Cisco ASR 1000 Series Routers Power Up and Initial Configuration

This chapter guides you through a basic router configuration, which is sufficient for you to access your network. Complex configuration procedures are beyond the scope of this publication and can be found in the modular configuration and modular command reference publications in the Cisco IOS software configuration documentation set that corresponds to the software release installed on your Cisco hardware.

To configure the Cisco ASR 1000 Series Router from a console, you need to connect a terminal to the router console port.

This chapter contains the following sections:

- Checking Conditions Prior to System Startup, on page 1
- Verifying Power Supply Operation, on page 2
- Powering Up the Cisco ASR 1000 Series Routers, on page 3
- Configuring the Cisco ASR 1000 Series Routers at Startup, on page 7
- Powering Off the Cisco ASR 1000 Series Router Safely, on page 10

Checking Conditions Prior to System Startup

Ensure that the following conditions are addressed before starting up the router:

- The shared port adapter is inserted in its slot.

- The network interface cable is connected.

- The optional Fast Ethernet Management port cable is installed.

- The chassis is securely mounted and grounded.

- The power and interface cables are connected
  .

- Your PC with terminal emulation program (hyperTerminal or equivalent) is connected to the console port and powered up.

- Your PC terminal emulation program is configured for 9600 baud, 8 data bits, 1 stop bit, no parity, and flow control is set to none.

- You have selected passwords for access control.

- Captive installation screws are tight on all removable components.

- The console terminal is turned on.

- You have determined the IP addresses for the Ethernet and serial interfaces.

- Empty card slots or card bays are filled with card blanks. This ensures proper air flow through the chassis and electromagnetic compatibility (EMC).

You are now ready to start your router.

Verifying Power Supply Operation

Follow this procedure to verify power supply is operating correctly.

SUMMARY STEPS

1. Check that the power supply LEDs are:
2. To ensure that the power supply state is OK, type the **show platform** command. This output sample is from the Cisco ASR 1013 router. The other Cisco ASR 1000 routers display similar type of output.

DETAILED STEPS

Step 1   Check that the power supply LEDs are:

- INPUT OK is green

- FAN OK is green

- OUTPUT FAILED is not illuminated

Step 2   To ensure that the power supply state is OK, type the **show platform** command. This output sample is from the Cisco ASR 1013 router. The other Cisco ASR 1000 routers display similar type of output.

The following output displays:

Example:

```
Router# show platform
Chassis type: ASR1013
Slot       Type                State                Insert time (ago)
---------  ------------------  -------------------- ----------------
0          ASR1000-SIP40       ok                   22:56:46
 0/0       SPA-5X1GE-V2        ok                   22:55:42
 0/1       SPA-5X1GE-V2        ok                   22:55:36
 0/2       SPA-5X1GE-V2        ok                   22:55:32
 0/3       SPA-5X1GE-V2        ok                   22:55:28
1          ASR1000-SIP40       ok                   22:56:46
 1/0       SPA-5X1GE-V2        ok                   22:55:43
 1/1       SPA-5X1GE-V2        ok                   22:55:40
 1/2       SPA-5X1GE-V2        ok                   22:55:35
 1/3       SPA-5X1GE-V2        ok                   22:55:30
2          ASR1000-SIP10       ok                   22:56:46
 2/0       SPA-5X1GE-V2        ok                   22:55:41
 2/1       SPA-5X1GE-V2        ok                   22:55:33
```

```
 2/2      SPA-5X1GE-V2         ok                      22:55:27
 2/3      SPA-5X1GE-V2         ok                      22:55:22
3         ASR1000-SIP40        ok                      22:56:46
 3/0      SPA-3XOC3-ATM-V2     ok                      22:55:43
 3/1      SPA-4X1FE-TX-V2      ok                      22:55:41
 3/2      SPA-1XCHSTM1/OC3     ok                      22:55:35
 3/3      SPA-8XCHT1/E1        ok                      22:55:32
4         ASR1000-SIP40        ok                      22:56:46
 4/0      SPA-1X10GE-L-V2      ok                      22:55:43
 4/1      SPA-2XCT3/DS0        ok                      22:55:41
 4/2      SPA-2X1GE-V2         ok                      22:55:34
 4/3      SPA-1XOC12-POS       ok                      22:55:32
5         ASR1000-SIP10        ok                      22:56:46
 5/0      SPA-4XT-SERIAL       ok                      22:55:39
 5/1      SPA-4XOC3-POS        ok                      22:55:34
 5/2      SPA-5X1GE-V2         ok                      22:55:26
 5/3      SPA-2XT3/E3          ok                      22:55:22
R0        ASR1000-RP2          ok, active              22:56:46
R1        ASR1000-RP2          ok, standby             22:56:46
F0        ASR1000-ESP40        ok, active              22:56:46
F1        ASR1000-ESP40        ok, standby             22:56:46
P0        ASR1013-PWR-AC       ps, fail                22:55:56
P1        ASR1013-PWR-AC       ok                      22:55:56
P2        ASR1013-PWR-AC       ok                      22:55:56
P3        ASR1013-PWR-AC       ps, fail                22:55:56
Slot      CPLD Version         Firmware Version
--------- -------------------  ---------------------------------------
0         00200800             15.0(1r)S
1         00200800             15.0(1r)S
2         09111601             15.0(1r)S
3         00200800             15.0(1r)S
4         00200800             15.0(1r)S
5         09111601             15.0(1r)S
R0        10021901             15.0(1r)S
R1        10021901             15.0(1r)S
F0        1001270D             15.0(1r)S
F1        1001270D             15.0(1r)S
MCP_CAP_13RU#
```

If the LEDs indicate a power problem or the power supply state is **ps, fail,** then contact a customer service representatives for assistance or additional instructions.

Powering Up the Cisco ASR 1000 Series Routers

Make certain that all card slots and compartments are closed off. Install blank faceplates on any empty slots. Always have power supply slots filled. If you leave a power supply slot uncovered, then you risk exposure to hazardous voltages on the power pins on the midplane.

After installing your Cisco ASR 1000 Series Routers and connecting cables, start the router.

Warning   Blank faceplates and cover panels serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards, faceplates, front covers, and rear covers are in place. Statement 1029

Note	There is no cover on the Cisco ASR 1002 Router and the Cisco ASR 1002-X Router DC power supply terminal block; therefore, Statement 1029 does not apply to the Cisco ASR 1002 router.

You are now ready to power on the system for the first time. Follow these steps.

SUMMARY STEPS

1. Before you power on, make sure that:
2. Move the power switch to the ON position. Listen for the fans; you should immediately hear them operating.
3. Depending on your installation, some LEDs on the rear of the chassis and on installed modules also come on.
4. Observe the initialization process. When the system boot is complete (the process takes a few seconds), the Cisco ASR 1000 RP1 begins to initialize.
5. During the boot process, observe the system LEDs. The LEDs on the shared port adapter go on and off in irregular sequence. They may go on, go out, and go on again for a short time. On the router, the green STATUS LED comes on and stays on.

DETAILED STEPS

Step 1 Before you power on, make sure that:

a) The AC cord is plugged into the AC power inlet.

b) All cables are connected.

c) Your computer is powered up and connected.

Note	To view the boot sequence, you must have a console connection to the Cisco ASR 1000 Series Routers before it powers up.

Step 2 Move the power switch to the ON position. Listen for the fans; you should immediately hear them operating.

Step 3 Depending on your installation, some LEDs on the rear of the chassis and on installed modules also come on.

Caution	Do not press any keys on the keyboard until the messages stop and the SYS PWR LED is solid green. Any keys pressed during this time are interpreted as the first command typed when the messages stop, which might cause the router to power off and start over. It takes a few minutes for the messages to stop.
Note	This is only an example of what can display. The system boots differently depending upon the configuration that ships with your system.

Step 4 Observe the initialization process. When the system boot is complete (the process takes a few seconds), the Cisco ASR 1000 RP1 begins to initialize.

Example:

Loading the Default System Boot Image

```
rommon 1 >
rommon 1 > boot
Located rp_super.ppc.nader.5g.evfc.bin
Image size 211681484 inode num 12, bks cnt 51681 blk size 8*512
#################################################################################
#############################################
```

```
Boot image size = 211681484 (0xc9e00cc) bytes

Using midplane macaddr
Package header rev 0 structure detected
Calculating SHA-1 hash...done
validate_package: SHA-1 hash:
        calculated 479a7d62:6c128ba8:3616b8da:93cb3224:5c1aeb34
        expected   479a7d62:6c128ba8:3616b8da:93cb3224:5c1aeb34
Image validated

PPC/IOS XE loader version: 0.0.3
loaded at:     00800000 0D1E2004
zimage at:     00807673 009B8C69
initrd at:     009B9000 01006219
isord at:      01007000 0D1DF800
avail ram:     00400000 00800000

Kernel load:
Uncompressing image... dst: 00000000 lim: 00400000 start: 00807673 size: 001B15F6...done.
Now booting the IOS XE kernel
              Restricted Rights Legend

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(c) (1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.

         cisco Systems, Inc.
         170 West Tasman Drive
         San Jose, California 95134-1706

Router# show version
Cisco IOS Software, IOS-XE Software (PPC_LINUX_IOSD-ADVENTERPRISEK9-M), Version 12.2(33)XNA, RELEASE
 SOFTWARE
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2008 by Cisco Systems, Inc.
Compiled Thu 01-May-08 00:29 by mcpre
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documentation or "License Notice" file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.
A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending email to
export@cisco.com.

cisco ASR1002 (RP1) processor with 541737K/6147K bytes of memory.
4 Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
1869396K bytes of physical memory.
7798783K bytes of eUSB flash at bootflash:.

         --- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: no
```

```
Press RETURN to get started!

*Feb 19 17:34:27.361: % Error opening nvram:/ifIndex-table No such file or directory
*Feb 19 17:34:28.235: %ASR1000_MGMTVRF-6-CREATE_SUCCESS_INFO: Management vrf Mgmt-intf created with
 ID 4085, ipv4 table-id 0xFF5, ipv6 table-id 0x1E000001
*Feb 19 17:34:29.720: %PARSER-4-BADCFG: Unexpected end of configuration file.

*Feb 19 17:34:29.809: %NETCLK-5-NETCLK_MODE_CHANGE: Network clock source not available. The network
 clock has changed to freerun

*Feb 19 17:34:10.138: %CPPHA-7-SYSREADY: F0: cpp_ha:  CPP client process FMAN-FP (5 of 5) ready.
*Feb 19 17:34:29.824: %LINK-3-UPDOWN: Interface GigabitEthernet0, changed state to up
*Feb 19 17:34:10.269: %IOSXE-6-PLATFORM: F0: cpp_cp:  cpp_mlp_svr_client_bind: cpp_mlp_svr_ifm_init()
 successful
*Feb 19 17:34:10.362: %CPPHA-7-START: F0: cpp_ha:  CPP 0 preparing image /usr/cpp/bin/cpp-mcplo-ucode
*Feb 19 17:34:10.473: %CPPHA-7-START: F0: cpp_ha:  CPP 0 startup init image /usr/cpp/bin/cpp-mcplo-ucode
*Feb 19 17:34:14.688: %CPPHA-7-START: F0: cpp_ha:  CPP 0 running init image /usr/cpp/bin/cpp-mcplo-ucode
*Feb 19 17:34:14.919: %CPPHA-7-READY: F0: cpp_ha:  CPP 0 loading and initialization complete
*Feb 19 17:34:14.919: %CPPHA-6-SYSINIT: F0: cpp_ha:  CPP HA system configuration start.
*Feb 19 17:34:15.179: %IOSXE-6-PLATFORM: F0: cpp_cp: Process CPP_PFILTER_EA_EVENT__API_CALL__REGISTER
*Feb 19 17:34:15.286: %CPPHA-6-SYSINIT: F0: cpp_ha:  CPP HA system enabled.
*Feb 19 17:34:15.287: %CPPHA-6-SYSINIT: F0: cpp_ha:  CPP HA system initializaton complete.
*Feb 19 17:34:30.823: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0, changed state
 to down
*Feb 19 17:35:12.865: %LINK-5-CHANGED: Interface GigabitEthernet0/0/0, changed state to administratively
 down
*Feb 19 17:35:12.865: %LINK-5-CHANGED: Interface GigabitEthernet0/0/1, changed state to administratively
 down
*Feb 19 17:35:12.865: %LINK-5-CHANGED: Interface GigabitEthernet0/0/2, changed state to administratively
 down
*Feb 19 17:35:12.865: %LINK-5-CHANGED: Interface GigabitEthernet0/0/3, changed state to administratively
 down
*Feb 19 17:35:13.865: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/0, changed
 state to down
*Feb 19 17:35:13.865: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/1, changed
 state to down
*Feb 19 17:35:13.866: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/2, changed
 state to down
*Feb 19 17:35:13.866: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0/3, changed
 state to down
*Feb 19 17:35:19.167: %ASR1000_OIR-6-REMSPA: SPA removed from subslot 0/0, interfaces disabled
*Feb 19 17:35:19.171: %ASR1000_OIR-6-INSCARD: Card (fp) inserted in slot F0
*Feb 19 17:35:19.171: %ASR1000_OIR-6-ONLINECARD: Card (fp) online in slot F0
*Feb 19 17:35:19.187: %ASR1000_OIR-6-INSCARD: Card (cc) inserted in slot 0
*Feb 19 17:35:19.187: %ASR1000_OIR-6-ONLINECARD: Card (cc) online in slot 0
*Feb 19 17:35:19.189: %ASR1000_OIR-6-INSSPA: SPA inserted in subslot 0/0
*Feb 19 17:35:19.452: %SYS-5-RESTART: System restarted --
Cisco IOS Software, IOS-XE Software (PPC_LINUX_IOSD-ADVENTERPRISEK9-M), Version 12.2(33)XNA, RELEASE
 SOFTWARE
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2008 by Cisco Systems, Inc.
Compiled Thu 20-Dec-07 18:10 by mcpre
*Feb 19 17:35:19.455: %SYS-6-BOOTTIME: Time taken to reboot after reload = 78809 seconds
*Feb 19 17:35:19.551: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Feb 19 17:35:19.551: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Feb 19 17:35:21.669: %DYNCMD-7-CMDSET_LOADED: The Dynamic Command set has been loaded from the Shell
 Manager
*Feb 19 17:35:22.221: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
Router>
```

Step 5   During the boot process, observe the system LEDs. The LEDs on the shared port adapter go on and off in irregular sequence. They may go on, go out, and go on again for a short time. On the router, the green STATUS LED comes on and stays on.

Verifying the Front Panel LEDs

The front-panel indicator LEDs provide power, activity, and status information useful during bootup. For more detailed information about the LEDs, see Chapter2, "Cisco ASR 1000 Series Routers Component Overview".

Verifying the Hardware Configuration

To display and verify the hardware features, enter the following commands:

- **show version**—Displays the system hardware version; the installed software version; the names and sources of configuration files; the boot images; and the amount of installed DRAM, NVRAM, and flash memory.

- **show diag chassis**—Displays the IDPROM information for the assemblies in the chassis.

- **show diag slot/subslot**—Displays the IDPROM information for the subassemblies in the chassis.

Checking Hardware and Software Compatibility

To check the minimum software requirements of the Cisco IOS software with the hardware installed on your Cisco ASR 1000 Series Routers, Cisco maintains the Software Advisor tool on Cisco.com. This tool does not verify whether Cisco ASR 1000 Series SIPs or SPAs within a system are compatible; but the tool provides the minimum Cisco IOS requirements for individual hardware modules and components.

Note   To access this tool, you must have a Cisco.com login account.

To access the Software Advisor, click **Login** at Cisco.com, type **Software Advisor** in the search box, and click **G**o. Click the link for the Software Advisor Tool.

Choose a product family or enter a specific product number to search for the minimum supported software needed for your hardware.

Configuring the Cisco ASR 1000 Series Routers at Startup

This section explains how to create a basic running configuration for your Cisco ASR 1000 Series Routers.

Note   You need to acquire the correct network addresses from your system administrator or consult your network plan to determine correct addresses before you can complete the router configuration.

Before continuing the configuration process, check the current state of the router by entering the **show version** command. The **show version** command displays the release of Cisco IOS software that is available on the router.

For information on modifying the configuration after you create it, see the Cisco IOS configuration and command reference guides.

To configure a Cisco ASR 1000 Series Routers from the console, you must connect a terminal or terminal server to the console port. To configure the Cisco ASR 1000 Series Routers over your management Ethernet, you must have the router's IP address available.

Using the Console Interface

To access the command line interface using the console, follow these steps:

SUMMARY STEPS

1. Your system is booting and if you answer No, at the prompt:
2. Then Press Return to enter user EXEC mode. The following prompt appears:
3. From user EXEC mode, enter the enable command as shown in the following example:
4. At the password prompt, enter your system password. If an enable password has not been set on your system, this step may be skipped. The following example shows entry of the password called *enablepass* :
5. When your enable password is accepted, the privileged EXEC mode prompt appears: Router#
6. You now have access to the CLI in privileged EXEC mode and you can enter the necessary commands to complete your desired tasks. To exit the console session, enter the quit command as shown in the following example:

DETAILED STEPS

Step 1   Your system is booting and if you answer No, at the prompt:

Example:

```
        --- System Configuration Dialog ---
Would you like to enter the initial configuration dialog? [yes/no]: no
```

Step 2   Then Press Return to enter user EXEC mode. The following prompt appears:

Router>

Step 3   From user EXEC mode, enter the enable command as shown in the following example:

Router> enable

Step 4   At the password prompt, enter your system password. If an enable password has not been set on your system, this step may be skipped. The following example shows entry of the password called *enablepass* :

Password: enablepass

Step 5   When your enable password is accepted, the privileged EXEC mode prompt appears: Router#

Step 6   You now have access to the CLI in privileged EXEC mode and you can enter the necessary commands to complete your desired tasks. To exit the console session, enter the quit command as shown in the following example:

Router# quit

Configuring Global Parameters

When you first start the setup program, you must configure the global parameters. These parameters are used for controlling system-wide settings. Perform the following steps to enter the global parameters:

SUMMARY STEPS

1. Connect a console terminal to the console port, and then boot the router.
2. The first sections of the configuration script appear only at an initial system startup. On subsequent uses of the setup facility, the script begins with a System Configuration Dialog as shown below: When asked if you would like to enter the initial configuration dialog, enter yes.

DETAILED STEPS

Step 1 Connect a console terminal to the console port, and then boot the router.

Note This is only an example of the output display; prompts may vary.

When you see this information, you have successfully booted your router:

Example:

```
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subject to restrictions as set forth in subparagraph
(c) of the Commercial Computer Software - Restricted
Rights clause at FAR sec. 52.227-19 and subparagraph
(c) (1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.

        cisco Systems, Inc.
        170 West Tasman Drive
  San Jose, California 95134-1706
.
.
.
        --- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/no]: yes

Press RETURN to get started!
```

Step 2 The first sections of the configuration script appear only at an initial system startup. On subsequent uses of the setup facility, the script begins with a System Configuration Dialog as shown below: When asked if you would like to enter the initial configuration dialog, enter yes.

Example:

```
Would you like to enter the initial configuration dialog? [yes/no] yes
At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
```

```
Default settings are in square brackets '[]'.
Basic management setup configures only enough connectivity for management of the system, extended
setup will ask you to configure each interface on the system.
```

Note   Basic management setup configures enough connectivity for managing the system; extended setup will ask you to configure each interface on the system. For detailed information about setting global parameters, refer to the *Cisco ASR 1000_Series Aggregation Services Routers Software Configuration Guide.*

Checking the Running Configuration Settings

To check the value of the settings you have entered, enter the show running-config command at the Router# prompt:

```
Router# show running-config
```

To review changes you make to the configuration, use the EXEC mode **show startup-config** command to see the changes and copy run-start stored in NVRAM.

Saving the Running Configuration to NVRAM

To store the configuration or changes to your startup configuration in NVRAM, run the **copy running-config startup-config** command:

Router# **copy running-config startup-config**

Using this command saves the configuration settings that you created in the router using configuration mode and the setup facility. If you fail to do this, your configuration will be lost the next time you reload the router.

If you are using the Cisco ASR 1013 Router, see the caution notice in the .

Powering Off the Cisco ASR 1000 Series Router Safely

This section explains how to shut down the Cisco ASR 1000 Series Router. It is recommended that before turning off all power to the chassis, you issue the **reload** command. This insures that the operating system cleans up all the file systems. After the reload operation is complete, then the Cisco ASR 1000 Series Router can be powered off safely.

⚠

Caution   If you are going to power cycle a Cisco ASR 1013 Router, we recommend that you first perform a graceful reload on the router. Power cycling the router without first performing a graceful reload might cause a loss of data stored in the NVRAM. In other words, the configuration file might be lost. Note that this is not observed when a power failure occurs because each active power supply in the two power supply zones is power cycled at the same time during a power failure. If there is a chance that the router might be power cycled without a graceful reload, we recommend that you use the **boot config** *file-system:configuration-file* **nvbypass** command to specify a file system other than the NVRAM for storing the configuration file. The following are examples:Router(config)# **boot config harddisk:config_file.cfg nvbypass**Router(config)# **boot config bootflash:configuration_data.cfg nvbypass**

To remove power from the Cisco ASR 1000 Series Router safely, follow this procedure and see the examples:

SUMMARY STEPS

1. Slip on the ESD-preventive wrist strap that was included in the accessory kit.
2. Enter the **reload** command.
3. Confirm the reload command.
4. After confirming the reload command, wait until the system bootstrap message displays before powering off the system.
5. Remove any power cables from the Cisco ASR 1000 Series Router.

DETAILED STEPS

Step 1 Slip on the ESD-preventive wrist strap that was included in the accessory kit.

Step 2 Enter the **reload** command.

Step 3 Confirm the reload command.

Example:

```
Router# reload
Proceed with reload? [confirm]
Aug 17 00:06:47.051 R0/0: %PMAN-5-EXITACTION: Process manager is exiting: prs exit with reload chassis
 code
```

Step 4 After confirming the reload command, wait until the system bootstrap message displays before powering off the system.

Example:

```
System Bootstrap, Version 12.2(33r)XN2, RELEASE SOFTWARE (fc1)
Technical Support: tap://www.cisco.com/techsupport
Copyright (c) 2008 by cisco Systems, Inc.
Current image running: Boot ROM0
Last reset cause: LocalSoft
ASR1000-RP1 platform with 4194303 Kbytes of main memory
mcp-6ru-1-rp0-rommon 1>
```

Step 5 Remove any power cables from the Cisco ASR 1000 Series Router.

    a) For power supplies with a circuit breaker switch, position the switch to the Off (O) position.

    b) For power supplies with a Standby switch, place the Standby switch in the Standby position.

> **Note** After powering off the router, wait a minimum of 30 seconds before powering it on again.