

Interface Overview

This chapter provides an overview of the interfaces and its features.

- Finding Feature Information, on page 2
- Trunks and Port Channels, on page 3
- Fibre Channel Port Rate Limiting, on page 4
- Maximum NPIV Limit, on page 5
- Extended Credits, on page 6
- N Port Virtualization, on page 7
- FlexAttach, on page 8

Finding Feature Information

Your software release might not support all the features documented in this module. For the latest caveats and feature information, see the Bug Search Tool at https://bst.cloudapps.cisco.com/bugsearch and the release notes for your software release.

To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the New and Changed chapter or the Feature History table below.

Trunks and Port Channels

Trunking, also known as VSAN trunking, is a feature specific to switches in the Cisco MDS 9000 Series. Trunking enables interconnect ports to transmit and receive frames in more than one VSAN, over the same physical link. E and F ports support trunking.

Port channels aggregate multiple physical ISLs into one logical link with higher bandwidth and port resiliency for both Fibre Channel and FICON traffic. With this feature, up to 16 expansion ports (E-ports) or trunking E-ports (TE-ports) can be bundled into a port channel. ISL ports can reside on any switching module, and they do not need a designated primary port. If a port or a switching module fails, the port channel continues to function properly without requiring fabric reconfiguration.

Cisco NX-OS software uses a protocol to exchange the port channel configuration information between adjacent switches to simplify the port channel management, including misconfiguration detection and autocreation of port channels among compatible ISLs. In the autoconfigure mode, ISLs with compatible parameters automatically form channel groups; no manual intervention is required.

Port channels load balance Fibre Channel traffic using a hash of source FC-ID and destination FC-ID, and optionally the exchange ID. Load balancing using port channels is performed over both Fibre Channel and FCIP links. Cisco NX-OS software can also be configured to load balance across multiple same-cost FSPF routes.

Fibre Channel Port Rate Limiting

The Fibre Channel port rate-limiting feature for the Cisco MDS 9100 Series controls the amount of bandwidth available to individual Fibre Channel ports within groups of four host-optimized ports. Limiting bandwidth on one or more Fibre Channel ports allows the other ports in the group to receive a greater share of the available bandwidth under high-utilization conditions. Port rate limiting is also beneficial for throttling WAN traffic at the source to help eliminate excessive buffering in Fibre Channel and IP data network devices.

Maximum NPIV Limit

The maximum number of NPIV logins is not configurable at the port level on edge switches operating in NPV mode. Starting with Cisco MDS 9000 Release 6.2(7), the maximum NPIV limit feature is supported on core NPIV switches, which include Cisco MDS 9513, MDS 9710, and MDS 9250i switches. The maximum NPIV limit per-port feature allows you to configure a per-port limit. If a maximum limit is configured, whenever an FDISC is received, it checks if the maximum NPIV limit is exceeded, then it will reject the FLOGI. If the maximum NPIV limit is not exceeded, if the limit is exceeded, then it will process the FLOGI. The **trunk-max-npiv-limit** command is used for F ports in trunking mode with multiple VSANs. If a port's operational mode goes into trunking mode, this parameter is used.

Extended Credits

Full line-rate Fibre Channel ports provide at least 255 standard buffer credits . Adding credits lengthens distances for the Fibre Channel SAN extension. Using extended credits, up to 4095 buffer credits from a pool of more than 6000 buffer credits for a module can be allocated to ports as needed to greatly extend the distance for Fibre Channel SANs.



Note This feature is supported on all Cisco MDS Director Class Fabric Switches and it is not supported on any Cisco MDS Fabric switches.

N Port Virtualization

Cisco NX-OS software supports industry-standard N port identifier virtualization (NPIV), which allows multiple N port fabric logins concurrently on a single physical Fibre Channel link. HBAs that support NPIV can help improve SAN security by enabling zoning and port security to be configured independently for each virtual machine (OS partition) on a host. In addition to being useful for server connections, NPIV is beneficial for connectivity between core and edge SAN switches.

N port virtualizer (NPV) is a complementary feature that reduces the number of Fibre Channel domain IDs in core-edge SANs. Cisco MDS 9000 Series Multilayer switches operating in the NPV mode do not join a fabric; they only pass traffic between core switch links and end devices, which eliminates the domain IDs for these switches. NPIV is used by edge switches in the NPV mode to log in to multiple end devices that share a link to the core switch. This feature is available only for Cisco MDS Blade Switch Series, the Cisco MDS 9124 Multilayer Fabric Switch, Cisco MDS 9134 Multilayer Fabric Switch, Cisco MDS 9148 Multilayer Fabric Switch, Cisco MDS 9148S Multilayer Fabric Switch, and Cisco MDS 9396S Multilayer Fabric Switch.

FlexAttach

One of the main problems in a SAN environment is the time and effort required to install and replace servers. The process involves both SAN and server administrators, and the interaction and coordination between them can make the process time consuming. To alleviate the need for interaction between SAN and server administrators, the SAN configuration should not be changed when a new server is installed or an existing server is replaced. FlexAttach addresses these problems by reducing configuration changes and the time and coordination required by SAN and server administrators when installing and replacing servers. This feature is available only for Cisco MDS 9000 Blade Switch Series, the Cisco MDS 9124, Cisco MDS 9134, Cisco MDS 9148 Multilayer Fabric Switch, Cisco MDS 9148S Multilayer Fabric Switch, and Cisco MDS 9396S switches when NPV mode is enabled.