HP 5900 Series

Switch Configuration Guide for EqualLogic SANs

Dell Storage Engineering
June 2014
Revisions

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>June 2014</td>
<td>Initial release</td>
</tr>
</tbody>
</table>

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# Table of contents

<table>
<thead>
<tr>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revisions</td>
</tr>
<tr>
<td>1  Introduction</td>
</tr>
<tr>
<td>1.1 Audience</td>
</tr>
<tr>
<td>1.2 Switch details</td>
</tr>
<tr>
<td>1.3 Cabling diagram</td>
</tr>
<tr>
<td>2  Dell recommended switch configuration</td>
</tr>
<tr>
<td>2.1 Hardware configuration</td>
</tr>
<tr>
<td>2.2 Delete startup configuration</td>
</tr>
<tr>
<td>2.3 Exit Auto-configuration</td>
</tr>
<tr>
<td>2.4 Entering system-view for configuration mode</td>
</tr>
<tr>
<td>2.5 Enable LLDP</td>
</tr>
<tr>
<td>2.6 Configure out of band (OOB) management port</td>
</tr>
<tr>
<td>2.7 Configure Link Aggregation</td>
</tr>
<tr>
<td>2.8 Configuring 10 Gb Ethernet Edge-Ports</td>
</tr>
<tr>
<td>2.9 Configure Spanning tree edge-ports</td>
</tr>
<tr>
<td>2.10 Save configuration</td>
</tr>
<tr>
<td>2.11 Configure additional switch</td>
</tr>
</tbody>
</table>

Additional resources
1 Introduction

This document illustrates how to configure HP™ 5900 Series switches for use with EqualLogic™ PS Series storage using Dell™ best practices. The recommended configuration uses link aggregation groups (LAGs) for inter-switch connections.

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 LAG configuration.

For more information on EqualLogic SAN design recommendations, see the EqualLogic Configuration Guide at: http://en.community.dell.com/dell-groups/dtcmedia/m/mediagallery/19852516/download.aspx.

1.1 Audience

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

1.2 Switch details

The table below provides an overview of the switch configuration.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Switch specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HP 5900 Series</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Switch vendor</strong></td>
<td>HP</td>
</tr>
<tr>
<td><strong>Switch model</strong></td>
<td>HP 5900AF-48XG-4QSFP+ switch</td>
</tr>
<tr>
<td><strong>Switch firmware</strong></td>
<td>7.1.045, Release 2308P01 and later</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: http://support.hp.com.
1.3 Cabling diagram

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

Figure 1   Cabling diagram
2 Dell recommended switch configuration

These steps show how to configure two HP 5900 switches with a Link Aggregation Group (LAG). The switches are interconnected using the two 40 GbE Quad Small Form-factor Pluggable (QSFP) uplink ports on the front. The LAG is configured for Dynamic Link Aggregation Control Protocol (LACP).

Dell recommends using QSFP 40 GbE uplink module ports to create a LAG between switches. This option provides the highest switch interconnect bandwidth as well as the best availability.

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 any 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 QSFP LAG cables between the fixed 40GbE modules on the front of the HP 5900 switches. See this configuration in Figure 1.

2.2 Delete startup configuration

Note: All configuration settings will be deleted. Always back up your configuration settings to an external location prior to performing any configuration changes.

<HP>reset saved-configuration backup

The saved configuration file will be erased. Are you sure? [Y/N]:Y

<HP>reset saved-configuration main

The saved configuration file will be erased. Are you sure? [Y/N]:Y

<HP>reboot

Current configuration may be lost after the reboot, save current configuration? [Y/N]:N

This command will reboot the device. Continue? [Y/N]:Y

Note: The switch will reboot.

2.3 Exit Auto-configuration

After switch reboot if the switch is in Auto-configuration mode, press Ctrl+D to exit auto-configuration mode.
2.4 Entering system-view for configuration mode

In order to perform switch configuration, you need to enter system view on the switch. From the prompt type the following:

```
<HP>system-view
[HP]
```

2.5 Enable LLDP

```
[HP] lldp global enable
```

2.6 Configure out of band (OOB) management port

```
[HP]interface M-GigabitEthernet 0/0/0
[HP-M-GigabitEthernet0/0/0]ip address ipaddress subnet-mask
[HP-M-GigabitEthernet0/0/0]quit
[HP]ip route-static ipaddress subnet-mask gateway
```

2.7 Configure Link Aggregation

These commands configure Link Aggregation between the switches. Two 40 GbE ports are assigned to the LAG. Additional ports can be added as needed to the LAG. The configuration allows all VLANs through the link aggregation.

```
[HP]interface Bridge-Aggregation 1
[HP-Bridge-Aggregation1]link-aggregation mode dynamic
[HP-Bridge-Aggregation1]quit
[HP]interface FortyGigE 1/0/49
[HP-FortyGigE1/0/49]port link-aggregation group 1
[HP-FortyGigE1/0/49]jumboframe enable 9216
[HP-FortyGigE1/0/49]flow-control receive enable
[HP-FortyGigE1/0/49]undo shutdown
[HP-FortyGigE1/0/49]quit
[HP]interface FortyGigE 1/0/50
[HP-FortyGigE1/0/50]port link-aggregation group 1
```
2.8 Configuring 10 Gb Ethernet Edge-Ports
Perform this step for each individual port that is connected to a storage controller or a host interface port, or you can specify a range of ports to configure. This section enables link-level flow control (802.3x), jumbo frames and configures the ports in layer 2 mode.

```
[HP-FortyGigE1/0/50] jumboframe enable 9216
[HP-FortyGigE1/0/50] flow-control receive enable
[HP-FortyGigE1/0/50] undo shutdown
[HP-FortyGigE1/0/50] quit
[HP]interface Bridge-Aggregation 1
[HP-Bridge-Aggregation1] port link-type trunk
[HP-Bridge-Aggregation1] port trunk permit vlan all
[HP-Bridge-Aggregation1] quit
```

2.9 Configure Spanning tree edge-ports

```
[HP] interface range Ten-GigabitEthernet 1/0/1 to Ten-GigabitEthernet 1/0/48
[HP-if-range] flow-control receive enable
[HP-if-range] jumboframe enable 9216
[HP-if-range] port link-mode bridge
[HP-if-range] undo shutdown
[HP-if-range] quit
```

2.10 Save configuration
```
[HP] save
The current configuration will be written to the device. Are you sure? [Y/N]: Y
```
Please input the file name(*.cfg)[flash:/startup.cfg]
(To leave the existing filename unchanged, press the enter key):<ENTER>
flash:/startup.cfg exists, overwrite? [Y/N]:Y
Validating file. Please wait...
Saved the current configuration to mainboard device successfully.

2.11  Configure additional switch
Repeat the commands from Section 2 to configure the second switch.

Note: This procedure places all switch ports in the default VLAN. To place ports in a non-default VLAN, refer to the documentation for the 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:

- Dell EqualLogic Configuration Guide:  
  http://en.community.dell.com/dell-groups/dtcmedia/m/mediagallery/19852516/download.aspx
- Dell EqualLogic Compatibility Matrix:  
  http://en.community.dell.com/dell-groups/dtcmedia/m/mediagallery/19856862/download.aspx

For EqualLogic best practices white papers, reference architectures, and sizing guidelines for enterprise applications and SANs, refer to EqualLogic Technical Content at:

- http://dell.to/1hEUvQA