CHAPTER 2

Configuring Basic Interface Parameters

This chapter describes how to configure the basic interface parameters. These parameters are shared by multiple interfaces.

This chapter includes the following sections:

Note To configure the parameters that are specifically used for Layer 2 interfaces (access or trunking interfaces), see Chapter 3, "Configuring Layer 2 Interfaces." To configure parameters that are specifically used for Layer 3 interfaces (routed interfaces, subinterfaces, VLAN interfaces, loopback interfaces, and IP tunnels), see Chapter 4, "Configuring Layer 3 Interfaces."

Information About the Basic Interface Parameters

This section includes the following topics:

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 on setting the description parameter for port-channel interfaces, see the "Configuring a Port-Channel Description" section on page 5-21. For information on configuring this parameter for other interfaces, see the "Configuring the Description" section on page 2-13.

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 on configuring the beacon parameter, see the "Configuring the Beacon Mode" section on page 2-14.

MDIX

The medium dependent interface crossover (MDIX) parameter enables or disables the detection of a crossover connection between devices. This parameter applies only to copper interfaces. By default, this parameter is enabled.

For information on configuring the MDIX parameter, see the "Verifying the Basic Interface Parameters" section on page 2-38.

Debounce Timer

The debounce timer delays notification of a link change, which can decrease traffic loss due to network reconfiguration. You can configure the debounce timer separately for each Ethernet port and specify the delay time in milliseconds. By default, this parameter is set for 100 milliseconds.

Caution Enabling the debounce timer causes the link-up and link-down detections to be delayed, which results in a loss of traffic during the debounce period. This situation might affect the convergence and reconvergence of some Layer 2 and Layer 3 protocols.

For information on configuring the debounce-timer parameters, see the "Configuring the Debounce Timer" section on page 2-22.

Error Disabled

A port is in the err-disabled state if it is enabled administratively (using the **no shutdown** command) but disabled at runtime by any process. For example, if UDLD detects a uni-directional link, the port is shutdown at runtime. However, since the port is administratively enabled, the port status is shown as err-disable. Once a port goes into the err-disable state, it has to be manually re-enabled or a timeout can be configured to provide auto recovery. By default, the auto recovery is not configured, and by default the err-disable detection is enabled for all the causes.

When an interface is in the err-disabled state, the err-disable detection commands is used to find the nature of the error. The **err-disable recovery interval** command provides auto recovery after a timeout. The default value for the timeout is 300 seconds, and it can range between 30 to 86400 seconds. The recovery timeout can also be configured for a particular err-disable cause.

If the err-disable recovery is not enabled for the cause, the interface stays in the err-disabled state until a shutdown and no shutdown occurs. 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.The **show interface status** command also lists the reason behind the error.

Rate Mode

On a 32-port 10 GE Ethernet module, each set of four ports can handle 10 gigabits per second (Gb/s) of bandwidth. You can use the rate-mode parameter to dedicate that bandwidth to the first port in the set of four ports or share the bandwidth across all four ports.

Table 2-1 identifies the ports that are grouped together to share each 10 Gb/s of bandwidth and which port in the group can be dedicated to utilize the entire bandwidth.

Table 2-1 Dedicated and Shared Ports

Ports Groups that Can Share Bandwidth	Ports that Can be Dedicated to Each 10 GE of Bandwidth
1, 3, 5, 7	1
2, 4, 6, 8	2
9, 11, 13, 15	9
10, 12, 14, 16	10
17, 19, 21, 23	17
18, 20, 22, 24	18
25, 27, 29, 31	25
26, 28, 30, 32	26

Note All ports in each port group must be part of the same virtual device context (VDC). For more information on VDCs, see the *Cisco Nexus 7000 Series NX-OS Virtual Device Context Configuration Guide, Release 4.0*.

Speed Mode and Duplex Mode

The speed mode and duplex mode are interrelated for each Ethernet and management interface. By default, each of these interfaces autonegotiates its speed and duplex mode with the other interface, but you can change these settings. If you change the settings, be sure to use the same speed and duplex mode setting on both interfaces, or use autonegotiation for at least one of the interfaces. Table 2-2 shows the settings that work for each type of Ethernet and management interface.

Table 2-2 Speed- and Duplex-Mode Settings Used for Ethernet and Management Interfaces

Module Type	Speed Mode Setting	Duplex Mode Setting	Operational Speed (Mbps)	Operational Duplex Mode
32-port 10 GE Ethernet	Auto[1]	Auto[1]	10,000	Full
48-port 10/100/1000 Ethernet	Auto[1]	Auto[1]	1000	Full
			10 or 100	Half
	1000	Auto[1] or full	1000	Full
	100	Auto[1] or half	100	Half
		Full	100	Full
	10	Auto[1] or half	10	Half
		Full	10	Full
Management	Auto[1]	Auto[1]	1000	Full
			10 or 100	Half
	1000	Auto[1] or full	1000	Full
	100	Auto[1] or half	100	Half
		Full	100	Full
	10	Auto[1] or half	10	Half
		Full	10	Full

1. Default setting

For information on setting the speed mode and duplex mode for port-channel interfaces, see the "Configuring the Speed and Duplex Settings for a Port-Channel Interface" section on page 5-22. For information on setting the speed and duplex speed for other interfaces, see the "Configuring the Interface Speed and Duplex Mode" section on page 2-24.

Flow Control

When the receive buffer for an Ethernet port that runs 1 Gbps or faster fills, flow control enables that port to send an IEEE 802.3x pause frame to the transmitting port to request it to stop transmitting data for a specified amount of time. Transmitting ports, running at any speed, can receive the pause frames to stop their transmission of data.

To allow flow control to work between two ports, you must set the corresponding receive and send flow control parameters for both ports as enabled or desired. When you set the parameter to enabled, the send or receive flow-control function is activated regardless of the setting of the other port. When you set the parameter to desired, the send or receive flow-control function is activated if you set the corresponding flow-control state of the other port to enabled or desired. If you set one of the flow control states to disabled, flow control is disabled for that transmission direction. To see how the different port flow-control states affect the link flow-control state, see Table 2-3.

Table 2-3 Port Flow-Control Influences on Link Flow Control

Port flow control states		
Port Receiving Data (Sends Pause Frames)	**Port Transmitting Data (Receives Pause Frames)**	**Link Flow Control State**
Enabled	Enabled	Enabled
Enabled	Desired	Enabled
Enabled	Disabled	Disabled
Desired	Enabled	Enabled
Desired	Desired	Enabled
Desired	Disabled	Disabled
Disabled	Enabled	Disabled
Disabled	Desired	Disabled
Disabled	Disabled	Disabled

For information on setting the flow-control parameters, see the "Configuring the Flow Control" section on page 2-26.

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. You can configure up to 64 MTU settings for each I/O module.

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

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 information on setting the MTU size, see the "Configuring the MTU Size" section on page 2-27.

Bandwidth

Ethernet ports have a fixed bandwidth of 1,000,000 Kb at the physical level. 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 level. For example, the Interior Gateway Routing Protocol (IGRP) uses the minimum path bandwidth to determine a routing metric, but the bandwidth at the physical level remains 1,000,000 Kb.

For information on configuring the bandwidth parameter for port-channel interfaces, see the "Configuring the Bandwidth and Delay for Informational Purposes" section on page 5-18. For information on configuring the bandwidth parameter for other interfaces, see the "Configuring the Bandwidth" section on page 2-30.

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 IGRP can use the delay setting to differentiate between a satellite link and a land link. The delay value that you set is in the tens of microseconds.

For information on configuring the bandwidth parameter for port-channel interfaces, see the "Configuring the Bandwidth and Delay for Informational Purposes" section on page 5-18. For information on configuring the throughput-delay parameter for other interfaces, see the "Configuring the Throughput Delay" section on page 2-31.

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 on configuring the administrative status parameter for port channel interfaces, see the "Shutting Down and Restarting the Port-Channel Interface" section on page 5-19. For information on configuring the administrative-status parameter for other interfaces, see the "Shutting Down and Activating the Interface" section on page 2-33.

Unidirectional Link Detection Parameter

This section includes the following topics:

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, including spanning tree topology loops.

UDLD is a Layer 2 protocol that works with the Layer 1 protocols to determine the physical status of a link. At Layer 1, autonegotiation takes care of physical signaling and fault detection. 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 and Layer 2 detections work together to prevent physical and logical unidirectional connections and the malfunctioning of other protocols.

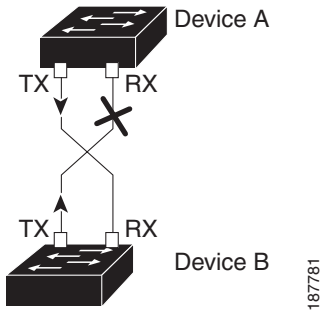
A unidirectional link occurs whenever traffic transmitted by the local device over a link is received by the neighbor but traffic transmitted from the neighbor is not received by the local device. If one of the fiber strands in a pair is disconnected, as long as autonegotiation is active, the link does 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, then UDLD at Layer 2 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 Nexus 7000 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.

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

Figure 2-1 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 2-1 Unidirectional Link



Default UDLD Configuration

Table 2-4 shows the default UDLD configuration.

Table 2-4 UDLD Default Configuration

Feature	Default Value
UDLD global enable state	Globally disabled
UDLD aggressive mode	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

For information on configuring the UDLD for the device and its port, see the "Configuring the UDLD Mode" section on page 2-34.

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.

To prevent spanning tree loops, nonaggressive UDLD with the default interval of 15 seconds is fast enough to shut down a unidirectional link before a blocking port transitions to the forwarding state (with default spanning tree parameters).

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.

Carrier Delay

In Cisco NX-OS 4.0(3) and later releases, you can configure the carrier delay timer.

Note You can configure the carrier delay timer only on VLAN interfaces; you cannot configure this timer in any other interface modes.

If a link goes down and comes back up before the carrier delay timer expires, the down state is effectively filtered, and the rest of the software on the device is not aware that a link-down event occurred. A large carrier delay timer results in fewer link-up/link-down events being detected. When you set the carrier delay time to 0, the device detects each link-up/link-down event that occurs.

In most environments, a lower carrier delay time is better than a higher one. The exact value that you choose depends on the nature of the link outages and how long you expect these linkages to last in your network. If your data links are subject to short outages (especially if those outages last less time than it takes for your IP routing to converge) you should set a long carrier delay value to prevent these short

outages from causing unnecessary churn in your routing tables. However, if you outages tend to be longer, then you may want to set a shorter carrier delay time so that the outages are detected sooner, and the IP route convergence begins and ends sooner.

The default carrier-delay time is 2 seconds or 50 milliseconds.

Port Channel Parameters

A port channel is an aggregation of physical interfaces that comprise a logical interface. You can bundle up to eight 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 a Layer 2 port channel by bundling compatible Layer 2 interfaces, or you can create Layer 3 port channels by bundling compatible Layer 3 interfaces. You cannot combine Layer 2 and Layer 3 interfaces in the same port channel.

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

For information on port channels and for information on configuring port channels, see Chapter 5, "Configuring Port Channels."

Licensing Requirements

The interface command and its sub commands do not require licenses.

Prerequisites for Configuring the Basic Interface Parameters

Before you begin configuring the basic interface parameters, make sure that you are in the correct VDC. To change the VDC, use the **switch to vdc** command.

Guidelines and Limitations

Follow these guidelines and limitations for configuring the basic interface parameters:

- 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.
- 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. Conversely, you can change a Layer 2 interface into a Layer 3 interface by using the **no switchport** command.
- When configuring flow control for a local port, consider the following:
  - To receive pause frames when you do not know how the remote port send parameter is configured, set the local port receive parameter to desired.

  - To receive pause frames when you know that the remote port send parameter is enabled or desired, set the local port receive parameter to enabled.
  - To ignore received pause frames, set the local port receive parameter to disabled.
  - To send pause frames when you do not know how the remote port receive parameter is configured, set the local port send parameter to desired.
  - To send pause frames when you know that the remote port receive parameter is enabled or desired, set the local port send parameter to enabled.
  - To prevent the sending of pause frames, set the local port send parameter to disabled.
- You usually configure Ethernet port speed and duplex mode parameters to auto to allow the NX-OS software 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 Table 2-2 on page 2-5 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, 10, 100, or 1000 Mbps), you must configure the connecting port to match. Do not configure the connecting port to negotiate the speed.

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.

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

Configuring the Basic Interface Parameters

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

The following sections explain how to specify the interface and configure each of its basic parameters:

Specifying the Interfaces to Configure

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. Table 2-5 shows the interface types and identities that you should use for specifying the Ethernet and management interfaces.

Table 2-5 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.

The following example shows how to configure an interface range:

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

To verify the current configuration of interfaces, you can display their properties.

Use the **show interface** command along with a specification of the interface type and identities.

SUMMARY STEPS

1. **config t**
2. **interface** *interface*

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters the global configuration mode.
Step 2	**interface** *interface* **Example 1:** switch(config)# interface ethernet 2/1 switch(config-if)# **Example 2:** switch(config)# interface mgmt0 switch(config-if)#	Specifies the interface that you are configuring. You can specify the interface type and identity. For an Ethernet port, use "ethernet *slot/port*." For the management interface, use "mgmt0." Example 1 shows how to specify the slot 2, port 1 Ethernet interface. Example 2 shows how to specify the management interface.

Note 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."

When you are in the interface configuration mode, the commands that you enter configure the interface that you specified for this mode. The following sections explain which commands to use to configure the basic parameters.

Configuring the Description

You can provide textual interface descriptions for the Ethernet and management interfaces. Descriptions can be a maximum of 80 case-sensitive alphanumeric characters.

SUMMARY STEPS

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

DETAILED STEPS

To provide and interface description for Ethernet and management interfaces, follow these steps:

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters the global configuration mode.
Step 2	**interface** *interface* **Example:** switch(config)# interface ethernet 2/1 switch(config-if)# switch(config)# interface mgmt0 switch(config-if)#	Specifies the interface that you are configuring. You can specify the interface type and identity. For an Ethernet port, use "ethernet *slot/port*." For the management interface, use "mgmt0." Example 1 shows how to specify the slot 2 port, 1 Ethernet interface. Example 2 shows how to specify the management interface.
Step 3	**description** *text* **Example:** switch(config-if)# description Ethernet port 3 on module 1. switch(config-if)#	Specifies the description for the interface. The description is a maximum of 80 characters.
Step 4	**show interface** *interface* **Example:** switch(config)# show interface ethernet 2/1	Displays the interface status, which includes the description parameter.
Step 5	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 6	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

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

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

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. **config t**

2. **interface ethernet** *slot/port*
3. **beacon | {no beacon}**
4. **show interface ethernet** *slot/port*
5. **exit**
6. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters configuration mode.
Step 2	**interface ethernet** *slot/port* **Example:** switch(config)# interface ethernet 3/1 switch(config-if)#	Specifies an interface to configure, and enters interface configuration mode.
Step 3	**beacon** | {**no beacon**} **Example:** switch(config-if)# beacon switch(config-if)#	Enables the beacon mode or disables the beacon mode.
Step 4	**show interface ethernet** *slot/port*	Displays the interface status, which includes the beacon mode state.
Step 5	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 6	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

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

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

Changing the Bandwidth-Rate Mode

You can specify whether each 10 Gb of bandwidth on a 32-port 10 GE Ethernet module is dedicated to one port or shared by four ports in the same port group.

This section includes the following topics:

Dedicating Bandwidth to One Port

When you dedicate the bandwidth to one port, you must first administratively shut down the four ports in the group, change the rate mode to dedicated, and then bring the dedicated port administratively up.

SUMMARY STEPS

1. **config t**
2. **interface ethernet** *slot/port,* **ethernet** *slot/port,* **ethernet** *slot/port,* **ethernet** *slot/port*
3. **shutdown**
4. **interface ethernet** *slot/port*
5. **rate-mode dedicated**
6. **no shutdown**
7. **show interface ethernet** *slot/port*
8. **exit**
9. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose

Step 1	**config t**
	
	Example:
	`switch# config t`
	`switch(config)#`
		Enters configuration mode.

Step 2	**interface ethernet** *slot/port*, **ethernet** *slot/port*, **ethernet** *slot/port*, **ethernet** *slot/port*
	
	Example:
	`switch(config)# interface ethernet 3/1, ethernet 3/3, ethernet 3/5, ethernet 3/7`
	`switch(config-if)#`
		Specifies an Ethernet interface to configure, and enters interface configuration mode.
		
		The example shows how to specify one port for the dedicated mode.

Step 3	**shutdown** **Example:** `switch(config)# shutdown`	Administratively shuts down the ports.

	Command	Purpose
Step 4	**interface ethernet** *slot/port* **Example:** switch(config)# interface ethernet 3/1 switch(config)#	Specifies the first Ethernet interface in a group of interfaces.
Step 5	**rate-mode dedicated** **Example:** switch(config-if)# rate-mode dedicated switch(config-if)#	Full bandwidth of 10 Gb is dedicated to one port. When you dedicate the bandwidth, all subsequent commands for the port are for dedicated mode.
Step 6	**no shutdown** **Example:** switch(config-if)# no shutdown	Brings the port administratively up.
Step 7	**show interface ethernet** *slot/port* **Example:** switch(config)# show interface ethernet 3/1	Displays the interface information including the current rate mode.
Step 8	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 9	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

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# config t
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)# rate-mode dedicated
switch(config-if)# no shutdown
switch(config-if)#
```

Sharing the Bandwidth Among a Port Group

You can share 10 Gb of bandwidth among a group of ports (four ports) on a 32-port 10 Gb Ethernet module. To share the bandwidth, you must bring the dedicated port administratively down, specify the ports that are to share the bandwidth, change the rate mode to shared, and then bring the ports administratively up.

BEFORE YOU BEGIN

All ports in the same group must belong to the same VDC.

SUMMARY STEPS

1. **config t**
2. **interface ethernet** *slot/port*

3. **shutdown**
4. **interface ethernet** *slot/port*, **ethernet** *slot/port*, **ethernet** *slot/port*, **ethernet** *slot/port*
5. **rate-mode shared**
6. **no shutdown**
7. **show interface ethernet** *slot/port*
8. **exit**
9. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters configuration mode.
Step 2	**interface ethernet** *slot/port* Example: switch(config)# interface ethernet 3/1 switch(config)#	Specifies the first Ethernet interface in a group of interfaces.
Step 3	**shutdown** **Example:** switch(config-if)# no shutdown	Brings the port administratively down.
Step 4	**interface ethernet** *slot/port*, **ethernet** *slot/port*, **ethernet** *slot/port*, **ethernet** *slot/port* **Example:** switch(config)# interface ethernet 3/1, ethernet 3/3, ethernet 3/5, ethernet 3/7 switch(config-if)#	Specifies four Ethernet interfaces to configure (they must be part of the same port group), and enters interface configuration mode. The example shows how to specify one port for the dedicated mode.
Step 5	**rate-mode shared** **Example:** switch(config-if)# rate-mode shared switch(config-if)#	Sets the shared rate mode for the specified ports. The example shows how to configure the shared mode.
Step 6	**no shutdown** **Example:** switch(config-if)# no shutdown	Brings the ports administratively up.
Step 7	**show interface ethernet** *slot/port* **Example:** switch(config)# show interface ethernet 3/1	Displays the interface information including the current rate mode.

	Command	Purpose
Step 8	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 9	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

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

```
switch# config t
switch(config)# interface ethernet 4/17
switch(config-if)# shutdown
switch(config)# interface ethernet 4/17, ethernet 4/19, ethernet 4/21, ethernet 4/23
switch(config-if)# rate-mode shared
switch(config-if)# no shutdown
switch(config-if)#
```

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. This is an operational state that is similar to the link-down state.

SUMMARY STEPS

1. **config t**
2. **errdisable detect cause** {**acl-exception** | **all** | **link-flap** | **loopback**}
3. **shutdown**
4. **no shutdown**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters configuration mode.
Step 2	**errdisable detect cause** {**acl-exception** | **all** | **link-flap** | **loopback**} **Example:** switch(config)# errdisable detect cause all switch(config-if)#	Specifies a condition under which to place the interface in an error-disabled state.

	Command	Purpose
Step 3	`shutdown`	Enables the interface to recover manually from the err-disable state.
Step 4	`no shutdown`	Enables the interface to recover manually from the err-disable state.

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

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

Enabling the Error Disable Recovery

Enables the application to bring the interface out of the error-disabled state and retry operation once all the causes have timed out.

SUMMARY STEPS

1. **config t**
2. **errdisable recovery cause** {**all** | **bpdguard** | **link-flap** | **psecure-violation** | **security-violation** | **storm-control** | **udld**}

DETAILED STEPS

	Command	Purpose

Step 1	`config t`
	
	Example:
	`switch# config t`
	`switch(config)#`
		Enters configuration mode.

Step 2	`errdisable recovery cause {all | bpduguard | link-flap | psecure-violation | security-violation | storm-control | udld}`
	
	Example:
	`switch(config)# errdisable recovery cause all`
	`switch(config-if)#`
		Specifies a condition under which the the timer should recover from the error-disabled state and retry operation.

This example shows how to enable error disable recovery:

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

Enabling the Error Recovery Interval

You can enable the error disable recovery timer value.

BEFORE YOU BEGIN

SUMMARY STEPS

1. **config t**
2. **errdisable recovery interval** {*timer-interval*}

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters configuration mode.
Step 2	**errdisable recovery interval** {*timer-interval*} **Example:** switch(config)# errdisable recovery interval 32 switch(config-if)#	Specifies the timer interval value to recover from the error-disabled state.

This example shows how to enable the error disable recovery timer:

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

Configuring the MDIX Parameter

If you need to detect the type of connection (crossover or straight) with another copper Ethernet port, enable the medium dependent independent crossover (MDIX) parameter for the local port. By default, this parameter is enabled.

BEFORE YOU BEGIN

MDIX must be enabled for the remote port.

SUMMARY STEPS

1. **config t**
2. **interface ethernet** *slot/port*
3. {**mdix auto**} | {**no mdix**}
4. **show interface ethernet** *slot/port*
5. **exit**
6. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters configuration mode.
Step 2	**interface ethernet** *slot/port* **Example:** switch(config)# interface ethernet 3/1 switch(config-if)#	Specifies an interface to configure, and enters interface configuration mode.
Step 3	{**mdix auto**} | {**no mdix**} **Example:** switch(config-if)# mdix auto switch(config-if)#	Specifies whether to enable or disable MDIX detection for the port.
Step 4	**show interface ethernet** *slot/port* **Example:** switch(config)# show interface ethernet 3/1 switch(config-if)#	Displays the interface status, which includes the MDIX status.
Step 5	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 6	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

This example shows how to enable MDIX for Ethernet port 3/1:

```
switch# config t
switch(config)# interface ethernet 3/1
switch(config-if)# mdix auto
switch(config-if)#
```

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

```
switch# config t
switch(config)# interface ethernet 3/1
switch(config-if)# no mdix
switch(config-if)#
```

Configuring the Debounce Timer

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

You can show the debounce times for all of the Ethernet ports by using the **show interface debounce** command.

SUMMARY STEPS

1. **config t**
2. **interface** *ethernet slot/port*
3. **link debounce time** *milliseconds*
4. **show interface debounce**
5. **exit**
6. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters configuration mode.
Step 2	**interface** *ethernet slot/port* **Example:** switch(config)# interface ethernet 3/1 switch(config-if)#	Specifies an interface to configure, and enters interface configuration mode.
Step 3	**link debounce time** *milliseconds* **Example:** switch(config-if)# link debounce time 1000 switch(config-if)#	Enables the debounce timer for the amount of time (1 to 5000 ms) specified. Disables the debounce timer if you specify 0 milliseconds.
Step 4	**show interface debounce** **Example:** switch(config)# show interface debounce switch(config-if)#	Shows the link debounce time for all of the Ethernet interfaces.
Step 5	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 6	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

This example shows how to enable the debounce timer and set the debounce time to 1000 ms for the Ethernet port 3/1:

```
switch# config t
switch(config)# interface ethernet 3/1
switch(config-if)# link debounce time 1000
switch(config-if)#
```

This example shows how to disable the debounce timer for the Ethernet port 3/1:

```
switch# config t
switch(config)# interface ethernet 3/1
```

```
switch(config-if)# link debounce time 0
switch(config-if)#
```

Configuring the Interface Speed and Duplex Mode

The interface speed and duplex mode are interrelated, so you should configure both of their parameters at the same time.

To see which speeds and duplex modes you can configure together for Ethernet and management interfaces, see Table 2-2 on page 2-5.

Note The interface speed that you specify can affect the duplex mode used for an interface, so you should set the speed before setting the duplex mode. If you set the speed for autonegotiation, the duplex mode is automatically set to be autonegotiated. If you specify 10- or 100-Mbps speed, the port is automatically configured to use half-duplex mode, but you can specify full-duplex mode instead. If you specify a speed of 1000 Mbps (1 Gbps) or faster, full duplex is automatically used.

BEFORE YOU BEGIN

Make sure that the remote port has a speed setting that supports your changes for the local port. If you want to set the local port to use a specific speed, you must set the remote port for the same speed or set the local port to autonegotiate the speed.

SUMMARY STEPS

1. **config t**
2. **interface** *interface*
3. **speed** {{**10** | **100** | **1000** | {**auto** [**10** **100** [**1000**]]}} | {**10000** | **auto**}}
4. **duplex** {**full** | **half** | **auto**}
5. **show interface** *interface*
6. **exit**
7. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters the global configuration mode.
Step 2	**interface** *interface* **Example 1:** switch(config)# interface ethernet 2/1 switch(config-if)# **Example 2:** switch(config)# interface mgmt0 switch(config-if)#	Specifies the interface that you are configuring. You can specify the interface type and identity. For an Ethernet port, use "ethernet *slot*/*port*." For the management interface, use "mgmt0." Example 1 shows how to specify the slot 2 port 1 Ethernet interface. Example 2 shows how to specify the management interface.
Step 3	**speed** {{**10** | **100** | **1000** | {**auto** [**10** **100** [**1000**]]}} | {**10000** | **auto**}} **Example:** switch(config-if)# speed 1000 switch(config-if)#	For Ethernet ports on the 48-port 10/100/1000 modules, sets the speed at 10 Mbps, 100 Mbps, or 1000 Mbps, or sets the port to auto negotiate its speed with the other 10/100/1000 port on the same link. For Ethernet ports on the 32-port 10 GE modules, sets the speed at 10,000 Mbps (10 Gbps) or sets the port to autonegotiate its speed with the other 10 GE port on the link. For management interfaces, sets the speed as 1000 Mbps or sets the port to autonegotiate its speed.
Step 4	**duplex** {**full** | **half** | **auto**} **Example:** switch(config-if)# duplex full	Specifies the duplex mode as full, half, or autonegotiate.
Step 5	**show interface** *interface* **Example:** switch(config)# show interface *mgmt0*	Displays the interface status, which includes the speed and duplex mode parameters.
Step 6	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 7	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

This example shows how to set the speed of Ethernet port 1 on the 48-port 10/100/1000 module in slot 3 to 1000 Mbps and full-duplex mode:

```
switch# config t
```

```
switch(config)# interface ethernet 3/1
switch(config-if)# speed 1000
switch(config-if)# duplex full
switch(config-if)#
```

Configuring the Flow Control

For Ethernet ports that run at 1 Gbps or faster, you can enable or disable the port's ability to send and receive flow-control pause frames. For Ethernet ports that run slower than 1 Gbps, you can enable or disable only the port's ability to receive pause frames.

When enabling flow control for the local port, you either fully enable the local port to send or receive frames regardless of the flow-control setting of the remote port, or you set the local port to use the desired setting used by the remote port. If you enable both the local and remote port for flow control, or set the desired flow control of the other port, or set a combination of those two states, flow control is enabled for those ports.

Note For ports that run at 10 Gbps, you cannot use the desired state for the send or receive parameter.

BEFORE YOU BEGIN

Make sure that the remote port has the corresponding setting for the flow control that you need. If you want the local port to send flow-control pause frames, the remote port has a receive parameter set to on or desired. If you want the local port to receive flow-control frames, you must make sure that the remote port has a send parameter set to on or desired. If you do not want to use flow control, you can set the remote port's send and receive parameters to off.

SUMMARY STEPS

1. **config t**
2. **interface** *interface*
3. **flowcontrol** {**send** | **receive**} {**desired** | **on** | **off**}
4. **show interface** *interface*
5. **show interface flowcontrol**
6. **exit**
7. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config terminal switch(config)#	Enters configuration mode.
Step 2	**interface ethernet** *slot/port* **Example:** switch(config)# interface ethernet 3/1 switch(config-if)#	Specifies an Ethernet interface to configure by its slot number and port number, and enters the interface configuration mode.
Step 3	**flowcontrol** {**send** | **receive**} {**desired** | **on** | **off**} **Example:** switch(config-if)# flowcontrol send on switch(config)-if#	Specifies the flow-control setting for ports. You can set the send setting for only the ports running at 1000 Mbps or faster. You can set the receive setting for ports running at any speed.

Step 4	**show interface ethernet** *slot/port*
	
	Example:
	switch(config)# show interface ethernet 3/1
	switch(config)
		Displays the interface status, which include the flow control parameters.

Step 5	**show interface flowcontrol**
	
	Example:
	switch(config)# show interface flowcontrol
	switch(config)
		Displays the flow control status for all Ethernet ports.

Step 6	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 7	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

This example shows how to set Ethernet port 3/1 to send flow control pause frames:

```
switch# config t
switch(config)# interface ethernet 3/1
switch(config-if)# flowcontrol send on
switch(config-if)#
```

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, you should also update the Layer 2 interfaces that use that value so that they use the new system jumbo MTU value. If you do not update the MTU value for Layer 2 interfaces, those interfaces will use the system default MTU (1500 bytes).

By default, DCNM 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.

This section includes the following topics:

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 on page 2-29.

SUMMARY STEPS

1. **config t**
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	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters configuration mode.
Step 2	**interface ethernet** *slot/port* **Example:** switch(config)# interface ethernet 3/1 switch(config-if)#	Specifies an Ethernet interface to configure, and enters interface configuration mode.

	Command	Purpose
Step 3	**switchport** | {**no switchport**}	Specifies to use Layer 2 or Layer 3.
Step 4	**mtu** *size* **Example:** switch(config-if)# mtu 9216 switch(config-if)#	For a Layer 2 interface, specifies either the default MTU size (1500) or the system jumbo MTU size (9216 unless you have changed the system jumbo MTU size). For a Layer 3 interface, specifies any even number between 576 and 9216.
Step 5	**show interface ethernet** *slot/port* **Example:** switch(config)# show interface *type slot/port*	Displays the interface status, which includes the MTU size.
Step 6	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 7	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

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

```
switch# config t
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 1500 bytes.

SUMMARY STEPS

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

DETAILED STEPS

To configure the system jumbo MTU size, follow these steps:

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters configuration mode.
Step 2	**system jumbomtu** *size* **Example:** switch(config)# system jumbomtu 8000 switch(config-if)#	Specifies the system jumbo MTU size. Use an even number between 1500 and 9216.
Step 3	**show running-config** **Example:** switch(config)# show running-config	Displays the current operating configuration, which includes the system jumbo MTU size.
Step 4	**interface** *type slot/port*	Specifies an interface to configure and enters the interface configuration mode.
Step 5	**mtu** *size*	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	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 7	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

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# config t
switch(config)# system jumbomtu 8000
switch(config)# show running-config
switch(config)# interface ethernet 2/2
switch(config-if)# switchport
switch(config-if)# mtu 8000
switch(config-if)#
```

Configuring the Bandwidth

You can configure the bandwidth for Ethernet interfaces. The physical level uses an unchangeable bandwidth of 1 GB, but you can configure a value of 1 to 10,000,000 Kb for Level 3 protocols.

SUMMARY STEPS

1. **config t**
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	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters configuration mode.
Step 2	**interface ethernet** *slot/port* **Example:** switch(config)# interface ethernet 3/1 switch(config-if)#	Specifies an Ethernet interface to configure, and enters interface configuration mode.
Step 3	**bandwidth** *kbps* **Example:** switch(config-if)# bandwidth 1000000 switch(config-if)#	Specifies the bandwidth as an informational-only value between 1 and 10,000,000.
Step 4	**show interface ethernet** *slot/port* **Example:** switch(config)# show interface ethernet *slot/port*	Displays the interface status, which includes the bandwidth value.
Step 5	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 6	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

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# config t
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. **config t**
2. **interface ethernet** *slot/port*
3. **delay** *tens_of_microseconds*
4. **show interface ethernet** *slot/port*
5. **exit**
6. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters configuration mode.
Step 2	**interface ethernet** *slot/port* **Example:** switch(config)# interface ethernet 3/1 switch(config-if)#	Specifies an interface to configure, and enters interface configuration mode.
Step 3	**delay** *value* **Example:** switch(config-if)# delay 10000 switch(config-if)#	Specifies the delay time in tens of microseconds. You can set an informational value range between 1 and 16777215 tens of microseconds
Step 4	**show interface ethernet** *slot/port* **Example:** switch(config)# show interface ethernet 3/1 switch(config-if)#	Displays the interface status, which includes the throughput-delay time.
Step 5	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 6	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

This example shows how to configure the throughput-delay time to 100,000 microseconds for the slot 3 port 1 Ethernet interface:

```
switch# config t
switch(config)# interface ethernet 3/1
switch(config-if)# delay 10000
switch(config-if)#
```

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. **config t**
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	Purpose

Step 1	**config t**
	
	Example:
	`switch# config t`
	`switch(config)#`
		Enters the global configuration mode.

Step 2	**interface** *interface*
	
	Example:
	`switch(config)# interface ethernet 2/1`
	`switch(config-if)#`
	
	`switch(config)# interface mgmt0`
	`switch(config-if)#`
		Specifies the interface that you are configuring. You can specify the interface type and identity. For an Ethernet port, use "ethernet *slot/port*." For the management interface, use "mgmt0."
		
		Example 1 shows how to specify the slot 2, port 1 Ethernet interface.
		
		Example 2 shows how to specify the management interface.

Step 3	**shutdown**
	
	Example:
	`switch(config-if)# shutdown`
	`switch(config-if)#`
		Disables the interface.

Step 4	**show interface** *interface*
	
	Example:
	`switch(config-if)# show interface ethernet 2/1`
	`switch(config-if)#`
		Displays the interface status, which includes the administrative status.

	Command	Purpose
Step 5	**no shutdown** **Example:** switch(config-if)# no shutdown switch(config-if)#	Reenables the interface.
Step 6	**show interface** *interface* **Example:** switch(config-if)# show interface ethernet 2/1 switch(config-if)#	Displays the interface status, which includes the administrative status.
Step 7	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 8	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

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

```
switch# config t
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 or aggressive 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.

To use the normal UDLD mode, you must configure one of the ports for normal mode and configure the other port for the normal or aggressive mode. To use the aggressive UDLD mode, you must configure both ports for the aggressive mode.

By default, UDLD is disabled for the 48-port, 10/100/1000 Ethernet module ports but the normal UDLD mode is enabled for the 32-port, 10 gigabit Ethernet module ports.

BEFORE YOU BEGIN

UDLD must be enabled for the other linked port and its device.

SUMMARY STEPS

1. **config t**
2. **feature udld**
   no feature udld
3. **show udld global**

4. **interface ethernet** *slot/port*
5. **udld** {**enable | disable | aggressive**}
6. **show udld ethernet** *slot/port*
7. **exit**
8. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters configuration mode.
Step 2	**feature udld** **Example:** switch(config)# feature udld switch(config)#	Enables UDLD for the device.
	no feature udld **Example:** switch(config)# no feature udld switch(config)#	Disables UDLD for the device.
Step 3	**show udld global** **Example:** switch(config)# show udld global UDLD global configuration mode: enabled UDLD global message interval: 15 switch(config)#	Displays the UDLD status for the device.
Step 4	**interface ethernet** *slot/port* **Example:** switch(config)# interface ethernet 3/1 switch(config-if)#	Specifies an interface to configure, and enters interface configuration mode.
Step 5	**udld {enable | disable | aggressive}** **Example:** switch(config-if)# udld aggressive switch(config-if)#	Enables the normal UDLD mode, disables UDLD, or enables the aggressive UDLD mode.
Step 6	**show udld** ***interface*** **Example:** switch(config-if)# show udld ethernet 2/1 Interface Ethernet2/1 --- Port enable administrative configuration setting: enabled-aggressive Port enable operational state:enabled-aggressive ... switch(config-if)#	Displays the UDLD status for the interface.

	Command	Purpose
Step 7	**exit** **Example:** switch(config-if-range)# exit switch(config)#	Exits the interface mode.
Step 8	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

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

```
switch# config t
switch(config)# feature udld
switch(config)#
```

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

```
switch# config t
switch(config)# feature udld
switch(config)# interface ethernet 3/1
switch(config-if)# udld enable
switch(config-if)#
```

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

```
switch# config t
switch(config)# feature udld
switch(config)# interface ethernet 3/1
switch(config-if-range)# udld aggressive
switch(config-if-range)#
```

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

```
switch# config t
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# config t
switch(config)# no feature udld
switch(config)# exit
```

Configuring the Carrier Delay Timer

The carrier delay timer sets a time during which all link-down/link-up events are not detected by any of the other software on the device. When you configure a longer carrier delay time, fewer link-down/link-up events are recorded. When you configure the carrier delay time to 0, the device detects each link-down/link-up event.

BEFORE YOU BEGIN

Ensure that you are in VLAN interface mode. You cannot configure the carrier delay timer in any other interface mode.

SUMMARY STEPS

1. **config t**
2. **interface vlan** *vlan-id*
3. **carrier-delay** {*sec* | **msec** *number*}
4. **show interface vlan** *vlan-id*
5. **exit**
6. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	Enters configuration mode.
Step 2	**interface vlan** *vlan-id* **Example:** switch(config)# interface vlan 5 switch(config-if)#	Enters the VLAN interface mode.
Step 3	**carrier-delay** {*sec* | **msec** *number*} **Example:** switch(config-if)# carrier-delay 20 switch(config-if)#	Sets the carrier delay timer. You can set the time between 0 to 60 seconds or 0 to 1000 milliseconds. The default is 2 seconds or 50 milliseconds.
Step 4	**show interface vlan** *vlan-id* **Example:** switch(config-if)# show interface vlan 5 switch(config-if)#	Displays the interface status.
Step 5	**exit** **Example:** switch(config-if)# exit switch(config)#	Exits the interface mode.
Step 6	**copy running-config startup-config** **Example:** switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

This example shows how to set the carrier delay timer to 20 seconds for VLAN 5:

```
switch# config t
switch(config)# interface vlan 5
switch(config-if)# carrier-delay 20
switch(config-if)#
```

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.

Note The system displays only those ports that are allocated to the VDC that you are working in.

DETAILED STEPS

To display Layer 2 port configuration information, use the appropriate **show** command for the parameters you need to display.

Command	Purpose
show cdp	Displays the CDP status.
show interface *interface*	Displays the configured states of one or all interfaces.
show interface brief	Displays a table of interface states.
show interface switchport	Displays the status of Layer 2 ports.
show vdc	Displays the status of the existing VDCs.
show udld *interface*	Displays the UDLD status for the current interface or all interfaces.
show udld-global	Displays the UDLD status for the current device.

For detailed information about the fields in the output from these commands, see the *Cisco Nexus 7000 Series NX-OS Interfaces Command Reference, Release 4.0*.

Clearing the Interface Counters

You can clear the Ethernet and management interface counters shown with the **show interfaces** command. You can perform this task from the EXEC mode, configuration mode, or interface configuration mode.

SUMMARY STEPS

1. **clear counters** *interface*
2. **show interface** *interface*

DETAILED STEPS

	Command	Purpose
Step 1	**clear counters** *interface* **Example:** switch# clear counters ethernet 2/1 switch#	Clears the Ethernet or management interface counters.
Step 2	**show interface** ***interface***	Displays the interface status, which includes the counters.

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

```
Switch# clear counters ethernet 5/5
Switch#
```

Default Settings

Table 2-6 lists the default settings for the basic interface parameters.

Table 2-6 Default Basic Interface Parameter Settings

Parameters	Default
Description	Null string / blank
Beacon	
Debounce timer	
Rate mode	Default
Bandwidth	
Throughput delay	
Administrative status	Shut
Unidirectional Link Detection Parameters	
MTU	1500 bytes
Carrier delay	

Feature History for Configuring Basic Interface Parameters

Table 2-7 lists the release history for this feature.

Table 2-7 Feature History for Configuring Basic Interface Parameters

Feature Name	Releases	Feature Information
Carrier-delay	4.0(3)	On the VLAN interface only, support for this feature was introduced. After you enter the VLAN interface mode, the following new commands are available: • **carrier-delay** {*sec* | **msec** *number*} • **no carrier-delay**