Dell™ PowerEdge™ Cluster
FE655W 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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⚠ **CAUTION: Only trained service technicians are authorized to remove the system cover and access any of the components inside the system. Before performing any procedure, see your *Product Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.**

✍ **NOTE:** Unless explicitly stated, reference to Microsoft® Windows Server® 2003 in this guide implies reference to Microsoft Windows Server 2003 Enterprise Edition, Microsoft Windows Server 2003 Enterprise x64 Edition, Microsoft Windows Server 2003 R2 Enterprise Edition, and Microsoft Windows Server 2003 R2 Enterprise x64 Edition.

This document provides information for installing and connecting peripheral hardware, storage, and storage area network (SAN) components for your Dell™ PowerEdge™ Cluster FE655W solution. The PowerEdge Cluster FE655W solution is based on the PowerEdge 1855/1955 server modules, the Dell|EMC storage systems, and the Windows Server 2003 Enterprise Edition operating systems.

This document covers the following topics:

- PowerEdge Cluster FE655W solution overview.

- Supported SAN configurations.

- Configuration information for installing peripheral and embedded hardware components into PowerEdge Cluster FE655W solution configurations. These components include the Fibre Channel daughter cards, the internal Fibre Channel switches or pass-through modules, the internal Gigabit Ethernet switches or pass-through modules, and the embedded server module network interface cards (NICs).

- Configuration rules and guidelines for SAN-attached configurations.

- Cluster Configuration Support Matrix.

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

## Overview

The PowerEdge Cluster FE655W solution is attached to a self-contained SAN formed by server modules from one or two PowerEdge 1855/1955 server enclosure(s). The server modules are interconnected to one or more storage systems in a direct-attached configuration, or in a SAN-attached configuration using one of the following methods:

- Self-contained internal fabrics with Fibre Channel switch modules

- External SAN using Fibre Channel pass-through modules

- External SAN using Fibre Channel switch modules

The PowerEdge 1855/1955 server enclosure provides up to ten server modules, two Fibre Channel switch modules or pass-through modules, and two Gigabit (Gb) Ethernet switch modules or pass-through modules. Each server module has two embedded NICs and one Fibre Channel daughter card with two Fibre Channel ports.

The PowerEdge Cluster FE655W solution supports two to eight server modules running the Windows Server 2003, Enterprise Edition or the Windows Server 2003, Enterprise x64 Edition operating system that are installed in one or two PowerEdge 1855/1955 server enclosure(s).

# Supported Cluster Configurations

This section provides information about supported cluster configurations for your PowerEdge Cluster FE655W solution.

Table 1-1 provides a list of supported cluster configurations for the PowerEdge Cluster FE655W solution running Windows Server 2003 Enterprise Edition on a PowerEdge 1855/1955 server enclosure.

**NOTE:** The server modules used in a cluster, including their Fibre Channel daughter cards, must be identical.

**NOTE:** The PowerEdge Cluster FE655W solution with the AX-series storage systems is supported only with Windows Server 2003 Enterprise Edition and Windows Server 2003 R2 Enterprise Edition.

**Table 1-1.   Supported Cluster FE655W Cluster Configuration**

| PowerEdge System | Fibre Channel Daughter Card | Storage Systems | Ethernet Modules | Fibre Channel Modules |
|---|---|---|---|---|
| 1855/1955 | Dell 2342M<br>QLogic QME2462<br>*Emulex LPe1105-M | Dell\|EMC AX150SC**<br>Dell\|EMC AX150<br>Dell\|EMC CX3-10c<br>Dell\|EMC CX3-20/f/c<br>Dell\|EMC CX3-40/f/c<br>Dell\|EMC CX3-80 | Dell PowerConnect™ 5316M Ethernet embedded switch module<br><br>Embedded Gigabit Ethernet pass-through module | Brocade SilkWorm 3014/4016 Fibre Channel switch module<br><br>*McData 4314/4416 Fibre Channel switch module<br><br>Embedded Fibre Channel pass-through module |

  \* Supported only with the Dell|EMC CX-series storage systems.
\*\* The AX150SC storage system is supported in a direct-attached configuration only.

**NOTE:** References to Dell|EMC CX3-20/f/c in this guide imply reference to CX3-20, CX3-20f, and CX3-20c storage systems. Dell|EMC CX3-20 storage system represents Fibre Channel front-end only, CX3-20f storage system represents Fibre Channel front-end expansion support), and CX3-20c storage system represents combo version with Internet Small Computer System Interface (iSCSI) and Fibre Channel front-end support. Similarly, references to Dell|EMC CX3-40/f/c in this guide imply reference to CX3-40, CX3-40f, and CX3-40c storage systems.

**NOTE:** The PowerEdge Cluster FE655W solution employs the Fibre Channel connections on supported Dell|EMC CX3-10c, CX3-20c, and CX3-40c storage sytsems. For more information on configuring high-availability clusters that use the iSCSI connections on these storage systems, see *Dell PowerEdge Cluster FE655Wi Systems Platform Guide*.

**NOTE:** The PowerEdge Cluster FE655W solution does not support the AX150SC storage system in SAN-attached configuration.

## System Configurations

The PowerEdge Cluster FE655W solution supports the following Fibre Channel configurations:

- Fibre Channel embedded switches connected to external SAN fabrics
- Fibre Channel embedded switches connected to up to two storage systems
- Fibre Channel pass-through modules connected to a storage system
- Fibre Channel pass-through modules connected to external SAN fabrics

## 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 embedded NICs, Fibre Channel daughter cards, and any other peripheral hardware components
- Systems management software, such as Dell OpenManage™ systems management software and EMC® Navisphere® storage management software

### Maximum Distance Between Cluster Nodes

The maximum distance allowed between two PowerEdge 1855/1955 server enclosures with embedded switches, or from a PowerEdge 1855/1955 server enclosure directly connected to a storage system or to an external switch, or from a switch to a storage system is 300 meters (984 feet) using multimode fiber at 2 Gbps. The maximum distance is 100 meters (328 feet) when using multimode fiber at 4 Gbps.

The total distance between a PowerEdge 1855/1955 server enclosure and a storage system, or between two PowerEdge 1855/1955 server enclosures with Fibre Channel pass-through modules, may be increased through the use of single-mode or multi-mode switch Inter-Switch Links (ISLs).

The maximum cable length for Fast Ethernet and copper Gigabit Ethernet is 100 meters (328 feet), and for optical Gigabit Ethernet is 550 meters (1804 feet). 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

See the *Dell PowerEdge Cluster FE655W Systems Installation and Troubleshooting Guide* for high availability cluster hardware and software installation and configuration information.

# Attaching Your Cluster to a Shared Storage System in a Direct-Attached Cluster 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 the cluster nodes are connected directly to the storage system.

## Rules and Guidelines

The rules and guidelines described in Table 1-2 apply to direct-attached clusters.

**Table 1-2.    Direct-Attached Clusters Rules and Guidelines**

| Rule/Guideline | Description |
| --- | --- |
| Operating system | Each direct-attached cluster must run in one of the following:<br>• Windows Server 2003, Enterprise Edition<br>• *Windows Server 2003, Enterprise x64 Edition<br>• Windows Server 2003 R2, Enterprise Edition<br>• *Windows Server 2003 R2, Enterprise x64 Edition |
| Windows Server 2003 service pack | See "Cluster Configuration Support Matrix" on page 10 for 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.<br><br>Only one storage system can be directly attached to the cluster. |
| Fibre Channel HBA | Dell 2342M, QLogic QME2462, and * Emulex LPe1105-M Fibre Channel HBAs. |
| Fibre Channel module | Two Fibre Channel pass-through modules. |
| Ethernet module | Two Gigabit Ethernet pass-through modules. |
| Fibre Channel HBA drivers and BIOS versions | See "Cluster Configuration Support Matrix" on page 10 for supported versions. |
| Dell\|EMC base software | See "Cluster Configuration Support Matrix" on page 10 for supported versions. |
| EMC PowerPath® versions | See "Cluster Configuration Support Matrix" on page 10 for supported versions. |

* Supported only with the Dell|EMC CX-series storage systems.

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

A PowerEdge Cluster FE655W solution may include the following hardware components in a SAN configuration:

- Multiple clusters and non-clustered server modules, but is limited to no more than two PowerEdge 1855/1955 server enclosures.
- The supported storage system configurations using internal fabrics include:
  - One Dell|EMC storage system
  - Two Dell|EMC storage systems
  - One Dell|EMC storage system and one Dell PowerVault™ tape library
- With external SAN, a system can support up to four storage systems and up to two tape libraries.

*NOTE:* The PowerEdge Cluster FE655W solution does not support the AX150SC storage system in SAN-attached configuration.

## Rules and Guidelines

The rules and guidelines described in Table 1-3 apply to SAN-attached clusters.

**Table 1-3.   Rules and Guidelines for Dell PowerEdge Clusters**

| Rule/Guideline | Description |
| --- | --- |
| Operating system | Each cluster attached to the SAN must run one of the following:<br>• Windows Server 2003, Enterprise Edition<br>• *Windows Server 2003, Enterprise x64 Edition<br>• Windows Server 2003 R2, Enterprise Edition<br>• *Windows Server 2003 R2, Enterprise x64 Edition |
| Windows Server 2003 service pack | See "Cluster Configuration Support Matrix" on page 10 for supported versions. |
| Primary storage | Each Windows Server 2003, Enterprise Edition cluster can support up to 22 unique drive letters for shared logical drives. Windows Server 2003 can support additional physical drives through mount points.<br><br>Up to two Dell|EMC Fibre Channel disk arrays are supported in a configuration using only embedded switches.<br><br>Up to four Dell|EMC Fibre Channel disk arrays are supported in a configuration that is connected to external SAN. |
| Secondary Storage | Depending on the configuration, up to two PowerVault tape libraries that are supported by your cluster nodes in a Dell|EMC SAN environment may be used by the cluster.<br><br>Any system attached to the SAN can share these devices. |

**Table 1-3.  Rules and Guidelines for Dell PowerEdge Clusters** *(continued)*

| Rule/Guideline | Description |
| --- | --- |
| Ethernet module | Two Gigabit Ethernet pass-through modules. |
| Fibre Channel module | • Two Brocade SilkWorm 3014/4016 Fibre Channel switch modules.<br>• *Two McData 4314/4416 Fibre Channel switch modules.<br>• Two Fibre Channel pass-through modules. |
| Fibre Channel switch (external SAN) | Brocade SilkWorm 200E, *3250, *3850, *4100, *5000, and McData Sphereon *4400, *4500, *4700 switches. |
| Fibre Channel switch configuration | Redundant switch fabrics required. When connecting to an external SAN, all switches in the same fabric must be from the same manufacturer. |
| Fibre Channel switch zoning | Single-initiator zoning. |
| Fibre Channel switch firmware | See "Cluster Configuration Support Matrix" on page 10 for supported versions. |
| Fibre Channel HBA | Dell 2342M, QLogic QME2462, and *Emulex LPe1105-M Fibre Channel HBAs. |
| Fibre Channel HBA drivers and BIOS versions | See "Cluster Configuration Support Matrix" on page 10 for supported versions. |
| Dell\|EMC base software | See "Cluster Configuration Support Matrix" on page 10 for supported versions. |
| EMC PowerPath | See "Cluster Configuration Support Matrix" on page 10 for supported versions. |

* Supported only with the Dell|EMC CX-series storage systems.

### Obtaining More Information

See *Dell PowerEdge Cluster FE655W Systems Installation and Troubleshooting Guide* and the Dell Support website at **support.dell.com** for more information about Dell PowerEdge clusters.

# Cluster Configuration Support Matrix

The Cluster Configuration Support Matrix provides the latest supported drivers, firmware, and the operating system versions for your PowerEdge Cluster FE655W solution.

To obtain the supported drivers and firmware version for the operating system that is running on your 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 **FE655W**.

The *Dell Cluster Configuration Support Matrix* for the PowerEdge Cluster FE655W solution appears.

5  Locate the appropriate drivers and firmware that are supported on your cluster hardware and software components, and the operating system version.