Open Source Used In Unified Computing System (UCS) Server Firmware 4.3(1a)

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util/unlink.py
---

backport frop python3 Lib/test/support.py

1.6 nspr 4.32

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1.7 kerberos 1.16.1

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cmd/krb5/slave/kpropd_rpc.c
lib/gss_mechs/mech_krb5/et/kdb5_err.c
lib/gss_mechs/mech_spnego/mech/gssapiP_spnego.h
lib/gss_mechs/mech_spnego/mech/spnego_mech.c
lib/krb5/kadm5/kadm_host_srv_names.c
lib/krb5/kdb/kdb_convert.c
lib/krb5/kdb/kdb_hdr.h
lib/krb5/kdb/kdb_log.c
lib/krb5/kdb/kdb_log.h
lib/libgss/g_accept_sec_context.c
lib/libgss/g_acquire_cred.c
lib/libgss/g_canon_name.c
lib/libgss/g_compare_name.c
lib/libgss/g_context_time.c
lib/libgss/g_delete_sec_context.c
lib/libgss/g_dsp_name.c
lib/libgss/g_dsp_status.c
lib/libgss/g_dup_name.c
lib/libgss/g_exp_sec_context.c
lib/libgss/g_export_name.c
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lib/libgss/g_init_sec_context.c
lib/libgss/g_initialize.c
lib/libgss/g_inquire_context.c
lib/libgss/g_inquire_cred.c
lib/libgss/g_inquire_names.c
lib/libgss/g_process_context.c
lib/libgss/g_rel_buffer.c
lib/libgss/g_rel_cred.c
lib/libgss/g_rel_name.c
lib/libgss/g_rel_oid_set.c
lib/libgss/g_seal.c
lib/libgss/g_sign.c
lib/libgss/g_store_cred.c
lib/libgss/g_unseal.c
lib/libgss/g_userok.c
lib/libgss/g_utils.c
lib/libgss/g_verify.c
lib/libgss/gssd_pname_to_uid.c

uts/common/gssapi/include/gssapi_err_generic.h
uts/common/gssapi/include/mechglueP.h

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lib/gssapi/generic/gssapi_err_generic.et
lib/gssapi/mechglue/g_accept_sec_context.c
lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
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lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c
lib/gssapi/mechglue/g_seal.c
lib/gssapi/mechglue/g_sign.c
lib/gssapi/mechglue/g_store_cred.c
lib/gssapi/mechglue/g_unseal.c
lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c
lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

and the initial implementation of incremental propagation, including
the following new or changed files:

include/iprop_hdr.h
kadmin/server/ipropd_svc.c
lib/kdb/iprop.x
lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
kprop/kpropd_rpc.c
kprop/kproplog.c

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If

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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library,

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When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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1.11 libjpeg-turbo 2.0.0

1.11.1 Available under license :

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==========

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==========

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1.12 libmnl 1.0.4- r0

1.12.1 Available under license :

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Version 2.1, February 1999

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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1.13 file 5.34

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```
## -*-makefile-*-
## BSD-specific setup (FreeBSD, OpenBSD, NetBSD, *BSD)
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## Commands to generate dependency files
GEN_DEPS.c= $(CC) -E -MM $(DEFS) $(CPPFLAGS)
GEN_DEPS.cc= $(CXX) -E -MM $(DEFS) $(CPPFLAGS)

## Flags for position independent code
SHAREDLIBCFLAGS = -fPIC
SHAREDLIBCXXFLAGS = -fPIC
SHAREDLIBCPPFLAGS = -DPIC

## Additional flags when building libraries and with threads
THREADSCPPFLAGS = -D_REENTRANT
LIBCPPFLAGS =

## Compiler switch to embed a runtime search path
```

```
LD_RPATH=
LD_RPATH_PRE= -Wl,-rpath,

## Compiler switch to embed a library name
LD_SONAME = -Wl,-soname -Wl,$(notdir $(MIDDLE_SO_TARGET))

## Shared library options
LD_SOOPTIONS= -Wl,-Bsymbolic

## Shared object suffix
SO = so
## Non-shared intermediate object suffix
STATIC_O = ao

## Compilation rules
%.$(STATIC_O): $(srcdir)/%.c
 $(COMPILE.c) $(STATICCPPFLAGS) $(STATICCFLAGS) -o $@ $<
%.o: $(srcdir)/%.c
 $(COMPILE.c) $(DYNAMICCPPFLAGS) $(DYNAMICCFLAGS) -o $@ $<

%.$(STATIC_O): $(srcdir)/%.cpp
 $(COMPILE.cc) $(STATICCPPFLAGS) $(STATICCXXFLAGS) -o $@ $<
%.o: $(srcdir)/%.cpp
 $(COMPILE.cc) $(DYNAMICCPPFLAGS) $(DYNAMICCXXFLAGS) -o $@ $<


## Dependency rules
%.d: $(srcdir)/%.c
 @echo "generating dependency information for $<"
 @$(SHELL) -ec '$(GEN_DEPS.c) $< \
  | sed '\''s/\($*\)\.o[ :]*/\1.o $@ : /g'\'' > $@; \
  [ -s $@ ] || rm -f $@'

%.d: $(srcdir)/%.cpp
 @echo "generating dependency information for $<"
 @$(SHELL) -ec '$(GEN_DEPS.cc) $< \
  | sed '\''s/\($*\)\.o[ :]*/\1.o $@ : /g'\'' > $@; \
  [ -s $@ ] || rm -f $@'

## Versioned libraries rules

%.$(SO).$(SO_TARGET_VERSION_MAJOR): %.$(SO).$(SO_TARGET_VERSION)
 $(RM) $@ && ln -s ${<F} $@
%.$(SO): %.$(SO).$(SO_TARGET_VERSION_MAJOR)
 $(RM) $@ && ln -s ${*F}.$(SO).$(SO_TARGET_VERSION) $@

## End FreeBSD-specific setup
```

1.14 expat 2.2.4

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1.15 futures 3.3.0

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1.16 pyyaml 3.13

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1.17 libjitterentropy 3.4.1

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1.18 libyaml 0.2.1

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1.19 libnsl 2.28

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1.32 tftp-hpa 0.49

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*
* ------------------------------------------------------------------------- */
```

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```

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* /opt/ws_local/PERMITS_SQL/1066872890_1597797277.96/0/tftp-hpa-0-49-orig-tar-gz/tftp-hpa-0.49/tftp/main.c
* /opt/ws_local/PERMITS_SQL/1066872890_1597797277.96/0/tftp-hpa-0-49-orig-tar-gz/tftp-hpa-0.49/common/tftpsubs.c
* /opt/ws_local/PERMITS_SQL/1066872890_1597797277.96/0/tftp-hpa-0-49-orig-tar-gz/tftp-hpa-0.49/tftp/tftp.c
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```

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```

Found in path(s):
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* /opt/ws_local/PERMITS_SQL/1066872890_1597797277.96/0/tftp-hpa-0-49-orig-tar-gz/tftp-hpa-0.49/tftpd/remap.c
* /opt/ws_local/PERMITS_SQL/1066872890_1597797277.96/0/tftp-hpa-0-49-orig-tar-gz/tftp-hpa-0.49/tftpd/misc.c
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.\"---------------------------------------------------------------------- */
```

Found in path(s):

* /opt/ws_local/PERMITS_SQL/1066872890_1597797277.96/0/tftp-hpa-0-49-orig-tar-gz/tftp-hpa-0.49/tftp/tftp.1.in
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Found in path(s):
* /opt/ws_local/PERMITS_SQL/1066872890_1597797277.96/0/tftp-hpa-0-49-orig-tar-gz/tftp-hpa-0.49/tftpd/tftpd.c
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```

Found in path(s):
* /opt/ws_local/PERMITS_SQL/1066872890_1597797277.96/0/tftp-hpa-0-49-orig-tar-gz/tftp-hpa-0.49/tftpd/recvfrom.h
* /opt/ws_local/PERMITS_SQL/1066872890_1597797277.96/0/tftp-hpa-0-49-orig-tar-gz/tftp-hpa-0.49/tftpd/recvfrom.c
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* /opt/ws_local/PERMITS_SQL/1066872890_1597797277.96/0/tftp-hpa-0-49-orig-tar-gz/tftp-hpa-0.49/tftpd/tftpd.h
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```
Summary: The client for the Trivial File Transfer Protocol (TFTP).
Name: tftp
Version: 0.49
Release: 1
License: BSD
Group: Applications/Internet
Source0: http://www.kernel.org/pub/software/network/tftp/tftp-hpa-%{version}.tar.gz
BuildPreReq: tcp_wrappers
BuildRoot: %{_tmppath}/%{name}-root

%description
The Trivial File Transfer Protocol (TFTP) is normally used only for
booting diskless workstations.  The tftp package provides the user
interface for TFTP, which allows users to transfer files to and from a
remote machine.  This program and TFTP provide very little security,
and should not be enabled unless it is expressly needed.
```

```
%package server
Group: System Environment/Daemons
Summary: The server for the Trivial File Transfer Protocol (TFTP).
Requires: xinetd

%description server
The Trivial File Transfer Protocol (TFTP) is normally used only for
booting diskless workstations.  The tftp-server package provides the
server for TFTP, which allows users to transfer files to and from a
remote machine. TFTP provides very little security, and should not be
enabled unless it is expressly needed.  The TFTP server is run from
/etc/xinetd.d/tftp, and is disabled by default on Red Hat Linux systems.

%prep
%setup -q -n tftp-hpa-%{version}

%build

%configure
make %{?_smp_mflags}

%install
rm -rf ${RPM_BUILD_ROOT}
mkdir -p ${RPM_BUILD_ROOT}%{_bindir}
mkdir -p ${RPM_BUILD_ROOT}%{_mandir}/man{1,8}
mkdir -p ${RPM_BUILD_ROOT}%{_sbindir}

make INSTALLROOT=${RPM_BUILD_ROOT} \
   SBINDIR=%{_sbindir} MANDIR=%{_mandir} \
 install
install -m755 -d ${RPM_BUILD_ROOT}%{_sysconfdir}/xinetd.d/ ${RPM_BUILD_ROOT}/tftpboot
install -m644 tftp-xinetd ${RPM_BUILD_ROOT}%{_sysconfdir}/xinetd.d/tftp

%post server
/sbin/service xinetd reload > /dev/null 2>&1 || :

%postun server
if [ $1 = 0 ]; then
   /sbin/service xinetd reload > /dev/null 2>&1 || :
fi

%clean
rm -rf ${RPM_BUILD_ROOT}

%files
%defattr(-,root,root)
%{_bindir}/tftp
%{_mandir}/man1/*
```

%files server
%defattr(-,root,root)
%config(noreplace) %{_sysconfdir}/xinetd.d/tftp
%dir /tftpboot
%{_sbindir}/in.tftpd
%{_mandir}/man8/*

%changelog
* Tue Sep 14 2004 H. Peter Anvin <hpa@zytor.com>
- removed completely broken "Malta" patch.
- integrated into build machinery so rpm -ta works.

* Fri Feb 13 2004 Elliot Lee <sopwith@redhat.com>
- rebuilt

* Wed Jun 04 2003 Elliot Lee <sopwith@redhat.com>
- rebuilt

* Fri Apr 11 2003 Elliot Lee <sopwith@redhat.com>
- 0.33
- Add /tftpboot directory (#88204)

* Mon Feb 24 2003 Elliot Lee <sopwith@redhat.com>
- rebuilt

* Sun Feb 23 2003 Tim Powers <timp@redhat.com>
- add BuildPreReq on tcp_wrappers

* Wed Jan 22 2003 Tim Powers <timp@redhat.com>
- rebuilt

* Mon Nov 11 2002 Elliot Lee <sopwith@redhat.com> 0.32-1
- Update to 0.32

* Wed Oct 23 2002 Elliot Lee <sopwith@redhat.com> 0.30-1
- Fix #55789
- Update to 0.30

* Thu Jun 27 2002 Elliot Lee <sopwith@redhat.com>
- Try applying HJ's patch from #65476

* Fri Jun 21 2002 Tim Powers <timp@redhat.com>
- automated rebuild

* Mon Jun 17 2002 Elliot Lee <sopwith@redhat.com>
- Update to 0.29

* Thu May 23 2002 Tim Powers <timp@redhat.com>
- automated rebuild

* Wed Jan 09 2002 Tim Powers <timp@redhat.com>
- automated rebuild

* Tue Dec 18 2001 Elliot Lee <sopwith@redhat.com> 0.17-15
- Add patch4: netkit-tftp-0.17-defaultport.patch for bug #57562
- Update to tftp-hpa-0.28 (bug #56131)
- Remove include/arpa/tftp.h to fix #57259
- Add resource limits in tftp-xinetd (#56722)

* Sun Jun 24 2001 Elliot Lee <sopwith@redhat.com>
- Bump release + rebuild.

* Tue Jun 12 2001 Helge Deller <hdeller@redhat.de> (0.17-13)
- updated tftp-hpa source to tftp-hpa-0.17
- tweaked specfile with different defines for tftp-netkit and tftp-hpa version
- use hpa's tftpd.8 man page instead of the netkits one

* Mon May 07 2001 Helge Deller <hdeller@redhat.de>
- rebuilt in 7.1.x

* Wed Apr 18 2001 Helge Deller <hdeller@redhat.de>
- fix tftp client's put problems (#29529)
- update to tftp-hpa-0.16

* Wed Apr 4 2001 Jakub Jelinek <jakub@redhat.com>
- don't let configure to guess compiler, it can pick up egcs

* Thu Feb 08 2001 Helge Deller <hdeller@redhat.de>
- changed "wait" in xinetd file to "yes" (hpa-tftpd forks and exits) (#26467)
- fixed hpa-tftpd to handle files greater than 32MB (#23725)
- added "-l" flag to hpa-tftpd for file-logging (#26467)
- added description for "-l" to the man-page

* Thu Feb 08 2001 Helge Deller <hdeller@redhat.de>
- updated tftp client to 0.17 stable (#19640),
- drop dependency on xinetd for tftp client (#25051),

* Wed Jan 17 2001 Jeff Johnson <jbj@redhat.com>
- xinetd shouldn't wait on tftp (which forks) (#23923).

* Sat Jan 6 2001 Jeff Johnson <jbj@redhat.com>
- fix to permit tftp put's (#18128).
- startup as root with chroot to /tftpboot with early reversion to nobody
 is preferable to starting as nobody w/o ability to chroot.
- %%post is needed by server, not client. Add %%postun for erasure as well.

* Wed Aug 23 2000 Nalin Dahyabhai <nalin@redhat.com>
- default to being disabled

* Thu Aug 17 2000 Jeff Johnson <jbj@redhat.com>
- correct group.

* Tue Jul 25 2000 Nalin Dahyabhai <nalin@redhat.com>
- change user from root to nobody

* Sat Jul 22 2000 Jeff Johnson <jbj@redhat.com>
- update to tftp-hpa-0.14 (#14003).
- add server_args (#14003).
- remove -D_BSD_SOURCE (#14003).

* Fri Jul 21 2000 Nalin Dahyabhai <nalin@redhat.com>
- cook up an xinetd config file for tftpd

* Wed Jul 12 2000 Prospector <bugzilla@redhat.com>
- automatic rebuild

* Sun Jun 18 2000 Jeff Johnson <jbj@redhat.com>
- FHS packaging.
- update to 0.17.

* Fri May 5 2000 Matt Wilson <msw@redhat.com>
- use _BSD_SOURCE for hpa's tftpd so we get BSD signal semantics.

* Fri Feb 11 2000 Bill Nottingham <notting@redhat.com>
- fix description

* Wed Feb 9 2000 Jeff Johnson <jbj@redhat.com>
- compress man pages (again).

* Wed Feb 02 2000 Cristian Gafton <gafton@redhat.com>
- man pages are compressed
- fix description and summary

* Tue Jan 4 2000 Bill Nottingham <notting@redhat.com>
- split client and server

* Tue Dec 21 1999 Jeff Johnson <jbj@redhat.com>
- update to 0.16.

* Sat Aug 28 1999 Jeff Johnson <jbj@redhat.com>
- update to 0.15.

* Wed Apr 7 1999 Jeff Johnson <jbj@redhat.com>

- tftpd should truncate file when overwriting (#412)

* Sun Mar 21 1999 Cristian Gafton <gafton@redhat.com>
- auto rebuild in the new build environment (release 22)

* Mon Mar 15 1999 Jeff Johnson <jbj@redhat.com>
- compile for 6.0.

* Fri Aug 7 1998 Jeff Johnson <jbj@redhat.com>
- build root

* Mon Apr 27 1998 Prospector System <bugs@redhat.com>
- translations modified for de, fr, tr

* Mon Sep 22 1997 Erik Troan <ewt@redhat.com>
- added check for getpwnam() failure

* Tue Jul 15 1997 Erik Troan <ewt@redhat.com>
- initial build

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* /opt/ws_local/PERMITS_SQL/1066872890_1597797277.96/0/tftp-hpa-0-49-orig-tar-gz/tftp-hpa-0.49/tftpd/tftpd.8.in
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* /opt/ws_local/PERMITS_SQL/1066872890_1597797277.96/0/tftp-hpa-0-49-orig-tar-gz/tftp-hpa-0.49/common/tftpsubs.h
* /opt/ws_local/PERMITS_SQL/1066872890_1597797277.96/0/tftp-hpa-0-49-orig-tar-gz/tftp-hpa-0.49/tftp/extern.h

1.33 zlib 1.2.11

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1.34 uclibc 0.3.2

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This is the Debian-Linux prepackaged version of the Linux console font and
keytable utilities.

This package was put together by Yann Dirson <dirson@debian.org>, from
sources you can get from:
ftp://sunsite.unc.edu/pub/Linux/system/keyboards/console-tools-*

`console-tools' was derived from kbd-0.94 by Yann Dirson
<dirson@debian.org>.

The Linux Console Tools are covered by the GPL
(see /usr/doc/copyright/GPL for details).

The copyright notice for the original `kbd' package tells that
loadkeys, dumpkeys and showkey were derived from Risto Kankkunen's
kbd-0.81. The font loading code goes back to the codepage package by
Joel Hoffman (joel@wam.umd.edu). (He told that the original reference
is: "From: p. 307 of _Programmer's Guide to PC & PS/2 Video Systems_
by Richard Wilton. 1987. Microsoft Press".) The kernel and user
interface for the font loading closely used to follow Eugene Crosser's
intl_con package, but that may not be true anymore. [Similar things
were done earlier by Jerry Kaidor (tr2!jerry@abekas.com,
jkaidor@synoptics.com) : fontpak, H. Peter Anvin (hpa@nwu.edu) and
Pavel Zaboj (xzaboj@vse.cs). Their code was not used, but the Latin-1
*.psf fonts were developed by H. Peter Anvin, and the Latin-2 ones by
Pavel Zaboj.] The current maintainer of `kbd' is Andries Brouwer
<aeb@cwi.nl>.

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2.0.
The PSF file-format

(C) 1997 Yann Dirson <dirson@debian.org>

This file documents the PSF font-file-format, as understood by version 0.94

and above of the Linux console utilities ('kbd'). This file makes obsolete
the old `psffile.doc'.

This file has revision number 1.1, and is dated 1998/04/20.
Any useful additionnal information on PSF files would be great.

0. Changes:

1998/08/20: updated author's e-mail.
1998/08/20: History of the format from hpa himself.
1998/08/20: Fixed `filemode' description from hpa's input.

1. Summary

PSF stands for PC Screen Font.

A PSF file basically contains one character-font, whose width is 8 pixels,
ie. each scanline in a character occupies 1 byte.

It may contain characters of any height between 0 and 255, though character
heights lower than 8 or greater than 32 are not attested to exist or even be
useful [more info needed on this].

Fonts can contain either 256 or 512 characters.

The file can optionnally contain a unicode mapping-table, telling, for each
character in the font, which UCS2 characters it can be used to display.

The "file mode" byte controls font size (256/512) and whether file contains
a unicode mapping table.

2. History

The PSF file format was designed by H. Peter Anvin
<hpa@transmeta.com> in 1989 or so for his DOS screen font editor,
FONTEDIT.EXE. When he became involved with Linux, he used it for the
Linux font stuff he worked with, released a binary of FONTEDIT.EXE for
free distribution, and added the Unicode table to the spec.

3. Known programs understanding this file-format.

The following program in the Linux console utilities can read and/or write
PSF files:

setfont (R/W)
psfaddtable (R/W)
psfstriptable (R/W)
psfgettable (R)

4. Technical data

The file format is described here in sort-of EBNF notation. Upper-case
WORDS represent terminal symbols, ie. C types; lower-case words represent
non-terminal symbols, ie. symbols defined in terms of other symbols.
[sym] is an optional symbol
{sym} is a symbol that can be repeated 0 or more times
{sym}*N is a symbol that must be repeated N times
Comments are introduced with a # sign.

The data (U_SHORT's) are stored in LITTLE_ENDIAN byte order.

psf_file = psf_header
  raw_fontdata
  [unicode_data]

psf_header = CHAR = 0x36 CHAR = 0x04 # magic number
  filemode
  fontheight

fontheight = CHAR # measured in scan lines
filemode = CHAR # 0 : 256 characters, no unicode_data
    # 1 : 512 characters, no unicode_data
    # 2 : 256 characters, with unicode_data
    # 3 : 512 characters, with unicode_data

#

raw_fontdata = {char_data}*<fontsize>

char_data = {BYTE}*<fontheight>

#

unicode_data = { unicode_array psf_separator }*<fontsize>

unicode_array = { unicode }   # any necessary number of times

unicode = U_SHORT   # UCS2 code
psf_separator = unicode = 0xFFFF

This is console-tools-0.3.2.

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 getfd.c getkeycodes.c getunimap.c kbd_mode.c loadunimap.c
 resizecons.c screendump.c setkeycodes.c setleds.c
 setmetamode.c setvesablank.c showfont.c spawn_console.c
 spawn_login.c
 chvt.1 deallocvt.1 kbd_mode.1 setleds.1 setmetamode.1
 getkeycodes.8 loadunimap.8 resizecons.8 setkeycodes.8
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1.35 libconfig 1.7.2

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Version 2.1, February 1999

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1.37 libdrm 2.4.94

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1.38 atk 2.28.1

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1.39 libsgutils 1.47

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1.40 p11-kit 0.23.14-5.el8_0

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code or patches to this implementation of sudo since I began
maintaining it in 1993. This list is known to be incomplete--if
you believe you should be listed, please send a note to sudo@sudo.ws.

Ackeret, Matt
Adler, Mark
Allbery, Russ
Anderson, Jamie
Andrew, Nick
Andric, Dimitry
Barron, Danny
Bates, Tom
Behan, Zdenk
Bellis, Ray
Benali, Elias
Beverly, Jamie
Boardman, Spider
Bostley, P.J.
Bowes, Keith
Boyce, Keith Garry
Brantley, Michael
Braun, Rob
Bezina, Pavel
Brooks, Piete
Brown, Jerry
Burr, Michael E
Burton, Ross
Bussjaeger, Andreas
Calvin, Gary
Campbell, Aaron
Chazelas, Stephane
ek, Vtzslav

Coleman, Chris
Corzine, Deven T.
Cusack, Frank
Dai, Wei
Dill, David
Earickson, Jeff
Eckhardt, Drew
Edgington, Ben
Esipovich, Marc
Espie, Marc
Faigon, Ariel
Farrell, Brian
Fobes, Steve
Frysinger, Mike
G., Daniel Richard
Gailly, Jean-loup
Gelman, Stephen
Gerraty, Simon J.
Graber, Stephane
Guillory, B.
Hayman, Randy M.
Henke, Joachim
Hideaki, Yoshifuji
Hieb, Dave
Holloway, Nick
Hoover, Adam
Hunter, Michael T.
Hutchings, Ben
Irrgang, Eric
Jackson, Brian
Jackson, John R.
Jackson, Richard L., Jr.
Janssen, Mark
Jepeway, Chris
Jorge, Joel Pele
Juhani, Timo
Kikuchi, Ayamura
Kadow, Kevin
Kasal, Stepan
Kienenberger, Mike
King, Dale
King, Michael
Klyachkin, Andrey
Knoble, Jim
Knox, Tim
Komarnitsky, Alek O.
Kondrashov, Nikolai
Kopeek, Daniel

Kranenburg, Paul
Krause, David
Lakin, Eric
Larsen, Case
Levin, Dmitry V.
Libby, Kendall
Lobbes, Phillip E.
McIntyre, Jason
MacKenzie, David J.
McLaughlin, Tom
Makey, Jeff
Marchionna, Michael D.
Markham, Paul
Martinian, Emin
Meskes, Michael
Michael, David
Miller, Todd C.
Minier, Loc
Moffat, Darren
Moldung, Jan Thomas
Morris, Charles
Mueller, Andreas
Mller, Dworkin
Nieusma, Jeff
Nikitser, Peter A.
Nussel, Ludwig
Ouellet, Jean-Philippe
Paquet, Eric
Paradis, Chantal
Percival, Ted
Perera, Andres
Peron, Christian S.J.
Peschel, Aaron
Peslyak, Alexander
Peterson, Toby
Petten, Diego Elio
Pickett, Joel
Plotnick, Alex
de Raadt, Theo
Rasch, Gudleik
Reid, Steve
Richards, Matt
Rossum, Guido van
Rouillard, John P.
Rowe, William A., Jr.
Roy, Alain
Ruusame, Elan
Ryabinkin, Eygene

Sato, Yuichi
Snchez, Wilfredo
Saucier, Jean-Francois
Schoenfeld, Patrick
Schuring, Arno
Schwarze, Ingo
Scott, Dougal
Sieger, Nick
Simon, Thor Lancelot
Slemko, Marc
Smith, Andy
Sobrado, Igor
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Spangler, Aaron
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Winiger, Gary
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Zolnowsky, John

The following people have worked to translate sudo into other languages:

Blttermann, Mario

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Chornoivan, Yuri
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```
/* nicstar.c  v0.22  Jawaid Bazyar (bazyar@hypermall.com)
* nicstar.c, M. Welsh (matt.welsh@cl.cam.ac.uk)
*
* Hacked October, 1997 by Jawaid Bazyar, Interlink Advertising Services Inc.
*  http://www.hypermall.com/
* 10/1/97 - commented out CFG_PHYIE bit - we don't care when the PHY
* interrupts us (except possibly for removal/insertion of the cable?)
* 10/4/97 - began heavy inline documentation of the code. Corrected typos
* and spelling mistakes.
* 10/5/97 - added code to handle PHY interrupts, disable PHY on
* loss of link, and correctly re-enable PHY when link is
* re-established. (put back CFG_PHYIE)
*
*   Modified to work with the IDT7721 nicstar -- AAL5 (tested) only.
*
* R. D. Rechenmacher <ron@fnal.gov>, Aug. 6, 1997
*
* Linux driver for the IDT77201 NICStAR PCI ATM controller.
* PHY component is expected to be 155 Mbps S/UNI-Lite or IDT 77155;
* see init_nicstar() for PHY initialization to change this. This driver
* expects the Linux ATM stack to support scatter-gather lists
* (skb->atm.iovcnt != 0) for Rx skb's passed to vcc->push.
*
* Implementing minimal-copy of received data:
```

```
*   IDT always receives data into a small buffer, then large buffers
*    as needed. This means that data must always be copied to create
*    the linear buffer needed by most non-ATM protocol stacks (e.g. IP)
*    Fix is simple: make large buffers large enough to hold entire
*    SDU, and leave <small_buffer_data> bytes empty at the start. Then
*    copy small buffer contents to head of large buffer.
*   Trick is to avoid fragmenting Linux, due to need for a lot of large
*    buffers. This is done by 2 things:
*      1) skb->destructor / skb->atm.recycle_buffer
*           combined, allow nicstar_free_rx_skb to be called to
*           recycle large data buffers
*      2) skb_clone of received buffers
*   See nicstar_free_rx_skb and linearize_buffer for implementation
*    details.
*
*
*
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*
* M. Welsh, 6 July 1996
*
*
*/
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for his contributions to the dvb-net driver

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for CyberLogin for Linux which allows logging onto EON
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 for the nxt2004 frontend driver

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1.46 libvorbis 1.3.6

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1.61 pciutils 3.6.2-r0

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1.66 jq 1.2

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1.67 rdma-cm 18.1

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1.70 dmidecode 3.5

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1.71 libxi 1.7.9

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1.72 iptables 2.0.2

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1.74 lshw 02.18

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1.75 unzip 6.0 43.el8

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FIRST NOTE:
This file contains some details about the copyright history of
contributions to the UnZip project.

Additionally, it summarises some exceptions to the general BSD-like
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the system specific ports.
Please read LICENSE first to find out what is allowed to do with
Info-ZIP's UnZip code.

- -

There are currently two explicit copyrights on portions of UnZip
code (at least, of which Info-ZIP is aware):
Jim Luther's Mac OS File Manager interface code; and Christopher Evans'
MacBinaryIII coding code (for the MacOS port).. These copyrights
are discussed in more detail below.

All remaining code is now (starting with UnZip version 5.41) covered
by the new Info-ZIP license. For details, please read the acompaning
file LICENSE. The terms and conditions in this license supersede the
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(vms/vms.c), Greg Roelofs (zipinfo.c, new version of unshrink.c),
Mike White (Windows DLL code in "windll/*"), Steve P. Miller (Pocket
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core routines, previously put into the public domain). All these
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replace their copyright notes by the Info-ZIP License.

Frequently Asked Questions regarding (re)distribution of Zip and UnZip
are near the end of this file.

There are no known patents on any of the code in UnZip. Unisys
claims a patent on LZW encoding and on LZW decoding _in an apparatus
that performs LZW encoding_, but the patent appears to exempt a stand-
alone decoder (as in UnZip's unshrink.c). Unisys has publicly claimed
otherwise, but the issue has never been tested in court. Since this
point is unclear, unshrinking is not enabled by default. It is the
responsibility of the user to make his or her peace with Unisys and
its licensing requirements. (unshrink.c may be removed from future
releases altogether.)

The original unzip source code has been extensively modified and
almost entirely rewritten (changes include random zipfile access
rather than sequential; replacement of unimplode() with explode();
replacement of old unshrink() with new (unrelated) unshrink(); re-
placement of output routines; addition of inflate(), wildcards,
filename-mapping, text translation, ...; etc.). As far as we can
tell, only the core code of the unreduce method remained substantially
similar to Mr. Smith's original source. As of UnZip 5.42, the complete
core code is now covered by the Info-ZIP Licence. Therefore, support

for the reduce method has been removed.
The drop of the reduce method should only affect some test archives,
reducing was never used in any publically distributed Zip program.
For pathologic cases where support for reduced archive entries is
needed, the unreduce code copyrighted by Samuel H. Smith is available
as a separate distribution (the restricted copyright of this code is
cited below in the "historical" section).

The following copyright applies to the Mac OS File Manager interface code
(macos/source/macstuff.[ch]), distributed with UnZip 5.4 and later:

```
 * MoreFiles
 *
 * A collection of File Manager and related routines
 *
 * by Jim Luther (Apple Macintosh Developer Technical Support Emeritus)
 * with significant code contributions by Nitin Ganatra
 * (Apple Macintosh Developer Technical Support Emeritus)
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```

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The following copyright applies to the Mac OS "macbin3" decoding code
(extra field compatibility with ZipIt):

```
 *  MacBinaryIII.h
 *
 *  Copyright 1997 Christopher Evans (cevans@poppybank.com)
 *
 *  Basic encoding and decoding of Macintosh files to the
```

```
   *  MacBinary III spec.
   * ------------------------------------------------------------------------
   * This source is copyrighted by Christopher Evans (cevans@poppybank.com)
   * (available at ftp://ftp.lazerware.com/MacBinaryIII_src_C.sit
   * homepage of Leonard Rosenthol  leonardr@netcom.com)
```

This copyright note does not contain any usage terms. So, we assume
that this code is freely reusable until we are proved wrong...

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The following copyright applies to the full-featured unreduce.c
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```
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   *
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```

Regarding the first stipulation, Mr. Smith was tracked down in southern
California some years back [Samuel H. Smith, The Tool Shop; as of mid-
May 1994, (213) 851-9969 (voice), (213) 887-2127(?) (subscription BBS),
71150.2731@compuserve.com]:

"He says that he thought that whoever contacted him understood that
 he has no objection to the Info-ZIP group's inclusion of his code.
 His primary concern is that it remain freely distributable, he said."

Despite the fact that our "normal" code has been entirely rewritten
and by default no longer contains any of Mr. Smith's code, Info-ZIP
remains indebted and grateful to him. We hope he finds our contribu-
tions as useful as we have his.

Note that the third and fourth stipulations still apply to any com-
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The following copyright applied to most of the VMS code in vms.c,

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```

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```

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```
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```

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```
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  * Miller.  The product "Pocket UnZip" itself is property of the
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  * from Steve P. Miller.
```

The remaining code was written by many people associated with the
Info-ZIP group, with large contributions from (but not limited to):

Greg Roelofs (overall program logic, ZipInfo, unshrink, filename
mapping/portability, etc.), Mark Adler (inflate, explode, funzip),
Kai Uwe Rommel (OS/2), John Bush and Paul Kienitz (Amiga), Antoine
Verheijen (Macintosh), Hunter Goatley (more VMS), Mike White (Windows
DLLs), Christian Spieler (overall logic, optimization, VMS, etc.) and
others. See the file CONTRIBS in the source distribution for a much
more complete list of contributors.
The decompression core code for the deflate method (inflate.[ch],
explode.c) was originally written by Mark Adler who submitted it
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1.76 libcap 2.25

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see http://www.zope.com). In 2001, the Python Software Foundation (PSF, see http://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
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2.2 and above	2.1.1	2001-now	PSF	yes

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A. HISTORY OF THE SOFTWARE
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Python was created in the early 1990s by Guido van Rossum at Stichting
Mathematisch Centrum (CWI, see http://www.cwi.nl) in the Netherlands
as a successor of a language called ABC. Guido remains Python's
principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for
National Research Initiatives (CNRI, see http://www.cnri.reston.va.us)
in Reston, Virginia where he released several versions of the
software.

In May 2000, Guido and the Python core development team moved to
BeOpen.com to form the BeOpen PythonLabs team. In October of the same
year, the PythonLabs team moved to Digital Creations (now Zope
Corporation, see http://www.zope.com). In 2001, the Python Software
Foundation (PSF, see http://www.python.org/psf/) was formed, a
non-profit organization created specifically to own Python-related
Intellectual Property. Zope Corporation is a sponsoring member of
the PSF.

All Python releases are Open Source (see http://www.opensource.org for
the Open Source Definition). Historically, most, but not all, Python
releases have also been GPL-compatible; the table below summarizes
the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes

1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
2.7	2.6	2010	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under the GPL. All Python licenses, unlike the GPL, let you distribute a modified version without making your changes open source. The GPL-compatible licenses make it possible to combine Python with other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

Thanks to the many outside volunteers who have worked under Guido's
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1.83 tcl 8.6.6

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1.87 libnl3 3.4.0

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1.88 nginx 1.15.2

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1.89 e2fsprogs 1.44.3

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# libraries.
#
# In order to use this stub, the following makefile variables must be defined.
#
# BSDLIB_VERSION = 1.0
# BSDLIB_IMAGE = libce
# BSDLIB_MYDIR = et
# BSDLIB_INSTALL_DIR = $(SHLIBDIR)
#

all:: image

real-subdirs:: Makefile
 @echo " MKDIR pic"
 @mkdir -p pic

BSD_LIB = $(BSDLIB_IMAGE).so.$(BSDLIB_VERSION)
BSDLIB_PIC_FLAG = -fpic

image:  $(BSD_LIB)

$(BSD_LIB): $(OBJS)
 (cd pic; ld -Bshareable -o $(BSD_LIB) $(LDFLAGS_SHLIB) $(OBJS))
 $(MV) pic/$(BSD_LIB) .
 $(RM) -f ../$(BSD_LIB)
```

```
 (cd ..; $(LN) $(LINK_BUILD_FLAGS) \
  `echo $(my_dir) | sed -e 's;lib/;;'`/$(BSD_LIB) $(BSD_LIB))

install-shlibs install:: $(BSD_LIB)
 @echo " INSTALL_PROGRAM $(BSDLIB_INSTALL_DIR)/$(BSD_LIB)"
 @$(INSTALL_PROGRAM) $(BSD_LIB) \
  $(DESTDIR)$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)
 @-$(LDCONFIG)

install-strip: install

install-shlibs-strip:: install-shlibs

uninstall-shlibs uninstall::
 $(RM) -f $(DESTDIR)$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)

clean::
 $(RM) -rf pic
 $(RM) -f $(BSD_LIB)
 $(RM) -f ../$(BSD_LIB)
This package was added to the e2fsprogs debian source package by
Theodore Ts'o <tytso@mit.edu> on Sat Mar 15 15:33:37 EST 2003

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Index: tdbsa/tdb.c
===
--- tdbsa.orig/tdb.c
+++ tdbsa/tdb.c
@@ -4,11 +4,11 @@ Rev: 23371
Last Changed Date: 2007-06-06 20:14:06 -0400 (Wed, 06 Jun 2007)
*/
 /*
-   Unix SMB/CIFS implementation.
+   trivial database library - standalone version

-   trivial database library - private includes
-
-   Copyright (C) Andrew Tridgell   2005
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Theodore Ts'o
23-June-2007

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This package was added to the e2fsprogs debian source package by
Theodore Ts'o <tytso@mit.edu> on Sat Mar 15 15:33:37 EST 2003

It is part of the main e2fsprogs distribution, which can be found at:

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Upstream Author: Theodore Ts'o <tytso@mit.edu>

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<signature of Ty Coon>, 1 April 1989
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1.90 diffutils 2.16

1.90.1 Available under license :

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1.91 zlib 1.0.3

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1.92 diffutils 3.6

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1.95 pixman 0.34.0

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1.98 libpng 1.6.36

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---

pnm2png / png2pnm --- conversion from PBM/PGM/PPM-file to PNG-file

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1.100 perl 5.24.4

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Julian Seward, jseward@bzip.org
bzip2/libbzip2 version 1.0.6 of 6 September 2010

---
abstract: 'Build and install Perl modules'
author:
 - 'Ken Williams <kwilliams@cpan.org>'
 - "Development questions, bug reports, and patches should be sent to the\nModule-Build mailing list at <module-build@perl.org>."
build_requires:
 File::Temp: 0.15
 Test::Harness: 3.16
 Test::More: 0.49
generated_by: 'Module::Build version 0.3608'
license: gpl
meta-spec:
 url: http://module-build.sourceforge.net/META-spec-v1.4.html
 version: 1.4
name: Module-Build
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version: 3

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The End
#!perl

=head1 NAME

copyright.t

=head1 DESCRIPTION

Tests that the latest copyright years in the top-level README file and the C<perl -v> output match each other.

```
If the test fails, update at least one of README and perl.c so that they match
reality.

Optionally you can pass the C<--now> option to check they are at the current
year. This isn't checked by default, so that it doesn't fail for people
working on older releases. It should be run before making a new release.

=cut

use strict;
use Config;
BEGIN { require './test.pl' }

if ( $Config{usecrosscompile} ) {
 skip_all( "Not all files are available during cross-compilation" );
}

my ($opt) = @ARGV;

my $readme_year = readme_year();
my $v_year = v_year();

# Check that both copyright dates are up-to-date, but only if requested, so
# that tests still pass for people intentionally working on older versions:
if ($opt eq '--now')
{
 my $current_year = (gmtime)[5] + 1900;
 is $v_year, $current_year, 'perl -v copyright includes current year';
 is $readme_year, $current_year, 'README copyright includes current year';
}

# Otherwise simply check that the two copyright dates match each other:
else
{
 is $readme_year, $v_year, 'README and perl -v copyright dates match';
}

done_testing;


sub readme_year
# returns the latest copyright year from the top-level README file
{

 open my $readme, '<', '../README' or die "Opening README failed: $!";

 # The copyright message is the first paragraph:
 local $/ = '';
```

```
 my $copyright_msg = <$readme>;

 my ($year) = $copyright_msg =~ /.*\b(\d{4,})/s
    or die "Year not found in README copyright message '$copyright_msg'";

 $year;
}


sub v_year
# returns the latest copyright year shown in perl -v
{

 my $output = runperl switches => ['-v'];
 my ($year) = $output =~ /copyright 1987.*\b(\d{4,})/i
    or die "Copyright statement not found in perl -v output '$output'";

 $year;
}
```

1.101 kmod 25+gitAUTOINC+aca4eca103

1.101.1 Available under license :

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1.102 zlib 1.2.3

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/* zlib.h -- interface of the 'zlib' general purpose compression library
version 1.2.11, January 15th, 2017

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1.103 libusrsctp 0.9.5.0

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1.104 strace 4.4

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1.105 libvte 0.52.2

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1.107 lua 5.3.3

1.108 libgpg-error 1.32

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1.110 kerberos 1.16

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cmd/krb5/kproplog/kproplog.c
cmd/krb5/slave/kpropd_rpc.c
lib/gss_mechs/mech_krb5/et/kdb5_err.c
lib/gss_mechs/mech_spnego/mech/gssapiP_spnego.h
lib/gss_mechs/mech_spnego/mech/spnego_mech.c
lib/krb5/kadm5/kadm_host_srv_names.c
lib/krb5/kdb/kdb_convert.c
lib/krb5/kdb/kdb_hdr.h
lib/krb5/kdb/kdb_log.c
lib/krb5/kdb/kdb_log.h
lib/libgss/g_accept_sec_context.c
lib/libgss/g_acquire_cred.c

lib/libgss/g_canon_name.c
lib/libgss/g_compare_name.c
lib/libgss/g_context_time.c
lib/libgss/g_delete_sec_context.c
lib/libgss/g_dsp_name.c
lib/libgss/g_dsp_status.c
lib/libgss/g_dup_name.c
lib/libgss/g_exp_sec_context.c
lib/libgss/g_export_name.c
lib/libgss/g_glue.c
lib/libgss/g_imp_name.c
lib/libgss/g_imp_sec_context.c
lib/libgss/g_init_sec_context.c
lib/libgss/g_initialize.c
lib/libgss/g_inquire_context.c
lib/libgss/g_inquire_cred.c
lib/libgss/g_inquire_names.c
lib/libgss/g_process_context.c
lib/libgss/g_rel_buffer.c
lib/libgss/g_rel_cred.c
lib/libgss/g_rel_name.c
lib/libgss/g_rel_oid_set.c
lib/libgss/g_seal.c
lib/libgss/g_sign.c
lib/libgss/g_store_cred.c
lib/libgss/g_unseal.c
lib/libgss/g_userok.c
lib/libgss/g_utils.c
lib/libgss/g_verify.c
lib/libgss/gssd_pname_to_uid.c
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uts/common/gssapi/include/mechglueP.h

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```
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 "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">
 <head>
  <meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
  <title>MIT Kerberos License information &amp;#8212; MIT Kerberos Documentation</title>
  <link rel="stylesheet" href="_static/agogo.css" type="text/css" />
  <link rel="stylesheet" href="_static/pygments.css" type="text/css" />
  <link rel="stylesheet" href="_static/kerb.css" type="text/css" />
  <script type="text/javascript">
    var DOCUMENTATION_OPTIONS = {
      URL_ROOT:    './',
      VERSION:     '1.17',
      COLLAPSE_INDEX: false,
      FILE_SUFFIX: '.html',
      HAS_SOURCE:  true,
      SOURCELINK_SUFFIX: '.txt'
    };
  </script>
  <script type="text/javascript" src="_static/jquery.js"></script>
  <script type="text/javascript" src="_static/underscore.js"></script>
  <script type="text/javascript" src="_static/doctools.js"></script>
  <link rel="author" title="About these documents" href="about.html" />
  <link rel="index" title="Index" href="genindex.html" />
  <link rel="search" title="Search" href="search.html" />
  <link rel="copyright" title="Copyright" href="copyright.html" />
  <link rel="next" title="Copyright" href="copyright.html" />
  <link rel="prev" title="MIT Kerberos features" href="mitK5features.html" />
 </head>
 <body>
  <div class="header-wrapper">
     <div class="header">


        <h1><a href="index.html">MIT Kerberos Documentation</a></h1>

        <div class="rel">

     <a href="index.html" title="Full Table of Contents"
```

```
        accesskey="C">Contents</a> |
      <a href="mitK5features.html" title="MIT Kerberos features"
        accesskey="P">previous</a> |
      <a href="copyright.html" title="Copyright"
        accesskey="N">next</a> |
      <a href="genindex.html" title="General Index"
        accesskey="I">index</a> |
      <a href="search.html" title="Enter search criteria"
        accesskey="S">Search</a> |
  <a href="mailto:krb5-bugs@mit.edu?subject=Documentation__MIT Kerberos License
information">feedback</a>
        </div>
      </div>
  </div>

  <div class="content-wrapper">
    <div class="content">
      <div class="document">

    <div class="documentwrapper">
      <div class="bodywrapper">
        <div class="body" role="main">

 <div class="section" id="mit-kerberos-license-information">
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<code class="docutils literal">src/lib/gssapi</code>, including the following files:
<pre>lib<span
class="o">/gssapi/<span
class="n">generic/gssapi_err_generic<span
class="o">.et
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_accept_sec_context.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_acquire_cred.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_canon_name.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_compare_name.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_context_time.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_delete_sec_context.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_dsp_name.c
lib/gssapi<span

class="o">/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/<span

class="o">/mechglue/<span
class="n">g_rel_oid_set.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_seal.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_sign.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_store_cred.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_unseal.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_userok.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_utils.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">g_verify.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">gssd_pname_to_uid.c
lib/gssapi<span
class="o">/mechglue/<span
class="n">mglueP.h
lib/gssapi<span
class="o">/mechglue/<span
class="n">oid_ops.c
lib/gssapi<span
class="o">/spnego/<span
class="n">gssapiP_spnego.h
lib/gssapi<span
class="o">/spnego/<span
class="n">spnego_mech.c
</pre>

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the following new or changed files:
<pre>include<span
class="o">/iprop_hdr.h
kadmin/server<span
class="o">/ipropd_svc.c
lib/kdb/<span
class="n">iprop.x

lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
kprop/kpropd_rpc.c
kprop/kproplog.c
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.. parsed-literal::

lib/gssapi/generic/gssapi_err_generic.et
lib/gssapi/mechglue/g_accept_sec_context.c
lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c
lib/gssapi/mechglue/g_seal.c
lib/gssapi/mechglue/g_sign.c
lib/gssapi/mechglue/g_store_cred.c
lib/gssapi/mechglue/g_unseal.c
lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c
lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

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.. parsed-literal::

  include/iprop_hdr.h
  kadmin/server/ipropd_svc.c
  lib/kdb/iprop.x
  lib/kdb/kdb_convert.c
  lib/kdb/kdb_log.c
  lib/kdb/kdb_log.h
  lib/krb5/error_tables/kdb5_err.et
  kprop/kpropd_rpc.c
  kprop/kproplog.c

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 "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

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  <link rel="stylesheet" href="_static/agogo.css" type="text/css" />
  <link rel="stylesheet" href="_static/pygments.css" type="text/css" />
  <link rel="stylesheet" href="_static/kerb.css" type="text/css" />
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      VERSION:     '1.17',
      COLLAPSE_INDEX: false,
      FILE_SUFFIX: '.html',
      HAS_SOURCE:  true,
      SOURCELINK_SUFFIX: '.txt'
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  <link rel="index" title="Index" href="genindex.html" />
```

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  <link rel="copyright" title="Copyright" href="#" />
  <link rel="next" title="How to build this documentation from the source" href="build_this.html" />
  <link rel="prev" title="MIT Kerberos License information" href="mitK5license.html" />
</head>
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  <div class="header-wrapper">
     <div class="header">


        <h1><a href="index.html">MIT Kerberos Documentation</a></h1>

        <div class="rel">

     <a href="index.html" title="Full Table of Contents"
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        accesskey="P">previous</a> |
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        </div>
     </div>
  </div>

  <div class="content-wrapper">
    <div class="content">
      <div class="document">

    <div class="documentwrapper">
      <div class="bodywrapper">
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</div>


        </div>
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   </div>
    </div>
    <div class="sidebar">
  <h2>On this page</h2>
  <ul>
<li><a class="reference internal" href="#">Copyright</a></li>
</ul>

  <br/>
  <h2>Table of contents</h2>
  <ul>
<li class="toctree-l1"><a class="reference internal" href="user/index.html">For users</a></li>
<li class="toctree-l1"><a class="reference internal" href="admin/index.html">For administrators</a></li>
<li class="toctree-l1"><a class="reference internal" href="appdev/index.html">For application developers</a></li>
<li class="toctree-l1"><a class="reference internal" href="plugindev/index.html">For plugin module
developers</a></li>
<li class="toctree-l1"><a class="reference internal" href="build/index.html">Building Kerberos V5</a></li>
<li class="toctree-l1"><a class="reference internal" href="basic/index.html">Kerberos V5 concepts</a></li>
<li class="toctree-l1"><a class="reference internal" href="formats/index.html">Protocols and file formats</a></li>
<li class="toctree-l1"><a class="reference internal" href="mitK5features.html">MIT Kerberos features</a></li>
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  <br/>
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    <input type="submit" value="Go" />
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    <input type="hidden" name="area" value="default" />
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    <div class="clearer"></div>
  </div>
  </div>

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      <div class="left">
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         >Contents</a> |
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lib/gssapi/generic/gssapi_err_generic.et
lib/gssapi/mechglue/g_accept_sec_context.c
lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c

lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c
lib/gssapi/mechglue/g_seal.c
lib/gssapi/mechglue/g_sign.c
lib/gssapi/mechglue/g_store_cred.c
lib/gssapi/mechglue/g_unseal.c
lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c
lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

and the initial implementation of incremental propagation, including
the following new or changed files:

include/iprop_hdr.h
kadmin/server/ipropd_svc.c
lib/kdb/iprop.x
lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
kprop/kpropd_rpc.c
kprop/kproplog.c

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# This program is intended to be used by "make check-copyright".  It
# checks for violations of the coding standards related to copyright
# and license statements in source code comments.

import os
import sys
import re

def warn(fname, ln, msg):
  print '%s: %d: %s' % (fname, ln + 1, msg)

def indicates_license(line):
  return 'Copyright' in line or 'COPYRIGHT' in line or 'License' in line

# Check a comment for boilerplate violations.  Return true if the comment
# is a license statement.
def check_comment(comment, fname, ln, code_seen, nonlicense_seen):
  text_seen = False
  is_license = False
  for line in comment:
    if not is_license and indicates_license(line):
      is_license = True
      if text_seen:
        warn(fname, ln, 'License begins after first line of comment')
      elif code_seen:
        warn(fname, ln, 'License after code')
      elif nonlicense_seen:
        warn(fname, ln, 'License after non-license comments')
      break
    # DB2 licenses start with '/*-' and we don't want to change them.
    if line != '' and line != '-':
      text_seen = True
  return is_license

def check_file(lines, fname):
  # Skip emacs mode line if present.
  ln = 0
  if '-*- mode: c;' in lines[ln]:
    ln += 1
```

```
  # Check filename comment if present.
  m = re.match(r'/\* ([^ ]*)( - .*)? \*/', lines[ln])
  if m:
     if m.group(1) != fname:
        warn(fname, ln, 'Wrong filename in comment')
     ln += 1

  # Scan for license statements.
  in_comment = False
  code_seen = False
  nonlicense_seen = False
  for line in lines[ln:]:
     # Strip out whitespace and comments contained within a line.
     if not in_comment:
        line = re.sub(r'/\*.*?\*/', '', line)
     line = line.strip()

     if not in_comment and '/*' in line:
        (line, sep, comment_part) = line.partition('/*')
        comment = [comment_part.strip()]
        comment_starts_at = ln
        in_comment = True
     elif in_comment and '*/' not in line:
        comment.append(line.lstrip('*').lstrip())
     elif in_comment:
        (comment_part, sep, line) = line.partition('*/')
        comment.append(comment_part.strip())
        is_license = check_comment(comment, fname, comment_starts_at,
                                   code_seen, nonlicense_seen)
        nonlicense_seen = nonlicense_seen or not is_license
        in_comment = False
     elif line.strip() != '':
        code_seen = True

     ln += 1

for fname in sys.argv[1:]:
  if fname.startswith('./'):
     fname = fname[2:]
  f = open(fname)
  lines = f.readlines()
  f.close()
  check_file(lines, fname)
.. _mitK5license:

MIT Kerberos License information
================================
```

```
.. toctree::
   :hidden:

   copyright.rst

.. include::  notice.rst
Copyright
=========

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See :ref:`mitK5license` for additional copyright and license
information.
/* -*- mode: c; c-basic-offset: 4; indent-tabs-mode: nil -*- */
/*

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*/
```

1.111 pcre 10.31

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```
PCRE2 LICENCE

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End
```

PCRE2 LICENCE

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and semantics are as close as possible to those of the Perl 5 language.

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The basic library functions are written in C and are freestanding. Also
included in the distribution is a just-in-time compiler that can be used to
optimize pattern matching. This is an optional feature that can be omitted when
the library is built.

THE BASIC LIBRARY FUNCTIONS

Written by: Philip Hazel
Email local part: ph10
Email domain: cam.ac.uk

University of Cambridge Computing Service,
Cambridge, England.

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1.112 atk 2.26.2

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1.113 safeclib 4.1.3

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1.114 tdb 1.44.3

1.114.1 Available under license :

This is the Debian GNU/Linux prepackaged version of the static EXT2
file system consistency checker (e2fsck.static). The EXT2 utilities
were written by Theodore Ts'o <tytso@mit.edu> and Remy Card
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#
This is a Makefile stub which handles the creation of BSD shared
libraries.
#
In order to use this stub, the following makefile variables must be defined.
#
BSDLIB_VERSION = 1.0
BSDLIB_IMAGE = libce
BSDLIB_MYDIR = et
BSDLIB_INSTALL_DIR = $(SHLIBDIR)
#

```
all:: image

real-subdirs:: Makefile
 @echo " MKDIR pic"
 @mkdir -p pic

BSD_LIB = $(BSDLIB_IMAGE).so.$(BSDLIB_VERSION)
BSDLIB_PIC_FLAG = -fpic

image:  $(BSD_LIB)

$(BSD_LIB): $(OBJS)
 (cd pic; ld -Bshareable -o $(BSD_LIB) $(LDFLAGS_SHLIB) $(OBJS))
 $(MV) pic/$(BSD_LIB) .
 $(RM) -f ../$(BSD_LIB)
 (cd ..; $(LN) $(LINK_BUILD_FLAGS) \
  `echo $(my_dir) | sed -e 's;lib/;;'`/$(BSD_LIB) $(BSD_LIB))

install-shlibs install:: $(BSD_LIB)
 @echo " INSTALL_PROGRAM $(BSDLIB_INSTALL_DIR)/$(BSD_LIB)"
 @$(INSTALL_PROGRAM) $(BSD_LIB) \
  $(DESTDIR)$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)
 @-$(LDCONFIG)

install-strip: install

install-shlibs-strip:: install-shlibs

uninstall-shlibs uninstall::
 $(RM) -f $(DESTDIR)$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)

clean::
 $(RM) -rf pic
 $(RM) -f $(BSD_LIB)
 $(RM) -f ../$(BSD_LIB)
```

This package was added to the e2fsprogs debian source package by
Theodore Ts'o <tytso@mit.edu> on Sat Mar 15 15:33:37 EST 2003

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This is the Debian GNU/Linux prepackaged version of the translation
files of the EXT2 file system utilities. The EXT2 utilities were
written by Theodore Ts'o <tytso@mit.edu> and Remy Card
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Index: tdbsa/tdb.c
===
--- tdbsa.orig/tdb.c
+++ tdbsa/tdb.c
@@ -4,11 +4,11 @@ Rev: 23371
Last Changed Date: 2007-06-06 20:14:06 -0400 (Wed, 06 Jun 2007)
*/
 /*
-   Unix SMB/CIFS implementation.
+   trivial database library - standalone version

-   trivial database library - private includes
-
-   Copyright (C) Andrew Tridgell   2005
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     ** library. This does NOT imply that all of Samba is released
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system utilities (e2fsck, mke2fs, etc.). The EXT2 utilities were
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Theodore Ts'o
23-June-2007

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This package was added to the e2fsprogs debian source package by
Theodore Ts'o <tytso@mit.edu> on Sat Mar 15 15:33:37 EST 2003

It is part of the main e2fsprogs distribution, which can be found at:

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1.115 zlib 1.2.8

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1.117 eudev 3.2.7

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1.119 lz4 1.8.2

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Upstream-Contact: Yann Collet <Cyan4973@github.com>
Source: https://github.com/lz4/lz4

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1.120 acpica 20180508

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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslcompiler.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/asldebug.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acstruct.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/platform/acefi.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslcompile.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/extrace.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acpredef.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpiexec/aetables.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utaddress.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exresop.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/efihello/efihello.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/debugger/dbmethod.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/platform/acmacosx.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/debugger/dbinput.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/parser/psloop.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utlock.c

* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/actbinfo.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/dmtbdump3.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslprepkg.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpiexec/aemain.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpisrc/acpisrc.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/debugger/dbconvert.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/namespace/nspredef.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/parser/psopinfo.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/namespace/nsxfname.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utownerid.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpihelp/ahgrammar.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/resources/rscalc.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/os_specific/service_layers/osunixmap.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/disassembler/dmresrcs.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acapps.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/events/evgpeblk.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpinames/anstubs.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/dtio.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exconcat.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslmapoutput.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acutils.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/dispatcher/dswscope.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utalloc.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/namespace/nsalloc.c

* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslcache.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/events/evxfregn.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utmutex.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acinterp.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/platform/acefiex.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpihelp/ahasl.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exmutex.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acparser.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/disassembler/dmutils.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/debugger/dbtest.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/events/evmisc.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/resources/rsdump.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpixtract/axmain.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/resources/rsirq.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/hardware/hwesleep.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslwalks.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utids.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslfileio.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslmessages.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/hardware/hwvalid.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslstartup.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/actbl2.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/cvcompiler.c

* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpisrc/asconvrt.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exoparg2.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/dmtbinfo1.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/asltree.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslrestype1.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/namespace/nsdump.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/dmtbinfo2.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/events/evregion.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/namespace/nsparse.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/actbl3.h
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/aclocal.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/events/evxfevnt.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/tables/tbdata.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utexcep.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslfiles.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/accommon.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/events/evglock.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/tables/tbfind.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslutils.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslcodegen.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acoutput.h

* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utosi.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslpredef.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utstring.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/os_specific/service_layers/oslinuxtbl.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/getopt.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/asloperands.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/platform/achaiku.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/asllisting.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslpld.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslmap.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpisrc/asfile.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/namespace/nseval.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/disassembler/dmbuffer.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslrestype2w.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/dispatcher/dswexec.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslallocate.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/asluuid.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acglobal.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exoparg1.c

* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acnamesp.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/actables.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/tables/tbxface.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exprep.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpidump/acpidump.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/dtexpress.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/dispatcher/dsdebug.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpibin/abcompare.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpinames/antables.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpisrc/astable.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/namespace/nswalk.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/events/evxfgpe.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exstore.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpidump/apmain.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acclib.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslxrefout.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/hardware/hwacpi.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslbtypes.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/os_specific/service_layers/osbsdtbl.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/resources/rslist.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpihelp/ahmain.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/acgetline.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/disassembler/dmnames.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acdispat.h

* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exoparg3.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/adfile.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslrestype2q.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/parser/psxface.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/parser/psparse.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/preprocess.h
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/examples/extables.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/platform/aclinux.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/resources/rsdumpinfo.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acexcep.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpixtract/axutils.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/platform/acdragonfly.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/platform/acnetbsd.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslparseop.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/os_specific/service_layers/osgendbg.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpihelp/ahdecode.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utdebug.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/ahids.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/dmextern.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utstate.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/hardware/hwtimer.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/hardware/hwxface.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/disassembler/dmresrc.c

* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/tables/tbutils.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utinit.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utobject.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslopt.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/debugger/dbnames.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/events/evgpeinit.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/debugger/dbexec.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslnamesp.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/dmtable.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/platform/acdragonflyex.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/dispatcher/dsmthdat.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslglobal.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/events/evsci.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/dispatcher/dsmethod.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/namespace/nsutils.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/prutils.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/asloffset.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/tables/tbxfroot.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/resources/rsmisc.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpixtract/acpixtract.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exstorob.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/prscan.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/platform/acenv.h

* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exstoren.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/parser/psargs.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/os_specific/service_layers/oswindir.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utascii.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/disassembler/dmdeferred.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/tables/tbxfload.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/hardware/hwsleep.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/hardware/hwregs.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/dmtables.c
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* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/namespace/nsarguments.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/ahuuids.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/debugger/dbstats.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/prexpress.c

* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/namespace/nsrepair2.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utresrc.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utmisc.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/os_specific/service_layers/oswinxf.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/adisasm.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/disassembler/dmwalk.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslhex.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/parser/pswalk.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exmisc.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/resources/rsinfo.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/dispatcher/dswload.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utxface.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exregion.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslexternal.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpiexec/aeregion.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslmain.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acopcode.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/events/evhandler.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/events/evgpeutil.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/namespace/nsnames.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utstrtoul64.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acdisasm.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/dtcompiler.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acconvert.h

* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/dmrestag.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/dispatcher/dspkginit.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpihelp/acpihelp.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acnames.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/resources/rsmemory.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/os_specific/service_layers/osunixxf.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/asldefine.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/resources/rsserial.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslload.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/actbl1.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/resources/rsxface.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/platform/acgccex.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/achware.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/resources/rsutils.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslmaputils.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/disassembler/dmopcode.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/debugger/dbfileio.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpisrc/ascase.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslrestype1i.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/events/evxface.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/asllookup.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslprintf.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/hardware/hwgpe.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exsystem.c

* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/platform/acenvex.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/dtcompile.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utxfmutex.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/parser/psutils.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utcache.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utpredef.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/tools/acpiexec/aeinstall.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/dispatcher/dsutils.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acevents.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/cvdisasm.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslrestype2s.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/namespace/nsinit.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslxref.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/platform/aclinuxex.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/acpi.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/common/adwalk.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/dttemplate.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/debugger/dbxface.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/actypes.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/include/platform/acwin.h
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exutils.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/utilities/utstrsuppt.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/executer/exfldio.c
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/prmacros.c

* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/components/debugger/dbutils.c
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NoEcho('
/**
*
* Module Name: aslkeywords.y - Rules for resource descriptor keywords
*
**/

/*
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*/

```
')

/*****************************************************************************
*
* ASL Parameter Keyword Terms
*
*****************************************************************************/

AccessAttribKeyword
  : PARSEOP_ACCESSATTRIB_BLOCK          {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_BLOCK);}
  | PARSEOP_ACCESSATTRIB_BLOCK_CALL     {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_BLOCK_CALL);}
  | PARSEOP_ACCESSATTRIB_BYTE           {$$ = TrCreateLeafOp (PARSEOP_ACCESSATTRIB_BYTE);}
  | PARSEOP_ACCESSATTRIB_QUICK          {$$ = TrCreateLeafOp (PARSEOP_ACCESSATTRIB_QUICK
);}
  | PARSEOP_ACCESSATTRIB_SND_RCV        {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_SND_RCV);}
  | PARSEOP_ACCESSATTRIB_WORD           {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_WORD);}
  | PARSEOP_ACCESSATTRIB_WORD_CALL      {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_WORD_CALL);}
  | PARSEOP_ACCESSATTRIB_MULTIBYTE
    PARSEOP_OPEN_PAREN              {$<n>$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_MULTIBYTE);}
    ByteConst
    PARSEOP_CLOSE_PAREN             {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_ACCESSATTRIB_RAW_BYTES
    PARSEOP_OPEN_PAREN              {$<n>$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_RAW_BYTES);}
    ByteConst
    PARSEOP_CLOSE_PAREN             {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_ACCESSATTRIB_RAW_PROCESS
    PARSEOP_OPEN_PAREN              {$<n>$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_RAW_PROCESS);}
    ByteConst
    PARSEOP_CLOSE_PAREN             {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  ;

AccessTypeKeyword
  : PARSEOP_ACCESSTYPE_ANY          {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_ANY);}
  | PARSEOP_ACCESSTYPE_BYTE         {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_BYTE);}
  | PARSEOP_ACCESSTYPE_WORD         {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_WORD);}
  | PARSEOP_ACCESSTYPE_DWORD        {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_DWORD);}
  | PARSEOP_ACCESSTYPE_QWORD        {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_QWORD);}
  | PARSEOP_ACCESSTYPE_BUF          {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_BUF);}
  ;
```

```
AddressingModeKeyword
  : PARSEOP_ADDRESSINGMODE_7BIT         {$$ = TrCreateLeafOp
(PARSEOP_ADDRESSINGMODE_7BIT);}
  | PARSEOP_ADDRESSINGMODE_10BIT        {$$ = TrCreateLeafOp
(PARSEOP_ADDRESSINGMODE_10BIT);}
  ;

AddressKeyword
  : PARSEOP_ADDRESSTYPE_MEMORY          {$$ = TrCreateLeafOp
(PARSEOP_ADDRESSTYPE_MEMORY);}
  | PARSEOP_ADDRESSTYPE_RESERVED        {$$ = TrCreateLeafOp
(PARSEOP_ADDRESSTYPE_RESERVED);}
  | PARSEOP_ADDRESSTYPE_NVS             {$$ = TrCreateLeafOp (PARSEOP_ADDRESSTYPE_NVS);}
  | PARSEOP_ADDRESSTYPE_ACPI            {$$ = TrCreateLeafOp (PARSEOP_ADDRESSTYPE_ACPI);}
  ;

AddressSpaceKeyword
  : ByteConst                   {$$ = UtCheckIntegerRange ($1, 0x0A, 0xFF);}
  | RegionSpaceKeyword              {}
  ;

BitsPerByteKeyword
  : PARSEOP_BITSPERBYTE_FIVE            {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_FIVE);}
  | PARSEOP_BITSPERBYTE_SIX             {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_SIX);}
  | PARSEOP_BITSPERBYTE_SEVEN           {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_SEVEN);}
  | PARSEOP_BITSPERBYTE_EIGHT           {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_EIGHT);}
  | PARSEOP_BITSPERBYTE_NINE            {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_NINE);}
  ;

ClockPhaseKeyword
  : PARSEOP_CLOCKPHASE_FIRST            {$$ = TrCreateLeafOp (PARSEOP_CLOCKPHASE_FIRST);}
  | PARSEOP_CLOCKPHASE_SECOND           {$$ = TrCreateLeafOp
(PARSEOP_CLOCKPHASE_SECOND);}
  ;

ClockPolarityKeyword
  : PARSEOP_CLOCKPOLARITY_LOW           {$$ = TrCreateLeafOp
(PARSEOP_CLOCKPOLARITY_LOW);}
  | PARSEOP_CLOCKPOLARITY_HIGH          {$$ = TrCreateLeafOp
(PARSEOP_CLOCKPOLARITY_HIGH);}
  ;

DecodeKeyword
  : PARSEOP_DECODETYPE_POS              {$$ = TrCreateLeafOp (PARSEOP_DECODETYPE_POS);}
  | PARSEOP_DECODETYPE_SUB              {$$ = TrCreateLeafOp (PARSEOP_DECODETYPE_SUB);}
  ;

DevicePolarityKeyword
```

```
  : PARSEOP_DEVICEPOLARITY_LOW          {$$ = TrCreateLeafOp
(PARSEOP_DEVICEPOLARITY_LOW);}
  | PARSEOP_DEVICEPOLARITY_HIGH         {$$ = TrCreateLeafOp
(PARSEOP_DEVICEPOLARITY_HIGH);}
  ;

DMATypeKeyword
  : PARSEOP_DMATYPE_A                   {$$ = TrCreateLeafOp (PARSEOP_DMATYPE_A);}
  | PARSEOP_DMATYPE_COMPATIBILITY       {$$ = TrCreateLeafOp
(PARSEOP_DMATYPE_COMPATIBILITY);}
  | PARSEOP_DMATYPE_B                   {$$ = TrCreateLeafOp (PARSEOP_DMATYPE_B);}
  | PARSEOP_DMATYPE_F                   {$$ = TrCreateLeafOp (PARSEOP_DMATYPE_F);}
  ;

EndianKeyword
  : PARSEOP_ENDIAN_LITTLE               {$$ = TrCreateLeafOp (PARSEOP_ENDIAN_LITTLE);}
  | PARSEOP_ENDIAN_BIG                  {$$ = TrCreateLeafOp (PARSEOP_ENDIAN_BIG);}
  ;

FlowControlKeyword
  : PARSEOP_FLOWCONTROL_HW              {$$ = TrCreateLeafOp (PARSEOP_FLOWCONTROL_HW);}
  | PARSEOP_FLOWCONTROL_NONE            {$$ = TrCreateLeafOp
(PARSEOP_FLOWCONTROL_NONE);}
  | PARSEOP_FLOWCONTROL_SW              {$$ = TrCreateLeafOp (PARSEOP_FLOWCONTROL_SW);}
  ;

InterruptLevel
  : PARSEOP_INTLEVEL_ACTIVEBOTH         {$$ = TrCreateLeafOp
(PARSEOP_INTLEVEL_ACTIVEBOTH);}
  | PARSEOP_INTLEVEL_ACTIVEHIGH         {$$ = TrCreateLeafOp
(PARSEOP_INTLEVEL_ACTIVEHIGH);}
  | PARSEOP_INTLEVEL_ACTIVELOW          {$$ = TrCreateLeafOp
(PARSEOP_INTLEVEL_ACTIVELOW);}
  ;

InterruptTypeKeyword
  : PARSEOP_INTTYPE_EDGE                {$$ = TrCreateLeafOp (PARSEOP_INTTYPE_EDGE);}
  | PARSEOP_INTTYPE_LEVEL               {$$ = TrCreateLeafOp (PARSEOP_INTTYPE_LEVEL);}
  ;

IODecodeKeyword
  : PARSEOP_IODECODETYPE_16             {$$ = TrCreateLeafOp (PARSEOP_IODECODETYPE_16);}
  | PARSEOP_IODECODETYPE_10             {$$ = TrCreateLeafOp (PARSEOP_IODECODETYPE_10);}
  ;

IoRestrictionKeyword
  : PARSEOP_IORESTRICT_IN               {$$ = TrCreateLeafOp (PARSEOP_IORESTRICT_IN);}
  | PARSEOP_IORESTRICT_OUT              {$$ = TrCreateLeafOp (PARSEOP_IORESTRICT_OUT);}
```

```
  | PARSEOP_IORESTRICT_NONE           {$$ = TrCreateLeafOp (PARSEOP_IORESTRICT_NONE);}
  | PARSEOP_IORESTRICT_PRESERVE       {$$ = TrCreateLeafOp
(PARSEOP_IORESTRICT_PRESERVE);}
  ;

LockRuleKeyword
  : PARSEOP_LOCKRULE_LOCK             {$$ = TrCreateLeafOp (PARSEOP_LOCKRULE_LOCK);}
  | PARSEOP_LOCKRULE_NOLOCK           {$$ = TrCreateLeafOp (PARSEOP_LOCKRULE_NOLOCK);}
  ;

MatchOpKeyword
  : PARSEOP_MATCHTYPE_MTR             {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MTR);}
  | PARSEOP_MATCHTYPE_MEQ             {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MEQ);}
  | PARSEOP_MATCHTYPE_MLE             {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MLE);}
  | PARSEOP_MATCHTYPE_MLT             {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MLT);}
  | PARSEOP_MATCHTYPE_MGE             {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MGE);}
  | PARSEOP_MATCHTYPE_MGT             {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MGT);}
  ;

MaxKeyword
  : PARSEOP_MAXTYPE_FIXED             {$$ = TrCreateLeafOp (PARSEOP_MAXTYPE_FIXED);}
  | PARSEOP_MAXTYPE_NOTFIXED          {$$ = TrCreateLeafOp (PARSEOP_MAXTYPE_NOTFIXED);}
  ;

MemTypeKeyword
  : PARSEOP_MEMTYPE_CACHEABLE         {$$ = TrCreateLeafOp
(PARSEOP_MEMTYPE_CACHEABLE);}
  | PARSEOP_MEMTYPE_WRITECOMBINING    {$$ = TrCreateLeafOp
(PARSEOP_MEMTYPE_WRITECOMBINING);}
  | PARSEOP_MEMTYPE_PREFETCHABLE      {$$ = TrCreateLeafOp
(PARSEOP_MEMTYPE_PREFETCHABLE);}
  | PARSEOP_MEMTYPE_NONCACHEABLE      {$$ = TrCreateLeafOp
(PARSEOP_MEMTYPE_NONCACHEABLE);}
  ;

MinKeyword
  : PARSEOP_MINTYPE_FIXED             {$$ = TrCreateLeafOp (PARSEOP_MINTYPE_FIXED);}
  | PARSEOP_MINTYPE_NOTFIXED          {$$ = TrCreateLeafOp (PARSEOP_MINTYPE_NOTFIXED);}
  ;

ObjectTypeKeyword
  : PARSEOP_OBJECTTYPE_UNK            {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_UNK);}
  | PARSEOP_OBJECTTYPE_INT            {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_INT);}
  | PARSEOP_OBJECTTYPE_STR            {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_STR);}
  | PARSEOP_OBJECTTYPE_BUF            {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_BUF);}
  | PARSEOP_OBJECTTYPE_PKG            {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_PKG);}
  | PARSEOP_OBJECTTYPE_FLD            {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_FLD);}
  | PARSEOP_OBJECTTYPE_DEV            {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_DEV);}
```

```
  | PARSEOP_OBJECTTYPE_EVT          {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_EVT);}
  | PARSEOP_OBJECTTYPE_MTH          {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_MTH);}
  | PARSEOP_OBJECTTYPE_MTX          {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_MTX);}
  | PARSEOP_OBJECTTYPE_OPR         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_OPR);}
  | PARSEOP_OBJECTTYPE_POW          {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_POW);}
  | PARSEOP_OBJECTTYPE_PRO         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_PRO);}
  | PARSEOP_OBJECTTYPE_THZ         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_THZ);}
  | PARSEOP_OBJECTTYPE_BFF        {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_BFF);}
  | PARSEOP_OBJECTTYPE_DDB         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_DDB);}
  ;

ParityTypeKeyword
  : PARSEOP_PARITYTYPE_SPACE        {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_SPACE);}
  | PARSEOP_PARITYTYPE_MARK         {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_MARK);}
  | PARSEOP_PARITYTYPE_ODD         {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_ODD);}
  | PARSEOP_PARITYTYPE_EVEN         {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_EVEN);}
  | PARSEOP_PARITYTYPE_NONE         {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_NONE);}
  ;

PinConfigByte
  : PinConfigKeyword              {$$ = $1;}
  | ByteConstExpr                {$$ = UtCheckIntegerRange ($1, 0x80, 0xFF);}
  ;

PinConfigKeyword
  : PARSEOP_PIN_NOPULL             {$$ = TrCreateLeafOp (PARSEOP_PIN_NOPULL);}
  | PARSEOP_PIN_PULLDOWN           {$$ = TrCreateLeafOp (PARSEOP_PIN_PULLDOWN);}
  | PARSEOP_PIN_PULLUP            {$$ = TrCreateLeafOp (PARSEOP_PIN_PULLUP);}
  | PARSEOP_PIN_PULLDEFAULT         {$$ = TrCreateLeafOp (PARSEOP_PIN_PULLDEFAULT);}
  ;

PldKeyword
  : PARSEOP_PLD_REVISION           {$$ = TrCreateLeafOp (PARSEOP_PLD_REVISION);}
  | PARSEOP_PLD_IGNORECOLOR          {$$ = TrCreateLeafOp (PARSEOP_PLD_IGNORECOLOR);}
  | PARSEOP_PLD_RED               {$$ = TrCreateLeafOp (PARSEOP_PLD_RED);}
  | PARSEOP_PLD_GREEN              {$$ = TrCreateLeafOp (PARSEOP_PLD_GREEN);}
  | PARSEOP_PLD_BLUE              {$$ = TrCreateLeafOp (PARSEOP_PLD_BLUE);}
  | PARSEOP_PLD_WIDTH              {$$ = TrCreateLeafOp (PARSEOP_PLD_WIDTH);}
  | PARSEOP_PLD_HEIGHT             {$$ = TrCreateLeafOp (PARSEOP_PLD_HEIGHT);}
  | PARSEOP_PLD_USERVISIBLE          {$$ = TrCreateLeafOp (PARSEOP_PLD_USERVISIBLE);}
  | PARSEOP_PLD_DOCK              {$$ = TrCreateLeafOp (PARSEOP_PLD_DOCK);}
  | PARSEOP_PLD_LID               {$$ = TrCreateLeafOp (PARSEOP_PLD_LID);}
  | PARSEOP_PLD_PANEL              {$$ = TrCreateLeafOp (PARSEOP_PLD_PANEL);}
  | PARSEOP_PLD_VERTICALPOSITION       {$$ = TrCreateLeafOp
(PARSEOP_PLD_VERTICALPOSITION);}
  | PARSEOP_PLD_HORIZONTALPOSITION      {$$ = TrCreateLeafOp
(PARSEOP_PLD_HORIZONTALPOSITION);}
  | PARSEOP_PLD_SHAPE              {$$ = TrCreateLeafOp (PARSEOP_PLD_SHAPE);}
```

```
  | PARSEOP_PLD_GROUPORIENTATION        {$$ = TrCreateLeafOp
(PARSEOP_PLD_GROUPORIENTATION);}
  | PARSEOP_PLD_GROUPTOKEN             {$$ = TrCreateLeafOp (PARSEOP_PLD_GROUPTOKEN);}
  | PARSEOP_PLD_GROUPPOSITION          {$$ = TrCreateLeafOp (PARSEOP_PLD_GROUPPOSITION);}
  | PARSEOP_PLD_BAY                    {$$ = TrCreateLeafOp (PARSEOP_PLD_BAY);}
  | PARSEOP_PLD_EJECTABLE              {$$ = TrCreateLeafOp (PARSEOP_PLD_EJECTABLE);}
  | PARSEOP_PLD_EJECTREQUIRED          {$$ = TrCreateLeafOp (PARSEOP_PLD_EJECTREQUIRED);}
  | PARSEOP_PLD_CABINETNUMBER          {$$ = TrCreateLeafOp
(PARSEOP_PLD_CABINETNUMBER);}
  | PARSEOP_PLD_CARDCAGENUMBER         {$$ = TrCreateLeafOp
(PARSEOP_PLD_CARDCAGENUMBER);}
  | PARSEOP_PLD_REFERENCE              {$$ = TrCreateLeafOp (PARSEOP_PLD_REFERENCE);}
  | PARSEOP_PLD_ROTATION               {$$ = TrCreateLeafOp (PARSEOP_PLD_ROTATION);}
  | PARSEOP_PLD_ORDER                  {$$ = TrCreateLeafOp (PARSEOP_PLD_ORDER);}
  | PARSEOP_PLD_RESERVED               {$$ = TrCreateLeafOp (PARSEOP_PLD_RESERVED);}
  | PARSEOP_PLD_VERTICALOFFSET         {$$ = TrCreateLeafOp (PARSEOP_PLD_VERTICALOFFSET);}
  | PARSEOP_PLD_HORIZONTALOFFSET       {$$ = TrCreateLeafOp
(PARSEOP_PLD_HORIZONTALOFFSET);}
  ;

RangeTypeKeyword
  : PARSEOP_RANGETYPE_ISAONLY          {$$ = TrCreateLeafOp (PARSEOP_RANGETYPE_ISAONLY);}
  | PARSEOP_RANGETYPE_NONISAONLY       {$$ = TrCreateLeafOp
(PARSEOP_RANGETYPE_NONISAONLY);}
  | PARSEOP_RANGETYPE_ENTIRE           {$$ = TrCreateLeafOp (PARSEOP_RANGETYPE_ENTIRE);}
  ;

RegionSpaceKeyword
  : PARSEOP_REGIONSPACE_IO             {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_IO);}
  | PARSEOP_REGIONSPACE_MEM            {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_MEM);}
  | PARSEOP_REGIONSPACE_PCI            {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_PCI);}
  | PARSEOP_REGIONSPACE_EC             {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_EC);}
  | PARSEOP_REGIONSPACE_SMBUS          {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_SMBUS);}
  | PARSEOP_REGIONSPACE_CMOS           {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_CMOS);}
  | PARSEOP_REGIONSPACE_PCIBAR         {$$ = TrCreateLeafOp
(PARSEOP_REGIONSPACE_PCIBAR);}
  | PARSEOP_REGIONSPACE_IPMI           {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_IPMI);}
  | PARSEOP_REGIONSPACE_GPIO           {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_GPIO);}
  | PARSEOP_REGIONSPACE_GSBUS          {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_GSBUS);}
  | PARSEOP_REGIONSPACE_PCC            {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_PCC);}
  | PARSEOP_REGIONSPACE_FFIXEDHW       {$$ = TrCreateLeafOp
(PARSEOP_REGIONSPACE_FFIXEDHW);}
  ;

ResourceTypeKeyword
  : PARSEOP_RESOURCETYPE_CONSUMER      {$$ = TrCreateLeafOp
(PARSEOP_RESOURCETYPE_CONSUMER);}
  | PARSEOP_RESOURCETYPE_PRODUCER      {$$ = TrCreateLeafOp
```

```
(PARSEOP_RESOURCETYPE_PRODUCER);}
  ;

SerializeRuleKeyword
  : PARSEOP_SERIALIZERULE_SERIAL        {$$ = TrCreateLeafOp
(PARSEOP_SERIALIZERULE_SERIAL);}
  | PARSEOP_SERIALIZERULE_NOTSERIAL     {$$ = TrCreateLeafOp
(PARSEOP_SERIALIZERULE_NOTSERIAL);}
  ;

ShareTypeKeyword
  : PARSEOP_SHARETYPE_SHARED            {$$ = TrCreateLeafOp (PARSEOP_SHARETYPE_SHARED);}
  | PARSEOP_SHARETYPE_EXCLUSIVE         {$$ = TrCreateLeafOp
(PARSEOP_SHARETYPE_EXCLUSIVE);}
  | PARSEOP_SHARETYPE_SHAREDWAKE        {$$ = TrCreateLeafOp
(PARSEOP_SHARETYPE_SHAREDWAKE);}
  | PARSEOP_SHARETYPE_EXCLUSIVEWAKE     {$$ = TrCreateLeafOp
(PARSEOP_SHARETYPE_EXCLUSIVEWAKE);}
  ;

SlaveModeKeyword
  : PARSEOP_SLAVEMODE_CONTROLLERINIT    {$$ = TrCreateLeafOp
(PARSEOP_SLAVEMODE_CONTROLLERINIT);}
  | PARSEOP_SLAVEMODE_DEVICEINIT        {$$ = TrCreateLeafOp
(PARSEOP_SLAVEMODE_DEVICEINIT);}
  ;

StopBitsKeyword
  : PARSEOP_STOPBITS_TWO                {$$ = TrCreateLeafOp (PARSEOP_STOPBITS_TWO);}
  | PARSEOP_STOPBITS_ONEPLUSHALF        {$$ = TrCreateLeafOp
(PARSEOP_STOPBITS_ONEPLUSHALF);}
  | PARSEOP_STOPBITS_ONE                {$$ = TrCreateLeafOp (PARSEOP_STOPBITS_ONE);}
  | PARSEOP_STOPBITS_ZERO               {$$ = TrCreateLeafOp (PARSEOP_STOPBITS_ZERO);}
  ;

TranslationKeyword
  : PARSEOP_TRANSLATIONTYPE_SPARSE      {$$ = TrCreateLeafOp
(PARSEOP_TRANSLATIONTYPE_SPARSE);}
  | PARSEOP_TRANSLATIONTYPE_DENSE       {$$ = TrCreateLeafOp
(PARSEOP_TRANSLATIONTYPE_DENSE);}
  ;

TypeKeyword
  : PARSEOP_TYPE_TRANSLATION            {$$ = TrCreateLeafOp (PARSEOP_TYPE_TRANSLATION);}
  | PARSEOP_TYPE_STATIC                 {$$ = TrCreateLeafOp (PARSEOP_TYPE_STATIC);}
  ;

UpdateRuleKeyword
```

```
  : PARSEOP_UPDATERULE_PRESERVE         {$$ = TrCreateLeafOp
(PARSEOP_UPDATERULE_PRESERVE);}
  | PARSEOP_UPDATERULE_ONES           {$$ = TrCreateLeafOp (PARSEOP_UPDATERULE_ONES);}
  | PARSEOP_UPDATERULE_ZEROS          {$$ = TrCreateLeafOp (PARSEOP_UPDATERULE_ZEROS);}
  ;

WireModeKeyword
  : PARSEOP_WIREMODE_FOUR             {$$ = TrCreateLeafOp (PARSEOP_WIREMODE_FOUR);}
  | PARSEOP_WIREMODE_THREE            {$$ = TrCreateLeafOp (PARSEOP_WIREMODE_THREE);}
  ;

XferSizeKeyword
  : PARSEOP_XFERSIZE_8              {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_8,   0);}
  | PARSEOP_XFERSIZE_16             {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_16,  1);}
  | PARSEOP_XFERSIZE_32             {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_32,  2);}
  | PARSEOP_XFERSIZE_64             {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_64,  3);}
  | PARSEOP_XFERSIZE_128            {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_128, 4);}
  | PARSEOP_XFERSIZE_256            {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_256, 5);}
  ;

XferTypeKeyword
  : PARSEOP_XFERTYPE_8              {$$ = TrCreateLeafOp (PARSEOP_XFERTYPE_8);}
  | PARSEOP_XFERTYPE_8_16             {$$ = TrCreateLeafOp (PARSEOP_XFERTYPE_8_16);}
  | PARSEOP_XFERTYPE_16             {$$ = TrCreateLeafOp (PARSEOP_XFERTYPE_16);}
  ;

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-
20180508/source/compiler/aslkeywords.y
No license file was found, but licenses were detected in source scan.

---------------------------------------
8 May 2018. Summary of changes for version 20180508:


1) ACPICA kernel-resident subsystem:

Completed the new (recently deployed) package resolution mechanism for
the Load and LoadTable ASL/AML operators. This fixes a regression that
was introduced in version 20180209 that could result in an
AE_AML_INTERNAL exception during the loading of a dynamic ACPI/AML table
(SSDT) that contains package objects.


2) iASL Compiler/Disassembler and Tools:

AcpiDump and AcpiXtract: Implemented support for ACPI tables larger than
1 MB. This change allows for table offsets within the acpidump file to be
```

up to 8 characters. These changes are backwards compatible with existing
acpidump files.

---
27 April 2018. Summary of changes for version 20180427:

1) ACPICA kernel-resident subsystem:

Debugger: Added support for Package objects in the "Test Objects"
command. This command walks the entire namespace and evaluates all named
data objects (Integers, Strings, Buffers, and now Packages).

Improved error messages for the namespace root node. Originally, the root
was referred to by the confusing string "___". This has been replaced by
"Namespace Root" for clarification.

Fixed a potential infinite loop in the AcpiRsDumpByteList function. Colin
Ian King <colin.king@canonical.com>.

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented support to detect and flag illegal forward references.
For compatibility with other ACPI implementations, these references are
now illegal at the root level of the DSDT or SSDTs. Forward references
have always been illegal within control methods. This change should not
affect existing ASL/AML code because of the fact that these references
have always been illegal in the other ACPI implementation.

iASL: Added error messages for the case where a table OEM ID and OEM
TABLE ID strings are longer than the ACPI-defined length. Previously,
these strings were simply silently truncated.

iASL: Enhanced the -tc option (which creates an AML hex file in C,
suitable for import into a firmware project):
 1) Create a unique name for the table, to simplify use of multiple
SSDTs.
 2) Add a protection #ifdef in the file, similar to a .h header file.
With assistance from Sami Mujawar, sami.mujawar@arm.com and Evan Lloyd,
evan.lloyd@arm.com

AcpiExec: Added a new option, -df, to disable the local fault handler.
This is useful during debugging, where it may be desired to drop into a
debugger on a fault.

---

13 March 2018. Summary of changes for version 20180313:

1) ACPICA kernel-resident subsystem:

Implemented various improvements to the GPE support:

1) Dispatch all active GPEs at initialization time so that no GPEs are
lost.
2) Enable runtime GPEs earlier. Some systems expect GPEs to be enabled
before devices are enumerated.
3) Don't unconditionally clear ACPI IRQs during suspend/resume, so that
IRQs are not lost.
4) Add parallel GPE handling to eliminate the possibility of dispatching
the same GPE twice.
5) Dispatch any pending GPEs after enabling for the first time.

AcpiGetObjectInfo - removed support for the _STA method. This was causing
problems on some platforms.

Added a new _OSI string, "Windows 2017.2".

Cleaned up and simplified the module-level code support. These changes
are in preparation for the eventual removal of the legacy MLC support
(deferred execution), replaced by the new MLC architecture which executes
the MLC as a table is loaded (DSDT/SSDTs).

Changed a compile-time option to a runtime option. Changes the option to
ignore ACPI table load-time package resolution errors into a runtime
option. Used only for platforms that generate many AE_NOT_FOUND errors
during boot. AcpiGbl_IgnorePackageResolutionErrors.

Fixed the ACPI_ERROR_NAMESPACE macro. This change involves putting some
ACPI_ERROR_NAMESPACE parameters inside macros. By doing so, we avoid
compilation errors from unused variables (seen with some compilers).

2) iASL Compiler/Disassembler and Tools:

ASLTS: parallelized execution in order to achieve an (approximately) 2X
performance increase.

ASLTS: Updated to use the iASL __LINE__ and __METHOD__ macros. Improves
error reporting.

---
09 February 2018. Summary of changes for version 20180209:

1) ACPICA kernel-resident subsystem:

Completed the final integration of the recent changes to Package Object handling and the module-level AML code support. This allows forward references from individual package elements when the package object is declared from within module-level code blocks. Provides compatibility with other ACPI implementations.

The new architecture for the AML module-level code has been completed and is now the default for the ACPICA code. This new architecture executes the module-level code in-line as the ACPI table is loaded/parsed instead of the previous architecture which deferred this code until after the table was fully loaded. This solves some ASL code ordering issues and provides compatibility with other ACPI implementations. At this time, there is an option to fallback to the earlier architecture, but this support is deprecated and is planned to be completely removed later this year.

Added a compile-time option to ignore AE_NOT_FOUND exceptions during resolution of named reference elements within Package objects. Although this is potentially a serious problem, it can generate a lot of noise/errors on platforms whose firmware carries around a bunch of unused Package objects. To disable these errors, define ACPI_IGNORE_PACKAGE_RESOLUTION_ERRORS in the OS-specific header. All errors are always reported for ACPICA applications such as AcpiExec.

Fixed a regression related to the explicit type-conversion AML operators (ToXXXX). The regression was introduced early in 2017 but was not seen until recently because these operators are not fully supported by other ACPI implementations and are thus rarely used by firmware developers. The operators are defined by the ACPI specification to not implement the "implicit result object conversion". The regression incorrectly introduced this object conversion for the following explicit conversion operators:

- ToInteger
- ToString
- ToBuffer
- ToDecimalString
- ToHexString
- ToBCD
- FromBCD

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a problem with the compiler constant folding feature as related to the ToXXXX explicit conversion operators. These operators do

not support the "implicit result object conversion" by definition. Thus, ASL expressions that use these operators cannot be folded to a simple Store operator because Store implements the implicit conversion. This change uses the CopyObject operator for the ToXXXX operator folding instead. CopyObject is defined to not implement implicit result conversions and is thus appropriate for folding the ToXXXX operators.

iASL: Changed the severity of an error condition to a simple warning for the case where a symbol is declared both locally and as an external symbol. This accommodates existing ASL code.

AcpiExec: The -ep option to enable the new architecture for module-level code has been removed. It is replaced by the -dp option which instead has the opposite effect: it disables the new architecture (the default) and enables the legacy architecture. When the legacy code is removed in the future, the -dp option will be removed also.

---
05 January 2018. Summary of changes for version 20180105:

1) ACPICA kernel-resident subsystem:

Updated all copyrights to 2018. This affects all source code modules.

Fixed a possible build error caused by an unresolved reference to the AcpiUtSafeStrncpy function.

Removed NULL pointer arithmetic in the various pointer manipulation macros. All "(void *) NULL" constructs are converted to "(void *) 0". This eliminates warnings/errors in newer C compilers. Jung-uk Kim.

Added support for A32 ABI compilation, which uses the ILP32 model. Anuj Mittal.

2) iASL Compiler/Disassembler and Tools:

ASLTS: Updated all copyrights to 2018.

Tools: Updated all signon copyrights to 2018.

AcpiXtract: Fixed a regression related to ACPI table signatures where the signature was truncated to 3 characters (instead of 4).

AcpiExec: Restore the original terminal mode after the use of the -v and -vd options.

ASLTS: Deployed the iASL __METHOD__ macro across the test suite.

---
14 December 2017. Summary of changes for version 20171214:

1) ACPICA kernel-resident subsystem:

Fixed a regression in the external (public) AcpiEvaluateObjectTyped interface where the optional "pathname" argument had inadvertently become a required argument returning an error if omitted (NULL pointer argument).

Fixed two possible memory leaks related to the recently developed "late resolution" of reference objects within ASL Package Object definitions.

Added two recently defined _OSI strings: "Windows 2016" and "Windows 2017". Mario Limonciello.

Implemented and deployed a safer version of the C library function strncpy: AcpiUtSafeStrncpy. The intent is to at least prevent the creation of unterminated strings as a possible result of a standard strncpy.

Cleaned up and restructured the global variable file (acglobal.h). There are many changes, but no functional changes.

2) iASL Compiler/Disassembler and Tools:

iASL Table Compiler: Fixed a problem with the DBG2 ACPI table where the optional OemData field at the end of the table was incorrectly required for proper compilation. It is now correctly an optional field.

ASLTS: The entire suite was converted from standard ASL to the ASL+ language, using the ASL-to-ASL+ converter which is integrated into the iASL compiler. A binary compare of all output files has verified the correctness of the conversion.

iASL: Fixed the source code build for platforms where "char" is unsigned. This affected the iASL lexer only. Jung-uk Kim.

---
10 November 2017. Summary of changes for version 20171110:

1) ACPICA kernel-resident subsystem:

This release implements full support for ACPI 6.2A:
  NFIT - Added a new subtable, "Platform Capabilities Structure"
No other changes to ACPICA were required, since ACPI 6.2A is primarily an
errata release of the specification.

Other ACPI table changes:
  IORT: Added the SMMUv3 Device ID mapping index. Hanjun Guo
  PPTT: Added cache attribute flag definitions to actbl1.h. Jeremy
Linton

Utilities: Modified the string/integer conversion functions to use
internal 64-bit divide support instead of a native divide. On 32-bit
platforms, a 64-bit divide typically requires a library function which
may not be present in the build (kernel or otherwise).

Implemented a targeted error message for timeouts returned from the
Embedded Controller device driver. This is seen frequently enough to
special-case an AE_TIME returned from an EC operation region access:
  "Timeout from EC hardware or EC device driver"

Changed the "ACPI Exception" message prefix to "ACPI Error" so that all
runtime error messages have the identical prefix.

2) iASL Compiler/Disassembler and Tools:

AcpiXtract: Fixed a problem with table header detection within the
acpidump file. Processing a table could be ended early if a 0x40 (@)
appears in the original binary table, resulting in the @ symbol appearing
in the decoded ASCII field at the end of the acpidump text line. The
symbol caused acpixtract to incorrectly think it had reached the end of
the current table and the beginning of a new table.

AcpiXtract: Added an option (-f) to ignore some errors during table
extraction. This initial implementation ignores non-ASCII and non-
printable characters found in the acpidump text file.

TestSuite(ASLTS)/AcpiExec: Fixed and restored the memory usage statistics
for ASLTS. This feature is used to track memory allocations from
different memory caches within the ACPICA code. At the end of an ASLTS
run, these memory statistics are recorded and stored in a log file.

Debugger (user-space version): Implemented a simple "Background" command.
Creates a new thread to execute a control method in the background, while
control returns to the debugger prompt to allow additional commands.
  Syntax: Background <Namepath> [Arguments]

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29 September 2017. Summary of changes for version 20170929:

1) ACPICA kernel-resident subsystem:

Redesigned and implemented an improved ASL While() loop timeout
mechanism. This mechanism is used to prevent infinite loops in the kernel
AML interpreter caused by either non-responsive hardware or incorrect AML
code. The new implementation uses AcpiOsGetTimer instead of a simple
maximum loop count, and is thus more accurate and constant across
different machines. The default timeout is currently 30 seconds, but this
may be adjusted later.

Renamed the ACPI_AML_INFINITE_LOOP exception to AE_AML_LOOP_TIMEOUT to
better reflect the new implementation of the loop timeout mechanism.

Updated the AcpiGetTimerDuration interface to cleanup the 64-bit support
and to fix an off-by-one error. Jung-uk Kim.

Fixed an EFI build problem by updating the makefiles to for a new file
that was added, utstrsuppt.c

2) iASL Compiler/Disassembler and Tools:

Implemented full support for the PDTT, SDEV, and TPM2 ACPI tables. This
includes support in the table disassembler, compiler, and template
generator.

iASL: Added an exception for an illegal type of recursive method
invocation. If a method creates named objects, the first recursive call
will fail at runtime. This change adds an error detection at compile time
to catch the problem up front. Note: Marking such a method as
"serialized" will not help with this problem, because the same thread can
acquire the method mutex more than once. Example compiler and runtime
output:

```
Method (MTH1)
{
   Name (INT1, 1)
   MTH1 ()
}

dsdt.asl     22: MTH1 ()
Error    6152 -  ^ Illegal recursive call to method
                   that creates named objects (MTH1)
```

Previous runtime exception:

ACPI Error: [INT1] Namespace lookup failure,
AE_ALREADY_EXISTS (20170831/dswload2-465)

iASL: Updated support for External() opcodes to improve namespace management and error detection. These changes are related to issues seen with multiple-segment namespace pathnames within External declarations, such as below:

External(_SB.PCI0.GFX0, DeviceObj)
External(_SB.PCI0.GFX0.ALSI)

iASL: Implemented support for multi-line error/warning messages. This enables more detailed and helpful error messages as below, from the initial deployment for the duplicate names error:

DSDT.iiii 1692: Device(PEG2) {
Error 6074 - ^ Name already exists in scope (PEG2)

Original name creation/declaration below:
DSDT.iiii 93: External(_SB.PCI0.PEG2, DeviceObj)

AcpiXtract: Added additional flexibility to support differing input hex dump formats. Specifically, hex dumps that contain partial disassembly and/or comments within the ACPI table data definition. There exist some dump utilities seen in the field that create this type of hex dump (such as Simics). For example:

DSDT @ 0xdfffd0c0 (10999 bytes)
Signature DSDT
Length 10999
Revision 1
Checksum 0xf3 (Ok)
OEM_ID BXPC
OEM_table_id BXDSDT
OEM_revision 1
Creator_id 1280593481
Creator_revision 537399345
0000: 44 53 44 54 f7 2a 00 00 01 f3 42 58 50 43 00 00
...
2af0: 5f 4c 30 46 00 a4 01

Test suite: Miscellaneous changes/fixes:
More cleanup and simplification of makefiles
Continue compilation of test cases after a compile failure
Do not perform binary compare unless both files actually exist

iASL: Performed some code/module restructuring. Moved all memory

allocation functions to new modules. Two new files, aslallocate.c and aslcache.c

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31 August 2017. Summary of changes for version 20170831:

1) ACPICA kernel-resident subsystem:

Implemented internal support for full 64-bit addresses that appear in all Generic Address Structure (GAS) structures. Previously, only the lower 32 bits were used. Affects the use of GAS structures in the FADT and other tables, as well as the GAS structures passed to the AcpiRead and AcpiWrite public external interfaces that are used by drivers. Lv Zheng.

Added header support for the PDTT ACPI table (Processor Debug Trigger Table). Full support in the iASL Data Table Compiler and disassembler is forthcoming.

2) iASL Compiler/Disassembler and Tools:

iASL/Disassembler: Fixed a problem with the PPTT ACPI table (Processor Properties Topology Table) where a flag bit was specified in the wrong bit position ("Line Size Valid", bit 6).

iASL: Implemented support for Octal integer constants as defined by the ASL language grammar, per the ACPI specification. Any integer constant that starts with a zero is an octal constant. For example,

```
Store (037777, Local0) /* Octal constant */
Store (0x3FFF, Local0) /* Hex equivalent */
Store (16383,  Local0) /* Decimal equivalent */
```

iASL: Improved overflow detection for 64-bit string conversions during compilation of integer constants. "Overflow" in this case means a string that represents an integer that is too large to fit into a 64-bit value. Any 64-bit constants within a 32-bit DSDT or SSDT are still truncated to the low-order 32 bits with a warning, as previously implemented. Several new exceptions are defined that indicate a 64-bit overflow, as well as the base (radix) that was used during the attempted conversion. Examples:

```
Local0 = 0xAAAABBBBCCCCDDDDEEEEFFFF        // AE_HEX_OVERFLOW
Local0 = 01111222233334444555566667777     // AE_OCTAL_OVERFLOW
Local0 = 11112222333344445555666677778888  // AE_DECIMAL_OVERFLOW
```

iASL: Added a warning for the case where a ResourceTemplate is declared with no ResourceDescriptor entries (coded as "ResourceTemplate(){}"). In this case, the resulting template is created with a single END_TAG descriptor, which is essentially useless.

iASL: Expanded the -vw option (ignore specific warnings/remarks) to
include compilation error codes as well.

---
28 July 2017. Summary of changes for version 20170728:

1) ACPICA kernel-resident subsystem:

Fixed a regression seen with small resource descriptors that could cause
an inadvertent AE_AML_NO_RESOURCE_END_TAG exception.

AML interpreter: Implemented a new feature that allows forward references
from individual named references within package objects that are
contained within blocks of "module-level code". This provides
compatibility with other ACPI implementations and supports existing
firmware that depends on this feature. Example:

```
  Name (ABCD, 1)
  If (ABCD)                       /* An If() at module-level */
  {
     Name (PKG1, Package()
     {
        INT1                  /* Forward reference to object INT1
*/
     })
     Name (INT1, 0x1234)
  }
```

AML Interpreter: Fixed a problem with the Alias() operator where aliases
to some ASL objects were not handled properly. Objects affected are:
Mutex, Event, and OperationRegion.

AML Debugger: Enhanced to properly handle AML Alias objects. These
objects have one level of indirection which was not fully supported by
the debugger.

Table Manager: Added support to detect and ignore duplicate SSDTs within
the XSDT/RSDT. This error in the XSDT has been seen in the field.

EFI and EDK2 support:
  Enabled /WX flag for MSVC builds
  Added support for AcpiOsStall, AcpiOsSleep, and AcpiOsGetTimer
  Added local support for 64-bit multiply and shift operations
  Added support to compile acpidump.efi on Windows
  Added OSL function stubs for interfaces not used under EFI

Added additional support for the _DMA predefined name. _DMA returns a buffer containing a resource template. This change add support within the resource manager (AcpiWalkResourceBuffer) to walk and parse this list of resource descriptors. Lorenzo Pieralisi <lorenzo.pieralisi@arm.com>

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a problem where the internal input line buffer(s) could overflow if there are very long lines in the input ASL source code file. Implemented buffer management that automatically increases the size of the buffers as necessary.

iASL: Added an option (-vx) to "expect" particular remarks, warnings and errors. If the specified exception is not raised during compilation, the compiler emits an error. This is intended to support the ASL test suite, but may be useful in other contexts.

iASL: Implemented a new predefined macro, __METHOD__, which returns a string containing the name of the current control method that is being compiled.

iASL: Implemented debugger and table compiler support for the SDEI ACPI table (Software Delegated Exception Interface). James Morse <james.morse@arm.com>

Unix/Linux makefiles: Added an option to disable compile optimizations. The disable occurs when the NOOPT flag is set to TRUE. theracermaster@gmail.com

Acpidump: Added support for multiple DSDT and FACS tables. This can occur when there are different tables for 32-bit versus 64-bit.

Enhanced error reporting for the ASL test suite (ASLTS) by removing unnecessary/verbose text, and emit the actual line number where an error has occurred. These changes are intended to improve the usefulness of the test suite.

---

29 June 2017. Summary of changes for version 20170629:

1) ACPICA kernel-resident subsystem:

Tables: Implemented a deferred ACPI table verification. This is useful for operating systems where the tables cannot be verified in the early initialization stage due to early memory mapping limitations on some architectures. Lv Zheng.

Tables: Removed the signature validation for dynamically loaded tables.
Provides compatibility with other ACPI implementations. Previously, only
SSDT tables were allowed, as per the ACPI specification. Now, any table
signature can be used via the Load() operator. Lv Zheng.

Tables: Fixed several mutex issues that could cause errors during table
acquisition. Lv Zheng.

Tables: Fixed a problem where an ACPI warning could be generated if a
null pointer was passed to the AcpiPutTable interface. Lv Zheng.

Tables: Added a mechanism to handle imbalances for the AcpiGetTable and
AcpiPutTable interfaces. This applies to the "late stage" table loading
when the use of AcpiPutTable is no longer required (since the system
memory manager is fully running and available). Lv Zheng.

Fixed/Reverted a regression during processing of resource descriptors
that contain only a single EndTag. Fixes an AE_AML_NO_RESOURCE_END_TAG
exception in this case.

Headers: IORT/SMMU support: Updated the SMMU models for Revision C of the
I/O Remapping specification. Robin Murphy <robin.murphy@arm.com>

Interpreter: Fixed a possible fault if an Alias operator with an invalid
or duplicate target is encountered during Alias creation in
AcpiExCreateAlias. Alex James <theracermaster@gmail.com>

Added an option to use designated initializers for function pointers.
Kees Cook <keescook@google.com>

2) iASL Compiler/Disassembler and Tools:

iASL: Allow compilation of External declarations with target pathnames
that refer to existing named objects within the table. Erik Schmauss.

iASL: Fixed a regression when compiling FieldUnits. Fixes an error if a
FieldUnit name also is declared via External in the same table. Erik
Schmauss.

iASL: Allow existing scope names within pathnames used in External
statements. For example:
  External (ABCD.EFGH) // ABCD exists, but EFGH is truly external
  Device (ABCD)

iASL: IORT ACPI table: Implemented changes required to decode the new
Proximity Domain for the SMMUv3 IORT. Disassembler and Data Table

compiler. Ganapatrao Kulkarni <ganapatrao.kulkarni@cavium.com>

Disassembler: Don't abort disassembly on errors from External()
statements. Erik Schmauss.

Disassembler: fixed a possible fault when one of the Create*Field
operators references a Resource Template. ACPICA Bugzilla 1396.

iASL: In the source code, resolved some naming inconsistences across the
parsing support. Fixes confusion between "Parse Op" and "Parse Node".
Adds a new file, aslparseop.c

---
31 May 2017. Summary of changes for version 20170531:

0) ACPI 6.2 support:

The ACPI specification version 6.2 has been released and is available at
http://uefi.org/specifications

This version of ACPICA fully supports the ACPI 6.2 specification. Changes
are summarized below.

New ACPI tables (Table Compiler/Disassembler/Templates):
  HMAT (Heterogeneous Memory Attributes Table)
  WSMT (Windows SMM Security Mitigation Table)
  PPTT (Processor Properties Topology Table)

New subtables for existing ACPI tables:
  HEST (New subtable, Arch-deferred machine check)
  SRAT (New subtable, Arch-specific affinity structure)
  PCCT (New subtables, Extended PCC subspaces (types 3 and 4))

Simple updates for existing ACPI tables:
  BGRT (two new flag bits)
  HEST (New bit defined for several subtables, GHES_ASSIST)

New Resource Descriptors and Resource macros (Compiler/Disassembler):
  PinConfig()
  PinFunction()
  PinGroup()
  PinGroupConfig()
  PinGroupFunction()
  New type for hardware error notification (section 18.3.2.9)

New predefined names/methods (Compiler/Interpreter):
  _HMA (Heterogeneous Memory Attributes)

_LSI (Label Storage Information)
_LSR (Label Storage Read)
_LSW (Label Storage Write)

ASL grammar/macro changes (Compiler):
For() ASL macro, implemented with the AML while operator
Extensions to Concatenate operator
Support for multiple definition blocks in same ASL file
Clarification for Buffer operator
Allow executable AML code underneath all scopes (Devices, etc.)
Clarification/change for the _OSI return value
ASL grammar update for reference operators
Allow a zero-length string for AML filename in DefinitionBlock

Miscellaneous:
New device object notification value
Remove a notify value (0x0C) for graceful shutdown
New UUIDs for processor/cache properties and
physical package property
New _HID, ACPI0014 (Wireless Power Calibration Device)

1) ACPICA kernel-resident subsystem:

Added support to disable ACPI events on hardware-reduced platforms.
Eliminates error messages of the form "Could not enable fixed event". Lv
Zheng

Fixed a problem using Device/Thermal objects with the ObjectType and
DerefOf ASL operators. This support had not been fully/properly
implemented.

Fixed a problem where if a Buffer object containing a resource template
was longer than the actual resource template, an error was generated --
even though the AML is legal. This case has been seen in the field.

Fixed a problem with the header definition of the MADT PCAT_COMPAT flag.
The values for DUAL_PIC and MULTIPLE_APIC were reversed.

Added header file changes for the TPM2 ACPI table. Update to new version
of the TCG specification. Adds a new TPM2 subtable for ARM SMC.

Exported the external interfaces AcpiAcquireMutex and AcpiReleaseMutex.
These interfaces are intended to be used only in conjunction with the
predefined _DLM method (Device Lock Method). "This object appears in a
device scope when AML access to the device must be synchronized with the
OS environment".

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 143.1K Code, 60.0K Data, 203.1K Total
Debug Version: 204.0K Code, 84.3K Data, 288.3K Total
Previous Release:
Non-Debug Version: 141.7K Code, 58.5K Data, 200.2K Total
Debug Version: 207.5K Code, 82.7K Data, 290.2K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a problem where an External() declaration could not refer to a Field Unit. Erik Schmauss.

Disassembler: Improved support for the Switch/Case operators. This feature will disassemble AML code back to the original Switch operators when possible, instead of an If..Else sequence. David Box

iASL and disassembler: Improved the handling of multiple extraneous parentheses for both ASL input and disassembled ASL output.

Improved the behavior of the iASL compiler and disassembler to detect improper use of external declarations

Disassembler: Now aborts immediately upon detection of an unknown AML opcode. The AML parser has no real way to recover from this, and can result in the creation of an ill-formed parse tree that causes errors later during the disassembly.

All tools: Fixed a problem where the Unix application OSL did not handle control-c correctly. For example, a control-c could incorrectly wake the debugger.

AcpiExec: Improved the Control-C handling and added a handler for segmentation faults (SIGSEGV). Supports both Windows and Unix-like environments.

Reduced the verbosity of the generic unix makefiles. Previously, each compilation displayed the full set of compiler options. This has been eliminated as the options are easily inspected within the makefiles. Each compilation now results in a single line of output.

---
03 March 2017. Summary of changes for version 20170303:

0) ACPICA licensing:

The licensing information at the start of each source code module has
been updated. In addition to the Intel license, the dual GPLv2/BSD
license has been added for completeness. Now, a single version of the
source code should be suitable for all ACPICA customers. This is the
major change for this release since it affects all source code modules.

1) ACPICA kernel-resident subsystem:

Fixed two issues with the common asltypes.h header that could cause
problems in some environments: (Kim Jung-uk)
  Removed typedef for YY_BUFFER_STATE ?
    Fixes an error with earlier versions of Flex.
  Removed use of FILE typedef (which is only defined in stdio.h)

2) iASL Compiler/Disassembler and Tools:

Disassembler: fixed a regression introduced in 20170224. A fix for a
memory leak related to resource descriptor tags (names) could fault when
the disassembler was generated with 64-bit compilers.

The ASLTS test suite has been updated to implement a new testing
architecture. During generation of the suite from ASL source, both the
ASL and ASL+ compilers are now validated, as well as the disassembler
itself (Erik Schmauss). The architecture executes as follows:

  For every ASL source module:
    Compile (legacy ASL compilation)
    Disassemble the resulting AML to ASL+ source code
    Compile the new ASL+ module
    Perform a binary compare on the legacy AML and the new ASL+ AML
  The ASLTS suite then executes normally using the AML binaries.

---
24 February 2017. Summary of changes for version 20170224:

1) ACPICA kernel-resident subsystem:

Interpreter: Fixed two issues with the control method return value auto-
repair feature, where an attempt to double-delete an internal object
could result in an ACPICA warning (for _CID repair and others). No fault
occurs, however, because the attempted deletion (actually a release to an

internal cache) is detected and ignored via object poisoning.

Debugger: Fixed an AML interpreter mutex issue during the single stepping of control methods. If certain debugger commands are executed during stepping, a mutex aquire/release error could occur. Lv Zheng.

Fixed some issues generating ACPICA with the Intel C compiler by restoring the original behavior and compiler-specific include file in acenv.h. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 141.7K Code, 58.5K Data, 200.2K Total
Debug Version: 207.5K Code, 82.7K Data, 290.2K Total
Previous Release:
Non-Debug Version: 137.4K Code, 52.6K Data, 190.0K Total
Debug Version: 201.5K Code, 82.2K Data, 283.7K Total

2) iASL Compiler/Disassembler and Tools:

iASL/Disassembler: A preliminary version of a new ASL-to-ASL+ conversion tool has been designed, implemented, and included in this release. The key feature of this utility is that the original comments within the input ASL file are preserved during the conversion process, and included within the converted ASL+ file -- thus creating a transparent conversion of existing ASL files to ASL+ (ASL 2.0). Erik Schmauss.

Usage: iasl -ca <ASL-filename> // Output is a .dsl file with converted code

iASL/Disassembler: Improved the detection and correct disassembly of Switch/Case operators. This feature detects sequences of if/elseif/else operators that originated from ASL Switch/Case/Default operators and emits the original operators. David Box.

iASL: Improved the IORT ACPI table support in the following areas. Lv Zheng:
Clear MappingOffset if the MappingCount is zero.
Fix the disassembly of the SMMU GSU interrupt offset.
Update the template file for the IORT table.

Disassembler: Enhanced the detection and disassembly of resource template/descriptor within a Buffer object. An EndTag descriptor is now

required to have a zero second byte, since all known ASL compilers emit
this. This helps eliminate incorrect decisions when a buffer is
disassembled (false positives on resource templates).

---
19 January 2017. Summary of changes for version 20170119:

1) General ACPICA software:

Entire source code base: Added the 2017 copyright to all source code
legal/licensing module headers and utility/tool signons. This includes
the standard Linux dual-license header. This affects virtually every file
in the ACPICA core subsystem, iASL compiler, all ACPICA utilities, and
the ACPICA test suite.

2) iASL Compiler/Disassembler and Tools:

iASL: Removed/fixed an inadvertent remark when a method argument
containing a reference is used as a target operand within the method (and
never used as a simple argument), as in the example below. Jeffrey Hugo.

```
dsdt.asl   1507:    Store(0x1, Arg0)
Remark   2146 -              ^ Method Argument is never used (Arg0)
```

All tools: Removed the bit width of the compiler that generated the tool
from the common signon for all user space tools. This proved to be
confusing and unnecessary. This includes similar removal of HARDWARE_NAME
from the generic makefiles (Thomas Petazzoni). Example below.

```
Old:
ASL+ Optimizing Compiler version 20170119-32
ASL+ Optimizing Compiler version 20170119-64

New:
ASL+ Optimizing Compiler version 20170119
```

---
22 December 2016. Summary of changes for version 20161222:

1) ACPICA kernel-resident subsystem:

AML Debugger: Implemented a new mechanism to simplify and enhance
debugger integration into all environments, including kernel debuggers
and user-space utilities, as well as remote debug services. This
mechanism essentially consists of new OSL interfaces to support debugger

initialization/termination, as well as wait/notify interfaces to perform
the debugger handshake with the host. Lv Zheng.

New OSL interfaces:
AcpiOsInitializeDebugger (void)
AcpiOsTerminateDebugger (void)
AcpiOsWaitCommandReady (void)
AcpiOsNotifyCommandComplete (void)

New OS services layer:
osgendbg.c -- Example implementation, and used for AcpiExec

Update for Generic Address Space (GAS) support: Although the AccessWidth
and/or BitOffset fields of the GAS are not often used, this change now
fully supports these fields. This affects the internal support for FADT
registers, registers in other ACPI data tables, and the AcpiRead and
AcpiWrite public interfaces. Lv Zheng.

Sleep support: In order to simplify integration of ACPI sleep for the
various host operating systems, a new OSL interface has been introduced.
AcpiOsEnterSleep allows the host to perform any required operations
before the final write to the sleep control register(s) is performed by
ACPICA. Lv Zheng.

New OSL interface:
AcpiOsEnterSleep(SleepState, RegisterAValue, RegisterBValue)

Called from these internal interfaces:
AcpiHwLegacySleep
AcpiHwExtendedSleep

EFI support: Added a very small EFI/ACPICA example application. Provides
a simple demo for EFI integration, as well as assisting with resolution
of issues related to customer ACPICA/EFI integration. Lv Zheng. See:

source/tools/efihello/efihello.c

Local C library: Implemented several new functions to enhance ACPICA
portability, for environments where these clib functions are not
available (such as EFI). Lv Zheng:
putchar
getchar
strpbrk
strtok
memmove

Fixed a regression where occasionally a valid resource descriptor was
incorrectly detected as invalid at runtime, and a

AE_AML_NO_RESOURCE_END_TAG was returned.

Fixed a problem with the recently implemented support that enables control method invocations as Target operands to many ASL operators. Warnings of this form: "Needed type [Reference], found [Processor]" were seen at runtime for some method invocations.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 141.5K Code, 58.5K Data, 200.0K Total
Debug Version: 201.7K Code, 82.7K Data, 284.4K Total
Previous Release:
Non-Debug Version: 140.5K Code, 58.5K Data, 198.9K Total
Debug Version: 201.3K Code, 82.7K Data, 284.0K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Enhanced output by adding the capability to detect and disassemble ASL Switch/Case statements back to the original ASL source code instead of if/else blocks. David Box.

AcpiHelp: Split a large file into separate files based upon functionality/purpose. New files are:
ahaml.c
ahasl.c

---
17 November 2016. Summary of changes for version 20161117:

1) ACPICA kernel-resident subsystem:

Table Manager: Fixed a regression introduced in 20160729, "FADT support cleanup". This was an attempt to remove all references in the source to the FADT version 2, which never was a legal version number. It was skipped because it was an early version of 64-bit support that was eventually abandoned for the current 64-bit support.

Interpreter: Fixed a problem where runtime implicit conversion was incorrectly disabled for the ASL operators below. This brings the behavior into compliance with the ACPI specification:
FromBCD
ToBCD

ToDecimalString
ToHexString
ToInteger
ToBuffer

Table Manager: Added a new public interface, AcpiPutTable, used to release and free an ACPI table returned by AcpiGetTable and related interfaces. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 140.5K Code, 58.5K Data, 198.9K Total
Debug Version: 201.3K Code, 82.7K Data, 284.0K Total
Previous Release:
Non-Debug Version: 140.4K Code, 58.1K Data, 198.5K Total
Debug Version: 200.7K Code, 82.1K Data, 282.8K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed a regression for disassembly of Resource Template. Detection of templates in the AML stream missed some types of templates.

iASL: Fixed a problem where an Access Size error was returned for the PCC address space when the AccessSize of the GAS register is greater than a DWORD. Hoan Tran.

iASL: Implemented several grammar changes for the operators below. These changes are slated for the next version of the ACPI specification:
RefOf - Disallow method invocation as an operand
CondRefOf - Disallow method invocation as an operand
DerefOf - Disallow operands that use the result from operators that
do not return a reference (Changed TermArg to SuperName).

iASL: Control method invocations are now allowed for Target operands, as per the ACPI specification. Removed error for using a control method invocation as a Target operand.

Disassembler: Improved detection of Resource Templates, Unicode, and Strings within Buffer objects. These subtypes do not contain a specific opcode to indicate the originating ASL code, and they must be detected by other means within the disassembler.

iASL: Implemented an optimization improvement for 32-bit ACPI tables (DSDT/SSDT). For the 32-bit case only, compute the optimum integer opcode only after 64-bit to 32-bit truncation. A truncation warning message is still emitted, however.

AcpiXtract: Implemented handling for both types of line terminators (LF or CR/LF) so that it can accept AcpiDump output files from any system. Peter Wu.

AcpiBin: Added two new options for comparing AML files:
  -a: compare and display ALL mismatches
  -o: start compare at this offset into the second file

---
30 September 2016. Summary of changes for version 20160930:

1) ACPICA kernel-resident subsystem:

Fixed a regression in the internal AcpiTbFindTable function where a non AE_OK exception could inadvertently be returned even if the function did not fail. This problem affects the following operators:
  DataTableRegion
  LoadTable

Fixed a regression in the LoadTable operator where a load to any namespace location other than the root no longer worked properly.

Increased the maximum loop count value that will result in the AE_AML_INFINITE_LOOP exception. This is a mechanism that is intended to prevent infinite loops within the AML interpreter and thus the host OS kernel. The value is increased from 0xFFFF to 0xFFFFF loops (65,535 to 1,048,575).

Moved the AcpiGbl_MaxLoopIterations configuration variable to the public acpixf.h file. This allows hosts to easily configure the maximum loop count at runtime.

Removed an illegal character in the strtoul64.c file. This character caused errors with some C compilers.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 140.4K Code, 58.1K Data, 198.5K Total
Debug Version: 200.7K Code, 82.1K Data, 282.8K Total
Previous Release:
Non-Debug Version: 140.0K Code, 58.1K Data, 198.1K Total
Debug Version: 200.3K Code, 82.1K Data, 282.4K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed a problem with the conversion of Else{If{ blocks into the simpler ASL ElseIf keyword. During the conversion, a trailing If block could be lost and missing from the disassembled output.

iASL: Fixed a missing parser rule for the ObjectType operator. For ASL+, the missing rule caused a parse error when using the Index operator as an operand to ObjectType. This construct now compiles properly. Example:
ObjectType(PKG1[4]).

iASL: Correctly handle unresolved symbols in the hardware map file (-lm option). Previously, unresolved symbols could cause a protection fault. Such symbols are now marked as unresolved in the map file.

iASL: Implemented support to allow control method invocations as an operand to the ASL DeRefOf operator. Example:
DeRefOf(MTH1(Local0))

Disassembler: Improved support for the ToPLD ASL macro. Detection of a possible _PLD buffer now includes examination of both the normal buffer length (16 or 20) as well as the surrounding AML package length.

Disassembler: Fixed a problem with the decoding of complex expressions within the Divide operator for ASL+. For the case where both the quotient and remainder targets are specified, the entire statement cannot be disassembled. Previously, the output incorrectly contained a mix of ASL- and ASL+ operators. This mixed statement causes a syntax error when compiled. Example:
Divide (Add (INT1, 6), 128, RSLT, QUOT) // was incorrectly disassembled to:
Divide (INT1 + 6, 128, RSLT, QUOT)

iASL/Tools: Added support to process AML and non-AML ACPI tables consistently. For the disassembler and AcpiExec, allow all types of ACPI tables (AML and data tables). For the iASL -e option, allow only AML tables (DSDT/SSDT).

---
31 August 2016. Summary of changes for version 20160831:

1) ACPICA kernel-resident subsystem:

Improve support for the so-called "module-level code", which is defined to be math, logical and control AML opcodes that appear outside of any control method. This change improves the support by adding more opcodes that can be executed in the manner. Some other issues have been solved, and the ASL grammar changes to support such code under all scope operators (Device, etc.) are complete. Lv Zheng.

UEFI support: these OSL functions have been implemented. This is an additional step toward supporting the AcpiExec utility natively (with full hardware access) under UEFI. Marcelo Ferreira.
AcpiOsReadPciConfiguration
AcpiOsWritePciConfiguration

Fixed a possible mutex error during control method auto-serialization. Lv Zheng.

Updated support for the Generic Address Structure by fully implementing all GAS fields when a 32-bit address is expanded to a 64-bit GAS. Lv Zheng.

Updated the return value for the internal _OSI method. Instead of 0xFFFFFFFF, the "Ones" value is now returned, which is 0xFFFFFFFFFFFFFFFF for 64-bit ACPI tables. This fixes an incompatibility with other ACPI implementations, and will be reflected and clarified in the next version of the ACPI specification.

Implemented two new table events that can be passed to an ACPICA table handler. These events are used to indicate a table installation or uninstallation. These events are used in addition to existed table load and unload events. Lv Zheng.

Implemented a cleanup for all internal string-to-integer conversions. Consolidate multiple versions of this functionality and limit possible bases to either 10 or 16 to simplify the code. Adds a new file, utstrtoul64.

Cleanup the inclusion order of the various compiler-specific headers. This simplifies build configuration management. The compiler-specific headers are now split out from the host-specific headers. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 140.1K Code, 58.1K Data, 198.1K Total
Debug Version: 200.3K Code, 82.1K Data, 282.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL/AcpiExec: Added a command line option to display the build date/time
of the tool (-vd). This can be useful to verify that the correct version
of the tools are being used.

AML Debugger: Implemented a new subcommand ("execute predef") to execute
all predefined control methods and names within the current namespace.
This can be useful for debugging problems with ACPI tables and the ACPI
namespace.

---
29 July 2016. Summary of changes for version 20160729:

1) ACPICA kernel-resident subsystem:

Implemented basic UEFI support for the various ACPICA tools. This
includes:
1) An OSL to implement the various AcpiOs* interfaces on UEFI.
2) Support to obtain the ACPI tables on UEFI.
3) Local implementation of required C library functions not available on
UEFI.
4) A front-end (main) function for the tools for UEFI-related
initialization.

The initial deployment of this support is the AcpiDump utility executing
as an UEFI application via EDK2 (EDKII, "UEFI Firmware Development Kit").
Current environments supported are Linux/Unix. MSVC generation is not
supported at this time. See the generate/efi/README file for build
instructions. Lv Zheng.

Future plans include porting the AcpiExec utility to execute natively on
the platform with I/O and memory access. This will allow viewing/dump of
the platform namespace and native execution of ACPI control methods that
access the actual hardware. To fully implement this support, the OSL
functions below must be implemented with UEFI interfaces. Any community
help in the implementation of these functions would be appreciated:
AcpiOsReadPort
AcpiOsWritePort
AcpiOsReadMemory
AcpiOsWriteMemory
AcpiOsReadPciConfiguration

AcpiOsWritePciConfiguration

Restructured and standardized the C library configuration for ACPICA, resulting in the various configuration options below. This includes a global restructuring of the compiler-dependent and platform-dependent include files. These changes may affect the existing platform-dependent configuration files on some hosts. Lv Zheng.

The current C library configuration options appear below. For any issues, it may be helpful to examine the existing compiler-dependent and platform-dependent files as examples. Lv Zheng.

1) Linux kernel:
ACPI_USE_STANDARD_HEADERS=n in order not to use system-provided C library.
ACPI_USE_SYSTEM_CLIBRARY=y in order not to use ACPICA mini C library.
2) Unix/Windows/BSD applications:
ACPI_USE_STANDARD_HEADERS=y in order to use system-provided C library.
ACPI_USE_SYSTEM_CLIBRARY=y in order not to use ACPICA mini C library.
3) UEFI applications:
ACPI_USE_STANDARD_HEADERS=n in order not to use system-provided C library.
ACPI_USE_SYSTEM_CLIBRARY=n in order to use ACPICA mini C library.
4) UEFI applications (EDK2/StdLib):
ACPI_USE_STANDARD_HEADERS=y in order to use EDK2 StdLib C library.
ACPI_USE_SYSTEM_CLIBRARY=y in order to use EDK2 StdLib C library.

AML interpreter: "module-level code" support. Allows for execution of so-called "executable" AML code (math/logical operations, etc.) outside of control methods not just at the module level (top level) but also within any scope declared outside of a control method - Scope{}, Device{}, Processor{}, PowerResource{}, and ThermalZone{}. Lv Zheng.

Simplified the configuration of the "maximum AML loops" global option by adding a global public variable, "AcpiGbl_MaxLoopIterations" which can be modified at runtime.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 139.1K Code, 22.9K Data, 162.0K Total
Debug Version: 199.0K Code, 81.8K Data, 280.8K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Add full support for the RASF ACPI table (RAS Features Table).
Includes disassembler, data table compiler, and header support.

iASL Expand "module-level code" support. Allows for
compilation/disassembly of so-called "executable" AML code (math/logical
operations, etc.) outside of control methods not just at the module level
(top level) but also within any scope declared outside of a control
method - Scope{}, Device{}, Processor{}, PowerResource{}, and
ThermalZone{}.

AcpiDump: Added support for dumping all SSDTs on newer versions of
Windows. These tables are now easily available -- SSDTs are not available
through the registry on older versions.

---
27 May 2016. Summary of changes for version 20160527:

1) ACPICA kernel-resident subsystem:

Temporarily reverted the new arbitrary bit length/alignment support in
AcpiHwRead/AcpiHwWrite for the Generic Address Structure. There have been
a number of regressions with the new code that need to be fully resolved
and tested before this support can be finally integrated into ACPICA.
Apologies for any inconveniences these issues may have caused.

The ACPI message macros are not configurable (ACPI_MSG_ERROR,
ACPI_MSG_EXCEPTION, ACPI_MSG_WARNING, ACPI_MSG_INFO, ACPI_MSG_BIOS_ERROR,
and ACPI_MSG_BIOS_WARNING). Lv Zheng.

Fixed a couple of GCC warnings associated with the use of the -Wcast-qual
option. Adds a new return macro, return_STR. Junk-uk Kim.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a much larger code and data size.

Current Release:
Non-Debug Version: 136.8K Code, 51.6K Data, 188.4K Total
Debug Version: 201.5K Code, 82.2K Data, 283.7K Total
Previous Release:
Non-Debug Version: 137.4K Code, 52.6K Data, 190.0K Total
Debug Version: 200.9K Code, 82.2K Data, 283.1K Total

---
22 April 2016. Summary of changes for version 20160422:

1) ACPICA kernel-resident subsystem:

Fixed a regression in the GAS (generic address structure) arbitrary bit support in AcpiHwRead/AcpiHwWrite. Problem could cause incorrect behavior and incorrect return values. Lv Zheng. ACPICA BZ 1270.

ACPI 6.0: Added support for new/renamed resource macros. One new argument was added to each of these macros, and the original name has been deprecated. The AML disassembler will always disassemble to the new names. Support for the new macros was added to iASL, disassembler, resource manager, and the acpihelp utility. ACPICA BZ 1274.

```
I2cSerialBus  -> I2cSerialBusV2
SpiSerialBus  -> SpiSerialBusV2
UartSerialBus -> UartSerialBusV2
```

ACPI 6.0: Added support for a new integer field that was appended to the package object returned by the _BIX method. This adds iASL compile-time and AML runtime error checking. ACPICA BZ 1273.

ACPI 6.1: Added support for a new PCCT subtable, "HW-Reduced Comm Subspace Type2" (Headers, Disassembler, and data table compiler).

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

```
 Current Release:
   Non-Debug Version: 137.4K Code, 52.6K Data, 190.0K Total
   Debug Version:     201.5K Code, 82.2K Data, 283.7K Total
 Previous Release:
   Non-Debug Version: 137.1K Code, 51.5K Data, 188.6K Total
   Debug Version:     201.0K Code, 82.0K Data, 283.0K Total
```

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented an ASL grammar extension to allow/enable executable "module-level code" to be created and executed under the various operators that create new scopes. This type of AML code is already supported in all known AML interpreters, and the grammar change will appear in the next version of the ACPI specification. Simplifies the conditional runtime creation of named objects under these object types:

Device
PowerResource
Processor
Scope
ThermalZone

iASL: Implemented a new ASL extension, a "For" loop macro to add greater ease-of-use to the ASL language. The syntax is similar to the corresponding C operator, and is implemented with the existing AML While opcode -- thus requiring no changes to existing AML interpreters.

For (Initialize, Predicate, Update) {TermList}

Grammar:

```
ForTerm :=
   For (
      Initializer    // Nothing | TermArg => ComputationalData
      Predicate      // Nothing | TermArg => ComputationalData
      Update         // Nothing | TermArg => ComputationalData
   ) {TermList}
```

iASL: The _HID/_ADR detection and validation has been enhanced to search under conditionals in order to allow these objects to be conditionally created at runtime.

iASL: Fixed several issues with the constant folding feature. The improvement allows better detection and resolution of statements that can be folded at compile time. ACPICA BZ 1266.

iASL/Disassembler: Fixed a couple issues with the Else{If{}...} conversion to the ASL ElseIf operator where incorrect ASL code could be generated.

iASL/Disassembler: Fixed a problem with the ASL+ code disassembly where sometimes an extra (and extraneous) set of parentheses were emitted for some combinations of operators. Although this did not cause any problems with recompilation of the disassembled code, it made the code more difficult to read. David Box. ACPICA BZ 1231.

iASL: Changed to ignore the unreferenced detection for predefined names of resource descriptor elements, when the resource descriptor is created/defined within a control method.

iASL: Disassembler: Fix a possible fault with externally declared Buffer objects.

---
18 March 2016. Summary of changes for version 20160318:

1) ACPICA kernel-resident subsystem:

Added support for arbitrary bit lengths and bit offsets for registers defined by the Generic Address Structure. Previously, only aligned bit lengths of 8/16/32/64 were supported. This was sufficient for many years, but recently some machines have been seen that require arbitrary bit-level support. ACPICA BZ 1240. Lv Zheng.

Fixed an issue where the _SB._INI method sometimes must be evaluated before any _REG methods are evaluated. Lv Zheng.

Implemented several changes related to ACPI table support (Headers/Disassembler/TableCompiler):
NFIT: For ACPI 6.1, updated to add some additional new fields and constants.
FADT: Updated a warning message and set compliance to ACPI 6.1 (Version 6).
DMAR: Added new constants per the 10/2014 DMAR spec.
IORT: Added new subtable per the 10/2015 IORT spec.
HEST: For ACPI 6.1, added new constants and new subtable.
DBG2: Added new constants per the 12/2015 DBG2 spec.
FPDT: Fixed several incorrect fields, add the FPDT boot record structure. ACPICA BZ 1249.
ERST/EINJ: Updated disassembler with new "Execute Timings" actions.

Updated header support for the DMAR table to match the current version of the related spec.

Added extensions to the ASL Concatenate operator to allow any ACPI object to be passed as an operand. Any object other than Integer/String/Buffer simply returns a string containing the object type. This extends the usefulness of the Printf macros. Previously, Concatenate would abort the control method if a non-data object was encountered.

ACPICA source code: Deployed the C "const" keyword across the source code where appropriate. ACPICA BZ 732. Joerg Sonnenberger (NetBSD).

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 137.1K Code, 51.5K Data, 188.6K Total
Debug Version: 201.0K Code, 82.0K Data, 283.0K Total

Previous Release:
Non-Debug Version: 136.2K Code, 51.5K Data, 187.7K Total
Debug Version: 200.4K Code, 82.0K Data, 282.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL/Disassembler: Improved the heuristic used to determine the number of arguments for an externally defined control method (a method in another table). Although this is an improvement, there is no deterministic way to "guess" the number of method arguments. Only the ACPI 6.0 External opcode will completely solve this problem as it is deployed (automatically) in newer BIOS code.

iASL/Disassembler: Fixed an ordering issue for emitted External() ASL statements that could cause errors when the disassembled file is compiled. ACPICA BZ 1243. David Box.

iASL: Fixed a regression caused by the merger of the two versions of the local strtoul64. Because of a dependency on a global variable, strtoul64 could return an error for integers greater than a 32-bit value. ACPICA BZ 1260.

iASL: Fixed a regression where a fault could occur for an ASL Return statement if it invokes a control method that is not resolved. ACPICA BZ 1264.

AcpiXtract: Improved input file validation: detection of binary files and non-acpidump text files.

---
12 February 2016. Summary of changes for version 20160212:

1) ACPICA kernel-resident subsystem:

Implemented full support for the ACPI 6.1 specification (released in January). This version of the specification is available at: http://www.uefi.org/specifications

Only a relatively small number of changes were required in ACPICA to support ACPI 6.1, in these areas:
- New predefined names
- New _HID values
- A new subtable for HEST
- A few other header changes for new values

Ensure _SB_._INI is executed before any _REG methods are executed. There appears to be existing BIOS code that relies on this behavior. Lv Zheng.

Reverted a change made in version 20151218 which enabled method invocations to be targets of various ASL operators (SuperName and Target grammar elements). While the new behavior is supported by the ACPI specification, other AML interpreters do not support this behavior and never will. The ACPI specification will be updated for ACPI 6.2 to remove this support. Therefore, the change was reverted to the original ACPICA behavior.

ACPICA now supports the GCC 6 compiler.

Current Release: (Note: build changes increased sizes)
  Non-Debug Version: 136.2K Code, 51.5K Data, 187.7K Total
  Debug Version: 200.4K Code, 82.0K Data, 282.4K Total
Previous Release:
  Non-Debug Version: 102.7K Code, 28.4K Data, 131.1K Total
  Debug Version: 200.4K Code, 81.9K Data, 282.3K Total

2) iASL Compiler/Disassembler and Tools:

Completed full support for the ACPI 6.0 External() AML opcode. The compiler emits an external AML opcode for each ASL External statement. This opcode is used by the disassembler to assist with the disassembly of external control methods by specifying the required number of arguments for the method. AML interpreters do not use this opcode. To ensure that interpreters do not even see the opcode, a block of one or more external opcodes is surrounded by an "If(0)" construct. As this feature becomes commonly deployed in BIOS code, the ability of disassemblers to correctly disassemble AML code will be greatly improved. David Box.

iASL: Implemented support for an optional cross-reference output file. The -lx option will create a the cross-reference file with the suffix "xrf". Three different types of cross-reference are created in this file:
- List of object references made from within each control method
- Invocation (caller) list for each user-defined control method
- List of references to each non-method object in the namespace

iASL: Method invocations as ASL Target operands are now disallowed and flagged as errors in preparation for ACPI 6.2 (see the description of the problem above).

---
8 January 2016. Summary of changes for version 20160108:

1) ACPICA kernel-resident subsystem:

Updated all ACPICA copyrights and signons to 2016: Added the 2016

copyright to all source code module headers and utility/tool signons.
This includes the standard Linux dual-license header. This affects
virtually every file in the ACPICA core subsystem, iASL compiler, all
ACPICA utilities, and the ACPICA test suite.

Fixed a regression introduced in version 20151218 concerning the
execution of so-called module-level ASL/AML code. Namespace objects
created under a module-level If() construct were not properly/fully
entered into the namespace and could cause an interpreter fault when
accessed.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a much larger code and data size.

Current Release:
  Non-Debug Version: 102.7K Code, 28.4K Data, 131.1K Total
  Debug Version: 200.4K Code, 81.9K Data, 282.4K Total
Previous Release:
  Non-Debug Version: 102.6K Code, 28.4K Data, 131.0K Total
  Debug Version: 200.3K Code, 81.9K Data, 282.3K Total

2) iASL Compiler/Disassembler and Tools:

Fixed a problem with the compilation of the GpioIo and GpioInt resource
descriptors. The _PIN field name was incorrectly defined to be an array
of 32-bit values, but the _PIN values are in fact 16 bits each. This
would cause incorrect bit width warnings when using Word (16-bit) fields
to access the descriptors.

---
18 December 2015. Summary of changes for version 20151218:

1) ACPICA kernel-resident subsystem:

Implemented per-AML-table execution of "module-level code" as individual
ACPI tables are loaded into the namespace during ACPICA initialization.
In other words, any module-level code within an AML table is executed
immediately after the table is loaded, instead of batched and executed
after all of the tables have been loaded. This provides compatibility
with other ACPI implementations. ACPICA BZ 1219. Bob Moore, Lv Zheng,
David Box.

To fully support the feature above, the default operation region handlers
for the SystemMemory, SystemIO, and PCI_Config address spaces are now

installed before any ACPI tables are loaded. This enables module-level code to access these address spaces during the table load and module-level code execution phase. ACPICA BZ 1220. Bob Moore, Lv Zheng, David Box.

Implemented several changes to the internal _REG support in conjunction with the changes above. Also, changes to the AcpiExec/AcpiNames/Examples utilities for the changes above. Although these tools were changed, host operating systems that simply use the default handlers for SystemMemory, SystemIO, and PCI_Config spaces should not require any update. Lv Zheng.

For example, in the code below, DEV1 is conditionally added to the namespace by the DSDT via module-level code that accesses an operation region. The SSDT references DEV1 via the Scope operator. DEV1 must be created immediately after the DSDT is loaded in order for the SSDT to successfully reference DEV1. Previously, this code would cause an AE_NOT_EXIST exception during the load of the SSDT. Now, this code is fully supported by ACPICA.

```
DefinitionBlock ("", "DSDT", 2, "Intel", "DSDT1", 1)
{
   OperationRegion (OPR1, SystemMemory, 0x400, 32)
   Field (OPR1, AnyAcc, NoLock, Preserve)
   {
      FLD1, 1
   }
   If (FLD1)
   {
      Device (\DEV1)
      {
      }
   }
}
DefinitionBlock ("", "SSDT", 2, "Intel", "SSDT1", 1)
{
   External (\DEV1, DeviceObj)
   Scope (\DEV1)
   {
   }
}
```

Fixed an AML interpreter problem where control method invocations were not handled correctly when the invocation was itself a SuperName argument to another ASL operator. In these cases, the method was not invoked. ACPICA BZ 1002. Affects the following ASL operators that have a SuperName argument:

Store
Acquire, Wait

CondRefOf, RefOf
Decrement, Increment
Load, Unload
Notify
Signal, Release, Reset
SizeOf

Implemented automatic String-to-ObjectReference conversion support for packages returned by predefined names (such as _DEP). A common BIOS error is to add double quotes around an ObjectReference namepath, which turns the reference into an unexpected string object. This support detects the problem and corrects it before the package is returned to the caller that invoked the method. Lv Zheng.

Implemented extensions to the Concatenate operator. Concatenate now accepts any type of object, it is not restricted to simply Integer/String/Buffer. For objects other than these 3 basic data types, the argument is treated as a string containing the name of the object type. This expands the utility of Concatenate and the Printf/Fprintf macros. ACPICA BZ 1222.

Cleaned up the output of the ASL Debug object. The timer() value is now optional and no longer emitted by default. Also, the basic data types of Integer/String/Buffer are simply emitted as their values, without a data type string -- since the data type is obvious from the output. ACPICA BZ 1221.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 102.6K Code, 28.4K Data, 131.0K Total
Debug Version: 200.3K Code, 81.9K Data, 282.3K Total
Previous Release:
Non-Debug Version: 102.0K Code, 28.3K Data, 130.3K Total
Debug Version: 199.6K Code, 81.8K Data, 281.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed some issues with the ASL Include() operator. This operator was incorrectly defined in the iASL parser rules, causing a new scope to be opened for the code within the include file. This could lead to several issues, including allowing ASL code that is technically illegal and not supported by AML interpreters. Note, this does not affect the related #include preprocessor operator. ACPICA BZ 1212.

iASL/Disassembler: Implemented support for the ASL ElseIf operator. This operator is essentially an ASL macro since there is no AML opcode associated with it. The code emitted by the iASL compiler for ElseIf is an Else opcode followed immediately by an If opcode. The disassembler will now emit an ElseIf if it finds an Else immediately followed by an If. This simplifies the decoded ASL, especially for deeply nested If..Else and large Switch constructs. Thus, the disassembled code more closely follows the original source ASL. ACPICA BZ 1211. Example:

```
Old disassembly:
    Else
    {
        If (Arg0 == 0x02)
        {
            Local0 = 0x05
        }
    }

New disassembly:
    ElseIf (Arg0 == 0x02)
    {
        Local0 = 0x05
    }
```

AcpiExec: Added support for the new module level code behavior and the early region installation. This required a small change to the initialization, since AcpiExec must install its own operation region handlers.

AcpiExec: Added support to make the debug object timer optional. Default is timer disabled. This cleans up the debug object output -- the timer data is rarely used.

AcpiExec: Multiple ACPI tables are now loaded in the order that they appear on the command line. This can be important when there are interdependencies/references between the tables.

iASL/Templates. Add support to generate template files with multiple SSDTs within a single output file. Also added ommand line support to specify the number of SSDTs (in addition to a single DSDT). ACPICA BZ 1223, 1225.

---

24 November 2015. Summary of changes for version 20151124:

1) ACPICA kernel-resident subsystem:

Fixed a possible regression for a previous update to FADT handling. The FADT no longer has a fixed table ID, causing some issues with code that was hardwired to a specific ID. Lv Zheng.

Fixed a problem where the method auto-serialization could interfere with the current SyncLevel. This change makes the auto-serialization support transparent to the SyncLevel support and management.

Removed support for the _SUB predefined name in AcpiGetObjectInfo. This interface is intended for early access to the namespace during the initial namespace device discovery walk. The _SUB method has been seen to access operation regions in some cases, causing errors because the operation regions are not fully initialized.

AML Debugger: Fixed some issues with the terminate/quit/exit commands that can cause faults. Lv Zheng.

AML Debugger: Add thread ID support so that single-step mode only applies to the AML Debugger thread. This prevents runtime errors within some kernels. Lv Zheng.

Eliminated extraneous warnings from AcpiGetSleepTypeData. Since the _Sx methods that are invoked by this interface are optional, removed warnings emitted for the case where one or more of these methods do not exist. ACPICA BZ 1208, original change by Prarit Bhargava.

Made a major pass through the entire ACPICA source code base to standardize formatting that has diverged a bit over time. There are no functional changes, but this will of course cause quite a few code differences from the previous ACPICA release.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 102.0K Code, 28.3K Data, 130.3K Total
Debug Version: 199.6K Code, 81.8K Data, 281.4K Total
Previous Release:
Non-Debug Version: 101.7K Code, 27.9K Data, 129.6K Total
Debug Version: 199.3K Code, 81.4K Data, 280.7K Total

2) iASL Compiler/Disassembler and Tools:

iASL/acpiexec/acpixtract/disassembler: Added support to allow multiple

definition blocks within a single ASL file and the resulting AML file. Support for this type of file was also added to the various tools that use binary AML files: acpiexec, acpixtract, and the AML disassembler. The example code below shows two definition blocks within the same file:

```
  DefinitionBlock ("dsdt.aml", "DSDT", 2, "Intel", "Template",
0x12345678)
  {
  }
  DefinitionBlock ("", "SSDT", 2, "Intel", "Template", 0xABCDEF01)
  {
  }
```

iASL: Enhanced typechecking for the Name() operator. All expressions for the value of the named object must be reduced/folded to a single constant at compile time, as per the ACPI specification (the AML definition of Name()).

iASL: Fixed some code indentation issues for the -ic and -ia options (C and assembly headers). Now all emitted code correctly begins in column 1.

iASL: Added an error message for an attempt to open a Scope() on an object defined in an SSDT. The DSDT is always loaded into the namespace first, so any attempt to open a Scope on an SSDT object will fail at runtime.

---

30 September 2015. Summary of changes for version 20150930:

1) ACPICA kernel-resident subsystem:

Debugger: Implemented several changes and bug fixes to assist support for the in-kernel version of the AML debugger. Lv Zheng.
- Fix the "predefined" command for in-kernel debugger.
- Do not enter debug command loop for the help and version commands.
- Disallow "execute" command during execution/single-step of a method.

Interpreter: Updated runtime typechecking for all operators that have target operands. The operand is resolved and validated that it is legal. For example, the target cannot be a non-data object such as a Device, Mutex, ThermalZone, etc., as per the ACPI specification.

Debugger: Fixed the double-mutex user I/O handshake to work when local deadlock detection is enabled.

Debugger: limited display of method locals and arguments (LocalX and ArgX) to only those that have actually been initialized. This prevents

lines of extraneous output.

Updated the definition of the NFIT table to correct the bit polarity of
one flag: ACPI_NFIT_MEM_ARMED --> ACPI_NFIT_MEM_NOT_ARMED

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a much larger code and data size.

Current Release:
Non-Debug Version: 101.7K Code, 27.9K Data, 129.6K Total
Debug Version: 199.3K Code, 81.4K Data, 280.7K Total
Previous Release:
Non-Debug Version: 101.3K Code, 27.7K Data, 129.0K Total
Debug Version: 198.6K Code, 80.9K Data, 279.5K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Improved the compile-time typechecking for operands of many of the
ASL operators:

-- Added an option to disable compiler operand/operator typechecking (-
ot).

-- For the following operators, the TermArg operands are now validated
when possible to be Integer data objects: BankField, OperationRegion,
DataTableRegion, Buffer, and Package.

-- Store (Source, Target): Both the source and target operands are
resolved and checked that the operands are both legal. For example,
neither operand can be a non-data object such as a Device, Mutex,
ThermalZone, etc. Note, as per the ACPI specification, the CopyObject
operator can be used to store an object to any type of target object.

-- Store (Source, Target): If the source is a Package object, the target
must be a Package object, LocalX, ArgX, or Debug. Likewise, if the target
is a Package, the source must also be a Package.

-- Store (Source, Target): A warning is issued if the source and target
resolve to the identical named object.

-- Store (Source, <method invocation>): An error is generated for the
target method invocation, as this construct is not supported by the AML
interpreter.

-- For all ASL math and logic operators, the target operand must be a

data object (Integer, String, Buffer, LocalX, ArgX, or Debug). This includes the function return value also.

-- External declarations are also included in the typechecking where possible. External objects defined using the UnknownObj keyword cannot be typechecked, however.

iASL and Disassembler: Added symbolic (ASL+) support for the ASL Index operator:
- Legacy code: Index(PKG1, 3)
- New ASL+ code: PKG1[3]
This completes the ACPI 6.0 ASL+ support as it was the only operator not supported.

iASL: Fixed the file suffix for the preprocessor output file (.i). Two spaces were inadvertently appended to the filename, causing file access and deletion problems on some systems.

ASL Test Suite (ASLTS): Updated the master makefile to generate all possible compiler output files when building the test suite -- thus exercising these features of the compiler. These files are automatically deleted when the test suite exits.

---
18 August 2015. Summary of changes for version 20150818:

1) ACPICA kernel-resident subsystem:

Fix a regression for AcpiGetTableByIndex interface causing it to fail. Lv Zheng. ACPICA BZ 1186.

Completed development to ensure that the ACPICA Disassembler and Debugger are fully standalone components of ACPICA. Removed cross-component dependences. Lv Zheng.

The max-number-of-AML-loops is now runtime configurable (previously was compile-time only). This is essentially a loop timeout to force-abort infinite AML loops. ACPCIA BZ 1192.

Debugger: Cleanup output to dump ACPI names and namepaths without any trailing underscores. Lv Zheng. ACPICA BZ 1135.

Removed unnecessary conditional compilations across the Debugger and Disassembler components where entire modules could be left uncompiled.

The aapits test is deprecated and has been removed from the ACPICA git tree. The test has never been completed and has not been maintained, thus

becoming rather useless. ACPICA BZ 1015, 794.

A batch of small changes to close bugzilla and other reports:
- Remove duplicate code for _PLD processing. ACPICA BZ 1176.
- Correctly cleanup after a ACPI table load failure. ACPICA BZ 1185.
- iASL: Support POSIX yacc again in makefile. Jung-uk Kim.
- ACPI table support: general cleanup and simplification. Lv Zheng, Bob Moore.
- ACPI table support: fix for a buffer read overrun in AcpiTbFindTable. ACPICA BZ 1184.
- Enhance parameter validation for DataTableRegion and LoadTable ASL/AML operators.
- Debugger: Split debugger initialization/termination interfaces. Lv Zheng.
- AcpiExec: Emit OemTableId for SSDTs during the load phase for table identification.
- AcpiExec: Add debug message during _REG method phase during table load/init.
- AcpiNames: Fix a regression where some output was missing and no longer emitted.
- Debugger: General cleanup and simplification. Lv Zheng.
- Disassembler: Cleanup use of several global option variables. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 101.3K Code, 27.7K Data, 129.0K Total
Debug Version: 198.6K Code, 80.9K Data, 279.5K Total
Previous Release:
Non-Debug Version: 100.9K Code, 24.5K Data, 125.4K Total
Debug Version: 197.8K Code, 81.5K Data, 279.3K Total

2) iASL Compiler/Disassembler and Tools:

AcpiExec: Fixed a problem where any more than 32 ACPI tables in the XSDT were not handled properly and caused load errors. Now, properly invoke and use the ACPICA auto-reallocate mechanism for ACPI table data structures. ACPICA BZ 1188

AcpiNames: Add command-line wildcard support for ACPI table files. ACPICA BZ 1190.

AcpiExec and AcpiNames: Add -l option to load ACPI tables only. For AcpiExec, this means that no control methods (like _REG/_INI/_STA) are

executed during initialization. ACPICA BZ 1187, 1189.

iASL/Disassembler: Implemented a prototype "listing" mode that emits AML that corresponds to each disassembled ASL statement, to simplify debugging. ACPICA BZ 1191.

Debugger: Add option to the "objects" command to display a summary of the current namespace objects (Object type and count). This is displayed if the command is entered with no arguments.

AcpiNames: Add -x option to specify debug level, similar to AcpiExec.

---

17 July 2015. Summary of changes for version 20150717:

1) ACPICA kernel-resident subsystem:

Improved the partitioning between the Debugger and Disassembler components. This allows the Debugger to be used standalone within kernel code without the Disassembler (which is used for single stepping also). This renames and moves one file, dmobject.c to dbobject.c. Lv Zheng.

Debugger: Implemented a new command to trace the execution of control methods (Trace). This is especially useful for the in-kernel version of the debugger when file I/O may not be available for method trace output. See the ACPICA reference for more information. Lv Zheng.

Moved all C library prototypes (used for the local versions of these functions when requested) to a new header, acclib.h
Cleaned up the use of non-ANSI C library functions. These functions are implemented locally in ACPICA. Moved all such functions to a common source file, utnonansi.c

Debugger: Fixed a problem with the "!!" command (get last command executed) where the debugger could enter an infinite loop and eventually crash.

Removed the use of local macros that were used for some of the standard C library functions to automatically cast input parameters. This mostly affected the is* functions where the input parameter is defined to be an int. This required a few modifications to the main ACPICA source code to provide casting for these functions and eliminate possible compiler warnings for these parameters.

Across the source code, added additional status/error checking to resolve issues discovered by static source code analysis tools such as Coverity.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 100.9K Code, 24.5K Data, 125.4K Total
Debug Version: 197.8K Code, 81.5K Data, 279.3K Total
Previous Release:
Non-Debug Version: 100.6K Code, 27.6K Data, 128.2K Total
Debug Version: 196.2K Code, 81.0K Data, 277.2K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a regression where the device map file feature no longer worked properly when used in conjunction with the disassembler. It only worked properly with the compiler itself.

iASL: Implemented a new warning for method LocalX variables that are set but never used (similar to a C compiler such as gcc). This also applies to ArgX variables that are not defined by the parent method, and are instead (legally) used as local variables.

iASL/Preprocessor: Finished the pass-through of line numbers from the preprocessor to the compiler. This ensures that compiler errors/warnings have the correct original line numbers and filenames, regardless of any #include files.

iASL/Preprocessor: Fixed a couple of issues with comment handling and the pass-through of comments to the preprocessor output file (which becomes the compiler input file). Also fixed a problem with // comments that appear after a math expression.

iASL: Added support for the TCPA server table to the table compiler and template generator. (The client table was already previously supported)

iASL/Preprocessor: Added a permanent #define of the symbol "__IASL__" to identify the iASL compiler.

Cleaned up the use of the macros NEGATIVE and POSITIVE which were defined multiple times. The new names are ACPI_SIGN_NEGATIVE and ACPI_SIGN_POSITIVE.

AcpiHelp: Update to expand help messages for the iASL preprocessor directives.

---
19 June 2015. Summary of changes for version 20150619:

Two regressions in version 20150616 have been addressed:

Fixes some problems/issues with the C library macro removal (ACPI_STRLEN, etc.) This update changes ACPICA to only use the standard headers for functions, or the prototypes for the local versions of the C library functions. Across the source code, this required some additional casts for some Clib invocations for portability. Moved all local prototypes to a new file, acclib.h

Fixes several problems with recent changes to the handling of the FACS table that could cause some systems not to boot.

---
16 June 2015. Summary of changes for version 20150616:

1) ACPICA kernel-resident subsystem:

Across the entire ACPICA source code base, the various macros for the C library functions (such as ACPI_STRLEN, etc.) have been removed and replaced by the standard C library names (strlen, etc.) The original purpose for these macros is no longer applicable. This simplification reduces the number of macros used in the ACPICA source code significantly, improving readability and maintainability.

Implemented support for a new ACPI table, the OSDT. This table, the "override" SDT, can be loaded directly by the host OS at boot time. It enables the replacement of existing namespace objects that were installed via the DSDT and/or SSDTs. The primary purpose for this is to replace buggy or incorrect ASL/AML code obtained via the BIOS. The OSDT is slated for inclusion in a future version of the ACPI Specification. Lv Zheng/Bob Moore.

Added support for systems with (improperly) two FACS tables -- a "32-bit" table (via FADT 32-bit legacy field) and a "64-bit" table (via the 64-bit X field). This change will support both automatically. There continues to be systems found with this issue. This support requires a change to the AcpiSetFirmwareWakingVector interface. Also, a public global variable has been added to allow the host to select which FACS is desired (AcpiGbl_Use32BitFacsAddresses). See the ACPICA reference for more details Lv Zheng.

Added a new feature to allow for systems that do not contain an FACS. Although this is already supported on hardware-reduced platforms, the

feature has been extended for all platforms. The reasoning is that we do not want to abort the entire ACPICA initialization just because the system is seriously buggy and has no FACS.

Fixed a problem where the GUID strings for NFIT tables (in acuuid.h) were not correctly transcribed from the ACPI specification in ACPICA version 20150515.

Implemented support for the _CLS object in the AcpiGetObjectInfo external interface.

Updated the definitions of the TCPA and TPM2 ACPI tables to the more recent TCG ACPI Specification, December 14, 2014. Table disassembler and compiler also updated. Note: The TCPA "server" table is not supported by the disassembler/table-compiler at this time.

ACPI 6.0: Added definitions for the new GIC version field in the MADT.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 100.6K Code, 27.6K Data, 128.2K Total
Debug Version: 196.2K Code, 81.0K Data, 277.2K Total
Previous Release:
Non-Debug Version: 99.9K Code, 27.5K Data, 127.4K Total
Debug Version: 195.2K Code, 80.8K Data, 276.0K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed a problem with the new symbolic operator disassembler where incorrect ASL code could be emitted in some cases for the "non-commutative" operators -- Subtract, Divide, Modulo, ShiftLeft, and ShiftRight. The actual problem cases seem to be rather unusual in common ASL code, however. David Box.

Modified the linux version of acpidump to obtain ACPI tables from not just /dev/mem (which may not exist) and /sys/firmware/acpi/tables. Lv Zheng.

iASL: Fixed a problem where the user preprocessor output file (.i) contained extra data that was not expected. The compiler was using this file as a temporary file and passed through #line directives in order to keep compiler error messages in sync with the input file and line number across multiple include files. The (.i) is no longer a temporary file as

the compiler uses a new, different file for the original purpose.

iASL: Fixed a problem where comments within the original ASL source code file were not passed through to the preprocessor output file, nor any listing files.

iASL: Fixed some issues for the handling of the "#include" preprocessor directive and the similar (but not the same) "Include" ASL operator.

iASL: Add support for the new OSDT in both the disassembler and compiler.

iASL: Fixed a problem with the constant folding support where a Buffer object could be incorrectly generated (incorrectly formed) during a conversion to a Store() operator.

AcpiHelp: Updated for new NFIT GUIDs, "External" AML opcode, and new description text for the _REV predefined name. _REV now permanently returns 2, as per the ACPI 6.0 specification.

Debugger: Enhanced the output of the Debug ASL object for references produced by the Index operator. For Buffers and strings, only output the actual byte pointed to by the index. For packages, only print the single package element decoded by the index. Previously, the entire buffer/string/package was emitted.

iASL/Table-compiler: Fixed a regression where the "generic" data types were no longer recognized, causing errors.

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15 May 2015. Summary of changes for version 20150515:

This release implements most of ACPI 6.0 as described below.

1) ACPICA kernel-resident subsystem:

Implemented runtime argument checking and return value checking for all new ACPI 6.0 predefined names. This includes: _BTH, _CR3, _DSD, _LPI, _MTL, _PRR, _RDI, _RST, _TFP, _TSN.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 99.9K Code, 27.5K Data, 127.4K Total
Debug Version: 195.2K Code, 80.8K Data, 276.0K Total

Previous Release:
Non-Debug Version: 99.1K Code, 27.3K Data, 126.4K Total
Debug Version: 192.8K Code, 79.9K Data, 272.7K Total

2) iASL Compiler/Disassembler and Tools:

iASL compiler: Added compile-time support for all new ACPI 6.0 predefined names (argument count validation and return value typechecking.)

iASL disassembler and table compiler: implemented support for all new ACPI 6.0 tables. This includes: DRTM, IORT, LPIT, NFIT, STAO, WPBT, XENV.

iASL disassembler and table compiler: Added ACPI 6.0 changes to existing tables: FADT, MADT.

iASL preprocessor: Added a new directive to enable inclusion of binary blobs into ASL code. The new directive is #includebuffer. It takes a binary file as input and emits a named ascii buffer object into the ASL code.

AcpiHelp: Added support for all new ACPI 6.0 predefined names.

AcpiHelp: Added a new option, -d, to display all iASL preprocessor directives.

AcpiHelp: Added a new option, -t, to display all known/supported ACPI tables.

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10 April 2015. Summary of changes for version 20150410:

Reverted a change introduced in version 20150408 that caused a regression in the disassembler where incorrect operator symbols could be emitted.

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08 April 2015. Summary of changes for version 20150408:

1) ACPICA kernel-resident subsystem:

Permanently set the return value for the _REV predefined name. It now returns 2 (was 5). This matches other ACPI implementations. _REV will be deprecated in the future, and is now defined to be 1 for ACPI 1.0, and 2 for ACPI 2.0 and later. It should never be used to differentiate or

identify operating systems.

Added the "Windows 2015" string to the _OSI support. ACPICA will now
return TRUE to a query with this string.

Fixed several issues with the local version of the printf function.

Added the C99 compiler option (-std=c99) to the Unix makefiles.

Current Release:
  Non-Debug Version: 99.9K Code, 27.4K Data, 127.3K Total
  Debug Version: 195.2K Code, 80.7K Data, 275.9K Total
Previous Release:
  Non-Debug Version: 98.8K Code, 27.3K Data, 126.1K Total
  Debug Version: 192.1K Code, 79.8K Data, 271.9K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented an enhancement to the constant folding feature to
transform the parse tree to a simple Store operation whenever possible:
  Add (2, 3, X) ==> is converted to: Store (5, X)
  X = 2 + 3   ==> is converted to: Store (5, X)

Updated support for the SLIC table (Software Licensing Description Table)
in both the Data Table compiler and the disassembler. The SLIC table
support now conforms to "Microsoft Software Licensing Tables (SLIC and
MSDM). November 29, 2011. Copyright 2011 Microsoft". Note: Any SLIC data
following the ACPI header is now defined to be "Proprietary Data", and as
such, can only be entered or displayed as a hex data block.

Implemented full support for the MSDM table as described in the document
above. Note: The format of MSDM is similar to SLIC. Any MSDM data
following the ACPI header is defined to be "Proprietary Data", and can
only be entered or displayed as a hex data block.

Implemented the -Pn option for the iASL Table Compiler (was only
implemented for the ASL compiler). This option disables the iASL
preprocessor.

Disassembler: For disassembly of Data Tables, added a comment field
around the Ascii equivalent data that is emitted as part of the "Raw
Table Data" block. This prevents the iASL Preprocessor from possible
confusion if/when the table is compiled.

Disassembler: Added an option (-df) to force the disassembler to assume
that the table being disassembled contains valid AML. This feature is
useful for disassembling AML files that contain ACPI signatures other

than DSDT or SSDT (such as OEMx or other signatures).

Changes for the EFI version of the tools:
1) Fixed a build error/issue
2) Fixed a cast warning

iASL: Fixed a path issue with the __FILE__ operator by making the
directory prefix optional within the internal SplitInputFilename
function.

Debugger: Removed some unused global variables.

Tests: Updated the makefile for proper generation of the AAPITS suite.

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04 February 2015. Summary of changes for version 20150204:

ACPICA kernel-resident subsystem:

Updated all ACPICA copyrights and signons to 2014. Added the 2014
copyright to all module headers and signons, including the standard Linux
header. This affects virtually every file in the ACPICA core subsystem,
iASL compiler, all ACPICA utilities, and the test suites.

Events: Introduce ACPI_GPE_DISPATCH_RAW_HANDLER to fix GPE storm issues.
A raw gpe handling mechanism was created to allow better handling of GPE
storms that aren't easily managed by the normal handler. The raw handler
allows disabling/renabling of the the GPE so that interrupt storms can be
avoided in cases where events cannot be timely serviced. In this
scenario, handlers should use the AcpiSetGpe() API to disable/enable the
GPE. This API will leave the reference counts undisturbed, thereby
preventing unintentional clearing of the GPE when the intent in only to
temporarily disable it. Raw handlers allow enabling and disabling of a
GPE by removing GPE register locking. As such, raw handlers much provide
their own locks while using GPE API's to protect access to GPE data
structures.
Lv Zheng

Events: Always modify GPE registers under the GPE lock.
Applies GPE lock around AcpiFinishGpe() to protect access to GPE register
values. Reported as bug by joe.liu@apple.com.

Unix makefiles: Separate option to disable optimizations and
_FORTIFY_SOURCE. This change removes the _FORTIFY_SOURCE flag from the
NOOPT disable option and creates a separate flag (NOFORTIFY) for this
purpose. Some toolchains may define _FORTIFY_SOURCE which leads redefined
errors when building ACPICA. This allows disabling the option without

also having to disable optimazations.
David Box

Current Release:
Non-Debug Version: 101.7K Code, 27.9K Data, 129.6K Total
Debug Version: 199.2K Code, 82.4K Data, 281.6K Total

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07 November 2014. Summary of changes for version 20141107:

This release is available at https://acpica.org/downloads

This release introduces and implements language extensions to ASL that provide support for symbolic ("C-style") operators and expressions. These language extensions are known collectively as ASL+.

1) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed a problem with disassembly of the UartSerialBus macro. Changed "StopBitsNone" to the correct "StopBitsZero". David E. Box.

Disassembler: Fixed the Unicode macro support to add escape sequences. All non-printable ASCII values are emitted as escape sequences, as well as the standard escapes for quote and backslash. Ensures that the disassembled macro can be correctly recompiled.

iASL: Added Printf/Fprintf macros for formatted output. These macros are translated to existing AML Concatenate and Store operations. Printf writes to the ASL Debug object. Fprintf allows the specification of an ASL name as the target. Only a single format specifier is required, %o, since the AML interpreter dynamically converts objects to the required type. David E. Box.

```
(old)   Store (Concatenate (Concatenate (Concatenate (Concatenate
          (Concatenate (Concatenate (Concatenate ("", Arg0),
          ": Unexpected value for "), Arg1), ", "), Arg2),
          " at line "), Arg3), Debug)

(new)   Printf ("%o: Unexpected value for %o, %o at line %o",
          Arg0, Arg1, Arg2, Arg3)

(old)   Store (Concatenate (Concatenate (Concatenate (Concatenate
          ("", Arg1), ": "), Arg0), " Successful"), STR1)

(new)   Fprintf (STR1, "%o: %o Successful", Arg1, Arg0)
```

iASL: Added debug options (-bp, -bt) to dynamically prune levels of the ASL parse tree before the AML code is generated. This allows blocks of ASL code to be removed in order to help locate and identify problem devices and/or code. David E. Box.

AcpiExec: Added support (-fi) for an optional namespace object initialization file. This file specifies initial values for namespace objects as necessary for debugging and testing different ASL code paths that may be taken as a result of BIOS options.

2) Overview of symbolic operator support for ASL (ASL+)

As an extension to the ASL language, iASL implements support for symbolic (C-style) operators for math and logical expressions. This can greatly simplify ASL code as well as improve both readability and maintainability. These language extensions can exist concurrently with all legacy ASL code and expressions.

The symbolic extensions are 100% compatible with existing AML interpreters, since no new AML opcodes are created. To implement the extensions, the iASL compiler transforms the symbolic expressions into the legacy ASL/AML equivalents at compile time.

Full symbolic expressions are supported, along with the standard C precedence and associativity rules.

Full disassembler support for the symbolic expressions is provided, and creates an automatic migration path for existing ASL code to ASL+ code via the disassembly process. By default, the disassembler now emits ASL+ code with symbolic expressions. An option (-dl) is provided to force the disassembler to emit legacy ASL code if desired.

Below is the complete list of the currently supported symbolic operators with examples. See the iASL User Guide for additional information.

ASL+ Syntax	Legacy ASL Equivalent
// Math operators	
Z = X + Y	Add (X, Y, Z)
Z = X - Y	Subtract (X, Y, Z)
Z = X * Y	Multiply (X, Y, Z)
Z = X / Y	Divide (X, Y, , Z)

```
Z = X % Y       Mod (X, Y, Z)
Z = X << Y      ShiftLeft (X, Y, Z)
Z = X >> Y      ShiftRight (X, Y, Z)
Z = X & Y       And (X, Y, Z)
Z = X | Y       Or (X, Y, Z)
Z = X ^ Y       Xor (X, Y, Z)
Z = ~X          Not (X, Z)
X++             Increment (X)
X--             Decrement (X)

  // Logical operators

(X == Y)        LEqual (X, Y)
(X != Y)        LNotEqual (X, Y)
(X < Y)         LLess (X, Y)
(X > Y)         LGreater (X, Y)
(X <= Y)        LLessEqual (X, Y)
(X >= Y)        LGreaterEqual (X, Y)
(X && Y)        LAnd (X, Y)
(X || Y)        LOr (X, Y)
(!X)            LNot (X)

  // Assignment and compound assignment operations

X = Y           Store (Y, X)
X += Y          Add (X, Y, X)
X -= Y          Subtract (X, Y, X)
X *= Y          Multiply (X, Y, X)
X /= Y          Divide (X, Y, , X)
X %= Y          Mod (X, Y, X)
X <<= Y         ShiftLeft (X, Y, X)
X >>= Y         ShiftRight (X, Y, X)
X &= Y          And (X, Y, X)
X |= Y          Or (X, Y, X)
X ^= Y          Xor (X, Y, X)
```

3) ASL+ Examples:

Legacy ASL:

```
    If (LOr (LOr (LEqual (And (R510, 0x03FB), 0x02E0), LEqual (
        And (R520, 0x03FB), 0x02E0)), LOr (LEqual (And (R530,
0x03FB),
        0x02E0), LEqual (And (R540, 0x03FB), 0x02E0))))
    {
        And (MEMB, 0xFFFFFFF0, SRMB)
        Store (MEMB, Local2)
```

```
        Store (PDBM, Local1)
        And (PDBM, 0xFFFFFFFFFFFFFFF9, PDBM)
        Store (SRMB, MEMB)
        Or (PDBM, 0x02, PDBM)
    }
```

ASL+ version:

```
    If (((R510 & 0x03FB) == 0x02E0) ||
        ((R520 & 0x03FB) == 0x02E0) ||
        ((R530 & 0x03FB) == 0x02E0) ||
        ((R540 & 0x03FB) == 0x02E0))
    {
        SRMB = (MEMB & 0xFFFFFFF0)
        Local2 = MEMB
        Local1 = PDBM
        PDBM &= 0xFFFFFFFFFFFFFFF9
        MEMB = SRMB
        PDBM |= 0x02
    }
```

Legacy ASL:

```
    Store (0x1234, Local1)
    Multiply (Add (Add (Local1, TEST), 0x20), Local2, Local3)
    Multiply (Local2, Add (Add (Local1, TEST), 0x20), Local3)
    Add (Local1, Add (TEST, Multiply (0x20, Local2)), Local3)
    Store (Index (PKG1, 0x03), Local6)
    Store (Add (Local3, Local2), Debug)
    Add (Local1, 0x0F, Local2)
    Add (Local1, Multiply (Local2, Local3), Local2)
    Multiply (Add (Add (Local1, TEST), 0x20), ToBCD (Local1), Local3)
```

ASL+ version:

```
    Local1 = 0x1234
    Local3 = (((Local1 + TEST) + 0x20) * Local2)
    Local3 = (Local2 * ((Local1 + TEST) + 0x20))
    Local3 = (Local1 + (TEST + (0x20 * Local2)))
    Local6 = Index (PKG1, 0x03)
    Debug = (Local3 + Local2)
    Local2 = (Local1 + 0x0F)
    Local2 = (Local1 + (Local2 * Local3))
    Local3 = (((Local1 + TEST) + 0x20) * ToBCD (Local1))
```

---

26 September 2014. Summary of changes for version 20140926:

1) ACPICA kernel-resident subsystem:

Updated the GPIO operation region handler interface (GeneralPurposeIo).
In order to support GPIO Connection objects with multiple pins, along
with the related Field objects, the following changes to the interface
have been made: The Address is now defined to be the offset in bits of
the field unit from the previous invocation of a Connection. It can be
viewed as a "Pin Number Index" into the connection resource descriptor.
The BitWidth is the exact bit width of the field. It is usually one bit,
but not always. See the ACPICA reference guide (section 8.8.6.2.1) for
additional information and examples.

GPE support: During ACPICA/GPE initialization, ensure that all GPEs with
corresponding _Lxx/_Exx methods are disabled (they may have been enabled
by the firmware), so that they cannot fire until they are enabled via
AcpiUpdateAllGpes. Rafael J. Wysocki.

Added a new return flag for the Event/GPE status interfaces --
AcpiGetEventStatus and AcpiGetGpeStatus. The new
ACPI_EVENT_FLAGS_HAS_HANDLER flag is used to indicate that the event or
GPE currently has a handler associated with it, and can thus actually
affect the system. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a much larger code and data size.

Current Release:
Non-Debug Version: 99.1K Code, 27.3K Data, 126.4K Total
Debug Version: 192.8K Code, 79.9K Data, 272.7K Total
Previous Release:
Non-Debug Version: 98.8K Code, 27.3K Data, 126.1K Total
Debug Version: 192.1K Code, 79.8K Data, 271.9K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a memory allocation/free regression introduced in 20140828
that could cause the compiler to crash. This was introduced inadvertently
during the effort to eliminate compiler memory leaks. ACPICA BZ 1111,
1113.

iASL: Removed two error messages that have been found to create false
positives, until they can be fixed and fully validated (ACPICA BZ 1112):
1) Illegal forward reference within a method
2) Illegal reference across two methods

iASL: Implemented a new option (-lm) to create a hardware mapping file
that summarizes all GPIO, I2C, SPI, and UART connections. This option
works for both the compiler and disassembler. See the iASL compiler user

guide for additional information and examples (section 6.4.6).

AcpiDump: Added support for the version 1 (ACPI 1.0) RSDP in addition to version 2. This corrects the AE_BAD_HEADER exception seen on systems with a version 1 RSDP. Lv Zheng ACPICA BZ 1097.

AcpiExec: For Unix versions, don't attempt to put STDIN into raw mode unless STDIN is actually a terminal. Assists with batch-mode processing. ACPICA BZ 1114.

Disassembler/AcpiHelp: Added another large group of recognized _HID values.

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28 August 2014. Summary of changes for version 20140828:

1) ACPICA kernel-resident subsystem:

Fixed a problem related to the internal use of the Timer() operator where a 64-bit divide could cause an attempted link to a double-precision math library. This divide is not actually necessary, so the code was restructured to eliminate it. Lv Zheng.

ACPI 5.1: Added support for the runtime validation of the _DSD package (similar to the iASL support).

ACPI 5.1/Headers: Added support for the GICC affinity subtable to the SRAT table. Hanjun Guo <hanjun.guo@linaro.org>.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 98.8K Code, 27.3K Data, 126.1K Total
Debug Version: 192.1K Code, 79.8K Data, 271.9K Total
Previous Release:
Non-Debug Version: 98.7K Code, 27.3K Data, 126.0K Total1
Debug Version: 192.0K Code, 79.7K Data, 271.7K Total

2) iASL Compiler/Disassembler and Tools:

AcpiExec: Fixed a problem on unix systems where the original terminal state was not always properly restored upon exit. Seen when using the -v option. ACPICA BZ 1104.

iASL: Fixed a problem with the validation of the ranges/length within the Memory24 resource descriptor. There was a boundary condition when the range was equal to the (length -1) caused by the fact that these values are defined in 256-byte blocks, not bytes. ACPICA BZ 1098

Disassembler: Fixed a problem with the GpioInt descriptor interrupt polarity
flags. The flags are actually 2 bits, not 1, and the "ActiveBoth" keyword is
now supported properly.

ACPI 5.1: Added the GICC affinity subtable to the SRAT table. Supported in the disassembler, data table compiler, and table template generator.

iASL: Added a requirement for Device() objects that one of either a _HID or _ADR must exist within the scope of a Device, as per the ACPI specification. Remove a similar requirement that was incorrectly in place for the _DSD object.

iASL: Added error detection for illegal named references within control methods that would cause runtime failures. Now trapped as errors are: 1) References to objects within a non-parent control method. 2) Forward references (within a method) -- for control methods, AML interpreters use a one-pass parse of control methods. ACPICA BZ 1008.

iASL: Added error checking for dependencies related to the _PSx power methods. ACPICA BZ 1029.
1) For _PS0, one of these must exist within the same scope: _PS1, _PS2, _PS3.
2) For _PS1, _PS2, and PS3: A _PS0 object must exist within the same scope.

iASL and table compiler: Cleanup miscellaneous memory leaks by fully deploying the existing object and string caches and adding new caches for the table compiler.

iASL: Split the huge parser source file into multiple subfiles to improve manageability. Generation now requires the M4 macro preprocessor, which is part of the Bison distribution on both unix and windows platforms.

AcpiSrc: Fixed and removed all extraneous warnings generated during entire ACPICA source code scan and/or conversion.

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24 July 2014. Summary of changes for version 20140724:

The ACPI 5.1 specification has been released and is available at:
http://uefi.org/specs/access

0) ACPI 5.1 support in ACPICA:

ACPI 5.1 is fully supported in ACPICA as of this release.

New predefined names. Support includes iASL and runtime ACPICA validation.
  _CCA (Cache Coherency Attribute).
  _DSD (Device-Specific Data). David Box.

Modifications to existing ACPI tables. Support includes headers, iASL Data Table compiler, disassembler, and the template generator.
  FADT - New fields and flags. Graeme Gregory.
  GTDT - One new subtable and new fields. Tomasz Nowicki.
  MADT - Two new subtables. Tomasz Nowicki.
  PCCT - One new subtable.

Miscellaneous.
  New notification type for System Resource Affinity change events.

1) ACPICA kernel-resident subsystem:

Fixed a regression introduced in 20140627 where a fault can happen during the deletion of Alias AML namespace objects. The problem affected both the core ACPICA and the ACPICA tools including iASL and AcpiExec.

Implemented a new GPE public interface, AcpiMarkGpeForWake. Provides a simple mechanism to enable wake GPEs that have no associated handler or control method. Rafael Wysocki.

Updated the AcpiEnableGpe interface to disallow the enable if there is no handler or control method associated with the particular GPE. This will help avoid meaningless GPEs and even GPE floods. Rafael Wysocki.

Updated GPE handling and dispatch by disabling the GPE before clearing the status bit for edge-triggered GPEs. Lv Zheng.

Added Timer() support to the AML Debug object. The current timer value is now displayed with each invocation of (Store to) the debug object to enable simple generation of execution times for AML code (method execution for example.) ACPICA BZ 1093.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The

debug version of the code includes the debug output trace mechanism and
has a much larger code and data size.

Current Release:
Non-Debug Version: 98.7K Code, 27.3K Data, 126.0K Total
Debug Version: 192.0K Code, 79.7K Data, 271.7K Total
Previous Release:
Non-Debug Version: 98.7K Code, 27.2K Data, 125.9K Total
Debug Version: 191.7K Code, 79.6K Data, 271.3K Total

2) iASL Compiler/Disassembler and Tools:

Fixed an issue with the recently added local printf implementation,
concerning width/precision specifiers that could cause incorrect output.
Lv Zheng. ACPICA BZ 1094.

Disassembler: Added support to detect buffers that contain UUIDs and
disassemble them to an invocation of the ToUUID operator. Also emit
commented descriptions of known ACPI-related UUIDs.

AcpiHelp: Added support to display known ACPI-related UUIDs. New option,
-u. Adds three new files.

iASL: Update table compiler and disassembler for DMAR table changes that
were introduced in September 2013. With assistance by David Woodhouse.

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27 June 2014. Summary of changes for version 20140627:

1) ACPICA kernel-resident subsystem:

Formatted Output: Implemented local versions of standard formatted output
utilities such as printf, etc. Over time, it has been discovered that
there are in fact many portability issues with printf, and the addition
of this feature will fix/prevent these issues once and for all. Some
known issues are summarized below:

1) Output of 64-bit values is not portable. For example, UINT64 is %ull
for the Linux kernel and is %uI64 for some MSVC versions.
2) Invoking printf consistently in a manner that is portable across both
32-bit and 64-bit platforms is difficult at best in many situations.
3) The output format for pointers varies from system to system (leading
zeros especially), and leads to inconsistent output from ACPICA across
platforms.
4) Certain platform-specific printf formats may conflict with ACPICA use.
5) If there is no local C library available, ACPICA now has local support
for printf.

-- To address these printf issues in a complete manner, ACPICA now directly implements a small subset of printf format specifiers, only those that it requires. Adds a new file, utilities/utprint.c. Lv Zheng.

Implemented support for ACPICA generation within the EFI environment. Initially, the AcpiDump utility is supported in the UEFI shell environment. Lv Zheng.

Added a new external interface, AcpiLogError, to improve ACPICA portability. This allows the host to redirect error messages from the ACPICA utilities. Lv Zheng.

Added and deployed new OSL file I/O interfaces to improve ACPICA portability:
AcpiOsOpenFile
AcpiOsCloseFile
AcpiOsReadFile
AcpiOsWriteFile
AcpiOsGetFileOffset
AcpiOsSetFileOffset
There are C library implementations of these functions in the new file service_layers/oslibcfs.c -- however, the functions can be implemented by the local host in any way necessary. Lv Zheng.

Implemented a mechanism to disable/enable ACPI table checksum validation at runtime. This can be useful when loading tables very early during OS initialization when it may not be possible to map the entire table in order to compute the checksum. Lv Zheng.

Fixed a buffer allocation issue for the Generic Serial Bus support. Originally, a fixed buffer length was used. This change allows for variable-length buffers based upon the protocol indicated by the field access attributes. Reported by Lan Tianyu. Lv Zheng.

Fixed a problem where an object detached from a namespace node was not properly terminated/cleared and could cause a circular list problem if reattached. ACPICA BZ 1063. David Box.

Fixed a possible recursive lock acquisition in hwregs.c. Rakib Mullick.

Fixed a possible memory leak in an error return path within the function AcpiUtCopyIobjectToIobject. ACPICA BZ 1087. Colin Ian King.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 98.7K Code, 27.2K Data, 125.9K Total
Debug Version: 191.7K Code, 79.6K Data, 271.3K Total
Previous Release:
Non-Debug Version: 96.8K Code, 27.2K Data, 124.0K Total
Debug Version: 189.5K Code, 79.7K Data, 269.2K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Add dump of ASCII equivalent text within a comment at the end of each line of the output for the Buffer() ASL operator.

AcpiDump: Miscellaneous changes:
Fixed repetitive table dump in -n mode.
For older EFI platforms, use the ACPI 1.0 GUID during RSDP search if the ACPI 2.0 GUID fails.

iASL: Fixed a problem where the compiler could fault if incorrectly given an acpidump output file as input. ACPICA BZ 1088. David Box.

AcpiExec/AcpiNames: Fixed a problem where these utilities could fault if they are invoked without any arguments.

Debugger: Fixed a possible memory leak in an error return path. ACPICA BZ 1086. Colin Ian King.

Disassembler: Cleaned up a block of code that extracts a parent Op object. Added a comment that explains that the parent is guaranteed to be valid in this case. ACPICA BZ 1069.

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24 April 2014. Summary of changes for version 20140424:

1) ACPICA kernel-resident subsystem:

Implemented support to skip/ignore NULL address entries in the RSDT/XSDT. Some of these tables are known to contain a trailing NULL entry. Lv Zheng.

Removed an extraneous error message for the case where there are a large number of system GPEs (> 124). This was the "32-bit FADT register is too long to convert to GAS struct" message, which is irrelevant for GPEs since the GPEx_BLK_LEN fields of the FADT are always used instead of the (limited capacity) GAS bit length. Also, several changes to ensure proper support for GPE numbers > 255, where some "GPE number" fields were 8-bits

internally.

Implemented and deployed additional configuration support for the public ACPICA external interfaces. Entire classes of interfaces can now be easily modified or configured out, replaced by stubbed inline functions by default. Lv Zheng.

Moved all public ACPICA runtime configuration globals to the public ACPICA external interface file for convenience. Also, removed some obsolete/unused globals. See the file acpixf.h. Lv Zheng.

Documentation: Added a new section to the ACPICA reference describing the maximum number of GPEs that can be supported by the FADT-defined GPEs in block zero and one. About 1200 total. See section 4.4.1 of the ACPICA reference.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 96.8K Code, 27.2K Data, 124.0K Total
Debug Version: 189.5K Code, 79.7K Data, 269.2K Total
Previous Release:
Non-Debug Version: 97.0K Code, 27.2K Data, 124.2K Total
Debug Version: 189.7K Code, 79.5K Data, 269.2K Total

2) iASL Compiler/Disassembler and Tools:

iASL and disassembler: Add full support for the LPIT table (Low Power Idle Table). Includes support in the disassembler, data table compiler, and template generator.

AcpiDump utility:
1) Add option to force the use of the RSDT (over the XSDT).
2) Improve validation of the RSDP signature (use 8 chars instead of 4).

iASL: Add check for predefined packages that are too large. For predefined names that contain subpackages, check if each subpackage is too large. (Check for too small already exists.)

Debugger: Updated the GPE command (which simulates a GPE by executing the GPE code paths in ACPICA). The GPE device is now optional, and defaults to the GPE 0/1 FADT-defined blocks.

Unix application OSL: Update line-editing support. Add additional error

checking and take care not to reset terminal attributes on exit if they
were never set. This should help guarantee that the terminal is always
left in the previous state on program exit.

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25 March 2014. Summary of changes for version 20140325:

1) ACPICA kernel-resident subsystem:

Updated the auto-serialize feature for control methods. This feature
automatically serializes all methods that create named objects in order
to prevent runtime errors. The update adds support to ignore the
currently executing AML SyncLevel when invoking such a method, in order
to prevent disruption of any existing SyncLevel priorities that may exist
in the AML code. Although the use of SyncLevels is relatively rare, this
change fixes a regression where an AE_AML_MUTEX_ORDER exception can
appear on some machines starting with the 20140214 release.

Added a new external interface to allow the host to install ACPI tables
very early, before the namespace is even created. AcpiInstallTable gives
the host additional flexibility for ACPI table management. Tables can be
installed directly by the host as if they had originally appeared in the
XSDT/RSDT. Installed tables can be SSDTs or other ACPI data tables
(anything except the DSDT and FACS). Adds a new file, tbdata.c, along
with additional internal restructuring and cleanup. See the ACPICA
Reference for interface details. Lv Zheng.

Added validation of the checksum for all incoming dynamically loaded
tables (via external interfaces or via AML Load/LoadTable operators). Lv
Zheng.

Updated the use of the AcpiOsWaitEventsComplete interface during Notify
and GPE handler removal. Restructured calls to eliminate possible race
conditions. Lv Zheng.

Added a warning for the use/execution of the ASL/AML Unload (table)
operator. This will help detect and identify machines that use this
operator if and when it is ever used. This operator has never been seen
in the field and the usage model and possible side-effects of the drastic
runtime action of a full table removal are unknown.

Reverted the use of #pragma push/pop which was introduced in the 20140214
release. It appears that push and pop are not implemented by enough
compilers to make the use of this feature feasible for ACPICA at this
time. However, these operators may be deployed in a future ACPICA
release.

Added the missing EXPORT_SYMBOL macros for the install and remove SCI handler interfaces.

Source code generation:
1) Disabled the use of the "strchr" macro for the gcc-specific generation. For some versions of gcc, this macro can periodically expose a compiler bug which in turn causes compile-time error(s).
2) Added support for PPC64 compilation. Colin Ian King.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 97.0K Code, 27.2K Data, 124.2K Total
Debug Version: 189.7K Code, 79.5K Data, 269.2K Total
Previous Release:
Non-Debug Version: 96.5K Code, 27.2K Data, 123.7K Total
Debug Version: 188.6K Code, 79.0K Data, 267.6K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Added several new features to improve the readability of the resulting ASL code. Extra information is emitted within comment fields in the ASL code:
1) Known _HID/_CID values are decoded to descriptive text.
2) Standard values for the Notify() operator are decoded to descriptive text.
3) Target operands are expanded to full pathnames (in a comment) when possible.

Disassembler: Miscellaneous updates for extern() handling:
1) Abort compiler if file specified by -fe option does not exist.
2) Silence unnecessary warnings about argument count mismatches.
3) Update warning messages concerning unresolved method externals.
4) Emit "UnknownObj" keyword for externals whose type cannot be determined.

AcpiHelp utility:
1) Added the -a option to display both the ASL syntax and the AML encoding for an input ASL operator. This effectively displays all known information about an ASL operator with one AcpiHelp invocation.
2) Added substring match support (similar to a wildcard) for the -i (_HID/PNP IDs) option.

iASL/Disassembler: Since this tool does not yet support execution on big-

endian machines, added detection of endianness and an error message if execution is attempted on big-endian. Support for big-endian within iASL is a feature that is on the ACPICA to-be-done list.

AcpiBin utility:
1) Remove option to extract binary files from an acpidump; this function is made obsolete by the AcpiXtract utility.
2) General cleanup of open files and allocated buffers.

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14 February 2014. Summary of changes for version 20140214:

1) ACPICA kernel-resident subsystem:

Implemented a new mechanism to proactively prevent problems with ill-behaved reentrant control methods that create named ACPI objects. This behavior is illegal as per the ACPI specification, but is nonetheless frequently seen in the field. Previously, this could lead to an AE_ALREADY_EXISTS exception if the method was actually entered by more than one thread. This new mechanism detects such methods at table load time and marks them "serialized" to prevent reentrancy. A new global option, AcpiGbl_AutoSerializeMethods, has been added to disable this feature if desired. This mechanism and global option obsoletes and supersedes the previous AcpiGbl_SerializeAllMethods option.

Added the "Windows 2013" string to the _OSI support. ACPICA will now respond TRUE to _OSI queries with this string. It is the stated policy of ACPICA to add new strings to the _OSI support as soon as possible after they are defined. See the full ACPICA _OSI policy which has been added to the utilities/utosi.c file.

Hardened/updated the _PRT return value auto-repair code:
1) Do not abort the repair on a single subpackage failure, continue to check all subpackages.
2) Add check for the minimum subpackage length (4).
3) Properly handle extraneous NULL package elements.

Added support to avoid the possibility of infinite loops when traversing object linked lists. Never allow an infinite loop, even in the face of corrupted object lists.

ACPICA headers: Deployed the use of #pragma pack(push) and #pragma pack(pop) directives to ensure that the ACPICA headers are independent of compiler settings or other host headers.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The

debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 96.5K Code, 27.2K Data, 123.7K Total
Debug Version: 188.6K Code, 79.0K Data, 267.6K Total
Previous Release:
Non-Debug Version: 96.2K Code, 27.0K Data, 123.2K Total
Debug Version: 187.5K Code, 78.3K Data, 265.8K Total

2) iASL Compiler/Disassembler and Tools:

iASL/Table-compiler: Fixed a problem with support for the SPMI table. The first reserved field was incorrectly forced to have a value of zero. This change correctly forces the field to have a value of one. ACPICA BZ 1081.

Debugger: Added missing support for the "Extra" and "Data" subobjects when displaying object data.

Debugger: Added support to display entire object linked lists when displaying object data.

iASL: Removed the obsolete -g option to obtain ACPI tables from the Windows registry. This feature has been superseded by the acpidump utility.

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14 January 2014. Summary of changes for version 20140114:

1) ACPICA kernel-resident subsystem:

Updated all ACPICA copyrights and signons to 2014. Added the 2014 copyright to all module headers and signons, including the standard Linux header. This affects virtually every file in the ACPICA core subsystem, iASL compiler, all ACPICA utilities, and the test suites.

Improved parameter validation for AcpiInstallGpeBlock. Added the following checks:
1) The incoming device handle refers to type ACPI_TYPE_DEVICE.
2) There is not already a GPE block attached to the device.
Likewise, with AcpiRemoveGpeBlock, ensure that the incoming object is a device.

Correctly support "references" in the ACPI_OBJECT. This change fixes the support to allow references (namespace nodes) to be passed as arguments to control methods via the evaluate object interface. This is probably

most useful for testing purposes, however.

Improved support for 32/64 bit physical addresses in printf()-like output. This change improves the support for physical addresses in printf debug statements and other output on both 32-bit and 64-bit hosts. It consistently outputs the appropriate number of bytes for each host. The %p specifier is unsatisfactory since it does not emit uniform output on all hosts/clib implementations (on some, leading zeros are not supported, leading to difficult-to-read output).

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 96.2K Code, 27.0K Data, 123.2K Total
Debug Version: 187.5K Code, 78.3K Data, 265.8K Total
Previous Release:
Non-Debug Version: 96.1K Code, 27.0K Data, 123.1K Total
Debug Version: 185.6K Code, 77.3K Data, 262.9K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fix a possible fault when using the Connection() operator. Fixes a problem if the parent Field definition for the Connection operator refers to an operation region that does not exist. ACPICA BZ 1064.

AcpiExec: Load of local test tables is now optional. The utility has the capability to load some various tables to test features of ACPICA. However, there are enough of them that the output of the utility became confusing. With this change, only the required local tables are displayed (RSDP, XSDT, etc.) along with the actual tables loaded via the command line specification. This makes the default output simler and easier to understand. The -el command line option restores the original behavior for testing purposes.

AcpiExec: Added support for overlapping operation regions. This change expands the simulation of operation regions by supporting regions that overlap within the given address space. Supports SystemMemory and SystemIO. ASLTS test suite updated also. David Box. ACPICA BZ 1031.

AcpiExec: Added region handler support for PCI_Config and EC spaces. This allows AcpiExec to simulate these address spaces, similar to the current support for SystemMemory and SystemIO.

Debugger: Added new command to read/write/compare all namespace objects.

The command "test objects" will exercise the entire namespace by writing new values to each data object, and ensuring that the write was successful. The original value is then restored and verified.

Debugger: Added the "test predefined" command. This change makes this test public and puts it under the new "test" command. The test executes each and every predefined name within the current namespace.

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18 December 2013. Summary of changes for version 20131218:

Global note: The ACPI 5.0A specification was released this month. There are no changes needed for ACPICA since this release of ACPI is an errata/clarification release. The specification is available at acpi.info.

1) ACPICA kernel-resident subsystem:

Added validation of the XSDT root table if it is present. Some older platforms contain an XSDT that is ill-formed or otherwise invalid (such as containing some or all entries that are NULL pointers). This change adds a new function to validate the XSDT before actually using it. If the XSDT is found to be invalid, ACPICA will now automatically fall back to using the RSDT instead. Original implementation by Zhao Yakui. Ported to ACPICA and enhanced by Lv Zheng and Bob Moore.

Added a runtime option to ignore the XSDT and force the use of the RSDT. This change adds a runtime option that will force ACPICA to use the RSDT instead of the XSDT (AcpiGbl_DoNotUseXsdt). Although the ACPI spec requires that an XSDT be used instead of the RSDT, the XSDT has been found to be corrupt or ill-formed on some machines. Lv Zheng.

Added a runtime option to favor 32-bit FADT register addresses over the 64-bit addresses. This change adds an option to favor 32-bit FADT addresses when there is a conflict between the 32-bit and 64-bit versions of the same register. The default behavior is to use the 64-bit version in accordance with the ACPI specification. This can now be overridden via the AcpiGbl_Use32BitFadtAddresses flag. ACPICA BZ 885. Lv Zheng.

During the change above, the internal "Convert FADT" and "Verify FADT" functions have been merged to simplify the code, making it easier to understand and maintain. ACPICA BZ 933.

Improve exception reporting and handling for GPE block installation. Return an actual status from AcpiEvGetGpeXruptBlock and don't clobber the status when exiting AcpiEvInstallGpeBlock. ACPICA BZ 1019.

Added helper macros to extract bus/segment numbers from the HEST table.
This change adds two macros to extract the encoded bus and segment
numbers from the HEST Bus field - ACPI_HEST_BUS and ACPI_HEST_SEGMENT.
Betty Dall <betty.dall@hp.com>

Removed the unused ACPI_FREE_BUFFER macro. This macro is no longer used
by ACPICA. It is not a public macro, so it should have no effect on
existing OSV code. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a much larger code and data size.

Current Release:
  Non-Debug Version: 96.1K Code, 27.0K Data, 123.1K Total
  Debug Version: 185.6K Code, 77.3K Data, 262.9K Total
Previous Release:
  Non-Debug Version: 95.9K Code, 27.0K Data, 122.9K Total
  Debug Version: 185.1K Code, 77.2K Data, 262.3K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Improved pathname support for emitted External()
statements. This change adds full pathname support for external names
that have been resolved internally by the inclusion of additional ACPI
tables (via the iASL -e option). Without this change, the disassembler
can emit multiple externals for the same object, or it become confused
when the Scope() operator is used on an external object. Overall, greatly
improves the ability to actually recompile the emitted ASL code when
objects a referenced across multiple ACPI tables. Reported by Michael
Tsirkin (mst@redhat.com).

Tests/ASLTS: Updated functional control suite to execute with no errors.
David Box. Fixed several errors related to the testing of the interpreter
slack mode. Lv Zheng.

iASL: Added support to detect names that are declared within a control
method, but are unused (these are temporary names that are only valid
during the time the method is executing). A remark is issued for these
cases. ACPICA BZ 1022.

iASL: Added full support for the DBG2 table. Adds full disassembler,
table compiler, and template generator support for the DBG2 table (Debug
Port 2 table).

iASL: Added full support for the PCCT table, update the table definition. Updates the PCCT table definition in the actbl3.h header and adds table compiler and template generator support.

iASL: Added an option to emit only error messages (no warnings/remarks). The -ve option will enable only error messages, warnings and remarks are suppressed. This can simplify debugging when only the errors are important, such as when an ACPI table is disassembled and there are many warnings and remarks -- but only the actual errors are of real interest.

Example ACPICA code (source/tools/examples): Updated the example code so that it builds to an actual working program, not just example code. Added ACPI tables and execution of an example control method in the DSDT. Added makefile support for Unix generation.

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15 November 2013. Summary of changes for version 20131115:

This release is available at https://acpica.org/downloads

1) ACPICA kernel-resident subsystem:

Resource Manager: Fixed loop termination for the "get AML length" function. The loop previously had an error termination on a NULL resource pointer, which can never happen since the loop simply increments a valid resource pointer. This fix changes the loop to terminate with an error on an invalid end-of-buffer condition. The problem can be seen as an infinite loop by callers to AcpiSetCurrentResources with an invalid or corrupted resource descriptor, or a resource descriptor that is missing an END_TAG descriptor. Reported by Dan Carpenter <dan.carpenter@oracle.com>. Lv Zheng, Bob Moore.

Table unload and ACPICA termination: Delete all attached data objects during namespace node deletion. This fix updates namespace node deletion to delete the entire list of attached objects (attached via AcpiAttachObject) instead of just one of the attached items. ACPICA BZ 1024. Tomasz Nowicki (tomasz.nowicki@linaro.org).

ACPICA termination: Added support to delete all objects attached to the root namespace node. This fix deletes any and all objects that have been attached to the root node via AcpiAttachData. Previously, none of these objects were deleted. Reported by Tomasz Nowicki. ACPICA BZ 1026.

Debug output: Do not emit the function nesting level for the in-kernel build. The nesting level is really only useful during a single-thread execution. Therefore, only enable this output for the AcpiExec utility.

Also, only emit the thread ID when executing under AcpiExec (Context switches are still always detected and a message is emitted). ACPICA BZ 972.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 95.9K Code, 27.0K Data, 122.9K Total
Debug Version: 185.1K Code, 77.2K Data, 262.3K Total
Previous Release:
Non-Debug Version: 95.8K Code, 27.0K Data, 122.8K Total
Debug Version: 185.2K Code, 77.2K Data, 262.4K Total

2) iASL Compiler/Disassembler and Tools:

AcpiExec/Unix-OSL: Use <termios.h> instead of <termio.h>. This is the correct portable POSIX header for terminal control functions.

Disassembler: Fixed control method invocation issues related to the use of the CondRefOf() operator. The problem is seen in the disassembly where control method invocations may not be disassembled properly if the control method name has been used previously as an argument to CondRefOf. The solution is to not attempt to emit an external declaration for the CondRefOf target (it is not necessary in the first place). This prevents disassembler object type confusion. ACPICA BZ 988.

Unix Makefiles: Added an option to disable compiler optimizations and the _FORTIFY_SOURCE flag. Some older compilers have problems compiling ACPICA with optimizations (reportedly, gcc 4.4 for example). This change adds a command line option for make (NOOPT) that disables all compiler optimizations and the _FORTIFY_SOURCE compiler flag. The default optimization is -O2 with the _FORTIFY_SOURCE flag specified. ACPICA BZ 1034. Lv Zheng, Bob Moore.

Tests/ASLTS: Added options to specify individual test cases and modes. This allows testers running aslts.sh to optionally specify individual test modes and test cases. Also added an option to disable the forced generation of the ACPICA tools from source if desired. Lv Zheng.

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27 September 2013. Summary of changes for version 20130927:

This release is available at https://acpica.org/downloads

1) ACPICA kernel-resident subsystem:

Fixed a problem with store operations to reference objects. This change
fixes a problem where a Store operation to an ArgX object that contained
a
reference to a field object did not complete the automatic dereference
and
then write to the actual field object. Instead, the object type of the
field object was inadvertently changed to match the type of the source
operand. The new behavior will actually write to the field object (buffer
field or field unit), thus matching the correct ACPI-defined behavior.

Implemented support to allow the host to redefine individual OSL
prototypes. This change enables the host to redefine OSL prototypes found
in the acpiosxf.h file. This allows the host to implement OSL interfaces
with a macro or inlined function. Further, it allows the host to add any
additional required modifiers such as __iomem, __init, __exit, etc., as
necessary on a per-interface basis. Enables maximum flexibility for the
OSL interfaces. Lv Zheng.

Hardcoded the access width for the FADT-defined reset register. The ACPI
specification requires the reset register width to be 8 bits. ACPICA now
hardcodes the width to 8 and ignores the FADT width value. This provides
compatibility with other ACPI implementations that have allowed BIOS code
with bad register width values to go unnoticed. Matthew Garett, Bob
Moore,
Lv Zheng.

Changed the position/use of the ACPI_PRINTF_LIKE macro. This macro is
used
in the OSL header (acpiosxf). The change modifies the position of this
macro in each instance where it is used (AcpiDebugPrint, etc.) to avoid
build issues if the OSL defines the implementation of the interface to be
an inline stub function. Lv Zheng.

Deployed a new macro ACPI_EXPORT_SYMBOL_INIT for the main ACPICA
initialization interfaces. This change adds a new macro for the main init
and terminate external interfaces in order to support hosts that require
additional or different processing for these functions. Changed from
ACPI_EXPORT_SYMBOL to ACPI_EXPORT_SYMBOL_INIT for these functions. Lv
Zheng, Bob Moore.

Cleaned up the memory allocation macros for configurability. In the
common
case, the ACPI_ALLOCATE and related macros now resolve directly to their
respective AcpiOs* OSL interfaces. Two options:
1) The ACPI_ALLOCATE_ZEROED macro uses a simple local implementation by

default, unless overridden by the USE_NATIVE_ALLOCATE_ZEROED define.
2) For AcpiExec (and for debugging), the macros can optionally be
resolved
to the local ACPICA interfaces that track each allocation (local tracking
is used to immediately detect memory leaks).
Lv Zheng.

Simplified the configuration for ACPI_REDUCED_HARDWARE. Allows the kernel
to predefine this macro to either TRUE or FALSE during the system build.

Replaced __FUNCTION_ with __func__ in the gcc-specific header.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a much larger code and data size.

Current Release:
Non-Debug Version: 95.8K Code, 27.0K Data, 122.8K Total
Debug Version: 185.2K Code, 77.2K Data, 262.4K Total
Previous Release:
Non-Debug Version: 96.7K Code, 27.1K Data, 123.9K Total
Debug Version: 184.4K Code, 76.8K Data, 261.2K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented wildcard support for the -e option. This simplifies use
when there are many SSDTs that must be included to resolve external
method
declarations. ACPICA BZ 1041. Example:
iasl -e ssdt*.dat -d dsdt.dat

AcpiExec: Add history/line-editing for Unix/Linux systems. This change
adds a portable module that implements full history and limited line
editing for Unix and Linux systems. It does not use readline() due to
portability issues. Instead it uses the POSIX termio interface to put the
terminal in raw input mode so that the various special keys can be
trapped
(such as up/down-arrow for history support and left/right-arrow for line
editing). Uses the existing debugger history mechanism. ACPICA BZ 1036.

AcpiXtract: Add support to handle (ignore) "empty" lines containing only
one or more spaces. This provides compatible with early or different
versions of the AcpiDump utility. ACPICA BZ 1044.

AcpiDump: Do not ignore tables that contain only an ACPI table header.
Apparently, some BIOSs create SSDTs that contain an ACPI table header but

no other data. This change adds support to dump these tables. Any tables shorter than the length of an ACPI table header remain in error (an error message is emitted). Reported by Yi Li.

Debugger: Echo actual command along with the "unknown command" message.

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23 August 2013. Summary of changes for version 20130823:

1) ACPICA kernel-resident subsystem:

Implemented support for host-installed System Control Interrupt (SCI) handlers. Certain ACPI functionality requires the host to handle raw SCIs. For example, the "SCI Doorbell" that is defined for memory power state support requires the host device driver to handle SCIs to examine if the doorbell has been activated. Multiple SCI handlers can be installed to allow for future expansion. New external interfaces are AcpiInstallSciHandler, AcpiRemoveSciHandler; see the ACPICA reference for details. Lv Zheng, Bob Moore. ACPICA BZ 1032.

Operation region support: Never locally free the handler "context" pointer. This change removes some dangerous code that attempts to free the handler context pointer in some (rare) circumstances. The owner of the handler owns this pointer and the ACPICA code should never touch it. Although not seen to be an issue in any kernel, it did show up as a problem (fault) under AcpiExec. Also, set the internal storage field for the context pointer to zero when the region is deactivated, simply for sanity. David Box. ACPICA BZ 1039.

AcpiRead: On error, do not modify the return value target location. If an error happens in the middle of a split 32/32 64-bit I/O operation, do not modify the target of the return value pointer. Makes the code consistent with the rest of ACPICA. Bjorn Helgaas.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 96.7K Code, 27.1K Data, 123.9K Total
Debug Version: 184.4K Code, 76.8K Data, 261.2K Total
Previous Release:
Non-Debug Version: 96.2K Code, 27.1K Data, 123.3K Total
Debug Version: 185.4K Code, 77.1K Data, 262.5K Total

2) iASL Compiler/Disassembler and Tools:

AcpiDump: Implemented several new features and fixed some problems:
1) Added support to dump the RSDP, RSDT, and XSDT tables.
2) Added support for multiple table instances (SSDT, UEFI).
3) Added option to dump "customized" (overridden) tables (-c).
4) Fixed a problem where some table filenames were improperly
constructed.
5) Improved some error messages, removed some unnecessary messages.

iASL: Implemented additional support for disassembly of ACPI tables that contain invocations of external control methods. The -fe<file> option allows the import of a file that specifies the external methods along with the required number of arguments for each -- allowing for the correct disassembly of the table. This is a workaround for a limitation of AML code where the disassembler often cannot determine the number of arguments required for an external control method and generates incorrect ASL code. See the iASL reference for details. ACPICA BZ 1030.

Debugger: Implemented a new command (paths) that displays the full pathnames (namepaths) and object types of all objects in the namespace. This is an alternative to the namespace command.

Debugger: Implemented a new command (sci) that invokes the SCI dispatch mechanism and any installed handlers.

iASL: Fixed a possible segfault for "too many parent prefixes" condition. This can occur if there are too many parent prefixes in a namepath (for example, ^^^^^^PCI0.ECRD). ACPICA BZ 1035.

Application OSLs: Set the return value for the PCI read functions. These functions simply return AE_OK, but should set the return value to zero also. This change implements this. ACPICA BZ 1038.

Debugger: Prevent possible command line buffer overflow. Increase the size of a couple of the debugger line buffers, and ensure that overflow cannot happen. ACPICA BZ 1037.

iASL: Changed to abort immediately on serious errors during the parsing phase. Due to the nature of ASL, there is no point in attempting to compile these types of errors, and they typically end up causing a cascade of hundreds of errors which obscure the original problem.

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25 July 2013. Summary of changes for version 20130725:

1) ACPICA kernel-resident subsystem:

Fixed a problem with the DerefOf operator where references to FieldUnits

and BufferFields incorrectly returned the parent object, not the actual value of the object. After this change, a dereference of a FieldUnit reference results in a read operation on the field to get the value, and likewise, the appropriate BufferField value is extracted from the target buffer.

Fixed a problem where the _WAK method could cause a fault under these circumstances: 1) Interpreter slack mode was not enabled, and 2) the _WAK method returned no value. The problem is rarely seen because most kernels run ACPICA in slack mode.

For the DerefOf operator, a fatal error now results if an attempt is made to dereference a reference (created by the Index operator) to a NULL package element. Provides compatibility with other ACPI implementations, and this behavior will be added to a future version of the ACPI specification.

The ACPI Power Management Timer (defined in the FADT) is now optional. This provides compatibility with other ACPI implementations and will appear in the next version of the ACPI specification. If there is no PM Timer on the platform, AcpiGetTimer returns AE_SUPPORT. An address of zero in the FADT indicates no PM timer.

Implemented a new interface for _OSI support, AcpiUpdateInterfaces. This allows the host to globally enable/disable all vendor strings, all feature strings, or both. Intended to be primarily used for debugging purposes only. Lv Zheng.

Expose the collected _OSI data to the host via a global variable. This data tracks the highest level vendor ID that has been invoked by the BIOS so that the host (and potentially ACPICA itself) can change behaviors based upon the age of the BIOS.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 96.2K Code, 27.1K Data, 123.3K Total
Debug Version: 184.4K Code, 76.8K Data, 261.2K Total
Previous Release:
Non-Debug Version: 95.9K Code, 26.9K Data, 122.8K Total
Debug Version: 184.1K Code, 76.7K Data, 260.8K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Created the following enhancements for the -so option (create
offset table):
1)Add offsets for the last nameseg in each namepath for every supported
object type
2)Add support for Processor, Device, Thermal Zone, and Scope objects
3)Add the actual AML opcode for the parent object of every supported
object type
4)Add support for the ZERO/ONE/ONES AML opcodes for integer objects

Disassembler: Emit all unresolved external symbols in a single block.
These are external references to control methods that could not be
resolved, and thus, the disassembler had to make a guess at the number of
arguments to parse.

iASL: The argument to the -T option (create table template) is now
optional. If not specified, the default table is a DSDT, typically the
most common case.

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26 June 2013. Summary of changes for version 20130626:

1) ACPICA kernel-resident subsystem:

Fixed an issue with runtime repair of the _CST object. Null or invalid
elements were not always removed properly. Lv Zheng.

Removed an arbitrary restriction of 256 GPEs per GPE block (such as the
FADT-defined GPE0 and GPE1). For GPE0, GPE1, and each GPE Block Device,
the maximum number of GPEs is 1016. Use of multiple GPE block devices
makes the system-wide number of GPEs essentially unlimited.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a much larger code and data size.

Current Release:
Non-Debug Version: 95.9K Code, 26.9K Data, 122.8K Total
Debug Version: 184.1K Code, 76.7K Data, 260.8K Total
Previous Release:
Non-Debug Version: 96.0K Code, 27.0K Data, 123.0K Total
Debug Version: 184.1K Code, 76.8K Data, 260.9K Total

2) iASL Compiler/Disassembler and Tools:

Portable AcpiDump: Implemented full support for the Linux and FreeBSD
hosts. Now supports Linux, FreeBSD, and Windows.

Disassembler: Added some missing types for the HEST and EINJ tables: "Set Error Type With Address", "CMCI", "MCE", and "Flush Cacheline".

iASL/Preprocessor: Implemented full support for nested #if/#else/#elif/#endif blocks. Allows arbitrary depth of nested blocks.

Disassembler: Expanded maximum output string length to 64K. Was 256 bytes max. The original purpose of this constraint was to limit the amount of debug output. However, the string function in question (UtPrintString) is now used for the disassembler also, where 256 bytes is insufficient. Reported by RehabMan@GitHub.

iASL/DataTables: Fixed some problems and issues with compilation of DMAR tables. ACPICA BZ 999. Lv Zheng.

iASL: Fixed a couple of error exit issues that could result in a "Could not delete <file>" message during ASL compilation.

AcpiDump: Allow "FADT" and "MADT" as valid table signatures, even though the actual signatures for these tables are "FACP" and "APIC", respectively.

AcpiDump: Added support for multiple UEFI tables. Only SSDT and UEFI tables are allowed to have multiple instances.

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17 May 2013. Summary of changes for version 20130517:

1) ACPICA kernel-resident subsystem:

Fixed a regression introduced in version 20130328 for _INI methods. This change fixes a problem introduced in 20130328 where _INI methods are no longer executed properly because of a memory block that was not initialized correctly. ACPICA BZ 1016. Tomasz Nowicki <tomasz.nowicki@linaro.org>.

Fixed a possible problem with the new extended sleep registers in the ACPI
5.0 FADT. Do not use these registers (even if populated) unless the HW-reduced bit is set in the FADT (as per the ACPI specification). ACPICA BZ 1020. Lv Zheng.

Implemented return value repair code for _CST predefined objects: Sort the
list and detect/remove invalid entries. ACPICA BZ 890. Lv Zheng.

Implemented a debug-only option to disable loading of SSDTs from the

RSDT/XSDT during ACPICA initialization. This can be useful for debugging ACPI problems on some machines. Set AcpiGbl_DisableSsdtTableLoad in acglobal.h - ACPICA BZ 1005. Lv Zheng.

Fixed some issues in the ACPICA initialization and termination code:
Tomasz Nowicki <tomasz.nowicki@linaro.org>
1) Clear events initialized flag upon event component termination. ACPICA BZ 1013.
2) Fixed a possible memory leak in GPE init error path. ACPICA BZ 1018.
3) Delete global lock pending lock during termination. ACPICA BZ 1012.
4) Clear debug buffer global on termination to prevent possible multiple delete. ACPICA BZ 1010.

Standardized all switch() blocks across the entire source base. After many
years, different formatting for switch() had crept in. This change makes the formatting of every switch block identical. ACPICA BZ 997. Chao Guan.

Split some files to enhance ACPICA modularity and configurability:
1) Split buffer dump routines into utilities/utbuffer.c
2) Split internal error message routines into utilities/uterror.c
3) Split table print utilities into tables/tbprint.c
4) Split iASL command-line option processing into asloptions.c

Makefile enhancements:
1) Support for all new files above.
2) Abort make on errors from any subcomponent. Chao Guan.
3) Add build support for Apple Mac OS X. Liang Qi.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 96.0K Code, 27.0K Data, 123.0K Total
Debug Version: 184.1K Code, 76.8K Data, 260.9K Total
Previous Release:
Non-Debug Version: 95.6K Code, 26.8K Data, 122.4K Total
Debug Version: 183.5K Code, 76.6K Data, 260.1K Total

2) iASL Compiler/Disassembler and Tools:

New utility: Implemented an easily portable version of the acpidump utility to extract ACPI tables from the system (or a file) in an ASCII hex
dump format. The top-level code implements the various command line

options, file I/O, and table dump routines. To port to a new host, only
three functions need to be implemented to get tables -- since this
functionality is OS-dependent. See the tools/acpidump/apmain.c module and
the ACPICA reference for porting instructions. ACPICA BZ 859. Notes:
1) The Windows version obtains the ACPI tables from the Registry.
2) The Linux version is under development.
3) Other hosts - If an OS-dependent module is submitted, it will be
distributed with ACPICA.

iASL: Fixed a regression for -D preprocessor option (define symbol). A
restructuring/change to the initialization sequence caused this option to
no longer work properly.

iASL: Implemented a mechanism to disable specific warnings and remarks.
Adds a new command line option, "-vw <messageid> as well as "#pragma
disable <messageid>". ACPICA BZ 989. Chao Guan, Bob Moore.

iASL: Fix for too-strict package object validation. The package object
validation for return values from the predefined names is a bit too
strict, it does not allow names references within the package (which will
be resolved at runtime.) These types of references cannot be validated at
compile time. This change ignores named references within package objects
for names that return or define static packages.

Debugger: Fixed the 80-character command line limitation for the History
command. Now allows lines of arbitrary length. ACPICA BZ 1000. Chao Guan.

iASL: Added control method and package support for the -so option
(generates AML offset table for BIOS support.)

iASL: issue a remark if a non-serialized method creates named objects. If
a thread blocks within the method for any reason, and another thread
enters the method, the method will fail because an attempt will be made
to
create the same (named) object twice. In this case, issue a remark that
the method should be marked serialized. NOTE: may become a warning later.
ACPICA BZ 909.

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18 April 2013. Summary of changes for version 20130418:

1) ACPICA kernel-resident subsystem:

Fixed a possible buffer overrun during some rare but specific field unit
read operations. This overrun can only happen if the DSDT version is 1 --
meaning that all AML integers are 32 bits -- and the field length is
between 33 and 55 bits long. During the read, an internal buffer object
is

created for the field unit because the field is larger than an integer
(32
bits). However, in this case, the buffer will be incorrectly written
beyond the end because the buffer length is less than the internal
minimum
of 64 bits (8 bytes) long. The buffer will be either 5, 6, or 7 bytes
long, but a full 8 bytes will be written.

Updated the Embedded Controller "orphan" _REG method support. This refers to _REG methods under the EC device that have no corresponding operation region. This is allowed by the ACPI specification. This update removes a dependency on the existence an ECDT table. It will execute an orphan _REG method as long as the operation region handler for the EC is installed at the EC device node and not the namespace root. Rui Zhang (original update), Bob Moore (update/integrate).

Implemented run-time argument typechecking for all predefined ACPI names (_STA, _BIF, etc.) This change performs object typechecking on all incoming arguments for all predefined names executed via AcpiEvaluateObject. This ensures that ACPI-related device drivers are passing correct object types as well as the correct number of arguments (therefore identifying any issues immediately). Also, the ASL/namespace definition of the predefined name is checked against the ACPI specification for the proper argument count. Adds one new file, nsarguments.c

Changed an exception code for the ASL UnLoad() operator. Changed the exception code for the case where the input DdbHandle is invalid, from AE_BAD_PARAMETER to the more appropriate AE_AML_OPERAND_TYPE.

Unix/Linux makefiles: Removed the use of the -O2 optimization flag in the global makefile. The use of this flag causes compiler errors on earlier versions of GCC, so it has been removed for compatibility.

Miscellaneous cleanup:
1) Removed some unused/obsolete macros
2) Fixed a possible memory leak in the _OSI support
3) Removed an unused variable in the predefined name support
4) Windows OSL: remove obsolete reference to a memory list field

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:
Non-Debug Version: 95.2K Code, 26.4K Data, 121.6K Total
Debug Version: 183.0K Code, 76.0K Data, 259.0K Total

Previous Release:
Non-Debug Version: 95.6K Code, 26.8K Data, 122.4K Total
Debug Version: 183.5K Code, 76.6K Data, 260.1K Total

2) iASL Compiler/Disassembler and Tools:

AcpiExec: Added installation of a handler for the SystemCMOS address space. This prevents control method abort if a method accesses this space.

AcpiExec: Added support for multiple EC devices, and now install EC operation region handler(s) at the actual EC device instead of the namespace root. This reflects the typical behavior of host operating systems.

AcpiExec: Updated to ensure that all operation region handlers are installed before the _REG methods are executed. This prevents a _REG method from aborting if it accesses an address space has no handler. AcpiExec installs a handler for every possible address space.

Debugger: Enhanced the "handlers" command to display non-root handlers. This change enhances the handlers command to display handlers associated with individual devices throughout the namespace, in addition to the currently supported display of handlers associated with the root namespace
node.

ASL Test Suite: Several test suite errors have been identified and resolved, reducing the total error count during execution. Chao Guan.

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28 March 2013. Summary of changes for version 20130328:

1) ACPICA kernel-resident subsystem:

Fixed several possible race conditions with the internal object reference counting mechanism. Some of the external ACPICA interfaces update object reference counts without holding the interpreter or namespace lock. This change adds a spinlock to protect reference count updates on the internal ACPICA objects. Reported by and with assistance from Andriy Gapon (avg@FreeBSD.org).

FADT support: Removed an extraneous warning for very large GPE register sets. This change removes a size mismatch warning if the legacy length field for a GPE register set is larger than the 64-bit GAS structure can accommodate. GPE register sets can be larger than the 255-bit width limitation of the GAS structure. Linn Crosetto (linn@hp.com).

_OSI Support: handle any errors from AcpiOsAcquireMutex. Check for error return from this interface. Handles a possible timeout case if ACPI_WAIT_FOREVER is modified by the host to be a value less than "forever". Jung-uk Kim.

Predefined name support: Add allowed/required argument type information to
the master predefined info table. This change adds the infrastructure to enable typechecking on incoming arguments for all predefined methods/objects. It does not actually contain the code that will fully utilize this information, this is still under development. Also condenses some duplicate code for the predefined names into a new module, utilities/utpredef.c

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:
Non-Debug Version: 95.0K Code, 25.9K Data, 120.9K Total
Debug Version: 182.9K Code, 75.6K Data, 258.5K Total
Current Release:
Non-Debug Version: 95.2K Code, 26.4K Data, 121.6K Total
Debug Version: 183.0K Code, 76.0K Data, 259.0K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented a new option to simplify the development of ACPI-related
BIOS code. Adds support for a new "offset table" output file. The -so option will create a C table containing the AML table offsets of various named objects in the namespace so that BIOS code can modify them easily at
boot time. This can simplify BIOS runtime code by eliminating expensive searches for "magic values", enhancing boot times and adding greater reliability. With assistance from Lee Hamel.

iASL: Allow additional predefined names to return zero-length packages. Now, all predefined names that are defined by the ACPI specification to return a "variable-length package of packages" are allowed to return a zero length top-level package. This allows the BIOS to tell the host that the requested feature is not supported, and supports existing BIOS/ASL code and practices.

iASL: Changed the "result not used" warning to an error. This is the case

where an ASL operator is effectively a NOOP because the result of the
operation is not stored anywhere. For example:
  Add (4, Local0)
There is no target (missing 3rd argument), nor is the function return
value used. This is potentially a very serious problem -- since the code
was probably intended to do something, but for whatever reason, the value
was not stored. Therefore, this issue has been upgraded from a warning to
an error.

AcpiHelp: Added allowable/required argument types to the predefined names
info display. This feature utilizes the recent update to the predefined
names table (above).

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14 February 2013. Summary of changes for version 20130214:

1) ACPICA Kernel-resident Subsystem:

Fixed a possible regression on some hosts: Reinstated the safe return
macros (return_ACPI_STATUS, etc.) that ensure that the argument is
evaluated only once. Although these macros are not needed for the ACPICA
code itself, they are often used by ACPI-related host device drivers
where
the safe feature may be necessary.

Fixed several issues related to the ACPI 5.0 reduced hardware support
(SOC): Now ensure that if the platform declares itself as hardware-
reduced
via the FADT, the following functions become NOOPs (and always return
AE_OK) because ACPI is always enabled by definition on these machines:
 AcpiEnable
 AcpiDisable
 AcpiHwGetMode
 AcpiHwSetMode

Dynamic Object Repair: Implemented additional runtime repairs for
predefined name return values. Both of these repairs can simplify code in
the related device drivers that invoke these methods:
1) For the _STR and _MLS names, automatically repair/convert an ASCII
string to a Unicode buffer.
2) For the _CRS, _PRS, and _DMA names, return a resource descriptor with
a
lone end tag descriptor in the following cases: A Return(0) was executed,
a null buffer was returned, or no object at all was returned (non-slack
mode only). Adds a new file, nsconvert.c
ACPICA BZ 998. Bob Moore, Lv Zheng.

Resource Manager: Added additional code to prevent possible infinite

loops
while traversing corrupted or ill-formed resource template buffers. Check for zero-length resource descriptors in all code that loops through resource templates (the length field is used to index through the template). This change also hardens the external AcpiWalkResources and AcpiWalkResourceBuffer interfaces.

Local Cache Manager: Enhanced the main data structure to eliminate an unnecessary mechanism to access the next object in the list. Actually provides a small performance enhancement for hosts that use the local ACPICA cache manager. Jung-uk Kim.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:
Non-Debug Version: 94.5K Code, 25.4K Data, 119.9K Total
Debug Version: 182.3K Code, 75.0K Data, 257.3K Total
Current Release:
Non-Debug Version: 95.0K Code, 25.9K Data, 120.9K Total
Debug Version: 182.9K Code, 75.6K Data, 258.5K Total

2) iASL Compiler/Disassembler and Tools:

iASL/Disassembler: Fixed several issues with the definition of the ACPI 5.0 RASF table (RAS Feature Table). This change incorporates late changes that were made to the ACPI 5.0 specification.

iASL/Disassembler: Added full support for the following new ACPI tables:
1) The MTMR table (MID Timer Table)
2) The VRTC table (Virtual Real Time Clock Table).
Includes header file, disassembler, table compiler, and template support for both tables.

iASL: Implemented compile-time validation of package objects returned by predefined names. This new feature validates static package objects returned by the various predefined names defined to return packages. Both object types and package lengths are validated, for both parent packages and sub-packages, if any. The code is similar in structure and behavior
to
the runtime repair mechanism within the AML interpreter and uses the existing predefined name information table. Adds a new file, aslprepkg.c. ACPICA BZ 938.

iASL: Implemented auto-detection of binary ACPI tables for disassembly.

This feature detects a binary file with a valid ACPI table header and
invokes the disassembler automatically. Eliminates the need to
specifically invoke the disassembler with the -d option. ACPICA BZ 862.

iASL/Disassembler: Added several warnings for the case where there are
unresolved control methods during the disassembly. This can potentially
cause errors when the output file is compiled, because the disassembler
assumes zero method arguments in these cases (it cannot determine the
actual number of arguments without resolution/definition of the method).

Debugger: Added support to display all resources with a single command.
Invocation of the resources command with no arguments will now display
all
resources within the current namespace.

AcpiHelp: Added descriptive text for each ACPICA exception code displayed
via the -e option.

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17 January 2013. Summary of changes for version 20130117:

1) ACPICA Kernel-resident Subsystem:

Updated the AcpiGetSleepTypeData interface: Allow the _Sx methods to
return either 1 or 2 integers. Although the ACPI spec defines the _Sx
objects to return a package containing one integer, most BIOS code
returns
two integers and the previous code reflects that. However, we also need
to
support BIOS code that actually implements to the ACPI spec, and this
change reflects this.

Fixed two issues with the ACPI_DEBUG_PRINT macros:
1) Added the ACPI_DO_WHILE macro to the main DEBUG_PRINT helper macro for
C compilers that require this support.
2) Renamed the internal ACPI_DEBUG macro to ACPI_DO_DEBUG_PRINT since
ACPI_DEBUG is already used by many of the various hosts.

Updated all ACPICA copyrights and signons to 2013. Added the 2013
copyright to all module headers and signons, including the standard Linux
header. This affects virtually every file in the ACPICA core subsystem,
iASL compiler, all ACPICA utilities, and the test suites.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a much larger code and data size.

Previous Release:
Non-Debug Version: 94.5K Code, 25.5K Data, 120.0K Total
Debug Version: 182.2K Code, 74.9K Data, 257.1K Total
Current Release:
Non-Debug Version: 94.5K Code, 25.4K Data, 119.9K Total
Debug Version: 182.3K Code, 75.0K Data, 257.3K Total

2) iASL Compiler/Disassembler and Tools:

Generic Unix OSL: Use a buffer to eliminate multiple vfprintf()s and prevent a possible fault on some hosts. Some C libraries modify the arg pointer parameter to vfprintf making it difficult to call it twice in the AcpiOsVprintf function. Use a local buffer to workaround this issue. This does not affect the Windows OSL since the Win C library does not modify the arg pointer. Chao Guan, Bob Moore.

iASL: Fixed a possible infinite loop when the maximum error count is reached. If an output file other than the .AML file is specified (such as a listing file), and the maximum number of errors is reached, do not attempt to flush data to the output file(s) as the compiler is aborting. This can cause an infinite loop as the max error count code essentially keeps calling itself.

iASL/Disassembler: Added an option (-in) to ignore NOOP opcodes/operators.
Implemented for both the compiler and the disassembler. Often, the NOOP opcode is used as padding for packages that are changed dynamically by the
BIOS. When disassembled and recompiled, these NOOPs will cause syntax errors. This option causes the disassembler to ignore all NOOP opcodes (0xA3), and it also causes the compiler to ignore all ASL source code NOOP
statements as well.

Debugger: Enhanced the Sleep command to execute all sleep states. This change allows Sleep to be invoked with no arguments and causes the debugger to execute all of the sleep states, 0-5, automatically.

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20 December 2012. Summary of changes for version 20121220:

1) ACPICA Kernel-resident Subsystem:

Implemented a new interface, AcpiWalkResourceBuffer. This interface is an alternate entry point for AcpiWalkResources and improves the usability of the resource manager by accepting as input a buffer containing the output of either a _CRS, _PRS, or _AEI method. The key functionality is that the

input buffer is not deleted by this interface so that it can be used by
the host later. See the ACPICA reference for details.

Interpreter: Add a warning if a 64-bit constant appears in a 32-bit table
(DSDT version < 2). The constant will be truncated and this warning
reflects that behavior.

Resource Manager: Add support for the new ACPI 5.0 wake bit in the IRQ,
ExtendedInterrupt, and GpioInt descriptors. This change adds support to
both get and set the new wake bit in these descriptors, separately from
the existing share bit. Reported by Aaron Lu.

Interpreter: Fix Store() when an implicit conversion is not possible. For
example, in the cases such as a store of a string to an existing package
object, implement the store as a CopyObject(). This is a small departure
from the ACPI specification which states that the control method should
be
aborted in this case. However, the ASLTS suite depends on this behavior.

Performance improvement for the various FUNCTION_TRACE and DEBUG_PRINT
macros: check if debug output is currently enabled as soon as possible to
minimize performance impact if debug is in fact not enabled.

Source code restructuring: Cleanup to improve modularity. The following
new files have been added: dbconvert.c, evhandler.c, nsprepkg.c,
psopinfo.c, psobject.c, rsdumpinfo.c, utstring.c, and utownerid.c.
Associated makefiles and project files have been updated.

Changed an exception code for LoadTable operator. For the case where one
of the input strings is too long, change the returned exception code from
AE_BAD_PARAMETER to AE_AML_STRING_LIMIT.

Fixed a possible memory leak in dispatcher error path. On error, delete
the mutex object created during method mutex creation. Reported by
tim.gardner@canonical.com.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a much larger code and data size.

Previous Release:
Non-Debug Version: 94.3K Code, 25.3K Data, 119.6K Total
Debug Version: 175.5K Code, 74.5K Data, 250.0K Total
Current Release:
Non-Debug Version: 94.5K Code, 25.5K Data, 120.0K Total
Debug Version: 182.2K Code, 74.9K Data, 257.1K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Disallow a method call as argument to the ObjectType ASL operator.
This change tracks an errata to the ACPI 5.0 document. The AML grammar
will not allow the interpreter to differentiate between a method and a
method invocation when these are used as an argument to the ObjectType
operator. The ACPI specification change is to disallow a method
invocation
(UserTerm) for the ObjectType operator.

Finish support for the TPM2 and CSRT tables in the headers, table
compiler, and disassembler.

Unix user-space OSL: Fix a problem with WaitSemaphore where the timeout
always expires immediately if the semaphore is not available. The
original
code was using a relative-time timeout, but sem_timedwait requires the
use
of an absolute time.

iASL: Added a remark if the Timer() operator is used within a 32-bit
table. This operator returns a 64-bit time value that will be truncated
within a 32-bit table.

iASL Source code restructuring: Cleanup to improve modularity. The
following new files have been added: aslhex.c, aslxref.c, aslnamesp.c,
aslmethod.c, and aslfileio.c. Associated makefiles and project files have
been updated.

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14 November 2012. Summary of changes for version 20121114:

1) ACPICA Kernel-resident Subsystem:

Implemented a performance enhancement for ACPI/AML Package objects. This
change greatly increases the performance of Package objects within the
interpreter. It changes the processing of reference counts for packages
by
optimizing for the most common case where the package sub-objects are
either Integers, Strings, or Buffers. Increases the overall performance
of
the ASLTS test suite by 1.5X (Increases the Slack Mode performance by
2X.)
Chao Guan. ACPICA BZ 943.

Implemented and deployed common macros to extract flag bits from resource

descriptors. Improves readability and maintainability of the code. Fixes
a
problem with the UART serial bus descriptor for the number of data bits
flags (was incorrectly 2 bits, should be 3).

Enhanced the ACPI_GETx and ACPI_SETx macros. Improved the implementation
of the macros and changed the SETx macros to the style of (destination,
source). Also added ACPI_CASTx companion macros. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a much larger code and data size.

Previous Release:
Non-Debug Version: 93.9K Code, 25.2K Data, 119.1K Total
Debug Version: 175.5K Code, 74.5K Data, 250.0K Total
Current Release:
Non-Debug Version: 94.3K Code, 25.3K Data, 119.6K Total
Debug Version: 175.5K Code, 74.5K Data, 250.0K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Added the new ACPI 5.0 interrupt sharing flags. This change
adds the ShareAndWake and ExclusiveAndWake flags which were added to the
Irq, Interrupt, and Gpio resource descriptors in ACPI 5.0. ACPICA BZ 986.

Disassembler: Fixed a problem with external declaration generation. Fixes
a problem where an incorrect pathname could be generated for an external
declaration if the original reference to the object includes leading
carats (^). ACPICA BZ 984.

Debugger: Completed a major update for the Disassemble<method> command.
This command was out-of-date and did not properly disassemble control
methods that had any reasonable complexity. This fix brings the command
up
to the same level as the rest of the disassembler. Adds one new file,
dmdeferred.c, which is existing code that is now common with the main
disassembler and the debugger disassemble command. ACPICA MZ 978.

iASL: Moved the parser entry prototype to avoid a duplicate declaration.
Newer versions of Bison emit this prototype, so moved the prototype out
of
the iASL header to where it is actually used in order to avoid a
duplicate
declaration.

iASL/Tools: Standardized use of the stream I/O functions:
1) Ensure check for I/O error after every fopen/fread/fwrite
2) Ensure proper order of size/count arguments for fread/fwrite
3) Use test of (Actual != Requested) after all fwrite, and most fread
4) Standardize I/O error messages
Improves reliability and maintainability of the code. Bob Moore, Lv Zheng.
ACPICA BZ 981.

Disassembler: Prevent duplicate External() statements. During generation of external statements, detect similar pathnames that are actually duplicates such as these:
External (\ABCD)
External (ABCD)
Remove all leading '\' characters from pathnames during the external statement generation so that duplicates will be detected and tossed.
ACPICA BZ 985.

Tools: Replace low-level I/O with stream I/O functions. Replace open/read/write/close with the stream I/O equivalents fopen/fread/fwrite/fclose for portability and performance. Lv Zheng, Bob Moore.

AcpiBin: Fix for the dump-to-hex function. Now correctly output the table name header so that AcpiXtract recognizes the output file/table.

iASL: Remove obsolete -2 option flag. Originally intended to force the compiler/disassembler into an ACPI 2.0 mode, this was never implemented and the entire concept is now obsolete.

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18 October 2012. Summary of changes for version 20121018:

1) ACPICA Kernel-resident Subsystem:

Updated support for the ACPI 5.0 MPST table. Fixes some problems introduced by late changes to the table as it was added to the ACPI 5.0 specification. Includes header, disassembler, and data table compiler support as well as a new version of the MPST template.

AcpiGetObjectInfo: Enhanced the device object support to include the ACPI 5.0 _SUB method. Now calls _SUB in addition to the other PNP-related ID methods: _HID, _CID, and _UID.

Changed ACPI_DEVICE_ID to ACPI_PNP_DEVICE_ID. Also changed ACPI_DEVICE_ID_LIST to ACPI_PNP_DEVICE_ID_LIST. These changes prevent name collisions on hosts that reserve the *_DEVICE_ID (or *DeviceId)

names for their various drivers. Affects the AcpiGetObjectInfo external interface, and other internal interfaces as well.

Added and deployed a new macro for ACPI_NAME management: ACPI_MOVE_NAME. This macro resolves to a simple 32-bit move of the 4-character ACPI_NAME on machines that support non-aligned transfers. Optimizes for this case rather than using a strncpy. With assistance from Zheng Lv.

Resource Manager: Small fix for buffer size calculation. Fixed a one byte error in the output buffer calculation. Feng Tang. ACPICA BZ 849.

Added a new debug print message for AML mutex objects that are force-released. At control method termination, any currently acquired mutex objects are force-released. Adds a new debug-only message for each one that is released.

Audited/updated all ACPICA return macros and the function debug depth counter: 1) Ensure that all functions that use the various TRACE macros also use the appropriate ACPICA return macros. 2) Ensure that all normal return statements surround the return expression (value) with parens to ensure consistency across the ACPICA code base. Guan Chao, Tang Feng, Zheng Lv, Bob Moore. ACPICA Bugzilla 972.

Global source code changes/maintenance: All extra lines at the start and end of each source file have been removed for consistency. Also, within comments, all new sentences start with a single space instead of a double space, again for consistency across the code base.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:
Non-Debug Version: 93.7K Code, 25.3K Data, 119.0K Total
Debug Version: 175.0K Code, 74.4K Data, 249.4K Total
Current Release:
Non-Debug Version: 93.9K Code, 25.2K Data, 119.1K Total
Debug Version: 175.5K Code, 74.5K Data, 250.0K Total

2) iASL Compiler/Disassembler and Tools:

AcpiExec: Improved the algorithm used for memory leak/corruption detection. Added some intelligence to the code that maintains the global list of allocated memory. The list is now ordered by allocated memory address, significantly improving performance. When running AcpiExec on the ASLTS test suite, speed improvements of 3X to 5X are seen, depending

on the platform and/or the environment. Note, this performance
enhancement affects the AcpiExec utility only, not the kernel-resident
ACPICA code.

Enhanced error reporting for invalid AML opcodes and bad ACPI_NAMEs. For
the disassembler, dump the 48 bytes surrounding the invalid opcode. Fix
incorrect table offset reported for invalid opcodes. Report the original
32-bit value for bad ACPI_NAMEs (as well as the repaired name.)

Disassembler: Enhanced the -vt option to emit the binary table data in
hex format to assist with debugging.

Fixed a potential filename buffer overflow in osunixdir.c. Increased the
size of file structure. Colin Ian King.

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13 September 2012. Summary of changes for version 20120913:

1) ACPICA Kernel-resident Subsystem:

ACPI 5.0: Added two new notify types for the Hardware Error Notification
Structure within the Hardware Error Source Table (HEST) table -- CMCI(5)
and
MCE(6).

Table Manager: Merged/removed duplicate code in the root table resize
functions. One function is external, the other is internal. Lv Zheng,
ACPICA
BZ 846.

Makefiles: Completely removed the obsolete "Linux" makefiles under
acpica/generate/linux. These makefiles are obsolete and have been
replaced
by
the generic unix makefiles under acpica/generate/unix.

Makefiles: Ensure that binary files always copied properly. Minor rule
change
to ensure that the final binary output files are always copied up to the
appropriate binary directory (bin32 or bin64.)

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug
version of the code includes the debug output trace mechanism and has a
much
larger code and data size.

Previous Release:
Non-Debug Version: 93.8K Code, 25.3K Data, 119.1K Total
Debug Version: 175.7K Code, 74.8K Data, 250.5K Total
Current Release:
Non-Debug Version: 93.7K Code, 25.3K Data, 119.0K Total
Debug Version: 175.0K Code, 74.4K Data, 249.4K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed a possible fault during the disassembly of resource descriptors when a second parse is required because of the invocation of external control methods within the table. With assistance from adq@lidskialf.net. ACPICA BZ 976.

iASL: Fixed a namepath optimization problem. An error can occur if the parse
node that contains the namepath to be optimized does not have a parent node
that is a named object. This change fixes the problem.

iASL: Fixed a regression where the AML file is not deleted on errors. The AML
output file should be deleted if there are any errors during the compiler.
The
only exception is if the -f (force output) option is used. ACPICA BZ 974.

iASL: Added a feature to automatically increase internal line buffer sizes.
Via realloc(), automatically increase the internal line buffer sizes as necessary to support very long source code lines. The current version of the
preprocessor requires a buffer long enough to contain full source code lines.
This change increases the line buffer(s) if the input lines go beyond the current buffer size. This eliminates errors that occurred when a source code
line was longer than the buffer.

iASL: Fixed a problem with constant folding in method declarations. The SyncLevel term is a ByteConstExpr, and incorrect code would be generated if a
Type3 opcode was used.

Debugger: Improved command help support. For incorrect argument count, display

full help for the command. For help command itself, allow an argument to specify a command.

Test Suites: Several bug fixes for the ASLTS suite reduces the number of errors during execution of the suite. Guan Chao.

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16 August 2012. Summary of changes for version 20120816:

1) ACPICA Kernel-resident Subsystem:

Removed all use of the deprecated _GTS and _BFS predefined methods. The _GTS (Going To Sleep) and _BFS (Back From Sleep) methods are essentially deprecated and will probably be removed from the ACPI specification. Windows does not invoke them, and reportedly never will. The final nail in the coffin is that the ACPI specification states that these methods must be run with interrupts off, which is not going to happen in a kernel interpreter. Note: Linux has removed all use of the methods also. It was discovered that invoking these functions caused failures on some machines, probably because they were never tested since Windows does not call them. Affects two external interfaces, AcpiEnterSleepState and AcpiLeaveSleepStatePrep. Tang Feng. ACPICA BZ 969.

Implemented support for complex bit-packed buffers returned from the _PLD (Physical Location of Device) predefined method. Adds a new external interface, AcpiDecodePldBuffer that parses the buffer into a more usable C structure. Note: C Bitfields cannot be used for this type of predefined structure since the memory layout of individual bitfields is not defined by the C language. In addition, there are endian concerns where a compiler will change the bitfield ordering based on the machine type. The new ACPICA interface eliminates these issues, and should be called after _PLD is executed. ACPICA BZ 954.

Implemented a change to allow a scope change to root (via "Scope (\)") during execution of module-level ASL code (code that is executed at table load time.) Lin Ming.

Added the Windows8/Server2012 string for the _OSI method. This change adds
a
new _OSI string, "Windows 2012" for both Windows 8 and Windows Server 2012.

Added header support for the new ACPI tables DBG2 (Debug Port Table Type 2)
and CSRT (Core System Resource Table).

Added struct header support for the _FDE, _GRT, _GTM, and _SRT predefined names. This simplifies access to the buffers returned by these predefined names. Adds a new file, include/acbuffer.h. ACPICA BZ 956.

GPE support: Removed an extraneous parameter from the various low-level internal GPE functions. Tang Feng.

Removed the linux makefiles from the unix packages. The generate/linux makefiles are obsolete and have been removed from the unix tarball release
packages. The replacement makefiles are under generate/unix, and there is a
top-level makefile under the main acpica directory. ACPICA BZ 967, 912.

Updates for Unix makefiles:
1) Add -D_FORTIFY_SOURCE=2 for gcc generation. Arjan van de Ven.
2) Update linker flags (move to end of command line) for AcpiExec utility.
Guan Chao.

Split ACPICA initialization functions to new file, utxfinit.c. Split from utxface.c to improve modularity and reduce file size.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 93.5K Code, 25.3K Data, 118.8K Total
Debug Version: 173.7K Code, 74.0K Data, 247.7K Total
Current Release:
Non-Debug Version: 93.8K Code, 25.3K Data, 119.1K Total
Debug Version: 175.7K Code, 74.8K Data, 250.5K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a problem with constant folding for fixed-length constant expressions. The constant-folding code was not being invoked for constant expressions that allow the use of type 3/4/5 opcodes to generate constants
for expressions such as ByteConstExpr, WordConstExpr, etc. This could result
in the generation of invalid AML bytecode. ACPICA BZ 970.

iASL: Fixed a generation issue on newer versions of Bison. Newer versions apparently automatically emit some of the necessary externals. This change
handles these versions in order to eliminate generation warnings.

Disassembler: Added support to decode the DBG2 and CSRT ACPI tables.

Disassembler: Add support to decode _PLD buffers. The decoded buffer appears
within comments in the output file.

Debugger: Fixed a regression with the "Threads" command where AE_BAD_PARAMETER was always returned.

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11 July 2012. Summary of changes for version 20120711:

1) ACPICA Kernel-resident Subsystem:

Fixed a possible fault in the return package object repair code. Fixes a problem that can occur when a lone package object is wrapped with an outer
package object in order to force conformance to the ACPI specification. Can
affect these predefined names: _ALR, _MLS, _PSS, _TRT, _TSS, _PRT, _HPX, _DLM,
_CSD, _PSD, _TSD.

Removed code to disable/enable bus master arbitration (ARB_DIS bit in the PM2_CNT register) in the ACPICA sleep/wake interfaces. Management of the ARB_DIS bit must be implemented in the host-dependent C3 processor power state
support. Note, ARB_DIS is obsolete and only applies to older chipsets, both
Intel and other vendors. (for Intel: ICH4-M and earlier)

This change removes the code to disable/enable bus master arbitration during
suspend/resume. Use of the ARB_DIS bit in the optional PM2_CNT register

causes
resume problems on some machines. The change has been in use for over seven
years within Linux.

Implemented two new external interfaces to support host-directed dynamic ACPI
table load and unload. They are intended to simplify the host implementation
of hot-plug support:
 AcpiLoadTable: Load an SSDT from a buffer into the namespace.
 AcpiUnloadParentTable: Unload an SSDT via a named object owned by the table.
See the ACPICA reference for additional details. Adds one new file,
components/tables/tbxfload.c

Implemented and deployed two new interfaces for errors and warnings that are
known to be caused by BIOS/firmware issues:
 AcpiBiosError: Prints "ACPI Firmware Error" message.
 AcpiBiosWarning: Prints "ACPI Firmware Warning" message.
Deployed these new interfaces in the ACPICA Table Manager code for ACPI table
and FADT errors. Additional deployment to be completed as appropriate in the
future. The associated conditional macros are ACPI_BIOS_ERROR and
ACPI_BIOS_WARNING. See the ACPICA reference for additional details.
ACPICA
BZ
843.

Implicit notify support: ensure that no memory allocation occurs within a
critical region. This fix moves a memory allocation outside of the time that a
spinlock is held. Fixes issues on systems that do not allow this behavior.
Jung-uk Kim.

Split exception code utilities and tables into a new file,
utilities/utexcep.c

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug
version of the code includes the debug output trace mechanism and has a much
larger code and data size.

Previous Release:
Non-Debug Version: 93.1K Code, 25.1K Data, 118.2K Total
Debug Version: 172.9K Code, 73.6K Data, 246.5K Total
Current Release:
Non-Debug Version: 93.5K Code, 25.3K Data, 118.8K Total
Debug Version: 173.7K Code, 74.0K Data, 247.7K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a parser problem for hosts where EOF is defined as -1 instead of
0. Jung-uk Kim.

Debugger: Enhanced the "tables" command to emit additional information about
the current set of ACPI tables, including the owner ID and flags decode.

Debugger: Reimplemented the "unload" command to use the new
AcpiUnloadParentTable external interface. This command was disable previously
due to need for an unload interface.

AcpiHelp: Added a new option to decode ACPICA exception codes. The -e option
will decode 16-bit hex status codes (ACPI_STATUS) to name strings.

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20 June 2012. Summary of changes for version 20120620:

1) ACPICA Kernel-resident Subsystem:

Implemented support to expand the "implicit notify" feature to allow multiple
devices to be notified by a single GPE. This feature automatically generates a
runtime device notification in the absence of a BIOS-provided GPE control
method (_Lxx/_Exx) or a host-installed handler for the GPE. Implicit notify is
provided by ACPICA for Windows compatibility, and is a workaround for BIOS
AML
code errors. See the description of the AcpiSetupGpeForWake interface in the
APCICA reference. Bob Moore, Rafael Wysocki. ACPICA BZ 918.

Changed some comments and internal function names to simplify and ensure

correctness of the Linux code translation. No functional changes.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug
version of the code includes the debug output trace mechanism and has a much
larger code and data size.

Previous Release:
Non-Debug Version: 93.0K Code, 25.1K Data, 118.1K Total
Debug Version: 172.7K Code, 73.6K Data, 246.3K Total
Current Release:
Non-Debug Version: 93.1K Code, 25.1K Data, 118.2K Total
Debug Version: 172.9K Code, 73.6K Data, 246.5K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Added support to emit short, commented descriptions for the ACPI
predefined names in order to improve the readability of the disassembled output. ACPICA BZ 959. Changes include:
1) Emit descriptions for all standard predefined names (_INI, _STA, _PRW,
etc.)
2) Emit generic descriptions for the special names (_Exx, _Qxx, etc.)
3) Emit descriptions for the resource descriptor names (_MIN, _LEN, etc.)

AcpiSrc: Fixed several long-standing Linux code translation issues. Argument
descriptions in function headers are now translated properly to lower case
and
underscores. ACPICA BZ 961. Also fixes translation problems such as these:
(old -> new)
i_aSL -> iASL
00-7_f -> 00-7F
16_k -> 16K
local_fADT -> local_FADT
execute_oSI -> execute_OSI

iASL: Fixed a problem where null bytes were inadvertently emitted into some
listing files.

iASL: Added the existing debug options to the standard help screen. There are
no longer two different help screens. ACPICA BZ 957.

AcpiHelp: Fixed some typos in the various predefined name descriptions. Also
expand some of the descriptions where appropriate.

iASL: Fixed the -ot option (display compile times/statistics). Was not working
properly for standard output; only worked for the debug file case.

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18 May 2012. Summary of changes for version 20120518:

1) ACPICA Core Subsystem:

Added a new OSL interface, AcpiOsWaitEventsComplete. This interface is defined
to block until asynchronous events such as notifies and GPEs have completed.
Within ACPICA, it is only called before a notify or GPE handler is
removed/uninstalled. It also may be useful for the host OS within related
drivers such as the Embedded Controller driver. See the ACPICA reference for
additional information. ACPICA BZ 868.

ACPI Tables: Added a new error message for a possible overflow failure during
the conversion of FADT 32-bit legacy register addresses to internal common
64-
bit GAS structure representation. The GAS has a one-byte "bit length" field,
thus limiting the register length to 255 bits. ACPICA BZ 953.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug
version of the code includes the debug output trace mechanism and has a much
larger code and data size.

Previous Release:
Non-Debug Version: 92.9K Code, 25.0K Data, 117.9K Total
Debug Version: 172.6K Code, 73.4K Data, 246.0K Total
Current Release:

Non-Debug Version: 93.0K Code, 25.1K Data, 118.1K Total
Debug Version: 172.7K Code, 73.6K Data, 246.3K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Added the ACPI 5.0 "PCC" keyword for use in the Register() ASL macro.
This keyword was added late in the ACPI 5.0 release cycle and was not implemented until now.

Disassembler: Added support for Operation Region externals. Adds missing support for operation regions that are defined in another table, and referenced locally via a Field or BankField ASL operator. Now generates the
correct External statement.

Disassembler: Several additional fixes for the External() statement generation
related to some ASL operators. Also, order the External() statements alphabetically in the disassembler output. Fixes the External() generation
for
the Create* field, Alias, and Scope operators:
1) Create* buffer field operators - fix type mismatch warning on disassembly
2) Alias - implement missing External support
3) Scope - fix to make sure all necessary externals are emitted.

iASL: Improved pathname support. For include files, merge the prefix pathname
with the file pathname and eliminate unnecessary components. Convert backslashes in all pathnames to forward slashes, for readability. Include file
pathname changes affect both #include and Include() type operators.

iASL/DTC/Preprocessor: Gracefully handle early EOF. Handle an EOF at the end
of a valid line by inserting a newline and then returning the EOF during the
next call to GetNextLine. Prevents the line from being ignored due to EOF condition.

iASL: Implemented some changes to enhance the IDE support (-vi option.) Error
and Warning messages are now correctly recognized for both the source code
browser and the global error and warning counts.

---
20 April 2012. Summary of changes for version 20120420:

1) ACPICA Core Subsystem:

Implemented support for multiple notify handlers. This change adds support
to
allow multiple system and device notify handlers on Device, Thermal Zone, and
Processor objects. This can simplify the host OS notification implementation.
Also re-worked and restructured the entire notify support code to simplify
handler installation, handler removal, notify event queuing, and notify
dispatch to handler(s). Note: there can still only be two global notify
handlers - one for system notifies and one for device notifies. There are no
changes to the existing handler install/remove interfaces. Lin Ming, Bob
Moore, Rafael Wysocki.

Fixed a regression in the package repair code where the object reference
count was calculated incorrectly. Regression was introduced in the commit
"Support to add Package wrappers".

Fixed a couple possible memory leaks in the AML parser, in the error recovery
path. Jesper Juhl, Lin Ming.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 92.9K Code, 25.0K Data, 117.9K Total
Debug Version: 172.5K Code, 73.2K Data, 245.7K Total
Current Release:
Non-Debug Version: 92.9K Code, 25.0K Data, 117.9K Total
Debug Version: 172.6K Code, 73.4K Data, 246.0K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a problem with the resource descriptor support where the

length
of the StartDependentFn and StartDependentFnNoPrio descriptors were not
included in cumulative descriptor offset, resulting in incorrect values
for
resource tags within resource descriptors appearing after a
StartDependent*
descriptor. Reported by Petr Vandrovec. ACPICA BZ 949.

iASL and Preprocessor: Implemented full support for the #line directive
to
correctly track original source file line numbers through the .i
preprocessor
output file - for error and warning messages.

iASL: Expand the allowable byte constants for address space IDs.
Previously,
the allowable range was 0x80-0xFF (user-defined spaces), now the range is
0x0A-0xFF to allow for custom and new IDs without changing the compiler.

iASL: Add option to treat all warnings as errors (-we). ACPICA BZ 948.

iASL: Add option to completely disable the preprocessor (-Pn).

iASL: Now emit all error/warning messages to standard error (stderr) by
default (instead of the previous stdout).

ASL Test Suite (ASLTS): Reduce iASL warnings due to use of Switch().
Update
for resource descriptor offset fix above. Update/cleanup error output
routines. Enable and send iASL errors/warnings to an error logfile
(error.txt). Send all other iASL output to a logfile (compiler.txt).
Fixed
several extraneous "unrecognized operator" messages.

---
20 March 2012. Summary of changes for version 20120320:

1) ACPICA Core Subsystem:

Enhanced the sleep/wake interfaces to optionally execute the _GTS method
(Going To Sleep) and the _BFS method (Back From Sleep). Windows
apparently
does not execute these methods, and therefore these methods are often
untested. It has been seen on some systems where the execution of these
methods causes errors and also prevents the machine from entering S5. It
is
therefore suggested that host operating systems do not execute these

methods
by default. In the future, perhaps these methods can be optionally
executed
based on the age of the system and/or what is the newest version of
Windows
that the BIOS asks for via _OSI. Changed interfaces: AcpiEnterSleepState
and
AcpileaveSleepStatePrep. See the ACPICA reference and Linux BZ 13041. Lin
Ming.

Fixed a problem where the length of the local/common FADT was set too
early.
The local FADT table length cannot be set to the common length until the
original length has been examined. There is code that checks the table
length
and sets various fields appropriately. This can affect older machines
with
early FADT versions. For example, this can cause inadvertent writes to
the
CST_CNT register. Julian Anastasov.

Fixed a mapping issue related to a physical table override. Use the
deferred
mapping mechanism for tables loaded via the physical override OSL
interface.
This allows for early mapping before the virtual memory manager is
available.
Thomas Renninger, Bob Moore.

Enhanced the automatic return-object repair code: Repair a common problem
with
predefined methods that are defined to return a variable-length Package
of
sub-objects. If there is only one sub-object, some BIOS ASL code
mistakenly
simply returns the single object instead of a Package with one sub-
object.
This new support will repair this error by wrapping a Package object
around
the original object, creating the correct and expected Package with one
sub-
object. Names that can be repaired in this manner include: _ALR, _CSD,
_HPX,
_MLS, _PLD, _PRT, _PSS, _TRT, _TSS, _BCL, _DOD, _FIX, and _Sx. ACPICA BZ
939.

Changed the exception code returned for invalid ACPI paths passed as
parameters to external interfaces such as AcpiEvaluateObject. Was

AE_BAD_PARAMETER, now is the more sensible AE_BAD_PATHNAME.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug
version of the code includes the debug output trace mechanism and has a much
larger code and data size.

Previous Release:
Non-Debug Version: 93.0K Code, 25.0K Data, 118.0K Total
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Current Release:
Non-Debug Version: 92.9K Code, 25.0K Data, 117.9K Total
Debug Version: 172.5K Code, 73.2K Data, 245.7K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Added the infrastructure and initial implementation of a integrated C-
like preprocessor. This will simplify BIOS development process by eliminating
the need for a separate preprocessing step during builds. On Windows, it also
eliminates the need to install a separate C compiler. ACPICA BZ 761. Some features including full #define() macro support are still under development.
These preprocessor directives are supported:
#define
#elif
#else
#endif
#error
#if
#ifdef
#ifndef
#include
#pragma message
#undef
#warning
In addition, these new command line options are supported:
-D <symbol> Define symbol for preprocessor use
-li Create preprocessed output file (*.i)
-P Preprocess only and create preprocessor output file (*.i)

Table Compiler: Fixed a problem where the equals operator within an expression

did not work properly.

Updated iASL to use the current versions of Bison/Flex. Updated the Windows
project file to invoke these tools from the standard location. ACPICA BZ 904.
Versions supported:
  Flex for Windows: V2.5.4
  Bison for Windows: V2.4.1

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15 February 2012. Summary of changes for version 20120215:

1) ACPICA Core Subsystem:

There have been some major changes to the sleep/wake support code, as described below (a - e).

a) The AcpiLeaveSleepState has been split into two interfaces, similar to AcpiEnterSleepStatePrep and AcpiEnterSleepState. The new interface is AcpiLeaveSleepStatePrep. This allows the host to perform actions between the
time the _BFS method is called and the _WAK method is called. NOTE: all hosts
must update their wake/resume code or else sleep/wake will not work properly.
Rafael Wysocki.

b) In AcpiLeaveSleepState, now enable all runtime GPEs before calling the _WAK
method. Some machines require that the GPEs are enabled before the _WAK method
is executed. Thomas Renninger.

c) In AcpiLeaveSleepState, now always clear the WAK_STS (wake status) bit.
Some BIOS code assumes that WAK_STS will be cleared on resume and use it to
determine whether the system is rebooting or resuming. Matthew Garrett.

d) Move the invocations of _GTS (Going To Sleep) and _BFS (Back From Sleep) to
match the ACPI specification requirement. Rafael Wysocki.

e) Implemented full support for the ACPI 5.0 SleepStatus and SleepControl registers within the V5 FADT. This support adds two new files:
hardware/hwesleep.c implements the support for the new registers. Moved

all
sleep/wake external interfaces to hardware/hwxfsleep.c.

Added a new OSL interface for ACPI table overrides,
AcpiOsPhysicalTableOverride. This interface allows the host to override a
table via a physical address, instead of the logical address required by
AcpiOsTableOverride. This simplifies the host implementation. Initial
implementation by Thomas Renninger. The ACPICA implementation creates a
single
shared function for table overrides that attempts both a logical and a
physical override.

Expanded the OSL memory read/write interfaces to 64-bit data
(AcpiOsReadMemory, AcpiOsWriteMemory.) This enables full 64-bit memory
transfer support for GAS register structures passed to AcpiRead and
AcpiWrite.

Implemented the ACPI_REDUCED_HARDWARE option to allow the creation of a
custom
build of ACPICA that supports only the ACPI 5.0 reduced hardware (SoC)
model.
See the ACPICA reference for details. ACPICA BZ 942. This option removes
about
10% of the code and 5% of the static data, and the following hardware
ACPI
features become unavailable:
  PM Event and Control registers
  SCI interrupt (and handler)
  Fixed Events
  General Purpose Events (GPEs)
  Global Lock
  ACPI PM timer
  FACS table (Waking vectors and Global Lock)

Updated the unix tarball directory structure to match the ACPICA git
source
tree. This ensures that the generic unix makefiles work properly (in
generate/unix). Also updated the Linux makefiles to match. ACPICA BZ
867.

Updated the return value of the _REV predefined method to integer value 5
to
reflect ACPI 5.0 support.

Moved the external ACPI PM timer interface prototypes to the public
acpixf.h
file where they belong.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug
version of the code includes the debug output trace mechanism and has a much
larger code and data size.

Previous Release:
Non-Debug Version: 92.8K Code, 24.9K Data, 117.7K Total
Debug Version: 171.7K Code, 72.9K Data, 244.5K Total
Current Release:
Non-Debug Version: 93.0K Code, 25.0K Data, 118.0K Total
Debug Version: 172.5K Code, 73.2K Data, 245.7K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed a problem with the new ACPI 5.0 serial resource descriptors (I2C, SPI, UART) where the resource produce/consumer bit was incorrectly displayed.

AcpiHelp: Add display of ACPI/PNP device IDs that are defined in the ACPI specification.

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11 January 2012. Summary of changes for version 20120111:

1) ACPICA Core Subsystem:

Implemented a new mechanism to allow host device drivers to check for address
range conflicts with ACPI Operation Regions. Both SystemMemory and SystemIO
address spaces are supported. A new external interface, AcpiCheckAddressRange,
allows drivers to check an address range against the ACPI namespace. See the
ACPICA reference for additional details. Adds one new file, utilities/utaddress.c. Lin Ming, Bob Moore.

Fixed several issues with the ACPI 5.0 FADT support: Add the sleep Control
and
Status registers, update the ACPI 5.0 flags, and update internal data structures to handle an FADT larger than 256 bytes. The size of the ACPI 5.0

FADT is 268 bytes.

Updated all ACPICA copyrights and signons to 2012. Added the 2012 copyright to
all module headers and signons, including the standard Linux header. This affects virtually every file in the ACPICA core subsystem, iASL compiler, and
all ACPICA utilities.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug
version of the code includes the debug output trace mechanism and has a much
larger code and data size.

Previous Release:
Non-Debug Version: 92.3K Code, 24.9K Data, 117.2K Total
Debug Version: 170.8K Code, 72.6K Data, 243.4K Total
Current Release:
Non-Debug Version: 92.8K Code, 24.9K Data, 117.7K Total
Debug Version: 171.7K Code, 72.9K Data, 244.5K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: fixed a problem with the automatic resource tag generation support. Fixes a problem where the resource tags are inadvertently not constructed if the table being disassembled contains external references to
control methods. Moved the actual construction of the tags to after the final
namespace is constructed (after 2nd parse is invoked due to external control
method references.) ACPICA BZ 941.

Table Compiler: Make all "generic" operators caseless. These are the operators
like UINT8, String, etc. Making these caseless improves ease-of-use. ACPICA BZ
934.

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23 November 2011. Summary of changes for version 20111123:

0) ACPI 5.0 Support:

This release contains full support for the ACPI 5.0 specification, as

summarized below.

Reduced Hardware Support:

This support allows for ACPI systems without the usual ACPI hardware. This
support is enabled by a flag in the revision 5 FADT. If it is set, ACPICA will
not attempt to initialize or use any of the usual ACPI hardware. Note, when
this flag is set, all of the following ACPI hardware is assumed to be not
present and is not initialized or accessed:

  General Purpose Events (GPEs)
  Fixed Events (PM1a/PM1b and PM Control)
  Power Management Timer and Console Buttons (power/sleep)
  Real-time Clock Alarm
  Global Lock
  System Control Interrupt (SCI)
  The FACS is assumed to be non-existent

ACPI Tables:

All new tables and updates to existing tables are fully supported in the
ACPICA headers (for use by device drivers), the disassembler, and the iASL
Data Table Compiler. ACPI 5.0 defines these new tables:

```
  BGRT       /* Boot Graphics Resource Table */
  DRTM       /* Dynamic Root of Trust for Measurement table */
  FPDT       /* Firmware Performance Data Table */
  GTDT       /* Generic Timer Description Table */
  MPST       /* Memory Power State Table */
  PCCT       /* Platform Communications Channel Table */
  PMTT       /* Platform Memory Topology Table */
  RASF       /* RAS Feature table */
```

Operation Regions/SpaceIDs:

All new operation regions are fully supported by the iASL compiler, the
disassembler, and the ACPICA runtime code (for dispatch to region handlers.)
The new operation region Space IDs are:

  GeneralPurposeIo

GenericSerialBus

Resource Descriptors:

All new ASL resource descriptors are fully supported by the iASL compiler, the ASL/AML disassembler, and the ACPICA runtime Resource Manager code (including all new predefined resource tags). New descriptors are:

FixedDma
GpioIo
GpioInt
I2cSerialBus
SpiSerialBus
UartSerialBus

ASL/AML Operators, New and Modified:

One new operator is added, the Connection operator, which is used to associate a GeneralPurposeIo or GenericSerialBus resource descriptor with individual field objects within an operation region. Several new protocols are associated with the AccessAs operator. All are fully supported by the iASL compiler, disassembler, and runtime ACPICA AML interpreter:

Connection // Declare Field Connection attributes
AccessAs: AttribBytes (n) // Read/Write N-Bytes Protocol
AccessAs: AttribRawBytes (n) // Raw Read/Write N-Bytes Protocol
AccessAs: AttribRawProcessBytes (n) // Raw Process Call Protocol
RawDataBuffer // Data type for Vendor Data fields

Predefined ASL/AML Objects:

All new predefined objects/control-methods are supported by the iASL compiler and the ACPICA runtime validation/repair (arguments and return values.) New predefined names include the following:

Standard Predefined Names (Objects or Control Methods):
  _AEI, _CLS, _CPC, _CWS, _DEP,
  _DLM, _EVT, _GCP, _CRT, _GWS,
  _HRV, _PRE, _PSE, _SRT, _SUB.

Resource Tags (Names used to access individual fields within resource descriptors):
  _DBT, _DPL, _DRS, _END, _FLC,
  _IOR, _LIN, _MOD, _PAR, _PHA,
  _PIN, _PPI, _POL, _RXL, _SLV,
  _SPE, _STB, _TXL, _VEN.

ACPICA External Interfaces:

Several new interfaces have been defined for use by ACPI-related device drivers and other host OS services:

AcpiAcquireMutex and AcpiReleaseMutex: These interfaces allow the host OS to
acquire and release AML mutexes that are defined in the DSDT/SSDT tables provided by the BIOS. They are intended to be used in conjunction with the
ACPI 5.0 _DLM (Device Lock Method) in order to provide transaction-level mutual exclusion with the AML code/interpreter.

AcpiGetEventResources: Returns the (formatted) resource descriptors as defined
by the ACPI 5.0 _AEI object (ACPI Event Information). This object provides
resource descriptors associated with hardware-reduced platform events, similar
to the AcpiGetCurrentResources interface.

Operation Region Handlers: For General Purpose IO and Generic Serial Bus operation regions, information about the Connection() object and any optional
length information is passed to the region handler within the Context parameter.

AcpiBufferToResource: This interface converts a raw AML buffer containing a
resource template or resource descriptor to the ACPI_RESOURCE internal format
suitable for use by device drivers. Can be used by an operation region handler
to convert the Connection() buffer object into a ACPI_RESOURCE.

Miscellaneous/Tools/TestSuites:

Support for extended _HID names (Four alpha characters instead of three).
Support for ACPI 5.0 features in the AcpiExec and AcpiHelp utilities.
Support for ACPI 5.0 features in the ASLTS test suite.
Fully updated documentation (ACPICA and iASL reference documents.)

ACPI Table Definition Language:

Support for this language was implemented and released as a subsystem of the
iASL compiler in 2010. (See the iASL compiler User Guide.)

Non-ACPI 5.0 changes for this release:
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1) ACPICA Core Subsystem:

Fix a problem with operation region declarations where a failure can occur
if
the region name and an argument that evaluates to an object (such as the region address) are in different namespace scopes. Lin Ming, ACPICA BZ 937.

Do not abort an ACPI table load if an invalid space ID is found within. This
will be caught later if the offending method is executed. ACPICA BZ 925.

Fixed an issue with the FFixedHW space ID where the ID was not always recognized properly (Both ACPICA and iASL). ACPICA BZ 926.

Fixed a problem with the 32-bit generation of the unix-specific OSL (osunixxf.c). Lin Ming, ACPICA BZ 936.

Several changes made to enable generation with the GCC 4.6 compiler. ACPICA BZ
935.

New error messages: Unsupported I/O requests (not 8/16/32 bit), and Index/Bank
field registers out-of-range.

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented the __PATH__ operator, which returns the full pathname of
the current source file.

AcpiHelp: Automatically display expanded keyword information for all ASL operators.

Debugger: Add "Template" command to disassemble/dump resource template buffers.

Added a new master script to generate and execute the ASLTS test suite. Automatically handles 32- and 64-bit generation. See tests/aslts.sh

iASL: Fix problem with listing generation during processing of the Switch()
operator where AML listing was disabled until the entire Switch block was completed.

iASL: Improve support for semicolon statement terminators. Fix "invalid character" message for some cases when the semicolon is used. Semicolons are
now allowed after every <Term> grammar element. ACPICA BZ 927.

iASL: Fixed some possible aliasing warnings during generation. ACPICA BZ 923.

Disassembler: Fix problem with disassembly of the DataTableRegion operator
where an inadvertent "Unhandled deferred opcode" message could be generated.

3) Example Code and Data Size

These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data
size.

Previous Release:
Non-Debug Version: 90.2K Code, 23.9K Data, 114.1K Total
Debug Version: 165.6K Code, 68.4K Data, 234.0K Total
Current Release:
Non-Debug Version: 92.3K Code, 24.9K Data, 117.2K Total
Debug Version: 170.8K Code, 72.6K Data, 243.4K Total

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22 September 2011. Summary of changes for version 20110922:

0) ACPI 5.0 News:

Support for ACPI 5.0 in ACPICA has been underway for several months and will
be released at the same time that ACPI 5.0 is officially released.

The ACPI 5.0 specification is on track for release in the next few months.

1) ACPICA Core Subsystem:

Fixed a problem where the maximum sleep time for the Sleep() operator was intended to be limited to two seconds, but was inadvertently limited to 20
seconds instead.

Linux and Unix makefiles: Added header file dependencies to ensure correct
generation of ACPICA core code and utilities. Also simplified the makefiles
considerably through the use of the vpath variable to specify search paths.
ACPICA BZ 924.

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented support to check the access length for all fields created to
access named Resource Descriptor fields. For example, if a resource field is
defined to be two bits, a warning is issued if a CreateXxxxField() is used
with an incorrect bit length. This is implemented for all current resource
descriptor names. ACPICA BZ 930.

Disassembler: Fixed a byte ordering problem with the output of 24-bit and 56-
bit integers.

iASL: Fixed a couple of issues associated with variable-length package objects. 1) properly handle constants like One, Ones, Zero -- do not make a
VAR_PACKAGE when these are used as a package length. 2) Allow the VAR_PACKAGE
opcode (in addition to PACKAGE) when validating object types for

predefined
names.

iASL: Emit statistics for all output files (instead of just the ASL input
and
AML output). Includes listings, hex files, etc.

iASL: Added -G option to the table compiler to allow the compilation of
custom
ACPI tables. The only part of a table that is required is the standard
36-
byte
ACPI header.

AcpiXtract: Ported to the standard ACPICA environment (with ACPICA
headers),
which also adds correct 64-bit support. Also, now all output filenames
are
completely lower case.

AcpiExec: Ignore any non-AML tables (tables other than DSDT or SSDT) when
loading table files. A warning is issued for any such tables. The only
exception is an FADT. This also fixes a possible fault when attempting to
load
non-AML tables. ACPICA BZ 932.

AcpiHelp: Added the AccessAs and Offset operators. Fixed a problem where
a
missing table terminator could cause a fault when using the -p option.

AcpiSrc: Fixed a possible divide-by-zero fault when generating file
statistics.

3) Example Code and Data Size

These are the sizes for the OS-independent acpica.lib produced by the
Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code
includes the debug output trace mechanism and has a much larger code and
data
size.

Previous Release (VC 9.0):
Non-Debug Version: 90.2K Code, 23.9K Data, 114.1K Total
Debug Version: 165.6K Code, 68.4K Data, 234.0K Total
Current Release (VC 9.0):
Non-Debug Version: 90.2K Code, 23.9K Data, 114.1K Total
Debug Version: 165.6K Code, 68.4K Data, 234.0K Total

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23 June 2011. Summary of changes for version 20110623:

1) ACPI CA Core Subsystem:

Updated the predefined name repair mechanism to not attempt repair of a _TSS
return object if a _PSS object is present. We can only sort the _TSS return
package if there is no _PSS within the same scope. This is because if _PSS
is
present, the ACPI specification dictates that the _TSS Power Dissipation field
is to be ignored, and therefore some BIOSs leave garbage values in the _TSS
Power field(s). In this case, it is best to just return the _TSS package as-
is. Reported by, and fixed with assistance from Fenghua Yu.

Added an option to globally disable the control method return value validation
and repair. This runtime option can be used to disable return value repair
if
this is causing a problem on a particular machine. Also added an option to
AcpiExec (-dr) to set this disable flag.

All makefiles and project files: Major changes to improve generation of ACPICA
tools. ACPICA BZ 912:
  Reduce default optimization levels to improve compatibility
  For Linux, add strict-aliasing=0 for gcc 4
  Cleanup and simplify use of command line defines
  Cleanup multithread library support
  Improve usage messages

Linux-specific header: update handling of THREAD_ID and pthread. For the 32-
bit case, improve casting to eliminate possible warnings, especially with the
acpica tools.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug

version of the code includes the debug output trace mechanism and has a much
larger code and data size.

Previous Release (VC 9.0):
Non-Debug Version: 90.1K Code, 23.9K Data, 114.0K Total
Debug Version: 165.6K Code, 68.4K Data, 234.0K Total
Current Release (VC 9.0):
Non-Debug Version: 90.2K Code, 23.9K Data, 114.1K Total
Debug Version: 165.6K Code, 68.4K Data, 234.0K Total

2) iASL Compiler/Disassembler and Tools:

With this release, a new utility named "acpihelp" has been added to the ACPICA
package. This utility summarizes the ACPI specification chapters for the ASL
and AML languages. It generates under Linux/Unix as well as Windows, and
provides the following functionality:
Find/display ASL operator(s) -- with description and syntax.
Find/display ASL keyword(s) -- with exact spelling and descriptions.
Find/display ACPI predefined name(s) -- with description, number
of arguments, and the return value data type.
Find/display AML opcode name(s) -- with opcode, arguments, and grammar.
Decode/display AML opcode -- with opcode name, arguments, and grammar.

Service Layers: Make multi-thread support configurable. Conditionally compile
the multi-thread support so that threading libraries will not be linked if
not
necessary. The only tool that requires multi-thread support is AcpiExec.

iASL: Update yyerrror/AslCompilerError for "const" errors. Newer versions of
Bison appear to want the interface to yyerror to be a const char * (or at
least this is a problem when generating iASL on some systems.) ACPICA BZ 923
Pierre Lejeune.

Tools: Fix for systems where O_BINARY is not defined. Only used for Windows
versions of the tools.

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27 May 2011. Summary of changes for version 20110527:

1) ACPI CA Core Subsystem:

ASL Load() operator: Reinstate most restrictions on the incoming ACPI table
signature. Now, only allow SSDT, OEMx, and a null signature. History:
1) Originally, we checked the table signature for "SSDT" or "PSDT".
(PSDT is now obsolete.)
2) We added support for OEMx tables, signature "OEM" plus a fourth
"don't care" character.
3) Valid tables were encountered with a null signature, so we just
gave up on validating the signature, (05/2008).
4) We encountered non-AML tables such as the MADT, which caused
interpreter errors and kernel faults. So now, we once again allow
only SSDT, OEMx, and now, also a null signature. (05/2011).

Added the missing _TDL predefined name to the global name list in order to
enable validation. Affects both the core ACPICA code and the iASL compiler.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug
version of the code includes the debug output trace mechanism and has a much
larger code and data size.

Previous Release (VC 9.0):
Non-Debug Version: 90.0K Code, 23.8K Data, 113.8K Total
Debug Version: 164.5K Code, 68.0K Data, 232.5K Total
Current Release (VC 9.0):
Non-Debug Version: 90.1K Code, 23.9K Data, 114.0K Total
Debug Version: 165.6K Code, 68.4K Data, 234.0K Total

2) iASL Compiler/Disassembler and Tools:

Debugger/AcpiExec: Implemented support for "complex" method arguments on the
debugger command line. This adds support beyond simple integers -- including
Strings, Buffers, and Packages. Includes support for nested packages.
Increased the default command line buffer size to accommodate these arguments.
See the ACPICA reference for details and syntax. ACPICA BZ 917.

Debugger/AcpiExec: Implemented support for "default" method arguments for the

Execute/Debug command. Now, the debugger will always invoke a control method
with the required number of arguments -- even if the command line specifies
none or insufficient arguments. It uses default integer values for any missing
arguments. Also fixes a bug where only six method arguments maximum were
supported instead of the required seven.

Debugger/AcpiExec: Add a maximum buffer length parameter to AcpiOsGetLine and
also return status in order to prevent buffer overruns. See the ACPICA
reference for details and syntax. ACPICA BZ 921

iASL: Cleaned up support for Berkeley yacc. A general cleanup of code and
makefiles to simplify support for the two different but similar parser
generators, bison and yacc.

Updated the generic unix makefile for gcc 4. The default gcc version is now
expected to be 4 or greater, since options specific to gcc 4 are used.

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13 April 2011. Summary of changes for version 20110413:

1) ACPI CA Core Subsystem:

Implemented support to execute a so-called "orphan" _REG method under the EC
device. This change will force the execution of a _REG method underneath the
EC
device even if there is no corresponding operation region of type
EmbeddedControl. Fixes a problem seen on some machines and apparently is
compatible with Windows behavior. ACPICA BZ 875.

Added more predefined methods that are eligible for automatic NULL package
element removal. This change adds another group of predefined names to the
list
of names that can be repaired by having NULL package elements dynamically
removed. This group are those methods that return a single variable-length
package containing simple data types such as integers, buffers, strings. This
includes: _ALx, _BCL, _CID,_ DOD, _EDL, _FIX, _PCL, _PLD, _PMD, _PRx, _PSL,

_Sx,
and _TZD. ACPICA BZ 914.

Split and segregated all internal global lock functions to a new file,
evglock.c.

Updated internal address SpaceID for DataTable regions. Moved this
internal
space
id in preparation for ACPI 5.0 changes that will include some new space
IDs.
This
change should not affect user/host code.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib
produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug
version of
the code includes the debug output trace mechanism and has a much larger
code
and
data size.

Previous Release (VC 9.0):
Non-Debug Version: 89.8K Code, 23.8K Data, 113.6K Total
Debug Version: 164.2K Code, 67.9K Data, 232.1K Total
Current Release (VC 9.0):
Non-Debug Version: 90.0K Code, 23.8K Data, 113.8K Total
Debug Version: 164.5K Code, 68.0K Data, 232.5K Total

2) iASL Compiler/Disassembler and Tools:

iASL/DTC: Major update for new grammar features. Allow generic data types
in
custom ACPI tables. Field names are now optional. Any line can be split
to
multiple lines using the continuation char (\). Large buffers now use
line-
continuation character(s) and no colon on the continuation lines. See the
grammar
update in the iASL compiler reference. ACPI BZ 910,911. Lin Ming, Bob
Moore.

iASL: Mark ASL "Return()" and the simple "Return" as "Null" return
statements.
Since the parser stuffs a "zero" as the return value for these statements
(due
to

the underlying AML grammar), they were seen as "return with value" by the iASL
semantic checking. They are now seen correctly as "null" return statements.

iASL: Check if a_REG declaration has a corresponding Operation Region. Adds a
check for each _REG to ensure that there is in fact a corresponding operation
region declaration in the same scope. If not, the _REG method is not very useful
since it probably won't be executed. ACPICA BZ 915.

iASL/DTC: Finish support for expression evaluation. Added a new expression
parser
that implements c-style operator precedence and parenthesization. ACPICA bugzilla
908.

Disassembler/DTC: Remove support for () and <> style comments in data tables.
Now
that DTC has full expression support, we don't want to have comment strings
that
start with a parentheses or a less-than symbol. Now, only the standard /* and
//
comments are supported, as well as the bracket [] comments.

AcpiXtract: Fix for RSDP and dynamic SSDT extraction. These tables have "unusual"
headers in the acpidump file. Update the header validation to support these
tables. Problem introduced in previous AcpiXtract version in the change to
support "wrong checksum" error messages emitted by acpidump utility.

iASL: Add a * option to generate all template files (as a synonym for ALL)
as
in
"iasl -T *" or "iasl -T ALL".

iASL/DTC: Do not abort compiler on fatal errors. We do not want to completely
abort the compiler on "fatal" errors, simply should abort the current

compile.
This allows multiple compiles with a single (possibly wildcard) compiler
invocation.

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16 March 2011. Summary of changes for version 20110316:

1) ACPI CA Core Subsystem:

Fixed a problem caused by a _PRW method appearing at the namespace root
scope
during the setup of wake GPEs. A fault could occur if a _PRW directly
under
the
root object was passed to the AcpiSetupGpeForWake interface. Lin Ming.

Implemented support for "spurious" Global Lock interrupts. On some
systems, a
global lock interrupt can occur without the pending flag being set. Upon
a
GL
interrupt, we now ensure that a thread is actually waiting for the lock
before
signaling GL availability. Rafael Wysocki, Bob Moore.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib
produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug
version of
the code includes the debug output trace mechanism and has a much larger
code
and
data size.

Previous Release (VC 9.0):
Non-Debug Version: 89.7K Code, 23.7K Data, 113.4K Total
Debug Version: 163.9K Code, 67.5K Data, 231.4K Total
Current Release (VC 9.0):
Non-Debug Version: 89.8K Code, 23.8K Data, 113.6K Total
Debug Version: 164.2K Code, 67.9K Data, 232.1K Total

2) iASL Compiler/Disassembler and Tools:

Implemented full support for the "SLIC" ACPI table. Includes support in
the
header files, disassembler, table compiler, and template generator. Bob
Moore,
Lin Ming.

AcpiXtract: Correctly handle embedded comments and messages from AcpiDump.
Apparently some or all versions of acpidump will occasionally emit a comment
like
"Wrong checksum", etc., into the dump file. This was causing problems for AcpiXtract. ACPICA BZ 905.

iASL: Fix the Linux makefile by removing an inadvertent double file inclusion.
ACPICA BZ 913.

AcpiExec: Update installation of operation region handlers. Install one handler
for a user-defined address space. This is used by the ASL test suite (ASLTS).

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11 February 2011. Summary of changes for version 20110211:

1) ACPI CA Core Subsystem:

Added a mechanism to defer _REG methods for some early-installed handlers.
Most user handlers should be installed before call to AcpiEnableSubsystem.
However, Event handlers and region handlers should be installed after AcpiInitializeObjects. Override handlers for the "default" regions should be
installed early, however. This change executes all _REG methods for the default regions (Memory/IO/PCI/DataTable) simultaneously to prevent any chicken/egg issues between them. ACPICA BZ 848.

Implemented an optimization for GPE detection. This optimization will simply
ignore GPE registers that contain no enabled GPEs -- there is no need to read the register since this information is available internally. This becomes more important on machines with a large GPE space. ACPICA bugzilla
884. Lin Ming. Suggestion from Joe Liu.

Removed all use of the highly unreliable FADT revision field. The revision
number in the FADT has been found to be completely unreliable and cannot be
trusted. Only the actual table length can be used to infer the version. This

change updates the ACPICA core and the disassembler so that both no
longer
even look at the FADT version and instead depend solely upon the FADT
length.

Fix an unresolved name issue for the no-debug and no-error-message source
generation cases. The _AcpiModuleName was left undefined in these cases,
but
it is actually needed as a parameter to some interfaces. Define
_AcpiModuleName as a null string in these cases. ACPICA Bugzilla 888.

Split several large files (makefiles and project files updated)
utglobal.c -> utdecode.c
dbcomds.c -> dbmethod.c dbnames.c
dsopcode.c -> dsargs.c dscontrol.c
dsload.c -> dsload2.c
aslanalyze.c -> aslbtypes.c aslwalks.c

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has
a much larger code and data size.

Previous Release (VC 9.0):
Non-Debug Version: 89.7K Code, 23.7K Data, 113.4K Total
Debug Version: 163.9K Code, 67.5K Data, 231.4K Total
Current Release (VC 9.0):
Non-Debug Version: 89.7K Code, 23.7K Data, 113.4K Total
Debug Version: 163.9K Code, 67.5K Data, 231.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented the predefined macros __LINE__, __FILE__, and __DATE__.
These are useful C-style macros with the standard definitions. ACPICA
bugzilla 898.

iASL/DTC: Added support for integer expressions and labels. Support for
full
expressions for all integer fields in all ACPI tables. Support for labels
in
"generic" portions of tables such as UEFI. See the iASL reference manual.

Debugger: Added a command to display the status of global handlers. The
"handlers" command will display op region, fixed event, and miscellaneous
global handlers. installation status -- and for op regions, whether
default
or user-installed handler will be used.

iASL: Warn if reserved method incorrectly returns a value. Many predefined
names are defined such that they do not return a value. If implemented as a
method, issue a warning if such a name explicitly returns a value. ACPICA
Bugzilla 855.

iASL: Added detection of GPE method name conflicts. Detects a conflict where
there are two GPE methods of the form _Lxy and _Exy in the same scope. (For
example, _L1D and _E1D in the same scope.) ACPICA bugzilla 848.

iASL/DTC: Fixed a couple input scanner issues with comments and line
numbers. Comment remover could get confused and miss a comment ending. Fixed
a problem with line counter maintenance.

iASL/DTC: Reduced the severity of some errors from fatal to error. There is
no need to abort on simple errors within a field definition.

Debugger: Simplified the output of the help command. All help output now in
a single screen, instead of help subcommands. ACPICA Bugzilla 897.

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12 January 2011. Summary of changes for version 20110112:

1) ACPI CA Core Subsystem:

Fixed a race condition between method execution and namespace walks that can
possibly cause a fault. The problem was apparently introduced in version
20100528 as a result of a performance optimization that reduces the number
of
namespace walks upon method exit by using the delete_namespace_subtree
function instead of the delete_namespace_by_owner function used previously.
Bug is a missing namespace lock in the delete_namespace_subtree function.
dana.myers@oracle.com

Fixed several issues and a possible fault with the automatic "serialized"
method support. History: This support changes a method to "serialized" on the
fly if the method generates an AE_ALREADY_EXISTS error, indicating the

possibility that it cannot handle reentrancy. This fix repairs a couple of
issues seen in the field, especially on machines with many cores:

1) Delete method children only upon the exit of the last thread,
so as to not delete objects out from under other running threads
(and possibly causing a fault.)
2) Set the "serialized" bit for the method only upon the exit of the
Last thread, so as to not cause deadlock when running threads
attempt to exit.
3) Cleanup the use of the AML "MethodFlags" and internal method flags
so that there is no longer any confusion between the two.

Lin Ming, Bob Moore. Reported by dana.myers@oracle.com.

Debugger: Now lock the namespace for duration of a namespace dump. Prevents
issues if the namespace is changing dynamically underneath the debugger.
Especially affects temporary namespace nodes, since the debugger displays
these also.

Updated the ordering of include files. The ACPICA headers should appear
before any compiler-specific headers (stdio.h, etc.) so that acenv.h can set
any necessary compiler-specific defines, etc. Affects the ACPI-related tools
and utilities.

Updated all ACPICA copyrights and signons to 2011. Added the 2011 copyright
to all module headers and signons, including the Linux header. This affects
virtually every file in the ACPICA core subsystem, iASL compiler, and all
utilities.

Added project files for MS Visual Studio 2008 (VC++ 9.0). The original
project files for VC++ 6.0 are now obsolete. New project files can be found
under acpica/generate/msvc9. See acpica/generate/msvc9/readme.txt for
details.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release (VC 6.0):

Non-Debug Version: 89.8K Code, 18.9K Data, 108.7K Total
Debug Version: 166.6K Code, 52.1K Data, 218.7K Total
Current Release (VC 9.0):
Non-Debug Version: 89.7K Code, 23.7K Data, 113.4K Total
Debug Version: 163.9K Code, 67.5K Data, 231.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Added generic data types to the Data Table compiler. Add "generic" data
types such as UINT32, String, Unicode, etc., to simplify the generation of
platform-defined tables such as UEFI. Lin Ming.

iASL: Added listing support for the Data Table Compiler. Adds listing support
(-l) to display actual binary output for each line of input code.

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09 December 2010. Summary of changes for version 20101209:

1) ACPI CA Core Subsystem:

Completed the major overhaul of the GPE support code that was begun in July
2010. Major features include: removal of _PRW execution in ACPICA (host
executes _PRWs anyway), cleanup of "wake" GPE interfaces and processing,
changes to existing interfaces, simplification of GPE handler operation, and
a handful of new interfaces:

AcpiUpdateAllGpes
AcpiFinishGpe
AcpiSetupGpeForWake
AcpiSetGpeWakeMask
One new file, evxfgpe.c to consolidate all external GPE interfaces.

See the ACPICA Programmer Reference for full details and programming
information. See the new section 4.4 "General Purpose Event (GPE) Support"
for a full overview, and section 8.7 "ACPI General Purpose Event Management"
for programming details. ACPICA BZ 858,870,877. Matthew Garrett, Lin Ming,
Bob Moore, Rafael Wysocki.

Implemented a new GPE feature for Windows compatibility, the "Implicit Wake

GPE Notify". This feature will automatically issue a Notify(2) on a device
when a Wake GPE is received if there is no corresponding GPE method or handler. ACPICA BZ 870.

Fixed a problem with the Scope() operator during table parse and load phase.
During load phase (table load or method execution), the scope operator should
not enter the target into the namespace. Instead, it should open a new scope
at the target location. Linux BZ 19462, ACPICA BZ 882.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 89.8K Code, 18.9K Data, 108.7K Total
Debug Version: 166.6K Code, 52.1K Data, 218.7K Total
Current Release:
Non-Debug Version: 89.9K Code, 19.0K Data, 108.9K Total
Debug Version: 166.3K Code, 52.1K Data, 218.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Relax the alphanumeric restriction on _CID strings. These strings are
"bus-specific" per the ACPI specification, and therefore any characters are
acceptable. The only checks that can be performed are for a null string and
perhaps for a leading asterisk. ACPICA BZ 886.

iASL: Fixed a problem where a syntax error that caused a premature EOF condition on the source file emitted a very confusing error message. The premature EOF is now detected correctly. ACPICA BZ 891.

Disassembler: Decode the AccessSize within a Generic Address Structure (byte
access, word access, etc.) Note, this field does not allow arbitrary bit access, the size is encoded as 1=byte, 2=word, 3=dword, and 4=qword.

New: AcpiNames utility - Example namespace dump utility. Shows an example of
ACPICA configuration for a minimal namespace dump utility. Uses table and

namespace managers, but no AML interpreter. Does not add any
functionality
over AcpiExec, it is a subset of AcpiExec. The purpose is to show how to
partition and configure ACPICA. ACPICA BZ 883.

AML Debugger: Increased the debugger buffer size for method return
objects.
Was 4K, increased to 16K. Also enhanced error messages for debugger
method
execution, including the buffer overflow case.

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13 October 2010. Summary of changes for version 20101013:

1) ACPI CA Core Subsystem:

Added support to clear the PCIEXP_WAKE event. When clearing ACPI events,
now
clear the PCIEXP_WAKE_STS bit in the ACPI PM1 Status Register, via
HwClearAcpiStatus. Original change from Colin King. ACPICA BZ 880.

Changed the type of the predefined namespace object _TZ from ThermalZone
to
Device. This was found to be confusing to the host software that
processes
the various thermal zones, since _TZ is not really a ThermalZone.
However,
a
Notify() can still be performed on it. ACPICA BZ 876. Suggestion from Rui
Zhang.

Added Windows Vista SP2 to the list of supported _OSI strings. The actual
string is "Windows 2006 SP2".

Eliminated duplicate code in AcpiUtExecute* functions. Now that the
nsrepair
code automatically repairs _HID-related strings, this type of code is no
longer needed in Execute_HID, Execute_CID, and Execute_UID. ACPICA BZ
878.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a
much larger code and data size.

Previous Release:
Non-Debug Version: 89.9K Code, 19.0K Data, 108.9K Total

Debug Version: 166.3K Code, 52.1K Data, 218.4K Total
Current Release:
Non-Debug Version: 89.9K Code, 19.0K Data, 108.9K Total
Debug Version: 166.3K Code, 52.1K Data, 218.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented additional compile-time validation for _HID strings. The
non-hex prefix (such as "PNP" or "ACPI") must be uppercase, and the length
of
the string must be exactly seven or eight characters. For both _HID and
_CID
strings, all characters must be alphanumeric. ACPICA BZ 874.

iASL: Allow certain "null" resource descriptors. Some BIOS code creates
descriptors that are mostly or all zeros, with the expectation that they
will
be filled in at runtime. iASL now allows this as long as there is a
"resource
tag" (name) associated with the descriptor, which gives the ASL a handle
needed to modify the descriptor. ACPICA BZ 873.

Added single-thread support to the generic Unix application OSL.
Primarily
for iASL support, this change removes the use of semaphores in the
single-
threaded ACPICA tools/applications - increasing performance. The
_MULTI_THREADED option was replaced by the (reverse) ACPI_SINGLE_THREADED
option. ACPICA BZ 879.

AcpiExec: several fixes for the 64-bit version. Adds XSDT support and
support
for 64-bit DSDT/FACS addresses in the FADT. Lin Ming.

iASL: Moved all compiler messages to a new file, aslmessages.h.

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15 September 2010. Summary of changes for version 20100915:

1) ACPI CA Core Subsystem:

Removed the AcpiOsDerivePciId OSL interface. The various host
implementations
of this function were not OS-dependent and are now obsolete and can be
removed from all host OSLs. This function has been replaced by
AcpiHwDerivePciId, which is now part of the ACPICA core code.

AcpiHwDerivePciId has been implemented without recursion. Adds one new module, hwpci.c. ACPICA BZ 857.

Implemented a dynamic repair for _HID and _CID strings. The following problems are now repaired at runtime: 1) Remove a leading asterisk in the string, and 2) the entire string is uppercased. Both repairs are in accordance with the ACPI specification and will simplify host driver code.
ACPICA BZ 871.

The ACPI_THREAD_ID type is no longer configurable, internally it is now always UINT64. This simplifies the ACPICA code, especially any printf output.
UINT64 is the only common data type for all thread_id types across all operating systems. It is now up to the host OSL to cast the native thread_id
type to UINT64 before returning the value to ACPICA (via AcpiOsGetThreadId).
Lin Ming, Bob Moore.

Added the ACPI_INLINE type to enhance the ACPICA configuration. The "inline"
keyword is not standard across compilers, and this type allows inline to be
configured on a per-compiler basis. Lin Ming.

Made the system global AcpiGbl_SystemAwakeAndRunning publically available.
Added an extern for this boolean in acpixf.h. Some hosts utilize this value
during suspend/restore operations. ACPICA BZ 869.

All code that implements error/warning messages with the "ACPI:" prefix has
been moved to a new module, utxferror.c.

The UINT64_OVERLAY was moved to utmath.c, which is the only module where it
is used. ACPICA BZ 829. Lin Ming, Bob Moore.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 89.1K Code, 19.0K Data, 108.1K Total

Debug Version: 165.1K Code, 51.9K Data, 217.0K Total
Current Release:
Non-Debug Version: 89.9K Code, 19.0K Data, 108.9K Total
Debug Version: 166.3K Code, 52.1K Data, 218.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL/Disassembler: Write ACPI errors to stderr instead of the output file.
This keeps the output files free of random error messages that may originate
from within the namespace/interpreter code. Used this opportunity to merge
all ACPI:-style messages into a single new module, utxferror.c. ACPICA BZ
866. Lin Ming, Bob Moore.

Tools: update some printfs for ansi warnings on size_t. Handle width change
of size_t on 32-bit versus 64-bit generations. Lin Ming.

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06 August 2010. Summary of changes for version 20100806:

1) ACPI CA Core Subsystem:

Designed and implemented a new host interface to the _OSI support code. This
will allow the host to dynamically add or remove multiple _OSI strings, as
well as install an optional handler that is called for each _OSI invocation.
Also added a new AML debugger command, 'osi' to display and modify the global
_OSI string table, and test support in the AcpiExec utility. See the ACPICA
reference manual for full details. Lin Ming, Bob Moore. ACPICA BZ 836.
New Functions:
AcpiInstallInterface - Add an _OSI string.
AcpiRemoveInterface - Delete an _OSI string.
AcpiInstallInterfaceHandler - Install optional _OSI handler.
Obsolete Functions:
AcpiOsValidateInterface - no longer used.
New Files:
source/components/utilities/utosi.c

Re-introduced the support to enable multi-byte transfers for Embedded
Controller (EC) operation regions. A reported problem was found to be a bug

in the host OS, not in the multi-byte support. Previously, the maximum data
size passed to the EC operation region handler was a single byte. There are
often EC Fields larger than one byte that need to be transferred, and it is
useful for the EC driver to lock these as a single transaction. This change
enables single transfers larger than 8 bits. This effectively changes the
access to the EC space from ByteAcc to AnyAcc, and will probably require
changes to the host OS Embedded Controller driver to enable 16/32/64/256-bit
transfers in addition to 8-bit transfers. Alexey Starikovskiy, Lin Ming.

Fixed a problem with the prototype for AcpiOsReadPciConfiguration. The
prototype in acpiosxf.h had the output value pointer as a (void *).
It should be a (UINT64 *). This may affect some host OSL code.

Fixed a couple problems with the recently modified Linux makefiles for iASL
and AcpiExec. These new makefiles place the generated object files in the
local directory so that there can be no collisions between the files that are
shared between them that are compiled with different options.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

 Previous Release:
   Non-Debug Version: 88.3K Code, 18.8K Data, 107.1K Total
   Debug Version: 164.0K Code, 51.5K Data, 215.5K Total
 Current Release:
   Non-Debug Version: 89.1K Code, 19.0K Data, 108.1K Total
   Debug Version: 165.1K Code, 51.9K Data, 217.0K Total

2) iASL Compiler/Disassembler and Tools:

iASL/Disassembler: Added a new option (-da, "disassemble all") to load the
namespace from and disassemble an entire group of AML files. Useful for
loading all of the AML tables for a given machine (DSDT, SSDT1...SSDTn) and
disassembling with one simple command. ACPICA BZ 865. Lin Ming.

iASL: Allow multiple invocations of -e option. This change allows

multiple
uses of -e on the command line: "-e ssdt1.dat -e ssdt2.dat". ACPICA BZ
834.
Lin Ming.

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02 July 2010. Summary of changes for version 20100702:

1) ACPI CA Core Subsystem:

Implemented several updates to the recently added GPE reference count
support. The model for "wake" GPEs is changing to give the host OS
complete
control of these GPEs. Eventually, the ACPICA core will not execute any
_PRW
methods, since the host already must execute them. Also, additional
changes
were made to help ensure that the reference counts are kept in proper
synchronization with reality. Rafael J. Wysocki.

1) Ensure that GPEs are not enabled twice during initialization.
2) Ensure that GPE enable masks stay in sync with the reference count.
3) Do not inadvertently enable GPEs when writing GPE registers.
4) Remove the internal wake reference counter and add new AcpiGpeWakeup
interface. This interface will set or clear individual GPEs for wakeup.
5) Remove GpeType argument from AcpiEnable and AcpiDisable. These
interfaces
are now used for "runtime" GPEs only.

Changed the behavior of the GPE install/remove handler interfaces. The
GPE
is
no longer disabled during this process, as it was found to cause problems
on
some machines. Rafael J. Wysocki.

Reverted a change introduced in version 20100528 to enable Embedded
Controller multi-byte transfers. This change was found to cause problems
with
Index Fields and possibly Bank Fields. It will be reintroduced when these
problems have been resolved.

Fixed a problem with references to Alias objects within Package Objects.
A
reference to an Alias within the definition of a Package was not always
resolved properly. Aliases to objects like Processors, Thermal zones,
etc.
were resolved to the actual object instead of a reference to the object

as
it
should be. Package objects are only allowed to contain integer, string,
buffer, package, and reference objects. Redhat bugzilla 608648.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a
much larger code and data size.

Previous Release:
Non-Debug Version: 88.3K Code, 18.8K Data, 107.1K Total
Debug Version: 164.1K Code, 51.5K Data, 215.6K Total
Current Release:
Non-Debug Version: 88.3K Code, 18.8K Data, 107.1K Total
Debug Version: 164.0K Code, 51.5K Data, 215.5K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented a new compiler subsystem to allow definition and
compilation of the non-AML ACPI tables such as FADT, MADT, SRAT, etc.
These
are called "ACPI Data Tables", and the new compiler is the "Data Table
Compiler". This compiler is intended to simplify the existing error-prone
process of creating these tables for the BIOS, as well as allowing the
disassembly, modification, recompilation, and override of existing ACPI
data
tables. See the iASL User Guide for detailed information.

iASL: Implemented a new Template Generator option in support of the new
Data
Table Compiler. This option will create examples of all known ACPI tables
that can be used as the basis for table development. See the iASL
documentation and the -T option.

Disassembler and headers: Added support for the WDDT ACPI table (Watchdog
Descriptor Table).

Updated the Linux makefiles for iASL and AcpiExec to place the generated
object files in the local directory so that there can be no collisions
between the shared files between them that are generated with different
options.

Added support for Mac OS X in the Unix OSL used for iASL and AcpiExec.
Use
the #define __APPLE__ to enable this support.

---
28 May 2010. Summary of changes for version 20100528:

Note: The ACPI 4.0a specification was released on April 5, 2010 and is available at www.acpi.info. This is primarily an errata release.

1) ACPI CA Core Subsystem:

Undefined ACPI tables: We are looking for the definitions for the following
ACPI tables that have been seen in the field: ATKG, IEIT, GSCI.

Implemented support to enable multi-byte transfers for Embedded Controller
(EC) operation regions. Previously, the maximum data size passed to the EC
operation region handler was a single byte. There are often EC Fields larger
than one byte that need to be transferred, and it is useful for the EC driver
to lock these as a single transaction. This change enables single transfers
larger than 8 bits. This effectively changes the access to the EC space from
ByteAcc to AnyAcc, and will probably require changes to the host OS Embedded
Controller driver to enable 16/32/64/256-bit transfers in addition to 8-bit
transfers. Alexey Starikovskiy, Lin Ming

Implemented a performance enhancement for namespace search and access. This
change enhances the performance of namespace searches and walks by adding a
backpointer to the parent in each namespace node. On large namespaces, this
change can improve overall ACPI performance by up to 9X. Adding a pointer to
each namespace node increases the overall size of the internal namespace by
about 5%, since each namespace entry usually consists of both a namespace
node and an ACPI operand object. However, this is the first growth of the
namespace in ten years. ACPICA bugzilla 817. Alexey Starikovskiy.

Implemented a performance optimization that reduces the number of namespace
walks. On control method exit, only walk the namespace if the method is known

to have created namespace objects outside of its local scope. Previously, the
entire namespace was traversed on each control method exit. This change can
improve overall ACPI performance by up to 3X. Alexey Starikovskiy, Bob Moore.

Added support to truncate I/O addresses to 16 bits for Windows compatibility.
Some ASL code has been seen in the field that inadvertently has bits set
above bit 15. This feature is optional and is enabled if the BIOS requests
any Windows OSI strings. It can also be enabled by the host OS. Matthew
Garrett, Bob Moore.

Added support to limit the maximum time for the ASL Sleep() operator. To
prevent accidental deep sleeps, limit the maximum time that Sleep() will
actually sleep. Configurable, the default maximum is two seconds. ACPICA
bugzilla 854.

Added run-time validation support for the _WDG and_WED Microsoft predefined
methods. These objects are defined by "Windows Instrumentation", and are not
part of the ACPI spec. ACPICA BZ 860.

Expanded all statistic counters used during namespace and device
initialization from 16 to 32 bits in order to support very large
namespaces.

Replaced all instances of %d in printf format specifiers with %u since nearly
all integers in ACPICA are unsigned.

Fixed the exception namestring for AE_WAKE_ONLY_GPE. Was incorrectly returned
as AE_NO_HANDLER.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
  Non-Debug Version: 88.4K Code, 18.8K Data, 107.2K Total
  Debug Version: 164.2K Code, 51.5K Data, 215.7K Total
Current Release:

Non-Debug Version: 88.3K Code, 18.8K Data, 107.1K Total
Debug Version: 164.1K Code, 51.5K Data, 215.6K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Added compiler support for the _WDG and_WED Microsoft predefined methods. These objects are defined by "Windows Instrumentation", and are not
part of the ACPI spec. ACPICA BZ 860.

AcpiExec: added option to disable the memory tracking mechanism. The -dt option will disable the tracking mechanism, which improves performance considerably.

AcpiExec: Restructured the command line options into -d (disable) and -e (enable) options.

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28 April 2010. Summary of changes for version 20100428:

1) ACPI CA Core Subsystem:

Implemented GPE support for dynamically loaded ACPI tables. For all GPEs, including FADT-based and GPE Block Devices, execute any _PRW methods in the
new table, and process any _Lxx/_Exx GPE methods in the new table. Any runtime GPE that is referenced by an _Lxx/_Exx method in the new table is immediately enabled. Handles the FADT-defined GPEs as well as GPE Block Devices. Provides compatibility with other ACPI implementations. Two new files added, evgpeinit.c and evgpeutil.c. ACPICA BZ 833. Lin Ming, Bob Moore.

Fixed a regression introduced in version 20100331 within the table manager
where initial table loading could fail. This was introduced in the fix for
AcpiReallocateRootTable. Also, renamed some of fields in the table manager
data structures to clarify their meaning and use.

Fixed a possible allocation overrun during internal object copy in AcpiUtCopySimpleObject. The original code did not correctly handle the case
where the object to be copied was a namespace node. Lin Ming. ACPICA BZ 847.

Updated the allocation dump routine, AcpiUtDumpAllocation and fixed a possible access beyond end-of-allocation. Also, now fully validate

descriptor
(size and type) before output. Lin Ming, Bob Moore. ACPICA BZ 847

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a
much larger code and data size.

Previous Release:
Non-Debug Version: 87.9K Code, 18.6K Data, 106.5K Total
Debug Version: 163.5K Code, 51.3K Data, 214.8K Total
Current Release:
Non-Debug Version: 88.4K Code, 18.8K Data, 107.2K Total
Debug Version: 164.2K Code, 51.5K Data, 215.7K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented Min/Max/Len/Gran validation for address resource
descriptors. This change implements validation for the address fields
that
are common to all address-type resource descriptors. These checks are
implemented: Checks for valid Min/Max, length within the Min/Max window,
valid granularity, Min/Max a multiple of granularity, and _MIF/_MAF as
per
table 6-40 in the ACPI 4.0a specification. Also split the large
aslrestype1.c
and aslrestype2.c files into five new files. ACPICA BZ 840.

iASL: Added support for the _Wxx predefined names. This support was
missing
and these names were not recognized by the compiler as valid predefined
names. ACPICA BZ 851.

iASL: Added an error for all predefined names that are defined to return
no
value and thus must be implemented as Control Methods. These include all
of
the _Lxx, _Exx, _Wxx, and _Qxx names, as well as some other miscellaneous
names such as _DIS, _INI, _IRC, _OFF, _ON, and _PSx. ACPICA BZ 850, 856.

iASL: Implemented the -ts option to emit hex AML data in ASL format, as
an
ASL Buffer. Allows ACPI tables to be easily included within ASL files, to
be
dynamically loaded via the Load() operator. Also cleaned up output for
the
-

ta and -tc options. ACPICA BZ 853.

Tests: Added a new file with examples of extended iASL error checking. Demonstrates the advanced error checking ability of the iASL compiler. Available at tests/misc/badcode.asl.

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31 March 2010. Summary of changes for version 20100331:

1) ACPI CA Core Subsystem:

Completed a major update for the GPE support in order to improve support for
shared GPEs and to simplify both host OS and ACPICA code. Added a reference
count mechanism to support shared GPEs that require multiple device drivers.
Several external interfaces have changed. One external interface has been removed. One new external interface was added. Most of the GPE external interfaces now use the GPE spinlock instead of the events mutex (and the Flags parameter for many GPE interfaces has been removed.) See the updated
ACPICA Programmer Reference for details. Matthew Garrett, Bob Moore, Rafael
Wysocki. ACPICA BZ 831.

Changed:
  AcpiEnableGpe, AcpiDisableGpe, AcpiClearGpe, AcpiGetGpeStatus
Removed:
  AcpiSetGpeType
New:
  AcpiSetGpe

Implemented write support for DataTable operation regions. These regions are
defined via the DataTableRegion() operator. Previously, only read support was
implemented. The ACPI specification allows DataTableRegions to be read/write,
however.

Implemented a new subsystem option to force a copy of the DSDT to local memory. Optionally copy the entire DSDT to local memory (instead of simply
mapping it.) There are some (albeit very rare) BIOSs that corrupt or replace
the original DSDT, creating the need for this option. Default is FALSE, do

not copy the DSDT.

Implemented detection of a corrupted or replaced DSDT. This change adds support to detect a DSDT that has been corrupted and/or replaced from outside
the OS (by firmware). This is typically catastrophic for the system, but has
been seen on some machines. Once this problem has been detected, the DSDT copy option can be enabled via system configuration. Lin Ming, Bob Moore.

Fixed two problems with AcpiReallocateRootTable during the root table copy.
When copying the root table to the new allocation, the length used was incorrect. The new size was used instead of the current table size, meaning
too much data was copied. Also, the count of available slots for ACPI tables
was not set correctly. Alexey Starikovskiy, Bob Moore.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 87.5K Code, 18.4K Data, 105.9K Total
Debug Version: 163.4K Code, 51.1K Data, 214.5K Total
Current Release:
Non-Debug Version: 87.9K Code, 18.6K Data, 106.5K Total
Debug Version: 163.5K Code, 51.3K Data, 214.8K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implement limited typechecking for values returned from predefined control methods. The type of any returned static (unnamed) object is now validated. For example, Return(1). ACPICA BZ 786.

iASL: Fixed a predefined name object verification regression. Fixes a problem
introduced in version 20100304. An error is incorrectly generated if a predefined name is declared as a static named object with a value defined using the keywords "Zero", "One", or "Ones". Lin Ming.

iASL: Added Windows 7 support for the -g option (get local ACPI tables) by
reducing the requested registry access rights. ACPICA BZ 842.

Disassembler: fixed a possible fault when generating External()
statements.
Introduced in commit ae7d6fd: Properly handle externals with parent-
prefix
(carat). Fixes a string length allocation calculation. Lin Ming.

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04 March 2010. Summary of changes for version 20100304:

1) ACPI CA Core Subsystem:

Fixed a possible problem with the AML Mutex handling function
AcpiExReleaseMutex where the function could fault under the very rare
condition when the interpreter has blocked, the interpreter lock is
released,
the interpreter is then reentered via the same thread, and attempts to
acquire an AML mutex that was previously acquired. FreeBSD report 140979.
Lin
Ming.

Implemented additional configuration support for the AML "Debug Object".
Output from the debug object can now be enabled via a global variable,
AcpiGbl_EnableAmlDebugObject. This will assist with remote machine
debugging.
This debug output is now available in the release version of ACPICA
instead
of just the debug version. Also, the entire debug output module can now
be
configured out of the ACPICA build if desired. One new file added,
executer/exdebug.c. Lin Ming, Bob Moore.

Added header support for the ACPI MCHI table (Management Controller Host
Interface Table). This table was added in ACPI 4.0, but the defining
document
has only recently become available.

Standardized output of integer values for ACPICA warnings/errors. Always
use
0x prefix for hex output, always use %u for unsigned integer decimal
output.
Affects ACPI_INFO, ACPI_ERROR, ACPI_EXCEPTION, and ACPI_WARNING (about
400
invocations.) These invocations were converted from the original
ACPI_DEBUG_PRINT invocations and were not consistent. ACPICA BZ 835.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and

has a
much larger code and data size.

Previous Release:
Non-Debug Version: 87.1K Code, 18.0K Data, 105.1K Total
Debug Version: 163.5K Code, 50.9K Data, 214.4K Total
Current Release:
Non-Debug Version: 87.5K Code, 18.4K Data, 105.9K Total
Debug Version: 163.4K Code, 51.1K Data, 214.5K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented typechecking support for static (non-control method) predefined named objects that are declared with the Name() operator. For example, the type of this object is now validated to be of type Integer: Name(_BBN, 1). This change migrates the compiler to using the core predefined
name table instead of maintaining a local version. Added a new file, aslpredef.c. ACPICA BZ 832.

Disassembler: Added support for the ACPI 4.0 MCHI table.

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21 January 2010. Summary of changes for version 20100121:

1) ACPI CA Core Subsystem:

Added the 2010 copyright to all module headers and signons. This affects virtually every file in the ACPICA core subsystem, the iASL compiler, the tools/utilities, and the test suites.

Implemented a change to the AcpiGetDevices interface to eliminate unnecessary
invocations of the _STA method. In the case where a specific _HID is requested, do not run _STA until a _HID match is found. This eliminates potentially dozens of _STA calls during a search for a particular device/HID,
which in turn can improve boot times. ACPICA BZ 828. Lin Ming.

Implemented an additional repair for predefined method return values. Attempt
to repair unexpected NULL elements within returned Package objects. Create
an
Integer of value zero, a NULL String, or a zero-length Buffer as appropriate.
ACPICA BZ 818. Lin Ming, Bob Moore.

Removed the obsolete ACPI_INTEGER data type. This type was introduced as the
code was migrated from ACPI 1.0 (with 32-bit AML integers) to ACPI 2.0 (with
64-bit AML integers). It is now obsolete and this change removes it from the
ACPICA code base, replaced by UINT64. The original typedef has been retained
for now for compatibility with existing device driver code. ACPICA BZ 824.

Removed the unused UINT32_STRUCT type, and the obsolete Integer64 field in
the parse tree object.

Added additional warning options for the gcc-4 generation. Updated the source
accordingly. This includes some code restructuring to eliminate unreachable
code, elimination of some gotos, elimination of unused return values, some
additional casting, and removal of redundant declarations.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
  Non-Debug Version: 87.0K Code, 18.0K Data, 105.0K Total
  Debug Version: 163.4K Code, 50.8K Data, 214.2K Total
Current Release:
  Non-Debug Version: 87.1K Code, 18.0K Data, 105.1K Total
  Debug Version: 163.5K Code, 50.9K Data, 214.4K Total

2) iASL Compiler/Disassembler and Tools:

No functional changes for this release.

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14 December 2009. Summary of changes for version 20091214:

1) ACPI CA Core Subsystem:

Enhanced automatic data type conversions for predefined name repairs. This
change expands the automatic repairs/conversions for predefined name

return
values to make Integers, Strings, and Buffers fully interchangeable.
Also,
a
Buffer can be converted to a Package of Integers if necessary. The
nsrepair.c
module was completely restructured. Lin Ming, Bob Moore.

Implemented automatic removal of null package elements during predefined
name
repairs. This change will automatically remove embedded and trailing NULL
package elements from returned package objects that are defined to
contain
a
variable number of sub-packages. The driver is then presented with a
package
with no null elements to deal with. ACPICA BZ 819.

Implemented a repair for the predefined _FDE and _GTM names. The expected
return value for both names is a Buffer of 5 DWORDs. This repair fixes
two
possible problems (both seen in the field), where a package of integers
is
returned, or a buffer of BYTEs is returned. With assistance from Jung-uk
Kim.

Implemented additional module-level code support. This change will
properly
execute module-level code that is not at the root of the namespace (under
a
Device object, etc.). Now executes the code within the current scope
instead
of the root. ACPICA BZ 762. Lin Ming.

Fixed possible mutex acquisition errors when running _REG methods. Fixes
a
problem where mutex errors can occur when running a _REG method that is
in
the same scope as a method-defined operation region or an operation
region
under a module-level IF block. This type of code is rare, so the problem
has
not been seen before. ACPICA BZ 826. Lin Ming, Bob Moore.

Fixed a possible memory leak during module-level code execution. An
object
could be leaked for each block of executed module-level code if the
interpreter slack mode is enabled This change deletes any implicitly

returned
object from the module-level code block. Lin Ming.

Removed messages for successful predefined repair(s). The repair
mechanism
was considered too wordy. Now, messages are only unconditionally emitted
if
the return object cannot be repaired. Existing messages for successful
repairs were converted to ACPI_DEBUG_PRINT messages for now. ACPICA BZ
827.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a
much larger code and data size.

Previous Release:
Non-Debug Version: 86.6K Code, 18.2K Data, 104.8K Total
Debug Version: 162.7K Code, 50.8K Data, 213.5K Total
Current Release:
Non-Debug Version: 87.0K Code, 18.0K Data, 105.0K Total
Debug Version: 163.4K Code, 50.8K Data, 214.2K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a regression introduced in 20091112 where intermediate .SRC
files
were no longer automatically removed at the termination of the compile.

acpiexec: Implemented the -f option to specify default region fill value.
This option specifies the value used to initialize buffers that simulate
operation regions. Default value is zero. Useful for debugging problems
that
depend on a specific initial value for a region or field.

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12 November 2009. Summary of changes for version 20091112:

1) ACPI CA Core Subsystem:

Implemented a post-order callback to AcpiWalkNamespace. The existing
interface only has a pre-order callback. This change adds an additional
parameter for a post-order callback which will be more useful for bus
scans.
ACPICA BZ 779. Lin Ming. Updated the ACPICA Programmer Reference.

Modified the behavior of the operation region memory mapping cache for

SystemMemory. Ensure that the memory mappings created for operation regions
do not cross 4K page boundaries. Crossing a page boundary while mapping
regions can cause kernel warnings on some hosts if the pages have different
attributes. Such regions are probably BIOS bugs, and this is the workaround.
Linux BZ 14445. Lin Ming.

Implemented an automatic repair for predefined methods that must return
sorted lists. This change will repair (by sorting) packages returned by _ALR,
_PSS, and _TSS. Drivers can now assume that the packages are correctly sorted
and do not contain NULL package elements. Adds one new file,
namespace/nsrepair2.c. ACPICA BZ 784. Lin Ming, Bob Moore.

Fixed a possible fault during predefined name validation if a return Package
object contains NULL elements. Also adds a warning if a NULL element is
followed by any non-null elements. ACPICA BZ 813, 814. Future enhancement may
include repair or removal of all such NULL elements where possible.

Implemented additional module-level executable AML code support. This change
will execute module-level code that is not at the root of the namespace
(under a Device object, etc.) at table load time. Module-level executable AML
code has been illegal since ACPI 2.0. ACPICA BZ 762. Lin Ming.

Implemented a new internal function to create Integer objects. This function
simplifies miscellaneous object creation code. ACPICA BZ 823.

Reduced the severity of predefined repair messages, Warning to Info. Since
the object was successfully repaired, a warning is too severe. Reduced to an
info message for now. These messages may eventually be changed to debug-only.
ACPICA BZ 812.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 85.8K Code, 18.0K Data, 103.8K Total
Debug Version: 161.8K Code, 50.6K Data, 212.4K Total
Current Release:
Non-Debug Version: 86.6K Code, 18.2K Data, 104.8K Total
Debug Version: 162.7K Code, 50.8K Data, 213.5K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented Switch() with While(1) so that Break works correctly. This
change correctly implements the Switch operator with a surrounding While(1)
so that the Break operator works as expected. ACPICA BZ 461. Lin Ming.

iASL: Added a message if a package initializer list is shorter than package
length. Adds a new remark for a Package() declaration if an initializer list
exists, but is shorter than the declared length of the package. Although
technically legal, this is probably a coding error and it is seen in the
field. ACPICA BZ 815. Lin Ming, Bob Moore.

iASL: Fixed a problem where the compiler could fault after the maximum number
of errors was reached (200).

acpixtract: Fixed a possible warning for pointer cast if the compiler warning
level set very high.

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13 October 2009. Summary of changes for version 20091013:

1) ACPI CA Core Subsystem:

Fixed a problem where an Operation Region _REG method could be executed more
than once. If a custom address space handler is installed by the host before
the "initialize operation regions" phase of the ACPICA initialization, any
_REG methods for that address space could be executed twice. This change
fixes the problem. ACPICA BZ 427. Lin Ming.

Fixed a possible memory leak for the Scope() ASL operator. When the exact
invocation of "Scope(\)" is executed (change scope to root), one internal

operand object was leaked. Lin Ming.

Implemented a run-time repair for the _MAT predefined method. If the _MAT return value is defined as a Field object in the AML, and the field size is less than or equal to the default width of an integer (32 or 64),_MAT
can incorrectly return an Integer instead of a Buffer. ACPICA now automatically repairs this problem. ACPICA BZ 810.

Implemented a run-time repair for the _BIF and _BIX predefined methods. The
"OEM Information" field is often incorrectly returned as an Integer with value zero if the field is not supported by the platform. This is due to an
ambiguity in the ACPI specification. The field should always be a string. ACPICA now automatically repairs this problem by returning a NULL string within the returned Package. ACPICA BZ 807.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 85.6K Code, 18.0K Data, 103.6K Total
Debug Version: 161.7K Code, 50.9K Data, 212.6K Total
Current Release:
Non-Debug Version: 85.8K Code, 18.0K Data, 103.8K Total
Debug Version: 161.8K Code, 50.6K Data, 212.4K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed a problem where references to external symbols that contained one or more parent-prefixes (carats) were not handled correctly,
possibly causing a fault. ACPICA BZ 806. Lin Ming.

Disassembler: Restructured the code so that all functions that handle external symbols are in a single module. One new file is added, common/dmextern.c.

AML Debugger: Added a max count argument for the Batch command (which executes multiple predefined methods within the namespace.)

iASL: Updated the compiler documentation (User Reference.) Available at http://www.acpica.org/documentation/. ACPICA BZ 750.

AcpiXtract: Updated for Lint and other formatting changes. Close all open files.

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03 September 2009. Summary of changes for version 20090903:

1) ACPI CA Core Subsystem:

For Windows Vista compatibility, added the automatic execution of an _INI method located at the namespace root (_INI). This method is executed at table load time. This support is in addition to the automatic execution of _SB._INI. Lin Ming.

Fixed a possible memory leak in the interpreter for AML package objects if the package initializer list is longer than the defined size of the package. This apparently can only happen if the BIOS changes the package size on the fly (seen in a _PSS object), as ASL compilers do not allow this. The interpreter will truncate the package to the defined size (and issue an error message), but previously could leave the extra objects undeleted if they were pre-created during the argument processing (such is the case if the package consists of a number of sub-packages as in the _PSS.) ACPICA BZ 805.

Fixed a problem seen when a Buffer or String is stored to itself via ASL. This has been reported in the field. Previously, ACPICA would zero out the buffer/string. Now, the operation is treated as a noop. Provides Windows compatibility. ACPICA BZ 803. Lin Ming.

Removed an extraneous error message for ASL constructs of the form Store(LocalX,LocalX) when LocalX is uninitialized. These curious statements are seen in many BIOSs and are once again treated as NOOPs and no error is emitted when they are encountered. ACPICA BZ 785.

Fixed an extraneous warning message if a _DSM reserved method returns a Package object. _DSM can return any type of object, so validation on the return type cannot be performed. ACPICA BZ 802.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The

debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 85.5K Code, 18.0K Data, 103.5K Total
Debug Version: 161.6K Code, 50.9K Data, 212.5K Total
Current Release:
Non-Debug Version: 85.6K Code, 18.0K Data, 103.6K Total
Debug Version: 161.7K Code, 50.9K Data, 212.6K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a problem with the use of the Alias operator and Resource Templates. The correct alias is now constructed and no error is emitted. ACPICA BZ 738.

iASL: Implemented the -I option to specify additional search directories for
include files. Allows multiple additional search paths for include files. Directories are searched in the order specified on the command line (after
the local directory is searched.) ACPICA BZ 800.

iASL: Fixed a problem where the full pathname for include files was not emitted for warnings/errors. This caused the IDE support to not work properly. ACPICA BZ 765.

iASL: Implemented the -@ option to specify a Windows-style response file containing additional command line options. ACPICA BZ 801.

AcpiExec: Added support to load multiple AML files simultaneously (such as
a
DSDT and multiple SSDTs). Also added support for wildcards within the AML pathname. These features allow all machine tables to be easily loaded and debugged together. ACPICA BZ 804.

Disassembler: Added missing support for disassembly of HEST table Error Bank
subtables.

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30 July 2009. Summary of changes for version 20090730:

The ACPI 4.0 implementation for ACPICA is complete with this release.

1) ACPI CA Core Subsystem:

ACPI 4.0: Added header file support for all new and changed ACPI tables. Completely new tables are: IBFT, IVRS, MSCT, and WAET. Tables that are new for ACPI 4.0, but have previously been supported in ACPICA are: CPEP, BERT, EINJ, ERST, and HEST. Other newly supported tables are: UEFI and WDAT. There have been some ACPI 4.0 changes to other existing tables. Split the large actbl1.h header into the existing actbl2.h header. ACPICA BZ 774.

ACPI 4.0: Implemented predefined name validation for all new names. There are 31 new names in ACPI 4.0. The predefined validation module was split into two files. The new file is namespace/nsrepair.c. ACPICA BZ 770.

Implemented support for so-called "module-level executable code". This is executable AML code that exists outside of any control method and is intended to be executed at table load time. Although illegal since ACPI 2.0, this type of code still exists and is apparently still being created. Blocks of this code are now detected and executed as intended. Currently, the code blocks must exist under either an If, Else, or While construct; these are the typical cases seen in the field. ACPICA BZ 762. Lin Ming.

Implemented an automatic dynamic repair for predefined names that return nested Package objects. This applies to predefined names that are defined to return a variable-length Package of sub-packages. If the number of sub-packages is one, BIOS code is occasionally seen that creates a simple single package with no sub-packages. This code attempts to fix the problem by wrapping a new package object around the existing package. These methods can be repaired: _ALR, _CSD, _HPX, _MLS, _PRT, _PSS, _TRT, and _TSS. ACPICA BZ 790.

Fixed a regression introduced in 20090625 for the AcpiGetDevices interface. The _HID/_CID matching was broken and no longer matched IDs correctly. ACPICA BZ 793.

Fixed a problem with AcpiReset where the reset would silently fail if the register was one of the protected I/O ports. AcpiReset now bypasses the port
validation mechanism. This may eventually be driven into the AcpiRead/Write
interfaces.

Fixed a regression related to the recent update of the AcpiRead/Write interfaces. A sleep/suspend could fail if the optional PM2 Control register
does not exist during an attempt to write the Bus Master Arbitration bit. (However, some hosts already delete the code that writes this bit, and the
code may in fact be obsolete at this date.) ACPICA BZ 799.

Fixed a problem where AcpiTerminate could fault if inadvertently called twice
in succession. ACPICA BZ 795.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 84.7K Code, 17.8K Data, 102.5K Total
Debug Version: 160.5K Code, 50.6K Data, 211.1K Total
Current Release:
Non-Debug Version: 85.5K Code, 18.0K Data, 103.5K Total
Debug Version: 161.6K Code, 50.9K Data, 212.5K Total

2) iASL Compiler/Disassembler and Tools:

ACPI 4.0: Implemented disassembler support for all new ACPI tables and changes to existing tables. ACPICA BZ 775.

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25 June 2009. Summary of changes for version 20090625:

The ACPI 4.0 Specification was released on June 16 and is available at www.acpi.info. ACPICA implementation of ACPI 4.0 is underway and will continue for the next few releases.

1) ACPI CA Core Subsystem:

ACPI 4.0: Implemented interpreter support for the IPMI operation region address space. Includes support for bi-directional data buffers and an

IPMI
address space handler (to be installed by an IPMI device driver.) ACPICA
BZ
773. Lin Ming.

ACPI 4.0: Added changes for existing ACPI tables - FACS and SRAT.
Includes
support in both the header files and the disassembler.

Completed a major update for the AcpiGetObjectInfo external interface.
Changes include:
- Support for variable, unlimited length HID, UID, and CID strings.
- Support Processor objects the same as Devices (HID,UID,CID,ADR,STA,
etc.)
- Call the _SxW power methods on behalf of a device object.
- Determine if a device is a PCI root bridge.
- Change the ACPI_BUFFER parameter to ACPI_DEVICE_INFO.
These changes will require an update to all callers of this interface.
See
the updated ACPICA Programmer Reference for details. One new source file
has
been added - utilities/utids.c. ACPICA BZ 368, 780.

Updated the AcpiRead and AcpiWrite external interfaces to support 64-bit
transfers. The Value parameter has been extended from 32 bits to 64 bits
in
order to support new ACPI 4.0 tables. These changes will require an
update
to
all callers of these interfaces. See the ACPICA Programmer Reference for
details. ACPICA BZ 768.

Fixed several problems with AcpiAttachData. The handler was not invoked
when
the host node was deleted. The data sub-object was not automatically
deleted
when the host node was deleted. The interface to the handler had an
unused
parameter, this was removed. ACPICA BZ 778.

Enhanced the function that dumps ACPI table headers. All non-printable
characters in the string fields are now replaced with '?' (Signature,
OemId,
OemTableId, and CompilerId.) ACPI tables with non-printable characters in
these fields are occasionally seen in the field. ACPICA BZ 788.

Fixed a problem with predefined method repair code where the code that
attempts to repair/convert an object of incorrect type is only executed

on
the first time the predefined method is called. The mechanism that
disables
warnings on subsequent calls was interfering with the repair mechanism.
ACPICA BZ 781.

Fixed a possible memory leak in the predefined validation/repair code
when
a
buffer is automatically converted to an expected string object.

Removed obsolete 16-bit files from the distribution and from the current
git
tree head. ACPICA BZ 776.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a
much larger code and data size.

Previous Release:
Non-Debug Version: 83.4K Code, 17.5K Data, 100.9K Total
Debug Version: 158.9K Code, 50.0K Data, 208.9K Total
Current Release:
Non-Debug Version: 84.7K Code, 17.8K Data, 102.5K Total
Debug Version: 160.5K Code, 50.6K Data, 211.1K Total

2) iASL Compiler/Disassembler and Tools:

ACPI 4.0: iASL and Disassembler - implemented support for the new IPMI
operation region keyword. ACPICA BZ 771, 772. Lin Ming.

ACPI 4.0: iASL - implemented compile-time validation support for all new
predefined names and control methods (31 total). ACPICA BZ 769.

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21 May 2009. Summary of changes for version 20090521:

1) ACPI CA Core Subsystem:

Disabled the preservation of the SCI enable bit in the PM1 control
register.
The SCI enable bit (bit 0, SCI_EN) is defined by the ACPI specification
to
be
a "preserved" bit - "OSPM always preserves this bit position", section
4.7.3.2.1. However, some machines fail if this bit is in fact preserved

because the bit needs to be explicitly set by the OS as a workaround. No machines fail if the bit is not preserved. Therefore, ACPICA no longer attempts to preserve this bit.

Fixed a problem in AcpiRsGetPciRoutingTableLength where an invalid or incorrectly formed _PRT package could cause a fault. Added validation to ensure that each package element is actually a sub-package.

Implemented a new interface to install or override a single control method,
AcpiInstallMethod. This interface is useful when debugging in order to repair
an existing method or to install a missing method without having to override
the entire ACPI table. See the ACPICA Programmer Reference for use and examples. Lin Ming, Bob Moore.

Fixed several reference count issues with the DdbHandle object that is created from a Load or LoadTable operator. Prevent premature deletion of the
object. Also, mark the object as invalid once the table has been unloaded.
This is needed because the handle itself may not be deleted after the table
unload, depending on whether it has been stored in a named object by the caller. Lin Ming.

Fixed a problem with Mutex Sync Levels. Fixed a problem where if multiple mutexes of the same sync level are acquired but then not released in strict
opposite order, the internally maintained Current Sync Level becomes confused
and can cause subsequent execution errors. ACPICA BZ 471.

Changed the allowable release order for ASL mutex objects. The ACPI 4.0 specification has been changed to make the SyncLevel for mutex objects more
useful. When releasing a mutex, the SyncLevel of the mutex must now be the
same as the current sync level. This makes more sense than the previous rule
(SyncLevel less than or equal). This change updates the code to match the specification.

Fixed a problem with the local version of the AcpiOsPurgeCache function. The
(local) cache must be locked during all cache object deletions. Andrew Baumann.

Updated the Load operator to use operation region interfaces. This replaces
direct memory mapping with region access calls. Now, all region accesses go
through the installed region handler as they should.

Simplified and optimized the NsGetNextNode function. Reduced parameter count
and reduced code for this frequently used function.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 82.8K Code, 17.5K Data, 100.3K Total
Debug Version: 158.0K Code, 49.9K Data, 207.9K Total
Current Release:
Non-Debug Version: 83.4K Code, 17.5K Data, 100.9K Total
Debug Version: 158.9K Code, 50.0K Data, 208.9K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed some issues with DMAR, HEST, MADT tables. Some problems
with sub-table disassembly and handling invalid sub-tables. Attempt recovery
after an invalid sub-table ID.

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22 April 2009. Summary of changes for version 20090422:

1) ACPI CA Core Subsystem:

Fixed a compatibility issue with the recently released I/O port protection
mechanism. For windows compatibility, 1) On a port protection violation,
simply ignore the request and do not return an exception (allow the control
method to continue execution.) 2) If only part of the request overlaps a
protected port, read/write the individual ports that are not protected.
Linux
BZ 13036. Lin Ming

Enhanced the execution of the ASL/AML BreakPoint operator so that it

actually
breaks into the AML debugger if the debugger is present. This matches the ACPI-defined behavior.

Fixed several possible warnings related to the use of the configurable ACPI_THREAD_ID. This type can now be configured as either an integer or a pointer with no warnings. Also fixes several warnings in printf-like statements for the 64-bit build when the type is configured as a pointer. ACPICA BZ 766, 767.

Fixed a number of possible warnings when compiling with gcc 4+ (depending on
warning options.) Examples include printf formats, aliasing, unused globals,
missing prototypes, missing switch default statements, use of non-ANSI library functions, use of non-ANSI constructs. See generate/unix/Makefile for
a list of warning options used with gcc 3 and 4. ACPICA BZ 735.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 82.6K Code, 17.6K Data, 100.2K Total
Debug Version: 157.7K Code, 49.9K Data, 207.6K Total
Current Release:
Non-Debug Version: 82.8K Code, 17.5K Data, 100.3K Total
Debug Version: 158.0K Code, 49.9K Data, 207.9K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a generation warning from Bison 2.3 and fixed several warnings
on
the 64-bit build.

iASL: Fixed a problem where the Unix/Linux versions of the compiler could not
correctly digest Windows/DOS formatted files (with CR/LF).

iASL: Added a new option for "quiet mode" (-va) that produces only the compilation summary, not individual errors and warnings. Useful for large batch compilations.

AcpiExec: Implemented a new option (-z) to enable a forced

semaphore/mutex
timeout that can be used to detect hang conditions during execution of AML
code (includes both internal semaphores and AML-defined mutexes and events.)

Added new makefiles for the generation of acpica in a generic unix-like environment. These makefiles are intended to generate the acpica tools and
utilities from the original acpica git source tree structure.

Test Suites: Updated and cleaned up the documentation files. Updated the copyrights to 2009, affecting all source files. Use the new version of iASL
with quiet mode. Increased the number of available semaphores in the Windows
OSL, allowing the aslts to execute fully on Windows. For the Unix OSL, added
an alternate implementation of the semaphore timeout to allow aslts to execute fully on Cygwin.

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20 March 2009. Summary of changes for version 20090320:

1) ACPI CA Core Subsystem:

Fixed a possible race condition between AcpiWalkNamespace and dynamic table
unloads. Added a reader/writer locking mechanism to allow multiple concurrent
namespace walks (readers), but block a dynamic table unload until it can gain
exclusive write access to the namespace. This fixes a problem where a table
unload could (possibly catastrophically) delete the portion of the namespace
that is currently being examined by a walk. Adds a new file, utlock.c, that
implements the reader/writer lock mechanism. ACPICA BZ 749.

Fixed a regression introduced in version 20090220 where a change to the FADT
handling could cause the ACPICA subsystem to access non-existent I/O ports.

Modified the handling of FADT register and table (FACS/DSDT) addresses. The
FADT can contain both 32-bit and 64-bit versions of these addresses.

Previously, the 64-bit versions were favored, meaning that if both 32 and 64
versions were valid, but not equal, the 64-bit version was used. This was found to cause some machines to fail. Now, in this case, the 32-bit version
is used instead. This now matches the Windows behavior.

Implemented a new mechanism to protect certain I/O ports. Provides Microsoft
compatibility and protects the standard PC I/O ports from access via AML code. Adds a new file, hwvalid.c

Fixed a possible extraneous warning message from the FADT support. The message warns of a 32/64 length mismatch between the legacy and GAS definitions for a register.

Removed the obsolete AcpiOsValidateAddress OSL interface. This interface is
made obsolete by the port protection mechanism above. It was previously used
to validate the entire address range of an operation region, which could be
incorrect if the range included illegal ports, but fields within the operation region did not actually access those ports. Validation is now performed on a per-field basis instead of the entire region.

Modified the handling of the PM1 Status Register ignored bit (bit 11.) Ignored bits must be "preserved" according to the ACPI spec. Usually, this
means a read/modify/write when writing to the register. However, for status
registers, writing a one means clear the event. Writing a zero means preserve
the event (do not clear.) This behavior is clarified in the ACPI 4.0 spec,
and the ACPICA code now simply always writes a zero to the ignored bit.

Modified the handling of ignored bits for the PM1 A/B Control Registers. As
per the ACPI specification, for the control registers, preserve (read/modify/write) all bits that are defined as either reserved or ignored.

Updated the handling of write-only bits in the PM1 A/B Control Registers. When reading the register, zero the write-only bits as per the ACPI spec. ACPICA BZ 443. Lin Ming.

Removed "Linux" from the list of supported _OSI strings. Linux no longer

wants to reply true to this request. The Windows strings are the only paths
through the AML that are tested and known to work properly.

Previous Release:
Non-Debug Version: 82.0K Code, 17.5K Data, 99.5K Total
Debug Version: 156.9K Code, 49.8K Data, 206.7K Total
Current Release:
Non-Debug Version: 82.6K Code, 17.6K Data, 100.2K Total
Debug Version: 157.7K Code, 49.9K Data, 207.6K Total

2) iASL Compiler/Disassembler and Tools:

Acpiexec: Split the large aeexec.c file into two new files, aehandlers.c and
aetables.c

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20 February 2009. Summary of changes for version 20090220:

1) ACPI CA Core Subsystem:

Optimized the ACPI register locking. Removed locking for reads from the ACPI
bit registers in PM1 Status, Enable, Control, and PM2 Control. The lock is
not required when reading the single-bit registers. The
AcpiGetRegisterUnlocked function is no longer needed and has been removed.
This will improve performance for reads on these registers. ACPICA BZ 760.

Fixed the parameter validation for AcpiRead/Write. Now return
AE_BAD_PARAMETER if the input register pointer is null, and AE_BAD_ADDRESS
if
the register has an address of zero. Previously, these cases simply returned
AE_OK. For optional registers such as PM1B status/enable/control, the caller
should check for a valid register address before calling. ACPICA BZ 748.

Renamed the external ACPI bit register access functions. Renamed
AcpiGetRegister and AcpiSetRegister to clarify the purpose of these
functions. The new names are AcpiReadBitRegister and AcpiWriteBitRegister.
Also, restructured the code for these functions by simplifying the code path

and condensing duplicate code to reduce code size.

Added new functions to transparently handle the possibly split PM1 A/B registers. AcpiHwReadMultiple and AcpiHwWriteMultiple. These two functions
now handle the split registers for PM1 Status, Enable, and Control. ACPICA
BZ
746.

Added a function to handle the PM1 control registers, AcpiHwWritePm1Control.
This function writes both of the PM1 control registers (A/B). These registers
are different than the PM1 A/B status and enable registers in that different
values can be written to the A/B registers. Most notably, the SLP_TYP bits
can be different, as per the values returned from the _Sx predefined methods.

Removed an extra register write within AcpiHwClearAcpiStatus. This function
was writing an optional PM1B status register twice. The existing call to the
low-level AcpiHwRegisterWrite automatically handles a possibly split PM1 A/B
register. ACPICA BZ 751.

Split out the PM1 Status registers from the FADT. Added new globals for these
registers (A/B), similar to the way the PM1 Enable registers are handled.
Instead of overloading the FADT Event Register blocks. This makes the code
clearer and less prone to error.

Fixed the warning message for when the platform contains too many ACPI tables
for the default size of the global root table data structure. The calculation
for the truncation value was incorrect.

Removed the ACPI_GET_OBJECT_TYPE macro. Removed all instances of this
obsolete macro, since it is now a simple reference to ->common.type. There
were about 150 invocations of the macro across 41 files. ACPICA BZ 755.

Removed the redundant ACPI_BITREG_SLEEP_TYPE_B. This type is the same as

TYPE_A. Removed this and all related instances. Renamed SLEEP_TYPE_A to simply SLEEP_TYPE. ACPICA BZ 754.

Conditionally compile the AcpiSetFirmwareWakingVector64 function. This function is only needed on 64-bit host operating systems and is thus not included for 32-bit hosts.

Debug output: print the input and result for invocations of the _OSI reserved
control method via the ACPI_LV_INFO debug level. Also, reduced some of the
verbosity of this debug level. Len Brown.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 82.3K Code, 17.5K Data, 99.8K Total
Debug Version: 157.3K Code, 49.8K Data, 207.1K Total
Current Release:
Non-Debug Version: 82.0K Code, 17.5K Data, 99.5K Total
Debug Version: 156.9K Code, 49.8K Data, 206.7K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Decode the FADT PM_Profile field. Emit ascii names for the various legal performance profiles.

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23 January 2009. Summary of changes for version 20090123:

1) ACPI CA Core Subsystem:

Added the 2009 copyright to all module headers and signons. This affects virtually every file in the ACPICA core subsystem, the iASL compiler, and the tools/utilities.

Implemented a change to allow the host to override any ACPI table, including
dynamically loaded tables. Previously, only the DSDT could be replaced by the
host. With this change, the AcpiOsTableOverride interface is called for each
table found in the RSDT/XSDT during ACPICA initialization, and also whenever

a table is dynamically loaded via the AML Load operator.

Updated FADT flag definitions, especially the Boot Architecture flags.

Debugger: For the Find command, automatically pad the input ACPI name with
underscores if the name is shorter than 4 characters. This enables a match
with the actual namespace entry which is itself padded with underscores.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 82.3K Code, 17.4K Data, 99.7K Total
Debug Version: 157.1K Code, 49.7K Data, 206.8K Total
Current Release:
Non-Debug Version: 82.3K Code, 17.5K Data, 99.8K Total
Debug Version: 157.3K Code, 49.8K Data, 207.1K Total

2) iASL Compiler/Disassembler and Tools:

Fix build error under Bison-2.4.

Dissasembler: Enhanced FADT support. Added decoding of the Boot Architecture
flags. Now decode all flags, regardless of the FADT version. Flag output
includes the FADT version which first defined each flag.

The iASL -g option now dumps the RSDT to a file (in addition to the FADT and
DSDT). Windows only.

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04 December 2008. Summary of changes for version 20081204:

1) ACPI CA Core Subsystem:

The ACPICA Programmer Reference has been completely updated and revamped for
this release. This includes updates to the external interfaces, OSL
interfaces, the overview sections, and the debugger reference.

Several new ACPICA interfaces have been implemented and documented in the
programmer reference:

AcpiReset - Writes the reset value to the FADT-defined reset register.
AcpiDisableAllGpes - Disable all available GPEs.
AcpiEnableAllRuntimeGpes - Enable all available runtime GPEs.
AcpiGetGpeDevice - Get the GPE block device associated with a GPE.
AcpiGbl_CurrentGpeCount - Tracks the current number of available GPEs.
AcpiRead - Low-level read ACPI register (was HwLowLevelRead.)
AcpiWrite - Low-level write ACPI register (was HwLowLevelWrite.)

Most of the public ACPI hardware-related interfaces have been moved to a new
file, components/hardware/hwxface.c

Enhanced the FADT parsing and low-level ACPI register access: The ACPI register lengths within the FADT are now used, and the low level ACPI register access no longer hardcodes the ACPI register lengths. Given that there may be some risk in actually trusting the FADT register lengths, a run-
time option was added to fall back to the default hardcoded lengths if the
FADT proves to contain incorrect values - UseDefaultRegisterWidths. This option is set to true for now, and a warning is issued if a suspicious FADT
register length is overridden with the default value.

Fixed a reference count issue in NsRepairObject. This problem was introduced
in version 20081031 as part of a fix to repair Buffer objects within Packages. Lin Ming.

Added semaphore support to the Linux/Unix application OS-services layer (OSL). ACPICA BZ 448. Lin Ming.

Added the ACPI_MUTEX_TYPE configuration option to select whether mutexes will
be implemented in the OSL, or will binary semaphores be used instead.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 81.7K Code, 17.3K Data, 99.0K Total
Debug Version: 156.4K Code, 49.4K Data, 205.8K Total
Current Release:
Non-Debug Version: 82.3K Code, 17.4K Data, 99.7K Total
Debug Version: 157.1K Code, 49.7K Data, 206.8K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Completed the '-e' option to include additional ACPI tables in order to aid with disassembly and External statement generation. ACPICA BZ 742. Lin Ming.

iASL: Removed the "named object in while loop" error. The compiler cannot determine how many times a loop will execute. ACPICA BZ 730.

Disassembler: Implemented support for FADT revision 2 (MS extension). ACPICA BZ 743.

Disassembler: Updates for several ACPI data tables (HEST, EINJ, and MCFG).

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31 October 2008. Summary of changes for version 20081031:

1) ACPI CA Core Subsystem:

Restructured the ACPICA header files into public/private. acpi.h now includes only the "public" acpica headers. All other acpica headers are "private" and should not be included by acpica users. One new file, accommon.h is used to include the commonly used private headers for acpica code generation. Future plans include moving all private headers to a new subdirectory.

Implemented an automatic Buffer->String return value conversion for predefined ACPI methods. For these methods (such as _BIF), added automatic conversion for return objects that are required to be a String, but a Buffer was found instead. This can happen when reading string battery data from an operation region, because it used to be difficult to convert the data from buffer to string from within the ASL. Ensures that the host OS is provided with a valid null-terminated string. Linux BZ 11822.

Updated the FACS waking vector interfaces. Split
AcpiSetFirmwareWakingVector
into two: one for the 32-bit vector, another for the 64-bit vector. This
is
required because the host OS must setup the wake much differently for
each
vector (real vs. protected mode, etc.) and the interface itself should
not
be
deciding which vector to use. Also, eliminated the
GetFirmwareWakingVector
interface, as it served no purpose (only the firmware reads the vector,
OS
only writes the vector.) ACPICA BZ 731.

Implemented a mechanism to escape infinite AML While() loops. Added a
loop
counter to force exit from AML While loops if the count becomes too
large.
This can occur in poorly written AML when the hardware does not respond
within a while loop and the loop does not implement a timeout. The
maximum
loop count is configurable. A new exception code is returned when a loop
is
broken, AE_AML_INFINITE_LOOP. Alexey Starikovskiy, Bob Moore.

Optimized the execution of AML While loops. Previously, a control state
object was allocated and freed for each execution of the loop. The
optimization is to simply reuse the control state for each iteration.
This
speeds up the raw loop execution time by about 5%.

Enhanced the implicit return mechanism. For Windows compatibility, return
an
implicit integer of value zero for methods that contain no executable
code.
Such methods are seen in the field as stubs (presumably), and can cause
drivers to fail if they expect a return value. Lin Ming.

Allow multiple backslashes as root prefixes in namepaths. In a fully
qualified namepath, allow multiple backslash prefixes. This can happen
(and
is seen in the field) because of the use of a double-backslash in strings
(since backslash is the escape character) causing confusion. ACPICA BZ
739
Lin Ming.

Emit a warning if two different FACS or DSDT tables are discovered in the

FADT. Checks if there are two valid but different addresses for the FACS and
DSDT within the FADT (mismatch between the 32-bit and 64-bit fields.)

Consolidated the method argument count validation code. Merged the code that
validates control method argument counts into the predefined validation
module. Eliminates possible multiple warnings for incorrect argument
counts.

Implemented ACPICA example code. Includes code for ACPICA initialization,
handler installation, and calling a control method. Available at
source/tools/examples.

Added a global pointer for FACS table to simplify internal FACS access. Use
the global pointer instead of using AcpiGetTableByIndex for each FACS
access.
This simplifies the code for the Global Lock and the Firmware Waking
Vector(s).

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a
much larger code and data size.

Previous Release:
Non-Debug Version: 81.2K Code, 17.0K Data, 98.2K Total
Debug Version: 155.8K Code, 49.1K Data, 204.9K Total
Current Release:
Non-Debug Version: 81.7K Code, 17.3K Data, 99.0K Total
Debug Version: 156.4K Code, 49.4K Data, 205.8K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Improved disassembly of external method calls. Added the -e option
to
allow the inclusion of additional ACPI tables to help with the
disassembly
of
method invocations and the generation of external declarations during the
disassembly. Certain external method invocations cannot be disassembled
properly without the actual declaration of the method. Use the -e option
to
include the table where the external method(s) are actually declared.
Most
useful for disassembling SSDTs that make method calls back to the master

DSDT. Lin Ming. Example: To disassemble an SSDT with calls to DSDT: iasl
-d
-e dsdt.aml ssdt1.aml

iASL: Fix to allow references to aliases within ASL namepaths. Fixes a problem where the use of an alias within a namepath would result in a not found error or cause the compiler to fault. Also now allows forward references from the Alias operator itself. ACPICA BZ 738.

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26 September 2008. Summary of changes for version 20080926:

1) ACPI CA Core Subsystem:

Designed and implemented a mechanism to validate predefined ACPI methods and
objects. This code validates the predefined ACPI objects (objects whose names
start with underscore) that appear in the namespace, at the time they are evaluated. The argument count and the type of the returned object are validated against the ACPI specification. The purpose of this validation is
to detect problems with the BIOS-implemented predefined ACPI objects before
the results are returned to the ACPI-related drivers. Future enhancements may
include actual repair of incorrect return objects where possible. Two new files are nspredef.c and acpredef.h.

Fixed a fault in the AML parser if a memory allocation fails during the Op
completion routine AcpiPsCompleteThisOp. Lin Ming. ACPICA BZ 492.

Fixed an issue with implicit return compatibility. This change improves the
implicit return mechanism to be more compatible with the MS interpreter. Lin
Ming, ACPICA BZ 349.

Implemented support for zero-length buffer-to-string conversions. Allow zero
length strings during interpreter buffer-to-string conversions. For example,
during the ToDecimalString and ToHexString operators, as well as implicit conversions. Fiodor Suietov, ACPICA BZ 585.

Fixed two possible memory leaks in the error exit paths of AcpiUtUpdateObjectReference and AcpiUtWalkPackageTree. These functions

are
similar in that they use a stack of state objects in order to eliminate
recursion. The stack must be fully unwound and deallocated if an error
occurs. Lin Ming. ACPICA BZ 383.

Removed the unused ACPI_BITREG_WAKE_ENABLE definition and entry in the
global
ACPI register table. This bit does not exist and is unused. Lin Ming, Bob
Moore ACPICA BZ 442.

Removed the obsolete version number in module headers. Removed the
"$Revision" number that appeared in each module header. This version
number
was useful under SourceSafe and CVS, but has no meaning under git. It is
not
only incorrect, it could also be misleading.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a
much larger code and data size.

Previous Release:
Non-Debug Version: 79.7K Code, 16.4K Data, 96.1K Total
Debug Version: 153.7K Code, 48.2K Data, 201.9K Total
Current Release:
Non-Debug Version: 81.2K Code, 17.0K Data, 98.2K Total
Debug Version: 155.8K Code, 49.1K Data, 204.9K Total

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29 August 2008. Summary of changes for version 20080829:

1) ACPI CA Core Subsystem:

Completed a major cleanup of the internal ACPI_OPERAND_OBJECT of type
Reference. Changes include the elimination of cheating on the Object
field
for the DdbHandle subtype, addition of a reference class field to
differentiate the various reference types (instead of an AML opcode), and
the
cleanup of debug output for this object. Lin Ming, Bob Moore. BZ 723

Reduce an error to a warning for an incorrect method argument count.
Previously aborted with an error if too few arguments were passed to a
control method via the external ACPICA interface. Now issue a warning
instead
and continue. Handles the case where the method inadvertently declares

too
many arguments, but does not actually use the extra ones. Applies mainly
to
the predefined methods. Lin Ming. Linux BZ 11032.

Disallow the evaluation of named object types with no intrinsic value.
Return
AE_TYPE for objects that have no value and therefore evaluation is
undefined:
Device, Event, Mutex, Region, Thermal, and Scope. Previously, evaluation
of
these types were allowed, but an exception would be generated at some
point
during the evaluation. Now, the error is generated up front.

Fixed a possible memory leak in the AcpiNsGetExternalPathname function
(nsnames.c). Fixes a leak in the error exit path.

Removed the obsolete debug levels ACPI_DB_WARN and ACPI_DB_ERROR. These
debug
levels were made obsolete by the ACPI_WARNING, ACPI_ERROR, and
ACPI_EXCEPTION
interfaces. Also added ACPI_DB_EVENTS to correspond with the existing
ACPI_LV_EVENTS.

Removed obsolete and/or unused exception codes from the acexcep.h header.
There is the possibility that certain device drivers may be affected if
they
use any of these exceptions.

The ACPICA documentation has been added to the public git source tree,
under
acpica/documents. Included are the ACPICA programmer reference, the iASL
compiler reference, and the changes.txt release logfile.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a
much larger code and data size.

Previous Release:
Non-Debug Version: 79.7K Code, 16.4K Data, 96.1K Total
Debug Version: 153.9K Code, 48.4K Data, 202.3K Total
Current Release:
Non-Debug Version: 79.7K Code, 16.4K Data, 96.1K Total
Debug Version: 153.7K Code, 48.2K Data, 201.9K Total

2) iASL Compiler/Disassembler and Tools:

Allow multiple argument counts for the predefined _SCP method. ACPI 3.0 defines _SCP with 3 arguments. Previous versions defined it with only 1 argument. iASL now allows both definitions.

iASL/disassembler: avoid infinite loop on bad ACPI tables. Check for zero-
length subtables when disassembling ACPI tables. Also fixed a couple of errors where a full 16-bit table type field was not extracted from the input
properly.

acpisrc: Improve comment counting mechanism for generating source code statistics. Count first and last lines of multi-line comments as whitespace,
not comment lines. Handle Linux legal header in addition to standard acpica
header.

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29 July 2008. Summary of changes for version 20080729:

1) ACPI CA Core Subsystem:

Fix a possible deadlock in the GPE dispatch. Remove call to AcpiHwDisableAllGpes during wake in AcpiEvGpeDispatch. This call will attempt
to acquire the GPE lock but can deadlock since the GPE lock is already held
at dispatch time. This code was introduced in version 20060831 as a response
to Linux BZ 6881 and has since been removed from Linux.

Add a function to dereference returned reference objects. Examines the return
object from a call to AcpiEvaluateObject. Any Index or RefOf references are
automatically dereferenced in an attempt to return something useful (these
reference types cannot be converted into an external ACPI_OBJECT.) Provides
MS compatibility. Lin Ming, Bob Moore. Linux BZ 11105

x2APIC support: changes for MADT and SRAT ACPI tables. There are 2 new subtables for the MADT and one new subtable for the SRAT. Includes disassembler and AcpiSrc support. Data from the Intel 64 Architecture

x2APIC
Specification, June 2008.

Additional error checking for pathname utilities. Add error check after all
calls to AcpiNsGetPathnameLength. Add status return from
AcpiNsBuildExternalPath and check after all calls. Add parameter validation
to AcpiUtInitializeBuffer. Reported by and initial patch by Ingo Molnar.

Return status from the global init function AcpiUtGlobalInitialize. This is
used by both the kernel subsystem and the utilities such as iASL compiler.
The function could possibly fail when the caches are initialized. Yang Yi.

Add a function to decode reference object types to strings. Created for
improved error messages.

Improve object conversion error messages. Better error messages during object
conversion from internal to the external ACPI_OBJECT. Used for external calls
to AcpiEvaluateObject.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
  Non-Debug Version: 79.6K Code, 16.2K Data, 95.8K Total
  Debug Version: 153.5K Code, 48.2K Data, 201.7K Total
Current Release:
  Non-Debug Version: 79.7K Code, 16.4K Data, 96.1K Total
  Debug Version: 153.9K Code, 48.4K Data, 202.3K Total

2) iASL Compiler/Disassembler and Tools:

Debugger: fix a possible hang when evaluating non-methods. Fixes a problem
introduced in version 20080701. If the object being evaluated (via execute
command) is not a method, the debugger can hang while trying to obtain non-
existent parameters.

iASL: relax error for using reserved "_T_x" identifiers. These names can
appear in a disassembled ASL file if they were emitted by the original
compiler. Instead of issuing an error or warning and forcing the user to
manually change these names, issue a remark instead.

iASL: error if named object created in while loop. Emit an error if any
named
object is created within a While loop. If allowed, this code will
generate
a
run-time error on the second iteration of the loop when an attempt is
made
to
create the same named object twice. ACPICA bugzilla 730.

iASL: Support absolute pathnames for include files. Add support for
absolute
pathnames within the Include operator. previously, only relative
pathnames
were supported.

iASL: Enforce minimum 1 interrupt in interrupt macro and Resource
Descriptor.
The ACPI spec requires one interrupt minimum. BZ 423

iASL: Handle a missing ResourceSource arg, with a present SourceIndex.
Handles the case for the Interrupt Resource Descriptor where
the ResourceSource argument is omitted but ResourceSourceIndex
is present. Now leave room for the Index. BZ 426

iASL: Prevent error message if CondRefOf target does not exist. Fixes
cases
where an error message is emitted if the target does not exist. BZ 516

iASL: Fix broken -g option (get Windows ACPI tables). Fixes the -g option
(get ACPI tables on Windows). This was apparently broken in version
20070919.

AcpiXtract: Handle EOF while extracting data. Correctly handle the case
where
the EOF happens immediately after the last table in the input file. Print
completion message. Previously, no message was displayed in this case.

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01 July 2008. Summary of changes for version 20080701:

0) Git source tree / acpica.org

Fixed a problem where a git-clone from http would not transfer the entire source tree.

1) ACPI CA Core Subsystem:

Implemented a "careful" GPE disable in AcpiEvDisableGpe, only modify one enable bit. Now performs a read-change-write of the enable register instead
of simply writing out the cached enable mask. This will prevent inadvertent
enabling of GPEs if a rogue GPE is received during initialization (before GPE
handlers are installed.)

Implemented a copy for dynamically loaded tables. Previously, dynamically loaded tables were simply mapped - but on some machines this memory is corrupted after suspend. Now copy the table to a local buffer. For the OpRegion case, added checksum verify. Use the table length from the table header, not the region length. For the Buffer case, use the table length also. Dennis Noordsij, Bob Moore. BZ 10734

Fixed a problem where the same ACPI table could not be dynamically loaded and
unloaded more than once. Without this change, a table cannot be loaded again
once it has been loaded/unloaded one time. The current mechanism does not unregister a table upon an unload. During a load, if the same table is found,
this no longer returns an exception. BZ 722

Fixed a problem where the wrong descriptor length was calculated for the EndTag descriptor in 64-bit mode. The "minimal" descriptors such as EndTag
are calculated as 12 bytes long, but the actual length in the internal descriptor is 16 because of the round-up to 8 on the 64-bit build. Reported
by Linn Crosetto. BZ 728

Fixed a possible memory leak in the Unload operator. The DdbHandle returned
by Load() did not have its reference count decremented during unload, leading
to a memory leak. Lin Ming. BZ 727

Fixed a possible memory leak when deleting thermal/processor objects. Any associated notify handlers (and objects) were not being deleted. Fiodor Suietov. BZ 506

Fixed the ordering of the ASCII names in the global mutex table to match the
actual mutex IDs. Used by AcpiUtGetMutexName, a function used for debug only.
Vegard Nossum. BZ 726

Enhanced the AcpiGetObjectInfo interface to return the number of required arguments if the object is a control method. Added this call to the debugger
so the proper number of default arguments are passed to a method. This prevents a warning when executing methods from AcpiExec.

Added a check for an invalid handle in AcpiGetObjectInfo. Return AE_BAD_PARAMETER if input handle is invalid. BZ 474

Fixed an extraneous warning from exconfig.c on the 64-bit build.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 79.3K Code, 16.2K Data, 95.5K Total
Debug Version: 153.0K Code, 48.2K Data, 201.2K Total
Current Release:
Non-Debug Version: 79.6K Code, 16.2K Data, 95.8K Total
Debug Version: 153.5K Code, 48.2K Data, 201.7K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Added two missing ACPI reserved names. Added _MTP and _ASZ, both resource descriptor names.

iASL: Detect invalid ASCII characters in input (windows version). Removed the
"-CF" flag from the flex compile, enables correct detection of non-ASCII characters in the input. BZ 441

iASL: Eliminate warning when result of LoadTable is not used. Eliminate the
"result of operation not used" warning when the DDB handle returned from LoadTable is not used. The warning is not needed. BZ 590

AcpiExec: Add support for dynamic table load/unload. Now calls _CFG method

to
pass address of table to the AML. Added option to disable OpRegion simulation
to allow creation of an OpRegion with a real address that was passed to _CFG.
All of this allows testing of the Load and Unload operators from AcpiExec.

Debugger: update tables command for unloaded tables. Handle unloaded tables
and use the standard table header output routine.

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09 June 2008. Summary of changes for version 20080609:

1) ACPI CA Core Subsystem:

Implemented a workaround for reversed _PRT entries. A significant number of
BIOSs erroneously reverse the _PRT SourceName and the SourceIndex. This change dynamically detects and repairs this problem. Provides compatibility
with MS ACPI. BZ 6859

Simplified the internal ACPI hardware interfaces to eliminate the locking flag parameter from Register Read/Write. Added a new external interface, AcpiGetRegisterUnlocked.

Fixed a problem where the invocation of a GPE control method could hang. This
was a regression introduced in 20080514. The new method argument count validation mechanism can enter an infinite loop when a GPE method is dispatched. Problem fixed by removing the obsolete code that passed GPE block
information to the notify handler via the control method parameter pointer.

Fixed a problem where the _SST execution status was incorrectly returned to
the caller of AcpiEnterSleepStatePrep. This was a regression introduced in
20080514. _SST is optional and a NOT_FOUND exception should never be returned. BZ 716

Fixed a problem where a deleted object could be accessed from within the AML
parser. This was a regression introduced in version 20080123 as a fix for the

Unload operator. Lin Ming. BZ 10669

Cleaned up the debug operand dump mechanism. Eliminated unnecessary operands
and eliminated the use of a negative index in a loop. Operands are now displayed in the correct order, not backwards. This also fixes a regression
introduced in 20080514 on 64-bit systems where the elimination of ACPI_NATIVE_UINT caused the negative index to go large and positive. BZ 715

Fixed a possible memory leak in EvPciConfigRegionSetup where the error exit
path did not delete a locally allocated structure.

Updated definitions for the DMAR and SRAT tables to synchronize with the current specifications. Includes disassembler support.

Fixed a problem in the mutex debug code (in utmutex.c) where an incorrect loop termination value was used. Loop terminated on iteration early, missing
one mutex. Linn Crosetto

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a
much larger code and data size.

Previous Release:
Non-Debug Version: 79.5K Code, 16.2K Data, 95.7K Total
Debug Version: 153.3K Code, 48.3K Data, 201.6K Total
Current Release:
Non-Debug Version: 79.3K Code, 16.2K Data, 95.5K Total
Debug Version: 153.0K Code, 48.2K Data, 201.2K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Implemented support for EisaId() within _CID objects. Now disassemble integer _CID objects back to EisaId invocations, including multiple integers within _CID packages. Includes single-step support for debugger also.

Disassembler: Added support for DMAR and SRAT table definition changes.

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14 May 2008. Summary of changes for version 20080514:

1) ACPI CA Core Subsystem:

Fixed a problem where GPEs were enabled too early during the ACPICA initialization. This could lead to "handler not installed" errors on some machines. Moved GPE enable until after _REG/_STA/_INI methods are run. This ensures that all operation regions and devices throughout the namespace have been initialized before GPEs are enabled. Alexey Starikovskiy, BZ 9916.

Implemented a change to the enter sleep code. Moved execution of the _GTS method to just before setting sleep enable bit. The execution was moved from AcpiEnterSleepStatePrep to AcpiEnterSleepState. _GTS is now executed immediately before the SLP_EN bit is set, as per the ACPI specification. Luming Yu, BZ 1653.

Implemented a fix to disable unknown GPEs (2nd version). Now always disable the GPE, even if ACPICA thinks that that it is already disabled. It is possible that the AML or some other code has enabled the GPE unbeknownst to the ACPICA code.

Fixed a problem with the Field operator where zero-length fields would return an AE_AML_NO_OPERAND exception during table load. Fix enables zero-length ASL field declarations in Field(), BankField(), and IndexField(). BZ 10606.

Implemented a fix for the Load operator, now load the table at the namespace root. This reverts a change introduced in version 20071019. The table is now loaded at the namespace root even though this goes against the ACPI specification. This provides compatibility with other ACPI implementations. The ACPI specification will be updated to reflect this in ACPI 4.0. Lin Ming.

Fixed a problem where ACPICA would not Load() tables with unusual signatures. Now ignore ACPI table signature for Load() operator. Only "SSDT" is acceptable to the ACPI spec, but tables are seen with OEMx and null sigs. Therefore, signature validation is worthless. Apparently MS ACPI accepts such signatures, ACPICA must be compatible. BZ 10454.

Fixed a possible negative array index in AcpiUtValidateException. Added
NULL
fields to the exception string arrays to eliminate a -1 subtraction on
the
SubStatus field.

Updated the debug tracking macros to reduce overall code and data size.
Changed ACPI_MODULE_NAME and ACPI_FUNCTION_NAME to use arrays of strings
instead of pointers to static strings. Jan Beulich and Bob Moore.

Implemented argument count checking in control method invocation via
AcpiEvaluateObject. Now emit an error if too few arguments, warning if
too
many. This applies only to extern programmatic control method execution,
not
method-to-method calls within the AML. Lin Ming.

Eliminated the ACPI_NATIVE_UINT type across all ACPICA code. This type is
no
longer needed, especially with the removal of 16-bit support. It was
replaced
mostly with UINT32, but also ACPI_SIZE where a type that changes 32/64
bit
on
32/64-bit platforms is required.

Added the C const qualifier for appropriate string constants -- mostly
MODULE_NAME and printf format strings. Jan Beulich.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a
much larger code and data size.

Previous Release:
Non-Debug Version: 80.0K Code, 17.4K Data, 97.4K Total
Debug Version: 159.4K Code, 64.4K Data, 223.8K Total
Current Release:
Non-Debug Version: 79.5K Code, 16.2K Data, 95.7K Total
Debug Version: 153.3K Code, 48.3K Data, 201.6K Total

2) iASL Compiler/Disassembler and Tools:

Implemented ACPI table revision ID validation in the disassembler. Zero
is
always invalid. For DSDTs, the ID controls the interpreter integer width.
1

means 32-bit and this is unusual. 2 or greater is 64-bit.

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21 March 2008. Summary of changes for version 20080321:

1) ACPI CA Core Subsystem:

Implemented an additional change to the GPE support in order to suppress spurious or stray GPEs. The AcpiEvDisableGpe function will now permanently
disable incoming GPEs that are neither enabled nor disabled -- meaning that
the GPE is unknown to the system. This should prevent future interrupt floods
from that GPE. BZ 6217 (Zhang Rui)

Fixed a problem where NULL package elements were not returned to the AcpiEvaluateObject interface correctly. The element was simply ignored instead of returning a NULL ACPI_OBJECT package element, potentially causing
a buffer overflow and/or confusing the caller who expected a fixed number of
elements. BZ 10132 (Lin Ming, Bob Moore)

Fixed a problem with the CreateField, CreateXXXField (Bit, Byte, Word, Dword,
Qword), Field, BankField, and IndexField operators when invoked from inside
an executing control method. In this case, these operators created namespace
nodes that were incorrectly left marked as permanent nodes instead of temporary nodes. This could cause a problem if there is race condition between an exiting control method and a running namespace walk. (Reported by
Linn Crosetto)

Fixed a problem where the CreateField and CreateXXXField operators would incorrectly allow duplicate names (the name of the field) with no exception
generated.

Implemented several changes for Notify handling. Added support for new Notify
values (ACPI 2.0+) and improved the Notify debug output. Notify on PowerResource objects is no longer allowed, as per the ACPI specification.
(Bob Moore, Zhang Rui)

All Reference Objects returned via the AcpiEvaluateObject interface are
now
marked as type "REFERENCE" instead of "ANY". The type ANY is now reserved
for
NULL objects - either NULL package elements or unresolved named
references.

Fixed a problem where an extraneous debug message was produced for
package
objects (when debugging enabled). The message "Package List length larger
than NumElements count" is now produced in the correct case, and is now
an
error message rather than a debug message. Added a debug message for the
opposite case, where NumElements is larger than the Package List (the
package
will be padded out with NULL elements as per the ACPI spec.)

Implemented several improvements for the output of the ASL "Debug" object
to
clarify and keep all data for a given object on one output line.

Fixed two size calculation issues with the variable-length Start
Dependent
resource descriptor.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has
a much larger code and data size.

Previous Release:
Non-Debug Version: 79.7K Code, 17.3K Data, 97.0K Total
Debug Version: 158.9K Code, 64.0K Data, 222.9K Total
Current Release:
Non-Debug Version: 80.0K Code, 17.4K Data, 97.4K Total
Debug Version: 159.4K Code, 64.4K Data, 223.8K Total

2) iASL Compiler/Disassembler and Tools:

Fixed a problem with the use of the Switch operator where execution of
the
containing method by multiple concurrent threads could cause an
AE_ALREADY_EXISTS exception. This is caused by the fact that there is no
actual Switch opcode, it must be simulated with local named temporary
variables and if/else pairs. The solution chosen was to mark any method
that
uses Switch as Serialized, thus preventing multiple thread entries. BZ

469.

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13 February 2008. Summary of changes for version 20080213:

1) ACPI CA Core Subsystem:

Implemented another MS compatibility design change for GPE/Notify handling.
GPEs are now cleared/enabled asynchronously to allow all pending notifies to
complete first. It is expected that the OSL will queue the enable request
behind all pending notify requests (may require changes to the local host OSL
in AcpiOsExecute). Alexey Starikovskiy.

Fixed a problem where buffer and package objects passed as arguments to a
control method via the external AcpiEvaluateObject interface could cause an
AE_AML_INTERNAL exception depending on the order and type of operators
executed by the target control method.

Fixed a problem where resource descriptor size optimization could cause a
problem when a _CRS resource template is passed to a _SRS method. The _SRS
resource template must use the same descriptors (with the same size) as
returned from _CRS. This change affects the following resource descriptors:
IRQ / IRQNoFlags and StartDependendentFn / StartDependentFnNoPri. (BZ 9487)

Fixed a problem where a CopyObject to RegionField, BankField, and IndexField
objects did not perform an implicit conversion as it should. These types must
retain their initial type permanently as per the ACPI specification. However,
a CopyObject to all other object types should not perform an implicit
conversion, as per the ACPI specification. (Lin Ming, Bob Moore) BZ 388

Fixed a problem with the AcpiGetDevices interface where the mechanism to
match device CIDs did not examine the entire list of available CIDs, but
instead aborted on the first non-matching CID. Andrew Patterson.

Fixed a regression introduced in version 20071114. The ACPI_HIDWORD macro was
inadvertently changed to return a 16-bit value instead of a 32-bit value,
truncating the upper dword of a 64-bit value. This macro is only used to

display debug output, so no incorrect calculations were made. Also, reimplemented the macro so that a 64-bit shift is not performed by inefficient compilers.

Added missing va_end statements that should correspond with each va_start statement.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 79.5K Code, 17.2K Data, 96.7K Total
Debug Version: 159.0K Code, 63.8K Data, 222.8K Total
Current Release:
Non-Debug Version: 79.7K Code, 17.3K Data, 97.0K Total
Debug Version: 158.9K Code, 64.0K Data, 222.9K Total

2) iASL Compiler/Disassembler and Tools:

Implemented full disassembler support for the following new ACPI tables: BERT, EINJ, and ERST. Implemented partial disassembler support for the complicated HEST table. These tables support the Windows Hardware Error Architecture (WHEA).

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23 January 2008. Summary of changes for version 20080123:

1) ACPI CA Core Subsystem:

Added the 2008 copyright to all module headers and signons. This affects virtually every file in the ACPICA core subsystem, the iASL compiler, and the tools/utilities.

Fixed a problem with the SizeOf operator when used with Package and Buffer
objects. These objects have deferred execution for some arguments, and the
execution is now completed before the SizeOf is executed. This problem caused
unexpected AE_PACKAGE_LIMIT errors on some systems (Lin Ming, Bob Moore) BZ
9558

Implemented an enhancement to the interpreter "slack mode". In the absence

of
an explicit return or an implicitly returned object from the last
executed
opcode, a control method will now implicitly return an integer of value 0
for
Microsoft compatibility. (Lin Ming) BZ 392

Fixed a problem with the Load operator where an exception was not
returned
in
the case where the table is already loaded. (Lin Ming) BZ 463

Implemented support for the use of DDBHandles as an Indexed Reference, as
per
the ACPI spec. (Lin Ming) BZ 486

Implemented support for UserTerm (Method invocation) for the Unload
operator
as per the ACPI spec. (Lin Ming) BZ 580

Fixed a problem with the LoadTable operator where the OemId and
OemTableId
input strings could cause unexpected failures if they were shorter than
the
maximum lengths allowed. (Lin Ming, Bob Moore) BZ 576

Implemented support for UserTerm (Method invocation) for the Unload
operator
as per the ACPI spec. (Lin Ming) BZ 580

Implemented header file support for new ACPI tables - BERT, ERST, EINJ,
HEST,
IBFT, UEFI, WDAT. Disassembler support is forthcoming.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has
a much larger code and data size.

Previous Release:
Non-Debug Version: 79.3K Code, 17.2K Data, 96.5K Total
Debug Version: 158.6K Code, 63.8K Data, 222.4K Total
Current Release:
Non-Debug Version: 79.5K Code, 17.2K Data, 96.7K Total
Debug Version: 159.0K Code, 63.8K Data, 222.8K Total

2) iASL Compiler/Disassembler and Tools:

Implemented support in the disassembler for checksum validation on incoming
binary DSDTs and SSDTs. If incorrect, a message is displayed within the table
header dump at the start of the disassembly.

Implemented additional debugging information in the namespace listing file
created during compilation. In addition to the namespace hierarchy, the full
pathname to each namespace object is displayed.

Fixed a problem with the disassembler where invalid ACPI tables could cause
faults or infinite loops.

Fixed an unexpected parse error when using the optional "parameter types"
list in a control method declaration. (Lin Ming) BZ 397

Fixed a problem where two External declarations with the same name did not
cause an error (Lin Ming) BZ 509

Implemented support for full TermArgs (adding Argx, Localx and method
invocation) for the ParameterData parameter to the LoadTable operator. (Lin
Ming) BZ 583,587

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19 December 2007. Summary of changes for version 20071219:

1) ACPI CA Core Subsystem:

Implemented full support for deferred execution for the TermArg string
arguments for DataTableRegion. This enables forward references and full
operand resolution for the three string arguments. Similar to OperationRegion
deferred argument execution.) Lin Ming. BZ 430

Implemented full argument resolution support for the BankValue argument to
BankField. Previously, only constants were supported, now any TermArg may be
used. Lin Ming BZ 387, 393

Fixed a problem with AcpiGetDevices where the search of a branch of the
device tree could be terminated prematurely. In accordance with the ACPI

specification, the search down the current branch is terminated if a device
is both not present and not functional (instead of just not present.)
Yakui
Zhao.

Fixed a problem where "unknown" GPEs could be allowed to fire repeatedly if
the underlying AML code changed the GPE enable registers. Now, any unknown
incoming GPE (no _Lxx/_Exx method and not the EC GPE) is immediately disabled
instead of simply ignored. Rui Zhang.

Fixed a problem with Index Fields where the Index register was incorrectly
limited to a maximum of 32 bits. Now any size may be used.

Fixed a couple memory leaks associated with "implicit return" objects when
the AML Interpreter slack mode is enabled. Lin Ming BZ 349

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
  Non-Debug Version: 79.0K Code, 17.2K Data, 96.2K Total
  Debug Version: 157.9K Code, 63.6K Data, 221.5K Total
Current Release:
  Non-Debug Version: 79.3K Code, 17.2K Data, 96.5K Total
  Debug Version: 158.6K Code, 63.8K Data, 222.4K Total

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14 November 2007. Summary of changes for version 20071114:

1) ACPI CA Core Subsystem:

Implemented event counters for each of the Fixed Events, the ACPI SCI
(interrupt) itself, and control methods executed. Named
AcpiFixedEventCount[], AcpiSciCount, and AcpiMethodCount respectively. These
should be useful for debugging and statistics.

Implemented a new external interface, AcpiGetStatistics, to retrieve the
contents of the various event counters. Returns the current values for

AcpiSciCount, AcpiGpeCount, the AcpiFixedEventCount array, and AcpiMethodCount. The interface can be expanded in the future if new counters
are added. Device drivers should use this interface rather than access the
counters directly.

Fixed a problem with the FromBCD and ToBCD operators. With some compilers,
the ShortDivide function worked incorrectly, causing problems with the BCD
functions with large input values. A truncation from 64-bit to 32-bit inadvertently occurred. Internal BZ 435. Lin Ming

Fixed a problem with Index references passed as method arguments. References
passed as arguments to control methods were dereferenced immediately (before
control was passed to the called method). The references are now correctly
passed directly to the called method. BZ 5389. Lin Ming

Fixed a problem with CopyObject used in conjunction with the Index operator.
The reference was incorrectly dereferenced before the copy. The reference is
now correctly copied. BZ 5391. Lin Ming

Fixed a problem with Control Method references within Package objects. These
references are now correctly generated. This completes the package construction overhaul that began in version 20071019.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 78.8K Code, 17.2K Data, 96.0K Total
Debug Version: 157.2K Code, 63.4K Data, 220.6K Total
Current Release:
Non-Debug Version: 79.0K Code, 17.2K Data, 96.2K Total
Debug Version: 157.9K Code, 63.6K Data, 221.5K Total

2) iASL Compiler/Disassembler and Tools:

The AcpiExec utility now installs handlers for all of the predefined Operation Region types. New types supported are: PCI_Config, CMOS, and PCIBARTarget.

Fixed a problem with the 64-bit version of AcpiExec where the extended (64-
bit) address fields for the DSDT and FACS within the FADT were not being used, causing truncation of the upper 32-bits of these addresses. Lin Ming
and Bob Moore

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19 October 2007. Summary of changes for version 20071019:

1) ACPI CA Core Subsystem:

Fixed a problem with the Alias operator when the target of the alias is a named ASL operator that opens a new scope -- Scope, Device, PowerResource,
Processor, and ThermalZone. In these cases, any children of the original operator could not be accessed via the alias, potentially causing unexpected
AE_NOT_FOUND exceptions. (BZ 9067)

Fixed a problem with the Package operator where all named references were created as object references and left otherwise unresolved. According to the
ACPI specification, a Package can only contain Data Objects or references to
control methods. The implication is that named references to Data Objects (Integer, Buffer, String, Package, BufferField, Field) should be resolved immediately upon package creation. This is the approach taken with this change. References to all other named objects (Methods, Devices, Scopes, etc.) are all now properly created as reference objects. (BZ 5328)

Reverted a change to Notify handling that was introduced in version 20070508. This version changed the Notify handling from asynchronous to fully synchronous (Device driver Notify handling with respect to the Notify
ASL operator). It was found that this change caused more problems than it solved and was removed by most users.

Fixed a problem with the Increment and Decrement operators where the type of
the target object could be unexpectedly and incorrectly changed. (BZ 353) Lin Ming.

Fixed a problem with the Load and LoadTable operators where the table location within the namespace was ignored. Instead, the table was always loaded into the root or current scope. Lin Ming.

Fixed a problem with the Load operator when loading a table from a buffer object. The input buffer was prematurely zeroed and/or deleted. (BZ 577)

Fixed a problem with the Debug object where a store of a DdbHandle reference
object to the Debug object could cause a fault.

Added a table checksum verification for the Load operator, in the case where
the load is from a buffer. (BZ 578).

Implemented additional parameter validation for the LoadTable operator. The
length of the input strings SignatureString, OemIdString, and OemTableId are
now checked for maximum lengths. (BZ 582) Lin Ming.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 78.5K Code, 17.1K Data, 95.6K Total
Debug Version: 156.7K Code, 63.2K Data, 219.9K Total
Current Release:
Non-Debug Version: 78.8K Code, 17.2K Data, 96.0K Total
Debug Version: 157.2K Code, 63.4K Data, 220.6K Total

2) iASL Compiler/Disassembler:

Fixed a problem where if a single file was specified and the file did not exist, no error message was emitted. (Introduced with wildcard support in version 20070917.)

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19 September 2007. Summary of changes for version 20070919:

1) ACPI CA Core Subsystem:

Designed and implemented new external interfaces to install and remove handlers for ACPI table-related events. Current events that are defined

are
LOAD and UNLOAD. These interfaces allow the host to track ACPI tables as they are dynamically loaded and unloaded. See AcpiInstallTableHandler and AcpiRemoveTableHandler. (Lin Ming and Bob Moore)

Fixed a problem where the use of the AcpiGbl_AllMethodsSerialized flag (acpi_serialized option on Linux) could cause some systems to hang during initialization. (Bob Moore) BZ 8171

Fixed a problem where objects of certain types (Device, ThermalZone, Processor, PowerResource) can be not found if they are declared and referenced from within the same control method (Lin Ming) BZ 341

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 78.3K Code, 17.0K Data, 95.3K Total
Debug Version: 156.3K Code, 63.1K Data, 219.4K Total
Current Release:
Non-Debug Version: 78.5K Code, 17.1K Data, 95.6K Total
Debug Version: 156.7K Code, 63.2K Data, 219.9K Total

2) iASL Compiler/Disassembler:

Implemented support to allow multiple files to be compiled/disassembled in
a
single invocation. This includes command line wildcard support for both the
Windows and Unix versions of the compiler. This feature simplifies the disassembly and compilation of multiple ACPI tables in a single directory.

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08 May 2007. Summary of changes for version 20070508:

1) ACPI CA Core Subsystem:

Implemented a Microsoft compatibility design change for the handling of the
Notify AML operator. Previously, notify handlers were dispatched and executed completely asynchronously in a deferred thread. The new design still executes the notify handlers in a different thread, but the

original
thread that executed the Notify() now waits at a synchronization point
for
the notify handler to complete. Some machines depend on a synchronous
Notify
operator in order to operate correctly.

Implemented support to allow Package objects to be passed as method
arguments to the external AcpiEvaluateObject interface. Previously, this
would return the AE_NOT_IMPLEMENTED exception. This feature had not been
implemented since there were no reserved control methods that required it
until recently.

Fixed a problem with the internal FADT conversion where ACPI 1.0 FADTs
that
contained invalid non-zero values in reserved fields could cause later
failures because these fields have meaning in later revisions of the
FADT.
For incoming ACPI 1.0 FADTs, these fields are now always zeroed. (The
fields
are: Preferred_PM_Profile, PSTATE_CNT, CST_CNT, and IAPC_BOOT_FLAGS.)

Fixed a problem where the Global Lock handle was not properly updated if
a
thread that acquired the Global Lock via executing AML code then
attempted
to acquire the lock via the AcpiAcquireGlobalLock interface. Reported by
Joe
Liu.

Fixed a problem in AcpiEvDeleteGpeXrupt where the global interrupt list
could be corrupted if the interrupt being removed was at the head of the
list. Reported by Linn Crosetto.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has
a much larger code and data size.

Previous Release:
Non-Debug Version: 78.0K Code, 17.1K Data, 95.1K Total
Debug Version: 155.9K Code, 63.1K Data, 219.0K Total
Current Release:
Non-Debug Version: 78.3K Code, 17.0K Data, 95.3K Total
Debug Version: 156.3K Code, 63.1K Data, 219.4K Total

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20 March 2007. Summary of changes for version 20070320:

1) ACPI CA Core Subsystem:

Implemented a change to the order of interpretation and evaluation of AML operand objects within the AML interpreter. The interpreter now evaluates operands in the order that they appear in the AML stream (and the corresponding ASL code), instead of in the reverse order (after the entire operand list has been parsed). The previous behavior caused several subtle incompatibilities with the Microsoft AML interpreter as well as being somewhat non-intuitive. BZ 7871, local BZ 263. Valery Podrezov.

Implemented a change to the ACPI Global Lock support. All interfaces to the global lock now allow the same thread to acquire the lock multiple times. This affects the AcpiAcquireGlobalLock external interface to the global lock as well as the internal use of the global lock to support AML fields -- a control method that is holding the global lock can now simultaneously access AML fields that require global lock protection. Previously, in both cases, this would have resulted in an AE_ALREADY_ACQUIRED exception. The change to AcpiAcquireGlobalLock is of special interest to drivers for the Embedded Controller. There is no change to the behavior of the AML Acquire operator, as this can already be used to acquire a mutex multiple times by the same thread. BZ 8066. With assistance from Alexey Starikovskiy.

Fixed a problem where invalid objects could be referenced in the AML Interpreter after error conditions. During operand evaluation, ensure that the internal "Return Object" field is cleared on error and only valid pointers are stored there. Caused occasional access to deleted objects that resulted in "large reference count" warning messages. Valery Podrezov.

Fixed a problem where an AE_STACK_OVERFLOW internal exception could occur on deeply nested control method invocations. BZ 7873, local BZ 487. Valery Podrezov.

Fixed an internal problem with the handling of result objects on the interpreter result stack. BZ 7872. Valery Podrezov.

Removed obsolete code that handled the case where AML_NAME_OP is the
target
of a reference (Reference.Opcode). This code was no longer necessary. BZ
7874. Valery Podrezov.

Removed obsolete ACPI_NO_INTEGER64_SUPPORT from two header files. This
was
a
remnant from the previously discontinued 16-bit support.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has
a much larger code and data size.

Previous Release:
Non-Debug Version: 78.0K Code, 17.1K Data, 95.1K Total
Debug Version: 155.8K Code, 63.3K Data, 219.1K Total
Current Release:
Non-Debug Version: 78.0K Code, 17.1K Data, 95.1K Total
Debug Version: 155.9K Code, 63.1K Data, 219.0K Total

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26 January 2007. Summary of changes for version 20070126:

1) ACPI CA Core Subsystem:

Added the 2007 copyright to all module headers and signons. This affects
virtually every file in the ACPICA core subsystem, the iASL compiler, and
the utilities.

Implemented a fix for an incorrect parameter passed to AcpiTbDeleteTable
during a table load. A bad pointer was passed in the case where the DSDT
is
overridden, causing a fault in this case.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has
a much larger code and data size.

Previous Release:
Non-Debug Version: 78.0K Code, 17.1K Data, 95.1K Total
Debug Version: 155.8K Code, 63.3K Data, 219.1K Total
Current Release:
Non-Debug Version: 78.0K Code, 17.1K Data, 95.1K Total

Debug Version: 155.8K Code, 63.3K Data, 219.1K Total

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15 December 2006. Summary of changes for version 20061215:

1) ACPI CA Core Subsystem:

Support for 16-bit ACPICA has been completely removed since it is no longer
necessary and it clutters the code. All 16-bit macros, types, and
conditional compiles have been removed, cleaning up and simplifying the code
across the entire subsystem. DOS support is no longer needed since the
bootable Linux firmware kit is now available.

The handler for the Global Lock is now removed during AcpiTerminate to
enable a clean subsystem restart, via the implementation of the
AcpiEvRemoveGlobalLockHandler function. (With assistance from Joel Bretz, HP)

Implemented enhancements to the multithreading support within the debugger
to enable improved multithreading debugging and evaluation of the subsystem.
(Valery Podrezov)

Debugger: Enhanced the Statistics/Memory command to emit the total (maximum)
memory used during the execution, as well as the maximum memory consumed by
each of the various object types. (Valery Podrezov)

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 77.9K Code, 17.0K Data, 94.9K Total
Debug Version: 155.2K Code, 63.1K Data, 218.3K Total
Current Release:
Non-Debug Version: 78.0K Code, 17.1K Data, 95.1K Total
Debug Version: 155.8K Code, 63.3K Data, 219.1K Total

2) iASL Compiler/Disassembler and Tools:

AcpiExec: Implemented a new option (-m) to display full memory use statistics upon subsystem/program termination. (Valery Podrezov)

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09 November 2006. Summary of changes for version 20061109:

1) ACPI CA Core Subsystem:

Optimized the Load ASL operator in the case where the source operand is an operation region. Simply map the operation region memory, instead of performing a bytewise read. (Region must be of type SystemMemory, see below.)

Fixed the Load ASL operator for the case where the source operand is a region field. A buffer object is also allowed as the source operand. BZ 480

Fixed a problem where the Load ASL operator allowed the source operand to be an operation region of any type. It is now restricted to regions of type SystemMemory, as per the ACPI specification. BZ 481

Additional cleanup and optimizations for the new Table Manager code.

AcpiEnable will now fail if all of the required ACPI tables are not loaded (FADT, FACS, DSDT). BZ 477

Added #pragma pack(8/4) to acobject.h to ensure that the structures in this header are always compiled as aligned. The ACPI_OPERAND_OBJECT has been manually optimized to be aligned and will not work if it is byte-packed.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:
Non-Debug Version: 78.1K Code, 17.1K Data, 95.2K Total
Debug Version: 155.4K Code, 63.1K Data, 218.5K Total
Current Release:
Non-Debug Version: 77.9K Code, 17.0K Data, 94.9K Total
Debug Version: 155.2K Code, 63.1K Data, 218.3K Total

2) iASL Compiler/Disassembler and Tools:

Fixed a problem where the presence of the _OSI predefined control method
within complex expressions could cause an internal compiler error.

AcpiExec: Implemented full region support for multiple address spaces.
SpaceId is now part of the REGION object. BZ 429

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11 October 2006. Summary of changes for version 20061011:

1) ACPI CA Core Subsystem:

Completed an AML interpreter performance enhancement for control method
execution. Previously a 2-pass parse/execution, control methods are now
completely parsed and executed in a single pass. This improves overall
interpreter performance by ~25%, reduces code size, and reduces CPU stack
use. (Valery Podrezov + interpreter changes in version 20051202 that
eliminated namespace loading during the pass one parse.)

Implemented _CID support for PCI Root Bridge detection. If the _HID does
not
match the predefined PCI Root Bridge IDs, the _CID list (if present) is
now
obtained and also checked for an ID match.

Implemented additional support for the PCI _ADR execution: upsearch until
a
device scope is found before executing _ADR. This allows PCI_Config
operation regions to be declared locally within control methods
underneath
PCI device objects.

Fixed a problem with a possible race condition between threads executing
AcpiWalkNamespace and the AML interpreter. This condition was removed by
modifying AcpiWalkNamespace to (by default) ignore all temporary
namespace
entries created during any concurrent control method execution. An
additional namespace race condition is known to exist between
AcpiWalkNamespace and the Load/Unload ASL operators and is still under
investigation.

Restructured the AML ParseLoop function, breaking it into several
subfunctions in order to reduce CPU stack use and improve
maintainability.
(Mikhail Kouzmich)

AcpiGetHandle: Fix for parameter validation to detect invalid

combinations
of prefix handle and pathname. BZ 478

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 77.9K Code, 17.1K Data, 95.0K Total
Debug Version: 154.6K Code, 63.0K Data, 217.6K Total
Current Release:
Non-Debug Version: 78.1K Code, 17.1K Data, 95.2K Total
Debug Version: 155.4K Code, 63.1K Data, 218.5K Total

2) iASL Compiler/Disassembler and Tools:

Ported the -g option (get local ACPI tables) to the new ACPICA Table Manager
to restore original behavior.

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27 September 2006. Summary of changes for version 20060927:

1) ACPI CA Core Subsystem:

Removed the "Flags" parameter from AcpiGetRegister and AcpiSetRegister. These functions now use a spinlock for mutual exclusion and the interrupt level indication flag is not needed.

Fixed a problem with the Global Lock where the lock could appear to be obtained before it is actually obtained. The global lock semaphore was inadvertently created with one unit instead of zero units. (BZ 464) Fiodor
Suietov.

Fixed a possible memory leak and fault in AcpiExResolveObjectToValue during
a read from a buffer or region field. (BZ 458) Fiodor Suietov.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:

Non-Debug Version: 77.9K Code, 17.1K Data, 95.0K Total
Debug Version: 154.7K Code, 63.0K Data, 217.7K Total
Current Release:
Non-Debug Version: 77.9K Code, 17.1K Data, 95.0K Total
Debug Version: 154.6K Code, 63.0K Data, 217.6K Total

2) iASL Compiler/Disassembler and Tools:

Fixed a compilation problem with the pre-defined Resource Descriptor field
names where an "object does not exist" error could be incorrectly generated
if the parent ResourceTemplate pathname places the template within a different namespace scope than the current scope. (BZ 7212)

Fixed a problem where the compiler could hang after syntax errors detected
in an ElseIf construct. (BZ 453)

Fixed a problem with the AmlFilename parameter to the DefinitionBlock() operator. An incorrect output filename was produced when this parameter was
a null string (""). Now, the original input filename is used as the AML output filename, with an ".aml" extension.

Implemented a generic batch command mode for the AcpiExec utility (execute
any AML debugger command) (Valery Podrezov).

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12 September 2006. Summary of changes for version 20060912:

1) ACPI CA Core Subsystem:

Enhanced the implementation of the "serialized mode" of the interpreter (enabled via the AcpiGbl_AllMethodsSerialized flag.) When this mode is specified, instead of creating a serialization semaphore per control method,
the interpreter lock is simply no longer released before a blocking operation during control method execution. This effectively makes the AML Interpreter single-threaded. The overhead of a semaphore per-method is eliminated.

Fixed a regression where an error was no longer emitted if a control method
attempts to create 2 objects of the same name. This once again returns AE_ALREADY_EXISTS. When this exception occurs, it invokes the mechanism

that
will dynamically serialize the control method to possible prevent future errors. (BZ 440)

Integrated a fix for a problem with PCI Express HID detection in the PCI Config Space setup procedure. (BZ 7145)

Moved all FADT-related functions to a new file, tbfadt.c. Eliminated the AcpiHwInitialize function - the FADT registers are now validated when the table is loaded.

Added two new warnings during FADT verification - 1) if the FADT is larger
than the largest known FADT version, and 2) if there is a mismatch between
a
32-bit block address and the 64-bit X counterpart (when both are non-zero.)

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 77.9K Code, 16.7K Data, 94.6K Total
Debug Version: 154.9K Code, 62.6K Data, 217.5K Total
Current Release:
Non-Debug Version: 77.9K Code, 17.1K Data, 95.0K Total
Debug Version: 154.7K Code, 63.0K Data, 217.7K Total

2) iASL Compiler/Disassembler and Tools:

Fixed a problem with the implementation of the Switch() operator where the
temporary variable was declared too close to the actual Switch, instead of
at method level. This could cause a problem if the Switch() operator is within a while loop, causing an error on the second iteration. (BZ 460)

Disassembler - fix for error emitted for unknown type for target of scope operator. Now, ignore it and continue.

Disassembly of an FADT now verifies the input FADT and reports any errors found. Fix for proper disassembly of full-sized (ACPI 2.0) FADTs.

Disassembly of raw data buffers with byte initialization data now
prefixes
each output line with the current buffer offset.

Disassembly of ASF! table now includes all variable-length data fields at
the end of some of the subtables.

The disassembler now emits a comment if a buffer appears to be a
ResourceTemplate, but cannot be disassembled as such because the EndTag
does
not appear at the very end of the buffer.

AcpiExec - Added the "-t" command line option to enable the serialized
mode
of the AML interpreter.

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31 August 2006. Summary of changes for version 20060831:

1) ACPI CA Core Subsystem:

Miscellaneous fixes for the Table Manager:
- Correctly initialize internal common FADT for all 64-bit "X" fields
- Fixed a couple table mapping issues during table load
- Fixed a couple alignment issues for IA64
- Initialize input array to zero in AcpiInitializeTables
- Additional parameter validation for AcpiGetTable, AcpiGetTableHeader,
AcpiGetTableByIndex

Change for GPE support: when a "wake" GPE is received, all wake GPEs are
now
immediately disabled to prevent the waking GPE from firing again and to
prevent other wake GPEs from interrupting the wake process.

Added the AcpiGpeCount global that tracks the number of processed GPEs,
to
be used for debugging systems with a large number of ACPI interrupts.

Implemented support for the "DMAR" ACPI table (DMA Redirection Table) in
both the ACPICA headers and the disassembler.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has
a much larger code and data size.

Previous Release:

Non-Debug Version: 77.8K Code, 16.5K Data, 94.3K Total
Debug Version: 154.6K Code, 62.3K Data, 216.9K Total
Current Release:
Non-Debug Version: 77.9K Code, 16.7K Data, 94.6K Total
Debug Version: 154.9K Code, 62.6K Data, 217.5K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler support for the DMAR ACPI table.

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23 August 2006. Summary of changes for version 20060823:

1) ACPI CA Core Subsystem:

The Table Manager component has been completely redesigned and reimplemented. The new design is much simpler, and reduces the overall code
and data size of the kernel-resident ACPICA by approximately 5%. Also, it is
now possible to obtain the ACPI tables very early during kernel initialization, even before dynamic memory management is initialized. (Alexey Starikovskiy, Fiodor Suietov, Bob Moore)

Obsolete ACPICA interfaces:

- AcpiGetFirmwareTable: Use AcpiGetTable instead (works at early kernel init
time).
- AcpiLoadTable: Not needed.
- AcpiUnloadTable: Not needed.

New ACPICA interfaces:

- AcpiInitializeTables: Must be called before the table manager can be used.
- AcpiReallocateRootTable: Used to transfer the root table to dynamically allocated memory after it becomes available.
- AcpiGetTableByIndex: Allows the host to easily enumerate all ACPI tables
in the RSDT/XSDT.

Other ACPICA changes:

- AcpiGetTableHeader returns the actual mapped table header, not a copy. Use
AcpiOsUnmapMemory to free this mapping.

- AcpiGetTable returns the actual mapped table. The mapping is managed internally and must not be deleted by the caller. Use of this interface causes no additional dynamic memory allocation.
- AcpiFindRootPointer: Support for physical addressing has been eliminated,
it appeared to be unused.
- The interface to AcpiOsMapMemory has changed to be consistent with the other allocation interfaces.
- The interface to AcpiOsGetRootPointer has changed to eliminate unnecessary
parameters.
- ACPI_PHYSICAL_ADDRESS is now 32 bits on 32-bit platforms, 64 bits on 64-
bit platforms. Was previously 64 bits on all platforms.
- The interface to the ACPI Global Lock acquire/release macros have changed
slightly since ACPICA no longer keeps a local copy of the FACS with a constructed pointer to the actual global lock.

Porting to the new table manager:

- AcpiInitializeTables: Must be called once, and can be called anytime during the OS initialization process. It allows the host to specify an area
of memory to be used to store the internal version of the RSDT/XSDT (root table). This allows the host to access ACPI tables before memory management
is initialized and running.
- AcpiReallocateRootTable: Can be called after memory management is running
to copy the root table to a dynamically allocated array, freeing up the scratch memory specified in the call to AcpiInitializeTables.
- AcpiSubsystemInitialize: This existing interface is independent of the Table Manager, and does not have to be called before the Table Manager can
be used, it only must be called before the rest of ACPICA can be used.
- ACPI Tables: Some changes have been made to the names and structure of the
actbl.h and actbl1.h header files and may require changes to existing code.
For example, bitfields have been completely removed because of their lack of
portability across C compilers.
- Update interfaces to the Global Lock acquire/release macros if local versions are used. (see acwin.h)

Obsolete files: tbconvrt.c, tbget.c, tbgetall.c, tbrsdt.c

New files: tbfind.c

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 80.7K Code, 17.9K Data, 98.6K Total
Debug Version: 161.0K Code, 65.1K Data, 226.1K Total
Current Release:
Non-Debug Version: 77.8K Code, 16.5K Data, 94.3K Total
Debug Version: 154.6K Code, 62.3K Data, 216.9K Total

2) iASL Compiler/Disassembler and Tools:

No changes for this release.

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21 July 2006. Summary of changes for version 20060721:

1) ACPI CA Core Subsystem:

The full source code for the ASL test suite used to validate the iASL compiler and the ACPICA core subsystem is being released with the ACPICA source for the first time. The source is contained in a separate package and
consists of over 1100 files that exercise all ASL/AML operators. The package
should appear on the Intel/ACPI web site shortly. (Valery Podrezov, Fiodor
Suietov)

Completed a new design and implementation for support of the ACPI Global Lock. On the OS side, the global lock is now treated as a standard AML mutex. Previously, multiple OS threads could "acquire" the global lock simultaneously. However, this could cause the BIOS to be starved out of the
lock - especially in cases such as the Embedded Controller driver where there is a tight coupling between the OS and the BIOS.

Implemented an optimization for the ACPI Global Lock interrupt mechanism. The Global Lock interrupt handler no longer queues the execution of a separate thread to signal the global lock semaphore. Instead, the semaphore
is signaled directly from the interrupt handler.

Implemented support within the AML interpreter for package objects that contain a larger AML length (package list length) than the package element
count. In this case, the length of the package is truncated to match the package element count. Some BIOS code apparently modifies the package length
on the fly, and this change supports this behavior. Provides compatibility
with the MS AML interpreter. (With assistance from Fiodor Suietov)

Implemented a temporary fix for the BankValue parameter of a Bank Field to
support all constant values, now including the Zero and One opcodes. Evaluation of this parameter must eventually be converted to a full TermArg
evaluation. A not-implemented error is now returned (temporarily) for non-
constant values for this parameter.

Fixed problem reports (Fiodor Suietov) integrated:
- Fix for premature object deletion after CopyObject on Operation Region (BZ
350)

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 80.7K Code, 18.0K Data, 98.7K Total
Debug Version: 160.9K Code, 65.1K Data, 226.0K Total
Current Release:
Non-Debug Version: 80.7K Code, 17.9K Data, 98.6K Total
Debug Version: 161.0K Code, 65.1K Data, 226.1K Total

2) iASL Compiler/Disassembler and Tools:

No changes for this release.

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07 July 2006. Summary of changes for version 20060707:

1) ACPI CA Core Subsystem:

Added the ACPI_PACKED_POINTERS_NOT_SUPPORTED macro to support C compilers that do not allow the initialization of address pointers within packed structures - even though the hardware itself may support misaligned transfers. Some of the debug data structures are packed by default to minimize size.

Added an error message for the case where AcpiOsGetThreadId() returns zero.
A non-zero value is required by the core ACPICA code to ensure the proper operation of AML mutexes and recursive control methods.

The DSDT is now the only ACPI table that determines whether the AML interpreter is in 32-bit or 64-bit mode. Not really a functional change, but
the hooks for per-table 32/64 switching have been removed from the code. A
clarification to the ACPI specification is forthcoming in ACPI 3.0B.

Fixed a possible leak of an OwnerID in the error path of AcpiTbInitTableDescriptor (tbinstal.c), and migrated all table OwnerID deletion to a single place in AcpiTbUninstallTable to correct possible leaks
when using the AcpiTbDeleteTablesByType interface (with assistance from Lance Ortiz.)

Fixed a problem with Serialized control methods where the semaphore associated with the method could be over-signaled after multiple method invocations.

Fixed two issues with the locking of the internal namespace data structure.
Both the Unload() operator and AcpiUnloadTable interface now lock the namespace during the namespace deletion associated with the table unload (with assistance from Linn Crosetto.)

Fixed problem reports (Valery Podrezov) integrated:
- Eliminate unnecessary memory allocation for CreateXxxxField (BZ 5426)

Fixed problem reports (Fiodor Suietov) integrated:
- Incomplete cleanup branches in AcpiTbGetTableRsdt (BZ 369)
- On Address Space handler deletion, needless deactivation call (BZ 374)
- AcpiRemoveAddressSpaceHandler: validate Device handle parameter (BZ 375)
- Possible memory leak, Notify sub-objects of Processor, Power, ThermalZone
(BZ 376)
- AcpiRemoveAddressSpaceHandler: validate Handler parameter (BZ 378)
- Minimum Length of RSDT should be validated (BZ 379)

- AcpiRemoveNotifyHandler: return AE_NOT_EXIST if Processor Obj has no Handler (BZ (380)
- AcpiUnloadTable: return AE_NOT_EXIST if no table of specified type loaded
(BZ 381)

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 80.5K Code, 17.8K Data, 98.3K Total
Debug Version: 160.8K Code, 64.8K Data, 225.6K Total
Current Release:
Non-Debug Version: 80.7K Code, 17.9K Data, 98.6K Total
Debug Version: 161.0K Code, 65.1K Data, 226.1K Total

2) iASL Compiler/Disassembler and Tools:

Fixed problem reports:
Compiler segfault when ASL contains a long (>1024) String declaration (BZ 436)

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23 June 2006. Summary of changes for version 20060623:

1) ACPI CA Core Subsystem:

Implemented a new ACPI_SPINLOCK type for the OSL lock interfaces. This allows the type to be customized to the host OS for improved efficiency (since a spinlock is usually a very small object.)

Implemented support for "ignored" bits in the ACPI registers. According to
the ACPI specification, these bits should be preserved when writing the registers via a read/modify/write cycle. There are 3 bits preserved in this
manner: PM1_CONTROL[0] (SCI_EN), PM1_CONTROL[9], and PM1_STATUS[11].

Implemented the initial deployment of new OSL mutex interfaces. Since some
host operating systems have separate mutex and semaphore objects, this feature was requested. The base code now uses mutexes (and the new mutex interfaces) wherever a binary semaphore was used previously. However, for the current release, the mutex interfaces are defined as macros to map

them
to the existing semaphore interfaces. Therefore, no OSL changes are
required
at this time. (See acpiosxf.h)

Fixed several problems with the support for the control method SyncLevel
parameter. The SyncLevel now works according to the ACPI specification
and
in concert with the Mutex SyncLevel parameter, since the current
SyncLevel
is a property of the executing thread. Mutual exclusion for control
methods
is now implemented with a mutex instead of a semaphore.

Fixed three instances of the use of the C shift operator in the bitfield
support code (exfldio.c) to avoid the use of a shift value larger than
the
target data width. The behavior of C compilers is undefined in this case
and
can cause unpredictable results, and therefore the case must be detected
and
avoided. (Fiodor Suietov)

Added an info message whenever an SSDT or OEM table is loaded dynamically
via the Load() or LoadTable() ASL operators. This should improve
debugging
capability since it will show exactly what tables have been loaded
(beyond
the tables present in the RSDT/XSDT.)

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has
a much larger code and data size.

Previous Release:
Non-Debug Version: 80.0K Code, 17.6K Data, 97.6K Total
Debug Version: 160.2K Code, 64.7K Data, 224.9K Total
Current Release:
Non-Debug Version: 80.5K Code, 17.8K Data, 98.3K Total
Debug Version: 160.8K Code, 64.8K Data, 225.6K Total

2) iASL Compiler/Disassembler and Tools:

No changes for this release.

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08 June 2006. Summary of changes for version 20060608:

1) ACPI CA Core Subsystem:

Converted the locking mutex used for the ACPI hardware to a spinlock. This
change should eliminate all problems caused by attempting to acquire a
semaphore at interrupt level, and it means that all ACPICA external
interfaces that directly access the ACPI hardware can be safely called from
interrupt level. OSL code that implements the semaphore interfaces should be
able to eliminate any workarounds for being called at interrupt level.

Fixed a regression introduced in 20060526 where the ACPI device
initialization could be prematurely aborted with an AE_NOT_FOUND if a device
did not have an optional _INI method.

Fixed an IndexField issue where a write to the Data Register should be
limited in size to the AccessSize (width) of the IndexField itself. (BZ 433,
Fiodor Suietov)

Fixed problem reports (Valery Podrezov) integrated:
- Allow store of ThermalZone objects to Debug object (BZ 5369/5370)

Fixed problem reports (Fiodor Suietov) integrated:
- AcpiGetTableHeader doesn't handle multiple instances correctly (BZ 364)

Removed four global mutexes that were obsolete and were no longer being
used.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 80.0K Code, 17.7K Data, 97.7K Total
Debug Version: 160.3K Code, 64.9K Data, 225.2K Total
Current Release:
Non-Debug Version: 80.0K Code, 17.6K Data, 97.6K Total
Debug Version: 160.2K Code, 64.7K Data, 224.9K Total

2) iASL Compiler/Disassembler and Tools:

Fixed a fault when using -g option (get tables from registry) on Windows machines.

Fixed problem reports integrated:
- Generate error if CreateField NumBits parameter is zero. (BZ 405)
- Fault if Offset/Length in Field unit is very large (BZ 432, Fiodor Suietov)
- Global table revision override (-r) is ignored (BZ 413)

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26 May 2006. Summary of changes for version 20060526:

1) ACPI CA Core Subsystem:

Restructured, flattened, and simplified the internal interfaces for namespace object evaluation - resulting in smaller code, less CPU stack use,
and fewer interfaces. (With assistance from Mikhail Kouzmich)

Fixed a problem with the CopyObject operator where the first parameter was
not typed correctly for the parser, interpreter, compiler, and disassembler.
Caused various errors and unexpected behavior.

Fixed a problem where a ShiftLeft or ShiftRight of more than 64 bits produced incorrect results with some C compilers. Since the behavior of C compilers when the shift value is larger than the datatype width is apparently not well defined, the interpreter now detects this condition and
simply returns zero as expected in all such cases. (BZ 395)

Fixed problem reports (Valery Podrezov) integrated:
- Update String-to-Integer conversion to match ACPI 3.0A spec (BZ 5329)
- Allow interpreter to handle nested method declarations (BZ 5361)

Fixed problem reports (Fiodor Suietov) integrated:
- AcpiTerminate doesn't free debug memory allocation list objects (BZ 355)
- After Core Subsystem shutdown, AcpiSubsystemStatus returns AE_OK (BZ 356)
- AcpiOsUnmapMemory for RSDP can be invoked inconsistently (BZ 357)
- Resource Manager should return AE_TYPE for non-device objects (BZ 358)
- Incomplete cleanup branch in AcpiNsEvaluateRelative (BZ 359)
- Use AcpiOsFree instead of ACPI_FREE in AcpiRsSetSrsMethodData (BZ 360)
- Incomplete cleanup branch in AcpiPsParseAml (BZ 361)

- Incomplete cleanup branch in AcpiDsDeleteWalkState (BZ 362)
- AcpiGetTableHeader returns AE_NO_ACPI_TABLES until DSDT is loaded (BZ 365)
- Status of the Global Initialization Handler call not used (BZ 366)
- Incorrect object parameter to Global Initialization Handler (BZ 367)

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 79.8K Code, 17.7K Data, 97.5K Total
Debug Version: 160.5K Code, 65.1K Data, 225.6K Total
Current Release:
Non-Debug Version: 80.0K Code, 17.7K Data, 97.7K Total
Debug Version: 160.3K Code, 64.9K Data, 225.2K Total

2) iASL Compiler/Disassembler and Tools:

Modified the parser to allow the names IO, DMA, and IRQ to be used as namespace identifiers with no collision with existing resource descriptor macro names. This provides compatibility with other ASL compilers and is most useful for disassembly/recompilation of existing tables without parse
errors. (With assistance from Thomas Renninger)

Disassembler: fixed an incorrect disassembly problem with the DataTableRegion and CopyObject operators. Fixed a possible fault during disassembly of some Alias operators.

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12 May 2006. Summary of changes for version 20060512:

1) ACPI CA Core Subsystem:

Replaced the AcpiOsQueueForExecution interface with a new interface named AcpiOsExecute. The major difference is that the new interface does not have
a Priority parameter, this appeared to be useless and has been replaced by
a
Type parameter. The Type tells the host what type of execution is being requested, such as global lock handler, notify handler, GPE handler, etc. This allows the host to queue and execute the request as appropriate for the

request type, possibly using different work queues and different priorities
for the various request types. This enables fixes for multithreading deadlock problems such as BZ #5534, and will require changes to all existing
OS interface layers. (Alexey Starikovskiy and Bob Moore)

Fixed a possible memory leak associated with the support for the so-called
"implicit return" ACPI extension. Reported by FreeBSD, BZ #6514. (Fiodor Suietov)

Fixed a problem with the Load() operator where a table load from an operation region could overwrite an internal table buffer by up to 7 bytes
and cause alignment faults on IPF systems. (With assistance from Luming Yu)

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 79.7K Code, 17.7K Data, 97.4K Total
Debug Version: 160.1K Code, 65.2K Data, 225.3K Total
Current Release:
Non-Debug Version: 79.8K Code, 17.7K Data, 97.5K Total
Debug Version: 160.5K Code, 65.1K Data, 225.6K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Implemented support to cross reference the internal namespace
and automatically generate ASL External() statements for symbols not defined
within the current table being disassembled. This will simplify the disassembly and recompilation of interdependent tables such as SSDTs since
these statements will no longer have to be added manually.

Disassembler: Implemented experimental support to automatically detect invocations of external control methods and generate appropriate External()
statements. This is problematic because the AML cannot be correctly

parsed
until the number of arguments for each control method is known.
Currently,
standalone method invocations and invocations as the source operand of a
Store() statement are supported.

Disassembler: Implemented support for the ASL pseudo-operators LNotEqual,
LLessEqual, and LGreaterEqual. Previously disassembled as LNot(LEqual()),
LNot(LGreater()), and LNot(LLess()), this makes the disassembled ASL code
more readable and likely closer to the original ASL source.

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21 April 2006. Summary of changes for version 20060421:

1) ACPI CA Core Subsystem:

Removed a device initialization optimization introduced in 20051216 where
the _STA method was not run unless an _INI was also present for the same
device. This optimization could cause problems because it could allow
_INI
methods to be run within a not-present device subtree. (If a not-present
device had no _INI, _STA would not be run, the not-present status would
not
be discovered, and the children of the device would be incorrectly
traversed.)

Implemented a new _STA optimization where namespace subtrees that do not
contain _INI are identified and ignored during device initialization.
Selectively running _STA can significantly improve boot time on large
machines (with assistance from Len Brown.)

Implemented support for the device initialization case where the returned
_STA flags indicate a device not-present but functioning. In this case,
_INI
is not run, but the device children are examined for presence, as per the
ACPI specification.

Implemented an additional change to the IndexField support in order to
conform to MS behavior. The value written to the Index Register is not
simply a byte offset, it is a byte offset in units of the access width of
the parent Index Field. (Fiodor Suietov)

Defined and deployed a new OSL interface, AcpiOsValidateAddress. This
interface is called during the creation of all AML operation regions, and
allows the host OS to exert control over what addresses it will allow the
AML code to access. Operation Regions whose addresses are disallowed will
cause a runtime exception when they are actually accessed (will not
affect

or abort table loading.) See oswinxf or osunixxf for an example implementation.

Defined and deployed a new OSL interface, AcpiOsValidateInterface. This interface allows the host OS to match the various "optional" interface/behavior strings for the _OSI predefined control method as appropriate (with assistance from Bjorn Helgaas.) See oswinxf or osunixxf for an example implementation.

Restructured and corrected various problems in the exception handling code
paths within DsCallControlMethod and DsTerminateControlMethod in dsmethod (with assistance from Takayoshi Kochi.)

Modified the Linux source converter to ignore quoted string literals while
converting identifiers from mixed to lower case. This will correct problems
with the disassembler and other areas where such strings must not be modified.

The ACPI_FUNCTION_* macros no longer require quotes around the function name. This allows the Linux source converter to convert the names, now that
the converter ignores quoted strings.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:

Non-Debug Version: 81.1K Code, 17.7K Data, 98.8K Total
Debug Version: 158.9K Code, 64.9K Data, 223.8K Total
Current Release:
Non-Debug Version: 79.7K Code, 17.7K Data, 97.4K Total
Debug Version: 160.1K Code, 65.2K Data, 225.3K Total

2) iASL Compiler/Disassembler and Tools:

Implemented 3 new warnings for iASL, and implemented multiple warning levels
(w2 flag).

1) Ignored timeouts: If the TimeoutValue parameter to Wait or Acquire is

not
WAIT_FOREVER (0xFFFF) and the code does not examine the return value to
check for the possible timeout, a warning is issued.

2) Useless operators: If an ASL operator does not specify an optional
target
operand and it also does not use the function return value from the
operator, a warning is issued since the operator effectively does
nothing.

3) Unreferenced objects: If a namespace object is created, but never
referenced, a warning is issued. This is a warning level 2 since there
are
cases where this is ok, such as when a secondary table is loaded that
uses
the unreferenced objects. Even so, care is taken to only flag objects
that
don't look like they will ever be used. For example, the reserved methods
(starting with an underscore) are usually not referenced because it is
expected that the OS will invoke them.

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31 March 2006. Summary of changes for version 20060331:

1) ACPI CA Core Subsystem:

Implemented header file support for the following additional ACPI tables:
ASF!, BOOT, CPEP, DBGP, MCFG, SPCR, SPMI, TCPA, and WDRT. With this
support,
all current and known ACPI tables are now defined in the ACPICA headers
and
are available for use by device drivers and other software.

Implemented support to allow tables that contain ACPI names with invalid
characters to be loaded. Previously, this would cause the table load to
fail, but since there are several known cases of such tables on existing
machines, this change was made to enable ACPI support for them. Also,
this
matches the behavior of the Microsoft ACPI implementation.

Fixed a couple regressions introduced during the memory optimization in
the
20060317 release. The namespace node definition required additional
reorganization and an internal datatype that had been changed to 8-bit
was
restored to 32-bit. (Valery Podrezov)

Fixed a problem where a null pointer passed to AcpiUtDeleteGenericState

could be passed through to AcpiOsReleaseObject which is unexpected. Such null pointers are now trapped and ignored, matching the behavior of the previous implementation before the deployment of AcpiOsReleaseObject. (Valery Podrezov, Fiodor Suietov)

Fixed a memory mapping leak during the deletion of a SystemMemory operation
region where a cached memory mapping was not deleted. This became a noticeable problem for operation regions that are defined within frequently
used control methods. (Dana Meyers)

Reorganized the ACPI table header files into two main files: one for the ACPI tables consumed by the ACPICA core, and another for the miscellaneous
ACPI tables that are consumed by the drivers and other software. The various
FADT definitions were merged into one common section and three different tables (ACPI 1.0, 1.0+, and 2.0)

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has
a much larger code and data size.

Previous Release:
Non-Debug Version: 80.9K Code, 17.7K Data, 98.6K Total
Debug Version: 158.7K Code, 64.8K Data, 223.5K Total
Current Release:
Non-Debug Version: 81.1K Code, 17.7K Data, 98.8K Total
Debug Version: 158.9K Code, 64.9K Data, 223.8K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Implemented support to decode and format all non-AML ACPI tables (tables other than DSDTs and SSDTs.) This includes the new tables added to the ACPICA headers, therefore all current and known ACPI tables are
supported.

Disassembler: The change to allow ACPI names with invalid characters also enables the disassembly of such tables. Invalid characters within names are
changed to '*' to make the name printable; the iASL compiler will still generate an error for such names, however, since this is an invalid ACPI character.

Implemented an option for AcpiXtract (-a) to extract all tables found in the
input file. The default invocation extracts only the DSDTs and SSDTs.

Fixed a couple of gcc generation issues for iASL and AcpiExec and added a
makefile for the AcpiXtract utility.

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17 March 2006. Summary of changes for version 20060317:

1) ACPI CA Core Subsystem:

Implemented the use of a cache object for all internal namespace nodes.
Since there are about 1000 static nodes in a typical system, this will
decrease memory use for cache implementations that minimize per-allocation
overhead (such as a slab allocator.)

Removed the reference count mechanism for internal namespace nodes, since it
was deemed unnecessary. This reduces the size of each namespace node by
about 5%-10% on all platforms. Nodes are now 20 bytes for the 32-bit case,
and 32 bytes for the 64-bit case.

Optimized several internal data structures to reduce object size on 64-bit
platforms by packing data within the 64-bit alignment. This includes the
frequently used ACPI_OPERAND_OBJECT, of which there can be ~1000 static
instances corresponding to the namespace objects.

Added two new strings for the predefined _OSI method: "Windows 2001.1 SP1"
and "Windows 2006".

Split the allocation tracking mechanism out to a separate file, from
utalloc.c to uttrack.c. This mechanism appears to be only useful for
application-level code. Kernels may wish to not include uttrack.c in
distributions.

Removed all remnants of the obsolete ACPI_REPORT_* macros and the associated
code. (These macros have been replaced by the ACPI_ERROR and ACPI_WARNING
macros.)

Code and Data Size: These are the sizes for the acpica.lib produced by the

Microsoft Visual C++ 6.0 32-bit compiler. The values do not include any ACPI
driver or OSPM code. The debug version of the code includes the debug output
trace mechanism and has a much larger code and data size. Note that these
values will vary depending on the efficiency of the compiler and the
compiler options used during generation.

Previous Release:
Non-Debug Version: 81.1K Code, 17.8K Data, 98.9K Total
Debug Version: 161.6K Code, 65.7K Data, 227.3K Total
Current Release:
Non-Debug Version: 80.9K Code, 17.7K Data, 98.6K Total
Debug Version: 158.7K Code, 64.8K Data, 223.5K Total

2) iASL Compiler/Disassembler and Tools:

Implemented an ANSI C version of the acpixtract utility. This version will
automatically extract the DSDT and all SSDTs from the input acpidump text
file and dump the binary output to separate files. It can also display a
summary of the input file including the headers for each table found and
will extract any single ACPI table, with any signature. (See
source/tools/acpixtract)

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10 March 2006. Summary of changes for version 20060310:

1) ACPI CA Core Subsystem:

Tagged all external interfaces to the subsystem with the new
ACPI_EXPORT_SYMBOL macro. This macro can be defined as necessary to assist
kernel integration. For Linux, the macro resolves to the EXPORT_SYMBOL
macro. The default definition is NULL.

Added the ACPI_THREAD_ID type for the return value from AcpiOsGetThreadId.
This allows the host to define this as necessary to simplify kernel
integration. The default definition is ACPI_NATIVE_UINT.

Fixed two interpreter problems related to error processing, the deletion of
objects, and placing invalid pointers onto the internal operator result
stack. BZ 6028, 6151 (Valery Podrezov)

Increased the reference count threshold where a warning is emitted for

large
reference counts in order to eliminate unnecessary warnings on systems
with
large namespaces (especially 64-bit.) Increased the value from 0x400 to
0x800.

Due to universal disagreement as to the meaning of the 'c' in the
calloc()
function, the ACPI_MEM_CALLOCATE macro has been renamed to
ACPI_ALLOCATE_ZEROED so that the purpose of the interface is 'clear'.
ACPI_MEM_ALLOCATE and ACPI_MEM_FREE are renamed to ACPI_ALLOCATE and
ACPI_FREE.

Code and Data Size: These are the sizes for the acpica.lib produced by
the
Microsoft Visual C++ 6.0 32-bit compiler. The values do not include any
ACPI
driver or OSPM code. The debug version of the code includes the debug
output
trace mechanism and has a much larger code and data size. Note that these
values will vary depending on the efficiency of the compiler and the
compiler options used during generation.

Previous Release:
Non-Debug Version: 81.0K Code, 17.8K Data, 98.8K Total
Debug Version: 161.4K Code, 65.7K Data, 227.1K Total
Current Release:
Non-Debug Version: 81.1K Code, 17.8K Data, 98.9K Total
Debug Version: 161.6K Code, 65.7K Data, 227.3K Total

2) iASL Compiler/Disassembler:

Disassembler: implemented support for symbolic resource descriptor
references. If a CreateXxxxField operator references a fixed offset
within
a
resource descriptor, a name is assigned to the descriptor and the offset
is
translated to the appropriate resource tag and pathname. The addition of
this support brings the disassembled code very close to the original ASL
source code and helps eliminate run-time errors when the disassembled
code
is modified (and recompiled) in such a way as to invalidate the original
fixed offsets.

Implemented support for a Descriptor Name as the last parameter to the
ASL

Register() macro. This parameter was inadvertently left out of the ACPI specification, and will be added for ACPI 3.0b.

Fixed a problem where the use of the "_OSI" string (versus the full path "_OSI") caused an internal compiler error. ("No back ptr to op")

Fixed a problem with the error message that occurs when an invalid string is
used for a _HID object (such as one with an embedded asterisk: "*PNP010A".)
The correct message is now displayed.

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17 February 2006. Summary of changes for version 20060217:

1) ACPI CA Core Subsystem:

Implemented a change to the IndexField support to match the behavior of the
Microsoft AML interpreter. The value written to the Index register is now a
byte offset, no longer an index based upon the width of the Data register.
This should fix IndexField problems seen on some machines where the Data register is not exactly one byte wide. The ACPI specification will be clarified on this point.

Fixed a problem where several resource descriptor types could overrun the internal descriptor buffer due to size miscalculation: VendorShort, VendorLong, and Interrupt. This was noticed on IA64 machines, but could affect all platforms.

Fixed a problem where individual resource descriptors were misaligned within
the internal buffer, causing alignment faults on IA64 platforms.

Code and Data Size: These are the sizes for the acpica.lib produced by the
Microsoft Visual C++ 6.0 32-bit compiler. The values do not include any ACPI
driver or OSPM code. The debug version of the code includes the debug output
trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 81.1K Code, 17.8K Data, 98.9K Total

Debug Version: 161.3K Code, 65.6K Data, 226.9K Total
Current Release:
Non-Debug Version: 81.0K Code, 17.8K Data, 98.8K Total
Debug Version: 161.4K Code, 65.7K Data, 227.1K Total

2) iASL Compiler/Disassembler:

Implemented support for new reserved names: _WDG and _WED are Microsoft extensions for Windows Instrumentation Management, _TDL is a new ACPI-defined method (Throttling Depth Limit.)

Fixed a problem where a zero-length VendorShort or VendorLong resource descriptor was incorrectly emitted as a descriptor of length one.

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10 February 2006. Summary of changes for version 20060210:

1) ACPI CA Core Subsystem:

Removed a couple of extraneous ACPI_ERROR messages that appeared during normal execution. These became apparent after the conversion from ACPI_DEBUG_PRINT.

Fixed a problem where the CreateField operator could hang if the BitIndex or NumBits parameter referred to a named object. (Valery Podrezov, BZ 5359)

Fixed a problem where a DeRefOf operation on a buffer object incorrectly failed with an exception. This also fixes a couple of related RefOf and DeRefOf issues. (Valery Podrezov, BZ 5360/5392/5387)

Fixed a problem where the AE_BUFFER_LIMIT exception was returned instead of AE_STRING_LIMIT on an out-of-bounds Index() operation. (Valery Podrezov, BZ 5480)

Implemented a memory cleanup at the end of the execution of each iteration of an AML While() loop, preventing the accumulation of outstanding objects. (Valery Podrezov, BZ 5427)

Eliminated a chunk of duplicate code in the object resolution code. (Valery Podrezov, BZ 5336)

Fixed several warnings during the 64-bit code generation.

The AcpiSrc source code conversion tool now inserts one line of whitespace
after an if() statement that is followed immediately by a comment, improving
readability of the Linux code.

Code and Data Size: The current and previous library sizes for the core
subsystem are shown below. These are the code and data sizes for the
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. These
values do not include any ACPI driver or OSPM code. The debug version of the
code includes the debug output trace mechanism and has a much larger code
and data size. Note that these values will vary depending on the efficiency
of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 81.0K Code, 17.9K Data, 98.9K Total
Debug Version: 161.3K Code, 65.7K Data, 227.0K Total
Current Release:
Non-Debug Version: 81.1K Code, 17.8K Data, 98.9K Total
Debug Version: 161.3K Code, 65.6K Data, 226.9K Total

2) iASL Compiler/Disassembler:

Fixed a problem with the disassembly of a BankField operator with a complex
expression for the BankValue parameter.

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27 January 2006. Summary of changes for version 20060127:

1) ACPI CA Core Subsystem:

Implemented support in the Resource Manager to allow unresolved namestring
references within resource package objects for the _PRT method. This support
is in addition to the previously implemented unresolved reference support
within the AML parser. If the interpreter slack mode is enabled, these
unresolved references will be passed through to the caller as a NULL package
entry.

Implemented and deployed new macros and functions for error and warning messages across the subsystem. These macros are simpler and generate less code than their predecessors. The new macros ACPI_ERROR, ACPI_EXCEPTION, ACPI_WARNING, and ACPI_INFO replace the ACPI_REPORT_* macros. The older macros remain defined to allow ACPI drivers time to migrate to the new macros.

Implemented the ACPI_CPU_FLAGS type to simplify host OS integration of the
Acquire/Release Lock OSL interfaces.

Fixed a problem where Alias ASL operators are sometimes not correctly resolved, in both the interpreter and the iASL compiler.

Fixed several problems with the implementation of the ConcatenateResTemplate
ASL operator. As per the ACPI specification, zero length buffers are now treated as a single EndTag. One-length buffers always cause a fatal exception. Non-zero length buffers that do not end with a full 2-byte EndTag
cause a fatal exception.

Fixed a possible structure overwrite in the AcpiGetObjectInfo external interface. (With assistance from Thomas Renninger)

Code and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. These
values do not include any ACPI driver or OSPM code. The debug version of the
code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency
of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 83.1K Code, 18.4K Data, 101.5K Total
Debug Version: 163.2K Code, 66.2K Data, 229.4K Total
Current Release:
Non-Debug Version: 81.0K Code, 17.9K Data, 98.9K Total
Debug Version: 161.3K Code, 65.7K Data, 227.0K Total

2) iASL Compiler/Disassembler:

Fixed an internal error that was generated for any forward references to ASL

Alias objects.

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13 January 2006. Summary of changes for version 20060113:

1) ACPI CA Core Subsystem:

Added 2006 copyright to all module headers and signons. This affects virtually every file in the ACPICA core subsystem, iASL compiler, and the utilities.

Enhanced the ACPICA error reporting in order to simplify user migration to the non-debug version of ACPICA. Replaced all instances of the ACPI_DEBUG_PRINT macro invoked at the ACPI_DB_ERROR and ACPI_DB_WARN debug levels with the ACPI_REPORT_ERROR and ACPI_REPORT_WARNING macros, respectively. This preserves all error and warning messages in the non-debug version of the ACPICA code (this has been referred to as the "debug lite" option.) Over 200 cases were converted to create a total of over 380 error/warning messages across the ACPICA code. This increases the code and data size of the default non-debug version of the code somewhat (about 13K), but all error/warning reporting may be disabled if desired (and code eliminated) by specifying the ACPI_NO_ERROR_MESSAGES compile-time configuration option. The size of the debug version of ACPICA remains about the same.

Fixed a memory leak within the AML Debugger "Set" command. One object was not properly deleted for every successful invocation of the command.

Code and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. These values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 76.6K Code, 12.3K Data, 88.9K Total
Debug Version: 163.7K Code, 67.5K Data, 231.2K Total

Current Release:
Non-Debug Version: 83.1K Code, 18.4K Data, 101.5K Total
Debug Version: 163.2K Code, 66.2K Data, 229.4K Total

2) iASL Compiler/Disassembler:

The compiler now officially supports the ACPI 3.0a specification that was released on December 30, 2005. (Specification is available at www.acpi.info)

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16 December 2005. Summary of changes for version 20051216:

1) ACPI CA Core Subsystem:

Implemented optional support to allow unresolved names within ASL Package objects. A null object is inserted in the package when a named reference cannot be located in the current namespace. Enabled via the interpreter slack flag, this should eliminate AE_NOT_FOUND exceptions seen on machines
that contain such code.

Implemented an optimization to the initialization sequence that can improve
boot time. During ACPI device initialization, the _STA method is now run if
and only if the _INI method exists. The _STA method is used to determine if
the device is present; An _INI can only be run if _STA returns present, but
it is a waste of time to run the _STA method if the _INI does not exist.
(Prototype and assistance from Dong Wei)

Implemented use of the C99 uintptr_t for the pointer casting macros if it is
available in the current compiler. Otherwise, the default (void *) cast is
used as before.

Fixed some possible memory leaks found within the execution path of the Break, Continue, If, and CreateField operators. (Valery Podrezov)

Fixed a problem introduced in the 20051202 release where an exception is generated during method execution if a control method attempts to declare another method.

Moved resource descriptor string constants that are used by both the AML

disassembler and AML debugger to the common utilities directory so that these components are independent.

Implemented support in the AcpiExec utility (-e switch) to globally ignore
exceptions during control method execution (method is not aborted.)

Added the rsinfo.c source file to the AcpiExec makefile for Linux/Unix generation.

Code and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. These
values do not include any ACPI driver or OSPM code. The debug version of the
code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency
of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 76.3K Code, 12.3K Data, 88.6K Total
Debug Version: 163.2K Code, 67.4K Data, 230.6K Total
Current Release:
Non-Debug Version: 76.6K Code, 12.3K Data, 88.9K Total
Debug Version: 163.7K Code, 67.5K Data, 231.2K Total

2) iASL Compiler/Disassembler:

Fixed a problem where a CPU stack overflow fault could occur if a recursive
method call was made from within a Return statement.

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02 December 2005. Summary of changes for version 20051202:

1) ACPI CA Core Subsystem:

Modified the parsing of control methods to no longer create namespace objects during the first pass of the parse. Objects are now created only during the execute phase, at the moment the namespace creation operator is
encountered in the AML (Name, OperationRegion, CreateByteField, etc.) This
should eliminate ALREADY_EXISTS exceptions seen on some machines where reentrant control methods are protected by an AML mutex. The mutex will

now
correctly block multiple threads from attempting to create the same
object
more than once.

Increased the number of available Owner Ids for namespace object tracking
from 32 to 255. This should eliminate the OWNER_ID_LIMIT exceptions seen
on
some machines with a large number of ACPI tables (either static or
dynamic).

Fixed a problem with the AcpiExec utility where a fault could occur when
the
-b switch (batch mode) is used.

Enhanced the namespace dump routine to output the owner ID for each
namespace object.

Code and Data Size: The current and previous library sizes for the core
subsystem are shown below. These are the code and data sizes for the
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler.
These
values do not include any ACPI driver or OSPM code. The debug version of
the
code includes the debug output trace mechanism and has a much larger code
and data size. Note that these values will vary depending on the
efficiency
of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 76.3K Code, 12.3K Data, 88.6K Total
Debug Version: 163.0K Code, 67.4K Data, 230.4K Total
Current Release:
Non-Debug Version: 76.3K Code, 12.3K Data, 88.6K Total
Debug Version: 163.2K Code, 67.4K Data, 230.6K Total

2) iASL Compiler/Disassembler:

Fixed a parse error during compilation of certain Switch/Case constructs.
To
simplify the parse, the grammar now allows for multiple Default
statements
and this error is now detected and flagged during the analysis phase.

Disassembler: The disassembly now includes the contents of the original
table header within a comment at the start of the file. This includes the
name and version of the original ASL compiler.

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17 November 2005. Summary of changes for version 20051117:

1) ACPI CA Core Subsystem:

Fixed a problem in the AML parser where the method thread count could be decremented below zero if any errors occurred during the method parse phase.
This should eliminate AE_AML_METHOD_LIMIT exceptions seen on some machines.
This also fixed a related regression with the mechanism that detects and corrects methods that cannot properly handle reentrancy (related to the deployment of the new OwnerId mechanism.)

Eliminated the pre-parsing of control methods (to detect errors) during table load. Related to the problem above, this was causing unwind issues if
any errors occurred during the parse, and it seemed to be overkill. A table
load should not be aborted if there are problems with any single control method, thus rendering this feature rather pointless.

Fixed a problem with the new table-driven resource manager where an internal
buffer overflow could occur for small resource templates.

Implemented a new external interface, AcpiGetVendorResource. This interface
will find and return a vendor-defined resource descriptor within a _CRS or
_PRS method via an ACPI 3.0 UUID match. With assistance from Bjorn Helgaas.

Removed the length limit (200) on string objects as per the upcoming ACPI 3.0A specification. This affects the following areas of the interpreter: 1)
any implicit conversion of a Buffer to a String, 2) a String object result
of the ASL Concatentate operator, 3) the String object result of the ASL ToString operator.

Fixed a problem in the Windows OS interface layer (OSL) where a WAIT_FOREVER
on a semaphore object would incorrectly timeout. This allows the multithreading features of the AcpiExec utility to work properly under Windows.

Updated the Linux makefiles for the iASL compiler and AcpiExec to include the recently added file named "utresrc.c".

Code and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. These values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 76.2K Code, 12.3K Data, 88.5K Total
Debug Version: 163.0K Code, 67.4K Data, 230.4K Total
Current Release:
Non-Debug Version: 76.3K Code, 12.3K Data, 88.6K Total
Debug Version: 163.0K Code, 67.4K Data, 230.4K Total

2) iASL Compiler/Disassembler:

Removed the limit (200) on string objects as per the upcoming ACPI 3.0A specification. For the iASL compiler, this means that string literals within the source ASL can be of any length.

Enhanced the listing output to dump the AML code for resource descriptors immediately after the ASL code for each descriptor, instead of in a block at the end of the entire resource template.

Enhanced the compiler debug output to dump the entire original parse tree constructed during the parse phase, before any transforms are applied to the tree. The transformed tree is dumped also.

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02 November 2005. Summary of changes for version 20051102:

1) ACPI CA Core Subsystem:

Modified the subsystem initialization sequence to improve GPE support. The GPE initialization has been split into two parts in order to defer execution

of the _PRW methods (Power Resources for Wake) until after the hardware is
fully initialized and the SCI handler is installed. This allows the _PRW
methods to access fields protected by the Global Lock. This will fix systems
where a NO_GLOBAL_LOCK exception has been seen during initialization.

Converted the ACPI internal object disassemble and display code within the
AML debugger to fully table-driven operation, reducing code size and
increasing maintainability.

Fixed a regression with the ConcatenateResTemplate() ASL operator introduced
in the 20051021 release.

Implemented support for "local" internal ACPI object types within the
debugger "Object" command and the AcpiWalkNamespace external interfaces.
These local types include RegionFields, BankFields, IndexFields, Alias, and
reference objects.

Moved common AML resource handling code into a new file, "utresrc.c". This
code is shared by both the Resource Manager and the AML Debugger.

Code and Data Size: The current and previous library sizes for the core
subsystem are shown below. These are the code and data sizes for the
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. These
values do not include any ACPI driver or OSPM code. The debug version of the
code includes the debug output trace mechanism and has a much larger code
and data size. Note that these values will vary depending on the efficiency
of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 76.1K Code, 12.2K Data, 88.3K Total
Debug Version: 163.5K Code, 67.0K Data, 230.5K Total
Current Release:
Non-Debug Version: 76.2K Code, 12.3K Data, 88.5K Total
Debug Version: 163.0K Code, 67.4K Data, 230.4K Total

2) iASL Compiler/Disassembler:

Fixed a problem with very large initializer lists (more than 4000

elements)
for both Buffer and Package objects where the parse stack could overflow.

Enhanced the pre-compile source code scan for non-ASCII characters to ignore
characters within comment fields. The scan is now always performed and is no
longer optional, detecting invalid characters within a source file
immediately rather than during the parse phase or later.

Enhanced the ASL grammar definition to force early reductions on all list-
style grammar elements so that the overall parse stack usage is greatly
reduced. This should improve performance and reduce the possibility of parse
stack overflow.

Eliminated all reduce/reduce conflicts in the iASL parser generation. Also,
with the addition of a %expected statement, the compiler generates from
source with no warnings.

Fixed a possible segment fault in the disassembler if the input filename
does not contain a "dot" extension (Thomas Renninger).

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21 October 2005. Summary of changes for version 20051021:

1) ACPI CA Core Subsystem:

Implemented support for the EM64T and other x86-64 processors. This
essentially entails recognizing that these processors support non-aligned
memory transfers. Previously, all 64-bit processors were assumed to lack
hardware support for non-aligned transfers.

Completed conversion of the Resource Manager to nearly full table-driven
operation. Specifically, the resource conversion code (convert AML to
internal format and the reverse) and the debug code to dump internal
resource descriptors are fully table-driven, reducing code and data size and
improving maintainability.

The OSL interfaces for Acquire and Release Lock now use a 64-bit flag word
on 64-bit processors instead of a fixed 32-bit word. (With assistance from
Alexey Starikovskiy)

Implemented support within the resource conversion code for the Type-Specific byte within the various ACPI 3.0 *WordSpace macros.

Fixed some issues within the resource conversion code for the type-specific
flags for both Memory and I/O address resource descriptors. For Memory, implemented support for the MTP and TTP flags. For I/O, split the TRS and TTP flags into two separate fields.

Code and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. These
values do not include any ACPI driver or OSPM code. The debug version of the
code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency
of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 77.1K Code, 12.1K Data, 89.2K Total
Debug Version: 168.0K Code, 68.3K Data, 236.3K Total
Current Release:
Non-Debug Version: 76.1K Code, 12.2K Data, 88.3K Total
Debug Version: 163.5K Code, 67.0K Data, 230.5K Total

2) iASL Compiler/Disassembler:

Relaxed a compiler restriction that disallowed a ResourceIndex byte if the
corresponding ResourceSource string was not also present in a resource descriptor declaration. This restriction caused problems with existing AML/ASL code that includes the Index byte without the string. When such AML
was disassembled, it could not be compiled without modification. Further, the modified code created a resource template with a different size than the
original, breaking code that used fixed offsets into the resource template
buffer.

Removed a recent feature of the disassembler to ignore a lone ResourceIndex
byte. This byte is now emitted if present so that the exact AML can be reproduced when the disassembled code is recompiled.

Improved comments and text alignment for the resource descriptor code
emitted by the disassembler.

Implemented disassembler support for the ACPI 3.0 AccessSize field within
a
Register() resource descriptor.

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30 September 2005. Summary of changes for version 20050930:

1) ACPI CA Core Subsystem:

Completed a major overhaul of the Resource Manager code - specifically,
optimizations in the area of the AML/internal resource conversion code.
The
code has been optimized to simplify and eliminate duplicated code, CPU
stack
use has been decreased by optimizing function parameters and local
variables, and naming conventions across the manager have been
standardized
for clarity and ease of maintenance (this includes function, parameter,
variable, and struct/typedef names.) The update may force changes in some
driver code, depending on how resources are handled by the host OS.

All Resource Manager dispatch and information tables have been moved to a
single location for clarity and ease of maintenance. One new file was
created, named "rsinfo.c".

The ACPI return macros (return_ACPI_STATUS, etc.) have been modified to
guarantee that the argument is not evaluated twice, making them less
prone
to macro side-effects. However, since there exists the possibility of
additional stack use if a particular compiler cannot optimize them (such
as
in the debug generation case), the original macros are optionally
available.
Note that some invocations of the return_VALUE macro may now cause size
mismatch warnings; the return_UINT8 and return_UINT32 macros are provided
to
eliminate these. (From Randy Dunlap)

Implemented a new mechanism to enable debug tracing for individual
control
methods. A new external interface, AcpiDebugTrace, is provided to enable
this mechanism. The intent is to allow the host OS to easily enable and
disable tracing for problematic control methods. This interface can be
easily exposed to a user or debugger interface if desired. See the file

psxface.c for details.

AcpiUtCallocate will now return a valid pointer if a length of zero is
specified - a length of one is used and a warning is issued. This matches
the behavior of AcpiUtAllocate.

Code and Data Size: The current and previous library sizes for the core
subsystem are shown below. These are the code and data sizes for the
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler.
These
values do not include any ACPI driver or OSPM code. The debug version of
the
code includes the debug output trace mechanism and has a much larger code
and data size. Note that these values will vary depending on the
efficiency
of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 77.5K Code, 12.0K Data, 89.5K Total
Debug Version: 168.1K Code, 68.4K Data, 236.5K Total
Current Release:
Non-Debug Version: 77.1K Code, 12.1K Data, 89.2K Total
Debug Version: 168.0K Code, 68.3K Data, 236.3K Total

2) iASL Compiler/Disassembler:

A remark is issued if the effective compile-time length of a package or
buffer is zero. Previously, this was a warning.

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16 September 2005. Summary of changes for version 20050916:

1) ACPI CA Core Subsystem:

Fixed a problem within the Resource Manager where support for the Generic
Register descriptor was not fully implemented. This descriptor is now
fully
recognized, parsed, disassembled, and displayed.

Completely restructured the Resource Manager code to utilize table-driven
dispatch and lookup, eliminating many of the large switch() statements.
This
reduces overall subsystem code size and code complexity. Affects the
resource parsing and construction, disassembly, and debug dump output.

Cleaned up and restructured the debug dump output for all resource
descriptors. Improved readability of the output and reduced code size.

Fixed a problem where changes to internal data structures caused the
optional ACPI_MUTEX_DEBUG code to fail compilation if specified.

Code and Data Size: The current and previous library sizes for the core
subsystem are shown below. These are the code and data sizes for the
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler.
These
values do not include any ACPI driver or OSPM code. The debug version of
the
code includes the debug output trace mechanism and has a much larger code
and data size. Note that these values will vary depending on the
efficiency
of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.4K Code, 11.8K Data, 90.2K Total
Debug Version: 169.6K Code, 69.9K Data, 239.5K Total
Current Release:
Non-Debug Version: 77.5K Code, 12.0K Data, 89.5K Total
Debug Version: 168.1K Code, 68.4K Data, 236.5K Total

2) iASL Compiler/Disassembler:

Updated the disassembler to automatically insert an EndDependentFn()
macro
into the ASL stream if this macro is missing in the original AML code,
simplifying compilation of the resulting ASL module.

Fixed a problem in the disassembler where a disassembled ResourceSource
string (within a large resource descriptor) was not surrounded by quotes
and
not followed by a comma, causing errors when the resulting ASL module was
compiled. Also, escape sequences within a ResourceSource string are now
handled correctly (especially "\\")

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02 September 2005. Summary of changes for version 20050902:

1) ACPI CA Core Subsystem:

Fixed a problem with the internal Owner ID allocation and deallocation
mechanisms for control method execution and recursive method invocation.
This should eliminate the OWNER_ID_LIMIT exceptions and "Invalid OwnerId"
messages seen on some systems. Recursive method invocation depth is
currently limited to 255. (Alexey Starikovskiy)

Completely eliminated all vestiges of support for the "module-level executable code" until this support is fully implemented and debugged. This should eliminate the NO_RETURN_VALUE exceptions seen during table load on some systems that invoke this support.

Fixed a problem within the resource manager code where the transaction flags for a 64-bit address descriptor were handled incorrectly in the type-specific flag byte.

Consolidated duplicate code within the address descriptor resource manager code, reducing overall subsystem code size.

Fixed a fault when using the AML debugger "disassemble" command to disassemble individual control methods.

Removed references to the "release_current" directory within the Unix release package.

Code and Data Size: The current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler. These values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.
Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.6K Code, 11.7K Data, 90.3K Total
Debug Version: 170.0K Code, 69.9K Data, 239.9K Total
Current Release:
Non-Debug Version: 78.4K Code, 11.8K Data, 90.2K Total
Debug Version: 169.6K Code, 69.9K Data, 239.5K Total

2) iASL Compiler/Disassembler:

Implemented an error check for illegal duplicate values in the interrupt and dma lists for the following ASL macros: Dma(), Irq(), IrqNoFlags(), and Interrupt().

Implemented error checking for the Irq() and IrqNoFlags() macros to

detect
too many values in the interrupt list (16 max) and invalid values in the
list (range 0 - 15)

The maximum length string literal within an ASL file is now restricted to
200 characters as per the ACPI specification.

Fixed a fault when using the -ln option (generate namespace listing).

Implemented an error check to determine if a DescriptorName within a
resource descriptor has already been used within the current scope.

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15 August 2005. Summary of changes for version 20050815:

1) ACPI CA Core Subsystem:

Implemented a full bytewise compare to determine if a table load request
is
attempting to load a duplicate table. The compare is performed if the
table
signatures and table lengths match. This will allow different tables with
the same OEM Table ID and revision to be loaded - probably against the
ACPI
specification, but discovered in the field nonetheless.

Added the changes.txt logfile to each of the zipped release packages.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib
produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size.
Note
that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

 Previous Release:
   Non-Debug Version: 78.6K Code, 11.7K Data, 90.3K Total
   Debug Version: 167.0K Code, 69.9K Data, 236.9K Total
 Current Release:
   Non-Debug Version: 78.6K Code, 11.7K Data, 90.3K Total
   Debug Version: 170.0K Code, 69.9K Data, 239.9K Total

2) iASL Compiler/Disassembler:

Fixed a problem where incorrect AML code could be generated for Package objects if optimization is disabled (via the -oa switch).

Fixed a problem with where incorrect AML code is generated for variable-length packages when the package length is not specified and the number of initializer values is greater than 255.

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29 July 2005. Summary of changes for version 20050729:

1) ACPI CA Core Subsystem:

Implemented support to ignore an attempt to install/load a particular ACPI table more than once. Apparently there exists BIOS code that repeatedly attempts to load the same SSDT upon certain events. With assistance from Venkatesh Pallipadi.

Restructured the main interface to the AML parser in order to correctly handle all exceptional conditions. This will prevent leakage of the OwnerId resource and should eliminate the AE_OWNER_ID_LIMIT exceptions seen on some machines. With assistance from Alexey Starikovskiy.

Support for "module level code" has been disabled in this version due to a number of issues that have appeared on various machines. The support can be enabled by defining ACPI_ENABLE_MODULE_LEVEL_CODE during subsystem compilation. When the issues are fully resolved, the code will be enabled by default again.

Modified the internal functions for debug print support to define the FunctionName parameter as a (const char *) for compatibility with compiler built-in macros such as __FUNCTION__, etc.

Linted the entire ACPICA source tree for both 32-bit and 64-bit.

Implemented support to display an object count summary for the AML Debugger commands Object and Methods.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib
produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size.
Note
that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.6K Code, 11.6K Data, 90.2K Total
Debug Version: 170.0K Code, 69.7K Data, 239.7K Total
Current Release:
Non-Debug Version: 78.6K Code, 11.7K Data, 90.3K Total
Debug Version: 167.0K Code, 69.9K Data, 236.9K Total

2) iASL Compiler/Disassembler:

Fixed a regression that appeared in the 20050708 version of the compiler
where an error message was inadvertently emitted for invocations of the
_OSI
reserved control method.

---
08 July 2005. Summary of changes for version 20050708:

1) ACPI CA Core Subsystem:

The use of the CPU stack in the debug version of the subsystem has been
considerably reduced. Previously, a debug structure was declared in every
function that used the debug macros. This structure has been removed in
favor of declaring the individual elements as parameters to the debug
functions. This reduces the cumulative stack use during nested execution
of
ACPI function calls at the cost of a small increase in the code size of
the
debug version of the subsystem. With assistance from Alexey Starikovskiy
and
Len Brown.

Added the ACPI_GET_FUNCTION_NAME macro to enable the compiler-dependent
headers to define a macro that will return the current function name at
runtime (such as __FUNCTION__ or _func_, etc.) The function name is used
by
the debug trace output. If ACPI_GET_FUNCTION_NAME is not defined in the

compiler-dependent header, the function name is saved on the CPU stack (one
pointer per function.) This mechanism is used because apparently there exists no standard ANSI-C defined macro that that returns the function name.

Redesigned and reimplemented the "Owner ID" mechanism used to track namespace objects created/deleted by ACPI tables and control method execution. A bitmap is now used to allocate and free the IDs, thus solving
the wraparound problem present in the previous implementation. The size of
the namespace node descriptor was reduced by 2 bytes as a result (Alexey Starikovskiy).

Removed the UINT32_BIT and UINT16_BIT types that were used for the bitfield
flag definitions within the headers for the predefined ACPI tables. These have been replaced by UINT8_BIT in order to increase the code portability of
the subsystem. If the use of UINT8 remains a problem, we may be forced to eliminate bitfields entirely because of a lack of portability.

Enhanced the performance of the AcpiUtUpdateObjectReference procedure. This
is a frequently used function and this improvement increases the performance
of the entire subsystem (Alexey Starikovskiy).

Fixed several possible memory leaks and the inverse - premature object deletion (Alexey Starikovskiy).

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.6K Code, 11.5K Data, 90.1K Total
Debug Version: 165.2K Code, 69.6K Data, 234.8K Total
Current Release:
Non-Debug Version: 78.6K Code, 11.6K Data, 90.2K Total

Debug Version: 170.0K Code, 69.7K Data, 239.7K Total

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24 June 2005. Summary of changes for version 20050624:

1) ACPI CA Core Subsystem:

Modified the new OSL cache interfaces to use ACPI_CACHE_T as the type for the host-defined cache object. This allows the OSL implementation to define
and type this object in any manner desired, simplifying the OSL implementation. For example, ACPI_CACHE_T is defined as kmem_cache_t for Linux, and should be defined in the OS-specific header file for other operating systems as required.

Changed the interface to AcpiOsAcquireObject to directly return the requested object as the function return (instead of ACPI_STATUS.) This change was made for performance reasons, since this is the purpose of the interface in the first place. AcpiOsAcquireObject is now similar to the AcpiOsAllocate interface.

Implemented a new AML debugger command named Businfo. This command displays
information about all devices that have an associate _PRT object. The _ADR,
_HID, _UID, and _CID are displayed for these devices.

Modified the initialization sequence in AcpiInitializeSubsystem to call the
OSL interface AcpiOslInitialize first, before any local initialization. This
change was required because the global initialization now calls OSL interfaces.

Enhanced the Dump command to display the entire contents of Package objects
(including all sub-objects and their values.)

Restructured the code base to split some files because of size and/or because the code logically belonged in a separate file. New files are listed
below. All makefiles and project files included in the ACPI CA release have
been updated.

```
  utilities/utcache.c          /* Local cache interfaces */
  utilities/utmutex.c          /* Local mutex support */
  utilities/utstate.c          /* State object support */
  interpreter/parser/psloop.c  /* Main AML parse loop */
```

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.3K Code, 11.6K Data, 89.9K Total
Debug Version: 164.0K Code, 69.1K Data, 233.1K Total
Current Release:
Non-Debug Version: 78.6K Code, 11.5K Data, 90.1K Total
Debug Version: 165.2K Code, 69.6K Data, 234.8K Total

2) iASL Compiler/Disassembler:

Fixed a regression introduced in version 20050513 where the use of a Package
object within a Case() statement caused a compile time exception. The original behavior has been restored (a Match() operator is emitted.)

---
17 June 2005. Summary of changes for version 20050617:

1) ACPI CA Core Subsystem:

Moved the object cache operations into the OS interface layer (OSL) to allow
the host OS to handle these operations if desired (for example, the Linux OSL will invoke the slab allocator). This support is optional; the compile
time define ACPI_USE_LOCAL_CACHE may be used to utilize the original cache
code in the ACPI CA core. The new OSL interfaces are shown below. See utalloc.c for an example implementation, and acpiosxf.h for the exact interface definitions. With assistance from Alexey Starikovskiy.
AcpiOsCreateCache
AcpiOsDeleteCache
AcpiOsPurgeCache
AcpiOsAcquireObject
AcpiOsReleaseObject

Modified the interfaces to AcpiOsAcquireLock and AcpiOsReleaseLock to return
and restore a flags parameter. This fits better with many OS lock models.
Note: the current execution state (interrupt handler or not) is no longer
passed to these interfaces. If necessary, the OSL must determine this state
by itself, a simple and fast operation. With assistance from Alexey
Starikovskiy.

Fixed a problem in the ACPI table handling where a valid XSDT was assumed
present if the revision of the RSDP was 2 or greater. According to the ACPI
specification, the XSDT is optional in all cases, and the table manager
therefore now checks for both an RSDP >=2 and a valid XSDT pointer.
Otherwise, the RSDT pointer is used. Some ACPI 2.0 compliant BIOSs contain
only the RSDT.

Fixed an interpreter problem with the Mid() operator in the case of an input
string where the resulting output string is of zero length. It now correctly
returns a valid, null terminated string object instead of a string object
with a null pointer.

Fixed a problem with the control method argument handling to allow a store
to an Arg object that already contains an object of type Device. The Device
object is now correctly overwritten. Previously, an error was returned.

Enhanced the debugger Find command to emit object values in addition to the
found object pathnames. The output format is the same as the dump namespace
command.

Enhanced the debugger Set command. It now has the ability to set the value
of any Named integer object in the namespace (Previously, only method locals
and args could be set.)

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include

any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.1K Code, 11.6K Data, 89.7K Total
Debug Version: 164.0K Code, 69.3K Data, 233.3K Total
Current Release:
Non-Debug Version: 78.3K Code, 11.6K Data, 89.9K Total
Debug Version: 164.0K Code, 69.1K Data, 233.1K Total

2) iASL Compiler/Disassembler:

Fixed a regression in the disassembler where if/else/while constructs were output incorrectly. This problem was introduced in the previous release (20050526). This problem also affected the single-step disassembly in the debugger.

Fixed a problem where compiling the reserved _OSI method would randomly (but rarely) produce compile errors.

Enhanced the disassembler to emit compilable code in the face of incorrect AML resource descriptors. If the optional ResourceSourceIndex is present, but the ResourceSource is not, do not emit the ResourceSourceIndex in the disassembly. Otherwise, the resulting code cannot be compiled without errors.

---
26 May 2005. Summary of changes for version 20050526:

1) ACPI CA Core Subsystem:

Implemented support to execute Type 1 and Type 2 AML opcodes appearing at the module level (not within a control method.) These opcodes are executed exactly once at the time the table is loaded. This type of code was legal up until the release of ACPI 2.0B (2002) and is now supported within ACPI CA in order to provide backwards compatibility with earlier BIOS implementations.

This eliminates the "Encountered executable code at module level" warning
that was previously generated upon detection of such code.

Fixed a problem in the interpreter where an AE_NOT_FOUND exception could
inadvertently be generated during the lookup of namespace objects in the
second pass parse of ACPI tables and control methods. It appears that
this
problem could occur during the resolution of forward references to
namespace
objects.

Added the ACPI_MUTEX_DEBUG #ifdef to the AcpiUtReleaseMutex function,
corresponding to the same #ifdef in the AcpiUtAcquireMutex function. This
allows the deadlock detection debug code to be compiled out in the normal
case, improving mutex performance (and overall subsystem performance)
considerably.

Implemented a handful of miscellaneous fixes for possible memory leaks on
error conditions and error handling control paths. These fixes were
suggested by FreeBSD and the Coverity Prevent source code analysis tool.

Added a check for a null RSDT pointer in AcpiGetFirmwareTable
(tbxfroot.c)
to prevent a fault in this error case.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib
produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size.
Note
that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.2K Code, 11.6K Data, 89.8K Total
Debug Version: 163.7K Code, 69.3K Data, 233.0K Total
Current Release:
Non-Debug Version: 78.1K Code, 11.6K Data, 89.7K Total
Debug Version: 164.0K Code, 69.3K Data, 233.3K Total

2) iASL Compiler/Disassembler:

Implemented support to allow Type 1 and Type 2 ASL operators to appear at
the module level (not within a control method.) These operators will be

executed once at the time the table is loaded. This type of code was
legal
up until the release of ACPI 2.0B (2002) and is now supported by the iASL
compiler in order to provide backwards compatibility with earlier BIOS
ASL
code.

The ACPI integer width (specified via the table revision ID or the -r
override, 32 or 64 bits) is now used internally during compile-time
constant
folding to ensure that constants are truncated to 32 bits if necessary.
Previously, the revision ID value was only emitted in the AML table
header.

An error message is now generated for the Mutex and Method operators if
the
SyncLevel parameter is outside the legal range of 0 through 15.

Fixed a problem with the Method operator ParameterTypes list handling
(ACPI
3.0). Previously, more than 2 types or 2 arguments generated a syntax
error.
The actual underlying implementation of method argument typechecking is
still under development, however.

---
13 May 2005. Summary of changes for version 20050513:

1) ACPI CA Core Subsystem:

Implemented support for PCI Express root bridges -- added support for
device
PNP0A08 in the root bridge search within AcpiEvPciConfigRegionSetup.

The interpreter now automatically truncates incoming 64-bit constants to
32
bits if currently executing out of a 32-bit ACPI table (Revision < 2).
This
also affects the iASL compiler constant folding. (Note: as per below, the
iASL compiler no longer allows 64-bit constants within 32-bit tables.)

Fixed a problem where string and buffer objects with "static" pointers
(pointers to initialization data within an ACPI table) were not handled
consistently. The internal object copy operation now always copies the
data
to a newly allocated buffer, regardless of whether the source object is
static or not.

Fixed a problem with the FromBCD operator where an implicit result conversion was improperly performed while storing the result to the target
operand. Since this is an "explicit conversion" operator, the implicit conversion should never be performed on the output.

Fixed a problem with the CopyObject operator where a copy to an existing named object did not always completely overwrite the existing object stored
at name. Specifically, a buffer-to-buffer copy did not delete the existing
buffer.

Replaced "InterruptLevel" with "InterruptNumber" in all GPE interfaces and
structs for consistency.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.2K Code, 11.6K Data, 89.8K Total
Debug Version: 163.7K Code, 69.3K Data, 233.0K Total
Current Release: (Same sizes)
Non-Debug Version: 78.2K Code, 11.6K Data, 89.8K Total
Debug Version: 163.7K Code, 69.3K Data, 233.0K Total

2) iASL Compiler/Disassembler:

The compiler now emits a warning if an attempt is made to generate a 64-bit
integer constant from within a 32-bit ACPI table (Revision < 2). The integer
is truncated to 32 bits.

Fixed a problem with large package objects: if the static length of the package is greater than 255, the "variable length package" opcode is emitted. Previously, this caused an error. This requires an update to the ACPI spec, since it currently (incorrectly) states that packages larger

than
255 elements are not allowed.

The disassembler now correctly handles variable length packages and
packages
larger than 255 elements.

---
08 April 2005. Summary of changes for version 20050408:

1) ACPI CA Core Subsystem:

Fixed three cases in the interpreter where an "index" argument to an ASL
function was still (internally) 32 bits instead of the required 64 bits.
This was the Index argument to the Index, Mid, and Match operators.

The "strupr" function is now permanently local (AcpiUtStrupr), since this
is
not a POSIX-defined function and not present in most kernel-level C
libraries. All references to the C library strupr function have been
removed
from the headers.

Completed the deployment of static functions/prototypes. All prototypes
with
the static attribute have been moved from the headers to the owning C
file.

Implemented an extract option (-e) for the AcpiBin utility (AML binary
utility). This option allows the utility to extract individual ACPI
tables
from the output of AcpiDmp. It provides the same functionality of the
acpixtract.pl perl script without the worry of setting the correct perl
options. AcpiBin runs on Windows and has not yet been generated/validated
in
the Linux/Unix environment (but should be soon).

Updated and fixed the table dump option for AcpiBin (-d). This option
converts a single ACPI table to a hex/ascii file, similar to the output
of
AcpiDmp.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib
produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size.

Note
that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.0K Code, 11.6K Data, 89.6K Total
Debug Version: 163.5K Code, 69.3K Data, 232.8K Total
Current Release:
Non-Debug Version: 78.2K Code, 11.6K Data, 89.8K Total
Debug Version: 163.7K Code, 69.3K Data, 233.0K Total

2) iASL Compiler/Disassembler:

Disassembler fix: Added a check to ensure that the table length found in
the
ACPI table header within the input file is not longer than the actual
input
file size. This indicates some kind of file or table corruption.

---
29 March 2005. Summary of changes for version 20050329:

1) ACPI CA Core Subsystem:

An error is now generated if an attempt is made to create a Buffer Field
of
length zero (A CreateField with a length operand of zero.)

The interpreter now issues a warning whenever executable code at the
module
level is detected during ACPI table load. This will give some idea of the
prevalence of this type of code.

Implemented support for references to named objects (other than control
methods) within package objects.

Enhanced package object output for the debug object. Package objects are
now
completely dumped, showing all elements.

Enhanced miscellaneous object output for the debug object. Any object can
now be written to the debug object (for example, a device object can be
written, and the type of the object will be displayed.)

The "static" qualifier has been added to all local functions across both
the

core subsystem and the iASL compiler.

The number of "long" lines (> 80 chars) within the source has been
significantly reduced, by about 1/3.

Cleaned up all header files to ensure that all CA/iASL functions are
prototyped (even static functions) and the formatting is consistent.

Two new header files have been added, acopcode.h and acnames.h.

Removed several obsolete functions that were no longer used.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib
produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size.
Note
that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total
Debug Version: 165.4K Code, 69.7K Data, 236.1K Total
Current Release:
Non-Debug Version: 78.0K Code, 11.6K Data, 89.6K Total
Debug Version: 163.5K Code, 69.3K Data, 232.8K Total

2) iASL Compiler/Disassembler:

Fixed a problem with the resource descriptor generation/support. For the
ResourceSourceIndex and the ResourceSource fields, both must be present,
or
both must be not present - can't have one without the other.

The compiler now returns non-zero from the main procedure if any errors
have
occurred during the compilation.

---
09 March 2005. Summary of changes for version 20050309:

1) ACPI CA Core Subsystem:

The string-to-buffer implicit conversion code has been modified again after
a change to the ACPI specification. In order to match the behavior of the
other major ACPI implementation, the target buffer is no longer truncated if
the source string is smaller than an existing target buffer. This change
requires an update to the ACPI spec, and should eliminate the recent
AE_AML_BUFFER_LIMIT issues.

The "implicit return" support was rewritten to a new algorithm that solves
the general case. Rather than attempt to determine when a method is about to
exit, the result of every ASL operator is saved momentarily until the very
next ASL operator is executed. Therefore, no matter how the method exits,
there will always be a saved implicit return value. This feature is only
enabled with the AcpiGbl_EnableInterpreterSlack flag, and should eliminate
AE_AML_NO_RETURN_VALUE errors when enabled.

Implemented implicit conversion support for the predicate (operand) of the
If, Else, and While operators. String and Buffer arguments are automatically
converted to Integers.

Changed the string-to-integer conversion behavior to match the new ACPI
errata: "If no integer object exists, a new integer is created. The ASCII
string is interpreted as a hexadecimal constant. Each string character is
interpreted as a hexadecimal value ('0'-'9', 'A'-'F', 'a', 'f'), starting
with the first character as the most significant digit, and ending with the
first non-hexadecimal character or end-of-string." This means that the first
non-hex character terminates the conversion and this is the code that was
changed.

Fixed a problem where the ObjectType operator would fail (fault) when used
on an Index of a Package which pointed to a null package element. The
operator now properly returns zero (Uninitialized) in this case.

Fixed a problem where the While operator used excessive memory by not
properly popping the result stack during execution. There was no memory
leak

after execution, however. (Code provided by Valery Podrezov.)

Fixed a problem where references to control methods within Package objects
caused the method to be invoked, instead of producing a reference object
pointing to the method.

Restructured and simplified the pswalk.c module (AcpiPsDeleteParseTree) to
improve performance and reduce code size. (Code provided by Alexey
Starikovskiy.)

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total
Debug Version: 165.4K Code, 69.6K Data, 236.0K Total
Current Release:
Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total
Debug Version: 165.4K Code, 69.7K Data, 236.1K Total

2) iASL Compiler/Disassembler:

Fixed a problem with the Return operator with no arguments. Since the AML
grammar for the byte encoding requires an operand for the Return opcode, the
compiler now emits a Return(Zero) for this case. An ACPI specification
update has been written for this case.

For tables other than the DSDT, namepath optimization is automatically
disabled. This is because SSDTs can be loaded anywhere in the namespace, the
compiler has no knowledge of where, and thus cannot optimize namepaths.

Added "ProcessorObj" to the ObjectTypeKeyword list. This object type was
inadvertently omitted from the ACPI specification, and will require an
update to the spec.

The source file scan for ASCII characters is now optional (-a). This
change
was made because some vendors place non-ascii characters within comments.
However, the scan is simply a brute-force byte compare to ensure all
characters in the file are in the range 0x00 to 0x7F.

Fixed a problem with the CondRefOf operator where the compiler was
inappropriately checking for the existence of the target. Since the point
of
the operator is to check for the existence of the target at run-time, the
compiler no longer checks for the target existence.

Fixed a problem where errors generated from the internal AML interpreter
during constant folding were not handled properly, causing a fault.

Fixed a problem with overly aggressive range checking for the Stall
operator. The valid range (max 255) is now only checked if the operand is
of
type Integer. All other operand types cannot be statically checked.

Fixed a problem where control method references within the RefOf,
DeRefOf,
and ObjectType operators were not treated properly. They are now treated
as
actual references, not method invocations.

Fixed and enhanced the "list namespace" option (-ln). This option was
broken
a number of releases ago.

Improved error handling for the Field, IndexField, and BankField
operators.
The compiler now cleanly reports and recovers from errors in the field
component (FieldUnit) list.

Fixed a disassembler problem where the optional ResourceDescriptor fields
TRS and TTP were not always handled correctly.

Disassembler - Comments in output now use "//" instead of "/*"

---
28 February 2005. Summary of changes for version 20050228:

1) ACPI CA Core Subsystem:

Fixed a problem where the result of an Index() operator (an object
reference) must increment the reference count on the target object for
the

life of the object reference.

Implemented AML Interpreter and Debugger support for the new ACPI 3.0
Extended Address (IO, Memory, Space), QwordSpace, DwordSpace, and
WordSpace
resource descriptors.

Implemented support in the _OSI method for the ACPI 3.0 "Extended Address
Space Descriptor" string, indicating interpreter support for the
descriptors
above.

Implemented header support for the new ACPI 3.0 FADT flag bits.

Implemented header support for the new ACPI 3.0 PCI Express bits for the
PM1
status/enable registers.

Updated header support for the MADT processor local Apic struct and MADT
platform interrupt source struct for new ACPI 3.0 fields.

Implemented header support for the SRAT and SLIT ACPI tables.

Implemented the -s switch in AcpiExec to enable the "InterpreterSlack"
flag
at runtime.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib
produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size.
Note
that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.2K Code, 11.5K Data, 89.7K Total
Debug Version: 164.9K Code, 69.2K Data, 234.1K Total
Current Release:
Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total
Debug Version: 165.4K Code, 69.6K Data, 236.0K Total

2) iASL Compiler/Disassembler:

Fixed a problem with the internal 64-bit String-to-integer conversion with
strings less than two characters long.

Fixed a problem with constant folding where the result of the Index()
operator can not be considered a constant. This means that Index() cannot be
a type3 opcode and this will require an update to the ACPI specification.

Disassembler: Implemented support for the TTP, MTP, and TRS resource
descriptor fields. These fields were inadvertently ignored and not output in
the disassembly of the resource descriptor.

---

11 February 2005. Summary of changes for version 20050211:

1) ACPI CA Core Subsystem:

Implemented ACPI 3.0 support for implicit conversion within the Match()
operator. MatchObjects can now be of type integer, buffer, or string instead
of just type integer. Package elements are implicitly converted to the type
of the MatchObject. This change aligns the behavior of Match() with the
behavior of the other logical operators (LLess(), etc.) It also requires an
errata change to the ACPI specification as this support was intended for
ACPI 3.0, but was inadvertently omitted.

Fixed a problem with the internal implicit "to buffer" conversion. Strings
that are converted to buffers will cause buffer truncation if the string is
smaller than the target buffer. Integers that are converted to buffers will
not cause buffer truncation, only zero extension (both as per the ACPI
spec.) The problem was introduced when code was added to truncate the
buffer, but this should not be performed in all cases, only the string
case.

Fixed a problem with the Buffer and Package operators where the interpreter
would get confused if two such operators were used as operands to an ASL
operator (such as LLess(Buffer(1){0},Buffer(1){1}). The internal result
stack was not being popped after the execution of these operators,
resulting

in an AE_NO_RETURN_VALUE exception.

Fixed a problem with constructs of the form Store(Index(...),...). The
reference object returned from Index was inadvertently resolved to an
actual
value. This problem was introduced in version 20050114 when the behavior
of
Store() was modified to restrict the object types that can be used as the
source operand (to match the ACPI specification.)

Reduced excessive stack use within the AcpiGetObjectInfo procedure.

Added a fix to aclinux.h to allow generation of AcpiExec on Linux.

Updated the AcpiSrc utility to add the FADT_DESCRIPTOR_REV2_MINUS struct.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib
produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size.
Note
that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.1K Code, 11.5K Data, 89.6K Total
Debug Version: 164.8K Code, 69.2K Data, 234.0K Total
Current Release:
Non-Debug Version: 78.2K Code, 11.5K Data, 89.7K Total
Debug Version: 164.9K Code, 69.2K Data, 234.1K Total

2) iASL Compiler/Disassembler:

Fixed a code generation problem in the constant folding optimization code
where incorrect code was generated if a constant was reduced to a buffer
object (i.e., a reduced type 5 opcode.)

Fixed a typechecking problem for the ToBuffer operator. Caused by an
incorrect return type in the internal opcode information table.

---
25 January 2005. Summary of changes for version 20050125:

1) ACPI CA Core Subsystem:

Fixed a recently introduced problem with the Global Lock where the underlying semaphore was not created. This problem was introduced in version 20050114, and caused an AE_AML_NO_OPERAND exception during an Acquire() operation on _GL.

The local object cache is now optional, and is disabled by default. Both AcpiExec and the iASL compiler enable the cache because they run in user mode and this enhances their performance. #define ACPI_ENABLE_OBJECT_CACHE to enable the local cache.

Fixed an issue in the internal function AcpiUtEvaluateObject concerning the optional "implicit return" support where an error was returned if no return object was expected, but one was implicitly returned. AE_OK is now returned in this case and the implicitly returned object is deleted. AcpiUtEvaluateObject is only occasionally used, and only to execute reserved methods such as _STA and _INI where the return type is known up front.

Fixed a few issues with the internal convert-to-integer code. It now returns an error if an attempt is made to convert a null string, a string of only blanks/tabs, or a zero-length buffer. This affects both implicit conversion and explicit conversion via the ToInteger() operator.

The internal debug code in AcpiUtAcquireMutex has been commented out. It is not needed for normal operation and should increase the performance of the entire subsystem. The code remains in case it is needed for debug purposes again.

The AcpiExec source and makefile are included in the Unix/Linux package for the first time.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note
that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.4K Code, 11.5K Data, 89.9K Total
Debug Version: 165.4K Code, 69.4K Data, 234.8K Total
Current Release:
Non-Debug Version: 78.1K Code, 11.5K Data, 89.6K Total
Debug Version: 164.8K Code, 69.2K Data, 234.0K Total

2) iASL Compiler/Disassembler:

Switch/Case support: A warning is now issued if the type of the Switch
value
cannot be determined at compile time. For example, Switch(Arg0) will
generate the warning, and the type is assumed to be an integer. As per
the
ACPI spec, use a construct such as Switch(ToInteger(Arg0)) to eliminate
the
warning.

Switch/Case support: Implemented support for buffer and string objects as
the switch value. This is an ACPI 3.0 feature, now that LEqual supports
buffers and strings.

Switch/Case support: The emitted code for the LEqual() comparisons now
uses
the switch value as the first operand, not the second. The case value is
now
the second operand, and this allows the case value to be implicitly
converted to the type of the switch value, not the other way around.

Switch/Case support: Temporary variables are now emitted immediately
within
the control method, not at the global level. This means that there are
now
36 temps available per-method, not 36 temps per-module as was the case
with
the earlier implementation (_T_0 through _T_9 and _T_A through _T_Z.)

---
14 January 2005. Summary of changes for version 20050114:

Added 2005 copyright to all module headers. This affects every module in
the core subsystem, iASL compiler, and the utilities.

1) ACPI CA Core Subsystem:

Fixed an issue with the String-to-Buffer conversion code where the string null terminator was not included in the buffer after conversion, but there is existing ASL that assumes the string null terminator is included. This is the root of the ACPI_AML_BUFFER_LIMIT regression. This problem was introduced in the previous version when the code was updated to correctly set the converted buffer size as per the ACPI specification. The ACPI spec is ambiguous and will be updated to specify that the null terminator must be included in the converted buffer. This also affects the ToBuffer() ASL operator.

Fixed a problem with the Mid() ASL/AML operator where it did not work correctly on Buffer objects. Newly created sub-buffers were not being marked as initialized.

Fixed a problem in AcpiTbFindTable where incorrect string compares were performed on the OemId and OemTableId table header fields. These fields are not null terminated, so strncmp is now used instead of strcmp.

Implemented a restriction on the Store() ASL/AML operator to align the behavior with the ACPI specification. Previously, any object could be used as the source operand. Now, the only objects that may be used are Integers, Buffers, Strings, Packages, Object References, and DDB Handles. If necessary, the original behavior can be restored by enabling the EnableInterpreterSlack flag.

Enhanced the optional "implicit return" support to allow an implicit return value from methods that are invoked externally via the AcpiEvaluateObject interface. This enables implicit returns from the _STA and _INI methods, for example.

Changed the Revision() ASL/AML operator to return the current version of the AML interpreter, in the YYYYMMDD format. Previously, it incorrectly returned the supported ACPI version (This is the function of the _REV method).

Updated the _REV predefined method to return the currently supported version
of ACPI, now 3.

Implemented batch mode option for the AcpiExec utility (-b).

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total
Debug Version: 165.3K Code, 69.4K Data, 234.7K Total
Current Release:
Non-Debug Version: 78.4K Code, 11.5K Data, 89.9K Total
Debug Version: 165.4K Code, 69.4K Data, 234.8K Total

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10 December 2004. Summary of changes for version 20041210:

ACPI 3.0 support is nearing completion in both the iASL compiler and the ACPI CA core subsystem.

1) ACPI CA Core Subsystem:

Fixed a problem in the ToDecimalString operator where the resulting string
length was incorrectly calculated. The length is now calculated exactly, eliminating incorrect AE_STRING_LIMIT exceptions.

Fixed a problem in the ToHexString operator to allow a maximum 200 character
string to be produced.

Fixed a problem in the internal string-to-buffer and buffer-to-buffer copy
routine where the length of the resulting buffer was not truncated to the new size (if the target buffer already existed).

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib

produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size.
Note
that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total
Debug Version: 164.7K Code, 68.5K Data, 233.2K Total
Current Release:
Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total
Debug Version: 165.3K Code, 69.4K Data, 234.7K Total

2) iASL Compiler/Disassembler:

Implemented the new ACPI 3.0 resource template macros - DWordSpace,
ExtendedIO, ExtendedMemory, ExtendedSpace, QWordSpace, and WordSpace.
Includes support in the disassembler.

Implemented support for the new (ACPI 3.0) parameter to the Register
macro,
AccessSize.

Fixed a problem where the _HE resource name for the Interrupt macro was
referencing bit 0 instead of bit 1.

Implemented check for maximum 255 interrupts in the Interrupt macro.

Fixed a problem with the predefined resource descriptor names where
incorrect AML code was generated if the offset within the resource buffer
was 0 or 1. The optimizer shortened the AML code to a single byte opcode
but did not update the surrounding package lengths.

Changes to the Dma macro: All channels within the channel list must be
in
the range 0-7. Maximum 8 channels can be specified. BusMaster operand is
optional (default is BusMaster).

Implemented check for maximum 7 data bytes for the VendorShort macro.

The ReadWrite parameter is now optional for the Memory32 and similar
macros.

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03 December 2004. Summary of changes for version 20041203:

1) ACPI CA Core Subsystem:

The low-level field insertion/extraction code (exfldio) has been completely
rewritten to eliminate unnecessary complexity, bugs, and boundary conditions.

Fixed a problem in the ToInteger, ToBuffer, ToHexString, and ToDecimalString
operators where the input operand could be inadvertently deleted if no conversion was necessary (e.g., if the input to ToInteger was an Integer object.)

Fixed a problem with the ToDecimalString and ToHexString where an incorrect
exception code was returned if the resulting string would be > 200 chars. AE_STRING_LIMIT is now returned.

Fixed a problem with the Concatenate operator where AE_OK was always returned, even if the operation failed.

Fixed a problem in oswinxf (used by AcpiExec and iASL) to allow > 128 semaphores to be allocated.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.5K Code, 11.5K Data, 90.0K Total
Debug Version: 165.2K Code, 68.6K Data, 233.8K Total
Current Release:
Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total
Debug Version: 164.7K Code, 68.5K Data, 233.2K Total

2) iASL Compiler/Disassembler:

Fixed typechecking for the ObjectType and SizeOf operators. Problem was

recently introduced in 20041119.

Fixed a problem with the ToUUID macro where the upper nybble of each buffer
byte was inadvertently set to zero.

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19 November 2004. Summary of changes for version 20041119:

1) ACPI CA Core Subsystem:

Fixed a problem in the internal ConvertToInteger routine where new integers
were not truncated to 32 bits for 32-bit ACPI tables. This routine converts
buffers and strings to integers.

Implemented support to store a value to an Index() on a String object. This
is an ACPI 2.0 feature that had not yet been implemented.

Implemented new behavior for storing objects to individual package elements
(via the Index() operator). The previous behavior was to invoke the implicit
conversion rules if an object was already present at the index. The new
behavior is to simply delete any existing object and directly store the new
object. Although the ACPI specification seems unclear on this subject, other
ACPI implementations behave in this manner. (This is the root of the
AE_BAD_HEX_CONSTANT issue.)

Modified the RSDP memory scan mechanism to support the extended checksum for
ACPI 2.0 (and above) RSDPs. Note that the search continues until a valid
RSDP signature is found with a valid checksum.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.5K Code, 11.5K Data, 90.0K Total
Debug Version: 165.2K Code, 68.6K Data, 233.8K Total
Current Release:
Non-Debug Version: 78.5K Code, 11.5K Data, 90.0K Total
Debug Version: 165.2K Code, 68.6K Data, 233.8K Total

2) iASL Compiler/Disassembler:

Fixed a missing semicolon in the aslcompiler.y file.

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05 November 2004. Summary of changes for version 20041105:

1) ACPI CA Core Subsystem:

Implemented support for FADT revision 2. This was an interim table (between
ACPI 1.0 and ACPI 2.0) that adds support for the FADT reset register.

Implemented optional support to allow uninitialized LocalX and ArgX variables in a control method. The variables are initialized to an Integer
object with a value of zero. This support is enabled by setting the AcpiGbl_EnableInterpreterSlack flag to TRUE.

Implemented support for Integer objects for the SizeOf operator. Either 4
or 8 is returned, depending on the current integer size (32-bit or 64-bit,
depending on the parent table revision).

Fixed a problem in the implementation of the SizeOf and ObjectType operators
where the operand was resolved to a value too early, causing incorrect return values for some objects.

Fixed some possible memory leaks during exceptional conditions.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note

that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.0K Code, 11.5K Data, 89.5K Total
Debug Version: 164.8K Code, 68.6K Data, 233.4K Total
Current Release:
Non-Debug Version: 78.5K Code, 11.5K Data, 90.0K Total
Debug Version: 165.2K Code, 68.6K Data, 233.8K Total

2) iASL Compiler/Disassembler:

Implemented support for all ACPI 3.0 reserved names and methods.

Implemented all ACPI 3.0 grammar elements in the front-end, including
support for semicolons.

Implemented the ACPI 3.0 Function() and ToUUID() macros

Fixed a problem in the disassembler where a Scope() operator would not be
emitted properly if the target of the scope was in another table.

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15 October 2004. Summary of changes for version 20041015:

Note: ACPI CA is currently undergoing an in-depth and complete formal
evaluation to test/verify the following areas. Other suggestions are
welcome. This will result in an increase in the frequency of releases and
the number of bug fixes in the next few months.
- Functional tests for all ASL/AML operators
- All implicit/explicit type conversions
- Bit fields and operation regions
- 64-bit math support and 32-bit-only "truncated" math support
- Exceptional conditions, both compiler and interpreter
- Dynamic object deletion and memory leaks
- ACPI 3.0 support when implemented
- External interfaces to the ACPI subsystem

1) ACPI CA Core Subsystem:

Fixed two alignment issues on 64-bit platforms - within debug statements
in
AcpiEvGpeDetect and AcpiEvCreateGpeBlock. Removed references to the
Address
field within the non-aligned ACPI generic address structure.

Fixed a problem in the Increment and Decrement operators where incorrect operand resolution could result in the inadvertent modification of the original integer when the integer is passed into another method as an argument and the arg is then incremented/decremented.

Fixed a problem in the FromBCD operator where the upper 32-bits of a 64-bit
BCD number were truncated during conversion.

Fixed a problem in the ToDecimal operator where the length of the resulting
string could be set incorrectly too long if the input operand was a Buffer
object.

Fixed a problem in the Logical operators (LLess, etc.) where a NULL byte (0)
within a buffer would prematurely terminate a compare between buffer objects.

Added a check for string overflow (>200 characters as per the ACPI specification) during the Concatenate operator with two string operands.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 77.8K Code, 11.5K Data, 89.3K Total
Debug Version: 164.6K Code, 68.5K Data, 233.1K Total
Current Release:
Non-Debug Version: 78.0K Code, 11.5K Data, 89.5K Total
Debug Version: 164.8K Code, 68.6K Data, 233.4K Total

2) iASL Compiler/Disassembler:

Allow the use of the ObjectType operator on uninitialized Locals and Args (returns 0 as per the ACPI specification).

Fixed a problem where the compiler would fault if there was a syntax error
in the FieldName of all of the various CreateXXXField operators.

Disallow the use of lower case letters within the EISAID macro, as per the
ACPI specification. All EISAID strings must be of the form "UUUNNNN" Where
U is an uppercase letter and N is a hex digit.

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06 October 2004. Summary of changes for version 20041006:

1) ACPI CA Core Subsystem:

Implemented support for the ACPI 3.0 Timer operator. This ASL function
implements a 64-bit timer with 100 nanosecond granularity.

Defined a new OSL interface, AcpiOsGetTimer. This interface is used to
implement the ACPI 3.0 Timer operator. This allows the host OS to implement
the timer with the best clock available. Also, it keeps the core subsystem
out of the clock handling business, since the host OS (usually) performs
this function.

Fixed an alignment issue on 64-bit platforms. The HwLowLevelRead(Write)
functions use a 64-bit address which is part of the packed ACPI Generic
Address Structure. Since the structure is non-aligned, the alignment macros
are now used to extract the address to a local variable before use.

Fixed a problem where the ToInteger operator assumed all input strings were
hexadecimal. The operator now handles both decimal strings and hex strings
(prefixed with "0x").

Fixed a problem where the string length in the string object created as a
result of the internal ConvertToString procedure could be incorrect. This
potentially affected all implicit conversions and also the ToDecimalString
and ToHexString operators.

Fixed two problems in the ToString operator. If the length parameter was
zero, an incorrect string object was created and the value of the input

length parameter was inadvertently changed from zero to Ones.

Fixed a problem where the optional ResourceSource string in the ExtendedIRQ
resource macro was ignored.

Simplified the interfaces to the internal division functions, reducing code
size and complexity.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 77.9K Code, 11.4K Data, 89.3K Total
Debug Version: 164.5K Code, 68.3K Data, 232.8K Total
Current Release:
Non-Debug Version: 77.8K Code, 11.5K Data, 89.3K Total
Debug Version: 164.6K Code, 68.5K Data, 233.1K Total

2) iASL Compiler/Disassembler:

Implemented support for the ACPI 3.0 Timer operator.

Fixed a problem where the Default() operator was inadvertently ignored in a
Switch/Case block. This was a problem in the translation of the Switch statement to If...Else pairs.

Added support to allow a standalone Return operator, with no parentheses (or
operands).

Fixed a problem with code generation for the ElseIf operator where the translated Else...If parse tree was improperly constructed leading to the loss of some code.

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22 September 2004. Summary of changes for version 20040922:

1) ACPI CA Core Subsystem:

Fixed a problem with the implementation of the LNot() operator where "Ones"
was not returned for the TRUE case. Changed the code to return Ones instead
of (!Arg) which was usually 1. This change affects iASL constant folding for
this operator also.

Fixed a problem in AcpiUtInitializeBuffer where an existing buffer was not
initialized properly -- Now zero the entire buffer in this case where the
buffer already exists.

Changed the interface to AcpiOsSleep from (UINT32 Seconds, UINT32
Milliseconds) to simply (ACPI_INTEGER Milliseconds). This simplifies all
related code considerably. This will require changes/updates to all OS
interface layers (OSLs.)

Implemented a new external interface, AcpiInstallExceptionHandler, to allow
a system exception handler to be installed. This handler is invoked upon any
run-time exception that occurs during control method execution.

Added support for the DSDT in AcpiTbFindTable. This allows the
DataTableRegion() operator to access the local copy of the DSDT.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 77.8K Code, 11.4K Data, 89.2K Total
Debug Version: 164.2K Code, 68.2K Data, 232.4K Total
Current Release:
Non-Debug Version: 77.9K Code, 11.4K Data, 89.3K Total
Debug Version: 164.5K Code, 68.3K Data, 232.8K Total

2) iASL Compiler/Disassembler:

Fixed a problem with constant folding and the LNot operator. LNot was returning 1 in the TRUE case, not Ones as per the ACPI specification. This could result in the generation of an incorrect folded/reduced constant.

End-Of-File is now allowed within a "//"-style comment. A parse error no longer occurs if such a comment is at the very end of the input ASL source file.

Implemented the "-r" option to override the Revision in the table header. The initial use of this option will be to simplify the evaluation of the AML interpreter by allowing a single ASL source module to be compiled for either 32-bit or 64-bit integers.

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27 August 2004. Summary of changes for version 20040827:

1) ACPI CA Core Subsystem:

- Implemented support for implicit object conversion in the non-numeric logical operators (LEqual, LGreater, LGreaterEqual, LLess, LLessEqual, and LNotEqual.) Any combination of Integers/Strings/Buffers may now be used; the second operand is implicitly converted on the fly to match the type of the first operand. For example:

```
LEqual (Source1, Source2)
```

Source1 and Source2 must each evaluate to an integer, a string, or a buffer. The data type of Source1 dictates the required type of Source2. Source2 is implicitly converted if necessary to match the type of Source1.

- Updated and corrected the behavior of the string conversion support. The rules concerning conversion of buffers to strings (according to the ACPI specification) are as follows:

ToDecimalString - explicit byte-wise conversion of buffer to string of

decimal values (0-255) separated by commas. ToHexString - explicit byte-wise
conversion of buffer to string of hex values (0-FF) separated by commas.
ToString - explicit byte-wise conversion of buffer to string. Byte-by-byte
copy with no transform except NULL terminated. Any other implicit buffer-to-
string conversion - byte-wise conversion of buffer to string of hex values
(0-FF) separated by spaces.

- Fixed typo in definition of AcpiGbl_EnableInterpreterSlack.

- Fixed a problem in AcpiNsGetPathnameLength where the returned length was
one byte too short in the case of a node in the root scope. This could
cause a fault during debug output.

- Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 77.9K Code, 11.5K Data, 89.4K Total
Debug Version: 164.1K Code, 68.3K Data, 232.4K Total
Current Release:
Non-Debug Version: 77.8K Code, 11.4K Data, 89.2K Total
Debug Version: 164.2K Code, 68.2K Data, 232.4K Total

2) iASL Compiler/Disassembler:

- Fixed a Linux generation error.

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16 August 2004. Summary of changes for version 20040816:

1) ACPI CA Core Subsystem:

Designed and implemented support within the AML interpreter for the so-
called "implicit return". This support returns the result of the last
ASL
operation within a control method, in the absence of an explicit Return()
operator. A few machines depend on this behavior, even though it is not
explicitly supported by the ASL language. It is optional support that
can
be enabled at runtime via the AcpiGbl_EnableInterpreterSlack flag.

Removed support for the PCI_Config address space from the internal low
level
hardware interfaces (AcpiHwLowLevelRead and AcpiHwLowLevelWrite). This
support was not used internally, and would not work correctly anyway
because
the PCI bus number and segment number were not supported. There are
separate interfaces for PCI configuration space access because of the
unique
interface.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib
produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size.
Note
that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 78.0K Code, 11.5K Data, 89.5K Total
Debug Version: 164.1K Code, 68.2K Data, 232.3K Total
Current Release:
Non-Debug Version: 77.9K Code, 11.5K Data, 89.4K Total
Debug Version: 164.1K Code, 68.3K Data, 232.4K Total

2) iASL Compiler/Disassembler:

Fixed a problem where constants in ASL expressions at the root level (not
within a control method) could be inadvertently truncated during code
generation. This problem was introduced in the 20040715 release.

---
15 July 2004. Summary of changes for version 20040715:

1) ACPI CA Core Subsystem:

Restructured the internal HW GPE interfaces to pass/track the current
state
of interrupts (enabled/disabled) in order to avoid possible deadlock and
increase flexibility of the interfaces.

Implemented a "lexicographical compare" for String and Buffer objects
within
the logical operators -- LGreater, LLess, LGreaterEqual, and LLessEqual -
-
as per further clarification to the ACPI specification. Behavior is
similar
to C library "strcmp".

Completed a major reduction in CPU stack use for the AcpiGetFirmwareTable
external function. In the 32-bit non-debug case, the stack use has been
reduced from 168 bytes to 32 bytes.

Deployed a new run-time configuration flag,
AcpiGbl_EnableInterpreterSlack,
whose purpose is to allow the AML interpreter to forgive certain bad AML
constructs. Default setting is FALSE.

Implemented the first use of AcpiGbl_EnableInterpreterSlack in the Field
IO
support code. If enabled, it allows field access to go beyond the end of
a
region definition if the field is within the region length rounded up to
the
next access width boundary (a common coding error.)

Renamed OSD_HANDLER to ACPI_OSD_HANDLER, and OSD_EXECUTION_CALLBACK to
ACPI_OSD_EXEC_CALLBACK for consistency with other ACPI symbols. Also,
these
symbols are lowercased by the latest version of the AcpiSrc tool.

The prototypes for the PCI interfaces in acpiosxf.h have been updated to
rename "Register" to simply "Reg" to prevent certain compilers from
complaining.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib
produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size.
Note

that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 77.8K Code, 11.5K Data, 89.3K Total
Debug Version: 163.8K Code, 68.2K Data, 232.0K Total
Current Release:
Non-Debug Version: 78.0K Code, 11.5K Data, 89.5K Total
Debug Version: 164.1K Code, 68.2K Data, 232.3K Total

2) iASL Compiler/Disassembler:

Implemented full support for Package objects within the Case() operator.
Note: The Break() operator is currently not supported within Case blocks
(TermLists) as there is some question about backward compatibility with ACPI
1.0 interpreters.

Fixed a problem where complex terms were not supported properly within the
Switch() operator.

Eliminated extraneous warning for compiler-emitted reserved names of the
form "_T_x". (Used in Switch/Case operators.)

Eliminated optimization messages for "_T_x" objects and small constants
within the DefinitionBlock operator.

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15 June 2004. Summary of changes for version 20040615:

1) ACPI CA Core Subsystem:

Implemented support for Buffer and String objects (as per ACPI 2.0) for the
following ASL operators: LEqual, LGreater, LLess, LGreaterEqual, and
LLessEqual.

All directory names in the entire source package are lower case, as they
were in earlier releases.

Implemented "Disassemble" command in the AML debugger that will disassemble
a single control method.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 77.7K Code, 11.5K Data, 89.2K Total
Debug Version: 163.3K Code, 67.2K Data, 230.5K Total

Current Release:
Non-Debug Version: 77.8K Code, 11.5K Data, 89.3K Total
Debug Version: 163.8K Code, 68.2K Data, 232.0K Total

2) iASL Compiler/Disassembler:

Implemented support for Buffer and String objects (as per ACPI 2.0) for the
following ASL operators: LEqual, LGreater, LLess, LGreaterEqual, and LLessEqual.

All directory names in the entire source package are lower case, as they were in earlier releases.

Fixed a fault when using the -g or -d<nofilename> options if the FADT was not found.

Fixed an issue with the Windows version of the compiler where later versions
of Windows place the FADT in the registry under the name "FADT" and not "FACP" as earlier versions did. This applies when using the -g or -d<nofilename> options. The compiler now looks for both strings as necessary.

Fixed a problem with compiler namepath optimization where a namepath within
the Scope() operator could not be optimized if the namepath was a subpath of
the current scope path.

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27 May 2004. Summary of changes for version 20040527:

1) ACPI CA Core Subsystem:

Completed a new design and implementation for EBDA (Extended BIOS Data Area)
support in the RSDP scan code. The original code improperly scanned for the
EBDA by simply scanning from memory location 0 to 0x400. The correct method
is to first obtain the EBDA pointer from within the BIOS data area, then
scan 1K of memory starting at the EBDA pointer. There appear to be few if
any machines that place the RSDP in the EBDA, however.

Integrated a fix for a possible fault during evaluation of BufferField
arguments. Obsolete code that was causing the problem was removed.

Found and fixed a problem in the Field Support Code where data could be
corrupted on a bit field read that starts on an aligned boundary but does
not end on an aligned boundary. Merged the read/write "datum length"
calculation code into a common procedure.

Rolled in a couple of changes to the FreeBSD-specific header.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:
Non-Debug Version: 77.6K Code, 11.5K Data, 89.1K Total
Debug Version: 163.2K Code, 67.2K Data, 230.4K Total
Current Release:
Non-Debug Version: 77.7K Code, 11.5K Data, 89.2K Total
Debug Version: 163.3K Code, 67.2K Data, 230.5K Total

2) iASL Compiler/Disassembler:

Fixed a generation warning produced by some overly-verbose compilers for

a
64-bit constant.

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14 May 2004. Summary of changes for version 20040514:

1) ACPI CA Core Subsystem:

Fixed a problem where hardware GPE enable bits sometimes not set properly during and after GPE method execution. Result of 04/27 changes.

Removed extra "clear all GPEs" when sleeping/waking.

Removed AcpiHwEnableGpe and AcpiHwDisableGpe, replaced by the single AcpiHwWriteGpeEnableReg. Changed a couple of calls to the functions above to
the new AcpiEv* calls as appropriate.

ACPI_OS_NAME was removed from the OS-specific headers. The default name is
now "Microsoft Windows NT" for maximum compatibility. However this can be
changed by modifying the acconfig.h file.

Allow a single invocation of AcpiInstallNotifyHandler for a handler that traps both types of notifies (System, Device). Use ACPI_ALL_NOTIFY flag.

Run _INI methods on ThermalZone objects. This is against the ACPI specification, but there is apparently ASL code in the field that has these
_INI methods, and apparently "other" AML interpreters execute them.

Performed a full 16/32/64 bit lint that resulted in some small changes.

Added a sleep simulation command to the AML debugger to test sleep code.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Previous Release:

Non-Debug Version: 77.6K Code, 11.5K Data, 89.1K Total
Debug Version: 162.9K Code, 67.0K Data, 229.9K Total
Current Release:
Non-Debug Version: 77.6K Code, 11.5K Data, 89.1K Total
Debug Version: 163.2K Code, 67.2K Data, 230.4K Total

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27 April 2004. Summary of changes for version 20040427:

1) ACPI CA Core Subsystem:

Completed a major overhaul of the GPE handling within ACPI CA. There are now three types of GPEs: wake-only, runtime-only, and combination wake/run.
The only GPEs allowed to be combination wake/run are for button-style devices such as a control-method power button, control-method sleep button,
or a notebook lid switch. GPEs that have an _Lxx or _Exx method and are not
referenced by any _PRW methods are marked for "runtime" and hardware enabled. Any GPE that is referenced by a _PRW method is marked for "wake"
(and disabled at runtime). However, at sleep time, only those GPEs that have been specifically enabled for wake via the AcpiEnableGpe interface will
actually be hardware enabled.

A new external interface has been added, AcpiSetGpeType(), that is meant to
be used by device drivers to force a GPE to a particular type. It will be
especially useful for the drivers for the button devices mentioned above.

Completed restructuring of the ACPI CA initialization sequence so that default operation region handlers are installed before GPEs are initialized
and the _PRW methods are executed. This will prevent errors when the _PRW
methods attempt to access system memory or I/O space.

GPE enable/disable no longer reads the GPE enable register. We now keep the
enable info for runtime and wake separate and in the GPE_EVENT_INFO. We thus no longer depend on the hardware to maintain these bits.

Always clear the wake status and fixed/GPE status bits before sleep, even for state S5.

Improved the AML debugger output for displaying the GPE blocks and their current status.

Added new strings for the _OSI method, of the form "Windows 2001 SPx" where
x = 0,1,2,3,4.

Fixed a problem where the physical address was incorrectly calculated when
the Load() operator was used to directly load from an Operation Region (vs.
loading from a Field object.) Also added check for minimum table length for
this case.

Fix for multiple mutex acquisition. Restore original thread SyncLevel on mutex release.

Added ACPI_VALID_SXDS flag to the AcpiGetObjectInfo interface for consistency with the other fields returned.

Shrunk the ACPI_GPE_EVENT_INFO structure by 40%. There is one such structure for each GPE in the system, so the size of this structure is important.

CPU stack requirement reduction: Cleaned up the method execution and object
evaluation paths so that now a parameter structure is passed, instead of copying the various method parameters over and over again.

In evregion.c: Correctly exit and reenter the interpreter region if and only if dispatching an operation region request to a user-installed handler.
Do not exit/reenter when dispatching to a default handler (e.g., default system memory or I/O handlers)

Notes for updating drivers for the new GPE support. The following changes
must be made to ACPI-related device drivers that are attached to one or more
GPEs: (This information will be added to the ACPI CA Programmer Reference.)

1) AcpiInstallGpeHandler no longer automatically enables the GPE, you must
explicitly call AcpiEnableGpe.
2) There is a new interface called AcpiSetGpeType. This should be called

before enabling the GPE. Also, this interface will automatically disable
the GPE if it is currently enabled.
3) AcpiEnableGpe no longer supports a GPE type flag.

Specific drivers that must be changed:
1) EC driver:
  AcpiInstallGpeHandler (NULL, GpeNum, ACPI_GPE_EDGE_TRIGGERED,
AeGpeHandler, NULL);
  AcpiSetGpeType (NULL, GpeNum, ACPI_GPE_TYPE_RUNTIME);
  AcpiEnableGpe (NULL, GpeNum, ACPI_NOT_ISR);

2) Button Drivers (Power, Lid, Sleep):
Run _PRW method under parent device
If _PRW exists: /* This is a control-method button */
  Extract GPE number and possibly GpeDevice
  AcpiSetGpeType (GpeDevice, GpeNum, ACPI_GPE_TYPE_WAKE_RUN);
  AcpiEnableGpe (GpeDevice, GpeNum, ACPI_NOT_ISR);

For all other devices that have _PRWs, we automatically set the GPE type
to
ACPI_GPE_TYPE_WAKE, but the GPE is NOT automatically (wake) enabled.
This
must be done on a selective basis, usually requiring some kind of user
app
to allow the user to pick the wake devices.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib
produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size.
Note
that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

 Previous Release:
  Non-Debug Version: 77.0K Code, 11.4K Data,   88.4K Total
  Debug Version: 161.0K Code, 66.3K Data, 227.3K Total
 Current Release:

  Non-Debug Version: 77.6K Code, 11.5K Data,   89.1K Total
  Debug Version: 162.9K Code, 67.0K Data, 229.9K Total

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02 April 2004. Summary of changes for version 20040402:

1) ACPI CA Core Subsystem:

Fixed an interpreter problem where an indirect store through an ArgX parameter was incorrectly applying the "implicit conversion rules" during the store. From the ACPI specification: "If the target is a method local or argument (LocalX or ArgX), no conversion is performed and the result is stored directly to the target". The new behavior is to disable implicit conversion during ALL stores to an ArgX.

Changed the behavior of the _PRW method scan to ignore any and all errors returned by a given _PRW. This prevents the scan from aborting from the failure of any single _PRW.

Moved the runtime configuration parameters from the global init procedure to static variables in acglobal.h. This will allow the host to override the default values easily.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:
Non-Debug Version: 76.9K Code, 11.4K Data, 88.3K Total
Debug Version: 160.8K Code, 66.1K Data, 226.9K Total
Current Release:
Non-Debug Version: 77.0K Code, 11.4K Data, 88.4K Total
Debug Version: 161.0K Code, 66.3K Data, 227.3K Total

2) iASL Compiler/Disassembler:

iASL now fully disassembles SSDTs. However, External() statements are not generated automatically for unresolved symbols at this time. This is a planned feature for future implementation.

Fixed a scoping problem in the disassembler that occurs when the type of the
target of a Scope() operator is overridden. This problem caused an
incorrectly nested internal namespace to be constructed.

Any warnings or errors that are emitted during disassembly are now commented
out automatically so that the resulting file can be recompiled without any
hand editing.

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26 March 2004. Summary of changes for version 20040326:

1) ACPI CA Core Subsystem:

Implemented support for "wake" GPEs via interaction between GPEs and the
_PRW methods. Every GPE that is pointed to by one or more _PRWs is
identified as a WAKE GPE and by default will no longer be enabled at
runtime. Previously, we were blindly enabling all GPEs with a corresponding
_Lxx or _Exx method - but most of these turn out to be WAKE GPEs anyway. We
believe this has been the cause of thousands of "spurious" GPEs on some
systems.

This new GPE behavior is can be reverted to the original behavior (enable
ALL GPEs at runtime) via a runtime flag.

Fixed a problem where aliased control methods could not access objects
properly. The proper scope within the namespace was not initialized
(transferred to the target of the aliased method) before executing the
target method.

Fixed a potential race condition on internal object deletion on the return
object in AcpiEvaluateObject.

Integrated a fix for resource descriptors where both _MEM and _MTP were
being extracted instead of just _MEM. (i.e. bitmask was incorrectly too
wide, 0x0F instead of 0x03.)

Added a special case for ACPI_ROOT_OBJECT in AcpiUtGetNodeName, preventing a
fault in some cases.

Updated Notify() values for debug statements in evmisc.c

Return proper status from AcpiUtMutexInitialize, not just simply AE_OK.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib
produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size.
Note
that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

Previous Release:

Non-Debug Version: 76.5K Code, 11.3K Data, 87.8K Total
Debug Version: 160.3K Code, 66.0K Data, 226.3K Total
Current Release:
Non-Debug Version: 76.9K Code, 11.4K Data, 88.3K Total
Debug Version: 160.8K Code, 66.1K Data, 226.9K Total

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11 March 2004. Summary of changes for version 20040311:

1) ACPI CA Core Subsystem:

Fixed a problem where errors occurring during the parse phase of control
method execution did not abort cleanly. For example, objects created and
installed in the namespace were not deleted. This caused all subsequent
invocations of the method to return the AE_ALREADY_EXISTS exception.

Implemented a mechanism to force a control method to "Serialized"
execution
if the method attempts to create namespace objects. (The root of the
AE_ALREADY_EXISTS problem.)

Implemented support for the predefined _OSI "internal" control method.
Initial supported strings are "Linux", "Windows 2000", "Windows 2001",
and
"Windows 2001.1", and can be easily upgraded for new strings as
necessary.
This feature will allow "other" operating systems to execute the fully
tested, "Windows" code path through the ASL code

Global Lock Support: Now allows multiple acquires and releases with any
internal thread. Removed concept of "owning thread" for this special
mutex.

Fixed two functions that were inappropriately declaring large objects on the
CPU stack: PsParseLoop, NsEvaluateRelative. Reduces the stack usage during
method execution considerably.

Fixed a problem in the ACPI 2.0 FACS descriptor (actbl2.h) where the
S4Bios_f field was incorrectly defined as UINT32 instead of UINT32_BIT.

Fixed a problem where AcpiEvGpeDetect would fault if there were no GPEs
defined on the machine.

Implemented two runtime options: One to force all control method execution
to "Serialized" to mimic Windows behavior, another to disable _OSI support
if it causes problems on a given machine.

Code and Data Size: Current and previous core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size. Note
that these values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

 Previous Release:
   Non-Debug Version: 74.8K Code, 10.1K Data,   84.9K Total
   Debug Version: 158.7K Code, 65.1K Data, 223.8K Total
 Current Release:
   Non-Debug Version: 76.5K Code, 11.3K Data,   87.8K Total
   Debug Version: 160.3K Code, 66.0K Data, 226.3K Total

2) iASL Compiler/Disassembler:

Fixed an array size problem for FreeBSD that would cause the compiler to
fault.

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20 February 2004. Summary of changes for version 20040220:

1) ACPI CA Core Subsystem:

Implemented execution of _SxD methods for Device objects in the
GetObjectInfo interface.

Fixed calls to _SST method to pass the correct arguments.

Added a call to _SST on wake to restore to "working" state.

Check for End-Of-Buffer failure case in the WalkResources interface.

Integrated fix for 64-bit alignment issue in acglobal.h by moving two
structures to the beginning of the file.

After wake, clear GPE status register(s) before enabling GPEs.

After wake, clear/enable power button. (Perhaps we should clear/enable
all
fixed events upon wake.)

Fixed a couple of possible memory leaks in the Namespace manager.

Integrated latest acnetbsd.h file.

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11 February 2004. Summary of changes for version 20040211:

1) ACPI CA Core Subsystem:

Completed investigation and implementation of the call-by-reference
mechanism for control method arguments.

Fixed a problem where a store of an object into an indexed package could
fail if the store occurs within a different method than the method that
created the package.

Fixed a problem where the ToDecimal operator could return incorrect
results.

Fixed a problem where the CopyObject operator could fail on some of the
more
obscure objects (e.g., Reference objects.)

Improved the output of the Debug object to display buffer, package, and
index objects.

Fixed a problem where constructs of the form "RefOf (ArgX)" did not
return
the expected result.

Added permanent ACPI_REPORT_ERROR macros for all instances of the ACPI_AML_INTERNAL exception.

Integrated latest version of acfreebsd.h

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16 January 2004. Summary of changes for version 20040116:

The purpose of this release is primarily to update the copyright years in each module, thus causing a huge number of diffs. There are a few small functional changes, however.

1) ACPI CA Core Subsystem:

Improved error messages when there is a problem finding one or more of the
required base ACPI tables

Reintroduced the definition of APIC_HEADER in actbl.h

Changed definition of MADT_ADDRESS_OVERRIDE to 64 bits (actbl.h)

Removed extraneous reference to NewObj in dsmthdat.c

2) iASL compiler

Fixed a problem introduced in December that disabled the correct disassembly
of Resource Templates

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03 December 2003. Summary of changes for version 20031203:

1) ACPI CA Core Subsystem:

Changed the initialization of Operation Regions during subsystem init to perform two entire walks of the ACPI namespace; The first to initialize the regions themselves, the second to execute the _REG methods. This fixed some interdependencies across _REG methods found on some machines.

Fixed a problem where a Store(Local0, Local1) could simply update the object reference count, and not create a new copy of the object if the Local1 is uninitialized.

Implemented support for the _SST reserved method during sleep

transitions.

Implemented support to clear the SLP_TYP and SLP_EN bits when waking up, this is apparently required by some machines.

When sleeping, clear the wake status only if SleepState is not S5.

Fixed a problem in AcpiRsExtendedIrqResource() where an incorrect pointer arithmetic advanced a string pointer too far.

Fixed a problem in AcpiTbGetTablePtr() where a garbage pointer could be returned if the requested table has not been loaded.

Within the support for IRQ resources, restructured the handling of the active and edge/level bits.

Fixed a few problems in AcpiPsxExecute() where memory could be leaked under certain error conditions.

Improved error messages for the cases where the ACPI mode could not be entered.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (20031029):
Non-Debug Version: 74.4K Code, 10.1K Data, 84.5K Total
Debug Version: 158.3K Code, 65.0K Data, 223.3K Total
Current Release:
Non-Debug Version: 74.8K Code, 10.1K Data, 84.9K Total
Debug Version: 158.7K Code, 65.1K Data, 223.8K Total

2) iASL Compiler/Disassembler:

Implemented a fix for the iASL disassembler where a bad index was generated. This was most noticeable on 64-bit platforms

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29 October 2003. Summary of changes for version 20031029:

1) ACPI CA Core Subsystem:

Fixed a problem where a level-triggered GPE with an associated
_Lxx control method was incorrectly cleared twice.

Fixed a problem with the Field support code where an access can
occur beyond the end-of-region if the field is non-aligned but
extends to the very end of the parent region (resulted in an
AE_AML_REGION_LIMIT exception.)

Fixed a problem with ACPI Fixed Events where an RT Clock handler
would not get invoked on an RTC event. The RTC event bitmasks for
the PM1 registers were not being initialized properly.

Implemented support for executing _STA and _INI methods for
Processor objects. Although this is currently not part of the
ACPI specification, there is existing ASL code that depends on the
init-time execution of these methods.

Implemented and deployed a GetDescriptorName function to decode
the various types of internal descriptors. Guards against null
descriptors during debug output also.

Implemented and deployed a GetNodeName function to extract the 4-
character namespace node name. This function simplifies the debug
and error output, as well as guarding against null pointers during
output.

Implemented and deployed the ACPI_FORMAT_UINT64 helper macro to
simplify the debug and error output of 64-bit integers. This
macro replaces the HIDWORD and LODWORD macros for dumping these
integers.

Updated the implementation of the Stall() operator to only call
AcpiOsStall(), and also return an error if the operand is larger
than 255. This preserves the required behavior of not
relinquishing the processor, as would happen if AcpiOsSleep() was
called for "long stalls".

Constructs of the form "Store(LocalX,LocalX)" where LocalX is not
initialized are now treated as NOOPs.

Cleaned up a handful of warnings during 64-bit generation.

Fixed a reported error where and incorrect GPE number was passed
to the GPE dispatch handler. This value is only used for error
output, however. Used this opportunity to clean up and streamline
the GPE dispatch code.

Code and Data Size: Current and previous core subsystem library
sizes are shown below. These are the code and data sizes for the
acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and
these values do not include any ACPI driver or OSPM code. The

debug version of the code includes the debug output trace
mechanism and has a much larger code and data size. Note that
these values will vary depending on the efficiency of the compiler
and the compiler options used during generation.

Previous Release (20031002):
Non-Debug Version: 74.1K Code, 9.7K Data, 83.8K Total
Debug Version: 157.9K Code, 64.8K Data, 222.7K Total
Current Release:
Non-Debug Version: 74.4K Code, 10.1K Data, 84.5K Total
Debug Version: 158.3K Code, 65.0K Data, 223.3K Total

2) iASL Compiler/Disassembler:

Updated the iASL compiler to return an error if the operand to the
Stall() operator is larger than 255.

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02 October 2003. Summary of changes for version 20031002:

1) ACPI CA Core Subsystem:

Fixed a problem with Index Fields where the index was not
incremented for fields that require multiple writes to the
index/data registers (Fields that are wider than the data
register.)

Fixed a problem with all Field objects where a write could go
beyond the end-of-field if the field was larger than the access
granularity and therefore required multiple writes to complete the
request. An extra write beyond the end of the field could happen
inadvertently.

Fixed a problem with Index Fields where a BUFFER_OVERFLOW error
would incorrectly be returned if the width of the Data Register
was larger than the specified field access width.

Completed fixes for LoadTable() and Unload() and verified their
operation. Implemented full support for the "DdbHandle" object

throughout the ACPI CA subsystem.

Implemented full support for the MADT and ECDT tables in the ACPI CA header files. Even though these tables are not directly consumed by ACPI CA, the header definitions are useful for ACPI device drivers.

Integrated resource descriptor fixes posted to the Linux ACPI list. This included checks for minimum descriptor length, and support for trailing NULL strings within descriptors that have optional string elements.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (20030918):
Non-Debug Version: 73.9K Code, 9.7K Data, 83.6K Total
Debug Version: 157.3K Code, 64.5K Data, 221.8K Total
Current Release:
Non-Debug Version: 74.1K Code, 9.7K Data, 83.8K Total
Debug Version: 157.9K Code, 64.8K Data, 222.7K Total

2) iASL Compiler:

Implemented detection of non-ASCII characters within the input source ASL file. This catches attempts to compile binary (AML) files early in the compile, with an informative error message.

Fixed a problem where the disassembler would fault if the output filename could not be generated or if the output file could not be opened.

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18 September 2003. Summary of changes for version 20030918:

1) ACPI CA Core Subsystem:

Found and fixed a longstanding problem with the late execution of the various deferred AML opcodes (such as Operation Regions, Buffer Fields, Buffers, and Packages). If the name string

specified for the name of the new object placed the object in a scope other than the current scope, the initialization/execution of the opcode failed. The solution to this problem was to implement a mechanism where the late execution of such opcodes does not attempt to lookup/create the name a second time in an incorrect scope. This fixes the "region size computed incorrectly" problem.

Fixed a call to AcpiHwRegisterWrite in hwregs.c that was causing a Global Lock AE_BAD_PARAMETER error.

Fixed several 64-bit issues with prototypes, casting and data types.

Removed duplicate prototype from acdisasm.h

Fixed an issue involving EC Operation Region Detach (Shaohua Li)

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 73.7K Code, 9.7K Data, 83.4K Total
Debug Version: 156.9K Code, 64.2K Data, 221.1K Total
Current Release:
Non-Debug Version: 73.9K Code, 9.7K Data, 83.6K Total
Debug Version: 157.3K Code, 64.5K Data, 221.8K Total

2) Linux:

Fixed the AcpiOsSleep implementation in osunixxf.c to pass the correct sleep time in seconds.

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14 July 2003. Summary of changes for version 20030619:

1) ACPI CA Core Subsystem:

Parse SSDTs in order discovered, as opposed to reverse order (Hrvoje Habjanic)

Fixes from FreeBSD and NetBSD. (Frank van der Linden, Thomas Klausner,
Nate Lawson)

2) Linux:

Dynamically allocate SDT list (suggested by Andi Kleen)

proc function return value cleanups (Andi Kleen)

Correctly handle NMI watchdog during long stalls (Andrew Morton)

Make it so acpismp=force works (reported by Andrew Morton)

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19 June 2003. Summary of changes for version 20030619:

1) ACPI CA Core Subsystem:

Fix To/FromBCD, eliminating the need for an arch-specific #define.

Do not acquire a semaphore in the S5 shutdown path.

Fix ex_digits_needed for 0. (Takayoshi Kochi)

Fix sleep/stall code reversal. (Andi Kleen)

Revert a change having to do with control method calling semantics.

2) Linux:

acpiphp update (Takayoshi Kochi)

Export acpi_disabled for sonypi (Stelian Pop)

Mention acpismp=force in config help

Re-add acpitable.c and acpismp=force. This improves backwards

compatibility and also cleans up the code to a significant degree.

Add ASUS Value-add driver (Karol Kozimor and Julien Lerouge)

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22 May 2003. Summary of changes for version 20030522:

1) ACPI CA Core Subsystem:

Found and fixed a reported problem where an AE_NOT_FOUND error occurred occasionally during _BST evaluation. This turned out to be an Owner ID allocation issue where a called method did not get a new ID assigned to it. Eventually, (after 64k calls), the Owner ID UINT16 would wraparound so that the ID would be the same as the caller's and the called method would delete the caller's namespace.

Implemented extended error reporting for control methods that are aborted due to a run-time exception. Output includes the exact AML instruction that caused the method abort, a dump of the method locals and arguments at the time of the abort, and a trace of all nested control method calls.

Modified the interpreter to allow the creation of buffers of zero length from the AML code. Implemented new code to ensure that no attempt is made to actually allocate a memory buffer (of length zero) - instead, a simple buffer object with a NULL buffer pointer and length zero is created. A warning is no longer issued when the AML attempts to create a zero-length buffer.

Implemented a workaround for the "leading asterisk issue" in _HIDs, _UIDs, and _CIDs in the AML interpreter. One leading asterisk is automatically removed if present in any HID, UID, or CID strings. The iASL compiler will still flag this asterisk as an error, however.

Implemented full support for _CID methods that return a package of multiple CIDs (Compatible IDs). The AcpiGetObjectInfo() interface now additionally returns a device _CID list if present. This required a change to the external interface in order to pass an ACPI_BUFFER object as a parameter since the _CID list is of variable length.

Fixed a problem with the new AE_SAME_HANDLER exception where handler initialization code did not know about this exception.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler

and the compiler options used during generation.

Previous Release (20030509):
Non-Debug Version: 73.4K Code, 9.7K Data, 83.1K Total
Debug Version: 156.1K Code, 63.9K Data, 220.0K Total
Current Release:
Non-Debug Version: 73.7K Code, 9.7K Data, 83.4K Total
Debug Version: 156.9K Code, 64.2K Data, 221.1K Total

2) Linux:

Fixed a bug in which we would reinitialize the ACPI interrupt after it was already working, thus disabling all ACPI and the IRQs for any other device sharing the interrupt. (Thanks to Stian Jordet)

Toshiba driver update (John Belmonte)

Return only 0 or 1 for our interrupt handler status (Andrew Morton)

3) iASL Compiler:

Fixed a reported problem where multiple (nested) ElseIf() statements were not handled correctly by the compiler, resulting in incorrect warnings and incorrect AML code. This was a problem in both the ASL parser and the code generator.

4) Documentation:

Added changes to existing interfaces, new exception codes, and new text concerning reference count object management versus garbage collection.

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09 May 2003. Summary of changes for version 20030509.

1) ACPI CA Core Subsystem:

Changed the subsystem initialization sequence to hold off installation of address space handlers until the hardware has been initialized and the system has entered ACPI mode. This is because the installation of space handlers can cause _REG methods to be run. Previously, the _REG methods could potentially be run before

ACPI mode was enabled.

Fixed some memory leak issues related to address space handler and notify handler installation. There were some problems with the reference count mechanism caused by the fact that the handler objects are shared across several namespace objects.

Fixed a reported problem where reference counts within the namespace were not properly updated when named objects created by method execution were deleted.

Fixed a reported problem where multiple SSDTs caused a deletion issue during subsystem termination. Restructured the table data structures to simplify the linked lists and the related code.

Fixed a problem where the table ID associated with secondary tables (SSDTs) was not being propagated into the namespace objects created by those tables. This would only present a problem for tables that are unloaded at run-time, however.

Updated AcpiOsReadable and AcpiOsWritable to use the ACPI_SIZE type as the length parameter (instead of UINT32).

Solved a long-standing problem where an ALREADY_EXISTS error appears on various systems. This problem could happen when there are multiple PCI_Config operation regions under a single PCI root bus. This doesn't happen very frequently, but there are some systems that do this in the ASL.

Fixed a reported problem where the internal DeleteNode function was incorrectly handling the case where a namespace node was the first in the parent's child list, and had additional peers (not the only child, but first in the list of children.)

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release
Non-Debug Version: 73.7K Code, 9.5K Data, 83.2K Total
Debug Version: 156.1K Code, 63.6K Data, 219.7K Total
Current Release:
Non-Debug Version: 73.4K Code, 9.7K Data, 83.1K Total

Debug Version: 156.1K Code, 63.9K Data, 220.0K Total

2) Linux:

Allow ":" in OS override string (Ducrot Bruno)

Kobject fix (Greg KH)

3 iASL Compiler/Disassembler:

Fixed a problem in the generation of the C source code files (AML is emitted in C source statements for BIOS inclusion) where the Ascii dump that appears within a C comment at the end of each line could cause a compile time error if the AML sequence happens to have an open comment or close comment sequence embedded.

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24 April 2003. Summary of changes for version 20030424.

1) ACPI CA Core Subsystem:

Support for big-endian systems has been implemented. Most of the support has been invisibly added behind big-endian versions of the ACPI_MOVE_* macros.

Fixed a problem in AcpiHwDisableGpeBlock() and AcpiHwClearGpeBlock() where an incorrect offset was passed to the low level hardware write routine. The offset parameter was actually eliminated from the low level read/write routines because they had become obsolete.

Fixed a problem where a handler object was deleted twice during the removal of a fixed event handler.

2) Linux:

A fix for SMP systems with link devices was contributed by

Compaq's Dan Zink.

(2.5) Return whether we handled the interrupt in our IRQ handler. (Linux ISRs no longer return void, so we can propagate the handler return value from the ACPI CA core back to the OS.)

3) Documentation:

The ACPI CA Programmer Reference has been updated to reflect new interfaces and changes to existing interfaces.

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28 March 2003. Summary of changes for version 20030328.

1) ACPI CA Core Subsystem:

The GPE Block Device support has been completed. New interfaces are AcpiInstallGpeBlock and AcpiRemoveGpeBlock. The Event interfaces (enable, disable, clear, getstatus) have been split into separate interfaces for Fixed Events and General Purpose Events (GPEs) in order to support GPE Block Devices properly.

Fixed a problem where the error message "Failed to acquire semaphore" would appear during operations on the embedded controller (EC).

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release
Non-Debug Version: 72.3K Code, 9.5K Data, 81.8K Total
Debug Version: 154.0K Code, 63.4K Data, 217.4K Total
Current Release:
Non-Debug Version: 73.7K Code, 9.5K Data, 83.2K Total
Debug Version: 156.1K Code, 63.6K Data, 219.7K Total

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28 February 2003. Summary of changes for version 20030228.

1) ACPI CA Core Subsystem:

The GPE handling and dispatch code has been completely overhauled in preparation for support of GPE Block Devices (ID ACPI0006).

This affects internal data structures and code only; there should
be no differences visible externally. One new file has been
added, evgpeblk.c

The FADT fields GPE0_BLK_LEN and GPE1_BLK_LEN are now the only
fields that are used to determine the GPE block lengths. The
REGISTER_BIT_WIDTH field of the X_GPEx_BLK extended address
structures are ignored. This is per the ACPI specification but it
isn't very clear. The full 256 Block 0/1 GPEs are now supported
(the use of REGISTER_BIT_WIDTH limited the number of GPEs to 128).

In the SCI interrupt handler, removed the read of the PM1_CONTROL
register to look at the SCI_EN bit. On some machines, this read
causes an SMI event and greatly slows down SCI events. (This may
in fact be the cause of slow battery status response on some
systems.)

Fixed a problem where a store of a NULL string to a package object
could cause the premature deletion of the object. This was seen
during execution of the battery _BIF method on some systems,
resulting in no battery data being returned.

Added AcpiWalkResources interface to simplify parsing of resource
lists.

Code and Data Size: Current core subsystem library sizes are shown
below. These are the code and data sizes for the acpica.lib
produced by the Microsoft Visual C++ 6.0 compiler, and these
values do not include any ACPI driver or OSPM code. The debug
version of the code includes the debug output trace mechanism and
has a much larger code and data size. Note that these values will
vary depending on the efficiency of the compiler and the compiler
options used during generation.

Previous Release
Non-Debug Version: 72.0K Code, 9.5K Data, 81.5K Total
Debug Version: 153.0K Code, 62.9K Data, 215.9K Total
Current Release:
Non-Debug Version: 72.3K Code, 9.5K Data, 81.8K Total
Debug Version: 154.0K Code, 63.4K Data, 217.4K Total

2) Linux

S3 fixes (Ole Rohne)

Update ACPI PHP driver with to use new acpi_walk_resource API
(Bjorn Helgaas)

Add S4BIOS support (Pavel Machek)

Map in entire table before performing checksum (John Stultz)

Expand the mem= cmdline to allow the specification of reserved and
ACPI DATA blocks (Pavel Machek)

Never use ACPI on VISWS

Fix derive_pci_id (Ducrot Bruno, Alvaro Lopez)

Revert a change that allowed P_BLK lengths to be 4 or 5. This is
causing us to think that some systems support C2 when they really
don't.

Do not count processor objects for non-present CPUs (Thanks to
Dominik Brodowski)

3) iASL Compiler:

Fixed a problem where ASL include files could not be found and
opened.

Added support for the _PDC reserved name.

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22 January 2003. Summary of changes for version 20030122.

1) ACPI CA Core Subsystem:

Added a check for constructs of the form: Store (Local0, Local0)
where Local0 is not initialized. Apparently, some BIOS
programmers believe that this is a NOOP. Since this store doesn't
do anything anyway, the new prototype behavior will ignore this
error. This is a case where we can relax the strict checking in
the interpreter in the name of compatibility.

2) Linux

The AcpiSrc Source Conversion Utility has been released with the
Linux package for the first time. This is the utility that is
used to convert the ACPI CA base source code to the Linux version.

(Both) Handle P_BLK lengths shorter than 6 more gracefully

(Both) Move more headers to include/acpi, and delete an unused header.

(Both) Move drivers/acpi/include directory to include/acpi

(Both) Boot functions don't use cmdline, so don't pass it around

(Both) Remove include of unused header (Adrian Bunk)

(Both) acpiphp.h includes both linux/acpi.h and acpi_bus.h. Since the
former now also includes the latter, acpiphp.h only needs the one, now.

(2.5) Make it possible to select method of bios restoring after S3 resume. [=> no more ugly ifdefs] (Pavel Machek)

(2.5) Make proc write interfaces work (Pavel Machek)

(2.5) Properly init/clean up in cpufreq/acpi (Dominik Brodowski)

(2.5) Break out ACPI Perf code into its own module, under cpufreq (Dominik Brodowski)

(2.4) S4BIOS support (Ducrot Bruno)

(2.4) Fix acpiphp_glue.c for latest ACPI struct changes (Sergio Visinoni)

3) iASL Compiler:

Added support to disassemble SSDT and PSDTs.

Implemented support to obtain SSDTs from the Windows registry if available.

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09 January 2003. Summary of changes for version 20030109.

1) ACPI CA Core Subsystem:

Changed the behavior of the internal Buffer-to-String conversion function. The current ACPI specification states that the contents of the buffer are "converted to a string of two-character

hexadecimal numbers, each separated by a space". Unfortunately, this definition is not backwards compatible with existing ACPI 1.0 implementations (although the behavior was not defined in the ACPI 1.0 specification). The new behavior simply copies data from the buffer to the string until a null character is found or the end of the buffer is reached. The new String object is always null terminated. This problem was seen during the generation of _BIF battery data where incorrect strings were returned for battery type, etc. This will also require an errata to the ACPI specification.

Renamed all instances of NATIVE_UINT and NATIVE_INT to ACPI_NATIVE_UINT and ACPI_NATIVE_INT, respectively.

Copyright in all module headers (both Linux and non-Linux) has be updated to 2003.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release
Non-Debug Version: 72.0K Code, 9.5K Data, 81.5K Total
Debug Version: 153.0K Code, 62.9K Data, 215.9K Total
Current Release:
Non-Debug Version: 72.0K Code, 9.5K Data, 81.5K Total
Debug Version: 153.0K Code, 62.9K Data, 215.9K Total

2) Linux

Fixed an oops on module insertion/removal (Matthew Tippett)

(2.4) Fix to handle dynamic size of mp_irqs (Joerg Prante)

(2.5) Replace pr_debug (Randy Dunlap)

(2.5) Remove usage of CPUFREQ_ALL_CPUS (Dominik Brodowski)

(Both) Eliminate spawning of thread from timer callback, in favor of schedule_work()

(Both) Show Lid status in /proc (Zdenek OGAR Skalak)

(Both) Added define for Fixed Function HW region (Matthew Wilcox)

(Both) Add missing statics to button.c (Pavel Machek)

Several changes have been made to the source code translation
utility that generates the Linux Code in order to make the code
more "Linux-like":

All typedefs on structs and unions have been removed in keeping
with the Linux coding style.

Removed the non-Linux SourceSafe module revision number from each
module header.

Completed major overhaul of symbols to be lowercased for linux.
Doubled the number of symbols that are lowercased.

Fixed a problem where identifiers within procedure headers and
within quotes were not fully lower cased (they were left with a
starting capital.)

Some C macros whose only purpose is to allow the generation of 16-
bit code are now completely removed in the Linux code, increasing
readability and maintainability.

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12 December 2002. Summary of changes for version 20021212.

1) ACPI CA Core Subsystem:

Fixed a problem where the creation of a zero-length AML Buffer
would cause a fault.

Fixed a problem where a Buffer object that pointed to a static AML
buffer (in an ACPI table) could inadvertently be deleted, causing
memory corruption.

Fixed a problem where a user buffer (passed in to the external
ACPI CA interfaces) could be overwritten if the buffer was too
small to complete the operation, causing memory corruption.

Fixed a problem in the Buffer-to-String conversion code where a
string of length one was always returned, regardless of the size
of the input Buffer object.

Removed the NATIVE_CHAR data type across the entire source due to
lack of need and lack of consistent use.

Code and Data Size: Current core subsystem library sizes are shown
below. These are the code and data sizes for the acpica.lib
produced by the Microsoft Visual C++ 6.0 compiler, and these
values do not include any ACPI driver or OSPM code. The debug
version of the code includes the debug output trace mechanism and
has a much larger code and data size. Note that these values will
vary depending on the efficiency of the compiler and the compiler
options used during generation.

Previous Release
Non-Debug Version: 72.1K Code, 9.5K Data, 81.6K Total
Debug Version: 152.7K Code, 62.7K Data, 215.4K Total
Current Release:
Non-Debug Version: 72.0K Code, 9.5K Data, 81.5K Total
Debug Version: 153.0K Code, 62.9K Data, 215.9K Total

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05 December 2002. Summary of changes for version 20021205.

1) ACPI CA Core Subsystem:

Fixed a problem where a store to a String or Buffer object could
cause corruption of the DSDT if the object type being stored was
the same as the target object type and the length of the object
being stored was equal to or smaller than the original (existing)
target object. This was seen to cause corruption of battery _BIF
buffers if the _BIF method modified the buffer on the fly.

Fixed a problem where an internal error was generated if a control
method invocation was used in an OperationRegion, Buffer, or
Package declaration. This was caused by the deferred parsing of
the control method and thus the deferred creation of the internal
method object. The solution to this problem was to create the
internal method object at the moment the method is encountered in
the first pass - so that subsequent references to the method will
able to obtain the required parameter count and thus properly
parse the method invocation. This problem presented itself as an
AE_AML_INTERNAL during the pass 1 parse phase during table load.

Fixed a problem where the internal String object copy routine did
not always allocate sufficient memory for the target String object
and caused memory corruption. This problem was seen to cause
"Allocation already present in list!" errors as memory allocation
became corrupted.

Implemented a new function for the evaluation of namespace objects
that allows the specification of the allowable return object
types. This simplifies a lot of code that checks for a return
object of one or more specific objects returned from the
evaluation (such as _STA, etc.) This may become and external
function if it would be useful to ACPI-related drivers.

Completed another round of prefixing #defines with "ACPI_" for
clarity.

Completed additional code restructuring to allow more modular
linking for iASL compiler and AcpiExec. Several files were split
creating new files. New files: nsparse.c dsinit.c evgpe.c

Implemented an abort mechanism to terminate an executing control
method via the AML debugger. This feature is useful for debugging
control methods that depend (wait) for specific hardware
responses.

Code and Data Size: Current core subsystem library sizes are shown
below. These are the code and data sizes for the acpica.lib
produced by the Microsoft Visual C++ 6.0 compiler, and these
values do not include any ACPI driver or OSPM code. The debug
version of the code includes the debug output trace mechanism and
has a much larger code and data size. Note that these values will
vary depending on the efficiency of the compiler and the compiler
options used during generation.

 Previous Release
   Non-Debug Version: 71.4K Code,   9.0K Data,   80.4K Total
   Debug Version: 152.9K Code, 63.3K Data, 216.2K Total
 Current Release:
   Non-Debug Version: 72.1K Code,   9.5K Data,   81.6K Total
   Debug Version: 152.7K Code, 62.7K Data, 215.4K Total

2) iASL Compiler/Disassembler

Fixed a compiler code generation problem for "Interrupt" Resource
Descriptors. If specified in the ASL, the optional "Resource
Source Index" and "Resource Source" fields were not inserted into
the correct location within the AML resource descriptor, creating
an invalid descriptor.

Fixed a disassembler problem for "Interrupt" resource descriptors.
The optional "Resource Source Index" and "Resource Source" fields
were ignored.

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22 November 2002. Summary of changes for version 20021122.

1) ACPI CA Core Subsystem:

Fixed a reported problem where an object stored to a Method Local or Arg was not copied to a new object during the store - the object pointer was simply copied to the Local/Arg. This caused all subsequent operations on the Local/Arg to also affect the original source of the store operation.

Fixed a problem where a store operation to a Method Local or Arg was not completed properly if the Local/Arg contained a reference (from RefOf) to a named field. The general-purpose store-to-namespace-node code is now used so that this case is handled automatically.

Fixed a problem where the internal object copy routine would cause a protection fault if the object being copied was a Package and contained either 1) a NULL package element or 2) a nested sub-package.

Fixed a problem with the GPE initialization that resulted from an ambiguity in the ACPI specification. One section of the specification states that both the address and length of the GPE block must be zero if the block is not supported. Another section implies that only the address need be zero if the block is not supported. The code has been changed so that both the address and the length must be non-zero to indicate a valid GPE block (i.e., if either the address or the length is zero, the GPE block is invalid.)

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release
Non-Debug Version: 71.3K Code, 9.0K Data, 80.3K Total
Debug Version: 152.7K Code, 63.2K Data, 215.5K Total
Current Release:

Non-Debug Version: 71.4K Code,   9.0K Data,   80.4K Total
Debug Version: 152.9K Code, 63.3K Data, 216.2K Total

2) Linux

Cleaned up EC driver. Exported an external EC read/write
interface. By going through this, other drivers (most notably
sonypi) will be able to serialize access to the EC.

3) iASL Compiler/Disassembler

Implemented support to optionally generate include files for both
ASM and C (the -i switch). This simplifies BIOS development by
automatically creating include files that contain external
declarations for the symbols that are created within the

(optionally generated) ASM and C AML source files.

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15 November 2002. Summary of changes for version 20021115.

1) ACPI CA Core Subsystem:

Fixed a memory leak problem where an error during resolution of

method arguments during a method invocation from another method
failed to cleanup properly by deleting all successfully resolved
argument objects.

Fixed a problem where the target of the Index() operator was not
correctly constructed if the source object was a package. This
problem has not been detected because the use of a target operand
with Index() is very rare.

Fixed a problem with the Index() operator where an attempt was
made to delete the operand objects twice.

Fixed a problem where an attempt was made to delete an operand
twice during execution of the CondRefOf() operator if the target
did not exist.

Implemented the first of perhaps several internal create object
functions that create and initialize a specific object type. This
consolidates duplicated code wherever the object is created, thus
shrinking the size of the subsystem.

Implemented improved debug/error messages for errors that occur
during nested method invocations. All executing method pathnames
are displayed (with the error) as the call stack is unwound - thus
simplifying debug.

Fixed a problem introduced in the 10/02 release that caused
premature deletion of a buffer object if a buffer was used as an
ASL operand where an integer operand is required (Thus causing an
implicit object conversion from Buffer to Integer.) The change in
the 10/02 release was attempting to fix a memory leak (albeit
incorrectly.)

Code and Data Size: Current core subsystem library sizes are shown
below. These are the code and data sizes for the acpica.lib
produced by the Microsoft Visual C++ 6.0 compiler, and these
values do not include any ACPI driver or OSPM code. The debug
version of the code includes the debug output trace mechanism and
has a much larger code and data size. Note that these values will
vary depending on the efficiency of the compiler and the compiler
options used during generation.

Previous Release
Non-Debug Version: 71.9K Code, 9.1K Data, 81.0K Total
Debug Version: 153.1K Code, 63.3K Data, 216.4K Total
Current Release:
Non-Debug Version: 71.3K Code, 9.0K Data, 80.3K Total
Debug Version: 152.7K Code, 63.2K Data, 215.5K Total

2) Linux

Changed the implementation of the ACPI semaphores to use down()
instead of down_interruptable(). It is important that the
execution of ACPI control methods not be interrupted by signals.
Methods must run to completion, or the system may be left in an
unknown/unstable state.

Fixed a compilation error when CONFIG_SOFTWARE_SUSPEND is not set.
(Shawn Starr)

3) iASL Compiler/Disassembler

Changed the default location of output files. All output files
are now placed in the current directory by default instead of in
the directory of the source file. This change may affect some

existing makefiles, but it brings the behavior of the compiler in
line with other similar tools. The location of the output files
can be overridden with the -p command line switch.

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11 November 2002. Summary of changes for version 20021111.

0) ACPI Specification 2.0B is released and is now available at:
http://www.acpi.info/index.html

1) ACPI CA Core Subsystem:

Implemented support for the ACPI 2.0 SMBus Operation Regions.
This includes the early detection and handoff of the request to
the SMBus region handler (avoiding all of the complex field
support code), and support for the bidirectional return packet
from an SMBus write operation. This paves the way for the
development of SMBus drivers in each host operating system.

Fixed a problem where the semaphore WAIT_FOREVER constant was
defined as 32 bits, but must be 16 bits according to the ACPI
specification. This had the side effect of causing ASL
Mutex/Event timeouts even though the ASL code requested a wait
forever. Changed all internal references to the ACPI timeout
parameter to 16 bits to prevent future problems. Changed the name
of WAIT_FOREVER to ACPI_WAIT_FOREVER.

Code and Data Size: Current core subsystem library sizes are shown
below. These are the code and data sizes for the acpica.lib
produced by the Microsoft Visual C++ 6.0 compiler, and these
values do not include any ACPI driver or OSPM code. The debug
version of the code includes the debug output trace mechanism and
has a much larger code and data size. Note that these values will
vary depending on the efficiency of the compiler and the compiler
options used during generation.

Previous Release
Non-Debug Version: 71.4K Code, 9.0K Data, 80.4K Total
Debug Version: 152.3K Code, 63.0K Data, 215.3K Total
Current Release:
Non-Debug Version: 71.9K Code, 9.1K Data, 81.0K Total
Debug Version: 153.1K Code, 63.3K Data, 216.4K Total

2) Linux

Module loading/unloading fixes (John Cagle)

3) iASL Compiler/Disassembler

Added support for the SMBBlockProcessCall keyword (ACPI 2.0)

Implemented support for the disassembly of all SMBus protocol
keywords (SMBQuick, SMBWord, etc.)

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01 November 2002. Summary of changes for version 20021101.

1) ACPI CA Core Subsystem:

Fixed a problem where platforms that have a GPE1 block but no GPE0
block were not handled correctly. This resulted in a "GPE
overlap" error message. GPE0 is no longer required.

Removed code added in the previous release that inserted nodes
into the namespace in alphabetical order. This caused some side-
effects on various machines. The root cause of the problem is
still under investigation since in theory, the internal ordering
of the namespace nodes should not matter.

Enhanced error reporting for the case where a named object is not
found during control method execution. The full ACPI namepath
(name reference) of the object that was not found is displayed in
this case.

Note: as a result of the overhaul of the namespace object types in
the previous release, the namespace nodes for the predefined
scopes (_TZ, _PR, etc.) are now of the type ACPI_TYPE_LOCAL_SCOPE
instead of ACPI_TYPE_ANY. This simplifies the namespace
management code but may affect code that walks the namespace tree
looking for specific object types.

Code and Data Size: Current core subsystem library sizes are shown
below. These are the code and data sizes for the acpica.lib
produced by the Microsoft Visual C++ 6.0 compiler, and these
values do not include any ACPI driver or OSPM code. The debug
version of the code includes the debug output trace mechanism and
has a much larger code and data size. Note that these values will
vary depending on the efficiency of the compiler and the compiler
options used during generation.

Previous Release
  Non-Debug Version: 70.7K Code,   8.6K Data,   79.3K Total
  Debug Version: 151.7K Code, 62.4K Data, 214.1K Total
Current Release:
  Non-Debug Version: 71.4K Code,   9.0K Data,   80.4K Total
  Debug Version: 152.3K Code, 63.0K Data, 215.3K Total

2) Linux

Fixed a problem introduced in the previous release where the
Processor and Thermal objects were not recognized and installed in
/proc. This was related to the scope type change described above.

3) iASL Compiler/Disassembler

Implemented the -g option to get all of the required ACPI tables
from the registry and save them to files (Windows version of the
compiler only.) The required tables are the FADT, FACS, and DSDT.

Added ACPI table checksum validation during table disassembly in
order to catch corrupted tables.

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22 October 2002. Summary of changes for version 20021022.

1) ACPI CA Core Subsystem:

Implemented a restriction on the Scope operator that the target
must already exist in the namespace at the time the operator is
encountered (during table load or method execution). In other
words, forward references are not allowed and Scope() cannot
create a new object. This changes the previous behavior where the
interpreter would create the name if not found. This new behavior
correctly enables the search-to-root algorithm during namespace
lookup of the target name. Because of this upsearch, this fixes
the known Compaq _SB_.OKEC problem and makes both the AML
interpreter and iASL compiler compatible with other ACPI
implementations.

Completed a major overhaul of the internal ACPI object types for
the ACPI Namespace and the associated operand objects. Many of
these types had become obsolete with the introduction of the two-
pass namespace load. This cleanup simplifies the code and makes
the entire namespace load mechanism much clearer and easier to

understand.

Improved debug output for tracking scope opening/closing to help diagnose scoping issues. The old scope name as well as the new scope name are displayed. Also improved error messages for problems with ASL Mutex objects and error messages for GPE problems.

Cleaned up the namespace dump code, removed obsolete code.

All string output (for all namespace/object dumps) now uses the common ACPI string output procedure which handles escapes properly and does not emit non-printable characters.

Fixed some issues with constants in the 64-bit version of the local C library (utclib.c)

2) Linux

EC Driver: No longer attempts to acquire the Global Lock at interrupt level.

3) iASL Compiler/Disassembler

Implemented ACPI 2.0B grammar change that disallows all Type 1 and 2 opcodes outside of a control method. This means that the "executable" operators (versus the "namespace" operators) cannot be used at the table level; they can only be used within a control method.

Implemented the restriction on the Scope() operator where the target must already exist in the namespace at the time the operator is encountered (during ASL compilation). In other words, forward references are not allowed and Scope() cannot create a new object. This makes the iASL compiler compatible with other ACPI implementations and makes the Scope() implementation adhere to the ACPI specification.

Fixed a problem where namepath optimization for the Alias operator was optimizing the wrong path (of the two namepaths.) This caused a "Missing alias link" error message.

Fixed a problem where an "unknown reserved name" warning could be incorrectly generated for names like "_SB" when the trailing underscore is not used in the original ASL.

Fixed a problem where the reserved name check did not handle NamePaths with multiple NameSegs correctly. The first nameseg of the NamePath was examined instead of the last NameSeg.

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02 October 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem version 20021002:

Fixed a problem where a store/copy of a string to an existing string did not always set the string length properly in the String object.

Fixed a reported problem with the ToString operator where the behavior was identical to the ToHexString operator instead of just simply converting a raw buffer to a string data type.

Fixed a problem where CopyObject and the other "explicit" conversion operators were not updating the internal namespace node type as part of the store operation.

Fixed a memory leak during implicit source operand conversion where the original object was not deleted if it was converted to a new object of a different type.

Enhanced error messages for all problems associated with namespace lookups. Common procedure generates and prints the lookup name as well as the formatted status.

Completed implementation of a new design for the Alias support within the namespace. The existing design did not handle the case where a new object was assigned to one of the two names due to the use of an explicit conversion operator, resulting in the two names pointing to two different objects. The new design simply points the Alias name to the original name node - not to the object. This results in a level of indirection that must be handled in the name resolution mechanism.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler

options used during generation.

Previous Release
Non-Debug Version: 69.6K Code, 8.3K Data, 77.9K Total
Debug Version: 150.0K Code, 61.7K Data, 211.7K Total
Current Release:
Non-Debug Version: 70.7K Code, 8.6K Data, 79.3K Total
Debug Version: 151.7K Code, 62.4K Data, 214.1K Total

2) Linux

Initialize thermal driver's timer before it is used. (Knut Neumann)

Allow handling negative celsius values. (Kochi Takayoshi)

Fix thermal management and make trip points. R/W (Pavel Machek)

Fix /proc/acpi/sleep. (P. Christeas)

IA64 fixes. (David Mosberger)

Fix reversed logic in blacklist code. (Sergio Monteiro Basto)

Replace ACPI_DEBUG define with ACPI_DEBUG_OUTPUT. (Dominik Brodowski)

3) iASL Compiler/Disassembler

Clarified some warning/error messages.

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18 September 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem version 20020918:

Fixed a reported problem with reference chaining (via the Index() and RefOf() operators) in the ObjectType() and SizeOf() operators. The definition of these operators includes the dereferencing of all chained references to return information on the base object.

Fixed a problem with stores to indexed package elements - the existing code would not complete the store if an "implicit conversion" was not performed. In other words, if the existing

object (package element) was to be replaced completely, the code didn't handle this case.

Relaxed typechecking on the ASL "Scope" operator to allow the target name to refer to an object of type Integer, String, or Buffer, in addition to the scoping object types (Device, predefined Scopes, Processor, PowerResource, and ThermalZone.) This allows existing AML code that has workarounds for a bug in Windows to function properly. A warning is issued, however. This affects both the AML interpreter and the iASL compiler. Below is an example of this type of ASL code:

```
Name(DEB,0x00)
Scope(DEB)
{
```

Fixed some reported problems with 64-bit integer support in the local implementation of C library functions (clib.c)

2) Linux

Use ACPI fix map region instead of IOAPIC region, since it is undefined in non-SMP.

Ensure that the SCI has the proper polarity and trigger, even on systems that do not have an interrupt override entry in the MADT.

2.5 big driver reorganization (Pat Mochel)

Use early table mapping code from acpitable.c (Andi Kleen)

New blacklist entries (Andi Kleen)

Blacklist improvements. Split blacklist code out into a separate file. Move checking the blacklist to very early. Previously, we would use ACPI tables, and then halfway through init, check the blacklist -- too late. Now, it's early enough to completely fall-back to non-ACPI.

3) iASL Compiler/Disassembler version 20020918:

Fixed a problem where the typechecking code didn't know that an alias could point to a method. In other words, aliases were not being dereferenced during typechecking.

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29 August 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020829:

If the target of a Scope() operator already exists, it must be an object type that actually opens a scope -- such as a Device, Method, Scope, etc. This is a fatal runtime error. Similar error check has been added to the iASL compiler also.

Tightened up the namespace load to disallow multiple names in the same scope. This previously was allowed if both objects were of the same type. (i.e., a lookup was the same as entering a new name).

2) Linux

Ensure that the ACPI interrupt has the proper trigger and polarity.

local_irq_disable is extraneous. (Matthew Wilcox)

Make "acpi=off" actually do what it says, and not use the ACPI interpreter *or* the tables.

Added arch-neutral support for parsing SLIT and SRAT tables (Kochi Takayoshi)

3) iASL Compiler/Disassembler Version 20020829:

Implemented namepath optimization for name declarations. For example, a declaration like "Method (_SB_.ABCD)" would get optimized to "Method (ABCD)" if the declaration is within the _SB_ scope. This optimization is in addition to the named reference path optimization first released in the previous version. This would seem to complete all possible optimizations for namepaths within the ASL/AML.

If the target of a Scope() operator already exists, it must be an object type that actually opens a scope -- such as a Device, Method, Scope, etc.

Implemented a check and warning for unreachable code in the same block below a Return() statement.

Fixed a problem where the listing file was not generated if the

compiler aborted if the maximum error count was exceeded (200).

Fixed a problem where the typechecking of method return values was
broken. This includes the check for a return value when the
method is invoked as a TermArg (a return value is expected.)

Fixed a reported problem where EOF conditions during a quoted
string or comment caused a fault.

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15 August 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020815:

Fixed a reported problem where a Store to a method argument that
contains a reference did not perform the indirect store correctly.
This problem was created during the conversion to the new
reference object model - the indirect store to a method argument
code was not updated to reflect the new model.

Reworked the ACPI mode change code to better conform to ACPI 2.0,
handle corner cases, and improve code legibility (Kochi Takayoshi)

Fixed a problem with the pathname parsing for the carat (^)
prefix. The heavy use of the carat operator by the new namepath
optimization in the iASL compiler uncovered a problem with the AML
interpreter handling of this prefix. In the case where one or
more carats precede a single nameseg, the nameseg was treated as
standalone and the search rule (to root) was inadvertently
applied. This could cause both the iASL compiler and the
interpreter to find the wrong object or to miss the error that
should occur if the object does not exist at that exact pathname.

Found and fixed the problem where the HP Pavilion DSDT would not
load. This was a relatively minor tweak to the table loading code
(a problem caused by the unexpected encounter with a method
invocation not within a control method), but it does not solve the
overall issue of the execution of AML code at the table level.
This investigation is still ongoing.

Code and Data Size: Current core subsystem library sizes are shown
below. These are the code and data sizes for the acpica.lib
produced by the Microsoft Visual C++ 6.0 compiler, and these
values do not include any ACPI driver or OSPM code. The debug
version of the code includes the debug output trace mechanism and
has a larger code and data size. Note that these values will vary
depending on the efficiency of the compiler and the compiler

options used during generation.

Previous Release
Non-Debug Version: 69.1K Code, 8.2K Data, 77.3K Total
Debug Version: 149.4K Code, 61.6K Data, 211.0K Total
Current Release:
Non-Debug Version: 69.6K Code, 8.3K Data, 77.9K Total
Debug Version: 150.0K Code, 61.7K Data, 211.7K Total

2) Linux

Remove redundant slab.h include (Brad Hards)

Fix several bugs in thermal.c (Herbert Nachtnebel)

Make CONFIG_ACPI_BOOT work properly (Pavel Machek)

Change acpi_system_suspend to use updated irq functions (Pavel Machek)

Export acpi_get_firmware_table (Matthew Wilcox)

Use proper root proc entry for ACPI (Kochi Takayoshi)

Fix early-boot table parsing (Bjorn Helgaas)

3) iASL Compiler/Disassembler

Reworked the compiler options to make them more consistent and to use two-letter options where appropriate. We were running out of sensible letters. This may break some makefiles, so check the current options list by invoking the compiler with no parameters.

Completed the design and implementation of the ASL namepath optimization option for the compiler. This option optimizes all references to named objects to the shortest possible path. The first attempt tries to utilize a single nameseg (4 characters) and the "search-to-root" algorithm used by the interpreter. If that cannot be used (because either the name is not in the search path or there is a conflict with another object with the same name), the pathname is optimized using the carat prefix (usually a shorter string than specifying the entire path from the root.)

Implemented support to obtain the DSDT from the Windows registry (when the disassembly option is specified with no input file). Added this code as the implementation for AcpiOsTableOverride in

the Windows OSL. Migrated the 16-bit code (used in the AcpiDump utility) to scan memory for the DSDT to the AcpiOsTableOverride function in the DOS OSL to make the disassembler truly OS independent.

Implemented a new option to disassemble and compile in one step. When used without an input filename, this option will grab the DSDT from the local machine, disassemble it, and compile it in one step.

Added a warning message for invalid escapes (a backslash followed by any character other than the allowable escapes). This catches the quoted string error "_SB_" (which should be "_SB_").

Also, there are numerous instances in the ACPI specification where this error occurs.

Added a compiler option to disable all optimizations. This is basically the "compatibility mode" because by using this option, the AML code will come out exactly the same as other ASL compilers.

Added error messages for incorrectly ordered dependent resource functions. This includes: missing EndDependentFn macro at end of dependent resource list, nested dependent function macros (both start and end), and missing StartDependentFn macro. These are common errors that should be caught at compile time.

Implemented _OSI support for the disassembler and compiler. _OSI must be included in the namespace for proper disassembly (because the disassembler must know the number of arguments.)

Added an "optimization" message type that is optional (off by default). This message is used for all optimizations - including constant folding, integer optimization, and namepath optimization.

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25 July 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020725:

The AML Disassembler has been enhanced to produce compilable ASL code and has been integrated into the iASL compiler (see below) as well as the single-step disassembly for the AML debugger and the disassembler for the AcpiDump utility. All ACPI 2.0A opcodes, resource templates and macros are fully supported. The disassembler has been tested on over 30 different AML files,

producing identical AML when the resulting disassembled ASL file
is recompiled with the same ASL compiler.

Modified the Resource Manager to allow zero interrupts and zero
dma channels during the GetCurrentResources call. This was
causing problems on some platforms.

Added the AcpiOsRedirectOutput interface to the OSL to simplify
output redirection for the AcpiOsPrintf and AcpiOsVprintf
interfaces.

Code and Data Size: Current core subsystem library sizes are shown
below. These are the code and data sizes for the acpica.lib
produced by the Microsoft Visual C++ 6.0 compiler, and these
values do not include any ACPI driver or OSPM code. The debug
version of the code includes the debug output trace mechanism and
has a larger code and data size. Note that these values will vary
depending on the efficiency of the compiler and the compiler
options used during generation.

Previous Release
Non-Debug Version: 68.7K Code, 7.4K Data, 76.1K Total
Debug Version: 142.9K Code, 58.7K Data, 201.6K Total
Current Release:
Non-Debug Version: 69.1K Code, 8.2K Data, 77.3K Total
Debug Version: 149.4K Code, 61.6K Data, 211.0K Total

2) Linux

Fixed a panic in the EC driver (Dominik Brodowski)

Implemented checksum of the R/XSDT itself during Linux table scan
(Richard Schaal)

3) iASL compiler

The AML disassembler is integrated into the compiler. The "-d"
option invokes the disassembler to completely disassemble an
input AML file, producing as output a text ASL file with the
extension ".dsl" (to avoid name collisions with existing .asl
source files.) A future enhancement will allow the disassembler
to obtain the BIOS DSDT from the registry under Windows.

Fixed a problem with the VendorShort and VendorLong resource
descriptors where an invalid AML sequence was created.

Implemented a fix for BufferData term in the ASL parser. It was inadvertently defined twice, allowing invalid syntax to pass and causing reduction conflicts.

Fixed a problem where the Ones opcode could get converted to a value of zero if "Ones" was used where a byte, word or dword value was expected. The 64-bit value is now truncated to the correct size with the correct value.

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02 July 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020702:

The Table Manager code has been restructured to add several new features. Tables that are not required by the core subsystem (other than the FADT, DSDT, FACS, PSDTs, etc.) are no longer validated in any way and are returned from AcpiGetFirmwareTable if requested. The AcpiOsTableOverride interface is now called for each table that is loaded by the subsystem in order to allow the host to override any table it chooses. Previously, only the DSDT could be overridden. Added one new files, tbrsdt.c and tbgetall.c.

Fixed a problem with the conversion of internal package objects to external objects (when a package is returned from a control method.) The return buffer length was set to zero instead of the proper length of the package object.

Fixed a reported problem with the use of the RefOf and DeRefOf operators when passing reference arguments to control methods. A new type of Reference object is used internally for references produced by the RefOf operator.

Added additional error messages in the Resource Manager to explain AE_BAD_DATA errors when they occur during resource parsing.

Split the AcpiEnableSubsystem into two primitives to enable a finer granularity initialization sequence. These two calls should be called in this order: AcpiEnableSubsystem (flags), AcpiInitializeObjects (flags). The flags parameter remains the same.

2) Linux

Updated the ACPI utilities module to understand the new style of
fully resolved package objects that are now returned from the core
subsystem. This eliminates errors of the form:

```
ACPI: PCI Interrupt Routing Table [\_SB_.PCI0.PPB_._PRT]
acpi_utils-0430 [145] acpi_evaluate_reference:
   Invalid element in package (not a device reference)
```

The method evaluation utility uses the new buffer allocation
scheme instead of calling AcpiEvaluate Object twice.

Added support for ECDT. This allows the use of the Embedded

Controller before the namespace has been fully initialized, which
is necessary for ACPI 2.0 support, and for some laptops to
initialize properly. (Laptops using ECDT are still rare, so only
limited testing was performed of the added functionality.)

Fixed memory leaks in the EC driver.

Eliminated a brittle code structure in acpi_bus_init().

Eliminated the acpi_evaluate() helper function in utils.c. It is
no longer needed since acpi_evaluate_object can optionally
allocate memory for the return object.

Implemented fix for keyboard hang when getting battery readings on
some systems (Stephen White)

PCI IRQ routing update (Dominik Brodowski)

Fix an ifdef to allow compilation on UP with LAPIC but no IOAPIC
support

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11 June 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020611:

Fixed a reported problem where constants such as Zero and One
appearing within _PRT packages were not handled correctly within
the resource manager code. Originally reported against the ASL
compiler because the code generator now optimizes integers to
their minimal AML representation (i.e. AML constants if possible.)
The _PRT code now handles all AML constant opcodes correctly
(Zero, One, Ones, Revision).

Fixed a problem with the Concatenate operator in the AML
interpreter where a buffer result object was incorrectly marked as
not fully evaluated, causing a run-time error of AE_AML_INTERNAL.

All package sub-objects are now fully resolved before they are
returned from the external ACPI interfaces. This means that name
strings are resolved to object handles, and constant operators
(Zero, One, Ones, Revision) are resolved to Integers.

Implemented immediate resolution of the AML Constant opcodes
(Zero, One, Ones, Revision) to Integer objects upon detection
within the AML stream. This has simplified and reduced the
generated code size of the subsystem by eliminating about 10
switch statements for these constants (which previously were
contained in Reference objects.) The complicating issues are that
the Zero opcode is used as a "placeholder" for unspecified
optional target operands and stores to constants are defined to be
no-ops.

Code and Data Size: Current core subsystem library sizes are shown
below. These are the code and data sizes for the acpica.lib
produced by the Microsoft Visual C++ 6.0 compiler, and these
values do not include any ACPI driver or OSPM code. The debug
version of the code includes the debug output trace mechanism and
has a larger code and data size. Note that these values will vary
depending on the efficiency of the compiler and the compiler
options used during generation.

Previous Release
Non-Debug Version: 69.3K Code, 7.4K Data, 76.7K Total
Debug Version: 143.8K Code, 58.8K Data, 202.6K Total
Current Release:
Non-Debug Version: 68.7K Code, 7.4K Data, 76.1K Total
Debug Version: 142.9K Code, 58.7K Data, 201.6K Total

2) Linux

Added preliminary support for obtaining _TRA data for PCI root
bridges (Bjorn Helgaas).

3) iASL Compiler Version X2046:

Fixed a problem where the "_DDN" reserved name was defined to be a
control method with one argument. There are no arguments, and

_DDN does not have to be a control method.

Fixed a problem with the Linux version of the compiler where the source lines printed with error messages were the wrong lines. This turned out to be the "LF versus CR/LF" difference between Windows and Unix. This appears to be the longstanding issue concerning listing output and error messages.

Fixed a problem with the Linux version of compiler where opcode names within error messages were wrong. This was caused by a slight difference in the output of the Flex tool on Linux versus Windows.

Fixed a problem with the Linux compiler where the hex output files contained some garbage data caused by an internal buffer overrun.

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17 May 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020517:

Implemented a workaround to an BIOS bug discovered on the HP OmniBook where the FADT revision number and the table size are inconsistent (ACPI 2.0 revision vs. ACPI 1.0 table size). The new behavior is to fallback to using only the ACPI 1.0 fields of the FADT if the table is too small to be a ACPI 2.0 table as claimed by the revision number. Although this is a BIOS bug, this is a case where the workaround is simple enough and with no side effects, so it seemed prudent to add it. A warning message is issued, however.

Implemented minimum size checks for the fixed-length ACPI tables -- the FADT and FACS, as well as consistency checks between the revision number and the table size.

Fixed a reported problem in the table override support where the new table pointer was incorrectly treated as a physical address instead of a logical address.

Eliminated the use of the AE_AML_ERROR exception and replaced it with more descriptive codes.

Fixed a problem where an exception would occur if an ASL Field was defined with no named Field Units underneath it (used by some index fields).

Code and Data Size: Current core subsystem library sizes are shown
below. These are the code and data sizes for the acpica.lib
produced by the Microsoft Visual C++ 6.0 compiler, and these
values do not include any ACPI driver or OSPM code. The debug
version of the code includes the debug output trace mechanism and
has a larger code and data size. Note that these values will vary
depending on the efficiency of the compiler and the compiler
options used during generation.

Previous Release
Non-Debug Version: 68.8K Code, 7.1K Data, 75.9K Total
Debug Version: 142.9K Code, 58.4K Data, 201.3K Total
Current Release:
Non-Debug Version: 69.3K Code, 7.4K Data, 76.7K Total
Debug Version: 143.8K Code, 58.8K Data, 202.6K Total

2) Linux

Much work done on ACPI init (MADT and PCI IRQ routing support).
(Paul D. and Dominik Brodowski)

Fix PCI IRQ-related panic on boot (Sam Revitch)

Set BM_ARB_DIS when entering a sleep state (Ducrot Bruno)

Fix "MHz" typo (Dominik Brodowski)

Fix RTC year 2000 issue (Dominik Brodowski)

Preclude multiple button proc entries (Eric Brunet)

Moved arch-specific code out of include/platform/aclinux.h

3) iASL Compiler Version X2044:

Implemented error checking for the string used in the EISAID macro
(Usually used in the definition of the _HID object.) The code now
strictly enforces the PnP format - exactly 7 characters, 3
uppercase letters and 4 hex digits.

If a raw string is used in the definition of the _HID object
(instead of the EISAID macro), the string must contain all
alphanumeric characters (e.g., "*PNP0011" is not allowed because
of the asterisk.)

Implemented checking for invalid use of ACPI reserved names for

most of the name creation operators (Name, Device, Event, Mutex, OperationRegion, PowerResource, Processor, and ThermalZone.) Previously, this check was only performed for control methods.

Implemented an additional check on the Name operator to emit an error if a reserved name that must be implemented in ASL as a control method is used. We know that a reserved name must be a method if it is defined with input arguments.

The warning emitted when a namespace object reference is not found during the cross reference phase has been changed into an error. The "External" directive should be used for names defined in other modules.

4) Tools and Utilities

The 16-bit tools (adump16 and aexec16) have been regenerated and tested.

Fixed a problem with the output of both acpidump and adump16 where the indentation of closing parentheses and brackets was not

aligned properly with the parent block.

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03 May 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020503:

Added support a new OSL interface that allows the host operating

system software to override the DSDT found in the firmware - AcpiOsTableOverride. With this interface, the OSL can examine the version of the firmware DSDT and replace it with a different one if desired.

Added new external interfaces for accessing ACPI registers from device drivers and other system software - AcpiGetRegister and AcpiSetRegister. This was simply an externalization of the existing AcpiHwBitRegister interfaces.

Fixed a regression introduced in the previous build where the ASL/AML CreateField operator always returned an error, "destination must be a NS Node".

Extended the maximum time (before failure) to successfully enable ACPI mode to 3 seconds.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release
Non-Debug Version: 68.5K Code, 7.0K Data, 75.5K Total
Debug Version: 142.4K Code, 58.3K Data, 200.7K Total
Current Release:
Non-Debug Version: 68.8K Code, 7.1K Data, 75.9K Total
Debug Version: 142.9K Code, 58.4K Data, 201.3K Total

2) Linux

Enhanced ACPI init code for SMP. We are now fully MPS and $PIR-free. While 3 out of 4 of our in-house systems work fine, the last one still hangs when testing the LAPIC timer.

Renamed many files in 2.5 kernel release to omit "acpi_" from the name.

Added warning on boot for Presario 711FR.

Sleep improvements (Pavel Machek)

ACPI can now be built without CONFIG_PCI enabled.

IA64: Fixed memory map functions (JI Lee)

3) iASL Compiler Version X2043:

Added support to allow the compiler to be integrated into the MS VC++ development environment for one-button compilation of single files or entire projects -- with error-to-source-line mapping.

Implemented support for compile-time constant folding for the Type3, Type4, and Type5 opcodes first defined in the ACPI 2.0 specification. This allows the ASL writer to use expressions instead of Integer/Buffer/String constants in terms that must

evaluate to constants at compile time and will also simplify the emitted AML in any such sub-expressions that can be folded (evaluated at compile-time.) This increases the size of the compiler significantly because a portion of the ACPI CA AML interpreter is included within the compiler in order to pre-evaluate constant expressions.

Fixed a problem with the "Unicode" ASL macro that caused the compiler to fault. (This macro is used in conjunction with the _STR reserved name.)

Implemented an AML opcode optimization to use the Zero, One, and Ones opcodes where possible to further reduce the size of integer constants and thus reduce the overall size of the generated AML code.

Implemented error checking for new reserved terms for ACPI version 2.0A.

Implemented the -qr option to display the current list of ACPI reserved names known to the compiler.

Implemented the -qc option to display the current list of ASL operators that are allowed within constant expressions and can therefore be folded at compile time if the operands are constants.

4) Documentation

Updated the Programmer's Reference for new interfaces, data types, and memory allocation model options.

Updated the iASL Compiler User Reference to apply new format and add information about new features and options.

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19 April 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020419:

The source code base for the Core Subsystem has been completely cleaned with PC-lint (FlexLint) for both 32-bit and 64-bit versions. The Lint option files used are included in the /acpi/generate/lint directory.

Implemented enhanced status/error checking across the entire Hardware manager subsystem. Any hardware errors (reported from

the OSL) are now bubbled up and will abort a running control method.

Fixed a problem where the per-ACPI-table integer width (32 or 64) was stored only with control method nodes, causing a fault when non-control method code was executed during table loading. The solution implemented uses a global variable to indicate table width across the entire ACPI subsystem. Therefore, ACPI CA does not support mixed integer widths across different ACPI tables (DSDT, SSDT).

Fixed a problem where NULL extended fields (X fields) in an ACPI 2.0 ACPI FADT caused the table load to fail. Although the existing ACPI specification is a bit fuzzy on this topic, the new behavior is to fall back on a ACPI 1.0 field if the corresponding ACPI 2.0 X field is zero (even though the table revision indicates a full ACPI 2.0 table.) The ACPI specification will be updated to clarify this issue.

Fixed a problem with the SystemMemory operation region handler where memory was always accessed byte-wise even if the AML-specified access width was larger than a byte. This caused problems on systems with memory-mapped I/O. Memory is now accessed with the width specified. On systems that do not support non-aligned transfers, a check is made to guarantee proper address alignment before proceeding in order to avoid an AML-caused alignment fault within the kernel.

Fixed a problem with the ExtendedIrq resource where only one byte of the 4-byte Irq field was extracted.

Fixed the AcpiExDigitsNeeded() procedure to support _UID. This function was out of date and required a rewrite.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release
Non-Debug Version: 66.6K Code, 6.5K Data, 73.1K Total
Debug Version: 139.8K Code, 57.4K Data, 197.2K Total

Current Release:
Non-Debug Version: 68.5K Code, 7.0K Data, 75.5K Total
Debug Version: 142.4K Code, 58.3K Data, 200.7K Total

2) Linux

PCI IRQ routing fixes (Dominik Brodowski)

3) iASL Compiler Version X2042:

Implemented an additional compile-time error check for a field unit whose size + minimum access width would cause a run-time access beyond the end-of-region. Previously, only the field size itself was checked.

The Core subsystem and iASL compiler now share a common parse object in preparation for compile-time evaluation of the type 3/4/5 ASL operators.

Summary of changes for this release: 03_29_02

1) ACPI CA Core Subsystem Version 20020329:

Implemented support for late evaluation of TermArg operands to Buffer and Package objects. This allows complex expressions to be used in the declarations of these object types.

Fixed an ACPI 1.0 compatibility issue when reading Fields. In ACPI 1.0, if the field was larger than 32 bits, it was returned as a buffer - otherwise it was returned as an integer. In ACPI 2.0, the field is returned as a buffer only if the field is larger than 64 bits. The TableRevision is now considered when making this conversion to avoid incompatibility with existing ASL code.

Implemented logical addressing for AcpiOsGetRootPointer. This allows an RSDP with either a logical or physical address. With this support, the host OS can now override all ACPI tables with one logical RSDP. Includes implementation of "typed" pointer support to allow a common data type for both physical and logical pointers internally. This required a change to the AcpiOsGetRootPointer interface.

Implemented the use of ACPI 2.0 Generic Address Structures for all GPE, Fixed Event, and PM Timer I/O. This allows the use of memory

mapped I/O for these ACPI features.

Initialization now ignores not only non-required tables (All tables other than the FADT, FACS, DSDT, and SSDTs), but also does not validate the table headers of unrecognized tables.

Fixed a problem where a notify handler could only be installed/removed on an object of type Device. All "notify"

objects are now supported -- Devices, Processor, Power, and Thermal.

Removed most verbosity from the ACPI_DB_INFO debug level. Only critical information is returned when this debug level is enabled.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release
Non-Debug Version: 65.4K Code, 6.2K Data, 71.6K Total
Debug Version: 138.0K Code, 56.6K Data, 194.6K Total
Current Release:
Non-Debug Version: 66.6K Code, 6.5K Data, 73.1K Total
Debug Version: 139.8K Code, 57.4K Data, 197.2K Total

2) Linux:

The processor driver (acpi_processor.c) now fully supports ACPI 2.0-based processor performance control (e.g. Intel(R) SpeedStep(TM) technology) Note that older laptops that only have the Intel "applet" interface are not supported through this. The 'limit' and 'performance' interface (/proc) are fully functional. [Note that basic policy for controlling performance state transitions will be included in the next version of ospmd.] The idle handler was modified to more aggressively use C2, and PIIX4 errata handling underwent a complete overhaul (big thanks to Dominik Brodowski).

Added support for ACPI-PCI device binding (acpi_pci_root.c). _ADR-based devices in the ACPI namespace are now dynamically bound (associated) with their PCI counterparts (e.g. PCI1->01:00.0).

This allows, among other things, ACPI to resolve bus numbers for subordinate PCI bridges.

Enhanced PCI IRQ routing to get the proper bus number for _PRT entries defined underneath PCI bridges.

Added IBM 600E to bad bios list due to invalid _ADR value for PIIX4 PCI-ISA bridge, resulting in improper PCI IRQ routing.

In the process of adding full MADT support (e.g. IOAPIC) for IA32 (acpi.c, mpparse.c) -- stay tuned.

Added back visual differentiation between fixed-feature and control-method buttons in dmesg. Buttons are also subtyped (e.g. button/power/PWRF) to simplify button identification.

We no longer use -Wno-unused when compiling debug. Please ignore any "_THIS_MODULE defined but not used" messages.

Can now shut down the system using "magic sysrq" key.

3) iASL Compiler version 2041:

Fixed a problem where conversion errors for hex/octal/decimal constants were not reported.

Implemented a fix for the General Register template Address field. This field was 8 bits when it should be 64.

Fixed a problem where errors/warnings were no longer being emitted within the listing output file.

Implemented the ACPI 2.0A restriction on ACPI Table Signatures to exactly 4 characters, alphanumeric only.

Summary of changes for this release: 03_08_02

1) ACPI CA Core Subsystem Version 20020308:

Fixed a problem with AML Fields where the use of the "AccessAny" keyword could cause an interpreter error due to attempting to read or write beyond the end of the parent Operation Region.

Fixed a problem in the SystemMemory Operation Region handler where
an attempt was made to map memory beyond the end of the region.
This was the root cause of the "AE_ERROR" and "AE_NO_MEMORY"
errors on some Linux systems.

Fixed a problem where the interpreter/namespace "search to root"
algorithm was not functioning for some object types. Relaxed the
internal restriction on the search to allow upsearches for all
external object types as well as most internal types.

2) Linux:

We now use safe_halt() macro versus individual calls to sti | hlt.

Writing to the processor limit interface should now work. "echo 1"
will increase the limit, 2 will decrease, and 0 will reset to the

default.

3) ASL compiler:

Fixed segfault on Linux version.

Summary of changes for this release: 02_25_02

1) ACPI CA Core Subsystem:

Fixed a problem where the GPE bit masks were not initialized
properly, causing erratic GPE behavior.

Implemented limited support for multiple calling conventions. The
code can be generated with either the VPL (variable parameter
list, or "C") convention, or the FPL (fixed parameter list, or
"Pascal") convention. The core subsystem is about 3.4% smaller
when generated with FPL.

2) Linux

Re-add some /proc/acpi/event functionality that was lost during
the rewrite

Resolved issue with /proc events for fixed-feature buttons showing up as the system device.

Fixed checks on C2/C3 latencies to be inclusive of maximum values.

Replaced AE_ERRORs in acpi_osl.c with more specific error codes.

Changed ACPI PRT option from "pci=noacpi-routing" to "pci=noacpi"

Fixed limit interface & usage to fix bugs with passive cooling hysterisis.

Restructured PRT support.

Summary of changes for this label: 02_14_02

1) ACPI CA Core Subsystem:

Implemented support in AcpiLoadTable to allow loading of FACS and FADT tables.

Suport for the now-obsolete interim 0.71 64-bit ACPI tables has been removed. All 64-bit platforms should be migrated to the ACPI 2.0 tables. The actbl71.h header has been removed from the source tree.

All C macros defined within the subsystem have been prefixed with "ACPI_" to avoid collision with other system include files.

Removed the return value for the two AcpiOsPrint interfaces, since it is never used and causes lint warnings for ignoring the return value.

Added error checking to all internal mutex acquire and release calls. Although a failure from one of these interfaces is probably a fatal system error, these checks will cause the immediate abort of the currently executing method or interface.

Fixed a problem where the AcpiSetCurrentResources interface could fault. This was a side effect of the deployment of the new memory allocation model.

Fixed a couple of problems with the Global Lock support introduced in the last major build. The "common" (1.0/2.0) internal FACS was being overwritten with the FACS signature and clobbering the

Global Lock pointer. Also, the actual firmware FACS was being unmapped after construction of the "common" FACS, preventing access to the actual Global Lock field within it. The "common" internal FACS is no longer installed as an actual ACPI table; it is used simply as a global.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (02_07_01)
Non-Debug Version: 65.2K Code, 6.2K Data, 71.4K Total
Debug Version: 136.9K Code, 56.4K Data, 193.3K Total
Current Release:
Non-Debug Version: 65.4K Code, 6.2K Data, 71.6K Total
Debug Version: 138.0K Code, 56.6K Data, 194.6K Total

2) Linux

Updated Linux-specific code for core macro and OSL interface changes described above.

Improved /proc/acpi/event. It now can be opened only once and has proper poll functionality.

Fixed and restructured power management (acpi_bus).

Only create /proc "view by type" when devices of that class exist.

Fixed "charging/discharging" bug (and others) in acpi_battery.

Improved thermal zone code.

3) ASL Compiler, version X2039:

Implemented the new compiler restriction on ASL String hex/octal escapes to non-null, ASCII values. An error results if an invalid value is used. (This will require an ACPI 2.0 specification change.)

AML object labels that are output to the optional C and ASM source
are now prefixed with both the ACPI table signature and table ID
to help guarantee uniqueness within a large BIOS project.

Summary of changes for this label: 02_01_02

1) ACPI CA Core Subsystem:

ACPI 2.0 support is complete in the entire Core Subsystem and the
ASL compiler. All new ACPI 2.0 operators are implemented and all
other changes for ACPI 2.0 support are complete. With
simultaneous code and data optimizations throughout the subsystem,
ACPI 2.0 support has been implemented with almost no additional
cost in terms of code and data size.

Implemented a new mechanism for allocation of return buffers. If
the buffer length is set to ACPI_ALLOCATE_BUFFER, the buffer will
be allocated on behalf of the caller. Consolidated all return
buffer validation and allocation to a common procedure. Return
buffers will be allocated via the primary OSL allocation interface
since it appears that a separate pool is not needed by most users.
If a separate pool is required for these buffers, the caller can
still use the original mechanism and pre-allocate the buffer(s).

Implemented support for string operands within the DerefOf
operator.

Restructured the Hardware and Event managers to be table driven,
simplifying the source code and reducing the amount of generated
code.

Split the common read/write low-level ACPI register bitfield
procedure into a separate read and write, simplifying the code
considerably.

Obsoleted the AcpiOsCallocate OSL interface. This interface was
used only a handful of times and didn't have enough critical mass
for a separate interface. Replaced with a common calloc procedure
in the core.

Fixed a reported problem with the GPE number mapping mechanism
that allows GPE1 numbers to be non-contiguous with GPE0.
Reorganized the GPE information and shrunk a large array that was
originally large enough to hold info for all possible GPEs (256)
to simply large enough to hold all GPEs up to the largest GPE
number on the machine.

Fixed a reported problem with resource structure alignment on 64-bit platforms.

Changed the AcpiEnableEvent and AcpiDisableEvent external interfaces to not require any flags for the common case of enabling/disabling a GPE.

Implemented support to allow a "Notify" on a Processor object.

Most TBDs in comments within the source code have been resolved and eliminated.

Fixed a problem in the interpreter where a standalone parent prefix (^) was not handled correctly in the interpreter and debugger.

Removed obsolete and unnecessary GPE save/restore code.

Implemented Field support in the ASL Load operator. This allows a table to be loaded from a named field, in addition to loading a table directly from an Operation Region.

Implemented timeout and handle support in the external Global Lock interfaces.

Fixed a problem in the AcpiDump utility where pathnames were no longer being generated correctly during the dump of named objects.

Modified the AML debugger to give a full display of if/while predicates instead of just one AML opcode at a time. (The predicate can have several nested ASL statements.) The old method was confusing during single stepping.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (12_18_01)
Non-Debug Version: 66.1K Code, 5.5K Data, 71.6K Total
Debug Version: 138.3K Code, 55.9K Data, 194.2K Total
Current Release:

Non-Debug Version: 65.2K Code, 6.2K Data, 71.4K Total
Debug Version: 136.9K Code, 56.4K Data, 193.3K Total

2) Linux

Implemented fix for PIIX reverse throttling errata (Processor driver)

Added new Limit interface (Processor and Thermal drivers)

New thermal policy (Thermal driver)

Many updates to /proc

Battery "low" event support (Battery driver)

Supports ACPI PCI IRQ routing (PCI Link and PCI root drivers)

IA32 - IA64 initialization unification, no longer experimental

Menuconfig options redesigned

3) ASL Compiler, version X2037:

Implemented several new output features to simplify integration of AML code into firmware: 1) Output the AML in C source code with labels for each named ASL object. The original ASL source code is interleaved as C comments. 2) Output the AML in ASM source code with labels and interleaved ASL source. 3) Output the AML in raw hex table form, in either C or ASM.

Implemented support for optional string parameters to the LoadTable operator.

Completed support for embedded escape sequences within string literals. The compiler now supports all single character escapes as well as the Octal and Hex escapes. Note: the insertion of a null byte into a string literal (via the hex/octal escape) causes the string to be immediately terminated. A warning is issued.

Fixed a problem where incorrect AML was generated for the case where an ASL namepath consists of a single parent prefix (

) with no trailing name segments.

The compiler has been successfully generated with a 64-bit C compiler.

Summary of changes for this label: 12_18_01

1) Linux

Enhanced blacklist with reason and severity fields. Any table's
signature may now be used to identify a blacklisted system.

Call _PIC control method to inform the firmware which interrupt
model the OS is using. Turn on any disabled link devices.

Cleaned up busmgr /proc error handling (Andreas Dilger)

2) ACPI CA Core Subsystem:

Implemented ACPI 2.0 semantics for the "Break" operator (Exit from
while loop)

Completed implementation of the ACPI 2.0 "Continue",
"ConcatenateResTemplate", "DataTableRegion", and "LoadTable"
operators. All new ACPI 2.0 operators are now implemented in both
the ASL compiler and the AML interpreter. The only remaining ACPI
2.0 task is support for the String data type in the DerefOf
operator. Fixed a problem with AcquireMutex where the status code
was lost if the caller had to actually wait for the mutex.

Increased the maximum ASL Field size from 64K bits to 4G bits.

Completed implementation of the external Global Lock interfaces --
AcpiAcquireGlobalLock and AcpiReleaseGlobalLock. The Timeout and
Handler parameters were added.

Completed another pass at removing warnings and issues when
compiling with 64-bit compilers. The code now compiles cleanly
with the Intel 64-bit C/C++ compiler. Most notably, the pointer
add and subtract (diff) macros have changed considerably.

Created and deployed a new ACPI_SIZE type that is 64-bits wide on
64-bit platforms, 32-bits on all others. This type is used
wherever memory allocation and/or the C sizeof() operator is used,
and affects the OSL memory allocation interfaces AcpiOsAllocate
and AcpiOsCallocate.

Implemented sticky user breakpoints in the AML debugger.

Code and Data Size: Current core subsystem library sizes are shown
below. These are the code and data sizes for the acpica.lib
produced by the Microsoft Visual C++ 6.0 compiler, and these
values do not include any ACPI driver or OSPM code. The debug
version of the code includes the debug output trace mechanism and
has a larger code and data size. Note that these values will vary
depending on the efficiency of the compiler and the compiler
options used during generation.

Previous Release (12_05_01)
Non-Debug Version: 64.7K Code, 5.3K Data, 70.0K Total
Debug Version: 136.2K Code, 55.6K Data, 191.8K Total
Current Release:
Non-Debug Version: 66.1K Code, 5.5K Data, 71.6K Total
Debug Version: 138.3K Code, 55.9K Data, 194.2K Total

3) ASL Compiler, version X2034:

Now checks for (and generates an error if detected) the use of a
Break or Continue statement without an enclosing While statement.

Successfully generated the compiler with the Intel 64-bit C
compiler.

Summary of changes for this label: 12_05_01

1) ACPI CA Core Subsystem:

The ACPI 2.0 CopyObject operator is fully implemented. This
operator creates a new copy of an object (and is also used to
bypass the "implicit conversion" mechanism of the Store operator.)

The ACPI 2.0 semantics for the SizeOf operator are fully
implemented. The change is that performing a SizeOf on a
reference object causes an automatic dereference of the object to
tha actual value before the size is evaluated. This behavior was
undefined in ACPI 1.0.

The ACPI 2.0 semantics for the Extended IRQ resource descriptor
have been implemented. The interrupt polarity and mode are now
independently set.

Fixed a problem where ASL Constants (Zero, One, Ones, Revision)
appearing in Package objects were not properly converted to
integers when the internal Package was converted to an external

object (via the AcpiEvaluateObject interface.)

Fixed a problem with the namespace object deletion mechanism for objects created by control methods. There were two parts to this problem: 1) Objects created during the initialization phase method parse were not being deleted, and 2) The object owner ID mechanism to track objects was broken.

Fixed a problem where the use of the ASL Scope operator within a control method would result in an invalid opcode exception.

Fixed a problem introduced in the previous label where the buffer length required for the _PRT structure was not being returned correctly.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (11_20_01)
Non-Debug Version: 64.1K Code, 5.3K Data, 69.4K Total
Debug Version: 135.1K Code, 55.4K Data, 190.5K Total

Current Release:
Non-Debug Version: 64.7K Code, 5.3K Data, 70.0K Total
Debug Version: 136.2K Code, 55.6K Data, 191.8K Total

2) Linux:

Updated all files to apply cleanly against 2.4.16.

Added basic PCI Interrupt Routing Table (PRT) support for IA32 (acpi_pci.c), and unified the PRT code for IA32 and IA64. This version supports both static and dyanmic PRT entries, but dynamic entries are treated as if they were static (not yet reconfigurable). Architecture- specific code to use this data is absent on IA32 but should be available shortly.

Changed the initialization sequence to start the ACPI interpreter (acpi_init) prior to initialization of the PCI driver (pci_init) in init/main.c. This ordering is required to support PRT and facilitate other (future) enhancement. A side effect is that the ACPI bus driver and certain device drivers can no longer be loaded

as modules.

Modified the 'make menuconfig' options to allow PCI Interrupt Routing support to be included without the ACPI Bus and other device drivers.

3) ASL Compiler, version X2033:

Fixed some issues with the use of the new CopyObject and DataTableRegion operators. Both are fully functional.

Summary of changes for this label: 11_20_01

20 November 2001. Summary of changes for this release.

1) ACPI CA Core Subsystem:

Updated Index support to match ACPI 2.0 semantics. Storing a Integer, String, or Buffer to an Index of a Buffer will store only the least-significant byte of the source to the Indexed buffer byte. Multiple writes are not performed.

Fixed a problem where the access type used in an AccessAs ASL operator was not recorded correctly into the field object.

Fixed a problem where ASL Event objects were created in a signalled state. Events are now created in an unsignalled state.

The internal object cache is now purged after table loading and initialization to reduce the use of dynamic kernel memory -- on the assumption that object use is greatest during the parse phase of the entire table (versus the run-time use of individual control methods.)

ACPI 2.0 variable-length packages are now fully operational.

Code and Data Size: Code and Data optimizations have permitted new feature development with an actual reduction in the library size. Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (11_09_01):
Non-Debug Version: 63.7K Code, 5.2K Data, 68.9K Total
Debug Version: 134.5K Code, 55.4K Data, 189.9K Total

Current Release:
Non-Debug Version: 64.1K Code, 5.3K Data, 69.4K Total
Debug Version: 135.1K Code, 55.4K Data, 190.5K Total

2) Linux:

Enhanced the ACPI boot-time initialization code to allow the use of Local APIC tables for processor enumeration on IA-32, and to pave the way for a fully MPS-free boot (on SMP systems) in the near future. This functionality replaces arch/i386/kernel/acpitables.c, which was introduced in an earlier 2.4.15-preX release. To enable this feature you must add "acpi_boot=on" to the kernel command line -- see the help entry for CONFIG_ACPI_BOOT for more information. An IA-64 release is in the works...

Restructured the configuration options to allow boot-time table parsing support without inclusion of the ACPI Interpreter (and other) code.

NOTE: This release does not include fixes for the reported events, power-down, and thermal passive cooling issues (coming soon).

3) ASL Compiler:

Added additional typechecking for Fields within restricted access Operation Regions. All fields within EC and CMOS regions must be declared with ByteAcc. All fields withing SMBus regions must be declared with the BufferAcc access type.

Fixed a problem where the listing file output of control methods no longer interleaved the actual AML code with the ASL source code.

Summary of changes for this label: 11_09_01

1) ACPI CA Core Subsystem:

Implemented ACPI 2.0-defined support for writes to fields with a Buffer, String, or Integer source operand that is smaller than the

target field. In these cases, the source operand is zero-extended
to fill the target field.

Fixed a problem where a Field starting bit offset (within the
parent operation region) was calculated incorrectly if the

alignment of the field differed from the access width. This
affected CreateWordField, CreateDwordField, CreateQwordField, and
possibly other fields that use the "AccessAny" keyword.

Fixed a problem introduced in the 11_02_01 release where indirect
stores through method arguments did not operate correctly.

2) Linux:

Implemented boot-time ACPI table parsing support
(CONFIG_ACPI_BOOT) for IA32 and IA64 UP/SMP systems. This code
facilitates the use of ACPI tables (e.g. MADT, SRAT) rather than
legacy BIOS interfaces (e.g. MPS) for the configuration of system
processors, memory, and interrupts during setup_arch(). Note that
this patch does not include the required architecture-specific
changes required to apply this information -- subsequent patches
will be posted for both IA32 and IA64 to achieve this.

Added low-level sleep support for IA32 platforms, courtesy of Pat
Mochel. This allows IA32 systems to transition to/from various
sleeping states (e.g. S1, S3), although the lack of a centralized
driver model and power-manageable drivers will prevent its
(successful) use on most systems.

Revamped the ACPI 'menuconfig' layout: created new "ACPI Support"
submenu, unified IA32 and IA64 options, added new "Boot using ACPI
tables" option, etc.

Increased the default timeout for the EC driver from 1ms to 10ms
(1000 cycles of 10us) to try to address AE_TIME errors during EC
transactions.

Summary of changes for this label: 11_02_01

1) ACPI CA Core Subsystem:

ACPI 2.0 Support: Implemented ACPI 2.0 64-bit Field access
(QWordAcc keyword). All ACPI 2.0 64-bit support is now
implemented.

OSL Interfaces: Several of the OSL (AcpiOs*) interfaces required

changes to support ACPI 2.0 Qword field access. Read/Write PciConfiguration(), Read/Write Memory(), and Read/Write Port() now accept an ACPI_INTEGER (64 bits) as the value parameter. Also, the value parameter for the address space handler interface is now an ACPI_INTEGER. OSL implementations of these interfaces must now handle the case where the Width parameter is 64.

Index Fields: Fixed a problem where unaligned bit assembly and disassembly for IndexFields was not supported correctly.

Index and Bank Fields: Nested Index and Bank Fields are now supported. During field access, a check is performed to ensure that the value written to an Index or Bank register is not out of the range of the register. The Index (or Bank) register is written before each access to the field data. Future support will include allowing individual IndexFields to be wider than the DataRegister width.

Fields: Fixed a problem where the AML interpreter was incorrectly attempting to write beyond the end of a Field/OpRegion. This was a boundary case that occurred when a DWORD field was written to a BYTE access OpRegion, forcing multiple writes and causing the interpreter to write one datum too many.

Fields: Fixed a problem with Field/OpRegion access where the starting bit address of a field was incorrectly calculated if the current access type was wider than a byte (WordAcc, DwordAcc, or QwordAcc).

Fields: Fixed a problem where forward references to individual FieldUnits (individual Field names within a Field definition) were not resolved during the AML table load.

Fields: Fixed a problem where forward references from a Field definition to the parent Operation Region definition were not resolved during the AML table load.

Fields: Duplicate FieldUnit names within a scope are now detected during AML table load.

Acpi Interfaces: Fixed a problem where the AcpiGetName() interface returned an incorrect name for the root node.

Code and Data Size: Code and Data optimizations have permitted new feature development with an actual reduction in the library size. Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include

any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (10_18_01):
Non-Debug Version: 63.9K Code, 5.1K Data, 69.0K Total
Debug Version: 136.7K Code, 57.4K Data, 194.2K Total

Current Release:
Non-Debug Version: 63.7K Code, 5.2K Data, 68.9K Total
Debug Version: 134.5K Code, 55.4K Data, 189.9K Total

2) Linux:

Improved /proc processor output (Pavel Machek) Re-added MODULE_LICENSE("GPL") to all modules.

3) ASL Compiler version X2030:

Duplicate FieldUnit names within a scope are now detected and flagged as errors.

4) Documentation:

Programmer Reference updated to reflect OSL and address space handler interface changes described above.

Summary of changes for this label: 10_18_01

ACPI CA Core Subsystem:

Fixed a problem with the internal object reference count mechanism that occasionally caused premature object deletion. This resolves all of the outstanding problem reports where an object is deleted in the middle of an interpreter evaluation. Although this problem only showed up in rather obscure cases, the solution to the problem involved an adjustment of all reference counts involving objects attached to namespace nodes.

Fixed a problem with Field support in the interpreter where writing to an aligned field whose length is an exact multiple (2 or greater) of the field access granularity would cause an attempt to write beyond the end of the field.

The top level AML opcode execution functions within the

interpreter have been renamed with a more meaningful and
consistent naming convention. The modules exmonad.c and
exdyadic.c were eliminated. New modules are exoparg1.c,
exoparg2.c, exoparg3.c, and exoparg6.c.

Support for the ACPI 2.0 "Mid" ASL operator has been implemented.

Fixed a problem where the AML debugger was causing some internal
objects to not be deleted during subsystem termination.

Fixed a problem with the external AcpiEvaluateObject interface
where the subsystem would fault if the named object to be
evaluated refered to a constant such as Zero, Ones, etc.

Fixed a problem with IndexFields and BankFields where the
subsystem would fault if the index, data, or bank registers were
not defined in the same scope as the field itself.

Added printf format string checking for compilers that support
this feature. Corrected more than 50 instances of issues with
format specifiers within invocations of ACPI_DEBUG_PRINT
throughout the core subsystem code.

The ASL "Revision" operator now returns the ACPI support level
implemented in the core - the value "2" since the ACPI 2.0 support
is more than 50% implemented.

Enhanced the output of the AML debugger "dump namespace" command
to output in a more human-readable form.

Current core subsystem library code sizes are shown below. These

are the code and data sizes for the acpica.lib produced by the
Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code
includes the full debug trace mechanism -- leading to a much

larger code and data size. Note that these values will vary
depending on the efficiency of the compiler and the compiler
options used during generation.

Previous Label (09_20_01):
Non-Debug Version: 65K Code, 5K Data, 70K Total
Debug Version: 138K Code, 58K Data, 196K Total

This Label:

Non-Debug Version: 63.9K Code, 5.1K Data, 69.0K Total

Debug Version: 136.7K Code, 57.4K Data, 194.2K Total

Linux:

Implemented a "Bad BIOS Blacklist" to track machines that have known ASL/AML problems.

Enhanced the /proc interface for the thermal zone driver and added support for _HOT (the critical suspend trip point). The 'info' file now includes threshold/policy information, and allows setting of _SCP (cooling preference) and _TZP (polling frequency) values to the 'info' file. Examples: "echo tzp=5 > info" sets the polling frequency to 5 seconds, and "echo scp=1 > info" sets the cooling preference to the passive/quiet mode (if supported by the ASL).

Implemented a workaround for a gcc bug that resuted in an OOPs when loading the control method battery driver.

Summary of changes for this label: 09_20_01

ACPI CA Core Subsystem:

The AcpiEnableEvent and AcpiDisableEvent interfaces have been modified to allow individual GPE levels to be flagged as wake-enabled (i.e., these GPEs are to remain enabled when the platform sleeps.)

The AcpiEnterSleepState and AcpiLeaveSleepState interfaces now support wake-enabled GPEs. This means that upon entering the sleep state, all GPEs that are not wake-enabled are disabled. When leaving the sleep state, these GPEs are reenabled.

A local double-precision divide/modulo module has been added to enhance portability to OS kernels where a 64-bit math library is not available. The new module is "utmath.c".

Several optimizations have been made to reduce the use of CPU stack. Originally over 2K, the maximum stack usage is now below 2K at 1860 bytes (1.82k)

Fixed a problem with the AcpiGetFirmwareTable interface where the root table pointer was not mapped into a logical address properly.

Fixed a problem where a NULL pointer was being dereferenced in the interpreter code for the ASL Notify operator.

Fixed a problem where the use of the ASL Revision operator

returned an error. This operator now returns the current version of the ACPI CA core subsystem.

Fixed a problem where objects passed as control method parameters to AcpiEvaluateObject were always deleted at method termination. However, these objects may end up being stored into the namespace by the called method. The object reference count mechanism was applied to these objects instead of a force delete.

Fixed a problem where static strings or buffers (contained in the AML code) that are declared as package elements within the ASL code could cause a fault because the interpreter would attempt to delete them. These objects are now marked with the "static object" flag to prevent any attempt to delete them.

Implemented an interpreter optimization to use operands directly from the state object instead of extracting the operands to local variables. This reduces stack use and code size, and improves performance.

The module exxface.c was eliminated as it was an unnecessary extra layer of code.

Current core subsystem library code sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the full debug trace mechanism -- leading to a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Non-Debug Version: 65K Code, 5K Data, 70K Total (Previously 69K) Debug Version: 138K Code, 58K Data, 196K Total (Previously 195K)

Linux:

Support for ACPI 2.0 64-bit integers has been added. All ACPI Integer objects are now 64 bits wide

All Acpi data types and structures are now in lower case. Only Acpi macros are upper case for differentiation.

Documentation:

Changes to the external interfaces as described above.

Summary of changes for this label: 08_31_01

ACPI CA Core Subsystem:

A bug with interpreter implementation of the ASL Divide operator
was found and fixed. The implicit function return value (not the
explicit store operands) was returning the remainder instead of
the quotient. This was a longstanding bug and it fixes several
known outstanding issues on various platforms.

The ACPI_DEBUG_PRINT and function trace entry/exit macros have
been further optimized for size. There are 700 invocations of the
DEBUG_PRINT macro alone, so each optimization reduces the size of
the debug version of the subsystem significantly.

A stack trace mechanism has been implemented. The maximum stack
usage is about 2K on 32-bit platforms. The debugger command "stat
stack" will display the current maximum stack usage.

All public symbols and global variables within the subsystem are
now prefixed with the string "Acpi". This keeps all of the
symbols grouped together in a kernel map, and avoids conflicts
with other kernel subsystems.

Most of the internal fixed lookup tables have been moved into the
code segment via the const operator.

Several enhancements have been made to the interpreter to both
reduce the code size and improve performance.

Current core subsystem library code sizes are shown below. These
are the code and data sizes for the acpica.lib produced by the
Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code
includes the full debug trace mechanism which contains over 700
invocations of the DEBUG_PRINT macro, 500 function entry macro
invocations, and over 900 function exit macro invocations --
leading to a much larger code and data size. Note that these
values will vary depending on the efficiency of the compiler and
the compiler options used during generation.

Non-Debug Version: 64K Code, 5K Data, 69K Total
Debug Version: 137K Code, 58K Data, 195K Total

Linux:

Implemented wbinvd() macro, pending a kernel-wide definition.

Fixed /proc/acpi/event to handle poll() and short reads.

ASL Compiler, version X2026:

Fixed a problem introduced in the previous label where the AML

code emitted for package objects produced packages with zero
length.

Summary of changes for this label: 08_16_01

ACPI CA Core Subsystem:

The following ACPI 2.0 ASL operators have been implemented in the
AML interpreter (These are already supported by the Intel ASL
compiler): ToDecimalString, ToHexString, ToString, ToInteger, and
ToBuffer. Support for 64-bit AML constants is implemented in the
AML parser, debugger, and disassembler.

The internal memory tracking mechanism (leak detection code) has
been upgraded to reduce the memory overhead (a separate tracking
block is no longer allocated for each memory allocation), and now
supports all of the internal object caches.

The data structures and code for the internal object caches have
been coelesced and optimized so that there is a single cache and
memory list data structure and a single group of functions that
implement generic cache management. This has reduced the code
size in both the debug and release versions of the subsystem.

The DEBUG_PRINT macro(s) have been optimized for size and replaced
by ACPI_DEBUG_PRINT. The syntax for this macro is slightly
different, because it generates a single call to an internal
function. This results in a savings of about 90 bytes per
invocation, resulting in an overall code and data savings of about
16% in the debug version of the subsystem.

Linux:

Fixed C3 disk corruption problems and re-enabled C3 on supporting
machines.

Integrated low-level sleep code by Patrick Mochel.

Further tweaked source code Linuxization.

Other minor fixes.

ASL Compiler:

Support for ACPI 2.0 variable length packages is fixed/completed.

Fixed a problem where the optional length parameter for the ACPI 2.0 ToString operator.

Fixed multiple extraneous error messages when a syntax error is detected within the declaration line of a control method.

Summary of changes for this label: 07_17_01

ACPI CA Core Subsystem:

Added a new interface named AcpiGetFirmwareTable to obtain any ACPI table via the ACPI signature. The interface can be called at any time during kernel initialization, even before the kernel virtual memory manager is initialized and paging is enabled. This allows kernel subsystems to obtain ACPI tables very early, even before the ACPI CA subsystem is initialized.

Fixed a problem where Fields defined with the AnyAcc attribute could be resolved to the incorrect address under the following conditions: 1) the field width is larger than 8 bits and 2) the parent operation region is not defined on a DWORD boundary.

Fixed a problem where the interpreter is not being locked during namespace initialization (during execution of the _INI control methods), causing an error when an attempt is made to release it later.

ACPI 2.0 support in the AML Interpreter has begun and will be ongoing throughout the rest of this year. In this label, The Mod operator is implemented.

Added a new data type to contain full PCI addresses named ACPI_PCI_ID. This structure contains the PCI Segment, Bus, Device, and Function values.

Linux:

Enhanced the Linux version of the source code to change most capitalized ACPI type names to lowercase. For example, all instances of ACPI_STATUS are changed to acpi_status. This will result in a large diff, but the change is strictly cosmetic and

aligns the CA code closer to the Linux coding standard.

OSL Interfaces:

The interfaces to the PCI configuration space have been changed to add the PCI Segment number and to split the single 32-bit combined DeviceFunction field into two 16-bit fields. This was accomplished by moving the four values that define an address in PCI configuration space (segment, bus, device, and function) to the new ACPI_PCI_ID structure.

The changes to the PCI configuration space interfaces led to a reexamination of the complete set of address space access interfaces for PCI, I/O, and Memory. The previously existing 18 interfaces have proven difficult to maintain (any small change must be propagated across at least 6 interfaces) and do not easily allow for future expansion to 64 bits if necessary. Also, on some systems, it would not be appropriate to demultiplex the access width (8, 16, 32,or 64) before calling the OSL if the corresponding native OS interfaces contain a similar access width parameter. For these reasons, the 18 address space interfaces have been replaced by these 6 new ones:

AcpiOsReadPciConfiguration
AcpiOsWritePciConfiguration
AcpiOsReadMemory
AcpiOsWriteMemory
AcpiOsReadPort
AcpiOsWritePort

Added a new interface named AcpiOsGetRootPointer to allow the OSL to perform the platform and/or OS-specific actions necessary to obtain the ACPI RSDP table pointer. On IA-32 platforms, this interface will simply call down to the CA core to perform the low-memory search for the table. On IA-64, the RSDP is obtained from EFI. Migrating this interface to the OSL allows the CA core to

remain OS and platform independent.

Added a new interface named AcpiOsSignal to provide a generic "function code and pointer" interface for various miscellaneous signals and notifications that must be made to the host OS. The first such signals are intended to support the ASL Fatal and Breakpoint operators. In the latter case, the AcpiOsBreakpoint interface has been obsoleted.

The definition of the AcpiFormatException interface has been changed to simplify its use. The caller no longer must supply a

buffer to the call; A pointer to a const string is now returned
directly. This allows the call to be easily used in printf
statements, etc. since the caller does not have to manage a local
buffer.

ASL Compiler, Version X2025:

The ACPI 2.0 Switch/Case/Default operators have been implemented
and are fully functional. They will work with all ACPI 1.0
interpreters, since the operators are simply translated to If/Else
pairs.

The ACPI 2.0 ElseIf operator is implemented and will also work
with 1.0 interpreters, for the same reason.

Implemented support for ACPI 2.0 variable-length packages. These
packages have a separate opcode, and their size is determined by
the interpreter at run-time.

Documentation The ACPI CA Programmer Reference has been updated to
reflect the new interfaces and changes to existing interfaces.

Summary of changes for this label: 06_15_01

ACPI CA Core Subsystem:

Fixed a problem where a DWORD-accessed field within a Buffer
object would get its byte address inadvertently rounded down to
the nearest DWORD. Buffers are always Byte-accessible.

ASL Compiler, version X2024:

Fixed a problem where the Switch() operator would either fault or
hang the compiler. Note however, that the AML code for this ACPI
2.0 operator is not yet implemented.

Compiler uses the new AcpiOsGetTimer interface to obtain compile
timings.

Implementation of the CreateField operator automatically converts
a reference to a named field within a resource descriptor from a
byte offset to a bit offset if required.

Added some missing named fields from the resource descriptor
support. These are the names that are automatically created by the
compiler to reference fields within a descriptor. They are only

valid at compile time and are not passed through to the AML
interpreter.

Resource descriptor named fields are now typed as Integers and
subject to compile-time typechecking when used in expressions.

Summary of changes for this label: 05_18_01

ACPI CA Core Subsystem:

Fixed a couple of problems in the Field support code where bits
from adjacent fields could be returned along with the proper field
bits. Restructured the field support code to improve performance,
readability and maintainability.

New DEBUG_PRINTP macro automatically inserts the procedure name
into the output, saving hundreds of copies of procedure name
strings within the source, shrinking the memory footprint of the
debug version of the core subsystem.

Source Code Structure:

The source code directory tree was restructured to reflect the
current organization of the component architecture. Some files
and directories have been moved and/or renamed.

Linux:

Fixed leaking kacpidpc processes.

Fixed queueing event data even when /proc/acpi/event is not
opened.

ASL Compiler, version X2020:

Memory allocation performance enhancement - over 24X compile time
improvement on large ASL files. Parse nodes and namestring
buffers are now allocated from a large internal compiler buffer.

The temporary .SRC file is deleted unless the "-s" option is
specified

The "-d" debug output option now sends all output to the .DBG file
instead of the console.

"External" second parameter is now optional

"ElseIf" syntax now properly allows the predicate

Last operand to "Load" now recognized as a Target operand

Debug object can now be used anywhere as a normal object.

ResourceTemplate now returns an object of type BUFFER

EISAID now returns an object of type INTEGER

"Index" now works with a STRING operand

"LoadTable" now accepts optional parameters

"ToString" length parameter is now optional

"Interrupt (ResourceType," parse error fixed.

"Register" with a user-defined region space parse error fixed

Escaped backslash at the end of a string ("\\") scan/parse error fixed

"Revision" is now an object of type INTEGER.

Summary of changes for this label: 05_02_01

Linux:

/proc/acpi/event now blocks properly.

Removed /proc/sys/acpi. You can still dump your DSDT from /proc/acpi/dsdt.

ACPI CA Core Subsystem:

Fixed a problem introduced in the previous label where some of the "small" resource descriptor types were not recognized.

Improved error messages for the case where an ASL Field is outside the range of the parent operation region.

ASL Compiler, version X2018:

Added error detection for ASL Fields that extend beyond the length
of the parent operation region (only if the length of the region
is known at compile time.) This includes fields that have a
minimum access width that is smaller than the parent region, and
individual field units that are partially or entirely beyond the
extent of the parent.

Summary of changes for this label: 04_27_01

ACPI CA Core Subsystem:

Fixed a problem where the namespace mutex could be released at the
wrong time during execution of AcpiRemoveAddressSpaceHandler.

Added optional thread ID output for debug traces, to simplify
debugging of multiple threads. Added context switch notification
when the debug code realizes that a different thread is now
executing ACPI code.

Some additional external data types have been prefixed with the
string "ACPI_" for consistency. This may effect existing code.
The data types affected are the external callback typedefs - e.g.,

WALK_CALLBACK becomes ACPI_WALK_CALLBACK.

Linux:

Fixed an issue with the OSL semaphore implementation where a
thread was waking up with an error from receiving a SIGCHLD
signal.

Linux version of ACPI CA now uses the system C library for string
manipulation routines instead of a local implementation.

Cleaned up comments and removed TBDs.

ASL Compiler, version X2017:

Enhanced error detection and reporting for all file I/O
operations.

Documentation:

Programmer Reference updated to version 1.06.

Summary of changes for this label: 04_13_01

ACPI CA Core Subsystem:

Restructured support for BufferFields and RegionFields.
BankFields support is now fully operational. All known 32-bit
limitations on field sizes have been removed. Both BufferFields
and (Operation) RegionFields are now supported by the same field
management code.

Resource support now supports QWORD address and IO resources. The
16/32/64 bit address structures and the Extended IRQ structure
have been changed to properly handle Source Resource strings.

A ThreadId of -1 is now used to indicate a "mutex not acquired"
condition internally and must never be returned by AcpiOsThreadId.
This reserved value was changed from 0 since Unix systems allow a
thread ID of 0.

Linux:

Driver code reorganized to enhance portability

Added a kernel configuration option to control ACPI_DEBUG

Fixed the EC driver to honor _GLK.

ASL Compiler, version X2016:

Fixed support for the "FixedHw" keyword. Previously, the FixedHw
address space was set to 0, not 0x7f as it should be.

Summary of changes for this label: 03_13_01

ACPI CA Core Subsystem:

During ACPI initialization, the _SB_._INI method is now run if
present.

Notify handler fix - notifies are deferred until the parent method
completes execution. This fixes the "mutex already acquired"
issue seen occasionally.

Part of the "implicit conversion" rules in ACPI 2.0 have been

found to cause compatibility problems with existing ASL/AML. The convert "result-to-target-type" implementation has been removed for stores to method Args and Locals. Source operand conversion is still fully implemented. Possible changes to ACPI 2.0 specification pending.

Fix to AcpiRsCalculatePciRoutingTableLength to return correct length.

Fix for compiler warnings for 64-bit compiles.

Linux:

/proc output aligned for easier parsing.

Release-version compile problem fixed.

New kernel configuration options documented in Configure.help.

IBM 600E - Fixed Sleep button may generate "Invalid <NULL> context" message.

OSPM:

Power resource driver integrated with bus manager.

Fixed kernel fault during active cooling for thermal zones.

Source Code:

The source code tree has been restructured.

Summary of changes for this label: 03_02_01

Linux OS Services Layer (OSL):

Major revision of all Linux-specific code.

Modularized all ACPI-specific drivers.

Added new thermal zone and power resource drivers.

Revamped /proc interface (new functionality is under /proc/acpi).

New kernel configuration options.

Linux known issues:

New kernel configuration options not documented in Configure.help yet.

Module dependencies not currently implemented. If used, they should be loaded in this order: busmgr, power, ec, system, processor, battery, ac_adapter, button, thermal.

Modules will not load if CONFIG_MODVERSION is set.

IBM 600E - entering S5 may reboot instead of shutting down.

IBM 600E - Sleep button may generate "Invalid <NULL> context" message.

Some systems may fail with "execution mutex already acquired" message.

ACPI CA Core Subsystem:

Added a new OSL Interface, AcpiOsGetThreadId. This was required for the deadlock detection code. Defined to return a non-zero, 32-bit thread ID for the currently executing thread. May be a non-zero constant integer on single-thread systems.

Implemented deadlock detection for internal subsystem mutexes. We may add conditional compilation for this code (debug only) later.

ASL/AML Mutex object semantics are now fully supported. This includes multiple acquires/releases by owner and support for the

Mutex SyncLevel parameter.

A new "Force Release" mechanism automatically frees all ASL Mutexes that have been acquired but not released when a thread exits the interpreter. This forces conformance to the ACPI spec ("All mutexes must be released when an invocation exits") and prevents deadlocked ASL threads. This mechanism can be expanded (later) to monitor other resource acquisitions if OEM ASL code continues to misbehave (which it will).

Several new ACPI exception codes have been added for the Mutex support.

Recursive method calls are now allowed and supported (the ACPI

spec does in fact allow recursive method calls.) The number of recursive calls is subject to the restrictions imposed by the SERIALIZED method keyword and SyncLevel (ACPI 2.0) method parameter.

Implemented support for the SyncLevel parameter for control methods (ACPI 2.0 feature)

Fixed a deadlock problem when multiple threads attempted to use the interpreter.

Fixed a problem where the string length of a String package element was not always set in a package returned from AcpiEvaluateObject.

Fixed a problem where the length of a String package element was not always included in the length of the overall package returned from AcpiEvaluateObject.

Added external interfaces (Acpi*) to the ACPI debug memory manager. This manager keeps a list of all outstanding allocations, and can therefore detect memory leaks and attempts to free memory blocks more than once. Useful for code such as the power manager, etc. May not be appropriate for device drivers. Performance with the debug code enabled is slow.

The ACPI Global Lock is now an optional hardware element.

ASL Compiler Version X2015:

Integrated changes to allow the compiler to be generated on multiple platforms.

Linux makefile added to generate the compiler on Linux

Source Code:

All platform-specific headers have been moved to their own subdirectory, Include/Platform.

New source file added, Interpreter/ammutex.c

New header file, Include/acstruct.h

Documentation:

The programmer reference has been updated for the following new interfaces: AcpiOsGetThreadId AcpiAllocate AcpiCallocate AcpiFree

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Summary of changes for this label: 02_08_01

Core ACPI CA Subsystem: Fixed a problem where an error was
incorrectly returned if the return resource buffer was larger than
the actual data (in the resource interfaces).

References to named objects within packages are resolved to the

full pathname string before packages are returned directly (via
the AcpiEvaluateObject interface) or indirectly via the resource
interfaces.

Linux OS Services Layer (OSL):

Improved /proc battery interface.

Added C-state debugging output and other miscellaneous fixes.

ASL Compiler Version X2014:

All defined method arguments can now be used as local variables,
including the ones that are not actually passed in as parameters.
The compiler tracks initialization of the arguments and issues an
exception if they are used without prior assignment (just like
locals).

The -o option now specifies a filename prefix that is used for all
output files, including the AML output file. Otherwise, the
default behavior is as follows: 1) the AML goes to the file
specified in the DSDT. 2) all other output files use the input
source filename as the base.

Summary of changes for this label: 01_25_01

Core ACPI CA Subsystem: Restructured the implementation of object
store support within the interpreter. This includes support for
the Store operator as well as any ASL operators that include a
target operand.

Partially implemented support for Implicit Result-to-Target
conversion. This is when a result object is converted on the fly
to the type of an existing target object. Completion of this
support is pending further analysis of the ACPI specification
concerning this matter.

CPU-specific code has been removed from the subsystem (hardware directory).

New Power Management Timer functions added

Linux OS Services Layer (OSL): Moved system state transition code to the core, fixed it, and modified Linux OSL accordingly.

Fixed C2 and C3 latency calculations.

We no longer use the compilation date for the version message on initialization, but retrieve the version from AcpiGetSystemInfo().

Incorporated for fix Sony VAIO machines.

Documentation: The Programmer Reference has been updated and reformatted.

ASL Compiler: Version X2013: Fixed a problem where the line numbering and error reporting could get out of sync in the presence of multiple include files.

Summary of changes for this label: 01_15_01

Core ACPI CA Subsystem:

Implemented support for type conversions in the execution of the ASL Concatenate operator (The second operand is converted to match the type of the first operand before concatenation.)

Support for implicit source operand conversion is partially implemented. The ASL source operand types Integer, Buffer, and String are freely interchangeable for most ASL operators and are converted by the interpreter on the fly as required. Implicit Target operand conversion (where the result is converted to the target type before storing) is not yet implemented.

Support for 32-bit and 64-bit BCD integers is implemented.

Problem fixed where a field read on an aligned field could cause a read past the end of the field.

New exception, AE_AML_NO_RETURN_VALUE, is returned when a method does not return a value, but the caller expects one. (The ASL

compiler flags this as a warning.)

ASL Compiler:

Version X2011:
1. Static typechecking of all operands is implemented. This
prevents the use of invalid objects (such as using a Package where
an Integer is required) at compile time instead of at interpreter
run-time.
2. The ASL source line is printed with ALL errors and warnings.
3. Bug fix for source EOF without final linefeed.
4. Debug option is split into a parse trace and a namespace trace.
5. Namespace output option (-n) includes initial values for
integers and strings.
6. Parse-only option added for quick syntax checking.
7. Compiler checks for duplicate ACPI name declarations

Version X2012:
1. Relaxed typechecking to allow interchangeability between
strings, integers, and buffers. These types are now converted by
the interpreter at runtime.
2. Compiler reports time taken by each internal subsystem in the
debug output file.

Summary of changes for this label: 12_14_00

ASL Compiler:

This is the first official release of the compiler. Since the
compiler requires elements of the Core Subsystem, this label
synchronizes everything.

Summary of changes for this label: 12_08_00

Fixed a problem where named references within the ASL definition
of both OperationRegions and CreateXXXFields did not work
properly. The symptom was an AE_AML_OPERAND_TYPE during
initialization of the region/field. This is similar (but not
related internally) to the problem that was fixed in the last
label.

Implemented both 32-bit and 64-bit support for the BCD ASL
functions ToBCD and FromBCD.

Updated all legal headers to include "2000" in the copyright
years.

Summary of changes for this label: 12_01_00

Fixed a problem where method invocations within the ASL definition
of both OperationRegions and CreateXXXFields did not work
properly. The symptom was an AE_AML_OPERAND_TYPE during
initialization of the region/field:

 nsinit-0209: AE_AML_OPERAND_TYPE while getting region arguments
[DEBG]   ammonad-0284: Exec_monadic2_r/Not: bad operand(s)
(0x3005)

Fixed a problem where operators with more than one nested
subexpression would fail. The symptoms were varied, by mostly
AE_AML_OPERAND_TYPE errors. This was actually a rather serious
problem that has gone unnoticed until now.

 Subtract (Add (1,2), Multiply (3,4))

Fixed a problem where AcpiGetHandle didn't quite get fixed in the
previous build (The prefix part of a relative path was handled
incorrectly).

Fixed a problem where Operation Region initialization failed if
the operation region name was a "namepath" instead of a simple
"nameseg". Symptom was an AE_NO_OPERAND error.

Fixed a problem where an assignment to a local variable via the
indirect RefOf mechanism only worked for the first such
assignment. Subsequent assignments were ignored.

Summary of changes for this label: 11_15_00

ACPI 2.0 table support with backwards support for ACPI 1.0 and the
0.71 extensions. Note: although we can read ACPI 2.0 BIOS tables,
the AML interpreter does NOT have support for the new 2.0 ASL
grammar terms at this time.

All ACPI hardware access is via the GAS structures in the ACPI 2.0
FADT.

All physical memory addresses across all platforms are now 64 bits
wide. Logical address width remains dependent on the platform
(i.e., "void *").

AcpiOsMapMemory interface changed to a 64-bit physical address.

The AML interpreter integer size is now 64 bits, as per the ACPI 2.0 specification.

For backwards compatibility with ACPI 1.0, ACPI tables with a revision number less than 2 use 32-bit integers only.

Fixed a problem where the evaluation of OpRegion operands did not always resolve them to numbers properly.

Summary of changes for this label: 10_20_00

Fix for CBN_._STA issue. This fix will allow correct access to CBN_ OpRegions when the _STA returns 0x8.

Support to convert ACPI constants (Ones, Zeros, One) to actual values before a package object is returned

Fix for method call as predicate to if/while construct causing incorrect if/while behavior

Fix for Else block package lengths sometimes calculated wrong (if block > 63 bytes)

Fix for Processor object length field, was always zero

Table load abort if FACP sanity check fails

Fix for problem with Scope(name) if name already exists

Warning emitted if a named object referenced cannot be found (resolved) during method execution.

Summary of changes for this label: 9_29_00

New table initialization interfaces: AcpiInitializeSubsystem no longer has any parameters AcpiFindRootPointer - Find the RSDP (if necessary) AcpiLoadTables (RSDP) - load all tables found at RSDP->RSDT Obsolete Interfaces AcpiLoadFirmwareTables - replaced by AcpiLoadTables

Note: These interface changes require changes to all existing OSDs

The PCI_Config default address space handler is always installed
at the root namespace object.

Summary of changes for this label: 09_15_00

The new initialization architecture is implemented. New
interfaces are: AcpiInitializeSubsystem (replaces AcpiInitialize)
AcpiEnableSubsystem Obsolete Interfaces: AcpiLoadNamespace

(Namespace is automatically loaded when a table is loaded)

The ACPI_OPERAND_OBJECT has been optimized to shrink its size from
52 bytes to 32 bytes. There is usually one of these for every
namespace object, so the memory savings is significant.

Implemented just-in-time evaluation of the CreateField operators.

Bug fixes for IA-64 support have been integrated.

Additional code review comments have been implemented

The so-called "third pass parse" has been replaced by a final walk
through the namespace to initialize all operation regions (address
spaces) and fields that have not yet been initialized during the
execution of the various _INI and REG methods.

New file - namespace/nsinit.c

Summary of changes for this label: 09_01_00

Namespace manager data structures have been reworked to change the
primary object from a table to a single object. This has
resulted in dynamic memory savings of 3X within the namespace and
2X overall in the ACPI CA subsystem.

Fixed problem where the call to AcpiEvFindPciRootBuses was
inadvertently left commented out.

Reduced the warning count when generating the source with the GCC
compiler.

Revision numbers added to each module header showing the
SourceSafe version of the file. Please refer to this version

number when giving us feedback or comments on individual modules.

The main object types within the subsystem have been renamed to
clarify their purpose:

ACPI_INTERNAL_OBJECT -> ACPI_OPERAND_OBJECT
ACPI_GENERIC_OP -> ACPI_PARSE_OBJECT
ACPI_NAME_TABLE_ENTRY -> ACPI_NAMESPACE_NODE

NOTE: no changes to the initialization sequence are included in
this label.

Summary of changes for this label: 08_23_00

Fixed problem where TerminateControlMethod was being called
multiple times per method

Fixed debugger problem where single stepping caused a semaphore to
be oversignalled

Improved performance through additional parse object caching -
added ACPI_EXTENDED_OP type

Summary of changes for this label: 08_10_00

Parser/Interpreter integration: Eliminated the creation of
complete parse trees for ACPI tables and control methods.
Instead, parse subtrees are created and then deleted as soon as
they are processed (Either entered into the namespace or executed
by the interpreter). This reduces the use of dynamic kernel
memory significantly. (about 10X)

Exception codes broken into classes and renumbered. Be sure to
recompile all code that includes acexcep.h. Hopefully we won't
have to renumber the codes again now that they are split into
classes (environment, programmer, AML code, ACPI table, and
internal).

Fixed some additional alignment issues in the Resource Manager
subcomponent

Implemented semaphore tracking in the AcpiExec utility, and fixed
several places where mutexes/semaphores were being unlocked
without a corresponding lock operation. There are no known
semaphore or mutex "leaks" at this time.

Fixed the case where an ASL Return operator is used to return an unnamed package.

Summary of changes for this label: 07_28_00

Fixed a problem with the way addresses were calculated in AcpiAmlReadFieldData() and AcpiAmlWriteFieldData(). This problem manifested itself when a Field was created with WordAccess or DwordAccess, but the field unit defined within the Field was less

than a Word or Dword.

Fixed a problem in AmlDumpOperands() module's loop to pull operands off of the operand stack to display information. The problem manifested itself as a TLB error on 64-bit systems when accessing an operand stack with two or more operands.

Fixed a problem with the PCI configuration space handlers where context was getting confused between accesses. This required a change to the generic address space handler and address space setup definitions. Handlers now get both a global handler context (this is the one passed in by the user when executing AcpiInstallAddressSpaceHandler() and a specific region context that is unique to each region (For example, the _ADR, _SEG and _BBN values associated with a specific region). The generic function definitions have changed to the following:

typedef ACPI_STATUS (*ADDRESS_SPACE_HANDLER) (UINT32 Function, UINT32 Address, UINT32 BitWidth, UINT32 *Value, void *HandlerContext, // This used to be void *Context void *RegionContext); // This is an additional parameter

typedef ACPI_STATUS (*ADDRESS_SPACE_SETUP) (ACPI_HANDLE RegionHandle, UINT32 Function, void *HandlerContext, void **RegionContext); // This used to be **ReturnContext

---

Summary of changes for this label: 07_21_00

Major file consolidation and rename. All files within the interpreter have been renamed as well as most header files. This was done to prevent collisions with existing files in the host OSs -- filenames such as "config.h" and "global.h" seem to be quite common. The VC project files have been updated. All makefiles will require modification.

The parser/interpreter integration continues in Phase 5 with the

implementation of a complete 2-pass parse (the AML is parsed twice) for each table; This avoids the construction of a huge parse tree and therefore reduces the amount of dynamic memory required by the subsystem. Greater use of the parse object cache means that performance is unaffected.

Many comments from the two code reviews have been rolled in.

The 64-bit alignment support is complete.

Summary of changes for this label: 06_30_00

With a nod and a tip of the hat to the technology of yesteryear, we've added support in the source code for 80 column output devices. The code is now mostly constrained to 80 columns or less to support environments and editors that 1) cannot display or print more than 80 characters on a single line, and 2) cannot disable line wrapping.

A major restructuring of the namespace data structure has been completed. The result is 1) cleaner and more understandable/maintainable code, and 2) a significant reduction in the dynamic memory requirement for each named ACPI object (almost half).

Summary of changes for this label: 06_23_00

Linux support has been added. In order to obtain approval to get the ACPI CA subsystem into the Linux kernel, we've had to make quite a few changes to the base subsystem that will affect all users (all the changes are generic and OS- independent). The effects of these global changes have been somewhat far reaching. Files have been merged and/or renamed and interfaces have been renamed. The major changes are described below.

Osd* interfaces renamed to AcpiOs* to eliminate namespace pollution/confusion within our target kernels. All OSD interfaces must be modified to match the new naming convention.

Files merged across the subsystem. A number of the smaller source and header files have been merged to reduce the file count and increase the density of the existing files. There are too many to list here. In general, makefiles that call out individual files will require rebuilding.

Interpreter files renamed. All interpreter files now have the

prefix am* instead of ie* and is*.

Header files renamed: The acapi.h file is now acpixf.h. The acpiosd.h file is now acpiosxf.h. We are removing references to the acronym "API" since it is somewhat windowsy. The new name is "external interface" or xface or xf in the filenames.j

All manifest constants have been forced to upper case (some were mixed case.) Also, the string "ACPI_" has been prepended to many (not all) of the constants, typedefs, and structs.

The globals "DebugLevel" and "DebugLayer" have been renamed "AcpiDbgLevel" and "AcpiDbgLayer" respectively.

All other globals within the subsystem are now prefixed with "AcpiGbl_" Internal procedures within the subsystem are now prefixed with "Acpi" (with only a few exceptions). The original two-letter abbreviation for the subcomponent remains after "Acpi" - for example, CmCallocate became AcpiCmCallocate.

Added a source code translation/conversion utility. Used to generate the Linux source code, it can be modified to generate other types of source as well. Can also be used to cleanup existing source by removing extraneous spaces and blank lines. Found in tools/acpisrc/*

OsdUnMapMemory was renamed to OsdUnmapMemory and then AcpiOsUnmapMemory. (UnMap became Unmap).

A "MaxUnits" parameter has been added to AcpiOsCreateSemaphore. When set to one, this indicates that the caller wants to use the

semaphore as a mutex, not a counting semaphore. ACPI CA uses both types. However, implementers of this call may want to use different OS primitives depending on the type of semaphore requested. For example, some operating systems provide separate

"mutex" and "semaphore" interfaces - where the mutex interface is much faster because it doesn't have all the overhead of a full semaphore implementation.

Fixed a deadlock problem where a method that accesses the PCI address space can block forever if it is the first access to the space.

Summary of changes for this label: 06_02_00

Support for environments that cannot handle unaligned data
accesses (e.g. firmware and OS environments devoid of alignment
handler technology namely SAL/EFI and the IA-64 Linux kernel) has
been added (via configurable macros) in these three areas: -
Transfer of data from the raw AML byte stream is done via byte
moves instead of word/dword/qword moves. - External objects are
aligned within the user buffer, including package elements (sub-
objects). - Conversion of name strings to UINT32 Acpi Names is now
done byte-wise.

The Store operator was modified to mimic Microsoft's
implementation when storing to a Buffer Field.

Added a check of the BM_STS bit before entering C3.

The methods subdirectory has been obsoleted and removed. A new
file, cmeval.c subsumes the functionality.

A 16-bit (DOS) version of AcpiExec has been developed. The
makefile is under the acpiexec directory.

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/changes.txt
No license file was found, but licenses were detected in source scan.

NoEcho('
/**
*
* Module Name: aslresources.y - Bison/Yacc production rules for resources
*   - Keep this file synched with the
*   CvParseOpBlockType function in cvcompiler.c
*
***/

/*
* Copyright (C) 2000 - 2018, Intel Corp.
* All rights reserved.
*
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* modification, are permitted provided that the following conditions
* are met:
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```
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* STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING
* IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
* POSSIBILITY OF SUCH DAMAGES.
*/

')


/******************************************************************************
*
* ASL Resource Template Terms
*
******************************************************************************/

/*
* Note: Create two default nodes to allow conversion to a Buffer AML opcode
* Also, insert the EndTag at the end of the template.
*/
ResourceTemplateTerm
  : PARSEOP_RESOURCETEMPLATE      {COMMENT_CAPTURE_OFF;}
    OptionalParentheses
    '{'
    ResourceMacroList '}'       {$$ = TrCreateOp (PARSEOP_RESOURCETEMPLATE,4,
                                TrCreateLeafOp (PARSEOP_DEFAULT_ARG),
                                TrCreateLeafOp (PARSEOP_DEFAULT_ARG),
                                $5,
                                TrCreateLeafOp (PARSEOP_ENDTAG));
                            COMMENT_CAPTURE_ON;}
```

```
  ;

OptionalParentheses
  :                         {$$ = NULL;}
  | PARSEOP_OPEN_PAREN
    PARSEOP_CLOSE_PAREN       {$$ = NULL;}
  ;

ResourceMacroList
  :                         {$$ = NULL;}
  | ResourceMacroList
    ResourceMacroTerm         {$$ = TrLinkPeerOp ($1,$2);}
  ;

ResourceMacroTerm
  : DMATerm                 {}
  | DWordIOTerm             {}
  | DWordMemoryTerm         {}
  | DWordSpaceTerm          {}
  | EndDependentFnTerm      {}
  | ExtendedIOTerm          {}
  | ExtendedMemoryTerm      {}
  | ExtendedSpaceTerm       {}
  | FixedDmaTerm            {}
  | FixedIOTerm             {}
  | GpioIntTerm             {}
  | GpioIoTerm              {}
  | I2cSerialBusTerm        {}
  | I2cSerialBusTermV2      {}
  | InterruptTerm           {}
  | IOTerm                  {}
  | IRQNoFlagsTerm          {}
  | IRQTerm                 {}
  | Memory24Term            {}
  | Memory32FixedTerm       {}
  | Memory32Term            {}
  | PinConfigTerm           {}
  | PinFunctionTerm         {}
  | PinGroupTerm            {}
  | PinGroupConfigTerm      {}
  | PinGroupFunctionTerm    {}
  | QWordIOTerm             {}
  | QWordMemoryTerm         {}
  | QWordSpaceTerm          {}
  | RegisterTerm            {}
  | SpiSerialBusTerm        {}
  | SpiSerialBusTermV2      {}
  | StartDependentFnNoPriTerm   {}
```

```
  | StartDependentFnTerm        {}
  | UartSerialBusTerm          {}
  | UartSerialBusTermV2        {}
  | VendorLongTerm             {}
  | VendorShortTerm            {}
  | WordBusNumberTerm          {}
  | WordIOTerm                 {}
  | WordSpaceTerm              {}
  ;

DMATerm
  : PARSEOP_DMA
    PARSEOP_OPEN_PAREN        {$<n>$ = TrCreateLeafOp (PARSEOP_DMA);}
    DMATypeKeyword
    OptionalBusMasterKeyword
    ',' XferTypeKeyword
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN '{'
      ByteList '}'            {$$ = TrLinkOpChildren ($<n>3,5,$4,$5,$7,$8,$11);}
  | PARSEOP_DMA
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

DWordIOTerm
  : PARSEOP_DWORDIO
    PARSEOP_OPEN_PAREN        {$<n>$ = TrCreateLeafOp (PARSEOP_DWORDIO);}
    OptionalResourceType_First
    OptionalMinType
    OptionalMaxType
    OptionalDecodeType
    OptionalRangeType
    ',' DWordConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    OptionalByteConstExpr
    OptionalStringData
    OptionalNameString
    OptionalType
    OptionalTranslationType_Last
    PARSEOP_CLOSE_PAREN       {$$ = TrLinkOpChildren ($<n>3,15,
                              $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$19,$20,$21,$22,$23);}
  | PARSEOP_DWORDIO
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;
```

```
DWordMemoryTerm
  : PARSEOP_DWORDMEMORY
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_DWORDMEMORY);}
    OptionalResourceType_First
    OptionalDecodeType
    OptionalMinType
    OptionalMaxType
    OptionalMemType
    ',' OptionalReadWriteKeyword
    ',' DWordConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    OptionalByteConstExpr
    OptionalStringData
    OptionalNameString
    OptionalAddressRange
    OptionalType_Last
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,16,
                          $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$20,$21,$22,$23,$24,$25);}
  | PARSEOP_DWORDMEMORY
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

DWordSpaceTerm
  : PARSEOP_DWORDSPACE
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_DWORDSPACE);}
    ByteConstExpr               {UtCheckIntegerRange ($4, 0xC0, 0xFF);}
    OptionalResourceType
    OptionalDecodeType
    OptionalMinType
    OptionalMaxType
    ',' ByteConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    OptionalByteConstExpr
    OptionalStringData
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,14,
                          $4,$6,$7,$8,$9,$11,$13,$15,$17,$19,$21,$22,$23,$24);}
  | PARSEOP_DWORDSPACE
    PARSEOP_OPEN_PAREN
```

```
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

EndDependentFnTerm
  : PARSEOP_ENDDEPENDENTFN
    PARSEOP_OPEN_PAREN
    PARSEOP_CLOSE_PAREN         {$$ = TrCreateLeafOp (PARSEOP_ENDDEPENDENTFN);}
  | PARSEOP_ENDDEPENDENTFN
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ExtendedIOTerm
  : PARSEOP_EXTENDEDIO
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_EXTENDEDIO);}
    OptionalResourceType_First
    OptionalMinType
    OptionalMaxType
    OptionalDecodeType
    OptionalRangeType
    ',' QWordConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
    OptionalQWordConstExpr
    OptionalNameString
    OptionalType
    OptionalTranslationType_Last
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,14,
                          $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$19,$20,$21,$22);}
  | PARSEOP_EXTENDEDIO
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ExtendedMemoryTerm
  : PARSEOP_EXTENDEDMEMORY
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_EXTENDEDMEMORY);}
    OptionalResourceType_First
    OptionalDecodeType
    OptionalMinType
    OptionalMaxType
    OptionalMemType
    ',' OptionalReadWriteKeyword
    ',' QWordConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
```

```
    ',' QWordConstExpr
    ',' QWordConstExpr
    OptionalQWordConstExpr
    OptionalNameString
    OptionalAddressRange
    OptionalType_Last
    PARSEOP_CLOSE_PAREN        {$$ = TrLinkOpChildren ($<n>3,15,
                        $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$20,$21,$22,$23,$24);}
  | PARSEOP_EXTENDEDMEMORY
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ExtendedSpaceTerm
  : PARSEOP_EXTENDEDSPACE PARSEOP_OPEN_PAREN     {$<n>$ = TrCreateLeafOp
(PARSEOP_EXTENDEDSPACE);}
    ByteConstExpr              {UtCheckIntegerRange ($4, 0xC0, 0xFF);}
    OptionalResourceType
    OptionalDecodeType
    OptionalMinType
    OptionalMaxType
    ',' ByteConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
    OptionalQWordConstExpr
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN                {$$ = TrLinkOpChildren ($<n>3,13,
                        $4,$6,$7,$8,$9,$11,$13,$15,$17,$19,$21,$22,$23);}
  | PARSEOP_EXTENDEDSPACE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN              {$$ = AslDoError(); yyclearin;}
  ;

FixedDmaTerm
  : PARSEOP_FIXEDDMA
    PARSEOP_OPEN_PAREN        {$<n>$ = TrCreateLeafOp (PARSEOP_FIXEDDMA);}
    WordConstExpr             /* 04: DMA RequestLines */
    ',' WordConstExpr         /* 06: DMA Channels */
    OptionalXferSize          /* 07: DMA TransferSize */
    OptionalNameString        /* 08: DescriptorName */
    PARSEOP_CLOSE_PAREN                {$$ = TrLinkOpChildren ($<n>3,4,$4,$6,$7,$8);}
  | PARSEOP_FIXEDDMA
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN              {$$ = AslDoError(); yyclearin;}
  ;
```

```
FixedIOTerm
  : PARSEOP_FIXEDIO
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_FIXEDIO);}
    WordConstExpr
    ',' ByteConstExpr
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN                 {$$ = TrLinkOpChildren ($<n>3,3,$4,$6,$7);}
  | PARSEOP_FIXEDIO
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN               {$$ = AslDoError(); yyclearin;}
  ;

GpioIntTerm
  : PARSEOP_GPIO_INT
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_GPIO_INT);}
    InterruptTypeKeyword        /* 04: InterruptType */
    ',' InterruptLevel          /* 06: InterruptLevel */
    OptionalShareType           /* 07: SharedType */
    ',' PinConfigByte           /* 09: PinConfig */
    OptionalWordConstExpr       /* 10: DebounceTimeout */
    ',' StringData              /* 12: ResourceSource */
    OptionalByteConstExpr       /* 13: ResourceSourceIndex */
    OptionalResourceType        /* 14: ResourceType */
    OptionalNameString          /* 15: DescriptorName */
    OptionalBuffer_Last         /* 16: VendorData */
    PARSEOP_CLOSE_PAREN '{'
      DWordConstExpr '}'      {$$ = TrLinkOpChildren ($<n>3,11,
                          $4,$6,$7,$9,$10,$12,$13,$14,$15,$16,$19);}
  | PARSEOP_GPIO_INT
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

GpioIoTerm
  : PARSEOP_GPIO_IO
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_GPIO_IO);}
    OptionalShareType_First     /* 04: SharedType */
    ',' PinConfigByte           /* 06: PinConfig */
    OptionalWordConstExpr       /* 07: DebounceTimeout */
    OptionalWordConstExpr       /* 08: DriveStrength */
    OptionalIoRestriction       /* 09: IoRestriction */
    ',' StringData              /* 11: ResourceSource */
    OptionalByteConstExpr       /* 12: ResourceSourceIndex */
    OptionalResourceType        /* 13: ResourceType */
    OptionalNameString          /* 14: DescriptorName */
    OptionalBuffer_Last         /* 15: VendorData */
    PARSEOP_CLOSE_PAREN '{'
```

```
        DWordList '}'           {$$ = TrLinkOpChildren ($<n>3,11,
                                $4,$6,$7,$8,$9,$11,$12,$13,$14,$15,$18);}
  | PARSEOP_GPIO_IO
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN                   {$$ = AslDoError(); yyclearin;}
  ;

I2cSerialBusTerm
  : PARSEOP_I2C_SERIALBUS
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_I2C_SERIALBUS);}
    WordConstExpr               /* 04: SlaveAddress */
    OptionalSlaveMode           /* 05: SlaveMode */
    ',' DWordConstExpr          /* 07: ConnectionSpeed */
    OptionalAddressingMode      /* 08: AddressingMode */
    ',' StringData              /* 10: ResourceSource */
    OptionalByteConstExpr       /* 11: ResourceSourceIndex */
    OptionalResourceType        /* 12: ResourceType */
    OptionalNameString          /* 13: DescriptorName */
    OptionalBuffer_Last         /* 14: VendorData */
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,10,
                                $4,$5,$7,$8,$10,$11,$12,$13,
                                TrCreateLeafOp (PARSEOP_DEFAULT_ARG),$14);}
  | PARSEOP_I2C_SERIALBUS
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

I2cSerialBusTermV2
  : PARSEOP_I2C_SERIALBUS_V2
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_I2C_SERIALBUS_V2);}
    WordConstExpr               /* 04: SlaveAddress */
    OptionalSlaveMode           /* 05: SlaveMode */
    ',' DWordConstExpr          /* 07: ConnectionSpeed */
    OptionalAddressingMode      /* 08: AddressingMode */
    ',' StringData              /* 10: ResourceSource */
    OptionalByteConstExpr       /* 11: ResourceSourceIndex */
    OptionalResourceType        /* 12: ResourceType */
    OptionalNameString          /* 13: DescriptorName */
    OptionalShareType           /* 14: Share */
    OptionalBuffer_Last         /* 15: VendorData */
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,10,
                                $4,$5,$7,$8,$10,$11,$12,$13,$14,$15);}
  | PARSEOP_I2C_SERIALBUS_V2
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

InterruptTerm
```

```
  : PARSEOP_INTERRUPT
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_INTERRUPT);}
      OptionalResourceType_First
      ',' InterruptTypeKeyword
      ',' InterruptLevel
      OptionalShareType
      OptionalByteConstExpr
      OptionalStringData
      OptionalNameString_Last
      PARSEOP_CLOSE_PAREN '{'
        DWordList '}'           {$$ = TrLinkOpChildren ($<n>3,8,
                                $4,$6,$8,$9,$10,$11,$12,$15);}
  | PARSEOP_INTERRUPT
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

IOTerm
  : PARSEOP_IO
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_IO);}
      IODecodeKeyword
      ',' WordConstExpr
      ',' WordConstExpr
      ',' ByteConstExpr
      ',' ByteConstExpr
      OptionalNameString_Last
      PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$8,$10,$12,$13);}
  | PARSEOP_IO
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

IRQNoFlagsTerm
  : PARSEOP_IRQNOFLAGS
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_IRQNOFLAGS);}
      OptionalNameString_First
      PARSEOP_CLOSE_PAREN '{'
        ByteList '}'            {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
  | PARSEOP_IRQNOFLAGS
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

IRQTerm
  : PARSEOP_IRQ
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_IRQ);}
      InterruptTypeKeyword
      ',' InterruptLevel
```

```
    OptionalShareType
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN '{'
      ByteList '}'          {$$ = TrLinkOpChildren ($<n>3,5,$4,$6,$7,$8,$11);}
  | PARSEOP_IRQ
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

Memory24Term
  : PARSEOP_MEMORY24
    PARSEOP_OPEN_PAREN        {$<n>$ = TrCreateLeafOp (PARSEOP_MEMORY24);}
    OptionalReadWriteKeyword
    ',' WordConstExpr
    ',' WordConstExpr
    ',' WordConstExpr
    ',' WordConstExpr
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN       {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$8,$10,$12,$13);}
  | PARSEOP_MEMORY24
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

Memory32FixedTerm
  : PARSEOP_MEMORY32FIXED
    PARSEOP_OPEN_PAREN        {$<n>$ = TrCreateLeafOp (PARSEOP_MEMORY32FIXED);}
    OptionalReadWriteKeyword
    ',' DWordConstExpr
    ',' DWordConstExpr
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN       {$$ = TrLinkOpChildren ($<n>3,4,$4,$6,$8,$9);}
  | PARSEOP_MEMORY32FIXED
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

Memory32Term
  : PARSEOP_MEMORY32
    PARSEOP_OPEN_PAREN        {$<n>$ = TrCreateLeafOp (PARSEOP_MEMORY32);}
    OptionalReadWriteKeyword
    ',' DWordConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN       {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$8,$10,$12,$13);}
  | PARSEOP_MEMORY32
```

```
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

PinConfigTerm
  : PARSEOP_PINCONFIG
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_PINCONFIG);}
    OptionalShareType_First     /* 04: SharedType */
    ',' ByteConstExpr           /* 06: PinConfigType */
    ',' DWordConstExpr          /* 08: PinConfigValue */
    ',' StringData              /* 10: ResourceSource */
    OptionalByteConstExpr       /* 11: ResourceSourceIndex */
    OptionalResourceType        /* 12: ResourceType */
    OptionalNameString          /* 13: DescriptorName */
    OptionalBuffer_Last         /* 14: VendorData */
    PARSEOP_CLOSE_PAREN '{'
      DWordList '}'             {$$ = TrLinkOpChildren ($<n>3,9,
                                $4,$6,$8,$10,$11,$12,$13,$14,$17);}
  | PARSEOP_PINCONFIG
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

PinFunctionTerm
  : PARSEOP_PINFUNCTION
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_PINFUNCTION);}
    OptionalShareType_First     /* 04: SharedType */
    ',' PinConfigByte           /* 06: PinConfig */
    ',' WordConstExpr           /* 08: FunctionNumber */
    ',' StringData              /* 10: ResourceSource */
    OptionalByteConstExpr       /* 11: ResourceSourceIndex */
    OptionalResourceType        /* 12: ResourceType */
    OptionalNameString          /* 13: DescriptorName */
    OptionalBuffer_Last         /* 14: VendorData */
    PARSEOP_CLOSE_PAREN '{'
      DWordList '}'             {$$ = TrLinkOpChildren ($<n>3,9,
                                $4,$6,$8,$10,$11,$12,$13,$14,$17);}
  | PARSEOP_PINFUNCTION
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

PinGroupTerm
  : PARSEOP_PINGROUP
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_PINGROUP);}
    StringData                  /* 04: ResourceLabel */
    OptionalProducerResourceType /* 05: ResourceType */
    OptionalNameString          /* 06: DescriptorName */
```

```
    OptionalBuffer_Last         /* 07: VendorData */
    PARSEOP_CLOSE_PAREN '{'
      DWordList '}'             {$$ = TrLinkOpChildren ($<n>3,5,$4,$5,$6,$7,$10);}
  | PARSEOP_PINGROUP
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

PinGroupConfigTerm
  : PARSEOP_PINGROUPCONFIG
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_PINGROUPCONFIG);}
    OptionalShareType_First     /* 04: SharedType */
    ',' ByteConstExpr           /* 06: PinConfigType */
    ',' DWordConstExpr          /* 08: PinConfigValue */
    ',' StringData              /* 10: ResourceSource */
    OptionalByteConstExpr       /* 11: ResourceSourceIndex */
    ',' StringData              /* 13: ResourceSourceLabel */
    OptionalResourceType        /* 14: ResourceType */
    OptionalNameString          /* 15: DescriptorName */
    OptionalBuffer_Last         /* 16: VendorData */
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,9,
                                $4,$6,$8,$10,$11,$13,$14,$15,$16);}
  | PARSEOP_PINGROUPCONFIG
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

PinGroupFunctionTerm
  : PARSEOP_PINGROUPFUNCTION
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_PINGROUPFUNCTION);}
    OptionalShareType_First     /* 04: SharedType */
    ',' WordConstExpr           /* 06: FunctionNumber */
    ',' StringData              /* 08: ResourceSource */
    OptionalByteConstExpr       /* 09: ResourceSourceIndex */
    ',' StringData              /* 11: ResourceSourceLabel */
    OptionalResourceType        /* 12: ResourceType */
    OptionalNameString          /* 13: DescriptorName */
    OptionalBuffer_Last         /* 14: VendorData */
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,8,
                                $4,$6,$8,$9,$11,$12,$13,$14);}
  | PARSEOP_PINGROUPFUNCTION
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

QWordIOTerm
  : PARSEOP_QWORDIO
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_QWORDIO);}
```

```
    OptionalResourceType_First
    OptionalMinType
    OptionalMaxType
    OptionalDecodeType
    OptionalRangeType
    ',' QWordConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
    OptionalByteConstExpr
    OptionalStringData
    OptionalNameString
    OptionalType
    OptionalTranslationType_Last
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,15,
                            $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$19,$20,$21,$22,$23);}
  | PARSEOP_QWORDIO
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

QWordMemoryTerm
  : PARSEOP_QWORDMEMORY
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_QWORDMEMORY);}
    OptionalResourceType_First
    OptionalDecodeType
    OptionalMinType
    OptionalMaxType
    OptionalMemType
    ',' OptionalReadWriteKeyword
    ',' QWordConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
    ',' QWordConstExpr
    OptionalByteConstExpr
    OptionalStringData
    OptionalNameString
    OptionalAddressRange
    OptionalType_Last
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,16,
                            $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$20,$21,$22,$23,$24,$25);}
  | PARSEOP_QWORDMEMORY
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;
```

```
QWordSpaceTerm
  : PARSEOP_QWORDSPACE
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_QWORDSPACE);}
      ByteConstExpr               {UtCheckIntegerRange ($4, 0xC0, 0xFF);}
      OptionalResourceType
      OptionalDecodeType
      OptionalMinType
      OptionalMaxType
      ',' ByteConstExpr
      ',' QWordConstExpr
      ',' QWordConstExpr
      ',' QWordConstExpr
      ',' QWordConstExpr
      ',' QWordConstExpr
      OptionalByteConstExpr
      OptionalStringData
      OptionalNameString_Last
      PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,14,
                                  $4,$6,$7,$8,$9,$11,$13,$15,$17,$19,$21,$22,$23,$24);}
  | PARSEOP_QWORDSPACE
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

RegisterTerm
  : PARSEOP_REGISTER
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_REGISTER);}
      AddressSpaceKeyword
      ',' ByteConstExpr
      ',' ByteConstExpr
      ',' QWordConstExpr
      OptionalAccessSize
      OptionalNameString_Last
      PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$8,$10,$11,$12);}
  | PARSEOP_REGISTER
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

SpiSerialBusTerm
  : PARSEOP_SPI_SERIALBUS
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_SPI_SERIALBUS);}
      WordConstExpr               /* 04: DeviceSelection */
      OptionalDevicePolarity      /* 05: DevicePolarity */
      OptionalWireMode            /* 06: WireMode */
      ',' ByteConstExpr           /* 08: DataBitLength */
      OptionalSlaveMode           /* 09: SlaveMode */
      ',' DWordConstExpr          /* 11: ConnectionSpeed */
```

```
    ',' ClockPolarityKeyword    /* 13: ClockPolarity */
    ',' ClockPhaseKeyword       /* 15: ClockPhase */
    ',' StringData              /* 17: ResourceSource */
    OptionalByteConstExpr       /* 18: ResourceSourceIndex */
    OptionalResourceType        /* 19: ResourceType */
    OptionalNameString          /* 20: DescriptorName */
    OptionalBuffer_Last         /* 21: VendorData */
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,14,
                                $4,$5,$6,$8,$9,$11,$13,$15,$17,$18,$19,$20,
                                TrCreateLeafOp (PARSEOP_DEFAULT_ARG),$21);}
  | PARSEOP_SPI_SERIALBUS
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

SpiSerialBusTermV2
  : PARSEOP_SPI_SERIALBUS_V2
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_SPI_SERIALBUS_V2);}
    WordConstExpr               /* 04: DeviceSelection */
    OptionalDevicePolarity      /* 05: DevicePolarity */
    OptionalWireMode            /* 06: WireMode */
    ',' ByteConstExpr           /* 08: DataBitLength */
    OptionalSlaveMode           /* 09: SlaveMode */
    ',' DWordConstExpr          /* 11: ConnectionSpeed */
    ',' ClockPolarityKeyword    /* 13: ClockPolarity */
    ',' ClockPhaseKeyword       /* 15: ClockPhase */
    ',' StringData              /* 17: ResourceSource */
    OptionalByteConstExpr       /* 18: ResourceSourceIndex */
    OptionalResourceType        /* 19: ResourceType */
    OptionalNameString          /* 20: DescriptorName */
    OptionalShareType           /* 21: Share */
    OptionalBuffer_Last         /* 22: VendorData */
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,14,
                                $4,$5,$6,$8,$9,$11,$13,$15,$17,$18,$19,$20,$21,$22);}
  | PARSEOP_SPI_SERIALBUS_V2
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

StartDependentFnNoPriTerm
  : PARSEOP_STARTDEPENDENTFN_NOPRI
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_STARTDEPENDENTFN_NOPRI);}
    PARSEOP_CLOSE_PAREN '{'
    ResourceMacroList '}'       {$$ = TrLinkOpChildren ($<n>3,1,$6);}
  | PARSEOP_STARTDEPENDENTFN_NOPRI
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;
```

```
StartDependentFnTerm
  : PARSEOP_STARTDEPENDENTFN
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_STARTDEPENDENTFN);}
      ByteConstExpr
      ',' ByteConstExpr
      PARSEOP_CLOSE_PAREN '{'
      ResourceMacroList '}'       {$$ = TrLinkOpChildren ($<n>3,3,$4,$6,$9);}
  | PARSEOP_STARTDEPENDENTFN
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

UartSerialBusTerm
  : PARSEOP_UART_SERIALBUS
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_UART_SERIALBUS);}
      DWordConstExpr              /* 04: ConnectionSpeed */
      OptionalBitsPerByte         /* 05: BitsPerByte */
      OptionalStopBits            /* 06: StopBits */
      ',' ByteConstExpr           /* 08: LinesInUse */
      OptionalEndian              /* 09: Endianess */
      OptionalParityType          /* 10: Parity */
      OptionalFlowControl         /* 11: FlowControl */
      ',' WordConstExpr           /* 13: Rx BufferSize */
      ',' WordConstExpr           /* 15: Tx BufferSize */
      ',' StringData              /* 17: ResourceSource */
      OptionalByteConstExpr       /* 18: ResourceSourceIndex */
      OptionalResourceType        /* 19: ResourceType */
      OptionalNameString          /* 20: DescriptorName */
      OptionalBuffer_Last         /* 21: VendorData */
      PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,15,
                                  $4,$5,$6,$8,$9,$10,$11,$13,$15,$17,$18,$19,$20,
                                  TrCreateLeafOp (PARSEOP_DEFAULT_ARG),$21);}
  | PARSEOP_UART_SERIALBUS
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

UartSerialBusTermV2
  : PARSEOP_UART_SERIALBUS_V2
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_UART_SERIALBUS_V2);}
      DWordConstExpr              /* 04: ConnectionSpeed */
      OptionalBitsPerByte         /* 05: BitsPerByte */
      OptionalStopBits            /* 06: StopBits */
      ',' ByteConstExpr           /* 08: LinesInUse */
      OptionalEndian              /* 09: Endianess */
      OptionalParityType          /* 10: Parity */
      OptionalFlowControl         /* 11: FlowControl */
```

```
    ',' WordConstExpr          /* 13: Rx BufferSize */
    ',' WordConstExpr          /* 15: Tx BufferSize */
    ',' StringData             /* 17: ResourceSource */
    OptionalByteConstExpr      /* 18: ResourceSourceIndex */
    OptionalResourceType       /* 19: ResourceType */
    OptionalNameString         /* 20: DescriptorName */
    OptionalShareType          /* 21: Share */
    OptionalBuffer_Last        /* 22: VendorData */
    PARSEOP_CLOSE_PAREN        {$$ = TrLinkOpChildren ($<n>3,15,
                          $4,$5,$6,$8,$9,$10,$11,$13,$15,$17,$18,$19,$20,$21,$22);}
  | PARSEOP_UART_SERIALBUS_V2
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

VendorLongTerm
  : PARSEOP_VENDORLONG
    PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_VENDORLONG);}
    OptionalNameString_First
    PARSEOP_CLOSE_PAREN '{'
      ByteList '}'             {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
  | PARSEOP_VENDORLONG
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

VendorShortTerm
  : PARSEOP_VENDORSHORT
    PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_VENDORSHORT);}
    OptionalNameString_First
    PARSEOP_CLOSE_PAREN '{'
      ByteList '}'             {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
  | PARSEOP_VENDORSHORT
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

WordBusNumberTerm
  : PARSEOP_WORDBUSNUMBER
    PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_WORDBUSNUMBER);}
    OptionalResourceType_First
    OptionalMinType
    OptionalMaxType
    OptionalDecodeType
    ',' WordConstExpr
    ',' WordConstExpr
    ',' WordConstExpr
    ',' WordConstExpr
```

```
    ',' WordConstExpr
    OptionalByteConstExpr
    OptionalStringData
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,12,
                                $4,$5,$6,$7,$9,$11,$13,$15,$17,$18,$19,$20);}
  | PARSEOP_WORDBUSNUMBER
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

WordIOTerm
  : PARSEOP_WORDIO
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_WORDIO);}
    OptionalResourceType_First
    OptionalMinType
    OptionalMaxType
    OptionalDecodeType
    OptionalRangeType
    ',' WordConstExpr
    ',' WordConstExpr
    ',' WordConstExpr
    ',' WordConstExpr
    ',' WordConstExpr
    OptionalByteConstExpr
    OptionalStringData
    OptionalNameString
    OptionalType
    OptionalTranslationType_Last
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,15,
                                $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$19,$20,$21,$22,$23);}
  | PARSEOP_WORDIO
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

WordSpaceTerm
  : PARSEOP_WORDSPACE
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_WORDSPACE);}
    ByteConstExpr               {UtCheckIntegerRange ($4, 0xC0, 0xFF);}
    OptionalResourceType
    OptionalDecodeType
    OptionalMinType
    OptionalMaxType
    ',' ByteConstExpr
    ',' WordConstExpr
    ',' WordConstExpr
    ',' WordConstExpr
```

```
    ',' WordConstExpr
    ',' WordConstExpr
    OptionalByteConstExpr
    OptionalStringData
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,14,
                            $4,$6,$7,$8,$9,$11,$13,$15,$17,$19,$21,$22,$23,$24);}
  | PARSEOP_WORDSPACE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslresources.y
No license file was found, but licenses were detected in source scan.

```
%{
/******************************************************************************
*
* Module Name: prparser.l - Flex input file for preprocessor lexer
*
*****************************************************************************/

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* POSSIBILITY OF SUCH DAMAGES.
*/

#include "aslcompiler.h"
#include "prparser.y.h"

/* Buffer to pass strings to the parser */

#define STRING_SETUP    strcpy (StringBuffer, PrParsertext);\
  PrParserlval.str = StringBuffer

#define _COMPONENT          ACPI_COMPILER
      ACPI_MODULE_NAME    ("prscanner")


/* Local prototypes */

static char
PrDoCommentType1 (
  void);

static char
PrDoCommentType2 (
  void);
%}

%option noyywrap

Number          [0-9a-fA-F]+
HexNumber       0[xX][0-9a-fA-F]+
WhiteSpace      [ \t\v\r]+
NewLine         [\n]
Identifier      [a-zA-Z][0-9a-zA-Z]*

%%
"/*"            { if (!PrDoCommentType1 ()) {yyterminate ();} }
"//"            { if (!PrDoCommentType2 ()) {yyterminate ();} }
```

```
\(              return (EXPOP_PAREN_OPEN);
\)              return (EXPOP_PAREN_CLOSE);
\~              return (EXPOP_ONES_COMPLIMENT);
\!              return (EXPOP_LOGICAL_NOT);
\*              return (EXPOP_MULTIPLY);
\/              return (EXPOP_DIVIDE);
\%              return (EXPOP_MODULO);
\+              return (EXPOP_ADD);
\-              return (EXPOP_SUBTRACT);
">>"            return (EXPOP_SHIFT_RIGHT);
"<<"            return (EXPOP_SHIFT_LEFT);
\<              return (EXPOP_LESS);
\>              return (EXPOP_GREATER);
"<="            return (EXPOP_LESS_EQUAL);
">="            return (EXPOP_GREATER_EQUAL);
"=="            return (EXPOP_EQUAL);
"!="            return (EXPOP_NOT_EQUAL);
\&              return (EXPOP_AND);
\^              return (EXPOP_XOR);
\|              return (EXPOP_OR);
"&&"            return (EXPOP_LOGICAL_AND);
"||"            return (EXPOP_LOGICAL_OR);

"defined"       return (EXPOP_DEFINE);
{Identifier}    {STRING_SETUP; return (EXPOP_IDENTIFIER);}

<<EOF>>         return (EXPOP_EOF); /* null end-of-string */

{Number}        return (EXPOP_NUMBER);
{HexNumber}     return (EXPOP_HEX_NUMBER);
{NewLine}       return (EXPOP_NEW_LINE);
{WhiteSpace}    /* Ignore */

.               return (EXPOP_EOF);
%%

/*
* Local support functions
*/
YY_BUFFER_STATE         LexBuffer;


/*******************************************************************************
*
* FUNCTION:    PrInitLexer
*
* PARAMETERS:  String              - Input string to be parsed
*
```

```
* RETURN:      TRUE if parser returns NULL. FALSE otherwise.
*
* DESCRIPTION: Initialization routine for lexer. The lexer needs
*              a buffer to handle strings instead of a file.
*
*****************************************************************************/

int
PrInitLexer (
  char                  *String)
{

  LexBuffer = yy_scan_string (String);
  return (LexBuffer == NULL);
}


/*****************************************************************************
*
* FUNCTION:    PrTerminateLexer
*
* PARAMETERS:  None
*
* RETURN:      None
*
* DESCRIPTION: Termination routine for thelexer.
*
*****************************************************************************/

void
PrTerminateLexer (
  void)
{

  yy_delete_buffer (LexBuffer);
}


/*****************************************************************************
*
* FUNCTION:    PrDoCommentType1
*
* PARAMETERS:  none
*
* RETURN:      none
*
* DESCRIPTION: Process a new legacy comment. Just toss it.
*
```

```
*****************************************************************************/

static char
PrDoCommentType1 (
  void)
{
  int               c;


Loop:
  while (((c = input ()) != '*') && (c != EOF))
  {
  }
  if (c == EOF)
  {
     return (FALSE);
  }

  if (((c = input ()) != '/') && (c != EOF))
  {
     unput (c);
     goto Loop;
  }
  if (c == EOF)
  {
     return (FALSE);
  }

  return (TRUE);
}


/*****************************************************************************
*
* FUNCTION:    PrDoCommentType2
*
* PARAMETERS:  none
*
* RETURN:      none
*
* DESCRIPTION: Process a new "//" comment. Just toss it.
*
*****************************************************************************/

static char
PrDoCommentType2 (
  void)
{
```

```
  int               c;


  while (((c = input ()) != '\n') && (c != EOF))
  {
  }
  if (c == EOF)
  {
     return (FALSE);
  }

  return (TRUE);
}
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/prparser.l
No license file was found, but licenses were detected in source scan.

```
%{
/******************************************************************************
*
* Module Name: prparser.y - Bison input file for preprocessor parser
*
*****************************************************************************/

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```

```
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*/

#include "aslcompiler.h"

#define _COMPONENT          ASL_PREPROCESSOR
     ACPI_MODULE_NAME    ("prparser")

void *                  AslLocalAllocate (unsigned int Size);

/* Bison/yacc configuration */

#undef alloca
#define alloca              AslLocalAllocate

int                     PrParserlex (void);
int                     PrParserparse (void);
void                    PrParsererror (char const *msg);
extern char             *PrParsertext;

UINT64                  PrParserResult; /* Expression return value */

/* Bison/yacc configuration */

#define yytname             PrParsername
#define YYDEBUG             1           /* Enable debug output */
#define YYERROR_VERBOSE     1           /* Verbose error messages */
#define YYFLAG              -32768

/* Define YYMALLOC/YYFREE to prevent redefinition errors  */

#define YYMALLOC            malloc
#define YYFREE              free
%}

%union
```

```
{
   UINT64            value;
   UINT32            op;
   char              *str;
}

/*! [Begin] no source code translation */

%type  <value>  Expression

%token <op>    EXPOP_EOF
%token <op>    EXPOP_NEW_LINE
%token <op>    EXPOP_NUMBER
%token <op>    EXPOP_HEX_NUMBER
%token <op>    EXPOP_RESERVED1
%token <op>    EXPOP_RESERVED2
%token <op>    EXPOP_PAREN_OPEN
%token <op>    EXPOP_PAREN_CLOSE

%left <op>     EXPOP_LOGICAL_OR
%left <op>     EXPOP_LOGICAL_AND
%left <op>     EXPOP_OR
%left <op>     EXPOP_XOR
%left <op>     EXPOP_AND
%left <op>     EXPOP_EQUAL EXPOP_NOT_EQUAL
%left <op>     EXPOP_GREATER EXPOP_LESS EXPOP_GREATER_EQUAL EXPOP_LESS_EQUAL
%left <op>     EXPOP_SHIFT_RIGHT EXPOP_SHIFT_LEFT
%left <op>     EXPOP_ADD EXPOP_SUBTRACT
%left <op>     EXPOP_MULTIPLY EXPOP_DIVIDE EXPOP_MODULO
%right <op>    EXPOP_ONES_COMPLIMENT EXPOP_LOGICAL_NOT

/* Tokens above must be kept in synch with dtparser.y */

%token <op>    EXPOP_DEFINE
%token <op>    EXPOP_IDENTIFIER

%%

/*
*  Operator precedence rules (from K&R)
*
*  1)     ( )
*  2)     ! ~ (unary operators that are supported here)
*  3)     *   /   %
*  4)     +   -
*  5)     >>  <<
*  6)     <   >   <=  >=
*  7)     ==  !=
```

```
* 8)     &
* 9)     ^
* 10)    |
* 11)    &&
* 12)    ||
*/

/*! [End] no source code translation !*/

Value
  : Expression EXPOP_NEW_LINE                { PrParserResult=$1; return 0; } /* End of line (newline) */
  | Expression EXPOP_EOF                     { PrParserResult=$1; return 0; } /* End of string (0) */
  ;

Expression

    /* Unary operators */

  : EXPOP_LOGICAL_NOT        Expression        { $$ = DtDoOperator ($2, EXPOP_LOGICAL_NOT,     $2);}
  | EXPOP_ONES_COMPLIMENT    Expression        { $$ = DtDoOperator ($2,
EXPOP_ONES_COMPLIMENT, $2);}

    /* Binary operators */

  | Expression EXPOP_MULTIPLY        Expression  { $$ = DtDoOperator ($1, EXPOP_MULTIPLY,       $3);}
  | Expression EXPOP_DIVIDE          Expression  { $$ = DtDoOperator ($1, EXPOP_DIVIDE,         $3);}
  | Expression EXPOP_MODULO          Expression  { $$ = DtDoOperator ($1, EXPOP_MODULO,         $3);}
  | Expression EXPOP_ADD             Expression  { $$ = DtDoOperator ($1, EXPOP_ADD,            $3);}
  | Expression EXPOP_SUBTRACT        Expression  { $$ = DtDoOperator ($1, EXPOP_SUBTRACT,       $3);}
  | Expression EXPOP_SHIFT_RIGHT     Expression  { $$ = DtDoOperator ($1, EXPOP_SHIFT_RIGHT,    $3);}
  | Expression EXPOP_SHIFT_LEFT      Expression  { $$ = DtDoOperator ($1, EXPOP_SHIFT_LEFT,     $3);}
  | Expression EXPOP_GREATER         Expression  { $$ = DtDoOperator ($1, EXPOP_GREATER,        $3);}
  | Expression EXPOP_LESS            Expression  { $$ = DtDoOperator ($1, EXPOP_LESS,           $3);}
  | Expression EXPOP_GREATER_EQUAL   Expression  { $$ = DtDoOperator ($1,
EXPOP_GREATER_EQUAL,   $3);}
  | Expression EXPOP_LESS_EQUAL      Expression  { $$ = DtDoOperator ($1, EXPOP_LESS_EQUAL,
$3);}
  | Expression EXPOP_EQUAL           Expression  { $$ = DtDoOperator ($1, EXPOP_EQUAL,          $3);}
  | Expression EXPOP_NOT_EQUAL       Expression  { $$ = DtDoOperator ($1, EXPOP_NOT_EQUAL,
$3);}
  | Expression EXPOP_AND             Expression  { $$ = DtDoOperator ($1, EXPOP_AND,            $3);}
  | Expression EXPOP_XOR             Expression  { $$ = DtDoOperator ($1, EXPOP_XOR,            $3);}
  | Expression EXPOP_OR              Expression  { $$ = DtDoOperator ($1, EXPOP_OR,             $3);}
  | Expression EXPOP_LOGICAL_AND     Expression  { $$ = DtDoOperator ($1, EXPOP_LOGICAL_AND,
$3);}
  | Expression EXPOP_LOGICAL_OR      Expression  { $$ = DtDoOperator ($1, EXPOP_LOGICAL_OR,
$3);}
```

```
    /* Parentheses: '(' Expression ')' */

  | EXPOP_PAREN_OPEN         Expression
    EXPOP_PAREN_CLOSE                   { $$ = $2;}

    /* #if defined (ID) or #if defined ID */

  | EXPOP_DEFINE EXPOP_PAREN_OPEN EXPOP_IDENTIFIER
    EXPOP_PAREN_CLOSE                   { $$ = PrIsDefined (PrParserlval.str);}

  | EXPOP_DEFINE EXPOP_IDENTIFIER               { $$ = PrIsDefined (PrParserlval.str);}

  | EXPOP_IDENTIFIER                    { $$ = PrResolveDefine (PrParserlval.str);}

    /* Default base for a non-prefixed integer is 10 */

  | EXPOP_NUMBER                        { AcpiUtStrtoul64 (PrParsertext, &$$);}

    /* Standard hex number (0x1234) */

  | EXPOP_HEX_NUMBER                    { AcpiUtStrtoul64 (PrParsertext, &$$);}
  ;
%%

/*
* Local support functions, including parser entry point
*/
#define PR_FIRST_PARSE_OPCODE   EXPOP_EOF
#define PR_YYTNAME_START        3


/*******************************************************************************
*
* FUNCTION:    PrParsererror
*
* PARAMETERS:  Message            - Parser-generated error message
*
* RETURN:      None
*
* DESCRIPTION: Handler for parser errors
*
*******************************************************************************/

void
PrParsererror (
  char const            *Message)
{
```

```
  sprintf (StringBuffer, "Preprocessor Parser : %s (near line %u)",
     Message, Gbl_CurrentLineNumber);
  DtError (ASL_ERROR, ASL_MSG_SYNTAX,
     NULL, (char *) StringBuffer);
}


/*******************************************************************************
*
* FUNCTION:    PrGetOpName
*
* PARAMETERS:  ParseOpcode        - Parser token (EXPOP_*)
*
* RETURN:      Pointer to the opcode name
*
* DESCRIPTION: Get the ascii name of the parse opcode for debug output
*
*******************************************************************************/

char *
PrGetOpName (
  UINT32                ParseOpcode)
{
#ifdef ASL_YYTNAME_START
  /*
   * First entries (PR_YYTNAME_START) in yytname are special reserved names.
   * Ignore first 6 characters of name (EXPOP_)
   */
  return ((char *) yytname
     [(ParseOpcode - PR_FIRST_PARSE_OPCODE) + PR_YYTNAME_START] + 6);
#else
  return ("[Unknown parser generator]");
#endif
}


/*******************************************************************************
*
* FUNCTION:    PrEvaluateExpression
*
* PARAMETERS:  ExprString         - Expression to be evaluated. Must be
*                                   terminated by either a newline or a NUL
*                                   string terminator
*
* RETURN:      64-bit value for the expression
*
* DESCRIPTION: Main entry point for the DT expression parser
*
```

```
*****************************************************************************/

UINT64
PrEvaluateExpression (
  char                *ExprString)
{

  DbgPrint (ASL_DEBUG_OUTPUT,
     "**** Input expression: %s\n", ExprString);

  /* Point lexer to the input string */

  if (PrInitLexer (ExprString))
  {
     DtError (ASL_ERROR, ASL_MSG_COMPILER_INTERNAL,
        NULL, "Could not initialize lexer");
     return (0);
  }

  /* Parse/Evaluate the input string (value returned in PrParserResult) */

  PrParserparse ();
  PrTerminateLexer ();

  DbgPrint (ASL_DEBUG_OUTPUT,
     "**** Parser returned value: %u (%8.8X%8.8X)\n",
     (UINT32) PrParserResult, ACPI_FORMAT_UINT64 (PrParserResult));

  return (PrParserResult);
}
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/prparser.y
No license file was found, but licenses were detected in source scan.

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*/
/******************************************************************************
*
* SLIC - Software Licensing Description Table. This table contains the standard
* ACPI header followed by proprietary data structures
*
******************************************************************************/
/* Single subtable, a proprietary format, so treat it as a buffer */

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-
20180508/source/common/dmtbinfo3.c
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*/

//
//
// Grammar.asl - Minimally excercises most ASL constructs
//
// NOTE -- use: iasl -f -of grammar.asl to compile
//
//        This 1) Ignores errors (checks compiler error handling)
//             2) Disables constant folding
//
//

/*****************************************************************************
Compilation should look like this:

C:\acpica\tests\misc>iasl -f -of grammar.asl

Intel ACPI Component Architecture
ASL Optimizing Compiler version 20090422 [Apr 22 2009]
Copyright (C) 2000 - 2009 Intel Corporation
Supports ACPI Specification Revision 3.0a

grammar.asl   187:    Name (_NPK, Package (8)
Warning  1098 -             ^ Unknown reserved name (_NPK)

grammar.asl   510:    NAME (ESC1, "abcdefg\x00hijklmn")
Warning  1042 -                     ^ Invalid Hex/Octal Escape - Non-ASCII or NULL

grammar.asl   511:    NAME (ESC2, "abcdefg\000hijklmn")
Warning  1042 -                     ^ Invalid Hex/Octal Escape - Non-ASCII or NULL
```

```
grammar.asl   601:    Method (RCIV, 1)
Warning  1087 -              ^ Not all control paths return a value (RCIV)

grammar.asl   608:        RCIV (Subtract (Arg0, 1))
Remark   5073 -           ^ Recursive method call (RCIV)

grammar.asl   937:    Method (_ERR, 2)
Warning  1077 -              ^ Reserved method has too few arguments (_ERR requires 3)

grammar.asl  1377:        Store (0x1234567887654321, QWD2)
Warning  1032 -                        ^ 64-bit integer in 32-bit table, truncating

grammar.asl  1379:        if (LNotEqual (Local0, 0x1234567887654321))
Warning  1032 -       64-bit integer in 32-bit table, truncating ^

grammar.asl  1459:        SizeOf (BUFO)
Warning  1105 -               ^ Result is not used, operator has no effect

grammar.asl  1485:        Acquire (MTX2, 1)
Warning  1104 -                   ^ Possible operator timeout is ignored

grammar.asl  1633:        Add (Local0, Local1)
Warning  1105 -               ^ Result is not used, operator has no effect

grammar.asl  1804:    Method (COND)
Warning  1087 -              ^ Not all control paths return a value (COND)

grammar.asl  6010:          Name (_HID, "*PNP0A06")
Error    4001 -                       ^ String must be entirely alphanumeric (*PNP0A06)

grammar.asl  6461:          Name (_CRS, Buffer(26)  {"\_SB_.PCI2._CRS....."})
Warning  1038 -       Invalid or unknown escape sequence ^

grammar.asl  6800:            And (Local0, 1, Local0) //  Local0 &= 1
Error    4050 -                   ^ Method local variable is not initialized (Local0)

grammar.asl  6886:          Name (_HID, "*PNP0C0A")     //  Control Method Battey ID
Error    4001 -                       ^ String must be entirely alphanumeric (*PNP0C0A)

ASL Input:  grammar.asl - 10254 lines, 322162 bytes, 4810 keywords
AML Output: grammar.aml - 43392 bytes, 669 named objects, 4141 executable opcodes

Compilation complete. 3 Errors, 12 Warnings, 1 Remarks, 1101 Optimizations

*******************************************************************************************
******/
```

```
DefinitionBlock (
  "grammar.aml",      //Output filename
  "DSDT",             //Signature
  0x01,               //DSDT Revision ---> 32-bit table
  "Intel",            //OEMID
  "GRMTEST",          //TABLE ID
  0x20090511          //OEM Revision
  )
{

  External (\ABCD, UnknownObj)


  /* Device with _STA and _INI */

  Device (A1)
  {
     Method (_STA)
     {
        Return (0x0F)
     }

     Method (_INI)
     {
        Return
     }
  }

  /* Device with no _STA, has _INI */

  Device (A2)
  {
     Method (_INI)
     {
        Return
     }
  }

  /* Device with _STA, no _INI */

  Device (A3)
  {
     Method (_STA)
     {
        Return (0x0F)
     }
  }
```

```
/* Device with _STA and _INI, but not present */

Device (A4)
{
   Method (_STA)
   {
      Return (Zero)
   }

   Method (_INI)
   {
      Return
   }
}


/* Resource descriptors */

Device (IRES)
{
   Name (PRT0, ResourceTemplate ()
   {
      IRQ (Edge, ActiveHigh, Exclusive) {3,4,5,6,7,9,10,11,14,15}

      StartDependentFn (1,1)
      {
         IRQNoFlags () {0,1,2}
      }
      EndDependentFn ()
   })

   Method (_CRS, 0, NotSerialized)
   {
      Store ("_CRS:", Debug)
      Store (PRT0, Debug)
      Return (PRT0)
   }

   Method (_SRS, 1, Serialized)
   {
      Store ("_SRS:", Debug)
      Store (Arg0, Debug)
      Return (Zero)
   }
}

Name (_NPK, Package ()
{
```

```
    0x1111,
    0x2222,
    0x3333,
    0x4444
})


Device (RES)
{
    Name (_PRT, Package (0x04)
    {
        Package (0x04)
        {
            0x0002FFFF,
            Zero,
            Zero,
            Zero
        },

        Package (0x04)
        {
            0x0002FFFF,
            One,
            Zero,
            Zero
        },

        Package (0x04)
        {
            0x000AFFFF,
            Zero,
            Zero,
            Zero
        },

        Package (0x04)
        {
            0x000BFFFF,
            Zero,
            Zero,
            Zero
        }
    })

    Method (_CRS, 0, Serialized)
    {
        Name (PRT0, ResourceTemplate ()
        {
```

```
WordBusNumber (ResourceConsumer, MinFixed, MaxFixed, SubDecode,
   0x0000, // Address Space Granularity
   0xFFF2, // Address Range Minimum
   0xFFF3, // Address Range Maximum
   0x0032, // Address Translation Offset
   0x0002,,,)
WordBusNumber (ResourceProducer, MinFixed, MaxFixed, PosDecode,
   0x0000, // Address Space Granularity
   0x0000, // Address Range Minimum
   0x00FF, // Address Range Maximum
   0x0000, // Address Translation Offset
   0x0100,,,)
WordSpace (0xC3, ResourceConsumer, PosDecode, MinFixed, MaxFixed, 0xA5,
   0x0000, // Address Space Granularity
   0xA000, // Address Range Minimum
   0xBFFF, // Address Range Maximum
   0x0000, // Address Translation Offset
   0x2000,,,)
IO (Decode16, 0x0CF8, 0x0CFF, 0x01, 0x08)
WordIO (ResourceProducer, MinFixed, MaxFixed, PosDecode, EntireRange,
   0x0000, // Address Space Granularity
   0x0000, // Address Range Minimum
   0x0CF7, // Address Range Maximum
   0x0000, // Address Translation Offset
   0x0CF8,,,
   , TypeStatic)
WordIO (ResourceProducer, MinFixed, MaxFixed, PosDecode, EntireRange,
   0x0000, // Address Space Granularity
   0x0D00, // Address Range Minimum
   0xFFFF, // Address Range Maximum
   0x0000, // Address Translation Offset
   0xF300,,,
   , TypeStatic)
DWordIO (ResourceProducer, MinFixed, MaxFixed, PosDecode, EntireRange,
   0x00000000, // Address Space Granularity
   0x00000000, // Address Range Minimum
   0x00000CF7, // Address Range Maximum
   0x00000000, // Address Translation Offset
   0x00000CF8,,,
   , TypeStatic)
DWordMemory (ResourceProducer, PosDecode, MinFixed, MaxFixed, Cacheable, ReadWrite,
   0x00000000, // Address Space Granularity
   0x000C8000, // Address Range Minimum
   0x000EFFFF, // Address Range Maximum
   0x00000000, // Address Translation Offset
   0x00028000,,,
   , AddressRangeMemory, TypeStatic)
DWordSpace (0xC3, ResourceConsumer, PosDecode, MinFixed, MaxFixed, 0xA5,
```

```
    0x00000000, // Address Space Granularity
    0x000C8000, // Address Range Minimum
    0x000EFFFF, // Address Range Maximum
    0x00000000, // Address Translation Offset
    0x00028000,,,)
  QWordIO (ResourceProducer, MinFixed, MaxFixed, PosDecode, EntireRange,
    0x0000000000000000, // Address Space Granularity
    0x0000000000000000, // Address Range Minimum
    0x00000000000000CF7, // Address Range Maximum
    0x0000000000000000, // Address Translation Offset
    0x00000000000000CF8, 0x44, "This is a ResouceSource string",
    , TypeStatic)
  QWordIO (ResourceProducer, MinFixed, MaxFixed, PosDecode, EntireRange,
    0x0000000000000000, // Address Space Granularity
    0x0000000000000000, // Address Range Minimum
    0x00000000000000CF7, // Address Range Maximum
    0x0000000000000000, // Address Translation Offset
    0x00000000000000CF8,,,
    , TypeStatic)
  QWordMemory (ResourceProducer, PosDecode, MinFixed, MaxFixed, Cacheable, ReadWrite,
    0x0000000000000000, // Address Space Granularity
    0x0000000000100000, // Address Range Minimum
    0x00000000FFDFFFFF, // Address Range Maximum
    0x0000000000000000, // Address Translation Offset
    0x00000000FFD00000,,,
    , AddressRangeMemory, TypeStatic)
  QWordSpace (0xC3, ResourceConsumer, PosDecode, MinFixed, MaxFixed, 0xA5,
    0x0000000000000000, // Address Space Granularity
    0x0000000000000000, // Address Range Minimum
    0x00000000000000CF7, // Address Range Maximum
    0x0000000000000000, // Address Translation Offset
    0x00000000000000CF8,,,)
  ExtendedIO (ResourceProducer, MinFixed, MaxFixed, PosDecode, EntireRange,
    0x0000000000000000, // Address Space Granularity
    0x0000000000000000, // Address Range Minimum
    0x00000000000000CF7, // Address Range Maximum
    0x0000000000000000, // Address Translation Offset
    0x00000000000000CF8, // Address Length
    0x0000000000000000, // Type Specific Attributes
    , TypeStatic)
  ExtendedMemory (ResourceProducer, PosDecode, MinFixed, MaxFixed, Cacheable, ReadWrite,
    0x0000000000000000, // Address Space Granularity
    0x0000000000100000, // Address Range Minimum
    0x00000000FFDFFFFF, // Address Range Maximum
    0x0000000000000000, // Address Translation Offset
    0x00000000FFD00000, // Address Length
    0x0000000000000000, // Type Specific Attributes
    , AddressRangeMemory, TypeStatic)
```

```
ExtendedSpace (0xC3, ResourceProducer, PosDecode, MinFixed, MaxFixed, 0xA3,
   0x0000000000000000, // Address Space Granularity
   0x0000000000100000, // Address Range Minimum
   0x00000000FFDFFFFF, // Address Range Maximum
   0x0000000000000000, // Address Translation Offset
   0x00000000FFD00000, // Address Length
   0x0000000000000000) // Type Specific Attributes
IO (Decode16, 0x0010, 0x0020, 0x01, 0x10)
IO (Decode16, 0x0090, 0x00A0, 0x01, 0x10)
FixedIO (0x0061, 0x01)
IRQNoFlags () {2}
DMA (Compatibility, BusMaster, Transfer8_16) {4}
DMA (Compatibility, BusMaster, Transfer8) {2,5,7}
Memory32Fixed (ReadWrite, 0x00100000, 0x00000000)
Memory32Fixed (ReadOnly, 0xFFFE0000, 0x00020000)
Memory32 (ReadOnly, 0x00020000, 0xFFFE0000, 0x00000004, 0x00000200)
Memory24 (ReadOnly, 0x1111, 0x2222, 0x0004, 0x0200)
Interrupt (ResourceConsumer, Level, ActiveLow, Exclusive, 0xE, "\\_SB_.TEST")
{
   0x00000E01,
}
Interrupt (ResourceConsumer, Edge, ActiveHigh, Exclusive, 0x6, "xxxx")
{
   0x00000601,
   0x00000003,
   0x00000002,
   0x00000001,
}
Interrupt (ResourceProducer, Edge, ActiveHigh, Exclusive)
{
   0xFFFF0000,
   0x00000003,
   0x00000002,
   0x00000001,
   0x00000005,
   0x00000007,
   0x00000009,
}
VendorShort () {0x01, 0x02, 0x03}
VendorLong ()
{
   0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08,
   0x09
}
Register (SystemIO, 0x08, 0x00, 0x00000000000000B2, , R000)
Register (SystemMemory, 0x08, 0x00, 0x00000000000000B2)
StartDependentFnNoPri ()
{
```

```
            IRQNoFlags () {0,1,2}
            IRQ (Level, ActiveLow, Shared) {3,4,5,6,7,9,10,11,14,15}
        }
        EndDependentFn ()
    })
    CreateWordField (PRT0, 0x08, BMIN)
    CreateByteField (PRT0, R000._ASZ, RSIZ)
    Store (0x03, BMIN)
    Return (PRT0)
}

Method (_PRS, 0, Serialized)
{
    Name (BUF0, ResourceTemplate ()
    {
        StartDependentFn (0x01, 0x02)
        {
            IO (Decode16, 0x03D8, 0x03F8, 0x01, 0x08)
            IRQNoFlags () {4}
        }
        StartDependentFn (0x02, 0x01)
        {
            IO (Decode16, 0x03D8, 0x03E8, 0x01, 0x08)
            IRQNoFlags () {4}
        }
        StartDependentFn (0x00, 0x02)
        {
            IO (Decode16, 0x02E8, 0x02F8, 0x01, 0x08)
            IRQNoFlags () {3}
        }
        StartDependentFn (0x00, 0x02)
        {
            IO (Decode16, 0x02D8, 0x02E8, 0x01, 0x08)
            IRQNoFlags () {3}
        }
        StartDependentFn (0x02, 0x00)
        {
            IO (Decode16, 0x0100, 0x03F8, 0x08, 0x08)
            IRQNoFlags () {1,3,4,5,6,7,8,10,11,12,13,14,15}
        }
        EndDependentFn ()
    })
    Return (BUF0)
}

Method (_SRS, 1, Serialized)
{
    Return (Zero)
```

```
    }
  }


  Name(\_S0,Package(0x04){
    0x00,
    0x00,
    0x00,
    0x00
  })
  Name(\_S3,Package(0x04){
    0x05,
    0x05,
    0x00,
    0x00
  })
  Name(\_S4,Package(0x04){
    0x06,
    0x06,
    0x00,
    0x00
  })
  Name(\_S5,Package(0x04){
    0x07,
    0x07,
    0x00,
    0x00
  })

/* Examine this table header (DSDT) */

/*
  DataTableRegion (HDR, "DSDT", "", "")
  Field (HDR, AnyAcc, NoLock, Preserve)
  {
    SIG,  32,
    LENG, 32,
    REV,  8,
    SUM,  8,
    OID,  48,
    OTID, 64,
    OREV, 32,
    CID,  32,
    CREV, 32
  }

  Method (SIZE)
  {
```

```
    If (LLess (REV, 2))
    {
        Store ("32-bit table", Debug)
    }
    else
    {
        Store ("64-bit table", Debug)
    }
    Return (0)
  }

*/
  Name (SIZE, 0)

  /* Custom operation region */

  OperationRegion(MYOP,0x80,0xFD60,0x6)
  Field(MYOP,ByteAcc,NoLock,Preserve)
  {
    MFLD,8
  }

  Method (TCOP,, Serialized)
  {
    Name (_STR, Unicode ("test"))
    Store (4, MFLD)
    Store (MFLD, Local0)
  }

  Name (ERRS, 0x0)

  /* Warning should be issued for premature string termination */

  NAME (ESC1, "abcdefg\x00hijklmn")
  NAME (ESC2, "abcdefg\000hijklmn")
  Name (ESC3, "abc\a\bdef\f\n\r\t\v\x03ffff\432")


  Name(CRSA,ResourceTemplate()
  {
WORDBusNumber(ResourceProducer,MinFixed,MaxFixed,PosDecode,0x0000,0x0019,0x001D,0x0000,0x0005)
WORDIO(ResourceProducer,MinFixed,MaxFixed,PosDecode,NonISAOnlyRanges,0x0000,0xC000,0xCFFF,0x0000,0x1000)
DWORDMemory(ResourceProducer,PosDecode,MinFixed,MaxFixed,NonCacheable,ReadWrite,0x00000000,0xD8000000,0xDBFFFFFF,0x00000000,0x04000000)

  })
  Name(CRSB,ResourceTemplate()
```

```
  {
DWORDMemory(ResourceProducer,PosDecode,MinFixed,MaxFixed,NonCacheable,ReadWrite,0x00000000,0xD8
000000,0xDBFFFFFF,0x00000000,0x04000000)

  })

  Name(CRSC,ResourceTemplate()
  {
     VendorShort () {0x1, 0x2, 0x3}
  })
  Name(CRSD,ResourceTemplate()
  {
     VendorLong (VNDL) {0x1, 0x2, 0x3, 0x4, 0x5, 0x6, 0x7, 0x8, 0x9}
  })

  Name(CRSE,ResourceTemplate()
  {
     IRQNoFlags(){3,4,10,11}
     IRQNoFlags(xxxt){3,4,10,11}
  })
  Name(CRSR, Buffer (Add (SizeOf(CRSA),SizeOf(CRSB))){})
  Method(_CRS,0,NotSerialized)
  {
     Return(CRSR)
  }


  //
  // Unnamed scope
  //
  Scope (\)
  {
     Name(Bxxx,0xFFFFFFFF)
  }

  Name (LANS, 0x0)

  PowerResource(LANP,1,0)
  {
     Method(_STA){
        If(LEqual(And(LANS,0x30),0x30)){
           Return(One)
        } Else {
           Return(Zero)
        }
     }
     Method(_ON){
        If(LNot(_STA())){
```

```
            Store (0x30, LANS)
        }
    }
    Method(_OFF){
        If(_STA()){
            Store (0, LANS)
        }
    }
}


/* Can a method define another method? */

/***********************************
Method (TASK, 2, SERIALIZED)
{
    Sleep (100)

    Method (TAS2)
    {
        Sleep (100)
    }

    TAS2()
    Return

}
***********************************/

/* A recursive method */

Method (RCIV, 1)
{
    Store (Arg0, Debug)
    If (Lequal (Arg0, 0))
    {
        Return ()
    }
    RCIV (Subtract (Arg0, 1))
}

Method (RTOP)
{
    RCIV (100)
}


Scope(\_PR)
```

```
{
   Processor(CPU0,0x0,0xFFFFFFFF,0x0) {}
}

Name(B1TP,0xFFFFFFFF)

Name(B2TP,0xFFFFFFFF)
Name(ADPS,0xFFFFFFFF)
Name(B1PS,0xFFFFFFFF)
Name(B1RS,0xFFFFFFFF)
Name(B1CS,0xFFFFFFFF)
Name(B2PS,0xFFFFFFFF)
Name(B2RS,0xFFFFFFFF)
Name(B2CS,0xFFFFFFFF)
Name(B1DC,3000)
Name(B2DC,2600)
Name(B1LF,3000)
Name(B2LF,2600)
Name(BPIF,0)
Name(PBLL,0)

Name(RBIF,Package()
{
   0x1,
   2200,
   2200,
   0x1,
   10800,
   0,
   0,
   1,
   1,
   "CA54200-5003/5",
   "1",
   "LION",
   "Fujitsu"
})

Method(SMWE, 4)
{
  return(ONES)
}

Method(SMRE, 4)
{
  return(ONES)
}
```

```
/*
  Method(RDBT,0,Serialized){
    If(LNot(SMWE(0x09,0x15,1,1))){
          Store(0x18,Local2)
      }
  }
*/
  Scope(_SB)
  {

    Name (SBUF, Buffer (128) {})

    CreateBitField (SBUF, 3, BITY)
    CreateByteField (SBUF, 1, BYTY)
    CreateWordField (SBUF, 2, WRDZ)
    CreateDwordField (SBUF, 4, DWDZ)
    CreateQwordField (SBUF, 8, QWDZ)
    CreateField (SBUF, 128, 12, FLDZ)
    CreateField (SBUF, 148, 96, FLDY)
    CreateField (SBUF, 148, 96, \_SB_.FLDW)

    Method (_INI)
    {
      CreateField (\_SB_.SBUF, 148, 96, FLDV)
    }


    Device(PCI0)
    {
      Name(_HID,EISAID("PNP0A03"))
      Name(_ADR,0x0)

      Method(_CRS,, Serialized)
      {
        Name(PRT0, ResourceTemplate() {
          WORDBusNumber(                    // Bus number resource(0)
            ResourceConsumer,           // bit 0 of general flags is 1
            MinFixed,                  // Range is notfixed
            MaxFixed,                   // Range is not fixed
            SubDecode,                   // SubDecode
            0x0000,                    // Granularity
            0xfff1,                   // Min
            0xfff2,                   // Max
            0x0032,                     // Translation
            0x0002,,,                   // Range Length
            BUS0
        ) } )// PRT0
```

```
    CreateWordField(PRT0, BUS0._MIN, BMIN)          //Minimum bus number suported under this bridge.

    Store(3, BMIN)
    Return(PRT0)

} // _CRS

Method(_SRS)
{
    Return ()
}

Device(EIO)
{
    OperationRegion(FJIO,SystemIO,0xFD60,0x6)
        Field(FJIO,ByteAcc,NoLock,Preserve)
        {
            GIDX,8,

            GDTA,8,

            PIDX,8,

            PDTA,8,

            SIDX,8,

            SDTA,8
        }
        IndexField(GIDX,GDTA,ByteAcc,NoLock,Preserve)
        {
            Offset(0x2),
             ,5,
            VGAS,2,
            Offset(0x4),
             ,4,
            DCKE,1,
            Offset(0x5),
             ,6,
            ACPW,1,

            Offset(0xA),
            B1P,1,

            B2P,1,

            B1C,1,
```

```
            B2C,1,

            B1ER,1,

            B2ER,1,

            Offset(0xB),
            B1CP,8,

            B2CP,8,

            BCP,8,

            B1VH,8,

            B1VL,8,

            B2VH,8,

            B2VL,8,

            B1TM,8,

            B2TM,8,

            B1CH,8,

            B1CL,8,

            B2CH,8,

            B2CL,8
          }
        }
    }
}

Method(RDBT,3,Serialized){
    Store(0x1FFF,Local1)
    If( Arg0 ){
        Store(0x2FFF,Local1)
    }
    Store(0x18,Local2)
    If( Arg1 ){
        Store(0x10,Local2)
    }
    If(LNot(SMRE(0x09,0x15,1,RefOf(Local0)))){
        If(LNot(SMWE(0x08,0x14,1,Local1))){
```

```
            If(LNot(SMRE(0x09,0x17,Local2,RefOf(Local3)))){
               Store(Local1,Arg2)
            }
         }
         Or(Local0,0xFFF,Local0)
         SMWE(0x08,0x14,1,Local0)
      }
   }
   Method(MKWD,2)
   {
      If(And(Arg1,0x80)) {
         Or(0xFFFF0000,Arg0,Local0)
         Or(Local0,ShiftLeft(Arg1,8),Local0)
         Subtract(Zero,Local0,Local0)
      } else {
         Store(Arg0,Local0)
         Or(Local0,ShiftLeft(Arg1,8),Local0)
      }
      Return(Local0)
   }

   Device(CMB1)
   {
      Name(_HID,EISAID("PNP0C0A"))
      Name(_UID,0x1)
      Alias(\_SB.PCI0.EIO.B1P,\_SB_.PCI0.XXXX)
      Alias(\_SB.PCI0.EIO.B1P,B1P)
      Alias(\_SB.PCI0.EIO.B1C,B1C)
      Alias(\_SB.PCI0.EIO.B1CH,B1CH)
      Alias(\_SB.PCI0.EIO.B1CL,B1CL)
      Alias(\_SB.PCI0.EIO.B1VH,B1VH)
      Alias(\_SB.PCI0.EIO.B1VL,B1VL)
      Alias(\_SB.PCI0.EIO.B1CP,B1CP)

      Method(_INI)
            {
         Store(B1P, B1PS)
         Store(B1CP,B1RS)
         Store(B1C, B1CS)
      }

      Method(_BIF){
         RDBT(Zero,Zero,RefOf(B1DC))
         RDBT(Zero,One,RefOf(B1LF))
         Store(B1DC,Index(RBIF,1))
         Store(B1LF,Index(RBIF,2))
         Store("CA54200-5003/5",Index(RBIF,9))
         Store("1",Index(RBIF,10))
```

```
            Return(RBIF)
        }

        Method(_BST,, Serialized) {

            _INI()

            Store(Zero,Local0)

            if (LAnd(B1P,LNot(B1C))){
                Or(Local0,1,Local0)
            }

            if (LAnd(B1P,B1C)) {
                Or(Local0,2,Local0)
            }

            if (LLessEqual(B1CP,1)) {
                Or(Local0,4,Local0)
            }

            Store(MKWD(B1CL,B1CH),Local1)

            Store(Divide(Add(Multiply(B1CP,B1LF),99),100),Local2)

            Store(MKWD(B1VL,B1VH),Local3)

            Name(STAT,Package(4){})
            Store(Local0,Index(STAT,0))
            Store(Local1,Index(STAT,1))
            Store(Local2,Index(STAT,2))
            Store(Local3,Index(STAT,3))

            If(LNot(BPIF)){
//                \_SB.PCI0.EIO.EC0.IECT()
//                \_SB.PCI0.EIO.EC0.SECT()
                Store(One,BPIF)
            }
            return(STAT)
        }

    }

    Device (DEV1)
    {
    }

    Scope(\_TZ)
```

```
{
   ThermalZone(TZ1)
   {
      Name(_PSL,Package()
      {
         \_PR.CPU0
      })
   }
}

Method (TZ2, 0, SERIALIZED)
{
   Name(_PSL,Package()
   {
      \_PR.CPU0
   })

   Return (_PSL)
}

ThermalZone (THM1)
{
}

Method (NOTI)
{
   Notify (\DEV1, 0)
   Notify (\THM1, 0)
   Notify (\_PR.CPU0, 0)
}

Method (_ERR, 3)
{
   Increment (ERRS)
   Store ("Run-time exception:", Debug)
   Store (Arg0, Debug)
   Store (Arg1, Debug)

   Return (0)         // Map error to AE_OK
}

Method (DIV0)
{
   Store (1, Local0)
   Store (0, Local1)
   Divide (Local0, Local1, Local3)

   Store ("DIV0 - noabort", Debug)
```

```
}

Method (ERR_, 2)
{
   Local0 = ToDecimalString (Arg1)
   if (LEqual (Arg0, 0))
   {
      Printf ("+*+*+*+* MTHD_ERROR at line %o: Results not equal!", Local0)
   }
   if (LEqual (Arg0, 1))
   {
      Printf ("+*+*+*+* MTHD_ERROR at line %o: Numeric result is incorrect!", Local0)
   }
   if (LEqual (Arg0, 2))
   {
      Printf ("+*+*+*+* MTHD_ERROR at line %o: Operand was clobbered!", Local0)
   }

   Notify (DEV1, Arg0)
   Increment (ERRS)
}

Method (R226, 2)
{
}
Method (R225, 2)
{
   R226 (Arg0, Arg1)
}
Method (R224, 2)
{
   R225 (Arg1, Arg0)
}
Method (R223, 2)
{
   R224 (Arg0, Arg1)
}
Method (R222, 2)
{
   R223 (Arg1, Arg0)
}
Method (R111)
{
   Store (0x01010101, Local0)
   R222 (0xABAB, Local0)
   Store (Local0, Local1)
}
```

```
  Method (MAIN)
  {

//    SIZE()
      Store (NUM1(), Local0)
      \CMB1._BST()
      RDBT(1,2,3)
      OBJ1(1)
      OBJ2(2)
      CHEK()
      RETZ()
      BITZ()
      LOGS()
      REFS()
      COND()
      TZ2()

      //
      // iPCO tests added
      //
      Store (\IFEL.TEST(), Local0)
      if (LGreater (Local0, 0))
      {
         ERR_ (1, __LINE__)
         Return(Local0)
      }

      Store (\NOSV.TEST(), Local0)
      if (LGreater (Local0, 0))
      {
         ERR_ (1, __LINE__)
         Return(Local0)
      }

      Store (\IDXF.TEST(), Local0)
      if (LGreater (Local0, 0))
      {
         ERR_ (1, __LINE__)
         Return(Local0)
      }

      Store (\_SB_.NSTL.TEST(), Local0)
      if (LGreater (Local0, 0))
      {
         ERR_ (1, __LINE__)
         Return(Local0)
      }
```

```
Store (\RTBF.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\_SB_.RTLV.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\_SB_.RETP.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\WHLR.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\ANDO.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\BRKP.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\ADSU.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}
```

```
Store (\INDC.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\LOPS.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\FDSO.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\MLDV.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\NBIT.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\SHFT.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\XORD.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
```

```
}

Store (\CRBF.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\IDX4.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\EVNT.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\SZLV.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\_SB_.BYTF.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\DWDF.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
   Return(Local0)
}

Store (\DVAX.TEST(), Local0)
if (LGreater (Local0, 0))
{
   ERR_ (1, __LINE__)
```

```
    Return(Local0)
}

Store (\IDX6.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}

Store (\IDX5.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}

Store (\_SB_.IDX0.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}

Store (\_SB_.IDX3.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}

Store (\IDX7.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}

Store (\MTCH.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}

Store (\WHLB.TEST(), Local0)
if (LGreater (Local0, 0))
{
```

```
        ERR_ (1, __LINE__)
        Return(Local0)
    }

    Store (\_SB_.IDX2.TEST(), Local0)
    if (LGreater (Local0, 0))
    {
        ERR_ (1, __LINE__)
        Return(Local0)
    }

    Store (\SIZO.TEST(), Local0)
    if (LGreater (Local0, 0))
    {
        ERR_ (1, __LINE__)
        Return(Local0)
    }

    Store (\_SB_.SMIS.TEST(), Local0)
    if (LGreater (Local0, 0))
    {
        ERR_ (1, __LINE__)
        Return(Local0)
    }

    if (LGreater (ERRS, 0))
    {
        Store ("****** There were errors during the execution of the test ******", Debug)
    }

    // Flush all notifies

    Sleep (250)

    //
    // Last Test
    //

    Return(0) // Success
}


Method (OBJ1, 1, SERIALIZED)
{

    Store (3, Local0)
    Name(BUFR, Buffer (Local0) {})
    Name(BUF1, Buffer (4) {1,2,3,4})
```

```
    Name(BUF2, Buffer (4) {})

    Store (BUF1, BUF2)
    Mutex (MTX1, 4)

    Alias (MTX1, MTX2)
}


Mutex (MTXT, 0)
Mutex (MTXX, 0)

/*
 * Field Creation
 */

Method (FLDS,, Serialized)
{
    Store ("++++++++ Creating BufferFields", Debug)
    Name (BUF2, Buffer (128) {})

    CreateBitField (BUF2, 3, BIT2)
    CreateByteField (BUF2, 1, BYT2)
    CreateWordField (BUF2, 2, WRD2)
    CreateDwordField (BUF2, 4, DWD2)
    CreateQwordField (BUF2, 8, QWD2)
    CreateField (BUF2, 128, 12, FLD2)
    CreateField (BUF2, 148, 96, FLD3)

    Store (0x1, BIT2)
    Store (BIT2, Local0)
    if (LNotEqual (Local0, 0x1))
    {
        ERR_ (1, __LINE__)
    }
    else
    {
        Store (DerefOf (Index (BUF2, 0)), Local0)
        if (LNotEqual (Local0, 0x08))
        {
            ERR_ (1, __LINE__)
        }
        else
        {
            Store ("++++++++ Bit BufferField I/O PASS", Debug)
        }
    }
```

```
Store (0x1A, BYT2)
Store (BYT2, Local0)
if (LNotEqual (Local0, 0x1A))
{
   ERR_ (1, __LINE__)
}
else
{
   Store ("++++++++ Byte BufferField I/O PASS", Debug)
}

Store (0x1234, WRD2)
Store (WRD2, Local0)
if (LNotEqual (Local0, 0x1234))
{
   ERR_ (1, __LINE__)
}
else
{
   Store ("++++++++ Word BufferField I/O PASS", Debug)
}

Store (0x123, FLD2)
Store (FLD2, Local0)
if (LNotEqual (Local0, 0x123))
{
   ERR_ (1, __LINE__)
}
else
{
   Store ("++++++++ 12-bit BufferField I/O PASS", Debug)
}

Store (0x12345678, DWD2)
Store (DWD2, Local0)
if (LNotEqual (Local0, 0x12345678))
{
   ERR_ (1, __LINE__)
}
else
{
   Store ("++++++++ Dword BufferField I/O PASS", Debug)
}

Store (0x1234567887654321, QWD2)
Store (QWD2, Local0)
if (LNotEqual (Local0, 0x1234567887654321))
{
```

```
        ERR_ (1, __LINE__)
    }
    else
    {
        Store ("++++++++ Qword BufferField I/O PASS", Debug)
    }
}


/* Field execution */

Method (FLDX,, Serialized)
{
    Field (\_SB_.MEM.SMEM, AnyAcc, NoLock, Preserve)
    {   // Field: SMEM overlay using 32-bit field elements
        SMD0,   32, // 32-bits
        SMD1,   32,     // 32-bits
        SMD2,   32,     // 32-bits
        SMD3,   32  // 32-bits
    }   // Field: SMEM overlay using 32-bit field elements
    Field (\_SB_.MEM.SMEM, AnyAcc, NoLock, Preserve)
    {   // Field: SMEM overlay using greater than 32-bit field elements
        SME0,   69, // larger than an integer (32 or 64)
        SME1,   97  // larger than an integer
    }   // Field: SMEM overlay using greater than 32-bit field elements
}


Method (MTX_, )
{
    /* Test "Force release" of mutex on method exit */

    Acquire (MTXT, 0xFFFF)
    Acquire (MTXX, 0xFFFF)

    Store ("++++++++ Acquiring Mutex MTX2", Debug)
    Acquire (_GL_, 0xFFFF)


    Store ("++++++++ Releasing Mutex MTX2", Debug)
    Release (_GL_)
}


Method (OBJ2, 1, Serialized)
{
    Store ("++++++++ Creating Buffer BUFO", Debug)
    Name (BUFO, Buffer (32) {})
```

```
Store ("++++++++ Creating OpRegion OPR2", Debug)
OperationRegion (OPR2, SystemMemory, Arg0, 256)

Store ("++++++++ Creating Field(s) in OpRegion OPR2", Debug)
Field (OPR2, ByteAcc, NoLock, Preserve)
{
   IDX2, 8,
   DAT2, 8,
   BNK2, 4
}

Store ("++++++++ Creating BankField BNK2 in OpRegion OPR2", Debug)
//
// mcw 3/20/00 - changed FET0, 4, FET1, 3 to FET0, 1, FET1, 1
//
BankField (OPR2, BNK2, 0, ByteAcc, NoLock, Preserve)
{
   FET0, 4,
   FET1, 3
}

Store ("++++++++ Creating IndexField", Debug)
IndexField (IDX2, DAT2, ByteAcc, NoLock, Preserve)
{
   FET2, 4,
   FET3, 3
}

Store ("++++++++ SizeOf (BUFO)", Debug)
SizeOf (BUFO)

Store ("++++++++ Store (SizeOf (BUFO), Local0)", Debug)
Store (SizeOf (BUFO), Local0)

Store ("++++++++ Concatenate (\"abd\", \"def\", Local0)", Debug)
Concatenate ("abd", "def", Local0)
Store (Local0, Debug)

Store ("++++++++ Concatenate (\"abd\", 0x7B, Local0)", Debug)
Concatenate ("abd", 0x7B, Local0)
Store (Local0, Debug)

Store ("++++++++ Creating Event EVT2", Debug)
Event (EVT2)

Store ("++++++++ Creating Mutex MTX2", Debug)
Mutex (MTX2, 0)
```

```
    Store ("++++++++ Creating Alias MTXA to MTX2", Debug)
    Alias (MTX2, MTXA)

    Store ("++++++++ Acquiring Mutex MTX2", Debug)
    Acquire (MTX2, 0xFFFF)

    Store ("++++++++ Acquiring Mutex MTX2 (2nd acquire)", Debug)
    Acquire (MTX2, 1)

    Store ("++++++++ Releasing Mutex MTX2", Debug)
    Release (MTX2)

    // Type 1 opcodes

    Store ("++++++++ Signalling Event EVT2", Debug)
    Signal (EVT2)

    Store ("++++++++ Resetting Event EVT2", Debug)
    Reset (EVT2)

    Store ("++++++++ Signalling Event EVT2", Debug)
    Signal (EVT2)

    Store ("++++++++ Waiting Event EVT2", Debug)
    Wait (EVT2, 0xFFFF)

    Store ("++++++++ Sleep", Debug)
    Sleep (100)

    Store ("++++++++ Stall", Debug)
    Stall (254)

    Store ("++++++++ NoOperation", Debug)
    Noop

    // Type 2 Opcodes

    Store ("++++++++ Return from Method OBJ2", Debug)
    return (4)
}


Method (NUM1, 0)
{
    /* ADD */

    Store ("++++++++ Add (0x12345678, 0x11111111, Local0)", Debug)
```

```
Add (0x12345678, 0x11111111, Local0)

Store ("++++++++ Store (Add (0x12345678, 0x11111111), Local1)", Debug)
Store (Add (0x12345678, 0x11111111), Local1)

Store ("++++++++ Checking result from ADD", Debug)
if (LNotEqual (Local0, Local1))
{
   ERR_ (0, __LINE__)
}


/* SUBTRACT */

Store ("++++++++ Subtract (0x87654321, 0x11111111, Local4)", Debug)
Subtract (0x87654321, 0x11111111, Local4)

Store ("++++++++ Store (Subtract (0x87654321, 0x11111111), Local5)", Debug)
Store (Subtract (0x87654321, 0x11111111), Local5)

Store ("++++++++ Checking result from SUBTRACT", Debug)
if (LNotEqual (Local4, Local5))
{
   ERR_ (0, __LINE__)
}


/* MULTIPLY */

Store ("++++++++ Multiply (33, 10, Local6)", Debug)
Multiply (33, 10, Local6)

Store ("++++++++ Store (Multiply (33, 10), Local7)", Debug)
Store (Multiply (33, 10), Local7)


Store ("++++++++ Checking result from MULTIPLY", Debug)
if (LNotEqual (Local6, Local7))
{
   ERR_ (0, __LINE__)
}


/* DIVIDE */

Store ("++++++++ Divide (100, 9, Local1, Local2)", Debug)
Divide (100, 9, Local1, Local2)
```

```
Store ("++++++++ Store (Divide (100, 9), Local3)", Debug)
Store (Divide (100, 9), Local3)

Store ("++++++++ Checking (quotient) result from DIVIDE", Debug)
if (LNotEqual (Local2, Local3))
{
   ERR_ (0, __LINE__)
}


/* INCREMENT */

Store ("++++++++ Increment (Local0)", Debug)
Store (1, Local0)
Store (2, Local1)
Increment (Local0)

Store ("++++++++ Checking result from INCREMENT", Debug)
if (LNotEqual (Local0, Local1))
{
   ERR_ (0, __LINE__)
}


/* DECREMENT */

Store ("++++++++ Decrement (Local0)", Debug)
Store (2, Local0)
Store (1, Local1)
Decrement (Local0)

Store ("++++++++ Checking result from DECREMENT", Debug)
if (LNotEqual (Local0, Local1))
{
   ERR_ (0, __LINE__)
}


/* TOBCD */
/* FROMBCD */

Store ("++++++++ ToBCD (0x1234, Local5)", Debug)
ToBCD (0x1234, Local5)

Store ("++++++++ FromBCD (Local5, Local6)", Debug)
FromBCD (Local5, Local6)

Store ("++++++++ Return (Local6)", Debug)
```

```
    Return (Local6)
}


Method (CHEK)
{

    Store (3, Local0)
    Store (3, Debug)
    Store (Local0, Debug)
    Store (7, Local1)

    Add (Local0, Local1)
    if (LNotEqual (Local0, 3))
    {
        ERR_ (2, __LINE__)
    }
    if (LNotEqual (Local1, 7))
    {
        ERR_ (2, __LINE__)
    }


    Add (Local0, Local1, Local2)
    if (LNotEqual (Local0, 3))
    {
        ERR_ (2, __LINE__)
    }
    if (LNotEqual (Local1, 7))
    {
        ERR_ (2, __LINE__)
    }
}


Method (RET1)
{
    Store (3, Local0)
    Return (Local0)
}

Method (RET2)
{
    Return (RET1())
}

Method (RETZ)
{
```

```
    RET2 ()
}


Method (BITZ)
{
    Store ("++++++++ FindSetLeftBit (0x00100100, Local0)", Debug)
    FindSetLeftBit (0x00100100, Local0)
    if (LNotEqual (Local0, 21))
    {
        ERR_ (1, __LINE__)
    }

    Store ("++++++++ FindSetRightBit (0x00100100, Local1)", Debug)
    FindSetRightBit (0x00100100, Local1)
    if (LNotEqual (Local1, 9))
    {
        ERR_ (1, __LINE__)
    }

    Store ("++++++++ And (0xF0F0F0F0, 0x11111111, Local2)", Debug)
    And (0xF0F0F0F0, 0x11111111, Local2)
    if (LNotEqual (Local2, 0x10101010))
    {
        ERR_ (1, __LINE__)
    }

    Store ("++++++++ NAnd (0xF0F0F0F0, 0x11111111, Local3)", Debug)
    NAnd (0xF0F0F0F0, 0x11111111, Local3)
    if (LNotEqual (Local3, 0xEFEFEFEF))
    {
        ERR_ (1, __LINE__)
    }

    Store ("++++++++ Or (0x11111111, 0x22222222, Local4)", Debug)
    Or (0x11111111, 0x22222222, Local4)
    if (LNotEqual (Local4, 0x33333333))
    {
        ERR_ (1, __LINE__)
    }

    Store ("++++++++ NOr (0x11111111, 0x22222222, Local5)", Debug)
    NOr (0x11111111, 0x22222222, Local5)
    if (LNotEqual (Local5, 0xCCCCCCCC))
    {
        ERR_ (1, __LINE__)
    }
```

```
    Store ("++++++++ XOr (0x11113333, 0x22222222, Local6)", Debug)
    XOr (0x11113333, 0x22222222, Local6)
    if (LNotEqual (Local6, 0x33331111))
    {
        ERR_ (1, __LINE__)
    }

    Store ("++++++++ ShiftLeft (0x11112222, 2, Local7)", Debug)
    ShiftLeft (0x11112222, 2, Local7)
    if (LNotEqual (Local7, 0x44448888))
    {
        ERR_ (1, __LINE__)
    }

    Store ("++++++++ ShiftRight (Local7, 2, Local7)", Debug)
    ShiftRight (Local7, 2, Local7)
    if (LNotEqual (Local7, 0x11112222))
    {
        ERR_ (1, __LINE__)
    }


    Store ("++++++++ Not (Local0, Local1)", Debug)
    Store (0x22224444, Local0)
    Not (Local0, Local1)
    if (LNotEqual (Local0, 0x22224444))
    {
        ERR_ (2, __LINE__)
    }

    if (LNotEqual (Local1, 0xDDDDBBBB))
    {
        ERR_ (1, __LINE__)
    }

    Return (Local7)
}


Method (LOGS)
{

    Store ("++++++++ Store (LAnd (0xFFFFFFFF, 0x11111111), Local0)", Debug)
    Store (LAnd (0xFFFFFFFF, 0x11111111), Local0)

    Store ("++++++++ Store (LEqual (0xFFFFFFFF, 0x11111111), Local)", Debug)
    Store (LEqual (0xFFFFFFFF, 0x11111111), Local1)
```

```
    Store ("++++++++ Store (LGreater (0xFFFFFFFF, 0x11111111), Local2)", Debug)
    Store (LGreater (0xFFFFFFFF, 0x11111111), Local2)

    Store ("++++++++ Store (LGreaterEqual (0xFFFFFFFF, 0x11111111), Local3)", Debug)
    Store (LGreaterEqual (0xFFFFFFFF, 0x11111111), Local3)

    Store ("++++++++ Store (LLess (0xFFFFFFFF, 0x11111111), Local4)", Debug)
    Store (LLess (0xFFFFFFFF, 0x11111111), Local4)

    Store ("++++++++ Store (LLessEqual (0xFFFFFFFF, 0x11111111), Local5)", Debug)
    Store (LLessEqual (0xFFFFFFFF, 0x11111111), Local5)

    Store ("++++++++ Store (LNot (0x31313131), Local6)", Debug)
    Store (0x00001111, Local6)
    Store (LNot (Local6), Local7)
    if (LNotEqual (Local6, 0x00001111))
    {
        ERR_ (2, __LINE__)
    }

    if (LNotEqual (Local7, 0x0))
    {
        ERR_ (1, __LINE__)
    }


    Store ("++++++++ Store (LNotEqual (0xFFFFFFFF, 0x11111111), Local7)", Debug)
    Store (LNotEqual (0xFFFFFFFF, 0x11111111), Local7)

    Store ("++++++++ Lor (0x0, 0x1)", Debug)
    if (Lor (0x0, 0x1))
    {
        Store ("+_+_+_+_+_+ Lor (0x0, 0x1) returned TRUE", Debug)
    }

    return (Local7)
}


Method (COND)
{
    Store ("++++++++ Store (0x4, Local0)", Debug)
    Store (0x4, Local0)

    Store ("++++++++ While (Local0)", Debug)
    While (Local0)
    {
        Store ("++++++++ Decrement (Local0)", Debug)
```

```
    Decrement (Local0)
}


Store ("++++++++ Store (0x3, Local6)", Debug)
Store (0x3, Local6)

Store ("++++++++ While (Subtract (Local6, 1))", Debug)
While (Subtract (Local6, 1))
{
    Store ("++++++++ Decrement (Local6)", Debug)
    Decrement (Local6)
}


Store ("++++++++ [LVL1] If (LGreater (0x2, 0x1))", Debug)
If (LGreater (0x2, 0x1))
{
    Store ("++++++++ [LVL2] If (LEqual (0x11111111, 0x22222222))", Debug)
    If (LEqual (0x11111111, 0x22222222))
    {
        Store ("++++++++ ERROR: If (LEqual (0x11111111, 0x22222222)) returned TRUE", Debug)
    }

    else
    {
        Store ("++++++++ [LVL3] If (LNot (0x0))", Debug)
        If (LNot (0x0))
        {
            Store ("++++++++ [LVL4] If (LAnd (0xEEEEEEEE, 0x2))", Debug)
            If (LAnd (0xEEEEEEEE, 0x2))
            {
                Store ("++++++++ [LVL5] If (LLess (0x44444444, 0x3))", Debug)
                If (LLess (0x44444444, 0x3))
                {
                    Store ("++++++++ ERROR: If (LLess (0x44444444, 0x3)) returned TRUE", Debug)
                }

                else
                {
                    Store ("++++++++ Exiting from nested IF/ELSE statements", Debug)
                }
            }
        }
    }
}
```

```
    Store ("++++++++ [LVL1] If (LGreater (0x2, 0x1))", Debug)
    If (LGreater (0x2, 0x1))
    {
        Store ("++++++++ [LVL2] If (LEqual (0x11111111, 0x22222222))", Debug)
        If (LEqual (0x11111111, 0x22222222))
        {
            Store ("++++++++ ERROR: If (LEqual (0x11111111, 0x22222222)) returned TRUE", Debug)
        }

        else
        {
            Store ("++++++++ [LVL3] If (LNot (0x0))", Debug)
            If (LNot (0x0))
            {
                Store ("++++++++ [LVL4] If (LAnd (0xEEEEEEEE, 0x2))", Debug)
                If (LAnd (0xEEEEEEEE, 0x2))
                {
                    Store ("++++++++ [LVL5] If (LLess (0x44444444, 0x3))", Debug)
                    If (LLess (0x44444444, 0x3))
                    {
                        Store ("++++++++ ERROR: If (LLess (0x44444444, 0x3)) returned TRUE", Debug)
                    }

                    else
                    {
                        Store ("++++++++ Returning from nested IF/ELSE statements", Debug)
                        Return (Local6)
                    }
                }
            }
        }
    }

}


Method (REFS,, Serialized)
{
    Name (BBUF, Buffer() {0xB0, 0xB1, 0xB2, 0xB3, 0xB4, 0xB5, 0xB6, 0xB7})

    Name (NEST, Package ()
    {
        Package ()
        {
            0x01, 0x02, 0x03, 0x04, 0x05, 0x06
        },
        Package ()
        {
```

```
            0x11, 0x12, 0x12, 0x14, 0x15, 0x16
        }
    })

    Store (RefOf (MAIN), Local5)

    // For this to work, ABCD must NOT exist.

    Store (CondRefOf (ABCD, Local0), Local1)
    if (LNotEqual (Local1, 0))
    {
        ERR_ (2, __LINE__)
    }

    Store (CondRefOf (BBUF, Local0), Local1)
    if (LNotEqual (Local1, Ones))
    {
        ERR_ (2, __LINE__)
    }

    Store (DeRefOf (Index (BBUF, 3)), Local6)
    if (LNotEqual (Local6, 0xB3))
    {
        ERR_ (2, __LINE__)
    }

    Store (DeRefOf (Index (DeRefOf (Index (NEST, 1)), 3)), Local0)
    if (LNotEqual (Local0, 0x14))
    {
        ERR_ (2, __LINE__)
    }


    Store (0x11223344, Local0)
    Store (RefOf (Local0), Local1)

    Store (DerefOf (Local1), Local2)
    If (LNotEqual (Local2, 0x11223344))
    {
        ERR_ (2, __LINE__)
    }


/* Parser thinks this is a method invocation!! */

//  RefOf (MAIN)
```

```
  //  RefOf (R___)
  //  RefOf (BBUF)

  //  Store (RefOf (Local0), Local1)

  //  CondRefOf (BBUF, Local2)
  //  CondRefOf (R___, Local3)

  //  Store (DerefOf (Local1), Local4)

  //  Return (Local4)
  }


  Method (INDX, 0, Serialized)
  {
     Name(STAT,Package(4){})
     Store(0x44443333,Index(STAT,0))
  }

//=========================================================================
//=========================================================================
//====================== iPCO TESTS ===============================
//=========================================================================
//=========================================================================
//
//
// test IfElseOp.asl
//
//  test for IfOp and ElseOp, including validation of object stack cleanup
//
  Device (IFEL)
  {
     Name (DWRD, 1)
     Name (RSLT, 0)

     //  IFNR control method executes IfOp branch with NO nested Return
     //  and no Else branch
     Method (IFNR)
     {
        Store (DWRD, RSLT)
        If (LEqual (DWRD, 1))
        {
           Store (0, RSLT)
        }
     }  //  IFNR

     //  NINR control method does not execute If branch and has no Else branch
```

```
Method (NINR)
{
   Store (0, RSLT)
   If (LNotEqual (DWRD, 1))
   {
      Store (DWRD, RSLT)
   }
}  //  NINR

//  IENR control method executes IfOp branch with NO nested Return
Method (IENR)
{
   If (LEqual (DWRD, 1))
   {
      Store (0, RSLT)
   }
   Else
   {
      Store (DWRD, RSLT)
   }
}  //  IENR

//  ELNR control method executes ElseOp branch with NO nested Return
Method (ELNR)
{
   If (LNotEqual (DWRD, 1))
   {
      Store (DWRD, RSLT)
   }
   Else
   {
      Store (0, RSLT)
   }
}  //  ELNR

//  IFRT control method executes IfOp branch with nested Return with
//  no Else branch
Method (IFRT)

{
   If (LEqual (DWRD, 1))
   {
      Return (0)
   }
   Return (DWRD)
}  //  IFRT

//  IERT control method executes IfOp branch with nested Return with
```

```
// Else branch
Method (IERT)
{
   If (LEqual (DWRD, 1))
   {
      Return (0)
   }
   Else
   {
      Return (DWRD)
   }
}  // IERT

// ELRT control method executes ElseOp branch with nested Return
Method (ELRT)
{
   If (LNotEqual (DWRD, 1))
   {
      Return (DWRD)
   }
   Else
   {
      Return (0)
   }
}  // ELRT

Method (TEST)
{
   Store ("++++++++ IfElseOp Test", Debug)

   // IfOp with NO return value
   IFNR()
   If (LNotEqual (RSLT, 0))
   {
      Return (RSLT)
   }

   // IfOp with NO return value
   NINR()
   If (LNotEqual (RSLT, 0))
   {
      Return (RSLT)
   }

   // IfOp with NO return value
   IENR()
   If (LNotEqual (RSLT, 0))
   {
```

```
            Return (RSLT)
        }

        //  ElseOp with NO return value
        ELNR()
        If (LNotEqual (RSLT, 0))
        {
            Return (RSLT)
        }

        //  IfOp with return value
        Store (IFRT, RSLT)
        If (LNotEqual (RSLT, 0))
        {
            Return (RSLT)
        }

        //  IfOp with return value
        Store (IERT, RSLT)
        If (LNotEqual (RSLT, 0))
        {
            Return (RSLT)
        }

        //  ElseOp with return value
        Store (ELRT, RSLT)
        If (LNotEqual (RSLT, 0))
        {
            Return (RSLT)
        }

        Return (0)
    }   //  TEST
  }   //  IFEL

//
// test NoSave.asl
//
//
//  Internal test cases to validate IfOp (Operator (,,)) where Operator
//  target is ZeroOp to throw away the results.
//  Includes internal test cases for logical operators with no destination
//  operands.
//
  Device (NOSV)
  {
    Method (TEST,, Serialized)
    {
```

```
Store ("++++++++ NoSave Test", Debug)

Name (WRD, 0x1234)

//
//  Begin test of nested operators without saving results
//

//  Test If (And ()) with no save of And result
If (And (3, 1, ))
{
   Store (1, WRD)  //  pass -- just do something
}
else
{
   Return (1)      //  fail
}

//  Test If (And ()) with no save of And result
If (And (4, 1, ))
{
   Return (2)      //  fail
}
else
{
   Store (2, WRD)  //  pass -- just do something
}


//  Test If (NAnd ()) with no save of NAnd result
If (NAnd (3, 1, ))
{
   Store (3, WRD)  //  pass -- just do something
}
else
{
   Return (3)      //  fail
}

//  Test If (NAnd ()) with no save of NAnd result
If (NAnd (0xFFFFFFFF, 0xFFFFFFFF, ))
{
   Return (4)      // fail
}
else
{
   Store (4, WRD)  //  pass -- just do something
}
```

```
// Test If (NOr ()) with no save of NOr result
If (NOr (0, 1, ))
{
   Store (5, WRD)  //  pass -- just do something
}
else
{
   Return (5)      //  fail
}

// Test If (NOr ()) with no save of NOr result
If (NOr (0xFFFFFFFE, 1, ))
{
   Return (6)      // fail
}
else
{
   Store (6, WRD)  //  pass -- just do something
}


// Test If (Not ()) with no save of Not result
If (Not (1, ))
{
   Store (7, WRD)  //  pass -- just do something
}
else
{
   Return (7)      //  fail
}

// Test If (Not ()) with no save of Not result
If (Not (0xFFFFFFFF, ))
{
   Return (8)      // fail
}
else
{
   Store (8, WRD)  //  pass -- just do something
}


// Test If (Or ()) with no save of Or result
If (Or (3, 1, ))
{
   Store (9, WRD)  //  pass -- just do something
```

```
}
else
{
   Return (9)      //  fail
}

//  Test If (Or ()) with no save of Or result
If (Or (0, 0, ))
{
   Return (10)     //  fail
}
else
{
   Store (10, WRD) //  pass -- just do something
}


//  Test If (XOr ()) with no save of XOr result
If (XOr (3, 1, ))
{
   Store (11, WRD) //  pass -- just do something
}
else
{
   Return (11)     // fail
}

//  Test If (XOr ()) with no save of XOr result
If (XOr (3, 3, ))
{
   Return (12)     // fail
}
else
{
   Store (12, WRD) //  pass -- just do something
}


//
//  Begin test of logical operators with no destination operands
//

//  Test If (LAnd ()) with no save of LAnd result
If (LAnd (3, 3))
{
   Store (21, WRD) //  pass -- just do something
}
else
```

```
{
   Return (21)     // fail
}

//  Test If (LAnd ()) with no save of LAnd result
If (LAnd (3, 0))
{
   Return (22)     // fail
}
else
{
   Store (22, WRD) //  pass -- just do something
}

//  Test If (LAnd ()) with no save of LAnd result
If (LAnd (0, 3))
{
   Return (23)     //  fail
}
else
{
   Store (23, WRD) //  pass -- just do something
}

//  Test If (LAnd ()) with no save of LAnd result
If (LAnd (0, 0))
{
   Return (24)     //  fail
}
else
{
   Store (24, WRD) //  pass -- just do something
}


//  Test If (LEqual ()) with no save of LEqual result
If (LEqual (3, 3))
{
   Store (31, WRD) //  pass -- just do something
}
else
{
   Return (31)     //  fail
}

//  Test If (LEqual ()) with no save of LEqual result
If (LEqual (1, 3))
{
```

```
   Return (32)     //  fail
}
else
{
   Store (32, WRD) //  pass -- just do something
}


//  Test If (LGreater ()) with no save of LGreater result
If (LGreater (3, 1))
{
   Store (41, WRD) //  pass -- just do something
}
else
{
   Return (41)     //  fail
}

//  Test If (LGreater ()) with no save of LGreater result
If (LGreater (4, 4))
{
   Return (42)     //  fail
}
else
{
   Store (42, WRD) //  pass -- just do something
}

//  Test If (LGreater ()) with no save of LGreater result
If (LGreater (1, 4))
{
   Return (43)     //  fail
}
else
{
   Store (43, WRD) //  pass -- just do something
}

//  Test If (LGreaterEqual ()) with no save of LGreaterEqual result
If (LGreaterEqual (3, 1))
{
   Store (44, WRD) //  pass -- just do something
}
else
{
   Return (44)     //  fail
}
```

```
//  Test If (LGreaterEqual ()) with no save of LGreaterEqual result
If (LGreaterEqual (3, 3))
{
   Store (45, WRD) //  pass -- just do something
}
else
{
   Return (45)     //  fail
}

//  Test If (LGreaterEqual ()) with no save of LGreaterEqual result
If (LGreaterEqual (3, 4))
{
   Return (46)     //  fail
}
else
{
   Store (46, WRD) //  pass -- just do something
}


//  Test If (LLess ()) with no save of LLess result
If (LLess (1, 3))
{
   Store (51, WRD) //  pass -- just do something
}
else
{
   Return (51)     //  fail
}

//  Test If (LLess ()) with no save of LLess result
If (LLess (2, 2))
{
   Return (52)     //  fail
}
else
{
   Store (52, WRD) //  pass -- just do something
}

//  Test If (LLess ()) with no save of LLess result
If (LLess (4, 2))
{
   Return (53)     //  fail
}
else
{
```

```
    Store (53, WRD) //  pass -- just do something
}


//  Test If (LLessEqual ()) with no save of LLessEqual result
If (LLessEqual (1, 3))
{
    Store (54, WRD) //  pass -- just do something
}
else
{
    Return (54)     //  fail
}

//  Test If (LLessEqual ()) with no save of LLessEqual result
If (LLessEqual (2, 2))
{
    Store (55, WRD) //  pass -- just do something
}
else
{
    Return (55)     //  fail
}

//  Test If (LLessEqual ()) with no save of LLessEqual result
If (LLessEqual (4, 2))
{
    Return (56)     //  fail
}
else
{
    Store (56, WRD) //  pass -- just do something
}


//  Test If (LNot ()) with no save of LNot result
If (LNot (0))
{
    Store (61, WRD) //  pass -- just do something
}
else
{
    Return (61)     //  fail
}

//  Test If (LNot ()) with no save of LNot result
If (LNot (1))
{
```

```
    Return (62)     //  fail
}
else
{
    Store (62, WRD) //  pass -- just do something
}


//  Test If (LNotEqual ()) with no save of LNotEqual result
If (LNotEqual (3, 3))
{
    Return (63)     //  fail
}
else
{
    Store (63, WRD) //  pass -- just do something
}

//  Test If (LNotEqual ()) with no save of LNotEqual result
If (LNotEqual (1, 3))
{
    Store (64, WRD) //  pass -- just do something
}
else
{
    Return (64)     //  fail
}


//  Test If (LOr ()) with no save of LOr result
If (LOr (3, 1))
{
    Store (71, WRD) //  pass -- just do something
}
else
{
    Return (71)     //  fail
}

//  Test If (LOr ()) with no save of LOr result
If (LOr (0, 1))
{
    Store (72, WRD) //  pass -- just do something
}
else
{
    Return (72)     //  fail
}
```

```
        //  Test If (LOr ()) with no save of LOr result
        If (LOr (3, 0))
        {
           Store (73, WRD) //  pass -- just do something
        }
        else
        {
           Return (73)     //  fail
        }

        //  Test If (LOr ()) with no save of LOr result
        If (LOr (0, 0))
        {
           Return (74)     //  fail
        }
        else
        {
           Store (74, WRD) //  pass -- just do something
        }

        Return (0)
     }   //  TEST
  }   //  NOSV


//
// test IndxFld.asl
//
//  IndexFld test
//      This is just a subset of the many RegionOp/Index Field test cases.
//      Tests index field element AccessAs macro.
//
  Device (IDXF)
  {   //  Test device name

     OperationRegion (SIO, SystemIO, 0x100, 2)
     Field (SIO, ByteAcc, NoLock, Preserve)
     {
        INDX,   8,
        DATA,   8
     }
     IndexField (INDX, DATA, AnyAcc, NoLock, WriteAsOnes)
     {
        AccessAs (ByteAcc, 0),
        IFE0,   8,
        IFE1,   8,
        IFE2,   8,
```

```
            IFE3,   8,
            IFE4,   8,
            IFE5,   8,
            IFE6,   8,
            IFE7,   8,
            IFE8,   8,
            IFE9,   8,
        }

        Method (TEST)
        {
            Store ("++++++++ IndxFld Test", Debug)

            Store (IFE0, Local0)
            Store (IFE1, Local1)
            Store (IFE2, Local2)

            Return (0)
        }   //  TEST
    }   //  IDXF

//
// test NestdLor.asl
//
    Scope (\_SB)    //  System Bus
    {   //  _SB system bus

        Name (ZER0, 0)
        Name (ZER1, 0)
        Name (ZER2, 0)
        Name (ONE0, 1)

        Device (NSTL)
        {
            Method (TEST)
            {
                Store ("++++++++ NestdLor Test", Debug)

                If (Lor (ZER0, Lor (ZER1, Lor (ZER2, ONE0))))
                {   //  Indicate Pass
                    Store (0x00, Local0)
                }

                Else
                {   //  Indicate Fail
                    Store (0x01, Local0)
                }
```

```
            Return (Local0)
        }   //  End Method TEST
    }   //  Device NSTL
}   //  _SB system bus

//
// test RetBuf.asl
//
//  Test ReturnOp(Buffer)
//     This is required to support Control Method Batteries on
//        Dell Latitude Laptops (e.g., CP1-A)
//
  Device (RTBF)
  {
    Method (SUBR, 1)
    {
      Return (Arg0)
    }

    Method (RBUF,, Serialized)
    {   //  RBUF: Return Buffer from local variable
      Name (ABUF, Buffer() {"ARBITRARY_BUFFER"})

      //  store local buffer ABUF into Local0
      Store (ABUF, Local0)

      //  save Local0 object type value into Local1
      Store (ObjectType (Local0), Local1)

      //  validate Local0 is a Buffer
      If (LNotEqual (Local1, 3))  //  Buffer type is 3
      {
        Return (1)      //  failure
      }

      //  store value returned by control method SUBR into Local0
      Store (SUBR (ABUF), Local0)

      //  save Local0 object type value into Local1
      Store (ObjectType (Local0), Local1)

      //  validate Local0 is a Buffer
      If (LNotEqual (Local1, 3))  //  Buffer type is 3
      {
        Return (2)      //  failure
      }

      //  allocate buffer using Local1 as buffer size (run-time evaluation)
```

```
    Store (5, Local1)
    Name (BUFR, Buffer(Local1) {})

    //  store value returned by control method SUBR into Local0
    Store (SUBR (BUFR), Local0)

    //  save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    //  validate Local0 is a Buffer
    If (LNotEqual (Local1, 3))  //  Buffer type is 3
    {
       Return (3)      //  failure
    }

    //  store BUFR Buffer into Local0
    Store (BUFR, Local0)

    //  save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    //  validate Local0 is a Buffer
    If (LNotEqual (Local1, 3))  //  Buffer type is 3
    {
       Return (4)      //  failure
    }


    //  return Local0 Buffer
    Return (Local0)
}   //  RBUF

Method (TEST)
{
    Store ("++++++++ RetBuf Test", Debug)

    //  store RBUF Buffer return value into Local0
    Store (RBUF, Local0)

    //  save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    //  validate Local0 is a Buffer
    If (LNotEqual (Local1, 3))  //  Buffer type is 3
    {
       Return (10)     //  failure
    }
    Else
```

```
        {
            Return (0)      //  success
        }
    }   //  TEST
}   //  RTBF

//
// test RetLVal.asl
//
//  Test ReturnOp(Lvalue)
//      This is required to support _PSR on IBM ThinkPad 560D and
//      _DCK on Toshiba Tecra 8000.
//

  Device (GPE2)
  {
    Method (_L03)
    {
      Store ("Method GPE2._L03 invoked", Debug)
      Return ()
    }

    Method (_E05)
    {
      Store ("Method GPE2._E05 invoked", Debug)
      Return ()
    }
  }

  Device (PRW2)
  {
    Name (_PRW, Package(2) {Package(2){\GPE2, 0x05}, 3})
  }


  Scope (\_GPE)
  {
    Name (ACST, 0xFF)

    Method (_L08)
    {
      Store ("Method _GPE._L08 invoked", Debug)
      Return ()
    }

    Method (_E09)
    {
      Store ("Method _GPE._E09 invoked", Debug)
```

```
      Return ()
   }

   Method (_E11)
   {
      Store ("Method _GPE._E11 invoked", Debug)
      Notify (\PRW1, 2)
   }

   Method (_L22)
   {
      Store ("Method _GPE._L22 invoked", Debug)
      Return ()
   }

   Method (_L33)
   {
      Store ("Method _GPE._L33 invoked", Debug)
      Return ()
   }

   Method (_E64)
   {
      Store ("Method _GPE._E64 invoked", Debug)
      Return ()
   }

}  //  _GPE

Device (PRW1)
{
   Name (_PRW, Package(2) {0x11, 3})
}

Device (PWRB)
{
   Name (_HID, EISAID("PNP0C0C"))
   Name (_PRW, Package(2) {0x33, 3})
}


Scope (\_SB)    //  System Bus
{   //  _SB system bus

   Device (ACAD)
   {   //  ACAD:   AC adapter device
      Name (_HID, "ACPI0003") //  AC adapter device
```

```
    Name (_PCL, Package () {\_SB})

    OperationRegion (AREG, SystemIO, 0x0372, 2)
    Field (AREG, ByteAcc, NoLock, Preserve)
    {
      AIDX,   8,
      ADAT,   8
    }
    IndexField (AIDX, ADAT, ByteAcc, NoLock, Preserve)
    {
        ,  1,  //  skips
      ACIN,   1,
        ,  2,  //  skips
      CHAG,   1,
        ,  3,  //  skips
        ,  7,  //  skips
      ABAT,   1,
    }   //  IndexField

    Method (_PSR)
    {
      Store (\_GPE.ACST, Local0)
      Store (ACIN, Local1)
      If (LNotEqual (\_GPE.ACST, Local1))
      {
        Store (Local1, \_GPE.ACST)
        // This Notify is commented because it causes a
        //  method error when running on a system without the
        //  specific device.
        // Notify (\_SB_.ACAD, 0)
      }
      Return (Local0)
    }   //  _PSR

    Method (_STA)
    {
      Return (0x0F)
    }

    Method (_INI)
    {
      Store (ACIN, \_GPE.ACST)
    }
  }   //  ACAD:   AC adapter device

  //  test implicit return from control method
  Method (DIS_, 1)
  {
```

```
    Store (Arg0, Local0)
}

Device (RTLV)
{
    //  test implicit return inside nested if with explicit return of Lvalue
    Method (_DCK, 1)
    //  Arg0:   1 == dock, 0 == undock
    {
        If (Arg0)
        {   //  dock
            Store (0x87, Local0)

            If (Local0)
            {
                DIS_ (0x23)
                Return (1)
            }

            Return (0)
        }   //  dock
        Else
        {   //  undock
            Store (Arg0, Local0)

            If (Local0)
            {
                DIS_ (0x23)
                Return (1)
            }

            Return (0)
        }   //  undock
    }   //  _DCK control method

    Method (TEST)
    {
        Store ("++++++++ RetLVal Test", Debug)

        //  store _PSR return value into Local0
        Store (\_SB_.ACAD._PSR, Local0)

        //  save Local0 object type value into Local1
        Store (ObjectType (Local0), Local1)

        //  validate Local0 is a Number
        If (LNotEqual (Local1, 1))  //  Number/Integer type is 1
        {
```

```
            Return (1)      //  failure
          }

          //  test implicit return inside nested if with explicit return of Lvalue
          Store (_DCK (1), Local2)

          //  save Local2 object type value into Local3
          Store (ObjectType (Local2), Local3)

          //  validate Local2 is a Number
          If (LNotEqual (Local3, 1))  //  Number/Integer type is 1
          {
            Return (2)      //  failure
          }

          If (LNotEqual (Local2, 1))
          {
            Return (3)      //  failure
          }

          Return (0)  //  success
        }   //  TEST
      }   //  RTLV
    }   //  _SB system bus

//
// test RetPkg.asl
//
//  Test ReturnOp(Package)
//      This is required to support _PRT on Dell Optiplex Workstations (e.g. GX1)
//

  Scope (\_SB)    //  System Bus
  {   //  _SB system bus
    Device(LNKA)
    {
      Name (_HID, EISAID("PNP0C0F"))  //  PCI interrupt link
      Name (_UID, 1)
    }
    Device(LNKB)
    {
      Name (_HID, EISAID("PNP0C0F"))  //  PCI interrupt link
      Name (_UID, 2)
    }
    Device(LNKC)
    {
      Name (_HID, EISAID("PNP0C0F"))  //  PCI interrupt link
      Name (_UID, 3)
```

```
}
Device(LNKD)
{
   Name (_HID, EISAID("PNP0C0F"))  //  PCI interrupt link
   Name (_UID, 4)
}

Device (PCI1)
{   //  PCI1:   Root PCI Bus
   Name (_HID, "PNP0A03")  //  Need _HID for root device (String format)
   Name (_ADR,0x00000000)
   Name (_CRS,0)

   Name (_PRT, Package ()
   {
      Package () {0x0004ffff, 0, LNKA, 0},          //  Slot 1, INTA
      Package () {0x0004ffff, 1, LNKB, 0},          //  Slot 1, INTB
      Package () {0x0004ffff, 2, LNKC, 0},          //  Slot 1, INTC
      Package () {0x0004ffff, 3, LNKD, 0},          //  Slot 1, INTD
      Package () {0x0005ffff, 0, \_SB_.LNKB, 0},  //  Slot 2, INTA
      Package () {0x0005ffff, 1, \_SB_.LNKC, 0},  //  Slot 2, INTB
      Package () {0x0005ffff, 2, \_SB_.LNKD, 0},  //  Slot 2, INTC
      Package () {0x0006ffff, 3, \_SB_.LNKA, 0},  //  Slot 2, INTD
      Package () {0x0006ffff, 0, LNKC, 0},          //  Slot 3, INTA
      Package () {0x0006ffff, 1, LNKD, 0},          //  Slot 3, INTB
      Package () {0x0006ffff, 2, LNKA, 0},          //  Slot 3, INTC
      Package () {0x0006ffff, 3, LNKB, 0},          //  Slot 3, INTD
   })

   Device (PX40)
   {   // Map f0 space, Start PX40
      Name (_ADR,0x00070000)  //  Address+function.
   }
}   //  PCI0:   Root PCI Bus

Device (RETP)
{
   Method (RPKG)
   {   //  RPKG: Return Package from local variable

      //  store _PRT package into Local0
      Store (\_SB_.PCI1._PRT, Local0)

      //  return Local0 Package
      Return (Local0)
   }   //  RPKG

   Method (TEST)
```

```
        {
            Store ("++++++++ RetPkg Test", Debug)

            //  store RPKG package return value into Local0
            Store (RPKG, Local0)

            //  save Local0 object type value into Local1
            Store (ObjectType (Local0), Local1)

            //  validate Local0 is a Package
            If (LNotEqual (Local1, 4))  //  Package type is 4
                {   Return (1)  }   //  failure
            Else
                {   Return (0)  }   //  success
        }   //  TEST
    }   //  RETP
  } // _SB_

//
// test WhileRet.asl
//
//  WhileRet.asl tests a ReturnOp nested in a IfOp nested in a WhileOp.
//
  Device (WHLR)
  {
     Name (LCNT, 0)
     Method (WIR)
     {   //  WIR:    control method that returns inside of IfOp inside of WhileOp
        While (LLess (LCNT, 4))
        {
              If (LEqual (LCNT, 2))
              {
                 Return (0)
              }

           Increment (LCNT)
        }

        Return (LCNT)
     }   //  WIR:    control method that returns inside of IfOp inside of WhileOp

     Method (TEST)
     {
        Store ("++++++++ WhileRet Test", Debug)

        Store (WIR, Local0)

        Return (Local0)
```

```
    }  //  TEST
  }  //  WHLR

//
// test AndOrOp.asl
//
//This code tests the bitwise AndOp and OrOp Operator terms
//
//Syntax of Andop term
//And - Bitwise And
//AndTerm   := And(
//  Source1,    //TermArg=>Integer
//  Source2,    //TermArg=>Integer
//  Result  //Nothing | SuperName
//) => Integer
//Source1 and Source2 are evaluated as integer data types,
// a bit-wise AND is performed, and the result is optionally
//stored into Result.
//
//
//Syntax of OrOp
//Or - Bit-wise Or
//OrTerm    := Or(
//  Source1,    //TermArg=>Integer
//  Source2 //TermArg=>Integer
//  Result  //Nothing | SuperName
//) => Integer
//Source1 and Source2 are evaluated as integer data types,
// a bit-wide OR is performed, and the result is optionally
//stored in Result
//
  Device (ANDO)
  {
     OperationRegion (TMEM, SystemMemory, 0xC4, 0x02)
     Field (TMEM, ByteAcc, NoLock, Preserve)
     {
           ,   3,
        TOUD,   13
     }

     //Create System Memory Operation Region and field overlays
     OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
     Field (RAM, AnyAcc, NoLock, Preserve)
     {
        SMDW,   32, //  32-bit DWORD
        SMWD,   16, //  16-bit WORD
        SMBY,   8,  //  8-bit BYTE
     }// Field(RAM)
```

```
//And with Byte Data
Name (BYT1, 0xff)
Name (BYT2, 0xff)
Name (BRSL, 0x00)

//And with Word Data
Name (WRD1, 0xffff)
Name (WRD2, 0xffff)
Name (WRSL, 0x0000)

//And with DWord Data
Name (DWD1, 0xffffffff)
Name (DWD2, 0xffffffff)
Name (DRSL, 0x00000000)

Method (ANDP)
{
   //Check with 1 And 1 on byte data
   And(BYT1, BYT2, BRSL)
   if(LNotEqual(BRSL,0xff))
   {Return(1)}

   //Check with 1 And 1 on Word data
   And(WRD1, WRD2, WRSL)
   if(LNotEqual(WRSL,0xffff))
   {
      Return (1)     //  failure
   }

   //Check with 1 And 1 Dword
   And(DWD1, DWD2, DRSL)
   if(LNotEqual(DRSL,0xffffffff))
   {
      Return (1)     //  failure
   }

   //Check with 0 And 0 on byte data
   Store(0x00,BYT1)
   Store(0x00,BYT2)
   Store(0x00,BRSL)
   And(BYT1, BYT2, BRSL)
   if(LNotEqual(BRSL,0x00))
   {
      Return (1)     //  failure
   }
```

```
//Check with 0 And 0 on Word data
Store (0x0000,WRD1)
Store (0x0000,WRD2)
Store (0x0000,WRSL)
And(WRD1, WRD2, WRSL)
if(LNotEqual(WRSL,0x0000))
{
   Return (1)      //  failure
}

//Check with 0 And 0 Dword
Store (0x00000000,DWD1)
Store (0x00000000,DWD2)
Store (0x00000000,DRSL)
And(DWD1, DWD2, DRSL)
if(LNotEqual(DRSL,0x00000000))
{
   Return (1)      //  failure
}


//Check with 1 And 0 on byte data
Store(0x55,BYT1)
Store(0xAA,BYT2)
Store(0x00,BRSL)
And(BYT1, BYT2, BRSL)
if(LNotEqual(BRSL,0x00))
{
   Return (1)      //  failure
}

//Check with 1 And 0 on Word data
Store (0x5555,WRD1)
Store (0xAAAA,WRD2)
Store (0x0000,WRSL)
And(WRD1, WRD2, WRSL)
if(LNotEqual(WRSL,0x0000))
{
   Return (1)      //  failure
}

//Check with 1 And 0 on Dword
Store (0x55555555,DWD1)
Store (0xAAAAAAAA,DWD2)
Store (0x00000000,DRSL)
And(DWD1, DWD2, DRSL)
if(LNotEqual(DRSL,0x00000000))
{
```

```
        Return (1)      //  failure
    }

    Store (0x1FFF, TOUD)
    Store (TOUD, Local0)
    if(LNotEqual(Local0,0x1FFF))
    {
        Return (1)      //  failure
    }

    //TBD- Do We need to check for system memory data also for each test case ??

    Return(0)

}//ANDP

Method (OROP)
{

    //Check with 1 Ored with 1 on byte data
    Store(0xff,BYT1)
    Store(0xff,BYT2)
    Store(0x00,BRSL)
    Or(BYT1, BYT2, BRSL)
    if(LNotEqual(BRSL,0xff))
    {
        Return (1)      //  failure
    }


    //Check with 1 Ored with 1 on Word data
    Store(0xffff,WRD1)
    Store(0xffff,WRD2)
    Store(0x0000,WRSL)
    Or(WRD1, WRD2, WRSL)
    if(LNotEqual(WRSL,0xffff))
    {
        Return (1)      //  failure
    }

    //Check with 1 Ored with 1 on Dword data
    Store(0xffffffff,DWD1)
    Store(0xffffffff,DWD2)
    Store(0x00000000,DRSL)
    Or(DWD1, DWD2, DRSL)
    if(LNotEqual(DRSL,0xffffffff))
    {
        Return (1)      //  failure
```

```
}

//Check with 0 Ored with 0 on byte data
Store(0x00,BYT1)
Store(0x00,BYT2)
Store(0x00,BRSL)
Or(BYT1, BYT2, BRSL)
if(LNotEqual(BRSL,0x00))
{
   Return (1)      //  failure
}

//Check with 0 Ored with 0 on Word data
Store (0x0000,WRD1)
Store (0x0000,WRD2)
Store (0x0000,WRSL)
Or(WRD1, WRD2, WRSL)
if(LNotEqual(WRSL,0x0000))
{
   Return (1)      //  failure
}

//Check with 0 Ored with  0 Dword data
Store (0x00000000,DWD1)
Store (0x00000000,DWD2)
Store (0x00000000,DRSL)
Or(DWD1, DWD2, DRSL)
if(LNotEqual(DRSL,0x00000000))
{
   Return (1)      //  failure
}


//Check with 1 Ored with 0 on byte data
Store(0x55,BYT1)
Store(0xAA,BYT2)
Store(0x00,BRSL)
Or(BYT1, BYT2, BRSL)
if(LNotEqual(BRSL,0xff))
{
   Return (1)      //  failure
}

//Check with 1 Ored with 0 on Word data
Store (0x5555,WRD1)
Store (0xAAAA,WRD2)
Store (0x0000,WRSL)
Or(WRD1, WRD2, WRSL)
```

```
    if(LNotEqual(WRSL,0xffff))
    {
       Return (1)      //  failure
    }

    //Check with 1 Ored with 0 on Dword data
    Store (0x55555555,DWD1)
    Store (0xAAAAAAAA,DWD2)
    Store (0x00000000,DRSL)
    Or(DWD1, DWD2, DRSL)
    if(LNotEqual(DRSL,0xffffffff))
    {
       Return (1)      //  failure
    }

    //TBD - Do We need to check for system memory data also for each test case ??

    Return(0)

}//OROP

Method(TEST,, Serialized)
{
    Store ("++++++++ AndOrOp Test", Debug)

    Name(RSLT,1)
    //Call Andop method
    Store(ANDP,RSLT)
    if(LEqual(RSLT,1))
    {
       Return (RSLT)
    }

    //Call OrOp Method
    Store(OROP,RSLT)
    if(LEqual(RSLT,1))
    {
       Return(RSLT)
    }

    //
    // Return original conditions to allow iterative execution
    //
    Store(0xff,BYT1)
    Store(0xff,BYT2)
    Store(0x00,BRSL)
    Store (0xffff,WRD1)
    Store (0xffff,WRD2)
```

```
        Store (0x0000,WRSL)
        Store (0xffffffff,DWD1)
        Store (0xffffffff,DWD2)
        Store (0x00000000,DRSL)

        Return(0)
    }   //TEST
  }   //ANDO

//
// test BreakPnt.asl
//
// This code tests the BreakPoint opcode term. The syntax of BreakPoint Term is
// BreakPointTerm    := BreakPoint
// Used for debugging, the Breakpoint opcode stops the execution and enters the AML debugger.
// In the non-debug version of the interpreter, BreakPoint is equivalent to Noop.
//
  Device (BRKP)
  {
    Name(CNT0,0)

    Method (BK1)
    {
      BreakPoint
      Return(0)
    }

    Method (TEST)
    {
      Store ("++++++++ BreakPnt Test", Debug)

      Store(0,CNT0)

      //Check BreakPoint statement
      While(LLess(CNT0,10))
      {
        Increment(CNT0)
      }

      //Check the BreakPoint statement
      If(LEqual(CNT0,10))
      {
//          BreakPoint
        Return(0)
      }

      //failed
      Return(1)
```

```
    }
  }

//
// test AddSubOp.asl
//
  Device (ADSU)
  {
    // create System Memory Operation Region and field overlays
    OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
    Field (RAM, AnyAcc, NoLock, Preserve)
    {
      SMDW,   32, // 32-bit DWORD
      SMWD,   16, // 16-bit WORD
      SMBY,   8,  // 8-bit BYTE
    }  // Field(RAM)

    Method (TEST,, Serialized)
    {
      Store ("++++++++ AddSubOp Test", Debug)

      Name (DWRD, 0x12345678)
      Name (WRD, 0x1234)
      Name (BYT, 0x12)

      // Test AddOp with DWORD data
      Store (0x12345678, DWRD)
      Add (DWRD, 7, DWRD)
      If (LNotEqual (DWRD, 0x1234567F))
        {   Return (DWRD)   }

      // Test AddOp with WORD data
      Add (WRD, 5, WRD)
      If (LNotEqual (WRD, 0x1239))
        {   Return (WRD)    }

      // Test AddOp with BYTE data
      Add (BYT, 3, BYT)
      If (LNotEqual (BYT, 0x15))
        {   Return (BYT)    }

      // Test SubtractOp with DWORD data
      Subtract (DWRD, 7, DWRD)
      If (LNotEqual (DWRD, 0x12345678))
        {   Return (DWRD)   }

      // Test SubtractOp with WORD data
      Subtract (WRD, 3, WRD)
```

```
        If (LNotEqual (WRD, 0x1236))
            {   Return (WRD)    }

        //  Test SubtractOp with BYTE data
        Subtract (BYT, 3, BYT)
        If (LNotEqual (BYT, 0x12))
            {   Return (BYT)    }


        //  test AddOp with DWORD SystemMemory OpRegion
        Store (0x01234567, SMDW)
        Add (SMDW, 8, SMDW)
        If (LNotEqual (SMDW, 0x0123456F))
            {   Return (SMDW)   }

        //  test SubtractOp with DWORD SystemMemory OpRegion
        Subtract (SMDW, 7, SMDW)
        If (LNotEqual (SMDW, 0x01234568))
            {   Return (SMDW)   }


        //  test AddOp with WORD SystemMemory OpRegion
        Store (0x0123, SMWD)
        Add (SMWD, 6, SMWD)
        If (LNotEqual (SMWD, 0x0129))
            {   Return (SMWD)   }

        //  test SubtractOp with WORD SystemMemory OpRegion
        Subtract (SMWD, 5, SMWD)
        If (LNotEqual (SMWD, 0x0124))
            {   Return (SMWD)   }


        //  test AddOp with BYTE SystemMemory OpRegion
        Store (0x01, SMBY)
        Add (SMBY, 4, SMBY)
        If (LNotEqual (SMBY, 0x05))
            {   Return (SMBY)   }

        //  test SubtractOp with BYTE SystemMemory OpRegion
        Subtract (SMBY, 3, SMBY)
        If (LNotEqual (SMBY, 0x02))
            {   Return (SMBY)   }

        Return (0)
    }   //  TEST
}   //  ADSU
```

```
//
// test IncDecOp.asl
//
  Device (INDC)
  {
    // create System Memory Operation Region and field overlays
    OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
    Field (RAM, AnyAcc, NoLock, Preserve)
    {
      SMDW,   32, // 32-bit DWORD
      SMWD,   16, // 16-bit WORD
      SMBY,   8,  // 8-bit BYTE
    }   // Field(RAM)

    Method (TEST,, Serialized)
    {
      Store ("++++++++ IncDecOp Test", Debug)

      Name (DWRD, 0x12345678)
      Name (WRD, 0x1234)
      Name (BYT, 0x12)

      // Test IncrementOp with DWORD data
      Store (0x12345678, DWRD)
      Increment (DWRD)
      If (LNotEqual (DWRD, 0x12345679))
        {   Return (DWRD)   }

      // Test IncrementOp with WORD data
      Increment (WRD)
      If (LNotEqual (WRD, 0x1235))
        {   Return (WRD)    }

      // Test IncrementOp with BYTE data
      Increment (BYT)
      If (LNotEqual (BYT, 0x13))
        {   Return (BYT)    }

      // Test DecrementOp with DWORD data
      Decrement (DWRD)
      If (LNotEqual (DWRD, 0x12345678))
        {   Return (DWRD)   }

      // Test DecrementOp with WORD data
      Decrement (WRD)
      If (LNotEqual (WRD, 0x1234))
        {   Return (WRD)    }
```

```
        //  Test DecrementOp with BYTE data
        Decrement (BYT)
        If (LNotEqual (BYT, 0x12))
           {   Return (BYT)    }


        //  test IncrementOp with DWORD SystemMemory OpRegion
        Store (0x01234567, SMDW)
        Increment (SMDW)
        If (LNotEqual (SMDW, 0x01234568))
           {   Return (SMDW)   }

        //  test DecrementOp with DWORD SystemMemory OpRegion
        Decrement (SMDW)
        If (LNotEqual (SMDW, 0x01234567))
           {   Return (SMDW)   }


        //  test IncrementOp with WORD SystemMemory OpRegion
        Store (0x0123, SMWD)
        Increment (SMWD)
        If (LNotEqual (SMWD, 0x0124))
           {   Return (SMWD)   }

        //  test DecrementOp with WORD SystemMemory OpRegion
        Decrement (SMWD)
        If (LNotEqual (SMWD, 0x0123))
           {   Return (SMWD)   }


        //  test IncrementOp with BYTE SystemMemory OpRegion
        Store (0x01, SMBY)
        Increment (SMBY)
        If (LNotEqual (SMBY, 0x02))
           {   Return (SMBY)   }

        //  test DecrementOp with BYTE SystemMemory OpRegion
        Decrement (SMBY)
        If (LNotEqual (SMBY, 0x01))
           {   Return (SMBY)   }

        Return (0)
     }   //  TEST
  }   //  INDC

//
// test LOps.asl
//
```

```
//This source tests all the logical operators. Logical operators in ASL are as follows.
//LAnd, LEqual, LGreater, LLess, LNot, LNotEqual, LOr.
// Success will return 0 and failure will return a non zero number. Check the source code for
// non zero number to find where the test failed

  Device (LOPS)
  {
     //Create System Memory Operation Region and field overlays
     OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
     Field (RAM, AnyAcc, NoLock, Preserve)
     {
        SMDW,   32, //  32-bit DWORD
        SMWD,   16, //  16-bit WORD
        SMBY,   8,  //  8-bit BYTE
     }// Field(RAM)

     //And with Byte Data
     Name (BYT1, 0xff)
     Name (BYT2, 0xff)
     Name (BRSL, 0x00)

     //And with Word Data
     Name (WRD1, 0xffff)
     Name (WRD2, 0xffff)
     Name (WRSL, 0x0000)

     //And with DWord Data
     Name (DWD1, 0xffffffff)
     Name (DWD2, 0xffffffff)
     Name (DRSL, 0x00000000)

     Name(RSLT,1)

     Method (ANDL,2) // Test Logical And
     {
        //test with the arguments passed
        if(LEqual(Arg0,Arg1))
        { Store(LAnd(Arg0,Arg1),RSLT)
           if(LNotEqual(Ones,RSLT))
           {Return(11)}
        }

        //test with he locals
        Store(Arg0,Local0)
        Store(Arg1,Local1)

        if(LEqual(Local0,Local1))
        {
```

```
   Store(LAnd(Local0,Local1),RSLT)
   if(LNotEqual(Ones,RSLT))
      {Return(12)}
}

//test with BYTE data
if(LEqual(BYT1,BYT2))
{ Store(LAnd(BYT1,BYT2),BRSL)
   if(LNotEqual(Ones,BRSL))
   {Return(13)}
}

//test with WORD data
if(LEqual(WRD1,WRD2))
{ Store(LAnd(WRD1,WRD2),WRSL)
   if(LNotEqual(Ones,WRSL))
   {Return(14)}
}

//test with DWORD data
if(LEqual(DWD1,DWD2))
{ Store(LAnd(DWD1,DWD2),DRSL)
   if(LNotEqual(Ones,DRSL))
   {Return(15)}
}

//Test for system memory data for each test case.

   Store(0xff,BYT1)
   Store(0xff,SMBY)
   Store(0x00,BRSL)

//test with BYTE system memory data
if(LEqual(BYT1,SMBY))
{ Store(LAnd(BYT1,SMBY),BRSL)
   if(LNotEqual(Ones,BRSL))
   {Return(16)}
}

Store (0xffff,WRD1)
Store(0xffff,SMWD)
Store(0x0000,WRSL)
//test with WORD system memory data
if(LEqual(WRD1,SMWD))
{ Store(LAnd(WRD1,SMWD),WRSL)
   if(LNotEqual(Ones,WRSL))
   {Return(17)}
}
```

```
    Store(0x000000,DRSL)
    Store (0xffffff,DWD1)
    Store(0xffffff,SMDW)

    //test with DWORD system memory data
    if(LEqual(DWD1,SMDW))
    { Store(LAnd(DWD1,SMDW),DRSL)
      if(LNotEqual(Ones,DRSL))
      {Return(18)}
    }

    Return(0)

}//ANDL

//Test the LOr Operator

Method (ORL_,2)
{//ORL_

    //test with the arguments passed
    if(LEqual(Arg0,Arg1))
    {
      Store(LOr(Arg0,Arg1),RSLT)
      if(LNotEqual(Ones,RSLT))
      {
        Return(21)
      }
    }

    //test with he locals
    Store(Arg0,Local0)
    Store(Arg1,Local1)

    if(LEqual(Local0,Local1))
    {
      Store(LOr(Local0,Local1),RSLT)
      if(LNotEqual(Ones,RSLT))
        {Return(22)}
    }

    //Check with 1 LOred with 0 on byte data
    Store(0xff,BYT1)
    Store(0x00,BYT2)
    Store(0x00,BRSL)

    if(LNotEqual(BYT1, BYT2))
```

```
{
   Store(LOr(BYT1, BYT2), BRSL)
   if(LNotEqual(Ones,BRSL))
   {Return(23)}
}

//Check with 1 LOred with 0 on WORD data
Store(0xffff,WRD1)
Store(0x0000,WRD2)
Store(0x0000,WRSL)

if(LNotEqual(WRD1, WRD2))
{
   Store(LOr(WRD1, WRD2), WRSL)
   if(LNotEqual(Ones,WRSL))
   {Return(24)}
}

//Check with 1 LOred with 0 on DWORD data
Store(0xffffffff,DWD1)
Store(0x00000000,DWD2)
Store(0x00000000,DRSL)

if(LNotEqual(DWD1, DWD2))
{
   Store(LOr(DWD1, DWD2), DRSL)
   if(LNotEqual(Ones,DRSL))
   {Return(25)}
}

Store(0x00,BYT1)
Store(0xff,SMBY)
Store(0x00,BRSL)

//test with BYTE system memory data
if(LEqual(BYT1,SMBY))
{ Store(LOr(BYT1,SMBY),BRSL)
   if(LNotEqual(Ones,BRSL))
   {Return(26)}
}

Store (0x0000,WRD1)
Store(0xffff,SMWD)
Store(0x0000,WRSL)

//test with WORD system memory data
if(LEqual(WRD1,SMWD))
{ Store(LOr(WRD1,SMWD),WRSL)
```

```
        if(LNotEqual(Ones,WRSL))
        {Return(27)}
    }


    Store(0x00000000,DWD1)
    Store(0xffffffff,SMDW)
    Store(0x00000000,DRSL)

    //test with DWORD system memory data
    if(LEqual(DWD1,SMDW))
    { Store(LAnd(DWD1,SMDW),DRSL)
        if(LNotEqual(Ones,DRSL))
        {Return(28)}
    }
    Return(0)

}//ORL_

//This method tests LGreater and LNot operator
Method(LSGR,2)
{//LSGR

    //Test on arguements passed

    //in test data, Arg1 > Arg0
    if(LEqual(Ones,LNot(LGreater(Arg1,Arg0))))
    {Return(31)}

    //test LLessEqual
    if(LEqual(Ones,LNot(LGreaterEqual(Arg1,Arg0))))
    {Return(32)}

    if(LEqual(Ones,LLess(Arg1,Arg0)))
    {Return(33)}

    //test LLessEqual
    if(LEqual(Ones,LLessEqual(Arg1,Arg0)))
    {Return(34)}

    Store(Arg0,Local0)
    Store(Arg1,Local1)

    //test with the locals
    if(LNot(LGreater(Local1,Local0)))
        {Return(35)}

    //test on Byte data
```

```
Store(0x12,BYT1)
Store(0x21,BYT2)

if(LNot(LGreater(BYT2,BYT1)))
   {Return(36)}

if(LNot(LLess(BYT1,BYT2)))
   {Return(37)}

//test LGreaterEqual with byte data
if(LNot(LGreaterEqual(BYT2,BYT1)))
   {Return(38)}

//test LLessEqual byte data
if(LNot(LLessEqual(BYT1,BYT2)))
   {Return(39)}


//test on Word data
Store(0x1212,WRD1)
Store(0x2121,WRD2)

if(LNot(LGreater(WRD2,WRD1)))
   {Return(310)}

if(LNot(LLess(WRD1,WRD2)))
   {Return(311)}

//Test LGreaterEqual with Word Data
if(LNot(LGreaterEqual(WRD2,WRD1)))
   {Return(312)}


//Test LLessEqual with Word Data
if(LNot(LLessEqual(WRD1,WRD2)))
   {Return(313)}

//test on DWord data
Store(0x12121212,DWD1)
Store(0x21212121,DWD2)

if(LNot(LGreater(DWD2,DWD1)))
   {Return(314)}

if(LNot(LLess(DWD1,DWD2)))
   {Return(315)}
```

```
        //Test LGreaterEqual with Dword
        if(LNot(LGreaterEqual(DWD2,DWD1)))
          {Return(316)}

        //Test LLessEqual DWord
        if(LNot(LLessEqual(DWD1,DWD2)))
          {Return(317)}

        Return(0)
      }//LSGR

      //The test method
      Method(TEST)
      {
        Store ("++++++++ LOps Test", Debug)

        Store(0,RSLT)
        //Call LAndOp method
        Store(ANDL(2,2),RSLT)
        if(LNotEqual(RSLT,0))
         {Return(RSLT)}

        //Call LOrOp Method
        Store(ORL_(5,5),RSLT)
        if(LNotEqual(RSLT,0))
        {Return(RSLT)}

        //Call LSGR Method
        Store(LSGR(5,7),RSLT)
        if(LNotEqual(RSLT,0))
        {Return(RSLT)}

        Return(0)
      }//TEST
    }//LOPS

//
// test FdSetOps.asl
//
//  FindSetLeftBit - Find Set Left Bit
//  FindSetLeftBitTerm  := FindSetLeftBit
//  (   Source, //TermArg=>Integer
//      Result  //Nothing | SuperName
//  ) => Integer
//  Source is evaluated as integer data type, and the one-based bit location of
//  the first MSb (most significant set bit) is optionally stored into Result.
//  The result of 0 means no bit was set, 1 means the left-most bit set is the
//  first bit, 2 means the left-most bit set is the second bit, and so on.
```

```
// FindSetRightBit - Find Set Right Bit

// FindSetRightBitTerm := FindSetRightBit
// (   Source, //TermArg=>Integer
//     Result  //Nothing | SuperName
// ) => Integer
// Source is evaluated as integer data type, and the one-based bit location of
// the most LSb (least significant set bit) is optionally stored in Result.
// The result of 0 means no bit was set, 32 means the first bit set is the
// 32nd bit, 31 means the first bit set is the 31st bit, and so on.

// If the Control method is success Zero is returned. Otherwise a non-zero
// number is returned.
//
  Device (FDSO)
  {   // FDSO

    // Create System Memory Operation Region and field overlays
    OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
    Field (RAM, AnyAcc, NoLock, Preserve)
    {
      SMDW,   32, // 32-bit DWORD
      SMWD,   16, // 16-bit WORD
      SMBY,   8,      // 8-bit BYTE
    }   // Field(RAM)

    // Byte Data
    Name (BYT1, 1)
    Name (BRSL, 0x00)

    // Word Data
    Name (WRD1, 0x100)
    Name (WRSL, 0x0000)

    // DWord Data
    Name (DWD1, 0x10000)
    Name (DRSL, 0x00000000)
    Name (RSLT, 1)
    Name (CNTR, 1)

    Method (SHFT,2)
    // Arg0 is the actual data and Arg1 is the bit position
    {   // SHFT
      Store (Arg0, Local0)
      Store (Arg1, Local1)

      FindSetLeftBit (Arg0, BRSL)
      If (LNotEqual (BRSL, Arg1))
```

```
    {   Return (0x11)   }
If (LNotEqual (Arg0, Local0))
    {   Return (0x12)   }

FindSetLeftBit (Local0, BRSL)
If (LNotEqual (BRSL, Local1))
    {   Return (0x13)   }
If (LNotEqual (Arg0, Local0))
    {   Return (0x14)   }

//  test the byte value for SetLeftBit
Store (7, BYT1)
FindSetLeftBit (BYT1, BRSL)
If (LNotEqual (BRSL, 3))
    {   Return (0x15)   }
If (LNotEqual (BYT1, 7))
    {   Return (0x16)   }

Store (1, BYT1)
Store (1, CNTR)
While (LLessEqual (CNTR, 8))
{   //  FindSetLeftBit check loop for byte data
    FindSetLeftBit (BYT1, BRSL)
    If (LNotEqual (BRSL, CNTR))
        {   Return (0x17)   }

    //  Shift the bits to check the same
    ShiftLeft (BYT1, 1, BYT1)
    Increment (CNTR)
}   //  FindSetLeftBit check loop for byte data


//  Check BYTE value for SetRightBit
Store (7, BYT1)
FindSetRightBit (BYT1, BRSL)
If (LNotEqual (BRSL, 1))
    {   Return (0x21)   }
If (LNotEqual (BYT1, 7))
    {   Return (0x22)   }

Store (1, CNTR)
Store (0xFF, BYT1)
While (LLessEqual (CNTR, 8))
{   //  FindSetRightBit check loop for byte data
    FindSetRightBit (BYT1, BRSL)
    If (LNotEqual (BRSL, CNTR))
        {   Return (0x23)   }
```

```
    ShiftLeft (BYT1, 1, BYT1)
    Increment (CNTR)
}   //  FindSetRightBit check loop for byte data


//  Test Word value for SetLeftBit
Store (9, CNTR)
Store (0x100, WRD1)
While (LLessEqual (CNTR, 16))
{
    //  FindSetLeftBit check loop for Word data
    FindSetLeftBit (WRD1, WRSL)
    If (LNotEqual (WRSL, CNTR))
        {   Return (0x31)   }

    //  Shift the bits to check the same
    ShiftLeft (WRD1, 1, WRD1)
    Increment (CNTR)
}   //  FindSetLeftBit check loop for Word data

//  Check Word value for SetRightBit
Store (9, CNTR)
Store (0xFF00, WRD1)
While (LLessEqual (CNTR, 16))
{
    //  FindSetRightBit check loop for Word data
    FindSetRightBit (WRD1, WRSL)
    If (LNotEqual (WRSL, CNTR))
        {   Return (0x32)   }

    ShiftLeft (WRD1, 1, WRD1)
    Increment (CNTR)
}   //  FindSetRightBit check loop for Word data

//  Test the DWord value for SetLeftBit
Store (17, CNTR)
Store (0x10000, DWD1)
While (LLessEqual (CNTR, 32))
{
    //  FindSetLeftBit check loop for Dword
    FindSetLeftBit (DWD1, DRSL)
    If (LNotEqual (DRSL, CNTR))
        {   Return (0x41)   }

    //  Shift the bits to check the same
    ShiftLeft (DWD1, 1, DWD1)
    Increment (CNTR)
}   //  FindSetLeftBit check loop for Dword
```

```
        // Check DWord value for SetRightBit
        Store (17, CNTR)
        Store (0xFFFF0000, DWD1)
        While (LLessEqual (CNTR, 32))
        {   // FindSetRightBit Check loop for DWORD
            FindSetRightBit (DWD1, DRSL)
            If (LNotEqual (DRSL, CNTR))
                {   Return (0x42)   }

            ShiftLeft (DWD1, 1, DWD1)
            Increment (CNTR)
        }   // FindSetRightBit Check loop for DWORD

        Return (0)
    }   // SHFT

    // Test method called from amlexec
    Method (TEST)
    {   // TEST

        Store ("++++++++ FdSetOps Test", Debug)

        Store (SHFT (0x80, 8), RSLT)
        If (LNotEqual (RSLT, 0))
            {   Return (RSLT)   }

        Return (0)  // pass
    }   // TEST
  }   // Device FDSO

//
// test MulDivOp.asl
//
  Device (MLDV)
  {
    // create System Memory Operation Region and field overlays
    OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
    Field (RAM, AnyAcc, NoLock, Preserve)
    {
      SMDW,   32, // 32-bit DWORD
      SMWD,   16, // 16-bit WORD
      SMBY,   8,  // 8-bit BYTE
    }   // Field(RAM)

    Method (TEST,, Serialized)
    {
      Store ("++++++++ MulDivOp Test", Debug)
```

```
Name (RMDR, 0)
Name (DWRD, 0x12345678)
Name (WRD, 0x1234)
Name (BYT, 0x12)

//  Test MultiplyOp with DWORD data
Store (0x12345678, DWRD)
Multiply (DWRD, 3, DWRD)
If (LNotEqual (DWRD, 0x369D0368))
   {   Return (DWRD)   }

//  Test MultiplyOp with WORD data
Multiply (WRD, 4, WRD)
If (LNotEqual (WRD, 0x48D0))
   {   Return (WRD)    }

//  Test MultiplyOp with BYTE data
Multiply (BYT, 5, BYT)
If (LNotEqual (BYT, 0x5A))
   {   Return (BYT)    }

//  Test DivideOp with DWORD data
Divide (DWRD, 3, DWRD, RMDR)
If (LNotEqual (DWRD, 0x12345678))
   {   Return (DWRD)   }
If (LNotEqual (RMDR, 0))
   {   Return (RMDR)   }

//  Test DivideOp with WORD data
Divide (WRD, 4, WRD, RMDR)
If (LNotEqual (WRD, 0x1234))
   {   Return (WRD)    }
If (LNotEqual (RMDR, 0))
   {   Return (RMDR)   }

//  Test DivideOp with BYTE data
Divide (BYT, 5, BYT, RMDR)
If (LNotEqual (BYT, 0x12))
   {   Return (BYT)    }
If (LNotEqual (RMDR, 0))
   {   Return (RMDR)   }


//  test MultiplyOp with DWORD SystemMemory OpRegion
Store (0x01234567, SMDW)
Multiply (SMDW, 2, SMDW)
If (LNotEqual (SMDW, 0x02468ACE))
```

```
            {   Return (SMDW)   }

        //  test DivideOp with DWORD SystemMemory OpRegion
        Divide (SMDW, 3, SMDW, RMDR)
        If (LNotEqual (SMDW, 0x00C22E44))
            {   Return (SMDW)   }
        If (LNotEqual (RMDR, 2))
            {   Return (RMDR)   }


        //  test MultiplyOp with WORD SystemMemory OpRegion
        Store (0x0123, SMWD)
        Multiply (SMWD, 3, SMWD)
        If (LNotEqual (SMWD, 0x369))
            {   Return (SMWD)   }

        //  test DivideOp with WORD SystemMemory OpRegion
        Divide (SMWD, 2, SMWD, RMDR)
        If (LNotEqual (SMWD, 0x01B4))
            {   Return (SMWD)   }
        If (LNotEqual (RMDR, 1))
            {   Return (RMDR)   }


        //  test MultiplyOp with BYTE SystemMemory OpRegion
        Store (0x01, SMBY)
        Multiply (SMBY, 7, SMBY)
        If (LNotEqual (SMBY, 0x07))
            {   Return (SMBY)   }

        //  test DivideOp with BYTE SystemMemory OpRegion
        Divide (SMBY, 4, SMBY, RMDR)
        If (LNotEqual (SMBY, 0x01))
            {   Return (SMBY)   }
        If (LNotEqual (RMDR, 3))
            {   Return (RMDR)   }

        Return (0)
      }   //  TEST
    }   //  MLDV

//
// test NBitOps.asl
//
//NAnd - Bit-wise NAnd
//NAndTerm  := NAnd(
//  Source1,    //TermArg=>Integer
//  Source2 //TermArg=>Integer
```

```
//  Result  //Nothing | SuperName
//) => Integer
//Source1 and Source2 are evaluated as integer data types, a bit-wise NAND is performed, and the result is
optionally
//stored in Result.

//NOr - Bitwise NOr
//NOrTerm   := NOr(
//  Source1,    //TermArg=>Integer
//  Source2 //TermArg=>Integer
//  Result  //Nothing | SuperName
//) => Integer
//Source1 and Source2 are evaluated as integer data types, a bit-wise NOR is performed, and the result is optionally
//stored in Result.
// Not - Not
//NotTerm   := Not(
//  Source, //TermArg=>Integer
//  Result  //Nothing | SuperName
//) => Integer
//Source1 is evaluated as an integer data type, a bit-wise NOT is performed, and the result is optionally stored in
//Result.

//If the Control method is success Zero is returned else a non-zero number is returned

  Device (NBIT)
  {//NBIT

     //Create System Memory Operation Region and field overlays
     OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
     Field (RAM, AnyAcc, NoLock, Preserve)
     {
        SMDW,   32, //  32-bit DWORD
        SMWD,   16, //  16-bit WORD
        SMBY,   8,  //  8-bit BYTE
     }// Field(RAM)


     //And with Byte Data
     Name (BYT1, 0xff)
     Name (BYT2, 0xff)
     Name (BRSL, 0x00)

     //And with Word Data
     Name (WRD1, 0xffff)
     Name (WRD2, 0xffff)
     Name (WRSL, 0x0000)

     //And with DWord Data
```

```
Name (DWD1, 0xffffffff)
Name (DWD2, 0xffffffff)
Name (DRSL, 0x00000000)
Name(RSLT,1)


Name(ARSL,0x00)
Name(LRSL,0x00)

Method(NNDB,2)
{//NNDB

   Store(0xffffffff,SMDW)
   Store(0xffff,SMWD)
   Store(0xff,SMBY)


   NAnd(Arg0,Arg1,ARSL)
   if(LNotEqual(ARSL,0xfffffffd))
    {Return(11)}

    Store(Arg0,local0)
    Store(Arg1,Local1)

    NAnd(Local0,Local1,LRSL)
      if(LNotEqual(LRSL,0xfffffffd))
    {Return(12)}


   //Byte data
   NAnd(BYT1,BYT2,BRSL)
   if(LNotEqual(BRSL,0xffffff00))
    {Return(13)}

   //Word Data
    NAnd(WRD1,WRD2,WRSL)
   if(LNotEqual(WRSL,0xffff0000))
    {Return(14)}

    //DWord Data
    NAnd(DWD1,DWD2,DRSL)
   if(LNotEqual(DRSL,0x00000000))
    {Return(15)}

    //Byte data
   NAnd(SMBY,0xff,BRSL)
   if(LNotEqual(BRSL,0xffffff00))
    {Return(16)}
```

```
    //Word Data
     NAnd(SMWD,0xffff,WRSL)
    if(LNotEqual(WRSL,0xffff0000))
     {Return(17)}

     //DWord Data
     NAnd(SMDW,0xffffffff,DRSL)
    if(LNotEqual(DRSL,0x00000000))
     {Return(18)}

    Return(0)

}//NNDB

Method(NNOR,2)
{//NNOR

    NOr(Arg0,Arg1,ARSL)
    if(LNotEqual(ARSL,0xfffffffd))
     {Return(21)}

    Store(Arg0,local0)
    Store(Arg1,Local1)

    NOr(Local0,Local1,LRSL)
    if(LNotEqual(LRSL,0xfffffffd))
     {Return(22)}


    //Byte data
    NOr(BYT1,BYT2,BRSL)
    if(LNotEqual(BRSL,0xffffff00))
     {Return(23)}

    //Word Data
    NOr(WRD1,WRD2,WRSL)
    if(LNotEqual(WRSL,0xffff0000))
     {Return(24)}

    //DWord Data
    NOr(DWD1,DWD2,DRSL)
    if(LNotEqual(DRSL,0x00000000))
     {Return(25)}

     //System Memory Byte data
    NOr(SMBY,0xff,BRSL)
    if(LNotEqual(BRSL,0xffffff00))
```

```
    {Return(26)}

    //System Memory Word Data
    NOr(SMWD,0xffff,WRSL)
    if(LNotEqual(WRSL,0xffff0000))
    {Return(27)}

    //System Memory DWord Data
    NOr(SMDW,0xffffffff,DRSL)
    if(LNotEqual(DRSL,0x00000000))
    {Return(28)}

    Return(0)

}//NNOR

Method(NNOT,2)
{//NNOT

    Or(Arg0,Arg1,ARSL)
    Not(ARSL,ARSL)
    if(LNotEqual(ARSL,0xfffffffd))
    {Return(31)}

    Store(Arg0,local0)
    Store(Arg1,Local1)

    Or(Local0,Local1,LRSL)
    Not(LRSL,LRSL)
    if(LNotEqual(LRSL,0xfffffffd))
    {Return(32)}


    //Byte data
    Or(BYT1,BYT2,BRSL)
    Not(BRSL,BRSL)
    if(LNotEqual(BRSL,0xffffff00))
    {Return(33)}

    //Word Data
    Or(WRD1,WRD2,WRSL)
    Not(WRSL,WRSL)
    if(LNotEqual(WRSL,0xffff0000))
    {Return(34)}

    //DWord Data
    Or(DWD1,DWD2,DRSL)
    Not(DRSL,DRSL)
```

```
        if(LNotEqual(DRSL,0x00000000))
         {Return(35)}

         //System Memory Byte data
        Or(SMBY,0xff,BRSL)
        Not(BRSL,BRSL)
        if(LNotEqual(BRSL,0xffffff00))
         {Return(36)}

        //System Memory Word Data
        Or(SMWD,0xffff,WRSL)
        Not(WRSL,WRSL)
        if(LNotEqual(WRSL,0xffff0000))
         {Return(37)}

        //System Memory DWord Data
        Or(SMDW,0xffffffff,DRSL)
        Not(DRSL,DRSL)
        if(LNotEqual(DRSL,0x00000000))
         {Return(38)}

        Return(0)
      }//NNOT


      Method(TEST)
      {

        Store ("++++++++ NBitOps Test", Debug)

        Store(NNDB(2,2),RSLT)
        if(LNotEqual(RSLT,0))
          {Return(RSLT)}

        Store(NNOR(2,2),RSLT)
        if(LNotEqual(RSLT,0))
          {Return(RSLT)}

        Store(NNOT(2,2),RSLT)
        if(LNotEqual(RSLT,0))
          {Return(RSLT)}


       Return(0)
      }

    }//Device NBIT
```

```
//
// test ShftOp.asl
//
//ShiftRightTerm    := ShiftRight(
//  Source, //TermArg=>Integer
//  ShiftCount  //TermArg=>Integer
//  Result  //Nothing | SuperName
//) => Integer
//Source and ShiftCount are evaluated as integer data types. Source is shifted right with the most significant bit
//zeroed ShiftCount times. The result is optionally stored into Result.

//ShiftLeft(
//  Source, //TermArg=>Integer
//  ShiftCount  //TermArg=>Integer
//  Result  //Nothing | SuperName
//) => Integer
//Source and ShiftCount are evaluated as integer data types. Source is shifted left with the least significant
//bit zeroed ShiftCount times. The result is optionally stored into Result.

//If the Control method is success Zero is returned else a non-zero number is returned
  Device (SHFT)
  {//SHFT

     //Create System Memory Operation Region and field overlays
     OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
     Field (RAM, AnyAcc, NoLock, Preserve)
     {
        SMDW,   32, //  32-bit DWORD
        SMWD,   16, //  16-bit WORD
        SMBY,   8,  //  8-bit BYTE
     }// Field(RAM)


     Name(SHFC,0x00)

     //And with Byte Data
     Name (BYT1, 0xff)
     Name (BRSL, 0x00)

     //And with Word Data
     Name (WRD1, 0xffff)
     Name (WRSL, 0x0000)

     //And with DWord Data
     Name (DWD1, 0xffffffff)
     Name (DRSL, 0x00000000)

     Name(RSLT,1)
```

```
Name(ARSL,0x00)
Name(LRSL,0x00)

Method(SLFT,2)
{//SLFT

   Store(0xffffffff,SMDW)
   Store(0xffff,SMWD)
   Store(0xff,SMBY)


   //Arg0-> 2 & Arg1->2
   ShiftLeft(Arg0,Arg1,ARSL)
   if(LNotEqual(ARSL,8))
   {Return(11)}

    Store(Arg0,local0)
    Store(Arg1,Local1)

    //Local0->8 and Local1->2
    ShiftLeft(Local0,Local1,LRSL)
      if(LNotEqual(LRSL,8))
    {Return(12)}

   Store(2,SHFC)
   //Byte data
   ShiftLeft(BYT1,SHFC,BRSL)
   if(LNotEqual(BRSL,0x3FC))
    {Return(13)}

   Store(4,SHFC)
   //Word Data
    ShiftLeft(WRD1,SHFC,WRSL)
   if(LNotEqual(WRSL,0xFFFF0))
    {Return(14)}

   Store(8,SHFC)
   //DWord Data
   ShiftLeft(DWD1,SHFC,DRSL)
   if(LNotEqual(DRSL,0xFFFFFF00))
    {Return(15)}


    //System Memory Byte data
   Store(4,SHFC)
   ShiftLeft(SMBY,SHFC,BRSL)
   if(LNotEqual(BRSL,0xFF0))
```

```
    {Return(16)}

    //Word Data
    Store(4,SHFC)
    ShiftLeft(SMWD,SHFC,WRSL)
    if(LNotEqual(WRSL,0xffff0))
     {Return(17)}

    //DWord Data
    Store(8,SHFC)
    ShiftLeft(SMDW,SHFC,DRSL)
    if(LNotEqual(DRSL,0xFFFFFF00))
       {Return(18)}

    Return(0)

}//SLFT

Method(SRGT,2)
{//SRGT
    //And with Byte Data
    Store (0xff,BYT1)
    Store (0x00,BRSL)

    //And with Word Data
    Store (0xffff,WRD1)
    Store (0x0000,WRSL)

    //And with DWord Data
    Store(0xffffffff,DWD1)
    Store (0x00000000,DRSL)

    //Reinitialize the result objects
    Store(0x00,ARSL)
    Store(0x00,LRSL)

    Store(0xffffffff,SMDW)
    Store(0xffff,SMWD)
    Store(0xff,SMBY)

    //Arg0-> 2 & Arg1->2
    ShiftRight(Arg0,Arg1,ARSL)
    if(LNotEqual(ARSL,0))
    {Return(21)}

     Store(Arg0,local0)
     Store(Arg1,Local1)
```

```
    //Local0->8 and Local1->2
    ShiftRight(Local0,Local1,LRSL)
      if(LNotEqual(LRSL,0))
    {Return(22)}

   Store(2,SHFC)
   //Byte data
   ShiftRight(BYT1,SHFC,BRSL)
   if(LNotEqual(BRSL,0x3F))
    {Return(23)}

   Store(4,SHFC)
   //Word Data
    ShiftRight(WRD1,SHFC,WRSL)
   if(LNotEqual(WRSL,0xFFF))
    {Return(24)}

   Store(8,SHFC)
   //DWord Data
   ShiftRight(DWD1,SHFC,DRSL)
   if(LNotEqual(DRSL,0xFFFFFF))
    {Return(25)}

   //System Memory Byte data
   Store(4,SHFC)
   ShiftRight(SMBY,SHFC,BRSL)
   if(LNotEqual(BRSL,0xF))
   {Return(26)}

   //Word Data
   Store(4,SHFC)
   ShiftRight(SMWD,SHFC,WRSL)
   if(LNotEqual(WRSL,0xFFF))
    {Return(27)}

   //DWord Data
   Store(8,SHFC)
   ShiftRight(SMDW,SHFC,DRSL)
   if(LNotEqual(DRSL,0xFFFFFF))
      {Return(28)}

   Return(0)
}//SRGT

//Test method called from amlexec
Method(TEST)
{
   Store ("++++++++ ShftOp Test", Debug)
```

```
        Store(SLFT(2,2),RSLT)
        if(LNotEqual(RSLT,0))
          {Return(RSLT)}
        Store(SRGT(2,2),RSLT)
        if(LNotEqual(RSLT,0))
          {Return(RSLT)}
        Return(0)
      }

  }//Device SHFT

//
// test Xor.asl and slightly modified
//
//This code tests the XOR opcode term
//Syntax of XOR term
//        XOr(
//              Source1  //TermArg=>BufferTerm
//              Source2  //TermArg=>Integer
//              Result //NameString
//           )
//"Source1" and "Source2" are evaluated as integers, a bit-wise XOR is performed, and the result is optionally stored
in
// Result
  Device (XORD)
  {
    //This Method tests XOr operator for all the data types i.e. BYTE, WORD and DWORD
    Method (TEST,, Serialized)
    {
      Store ("++++++++ Xor Test", Debug)

      //Overlay in system memory
      OperationRegion (RAM, SystemMemory, 0x800000, 256)
      Field (RAM, ByteAcc, NoLock, Preserve)
      {
        RES1,   1,  //Offset
        BYT1,   8,  //First BYTE
        BYT2,   8,  //Second BYTE
        RBYT,   8,  //Result Byte
        RES2,   1,  //Offset
        WRD1,   16, //First WORD field
        WRD2,   16, //Second WORD field
        RWRD,   16, //RSLT WORD field
        RES3,   1,  //Offset
        DWD1,   32, //First Dword
        DWD2,   32, //Second Dword
        RDWD,   32, //Result Dword
```

```
    RES4,   1,  //Offset
}

// Store bits in the single bit fields for checking
//  at the end
Store(1, RES1)
Store(1, RES2)
Store(1, RES3)
Store(1, RES4)

// Check the stored single bits
if(LNotEqual(RES1, 1))
{
    Return(1)
}

if(LNotEqual(RES2, 1))
{
    Return(1)
}

if(LNotEqual(RES3, 1))
{
    Return(1)
}

if(LNotEqual(RES4, 1))
{
    Return(1)
}

//*************************************************
// (BYT1) Bit1 ->0 and (BYT2)Bit2 -> 0 condition
Store(0x00,BYT1)
Store(0x00,BYT2)
XOr(BYT1,BYT2,Local0)
Store (Local0, RBYT)
if(LNotEqual(RBYT,0))
{   Return(1)}

// (BYT1) Bit1 ->1 and (BYT2)Bit2 -> 1 condition
Store(0xff,BYT1)
Store(0xff,BYT2)
XOr(BYT1,BYT2,Local0)
Store (Local0, RBYT)
if(LNotEqual(RBYT,0))
{   Return(1)}
```

```
// (BYT1) Bit1 ->1 and (BYT)Bit2 -> 0 condition
Store(0x55,BYT1)
Store(0xAA,BYT2)
XOr(BYT1,BYT2,Local0)
Store (Local0, RBYT)
if(LNotEqual(RBYT,0xFF))
{   Return(1)}

//(BYT1) Bit1 ->0 and (BYT2)Bit2 -> 1 condition
Store(0xAA,BYT1)
Store(0x55,BYT2)
XOr(BYT1,BYT2,Local0)
Store (Local0, RBYT)
if(LNotEqual(RBYT,0xFF))
{   Return(1)}

Store(0x12,BYT1)
Store(0xED,BYT2)

XOr(BYT1,BYT2,Local0)
Store (Local0, RBYT)
if(LNotEqual(RBYT,0xFF))
{
   Return(1)
}

// Store known values for checking later
Store(0x12, BYT1)
if(LNotEqual(BYT1, 0x12))
{
   Return(1)
}

Store(0xFE, BYT2)
if(LNotEqual(BYT2, 0xFE))
{
   Return(1)
}

Store(0xAB, RBYT)
if(LNotEqual(RBYT, 0xAB))
{
   Return(1)
}

//*************************************************
// (WRD1) Bit1 ->0 and (WRD2)Bit2 -> 0 condition
Store(0x0000,WRD1)
```

```
Store(0x0000,WRD2)
XOr(WRD1,WRD2,RWRD)
if(LNotEqual(RWRD,0))
{   Return(1)}

// (WRD1) Bit1 ->1 and (WRD2)Bit2 -> 1 condition
Store(0xffff,WRD1)
Store(0xffff,WRD2)
XOr(WRD1,WRD2,RWRD)
if(LNotEqual(RWRD,0))
{   Return(1)}

// (WRD1) Bit1 ->1 and (WRD2)Bit2 -> 0 condition
Store(0x5555,WRD1)
Store(0xAAAA,WRD2)
XOr(WRD1,WRD2,RWRD)
if(LNotEqual(RWRD,0xFFFF))
{   Return(1)}

//(WRD1) Bit1 ->0 and (WRD2)Bit2 -> 1 condition
Store(0xAAAA,WRD1)
Store(0x5555,WRD2)
XOr(WRD1,WRD2,RWRD)
if(LNotEqual(RWRD,0xFFFF))
{   Return(1)}

Store(0x1234,WRD1)
Store(0xEDCB,WRD2)
XOr(WRD1,WRD2,RWRD)
if(LNotEqual(RWRD,0xFFFF))
{   Return(1)}

// Store known values for checking later
Store(0x1234, WRD1)
if(LNotEqual(WRD1, 0x1234))
{
   Return(1)
}

Store(0xFEDC, WRD2)
if(LNotEqual(WRD2, 0xFEDC))
{
   Return(1)
}

Store(0x87AB, RWRD)
if(LNotEqual(RWRD, 0x87AB))
{
```

```
   Return(1)
}


//*************************************************
// (DWD1) Bit1 ->0 and (DWD2)Bit2 -> 0 condition
Store(0x00000000,DWD1)
Store(0x00000000,DWD2)
XOr(DWD1,DWD2,RDWD)
if(LNotEqual(RDWD,0))
{   Return(1)}

// (DWD1) Bit1 ->1 and (DWD2)Bit2 -> 1 condition
Store(0xffffffff,DWD1)
Store(0xffffffff,DWD2)
XOr(DWD1,DWD2,RDWD)
if(LNotEqual(RDWD,0))
{   Return(1)}

// (DWD1) Bit1 ->1 and (DWD2)Bit2 -> 0 condition
Store(0x55555555,DWD1)
Store(0xAAAAAAAA,DWD2)
XOr(DWD1,DWD2,RDWD)
if(LNotEqual(RDWD,0xFFFFFFFF))
{   Return(1)}

//(DWD1) Bit1 ->0 and (DWD2)Bit2 -> 1 condition
Store(0xAAAAAAAA,DWD1)
Store(0x55555555,DWD2)
XOr(DWD1,DWD2,RDWD)
if(LNotEqual(RDWD,0xFFFFFFFF))
{   Return(1)}

// (DWD1) Bit1 ->1 and (DWD2)Bit2 -> 0 condition
Store(0x12345678,DWD1)
Store(0xEDCBA987,DWD2)
XOr(DWD1,DWD2,RDWD)
if(LNotEqual(RDWD,0xFFFFFFFF))
{   Return(1)}

Store(0x12345678,DWD1)
if(LNotEqual(DWD1,0x12345678))
{
   Return(1)
}

Store(0xFEDCBA98,DWD2)
if(LNotEqual(DWD2,0xFEDCBA98))
```

```
{
   Return(1)
}

Store(0x91827364,RDWD)
if(LNotEqual(RDWD,0x91827364))
{
   Return(1)
}

//*****************************************************
// Check the stored single bits
if(LNotEqual(RES1, 1))
{
   Return(1)
}

if(LNotEqual(RES2, 1))
{
   Return(1)
}

if(LNotEqual(RES3, 1))
{
   Return(1)
}

if(LNotEqual(RES4, 1))
{
   Return(1)
}

// Change all of the single bit fields to zero
Store(0, RES1)
Store(0, RES2)
Store(0, RES3)
Store(0, RES4)

// Now, check all of the fields

// Byte
if(LNotEqual(BYT1, 0x12))
{
   Return(1)
}

if(LNotEqual(BYT2, 0xFE))
{
```

```
    Return(1)
}

if(LNotEqual(RBYT, 0xAB))
{
    Return(1)
}

// Word
if(LNotEqual(WRD1, 0x1234))
{
    Return(1)
}

if(LNotEqual(WRD2, 0xFEDC))
{
    Return(1)
}

if(LNotEqual(RWRD, 0x87AB))
{
    Return(1)
}

// Dword
if(LNotEqual(DWD1, 0x12345678))
{
    Return(1)
}

if(LNotEqual(DWD2, 0xFEDCBA98))
{
    Return(1)
}

if(LNotEqual(RDWD, 0x91827364))
{
    Return(1)
}

// Bits
if(LNotEqual(RES1, 0))
{
    Return(1)
}

if(LNotEqual(RES2, 0))
{
```

```
            Return(1)
        }

        if(LNotEqual(RES3, 0))
        {
            Return(1)
        }

        if(LNotEqual(RES4, 0))
        {
            Return(1)
        }


        Return(0)
    }   //  TEST
  }   //  XORD

//
// test CrBytFld.asl
//
//  CrBytFld test
//      Test for CreateByteField.
//      Tests creating byte field overlay of buffer stored in Local0.
//      Tests need to be added for Arg0 and Name buffers.
//
  Device (CRBF)
  {   //  Test device name
      Method (TEST)
      {
          Store ("++++++++ CrBytFld Test", Debug)

          //  Local0 is unitialized buffer with 4 elements
          Store (Buffer (4) {}, Local0)

          //  create Byte Field named BF0 based on Local0 element 0
          CreateByteField (Local0, 0, BF0)

          //  validate CreateByteField did not alter Local0
          Store (ObjectType (Local0), Local1) //  Local1 = Local0 object type
          If (LNotEqual (Local1, 3))  //  Buffer object type value is 3
              {   Return (2)  }

          //  store something into BF0
          Store (1, BF0)

          //  validate Store did not alter Local0 object type
          Store (ObjectType (Local0), Local1) //  Local1 = Local0 object type
```

```
        If (LNotEqual (Local1, 3))  //  Buffer object type value is 3
            {   Return (3)  }

        //  verify that the Store into BF0 was successful
        If (LNotEqual (BF0, 1))
            {   Return (4)  }


        //  create Byte Field named BF1 based on Local0 element 1
        CreateByteField (Local0, 1, BF1)

        //  validate CreateByteField did not alter Local0
        Store (ObjectType (Local0), Local1) //  Local1 = Local0 object type
        If (LNotEqual (Local1, 3))  //  Buffer object type value is 3
            {   Return (10) }

        //  store something into BF1
        Store (5, BF1)

        //  validate Store did not alter Local0 object type
        Store (ObjectType (Local0), Local1) //  Local1 = Local0 object type
        If (LNotEqual (Local1, 3))  //  Buffer object type value is 3
            {   Return (11) }

        //  verify that the Store into BF1 was successful
        If (LNotEqual (BF1, 5))
            {   Return (12) }

        //  verify that the Store into BF1 did not alter BF0
        If (LNotEqual (BF0, 1))
            {   Return (13) }


        //  store something into BF0
        Store (0xFFFF, BF0)

        //  verify that the Store into BF0 was successful
        If (LNotEqual (BF0, 0xFF))
            {   Return (20) }

        //  verify that the Store into BF0 did not alter BF1
        If (LNotEqual (BF1, 5))
            {   Return (21) }


        Return (0)
    }   //  TEST
}   //  CRBF
```

```
//
// test IndexOp4.asl
//
//  IndexOp4 test
//      This is just a subset of the many RegionOp/Index Field test cases.
//      Tests access of index fields smaller than 8 bits.
//
  Device (IDX4)
  {   //  Test device name

      //  MADM:   Misaligned Dynamic RAM SystemMemory OperationRegion
      //          Tests OperationRegion memory access using misaligned BYTE,
      //          WORD, and DWORD field element accesses. Validation is performed
      //          using both misaligned field entries and aligned field entries.
      //
      //          MADM returns 0 if all test cases pass or non-zero identifying
      //          the failing test case for debug purposes. This non-zero numbers
      //          are not guaranteed to be in perfect sequence (i.e., test case
      //          index), but are guaranteed to be unique so the failing test
      //          case can be uniquely identified.
      //
      Method (MADM, 1, Serialized)    //  Misaligned Dynamic RAM SystemMemory OperationRegion
      //  Arg0    --  SystemMemory OperationRegion base address
      {   //  MADM:   Misaligned Dynamic RAM SystemMemory OperationRegion
          OperationRegion (RAM, SystemMemory, Arg0, 0x100)
          Field (RAM, DwordAcc, NoLock, Preserve)
          {   //  aligned field definition (for verification)
              DWD0,   32, //  aligned DWORD field
              DWD1,   32      //  aligned DWORD field
          }
          Field (RAM, ByteAcc, NoLock, Preserve)
          {   //  bit access field definition
              BIT0,   1,      //  single bit field entry
              BIT1,   1,      //  single bit field entry
              BIT2,   1,      //  single bit field entry
              BIT3,   1,      //  single bit field entry
              BIT4,   1,      //  single bit field entry
              BIT5,   1,      //  single bit field entry
              BIT6,   1,      //  single bit field entry
              BIT7,   1,      //  single bit field entry
              BIT8,   1,      //  single bit field entry
              BIT9,   1,      //  single bit field entry
              BITA,   1,      //  single bit field entry
              BITB,   1,      //  single bit field entry
              BITC,   1,      //  single bit field entry
              BITD,   1,      //  single bit field entry
              BITE,   1,      //  single bit field entry
```

```
    BITF,   1,      //  single bit field entry
    BI10,   1,      //  single bit field entry
    BI11,   1,      //  single bit field entry
    BI12,   1,      //  single bit field entry
    BI13,   1,      //  single bit field entry
    BI14,   1,      //  single bit field entry
    BI15,   1,      //  single bit field entry
    BI16,   1,      //  single bit field entry
    BI17,   1,      //  single bit field entry
    BI18,   1,      //  single bit field entry
    BI19,   1,      //  single bit field entry
    BI1A,   1,      //  single bit field entry
    BI1B,   1,      //  single bit field entry
    BI1C,   1,      //  single bit field entry
    BI1D,   1,      //  single bit field entry
    BI1E,   1,      //  single bit field entry
    BI1F,   1       //  single bit field entry
}   //  bit access field definition

Field (RAM, ByteAcc, NoLock, Preserve)
{   //  two-bit access field definition
    B2_0,   2,      //  single bit field entry
    B2_1,   2,      //  single bit field entry
    B2_2,   2,      //  single bit field entry
    B2_3,   2,      //  single bit field entry
    B2_4,   2,      //  single bit field entry
    B2_5,   2,      //  single bit field entry
    B2_6,   2,      //  single bit field entry
    B2_7,   2,      //  single bit field entry
    B2_8,   2,      //  single bit field entry
    B2_9,   2,      //  single bit field entry
    B2_A,   2,      //  single bit field entry
    B2_B,   2,      //  single bit field entry
    B2_C,   2,      //  single bit field entry
    B2_D,   2,      //  single bit field entry
    B2_E,   2,      //  single bit field entry
    B2_F,   2       //  single bit field entry
}   //  bit access field definition

//  initialize memory contents using aligned field entries
Store (0x5AA55AA5, DWD0)
Store (0x5AA55AA5, DWD1)

//  set memory contents to known values using misaligned field entries
Store (0, BIT0)
    //  verify memory contents using misaligned field entries
    If (LNotEqual (BIT0, 0))
        {   Return (1)  }
```

```
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA55AA4))
        {   Return (2)  }

// set memory contents to known values using misaligned field entries
Store (1, BIT1)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BIT1, 1))
        {   Return (3)  }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA55AA6))
        {   Return (4)  }

// set memory contents to known values using misaligned field entries
Store (0, BIT2)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BIT2, 0))
        {   Return (5)  }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA55AA2))
        {   Return (6)  }

// set memory contents to known values using misaligned field entries
Store (1, BIT3)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BIT3, 1))
        {   Return (7)  }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA55AAA))
        {   Return (8)  }

// set memory contents to known values using misaligned field entries
Store (1, BIT4)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BIT4, 1))
        {   Return (9)  }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA55ABA))
        {   Return (10) }

// set memory contents to known values using misaligned field entries
Store (0, BIT5)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BIT5, 0))
        {   Return (11) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA55A9A))
        {   Return (12) }
```

```
// set memory contents to known values using misaligned field entries
Store (1, BIT6)
   // verify memory contents using misaligned field entries
   If (LNotEqual (BIT6, 1))
      {  Return (13) }
   // verify memory contents using aligned field entries
   If (LNotEqual (DWD0, 0x5AA55ADA))
      {  Return (14) }

// set memory contents to known values using misaligned field entries
Store (0, BIT7)
   // verify memory contents using misaligned field entries
   If (LNotEqual (BIT7, 0))
      {  Return (15) }
   // verify memory contents using aligned field entries
   If (LNotEqual (DWD0, 0x5AA55A5A))
      {  Return (16) }

// set memory contents to known values using misaligned field entries
Store (1, BIT8)
   // verify memory contents using misaligned field entries
   If (LNotEqual (BIT8, 1))
      {  Return (17) }
   // verify memory contents using aligned field entries
   If (LNotEqual (DWD0, 0x5AA55B5A))
      {  Return (18) }

// set memory contents to known values using misaligned field entries
Store (0, BIT9)
   // verify memory contents using misaligned field entries
   If (LNotEqual (BIT9, 0))
      {  Return (19) }
   // verify memory contents using aligned field entries
   If (LNotEqual (DWD0, 0x5AA5595A))
      {  Return (20) }

// set memory contents to known values using misaligned field entries
Store (1, BITA)
   // verify memory contents using misaligned field entries
   If (LNotEqual (BITA, 1))
      {  Return (21) }
   // verify memory contents using aligned field entries
   If (LNotEqual (DWD0, 0x5AA55D5A))
      {  Return (22) }

// set memory contents to known values using misaligned field entries
Store (0, BITB)
```

```
    // verify memory contents using misaligned field entries
    If (LNotEqual (BITB, 0))
        {   Return (23) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA5555A))
        {   Return (24) }

// set memory contents to known values using misaligned field entries
Store (0, BITC)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BITC, 0))
        {   Return (25) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA5455A))
        {   Return (26) }

// set memory contents to known values using misaligned field entries
Store (1, BITD)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BITD, 1))
        {   Return (27) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA5655A))
        {   Return (28) }

// set memory contents to known values using misaligned field entries
Store (0, BITE)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BITE, 0))
        {   Return (29) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA5255A))
        {   Return (30) }

// set memory contents to known values using misaligned field entries
Store (1, BITF)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BITF, 1))
        {   Return (31) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA5A55A))
        {   Return (32) }

// set memory contents to known values using misaligned field entries
Store (0, BI10)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI10, 0))
        {   Return (33) }
```

```
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA4A55A))
        {   Return (34) }

// set memory contents to known values using misaligned field entries
Store (1, BI11)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI11, 1))
        {   Return (35) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA6A55A))
        {   Return (36) }

// set memory contents to known values using misaligned field entries
Store (0, BI12)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI12, 0))
        {   Return (37) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA2A55A))
        {   Return (38) }

// set memory contents to known values using misaligned field entries
Store (1, BI13)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI13, 1))
        {   Return (39) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AAAA55A))
        {   Return (40) }

// set memory contents to known values using misaligned field entries
Store (1, BI14)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI14, 1))
        {   Return (41) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5ABAA55A))
        {   Return (42) }

// set memory contents to known values using misaligned field entries
Store (0, BI15)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI15, 0))
        {   Return (43) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5A9AA55A))
        {   Return (44) }
```

```
// set memory contents to known values using misaligned field entries
Store (1, BI16)
   // verify memory contents using misaligned field entries
   If (LNotEqual (BI16, 1))
      {  Return (45) }
   // verify memory contents using aligned field entries
   If (LNotEqual (DWD0, 0x5ADAA55A))
      {  Return (46) }

// set memory contents to known values using misaligned field entries
Store (0, BI17)
   // verify memory contents using misaligned field entries
   If (LNotEqual (BI17, 0))
      {  Return (47) }
   // verify memory contents using aligned field entries
   If (LNotEqual (DWD0, 0x5A5AA55A))
      {  Return (48) }

// set memory contents to known values using misaligned field entries
Store (1, BI18)
   // verify memory contents using misaligned field entries
   If (LNotEqual (BI18, 1))
      {  Return (49) }
   // verify memory contents using aligned field entries
   If (LNotEqual (DWD0, 0x5B5AA55A))
      {  Return (50) }

// set memory contents to known values using misaligned field entries
Store (0, BI19)
   // verify memory contents using misaligned field entries
   If (LNotEqual (BI19, 0))
      {  Return (51) }
   // verify memory contents using aligned field entries
   If (LNotEqual (DWD0, 0x595AA55A))
      {  Return (52) }

// set memory contents to known values using misaligned field entries
Store (1, BI1A)
   // verify memory contents using misaligned field entries
   If (LNotEqual (BI1A, 1))
      {  Return (53) }
   // verify memory contents using aligned field entries
   If (LNotEqual (DWD0, 0x5D5AA55A))
      {  Return (54) }

// set memory contents to known values using misaligned field entries
Store (0, BI1B)
```

```
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI1B, 0))
        {   Return (55) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x555AA55A))
        {   Return (56) }

// set memory contents to known values using misaligned field entries
Store (0, BI1C)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI1C, 0))
        {   Return (57) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x455AA55A))
        {   Return (58) }

// set memory contents to known values using misaligned field entries
Store (1, BI1D)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI1D, 1))
        {   Return (59) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x655AA55A))
        {   Return (60) }

// set memory contents to known values using misaligned field entries
Store (0, BI1E)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI1E, 0))
        {   Return (61) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x255AA55A))
        {   Return (62) }

// set memory contents to known values using misaligned field entries
Store (1, BI1F)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI1F, 1))
        {   Return (63) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0xA55AA55A))
        {   Return (64) }


// set memory contents to known values using misaligned field entries
Store (3, B2_0)
    // verify memory contents using misaligned field entries
    If (LNotEqual (B2_0, 3))
```

```
        {   Return (65) }
    //  verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0xA55AA55B))
        {   Return (66) }

//  set memory contents to known values using misaligned field entries
Store (1, B2_1)
    //  verify memory contents using misaligned field entries
    If (LNotEqual (B2_1, 1))
        {   Return (67) }
    //  verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0xA55AA557))
        {   Return (68) }

//  set memory contents to known values using misaligned field entries
Store (0, B2_2)
    //  verify memory contents using misaligned field entries
    If (LNotEqual (B2_2, 0))
        {   Return (69) }
    //  verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0xA55AA547))
        {   Return (70) }

//  set memory contents to known values using misaligned field entries
Store (3, B2_3)
    //  verify memory contents using misaligned field entries
    If (LNotEqual (B2_3, 3))
        {   Return (71) }
    //  verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0xA55AA5C7))
        {   Return (72) }

//  set memory contents to known values using misaligned field entries
Store (3, B2_4)
    //  verify memory contents using misaligned field entries
    If (LNotEqual (B2_4, 3))
        {   Return (73) }
    //  verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0xA55AA7C7))
        {   Return (74) }

//  set memory contents to known values using misaligned field entries
Store (0, B2_5)
    //  verify memory contents using misaligned field entries
    If (LNotEqual (B2_5, 0))
        {   Return (75) }
    //  verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0xA55AA3C7))
```

```
        {   Return (76) }

    //  set memory contents to known values using misaligned field entries
    Store (1, B2_6)
       //  verify memory contents using misaligned field entries
       If (LNotEqual (B2_6, 1))
          {   Return (77) }
       //  verify memory contents using aligned field entries
       If (LNotEqual (DWD0, 0xA55A93C7))
          {   Return (78) }

    //  set memory contents to known values using misaligned field entries
    Store (1, B2_7)
       //  verify memory contents using misaligned field entries
       If (LNotEqual (B2_7, 1))
          {   Return (79) }
       //  verify memory contents using aligned field entries
       If (LNotEqual (DWD0, 0xA55A53C7))
          {   Return (80) }

    //  set memory contents to known values using misaligned field entries
    Store (0, B2_8)
       //  verify memory contents using misaligned field entries
       If (LNotEqual (B2_8, 0))
          {   Return (81) }
       //  verify memory contents using aligned field entries
       If (LNotEqual (DWD0, 0xA55853C7))
          {   Return (82) }

    //  set memory contents to known values using misaligned field entries
    Store (1, B2_9)
       //  verify memory contents using misaligned field entries
       If (LNotEqual (B2_9, 1))
          {   Return (83) }
       //  verify memory contents using aligned field entries
       If (LNotEqual (DWD0, 0xA55453C7))
          {   Return (84) }

    //  set memory contents to known values using misaligned field entries
    Store (2, B2_A)
       //  verify memory contents using misaligned field entries
       If (LNotEqual (B2_A, 2))
          {   Return (85) }
       //  verify memory contents using aligned field entries
       If (LNotEqual (DWD0, 0xA56453C7))
          {   Return (86) }

    //  set memory contents to known values using misaligned field entries
```

```
    Store (2, B2_B)
      //  verify memory contents using misaligned field entries
      If (LNotEqual (B2_B, 2))
        {   Return (87) }
      //  verify memory contents using aligned field entries
      If (LNotEqual (DWD0, 0xA5A453C7))
        {   Return (88) }

    //  set memory contents to known values using misaligned field entries
    Store (3, B2_C)
      //  verify memory contents using misaligned field entries
      If (LNotEqual (B2_C, 3))
        {   Return (89) }
      //  verify memory contents using aligned field entries
      If (LNotEqual (DWD0, 0xA7A453C7))
        {   Return (90) }

    //  set memory contents to known values using misaligned field entries
    Store (3, B2_D)
      //  verify memory contents using misaligned field entries
      If (LNotEqual (B2_D, 3))
        {   Return (91) }
      //  verify memory contents using aligned field entries
      If (LNotEqual (DWD0, 0xAFA453C7))
        {   Return (92) }

    //  set memory contents to known values using misaligned field entries
    Store (1, B2_E)
      //  verify memory contents using misaligned field entries
      If (LNotEqual (B2_E, 1))
        {   Return (93) }
      //  verify memory contents using aligned field entries
      If (LNotEqual (DWD0, 0x9FA453C7))
        {   Return (94) }

    //  set memory contents to known values using misaligned field entries
    Store (0, B2_F)
      //  verify memory contents using misaligned field entries
      If (LNotEqual (B2_F, 0))
        {   Return (95) }
      //  verify memory contents using aligned field entries
      If (LNotEqual (DWD0, 0x1FA453C7))
        {   Return (96) }


    Return (0)  //  pass
}   //  MADM:   Misaligned Dynamic RAM SystemMemory OperationRegion
```

```
    Method (TEST)
    {
      Store ("++++++++ IndexOp4 Test", Debug)

      //  MADM (Misaligned Dynamic RAM SystemMemory OperationRegion) arguments:
      //      Arg0    --  SystemMemory OperationRegion base address
      Store (MADM (0x800000), Local0)
      If (LNotEqual (Local0, 0))      //  MADM returns zero if successful
        {   Return (Local0) }       //  failure:    return MADM error code

      Return (Local0)
    }   //  TEST
  }   //  IDX4

//
// test Event.asl
//
//  EventOp, ResetOp, SignalOp, and WaitOp test cases.
//
  Device (EVNT)
  {
    Event (EVNT)    //  event synchronization object

    Method (TEVN, 1)
    //  Arg0:   time to Wait for event in milliseconds
    {   //  TEVN control method to test ResetOp, SignalOp, and WaitOp
      //  reset EVNT to initialization (zero) state
      Reset (EVNT)

      //  prime EVNT with two outstanding signals
      Signal (EVNT)
      Signal (EVNT)


      //  acquire existing signal
      Store (Wait (EVNT, Arg0), Local0)

      //  validate Local0 is a Number
      Store (ObjectType (Local0), Local1)
      If (LNotEqual (Local1, 1))  //  Number is type 1
        {   Return (0x21)   }       //  Local1 indicates Local0 is not a Number

      If (LNotEqual (Local0, 0))  //  Number is type 1
        {   Return (0x22)   }       //  timeout occurred without acquiring signal

      Store ("Acquire 1st existing signal PASS", Debug)
```

```
// acquire existing signal
Store (Wait (EVNT, Arg0), Local0)

// validate Local0 is a Number
Store (ObjectType (Local0), Local1)
If (LNotEqual (Local1, 1)) // Number is type 1
   {  Return (0x31)  }      // Local1 indicates Local0 is not a Number

If (LNotEqual (Local0, 0)) // Number is type 1
   {  Return (0x32)  }      // timeout occurred without acquiring signal

Store ("Acquire 2nd existing signal PASS", Debug)


// ensure WaitOp timeout test cases do not hang
if (LEqual (Arg0, 0xFFFF))
   {  Store (0xFFFE, Arg0)  }

// acquire non-existing signal
Store (Wait (EVNT, Arg0), Local0)

// validate Local0 is a Number
Store (ObjectType (Local0), Local1)
If (LNotEqual (Local1, 1)) // Number is type 1
   {  Return (0x41)  }      // Local1 indicates Local0 is not a Number

If (LEqual (Local0, 0))    // Number is type 1
   {  Return (0x42)  }      // non-existant signal was acquired

Store ("Acquire signal timeout PASS", Debug)


// prime EVNT with two outstanding signals
Signal (EVNT)
Signal (EVNT)

// reset EVNT to initialization (zero) state
Reset (EVNT)

// acquire non-existing signal
Store (Wait (EVNT, Arg0), Local0)

// validate Local0 is a Number
Store (ObjectType (Local0), Local1)
If (LNotEqual (Local1, 1)) // Number is type 1
   {  Return (0x51)  }      // Local1 indicates Local0 is not a Number

If (LEqual (Local0, 0))    // Number is type 1
```

```
        {   Return (0x52)   }       //  non-existant signal was acquired

        Store ("Reset signal PASS", Debug)


        //  acquire non-existing signal using Lvalue timeout
        Store (Wait (EVNT, Zero), Local0)

        //  validate Local0 is a Number
        Store (ObjectType (Local0), Local1)
        If (LNotEqual (Local1, 1))  //  Number is type 1
           {   Return (0x61)   }       //  Local1 indicates Local0 is not a Number

        If (LEqual (Local0, 0))     //  Number is type 1
           {   Return (0x62)   }       //  non-existant signal was acquired

        Store ("Zero Lvalue PASS", Debug)


        //  acquire non-existing signal using Lvalue timeout
        Store (Wait (EVNT, One), Local0)

        //  validate Local0 is a Number
        Store (ObjectType (Local0), Local1)
        If (LNotEqual (Local1, 1))  //  Number is type 1
           {   Return (0x71)   }       //  Local1 indicates Local0 is not a Number

        If (LEqual (Local0, 0))     //  Number is type 1
           {   Return (0x72)   }       //  non-existant signal was acquired

        Store ("One Lvalue PASS", Debug)

        //  Lvalue Event test cases
    // ILLEGAL SOURCE OPERAND       Store (EVNT, Local2)

        //  validate Local2 is an Event
        Store (ObjectType (EVNT), Local1)
        If (LNotEqual (Local1, 7))  //  Event is type 7
           {   Return (0x81)   }       //  Local1 indicates Local0 is not a Number

        //  reset EVNT to initialization (zero) state
        Reset (EVNT)

        //  prime EVNT with two outstanding signals
        Signal (EVNT)

        //  acquire existing signal
        Store (Wait (EVNT, Arg0), Local0)
```

```
        // validate Local0 is a Number
        Store (ObjectType (Local0), Local1)
        If (LNotEqual (Local1, 1)) // Number is type 1
          { Return (0x82) }      // Local1 indicates Local0 is not a Number

        If (LNotEqual (Local0, 0)) // Number is type 1
          { Return (0x83) }      // timeout occurred without acquiring signal

        Store ("Acquire Lvalue existing signal PASS", Debug)


        // acquire non-existing signal
        Store (Wait (EVNT, Arg0), Local0)

        // validate Local0 is a Number
        Store (ObjectType (Local0), Local1)
        If (LNotEqual (Local1, 1)) // Number is type 1
          { Return (0x84) }      // Local1 indicates Local0 is not a Number

        If (LEqual (Local0, 0))    // Number is type 1
          { Return (0x85) }      // non-existant signal was acquired

        Store ("Acquire Lvalue signal timeout PASS", Debug)


        Return (0) // success
      } // TEVN control method to test ResetOp, SignalOp, and WaitOp

      Method (TEST)
      {
        Store ("++++++++ Event Test", Debug)

        Store (TEVN (100), Local0)

        Return (Local0)
      } // TEST
    } // EVNT

//
// test SizeOfLv.asl
//
// Test for SizeOf (Lvalue)
//
// This next section will contain the packages that the SizeOfOp will be
// exercised on. The first one, PKG0, is a regular package of 3 elements.
// The 2nd one, PKG1, is a nested package with 3 packages inside it, each
// with 3 elements. It is expected that SizeOf operator will return the
```

```
// same value for these two packages since they both have 3 elements. The
// final package, PKG2, has 4 elements and the SizeOf operator is expected
// to return different results for this package.

  Name (PKG0,
    Package (3)
    {0x0123, 0x4567, 0x89AB}
  ) // PKG0

  Name (PKG1,
    Package (3)
    {
      Package (3) {0x0123, 0x4567, 0x89AB},
      Package (3) {0xCDEF, 0xFEDC, 0xBA98},
      Package (3) {0x7654, 0x3210, 0x1234}
    }
  ) // PKG1

  Name (PKG2,
    Package (4)
    {0x0123, 0x4567, 0x89AB, 0x8888}
  ) // PKG2

  Name (PKG3,
    Package (5)
    {0x0123, 0x4567, 0x89AB, 0x8888, 0x7777}
  ) // PKG3

// End Packages    ************************************************************

// The following section will declare the data strings that will be used to
// exercise the SizeOf operator. STR0 and STR1 are expected to be equal,
// STR2 is expected to have a different SizeOf value than STR0 and STR1.

  Name (STR0, "ACPI permits very flexible methods of expressing a system")

  Name (STR1, "MIKE permits very flexible methods of expressing a system")

  Name (STR2, "Needless to say, Mike and ACPI are frequently at odds")

// This string is being made in case we want to do a SizeOf comparison
// between strings and packages or buffers
  Name (STR3, "12345")

// End Strings     ************************************************************

// The following section will declare the buffers that will be used to exercise
// the SizeOf operator.
```

```
  Name (BUF0, Buffer (10) {})
  Name (BUF1, Buffer (10) {})
  Name (BUF2, Buffer (8)  {})
  Name (BUF3, Buffer (5)  {})

// End Buffers     ***********************************************************
  Device (SZLV)
  {

    Method (CMPR, 2)
    {
      // CMPR is passed two arguments. If unequal, return 1 to indicate
      // that, otherwise return 0 to indicate SizeOf each is equal.

      Store (0x01, Local0)

      if (LEqual (SizeOf(Arg0), SizeOf(Arg1)))
      {
        Store (0x00, Local0)
      }

      return (Local0)
    }  // CMPR


    Method (TEST)
    {

      Store ("++++++++ SizeOfLv Test", Debug)

      // TBD:    SizeOf ("string")
      //         SizeOf (Buffer)
      //         SizeOf (Package)
      //         SizeOf (String)
      //         SizeOf (STR0)   --  where Name (STR0,...) -- lot's of cases
      //            buffer, string, package,
      //         SizeOf (METH) -- where METH control method returns
      //            buffer, string, package,

      // TBD:    SLOC [SizeOf (Local0)] -- dup SARG

      // Compare the elements that we expect to be the same. Exit out with an error
      // code on the first failure.
      if (LNotEqual (0x00, CMPR (STR0, STR1)))
      {
        Return (0x01)
      }
```

```
        if (LNotEqual (0x00, CMPR (STR3, BUF3)))
        {
           Return (0x02)
        }

        if (LNotEqual (0x00, CMPR (STR3, PKG3)))
        {
           Return (0x03)
        }

        //  In the following section, this test will cover the SizeOf
        //  operator for Local values.
        //  In this case, both Local0 and Local1 should have the same Size
        Store (STR0, Local0)
        Store (STR1, Local1)

        if (LNotEqual (SizeOf (Local0), SizeOf (Local1)))
        {
           Return (0x04)
        }

        //  Now create a case where Local0 and Local1 are different
        Store (STR2, Local1)

        if (LEqual (SizeOf (Local0), SizeOf (Local1)))
        {
           Return (0x05)
        }

        //  Finally, check for the return of SizeOf for a known Buffer. Just
        //  in case we magically pass above cases due to all Buffers being Zero
        //  bytes in size, or Infinity, etc.
        if (LNotEqual (0x05, SizeOf (BUF3)))
        {
           Return (0x06)
        }

        Return (0)
     }  //  TEST
  }  //  SZLV


//
// test BytField.asl
//
//  BytField test
//      This is just a subset of the many RegionOp/Index Field test cases.
```

```
//      Tests access of TBD.
//
   Scope (\_SB)    //  System Bus
   {   //  _SB system bus
      Device (BYTF)
      {   //  Test device name
         Method (TEST)
         {
            Store ("++++++++ BytField Test", Debug)

            Return (\_TZ.C19B.RSLT)
         }   //  TEST
      }   //  BYTF

      Device (C005)
      {   //  Device C005
         Device (C013)
         {   //  Device C013
         }   //  Device C013
      }   //  Device C005

      Method (C115)
      {   //  C115 control method
         Acquire (\_GL, 0xFFFF)
         Store (\_SB.C005.C013.C058.C07E, Local0)
         Release (\_GL)
         And (Local0, 16, Local0)
         Store (ShiftRight (Local0, 4, ), Local1)
         If (LEqual (Local1, 0))
            {   Return (1)  }
         Else
            {   Return (0)  }
      }   //  C115 control method
   }   //  _SB system bus

   OperationRegion (C018, SystemIO, 0x5028, 4)
   Field (C018, AnyAcc, NoLock, Preserve)
   {   //  Field overlaying C018
      C019,   32
   }   //  Field overlaying C018

   OperationRegion (C01A, SystemIO, 0x5030, 4)
   Field (C01A, ByteAcc, NoLock, Preserve)
   {   //  Field overlaying C01A
      C01B,   8,
      C01C,   8,
      C01D,   8,
      C01E,   8
```

```
}   //  Field overlaying C01A

Mutex (\C01F, 0)
Name (\C020, 0)
Name (\C021, 0)

Method (\C022, 0)
{   //  \C022 control method
   Acquire (\C01F, 0xFFFF)
   If (LEqual (\C021, 0))
   {
      Store (C019, Local0)
      And (Local0, 0xFFFEFFFE, Local0)
      Store (Local0, C019)
      Increment (\C021)
   }
   Release (\C01F)
}   //  \C022 control method

Scope (\_SB.C005.C013)
{   //  Scope \_SB.C005.C013
   Device (C058)
   {   //  Device C058
      Name (_HID, "*PNP0A06")

      OperationRegion (C059, SystemIO, 0xE0, 2)
      Field (C059, ByteAcc, NoLock, Preserve)
      {   //  Field overlaying C059
         C05A,   8,
         C05B,   8
      }   //  Field overlaying C059

      OperationRegion (C05C, SystemIO, 0xE2, 2)
      Field (C05C, ByteAcc, NoLock, Preserve)
      {   //  Field overlaying C05C
         C05D,   8,
         C05E,   8
      }   //  Field overlaying C05C
      IndexField (C05D, C05E, ByteAcc, NoLock, Preserve)
      {   //  IndexField overlaying C05D/C05E
         ,       0x410,  //  skip
         C05F,   8,
         C060,   8,
         C061,   8,
         C062,   8,
         C063,   8,
         C064,   8,
         C065,   8,
```

```
    C066,   8,
    C067,   8,
    C068,   8,
    C069,   8,
    C06A,   8,
    C06B,   8,
    C06C,   8,
    C06D,   8,
    C06E,   8,
    ,       0x70,       // skip
    C06F,   8,
    C070,   8,
    C071,   8,
    C072,   8,
    C073,   8,
    C074,   8,
    C075,   8,
    C076,   8,
    C077,   8,
    C078,   8,
    C079,   8,
    C07A,   8,
    C07B,   8,
    C07C,   8,
    C07D,   8,
    C07E,   8
}   //  IndexField overlaying C05D/C05E

OperationRegion (C07F, SystemIO, 0xE4, 2)
Field (C07F, ByteAcc, NoLock, Preserve)
{   //  Field overlaying C07F
    C080,   8,
    C081,   8
}   //  Field overlaying C07F

OperationRegion (C082, SystemIO, 0xE0, 1)
Field (C082, ByteAcc, NoLock, Preserve)
{   //  Field overlaying C082
    C083,   8
}   //  Field overlaying C082

OperationRegion (C084, SystemIO, 0xFF, 1)
Field (C084, ByteAcc, NoLock, Preserve)
{   //  Field overlaying C084
    C085,   8
}   //  Field overlaying C084

OperationRegion (C086, SystemIO, 0xFD, 1)
```

```
    Field (C086, ByteAcc, NoLock, Preserve)
    {   // Field overlaying C086
        C087,   8
    }   // Field overlaying C086

    Mutex (C088, 0)
    Mutex (C089, 0)
    Mutex (C08A, 0)
    Mutex (C08B, 0)
    Mutex (C08C, 0)
    Mutex (C08D, 0)

    Name (C08E, 0xFFFFFFFD)
    Name (C08F, 0)

    Method (C0AA, 4)
    {   // C0AA control method
        Store (Buffer (4) {}, Local7)
        CreateByteField (Local7, 0, C0AB)
        CreateByteField (Local7, 1, C0AC)
        CreateByteField (Local7, 2, C0AD)
        CreateByteField (Local7, 3, C0AE)
        Acquire (^C08B, 0xFFFF)
        Acquire (\_GL, 0xFFFF)
        \C022 ()
        Store (1, \_SB.C005.C013.C058.C06B)
        While (LNot (LEqual (0, \_SB.C005.C013.C058.C06B)))
            {   Stall (100) }
        Store (Arg3, \_SB.C005.C013.C058.C06E)
        Store (Arg2, \_SB.C005.C013.C058.C06D)
        Store (Arg1, \_SB.C005.C013.C058.C06C)
        Store (Arg0, \_SB.C005.C013.C058.C06B)
        While (LNot (LEqual (0, \_SB.C005.C013.C058.C06B)))
            {   Stall (100) }
        Store (\_SB.C005.C013.C058.C06E, C0AB)
        Store (\_SB.C005.C013.C058.C06D, C0AC)
        Store (\_SB.C005.C013.C058.C06C, C0AD)
        Store (\_SB.C005.C013.C058.C06B, C0AE)
        If (LNot (LEqual (Arg0, 23)))
        {
            Store (2, \_SB.C005.C013.C058.C06B)
            Stall (100)
        }
        Release (\_GL)
        Release (^C08B)
        Return (Local7)
    }   // C0AA control method
}   // Device C058
```

```
}  //  Scope \_SB.C005.C013

Scope (\_TZ)
{  //  \_TZ thermal zone scope
   Name (C18B, Package (2)
   {
      Package (2)
      {
         Package (5) {0x05AC, 0x0CD2, 0x0D68, 0x0DE0, 0x0E4E},
         Package (5) {0x0D04, 0x0D9A, 0x0DFE, 0x0E80, 0x0FA2}
      },
      Package (2)
      {
         Package (5) {0x05AC, 0x0CD2, 0x0D68, 0x0DE0, 0x0E4E},
         Package (5) {0x0D04, 0x0D9A, 0x0DFE, 0x0E80, 0x0FA2}
      }
   })  //  C18B

   Name (C18C, Package (2)
   {
      Package (2)
      {
         Package (3) {0x64, 0x4B, 0x32},
         Package (3) {0x64, 0x4B, 0x32}
      }
   })  //  C81C

   Name (C18D, 0)
   Name (C18E, 0)
   Name (C18F, 0)
   Name (C190, 0)
   Name (C191, 3)
   Name (C192, 0)
   Name (C193, 1)
   Name (C194, 2)
   Mutex (C195, 0)
   Name (C196, 1)
   Name (C197, 0x0B9C)
   Name (C198, 0x0B9C)
   Name (C199, 0xFFFFFFFD)
   Name (C19A, 0)

   Device (C19B)
   {  //  Device C19B
      Name (RSLT, 0)  //  default to zero

      Method (XINI)
      {  //  _INI control method (Uses Global Lock -- can't run under AcpiExec)
```

```
            Store (\_SB.C115, C19A)
            \_TZ.C19C._SCP (0)
            Subtract (0x0EB2, 0x0AAC, Local1)   //  Local1 = AACh - EB2h
            Divide (Local1, 10, Local0, Local2) //  Local0 = Local1 / 10
                                                //  Local2 = Local1 % 10
            \_SB.C005.C013.C058.C0AA (14, Local2, 0, 0)
            Store
               (DerefOf (Index (DerefOf (Index (\_TZ.C18C, C19A, )), 0, )), C18D)
            Store
               (DerefOf (Index (DerefOf (Index (\_TZ.C18C, C19A, )), 1, )), C18E)
            Store
               (DerefOf (Index (DerefOf (Index (\_TZ.C18C, C19A, )), 2, )), C18F)

            Store (1, RSLT) //  set RSLT to 1 if _INI control method completes
         }   //  _INI control method

         //  PowerResource (C19D) {...}
      }   //  Device C19B

      ThermalZone (C19C)
      {
         Method (_SCP, 1)
         {   //  _SCP control method
            Store (Arg0, Local0)
            If (LEqual (Local0, 0))
            {
               Store (0, \_TZ.C192)
               Store (1, \_TZ.C193)
               Store (2, \_TZ.C194)
               Store (3, \_TZ.C191)
            }
            Else
            {
               Store (0, \_TZ.C191)
               Store (1, \_TZ.C192)
               Store (2, \_TZ.C193)
               Store (3, \_TZ.C194)
            }
         }   //  _SCP control method
      }   //  ThermalZone C19C
   }   //  \_TZ thermal zone scope


//
// test DwrdFld.asl
//
   Name (BUFR, buffer(10) {0,0,0,0,0,0,0,0,0,0} )
```

```
Device (DWDF)
{
   Method (TEST)
   {
      Store ("++++++++ DwrdFld Test", Debug)

      CreateByteField (BUFR, 0, BYTE)
      Store (0xAA, BYTE)

      CreateWordField (BUFR, 1, WORD)
      Store (0xBBCC, WORD)

      CreateDWordField (BUFR, 3, DWRD)
      Store (0xDDEEFF00, DWRD)

      CreateByteField (BUFR, 7, BYT2)
      Store (0x11, BYT2)

      CreateWordField (BUFR, 8, WRD2)
      Store (0x2233, WRD2)

      Return (0)

   }  //  End Method TEST
}  //  Device DWDF

//
// test DivAddx.asl
//
Name (B1LO, 0xAA)
Name (B1HI, 0xBB)

Method (MKW_, 2)
{  //  This control method will take two bytes and make them into a WORD

   Multiply (B1HI, 256, Local0)    //  Make high byte.....high
   Or (Local0, B1LO, Local0)       //  OR in the low byte
   Return (Local0)                 //  Return the WORD

}  //  MKW_

Device (DVAX)
{
   Method (TEST)
   {

      Store ("++++++++ DivAddx Test", Debug)
```

```
        Store (25, B1LO)
        Store (0, B1HI)

        //  We'll multiply 25 * 3 to get 75, add 99 to it then divide
        //  by 100. We expect to get 74 for the remainder and 1 for
        //  the quotient.
        Divide(
           Add (Multiply (3, MKW_ (B1LO, B1HI)), 0x63),
                    //  Dividend,
           100,       //  Divisor
           Local4,    //  Remainder
           Local2)    //  Quotient

        If (LAnd (LEqual (74, Local4), LEqual (1, Local2)))
        {   //  Indicate Pass
           Store (0x00, Local0)
        }

        Else
        {   //  Indicate Fail
           Store (0x01, Local0)
        }

        Return (Local0)
     }   //  End Method TEST
  }   //  Device DVAX

//
// test IndexFld.asl (IndexOp6.asl)
//
//  IndexFld test
//     This is just a subset of the many RegionOp/Index Field test cases.
//     Tests index field element AccessAs macro.
//     Also tests name resolution of index field elements with same names
//     but different namespace scopes.
//
  Device (IDX6)
  {   //  Test device name

     OperationRegion (SIO, SystemIO, 0x100, 2)
     Field (SIO, ByteAcc, NoLock, Preserve)
     {
        INDX,   8,
        DATA,   8
     }
     IndexField (INDX, DATA, AnyAcc, NoLock, WriteAsOnes)
     {
        AccessAs (ByteAcc, 0),
```

```
            IFE0,   8,
            IFE1,   8,
            IFE2,   8,
            IFE3,   8,
            IFE4,   8,
            IFE5,   8,
            IFE6,   8,
            IFE7,   8,
            IFE8,   8,
            IFE9,   8,
        }

        Device (TST_)
        {   //  TST_:   provides a different namespace scope for IFE0 and IFE1
            OperationRegion (SIO2, SystemIO, 0x100, 2)
            Field (SIO2, ByteAcc, NoLock, Preserve)
            {
                IND2,   8,
                DAT2,   8
            }
            IndexField (IND2, DAT2, AnyAcc, NoLock, WriteAsOnes)
            {
                IFE0,   8,  //  duplicate IndexField name with different scope
                IFE1,   8
            }
        }   //  TST_:   provides a different namespace scope for IFE0 and IFE1

        Method (TEST)
        {
            Store ("++++++++ IndexOp6 Test", Debug)

            Store (IFE0, Local0)
            Store (IFE1, Local1)
            Store (IFE2, Local2)

            //  validate name resolution of IndexFields with different scopes
            Store (\IDX6.IFE0, Local3)
            Store (\IDX6.IFE1, Local4)
            //  verioading of namespace can resolve following names
            Store (\IDX6.TST_.IFE0, Local5)
            Store (\IDX6.TST_.IFE1, Local6)

            Return (0)
        }   //  TEST
    }   //  IDX6

//
// test IndexOp5.asl
```

```
//
//  IndexOp5 test
//      This is just a subset of the many RegionOp/Index Field test cases.
//      Tests copying string into buffer then performing IndexOp on result.
//
  Device (IDX5)
  {   //  Test device name

      Name (OSFL, 0)  //  0 == Windows 98, 1 == Windows NT

      //  MCTH is a control method to compare two strings. It returns
      //  zero if the strings mismatch, or 1 if the strings match.
      //  This exercises the test case of copying a string into a buffer
      //  and performing an IndexOp on the resulting buffer.
      Method (MCTH, 2, Serialized)    //  Control Method to compare two strings
      {   //  MCTH:   Control Method to compare two strings
          //  Arg0:       first string to compare
          //  Arg1:       second string to compare
          //  Return: zero if strings mismatch, 1 if strings match

          //  check if first string's length is less than second string's length
          If (LLess (SizeOf (Arg0), SizeOf (Arg1)))
              {   Return (0)  }

          //  increment length to include NULL termination character
          Add (SizeOf (Arg0), 1, Local0)  //  Local0 = strlen(Arg0) + 1

          //  create two buffers of size Local0 [strlen(Arg0)+1]
          Name (BUF0, Buffer (Local0) {})
          Name (BUF1, Buffer (Local0) {})

          //  copy strings into buffers
          Store (Arg0, BUF0)
          Store (Arg1, BUF1)

          //  validate BUF0 and BUF1 are still buffers
          Store (ObjectType (BUF0), Local1)
          If (LNotEqual (Local1, 3))  //  Buffer is type 3
              {   Return (20) }
          Store (ObjectType (BUF1), Local1)
          If (LNotEqual (Local1, 3))  //  Buffer is type 3
              {   Return (21) }

          // Decrement because the Index base below is zero based
          //  while Local0 length is one based.
          Decrement (Local0)

          While (Local0)
```

```
        {   //  loop through all BUF0 buffer elements
            Decrement (Local0)

            //  check if BUF0[n] == BUF1[n]
            If (LEqual (DerefOf (Index (BUF0, Local0, )),
                    DerefOf (Index (BUF1, Local0, ))))
                {   }   //  this is how the code was really implemented
            Else
                {   Return (Zero)   }
        }   //  loop through all BUF0 buffer elements

        Return (One)    //  strings / buffers match
    }   //  MCTH:   Control Method to compare two strings


    Method (TEST)
    {
        Store ("++++++++ IndexOp5 Test", Debug)

        If (MCTH (\_OS, "Microsoft Windows NT"))
            {   Store (1, OSFL) }

        If (LNotEqual (OSFL, 1))
            {   Return (11) }

        Return (0)
    }   //  TEST
  }   //  IDX5

//
// test IndexOp.asl
//
  Scope (\_SB)    //  System Bus
  {   //  _SB system bus

    Method (C097)
        {   Return (1)  }

    Device (PCI2)
    {   //  Root PCI Bus
        Name (_HID, EISAID("PNP0A03"))
        Name (_ADR, 0x00000000)
        Name (_CRS, Buffer(26)  {"\_SB_.PCI2._CRS....."})
        Method (_STA)   {Return (0x0F)}

        Device (ISA)
        {   //  ISA bridge
            Name (_ADR, 0x00030000)     //  ISA bus ID
```

```
Device (EC0)
{   //  Embedded Controller
    Name (_GPE, 0)              //  EC use GPE0
    Name (_ADR, 0x0030000)  //  PCI address

    Method (_STA,0)         //  EC Status
        {   Return(0xF) }       //  EC is functioning

    Name (_CRS, ResourceTemplate()
        {
            IO (Decode16, 0x62, 0x62, 1, 1)
            IO (Decode16, 0x66, 0x66, 1, 1)
        }
    )

//  create EC's region and field
    OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
    Field (RAM, AnyAcc, NoLock, Preserve)
    {
        //  AC information
        ADP,    1,      //  AC Adapter 1:On-line, 0:Off-line
        AFLT,   1,      //  AC Adapter Fault  1:Fault  0:Normal
        BAT0,   1,      //  BAT0  1:present, 0:not present
        ,       1,      //  reserved
        ,       28, //  filler to force DWORD alignment

        //  CMBatt information
        BPU0,   32, //  Power Unit
        BDC0,   32, //  Designed Capacity
        BFC0,   32, //  Last Full Charge Capacity
        BTC0,   32, //  Battery Technology
        BDV0,   32, //  Design Voltage
        BST0,   32, //  Battery State
        BPR0,   32, //  Battery Present Rate
                    //  (Designed Capacity)x(%)/{(h)x100}
        BRC0,   32, //  Battery Remaining Capacity
                    //  (Designed Capacity)(%)^100
        BPV0,   32, //  Battery Present Voltage
        BTP0,   32, //  Trip Point
        BCW0,   32, //  Design capacity of Warning
        BCL0,   32, //  Design capacity of Low
        BCG0,   32, //  capacity granularity 1
        BG20,   32, //  capacity granularity 2
        BMO0,   32, //  Battery model number field
        BIF0,   32, //  OEM Information(00h)
        BSN0,   32, //  Battery Serial Number
        BTY0,   32, //  Battery Type (e.g., "Li-Ion")
```

```
            BTY1,   32      // Battery Type (e.g., "Li-Ion")
          }  // Field
        }  // EC0: Embedded Controller
      }  // ISA bridge
    }  // PCI2 Root PCI Bus

    Device (IDX0)
    {  // Test device name
      Name (_HID, EISAID ("PNP0C0A"))     // Control Method Battey ID
      Name (_PCL, Package() {\_SB})
      Method (_STA)
      {
        // _STA bits 0-3 indicate existence of battery slot
        // _STA bit 4 indicates battery (not) present
        If (\_SB.PCI2.ISA.EC0.BAT0)
          {  Return (0x1F)  }  // Battery present
        else
          {  Return (0x0F)  }  // Battery not present
      }  // _STA

      Method (_BIF,, Serialized)
      {
        Name (BUFR, Package(13) {})
        Store (\_SB.PCI2.ISA.EC0.BPU0, Index (BUFR,0))  // Power Unit
        Store (\_SB.PCI2.ISA.EC0.BDC0, Index (BUFR,1))  // Designed Capacity
        Store (\_SB.PCI2.ISA.EC0.BFC0, Index (BUFR,2))  // Last Full Charge Capa.
        Store (\_SB.PCI2.ISA.EC0.BTC0, Index (BUFR,3))  // Battery Technology
        Store (\_SB.PCI2.ISA.EC0.BDV0, Index (BUFR,4))  // Designed Voltage
        Store (\_SB.PCI2.ISA.EC0.BCW0, Index (BUFR,5))  // Designed warning level
        Store (\_SB.PCI2.ISA.EC0.BCL0, Index (BUFR,6))  // Designed Low level
        Store (\_SB.PCI2.ISA.EC0.BCG0, Index (BUFR,7))  // Capacity granularity 1
        Store (\_SB.PCI2.ISA.EC0.BG20, Index (BUFR,8))  // Capacity granularity 2

        Store ("", Index (BUFR,9))                      // Model Number

        Store ("", Index (BUFR,10))                    // Serial Number

        Store ("LiOn", Index (BUFR,11))                 // Battery Type

        Store ("Chicony", Index (BUFR,12))              // OEM Information

        Return (BUFR)
      }  // _BIF

      Method (_BST,, Serialized)
      {
        Name (BUFR, Package(4) {1, 0x100, 0x76543210, 0x180})
        Return (BUFR)
```

```
}   //  _BST

Method (_BTP,1)
{
   Store (arg0, \_SB.PCI2.ISA.EC0.BTP0)    //  Set Battery Trip point
}

Method (TEST,, Serialized)
{

   Store ("++++++++ IndexOp Test", Debug)

   //  test storing into uninitialized package elements
   Name (PBUF, Package(4) {})  //  leave unitialized
   Store (0x01234567, Index (PBUF,0))
   Store (0x89ABCDEF, Index (PBUF,1))
   Store (0xFEDCBA98, Index (PBUF,2))
   Store (0x76543210, Index (PBUF,3))

   //  verify values stored into uninitialized package elements
   If (LNotEqual (DerefOf (Index (PBUF,0)), 0x01234567))
      {   Return (0x10)   }

   If (LNotEqual (DerefOf (Index (PBUF,1)), 0x89ABCDEF))
      {   Return (0x11)   }

   If (LNotEqual (DerefOf (Index (PBUF,2)), 0xFEDCBA98))
      {   Return (0x12)   }

   If (LNotEqual (DerefOf (Index (PBUF,3)), 0x76543210))
      {   Return (0x13)   }


   //  store _BIF package return value into Local0
   Store (_BIF, Local0)

   //  save Local0 object type value into Local1
   Store (ObjectType (Local0), Local1)

   //  validate Local0 is a Package
   If (LNotEqual (Local1, 4))  //  Package type is 4
      {   Return (0x21)   }   //  failure


   //  test storing into buffer field elements
   Name (BUFR, Buffer(16)
      {   //  initial values
         00, 00, 00, 00, 00, 00, 00, 00,
```

```
                00, 00, 00, 00, 00, 00, 00, 00,
            }
        )  // BUFR
        //  test storing into buffer field elements
        Store (0x01234567, Index (BUFR,0))  //  should only store 0x67
        Store (0x89ABCDEF, Index (BUFR,4))  //  should only store 0xEF
        Store (0xFEDCBA98, Index (BUFR,8))  //  should only store 0x98
        Store (0x76543210, Index (BUFR,12)) //  should only store 0x10

        //  verify storing into buffer field elements
        If (LNotEqual (DerefOf (Index (BUFR,0)), 0x67))
          {   Return (0x30)   }

        If (LNotEqual (DerefOf (Index (BUFR,1)), 0))
          {   Return (0x31)   }

        If (LNotEqual (DerefOf (Index (BUFR,4)), 0xEF))
          {   Return (0x34)   }

        If (LNotEqual (DerefOf (Index (BUFR,8)), 0x98))
          {   Return (0x38)   }

        If (LNotEqual (DerefOf (Index (BUFR,12)), 0x10))
          {   Return (0x3C)   }


        Return (0)  //  pass
      }   //  TEST
    }   //  IDX0
  }   //  _SB system bus

//
// test BitIndex.asl
//
//  BitIndex test
//  This is a test case for accessing fields defined as single bits in
//  memory. This is done by creating two index fields that overlay the
//  same DWORD in memory. One field accesses the DWORD as a DWORD, the
//  other accesses individual bits of the same DWORD field in memory.
//
  Scope (\_SB)    //  System Bus
  {   //  _SB system bus
    OperationRegion (RAM, SystemMemory, 0x800000, 0x100)
    Field (RAM, AnyAcc, NoLock, Preserve)
    {   //  Any access
      TREE,   3,
      WRD0,   16,
      WRD1,   16,
```

```
   WRD2,   16,
   WRD3,   16,
   WRD4,   16,
   DWRD,   32, //  DWORD field
}
Field (RAM, AnyAcc, NoLock, Preserve)
{   //  Any access
   THRE,   3,
   WD00,   16,
   WD01,   16,
   WD02,   16,
   WD03,   16,
   WD04,   16,
   BYT0,   8,  //  Start off with a BYTE
   BIT0,   1,  //  single-bit field
   BIT1,   1,  //  single-bit field
   BIT2,   1,  //  single-bit field
   BIT3,   1,  //  single-bit field
   BIT4,   1,  //  single-bit field
   BIT5,   1,  //  single-bit field
   BIT6,   1,  //  single-bit field
   BIT7,   1,  //  single-bit field
   BIT8,   1,  //  single-bit field
   BIT9,   1,  //  single-bit field
   BITA,   1,  //  single-bit field
   BITB,   1,  //  single-bit field
   BITC,   1,  //  single-bit field
   BITD,   1,  //  single-bit field
   BITE,   1,  //  single-bit field
   BITF,   1,  //  single-bit field
   BYTZ,   8,  //  End with a BYTE for a total of 32 bits
}

Device (BITI)
{   //  Test device name

   Method (MBIT)   //  Test single bit memory accesses
   {

      If (LNotEqual (DWRD, 0x00))
      {
         Store (0xFF00, Local0)
      }
      Else
      {
         //  Prime Local0 with 0...assume passing condition
         Store (0, Local0)
```

```
//  set memory contents to known values using DWORD field
Store (0x5A5A5A5A, DWRD)

//  Given the value programmed into DWRD, only the odd bits
//  of the lower nibble should be set. BIT1, BIT3 should be set.
//  BIT0 and BIT2 should be clear

If (BIT0)
{
   Or (Local0, 0x01, Local0)
}

If (LNot (BIT1))
{
   Or (Local0, 0x02, Local0)
}

If (BIT2)
{
   Or (Local0, 0x04, Local0)
}

If (LNot (BIT3))
{
   Or (Local0, 0x08, Local0)
}

//  Now check the upper nibble. Only the "even" bits should
//  be set. BIT4, BIT6. BIT5 and BIT7 should be clear.
If (LNot (BIT4))
{
   Or (Local0, 0x10, Local0)
}

If (BIT5)
{
   Or (Local0, 0x20, Local0)
}

If (LNot (BIT6))
{
   Or (Local0, 0x40, Local0)
}

If (BIT7)
{
   Or (Local0, 0x80, Local0)
}
```

```
            }   //  End Else DWRD zeroed out

            Return (Local0)
        }   //  MBIT:   Test single bit memory accesses

        Method (TEST)
        {

            Store ("++++++++ BitIndex Test", Debug)

            //  Zero out DWRD
            Store (0x00000000, DWRD)

            //  MBIT returns zero if successful
            //  This may be causing problems -- Return (MBIT)
            Store (MBIT, Local0)

            Return (Local0)
        }   //  TEST
    }   //  BITI
  }   //  _SB system bus

//
// test IndexOp3.asl
//
//  Additional IndexOp test cases to support ACPICMB (control method battery
//  test) on Compaq laptops. Test cases include storing a package into
//  an IndexOp target and validating that changing source and destination
//  package contents are independent of each other.
//
  Scope (\_SB)    //  System Bus
  {   //  _SB system bus

    Name (C174, 13)
    Name (C175, 8)

    Device (C158)
    {   //  C158:   AC Adapter device
      Name (_HID, "ACPI0003") //  AC Adapter device
      Name (_PCL, Package (1) {\_SB})

      Method (_PSR)
      {
        Acquire (\_GL, 0xFFFF)
        Release (\_GL)
        And (Local0, 1, Local0) //  Local0 &= 1
        Return (Local0)
      }   //  _PSR
```

```
}  // C158:  AC Adapter device

Name (C176, Package (4) {"Primary", "MultiBay", "DockRight", "DockLeft"})

Name (C177, Package (4) {0x99F5, 0x99F5, 0x995F, 0x995F})

Name (C178, Package (4)
{
   Package (4) {0, 0, 0x966B, 0x4190},
   Package (4) {0, 0, 0x966B, 0x4190},
   Package (4) {0, 0, 0x966B, 0x4190},
   Package (4) {0, 0, 0x966B, 0x4190}
})  // C178

Name (C179, Package (4) {0, 0, 0x966B, 0x4190})

Name (C17A, Package (4)
{
   Package (3) {0, 0, 0},
   Package (3) {0, 0, 0},
   Package (3) {0, 0, 0},
   Package (3) {0, 0, 0}
})  // C17A

Method (C17B, 1, Serialized)
{   // C17B:  _BIF implementation
   Name (C17C, Package (13)
   {   // C17C:  _BIF control method return package
      0,               // Power Unit (0 ==> mWh and mW)
      0x99F5,          // Design Capacity
      0x99F5,          // Last Full Charge Capacity
      1,               // Battery Technology (1 ==> rechargeable)
      0x3840,          // Design Voltage
      0x1280,          // Design Capacity of Warning
      0x0AC7,          // Design Capacity of Low
      1,               // Battery Capacity Granularity 1 (Low -- Warning)
      1,               // Battery Capacity Granularity 2 (Warning -- Full)
      "2891",          // Model Number (ASCIIZ)
      "(-Unknown-)",   // Serial Number (ASCIIZ)
      "LIon",          // Battery Type (ASCIIZ)
      0                // OEM Information (ASCIIZ)
   })  // C17C:  _BIF control method return package

   And (Arg0, 7, Local0)                  // Local0 = Arg0 & 7

   ShiftRight (Local0, 1, Local4)         // Local4 = Local0 >> 1

   Store (C179, Index (C178, Local4, ))   // C178->Local4 = C179
```

```
    //  verify source and destination packages can be altered independent
    //  of each other (i.e., changing one's contents does NOT change other's
    //  contents)
    Store (0x1234, Index (C179, 2, ))              //  C179[2] = 0x1234
    Store (DerefOf (Index (C179, 2, )), Local2) //  Local2 = C179[2]
    if (LNotEqual (Local2, 0x1234))
       {   Return (0x1234) }
                                                   //  Local2 = C178[0,2]
    Store (DerefOf (Index (DerefOf (Index (C178, 0, )), 2, )), Local2)
    if (LNotEqual (Local2, 0x966B))
       {   Return (0x1234) }

    // Restore data to allow iterative execution
    Store (0x966B, Index (C179, 2, ))              //  C179[2] = 0x966B

                                                   //  C178[0,3] = 0x5678
    Store (0x5678, Index (DerefOf (Index (C178, 0, )), 3, ))
                                                   //  Local2 = C178[0,3]
    Store (DerefOf (Index (DerefOf (Index (C178, 0, )), 3, )), Local2)
    if (LNotEqual (Local2, 0x5678))
       {   Return (0x5678) }

    Store (DerefOf (Index (C179, 3, )), Local2) //  Local2 = C179[3]
    if (LNotEqual (Local2, 0x4190))
       {   Return (0x5678) }

    // Restore data to allow iterative execution
    Store (0x4190, Index (DerefOf (Index (C178, 0, )), 3, ))    //  C179[2] = 0x4190

    Return (C17C)
}   //  C17B:   _BIF implementation

Device (C154)
{   //  C154:   Battery 0
    Name (_HID, "*PNP0C0A")     //  Control Method Battey ID
    Name (_UID, 0)                //  first instance

    Method (_BIF)
    {   //  _BIF
       Return (C17B (48))
    }   //  _BIF
}   //  C154:   Battery 0

Device (IDX3)
{
    Method (LCLB,, Serialized)
    {   //  LCLB control method: test Index(Local#) where Local# is buffer
```

```
// Local0 is index counter
// Local1 is buffer
// Local2 receives BUFR[Local0] via Deref(Index(Local1...))
// Local3 is Local1 or Local2 object type
// Local4 is return error code

Name (BUFR, Buffer ()  {0, 1, 2, 3, 4, 5, 6, 7, 8, 9})

// save PKG into Local1
Store (BUFR, Local1)

// save Local2 object type value into Local3
Store (ObjectType (Local1), Local3)

// validate Local1 is a Buffer
If (LNotEqual (Local3, 3))     // Buffer type is 3
   {   Return (0x9F)   }


Store (0, Local0)
While (LLess (Local0, 5))
{   // While (Local0 < 5)
   // Local2 = Local1[Local0]
   Store (DerefOf (Index (Local1, Local0, )), Local2)

   // save Local2 object type value into Local3
   Store (ObjectType (Local2), Local3)

   // validate Local2 is a Number
   If (LNotEqual (Local3, 1))     // Number type is 1
      {   Return (0x9E)   }

   // validate Local1[Local0] value == Local0
   If (LNotEqual (Local0, Local2))
   {   // Local0 != Local2 == PKG[Local0]
      // Local4 = 0x90 + loop index (Local0)
      Add (0x90, Local0, Local4)

      // return 0x90 + loop index
      Return (Local4)
   }

   Increment (Local0)
}   // While (Local0 < 5)

Store ("DerefOf(Index(LocalBuffer,,)) PASS", Debug)

Return (0)  // Pass
```

```
}   //  LCLB control method: test Index(Local#) where Local# is buffer

Method (LCLP,, Serialized)
{   //  LCLP control method: test Index(Local#) where Local# is package
    //  Local0 is index counter
    //  Local1 is package
    //  Local2 receives PKG[Local0] via Deref(Index(Local1...))
    //  Local3 is Local1 or Local2 object type
    //  Local4 is return error code

    Name (PKG, Package ()   {0, 1, 2, 3, 4, 5, 6, 7, 8, 9})

    //  save PKG into Local1
    Store (PKG, Local1)

    //  save Local2 object type value into Local3
    Store (ObjectType (Local1), Local3)

    //  validate Local1 is a Package
    If (LNotEqual (Local3, 4))      //  Package type is 4
        {   Return (0x8F)   }


    Store (0, Local0)
    While (LLess (Local0, 5))
    {   //  While (Local0 < 5)
        //  Local2 = Local1[Local0]
        Store (DerefOf (Index (Local1, Local0, )), Local2)

        //  save Local2 object type value into Local3
        Store (ObjectType (Local2), Local3)

        //  validate Local2 is a Number
        If (LNotEqual (Local3, 1))      //  Number type is 1
            {   Return (0x8E)   }

        //  validate Local1[Local0] value == Local0
        If (LNotEqual (Local0, Local2))
        {   //  Local0 != Local2 == PKG[Local0]
            //  Local4 = 0x80 + loop index (Local0)
            Add (0x80, Local0, Local4)

            //  return 0x80 + loop index
            Return (Local4)
        }

        Increment (Local0)
    }   //  While (Local0 < 5)
```

```
            Store ("DerefOf(Index(LocalPackage,,)) PASS", Debug)

            Return (0)  //  Pass
        }   //  LCLP control method: test Index(Local#) where Local# is package

        Method (TEST)
        {

            Store ("++++++++ IndexOp3 Test", Debug)

            //  store _BIF package return value into Local0
            Store (\_SB.C154._BIF, Local0)

            //  save Local0 object type value into Local1
            Store (ObjectType (Local0), Local1)

            //  validate Local0 is a Package
            If (LNotEqual (Local1, 4))      //  Package type is 4
            {   //  failure: did not return a Package (type 4)
               //  if Local0 is a Number, it contains an error code
               If (LEqual (Local1, 1))     //  Number type is 1
                  {   Return (Local0) }   //  return Local0 error code
               Else                        //  Local0 is not a Number
                  {   Return (1)  }          //  return default error code
            }   //  failure: did not return a Package (type 4)

            //  save LCLB control method return value into Local2
            Store (LCLB, Local2)
            If (LNotEqual (Local2, 0))
               {   Return (Local2) }   //  return failure code

            //  save LCLP control method return value into Local2
            Store (LCLP, Local2)
            If (LNotEqual (Local2, 0))
               {   Return (Local2) }   //  return failure code

            Return (0)  //  Pass
        }   //  TEST
     }   //  IDX3:   Test device name
  }   //  _SB system bus

//
// MTL developed test to exercise Indexes into buffers
//
  Device(IDX7)
  {
```

```
Name (PKG4, Package() {
        0x2,
        "A short string",
        Buffer() {0xA, 0xB, 0xC, 0xD},
        0x1234,
        Package() {IDX7, 0x3}
        })

//
// Generic Test method
//
// This test returns 0xE (14) - ObjectType = Buffer Field
Method(TST1,, Serialized)
{
    Name (DEST, Buffer ()                       //  62 characters plus NULL
        {"Destination buffer that is longer than the short source buffer"})

    //  verify object type returned by Index(Buffer,Element,)
    Store (Index (DEST, 2, ), Local1)
    Store (ObjectType (Local1), Local2)
    If (LEqual(Local2, 14))
    {
        Return(0)
    }
    Else
    {
        Return(0x1)
    }

}

Method(TST2,, Serialized)
{
    Name (BUF0, Buffer() {0x1, 0x2, 0x3, 0x4, 0x5})
    Store(0x55, Index(BUF0, 2))
    Store(DerefOf(Index(BUF0, 2)), Local0)
    If (LEqual(Local0, 0x55))
    {
        Return(0)
    }
    Else
    {
        Return(0x2)
    }


}
```

```
Method(TST3,, Serialized)
{
   Name (BUF1, Buffer() {0x1, 0x2, 0x3, 0x4, 0x5})
   Store(Index(BUF1, 1), Local0)
   Store(DerefOf(Local0), Local1)
   If (LEqual(Local1, 0x2))
   {
      Return(0)
   }
   Else
   {
      Return(0x3)
   }

}

Method(TST4)
{
   // Index (PKG4, 0) is a Number
   Store (Index (PKG4, 0), Local0)
   Store (ObjectType(Local0), Local1)
   If (LEqual(Local1, 0x1))
   {
      Return(0)
   }
   Else
   {
      Return(0x4)
   }

}

Method(TST5)
{
   // Index (PKG4, 1) is a String
   Store (Index (PKG4, 1), Local0)
   Store (ObjectType(Local0), Local1)
   If (LEqual(Local1, 0x2))
   {
      Return(0)
   }
   Else
   {
      Return(0x5)
   }

}
```

```
Method(TST6)
{
   // Index (PKG4, 2) is a Buffer
   Store (Index (PKG4, 2), Local0)
   Store (ObjectType(Local0), Local1)
   If (LEqual(Local1, 0x3))
   {
      Return(0)
   }
   Else
   {
      Return(0x6)
   }

}

Method(TST7)
{
   // Index (PKG4, 3) is a Number
   Store (Index (PKG4, 3), Local0)
   Store (ObjectType(Local0), Local1)
   If (LEqual(Local1, 0x1))
   {
      Return(0)
   }
   Else
   {
      Return(0x7)
   }

}

Method(TST8)
{
   // Index (PKG4, 4) is a Package
   Store (Index (PKG4, 4), Local0)
   Store (ObjectType(Local0), Local1)
   If (LEqual(Local1, 0x4))
   {
      Return(0)
   }
   Else
   {
      Return(0x8)
   }

}
```

```
Method(TST9)
{
   // DerefOf (Index (PKG4, 0)) is a Number
   Store (DerefOf (Index (PKG4, 0)), Local0)
   If (LEqual(Local0, 0x2))
   {
      Return(0)
   }
   Else
   {
      Return(0x9)
   }

}

Method(TSTA)
{
   // DerefOf (Index (PKG4, 1)) is a String
   Store (DerefOf (Index (PKG4, 1)), Local0)
   Store (SizeOf(Local0), Local1)
   If (LEqual(Local1, 0xE))
   {
      Return(0)
   }
   Else
   {
      Return(0xA)
   }

}

Method(TSTB)
{
   // DerefOf (Index (PKG4, 2)) is a Buffer
   Store (DerefOf (Index (PKG4, 2)), Local0)
   Store (SizeOf(Local0), Local1)
   If (LEqual(Local1, 0x4))
   {
      Return(0)
   }
   Else
   {
      Return(0xB)
   }

}

Method(TSTC)
```

```
{
   // DerefOf (Index (PKG4, 3)) is a Number
   Store (DerefOf (Index (PKG4, 3)), Local0)
   If (LEqual(Local0, 0x1234))
   {
      Return(0)
   }
   Else
   {
      Return(0xC)
   }

}

Method(TSTD)
{
   // DerefOf (Index (PKG4, 4)) is a Package
   Store (DerefOf (Index (PKG4, 4)), Local0)
   Store (SizeOf(Local0), Local1)
   If (LEqual(Local1, 0x2))
   {
      Return(0)
   }
   Else
   {
      Return(0xD)
   }

}

Method(TSTE)
{
   // DerefOf (Index (PKG4, 2)) is a Buffer
   Store (DerefOf (Index (PKG4, 2)), Local0)
   // DerefOf (Index (Local0, 1)) is a Number
   Store (DerefOf (Index (Local0, 1)), Local1)
   If (LEqual(Local1, 0xB))
   {
      Return(0)
   }
   Else
   {
      Return(0xE)
   }

}

Method (TSTF,, Serialized)
```

```
{
   Name (SRCB, Buffer (12) {}) //  12 characters
   Store ("Short Buffer", SRCB)

   Name (DEST, Buffer ()                    //  62 characters plus NULL
      {"Destination buffer that is longer than the short source buffer"})

   //  overwrite DEST contents, starting at buffer position 2
   Store (SRCB, Index (DEST, 2))

   //
   //  The DEST buffer element should be replaced with the last element of
   //      the SRCB element (i.e. 's'->'r')
   Store (DerefOf (Index (DEST, 2)), Local0)

   If (LNotEqual (Local0, 0x72))       //  'r'
   {
      //  DEST element does not match the value from SRCB
      Return(Or(Local0, 0x1000))
   }

   Return(0)
}

Method (TSTG,, Serialized)
{

   Name (SRCB, Buffer (12) {}) //  12 characters
   Store ("Short Buffer", SRCB)

   Name (DEST, Buffer ()                    //  62 characters plus NULL
      {"Destination buffer that is longer than the short source buffer"})

   //  overwrite DEST contents, starting at buffer position 2
   Store (SRCB, Index (DEST, 2))

   //
   // The next element of DEST should be unchanged
   //
   Store (DerefOf (Index (DEST, 3)), Local0)

   If (LNotEqual (Local0, 0x74))       //  't'
   {
      //  DEST has been changed
      Return(Or(Local0, 0x2000))
   }

   //
```

```
// The next element of DEST should be unchanged
//
Store (DerefOf (Index (DEST, 4)), Local0)

If (LNotEqual (Local0, 0x69))       //  'i'
{
   //  DEST has been changed
   Return(Or(Local0, 0x2100))
}

//
// The next element of DEST should be unchanged
//
Store (DerefOf (Index (DEST, 5)), Local0)

If (LNotEqual (Local0, 0x6E))       //  'n'
{
   //  DEST has been changed
   Return(Or(Local0, 0x2200))
}

//
// The next element of DEST should be unchanged
//
Store (DerefOf (Index (DEST, 6)), Local0)

If (LNotEqual (Local0, 0x61))       //  'a'
{
   //  DEST has been changed
   Return(Or(Local0, 0x2300))
}

//
// The next element of DEST should be unchanged
//
Store (DerefOf (Index (DEST, 7)), Local0)

If (LNotEqual (Local0, 0x74))       //  't'
{
   //  DEST has been changed
   Return(Or(Local0, 0x2400))
}

//
//  Verify DEST elements beyond end of SRCB buffer copy
//  have not been changed
Store (DerefOf (Index (DEST, 14)), Local0)
```

```
    If (LNotEqual (Local0, 0x66))       // 'f'
    {
        //  DEST has been changed
        Return(Or(Local0, 0x2400))
    }

    Return(0)
}

//
// This test shows that MS ACPI.SYS stores only the lower 8-bits of a 32-bit
//  number into the index'ed buffer
//
Method (TSTH,, Serialized)
{
    // Create a Destination Buffer
    Name (DBUF, Buffer () {"abcdefghijklmnopqrstuvwxyz"})

    // Store a number > UINT8 into an index of the buffer
    Store (0x12345678, Index(DBUF, 2))

    // Check the results
    Store (DerefOf (Index (DBUF, 2)), Local0)
    If (LNotEqual (Local0, 0x78))   // 0x78
    {
        Return(Or(Local0, 0x3000))
    }

    Store (DerefOf (Index (DBUF, 3)), Local0)
    If (LNotEqual (Local0, 0x64))   // 'd'
    {
        Return(Or(Local0, 0x3100))
    }

    Store (DerefOf (Index (DBUF, 4)), Local0)
    If (LNotEqual (Local0, 0x65))   // 'e'
    {
        Return(Or(Local0, 0x3200))
    }

    Store (DerefOf (Index (DBUF, 5)), Local0)
    If (LNotEqual (Local0, 0x66))   // 'f'
    {
        Return(Or(Local0, 0x3300))
    }

    Return(0)
}
```

```
Method (TSTI,, Serialized)
{
   // Create a Destination Buffer
   Name (DBUF, Buffer () {"abcdefghijklmnopqrstuvwxyz"})

   // Store a String into an index of the buffer
   Store ("ABCDEFGH", Index(DBUF, 2))

   // Check the results
   Store (DerefOf (Index (DBUF, 2)), Local0)
   If (LNotEqual (Local0, 0x48))   // 'H'
   {
      Return(Or(Local0, 0x4000))
   }

   Store (DerefOf (Index (DBUF, 3)), Local0)
   If (LNotEqual (Local0, 0x64))   // 'd'
   {
      Return(Or(Local0, 0x4100))
   }

   Store (DerefOf (Index (DBUF, 4)), Local0)
   If (LNotEqual (Local0, 0x65))   // 'e'
   {
      Return(Or(Local0, 0x4200))
   }

   Store (DerefOf (Index (DBUF, 5)), Local0)
   If (LNotEqual (Local0, 0x66))   // 'f'
   {
      Return(Or(Local0, 0x4300))
   }

   Return(0)
}

Method(TSTJ,, Serialized)
{
   // Create a Destination Buffer
   Name (DBUF, Buffer () {"abcdefghijklmnopqrstuvwxyz"})

   // Store a number > UINT8 into an index of the buffer
   Store (0x1234, Index(DBUF, 2))

   // Check the results
   Store (DerefOf (Index (DBUF, 2)), Local0)
   If (LNotEqual (Local0, 0x34))   // 0x34
```

```
    {
        Return(Or(Local0, 0x3000))
    }

    Store (DerefOf (Index (DBUF, 3)), Local0)
    If (LNotEqual (Local0, 0x64))   // 'd'
    {
        Return(Or(Local0, 0x3100))
    }

    Store (DerefOf (Index (DBUF, 4)), Local0)
    If (LNotEqual (Local0, 0x65))   // 'e'
    {
        Return(Or(Local0, 0x3200))
    }

    Store (DerefOf (Index (DBUF, 5)), Local0)
    If (LNotEqual (Local0, 0x66))   // 'f'
    {
        Return(Or(Local0, 0x3300))
    }

    Return(0)
}

Method(TSTK,, Serialized)
{
    // Create a Destination Buffer
    Name (DBUF, Buffer () {"abcdefghijklmnopqrstuvwxyz"})

    // Store a number > UINT8 into an index of the buffer
    Store (0x123456, Index(DBUF, 2))

    // Check the results
    Store (DerefOf (Index (DBUF, 2)), Local0)
    If (LNotEqual (Local0, 0x56))   // 0x56
    {
        Return(Or(Local0, 0x3000))
    }

    Store (DerefOf (Index (DBUF, 3)), Local0)
    If (LNotEqual (Local0, 0x64))   // 'd'
    {
        Return(Or(Local0, 0x3100))
    }

    Store (DerefOf (Index (DBUF, 4)), Local0)
    If (LNotEqual (Local0, 0x65))   // 'e'
```

```
    {
        Return(Or(Local0, 0x3200))
    }

    Store (DerefOf (Index (DBUF, 5)), Local0)
    If (LNotEqual (Local0, 0x66))   // 'f'
    {
        Return(Or(Local0, 0x3300))
    }

    Return(0)
}

Method(TSTL,, Serialized)
{
    // Create a Destination Buffer
    Name (DBUF, Buffer () {"abcdefghijklmnopqrstuvwxyz"})

    // Store a number > UINT8 into an index of the buffer
    Store (0x12, Index(DBUF, 2))

    // Check the results
    Store (DerefOf (Index (DBUF, 2)), Local0)
    If (LNotEqual (Local0, 0x12))   // 0x12
    {
        Return(Or(Local0, 0x3000))
    }

    Store (DerefOf (Index (DBUF, 3)), Local0)
    If (LNotEqual (Local0, 0x64))   // 'd'
    {
        Return(Or(Local0, 0x3100))
    }

    Store (DerefOf (Index (DBUF, 4)), Local0)
    If (LNotEqual (Local0, 0x65))   // 'e'
    {
        Return(Or(Local0, 0x3200))
    }

    Store (DerefOf (Index (DBUF, 5)), Local0)
    If (LNotEqual (Local0, 0x66))   // 'f'
    {
        Return(Or(Local0, 0x3300))
    }

    Return(0)
}
```

```
Method(TEST)
{
   Store ("++++++++ IndexOp7 Test", Debug)

   Store(TST1(), Local0)
   if (LGreater (Local0, 0))
   {
      Return(Local0)
   }

   Store(TST2(), Local0)
   if (LGreater (Local0, 0))
   {
      Return(Local0)
   }

   Store(TST3(), Local0)
   if (LGreater (Local0, 0))
   {
      Return(Local0)
   }

   Store(TST4(), Local0)
   if (LGreater (Local0, 0))
   {
      Return(Local0)
   }

   Store(TST5(), Local0)
   if (LGreater (Local0, 0))
   {
      Return(Local0)
   }

   Store(TST6(), Local0)
   if (LGreater (Local0, 0))
   {
      Return(Local0)
   }

   Store(TST7(), Local0)
   if (LGreater (Local0, 0))
   {
      Return(Local0)
   }

   Store(TST8(), Local0)
```

```
        if (LGreater (Local0, 0))
        {
            Return(Local0)
        }

        Store(TST9(), Local0)
        if (LGreater (Local0, 0))
        {
            Return(Local0)
        }

        Store(TSTA(), Local0)
        if (LGreater (Local0, 0))
        {
            Return(Local0)
        }

        Store(TSTB(), Local0)
        if (LGreater (Local0, 0))
        {
            Return(Local0)
        }

        Store(TSTC(), Local0)
        if (LGreater (Local0, 0))
        {
            Return(Local0)
        }

        Store(TSTD(), Local0)
        if (LGreater (Local0, 0))
        {
            Return(Local0)
        }

        Store(TSTE(), Local0)
        if (LGreater (Local0, 0))
        {
            Return(Local0)
        }

    /* No longer ACPI compliant */
    /*
        Store(TSTF(), Local0)
        if (LGreater (Local0, 0))
        {
            Return(Local0)
        }
```

```
    */

        Store(TSTG(), Local0)
        if (LGreater (Local0, 0))
        {
           Return(Local0)
        }

        Store(TSTH(), Local0)
        if (LGreater (Local0, 0))
        {
           Return(Local0)
        }

    /* No longer ACPI compliant */
    /*
        Store(TSTI(), Local0)
        if (LGreater (Local0, 0))
        {
           Return(Local0)
        }
    */
        Store(TSTJ(), Local0)
        if (LGreater (Local0, 0))
        {
           Return(Local0)
        }

        Store(TSTK(), Local0)
        if (LGreater (Local0, 0))
        {
           Return(Local0)
        }

        Store(TSTL(), Local0)
        if (LGreater (Local0, 0))
        {
           Return(Local0)
        }

        Return(Local0)

      }

    } // Device(IDX7)

  //
  // test MatchOp.asl
```

```
//
//  MatchOp test cases that utilize nested DerefOf(Index(...)) to validate
//  MatchOp, DerefOfOp, and IndexOp of nested packages.
//
  Device (MTCH)
  {

    Method (TEST,, Serialized)
    {
      Store ("++++++++ MatchOp Test", Debug)

      Name (TIM0, Package ()
        {
          Package ()  {0x78, 0xB4, 0xF0, 0x0384},
          Package ()  {0x23, 0x21, 0x10, 0},
          Package ()  {0x0B, 9, 4, 0},
          Package ()  {0x70, 0x49, 0x36, 0x27, 0x19},
          Package ()  {0, 1, 2, 1, 2},
          Package ()  {0, 0, 0, 1, 1},
          Package ()  {4, 3, 2, 0},
          Package ()  {2, 1, 0, 0}
        })  //  TIM0

      Name (TMD0, Buffer (20) {0xFF, 0xFF, 0xFF, 0xFF })
      CreateDWordField (TMD0, 0, PIO0)    //  0xFFFFFFFF
      CreateDWordField (TMD0, 4, DMA0)
      CreateDWordField (TMD0, 8, PIO1)
      CreateDWordField (TMD0, 12, DMA1)
      CreateDWordField (TMD0, 16, CHNF)


      //  validate PIO0 value
      Store (PIO0, Local3)

      //  save Local3 object type value into Local2
      Store (ObjectType (Local3), Local2)

      //  validate Local3 is a Number
      If (LNotEqual (Local2, 1))  //  Number type is 1
        {   Return (2)  }   //  failure

      //  validate Local3 Number value
      If (LNotEqual (Local3, 0xFFFFFFFF)) //  Number value 0xFFFFFFFF
        {   Return (3)  }   //  failure

      Store ("DWordField PASS", Debug)
```

```
Store (0, Local5)
Store (Match (DerefOf (Index (TIM0, 1, )), MLE, Local5, MTR, 0, 0), Local6)

//  save Local6 object type value into Local2
Store (ObjectType (Local6), Local2)

//  validate Local6 is a Number
If (LNotEqual (Local2, 1))  //  Number type is 1
   {   Return (4)  }   //  failure

Store ("Match(DerefOf(Index(TIM0,1)),... PASS", Debug)


//  validate following produces a nested package to validate
//  that MatchOp did not corrupt SearchPackage (TIM0)
Store (DerefOf (Index (TIM0, 1, )), Local4)

//  save Local4 object type value into Local2
Store (ObjectType (Local4), Local2)

//  validate Local4 is a Package
If (LNotEqual (Local2, 4))  //  Package type is 4
   {   Return (5)  }   //  failure

Store ("DerefOf(Index(TIM0,1)),... PASS", Debug)


And (Match (DerefOf (Index (TIM0, 0, )), MGE, PIO0, MTR, 0, 0), 3, Local0)

//  save Local0 object type value into Local2
Store (ObjectType (Local0), Local2)

//  validate Local0 is a Number
If (LNotEqual (Local2, 1))  //  Number type is 1
   {   Return (6)  }   //  failure

//  validate Local0 Number value
If (LNotEqual (Local0, 3))  //  Number value 3
   {   Return (7)  }   //  failure

Store ("And(Match(DerefOf(Index(TIM0,0)),... PASS", Debug)


//  again, validate following produces a nested package
Store (DerefOf (Index (TIM0, 1, )), Local4)

//  save Local4 object type value into Local2
Store (ObjectType (Local4), Local2)
```

```
// validate Local4 is a Package
If (LNotEqual (Local2, 4))  //  Package type is 4
   {   Return (8)  }   //  failure

Store ("DerefOf(Index(TIM0,1)),... PASS again", Debug)


// again, validate following produces a nested package
Store (DerefOf (Index (TIM0, 1, )), Local4)

// save Local4 object type value into Local2
Store (ObjectType (Local4), Local2)

// validate Local4 is a Package
If (LNotEqual (Local2, 4))  //  Package type is 4
   {   Return (9)  }   //  failure

Store ("DerefOf(Index(TIM0,1)),... PASS again", Debug)


// test nested DerefOf(Index) operators
Store (DerefOf (Index (DerefOf (Index (TIM0, 1, )), Local0, )), Local1)

// save Local1 object type value into Local2
Store (ObjectType (Local1), Local2)

// validate Local1 is a Number
If (LNotEqual (Local2, 1))  //  Number type is 1
   {   Return (10) }   //  failure

// zero indicates pass, non-zero is an error code
If (LNotEqual (Local1, 0))
   {   Return (11) }   //  failure

Store ("DerefOf(Index(DerefOf(Index(TIM0,1)),... PASS", Debug)


// again, validate following produces a nested package
Store (DerefOf (Index (TIM0, 1, )), Local4)

// save Local4 object type value into Local2
Store (ObjectType (Local4), Local2)

// validate Local4 is a Package
If (LNotEqual (Local2, 4))  //  Package type is 4
   {   Return (12) }   //  failure
```

```
        Store ("DerefOf(Index(TIM0,1)),... PASS again", Debug)


        //  retest nested DerefOf(Index) operators
        Store (DerefOf (Index (DerefOf (Index (TIM0, 1, )), Local0, )), Local1)

        //  save Local1 object type value into Local2
        Store (ObjectType (Local1), Local2)

        //  validate Local1 is a Number
        If (LNotEqual (Local2, 1))  //  Number type is 1
           {   Return (13) }   //  failure

        //  zero indicates pass, non-zero is an error code
        If (LNotEqual (Local1, 0))
           {   Return (14) }   //  failure

        Store ("DerefOf(Index(DerefOf(Index(TIM0,1)),... PASS again", Debug)


        //  again, validate following produces a nested package
        Store (DerefOf (Index (TIM0, 1, )), Local4)

        //  save Local4 object type value into Local2
        Store (ObjectType (Local4), Local2)

        //  validate Local4 is a Package
        If (LNotEqual (Local2, 4))  //  Package type is 4
           {   Return (15) }   //  failure

        Store ("DerefOf(Index(TIM0,1)),... PASS again", Debug)


        Return (0)  //  pass
     }   //  TEST
  }   // MTCH

//
// test WhileBrk.asl
//
//  This code tests the Break term and While term
//
//  Syntax of Break term
//     BreakTerm := Break
//  The break operation causes the current package execution to complete.
//
//  Syntax of While Term
//     WhileTerm   := While(
```

```
//          Predicate   //TermArg=>Integer
//      ) {TermList}
//  Predicate is evaluated as an integer.
//  If the integer is non-zero, the list of terms in TermList is executed.
//  The operation repeats until the Predicate evaluates to zero.
//
// MTL NOTE: This test has been modified to reflect ACPI 2.0 break
// NOTE: This test, when run under the MS ACPI.SYS grinds the system to
//  a halt.
//
  Device (WHLB)
  {
     Name (CNT0, 0)
     Name (CNT1, 0)

     Method (TEST)
     {
        //  Check Break statement nested in If nested in While nested in
        //  While only exits inner-most While loop
        Store (0, CNT0)

        While (LLess (CNT0, 4))
        {
           Store (0, CNT1)
           While (LLess (CNT1, 10))
           {
              if (LEqual (CNT1, 1))
              {
                 Break       //  exit encompassing loop
              }

              Increment (CNT1)
           }

           If (LNotEqual (CNT1, 1))
           {
              //  failure
              Return (7)
           }

           Increment (CNT0)
        }

        //  Verify Break only exited inner-most While loop

        If (LNotEqual (CNT0, 4))
        {
           //  failure
```

```
    Return (8)
}

Store ("While/While/If/Break PASS", Debug)

Store ("++++++++ WhileBrk Test", Debug)

//  Check Break statement nested in While
Store (0, CNT0)

While (LLess (CNT0, 10))
{
    Break       //  exit encompassing package
    Increment (CNT0)
}

If (LNotEqual (CNT0, 0))    //  instruction after Break executed
{
    Return (4)
}


Store (0, CNT0)

//  Test While Term
While (LLess (CNT0, 10))
{
    Increment (CNT0)
}

//  Check if the while loop was executed until the condition is satisfied.
If (LNotEqual (CNT0, 10))
{
    Return (1)
}


//  While loop in a reverse order
While (LGreater (CNT0, 0))
{
    Decrement (CNT0)
}

//  Check if the while loop was executed until the condition is satisfied.
If (LNotEqual (CNT0, 0))
{
    Return (2)
}
```

```
        Store ("While/Break PASS", Debug)


        //  Check Break statement nested in If nested in While
        Store (0, CNT0)

        While (LLess (CNT0, 10))
        {
           if (LEqual (CNT0, 5))
           {
              Break       //  exit encompassing Package (If)

              //  if we execute the next instruction,
              //  Break did not exit the loop
              Store (20, CNT0)    //  exit While loop with value larger
                                  //  than above
           }

           Increment (CNT0)    //  check if Break exited both If and While
        }   //  While

        If (LGreater (CNT0, 19))
        {   //  instruction after Break inside IfOp executed
           Return (5)
        }

        //
        // Break will exit out of the while loop, therefore
        //  the CNT0 counter should still Increment until 5
        //
        If (LNotEqual (CNT0, 5))
        {   //  instruction after Break inside WhileOp executed
           Return (6)
        }
        Store ("While/If/Break PASS", Debug)


        //  All the conditions passed
        Return (0)
     }   //  TEST
  }   //  WHLB


//
// test IndexOp2.asl
//
```

```
//  Additional IndexOp test cases to support ACPICMB (control method battery
//  test) on Toshiba Portege 7020CT. Test cases include appropriate bit
//  shifting of Field elements and reading Field elements greater than 64 bits.
//
// MTL NOTE: This test has been modified slightly from the original test
//  to take into account ACPI specification limitations.
//
  Scope (\_SB)    //  System Bus
  {   //  _SB system bus

     Device (MEM)
     {   //  MEM
        Name (_HID, 0x010CD041)
        Name (_STA, 0x0F)

        OperationRegion (SMEM, SystemMemory, 0x800000, 0x100)
        Field (SMEM, AnyAcc, NoLock, Preserve)
        {   //  Field:  SMEM overlay using 32-bit field elements
           SMD0,   32, //  32-bits
           SMD1,   32,     //  32-bits
           SMD2,   32,     //  32-bits
           SMD3,   32  //  32-bits
        }   //  Field:  SMEM overlay using 32-bit field elements
        Field (SMEM, AnyAcc, NoLock, Preserve)
        {   //  Field:  SMEM overlay using greater than 32-bit field elements
           SME0,   69, //  larger than an integer (32 or 64)
           SME1,   97  //  larger than an integer
        }   //  Field:  SMEM overlay using greater than 32-bit field elements

        OperationRegion (SRAM, SystemMemory, 0x100B0000, 0xF000)
        Field (SRAM, AnyAcc, NoLock, Preserve)
        {   //  Field:  SRAM overlay
              ,   0x34000,    //  skip
           IEAX,   0x20,
           IEBX,   0x20,
           IECX,   0x20,
           IEDX,   0x20,
           IESI,   0x20,
           IEDI,   0x20,
           IEBP,   0x20,
              ,   0x20,
           OEAX,   0x20,
           OEBX,   0x20,
           OECX,   0x20,
           OEDX,   0x20,
           OESI,   0x20,
           OEDI,   0x20,
           OEBP,   0x20,
```

```
    , 0x618, // skip
ACST, 1,
BES1, 1,
BES2, 1,
    , 5,        // skip
BMN1, 0x68,
BSN1, 0x58,
BTP1, 0x48,
BPU1, 0x20,
BDC1, 0x20,
BLF1, 0x20,
BTC1, 0x20,
BDV1, 0x20,
BST1, 0x20,
BPR1, 0x20,
BRC1, 0x20,
BPV1, 0x20,
    , 0x20,
BCW1, 0x20,
BCL1, 0x20,
BG11, 0x20,
BG21, 0x20,
BOI1, 0x20,
    , 0x530, // skip
BMN2, 0x68,
BSN2, 0x58,
BTP2, 0x48,
BPU2, 0x20,
BDC2, 0x20,
BLF2, 0x20,
BTC2, 0x20,
BDV2, 0x20,
BST2, 0x20,
BPR2, 0x20,
BRC2, 0x20,
BPV2, 0x20,
    , 0x20,
BCW2, 0x20,
BCL2, 0x20,
BG12, 0x20,
BG22, 0x20,
BOI2, 0x20,
    , 0x518, // skip
AC01, 0x10,
AC11, 0x10,
PSV1, 0x10,
CRT1, 0x10,
TMP1, 0x10,
```

```
AST1,   0x10,
AC21,   0x10,
AC31,   0x10,
AC02,   0x10,
AC12,   0x10,
PSV2,   0x10,
CRT2,   0x10,
TMP2,   0x10,
AST2,   0x10,
AC22,   0x10,
AC32,   0x10,
AC03,   0x10,
AC13,   0x10,
PSV3,   0x10,
CRT3,   0x10,
TMP3,   0x10,
AST3,   0x10,
AC23,   0x10,
AC33,   0x10,
   ,   0x80,      // skip
TMPF,   0x10,
   ,   0x570,  // skip
FANH,   1,
FANL,   7,
TF11,   1,
TF21,   1,
TF31,   1,
   ,   1,
TF10,   1,
TF20,   1,
TF30,   1,
   ,   1,
TP11,   1,
TP21,   1,
TP31,   1,
   ,   0x6D,   // 109
GP50,   1,
GP51,   1,
GP52,   1,
GP53,   1,
   ,   4,
GP60,   1,
GP61,   1,
GP62,   1,
GP63,   1,
GP64,   1,
GP65,   1,
GP66,   1,
```

```
            , 1,
        GP70, 1,
        GP71, 1,
        GP72, 1,
        GP73, 1,
        GP74, 1,
        GP75, 1,
        GP76, 1,
            , 1,
        WED0, 1,
        WED1, 1,
        WED2, 1,
        WED3, 1,
        WED4, 1,
            , 3,
        SBL0, 1,
        SBL1, 1,
        SBL2, 1,
        SBL3, 1,
            , 4,
        LIDS, 1,
        VALF, 1,
            , 2,
        DCKI, 1,
        DCKF, 1,
        BT1F, 1,
        BT2F, 1,
            , 0x7D0, // skip
        HKCD, 8,
            , 8,
        DLID, 0x20,
        DSRN, 0x20,
            , 0x20,
        BDID, 0x20,
        DSPW, 1,
        VGAF, 1,
        VWE0, 1,
        VWE1, 1,
        PPSC, 1,
        SPSC, 1,
        EWLD, 1,
        EWPS, 1,
            , 0x1768, // skip
        PRES, 0x8000
    } // Field: SRAM overlay
} // MEM

Device (BAT1)
```

```
{   //  BAT1
    Name (_HID, EISAID ("PNP0C0A"))     //  Control Method Battey ID
    Name (_UID, 1)
    Name (_PCL, Package (1) {\_SB})

    Method (_STA)
    {   //  _STA
        If (\_SB.MEM.BES1)
            {   Return (0x1F)   }   //  battery present
        Else
            {   Return (0x0F)   }   //  battery not present
    }   //  _STA

    Method (_BIF,, Serialized)
    {   //  _BIF
        Name (BUFR, Package (13)    {})

        Store (\_SB.MEM.BPU1, Index (BUFR, 0))
        Store (\_SB.MEM.BDC1, Index (BUFR, 1))
        Store (\_SB.MEM.BLF1, Index (BUFR, 2))
        Store (\_SB.MEM.BTC1, Index (BUFR, 3))
        Store (\_SB.MEM.BDV1, Index (BUFR, 4))
        Store (\_SB.MEM.BCW1, Index (BUFR, 5))
        Store (\_SB.MEM.BCL1, Index (BUFR, 6))
        Store (\_SB.MEM.BG11, Index (BUFR, 7))
        Store (\_SB.MEM.BG21, Index (BUFR, 8))
        Store (\_SB.MEM.BMN1, Index (BUFR, 9))
        Store (\_SB.MEM.BSN1, Index (BUFR, 10))
        Store (\_SB.MEM.BTP1, Index (BUFR, 11))
        Store (\_SB.MEM.BOI1, Index (BUFR, 12))

        Return (BUFR)
    }   //  _BIF
}   //  BAT1

Device (IDX2)
{
    Method (B2IB,, Serialized)
    {   //  B2IB:   store from Buffer into Index'ed Buffer

        Name (SRCB, Buffer ()   {"Short Buffer"})   //  12 characters plus NULL

        Name (DEST, Buffer ()                       //  62 characters plus NULL
            {"Destination buffer that is longer than the short source buffer"})


        //  verify object type returned by Index(Buffer,Element,)
```

```
Store (Index (DEST, 2, ), Local1)
Store (ObjectType (Local1), Local2)

If (LNotEqual (Local2, 14))     //  Buffer Field is type 14
{
   //  Local2 indicates Local1 is not a Buffer Field

   Return (0x61)
}

//  verify object type and value returned by DerefOf(Index(Buffer,Element,))
//  should return Number containing element value

Store (DerefOf (Local1), Local3)
Store (ObjectType (Local3), Local4)

If (LNotEqual (Local4, 1))          //  Number is type 1
{
   //  Local2 indicates Local1 is not a Number
   Return (0x62)
}
Else
{
   If (LNotEqual (Local3, 0x73))       //  expect 's' element from DEST
   {
      Return (0x63)
   }
}

Store ("DerefOf(Index(Buffer,,)) PASS", Debug)


//
// The following sections have been rewritten because storing into
// an Indexed buffer only changes one byte - the FIRST byte of the
// buffer is written to the source index. This is the ONLY byte
// written -- as per ACPI 2.0
//
// Overwrite DEST contents, at buffer position 2 [only]

Store (SRCB, Index (DEST, 2, ))

//
// Check that the next byte is not changed
//
Store (DerefOf (Index (DEST, 3, )), Local0)
If (LNotEqual (Local0, 0x74))       //  't'
{
```

```
    //  DEST element is not matching original value
    If (LEqual (Local0, 0x68))
    {
        //  DEST element was altered to 'h'
        Return (0x68)
    }
    Else
    {
        // DEST element is an unknown value
        Return (0x69)
    }
}

//
// Check that the elements beyond the SRCB buffer copy
//  have not been altered.
//
Store (DerefOf (Index (DEST, 14)), Local0)

//
// This should be an 'f'.
//
If (LNotEqual (Local0, 0x66))
{
    //  DEST element was zero'd by buffer copy
    If (LEqual (Local0, 0))
    {
        //  DEST element is zero
        Return (0x6A)
    }
    Else
    {
        //  DEST element is unknown value
        Return (0x6B)
    }
}

Store ("Store(SRCB,Index(Buffer,,)) PASS", Debug)

//
//  verify altering SRCB does NOT alter DEST
//
Store (0x6A, Index (SRCB, 1))   //  SRCB = "Sjort Buffer"

Store (DerefOf (Index (SRCB, 1)), Local0)

If (LNotEqual (Local0, 0x6A))       //  'j'
{
```

```
   //  SRCB element is unaltered
   Return (0x71)
}

Store (DerefOf (Index (DEST, 3)), Local0) // DEST = "Destination buffer that...

If (LNotEqual (Local0, 0x74))       //  't'
{
   //  DEST element is altered
   If (LEqual (Local0, 0x6A))  //  'j'
   {
      //  SRCB change altered DEST element
      Return (0x72)
   }
   Else
   {
      //  DEST element is unknown value
      Return (0x73)
   }
}

//  verify altering DEST does NOT alter SRCB

Store (0x6B, Index (DEST, 4, )) //  DEST = "DeSkination buffer..."

Store (DerefOf (Index (DEST, 4, )), Local0)

If (LNotEqual (Local0, 0x6B))       //  'k'
{
   //  DEST element is unaltered
   Return (0x74)
}

Store (DerefOf (Index (SRCB, 2, )), Local0)

If (LNotEqual (Local0, 0x6F))       //  'o'
{   //  SRC element is altered
   If (LEqual (Local0, 0x6B))  //  'k'
   {
      //  DEST change altered SRCB element
      Return (0x75)
   }
   Else
   {
      //  SRCB element is unknown value
      Return (0x76)
   }
}
```

```
    Store ("SRCB and DEST independent PASS", Debug)


    // verify string can be written to Index target/destination
    // Only FIRST byte is written

    Store ("New Buff", Index (DEST, 2, ))   //  DEST = "DeNkination buffer..."

    Store (DerefOf (Index (DEST, 2, )), Local0)

    If (LNotEqual (Local0, 0x4E))       //  'N'
    {
       //  DEST element is unaltered
       Return (0x81)
    }

    Store (DerefOf (Index (DEST, 6, )), Local0)

    If (LNotEqual (Local0, 0x61))       //  'a'
    {
       //  DEST element is unaltered
       Return (0x82)
    }

    Store (DerefOf (Index (DEST, 10, )), Local0)

    If (LNotEqual (Local0, 0x6E))       //  'n'
    {
       //  DEST element is unaltered
       Return (0x83)
    }

    Store ("Store(String,Index) PASS", Debug)


    Return (0)  //  pass
}   //  B2IB:   store from Buffer into Index'ed Buffer

Method (FB2P,, Serialized)
{   //  FB2P:   store from Field Buffer into Index'ed Package
    Name (DEST, Package (2) {})

    //  initialize memory using 32-bit field elements
    Store (0x01234567, \_SB.MEM.SMD0)
    Store (0x89ABCDEF, \_SB.MEM.SMD1)
    Store (0xFEDCBA98, \_SB.MEM.SMD2)
    Store (0x76543210, \_SB.MEM.SMD3)
```

```
//  move greater than 64-bit buffers into DEST package
Store (\_SB.MEM.SME0, Index (DEST, 0))
Store (\_SB.MEM.SME1, Index (DEST, 1))

//  validate DEST contents
Store (DerefOf (Index (DEST, 0, )), Local0)
Store (DerefOf (Index (DEST, 1, )), Local1)

//  verify Local0 and Local1 are Buffers
Store (ObjectType (Local0), Local2)
if (LNotEqual (Local2, 3))  //  Buffer type is 3
{
   Return (0x11)
}

Store (ObjectType (Local1), Local3)
if (LNotEqual (Local3, 3))  //  Buffer type is 3
{
   Return (0x12)
}

//  validate DEST buffer contents
Store (DerefOf (Index (DerefOf (Index (DEST, 0)), 0)), Local4)
If (LNotEqual (Local4, 0x67))
{
   Return (0x13)
}

Store (DerefOf (Index (DerefOf (Index (DEST, 0)), 1)), Local4)
If (LNotEqual (Local4, 0x45))
{
   Return (0x14)
}

Store (DerefOf (Index (DerefOf (Index (DEST, 0)), 4)), Local4)
If (LNotEqual (Local4, 0xEF))
{
   Return (0x15)
}

Store (DerefOf (Index (DerefOf (Index (DEST, 0, )), 5, )), Local4)
If (LNotEqual (Local4, 0xCD))
{
   Return (0x16)
}

Store ("Store(Mem,PkgElement) PASS", Debug)
```

```
    //  validate changing source \_SB.MEM.SMD* does not impact DEST
    Store (0x12345678, \_SB.MEM.SMD0)

    Store (DerefOf (Index (DerefOf (Index (DEST, 0, )), 0, )), Local5)
    If (LNotEqual (Local5, 0x67))
    {
       Return (0x21)
    }

    Store (DerefOf (Index (DerefOf (Index (DEST, 0, )), 1, )), Local5)
    If (LNotEqual (Local5, 0x45))
    {
       Return (0x22)
    }

    //  validate changing DEST does not impact source \_SB.MEM.SMD*
    Store (0x30, Index (DerefOf (Index (DEST, 0)), 0))

    Store (DerefOf(Index (DerefOf (Index (DEST, 0)), 0)), Local5)
    If (LNotEqual (Local5, 0x30))
    {
       Return (0x23)
    }

    //
    // This section was modified from the original iPCO code because
    //  it attempted to compare two buffers. This is not allowed until
    //  ACPI v2.0, so the test has been modified to just check the
    //  changed \_SB.MEM.SMD0
    //
    Store (\_SB.MEM.SMD0, Local5)

    If(LNotEqual(Local5, 0x12345678))
    {
       Return (0x24)
    }

    Store ("Mem and Pkg independent PASS", Debug)


    Return (0)
}   //  FB2P:   store from Field Buffer into Index'ed Package

Method (TEST)
{
    Store ("++++++++ IndexOp2 Test", Debug)
```

```
// store _BIF package return value into Local0

Store (\_SB.BAT1._BIF, Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Package
If (LNotEqual (Local1, 4)) // Package type is 4
{
   // failure
   Return (2)
}

// validate source and destination buffers are independent of each
// of each other (i.e., changing one's contents does not change
// other's contents) using B2IB (store from Buffer into Index'ed
// Buffer) and FB2P (store from Field Buffer into Index'ed Package)

// call B2IB (store from Buffer into Index'ed Buffer)
Store (B2IB, Local2)    // Local2 is B2IB return value

// save Local2 object type value into Local3
Store (ObjectType (Local2), Local3)

// validate Local2 is a Number
If (LNotEqual (Local3, 1)) // Number type is 1
{
   // failure
   Return (4)
}

// zero indicates pass, non-zero is an error code
If (LNotEqual (Local2, 0))
{
   // return B2IB error code
   Return (Local2)
}

// call FB2P (store from Field Buffer into Index'ed Package)
Store (FB2P, Local2)    // Local2 is FB2P return value

// save Local2 object type value into Local3
Store (ObjectType (Local2), Local3)

// validate Local2 is a Number
If (LNotEqual (Local3, 1)) // Number type is 1
```

```
            {
               //  failure
               Return (5)
            }

            //  zero indicates pass, non-zero is an error code
            If (LNotEqual (Local2, 0))
            {
               //  return FB2P error code
               Return (Local2)
            }


            Return (0)
         }   //  TEST
      }   //  IDX2:   Test device name
   }   //  _SB system bus

//
// test SizeOf.asl
//
//  Test for SizeOf
//      test cases include following SizeOf arguments:
//          buffer, buffer field;
//          control method argument, control method local variable;
//          control method return values;
//          direct string, string;
//          package;
//          buffer, package, and string package elements
//
// MTL NOTE: This test has been modified to remove any SizeOf(Index(Buff,...
//  calls because it is not legal to perform a SizeOf operation on a Buffer Field.
//  This test has also been extended to test additional Package element sizes.
//
   Device (SIZO)
   {
      //  SAR0 control method validates SizeOf(Arg)
      //      SAR0 should only be called by SARG
      Method (SAR0, 2)
      //  Arg0    object to determine size of
      //  Arg1    expected Arg length
      {   //  SAR0:   SizeOf(Arg) test control method
         //  Local0  Arg0 length
         //  Local1  Local0 object type

         //  Store first string size (Arg0) into Local7
         Store (SizeOf (Arg0), Local0)
```

```
    // save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    // validate Local0 is a Number
    If (LNotEqual (Local1, 1))      // Number type is 1
        {   Return (0x21)   }

    // If strings are not of equal size, return error code
    If (LNotEqual (Local0, Arg1))
        {   Return (0x22)   }

    Return (0)
}   // SAR0:   SizeOf(Arg) test control method

Method (SARG,, Serialized)
{   // SARG:   SizeOf(Arg) test control method
    Name (BUFR, Buffer (12) {}) // uninitialized Buffer
    Name (BUF1, Buffer() {0x01, 0x02, 0x03, 0x04, 0x05})
    Name (PKG0, Package (4) {}) // uninitialized Package
    Name (STR0, "String")
    Name (PKG1, Package (4)
    {
        BUFR,
        "String2",
        STR0,
        PKG0
    }) // PKG1

    Name (PKG2, Package (4)
    {
        Buffer (15) {},
        "String 1",
        Package (2) {}
    }) // PKG2

    // Namespace entry buffer reference
    Store (SAR0 (BUFR, 12), Local0)

    // save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    // validate Local0 is a Number
    If (LNotEqual (Local1, 1))      // Number type is 1
    {
        Return (0x23)
    }

    If (LNotEqual (Local0, 0))      // Local0 is SAR0 return error code
```

```
{
   Return (Local0)
}

Store ("SizeOf(Arg=BUFR) PASS", Debug)


//  Namespace entry package reference
Store (SAR0 (PKG0, 4), Local0)

//  save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

//  validate Local0 is a Number
If (LNotEqual (Local1, 1))      //  Number type is 1
{
   Return (0x24)
}

If (LNotEqual (Local0, 0))      //  Local0 is SAR0 return error code
{
   Return (Local0)
}

Store ("SizeOf(Arg=PKG0) PASS", Debug)


//  Namespace entry string reference
Store (SAR0 (STR0, 6), Local0)

//  save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

//  validate Local0 is a Number
If (LNotEqual (Local1, 1))      //  Number type is 1
{
   Return (0x25)
}

If (LNotEqual (Local0, 0))      //  Local0 is SAR0 return error code
{
   Return (Local0)
}

Store ("SizeOf(Arg=STR0) PASS", Debug)


//  direct string reference
```

```
Store (SAR0 ("String", 6), Local0)

//  save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

//  validate Local0 is a Number
If (LNotEqual (Local1, 1))      //  Number type is 1
{
   Return (0x26)
}

If (LNotEqual (Local0, 0))      //  Local0 is SAR0 return error code
{
   Return (Local0)
}

Store ("SizeOf(Arg=String) PASS", Debug)

Store (0x55, Index (BUF1, 2))

/*****************************************************
//
// This section is commented because it is illegal to
//  perform a SizeOf operation on a Buffer Field
//
//  Namespace BufferField reference
Store (SAR0 (Index (BUFR, 2, ), 10), Local0)

//  save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

//  validate Local0 is a Number
If (LNotEqual (Local1, 1))      //  Number type is 1
   {   Return (0x27)   }

If (LNotEqual (Local0, 0))      //  Local0 is SAR0 return error code
   {   Return (Local0) }

Store ("SizeOf(Arg=BufferField) PASS", Debug)
*****************************************************/

//  Namespace BufferPackageElement reference
//
Store (SAR0 (Index(PKG1, 0), 12), Local0)

//  save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)
```

```
// validate Local0 is a Number
If (LNotEqual (Local1, 1))      // Number type is 1
{
   Return (0x28)
}

If (LNotEqual (Local0, 0))      // Local0 is SAR0 return error code
{
   Return (Local0)
}

Store ("SizeOf(Arg=PackageBuffer NTE Reference Element) PASS", Debug)


// Namespace StringPackageElement reference
Store (SAR0 (Index (PKG1, 1, ), 7), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1))      // Number type is 1
{
   Return (0x29)
}

If (LNotEqual (Local0, 0))      // Local0 is SAR0 return error code
{
   Return (Local0)
}

Store ("SizeOf(Arg=Package String Element) PASS", Debug)


// Namespace StringPackageElement reference
Store (SAR0 (Index (PKG1, 2, ), 6), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1))      // Number type is 1
{
   Return (0x2A)
}

If (LNotEqual (Local0, 0))      // Local0 is SAR0 return error code
{
```

```
   Return (Local0)
}

Store ("SizeOf(Arg=Package String NTE Reference Element) PASS", Debug)


// Namespace PackagePackageElement reference
Store (SAR0 (Index (PKG1, 3, ), 4), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1))      // Number type is 1
{
   Return (0x2B)
}

If (LNotEqual (Local0, 0))      // Local0 is SAR0 return error code
{
   Return (Local0)
}

Store ("SizeOf(Arg=Package Package NTE Reference Element) PASS", Debug)

// Package Buffer Element
Store (SAR0 (Index (PKG2, 0), 15), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1))      // Number type is 1
{
   Return (0x2B)
}

If (LNotEqual (Local0, 0))      // Local0 is SAR0 return error code
{
   Return (Local0)
}

Store ("SizeOf(Arg=Package Buffer Element) PASS", Debug)

// Package String Element
Store (SAR0 (Index (PKG2, 1), 8), Local0)

// save Local0 object type value into Local1
```

```
    Store (ObjectType (Local0), Local1)

    //  validate Local0 is a Number
    If (LNotEqual (Local1, 1))      //  Number type is 1
    {
       Return (0x2B)
    }

    If (LNotEqual (Local0, 0))      //  Local0 is SAR0 return error code
    {
       Return (Local0)
    }

    Store ("SizeOf(Arg=Package String Element) PASS", Debug)

    // Package Package Element
    Store (SAR0 (Index (PKG2, 2), 2), Local0)

    //  save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    //  validate Local0 is a Number
    If (LNotEqual (Local1, 1))      //  Number type is 1
    {
       Return (0x2B)
    }

    If (LNotEqual (Local0, 0))      //  Local0 is SAR0 return error code
    {
       Return (Local0)
    }

    Store ("SizeOf(Arg=Package Package Element) PASS", Debug)

    Store ("SizeOf(Arg) PASS", Debug)

    Return (0)
}   //  SARG:   SizeOf(Arg) test control method

Method (SBUF,, Serialized)
{   //  SBUF:   SizeOf(Buffer) test control method
    Name (BUFR, Buffer (12) {})

    //  store size of BUFR buffer into Local0
    Store (SizeOf (BUFR), Local0)

    //  save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)
```

```
    // validate Local0 is a Number
    If (LNotEqual (Local1, 1))      // Number type is 1
    {
        Return (0x31)
    }

    If (LNotEqual (Local0, 12))     // BUFR size is 12
    {
        Return (0x32)
    }

    Store ("SizeOf(BUFR) PASS", Debug)

    Return (0)
}   // SBUF:   SizeOf(Buffer) test control method


/**************************************************
//
// This section is commented because it is illegal to
//  perform a SizeOf operation on a Buffer Field
//
Method (SIND)
{   // SIND:   SizeOf(Index(,,)) test control method
    Name (BUFR, Buffer (12) {})

    // store size of Index(BUFR,2,) buffer into Local0
    Store (SizeOf (Index (BUFR, 2, )), Local0)

    // save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    // validate Local0 is a Number
    If (LNotEqual (Local1, 1))      // Number type is 1
    {
        Return (0x41)
    }

    If (LNotEqual (Local0, 10))     // 12 - 2 = 10
    {
        Return (0x42)
    }

    Store ("SizeOf(Index(BUFR,,)) PASS", Debug)

    // TBD:    strings and packages
```

```
    Return (0)
}   //  SIND:   SizeOf(Index(,,)) test control method
*****************************************************/

Method (SLOC,, Serialized)
{   //  SLOC:   SizeOf(Local) test control method
    Name (BUFR, Buffer (12) {}) //  uninitialized Buffer
    Name (STR0, "String")
    Name (PKG0, Package (4) {}) //  uninitialized Package


    //  store BUFR Buffer into Local2
    Store (BUFR, Local2)

    //  store size of BUFR buffer into Local0
    Store (SizeOf (Local2), Local0)

    //  save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    //  validate Local0 is a Number
    If (LNotEqual (Local1, 1))      //  Number type is 1
    {
        Return (0x51)
    }

    If (LNotEqual (Local0, 12)) //  BUFR size is 12
    {
        Return (0x52)
    }

    Store ("SizeOf(Local2=Buffer) PASS", Debug)


    //  store STR0 string into Local2
    Store (STR0, Local2)

    //  store size of STR0 buffer into Local0
    Store (SizeOf (Local2), Local0)

    //  save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    //  validate Local0 is a Number
    If (LNotEqual (Local1, 1))      //  Number type is 1
    {
        Return (0x53)
    }
```

```
    If (LNotEqual (Local0, 6))      //  STR0 size is 6
    {
       Return (0x54)
    }

    Store ("SizeOf(Local2=String) PASS", Debug)


    //  store PKG0 Package into Local2
    Store (PKG0, Local2)

    //  store size of PKG0 buffer into Local0
    Store (SizeOf (Local2), Local0)

    //  save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    //  validate Local0 is a Number
    If (LNotEqual (Local1, 1))      //  Number type is 1
    {
       Return (0x55)
    }

    If (LNotEqual (Local0, 4))      //  PKG0 size is 4
    {
       Return (0x56)
    }

    Store ("SizeOf(Local2=Package) PASS", Debug)


    Return (0)
}   //  SLOC:   SizeOf(Local) test control method

Method (TEST)
{
    Store ("++++++++ SizeOf Test", Debug)

    //  Store current operating system string into Local0
    Store (_OS, Local0)

    Store (SizeOf (_OS), Local3)

    //  save Local3 object type value into Local4
    Store (ObjectType (Local3), Local4)

    //  validate Local3 is a Number
```

```
If (LNotEqual (Local4, 1))  //  Number type is 1
{
   //  failure
   Return (0x61)
}

//  Store current operating system string into Local0
//  This verifies above SizeOf(_OS) did not corrupt ACPI namespace
Store (_OS, Local0)

//  Store SARG [Validate SizeOf(Arg)] return value into Local1
Store (SARG, Local1)

//  save Local1 object type value into Local2
Store (ObjectType (Local1), Local2)

//  validate Local1 is a Number
If (LNotEqual (Local2, 1))  //  Number type is 1
{
   //  failure
   Return (0x62)
}

//  zero indicates pass, non-zero is an error code
If (LNotEqual (Local1, 0))
{
   //  return SARG error code
   Return (Local1)
}


//  Store SBUF [Validate SizeOf(Buffer)] return value into Local1
Store (SBUF, Local1)

//  save Local1 object type value into Local2
Store (ObjectType (Local1), Local2)

//  validate Local1 is a Number
If (LNotEqual (Local2, 1))  //  Number type is 1
{
   //  failure
   Return (0x63)
}

//  zero indicates pass, non-zero is an error code
If (LNotEqual (Local1, 0))
{
   //  return SBUF error code
```

```
   Return (Local1)
}

/*****************************************************
//
// This section is commented because it is illegal to
//  perform a SizeOf operation on a Buffer Field
//
//  Store SIND [verify SizeOf(Index(,,))] return value into Local1
Store (SIND, Local1)

//  save Local1 object type value into Local2
Store (ObjectType (Local1), Local2)

//  validate Local1 is a Number
If (LNotEqual (Local2, 1))  //  Number type is 1
{
   //  failure
   Return (0x64)
}

//  zero indicates pass, non-zero is an error code
If (LNotEqual (Local1, 0))
{
   //  return SARG error code
   Return (Local1)
}
*****************************************************/

//  Store SLOC [verify SizeOf(Local)] return value into Local1
Store (SLOC, Local1)

//  save Local1 object type value into Local2
Store (ObjectType (Local1), Local2)

//  validate Local1 is a Number
If (LNotEqual (Local2, 1))  //  Number type is 1
{
   //  failure
   Return (0x65)
}

//  zero indicates pass, non-zero is an error code
If (LNotEqual (Local1, 0))
{
   //  return SLOC error code
   Return (Local1)
}
```

```
        // TBD:    SizeOf (METH) -- where METH control method returns
        //             buffer, BufferField, string, package, package element


        Return (0)
      }  // TEST
    }  // SIZO

//
// test SmiShare.asl
//
  Scope (\_SB)    // System Bus
  {  // _SB system bus
    // Declare an OpRegion in Memory starting at offset 0x400000 that is 10 bytes long
    OperationRegion(RAM1, SystemMemory, 0x400000, 0xA)

    Field (RAM1, AnyAcc, NoLock, Preserve)
    {
      BI1T, 1,       // Create some bits in memory to access
      BI2T, 2,
      BI3T, 3,
      LST2, 2
    }  // End Field RAM1

    Field (RAM1, WordAcc, NoLock, WriteAsZeros)
    {
      WRD, 16
    }  // End 2nd Field RAM1

    Field (RAM1, ByteAcc, NoLock, WriteAsOnes)
    {
      BYTE, 8
    }  // End 3rd Field RAM1

    Field (RAM1, ByteAcc, NoLock, Preserve)
    {
      SMIC, 8,
      SMID, 8
    }

    Device (MBIT)
    {
      Method (_INI)
      {
        Store (0, BI1T)
        Store (3, BI2T)
```

```
            Store (7, BI3T)
            Store (0, LST2)
        }   //  End _INI Method
    }   //  End Device MBIT

    Device (MWRD)
    {
        Method (_INI)
        {
            Store (0, WRD)
        }   //  End _INI Method
    }   //  End Device MWRD

    Device (MBYT)
    {
        Method (_INI)
        {
            Store (0, BYTE)
            Store (0xC, SMIC)
            Store (0xD, SMID)
        }   //  End _INI Method
    }   //  End Device MBYT

/*
    //  Declare an OpRegion in Memory starting at offset 0x400000 that is 10 bytes long
    OperationRegion(\RAM1, SystemMemory, 0x400000, 0xA)

    Field (\RAM1, AnyAcc, NoLock, Preserve)
    {
        BI1T, 1,        // Create some bits in memory to access
        BI2T, 2,
        BI3T, 3,
        LST2, 2
    }   //  End Field RAM1

    Field (\RAM1, WordAcc, NoLock, WriteAsZeros)
    {
        WRD, 16
    }   //  End 2nd Field RAM1

    Field (\RAM1, ByteAcc, NoLock, WriteAsOnes)
    {
        BYTE, 8
    }   //  End 3rd Field RAM1

    Field (\RAM1, ByteAcc, NoLock, Preserve)
    {
        SMIC, 8,
```

```
        SMID, 8
    }
*/
    Method (SMIX)
    {
        Return (BYTE)
    }   //  End SMIX

    Method (EVNT)
    {
        Store (SMIX, Local0)

        Notify (\_SB_, 0x29)
        If (And (Local0, 0x01))
        {   Notify (\_SB_.SMIS, 0x21)}

        If (And (Local0, 0x02))
        {   Notify (\_SB_.SMIS, 0x22)}

        If (And (Local0, 0x04))
        {   Notify (\_SB_.SMIS, 0x24)}

        If (And (Local0, 0x08))
        {   Notify (\_SB_.SMIS, 0x28)}

    }   //  End Method EVNT

    Method (NTFY)
    {
        Notify (\_SB_, 1)
        Notify (\_TZ_.TZ1, 2)
        Notify (\_PR_.CPU0, 3)

        Notify (\_SB_, 0x81)
        Notify (\_TZ_.TZ1, 0x82)
        Notify (\_PR_.CPU0, 0x83)
    }

    Device (SMIS)
    {
        Method (BINK)
        {
            Store (0, Local0)               //  Zero out Local0

            If (LNotEqual (SMID, 0xD))
            {   Or (0x80, Local0, Local0)}

            If (LNotEqual (SMIC, 0xC))
```

```
        {   Or (0x40, Local0, Local0)}

        If (LNotEqual (BYTE, 0))
        {   Or (0x20, Local0, Local0)}

        If (LNotEqual (WRD, 0))
        {   Or (0x10, Local0, Local0)}

        If (LNotEqual (LST2, 0))
        {   Or (0x8, Local0, Local0)}

        If (LNotEqual (BI3T, 0x7))
        {   Or (0x4, Local0, Local0)}

        If (LNotEqual (BI2T, 0x3))
        {   Or (0x2, Local0, Local0)}

        If (LNotEqual (BI1T, 0))
        {   Or (0x1, Local0, Local0)}

        Return (Local0)
    }   //  End Method BINK

    Method (TEST)
    {
        Store ("++++++++ SmiShare Test", Debug)

        //  Expect EVNT to generate Notify value we just previously
        //  stored in BYTE

        Store (0x20, BYTE)
        EVNT ()
        Store (0x21, BYTE)
        EVNT ()
        Store (0x22, BYTE)
        EVNT ()
        Store (0x23, BYTE)
        EVNT ()

        NTFY ()
        Return (0)  //  pass
    }   //  End Method TEST
}   //  Device SMIS

Device(CNDT)
{
    Method(TEST)
    {
```

```
            If (ECOK)
            {
               return("Broken")
            }
            Else
            {
               return("Works")
            }
         }

         Method(ECOK)
         {
            Return(0x0)
         }
      }

   }  //  _SB system bus


/* Test a very big buffer */

   Name(WQAB, Buffer(6756)
   {
      0x46,0x4F,0x4D,0x42,0x01,0x00,0x00,0x00,
      0x54,0x1A,0x00,0x00,0xBA,0xAD,0x00,0x00,
      0x44,0x53,0x00,0x01,0x1A,0x7D,0xDA,0x54,
      0x98,0xBD,0x92,0x00,0x01,0x06,0x18,0x42,
      0x10,0x47,0x10,0x92,0x46,0x62,0x02,0x89,
      0x80,0x90,0x18,0x18,0x14,0x81,0x85,0x00,
      0x49,0x02,0x88,0xC4,0x41,0xE1,0x20,0xD4,
      0x9F,0x40,0x7E,0x05,0x20,0x74,0x28,0x40,
      0xA6,0x00,0x83,0x02,0x9C,0x22,0x88,0xA0,
      0x57,0x01,0x36,0x05,0x98,0x14,0x60,0x51,
      0x80,0x76,0x01,0x96,0x05,0xE8,0x16,0x20,
      0x1D,0x96,0x88,0x04,0x47,0x89,0x01,0x47,
      0xE9,0xC4,0x16,0x6E,0xD8,0xE0,0x85,0xA2,
      0x68,0x06,0x51,0x12,0x94,0x8B,0x20,0x5D,
      0x10,0x52,0x2E,0xC0,0x37,0x82,0x06,0x10,
      0xA5,0x77,0x01,0xB6,0x05,0x98,0x86,0x27,
      0xD2,0x20,0xE4,0x60,0x08,0x54,0xCE,0x80,
      0x20,0x69,0x44,0x21,0x1E,0xA7,0x44,0x08,
      0x0A,0x84,0x90,0xD4,0xF1,0xA0,0xA0,0x71,
      0x88,0xAD,0xCE,0x46,0x93,0xA9,0x74,0x7E,
      0x48,0x82,0x70,0xC6,0x2A,0x7E,0x3A,0x9A,
      0xD0,0xD9,0x9C,0x60,0xE7,0x18,0x72,0x3C,
      0x48,0xF4,0x20,0xB8,0x00,0x0F,0x1C,0x2C,
      0x34,0x84,0x22,0x6B,0x80,0xC1,0x8C,0xDD,
      0x63,0xB1,0x0B,0x4E,0x0A,0xEC,0x61,0xB3,
```

0x01,0x19,0xA2,0x24,0x38,0xD4,0x11,0xC0,
0x12,0x05,0x98,0x1F,0x87,0x0C,0x0F,0x95,
0x8C,0x25,0x24,0x1B,0xAB,0x87,0xC2,0xA5,
0x40,0x68,0x6C,0x27,0xED,0x19,0x45,0x2C,
0x79,0x4A,0x82,0x49,0xE0,0x51,0x44,0x36,
0x1A,0x27,0x28,0x1B,0x1A,0x25,0x03,0x42,
0x9E,0x05,0x58,0x07,0x26,0x04,0x76,0x2F,
0xC0,0x9A,0x00,0x73,0xB3,0x90,0xB1,0xB9,
0xE8,0xFF,0x0F,0x71,0xB0,0x31,0xDA,0x9A,
0xAE,0x90,0xC2,0xC4,0x88,0x12,0x2C,0x5E,
0xC5,0xC3,0x10,0xCA,0x93,0x42,0xA8,0x48,
0x95,0xA1,0x68,0xB4,0x51,0x2A,0x14,0xE0,
0x4C,0x80,0x30,0x5C,0x1D,0x03,0x82,0x46,
0x88,0x15,0x29,0x56,0xFB,0x83,0x20,0xF1,
0x2D,0x40,0x54,0x01,0xA2,0x48,0xA3,0x41,
0x9D,0x03,0x3C,0x5C,0x0F,0xF5,0xF0,0x3D,
0xF6,0x93,0x0C,0x72,0x90,0x67,0xF1,0xA8,
0x70,0x9C,0x06,0x49,0xE0,0x0B,0x80,0x4F,
0x08,0x1E,0x38,0xDE,0x35,0xA0,0x66,0x7C,
0xBC,0x4C,0x10,0x1C,0x6A,0x88,0x1E,0x68,
0xB8,0x13,0x38,0x44,0x06,0xE8,0x49,0x3D,
0x52,0x60,0x07,0x77,0x32,0xEF,0x01,0xAF,
0x0A,0xCD,0x5E,0x12,0x08,0xC1,0xF1,0xF8,
0x7E,0xC0,0x26,0x9C,0xC0,0xF2,0x07,0x81,
0x1A,0x99,0xA1,0x3D,0xCA,0xD3,0x8A,0x19,
0xF2,0x31,0xC1,0x04,0x16,0x0B,0x21,0x05,
0x10,0x1A,0x0F,0xF8,0x6F,0x00,0x8F,0x17,
0xBE,0x12,0xC4,0xF6,0x80,0x12,0x0C,0x0B,
0x21,0x23,0xAB,0xF0,0x78,0xE8,0x28,0x7C,
0x95,0x38,0x9C,0xD3,0x8A,0x67,0x82,0xE1,
0x20,0xF4,0x05,0x90,0x00,0x51,0xE7,0x0C,
0xD4,0x61,0xC1,0xE7,0x04,0x76,0x33,0x38,
0x83,0x47,0x00,0x8F,0xE4,0x84,0xFC,0x2B,
0xF1,0xC0,0xE0,0x03,0xE2,0xEF,0x1F,0xA7,
0xEC,0x11,0x9C,0xA9,0x01,0x7D,0x1C,0xF0,
0xFF,0x7F,0x28,0x7C,0x88,0x1E,0xDF,0x29,
0x1F,0xAF,0x4F,0x17,0x96,0x35,0x4E,0xE8,
0x77,0x08,0x9F,0x38,0x7C,0x64,0x71,0x44,
0x08,0x39,0x39,0x05,0xA0,0x81,0x4F,0xF7,
0xEC,0x22,0x9C,0xAE,0x27,0xE5,0x40,0xC3,
0xA0,0xE3,0x04,0xC7,0x79,0x00,0x1C,0xE3,
0x84,0x7F,0x2E,0x80,0x3F,0x40,0x7E,0xCA,
0x78,0xC5,0x48,0xE0,0x98,0x23,0x44,0x9F,
0x6B,0x3C,0x42,0x2C,0xFC,0x53,0x45,0xE1,
0x03,0x21,0x63,0x04,0x17,0xA0,0xC7,0x08,
0x7C,0x03,0x8E,0x11,0x7D,0x94,0xE0,0xEA,
0x0F,0x1A,0x74,0x80,0xB8,0xFF,0xFF,0x00,
0xE1,0x83,0x7A,0x80,0xC0,0x37,0xFA,0xD1,

0x03,0x3D,0x2E,0x8B,0x3E,0x0F,0xC8,0xF8,
0x89,0x46,0xF3,0xE2,0xA7,0x03,0x7E,0xF8,
0x00,0x0F,0xA8,0x87,0x84,0x03,0xC5,0x4C,
0x9B,0x83,0x3E,0xBB,0x1C,0x3A,0x76,0xB8,
0xE0,0x3F,0x81,0x80,0x4B,0xDE,0x21,0x0C,
0x14,0x23,0xC6,0x9F,0x83,0x7C,0x0A,0x03,
0xFF,0xFF,0xFF,0x14,0x06,0xFE,0xE1,0xF0,
0x20,0x4F,0x07,0x9F,0xB6,0xA8,0x74,0x18,
0xD4,0x81,0x0B,0xB0,0x32,0x89,0x08,0xCF,
0x12,0xB5,0x41,0xE8,0xD4,0xF0,0x36,0xF1,
0xB6,0xE5,0x5B,0x40,0x9C,0xD3,0xEC,0xED,
0xC0,0x45,0x30,0x22,0xD4,0x0C,0x45,0x4E,
0x5A,0x11,0x63,0x44,0x79,0xDC,0x32,0xCA,
0xDB,0xD6,0x0B,0x40,0xBC,0x13,0x7B,0xDE,
0x32,0x46,0xF0,0xC8,0x0F,0x5C,0x2C,0xC6,
0xEA,0xF5,0x5F,0xF3,0x81,0x0B,0x70,0xF6,
0xFF,0x3F,0x70,0x01,0x1C,0x0A,0x7A,0x18,
0x42,0x0F,0xC3,0x53,0x39,0x97,0x87,0xC8,
0x53,0x89,0x18,0x35,0x4C,0xD4,0x67,0x28,
0xDF,0x2D,0x7C,0x20,0x02,0xDF,0x99,0x0B,
0xF8,0xFD,0xFF,0x0F,0x44,0x70,0x8E,0x29,
0xB8,0x33,0x0D,0x78,0x7C,0xCE,0x40,0x20,
0xA7,0xE2,0x43,0x0D,0x60,0x41,0xF4,0x13,
0xC2,0x27,0x1A,0x2A,0x13,0x06,0x75,0xA8,
0x01,0xAC,0x5C,0x61,0x9E,0x46,0xCF,0xF9,
0x59,0xC6,0xA7,0x1A,0x1F,0x4A,0x8D,0x63,
0x88,0x97,0x99,0x87,0x1A,0x1F,0x0B,0x5E,
0x49,0x7D,0xA8,0x31,0x54,0x9C,0x87,0x1A,
0x0F,0x37,0x50,0xD4,0x37,0x9B,0x67,0x1B,
0xA3,0xC7,0xF7,0x0D,0xD5,0x10,0x0F,0x35,
0x4C,0xF2,0x4A,0x35,0x16,0x1F,0x6A,0xC0,
0xF1,0xFF,0x3F,0xD4,0x00,0xFC,0xFF,0xFF,
0x1F,0x6A,0x00,0x47,0x47,0x03,0x38,0x47,
0x46,0xDC,0xD1,0x00,0x5C,0x87,0x52,0xE0,
0x70,0x34,0x00,0x1E,0x47,0x21,0x30,0x5F,
0x68,0x7C,0x14,0x02,0x16,0xFF,0xFF,0xA3,
0x10,0xF8,0x65,0x9F,0x83,0x50,0x42,0x8F,
0x42,0x80,0xA0,0xDB,0xCF,0x53,0xC4,0xB3,
0x8F,0x2F,0x3F,0x0F,0x04,0x11,0x5E,0xF3,
0x7D,0x0A,0xF2,0x21,0xDF,0x47,0x21,0x06,
0x63,0x28,0x5F,0x83,0x7C,0x14,0x62,0x50,
0xAF,0x41,0xBE,0xEF,0x1B,0xE4,0xF1,0x22,
0x48,0xEC,0x67,0x02,0x1F,0x85,0x98,0xE8,
0xA3,0x10,0xA0,0xF0,0xFF,0x7F,0x14,0x02,
0xF8,0xFF,0xFF,0x3F,0x0A,0x01,0xCE,0x02,
0x1C,0x0D,0x40,0x37,0xAD,0x47,0x21,0xF0,
0xDE,0x59,0x4E,0xFB,0x04,0x7C,0x16,0x02,
0xCC,0xFE,0xFF,0xCF,0x42,0xC0,0xEC,0x28,

0x74,0x14,0x67,0xF9,0x2A,0xF4,0x04,0xF0,
0x02,0x10,0x23,0xCC,0x3B,0xD0,0x4B,0x26,
0xBB,0x8B,0x1B,0xE7,0xC9,0xE5,0x2C,0x9E,
0xC4,0x7D,0x09,0xF2,0x81,0xE2,0x59,0xC8,
0x50,0xA7,0x1B,0xF4,0x8D,0xDC,0x03,0x8B,
0x19,0x3F,0xC4,0xF3,0x90,0x21,0x9E,0x85,
0x00,0x76,0xFD,0xFF,0xCF,0x42,0x00,0xFF,
0xFF,0xFF,0x47,0x03,0xF8,0x2F,0x00,0x9F,
0x85,0x80,0xE7,0x09,0xE0,0x41,0xDB,0x67,
0x21,0x80,0x33,0x87,0xCB,0xF3,0x7F,0x05,
0x3A,0x96,0xF7,0x08,0xCF,0xFA,0x24,0x5F,
0x2F,0x3D,0xD3,0x87,0x82,0x67,0x21,0x86,
0x75,0x18,0x3E,0x0B,0x31,0x88,0x17,0x4D,
0x43,0xBC,0x70,0xFA,0x30,0xE0,0xFF,0x3F,
0x5E,0xE0,0x57,0x4E,0x03,0x05,0x09,0xF4,
0x2C,0x04,0x30,0xFE,0xFF,0x7F,0x16,0x02,
0xC8,0xB8,0x46,0x9D,0x85,0x80,0xE5,0x6D,
0xE5,0x19,0xDB,0xA7,0x95,0x04,0xFF,0xFF,
0x67,0x21,0xC0,0x41,0x2E,0x23,0x07,0x21,
0x4C,0xC4,0x87,0x83,0x8F,0x99,0x80,0x9E,
0x29,0xBE,0xB8,0x1B,0xE3,0x09,0xE0,0x45,
0xE2,0x31,0x93,0x1D,0x35,0x0D,0xF3,0x2C,
0x64,0xBC,0xB3,0x78,0x0D,0x78,0x82,0xF7,
0xE4,0x9F,0x85,0x18,0xD8,0x61,0x05,0x7B,
0x14,0x32,0xA8,0xC1,0x63,0x87,0x08,0x13,
0xE8,0x59,0x88,0xC5,0x7D,0xAE,0xE8,0x3C,
0xE1,0xB3,0x10,0xF0,0xFE,0xFF,0x9F,0x25,
0xE0,0x5E,0x0D,0x9E,0x85,0x00,0x13,0x87,
0x0D,0x9F,0x35,0xC0,0x33,0x7C,0x8F,0xEA,
0x1C,0x1E,0x8F,0x81,0x7F,0x56,0x1D,0xE7,
0x04,0x96,0x7B,0xD1,0xB2,0x71,0xA0,0xA1,
0x23,0xB2,0x3A,0x20,0x8D,0x0D,0x73,0x29,
0x89,0x7C,0x72,0x6C,0xD4,0x56,0x04,0xA7,
0x33,0x93,0x4F,0x00,0xD6,0x42,0x21,0x05,
0x34,0x1A,0x8B,0xE1,0x9D,0xF9,0xE8,0x44,
0x41,0x0C,0xE8,0xE3,0x90,0x6D,0x1C,0x0A,
0x50,0x7B,0xD1,0x14,0xC8,0x39,0x07,0xA3,
0x7F,0x76,0x74,0x36,0xBE,0x13,0x70,0x0D,
0x10,0x3A,0x25,0x18,0xDA,0x6A,0x04,0xFC,
0xFF,0x67,0x89,0x01,0x33,0xFE,0x53,0x8C,
0x09,0x7C,0x8E,0xC1,0x1F,0x0C,0xF0,0x03,
0x7F,0x31,0xA8,0xFA,0x5E,0xA0,0xFB,0x82,
0xD5,0xDD,0x64,0x20,0xCC,0xC8,0x04,0xF5,
0x9D,0x0E,0x40,0x01,0xE4,0x0B,0x81,0xCF,
0x51,0x0F,0x05,0x6C,0x22,0x21,0xC2,0x44,
0x33,0x3A,0x62,0xC2,0xA8,0xE8,0x13,0xA6,
0x20,0x9E,0xB0,0x63,0x4D,0x18,0x3D,0x13,
0x5F,0x74,0xD8,0x88,0x31,0x21,0xAE,0x1E,

0xD0,0x26,0x18,0xD4,0x97,0x22,0x58,0x43,
0xE6,0x63,0xF1,0x05,0x02,0x37,0x65,0x30,
0xCE,0x89,0x5D,0x13,0x7C,0xD9,0xC1,0xCD,
0x19,0x8C,0xF0,0x98,0xBB,0x18,0xBF,0x3A,
0x79,0x74,0xFC,0xA0,0xE0,0x1B,0x0E,0xC3,
0x7E,0x32,0xF3,0x8C,0xDE,0xCB,0x7C,0x8D,
0xC3,0xC0,0x7A,0xBC,0x1C,0xD6,0x68,0x61,
0x0F,0xED,0x3D,0xC4,0xFF,0xFF,0x43,0x8C,
0xCF,0x13,0xC6,0x08,0xEB,0xDB,0x0B,0x38,
0xEE,0x59,0xF0,0xEF,0x1A,0xE0,0xB9,0x84,
0xF8,0xAE,0x01,0x30,0xF0,0xFF,0x7F,0xD7,
0x00,0x4E,0xD7,0x04,0xDF,0x35,0x80,0xF7,
0xD0,0x7D,0xD7,0x00,0xAE,0xD9,0xEF,0x1A,
0xA8,0x63,0x80,0x15,0xDE,0x35,0xA0,0x5D,
0xD9,0xDE,0xD7,0x9E,0xB0,0xAC,0xE9,0xB2,
0x81,0x52,0x73,0xD9,0x00,0x14,0xFC,0xFF,
0x2F,0x1B,0x80,0x01,0x29,0x13,0x46,0x85,
0x9F,0x30,0x05,0xF1,0x84,0x1D,0xEC,0xB2,
0x01,0x8A,0x18,0x97,0x0D,0xD0,0x8F,0xED,
0x65,0x03,0x18,0xDC,0x13,0xF8,0x6D,0x03,
0x78,0x43,0xFA,0xB6,0x01,0xD6,0xFF,0xFF,
0x6D,0x03,0xAC,0xF9,0x6F,0x1B,0x28,0x0E,
0xAB,0xBC,0x6D,0x40,0x3C,0xC9,0x33,0x02,
0xAB,0xBA,0x6E,0xA0,0xF4,0x5C,0x37,0x00,
0x12,0x88,0x99,0x30,0x2A,0xFE,0x84,0x29,
0x88,0x27,0xEC,0x68,0xD7,0x0D,0x50,0x04,
0xB9,0x6E,0x80,0x7E,0x5E,0x09,0xFE,0xFF,
0xAF,0x1B,0xC0,0xE0,0xA2,0x80,0xB9,0x6F,
0x00,0x6F,0x58,0x7E,0xDF,0x00,0x7C,0xDC,
0xC4,0x31,0xF7,0x0D,0xC0,0xCC,0xFF,0xFF,
0xBE,0x01,0xB0,0xE7,0xA2,0x80,0xBB,0x6F,
0x00,0xEF,0x8B,0xB4,0xEF,0x1B,0x60,0xFE,
0xFF,0xDF,0x37,0xC0,0x28,0x6D,0xFD,0x1E,
0x1C,0x3D,0x21,0x78,0x7C,0xB8,0xFB,0xA5,
0xC7,0xE7,0xBB,0x39,0x38,0x06,0x79,0x8C,
0x87,0x76,0xC0,0xAF,0xEF,0x9E,0x98,0xEF,
0xE6,0xC0,0xFF,0x4C,0x70,0x3C,0x18,0x68,
0x1C,0x62,0xAB,0x97,0x06,0x72,0x34,0x38,
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0x18,0xEC,0x58,0xE0,0xC3,0x86,0xAF,0x01,
0xEC,0x5E,0xE0,0x30,0xF7,0x08,0x50,0x81,
0x7A,0x78,0xF0,0xD5,0xDE,0x23,0x40,0x71,
0xB2,0xF4,0xA1,0xC1,0x03,0xB5,0xAA,0x33,
0x26,0x94,0x23,0x26,0x3F,0x9B,0xF9,0x26,
0x81,0xB9,0x5D,0xFA,0x26,0x01,0x37,0xCF,
0x2C,0x50,0x49,0x20,0xF4,0xFF,0xBF,0x49,
0xC0,0x85,0xE9,0xF2,0x32,0x43,0xE7,0x7F,
0xE0,0xBE,0xD5,0x79,0x84,0x3E,0x44,0x30,
0x94,0xF7,0x3C,0x9F,0xC2,0xF8,0x19,0xC2,
0x07,0x4C,0x76,0xA6,0xE0,0x67,0x4D,0xDC,
0x1D,0xC0,0x28,0x6F,0x9E,0x9E,0x00,0x3B,
0x7F,0x1A,0xF9,0xDD,0xE0,0x5D,0xC0,0xD3,
0xF7,0xBD,0x88,0x9F,0x28,0xC0,0x17,0xEC,
0x4E,0x07,0x05,0xFA,0x84,0x3C,0x22,0xA3,
0xFA,0x88,0xC0,0x2F,0x49,0x60,0x3C,0x92,
0xF8,0x40,0x01,0x84,0xEE,0x05,0xA8,0xD3,
0x07,0x47,0x3D,0xE3,0x17,0x54,0x63,0xBE,
0x5B,0x3D,0xC2,0x79,0x72,0x98,0xCB,0x01,
0x8B,0x73,0x4D,0x02,0xD5,0x71,0x97,0x8F,
0x0E,0xEE,0xB5,0x15,0xFB,0xFF,0x27,0x38,
0xB8,0x77,0x96,0x77,0x3E,0x43,0x79,0x90,
0xE0,0xBB,0xB6,0x82,0xE3,0xAA,0x06,0xE3,
0xD8,0xC2,0x2F,0x79,0x80,0x9D,0x61,0x71,
0xC1,0x7F,0x0F,0x03,0x51,0x89,0x30,0x28,
0x02,0xCB,0xBB,0xB7,0x52,0xF8,0x43,0x06,
0xE3,0x4D,0x81,0x4F,0x1A,0x3B,0x6A,0xE0,
0xFB,0xFF,0x1F,0x35,0xD8,0x86,0x8A,0xBB,
0x29,0x82,0x75,0xAA,0x98,0x21,0xF0,0x60,
0x0F,0x00,0x9F,0xAF,0x7C,0x06,0x50,0x14,
0x18,0xD4,0xA1,0x1D,0xCE,0x6D,0x18,0x70,
0x30,0x62,0xDC,0xA5,0x10,0xEE,0x94,0xDF,
0x51,0x62,0x3F,0x97,0xB3,0xE9,0xE2,0xAE,
0xE6,0x3E,0x9D,0xB0,0x0B,0x32,0x8C,0xB3,
0xC0,0x23,0xC0,0xAB,0x39,0xBF,0x20,0x3F,
0x17,0xBF,0x10,0x3C,0x26,0x85,0x78,0x53,
0x7A,0x25,0x36,0xC6,0x93,0x71,0x73,0xB7,
0x62,0x72,0xDE,0x79,0x41,0x36,0xC6,0xD1,
0x44,0x8C,0x72,0x6E,0x0F,0x03,0x91,0x5F,

0x90,0x7D,0x3F,0x79,0x21,0x88,0x18,0xCD,
0x10,0x41,0x9F,0x97,0x8D,0x15,0x28,0xDE,
0x0B,0x32,0x13,0xF8,0x56,0xD0,0xC1,0xC5,
0x17,0x64,0xEC,0xFF,0xFF,0x82,0x0C,0x30,
0xE2,0x64,0x04,0xF8,0x3C,0x71,0xE0,0xCE,
0x35,0x30,0xFE,0xFF,0x97,0x6A,0xD8,0x27,
0x1B,0xC0,0xD9,0xD0,0x7D,0xB2,0x01,0xF7,
0x68,0xE1,0x1D,0x4D,0x10,0x27,0x1B,0x0A,
0xE4,0xE0,0xEB,0xA2,0x70,0x3C,0xF4,0x49,
0x84,0x1E,0x9D,0x7C,0x94,0xC4,0x9D,0x19,
0x3C,0x91,0x77,0x16,0x8F,0xE2,0x65,0xD0,
0xF7,0x82,0x13,0x79,0x7D,0xB0,0x9C,0x63,
0x24,0xA8,0x46,0xE2,0xE3,0x03,0xFC,0xEB,
0x8B,0x8F,0x91,0xF0,0xF9,0xFC,0xC3,0xF2,
0x60,0x0C,0xF9,0xFF,0x7F,0x8A,0xC4,0x80,
0x3C,0xBB,0x3C,0x86,0xF0,0x0B,0x24,0xDC,
0xD3,0xCC,0x01,0x60,0x64,0x5D,0x1E,0xD1,
0x67,0x47,0x8E,0x11,0xD7,0x17,0x45,0x5F,
0x81,0x7D,0x10,0x38,0x9F,0xE7,0x44,0xB0,
0x8E,0x9A,0x1F,0x6D,0xF8,0xF8,0x39,0xF8,
0x5B,0xC1,0x03,0xA5,0x8F,0x45,0x21,0x1E,
0x91,0xF8,0x39,0x11,0x5C,0x26,0xCE,0x89,
0x40,0xE2,0xD0,0x0B,0xE3,0xB4,0x80,0x1B,
0x88,0xCF,0x94,0xD8,0x29,0x9F,0x08,0x3B,
0x97,0x60,0x46,0x07,0xAE,0xCB,0xBD,0x47,
0x07,0xFE,0x93,0x00,0x1E,0xEB,0xFF,0xFF,
0x78,0x07,0xBE,0x93,0xBA,0xEF,0x26,0xBE,
0xC8,0xF8,0x50,0xF4,0x7C,0x07,0xF8,0x0F,
0x77,0xB8,0x43,0xC5,0x39,0xDF,0x01,0xD2,
0xFE,0xFF,0xE7,0x3B,0x60,0x79,0xB6,0x7E,
0xBE,0x03,0xBB,0xC8,0xF3,0x1D,0x40,0xAC,
0xFF,0xFF,0xF9,0x0E,0xB0,0x73,0x46,0xC3,
0x9D,0xEF,0xC0,0x76,0xB4,0x01,0xCC,0x4D,
0xE3,0xD1,0x06,0xDC,0xC3,0x85,0x3D,0x0C,
0xAE,0xD0,0xA6,0x4F,0x8D,0x46,0xAD,0x1A,
0x94,0xA9,0x51,0xE6,0xFF,0xDF,0xA0,0x56,
0x9F,0x4A,0x8D,0x19,0xCB,0x0E,0xA5,0x80,
0x8F,0x0A,0x8D,0xCD,0xF2,0x28,0x04,0x62,
0x31,0xAF,0x06,0x81,0x38,0x2C,0x08,0x8D,
0xF4,0xCA,0x11,0x88,0x25,0x3F,0xFB,0x05,
0x62,0xB9,0x6F,0x06,0x81,0x38,0xE0,0x1B,
0x4C,0xE0,0xE4,0x61,0x25,0x70,0xF2,0x6E,
0x10,0x88,0x23,0x83,0x50,0xA1,0x3A,0x40,
0x58,0x4C,0x10,0x1A,0xCA,0x07,0x08,0x93,
0xFE,0x48,0x10,0x20,0x31,0x02,0xC2,0xC2,
0xBD,0xBF,0x04,0x62,0x69,0xEF,0x09,0x81,
0x58,0x88,0x15,0x10,0x16,0x17,0x84,0x86,
0xD3,0x02,0xC2,0x24,0x99,0x01,0x61,0x81,

0x40,0xA8,0x7C,0x35,0x20,0x4C,0xA4,0x1B,
0x40,0xBA,0x7A,0x81,0x38,0x88,0x1E,0x10,
0x26,0xC3,0x0F,0x08,0x0B,0x0D,0x42,0xA3,
0x3D,0x30,0x04,0x48,0x0C,0x81,0xB0,0xF8,
0x8E,0x40,0x98,0xF8,0x57,0x91,0x40,0x9C,
0xDF,0x12,0xC4,0x4D,0x69,0x88,0x35,0x01,
0x31,0x0D,0x9E,0x80,0x98,0x22,0x10,0x01,
0x39,0xF6,0xD3,0x43,0x40,0xD6,0x60,0x0A,
0x88,0x45,0x07,0x11,0x90,0x85,0xA8,0x02,
0x62,0x79,0x5D,0x01,0xB1,0xF0,0x20,0x02,
0x72,0xE6,0x97,0x9F,0x80,0xAC,0xE0,0xA5,
0xF3,0x10,0xC0,0xDE,0x10,0x81,0x48,0x72,
0x10,0x01,0x39,0xB0,0x2F,0x20,0x16,0x1F,
0x44,0x40,0xCE,0xFA,0x28,0x14,0x90,0x83,
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0xBD,0x81,0x30,0x3D,0x8F,0x42,0x0D,0x85,
0x80,0x50,0xE5,0xEA,0xCE,0x31,0x2C,0x07,
0x08,0xCD,0x05,0x22,0x30,0xAB,0x70,0x07,
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0xFF,0x9F,0x60,0x2A,0x10,0x9A,0x12,0x8C,
0xEA,0x92,0x07,0xC4,0x12,0x80,0xD0,0x54,
0x20,0x34,0x25,0x88,0x00,0xAD,0xCA,0x1E,
0x10,0x53,0x0A,0x42,0x95,0x83,0xD0,0x74,
0x20,0x54,0xB6,0xBE,0xC3,0x02,0x05,0x11,
0x90,0xA3,0x83,0x50,0xE1,0xFE,0x40,0x98,
0xDE,0x97,0x86,0x00,0x9D,0x0E,0x44,0x40,
0x4E,0x0C,0x42,0x15,0x7C,0x32,0x82,0x10,
0xB1,0x20,0x54,0xC1,0x27,0x23,0x28,0xD1,
0xF2,0xB2,0x13,0x90,0xF5,0x81,0x50,0xBD,
0x20,0x02,0x73,0x36,0x20,0x9A,0x17,0x84,
0xE6,0x07,0xA3,0x5A,0x8D,0x02,0x31,0xFD,
0x20,0x34,0x0F,0x88,0xC0,0xAC,0xE0,0xF9,
0x71,0xC0,0x0C,0x84,0xAA,0x04,0x11,0x98,
0x73,0x01,0xD1,0xAC,0x20,0x34,0x3B,0x18,
0xD5,0xFE,0x0F,0xD1,0x00,0x08,0x08,0xCD,
0x07,0xA2,0xC3,0x00,0x79,0x96,0x09,0xC8,
0x1A,0x41,0xA8,0x66,0x10,0x81,0x39,0x27,
0x10,0xCD,0x0E,0x42,0x95,0xFD,0x4D,0x82,
0x91,0x8C,0x0F,0xD0,0x40,0x24,0x37,0x08,
0xD5,0xF1,0x0C,0x0A,0x46,0x74,0x83,0x08,
0xC8,0x59,0x40,0x68,0x36,0x30,0x9A,0x4C,
0xED,0x91,0x80,0xBA,0x05,0x61,0xE9,0x41,
0x68,0x3A,0xBB,0x83,0xA7,0x20,0x54,0x81,
0x5E,0x30,0xA6,0x19,0x44,0x87,0x05,0x02,
0x42,0x73,0x81,0x51,0x1D,0xAF,0x96,0x40,
0x44,0x1B,0x08,0xD5,0x0A,0xA2,0x81,0x93,
0x1F,0x53,0x10,0x92,0x14,0x84,0xFC,0xFF,

0x07,0xAA,0xC7,0x9C,0x40,0xAC,0xFA,0x5B,
0x25,0x50,0x27,0x01,0xA1,0xC9,0x40,0x74,
0x7C,0x20,0x0F,0xB8,0x83,0x64,0x20,0x54,
0x29,0x88,0xC0,0xAC,0xF4,0x63,0xA4,0x23,
0x05,0x51,0x7D,0xBC,0xA0,0x20,0x34,0xD1,
0x3B,0x2C,0x08,0x7B,0xB8,0x69,0xA8,0xE4,
0x59,0xA5,0xA1,0x12,0x10,0x9A,0x0D,0x44,
0xC7,0x04,0xF2,0xAA,0x79,0x4C,0x60,0x20,
0x54,0x2F,0x08,0xCD,0x01,0x42,0x13,0x83,
0x08,0xD4,0xA9,0xBF,0x37,0x1A,0x2A,0xF9,
0x5B,0x09,0xC4,0xCA,0x5E,0x69,0x02,0xB1,
0xDE,0xA7,0x4E,0x20,0xE6,0x1D,0x98,0xA9,
0x05,0xA1,0xEA,0x41,0x04,0xE6,0xB4,0x40,
0x54,0x81,0x78,0x10,0xA6,0x08,0x44,0x60,
0x4E,0x02,0x44,0xD3,0x81,0xD0,0xEC,0x60,
0x54,0xE7,0xA3,0x4D,0x40,0xD6,0x0E,0x42,
0xB3,0x80,0x08,0xCC,0x59,0x1E,0x69,0x02,
0xB1,0x92,0x2F,0x9D,0x0E,0x24,0x04,0x84,
0x26,0xD3,0x7F,0x68,0xA1,0x05,0x80,0x99,
0x84,0x04,0x20,0x4C,0x16,0x88,0x0E,0x27,
0xD6,0x08,0x22,0x40,0xC7,0x01,0xA3,0xD1,
0x40,0x68,0x5C,0x40,0x9A,0x1D,0x90,0x2A,
0x6D,0x00,0xC6,0x54,0x83,0xD0,0x24,0x20,
0x02,0x74,0x2C,0x10,0x01,0x5A,0x74,0x04,
0x30,0x16,0x01,0x84,0x46,0x05,0xA1,0xC9,
0x2A,0x80,0xB2,0x9C,0x20,0x1A,0x20,0xC9,
0x30,0x60,0x0A,0x42,0x33,0x81,0xD0,0x8C,
0x20,0x54,0x7C,0x07,0x10,0x16,0x04,0x84,
0x86,0x03,0xD1,0x00,0xFE,0xFF,0x8F,0x0C,
0x02,0xD1,0x00,0x9C,0x23,0xC4,0x61,0x85,
0x82,0xD0,0xF4,0x20,0x34,0x6C,0x09,0x50,
0x16,0x1D,0x44,0xC7,0x23,0x92,0x02,0x8C,
0x05,0x02,0xA1,0x31,0x41,0x68,0x6C,0x10,
0x1A,0x29,0x06,0x28,0x13,0x54,0xE3,0x50,
0x44,0x7B,0x80,0x31,0x99,0x20,0x54,0x36,
0x88,0xC0,0x1C,0x14,0x88,0x86,0x07,0xA1,
0x62,0x82,0x00,0x52,0x10,0x01,0x12,0x20,
0x1A,0x1E,0x84,0x8A,0x29,0x32,0x74,0x0A,
0x42,0x55,0x24,0x39,0x9A,0x50,0x10,0x1D,
0x4D,0x08,0x08,0xCD,0x07,0x46,0x75,0x35,
0x39,0x6E,0x50,0x10,0xAA,0x1D,0x84,0x06,
0x05,0xA1,0x39,0xA2,0x80,0xB2,0xEC,0x20,
0x02,0xB2,0x9E,0x2A,0x87,0x0A,0x0A,0x22,
0x30,0xA7,0x02,0xA2,0x49,0x41,0xA8,0x8E,
0x2C,0x47,0x0A,0x9A,0x06,0x84,0x25,0x06,
0xA1,0xC9,0xDA,0x80,0xB0,0x0C,0x75,0x0E,
0x24,0x14,0x84,0xE6,0x04,0xA1,0x4A,0xF2,
0x0C,0x8F,0x82,0xE8,0x38,0x42,0x80,0x68,

```
      0x7A,0x10,0xAA,0xA6,0xCF,0x00,0x28,0x88,
      0x06,0x40,0x40,0x68,0x4E,0x30,0xAA,0xA8,
      0xD1,0xD1,0x84,0x82,0x50,0xDD,0x2F,0x4E,
      0x81,0xF8,0xFF,0x0F,
    })  // END MBUF

} //end DefinitionBlock
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/tests/misc/grammar.asl
No license file was found, but licenses were detected in source scan.

```
/******************************************************************************
*
* Module Name: aslsupport.l - Flex/lex scanner C support routines.
*              NOTE: Included into aslcompile.l, not compiled by itself.
*
*****************************************************************************/

/*
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* POSSIBILITY OF SUCH DAMAGES.
*/

/* Configuration */

#define ASL_SPACES_PER_TAB      4

#define ASL_NORMAL_CHAR         0
#define ASL_ESCAPE_SEQUENCE     1
#define ASL_OCTAL_CONSTANT      2
#define ASL_HEX_CONSTANT        3


void
yyerror (char const *s)
{

 AcpiOsPrintf ("YYERROR: %s\n", s);
}


/*******************************************************************************
*
* FUNCTION:    AslParserCleanup
*
* Used to delete the current buffer
*
*******************************************************************************/

void
AslParserCleanup (
  void)
{

  yy_delete_buffer (YY_CURRENT_BUFFER);
}


/*******************************************************************************
*
* FUNCTION:    AslDoLineDirective
*
```

```
* PARAMETERS:  None. Uses input() to access current source code line
*
* RETURN:      Updates global line number and filename
*
* DESCRIPTION: Handle #line directives emitted by the preprocessor.
*
* The #line directive is emitted by the preprocesser, and is used to
* pass through line numbers from the original source code file to the
* preprocessor output file (.i). This allows any compiler-generated
* error messages to be displayed with the correct line number.
*
*****************************************************************************/

static void
AslDoLineDirective (
  void)
{
  int                 c;
  char                *Token;
  UINT32              LineNumber;
  char                *Filename;
  UINT32              i;

 Gbl_HasIncludeFiles = TRUE;

  /* Eat the entire line that contains the #line directive */

  Gbl_LineBufPtr = Gbl_CurrentLineBuffer;

  while ((c = input()) != '\n' && c != EOF)
  {
     *Gbl_LineBufPtr = c;
     Gbl_LineBufPtr++;
  }
  *Gbl_LineBufPtr = 0;

  /* First argument is the actual line number */

  Token = strtok (Gbl_CurrentLineBuffer, " ");
  if (!Token)
  {
     goto ResetAndExit;
  }

  /* First argument is the line number */

  LineNumber = (UINT32) UtDoConstant (Token);
```

```
    /* Emit the appropriate number of newlines */

    Gbl_CurrentColumn = 0;
    if (LineNumber > Gbl_CurrentLineNumber)
    {
        for (i = 0; i < (LineNumber - Gbl_CurrentLineNumber); i++)
        {
            FlWriteFile (ASL_FILE_SOURCE_OUTPUT, "\n", 1);
            Gbl_CurrentColumn++;
        }
    }

    FlSetLineNumber (LineNumber);

    /* Second argument is the optional filename (in double quotes) */

    Token = strtok (NULL, " \"");
    if (Token)
    {
        Filename = ACPI_ALLOCATE_ZEROED (strlen (Token) + 1);
        strcpy (Filename, Token);
        FlSetFilename (Filename);
    }

    /* Third argument is not supported at this time */

ResetAndExit:

    /* Reset globals for a new line */

    Gbl_CurrentLineOffset += Gbl_CurrentColumn;
    Gbl_CurrentColumn = 0;
    Gbl_LineBufPtr = Gbl_CurrentLineBuffer;
}


/*******************************************************************************
*
* FUNCTION:    AslPopInputFileStack
*
* PARAMETERS:  None
*
* RETURN:      0 if a node was popped, -1 otherwise
*
* DESCRIPTION: Pop the top of the input file stack and point the parser to
*              the saved parse buffer contained in the fnode. Also, set the
*              global line counters to the saved values. This function is
*              called when an include file reaches EOF.
```

```
 *
 ******************************************************************************/

int
AslPopInputFileStack (
  void)
{
  ASL_FILE_NODE           *Fnode;


  Gbl_PreviousIncludeFilename = Gbl_Files[ASL_FILE_INPUT].Filename;
  Fnode = Gbl_IncludeFileStack;
  DbgPrint (ASL_PARSE_OUTPUT,
     "\nPop InputFile Stack, Fnode %p\n", Fnode);

  DbgPrint (ASL_PARSE_OUTPUT,
     "Include: Closing \"%s\"\n\n", Gbl_Files[ASL_FILE_INPUT].Filename);

  if (!Fnode)
  {
     return (-1);
  }

  /* Close the current include file */

  fclose (yyin);

  /* Update the top-of-stack */

  Gbl_IncludeFileStack = Fnode->Next;

  /* Reset global line counter and filename */

  Gbl_Files[ASL_FILE_INPUT].Filename = Fnode->Filename;
  Gbl_CurrentLineNumber = Fnode->CurrentLineNumber;

  /* Point the parser to the popped file */

  yy_delete_buffer (YY_CURRENT_BUFFER);
  yy_switch_to_buffer (Fnode->State);

  /* All done with this node */

  ACPI_FREE (Fnode);
  return (0);
}
```

```
/*******************************************************************************
*
* FUNCTION:    AslPushInputFileStack
*
* PARAMETERS:  InputFile           - Open file pointer
*              Filename            - Name of the file
*
* RETURN:      None
*
* DESCRIPTION: Push the InputFile onto the file stack, and point the parser
*              to this file. Called when an include file is successfully
*              opened.
*
******************************************************************************/

void
AslPushInputFileStack (
  FILE                *InputFile,
  char                *Filename)
{
  ASL_FILE_NODE         *Fnode;
  YY_BUFFER_STATE       State;


  /* Save the current state in an Fnode */

  Fnode = UtLocalCalloc (sizeof (ASL_FILE_NODE));

  Fnode->File = yyin;
  Fnode->Next = Gbl_IncludeFileStack;
  Fnode->State = YY_CURRENT_BUFFER;
  Fnode->Filename = Gbl_Files[ASL_FILE_INPUT].Filename;
  Fnode->CurrentLineNumber = Gbl_CurrentLineNumber;

  /* Push it on the stack */

  Gbl_IncludeFileStack = Fnode;

  /* Point the parser to this file */

  State = yy_create_buffer (InputFile, YY_BUF_SIZE);
  yy_switch_to_buffer (State);

  DbgPrint (ASL_PARSE_OUTPUT,
     "\nPush InputFile Stack, returning %p\n\n", InputFile);

  /* Reset the global line count and filename */
```

```
  Gbl_Files[ASL_FILE_INPUT].Filename =
     UtLocalCacheCalloc (strlen (Filename) + 1);

  strcpy (Gbl_Files[ASL_FILE_INPUT].Filename, Filename);

  Gbl_CurrentLineNumber = 1;
  yyin = InputFile;

  /* converter: reset the comment state to STANDARD_COMMENT */

  Gbl_CommentState.CommentType = STANDARD_COMMENT;
}


/*******************************************************************************
*
* FUNCTION:    AslResetCurrentLineBuffer
*
* PARAMETERS:  None
*
* RETURN:      None
*
* DESCRIPTION: Reset the Line Buffer to zero, increment global line numbers.
*
*******************************************************************************/

void
AslResetCurrentLineBuffer (
  void)
{

  if (Gbl_Files[ASL_FILE_SOURCE_OUTPUT].Handle)
  {
     FlWriteFile (ASL_FILE_SOURCE_OUTPUT, Gbl_CurrentLineBuffer,
        Gbl_LineBufPtr - Gbl_CurrentLineBuffer);
  }

  Gbl_CurrentLineOffset += Gbl_CurrentColumn;
  Gbl_CurrentColumn = 0;

  Gbl_CurrentLineNumber++;
  Gbl_LogicalLineNumber++;
  Gbl_LineBufPtr = Gbl_CurrentLineBuffer;
}


/*******************************************************************************
*
```

```
* FUNCTION:    AslInsertLineBuffer
*
* PARAMETERS:  SourceChar          - One char from the input ASL source file
*
* RETURN:      None
*
* DESCRIPTION: Put one character of the source file into the temp line buffer
*
*****************************************************************************/

void
AslInsertLineBuffer (
  int                 SourceChar)
{
  UINT32              i;
  UINT32              Count = 1;


  if (SourceChar == EOF)
  {
     return;
  }

  Gbl_InputByteCount++;

  /* Handle tabs. Convert to spaces */

  if (SourceChar == '\t')
  {
     SourceChar = ' ';
     Count = ASL_SPACES_PER_TAB -
             (Gbl_CurrentColumn & (ASL_SPACES_PER_TAB-1));
  }

  for (i = 0; i < Count; i++)
  {
     Gbl_CurrentColumn++;

     /* Insert the character into the line buffer */

     *Gbl_LineBufPtr = (UINT8) SourceChar;
     Gbl_LineBufPtr++;

     if (Gbl_LineBufPtr >
        (Gbl_CurrentLineBuffer + (Gbl_LineBufferSize - 1)))
     {
#if 0
        /*
```

```
         * Warning if we have split a long source line.
         * <Probably overkill>
         */
        sprintf (MsgBuffer, "Max %u", Gbl_LineBufferSize);
        AslCommonError (ASL_WARNING, ASL_MSG_LONG_LINE,
          Gbl_CurrentLineNumber, Gbl_LogicalLineNumber,
          Gbl_CurrentLineOffset, Gbl_CurrentColumn,
          Gbl_Files[ASL_FILE_INPUT].Filename, MsgBuffer);
#endif

        AslResetCurrentLineBuffer ();
      }
      else if (SourceChar == '\n')
      {
        /* End of line */

        AslResetCurrentLineBuffer ();
      }

      if (AcpiGbl_CaptureComments)
      {
        CvProcessCommentState (SourceChar);
      }
    }
}


/******************************************************************************
*
* FUNCTION:    count
*
* PARAMETERS:  yytext          - Contains the matched keyword.
*              Type            - Keyword/Character type:
*                                0 = anything except a keyword
*                                1 = pseudo-keywords
*                                2 = non-executable ASL keywords
*                                3 = executable ASL keywords
*
* RETURN:      None
*
* DESCRIPTION: Count keywords and put them into the line buffer
*
******************************************************************************/

static void
count (
  int               Type)
{
```

```
  char                *p;


  switch (Type)
  {
  case 2:

      TotalKeywords++;
      TotalNamedObjects++;
      break;

  case 3:

      TotalKeywords++;
      TotalExecutableOpcodes++;
      break;

  default:

      break;
  }

  for (p = yytext; *p != '\0'; p++)
  {
      AslInsertLineBuffer (*p);
      *Gbl_LineBufPtr = 0;
  }
}


/*******************************************************************************
*
* FUNCTION:    AslDoComment
*
* PARAMETERS:  none
*
* RETURN:      none
*
* DESCRIPTION: Process a standard comment.
*
*******************************************************************************/

static BOOLEAN
AslDoComment (
  void)
{
  int                 c;
  int                 c1 = 0;
```

```
    char                *StringBuffer = MsgBuffer;
    char                *EndBuffer = MsgBuffer + ASL_MSG_BUFFER_SIZE;
    ASL_COMMENT_STATE       CurrentState = Gbl_CommentState; /* to reference later on */


    AslInsertLineBuffer ('/');
    AslInsertLineBuffer ('*');
    if (AcpiGbl_CaptureComments && CurrentState.CaptureComments)
    {
        *StringBuffer = '/';
        ++StringBuffer;
        *StringBuffer = '*';
        ++StringBuffer;
    }

  loop:

    /* Eat chars until end-of-comment */

    while (((c = input ()) != '*') && (c != EOF))
    {
        AslInsertLineBuffer (c);
        if (AcpiGbl_CaptureComments && CurrentState.CaptureComments)
        {
            *StringBuffer = c;
            ++StringBuffer;
        }
        c1 = c;
    }

    if (c == EOF)
    {
        goto EarlyEOF;
    }

    /*
     * Check for nested comment -- can help catch cases where a previous
     * comment was accidently left unterminated
     */
    if ((c1 == '/') && (c == '*'))
    {
        AslCommonError (ASL_WARNING, ASL_MSG_NESTED_COMMENT,
            Gbl_CurrentLineNumber, Gbl_LogicalLineNumber,
            Gbl_InputByteCount, Gbl_CurrentColumn,
            Gbl_Files[ASL_FILE_INPUT].Filename, NULL);
    }

    /* Comment is closed only if the NEXT character is a slash */
```

```
    AslInsertLineBuffer (c);
    if (AcpiGbl_CaptureComments && CurrentState.CaptureComments)
    {
        *StringBuffer = c;
        ++StringBuffer;
    }

    if (((c1 = input ()) != '/') && (c1 != EOF))
    {
        unput (c1);
        goto loop;
    }

    if (c1 == EOF)
    {
        goto EarlyEOF;
    }
    if (StringBuffer > EndBuffer)
    {
        goto BufferOverflow;
    }

    AslInsertLineBuffer (c1);
    CvProcessComment (CurrentState, StringBuffer, c1);
    return (TRUE);


EarlyEOF:
    /*
     * Premature End-Of-File
     */
    AslCommonError (ASL_ERROR, ASL_MSG_EARLY_EOF,
        Gbl_CurrentLineNumber, Gbl_LogicalLineNumber,
        Gbl_CurrentLineOffset, Gbl_CurrentColumn,
        Gbl_Files[ASL_FILE_INPUT].Filename, NULL);
    return (FALSE);


BufferOverflow:

    /* Comment was too long */

    AslCommonError (ASL_ERROR, ASL_MSG_STRING_LENGTH,
        Gbl_CurrentLineNumber, Gbl_LogicalLineNumber,
        Gbl_CurrentLineOffset, Gbl_CurrentColumn,
        Gbl_Files[ASL_FILE_INPUT].Filename, "Max length 4096");
    return (FALSE);
```

```
}


/*****************************************************************************
*
* FUNCTION:    AslDoCommentType2
*
* PARAMETERS:  none
*
* RETURN:      none
*
* DESCRIPTION: Process a new "//" comment. Inline comments will be converted
*              to "/ *" standard comments.
*
*****************************************************************************/

static BOOLEAN
AslDoCommentType2 (
  void)
{
  int                 c;
  char                *StringBuffer = MsgBuffer;
  char                *EndBuffer = MsgBuffer + ASL_MSG_BUFFER_SIZE;
  ASL_COMMENT_STATE       CurrentState = Gbl_CommentState;


  AslInsertLineBuffer ('/');

  if (AcpiGbl_CaptureComments && CurrentState.CaptureComments)
  {
     AslInsertLineBuffer ('*');
     *StringBuffer = '/';
     ++StringBuffer;
     *StringBuffer = '*';
     ++StringBuffer;
  }
  else
  {
     AslInsertLineBuffer ('/');
  }

  while (((c = input ()) != '\n') && (c != EOF))
  {
     AslInsertLineBuffer (c);
     if (AcpiGbl_CaptureComments && CurrentState.CaptureComments)
     {
        *StringBuffer = c;
```

```
            ++StringBuffer;
        }
    }

    if (c == EOF)
    {
        /* End of file is OK, change to newline. Let parser detect EOF later */

        c = '\n';
    }

    if (StringBuffer > EndBuffer)
    {
        goto BufferOverflow;
    }
    AslInsertLineBuffer (c);

    CvProcessCommentType2 (CurrentState, StringBuffer);
    return (TRUE);


BufferOverflow:

    /* Comment was too long */

    AslCommonError (ASL_ERROR, ASL_MSG_STRING_LENGTH,
        Gbl_CurrentLineNumber, Gbl_LogicalLineNumber,
        Gbl_CurrentLineOffset, Gbl_CurrentColumn,
        Gbl_Files[ASL_FILE_INPUT].Filename, "Max length 4096");
    return (FALSE);

}


/*******************************************************************************
*
* FUNCTION:    AslDoStringLiteral
*
* PARAMETERS:  none
*
* RETURN:      none
*
* DESCRIPTION: Process a string literal (surrounded by quotes)
*
******************************************************************************/

static char
AslDoStringLiteral (
```

```
  void)
{
  char              *StringBuffer = MsgBuffer;
  char              *EndBuffer = MsgBuffer + ASL_MSG_BUFFER_SIZE;
  char              *CleanString;
  int               StringChar;
  UINT32             State = ASL_NORMAL_CHAR;
  UINT32             i = 0;
  UINT8             Digit;
  char              ConvertBuffer[4];


  /*
   * Eat chars until end-of-literal.
   * NOTE:  Put back the original surrounding quotes into the
   * source line buffer.
   */
  AslInsertLineBuffer ('\"');
  while ((StringChar = input()) != EOF)
  {
     AslInsertLineBuffer (StringChar);

DoCharacter:
     switch (State)
     {
     case ASL_NORMAL_CHAR:

        switch (StringChar)
        {
        case '\\':
           /*
            * Special handling for backslash-escape sequence. We will
            * toss the backslash and translate the escape char(s).
            */
           State = ASL_ESCAPE_SEQUENCE;
           continue;

        case '\"':

           /* String terminator */

           goto CompletedString;

        default:

           break;
        }
        break;
```

```
case ASL_ESCAPE_SEQUENCE:

   State = ASL_NORMAL_CHAR;
   switch (StringChar)
   {
   case 'a':

      StringChar = 0x07;      /* BELL */
      break;

   case 'b':

      StringChar = 0x08;      /* BACKSPACE */
      break;

   case 'f':

      StringChar = 0x0C;      /* FORMFEED */
      break;

   case 'n':

      StringChar = 0x0A;      /* LINEFEED */
      break;

   case 'r':

      StringChar = 0x0D;      /* CARRIAGE RETURN*/
      break;

   case 't':

      StringChar = 0x09;      /* HORIZONTAL TAB */
      break;

   case 'v':

      StringChar = 0x0B;      /* VERTICAL TAB */
      break;

   case 'x':

      State = ASL_HEX_CONSTANT;
      i = 0;
      continue;
```

```
    case '\'':              /* Single Quote */
    case '\"':              /* Double Quote */
    case '\\':              /* Backslash */

      break;

    default:

      /* Check for an octal digit (0-7) */

      if (ACPI_IS_OCTAL_DIGIT (StringChar))
      {
        State = ASL_OCTAL_CONSTANT;
        ConvertBuffer[0] = StringChar;
        i = 1;
        continue;
      }

      /* Unknown escape sequence issue warning, but use the character */

      AslCommonError (ASL_WARNING, ASL_MSG_INVALID_ESCAPE,
        Gbl_CurrentLineNumber, Gbl_LogicalLineNumber,
        Gbl_CurrentLineOffset, Gbl_CurrentColumn,
        Gbl_Files[ASL_FILE_INPUT].Filename, NULL);
      break;
    }
    break;


  case ASL_OCTAL_CONSTANT:

    /* Up to three octal digits allowed */

    if (!ACPI_IS_OCTAL_DIGIT (StringChar) ||
      (i > 2))
    {
      /*
       * Reached end of the constant. Convert the assembled ASCII
       * string and resume processing of the next character
       */
      ConvertBuffer[i] = 0;
      Digit = (UINT8) strtoul (ConvertBuffer, NULL, 8);

      /* Check for NULL or non-ascii character (ignore if so) */

      if ((Digit == 0) || (Digit > ACPI_ASCII_MAX))
      {
        AslCommonError (ASL_WARNING, ASL_MSG_INVALID_STRING,
```

```
            Gbl_CurrentLineNumber, Gbl_LogicalLineNumber,
            Gbl_CurrentLineOffset, Gbl_CurrentColumn,
            Gbl_Files[ASL_FILE_INPUT].Filename, NULL);
        }
        else
        {
            *StringBuffer = (char) Digit;
            StringBuffer++;
            if (StringBuffer >= EndBuffer)
            {
                goto BufferOverflow;
            }
        }

        State = ASL_NORMAL_CHAR;
        goto DoCharacter;
        break;
    }

    /* Append another digit of the constant */

    ConvertBuffer[i] = StringChar;
    i++;
    continue;

case ASL_HEX_CONSTANT:

    /* Up to two hex digits allowed */

    if (!isxdigit (StringChar) ||
        (i > 1))
    {
        /*
         * Reached end of the constant. Convert the assembled ASCII
         * string and resume processing of the next character
         */
        ConvertBuffer[i] = 0;
        Digit = (UINT8) strtoul (ConvertBuffer, NULL, 16);

        /* Check for NULL or non-ascii character (ignore if so) */

        if ((Digit == 0) || (Digit > ACPI_ASCII_MAX))
        {
            AslCommonError (ASL_WARNING, ASL_MSG_INVALID_STRING,
                Gbl_CurrentLineNumber, Gbl_LogicalLineNumber,
                Gbl_CurrentLineOffset, Gbl_CurrentColumn,
                Gbl_Files[ASL_FILE_INPUT].Filename, NULL);
        }
```

```
            else
            {
               *StringBuffer = (char) Digit;
               StringBuffer++;
               if (StringBuffer >= EndBuffer)
               {
                  goto BufferOverflow;
               }
            }

            State = ASL_NORMAL_CHAR;
            goto DoCharacter;
            break;
         }

         /* Append another digit of the constant */

         ConvertBuffer[i] = StringChar;
         i++;
         continue;

      default:

         break;
      }

      /* Save the finished character */

      *StringBuffer = StringChar;
      StringBuffer++;
      if (StringBuffer >= EndBuffer)
      {
         goto BufferOverflow;
      }
   }

   /*
    * Premature End-Of-File
    */
   AslCommonError (ASL_ERROR, ASL_MSG_EARLY_EOF,
      Gbl_CurrentLineNumber, Gbl_LogicalLineNumber,
      Gbl_CurrentLineOffset, Gbl_CurrentColumn,
      Gbl_Files[ASL_FILE_INPUT].Filename, NULL);
   return (FALSE);


CompletedString:
   /*
```

```
     * Null terminate the input string and copy string to a new buffer
     */
    *StringBuffer = 0;

    CleanString = UtLocalCacheCalloc (strlen (MsgBuffer) + 1);
    strcpy (CleanString, MsgBuffer);
    AslCompilerlval.s = CleanString;
    return (TRUE);


BufferOverflow:

    /* Literal was too long */

    AslCommonError (ASL_ERROR, ASL_MSG_STRING_LENGTH,
        Gbl_CurrentLineNumber, Gbl_LogicalLineNumber,
        Gbl_CurrentLineOffset, Gbl_CurrentColumn,
        Gbl_Files[ASL_FILE_INPUT].Filename, "Max length 4096");
    return (FALSE);
}

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-
20180508/source/compiler/aslsupport.l
No license file was found, but licenses were detected in source scan.

NoEcho('
/******************************************************************************
*
* Module Name: aslrules.y - Main Bison/Yacc production rules
*                         - Keep this file synched with the
*                           CvParseOpBlockType function in cvcompiler.c
*
*****************************************************************************/

/*
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```

```
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* IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
* POSSIBILITY OF SUCH DAMAGES.
*/

')

/******************************************************************************
*
* ASL Root and Secondary Terms
*
******************************************************************************/

/*
* Root term. Allow multiple #line directives before the definition block
* to handle output from preprocessors
*/
AslCode
  : DefinitionBlockList         {$<n>$ = TrLinkOpChildren (
                                 TrCreateLeafOp (PARSEOP_ASL_CODE),1, $1);}
  | error                       {YYABORT; $$ = NULL;}
  ;


/*
* Note concerning support for "module-level code".
*
* ACPI 1.0 allowed Type1 and Type2 executable opcodes outside of control
* methods (the so-called module-level code.) This support was explicitly
```

```
* removed in ACPI 2.0, but this type of code continues to be created by
* BIOS vendors. In order to support the disassembly and recompilation of
* such code (and the porting of ASL code to iASL), iASL supports this
* code in violation of the current ACPI specification.
*
* The grammar change to support module-level code is to revert the
* {ObjectList} portion of the DefinitionBlockTerm in ACPI 2.0 to the
* original use of {TermList} instead (see below.) This allows the use
* of Type1 and Type2 opcodes at module level.
*
* 04/2016: The module-level code is now allowed in the following terms:
* DeviceTerm, PowerResTerm, ProcessorTerm, ScopeTerm, ThermalZoneTerm.
* The ObjectList term is obsolete and has been removed.
*/
DefinitionBlockTerm
  : PARSEOP_DEFINITION_BLOCK
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_DEFINITION_BLOCK);
COMMENT_CAPTURE_OFF;}
    String ','
    String ','
    ByteConst ','
    String ','
    String ','
    DWordConst
    PARSEOP_CLOSE_PAREN         {TrSetOpIntegerWidth ($6,$8);
                                TrSetOpEndLineNumber ($<n>3); COMMENT_CAPTURE_ON;}
      '{' TermList '}'          {$$ = TrLinkOpChildren ($<n>3,7,
                                $4,$6,$8,$10,$12,$14,$18);}
  ;

DefinitionBlockList
  : DefinitionBlockTerm
  | DefinitionBlockTerm
    DefinitionBlockList         {$$ = TrLinkPeerOps (2, $1,$2);}
  ;


/******* Basic ASCII identifiers ************************************************/

/* Allow IO, DMA, IRQ Resource macro and FOR macro names to also be used as identifiers */

NameString
  : NameSeg                     {}
  | PARSEOP_NAMESTRING          {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING,
(ACPI_NATIVE_INT) $1);}
  | PARSEOP_IO                  {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING, (ACPI_NATIVE_INT)
"IO");}
  | PARSEOP_DMA                 {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING,
```

```
(ACPI_NATIVE_INT) "DMA");}
  | PARSEOP_IRQ                {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING, (ACPI_NATIVE_INT)
"IRQ");}
  | PARSEOP_FOR                {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING, (ACPI_NATIVE_INT)
"FOR");}
  ;
/*
NameSeg
  : PARSEOP_NAMESEG            {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESEG,
(ACPI_NATIVE_INT)
                        TrNormalizeNameSeg ($1));}
  ;
*/

NameSeg
  : PARSEOP_NAMESEG            {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESEG,
                        (ACPI_NATIVE_INT) AslCompilerlval.s);}
  ;


/******* Fundamental argument/statement types ***********************************/

Term
  : Object                  {}
  | Type1Opcode             {}
  | Type2Opcode             {}
  | Type2IntegerOpcode      {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
  | Type2StringOpcode       {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
  | Type2BufferOpcode       {}
  | Type2BufferOrStringOpcode   {}
  | error                   {$$ = AslDoError(); yyclearin;}
  ;

SuperName
  : SimpleName              {}
  | DebugTerm               {}
  | Type6Opcode             {}
  ;

Target
  :                         {$$ = TrCreateNullTargetOp ();} /* Placeholder is a ZeroOp object */
  | ','                     {$$ = TrCreateNullTargetOp ();} /* Placeholder is a ZeroOp object */
  | ',' SuperName           {$$ = TrSetOpFlags ($2, OP_IS_TARGET);}
  ;

RequiredTarget
  : ',' SuperName           {$$ = TrSetOpFlags ($2, OP_IS_TARGET);}
  ;
```

```
TermArg
  : SimpleName                  {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
  | Type2Opcode                 {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
  | DataObject                  {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
  | PARSEOP_OPEN_PAREN
      TermArg
      PARSEOP_CLOSE_PAREN       {$$ = TrSetOpFlags ($2, OP_IS_TERM_ARG);}
  ;

/*
NOTE: Removed from TermArg due to reduce/reduce conflicts:
  | Type2IntegerOpcode           {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
  | Type2StringOpcode            {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
  | Type2BufferOpcode            {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
  | Type2BufferOrStringOpcode    {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}

*/

MethodInvocationTerm
  : NameString
      PARSEOP_OPEN_PAREN        {TrSetOpIntegerValue (PARSEOP_METHODCALL, $1);
COMMENT_CAPTURE_OFF;}
      ArgList
      PARSEOP_CLOSE_PAREN       {$$ = TrLinkChildOp ($1,$4); COMMENT_CAPTURE_ON;}
  ;

/* OptionalCount must appear before ByteList or an incorrect reduction will result */

OptionalCount
  :                             {$$ = TrCreateLeafOp (PARSEOP_ONES);}       /* Placeholder is a OnesOp object */
  | ','                         {$$ = TrCreateLeafOp (PARSEOP_ONES);}       /* Placeholder is a OnesOp object */
  | ',' TermArg                 {$$ = $2;}
  ;

/*
* Data count for buffers and packages (byte count for buffers,
* element count for packages).
*/
OptionalDataCount

      /* Legacy ASL */
  :                             {$$ = NULL;}
  | PARSEOP_OPEN_PAREN
      TermArg
      PARSEOP_CLOSE_PAREN       {$$ = $2;}
  | PARSEOP_OPEN_PAREN
      PARSEOP_CLOSE_PAREN       {$$ = NULL;}
```

```
    /* C-style (ASL+) -- adds equals term */

  |  PARSEOP_EXP_EQUALS          {$$ = NULL;}

  | PARSEOP_OPEN_PAREN
    TermArg
    PARSEOP_CLOSE_PAREN
    PARSEOP_EXP_EQUALS          {$$ = $2;}

  | PARSEOP_OPEN_PAREN
    PARSEOP_CLOSE_PAREN
    String
    PARSEOP_EXP_EQUALS          {$$ = NULL;}
  ;


/******* List Terms ************************************************/

  /* ACPI 3.0 -- allow semicolons between terms */

TermList
  :                         {$$ = NULL;}
  | TermList Term               {$$ = TrLinkPeerOp (
                              TrSetOpFlags ($1, OP_RESULT_NOT_USED),$2);}
  | TermList Term ';'           {$$ = TrLinkPeerOp (
                              TrSetOpFlags ($1, OP_RESULT_NOT_USED),$2);}
  | TermList ';' Term           {$$ = TrLinkPeerOp (
                              TrSetOpFlags ($1, OP_RESULT_NOT_USED),$3);}
  | TermList ';' Term ';'       {$$ = TrLinkPeerOp (
                              TrSetOpFlags ($1, OP_RESULT_NOT_USED),$3);}
  ;

ArgList
  :                         {$$ = NULL;}
  | TermArg
  | ArgList ','                 /* Allows a trailing comma at list end */
  | ArgList ','
    TermArg                   {$$ = TrLinkPeerOp ($1,$3);}
  ;

ByteList
  :                         {$$ = NULL;}
  | ByteConstExpr
  | ByteList ','                /* Allows a trailing comma at list end */
  | ByteList ','
    ByteConstExpr               {$$ = TrLinkPeerOp ($1,$3);}
  ;
```

```
DWordList
  :                         {$$ = NULL;}
  | DWordConstExpr
  | DWordList ','             /* Allows a trailing comma at list end */
  | DWordList ','
    DWordConstExpr            {$$ = TrLinkPeerOp ($1,$3);}
  ;

FieldUnitList
  :                         {$$ = NULL;}
  | FieldUnit
  | FieldUnitList ','         /* Allows a trailing comma at list end */
  | FieldUnitList ','
    FieldUnit               {$$ = TrLinkPeerOp ($1,$3);}
  ;

FieldUnit
  : FieldUnitEntry            {}
  | OffsetTerm                {}
  | AccessAsTerm              {}
  | ConnectionTerm            {}
  ;

FieldUnitEntry
  : ',' AmlPackageLengthTerm    {$$ = TrCreateOp (PARSEOP_RESERVED_BYTES,1,$2);}
  | NameSeg ','
    AmlPackageLengthTerm      {$$ = TrLinkChildOp ($1,$3);}
  ;

Object
  : CompilerDirective         {}
  | NamedObject               {}
  | NameSpaceModifier         {}
/*  | StructureTerm             {} */
  ;

PackageList
  :                         {$$ = NULL;}
  | PackageElement
  | PackageList ','           /* Allows a trailing comma at list end */
  | PackageList ','
    PackageElement            {$$ = TrLinkPeerOp ($1,$3);}
  ;

PackageElement
  : DataObject                {}
  | NameString                {}
```

```
  ;

  /* Rules for specifying the type of one method argument or return value */

ParameterTypePackage
  :                         {$$ = NULL;}
  | ObjectTypeKeyword       {$$ = $1;}
  | ParameterTypePackage ','
    ObjectTypeKeyword       {$$ = TrLinkPeerOps (2,$1,$3);}
  ;

ParameterTypePackageList
  :                         {$$ = NULL;}
  | ObjectTypeKeyword       {$$ = $1;}
  | '{' ParameterTypePackage '}'  {$$ = $2;}
  ;

OptionalParameterTypePackage
  :                         {$$ = TrCreateLeafOp (PARSEOP_DEFAULT_ARG);}
  | ',' ParameterTypePackageList  {$$ = TrLinkOpChildren (
                              TrCreateLeafOp (PARSEOP_DEFAULT_ARG),1,$2);}
  ;

  /* Rules for specifying the types for method arguments */

ParameterTypesPackage
  : ParameterTypePackageList    {$$ = $1;}
  | ParameterTypesPackage ','
    ParameterTypePackageList    {$$ = TrLinkPeerOps (2,$1,$3);}
  ;

ParameterTypesPackageList
  :                         {$$ = NULL;}
  | ObjectTypeKeyword       {$$ = $1;}
  | '{' ParameterTypesPackage '}' {$$ = $2;}
  ;

OptionalParameterTypesPackage
  :                         {$$ = TrCreateLeafOp (PARSEOP_DEFAULT_ARG);}
  | ',' ParameterTypesPackageList {$$ = TrLinkOpChildren (
                              TrCreateLeafOp (PARSEOP_DEFAULT_ARG),1,$2);}
  ;

/*
* Case-Default list; allow only one Default term and unlimited Case terms
*/
CaseDefaultTermList
  :                         {$$ = NULL;}
```

```
  | CaseTerm                  {}
  | DefaultTerm               {}
  | CaseDefaultTermList
    CaseTerm                  {$$ = TrLinkPeerOp ($1,$2);}
  | CaseDefaultTermList
    DefaultTerm               {$$ = TrLinkPeerOp ($1,$2);}

/* Original - attempts to force zero or one default term within the switch */

/*
CaseDefaultTermList
  :                           {$$ = NULL;}
  | CaseTermList
    DefaultTerm
    CaseTermList              {$$ = TrLinkPeerOp ($1,TrLinkPeerOp ($2, $3));}
  | CaseTermList
    CaseTerm                  {$$ = TrLinkPeerOp ($1,$2);}
  ;

CaseTermList
  :                           {$$ = NULL;}
  | CaseTerm                  {}
  | CaseTermList
    CaseTerm                  {$$ = TrLinkPeerOp ($1,$2);}
  ;
*/


/******************************************************************************
*
* ASL Data and Constant Terms
*
******************************************************************************/

DataObject
  : BufferData                {}
  | PackageData               {}
  | IntegerData               {}
  | StringData                {}
  ;

BufferData
  : Type5Opcode               {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
  | Type2BufferOrStringOpcode {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
  | Type2BufferOpcode         {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
  | BufferTerm                {}
  ;
```

```
PackageData
  : PackageTerm                 {}
  ;

IntegerData
  : Type2IntegerOpcode          {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
  | Type3Opcode                 {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
  | Integer                     {}
  | ConstTerm                   {}
  ;

StringData
  : Type2StringOpcode           {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
  | String                      {}
  ;

ByteConst
  : Integer                     {$$ = TrSetOpIntegerValue (PARSEOP_BYTECONST, $1);}
  ;

WordConst
  : Integer                     {$$ = TrSetOpIntegerValue (PARSEOP_WORDCONST, $1);}
  ;

DWordConst
  : Integer                     {$$ = TrSetOpIntegerValue (PARSEOP_DWORDCONST, $1);}
  ;

QWordConst
  : Integer                     {$$ = TrSetOpIntegerValue (PARSEOP_QWORDCONST, $1);}
  ;

/*
* The OP_COMPILE_TIME_CONST flag in the following constant expressions
* enables compile-time constant folding to reduce the Type3Opcodes/Type2IntegerOpcodes
* to simple integers. It is an error if these types of expressions cannot be
* reduced, since the AML grammar for ****ConstExpr requires a simple constant.
* Note: The required byte length of the constant is passed through to the
* constant folding code in the node AmlLength field.
*/
ByteConstExpr
  : Type3Opcode                 {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                                TrSetOpAmlLength ($1, 1);}
  | Type2IntegerOpcode          {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                                TrSetOpAmlLength ($1, 1);}
  | ConstExprTerm               {$$ = TrSetOpIntegerValue (PARSEOP_BYTECONST, $1);}
  | ByteConst                   {}
  ;
```

```
WordConstExpr
  : Type3Opcode               {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                          TrSetOpAmlLength ($1, 2);}
  | Type2IntegerOpcode        {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                          TrSetOpAmlLength ($1, 2);}
  | ConstExprTerm             {$$ = TrSetOpIntegerValue (PARSEOP_WORDCONST, $1);}
  | WordConst                 {}
  ;

DWordConstExpr
  : Type3Opcode               {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                          TrSetOpAmlLength ($1, 4);}
  | Type2IntegerOpcode        {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                          TrSetOpAmlLength ($1, 4);}
  | ConstExprTerm             {$$ = TrSetOpIntegerValue (PARSEOP_DWORDCONST, $1);}
  | DWordConst                {}
  ;

QWordConstExpr
  : Type3Opcode               {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                          TrSetOpAmlLength ($1, 8);}
  | Type2IntegerOpcode        {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                          TrSetOpAmlLength ($1, 8);}
  | ConstExprTerm             {$$ = TrSetOpIntegerValue (PARSEOP_QWORDCONST, $1);}
  | QWordConst                {}
  ;

ConstTerm
  : ConstExprTerm             {}
  | PARSEOP_REVISION          {$$ = TrCreateLeafOp (PARSEOP_REVISION);}
  ;

ConstExprTerm
  : PARSEOP_ZERO              {$$ = TrCreateValuedLeafOp (PARSEOP_ZERO, 0);}
  | PARSEOP_ONE               {$$ = TrCreateValuedLeafOp (PARSEOP_ONE, 1);}
  | PARSEOP_ONES              {$$ = TrCreateValuedLeafOp (PARSEOP_ONES, ACPI_UINT64_MAX);}
  | PARSEOP___DATE__          {$$ = TrCreateConstantLeafOp (PARSEOP___DATE__);}
  | PARSEOP___FILE__          {$$ = TrCreateConstantLeafOp (PARSEOP___FILE__);}
  | PARSEOP___LINE__          {$$ = TrCreateConstantLeafOp (PARSEOP___LINE__);}
  | PARSEOP___PATH__          {$$ = TrCreateConstantLeafOp (PARSEOP___PATH__);}
  | PARSEOP___METHOD__        {$$ = TrCreateConstantLeafOp (PARSEOP___METHOD__);}
  ;

Integer
  : PARSEOP_INTEGER           {$$ = TrCreateValuedLeafOp (PARSEOP_INTEGER,
                          AslCompilerlval.i);}
  ;
```

```
String
  : PARSEOP_STRING_LITERAL        {$$ = TrCreateValuedLeafOp (PARSEOP_STRING_LITERAL,
                                (ACPI_NATIVE_INT) AslCompilerlval.s);}
  ;


/*******************************************************************************
*
* ASL Opcode Terms
*
******************************************************************************/

CompilerDirective
  : IncludeTerm               {}
  | IncludeEndTerm              {}
  | ExternalTerm              {}
  ;

NamedObject
  : BankFieldTerm             {}
  | CreateBitFieldTerm          {}
  | CreateByteFieldTerm         {}
  | CreateDWordFieldTerm        {}
  | CreateFieldTerm             {}
  | CreateQWordFieldTerm        {}
  | CreateWordFieldTerm         {}
  | DataRegionTerm              {}
  | DeviceTerm                {}
  | EventTerm                 {}
  | FieldTerm                 {}
  | FunctionTerm              {}
  | IndexFieldTerm              {}
  | MethodTerm                {}
  | MutexTerm                 {}
  | OpRegionTerm              {}
  | PowerResTerm              {}
  | ProcessorTerm             {}
  | ThermalZoneTerm             {}
  ;

NameSpaceModifier
  : AliasTerm                 {}
  | NameTerm                  {}
/*  | NameTermAslPlus             {} */
  | ScopeTerm                 {}
  ;
```

```
SimpleName
  : NameString              {}
  | LocalTerm               {}
  | ArgTerm                 {}
  ;

/* For ObjectType(), SuperName except for MethodInvocationTerm */

ObjectTypeSource
  : SimpleName              {}
  | DebugTerm               {}
  | RefOfTerm               {}
  | DerefOfTerm             {}
  | IndexTerm               {}
  | IndexExpTerm            {}
  ;

/* For DeRefOf(), SuperName except for DerefOf and Debug */

DerefOfSource
  : SimpleName              {}
  | RefOfTerm               {}
  | DerefOfTerm             {}
  | IndexTerm               {}
  | IndexExpTerm            {}
  | StoreTerm               {}
  | EqualsTerm              {}
  | MethodInvocationTerm    {}
  ;

/* For RefOf(), SuperName except for RefOf and MethodInvocationTerm */

RefOfSource
  : SimpleName              {}
  | DebugTerm               {}
  | DerefOfTerm             {}
  | IndexTerm               {}
  | IndexExpTerm            {}
  ;

/* For CondRefOf(), SuperName except for RefOf and MethodInvocationTerm */

CondRefOfSource
  : SimpleName              {}
  | DebugTerm               {}
  | DerefOfTerm             {}
  | IndexTerm               {}
  | IndexExpTerm            {}
```

```
  ;

/*
* Opcode types, as defined in the ACPI specification
*/
Type1Opcode
  : BreakTerm                {}
  | BreakPointTerm           {}
  | ContinueTerm             {}
  | FatalTerm                {}
  | ForTerm                  {}
  | ElseIfTerm               {}
  | LoadTerm                 {}
  | NoOpTerm                 {}
  | NotifyTerm               {}
  | ReleaseTerm              {}
  | ResetTerm                {}
  | ReturnTerm               {}
  | SignalTerm               {}
  | SleepTerm                {}
  | StallTerm                {}
  | SwitchTerm               {}
  | UnloadTerm               {}
  | WhileTerm                {}
  ;

Type2Opcode
  : AcquireTerm              {}
  | CondRefOfTerm            {}
  | CopyObjectTerm           {}
  | DerefOfTerm              {}
  | ObjectTypeTerm           {}
  | RefOfTerm                {}
  | SizeOfTerm               {}
  | StoreTerm                {}
  | EqualsTerm               {}
  | TimerTerm                {}
  | WaitTerm                 {}
  | MethodInvocationTerm     {}
  ;

/*
* Type 3/4/5 opcodes
*/
Type2IntegerOpcode              /* "Type3" opcodes */
  : Expression               {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
  | AddTerm                  {}
  | AndTerm                  {}
```

```
  | DecTerm                 {}
  | DivideTerm              {}
  | FindSetLeftBitTerm      {}
  | FindSetRightBitTerm     {}
  | FromBCDTerm             {}
  | IncTerm                 {}
  | IndexTerm               {}
/*  | StructureIndexTerm     {} */
/*  | StructurePointerTerm   {} */
  | LAndTerm                {}
  | LEqualTerm              {}
  | LGreaterTerm            {}
  | LGreaterEqualTerm       {}
  | LLessTerm               {}
  | LLessEqualTerm          {}
  | LNotTerm                {}
  | LNotEqualTerm           {}
  | LoadTableTerm           {}
  | LOrTerm                 {}
  | MatchTerm               {}
  | ModTerm                 {}
  | MultiplyTerm            {}
  | NAndTerm                {}
  | NOrTerm                 {}
  | NotTerm                 {}
  | OrTerm                  {}
  | ShiftLeftTerm           {}
  | ShiftRightTerm          {}
  | SubtractTerm            {}
  | ToBCDTerm               {}
  | ToIntegerTerm           {}
  | XOrTerm                 {}
  ;

Type2StringOpcode           /* "Type4" Opcodes */
  : ToDecimalStringTerm     {}
  | ToHexStringTerm         {}
  | ToStringTerm            {}
  ;

Type2BufferOpcode           /* "Type5" Opcodes */
  : ToBufferTerm            {}
  | ConcatResTerm           {}
  ;

Type2BufferOrStringOpcode
  : ConcatTerm              {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
  | PrintfTerm              {}
```

```
  | FprintfTerm                {}
  | MidTerm                    {}
  ;

/*
* A type 3 opcode evaluates to an Integer and cannot have a destination operand
*/
Type3Opcode
  : EISAIDTerm                 {}
  ;

/* Obsolete
Type4Opcode
  : ConcatTerm                 {}
  | ToDecimalStringTerm        {}
  | ToHexStringTerm            {}
  | MidTerm                    {}
  | ToStringTerm               {}
  ;
*/

/* Type 5 opcodes are a subset of Type2 opcodes, and return a constant */

Type5Opcode
  : ResourceTemplateTerm       {}
  | UnicodeTerm                {}
  | ToPLDTerm                  {}
  | ToUUIDTerm                 {}
  ;

Type6Opcode
  : RefOfTerm                  {}
  | DerefOfTerm                {}
  | IndexTerm                  {}
  | IndexExpTerm               {}
/*    | StructureIndexTerm         {} */
/*    | StructurePointerTerm       {} */
  | MethodInvocationTerm       {}
  ;


/******************************************************************************
*
* ASL Helper Terms
*
******************************************************************************/

AmlPackageLengthTerm
```

```
  : Integer                 {$$ = TrSetOpIntegerValue (PARSEOP_PACKAGE_LENGTH,
                            (ACPI_PARSE_OBJECT *) $1);}
  ;

NameStringItem
  : ',' NameString          {$$ = $2;}
  | ',' error               {$$ = AslDoError (); yyclearin;}
  ;

TermArgItem
  : ',' TermArg             {$$ = $2;}
  | ',' error               {$$ = AslDoError (); yyclearin;}
  ;

OptionalReference
  :                         {$$ = TrCreateLeafOp (PARSEOP_ZERO);}       /* Placeholder is a ZeroOp object */
  | ','                     {$$ = TrCreateLeafOp (PARSEOP_ZERO);}       /* Placeholder is a ZeroOp object */
  | ',' TermArg             {$$ = $2;}
  ;

OptionalReturnArg
  :                         {$$ = TrSetOpFlags (TrCreateLeafOp (PARSEOP_ZERO),
                                  OP_IS_NULL_RETURN);}       /* Placeholder is a ZeroOp object */
  | TermArg                 {$$ = $1;}
  ;

OptionalSerializeRuleKeyword
  :                         {$$ = NULL;}
  | ','                     {$$ = NULL;}
  | ',' SerializeRuleKeyword      {$$ = $2;}
  ;

OptionalTermArg
  :                         {$$ = TrCreateLeafOp (PARSEOP_DEFAULT_ARG);}
  | TermArg                 {$$ = $1;}
  ;

OptionalWordConst
  :                         {$$ = NULL;}
  | WordConst               {$$ = $1;}
  ;
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslrules.y
No license file was found, but licenses were detected in source scan.

```
NoEcho('
```

```
/******************************************************************************
*
* Module Name: asltokens.y - Bison/Yacc token types
*
*****************************************************************************/

/*
* Copyright (C) 2000 - 2018, Intel Corp.
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*
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* modification, are permitted provided that the following conditions
* are met:
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* HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT,
* STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING
* IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
* POSSIBILITY OF SUCH DAMAGES.
*/

')

/******************************************************************************
*
* Token types: These are returned by the lexer
```

```
*
* NOTE: This list MUST match the AslKeywordMapping table found
*       in aslmap.c EXACTLY!  Double check any changes!
*
******************************************************************************/

/*
* Most tokens are defined to return <i>, which is a UINT64.
*
* These tokens return <s>, a pointer to the associated lexed string:
*
*  PARSEOP_NAMESEG
*  PARSEOP_NAMESTRING
*  PARSEOP_STRING_LITERAL
*  PARSEOP_STRUCTURE_NAMESTRING
*/
%token <i> PARSEOP_ACCESSAS
%token <i> PARSEOP_ACCESSATTRIB_BLOCK
%token <i> PARSEOP_ACCESSATTRIB_BLOCK_CALL
%token <i> PARSEOP_ACCESSATTRIB_BYTE
%token <i> PARSEOP_ACCESSATTRIB_MULTIBYTE
%token <i> PARSEOP_ACCESSATTRIB_QUICK
%token <i> PARSEOP_ACCESSATTRIB_RAW_BYTES
%token <i> PARSEOP_ACCESSATTRIB_RAW_PROCESS
%token <i> PARSEOP_ACCESSATTRIB_SND_RCV
%token <i> PARSEOP_ACCESSATTRIB_WORD
%token <i> PARSEOP_ACCESSATTRIB_WORD_CALL
%token <i> PARSEOP_ACCESSTYPE_ANY
%token <i> PARSEOP_ACCESSTYPE_BUF
%token <i> PARSEOP_ACCESSTYPE_BYTE
%token <i> PARSEOP_ACCESSTYPE_DWORD
%token <i> PARSEOP_ACCESSTYPE_QWORD
%token <i> PARSEOP_ACCESSTYPE_WORD
%token <i> PARSEOP_ACQUIRE
%token <i> PARSEOP_ADD
%token <i> PARSEOP_ADDRESSINGMODE_7BIT
%token <i> PARSEOP_ADDRESSINGMODE_10BIT
%token <i> PARSEOP_ADDRESSTYPE_ACPI
%token <i> PARSEOP_ADDRESSTYPE_MEMORY
%token <i> PARSEOP_ADDRESSTYPE_NVS
%token <i> PARSEOP_ADDRESSTYPE_RESERVED
%token <i> PARSEOP_ALIAS
%token <i> PARSEOP_AND
%token <i> PARSEOP_ARG0
%token <i> PARSEOP_ARG1
%token <i> PARSEOP_ARG2
%token <i> PARSEOP_ARG3
%token <i> PARSEOP_ARG4
```

%token <i> PARSEOP_ARG5
%token <i> PARSEOP_ARG6
%token <i> PARSEOP_BANKFIELD
%token <i> PARSEOP_BITSPERBYTE_EIGHT
%token <i> PARSEOP_BITSPERBYTE_FIVE
%token <i> PARSEOP_BITSPERBYTE_NINE
%token <i> PARSEOP_BITSPERBYTE_SEVEN
%token <i> PARSEOP_BITSPERBYTE_SIX
%token <i> PARSEOP_BREAK
%token <i> PARSEOP_BREAKPOINT
%token <i> PARSEOP_BUFFER
%token <i> PARSEOP_BUSMASTERTYPE_MASTER
%token <i> PARSEOP_BUSMASTERTYPE_NOTMASTER
%token <i> PARSEOP_BYTECONST
%token <i> PARSEOP_CASE
%token <i> PARSEOP_CLOCKPHASE_FIRST
%token <i> PARSEOP_CLOCKPHASE_SECOND
%token <i> PARSEOP_CLOCKPOLARITY_HIGH
%token <i> PARSEOP_CLOCKPOLARITY_LOW
%token <i> PARSEOP_CONCATENATE
%token <i> PARSEOP_CONCATENATERESTEMPLATE
%token <i> PARSEOP_CONDREFOF
%token <i> PARSEOP_CONNECTION
%token <i> PARSEOP_CONTINUE
%token <i> PARSEOP_COPYOBJECT
%token <i> PARSEOP_CREATEBITFIELD
%token <i> PARSEOP_CREATEBYTEFIELD
%token <i> PARSEOP_CREATEDWORDFIELD
%token <i> PARSEOP_CREATEFIELD
%token <i> PARSEOP_CREATEQWORDFIELD
%token <i> PARSEOP_CREATEWORDFIELD
%token <i> PARSEOP_DATABUFFER
%token <i> PARSEOP_DATATABLEREGION
%token <i> PARSEOP_DEBUG
%token <i> PARSEOP_DECODETYPE_POS
%token <i> PARSEOP_DECODETYPE_SUB
%token <i> PARSEOP_DECREMENT
%token <i> PARSEOP_DEFAULT
%token <i> PARSEOP_DEFAULT_ARG
%token <i> PARSEOP_DEFINITION_BLOCK
%token <i> PARSEOP_DEREFOF
%token <i> PARSEOP_DEVICE
%token <i> PARSEOP_DEVICEPOLARITY_HIGH
%token <i> PARSEOP_DEVICEPOLARITY_LOW
%token <i> PARSEOP_DIVIDE
%token <i> PARSEOP_DMA
%token <i> PARSEOP_DMATYPE_A
%token <i> PARSEOP_DMATYPE_COMPATIBILITY

%token <i> PARSEOP_DMATYPE_B
%token <i> PARSEOP_DMATYPE_F
%token <i> PARSEOP_DWORDCONST
%token <i> PARSEOP_DWORDIO
%token <i> PARSEOP_DWORDMEMORY
%token <i> PARSEOP_DWORDSPACE
%token <i> PARSEOP_EISAID
%token <i> PARSEOP_ELSE
%token <i> PARSEOP_ELSEIF
%token <i> PARSEOP_ENDDEPENDENTFN
%token <i> PARSEOP_ENDIAN_BIG
%token <i> PARSEOP_ENDIAN_LITTLE
%token <i> PARSEOP_ENDTAG
%token <i> PARSEOP_ERRORNODE
%token <i> PARSEOP_EVENT
%token <i> PARSEOP_EXTENDEDIO
%token <i> PARSEOP_EXTENDEDMEMORY
%token <i> PARSEOP_EXTENDEDSPACE
%token <i> PARSEOP_EXTERNAL
%token <i> PARSEOP_FATAL
%token <i> PARSEOP_FIELD
%token <i> PARSEOP_FINDSETLEFTBIT
%token <i> PARSEOP_FINDSETRIGHTBIT
%token <i> PARSEOP_FIXEDDMA
%token <i> PARSEOP_FIXEDIO
%token <i> PARSEOP_FLOWCONTROL_HW
%token <i> PARSEOP_FLOWCONTROL_NONE
%token <i> PARSEOP_FLOWCONTROL_SW
%token <i> PARSEOP_FROMBCD
%token <i> PARSEOP_FUNCTION
%token <i> PARSEOP_GPIO_INT
%token <i> PARSEOP_GPIO_IO
%token <i> PARSEOP_I2C_SERIALBUS
%token <i> PARSEOP_I2C_SERIALBUS_V2
%token <i> PARSEOP_IF
%token <i> PARSEOP_INCLUDE
%token <i> PARSEOP_INCLUDE_END
%token <i> PARSEOP_INCREMENT
%token <i> PARSEOP_INDEX
%token <i> PARSEOP_INDEXFIELD
%token <i> PARSEOP_INTEGER
%token <i> PARSEOP_INTERRUPT
%token <i> PARSEOP_INTLEVEL_ACTIVEBOTH
%token <i> PARSEOP_INTLEVEL_ACTIVEHIGH
%token <i> PARSEOP_INTLEVEL_ACTIVELOW
%token <i> PARSEOP_INTTYPE_EDGE
%token <i> PARSEOP_INTTYPE_LEVEL
%token <i> PARSEOP_IO

%token <i> PARSEOP_IODECODETYPE_10
%token <i> PARSEOP_IODECODETYPE_16
%token <i> PARSEOP_IORESTRICT_IN
%token <i> PARSEOP_IORESTRICT_NONE
%token <i> PARSEOP_IORESTRICT_OUT
%token <i> PARSEOP_IORESTRICT_PRESERVE
%token <i> PARSEOP_IRQ
%token <i> PARSEOP_IRQNOFLAGS
%token <i> PARSEOP_LAND
%token <i> PARSEOP_LEQUAL
%token <i> PARSEOP_LGREATER
%token <i> PARSEOP_LGREATEREQUAL
%token <i> PARSEOP_LLESS
%token <i> PARSEOP_LLESSEQUAL
%token <i> PARSEOP_LNOT
%token <i> PARSEOP_LNOTEQUAL
%token <i> PARSEOP_LOAD
%token <i> PARSEOP_LOADTABLE
%token <i> PARSEOP_LOCAL0
%token <i> PARSEOP_LOCAL1
%token <i> PARSEOP_LOCAL2
%token <i> PARSEOP_LOCAL3
%token <i> PARSEOP_LOCAL4
%token <i> PARSEOP_LOCAL5
%token <i> PARSEOP_LOCAL6
%token <i> PARSEOP_LOCAL7
%token <i> PARSEOP_LOCKRULE_LOCK
%token <i> PARSEOP_LOCKRULE_NOLOCK
%token <i> PARSEOP_LOR
%token <i> PARSEOP_MATCH
%token <i> PARSEOP_MATCHTYPE_MEQ
%token <i> PARSEOP_MATCHTYPE_MGE
%token <i> PARSEOP_MATCHTYPE_MGT
%token <i> PARSEOP_MATCHTYPE_MLE
%token <i> PARSEOP_MATCHTYPE_MLT
%token <i> PARSEOP_MATCHTYPE_MTR
%token <i> PARSEOP_MAXTYPE_FIXED
%token <i> PARSEOP_MAXTYPE_NOTFIXED
%token <i> PARSEOP_MEMORY24
%token <i> PARSEOP_MEMORY32
%token <i> PARSEOP_MEMORY32FIXED
%token <i> PARSEOP_MEMTYPE_CACHEABLE
%token <i> PARSEOP_MEMTYPE_NONCACHEABLE
%token <i> PARSEOP_MEMTYPE_PREFETCHABLE
%token <i> PARSEOP_MEMTYPE_WRITECOMBINING
%token <i> PARSEOP_METHOD
%token <i> PARSEOP_METHODCALL
%token <i> PARSEOP_MID

%token <i> PARSEOP_MINTYPE_FIXED
%token <i> PARSEOP_MINTYPE_NOTFIXED
%token <i> PARSEOP_MOD
%token <i> PARSEOP_MULTIPLY
%token <i> PARSEOP_MUTEX
%token <i> PARSEOP_NAME
%token <s> PARSEOP_NAMESEG
%token <s> PARSEOP_NAMESTRING
%token <i> PARSEOP_NAND
%token <i> PARSEOP_NOOP
%token <i> PARSEOP_NOR
%token <i> PARSEOP_NOT
%token <i> PARSEOP_NOTIFY
%token <i> PARSEOP_OBJECTTYPE
%token <i> PARSEOP_OBJECTTYPE_BFF
%token <i> PARSEOP_OBJECTTYPE_BUF
%token <i> PARSEOP_OBJECTTYPE_DDB
%token <i> PARSEOP_OBJECTTYPE_DEV
%token <i> PARSEOP_OBJECTTYPE_EVT
%token <i> PARSEOP_OBJECTTYPE_FLD
%token <i> PARSEOP_OBJECTTYPE_INT
%token <i> PARSEOP_OBJECTTYPE_MTH
%token <i> PARSEOP_OBJECTTYPE_MTX
%token <i> PARSEOP_OBJECTTYPE_OPR
%token <i> PARSEOP_OBJECTTYPE_PKG
%token <i> PARSEOP_OBJECTTYPE_POW
%token <i> PARSEOP_OBJECTTYPE_PRO
%token <i> PARSEOP_OBJECTTYPE_STR
%token <i> PARSEOP_OBJECTTYPE_THZ
%token <i> PARSEOP_OBJECTTYPE_UNK
%token <i> PARSEOP_OFFSET
%token <i> PARSEOP_ONE
%token <i> PARSEOP_ONES
%token <i> PARSEOP_OPERATIONREGION
%token <i> PARSEOP_OR
%token <i> PARSEOP_PACKAGE
%token <i> PARSEOP_PACKAGE_LENGTH
%token <i> PARSEOP_PARITYTYPE_EVEN
%token <i> PARSEOP_PARITYTYPE_MARK
%token <i> PARSEOP_PARITYTYPE_NONE
%token <i> PARSEOP_PARITYTYPE_ODD
%token <i> PARSEOP_PARITYTYPE_SPACE
%token <i> PARSEOP_PINCONFIG
%token <i> PARSEOP_PINFUNCTION
%token <i> PARSEOP_PINGROUP
%token <i> PARSEOP_PINGROUPCONFIG
%token <i> PARSEOP_PINGROUPFUNCTION
%token <i> PARSEOP_PIN_NOPULL

%token <i> PARSEOP_PIN_PULLDEFAULT
%token <i> PARSEOP_PIN_PULLDOWN
%token <i> PARSEOP_PIN_PULLUP
%token <i> PARSEOP_POWERRESOURCE
%token <i> PARSEOP_PROCESSOR
%token <i> PARSEOP_QWORDCONST
%token <i> PARSEOP_QWORDIO
%token <i> PARSEOP_QWORDMEMORY
%token <i> PARSEOP_QWORDSPACE
%token <i> PARSEOP_RANGETYPE_ENTIRE
%token <i> PARSEOP_RANGETYPE_ISAONLY
%token <i> PARSEOP_RANGETYPE_NONISAONLY
%token <i> PARSEOP_RAW_DATA
%token <i> PARSEOP_READWRITETYPE_BOTH
%token <i> PARSEOP_READWRITETYPE_READONLY
%token <i> PARSEOP_REFOF
%token <i> PARSEOP_REGIONSPACE_CMOS
%token <i> PARSEOP_REGIONSPACE_EC
%token <i> PARSEOP_REGIONSPACE_FFIXEDHW
%token <i> PARSEOP_REGIONSPACE_GPIO
%token <i> PARSEOP_REGIONSPACE_GSBUS
%token <i> PARSEOP_REGIONSPACE_IO
%token <i> PARSEOP_REGIONSPACE_IPMI
%token <i> PARSEOP_REGIONSPACE_MEM
%token <i> PARSEOP_REGIONSPACE_PCC
%token <i> PARSEOP_REGIONSPACE_PCI
%token <i> PARSEOP_REGIONSPACE_PCIBAR
%token <i> PARSEOP_REGIONSPACE_SMBUS
%token <i> PARSEOP_REGISTER
%token <i> PARSEOP_RELEASE
%token <i> PARSEOP_RESERVED_BYTES
%token <i> PARSEOP_RESET
%token <i> PARSEOP_RESOURCETEMPLATE
%token <i> PARSEOP_RESOURCETYPE_CONSUMER
%token <i> PARSEOP_RESOURCETYPE_PRODUCER
%token <i> PARSEOP_RETURN
%token <i> PARSEOP_REVISION
%token <i> PARSEOP_SCOPE
%token <i> PARSEOP_SERIALIZERULE_NOTSERIAL
%token <i> PARSEOP_SERIALIZERULE_SERIAL
%token <i> PARSEOP_SHARETYPE_EXCLUSIVE
%token <i> PARSEOP_SHARETYPE_EXCLUSIVEWAKE
%token <i> PARSEOP_SHARETYPE_SHARED
%token <i> PARSEOP_SHARETYPE_SHAREDWAKE
%token <i> PARSEOP_SHIFTLEFT
%token <i> PARSEOP_SHIFTRIGHT
%token <i> PARSEOP_SIGNAL
%token <i> PARSEOP_SIZEOF

%token <i> PARSEOP_SLAVEMODE_CONTROLLERINIT
%token <i> PARSEOP_SLAVEMODE_DEVICEINIT
%token <i> PARSEOP_SLEEP
%token <i> PARSEOP_SPI_SERIALBUS
%token <i> PARSEOP_SPI_SERIALBUS_V2
%token <i> PARSEOP_STALL
%token <i> PARSEOP_STARTDEPENDENTFN
%token <i> PARSEOP_STARTDEPENDENTFN_NOPRI
%token <i> PARSEOP_STOPBITS_ONE
%token <i> PARSEOP_STOPBITS_ONEPLUSHALF
%token <i> PARSEOP_STOPBITS_TWO
%token <i> PARSEOP_STOPBITS_ZERO
%token <i> PARSEOP_STORE
%token <s> PARSEOP_STRING_LITERAL
%token <i> PARSEOP_SUBTRACT
%token <i> PARSEOP_SWITCH
%token <i> PARSEOP_THERMALZONE
%token <i> PARSEOP_TIMER
%token <i> PARSEOP_TOBCD
%token <i> PARSEOP_TOBUFFER
%token <i> PARSEOP_TODECIMALSTRING
%token <i> PARSEOP_TOHEXSTRING
%token <i> PARSEOP_TOINTEGER
%token <i> PARSEOP_TOSTRING
%token <i> PARSEOP_TOUUID
%token <i> PARSEOP_TRANSLATIONTYPE_DENSE
%token <i> PARSEOP_TRANSLATIONTYPE_SPARSE
%token <i> PARSEOP_TYPE_STATIC
%token <i> PARSEOP_TYPE_TRANSLATION
%token <i> PARSEOP_UART_SERIALBUS
%token <i> PARSEOP_UART_SERIALBUS_V2
%token <i> PARSEOP_UNICODE
%token <i> PARSEOP_UNLOAD
%token <i> PARSEOP_UPDATERULE_ONES
%token <i> PARSEOP_UPDATERULE_PRESERVE
%token <i> PARSEOP_UPDATERULE_ZEROS
%token <i> PARSEOP_VAR_PACKAGE
%token <i> PARSEOP_VENDORLONG
%token <i> PARSEOP_VENDORSHORT
%token <i> PARSEOP_WAIT
%token <i> PARSEOP_WHILE
%token <i> PARSEOP_WIREMODE_FOUR
%token <i> PARSEOP_WIREMODE_THREE
%token <i> PARSEOP_WORDBUSNUMBER
%token <i> PARSEOP_WORDCONST
%token <i> PARSEOP_WORDIO
%token <i> PARSEOP_WORDSPACE
%token <i> PARSEOP_XFERSIZE_8

```
%token <i> PARSEOP_XFERSIZE_16
%token <i> PARSEOP_XFERSIZE_32
%token <i> PARSEOP_XFERSIZE_64
%token <i> PARSEOP_XFERSIZE_128
%token <i> PARSEOP_XFERSIZE_256
%token <i> PARSEOP_XFERTYPE_8
%token <i> PARSEOP_XFERTYPE_8_16
%token <i> PARSEOP_XFERTYPE_16
%token <i> PARSEOP_XOR
%token <i> PARSEOP_ZERO

/* ToPld macro */

%token <i> PARSEOP_TOPLD
%token <i> PARSEOP_PLD_REVISION
%token <i> PARSEOP_PLD_IGNORECOLOR
%token <i> PARSEOP_PLD_RED
%token <i> PARSEOP_PLD_GREEN
%token <i> PARSEOP_PLD_BLUE
%token <i> PARSEOP_PLD_WIDTH
%token <i> PARSEOP_PLD_HEIGHT
%token <i> PARSEOP_PLD_USERVISIBLE
%token <i> PARSEOP_PLD_DOCK
%token <i> PARSEOP_PLD_LID
%token <i> PARSEOP_PLD_PANEL
%token <i> PARSEOP_PLD_VERTICALPOSITION
%token <i> PARSEOP_PLD_HORIZONTALPOSITION
%token <i> PARSEOP_PLD_SHAPE
%token <i> PARSEOP_PLD_GROUPORIENTATION
%token <i> PARSEOP_PLD_GROUPTOKEN
%token <i> PARSEOP_PLD_GROUPPOSITION
%token <i> PARSEOP_PLD_BAY
%token <i> PARSEOP_PLD_EJECTABLE
%token <i> PARSEOP_PLD_EJECTREQUIRED
%token <i> PARSEOP_PLD_CABINETNUMBER
%token <i> PARSEOP_PLD_CARDCAGENUMBER
%token <i> PARSEOP_PLD_REFERENCE
%token <i> PARSEOP_PLD_ROTATION
%token <i> PARSEOP_PLD_ORDER
%token <i> PARSEOP_PLD_RESERVED
%token <i> PARSEOP_PLD_VERTICALOFFSET
%token <i> PARSEOP_PLD_HORIZONTALOFFSET

/*
* C-style expression parser. These must appear after all of the
* standard ASL operators and keywords.
*
* Note: The order of these tokens implements the precedence rules
```

```
* (low precedence to high). See aslrules.y for an exhaustive list.
*/
%right <i> PARSEOP_EXP_EQUALS
        PARSEOP_EXP_ADD_EQ
        PARSEOP_EXP_SUB_EQ
        PARSEOP_EXP_MUL_EQ
        PARSEOP_EXP_DIV_EQ
        PARSEOP_EXP_MOD_EQ
        PARSEOP_EXP_SHL_EQ
        PARSEOP_EXP_SHR_EQ
        PARSEOP_EXP_AND_EQ
        PARSEOP_EXP_XOR_EQ
        PARSEOP_EXP_OR_EQ

%left <i>  PARSEOP_EXP_LOGICAL_OR
%left <i>  PARSEOP_EXP_LOGICAL_AND
%left <i>  PARSEOP_EXP_OR
%left <i>  PARSEOP_EXP_XOR
%left <i>  PARSEOP_EXP_AND
%left <i>  PARSEOP_EXP_EQUAL
        PARSEOP_EXP_NOT_EQUAL
%left <i>  PARSEOP_EXP_GREATER
        PARSEOP_EXP_LESS
        PARSEOP_EXP_GREATER_EQUAL
        PARSEOP_EXP_LESS_EQUAL
%left <i>  PARSEOP_EXP_SHIFT_RIGHT
        PARSEOP_EXP_SHIFT_LEFT
%left <i>  PARSEOP_EXP_ADD
        PARSEOP_EXP_SUBTRACT
%left <i>  PARSEOP_EXP_MULTIPLY
        PARSEOP_EXP_DIVIDE
        PARSEOP_EXP_MODULO

%right <i> PARSEOP_EXP_NOT
        PARSEOP_EXP_LOGICAL_NOT

%left <i>  PARSEOP_EXP_INCREMENT
        PARSEOP_EXP_DECREMENT

%left <i>  PARSEOP_OPEN_PAREN
        PARSEOP_CLOSE_PAREN

/* Brackets for Index() support */

%left <i>  PARSEOP_EXP_INDEX_LEFT
%right <i> PARSEOP_EXP_INDEX_RIGHT

/* Macros */
```

```
%token <i> PARSEOP_PRINTF
%token <i> PARSEOP_FPRINTF
%token <i> PARSEOP_FOR

/* Structures */

%token <i> PARSEOP_STRUCTURE
%token <s> PARSEOP_STRUCTURE_NAMESTRING
%token <i> PARSEOP_STRUCTURE_TAG
%token <i> PARSEOP_STRUCTURE_ELEMENT
%token <i> PARSEOP_STRUCTURE_INSTANCE
%token <i> PARSEOP_STRUCTURE_REFERENCE
%token <i> PARSEOP_STRUCTURE_POINTER

/* Top level */

%token <i> PARSEOP_ASL_CODE


/******************************************************************************
*
* Tokens below are not in the aslmap.c file
*
******************************************************************************/


/* Tokens below this are not in the aslmap.c file */

/* Specific parentheses tokens are not used at this time */
        /* PARSEOP_EXP_PAREN_OPEN */
        /* PARSEOP_EXP_PAREN_CLOSE */

/* ASL+ variable creation */

%token <i> PARSEOP_INTEGER_TYPE
%token <i> PARSEOP_STRING_TYPE
%token <i> PARSEOP_BUFFER_TYPE
%token <i> PARSEOP_PACKAGE_TYPE
%token <i> PARSEOP_REFERENCE_TYPE


/*
* Special functions. These should probably stay at the end of this
* table.
*/
%token <i> PARSEOP___DATE__
%token <i> PARSEOP___FILE__
```

%token <i> PARSEOP___LINE__
%token <i> PARSEOP___PATH__
%token <i> PARSEOP___METHOD__

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/asltokens.y
No license file was found, but licenses were detected in source scan.

NoEcho('
/**
*
* Module Name: aslcstyle.y - Production rules for symbolic operators
*
**/

/*
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```
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*/

')

/******************************************************************************
*
* Production rules for the symbolic (c-style) operators
*
******************************************************************************/

/*
* ASL Extensions: C-style math/logical operators and expressions.
* The implementation transforms these operators into the standard
* AML opcodes and syntax.
*
* Supported operators and precedence rules (high-to-low)
*
* NOTE: The operator precedence and associativity rules are
* implemented by the tokens in asltokens.y
*
* (left-to-right):
*  1)     ( ) expr++ expr--
*
* (right-to-left):
*  2)     ! ~
*
* (left-to-right):
*  3)     *  /  %
*  4)     +  -
*  5)     >>  <<
*  6)     <  >  <=  >=
*  7)     ==  !=
*  8)     &
*  9)     ^
*  10)    |
*  11)    &&
*  12)    ||
*
* (right-to-left):
*  13)    = += -= *= /= %= <<= >>= &= ^= |=
*/


/******************************************************************************
*
```

```
* Basic operations for math and logical expressions.
*
*****************************************************************************/

Expression

  /* Unary operators */

  : PARSEOP_EXP_LOGICAL_NOT          {$<n>$ = TrCreateLeafOp (PARSEOP_LNOT);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>2,1,$3);}
  | PARSEOP_EXP_NOT                  {$<n>$ = TrCreateLeafOp (PARSEOP_NOT);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>2,2,$3,TrCreateNullTargetOp ());}

  | SuperName PARSEOP_EXP_INCREMENT   {$<n>$ = TrCreateLeafOp (PARSEOP_INCREMENT);}
                           {$$ = TrLinkOpChildren ($<n>3,1,$1);}
  | SuperName PARSEOP_EXP_DECREMENT   {$<n>$ = TrCreateLeafOp (PARSEOP_DECREMENT);}
                           {$$ = TrLinkOpChildren ($<n>3,1,$1);}

  /* Binary operators: math and logical */

  | TermArg PARSEOP_EXP_ADD          {$<n>$ = TrCreateLeafOp (PARSEOP_ADD);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
  | TermArg PARSEOP_EXP_DIVIDE       {$<n>$ = TrCreateLeafOp (PARSEOP_DIVIDE);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>3,4,$1,$4,TrCreateNullTargetOp (),
                           TrCreateNullTargetOp ());}
  | TermArg PARSEOP_EXP_MODULO       {$<n>$ = TrCreateLeafOp (PARSEOP_MOD);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
  | TermArg PARSEOP_EXP_MULTIPLY     {$<n>$ = TrCreateLeafOp (PARSEOP_MULTIPLY);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
  | TermArg PARSEOP_EXP_SHIFT_LEFT    {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTLEFT);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
  | TermArg PARSEOP_EXP_SHIFT_RIGHT   {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTRIGHT);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
  | TermArg PARSEOP_EXP_SUBTRACT     {$<n>$ = TrCreateLeafOp (PARSEOP_SUBTRACT);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}

  | TermArg PARSEOP_EXP_AND          {$<n>$ = TrCreateLeafOp (PARSEOP_AND);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
  | TermArg PARSEOP_EXP_OR           {$<n>$ = TrCreateLeafOp (PARSEOP_OR);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
  | TermArg PARSEOP_EXP_XOR          {$<n>$ = TrCreateLeafOp (PARSEOP_XOR);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}

  | TermArg PARSEOP_EXP_GREATER      {$<n>$ = TrCreateLeafOp (PARSEOP_LGREATER);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
  | TermArg PARSEOP_EXP_GREATER_EQUAL {$<n>$ = TrCreateLeafOp
(PARSEOP_LGREATEREQUAL);}
    TermArg                  {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
```

```
  | TermArg PARSEOP_EXP_LESS         {$<n>$ = TrCreateLeafOp (PARSEOP_LLESS);}
    TermArg                        {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
  | TermArg PARSEOP_EXP_LESS_EQUAL    {$<n>$ = TrCreateLeafOp (PARSEOP_LLESSEQUAL);}
    TermArg                        {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}

  | TermArg PARSEOP_EXP_EQUAL        {$<n>$ = TrCreateLeafOp (PARSEOP_LEQUAL);}
    TermArg                        {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
  | TermArg PARSEOP_EXP_NOT_EQUAL     {$<n>$ = TrCreateLeafOp (PARSEOP_LNOTEQUAL);}
    TermArg                        {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}

  | TermArg PARSEOP_EXP_LOGICAL_AND   {$<n>$ = TrCreateLeafOp (PARSEOP_LAND);}
    TermArg                        {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
  | TermArg PARSEOP_EXP_LOGICAL_OR    {$<n>$ = TrCreateLeafOp (PARSEOP_LOR);}
    TermArg                        {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}

  /* Parentheses */

  | PARSEOP_OPEN_PAREN
    Expression
    PARSEOP_CLOSE_PAREN            {$$ = $2;}

  /* Index term -- "= BUF1[5]" on right-hand side of an equals (source) */

  | IndexExpTerm
  ;

  /*
   * Index term -- "BUF1[5] = " or " = BUF1[5] on either the left side
   * of an equals (target) or the right side (source)
   * Currently used in these terms:
   *     Expression
   *     ObjectTypeSource
   *     DerefOfSource
   *     Type6Opcode
   */
IndexExpTerm

  : SuperName
    PARSEOP_EXP_INDEX_LEFT
    TermArg
    PARSEOP_EXP_INDEX_RIGHT        {$$ = TrCreateLeafOp (PARSEOP_INDEX);
                                TrLinkOpChildren ($$,3,$1,$3,TrCreateNullTargetOp ());}
  ;


/*******************************************************************************
*
* All assignment-type operations -- math and logical. Includes simple
```

```
* assignment and compound assignments.
*
*****************************************************************************/

EqualsTerm

  /* Allow parens anywhere */

  : PARSEOP_OPEN_PAREN
    EqualsTerm
    PARSEOP_CLOSE_PAREN           {$$ = $2;}

  /* Simple Store() operation */

  | SuperName
    PARSEOP_EXP_EQUALS
    TermArg                       {$$ = TrCreateAssignmentOp ($1, $3);}

  /* Chained equals: (a=RefOf)=b, a=b=c=d etc. */

  | PARSEOP_OPEN_PAREN
    EqualsTerm
    PARSEOP_CLOSE_PAREN
    PARSEOP_EXP_EQUALS
    TermArg                       {$$ = TrCreateAssignmentOp ($2, $5);}

  /* Compound assignments -- Add (operand, operand, target) */

  | TermArg PARSEOP_EXP_ADD_EQ       {$<n>$ = TrCreateLeafOp (PARSEOP_ADD);}
    TermArg                       {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                                  TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

  | TermArg PARSEOP_EXP_DIV_EQ       {$<n>$ = TrCreateLeafOp (PARSEOP_DIVIDE);}
    TermArg                       {$$ = TrLinkOpChildren ($<n>3,4,$1,$4,TrCreateNullTargetOp (),
                                  TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

  | TermArg PARSEOP_EXP_MOD_EQ       {$<n>$ = TrCreateLeafOp (PARSEOP_MOD);}
    TermArg                       {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                                  TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

  | TermArg PARSEOP_EXP_MUL_EQ       {$<n>$ = TrCreateLeafOp (PARSEOP_MULTIPLY);}
    TermArg                       {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                                  TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

  | TermArg PARSEOP_EXP_SHL_EQ       {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTLEFT);}
    TermArg                       {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                                  TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}
```

```
  | TermArg PARSEOP_EXP_SHR_EQ       {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTRIGHT);}
    TermArg                     {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                                TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

  | TermArg PARSEOP_EXP_SUB_EQ       {$<n>$ = TrCreateLeafOp (PARSEOP_SUBTRACT);}
    TermArg                     {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                                TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

  | TermArg PARSEOP_EXP_AND_EQ       {$<n>$ = TrCreateLeafOp (PARSEOP_AND);}
    TermArg                     {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                                TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

  | TermArg PARSEOP_EXP_OR_EQ        {$<n>$ = TrCreateLeafOp (PARSEOP_OR);}
    TermArg                     {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                                TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

  | TermArg PARSEOP_EXP_XOR_EQ       {$<n>$ = TrCreateLeafOp (PARSEOP_XOR);}
    TermArg                     {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                                TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}
  ;
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslcstyle.y
No license file was found, but licenses were detected in source scan.

```
%{
/******************************************************************************
*
* Module Name: aslcompiler.l - Flex/lex input file
*
*****************************************************************************/

/*
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```

```
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* IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
* POSSIBILITY OF SUCH DAMAGES.
*/

#include "aslcompiler.h"
#include "aslcompiler.y.h"
#include "acconvert.h"

#include <stdlib.h>
#include <string.h>
YYSTYPE AslCompilerlval;

/*
* Generation:  Use the following command line:
*
* flex.exe -PAslCompiler -i -o$(InputPath).c $(InputPath)
*
* -i: Scanner must be case-insensitive
*/

#define _COMPONENT          ACPI_COMPILER
     ACPI_MODULE_NAME    ("aslscanner")


/* Local prototypes */

static void
AslDoLineDirective (void);

static BOOLEAN
```

```
AslDoComment (void);

static BOOLEAN
AslDoCommentType2 (void);

static char
AslDoStringLiteral (void);

static void
count (int type);


/*! [Begin] no source code translation */

%}
  /* Definitions */

LeadNameChar            [A-Za-z_]
DigitChar               [0-9]
OctalChar               [0-7]
HexDigitChar            [A-Fa-f0-9]
RootChar                [\\]
Nothing                 []

NameChar                [A-Za-z_0-9]
NameSeg1                {LeadNameChar}{NameChar}
NameSeg2                {LeadNameChar}{NameChar}{NameChar}
NameSeg3                {LeadNameChar}{NameChar}{NameChar}{NameChar}
NameSeg                 {LeadNameChar}|{NameSeg1}|{NameSeg2}|{NameSeg3}

NameString              {RootChar}|{RootChar}{NamePath}|[\^]+{NamePath}|{NonEmptyNamePath}
NamePath                {NonEmptyNamePath}?
NonEmptyNamePath        {NameSeg}{NamePathTail}*
NamePathTail            [.]{NameSeg}

%%
  /* Rules */

[ ]                     { count (0); }
[\n]                    { count (0); } /* Handle files with both LF and CR/LF */
[\r]                    { count (0); } /* termination on both Unix and Windows */
[ \t]                   { count (0); }


"/*"                    { if (!AslDoComment ()) {yyterminate ();} }
"//"                    { if (!AslDoCommentType2 ()) {yyterminate ();} }

"\""                    { if (AslDoStringLiteral ()) {return (PARSEOP_STRING_LITERAL);}
```

```
                    else {yyterminate ();} }
";"                 { count (0); return(';'); }

  /* ASL Extension: Standard C operators */

"~"                 { count (3); return (PARSEOP_EXP_NOT); }
"!"                 { count (3); return (PARSEOP_EXP_LOGICAL_NOT); }
"*"                 { count (3); return (PARSEOP_EXP_MULTIPLY); }
"/"                 { count (3); return (PARSEOP_EXP_DIVIDE); }
"%"                 { count (3); return (PARSEOP_EXP_MODULO); }
"+"                 { count (3); return (PARSEOP_EXP_ADD); }
"-"                 { count (3); return (PARSEOP_EXP_SUBTRACT); }
">>"                { count (3); return (PARSEOP_EXP_SHIFT_RIGHT); }
"<<"                { count (3); return (PARSEOP_EXP_SHIFT_LEFT); }
"<"                 { count (3); return (PARSEOP_EXP_LESS); }
">"                 { count (3); return (PARSEOP_EXP_GREATER); }
"&"                 { count (3); return (PARSEOP_EXP_AND); }
"<="                { count (3); return (PARSEOP_EXP_LESS_EQUAL); }
">="                { count (3); return (PARSEOP_EXP_GREATER_EQUAL); }
"=="                { count (3); return (PARSEOP_EXP_EQUAL); }
"!="                { count (3); return (PARSEOP_EXP_NOT_EQUAL); }
"|"                 { count (3); return (PARSEOP_EXP_OR); }
"&&"                { count (3); return (PARSEOP_EXP_LOGICAL_AND); }
"||"                { count (3); return (PARSEOP_EXP_LOGICAL_OR); }
"++"                { count (3); return (PARSEOP_EXP_INCREMENT); }
"--"                { count (3); return (PARSEOP_EXP_DECREMENT); }
"^ "                { count (3); return (PARSEOP_EXP_XOR); }

  /* ASL Extension: Standard C assignment operators */

"="                 { count (3); return (PARSEOP_EXP_EQUALS); }
"+="                { count (3); return (PARSEOP_EXP_ADD_EQ); }
"-="                { count (3); return (PARSEOP_EXP_SUB_EQ); }
"*="                { count (3); return (PARSEOP_EXP_MUL_EQ); }
"/="                { count (3); return (PARSEOP_EXP_DIV_EQ); }
"%="                { count (3); return (PARSEOP_EXP_MOD_EQ); }
"<<="               { count (3); return (PARSEOP_EXP_SHL_EQ); }
">>="               { count (3); return (PARSEOP_EXP_SHR_EQ); }
"&="                { count (3); return (PARSEOP_EXP_AND_EQ); }
"^="                { count (3); return (PARSEOP_EXP_XOR_EQ); }
"|="                { count (3); return (PARSEOP_EXP_OR_EQ); }

"["                 { count (3); return (PARSEOP_EXP_INDEX_LEFT); }
"]"                 { count (0); return (PARSEOP_EXP_INDEX_RIGHT); }
"("                 { count (0); return (PARSEOP_OPEN_PAREN); }
")"                 { count (0); return (PARSEOP_CLOSE_PAREN); }

"{"                 { count (0); return ('{'); }
```

```
"}"                     { count (0); return ('}'); }
","                     { count (0); return (','); }


  /*
   * Begin standard ASL grammar
   */
[0-9][a-zA-Z0-9]*           { AslCompilerlval.i = UtDoConstant ((char *) AslCompilertext);
                        count (1); return (PARSEOP_INTEGER); }

"Include"               { count (1); return (PARSEOP_INCLUDE); }
"External"              { count (1); return (PARSEOP_EXTERNAL); }

/*
 * The #line directive is emitted by the preprocessor and handled
 * here in the main iASL lexer - simply set the line number and
 * optionally the current filename.
 */
"#line"                 { AslDoLineDirective ();}


/******************************************************************************
 *
 * Main ASL operators
 *
 *****************************************************************************/

"AccessAs"              { count (1); return (PARSEOP_ACCESSAS); }
"Acquire"               { count (3); return (PARSEOP_ACQUIRE); }
"Add"                   { count (3); return (PARSEOP_ADD); }
"Alias"                 { count (2); return (PARSEOP_ALIAS); }
"And"                   { count (3); return (PARSEOP_AND); }
"BankField"             { count (2); return (PARSEOP_BANKFIELD); }
"Break"                 { count (3); return (PARSEOP_BREAK); }
"BreakPoint"            { count (3); return (PARSEOP_BREAKPOINT); }
"Buffer"                { count (1); return (PARSEOP_BUFFER); }
"Case"                  { count (3); return (PARSEOP_CASE); }
"Concatenate"           { count (3); return (PARSEOP_CONCATENATE); }
"ConcatenateResTemplate"    { count (3); return (PARSEOP_CONCATENATERESTEMPLATE); }
"CondRefOf"             { count (3); return (PARSEOP_CONDREFOF); }
"Connection"            { count (2); return (PARSEOP_CONNECTION); }
"Continue"              { count (3); return (PARSEOP_CONTINUE); }
"CopyObject"            { count (3); return (PARSEOP_COPYOBJECT); }
"CreateBitField"        { count (2); return (PARSEOP_CREATEBITFIELD); }
"CreateByteField"       { count (2); return (PARSEOP_CREATEBYTEFIELD); }
"CreateDWordField"      { count (2); return (PARSEOP_CREATEDWORDFIELD); }
"CreateField"           { count (2); return (PARSEOP_CREATEFIELD); }
"CreateQWordField"      { count (2); return (PARSEOP_CREATEQWORDFIELD); }
```

```
"CreateWordField"          { count (2); return (PARSEOP_CREATEWORDFIELD); }
"DataTableRegion"          { count (2); return (PARSEOP_DATATABLEREGION); }
"Debug"                 { count (1); return (PARSEOP_DEBUG); }
"Decrement"               { count (3); return (PARSEOP_DECREMENT); }
"Default"               { count (3); return (PARSEOP_DEFAULT); }
"DefinitionBlock"          { count (1); return (PARSEOP_DEFINITION_BLOCK); }
"DeRefOf"               { count (3); return (PARSEOP_DEREFOF); }
"Device"                { count (2); return (PARSEOP_DEVICE); }
"Divide"                { count (3); return (PARSEOP_DIVIDE); }
"Eisaid"                { count (1); return (PARSEOP_EISAID); }
"Else"                  { count (3); return (PARSEOP_ELSE); }
"ElseIf"                { count (3); return (PARSEOP_ELSEIF); }
"Event"                 { count (2); return (PARSEOP_EVENT); }
"Fatal"                 { count (3); return (PARSEOP_FATAL); }
"Field"                 { count (2); return (PARSEOP_FIELD); }
"FindSetLeftBit"           { count (3); return (PARSEOP_FINDSETLEFTBIT); }
"FindSetRightBit"          { count (3); return (PARSEOP_FINDSETRIGHTBIT); }
"FromBcd"               { count (3); return (PARSEOP_FROMBCD); }
"Function"              { count (2); return (PARSEOP_FUNCTION); }
"If"                    { count (3); return (PARSEOP_IF); }
"Increment"               { count (3); return (PARSEOP_INCREMENT); }
"Index"                 { count (3); return (PARSEOP_INDEX); }
"IndexField"              { count (2); return (PARSEOP_INDEXFIELD); }
"LAnd"                  { count (3); return (PARSEOP_LAND); }
"LEqual"                { count (3); return (PARSEOP_LEQUAL); }
"LGreater"              { count (3); return (PARSEOP_LGREATER); }
"LGreaterEqual"            { count (3); return (PARSEOP_LGREATEREQUAL); }
"LLess"                 { count (3); return (PARSEOP_LLESS); }
"LLessEqual"               { count (3); return (PARSEOP_LLESSEQUAL); }
"LNot"                  { count (3); return (PARSEOP_LNOT); }
"LNotEqual"               { count (3); return (PARSEOP_LNOTEQUAL); }
"Load"                  { count (3); return (PARSEOP_LOAD); }
"LoadTable"               { count (3); return (PARSEOP_LOADTABLE); }
"LOr"                   { count (3); return (PARSEOP_LOR); }
"Match"                 { count (3); return (PARSEOP_MATCH); }
"Method"                { count (2); return (PARSEOP_METHOD); }
"Mid"                   { count (3); return (PARSEOP_MID); }
"Mod"                   { count (3); return (PARSEOP_MOD); }
"Multiply"              { count (3); return (PARSEOP_MULTIPLY); }
"Mutex"                 { count (2); return (PARSEOP_MUTEX); }
"Name"                  { count (2); return (PARSEOP_NAME); }
"NAnd"                  { count (3); return (PARSEOP_NAND); }
"Noop"                  { if (!AcpiGbl_IgnoreNoopOperator) {count (3); return (PARSEOP_NOOP);} }
"NOr"                   { count (3); return (PARSEOP_NOR); }
"Not"                   { count (3); return (PARSEOP_NOT); }
"Notify"                { count (3); return (PARSEOP_NOTIFY); }
"ObjectType"               { count (3); return (PARSEOP_OBJECTTYPE); }
"Offset"                { count (1); return (PARSEOP_OFFSET); }
```

```
"One"                   { count (1); return (PARSEOP_ONE); }
"Ones"                  { count (1); return (PARSEOP_ONES); }
"OperationRegion"           { count (2); return (PARSEOP_OPERATIONREGION); }
"Or"                    { count (3); return (PARSEOP_OR); }
"Package"                 { count (1); return (PARSEOP_PACKAGE); }
"PowerResource"             { count (2); return (PARSEOP_POWERRESOURCE); }
"Processor"               { count (2); return (PARSEOP_PROCESSOR); }
"RefOf"                 { count (3); return (PARSEOP_REFOF); }
"Release"               { count (3); return (PARSEOP_RELEASE); }
"Reset"                 { count (3); return (PARSEOP_RESET); }
"Return"                { count (3); return (PARSEOP_RETURN); }
"Revision"                { count (1); return (PARSEOP_REVISION); }
"Scope"                 { count (2); return (PARSEOP_SCOPE); }
"ShiftLeft"             { count (3); return (PARSEOP_SHIFTLEFT); }
"ShiftRight"              { count (3); return (PARSEOP_SHIFTRIGHT); }
"Signal"                { count (3); return (PARSEOP_SIGNAL); }
"SizeOf"                { count (3); return (PARSEOP_SIZEOF); }
"Sleep"                 { count (3); return (PARSEOP_SLEEP); }
"Stall"                 { count (3); return (PARSEOP_STALL); }
"Store"                 { count (3); return (PARSEOP_STORE); }
"Subtract"              { count (3); return (PARSEOP_SUBTRACT); }
"Switch"                { count (3); return (PARSEOP_SWITCH); }
"ThermalZone"             { count (2); return (PARSEOP_THERMALZONE); }
"Timer"                 { count (3); return (PARSEOP_TIMER); }
"ToBcd"                 { count (3); return (PARSEOP_TOBCD); }
"ToBuffer"                { count (3); return (PARSEOP_TOBUFFER); }
"ToDecimalString"           { count (3); return (PARSEOP_TODECIMALSTRING); }
"ToHexString"             { count (3); return (PARSEOP_TOHEXSTRING); }
"ToInteger"               { count (3); return (PARSEOP_TOINTEGER); }
"ToString"              { count (3); return (PARSEOP_TOSTRING); }
"ToUuid"                { count (1); return (PARSEOP_TOUUID); }
"Unicode"               { count (1); return (PARSEOP_UNICODE); }
"Unload"                { count (3); return (PARSEOP_UNLOAD); }
"Wait"                  { count (3); return (PARSEOP_WAIT); }
"While"                 { count (3); return (PARSEOP_WHILE); }
"XOr"                   { count (3); return (PARSEOP_XOR); }
"Zero"                  { count (1); return (PARSEOP_ZERO); }

  /* Control method arguments and locals */

"Arg0"                  { count (1); return (PARSEOP_ARG0); }
"Arg1"                  { count (1); return (PARSEOP_ARG1); }
"Arg2"                  { count (1); return (PARSEOP_ARG2); }
"Arg3"                  { count (1); return (PARSEOP_ARG3); }
"Arg4"                  { count (1); return (PARSEOP_ARG4); }
"Arg5"                  { count (1); return (PARSEOP_ARG5); }
"Arg6"                  { count (1); return (PARSEOP_ARG6); }
"Local0"                { count (1); return (PARSEOP_LOCAL0); }
```

```
"Local1"                { count (1); return (PARSEOP_LOCAL1); }
"Local2"                { count (1); return (PARSEOP_LOCAL2); }
"Local3"                { count (1); return (PARSEOP_LOCAL3); }
"Local4"                { count (1); return (PARSEOP_LOCAL4); }
"Local5"                { count (1); return (PARSEOP_LOCAL5); }
"Local6"                { count (1); return (PARSEOP_LOCAL6); }
"Local7"                { count (1); return (PARSEOP_LOCAL7); }


/*******************************************************************************
 *
 * Resource Descriptor macros
 *
 ******************************************************************************/

"ResourceTemplate"          { count (1); return (PARSEOP_RESOURCETEMPLATE); }
"RawDataBuffer"             { count (1); return (PARSEOP_DATABUFFER); }

"DMA"                   { count (1); return (PARSEOP_DMA); }
"DWordIO"               { count (1); return (PARSEOP_DWORDIO); }
"DWordMemory"               { count (1); return (PARSEOP_DWORDMEMORY); }
"DWordSpace"              { count (1); return (PARSEOP_DWORDSPACE); }
"EndDependentFn"            { count (1); return (PARSEOP_ENDDEPENDENTFN); }
"ExtendedIO"              { count (1); return (PARSEOP_EXTENDEDIO); }
"ExtendedMemory"            { count (1); return (PARSEOP_EXTENDEDMEMORY); }
"ExtendedSpace"           { count (1); return (PARSEOP_EXTENDEDSPACE); }
"FixedDma"              { count (1); return (PARSEOP_FIXEDDMA); }
"FixedIO"               { count (1); return (PARSEOP_FIXEDIO); }
"GpioInt"               { count (1); return (PARSEOP_GPIO_INT); }
"GpioIo"                { count (1); return (PARSEOP_GPIO_IO); }
"I2cSerialBus"            { count (1); return (PARSEOP_I2C_SERIALBUS); }
"I2cSerialBusV2"            { count (1); return (PARSEOP_I2C_SERIALBUS_V2); }
"Interrupt"             { count (1); return (PARSEOP_INTERRUPT); }
"IO"                  { count (1); return (PARSEOP_IO); }
"IRQ"                 { count (1); return (PARSEOP_IRQ); }
"IRQNoFlags"              { count (1); return (PARSEOP_IRQNOFLAGS); }
"Memory24"              { count (1); return (PARSEOP_MEMORY24); }
"Memory32"              { count (1); return (PARSEOP_MEMORY32); }
"Memory32Fixed"             { count (1); return (PARSEOP_MEMORY32FIXED); }
"PinConfig"             { count (1); return (PARSEOP_PINCONFIG); }
"PinFunction"           { count (1); return (PARSEOP_PINFUNCTION); }
"PinGroup"              { count (1); return (PARSEOP_PINGROUP); }
"PinGroupConfig"            { count (1); return (PARSEOP_PINGROUPCONFIG); }
"PinGroupFunction"          { count (1); return (PARSEOP_PINGROUPFUNCTION); }
"QWordIO"               { count (1); return (PARSEOP_QWORDIO); }
"QWordMemory"               { count (1); return (PARSEOP_QWORDMEMORY); }
"QWordSpace"              { count (1); return (PARSEOP_QWORDSPACE); }
"Register"              { count (1); return (PARSEOP_REGISTER); }
```

```
"SpiSerialBus"            { count (1); return (PARSEOP_SPI_SERIALBUS); }
"SpiSerialBusV2"          { count (1); return (PARSEOP_SPI_SERIALBUS_V2); }
"StartDependentFn"        { count (1); return (PARSEOP_STARTDEPENDENTFN); }
"StartDependentFnNoPri"   { count (1); return (PARSEOP_STARTDEPENDENTFN_NOPRI); }
"UartSerialBus"           { count (1); return (PARSEOP_UART_SERIALBUS); }
"UartSerialBusV2"         { count (1); return (PARSEOP_UART_SERIALBUS_V2); }
"VendorLong"              { count (1); return (PARSEOP_VENDORLONG); }
"VendorShort"             { count (1); return (PARSEOP_VENDORSHORT); }
"WordBusNumber"           { count (1); return (PARSEOP_WORDBUSNUMBER); }
"WordIO"                  { count (1); return (PARSEOP_WORDIO); }
"WordSpace"               { count (1); return (PARSEOP_WORDSPACE); }


/*******************************************************************************
 *
 * Keywords used as arguments to ASL operators and macros
 *
 ******************************************************************************/

  /*  AccessAttribKeyword: Serial Bus Attributes (ACPI 5.0) */

"AttribQuick"             { count (0); return (PARSEOP_ACCESSATTRIB_QUICK); }
"AttribSendReceive"       { count (0); return (PARSEOP_ACCESSATTRIB_SND_RCV); }
"AttribByte"              { count (0); return (PARSEOP_ACCESSATTRIB_BYTE); }
"AttribWord"              { count (0); return (PARSEOP_ACCESSATTRIB_WORD); }
"AttribBlock"             { count (0); return (PARSEOP_ACCESSATTRIB_BLOCK); }
"AttribProcessCall"       { count (0); return (PARSEOP_ACCESSATTRIB_WORD_CALL); }
"AttribBlockProcessCall"  { count (0); return (PARSEOP_ACCESSATTRIB_BLOCK_CALL); }

  /* AccessAttribKeyword: Legacy synonyms for above (pre-ACPI 5.0) */

"SMBQuick"                { count (0); return (PARSEOP_ACCESSATTRIB_QUICK); }
"SMBSendReceive"          { count (0); return (PARSEOP_ACCESSATTRIB_SND_RCV); }
"SMBByte"                 { count (0); return (PARSEOP_ACCESSATTRIB_BYTE); }
"SMBWord"                 { count (0); return (PARSEOP_ACCESSATTRIB_WORD); }
"SMBBlock"                { count (0); return (PARSEOP_ACCESSATTRIB_BLOCK); }
"SMBProcessCall"          { count (0); return (PARSEOP_ACCESSATTRIB_WORD_CALL); }
"SMBBlockProcessCall"     { count (0); return (PARSEOP_ACCESSATTRIB_BLOCK_CALL); }

  /* AccessTypeKeyword: Field Access Types */

"AnyAcc"                  { count (0); return (PARSEOP_ACCESSTYPE_ANY); }
"ByteAcc"                 { count (0); return (PARSEOP_ACCESSTYPE_BYTE); }
"WordAcc"                 { count (0); return (PARSEOP_ACCESSTYPE_WORD); }
"DWordAcc"                { count (0); return (PARSEOP_ACCESSTYPE_DWORD); }
"QWordAcc"                { count (0); return (PARSEOP_ACCESSTYPE_QWORD); }
"BufferAcc"               { count (0); return (PARSEOP_ACCESSTYPE_BUF); }
```

```
  /* AddressingModeKeyword: Mode - Resource Descriptors (ACPI 5.0) */

"AddressingMode7Bit"        { count (0); return (PARSEOP_ADDRESSINGMODE_7BIT); }
"AddressingMode10Bit"       { count (0); return (PARSEOP_ADDRESSINGMODE_10BIT); }

  /* AddressKeyword: ACPI memory range types */

"AddressRangeMemory"        { count (0); return (PARSEOP_ADDRESSTYPE_MEMORY); }
"AddressRangeReserved"      { count (0); return (PARSEOP_ADDRESSTYPE_RESERVED); }
"AddressRangeNVS"           { count (0); return (PARSEOP_ADDRESSTYPE_NVS); }
"AddressRangeACPI"          { count (0); return (PARSEOP_ADDRESSTYPE_ACPI); }

  /* BusMasterKeyword: DMA Bus Mastering */

"BusMaster"                 { count (0); return (PARSEOP_BUSMASTERTYPE_MASTER); }
"NotBusMaster"              { count (0); return (PARSEOP_BUSMASTERTYPE_NOTMASTER); }

  /* ByteLengthKeyword: Bits per Byte - Resource Descriptors (ACPI 5.0) */

"DataBitsFive"              { count (0); return (PARSEOP_BITSPERBYTE_FIVE); }
"DataBitsSix"               { count (0); return (PARSEOP_BITSPERBYTE_SIX); }
"DataBitsSeven"             { count (0); return (PARSEOP_BITSPERBYTE_SEVEN); }
"DataBitsEight"             { count (0); return (PARSEOP_BITSPERBYTE_EIGHT); }
"DataBitsNine"              { count (0); return (PARSEOP_BITSPERBYTE_NINE); }

  /* ClockPhaseKeyword: Resource Descriptors (ACPI 5.0) */

"ClockPhaseFirst"           { count (0); return (PARSEOP_CLOCKPHASE_FIRST); }
"ClockPhaseSecond"          { count (0); return (PARSEOP_CLOCKPHASE_SECOND); }

  /* ClockPolarityKeyword: Resource Descriptors (ACPI 5.0) */

"ClockPolarityLow"          { count (0); return (PARSEOP_CLOCKPOLARITY_LOW); }
"ClockPolarityHigh"         { count (0); return (PARSEOP_CLOCKPOLARITY_HIGH); }

  /* DecodeKeyword: Type of Memory Decoding - Resource Descriptors */

"PosDecode"                 { count (0); return (PARSEOP_DECODETYPE_POS); }
"SubDecode"                 { count (0); return (PARSEOP_DECODETYPE_SUB); }

  /* DmaTypeKeyword: DMA Types - DMA Resource Descriptor */

"Compatibility"             { count (0); return (PARSEOP_DMATYPE_COMPATIBILITY); }
"TypeA"                     { count (0); return (PARSEOP_DMATYPE_A); }
"TypeB"                     { count (0); return (PARSEOP_DMATYPE_B); }
"TypeF"                     { count (0); return (PARSEOP_DMATYPE_F); }

  /* EndianKeyword: Endian type - Resource Descriptor (ACPI 5.0) */
```

```
"LittleEndian"          { count (0); return (PARSEOP_ENDIAN_LITTLE); }
"BigEndian"             { count (0); return (PARSEOP_ENDIAN_BIG); }

  /* ExtendedAttribKeyword: Bus attributes, AccessAs operator (ACPI 5.0) */

"AttribBytes"           { count (0); return (PARSEOP_ACCESSATTRIB_MULTIBYTE); }
"AttribRawBytes"        { count (0); return (PARSEOP_ACCESSATTRIB_RAW_BYTES); }
"AttribRawProcessBytes"     { count (0); return (PARSEOP_ACCESSATTRIB_RAW_PROCESS); }

  /* FlowControlKeyword: Resource Descriptors (ACPI 5.0) */

"FlowControlHardware"       { count (0); return (PARSEOP_FLOWCONTROL_HW); }
"FlowControlNone"       { count (0); return (PARSEOP_FLOWCONTROL_NONE); }
"FlowControlXon"        { count (0); return (PARSEOP_FLOWCONTROL_SW); }

  /* InterruptLevelKeyword: Interrupt Active Types */

"ActiveBoth"            { count (0); return (PARSEOP_INTLEVEL_ACTIVEBOTH); }
"ActiveHigh"            { count (0); return (PARSEOP_INTLEVEL_ACTIVEHIGH); }
"ActiveLow"             { count (0); return (PARSEOP_INTLEVEL_ACTIVELOW); }

  /* InterruptTypeKeyword: Interrupt Types */

"Edge"                  { count (0); return (PARSEOP_INTTYPE_EDGE); }
"Level"                 { count (0); return (PARSEOP_INTTYPE_LEVEL); }

  /* IoDecodeKeyword: Type of Memory Decoding - Resource Descriptors */

"Decode10"              { count (0); return (PARSEOP_IODECODETYPE_10); }
"Decode16"              { count (0); return (PARSEOP_IODECODETYPE_16); }

  /* IoRestrictionKeyword: I/O Restriction - GPIO Resource Descriptors (ACPI 5.0) */

"IoRestrictionNone"     { count (0); return (PARSEOP_IORESTRICT_NONE); }
"IoRestrictionInputOnly"    { count (0); return (PARSEOP_IORESTRICT_IN); }
"IoRestrictionOutputOnly"   { count (0); return (PARSEOP_IORESTRICT_OUT); }
"IoRestrictionNoneAndPreserve"  { count (0); return (PARSEOP_IORESTRICT_PRESERVE); }

  /* LockRuleKeyword: Global Lock use for Field Operator */

"Lock"                  { count (0); return (PARSEOP_LOCKRULE_LOCK); }
"NoLock"                { count (0); return (PARSEOP_LOCKRULE_NOLOCK); }

  /* MatchOpKeyword: Types for Match Operator */

"MTR"                   { count (0); return (PARSEOP_MATCHTYPE_MTR); }
"MEQ"                   { count (0); return (PARSEOP_MATCHTYPE_MEQ); }
```

```
"MLE"                   { count (0); return (PARSEOP_MATCHTYPE_MLE); }
"MLT"                   { count (0); return (PARSEOP_MATCHTYPE_MLT); }
"MGE"                   { count (0); return (PARSEOP_MATCHTYPE_MGE); }
"MGT"                   { count (0); return (PARSEOP_MATCHTYPE_MGT); }

  /* MaxKeyword: Max Range Type - Resource Descriptors */

"MaxFixed"              { count (0); return (PARSEOP_MAXTYPE_FIXED); }
"MaxNotFixed"           { count (0); return (PARSEOP_MAXTYPE_NOTFIXED); }

  /* MemTypeKeyword: Memory Types - Resource Descriptors */

"Cacheable"             { count (0); return (PARSEOP_MEMTYPE_CACHEABLE); }
"WriteCombining"        { count (0); return (PARSEOP_MEMTYPE_WRITECOMBINING); }
"Prefetchable"          { count (0); return (PARSEOP_MEMTYPE_PREFETCHABLE); }
"NonCacheable"          { count (0); return (PARSEOP_MEMTYPE_NONCACHEABLE); }

  /* MinKeyword: Min Range Type - Resource Descriptors */

"MinFixed"              { count (0); return (PARSEOP_MINTYPE_FIXED); }
"MinNotFixed"           { count (0); return (PARSEOP_MINTYPE_NOTFIXED); }

  /* ObjectTypeKeyword: ACPI Object Types */

"UnknownObj"            { count (0); return (PARSEOP_OBJECTTYPE_UNK); }
"IntObj"                { count (0); return (PARSEOP_OBJECTTYPE_INT); }
"StrObj"                { count (0); return (PARSEOP_OBJECTTYPE_STR); }
"BuffObj"               { count (0); return (PARSEOP_OBJECTTYPE_BUF); }
"PkgObj"                { count (0); return (PARSEOP_OBJECTTYPE_PKG); }
"FieldUnitObj"          { count (0); return (PARSEOP_OBJECTTYPE_FLD); }
"DeviceObj"             { count (0); return (PARSEOP_OBJECTTYPE_DEV); }
"EventObj"              { count (0); return (PARSEOP_OBJECTTYPE_EVT); }
"MethodObj"             { count (0); return (PARSEOP_OBJECTTYPE_MTH); }
"MutexObj"              { count (0); return (PARSEOP_OBJECTTYPE_MTX); }
"OpRegionObj"           { count (0); return (PARSEOP_OBJECTTYPE_OPR); }
"PowerResObj"           { count (0); return (PARSEOP_OBJECTTYPE_POW); }
"ProcessorObj"          { count (0); return (PARSEOP_OBJECTTYPE_PRO); }
"ThermalZoneObj"        { count (0); return (PARSEOP_OBJECTTYPE_THZ); }
"BuffFieldObj"          { count (0); return (PARSEOP_OBJECTTYPE_BFF); }
"DDBHandleObj"          { count (0); return (PARSEOP_OBJECTTYPE_DDB); }

  /* ParityKeyword: Resource Descriptors (ACPI 5.0) */

"ParityTypeSpace"       { count (0); return (PARSEOP_PARITYTYPE_SPACE); }
"ParityTypeMark"        { count (0); return (PARSEOP_PARITYTYPE_MARK); }
"ParityTypeOdd"         { count (0); return (PARSEOP_PARITYTYPE_ODD); }
"ParityTypeEven"        { count (0); return (PARSEOP_PARITYTYPE_EVEN); }
"ParityTypeNone"        { count (0); return (PARSEOP_PARITYTYPE_NONE); }
```

```
  /* PinConfigKeyword: Pin Configuration - GPIO Resource Descriptors (ACPI 5.0) */

"PullDefault"           { count (0); return (PARSEOP_PIN_PULLDEFAULT); }
"PullUp"                { count (0); return (PARSEOP_PIN_PULLUP); }
"PullDown"              { count (0); return (PARSEOP_PIN_PULLDOWN); }
"PullNone"              { count (0); return (PARSEOP_PIN_NOPULL); }

  /* PolarityKeyword: Resource Descriptors (ACPI 5.0) */

"PolarityLow"           { count (0); return (PARSEOP_DEVICEPOLARITY_LOW); }
"PolarityHigh"          { count (0); return (PARSEOP_DEVICEPOLARITY_HIGH); }

  /* RangeTypeKeyword: I/O Range Types - Resource Descriptors */

"ISAOnlyRanges"         { count (0); return (PARSEOP_RANGETYPE_ISAONLY); }
"NonISAOnlyRanges"      { count (0); return (PARSEOP_RANGETYPE_NONISAONLY); }
"EntireRange"           { count (0); return (PARSEOP_RANGETYPE_ENTIRE); }

  /* ReadWriteKeyword: Memory Access Types - Resource Descriptors */

"ReadWrite"             { count (0); return (PARSEOP_READWRITETYPE_BOTH); }
"ReadOnly"              { count (0); return (PARSEOP_READWRITETYPE_READONLY); }

  /* RegionSpaceKeyword: Operation Region Address Space Types */

"SystemIO"              { count (0); return (PARSEOP_REGIONSPACE_IO); }
"SystemMemory"          { count (0); return (PARSEOP_REGIONSPACE_MEM); }
"PCI_Config"            { count (0); return (PARSEOP_REGIONSPACE_PCI); }
"EmbeddedControl"       { count (0); return (PARSEOP_REGIONSPACE_EC); }
"SMBus"                 { count (0); return (PARSEOP_REGIONSPACE_SMBUS); }
"SystemCMOS"            { count (0); return (PARSEOP_REGIONSPACE_CMOS); }
"PciBarTarget"          { count (0); return (PARSEOP_REGIONSPACE_PCIBAR); }
"IPMI"                  { count (0); return (PARSEOP_REGIONSPACE_IPMI); }
"GeneralPurposeIo"      { count (0); return (PARSEOP_REGIONSPACE_GPIO); }       /* ACPI 5.0 */
"GenericSerialBus"      { count (0); return (PARSEOP_REGIONSPACE_GSBUS); }      /* ACPI 5.0 */
"PCC"                   { count (0); return (PARSEOP_REGIONSPACE_PCC); }        /* ACPI 5.0 */
"FFixedHW"              { count (0); return (PARSEOP_REGIONSPACE_FFIXEDHW); }

  /* ResourceTypeKeyword: Resource Usage - Resource Descriptors */

"ResourceConsumer"      { count (0); return (PARSEOP_RESOURCETYPE_CONSUMER); }
"ResourceProducer"      { count (0); return (PARSEOP_RESOURCETYPE_PRODUCER); }

  /* SerializeRuleKeyword: Control Method Serialization */

"Serialized"            { count (0); return (PARSEOP_SERIALIZERULE_SERIAL); }
"NotSerialized"         { count (0); return (PARSEOP_SERIALIZERULE_NOTSERIAL); }
```

```
  /* ShareTypeKeyword: Interrupt Sharing - Resource Descriptors */

"Shared"                { count (0); return (PARSEOP_SHARETYPE_SHARED); }
"Exclusive"             { count (0); return (PARSEOP_SHARETYPE_EXCLUSIVE); }
"SharedAndWake"         { count (0); return (PARSEOP_SHARETYPE_SHAREDWAKE); }       /* ACPI 5.0 */
"ExclusiveAndWake"      { count (0); return (PARSEOP_SHARETYPE_EXCLUSIVEWAKE); }    /* ACPI 5.0
*/

  /* SlaveModeKeyword: Resource Descriptors (ACPI 5.0) */

"ControllerInitiated"   { count (0); return (PARSEOP_SLAVEMODE_CONTROLLERINIT); }
"DeviceInitiated"       { count (0); return (PARSEOP_SLAVEMODE_DEVICEINIT); }

  /* StopBitsKeyword: Resource Descriptors (ACPI 5.0) */

"StopBitsOne"           { count (0); return (PARSEOP_STOPBITS_ONE); }
"StopBitsOnePlusHalf"   { count (0); return (PARSEOP_STOPBITS_ONEPLUSHALF); }
"StopBitsTwo"           { count (0); return (PARSEOP_STOPBITS_TWO); }
"StopBitsZero"          { count (0); return (PARSEOP_STOPBITS_ZERO); }

  /* TransferWidthKeyword: DMA Widths - Fixed DMA Resource Descriptor (ACPI 5.0) */

"Width8bit"             { count (0); return (PARSEOP_XFERSIZE_8); }
"Width16bit"            { count (0); return (PARSEOP_XFERSIZE_16); }
"Width32bit"            { count (0); return (PARSEOP_XFERSIZE_32); }
"Width64bit"            { count (0); return (PARSEOP_XFERSIZE_64); }
"Width128bit"           { count (0); return (PARSEOP_XFERSIZE_128); }
"Width256bit"           { count (0); return (PARSEOP_XFERSIZE_256); }

  /* TranslationKeyword: Translation Density Types - Resource Descriptors */

"SparseTranslation"     { count (0); return (PARSEOP_TRANSLATIONTYPE_SPARSE); }
"DenseTranslation"      { count (0); return (PARSEOP_TRANSLATIONTYPE_DENSE); }

  /* TypeKeyword: Translation Types - Resource Descriptors */

"TypeTranslation"       { count (0); return (PARSEOP_TYPE_TRANSLATION); }
"TypeStatic"            { count (0); return (PARSEOP_TYPE_STATIC); }

  /* UpdateRuleKeyword: Field Update Rules */

"Preserve"              { count (0); return (PARSEOP_UPDATERULE_PRESERVE); }
"WriteAsOnes"           { count (0); return (PARSEOP_UPDATERULE_ONES); }
"WriteAsZeros"          { count (0); return (PARSEOP_UPDATERULE_ZEROS); }

  /* WireModeKeyword: SPI Wire Mode - Resource Descriptors (ACPI 5.0) */
```

```
"FourWireMode"          { count (0); return (PARSEOP_WIREMODE_FOUR); }
"ThreeWireMode"         { count (0); return (PARSEOP_WIREMODE_THREE); }

  /* XferTypeKeyword: DMA Transfer Types */

"Transfer8"             { count (0); return (PARSEOP_XFERTYPE_8); }
"Transfer8_16"          { count (0); return (PARSEOP_XFERTYPE_8_16); }
"Transfer16"            { count (0); return (PARSEOP_XFERTYPE_16); }

  /* ToPld macro */

"ToPLD"                 { count (0); return (PARSEOP_TOPLD); }

"PLD_Revision"          { count (0); return (PARSEOP_PLD_REVISION); }
"PLD_IgnoreColor"       { count (0); return (PARSEOP_PLD_IGNORECOLOR); }
"PLD_Red"               { count (0); return (PARSEOP_PLD_RED); }
"PLD_Green"             { count (0); return (PARSEOP_PLD_GREEN); }
"PLD_Blue"              { count (0); return (PARSEOP_PLD_BLUE); }
"PLD_Width"             { count (0); return (PARSEOP_PLD_WIDTH); }
"PLD_Height"            { count (0); return (PARSEOP_PLD_HEIGHT); }
"PLD_UserVisible"       { count (0); return (PARSEOP_PLD_USERVISIBLE); }
"PLD_Dock"              { count (0); return (PARSEOP_PLD_DOCK); }
"PLD_Lid"               { count (0); return (PARSEOP_PLD_LID); }
"PLD_Panel"             { count (0); return (PARSEOP_PLD_PANEL); }
"PLD_VerticalPosition"  { count (0); return (PARSEOP_PLD_VERTICALPOSITION); }
"PLD_HorizontalPosition" { count (0); return (PARSEOP_PLD_HORIZONTALPOSITION); }
"PLD_Shape"             { count (0); return (PARSEOP_PLD_SHAPE); }
"PLD_GroupOrientation"  { count (0); return (PARSEOP_PLD_GROUPORIENTATION); }
"PLD_GroupToken"        { count (0); return (PARSEOP_PLD_GROUPTOKEN); }
"PLD_GroupPosition"     { count (0); return (PARSEOP_PLD_GROUPPOSITION); }
"PLD_Bay"               { count (0); return (PARSEOP_PLD_BAY); }
"PLD_Ejectable"         { count (0); return (PARSEOP_PLD_EJECTABLE); }
"PLD_EjectRequired"     { count (0); return (PARSEOP_PLD_EJECTREQUIRED); }
"PLD_CabinetNumber"     { count (0); return (PARSEOP_PLD_CABINETNUMBER); }
"PLD_CardCageNumber"    { count (0); return (PARSEOP_PLD_CARDCAGENUMBER); }
"PLD_Reference"         { count (0); return (PARSEOP_PLD_REFERENCE); }
"PLD_Rotation"          { count (0); return (PARSEOP_PLD_ROTATION); }
"PLD_Order"             { count (0); return (PARSEOP_PLD_ORDER); }
"PLD_Reserved"          { count (0); return (PARSEOP_PLD_RESERVED); }
"PLD_VerticalOffset"    { count (0); return (PARSEOP_PLD_VERTICALOFFSET); }
"PLD_HorizontalOffset"  { count (0); return (PARSEOP_PLD_HORIZONTALOFFSET); }


  /* printf debug macros */

"printf"                { count (0); return (PARSEOP_PRINTF); }
"fprintf"               { count (0); return (PARSEOP_FPRINTF); }
```

```
  /* Other macros */

"For"                   { count (0); return (PARSEOP_FOR); }

  /* Predefined compiler names */

"__DATE__"              { count (0); return (PARSEOP___DATE__); }
"__FILE__"              { count (0); return (PARSEOP___FILE__); }
"__LINE__"              { count (0); return (PARSEOP___LINE__); }
"__PATH__"              { count (0); return (PARSEOP___PATH__); }
"__METHOD__"            { count (0); return (PARSEOP___METHOD__); }

{NameSeg}               { char *s;
                        count (0);
                        s=UtLocalCacheCalloc (ACPI_NAME_SIZE + 1);
                        if (strcmp (AslCompilertext, "\\"))
                        {
                           strcpy (s, "____");
                           AcpiUtStrupr (AslCompilertext);
                        }
                        memcpy (s, AslCompilertext, strlen (AslCompilertext));
                        AslCompilerlval.s = s;
                        DbgPrint (ASL_PARSE_OUTPUT, "NameSeg: %s\n", s);
                        return (PARSEOP_NAMESEG); }

{NameString}            { char *s;
                        count (0);
                        s=UtLocalCacheCalloc (strlen (AslCompilertext)+1);
                        AcpiUtStrupr (AslCompilertext);
                        strcpy (s, AslCompilertext);
                        AslCompilerlval.s = s;
                        DbgPrint (ASL_PARSE_OUTPUT, "NameString: %s\n", s);
                        return (PARSEOP_NAMESTRING); }

.                       { count (1);
                        if (isprint ((int) *AslCompilertext))
                        {
                           sprintf (MsgBuffer,
                              "Invalid character (%c), expecting ASL keyword or name",
                              *AslCompilertext);
                        }
                        else
                        {
                           sprintf (MsgBuffer,
                              "Invalid character (0x%2.2X), expecting ASL keyword or name",
                              *AslCompilertext);
                        }
                        AslCompilererror (MsgBuffer);}
```

```
<<EOF>>                 { if (AslPopInputFileStack ())
                        {yyterminate();}
                      else
                        {return (PARSEOP_INCLUDE_END);} };

%%

/*! [End] no source code translation !*/

/*
* Bring in the scanner support routines
*/
#include "aslsupport.l"
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslcompiler.l
No license file was found, but licenses were detected in source scan.

```
NoEcho('
/******************************************************************************
*
* Module Name: aslsupport.y - Bison/Yacc C support functions
*
*****************************************************************************/

/*
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```

```
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* IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
* POSSIBILITY OF SUCH DAMAGES.
*/

')

/*****************************************************************************
*
* Local support functions
*
*****************************************************************************/

/*! [Begin] no source code translation */
int
AslCompilerwrap(void)
{
 return (1);
}
/*! [End] no source code translation !*/


void *
AslLocalAllocate (
  unsigned int        Size)
{
  void                *Mem;


  DbgPrint (ASL_PARSE_OUTPUT,
     "\nAslLocalAllocate: Expanding Stack to %u\n\n", Size);

  Mem = ACPI_ALLOCATE_ZEROED (Size);
  if (!Mem)
  {
     AslCommonError (ASL_ERROR, ASL_MSG_MEMORY_ALLOCATION,
        Gbl_CurrentLineNumber, Gbl_LogicalLineNumber,
```

```
        Gbl_InputByteCount, Gbl_CurrentColumn,
        Gbl_Files[ASL_FILE_INPUT].Filename, NULL);
      exit (1);
  }

  return (Mem);
}

ACPI_PARSE_OBJECT *
AslDoError (
  void)
{

  return (TrCreateLeafOp (PARSEOP_ERRORNODE));
}


/*******************************************************************************
*
* FUNCTION:    UtGetOpName
*
* PARAMETERS:  ParseOpcode        - Parser keyword ID
*
* RETURN:      Pointer to the opcode name
*
* DESCRIPTION: Get the ascii name of the parse opcode
*
******************************************************************************/

char *
UtGetOpName (
  UINT32                ParseOpcode)
{
#ifdef ASL_YYTNAME_START
  /*
   * First entries (ASL_YYTNAME_START) in yytname are special reserved names.
   * Ignore first 8 characters of the name
   */
  return ((char *) yytname
      [(ParseOpcode - ASL_FIRST_PARSE_OPCODE) + ASL_YYTNAME_START] + 8);
#else
  return ("[Unknown parser generator]");
#endif
}
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslsupport.y

No license file was found, but licenses were detected in source scan.

```
%{
/******************************************************************************
*
* Module Name: aslparser.y - Master Bison/Yacc input file for iASL
*
*****************************************************************************/

/*
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* STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING
* IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
* POSSIBILITY OF SUCH DAMAGES.
*/

#include "aslcompiler.h"
#include "acpi.h"
```

```
#include "accommon.h"

#define _COMPONENT          ACPI_COMPILER
     ACPI_MODULE_NAME    ("aslparse")

/*
* Global Notes:
*
* October 2005: The following list terms have been optimized (from the
* original ASL grammar in the ACPI specification) to force the immediate
* reduction of each list item so that the parse stack use doesn't increase on
* each list element and possibly overflow on very large lists (>4000 items).
* This dramatically reduces use of the parse stack overall.
*
*      ArgList, TermList, ByteList, DWordList, PackageList,
*      ResourceMacroList, and FieldUnitList
*/

void *
AslLocalAllocate (
  unsigned int          Size);


/* Bison/yacc configuration */

#define static
#undef malloc
#define malloc              AslLocalAllocate
#undef alloca
#define alloca              AslLocalAllocate
#define yytname             AslCompilername

#define YYINITDEPTH         600             /* State stack depth */
#define YYDEBUG             1               /* Enable debug output */
#define YYERROR_VERBOSE     1               /* Verbose error messages */
#define YYFLAG              -32768

/* Define YYMALLOC/YYFREE to prevent redefinition errors  */

#define YYMALLOC            AslLocalAllocate
#define YYFREE              ACPI_FREE
%}

/*
* Declare the type of values in the grammar
*/
%union {
  UINT64            i;
```

```
  char              *s;
  ACPI_PARSE_OBJECT   *n;
}

/*
* These shift/reduce conflicts are expected. There should be zero
* reduce/reduce conflicts.
*/
%expect 118

/*! [Begin] no source code translation */

/*
* The M4 macro processor is used to bring in the parser items,
* in order to keep this master file smaller, and to break up
* the various parser items.
*/
m4_define(NoEcho)

/* Token types */

m4_include(asltokens.y)

/* Production types/names */

m4_include(asltypes.y)
%%

/* Production rules */

m4_include(aslrules.y)
m4_include(aslprimaries.y)
m4_include(aslcstyle.y)
m4_include(aslkeywords.y)
m4_include(aslresources.y)
m4_include(aslhelpers.y)
%%

/*! [End] no source code translation !*/

/* Local support functions in C */

m4_include(aslsupport.y)
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslparser.y

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```
NoEcho('
/******************************************************************************
*
* Module Name: asltypes.y - Bison/Yacc production types/names
*
******************************************************************************/

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* IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
* POSSIBILITY OF SUCH DAMAGES.
*/

')
```

```
/*******************************************************************************
*
* Production names
*
*******************************************************************************/

%type <n> ArgList
%type <n> AslCode
%type <n> BufferData
%type <n> BufferTermData
%type <n> CompilerDirective
%type <n> DataObject
%type <n> DefinitionBlockTerm
%type <n> DefinitionBlockList
%type <n> IntegerData
%type <n> NamedObject
%type <n> NameSpaceModifier
%type <n> Object
%type <n> PackageData
%type <n> ParameterTypePackage
%type <n> ParameterTypePackageList
%type <n> ParameterTypesPackage
%type <n> ParameterTypesPackageList
%type <n> RequiredTarget
%type <n> SimpleName
%type <n> StringData
%type <n> Target
%type <n> Term
%type <n> TermArg
%type <n> TermList
%type <n> MethodInvocationTerm

/* Type4Opcode is obsolete */

%type <n> Type1Opcode
%type <n> Type2BufferOpcode
%type <n> Type2BufferOrStringOpcode
%type <n> Type2IntegerOpcode
%type <n> Type2Opcode
%type <n> Type2StringOpcode
%type <n> Type3Opcode
%type <n> Type5Opcode
%type <n> Type6Opcode

%type <n> AccessAsTerm
%type <n> ExternalTerm
%type <n> FieldUnit
%type <n> FieldUnitEntry
```

```
%type <n> FieldUnitList
%type <n> IncludeTerm
%type <n> OffsetTerm
%type <n> OptionalAccessAttribTerm

/* Named Objects */

%type <n> BankFieldTerm
%type <n> CreateBitFieldTerm
%type <n> CreateByteFieldTerm
%type <n> CreateDWordFieldTerm
%type <n> CreateFieldTerm
%type <n> CreateQWordFieldTerm
%type <n> CreateWordFieldTerm
%type <n> DataRegionTerm
%type <n> DeviceTerm
%type <n> EventTerm
%type <n> FieldTerm
%type <n> FunctionTerm
%type <n> IndexFieldTerm
%type <n> MethodTerm
%type <n> MutexTerm
%type <n> OpRegionTerm
%type <n> OpRegionSpaceIdTerm
%type <n> PowerResTerm
%type <n> ProcessorTerm
%type <n> ThermalZoneTerm

/* Namespace modifiers */

%type <n> AliasTerm
%type <n> NameTerm
%type <n> ScopeTerm

/* Type 1 opcodes */

%type <n> BreakPointTerm
%type <n> BreakTerm
%type <n> CaseDefaultTermList
%type <n> CaseTerm
%type <n> ContinueTerm
%type <n> DefaultTerm
%type <n> ElseTerm
%type <n> FatalTerm
%type <n> ElseIfTerm
%type <n> IfTerm
%type <n> LoadTerm
%type <n> NoOpTerm
```

%type <n> NotifyTerm
%type <n> ReleaseTerm
%type <n> ResetTerm
%type <n> ReturnTerm
%type <n> SignalTerm
%type <n> SleepTerm
%type <n> StallTerm
%type <n> SwitchTerm
%type <n> UnloadTerm
%type <n> WhileTerm
/* %type <n> CaseTermList */

/* Type 2 opcodes */

%type <n> AcquireTerm
%type <n> AddTerm
%type <n> AndTerm
%type <n> ConcatResTerm
%type <n> ConcatTerm
%type <n> CondRefOfTerm
%type <n> CopyObjectTerm
%type <n> DecTerm
%type <n> DerefOfTerm
%type <n> DivideTerm
%type <n> FindSetLeftBitTerm
%type <n> FindSetRightBitTerm
%type <n> FromBCDTerm
%type <n> IncTerm
%type <n> IndexTerm
%type <n> LAndTerm
%type <n> LEqualTerm
%type <n> LGreaterEqualTerm
%type <n> LGreaterTerm
%type <n> LLessEqualTerm
%type <n> LLessTerm
%type <n> LNotEqualTerm
%type <n> LNotTerm
%type <n> LoadTableTerm
%type <n> LOrTerm
%type <n> MatchTerm
%type <n> MidTerm
%type <n> ModTerm
%type <n> MultiplyTerm
%type <n> NAndTerm
%type <n> NOrTerm
%type <n> NotTerm
%type <n> ObjectTypeTerm
%type <n> OrTerm

%type <n> RawDataBufferTerm
%type <n> RefOfTerm
%type <n> ShiftLeftTerm
%type <n> ShiftRightTerm
%type <n> SizeOfTerm
%type <n> StoreTerm
%type <n> SubtractTerm
%type <n> TimerTerm
%type <n> ToBCDTerm
%type <n> ToBufferTerm
%type <n> ToDecimalStringTerm
%type <n> ToHexStringTerm
%type <n> ToIntegerTerm
%type <n> ToStringTerm
%type <n> WaitTerm
%type <n> XOrTerm

/* Keywords */

%type <n> AccessAttribKeyword
%type <n> AccessTypeKeyword
%type <n> AddressingModeKeyword
%type <n> AddressKeyword
%type <n> AddressSpaceKeyword
%type <n> BitsPerByteKeyword
%type <n> ClockPhaseKeyword
%type <n> ClockPolarityKeyword
%type <n> DecodeKeyword
%type <n> DevicePolarityKeyword
%type <n> DMATypeKeyword
%type <n> EndianKeyword
%type <n> FlowControlKeyword
%type <n> InterruptLevel
%type <n> InterruptTypeKeyword
%type <n> IODecodeKeyword
%type <n> IoRestrictionKeyword
%type <n> LockRuleKeyword
%type <n> MatchOpKeyword
%type <n> MaxKeyword
%type <n> MemTypeKeyword
%type <n> MinKeyword
%type <n> ObjectTypeKeyword
%type <n> OptionalBusMasterKeyword
%type <n> OptionalReadWriteKeyword
%type <n> ParityTypeKeyword
%type <n> PinConfigByte
%type <n> PinConfigKeyword
%type <n> RangeTypeKeyword

```
%type <n> RegionSpaceKeyword
%type <n> ResourceTypeKeyword
%type <n> SerializeRuleKeyword
%type <n> ShareTypeKeyword
%type <n> SlaveModeKeyword
%type <n> StopBitsKeyword
%type <n> TranslationKeyword
%type <n> TypeKeyword
%type <n> UpdateRuleKeyword
%type <n> WireModeKeyword
%type <n> XferSizeKeyword
%type <n> XferTypeKeyword

/* Types */

%type <n> SuperName
%type <n> ObjectTypeSource
%type <n> DerefOfSource
%type <n> RefOfSource
%type <n> CondRefOfSource
%type <n> ArgTerm
%type <n> LocalTerm
%type <n> DebugTerm

%type <n> Integer
%type <n> ByteConst
%type <n> WordConst
%type <n> DWordConst
%type <n> QWordConst
%type <n> String

%type <n> ConstTerm
%type <n> ConstExprTerm
%type <n> ByteConstExpr
%type <n> WordConstExpr
%type <n> DWordConstExpr
%type <n> QWordConstExpr

%type <n> DWordList
%type <n> BufferTerm
%type <n> ByteList

%type <n> PackageElement
%type <n> PackageList
%type <n> PackageTerm

/* Macros */
```

%type <n> EISAIDTerm
%type <n> ResourceMacroList
%type <n> ResourceMacroTerm
%type <n> ResourceTemplateTerm
%type <n> PldKeyword
%type <n> PldKeywordList
%type <n> ToPLDTerm
%type <n> ToUUIDTerm
%type <n> UnicodeTerm
%type <n> PrintfArgList
%type <n> PrintfTerm
%type <n> FprintfTerm
%type <n> ForTerm

/* Resource Descriptors */

%type <n> ConnectionTerm
%type <n> DMATerm
%type <n> DWordIOTerm
%type <n> DWordMemoryTerm
%type <n> DWordSpaceTerm
%type <n> EndDependentFnTerm
%type <n> ExtendedIOTerm
%type <n> ExtendedMemoryTerm
%type <n> ExtendedSpaceTerm
%type <n> FixedDmaTerm
%type <n> FixedIOTerm
%type <n> GpioIntTerm
%type <n> GpioIoTerm
%type <n> I2cSerialBusTerm
%type <n> I2cSerialBusTermV2
%type <n> InterruptTerm
%type <n> IOTerm
%type <n> IRQNoFlagsTerm
%type <n> IRQTerm
%type <n> Memory24Term
%type <n> Memory32FixedTerm
%type <n> Memory32Term
%type <n> NameSeg
%type <n> NameString
%type <n> PinConfigTerm
%type <n> PinFunctionTerm
%type <n> PinGroupTerm
%type <n> PinGroupConfigTerm
%type <n> PinGroupFunctionTerm
%type <n> QWordIOTerm
%type <n> QWordMemoryTerm
%type <n> QWordSpaceTerm

%type <n> RegisterTerm
%type <n> SpiSerialBusTerm
%type <n> SpiSerialBusTermV2
%type <n> StartDependentFnNoPriTerm
%type <n> StartDependentFnTerm
%type <n> UartSerialBusTerm
%type <n> UartSerialBusTermV2
%type <n> VendorLongTerm
%type <n> VendorShortTerm
%type <n> WordBusNumberTerm
%type <n> WordIOTerm
%type <n> WordSpaceTerm

/* Local types that help construct the AML, not in ACPI spec */

%type <n> AmlPackageLengthTerm
%type <n> IncludeEndTerm
%type <n> NameStringItem
%type <n> TermArgItem

%type <n> OptionalAccessSize
%type <n> OptionalAddressingMode
%type <n> OptionalAddressRange
%type <n> OptionalBitsPerByte
%type <n> OptionalBuffer_Last
%type <n> OptionalByteConstExpr
%type <n> OptionalCount
%type <n> OptionalDataCount
%type <n> OptionalDecodeType
%type <n> OptionalDevicePolarity
%type <n> OptionalDWordConstExpr
%type <n> OptionalEndian
%type <n> OptionalFlowControl
%type <n> OptionalIoRestriction
%type <n> OptionalListString
%type <n> OptionalMaxType
%type <n> OptionalMemType
%type <n> OptionalMinType
%type <n> OptionalNameString
%type <n> OptionalNameString_First
%type <n> OptionalNameString_Last
%type <n> OptionalObjectTypeKeyword
%type <n> OptionalParameterTypePackage
%type <n> OptionalParameterTypesPackage
%type <n> OptionalParentheses
%type <n> OptionalParityType
%type <n> OptionalPredicate
%type <n> OptionalQWordConstExpr

```
%type <n> OptionalRangeType
%type <n> OptionalReference
%type <n> OptionalResourceType
%type <n> OptionalResourceType_First
%type <n> OptionalProducerResourceType
%type <n> OptionalReturnArg
%type <n> OptionalSerializeRuleKeyword
%type <n> OptionalShareType
%type <n> OptionalShareType_First
%type <n> OptionalSlaveMode
%type <n> OptionalStopBits
%type <n> OptionalStringData
%type <n> OptionalTermArg
%type <n> OptionalTranslationType_Last
%type <n> OptionalType
%type <n> OptionalType_Last
%type <n> OptionalWireMode
%type <n> OptionalWordConst
%type <n> OptionalWordConstExpr
%type <n> OptionalXferSize

/*
* ASL+ (C-style) parser
*/

/* Expressions and symbolic operators */

%type <n> Expression
%type <n> EqualsTerm
%type <n> IndexExpTerm

/* ASL+ Named object declaration support */
/*
%type <n> NameTermAslPlus

%type <n> BufferBegin
%type <n> BufferEnd
%type <n> PackageBegin
%type <n> PackageEnd
%type <n> OptionalLength
*/
/* ASL+ Structure declarations */
/*
%type <n> StructureTerm
%type <n> StructureTermBegin
%type <n> StructureType
%type <n> StructureTag
%type <n> StructureElementList
```

```
%type <n> StructureElement
%type <n> StructureElementType
%type <n> OptionalStructureElementType
%type <n> StructureId
*/
/* Structure instantiantion */
/*
%type <n> StructureInstanceTerm
%type <n> StructureTagReference
%type <n> StructureInstanceEnd
*/
/* Pseudo-instantiantion for method Args/Locals */
/*
%type <n> MethodStructureTerm
%type <n> LocalStructureName
*/
/* Direct structure references via the Index operator */
/*
%type <n> StructureReference
%type <n> StructureIndexTerm
%type <n> StructurePointerTerm
%type <n> StructurePointerReference
%type <n> OptionalDefinePointer
*/
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/asltypes.y
No license file was found, but licenses were detected in source scan.

```
NoEcho('
/******************************************************************************
*
* Module Name: aslprimaries.y - Rules for primary ASL operators
*                             - Keep this file synched with the
*                               CvParseOpBlockType function in cvcompiler.c
*
*****************************************************************************/

/*
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```

```
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* IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE
* POSSIBILITY OF SUCH DAMAGES.
*/

')


/******************************************************************************
*
* ASL Primary Terms
*
******************************************************************************/

AccessAsTerm
  : PARSEOP_ACCESSAS
    PARSEOP_OPEN_PAREN
    AccessTypeKeyword
    OptionalAccessAttribTerm
    PARSEOP_CLOSE_PAREN         {$$ = TrCreateOp (PARSEOP_ACCESSAS,2,$3,$4);}
  | PARSEOP_ACCESSAS
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;
```

```
AcquireTerm
  : PARSEOP_ACQUIRE
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp(PARSEOP_ACQUIRE);}
    SuperName
    ',' WordConstExpr
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$6);}
  | PARSEOP_ACQUIRE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

AddTerm
  : PARSEOP_ADD
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_ADD);}
    TermArg
    TermArgItem
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
  | PARSEOP_ADD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

AliasTerm
  : PARSEOP_ALIAS
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_ALIAS);}
    NameString
    NameStringItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,
                            TrSetOpFlags ($5, OP_IS_NAME_DECLARATION));}
  | PARSEOP_ALIAS
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

AndTerm
  : PARSEOP_AND
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_AND);}
    TermArg
    TermArgItem
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
  | PARSEOP_AND
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ArgTerm
```

```
  : PARSEOP_ARG0              {$$ = TrCreateLeafOp (PARSEOP_ARG0);}
  | PARSEOP_ARG1              {$$ = TrCreateLeafOp (PARSEOP_ARG1);}
  | PARSEOP_ARG2              {$$ = TrCreateLeafOp (PARSEOP_ARG2);}
  | PARSEOP_ARG3              {$$ = TrCreateLeafOp (PARSEOP_ARG3);}
  | PARSEOP_ARG4              {$$ = TrCreateLeafOp (PARSEOP_ARG4);}
  | PARSEOP_ARG5              {$$ = TrCreateLeafOp (PARSEOP_ARG5);}
  | PARSEOP_ARG6              {$$ = TrCreateLeafOp (PARSEOP_ARG6);}
  ;

BankFieldTerm
  : PARSEOP_BANKFIELD
    PARSEOP_OPEN_PAREN        {$<n>$ = TrCreateLeafOp (PARSEOP_BANKFIELD);}
    NameString
    NameStringItem
    TermArgItem
    ',' AccessTypeKeyword
    ',' LockRuleKeyword
    ',' UpdateRuleKeyword
    PARSEOP_CLOSE_PAREN '{'
      FieldUnitList '}'       {$$ = TrLinkOpChildren ($<n>3,7,
                              $4,$5,$6,$8,$10,$12,$15);}
  | PARSEOP_BANKFIELD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN
    '{' error '}'             {$$ = AslDoError(); yyclearin;}
  ;

BreakTerm
  : PARSEOP_BREAK             {$$ = TrCreateOp (PARSEOP_BREAK, 0);}
  ;

BreakPointTerm
  : PARSEOP_BREAKPOINT        {$$ = TrCreateOp (PARSEOP_BREAKPOINT, 0);}
  ;

BufferTerm
  : PARSEOP_BUFFER            {$<n>$ = TrCreateLeafOp (PARSEOP_BUFFER);
COMMENT_CAPTURE_OFF; }
    OptionalDataCount
    '{' BufferTermData '}'    {$$ = TrLinkOpChildren ($<n>2,2,$3,$5); COMMENT_CAPTURE_ON;}
  ;

BufferTermData
  : ByteList                  {}
  | StringData                {}
  ;

CaseTerm
```

```
  : PARSEOP_CASE
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_CASE);}
    DataObject
    PARSEOP_CLOSE_PAREN '{'
      TermList '}'              {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
  | PARSEOP_CASE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ConcatTerm
  : PARSEOP_CONCATENATE
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_CONCATENATE);}
    TermArg
    TermArgItem
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
  | PARSEOP_CONCATENATE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ConcatResTerm
  : PARSEOP_CONCATENATERESTEMPLATE
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (
                                PARSEOP_CONCATENATERESTEMPLATE);}
    TermArg
    TermArgItem
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
  | PARSEOP_CONCATENATERESTEMPLATE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

CondRefOfTerm
  : PARSEOP_CONDREFOF
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_CONDREFOF);}
    CondRefOfSource
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_CONDREFOF
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ConnectionTerm
  : PARSEOP_CONNECTION
```

```
    PARSEOP_OPEN_PAREN
    NameString
    PARSEOP_CLOSE_PAREN        {$$ = TrCreateOp (PARSEOP_CONNECTION,1,$3);}
  | PARSEOP_CONNECTION
    PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_CONNECTION);}
    ResourceMacroTerm
    PARSEOP_CLOSE_PAREN        {$$ = TrLinkOpChildren ($<n>3, 1,
                               TrLinkOpChildren (
                                  TrCreateLeafOp (PARSEOP_RESOURCETEMPLATE), 3,
                                  TrCreateLeafOp (PARSEOP_DEFAULT_ARG),
                                  TrCreateLeafOp (PARSEOP_DEFAULT_ARG),
                                  $4));}
  | PARSEOP_CONNECTION
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ContinueTerm
  : PARSEOP_CONTINUE            {$$ = TrCreateOp (PARSEOP_CONTINUE, 0);}
  ;

CopyObjectTerm
  : PARSEOP_COPYOBJECT
    PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_COPYOBJECT);}
    TermArg
    ',' SimpleName
    PARSEOP_CLOSE_PAREN        {$$ = TrLinkOpChildren ($<n>3,2,$4,
                               TrSetOpFlags ($6, OP_IS_TARGET));}
  | PARSEOP_COPYOBJECT
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

CreateBitFieldTerm
  : PARSEOP_CREATEBITFIELD
    PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEBITFIELD);}
    TermArg
    TermArgItem
    NameStringItem
    PARSEOP_CLOSE_PAREN        {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,
                               TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
  | PARSEOP_CREATEBITFIELD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

CreateByteFieldTerm
  : PARSEOP_CREATEBYTEFIELD
```

```
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEBYTEFIELD);}
    TermArg
    TermArgItem
    NameStringItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,
                                TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
  | PARSEOP_CREATEBYTEFIELD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

CreateDWordFieldTerm
  : PARSEOP_CREATEDWORDFIELD
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEDWORDFIELD);}
    TermArg
    TermArgItem
    NameStringItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,
                                TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
  | PARSEOP_CREATEDWORDFIELD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

CreateFieldTerm
  : PARSEOP_CREATEFIELD
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEFIELD);}
    TermArg
    TermArgItem
    TermArgItem
    NameStringItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,4,$4,$5,$6,
                                TrSetOpFlags ($7, OP_IS_NAME_DECLARATION));}
  | PARSEOP_CREATEFIELD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

CreateQWordFieldTerm
  : PARSEOP_CREATEQWORDFIELD
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEQWORDFIELD);}
    TermArg
    TermArgItem
    NameStringItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,
                                TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
  | PARSEOP_CREATEQWORDFIELD
    PARSEOP_OPEN_PAREN
```

```
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

CreateWordFieldTerm
  : PARSEOP_CREATEWORDFIELD
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEWORDFIELD);}
    TermArg
    TermArgItem
    NameStringItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,
                        TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
  | PARSEOP_CREATEWORDFIELD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

DataRegionTerm
  : PARSEOP_DATATABLEREGION
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_DATATABLEREGION);}
    NameString
    TermArgItem
    TermArgItem
    TermArgItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,4,
                        TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$5,$6,$7);}
  | PARSEOP_DATATABLEREGION
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

DebugTerm
  : PARSEOP_DEBUG               {$$ = TrCreateLeafOp (PARSEOP_DEBUG);}
  ;

DecTerm
  : PARSEOP_DECREMENT
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_DECREMENT);}
    SuperName
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_DECREMENT
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

DefaultTerm
  : PARSEOP_DEFAULT '{'         {$<n>$ = TrCreateLeafOp (PARSEOP_DEFAULT);}
    TermList '}'                {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_DEFAULT '{'
```

```
    error '}'               {$$ = AslDoError(); yyclearin;}
  ;

DerefOfTerm
  : PARSEOP_DEREFOF
    PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_DEREFOF);}
    DerefOfSource
    PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_DEREFOF
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

DeviceTerm
  : PARSEOP_DEVICE
    PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_DEVICE);}
    NameString
    PARSEOP_CLOSE_PAREN '{'
      TermList '}'          {$$ = TrLinkOpChildren ($<n>3,2,
                            TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$7);}
  | PARSEOP_DEVICE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

DivideTerm
  : PARSEOP_DIVIDE
    PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_DIVIDE);}
    TermArg
    TermArgItem
    Target
    Target
    PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,4,$4,$5,$6,$7);}
  | PARSEOP_DIVIDE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

EISAIDTerm
  : PARSEOP_EISAID
    PARSEOP_OPEN_PAREN
    StringData
    PARSEOP_CLOSE_PAREN     {$$ = TrSetOpIntegerValue (PARSEOP_EISAID, $3);}
  | PARSEOP_EISAID
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;
```

```
ElseIfTerm
  : IfTerm ElseTerm              {$$ = TrLinkPeerOp ($1,$2);}
  ;

ElseTerm
  :                          {$$ = NULL;}
  | PARSEOP_ELSE '{'
     TermList          {$<n>$ = TrCreateLeafOp (PARSEOP_ELSE);}
     '}'               {$$ = TrLinkOpChildren ($<n>4,1,$3);}

  | PARSEOP_ELSE '{'
     error '}'                 {$$ = AslDoError(); yyclearin;}

  | PARSEOP_ELSE
     error                     {$$ = AslDoError(); yyclearin;}

  | PARSEOP_ELSEIF
     PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_ELSE);}
     TermArg                    {$<n>$ = TrCreateLeafOp (PARSEOP_IF);}
     PARSEOP_CLOSE_PAREN '{'
        TermList '}'           {TrLinkOpChildren ($<n>5,2,$4,$8);}
     ElseTerm                   {TrLinkPeerOp ($<n>5,$11);}
                           {$$ = TrLinkOpChildren ($<n>3,1,$<n>5);}

  | PARSEOP_ELSEIF
     PARSEOP_OPEN_PAREN
     error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}

  | PARSEOP_ELSEIF
     error                     {$$ = AslDoError(); yyclearin;}
  ;

EventTerm
  : PARSEOP_EVENT
     PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_EVENT);}
     NameString
     PARSEOP_CLOSE_PAREN        {$$ = TrLinkOpChildren ($<n>3,1,
                              TrSetOpFlags ($4, OP_IS_NAME_DECLARATION));}
  | PARSEOP_EVENT
     PARSEOP_OPEN_PAREN
     error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ExternalTerm
  : PARSEOP_EXTERNAL
     PARSEOP_OPEN_PAREN
     NameString
     OptionalObjectTypeKeyword
```

```
    OptionalParameterTypePackage
    OptionalParameterTypesPackage
    PARSEOP_CLOSE_PAREN         {$$ = TrCreateOp (PARSEOP_EXTERNAL,4,$3,$4,$5,$6);}
  | PARSEOP_EXTERNAL
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

FatalTerm
  : PARSEOP_FATAL
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_FATAL);}
    ByteConstExpr
    ',' DWordConstExpr
    TermArgItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$6,$7);}
  | PARSEOP_FATAL
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

FieldTerm
  : PARSEOP_FIELD
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_FIELD);}
    NameString
    ',' AccessTypeKeyword
    ',' LockRuleKeyword
    ',' UpdateRuleKeyword
    PARSEOP_CLOSE_PAREN '{'
       FieldUnitList '}'        {$$ = TrLinkOpChildren ($<n>3,5,$4,$6,$8,$10,$13);}
  | PARSEOP_FIELD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN
    '{' error '}'               {$$ = AslDoError(); yyclearin;}
  ;

FindSetLeftBitTerm
  : PARSEOP_FINDSETLEFTBIT
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_FINDSETLEFTBIT);}
    TermArg
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_FINDSETLEFTBIT
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

FindSetRightBitTerm
  : PARSEOP_FINDSETRIGHTBIT
```

```
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_FINDSETRIGHTBIT);}
    TermArg
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_FINDSETRIGHTBIT
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

  /* Convert a For() loop to a While() loop */
ForTerm
  : PARSEOP_FOR
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_WHILE);}
    OptionalTermArg ','         {}
    OptionalPredicate ','
    OptionalTermArg             {$<n>$ = TrLinkPeerOp ($4,$<n>3);
                                 TrSetOpParent ($9,$<n>3);}             /* New parent is WHILE */
    PARSEOP_CLOSE_PAREN
    '{' TermList '}'            {$<n>$ = TrLinkOpChildren ($<n>3,2,$7,$13);}
                                {$<n>$ = TrLinkPeerOp ($13,$9);
                                 $$ = $<n>10;}
  ;

OptionalPredicate
  :                             {$$ = TrCreateValuedLeafOp (PARSEOP_INTEGER, 1);}
  | TermArg                     {$$ = $1;}
  ;

FprintfTerm
  : PARSEOP_FPRINTF
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_FPRINTF);}
    TermArg ','
    StringData
    PrintfArgList
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$6,$7);}
  | PARSEOP_FPRINTF
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

FromBCDTerm
  : PARSEOP_FROMBCD
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_FROMBCD);}
    TermArg
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_FROMBCD
    PARSEOP_OPEN_PAREN
```

```
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

FunctionTerm
  : PARSEOP_FUNCTION
    PARSEOP_OPEN_PAREN          {COMMENT_CAPTURE_OFF; $<n>$ = TrCreateLeafOp
(PARSEOP_METHOD); }
    NameString
    OptionalParameterTypePackage
    OptionalParameterTypesPackage
    PARSEOP_CLOSE_PAREN '{'     {COMMENT_CAPTURE_ON; }
      TermList '}'              {$$ = TrLinkOpChildren ($<n>3,7,
                          TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
                          TrCreateValuedLeafOp (PARSEOP_BYTECONST, 0),
                          TrCreateLeafOp (PARSEOP_SERIALIZERULE_NOTSERIAL),
                          TrCreateValuedLeafOp (PARSEOP_BYTECONST, 0),$5,$6,$10);}
  | PARSEOP_FUNCTION
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

IfTerm
  : PARSEOP_IF
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_IF);}
    TermArg
    PARSEOP_CLOSE_PAREN '{'
      TermList '}'              {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}

  | PARSEOP_IF
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

IncludeTerm
  : PARSEOP_INCLUDE
    PARSEOP_OPEN_PAREN
    String
    PARSEOP_CLOSE_PAREN         {$$ = TrSetOpIntegerValue (PARSEOP_INCLUDE, $3);
                          FlOpenIncludeFile ($3);}
  ;

IncludeEndTerm
  : PARSEOP_INCLUDE_END         {$<n>$ = TrCreateLeafOp (PARSEOP_INCLUDE_END);
                          TrSetOpCurrentFilename ($$);}
  ;

IncTerm
  : PARSEOP_INCREMENT
```

```
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_INCREMENT);}
    SuperName
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_INCREMENT
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

IndexFieldTerm
  : PARSEOP_INDEXFIELD
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_INDEXFIELD);}
    NameString
    NameStringItem
    ',' AccessTypeKeyword
    ',' LockRuleKeyword
    ',' UpdateRuleKeyword
    PARSEOP_CLOSE_PAREN '{'
      FieldUnitList '}'         {$$ = TrLinkOpChildren ($<n>3,6,$4,$5,$7,$9,$11,$14);}
  | PARSEOP_INDEXFIELD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN
    '{' error '}'               {$$ = AslDoError(); yyclearin;}
  ;

IndexTerm
  : PARSEOP_INDEX
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_INDEX);}
    TermArg
    TermArgItem
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
  | PARSEOP_INDEX
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

LAndTerm
  : PARSEOP_LAND
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_LAND);}
    TermArg
    TermArgItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_LAND
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

LEqualTerm
```

```
  : PARSEOP_LEQUAL
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_LEQUAL);}
    TermArg
    TermArgItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_LEQUAL
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

LGreaterEqualTerm
  : PARSEOP_LGREATEREQUAL
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_LLESS);}
    TermArg
    TermArgItem
    PARSEOP_CLOSE_PAREN         {$$ = TrCreateOp (PARSEOP_LNOT, 1,
                            TrLinkOpChildren ($<n>3,2,$4,$5));}
  | PARSEOP_LGREATEREQUAL
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

LGreaterTerm
  : PARSEOP_LGREATER
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_LGREATER);}
    TermArg
    TermArgItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_LGREATER
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

LLessEqualTerm
  : PARSEOP_LLESSEQUAL
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_LGREATER);}
    TermArg
    TermArgItem
    PARSEOP_CLOSE_PAREN         {$$ = TrCreateOp (PARSEOP_LNOT, 1,
                            TrLinkOpChildren ($<n>3,2,$4,$5));}
  | PARSEOP_LLESSEQUAL
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

LLessTerm
  : PARSEOP_LLESS
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_LLESS);}
```

```
    TermArg
    TermArgItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_LLESS
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

LNotEqualTerm
  : PARSEOP_LNOTEQUAL
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_LEQUAL);}
    TermArg
    TermArgItem
    PARSEOP_CLOSE_PAREN         {$$ = TrCreateOp (PARSEOP_LNOT, 1,
                          TrLinkOpChildren ($<n>3,2,$4,$5));}
  | PARSEOP_LNOTEQUAL
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

LNotTerm
  : PARSEOP_LNOT
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_LNOT);}
    TermArg
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_LNOT
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

LoadTableTerm
  : PARSEOP_LOADTABLE
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_LOADTABLE);}
    TermArg
    TermArgItem
    TermArgItem
    OptionalListString
    OptionalListString
    OptionalReference
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,6,$4,$5,$6,$7,$8,$9);}
  | PARSEOP_LOADTABLE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

LoadTerm
  : PARSEOP_LOAD
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_LOAD);}
```

```
    NameString
    RequiredTarget
    PARSEOP_CLOSE_PAREN        {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_LOAD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

LocalTerm
  : PARSEOP_LOCAL0             {$$ = TrCreateLeafOp (PARSEOP_LOCAL0);}
  | PARSEOP_LOCAL1             {$$ = TrCreateLeafOp (PARSEOP_LOCAL1);}
  | PARSEOP_LOCAL2             {$$ = TrCreateLeafOp (PARSEOP_LOCAL2);}
  | PARSEOP_LOCAL3             {$$ = TrCreateLeafOp (PARSEOP_LOCAL3);}
  | PARSEOP_LOCAL4             {$$ = TrCreateLeafOp (PARSEOP_LOCAL4);}
  | PARSEOP_LOCAL5             {$$ = TrCreateLeafOp (PARSEOP_LOCAL5);}
  | PARSEOP_LOCAL6             {$$ = TrCreateLeafOp (PARSEOP_LOCAL6);}
  | PARSEOP_LOCAL7             {$$ = TrCreateLeafOp (PARSEOP_LOCAL7);}
  ;

LOrTerm
  : PARSEOP_LOR
    PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_LOR);}
    TermArg
    TermArgItem
    PARSEOP_CLOSE_PAREN        {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_LOR
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

MatchTerm
  : PARSEOP_MATCH
    PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_MATCH);}
    TermArg
    ',' MatchOpKeyword
    TermArgItem
    ',' MatchOpKeyword
    TermArgItem
    TermArgItem
    PARSEOP_CLOSE_PAREN        {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$7,$9,$10,$11);}
  | PARSEOP_MATCH
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

MethodTerm
  : PARSEOP_METHOD
    PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_METHOD);
```

```
COMMENT_CAPTURE_OFF;}
      NameString
      OptionalByteConstExpr       {UtCheckIntegerRange ($5, 0, 7);}
      OptionalSerializeRuleKeyword
      OptionalByteConstExpr
      OptionalParameterTypePackage
      OptionalParameterTypesPackage
      PARSEOP_CLOSE_PAREN '{'     {COMMENT_CAPTURE_ON;}
        TermList '}'          {$$ = TrLinkOpChildren ($<n>3,7,
                              TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
                              $5,$7,$8,$9,$10,$14);}
  | PARSEOP_METHOD
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

MidTerm
  : PARSEOP_MID
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_MID);}
      TermArg
      TermArgItem
      TermArgItem
      Target
      PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,4,$4,$5,$6,$7);}
  | PARSEOP_MID
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ModTerm
  : PARSEOP_MOD
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_MOD);}
      TermArg
      TermArgItem
      Target
      PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
  | PARSEOP_MOD
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

MultiplyTerm
  : PARSEOP_MULTIPLY
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_MULTIPLY);}
      TermArg
      TermArgItem
      Target
      PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
```

```
  | PARSEOP_MULTIPLY
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

MutexTerm
  : PARSEOP_MUTEX
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_MUTEX);}
    NameString
    ',' ByteConstExpr
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,
                          TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$6);}
  | PARSEOP_MUTEX
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

NameTerm
  : PARSEOP_NAME
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_NAME);}
    NameString
    ',' DataObject
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,
                          TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$6);}
  | PARSEOP_NAME
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

NAndTerm
  : PARSEOP_NAND
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_NAND);}
    TermArg
    TermArgItem
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
  | PARSEOP_NAND
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

NoOpTerm
  : PARSEOP_NOOP                {$$ = TrCreateOp (PARSEOP_NOOP, 0);}
  ;

NOrTerm
  : PARSEOP_NOR
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_NOR);}
```

```
      TermArg
      TermArgItem
      Target
      PARSEOP_CLOSE_PAREN        {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
    | PARSEOP_NOR
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
    ;

NotifyTerm
    : PARSEOP_NOTIFY
      PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_NOTIFY);}
      SuperName
      TermArgItem
      PARSEOP_CLOSE_PAREN        {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
    | PARSEOP_NOTIFY
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
    ;

NotTerm
    : PARSEOP_NOT
      PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_NOT);}
      TermArg
      Target
      PARSEOP_CLOSE_PAREN        {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
    | PARSEOP_NOT
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
    ;

ObjectTypeTerm
    : PARSEOP_OBJECTTYPE
      PARSEOP_OPEN_PAREN         {$<n>$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE);}
      ObjectTypeSource
      PARSEOP_CLOSE_PAREN        {$$ = TrLinkOpChildren ($<n>3,1,$4);}
    | PARSEOP_OBJECTTYPE
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
    ;

OffsetTerm
    : PARSEOP_OFFSET
      PARSEOP_OPEN_PAREN
      AmlPackageLengthTerm
      PARSEOP_CLOSE_PAREN        {$$ = TrCreateOp (PARSEOP_OFFSET,1,$3);}
    | PARSEOP_OFFSET
      PARSEOP_OPEN_PAREN
```

```
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

OpRegionTerm
  : PARSEOP_OPERATIONREGION
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_OPERATIONREGION);}
    NameString
    ',' OpRegionSpaceIdTerm
    TermArgItem
    TermArgItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,4,
                                TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
                                $6,$7,$8);}
  | PARSEOP_OPERATIONREGION
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

OpRegionSpaceIdTerm
  : RegionSpaceKeyword          {}
  | ByteConst                   {$$ = UtCheckIntegerRange ($1, 0x80, 0xFF);}
  ;

OrTerm
  : PARSEOP_OR
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_OR);}
    TermArg
    TermArgItem
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
  | PARSEOP_OR
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

PackageTerm
  : PARSEOP_PACKAGE             {$<n>$ = TrCreateLeafOp (PARSEOP_VAR_PACKAGE);}
    OptionalDataCount
    '{' PackageList '}'         {$$ = TrLinkOpChildren ($<n>2,2,$3,$5);}

PowerResTerm
  : PARSEOP_POWERRESOURCE
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_POWERRESOURCE);}
    NameString
    ',' ByteConstExpr
    ',' WordConstExpr
    PARSEOP_CLOSE_PAREN '{'
      TermList '}'              {$$ = TrLinkOpChildren ($<n>3,4,
```

```
                        TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
                        $6,$8,$11);}
  | PARSEOP_POWERRESOURCE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

PrintfTerm
  : PARSEOP_PRINTF
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_PRINTF);}
    StringData
    PrintfArgList
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_PRINTF
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

PrintfArgList
  :                         {$$ = NULL;}
  | TermArg                 {$$ = $1;}
  | PrintfArgList ','
    TermArg                 {$$ = TrLinkPeerOp ($1, $3);}
  ;

ProcessorTerm
  : PARSEOP_PROCESSOR
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_PROCESSOR);}
    NameString
    ',' ByteConstExpr
    OptionalDWordConstExpr
    OptionalByteConstExpr
    PARSEOP_CLOSE_PAREN '{'
      TermList '}'              {$$ = TrLinkOpChildren ($<n>3,5,
                        TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
                        $6,$7,$8,$11);}
  | PARSEOP_PROCESSOR
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

RawDataBufferTerm
  : PARSEOP_DATABUFFER
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_DATABUFFER);}
    OptionalWordConst
    PARSEOP_CLOSE_PAREN '{'
      ByteList '}'              {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
  | PARSEOP_DATABUFFER
```

```
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

/*
* In RefOf, the node isn't really a target, but we can't keep track of it after
* we've taken a pointer to it. (hard to tell if a local becomes initialized this way.)
*/
RefOfTerm
  : PARSEOP_REFOF
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_REFOF);}
    RefOfSource
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,1,
                          TrSetOpFlags ($4, OP_IS_TARGET));}
  | PARSEOP_REFOF
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ReleaseTerm
  : PARSEOP_RELEASE
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_RELEASE);}
    SuperName
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_RELEASE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ResetTerm
  : PARSEOP_RESET
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_RESET);}
    SuperName
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_RESET
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ReturnTerm
  : PARSEOP_RETURN
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_RETURN);}
    OptionalReturnArg
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_RETURN              {$$ = TrLinkOpChildren (
                          TrCreateLeafOp (PARSEOP_RETURN),1,
                          TrSetOpFlags (TrCreateLeafOp (PARSEOP_ZERO),
                            OP_IS_NULL_RETURN));}
```

```
  | PARSEOP_RETURN
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ScopeTerm
  : PARSEOP_SCOPE
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_SCOPE);}
      NameString
      PARSEOP_CLOSE_PAREN '{'
        TermList '}'              {$$ = TrLinkOpChildren ($<n>3,2,
                                  TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$7);}
  | PARSEOP_SCOPE
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ShiftLeftTerm
  : PARSEOP_SHIFTLEFT
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTLEFT);}
      TermArg
      TermArgItem
      Target
      PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
  | PARSEOP_SHIFTLEFT
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ShiftRightTerm
  : PARSEOP_SHIFTRIGHT
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTRIGHT);}
      TermArg
      TermArgItem
      Target
      PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
  | PARSEOP_SHIFTRIGHT
      PARSEOP_OPEN_PAREN
      error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

SignalTerm
  : PARSEOP_SIGNAL
      PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_SIGNAL);}
      SuperName
      PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_SIGNAL
      PARSEOP_OPEN_PAREN
```

```
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

SizeOfTerm
  : PARSEOP_SIZEOF
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_SIZEOF);}
    SuperName
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_SIZEOF
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

SleepTerm
  : PARSEOP_SLEEP
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_SLEEP);}
    TermArg
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_SLEEP
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

StallTerm
  : PARSEOP_STALL
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_STALL);}
    TermArg
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_STALL
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

StoreTerm
  : PARSEOP_STORE
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_STORE);}
    TermArg
    ',' SuperName
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,
                                TrSetOpFlags ($6, OP_IS_TARGET));}
  | PARSEOP_STORE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

SubtractTerm
  : PARSEOP_SUBTRACT
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_SUBTRACT);}
```

```
    TermArg
    TermArgItem
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
  | PARSEOP_SUBTRACT
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

SwitchTerm
  : PARSEOP_SWITCH
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_SWITCH);}
    TermArg
    PARSEOP_CLOSE_PAREN '{'
      CaseDefaultTermList '}' {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
  | PARSEOP_SWITCH
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ThermalZoneTerm
  : PARSEOP_THERMALZONE
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_THERMALZONE);}
    NameString
    PARSEOP_CLOSE_PAREN '{'
      TermList '}'              {$$ = TrLinkOpChildren ($<n>3,2,
                                TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$7);}
  | PARSEOP_THERMALZONE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

TimerTerm
  : PARSEOP_TIMER
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_TIMER);}
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,0);}
  | PARSEOP_TIMER               {$$ = TrLinkOpChildren (
                                TrCreateLeafOp (PARSEOP_TIMER),0);}
  | PARSEOP_TIMER
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ToBCDTerm
  : PARSEOP_TOBCD
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_TOBCD);}
    TermArg
    Target
```

```
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_TOBCD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ToBufferTerm
  : PARSEOP_TOBUFFER
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_TOBUFFER);}
    TermArg
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_TOBUFFER
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ToDecimalStringTerm
  : PARSEOP_TODECIMALSTRING
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_TODECIMALSTRING);}
    TermArg
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_TODECIMALSTRING
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ToHexStringTerm
  : PARSEOP_TOHEXSTRING
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_TOHEXSTRING);}
    TermArg
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_TOHEXSTRING
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ToIntegerTerm
  : PARSEOP_TOINTEGER
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_TOINTEGER);}
    TermArg
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_TOINTEGER
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
```

```
  ;

ToPLDTerm
  : PARSEOP_TOPLD
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_TOPLD);}
    PldKeywordList
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_TOPLD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

PldKeywordList
  :                             {$$ = NULL;}
  | PldKeyword
    PARSEOP_EXP_EQUALS Integer  {$$ = TrLinkOpChildren ($1,1,$3);}
  | PldKeyword
    PARSEOP_EXP_EQUALS String   {$$ = TrLinkOpChildren ($1,1,$3);}
  | PldKeywordList ','          /* Allows a trailing comma at list end */
  | PldKeywordList ','
    PldKeyword
    PARSEOP_EXP_EQUALS Integer  {$$ = TrLinkPeerOp ($1,TrLinkOpChildren ($3,1,$5));}
  | PldKeywordList ','
    PldKeyword
    PARSEOP_EXP_EQUALS String   {$$ = TrLinkPeerOp ($1,TrLinkOpChildren ($3,1,$5));}
  ;


ToStringTerm
  : PARSEOP_TOSTRING
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_TOSTRING);}
    TermArg
    OptionalCount
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
  | PARSEOP_TOSTRING
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

ToUUIDTerm
  : PARSEOP_TOUUID
    PARSEOP_OPEN_PAREN
    StringData
    PARSEOP_CLOSE_PAREN         {$$ = TrSetOpIntegerValue (PARSEOP_TOUUID, $3);}
  | PARSEOP_TOUUID
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
```

```
  ;

UnicodeTerm
  : PARSEOP_UNICODE
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_UNICODE);}
    StringData
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,0,$4);}
  | PARSEOP_UNICODE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

UnloadTerm
  : PARSEOP_UNLOAD
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_UNLOAD);}
    SuperName
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,1,$4);}
  | PARSEOP_UNLOAD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

WaitTerm
  : PARSEOP_WAIT
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_WAIT);}
    SuperName
    TermArgItem
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
  | PARSEOP_WAIT
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

XOrTerm
  : PARSEOP_XOR
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_XOR);}
    TermArg
    TermArgItem
    Target
    PARSEOP_CLOSE_PAREN         {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
  | PARSEOP_XOR
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;

WhileTerm
  : PARSEOP_WHILE
    PARSEOP_OPEN_PAREN          {$<n>$ = TrCreateLeafOp (PARSEOP_WHILE);}
```

```
    TermArg
    PARSEOP_CLOSE_PAREN
      '{' TermList '}'      {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
  | PARSEOP_WHILE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN   {$$ = AslDoError(); yyclearin;}
  ;
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslprimaries.y
No license file was found, but licenses were detected in source scan.

```
NoEcho('
/******************************************************************************
*
* Module Name: aslhelpers.y - helper and option terms
*
*****************************************************************************/

/*
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* POSSIBILITY OF SUCH DAMAGES.
*/

')


/******************************************************************************
*
* ASL Helper Terms
*
******************************************************************************/

OptionalBusMasterKeyword
  : ','                         {$$ = TrCreateLeafOp (
                                   PARSEOP_BUSMASTERTYPE_MASTER);}
  | ',' PARSEOP_BUSMASTERTYPE_MASTER     {$$ = TrCreateLeafOp (
                                   PARSEOP_BUSMASTERTYPE_MASTER);}
  | ',' PARSEOP_BUSMASTERTYPE_NOTMASTER  {$$ = TrCreateLeafOp (
                                   PARSEOP_BUSMASTERTYPE_NOTMASTER);}
  ;

OptionalAccessAttribTerm
  :                         {$$ = NULL;}
  | ','                     {$$ = NULL;}
  | ',' ByteConstExpr           {$$ = $2;}
  | ',' AccessAttribKeyword     {$$ = $2;}
  ;

OptionalAccessSize
  :                         {$$ = TrCreateValuedLeafOp (
                               PARSEOP_BYTECONST, 0);}
  | ','                     {$$ = TrCreateValuedLeafOp (
                               PARSEOP_BYTECONST, 0);}
  | ',' ByteConstExpr           {$$ = $2;}
  ;

OptionalAddressingMode
  : ','                     {$$ = NULL;}
  | ',' AddressingModeKeyword    {$$ = $2;}
  ;

OptionalAddressRange
```

```
  :                         {$$ = NULL;}
  | ','                     {$$ = NULL;}
  | ',' AddressKeyword      {$$ = $2;}
  ;

OptionalBitsPerByte
  : ','                     {$$ = NULL;}
  | ',' BitsPerByteKeyword  {$$ = $2;}
  ;

OptionalBuffer_Last
  :                         {$$ = NULL;}
  | ','                     {$$ = NULL;}
  | ',' RawDataBufferTerm   {$$ = $2;}
  ;

OptionalByteConstExpr
  :                         {$$ = NULL;}
  | ','                     {$$ = NULL;}
  | ',' ByteConstExpr       {$$ = $2;}
  ;

OptionalDecodeType
  : ','                     {$$ = NULL;}
  | ',' DecodeKeyword       {$$ = $2;}
  ;

OptionalDevicePolarity
  : ','                     {$$ = NULL;}
  | ',' DevicePolarityKeyword  {$$ = $2;}
  ;

OptionalDWordConstExpr
  :                         {$$ = NULL;}
  | ','                     {$$ = NULL;}
  | ',' DWordConstExpr      {$$ = $2;}
  ;

OptionalEndian
  : ','                     {$$ = NULL;}
  | ',' EndianKeyword       {$$ = $2;}
  ;

OptionalFlowControl
  : ','                     {$$ = NULL;}
  | ',' FlowControlKeyword  {$$ = $2;}
  ;
```

```
OptionalIoRestriction
  : ','                     {$$ = NULL;}
  | ',' IoRestrictionKeyword      {$$ = $2;}
  ;

OptionalListString
  :                         {$$ = TrCreateValuedLeafOp (
                              PARSEOP_STRING_LITERAL,
                              ACPI_TO_INTEGER (""));}    /* Placeholder is a NULL string */
  | ','                     {$$ = TrCreateValuedLeafOp (
                              PARSEOP_STRING_LITERAL,
                              ACPI_TO_INTEGER (""));}    /* Placeholder is a NULL string */
  | ',' TermArg               {$$ = $2;}
  ;

OptionalMaxType
  : ','                     {$$ = NULL;}
  | ',' MaxKeyword              {$$ = $2;}
  ;

OptionalMemType
  : ','                     {$$ = NULL;}
  | ',' MemTypeKeyword          {$$ = $2;}
  ;

OptionalMinType
  : ','                     {$$ = NULL;}
  | ',' MinKeyword              {$$ = $2;}
  ;

OptionalNameString
  :                         {$$ = NULL;}
  | ','                     {$$ = NULL;}
  | ',' NameString              {$$ = $2;}
  ;

OptionalNameString_Last
  :                         {$$ = NULL;}
  | ','                     {$$ = NULL;}
  | ',' NameString              {$$ = $2;}
  ;

OptionalNameString_First
  :                         {$$ = TrCreateLeafOp (
                              PARSEOP_ZERO);}
  | NameString                  {$$ = $1;}
  ;
```

```
OptionalObjectTypeKeyword
  :                         {$$ = TrCreateLeafOp (
                              PARSEOP_OBJECTTYPE_UNK);}
  | ',' ObjectTypeKeyword       {$$ = $2;}
  ;

OptionalParityType
  : ','                     {$$ = NULL;}
  | ',' ParityTypeKeyword       {$$ = $2;}
  ;

OptionalQWordConstExpr
  :                         {$$ = NULL;}
  | ','                     {$$ = NULL;}
  | ',' QWordConstExpr          {$$ = $2;}
  ;

OptionalRangeType
  : ','                     {$$ = NULL;}
  | ',' RangeTypeKeyword        {$$ = $2;}
  ;

OptionalReadWriteKeyword
  :                           {$$ = TrCreateLeafOp (
                                PARSEOP_READWRITETYPE_BOTH);}
  | PARSEOP_READWRITETYPE_BOTH      {$$ = TrCreateLeafOp (
                                PARSEOP_READWRITETYPE_BOTH);}
  | PARSEOP_READWRITETYPE_READONLY  {$$ = TrCreateLeafOp (
                                PARSEOP_READWRITETYPE_READONLY);}
  ;

OptionalResourceType_First
  :                         {$$ = TrCreateLeafOp (
                              PARSEOP_RESOURCETYPE_CONSUMER);}
  | ResourceTypeKeyword         {$$ = $1;}
  ;

OptionalResourceType
  :                         {$$ = TrCreateLeafOp (
                              PARSEOP_RESOURCETYPE_CONSUMER);}
  | ','                     {$$ = TrCreateLeafOp (
                              PARSEOP_RESOURCETYPE_CONSUMER);}
  | ',' ResourceTypeKeyword     {$$ = $2;}
  ;

/* Same as above except default is producer */
OptionalProducerResourceType
  :                         {$$ = TrCreateLeafOp (
```

```
                                PARSEOP_RESOURCETYPE_PRODUCER);}
  | ','                       {$$ = TrCreateLeafOp (
                                PARSEOP_RESOURCETYPE_PRODUCER);}
  | ',' ResourceTypeKeyword       {$$ = $2;}
  ;

OptionalSlaveMode
  : ','                       {$$ = NULL;}
  | ',' SlaveModeKeyword          {$$ = $2;}
  ;

OptionalShareType
  :                           {$$ = NULL;}
  | ','                       {$$ = NULL;}
  | ',' ShareTypeKeyword          {$$ = $2;}
  ;

OptionalShareType_First
  :                           {$$ = NULL;}
  | ShareTypeKeyword              {$$ = $1;}
  ;

OptionalStopBits
  : ','                       {$$ = NULL;}
  | ',' StopBitsKeyword           {$$ = $2;}
  ;

OptionalStringData
  :                           {$$ = NULL;}
  | ','                       {$$ = NULL;}
  | ',' StringData                {$$ = $2;}
  ;

OptionalTranslationType_Last
  :                           {$$ = NULL;}
  | ','                       {$$ = NULL;}
  | ',' TranslationKeyword        {$$ = $2;}
  ;

OptionalType
  :                           {$$ = NULL;}
  | ','                       {$$ = NULL;}
  | ',' TypeKeyword               {$$ = $2;}
  ;

OptionalType_Last
  :                           {$$ = NULL;}
  | ','                       {$$ = NULL;}
```

```
  | ',' TypeKeyword             {$$ = $2;}
  ;

OptionalWireMode
  : ','                       {$$ = NULL;}
  | ',' WireModeKeyword         {$$ = $2;}
  ;

OptionalWordConstExpr
  : ','                       {$$ = NULL;}
  | ',' WordConstExpr           {$$ = $2;}
  ;

OptionalXferSize
  :                           {$$ = TrCreateValuedLeafOp (
                                 PARSEOP_XFERSIZE_32, 2);}
  | ','                       {$$ = TrCreateValuedLeafOp (
                                 PARSEOP_XFERSIZE_32, 2);}
  | ',' XferSizeKeyword         {$$ = $2;}
  ;
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/aslhelpers.y
No license file was found, but licenses were detected in source scan.

```
%{
/******************************************************************************
*
* Module Name: dtparser.l - Flex input file for table compiler lexer
*
*****************************************************************************/

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*/

#include "aslcompiler.h"
#include "dtparser.y.h"

#define YY_NO_INPUT     /* No file input, we use strings only */

#define _COMPONENT          ACPI_COMPILER
     ACPI_MODULE_NAME    ("dtscanner")
%}

%option noyywrap
%option nounput

Number          [0-9a-fA-F]+
HexNumber       0[xX][0-9a-fA-F]+
DecimalNumber   0[dD][0-9]+
LabelRef        $[a-zA-Z][0-9a-zA-Z]*
WhiteSpace      [ \t\v\r]+
NewLine         [\n]

%%

\(              return (OP_EXP_PAREN_OPEN);
\)              return (OP_EXP_PAREN_CLOSE);
\~              return (OP_EXP_ONES_COMPLIMENT);
\!              return (OP_EXP_LOGICAL_NOT);
\*              return (OP_EXP_MULTIPLY);
```

```
\/              return (OP_EXP_DIVIDE);
\%              return (OP_EXP_MODULO);
\+              return (OP_EXP_ADD);
\-              return (OP_EXP_SUBTRACT);
">>"            return (OP_EXP_SHIFT_RIGHT);
"<<"            return (OP_EXP_SHIFT_LEFT);
\<              return (OP_EXP_LESS);
\>              return (OP_EXP_GREATER);
"<="            return (OP_EXP_LESS_EQUAL);
">="            return (OP_EXP_GREATER_EQUAL);
"=="            return (OP_EXP_EQUAL);
"!="            return (OP_EXP_NOT_EQUAL);
\&              return (OP_EXP_AND);
\^              return (OP_EXP_XOR);
\|              return (OP_EXP_OR);
"&&"            return (OP_EXP_LOGICAL_AND);
"||"            return (OP_EXP_LOGICAL_OR);
<<EOF>>         return (OP_EXP_EOF); /* null end-of-string */

{LabelRef}      return (OP_EXP_LABEL);
{Number}        return (OP_EXP_NUMBER);
{HexNumber}     return (OP_EXP_HEX_NUMBER);
{NewLine}       return (OP_EXP_NEW_LINE);
{WhiteSpace}    /* Ignore */

.               return (OP_EXP_EOF);

%%

/*
* Local support functions
*/
YY_BUFFER_STATE         LexBuffer;

/*******************************************************************************
*
* FUNCTION:    DtInitLexer, DtTerminateLexer
*
* PARAMETERS:  String              - Input string to be parsed
*
* RETURN:      None
*
* DESCRIPTION: Initialization and termination routines for lexer. Lexer needs
*              a buffer to handle strings instead of a file.
*
******************************************************************************/

int
```

```
DtInitLexer (
  char                *String)
{

  LexBuffer = yy_scan_string (String);
  return (LexBuffer == NULL);
}

void
DtTerminateLexer (
  void)
{

  yy_delete_buffer (LexBuffer);
}
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/dtparser.l
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```
%{
/******************************************************************************
*
* Module Name: dtparser.y - Bison input file for table compiler parser
*
*****************************************************************************/

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*/

#include "aslcompiler.h"

#define _COMPONENT          DT_COMPILER
     ACPI_MODULE_NAME    ("dtparser")

void *                  AslLocalAllocate (unsigned int Size);

/* Bison/yacc configuration */

#undef alloca
#define alloca              AslLocalAllocate

int                     DtParserlex (void);
int                     DtParserparse (void);
void                    DtParsererror (char const *msg);
extern char             *DtParsertext;
extern DT_FIELD         *Gbl_CurrentField;

UINT64                  DtParserResult; /* Expression return value */

/* Bison/yacc configuration */

#define yytname             DtParsername
#define YYDEBUG             1           /* Enable debug output */
#define YYERROR_VERBOSE     1           /* Verbose error messages */
#define YYFLAG              -32768

/* Define YYMALLOC/YYFREE to prevent redefinition errors  */

#define YYMALLOC            malloc
#define YYFREE              free
```

```
%}

%union
{
   UINT64            value;
   UINT32            op;
}

/*! [Begin] no source code translation */

%type  <value>  Expression

%token <op>    OP_EXP_EOF
%token <op>    OP_EXP_NEW_LINE
%token <op>    OP_EXP_NUMBER
%token <op>    OP_EXP_HEX_NUMBER
%token <op>    OP_EXP_DECIMAL_NUMBER
%token <op>    OP_EXP_LABEL
%token <op>    OP_EXP_PAREN_OPEN
%token <op>    OP_EXP_PAREN_CLOSE

%left <op>     OP_EXP_LOGICAL_OR
%left <op>     OP_EXP_LOGICAL_AND
%left <op>     OP_EXP_OR
%left <op>     OP_EXP_XOR
%left <op>     OP_EXP_AND
%left <op>     OP_EXP_EQUAL OP_EXP_NOT_EQUAL
%left <op>     OP_EXP_GREATER OP_EXP_LESS OP_EXP_GREATER_EQUAL OP_EXP_LESS_EQUAL
%left <op>     OP_EXP_SHIFT_RIGHT OP_EXP_SHIFT_LEFT
%left <op>     OP_EXP_ADD OP_EXP_SUBTRACT
%left <op>     OP_EXP_MULTIPLY OP_EXP_DIVIDE OP_EXP_MODULO
%right <op>    OP_EXP_ONES_COMPLIMENT OP_EXP_LOGICAL_NOT

%%

/*
*  Operator precedence rules (from K&R)
*
*  1)     ( )
*  2)     ! ~ (unary operators that are supported here)
*  3)     *   /   %
*  4)     +   -
*  5)     >>  <<
*  6)     <   >   <=  >=
*  7)     ==  !=
*  8)     &
*  9)     ^
*  10)    |
```

```
* 11)    &&
* 12)    ||
*/
Value
  : Expression OP_EXP_NEW_LINE                { DtParserResult=$1; return 0; } /* End of line (newline) */
  | Expression OP_EXP_EOF                     { DtParserResult=$1; return 0; } /* End of string (0) */
  ;

Expression

    /* Unary operators */

  : OP_EXP_LOGICAL_NOT        Expression        { $$ = DtDoOperator ($2, OP_EXP_LOGICAL_NOT,
$2);}
  | OP_EXP_ONES_COMPLIMENT    Expression        { $$ = DtDoOperator ($2,
OP_EXP_ONES_COMPLIMENT, $2);}

    /* Binary operators */

  | Expression OP_EXP_MULTIPLY        Expression  { $$ = DtDoOperator ($1, OP_EXP_MULTIPLY,       $3);}
  | Expression OP_EXP_DIVIDE          Expression  { $$ = DtDoOperator ($1, OP_EXP_DIVIDE,         $3);}
  | Expression OP_EXP_MODULO          Expression  { $$ = DtDoOperator ($1, OP_EXP_MODULO,         $3);}
  | Expression OP_EXP_ADD             Expression  { $$ = DtDoOperator ($1, OP_EXP_ADD,            $3);}
  | Expression OP_EXP_SUBTRACT        Expression  { $$ = DtDoOperator ($1, OP_EXP_SUBTRACT,
$3);}
  | Expression OP_EXP_SHIFT_RIGHT     Expression  { $$ = DtDoOperator ($1, OP_EXP_SHIFT_RIGHT,
$3);}
  | Expression OP_EXP_SHIFT_LEFT      Expression  { $$ = DtDoOperator ($1, OP_EXP_SHIFT_LEFT,     $3);}
  | Expression OP_EXP_GREATER         Expression  { $$ = DtDoOperator ($1, OP_EXP_GREATER,        $3);}
  | Expression OP_EXP_LESS            Expression  { $$ = DtDoOperator ($1, OP_EXP_LESS,           $3);}
  | Expression OP_EXP_GREATER_EQUAL   Expression  { $$ = DtDoOperator ($1,
OP_EXP_GREATER_EQUAL,   $3);}
  | Expression OP_EXP_LESS_EQUAL      Expression  { $$ = DtDoOperator ($1, OP_EXP_LESS_EQUAL,
$3);}
  | Expression OP_EXP_EQUAL           Expression  { $$ = DtDoOperator ($1, OP_EXP_EQUAL,          $3);}
  | Expression OP_EXP_NOT_EQUAL       Expression  { $$ = DtDoOperator ($1, OP_EXP_NOT_EQUAL,
$3);}
  | Expression OP_EXP_AND             Expression  { $$ = DtDoOperator ($1, OP_EXP_AND,            $3);}
  | Expression OP_EXP_XOR             Expression  { $$ = DtDoOperator ($1, OP_EXP_XOR,            $3);}
  | Expression OP_EXP_OR              Expression  { $$ = DtDoOperator ($1, OP_EXP_OR,             $3);}
  | Expression OP_EXP_LOGICAL_AND     Expression  { $$ = DtDoOperator ($1, OP_EXP_LOGICAL_AND,
$3);}
  | Expression OP_EXP_LOGICAL_OR      Expression  { $$ = DtDoOperator ($1, OP_EXP_LOGICAL_OR,
$3);}

    /* Parentheses: '(' Expression ')' */

  | OP_EXP_PAREN_OPEN         Expression
```

```
    OP_EXP_PAREN_CLOSE                  { $$ = $2;}

   /* Label references (prefixed with $) */

  | OP_EXP_LABEL                        { $$ = DtResolveLabel (DtParsertext);}

   /*
    * All constants for the data table compiler are in hex, whether a (optional) 0x
    * prefix is present or not. For example, these two input strings are equivalent:
    *    1234
    *    0x1234
    */

   /* Non-prefixed hex number */

  | OP_EXP_NUMBER                      { $$ = DtDoConstant (DtParsertext);}

   /* Standard hex number (0x1234) */

  | OP_EXP_HEX_NUMBER                  { $$ = DtDoConstant (DtParsertext);}

   /* Possible TBD: Decimal number with prefix (0d1234) - Not supported this time */

  | OP_EXP_DECIMAL_NUMBER              { $$ = DtDoConstant (DtParsertext);}
  ;
%%

/*! [End] no source code translation !*/

/*
* Local support functions, including parser entry point
*/
#define PR_FIRST_PARSE_OPCODE   OP_EXP_EOF
#define PR_YYTNAME_START        3


/******************************************************************************
*
* FUNCTION:    DtParsererror
*
* PARAMETERS:  Message            - Parser-generated error message
*
* RETURN:      None
*
* DESCRIPTION: Handler for parser errors
*
*****************************************************************************/
```

```
void
DtParsererror (
  char const          *Message)
{
  DtError (ASL_ERROR, ASL_MSG_SYNTAX,
    Gbl_CurrentField, (char *) Message);
}


/******************************************************************************
*
* FUNCTION:    DtGetOpName
*
* PARAMETERS:  ParseOpcode        - Parser token (OP_EXP_*)
*
* RETURN:      Pointer to the opcode name
*
* DESCRIPTION: Get the ascii name of the parse opcode for debug output
*
*****************************************************************************/

char *
DtGetOpName (
  UINT32              ParseOpcode)
{
#ifdef ASL_YYTNAME_START
  /*
   * First entries (PR_YYTNAME_START) in yytname are special reserved names.
   * Ignore first 6 characters of name (OP_EXP_)
   */
  return ((char *) yytname
    [(ParseOpcode - PR_FIRST_PARSE_OPCODE) + PR_YYTNAME_START] + 6);
#else
  return ("[Unknown parser generator]");
#endif
}


/******************************************************************************
*
* FUNCTION:    DtEvaluateExpression
*
* PARAMETERS:  ExprString         - Expression to be evaluated. Must be
*                                   terminated by either a newline or a NUL
*                                   string terminator
*
* RETURN:      64-bit value for the expression
*
```

```
* DESCRIPTION: Main entry point for the DT expression parser
*
*****************************************************************************/

UINT64
DtEvaluateExpression (
  char                  *ExprString)
{

  DbgPrint (ASL_DEBUG_OUTPUT,
     "**** Input expression: %s  (Base 16)\n", ExprString);

  /* Point lexer to the input string */

  if (DtInitLexer (ExprString))
  {
     DtError (ASL_ERROR, ASL_MSG_COMPILER_INTERNAL,
        Gbl_CurrentField, "Could not initialize lexer");
     return (0);
  }

  /* Parse/Evaluate the input string (value returned in DtParserResult) */

  DtParserparse ();
  DtTerminateLexer ();

  DbgPrint (ASL_DEBUG_OUTPUT,
     "**** Parser returned value: %u (%8.8X%8.8X)\n",
     (UINT32) DtParserResult, ACPI_FORMAT_UINT64 (DtParserResult));

  return (DtParserResult);
}
```

Found in path(s):
* /opt/cola/permits/1548411445_1675666049.330563/0/acpica-unix2-20180508-tar-gz/acpica-unix2-20180508/source/compiler/dtparser.y

1.121 python-setuptools 28.8.0

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1.122 libidn 2.16.840

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<!-- Generate ISC copyright comments from Docbook copyright metadata. -->

<xsl:stylesheet version="1.0"
 xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
 xmlns:xi="http://www.w3.org/2001/XInclude"
 xmlns:db="http://docbook.org/ns/docbook">

 <xsl:template name="isc.copyright.format">
   <xsl:param name="text"/>
   <xsl:value-of select="$isc.copyright.leader"/>
   <xsl:value-of select="normalize-space(substring-before($text, '&#10;'))"/>
   <xsl:text>&#10;</xsl:text>
   <xsl:variable name="rest" select="substring-after($text, '&#10;')"/>
```

```
  <xsl:if test="translate($rest, '&#9;&#32;', '')">
    <xsl:call-template name="isc.copyright.format">
      <xsl:with-param name="text" select="$rest"/>
    </xsl:call-template>
  </xsl:if>
</xsl:template>

<xsl:variable name="isc.copyright.text">
  <xsl:text>
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  </xsl:text>
</xsl:variable>

<xsl:variable name="isc.copyright">
  <xsl:call-template name="isc.copyright.format">
    <xsl:with-param name="text">
      <xsl:for-each select="book/info/copyright | refentry/docinfo/copyright">
  <xsl:text>Copyright (C) </xsl:text>
  <xsl:call-template name="copyright.years">
    <xsl:with-param name="years" select="year"/>
  </xsl:call-template>
  <xsl:text> </xsl:text>
  <xsl:value-of select="holder"/>
       <xsl:value-of select="$isc.copyright.breakline"/>
  <xsl:text>&#10;</xsl:text>
</xsl:for-each>
<xsl:value-of select="$isc.copyright.text"/>
    </xsl:with-param>
  </xsl:call-template>
</xsl:variable>
</xsl:stylesheet>

<!--
 - Local variables:
 - mode: sgml
 - End:
-->
```

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1.125 kmod 25

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##
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Corresponding Source, you remain obligated to ensure that it is
available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided
you inform other peers where the object code and Corresponding
Source of the work are being offered to the general public at no
charge under subsection 6d.

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from the Corresponding Source as a System Library, need not be
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1.127 coreutils 8.30

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1.130 u-boot 2018.07

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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Version 3, 29 June 2007

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1.132 libidn 2.0.5

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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it with the complete corresponding machine-readable source code, which
must be distributed under the terms of Sections 1 and 2 above on a
medium customarily used for software interchange.

If distribution of object code is made by offering access to copy
from a designated place, then offering equivalent access to copy the
source code from the same place satisfies the requirement to
distribute the source code, even though third parties are not
compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the
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linked with it, is called a "work that uses the Library". Such a
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However, linking a "work that uses the Library" with the Library
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When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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b) Use a suitable shared library mechanism for linking with the

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e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

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1.142 oniguruma 7.2.3

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1.143 mini-xml 2.11

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1.144 libwebp 1.0.0

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1.145 python-pip 9.0.1

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1.146 d-bus 1.12.10

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##
Constant-time SSSE3 AES core implementation.

version 0.1
##
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##
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1.156 gobject-introspection 1.58.0

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1.157 libcxx 7.1.0

1.157.1 Available under license :

```
; RUN: llc < %s -mtriple=s390x-linux-gnu -mcpu=zEC12 -verify-machineinstrs | FileCheck %s
;
; Test that early if conversion produces LOCR with operands of the right
; register classes.

define void @autogen_SD4739(i8*) {
; CHECK-NOT: Expected a GR32Bit register, but got a GRX32Bit register
BB:
 %L34 = load i8, i8* %0
 %Cmp56 = icmp sgt i8 undef, %L34
 br label %CF246

CF246:                                            ; preds = %CF246, %BB
 %Sl163 = select i1 %Cmp56, i8 %L34, i8 undef
 br i1 undef, label %CF246, label %CF248

CF248:                                            ; preds = %CF248, %CF246
 store i8 %Sl163, i8* %0
 br label %CF248
}
```

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THE SOFTWARE.
; RUN: llc -mtriple=aarch64-apple-ios %s -o - | FileCheck %s

define <16 x double> @test_sitofp_fixed(<16 x i32> %in) {
; CHECK-LABEL: test_sitofp_fixed:

 ; First, extend each i32 to i64
; CHECK-DAG: sshll2.2d [[BLOCK0_HI:v[0-9]+]], v0, #0
; CHECK-DAG: sshll2.2d [[BLOCK1_HI:v[0-9]+]], v1, #0
; CHECK-DAG: sshll2.2d [[BLOCK2_HI:v[0-9]+]], v2, #0
; CHECK-DAG: sshll2.2d [[BLOCK3_HI:v[0-9]+]], v3, #0
; CHECK-DAG: sshll.2d [[BLOCK0_LO:v[0-9]+]], v0, #0
; CHECK-DAG: sshll.2d [[BLOCK1_LO:v[0-9]+]], v1, #0
; CHECK-DAG: sshll.2d [[BLOCK2_LO:v[0-9]+]], v2, #0
; CHECK-DAG: sshll.2d [[BLOCK3_LO:v[0-9]+]], v3, #0

 ; Next, convert each to double.
; CHECK-DAG: scvtf.2d v0, [[BLOCK0_LO]]
; CHECK-DAG: scvtf.2d v1, [[BLOCK0_HI]]
; CHECK-DAG: scvtf.2d v2, [[BLOCK1_LO]]
; CHECK-DAG: scvtf.2d v3, [[BLOCK1_HI]]
; CHECK-DAG: scvtf.2d v4, [[BLOCK2_LO]]
; CHECK-DAG: scvtf.2d v5, [[BLOCK2_HI]]
; CHECK-DAG: scvtf.2d v6, [[BLOCK3_LO]]
; CHECK-DAG: scvtf.2d v7, [[BLOCK3_HI]]

; CHECK: ret
 %flt = sitofp <16 x i32> %in to <16 x double>
 %res = fdiv <16 x double> %flt, <double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0>
 ret <16 x double> %res
}

; This one is small enough to satisfy isSimple, but still illegally large.

```
define <4 x double> @test_sitofp_fixed_shortish(<4 x i64> %in) {
; CHECK-LABEL: test_sitofp_fixed_shortish:

; CHECK-DAG: scvtf.2d v0, v0
; CHECK-DAG: scvtf.2d v1, v1

; CHECK: ret
 %flt = sitofp <4 x i64> %in to <4 x double>
 %res = fdiv <4 x double> %flt, <double 64.0, double 64.0, double 64.0, double 64.0>
 ret <4 x double> %res
}
```

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; RUN: llc -march=hexagon < %s
; REQUIRES: asserts

; The two loads based on %struct.0, loading two different data types
; cause LSR to assume type "void" for the memory type. This would then
; cause an assert in isLegalAddressingMode. Make sure we no longer crash.

target triple = "hexagon"

```
%struct.0 = type { i8*, i8, %union.anon.0 }
%union.anon.0 = type { i8* }

define hidden fastcc void @fred() unnamed_addr #0 {
entry:
 br i1 undef, label %while.end, label %while.body.lr.ph

while.body.lr.ph:                                 ; preds = %entry
 br label %while.body

while.body:                                       ; preds = %exit.2, %while.body.lr.ph
 %lsr.iv = phi %struct.0* [ %cgep22, %exit.2 ], [ undef, %while.body.lr.ph ]
 switch i32 undef, label %exit [
   i32 1, label %sw.bb.i
   i32 2, label %sw.bb3.i
 ]

sw.bb.i:                                          ; preds = %while.body
 unreachable

sw.bb3.i:                                         ; preds = %while.body
 unreachable

exit:                                             ; preds = %while.body
 switch i32 undef, label %exit.2 [
   i32 1, label %sw.bb.i17
   i32 2, label %sw.bb3.i20
 ]

sw.bb.i17:                                        ; preds = %.exit
 %0 = bitcast %struct.0* %lsr.iv to i32*
 %1 = load i32, i32* %0, align 4
 unreachable

sw.bb3.i20:                                       ; preds = %exit
 %2 = bitcast %struct.0* %lsr.iv to i8**
 %3 = load i8*, i8** %2, align 4
 unreachable

exit.2:                                           ; preds = %exit
 %cgep22 = getelementptr %struct.0, %struct.0* %lsr.iv, i32 1
 br label %while.body

while.end:                                        ; preds = %entry
 ret void
}
```

attributes #0 = { nounwind optsize "target-cpu"="hexagonv55" }
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;
; D31946
; Check that we dont end up with the ""LLVM ERROR: Cannot select" error.
; Additionally ensure that the output code actually put fp128 values in SSE registers.

declare fp128 @llvm.fabs.f128(fp128)
declare fp128 @llvm.copysign.f128(fp128, fp128)

define fp128 @TestSelect(fp128 %a, fp128 %b) {
 %cmp = fcmp ogt fp128 %a, %b
 %sub = fsub fp128 %a, %b
 %res = select i1 %cmp, fp128 %sub, fp128 0xL00000000000000000000000000000000
 ret fp128 %res
; CHECK-LABEL: TestSelect:
; CHECK   movaps 16(%rsp), %xmm1
; CHECK-NEXT   callq __subtf3
; CHECK-NEXT   testl %ebx, %ebx
; CHECK-NEXT   jg .LBB0_2
; CHECK-NEXT # %bb.1:
; CHECK-NEXT   movaps .LCPI0_0(%rip), %xmm0
; CHECK-NEXT .LBB0_2:
; CHECK-NEXT   addq $32, %rsp
; CHECK-NEXT   popq %rbx

```
; CHECK-NEXT   retq
}

define fp128 @TestFabs(fp128 %a) {
 %res = call fp128 @llvm.fabs.f128(fp128 %a)
 ret fp128 %res
; CHECK-LABEL: TestFabs:
; CHECK      andps .LCPI1_0(%rip), %xmm0
; CHECK-NEXT retq
}

define fp128 @TestCopysign(fp128 %a, fp128 %b) {
 %res = call fp128 @llvm.copysign.f128(fp128 %a, fp128 %b)
 ret fp128 %res
; CHECK-LABEL: TestCopysign:
; CHECK      andps .LCPI2_1(%rip), %xmm0
; CHECK-NEXT orps %xmm1, %xmm0
; CHECK-NEXT retq
}

define fp128 @TestFneg(fp128 %a) {
 %mul = fmul fp128 %a, %a
 %res = fsub fp128 0xL00000000000000008000000000000000, %mul
 ret fp128 %res
; CHECK-LABEL: TestFneg:
; CHECK      movaps %xmm0, %xmm1
; CHECK-NEXT callq __multf3
; CHECK-NEXT xorps .LCPI3_0(%rip), %xmm0
; CHECK-NEXT popq %rax
; CHECK-NEXT retq
}
```

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1.161 pcre 10.32 2.el8

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THE BASIC LIBRARY FUNCTIONS

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1.162 libxv 1.0.11-r0

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  the Front-Cover Texts being @var{list}, and with the Back-Cover Texts
  being @var{list}.
@end group
@end smallexample

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@c Local Variables:
@c ispell-local-pdict: "ispell-dict"
@c End:

1.164 tcpdump 4.9.2

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1.165 lzo 2.10

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jseward@acm.org
bzip2/libbzip2 version 1.0.2 of 30 December 2001

```
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  usage: minibz2 [-d] [-{1,2,..9}] [[srcfilename] destfilename]
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<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

1.170 fwupdate 8.7

1.170.1 Available under license :

No license file was found, but licenses were detected in source scan.

/*
* CIpmiSel.hpp

```
*
*  IPMI SEL decode protocol
*
*  Created: Yogindar Das Y
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated, all rights reserved.
*
*
*  Notes:
*
*   TBD
*
*

*/
```

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* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/ipmi/inc/CIpmiSel.hpp
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```
/*
*  ISystemEntity.cpp
*
*  Created: Harshad
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated,
*  All rights reserved.
*
*
*  Notes:
*   This is for interface functions which is supported by main BASE Class
*
*
*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/common/src/ISystemEntity.cpp
No license file was found, but licenses were detected in source scan.

```
/*
*  IBmcEntity.hpp
*
*  Created: Harshad
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated,
*  All rights reserved.
```

*
* Notes:
*   TBD
*
*/

Found in path(s):
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/*
* CBiosEntity.cpp
*
* Created: Harshad
*
* Copyright(c) 2009 - 2010 Cisco Systems, Incorporated,
* All rights reserved.
*
*
* Notes:
*   Contains all the BIOS Entity functions
*
*
*/

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/common/src/CBiosEntity.cpp
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/*
*   CBiosEntity.hpp
*
* Bios Header file
*
* Created: Harshad
*
* Copyright(c) 2009 - 2010 Cisco Systems, Incorporated, all rights reserved.
*
* Notes:
*   Contains all the function supported by BIOS interface
*

*/

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-

gz/fwupdate_source/common/inc/CBiosEntity.hpp
No license file was found, but licenses were detected in source scan.

```
/*
*  IBiosEntity.cpp
*
*  Created: Harshad
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated,
*  All rights reserved.
*
*
*  Notes:
*  Not much added. Will be used in future if we have to add anything in this interface
*
*
*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/common/src/IBiosEntity.cpp
No license file was found, but licenses were detected in source scan.

```
/*
*  CIpmiFru.hpp
*
*  IPMI FRU protocol
*
*  Created: Yogindar Das Y
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated, all rights reserved.
*
*
*  Notes:
*
*   TBD
*
*

*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/ipmi/inc/CIpmiFru.hpp
No license file was found, but licenses were detected in source scan.

```
/*
*  IBmcEntity.hpp
```

```
*
*  Created: Harshad
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated,
*  All rights reserved.
*
*
*  Notes:
*   TBD
*
*
*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/common/src/IBmcEntity.cpp
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```
/*
*  IBiosEntity.hpp
*
*  Created: Harshad
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated,
*  All rights reserved.
*
*
*  Notes:
*   TBD
*
*
*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/common/inc/IBiosEntity.hpp
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```
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*
*/

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-
gz/fwupdate_source/common/inc/INetworkEntity.hpp
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-
gz/fwupdate_source/common/src/CNetworkEntity.cpp
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-
gz/fwupdate_source/common/inc/CNetworkEntity.hpp
No license file was found, but licenses were detected in source scan.

/*
*
*  CBmcEntity.cpp
*
*  Created: Harshad
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated,
*  All rights reserved.
*
```

```
*  Notes:
*   BMC Entity functions
*
*
*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/common/src/CBmcEntity.cpp
No license file was found, but licenses were detected in source scan.

```
/*
*  IIpmiProtocol.hpp
*
*  IPMI protocol interface header
*
*  Created: Yogindar Das Y
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated, all rights reserved.
*
*
*  Notes:
*
*   TBD
*
*

*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/ipmi/inc/IIpmiProtocol.hpp
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```
/*
*  CIpmiProtocol.hpp
*
*  header for IPMI protocol
*
*  Created: Yogindar Das Y
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated, all rights reserved.
*
*
*  Notes:
*
*   TBD
*
```

```
*

*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/ipmi/inc/CIpmiProtocol.hpp
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```
/*
*  CIpmiSdr.cpp
*
*  IPMI SDR decode protocol implementation
*
*  Created: Yogindar Das Y
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated, all rights reserved.
*
*
*  Notes:
*
*   TBD
*
*

*/
```

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* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/ipmi/src/CIpmiSdr.cpp
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```
/*
*
*  cimcUpdate.cpp
*
*  Created: Harshad
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated,
*  All rights reserved.
*
*
*  Notes:
*   This contains functions related to CIMC firmware upgrade..
*
*
*/
```

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```
/*
*  CIpmiSel.cpp
*
*  IPMI SEL decode protocol implementation
*
*  Created: Yogindar Das Y
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated, all rights reserved.
*
*
*  Notes:
*
*   TBD
*
*

*/
```

Found in path(s):
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```
/*
*  CIpmiFru.cpp
*
*  IPMI FRU protocol implementation
*
*  Created: Yogindar Das Y
*
*  Copyright(c) 2009 - 2010 Cisco Systems, Incorporated, all rights reserved.
*
*
*  Notes:
*
*   TBD
*
*

*/
```

Found in path(s):
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gz/fwupdate_source/ipmi/src/CIpmiFru.cpp
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```
/*
*  CIpmiSdr.hpp
*
*  IPMI SDR protocol header
*
*  Created: Yogindar Das Y
*
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*
*
*  Notes:
*
*   TBD
*
*

*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/ipmi/inc/CIpmiSdr.hpp
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```
/*
*  IIpmiProtocol.cpp
*
*  IPMI protocol implementation
*
*  Created: Yogindar Das Y
*
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*
*
*  Notes:
*
*   TBD
*
*

*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/ipmi/src/IIpmiProtocol.cpp

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```
/*
*  CIpmiProtocol.cpp
*
*  IPMI protocol implementation
*
*  Created: Yogindar Das Y
*
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*
*
*  Notes:
*
*   TBD
*
*

*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/ipmi/src/CIpmiProtocol.cpp
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```
/*
*  fwupdate.cpp
*
*  Created: Harshad
*
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*
*
*  Notes:
*   firmware update functions.
*
*
*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/fwupdate/src/fwupdate.cpp
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```
/*
*  ISystemEntity.hpp
*
```

```
*  Created: Harshad
*
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*
*
*  Notes:
*   ISystemEntity is the base class which contains all the virtual functions
*
*
*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/common/inc/ISystemEntity.hpp
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```
/*
*
*  fwupdate.cpp
*
*  Created: Harshad
*
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*
*
*  Notes:
*  Main function related to firmware updated. This uses all the entity interface
*  function to do the firmware update.
*
*
*/
```

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/fwupdate/inc/fwupdate.hpp
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```
/*
*  CBmcEntity.hpp
*
*  BMC Entity functions and variables
*
*  Created: Harshad
*
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```

*
*
* Notes:
*
* This contains all the data structures shared for BMC Entity
*
*
*/

Found in path(s):
* /opt/cola/permits/1456366791_1675765754.0516741/0/fwupdate-source-tar-gz/fwupdate_source/common/inc/CBmcEntity.hpp

1.171 jinja2 2.10

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1.172 openssl 1.0.2o

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1.173 libunistring 0.9.9 3.el8

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Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while

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```
/* nicstar.c  v0.22  Jawaid Bazyar (bazyar@hypermall.com)
* nicstar.c, M. Welsh (matt.welsh@cl.cam.ac.uk)
*
* Hacked October, 1997 by Jawaid Bazyar, Interlink Advertising Services Inc.
*  http://www.hypermall.com/
* 10/1/97 - commented out CFG_PHYIE bit - we don't care when the PHY
* interrupts us (except possibly for removal/insertion of the cable?)
* 10/4/97 - began heavy inline documentation of the code. Corrected typos
* and spelling mistakes.
* 10/5/97 - added code to handle PHY interrupts, disable PHY on
* loss of link, and correctly re-enable PHY when link is
* re-established. (put back CFG_PHYIE)
*
*   Modified to work with the IDT7721 nicstar -- AAL5 (tested) only.
*
* R. D. Rechenmacher <ron@fnal.gov>, Aug. 6, 1997
*
* Linux driver for the IDT77201 NICStAR PCI ATM controller.
* PHY component is expected to be 155 Mbps S/UNI-Lite or IDT 77155;
* see init_nicstar() for PHY initialization to change this. This driver
* expects the Linux ATM stack to support scatter-gather lists
* (skb->atm.iovcnt != 0) for Rx skb's passed to vcc->push.
*
* Implementing minimal-copy of received data:
*   IDT always receives data into a small buffer, then large buffers
*     as needed. This means that data must always be copied to create
*     the linear buffer needed by most non-ATM protocol stacks (e.g. IP)
*     Fix is simple: make large buffers large enough to hold entire
*     SDU, and leave <small_buffer_data> bytes empty at the start. Then
*     copy small buffer contents to head of large buffer.
*   Trick is to avoid fragmenting Linux, due to need for a lot of large
*     buffers. This is done by 2 things:
```

```
*       1) skb->destructor / skb->atm.recycle_buffer
*            combined, allow nicstar_free_rx_skb to be called to
*            recycle large data buffers
*       2) skb_clone of received buffers
*   See nicstar_free_rx_skb and linearize_buffer for implementation
*    details.
*
*
*
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*
* M. Welsh, 6 July 1996
*
*
*/
```

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1.182 sysv-init 2.86-1

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The of the start-stop-daemon

* A rewrite of the original Debian's start-stop-daemon Perl script
* in C (faster - it is executed many times during system startup).
*
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1.183 libxvmc 1_1.0.10-r0

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1.187 libogg 1.3.3

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1.188 xorg-server 1.20.1

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1.190 at-spi2-core 2.28.0

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Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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a) Accompany the work with the complete corresponding

machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

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1.192 python 3.5.6

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In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see http://www.cnri.reston.va.us) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see https://www.python.org/psf/) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

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1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now	PSF	yes

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In 1995, Guido continued his work on Python at the Corporation for National
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Mersenne Twister

The :mod:`_random` module includes code based on a download from http://www.math.sci.hiroshima-u.ac.jp/~m-mat/MT/MT2002/emt19937ar.html. The following are the verbatim comments from the original code::

A C-program for MT19937, with initialization improved 2002/1/26.
Coded by Takuji Nishimura and Makoto Matsumoto.

Before using, initialize the state by using init_genrand(seed)
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Any feedback is very welcome.
http://www.math.sci.hiroshima-u.ac.jp/~m-mat/MT/emt.html
email: m-mat @ math.sci.hiroshima-u.ac.jp (remove space)

Sockets

The :mod:`socket` module uses the functions, :func:`getaddrinfo`, and
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Asynchronous socket services

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Modified by Jack Jansen, CWI, July 1995:
- Use binascii module to do the actual line-by-line conversion
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- Arguments more compliant with Python standard

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The :mod:`xmlrpc.client` module contains the following notice::

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Original location:
  https://github.com/majek/csiphash/

Solution inspired by code from:
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  djb (supercop/crypto_auth/siphash24/little2)
  Jean-Philippe Aumasson (https://131002.net/siphash/siphash24.c)

strtod and dtoa

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libmpdec

The :mod:`_decimal` module is built using an included copy of the libmpdec
library unless the build is configured ``--with-system-libmpdec``::

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1.193 grub2 1.2

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1.197 libedit 20180525-3.1

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1.198 pcre 8.42

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THE BASIC LIBRARY FUNCTIONS

Written by: Philip Hazel
Email local part: ph10
Email domain: cam.ac.uk

University of Cambridge Computing Service,
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1.199 libaom 1.6.3

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/opt/cola/permits/1424401963_1675839759.6563523/0/firefox-93-0-tar-gz/minidump-analyzer: binary file matches
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Found in path(s):
* /bin/grep

1.200 zlib 1.2.5

1.200.1 Available under license :

/* zlib.h -- interface of the 'zlib' general purpose compression library
version 1.2.11, January 15th, 2017

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1.201 libpng 1.6.37

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pnm2png / png2pnm --- conversion from PBM/PGM/PPM-file to PNG-file

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1.207 xz 5.2.4

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==========

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1.213 libxfont 2.0.3

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/* lib/font/fontfile/gunzip.c
  written by Mark Eichin <eichin@kitten.gen.ma.us> September 1996.
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1.214 libxkbcommon 0.8.2

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1.215 libvpx 1.8.2

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1.219 libinput 1.11.3

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* configure.ac, Makefile.am: The original versions were derived from the
 ones in the XML Catalog Manager project, version 2.2.

 Author: Julio Merino <jmmv@users.sourceforge.net>

* atf-c/ui.c: The format_paragraph and format_text functions were
 derived form the ones in the Monotone project, revision
 3a0982da308228d796df35f98d787c5cff2bb5b6.

 Author: Julio Merino <jmmv@NetBSD.org>

* atf-c++/detail/io.hpp, atf-c++/detail/io.cpp, atf-c++/detail/io_test.cpp:
 These files were derived from the file_handle, systembuf, pipe and pistream
 classes and tests found in the Boost.Process library.

 Author: Julio Merino <jmmv84@gmail.com>

* admin/check-style.sh, admin/check-style-common.awk,
 admin/check-style-cpp.awk, admin/check-style-shell.awk: These files,
 except the first one, were first implemented in the Buildtool project.
 They were later adapted to be part of Boost.Process and, during that
 process, the shell script was created.

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-->

<!-- Id -->

```
<!-- Generate ISC copyright comments from Docbook copyright metadata. -->

<xsl:stylesheet version="1.0"
 xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
 xmlns:xi="http://www.w3.org/2001/XInclude"
 xmlns:db="http://docbook.org/ns/docbook">

 <xsl:template name="isc.copyright.format">
  <xsl:param name="text"/>
  <xsl:value-of select="$isc.copyright.leader"/>
  <xsl:value-of select="normalize-space(substring-before($text, '&#10;'))"/>
  <xsl:text>&#10;</xsl:text>
  <xsl:variable name="rest" select="substring-after($text, '&#10;')"/>
  <xsl:if test="translate($rest, '&#9;&#32;', '')">
   <xsl:call-template name="isc.copyright.format">
    <xsl:with-param name="text" select="$rest"/>
   </xsl:call-template>
  </xsl:if>
 </xsl:template>

 <xsl:variable name="isc.copyright.text">
  <xsl:text>
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  </xsl:text>
 </xsl:variable>

 <xsl:variable name="isc.copyright">
  <xsl:call-template name="isc.copyright.format">
   <xsl:with-param name="text">
    <xsl:for-each select="book/info/copyright | refentry/docinfo/copyright">
  <xsl:text>Copyright (C) </xsl:text>
  <xsl:call-template name="copyright.years">
   <xsl:with-param name="years" select="year"/>
  </xsl:call-template>
  <xsl:text> </xsl:text>
  <xsl:value-of select="holder"/>
      <xsl:value-of select="$isc.copyright.breakline"/>
  <xsl:text>&#10;</xsl:text>
 </xsl:for-each>
 <xsl:value-of select="$isc.copyright.text"/>
   </xsl:with-param>
  </xsl:call-template>
 </xsl:variable>
</xsl:stylesheet>

<!--
```

- Local variables:
- mode: sgml
- End:
-->
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