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Introduction

This document provides configuration examples for using simple multichassis link aggregation (S-MLAG).

S-MLAG enhances dynamic link aggregation to establish an aggregation that spans multiple standalone devices to a remote device.

Prerequisites

The configuration examples were created and verified in a lab environment, and all the devices were started with the factory default configuration. When you are working on a live network, make sure you understand the potential impact of every command on your network.

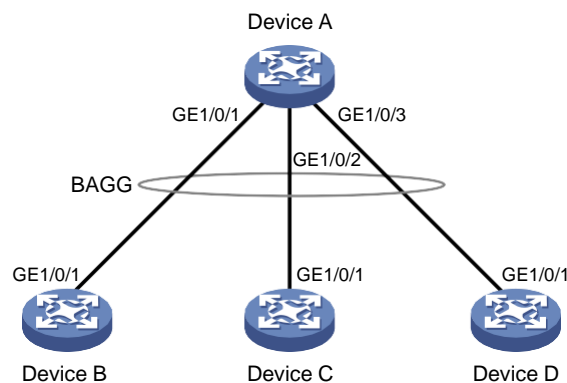
The following information is provided based on the assumption that you have basic knowledge of S-MLAG.

Example: Configuring S-MLAG

Network configuration

Device B, Device C, and Device D are standalone devices. As shown in [Figure 1](#), configure Device B, Device C, and Device D as S-MLAG devices to establish a multidevice aggregate link with Device A.

Figure 1 Network diagram



Analysis

To establish a multidevice aggregate link with Device A, you must perform the following tasks on Device B, Device C, and Device D:

1. Create a Layer 2 dynamic aggregate interface and assign GigabitEthernet 1/0/1 to its aggregation group.
2. Assign the aggregate interfaces to the same DR group.

Applicable hardware and software versions

The following matrix shows the hardware and software versions to which this configuration example is applicable:

Hardware	Software version
SC 3570 switch series	Release 11xx
SC 5525 switch series	Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx
SC 5520 switch series	Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx
SC 3170 switch series	Release 11xx
SC 3130 switch series	Release 63xx

Restrictions and guidelines

Before you assign an interface to an aggregation group, use the **display this** command in interface view to identify whether attribute settings exist, including port isolation, QinQ, VLAN, and VLAN mapping settings. If attribute settings exist, use the corresponding **undo** commands to remove them.

Configure the link aggregation settings other than S-MLAG settings on each S-MLAG device. Make sure the settings are consistent across the S-MLAG devices.

As a best practice, maintain consistency across S-MLAG devices in service feature configuration.

Procedures

Configuring Device A

Create Layer 2 aggregate interface Bridge-Aggregation 10, and set the link aggregation mode to dynamic.

```
<DeviceA> system-view
[DeviceA] interface bridge-aggregation 10
[DeviceA-Bridge-Aggregation10] link-aggregation mode dynamic
[DeviceA-Bridge-Aggregation10] quit
```

Assign GigabitEthernet 1/0/1 through GigabitEthernet 1/0/3 to aggregation group 10.

```
[DeviceA] interface gigabitethernet 1/0/1
[DeviceA-GigabitEthernet1/0/1] port link-aggregation group 10
[DeviceA-GigabitEthernet1/0/1] quit
[DeviceA] interface gigabitethernet 1/0/2
[DeviceA-GigabitEthernet1/0/2] port link-aggregation group 10
[DeviceA-GigabitEthernet1/0/2] quit
[DeviceA] interface gigabitethernet 1/0/3
[DeviceA-GigabitEthernet1/0/3] port link-aggregation group 10
[DeviceA-GigabitEthernet1/0/3] quit
```

Configuring Device B

Set the LACP system MAC address to 0001-0001-0001.

```
<DeviceB> system-view
[DeviceB] lacp system-mac 1-1-1
```

Set the LACP system priority to 123.

```
[DeviceB] lacp system-priority 123
```

Set the LACP system number to 1.

```
[DeviceB] lacp system-number 1
```

Create Layer 2 aggregate interface Bridge-Aggregation 2, and set the link aggregation mode to dynamic.

```
[DeviceB] interface bridge-aggregation 2
[DeviceB-Bridge-Aggregation2] link-aggregation mode dynamic
```

Assign Bridge-Aggregation 2 to S-MLAG group 100.

```
[DeviceB-Bridge-Aggregation2] port s-mlag group 100
```

```
[DeviceB-Bridge-Aggregation2] quit
# Assign GigabitEthernet 1/0/1 to aggregation group 2.
[DeviceB] interface gigabitethernet 1/0/1
[DeviceB-GigabitEthernet1/0/1] port link-aggregation group 2
[DeviceB-GigabitEthernet1/0/1] quit
```

Configuring Device C

```
# Set the LACP system MAC address to 0001-0001-0001.
<DeviceC> system-view
[DeviceC] lacp system-mac 1-1-1
# Set the LACP system priority to 123.
[DeviceC] lacp system-priority 123
# Set the LACP system number to 2.
[DeviceC] lacp system-number 2
# Create Layer 2 aggregate interface Bridge-Aggregation 3, and set the link aggregation mode to dynamic.
[DeviceC] interface bridge-aggregation 3
[DeviceC-Bridge-Aggregation3] link-aggregation mode dynamic
# Assign Bridge-Aggregation 3 to S-MLAG group 100.
[DeviceC-Bridge-Aggregation3] port s-mlag group 100
# Assign GigabitEthernet 1/0/1 to aggregation group 3.
[DeviceC] interface gigabitethernet 1/0/1
[DeviceC-GigabitEthernet1/0/1] port link-aggregation group 3
[DeviceC-GigabitEthernet1/0/1] quit
```

Configuring Device D

```
# Set the LACP system MAC address to 0001-0001-0001.
<DeviceD> system-view
[DeviceD] lacp system-mac 1-1-1
# Set the LACP system priority to 123.
[DeviceD] lacp system-priority 123
# Set the LACP system number to 3.
[DeviceD] lacp system-number 3
# Create Layer 2 aggregate interface Bridge-Aggregation 4, and set the link aggregation mode to dynamic.
[DeviceD] interface bridge-aggregation 4
[DeviceD-Bridge-Aggregation4] link-aggregation mode dynamic
# Assign Bridge-Aggregation 4 to S-MLAG group 100.
[DeviceD-Bridge-Aggregation4] port s-mlag group 100
# Assign GigabitEthernet 1/0/1 to aggregation group 4.
[DeviceD] interface gigabitethernet 1/0/1
[DeviceD-GigabitEthernet1/0/1] port link-aggregation group 4
[DeviceD-GigabitEthernet1/0/1] quit
```

Verifying the configuration

Verify that GigabitEthernet 1/0/1 through GigabitEthernet 1/0/3 on Device A are Selected ports.

```
[DeviceA] display link-aggregation verbose
Loadsharing Type: Shar -- Loadsharing, NonS -- Non-Loadsharing
Port Status: S -- Selected, U -- Unselected, I -- Individual
Port: A -- Auto port, M -- Management port, R -- Reference port
Flags:  A -- LACP_Activity, B -- LACP_Timeout, C -- Aggregation,
        D -- Synchronization, E -- Collecting, F -- Distributing,
        G -- Defaulted, H -- Expired
```

Aggregate Interface: Bridge-Aggregation10

Creation Mode: Manual

Aggregation Mode: Dynamic

Loadsharing Type: Shar

Management VLANs: None

System ID: 0x8000, a0c7-9afd-0100

Local:

Port	Status	Priority	Index	Oper-Key	Flag
GE1/0/1	S	32768	1	1	{ACDEF}
GE1/0/2	S	32768	2	1	{ACDEF}
GE1/0/3	S	32768	3	1	{ACDEF}

Remote:

Actor	Priority	Index	Oper-Key	SystemID	Flag
GE1/0/1(R)	32768	16385	50100	0x7b , 0001-0001-0001	{ACDEF}
GE1/0/2	32768	32769	50100	0x7b , 0001-0001-0001	{ACDEF}
GE1/0/3	32768	49153	50100	0x7b , 0001-0001-0001	{ACDEF}

Configuration files

❗ IMPORTANT:

Support for the **port link-mode bridge** command depends on the device model.

- Device A:

```
#
interface Bridge-Aggregation10
  link-aggregation mode dynamic
#
interface GigabitEthernet1/0/1
  port link-mode bridge
  combo enable fiber
  port link-aggregation group 10
#
interface GigabitEthernet1/0/2
  port link-mode bridge
  combo enable fiber
  port link-aggregation group 10
```

- ```
#
interface GigabitEthernet1/0/3
port link-mode bridge
combo enable fiber
port link-aggregation group 10
#
```
- **Device B:**

```
#
lACP system-mac 0001-0001-0001
lACP system-number 1
lACP system-priority 123
#
interface Bridge-Aggregation2
link-aggregation mode dynamic
port s-mLag group 100
#
interface GigabitEthernet1/0/1
port link-mode bridge
combo enable fiber
port link-aggregation group 2
#
```
  - **Device C:**

```
#
lACP system-mac 0001-0001-0001
lACP system-number 2
lACP system-priority 123
#
interface Bridge-Aggregation3
link-aggregation mode dynamic
port s-mLag group 100
#
interface GigabitEthernet1/0/1
port link-mode bridge
combo enable fiber
port link-aggregation group 3
#
```
  - **Device D:**

```
#
lACP system-mac 0001-0001-0001
lACP system-number 3
lACP system-priority 123
#
interface Bridge-Aggregation4
link-aggregation mode dynamic
port s-mLag group 100
#
interface GigabitEthernet1/0/1
port link-mode bridge
```

```

combo enable fiber
port link-aggregation group 4
#

```

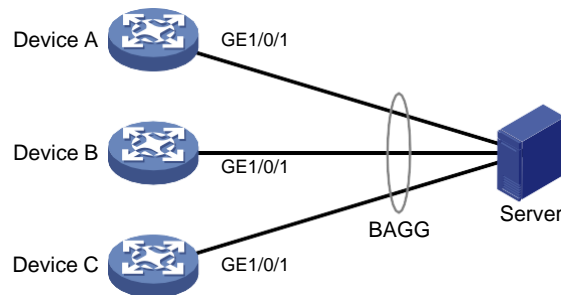
# Example: Aggregating server-side links by using S-MLAG

## Network configuration

As shown in [Figure 2](#), configure S-MLAG as follows:

- Connect GigabitEthernet 1/0/1 interfaces on Device A, Device B, and Device C to the server, and configure S-MLAG to aggregate the links to the server.
- Configure the server-facing aggregate interfaces on Device A, Device B, and Device C as edge aggregate interfaces for the aggregation member ports to forward traffic correctly before link aggregation is set up on the server.

**Figure 2 Network diagram**



## Analysis

To create a multichassis aggregate link on Device A, Device B, and Device C, perform the following tasks:

- Create server-facing Layer 2 dynamic aggregate interfaces.
- Assign the aggregate interfaces to an S-MLAG group.

## Applicable hardware and software versions

The following matrix shows the hardware and software versions to which this configuration example is applicable:

| Hardware              | Software version                                             |
|-----------------------|--------------------------------------------------------------|
| SC 3570 switch series | Release 11xx                                                 |
| SC 5525 switch series | Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx |
| SC 5520 switch series | Release 63xx, Release 65xx, Release 6615Pxx, Release 6628Pxx |



|                       |              |
|-----------------------|--------------|
| SC 3170 switch series | Release 11xx |
| SC 3130 switch series | Release 63xx |

# Restrictions and guidelines

When you configure S-MLAG, follow these restrictions and guidelines:

- When you assign a port to an aggregation group, the recommended configuration procedure is as follows:
  - a. Use the **display this** command in interface view to check the following attribute configurations of the port:
    - Port isolation.
    - QinQ.
    - VLAN.
    - VLAN mapping.
  - b. If any of the above configurations exist, use the **undo** forms of the corresponding commands to remove these configurations. This enables the port to use the default attribute configurations.
  - c. Assign the port to the aggregation group.
- Make sure the S-MLAG member devices have consistent link aggregation configuration.
- To ensure correct service traffic forwarding, configure the same service settings on the S-MLAG member devices.

# Procedures

## Configuring Device A

```
Set the LACP system MAC address to 0001-0001-0001.
<DeviceA> system-view
[DeviceA] lacp system-mac 1-1-1

Set the LACP system priority to 123.
[DeviceA] lacp system-priority 123

Set the LACP system number to 1.
[DeviceA] lacp system-number 1

Create Layer 2 aggregate interface Bridge-Aggregation 1, and set the link aggregation mode to dynamic.
[DeviceA] interface bridge-aggregation 1
[DeviceA-Bridge-Aggregation1] link-aggregation mode dynamic

Configure Bridge-Aggregation 1 as an edge aggregate interface.
[DeviceA-Bridge-Aggregation1] lacp edge-port

Assign Bridge-Aggregation 1 to S-MLAG group 100.
[DeviceA-Bridge-Aggregation1] port s-mlag group 100
[DeviceA-Bridge-Aggregation1] quit

Assign GigabitEthernet 1/0/1 to aggregation group 1.
[DeviceA] interface gigabitethernet 1/0/1
[DeviceA-GigabitEthernet1/0/1] port link-aggregation group 1
[DeviceA-GigabitEthernet1/0/1] quit
```

## Configuring Device B

```
Set the LACP system MAC address to 0001-0001-0001.
<DeviceB> system-view
[DeviceB] lacp system-mac 1-1-1

Set the LACP system priority to 123.
[DeviceB] lacp system-priority 123

Set the LACP system number to 2.
[DeviceB] lacp system-number 2

Create Layer 2 aggregate interface Bridge-Aggregation 2, and set the link aggregation mode to dynamic.
[DeviceB] interface bridge-aggregation 2
[DeviceB-Bridge-Aggregation2] link-aggregation mode dynamic

Configure Bridge-Aggregation 2 as an edge aggregate interface.
[DeviceB-Bridge-Aggregation2] lacp edge-port

Assign Bridge-Aggregation 2 to S-MLAG group 100.
```

```
[DeviceB-Bridge-Aggregation2] port s-mlag group 100
Assign GigabitEthernet 1/0/1 to aggregation group 2.
[DeviceB] interface gigabitethernet 1/0/1
[DeviceB-GigabitEthernet1/0/1] port link-aggregation group 2
[DeviceB-GigabitEthernet1/0/1] quit
```

## Configuring Device C

```
Set the LACP system MAC address to 0001-0001-0001.
<DeviceC> system-view
[DeviceC] lacp system-mac 1-1-1
Set the LACP system priority to 123.
[DeviceC] lacp system-priority 123
Set the LACP system number to 3.
[DeviceC] lacp system-number 3
Create Layer 2 aggregate interface Bridge-Aggregation 3, and set the link aggregation mode to dynamic.
[DeviceC] interface bridge-aggregation 3
[DeviceC-Bridge-Aggregation3] link-aggregation mode dynamic
Configure Bridge-Aggregation 3 as an edge aggregate interface.
[DeviceC-Bridge-Aggregation3] lacp edge-port
Assign Bridge-Aggregation 3 to S-MLAG group 100.
[DeviceC-Bridge-Aggregation3] port s-mlag group 100
Assign GigabitEthernet 1/0/1 to aggregation group 3.
[DeviceC] interface gigabitethernet 1/0/1
[DeviceC-GigabitEthernet1/0/1] port link-aggregation group 3
[DeviceC-GigabitEthernet1/0/1] quit
```

## Verifying the configuration

# Before you configure dynamic link aggregation on the server, verify that the aggregation member ports are in individual state on Device A, Device B, and Device C to forward traffic independently.

```
[DeviceA] display link-aggregation verbose
Loadsharing Type: Shar -- Loadsharing, NonS -- Non-Loadsharing
Port Status: S -- Selected, U -- Unselected, I -- Individual
Port: A -- Auto port, M -- Management port, R -- Reference port
Flags: A -- LACP_Activity, B -- LACP_Timeout, C -- Aggregation,
 D -- Synchronization, E -- Collecting, F -- Distributing,
 G -- Defaulted, H -- Expired

Aggregate Interface: Bridge-Aggregation1
Creation Mode: Manual
Aggregation Mode: Dynamic
Loadsharing Type: Shar
Management VLANs: None
System ID: 0x7b, 0001-0001-0001
Local:
```

| Port    | Status | Priority | Index | Oper-Key | Flag |
|---------|--------|----------|-------|----------|------|
| GE1/0/1 |        | 32768    | 16385 | 50100    | {AG} |

Remote:

| Actor   | Priority | Index | Oper-Key | SystemID               | Flag  |
|---------|----------|-------|----------|------------------------|-------|
| GE1/0/1 | 32768    | 0     | 0        | 0x8000, 0000-0000-0000 | {DEF} |

[DeviceB] display link-aggregation verbose

Loadsharing Type: Shar -- Loadsharing, NonS -- Non-Loadsharing

Port Status: S -- Selected, U -- Unselected, I -- Individual

Port: A -- Auto port, M -- Management port, R -- Reference port

Flags: A -- LACP\_Activity, B -- LACP\_Timeout, C -- Aggregation,  
D -- Synchronization, E -- Collecting, F -- Distributing,  
G -- Defaulted, H -- Expired

Aggregate Interface: Bridge-Aggregation2

Creation Mode: Manual

Aggregation Mode: Dynamic

Loadsharing Type: Shar

Management VLANs: None

System ID: 0x7b, 0001-0001-0001

Local:

| Port    | Status | Priority | Index | Oper-Key | Flag |
|---------|--------|----------|-------|----------|------|
| GE1/0/1 | I      | 32768    | 32769 | 50100    | {AG} |

Remote:

| Actor   | Priority | Index | Oper-Key | SystemID               | Flag  |
|---------|----------|-------|----------|------------------------|-------|
| GE1/0/1 | 32768    | 0     | 0        | 0x8000, 0000-0000-0000 | {DEF} |

[DeviceC] display link-aggregation verbose

Loadsharing Type: Shar -- Loadsharing, NonS -- Non-Loadsharing

Port Status: S -- Selected, U -- Unselected, I -- Individual

Port: A -- Auto port, M -- Management port, R -- Reference port

Flags: A -- LACP\_Activity, B -- LACP\_Timeout, C -- Aggregation,  
D -- Synchronization, E -- Collecting, F -- Distributing,  
G -- Defaulted, H -- Expired

Aggregate Interface: Bridge-Aggregation3

Creation Mode: Manual

Aggregation Mode: Dynamic

Loadsharing Type: Shar

Management VLANs: None

System ID: 0x7b, 0001-0001-0001

Local:

| Port    | Status | Priority | Index | Oper-Key | Flag |
|---------|--------|----------|-------|----------|------|
| GE1/0/1 | I      | 32768    | 49153 | 50100    | {AG} |

Remote:

| Actor   | Priority | Index | Oper-Key | SystemID               | Flag  |
|---------|----------|-------|----------|------------------------|-------|
| GE1/0/1 | 32768    | 0     | 0        | 0x8000, 0000-0000-0000 | {DEF} |

**# After you configure dynamic link aggregation on the server, verify that the aggregation member ports are selected on Device A, Device B, and Device C, which indicates that the multichassis link aggregation has been set up.**

[DeviceA] display link-aggregation verbose

Loadsharing Type: Shar -- Loadsharing, NonS -- Non-Loadsharing  
 Port Status: S -- Selected, U -- Unselected, I -- Individual  
 Port: A -- Auto port, M -- Management port, R -- Reference port  
 Flags: A -- LACP\_Activity, B -- LACP\_Timeout, C -- Aggregation,  
 D -- Synchronization, E -- Collecting, F -- Distributing,  
 G -- Defaulted, H -- Expired

Aggregate Interface: Bridge-Aggregation1

Creation Mode: Manual

Aggregation Mode: Dynamic

Loadsharing Type: Shar

Management VLANs: None

System ID: 0x7b, 0001-0001-0001

Local:

| Port       | Status | Priority | Index | Oper-Key | Flag    |
|------------|--------|----------|-------|----------|---------|
| GE1/0/1(R) | S      | 32768    | 16385 | 50100    | {ACDEF} |

Remote:

| Actor   | Priority | Index | Oper-Key | SystemID               | Flag    |
|---------|----------|-------|----------|------------------------|---------|
| GE1/0/1 | 32768    | 1     | 1        | 0x8000, 5022-e533-0400 | {ACDEF} |

[DeviceB] display link-aggregation verbose

Loadsharing Type: Shar -- Loadsharing, NonS -- Non-Loadsharing  
 Port Status: S -- Selected, U -- Unselected, I -- Individual  
 Port: A -- Auto port, M -- Management port, R -- Reference port  
 Flags: A -- LACP\_Activity, B -- LACP\_Timeout, C -- Aggregation,  
 D -- Synchronization, E -- Collecting, F -- Distributing,  
 G -- Defaulted, H -- Expired

Aggregate Interface: Bridge-Aggregation2

Creation Mode: Manual

Aggregation Mode: Dynamic

Loadsharing Type: Shar

Management VLANs: None

System ID: 0x7b, 0001-0001-0001

Local:

| Port       | Status | Priority | Index | Oper-Key | Flag    |
|------------|--------|----------|-------|----------|---------|
| GE1/0/1(R) | S      | 32768    | 32769 | 50100    | {ACDEF} |

Remote:

| Actor   | Priority | Index | Oper-Key | SystemID               | Flag    |
|---------|----------|-------|----------|------------------------|---------|
| GE1/0/1 | 32768    | 2     | 1        | 0x8000, 5022-e533-0400 | {ACDEF} |

[DeviceC] display link-aggregation verbose

Loadsharing Type: Shar -- Loadsharing, NonS -- Non-Loadsharing  
 Port Status: S -- Selected, U -- Unselected, I -- Individual  
 Port: A -- Auto port, M -- Management port, R -- Reference port  
 Flags: A -- LACP\_Activity, B -- LACP\_Timeout, C -- Aggregation,  
 D -- Synchronization, E -- Collecting, F -- Distributing,  
 G -- Defaulted, H -- Expired

Aggregate Interface: Bridge-Aggregation3

Creation Mode: Manual  
 Aggregation Mode: Dynamic  
 Loadsharing Type: Shar  
 Management VLANs: None  
 System ID: 0x7b, 0001-0001-0001  
 Local:

| Port       | Status | Priority | Index | Oper-Key | Flag    |
|------------|--------|----------|-------|----------|---------|
| GE1/0/1(R) | S      | 32768    | 49153 | 50100    | {ACDEF} |

Remote:

| Actor   | Priority | Index | Oper-Key | SystemID               | Flag    |
|---------|----------|-------|----------|------------------------|---------|
| GE1/0/1 | 32768    | 3     | 1        | 0x8000, 5022-e533-0400 | {ACDEF} |

## Configuration files



### IMPORTANT:

Support for the **port link-mode bridge** command depends on the device model.

- Device A:

```
#
lacp system-mac 0001-0001-0001
lacp system-number 1
lacp system-priority 123
#
interface Bridge-Aggregation1
link-aggregation mode dynamic
lacp edge-port
port s-mlag group 100
#
interface GigabitEthernet1/0/1
port link-mode bridge
port link-aggregation group 1
#
```

- Device B:

```
#
lacp system-mac 0001-0001-0001
lacp system-number 2
lacp system-priority 123
#
interface Bridge-Aggregation2
link-aggregation mode dynamic
lacp edge-port
port s-mlag group 100
#
interface GigabitEthernet1/0/1
port link-mode bridge
port link-aggregation group 2
#
```

- Device C:

```
#
lacp system-mac 0001-0001-0001
lacp system-number 3
lacp system-priority 123
#
interface Bridge-Aggregation3
link-aggregation mode dynamic
lacp edge-port
port s-mlag group 100
#
interface GigabitEthernet1/0/1
port link-mode bridge
port link-aggregation group 3
#
```