

Cisco 7200VXR NPE-G2 Network Processing Engine

Product Overview

Increasingly, business applications and services affect aggregation requirements and router-integrated services across the WAN and metropolitan-area network (MAN)—in both the branch office and headquarters. Consequently, to continue to meet the increasing need for performance for integrated services at the branch office and headquarters and to maintain exceptional value and flexibility, Cisco Systems® introduces the newest processor for the Cisco® 7200VXR Series—the Cisco 7200VXR NPE-G2 Network Processing Engine (Figure 1). The Cisco NPE-G2 addresses the demand for performance and flexibility by further increasing its processing capacity and enabling the latest Cisco IOS® Software features. Benefits of the Cisco NPE-G2 include the following (refer to Table 1 for details):

- Provides double the performance compared to the Cisco 7200 VXR NPE-G1—up to 2 million packets per second (pps) in Cisco Express Forwarding
- Offers three 10/100/1000-Mbps copper Ethernet ports and optical ports that do not consume any bandwidth points
- Provides one dedicated 10/100-Mbps copper Ethernet port for management
- Provides two USB ports for general storage and security token storage
- Offers 1 GB of DRAM memory by default
- Eliminates the requirement for an I/O controller
- Extends the use of the available I/O slot for a single port adapter or a Cisco 7200VXR VPN Services Adapter (VSA)
- Offers greatly improved price/performance ratio

Figure 1. Cisco NPE-G2



Table 1. Features and Benefits Overview

Features	Benefits
Performance of up to 2 million packets per second (pps) in Cisco Express Forwarding switching	• Doubles the performance compared to Cisco NPE-G1 • Dramatically increases the performance and scalability of the Cisco 7200VXR Series in WAN and MAN applications for both enterprise and service providers
Modularity	• Enables maximum investment protection through the ability to upgrade processors incrementally
Backward compatibility with existing port adapters (with a few exceptions)	• Provides investment protection through backward compatibility Note: Only a few end-of-sale port adapters are not supported with NPE-G2; details are in Table 3.
Three fixed Gigabit Ethernet ports (10/100/1000-Mbps copper or Small Form-Factor Pluggable optics [SFP])	• Maximizes LAN connectivity and performance without taking up bandwidth points or midplane capacity

Features	Benefits
Built-in I/O function (Compact Flash memory, console port, auxiliary port, and bootflash memory)	Reduces costs (Note: An I/O controller can still be used.)
Support for third peripheral component interconnect (PCI) bus to the I/O controller slot	- Frees the current I/O controller ports from bandwidth allocation, allowing two PCI buses to be dedicated to the port adapter slots - Provides cost-effective way for a slot expansion by using port adapter jacket card - Provides a dedicated slot for the high-performance VPN services adapter
Double the speed of the peripheral component interconnect bus on the I/O slot	Dramatically increases the performance of Cisco 7200VXR Series VSA
1 GB of DRAM default memory	- Delivers the most amount of memory by default compared to existing 7200 VXR series Network Processing engines, offering the following benefits: - Supports more routes and routing tables - Supports more Multiprotocol Label Switching (MPLS) virtual routing and forwarding instances (VRFs) - Supports more sessions for broadband aggregation - Enables higher scalability on features such as NetFlow, Network Address Translation (NAT), access control lists (ACLs), and more
Cisco IOS Software	Supports a wide range of IP and non-IP network services, including quality of service (QoS), MPLS, broadband aggregation, integrated security, encryption, voice, and more
Dedicated management for 10/100-Mbps Ethernet	Reduces costs and protects port density of the chassis
Two USB ports	- Provides a large, removable storage for files - Stores security e-tokens for VPN applications
Digital diagnostics on SFP interfaces	Provides a powerful tool that monitors many manageable parameters, including optical transmit and receive power, voltage and temperature measurement, and factory parameters
Time domain reflectometry (TDR) on copper interfaces	Provides an effective method of isolating fault at the remote end of the copper wire by monitoring reflected pulsed signals

Software

The Cisco 7200 VXR Series Network Processing Engine NPE-G2 is supported in the following Cisco IOS Software Releases:

- 12.4(4)XD
- 12.4(11)T
- 12.5M—In future
- 12.2SB
- 12.2SRC

Unlike all other NPEs, the Cisco NPE-G2 requires a unique Cisco IOS image to boot and operate properly. Cisco IOS images dedicated for the Cisco NPE-G2 will have the file names starting with “c7200p” and the product codes starting with “S72P.”

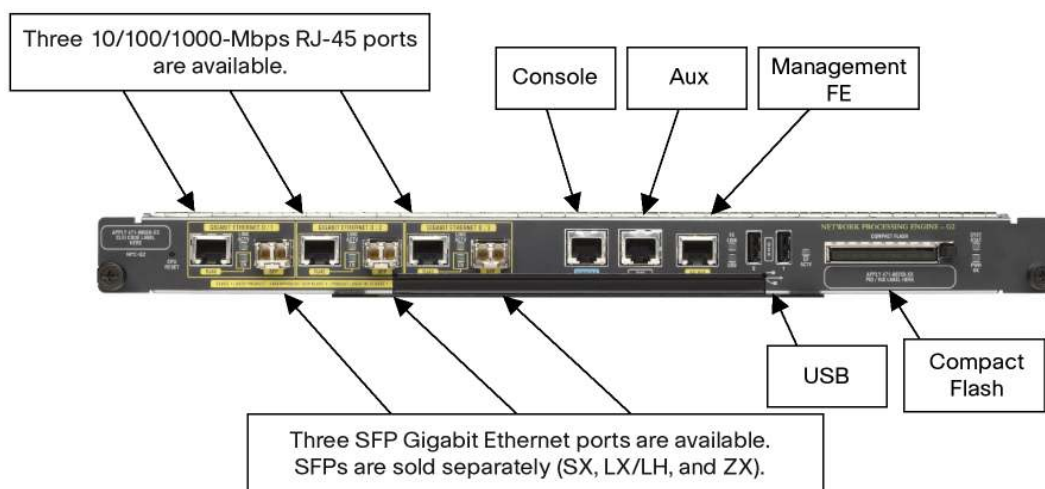
Product Specifications: Components

Connectivity

- Gigabit Ethernet ports**—Three 10/100/1000-Mbps ports are available on the Cisco NPE-G2 (Figure 2). Each of these ports provides either copper or optical connectivity (via Small Form Factor Pluggable optics (SFP)).
- Gigabit Ethernet port features**—All three ports support the IEEE 802.1Q standard.

- **The Cisco NPE-G2 supports three types of Small Form Factor Pluggable optics (SFP) interfaces**—Short wave (SX), long wave/long haul (LX/LH), and extended wavelength (ZX) for varying fiber length requirements.
- **Console and auxiliary ports**—The Cisco NPE-G2 has a console port and an auxiliary port, and it handles the other functions of the I/O controller, the need for an I/O controller is eliminated. However, an I/O controller can still be used, if desired. If an I/O controller is detected in the I/O controller slot, the I/O controller function defaults to the I/O controller (with the exception of NVRAM and bootflash memory). The console and auxiliary ports of the Cisco NPE-G2 are then disabled.
- **Management 10/100 Mbps Ethernet port**—This Ethernet port is strictly dedicated for management purposes.

Figure 2. Cisco 7200VXR Series NPE-G2 Ports



Memory

- **SDRAM**—The Cisco NPE-G2 ships with the highest default memory available on all of the Network Processing Engines (NPEs) on the Cisco 7200 VXR series available, 1-GB SDRAM. There is only one memory slot. The type of memory on the Cisco NPE-G2 is double data-rate (DDR) memory, which provides high-performance memory access rates. Note: The NPE-G1 SDRAM memory module is not compatible with the NPE-G2 SDRAM memory module.
- **Compact Flash memory**—The 256-MB Compact Flash memory used on the Cisco NPE-G2 is the same Compact Flash memory used with the Cisco NPE-G1, Cisco 7401, and Cisco 7300 Series routers.
- 2-MB NVRAM
- 1-MB Layer 2 cache
- **64-MB bootflash**—The 64-MB internal flash memory is large enough to hold multiple boot helper images and logging files.
- **USB ports**—The USB Flash feature provides an optional secondary storage capability. Images, configurations, or other files can be copied to or from the Cisco USB Flash memory with the same reliability as storing and retrieving files using the Compact Flash card. Cisco USB Flash memory is available in 64- and 128-MB sizes.

Processor

1.67-GHz Motorola Freescale 7448 processor

Product Specifications

Table 2 gives environmental conditions and physical specifications for the Cisco NPE-G2.

Table 2. Environmental Conditions and Physical Specifications

Feature	Description
Environmental Conditions	
Storage temperature	–38 to 150°F (–40 to 70 °C)
Operating temperature, nominal	41 to 104°F (5 to 40°C)
Operating temperature, short term	23 to 131°F (–5 to 55°C)
Storage relative humidity	5 to 95% relative humidity
Operating humidity, nominal	5 to 85% relative humidity
Operating humidity, short term	5 to 90% relative humidity
Operating altitude	–60 to 2000 meters
Physical Specifications	
Height	1.40 in. (3.556 cm)
Width	15.15 in. (38.481 cm)
Depth	11.12 in. (28.245 cm)

Product Regulatory Approvals and Compliance

Safety Standards

- UL/CSA/IEC/EN 60950-1
- AS/NZS 60950
- EN60825/IEC 60825 Laser Safety
- FDA—Code of Federal Regulations Laser Safety

EMC Standards

- FCC 47 CFR Part 15 Class A
- VCCI Class A
- AS/NSZ Class A
- ICES-003 Class A
- EN55022/CISPR 22 Information Technology Equipment (Emissions)
- EN55024/CISPR 24 Information Technology Equipment (Immunity)
- EN300 386 Telecommunications Network Equipment (EMC)
- EN50082-1/EN61000-6-1 Generic Immunity Standard

System Requirements

Table 3 gives system requirements.

Table 3. System Requirements

Feature	Description
Chassis	The Cisco NPE-G2 is supported on the Cisco 7204VXR chassis and the Cisco 7206VXR chassis.
I/O Controllers	Although not required, an I/O controller can still be used. The Cisco NPE-G2 is supported with the Cisco 7200VXR Series I/O controllers with the following part numbers: C7200-I/O, C7200-I/O-2FE, and C7200-I/O-GE+E.
Port Adapters	The Cisco NPE-G2 is supported with all port adapters that can be ordered with the Cisco 7200VXR chassis with the following exceptions: • Fibre Channel over IP Port Adapter (PA-FC-1G; this Port Adapter is End-of-Sale as of Dec 3, 2004) • One-Port OC-12, dual width DPT Port Adapter (PA-SRP-OC12; this Port Adapter is End-of-Sale as of July 15, 2005) • VPN Acceleration Module (SA-VAM; this Service Adapter is End-of-Sale as of April 28, 2006), • Cisco VPN Acceleration Module 2 (SA-VAM2; this Service Adapter is End-of-Sale as of April 28, 2006)
Software	The Cisco NPE-G2 is supported in Cisco IOS Software Release 12.4(4)XD, 12.4T, 12.2SB, 12.2SRC.

Product Ordering Details

To place an order, visit the [Cisco Ordering Home Page](#). Refer to Table 4 for product part numbers.

Table 4. Product Ordering Details

Product Number	Product Description
NPE-G2	Cisco NPE-G2, including 1-GB default DRAM and 256-MB default flash memory
NPE-G2=	Cisco NPE-G2, including 1-GB default DRAM and 256-MB default flash memory, spare
MEM-NPE-G2-1GB	One 1-GB memory module for the Cisco NPE-G2
MEM-NPE-G2-1GB=	One 1-GB memory module for the Cisco NPE-G2, spare
MEM-NPE-G2-FLD256	256-MB Compact Flash disk for the Cisco NPE-G2
MEM-NPE-G2-FLD256=	256-MB Compact Flash disk for the Cisco NPE-G2, spare
IO-CONTROLR-BLANK=	I/O controller slot blank, spare
MEMUSB-64FT	64-MB USB flash token for Cisco 1800, 2800, 3800, and 7200 series
MEMUSB-64FT=	64-MB USB flash token for Cisco 1800, 2800, 3800, and 7200 series, spare
MEMUSB-128FT	128-MB USB flash token for Cisco 1800, 2800, 3800, and 7200 series
MEMUSB-128FT=	128-MB USB flash token for Cisco 1800, 2800, 3800, and 7200 series, spare
MEM-NPE-G2-2GB	One 2-GB memory module for the Cisco NPE-G2
MEM-NPE-G2-2GB=	One 2-GB memory module for the Cisco NPE-G2, spare

Product Ordering Details: Migration Program

A Cisco Technology Migration Plan (TMP) has been established for this product.

The Cisco TMP is a sales program that allows customers to trade in Cisco products to receive a trade-in credit toward the purchase of any new Cisco product. The program underscores Cisco's commitment to the customer.

More specifics about this program are available at <http://www.cisco.com/go/tradein>.

Service and Support

Cisco Systems offers a wide range of service and support options for its customers. More information about Cisco service and support programs and benefits is available at http://www.cisco.com/public/Support_root.shtml.

For More Information

For more information about the Cisco 7200VXR Series NPE-G2, visit <http://www.cisco.com/go/7200> or contact your local Cisco account representative.



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