

### Objective

This tech note outlines the main differences in interface support between Cisco® NX-OS Software and Cisco IOS® Software. Sample configurations are included for Cisco NX-OS and Cisco IOS Software for some common features to demonstrate the similarities and differences. Please refer to the [NX-OS documentation on Cisco.com](#) for a complete list of supported features.

### Interface Configuration Overview

The NX-OS supports different physical and virtual interface types to meet various network connectivity requirements. The different interface types include: layer-2 switched (access or trunk), layer-3 routed, layer-3 routed (sub-interface trunk), switched virtual interface (SVI), port-channel, loopback, and tunnel interfaces. Port-channel interfaces are documented in the [Cisco NX-OS/IOS Port-Channel Comparison Tech-Note](#).

### Important Cisco NX-OS and Cisco IOS Software Differences

In Cisco NX-OS:

- SVI command-line interface (CLI) configuration and verification commands are not available until you enable the SVI feature with the **feature interface-vlan** command.
- Tunnel interface command-line interface (CLI) configuration and verification commands are not available until you enable the Tunnel feature with the **feature tunnel** command.
- Interfaces support stateful and stateless restarts after a supervisor switchover for high availability.
- Only 802.1q trunks are supported, so the encapsulation command isn't necessary when configuring a layer-2 switched trunk interface. (Cisco ISL is not supported)
- An IP subnet mask can be applied using /xx or xxx.xxx.xxx.xxx notation when configuring an IP address on a layer-3 interface. The IP subnet mask is displayed as /xx in the configuration and **show interface** command output regardless which configuration method is used.
- The CLI syntax for specifying multiple interfaces is different in Cisco NX-OS Software. The **range** keyword required in Cisco IOS Software has been omitted from the syntax (IE: **interface ethernet 1/1-2**), and the interface range can be configured in ascending or descending order. Cisco IOS Software requires the interface range to be configured in ascending order.
- When monitoring interface statistics with the **show interface** CLI command, a configurable load-interval can be configured per interface with the **load-interval counters** command to specify sampling rates for bit-rate and packet-rate statistics. The Cisco IOS Software supports the **load-interval** interface command, but doesn't support multiple sampling rates.
- I/O modules have a locator-LED (beacon) that allows remote-hands-support personnel to easily identify a specific port. The beacon light can be enabled per interface in interface configuration mode with the **beacon** CLI command.
- An administrator can configure port profiles as templates that can be applied to a large number of interfaces to simplify the CLI configuration process. Port profiles are "live" configuration templates, so modifications to a port profile are automatically applied to the associated interfaces. Cisco IOS uses port macros to simplify the CLI configuration process, but unlike Port Profiles they are applied one time.
- The supervisor module out-of-band management ethernet port located on the supervisor module is configured with the **interface mgmt 0** CLI command.
- The supervisor module out-of-band Connectivity Management Processor (CMP) port is configured in the NX-OS with the **interface cmp module <#>** CLI command. The CMP port can also be configured by attaching to the CMP using the **attach cmp** CLI command.
- The NX-OS support Nexus 2000 (models 2224TP, 2248TP, 2232PP) Fabric Extender (FEX) connectivity. The parent Nexus 7000 manages Nexus 2000's software and CLI configuration, so the

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Nexus 7000 is a single managed entity for all connected Nexus 2000's. Nexus 2000 host ports are configured using the **interface ethernet <chassis/module/port>** CLI command. A Nexus 2000 can only be connected to the 10GE M1, M1-XL and F2 modules (Please read the documentation on cisco.com to understand port connectivity restrictions.)

- Proxy ARP is disabled on all interfaces by default.

### Things You Should Know

The following list provides some additional facts about the Cisco NX-OS that should be helpful when configuring interfaces.

- An interface can only be configured in 1 VDC at a time.
- When assigning interfaces to a VDC on the 48 port SFP/UTP M1 series modules there are no restrictions.
- When assigning interfaces to a VDC on the 32 port 10GE M1 series modules, all four interfaces in a port group (IE. group 1 =1,3,5,7 group 2 =2,4,6,8, etc.) must be assigned to the same VDC.
- When assigning interfaces to a VDC on the 32 port 1/10GE F1 Series module, both ports in a port group (IE. 1-2, 3-4, etc.) must be assigned to the same VDC.
- When assigning interfaces to a VDC on the 48 port 1/10GE F2 Series module, all four ports in a port group (IE. 1-4, 5-8, etc.) must be assigned to the same VDC.
- When assigning interfaces to a VDC on a Nexus 2224TP, 2248TP, 2232PP all interfaces must belong to the same VDC.
- One 10 GE interface per port group can be configured in dedicated mode using the **rate-mode dedicated** interface CLI command on the M1 series modules (The remaining three ports are disabled).
- The mgmt 0 port is associated to all configured VDCs allowing TELNET/SSH and IP management applications such as SNMP to access the VDC directly. All mgmt 0 ports must be configured in the same IP subnet.
- The default port type is configurable for **L3** routed or **L2** switched in the **setup** startup script. (**L3** is the default port type prior to running the script)
- A layer-2 switched trunk port sends and receives traffic for all VLANs by default (This is the same as Cisco IOS Software). Use the **switchport trunk allowed vlan** interface CLI command to specify the VLANs allowed on the trunk.
- The **clear counters interface ethernet <x/x>** CLI command resets the counters for a specific interface.
- An interface configuration can be reset to its default values with the **default interface <x/x>** global configuration command.
- The 48 port UTP M1 series module supports Time Domain Reflectometry (TDR) cable diagnostics. All 12 ports in a port group must be shutdown prior to running the **test cable-diagnostics tdr interface ethernet <x/x>** CLI command. The results can be verified with the **show interface ethernet <x/x> cable-diagnostics-tdr** command.

### Configuration Comparison

The following sample code shows configuration similarities and differences between the Cisco NX-OS and Cisco IOS Software CLIs. The CLI is very similar between Cisco IOS and Cisco NX-OS Software.

## *Cisco IOS CLI*

### **Configuring a Routed Interface**

### **Configuring a Switched Interface (VLAN 10)**

### **Configuring a Switched Virtual Interface (SVI)**

### **Configuring a Switched Trunk Interface**

### **Configuring a Routed Trunk Sub-Interface**

## *Cisco NX-OS CLI*

**interface ethernet 1/1**

ip address 192.168.1.1/24

no shutdown

**vlan 10**

interface ethernet 1/1

switchport

switchport mode access

switchport access vlan 10

no shutdown

**feature interface-vlan**

interface vlan 10

ip address 192.168.1.1/24

no shutdown

**interface ethernet 1/1**

switchport mode trunk

switchport trunk allowed vlan 10,20

switchport trunk native vlan 2

no shutdown

**interface ethernet 1/1**

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no switchport

no shutdown

interface ethernet 1/1.10

encapsulation dot1q 10

ip address 192.168.1.1/24

no shutdown

### Configuring a Loopback Interface

**interface loopback 1**

ip address 192.168.1.1/32

no shutdown

### Configuring a Tunnel Interface

**feature tunnel**

interface tunnel 1

ip address 192.168.1.1/24

tunnel source 172.16.1.1

tunnel destination 172.16.2.1

no shutdown

### Configuring an Interface Description

**interface ethernet 1/1**

description Test Interface

### Configuring Jumbo Frames

**interface ethernet 1/1**

mtu 9216

### Configuring Multiple Interfaces (Examples)

**interface ethernet 1/1-2**

or

interface ethernet 1/1, ethernet 2/1

**Configuring Port Profiles****port-profile type ethernet Email-Template**

switchport

switchport access vlan 10

spanning-tree port type edge

no shutdown

description Email Server Port

state enabled

interface ethernet 2/1-48

inherit port-profile Email-Template

**TDR Cable Diagnostics****test cable-diagnostics tdr interface ethernet 1/1****Configuring the Interface Locator-LED (Beacon)****interface ethernet 1/1**

beacon

**Configuring a Nexus 2000(FEX) Host Interface****interface ethernet 101/1/1****Verification Command Comparison**

The following table lists some useful **show** commands for verifying the status and troubleshooting an interface.

Cisco NX-OS Interface	Cisco IOS Software Interface	Command Description
<b>show interface</b>	show interface	Displays the status and statistics for all interfaces or a specific interface
<b>show interface ethernet &lt;x/x/x&gt;</b>	-	Displays the status and statistics for a FEX host interface
<b>show interface ethernet &lt;x/x&gt; cable-diagnostics tdr</b>	show cable-diagnostics tdr interface <i>type</i> <x/x>	Displays TDR test results
<b>show interface brief</b>	-	Displays a brief list of the interfaces

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		(type, mode, status, speed, MTU)
<b>show interface capabilities</b>	show interface capabilities	Displays interface capabilities
<b>show interface counters</b>	show interface counters	Displays interface counters (input/output unicast, multicast & broadcast)
<b>show interface debounce</b>	show interface debounce	Displays the de-bounce status and time in ms for all interfaces
<b>show interface description</b>	show interface description	Displays all interfaces with configured descriptions
<b>show interface ethernet</b>	show interface ethernet	Displays status and statistics for a specific interface
<b>show interface fex-fabric</b>	-	Displays FEX fabric interface status
<b>show interface flowcontrol</b>	show interface flowcontrol	Displays Flow Control (802.1p) status and state for all interfaces
<b>show interface loopback</b>	show interface loopback	Displays status and statistics for a specific loopback interface
<b>show interface mac-address</b>	-	Displays all interfaces and their associated MAC Addresses
<b>show interface mgmt</b>	-	Displays status and statistics for the management interface located on the supervisor
<b>show interface port-channel</b>	show interface port-channel	Displays status and statistics for a specific port-channel
<b>show interface priority-flow-control</b>	-	Displays PFC information
<b>show interface pruning</b>	show interface pruning	Displays trunk interfaces VTP pruning information
<b>show interface snmp-ifindex</b>	-	Displays SNMP interface index
<b>show interface status</b>	show interface status	Displays all interfaces and their current status
<b>show interface switchport</b>	show interface switchport	Displays a list of all interfaces that are configured as switchports
<b>show interface transceiver</b>	show interface transceiver	Displays a list of all interfaces and optic information (calibrations, details)
<b>show interface trunk</b>	show interface trunk	Displays a list of all interfaces configured as trunks
<b>show interface tunnel &lt;#&gt;</b>	show interface tunnel <#>	Displays status and statistics for a specific tunnel interface
<b>show interface vlan &lt;#&gt;</b>	show interface vlan <#>	Displays status and statistics for a specific VLAN interface
<b>show port-profile</b>	-	Displays all port profile information
<b>show port-profile brief</b>	-	Displays brief port profile information
<b>show port-profile expand-interface</b>	-	Displays active profile configuration applied to an interface

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<b>show port-profile name</b>	-	Displays specific port profile
<b>show port-profile sync-status</b>	-	Displays interfaces out of sync with port profiles
<b>show port-profile usage</b>	-	Displays interfaces inherited to a port profile