

# Contents

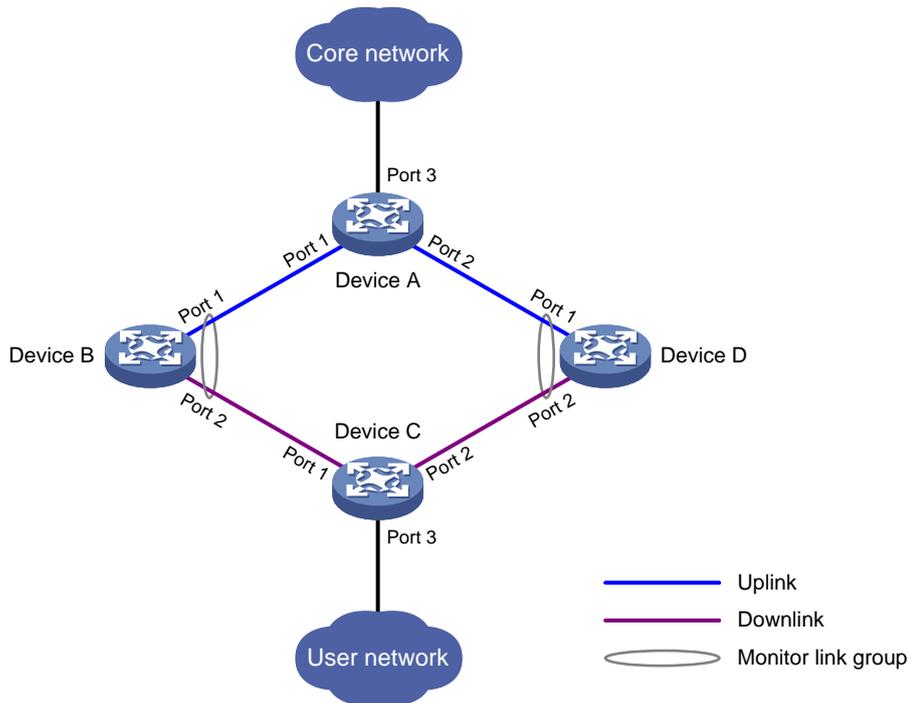
Configuring Monitor Link .....	1
Overview .....	1
Configuration restrictions and guidelines .....	2
Monitor Link configuration task list .....	2
Enabling Monitor Link globally .....	2
Creating a monitor link group .....	2
Configuring monitor link group member interfaces .....	3
Configuring the uplink interface threshold for triggering monitor link group state switchover .....	4
Configuring the switchover delay for the downlink interfaces in a monitor link group .....	4
Displaying and maintaining Monitor Link .....	4
Monitor Link configuration example .....	4

# Configuring Monitor Link

## Overview

Monitor Link associates the state of downlink interfaces with the state of uplink interfaces in a monitor link group. When Monitor Link shuts down the downlink interfaces because of an uplink failure, the downstream device changes connectivity to another link.

**Figure 1 Monitor Link application scenario**



A monitor link group contains uplink and downlink interfaces. An interface can belong to only one monitor link group.

- Uplink interfaces are the monitored interfaces. The state of a monitor link group is associated with the state of its member uplink interfaces. When the number of uplink interfaces in up state in a monitor link group is less than the specified threshold, the monitor link group goes down and shuts down its downlink interfaces. When the number of uplink interfaces in up state reaches the threshold, the monitor link group comes up and brings up all its downlink interfaces.
- Downlink interfaces are the monitoring interfaces. The state of the downlink interfaces is associated with the state of the monitor link group. When the state of the monitor link group changes, the state of its member downlink interfaces changes to be consistent with the group state.

As shown in [Figure 1](#):

- Port 1 and Port 2 of Device B form a monitor link group.
- Port 1 and Port 2 of Device D form another monitor link group.
- Port 1 is an uplink interface on both devices, and Port 2 is a downlink interface on both devices.

A monitor link group works independently of other monitor link groups. When the number of uplink interfaces in up state in a monitor link group is less than the specified threshold, the monitor link group goes down and shuts down its downlink interfaces. When the number of uplink interfaces in up

state reaches the threshold, the monitor link group comes up and brings up all its downlink interfaces.

## Configuration restrictions and guidelines

Follow these restrictions and guidelines when you configure Monitor Link:

- Do not manually shut down or bring up the downlink interfaces in a monitor link group.
- To avoid frequent state changes of downlink interfaces in the event that uplink interfaces in the monitor link group flap, you can configure a switchover delay. The switchover delay is the time that the downlink interfaces wait before they come up following an uplink interface.

## Monitor Link configuration task list

Tasks at a glance
(Required.) <a href="#">Enabling Monitor Link globally</a>
(Required.) <a href="#">Creating a monitor link group</a>
(Required.) <a href="#">Configuring monitor link group member interfaces</a>
(Optional.) <a href="#">Configuring the uplink interface threshold for triggering monitor link group state switchover</a>
(Optional.) <a href="#">Configuring the switchover delay for the downlink interfaces in a monitor link group</a>

## Enabling Monitor Link globally

All monitor link groups can operate only after you enable Monitor Link globally. When you disable Monitor Link globally, all monitor link groups cannot operate and the downlink interfaces brought down by the monitor link groups resume their original states.

To enable Monitor Link globally:

Step	Command	Remarks
1. Enter system view.	<b>system-view</b>	N/A
2. Enable Monitor Link globally.	<b>undo monitor-link disable</b>	By default, Monitor Link is enabled globally.

## Creating a monitor link group

Step	Command	Remarks
1. Enter system view.	<b>system-view</b>	N/A
2. Create a monitor link group and enter monitor link group view.	<b>monitor-link group <i>group-id</i></b>	By default, no monitor link groups exist.

# Configuring monitor link group member interfaces

You can configure member interfaces for a monitor link group in monitor link group view or interface view. Configurations made in these views have the same effect. The configuration is supported by the following interfaces:

- Layer 2 Ethernet interfaces and Layer 2 aggregate interfaces.
- Layer 3 Ethernet interfaces/subinterfaces and Layer 3 aggregate interfaces/subinterfaces.
- S-channel interfaces and S-channel aggregate interfaces.

Follow these guidelines when you configure monitor link group member interfaces:

- If you have configured an interface as the downlink interface of a monitor link group, do not configure its subinterfaces as the uplink interfaces of any monitor link group. Otherwise, the Monitor Link operation might be interrupted.
- The state of subinterfaces is associated with the state of the interface. Do not add the interface and its subinterfaces to the same monitor link group. Otherwise, the monitor link group performance might be affected.
- Do not add an aggregate interface and its member ports to the same monitor link group. Otherwise, the Monitor Link operation might be interrupted.
- An interface can be assigned to only one monitor link group.
- To avoid undesired down/up state changes on the downlink interfaces, configure uplink interfaces before you configure downlink interfaces.

## In monitor link group view

To configure member interfaces for a monitor link group in monitor link group view:

Step	Command	Remarks
1. Enter system view.	<b>system-view</b>	N/A
2. Enter monitor link group view.	<b>monitor-link group</b> <i>group-id</i>	N/A
3. Configure member interfaces for the monitor link group.	<b>port</b> <i>interface-type</i> { <i>interface-number</i>   <i>interface-number.subnumber</i> } { <b>downlink</b>   <b>uplink</b> }	By default, no member interfaces exist in a monitor link group.

## In interface view

To configure member interfaces for a monitor link group in interface view:

Step	Command	Remarks
1. Enter system view.	<b>system-view</b>	N/A
2. Enter interface view or subinterface view.	<b>interface</b> <i>interface-type</i> { <i>interface-number</i>   <i>interface-number.subnumber</i> }	N/A
3. Configure the interface as a member of a monitor link group.	<b>port monitor-link group</b> <i>group-id</i> { <b>downlink</b>   <b>uplink</b> }	By default, the interface/subinterface is not a monitor link group member.

## Configuring the uplink interface threshold for triggering monitor link group state switchover

Step	Command	Remarks
1. Enter system view.	<b>system-view</b>	N/A
2. Enter monitor link group view.	<b>monitor-link group</b> <i>group-id</i>	N/A
3. Configure the uplink interface threshold for triggering monitor link group state switchover.	<b>uplink up-port-threshold</b> <i>number-of-port</i>	By default, the uplink interface threshold for triggering monitor link group state switchover is 1.

## Configuring the switchover delay for the downlink interfaces in a monitor link group

Step	Command	Remarks
1. Enter system view.	<b>system-view</b>	N/A
2. Enter monitor link group view.	<b>monitor-link group</b> <i>group-id</i>	N/A
3. Configure the switchover delay for the downlink interfaces in the monitor link group.	<b>downlink up-delay</b> <i>delay</i>	By default, the switchover delay is 0 seconds. The downlink interfaces come up as soon as an uplink interface comes up.

## Displaying and maintaining Monitor Link

Execute the **display** command in any view:

Task	Command
Display monitor link group information.	<b>display monitor-link group</b> { <i>group-id</i>   <b>all</b> }

## Monitor Link configuration example

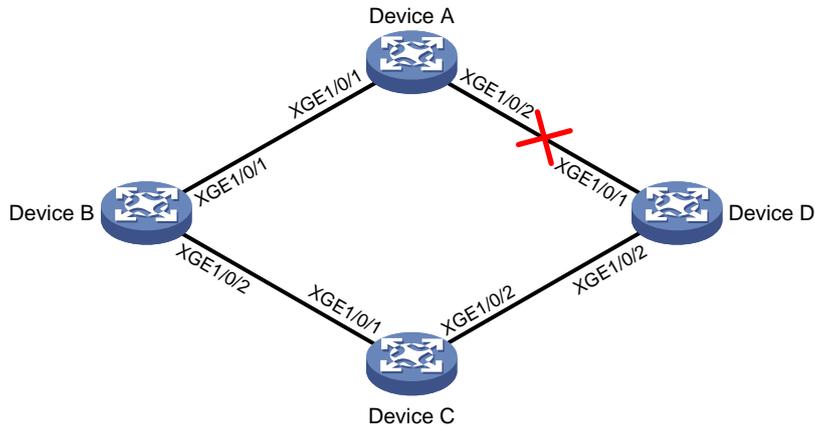
### Network requirements

As shown in [Figure 2](#):

- Device C is a Smart Link device, and Device A, Device B, and Device D are associated devices. Traffic of VLANs 1 through 30 on Device C is dual-uplinked to Device A through a smart link group.
- Implement dual uplink backup on Device C. When the link between Device A and Device B (or Device D) fails, Device C can detect the link fault. It then performs uplink switchover in the smart link group.

For more information about Smart Link, see "Configuring Smart Link."

**Figure 2 Network diagram**



### Configuration procedure

**1. Configure Device C:**

# Create VLANs 1 through 30.

```
<DeviceC> system-view  
[DeviceC] vlan 1 to 30
```

# Map these VLANs to MSTI 1.

```
[DeviceC] stp region-configuration  
[DeviceC-mst-region] instance 1 vlan 1 to 30
```

# Activate MST region configuration.

```
[DeviceC-mst-region] active region-configuration  
[DeviceC-mst-region] quit
```

# Shut down Ten-GigabitEthernet 1/0/1.

```
[DeviceC] interface ten-gigabitethernet 1/0/1  
[DeviceC-Ten-GigabitEthernet1/0/1] shutdown
```

# Disable the spanning tree feature on the interface.

```
[DeviceC-Ten-GigabitEthernet1/0/1] undo stp enable
```

# Configure the interface as a trunk port.

```
[DeviceC-Ten-GigabitEthernet1/0/1] port link-type trunk
```

# Assign the interface to VLANs 1 through 30.

```
[DeviceC-Ten-GigabitEthernet1/0/1] port trunk permit vlan 1 to 30  
[DeviceC-Ten-GigabitEthernet1/0/1] quit
```

# Configure Ten-GigabitEthernet 1/0/2 in the same way Ten-GigabitEthernet 1/0/1 is configured.

```
[DeviceC] interface ten-gigabitethernet 1/0/2  
[DeviceC-Ten-GigabitEthernet1/0/2] shutdown  
[DeviceC-Ten-GigabitEthernet1/0/2] undo stp enable  
[DeviceC-Ten-GigabitEthernet1/0/2] port link-type trunk  
[DeviceC-Ten-GigabitEthernet1/0/2] port trunk permit vlan 1 to 30  
[DeviceC-Ten-GigabitEthernet1/0/2] quit
```

# Create smart link group 1, and configure all the VLANs mapped to MSTI 1 as the protected VLANs for smart link group 1.

```
[DeviceC] smart-link group 1  
[DeviceC-smlk-group1] protected-vlan reference-instance 1
```

**# Configure Ten-GigabitEthernet 1/0/1 as the primary port and Ten-GigabitEthernet 1/0/2 as the secondary port for smart link group 1.**

```
[DeviceC-smlk-group1] port ten-gigabitethernet 1/0/1 primary  
[DeviceC-smlk-group1] port ten-gigabitethernet 1/0/2 secondary
```

**# Enable the smart link group to transmit flush messages.**

```
[DeviceC-smlk-group1] flush enable  
[DeviceC-smlk-group1] quit
```

**# Bring up Ten-GigabitEthernet 1/0/1 and Ten-GigabitEthernet 1/0/2.**

```
[DeviceC] interface ten-gigabitethernet 1/0/1  
[DeviceC-Ten-GigabitEthernet1/0/1] undo shutdown  
[DeviceC-Ten-GigabitEthernet1/0/1] quit  
[DeviceC] interface ten-gigabitethernet 1/0/2  
[DeviceC-Ten-GigabitEthernet1/0/2] undo shutdown  
[DeviceC-Ten-GigabitEthernet1/0/2] quit
```

## **2. Configure Device A:**

**# Create VLANs 1 through 30.**

```
<DeviceA> system-view  
[DeviceA] vlan 1 to 30
```

**# Configure Ten-GigabitEthernet 1/0/1 as a trunk port.**

```
[DeviceA] interface ten-gigabitethernet 1/0/1  
[DeviceA-Ten-GigabitEthernet1/0/1] port link-type trunk
```

**# Assign the interface to VLANs 1 through 30.**

```
[DeviceA-Ten-GigabitEthernet1/0/1] port trunk permit vlan 1 to 30
```

**# Enable flush message receiving on the interface.**

```
[DeviceA-Ten-GigabitEthernet1/0/1] smart-link flush enable  
[DeviceA-Ten-GigabitEthernet1/0/1] quit
```

**# Configure Ten-GigabitEthernet 1/0/2 in the same way Ten-GigabitEthernet 1/0/1 is configured.**

```
[DeviceA] interface ten-gigabitethernet 1/0/2  
[DeviceA-Ten-GigabitEthernet1/0/2] port link-type trunk  
[DeviceA-Ten-GigabitEthernet1/0/2] port trunk permit vlan 1 to 30  
[DeviceA-Ten-GigabitEthernet1/0/2] smart-link flush enable  
[DeviceA-Ten-GigabitEthernet1/0/2] quit
```

## **3. Configure Device B:**

**# Create VLANs 1 through 30.**

```
<DeviceB> system-view  
[DeviceB] vlan 1 to 30
```

**# Configure Ten-GigabitEthernet 1/0/1 as a trunk port.**

```
[DeviceB] interface ten-gigabitethernet 1/0/1  
[DeviceB-Ten-GigabitEthernet1/0/1] port link-type trunk
```

**# Assign the interface to VLANs 1 through 30.**

```
[DeviceB-Ten-GigabitEthernet1/0/1] port trunk permit vlan 1 to 30
```

**# Enable flush message receiving on the interface.**

```
[DeviceB-Ten-GigabitEthernet1/0/1] smart-link flush enable  
[DeviceB-Ten-GigabitEthernet1/0/1] quit
```

**# Disable the spanning tree feature on Ten-GigabitEthernet 1/0/2.**

```
[DeviceB] interface ten-gigabitethernet 1/0/2
```

```

[DeviceB-Ten-GigabitEthernet1/0/2] undo stp enable
# Configure the interface as a trunk port.
[DeviceB-Ten-GigabitEthernet1/0/2] port link-type trunk
# Assign the interface to VLANs 1 through 30.
[DeviceB-Ten-GigabitEthernet1/0/2] port trunk permit vlan 1 to 30
# Enable flush message receiving on the interface.
[DeviceB-Ten-GigabitEthernet1/0/2] smart-link flush enable
[DeviceB-Ten-GigabitEthernet1/0/2] quit
# Create monitor link group 1.
[DeviceB] monitor-link group 1
# Configure Ten-GigabitEthernet 1/0/1 as an uplink interface for monitor link group 1.
[DeviceB-mtlk-group1] port ten-gigabitethernet 1/0/1 uplink
# Configure Ten-GigabitEthernet 1/0/2 as a downlink interface for monitor link group 1.
[DeviceB-mtlk-group1] port ten-gigabitethernet 1/0/2 downlink
[DeviceB-mtlk-group1] quit

```

#### 4. Configure Device D:

```

# Create VLANs 1 through 30.
<DeviceD> system-view
[DeviceD] vlan 1 to 30
# Configure Ten-GigabitEthernet 1/0/1 as a trunk port.
[DeviceD] interface ten-gigabitethernet 1/0/1
[DeviceD-Ten-GigabitEthernet1/0/1] port link-type trunk
# Assign the interface to VLANs 1 through 30.
[DeviceD-Ten-GigabitEthernet1/0/1] port trunk permit vlan 1 to 30
# Enable flush message receiving on the interface.
[DeviceD-Ten-GigabitEthernet1/0/1] smart-link flush enable
[DeviceD-Ten-GigabitEthernet1/0/1] quit
# Disable the spanning tree feature on Ten-GigabitEthernet 1/0/2.
[DeviceD] interface ten-gigabitethernet 1/0/2
[DeviceD-Ten-GigabitEthernet1/0/2] undo stp enable
# Configure the interface as a trunk port.
[DeviceD-Ten-GigabitEthernet1/0/2] port link-type trunk
# Assign the interface to VLANs 1 through 30.
[DeviceD-Ten-GigabitEthernet1/0/2] port trunk permit vlan 1 to 30
# Enable flush message receiving on the interface.
[DeviceD-Ten-GigabitEthernet1/0/2] smart-link flush enable
[DeviceD-Ten-GigabitEthernet1/0/2] quit
# Create monitor link group 1.
[DeviceD] monitor-link group 1
# Configure Ten-GigabitEthernet 1/0/1 as an uplink interface for monitor link group 1.
[DeviceD-mtlk-group1] port ten-gigabitethernet 1/0/1 uplink
# Configure Ten-GigabitEthernet 1/0/2 as a downlink interface for monitor link group 1.
[DeviceD-mtlk-group1] port ten-gigabitethernet 1/0/2 downlink
[DeviceD-mtlk-group1] quit

```

## Verifying the configuration

# When Ten-GigabitEthernet 1/0/2 on Device A goes down because of a link fault, verify information about monitor link group 1 on Device B.

```
[DeviceB] display monitor-link group 1
```

```
Monitor link group 1 information:
```

```
Group status      : UP
Downlink up-delay: 0(s)
Last-up-time      : 16:38:26 2012/4/21
Last-down-time    : 16:37:20 2012/4/21
Up-port-threshold: 1
```

Member	Role	Status
XGE1/0/1	UPLINK	UP
XGE1/0/2	DOWNLINK	UP

# Verify information about monitor link group 1 on Device D.

```
[DeviceD] display monitor-link group 1
```

```
Monitor link group 1 information:
```

```
Group status      : DOWN
Downlink up-delay: 0(s)
Last-up-time      : 16:37:20 2012/4/21
Last-down-time    : 16:38:26 2012/4/21
Up-port-threshold: 1
```

Member	Role	Status
XGE1/0/1	UPLINK	DOWN
XGE1/0/2	DOWNLINK	DOWN