With the Linux<sup>\*</sup> Operating System

Rev 1.0



# **Revision History**

Date	Revision	Notes	Product Code
2006.05.10	Rev 1.0	Initial Version	

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# **1** Introduction

### **1.1 Document Overview**

This document outlines the procedures for deploying a new Dual-Core Intel<sup>®</sup> Xeon<sup>®</sup> processor-based server (or workstation) with Red Hat<sup>\*</sup> Enterprise Linux<sup>\*</sup> 4 Update 2.

The process of properly integrating a new server (or workstation) system typically requires access to several source documents, each containing pertinent information. The purpose of this document is to extract the essential information needed from the various sources and place it into one comprehensive document.

See the References section of this document for the complete list of source documents used.

In addition this document will provide any useful "tips and tricks" that may have been discovered during the development of this system.

### **1.2 Target Audience**

- Intel Channel program members who currently integrate Intel<sup>®</sup> Server Products or are new to server platforms
- System integrators who deploy the new Dual-Core Intel<sup>®</sup> Xeon<sup>®</sup> processor-based servers (or workstations)

# **1.3 Document Objective**

Our intent is to better enable system integrators in meeting the competitive challenges they face in the server market and to keep program members up-to-date on emerging server technologies. By following the steps outlined in this document you will be able to deploy a stable new Dual-Core Intel<sup>®</sup> Xeon<sup>®</sup> processor-based server (or workstation) using Intel components running Red Hat<sup>\*</sup> Enterprise Linux<sup>\*</sup> 4 Update 2 in a timely and effective manner.

# 2 Platform Overview

The new platform consists of the Dual-Core Intel<sup>®</sup> Xeon<sup>®</sup> processor 5000 sequence, Intel<sup>®</sup> 5000P or Intel<sup>®</sup> 5000V or Intel<sup>®</sup> 5000X Memory Control Hub, and the Intel<sup>®</sup> 6311ESB or 6312ESB I/O Controller Hub. The new Dual-Core Intel<sup>®</sup> Xeon<sup>®</sup> processor-based server enhances platform performance, bandwidth, flexibility, and I/O integration. Intel's innovation around the new platform is a leap ahead of our prior generation servers and offers the best business server platform for IT available in the marketplace.

- Lower Power 64-bit Dual-Core Processors
- Intel<sup>®</sup> Core<sup>™</sup> Micro-Architecture
- Hardware assisted Intel® Virtualization Technology (VT)
- New dual independent point-to-point bus
- Fully Buffered DDR2 DIMM Memory (FBDIMM)
- Intel<sup>®</sup> I/O Acceleration Technology (optional)
- Embedded RAID technology (optional)
- Quad-Core support
- Intel® EM64T 64 bit computing (standard since 2004)
- PCI Express<sup>\*</sup> (standard since 2004)
- Intel<sup>®</sup> Execute Disable Bit (XD-bit) (since 2005)
- Intel<sup>®</sup> Software Optimization Tools (optional)
- Intel<sup>®</sup> Power Efficiency Tools (optional)

### New Dual Independent Point-to-Point Bus

To balance the higher throughput requirements from dual core CPUs, Intel comes up with the new front side bus architecture – DIB (Dual Independent bus). This new point to point bus enables faster FSB speeds (1066 MHZ and 1333 MHZ), much higher throughput (17-21GB/s transfer rate) and better performance.

### **Power Efficient Micro Architecture**

- ➢ Power-efficient Intel<sup>®</sup> Xeon<sup>®</sup> processor-based servers feature Intel<sup>®</sup> Core<sup>™</sup> Micro-Architecture, software and management tools to help you maximize performance density while providing tremendous improvements in performance, utilization and reliability
- Improve Total Cost of Ownership (TCO) and server density with 80W Dual-Core Intel<sup>®</sup> Xeon<sup>®</sup> processor 5100 series based servers that deliver up to 2x the performance of yesterday's servers with up to 3x the power efficiency

### Intel<sup>®</sup> Virtualization Technology

Intel<sup>®</sup> Virtualization Technology is part of a collection of premier Intel designed and manufactured silicon technologies that deliver new and improved computing benefits for home, business users, and IT managers. Virtualization enhanced by Intel<sup>®</sup> Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one

computer system can function as multiple 'virtual' systems. With processor and I/O enhancements to Intel's various platforms, Intel<sup>®</sup> Virtualization Technology can improve the performance and robustness of today's software-only virtual machine solutions.

### Intel<sup>®</sup> Active Server Manager

- Intel<sup>®</sup> Active Server Manager (ASM) delivers the best combination of integrated management hardware, software, and firmware required to manage today's server environments. Intel<sup>®</sup> ASM can help IT Track the health and status of connected servers, remotely diagnose and repair systems even when the operating system is not running, and keep software and virus protection up-to-date. Intel ASM features, launching with the Dual-Core Intel<sup>®</sup> Xeon<sup>®</sup> processor 5000 sequence, includes:
  - ✓ Support for IPMI 2.0
  - ✓ Remote power control and asset management
  - ✓ Advanced features such as IDE-redirection and remote monitoring (KVM pass-through) capability.

### Intel<sup>®</sup> 6311ESB/6312ESB I/O Controller Hub

Intel® 6311ESB/6312ESB I/O Controller Hub is a highly integrated I/O chipset. It integrates bridge functionality for PCI Express\*, PCI-X\*, conventional PCI\*, LPC, USB\*, SATA\*, IDE and SMBus, and Dual-Gigabit Ethernet MAC components as well as numerous board management functions. It provides for all system I/O, allowing for simpler system board architectures and smaller board areas than if discrete components were used.

### Intel<sup>®</sup> I/O Acceleration Technology

Intel<sup>®</sup> I/O Acceleration Technology, unlike NIC-centric solutions (such as TCP Offload Engine), is a platform level solution that addresses all packet and payload processing bottlenecks throughout the server platform. It increases CPU efficiency and delivers data to and from applications faster than possible with current server platforms. Most importantly, Intel<sup>®</sup> I/OAT scales with future platform improvements, providing a path for further reducing infrastructure costs by consolidating hardware and software, and ultimately growing your business.

### Fully Buffered DIMM (FBDIMM) Memory Technology

- Fully Buffered DIMM (FBDIMM) memory enables both increased capacity and memory bandwidth requirements needed to keep pace with the processor and I/O performance enhancements on today's dual-core server processors.
- FBDIMM technology offers better RAS (reliability, availability, serviceability) by extending the currently available ECC (error-correcting code, a method of checking the integrity of data in DRAM) to include protection of commands and address data. Additionally, FBDIMM technology automatically retries when an error is detected, allowing for uninterrupted operation in case of transient errors.
- The FBDIMM channel pin count is approximately 69 pins per channel, compared with about 240 pins for today's parallel channel. This results in less routing complexity and less routing area between the memory controller and DIMMs, thereby saving board cost to system manufacturers.

# **3** Plaform Hardware Requirements

This hardware integration section demonstrates the base line of how to integrate a server system using a motherboard based on new Dual-Core Intel<sup>®</sup> Xeon<sup>®</sup> processors together with an SSI compliant chassis and power supply, as well as FBDIMM memory and other standard off-the-shelf components. The target audiences of this integration guideline are system designers and system integrators. The validation of server functions and performance optimization will not be discussed here.

As a functional server, new Dual-Core Intel<sup>®</sup> Xeon<sup>®</sup> processor-based servers should include the following building blocks:

- Motherboard
- Memory
- Processor and Intel designed thermal solution
- Chassis
- Power supply
- Other system components

# 3.1 Motherboard Integration

The server boards should be compliant with one of the following Server System Infrastructure (SSI) specifications for building block compatibility and interchangeability between different blocks:

- EEB 3.61
  - > EEB (Entry- level Electronics Bay) 3.51 for Entry Pedestal Servers and Workstations.
- TEB 2.11
  - > TEB (Thin Electronics Bay) 2.11 for rack mount optimized servers.
- CEB 1.1
  - > CEB (Compact Electronics Bay) 1.1 for value form factor servers.

The following system features are defined by the SSI specification:

- Baseboard maximum volumetric and mounting-hole locations
- Power and signal connector pin-outs
- ATX-compliant I/O aperture and dimensions that define its location
- Chassis keep-out volume and board/processor mounting requirements

### USEFUL INTEGRATION TIPS:

- SSI specifications can be obtained from SSI website at <u>http://ww.ssiforum.org</u>
- The motherboard should be SSI-compliant, which defines motherboard dimension, component and chassis attachment interface, board block layout directions, as well as power connectors

# 3.2 Fully Buffered DIMM (FBDIMM) Memory

Fully Buffered DIMM (FBDIMM) memory provides increased bandwidth and capacity for new Dual-Core Intel® Xeon® processor-based servers. It increases system bandwidth up to 21GB/s (with DDR2-667 FBD memory), and increased memory capacity up to 64GB in a 4 channel 16 DIMM server system.

FBDIMM memory has different versions in terms of the DRAM used in the memory module: DDR2-533 FBD memory and DDR2-667 FBD memory, and has different capacities: 512MB, 1GB, 2GB and 4GB. DIMM pairs must be identical with respect to size, speed and manufacturer.

The picture below illustrates an example of an FBDIMM.



Figure 3.2.2 FBDIMM Example

# USEFUL INTEGRATION TIPS

- To take advantage of the Intel® E5000P chipset, Intel recommends using at least 4 FBDIMMs in new Dual-Core Intel<sup>®</sup> Xeon<sup>®</sup> processor-based servers to achieve optimal throughput. Example: For 2GB configurations use 4 x 512M FBDIMMs rather than 2 x 1GB FBDIMMs.
- 2) To boot up the system, one FBDIMM should be installed in the first FBDIMM slot.
- 3) Intel has completed FBDIMM validation for different memory configurations. System integrators can find the complete list of tested memory modules at: http://developer.intel.com/technology/memory/

# 3.3 Processor and Thermal Solutions

The boxed version of the Dual-Core Intel<sup>®</sup> Xeon<sup>®</sup> processor 5000 sequence supports a passive 2U+ thermal solution, as well as a combination active/1U passive solution (as figure 3.3.1 and 3.3.2 shows). The 2U passive solution can be used in 2U+ rack chassis and pedestal systems; the active solution is a combined solution that supports pedestal chassis with the fan attached, and 1U rack systems with the fan removed (as figure 3.3.3 shows).



Figure 3.3.1 Active solution

Figure 3.3.2 2U passive solution



Figure 3.3.3 Combined Active Solution

The boxed Dual-Core Intel® Xeon® processor 5000 sequence requires the heat sink to be directly attached to the chassis, in order to securely attach the heat sink. As shown in Figure 3.3.4, verify the Common Enabling Kit (CEK) spring is installed on both processor sockets before motherboard installation. Refer to your motherboard documentation for more information, or contact your motherboard manufacturer to obtain a CEK spring for each processor socket if not included with the motherboard.



Figure 3.3.4 Verify the CEK Spring is Installed for Each Processor Socket

### **Dual-Core Intel® Xeon® Processor Installation**



- A. Open the socket lever
  - 1) Push the lever handle down and away from the socket to release it.
  - 2) Pull the lever and raise until it stops.
- B. Open the load plate
  - 1) Push the rear tab with your finger tip to bring the front end of the load plate up slightly.
  - 2) Open the load plate as shown.



- C. Remove the processor protective cover
  - 1) Take the processor out of the box remove the protective shipping cover.
- D. Remove socket protective cover
  - 1) Grasp the socket protective cover tab and pull away from the load plate as shown.
  - 2) Remove the socket protective cover and store for future use.

- E. Install the processor
  - 1) Orient the processor with the socket so that the processor cut-outs match the socket notches.
  - 2) Install the processor as shown.



- 1) Close the load plate all the way as shown.
- 2) With your finger, push down on the load plate as shown.
- 3) Close the socket lever and ensure that the load plate tab engages under the socket lever when fully closed.







G. Removing the plastic shield for the heat sink



H. Attach the heat sink to the chassis



I. Tighten screws



J. Connect the fan header if you are using the active solution.



# 3.4 Server System Infrastructure (SSI) Compliant

# Chassis

Server System Infrastructure (SSI) compliant chassis provides component attachment, adequate airflow, electronic emission protection, as well as data storage and management. The quality of chassis will greatly impact server system performance. Compared to a desktop PC chassis, the requirement for server chassis on thermal, power supplies and data management is much higher.

### USEFUL INFORMATION

- Rack mount chassis include 1U rack chassis and 2U+ chassis. The height of 1U chassis is 1.75" and 2U chassis is 3.5".
- SSI specifications can be obtained from SSI website at http://www.ssiforum.org

### **3.4.1 Chassis Form Factor**

Pedestal and rack mount are two types of form factors. Pedestal chassis should be compliant to EEB 3.61 or CEB 1.1, and rack mount chassis should be compliant to TEB 2.11.

EEB is mainly used for entry-level servers with larger form factors, and CEB is targeted at value servers with smaller form factors and lower cost.

The EEB chassis can install one motherboard based on the ATX form factor 'stretched' to  $12" \times 13"$ , a size sometimes known as "full ATX". This represents the maximum size of board in one EEB chassis, though smaller sizes are possible. The maximum motherboard size in CEB Chassis is  $12" \times 10.5"$ ; there is a 2.5" difference in length. The TEB baseboard is based on the EEB baseboard size of  $12" \times 13"$ .

There are specific requirements on rack chassis width and height to make sure they are compliant to rack system. The 1U and 2U maximum height dimensions allow for 1.3mm clearance between adjacent systems when they are installed in a typical rack configuration. The 445.0mm maximum width includes chassis width, rails, and tolerance; chassis with typical 3/8" roller-bearing slide rails are limited to 428.0mm. System typical depth is 610mm to 660mm.

Figure 3.4.1

# 3.5 SSI Compliant Power Supply

The power supply provides adequate power to the processor, motherboard and other key components. As shown by research data, most of the server shut-down issues are caused by a power supply failure, including over-heat protection and over-current protection. So, choosing a reliable power supply is an important consideration for proper server integration.

Based on the SSI form factor, there are three types of SSI power supplies, EPS1U is used in 1U rack mount server, EPS2U is used in 2U rack mount server and EPS12V is used in pedestal server. Additional to that, there are redundant power supplies for 2U and pedestal server, they are ERP2U and ERP12V respectively.

### 3.5.1 Mechanical form factors

Form Factor	Application	Height	Width	Length
EPS1U	1U rack	40mm	106mm	355mm
EPS2U	2U rack	42.2mm	106mm	348.2mm
ERP2U	2U rack Redundant	83mm	108mm	400mm(Regular) 350mm(Hot Swap)
EPS12V	Pedestal	86mm	150mm	140mm (<450W) 180mm (450W~750W) 230mm (>800W)
ERP12V	Pedestal Redundant	86mm	150mm	260mm

Below are detailed mechanical dimensions for SSI compliant power supplies:

Table 3.4.3 Power Supply Form Factors

There is no specified requirement on position and length of wire harness of power supply, the base line is wire harness must make integration and wire plug easier and more beneficial for maintaining.

Some time, the power supply will influence cable layout because of card edge dimensions and small gaps between the power supply and the chassis, especially in rack mount server where cable layout is important may impact system thermal performance.

### 3.5.2 Power level and output rails

Below figure is one typical power budget in one new Dual-Core Intel<sup>®</sup> Xeon<sup>®</sup> based server system. There are 8 rails recommended in SSI specification for the new platform compliant power supplies, as below:

Space	Power	Current Rating (A)								
Spec	(W)	+3.3V	+5V	12V1	12V2	12V3	12V4	-12V	+5VSB	
EPS1U	600	10	21	16	16	16	16	0.5	3	
EPS2U	700	24	30	16	16	16	16	0.5	3	
ERP2U	750	24	30	16	16	16	16	0.5	3	
EPS12V	650	24	30	16	16	16	16	0.5	3	
ERP12V	700	24	30	16	16	16	16	0.5	3	

The following table provides recommendations for the power and current ratings for different form factors:

Table 3.4.4 SSI recommended power levels and current rating

### 3.5.3 Power supply connectors

Normally, the power supply distribution board shall have the following output connectors and wire harness configuration:

Connectors	Pins No.
Base board power connector	24
Processor power connector	8
+12V4 base board power connector, required for 700W, 750W and 800W power levels	4
Fan power with fan speed control	4
Peripheral power connectors	4
Floppy power connectors	4
Serial ATA power connectors	5
Server signal connectors	5

Table 3.4.5 SSI recommended power supply connectors

Integrators must ensure these power connectors provide the proper output and that they are connected properly. Different colors have been used to mark different power output voltages. One power connector may have several colors in one stripe along the colored wire

3.3VDC	3.3VRS	+5VDC	+12V1	+12V2	+12V3	+12V4	-12V	5VSB	PS_ON
Orange	Orange	Red	Yellow	Yellow	Yellow	Yellow	Blue	Purple	Green
orange	White		Black	TCHOW	Blue	Green	Diac	i di pic	

Table 3.4.6 SSI recommended power supply triples color

### 3.5.4 Hot swap and redundant power supplies

It is recommended to use the hot swap and redundant power supplies for new Dual-Core Intel<sup>®</sup> Xeon<sup>®</sup> processor-based servers Hot swapping a power supply is the process of inserting and extracting a power supply from an server while it is operating, without interruption.

# 3.6 Other System Components

### 3.6.1 Hard drive

### 1) SCSI HDD

The SCSI specification was developed to provide a common interface that could be used across all peripheral platforms and system applications. The SCSI interface addresses a wider range of applications, such as Redundant Array of Independent Disks (RAID) storage, and has a broader command set than the parallel ATA interface. The SCSI system contains the SCSI controller (initiator), the SCSI bus (cable or backplane), and one or more target devices. The SCSI controller may be built into the motherboard or housed on a SCSI host bus adapter (HBA) card in a PCI or PCI-X slot. Both configurations are shown in Figure 3.6.1.

SCSI cables can connect up to 16 devices, including the SCSI controller. SCSI cables consist of 34 twisted pairs of multi-stranded flexible copper wires for a total of 68 conductors. SCSI devices inside the server are connected to the SCSI controller by a 68-pin ribbon cable. The ribbon cable has a connector at each end and one or more connectors along its length. External SCSI devices are attached to the SCSI HBA by a round 68-pin cable. Two sets of terminators, one at each end of the SCSI bus, prevent signal reflections within the cables.



Figure 3.6.1 SCSI components

Since 1981, there have been seven generations of the SCSI protocol. Each new generation has doubled the performance of the previous one (Figure 3.6.2). SCSI performance has ranged from an 8-bit, single-ended interface transferring data up to 4 MB/s (SCSI-1) to the latest 16-bit, low-voltage differential interface transferring data at 320 MB/s per channel (Ultra320 SCSI).



Figure 3.6.2 Bandwidths of seven generations of SCSI

SCSI hard drives provide some benefits:

- > Fast data transfer (up to 320 MB/s transfer rate per channel)
- High MTBF (Mean Time between Failures)
- Support multiple HDD on one channel, such as a single channel of Ultra 320 can support 15 hard drivers, two channels can support up to 30 hard drivers, and all of hard drivers in the same channel use only one IRG
- SCSI controller can offload some CPU tasks which used to handling the storage commands; CPU utilization rate for SCSI HDD processing is low. This is good for multiple task system.

### 2) SATA HDD

### Serial ATA 1.0 (SATA)

SATA 1.0 specification was developed in 2001, SATA is the first generation of the new disk interface technology replacing Parallel ATA. In desktops, SATA is expected to replace Parallel ATA as the primary internal storage for PCs. SATA1.0 delivers a maximum data transfer rate of 1.5 Gb/sec (150 MB/sec) per port and its future roadmap shows growth to 6.0 Gb/sec (600 MB/sec). Advantages of SATA include a point-to-point interconnect that enables full bandwidth available to each device, lower pin-count, lower voltage, hot-plug capability, thin cabling, longer cable length and register-level compatibility with Parallel ATA. These added features make SATA an option for DAS, NAS and some Storage Area Network (SAN) systems where Parallel ATA may not have been considered.

### Serial ATA II (SATA II)

SATA II is the second-generation SATA disk interface technology currently under development by the SATA working group. The SATA II specification picks up where SATA 1.0 left off, and will be deployed in 2 phases. The first phase, called "Extensions to Serial ATA 1.0", focuses primarily on addressing the needs of servers and networked storage. These include queuing, enclosure services, hot plug, cold presence detect, cabling and backplane improvements. The second phase is anticipated to scale performance to 3.0 Gb/sec (300 MB/sec) per port. These combined enhancements will make SATA II a good option for DAS, NAS and SAN storage systems where price/performance and cost are key factors.

#### 3) SAS HDD

SAS (Serial Attached SCSI) is a point-to-point architecture in which all storage devices connect directly to a SAS port rather than sharing a common bus as traditional SCSI devices do. Point-to-point links increase data throughput and improve the ability to locate and fix disk failures. More importantly, the SAS architecture solves the clock skew and signal degradation problems of parallel SCSI at higher signaling rates. SAS inherits its command set from parallel SCSI, frame formats from Fibre Channel, and physical characteristics from Serial ATA.

The SAS and SATA technologies have several common features, including low-voltage differential signaling, 8b/10b encoding, and full duplex communication. The Serial Attached SCSI standards committee designed the SAS infrastructure to be compatible with SATA drives, allowing the coexistence of both storage technologies in the same system and opening the door to SATA scalability. Because the SAS architecture features a proven SCSI command set, advanced command queuing, and advanced verification/error correction, SAS is the ideal solution for mission-critical enterprise storage applications.

Performance

The speed of the first-generation SAS link is 3.0 gigabits/second (Gb/s). The speed of the second-generation SAS link will be 6.0 Gb/s . SAS links are full duplex; they send and receive information simultaneously, thereby reducing a major source of latency. The SAS interface allows for combining multiple links to create 2x, 3x, or 4x connections for scalable bandwidth.

• SAS/SATA interoperability

The SAS architecture enables system designs that deploy both SAS and SATA devices, a breakthrough for enterprise customers. This capability provides a broad range of storage solutions that give IT managers the flexibility to choose storage devices based on reliability, performance, and cost.

• Greater scalability

Serial Attached SCSI enables highly scalable topologies—internal, external, or a combination of both—to give manufacturers and customers the flexibility to design and deploy a range of solutions. The Serial ATA Tunneling Protocol (STP) enables SAS HBAs to communicate with SATA devices through expanders and, therefore, is key to SATA scalability in the SAS domain.

# USEFUL INFORMATION

More detail information about the disk interface technology can be found at <a href="http://www.intel.com/technology/serialATA/pdf/NP2108.pdf">http://www.intel.com/technology/serialATA/pdf/NP2108.pdf</a>

# **4** Recommended Server Components

Before you begin system integration, you may want to become more familiar with some of the server components. The following section contains a brief overview of the products used in this integration guide. Intel recommends that before beginning system integration, the integrator sources all recommended components needed to complete integration. A recommended list of components needed can be found below.

Server System						
Boxed Intel Server Board Qty: 1	Product code: Intel® Server Board S5000PSL	For more information please refer to: http://intel.com/design/servers/boards/				
Processor						
Boxed Dual-Core Intel <sup>®</sup> Xeon <sup>®</sup> processor Qty: 2	Product code: Intel® Xeon® Processor 5000 Series, or Xeon® Processor 5100 Series	For more information please refer to: http://support.intel.com/support/processors/ xeon				
Server Chassis						
Intel Server Chassis Qty: 1	Product code: Intel® Server Chassis SC5299-E	For more information please refer to: http://intel.com/design/servers/chassis/				
Memory Configuration						
512MB FBDIMM 533MHz Qty: 4	Product code: Kingston* KVR533D2S8F4/512	For more information please refer to: http://developer.intel.com/technology/memo ry/				

### **Table 1- Recommended Server Components List**

# 5 Setup and Configuration of Red Hat<sup>\*</sup> Enterprise Linux<sup>\*</sup> 4

# Outline of Red Hat<sup>\*</sup> Enterprise Linux<sup>\*</sup> 4 Update 2 Operating System Installation

Perform the following steps to install the Red Hat Linux System:

- 1. BIOS Configuration
- 2. Text Based Installation
- 3. Graphics Based Installation

### **BIOS Configuration**

1. Turn on the server and quickly enter BIOS by pressing **F2** during boot up. Under boot priority section, make sure you first boot device is **CD-ROM**.

### **Text Based Installation**

- 1. Insert Red Hat<sup>\*</sup> Enterprise Linux<sup>\*</sup> 4 Update 2 disk 1 (of 4).
- 2. Reset the system, and it will boot up from the bootable CD.
- As Figure 5-1 shows, the installation will request you to select a method to install the operating system, press Enter to install Red Hat Linux in text mode.



4. As Figure 5-2 shows, choose **Skip** to skip the media test and start the Linux installation. Melcome to Red Hat Enterprise Linux



Before the installation can begin it must create a new partition and format the hard drive.

### **Graphics Based Installation**

5. The graphic console starts and the "Welcome to Red Hat Enterprise Linux AS installation" is displayed.



Figure 5-3

6. Choose the language you would like to use during the installation



Figure 5-4

7. Choose the layout type for the Keyboard

		redhat.
Keyboard	Select the appropriate keyboard for the system.	
Configuration	Russian (ru1)	•
5	Russian (ru2)	
Choose the layout type for the	Russian (utf8ru)	
keyboard (for example, U.S.	Russian (win)	
English) that you would like to	Slovakian	
use for the system.	Slovenian	
	Spanish	
	Swedish	
	Swiss French	
	Swiss French (latin1)	
	Swiss German	
	Swiss German (latin1)	
	Tamil (Inscript)	
	Tamil (Typewriter)	
	Turkish	
	Ukrainian	
	United Kingdom	
	U.S. English	
	U.S. International	•
Belease Notes		<u>a</u> ck <u>N</u> ext

Figure 5-5

8. Disk partitioning is one of the largest obstacles for the new user to install Linux. By selecting automatic partitioning, you do not have to use partitioning tools to create partitions Select "Manually partition with Disk Druid" to manually partition the hard disk.

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Figure 5-6

9. Note the warning before the Disk Partitioning Setup application begins.

		redhat.
Disk Partitioning Setup One of the largest obstaclor for		
a new user during a Lin	Warning	
installation is partitionir process is made easier providing automatic partitioning.	The partition table on device sda was unreadable. To create new partitions it must be initialized, causing the loss of ALL DATA on this drive.	) the selected partitions once
By selecting automatic partitioning, you do not use partitioning tools to	This operation will override any previous installation choices about which drives to ignore. Would you like to initialize this drive, erasing ALL DATA?	allows you to You can set the s, and more.
mount points, create pa or allocate space for yo installation.	X No Yes	ruid
To partition manually, choose the <b>Disk Druid</b> partitioning tool.		
Use the <b>Back</b> button to choose	•	
Image: Construction of the second s		<u>B</u> ack <u>N</u> ext

Figure 5-7

This step is necessary to ensure the operating system is installed on a new and error-free partition. Formatting the partition deletes all information that currently exists on the hard drive.

 Before automatic partitioning can be set up, you must choose how to use the space on the hard drives. Remember: removing all partitions on the system means your data will be COMPLETELY REMOVED from the hard drive. Integration Guide for New Dual-Core Intel® Xeon® Processor-Based Servers (or Workstations) Rev 1.0



Figure 5-8

11. If you used automatic partitioning, you need confirm the removal of all data and accept the automatically generated partition settings.

							re	d٢	nat.
Disk Setup	•	T	la (12284 MB) (	Model: VMware, V	/Mware Vir	tual S)			
Red Hat Enterprise Linux AS to be installed.		sda2 12182 MB							
If you do not know how to									
partition your system or if you need help with using the		Ne <u>w</u>	<u>E</u> dit	<u>D</u> elete	Re <u>s</u> et	R	<u>A</u> ID	<u>L</u> V	M
manual partitioning tools, refer to the product documentation.		De	vice	Mount Point/ RAID/Volume	Type	Format	Size (MB)	Start	End
If you used automatic		▽ LVM Volun	ne Groups						
partitioning, you can either		⊽ VolGrou	ip00				12128		
accept the current partition		LogV	/ol00	/	ext3	~	11104		
settings (click <b>Next</b> ), or modify		LogV	/ol01		swap	~	1024		
the setup using the manual		▽ Hard Drive	s						
partitioning tool.		▽ /dev/sda	a						
		/dev/	/sda1	/boot	ext3	1	102	1	13
If you are manually partitioning		/dev/	/sda2	VolGroup00	LVM PV	1	12182	14	1566
your system, you can see your current hard drive(s) and		•		1//					1
partitions displayed below. Use	*	Hide RAID	device/LVM V	olume <u>G</u> roup mei	mbers				
BHide Help					<	<u>B</u> acl			<u>N</u> ext
		Fi	gure 5-9	9					

12. This step allows you to configure the Linux boot loader to boot other operating systems after the partitioning. You could also choose which operating system (if you have more than one) should boot by default.

	redhat.
Boot Loader Configuration By default, the GRUB boot loader is installed on the system. If you do not want to install GRUB as your boot loader, select Change boot loader. You can also choose which OS (if you have more than one)	The GRUB boot loader will be installed on /dev/sda. Change boot loader You can configure the boot loader to boot other operating systems. It will allow you to select an operating system to boot from the list. To add additional operating systems, which are not automatically detected, click 'Add.' To change the operating system booted by default, select 'Default' by the desired operating system. Default Label Device Add Content
should boot by default. Select <b>Default</b> beside the preferred boot partition to choose your default bootable OS. You cannot move forward in the installation unless you choose a default boot image.	A boot loader password prevents users from changing options passed to the kernel. For greater system security, it is recommended that you set a password.           Use a boot loader password           Change password           Configure advanced boot loader options
You may add, edit, and delete the boot loader entries by	
Hide <u>H</u> elp	Eiguro F. 10

Figure 5-10

13. Refer to Figure 5-11. To configure the network devices, you can either choose to configure by DHCP or manually configure the gateway, DNS and domain information.

	redhat.
Network Configuration	Network Devices
Any network devices you have on the system are automatically detected by the installation program and shown in the <b>Network Devices</b> list.	Hostname Set the hostname: (automatically via DHCP
To configure the network device, first select the device and then click <b>Edit</b> . In the <b>Edit</b> <b>Interface</b> screen, you can choose to have the IP and Netmask information configured by DHCP or you can enter it manually. You can also choose to make the device active at boot time. If you do not have DHCP client	manually       localhost.localdomain       (ex. "host.domain.com")         Miscellaneous Settings
Access or are unsure as to	Back
	Figure 5-11

14. Refer to Figure 5-12. A properly configured firewall can greatly increase the security level of your network. Select "Enable firewall" and the specific services you will allow access to from other computers.

	redhat.
Firewall Configuration A firewall sits between your computer and the network, and determines which resources on your computer remote users on the network are able to access. A properly configured firewall can greatly increase the out-of- the-box security of your system. Choose the appropriate security level for your system. No Firewall — No firewall provides complete access to your system and does no security checking. Security checking is the disabling of access to certain services. This should only be selected if you	A firewall can help prevent unauthorized access to your computer from the outside world. Would you like to enable a firewall? <ul> <li>No firewall</li> <li>Enable firewall</li> </ul> <li>You can use a firewall to allow access to specific services on your computer from other computers. Which services, if any, do you wish to allow access to ?</li> <li>Remote Login (SSH)         <ul> <li>Web Server (HTTP, HTTPS)</li> <li>File Transfer (FTP)</li> <li>Mail Server (SMTP)</li> </ul> </li> <li>Security Enhanced Linux (SELinux) provides finer-grained security controls than those available in a traditional Linux system. It can be set up in a disabled state, a state which only warns about things which would be denied, or a fully active state.</li> <li>Enable SELinux?: Active </li>

Figure 5-12

15. Refer to Figure 5-13. Select the language to be used as the default language. You can also decide to install other language packs to use with the operating system.

		<b>red</b> hat
Additional	Select the <u>d</u> efault language for the system: English (USA	
Language Support	Select additional languages to install on the system:	
Select a language to use as the default language. The default language is the language used on the system once installation is complete. If you choose to install other languages, it is possible to change the default language after the installation.		<u>S</u> elect All Select Default <u>O</u> nly Rese <u>t</u>
The installation program can install and support several languages. To use more than one language on your system, choose specific languages to be installed, or select all languages to have all available languages installed on the system.	English (Zimbabwe)  Estonian  Faroese (Faroe Islands)  Finnish French (Belgium) French (Canada) French (France) French (Luxemburg)	
Hide <u>H</u> elp		Back Next

Figure 5-13

16. Select **Time Zone Settings** to set the local time and date settings.



Figure 5-14

Programs that use time in any way access these settings to establish the correct time, therefore these settings are important for successful use of this server.

17. Set the Root Password. Once you have entered the password, please click **Next** to continue.

Use the root account **ONLY** for administration. Once the installation has been completed, create a non-root account for general use and *su*- to gain root access when you need administration rights. This procedure can minimize your chances of a typo or incorrect command doing damage to your system.

		redhat.
Set Root Password Use the root account <i>only</i> for administration. Once the installation has been completed, create a non-root account for your general use and su – to gain root access when you need to fix something quickly. These basic rules minimize the chances of a typo or incorrect command doing damage to your system.	count is used for administering to ssword for the root user.	he system.



18. Select the software packages you want to install with the operating system. These packages include extra desktop themes, general and office applications, and development tools.

		redhat.
Package Installation Defaults The installation program automatically chooses package groups to be installed on the system. Select Accept the current package list to accept the default package groups and to continue with the installation process. Select Customize the set of packages to be installed if you wish to select different or additional package groups.	<ul> <li>The default installation environment includes our recommended package selection, including:</li> <li>Desktop shell (GNOME) Administration Tools Server Configuration Tools Web Server Windows File Server (SMB)</li> <li>After installation, additional software can be added or removed using the 'system-config-packages' tool.</li> <li>If you are familiar with Red Hat Enterprise Linux AS, you may have specific packages you would like to install or avoid installing. Check the box below to customize your installation.</li> <li>Install default software packages</li> <li>Customize software packages to be installed</li> </ul>	▶ <u>N</u> ext
	Figure 5-16	

19. Choose the package you want to install by selecting the checkbox in each item.

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Figure 5-17

20. Congratulations, you are ready to install and copy files.

	redha <sup>-</sup>
About to Install Caution: Once you click Next, the installation program begins writing the operating system to the hard drive(s). This process cannot be undone. If you have decided not to continue with this installation, this is the last point at which you can safely abort the installation process. To abort this installation, press your computer's Reset button or reset using Control-Alt-Delete, and then remove the installation media between the unmounting and reboot screen messages.	<image/>

Figure 5-18

21. You are required to have the Red Hat<sup>\*</sup> Linux\* installation disks to begin the installation.

		redhat.
About to Install		
Caution: Once you click <b>Next</b> , the installation program writing the operating sys	Required Install Media	
the hard drive(s). This p	The software you have selected to install will require the following CDs: Red Hat Enterprise Linux AS 4 CD #1 Red Hat Enterprise Linux AS 4 CD #2 Red Hat Enterprise Linux AS 4 CD #3	ext to begin installation Hat Enterprise Linux AS. lete log of the jon can be found in the t/install.log' after g your system.
i o abort this installation	Please have these ready before proceeding with the installation. If you need to abort the installation and reboot please select "Reboot".	tart file containing the ion options selected can ‡ in the file '/root/ Ja-ks.cfg' after rebooting tem.
and reboot screen messages.		
Hide <u>H</u> elp		🛚 <u>B</u> ack 📄 <u>N</u> ext
	Figure 5-19	

22. Installation in progress.

	redhat.
Installing Packages We have gathered all the information needed to install Red Hat Enterprise Linux AS on the system. It may take a while to install everything, depending on how many packages need to be installed.	Transferring install image to hard drive
	U
Hide Help	
	Figure E 20

Figure 5-20

23. Installation in progress.

		redhat.
Installing Packages We have gathered all the information needed to install Red Hat Enterprise Linux AS on the system. It may take a while to install everything, depending on how many packages need to be installed.	ting install process, this may take several minutes	<b>d</b> hat.
Hide Help		■ <u>B</u> ack

Figure 5-21

24. You will be notified to insert the required disk.

			red	na
Installing Pack	ages			
We have gathered all th information needed to in	nstall Red	Thank You		
Hat Enterprise Linux AS system. It may take a w install everything, depe	hile to	Red Hat would like to thank all of Change CDROM ginee		
how many packages n installed.	Pleas	se insert Red Hat Enterprise Linux AS disc 3 to continue.		
		Remaining time: 6 minutes		
		Installing eel2-2.8.1-2.i386 (1 MB) Eazel Extensions Library.		
Hide <u>H</u> elp	se Notes	<u>Back</u>		<u>N</u> ex

Figure 5-22

25. Post installation process.

<b>,</b>	redha
<b>Installing Packages</b> We have gathered all the information needed to install Red Hat Enterprise Linux AS on the system. It may take a while to install everything, depending on how many packages need to be installed.	Red Hat Global Services         Greatest value from your Enterprise and get the greatest value from your Enterprise Linux subscription         Performing post install configuration         Performing post install configuration         ww.redhat.com
Hide Help	■ <u>Back</u>

Figure 5-23

26. Congratulations, the installation is complete.

	redhat.
	Congratulations, the installation is complete. Remove any installation media (diskettes or CD-ROMs) used during the installation process and press the "Reboot" button to reboot your system.
Show Help	Back Back

Figure 5-24

27. The installation is finished, but you still need to configure the Linux environment before you can actually use the Linux desktop. Figure 5-25 and Figure 5-26 show the boot up screen.



Figure 5-25

▶ Show <u>D</u> etails	Setting up local disks 🔿	
	Red Hat <b>Ent</b>	erprise Linux

Figure 5-26

28. Welcome to the Linux setup agent.



Figure 5-27

29. Click **Yes** to accept the license agreement.



Figure 5-28

30. Set the correct date and time.

Sound Card Additional CDs	Date Ja	nuary	>			Time Current Time: 12:50:30				
Finish Setup	Sun	Mon	Tue	Wed	Thu	Fri	Sat	<u>H</u> our :	12	*
	1	2	3	4	5	6	7	Minute :	49	•
	8	9	10	11	12	13	14			~
	15	16	17	18	19	20	21	<u>S</u> econd :	53	•
	22	23 30	24 31	25	26 2	27	28			
	29	30	31				11			

Figure 5-29

31. Configure your display type, including the resolution and color depth.

Welcome License Agreement Date and Time > Display System User Sound Card Additional CDs Finish Setup	Display Please select the resolution and color depth that you	u wish to use:
	Unknown monitor with VMWare	Configure
	<u>R</u> esolution:	800x600 👻
	<u>C</u> olor Depth:	Millions of Colors
		<u>■</u> Back

Figure 5-30

32. It is always recommended that you create a system 'username' for regular (non-administrative) use of the system; this will help secure your system as well.

Welcome License Agreement Date and Time Display • System User Sound Card Additional CDs Finish Setup	Image: System User System 'username' for regular (non-diministrative) use of your system. To create a system 'username,' please provide the information requested below.         Image:
	▲ <u>B</u> ack ▶ Next

Figure 5-31

33. Configure your sound card.

Welcome License Agreement Date and Time Display System User Sound Card Additional CDs Finish Setup	<image/> <text><text><text><text><text><text></text></text></text></text></text></text>
	■ Back Next

Figure 5-32

34. If you want to install the third party plug-ins applications or the Linux documents, this is the start page.
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Figure 5-33

35. You have completed the system setup.

Welcome License Agreement Date and Time	Finish Setup
Display System User Sound Card Additional CDs Finish Setup	<text><text><text><text><text><text><text></text></text></text></text></text></text></text>

Figure 5-34

36. The Linux desktop after you login in.



Figure 5-35

# 6 Setup and Configuration of VMWare<sup>\*</sup> Server (Linux<sup>\*</sup> Version)

## **Outline of VMWare<sup>\*</sup> Server Installation**

Here's the steps you're going to perform to install the VMWare Server.

- 1. BIOS Configuration
- 2. Graphic based installation
- 3. Text based installation and configuration

VMware<sup>\*</sup> Server, is a free virtualization tool for Windows<sup>\*</sup> and Linux<sup>\*</sup> servers. You can learn about more VMware<sup>\*</sup> Server features at <u>http://www.vmware.com/products/server/</u>). Before you begin, be sure you have:

- > A server system can support Intel<sup>®</sup> Virtualization technology
- > The installation files or CD or disks for the installed operating system

#### **BIOS Configuration**

1. Turn on the server and quickly enter BIOS by pressing **F2** during boot up. Under CPU configuration sub-section, make sure you *enabled* the Intel<sup>®</sup> Virtualization technology.

CPU / FSB Configuration				
P Initialisation yper Threading SLPM MX C1E KTPR EIST Primary Thread DINV Driving FSB Bus Parking BINIT# MCERR# FSB IOQ Depth FSB Enable	<pre> <enabled> <enabled> <disabled> <disabled> <disabled> <disabled> <disabled> <disa <disa="" <enabled="" <thre="" disabled=""> <disa <enabled=""> <enabled> <enab< th=""><th>Enables the Vanderpool Technology, takes effect after reboot.</th></enab<></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></enabled></disa></disa></disabled></disabled></disabled></disabled></disabled></enabled></enabled></pre>	Enables the Vanderpool Technology, takes effect after reboot.		

Figure 6-1

The following steps describe the procedure to download the installation file and install from a USB drive. If you are using the CD-ROM instead of downloading the software, the steps are the same except that you start from the CD directory where the installer file is located.

Download your free copy of VMware Server at <u>http://www.vmware.com/download/server/</u> before the installation. You will be asked for your VMware registration information before being given access to download files. Please be sure to enter the same email address you provided when registering, because right after the registration, you will get an email contains the serial number(s) to install and run multiple copies of VMware Server.

### **Graphic Based Installation**

- 2. Save the downloaded file to a USB drive.
- 3. Log on to your Linux host. In a terminal window, become *root* so you can perform the initial installation steps.

su -

- 4. Plug the USB drive into one USB port, and the system will automatically mount it.
- 5. Copy the file into '/tmp/vmare'



Figure 6-2

6. Change to the '/*tmp*/*vmware*' directory to verify the copy process is successful.



Figure 6-3

### **Text Based Installation and Configuration**

7. Run RPM specifying the installation file.

rpm –Uhv VMware-<XXX>.rpm

*VMware-<XXX>.rpm* is the installation file, in place of *<XXX>* the file name contains numbers that correspond to the version and build.



Figure 6-4

8. RPM installation processing...

📤 Applications 🛛 Actions 😔	😤 🥥 Sat	t Apr 29, 3:47 AM 🔇
		Sector A
	root@localhost:/tmp/vmware	= = ×
<u>F</u> ile <u>E</u> dit <u>V</u> iew	<u>T</u> erminal Ta <u>b</u> s <u>H</u> elp	
<pre>( [root@localhost [root@localhost [root@localhost gconfd-root keyring-d22sRc keyring-LaLzfX [root@localhost [root@localhost WMware-server-e</pre>	<pre>~]# cd /]# cd \tmp tmp]# dir keyring-uEYFEU ssh-cKMvxA3198 xses-root.kwXCOt keyring-XDfdX1 vmware xses-root.lSaPG4 mapping-root vmware-config0 xses-root.QLEz5j orbit-root xses-root.beLTgk xses-root.TLxbUi tmp]# cd vmware vmware]# dir x.p-22874.i386.rpm vmware]# rpm -Uhv VMware-server-e.x.p-22874.i386.rpm ####################################</pre>	100%] 15%)

Figure 6-5

9. Run the configuration program from the command line.

vmware-config.pl

- **Note:** Use *vmware-config.pl* to reconfigure VMware Server whenever you upgrade your Linux kernel. It is not necessary to reinstall VMware Server after you upgrade your kernel.
- **Note:** You can also use *vmware-config.pl* to reconfigure the networking options for VMware Server for example, to add or remove host-only networks.
- 10. Press **Enter** to read the End User License agreement (EULA). Read through the agreement by pressing the **Spacebar**, and type **Yes** to accept the agreement (as Figure 6-7 shows).



Figure 6-6



Figure 6-7

11. The remaining prompts are worded in such a way that, in most cases, the default response is appropriate.

Note: if you do not enable host-only networking when you install the software, you can not allow a virtual machine to use both bridged and host-only networking.

12. As shown in Figure 6-8, configure the networking for your virtual machines.

■ If you want to use any type of networking with virtual machines, answer **Yes** to this prompt:

Do you want networking for your virtual machines?

Bridged networking is always enabled if you enable networking.

■ To enable NAT, answer *Yes* to the following prompts:

Do you want to be able to use NAT networking in your virtual machines? Do you want this script to probe for an unused private subnet?

This allows you to connect your virtual machines to an external network when you have only one IP network address on the physical network, and that address is used by the host computer.

■ To enable host-only networking, answer **Yes** to the following prompts:

Do you want to be able to use host-only networking in your virtual machines? Do you want this script to probe for an unused private subnet?

Host-only networking allows for networking between the virtual machine and the host operating system.



Figure 6-8

13. Enter your VMware Server serial number exactly as it appears (with hyphens) in the email message you received from VMware. When you enter the serial number, it is saved in your license file.



Figure 6-9

14. The configuration program displays a message indicating the configuration completed successfully. If this message is not displayed, run the configuration program again.



Figure 6-10

- 15. When done, *exit* from the root account.
- 16. Run the software from *system tools* directory.



Figure 6-11

17. You will get a prompt asking you to select the VMware host, select *Local Host* if you just want to access virtual machines on the local computer.

🐣 Applications	Actions	0							Sat Apr 29, 3:51 AM 🔇
<b>*</b>			Ног	me - VMware S	erver Con	sole (e.x.p	build-22874)		- 6 2
<u>F</u> ile <u>E</u> dit <u>V</u> ie	w H <u>o</u> st	V <u>M</u>	Ta <u>b</u> s	<u>H</u> elp					
	spend	Power C	Dn	G   Reset   S	napshot	Revert	Full Screen	Quick Switch	
Inventory					Conne	ct to Host		///////////////	
			Se To sel an	elect the VMwar access virtual lect 'Local host lect 'Remote hi d password. D Local host D Remote host	re host that machines c '. To acces	you want to on the local s virtual ma	computer you a	tworked host,	t to virtual machines rtual machine is networking, memory ves you full control leo and mouse
				Host name: [ User name: [ Password: [		×	<u>C</u> ancel	Connect	
< 🗐 [System	n Monitor	]		🔳 root@loca	alhost:/tmp/	vmware	🛃 Home - VI	Mware Server C	Console

- Figure 6-12
- 18. Initial graphic interface for VMware Server.

📥 Applications Actions 🔗 🌋		🌏 Sat Apr 29, 3:51 AM 🄇
	caldomain - VMware Server Console (e.x.p build-2	2874)
<u>File E</u> dit <u>V</u> iew H <u>o</u> st V <u>M</u> Ta <u>b</u> s	<u>H</u> elp	
	Reset Snapshot Revert Full Screen	Quick Switch
Cor Etale Cor Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etale Etal	Open a virtual machine Open a virtual machine Storage, networking Server Console giv	er Console lets you connect to virtual on VMware Server systems. Each equivalent to a physical server with 9, memory and devices. The VMware res you full control over virtual 9 keyboard, video and mouse
		Local host 🗎
< 🗐 [System Monitor]	root@localhost:/tmp/vmware 120 localhost.lo	caldomain - VMware

Figure 6-13

19. Product information for VMware Server.



Figure 6-14

20. You can change your serial number using the option in menu "Help->Enter Serial Number".

Applications Actions	2	🌗 Sat Apr 29, 3:52 AM 🔇
✓ loc	alhost.localdomain - VMware Server Console (e.x.p build-22874)	= 8 ×
<u>F</u> ile <u>E</u> dit <u>V</u> iew H <u>o</u> st V <u>M</u>	Ta <u>b</u> s <u>H</u> elp	
Power Off Suspend Power		Switch
🍘 localhost.localdomain 🛛 🗙		
localhost.localdomain		
State: Connected	Enter Serial Number	×
	Please enter your 20 character serial number, name, and company na	
🛱 Create a new virtual ma	Serial number:	hat run on VMware Server th storage, networking,
🞾 Open a virtual machine	Name:	ontrol over virtual
Sedit host settings (	Company name:	
₿ (Switch to a different hos	Get Serial Number X Cancel	к
_		
		Local host 🔒
< 🗐 [System Monitor]	🔳 root@localhost:/tmp/vmware 🛛 👹 localhost.localdor	main - VMware 📃

Figure 6-15

21. Installation and configuration completed, you can create new virtual machines with Linux based VMWare Server now.

interstion Actions statement of the Applications Actions in the Application of the Applic	Sat Apr 2	29, 3:51 AM 🔇
✓ localhost.lo	caldomain - VMware Server Console (e.x.p build-22874)	- 8 ×
Eile Edit Welcome to the New Virt	New Virtual Machine Wizard	
Inventory	This wizard will guide you through the steps of creating a new virtual machi	p virtual Each r with VMware
		cal host 🗿
(System Monitor)	💷 root@localhost:/tmp/vmware 🛛 🐉 localhost.localdomain - VMware	

Figure 6-16