Dell Networking S3148p/S3124

Switch Configuration Guide for Dell PS Series SANs

Dell Storage Engineering
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A Dell Deployment and Configuration Guide
### Revisions

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 2015</td>
<td>Initial release</td>
</tr>
<tr>
<td>August 2016</td>
<td>Prompts corrected in sections 2.13 and 3.8</td>
</tr>
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</table>

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1 Introduction

This document illustrates how to configure Dell Networking S3148p or S3124 switches 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 information on PS Series SAN design recommendations, see the 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><strong>Bold</strong></td>
<td>User input</td>
<td>Dell&gt;<code>enable</code></td>
</tr>
<tr>
<td><em>Italic</em></td>
<td>Placeholder or variable</td>
<td><code>your password</code></td>
</tr>
<tr>
<td><code>&lt;Italic&gt;</code></td>
<td>Separate variables</td>
<td><code>&lt;ip address&gt;</code> <code>&lt;mask&gt;</code></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

Table 2 provides an overview of the switch configuration.

<table>
<thead>
<tr>
<th><strong>Dell Networking S3148p / S3124</strong></th>
</tr>
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<tbody>
<tr>
<td><strong>Switch vendor</strong></td>
</tr>
<tr>
<td><strong>Switch model</strong></td>
</tr>
<tr>
<td><strong>Switch firmware</strong></td>
</tr>
</tbody>
</table>

**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.

Find the latest firmware updates and documentation at: www.force10networks.com (login required).
1.4 Cabling diagram

The cabling diagram shown in Figure 1 represents the Dell recommend method for deploying servers with Dell PS Series arrays.

Figure 1  Cabling diagram
2 Dell recommended switch configuration
Follow these steps to configure two S3148p or S3124 switches with a LAG. The switches are interconnected using two of the 10GbE Small Form-factor Pluggable (SFP+) 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 9600,N,8,1 and no flow control.
5. Connect the (SFP+) 10GbE cables between the switches.
   - S3148: Connect ports 49 and 50 on switch 1 to ports 49 and 50 on switch 2, respectively. See this configuration in Figure 1.
   - S3124: Connect 10GbE ports 25 and 26 on switch 1 to 25 and 26 ports on switch 2, respectively.

2.2 Delete startup configuration

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

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 Disable iSCSI optimization

Dell>enable
Dell>configure
Dell(conf)#no iscsi enable

2.4 Configure out of band (OOB) management port

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
2.5 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.

2.6 Configure login credentials

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

2.7 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

Note: For the S3124 switch, use:
Dell(conf)#interface range gigabitethernet 1/1-1/24

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

2.8 Enable Jumbo Frames

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.

```bash
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 LLDP

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

2.12 Configure port channel for LAG

These commands configure the switch interconnect as a LAG.

```bash
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
```

2.13 Configure SFP+ ports for LAG

These commands assign 10Gb SFP+ ports to the Port Channel.

```bash
Dell(conf)#interface range tengigabitethernet 1/49-1/50

**Note:** For the S3124 switch, use:
Dell(conf)#interface range tengigabitethernet 1/25-1/26

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

Dell#`copy running-config startup-config`

2.15 **Configure additional switch**

Repeat the commands from section 2 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

**Note:** If you wish to use a stack configuration instead of LAG, use the following instructions instead of the instructions in section 2.

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 all switches

**Note:** To run the following commands on the serial console, first connect serially to the switch using steps 1–4 in section 2.1.

```
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. Repeat the above steps for all switches.

### 3.2 Connect stacking cables for the switches

Connect the stacking cables using the stacking ports available on the switches. Once the stacking cables are connected, the switches will reboot and one of the switches will come up in master mode and others will be standby units.

### 3.3 Verify stack configuration

From the master switch CLI, confirm that the stack has formed:

```
Dell> enable
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 will be off for the standby unit. All of the following configuration steps must be performed from the master switch.

### 3.4 Disable iSCSI optimization

```
Dell# configure
Dell (conf)# no iscsi enable
```
3.5 Configure out of band (OOB) management port
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

3.6 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.

3.7 Configure login credentials
Dell(conf)#username admin privilege 15 password 0 <yourpassword>
Dell(conf)#enable password level 15 0 <yourpassword>

3.8 Configuring switch ports
Dell(conf)#interface range gigabitethernet 1/1-1/48

**Note:** For the S3124 switch, use:
Dell(conf)#interface range gigabitethernet 1/1-1/24

Dell(conf-if-range-gi-1/1-1/48)#mtu 12000
Dell(conf-if-range-gi-1/1-1/48)#switchport
Dell(conf-if-range-gi-1/1-1/48)#spanning-tree rstp edge-port
Dell(conf-if-range-gi-1/1-1/48)#flowcontrol rx on tx off
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)#interface range gigabitethernet 2/1-2/48

**Note:** For the S3124 switch, use:
Dell(conf)#interface range gigabitethernet 2/1-2/24

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

3.9 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.
A Additional resources

Dell.com/support 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:

- Dell PS Series Configuration Guide
- Dell Storage Compatibility Matrix
- For Dell PS Series best practices white papers, reference architectures, and sizing guidelines for enterprise applications and SANs, refer to the PS Series Technical Documents page.