

Cisco 7600 Product Overview

This chapter provides an overview of the Cisco 7600 series routers and describes interface and port addresses on the routers. It contains the following sections:

- [Cisco 7600 Series Routers, page 1-1](#)
- [Port Addresses, page 1-6](#)



Note

This document does not contain instructions for installing the router. For instructions on how to install the router, see the *Cisco 7600 Series Router Installation Guide*.

Cisco 7600 Series Routers

The Cisco 7600 series routers consist of these routers:

- Cisco 7603 router (3 slots)
- Cisco 7604 router (4 slots)
- Cisco 7606 router (6 slots)
- Cisco 7609 router (9 vertical slots)
- Cisco 7613 router (13 slots)



Note

In addition, Cisco IOS Release 12.2SRB and later releases introduced enhanced versions of the 3-slot, 6-slot, and 9-slot chassis (CISCO7603-S, CISCO7606-S, and CISCO7609-S). These enhanced chassis provide increased power and cooling capabilities and an enhanced switch fabric to support high-power processors and future line cards, which will provide 80-Gbps connections.

Cisco 7600 series routers provide optical wide area network (WAN) and metropolitan-area network (MAN) networking with a focus on line-rate delivery of high-touch IP services at the edge of service provider networks.

Supported Hardware

Cisco 7600 series routers support the following hardware:

- A supervisor engine (such as the Sup720, Sup32, or Sup2) or Route Switch Processor (RSP720) with modular Gigabit Ethernet uplink ports. Each supervisor engine or RSP has two integrated daughter cards: a policy feature card (PFC) and a multilayer switch feature card (MSFC). See the [“Overview” section on page 2-2](#) for details.



Note You can install a redundant supervisor engine or RSP in the router to provide a backup in case the active module fails. Both supervisor engines or RSPs must be identical. If the system does not include a redundant supervisor engine or RSP, you can install another type of module (for example, FlexWAN, OSM, or SIP and SPA) in the slot that is reserved for the redundant processor card.

- Optical Services Modules (OSMs), FlexWAN and Enhanced FlexWAN modules, recommended Catalyst 6000 family modules, and SPA interface processors (SIPs) in any combination.
 - Two additional modules for the Cisco 7603 router
 - Three additional modules for the Cisco 7604 router
 - Five additional modules for the Cisco 7606 router
 - Eight additional modules for the Cisco 7609 router
 - Twelve additional modules for the Cisco 7613 router



Note Specific combinations of supervisor engines or RSPs and modules may not be supported in your chassis. See the *Supported Hardware for Cisco 7600 Series Routers* guide for information about which combinations are not supported.

- Hot-swappable fan assembly
- Redundant AC-input or DC-input power supplies
- Redundant AC-input or DC-input power entry modules (PEMs) (Cisco 7603 and Cisco 7606 routers only)
- An optional Switch Fabric Module (WS-X6500-SFM2) that is available with the Supervisor Engine 2. For redundancy, you can install a redundant SFM2 module. The module that is installed first functions as the primary module.

Features

Table 1-1 lists some key features of the Cisco 7600 series routers.

Table 1-1 Cisco 7600 Series Routers Key Features

Feature	Description
Performance and configuration	For detailed information about the features supported on Cisco 7600 series routers, see the <i>Cisco 7600 Series Router Cisco IOS Software Configuration Guide</i> for the version of software being used on the router.
Supervisor engine or route switch processor	<ul style="list-style-type: none"> Modular, upgradable feature modules for core switching logic Modular Gigabit Ethernet ports that you can configure with Gigabit Interface Converter (GBIC), small form-factor pluggable (SFP), XENPAK, and X2 optics modules Several combinations of multilayer switch feature cards (MSFCs) and policy feature cards (PFCs) supported (see Table 2-1): <ul style="list-style-type: none"> MSFC4 and PFC3C or PFC3CXL (for the RSP720, see note below) MSFC3 and PFC3B, PFC3BXL, or PFC3A (see note below) MSFC2 and PFC or PFC2 The MSFC contains the switch processor and route processor (SP/RP) for the router. PCMCIA slot Console port for terminal and modem access <p>Note The Route Switch Processor 720 (RSP720) is the newest supervisor engine for the Cisco 7600 series routers. It is available in Cisco IOS Release 12.2SRB and later releases.</p> <p>Note Cisco IOS Release 12.2SRC introduces support for the RSP720-10GE (an RSP with 10 Gigabit Ethernet uplink ports).</p> <p>Note Cisco IOS Release 12.2SXF is the last release in which the PFC3A is supported. Later releases do not support this PFC.</p>
Fault tolerance and redundancy	<ul style="list-style-type: none"> Support for two hot-swappable (redundant) supervisor engines or route switch processors, including fast switchover to the redundant (standby) module Support for two redundant AC- or DC-input, load-sharing power supplies Support for two redundant AC- or DC-input PEMs (Cisco 7603 and Cisco 7606 routers only) Power management for modules and power supplies Environmental monitoring of critical system components Hot-swappable fan assembly Redundant clock modules LACP 1-1 redundancy with fast switchover

Table 1-1 Cisco 7600 Series Routers Key Features (continued)

Feature	Description
Memory components	<ul style="list-style-type: none"> • Electrically erasable programmable read-only memory (EEPROM) on the supervisor engine or route switch processor stores module-specific information, such as the serial number, part number, controller type, hardware revision, configuration information, and other details unique to each module. • NVRAM for storing configuration information. • DRAM for default system software. <p>For the RSP720-GE and the RSP720-10GE:</p> <ul style="list-style-type: none"> – RP Memory: 1 to 4 GB DRAM (default is 1 GB for the 3C version and 2GB for the 3CXL version) – SP: 1 to 2 GB DRAM (default is 1 GB) <ul style="list-style-type: none"> • Internal flash memory—To store the boot image. The defaults are: <ul style="list-style-type: none"> • The RSP720 SP/RP and the Sup32 SP contain a CompactFlash (CF) adapter that provides 512 MB of internal flash memory. • The Sup720 SP/RP, Sup32 RP, and Sup2 SP/RP contain 32-MB or 64-MB of internal flash memory. Cisco IOS Release 12.2(18)SXF and later releases support the CF adapter as an orderable option (Cisco part number CF-ADAPTER=) for these Sups. ¹ <p>Note In the command-line-interface (CLI), you access internal flash memory as bootdisk (CF adapter) or bootflash (non-CF adapter). When you install a CF adapter on the Sup720, Sup32, or Sup2, bootflash becomes an alias to bootdisk.</p> <ul style="list-style-type: none"> • External flash memory—To store and run software images and configuration files or to serve as an input/output (I/O) device. You can install 64-MB, 128-MB, 256-MB, 512-MB, or 1 GB flash memory cards, or 1-GB MicroDrive card, in slots on the supervisor engine or RSP front panel. For information on using flash memory, see Using Flash Memory Cards, page 3-12. <p>The RSP720 and RSP720-10GE support 1G external compact flash from Cisco IOS Release 12.2(33)SRD1 release onwards. (Previously, 512MB was the maximum external compact flash.</p> <p>The Sup2 supports PCMCIA flash memory cards only. It does not support CompactFlash or MicroDrive cards.</p> <ul style="list-style-type: none"> • Flash file system—Flash memory contains a file system. You can use a variety of commands to manage the file system (such as cd, pwd, dir, and delete). The file system includes the following devices: <ul style="list-style-type: none"> – Onboard bootflash/bootdisk – Flash memory slot

Table 1-1 Cisco 7600 Series Routers Key Features (continued)

Feature	Description
Component hot swapping	All components (including optional redundant modules and fans) support hot swapping, which allows you to add, replace, or remove components without interrupting the system power or causing other software or interfaces to shut down.
Management	<ul style="list-style-type: none"><li data-bbox="651 428 1117 455">• CLI through the console port or Telnet<li data-bbox="651 470 1219 497">• Simple Network Management Protocol (SNMP)

1. For information on how to install a CF adapter, see the instructions at:
http://www.cisco.com/en/US/products/hw/switches/ps708/products_installation_and_configuration_guide09186a0080537ae3.html

Port Addresses

Each port (or interface) in the Cisco 7600 series router has several different types of addresses. The physical interface address is the actual physical location (slot and port) of the interface connector within the chassis. The system software uses the physical addresses to control activity within the router and to display status information. These physical slot and port addresses are not used by other devices in the network; they are specific to the individual router and its internal components and software. For more information, see the [“Physical Interface Addresses” section on page 1-6](#).

The Media Access Control (MAC) address is a standardized data link layer address that is required for every port or device that connects to a network. Other devices in the network use MAC addresses to locate specific ports in the network and to create and update routing tables and data structures. Routers use a unique method, described in the [“MAC Addresses” section on page 1-7](#), to assign and control the MAC addresses of their interfaces.

Physical Interface Addresses

Physical port addresses specify the actual physical location of each port on every module in the router, as shown in [Figure 1-1](#). The port address is a two-part number in the format *slot/port number* (for example, 1/1, 1/2, 2/1, 2/2, and so on):

- *Slot*—Identifies the slot in which the module is installed. Depending on the router layout, the slots are numbered from top to bottom or right to left starting with 1 (*1/n*, *2/n*, and so on).
 - On horizontal-oriented chassis (such as the Cisco 7606 and Cisco 7613 routers), slots are numbered from top to bottom.
 - On vertical-oriented chassis (such as the Cisco 7609 router), slots are numbered from right to left.
- *Port number*—Identifies the physical port number on the module. Port numbers always begin at 1 (*n/1*, *n/2*, and so on).
 - On horizontal-oriented modules, ports are numbered from left to right.
 - On vertical-oriented modules, ports are numbered from top to bottom.

Figure 1-1 Cisco 7609 Router Port Address Examples



The supervisor engine and route switch processor have two or more uplink ports (numbered $n/1$, $n/2$, and so on). The Supervisor Engine 32 (WS-SUP32-GE-3B) has nine uplink ports, numbered $n/1$ to $n/9$.

In some cases, a single port supports two different types of connectors (for example, Port 2 on the Supervisor Engine 720 supports a Gigabit Ethernet SFP module or a 10/100/1000-Mbps RJ-45 connector). However, only one of the two options can be active at a time.

MAC Addresses

All network interface connections (ports) require a unique MAC address. The MAC address of an interface is stored in electrically erasable programmable read-only memory (EEPROM) on a component that resides directly on the interface circuitry. The router system code reads the EEPROM for each interface in the system, learns the MAC addresses, and then initializes appropriate hardware and data structures. Each VLAN in the spanning tree has one unique MAC address. This addressing scheme enables the router to identify the state (connected or not connected) of each interface. When you hot swap a module, the MAC address changes with the module.

