CISCO SYSTEMS

Data Sheet

Cisco 7304 Router NSE-100 Forwarding Engine (Network Services Engine-100 Forwarding Engine) for the Cisco 7304 Router

CISCO 7304 ROUTE PROCESSOR

The Cisco® 7304 Router is designed for the network edge where high performance IP services are required to enable profitability, service differentiation, and business agility. Utilizing a compact (4 Rack Unit), modular (4 slot) form factor, the Cisco 7304 platform delivers high-touch IP services at optical speeds necessary for applications in the high-end enterprise and the service provider managed service customer premise equipment (CPE).

Figure 1. NSE-100 for the Cisco 7304

High performance services are critical in these implementations, and the Cisco 7304 delivers an evolving set of hardware accelerated IP Services via the Cisco patented Parallel eXpress Forwarding (PXF) IP Services Processor technology. The Cisco 7304 provides a wide range of connectivity from DS-0 to OC-48 performance, an architecture engineered for high availability, and multiprotocol support. With Gigabit Ethernet ports built into the system, the Cisco 7304 is the evolution of Cisco System's® 7x00 series routers.

The NSE-100 is the forwarding engine/route processor for the Cisco 7304. In order to provide both a rich feature set and a forwarding rate of up to 3.5 Mpps, the NSE-100 utilizes PXF technology to deliver hardware-accelerated network services and a RM7000 MIPS microprocessor to leverage various multiprotocol capabilities such as IPX, AppleTalk, DLSw, SNAw, and other features from Cisco IOS.

QUICK-LOOK FEATURE SUMMARY

NSE-100 Features

- Centralized PXFs for hardware accelerated features (CEF, Turbo ACLs, NetFlow v8, MPLS, MPLS VPN, priority queuing, classification and marking, etc.)
- Up to 3.5 Mpps CEF forwarding performance for PXF accelerated services
- 350 MHz RM 7000 MIPS microprocessor allows non-PXF accelerated features to run at 450 Kpps
- 4 Gbps bidirectional throughput supported through NSE-100 for line cards
- Two GBIC based Gigabit Ethernet ports
- Multiprotocol and feature support via Cisco IOS (IP, IPX, AppleTalk, DLSw, SNAs)
- FE Management port
- Console/Auxiliary ports (RJ-45)
- 256 MB removable compact flash
- 512MB SODIMM memory

Cisco 7304 Chassis Features

- Compact (4RU), modular, NEBS-3 compliant system
- Redundant Route Processor capable
- Front to back airflow

Minimum Recommended Software Release

- 12.2(20)S

CISCO 7304 PROCESSOR OPTIONS

The Cisco 7304 Router offers two types of processor options: general-purpose network processing engine (NPE) and hardware-accelerated network services engine (NSE).

In addition to providing increased LAN connectivity (three fixed 10/100/1000 Mbps ports copper or fiber), 1 GB SDRAM, and 256 MB compact flash, with over 1 Mpps switching performance, the NPE-G100 also offers full Cisco IOS Software feature support at a higher processing speed than the route processor of the Cisco 7304 NSE-100 (approximately 450,000 pps). This means that the NPE-G100 can deliver all Cisco IOS® Software-based services at high performance, thus providing maximum versatility. The PXF-based NSE-100 offers superior 3.5 Mpps performance for specific applications through those features that are hardware accelerated and also supports line-rate performance for high-speed interfaces (up to OC-48/STM-16).

Table 1 provides a quick overview of the primary differences between the two Cisco 7304 processing engines.

Table 1.   Comparison of the Cisco 7304 NPE-G100 and NSE-100 Network Processing Engines

Feature	NPE-G100	NSE-100
Engine type	General purpose processor	PXF-based processor plus general purpose RP support
Performance	Over 1 Mpps route processor (RP)	3.5 Mpps (PXF); 450 kpps (RP)
LAN ports	3 fixed 10/100/1000-Mbps ports (RJ-45) or SFP optics	(2) Gigabit Ethernet
Gigabit Ethernet optics	SFPs (SX, LX/LH, ZX)	Gigabit interface converters (GBICs) (SX, LX/LH, ZX)
SDRAM	1 GB, DDR Synchronous Dynamic RAM (SDRAM)	512 MB
Compact Flash memory	256 MB	256 MB

ORDERING INFORMATION

To order, visit: http://www.cisco.com/public/ordering_info.shtml

Table 2.   NSE-100 for the Cisco 7304 Ordering Information

Part Number	Description
7300-NSE-100	Cisco 7304 Network Services Engine 100 (offered through system bundle only)
7300-NSE-100=	Cisco 7304 Network Services Engine 100, SPARE
7300-MEM-512	512 MB memory for Cisco 7304
7300-MEM-512=	512 MB memory for Cisco 7304, SPARE
7304-I/O-CFM-256M	Cisco 7304 Compact Flash Memory, 256MB
7304-I/O-CFM-256M=	Cisco 7304 Compact Flash Memory, 256MB, SPARE

Note: "=" denotes a spare order (for example, 7300-NSE-100= would be the spare part number for the NSE-100).

TECHNICAL SPECIFICATIONS

Physical Specifications

- Occupies slots 0 and 1 in a Cisco 7304 chassis

- Redundant NSE-100 occupies slots 2 and 3

- Weight: 6.5 lb/2.95 kg

- Mean Time Between Failure (MTBF): 5.5 years for system configuration

- Gigabit Ethernet Specifications:

- IEEE 802.3z compliant

- Support for Jumbo frames with an MTU of 9192 bytes

- GBIC-based Gigabit Ethernet Interfaces with SC connectors: See Table 3

Table 3. GE Optical Specifications

Product Number	Product Description
CWDM-GBIC-1470=	1000BASE-CWDM 1470 nm GBIC (single mode only), spare
CWDM-GBIC-1490=	1000BASE-CWDM 1490 nm GBIC (single mode only), spare
CWDM-GBIC-1510=	1000BASE-CWDM 1510 nm GBIC (single mode only), spare
CWDM-GBIC-1530=	1000BASE-CWDM 1530 nm GBIC (single mode only), spare
CWDM-GBIC-1550=	1000BASE-CWDM 1550 nm GBIC (single mode only), spare
CWDM-GBIC-1570=	1000BASE-CWDM 1570 nm GBIC (single mode only), spare
CWDM-GBIC-1590=	1000BASE-CWDM 1590 nm GBIC (single mode only), spare
CWDM-GBIC-1610=	1000BASE-CWDM 1610 nm GBIC (single mode only), spare
WS-G5483=	1000BASE-T GBIC transceiver module for Category 5 copper wire
WS-G5484	1000BASE-SX Short Wavelength GBIC (Multimode only)
WS-G5484=	1000BASE-SX Short Wavelength GBIC (Multimode only), spare
WS-G5486	1000BASE-LX/LH long haul GBIC (singlemode or multimode)
WS-G5486=	1000BASE-LX/LH long haul GBIC (singlemode or multimode), spare
WS-G5487	1000Base-ZX extended reach GBIC(singlemode)
WS-G5487=	1000Base-ZX extended reach GBIC(singlemode), spare

Note: All CWDM-GBIC and WS-G5483 GBIC are supported in the Cisco IOS Software Release 12.2(28)SB or later on the Cisco 7304 Router.

Environmental Conditions

- Operating temperature: 32° to 104°F (0° to 40°C)

- Storage temperature: –4° to 149°F (–20° to 65°C)

- Relative humidity: 5 to 90%, noncondensing

- Operating altitude: –500 to 6500 ft

Network Management

- Local Loopback
- Network Loopback
- Netflow Data Export
- SONET MIB (RFC 1595), Performance Statistics for Timed Intervals (Current, 15 minute, Multiple 15 minute, and 1 Day intervals)
- Regenerator Section
- Multiplex Section
- Path Errored Seconds
- Severely Errored Seconds
- Severely Errored Framed Seconds
- SNMP MIB (RFC 1157)
- SNMP V2c MIB (RFC 1901-1907)
- SNMP V3 MIB
- IF-MIB (RFC 1573)
- CISCO-STACK-MIB
- CISCO-CDP-MIB
- RMON MIB (RFC 1757)
- ENTITY-MIB (RFC 2037)
- HC-RMON
- MIB-II (RFC1213)
- SMON-MIB
- HSRP MIB

REGULATORY COMPLIANCE

Safety Compliance

- UL 1950
- CAN/CSA C22.2 No. 950-95
- EN 60825-1 Laser Safety (Class 1)
- 21CFR 1040 Laser Safety
- EN60950
- IEC 60950
- TS 001
- AS/NZS 3260

EMC Compliance

- FCC Part 15 (CFR 47) Class A
- VCCI Class A
- EN55022 Class A
- CISPR 22 Class A
- AS/NZS 3548 Class A
- EN55024
- CE Marking
- EN50082-1
- ETS300386

NEBS Level 3 Compliance

- GR-1089-Core, Electromagnetic Compatibility and Electrical Safety
- GR-63-CORE-NEBS: Physical Protection

ETSI Compliance

- ETS-300386-2 Switching Equipment

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