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**Intel® Modular Server System MFSYS25,  
Intel® Modular Server System MFSYS35,  
Intel® Compute Module MFS5000SI,  
Intel® Compute Module MFS5520VI**

***Tested Hardware and Operating System List***

**Revision 2.4**

**October, 2009**

**Enterprise Platforms and Services Division**

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## ***Revision History***

<b>Date</b>	<b>Revision Number</b>	<b>Modifications</b>
November, 2007	1.0	Initial Release
January, 2008	1.1	Added support for Windows 2003 Server, clarified Virtualization Software testing/certification details
January 22 , 2008	1.2	Added Fujitsu 146GB 2.5" HDD
January 25 , 2008	1.3	Corrected 146GB FJ HDD – 10K instead of 15K drive
February 1, 008	1.4	Added SLES 10 64-bit Stress Testing and Novell Certification Status for both 32 & 64-bit versions
August, 2008	1.5	Added VMware ESX Server 3.0.2 U1 GA Certification and Windows 2008 Server support. Updated USB Device list.
December, 2008	1.6	Updated OS support. Added initial MFSYS35 HDD information.
January 9, 2009	1.7	Corrected Hard Drive FW revisions in Table 5.2 Tested Hard Drives
January 16, 2009	1.8	Corrected Xyratec external array information, added note for 3.5" drives-mixing of SAS and SATA not supported.
March, 2009	1.9	Updated Table 4.6 External Tape Drives and Table 5.2 Tested HDDs
June, 2009	2.0	Added Intel® Compute Module MFS5520VI to this document. Updated tables with new HDD and OS information.
July, 2009	2.1	Added back external storage information that was inadvertently removed.
September, 2009	2.2	Remove EOL external storage SSR212PP, correct ST9500430SS product family information.
October 21 2009	2.3	Added 2.5" SSD, SATA drives, updated supported OS, and system configuration information.
October 28, 2009	2.4	Added new 2.5" SAS drives, updated supported OS information.

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# Table of Contents

<b>1. Introduction .....</b>	<b>6</b>
1.1 Test Overview.....	6
1.1.1 Basic Installation Testing .....	6
1.1.2 I/O Expansion Card / Peripheral Compatibility and Stress Testing .....	7
1.2 Pass/Fail Test Criteria .....	8
<b>2. MFS5000SI / MFS5520VI / MFSYS25 / MFSYS35 Base System Configurations.....</b>	<b>9</b>
<b>3. Supported Operating Systems &amp; Software.....</b>	<b>10</b>
3.1 Operating System Certifications .....	12
3.2 Operating System Storage Component Support .....	15
<b>4. I/O Expansion Cards &amp; Peripherals.....</b>	<b>16</b>
4.1 Ethernet Expansion Card.....	17
4.2 Monitors .....	17
4.3 USB Devices.....	17
4.4 Ethernet Switch Modules .....	19
4.5 Storage Control Modules .....	19
4.6 External Tape Drives .....	19
4.7 External Storage .....	19
<b>5. Hard Disk Drives.....</b>	<b>20</b>
<b>6. Installation Guidelines .....</b>	<b>23</b>
6.1 Slipstreamed install for Windows 2003 Enterprise Edition (32 & 64 bit).....	23
6.2 Windows 2003 Enterprise Edition (32 & 64 bit) Remote Installation Method .....	24
6.3 Red Hat Enterprise Linux 5.0 (32 & 64 bit) Remote Installation Method .....	28
6.4 SuSE Linux Enterprise Server 10 (32 & 64 bit) Remote Installation Method.....	34

## List of Tables

Table 2.1 Base System Configurations Tested.....	9
Table 3.1 Operating Systems Tested .....	10
Table 3.2 Operating System Certifications, MFS5000SI .....	12
Table 4.1 Intel® Compute Module MFS5000SI / MFS5520VI Supported Items .....	17
Table 4.2 Intel® Modular Server System MFSYS25 / MFSYS35 Supported Peripherals.....	19

# 1. Introduction

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This document is intended to provide users of the Intel® Modular Server System MFSYS25/MFSYS35, Intel® Compute Module MFS5000SI and Intel® Compute Module MFS5520VI with a guide to the different operating systems, expansion cards, and peripherals Intel plans to test on this platform.

This document will continue to be updated as new expansion cards, peripherals, and operating systems are tested or until the Intel® Modular Server System MFSYS25/MFSYS35, Intel® Compute Module MFS5000SI and Intel® Compute Module MFS5520VI are no longer in production. Each new release of the document will present updated information as well as continue to provide the information from previous releases.

Intel will only provide support for those expansion cards and peripherals under the specified system configuration (System BIOS and Firmware revisions) and operating systems versions with which they were tested.

## 1.1 Test Overview

Testing performed on the Intel® Modular Server System MFSYS25/MFSYS35, Intel® Compute Module MFS5000SI and Intel® Compute Module MFS5520VI is classified under two separate categories: Basic Installation Testing, and Expansion Card/ Peripheral Compatibility and Stress Testing.

### 1.1.1 Basic Installation Testing

Basic installation testing is performed with each supported operating system. Basic installation testing validates that the server board can install the operating system and that the base hardware feature set is functional. A small set of peripherals is used for installation purposes only. No expansion cards are tested. Testing includes network connectivity and running of proprietary and industry standard test suites.



The latest version of an operating system signifies the latest supported version at the time of the actual test run. Each new release of this document may have a newly supported release of a given operating system. Previous releases of a supported operating system may not be tested beyond the basic installation test process.

#### 1.1.1.1 Support Commitment for Basic Installation Testing

Intel commits to provide the following level of customer support for operating systems that receive only basic installation testing:

- Intel will provide and test operating system drivers for each of the server board's integrated controllers, provided that the controller vendor has a driver available upon request. Vendors will not be required by Intel to develop drivers for operating systems that they do not already support. This may limit the functionality of certain server board integrated controllers.

- Intel will support customer issues that involve installation and/or functionality of operating system with the server board's integrated controllers only if a driver has been made available.
- Intel will NOT provide support for issues related to use of any 3<sup>rd</sup> party expansion cards or peripherals installed in the server system when an operating system that received basic installation testing only is in use.
- Support is defined as assistance in root causing issues, and determining a customer acceptable resolution to the issue associated with the operating system. The resolution may include, but is not limited to on-board controller driver changes, engaging the vendor for resolution, BIOS changes, firmware changes, or determining a customer acceptable workaround for the issue.

### **1.1.2 I/O Expansion Card / Peripheral Compatibility and Stress Testing**

I/O Expansion Card / Peripheral Compatibility and Stress testing is performed only on the most current release of a supported operating system at the time of a given validation run. The I/O Expansion Card / Peripheral Compatibility and Stress testing process consists of three areas: Base Platform, I/O Expansion Card Compatibility, and Stress.

**Base Platform:** Each base platform will successfully install a given operating system, successfully run a disk stress test, and successfully run a network stress test.

**I/O Expansion Card Compatibility:** I/O Expansion Card compatibility validation (CV) testing uses test suites to gain an accurate view of how the server performs with the available expansion card under the primary supported operating systems. These tests are designed to show hardware compatibility between the cards and the server platform and include functional testing only. No heavy stressing of the systems or the cards is performed for CV testing.

**Stress Testing:** This test sequence uses configurations that include expansion cards in all available slots, for a minimum 72-hour test run without injecting errors. Each configuration passes an installation test, a Network/Disk Stress test, and tape backup test. Any fatal errors that occur will require a complete test restart.

#### **1.1.2.1 Support Commitment for I/O Expansion Card / Peripheral Compatibility and Stress Testing**

Intel commits to provide the following level of customer support for operating systems that receive I/O Expansion Card / Peripheral Compatibility and Stress testing:

Intel commits to provide the following level of customer support for operating systems that receive I/O Expansion Card / Peripheral Compatibility and Stress testing:

- Intel will provide support for customer issues with these operating systems involving installation and/or functionality of the server board with or without the I/O Expansion Card and peripherals listed in this document as having been tested under the particular operating system.
- Support is defined as assistance in root causing issues, and determining a customer acceptable resolution to the issue associated with the operating system. The resolution may include, but is not limited to on-board controller driver changes, engaging the vendor for resolution, BIOS changes, firmware changes, or determining a customer acceptable workaround for the issue.

- Intel will provide and test operating system drivers for each onboard video, network, and storage controller.
- Intel will enable vendors to provide driver support for I/O Expansion Cards using these operating systems.
- Intel will go through some of the steps to achieve certification to ensure its customers do not run across any problems, but the actual certification is the responsibility of the individual customer.



For operating systems, adapter cards, and peripherals not listed in this document, there is no support commitment. Intel will consider support requests on a case-by-case basis.

## 1.2 Pass/Fail Test Criteria

For each operating system, I/O Expansion card, and peripheral configuration, a test passes if specific criteria are met. Specific configurations may have had particular characteristics that were addressed on a case-by-case basis. In general, a configuration passes testing if the following conditions are met:

- The operating system installed without error.
  - Manufacturer's installation instructions or Intel's best-known methods (BKMs) were used for the operating system installation.
  - In some cases rKVM BKMs used involve workarounds and were required during the operating system installation.
  - The server system behaved as expected during and after the operating system installation.
  - Application software installed and executed normally.
- Hardware compatibility tests ran to completion without error.
- Test software suites executed successfully
  - Test and data files were created in the correct directories without error.
  - Files copied from client to server and back compare to the original with zero errors reported.
  - Clients remain connected to the server system.
  - Industry standard test suites run to completion with zero errors reported.

All Intel® Compute Module testing was performed using the Intel® Server Modular System MFSYS25 and/or the Intel® Server Modular System MFSYS35.



## 2. MFS5000SI / MFS5520VI / MFSYS25 / MFSYS35 Base System Configurations

The following table lists the base system configurations tested. Base system configurations will change as new revisions of the Intel® Compute Module MFS5000SI, the Intel® Compute Module MFS5520VI or the Intel® Modular Server System MFSYS25/MFSYS35 are released and/or new system software stacks are cut onto the boards in the factory. Each base system configuration is assigned an identifier number that is referenced in the tables throughout this document. New base system configurations are added with each new release of this document.



Intel will only provide support for I/O expansion cards and peripherals under the specified base system configuration and operating systems versions with which they were tested.

The following table lists the base system configuration tested.

**Table 2.1 Base System Configurations Tested**

Config Id #	Intel® Modular Server System	System PBA/TA Number	Intel® Compute Module	Compute Module PBA/TA Number	Unified Firmware Update Rev	GUI Rev	BIOS Rev	BMC FW Rev	Switch Rev	SCM Rev
1	MFSYS25	D91400-003	MFS5000SI	D70726-402	P2.0.5	8633	32	1.25.1	1.0.0.25	2.91.140.11
2	MFSYS25	D91400-006I	MFS5000SI	D70726-402	P2.2.3	11328	43	1.30.3	1.0.0.25	2.91.140.45
3	MFSYS25	D91400-006I	MFS5000SI	D70726-402	P2.6	14717	43	1.34.9	1.0.0.27	3.00.0140.77
4	MFSYS35	D91403-004	MFS5000SI	D70726-402	P2.6	14717	43	1.34.9	1.0.0.27	3.00.0140.77
5	MFSYS25	D91400-006	MFS5000SI	D70726-402	V2.7 (1)	16239	48	1.35.1	1.0.0.27	3.02.0140.15
6	MFSYS35	D91403-004	MFS5000SI	D70726-402	V2.7 (1)	16239	48	1.35.1	1.0.0.27	3.02.0140.15
7	MFSYS25	D91400-008	MFS5000SI	D70726-501	V3.0	17040	48	1.35.3	1.0.0.27	3.02.0140.15
	MFSYS35	D91403-004	MFS5520VI	E41515-402			34	1.15.1		
8	MFSYS25	D91400-009	MFS5000SI	D70726-501	V5.0	19055	48	1.36.4	1.0.0.27	3.4.0140.15
	MFSYS35	D91403-006	MFS5520VI	E41515-402			38	1.17.4		

Notes: All base system configurations tested used the Intel® Compute Module MFS500SI and/or MFS5520VI

(1) Naming convention change from P.x.x to V.x.x, no change to FW package structure

### 3. Supported Operating Systems & Software

The following table provides a list of the operating systems and software applications that Intel plans to test with the Intel® Compute Module MFS5000SI and MFS5520VI. Each of the listed operating systems was tested for compatibility with the base system configuration listed in Section 2 of this document. Operating systems are supported only with the specified base system configuration(s) with which they were tested.

The following table also indicates whether each operating system received Basic Installation Testing, or Adapter / Peripheral Compatibility and Stress Testing. For information on the support commitments for Basic Installation Testing vs. Adapter / Peripheral Compatibility and Stress Testing, please reference Section 1 of this document.

Any variations to the standard operating system installation processes are documented in the Installation Guidelines section of this document. If no installation guidelines are noted in the following table, then the operating system installed as expected using manufacturer's installation instructions or Intel's best-known methods.



Operating systems supported by Intel® System Management Software may be different than the operating systems supported by the Intel® Compute Module MFS5000SI or MFS5520VI. Please reference the Readme and User Guide documents that are included as part of the Intel System Management Software distribution for operating systems that are supported by that release.

**Table 3.1 Operating Systems Tested**

Operating System	Type of Testing	Notes
Microsoft Windows* 2003 Enterprise (32-bit), R2 SP2	Configuration 8 - Compatibility & Stress	Intel's testing was completed with Microsoft Windows Server 2003 Enterprise R2 SP2, 32-bit. Although not specifically tested on this product, the MFS5000SI compute module also supports Microsoft Windows Server 2003 R2, 32-bit.
Microsoft Windows* 2003 Enterprise (64-bit), R2 SP2	Configuration 8 -Compatibility & Stress	Intel's testing was completed with Microsoft Windows Server 2003 Enterprise R2 SP2, 64-bit. Although not specifically tested on this product, the MFS5000SI compute module also supports Microsoft Windows Server 2003 R2, 64-bit.
Microsoft Windows* 2008 Enterprise (32-bit)	Configuration 8 -Compatibility & Stress	
Microsoft Windows* 2008 Enterprise (64-bit)	Configuration 8 -Compatibility & Stress	
Red Hat Enterprise Linux AS 5.0 U3 (64-bit)	Configuration 8 -Compatibility & Stress	This OS is currently only supported in a single SCM environment.
Red Hat Enterprise Linux AS 5.0 U3 (32-bit)	Configuration 8 Basic Installation	This OS is currently only supported in a single SCM environment.

**Intel® Modular Server System MFSYS25, Intel® Modular Server System MFSYS35, Intel® Compute Module MFS5000SI, Intel® Compute Module MFS5520VI**

Operating System	Type of Testing	Notes
SuSE Linux Enterprise Server 10 SP2 (32-bit),	Configuration 8 - Basic Installation, Compatibility Only	A user can develop a STONITH implementation for SLES 10 cluster utilizing the SNMP Power Control BKM posted at the following link: <a href="http://www.intel.com/support/motherboards/server/sb/CS-030380.htm">http://www.intel.com/support/motherboards/server/sb/CS-030380.htm</a>
SuSE Linux Enterprise Server 10 SP2 (64-bit),	Configuration 8 - Compatibility & Stress	A user can develop a STONITH implementation for SLES 10 cluster utilizing the SNMP Power Control BKM posted at the following link: <a href="http://www.intel.com/support/motherboards/server/sb/CS-030380.htm">http://www.intel.com/support/motherboards/server/sb/CS-030380.htm</a>
SCO UnixWare 7.1.4	Configuration 7 -Compatibility	Operating system was tested and is supported by SCO. In addition, this OS is currently only supported in a single SCM environment. <a href="http://www.sco.com/chwp">http://www.sco.com/chwp</a>
SCO OpenServer Release 6	Configuration 7 -Compatibility	Operating system was tested and is supported by SCO. In addition, this OS is currently only supported in a single SCM environment. <a href="http://www.sco.com/chwp">http://www.sco.com/chwp</a>
SCO OpenServer Release 5.07	Configuration 7 -Compatibility	Operating system was tested and is supported by SCO. In addition, this OS is currently only supported in a single SCM environment. <a href="http://www.sco.com/chwp">http://www.sco.com/chwp</a>
VMware ESX Server 3.5 U4	Configuration 8 -Compatibility	
VMware ESXi Server 3.5 U4	Configuration 8 -Compatibility	
Vmware ESX 3.5 for MFSYS25/MFSYS35 Storage	Configuration 8 -Compatibility	
Vmware ESX 3.5i for MFSYS25/MFSYS35 Storage	Configuration 8 -Compatibility	
VMware ESX Server 4.0	Configuration 8 -Compatibility	
VMware ESXi Server 4.0	Configuration 8 -Compatibility	
<b>Client Web Browsers (for CMM interface)</b>	<b>Type of Testing</b>	<b>Notes</b>
Microsoft Internet Explorer 6.0	Configuration 8 -Compatibility	
Microsoft Internet Explorer 7.0	Configuration 8 -Compatibility	
Mozilla Firefox 2.0	Configuration 8 -Compatibility	
Mozilla Firefox 3.x	Configuration 8 -Compatibility	Firefox 3.x is not supported on SLES 10 client. For SLES 10 client use Firefox 2.x.
<b>Client Java Engines (for CMM interface and remote KVM)</b>	<b>Type of Testing</b>	<b>Notes</b>
Sun Java Plugin 6.3	Configuration 8 -Compatibility	Sun Java Plugin 6.3 or above

**Intel® Modular Server System MFSYS25, Intel® Modular Server System MFSYS35, Intel® Compute Module MFS5000SI, Intel® Compute Module MFS5520VI**

Client OS	Type of Testing	Notes
Microsoft Windows* XP Professional, SP3	Configuration 8 -Compatibility	
Microsoft Vista* Business (32-bit ) SP1	Configuration 8 -Compatibility	
Red Hat Enterprise Linux 5.0 Desktop (32-bit)	Configuration 8 -Compatibility	
Novell SuSe Linux Desktop 10.2 (32-bit)	Configuration 8 -Compatibility	

### 3.1 Operating System Certifications

Listed below are the operating systems that Intel plans to certify with the Intel® Compute Module MFS5000SI and Intel® Compute Module MFS5520VI. However, the customer is responsible for their own certification from the individual operating system vendors. In many cases, the customer may leverage their operating system certifications from Intel's testing. See the "Comments" section next to each operating system in the table below for additional information. Intel's certifications, pre-certification, and operating system testing may help reduce some of the risk in achieving customer certifications with the operating system vendors.

**Table 3.2 Operating System Certifications, MFS5000SI**

Operating System	Certification Listing	Comments
Microsoft Windows* 2003 Enterprise Server (32 & 64-bit )	Intel® Modular Server System MFSYS25/ MFS5000SI SID# 1270300	Certification available at launch. OEM must request certification by Microsoft for their specific product.
Microsoft Windows* 2008 Enterprise Server (32 & 64-bit )	Intel® Modular Server System MFSYS25/ MFS5000SI SID# 129928	Certification available. OEM must request certification by Microsoft for their specific product.
Red Hat* Enterprise Linux Advanced Server 5.0 (32 & 64-bit)	Intel® Modular Server System MFSYS25/ MFS5000SI SID# 385741	Certification for single SCM configuration only. Certification available at launch. Red Hat checks Intel's results, certifies (if appropriate), and posts the certificate on their web site. Customer can leverage the Intel certification, if customer product meets the operating system vendor standard. <a href="http://hardware.redhat.com/hcl/?pagename=hcl&amp;view=certified&amp;vendor=399&amp;class=8#list">http://hardware.redhat.com/hcl/?pagename=hcl&amp;view=certified&amp;vendor=399&amp;class=8#list</a>
SuSE Linux Enterprise Server 10 SP1 (32 & 64-bit)	Intel® Compute Module MFS5000SI YES Certification Bulletin 95560	Certification for single SCM configuration only. YES Certification Bulletin's can be located on Novell's website. <a href="http://developer.novell.com/yesearch/Search.jsp">http://developer.novell.com/yesearch/Search.jsp</a>
SCO UnixWare 7.1.4	Intel® Compute Module MFS5000SI	Certification details available on SCO's website: <a href="http://www.sco.com/chwp">http://www.sco.com/chwp</a>
SCO OpenServer Release 6	Intel® Compute Module MFS5000SI	Certification details available on SCO's website: <a href="http://www.sco.com/chwp">http://www.sco.com/chwp</a>
SCO OpenServer Release 5.0.7	Intel® Compute Module MFS5000SI	Certification details available on SCO's website: <a href="http://www.sco.com/chwp">http://www.sco.com/chwp</a>

**Intel® Modular Server System MFSYS25, Intel® Modular Server System MFSYS35, Intel® Compute Module MFS5000SI, Intel® Compute Module MFS5520VI**

Virtualization Software	Certification Listing	Comments
VMware ESX Server 3.0.2 U1	GA Certification	This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up
VMware ESX Server 3.5 U4	Intel® Compute Module MFS5000SI	This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up
VMware ESXi Server 3.5 U4	Intel® Compute Module MFS5000SI	This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up
Vmware ESX 3.5 U4 for MFSYS25/MFSYS35 Storage	Intel® Modular Server MFSYS25 Intel® Modular Server MFSYS35 Pending	This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up
Vmware ESX 3.5i for MFSYS25/MFSYS35 Storage	Intel® Modular Server MFSYS25 Intel® Modular Server MFSYS35 Pending	This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up
VMware ESX Server 4.0	Intel® Compute Module MFS5000SI	Certification for single SCM configuration only. This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up
VMware ESXi Server 4.0	Intel® Compute Module MFS5000SI	Certification for single SCM configuration only. This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up
Vmware ESX 4.0 for MFSYS25/MFSYS35 Storage	Intel® Modular Server MFSYS25 Intel® Modular Server MFSYS35 Pending	This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up

**Table 3.3 Operating System Certifications, MFS5520VI**

Operating System	Certification Listing	Comments
Microsoft Windows* 2003 Enterprise Server R2 SP2 (32 & 64-bit )	Intel® Modular Server System MFSYS25/ MFS5520VI SID# 1327210	Certification available at launch. OEM must request certification by Microsoft for their specific product.
Microsoft Windows* 2008 Enterprise Server (32 & 64-bit )	Intel® Modular Server System MFSYS25/ MFS5520VI SID# 1327208	Certification available. OEM must request certification by Microsoft for their specific product.
Red Hat* Enterprise Linux Advanced Server 5.0 U3 (32 & 64-bit)	Intel® Modular Server System MFSYS25/ MFS5520VI SID# Pending	Certification for single SCM configuration only. Certification pending.
SuSE Linux Enterprise Server 10 SP2 (32 & 64-bit) SuSE Linux Enterprise Server 10 SP2 (64-bit) Xen kernel	Intel® Compute Module MFS5520VI	Certification Pending
Virtualization Software	Certification Listing	Comments

**Intel® Modular Server System MFSYS25, Intel® Modular Server System MFSYS35, Intel® Compute Module MFS5000SI, Intel® Compute Module MFS5520VI**

Operating System	Certification Listing	Comments
VMware ESX Server 3.5 U4	Intel® Compute Module MFS5520VI	This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up
VMware ESXi Server 3.5 U4	Intel® Compute Module MFS5520VI	This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up
Vmware ESX 3.5 U4 for MFSYS25/MFSYS35 Storage	Intel® Modular Server MFSYS25 Intel® Modular Server MFSYS35 Pending	This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up
Vmware ESX 3.5i for MFSYS25/MFSYS35 Storage	Intel® Modular Server MFSYS25 Intel® Modular Server MFSYS35 Pending	This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up
VMware ESX Server 4.0	Intel® Compute Module MFS5520VI	Certification for single SCM configuration only. This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up
VMware ESXi Server 4.0i	Intel® Compute Module MFS5520VI	Certification for single SCM configuration only. This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up
Vmware ESX 4.0 for MFSYS25/MFSYS35 Storage	Intel® Modular Server MFSYS25 Intel® Modular Server MFSYS35 Pending	This recipe is available only through the ESAA program. Please visit <a href="http://www.esaa-members.com">http://www.esaa-members.com</a> to sign up

### 3.2 Operating System Storage Component Support

Table 3.4 Operating System Storage Component Support

Operating System	Single SCM	Dual SCM	Shared LUN Single SCM	Shared LUN Dual SCM
Microsoft Windows* 2003 Enterprise (32-bit), R2 SP2	Supported	Supported	Not Supported	Not Supported
Microsoft Windows* 2003 Enterprise (64-bit), R2 SP2	Supported	Supported	Not Supported	Not Supported
Microsoft Windows* 2008 Enterprise SP2 (32-bit)	Supported	Supported	Supported	Supported
Microsoft Windows* 2008 Enterprise SP2 (64-bit)	Supported	Supported	Supported	Supported
Red Hat Enterprise Linux AS 5.0 U3(32-bit)	Supported	Not Supported	Not Supported	Not Supported
Red Hat Enterprise Linux AS 5.0 U3(64-bit)	Supported	Not Supported	Not Supported	Not Supported
SuSE Linux Enterprise Server 10 SP2 (32-bit),	Supported	Supported(1)	Supported	Supported(1)
SuSE Linux Enterprise Server 10 SP2(64-bit),	Supported	Supported(2)	Supported	Supported(2)
SCO UnixWare 7.1.4	Supported by vendor	Not Supported	Not Supported	Not Supported
SCO OpenServer Release 6	Supported by vendor	Not Supported	Not Supported	Not Supported
SCO OpenServer Release 5.0.7	Supported by vendor	Not Supported	Not Supported	Not Supported
VMWare ESX 3.5 U4	Supported	Supported	Supported	Supported
VMware ESXi 3.5 U4	Supported	Supported	Supported	Supported
VMWare ESX 4.0	Supported	Supported(3)	Supported	Supported(3)
VMWare ESXi 4.0	Supported	Supported(3)	Supported	Supported(3)

Note:

- (1) Support less than 4GB memory
- (2) Xen is not supported.
- (3) SP failover for SCM failures and SCM SAS port failures is not supported. Support for SP failover and SAS port failures currently targeted for Q1 2010.

## 4. I/O Expansion Cards & Peripherals

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I/O Expansion card and peripheral compatibility and stress testing will only be performed with the latest version of an operating system at the time the validation testing occurred. The expansion cards and peripherals are divided into categories based on their functionality. All integrated on-board devices are tested by default and are therefore not included in the following tables.

Note that not all expansion cards or peripherals were tested under all operating systems. The following notation is used in the tested adapters and peripherals table below to indicate the support level that Intel provides for a particular adapter under a particular operating system:

NT	This expansion card or peripheral has not been tested under this operating system and is not supported under this operating system.
ND	This expansion card or peripheral has not been tested under this operating system due to limitations in IHV driver availability, and is not supported under this operating system.
SD (Similar Device)	This expansion card/peripheral is supported, but not tested. This expansion card/peripheral model has not been tested with this server board, but Intel will support it based on successful testing of a similar expansion card/peripheral from the same family. Intel has high confidence that this expansion card/peripheral will function correctly with the server board. This expansion card/peripheral uses the same firmware and drivers, and has a nearly identical system interface to another expansion card/peripheral of the same family that has been successfully tested with this server board. In addition, Intel has secured IHV commitment to support the similar expansion card/peripheral equally. Customers should always test expansion card/peripheral as part of the final system configuration prior to deployment. All installation guidelines for the tested expansion card/peripheral also apply to the similar device.

Any variations to the standard adapter installation process or to expected adapter functionality are documented in the Installation Guidelines section of this document. If there are installation guidelines affecting a particular expansion card/peripheral and operating system combination, these are referenced in the following table. If there are no installation guidelines noted in the following table, then the expansion card/peripheral installed and functioned as expected using manufacturer's installation instructions or Intel's best-known methods.



**Intel® Modular Server System MFSYS25, Intel® Modular Server System MFSYS35, Intel® Compute Module MFS5000SI, Intel® Compute Module MFS5520VI**

**Table 4.1 Intel® Compute Module MFS5000SI / MFS5520VI Supported Items**

Manufacturer	Model Name	Model Number	Interface	Comments
<b>4.1 Ethernet Expansion Card</b>				
Intel	Intel® Modular Server Accessory -- Dual GbE I/O Expansion MezzCard	AXXGBIOMEZ	Proprietary PCI - E	For MFS5000SI
Intel	Intel® Modular Server Accessory -- Dual GbE I/O Expansion MezzCard	AXXGBIOMEZV	Proprietary PCI - E	For MFS5520VI
<b>4.2 Monitors</b>				
Viewsonic	19" LCD VX1935WM	VX1935WM - VGA only	VGA	
Viewsonic	17" LCD VAA 702	VAA 702- VGA only	VGA	
Viewsonic	19" HD Widescreen	VX1945wm	VGA	
Viewsonic	19" Wide Multimedia LCD Display Monitor	VA1912w	VGA	
Viewsonic	17" Multimedia Digital DVI LCD	VP702b	VGA	
Viewsonic	17" LCD Display Monitor	VA703b	VGA	
<b>4.3 USB Devices</b>				
Belkin	USB Hub	F5U021v 4 port hub	USB	
CP Technologies	USB Hub	CP-UH-315 4 port hub	USB	
Microsoft	Natural Ergonomic USB Keyboard	4000 V1.0	USB	
Belkin	Ergoboard Pro Keyboard	F8E887-BLK	USB	
Belkin	USB Mouse	F8E814-BLK-OPT	USB	
Logitech	Optical USB mouse	P/N: 931145-0403	USB	
Logitech	Optical USB Mouse	M-BJ58	USB	

**Intel® Modular Server System MFSYS25, Intel® Modular Server System MFSYS35, Intel® Compute Module MFS5000SI, Intel® Compute Module MFS5520VI**

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Manufacturer	Model Name	Model Number	Interface	Comments
Logitech	MiniWheel* Mouse	M-UB48	USB	
TEAC	USB Floppy	FD-05-PUB	USB	
NEC	USB Floppy	UF0002	USB	
IOMega	USB Storage Drive	80GB Silver Portable	USB	
Lexar	USB Keyfob	USB Jumpdrive 1GB	USB	
Lexar	USB Keyfob	USB Jumpdrive 2GB	USB	SD, This USB Keyfob is supported, but not tested. Intel will support it based on successful testing of the Lexar, 1GB, USB Jumpdrive.
SanDisk	USB Keyfob	USB Cruzer Micro 1GB	USB	
SanDisk	USB Keyfob	USB Cruzer mini 2GB	USB	
IOMega	USB Optical Drive	DVD R/W (Super 16xU2)	USB	
Liteon	USB Optical Drive	SHM-165P6SX	USB	
Liteon	USB Optical Drive	SOSW-1673SU	USB	
Liteon	USB Optical Drive	DX-20A4H	USB	
Sony	USB Optical Drive	DRX-830UL-G	USB	
Sony	USB Optical Drive	DRX-840U	USB	
HP	USB Optical Drive	DVD1040E	USB	

**Intel® Modular Server System MFSYS25, Intel® Modular Server System MFSYS35, Intel® Compute Module MFS5000SI, Intel® Compute Module MFS5520VI**

**Table 4.2 Intel® Modular Server System MFSYS25 / MFSYS35 Supported Peripherals**

Manufacturer	Model Name	Model Number	Interface	Comments
<b>4.4 Ethernet Switch Modules</b>				
Intel	Intel® Gigabit Ethernet Switch	AXXSW1GBS	Gbit Ethernet	
<b>4.5 Storage Control Modules</b>				
Intel	Intel® Storage Controller Module	AXXSCM3SS	SAS	
<b>4.6 External Tape Drives</b>				
Quantum	Quantum LTO-3 HH	LTO-3 HH SAS	LTO Drive	Tested by vendor. Intel tested with the following configurations: Windows 2003* with Symantec Backup Exec 12 Windows 2008* with Symantec Backup Exec 12
<b>4.7 External Storage</b>				
Promise	VTrak E310sS	VTE310sS	SAS	Single storage controller
Promise	VTrak E310sD	VTE310sD	SAS	Dual storage controller. Not tested with or supported under Red Hat Enterprise Linux AS 5.0 U3 (32 bit or 64 bit)
Promise	VTrak E610sS	VTE610sS	SAS	Single storage controller
Promise	VTrak E610sD	VTE610sD	SAS	Dual storage controller. Not tested with or supported under Red Hat Enterprise Linux AS 5.0 U3 (32 bit or 64 bit)
Intel	Intel® Storage Server SSR212MC2	SSR212MC2	NAS	
Xyratex	Xyratex E5412E	E5412E	SAS	3.07.0015 firmware. Supported by vendor in single SCM configuration only for the following Operating Systems: Microsoft Windows* 2003 Enterprise R2 SP2, Microsoft Windows* 2008 Enterprise, SuSE Linux Enterprise Server 10 SP2.. Add on JBODs and Dual SCM configurations are not supported.

## 5. Hard Disk Drives

The hard drives listed in the following table have been tested with the Intel® Modular Server System MFSYS25 / MFSYS35 by Intel validation labs and/or by individual drive vendors.

The following notation is used in the tested hard drives table below to indicate the support level that Intel provides for a particular hard drive:

SD (Similar Drive)	The hard disk drive is supported, but not tested. This hard drive model/capacity has not been tested with this server board, but Intel will support it based on successful testing of a larger capacity hard drive from the same hard drive family. Intel has high confidence that this hard drive will function correctly with the server board. This drive uses the exact same firmware and drivers as a larger capacity hard drive that has been successfully tested with this server board. The only difference between this drive and the one that was used in testing is the storage capacity. Intel provides the same level of support for all hard drives listed in this document, regardless of whether the drive was tested or not. Customers should always test hard drives as part of the final system configuration prior to deployment. Given the fact that a larger capacity hard drive from the same drive family has successfully completed testing on this server board, this particular hard drive capacity point will not be tested.
IHVT (IHV Tested)	The hard disk drive was tested according to Intel-approved guidelines and test procedures by the Independent Hardware Vendor (IHV) that manufactured the drive. Intel provides the same level of support for all hard drives listed in this document, regardless of whether the drive was tested in an Intel lab or not. IHV test reports remain the property of the IHV (Intel cannot provide copies of these reports).

**Table 5.1 Tested Hard Drives**

Manufacturer	Product Family	Model Number	RPM	Drive Size (GB)	Drive FW Level (1)	Notes
<b>2.5" SAS drive</b>						
Seagate	Constellation*	ST9500430SS	7,200	500G	0002	Added June 2009
Seagate	Savvio* 10K.3	ST9300603SS	10,000	300GB	0002	Added March 2009
Seagate	Savvio* 10K.3	ST9146803SS	10,000	146GB	0002	Added April 2009
Seagate	Savvio* 10K.2	ST9146802SS	10,000	146GB	0003	
Seagate	Savvio* 10K.2	ST973402SS	10,000	73GB	0003	
Seagate	Savvio* 15K	ST936751SS	15,000	36GB	0001	
Seagate	Savvio* 15K	ST973451SS	15,000	73GB	0001	SD
Seagate	Savvio* 15K.2	ST973452SS	15,000	73GB	0005	Added June 2009
Seagate	Savvio* 15K.2	ST9146852SS	15,000	146GB	0005	Added June 2009
Fujitsu	AL-10SE*	MBB2147RC	10,000	146GB	0110	Chassis must be at UFU P2.6 FW level
Fujitsu	AL-10Sx*	MBB2073RC	10,000	73GB	0110	Chassis must be at UFU P2.6 FW level
Fujitsu	AL-10Sx*	MBC2036RC	15,000	36GB	0005	Chassis must be at UFU P2.6 FW level

**Intel® Modular Server System MFSYS25, Intel® Modular Server System MFSYS35, Intel® Compute Module MFS5000SI, Intel® Compute Module MFS5520VI**

Fujitsu	AL-10Sx*	MBC2073RC	15,000	73GB	0005	Chassis must be at UFU P2.6 FW level
Toshiba		MBE2073RC	15,000	73GB	0103	Chassis must be at UFU P2.6 FW level
Toshiba		MBD2147RC	10,000	147GB	0102	Chassis must be at UFU P2.6 FW level
Toshiba		MBD2300RC	10,000	300GB	0102	Chassis must be at UFU P2.6 FW level
<b>2.5" SATA drives</b>						
Toshiba		MHZ2250BK-G2	7200	250GB	011E	Chassis must be at UFU 5.0, Requires AXXTM3SATA.(Note 2)
Toshiba		MHZ2160BK-G2	7200	160GB	011E	Chassis must be at UFU 5.0, Requires AXXTM3SATA.(Note 2)
<b>SSD (2.5" SATA interface)</b>						
Intel		SSDSA2SH03 2G101		32GB	045C 8790	Chassis must be at UFU 5.0, Requires AXXTM3SATA
Intel		SSDSA2SH06 4G101		64GB	045C 8790	Chassis must be at UFU 5.0, Requires AXXTM3SATA
<b>3.5" SAS drives</b>						
Seagate	Cheetah* 15K.6	ST3450856SS	15,000	450GB	0004	
Seagate	Cheetah* 15K.6	ST3300656SS	15,000	300GB	0004	
Seagate	Barracuda ES.2*	ST31000640S S	7,200	1TB	0003	Added March 2009
Seagate	Barracuda ES.2*	ST3750630SS	7,200	750GB	0002	
Fujitsu	MBA Series	MBA3300RC	15,000	300GB	0103	Chassis must be at UFU P2.6 FW level
<b>3.5" SATA drives</b>						
Seagate	Barracuda ES.2*	ST3500320NS	7,200	500GB	SN05	
Hitachi	UltraStar* A7K1000	HUA721050KL A330	7,200	500GB		

(1) Firmware revisions listed in this column are the minimum revision levels supported. As they become available, listed drives with newer revisions of firmware are also supported. OEM specific versions of drive firmware are not supported. Mixed drive firmware levels within the same storage pool is not supported.

(2) This drive may experience degradation in performance in environments with elevated temperatures or during a fault condition within the MFSYS25 chassis.

(3) MFSYS35 currently does not support a mix of SAS and SATA drives within the same chassis. All drives within the MFSYS35 subsystem must have the same interface.

(4) MFSYS25 mixed SAS and SSD mix models validated are as follows: Mix combination was limited to one physical SAS drive model and one SSD drive model. Mixing of drive models within a storage pool is not supported.

2 SSD drives – slots 1,2    12 SAS drives - slots 3-14

4 SSD drives – slots 1-4    10 SAS drives - slots 5-14

(5) MFSYS25 mixed SATA and SSD mix models validated are as follows: Mix combination was limited to one physical SATA drive model and one SSD drive model. Mixing of drive models within a storage pool is not supported.

2 SSD drives – slots 1,2    12 SATA drives - slots 3-14

4 SSD drives – slots 1-4    10 SATA drives - slots 5-14

**Intel® Modular Server System MFSYS25, Intel® Modular Server System MFSYS35, Intel® Compute Module MFS5000SI, Intel® Compute Module MFS5520VI**

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(6) MFSYS25 mixed SAS and SATA mix models validated are as follows: Mix combination was limited to one physical SAS drive model and one SATA drive model. Mixing of drive models within a storage pool is not supported.

2 SAS drives – slots 1,2	12 SATA drives - slots 3-14
4 SAS drives – slots 1-4	10 SATA drives - slots 5-14
6 SAS drives – slots 1-6	8 SATA drives - slots 7-14
8 SAS drives – slots 1-8	6 SATA drives - slots 9-14

## 6. Installation Guidelines

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### 6.1 Slipstreamed install for Windows 2003 Enterprise Edition (32 & 64 bit)

Method for performing Slipstreamed install for Windows 2003 Installation via CD-ROM drive. Both the CD-ROM and Floppy can not be simultaneously redirected on the MFSYS25 system.

**Implication:** The MFS500SI compute module will only support remote installation of the Windows 2003 Enterprise Edition R2 SP2 slipstreamed version. Local installation can be performed by either concurrent CD/floppy installation or via slipstreamed installation CD.

For remote install the LSI SAS driver must be slipstreamed into the installation media as both CD-ROM and Floppy can't be simultaneously redirected.

**Guideline:** To create a merged Windows 2003 CD perform the following:

1. Download and install the freeware program nLite from (<http://www.nliteos.com/index.html>)
2. Launch nLite
3. Select language desired and hit next
4. On the next screen browse to the location of the Windows 2003 CD
5. nLite will prompt for a location to copy the CD to for modification (C:\temp), it'll then copy the install CD to that folder
6. When the copy completes, hit next
7. Hit next on the presets screen
8. On the next screen, select "Integrate -> Drivers" and "Create -> Bootable ISO", hit Next.
9. Download and extract the 1.25.5 driver for the appropriate version of the OS (32-bit or 64-bit) and extract to a known location
10. Hit the Insert tab in the bottom left (single driver), browse to the location with the driver and select the "lsi\_sas.inf"
11. Select "Textmode driver", click on the description in the box, and hit OK
12. Hit Next to begin the process
13. When the process completes, hit next to bring up the Bootable ISO screen
14. Select the appropriate options for your system and hit "burn" to create the CD
15. When finished, the CD is ready for remote installation with no requirement for a driver floppy

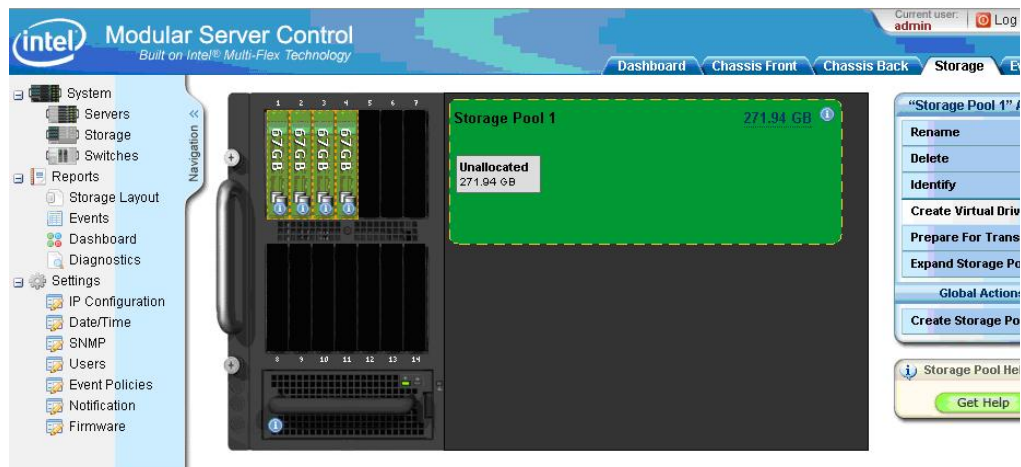
**Status:** Intel has no plans to add support for concurrent Remote Floppy and Remote CD/DVD.

## 6.2 Windows 2003 Enterprise Edition (32 & 64 bit) Remote Installation Method

Method for performing Remote Windows 2003 Installation via CD-ROM drive.

Guideline: Note: Prepare a Slipstreamed CD per section 6.1.

1. Plug your slipstreamed CD of your Windows operating system CD-ROM into the CD on your remote system.
2. Log in to the Modular Server and select the Storage Tab at the top.
3. If you have not already done so create a storage Pool and select it.
4. Select the Create Virtual Drive option under Actions.

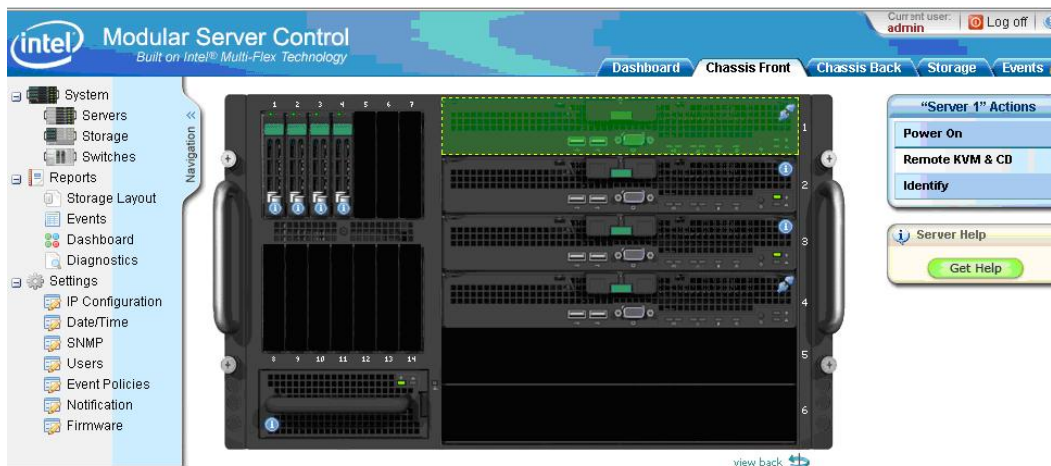


5. Enter a Name for the Virtual Disk.
6. Select a Raid Level appropriate for your application. The Raid levels that are available will be dependant on the number of drives used to create the storage pool.
7. Enter the size in GB for the virtual disk.
8. Select the Server that the virtual disk will be assigned
9. Select the Drive # for the virtual disk. For loading an operating system on a boot drive set the value to **0(boot device)**.

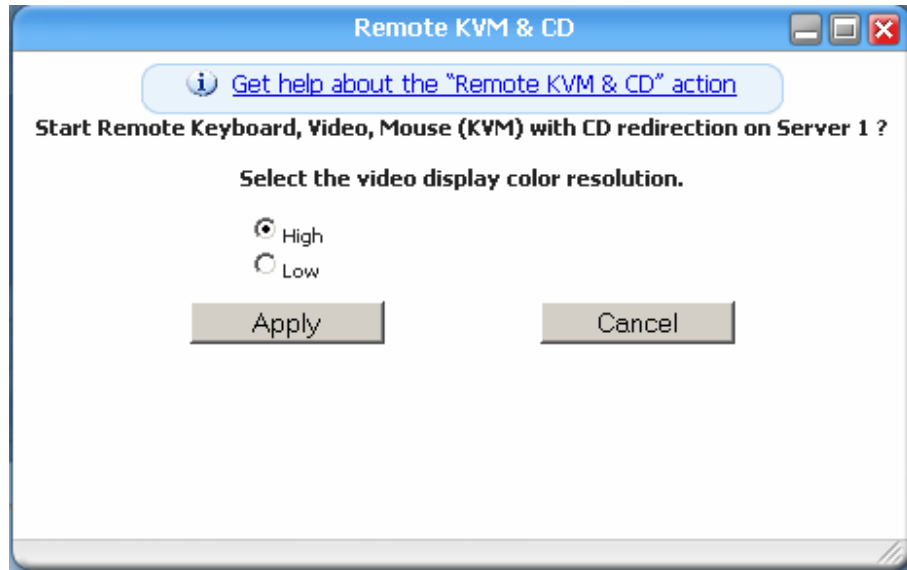




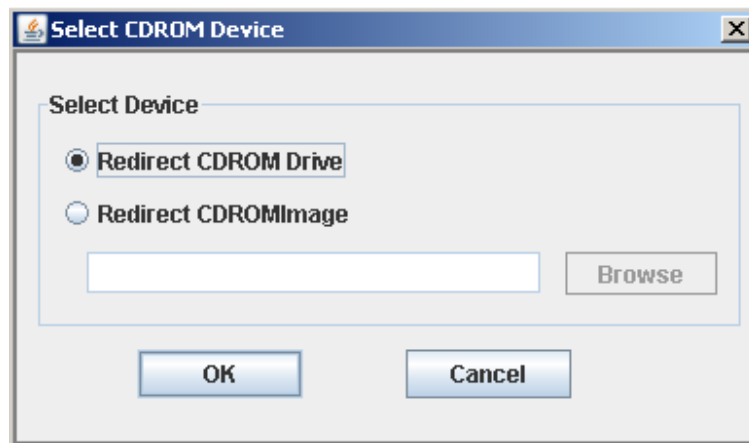
10. Confirm all your settings then Hit Apply. Hit OK when the confirmation dialog is displayed.
11. With the mouse, select the **Chassis Front** Tab.
12. Click on Server 1 on the Chassis picture with the Mouse.
13. Click on the Remote KVM & CD option under Server 1 Actions.



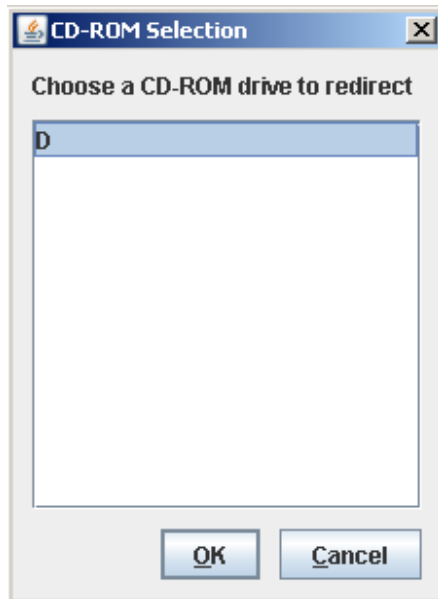
14. Select the video display color resolution.



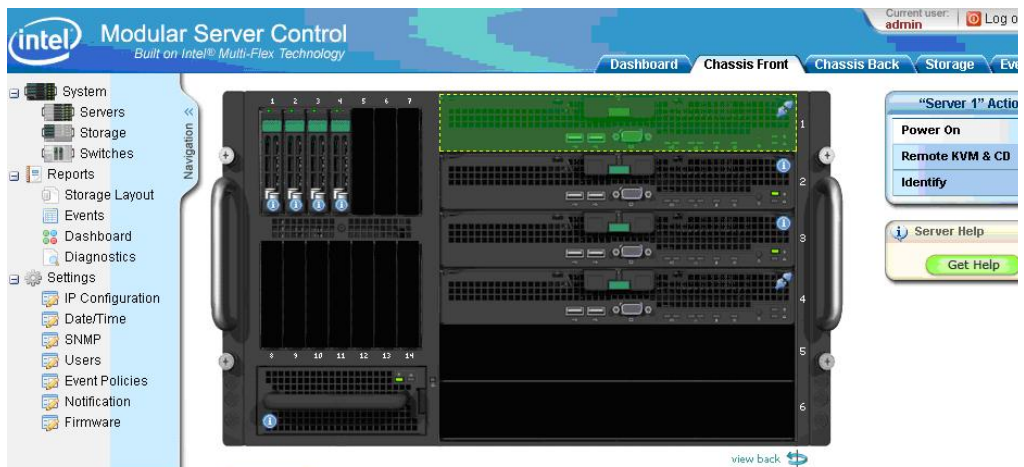
15. Choose the Device Menu Option and then click on the CDROM check box.
16. Choose the Redirect CDROM drive to select the CDROM on your system as the device to load the operating system from.



17. Choose the drive letter of the CDROM to redirect the CD.



18. Return to the Modular Server screen and select the **Chassis Front** TAB. Do not close out the KVM screen.
19. Select Server 1 and then hit the **Power On** option under "Server 1" Actions.



20. Select OK when requested to power on Server 1.
21. Return to the KVM screen and observe the bootup screen.
22. Continue with Windows setup following the directions for the operating installation.

### 6.3 Red Hat Enterprise Linux 5.0 (32 & 64 bit) Remote Installation Method

Method for performing Remote Red Hat Enterprise Linux 5.0 Installation with DVD media via FTP

Guideline: Configure the MFSYS25 system as follows:

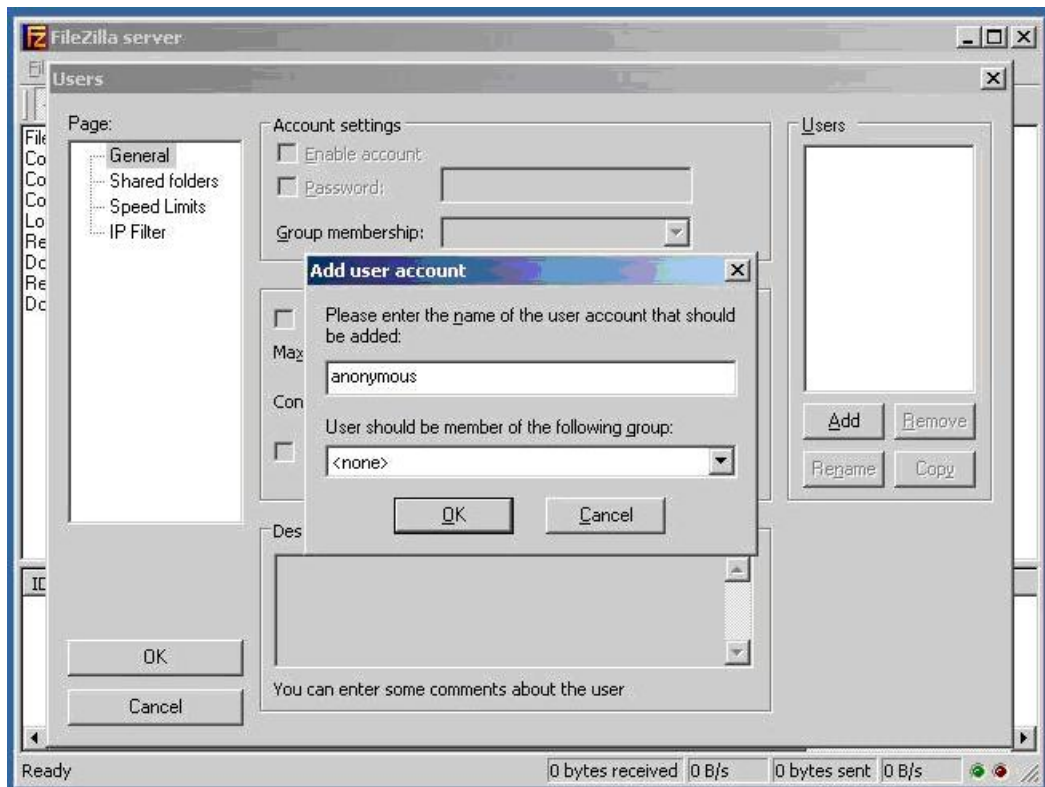
1. Ensure P2.0.5 or later SW stack is loaded
2. Management Module, Ethernet Switch (Ext 1 port and the compute module's ports in default vlan 1 setup) and client (desktop/laptop) in the same network
3. Client requires DVD unit installed direct or via USB port
4. Disable client's Firewall
5. Download and install Filezilla-Server application on the client. Application can be downloaded from <http://www.filezilla-project.org>. Version test: 0-9.24
6. When Filezilla Server is installed onto the client there will be a dialog popup
7. Click OK with the default listing



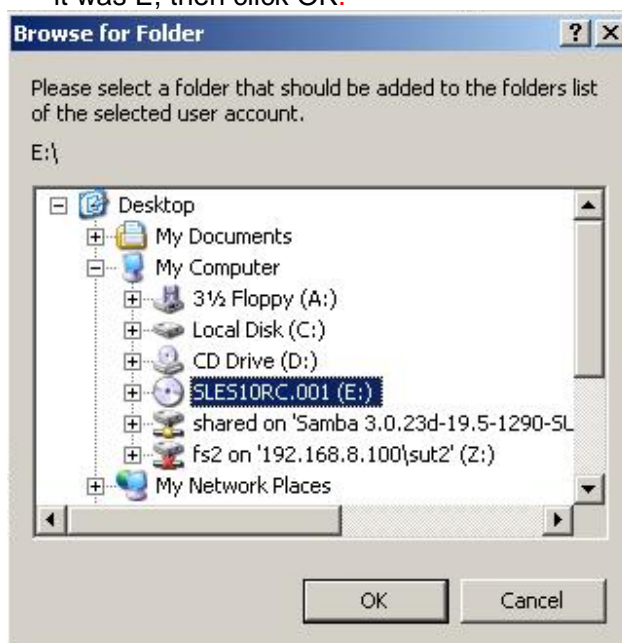
8. The Filezilla session should indicate "Logged on"



9. From Filezilla Server session, Click Edit
10. Select Users - The Users dialog pops up
11. Click "Add". A popup will appear - enter anonymous in the first field (user account). Accept default of <none> for second field then click OK.



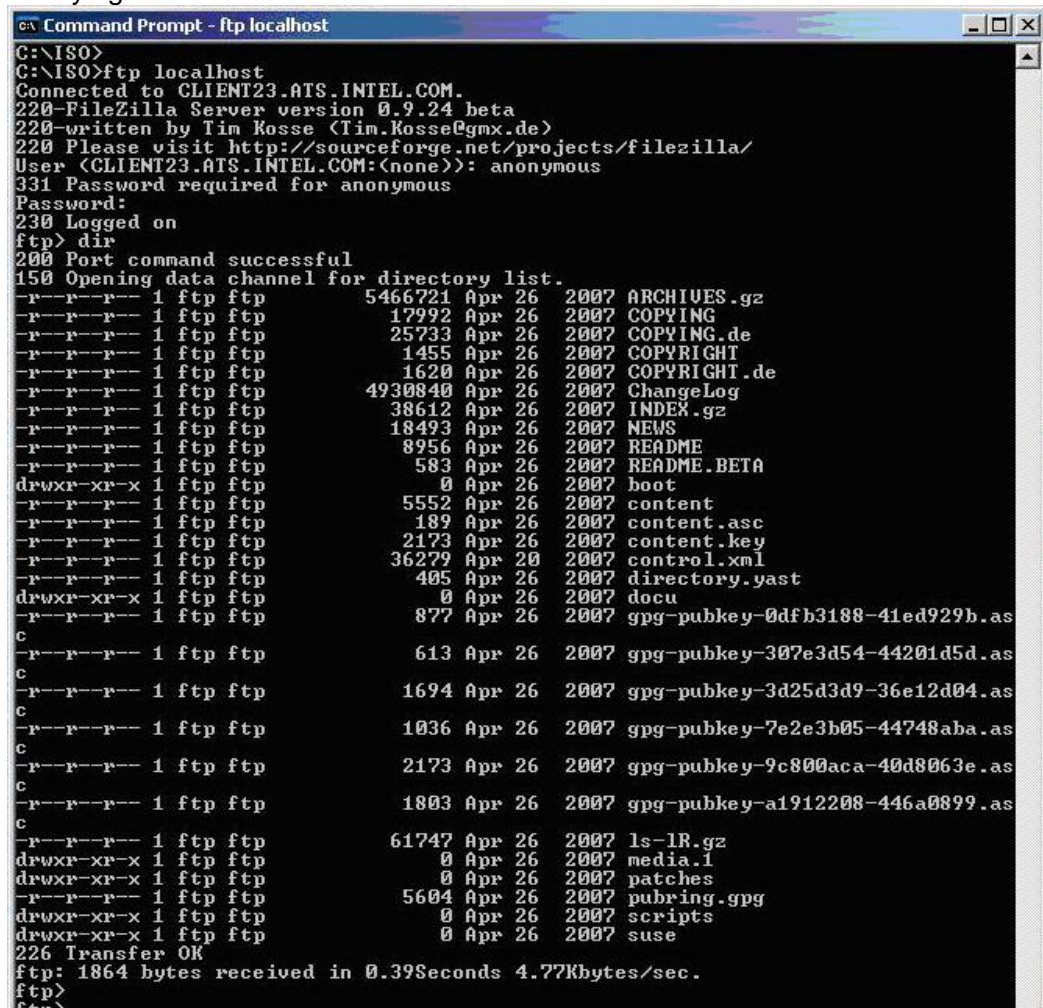
- From Filezilla server session click "Shared Folders", then click "Add", navigate down and select the client's DVD's unit drive-letter, in the example case below it was E, then click OK.



- To verify your FTP setup is correct:  
Open client's CMD prompt window and type:  
C:> ftp localhost

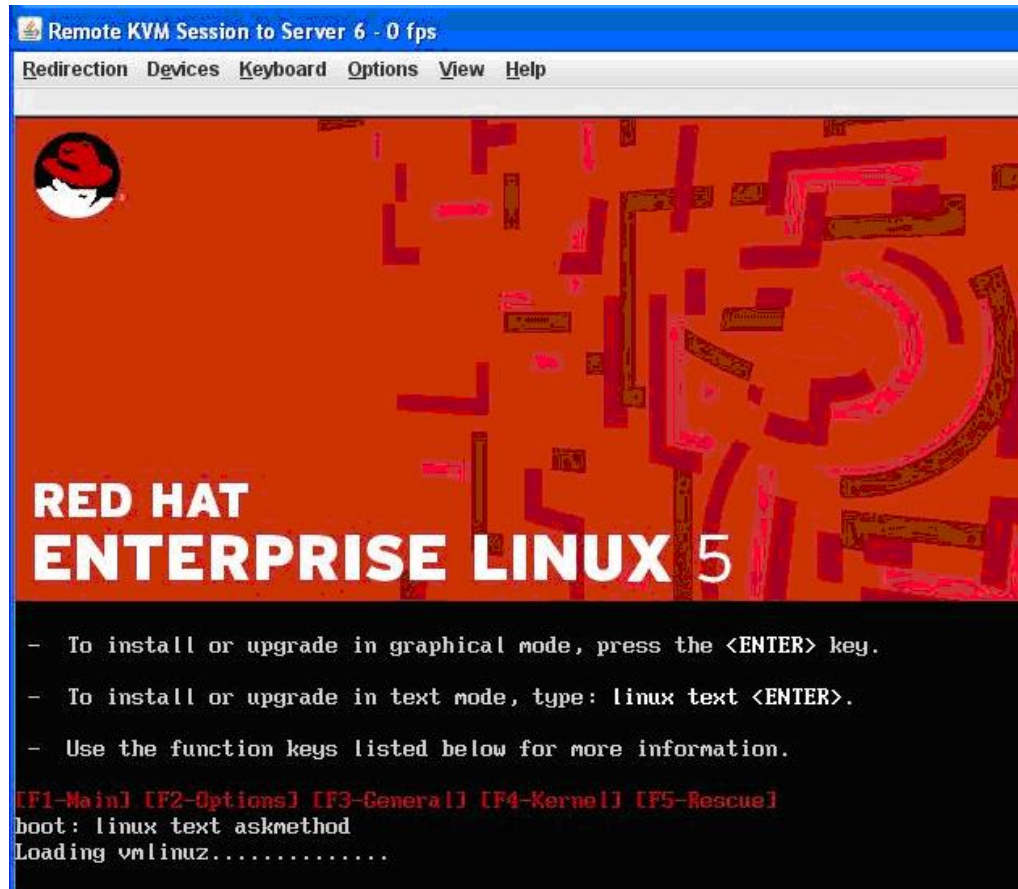
User: anonymous  
Password: (just hit enter key)  
ftp> dir

14. You should see the whole directory tree of the RHEL-5 DVD media you are trying to install from

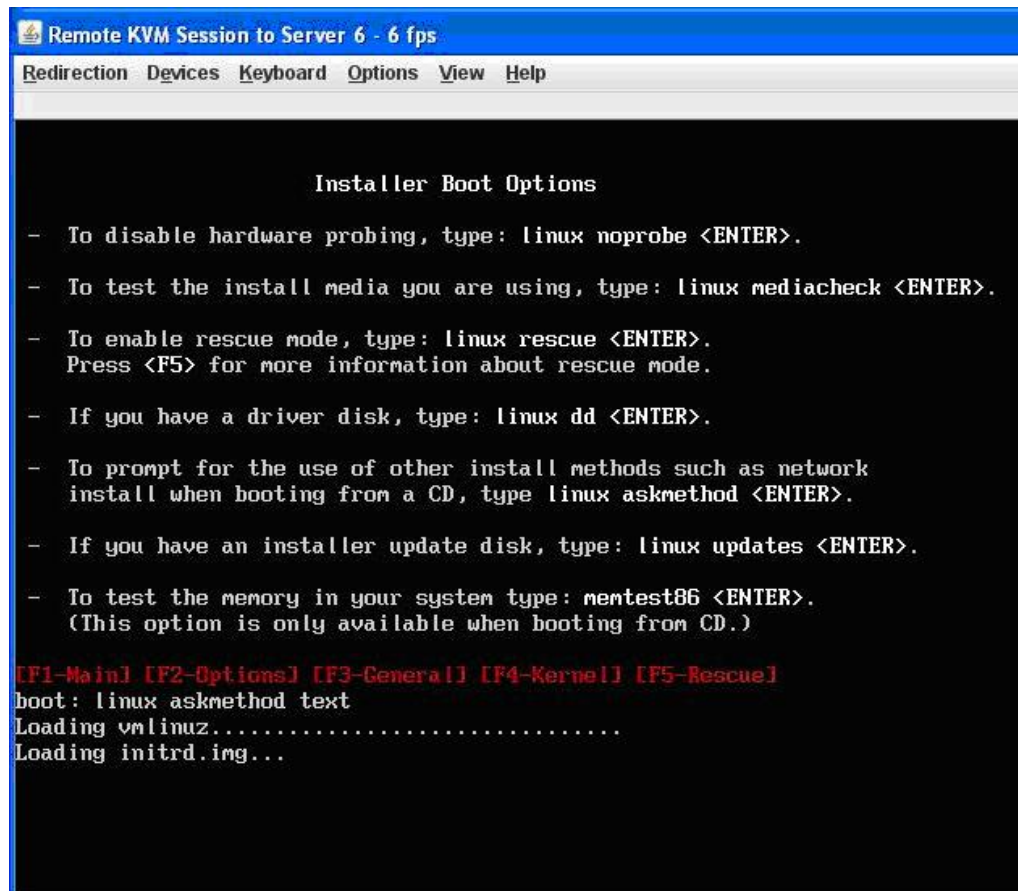


```
Command Prompt - ftp localhost
C:\ISO>
C:\ISO>ftp localhost
Connected to CLIENT23.ATS.INTEL.COM.
220-FileZilla Server version 0.9.24 beta
220-written by Tim Kosse (Tim.Kosse@gmx.de)
220 Please visit http://sourceforge.net/projects/filezilla/
User (CLIENT23.ATS.INTEL.COM:(none>): anonymous
331 Password required for anonymous
Password:
230 Logged on
ftp> dir
200 Port command successful
150 Opening data channel for directory list.
-r--r--r-- 1 ftp ftp      5466721 Apr 26  2007 ARCHIVES.gz
-r--r--r-- 1 ftp ftp      17992 Apr 26  2007 COPYING
-r--r--r-- 1 ftp ftp      25733 Apr 26  2007 COPYING.de
-r--r--r-- 1 ftp ftp       1455 Apr 26  2007 COPYRIGHT
-r--r--r-- 1 ftp ftp       1620 Apr 26  2007 COPYRIGHT.de
-r--r--r-- 1 ftp ftp     4930840 Apr 26  2007 ChangeLog
-r--r--r-- 1 ftp ftp      38612 Apr 26  2007 INDEX.gz
-r--r--r-- 1 ftp ftp      18493 Apr 26  2007 NEWS
-r--r--r-- 1 ftp ftp       8956 Apr 26  2007 README
-r--r--r-- 1 ftp ftp        583 Apr 26  2007 README.BETA
drwxr-xr-x 1 ftp ftp         0 Apr 26  2007 boot
-r--r--r-- 1 ftp ftp      5552 Apr 26  2007 content
-r--r--r-- 1 ftp ftp       189 Apr 26  2007 content.asc
-r--r--r-- 1 ftp ftp      2173 Apr 26  2007 content.key
-r--r--r-- 1 ftp ftp     36279 Apr 20  2007 control.xml
-r--r--r-- 1 ftp ftp       405 Apr 26  2007 directory.yast
drwxr-xr-x 1 ftp ftp         0 Apr 26  2007 docu
-r--r--r-- 1 ftp ftp       877 Apr 26  2007 gpg-pubkey-0dfb3188-41ed929b.as
c
-r--r--r-- 1 ftp ftp        613 Apr 26  2007 gpg-pubkey-307e3d54-44201d5d.as
c
-r--r--r-- 1 ftp ftp      1694 Apr 26  2007 gpg-pubkey-3d25d3d9-36e12d04.as
c
-r--r--r-- 1 ftp ftp      1036 Apr 26  2007 gpg-pubkey-7e2e3b05-44748aba.as
c
-r--r--r-- 1 ftp ftp      2173 Apr 26  2007 gpg-pubkey-9c800aca-40d8063e.as
c
-r--r--r-- 1 ftp ftp       1803 Apr 26  2007 gpg-pubkey-a1912208-446a0899.as
c
-r--r--r-- 1 ftp ftp     61747 Apr 26  2007 ls-lR.gz
drwxr-xr-x 1 ftp ftp         0 Apr 26  2007 media.1
drwxr-xr-x 1 ftp ftp         0 Apr 26  2007 patches
-r--r--r-- 1 ftp ftp      5604 Apr 26  2007 pubring.gpg
drwxr-xr-x 1 ftp ftp         0 Apr 26  2007 scripts
drwxr-xr-x 1 ftp ftp         0 Apr 26  2007 suse
226 Transfer OK
ftp: 1864 bytes received in 0.39Seconds 4.77Kbytes/sec.
ftp>
ftp>
```

15. The Filezilla FTP server is now setup and ready to use  
16. Log in CMM-GUI  
17. Create a Storage Pool and Virtual Drive  
18. Assign to a compute module as LUN 0  
19. Via GUI select the compute module's Remote KVM session and select CD-ROM Redirection and map to the DVD-drive-letter (x) on client  
20. Power on the compute module via GUI  
21. When presented with Red Hat Boot Option table, hit F2 then type following at the boot prompt:  
linux text askmethod

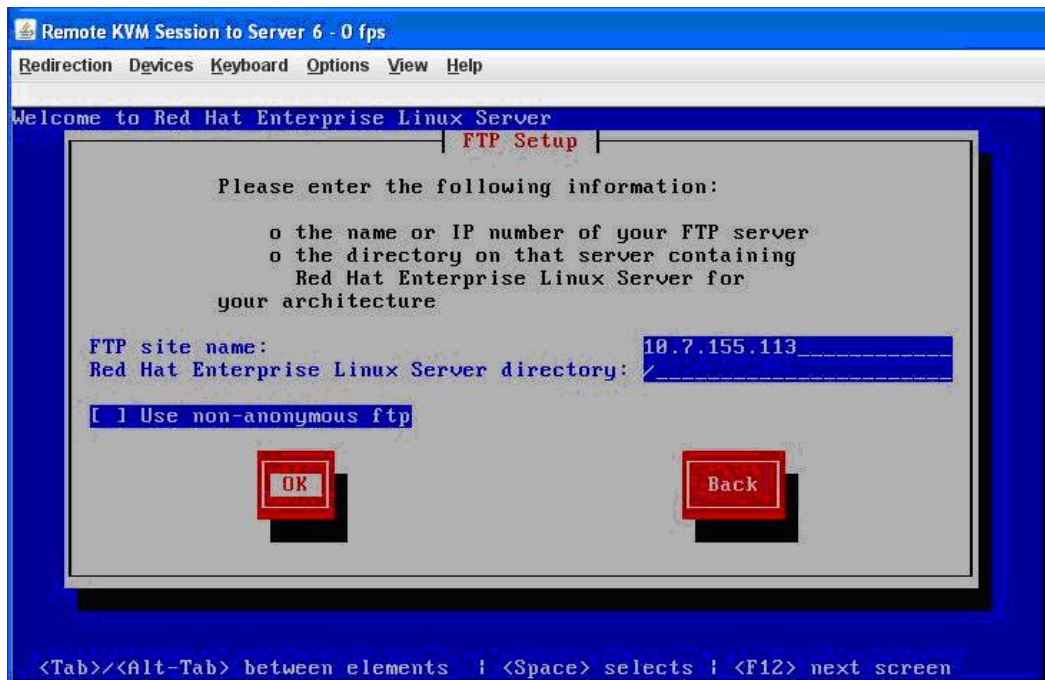


or  
hit F2 then type same command there.

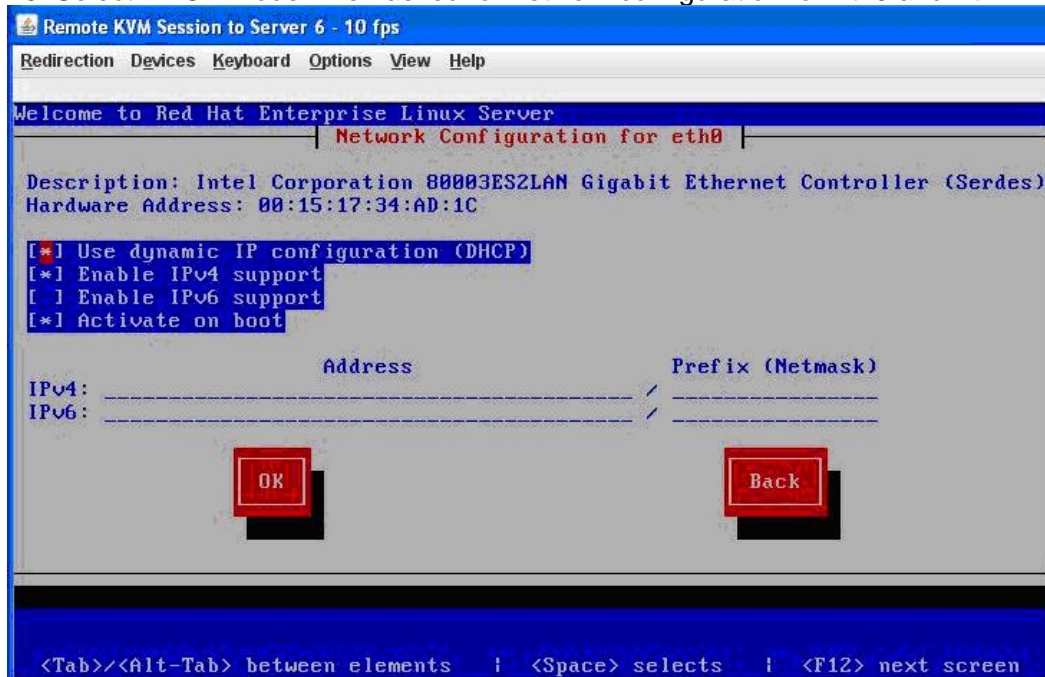


22. When asked for Installation Method - Select FTP then click OK
23. When asked for Networking Device - Select (hi-lite) eth0 as your main interface then click OK (Use TAB key to move around)
24. When presented dialog Configure TCP/IP - Select IPv4 and deselect IPv6 and OK
25. On the RedHat's FTP Setup page, enter as:  
FTP site name: x.x.x.x (your client IP)  
RH Enterprise Linux Server Directory: /





26. Select DHCP mode when asked for network configuration for Eth0 and Eth1



## 6.4 SuSE Linux Enterprise Server 10 (32 & 64 bit) Remote Installation Method

Method for performing SuSE Linux Enterprise Server 10 Installation via SMB

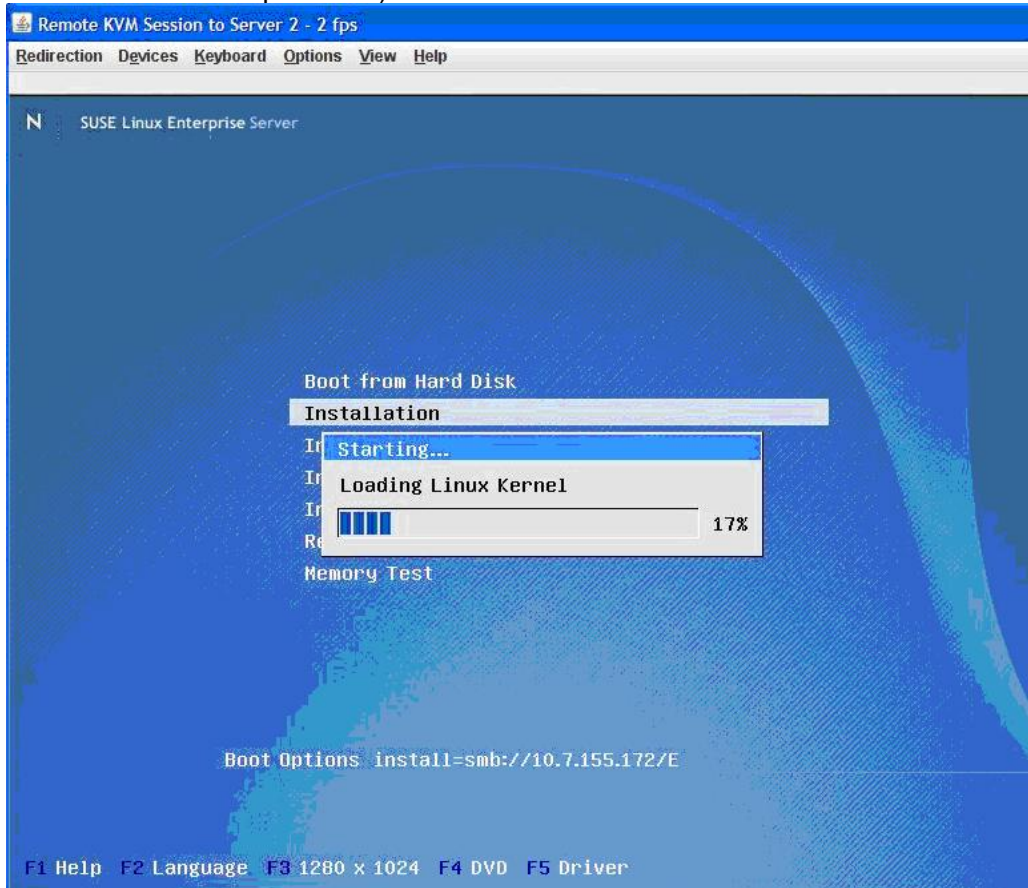
Guideline: Configure the MFSYS25 system as follows:

1. Ensure P2.0.5 or later SW stack is loaded
2. Management Module, Ethernet Switch (1 port and with compute module ports in default vlan 1 setup) and client (desktop/laptop) in same network
3. Client requires DVD unit installed direct or via USB port
4. Disable client's Firewall
5. Share the client's DVD-unit with "all read/write permissions"



6. Log into CMM and via GUI create a Storage Pool and Virtual Drive and assign it to the compute module as LUN 0.
7. Via GUI select the compute module's Remote KVM session and select CD-ROM Redirection and map to the DVD-drive-letter (E) on client
8. Select Video color resolution = High
9. Power on the compute module via the GUI

- When server boots to the option table, use down-arrow key to select second option from the given list "Installation" then type (Boot Options line):  
install=smb://x.x.x.x/drive-letter  
where:  
x.x.x.x : your client's IP  
drive-letter : the client's DVD unit drive letter assigned by OS (in example it is E)



- The installation process will result in a reboot in about 25 minutes
- The whole SLES installation will finish in about 45 minutes