Software Packaging on the Router

Software Package Modes

The router can be booted using any of the following:

- Consolidated—A single software image containing a full collection of software packages. This mode provides a simplified installation and can be stored in the bootflash, a TFTP server, or a network server.

- Sub-package—One or more sub-images that are extracted from the consolidated image. This mode provides optimized memory usage and requires that you store files in the bootflash directory.

Understanding Software Packages

Table 1: Individual Sub-Packages

Sub-Package	Purpose
RPBase	Route Switch Processor (RSP) operating system
RPControl	Control plane processes between IOS process and the rest of the platform.
RPAccess	Handles security features including Secure Socket Layer (SSL) and Secure Shell (SSH)
RPIOS	Cisco IOS kernel, which is where IOS features are stored and run. **Note** Each consolidated image has a unique RPIOS package.
FP Pkg	Controls FP daemons.

Sub-Package	Purpose
IO Pkg	Controls input/output driver daemons.
LC Base	Controls basic kernel functions including runtime, initialization scripts, and chassis control daemons.

Provisioning Files

Provisioning files manage the boot process when the router is configured to boot in sub-packages. The provisioning file manages the bootup of each individual sub-package. Provisioning files are extracted automatically when individual sub-package files are extracted from a consolidated package. Provisioning files are not necessary for running the router using the complete consolidated package.

File Systems on the Router

Table 2: File Systems

File System	Description
bootflash:	The boot flash memory file system on the active RSP.
cns:	The Cisco Networking Services file directory.
nvram:	Router NVRAM. You can copy the startup configuration to NVRAM or from NVRAM.
stby-bootflash:	The boot flash memory file system on the standby RSP.
stby-harddisk:	The hard disk file system on the standby RSP.
stby-usb0:	The Universal Serial Bus (USB) flash drive file systems on the standby RSP. **Note** stby-usb1: is an internal port.
system:	The system memory file system, which includes the running configuration.
tar:	The archive file system.
tmpsys:	The temporary system files file system.
usb0:	The Universal Serial Bus (USB) flash drive file systems on the active RSP. **Note** usb1: is an internal port.

If you see a file system not listed in the above table, enter the **?** help option or see the **copy** command reference for additional information on that file system.

System Requirements

RP Memory Recommendations

Table 3: Memory Recommendations for the Cisco ASR 903 RSP2 Module - Consolidated Package Image

Platform	Image Name	Software Image	Individual Sub-package Contents
ASR 903 RSP2 Module	Cisco ASR 903 Series RSP2 UNIVERSAL W/O CRYPTO	asr900rsp2-universal.*version* .bin	asr900rsp2-rpbase.*version* .pkg
			asr900rsp2-rpcontrol.*version* .pkg
			asr900rsp2-rpaccess.*version* .pkg
			asr900rsp2-rpios-universal.*version*. pkg
			asr900rsp2-espbase.*version.pkg*
			asr900rsp2-sipbase.*version* .pkg
			asr900rsp2-sipspa.*version* .pkg
			asr900rsp2-packages-universal. version.conf
			packages.conf
ASR 903 RSP2 Module	Cisco ASR 903 Series RSP2 UNIVERSAL NPE	asr900rsp2-universalk9_npe. *version* .bin	asr900-hw-programmables.*version* . pkg
			asr900rsp2-espbase.*version* .pkg
			asr900rsp2-packages-universalk9.*version* .pkg
			asr900sp2-rpacess.*version* .pkg
			asr900rsp2-rpbase.*version* .pkg
			asr900rsp2-rpcontrol.*version* .pkg
			asr900rsp2-rpios-universalk9_npe.*version* .pkg
			asr900rsp2-sipbase.*version*.pkg
			asr900rsp2-sipspa.*version*.pkg
			packages.conf

Table 4: Memory Recommendations for the Cisco ASR 900 RSP3 Module - Consolidated Package Image

Platform	Image Name	Software Image	Individual Sub-package Contents
ASR 900 RSP3 Module	Cisco ASR 900 Series RSP3 UNIVERSAL W/O CRYPTO	asr900rsp3-universal.*version* .bin	asr900rsp3-rpbase.*version* .pkg
			asr900rsp3-rpcontrol.*version* .pkg
			asr900rsp3-rpaccess.*version* .pkg
			asr900rsp3-rpios-universal.*version*. pkg
			asr900rsp3-espbase.*version.pkg*
			asr900rsp3-sipbase.*version* .pkg
			asr900rsp3-sipspa.*version* .pkg
			asr900rsp3-packages-universal. version.conf
			packages.conf
ASR 900 RSP3 Module	Cisco ASR 900 Series RSP3 UNIVERSAL NPE	asr900rsp3-universalk9_npe. *version* .bin	asr900-hw-programmables.*version* . pkg
			asr900rsp3-espbase.*version* .pkg
			asr900rsp3-packages-universalk9.*version* .pkg
			asr900rsp3-rpacess.*version* .pkg
			asr900rsp3-rpbase.*version* .pkg
			asr900rsp3-rpcontrol.*version* .pkg
			asr900rsp3-rpios-universalk9_npe.*version* .pkg
			asr900rsp3-sipbase.*version*.pkg
			asr900rsp3-sipspa.*version*.pkg
			packages.conf

Autogenerated Files and Directories

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Caution   Any autogenerated file in the bootflash: directory should not be deleted, renamed, moved, or altered in any way unless directed by customer support; altering these files can have unpredictable consequences for system performance.

Table 5: Autogenerated Files

File or Directory	Description
crashinfo files	A crashinfo file may appear in the bootflash: file system. Crashinfo files are useful for tuning and troubleshooting, but are not related to router operations: you can erase them without impacting the router's performance.
core files	The bootflash/core directory is the storage area for .core files. **Warning** Do not erase or move the core directory.
lost+found directory	This directory is created on bootup if a system check is performed. Its appearance is completely normal and does not indicate any issues with the router.
tracelogs files	The storage area for trace files is bootflash/tracelogs. Trace files are useful for troubleshooting; you can access trace files using diagnostic mode to gather information related to the IOS failure. **Warning** Do not erase or move the tracelog directory.

Additional References

Related Documents

Related Topic	Document Title
Cisco IOS master command list	Cisco IOS Master Command List , All Releases
Cisco IOS High Availability commands	*Cisco IOS High Availability Command Reference*

Standards

Standard	Title
No new or modified standards are supported, and support for existing standards has not been modified.	--

MIBs

MIB	MIBs Link
No new or modified MIBs are supported, and support for existing MIBs has not been modified. Cisco ASR 900 Series Aggregation Services Routers MIB Specifications Guide	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs Cisco ASR 900 Series Aggregation Services Routers MIB Specifications Guide

RFCs

RFC	Title
No new or modified RFCs are supported, and support for existing RFCs has not been modified.	--

Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	http://www.cisco.com/cisco/web/support/index.html