CHAPTER 2

# Configuring Flex Links and MAC Address-Table Move Update

This chapter describes how to configure Flex Links and MAC address-table move update, also known as Flex Links bidirectional fast convergence, on the Cisco Industrial Ethernet 2000U Series (IE2000 U) and Connected Grid Switches, hereafter referred to as switch. Flex Links are a pair of interfaces that provide a mutual backup.

The chapter includes the following sections:

# Information About Flex Links and MAC Address-Table Move Update

This section includes the following topics:

## Flex Links

Flex Links are a pair of a Layer 2 interfaces (switchports or port channels), where one interface is configured to act as a backup to the other.

This feature provides an alternative solution to the Spanning Tree Protocol (STP), allowing users to turn off STP and still provide basic link redundancy. You generally configure Flex Links in networks where customers do not want to run STP on the switch. When you configure STP on the switch, it is not necessary to configure Flex Links because STP already provides link-level redundancy or backup.

**Note** STP is enabled by default on network node interfaces (NNIs). It is disabled on enhanced network interfaces (ENIs), but you can enable it. STP is not supported on user network interfaces (UNIs).

You configure Flex Links on one Layer 2 interface (the active link) by assigning another Layer 2 interface as the Flex Link or backup link. When one of the links is up and forwarding traffic, the other link is in standby mode, ready to begin forwarding traffic if the other link shuts down. At any given time, only one of the interfaces is in the linkup state and forwarding traffic. If the primary link shuts down, the standby link starts forwarding traffic. When the active link comes back up, it goes into standby mode and does not forward traffic. STP is disabled on Flex Link interfaces.

In Figure 2-1, ports 1 and 2 on switch A are connected to uplink switches B and C. Because they are configured as Flex Links, only one of the interfaces is forwarding traffic; the other is in standby mode. If port 1 is the active link, it begins forwarding traffic between port 1 and switch B; the link between port 2 (the backup link) and switch C is not forwarding traffic. If port 1 goes down, port 2 comes up and starts forwarding traffic to switch C. When port 1 comes back up, it goes into standby mode and does not forward traffic; port 2 continues forwarding traffic.

## Preemption

You can also choose to configure a preemption mechanism, specifying the preferred port for forwarding traffic. In Figure 2-1, for example, you can configure the Flex Link pair with preemption mode so that after port 1 comes back up in the scenario, if it has greater bandwidth than port 2, port 1 begins forwarding after 60 seconds; and port 2 becomes the standby. You do this by entering the interface configuration **switchport backup interface preemption mode bandwidth** and **switchport backup interface preemption delay** commands.

*Figure 2-1        Flex Links Configuration Example*
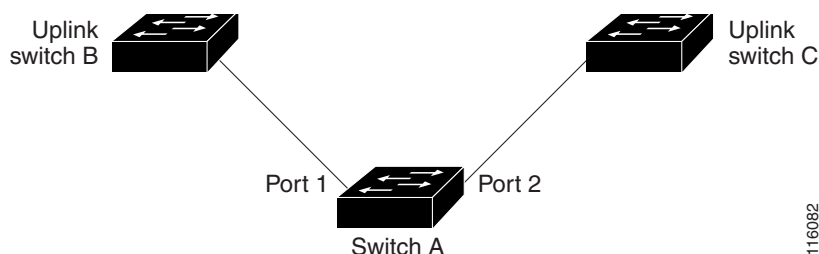


If a primary (forwarding) link goes down, a trap notifies the network management stations. If the standby link goes down, a trap notifies the users.

Flex Links are supported only on Layer 2 ports and port channels, not on VLANs or Layer 3 ports.

# VLAN Flex Link Load Balancing and Support

VLAN Flex Link load-balancing allows users to configure a Flex Link pair so that both ports simultaneously forward the traffic for some mutually exclusive VLANs. For example, if Flex Link ports are configured for 1-100 VLANs, the traffic of the first 50 VLANs can be forwarded on one port and the rest on the other port. If one of the ports fail, the other active port forwards all the traffic. When the failed port comes back up, it resumes forwarding traffic in the preferred vlans. This way, apart from providing the redundancy, this Flex Link pair can be used for load balancing. Also, Flex Link VLAN load-balancing does not impose any restrictions on uplink switches.

*Figure 2-2        VLAN Flex Links Load Balancing Configuration Example*
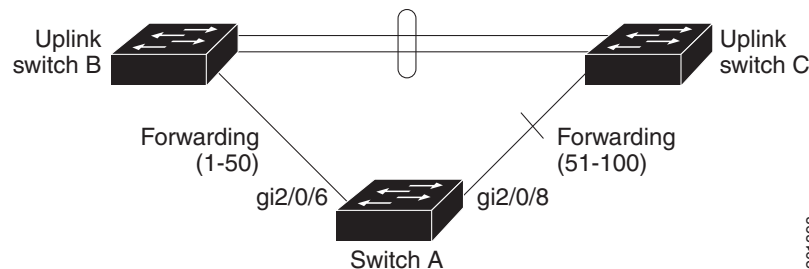


# Flex Link Multicast Fast Convergence

Flex Link Multicast Fast Convergence reduces the multicast traffic convergence time after a Flex Link failure. This is implemented by a combination of these solutions:

- Learning the Other Flex Link Port as the mrouter Port, page 2-3
- Generating IGMP Reports, page 2-4
- Leaking IGMP Reports, page 2-4

## Learning the Other Flex Link Port as the mrouter Port

In a typical multicast network, there is a querier for each VLAN. A switch deployed at the edge of a network has one of its Flex Link ports receiving queries. Flex Link ports are also always forwarding at any given time.

A port that receives queries is added as an *mrouter* port on the switch. An mrouter port is part of all the multicast groups learned by the switch. After a changeover, queries are received by the other Flex Link port. The other Flex Link port is then learned as the mrouter port. After changeover, multicast traffic then flows through the other Flex Link port. To achieve faster convergence of traffic, both Flex Link ports are learned as mrouter ports whenever either Flex Link port is learned as the mrouter port. Both Flex Link ports are always part of multicast groups.

Though both Flex Link ports are part of the groups in normal operation mode, all traffic on the backup port is blocked. So the normal multicast data flow is not affected by the addition of the backup port as an mrouter port. When the changeover happens, the backup port is unblocked, allowing the traffic to flow. In this case, the upstream multicast data flows as soon as the backup port is unblocked.

## Generating IGMP Reports

When the backup link comes up after the changeover, the upstream new distribution switch does not start forwarding multicast data, because the port on the upstream router, which is connected to the blocked Flex Link port, is not part of any multicast group. The reports for the multicast groups were not forwarded by the downstream switch because the backup link is blocked. The data does not flow on this port, until it learns the multicast groups, which occurs only after it receives reports.

The reports are sent by hosts when a general query is received, and a general query is sent within 60 seconds in normal scenarios. When the backup link starts forwarding, to achieve faster convergence of multicast data, the downstream switch immediately sends proxy reports for all the learned groups on this port without waiting for a general query.

## Leaking IGMP Reports

To achieve multicast traffic convergence with minimal loss, a redundant data path must be set up before the Flex Link active link goes down. This can be achieved by leaking only IGMP report packets on the Flex Link backup link. These leaked IGMP report messages are processed by upstream distribution routers, so multicast data traffic gets forwarded to the backup interface. Because all incoming traffic on the backup interface is dropped at the ingress of the access switch, no duplicate multicast traffic is received by the host. When the Flex Link active link fails, the access switch starts accepting traffic from the backup link immediately. The only disadvantage of this scheme is that it consumes bandwidth on the link between the distribution switches and on the backup link between the distribution and access switches. This feature is disabled by default and can be configured by using the **switchport backup interface** *interface-id* **multicast fast-convergence** command.

When this feature has been enabled at changeover, the switch does not generate the proxy reports on the backup port, which became the forwarding port.

### Configuration Examples

This configuration example shows learning the other Flex Link port as the mrouter port when Flex Link is configured on Gigabit Ethernet interface 0/11 and Gigabit Ethernet interface 0/12. The example shows the output for the **show interfaces switchport backup** command:

```
Switch# configure terminal
Switch(config)# interface gigabitEthernet0/11
Switch(config-if)# switchport trunk encapsulation dot1q
Switch(config-if)# switchport mode trunk
Switch(config-if)# switchport backup interface Gi0/12
Switch(config-if)# exit
Switch(config)# interface GigabitEthernet0/12
Switch(config-if)# switchport trunk encapsulation dot1q
Switch(config-if)# switchport mode trunk
Switch(config-if)# end
Switch# show interfaces switchport backup detail
Switch Backup Interface Pairs:
Active Interface Backup Interface State
GigabitEthernet0/11 GigabitEthernet0/12 Active Up/Backup Standby
Preemption Mode : off
Multicast Fast Convergence : Off
Bandwidth : 100000 Kbit (Gi0/11), 100000 Kbit (Gi0/12)
Mac Address Move Update Vlan : auto
```

This output shows a querier for VLANs 1 and 401, with their queries reaching the switch through Gigabit Ethernet interface 0/11:

```
Switch# show ip igmp snooping querier
```

```
Vlan    IP Address      IGMP Version      Port
----------------------------------------------------------------
1       1.1.1.1         v2                Gi0/11
401     41.41.41.1      v2                Gi0/11
```

This is output for the **show ip igmp snooping mrouter** command for VLANs 1 and 401:

```
Switch# show ip igmp snooping mrouter
Vlan    ports
----    -----
1       Gi1/0/11(dynamic), Gi0/12(dynamic)
401     Gi1/0/11(dynamic), Gi0/12(dynamic)
```

Similarly, both Flex Link ports are part of learned groups. In this example, Gigabit Ethernet interface 0/10 is a receiver/host in VLAN 1, which is interested in two multicast groups:

```
Switch# show ip igmp snooping groups
Vlan    Group       Type    Version    Port List
--------------------------------------------------------------------------
1       228.1.5.1   igmp    v2         Gi0/11, Gi0/12, Gi0/10
1       228.1.5.2   igmp    v2         Gi0/11, Gi0/12, Gi0/10
```

When a host responds to the general query, the switch forwards this report on all the mrouter ports. In this example, when a host sends a report for the group 228.1.5.1, it is forwarded only on Gigabit Ethernet interface 0/11, because the backup port Gigabit Ethernet 0/12 interface is blocked. When the active link, Gigabit Ethernet interface 0/11, goes down, the backup port, Gigabit Ethernet interface 0/12, begins forwarding.

As soon as this port starts forwarding, the switch sends proxy reports for the groups 228.1.5.1 and 228.1.5.2 on behalf of the host. The upstream router learns the groups and starts forwarding multicast data. This is the default behavior of Flex Link. This behavior changes when the user configures fast convergence using the **switchport backup interface gigabitethernet 0/12 multicast fast-convergence** command. This example shows turning on this feature:

```
Switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)# interface gigabitEthernet0/11
Switch(config-if)# switchport backup interface gigabitEthernet0/12 multicast
fast-convergence
Switch(config-if)# exit
Switch# show interfaces switchport backup detail
Switch Backup Interface Pairs:
Active                 Interface          Backup Interface State
----------------------------------------------------------------------
GigabitEthernet0/11 GigabitEthernet0/12 Active Up/Backup Standby
Preemption Mode : off
Multicast Fast Convergence : On
Bandwidth : 100000 Kbit (Gi0/11), 100000 Kbit (Gi0/12)
Mac Address Move Update Vlan : auto
```

This output shows a querier for VLAN 1 and 401 with their queries reaching the switch through Gigabit Ethernet interface 0/11:

```
Switch# show ip igmp snooping querier
Vlan        IP Address      IGMP Version    Port
----------------------------------------------------------------
1           1.1.1.1         v2              Gi0/11
401         41.41.41.1      v2              Gi0/11
```

This is output for the **show ip igmp snooping mrouter** command for VLAN 1 and 401:

```
Switch# show ip igmp snooping mrouter
Vlan        ports
```

```
----      -----
1         Gi0/11(dynamic), Gi0/12(dynamic)
401       Gi0/11(dynamic), Gi0/12(dynamic)
```

Similarly, both the Flex Link ports are a part of the learned groups. In this example, Gigabit Ethernet interface 0/10 is a receiver/host in VLAN 1, which is interested in two multicast groups:

```
Switch# show ip igmp snooping groups
Vlan    Group       Type    Version     Port List
---------------------------------------------------------------------
1       228.1.5.1   igmp    v2          Gi0/11, Gi0/12, Gi0/10
1       228.1.5.2   igmp    v2          Gi1/0/11, Gi0/12, Gi0/10
```

When a host responds to the general query, the switch forwards this report on all the mrouter ports. When you turn on this feature through the command-line port, and when a report is forwarded by the switch on Gigabit Ethernet interface 0/11, it is also leaked to the backup port Gigabit Ethernet interface 0/12. The upstream router learns the groups and starts forwarding multicast data, which is dropped at the ingress because Gigabit Ethernet interface 0/12 is blocked. When the active link, Gigabit Ethernet interface 0/11, goes down, the backup port, Gigabit Ethernet interface 0/12, begins forwarding. You do not need to send any proxy reports as the multicast data is already being forwarded by the upstream router. By leaking reports to the backup port, a redundant multicast path has been set up, and the time taken for the multicast traffic convergence is very minimal.

# MAC Address-Table Move Update

The MAC address-table move update feature allows the switch to provide rapid bidirectional convergence when a primary (forwarding) link goes down and the standby link begins forwarding traffic.

In Figure 2-3, switch A is an access switch, and ports 1 and 2 on switch A are connected to uplink switches B and D through a Flex Link pair. Port 1 is forwarding traffic, and port 2 is in the backup state. Traffic from the PC to the server is forwarded from port 1 to port 3. The MAC address of the PC has been learned on port 3 of switch C. Traffic from the server to the PC is forwarded from port 3 to port 1.

If the MAC address-table move update feature is not configured and port 1 goes down, port 2 starts forwarding traffic. However, for a short time, switch C keeps forwarding traffic from the server to the PC through port 3, and the PC does not get the traffic because port 1 is down. If switch C removes the MAC address of the PC on port 3 and relearns it on port 4, traffic can then be forwarded from the server to the PC through port 2.

If the MAC address-table move update feature is configured and enabled on the switches in Figure 2-3 and port 1 goes down, port 2 starts forwarding traffic from the PC to the server. The switch sends a MAC address-table move update packet from port 2. Switch C gets this packet on port 4 and immediately learns the MAC address of the PC on port 4, which reduces the reconvergence time.

You can configure the access switch, switch A, to *send* MAC address-table move update messages. You can also configure the uplink switches B, C, and D to *get* and process the MAC address-table move update messages. When switch C gets a MAC address-table move update message from switch A, switch C learns the MAC address of the PC on port 4. Switch C updates the MAC address table, including the forwarding table entry for the PC.

Switch A does not need to wait for the MAC address-table update. The switch detects a failure on port 1 and immediately starts forwarding server traffic from port 2, the new forwarding port. This change occurs in 100 milliseconds (ms). The PC is directly connected to switch A, and the connection status does not change. Switch A does not need to update the PC entry in the MAC address table.

*Figure 2-3        MAC Address-Table Move Update Example*
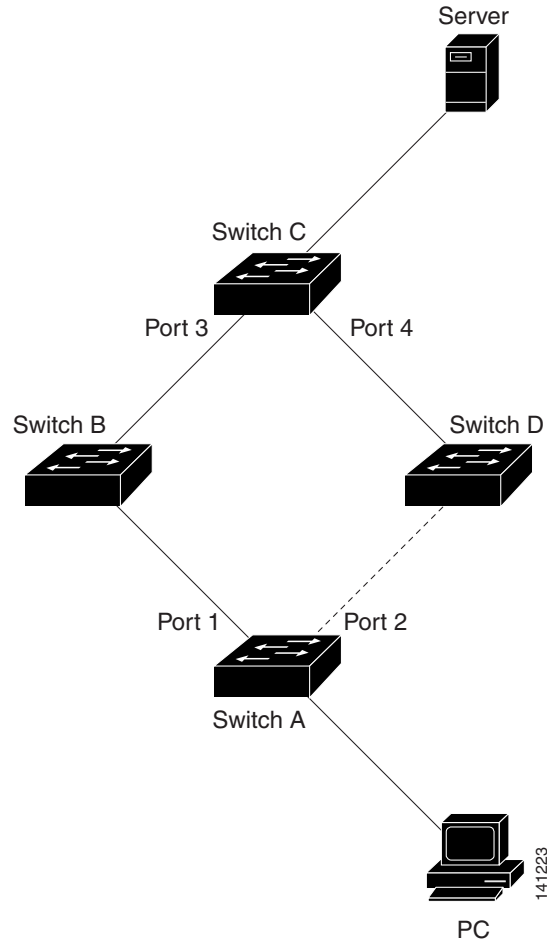


# Guidelines and Limitations

**Flex Links**

- You can configure up to 16 backup Flex Links.

- You can configure only one Flex Link backup link for any active link, and it must be on a different interface than the active interface.

- An interface can belong to only one Flex Link pair.

- An interface can be a backup link for only one active link. An active link cannot belong to another Flex Link pair.

- Neither of the links (active or backup) can be a port that belongs to an EtherChannel.

  However, you can configure two port channels (EtherChannel logical interfaces) as Flex Links, and you can configure a port channel and a physical interface as Flex Links, with either the port channel or the physical interface as the active link.

- A backup link does not have to be the same type (Fast Ethernet, Gigabit Ethernet, or port channel) as the active link. However, we recommend that you configure both Flex Links with similar characteristics so that there are no loops or changes in behavior if the standby link begins to forward traffic.

- STP is disabled on Flex Link ports. When STP is configured on the switch, Flex Links do not participate in STP within any VLANs. Ensure that there are no loops in the configured topology, when not operating with STP.

**Note**    STP is available only on NNIs or ENIs.

**Preemption**

- You cannot configure a preemption mechanism and VLAN load balancing for the same Flex Links pair.

**VLAN Load Balancing on Flex Links**

- For Flex Link VLAN load balancing, you must choose the preferred VLANs on the backup interface.

- You cannot configure a preemption mechanism and VLAN load balancing for the same Flex Links pair.

**MAC Address Table Move Update**

- You can enable and configure this feature on the access switch to *send* the MAC address-table move updates.

- You can enable and configure this feature on the uplink switches to *get* the MAC address-table move updates.

# Default Settings

| Parameters | Default |
|---|---|
| Flex links | Disabled |
| Flex links preemption mode | Off |
| Flex links preemption delay | 35 seconds |
| Flex link VLAN load-balancing | Disabled |
| MAC address table move update | Disabled |

# Configuring Flex Links and MAC Address Table Move Update

- Enabling the Flex Link, page 2-9
- Defining a Flex Link Preemption Scheme, page 2-10
- Configuring VLAN Load Balancing on Flex Links, page 2-11
- Configuring MAC Address-Table Move Update, page 2-12

## Enabling the Flex Link

### BEFORE YOU BEGIN

Review the Guidelines and Limitations for this feature. (See Guidelines and Limitations.)

### DETAILED STEPS

| | Command | Purpose |
|---|---|---|
| Step 1 | configure terminal | Enter global configuration mode. |
| Step 2 | interface *interface-id* | Specify the interface, and enters interface configuration mode. The interface can be a physical Layer 2 interface or a port channel (logical interface). The port-channel range is 1 to 48. |
| Step 3 | no shutdown | Enable the port, if necessary. By default, UNIs and ENIs are disabled, and network NNIs are enabled. |
| Step 4 | switchport backup interface *interface-id* | Configures the backup link for the interface defined in Step 2.<br><br>**Note**   When one interface is forwarding traffic, the other interface is in standby mode. |
| Step 5 | end | Return to privileged EXEC mode. |
| Step 6 | copy running-config startup config | (Optional) Save your entries in the switch startup configuration file. |

### EXAMPLE

This example shows how to configure an interface with a backup interface:

```
Switch# configure terminal
Switch(conf)# interface fastethernet0/1
Switch(conf-if)# no shutdown
Switch(conf-if)# switchport backup interface fastethernet0/2
Switch(conf-if)# end

Switch(conf)# interface gigabitethernet0/1
Switch(conf-if)# switchport backup interface gigabitethernet0/2 preemption mode forced
Switch(conf-if)# switchport backup interface gigabitethernet0/2 preemption delay 50
```

# Defining a Flex Link Preemption Scheme

Configure a preemption scheme for the Flex Links pair (active and backup links).

**BEFORE YOU BEGIN**

Review the Guidelines and Limitations for this feature. (See Guidelines and Limitations.)

Define and enable the Flex Link. (See Enabling the Flex Link.)

Determine what preemption mode, if any, you want to assign to the port. (See Preemption.)

**DETAILED STEPS**

|  | Command | Purpose |
|---|---|---|
| Step 1 | **configure terminal** | Enter global configuration mode. |
| Step 2 | **interface** *interface-id* | Specify the interface on which you want to define the preemption scheme. |
| Step 3 | **switchport backup interface** *interface-id* **preemption mode** {**forced** \| **bandwidth** \| **off**} | Configure a preemption mechanism and delay for a Flex Link pair. You can configure the preemption as:<br><br>• **forced**—the active interface always preempts the backup.<br><br>• **bandwidth**—the interface with the higher bandwidth always acts as the active interface.<br><br>• **off**—no preemption happens from active to backup. |
| Step 4 | **switchport backup interface** *interface-id* **preemption delay** *delay-time* | Configure the time delay until a port preempts another port.<br><br>**Note**    Setting a delay time only works with forced and bandwidth modes. |
| Step 5 | **end** | Return to privileged EXEC mode. |
| Step 6 | **copy running-config startup config** | (Optional) Save your entries in the switch startup configuration file. |

**EXAMPLE**

This example shows how to configure the preemption mode as *forced* for a backup interface pair:

```
Switch# configure terminal
Switch(conf)# interface gigabitethernet0/1
Switch(conf-if)# switchport backup interface gigabitethernet0/2 preemption mode forced
Switch(conf-if)# switchport backup interface gigabitethernet0/2 preemption delay 50
Switch(conf-if)# end
```

# Configuring VLAN Load Balancing on Flex Links

## BEFORE YOU BEGIN

Review the Guidelines and Limitations for this feature. (See Guidelines and Limitations.)

Define and enable the Flex Link. (See Enabling the Flex Link.)

## DETAILED STEPS

|        | Command | Purpose |
|--------|---------|---------|
| Step 1 | **configure terminal** | Enter global configuration mode. |
| Step 2 | **interface** *interface-id* | Specify the interface, and enter interface configuration mode. The interface can be a physical Layer 2 interface or a port channel (logical interface). The port-channel range is 1 to 48. |
| Step 3 | **no shutdown** | Enable the port, if necessary. By default, UNIs and ENIs are disabled, and NNIs are enabled. |
| Step 4 | **switchport backup interface** *interface-id* **prefer vlan** *vlan-range* | Configure a physical Layer 2 interface (or port channel) as part of a Flex Links pair with the interface, and specify the VLANs carried on the interface. The VLAN ID range is 1 to 4094. |
| Step 5 | **end** | Return to privileged EXEC mode. |
| Step 6 | **copy running-config startup config** | (Optional) Save your entries in the switch startup configuration file. |

## EXAMPLE

In the following example, VLANs 1 to 50, 60, and 100 to 120 are configured on the switch:

```
Switch(config)# interface gigabitEthernet 0/6
Switch(config-if)# switchport backup interface gigabitEthernet 0/8 prefer vlan 60,100-120
```

When both interfaces are up, Gigabit Ethernet port 0/8 forwards traffic for VLANs 60 and 100 to 120 and Gigabit Ethernet port 0/6 forwards traffic for VLANs 1 to 50.

```
Switch# show interfaces switchport backup
Switch Backup Interface Pairs:

Active Interface        Backup Interface        State
-----------------------------------------------------------------------
GigabitEthernet0/6    GigabitEthernet0/8    Active Up/Backup Standby

Vlans Preferred on Active Interface: 1-50
Vlans Preferred on Backup Interface: 60, 100-120
```

When a Flex Link interface goes down (LINK_DOWN), VLANs preferred on this interface are moved to the peer interface of the Flex Link pair. In this example, if interface Gigabit Ethernet port 0/6 goes down, Gigabit Ethernet port 0/8 carries all VLANs of the Flex Link pair.

```
Switch# show interfaces switchport backup
Switch Backup Interface Pairs:

Active Interface        Backup Interface        State
```

```
                        ------------------------------------------------------------------------
                        GigabitEthernet0/6   GigabitEthernet0/8    Active Down/Backup Up

                        Vlans Preferred on Active Interface: 1-50
                        Vlans Preferred on Backup Interface: 60, 100-120
```

When a Flex Link interface comes up, VLANs preferred on this interface are blocked on the peer interface and moved to the forwarding state on the interface that has just come up. In this example, if interface 0/6 comes up, VLANs preferred on this interface are blocked on the peer interface 0/8 and forwarded on 0/6.

```
Switch# show interfaces switchport backup
Switch Backup Interface Pairs:

Active Interface          Backup Interface          State
------------------------------------------------------------------------
GigabitEthernet0/6    GigabitEthernet0/8     Active Up/Backup Standby

Vlans Preferred on Active Interface: 1-50
Vlans Preferred on Backup Interface: 60, 100-120

Switch# show interfaces switchport backup detail
Switch Backup Interface Pairs:

Active Interface          Backup Interface          State
------------------------------------------------------------------------
FastEthernet 0/3      FastEthernet 0/4      Active Down/Backup Up

Vlans Preferred on Active Interface: 1-2,5-4094
Vlans Preferred on Backup Interface: 3-4
Preemption Mode  : off
Bandwidth : 10000 Kbit (Fa 0/3), 100000 Kbit (Fa0/4)
Mac Address Move Update Vlan : auto
```

# Configuring MAC Address-Table Move Update

Configuring a switch to send and get MAC address-table move updates.

## Sending MAC Address Table Move Updates

### BEFORE YOU BEGIN

Review the Guidelines and Limitations for this feature. (See Guidelines and Limitations.)

### DETAILED STEPS

|        | Command | Purpose |
|--------|---------|---------|
| Step 1 | **configure terminal** | Enter global configuration mode. |
| Step 2 | **interface** *interface-id* | Specify the interface, and enter interface configuration mode. The interface can be a physical Layer 2 interface or a port channel (logical interface). The port-channel range is 1 to 48. |
| Step 3 | **no shutdown** | Enable the port, if necessary. By default, UNIs and ENIs are disabled, and NNIs are enabled. |

| | Command | Purpose |
|---|---------|---------|
| Step 4 | **switchport backup interface** *interface-id* <br><br> or <br><br> **switchport backup interface** *interface-id* **mmu primary vlan** *vlan-id* | Configure a physical Layer 2 interface (or port channel), as part of a Flex Link pair with the interface. The MAC address-table move update VLAN is the lowest VLAN ID on the interface. <br><br> Configure a physical Layer 2 interface (or port channel) and specify the VLAN ID on the interface, which is used for sending the MAC address-table move update. <br><br> When one link is forwarding traffic, the other interface is in standby mode. |
| Step 5 | **end** | Return to global configuration mode. |
| Step 6 | **mac address-table move update transmit** | Enable the access switch to send MAC address-table move updates to other switches in the network if the primary link goes down and the switch starts forwarding traffic through the standby link. <br><br> To disable the MAC address-table move update feature, use the **no mac address-table move update transmit** interface configuration command. |
| Step 7 | **end** | Return to privileged EXEC mode. |
| Step 8 | **copy running-config startup config** | (Optional) Save your entries in the switch startup configuration file. |

## EXAMPLE

This example shows how to configure an access switch to send MAC address-table move update messages:

```
Switch# configure terminal
Switch(conf)# interface gigabitethernet0/1
Switch(conf-if)# switchport backup interface gigabitethernet0/2 mmu primary vlan 2
Switch(conf-if)# exit
Switch(conf)# mac address-table move update transmit
Switch(conf)# end
```

## Getting MAC Address Table Move Updates

### BEFORE YOU BEGIN

Review the Guidelines and Limitations for this feature. (See Guidelines and Limitations.)

**DETAILED STEPS**

| | Command | Purpose |
|---|---|---|
| Step 1 | **configure terminal** | Enter global configuration mode. |
| Step 2 | **mac address-table move update receive** | Enable the switch to get and process the MAC address-table move updates. |
| | | To disable the MAC address-table move update feature, use the **no mac address-table move update receive** configuration command. |
| Step 3 | **end** | Return to privileged EXEC mode. |
| Step 4 | **copy running-config startup config** | (Optional) Save your entries in the switch startup configuration file. |

**EXAMPLE**

This example shows how to configure a switch to get and process MAC address-table move update messages:

```
Switch# configure terminal
Switch(conf)# mac address-table move update receive
Switch(conf)# end
```

# Verifying Configuration

| Command | Purpose |
|---|---|
| **show interface** [*interface-id*] **switchport backup [detail]** | Displays the Flex Link backup interface configured for an interface, or displays all Flex Links configured on the switch and the state of each active and backup interface (up or standby mode). |
| **show mac address-table move update** | Displays the MAC address-table move update information on the switch. |

**EXAMPLE**

This example shows summary configuration information for the Flex Link pair.

```
Switch# show interface switchport backup

Switch Backup Interface Pairs:

Active Interface        Backup Interface        State
------------------------------------------------------------------------------------
FastEthernet0/1         FastEthernet0/2         Active Up/Backup Standby
FastEthernet0/3         FastEthernet0/4         Active Up/Backup Standby
Port-channel1           GigabitEthernet0/1      Active Up/Backup Standby
```

This example shows detailed configuration information for the Flex Link pair.

```
Switch# show interface switchport backup detail
Active Interface Backup Interface State
------------------------------------------------------------------------
GigabitEthernet0/21 GigabitEthernet0/2 Active Up/Backup Standby
Interface Pair : Gi0/1, Gi0/2
Preemption Mode : forced
Preemption Delay : 50 seconds
Bandwidth : 100000 Kbit (Gi0/1), 100000 Kbit (Gi0/2)
Mac Address Move Update Vlan : auto
```

# Feature History

| Platform | First Supported Release |
|----------|-------------------------|
| IE 2000U | Cisco IOS Release 15.0(2)EH |
| CGS 2520 switch | Cisco IOS Release  12.2(53)EX |
| Ethernet Switch Module (ESM) for CGR 2010 | Cisco IOS Release  12.2(53)EX |