Dell Networking S60 and Dell Force10 S60

Switch Configuration Guide for EqualLogic SANs

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Table of contents

1 Introduction

This document illustrates how to configure Dell™ Force10™ S60 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, or 1 and 3 in this guide.

For more information on EqualLogic SAN design recommendations, see the EqualLogic Configuration Guide at: www.delltechcenter.com/page/equallogic+configuration+guide.

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 1 Switch specifications

Dell Networking S60 or Force10 S60	
Switch vendor	Dell Networking or Dell Force10
Switch model	S60
Switch firmware	8.3.3.9

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.

1.3 Cabling diagram

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

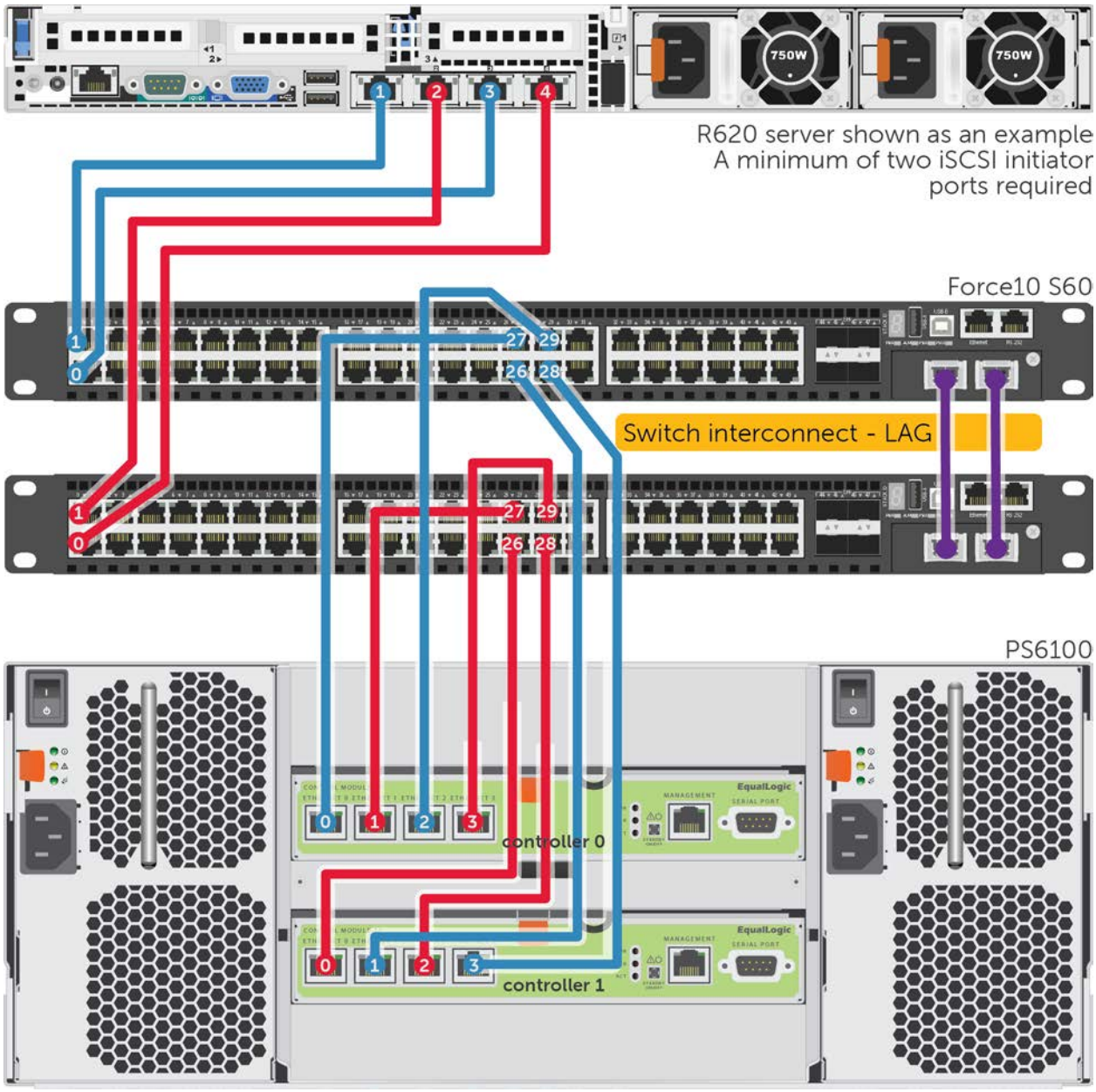

Figure 1 Cabling diagram

2 Dell recommended switch configuration

This section demonstrates how to configure two Dell Networking S60 or Force10 S60 switches with a LAG. The switches are interconnected by an optional dual port 10GbE SFP+ module, 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. Use optical cables to connect between the SFP+ optional modules on both switches. See this configuration in Figure 1.

2.2 Delete startup configuration

Note: The following commands will delete all configuration settings.

```
FTOS>enable

FTOS#delete startup-config

Proceed to delete startup-config [confirm yes/no]yes

FTOS#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

```
FTOS>enable

FTOS>#configure

FTOS(conf)#interface ManagementEthernet 0/0

FTOS(conf-if-ma-0/0)#no shutdown

FTOS(conf-if-ma-0/0)#ip address ipaddress mask

FTOS(conf-if-ma-0/0)#exit
```

2.4 Configure route for OOB management port (optional)

```
FTOS(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

```
FTOS(conf)#username admin privilege 15 password 0 yourpassword

FTOS(conf)#enable password level 15 0 yourpassword
```

2.6 Enable switch ports

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

```
FTOS#configure

FTOS(conf)#interface gigabitethernet 0/0

FTOS(conf-if-gi-0/0)#switchport

FTOS(conf-if-gi-0/0)#no shutdown

FTOS(conf-if-gi-0/0)#exit

FTOS(conf)#exit
```

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

```
FTOS#configure

FTOS(conf)#interface range gigabitethernet 0/0 – 47

FTOS(conf-if-range-gi-0/0-47)#switchport

FTOS(conf-if-range-gi-0/0-47)#no shutdown

FTOS(conf-if-range-gi-0/0-47)#exit

FTOS(conf)#exit
```

2.7 Enable LLDP

```
FTOS#configure

FTOS(conf)#protocol lldp

FTOS(conf-lldp)#advertise management-tlv system-capabilities

FTOS(conf-lldp)#no disable

FTOS(conf-lldp)#exit
```

2.8 Enable Jumbo Frames

```
FTOS(conf)#interface range gigabitethernet 0/0 – 47

FTOS(conf-if-range-gi-0/0-47)#mtu 9252
```

2.9 Enable flow control

```
FTOS(conf-if-range-gi-0/0-47)#flowcontrol rx on
```

2.10 Configure spanning tree on edge ports

```
FTOS(conf-if-range-gi-0/0-47)#spanning-tree rstp edge-port

FTOS(conf-if-range-gi-0/0-47)#exit
```

2.11 Configure port channel for LAG

These commands configure the switch interconnect as a LAG.

```
FTOS(conf)#interface Port-channel 1

FTOS(conf-if-po-1)#mtu 9252

FTOS(conf-if-po-1)#switchport

FTOS(conf-if-po-1)#no shutdown

FTOS(conf-if-po-1)#exit
```

2.12 Configure SFP+ ports for LAG

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

```
FTOS(conf)#interface range tengigabitethernet 0/48 - 49

FTOS(conf-if-range-te-0/48-49)#mtu 9252
```

```
FTOS(conf-if-range-te-0/48-49)#no shutdown
FTOS(conf-if-range-te-0/48-49)#flowcontrol rx on
FTOS(conf-if-range-te-0/48-49)#port-channel-protocol lacp
FTOS(conf-if-range-te-0/48-49-lacp)#port-channel 1 mode active
FTOS(conf-if-range-te-0/48-49-lacp)#exit
FTOS(conf-if-range-te-0/48-49)#exit
FTOS(conf)#exit
```

2.13 Save configuration

```
FTOS# copy running-config startup-config
```

2.14 Configure additional switch

Repeat the commands from section 2 to configure the second switch.

3 Optional stack configuration

Note: If you wish to use a stack configuration instead of LAG, follow the instructions below instead of 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 first switch

```
FTOS>enable
FTOS#delete startup-config
Proceed to delete startup-config [confirm yes/no]yes
FTOS#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

```
FTOS>enable
FTOS#config
FTOS(conf)#stack-unit 0 priority 1
FTOS(conf)#stack-unit 0 stack-group 12
FTOS(conf)#stack-unit 0 stack-group 13
FTOS(conf)#exit
FTOS#copy run start
FTOS#reload
```

3.3 Delete startup configuration on the second switch

```
FTOS>enable
FTOS#delete startup-config
Proceed to delete startup-config [confirm yes/no]yes
FTOS#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

```
FTOS>enable
FTOS#stack-unit 0 renumber 1
```

Note: The switch will reboot.

```
FTOS#config
FTOS(conf)#stack-unit 1 priority 1
FTOS(conf)#stack-unit 1 stack-group 12
FTOS(conf)#stack-unit 1 stack-group 13
FTOS(conf)#exit
FTOS#copy run start
FTOS#reload
```

3.5 Verify Stack Configuration

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

```
FTOS#show redundancy
```

Note: The switch front panel will show a steady light in the MASTER LED for the Master unit, and a blinking light for the Standby unit. All next configuration step must be perform from the master switch.

3.6 Configure out of band (OOB) management port

```
FTOS#config
FTOS(conf)#interface ManagementEthernet 0/0
FTOS(conf-if-ma-0/0)#no shutdown
FTOS(conf-if-ma-0/0)#ip address ipaddress mask
FTOS(conf-if-ma-0/0)#no shutdown
FTOS(conf-if-ma-0/0)#exit
```

3.7 Configure route for OOB management port (optional)

```
FTOS(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

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

3.9 Configuring switch ports

```
FTOS(conf)#interface range gigabitethernet 0/0 – 47
FTOS(conf-if-range-gi-0/0-47)#mtu 9252
FTOS(conf-if-range-gi-0/0-47)#switchport
FTOS(conf-if-range-gi-0/0-47)#spanning-tree rstp edge-port
FTOS(conf-if-range-gi-0/0-47)#flowcontrol rx on tx off
FTOS(conf-if-range-gi-0/0-47)#no shutdown
FTOS(conf-if-range-gi-0/0-47)#exit
FTOS(conf)#interface range gigabitethernet 1/0 – 47
FTOS(conf-if-range-gi-1/0-47)#mtu 9252
FTOS(conf-if-range-gi-1/0-47)#switchport
FTOS(conf-if-range-gi-1/0-47)#spanning-tree rstp edge-port
FTOS(conf-if-range-gi-1/0-47)#flowcontrol rx on tx off
FTOS(conf-if-range-gi-1/0-47)#no shut
FTOS(conf-if-range-gi-1/0-47)#exit
FTOS(conf)#exit
```

3.10 Save configuration and Reload

```
FTOS#copy run start
```

Reload the stack to allow settings to take effect:

```
FTOS#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:

- 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 Storage Infrastructure and Solutions Team Publications at:

- http://dell.to/sM4hJT