Configuring Switching Modes

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Information About Switching Modes

The switching mode determines whether the switch begins forwarding the frame as soon as the switch has read the destination details in the packet header or waits until the entire frame has been received and checked for cyclic redundancy check (CRC) errors before forwarding them to the network.

The switching mode is applicable to all packets being switched or routed through the hardware and can be saved persistently through reboots and restarts.

The switch operates in either of the following switching modes:

Cut-Through Switching Mode

Cut-through switching mode is enabled by default. Switches operating in cut-through switching mode start forwarding the frame as soon as the switch has read the destination details in the packet header. A switch in cut-through mode forwards the data before it has completed receiving the entire frame.

The switching speed in cut-through mode is faster than the switching speed in store-and-forward switching mode.

Store-and-Forward Switching Mode

When store-and-forward switching is enabled, the switch checks each frame for cyclic redundancy check (CRC) errors before forwarding them to the network. Each frame is stored until the entire frame has been received and checked.

Because it waits to forward the frame until the entire frame has been received and checked, the switching speed in store-and-forward switching mode is slower than the switching speed in cut-through switching mode.

Guidelines and Limitations for Switching Modes

Consider the following guidelines and limitations for each of the switching modes:

Cut-Through Switching Mode Guidelines and Limitations

- Packets with frame check sequence (FCS) errors are forwarded.
  - For the Cisco Nexus 3064PQ platform, packets smaller than or equal to 768 bytes are dropped.
  - For Cisco Nexus 3016, 3064E, 3064X, and 3048 platforms, packets smaller than or equal to 560 bytes are dropped.
  - For the Cisco Nexus 3064PQ platform, packets larger than 769 or equal to bytes are forwarded.
  - For 3016, 3064E, 3064X, and 3048 platforms, packets larger than or equal to 561 bytes are forwarded.
- Packets with FCS errors are mirrored if SPAN is configured.

Store-and-Forward Switching Mode Guidelines and Limitations

- Packets with FCS errors are dropped.
- Packets with FCS errors are not mirrored if SPAN is configured.
- The CPU port always operates in store-and-forward mode. Any packets forwarded to the CPU with FCS errors are dropped.
- The store-and-forward mode activates automatically for a port when the switch identifies that the ingress rate is less than the switching capacity of the egress port. For example, when the port ingress rate is 1 GB, the switching capacity of the egress port is 10 GB.

  Cisco Nexus 3000 Series switches perform cut-through switching if the bits are serialized-in at the same or greater speed than they are serialized-out.

In-Out	Cisco Nexus 3000 Switching Mode
1 GB to 1 GB	cut-through
1 GB to 10 GB	store-and-forward
1 GB to 40 GB	store-and-forward
10 GB to 1 GB	cut-through
10 GB to 10 GB	cut-through
10 GB to 40 GB	store-and-forward
40 GB to 1 GB	cut-through
40 GB to 10 GB	cut-through
40 GB to 40 GB	cut-through

Note The global configuration does not change, even if store-and-forward mode is activated for an oversubscribed port.

Default Settings for Switching Modes

Cut-through switching is enabled by default.

Configuring Switching Modes

Enabling Store-and-Forward Switching

Note Enabling store-and-forward switching mode might impact your port-to-port switching latency.

SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config) # **switching-mode store-forward**
3. (Optional) switch(config)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config) # **switching-mode store-forward**	Enables store-and-forward switching mode.
Step 3	(Optional) switch(config)# **copy running-config startup-config**	Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

Example

This example shows how to enable store-and-forward switching:

```
switch# configure terminal
switch(config) # switching-mode store-forward
switch(config) #
```

Reenabling Cut-Through Switching

Cut-through switching is enabled by default. To reenable cut-through switching, use the **no** form of the **switching-mode store-forward** command.

SUMMARY STEPS

1. switch# **configure terminal**

2. switch(config) # **no switching-mode store-forward**
3. (Optional) switch(config)# **copy running-config startup-config**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch# **configure terminal**	Enters global configuration mode.
Step 2	switch(config) # **no switching-mode store-forward**	Disables store-and-forward switching mode. Enables cut-through switching mode.
Step 3	(Optional) switch(config)# **copy running-config startup-config**	Saves the change persistently through reboots and restarts by copying the running configuration to the startup configuration.

Example

This example shows how to reenable cut-through switching:

```
switch# configure terminal
switch(config) # no switching-mode store-forward
switch(config) #
```