



## Flex Link+

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## Flex Link+ redundancy functions

Flex Link+ is a Layer 2 redundancy feature that

- provides a pair of interfaces where one acts as a backup to the other
- offers an alternative to the Spanning Tree Protocol (STP) for simple link redundancy, and
- supports switchover on both physical interfaces and EtherChannel bundles.

Flex Link+ provides redundancy by using one Layer 2 link as primary and another as backup. It can also improve bandwidth through VLAN load balancing, letting both links forward traffic at the same time for different VLANs while still maintaining redundancy.

In load-balancing mode, both ports forward traffic for separate VLANs simultaneously, which boosts bandwidth and maintains redundancy.

Table 1: Feature History

Feature name	Release Information	Description
Flex Link+ redundancy functions	26.2.1	<p>This feature provides fast link redundancy between two Layer 2 interfaces without requiring Spanning Tree Protocol, offering failover for active-standby configurations. This feature supports VLAN load balancing across both links, automatic or manual preemption, and works on physical interfaces or port channels.</p> <p>Flex Link+ is ideal for industrial networks requiring simple, reliable uplink redundancy with minimal configuration complexity.</p>

## Guidelines and restrictions

### Guidelines

- Use the spanning-tree portfast trunk command on uplink interfaces connected to Flex Link+ ports to bypass STP listening and learning states.
- Enable MSTP on upstream switches for any network extending across a FlexLink+ node to prevent traffic blackholing. Refer [MSTP](#) configuration for more details.
- Enable Layer 2 multicast snooping on the uplink switches.
- Every Flex Link+ segment must have exactly one primary edge port.

### Restrictions

- Flex Link+ supports physical Layer 2 interfaces and EtherChannel.
- VLAN load balancing requires the edge port to terminate the segment.
- Do not enable Flex Link+ if the device runs STP, as STP already provides its own redundancy.

## Configure active port for Flex Link+

Define the primary (active) interface in a FlexLink+ pair.

### Before you begin

Configure the node connected to the FlexLink+ active link as the root bridge.

### Procedure

- 
- Step 1** Use the **configure terminal** command to enter global configuration mode.

**Example:**

```
Switch# configure terminal
```

**Step 2** Use the **interface** *interface-id* command to specify the interface.

**Example:**

```
Switch(config)# interface GigabitEthernet1/1
```

**Step 3** Use the **switchport trunk allowed vlan** *vlan-list* command to configure the allowed VLANs on the interface.

**Example:**

```
Switch(config-if)# switchport trunk allowed vlan 10 20
```

**Step 4** Use the **switchport mode trunk** command to set the interface to trunk mode.

**Example:**

```
Switch(config-if)# switchport mode trunk
```

**Step 5** Use the **rep segment** *segment-id* **edge no-neighbor primary** command to define the port as the primary edge port.

**Example:**

```
Switch(config-if)# rep segment 2 edge no-neighbor primary
```

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## Configure standby port for Flex Link+

Define the standby interface in a FlexLink+ pair.

### Procedure

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**Step 1** Use the **configure terminal** command to enter global configuration mode.

**Example:**

```
Switch# configure terminal
```

**Step 2** Use the **interface** *interface-id* command to specify the interface.

**Example:**

```
Switch(config)# interface GigabitEthernet1/1
```

**Step 3** Use the **switchport trunk allowed vlan** *vlan-list* command to configure the allowed VLANs on the interface.

**Example:**

```
Switch(config-if)# switchport trunk allowed vlan 10 20
```

**Step 4** Use the **switchport mode trunk** command to set the interface to trunk mode.

**Example:**

```
Switch(config-if)# switchport mode trunk
```

**Step 5** Use the **rep segment *segment-id* edge no-neighbor preferred** command to define the port as the standby edge port.

**Example:**

```
Switch(config-if)# rep segment 2 edge no-neighbor preferred
```

**Note**

The `preferred` keyword helps determine which port becomes the blocking port under normal operating conditions, but does not guarantee it. Actual selection of the blocking port depends on timing and link state, such as which port comes up later.

## Configure VLAN load balancing on Flex Link+

Distribute traffic across both interfaces in a Flex Link+ pair.

This procedure enables traffic distribution across a Flex Link+ pair by configuring trunking parameters and designating a standby edge port to achieve VLAN load balancing.

### Procedure

**Step 1** Use the **configure terminal** command to enter global configuration mode.

**Example:**

```
Switch# configure terminal
```

**Step 2** Use the **interface *interface-id*** command to specify the interface.

**Example:**

```
Switch(config)# interface GigabitEthernet1/1
```

**Step 3** Use the **rep block port *port-number* vlan *vlan\_id*** command to define the VLANs that are blocked on the standby port.

**Example:**

```
Switch(config-if)# rep block port 2 vlan 1-50
```

This command blocks VLANs 1–50 on the standby port, meaning these VLANs remain active on the primary port.

**Step 4** Use the **switchport mode trunk** command to set the interface to trunk mode.

**Example:**

```
Switch(config-if)# switchport mode trunk
```

**Step 5** Use the **exit** command to exit interface configuration mode.

**Example:**

```
Switch(config-if)# exit
```

**Step 6** Use the **interface *interface\_id*** command to access the standby interface configuration.

**Example:**

```
Switch(config)# interface GigabitEthernet1/1
```

- Step 7** Use the **rep segment *segment-id* edge no-neighbor** command to confirm the standby interface role in the segment.

**Example:**

```
Switch(config)# rep segment 10 edge no-neighbor
```

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## Configure time for VLAN load balancing on Flex Link+

Defines the time to trigger VLAN load balancing automatically after a link recovers.

You can configure the time to trigger VLAN load balancing automatically after a link recovers.

This configuration is valid on the primary edge port only.

### Procedure

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- Step 1** Use the **configure terminal** command to enter global configuration mode.

**Example:**

```
Switch# configure terminal
```

- Step 2** Use the **interface *interface-id*** command to specify the interface.

**Example:**

```
Switch(config)# interface GigabitEthernet1/1
```

- Step 3** Use the **rep preempt delay *seconds*** command to configure the pre-emption delay time.

**Example:**

```
Switch(config-if)# rep preempt delay 100
```

The valid range for the delay value is 15 to 300 seconds.

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## Configure manual preemption for VLAN load balancing on Flex Link+

Manually initiate VLAN load balancing on a segment.

You can configure preemption delay manually if it is not configured.

## Procedure

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**Step 1** Use the **enable** command to enter privileged EXEC mode.

**Example:**

```
Switch> enable
```

**Step 2** Use the **rep preempt segment** *segment-id* command to manually trigger VLAN load-balancing pre-emption for the specified segment.

**Example:**

```
Switch# rep preempt segment 10
```

Confirm the command when prompted to proceed with the preemption action.

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# Configure Flex Link+ topology change messages

Notify upstream devices of topology changes within the FlexLink+ segment.

Configure Flex Link+ in a larger network domain to ensure traffic convergence.

## Procedure

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**Step 1** Use the **configure terminal** command to enter global configuration mode.

**Example:**

```
Switch# configure terminal
```

**Step 2** Use the **interface** *interface-id* command to specify the interface.

**Example:**

```
Switch(config)# interface GigabitEthernet1/1
```

**Step 3** Use the **rep stcn stp** command to enable propagation of topology change notifications on the active interface.

**Example:**

```
Switch(config-if)# rep stcn stp
```

**Step 4** Use the **exit** command to exit interface configuration mode.

**Example:**

```
Switch(config-if)# exit
```

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