Dell EMC Networking S4048-ON and S4048T-ON

Switch Configuration Guide for Dell EMC SC Series and Dell PS Series SANs

Abstract

This document illustrates how to configure Dell EMC™ Networking S4048-ON and S4048T-ON switches for use with Dell EMC SC Series or Dell™ PS Series storage using Dell EMC best practices.

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Revisions

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1 Introduction

This document illustrates how to configure Dell EMC™ Networking S4048-ON and S4048T-ON switches for use with Dell EMC™ SC Series or Dell™ PS Series storage using Dell EMC best practices.

Link aggregation groups (LAGs) for inter-switch connections are mandatory for PS Series iSCSI SAN environments and optional for SC Series iSCSI SAN environments. The switches are interconnected to each other using 40 GbE cables.

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, or 1 and 3 in this switch configuration guide.
Note: For more information on PS Series SAN design recommendations, see the *Dell PS Series Configuration Guide*.

1.1 Switch operating system support

Dell EMC Networking S4048-ON and S4048T-ON Open Networking switches have the ability to run different switch operating systems. This document provides command-line configuration steps specific to Dell Networking OS 9.x and Dell Networking OS 10.x.

1.2 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	`DellEMC(`*`profile-name`*`)#`
Command-line commands	Bold	`OS#`**`show version`**
Command-line user-supplied variables	Bold, italic, brackets	**`<vlan-id>`**

1.3 Audience

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

1.4 Hardware configuration

This section lists the required steps to configure your switches. The steps in this section apply to all switch OS versions.

Note: Do not connect any server NIC or storage controller cables to the switch before performing the following configuration steps.

1. Power on the two switches.
2. Connect a serial cable to the serial port of the first switch.
3. Using PuTTY or another terminal utility, open a serial connection session to the switch.
4. Open the terminal emulator and configure it to use the serial port (COM1, COM2). Configure serial communications for 115200 N, 8, 1, and no flow control.
5. Perform all CLI steps from section 2.1 (OS 9.x) or section 3.1 (OS 10.x) on switch 1. Optionally, perform the steps in section 2.2 (OS 9.x) or 3.2 (OS 10.x). Repeat this process (step 5) for switch 2.
6. **Required for PS Series (optional for SC Series):** Connect the interconnect cables between the switches by connecting physical port 49 on switch 1 to physical port 49 on switch 2, and physical port 50 on switch 1 to physical port 50 on switch 2. See the interconnect configuration in Figure 2.
7. Connect all server NIC and storage controller cables to the switch. See section 1.5 for example cabling diagrams.

1.5 Cabling diagrams

Refer to one of the following cabling sections that is applicable to your storage system: SC Series (section 1.5.1) or PS Series (section 1.5.2).

1.5.1 SC Series cabling diagram

The cabling diagram shown in Figure 2 represents the Dell EMC recommended method for deploying servers and SC Series storage arrays.

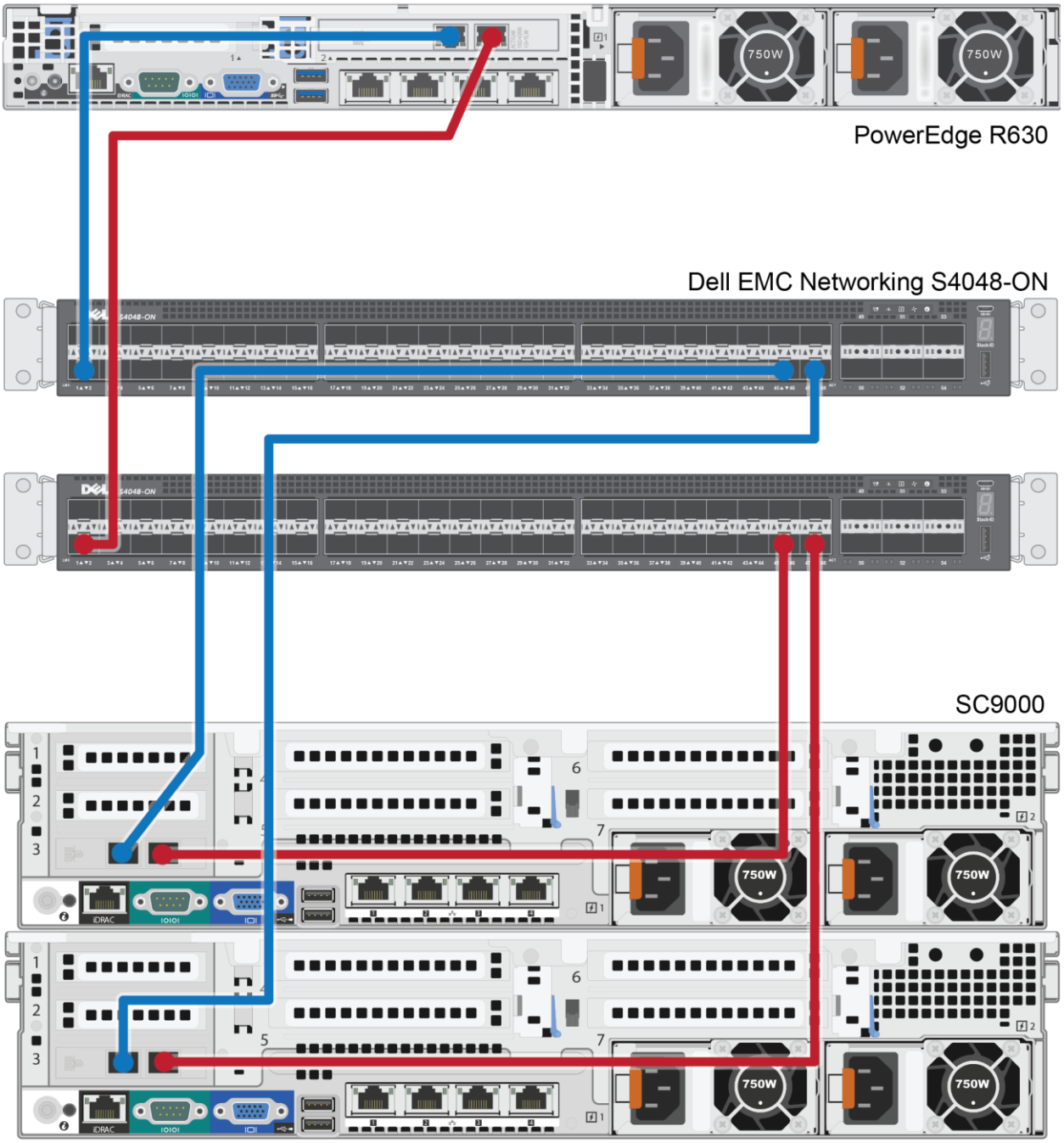

Figure 1 SC Series cabling diagram

1.5.2 PS Series cabling diagram

The cabling diagram in Figure 2 represents the Dell EMC recommended method for deploying servers and PS Series storage arrays.

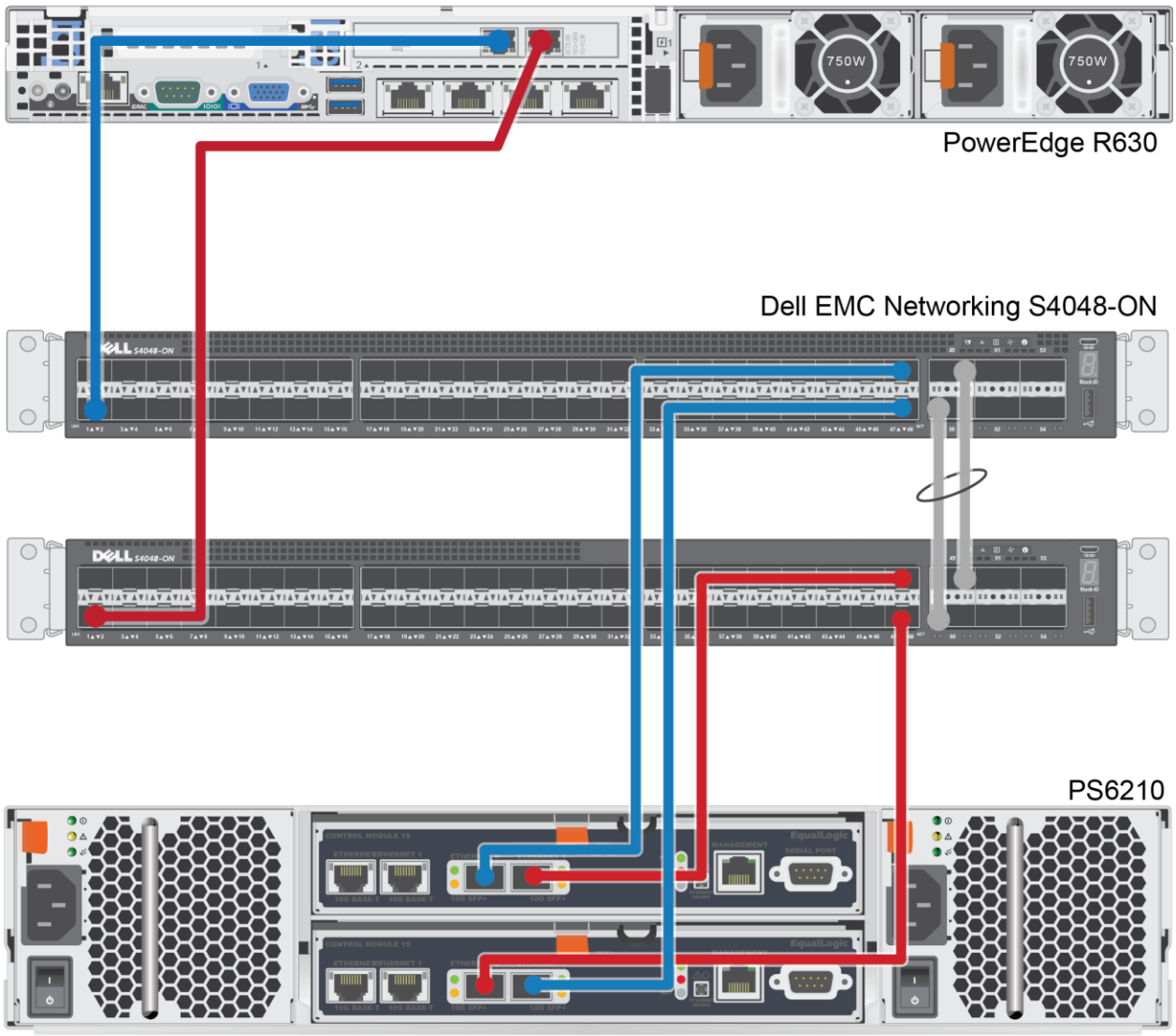

Figure 2 PS Series cabling diagram

2 Switch command-line configuration (OS 9.x)

This section provides command-line steps to configure Dell EMC Networking S4048-ON and S4048T-ON switches running Dell Networking OS 9.x. If your switches are running Dell Networking OS 10.x, skip section 2 and follow the steps in section 3.

Table 2 provides an overview of the switch configuration.

Table 2 Switch specifications (OS 9.x)

Dell EMC Networking S4048-ON/S4048T-ON	
Switch vendor	Dell EMC
Switch model	S4048-ON/S4048T-ON
Switch operating system	9.13 or above

Note: For proper functionality, the switch must be at the switch operating system version shown in Table 2 before proceeding with this configuration. Using a switch OS other than the versions specified in this document may have unpredictable results.

Note: The latest switch OS updates and documentation can be found at Dell.com/support.

2.1 Dell EMC recommended switch configuration

The steps in this section show how to configure two Dell EMC Networking S4048-ON or S4048T-ON switches with a link aggregation group (LAG). The switches are interconnected using two of the 40 GbE QSFP ports. The LAG is configured for Dynamic Link Aggregation Control Protocol (LACP). This example uses physical ports 49 and 50 for the 40 GbE interconnect between the two switches.

Note: LAGs for inter-switch connections are mandatory for PS Series iSCSI SAN environments and optional for SC Series iSCSI SAN environments.

2.1.1 Check switch operating system version

```
DellEMC>enable
DellEMC#show version
```

Note: If the active version displayed here is not 9.13 or above, visit Dell.com/support and download the latest update for your switches.

2.1.2 Delete startup configuration

Note: This example assumes a switch is using the default configuration settings. Using the **delete startup-config** command will set the startup configuration file to its default settings. Always back up your configuration settings prior to performing any configuration changes.

```
DellEMC>enable
DellEMC#delete startup-config
Proceed to delete startup-config [confirm yes/no]yes
DellEMC#reload
System configuration has been modified. Save? [yes/no]no
Proceed with reload [confirm yes/no]yes
```

Note: The switch will reboot.

2.1.3 Configure out-of-band management port

```
DellEMC>enable
DellEMC#configure
DellEMC(conf)#interface managementethernet 1/1
DellEMC(conf-if-ma-1/1)#ip address <ipaddress> <mask>
DellEMC(conf-if-ma-1/1)#no shutdown
DellEMC(conf-if-ma-1/1)#exit
```

2.1.4 Configure route for out-of-band management port (optional)

```
DellEMC(conf)#management route <X.Y.Z.0> /24 <A.B.C.1>
```

Note: In the previous command, ***<X.Y.Z.0>*** is the network your management system is connecting from and ***<A.B.C.1>*** is the gateway for the switch. If your management system is on the same subnet as the switch, the previous step may be omitted. The prior example assumes a class C subnet mask.

2.1.5 Configure login credentials

```
DellEMC(conf)#username admin privilege 15 password 0 <yourpassword>
DellEMC(conf)#enable password level 15 0 <yourpassword>
```

2.1.6 Enable switch ports

Option 1: Enable ports individually by entering the port number.

```
DellEMC(conf)#interface tengigabitethernet 1/1
DellEMC(conf-if-te-1/1)#switchport
DellEMC(conf-if-te-1/1)#no shutdown
DellEMC(conf-if-te-1/1)#end
```

Option 2: Enable multiple ports at once using the **range** parameter.

```
DellEMC#configure
DellEMC(conf)#interface range tengigabitethernet 1/1-1/48
DellEMC(conf -if-range-te-1/1-48)#switchport
```

2.1.7 Enable Jumbo frames

```
DellEMC(conf -if-range-te-1/1-48)#mtu 9216
```

2.1.8 Configure flow control

```
DellEMC(conf -if-range-te-1/1-48)#flowcontrol rx on tx off
```

2.1.9 Configure spanning tree on edge ports

```
DellEMC(conf-if-range-te-1/1-48)#spanning-tree rstp edge-port
DellEMC(conf-if-range-te-1/1-48)#no shutdown
DellEMC(conf-if-range-te-1/1-48)#exit
DellEMC(conf)#protocol spanning-tree rstp
DellEMC(conf-rstp)#no disable
DellEMC(conf-rstp)#exit
```

2.1.10 Configure port channel for LAG

Note: This section is mandatory for PS Series SANs and optional for SC Series SANs.

The following commands create a port channel or link aggregation used as an interconnect between two switches.

```
DellEMC(conf)#interface Port-channel 1
DellEMC(conf-if-po-1)#mtu 9216
DellEMC(conf-if-po-1)#switchport
DellEMC(conf-if-po-1)#no shutdown
DellEMC(conf-if-po-1)#exit
```

The following commands assign 40 Gb QSFP ports to the port channel.

```
DellEMC(conf)#interface range fortyGigE 1/49-1/50
DellEMC(conf-if-range-fo-1/49-1/50)#mtu 9216
DellEMC(conf-if-range-fo-1/49-1/50)#flowcontrol rx on tx off
DellEMC(conf-if-range-fo-1/49-1/50)#port-channel-protocol lacp
DellEMC(conf-if-range-fo-1/49-1/50-lacp)#port-channel 1 mode active
DellEMC(conf-if-range-fo-1/49-1/50-lacp)#exit
DellEMC(conf-if-range-fo-1/49-1/50)#no shutdown
DellEMC(conf-if-range-fo-1/49-1/50)#end
```

2.1.11 Save configuration

```
DellEMC#copy running-config startup-config
```

2.1.12 Reload switch

```
DellEMC#reload

System configuration has been modified. Save? [yes/no]:yes

Proceed with reload [confirm yes/no]:yes
```

2.1.13 Configure additional switch

Repeat the commands from section 2.1 to configure the second switch.

Note: The preceding procedure places all switch ports in the default VLAN. If you prefer to place ports in a non-default VLAN, refer to the documentation for your switch.

2.2 Configure Data Center Bridging (optional)

Use the following commands to enable Data Center Bridging (DCB) mode on the switch.

Note: You must complete the Dell EMC recommended switch configuration steps in section 2.1 before configuring the switch for DCB mode.

2.2.1 Disable 802.3x flowcontrol on SFP+ ports

```
DellEMC#configure
DellEMC(conf)#interface range tengigabitethernet 1/1-1/48
DellEMC(conf-if-range-te-1/1-48)#no flowcontrol rx on tx off
DellEMC(conf-if-range-te-1/1-48)#exit
```

2.2.2 Disable 802.3x flowcontrol on QSFP ports

```
DellEMC(conf)#interface range fortyGigE 1/49-1/50
DellEMC(conf-if-range-fo-1/49-1/50)#no flowcontrol rx on tx off
DellEMC(conf-if-range-fo-1/49-1/50)#exit
```

2.2.3 Create tagged VLAN for all ports and port-channels

```
DellEMC(conf)#interface vlan <vlan-id>
```

Note: You must supply a VLAN ID. The valid range is 2-4093.

```
Dell (conf-if-vl-vlan-id*)#tagged tengigabitethernet 1/1-1/48
Dell (conf-if-vl-vlan-id*)#mtu 9216
Dell (conf-if-vl-vlan-id*)#tagged port-channel 1
Dell (conf-if-vl-vlan-id*)#no shutdown
Dell (conf-if-vl-vlan-id*)#exit
```

2.2.4 Configure DCB policies

```
DellEMC(conf)#dcb-map <profile-name>
DellEMC(conf-dcbmap-profile-name*)#priority-group 0 bandwidth 50 pfc off
DellEMC(conf-dcbmap-profile-name*)#priority-group 1 bandwidth 50 pfc on
```

Note: The sum of the bandwidth-percentages must be equal to 100.

```
DellEMC(conf-dcbmap-profile-name*)#priority-pgid 0 0 0 0 1 0 0 0
DellEMC(conf-dcb-profile-name*)#exit
```

2.2.5 Apply policies to switch ports

```
DellEMC(conf)#interface range tengigabitethernet 1/1-1/48
DellEMC(conf-if-range-te-1/1-48)# dcb-map <profile-name>
DellEMC(conf-if-range-te-1/1-48)#exit

DellEMC(conf)#interface range fortyGigE 1/49-1/50
DellEMC(conf-if-range-fo-1/49-1/50)# dcb-map <profile-name>
DellEMC(conf-if-range-fo-1/49-1/50)#exit
```

Note: The sum of the bandwidth-percentages must be equal to 100.

2.2.6 Enable DCB

```
DellEMC(conf)#dcb enable
DellEMC(conf)#exit
```

Note: Set the corresponding VLAN ID on the storage controller network interfaces.

2.2.7 Save configuration

```
DellEMC#copy running-config startup-config
```

2.2.8 Reload switch

```
DellEMC#reload
System configuration has been modified. Save? [yes/no]:yes
Proceed with reload [confirm yes/no]:yes
```

2.2.9 Configure additional switch

Repeat the commands from section 2.2 to configure DCB on additional switches.

3 Switch command-line configuration (OS 10.x)

This section provides steps to configure Dell EMC Networking S4048-ON or S4048T-ON switches running Dell Networking OS 10.x. If your switches are running Dell Networking OS 9.x, do not follow the steps in section 3; follow the steps in section 2.

Table 3 provides an overview of the switch configuration.

Table 3 Switch specifications (OS 10.x)

Dell EMC Networking S4048-ON/S4048T-ON	
Switch vendor	Dell EMC
Switch model	S4048-ON/S4048T-ON
Switch operating system	10.3.1 or above

Note: For proper functionality, the switch must be at the switch operating system version shown in Table 3 before proceeding with this configuration. Using a switch OS other than the versions specified in this document may have unpredictable results.

Note: The latest switch OS updates and documentation can be found at Dell.com/support.

3.1 Dell EMC recommended switch configuration

The steps in this section show how to configure two Dell EMC Networking S4048-ON or S4048T-ON switches with a link aggregation group (LAG). The switches are interconnected using two of the 40 GbE QSFP ports. The LAG is configured for Dynamic Link Aggregation Control Protocol (LACP). This example uses physical ports 49 and 50 for the 40 GbE interconnect between the two switches.

Note: LAGs for inter-switch connections are mandatory for PS Series iSCSI SAN environments and optional for SC Series iSCSI SAN environments.

Note: The factory default user ID/password is **admin/admin.**

3.1.1 Check switch operating system version

```
OS10# show version
```

Note: If the active version displayed here is not 10.3.1 or above, visit Dell.com/support and download the latest update for the switches.

3.1.2 Delete startup configuration

Note: This example assumes a switch is using the default configuration settings. Using the **delete startup-configuration** command will set the startup configuration file to its default settings. Always back up your configuration settings prior to performing any configuration changes.

```
OS10# delete startup-configuration
Proceed to delete startup-config [confirm yes/no(default)]yes
OS10# reload
System configuration has been modified. Save? [yes/no]no
Proceed to reboot the system? [confirm yes/no]yes
```

Note: The switch will reboot.

3.1.3 Configure out-of-band management port

```
OS10# configure terminal
OS10(config)# interface mgmt 1/1/1
OS10(conf-if-ma-1/1/1)# no ip address dhcp
OS10(conf-if-ma-1/1/1)# ip address <ipaddress>/<subnet>
OS10(conf-if-ma-1/1/1)# exit
```

3.1.4 Configure login credentials

```
OS10(config)# username admin password $0$<password>
```

3.1.5 Disable iSCSI monitoring

```
OS10(config)# no iscsi enable
OS10(config)# no iscsi session-monitoring enable
```

3.1.6 Enable switch ports

Switch ports are enabled and are configured for **switchport mode access** by default for S4048-ON and S4048T-ON switches. If choosing to reconfigure the ports, use the following steps.

Option 1: Enable ports individually by entering the port number.

```
OS10# configure terminal
OS10(config)#interface ethernet 1/1/1
OS10(conf-if-eth1/1/1)# switchport mode access
OS10(conf-if-eth1/1/1)# no shutdown
OS10(conf-if-eth1/1/1)# exit
```

Option 2: Enable multiple ports at once using the **range** parameter.

```
OS10# configure terminal
OS10(config)# interface range ethernet 1/1/1-1/1/48
OS10(conf-range-eth1/1/1-1/1/48)# switchport mode access
OS10(conf-range-eth1/1/1-1/1/48)# no shutdown
```

3.1.7 Enable Jumbo frames and flow control

```
OS10(conf-range-eth1/1/1-1/1/48)# mtu 9216
OS10(conf-range-eth1/1/1-1/1/48)# flowcontrol receive on
OS10(conf-range-eth1/1/1-1/1/48)# flowcontrol transmit off
```

3.1.8 Configure spanning tree on edge ports

```
OS10(conf-range-eth1/1/1-1/1/48)# spanning-tree port type edge
OS10(conf-range-eth1/1/1-1/1/48)# exit
```

Note: Spanning tree is enabled by default. If it needs to be reconfigured, use the following command.

```
OS10(config)# no spanning-tree disable
```

3.1.9 Configure port channel for link aggregation

Note: This section is mandatory for PS Series SANs and optional for SC Series SANs.

Use the following commands to create a port channel or link aggregation used as an interconnect between two switches.

```
OS10(config)#interface port-channel 1
OS10(conf-if-po-1)#mtu 9216
OS10(conf-if-po-1)#no shutdown
OS10(conf-if-po-1)#exit
```

This configuration guide uses ports 1/1/49 and 1/1/50 as port-channel member ports which are configured using following commands.

```
OS10(config)#interface range ethernet 1/1/49-1/1/50
OS10(conf-range-eth1/1/49-1/1/50)# no switchport
OS10(conf-range-eth1/1/49-1/1/50)# channel-group 1 mode active
OS10(conf-range-eth1/1/49-1/1/50)# mtu 9216
OS10(conf-range-eth1/1/49-1/1/50)# flowcontrol receive on
OS10(conf-range-eth1/1/49-1/1/50)# flowcontrol transmit off
OS10(conf-range-eth1/1/49-1/1/50)# no shutdown
OS10(conf-range-eth1/1/49-1/1/50)# end
OS10#
```

3.1.10 Save configuration

```
OS10#copy running-configuration startup-configuration
OS10#reload
System configuration has been modified. Save? [yes/no]: yes
Proceed to reboot the system? [confirm yes/no]:yes
```

3.1.11 Configure additional switch

Repeat the commands from section 3.1 to configure the second switch.

Note: The preceding procedure places all switch ports in the default VLAN. If you prefer to place ports in a non-default VLAN, refer to the switch documentation.

3.2 Configure Data Center Bridging (optional)

To enable Data Center Bridging (DCB) mode on the switch, use the following commands.

Note: You must complete the Dell EMC recommended switch configuration steps in section 3.1 before configuring the switch for DCB mode.

3.2.1 Disable iSCSI

```
OS10# configure terminal
OS10(config)# no iscsi enable
OS10(config)# no iscsi session-monitoring enable
```

3.2.2 Disable 802.3x flowcontrol on all ports

```
OS10(config)# interface range ethernet 1/1/1-1/1/50
OS10(conf-range-eth1/1/1-1/1/50)# no flowcontrol receive
OS10(conf-range-eth1/1/1-1/1/50)# no flowcontrol transmit
OS10(conf-range-eth1/1/1-1/1/50)# exit
```

3.2.3 Create tagged VLAN for all ports and port-channels

Note: You must supply a VLAN ID. The valid range is 2-4093.

The following commands configure a single VLAN ID. If desired, multiple VLAN IDs can be created on the switch and assigned to ports.

```
OS10(config)# interface vlan <vlan-id>
OS10(conf-if-vl-<vlan-id>)# mtu 9216
OS10(conf-if-vl-<vlan-id>)# no shutdown
OS10(conf-if-vl-<vlan-id>)# exit
```

3.2.4 Create QoS policy-map with dot1p values as trusted

```
OS10(config)# policy-map type qos <trust-policy-map-name>
OS10(config-pmap-qos)# class class-trust
OS10(config-pmap-c-qos)# trust dot1p
OS10(config-pmap-c-qos)# exit
OS10(config-pmap-qos)# exit
```

3.2.5 Create PFC dot1p traffic class

The following commands configure a network QoS class map and match the iSCSI traffic class.

```
OS10(config)# class-map type network-qos <iSCSI-class-map-name>
OS10 (config-cmap-nqos)# match qos-group 4
OS10 (config-cmap-nqos)# exit
```

3.2.6 Configure network QoS policy map

```
OS10(config)# policy-map type network-qos <policy-map-name>
OS10(config-pmap-network-qos)# class <iSCSI-class-map-name>
OS10 (config-pmap-c-nqos)# pause
OS10 (config-pmap-c-nqos)# pfc-cos 4
OS10 (config-pmap-c-nqos)# exit
OS10(config-pmap-network-qos)# exit
OS10(config)# policy-map type application <qos-policy-map-name>
OS10(config-pmap-application)# class class-iscsi
OS10 (config-pmap-c-app)# set qos-group 4
OS10 (config-pmap-c-app)# set cos 4
OS10 (config-pmap-c-app)# exit
OS10(config-pmap-application)# exit
```

3.2.7 Configure ETS policies

```
OS10(config)# qos-map traffic-class <queue-map-name>
OS10(config-qos-map)# queue 0 qos-group 0-3,5-7
OS10(config-qos-map)# queue 4 qos-group 4
OS10(config-qos-map)# exit
OS10(config)# class-map type queuing <LAN-traffic-map-name>
OS10(config-cmap-queuing)# match queue 0
OS10(config-cmap-queuing)# exit
OS10(config)# class-map type queuing <iSCSI-traffic-map-name>
OS10(config-cmap-queuing)# match queue 4
OS10(config-cmap-queuing)# exit
```

3.2.8 Create ETS policy-map for bandwidth allocations

```
OS10(config)# policy-map type queuing <queuing-policy-name>
OS10(config-pmap-queuing)# class <LAN-traffic-map-name>
OS10(config-pmap-c-que)# bandwidth percent <bandwidth-percentage>
OS10(config-pmap-c-que)# exit
OS10(config-pmap-queuing)# class <iSCSI-traffic-map-name>
OS10(config-pmap-c-que)# bandwidth percent <bandwidth-percentage>
OS10(config-pmap-c-que)# exit
OS10(config-pmap-queuing)# exit
```

Note: The sum of the bandwidth-percentages must be equal to 100. Monitor the LAN and SAN performance in your environment to determine optimal bandwidth settings.

3.2.9 Apply policies and VLAN ID to all switch edge ports (except port-channel member ports)

```
OS10(config)# interface range ethernet 1/1/1-1/1/48
OS10(conf-range-eth1/1/1-1/1/48)# switchport mode trunk
OS10(conf-range-eth1/1/1-1/1/48)# switchport trunk allowed vlan <vlan-id>
OS10(conf-range-eth1/1/1-1/1/48)# service-policy input type network-qos <policy-map-name>
OS10(conf-range-eth1/1/1-1/1/48)# service-policy output type queuing <queuing-policy-name>
OS10(conf-range-eth1/1/1-1/1/48)# ets mode on
OS10(conf-range-eth1/1/1-1/1/48)# qos-map traffic-class <queue-map-name>
OS10(conf-range-eth1/1/1-1/1/48)# priority-flow-control mode on
OS10(conf-range-eth1/1/1-1/1/48)# exit
```

3.2.10 Apply policies and VLAN ID on port-channel and its member ports

```
OS10(config)# interface port-channel 1
OS10(conf-if-po-1)# switchport mode trunk
OS10(conf-if-po-1)# switchport trunk allowed vlan <vlan-id>
OS10(conf-if-po-1)# no shutdown
OS10(conf-if-po-1)# exit
```

This configuration guide uses ports 1/1/49 and 1/1/50 as port-channel member ports which are configured using following commands.

```
OS10(config)# interface range ethernet 1/1/49-1/1/50
OS10(conf-range-eth1/1/49-1/1/50)# service-policy input type network-qos <policy-map-name>
OS10(conf-range-eth1/1/49-1/1/50)# service-policy output type queuing <queuing-policy-name>
OS10(conf-range-eth1/1/49-1/1/50)# ets mode on
OS10(conf-range-eth1/1/49-1/1/50)# qos-map traffic-class <queue-map-name>
OS10(conf-range-eth1/1/49-1/1/50)# priority-flow-control mode on
OS10(conf-range-eth1/1/49-1/1/50)# exit
```

3.2.11 Set system QoS policies

```
OS10(config)# system qos
OS10(config-sys-qos)# service-policy input type qos <trust-policy-map-name>
OS10(config-sys-qos)# service-policy type application <qos-policy-map-name>
OS10(config-sys-qos)# ets mode on
OS10(config-sys-qos)# exit
```

3.2.12 Enable DCB

```
OS10(config)# dcbx enable
OS10(config)# exit
```

3.2.13 Save configuration

```
OS10# copy running-configuration startup-configuration
```

3.2.14 Reload switch

```
OS10# reload
Proceed to reboot the system? [confirm yes/no]:yes
```

3.2.15 Configure additional switches

Repeat the commands from section 3.2 to configure DCB on additional switches.

3.2.16 Verify DCB status

```
OS10# show lldp dcbx interface ethernet 1/1/<port-number>
```

3.2.17 Show commands to verify DCBx, ETS, and PFC status on individual ports

```
OS10# show lldp dcbx interface ethernet 1/1/<port-number>
OS10# show lldp dcbx interface ethernet 1/1/<port-number> pfc detail
OS10# show lldp dcbx interface ethernet 1/1/<port-number> ets detail
```

A Technical support and resources

Dell.com/support is focused on meeting customer needs with proven services and support.

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.

A.1 Related resources

See the following referenced or recommended Dell publications:

- *Dell PS Series Configuration Guide*
- *Dell EMC Storage Compatibility Matrix*

For best practices white papers, reference architectures, and sizing guidelines for enterprise applications and SANs, refer to PS Series Technical Documents or SC Series Technical Documents.