



Cisco Nexus 5548UP

Switch Configuration Guide for Dell SC Series SANs

Dell Storage Engineering
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Revisions

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Table of contents

Revisions	2
1 Introduction	4
1.1 Document conventions	4
1.2 Audience	4
1.3 Switch details	4
1.4 Cabling diagram	5
2 Dell recommended switch configuration	6
2.1 Hardware configuration	6
2.2 Delete startup configuration	6
2.3 Running the basic system configuration	7
2.4 Enable link level flow control (802.3x)	8
2.5 Configure portfast on edge ports	8
2.6 Enable VLAN	9
2.7 Enable switch ports	9
2.8 Configure the Nexus policy engine	9
2.8.1 Configure CoS for iSCSI	9
2.8.2 Define a QoS map for iSCSI	9
2.8.3 Define a QoS policy map for iSCSI	10
2.8.4 Define a Network QoS class map	10
2.8.5 Define a no-drop policy map and enable jumbo frames	10
2.8.6 Define a queuing class-map	10
2.8.7 Define a queuing policy-map	10
2.9 Apply the Nexus policies	11
2.10 Save configuration	11
2.11 Configure additional switch	11
2.12 Disabling DCB (alternative method)	11
A Additional resources	12
A.1 Related documentation	12
A.2 Cisco support	12



1 Introduction

This document illustrates how to configure Cisco® Nexus® 5548UP switches for use with Dell™ SC Series storage using Dell best practices.

For more information on SC Series SAN design recommendations, see the *Storage Center System Manager Administrator's Guide* and *Storage Center Deployment Guide* at the [Customer Portal](#) (login required).

1.1 Document conventions

Table 1 lists the formatting conventions used in this document.

Table 1 Document conventions

Format	Description	Example
Bold	User input	Dell> enable
<i>Italic</i>	Placeholder or variable	<i>your password</i>
< <i>Italic</i> > < <i>brackets</i> >	Separate variables	< <i>ip address</i> > < <i>mask</i> >

1.2 Audience

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

1.3 Switch details

The table below provides an overview of the switch configuration.

Table 2 Switch specifications

Cisco Nexus 5548UP	
Switch vendor	Cisco
Switch model	Nexus 5548UP
Switch firmware	7.1(0)N1(1b)

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

The latest firmware updates and documentation can be found at www.cisco.com (requires login).



1.4 Cabling diagram

The cabling diagram shown below represents the Dell recommend method for deploying your servers and SC Series storage arrays.

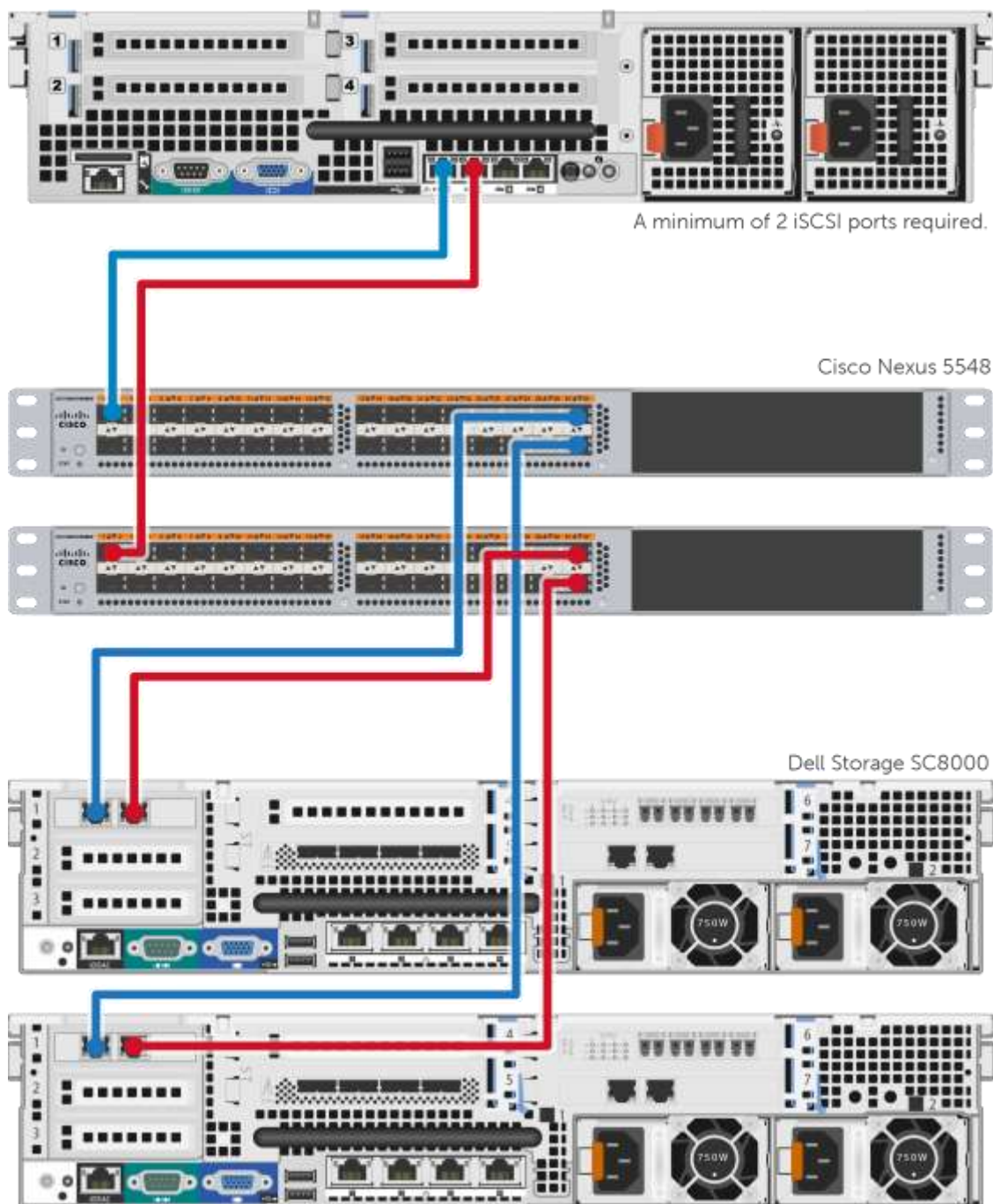


Figure 1 Cabling diagram

2 Dell recommended switch configuration

Follow the steps in this section to configure two Cisco Nexus 5548UP switches without using any interconnect between the two switches.

Note: The configuration steps in this section are only recommended when the switch is used as a dedicated SAN for iSCSI traffic (not shared with LAN traffic).

2.1 Hardware configuration

1. Power on both switches.
2. Connect a serial cable to the management port.
3. Using PuTTY or another 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.

2.2 Delete startup configuration

Note: This example assumes a switch at its default configuration settings. Using the `write erase` command will set the startup configuration file to its default settings. Always back up your configuration settings prior to performing any configuration changes.

```
switch#write erase
```

```
Warning: This command will erase the startup-configuration  
Do you wish to proceed anyway ? (y/n) [n] y
```

```
switch# reload
```

```
WARNING: this command will reboot the system  
Do you want to continue? (y/n) [n] y
```

Note: The switch will reboot.



2.3 Running the basic system configuration

The following steps use the setup utility to configure connectivity for basic management of the system.

After the switch fully reboots, the following prompts appear:

```
Abort Power On Auto Provisioning and continue with normal setup ?(yes/no) [n]: y
---- System Admin Account Setup ----
Do you want to enforce secure password standard (yes/no): yes
Enter the password for "admin": my password
Confirm the password for "admin": my password
---- Basic System Configuration Dialog ----
```

This setup utility will guide you through the basic configuration of the system. Setup configures only enough connectivity for management of the system.

Please register Cisco Nexus 5000 Family devices promptly with your supplier. Failure to register may affect response times for initial service calls. Nexus devices must be registered to receive entitled support services.

Press Enter at anytime to skip a dialog. Use ctrl-c at anytime to skip the remaining dialogs.

```
Would you like to enter the basic configuration dialog (yes/no): yes
Create another login account (yes/no) [n]: n
Configure read-only SNMP community string (yes/no) [n]: n
Configure read-write SNMP community string (yes/no) [n]: n
Enter the switch name : my switch name
Continue with Out-of-band (mgmt0) management configuration? (yes/no) [y]: y
Mgmt0 IPv4 address : my IP address
Mgmt0 IPv4 netmask : my netmask
Configure the default gateway? (yes/no) [y]: y
IPv4 address of the default gateway : my gateway
Enable the telnet service? (yes/no) [n]: y
Enable the ssh service? (yes/no) [y]: n
Configure the ntp server? (yes/no) [n]: n
Enter basic FC configurations (yes/no) [n]: n
```

The following configuration will be applied:

```
switchname my switch name
interface mgmt0
ip address my ip address my netmask
no shutdown
exit
vrf context management
ip route 0.0.0.0/0 my gateway
exit
```



```
telnet server enable
no ssh server enable
```

```
Would you like to edit the configuration? (yes/no) [n]: n
Use this configuration and save it? (yes/no) [y]: y
[#####] 100%
Copy complete, now saving to disk (please wait)...
```

Log in with the credentials created in the previous steps.

Note: All steps in section 2.3 are required in order to properly disable DCB. Also, when upgrading from previous versions to this new version 7.1(0)N1(1b), section 2.3 must also be performed to properly disable DCB.

```
switch# configure
switch(config)#lldp tlv-select dcbxp
switch(config)#copy running-config startup-config
switch(config)#no lldp tlv-select dcbxp
switch(config)#exit
switch#copy running-config startup-config
```

Note: The above steps are needed due to "CSCuo63486 LLDP - link err-disabled upon reload when dcbx tlv is disabled".

2.4 Enable link level flow control (802.3x)

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.

```
switch# configure
switch(config)#interface ethernet 1/1-32
switch(config-if-range)#priority-flow-control mode off
switch(config-if-range)#flowcontrol send off
switch(config-if-range)#flowcontrol receive on
switch(config-if-range)#exit
```

2.5 Configure portfast on edge ports

```
switch(config)#interface ethernet 1/1-32
```

```
switch(config-if-range)#spanning-tree port type edge
```

Warning: edge port type (portfast) should only be enabled on ports connected to a single host. Connecting hubs, concentrators, switches, bridges, etc... to this interface when edge port type (portfast) is enabled, can cause temporary bridging loops. Use with CAUTION.



Edge Port Type (Portfast) will be configured in 48 interfaces due to the range command but will only have effect when the interfaces are in a non-trunking mode.

```
switch(config-if-range) #exit
```

2.6 Enable VLAN

The following example uses VLAN 101 and configures a range of ports. Any valid VLAN (between 2-4094) may be substituted.

```
switch(config) # vlan 101  
switch(config-vlan) # exit  
switch(config) # interface ethernet 1/1-32  
switch(config-if-range) # switchport access vlan 101  
switch(config-if-range) # exit
```

2.7 Enable switch ports

The following example enables a range of ports. If preferred, enable individual ports as needed.

```
switch(config) # interface ethernet 1/1-32  
switch(config-if-range) # shutdown  
switch(config-if-range) # no shutdown  
switch (config-if-range) # exit
```

2.8 Configure the Nexus policy engine

The following example configures iSCSI traffic for Class of Service (CoS) 4 and Quality of Service (QoS) group 3.

2.8.1 Configure CoS for iSCSI

Repeat this step for each individual interface connected to host and array controller ports, or specify a range of ports to configure.

```
switch(config) # interface ethernet 1/1-32  
switch(config-if-range) # untagged cos 4  
switch(config-if-range) # exit
```

2.8.2 Define a QoS map for iSCSI

```
switch(config) # class-map type qos class-iscsi  
switch(config-cmap-qos) # match cos 4  
switch(config-cmap-qos) # exit
```



2.8.3 Define a QoS policy map for iSCSI

```
switch(config)# policy-map type qos policy-qos  
switch(config-pmap-qos)# class type qos class-iscsi  
switch(config-pmap-c-qos)# set qos-group 3  
switch(config-pmap-c-qos)# exit  
switch(config-pmap-qos)# exit
```

2.8.4 Define a Network QoS class map

```
switch(config)# class-map type network-qos class-iscsi  
switch(config-cmap-nq)# match qos-group 3  
switch(config-cmap-nq)# exit
```

2.8.5 Define a no-drop policy map and enable jumbo frames

```
switch(config)# policy-map type network-qos policy-nq  
switch(config-pmap-nq)# class type network-qos class-iscsi  
switch(config-pmap-nq-c)# mtu 9216  
switch(config-pmap-nq-c)# pause no-drop  
switch(config-pmap-nq-c)# exit
```

Note: The following steps are optional and will enable jumbo MTU for the default class (i.e., non-iSCSI traffic).

```
switch(config-pmap-nq)#class type network-qos class-default  
switch(config-pmap-nq-c)#mtu 9216  
switch(config-pmap-nq-c)# exit  
switch(config-pmap-nq)# exit
```

2.8.6 Define a queuing class-map

```
switch(config)# class-map type queuing class-iscsi  
switch(config-cmap-que)# match qos-group 3
```

2.8.7 Define a queuing policy-map

```
switch(config-cmap-que)# policy-map type queuing policy-queuing  
switch(config-pmap-que)# class type queuing class-default  
switch(config-pmap-c-que)# bandwidth percent 5  
switch(config-pmap-c-que)# class type queuing class-fcoe  
switch(config-pmap-c-que)# bandwidth percent 0  
switch(config-pmap-c-que)# class type queuing class-iscsi  
switch(config-pmap-c-que)# bandwidth percent 95  
switch(config-pmap-c-que)# exit  
switch(config-pmap-que)# exit
```



2.9 Apply the Nexus policies

```
switch(config)# system qos
switch(config-sys-qos)# service-policy type qos input policy-qos
switch(config-sys-qos)# service-policy type queuing output policy-queuing
switch(config-sys-qos)# service-policy type queuing input policy-queuing
switch(config-sys-qos)# service-policy type network-qos policy-nq
switch(config-sys-qos)# exit
switch(config)# exit
```

2.10 Save configuration

```
switch#copy running-config startup-config
```

2.11 Configure additional switch

Repeat the commands from Sections 2.1 through 2.10 to configure the second switch.

2.12 Disabling DCB (alternative method)

Note: With the Cisco Nexus firmware 7.1(0)N1(1b), DCB functionality can be disabled using the configuration steps in Section 2.3 of this document. As an alternative, disabling LLDP support can effectively prevent the negotiation of DCB by preventing the transmission of DCBx frames. However, disabling LLDP may also reduce functionality necessary for other protocols. **Only disable LLDP if instructed by Dell support.** The following example disables LLDP support on ports 1 through 32.

```
switch#configure
switch(config)#interface ethernet 1/1-32
switch(config-if-range)# no lldp receive
switch(config-if-range)# no lldp transmit
```



A Additional resources

For Copilot support of Dell SC Series products:

- SC Series [Customer Portal](#) (login required)
- [Global online support](#)
- Email: support@compellent.com (non-emergency business hours)
- Phone: 866-EZ-STORE (866-397-8673) (United States only)

The [Customer Portal](#) is an online portal for existing customers. A valid portal account is required to access the Knowledge Center within the Customer Portal.

A.1 Related documentation

See the following referenced or recommended Dell publications:

- *Storage Center System Manager Administrator's Guide* on the [Customer Portal](#) (requires login)
- *Storage Center Deployment Guide* on the [Customer Portal](#) (requires login)
- [Dell Storage Compatibility Matrix](#)
- [Compellent Technical Content on Dell TechCenter](#) includes SC Series best practices, white papers, reference architectures, and sizing guidelines for enterprise applications and SANs.

A.2 Cisco support

Visit support.cisco.com for support and information regarding Cisco networking products.

