PLATFORM GUIDE

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Notes, Notices, Cautions, and Warnings

Throughout this guide, blocks of text may be accompanied by an icon and printed in bold type or in italic type. These blocks are notes, notices, cautions, and warnings, and they are used as follows:

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

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 potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

WARNING: A WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious bodily injury.

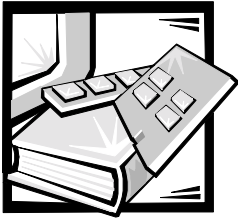# *Contents*

Dell™ PowerEdge™ Cluster SE100, SE200, and SL200 Platform Guide

This guide provides the latest information on using Microsoft® Windows NT® Server 4.0, Enterprise Edition operating system and Windows® 2000 Advanced Server operating system for the following Dell PowerEdge Cluster products and components:

- Dell PowerEdge Cluster SE100

    — Servers: PowerEdge 2300, 4300, 4350, 6300, and 6350

    — Storage: PowerVault™ 200S, 201S, 210S, and 211S

    — Cluster interconnect: Fast Ethernet

- Dell PowerEdge Cluster SE200

    — Servers: PowerEdge 2300, 2400, 2450, 4300, 4350, 4400, 6300, 6350, 6400, 6450 and 8450

    — Storage: PowerVault 200S, 201S, 210S, and 211S

    — Cluster interconnect: Fast Ethernet

- Dell PowerEdge Cluster SL200

    — Servers: PowerEdge 2300, 2400, 2450, 4300, 4350, 4400, 6300,6350, 6400, 6450 and 8450

    — Storage: PowerVault 200S, 201S, 210S, and 211S

    — Cluster interconnect: Giganet cLAN

See the section related to your cluster product for more information on supported configurations.

NOTE: Configurations not listed in this document are not certified and are not supported by Dell or Microsoft.

PowerEdge Cluster SE100

The PowerEdge Cluster SE100 supports clustering with Windows NT Server 4.0, Enterprise Edition or Windows 2000 Advanced Server. See the following sections for information on supported configurations and service packs (SPs) for your Windows operating system.

Windows 2000 Advanced Server

Installation instructions for hardware configurations using Windows 2000 Advanced Server can be found in the *Dell PowerEdge Cluster SE100, SE200, and SL200 Installation and Troubleshooting Guide.*

Your PowerEdge Cluster SE100 system supports the following PowerEdge servers as cluster nodes in homogeneous pairs (same server) with Windows 2000 Advanced Server:

- PowerEdge 2300
- PowerEdge 4300
- PowerEdge 4350
- PowerEdge 6300
- PowerEdge 6350

NOTE: Heterogeneous server clusters (mixed server models) are not supported with PowerEdge Cluster SE100 configurations running Windows 2000 Advanced Server.

Windows NT 4.0 Server, Enterprise Edition

You can find installation instructions for supported hardware configurations using Windows NT Server 4.0, Enterprise Edition in the *Dell PowerEdge Cluster SE100, SE200, and SL200 Installation and Troubleshooting Guide.*

Your PowerEdge Cluster SE100 supports the following PowerEdge servers as cluster nodes in homogeneous pairs (same server) with Windows NT 4.0, Enterprise Edition:

- PowerEdge 2300
- PowerEdge 4300
- PowerEdge 4350
- PowerEdge 6300
- PowerEdge 6350

Your PowerEdge Cluster SE100 supports one combination of PowerEdge servers as cluster nodes in heterogeneous pairs (*mixed server models*) with Windows NT 4.0, Enterprise Edition: PowerEdge 2300 - 4300.

Windows NT 4.0 Service Pack Support

Windows NT SP 6.0a or later is recommended for PowerEdge Cluster SE100 systems.

NOTE: Both nodes must be configured with similar drivers (network interface controllers [NIC], redundant array of independent disks [RAID] controller, and so on), utilities (Dell OpenManage™ suite, PowerConsole, and so on), firmware (PowerEdge Expandable RAID Controller 2/SC [PERC 2/SC]), and the latest basic input/output system [BIOS] for each system.

When planning for and testing your heterogeneous configurations, ensure that adequate resources are available on the server node to run all of the application programs on the cluster with fewer computing resources.

Adding Peripherals Required for PowerEdge 2300, 4300, or 4350

WARNING: Hardware installation should be performed only by trained service technicians. Before working inside the computer system, see the safety instructions in your PowerEdge system documentation to avoid a situation that could cause serious injury or death.

The following list provides Peripheral Component Interconnect (PCI) slot assignment information for buses, RAID controllers, NICs, and the Dell OpenManage Remote Assistant Card 2 (DRAC 2).

- PCI buses
  - PCI bus 1: PCI slots 1 through 4 are in front of the PCI bridge
  - PCI bus 2: PCI slots 5 and 6 are behind the PCI bridge
- RAID controllers
  - RAID controllers can be installed in any available PCI slot
- NICs
  - You can install NICs in any available PCI slot
- DRAC 2
  - If you are currently using a DRAC 2 or plan to use one in the future, install it in PCI slot 4

NOTE: To make sure that the small computer system interface (SCSI) or RAID controller attached to the boot drives initializes first, you may have to change the scan order of the PCI bus, if the BIOS supports this option, or change the order of the RAID controllers, NIC(s), and DRAC 2. Performing these tasks ensures that Windows numbers the boot drives in the proper sequence.

Adding Peripherals Required for PowerEdge 6300 or 6350

WARNING: Hardware installation should be performed only by trained service technicians. Before working inside the computer system, see the safety instructions in your PowerEdge system documentation to avoid a situation that could cause serious injury or death.

The following list provides PCI slot assignment information for buses, RAID controllers, NICs, and a DRAC 2.

- PCI buses
    - PCI bus 1: PCI slots 1 through 3 are 32-bit, 33-megahertz (MHz)
    - PCI bus 2: PCI slots 4 through 7 are 64-bit, 33-MHz
- RAID controllers
    - RAID controllers can be installed in any available PCI slot
    - If you use multiple RAID controllers and there are slots available, Dell recommends installing the RAID controllers on separate PCI buses to balance the load on the system
- NICs
    - You can install NICs in any available PCI slot
- DRAC 2
    - If you are currently using a DRAC 2 or plan to use one in the future, install it in PCI slot 3

NOTE: To make sure that the SCSI or RAID controller attached to the boot drives initializes first, you may have to change the scan order of the PCI bus, if the BIOS supports this option, or change the order of the RAID controllers, NIC(s), and DRAC 2. Performing these tasks ensures that Windows numbers the boot drives in the proper sequence.

PowerEdge Cluster SE200 and SL200

PowerEdge Clusters SE200 and SL200 support clustering with Windows NT Server 4.0, Enterprise Edition or Windows 2000 Advanced Server. See the following sections for information on supported configurations and SPs for your Windows operating system.

Windows 2000 Advanced Server

Installation instructions for hardware configurations using Windows 2000 Advanced Server can be found in the *Dell PowerEdge Cluster SE100, SE200, and SL200 Installation and Troubleshooting Guide.*

Your PowerEdge Cluster SE200 and SL200 system supports the following PowerEdge servers as cluster nodes in homogeneous pairs (same server) with Windows 2000 Advanced Server:

- PowerEdge 2400
- PowerEdge 2450
- PowerEdge 4400
- PowerEdge 6400
- PowerEdge 6450
- PowerEdge 8450

NOTE: Heterogeneous server clusters (mixed server models) are not supported with PowerEdge Cluster SE200 and SL200 configurations running Windows 2000 Advanced Server.

Windows NT Server 4.0, Enterprise Edition

Your PowerEdge Clusters SE200 and SL200 support the following PowerEdge servers as cluster nodes in homogeneous pairs (same server) with Windows NT Server 4.0, Enterprise Edition:

- PowerEdge 2400
- PowerEdge 2450
- PowerEdge 4400
- PowerEdge 6400
- PowerEdge 6450
- PowerEdge 8450

The following combinations of PowerEdge server cluster nodes are supported in heterogeneous pairs (mixed server nodes) with Windows NT Server 4.0, Enterprise Edition:

- PowerEdge 2400 - 2300
- PowerEdge 2400 - 4300
- PowerEdge 2400 - 4400
- PowerEdge 2450 - 4350
- PowerEdge 4400 - 4300
- PowerEdge 6400 - 6300
- PowerEdge 6400 - 4400

- PowerEdge 6450 - 6350
- PowerEdge 8450 - 6350
- PowerEdge 8450 - 6450

Windows NT 4.0 Service Pack Support

Windows NT SP 6.0a or later is recommended for PowerEdge Cluster SE200 and SL200 systems.

NOTE: Both nodes must be configured with similar drivers (NIC, RAID controller, and so on), utilities (Dell OpenManage suite, PowerConsole, and so on), firmware (PERC 2/DC), and the latest BIOS for each system.

When planning for and testing your heterogeneous configurations, ensure that adequate resources are available on the server node to run all of the application programs on the cluster with fewer computing resources.

PERC 2/DC Installation

You must install the PERC 2/DC in a 64-bit, 33-MHz or 32-bit, 33-MHz PCI slot. For your specific server system, see the PCI slot assignments in the following subsections.

Adding Peripherals Required for PowerEdge 2400 Cluster Nodes

WARNING: Hardware installation should be performed only by trained service technicians. Before working inside the computer system, see the safety instructions in your PowerEdge system documentation to avoid a situation that could cause serious injury or death.

The following list provides PCI slot assignment information for buses, RAID controllers, NICs, and a DRAC 2.

NOTE: The PERC 2/DC comes fitted with an ISA retainer (the extension bracket at the edge of the PCI card) to allow it to fit into a full-length ISA expansion slot. You must remove the ISA retainer to install the PERC 2/DC in PCI slots 1 or 2 of the PowerEdge 2400. To remove the ISA retainer, use a Phillips screwdriver to remove the two screws that fasten the retainer to the PERC 2/DC.

- PCI buses
    - PCI bus 1: PCI slots 1 through 5 are 64-bit, 33-MHz
    - PCI bus 2: PCI slot 6 is 32-bit, 33-MHz

- RAID controllers

  — RAID controllers can be installed in any available PCI slot.

  — If you use multiple RAID controllers and there are slots available, Dell recommends installing the RAID controllers on separate PCI buses to balance the load on the system.

  — If you are not currently using a DRAC 2 and do not plan to use one in the future, Dell recommends that you install one RAID controller in the 32-bit slot, even if it is a 64-bit RAID controller.

- NICs

  — You can install NICs in any available PCI slot.

- DRAC 2

  — If you are currently using a DRAC 2 or plan to use one in the future, install it in PCI slot 6.

NOTE: To make sure that the SCSI or RAID controller attached to the boot drives initializes first, you may have to change the scan order of the PCI bus, if the BIOS supports this option, or change the order of the RAID, NIC, and DRAC 2. Performing these tasks ensures that Windows numbers the boot drives in the proper sequence.

Adding Peripherals Required for PowerEdge 2450 Cluster Nodes

WARNING: Hardware installation should be performed only by trained service technicians. Before working inside the computer system, see the safety instructions in your PowerEdge system documentation to avoid a situation that could cause serious injury or death.

The following list provides PCI slot assignment information for the system's buses, RAID controllers, NICs, and DRAC 2.

NOTE: The PERC 2/DC comes fitted with an ISA retainer (the extension bracket at the edge of the PCI card) to allow it to fit into a full-length ISA expansion slot. You may need to remove the ISA retainer from systems that use full-length PCI expansion slots. To remove the ISA retainer, use a Phillips screwdriver to remove the two screws that fasten the retainer to the PERC 2/DC.

- PCI buses

  — PCI bus 1: PCI slots 1 through 3 are 32-bit, 33-MHz

- RAID controllers

  — RAID controllers can be installed in any available PCI slot.

- NICs

    — NICs can be installed in any available PCI slot. Dell recommends that Giganet cLAN adapters be installed in PCI slots 1 or 2.

- DRAC 2

    — If you are currently using a DRAC 2 or plan to use one in the future, install it in PCI slot 2.

NOTES: If you plan to use a DRAC 2, one PCI slot is available for a PERC 2/DC RAID controller for shared storage.

To make sure that the SCSI or RAID controller attached to the boot drives initializes first, you may have to change the scan order of the PCI bus, if the BIOS supports this option, or change the order of the RAID, NIC, and DRAC 2. Performing these tasks ensures that Windows numbers the boot drives in the proper sequence.

Adding Peripherals Required for PowerEdge 4400 Cluster Nodes

WARNING: Hardware installation should be performed only by trained service technicians. Before working inside the computer system, see the safety instructions in your PowerEdge system documentation to avoid a situation that could cause serious injury or death.

The following list provides PCI slot assignment information for the system's PCI buses, RAID controllers, NICs, and DRAC 2.

- PCI buses

    — PCI bus 1: PCI slots 1 and 2 are 64-bit, 33/66-MHz

    — PCI bus 2: PCI slots 3 through 6 are 64-bit, 33-MHz

    — PCI bus 3: PCI slot 7 is 32-bit, 33-MHz

- RAID controllers

    — RAID controllers can be installed in any available 64-bit, 33-MHz or 32-bit, 33-MHz PCI slot.

    — If you use multiple RAID controllers and there are available slots, Dell recommends installing the RAID controllers on separate PCI buses to balance the load on the system.

    NOTICE: The PERC 2/DC is keyed to prevent installation in a 64-bit 33/ 66 MHz PCI slot.

- NICs

    — You can install NICs in any available PCI slot.

- DRAC 2

  — If you are currently using a DRAC 2 or plan to use one in the future, install it in PCI slot 7.

NOTE: To make sure that the SCSI or RAID controller attached to the boot drives initializes first, you may have to change the scan order of the PCI bus, if the BIOS supports this option, or change the order of the RAID, NIC, and DRAC 2. Performing these tasks ensures that Windows numbers the boot drives in the proper sequence.

Adding Peripherals Required for PowerEdge 6400 and 6450 Systems Platform Support

WARNING: Hardware installation should be performed only by trained service technicians. Before working inside the computer system, see the safety instructions in your PowerEdge system documentation to avoid a situation that could cause serious injury or death.

The following list provides PCI slot assignment information for the system's PCI buses, RAID controllers, NICs, and DRAC 2.

- PCI buses

  — PCI bus 1: PCI slot 1 is 32-bit, 33-MHz

  — PCI bus 2: PCI slots 2 through 5 are 64-bit, 33-MHz

  — PCI bus 3: PCI slots 6 and 7 are 64-bit, 33/66-MHz

- RAID controllers

  — RAID controllers can be installed in any available 32-bit, 33-MHz or 64-bit, 33-MHz PCI slot.

  — If you use multiple RAID controllers and there are available PCI slots, Dell recommends installing the RAID controllers on separate PCI buses to balance the load on the system.

  NOTICE: The PERC 2/DC is keyed to prevent installation in a 64-bit 33/66 MHz PCI slot.

- NICs

  — You can install NICs in any available PCI slot.

- DRAC 2

  — If you are currently using a DRAC 2 or plan to use one in the future, install it in PCI slot 1.

NOTE: To make sure that the SCSI or RAID controller attached to the boot drives initializes first, you may have to change the scan order of the PCI bus, if the BIOS supports this option, or change the order of the RAID, NIC, and DRAC 2. Performing these tasks ensures that Windows numbers the boot drives in the proper sequence.

Adding Peripherals Required for PowerEdge 8450 Cluster Nodes

WARNING: Hardware installation should be performed only by trained service technicians. Before working inside the computer system, see the safety instructions in your PowerEdge system documentation to avoid a situation that could cause serious injury or death.

The following list provides PCI slot assignment information for the system's PCI buses, RAID controllers, NICs, and DRAC 2.

- PCI buses

    — PCI bus 1: PCI slots 1 and 2 are 64-bit, 33-MHz

    — PCI bus 2: PCI slots 3 through 6 are 64-bit, 33-MHz

    — PCI bus 3: PCI slots 7 and 8 are 64-bit, 33/66-MHz

    — PCI bus 4: PCI slots 9 through 10 are 64-bit, 33/66-MHz

- RAID controllers

    — Install the RAID controller for the server's internal drives in PCI slot 1.

    — Install additional RAID controllers in any available 64-bit, 33-MHz or 32-bit, 33-MHz PCI slot.

    — If you use multiple RAID controllers and there are available slots, Dell recommends installing the RAID controllers on separate 64-bit PCI buses to balance the load on the system.

NOTICE: The PERC 2/DC is keyed to prevent installation in a 64-bit 33/66 MHz PCI slot.

NOTE: The PERC 2/DC comes fitted with an ISA retainer (the extension bracket at the edge of the PCI card) to allow it to fit into a full-length ISA expansion slot. You may need to remove the ISA retainer from systems that use full-length PCI expansion slots. To remove the ISA retainer, use a Phillips screwdriver to remove the two screws that fasten the retainer to the PERC 2/DC.

- NICs

    — NICs can be installed in any available PCI slot.

- DRAC 2

    — If you are currently using a DRAC 2 or plan to use one in the future, install it in PCI slot 2.

NOTE: To make sure that the SCSI or RAID controller attached to the boot drives initializes first, you may have to change the scan order of the PCI bus, if the system BIOS supports this option, or change the order of the RAID, NIC, and DRAC 2. Performing these tasks ensures that Windows numbers the boot drives in the proper sequence.

Adding Peripherals Required for PowerEdge 2300, 43xx, and 63xx Cluster Nodes

There are no PCI slot requirements or restrictions.

PowerEdge Cluster SE100, SE200, and SL200 Configuration Matrixes

The following forms can be attached to the back of each cluster node or rack and may be used by the system installer to record important information about the hardware on each cluster component. In addition, have a copy of the form available any time you call Dell for technical support.

Record the following information on the configuration matrix form:

*   Cluster name, installer, date installed, and notes

*   Cluster server information

*   Storage array description for each storage array

*   Service tag information for each cluster component

*   Connectivity information to indicate the SCSI connector (A or B) on each shared storage system that connects to the RAID controller channel (A or B) on each shared storage system; see the PowerEdge Cluster Configuration Matrix for specific instructions

*   Each cluster node's PCI slot number, a description of each slot, the adapters installed in each slot, and a usage description for each adapter installed

PowerEdge Cluster SE100 Configuration Matrix

Cluster Type	PowerEdge Cluster SE100
Cluster Name	
Installer	
Date Installed	
Applications	
Location	
Notes	

Node	PowerEdge Server Model	Windows NT Name
Node 1		
Node 2		

Storage Array	Description (Drive letters, RAID types, applications/data installed)
Storage 1	
Storage 2	

Component:	Node 1	Node 2	Storage 1 1	Storage 2 2
Service Tag				

System	Storage 1	Storage 2
Node 1, controller 1		
Node 2, controller 1		
Node 1, controller 2		
Node 2, controller 2		

PCI Slot Number	PCI Slot Description	Adapter Installed (PERC 2/SC, NIC, and so on)	Usage (Public Network, Private Network, Shared Storage, Internal Drives)
PCI slot 1			
PCI slot 2			
PCI slot 3			
PCI slot 4			
PCI slot 5			
PCI slot 6			
PCI slot 7			

PowerEdge Cluster SE200/SL200 Configuration Matrix

Cluster Type	PowerEdge Cluster SE200 or SL200
Cluster Name	
Installer	
Date Installed	
Applications	
Location	
Notes	

Node	PowerEdge Server Model	Windows NT Name
Node 1		
Node 2		

Storage Array	Description (Drive letters, RAID types, applications/data installed)
Storage 1	
Storage 2	
Storage 3	
Storage 4	

Component:	Node 1	Node 2	Storage 1	Storage 2	Storage 3	Storage 4
Service Tag						

System	Storage 1	Storage 2	Storage 3	Storage 4
Node 1, controller 1				
Node 2, controller 1				
Node 1, controller 2				
Node 2, controller 2				

PCI Slot Number	PCI Slot Description	Adapter Installed (PERC 2/SC, PERC 2/DC, NIC, and so on)	Usage (Public Network, Private Network, Shared Storage, Internal Drives)
PCI slot 1			
PCI slot 2			
PCI slot 3			
PCI slot 4			
PCI slot 5			
PCI slot 6			
PCI slot 7			
PCI slot 8			
PCI slot 9			
PCI slot 10			