Dell™ PowerEdge™ Cluster FE100/FL100 and FE200/FL200

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

Index

Tables

This document provides configuration information for installing peripheral hardware components, such as host bus adapters (HBAs), network interface controller (NIC) cards, and peripheral component interconnect (PCI) adapter cards into Dell™ PowerEdge™ Cluster FE100/FL100 and FE200/FL200 configurations. The configuration information in this document is specific to Microsoft® Windows NT® Server 4.0, Enterprise Edition and Microsoft Windows® 2000 Advanced Server operating systems.

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, Microsoft Cluster Server (for Windows NT Server 4.0, Enterprise Edition) and Microsoft Cluster Service (for Windows 2000 Advanced Server) are referred to as MSCS.

Supported Cluster Configurations

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

Table 1-1 provides a list of supported cluster configurations for the PowerEdge Cluster FE100/FL100 and FE200/FL200 systems running Windows NT Server 4.0, Enterprise Edition or Windows 2000 Advanced Server.

Table 1-1. Supported Cluster Configurations

PowerEdge Cluster	Supported PowerEdge Systems	Supported PowerVault™ Storage System	Supported Cluster Interconnect HBA (for the Private Network)
FE100	1550, 1650, 2400, 2450, 2500, 2650, 4300, 4350, 4400, 4600, 6100, 6300, 6350, 6400, 6450, 6600, 6650, and 8450	65xF	Intel® PRO/100+ or PRO/100S Fast Ethernet controller, which can be a peripheral component interconnect (PCI) card or an integrated controller, if available
FL100	1550, 2400, 2450, 2500, 2550, 4300, 4350, 4400, 6100, 6300, 6350, 6400, 6450, and 8450	65xF	Emulex cluster local area network (cLAN) 1000

Table 1-1. **Supported Cluster Configurations** *(continued)*

PowerEdge Cluster	Supported PowerEdge Systems	Supported PowerVault™ Storage System	Supported Cluster Interconnect HBA (for the Private Network)
FE200	1550, 1650, 2400, 2450, 2500, 2550, 2650, 4300, 4350, 4400, 4600, 6300, 6350, 6400, 6450, 6600, 6650, and 8450	660F/224F	Intel PRO/100+ or PRO/100S Fast Ethernet controller, which can be a PCI card or an integrated controller, if available
FL200	1550, 2400, 2450, 2500, 2550, 4300, 4350, 4400, 6300, 6350, 6400, 6450, and 8450	660F/224F	Emulex cLAN 1000

Obtaining More Information

See the *Dell PowerEdge Cluster FE100/FL100 and FE200/FL200 Installation and Troubleshooting Guide* for a detailed list of related documentation.

Windows NT 4.0 Server, Enterprise Edition Cluster Configurations

The following subsections provide information on the Windows NT Server 4.0, Enterprise Edition Service Pack, homogeneous and heterogeneous cluster configurations, and supported QLogic HBAs and HBA drivers for your PowerEdge cluster configuration.

See the *Dell PowerEdge Cluster FE100/FL100 and FE200/FL200 Installation and Troubleshooting Guide* for installing cluster configurations running Windows NT Server 4.0, Enterprise Edition.

NOTE: HBAs installed in PowerEdge clusters using redundant paths must be identical. PowerEdge cluster configurations are tested and certified using identical QLogic HBAs installed in all of the cluster nodes. Using dissimilar HBAs in your cluster nodes is not supported.

Windows NT Service Pack Support

Windows NT Service Pack 6a or later is recommended for PowerEdge Cluster FE100/FL100 and FE200/FL200 systems.

PowerEdge Cluster FE100/FL100 and FE200/FL200 Homogeneous Configurations

Your PowerEdge Cluster FE100/FL100 and FE200/FL200 configuration supports the following PowerEdge servers as cluster nodes in homogeneous pairs (same server) running Windows NT Server 4.0, Enterprise Edition:

- PowerEdge 1550-1550
- PowerEdge 1650-1650
- PowerEdge 2400-2400
- PowerEdge 2450-2450
- PowerEdge 2500-2500
- PowerEdge 2550-2550
- PowerEdge 2650-2650
- PowerEdge 4300-4300
- PowerEdge 4350-4350
- PowerEdge 4400-4400
- PowerEdge 4600-4600
- PowerEdge 6100-6100
- PowerEdge 6300-6300
- PowerEdge 6350-6350
- PowerEdge 6400-6400
- PowerEdge 6450-6450
- PowerEdge 6600-6600
- PowerEdge 6650-6650
- PowerEdge 8450-8450

NOTE: The PowerEdge 1650, 2650, 4600, 6600, and 6650 systems are not supported in the FL100 and FL200 configurations.

NOTE: Heterogeneous server clusters are not supported in PowerEdge Cluster FE100/FL100 and FE200/FL200 configurations running Windows 2000 Advanced Server.

PowerEdge Cluster FE100/FL100 Heterogeneous Configurations

Your PowerEdge Cluster FE100/FL100 system supports the following PowerEdge servers as cluster nodes in heterogeneous pairs (mixed server models) running Windows NT Server 4.0, Enterprise Edition:

- PowerEdge 2400-4300
- PowerEdge 2450-4350
- PowerEdge 4400-2400
- PowerEdge 4400-4300
- PowerEdge 6300-4300
- PowerEdge 6300-6100
- PowerEdge 6350-4350
- PowerEdge 6400-4400
- PowerEdge 6400-6300
- PowerEdge 6450-6350
- PowerEdge 8450-6350
- PowerEdge 8450-6450

Rules and Guidelines

When configuring your PowerEdge cluster with heterogeneous cluster nodes, both cluster nodes must contain identical versions of the following software and hardware components:

- Operating systems and service packs
- Hardware drivers for the NICs, HBAs, and any other peripheral hardware components
- Management utilities, such as Dell OpenManage™ systems management software
- Fibre Channel HBA basic input/output system (BIOS)

HBA Connectors

Both optical and copper HBA connectors are supported in a storage area network (SAN)-attached and SAN appliance-attached configuration. Copper HBA connectors are supported in a direct-attached configuration.

PowerEdge Cluster FE200/FL200 Heterogeneous Configurations

Heterogeneous server clusters are not supported in PowerEdge Cluster FE200/FL200 configurations running Windows NT Server 4.0, Enterprise Edition.

QLogic HBA Support for PowerEdge Cluster FE100/FL100 Configurations

Table 1-2 lists the PowerEdge systems and the QLogic HBAs that are supported for PowerEdge Cluster FE100/FL100 configurations running Windows NT Server 4.0, Enterprise Edition.

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

Table 1-2. Supported HBAs for PowerEdge Cluster FE100/FL100 Configurations Running Windows NT Server 4.0, Enterprise Edition

PowerEdge System	QLA-2100 33 MHz	QLA-2200 33MHz	QLA-2200 66 MHz
1550			x
1650			x
2400/2450		x	x
2500			x
2550			x
2650			x
4300/4350	x	x	x
4400		x	x
4600			x
6100	x		
6300/6350	x	x	x
6400/6450		x	x
6600/6650			x
8450		x	x

QLogic HBA Support for PowerEdge Cluster FE200/FL200 Configurations

Table 1-3 lists the PowerEdge systems and the QLogic HBAs that are supported for PowerEdge Cluster FE200/FL200 configurations running Windows NT Server 4.0, Enterprise Edition.

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

Table 1-3. Supported HBAs for PowerEdge Cluster FE200/FL200 Configurations Running Windows NT Server 4.0, Enterprise Edition

PowerEdge System	QLA-2200 33 MHz	QLA 2200 66 MHz
1550		x
1650		x
2400/2450	x	x
2500		x
2550		x
2650		x
4300/4350	x	x
4400	x	x
4600		x
6300/6350	x	x
6400/6450	x	x
6600/6650		x
8450	x	x

Rules and Guidelines

All QLogic HBAs used in the cluster nodes must be the same model within the cluster and must use driver version 7.05.08 or later.

You can download the latest drivers from the Dell | Support website located at **support.dell.com**.

HBA Connectors

Both optical and copper HBA connectors are supported in a SAN-attached and SAN appliance-attached configuration. Copper HBA connectors are supported in a direct-attached configuration.

Windows 2000 Advanced Server Cluster Configurations

The following subsections provide information on the Windows 2000 Advanced Server Service Pack, homogeneous cluster configurations, and supported QLogic HBAs and HBA drivers for your PowerEdge cluster configuration.

See the *Dell PowerEdge Cluster FE100/FL100 and FE200/FL200 Installation and Troubleshooting Guide* for installing cluster configurations running Windows 2000 Advanced Server.

NOTE: HBAs installed in PowerEdge clusters using redundant paths must be identical. PowerEdge cluster configurations are tested and certified using identical QLogic HBAs installed in all of the cluster nodes. Using dissimilar HBAs in your cluster nodes is not supported.

Windows 2000 Advanced Server Service Pack Support

Windows 2000 Advanced Server Service Pack 1 or later is recommended for PowerEdge Cluster FE100/FL100 and FE200/FL200 systems.

PowerEdge Cluster FE100/FL100 and FE200/FL200 Homogeneous Configurations

Your PowerEdge Cluster FE100/FL100 and FE200/FL200 configuration supports the following PowerEdge servers as cluster nodes in homogeneous pairs (same server) running Windows 2000 Advanced Server:

- PowerEdge 1550-1550
- PowerEdge 1650-1650
- PowerEdge 2400-2400
- PowerEdge 2450-2450
- PowerEdge 2500-2500
- PowerEdge 2550-2550

- PowerEdge 2650-2650
- PowerEdge 4300-4300
- PowerEdge 4350-4350
- PowerEdge 4400-4400
- PowerEdge 4600-4600
- PowerEdge 6300-6300
- PowerEdge 6350-6350
- PowerEdge 6400-6400
- PowerEdge 6450-6450
- PowerEdge 6600-6600
- PowerEdge 6650-6650
- PowerEdge 8450-8450

NOTE: The PowerEdge 1650, 2650, 4600, 6600, and 6650 systems are not supported in the FL100 and FL200 configurations.

QLogic HBA Support for PowerEdge Cluster FE100/FL100 Configurations

Table 1-4 lists the PowerEdge systems and the QLogic HBAs that are supported for PowerEdge Cluster FE100/FL100 configurations running Windows 2000 Advanced Server.

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

Table 1-4. Supported HBAs for PowerEdge Cluster FE100/FL100 Configurations Running Windows 2000 Advanced Server

PowerEdge System	QLA-2100 33 MHz	QLA-2200 33MHz	QLA-2200 66 MHz
1550			x
1650			x
2400/2450		x	x
2500			x
2550			x
2650			x
4300/4350	x	x	x

Table 1-4. Supported HBAs for PowerEdge Cluster FE100/FL100 Configurations Running Windows 2000 Advanced Server *(continued)*

PowerEdge System	QLA-2100 33 MHz	QLA-2200 33MHz	QLA-2200 66 MHz
4400		x	x
4600			x
6300/6350	x	x	x
6400/6450		x	x
6600/6650			x
8450		x	x

QLogic HBA Support for PowerEdge Cluster FE200/FL200 Configurations

Table 1-5 lists the PowerEdge systems and the QLogic HBAs that are supported for PowerEdge Cluster FE200/FL200 configurations running Windows 2000 Advanced Server.

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

Table 1-5. Supported HBAs for PowerEdge Cluster FE200/FL200 Configurations Running Windows 2000 Advanced Server

PowerEdge System	QLA-2200 33 MHz	QLA 2200 66 MHz
1550		x
1650		x
2400/2450	x	x
2500		x
2550		x
2650		x
4300/4350	x	x
4400	x	x
4600		x
6300/6350	x	x
6400/6450	x	x
6600/6650		x
8450	x	x

Rules and Guidelines

All QLogic HBAs used in the cluster nodes must be the same model within the cluster and must use driver version 7.05.08 or later.

You can download the latest drivers from the Dell | Support website located at **support.dell.com**.

HBA Connectors

Both optical and copper HBA connectors are supported in a SAN-attached and SAN appliance-attached configuration. Copper HBA connectors are supported in a direct-attached configuration.

Installing Peripheral Components in Your PowerEdge Cluster Node PCI Slots

This section provides configuration information for adding HBAs, a DRAC II or III, and redundant array of independent disks (RAID) controllers into your PowerEdge cluster node PCI slots.

See your system's *Installation and Troubleshooting Guide* for expansion card installation guidelines.

Table 1-6 provides PCI slot assignments for your PowerEdge cluster nodes.

⚠ **CAUTION: Hardware installation should be performed only by trained service technicians. See the safety instructions in your PowerEdge *System Information* document before working inside the system to avoid a situation that could cause serious injury or death.**

Table 1-6. PCI Slot Assignments for PowerEdge Cluster Nodes

PowerEdge System	PCI Buses	HBA	DRAC II or III	RAID Controller
1550	PCI bus 1: PCI slot 1 is 64-bit, 66 MHz PCI bus 2: PCI slot 2 is 64-bit, 66 MHz	Install HBAs in any PCI slot.	N/A	N/A
1650	*Standard riser board:* PCI bus 2: PCI slot 1 is 64-bit, 66 MHz PCI bus 2: PCI slot 2 is 64-bit, 66 MHz *Optional riser board:* PCI bus 0: PCI slot 1 is 32-bit, 33 MHz PCI bus 2: PCI lot 2 is 64-bit, 66 MHz **NOTE:** The system is available with two different riser board configurations for PCI slot 1. The optional riser board includes a 32-bit, 33 MHz PCI slot for an optional DRAC III card.	Install HBA in any PCI slot.	Install new or existing DRAC III in the 32-bit, 33 MHz slot.	Install in any available PCI slot.
2400	PCI bus 0: PCI slots 1 through 5 are 64-bit, 33-MHz PCI bus 1: PCI slot 6 is 32-bit, 33-MHz	For dual HBA configurations, Dell recommends installing the HBAs on separate PCI buses to balance the load on the system.	Install new or existing DRAC II in PCI slot 6.	N/A
2450	PCI bus 0: PCI slots 1 through 3 are 32-bit, 33-MHz	Install HBAs in any PCI slot.	N/A	N/A
2500	PCI bus 1: PCI slots 6 and 7 are 32-bit, 33 MHz PCI bus 2: PCI slots 3, 4 and 5 are 64-bit, 33 MHz PCI bus 3: PCI slots 1 and 2 are 64-bit, 66 MHz	For dual HBA configurations, Dell recommends installing the HBAs on separate 64-bit PCI buses to balance the load on the system.	If you are currently using a DRAC II or plan to use one later, install the DRAC II in PCI slot 7.	Install in any available PCI slot.

Table 1-6. PCI Slot Assignments for PowerEdge Cluster Nodes *(continued)*

PowerEdge System	PCI Buses	HBA	DRAC II or III	RAID Controller
2550	PCI bus 0: PCI slots 1 through 3 are 64-bit, 33-MHz	Install HBAs in any PCI slot.	N/A	N/A
2650	PCI/PCI-X bus 1: PCI slot 1 is 64-bit, 33–133 MHz PCI/PCI-X bus 1: PCI slot 2 is 64-bit, 33–133 MHz PCI/PCI-X bus 2: PCI slot 3 is 64-bit, 33–133 MHz **NOTE:** PCI/PCI-X slot 1 must be empty for PCI/PCI-X slot 2 to attain an operating speed of 133 MHz.	For dual HBA configurations, Dell recommends installing the HBAs on separate PCI buses to balance the load on the system.	N/A	An integrated RAID controller is installed on the system board. **NOTE:** To activate the integrated RAID controller, you must install a RAID battery and key.
4300 4350	PCI bus 0: PCI slots 1 through 3 are 32-bit, 33-MHz slots	For dual HBA configurations, Dell recommends installing the HBAs on separate PCI buses to balance the load on the system.	Install new or existing DRAC II in PCI slot 4.	N/A
4400	PCI bus 0: PCI slots 1 and 2 are 64-bit, 33/66-MHz PCI bus 1: PCI slots 3 through 6 are 64-bit, 33-MHz PCI bus 2: PCI slot 7 is 32-bit, 33-MHz	For dual HBA configurations, Dell recommends installing the HBAs on separate PCI buses (PCI buses 1 and 2) to balance the load on the system.	Install new or existing DRAC II in PCI slot 7.	N/A
4600	PCI bus 0: PCI slot 1 is 32-bit, 33 MHz PCI/PCI-X bus 1: PCI slots 2 and 3 are 64-bit, 66–100 MHz PCI/PCI-X bus 2: PCI slots 4 and 5 are 64-bit, 66–100 MHz PCI/PCI-X bus 3: PCI slots 6 and 7 are 64-bit, 66–100 MHz	For dual HBA configurations, Dell recommends installing the HBAs on separate PCI buses to balance the load on the system.	Install new or existing DRAC III in PCI slot 1.	An integrated RAID controller is installed on the system board. **NOTE:** To activate the integrated RAID controller, you must install a RAID battery and key.

PowerEdge System	PCI Buses	HBA	DRAC II or III	RAID Controller
6100	PCI bus 0: PCI slots 1 through 3 are 32-bit, 33 MHz PCI bus 1: PCI slots 4 through 6 is 32-bit, 33 MHz	For dual HBA configurations, Dell recommends installing the HBAs on separate PCI buses to balance the load on the system.	N/A	N/A
6300 6350	PCI bus 0: PCI slots 1 through 3 are 32-bit, 33-MHz PCI bus 1: PCI slots 4 through 7 are 64-bit, 33-MHz	For dual HBA configurations, Dell recommends installing the HBAs on separate PCI buses to balance the load on the system.	Install new or existing DRAC II in PCI slot 3.	N/A
6400 6450	PCI bus 0: PCI slot 1 is 32-bit, 33-MHz PCI bus 1: PCI slots 2 through 5 are 64-bit, 33-MHz PCI bus 2: PCI slots 6 and 7 are 64-bit, 33/66-MHz	For dual HBA configurations, Dell recommends installing the HBAs on separate PCI buses (PCI buses 1 and 2) to balance the load on the system.	Install new or existing DRAC II in PCI slot 1.	N/A
6600	PCI bus 0: PCI slot 1 is 32-bit, 33 MHz PCI/PCI-X bus 1: PCI slot 2 and 3 are 64-bit, 33–100 MHz PCI/PCI-X bus 2: PCI slot 4 and 5 are 64-bit, 33–100 MHz PCI/PCI-X bus 3: PCI slot 6 and 7 are 64-bit, 33–100 MHz PCI/PCI-X bus 4: PCI slot 8 and 9 are 64-bit, 33–100 MHz PCI/PCI-X bus 5: PCI slot 10 and 11 are 64-bit, 33–100 MHz	For dual HBA configurations, Dell recommends installing the HBAs on separate PCI buses to balance the load on the system.	Install new or existing DRAC III in slot 1.	Install the RAID controller in PCI slot 2 or 3.

PowerEdge System	PCI Buses	HBA	DRAC II or III	RAID Controller
6650	PCI bus 0: PCI slot 1 is 32-bit, 33 MHz PCI/PCI-X bus 1: PCI slot 2 and 3 are 64-bit, 33–100 MHz PCI/PCI-X bus 2: PCI slot 4 and 5 are 64-bit, 33–100 MHz PCI/PCI-X bus 3: PCI slot 6 is 64-bit, 33–100 MHz PCI/PCI-X bus 4: PCI slot 7 is 64-bit, 33–100 MHz PCI/PCI-X bus 5: PCI slot 8 is 64-bit, 33–100 MHz	For dual HBA configurations, Dell recommends installing the HBAs on separate PCI buses to balance the load on the system.	Install new or existing DRAC III in slot 1.	Install the RAID controller in PCI slot 2 or 3.
8450	PCI bus 0: PCI slot 1 and 2 are 64-bit, 33-MHz PCI bus 1: PCI slots 3 through 6 are 64-bit, 33-MHz PCI bus 2: PCI slots 7 and 8 are 64-bit, 33/66-MHz PCI bus 3: PCI slots 9 and 10 are 64-bit, 33/66-MHz	For dual HBA configurations, Dell recommends installing the HBAs on separate PCI buses (PCI buses 2 and 3) to balance the load on the system.	Install new or existing DRAC II in PCI slot 2.	Install the RAID controller for the system's internal drives in PCI slot 1.

Index