

Cisco 7304 NSE-150 Network Services Engine

The Cisco® 7304 NSE-150 is the next-generation forwarding engine of the Cisco 7304 Series Router.

Q. What is the Cisco 7304 NSE-150?

A. The Cisco 7304 NSE-150 is the forwarding engine or route processor for the Cisco 7304. It uses Parallel Express Forwarding (PXF) technology to deliver hardware-accelerated network services, and with a 800-MHz CPU it processes control-plane features and forwards packets when non-PXF features are enabled.

Q. What is the performance of the Cisco 7304 NSE-150?

A. The Cisco 7304 NSE-150 uses PXF technology to deliver hardware-accelerated network services with up to a 3.5-Mpps forwarding rate. A detailed PXF feature list can be found at: http://www.cisco.com/en/US/products/hw/routers/ps352/prod_maintenance_guide09186a008057410a.html#wp1015499.

For non-PXF features, packets are punted to route processor CPU for processing. In this case, the packet forwarding rate through the route processor CPU may vary, based on detailed configurations; the maximum forwarding rate with the route processor CPU is 800 kpps.

Q. How many forwarding engines does the Cisco 7304 have today?

A. Three: Cisco 7304 NPE-G100, NSE-100, and NSE-150.

Q. How can I differentiate the three forwarding engines of the Cisco 7304?

A. The Cisco 7304 NSE-100 and NSE-150 are designed to provide high-performance IP services with up to a 3.5-Mpps forwarding rate when specific features are enabled.

The Cisco 7304 NPE-G100 is a CPU-based forwarding engine designed to deliver all Cisco IOS® Software-based services at high performance, thus providing maximum versatility. It comes with 1-GB synchronous dynamic RAM (SDRAM), and 256-MB Compact Flash memory by default, and it can achieve more than 800kpps switching performance with full support of Cisco IOS Software features in Cisco IOS Software 12.2S and 12.2SB trains.

The Cisco 7304 NSE-150 has the same route processor as the Cisco 7304 NPE-G100, so it offers up to 800,000-pps performance on non-PXF Cisco IOS Software features; the Cisco 7304 NSE-100, has an RM7000 MIPS CPU and it offers approximately 450,000-pps forwarding performance on non-PXF features.

Q. What are the primary differences of the three forwarding engines?

A. Table 1 summarizes the primary differences among all three engines.

Table 1. Differences Among Forwarding Engines

Feature	Cisco 7304 NPE-G100	Cisco 7304 NSE-100	Cisco 7304 NSE-150
Engine type	General-purpose processor	PXF-based processor plus general-purpose route processor support	PXF-based processor plus general-purpose route processor support
Performance	More than 1 Mpps route processor	3.5 Mpps (PXF); 450 kpps (route processor)	3.5 Mpps (PXF); 800 kpps (route processor)
LAN ports	Three fixed 10-/100-/1000-Mbps ports (RJ-45) or Small Form-Factor Pluggable (SFP) optics	Two Gigabit Ethernet	Four Gigabit Ethernet (SFP)
Gigabit Ethernet optics	SFPs	Gigabit interface converters (GBICs)	SFPs
SDRAM	1 GB	512 MB	2 GB
Compact Flash memory	256 MB	256 MB	256 MB
NVRAM	512KB	512KB	2MB
USB port	No	No	Yes **

Please note that USB port support will not be available at first customer shipment (FCS) time of the Cisco NSE-150 Network Services Engine (part number 7300-NSE-150), and it will be supported in a later software release.

Q. What are the major improvements that the Cisco 7304 NSE-150 has over the Cisco 7304 NSE-100?

A. Compared to the Cisco 7304 NSE-100, the Cisco 7304 NSE-150 has the following major improvements:

- Improved processing power for the control-plane functions (for example, routing protocols and statistics collection)
- Improved processing power for route processor-processed data traffic (for example, traditional protocol traffic such as X.25)
- Increased route-processor and PXF memory (from 64 Mb on the Cisco 7304 NSE-100 to 128 MB on the Cisco 7304 NSE-150) to enable more scalability of the routing table, the Forwarding Information Base (FIB) table, etc.
- Four onboard Gigabit Ethernet ports on the Cisco 7304 NSE-150, and two onboard Gigabit Ethernet ports on the Cisco 7304 NSE-100
- USB interfaces support on the Cisco 7304 NSE-150 to provide large removable file storage
- Support for up to 16,000 interface descriptor blocks (IDBs) for the Cisco 7304 NSE-150; 4000 IDBs for the Cisco 7304 NSE-100; and 8000 IDBs for the Cisco 7304 NPE-G100

Q. What PXF-accelerated features are supported on the Cisco 7304 NSE-150?

A. The Cisco 7304 NSE-150 supports the same set of PXF-accelerated features as the Cisco 7304 NSE-100. A detailed feature list is available at:

http://www.cisco.com/en/US/products/hw/routers/ps352/prod_maintenance_guide09186a008057410a.html - wp1015499.

Q. How many onboard interfaces will be available on the Cisco 7304 NSE-150?

A. Four onboard Gigabit Ethernet interfaces will be available with SFP support.

Q. With a redundant NSE-150 configuration in the Cisco 7304, will all eight onboard Gigabit Ethernet ports be active for packet forwarding?

- A.** No. Only the Gigabit Ethernet interfaces on the active engine will be available for packet forwarding.
- Q. Will the four onboard Gigabit Ethernet ports be able to support line-rate traffic?**
- A.** Yes. Four onboard Gigabit Ethernet ports can support line-rate traffic with up to 3.5Mpps total per chassis.
- Q. Can we configure two Cisco 7304 NSE-150 engines in a system to support forwarding-engine redundancy?**
- A.** Yes. The Cisco 7304 NSE-150 supports the same high-availability features as the Cisco 7304 NSE-100.
- Q. In order to have a redundant forwarding engine in a system, can three engines be mix-configured in one Cisco 7304? For example, one NSE-100 with one NSE-150 as backup, or one NSE-150 with one Cisco 7304 NPE-G100 Network Processing Engine as backup?**
- A.** No. In a redundant configuration, two forwarding engines have to be identical: two NSE-150 engines in one Cisco 7304, or two NSE-100 engines in one Cisco 7304, or two NPE-G100 engines in one Cisco 7304.
- Q. When will the Cisco 7304 NSE-150 be available?**
- A.** It will be available in Q4 2006.
- Q. What is the first Cisco IOS Software release, and which images support the Cisco 7304 NSE-150?**
- A.** Cisco IOS 12.2(31)SB2.
- Q. Is the Cisco 7304 NSE-150 backward-compatible with existing Cisco 7304 product components?**
- A.** The Cisco 7304 NSE-150 supports all Cisco 7304 hardware components that are available in Cisco IOS Software 12.2(31)SB2.
- Q. What type of interfaces does the Cisco 7304 NSE-150 support?**
- A.** The Cisco 7304 NSE-150 supports all existing port adapters, shared port adapters (SPAs) and native LC connectors that are available in the Cisco 7304 product family. It supports interfaces from E1/T1 all the way up to OC-48 or Gigabit Ethernet.
- Q. Will the Cisco 7304 NSE-150 support the same Cisco IOS Software features as the existing Cisco 7304 NSE-100?**
- A.** Yes. The Cisco 7304 NSE-150 has complete feature parity with the Cisco 7304 NSE-100.
- Q. What type of SFP does the Cisco 7304 NSE-150 support?**
- A.** Table 2 lists SFP support on the Cisco 7304 NSE-150 at first customer shipment (FCS).

Table 2. SFP Support on Cisco 7304

Product Number	Product Description
GLC-SX-MM	Gigabit Ethernet SFP, LC connector SX transceiver
GLC-SX-MM=	Gigabit Ethernet SFP, LC connector SX transceiver, spare
GLC-LH-SM	Gigabit Ethernet SFP, LC connector LH transceiver
GLC-LH-SM=	Gigabit Ethernet SFP, LC connector LH transceiver, spare
GLC-ZX-SM	Gigabit Ethernet SFP, 1000BASE-ZX
GLC-ZX-SM=	Gigabit Ethernet SFP, 1000BASE-ZX, spare
CWDM-SFP-1470=	1000BASE-CWDM 1470-nm SFP (single mode only), spare

Product Number	Product Description
CWDM-SFP-1490=	1000BASE-CWDM 1490-nm SFP (single mode only), spare
CWDM-SFP-1510=	1000BASE-CWDM 1510-nm SFP (single mode only), spare
CWDM-SFP-1530=	1000BASE-CWDM 1530-nm SFP (single mode only), spare
CWDM-SFP-1550=	1000BASE-CWDM 1550-nm SFP (single mode only), spare
CWDM-SFP-1570=	1000BASE-CWDM 1570-nm SFP (single mode only), spare
CWDM-SFP-1590=	1000BASE-CWDM 1590-nm SFP (single mode only), spare
CWDM-SFP-1610=	1000BASE-CWDM 1610-nm SFP (single mode only), spare
GLC-BX-D	1000BASE-BX SFP, 1490 nm
GLC-BX-D=	1000BASE-BX SFP, 1490 nm, spare
GLC-BX-U	1000BASE-BX SFP, 1310 nm
GLC-BX-U=	1000BASE-BX SFP, 1310 nm, spare
SFP-GE-S	Cisco 1000BASE-SX SFP (with DOM)
SFP-GE-S=	Cisco 1000BASE-SX SFP (with DOM), spare
SFP-GE-L	Cisco 1000BASE-LX/LH SFP (with DOM)
SFP-GE-L=	Cisco 1000BASE-LX/LH SFP (with DOM), spare
SFP-GE-Z	Extended-temperature ZX SFP
SFP-GE-Z=	Extended-temperature ZX SFP, spare
GLC-T	1000BASE-T SFP
GLC-T=	1000BASE-T SFP, spare

Q. What is the default memory size of the Cisco 7304 NSE-150?

A. The default memory is 2 GB.

Q. When will the Cisco 7304 NSE-150 be available to order?

A. The Cisco 7304 NSE-150 will be orderable Q4 2006.

Q. Will there be bundles for the Cisco 7304 NSE-150 similar to the Cisco 7304 NSE-100 chassis bundles?

A. Yes. The part number of the bundle is CISCO7304-NSE-150. It includes the 4-slot Cisco 7304 chassis, one Cisco 7304 NSE-150, one power supply, and 2-GB memory on the Cisco 7304 NSE-150.

For More Information

For more information about the Cisco 7304 NSE-150, visit

<http://www.cisco.com/en/US/products/hw/routers/ps352/ps353/index.html> or contact your local

Cisco account representative.

**Americas Headquarters**

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Asia Pacific Headquarters

Cisco Systems, Inc.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

Europe Headquarters

Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: +31 0 800 020 0791
Fax: +31 0 20 357 1100

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

©2006 Cisco Systems, Inc. All rights reserved. CCVP, the Cisco logo, and the Cisco Square Bridge logo are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn is a service mark of Cisco Systems, Inc.; and Access Registrar, Aironet, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, GigaDrive, GigaStack, HomeLink, Internet Quotient, IOS, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, LightStream, Linksys, MeetingPlace, MGX, Networking Academy, Network Registrar, Packet, PIX, ProConnect, RateMUX, ScriptShare, SlideCast, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0609R)