

Cisco Nexus 5548P Switch

Product Positioning

Q. What is the Cisco Nexus® 5500 Platform?

A. The Cisco Nexus 5500 Platform is the next-generation platform of the Cisco Nexus 5000 Series Switches, helping enable the industry's highest density and performance purpose-built fixed form-factor switch on a multilayer, multiprotocol, and multipurpose Ethernet-based fabric.

Q. What is the Cisco Nexus 5548P Switch?

A. The Cisco Nexus 5548P is the first switch in the Cisco Nexus 5500 Platform. It is offered in a one-rack-unit (1RU) form factor and has 32 fixed 10 Gigabit Ethernet SFP+ ports with one expansion slot for added flexibility. At first customer shipment (FCS), two expansion modules will be supported: a 16-port 10 Gigabit Ethernet SFP+ expansion module and an 8-port 10 Gigabit Ethernet SFP+ plus 8-port native Fibre Channel expansion module.

Q. Where can the Cisco Nexus 5500 Platform be deployed?

A. The Cisco Nexus 5500 Platform is well suited for deployments in enterprise data center access layers and small-scale, midmarket data center aggregation environments.

Q. Does this mean that the Cisco Nexus 5500 Platform will offer Layer 3 services?

A. Yes. The Cisco Nexus 5500 platform, including the 5548P switch, will provide Layer 3 functionality via a fieldupgradeable module that is targeted for Q1CY11.

Q. Is Cisco announcing the end-of-sale of the current generation of Cisco Nexus 5000 Series Switches?

A. No. Cisco has no plans to end of sale the current Cisco Nexus 5000 Series Switches.

Fibre Channel and FCoE Support

Q. Does the Cisco Nexus 5548P support FCoE?

A. Yes. All 10 Gigabit Ethernet ports on the Cisco Nexus 5548 are capable of supporting FCoE. The Storage Protocol Services License (SPS) is required to enable FCoE operation.

Q. How is FCoE enabled on the Cisco Nexus 5548P?

A. Similar to on the first generation Nexus 5000 Series Switches, FCoE is an optional feature delivered via the Storage Protocol Services (SPS) license on the Nexus 5548P switch. However, unlike on the first generation Nexus 5000 Series Switches, the Nexus 5548P switch provides a license with eight-port granularity. The granularity comes from an eight-port license that enables any eight ports on the Nexus 5548P switch to perform FCoE on 10GE ports or Native Fibre Channel on the physical Fibre Channel ports. Up to six eight-port licenses can be installed on a Nexus 5548P switch, making it the equivalent of a full chassis license.

Q. Is the Storage Protocol Services (SPS) license enforced or honor-based?

A. The first instance of the SPS license on a system is enforced. Further instances are honor-based. However, similar to on the current generation Nexus 5000 Series Switches, a temporary 120-day trial license goes in effect for the entire chassis upon first use of an FC command.

Q. Can I use the Cisco Nexus 5548P Switch ports as native Fibre Channel ports?

A. The Ethernet ports on the base chassis as well as those on the expansion modules cannot be used to support native Fibre Channel functions. However, you can use the expansion module N55-M8P8FP, which provides eight ports as native Fibre Channel ports. The Storage Protocol Services (SPS) license is also required to enable Native Fibre Channel operation.

Q. Does the Cisco Nexus 5548P support FCoE VE_port (Virtual E_port)?

A. Yes, the Cisco Nexus 5548P supports VE-to-VE connectivity on directly connected Data Center Bridging (DCB) capable links. This feature will be released for Nexus 5548 first and prior N5Ks in a later release.

Q. What is Unified Ports?

A. Unified Ports combine the physical layer port functionality of 1 Gigabit Ethernet, 10 Gigabit Ethernet, and 8/4/2/1G Fibre Channel onto a physical port. The physical port can be configured as 1/10G Traditional Ethernet, 10G Fibre Channel over Ethernet, or 8/4/2/1G Native Fibre Channel. The Storage Protocol Services (SPS) license is required to enable the use of both FCoE and Native FC operations on the Unified Ports.

Q. When will Unified Ports be available on the Cisco Nexus 5548P?

A. On the Nexus 5548P, 16 Unified Ports will be offered via an expansion module targeted for Q1CY11.

Hardware and Environment**Q. What are the main technical benefits of the Cisco Nexus 5548P compared to the previous generation of the Cisco Nexus 5000 Series Switches?**

A. The main technical benefits include:

- Higher port density: The Cisco Nexus 5548 can support up to 48 10 Gigabit Ethernet with a 16-port 10 Gigabit Ethernet expansion module in a single 1RU form factor.
- Lower-latency cut-through switching: Latency is reduced to about 2 microseconds.
- Better scalability: VLAN, MAC address count, Internet Group Management Protocol (IGMP) group, PortChannel, ternary content addressable memory (TCAM), Switched-Port Analyzer (SPAN) session, and logical interface (LIF) count scalability are increased.
- Hardware support for Cisco[®] FabricPath and standards-based Transparent Interconnection of Lots of Links (TRILL): This support makes the Cisco Nexus 5500 Platform an excellent platform for building large-scale, loop-free Layer 2 networks.
- Support for ingress and egress differentiated services code point (DSCP) marking.
- Layer 3 support: A field-upgradable routing card will be available in the future.
- Enhanced SPAN implementation: This feature protects data traffic in case of congestion resulting from SPAN. It enables more active SPAN sessions and supports fabric extender ports as SPAN destinations.

Q. What is the architecture of Cisco Nexus 5548P?

A. The Cisco Nexus 5548P implements a switch-fabric-based architecture. It consists of a set of port application-specific interface cards (ASICs) called unified port controllers (UPCs) and a switch fabric called the unified fabric controller (UFC). The UPCs provide packet-editing, forwarding, quality-of-service (QoS), security-table-lookup, buffering, and queuing functions. The UFC connects the ingress UPCs to the egress UPCs and has a built-in central scheduler. The UFC also replicates packets for unknown unicast, multicast, and broadcast traffic. Each UPC supports eight 1 and 10 Gigabit Ethernet interfaces; however, no local switching is performed on the UPCs. All packets go through the same forwarding path, and the system helps ensure consistent latency for all flows.

Q. Does the Cisco Nexus 5548P support Cisco FabricPath?

A. Yes. The Cisco Nexus 5548P hardware supports Cisco FabricPath, which will be enabled in a future software release.

Q. Does the Cisco Nexus 5548P support IETF TRILL?

A. Yes. The Cisco Nexus 5548P hardware supports prestandard IETF TRILL, since TRILL has not been completely standardized. Support will therefore be enabled in a future software release.

Q. Does the Cisco Nexus 5548P support Layer 3 routing?

A. Yes. The Cisco Nexus 5500 Platform has been designed with Layer 3 support from the start. At FCS, Layer 3 routing will not be available on the Cisco Nexus 5548P and will be enabled in the near future through a fieldupgradeable daughter card.

Q. What are considered the front and back of a Cisco Nexus 5548P Switch?

A. The front of the Cisco Nexus 5548P is where the fans, power supplies, and management ports are located. The back of the Cisco Nexus 5548 is where the fixed Ethernet data ports and the expansion slot are located. The data ports are located on the back of the Cisco Nexus 5548P to facilitate cabling with servers.

Q. Do the power supplies on the Cisco Nexus 5548P support both 110 and 220-volt (V) inputs?

A. Yes. The supported voltage range is from 100V to 240V.

Q. What are the additional RJ45 ports next to the management interface on the front of the Cisco Nexus 5548P?

A. The additional front panel RJ-45 ports are designed for future use. At present, the Cisco Nexus 5548P supports only a single out-of-band management interface.

Q. Can the existing expansion modules on the Cisco Nexus 5010 and 5020 Switches be used on the Cisco Nexus 5500 Platform?

A. No. The expansion modules supported on the Cisco Nexus 5010 and 5020 are not supported on the Cisco Nexus 5500 Platform.

Q. Can the existing power supplies and fan modules on the Cisco Nexus 5010 and 5020 be used on the Cisco Nexus 5500 Platform?

A. No. The power supplies and fan modules for the Cisco Nexus 5010 and 5020 are not interchangeable with those on the Cisco Nexus 5500 Platform.

Q. Does the Cisco Nexus 5548P run the same software image as the Cisco Nexus 5010 and 5020 Switches?

A. Yes. All Cisco Nexus 5000 Series Switches, including the Cisco Nexus 5500 Platform, support the same software image.

Q. Does the Cisco Nexus 5548P support a USB interface?

A. Yes. There is one type-A USB interface on the front of the Cisco Nexus 5548P.

Q. What kind of CPU is used on Cisco Nexus 5548P?

A. Intel Dual-Core 1.73GHz with 2 memory channels, DDR3 at 1066Mhz, with 4MB cache.

Q. How much CPU memory comes with the Cisco Nexus 5548P?

A. The Cisco Nexus 5548P comes with 8 GB of CPU DRAM.

Q. How much flash memory comes with the Cisco Nexus 5548P?

A. The Cisco Nexus 5548P comes with 2 GB of flash memory.

Q. What are the typical and maximum power consumption amounts for the Cisco Nexus 5548P?

A. The typical power consumption of the Cisco Nexus 5548P is 390 watts (W), and the maximum power consumption is 600W.

Q. Does the Cisco Nexus 5548P support 1 Gigabit Ethernet ports?

A. All Ethernet ports on the Cisco Nexus 5548P, including the Ethernet ports on expansion modules, are hardware capable of supporting both 1 and 10 Gigabit Ethernet speeds. Software support for 1 Gigabit Ethernet will be available in a future software release.

Q. What types of transceivers are supported by the Cisco Nexus 5548P?

A. Please refer to the Cisco Nexus 5500 Platform data sheet for a list of supported transceivers and cable types. Data sheets and associated collateral can be found at <http://www.cisco.com/go/nexus5000>.

Q. Does the Cisco Nexus 5548P support IEEE 802.1ae link-level cryptography?

A. No. The Cisco Nexus 5548P Switch hardware does not support IEEE 802.1ae.

Hardware Performance and Scalability**Q. What is the performance throughput of the Cisco Nexus 5548P?**

A. The Cisco Nexus 5548P provides up to 960-Gbps throughput. It implements a nonblocking hardware architecture and helps achieve a line-rate throughput for all frame sizes, for both unicast and multicast traffic, across all ports.

Q. Should I expect any performance degradation when I turn on some features, such as access control lists (ACLs) and Fibre Channel over Ethernet (FCoE), on the Cisco Nexus 5548P?

A. All ports on the Cisco Nexus 5548P provide line-rate performance regardless of the features that are turned on.

Q. The Cisco Nexus 5548P implements cut-through switching among all its 10 Gigabit Ethernet ports. Does it also support cut-through switching for all 1 Gigabit Ethernet, native Fibre Channel, and FCoE ports?

A. Under various circumstances, the Cisco Nexus 5548P can act as either a cut-through switch or a store-and-forward switch. Table 1 summarizes the switch behavior in various scenarios.

Table 1. Switching Mode

Source Interface	Destination Interface	Switching Mode
10 Gigabit Ethernet	10 Gigabit Ethernet	Cut-through
10 Gigabit Ethernet	1 Gigabit Ethernet	Cut-through
1 Gigabit Ethernet	1 Gigabit Ethernet	Store-and-forward
1 Gigabit Ethernet	10 Gigabit Ethernet	Store-and-forward
FcoE	Fibre Channel	Cut-through
Fibre Channel	FCoE	Store-and-forward
Fibre Channel	Fibre Channel	Store-and-forward
FCoE	FCoE	Cut-through

Whenever the ingress interface operates at 10 Gigabit Ethernet speed, cut-through switching is used.

Q. How many MAC addresses does the Cisco Nexus 5548P support?

A. The Cisco Nexus 5548P Switch hardware provides an address table for 32,000 MAC addresses. The same MAC address table is shared between unicast and multicast traffic, and it also includes some internal entries. At FCS, 4000 MAC address entries will be reserved for multicast groups that are learned through IGMP snooping, and 25,000 MAC address entries will be reserved for unicast traffic. The remaining 3000 MAC address entries will be used to handle hash collision.

Q. How many VLANs does the Cisco Nexus 5548P support?

A. The Cisco Nexus 5548P supports up to 4094 active VLANs. Of these, a few are reserved for internal use, thus providing users with up to 4014 configurable VLANs.

Q. How many PortChannels are supported with the Cisco Nexus 5548P?

A. All ports on the Cisco Nexus 5548P can be configured as PortChannel members. The Cisco Nexus 5548P Switch hardware can support up to 48 local PortChannels and up to 576 PortChannels on the host-facing ports of Cisco Nexus 2000 Series Fabric Extenders.

Q. How many ports can be in a PortChannel on the Cisco Nexus 5548P?

A. One PortChannel can have up to 16 members on the Cisco Nexus 5548P.

Q. What is the TCAM table size on the Cisco Nexus 5548P?

A. The Cisco Nexus 5548P provides a 4000-TCAM table size; however, the table is shared among port ACLs, VLAN ACLs, QoS ACLs, SPAN ACLs, and ACLs for control traffic redirection.

Q. How many Spanning Tree Protocol logical ports are supported on the Cisco Nexus 5548P?

A. The Cisco Nexus 5548P supports up to 12,000 logical ports, of which up to 4000 can be network ports for switch-to-switch connection.

Fabric Extender Support**Q. Can the Cisco Nexus 2000 Series Fabric Extenders connect to the expansion module ports on the Cisco Nexus 5548P?**

A. Yes. The Cisco Nexus 2000 Series Fabric Extenders can connect to any Ethernet port on the Cisco Nexus 5548P.

Q. How many Cisco Nexus 2000 Series Fabric Extenders can connect to a single Cisco Nexus 5548P Switch?

A. At FCS, one Cisco Nexus 5548P will support up to 12 Cisco Nexus 2000 Series Fabric Extenders. The scalability will increase with future software releases.

Q. Does the Cisco Nexus 5548P support all the currently available Cisco Nexus 2000 Series Fabric Extenders?

A. Yes. The Cisco Nexus 5548P supports all four currently available Cisco Nexus 2000 Series Fabric Extenders: Cisco Nexus 2148T, 2248TP GE, 2224TP GE, and 2232PP 10GE Fabric Extenders.

Management and Troubleshooting**Q. Does the Cisco Nexus 5548P Switch hardware support NetFlow?**

A. No. The Cisco Nexus 5548P Switch hardware does not support NetFlow.

Q. How many SPAN sessions does the Cisco Nexus 5548P support?

A. The Cisco Nexus 5548P supports up to four active SPAN sessions.

Q. Does SPAN traffic affect the data traffic on the Cisco Nexus 5548P?

A. No. The Cisco Nexus 5548P Switch hardware is designed to give higher priority to data traffic during periods of congestion when both SPAN and data traffic could contend with each other. When such congestion occurs, the Cisco Nexus 5548P can easily be configured to protect the higher-priority data traffic while dropping the lower-priority SPAN traffic.

Q. Can a 1 Gigabit Ethernet port on the Cisco Nexus 5548P be configured as a SPAN destination port?

A. Yes. After 1 Gigabit Ethernet mode is software enabled on the Cisco Nexus 5548P, any 1 Gigabit Ethernet port can be configured as a SPAN destination port.

Q. Can I use SPAN to capture a Priority Flow Control (PFC) frame on the Cisco Nexus 5548P?

A. No. The PFC frame will not be mirrored from the SPAN source port to the SPAN destination port.

Q. Can a Cisco Nexus 2000 Series host-facing port be configured as a SPAN destination port on the Cisco Nexus 5548P?

A. The Cisco Nexus 5548P Switch hardware supports configuration of Cisco Nexus 2000 Series host-facing ports as SPAN destination ports. However, the software support will be available in a future release.

Q. Does the Cisco Nexus 5548P support Encapsulated Remote SPAN (ERSPAN)?

A. In a post-FCS software release, the Cisco Nexus 5548P will support ERSPAN source sessions. The Cisco Nexus 5548P cannot de-encapsulate ERSPAN packets and therefore will not support ERSPAN destination sessions.

Q. Does the Cisco Nexus 5548P support RSPAN?

A. No. The Cisco Nexus 5548P does not support RSPAN.

Q. Does the Cisco Nexus 5548P support the IEEE 1588 Precision Time Protocol (PTP) feature?

A. The Cisco Nexus 5548P Switch hardware is capable of supporting IEEE 1588 PTP. However, software support will be available in a future software release.

Q. Do the Cisco Data Center Network Manager (DCNM) and Cisco Fabric Manager support the Cisco Nexus 5548P?

A. Cisco DCNM and Cisco Fabric Manager support for the Cisco Nexus 5548P will be available 2 to 3 months after FCS.

Configuration Synchronization

Q. What is the configuration synchronization feature introduced in Cisco NX-OS Release 5.0(2)N1(1) for the Cisco Nexus 5000 Series?

A. Configuration synchronization (config-sync), when enabled, allows the configuration made on one switch to be pushed to another switch through software. The feature is mainly used in virtual PortChannel (vPC) scenarios to eliminate the manual configuration on both vPC peer switches. It also eliminates the possibility of human error and helps ensure that both switches have the exact same configuration.

Q. Does config-sync require special hardware?

A. Config-sync is a software feature that is hardware independent. Starting with Cisco NX-OS Release 5.0(2)N1(1), it is supported on all Cisco Nexus 5000 Series Switches, including the Cisco Nexus 5548P.

Q. Can Type 1 and Type 2 inconsistencies be avoided with config-sync?

A. No. vPC and config-sync are two separate features. For vPC to be operational, Type 1 and Type 2 parameters must match. If the parameters do not match, users will continue to experience a vPC-failure scenario. Configsync allows the user to make changes on one switch and synchronize the configuration with that on the other peer automatically. It saves the user from having to create identical configurations on each switch.

Q. What are the three requirements for enabling the config-sync feature?

- A.** To enable the config-sync feature, users need to:
- Enable Cisco Fabric Services over IP on each peer
 - Create identical switch profiles on each switch
 - Configure the correct peer IP addresses

Q. Which interface carries config-sync traffic?

A. Config-sync messages are carried only over the mgmt0 interface. They cannot currently be carried over the in-band switch virtual interfaces (SVIs).

Q. If I use a direct point-to-point connection using SVIs and the default Virtual Routing and Forwarding (VRF) instance for my peer keepalive (instead of the mgmt0 interface and the management VRF instance), will config-sync work?

A. Config-sync is independent of vPC. As long as users have mgmt0 connectivity and can reach the vPC peer, config-sync will work.

Q. When config-sync is implemented, why are VLANs not propagated?

A. Users must make sure that the specific features are enabled on each Cisco Nexus 5548P Switch. Features are not automatically synchronized.

Q. Is FCoE supported under config-sync?

A. No. FCoE is not supported under config-sync. The supported features for a switch profile are VLANs, ACLs, Spanning Tree Protocol, QoS, and interface-level configurations (Ethernet, PortChannels, and vPC).

Q. What happens if the commit process fails during a config-sync operation?

A. The configuration will be rolled back to the original (default) state, resulting in no configuration changes. Neither switch will update any configurations.

Q. What happens if the switch profile has been created but no commit command was entered, yet a reload occurs?

A. In this instance, the switch profile was not saved to the startup configuration, and as a result, no changes will be made.

Q. If the peer is lost (config-sync transport is down) and local configuration changes are made on one switch, what happens when the config-sync transport (mgmt0 interface) comes back up?

A. Before the mgmt0 interface comes back up, the changes that were made on the switch are applied locally when the **commit** command is entered. After the mgmt0 interface comes back up, the configuration is automatically synchronized with that of the peer.

Q. Can I commit from the vPC secondary switch?

A. Yes, the config-sync feature is independent of the vPC. The initiator does not follow the vPC primary or secondary switch. The commit command can be entered from either of the two switches.

Q. Is there a mechanism to avoid configuration conflicts?

A. Yes. To avoid conflicts, enter the **commit** command from a single switch. If you simultaneously try to enter a **commit** command from the other switch, the following error message will appear:

```
N5K-2(config-sync-sp)# commit
Failed: Session Database already locked, Verify/Commit in Progress.
```

Q. Where is the configuration submode to create a switch profile?

A. A new mode is introduced with config-sync. As with **config t**, enter the **config sync** command to access the switch-profile subcommand.

Configuration Rollback**Q. What is the minimum Cisco NX-OS release that supports configuration rollback on the Cisco Nexus 5548P?**

A. Starting with Cisco NX-OS Release 5.0(2)N1(1), configuration rollback is supported on all Cisco Nexus 5000 Series Switches, including the Cisco Nexus 5548P.

Q. Is the configuration rollback feature on the Cisco Nexus 5000 Series Switches the same as that on the Cisco Nexus 7000 Series Switches?

A. Yes. However, at FCS, the Cisco Nexus 5000 Series, including the Cisco Nexus 5548P, will support only the atomic (default) configuration.

Q. Is FCoE supported by configuration rollback?

A. No. If feature fcoe is enabled, users will not be able to use the configuration rollback feature on the Cisco Nexus 5000 Series Switches, including the Cisco Nexus 5548P.

Q. Does configuration rollback require a license?

A. No. It requires only Cisco NX-OS Release 5.0(2)N1(1) as the minimum software version.

Q. Can I use the same checkpoint names?

A. No. Each checkpoint name must be unique.

Q. How do I create a configuration rollback?

A. Enter the following:

```
N5k#config t
N5k(config)#checkpoint "test"
N5k(config)#show checkpoint test
```

Q. How do I implement configuration rollback?

A. Enter the following:

```
N5k#show diff rollback-path checkpoint test
N5k#rollback running-config checkpoint test
```

Q. In atomic configuration, rollback will be implemented if there are no errors. What is the behavior if an error occurs?

A. The rollback action will abort if it encounters an error. For example, assume the user has a saved checkpoint named Test1. If an error occurs while the user is trying to roll back from the current running configuration to Test1, the switch will retain the current running configuration.

Q. What is the difference between config-sync rollback and configuration rollback?

A. Config-sync rollback occurs if a commit command is entered and fails. If the **commit** command fails, the new configuration is ignored, and the system reverts to the original configuration. This is an implicit rollback that takes place automatically. In contrast, the configuration rollback feature is user defined and is controlled by a manual configuration that is verified and applied by the user.

Q. How do I clear or remove checkpoints?

A. After the system runs a write-erase or reload operation, checkpoints are deleted. You can also enter the **clear checkpoint database** command.

Quality of Service**Q. How many classes of service does the Cisco Nexus 5548P support?**

A. The Cisco Nexus 5548P supports eight classes of service. Two of them are reserved for internal control traffic, and six classes of service are available for data traffic. All six classes of service can be used for non-FcoE Ethernet traffic.

Q. How many hardware queues does the Cisco Nexus 5548P have?

A. The Cisco Nexus 5548P has 384 unicast virtual output queues (VOQs) and 128 multicast VOQs at ingress for each Ethernet port. It has 8 queues for unicast and 8 queues for multicast at egress for each Ethernet port.

Q. How many packet buffers are present on the Cisco Nexus 5548P?

A. The Cisco Nexus 5548P provides 680-KB packet buffers for each 10 Gigabit Ethernet port: 480 KB are allocated for ingress, and 160 KB are allocated for egress. The default configuration has one system class - **class-default** - for data traffic, and all 480 KB of the buffer space are allocated to **class-default**. User-defined system classes have dedicated buffers and take buffer space from the 480-KB limit. Command-line interface (CLI) commands are available to allow users to configure the desired buffer sizes for each system class.

Q. How does the Cisco Nexus 5548P classify incoming traffic?

A. The Cisco Nexus 5548P can classify incoming traffic based on CoS marking, DSCP marking, or user-defined ACL rules.

Q. Does the Cisco Nexus 5548P trust CoS and DSCP markings by default?

A. Yes. The Cisco Nexus 5548P trusts CoS and DSCP markings by default. The switch will not modify CoS or DSCP values unless modification is configured by the user. Although the Cisco Nexus 5548P trusts the CoS and DSCP values, it will not classify and queue the packets based on those values. By default, all traffic will be assigned to **class-default** and mapped to one queue. Users will need to define their own policy maps to classify and queue packets based on CoS or DSCP values.

Q. Does Cisco Nexus 5548 support ingress policing and egress policing?

A. The Cisco Nexus 5548P Switch hardware supports both ingress and egress policing. However, software support will be available in a future software release.

Q. Does the Cisco Nexus 5548P support traffic shaping?

A. No. The Cisco Nexus 5548P does not support traffic shaping.

Q. Does the Cisco Nexus 5548P support DSCP marking?

A. Yes. The Cisco Nexus 5548P supports both ingress and egress DSCP marking.

Q. Does the Cisco Nexus 5548P support explicit congestion notification (ECN)?

A. The Cisco Nexus 5548P Switch hardware supports ECN. However, software support will be enabled in a future software release.

Multicast**Q. How many IGMP groups can the Cisco Nexus 5548P support?**

A. At FCS, the Cisco Nexus 5548P will support up to 4000 IGMP groups.

Q. How are multicast packets replicated in the Cisco Nexus 5548P?

A. Multicast packets are replicated by the switch fabric. The ingress ports send one copy of the multicast packets to the switch fabric, and the switch fabric replicates the packets for all the egress ports in the multicast group. No ingress or egress replication takes place for the multicast packets. However, the SPAN traffic is replicated by the port ASICs (the UPC); the receive SPAN traffic is replicated at the ingress ports, and transmit SPAN traffic is replicated at the egress ports.

Q. How is the forwarding decision made for IP multicast packets on the Cisco Nexus 5548P?

A. The Cisco Nexus 5548P intercepts the IGMP join and leave messages from hosts and keeps track of the ports that send join and leave messages. The IGMP group is converted to a multicast MAC address with the format 0100.5EXX.XX and stored in the MAC address table (sometimes referred to as a station table). Subsequently, the IP multicast packet forwarding decision is made by checking the destination MAC address against the multicast MAC table. For other features, such as QoS and security, the multicast IP address is used for table lookup.

Q. What happens if the Cisco Nexus 5548P receives an IP multicast packet whose group address is not yet learned by the switch?

A. If the destination MAC address is in the range 0100.5E00.00XX, the packets will be flooded in the VLAN. Otherwise, the IP multicast packets will be dropped if the IGMP group is unknown to the Cisco Nexus 5548P.

Virtualization

Q. What is network interface virtualization (NIV) on the Cisco Nexus 5548P?

A. NIV is a technology that allows any adapter to be virtualized in multiple virtual network interface cards (vNICs) or virtual host bus adapters (vHBAs). Virtualized adapters can be used to provide multiple interfaces on a single server, enabling consolidation and flexibility in both physical and virtualized server environments. Each individual vNIC and vHBA is identified by a tag called a VNTag. When an NIV-capable adapter is connected to the Cisco Nexus 5548P, the Cisco Nexus 5548P can use the VNTag to forward frames that belong to the same physical port.

Q. Does support for NIV mean that I can use the Cisco Nexus 5548P as an external switch for virtual machine traffic instead of the software hypervisor switch?

A. NIV is one of the building blocks necessary to implement virtual machine traffic switching using an external hardware switch, but it is not the only one. The full set of features is referred to as Cisco VN-Link and will be enabled on the Cisco Nexus 5548P, in subsequent releases.

Q. How do NIV and VNTag interoperate with existing standards?

A. VNTag and IEEE 802.1Qbh Port Extension provide the same capabilities, functions, and management interface. The on-the-wire formats are somewhat different between the two. However, Cisco expects to deliver IEEE 802.1Qbh standards-compliant products in the future that can translate between the on-the-wire formats, enabling full interoperability of a heterogeneous VNTag and IEEE 802.1Qbh environment.

Q. What is LIF on the Cisco Nexus 5548P?

A. The logical interface, or LIF, is a data structure on the Cisco Nexus 5548P Switch hardware that allows a physical interface on the Cisco Nexus 5548P to emulate multiple logical or virtual interfaces. The LIF data structure carries certain properties, such as the VLAN membership, interface ACL labels, and Spanning Tree Protocol states. For NIV support, the LIF is derived from the VNTag values carried in the packet. With a LIF data structure, the Cisco Nexus 5548P can process and forward frames on a per-LIF basis. For instance, each Cisco Nexus 2000 Series host-facing port or virtual interface created for the vNICs could be mapped to a LIF data structure on the Cisco Nexus 5548P Switch hardware.

Q. What is the advantage of supporting more LIFs?

A. After NIV becomes available, if you have more LIFs, you can configure more vNICs on a virtualized adapter. The Cisco Nexus 5548P Switch hardware can support up to 8000 LIFs per UPC.

Q. Does the Cisco Nexus 5548P support virtual device contexts (VDCs)?

A. No. The Cisco Nexus 5548P does not support VDCs.

Port Profiles

Q. Describe the port-profile feature offered with Cisco NX-OS Release 5.0(2)N1(1) on the Cisco Nexus 5000 Series Switches, including the Nexus 5548P.

A. A port profile is a preconfigured template that allows repetitive interface commands to be grouped together and applied to an interface range.

Q. What are the benefits of port profiles?

A. Port profiles provide ease-of-configuration. The switch administrator can manage one simple interface configuration template and apply it to a large range of ports as needed.

Q. What types of interfaces are supported with port profiles?

A. Port profiles can be configured as for Ethernet, PortChannels, and VLANs.

Q. How do I configure and apply a port profile to an interface?

A. The procedures for defining and applying port profiles are as follows:

- To create or delete a port profiles, enter the following commands:

```
N5k(config)# [no] port-profile type [eth|fc|port-channel|tunnel|interface-vlan]
<name>
```

```
N5k(config-port-prof)#
```

- To enable or disable a port profile, enter the following commands:

```
N5k(config-port-prof)# [no] state enabled
```

- To assign or unassign a port profiles to Interfaces, enter the following commands:

```
N5k(config)# interface eth1/1-10
```

```
N5k(config-if)# [no] inherit port-profile <name>
```

Q. What happens to a port-profile inherited interface when the port profile is deleted?

A. When a port profile is deleted, the commands configured in the port profile, are removed from the interfaces that had inherited the port profile.

Q. Which takes precedence: the interface default, the port profile, or the interface configuration?

A. The interface configuration takes precedence over the port profile, and the port profile takes precedence over the interface defaults.

Q. What happens if a failure occurs while a port profile is being inherited?

A. Whenever a port profile is to be inherited or enabled, a checkpoint is created through interaction with the configuration rollback feature. Upon detection of a failure, the software rolls back the configuration to the checkpoint created before the operation was started. For the rollback, only the commands in interface mode are considered for a diff computation. This approach helps ensure that a port profile is never partially applied, rendering the system inconsistent because of port-profile application.

Q. Can I add a command to a port profile after it is inherited by an interface?

A. Yes. You can add commands, and they will also be inherited by the interface.

Q. Can port profiles be combined through inheritance of one port profile by another?

A. Yes. For instance, assume that a port profile named p2 inherits a port profile named p1. In this example, profile p1 is called a subclass profile, and profile p2 is called a superclass profile. Inheritance allows the subclass port profile to inherit all the commands of the superclass port profile that do not conflict with its command list. If a conflict occurs, the configuration in the subclass port profile overrides the configuration in the superclass port profile. For example, assume that port-profile p2 inherits p1, and configurations are as shown here:

```
port-profile p1
speed 1000
port-profile p2
inherit port-profile p1
speed 10000
switch access vlan 100
```

When p2 is applied to an interface, the interface would receive **speed 10000** and not **speed 1000** as defined in p1.

Q. What types of interface commands are available in the port-profile mode?

A. Any command that is supported in the interface mode will also be supported in the corresponding port-profile mode.

Fabric Extender and Expansion Module Preprovisioning

Q. What is the preprovisioning feature?

A. Preprovisioning allows users to configure the Cisco Nexus 2000 Series switch ports and the expansion modules on the Cisco Nexus 5000 Series Switches, including the Nexus 5548P, without requiring the Cisco Nexus 2000 Series Fabric Extenders or the expansion modules to be connected to the Cisco Nexus 5000 Series chassis. With this feature, users can also check the configuration when the Cisco Nexus 2000 Series Fabric Extenders are offline or copy a configuration file to a running configuration.

Q. What version of Cisco NX-OS supports the preprovisioning feature?

A. Starting with Cisco NX-OS Release 5.0(2)N1(1), the preprovisioning feature is supported on all Cisco Nexus 5000 Series Switches, including the Cisco Nexus 5548P.

Q. Which Cisco Nexus 2000 Series Fabric Extenders support preprovisioning?

A. Preprovisioning is supported on all currently available Cisco Nexus 2000 Series Fabric Extenders, including the Cisco Nexus 2148T, 2248TP, 2224TP, and 2232PP.

Q. Can I make configuration changes for offline modules?

A. Yes. Users can make configuration changes to offline modules that have been preprovisioned before.

Q. What are the implications for the preprovisioning feature when Cisco NX-OS needs to be upgraded, downgraded, or reloaded?

A. If the upgrade or downgrade is between images that support preprovisioning, any preprovisioned configuration will be retained across the upgrade. When downgrading from an image that supports preprovisioning to an image that does not, users will be asked to remove any preprovisioned configuration. When the switch is reloaded, all configurations will be retained just as they were before the reload operation as long as the **copy running startup or install all** command was not entered before the reload.



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