

Dell™ PowerEdge™ Cluster  
FE550W 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.

---

**Information in this document is subject to change without notice.**


© 2004–2006 Dell Inc. All rights reserved.

Reproduction in any manner whatsoever without the written permission of Dell Inc. is strictly forbidden.

Trademarks used in this text: *Dell*, the *DELL* logo, *Dell OpenManage*, *PowerEdge*, and *PowerVault* are trademarks of Dell Inc.; *Microsoft* and *Windows* are registered trademarks of Microsoft Corporation; *EMC* and *Navisphere* are registered trademarks of EMC Corporation.


Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Dell Inc. disclaims any proprietary interest in trademarks and trade names other than its own.


This document provides information for installing and connecting peripheral hardware, storage, and storage area network (SAN) components to your Dell™ PowerEdge™ Cluster FE550W solution. The configuration information in this document is specific to the Microsoft® Windows® 2000 Advanced Server and 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 Edition, unless explicitly stated.

This document covers the following topics:

- Configuration information for installing peripheral hardware components, such as host bus adapters (HBAs), network interface cards (NICs), and peripheral component interconnect (PCI) adapter cards into Cluster FE550W configurations
- Configuration rules and guidelines for direct-attached or SAN-attached configurations


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

 **NOTE:** In this guide and in other cluster documentation, the Microsoft Cluster Service (for Windows 2000 Advanced Server or Windows Server 2003) is also referred to as MSCS.

## Supported Cluster Configurations

This section provides information about supported cluster configurations for your PowerEdge cluster configuration.

Table 1-1 provides a list of supported cluster configurations for the Cluster FE550W systems running Windows 2000 Advanced Server or Windows Server 2003.

 **NOTE:** Each cluster node must be of the same system model.

**Table 1-1. Supported Cluster Configurations**



PowerEdge Cluster	Supported PowerEdge Systems	Supported Storage Systems	Supported Cluster Interconnect (for the Private Network)
FE550W	1750, 1800, 1850, 1950, 2600, 2650, 2800, 2850, 2900, 2950	Dell EMC AX100 Dell EMC AX100SC	Any NIC supported by the system. <b>NOTE:</b> All nodes in the same cluster must use identical NICs for the cluster interconnect.

### Obtaining More Information

See the *Dell PowerEdge Cluster FE550W/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, HBAs, and HBA drivers for your cluster configuration.

-  **NOTICE:** All cluster nodes in a Cluster FE550W solution must run the same operating system. Mixing Windows 2000 Advanced Server and Windows Server 2003 in the same cluster is not supported except during a rolling upgrade.
-  **NOTICE:** HBAs installed in clusters using redundant paths must be identical. Using dissimilar HBAs in your cluster nodes is not supported.

## HBA Support for PowerEdge Cluster FE550W Configurations

The Cluster FE550W configurations support the QLogic QLA200 HBA.


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

## Fibre Channel Switches


- Dual (redundant) fabric configurations are required.
- A maximum of 2 switches are supported per fabric in an AX100 SAN.

## 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 fiber at 2 Gbps.

-  **NOTE:** The total distance between an HBA and a storage system may be increased through the use of inter switch links (ISLs).

The maximum cable length for Fast Ethernet and Gigabit Ethernet is 100 meters.

-  **NOTE:** 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.

## 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
- Systems management software, such as Dell OpenManage™ systems management software and EMC® Navisphere™ storage management software

## Obtaining More Information

See the *Dell PowerEdge Cluster FE550W/FE650W Systems Installation and Troubleshooting Guide* for installation instructions for hardware configurations running Windows 2000 Advanced Server or Windows Server 2003.

# 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 PowerEdge *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
1750	N/A	1	PCI	64-bit, 133 MHz OR 64-bit, 33 MHz
		2	PCI-X	64-bit, 133 MHz
1800	N/A	1	PCI	64-bit, 66 MHz
		2	PCI Express	2.5 GHz PCIe x4-lane
		3	PCI Express	2.5 GHz PCIe x8-lane
		4	PCI	32-bit, 33 MHz
		5 – 6	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
	PCI Express	1	PCI Express	2.5 GHz PCIe x4-lane
		2	PCI Express	2.5 GHz PCIe x8-lane <b>NOTE:</b> QLA200 HBA cannot be installed with this option.
1950	PCI-X	1 – 2	PCI-X	64-bit, 133 MHz
	PCI Express	1 – 2	PCI Express	2.5 GHz PCIe x8-lane <b>NOTE:</b> QLA200 HBA cannot be installed with this option.
2600	N/A	1	PCI	32-bit, 33 MHz
		2 – 5	PCI	64-bit, 100 MHz
		6 – 7	PCI	64-bit, 133 MHz

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

PowerEdge System	Riser Board Option	Slot	Slot Type	Slot Speed
2650	N/A	1	PCI/PCI-X	64-bit, 100 MHz
		2 – 3	PCI/PCI-X	4-bit, 133 MHz <b>NOTE:</b> PCI/PCI-X slot 1 must be empty for PCI/PCI-X slot 2 to attain an operating speed of 133 MHz.
2800	N/A	1	PCI	32-bit, 33 MHz
		2 – 5	PCI-X	64-bit, 133 MHz
		6	PCI Express	2.5 GHz PCIe x4-lane
		7	PCI Express	2.5 GHz PCIe x8-lane
2850	PCI-X	1 – 3	PCI-X	32-bit, 133 MHz <b>NOTE:</b> If PCI-X slot 1 is populated, PCI-X slot 1 and 2 are 100 MHz.
	PCI Express	1	PCI Express	2.5 GHz PCIe x4-lane
		2	PCI Express	2.5 GHz PCIe x8-lane
		3	PCI-X	32-bit, 100 MHz <b>NOTE:</b> Redundant QLA200 HBAs cannot be installed with this option.
	2900	N/A	1 – 2	PCI-X
3			PCI Express	2.5 GHz PCIe x8-lane
4 – 6			PCI Express	2.5 GHz PCIe x4-lane
2950	PCI-X	1	PCI Express	2.5 GHz PCIe x8-lane
		2 – 3	PCI-X	64-bit, 133 MHz
	PCI Express	1 – 2	PCI Express	2.5 GHz PCIe x8-lane
		3	PCI Express	2.5 GHz PCIe x4-lane <b>NOTE:</b> QLA200 HBA cannot be installed with this option.

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

<b>PowerEdge System</b>	<b>Riser Board Options</b>	<b>HBA</b>	<b>PCI Slot Assignment</b>
1750	Any	QLogic QLA200	Install the HBA(s) in any available PCI slot.
1800	N/A	QLogic QLA200	Install the HBA(s) in PCI slot 1, 5, or 6.
1850	Standard	QLogic QLA200	Install the HBA(s) in any available PCI slot.
	PCI-X	QLogic QLA200	
	PCI Express	–	
1950	PCI-X	QLogic QLA200	Install the HBA(s) in PCI-X slots 1 and/or 2
	PCI Express	–	
2600	N/A	QLogic QLA200	Install the HBA(s) in PCI slot 2, 3, 4, or 5.
2650	N/A	QLogic QLA200	Install the HBA(s) in any available PCI slot.
2800	N/A	QLogic QLA200	Install the HBA(s) in PCI slot 2, 3, 4, or 5.
2850	PCI-X	QLogic QLA200	Install the HBA(s) in any available PCI slot.
	PCI Express	QLogic QLA200	Install the HBA in PCI slot 3.
2900	N/A	QLogic QLA200	Install the HBA(s) in PCI-X slots 1 and/or 2
2950	PCI-X	QLogic QLA200	Install the HBA(s) in PCI-X slots 2 and/or 3
	PCI Express	–	

# Attaching Your Cluster to a Shared Storage System Through Direct-Attach 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-attach configuration, both cluster nodes are connected directly to the storage system.

## 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
Primary storage	Each Windows 2000 Advanced Server and 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. Only one storage system can be directly attached to the cluster.
Fibre Channel HBAs supported	QLogic QLA200
QLogic driver version	See "Dell Cluster Configuration Support Matrix" for the supported versions.
QLogic BIOS version	See "Dell Cluster Configuration Support Matrix" for the supported versions.
Operating system	Each direct-attached cluster must run Windows 2000 Advanced Server, Windows Server 2003 Enterprise Edition, or Windows Server 2003 R2 Enterprise Edition.
Windows 2000 Advanced Server service pack	See "Dell Cluster Configuration Support Matrix" for the supported versions.
Windows Server 2003 service pack	See "Dell Cluster Configuration Support Matrix" for the supported versions.
Dell EMC AX100 core software (FLARE)	See "Dell Cluster Configuration Support Matrix" for the supported versions.



# Attaching Your Cluster Shared Storage System to a SAN

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
Primary storage	Each Windows 2000 Advanced Server and 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 two Dell EMC Fibre Channel disk arrays are supported.
Fibre Channel switch configuration	Dual switch fabrics required.
Fibre Channel switch zoning	Single-initiator zoning.
Fibre Channel switches supported	Brocade SilkWorm 3250VL2 and Brocade SilkWorm 200E.
Fibre Channel switch firmware	See "Dell Cluster Configuration Support Matrix" for the supported versions.
Fibre Channel HBAs supported	QLogic QLA200
QLogic driver version	See "Dell Cluster Configuration Support Matrix" for the supported versions.
QLogic BIOS version	See "Dell Cluster Configuration Support Matrix" for the supported versions.
Operating system	Each cluster attached to the SAN must run Windows 2000 Advanced Server, Windows Server 2003 Enterprise Edition, or Windows Server 2003 R2 Enterprise Edition.
Windows 2000 Advanced Server service pack	See "Dell Cluster Configuration Support Matrix" for the supported versions.
Windows Server 2003 service pack	See "Dell Cluster Configuration Support Matrix" for the supported versions.
Dell EMC AX100 core software (FLARE)	See "Dell Cluster Configuration Support Matrix" for the supported versions.

## Obtaining More Information

See the *Dell PowerEdge Cluster FE550W/FE650W Systems Installation and Troubleshooting Guide* for more information about SAN-attached clusters. You can also see the Dell Support website at [www.support.dell.com](http://www.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 FE550W system. To obtain the supported drivers and firmware version for the operating system that is running on your PowerEdge Cluster FE550W cluster nodes:

- 1 Open a Web browser.
- 2 Navigate to the Dell High Availability Clustering website at [www.dell.com/ha](http://www.dell.com/ha).
- 3 Click the **Products & Services** tab.
- 4 In the Product Offerings window, click **FE550W**.
- 5 Locate the appropriate drivers and firmware that are supported on your hardware and software components and operating system version.