Dell Networking S3048-ON

Switch Configuration Guide for Dell PS Series SANs

Dell Storage Engineering
July 2015

A Dell Deployment and Configuration Guide
## Revisions

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
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<tbody>
<tr>
<td>July 2015</td>
<td>Initial release</td>
</tr>
</tbody>
</table>

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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>
<thead>
<tr>
<th>Format</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bold</td>
<td>User input</td>
<td>Dell-enable</td>
</tr>
<tr>
<td>Italic</td>
<td>Placeholder or variable</td>
<td>your password</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Dell Networking S3048-ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch vendor</td>
</tr>
<tr>
<td>Switch model</td>
</tr>
<tr>
<td>Switch firmware</td>
</tr>
</tbody>
</table>
**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](http://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.

![Cabling diagram](image)

Figure 1 Cabling diagram
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.
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 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 Tengigabitethernet 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
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
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 is focused on meeting your needs with proven services and support.

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:


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