



Bringing Up Cisco IOS XR Software on the Router

This chapter provides instructions for bringing up the Cisco IOS XR software on a standalone router for the first time. This section applies to standalone routers that are delivered with Cisco IOS XR software installed.

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Prerequisites

The following sections describe the software and hardware requirements for bringing up a standalone system.

Software Requirements

The system requires compatible ROM Monitor firmware on all RSPs.



Caution

The ROM Monitor firmware on all RSPs must be compatible with the Cisco IOS XR Software release installed on the router. If the router is brought up with an incompatible version of the ROM Monitor software, the standby RSP may fail to boot. For instructions about how to overcome a boot block in the standby RSP, see the *Cisco ASR 9000 Series Aggregation Services Router ROM Monitor Guide*.

Hardware Prerequisites and Documentation

Before a router can be started, these hardware management procedures must be completed:

- Site preparation
- Equipment unpacking

- Router installation

For information on how to complete these procedures for your router equipment, see the hardware documents listed in the [“Related Documents” section on page x](#).

Bringing Up and Configuring a Standalone Router

To bring up a standalone router, connect to the router and configure the root-system username and password, as described in the following procedure:

SUMMARY STEPS

1. Establish a connection to the Console port.
2. Type the username for the root-system login and press **Enter**.
3. Type the password for the root-system login and press **Enter**.
4. Log in to the router.

DETAILED STEPS

	Command or Action	Purpose
Step 1	Establish a connection to the Console port.	<p>Initiates communication with the router.</p> <ul style="list-style-type: none"> • For instructions on connecting to the Console port, see the “Connecting to the Router Through the Console Port” section on page 22. • After you have successfully connected to the router through the Console port, the router displays the prompt: <code>Username :</code> • If the Username prompt appears, skip this procedure and continue the general router configuration.
Step 2	Type the username for the root-system login and press Enter .	Sets the root-system username, which is used to log in to the router.
Step 3	Type the password for the root-system login and press Enter .	<p>Creates an encrypted password for the root-system username.</p> <p>Note This password can be changed with the secret command.</p>

	Command or Action	Purpose
Step 4	Retype the password for the root-system login and press Enter .	Allows the router to verify that you have entered the same password both times. <ul style="list-style-type: none"> If the passwords do not match, the router prompts you to repeat the process.
Step 5	Log in to the router.	Establishes your access rights for the router management session. <ul style="list-style-type: none"> Enter the root-system username and password that were created earlier in this procedure. After you log in, the router displays the CLI prompt, which is described in the CLI Prompt.

**Note**

The default username/password for a spare RSP without the Cisco IOS XR image or a chassis without the Cisco IOS XR image is set to “root/root”.

Examples

The following example shows the root-system username and password configuration for a new router, and it shows the initial log in:

```
--- Administrative User Dialog ---
Enter root-system username: username1
Enter secret:
Enter secret again:
RP/0/RSP0/CPU0:Jan 10 12:50:53.105 : exec[65652]: %MGBL-CONFIG-6-DB_COMMIT :
'Administration configuration committed by system'. Use 'show configuration
commit changes 2000000009' to view the changes.
Use the 'admin' mode 'configure' command to modify this configuration.
User Access Verification
Username: username1
Password:
RP/0/RSP0/CPU0:router#
```

The *secret* line in the configuration command script shows that the password is encrypted. When you enter the password during configuration and login, the password is hidden.

Verifying the System After Initial Boot

To verify the status of the router, perform the following procedure:

SUMMARY STEPS

1. **show version**
2. **admin**
3. **show platform** [*node-id*]
4. **exit**
5. **show redundancy**

6. show environment

DETAILED STEPS

	Command or Action	Purpose
Step 1	<p><code>show version</code></p> <p>Example: RP/0/RSP0/CPU0:router# show version</p>	Displays information about the router, including image names, uptime, and other system information.
Step 2	<p><code>admin</code></p> <p>Example: RP/0/RSP0/CPU0:router# admin</p>	Places the router in administration EXEC mode.
Step 3	<p><code>show platform [node-id]</code></p> <p>Example: RP/0/RSP0/CPU0:router(admin)# show platform</p>	<p>Displays information about the status of cards and modules installed in the router.</p> <ul style="list-style-type: none"> A card module is also called a <i>node</i>. When a node is working properly, the status of the node in the State column is IOS XR RUN. The status of the supported SPA interface is OK. The <code>show platform node-id</code> command is used to display information for a specific node. Replace <i>node-id</i> with a node name from the <code>show platform</code> command Node column. <p>Note To view the status of all the cards and modules, the <code>show platform</code> command must be executed in administration EXEC mode.</p>
Step 4	<p><code>exit</code></p> <p>Example: RP/0/RSP0/CPU0:router(admin)# exit</p>	Exits the administration EXEC mode.
Step 5	<p><code>show redundancy</code></p> <p>Example: RP/0/RSP0/CPU0:router# show redundancy</p>	<p>Displays the state of the primary (active) and standby (inactive) RPs, including the ability of the standby to take control of the system.</p> <ul style="list-style-type: none"> If both RPs are working correctly, one node displays active role, the Partner node row displays standby role, and the Standby node row displays Ready.
Step 6	<p><code>show environment</code></p> <p>Example: RP/0/RSP0/CPU0:router# show environment</p>	Displays information about the hardware attributes and status.

Examples of show Commands

The following sections provide examples of **show** commands:

- [show version Command: Example, page 33](#)
- [show platform Command: Example, page 33](#)
- [show redundancy Command: Example, page 34](#)
- [show environment Command: Example, page 35](#)

show version Command: Example

The following example shows how to display basic information about the router configuration by entering the **show version** command in EXEC mode.

```
RP/0/RSP0/CPU0:router# show version
Mon May 31 02:23:47.984 DST

Cisco IOS XR Software, Version 4.2.0.29I[Default]
Copyright (c) 2010 by Cisco Systems, Inc.

ROM: System Bootstrap, Version 1.4(20100216:021454) [ASR9K ROMMON],

router uptime is 2 weeks, 6 days, 10 hours, 30 minutes
System image file is "bootflash:disk0/asr9k-os-mbi-4.2.0/mbiasr9k-rp.vm"

cisco ASR9K Series (MPC8641D) processor with 4194304K bytes of memory.
MPC8641D processor at 1333MHz, Revision 2.2

2 Management Ethernet
12 TenGigE
40 GigabitEthernet
219k bytes of non-volatile configuration memory.
975M bytes of compact flash card.
33994M bytes of hard disk.
1605616k bytes of disk0: (Sector size 512 bytes).
1605616k bytes of disk1: (Sector size 512 bytes).

Configuration register on node 0/RSP0/CPU0 is 0x102
Boot device on node 0/RSP0/CPU0 is disk0:
Package active on node 0/RSP0/CPU0:
asr9k-optics-supp, V 4.2.0[DT_IMAGE], Cisco Systems, at disk0:asr9k-optics-s
upp-4.2.0
    Built on Thu May  6 16:52:16 DST 2010
    By sjc-lds-364 in /auto/iobuild6/production/4.2.0.DT_IMAGE/asr9k/worksp
ace for pie

asr9k-fwding, V 4.2.0[DT_IMAGE], Cisco Systems, at disk0:asr9k-fwding-4.2.0.
15I
    Built on Thu May  6 16:43:46 DST 2010
    By sjc-lds-364 in /auto/iobuild6/production/4.2.0.DT_IMAGE/asr9k/worksp
ace for pie
```

show platform Command: Example

The **show platform** command displays information on router resources. In EXEC mode, the **show platform** command displays the resources assigned to the RP that you are managing. In administration EXEC mode, the **show platform** command displays all router resources.

```
RP/0/RSP0/CPU0:router# show platform
Mon May 31 02:31:55.913 DST
```

Node	Type	State	Config State
0/RSP0/CPU0	A9K-RSP-4G (Active)	IOS XR RUN	PWR, NSHUT, MON
0/1/CPU0	A9K-40GE-B	IOS XR RUN	PWR, NSHUT, MON
0/4/CPU0	A9K-8T/4-B	IOS XR RUN	PWR, NSHUT, MON
0/6/CPU0	A9K-4T-B	IOS XR RUN	PWR, NSHUT, MON

The following administration EXEC mode example shows all router nodes:

```
RP/0/RSP0/CPU0:router# admin
RP/0/RSP0/CPU0:router(admin)# show platform
Mon May 31 02:35:05.459 DST
Node                Type                State                Config State
-----
0/RSP0/CPU0        A9K-RSP-4G (Active)  IOS XR RUN          PWR, NSHUT, MON
0/FT0/SP           FAN TRAY             READY
0/FT1/SP           FAN TRAY             READY
0/1/CPU0           A9K-40GE-B          IOS XR RUN          PWR, NSHUT, MON
0/4/CPU0           A9K-8T/4-B          IOS XR RUN          PWR, NSHUT, MON
0/6/CPU0           A9K-4T-B            IOS XR RUN          PWR, NSHUT, MON
0/PM0/SP           A9K-3KW-AC          READY               PWR, NSHUT, MON
0/PM1/SP           A9K-3KW-AC          READY               PWR, NSHUT, MON
0/PM2/SP           A9K-3KW-AC          READY               PWR, NSHUT, MON
RP/0/RSP0/CPU0:router# end
```

The following example displays information for a single node in the router:

```
RP/0/RSP0/CPU0:router# show platform 0/1/CPU0
Tue Jun 16 23:45:17.976 PST
Node                Type                State                Config State
-----
0/1/CPU0           A9K-40GE-B          IOS XR RUN          PWR, NSHUT, MON
```

For more information on node IDs, see *Cisco ASR 9000 Series Aggregation Services Router System Management Configuration Guide*.

For more information on the **show platform** command, see *Cisco ASR 9000 Series Aggregation Services Router Interface and Hardware Component Command Reference*.

show redundancy Command: Example

The following example shows how to display information about the active and standby (inactive) RPs by entering the **show redundancy** command.

```
RP/0/RSP0/CPU0:router# show redundancy

Tue Jan 6 22:49:15.719 UTC
Redundancy information for node 0/RSP0/CPU0:
=====
Node 0/RSP0/CPU0 is in ACTIVE role
Partner node (0/RSP1/CPU0) is in STANDBY role
Standby node in 0/RSP1/CPU0 is ready
Standby node in 0/RSP1/CPU0 is NSR-ready

Reload and boot info
-----
A9K-RSP-4G reloaded Wed Dec 31 23:59:48 2008: 5 days, 22 hours, 49 minutes ago
Active node booted Wed Dec 31 23:59:48 2008: 5 days, 22 hours, 49 minutes ago
Standby node boot Thu Jan 1 00:35:52 2009: 5 days, 22 hours, 13 minutes ago
Standby node last went not ready Thu Jan 1 00:39:17 2009: 5 days, 22 hours, 9 minutes ago
Standby node last went ready Thu Jan 1 00:39:17 2009: 5 days, 22 hours, 9 minutes ago
There have been 0 switch-overs since reload
```

```
Active node reload "Cause: Turboboot completed successfully"
Standby node reload "Cause: self-reset to use new boot image"
```

show environment Command: Example

To display environmental monitor parameters for the system, use the **show environment** command in EXEC or administration EXEC mode. The **show environment [options]** command syntax is used.

Enter the **show environment ?** command to display the command options.

```
RP/0/RSP0/CPU0:router# show environment temperatures
```

The following example shows temperature information for a Cisco ASR 9000 Series Router.

```
Mon May 31 02:44:19.989 DST
R/S/I  Modules          Inlet          Hotspot
          Temperature    Temperature
          (deg C)        (deg C)

0/1/*
      host              36.1           45.1
0/RSP0/*
      host              30.8           41.5

0/4/*
      host              34.4           44.5
0/6/*
      host              37.3           47.9
```

The following example shows LED status of the nodes in a Cisco ASR 9000 Series Router.

```
RP/0/RSP0/CPU0:router# show environment leds
Mon May 31 02:46:17.343 DST
R/S/I  Modules LED          Status
0/RSP0/*
      host  Critical-Alarm Off
      host  Major-Alarm  Off
      host  Minor-Alarm  Off
      host  ACO          Off
      host  Fail          Off
```

For more information, see *Cisco ASR 9000 Series Router Interface and Hardware Component Command Reference* document.

Firmware Upgrade

The field-programmable devices (FPDs) are hardware devices implemented on router cards that support separate software upgrades. A field-programmable gate array (FPGA) is a type of programmable memory device that exists on most hardware components of the router. The term FPD is introduced to

collectively and generically describe any type of programmable hardware device on SIPs and shared port adapters (SPAs), including FPGAs and the read-only memory monitor (ROMMON). Cisco IOS XR software provides the Cisco FPD upgrade feature to manage the upgrade of FPD images on SIPs and SPAs.

For more information on upgrading or downgrading the ROM Monitor firmware, see the *Upgrading and Downgrading ROM Monitor Firmware on the Cisco ASR 9000 Series Router* module in *Cisco ASR 9000 Series Router ROM Monitor Guide*.

FPD versions must be compatible with the Cisco IOS XR software that is running on the router; if any incompatibility exists between an FPD version and the Cisco IOS XR software, the device with the FPGA might not operate properly until the incompatibility is resolved. An FPGA incompatibility on a SPA does not necessarily affect the running of the SPA interfaces; an FPD incompatibility on a SIP disables all interfaces for all SPAs in the SIP until the incompatibility is resolved.

For minimum firmware version requirements for Cisco IOS XR Software Release 3.7.2 and later releases, see Software/Firmware Compatibility matrix at:

http://www.cisco.com/web/Cisco_IOS_XR_Software/index.html

The Cisco ASR 9000 Series Router supports upgrades for FPGA devices on its SIPs and SPAs. FPGA and ROMMON software upgrades are part of an FPD image package that corresponds to a Cisco IOS XR software image. SIPs and SPAs support manual upgrades for FPGA devices using the Cisco FPD upgrade feature.

For more information on upgrading firmware, see the *Upgrading FPD on Cisco ASR 9000 Series Router* module in *Cisco ASR 9000 Series Router System Management Configuration Guide*.

Where to Go Next

For information on configuring basic router features, see [Configuring General Router Features](#).