



# Configuring Basic Interface Parameters

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## About the Basic Interface Parameters

### Description

For the Ethernet and management interfaces, you can configure the description parameter to provide a recognizable name for the interface. Using a unique name for each interface allows you to quickly identify the interface when you are looking at a listing of multiple interfaces.

For information about setting the description parameter for port-channel interfaces, see the “Configuring a Port-Channel Description” section. For information about configuring this parameter for other interfaces, see the “Configuring the Description” section.

### Beacon

The beacon mode allows you to identify a physical port by flashing its link state LED with a green light. By default, this mode is disabled. To identify the physical port for an interface, you can activate the beacon parameter for the interface.

For information about configuring the beacon parameter, see the “Configuring the Beacon Mode” section.

### Error Disabled

A port is in the error-disabled (err-disabled) state when the port is enabled administratively (using the **no shutdown** command) but disabled at runtime by any process. For example, if UDLD detects a unidirectional link, the port is shut down at runtime. However, because the port is administratively enabled, the port status

displays as `err-disable`. Once a port goes into the `err-disable` state, you must manually reenable it or you can configure a timeout value that provides an automatic recovery. By default, the automatic recovery is not configured, and by default, the `err-disable` detection is enabled for all causes.

When an interface is in the `err-disabled` state, use the **`errdisable detect cause`** command to find information about the error.

You can configure the automatic error-disabled recovery timeout for a particular error-disabled cause and configure the recovery period.

The **`errdisable recovery cause`** command provides an automatic recovery after 300 seconds.

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

If you do not enable the error-disabled recovery for the cause, the interface stays in the error-disabled state until you enter the **`shutdown`** and **`no shutdown`** commands. If the recovery is enabled for a cause, the interface is brought out of the error-disabled state and allowed to retry operation once all the causes have timed out. Use the **`show interface status err-disabled`** command to display the reason behind the error.

## Interface Status Error Policy

Cisco NX-OS policy servers such as Access Control List (ACL) Manager and Quality of Service (QoS) Manager, maintain a policy database. A policy is defined through the command-line interface.

Policies are pushed when you configure a policy on an interface to ensure that policies that are pushed are consistent with the hardware policies. To clear the errors and to allow the policy programming to proceed with the running configuration, enter the **`no shutdown`** command. If the policy programming succeeds, the port is allowed to come up. If the policy programming fails, the configuration is inconsistent with the hardware policies and the port is placed in an error-disabled policy state. The error-disabled policy state remains and the information is stored to prevent the same port from being brought up in the future. This process helps to avoid unnecessary disruption to the system.

## Port MTU Size

The maximum transmission unit (MTU) size specifies the maximum frame size that an Ethernet port can process. For transmissions to occur between two ports, you must configure the same MTU size for both ports. A port drops any frames that exceed its MTU size.

By default, each port has an MTU of 1500 bytes, which is the IEEE 802.3 standard for Ethernet frames. Larger MTU sizes are possible for more efficient processing of data with less overhead. The larger frames, called jumbo frames, can be up to 9216 bytes in size, which is also the default system jumbo MTU size.

On a Layer 3 interface, you can configure an MTU size between 576 and 9216 bytes.



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**Note** The global LAN port MTU size applies to the traffic through a Layer 3 Ethernet LAN port that is configured with a nondefault MTU size.

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For a Layer 2 port, you can configure an MTU size that is either the system default (1500 bytes) or the system jumbo MTU size (initially 9216 bytes).



**Note** If you change the system jumbo MTU size, Layer 2 ports automatically use the system default MTU size (1500 bytes) unless you specify the new system jumbo MTU size for some or all of those ports.

For the Cisco Nexus 3400-S switch, the following applies:

- The 10-G interfaces are mapped to specific hardware ports where the default MTU is 1500.
- The 40-G interfaces are mapped as a HiGiG port where the default MTU is 3FFF and the MTU limit check is disabled.
- In the case of 40-G interfaces, since the MTU limit check is disabled, it ignores the packet size and traffic flows irrespective of its MTU.

For information about setting the MTU size, see the “Configuring the MTU Size” section.

## Bandwidth

Ethernet ports have a fixed bandwidth of 1,000,000 Kb at the physical layer. Layer 3 protocols use a bandwidth value that you can set for calculating their internal metrics. The value that you set is used for informational purposes only by the Layer 3 protocols—it does not change the fixed bandwidth at the physical layer. For example, the Enhanced Interior Gateway Routing Protocol (EIGRP) uses the minimum path bandwidth to determine a routing metric, but the bandwidth at the physical layer remains at 1,000,000 Kb.

For information about configuring the bandwidth parameter for port-channel interfaces, see the “Configuring the Bandwidth and Delay for Informational Purposes” section. For information about configuring the bandwidth parameter for other interfaces, see the “Configuring the Bandwidth” section.

## Throughput Delay

Specifying a value for the throughput-delay parameter provides a value used by Layer 3 protocols; it does not change the actual throughput delay of an interface. The Layer 3 protocols can use this value to make operating decisions. For example, the Enhanced Interior Gateway Routing Protocol (EIGRP) can use the delay setting to set a preference for one Ethernet link over another, if other parameters such as link speed are equal. The delay value that you set is in the tens of microseconds.

For information about configuring the bandwidth parameter for port-channel interfaces, see the “Configuring the Bandwidth and Delay for Informational Purposes” section. For information about configuring the throughput-delay parameter for other interfaces, see the “Configuring the Throughput Delay” section.

## Administrative Status

The administrative-status parameter determines whether an interface is up or down. When an interface is administratively down, it is disabled and unable to transmit data. When an interface is administratively up, it is enabled and able to transmit data.

For information about configuring the administrative status parameter for port-channel interfaces, see the “Shutting Down and Restarting the Port-Channel Interface” section. For information about configuring the administrative-status parameter for other interfaces, see the “Shutting Down and Activating the Interface” section.

# Unidirectional Link Detection Parameter

## UDLD Overview

The Cisco-proprietary Unidirectional Link Detection (UDLD) protocol allows devices that are connected through fiber-optic or copper (for example, Category 5 cabling) Ethernet cables to monitor the physical configuration of the cables and detect when a unidirectional link exists. When a device detects a unidirectional link, UDLD shuts down the affected LAN port and alerts the user. Unidirectional links can cause a variety of problems.

UDLD performs tasks that autonegotiation cannot perform, such as detecting the identities of neighbors and shutting down misconnected LAN ports. When you enable both autonegotiation and UDLD, Layer 1 detections work to prevent physical and logical unidirectional connections and the malfunctioning of other protocols.

A unidirectional link occurs whenever traffic transmitted by the local device over a link is received by the neighbor but traffic transmitted from the neighbor is not received by the local device. If one of the fiber strands in a pair is disconnected, as long as autonegotiation is active, the link does not stay up. In this case, the logical link is undetermined, and UDLD does not take any action. If both fibers are working normally at Layer 1, UDLD determines whether those fibers are connected correctly and whether traffic is flowing bidirectionally between the correct neighbors. This check cannot be performed by autonegotiation, because autonegotiation operates at Layer 1.

The Cisco Nexus 3400-S Series device periodically transmits UDLD frames to neighbor devices on LAN ports with UDLD enabled. If the frames are echoed back within a specific time frame and they lack a specific acknowledgment (echo), the link is flagged as unidirectional and the LAN port is shut down. Devices on both ends of the link must support UDLD in order for the protocol to successfully identify and disable unidirectional links. You can configure the transmission interval for the UDLD frames, either globally or for the specified interfaces.



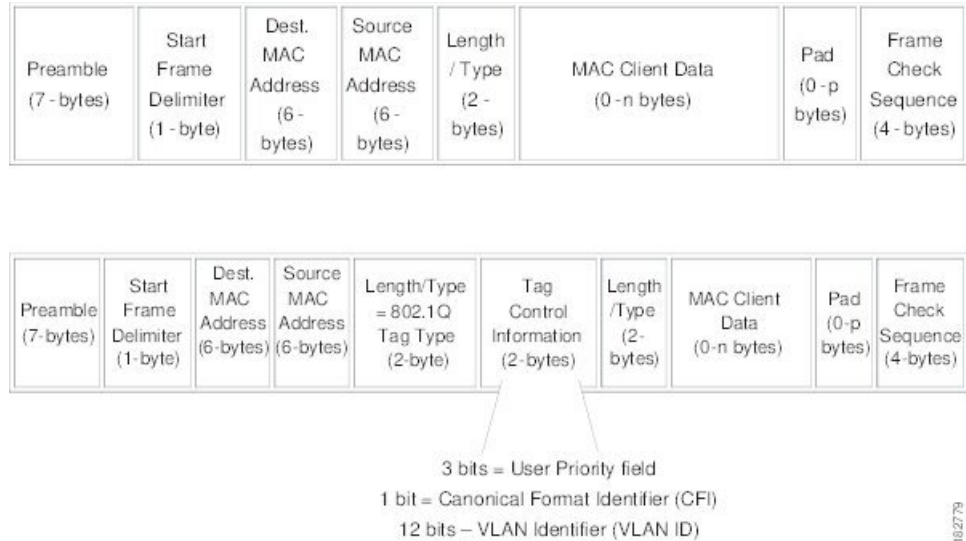
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**Note** By default, UDLD is locally disabled on copper LAN ports to avoid sending unnecessary control traffic on this type of media.

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The figure shows an example of a unidirectional link condition. Device B successfully receives traffic from device A on the port. However, device A does not receive traffic from device B on the same port. UDLD detects the problem and disables the port.

Figure 1: Unidirectional Link



## Default UDLD Configuration

The following table shows the default UDLD configuration.

Table 1: UDLD Default Configuration

Feature	Default Value
UDLD global enable state	Globally disabled
UDLD per-port enable state for fiber-optic media	Enabled on all Ethernet fiber-optic LAN ports
UDLD per-port enable state for twisted-pair (copper) media	Disabled on all Ethernet 10/100 and 1000BASE-TX LAN ports
UDLD aggressive mode	Disabled
UDLD message interval	15 seconds

For information about configuring the UDLD for the device and its port, see the “Configuring the UDLD Mode” section.

## UDLD Aggressive and Nonaggressive Modes

UDLD aggressive mode is disabled by default. You can configure UDLD aggressive mode only on point-to-point links between network devices that support UDLD aggressive mode. If UDLD aggressive mode is enabled, when a port on a bidirectional link that has a UDLD neighbor relationship established stops receiving UDLD frame, UDLD tries to reestablish the connection with the neighbor. After eight failed retries, the port is disabled.

When you enable the UDLD aggressive mode, the following occurs:

One side of a link has a port stuck (both transmission and receive)

One side of a link remains up while the other side of the link is down

In these cases, the UDLD aggressive mode disables one of the ports on the link, which prevents traffic from being discarded.




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**Note** You enable the UDLD aggressive mode globally to enable that mode on all the fiber ports. You must enable the UDLD aggressive mode on copper ports on specified interfaces.

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**Tip** When a line card upgrade is being performed during an in-service software upgrade (ISSU) and some of the ports on the line card are members of a Layer 2 port channel and are configured with UDLD aggressive mode, if you shut down one of the remote ports, UDLD puts the corresponding port on the local device into an error-disabled state. This behavior is correct.

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To restore service after the ISSU has completed, enter the **shutdown** command followed by the **no shutdown** command on the local port.

## Port-Channel Parameters

A port channel is an aggregation of physical interfaces that comprise a logical interface. You can bundle up to 32 individual interfaces into a port channel to provide increased bandwidth and redundancy. Port channeling also load balances traffic across these physical interfaces. The port channel stays operational if at least one physical interface within the port channel is operational.

You can create Layer 3 port channels by bundling compatible Layer 3 interfaces.

Any configuration changes that you apply to the port channel are applied to each interface member of that port channel.

For information about port channels and for information about configuring port channels, see Chapter 6, “Configuring Port Channels.”

## Port Profiles

On Cisco Nexus 3400-S switches, you can create a port profile that contains many interface commands and apply that port profile to a range of interfaces. Each port profile can be applied only to a specific type of interface; the choices are as follows:

- Ethernet
- VLAN network interface
- Port channel

When you choose Ethernet or port channel as the interface type, the port profile is in the default mode which is Layer 3. Enter the **switchport** command to change the port profile to Layer 2 mode.

You inherit the port profile when you attach the port profile to an interface or range of interfaces. When you attach, or inherit, a port profile to an interface or range of interfaces, the system applies all the commands in that port profile to the interfaces. Additionally, you can have one port profile inherit the settings from another port profile. Inheriting another port profile allows the initial port profile to assume all of the commands of

the second, inherited, port profile that do not conflict with the initial port profile. Four levels of inheritance are supported. The same port profile can be inherited by any number of port profiles.

The system applies the commands inherited by the interface or range of interfaces according to the following guidelines:

- Commands that you enter under the interface mode take precedence over the port profile's commands if there is a conflict. However, the port profile retains that command in the port profile.
- The port profile's commands take precedence over the default commands on the interface, unless the port-profile command is explicitly overridden by the default command.
- When a range of interfaces inherits a second port profile, the commands of the initial port profile override the commands of the second port profile if there is a conflict.
- After you inherit a port profile onto an interface or range of interfaces, you can override individual configuration values by entering the new value at the interface configuration level. If you remove the individual configuration values at the interface configuration level, the interface uses the values in the port profile again.
- There are no default configurations associated with a port profile.

A subset of commands are available under the port-profile configuration mode, depending on which interface type you specify.



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**Note** You cannot use port profiles with Session Manager. See the *Cisco Nexus 3400-S NX-OS System Management Configuration Guide* for information about Session Manager.

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To apply the port-profile configurations to the interfaces, you must enable the specific port profile. You can configure and inherit a port profile onto a range of interfaces prior to enabling the port profile. You would then enable that port profile for the configurations to take effect on the specified interfaces.

If you inherit one or more port profiles onto an original port profile, only the last inherited port profile must be enabled; the system assumes that the underlying port profiles are enabled.

When you remove a port profile from a range of interfaces, the system undoes the configuration from the interfaces first and then removes the port-profile link itself. Also, when you remove a port profile, the system checks the interface configuration and either skips the port-profile commands that have been overridden by directly entered interface commands or returns the command to the default value.

If you want to delete a port profile that has been inherited by other port profiles, you must remove the inheritance before you can delete the port profile.

You can also choose a subset of interfaces from which to remove a port profile from among that group of interfaces that you originally applied the profile. For example, if you configured a port profile and configured ten interfaces to inherit that port profile, you can remove the port profile from just some of the specified ten interfaces. The port profile continues to operate on the remaining interfaces to which it is applied.

If you delete a specific configuration for a specified range of interfaces using the interface configuration mode, that configuration is also deleted from the port profile for that range of interfaces only. For example, if you have a channel group inside a port profile and you are in the interface configuration mode and you delete that port channel, the specified port channel is also deleted from the port profile as well.

Just as in the device, you can enter a configuration for an object in port profiles without that object being applied to interfaces yet. For example, you can configure a virtual routing and forward (VRF) instance without

it being applied to the system. If you then delete that VRF and related configurations from the port profile, the system is unaffected.

After you inherit a port profile on an interface or range of interfaces and you delete a specific configuration value, that port-profile configuration is not operative on the specified interfaces.

If you attempt to apply a port profile to the wrong type of interface, the system returns an error.

When you attempt to enable, inherit, or modify a port profile, the system creates a checkpoint. If the port-profile configuration fails, the system rolls back to the prior configuration and returns an error. A port profile is never only partially applied.

## Guidelines and Limitations

Basic interface parameters have the following configuration guidelines and limitations:

- MDIX is enabled by default on copper ports. It is not possible to disable it.
- Fiber-optic Ethernet ports must use Cisco-supported transceivers. To verify that the ports are using Cisco-supported transceivers, use the **show interface transceivers** command. Interfaces with Cisco-supported transceivers are listed as functional interfaces.
- On 100G copper links with **speed auto** configured, **FEC off** configuration is not operational on ports 7-25 on N3K-C3432D-S switches.
- A port can be either a Layer 2 or a Layer 3 interface; it cannot be both simultaneously.

By default, each port is a Layer 3 interface.

You can change a Layer 3 interface into a Layer 2 interface by using the **switchport** command. You can change a Layer 2 interface into a Layer 3 interface by using the **no switchport** command.

- You usually configure Ethernet port speed and duplex mode parameters to auto to allow the system to negotiate the speed and duplex mode between ports. If you decide to configure the port speed and duplex modes manually for these ports, consider the following:
  - Before you configure the speed and duplex mode for an Ethernet or management interface, see the Default Settings section for the combinations of speeds and duplex modes that can be configured at the same time.
  - If you set the Ethernet port speed to auto, the device automatically sets the duplex mode to auto.
  - If you enter the **no speed** command, the device automatically sets both the speed and duplex parameters to auto (the **no speed** command produces the same results as the **speed auto** command).
  - If you configure an Ethernet port speed to a value other than auto (for example, 1G, 10G, or 40G), you must configure the connecting port to match. Do not configure the connecting port to negotiate the speed.
  - To configure speed, duplex, and automatic flow control for an Ethernet interface, you can use the **negotiate auto** command. To disable automatic negotiation, use the **no negotiate auto** command.




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**Note** The device cannot automatically negotiate the Ethernet port speed and duplex mode if the connecting port is configured to a value other than auto.

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**Caution** Changing the Ethernet port speed and duplex mode configuration might shut down and reenble the interface.

- For BASE-T copper ports, auto-negotiation is enabled even when fixed speed is configured.
- Using a regular expression to address a set of interfaces is supported with the **regex** command option. The **regex** command option is an extension that is available for all interface commands.

Example:

```
switch(config-if-range)# interface ethernet regex [2]/
switch(config-if-range)# where
  conf; interface Ethernet2/1-8      admin@switch%default
switch(config-if-range)# interface ethernet regex [1]/2[2-4]
switch(config-if-range)# where
  conf; interface Ethernet1/22-24    admin@switch%default
```

- The source-interface command option provides support for management applications to configure an IPv4 and/or IPv6 inband or outband source IP address for the copy command and other processes (such as tacacs, ntp, ping/ping6, icmp-error and traceroute).
  - Configuration commands

**ip services source-interface interface vrf vrf name**

Examples:

- ip ftp source-interface ethernet 8/1 vrf management
- ip http source-interface loopback 1 vrf blue
- ip ssh source-interface ethernet ethernet 5/1  
/\*This command executes in the VRF context.\*/
- ip ping source-interface ethernet 8/1 vrf blue
- ip traceroute source-interface ethernet 8/1 vrf red
- ip icmp-errors source-interface ethernet 8/1  
/\*This command executes in the VRF context.\*/

- Show commands:

**show ip copy services source-interface interface vrf vrf name**

- show ip ftp source-interface ethernet 8/1 vrf management
- show ip http source-interface loopback 1 vrf blue
- show ip ssh source-interface ethernet ethernet 5/1  
/\*This command executes in the VRF context.\*/
- show ip ping source-interface ethernet 8/1 vrf blue
- show ip traceroute source-interface ethernet 8/1 vrf red

- `show ip icmp-errors source-interface ethernet 8/1`  
/\*This command executes in the VRF context.\*/

- Service commands:

**copy** *service://username@hostname/path file source-interface interface name*

Examples:

- `copy ftp://username@hostname/usr/local/bin file source-interface ethernet 8/1`
- `copy scp://username@hostname/usr/local/bin file source-interface ethernet 8/1`
- `copy tftp://username@hostname/usr/local/bin file source-interface ethernet 8/1`
- `copy http://username@hostname/usr/local/bin file source-interface ethernet 8/1`
- `copy sftp://username@hostname/usr/local/bin file source-interface ethernet 8/1`

## Default Settings

The following lists the default settings for the basic interface parameters.

Parameter	Default
Description	Blank
Beacon	Disabled
Bandwidth	Data rate of interface
Throughput delay	100 microseconds
Administrative status	Shutdown
MTU	1500 bytes
UDLD global	Globally disabled
UDLD per-port enable state for fiber-optic media	Enabled on all Ethernet fiber-optic LAN ports
UDLD per-port enable state for copper media	Disabled on all Ethernet 1G, 10G, 40G, 100G or 400G LAN ports
UDLD message interval	Disabled
UDLD aggressive mode	Disabled
Error disable	Disabled
Error disable recovery	Disabled
Error disable recovery interval	300 seconds

Parameter	Default
Buffer-boost	Enabled

## Configuring the Basic Interface Parameters

When you configure an interface, you must specify the interface before you can configure its parameters.

### Specifying the Interfaces to Configure

#### Before you begin

Before you can configure the parameters for one or more interfaces of the same type, you must specify the type and the identities of the interfaces.

The following table shows the interface types and identities that you should use for specifying the Ethernet and management interfaces.

**Table 2: Information Needed to Identify an Interface for Configurations**

Interface Type	Identity
Ethernet	I/O module slot numbers and port numbers on the module
Management	0 (for port 0)

The interface range configuration mode allows you to configure multiple interfaces with the same configuration parameters. After you enter the interface range configuration mode, all command parameters you enter are attributed to all interfaces within that range until you exit out of the interface range configuration mode.

You enter a range of interfaces using dashes (-) and commas (.). Dashes separate contiguous interfaces and commas separate noncontiguous interfaces. When you enter noncontiguous interfaces, you must enter the media type for each interface.

This example shows how to configure a contiguous interface range:

```
switch(config)# interface ethernet 2/29-30
switch(config-if-range) #
```

This example shows how to configure a noncontiguous interface range:

```
switch(config)# interface ethernet 2/29, ethernet 2/33, ethernet 2/35
switch(config-if-range) #
```

You can specify subinterfaces in a range only when the subinterfaces are on the same port, for example, 2/29.1-2. But you cannot specify the subinterfaces in a range of ports, for example, you cannot enter 2/29.2-2/30.2. You can specify two of the subinterfaces discretely, for example, you can enter 2/29.2, 2/30.2.

This example shows how to configure a breakout cable:

```
switch(config)# interface ethernet 1/2/1
switch(config-if-range) #
```

## SUMMARY STEPS

1. **configure terminal**
2. **interface *interface***

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
<b>Step 2</b>	<b>interface <i>interface</i></b> <b>Example:</b> <pre>switch(config)# interface ethernet 2/1 switch(config-if)#</pre> <b>Example:</b> <pre>switch(config)# interface mgmt0 switch(config-if)#</pre>	<p>Specifies the interface that you are configuring. You can specify the interface type and identity. For an Ethernet port, use <b>ethernet <i>slot/port</i></b>. For the management interface, use <b>mgmt0</b>.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• The 1st example shows how to specify the slot 2, port 1 Ethernet interface.</li> <li>• The 2nd example shows how to specify the management interface.</li> </ul> <p><b>Note</b> You do not need to add a space between the interface type and identity (port or slot/port number) For example, for the Ethernet slot 4, port 5 interface, you can specify either “ethernet 4/5” or “ethernet4/5.” The management interface is either “mgmt0” or “mgmt 0.”</p> <p>When you are in the interface configuration mode, the commands that you enter configure the interface that you specified for this mode.</p>

## Configuring the Description

You can provide textual interface descriptions for the Ethernet and management interfaces.

## SUMMARY STEPS

1. **configure terminal**
2. **interface *interface***
3. **description *text***
4. **show interface *interface***
5. **exit**
6. **copy running-config startup-config**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>configure terminal</b> <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
Step 2	<b>interface interface</b> <b>Example:</b> <pre>switch(config)# interface ethernet 2/1 switch(config-if)#</pre> <b>Example:</b> <pre>switch(config)# interface mgmt0 switch(config-if)#</pre>	Specifies the interface that you are configuring. You can specify the interface type and identity. For an Ethernet port, use <b>ethernet slot/port</b> . For the management interface, use <b>mgmt0</b> .  Examples: <ul style="list-style-type: none"> <li>• The 1st example shows how to specify the slot 2, port 1 Ethernet interface.</li> <li>• The 2nd example shows how to specify the management interface.</li> </ul>
Step 3	<b>description text</b> <b>Example:</b> <pre>switch(config-if)# description Ethernet port 3 on module 1 switch(config-if)#</pre>	Specifies the description for the interface.
Step 4	<b>show interface interface</b> <b>Example:</b> <pre>switch(config)# show interface ethernet 2/1</pre>	(Optional) Displays the interface status, which includes the description parameter.
Step 5	<b>exit</b> <b>Example:</b> <pre>switch(config-if)# exit switch(config)#</pre>	Exits the interface mode.
Step 6	<b>copy running-config startup-config</b> <b>Example:</b> <pre>switch(config)# copy running-config startup-config</pre>	(Optional) Copies the running configuration to the startup configuration.

**Example**

This example shows how to set the interface description to Ethernet port 24 on module 3:

```
switch# configure terminal
switch(config)# interface ethernet 3/24
switch(config-if)# description server1
switch(config-if)#
```

The output of the **show interface eth** command is enhanced as shown in the following example:

```
Switch# show version
Software
BIOS: version 06.26
NXOS: version 6.1(2)I2(1) [build 6.1(2)I2.1]
BIOS compile time: 01/15/2014
NXOS image file is: bootflash:///n9000-dk9.6.1.2.I2.1.bin
NXOS compile time: 2/25/2014 2:00:00 [02/25/2014 10:39:03]

switch# show interface ethernet 6/36
Ethernet6/36 is up
admin state is up, Dedicated Interface
Hardware: 40000 Ethernet, address: 0022.bdf6.bf91 (bia 0022.bdf8.2bf3)
Internet Address is 192.168.100.1/24
MTU 9216 bytes, BW 40000000 Kbit, DLY 10 usec
```

## Configuring the Beacon Mode

You can enable the beacon mode for an Ethernet port to flash its LED to confirm its physical location.

### SUMMARY STEPS

1. **configure terminal**
2. **interface ethernet *slot/port***
3. **[no] beacon**
4. **show interface ethernet *slot/port***
5. **exit**
6. **copy running-config startup-config**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b>  <b>Example:</b> switch# <b>configure terminal</b> switch(config)#	Enters global configuration mode.
<b>Step 2</b>	<b>interface ethernet <i>slot/port</i></b>  <b>Example:</b> switch(config)# <b>interface ethernet 3/1</b> switch(config-if)#	Specifies an interface to configure, and enters interface configuration mode.
<b>Step 3</b>	<b>[no] beacon</b>  <b>Example:</b> switch(config)# <b>beacon</b> switch(config-if)#	Enables the beacon mode or disables the beacon mode. The default mode is disabled.
<b>Step 4</b>	<b>show interface ethernet <i>slot/port</i></b>  <b>Example:</b>	(Optional) Displays the interface status, which includes the beacon mode state.

	Command or Action	Purpose
	<code>switch(config)# show interface ethernet 2/1</code> <code>switch(config-if)#</code>	
<b>Step 5</b>	<b>exit</b>  <b>Example:</b> <code>switch(config-if)# exit</code> <code>switch(config)#</code>	Exits the interface mode.
<b>Step 6</b>	<b>copy running-config startup-config</b>  <b>Example:</b> <code>switch(config)# copy running-config startup-config</code>	(Optional) Copies the running configuration to the startup configuration.

### Example

This example shows how to enable the beacon mode for the Ethernet port 3/1:

```
switch# configure terminal
switch(config)# interface ethernet 3/1
switch(config-if)# beacon
switch(config-if)#
```

This example shows how to disable the beacon mode for the Ethernet port 3/1:

```
switch# configure terminal
switch(config)# interface ethernet 3/1
switch(config-if)# no beacon
switch(config-if)#
```

This example shows how to configure the dedicated mode for Ethernet port 4/17 in the group that includes ports 4/17, 4/19, 4/21, and 4/23:

```
switch# configure terminal
switch(config)# interface ethernet 4/17, ethernet 4/19, ethernet 4/21, ethernet 4/23
switch(config-if)# shutdown
switch(config-if)# interface ethernet 4/17
switch(config-if)# no shutdown
switch(config-if)#
```

## Configuring the Error-Disabled State

You can view the reason an interface moves to the error-disabled state and configure automatic recovery.

### Enabling the Error-Disable Detection

You can enable error-disable detection in an application. As a result, when a cause is detected on an interface, the interface is placed in an error-disabled state, which is an operational state that is similar to the link-down state.

#### SUMMARY STEPS

1. **configure terminal**
2. **errdisable detect cause {acl-exception | all | link-flap | loopback}**

3. shutdown
4. no shutdown
5. show interface status err-disabled
6. copy running-config startup-config

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
<b>Step 2</b>	<b>errdisable detect cause {acl-exception   all   link-flap   loopback}</b> <b>Example:</b> <pre>switch(config)# errdisable detect cause all switch(config-if)#</pre>	Specifies a condition under which to place the interface in an error-disabled state. The default is enabled.
<b>Step 3</b>	<b>shutdown</b> <b>Example:</b> <pre>switch(config-if)# shutdown switch(config)#</pre>	Brings the interface down administratively. To manually recover the interface from the error-disabled state, enter this command first.
<b>Step 4</b>	<b>no shutdown</b> <b>Example:</b> <pre>switch(config-if)# no shutdown switch(config)#</pre>	Brings the interface up administratively and enables the interface to recover manually from the error-disabled state.
<b>Step 5</b>	<b>show interface status err-disabled</b> <b>Example:</b> <pre>switch(config)# show interface status err-disabled</pre>	(Optional) Displays information about error-disabled interfaces.
<b>Step 6</b>	<b>copy running-config startup-config</b> <b>Example:</b> <pre>switch(config)# copy running-config startup-config</pre>	(Optional) Copies the running configuration to the startup configuration.

### Example

This example shows how to enable the error-disabled detection in all cases:

```
switch(config)# errdisable detect cause all
switch(config)#
```



## Enabling the Error-Disabled Recovery

You can specify the application to bring the interface out of the error-disabled state and retry coming up. It retries after 300 seconds, unless you configure the recovery timer (see the **errdisable recovery interval** command).

### SUMMARY STEPS

1. **configure terminal**
2. **errdisable recovery cause {all | bpduguard | failed-port-state | link-flap | loopback | miscabling | psecure-violation | security-violation | storm-control | uddl | vpc-peerlink}**
3. **show interface status err-disabled**
4. **copy running-config startup-config**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b>  <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
<b>Step 2</b>	<b>errdisable recovery cause {all   bpduguard   failed-port-state   link-flap   loopback   miscabling   psecure-violation   security-violation   storm-control   uddl   vpc-peerlink}</b>  <b>Example:</b> <pre>switch(config)# errdisable recovery cause all switch(config-if)#</pre>	Specifies a condition under which the interface automatically recovers from the error-disabled state, and the device retries bringing the interface up. The device waits 300 seconds to retry. The default is disabled.
<b>Step 3</b>	<b>show interface status err-disabled</b>  <b>Example:</b> <pre>switch(config)# show interface status err-disabled switch(config-if)#</pre>	(Optional) Displays information about error-disabled interfaces.
<b>Step 4</b>	<b>copy running-config startup-config</b>  <b>Example:</b> <pre>switch(config)# copy running-config startup-config</pre>	(Optional) Copies the running configuration to the startup configuration.

### Example

This example shows how to enable error-disabled recovery under all conditions:

```
switch(config)# errdisable recovery cause all
switch(config)#
```

## Configuring the Error-Disabled Recovery Interval

You can configure the error-disabled recovery timer value.

### SUMMARY STEPS

1. **configure terminal**
2. **errdisable recovery interval *interval***
3. **show interface status err-disabled**
4. **copy running-config startup-config**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b>  <b>Example:</b> <code>switch# configure terminal</code> <code>switch(config)#</code>	Enters global configuration mode.
<b>Step 2</b>	<b>errdisable recovery interval <i>interval</i></b>  <b>Example:</b> <code>switch(config)# errdisable recovery interval 32</code> <code>switch(config-if)#</code>	Specifies the interval for the interface to recover from the error-disabled state. The range is from 30 to 65535 seconds, and the default is 300 seconds.
<b>Step 3</b>	<b>show interface status err-disabled</b>  <b>Example:</b> <code>switch(config)# show interface status err-disabled</code> <code>switch(config-if)#</code>	(Optional) Displays information about error-disabled interfaces.
<b>Step 4</b>	<b>copy running-config startup-config</b>  <b>Example:</b> <code>switch(config)# copy running-config startup-config</code>	(Optional) Copies the running configuration to the startup configuration.

#### Example

This example shows how to configure the error-disabled recovery timer to set the interval for recovery to 32 seconds:

```
switch(config)# errdisable recovery interval 32
switch(config)#
```

## Configuring the MTU Size

You can configure the maximum transmission unit (MTU) size for Layer 2 and Layer 3 Ethernet interfaces. For Layer 3 interfaces, you can configure the MTU to be between 576 and 9216 bytes (even values are required). For Layer 2 interfaces, you can configure the MTU to be either the system default MTU (1500 bytes) or the system jumbo MTU size (which has the default size of 9216 bytes).



**Note** You can change the system jumbo MTU size, but if you change that value, the Layer 2 interfaces that use that value automatically changes to the new system jumbo MTU value.

By default, Cisco NX-OS configures Layer 3 parameters. If you want to configure Layer 2 parameters, you need to switch the port mode to Layer 2.

You can change the port mode by using the **switchport** command.

After changing the port mode to Layer 2, you can return to configuring Layer 3 interfaces by changing the port mode again, by using the **no switchport** command.

## Configuring the Interface MTU Size

For Layer 3 interfaces, you can configure an MTU size that is between 576 and 9216 bytes.

For Layer 2 interfaces, you can configure all Layer 2 interfaces to use either the default MTU size (1500 bytes) or the system jumbo MTU size (default size of 9216 bytes).

If you need to use a different system jumbo MTU size for Layer 2 interfaces, see the “Configuring the System Jumbo MTU Size” section.

### SUMMARY STEPS

1. **configure terminal**
2. **interface ethernet *slot/port***
3. **[switchport | no switchport]**
4. **mtu *size***
5. **show interface ethernet *slot/port***
6. **exit**
7. **copy running-config startup-config**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>configure terminal</b> <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
Step 2	<b>interface ethernet <i>slot/port</i></b> <b>Example:</b> <pre>switch(config)# interface ethernet 3/1 switch(config-if)#</pre>	Specifies an Ethernet interface to configure, and enters interface configuration mode.
Step 3	<b>[switchport   no switchport]</b> <b>Example:</b> <pre>switch(config-if)# no switchport switch(config-if)#</pre>	Specifies to use Layer 3.

	Command or Action	Purpose
<b>Step 4</b>	<b>mtu size</b> <b>Example:</b> <pre>switch(config-if)# mtu 9216 switch(config-if)#</pre>	For a Layer 3 interface, specifies any even number between 576 and 9216.
<b>Step 5</b>	<b>show interface ethernet slot/port</b> <b>Example:</b> <pre>switch(config)# show interface ethernet 2/1</pre>	(Optional) Displays the interface status, which includes the MTU size.
<b>Step 6</b>	<b>exit</b> <b>Example:</b> <pre>switch(config-if)# exit switch(config)#</pre>	Exits the interface mode.
<b>Step 7</b>	<b>copy running-config startup-config</b> <b>Example:</b> <pre>switch(config)# copy running-config startup-config</pre>	(Optional) Copies the running configuration to the startup configuration.

### Example

This example shows how to configure the Layer 2 Ethernet port 3/1 with the default MTU size (1500):

```
switch# configure terminal
switch(config)# interface ethernet 3/1
switch(config-if)# switchport
switch(config-if)# mtu 1500
switch(config-if)#
```

## Configuring the System Jumbo MTU Size

You can configure the system jumbo MTU size, which can be used to specify the MTU size for Layer 2 interfaces. You can specify an even number between 1500 and 9216. If you do not configure the system jumbo MTU size, it defaults to 9216 bytes.

### SUMMARY STEPS

1. **configure terminal**
2. **system jumbomtu size**
3. **show running-config all**
4. **interface type slot/port**
5. **mtu size**
6. **exit**
7. **copy running-config startup-config**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>configure terminal</b> <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
Step 2	<b>system jumbomtu size</b> <b>Example:</b> <pre>switch(config)# system jumbomtu 8000 switch(config)#</pre>	Specifies the system jumbo MTU size. Use an even number between 1500 and 9216.  <b>Note</b> In general accepted practice, a jumbo frame is considered to have an MTU size greater than 9000 bytes.
Step 3	<b>show running-config all</b> <b>Example:</b> <pre>switch(config)# show running-config all   include jumbomtu</pre>	(Optional) Displays the current operating configuration, which includes the system jumbo MTU size.
Step 4	<b>interface type slot/port</b> <b>Example:</b> <pre>switch(config)# interface ethernet 2/1 switch(config-if)#</pre>	Specifies an interface to configure and enters interface configuration mode.
Step 5	<b>mtu size</b> <b>Example:</b> <pre>switch(config-if)# mtu 1500 switch(config-if)#</pre>	For a Layer 2 interface, specifies either the default MTU size (1500) or the system jumbo MTU size that you specified earlier.  For a Layer 3 interface, specifies any even size between 576 and 9216.
Step 6	<b>exit</b> <b>Example:</b> <pre>switch(config-if)# exit switch(config)#</pre>	Exits the interface mode.
Step 7	<b>copy running-config startup-config</b> <b>Example:</b> <pre>switch(config)# copy running-config startup-config</pre>	(Optional) Copies the running configuration to the startup configuration.

**Example**

This example shows how to configure the system jumbo MTU as 8000 bytes and how to change the MTU specification for an interface that was configured with the previous jumbo MTU size:

```
switch# configure terminal
switch(config)# system jumbomtu 8000
switch(config)# show running-config
```

```
switch(config)# interface ethernet 2/2
switch(config-if)# switchport
switch(config-if)# mtu 1500
switch(config-if)#
```

## Configuring the Bandwidth

You can configure the bandwidth for Ethernet interfaces. The physical layer uses an unchangeable bandwidth of 100G or 400G, but you can configure a value of 1 to 100,000,000 KB for Level 3 protocols.

### SUMMARY STEPS

1. **configure terminal**
2. **interface ethernet *slot/port***
3. **bandwidth *kbps***
4. **show interface ethernet *slot/port***
5. **exit**
6. **copy running-config startup-config**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b>  <b>Example:</b> switch# <b>configure terminal</b> switch(config)#	Enters global configuration mode.
<b>Step 2</b>	<b>interface ethernet <i>slot/port</i></b>  <b>Example:</b> switch(config)# <b>interface ethernet 3/1</b> switch(config-if)#	Specifies an Ethernet interface to configure, and enters interface configuration mode.
<b>Step 3</b>	<b>bandwidth <i>kbps</i></b>  <b>Example:</b> switch(config-if)# <b>bandwidth 1000000</b> switch(config-if)#	Specifies the bandwidth as an informational-only value between 1 and 100,000,000.
<b>Step 4</b>	<b>show interface ethernet <i>slot/port</i></b>  <b>Example:</b> switch(config)# <b>show interface ethernet 2/1</b>	(Optional) Displays the interface status, which includes the bandwidth value.
<b>Step 5</b>	<b>exit</b>  <b>Example:</b> switch(config-if)# <b>exit</b> switch(config)#	Exits the interface mode.
<b>Step 6</b>	<b>copy running-config startup-config</b>  <b>Example:</b>	(Optional) Copies the running configuration to the startup configuration.

	Command or Action	Purpose
	<code>switch(config)# copy running-config startup-config</code>	

### Example

This example shows how to configure an informational value of 1,000,000 Kb for the Ethernet slot 3, port 1 interface bandwidth parameter:

```
switch# configure terminal
switch(config)# interface ethernet 3/1
switch(config-if)# bandwidth 1000000
switch(config-if)#
```

## Configuring the Throughput Delay

You can configure the interface throughput delay for Ethernet interfaces. The actual delay time does not change, but you can set an informational value between 1 and 16777215, where the value represents the number of tens of microseconds.

### SUMMARY STEPS

1. `configure terminal`
2. `interface ethernet slot/port`
3. `delay value`
4. `show interface ethernet slot/port`
5. `exit`
6. `copy running-config startup-config`

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
<b>Step 2</b>	<b>interface ethernet slot/port</b> <b>Example:</b> <pre>switch(config)# interface ethernet 3/1 switch(config-if)#</pre>	Specifies an Ethernet interface to configure, and enters interface configuration mode.
<b>Step 3</b>	<b>delay value</b> <b>Example:</b> <pre>switch(config-if)# delay 10000 switch(config-if)#</pre>	Specifies the delay time in tens of microseconds. You can set an informational value range between 1 and 16777215 tens of microseconds.

	Command or Action	Purpose
Step 4	<b>show interface ethernet <i>slot/port</i></b> <b>Example:</b> <pre>switch(config)# show interface ethernet 3/1 switch(config-if)#</pre>	(Optional) Displays the interface status, which includes the throughput-delay time.
Step 5	<b>exit</b> <b>Example:</b> <pre>switch(config-if)# exit switch(config)#</pre>	Exits the interface mode.
Step 6	<b>copy running-config startup-config</b> <b>Example:</b> <pre>switch(config)# copy running-config startup-config</pre>	(Optional) Copies the running configuration to the startup configuration.

### Example

This example shows how to configure the throughput-delay time so that one interface is preferred over another. A lower delay value is preferred over a higher value. In this example, Ethernet 7/48 is preferred over 7/47. The default delay for 7/48 is less than the configured value on 7/47, which is set for the highest value (16777215):

```
switch# configure terminal
switch(config)# interface ethernet 7/47
switch(config-if)# delay 16777215
switch(config-if)# ip address 192.168.10.1/24
switch(config-if)# ip router eigrp 10
switch(config-if)# no shutdown
switch(config-if)# exit
switch(config)# interface ethernet 7/48
switch(config-if)# ip address 192.168.11.1/24
switch(config-if)# ip router eigrp 10
switch(config-if)# no shutdown
switch(config-if)#
```



**Note** You must first ensure the EIGRP feature is enabled by running the **feature eigrp** command.

## Shutting Down and Activating the Interface

You can shut down and restart Ethernet or management interfaces. When you shut down interfaces, they become disabled and all monitoring displays show them as being down. This information is communicated to other network servers through all dynamic routing protocols. When the interfaces are shut down, the interface is not included in any routing updates. To activate the interface, you must restart the device.

### SUMMARY STEPS

1. **configure terminal**



2. **interface** *interface*
3. **shutdown**
4. **show interface** *interface*
5. **no shutdown**
6. **show interface** *interface*
7. **exit**
8. **copy running-config startup-config**

## DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>configure terminal</b> <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
Step 2	<b>interface</b> <i>interface</i> <b>Example:</b> <pre>switch(config)# interface ethernet 2/1 switch(config-if)#  switch(config)# interface mgmt0 switch(config-if)#</pre>	<p>Specifies the interface that you are configuring. You can specify the interface type and identity. For an Ethernet port, use <i>ethernet slot/port</i>. For the management interface, use <i>mgmt0</i>.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• The 1st example shows how to specify the slot 2, port 1 Ethernet interface.</li> <li>• The 2nd example shows how to specify the management interface.</li> </ul>
Step 3	<b>shutdown</b> <b>Example:</b> <pre>switch(config-if)# shutdown switch(config-if)#</pre>	Disables the interface.
Step 4	<b>show interface</b> <i>interface</i> <b>Example:</b> <pre>switch(config-if)# show interface ethernet 2/1 switch(config-if)#</pre>	(Optional) Displays the interface status, which includes the administrative status.
Step 5	<b>no shutdown</b> <b>Example:</b> <pre>switch(config-if)# no shutdown switch(config-if)#</pre>	Reenables the interface.
Step 6	<b>show interface</b> <i>interface</i> <b>Example:</b> <pre>switch(config-if)# show interface ethernet 2/1 switch(config-if)#</pre>	(Optional) Displays the interface status, which includes the administrative status.

	Command or Action	Purpose
<b>Step 7</b>	<b>exit</b> <b>Example:</b> <pre>switch(config-if)# exit switch(config)#</pre>	Exits the interface mode.
<b>Step 8</b>	<b>copy running-config startup-config</b> <b>Example:</b> <pre>switch(config)# copy running-config startup-config</pre>	(Optional) Copies the running configuration to the startup configuration.

### Example

This example shows how to change the administrative status for Ethernet port 3/1 from disabled to enabled:

```
switch# configure terminal
switch(config)# interface ethernet 3/1
switch(config-if)# shutdown
switch(config-if)# no shutdown
switch(config-if)#
```

## Configuring the UDLD Mode

You can configure normal unidirectional link detection (UDLD) modes for Ethernet interfaces on devices configured to run UDLD.

Before you can enable a UDLD mode for an interface, you must make sure that UDLD is already enabled on the device that includes the interface. UDLD must also be enabled on the other linked interface and its device.



**Note** If the interface is a copper port, you must use the command `enable UDLD` to enable the UDLD. If the interface is a fiber port you need not explicitly enable UDLD on the interface. However if you attempt to enable UDLD on a fiber port using the `enable UDLD` command, you may get an error message indicating that is not a valid command.

The following table lists CLI details to enable and disable UDLD on different interfaces

**Table 3: CLI Details to Enable or Disable UDLD on Different Interfaces**

Description	Fiber port	Copper or Nonfiber port
Default setting	Enabled	Disabled
Enable UDLD command	<b>no udld disable</b>	<b>udld enable</b>
Disable UDLD command	<b>udld disable</b>	<b>no udld enable</b>

**Before you begin**

You must enable UDLD for the other linked port and its device.

**SUMMARY STEPS**

1. **configure terminal**
2. **[no] feature udld**
3. **udld message-time** *seconds*
4. **udld aggressive**
5. **interface ethernet** *slot/port*
6. **udld** [**enable** | **disable**]
7. **show udld** [**ethernet** *slot/port* | **global** | **neighbors**]
8. **exit**
9. **copy running-config startup-config**

**DETAILED STEPS**

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
<b>Step 2</b>	<b>[no] feature udld</b> <b>Example:</b> <pre>switch(config)# feature udld switch(config)#  switch(config)# no feature udld switch(config)#</pre>	Enables/Disables UDLD for the device.
<b>Step 3</b>	<b>udld message-time</b> <i>seconds</i> <b>Example:</b> <pre>switch(config)# udld message-time 30 switch(config)#</pre>	(Optional) Specifies the interval between sending UDLD messages. The range is from 7 to 90 seconds, and the default is 15 seconds.
<b>Step 4</b>	<b>udld aggressive</b> <b>Example:</b> <pre>switch(config)# udld aggressive switch(config)#</pre>	Optional) Specifies UDLD mode to be aggressive. <b>Note</b> For copper interfaces, you enter the interface command mode for those interfaces you want to configure for UDLD aggressive mode and issue this command in interface command model.
<b>Step 5</b>	<b>interface ethernet</b> <i>slot/port</i> <b>Example:</b> <pre>switch(config)# interface ethernet 3/1 switch(config-if)#</pre>	(Optional) Specifies an interface to configure, and enters interface configuration mode.

	Command or Action	Purpose
<b>Step 6</b>	<b>udld [enable   disable]</b> <b>Example:</b> <pre>switch(config-if) # udld enable switch(config-if) #</pre>	(Optional) Enables UDLD on the specified copper port or disables UDLD on the specified fiber port.  To enable UDLD on copper ports, enter the <b>udld enable</b> command. To enable UDLD on fiber ports, enter the <b>no udld disable</b> command.
<b>Step 7</b>	<b>show udld [ethernet slot/port   global   neighbors]</b> <b>Example:</b> <pre>switch(config) # show udld switch(config) #</pre>	(Optional) Displays the UDLD status.
<b>Step 8</b>	<b>exit</b> <b>Example:</b> <pre>switch(config-if-range) # exit switch(config) #</pre>	Exits the interface mode.
<b>Step 9</b>	<b>copy running-config startup-config</b> <b>Example:</b> <pre>switch(config) # copy running-config startup-config</pre>	(Optional) Copies the running configuration to the startup configuration.

### Example

This example shows how to enable the UDLD for the device:

```
switch# configure terminal
switch(config) # feature udld
switch(config) #
```

This example shows how to set the UDLD message interval to 30 seconds:

```
switch# configure terminal
switch(config) # feature udld
switch(config) # udld message-time 30
switch(config) #
```

This example shows how to disable UDLD for Ethernet port 3/1:

```
switch# configure terminal
switch(config) # interface ethernet 3/1
switch(config-if-range) # no udld enable
switch(config-if-range) # exit
```

This example shows how to disable UDLD for the device:

```
switch# configure terminal
switch(config) # no feature udld
switch(config) # exit
```

## Configuring Debounce Timers

You can enable the debounce timer for Ethernet ports by specifying a debounce time (in milliseconds) or disable the timer by specifying a debounce time of 0.



**Note** The **link debounce time** and **link debounce link-up time** commands can only be applied to a physical Ethernet interface.

Use the **show interface debounce** command to display the debounce times for all Ethernet ports.

### SUMMARY STEPS

1. **configure terminal**
2. **interface ethernet *slot/port***
3. **link debounce time *time***
4. **link debounce link-up *time***

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>configure terminal</b> <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
Step 2	<b>interface ethernet <i>slot/port</i></b> <b>Example:</b> <pre>switch(config)# interface ethernet 3/1 switch(config-if)#</pre>	Specifies an Ethernet interface to configure, and enters interface configuration mode.
Step 3	<b>link debounce time <i>time</i></b> <b>Example:</b> <pre>switch(config-if)# link debounce time 1000 switch(config-if)#</pre>	<p>Enables the debounce timer for the specified time (1 to 5000 milliseconds).</p> <p>If you specify 0 milliseconds, the debounce timer is disabled.</p>
Step 4	<b>link debounce link-up <i>time</i></b> <b>Example:</b> <pre>switch(config-if)# link debounce link-up 1000 switch(config-if)#</pre>	<p>Enables the link-up timer for the specified time (1000 to 10000 milliseconds). This command applies only if the port speeds are 25G or 100G. It is not supported on port speeds 10G and/or 40G.</p> <p>The default value of the timer is 0. If the value is set to 0 the interface will be up without any delay.</p> <p><b>Note</b> The <b>no link debounce link-up</b> command also resets the value to 0.</p>

**Example**

- The following example enables the debounce timer and sets the debounce time to 1000 milliseconds for an Ethernet interface:

```
switch# configure terminal
switch(config)# interface ethernet 1/4
switch(config-if)# link debounce time 1000
```

- The following example disables the debounce timer for an Ethernet interface:

```
switch# configure terminal
switch(config)# interface ethernet 1/4
switch(config-if)# link debounce time 0
```

- The following example sets the debounce link-up timer to 1000 milliseconds for an Ethernet interface:

```
switch# configure terminal
switch(config)# interface ethernet 1/4
switch(config-if)# link debounce link-up time 1000
```

## Configuring Port Profiles

You can apply several configuration parameters to a range of interfaces simultaneously. All the interfaces in the range must be the same type. You can also inherit the configurations from one port profile into another port profile. The system supports four levels of inheritance.

### Creating a Port Profile

You can create a port profile on the device. Each port profile must have a unique name across types and the network.




---

**Note** Port profile names can include only the following characters:

- a-z
  - A-Z
  - 0-9
  - No special characters are allowed, except for the following:
    - .
    - -
    - \_
-

**SUMMARY STEPS**

1. **configure terminal**
2. **port-profile** [**type** {**ethernet** | **interface-vlan** | **port-channel**}] *name*
3. **exit**
4. (Optional) **show port-profile**
5. (Optional) **copy running-config startup-config**

**DETAILED STEPS**

	<b>Command or Action</b>	<b>Purpose</b>
<b>Step 1</b>	<b>configure terminal</b>	Enters the global configuration mode.
<b>Step 2</b>	<b>port-profile</b> [ <b>type</b> { <b>ethernet</b>   <b>interface-vlan</b>   <b>port-channel</b> }] <i>name</i>	Creates and names a port profile for the specified type of interface and enters the port-profile configuration mode.
<b>Step 3</b>	<b>exit</b>	Exits the port-profile configuration mode.
<b>Step 4</b>	(Optional) <b>show port-profile</b>	Displays the port-profile configuration.
<b>Step 5</b>	(Optional) <b>copy running-config startup-config</b>	Copies the running configuration to the startup configuration.

**Example**

This example shows how to create a port profile named test for ethernet interfaces:

```
switch# configure terminal
switch(config)# port-profile type ethernet test
switch(config-ppm)#
```

**Entering Port-Profile Configuration Mode and Modifying a Port Profile**

You can enter the port-profile configuration mode and modify a port profile. To modify the port profile, you must be in the port-profile configuration mode.

**SUMMARY STEPS**

1. **configure terminal**
2. **port-profile** [**type** {**ethernet** | **interface-vlan** | **port-channel**}] *name*
3. **exit**
4. (Optional) **show port-profile**
5. (Optional) **copy running-config startup-config**

**DETAILED STEPS**

	<b>Command or Action</b>	<b>Purpose</b>
<b>Step 1</b>	<b>configure terminal</b>	Enters the global configuration mode.

	Command or Action	Purpose
<b>Step 2</b>	<b>port-profile</b> [type { <b>ethernet</b>   <b>interface-vlan</b>   <b>port-channel</b> }] <i>name</i>	Enters the port-profile configuration mode for the specified port profile and allows you to add or remove configurations to the profile.
<b>Step 3</b>	<b>exit</b>	Exits the port-profile configuration mode.
<b>Step 4</b>	(Optional) <b>show port-profile</b>	Displays the port-profile configuration.
<b>Step 5</b>	(Optional) <b>copy running-config startup-config</b>	Copies the running configuration to the startup configuration.

### Example

This example shows how to enter the port-profile configuration mode for the specified port profile and bring all the interfaces administratively up:

```
switch# configure terminal
switch(config)# port-profile type ethernet test
switch(config-ppm)# no shutdown
switch(config-ppm)#
```

## Assigning a Port Profile to a Range of Interfaces

You can assign a port profile to an interface or to a range of interfaces. All the interfaces must be the same type.

### SUMMARY STEPS

1. **configure terminal**
2. **interface** [**ethernet** *slot/port* | **interface-vlan** *vlan-id* | **port-channel** *number*]
3. **inherit port-profile** *name*
4. **exit**
5. (Optional) **show port-profile**
6. (Optional) **copy running-config startup-config**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b>	Enters the global configuration mode.
<b>Step 2</b>	<b>interface</b> [ <b>ethernet</b> <i>slot/port</i>   <b>interface-vlan</b> <i>vlan-id</i>   <b>port-channel</b> <i>number</i> ]	Selects the range of interfaces.
<b>Step 3</b>	<b>inherit port-profile</b> <i>name</i>	Assigns the specified port profile to the selected interfaces.
<b>Step 4</b>	<b>exit</b>	Exits the port-profile configuration mode.
<b>Step 5</b>	(Optional) <b>show port-profile</b>	Displays the port-profile configuration.



	Command or Action	Purpose
Step 6	(Optional) <b>copy running-config startup-config</b>	Copies the running configuration to the startup configuration.

### Example

This example shows how to assign the port profile named adam to Ethernet interfaces 7/3 to 7/5, 10/2, and 11/20 to 11/25:

```
switch# configure terminal
switch(config)# interface ethernet7/3-5, ethernet10/2, ethernet11/20-25
switch(config-if)# inherit port-profile adam
switch(config-if)#
```

## Enabling a Specific Port Profile

To apply the port-profile configurations to the interfaces, you must enable the specific port profile. You can configure and inherit a port profile onto a range of interfaces before you enable that port profile. You would then enable that port profile for the configurations to take effect on the specified interfaces.

If you inherit one or more port profiles onto an original port profile, only the last inherited port profile must be enabled; the system assumes that the underlying port profiles are enabled.

You must be in the port-profile configuration mode to enable or disable port profiles.

### SUMMARY STEPS

1. **configure terminal**
2. **port-profile** [type {ethernet | interface-vlan | port-channel}] *name*
3. **state enabled**
4. **exit**
5. (Optional) **show port-profile**
6. (Optional) **copy running-config startup-config**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>configure terminal</b>	Enters the global configuration mode.
Step 2	<b>port-profile</b> [type {ethernet   interface-vlan   port-channel}] <i>name</i>	Creates and names a port profile for the specified type of interface and enters the port-profile configuration mode.
Step 3	<b>state enabled</b>	Enables that port profile.
Step 4	<b>exit</b>	Exits the port-profile configuration mode.
Step 5	(Optional) <b>show port-profile</b>	Displays the port-profile configuration.
Step 6	(Optional) <b>copy running-config startup-config</b>	Copies the running configuration to the startup configuration.

### Example

This example shows how to enter the port-profile configuration mode and enable the port profile:

```
switch# configure terminal
switch(config)# port-profile type ethernet test
switch(config-ppm)# state enabled
switch(config-ppm)#
```

## Inheriting a Port Profile

You can inherit a port profile onto an existing port profile. The system supports four levels of inheritance.

### SUMMARY STEPS

1. **configure terminal**
2. **port-profile** *name*
3. **inherit port-profile** *name*
4. **exit**
5. (Optional) **show port-profile**
6. (Optional) **copy running-config startup-config**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b>	Enters the global configuration mode.
<b>Step 2</b>	<b>port-profile</b> <i>name</i>	Enters the port-profile configuration mode for the specified port profile.
<b>Step 3</b>	<b>inherit port-profile</b> <i>name</i>	Inherits another port profile onto the existing one. The original port profile assumes all the configurations of the inherited port profile.
<b>Step 4</b>	<b>exit</b>	Exits the port-profile configuration mode.
<b>Step 5</b>	(Optional) <b>show port-profile</b>	Displays the port-profile configuration.
<b>Step 6</b>	(Optional) <b>copy running-config startup-config</b>	Copies the running configuration to the startup configuration.

### Example

This example shows how to inherit the port profile named adam onto the port profile named test:

```
switch# configure terminal
switch(config)# port-profile test
switch(config-ppm)# inherit port-profile adam
switch(config-ppm)#
```

## Removing a Port Profile from a Range of Interfaces

You can remove a port profile from some or all of the interfaces to which you have applied the profile. You do this configuration in the interfaces configuration mode.

### SUMMARY STEPS

1. **configure terminal**
2. **interface** [ethernet *slot/port* | **interface-vlan** *vlan-id* | **port-channel** *number*]
3. **no inherit port-profile** *name*
4. **exit**
5. (Optional) **show port-profile**
6. (Optional) **copy running-config startup-config**

### DETAILED STEPS

	Command or Action	Purpose
Step 1	<b>configure terminal</b>	Enters the global configuration mode.
Step 2	<b>interface</b> [ethernet <i>slot/port</i>   <b>interface-vlan</b> <i>vlan-id</i>   <b>port-channel</b> <i>number</i> ]	Selects the range of interfaces.
Step 3	<b>no inherit port-profile</b> <i>name</i>	Un-assigns the specified port profile to the selected interfaces.
Step 4	<b>exit</b>	Exits the port-profile configuration mode.
Step 5	(Optional) <b>show port-profile</b>	Displays the port-profile configuration.
Step 6	(Optional) <b>copy running-config startup-config</b>	Copies the running configuration to the startup configuration.

### Example

This example shows how to unassign the port profile named adam to Ethernet interfaces 7/3 to 7/5, 10/2, and 11/20 to 11/25:

```
switch# configure terminal
switch(config)# interface ethernet 7/3-5, 10/2, 11/20-25
switch(config-if)# no inherit port-profile adam
switch(config-if)#
```

## Removing an Inherited Port Profile

You can remove an inherited port profile. You do this configuration in the port-profile mode.

### SUMMARY STEPS

1. **configure terminal**
2. **port-profile** *name*

3. **no inherit port-profile** *name*
4. **exit**
5. (Optional) **show port-profile**
6. (Optional) **copy running-config startup-config**

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b>	Enters the global configuration mode.
<b>Step 2</b>	<b>port-profile</b> <i>name</i>	Enters the port-profile configuration mode for the specified port profile.
<b>Step 3</b>	<b>no inherit port-profile</b> <i>name</i>	Removes an inherited port profile from this port profile.
<b>Step 4</b>	<b>exit</b>	Exits the port-profile configuration mode.
<b>Step 5</b>	(Optional) <b>show port-profile</b>	Displays the port-profile configuration.
<b>Step 6</b>	(Optional) <b>copy running-config startup-config</b>	Copies the running configuration to the startup configuration.

### Example

This example shows how to remove the inherited port profile named adam from the port profile named test:

```
switch# configure terminal
switch(config)# port-profile test
switch(config-ppm)# no inherit port-profile adam
switch(config-ppm)#
```

## Verifying the Basic Interface Parameters

You can verify the basic interface parameters by displaying their values. You can also clear the counters listed when you display the parameter values.

To display basic interface configuration information, perform one of the following tasks:

Command	Purpose
<b>show cdp all</b>	Displays the CDP status.
<b>show interface</b> <i>interface</i>	Displays the configured states of one or all interfaces.
<b>show interface brief</b>	Displays a table of interface states.
<b>show interface status err-disabled</b>	Displays information about error-disabled interfaces.

Command	Purpose
<code>show udld interface</code>	Displays the UDLD status for the current interface or all interfaces.
<code>show udld global</code>	Displays the UDLD status for the current device.

## Monitoring the Interface Counters

You can display and clear interface counters using Cisco NX-OS.

### Displaying Interface Statistics

You can set up to three sampling intervals for statistics collections on interfaces.

#### SUMMARY STEPS

1. `configure terminal`
2. `interface ether slot/port`
3. `load-interval counters [1 | 2 | 3] seconds`
4. `show interface interface`
5. `exit`
6. `copy running-config startup-config`

#### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>configure terminal</b> <b>Example:</b> <pre>switch# configure terminal switch(config)#</pre>	Enters global configuration mode.
<b>Step 2</b>	<b>interface ether slot/port</b> <b>Example:</b> <pre>switch(config)# interface ether 4/1 switch(config)#</pre>	Specifies interface.
<b>Step 3</b>	<b>load-interval counters [1   2   3] seconds</b> <b>Example:</b> <pre>switch(config)# load-interval counters 1 100 switch(config)#</pre>	Sets up to three sampling intervals to collect bit-rate and packet-rate statistics. The default values for each counter is as follows: 1—30 seconds (60 seconds for VLAN) 2—300 seconds 3—not configured

	Command or Action	Purpose
<b>Step 4</b>	<b>show interface</b> <i>interface</i> <b>Example:</b> <pre>switch(config)# show interface ethernet 2/2 switch#</pre>	(Optional) Displays the interface status, which includes the counters.
<b>Step 5</b>	<b>exit</b> <b>Example:</b> <pre>switch(config-if-range)# exit switch(config)#</pre>	Exits the interface mode.
<b>Step 6</b>	<b>copy running-config startup-config</b> <b>Example:</b> <pre>switch(config)# copy running-config startup-config</pre>	(Optional) Copies the running configuration to the startup configuration.

### Example

This example shows how to set the three sample intervals for the Ethernet port 3/1:

```
switch# configure terminal
switch(config)# interface ethernet 3/1
switch(config-if)# load-interval counter 1 60
switch(config-if)# load-interval counter 2 135
switch(config-if)# load-interval counter 3 225
switch(config-if)#
```

## Clearing Interface Counters

You can clear the Ethernet and management interface counters by using the **clear counters interface** command. You can perform this task from the configuration mode or interface configuration mode.

### SUMMARY STEPS

1. **clear counters interface** [**all** | **ethernet** *slot/port* | **loopback** *number* | **mgmt** *number* | **port channel** *channel-number*]
2. **show interface** *interface*
3. **show interface** [**ethernet** *slot/port* | **port channel** *channel-number*] **counters**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>clear counters interface</b> [ <b>all</b>   <b>ethernet</b> <i>slot/port</i>   <b>loopback</b> <i>number</i>   <b>mgmt</b> <i>number</i>   <b>port channel</b> <i>channel-number</i> ] <b>Example:</b> <pre>switch# clear counters ethernet 2/1 switch#</pre>	Clears the interface counters.

	Command or Action	Purpose
Step 2	<b>show interface</b> <i>interface</i> <b>Example:</b> <pre>switch# show interface ethernet 2/1 switch#</pre>	(Optional) Displays the interface status.
Step 3	<b>show interface</b> [ <i>ethernet slot/port</i>   <i>port channel channel-number</i> ] <b>counters</b> <b>Example:</b> <pre>switch# show interface ethernet 2/1 counters switch#</pre>	(Optional) Displays the interface counters.

### Example

This example shows how to clear the counters on Ethernet port 5/5:

```
switch# clear counters interface ethernet 5/5
switch#
```

## Configuration Example for QSA

For a Cisco Nexus 3400-S switch:

- Using the default configuration on port 2/1, all the QSFPs in port group 2/1-6 are brought up with a speed of 40G. If there are any QSA modules in port group 2/1-6, they are error disabled.
- Using the **speed-group** [ **10000** | **40000** ] command to configure port 2/7, all the QSAs in port group 2/7-12 are brought up with a speed of 10G or 40G. If there are any QSFP modules in port group 2/7-12, they are error disabled.

This example shows how to configure QSA for the first port in the speed group for a Cisco Nexus 9396PX:

```
switch# conf t
switch(config)# interface ethernet 2/7
switch(config-if)# speed-group 10000
```

