

Brocade VDX 6940

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 the Brocade® VDX 6940 switch for use with Dell™ PS Series storage using Dell best practices. The recommended configuration uses Brocade link aggregation groups (LAGs) for inter-switch connections.

Note: For more information on PS Series SAN design recommendations, see the [Dell PS Series 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>
< <i>Italic</i> > < <i>brackets</i> >	Separate variables	< <i>ip address</i> > < <i>mask</i> >

1.2 Audience

This switch configuration guide describes a verified 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

Brocade VDX 6940	
Switch vendor	Brocade
Switch model	VDX 6940
Switch firmware	NOS 7.0.1

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.

Note: The latest firmware updates and documentation can be found at: [Brocade.com](#). This site requires a login.

1.4 Cabling diagram

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

PowerEdge R630

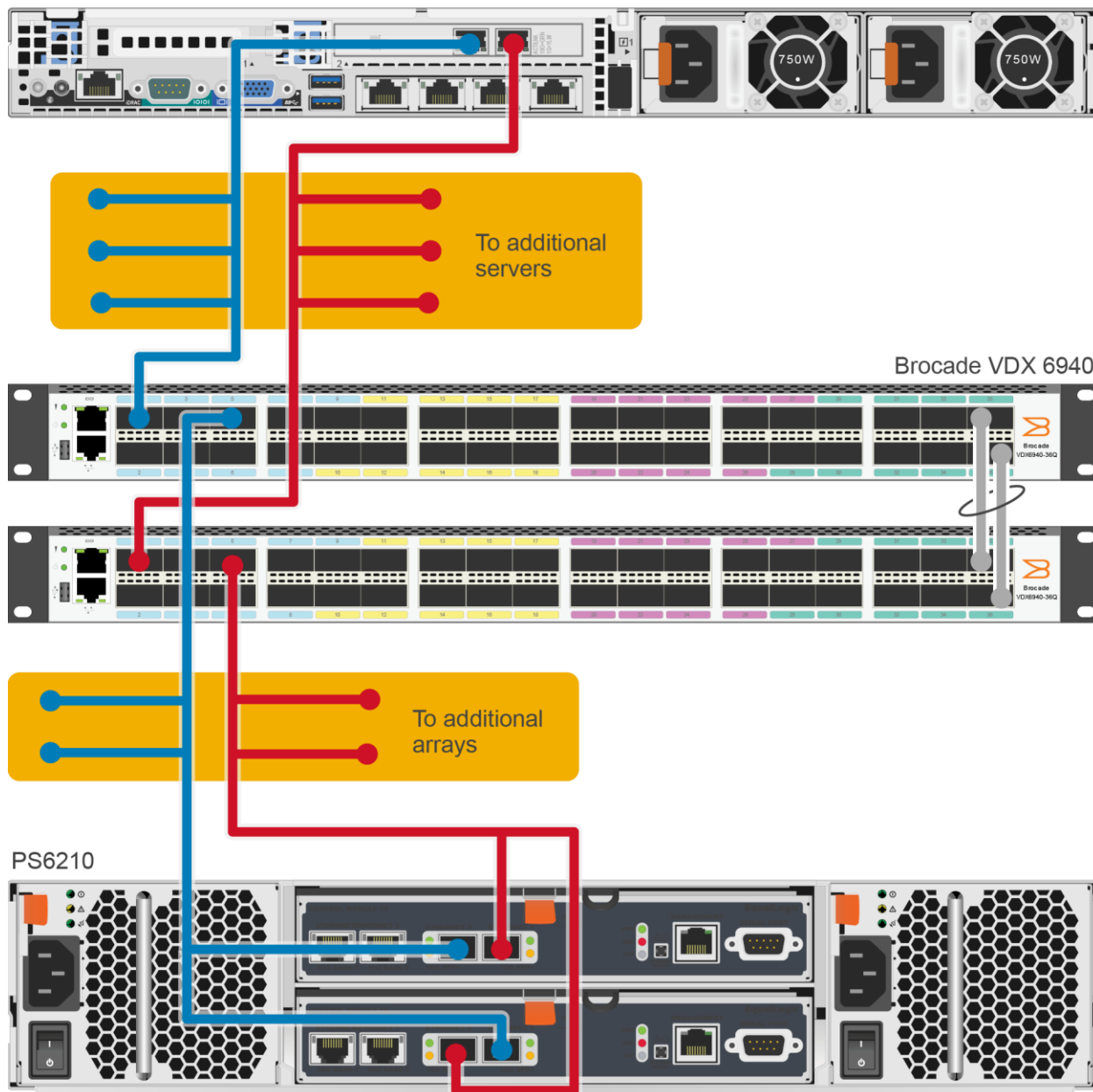


Figure 1 Cabling diagram

2 Dell recommended switch configuration

These steps show how to configure two Brocade VDX 6940 switches with a Brocade proprietary LAG interconnect. The switches are interconnected using two 40Gb ports (35 and 36) configured as the LAG links.

Note: The configuration steps in this section are only recommended when the switch is used as a dedicated SAN for iSCSI traffic (not shared with any other traffic type).

2.1 Hardware configuration

1. Power on both switches.
2. Connect a serial cable to the management port.
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 cables between switch 1 and switch 2 as shown in Figure 1. This will be used as your Brocade LAG link.

Note: The following configuration steps assume that the switch is configured with a unique Rbridge-id and VCS id. The LAG interconnection will fail to come up if the Rbridge-id or VCS id is conflicting. Refer to section 4 to change the Rbridge-id and VCS id of the switch.

2.2 Delete startup configuration

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

```
sw0# copy default-config startup-config
This operation will modify your startup configuration. Do you want to continue?
[y/n]:y
WARN: "reload system" is required to have configuration changes take effect!
sw0# reload system
Warning: This operation will cause the chassis to reboot and
requires all existing telnet, secure telnet and SSH sessions to be
restarted.
Are you sure you want to reboot the chassis [y/n]? y
```

Note: The switch will reboot. The default user ID and password are “admin” and “password”.

2.3 Configure management ports

```
sw0# configure
sw0(config)# interface Management 1/0
sw0(config-Management-1/0)# ip address <ip address/mask>
sw0(config-Management-1/0)# exit
```

2.4 Convert 40GbE ports to 10GbE mode

Note: For this example, physical ports 1–5 are converted from 40GbE mode to 4 x 10GbE mode.

```
sw0(config)# interface FortyGigabitEthernet 1/0/1-5
sw0(config-if-fo-1/0/1-5)# shutdown
sw0(config-if-fo-1/0/1-5)# exit
sw0(config)# hardware
sw0(config-hardware)# connector 1/0/1-5
sw0(config-connector-1/0/1-5)# sfp breakout
sw0(config-connector-1/0/1-5)# end
```

2.5 Configure port channel

```
sw0#configure
sw0(config)#interface Port-channel 1
sw0(config-Port-channel-1)# mtu 9216
sw0(config-Port-channel-1)# switchport
sw0(config-Port-channel-1)# switchport mode trunk
sw0(config-Port-channel-1)# qos flowcontrol tx off rx on
sw0(config-Port-channel-1)# speed 40000
sw0(config-Port-channel-1)# no shutdown
sw0(config-Port-channel-1)# exit
```

2.6 Configure ports for LAG

Note: For this example, ports 35 and 36 are used for the LAG interconnect.

```
sw0(config)# interface FortyGigabitEthernet 1/0/35-36
sw0(config-if-fo-1/0/35-36)# no fabric isl enable
sw0(config-if-fo-1/0/35-36)# no fabric trunk enable
sw0(config-if-fo-1/0/35-36)# channel-group 1 mode active type brocade
sw0(config-if-fo-1/0/35-36)# no cee
sw0(config-if-fo-1/0/35-36)# no lldp disable
sw0(config-if-fo-1/0/35-36)# no shutdown
sw0(config-if-fo-1/0/35-36)# exit
```

2.7 Configure global LLDP settings to disable DCB

The following commands are issued to disable dcbx-tlv and iscsi-app tlv.

```
sw0 (config) #protocol lldp  
sw0 (conf-lldp) #no advertise dcbx-iscsi-app-tlv  
sw0 (conf-lldp) #no advertise dcbx-tlv  
sw0 (conf-lldp) #exit
```

2.8 Disable Ethernet fabric on edge ports

Note: The port number scheme changes because the edge ports are now converted to 4 x 10 mode. To view the port number scheme, perform a “show interface status” or “do show interface status” command.

```
sw0 (config) # interface TenGigabitEthernet 1/0/1:1-4  
sw0 (conf-if-te-1/0/1:1-4) # no fabric isl enable  
sw0 (conf-if-te-1/0/1:1-4) # no fabric trunk enable
```

Note: For the remainder of this document, any actions that are performed on interface “TenGigabitEthernet 1/0/1:1-4” must also be performed on the other “4 x 10” edge port interfaces:

```
1/0/2:1-4  
1/0/3:1-4  
1/0/4:1-4  
1/0/5:1-4
```

2.9 Enable Jumbo MTU

```
sw0 (conf-if-te-1/0/1:1-4) # mtu 9216
```

Reminder: Perform this step on the other 4 x 10 edge ports.

2.10 Enable switchport

```
sw0 (conf-if-te-1/0/1:1-4) # switchport  
sw0 (conf-if-te-1/0/1:1-4) # switchport mode access
```

Reminder: Perform these steps on the other 4 x 10 edge ports.

2.11 Enable link level flow control (802.3x)

```
sw0(conf-if-te-1/0/1:1-4)# qos flowcontrol tx off rx on
sw0(conf-if-te-1/0/1:1-4)# exit
```

Reminder: Perform these steps on the other 4 x 10 edge ports.

2.12 Configure spanning tree on edge ports

```
sw0(config)#protocol spanning-tree rstp
sw0(config-rstp)#exit

sw0(config)# interface TenGigabitEthernet 1/0/1:1-4
sw0(conf-if-te-1/0/1:1-4)# spanning-tree edgeport
```

Reminder: Perform these steps on the other 4 x 10 edge ports.

2.13 Disable LLDP iSCSI priority on switch ports

```
sw0(conf-if-te-1/0/1:1-4)# no lldp disable
sw0(conf-if-te-1/0/1:1-4)# no cee
sw0(conf-if-te-1/0/1:1-4)# no lldp iscsi-priority
sw0(conf-if-te-1/0/1:1-4)# end
```

Reminder: Perform these steps on the other 4 x 10 edge ports.

2.14 Save configuration

```
Sw0# copy running-config startup-config
```

This operation will modify your startup configuration. Do you want to continue?
[y/n]:y

2.15 Configure additional switch

Repeat the commands from sections 2.1 through 2.14 to configure the second switch.

3 Performance tuning

When testing the VDX 6940 and using 802.3x flow control (Tx off, Rx on), the default buffer allocation did not yield optimal throughput and significant TCP retransmits were observed. The following section shows how to configure the QoS receive buffer. Testing indicated the optimal setting is 3MB for the receive queue.

```
sw0# configure
sw0(config)# rbridge-id 1
sw0(config-rbridge-id-1)# qos rcv-queue limit 3000
sw0(config-rbridge-id-1)# end
sw0#
```

Note: Repeat the commands to configure the buffer on the second switch.

4 Configuring VCS ID and Rbridge ID

Refer to Brocade documentation for details on VCS and Ethernet fabric. The following steps configure the Rbridge ID and VCS ID to 2 on the second switch so that it does not conflict with the default value of 1 on switch 1. VDX 6740 is in Fabric Cluster Mode by default and configuration change is not required for the mode.

```
sw0# show vcs
Config Mode      : Local-Only
VCS Mode         : Fabric Cluster
VCS ID           : 1
Total Number of Nodes           : 1
Rbridge-Id       WWN              Management IP   VCS Status
Fabric Status    HostName
-----
2                >10:00:50:EB:1A:2D:F2:64*      77.77.77.77   Online
Online          sw0
sw0# vcs vcsid 2
This operation will change the configuration to default and reboot the switch.
Do you want to continue? [y/n]:y
```

Note: The switch will reboot.

```
sw0# vcs rbridge-id 2
This operation will change the configuration to default and reboot the switch.
Do you want to continue? [y/n]:y
```

Note: The switch will reboot.

A Additional resources

Dell.com/support is focused on meeting your needs with proven services and support.

[Dell TechCenter](#) 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.

[Storage Solutions Technical Documents](#) on Dell TechCenter provide expertise that helps to ensure customer success on Dell Storage platforms.

Referenced or recommended Dell publications:

- [Dell PS Series Configuration Guide](#)
- [Dell Storage Compatibility Matrix](#)
- [PS Series Technical Documents](#)