



Configuring the Cisco ASR1000-RP3 Module

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

This chapter contains the following sections:

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- [Powering Up the Cisco ASR 1000 Modular Platforms, page 5-2](#)
- [Performing the Initial Configuration on the Router, page 5-3](#)
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Checking Conditions Prior to System Startup

Ensure that all card slots and compartments are closed. Install blank faceplates on 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.



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

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

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

- The network interface cable or the optional Fast Ethernet Management port cable is connected.
- 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, powered up, and is configured for 9600 baud, 8 data bits, 1 stop bit, no parity, with flow control 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 network interfaces.
- The shared port adapter and the NIM is inserted in its slot, if applicable.
- Empty card slots are filled with card blanks. This ensures proper air flow through the chassis and electromagnetic compatibility (EMC).

Powering Up the Cisco ASR 1000 Modular Platforms

Prerequisites

Before you power on, make sure that:

- The power supply cord is plugged into the power supply inlet.
- All cables are connected.
- Your computer is powered up and connected.

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

- Step 1** Move the power switch to the ON position. Listen for the fans; you should immediately hear them in operation. Ensure that the power supply LED OK is green and the FAIL LED is not illuminated.

The front-panel indicator LEDs provide power, activity, and status information useful during bootup. For more detailed information about the LEDs, see [“LEDs” section on page 1-5](#).

- Step 2** Observe the initialization process. When the system boot is complete (the process takes a few seconds), the Cisco ASR 1000 Modular Platforms (Cisco ASR 1013, Cisco ASR 1006-X, and Cisco ASR 1009-X routers) begins to initialize.

The following is an example of what is displayed during the system boot process:

Example 5-1 Loading from ROMMON with a System Image in Bootflash

```

Initializing Hardware ...

System integrity status: 9B710000 12030000 A0A00A05

System Bootstrap, Version 16.3(2r), RELEASE SOFTWARE (fc1)
Copyright (c) 1994-2016 by cisco Systems, Inc.

Current image running: Boot ROM1
Last reset cause: LocalSoft

```

```
ASR1000-RP3 platform with 67108864 Kbytes of main memory
```

```
Warning: filesystem is not clean
```

```
File size is 0x2fa10c3c
```

```
Located asr1000rpx86-universalk9.BLD_V163_MR_THROTTLE_LATEST_20160817_000512.SSA.bin
```

```
Image size 799083580 inode num 15, bks cnt 195089 blk size 8*512
```

```
#####
#####
#####
#####
#####
#####
```

Performing the Initial Configuration on the Router

You can perform initial configuration on the router using the procedure described in the following sections:

- “Using the Cisco setup Command Facility” section on page 5-3
- “Using the Cisco IOS-XE CLI—Manual Configuration” section on page 5-6

Using the Cisco setup Command Facility

The **setup** command facility prompts you to enter the information that is needed to configure a router quickly. The facility takes you through an initial configuration, including LAN and WAN interfaces.



Note

The **setup** command facility is entered automatically if there is no configuration on the router when it is booted into Cisco IOS-XE.

For information on modifying the configuration after you create it, see the *Cisco IOS XE Configuration Guide* and the *Cisco IOS XE Command References*.

This section explains how to configure a host name for the router, set passwords, and configure an interface to communicate with the management network.



Note

If you make a mistake while using the **setup** command facility, you can exit and run the **setup** command facility again. Press **Ctrl-C**, and enter the **setup** command in privileged EXEC mode (Router#).

Step 1 From the Cisco IOS-XE CLI, enter the **setup** command in privileged EXEC mode:

```
Router> enable
Password: <password>
Router# setup
```

```
--- System Configuration Dialog ---
Continue with configuration dialog? [yes/no]:
```

The prompts in the **setup** command facility vary depending on your router model, on the installed interface modules, and on the software image. The following steps and the user entries (in bold) are shown as examples only.

Step 2 To proceed using the **setup** command facility, enter **yes**.

```
Continue with configuration dialog? [yes/no]:
```

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 '['].

Step 3 Enter **yes** to proceed with the basic management setup that configures only enough connectivity.

Would you like to enter basic management setup? [yes/no]: **yes**

Step 4 Enter a hostname for the router ("myrouter" in this example):

Configuring global parameters:
Enter host name [Router]: **myrouter**

Step 5 Enter an enable secret password. This password is encrypted (for more security) and cannot be seen when viewing the configuration.

The enable secret is a password used to protect access to privileged EXEC and configuration modes. This password, after entered, becomes encrypted in the configuration.
Enter enable secret: **cisco**

Step 6 Enter an enable password that is different from the enable secret password. This password is *not* encrypted (and is less secure) and can be seen when viewing the configuration.

The enable password is used when you do not specify an enable secret password, with some older software versions, and some boot images.
Enter enable password: **cisco123**

Step 7 Enter the virtual terminal password, which prevents unauthenticated access to the router through ports other than the console port:

The virtual terminal password is used to protect access to the router over a network interface.
Enter virtual terminal password: **cisco**

Step 8 Respond to the following prompts as appropriate for your network:

Configure SNMP Network Management? [no]: **yes**
Community string [public]:

A summary of the available interfaces is displayed. The interface summary includes interface numbering, which is dependent on the router model and the installed modules and interface cards.

Current interface summary

Interface	IP-Address	OK?	Method	Status	Protocol
Te0/0/0	20.1.1.1	YES	NVRAM	administratively down	down
Te0/0/1	21.1.1.1	YES	NVRAM	administratively down	down
GigabitEthernet0/0/0	11.1.1.1	YES	NVRAM	down	down
GigabitEthernet0/0/1	12.1.1.1	YES	NVRAM	administratively down	down
GigabitEthernet0/0/2	13.1.1.1	YES	NVRAM	administratively down	down
GigabitEthernet0/0/3	14.1.1.1	YES	NVRAM	administratively down	down
GigabitEthernet0/0/4	15.1.1.1	YES	NVRAM	administratively down	down
GigabitEthernet0/0/5	200.1.1.1	YES	NVRAM	administratively down	down
Te0/1/0	22.1.1.1	YES	NVRAM	administratively down	down
GigabitEthernet0	2.1.12.233	YES	NVRAM	up	up

Any interface listed with OK? value "NO" does not have a valid configuration

Step 9 Respond to the following prompts as appropriate for your network:

Configuring interface **GigabitEthernet0/0/1**:

```

Configure IP on this interface? [yes]: yes
IP address for this interface [10.10.10.12]:
Subnet mask for this interface [255.0.0.0] : 255.255.255.0
Class A network is 10.0.0.0, 24 subnet bits; mask is /24

```

The following configuration command script is created:

```

hostname myrouter
enable secret 5 $1$t/Dj$yAeGKviLLZNOBX0b9eif00
enable password cisco123
line vty 0 4 password cisco snmp-server community public !
no ip routing

!
interface GigabitEthernet0/0/0
shutdown
no ip address
!
interface GigabitEthernet0/0/1
no shutdown
ip address 10.10.10.12 255.255.255.0
!
interface GigabitEthernet0/0/2
shutdown
no ip address
!
.
.
.
end

```

Step 10 Respond to the following prompts. Select [2] to save the initial configuration.

```

[0] Go to the IOS command prompt without saving this config.
[1] Return back to the setup without saving this config.
[2] Save this configuration to nvram and exit.

```

```

Enter your selection [2]: 2
Building configuration...
Use the enabled mode 'configure' command to modify this configuration.

```

Press RETURN to get started! **RETURN**

The following user prompt is displayed:

```
myrouter>
```

Completing the Configuration

When using the Cisco **setup** command facility, and after you have provided all the information requested by the facility as described in “Using the Cisco setup Command Facility” section on page 5-3, the final configuration appears. To complete your router configuration, follow these steps:

Step 1 The facility prompts you to save the configuration.

- If you answer no, the configuration information you entered is *not* saved, and you return to the router enable prompt (Router#). Enter **setup** to return to the System Configuration dialog box.
- If you answer yes, the configuration is saved, and you are returned to the user EXEC prompt (Router>).

```
Use this configuration? {yes/no} : yes
```

```
Building configuration...
Use the enabled mode 'configure' command to modify this configuration.
```

```
%LINK-3-UPDOWN: Interface GigabitEthernet0/1/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1/0, changed state to up

<Additional messages omitted.>
```

Step 2 When messages stop appearing on your screen, press **Return** to get the Router> prompt.

Step 3 The Router> prompt indicates that you are now at the command-line interface (CLI) and you have just completed an initial router configuration. Note that this is not a complete configuration. At this point, you have two choices:

- Run the **setup** command facility again, and create another configuration:

```
Router> enable
Password: password
Router# setup
```

- Modify the existing configuration or configure additional features by using the CLI:

```
Router> enable
Password: password
Router# configure terminal
Router(config)#
```

Using the Cisco IOS-XE CLI—Manual Configuration

This section shows you how to access the CLI to perform the initial configuration on the router.

If the system configuration message does not appear, it means a default configuration file was installed on the router prior to shipping. Follow these steps to configure the router.

Step 1 Enter **no** when the following system message appears on the router:

```
--- System Configuration Dialog ---

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

Step 2 Press **Return** and continue with the manual configuration:

Several log messages are displayed.

Step 3 Press **Return** to bring up the Router> prompt.

Step 4 Type **enable** to enter privileged EXEC mode:

```
Router> enable
Router#
```

Configuring the Router Hostname

The hostname is used in CLI prompts and default configuration filenames. If you do not configure the router hostname, the router uses the factory-assigned default hostname Router.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **hostname** *name*
4. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	hostname <i>name</i> Example: Router(config)# hostname myrouter	Specifies or modifies the hostname for the network server.
Step 4	end Example: myrouter# end	(Optional) Returns to privileged EXEC mode.

Configuring the Enable and Enable Secret Passwords

To provide an additional layer of security, particularly for passwords that cross the network or are stored on a TFTP server, you can use either the **enable password** command or **enable secret** command. Both commands accomplish the same thing—they allow you to establish an encrypted password that users must enter to access privileged EXEC (enable) mode.

We recommend that you use the **enable secret** command because it uses an improved encryption algorithm.

For more information, see the “Configuring Passwords and Privileges” chapter in the *Cisco IOS Security Configuration Guide*. Also see the *Cisco IOS Password Encryption Facts* tech note and the *Improving Security on Cisco Routers* tech note.

Restrictions

If you configure the **enable secret** command, it takes precedence over the **enable password** command; the two commands cannot be in effect simultaneously.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **enable secret** *password*
4. **end**
5. **enable**
6. **end**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	enable secret <i>password</i> Example: Router(config)# enable secret <i>greentree</i>	Specifies an additional layer of security over the enable password command.
Step 4	end Example: Router(config)# end	Returns to privileged EXEC mode.
Step 5	enable Example: Router> enable	Enables privileged EXEC mode. Verify that your new enable or enable secret password works.
Step 6	end Example: Router(config)# end	(Optional) Returns to privileged EXEC mode.

Configuring the Console Idle Privileged EXEC Timeout

This section describes how to configure the console line's idle privileged EXEC timeout. By default, the privileged EXEC command interpreter waits 10 minutes to detect user input before timing out.

When you configure the console line, you can also set communication parameters, specify autobaud connections, and configure terminal operating parameters for the terminal that you are using. For more information on configuring the console line, see the [Cisco IOS Configuration Fundamentals and Network Management Configuration Guide](#). In particular, see the “Configuring Operating Characteristics for Terminals” and “Troubleshooting and Fault Management” chapters.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **line console 0**
4. **exec-timeout** *minutes* [*seconds*]
5. **end**
6. **show running-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	line console 0 Example: Router(config)# line console 0	Configures the console line and starts the line configuration command collection mode.
Step 4	exec-timeout <i>minutes</i> [<i>seconds</i>] Example: Router(config-line)# exec-timeout 0 0	Sets the idle privileged EXEC timeout, which is the interval that the privileged EXEC command interpreter waits until user input is detected. The example shows how to specify no timeout. Setting the exec-timeout value to 0 will cause the router to never log out after it is logged in. This could have security implications if you leave the console without manually logging out using the disable command.

	Command or Action	Purpose
Step 5	end Example: Router(config)# end	Returns to privileged EXEC mode.
Step 6	show running-config Example: Router# show running-config	Displays the running configuration file. Verify that you have configured the idle privileged EXEC timeout correctly.

Examples

The following example shows how to set the console idle privileged EXEC timeout to 2 minutes 30 seconds:

```
line console
exec-timeout 2 30
```

The following example shows how to set the console idle privileged EXEC timeout to 30 seconds:

```
line console
exec-timeout 0 30
```

Gigabit Ethernet Management Interface Overview

The router provides an Ethernet management port named GigabitEthernet0.

The purpose of this interface is to allow users to perform management tasks on the router; it is an interface that should not, and often cannot, forward network traffic. It can, however, be used to access the router through Telnet and SSH to perform management tasks on the router. The interface is useful before a router has begun routing, or in troubleshooting scenarios when other forwarding interfaces are inactive.

The following aspects of the management Ethernet interface should be noted:

- The router has one management Ethernet interface named GigabitEthernet0.
- IPv4, IPv6, and ARP are the only routed protocols supported for the interface.
- The interface provides a way to access the router even if forwarding interfaces are not functional, or the Cisco IOS is down.
- The management Ethernet interface is part of its own VRF. See the [Cisco ASR 1000 Series Aggregation Services Routers Software Configuration Guide](#) for more details.

Default Gigabit Ethernet Configuration

By default, a forwarding VRF is configured for the interface with a special group named Mgmt-intf. This cannot be changed. This isolates the traffic on the management interface away from the forwarding plane. Otherwise, the interface can be configured like other Gigabit Ethernet interfaces for most functions.

For example, the default configuration is as follows:

```
interface GigabitEthernet0
vrf forwarding Mgmt-intf
```

```
ip address 172.18.77.212 255.255.255.240
negotiation auto
```

Configuring Gigabit Ethernet Interfaces

This sections shows how to assign an IP address and interface description to an Ethernet interface on your router.

For comprehensive configuration information on Gigabit Ethernet interfaces, see the “Configuring LAN Interfaces” chapter of the *Cisco IOS Interface and Hardware Component Configuration Guide*.

For information on interface numbering, see the software configuration guide pertaining to your router.

SUMMARY STEPS

1. **enable**
2. **show ip interface brief**
3. **configure terminal**
4. **interface gigabitethernet 0**
5. **ip address *ip-address mask***
6. **no shutdown**
7. **end**
8. **show ip interface brief**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	show ip interface brief Example: Router# show ip interface brief	Displays a brief status of the interfaces that are configured for IP and the type of Ethernet interface that is on your router.
Step 3	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 4	interface gigabitethernet 0 Example: Router(config)# interface gigabitethernet 0	Specifies the Ethernet interface and enters interface configuration mode.

	Command or Action	Purpose
Step 5	ip address <i>ip-address mask</i> Example: Router(config-if)# ip address 172.16.74.3 255.255.255.0	Sets a primary IP address for an interface.
Step 6	no shutdown Example: Router(config-if)# no shutdown	Enables an interface.
Step 7	end Example: Router(config)# end	Returns to privileged EXEC mode.
Step 8	show ip interface brief Example: Router# show ip interface brief	Displays a brief status of the interfaces that are configured for IP. Verify that the interfaces are up and configured correctly.

**Note**

For comprehensive configuration information about IP routing and IP routing protocols, see the [Configuring IP Routing Protocol-Independent Feature](#) on Cisco.com.

Saving Your Router Configuration

This section describes how to avoid losing your configuration at the next system reload or power cycle by saving the running configuration to the startup configuration in NVRAM. The NVRAM provides 32 MB of storage on the router.

SUMMARY STEPS

1. **enable**
2. **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	copy running-config startup-config Example: Router# copy running-config startup-config	Saves the running configuration to the startup configuration.

**Note**

To aid file recovery and minimize downtime in case of file corruption, we recommend that you save backup copies of the startup configuration file and the Cisco IOS-XE software system image file on a server.

**Note**

To avoid losing work you have completed, be sure to save your configuration occasionally as you proceed. Use the **copy running-config startup-config** command to save the configuration to NVRAM.

Verifying the Initial Configuration

Enter the following commands in Cisco IOS-XE to verify the initial configuration on the router:

- **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**—Lists and displays diagnostic information about the installed controllers, interface processors, and port adapters.
- **show configuration**—Helps verify if you have configured the correct hostname and password.

After you have completed and verified the initial configuration, the specific features and functions are ready to be configured. See the [Cisco ASR 1000 Series Aggregation Services Routers Software Configuration Guide](#).

Powering Off the Cisco ASR 1000 Modular Platforms

This section explains how to shut down the Cisco ASR 1000 Modular Platforms (Cisco ASR 1013, Cisco ASR 1006-X, and Cisco ASR 1009-X routers). We recommend that before turning off all power to the chassis, you issue the **reload** command. This ensures that the operating system cleans up all the file systems.

To remove power from the Cisco ASR 1000 Modular Platforms safely, follow this procedure:

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

Step 2 Enter the **reload** command.

Step 3 Confirm the **reload** command:

```
Router# reload
```

```
Proceed with reload? [confirm]
```

```
Apr 21 03:42:45.619 EDT: %SYS-5-RELOAD: Reload requested by console. Reload Reason: Reload Command.Apr 21 03:42:59.920 R0/0: %PMAN-5-EXITACTION: Process manager is exiting: process exit with reload chassis code
```

Step 4 After confirming the **reload** command, wait until the system bootstrap message is displayed before powering off the system:

```
System Bootstrap, Version 16.3(2r), RELEASE SOFTWARE (fc1)
Copyright (c) 1994-2016 by cisco Systems, Inc.
```

```
Current image running: Boot ROM1
```

```
Last reset cause: LocalSoft
```

```
ASR1000-RP3 platform with 67108864 Kbytes of main memory
```

Step 5 Place the Standby switch in the Standby position.



Note The fans in the power supply modules continue to run even if the Standby switch is in the Standby position.



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

Cisco ASR1000-RP3 Alarm Monitoring

The Cisco ASR1000-RP3 faceplate displays the CRIT, MAJ, and MIN alarm indicator LEDs. An external element can be connected to a power supply using the DB-25 alarm connector on the power supply. The external element is a DC light bulb for a visual alarm and a bell for an audible alarm.

If an alarm illuminates the CRIT, MIN, or MAJ LED on the Cisco ASR 1000 Series Route Processor (RP) faceplate, and a visual or audible alarm is wired, the alarm also activates an alarm relay in the power supply DB-25 connector (on the Cisco ASR 1006 Router and Cisco ASR 1004 Router). The bell rings or the light bulb flashes and alerts site personnel that a router alarm condition exists.



Note Shielded cables must be used to connect to the DB-25 alarm connector on both the AC and DC power supplies, in order to comply with the FCC/EN55022/CISPR22 Class A emissions requirements.

The alarm signals sent to this DB-25 connector are identical in function to those sent to the system LEDs on the Cisco ASR1000-RP1, Cisco ASR1000-RP2, and Cisco ASR1000-RP3. Each alarm consists of three contact pins that are switched when an alarm becomes active, which causes a corresponding contact closure between the DB-25 connector pins. As a result, a critical, major, or minor alarm condition detected in the router can trigger a simultaneous fault indication in some of the following ways:

- System alarm LEDs—The three system alarm LEDs on the Cisco ASR1000-RP3 faceplate constitute the standard method of alarm notification in the router. These LEDs indicate router status at all times, but you must directly observe these LEDs to become aware of a router alarm condition. See [Cisco ASR 1000 Series Route Processor LEDs](#) for LED descriptions.
- External alarm monitoring facility—By equipping your router with a telco-style external alarm monitoring facility, you can provide a more physical indication of router status. A visual alarm, however, can be reset only by resolving the problem that caused the alarm condition.

An external audible alarm can be reset by clearing the condition that caused the alarm or by pressing the Audible Cutoff (ACO) button on the Cisco ASR1000-RP3 module. An audible alarm can be sounded to immediately alert you to an alarm condition in the router. An audible alarm generated by the system continues to sound until you either press the ACO button to silence the alarm or clear the alarm condition itself. Pressing this button does not resolve the alarm condition.

- To clear an audible alarm, do one of the following:
 - Press the Audible Cut Off button on the route processor faceplate (see [Figure 2-1: Cisco ASR1000-RP Route Processor Faceplate LEDs and Connectors](#))
 - Enter the clear facility-alarm command.
- To clear a visual alarm, you must resolve the alarm condition. The clear facility-alarm command does not clear an alarm LED on the RP faceplate or turn off the DC light bulb. For example, if a critical alarm LED is illuminated because an active SPA was removed without a graceful deactivation of the SPA, the only way to resolve that alarm is to replace the SPA.

Reporting Functions

The chassis manager on the forwarding engine control processor manages the local resources of the forwarding processor. The Cisco ASR 1000 Modular Platforms (Cisco ASR 1013, Cisco ASR 1006-X, and Cisco ASR 1009-X routers) display warning messages on the console if the chassis interface-monitored parameters exceed a threshold. You can also retrieve and display environmental status reports with the following commands:

- **show environment all**
- **show version**
- **show inventory**
- **show platform**
- **show platform software status control-processor**
- **show diag**

Parameters are measured and reporting functions are updated every 60 seconds. A brief description of each of these commands follows.

The **show environment all** command displays temperature, voltage, fan, and power supply information.

The following is sample output from the **show environment all** command.

Example 5-2 show environment all Command

```
Router# show environment all
Sensor List: Environmental Monitoring
Sensor      Location      State      Reading
V1: VMA     F0            Normal    1796 mV
V1: VMB     F0            Normal    1201 mV
```

V1: VMC	F0	Normal	996 mV
V1: VMD	F0	Normal	1049 mV
V1: VME	F0	Normal	1049 mV
V1: VMF	F0	Normal	1098 mV
V1: 12v	F0	Normal	11879 mV
V1: VDD	F0	Normal	3286 mV
V1: GP1	F0	Normal	900 mV
V1: GP2	F0	Normal	766 mV
V2: VMA	F0	Normal	3291 mV
V2: VMB	F0	Normal	2495 mV
V2: VMC	F0	Normal	1499 mV
V2: VMD	F0	Normal	1196 mV
V2: VME	F0	Normal	1098 mV
V2: VMF	F0	Normal	996 mV
V2: 12v	F0	Normal	11835 mV
V2: VDD	F0	Normal	3291 mV
V2: GP1	F0	Normal	766 mV
V2: GP2	F0	Normal	1098 mV
Temp: Inlet	F0	Normal	23 Celsius
Temp: Pop Die	F0	Normal	40 Celsius
Temp: Left Ext	F0	Normal	33 Celsius
Temp: HKP Die	F0	Normal	44 Celsius
Temp: CPP Rear	F0	Normal	39 Celsius
Temp: Olv Die	F0	Normal	32 Celsius
Temp: Rght Ext	F0	Normal	32 Celsius
Temp: MCH Die	F0	Normal	47 Celsius
V3: VMA	F0	Normal	3291 mV
V3: VMB	F0	Normal	2490 mV
V3: VMC	F0	Normal	1499 mV
V3: VMD	F0	Normal	1000 mV
V3: 12v	F0	Normal	11865 mV
V3: VDD	F0	Normal	3291 mV
V1: VMA	F1	Normal	1796 mV
V1: VMB	F1	Normal	1196 mV
V1: VMC	F1	Normal	996 mV
V1: VMD	F1	Normal	1044 mV
V1: VME	F1	Normal	1035 mV
V1: VMF	F1	Normal	1098 mV
V1: 12v	F1	Normal	11879 mV
V1: VDD	F1	Normal	3271 mV
V1: GP1	F1	Normal	905 mV
V1: GP2	F1	Normal	766 mV
V2: VMA	F1	Normal	3295 mV
V2: VMB	F1	Normal	2495 mV
V2: VMC	F1	Normal	1499 mV
V2: VMD	F1	Normal	1201 mV
V2: VME	F1	Normal	1098 mV
V2: VMF	F1	Normal	996 mV
V2: 12v	F1	Normal	11835 mV
V2: VDD	F1	Normal	3276 mV
V2: GP1	F1	Normal	769 mV
V2: GP2	F1	Normal	1098 mV
Temp: Inlet	F1	Normal	24 Celsius
Temp: Pop Die	F1	Normal	44 Celsius
Temp: Left Ext	F1	Normal	31 Celsius
Temp: HKP Die	F1	Normal	49 Celsius
Temp: CPP Rear	F1	Normal	43 Celsius
Temp: Olv Die	F1	Normal	36 Celsius
Temp: Rght Ext	F1	Normal	32 Celsius
Temp: MCH Die	F1	Normal	50 Celsius
V3: VMA	F1	Normal	3291 mV
V3: VMB	F1	Normal	2495 mV
V3: VMC	F1	Normal	1499 mV
V3: VMD	F1	Normal	1000 mV

V3: 12v	F1	Normal	11865 mV
V3: VDD	F1	Normal	3286 mV
PEM Iout	P0	Normal	21 A
PEM Vout	P0	Normal	0 V DC
PEM Vin	P0	Normal	225 V AC
Temp: Temp1	P0	Normal	14 Celsius
Temp: Temp2	P0	Normal	26 Celsius
Temp: Temp3	P0	Normal	0 Celsius
PEM Iout	P1	Normal	22 A
PEM Vout	P1	Normal	0 V DC
PEM Vin	P1	Normal	225 V AC
Temp: Temp1	P1	Normal	14 Celsius
Temp: Temp2	P1	Normal	27 Celsius
Temp: Temp3	P1	Normal	0 Celsius
PEM Iout	P2	Normal	1 A
PEM Vout	P2	Normal	0 V DC
PEM Vin	P2	Normal	0 V AC
Temp: Temp1	P2	Normal	0 Celsius
Temp: Temp2	P2	Normal	16 Celsius
Temp: Temp3	P2	Normal	0 Celsius
PEM Iout	P3	Normal	1 A
PEM Vout	P3	Normal	0 V DC
PEM Vin	P3	Normal	0 V AC
Temp: Temp1	P3	Normal	0 Celsius
Temp: Temp2	P3	Normal	16 Celsius
Temp: Temp3	P3	Normal	0 Celsius
PEM Iout	P4	Normal	1 A
PEM Vout	P4	Normal	0 V DC
PEM Vin	P4	Normal	0 V AC
Temp: Temp1	P4	Normal	0 Celsius
Temp: Temp2	P4	Normal	16 Celsius
Temp: Temp3	P4	Normal	0 Celsius
PEM Iout	P5	Normal	1 A
PEM Vout	P5	Normal	0 V DC
PEM Vin	P5	Normal	0 V AC
Temp: Temp1	P5	Normal	0 Celsius
Temp: Temp2	P5	Normal	16 Celsius
Temp: Temp3	P5	Normal	0 Celsius
Temp1	P6	Normal	26 Celsius
Temp: FC PWM1	P6	Fan Speed 45%	24 Celsius
Temp1	P7	Normal	22 Celsius
Temp: FC PWM1	P7	Fan Speed 45%	24 Celsius
VVM 0: VX1	R0	Normal	607 mV
VVM 0: VX2	R0	Normal	1212 mV
VVM 0: VX3	R0	Normal	1207 mV
VVM 0: VX4	R0	Normal	994 mV
VVM 0: VP1	R0	Normal	3305 mV
VVM 0: VP2	R0	Normal	3312 mV
VVM 0: VP3	R0	Normal	5024 mV
VVM 0: VP4	R0	Normal	1506 mV
VVM 0: VH	R0	Normal	12003 mV
VVM 1: VX3	R0	Normal	1050 mV
VVM 1: VP1	R0	Normal	1696 mV
VVM 1: VP2	R0	Normal	1815 mV
VVM 1: VP3	R0	Normal	2511 mV
VVM 1: VP4	R0	Normal	3285 mV
VVM 1: VH	R0	Normal	12013 mV
VVM 2: VX1	R0	Normal	992 mV
VVM 2: VP1	R0	Normal	1199 mV
VVM 2: VP2	R0	Normal	1809 mV
VVM 2: VH	R0	Normal	11998 mV
Temp: CPU-IN	R0	Normal	24 Celsius
Temp: Outlet	R0	Normal	28 Celsius
Temp: Center	R0	Normal	15 Celsius

Temp: Inlet	R0	Normal	27 Celsius
Temp: DDR4 In	R0	Normal	24 Celsius
Temp: DDR4 Out	R0	Normal	20 Celsius
V1: VMA	0	Normal	1103 mV
V1: VMB	0	Normal	1196 mV
V1: VMC	0	Normal	1499 mV
V1: VMD	0	Normal	1801 mV
V1: VME	0	Normal	2490 mV
V1: VMF	0	Normal	3291 mV
V1: 12v	0	Normal	11938 mV
V1: VDD	0	Normal	3281 mV
V1: GP1	0	Normal	749 mV
V1: GP2	0	Normal	903 mV
V2: VMB	0	Normal	1000 mV
V2: VME	0	Normal	751 mV
V2: VMF	0	Normal	751 mV
V2: 12v	0	Normal	11923 mV
V2: VDD	0	Normal	3286 mV
V2: GP2	0	Normal	749 mV
Temp: Left	0	Normal	23 Celsius
Temp: Center	0	Normal	23 Celsius
Temp: Asic1	0	Normal	31 Celsius
Temp: Right	0	Normal	20 Celsius

The **show version** command displays the system hardware configuration, software version, and names and sources of configuration files and boot images.

The following is sample output from the **show version** command:

Example 5-3 show version Command

```
Router# show version
```

```
Cisco IOS XE Software, Version BLD_V163_MR_THROTTLE_LATEST_20160817_000512
Cisco IOS Software [Denali], ASR1000 Software (X86_64_LINUX_IOSD-UNIVERSALK9-M),
Experimental Version 16.3.20160817:001450
[v163_mr_throttle-BLD-BLD_V163_MR_THROTTLE_LATEST_20160817_000512 122]
Copyright (c) 1986-2016 by Cisco Systems, Inc.
Compiled Tue 16-Aug-16 18:16 by mcpre
```

```
Cisco IOS-XE software, Copyright (c) 2005-2016 by cisco Systems, Inc.
All rights reserved. Certain components of Cisco IOS-XE software are
licensed under the GNU General Public License ("GPL") Version 2.0. The
software code licensed under GPL Version 2.0 is free software that comes
with ABSOLUTELY NO WARRANTY. You can redistribute and/or modify such
GPL code under the terms of GPL Version 2.0. For more details, see the
documentation or "License Notice" file accompanying the IOS-XE software,
or the applicable URL provided on the flyer accompanying the IOS-XE
software.
```

```
ROM: IOS-XE ROMMON
```

```
RP3 uptime is 9 minutes
Uptime for this control processor is 11 minutes
System returned to ROM by reload
System image file is
"bootflash:asr1000rpx86-universalk9.BLD_V163_MR_THROTTLE_LATEST_20160817_000512.SSA.bin"
Last reload reason: Reload Command
```

This product contains cryptographic features and is subject to United States and local country laws governing import, export, transfer and use. Delivery of Cisco cryptographic products does not imply third-party authority to import, export, distribute or use encryption. Importers, exporters, distributors and users are responsible for compliance with U.S. and local country laws. By using this product you agree to comply with applicable laws and regulations. If you are unable to comply with U.S. and local laws, return this product immediately.

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.

License Type: Default. No valid license found.
License Level: ipbase
Next reload license Level: ipbase

Cisco ASR1006-X (RP3) processor (revision RP3) with 14994684K/24590K bytes of memory.
Processor board ID FXS1829Q0LR
5 Gigabit Ethernet interfaces
3 Ten Gigabit Ethernet interfaces
32768K bytes of non-volatile configuration memory.
67108864K bytes of physical memory.
7600127K bytes of eUSB flash at bootflash:.
97620247K bytes of SATA hard disk at harddisk:.
0K bytes of at webui:.

Configuration register is 0x2102

The **show inventory** command displays an extended report that includes the product inventory listing of all the Cisco products installed in the networking device.

The following is sample output from the **show inventory** command:

Example 5-4 *show inventory Command*

```
Router# show inventory
NAME: "Chassis", DESCR: "Cisco ASR1006-X Chassis"
PID: ASR1006-X          , VID: V00  , SN: FXS1829Q0LR

NAME: "module 0", DESCR: "Cisco ASR1000 SPA Interface Processor 40"
PID: ASR1000-SIP40     , VID: V01  , SN: JAE160804PL

NAME: "SPA subslot 0/0", DESCR: "1-port 10 Gigabit Ethernet Shared Port Adapter XFP based"
PID: SPA-1X10GE-L-V2   , VID: V02  , SN: JAE145207F5

NAME: "SPA subslot 0/1", DESCR: "1-port 10 Gigabit Ethernet Shared Port Adapter XFP based"
PID: SPA-1X10GE-L-V2   , VID: V02  , SN: JAE1431137E

NAME: "SPA subslot 0/2", DESCR: "5-port Gigabit Ethernet Shared Port Adapter"
PID: SPA-5X1GE-V2      , VID: V02  , SN: JAE1326D4V5

NAME: "subslot 0/2 transceiver 0", DESCR: "GE T"
PID: SP7041-E          , VID: E    , SN: MTC161204FS

NAME: "SPA subslot 0/3", DESCR: "1-port 10 Gigabit Ethernet Shared Port Adapter XFP based"
PID: SPA-1X10GE-L-V2   , VID: V02  , SN: JAE13062NZM

NAME: "module R0", DESCR: "Cisco ASR1000 Route Processor 3"
```

```

PID: ASR1000-RP3      , VID: V00  , SN: JAE201902DX

NAME: "module F0", DESCR: "Cisco ASR1000 Embedded Services Processor, 40Gbps"
PID: ASR1000-ESP40   , VID: V01  , SN: JAE144909W4

NAME: "module F1", DESCR: "Cisco ASR1000 Embedded Services Processor, 40Gbps"
PID: ASR1000-ESP40   , VID: V01  , SN: JAE15270531

NAME: "Power Supply Module 0", DESCR: "Cisco 750 Watt AC power supply"
PID: ASR1000X-AC-750W , VID: V00  , SN: ART181112ES

NAME: "Power Supply Module 1", DESCR: "Cisco 750 Watt AC power supply"
PID: ASR1000X-AC-750W , VID: V00  , SN: ART181112DB

NAME: "Power Supply Module 2", DESCR: "Cisco 750 Watt AC power supply"
PID: ASR1000X-AC-750W , VID: V00  , SN: ART181410EM

NAME: "Power Supply Module 3", DESCR: "Cisco 750 Watt AC power supply"
PID: ASR1000X-AC-750W , VID: V00  , SN: ART181112BM

NAME: "Power Supply Module 4", DESCR: "Cisco 750 Watt AC power supply"
PID: ASR1000X-AC-750W , VID: V00  , SN: ART181112CD

NAME: "Power Supply Module 5", DESCR: "Cisco 750 Watt AC power supply"
PID: ASR1000X-AC-750W , VID: V00  , SN: ART1814103R

NAME: "Fan Tray 0", DESCR: "Cisco ASR1000X FAN Module"
PID: ASR1000X-FAN     , VID: V00  , SN: FXS182600QY

NAME: "Fan Tray 1", DESCR: "Cisco ASR1000X FAN Module"
PID: ASR1000X-FAN     , VID: V00  , SN: FXS182600NN

```

The **show platform** command displays platform information.

The following is sample output from the **show platform** command:

Example 5-5 show platform Command

```
Router# show platform
```

```
Chassis type: ASR1006-X
```

Slot	Type	State	Insert time (ago)
0	ASR1000-SIP40	ok	00:10:54
0/0	SPA-1X10GE-L-V2	ok	00:09:12
0/1	SPA-1X10GE-L-V2	ok	00:09:07
0/2	SPA-5X1GE-V2	ok	00:08:57
0/3	SPA-1X10GE-L-V2	ok	00:08:53
R0	ASR1000-RP3	ok, active	00:10:54
F0	ASR1000-ESP40	ok, active	00:10:54
F1	ASR1000-ESP40	ok, standby	00:10:54
P0	ASR1000X-AC-750W	ok	00:09:53
P1	ASR1000X-AC-750W	ok	00:09:51
P2	ASR1000X-AC-750W	ps, fail	00:09:52
P3	ASR1000X-AC-750W	ps, fail	00:09:52
P4	ASR1000X-AC-750W	ps, fail	00:09:51
P5	ASR1000X-AC-750W	ps, fail	00:09:51
P6	ASR1000X-FAN	ok	00:09:47
P7	ASR1000X-FAN	ok	00:09:46

```
Slot      CPLD Version      Firmware Version
```

```

-----
0          00200800          12.2(20151201:221942) [gschnorr-rele...
R0         16081518          16.3(2r)
F0         1003190E          16.3(2r)
F1         1003190E          16.3(2r)

```

The **show platform software status control-processor** command displays the average load, memory usage, and CPU utilization levels at which the router is running. The output also specifies whether the levels of these system health parameters are within defined thresholds.

**Note**

The output does not display SIP-related information on a monolithic router.

The following is sample output from the **show platform software status control-processor** command:

Example 5-6 show platform software status control-processor Command

```

Router# show platform software status control-processor

RP0: online, statistics updated 1 seconds ago
Load Average: healthy
  1-Min: 0.00, status: healthy, under 8.00
  5-Min: 0.03, status: healthy, under 8.00
 15-Min: 0.07, status: healthy, under 10.00
Memory (kb): healthy
  Total: 8092776
  Used: 3491556 (43%)
  Free: 4601220 (57%)
  Committed: 3566404 (44%), status: healthy, under 95%
Per-core Statistics
CPU0: CPU Utilization (percentage of time spent)
  User: 0.00, System: 0.00, Nice: 0.00, Idle:100.00
  IRQ: 0.00, SIRQ: 0.00, IOWait: 0.00
CPU1: CPU Utilization (percentage of time spent)
  User: 1.30, System: 0.40, Nice: 0.00, Idle: 98.30
  IRQ: 0.00, SIRQ: 0.00, IOWait: 0.00
CPU2: CPU Utilization (percentage of time spent)
  User: 0.49, System: 8.89, Nice: 0.00, Idle: 90.60
  IRQ: 0.00, SIRQ: 0.00, IOWait: 0.00
CPU3: CPU Utilization (percentage of time spent)
  User: 2.00, System: 0.40, Nice: 0.00, Idle: 97.60
  IRQ: 0.00, SIRQ: 0.00, IOWait: 0.00
CPU4: CPU Utilization (percentage of time spent)
  User: 0.00, System: 0.30, Nice: 0.00, Idle: 99.69
  IRQ: 0.00, SIRQ: 0.00, IOWait: 0.00
CPU5: CPU Utilization (percentage of time spent)
  User: 0.40, System: 0.10, Nice: 0.00, Idle: 99.50
  IRQ: 0.00, SIRQ: 0.00, IOWait: 0.00
CPU6: CPU Utilization (percentage of time spent)
  User: 0.40, System: 0.40, Nice: 0.00, Idle: 99.19
  IRQ: 0.00, SIRQ: 0.00, IOWait: 0.00
CPU7: CPU Utilization (percentage of time spent)
  User: 0.80, System: 1.30, Nice: 0.00, Idle: 97.90
  IRQ: 0.00, SIRQ: 0.00, IOWait: 0.00

```

The **show diag slot R0 eeprom** command displays the configuration hardware information.

The following is sample output from the **show diag slot R0 eeprom** command:

Example 5-7 show diag slot R0 eeprom Command

```
Router# show diag slot R0 eeprom
Slot R0 EEPROM data:

Product Identifier (PID) : ASR1000-RP3
Version Identifier (VID) : V00
PCB Serial Number       : JAE201902DX
Top Assy. Part Number   : 68-5621-04
Hardware Revision       : 0.1
CLEI Code               : UNASSIGNED
```
