

# Contents

Introduction .....	1
Prerequisites .....	1
Example: Replacing an IRF member device with a new device .....	1
Network configuration .....	1
Applicable hardware and software versions .....	2
Restrictions and guidelines .....	4
Prerequisites .....	4
Procedures .....	10
Checking the environment after IRF member replacement .....	12
Verifying the configuration .....	12



# Introduction

This document provides examples for replacing an IRF member device with a new device.

## Prerequisites

The configuration examples in this document 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.

This document assumes that you have basic knowledge of IRF.

## Example: Replacing an IRF member device with a new device

In this example, the IRF fabric does not split. Because the standby device fails, you need to replace the standby device with a new device. During the replacement, the IRF fabric will split. The procedures in this example are also applicable to master device replacement in scenarios where the master device fails when the IRF fabric is integrated.

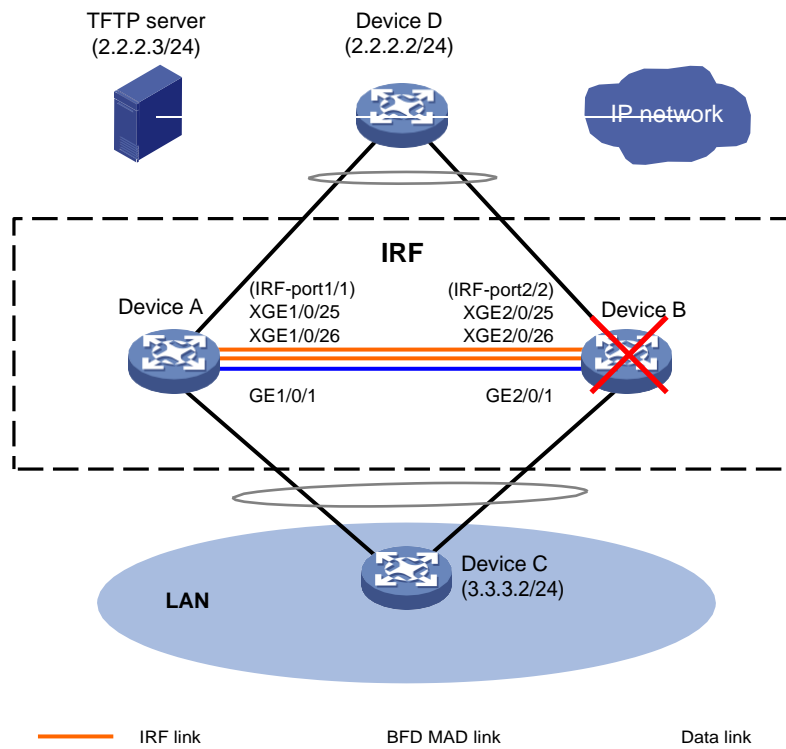
## Network configuration

As shown in [Figure 1](#), Device A and Device B have set up an IRF fabric. Device A is the master device and its member ID is 1, and Device B is the standby device and its member ID is 2. BFD MAD is used for multi-active collision detection.

Device B fails when the IRF fabric is integrated. Replace Device B with a new device.



**Figure 1 Network diagram**





# 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

Change the IRF member ID of the new device in advance and reboot the device for the change to take effect.

Prepare scripts in advance for shutting down or bringing up the uplink and downlink service interfaces on Device B. To prevent omission of service interfaces from resulting in exceptions in the replacement process, make sure the scripts contain all service interfaces on Device B.

To avoid configuration loss, do not save the running configuration on any IRF member device when the IRF fabric splits.

After the IRF fabric recovers, make sure all member devices are running correctly. Use the **display interface brief** command to verify that all interfaces are displayed, and then wait for 2 minutes before you move to the next step.

As a best practice to discover, locate, and analyze issues in time, record all operations during the whole replacement process. Login software, for example, HyperTerminal and PuTTY, supports session recording. The software can automatically record all user operations and save the operations to a .txt file. If the login software does not support session recording, you must manually record all operations.

## Prerequisites

1. Configure NSR settings on the IRF fabric:

During the replacement, process-level active/standby switchover might occur for routing protocols such as BGP and OSPF. This issue causes routing neighbor flapping and affects packet forwarding. For high availability, configure NSR for routing protocols. Before replacing Device B, configure NSR settings and save the configuration. In this example, OSPF NSR and BGP NSR are configured for illustration.



### # Enable NSR for OSPF process 100.

```
<IRF> system-view
[IRF] ospf 100
[IRF-ospf-100] non-stop-routing
[IRF-ospf-100] display ospf non-stop-routing status
```

```
OSPF Process 100 with Router ID 1.1.1.1
Non Stop Routing information
```

```
Non Stop Routing capability : Enabled
```

```
Upgrade phase : Normal
```

```
[IRF-ospf-100] quit
```

```
[IRF] quit
```

### # Enable NSR for BGP process 100.

```
[IRF] bgp 100
[IRF-bgp-default] non-stop-routing
[IRF-bgp-default] display bgp non-stop-routing status
```

```
BGP NSR status: Ready
```

```
Location of preferred standby process: Slot 2
```

```
TCP NSR status: Ready
```

```
[IRF-bgp-default] quit
```

```
[IRF-bgp] quit
```

```
[IRF] quit
```

## 2. Examine whether Device B has single-armed service links.

Single-armed service links refer to links connected only to one IRF member device in an IRF fabric. They do not connect to other IRF member devices in the IRF fabric. If single-armed service links exist, traffic interruption will occur during the replacement process. To avoid traffic interruption, add backup links for the single-armed links.

## 3. Check IRF status and collect information:

Before the replacement, you must check the device status, HA status, IRF status, and MAD status.

### ! IMPORTANT:

Make sure all member devices except Device B are in stable state. If a member device is not in stable state, identify the reason. Do not replace Device B with a new device unless other member devices are all in stable state.

### # Display device information.

```
<IRF> display device
```

Slot	Type	State	Subslot	Soft Ver	Patch Ver
1	S3130	Master	0	S3130-6530P01	None
2	S3130	Standby	0	S3130-6530P01	None

### # Display system stable status.

```
<IRF> display system stable state
```

```
System state : Stable
```

```
Redundancy state : Stable
```

Slot	CPU	Role	State
1	0	Active	Stable



2 0 Standby Stable

# Display brief information about system stability and status, including CPU running status, redundancy status, and NSR status.

<IRF> display system stable state summary

```
System state      : Stable
Redundancy state  : Stable
NSR state         : Ready
```

# Display IRF information.

<IRF> display irf

MemberID	Role	Priority	CPU-Mac	Description
*+1	Master	1	f010-90db-7402	---
2	Standby	1	f010-90db-8100	---

-----

\* indicates the device is the master.

+ indicates the device through which the user logs in.

The bridge MAC of the IRF is: ae05-0607-eaaa

```
Auto upgrade      : yes
Mac persistent    : 6 min
Domain ID         : 0
```

# Display IRF configuration on all IRF member devices.

<IRF> display irf configuration

MemberID	NewID	IRF-Port1	IRF-Port2
1	1	Ten-GigabitEthernet1/0/25	disable
		Ten-GigabitEthernet1/0/26	
2	2	disable	Ten-GigabitEthernet2/0/25
			Ten-GigabitEthernet2/0/26

# Display IRF link information.

<IRF> display irf link

Member 1

IRF Port	Interface	Status
1	Ten-GigabitEthernet1/0/25	UP
	Ten-GigabitEthernet1/0/26	UP
2	disable	--

Member 2

IRF Port	Interface	Status
1	disable	--
2	Ten-GigabitEthernet2/0/25	UP
	Ten-GigabitEthernet2/0/26	UP

# Display IRF topology information.

<IRF> display irf topology

Topology Info

-----

MemberID	IRF-Port1		IRF-Port2		Belong To
	Link	neighbor	Link	neighbor	
2	DIS	---	UP	1	f010-90db-7402
1	UP	2	DIS	---	f010-90db-7402

# Display detailed MAD information.



```

<IRF> display mad verbose
Multi-active recovery state: No
Excluded ports (user-configured):
Excluded ports (system-configured):
  IRF physical interfaces:
    Ten-GigabitEthernet1/0/25
    Ten-GigabitEthernet1/0/26
    Ten-GigabitEthernet2/0/25
    Ten-GigabitEthernet2/0/26
  BFD MAD interfaces:
    Vlan-interface2
MAD ARP disabled.
MAD ND disabled.
MAD LACP disabled.
MAD BFD enabled interface: Vlan-interface2
MAD status : Normal

```

Member ID	MAD IP address	Neighbor	MAD status
1	192.168.2.1/24	2	Normal
2	192.168.2.2/24	1	Normal

#### # Display BFD session information.

```

<IRF> display bfd session
Total Sessions: 1      Up Sessions: 0      Init mode: Active

IPv4 session working in control packet mode:

```

LD/RD	SourceAddr	DestAddr	State	Holdtime	Interface
32833/0	192.168.2.1	192.168.2.2	Down	/	Vlan2

4. Examine licensing state on the IRF fabric. If Device B has been installed with formal licenses, you must transfer the licenses on Device B to the new device before the replacement process. Alternatively, you can apply for and install new licenses of the same specification for the new device. For more information about license transfer and installation, see the licensing guide for the product. You cannot transfer trial licenses.

```

<IRF> display license
Slot 1:
flash:/license/210235A1XE00000000012020062314252639903.ak
Feature: OPENXCVR
Product Description: INTELBRAS Open Optical Transceiver Module Support
License for 40G/10G(or Lower) Fixed-Port Campus Switches
Registered at: 2021-12-10 06:03:27
License Type: Permanent
Current State: In use

```

```

Slot 2:
flash:/license/210235A1XE00000000012020062314252631110.ak
Feature: OPENXCVR
Product Description: INTELBRAS Open Optical Transceiver Module Support
License for 40G/10G(or Lower) Fixed-Port Campus Switches
Registered at: 2021-12-10 06:03:27
License Type: Permanent

```



Current State: In use

5. Verify that the IRF fabric is running correctly, and collect status information, including status information for protocols, ports, and table entries, for comparing the information with the information collected after the replacement:

# Display system version information.

```
<IRF> display version
```

# Display the running configuration.

```
<IRF> display current-configuration
```

# Display brief interface information.

```
<IRF> display interface brief
```

# Display ARP entries.

```
<IRF> display arp
```

# Display MAC address table information.

```
<IRF> display mac-address
```

# Display information about OSPF neighbors.

```
<IRF> display ospf peer
```

# Display routing table information.

```
<IRF> display ip routing-table
```

# Display detailed information about aggregation groups.

```
<IRF> display link-aggregation verbose
```

# Display traffic rate statistics for interfaces in up state within the most recent statistics polling interval.

```
<IRF> display counters rate inbound interface
```

6. Back up the main next-startup configuration file:

# Save the running configuration to the main next-startup configuration file.

```
<IRF> save
```

The current configuration will be written to the device. Are you sure? [Y/N]:y

Please input the file name(\*.cfg)[flash:/startup.cfg]

(To leave the existing filename unchanged, press the enter key):

Validating file. Please wait...

The startup.cfg file already exists.

Compared with the startup.cfg file, The current configuration adds 0 commands and deletes 0 commands.

If you want to see the configuration differences, please cancel this operation, and then use the display diff command to show the details.

If you continue the save operation, the file will be overwritten.

Are you sure you want to continue the save operation? [Y/N]:y

Saving the current configuration to the file. Please wait...

Saved the current configuration to mainboard device successfully.

Slot 2:

Save next configuration file successfully.

# Display the names of the current startup configuration file and the next-startup configuration files.

```
<IRF> display startup
```

MainBoard:

Current startup saved-configuration file: NULL

Next main startup saved-configuration file: flash:/startup.cfg

Next backup startup saved-configuration file: NULL



Slot 2:

Current startup saved-configuration file: NULL

Next main startup saved-configuration file: flash:/startup.cfg

Next backup startup saved-configuration file: NULL

**# Back up next-startup configuration file startup.cfg.**

<IRF> tftp 2.2.2.3 put startup.cfg

Press CTRL+C to abort.

% Total	% Received	% Xferd	Average Speed	Time	Time	Time	Current
			Dload Upload	Total	Spent	Left	Speed
100	8128	0	0	100	8128	0	170k
--:--:--	--:--:--	--:--:--	--:--:--	--:--:--	--:--:--	--:--:--	-----233k

<IRF>

**7. Prepare the new device:**

- a. Verify that the new device has the same model as the old device and runs the same version of software as the IRF fabric. If the new device runs a version of software different than the IRF fabric, upgrade the software on the new device.

<newDeviceB> display version

INTELBAS Comware Software, Version 7.1.070, Release 6530P01

Copyright (c) 2004-2021 New INTELBAS Technologies Co., Ltd. All rights

reserved. INTELBAS S3130uptime is 0 weeks, 0 days, 17 hours, 19 minutes

Last reboot reason : User reboot

...

- b. Verify that the new device has the same settings for some parameters as Device A. The parameters include the system operating mode and the maximum number of ECMP routes. The parameter requirements vary by device model. For more information about the configuration restrictions and guidelines, see IRF in *Virtual Technologies Configuration Guide* for the device.

- c. Change the IRF member ID of the new device to 2, the same as the old device.

[newDeviceB] irf member 1 renumber 2

Renumbering the member ID may result in configuration change or loss.

Continue?[Y/N]:y

[newDeviceB] quit

- d. Save the running configuration and reboot the new device for the member ID to take effect.

<newDeviceB> save

The current configuration will be written to the device. Are you sure? [Y/N]:y

Please input the file name(\*.cfg)[flash:/startup.cfg]

(To leave the existing filename unchanged, press the enter key):

Validating file. Please wait...

The startup.cfg file already exists.

Compared with the startup.cfg file, The current configuration adds 20 commands and deletes 121 commands.

If you want to see the configuration differences, please cancel this operation, and then use the display diff command to show the details.

If you continue the save operation, the file will be overwritten.

Are you sure you want to continue the save operation? [Y/N]:y

Saving the current configuration to the file. Please wait...

Saved the current configuration to mainboard device successfully.

<newDeviceB> reboot



Start to check configuration with next startup configuration file, please wait..... DONE!

This command will reboot the device. Continue? [Y/N]:y

Now rebooting, please wait.....

- e. Configure IRF port bindings. Bind Ten-GigabitEthernet 2/0/25 and Ten-GigabitEthernet 2/0/26 to IRF-port 2/2.

```
<newDeviceB> system-view
[newDeviceB] interface ten-gigabitethernet 2/0/25
[newDeviceB-Ten-GigabitEthernet2/0/25] shutdown
[newDeviceB-Ten-GigabitEthernet2/0/25] quit
[newDeviceB] int ten-gigabitethernet 2/0/26
[newDeviceB-Ten-GigabitEthernet2/0/26] shutdown
[newDeviceB-Ten-GigabitEthernet2/0/26] quit
[newDeviceB] irf-port 2/2
[newDeviceB-irf-port2/2] port group interface ten-gigabitethernet 2/0/25
You must perform the following tasks for a successful IRF setup:
Save the configuration after completing IRF configuration.
Execute the "irf-port-configuration active" command to activate the IRF ports.
[newDeviceB-irf-port2/2] port group interface ten-gigabitethernet 2/0/26
[newDeviceB-irf-port2/2] quit
[newDeviceB] interface ten-gigabitethernet 2/0/25
[newDeviceB-Ten-GigabitEthernet2/0/25] undo shutdown
[newDeviceB-Ten-GigabitEthernet2/0/25] quit
[newDeviceB] int ten-gigabitethernet 2/0/26
[newDeviceB-Ten-GigabitEthernet2/0/26] undo shutdown
[newDeviceB-Ten-GigabitEthernet2/0/26] quit
[newDeviceB] irf-port-configuration active
[newDeviceB] save
```

- f. Power off the new device.

## Procedures

1. On Device B (the old device), shut down service interfaces and save the configuration:

# On Device B, shut down all uplink and downlink service interfaces. Do not shut down IRF physical interfaces Ten-GigabitEthernet 2/0/25 and Ten-GigabitEthernet 2/0/26 and BFD MAD interface GigabitEthernet 2/0/1.

```
[IRF] interface range name yewu interface gigabitethernet 2/0/2 to gigabitethernet
2/0/24 ten-gigabitethernet 2/0/27 to ten-gigabitethernet 2/0/28
[IRF-if-range-yewu] shutdown
[IRF-if-range-yewu] quit
```

# On Device D, ping Device C. On Device C, ping Device D. If the ping operations succeed, Device C and Device D are reachable. If the ping operations fail, first locate and resolve the communication failure issue. (Details not shown.)

2. Verify that all services on Device B have been switched over to Device A. (Details not shown.)
3. Save the running configuration.

```
[IRF] save
The current configuration will be written to the device. Are you sure? [Y/N]:y
Please input the file name(*.cfg)[flash:/startup.cfg]
(To leave the existing filename unchanged, press the enter key):
```



```

Validating file. Please wait...
The startup.cfg file already exists.
Compared with the startup.cfg file, The current configuration adds 0 commands and
deletes 0 commands.
If you want to see the configuration differences, please cancel this operation, and
then use the display diff command to show the details.
If you continue the save operation, the file will be overwritten.
Are you sure you want to continue the save operation? [Y/N]:y
Saving the current configuration to the file. Please wait...
Saved the current configuration to mainboard device successfully.
Slot 2:
Save next configuration file successfully.

```

4. Power off Device B, and then remove cables for IRF physical interfaces and service interfaces.

### CAUTION:

The IRF fabric splits after you power off Device B. To avoid configuration loss, do not execute the **save** command on Device A or Device B.

5. Connect IRF physical interfaces to add the new device to the IRF fabric, and power on the new device:

# Connect IRF physical interfaces Ten-GigabitEthernet 1/0/25 and Ten-GigabitEthernet 1/0/26 and BFD MAD interface GigabitEthernet 2/0/1, and then power on the new device. The new device and Device A merge into an IRF fabric, and Device A is still the master device.

# After the new device starts up, execute the following **display** commands to verify that Device B and the IRF fabric are running correctly. The command outputs should be the same as those before the replacement. If the command outputs before and after the replacement are inconsistent, locate and resolve the issue.

```

[IRF] display system stable state
[IRF] display irf
[IRF] display irf configuration
[IRF] display irf link
[IRF] display irf topology
[IRF] display mad verbose

```

6. After the new device runs stably, connect service interfaces on the new device to uplink and downlink devices and bring up all service interfaces:

# Verify that the new device is a standby device.

```
[IRF] display device
```

# Verify that all physical interfaces on the new device are displayed.

```
[IRF] display interface
```

# Wait for 2 minutes, and then connect the cables that were connected to service interfaces on the old device to the service interfaces on the new device.

# Bring up all service interfaces on the new device and verify that all services are running correctly.

```

[IRF] interface range name yewu interface gigabitethernet 2/0/2 to gigabitethernet
2/0/24 ten-gigabitethernet 2/0/27 to ten-gigabitethernet 2/0/28
[IRF-if-range-yewu] undo shutdown
[IRF-if-range-yewu] quit

```

7. Save the configuration.

```
[IRF] save
```



# Checking the environment after IRF member replacement

# Delete unused settings as needed and save the configuration.

```
[IRF] undo interface range yewu
[IRF] quit
<IRF> save
```

# Check the device status, collect device status information, and compare the device status with that before the replacement. If the device status information is inconsistent before and after replacement, locate and resolve the issue.

```
<IRF> display version
<IRF> display current-configuration
<IRF> display interface brief
<IRF> display arp
<IRF> display mac-address
<IRF> display ospf peer
<IRF> display ip routing-table
<IRF> display link-aggregation verbose
<IRF> display counters rate inbound interface
```

## Verifying the configuration

# Display device information on the IRF fabric. Verify that Device A is the master device and Device B is the standby device.

```
<IRF> display device
```

Slot	Type	State	Subslot	Soft Ver	Patch Ver
1	S3130Master	0	S3130-6530P01		None
2	S3130Standby		0	S3130-6530P01	None