Cisco NX-OS Software Release 4.2(1)N1(1) for Cisco Nexus 5000 Series Switches and Nexus 2000 Series Fabric Extenders

PB620447

Cisco® NX-OS Software is a data center-class operating system built with modularity, resiliency, and serviceability at its foundation. Based on the industry-proven Cisco MDS 9000 SAN-OS Software, Cisco NX-OS helps ensure continuous availability and sets the standard for mission-critical data center environments. The self-healing and highly modular design of Cisco NX-OS makes zero-effect operations a reality and enables exceptional operational flexibility.

Cisco NX-OS Software Release 4.2(1)N1(1) is a Cisco NX-OS Software release on the Cisco Nexus® 5000 Series Switches and Nexus 2000 Series Fabric Extenders. This software release introduces two new products of the Cisco Nexus 2000 Series: the Cisco Nexus 2248TP GE and Nexus 2232PP 10GE Fabric Extenders, and the Cisco Fabric Extender Transceiver (FET). In addition, several new software features are introduced to improve performance, scalability, and management for the product line. The combination of the Cisco Nexus 2000 Series and Cisco Nexus 5000 Series offers a highly cost-effective access layer architecture for 100 Megabit Ethernet; Gigabit Ethernet; 10 Gigabit Ethernet; mixed Gigabit Ethernet; 10 Gigabit Ethernet server, Ethernet or unified fabric, physical, or virtual server environments.

Cisco Nexus 2232PP 10GE Fabric Extender

The Cisco Nexus 2232PP is a stackable one-rack unit (1RU) switch typically used in conjunction with the Cisco Nexus 5000 Series Switch. The Cisco Nexus 2232PP is managed and configured by the upstream switch. The fabric extender downloads the software image from the switch the same way that a module would download it from the supervisor in a modular chassis (Figure 1).

Figure 1. Cisco Nexus 2232PP 10GE Fabric Extender Front View

The Cisco Nexus 2232PP has the following features:

- It has a compact 1RU form factor
- Front-to-back cooling compatible with data center hot-aisle and cold-aisle designs, with all switch ports at the rear of the unit in close proximity to server ports
- The fabric extender is hot-pluggable
- Forty 10 Gigabit Ethernet SFP+ ports are on the rear panel. There are thirty-two 10 Gigabit Ethernet SFP+ and Gigabit SFP host ports and eight 10 Gigabit Ethernet SFP+ and SFP uplink ports
- Host PortChannel and vPC (up to 8 PortChannel members per PortChannel, with no restriction on the number of PortChannels)
- All ports support Data Center Bridging (DCB) and Fibre Channel over Ethernet (FCoE) transport

- Low-latency, cut-through switching, ideal for 10 Gigabit Ethernet server and pass-through blade server connectivity
- The fabric extender requires a Cisco Nexus 5000 for control and management-plane support
- Up to 12 Cisco Nexus 2232PP Fabric Extenders are supported per Cisco Nexus 5000
- Airflow is from power supply side to port side
- Hot swappable Fan Tray with redundant fans
- The fabric extender provides dual power supplies (- 1+1 redundant in default configuration) and load sharing, and is hot-swappable
- The fabric extender offers SFP+ support for short reach (SR), long reach (LR), FET-10G (100m), and CX1 (1, 3, and 5m)

Cisco Nexus 2248TP GE Fabric Extender

The Cisco Nexus 2248TP GE Fabric Extender is a stackable 1RU switch typically used in conjunction with the Cisco Nexus 5000 Series Switch. The Cisco Nexus 2248TP is managed and configured by the upstream switch. The fabric extender downloads the software image from its Nexus 5000 parent switch in the same way that a module would download it from the supervisor in a modular chassis. (Figure 2).

Figure 2. Cisco Nexus 2248TP GE Fabric Extender Front View

The Cisco Nexus 2248TP has the following features:

- It has a compact 1RU form factor
- Front-to-back cooling compatible with data center hot-aisle and cold-aisle designs, with all switch ports at the rear of the unit in close proximity to server ports
- The fabric extender is hot-pluggable
- The fabric extender has forty-eight 100/1000-TX downlink ports on the rear panel. There are four 10 Gigabit Ethernet SFP+ uplink ports on the rear panel
- Host PortChannel and vPC (up to 8 PortChannel members per PortChannel, with no restriction on the number of PortChannels)
- Up to 12 Cisco Nexus 2248TP Fabric Extenders are supported per Cisco Nexus 5000
- Airflow is from power supply side to port side
- Dual power supplies (- 1+1 redundant in default configuration), load sharing, hot swappable
- Hot swappable Fan Tray with redundant fans
- The fabric extender uplinks support SFP+: FET-10G, SR, LR, and CX1 (1, 3, and 5m, respectively); there is no long reach multimode (LRM) support

Cisco Fabric Extender Transceiver

Figure 3. Cisco Fabric Extender Transceiver

The Cisco Fabric Extender Transceiver is an optical transceiver that provides a compelling cost-effective solution for connecting the Cisco Nexus 2000 Fabric Extender to its parent Cisco Nexus 5000 Switch. The FET simplifies overall access layer designs by eliminating distance limitations within the data center and allowing customers to use structured cabling horizontally (multimode fiber [MMF]) to interconnect racks. Note that the FET can only be used to connect fabric links between the fabric extender and the parent switch. Figure 3 shows the Cisco FET and Table 1 gives its specifications.

Table 1. Specifications of 10 Gigabit Ethernet Cisco FET

Cisco Fabric Extender Transceiver	Specifications				
	Support Matrix	**Cable**	**Distance**	**Power**	**Latency**
Cisco Fabric Extender Transceiver (FET-10G)	• The Cisco FET is supported for fabric links only (Cisco Nexus 2000 Series to Cisco Nexus 5000 Series). • The Cisco FET must be connected to another Cisco FET. • The Cisco FET is supported on Cisco Nexus 2248TP and Nexus 2232PP uplinks and Cisco Nexus 5010 and Nexus 5020 Switch Fabric links.	MMF	25m (OM2) 100m (OM3)	Approximately 1 watt (W) per transceiver	Approximately 0.1 microsecond

New Software Features

ISSU

In Service Software Upgrade (ISSU) provides the capability to perform transparent software upgrades, reducing downtime and allowing you to integrate the newest features and functions with little or no effect on network operation for Ethernet, storage, and converged network environments.

The Cisco Nexus 5000 supports a single “supervisor” ISSU architecture and performs a stateful restart of the entire operating system upon execution, while leaving data plane forwarding intact. Critical processes are run in protected memory space and independently of each other and the kernel, providing granular service isolation and fault containment and enabling modular patching and upgrading and rapid restartability.

ISSU on the Cisco Nexus 5000 supports the nondisruptive upgrade of attached FEX modules. Cisco NX-OS Software Release 4.2(1)N1(1) supports nondisruptive upgrades with rolling upgrades of FEX. A command-line interface (CLI) option has been included to support simultaneous FEX upgrade disruptively.

F_Port Trunking and Channeling

F_Port Trunking, also known as virtual storage area network (VSAN) trunking, enables you to interconnect ports to transmit and receive frames in more than one VSAN over the same physical link. Cisco NX-OS Software Release 4.2(1)N1(1) supports trunking on F ports on the Cisco Nexus 5000 Series.

F_Port Channeling allows the configuration of 16 member ports per port channel and a maximum of 4 port channels per Cisco Nexus 5000 Switch.

VTP Transparent

In the Cisco Nexus 5000 Series Switches, the VLAN Trunking Protocol (VTP) works in transparent mode, allowing you to extend a VTP domain across the device. Layer 2 trunk interfaces, Layer 2 trunk over physical interfaces, and Layer 2 port channels support VTP transparent functions. This feature relays all VTP protocol packets that the device receives on a trunk port onto all other trunk ports. When the VTP feature is disabled, VTP protocol packets are not relayed.

Local Port Channels on FEX-10G and FEX-100/1000

Cisco NX-OS Software Release 4.2(1)N1(1) enables you to configure local port channels using Link Aggregation Control Protocol (LACP) on Cisco Nexus 2248PP and Cisco Nexus 2232TP ports. The Cisco Nexus 2248PP supports up to 24 port channels, and the Cisco Nexus 2232TP supports a maximum of 16 port channels.

ACLs for SNMP Communities

Cisco NX-OS Software Release 4.2(1)N1(1) enables the assignment of an access control list (ACL) to a community to filter incoming Simple Network Management Protocol (SNMP) requests. If the assigned ACL allows the incoming request packet, SNMP processes the request. If the ACL denies the request, SNMP drops the request and sends a system message.

Error-Disable Recovery

Cisco NX-OS Software Release 4.2(1)N1(1) enables you to configure the automatic error-disabled recovery timeout for a particular error-disabled cause and configure the recovery period.

You can use the **errdisable recovery interval** command to change the recovery period within a range of 30 to 65535 seconds and also change the recovery timeout for a particular error-disable cause.

For More Information

For more information about Cisco Nexus Switches, please visit: http://www.cisco.com/go/nexus5000 and http://www.cisco.com/go/nexus2000.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

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.**

Printed in USA C25-620447-00 09/10