

## Understanding Fast Failover in a Virtual Chassis Configuration

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The Virtual Chassis fast failover feature is a hardware-assisted failover mechanism that automatically reroutes traffic and reduces traffic loss in the event of a link failure or switch failure. If a link between two members fails, traffic flow between those members must be rerouted quickly so that there is minimal traffic loss.

Fast failover is effective only for Virtual Chassis members configured in ring topologies using identical port types.

This topic describes the following:

- Supported Topologies for Fast Failover on page 1
- How Fast Failover Works on page 1
- Effects of Topology Changes on a Fast Failover Configuration on page 6

### **Supported Topologies for Fast Failover**

For fast failover to be effective, the Virtual Chassis members must be configured in a ring topology. The ring topology can be formed by using either dedicated Virtual Chassis ports (VCPs) or user-configured uplink module VCPs. Fast failover is supported only in a ring topology that uses identical port types, for example, either a topology that uses all dedicated VCPs or one that uses all uplink module VCPs. Fast failover is not supported in a ring topology that includes both dedicated VCPs and uplink module VCPs. Fast failover is supported, however, in a Virtual Chassis configuration that consists of multiple rings.

### **How Fast Failover Works**

When fast failover is activated, each VCP is automatically configured with a backup port of the same type (dedicated VCP, SFP uplink VCP, or XFP uplink VCP). If a VCP fails, its backup port is used to send traffic. These backup ports act as standby ports and are not meant for load-balancing purposes.

#### **Fast Failover in a Ring Topology using Dedicated VCPs**

When fast failover is activated in a ring topology that uses dedicated VCPs, each VCP is automatically configured with a backup port of the same type. If a VCP fails, its backup port is used to send traffic. Figure 1 shows normal traffic flow in a ring topology using dedicated VCPs.

**Figure 1: Normal Traffic Flow in a Ring Topology Using Dedicated VCPs**

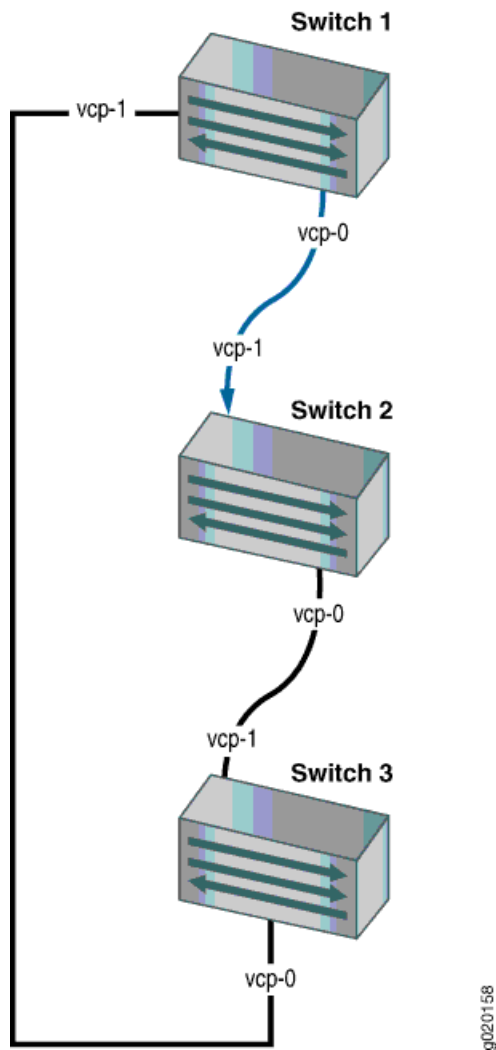
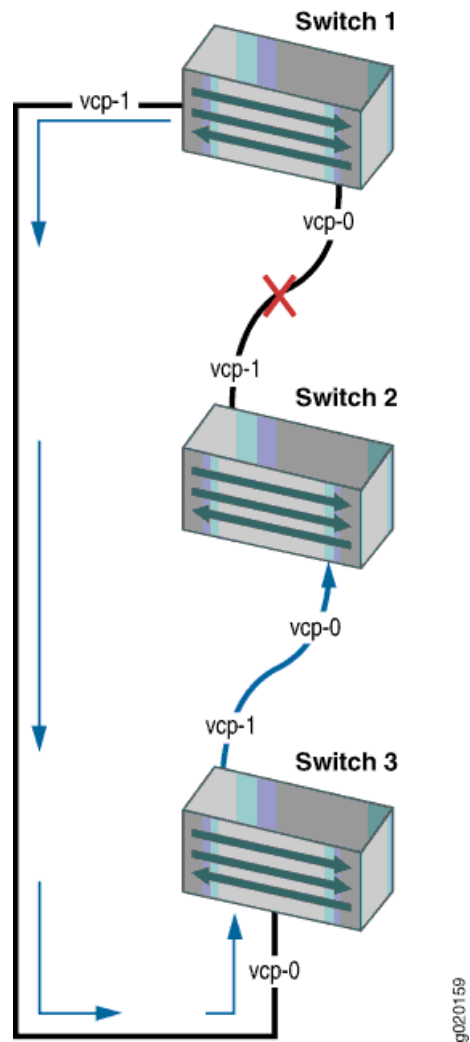


Figure 2 shows traffic redirected by fast failover.

**Figure 2: Traffic Redirected by Fast Failover After Dedicated VCP Link Failure**



When the failed link is restored, the Virtual Chassis reconfigures the topology to the topology's original state.

### **Fast Failover in a Ring Topology Using Uplink Module VCPs**

In a ring topology that uses uplink module VCPs, each uplink module VCP is automatically configured with a backup uplink module VCP. If an uplink module VCP fails, its backup port is used to send traffic. Figure 3 shows normal traffic flow in a ring topology using SFP uplink module VCPs. Normal traffic flow in a ring topology using XFP uplink module VCPs is the same.



**NOTE:** In order to use SFP or XFP uplink module ports as VCPs, you must configure them to be VCPs using the request virtual-chassis vc-port command. Once configured, they will be converted into VCPs. For example xe-0/1/0 will become vcp-255/1/0 after you configure it to be a VCP.

**Figure 3: Normal Traffic Flow in a Ring Topology Using SFP Uplink Module VCPs**

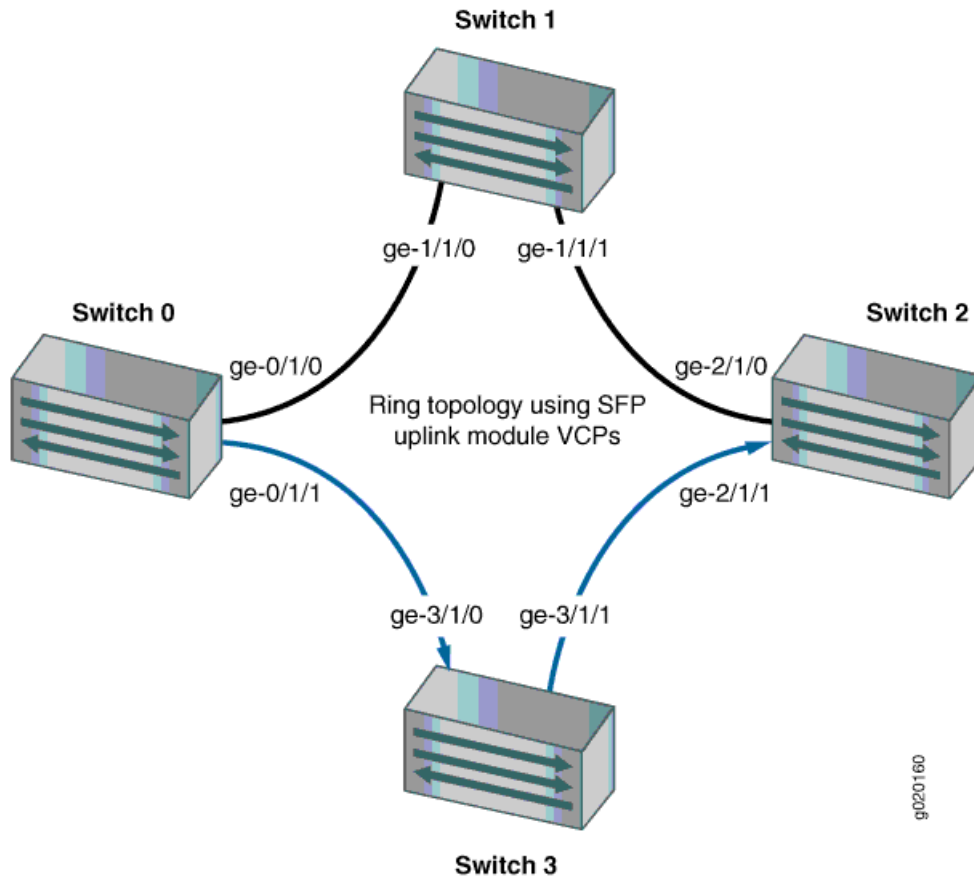
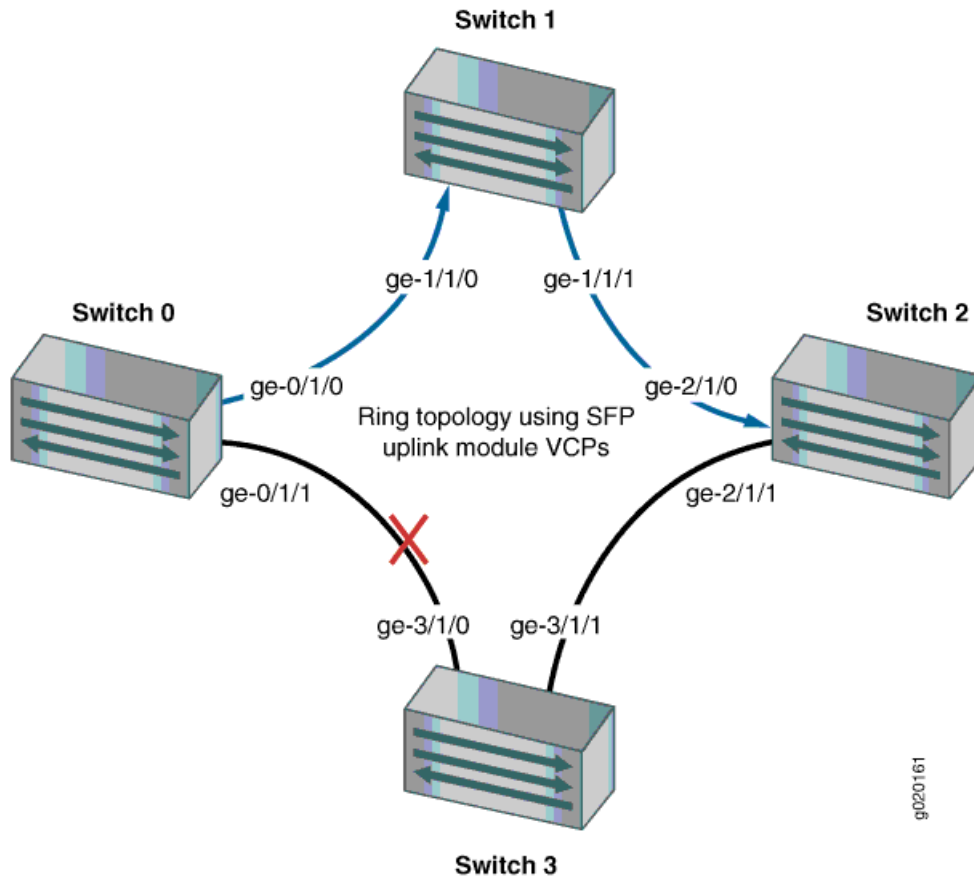


Figure 4 shows traffic redirected by fast failover.

**Figure 4: Traffic Redirected by Fast Failover After SFP Uplink Module VCP Link Failure**



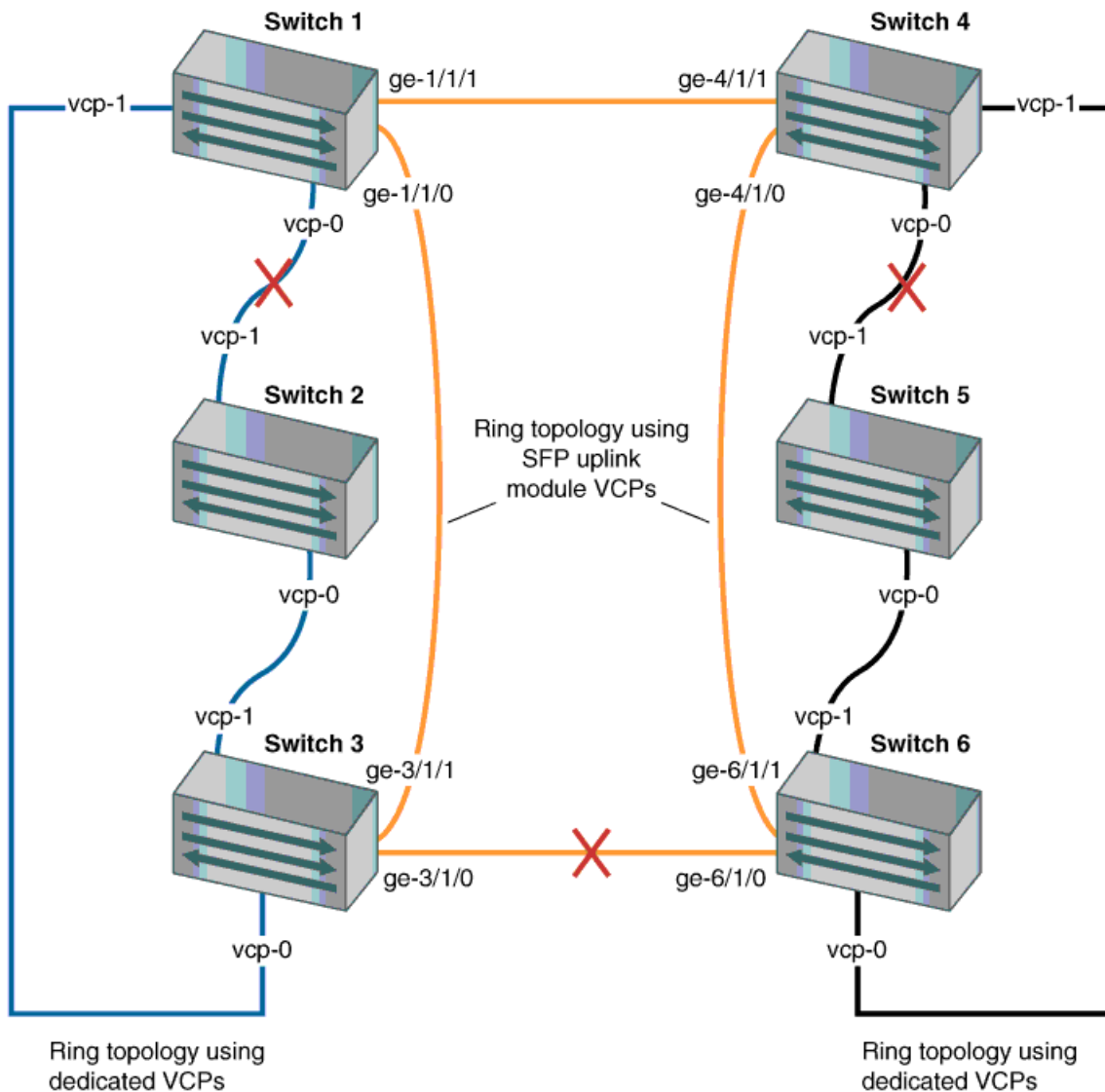
In a ring topology that uses SFP uplink module VCPs, there are four ports per module. Consecutive pair of ports are automatically configured as backup ports for each other. For example, if a Virtual Chassis member has an SFP uplink module installed, uplink module VCPs `ge-0/1/0` and `ge-0/1/1` are automatically configured as the backup port for the other port in the pair. Similarly, ports `ge-0/1/2` and `ge-0/1/3` are automatically configured as the backup port for the other port in the pair.

Similarly, in a ring topology that uses XFP uplink module VCPs, there are only two ports per uplink module. Each port is automatically configured to back up the other port in the uplink module (for example, `xe-0/1/0` is the backup for `xe-0/1/1`).

### **Fast Failover in a Virtual Chassis Configuration Using Multiple Ring Topologies**

Fast failover is supported in a Virtual Chassis configuration with a multiple-ring topology, as shown in Figure 5.

**Figure 5: Traffic Redirected by Fast Failover After VCP Link Failures in a Topology with Multiple Rings**



In this scenario, the Virtual Chassis configuration has three rings: two rings that use dedicated VCPs and one ring that uses SFP uplink module VCPs. Fast failover works independently on each ring. Each dedicated VCP in a ring is backed up by another dedicated VCP. Similarly, each SFP uplink module VCP is backed up by another SFP uplink module VCP. Fast failover does not support a ring topology consisting of a mix of dedicated VCPs and uplink module VCPs.

### **Effects of Topology Changes on a Fast Failover Configuration**

Once the fast failover feature has been activated, topology changes to the Virtual Chassis configuration do not affect the fast failover configuration. In the event of a link or switch failure, fast failover functions normally.

- Related Topics**
- Understanding Virtual Chassis Configuration
  - Example: Configuring Fast Failover on Uplink Module VCPs to Reroute Traffic When a Virtual Chassis Member Switch or Inter-Member Link Fails
  - Setting an Uplink Module Port as a Virtual Chassis Port (CLI Procedure)

