Dell™ PowerEdge™ Cluster FE650Wi 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 Internet small computer system interface (iSCSI) network components to your Dell™ PowerEdge™ Cluster FE650Wi solution. The configuration information in this document is specific to the Microsoft® Windows Server® 2003/ R2, Enterprise Edition operating system.

This document covers the following topics:

NOTE: Throughout this document iSCSI network interface card (NIC) refers to NIC dedicated for iSCSI traffic.

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

Supported Cluster Configurations

Table 1-1 and 1-2, in this section, provides a list of the supported cluster configurations for the PowerEdge Cluster FE650Wi systems running Microsoft Windows Server 2003/R2, Enterprise Edition.

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

Table 1-1. PowerEdge Cluster FE650Wi Solution Supported Cluster Configurations

PowerEdge System	Ethernet Card (for iSCSI)	Storage Systems	Supported Cluster Interconnect (For Private Networks)
1800, 1850, 1950, 2800, 2850, 2900, 2950, 2970, 6800, 6850, 6950	Intel PRO/1000 MT dual-port server adapter, Intel PRO/1000 PT single-port server adapter, Intel PRO/1000 PTdual-port server adapter, Broadcom® NetXtreme II™ 5708 single-port Gb Ethernet NIC with TCI/IP Off-load Engine (TOE)	Dell|EMC AX150SCi, Dell|EMC AX150i	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.
PowerEdge System	**Ethernet Daughter card (for iSCSI)**	**Storage Systems**	**Ethernet Modules**
1855, 1955	Intel® PRO/1000 MB dual-port server, Broadcom 5708 Gigabitdual-port NIC controller (TCP/IP offload engine [TOE] enabled).	Dell|EMC AX150SCi, Dell|EMC AX150i	Dell PowerConnect™ Ethernet Embedded Gigabit 5316M switch module, Ethernet pass-through module
NOTE: The AX150SCi storage system is supported in a direct-attached configuration only.			

Table 1-2. PowerEdge Cluster FE650Wi Solution Supported Cluster Configurations

PowerEdge System	Ethernet Daughter card (for iSCSI)	Storage Systems	Ethernet Modules
1855, 1955	Intel® PRO/1000 MB dual-port server, Broadcom 5708 Gigabitdual-port NIC controller (TCP/IP offload engine [TOE] enabled).	Dell|EMC AX150SCi, Dell|EMC AX150i	Dell PowerConnect™ Ethernet Embedded Gigabit 5316M switch module, Ethernet pass-through module
NOTE: The AX150SCi 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 1950 III, 2900 III, and 2950 III respectively.

Obtaining More Information

For a detailed list of related documentation, see the *Dell PowerEdge Cluster FE650Wi Systems Installation and Troubleshooting Guide*.

High-Availability Cluster Configurations

This section provides information about the supported operating systems, iSCSI initiator, and NICs and switches dedicated for iSCSI in your cluster configuration.

NOTE: All cluster nodes in a PowerEdge Cluster FE650Wi system solution must run the same operating system (Windows Server 2003, Enterprise Edition).

NOTE: The iSCSI NICs in cluster configurations with a single path or redundant paths must be identical. Using dissimilar iSCSI NICs in your cluster nodes is not supported.

For PCI slot recommendations, see "Installing Peripheral Components in Your Cluster Node PCI Slots" on page 8.

Ethernet Switches Dedicated for iSCSI Network

Ensure the following while you are configuring an iSCSI network:

- Dual (redundant) fabric configurations are required
- Dual (redundant) iSCSI network configurations are required
- Gigabit Ethernet switches are required

Maximum Distance Between Cluster Nodes

The maximum cable length for Fast Ethernet and copper Gigabit Ethernet is 100 meters. This distance may be extended using switches and virtual local area network (VLAN) technology. The upper bound for distance extension between cluster nodes is governed by the maximum round-trip latency of the cluster heartbeat, which is 500 milliseconds.

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, and any other peripheral hardware components
- Dell OpenManage™ Server Administrator systems management software and EMC® Navisphere™ storage management software

Obtaining More Information

For the installation instructions for hardware configurations running Microsoft Windows Server 2003/R2, Enterprise Edition, see the *Dell PowerEdge Cluster FE650Wi Systems Installation and Troubleshooting Guide*.

Installing Peripheral Components in Your Cluster Node PCI Slots

This section provides configuration information about adding iSCSI NICs to your cluster node PCI slots.

Table 1-3 and Table 1-4 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 1-3. 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	Peripheral Component Interconnect 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 **NOTE:** You cannot install the Intel PRO/1000 MT server adapter with this option.
1950	PCI-X	1–2	PCI-X	64-bit, 133MHz
	PCIe	1–2	PCIe	2.5 GHz PCIe x8-lane **NOTE:** You cannot install the Intel PRO/1000 MT server adapter with this option.

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

PowerEdge System	Riser Board Option	Slot	Slot Type	Slot Speed
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
2850	PCI-X	1–3	PCI-X	64-bit, 133 MHz **NOTE:** If PCI-X slot 1 is populated, PCI-X slots 1 and 2 are 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 can install only one Intel PRO/1000 MT server adapter or Intel PRO/1000 MT dual-port server adapter with this option.
2900	N/A	1–2	PCI-X	64-bit, 133MHz
		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
	PCIe	1–2	PCIe	2.5 GHz PCIe x8-lane
		3	PCIe	2.5 GHz PCIe x4-lane **NOTE:** You cannot install the Intel PRO/1000 MT server adapter with this option.
2970	N/A	1	PCIe	2.5 GHz PCIe x4-lane
		2–3	PCIe	2.5 GHz PCIe x8-lane

Table 1-4. PCI Slot Assignments for iSCSI NICs in PowerEdge Cluster Nodes

PowerEdge System	Riser Board Options	iSCSI NICs	PCI Slot Assignment
1800	N/A	Intel PRO/1000 MT server adapter Intel PRO/1000 MT dual-port server adapter	Install the iSCSI NIC(s) in PCI-X slots 5 and/or 6.
		Broadcom NetXtreme II 5708 single-port Gb Ethernet NIC with TOE	Install iSCSI NIC(s) in PCIe slots 2 and 3.
1850	Standard	Intel PRO/1000 MT server adapter Intel PRO/1000 MT dual-port server adapter	Install the iSCSI NIC(s) in any available PCI-X slot(s).
	PCI-X	Intel PRO/1000 MT server adapter Intel PRO/1000 MT dual-port server adapter	
	PCIe	Broadcom NetXtreme II 5708 single-port Gb Ethernet NIC with TOE	Install iSCSI NIC(s) in PCIe slots 1 and 2.
1950	PCI-X	N/A	N/A
	PCIe	Intel PRO/1000 PT server adapter Intel PRO/1000 PT dual-port server adapter	Install iSCSI NIC(s) in PCIe slots 1 and/or 2.
		Broadcom NetXtreme II 5708 single-port Gb Ethernet NIC with TOE	

Table 1-4. PCI Slot Assignments for iSCSI NICs in PowerEdge Cluster Nodes *(continued)*

PowerEdge System	Riser Board Options	iSCSI NICs	PCI Slot Assignment
2800	N/A	Intel PRO/1000 MT server adapter Intel PRO/1000 MT dual-port server adapter	Install the iSCSI NIC(s) in PCI-X slots 2, 3, 4, or 5.
		Broadcom NetXtreme II 5708 single-port Gb Ethernet NIC with TOE	Install iSCSI NIC(s) in PCIe slots 6 and 7.
2850	PCI-X	Intel PRO/1000 MT server adapter Intel PRO/1000 MT dual-port server adapter	Install the iSCSI NIC(s) in any available PCI-X slot(s).
	PCIe	Intel PRO/1000 PT server adapter Intel PRO/1000 PT dual-port server adapter	Install the iSCSI NIC(s) in PCIe slots 1 and 2.
		Broadcom NetXtreme II 5708 single-port Gb Ethernet NIC with TOE	
2900	N/A	Intel PRO/1000 PT server adapter Intel PRO/1000 PT dual-port server adapter	Install iSCSI NIC(s) in PCIe slot 3, 4, 5, or 6.
		Broadcom NetXtreme II 5708 single-port Gb Ethernet NIC with TOE	

Table 1-4. PCI Slot Assignments for iSCSI NICs in PowerEdge Cluster Nodes *(continued)*

PowerEdge System	Riser Board Options	iSCSI NICs	PCI Slot Assignment
2950	PCI-X	Intel PRO/1000 PT dual-port server adapter	Install the iSCSI NIC on the available PCI-e slot 1.
	PCIe	Intel PRO/1000 PT server adapter	Install the iSCSI NIC(s) in any available PCIe slots.
		Intel PRO/1000 PT dual-port server adapter	
		Broadcom NetXtreme II 5708 single-port Gb Ethernet NIC with TOE	
2970	N/A	Intel PRO/1000 PT server adapter	Install the iSCSI NIC(s) in PCIe slot 1, 2, or 3.
		Intel PRO/1000 PT dual-port server adapter	
		Broadcom NetXtreme II 5708 single-port Gb Ethernet NIC with TOE	
1855	N/A	Intel® PRO/1000 MB dual-port server adapter	Install the NIC in the available slot.
1955	N/A	Broadcom 5708 Gigabit dual-port NIC controller (TCP/IP offload engine [TOE] enabled)	Install the NIC in the available slot.

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 the switches for iSCSI access).

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

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

Rules and Guidelines

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

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

Rule/Guideline	Description
Operating system	Each direct-attached cluster must run Microsoft Windows Server 2003/R2, Enterprise Edition.
Microsoft Windows Server 2003/R2, Enterprise Edition service pack	See "Dell Cluster Configuration Support Matrix" on page 17 for the supported 32-bit versions.
Primary storage	Each Microsoft Windows Server 2003/R2, Enterprise Edition cluster can support up to 22 unique drive letters for shared logical drives and additional physical drives through mount points. **NOTE:** You can directly attach only one storage system (Dell|EMC AX150SCi or Dell|EMC AX150i) to the cluster.
iSCSI Initiator supported	Microsoft iSCSI Software Initiator
iSCSI Initiator version	See "Dell Cluster Configuration Support Matrix" on page 17 for the supported versions.

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

Rule/Guideline	Description
NICs supported for iSCSI	Intel PRO/1000 PT Single&Dual port server adapter Intel PRO/1000 MT Single&Dual port server adapter Intel® PRO/1000 MB Dual port adapter Broadcom NetXtreme II 5708 Dual port adapter with TOE Dell ethernet pass-through modules for Blades
NIC driver version	See "Dell Cluster Configuration Support Matrix" on page 17 for the supported versions.
Dell|EMC AX150i core software (FLARE®)	See "Dell Cluster Configuration Support Matrix" on page 17 for the supported versions.

Attaching Your Cluster Shared Storage System Through iSCSI Switch-Attached Configuration

This section provides the rules and guidelines for attaching your PowerEdge cluster nodes to the shared storage systems through an iSCSI switch-attached configuration using redundant Ethernet switch fabrics.

Rules and Guidelines

The rules and guidelines described in Table 1-6 apply to iSCSI switch-attached clusters.

Table 1-6. iSCSI Switch-Attached Clusters Rules and Guidelines

Rule/Guideline	Description
Operating system	Each switch-attached cluster must run Microsoft Windows Server 2003/R2, Enterprise Edition.
Microsoft Windows Server 2003/R2, Enterprise Edition service pack	See "Dell Cluster Configuration Support Matrix" on page 17 for the supported versions.
Primary storage	Each Microsoft Windows Server 2003/R2, Enterprise Edition cluster can support up to 22 unique drive letters for shared logical drives and additional physical drives through mount points.
	Up to two Dell|EMC AX150i disk arrays are supported.
Switch configuration for iSCSI traffic	Dual switch fabrics required.
Switches supported for iSCSI traffic	Gigabit Ethernet switches required.
	Dell 5316M ethernet gigabit switch modules, ethernet pass-through modules for Blades.
iSCSI Initiator supported	Microsoft iSCSI Software Initiator.
iSCSI Initiator version	See "Dell Cluster Configuration Support Matrix" on page 17 for the supported versions.
iSNS supported	Microsoft Internet Storage Name Service (iSNS) Server.
iSNS version	See "Dell Cluster Configuration Support Matrix" on page 17 for the supported versions.
NIC supported for iSCSI	Intel PRO/1000 PT Single&Dual port server adapter
	Intel PRO/1000 MT Single&Dual port server adapter
	Intel PRO/1000 MB Dual port adapter
	Broadcom NetXtreme II 5708 Dual port adapter with TOE
NIC driver version	See "Dell Cluster Configuration Support Matrix" on page 17 for the supported versions.
Dell|EMC AX150i core software (FLARE)	See "Dell Cluster Configuration Support Matrix" on page 17 for the supported versions.

Obtaining More Information

For more information about iSCSI-based clusters, see the *Dell PowerEdge Cluster FE650Wi Systems Installation and Troubleshooting Guide*. You can also see the Dell support website at **support.dell.com**.

Dell Cluster Configuration Support Matrix

The *Dell Cluster Configuration Support Matrix* provides the latest supported drivers, firmware, and the operating system versions for your PowerEdge Cluster FE650Wi solution. To obtain the supported drivers and the firmware version for the operating system that is running on your PowerEdge Cluster FE650Wi 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. Select **iSCSI Clusters.**
5. In the **Product Offerings** window, click **FE650Wi.**

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