VMware® Infrastructure 3.5 Update 2 for Dell™ PowerEdge™ Systems

Deployment Guide

Notes and Cautions

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

CAUTION: A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

September 2008 Rev. A04

Contents

Overview

This document is a companion guide to the VMware® Infrastructure 3.5 guides and provides additional information for supporting the Dell™ PowerEdge™ systems. The following topics are discussed:

- "Introduction" on page 5 — provides a brief overview of the VMware ESX™ 3.5 and VMware VirtualCenter products and technologies.
- "What's New?" on page 6 — provides information about additional supported hardware and updated software in this release.
- "**Licensing**" on page 7 — provides a list of the licensing options available to customers.
- "Dell-Supported Configurations" on page 9 — provides a list of qualified and supported VMware ESX 3.5 and VirtualCenter configurations.
- "**VMware Infrastructure Architecture**" on page 17— discusses the different components of the VMware deployment.
- "Installing ESX and VirtualCenter" on page 22 — provides guidelines for installing VMware ESX 3.5 software and VirtualCenter.
- "**Installing and Using Dell OpenManage™**" on page 26 — provides references to install and use Dell OpenManage.
- "Additional Resources" on page 27 — provides references to additional documentation.

NOTE: This document helps in deploying VMware ESX 3.x. To deploy VMware ESX 3i, see the *VMware ESX 3.5i Dell Deployment Guide* located on the Dell Support website at **support.dell.com**.

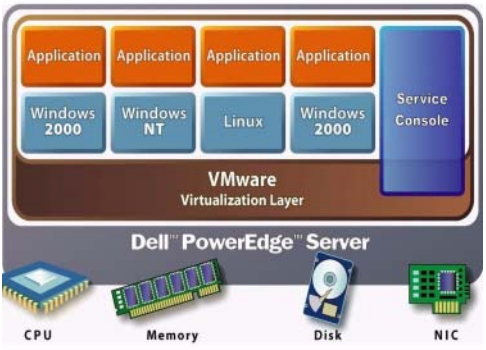
Introduction

This document helps you to deploy VMware Infrastructure 3.5 on PowerEdge systems and provides information specific to Dell systems and storage arrays, recommended configurations, best practices, and additional resources. VMware Infrastructure consists of the ESX software and VirtualCenter.

The ESX software allows multiple operating systems to run simultaneously in virtual environments on a single physical system.These virtual environments, referred to as *virtual machines* (VMs), can be created and managed faster than conventional systems. The virtual machines do not interact directly with the physical hardware. Each of these virtual machines run in a resource-isolated,

secure environment and can include Microsoft® Windows®, Linux, Novell® NetWare®, and Sun Solaris operating systems with their associated applications.

Figure 3-1. VMware ESX Server Architecture



VirtualCenter is a management application that monitors and manages virtual machines and the ESX software hosts. With VirtualCenter, you can create, start, stop, and migrate virtual machines across the entire physical data center. Advanced features such as VMware Distributed Resource Scheduling (DRS) and VMware High Availability are available with VirtualCenter 2.*x*. For more information, see "Installing VirtualCenter" on page 22.

What's New?

This release includes the new generation of VMware Infrastructure for the new PowerEdge systems and storage systems.

Supported New Hardware

- **Systems:** Dell PowerEdge M805 and Dell PowerEdge M905
- **Fibre Channel Host Bus Adapter Cards:** QLogic® QLe2560, QLogic QLe2562, Emulex® LP12000 and Emulex LP12002

Licensing

VMware Infrastructure 3.5 is available in three editions: Foundation Edition, Standard Edition, and Enterprise Edition. Foundation and Enterprise Editions are available through the Dell Original Equipment Manufacturer (OEM) channel and also through Dell Software and Peripherals (S&P). Standard Edition is available only through S&P.

Table 3-1 describes the features available in these editions.

Table 3-1. Licensing Features

Features	VMware Infrastructure Foundation (Previously Starter) virtualization for small business or branch office	VMware Infrastructure Standard High availability infrastructure virtualization suite for any workload	VMware Infrastructure Enterprise Enterprise-class infrastructure virtualization suite for the dynamic data center
ESX Software • Virtual Machine File System • Virtual Symmetric Multi-Processing	X	X	X
VirtualCenter Agent	X	X	X
Consolidated Backup	X	X	X
Update Manager	X	X	X
VMware High Availability		X	X
VMotion®			X
Storage VMotion			X
VMware DRS			X
Physical CPU Licensing	2 CPU or 4 CPU	2 CPU or 4 CPU	2 CPU or 4 CPU

Table 3-1. Licensing Features *(continued)*

Features	VMware Infrastructure Foundation	VMware Infrastructure Standard	VMware Infrastructure Enterprise
	(Previously Starter) virtualization for small business or branch office	High availability infrastructure virtualization suite for any workload	Enterprise-class infrastructure virtualization suite for the dynamic data center
Dell Offering	S&P	OEM, S&P	OEM, S&P
Software Subscription	1,3,4 years	0 to 4 years	1,3,4 years
VirtualCenter Server	• Available as a separately licensed product. • Licensed on per-server basis different from the three editions of VMware Infrastructure.		

NOTE: ESX can have a maximum of 8 GB RAM in the Foundation Edition.

Activation Code and License Key

To access your VMware software and the Software Subscription Services, you must register your software within 30 days of purchase on the VMware website at **www.vmware.com/code/dell** with the activation code of the license certificate. You must exchange each activation code for a license key to install the software and to receive proper subscription services. If you have multiple activation codes, you can either register all the codes with one license administrator or multiple activation codes with different license administrators.

NOTE: If you purchased 4 CPU licenses, you will get two 2 CPU software license-activation codes. You will need both the activation codes for product registration and activation.

Downloading the Software

You can download the VMware Infrastructure 3.5 software from the VMware site at **www.vmware.com/download/vi**. You may download and use VirtualCenter on a trial basis, but to continue using it beyond the trial period, you must purchase a VirtualCenter license.

Optional Media

You may order the media for your VMware Infrastructure or VirtualCenter software on PowerEdge systems from the Dell website at **dell.com**.

Dell-Supported Configurations

Dell-Supported ESX Configurations

Table 3-2, Table 3-3, and Table 3-4 list the current Dell-supported ESX configurations. For more information on legacy server support, see the *Systems Compatibility Guide for ESX 3.5 and ESX 3i* on the VMware documentation site at **www.vmware.com/support/pubs**.

For more information on supported network and Fibre Channel adapters, see the *I/O Compatibility Guide for ESX 3.5 and ESX 3i* on the VMware documentation site at **www.vmware.com/support/pubs**.

Table 3-2. Dell-Supported ESX Configurations

System	PowerEdge 1950 III	PowerEdge 2900 III	PowerEdge 2950 III
Processors	Two dual/ quad-core Intel® Xeon® 5100/5200/5300/5400	Two dual/ quad-core Intel Xeon 5100/5200/5300/5400	Two dual/ quad-core Intel Xeon 5100/5200/5300/5400
Memory (Min/Max)	1 GB/64 GB	1 GB/48 GB	1 GB/64 GB
Storage Adapter for Internal Disks	Dell PowerEdge Expandable RAID Controller (PERC) 6/i Integrated, Serial Attached SCSI (SAS) 6/iR Integrated	PERC 6/i Integrated, SAS 6/iR Integrated	PERC 6/i Integrated, SAS 6/iR Integrated
Storage Adapter for External Disks	PERC 5/E, SAS 5/E, PERC 6/E	PERC 5/E, SAS 5/E, PERC 6/E	PERC 5/E, SAS 5/E, PERC 6/E
Networking	Two integrated network ports, all supported peripheral Network Interface Cards (NICs)	Two integrated network ports, all supported peripheral NICs	Two integrated network ports, all supported peripheral NICs
Fibre Channel HBA (required for SAN Connectivity only)	All supported Fibre Channel Host Bus Adapters (HBAs)	All supported Fibre Channel HBAs	All supported Fibre Channel HBAs

Table 3-2. Dell-Supported ESX Configurations *(continued)*

System	PowerEdge 1950 III	PowerEdge 2900 III	PowerEdge 2950 III
Dell Remote Access Controller (DRAC) (highly recommended)	Dell Remote Assistant Card (DRAC) 5	DRAC 5	DRAC 5
Internal Storage	Up to two 3.5" SAS/SATA disks or four 2.5" SAS disks	Up to eight 3.5" SAS/SATA disks (up to 10 disks with Flexbay option)	Up to six 3.5" SAS/SATA disks or eight 2.5" SAS disks

Table 3-3. Dell-Supported ESX Configurations

System	PowerEdge 2970	PowerEdge R900	PowerEdge M600
Processors	Two dual/quad-core AMD Opteron® 2200/2300	Two/four dual/quad-core Intel Xeon 7200/7300	Two dual/quad-core Intel Xeon 5100/5200/5300/5400
Memory (Min/Max)	2 GB/64 GB	2 GB/256 GB	1GB/64 GB
Storage Adapter for Internal Disks	PERC 5/i Integrated	PERC 6/i Integrated, SAS 6/iR Integrated	SAS 6/iR Integrated CERC 6/i
Storage Adapter for External Disks	PERC 5/E, SAS 5/E and PERC 6/E	PERC 5/E, SAS 5/E, PERC 6/E	N/A
Networking	Two integrated network ports, all supported peripheral NICs	Four integrated network ports, all supported peripheral NICs	Two integrated network ports, all supported NIC daughter cards
Fibre Channel HBA (required for SAN Connectivity only)	All supported Fibre Channel HBAs	All supported Fibre Channel HBAs	All supported Fibre Channel daughter cards
Dell Remote Access Controller (DRAC) (highly recommended)	DRAC 5	DRAC 5	iDRAC (always included)
Internal Storage	Up to six 3.5" SAS/SATA disks or eight 2.5" SAS disks	Up to eight 2.5" SAS or five 3.5" SAS/SATA disks	Up to two 2.5" SAS/SATA disks

Table 3-4. Dell-Supported ESX Configurations

System	PowerEdge M605	PowerEdge R805	PowerEdge R905	PowerEdge M805	PowerEdge M905
Processors	Two dual/quad-core AMD Opteron 2200/2300	Two dual/quad-core AMD Opteron 2200/2300	Two/four dual/quad-core AMD Opteron 8200/8300	Two dual/quad-core AMD Opteron 2200/2300	Four dual/quad-core AMD Opteron 8200/8300
Memory (Min/Max)	1GB/64 GB	2 GB/128 GB	4 GB/256 GB	4GB/64 GB	8GB/96 GB
Storage Adapter for Internal Disks	SAS 6/iR Integrated CERC 6/i	PERC 6/i, SAS 6/iR Integrated	PERC 6/i, SAS 6/iR Integrated	SAS 6/iR Integrated Cost Effective RAID Controller (CERC)	SAS 6/iR Integrated CERC 6/i
Storage Adapter for External Disks	N/A	PERC 6/E, SAS 6/E	PERC 6/E, SAS 5/E	N/A	N/A
Networking	Two integrated network ports, all supported NIC daughter cards	Four integrated network ports, all supported peripheral NICs	Four integrated network ports, all supported peripheral NICs	Two integrated network ports, all supported peripheral NICs	Four integrated network ports, all supported peripheral NICs
Fibre Channel HBA (required for SAN Connectivity only)	All supported Fibre Channel daughter cards	All supported Fibre Channel HBAs	All supported Fibre Channel HBAs	All supported Fibre Channel HBAs	All supported Fibre Channel HBAs
Dell Remote Access Controller (DRAC) (highly recommended)	iDRAC (always included)	DRAC 5	DRAC 5	iDRAC (always included)	iDRAC (always included)
Internal Storage	Up to two 2.5" SAS/SATA disks	Up to two 2.5" SAS/SATA disks	Up to eight 2.5" SAS or five 3.5" SAS disks	Up to two 2.5" SAS/SATA disks	Up to two 2.5" SAS/SATA disks

Installing the Broadcom® 5709 Driver for the PowerEdge M805 and M905 Systems

The Broadcom 5709 driver media contains the Broadcom **bnx2 v1.5.10b.1** NIC driver.

NOTE: The ESX driver media can be used only with the ESX 3.5 Update 2 Software.

You can use the Broadcom 5709 NIC driver media in two ways:

- As a boot media to install a new copy of the ESX 3.5 Update 2 software on a system

  Follow the steps below to use the Broadcom NIC driver media as a boot media:

  a Place the Braodcom NIC driver media in the optical drive of the system.

  b Turn on the system.

  c When the system prompts you to choose an upgrade or installation method, press the **<Enter>** key for graphical mode.

  d Choose your **Language**.

  e Select a keyboard type.

  f If the Broadcom driver media loads successfully, you are prompted to swap the driver media with the ESX installation media.

  g Continue with the ESX 3.5 Update 2 installation.

  NOTE: While installing ESX 3.5 Update 2 with the ESX 3.5 Update 2 installation media, you are given two installation options. You can choose between a regular installation and an upgrade installation. Choose the regular installation method to install the ESX software.

  h When the ESX 3.5 software is installed, the system restarts.You can login to the ESX software to verify if the driver is installed successfully.

- As a driver update media to update the Broadcom driver for existing ESX 3.5 Update 2 installations
  Follow the steps below to use the ESX 3.5 media as an update media to update or add the Broadcom driver on an existing ESX 3.5 Update 2 installation.

  NOTE: For detailed instructions on how to update the Broadcom NIC driver, see the *Patch Management for ESX Server 3* document located on the VMware Support website at **support.vmware.com**.

  a Power on the system and login to the ESX software as an administrator.

  b Insert the Broadcom NIC driver media in the optical drive of the system.

  c Change the directory of the Broadcom driver to **VMupdates/RPMS/** directory. Run the **esxupdate** command by typing: `esxupdate update`

  NOTE: If the Broadcom NIC is not installed in the system, run the **esxupdate** command with the **noreboot** option. Turn off the system manually. You can then install the Broadcom NIC. After installing the Broadcom NIC, restart the system and install the driver for the NIC.

  d The Broadcom driver update causes the system to restart. Remove the driver media from the optical drive of the system and allow the system to restart.

  e You can login to the ESX software to verify if the driver is installed successfully.

Important Information for Dell-Supported Configurations

- I/O modules supported with the PowerEdge M1000e blade chassis for PowerEdge M600 and M605 blades include PowerConnect M6220 Ethernet Switch, the Dell Ethernet Pass-Through Module, Brocade M4424 SAN I/O Module, and the Dell 4 GB fibre channel Pass-Through Module.

  NOTE: The Dell Ethernet Pass-Through module will only support 1 GB ethernet links.

  NOTE: Use of either an ethernet or fibre channel pass-through module requires the use of external redundant switches.

- A Fibre Channel switch is required for storage area network (SAN) connectivity. Direct-attached fibre channel is not supported.
- iSCSI storage is supported with software iSCSI initiator provided with VMware ESX 3.5 or the iSCSI initiators in the guest operating systems.
- Dell PowerVault MD1000 and MD3000 are supported to provide external storage to a single ESX host or to a maximum of two hosts in a split configuration.
- ESX supports a maximum Virtual Disk size of 2 TB. Simple RAID groups (0,1,5, and 6) can be split into multiple Virtual Disks.
- A maximum of two PERC 5/E adapter or PERC 6/E adapter are supported in a single PowerEdge system.
- Features that require shared storage among ESX hosts, such as VMotion, HA, and DRS, are not supported with PowerVault MD1000 and PowerVault MD3000 storage arrays.
- PowerVault NX1950 is supported only as an iSCSI storage device. It is not supported as a NAS storage device.
- Dell Network Attached Storage (NAS) using Windows Storage Server on PowerEdge 2950 and PowerEdge 2900 are not supported.
- Trusted Platform Module (TPM) is not supported.

- VMware ESX 3.5 introduces support for N-Port ID Virtualization (NPIV) for fibre channel SANs. Each virtual machine can now have its own World Wide Port Name (WWPN). You can use this feature to enable per-virtual-machine traffic monitoring using third party tools and chargeback. In future releases, it is possible that NPIV will enable per-virtual-machine LUN masking capabilities. Both Emulex and QLogic NPIV HBAs are supported by the default drivers shipped with ESX 3.5.
- NIC enumeration on the Dell PowerEdge R900 system is handled differently in the ESX Installer, than in the ESX kernel. Because of this, it is recommended that you do not place add in NICs in Slots 5 or 7 of the PowerEdge R900 server. If these slots are used, the add in NICs may be enumerated ahead of the integrated NICs. VMware is aware of this and working to resolve this issue.
- For installing ESX 3.5 Update 1 on a Dell PowerEdge R905 system, boot the system using the *CD 1—Install First* media that shipped with your system. When prompted, replace this media with the *ESX 3.5 Update 1 Installation* media and follow the instructions on the screen to install the ESX 3.5 Update 1.(This is applicable only for Update 1)

NOTE: For more information on the NIC and Fibre Channel HBA supported with ESX Server 3.X, see the *I/O Compatibility Guide for ESX 3.5 and ESX 3i* on the VMware documentation website at **www.vmware.com/support/pubs**.

Dell-Supported VirtualCenter Configurations

VirtualCenter is an application that runs on Microsoft Windows Server® 2003. VirtualCenter is supported on all PowerEdge systems that support Windows Server 2003. Table 3-5 lists the Dell-supported VirtualCenter configuration.

Table 3-5. Dell-Supported VirtualCenter Configuration

Resource Class	Requirement
Server	PowerEdge system
Memory	2 GB minimum
RAID controller	Dell PowerEdge Expandable RAID Controller
Storage	Internal or external physical disks
Network	Two integrated network ports
Operating system	Windows Server 2003 SP1 or later

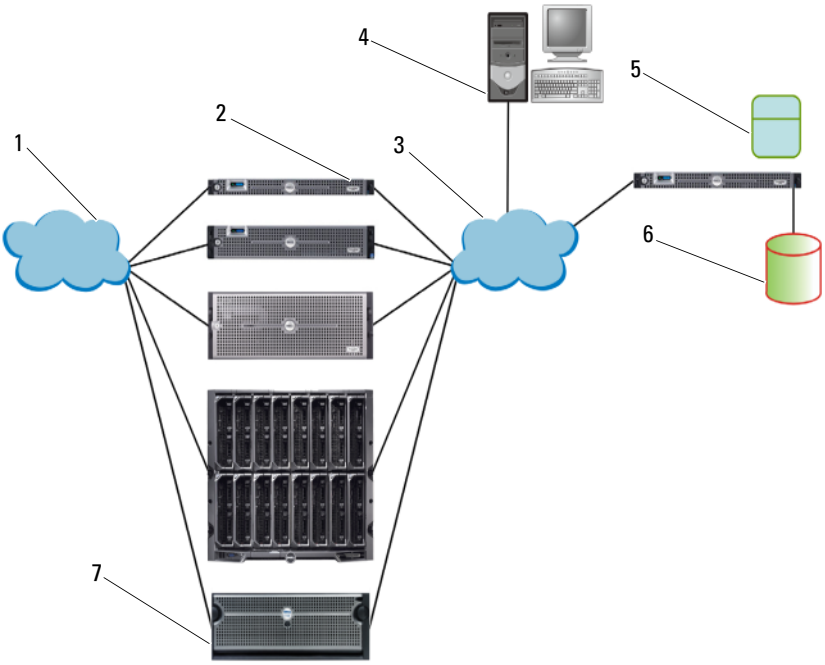
Related Documentation

- Additional hardware may have been released after the release of this document. For the latest Dell-qualified configurations of the ESX software and VirtualCenter, see the documentation on the Dell Support website at **support.dell.com.**
- For Dell|EMC-qualified storage configurations of the ESX software and VirtualCenter, see the *EMC® Support Matrix (ESM)* on the EMC website at **www.emc.com/interoperability**.
- For additional, non-qualified Dell configurations, see the *Storage/SAN Compatibility Guide for ESX 3.5 and ESX 3i* and the *I/O Compatibility Guide for ESX 3.5 and ESX 3i* on the VMware support site at **www.vmware.com/support/pubs**.
- For more information on legacy server support, see the VMware support documents on the Dell Support website at **support.dell.com**
- For more information on different licensing configurations, see the *Installation Guide* and *Upgrade Guide* for ESX 3 under *VMware Infrastructure 3* on the VMware documentation website at **www.vmware.com/support/pubs**.

VMware Infrastructure Architecture

VMware Infrastructure consists of the following components as shown in Figure 3-2:

Figure 3-2. VMware Infrastructure Components Using Dell PowerEdge Systems and Storage Systems



1	Storage Interconnect Fabric PowerEdge System as ESX Hosts	2	PowerEdge System as ESX Hosts
3	Ethernet Fabric	4	VMware Infrastructure Client
5	VirtualCenter Server/License Server External Storage for Virtual Machines	6	Virtual Center Database
7	External Storage for Virtual Machines		

- **ESX** — allows multiple operating systems to run simultaneously on a single PowerEdge system.
- **VirtualCenter server** — manages multiple copies of ESX software and runs on Windows Server 2003. VirtualCenter is optional and is required for advanced management capabilities such as VMotion, DRS, and High Availability.
- **VirtualCenter database** — stores all the configuration data about a VMware Infrastructure. It is recommended that you use a production database such as Microsoft SQL Server™ or Oracle™ for the VirtualCenter database.
- **License server** — authorizes ESX hosts and VirtualCenter server as per the purchased license keys and licensing agreement. It is recommended to install the license server on the VirtualCenter host. This can also reside on a separate host. License server is required when using Served Licensing Scheme but is not required for host-based licensing. For more information on the different licensing configurations, see the *Installation Guide* and *Upgrade Guide* for ESX 3 under *VMware Infrastructure 3 on the* VMware documentation website at **www.vmware.com/support/pubs**.
- **VMware Infrastructure client** — installs on a system running a supported Windows operating system and is the primary tool to manage an ESX host by directly connecting to it or through the VirtualCenter server.
- **Virtual machine storage** — stores virtual machine configuration and virtual disk files. This can either be an internal storage local to the ESX or an external storage that can be shared by multiple ESX Servers. Advanced features such as VMotion, High Availability, and DRS require that the virtual machines disk and configuration files are stored on external shared storage.
- **VMware Infrastructure Web Access** — a Web interface for managing virtual machines and accessing remote consoles.

Before deploying VMware Infrastructure, follow the guidelines given below:

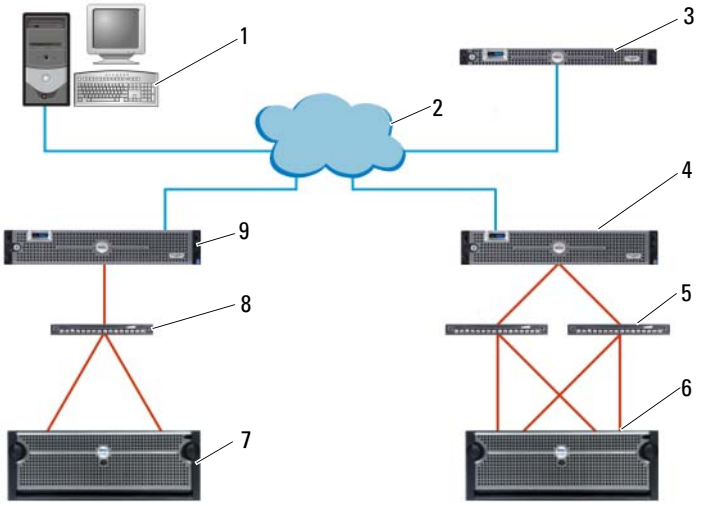
- For upgrade instructions, see the *Installation Guide* and *Upgrade Guide* for ESX 3 under *VMware Infrastructure 3* on the VMware documentation website at **www.vmware.com/support/pubs**. The guides provides details on different upgrade options and specific steps that need to be followed for a successful upgrade.
- Determine the kind of licensing mode that will best suit the deployment environment and design the licensing infrastructure accordingly.

- Determine the kind of storage (local SCSI/SAS/SATA, iSCSI, or Fibre Channel SAN) for hosting virtual machines that will best suit the deployment environment and design your storage infrastructure accordingly.
- Determine the number of logical unit numbers (LUNs), size of LUNs, RAID level of the LUNs, and the number of storage groups.
- Determine the number of virtual machines that will run on each copy of the ESX software and their corresponding workloads.
- Size the resource requirements for the virtual machines, such as the microprocessor requirements, memory size, and networking. For more information on general sizing and scaling studies, see the documentation available on the Dell Support website at **support.dell.com.** For articles on performance and sizing, see the VMware documentation website at **www.vmware.com/support/pubs**.
- Gather the required network information, such as IP addresses, network masks, and gateway addresses. In ESX 3.x, Service Console and VMkernel network interfaces require unique and valid IP addresses, network masks, and gateway addresses.
- Determine the most appropriate local disk partitioning scheme for ESX (see "Recommended Disk Partitioning for the ESX Software" on page 23).
- If you are using DRS or High Availability feature, determine the hosts that will be a part of such a cluster and allocate shared storage accordingly.
- Determine appropriate networking configuration for Service Console, virtual machines, and VMkernel. Virtual local area networks (VLANs) can be used to efficiently isolate traffic.

Dell-Supported VMware Infrastructure 3.5 Configurations

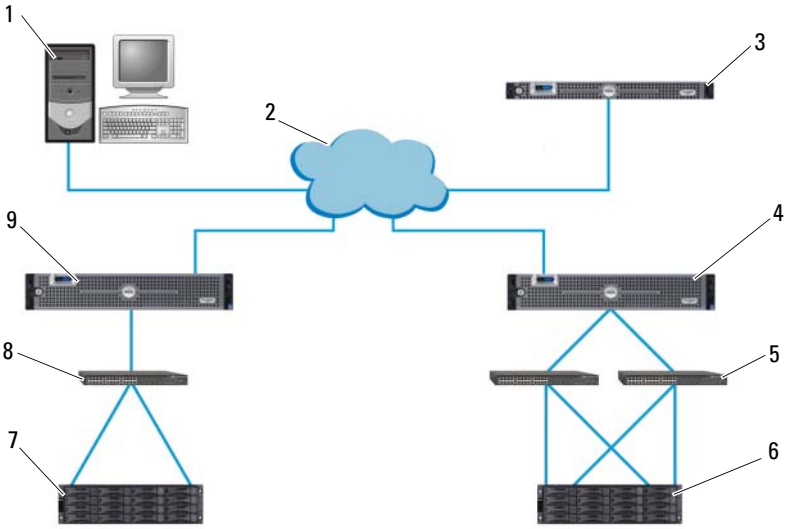
Figure 3-3 illustrates typical VMware Infrastructure configuration using Fibre Channel SAN. If you use Fibre Channel storage, you can have a single Fibre Channel HBA connected to a Fibre Channel switch that in turn provides paths to both storage processors (SPs) on the Fibre Channel storage unit. It is recommended that you use two Fibre Channel HBAs on the ESX host connected to separate Fibre Channel switches that provide redundant paths to SPs on the storage unit. This provides maximum protection against a single failure at the HBA, Fibre Channel switch, or SP level.

Figure 3-3. VMware Infrastructure Configurations With Dell PowerEdge Systems and Dell|EMC Fibre Channel SAN



1	VMware Infrastructure Client	2	Ethernet Fabric
3	Virtual Center Server	4	ESX Host
5	Redundant Fibre Channel Switch	6	Dell|EMC SAN CX3-20/CX3-40/CX3-80
7	Dell|EMC SAN CX3-20/CX3-40/CX3-80	8	Fibre Channel Switch
9	ESX Host		

Figure 3-4. VMware Infrastructure Configurations With Dell PowerEdge Systems and iSCSI SAN



1	VMware Infrastructure Client	2	Ethernet Fabric
3	VirtualCenter Server	4	ESX Host
5	Redundant Ethernet Switch	6	Storage Array
7	Storage Array	8	Ethernet Switch
9	ESX Host		

NOTE: The storage arrays in Figure 3-4 can be Dell|EMC AX150i/CX3-10c/CX3-20c/CX3-40c or Dell PowerVault MD3000i/NX1950 or the Dell EqualLogic PS5000 Series.

Figure 3-4 illustrates typical VMware Infrastructure configuration using iSCSI SAN. For a cost-effective solution, you can opt for an iSCSI SAN environment. It is recommended that you use two iSCSI initiators on the ESX host connected to two separate ethernet switches that provide redundant paths to SPs on the storage unit.

For information on typical configurations using PowerEdge 1955 Blade servers, see the *Deployment of VMware Infrastructure 3.x on Dell PowerEdge 1955 Blade Servers* available on the Dell Support website at **support.dell.com**.

Installing ESX and VirtualCenter

This section describes the important guidelines for installing VirtualCenter 2.*x* and ESX 3.*x* software on PowerEdge systems. For step-by-step installation instructions and requirements, see the *Installation Guide* and *Upgrade Guide* for ESX 3 under *VMWare Infrastructure* 3 on the VMware documentation website at **www.vmware.com/support/pubs**.

Installing VirtualCenter

Follow the guidelines given below for installing VirtualCenter:

1. Install license server if required.
2. Create a new database to store VirtualCenter data.
3. Install VirtualCenter server.
4. Install VMware Infrastructure client.

For more information about installing or upgrading VirtualCenter, see the *Installation Guide* and *Upgrade Guide* for ESX 3 under *VMware Infrastructure* 3 at **www.vmware.com/support/pubs**.

Installing ESX

Before Installation

BIOS Setup

Ensure that the BIOS of the PowerEdge system is configured with the following settings:

- Enable the Virtualization Technology (VT) feature, if available in the PowerEdge system. VT feature is required to run 64-bit virtual machines on Intel platforms.
- Disable Demand Based Power Management feature, if available in the PowerEdge system. This feature is not supported with the ESX software.
- Set the universal serial bus (USB) controller to **USB on with BIOS Support**, if available in the PowerEdge system. This enables support for USB devices both during and after the ESX boot process.

Configuring Boot From SAN

ESX 3.5 supports Boot from SAN with both QLogic and Emulex Fibre Channel adapters. For more information about configuring ESX to boot from SAN, see the *SAN Configuration Guide* under *VMware Infrastructure 3* at **www.vmware.com/support/pubs**.

RAID Configuration

Before installing the ESX software, ensure that the physical disks have the required RAID configurations. Use the appropriate RAID level depending on the number of local physical disks. RAID 0 is not recommended since it does not provide data redundancy. ESX supports a maximum Virtual Disk size of 2 TB. Simple RAID groups (0,1,5, and 6) can be split into multiple Virtual Disks.

Recommended Disk Partitioning for the ESX Software

The following table lists the recommended disk partitioning for the ESX software. When installing the ESX software, choose the **Manual Partitioning** option and use Table 3-6 to create the disk partitions.

Table 3-6. Suggested Disk Partitioning Within ESX

Mount Point	Type	Recommended Size	Notes
swap	swap	544 MB	This is for the Service Console only and *not* for the ESX software
/boot	ext3	100 MB	Holds the boot kernel image
/	ext3	10 GB	Holds the Service Console and ESX kernel
/var	ext3	4 GB	Holds the log files
(none)	vmkcore	102 MB	Holds the core dump file for the VMkernel
(none)	vmfs3	Remaining	Holds the configuration and disk files for the virtual machines

NOTE: It is recommended that you set the root (/) partition size to a minimum of 10 GB.

After Installation

After installing the ESX software, connect to the ESX host using VMware Infrastructure client and then perform the following steps:

1. Name the local virtual machine file system (VMFS) partition. This will improve usability and also enable easy identification.
2. Create one or more virtual switches for virtual machines and VMkernel, and bind the physical adapters accordingly. Virtual switches for Service Console and virtual machines are created by default during ESX installation.

Post Installation Procedure for PowerEdge 6850

The ESX running on the PowerEdge 6850 system and using PERC 5/i Integrated controller may have shared interrupt lines between the USB controller and PERC. To avoid any performance impact due to the shared interrupts, configure the ESX software to avoid loading the USB drivers.

To achieve this, perform the following steps:

1. Configure the USB controller setting in the PowerEdge 6850 BIOS to **USB on with BIOS support**.

   This enables support for USB devices both during and after ESX boot process even if USB drivers are not loaded by the ESX software.

2. Remove the following USB module aliases from `/etc/modules.conf`:

   ```
   alias usb-controller usb-uhci
   alias usb-controller1 ehci-hcd
   ```

3. Save `/etc/modules.conf` and restart the system.

For more information on shared interrupts in ESX, see the knowledge base article 1290 on the VMware documentation website at **www.vmware.com/support/kb**.

Tips for Configuring VMotion

To use the VMotion feature, follow the important guidelines given below:

- VMotion requires the setup of a Gigabit Ethernet migration network and a VMkernel port group between all the copies of ESX configured for VMotion.
- Create consistent network labels for each of the network port groups to which VMs are attached.

More details on VMotion configuration setup can be found on the VMware documentation website at **www.vmware.com/support/pubs**.

For VMotion compatibility across PowerEdge systems, see the *VMotion and 64-bit VM Compatibility with Dell PowerEdge Servers* available on the Dell and VMware website at **support.dell.com.**

Installing ESX on PowerEdge 1955 Blade Servers

The PowerEdge 1955 Blade server has a configuration limitation of two network ports if a fibre channel daughter card is installed. For best practices of configuring the two network ports and achieving redundancy between the LAN on Motherboards (LOMs) in a PowerEdge 1955 system, see the *Deployment of Virtual Infrastructure 3.x on Dell PowerEdge 1955 Blade Servers* available in the Dell Support website at **support.dell.com**.

NOTE: There is no limitation to configure PowerEdge M600 and M605, as they can be configured with four network ports in addition to two fibre channel ports.

Fibre Channel Environment Setup With the ESX Software

The typical steps involved in setting up a Dell|EMC SAN are:

1. Install and setup the Dell|EMC Fibre Channel storage system.
2. Configure zoning at the Fibre Channel switch level.
3. Create RAID groups.
4. Create and bind LUNs to RAID groups.

   NOTE: When creating the LUNs, select **Auto Assign** to assign the LUN to the SP. This is highly recommended for better load balancing.
5. Use Naviagent to register the servers (hosts) connected to the SAN.
6. Create storage groups and assign ESX s and LUNs to each of them.

For more information about SAN environment configuration, see the *Fibre Channel SAN Configuration Guide* for ESX Server 3.5 and VirtualCenter 2.5 under *VMware Infrastructure* 3 on the VMware documentation website at **www.vmware.com/support/pubs**.

For more information about setting up the storage device, and creating LUNs, RAID groups, and storage groups, and installing Naviagent, see the *EMC Navisphere Manager: Administrator's Guide*. This document comes on a media with the CX-series storage system.

iSCSI Environment Setup with the ESX Software

Basic steps involved in an iSCSI setup are:

1. Configure your software iSCSI initiator on the ESX host. Configuration on ESX firewall may be required to support iSCSI.
2. Install and configure your Dell-supported iSCSI storage device.
3. Create a VMFS datastore on the hardware/software initiated iSCSI storage device and add it to your ESX storage.

For more information about iSCSI SAN environment, see the *iSCSI SAN Configuration Guide* on the VMware documentation website at **www.vmware.com/support/pubs**.

Installing and Using Dell OpenManage™

For information on installing and using the Dell OpenManage management suite, including Dell IT Assistant and DRAC, the known issues and the uninstallation steps, see the documentation available on the Dell Support website at **support.dell.com.**

Multiple Virtual Disks in a Disk Group

It is necessary to limit the size of a logical disk to 2 TB. Follow the steps below if you are using a PERC 6 controller, and your desired disk RAID group is larger than 2 TB.

1. Press **<Ctrl><R>** during the boot process to enter the **PERC Configuration Utility**.
2. Create a new virtual disk.
3. Select your RAID level (it must be 0,1,5,or 6) and your physical disks.
4. In the **VD size** field enter `2097152` or smaller for the value of the virtual disk in MB.

   NOTE: When you proceed to the virtual disk name in the **PERC Configuration Utility**, the utility will automatically subtract `1` from the virtual disk size.
5. Finish creating the new virtual disk.

6 From the main screen, expand **Space Allocation** and select **Free Space**.

7 Press **<Enter>** to create a new virtual disk, and enter a disk size less than or equal to `2097152` for the second virtual disk.

8 Repeat step 6 to step 7 to create up to sixteen virtual disks for each disk group.

Additional Resources

Product Documentation Resources

- Complete and current documentation for Dell-qualified VMware configurations is available on the Dell Support website at **support.dell.com**.
- EMC Support Matrix (ESM) on the EMC website at **www.emc.com/horizontal/interoperability**.
- VMware ESX Server 3.5 and *VirtualCenter 2.5 Installation Guide*, *Administration Guide*, *Scripting User's Manual*, *technical resources*, and knowledge base are on the VMware documentation website at **www.vmware.com/support/pubs**.

Technical Support Resources

- VMware documentation website at **www.vmware.com/support**
- Dell hardware support at **www.dell.com/support**
- Dell deployment and professional services at **www.dell.com/services**

Discussion Forums

- VMware discussion forums at **http://vmware.com/communities/content**
- Dell VMware discussion forums at **www.dellcommunity.com**

Knowledge Base

VMware Knowledge Base articles at **www.vmware.com/support/kb**

Dell Wiki

Information about Dell technology in customer environments at **www.delltechcenter.com**.

Index

T

U

V