

Huawei CloudEngine 6850

Switch Configuration Guide for Dell PS Series SANs

[Abstract](#)

This document illustrates how to configure Huawei® CloudEngine 6850 series switches for use with Dell™ PS Series storage using Dell EMC best practices.

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1 Introduction

This document illustrates how to configure Huawei® CloudEngine 6850 (CE6850) series switches for use with Dell™ PS Series storage using Dell EMC best practices. The recommended configuration uses a link aggregation group (LAG) for inter-switch connections.

If you are following the **Rapid EqualLogic Configuration** steps at

<http://en.community.dell.com/techcenter/storage/w/wiki/3615.rapid-equallogic-configuration-portal-by-sis.aspx>, use sections 1 and 2 in this Switch Configuration Guide.

For more information on Dell PS Series SAN design recommendations, see the [PS Series Configuration Guide](#).

1.1 Document conventions

Table 1 lists the formatting conventions used in this document.

Table 1 Document conventions

Item	Convention	Example
Code samples	Monospace	System configuration has been modified.
Parameters	Italic	Dell (<i>profile-name</i>) #
Command-line commands	Bold	OS# show version
Command-line user-supplied variables	Bold, italic, brackets	< <i>vlan-id</i> >

1.2 Audience

This switch configuration guide describes a verified configuration following Dell EMC best practices for a PS Series iSCSI SAN and is intended for storage or network administrators and deployment personnel.

1.3 Switch details

Table 2 provides an overview of the switch configuration. This switch configuration guide covers setup instructions for all CE6850 switch models.

Table 2 Switch specifications

Huawei CloudEngine 6850	
Switch vendor	Huawei
Switch model	CloudEngine 6850
Switch firmware	8.100

Note: For proper functionality, the switch must be at the firmware version shown in Table 2 before proceeding with configuration. Using previous firmware versions may have unpredictable results.

Note: The latest firmware updates and documentation can be found at: www.huawei.com. This site requires a login.

1.4 Cabling diagram

The cabling diagram shown in Figure 1 represents the Dell recommended method for deploying servers and PS Series storage arrays. The CE6850 switch is shown with 40Gb QSFP interfaces used for the port-channel.

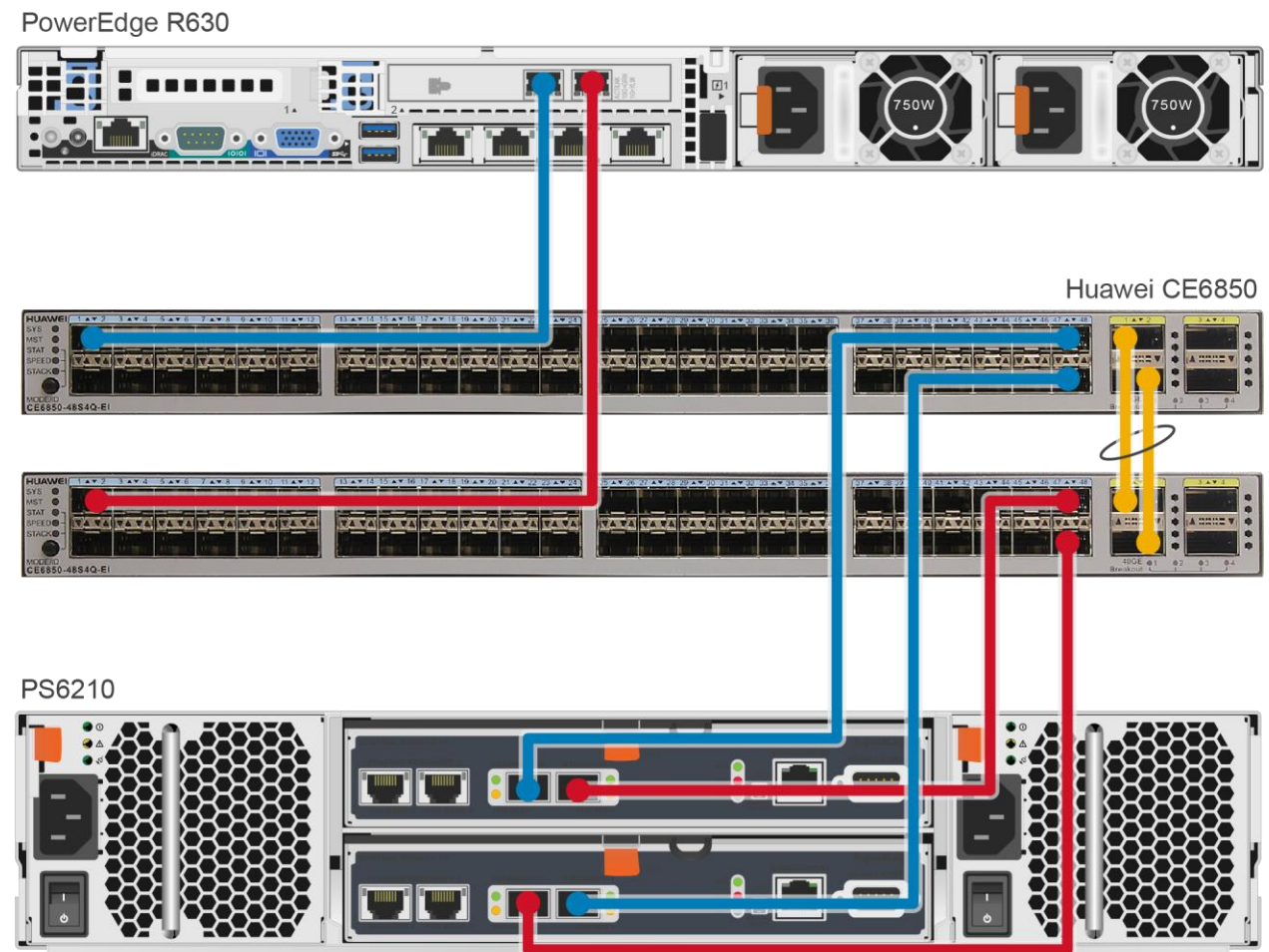


Figure 1 Cabling diagram

2 Dell EMC recommended switch configuration

These steps show how to configure two Huawei CE6850 switches. The switches are interconnected using the 2 x 40Gbps ports configured as a LAG.

Note: The configuration steps in this section are only recommended when the switch is used as a dedicated SAN for iSCSI traffic.

2.1 Hardware configuration

1. Power on both switches.
2. Connect a serial cable to the management port.
3. Using any terminal utility, open a serial connection session to the switch.
4. Open your terminal emulator and configure it to use the serial port (usually COM1 but this may vary depending on your system). Configure serial communications for 9600,N,8,1 and no flow control.
5. Connect the at least 2 x 40Gb Ethernet ports between the switch 1 and switch 2 as shown in Figure 1. These are used as switch interconnect links. This document uses 40GbE ports 1/0/1 and 1/0/2 for interconnect between the switches.

2.2 Startup configuration file

Note: This example assumes a switch at its default configuration settings. Always back up configuration settings prior to performing any configuration changes.

```
<HUAWEI>reset saved-configuration
```

The action will delete the saved configuration on the device.

The configuration will be erased to reconfigure. Continue? [Y/N]: **y**

Warning: Now the configuration on the device is being deleted.

Info: Succeeded in clearing the configuration in the device.

```
<HUAWEI>reboot
```

Warning: The current configuration will be saved to the next startup saved-configuration file. Continue? [Y/N]: **n**

Warning: The system will reboot. Continue? [Y/N]: **y**

2.3 Basic system configuration

The following steps set up the initial configuration for the switch.

Press CTRL+C to abort Zero Touch Provisioning in 10 seconds...

[CTRL+C]

Please Press ENTER.

An initial password is required for the first login via the console.

Continue to set it? [Y/N]: **Y**

Set a password and keep it safe! Otherwise you will not be able to login via the console.

Please configure the login password (8-16)

Enter Password: *********

Confirm Password: *********

```
<HUAWEI>
```

2.4 Configure management network

Connect the management port on the switch to an appropriate network and perform the following steps to set up the management network for the switch.

```
<HUAWEI> system-view
Enter system view, return user view with return command.
[~HUAWEI] interface MEth 0/0/0
[~HUAWEI-MEth0/0/0] ip address <IP address> <Mask>
[*HUAWEI-MEth0/0/0] undo shutdown
[*HUAWEI-MEth0/0/0] quit
[*HUAWEI] undo telnet server disable
[~HUAWEI] user-interface vty 0 4
[~HUAWEI-ui-vty0-4] user privilege level 15
[*HUAWEI-ui-vty0-4] authentication-mode aaa
Warning: The level of the user-interface(s) will be the default level of AAA
users, please check whether it is correct.
[*HUAWEI-ui-vty0-4] quit
[*HUAWEI] aaa
[*HUAWEI-aaa] local-user <username> password irreversible-cipher <password>
Info: A new user is added.
[*HUAWEI-aaa] local-user <username> level 15
[*HUAWEI-aaa] local-user <username> service-type telnet
Warning: The service type configured contains unsecured protocol(telnet). It is
recommended to configure the secure service type only.
[~HUAWEI-aaa] quit
```

2.5 Configure LLDP and spanning tree

```
[*HUAWEI] stp enable
[*HUAWEI] stp mode rstp
[*HUAWEI] lldp enable
```

2.6 Configure port-channel

```
[*HUAWEI] interface Eth-Trunk <trunk-id>
[*HUAWEI-Eth-Trunk1] mode lacp-static
[*HUAWEI-Eth-Trunk1] trunkport 40GE 1/0/1 to 1/0/2
[*HUAWEI-Eth-Trunk1] lacp timeout slow
[*HUAWEI-Eth-Trunk1] quit
```

2.7 Configure port-channel interfaces

```
[*HUAWEI] interface range 40GE 1/0/1 to 40GE 1/0/2
[*HUAWEI-port-group] flow-control
[*HUAWEI-port-group] jumboframe enable 9216
[*HUAWEI-port-group] quit
```

2.8 Configure edge-ports

Perform this step for each individual port that is connected to a storage controller or a host interface port, or specify a range of ports to configure. This section enables link-level flow control (802.3x), STP edge-ports, and jumbo frames.

```
[*HUAWEI] interface range 10GE 1/0/1 to 10GE 1/0/48
[*HUAWEI-port-group] undo shutdown
[*HUAWEI-port-group] flow-control
[*HUAWEI-port-group] jumboframe enable 9216
[*HUAWEI-port-group] stp edged-port enable
[*HUAWEI-port-group] quit
```

2.9 Disable link flapping protection

The Huawei CE6850 switch has an inbuilt link-flap protection, which by default turns off an interface if five link flapping events occur within an interval of ten seconds. The default values might cause interfaces on certain edge devices to be turned off. To avoid this, change the settings for link flapping protection or disable it completely. Refer support.huawei.com for further information.

To disable link flapping protection, set the threshold value to 0.

```
[*HUAWEI] interface range 10GE 1/0/1 to 10GE 1/0/48
[*HUAWEI-port-group] port link-flap threshold 0
[*HUAWEI-port-group] quit
```

2.10 Save configuration

```
[*HUAWEI] commit
[~HUAWEI] quit
<HUAWEI> save
```

Warning: The current configuration will be written to the device. Continue?

[Y/N]: **y**

Info: Please input the file name(*.cfg, *.zip, *.dat)[vrpcfg.zip]: **[ENTER]**

Now saving the current configuration to the slot 1 ..

Info: Save the configuration successfully.

<HUAWEI>

2.11 Configure breakout ports

Perform this step if using the QSFP 40GbE ports as 4 x 10GbE breakout ports. The following command splits the 40GbE port 1/0/3. The same action can be performed for each of the 40GbE QSFP ports on the switch.

```
<HUAWEI> system-view
```

Enter system view, return user view with return command.

```
[~HUAWEI] port split dimension interface 40GE 1/0/3 split-type 4*10GE
```

Warning: This operation will delete current port(s) and create new port(s). New port(s) will be offline before the board of slot 1 is reset. Continue? [Y/N]: **y**

Info: Operating, please wait for a moment...done.

```
[*HUAWEI] commit
```

```
[~HUAWEI] quit
```

```
<HUAWEI> save
```

Warning: The current configuration will be written to the device. Continue?

[Y/N]: **y**

```
<HUAWEI> reboot
```

Warning: The current configuration will be saved to the next startup saved-configuration file. Continue? [Y/N]: **y**

Warning: The system will reboot. Continue? [Y/N]: **y**

Repeat step 2.11 to configure the breakout ports as required. Reboot the switch to bring the breakout ports into effect. The breakout ports will be listed as 40GE 1/0/3:1 to 40GE 1/0/3:4. To configure these ports, repeat the steps in sections 2.8 to 2.10.

2.12 Configure additional switch

Repeat the commands from sections 2.1 through 2.11 to configure the second switch.

2.13 Calibrate link flapping protection setting (optional)

The Huawei CE6850 has an inbuilt link flap protection, which by default turns off an interface if five link-flapping events occur within an interval of 10 seconds. The default values might cause interfaces on certain edge devices to be turned off. To avoid this, change the settings for link flapping protection or disable it completely.

Section 2.9 shows the commands to disable link flapping protection, or if keeping link flapping protection turned on, use the following steps to calibrate the link flapping protection setting. Refer to support.huawei.com for further information.

```
<HUAWEI> system-view
```

Enter system view, return user view with return command.

```
[~HUAWEI] interface range 10GE 1/0/1 to 10GE 1/0/48
```

```
[~HUAWEI-port-group] port link-flap interval <5 to 60 seconds>
```

```
[*HUAWEI-port-group] port link-flap threshold <5 to 10>
```

```
[*HUAWEI-port-group] quit
```

With port link flapping protection enabled, use the following command for auto recovery of an interface which was brought down due to link flap.

```
[*HUAWEI] error-down auto-recovery cause link-flap interval <30 to 86400 sec>  
[*HUAWEI] commit  
[~HUAWEI] quit  
<HUAWEI> save  
Warning: The current configuration will be written to the device. Continue?  
[Y/N]: y
```

3 Switch configuration using stack interconnect

These steps show how to configure two Huawei CE6850 switches that are interconnected using the 2 x 40Gbps ports configured as a stack.

Note: The configuration steps in this section are only recommended when the switch is used as a dedicated SAN for iSCSI traffic.

3.1 Hardware configuration

1. Power on both switches.
2. Connect a serial cable to the management port.
3. Using any terminal utility, open a serial connection session to the switch.
4. Open your terminal emulator and configure it to use the serial port (usually COM1 but this may vary depending on your system). Configure serial communications for 9600,N,8,1 and no flow control.
5. Connect the at least 2 x 40Gb Ethernet ports between the switch 1 and switch 2 as shown in Figure 1. These will be used as your switch interconnect links. This document uses 40GbE ports 1/0/1 and 1/0/2 for interconnect between the switches.

3.2 Startup configuration file

Note: This example assumes a switch at its default configuration settings. Always back up configuration settings prior to performing any configuration changes.

```
<HUAWEI>reset saved-configuration
```

The action will delete the saved configuration on the device.

The configuration will be erased to reconfigure. Continue? [Y/N]: **y**

Warning: Now the configuration on the device is being deleted.

Info: Succeeded in clearing the configuration in the device.

```
<HUAWEI>reboot
```

Warning: The current configuration will be saved to the next startup saved-configuration file. Continue? [Y/N]: **n**

Warning: The system will reboot. Continue? [Y/N]: **y**

3.3 Basic system configuration

The following steps set up the initial configuration for the switch.

Press CTRL+C to abort Zero Touch Provisioning in 10 seconds...

[CTRL+C]

Please Press ENTER.

An initial password is required for the first login via the console.

Continue to set it? [Y/N]: **y**

Set a password and keep it safe! Otherwise you will not be able to login via the console.

Please configure the login password (8-16)

Enter Password: *********

Confirm Password: *********

```
<HUAWEI>
```

3.4 Configure stack ports on switch 1

Connect to switch 1 by serial console and use the following commands to configure stack ports 40GbE 1/0/1 and 40GbE 1/0/2. If required, more ports can be added to the stack interconnect.

Configure stack and add stack switch member 1 to domain 1.

```
<HUAWEI> system-view
[~HUAWEI] stack
[~HUAWEI-stack] port mode stack interface 40GE 1/0/1 to 1/0/2
[*HUAWEI-stack] stack member 1 domain 1
[*HUAWEI-stack] quit
```

Configure the 40GbE interfaces in stack mode.

```
[*HUAWEI] interface 40GE 1/0/1
[*HUAWEI-40GE1/0/1] port mode stack
[*HUAWEI-40GE1/0/1] quit
[*HUAWEI] interface 40GE 1/0/2
[*HUAWEI-40GE1/0/2] port mode stack
[*HUAWEI-40GE1/0/2] quit
```

Add the 40GbE interfaces to the logical stack port 1/1.

```
[*HUAWEI] interface Stack-Port 1/1
[*HUAWEI-Stack-Port1/1] port member-group interface 40GE 1/0/1 to 1/0/2
[*HUAWEI-Stack-Port1/1] quit
[*HUAWEI] commit
[~HUAWEI] quit
<HUAWEI> save
```

Warning: The current configuration will be written to the device. Continue?

[Y/N]: **y**

Info: Please input the file name(*.cfg, *.zip, *.dat)[vrpcfg.zip]: **[ENTER]**

Now saving the current configuration to the slot 1 ..

Info: Save the configuration successfully.

<HUAWEI>

3.5 Configure stack renumber on switch 2

Connect to switch 2 by serial console and use the following commands to renumber the switch as stack member 2.

Repeat section 3.3 for basic switch configuration for switch 2 and complete the following steps.

```
<HUAWEI> system-view
[~HUAWEI] stack
[~HUAWEI-stack] stack member 1 renumber 2
Warning: The device will use the configuration of member ID 2 after the device
resets. Continue? [Y/N]: y
Info: The operation will take effect after reboot.
[*HUAWEI-stack] quit
[*HUAWEI] commit
[~HUAWEI] quit
<HUAWEI> save
Warning: The current configuration will be written to the device. Continue?
[Y/N]: y
Now saving the current configuration to the slot 1 .
Info: Save the configuration successfully.
<HUAWEI> reboot
Warning: The system will reboot. Continue? [Y/N]: y
```

Note: Wait for the switch to reboot.

3.6 Configure stack ports on switch 2

After the switch reboots, use the following commands to configure 40GbE 2/0/1 and 40GbE 2/0/2 as stack ports. If required, more ports can be added to the stack interconnect.

Configure stack and add stack switch member 2 to domain 1.

```
<HUAWEI> system-view
[~HUAWEI] stack
[~HUAWEI-stack] stack member 2 priority 101
[*HUAWEI-stack] stack member 2 domain 1
[*HUAWEI-stack] quit
```

Configure the 40GbE interfaces in stack mode.

```
[*HUAWEI] interface 40GE 2/0/1
[*HUAWEI-40GE2/0/1] port mode stack
[*HUAWEI-40GE2/0/1] quit
[*HUAWEI] interface 40GE 2/0/2
[*HUAWEI-40GE2/0/2] port mode stack
[*HUAWEI-40GE2/0/2] quit
```

Add the 40GbE interfaces to the logical stack port 2/1.

```
[*HUAWEI] interface stack-port 2/1
[*HUAWEI-Stack-Port2/1] port member-group interface 40GE 2/0/1 to 2/0/2
[*HUAWEI-Stack-Port2/1] quit
[*HUAWEI] commit
[~HUAWEI] quit
<HUAWEI> save
Warning: The current configuration will be written to the device. Continue?
[Y/N]: y
```

Note: The switch will automatically reboot and will come up in a stacking configuration. Wait for the switch to complete the reboot.

3.7 Configure management network

Connect the management port on the switch to an appropriate network, connect to serial port of any switch in the stack configuration, and use the following steps to set up the management network for the switch.

```
<HUAWEI> system-view
Enter system view, return user view with return command.
[~HUAWEI] interface MEth 0/0/0
[~HUAWEI-MEth0/0/0] ip address <IP address> <Mask>
[*HUAWEI-MEth0/0/0] undo shutdown
[*HUAWEI-MEth0/0/0] quit
[*HUAWEI] undo telnet server disable
[~HUAWEI] user-interface vty 0 4
[~HUAWEI-ui-vty0-4] user privilege level 15
[*HUAWEI-ui-vty0-4] authentication-mode aaa
Warning: The level of the user-interface(s) will be the default level of AAA
users, please check whether it is correct.
[*HUAWEI-ui-vty0-4] quit
[*HUAWEI] aaa
[*HUAWEI-aaa] local-user <username> password irreversible-cipher <password>
Info: A new user is added.
[*HUAWEI-aaa] local-user <username> level 15
[*HUAWEI-aaa] local-user <username> service-type telnet
Warning: The service type configured contains unsecured protocol(telnet). It is
recommended to configure the secure service type only.
[~HUAWEI-aaa] quit
```

3.8 Configure LLDP and spanning tree

```
[*HUAWEI] stp enable
[*HUAWEI] stp mode rstp
[*HUAWEI] lldp enable
```

3.9 Configure edge-ports

Perform this step for each individual port that is connected to a storage controller or a host interface port, or specify a range of ports to configure. This section enables link-level flow control (802.3x), STP edge-ports, and Jumbo frames.

```
[*HUAWEI] interface range 10GE 1/0/1 to 10GE 1/0/48
[*HUAWEI-port-group] undo shutdown
[*HUAWEI-port-group] flow-control
[*HUAWEI-port-group] jumboframe enable 9216
[*HUAWEI-port-group] stp edged-port enable
[*HUAWEI-port-group] quit
[*HUAWEI] interface range 10GE 2/0/1 to 10GE 2/0/48
[*HUAWEI-port-group] undo shutdown
[*HUAWEI-port-group] flow-control
[*HUAWEI-port-group] jumboframe enable 9216
[*HUAWEI-port-group] stp edged-port enable
[*HUAWEI-port-group] quit
```

3.10 Disable link flapping protection

The Huawei CE6850 switch has an inbuilt link-flap protection, which by default turns off an interface if five link-flapping events occur within an interval of ten seconds. The default values might cause interfaces on certain edge devices to be turned off. To avoid this, change the settings for link flapping protection or disable it completely. Refer support.huawei.com for further information.

To disable link flapping protection, set the threshold value to 0.

```
[*HUAWEI] interface range 10GE 1/0/1 to 10GE 1/0/48
[*HUAWEI-port-group] port link-flap threshold 0
[*HUAWEI-port-group] quit
```

Repeat the previous step for **port group 10GE 2/0/1 to 10GE 2/0/48**.

3.11 Save configuration

```
[*HUAWEI] commit
[~HUAWEI] quit
<HUAWEI> save
```

Warning: The current configuration will be written to the device. Continue?

```
[Y/N]: y
<HUAWEI>
```

3.12 Configure breakout ports

Perform this step if using the QSFP 40GbE ports as 4 x 10GbE breakout ports. The following command splits the 40GbE port 1/0/3. The same action can be performed for each of the 40GbE QSFP ports on the switch.

```
[*HUAWEI] port split dimension interface 40GE 1/0/3 split-type 4*10GE
Warning: This operation will delete current port(s) and create new port(s). New
port(s) will be offline before the board of slot 1 is reset. Continue? [Y/N]: y
Info: Operating, please wait for a moment...done.
[*HUAWEI] commit
[~HUAWEI] quit
<HUAWEI> save
Warning: The current configuration will be written to the device. Continue?
[Y/N]: y
<HUAWEI> reboot
Warning: The current configuration will be saved to the next startup saved-
configuration file. Continue? [Y/N]: Y
Warning: The system will reboot. Continue? [Y/N]: Y
```

Repeat the steps in section 3.12 to configure the breakout ports as needed. Reboot the switch to bring the breakout ports into effect. The breakout ports will be listed as 40GE 1/0/3:1 to 40GE 1/0/3:4. To configure these ports, repeat the steps in sections 3.9 to 3.11.

3.13 Calibrate link flapping protection setting (optional)

The Huawei CE6850 switch has an inbuilt link flap protection, which by default turns off an interface if five link flapping events occur within an interval of ten seconds. The default values might cause interfaces on certain edge devices to be turned off. To avoid this, change the settings for link flapping protection or disable it completely.

The steps in section 3.10 show the commands to disable link flapping protection, or if choosing to keep the link flapping protection turned on, use the following steps to calibrate the link flapping protection setting. Refer to support.huawei.com for further information.

```
<HUAWEI> system-view
Enter system view, return user view with return command.
[~HUAWEI] interface range 10GE 1/0/1 to 10GE 1/0/48
[~HUAWEI-port-group] port link-flap interval <5 to 60 seconds>
[*HUAWEI-port-group] port link-flap threshold <5 to 10>
[*HUAWEI-port-group] quit
```

Repeat the previous step for **port group 10GE 2/0/1 to 10GE 2/0/48**.

With port link flapping protection enabled, use the following command for auto recovery of an interface which was brought down due to link flap.

```
[*HUAWEI] error-down auto-recovery cause link-flap interval <30 to 86400 sec>
[*HUAWEI] commit
[~HUAWEI] quit
<HUAWEI> save
Warning: The current configuration will be written to the device. Continue?
[Y/N]: y
```


A Technical support and resources

[Dell.com/support](https://dell.com/support) is focused on meeting your needs with proven services and support.

[Huawei.com](https://huawei.com) for support and information regarding Huawei networking products.

[Dell TechCenter](#) is an online technical community where IT professionals have access to numerous resources for Dell EMC software, hardware, and services.

[Storage Solutions Technical Documents](#) on Dell TechCenter provide expertise that helps to ensure customer success on Dell EMC storage platforms.

Additional referenced or recommended Dell publications:

- [Dell PS Series Configuration Guide](#)
- [Dell EMC Storage Compatibility Matrix](#)
- [PS Series Technical Documents](#)