



Dell Networking S3048-ON

Switch Configuration Guide for Dell PS Series SANs

Dell Storage Engineering
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Revisions

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1 Introduction

This document illustrates how to configure Dell Networking S3048-ON switches for use with Dell™ PS Series storage using Dell best practices. The recommended configuration uses Link Aggregation Groups (LAGs) for inter-switch connections. Optional steps are provided in section 3 for stack configurations.

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 PS Series SAN design recommendations, see the PS Series *Configuration Guide* at: www.Delltechcenter.com/page/equallogic+configuration+guide.

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> |

1.2 Audience

This switch configuration guide describes an optimal configuration following Dell best practices for a PS 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

| Dell Networking S3048-ON | |
|--------------------------|------------------|
| Switch vendor | Dell |
| Switch model | S3048-ON |
| Switch firmware | 9.8.0.0 or later |



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

The latest firmware updates and documentation can be found at: www.force10networks.com. This site requires a login.



1.4 Cabling diagram

The cabling diagram shown below represents the Dell recommended method for deploying your servers and PS Series arrays.

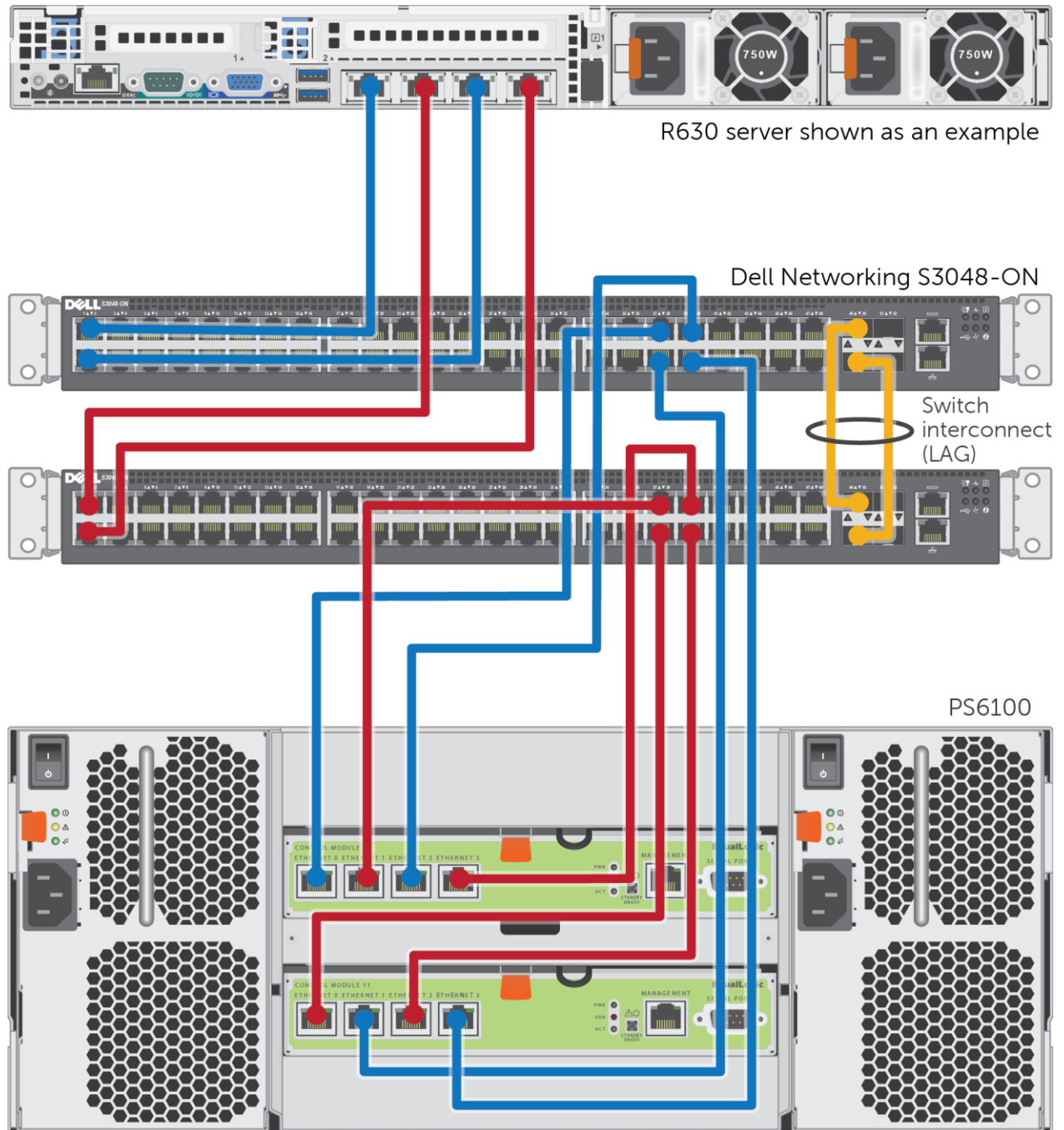


Figure 1 Cabling diagram

2 Dell recommended switch configuration

Use the following steps to configure two S3048 switches with a Link Aggregation Group (LAG). The switches are interconnected using two of the 40 GbE Quad Small Form-factor Pluggable (QSFP) uplink ports, and the LAG is configured for Dynamic Link Aggregation Control Protocol (LACP).

2.1 Hardware configuration

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 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 115200,N,8,1 and no flow control.
5. Connect the (SFP+) 10GbE cables between the switches by connecting port 49 and port 50 on switch 1 to port 49 and port 50 on switch 2, respectively. See this configuration in Figure 1.

2.2 Delete startup configuration

Note: The following commands will delete all configuration settings.

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

Note: The switch will reboot.

2.3 Configure out of band (OOB) management port

```
Dell>enable
```

After the startup configuration is deleted, the factory default Enable mode password is **calvin**.

```
Dell>#configure  
Dell (conf) #interface ManagementEthernet 1/1  
Dell (conf-if-ma-1/1) #no shutdown  
Dell (conf-if-ma-1/1) #ip address ipaddress mask  
Dell (conf-if-ma-1/1) #exit
```



2.4 Configure route for OOB management port (optional)

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

Note: 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 example above assumes a class C subnet mask.

2.5 Configure login credentials

```
Dell(conf)#username admin privilege 15 password 0 yourpassword  
Dell(conf)#enable password level 15 0 yourpassword
```

2.6 Enable switch ports

Option 1: You can enable ports individually by entering the port number.

```
Dell(conf)#interface gigabitethernet 1/1  
Dell(conf-if-gi-1/1)#switchport  
Dell(conf-if-gi-1/1)#no shutdown  
Dell(conf-if-gi-1/1)#no ip address  
Dell(conf-if-gi-1/1)#exit  
Dell(conf)#exit
```

Option 2: You can enable multiple ports at once using the 'range' parameter.

```
Dell#configure  
Dell(conf)#interface range gigabitethernet 1/1-1/48  
Dell(conf-if-range-gi-1/1-1/48)#switchport  
Dell(conf-if-range-gi-1/1-1/48)#no shutdown  
Dell(conf-if-range-gi-1/1-1/48)#no ip address  
Dell(conf-if-range-gi-1/1-1/48)#exit  
Dell(conf)#exit
```

2.7 Configure LLDP

```
Dell#configure  
Dell(conf)#protocol lldp  
Dell(conf-lldp)#no disable  
Dell(conf-lldp)#exit
```



2.8 Enable Jumbo Frames

```
Dell(conf)# interface range gigabitethernet 1/1-1/48  
Dell(conf-if-range-gi-1/1-1/48)#mtu 12000
```

2.9 Configure flow control

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

2.10 Configure spanning tree on edge ports

Note: Make sure that the following command is used only on server- and storage-connected edge ports.

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

2.11 Configure port channel for LAG

These commands configure the switch interconnect as a LAG.

```
Dell(conf)#interface Port-channel 1  
Dell(conf-if-po-1)#mtu 12000  
Dell(conf-if-po-1)#switchport  
Dell(conf-if-po-1)#no shutdown  
Dell(conf-if-po-1)#no ip address  
Dell(conf-if-po-1)#exit
```

2.12 Configure QSFP ports for LAG

These commands assigns 40Gb QSFP ports to the Port Channel.

```
Dell(conf)#interface range tengigabitethernet 1/49-1/50  
Dell(conf-if-range-te-1/49-1/50)#no ip address  
Dell(conf-if-range-fo-1/49,fo-1/50)#mtu 12000  
Dell(conf-if-range-te-1/49,fo-1/50)#no shutdown  
Dell(conf-if-range-fo-1/49,fo-1/50)#flowcontrol rx on tx off  
Dell(conf-if-range-fo-1/49,fo-1/50)#port-channel-protocol lacp  
Dell(conf-if-range-fo-1/49,fo-1/50-lacp)#port-channel 1 mode active  
Dell(conf-if-range-fo-1/49,fo-1/50-lacp)#exit  
Dell(conf-if-range-fo-1/49,fo-1/50)#exit  
Dell(conf)#exit
```



2.13 Save configuration

```
Dell#copy running-config startup-config
```

2.14 Configure additional switch

Repeat the commands from sections 2.2–2.13 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.



3 Optional stack configuration

If you wish to use a stack configuration instead of LAG, follow the instructions below instead of the instructions in section 2.

Note: One advantage of stacked switches is that they can be managed as a single switch; however firmware updates will update all members of the stack simultaneously and therefore should only be done during planned downtime.

3.1 Delete startup configuration on first switch

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

Note: The switch will reboot.

3.2 Configure stack on the first switch

```
Dell>enable
```

After the startup configuration is deleted, the factory default Enable mode password is **calvin**.

```
Dell#configure  
Dell(conf)#stack-unit 1 priority 1
```

Configuring Tenggigabitethernet 1/49 and 1/50 ports as stacking ports.

```
Dell(conf)#stack-unit 1 stack-group 0  
Dell(conf)#00:02:00: %STKUNIT1-M:CP %IFMGR-6-STACK_PORTS_ADDED: Ports Te  
1/49 have been configured as stacking ports. Please save and reset stack-  
unit 1 for config to take effect  
Dell(conf)#stack-unit 1 stack-group 1  
Dell(conf)#00:02:17: %STKUNIT1-M:CP %IFMGR-6-STACK_PORTS_ADDED: Ports Te  
1/50 have been configured as stacking ports. Please save and reset stack-  
unit 1 for config to take effect  
Dell(conf)#exit
```



```
Dell#copy running-config startup-config
Dell#reload
```

3.3 Delete startup configuration on the second switch

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

Note: The switch will reboot.

3.4 Configure stack on the second switch

```
Dell>enable
Dell#stack-unit 1 renumber 2
Renumbering management unit will reload the stack.
Warning: Interface configuration for current unit will be lost!
Proceed[confirm yes/no]:yes
System configuration has been modified. Save? [yes/no]: yes
```

Note: After confirming configuration change, the switch will reboot.

```
Dell>enable
```

After the startup configuration is deleted, the factory default Enable mode password is **calvin**.

```
Dell#configure
Dell(conf)#stack-unit 2 priority 1
```

Configuring TenGigabitEthernet 2/49 and 2/50 ports as stacking ports.

```
Dell(conf)#stack-unit 2 stack-group 0
Dell(conf)#00:01:36: %STKUNIT2-M:CP %IFMGR-6-STACK_PORTS_ADDED: Ports Te
2/49 have been configured as stacking ports. Please save and reset stack-
unit 2 for config to take effect
Dell(conf)#stack-unit 2 stack-group 1
```



```

Dell(conf)#00:01:40: %STKUNIT2-M:CP %IFMGR-6-STACK_PORTS_ADDED: Ports Te
2/50 have been configured as stacking ports. Please save and reset stack-
unit 2 for config to take effect
Dell(conf)#exit
Dell#copy running-config startup-config
Proceed to copy the file [confirm yes/no]: yes
Dell#reload

```

3.5 Verify stack configuration

From the first switch (Master) CLI, confirm that the stack has formed:

```

Dell#show redundancy
Dell#show boot system stack-unit all

```

Note: The switch front panel will show a steady light in the MASTER LED for the master unit and the light would be off for the standby unit. All of the following configuration steps must be performed from the master switch.

3.6 Configure out of band (OOB) management port

```

Dell#config
Dell(conf)#interface ManagementEthernet 1/1
Dell(conf-if-ma-1/1)#ip address ipaddress mask
Dell(conf-if-ma-1/1)#no shutdown
Dell(conf-if-ma-1/1)#exit

```

3.7 Configure route for OOB management port (optional)

```

Dell(conf)#management route X.Y.Z.0 /24 A.B.C.1

```

Note: 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 example above assumes a class C subnet mask.

3.8 Configure login credentials

```

Dell(conf)#username admin privilege 15 password 0 yourpassword
Dell(conf)#enable password level 15 0 yourpassword

```



3.9 Configuring switch ports

```
Dell(conf)#interface range gigabitethernet 1/1-1/48
Dell(conf-if-range-te-1/1-48)#mtu 12000
Dell(conf-if-range-te-1/1-48)#switchport
Dell(conf-if-range-te-1/1-48)#spanning-tree rstp edge-port
Dell(conf-if-range-te-1/1-48)#flowcontrol rx on tx off
Dell(conf-if-range-te-1/1-48)#no shutdown
Dell(conf-if-range-te-1/1-48)#no ip address
Dell(conf-if-range-te-1/1-48)#exit

Dell(conf)#interface range gigabitethernet 2/1-2/48
Dell(conf-if-range-te-2/1-2/48)#mtu 12000
Dell(conf-if-range-te-2/1-2/48)#switchport
Dell(conf-if-range-te-2/1-2/48)#spanning-tree rstp edge-port
Dell(conf-if-range-te-2/1-2/48)#flowcontrol rx on tx off
Dell(conf-if-range-te-2/1-2/48)#no shutdown
Dell(conf-if-range-te-2/1-2/48)#no ip address
Dell(conf-if-range-te-2/1-2/48)#exit

Dell(conf)# protocol spanning-tree rstp
Dell(conf-rstp)#no disable
Dell(conf-rstp)#exit
Dell(conf)#protocol lldp
Dell(conf-lldp)#no disable
Dell(conf-lldp)#exit
```

3.10 Save configuration and reload

```
Dell#copy running-config startup-config
```

Reload the stack to allow settings to take effect:

```
Dell#reload
```

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.



Additional resources

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

[DellTechCenter.com](http://delltechcenter.com) is an IT Community where you can connect with Dell Customers and Dell employees for the purpose of sharing knowledge, best practices, and information about Dell products and your installations.

Referenced or recommended Dell publications:

- Dell PS Series Configuration Guide:
<http://en.community.Dell.com/techcenter/storage/w/wiki/equallogic-configuration-guide.aspx>
- Dell PS Series Compatibility Matrix:
<http://en.community.Dell.com/techcenter/storage/w/wiki/2661.equallogic-compatibility-matrix.aspx>

For PS Series best practices white papers, reference architectures, and sizing guidelines for enterprise applications and SANs, refer to:

<http://en.community.dell.com/techcenter/storage/w/wiki/2660.equallogic-technical-content>

