Dell™ PowerEdge™ Cluster FE650W Systems

Platform Guide

Notes, Notices, and Cautions

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

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Contents

This document provides information for installing and connecting peripheral hardware, storage, and storage area network (SAN) components to your Dell™ PowerEdge™ Cluster FE650W solution. The configuration information in this document is specific to the Microsoft® Windows Server® 2003 operating systems.

NOTE: Reference to Windows Server 2003 in this guide, implies reference to both Microsoft Windows Server 2003 Enterprise Edition and Microsoft Windows Server 2003 R2 Enterprise x32 Edition, unless explicitly stated.

This document covers the following topics:

- Supported Cluster Configurations
- High-Availability Cluster Configurations
- Installing Peripheral Components in Your Cluster Node PCI Slots
- Attaching Your Cluster to a Shared Storage System Through Direct-Attached Configuration
- Attaching Your Cluster to a Shared Storage System Through a SAN-Attached Configuration
- Dell Cluster Configuration Support Matrix

NOTE: Configurations not listed in this document may not be certified or supported by Dell or Microsoft.

Supported Cluster Configurations

Table 1-1, in this section, provides a list of supported cluster configurations for the PowerEdge Cluster FE650W solution running Windows Server 2003.

NOTE: All cluster nodes must be of the same system model and must be running the same operating system.

NOTE: To configure Dell blade server modules in a PowerEdge Cluster, see the *Using Dell Blade Servers in a Dell PowerEdge High Availability Cluster* document located on the Dell Support site at **support.dell.com**.

Table 1-1. Supported Cluster Configurations

Supported PowerEdge Systems	Supported Fiber Channel HBA	Supported Storage Systems	Supported Cluster Interconnect (for the Private Network)	Fiber Channel Switch
1800, 1850, 1950, 2800, 2850, 2900, 2950, 2970, 6800, 6850	QLE220 QLA200	Dell|EMC AX150SC Dell|EMC AX150	Any network interface card (NIC) supported by the system. **NOTE:** All nodes in the same cluster must use homogeneous (identical) NICs for The cluster interconnect.	Brocade SilkWorm 200E
1855/1955	Dell 2342M QLogic QME2462	Dell|EMC AX150SC Dell|EMC AX150	Dell PowerConnect™ Ethernet 5316M embedded Gigabit switch module. Ethernet pass-through module.	Brocade SilkWorm 3014/4016 Embedded Fiber channel pass-through module

NOTE: The Dell|EMC AX150SC storage system is supported in a direct-attached configuration only.

NOTE: Reference to PowerEdge 1950, 2900, and 2950 in this document also implies reference to PowerEdge 1950 III, 2900 III, and 2950 III respectively.

Obtaining More Information

See the *Dell PowerEdge Cluster FE550W and FE650W Systems Installation and Troubleshooting Guide* for a detailed list of related documentation.

High-Availability Cluster Configurations

This section provides information about the supported operating systems, host bus adapters (HBA)s, and HBA drivers for your cluster configuration.

HBA Support for PowerEdge Cluster FE650W Configurations

The PowerEdge Cluster FE650W configurations support the QLogic QLA200 HBA, QLE220, QME2462, and Dell 2342M.

See "Installing Peripheral Components in Your Cluster Node PCI Slots" for PCI slot recommendations.

NOTE: The HBAs installed in clusters using redundant paths must be identical. Using dissimilar HBAs in your cluster nodes is not supported.

Fibre Channel Switches

When you are using Fibre Channel switches in your cluster configuration, ensure the following while enabling the fibre channel option.

- Dual (redundant) fabric configurations are required.
- A maximum of two switches per fabric are supported in an AX150 SAN.

NOTE: The PowerEdge Cluster FE650W solution does not support AX150SC in a SAN-attached cluster configuration.

Rules and Guidelines

When configuring your cluster, all cluster nodes must contain identical versions of the following:

- Operating systems and service packs
- Hardware, drivers, firmware or BIOS for the NICs, HBAs, and any other peripheral hardware components
- Dell OpenManage™ Server Administrator systems management software and EMC® Navisphere® storage management software

Maximum Distance between Cluster Nodes

The maximum cable length allowed from an HBA to a switch, an HBA directly connected to a storage system, or a switch to a storage system is 300 meters using multimode fibre at 2 Gbps. The maximum cable length allowed is 100 meters when using a multimode fibre at 4 Gbps.

NOTE: The total distance between an HBA and a storage system may be increased through the use of switch ISLs.

The maximum cable length for Fast Ethernet and copper Gigabit Ethernet is 100 meters, and for optical Gigabit Ethernet, is 550 meters. This distance may be extended using switches and virtual local area network (VLAN) technology. The maximum latency for a round-trip network packet between nodes is 500 milliseconds.

Obtaining More Information

For installation instructions for hardware configurations running Windows Server 2003, see the *Dell PowerEdge Cluster FE550W and FE650W Systems Installation and Troubleshooting Guide*.

Installing Peripheral Components in Your Cluster Node PCI Slots

This section provides configuration information for adding HBAs to your cluster node PCI slots.

Table 1-2 and Table 1-3 provide the PCI slot configurations and assignments for each supported PowerEdge system, respectively.

CAUTION: See your *Dell PowerEdge Systems Product Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.

Table 1-2. PCI Slot Configurations for PowerEdge Cluster Nodes

PowerEdge System	Riser Board Option	Slot	Slot Type	Slot Speed
1800	N/A	1	PCI	64-bit, 66 MHz
		2	PCI Express (PCIe)	2.5 GHz PCIe x4-lane
		3	PCIe	2.5 GHz PCIe x8-lane
		4	PCI	32-bit, 33 MHz
		5–6	Peripheral Component Interconnect Extended (PCI-X)	64-bit, 100 MHz
1850	Standard	1	PCI-X	64-bit, 133 MHz
		2	PCI-X	64-bit, 100 MHz
	PCI-X	1	PCI-X	64-bit, 133 MHz
		2	PCI-X	64-bit, 100 MHz
	PCIe	1	PCIe	2.5 GHz PCIe x4-lane
		2	PCIe	2.5 GHz PCIe x8-lane
1950	PCI-X	1–2	PCI-X	64-bit, 133 MHz
	PCIe	1–2	PCIe	2.5 GHz PCIe x8-lane
2800	N/A	1	PCI	32-bit, 33 MHz
		2–5	PCI-X	64-bit, 133 MHz
		6	PCIe	2.5 GHz PCIe x4-lane
		7	PCIe	2.5 GHz PCIe x8-lane

Table 1-2. PCI Slot Configurations for PowerEdge Cluster Nodes *(continued)*

PowerEdge System	Riser Board Option	Slot	Slot Type	Slot Speed
2850	PCI-X	1–3	PCI-X	64-bit, 133 MHz **NOTE:** If slot 1 is populated, PCI-X slots 2 and 3 operate at 100 MHz.
	PCIe	1	PCIe	2.5 GHz PCIe x4-lane
		2	PCIe	2.5 GHz PCIe x8-lane
		3	PCI-X	64-bit, 100 MHz **NOTE:** You cannot install redundant QLA200 HBAs with this option.
2900	N/A	1–2	PCI-X	64-bit, 133 MHz
		3	PCIe	2.5 GHz PCIe x8-lane
		4–6	PCIe	2.5 GHz PCIe x4-lane
2950	PCI-X	1	PCIe	2.5 GHz PCIe x8-lane
		2–3	PCI-X	64-bit, 133 MHz **NOTE:** You cannot install redundant QLE220 HBAs with this option.
	PCIe	1–2	PCIe	2.5 GHz PCIe x8-lane
		3	PCIe	2.5 GHz PCIe x4-lane
2970	N/A	1	PCIe	2.5 GHz x4-lane width
		2–3	PCIe	2.5 GHz x8-lane width

Table 1-3. PCI Slot Assignments for PowerEdge Cluster Nodes

PowerEdge System	Riser Board Options	HBA	PCI Slot Assignment
1800	N/A	QLogic QLA200	Install the HBA(s) in PCI slots 1, 5, or 6.
		Qlogic QLE220	Install the HBA(s) in PCIe slots 2 and/or 3.
1850	Standard	QLogic QLA200	Install the HBA(s) in any available PCI slot(s).
	PCI-X with RAID on motherboard (ROMB)	QLogic QLA200	Install the HBA(s) in PCI-X slots 1 and/or 2.
	PCIe with ROMB	Qlogic QLE220	Install the HBA(s) in PCIe slots 1 and/or 2.
1855	N/A	Dell 2342M Qlogic QME2462	Install these HBAs on the mezzanine slot of the Blades.
1950	PCIe	QLogic QLA220	Install the HBA(s) in PCIe slots 1 and/or 2.
1955	N/A	Dell 2342M Qlogic QME2462	Install these HBAs on the mezzanine slot of the Blades.
2800	N/A	QLogic QLA200	Install the HBA(s) in PCI slots 2, 3, 4, or 5.
		Qlogic QLE220	Install the HBA(s) in PCIe slots 6 and/or 7.
2850	PCI-X	QLogic QLA200	Install the HBA(s) in any available PCI slot(s).
	PCIe	QLogic QLA200	Install the HBA in PCI-X slot 3.
		Qlogic QLE220	Install the HBA(s) in PCIe slots 1 and/or 2.

Table 1-3. PCI Slot Assignments for PowerEdge Cluster Nodes *(continued)*

PowerEdge System	Riser Board Options	HBA	PCI Slot Assignment
2900	N/A	Qlogic QLE220	Install the HBA(s) in PCIe slots 3, 4, 5, and/or 6.
2950	PCI-X	QLogic QLE220	Install the HBA(s) in PCIe slot 1.
	PCIe	Qlogic QLE220	Install the HBA(s) in any available PCIe slot(s).
2970	N/A	QLogic QLE220	Install the HBA(s) in any available PCIe slot(s).

Attaching Your Cluster to a Shared Storage System Through Direct-Attached Configuration

This section provides the rules and guidelines for attaching your cluster nodes to the shared storage system using a direct connection (without Fibre Channel switches).

In a direct-attached configuration, both cluster nodes are connected directly to the storage system.

NOTE: To configure Dell blade server modules in a PowerEdge Cluster, see the *Using Dell Blade Servers in a Dell PowerEdge High Availability Cluster* document located on the Dell Support site at **support.dell.com**.

Rules and Guidelines

The rules and guidelines described in Table 1-4 apply to direct-attached clusters.

Table 1-4. Direct-Attached Clusters Rules and Guidelines

Rule/Guideline	Description
Operating system	Each direct-attached cluster must run Windows Server 2003.
Windows Server 2003 service pack	See "Dell Cluster Configuration Support Matrix" on page 15 for the supported versions.
Primary storage	Each Windows Server 2003 cluster can support up to 22 unique drive letters for shared logical drives and additional physical drives through mount points. **NOTE:** You can attach only one storage system directly to the cluster.
Fibre Channel HBAs supported	QLogic QLA200, QLE220, QME2462, and Dell 2342M.
Embedded modules for blades	Fiber channel and ethernet pass-through modules, Dell PowerConnect 5316M Ethernet switch module for blades.
QLogic driver version	See "Dell Cluster Configuration Support Matrix" on page 15 for the supported versions.
QLogic BIOS version	See "Dell Cluster Configuration Support Matrix" on page 15 for the supported versions.
Dell|EMC AX150SC/AX150 core software (EMC FLARE®)	See "Dell Cluster Configuration Support Matrix" on page 15 for the supported versions.

Attaching Your Cluster to a Shared Storage System Through a SAN-Attached Configuration

This section provides the rules and guidelines for attaching your PowerEdge cluster nodes to the shared storage systems through a Dell|EMC SAN using redundant Fibre Channel switch fabrics.

Rules and Guidelines

The rules and guidelines described in Table 1-5 apply to SAN-attached clusters.

Table 1-5. SAN-Attached Clusters Rules and Guidelines

Rule/Guideline	Description
Operating system	Each cluster attached to the SAN must run Windows Server 2003.
Windows Server 2003 service pack	See "Dell Cluster Configuration Support Matrix" on page 15 for the supported versions.
Primary storage	Each Windows Server 2003 cluster can support up to 22 unique drive letters for shared logical drives. Windows Server 2003 can support additional physical drives through mount points. Up to four Dell|EMC Fibre Channel disk arrays are supported.
Embedded modules for blades	Fiber channel and ethernet pass-through modules, Dell PowerConnect 5316M Ethernet switch module for blades.
Fibre Channel switch configuration	Dual switch fabrics required.
Fibre Channel switch zoning	Single-initiator zoning.
Fibre Channel switches supported	Brocade SilkWorm 200E and Brocade Silkworm 3014/4016 embedded blade Fibre Channel switch modules.
Fibre Channel switch firmware	See "Dell Cluster Configuration Support Matrix" on page 15 for the supported versions.
Fibre Channel HBAs supported	QLogic QLA200, QLE220, QME2462, and Dell 2342M.

Table 1-5. SAN-Attached Clusters Rules and Guidelines *(continued)*

Rule/Guideline	Description
QLogic driver version	See "Dell Cluster Configuration Support Matrix" on page 15 for the supported versions.
QLogic BIOS version	See "Dell Cluster Configuration Support Matrix" on page 15 for the supported versions.
Dell|EMC AX150 core software (FLARE)	See "Dell Cluster Configuration Support Matrix" on page 15 for the supported versions.

Obtaining More Information

For more information about SAN-attached clusters, see the *Dell PowerEdge Cluster FE550W and FE650W Systems Installation and Troubleshooting Guide* located at the Dell Support website at **support.dell.com**.

Dell Cluster Configuration Support Matrix

The Dell Cluster Configuration Support Matrix provides the latest supported driver, firmware, and operating system versions for your PowerEdge Cluster FE650W solution. To obtain the supported drivers and firmware version for the operating system that is running on your PowerEdge Cluster FE650W cluster nodes:

1. Open a Web browser.
2. Navigate to the Dell High Availability Clustering website at **www.dell.com/ha**.
3. Click the **Products & Services** tab.
4. In the **Product Offerings** window, click **FE650W**.

   The *Dell Cluster Configuration Support Matrix* appears.
5. Locate the appropriate drivers and firmware that are supported on your hardware and software components and operating system version.