

## StarWind iSCSI Target for Microsoft Windows: Using StarWind with VMware ESX Server

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www.starwindsoftware.com

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StarWind Software Technical Reference Series



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## Guide

## Introduction

Virtualized hardware reduces the TCO for many applications. Using StarWind iSCSI Target for Windows will further enhance these virtualized resources.

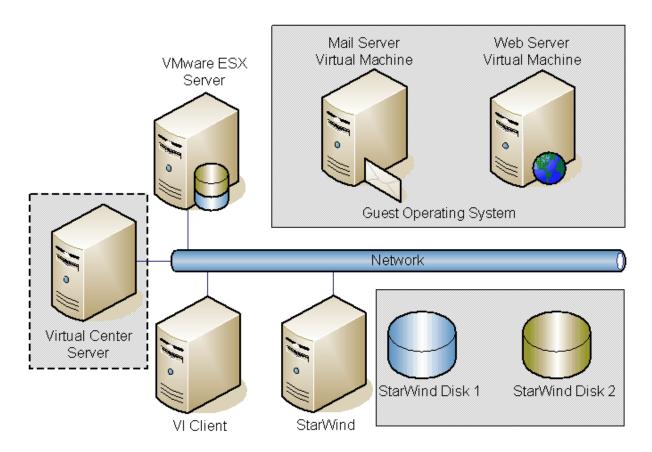


Figure 1. Virtual Machines stored on StarWind Disks



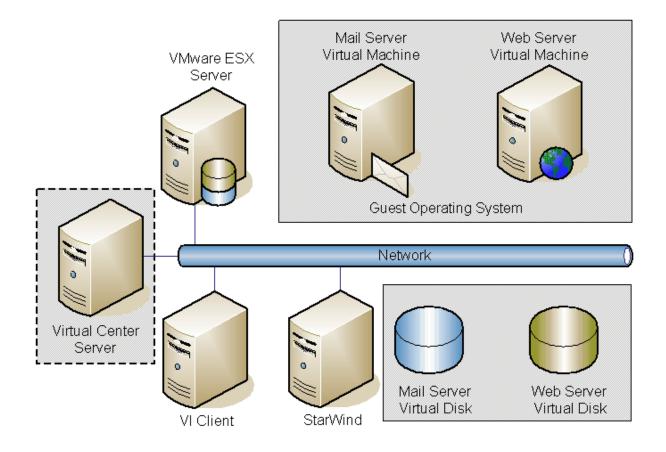


Figure 2. StarWind providing iSCSI Storage to Virtual Machines



## Installing ESX Server

This section provides a brief introduction to installation of VMware's ESX Server. Please note that this does not replace installation instructions provided by VMware and are provided as a guide to using StarWind for Windows with ESX Server.

ESX Server must first be installed on to a suitable machine that will be used to create the virtual environment. Obtain the media from VMware; install it on to the host machine booting the machine with the CD or DVD media. Follow the instructions on the installation wizard to complete the process.



Hit **Enter** to start installation.



CD Found dialog appears.

	diama.		
CD Media	Test		
	ownloaded this as a before installa		we recommend you test
If you ar	re installing fro	om a product CD	, you may skip this test.
	Skip		Test

Press the **Test** button to start media test or **Skip** button to skip this test.



The progress of the Media test is shown.

Welcome to UMWare ESX Server 3
Media Check
Checking "UMware ESX Server 3 disc 1"N
5×
<tab>/<alt-tab> between elements   <space> selects   <f12> next screen</f12></space></alt-tab></tab>



Media Check Result dialog appears.

Welcome to UMWare ESX Server 3	
Media Check Result It is OK to install from this media.	
<tab>/<alt-tab> between elements   <space> selects   <f12> next screen</f12></space></alt-tab></tab>	



#### The ESX Server 3 Installer Wizard will be shown.





## Select the appropriate keyboard.

ESX Server 3	
Select Keyboard What type of keyboard do you want to use for this system?	
Keyboard	•
Russian (win)	
Slovakian	
Slovenian	
Spanish	
Speakup	
Speakup (laptop)	
Swedish	
Swiss French	
Swiss French (latin1)	
Swiss German	
Swiss German (latin1)	
Turkish	
Ukrainian	
United Kingdom	1
U.S. English	
U.S. International	*
Back Next	🔀 <u>C</u> ancel



Select the appropriate mouse type.

ESX Server 3	6
Mouse Configuration Select the appropriate mouse for the system.	
Model	
2 Button Mouse (serial)	
2 Button Mouse (USB)	
3 Button Mouse (PS/2)	
3 Button Mouse (serial)	
3 Button Mouse (USB)	
Wheel Mouse (PS/2)	
Wheel Mouse (USB)	
▷ Genius	
▷ Kensington	
▷ Logitech	
D Microsoft	V
<u>S</u> erial Mouse Port	
/dev/ttyS0 (COM1 under DOS)	
/dev/ttyS1 (COM2 under DOS)	
/dev/ttyS2 (COM3 under DOS)	
/dev/ttyS3 (COM4 under DOS)	
Emulate 3 buttons	
	<u>Back</u> <u>Next</u> <u>X</u> <u>Cancel</u>



#### End User License Agreement dialog appears.

ESX Server 3
End User License Agreement To continue with the installation, please read and accept the end user license agreement.
VMWARE MASTER END USER LICENSE AGREEMENT NOTICE: BY DOWNLOADING AND INSTALLING, COPYING OR OTHERWISE USING THE SOFTWARE, YOU AGREE TO BE BOUND BY THE TERMS OF THIS EULA. IF YOU DO NOT AGREE TO THE TERMS OF THIS EULA, YOU MAY NOT DOWNLOAD, INSTALL, COPY OR USE THE SOFTWARE, AND YOU MAY RETURN THE UNUSED SOFTWARE TO THE VENDOR FROM WHICH YOU ACQUIRED IT WITHIN THIRTY (30) DAYS AND REQUEST A REFUND OF THE LICENSE FEE, IF ANY, ALREADY PAID UPON SHOWING PROOF OF PAYMENT. "YOU" MEANS THE NATURAL PERSON OR THE ENTITY THAT IS AGREEING TO BE BOUND BY THIS EULA, THEIR EMPLOYEES AND THIRD PARTY CONTRACTORS THAT PROVIDE SERVICES TO YOU. YOU SHALL BE LIABLE FOR ANY FAILURE BY SUCH EMPLOYEES AND THIRD PARTY CONTRACTORS TO COMPLY WITH THE TERMS OF THIS AGREEMENT.
<ol> <li>DEFINITIONS</li> <li>1. DEFINITIONS</li> <li>1.1 "Designated Administrative Access" means that access to the standard user interfaces of a given instance of the Software (designated in this section) that you may grant to a designated third party for which you have provided advance written notice to VMware that you are providing outsourced services and for whose dedicated benefit you have licensed such instance of the Software Software. Designated Administrative Access is applicable only where you are 1) an IT outsourcing company that is providing outsourced IT services to a client company and 2) applicable only to the following Software: ESX Server, VMware Server and VirtualCenter.</li> <li>1.2 "GPL Software" means GPL software licensed to you under the GNU General Public License as published by the Free Software Foundation (GPL). A copy of the GPL is included on the media on which you received the Software or included in the files you downloaded, if you acquired the Software by electronic download.</li> <li>▼ I accept the terms of the license agreement</li> </ol>
<u> <u>         B</u>ack         </u>

Accept the terms of the license agreement and press the **Next** button to continue the installation.



#### Set Partitioning options.

ESX Server 3		
Partitioning The wizard car	Options n set up initial system partitions for you, or you can create them yourself.	
How do you want to partition Recommended If you are not familiar with	n the disks for this system? th ESX Server, we will select the best partitioning options for you.	
Install ESX Server on:	IDE Disk hda: VMware Virtual IDE Hard Drive - 8189 MB	
○ Advanced	es and the VMFS (virtual machine file system) that contains them.	
	Sack	ext 🔀 <u>C</u> ancel



## Optionally you can edit the default partitioning settings.

	n Disks e the default p	artitions tha	it we reco	ommend. Y	ou do n	ot need	to change anything on this page.
	nue, click Next						5,5,5
T			New				
To create a partition b To create a partition b				linders, sel	ect free	space a	and click Edit.
System partitions:							
Device	Mount Point	Туре	Format	Size (MB)	Start	End	
✓ Hard Drives							
⊽ /dev/sda							
/dev/sda1	/boot	ext3	1	100	1	100	
/dev/sda2	/	ext3	1	4824	101	4924	
/dev/sda3		vmfs3	~	3216	4925	8140	
⊽ /dev/sda4		Extended		2100	8141	10240	
/dev/sda5		swap	~	544	8141	8684	
/dev/sda6	/var/log	ext3	1	1456	8685	10140	
/dev/sda7		vmkcore	4	100	10141	10240	



## Specify the boot options.

ESX Server 3.5
Advanced Options These advanced options usually do not need to be changed.
✓ Edit default bootloader configuration
ESX Boot Specification How will the ESX Server boot?
● From a drive (install on the MBR of the drive): SCSI Disk sda: VMware, VMware Virtual S - 10240 MB 🎽
This is the standard option. Make sure your BIOS settings are correct for the drive you select.
Use this option, for example, if you are using a Boot Menu tool, or if you have the option to run special diagnostic software that runs in a separate partition.
Boot Options
If you wish to add default options to boot up, enter them here:
General kernel parameters:



On the Network Configuration dialog, specify the network options.

ESX Server 3.5					
Network Select and		-		interface ca	rd that is used for console communication.
Network Interface Card					
Device: 2:1:0 - e10	00 - 82	545EM	Gigabit	Ethernet Co	ntroller (Copper) 🖆
Network Address and I	Host Na	ame			
○ Set automatically	using	DHCP			
Ose the following	netwo	rk inforn	nation:		
IP Address	192	. 168	. 1	. 202	
Subnet mask	255	. 255	. 255	. 0	
Gateway	192	. 168	. 1	. 1	
Primary DNS	192	. 168	. 1	. 1	
Secondary DNS					
Host name:	me: esx.starwindsoftware		2	Enter a fully qualified host name (e.g. host.vmware.com)	
VLAN Settings VLAN ID: (Le					er your network requires a VLAN ID)



#### Select the time zone.

ESX Server 3.5	-
Time Zone Selection         Set the time zone for the server by clicking on the map, selecting a location or selecting the UTC offset west of GMT.	
Map Location UTC Offset	
Antarctica/South_Pole - Amundsen-Scott Station, South Pole	
Selected time zone: America/Los_Angeles - Pacific Time	
System clock uses UTC	
<u>B</u> ack	ncel



Set the root password for the ESX Server.

ESX Server 3.5	
Account Configuration Set the root (administrator) password for the VMware ESX Server.	
Passwords must be at least 6 characters.         Root Password:       *********         Confirm:       *********         Additional accounts can be created for other users of this system. Such accounts could be for a personal login account, or for other non-administrative users who need to use this system. Use the <add> button to enter additional user accounts.</add>	
User Name	Add
	Edit
	Delete
	👌 <u>B</u> ack Next 📐 🔀 <u>C</u> ancel



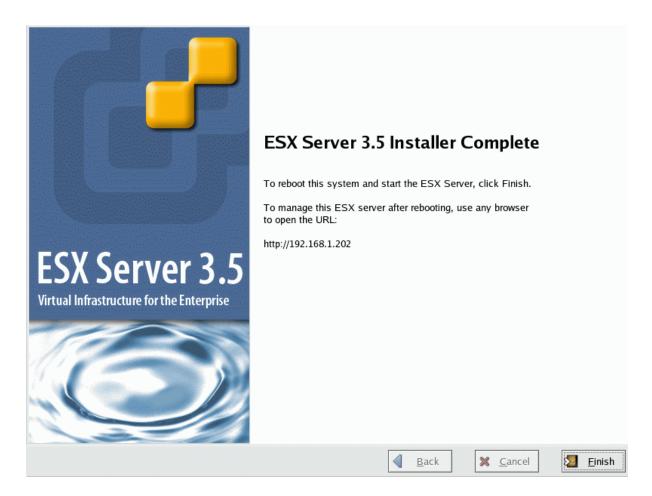
Check that all of the parameters are correct. Press the **Back** button if changes are required.

ESX Server 3.5	-
About to Install The wizard is ready to install the VMware ESX Server. Please review the summary of your selected installat	tion options.
Summary:	
Language: English Keyboard: U.S. English Mouse: Generic - Wheel Mouse (PS/2) Partition Disks: sda1 ext3 99M /boot sda2 ext3 4824M / sda3 vmfs3 3216M None sda5 swap 543M None sda6 ext3 1455M /var/log sda7 vmkcore 99M None Boot Loader Record: Master Boot Record of sda Console Network Device: vswif0: e1000 - 82545EM Gigabit Ethernet Controller (Copper) To install VMware ESX Server 3.5, click Next.	
Sack Next	K <u>C</u> ancel

Press the **Next** button to begin installation.



After the installation process you will see a window confirming the installation is finished.



The installation is complete. After rebooting you can download and install Virtual Infrastructure Client and configure the ESX Server.



## **Configuring StarWind Server**

The StarWind configuration is detailed in this section. Before you start please ensure that StarWind is installed on the host that is providing storage services to the VMware ESX Server.

VMware's ESX Server needs a disk to store the settings of the virtual machine and a virtual hard drive to install a guest OS. With StarWind you can share the virtual disk for storing virtual machines.



## Storage Info

#### Image File device

The **Image File** device creates a virtual iSCSI drive using the space of a physical hard disk on the machine where it is created. The resulting iSCSI storage will have the same structure as a physical hard disk.

When the **Image File** device is mounted (using an iSCSI Initiator), it will appear as standard hard disk to the computer on which it is mounted. All standard disk operations such as formatting, using a custom file system, copy data to/ from it and install applications, etc. are fully supported.

There are some limitations for the Image File device usage:

As a virtual hard disk uses the space of your physical hard disk, the available volume is limited by the free space on that hard drive. If the size of the image file is close to the remaining free space of the hard disk on which it is store, you will not be able to store additional files on that disk.

You cannot change the volume of the image file whilst it is online (users are connected to it). However, you can extend the volume.



## **Preparing Storage**

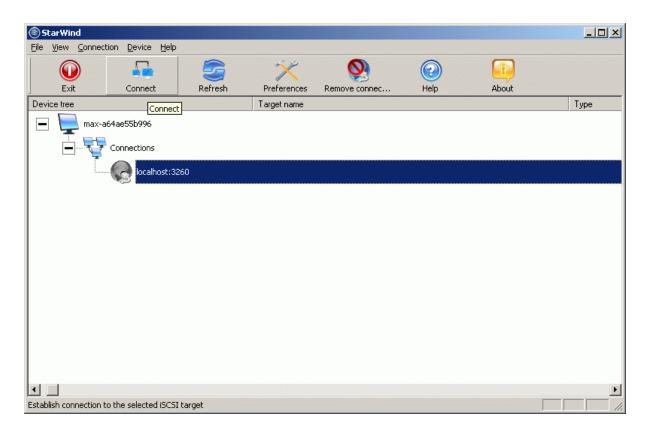
Launch the StarWind console **Start -> All Programs -> StarWind Software -> StarWind -> StarWind**. Whenever the **StarWind Console** is running, its icon will appear in the system tray.



The **StarWind Console** may be accessed by either double clicking the icon using the left mouse button or single click with the right mouse button and selecting the Start Management menuitem from the pop-up menu.



From the **Connections** tree select the computer you wish to provision the iSCSI target device on. By default, there is a single item in the tree (localhost) which represents the local computer using a loopback connection.



Press **Connect** button to continue.



The Login dialog is presented (shown below) requiring values for user name and password. The default values configured during installation are test, test.

Login		×
🕗 Ente	r the user name and password for this connectio	חת.
User <u>n</u> ame:	test	
Password:	••••	
	ОК	Cancel



When the connection is established the window will look like the one below.

🖲 Star Wind							<u>_   ×</u>
<u>File ⊻iew Conne</u>	ection <u>D</u> evice <u>H</u> elp						
	-0	5	×	<u> </u>	**		- <b>-</b>
Exit	Disconnect	Refresh	Preferences	Remove connec	Add device	Help	About
Device tree			Target name		Add device		Туре
🗖 📃 max-	-a64ae55b996						
	Connections						
Ĺ	localhost:32	60					
	~						
							▶ ▶
Add a new device to	the selected target						

Press Add Device button to continue.



In the Add Device Wizard that appears, select **Image File device**. A brief description of each option is displayed in the right area of the wizard window and context sensitive help is also available by pressing the **Help** button.

$\approx$
a virtual a.



Select **Create new image** to create a new hard disk image or **Mount existing image** to mount an existing image that you've prepared before.

d Device Wizard				>
Select method to add Ima	ge File device	2		$\approx$
Select one of the following opti	ons.			
C Mount existing virtual disk				
• Create new virtual disk				
C Create new virtual disk bas	ed on Snapsho	t and CDP one		
Help		< <u>B</u> ack	Next >	Cancel
		- Each	Tover	

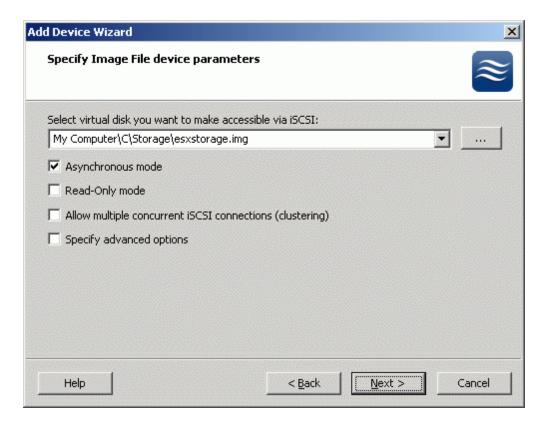


If you have decided to create a new image file, specify the location and the name of the image you wish to be created. The image size is specified in megabytes. Refer to the online help for details regarding additional parameters (**Fill with zeroes, Compressed** and **Encrypted**).

d Device Wizard		>
Specify virtual d	isk parameters	ະ
New virtual disk loc	ation and name:	
My Computer\C\S	torage\esxstorage.img 🗾	
Size in MBs:	5120 Fill with zeroes WARNING: You choose not to zero out the virtual disk. This can be a security hole if the virtual disk is used directly by untrusted clients!	
Help	< <u>B</u> ack Cance	



An Image File device can have additional parameters. Refer to the online help for details regarding the additional parameters (Asynchronous mode, Allow multiple connections (clustering), Read-only mode and Specify advanced options).



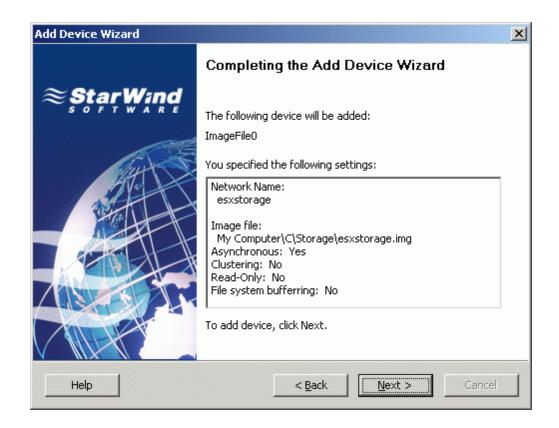


Select an optional target name. The name must be a unique name by which the device will be declared to the iSCSI initiators connecting to StarWind over an IP network. It is also best practise to name the devices using recognizable sequences such as 'host machine name'.'type of device'.'name of device'.

dd Device Wizard			X
Please specify common device para	meters		$\approx$
Choose a target <u>n</u> ame (optional):			
esxstorage			•
Help	< <u>B</u> ack	Next >	Cancel

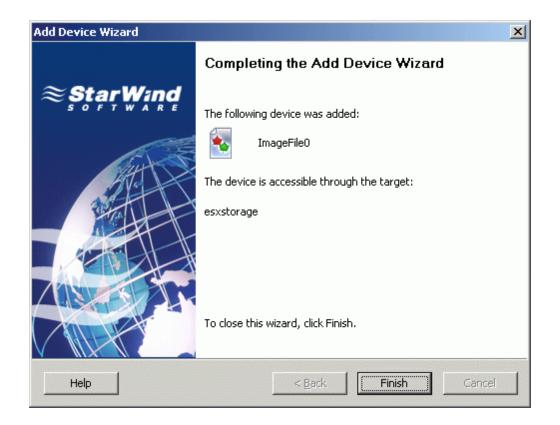


Check the device parameters are correct. Press the **Back** button should any changes be required.





A summary of the created device is displayed on the last wizard page (see image below).



Press the **Finish** button to close the wizard.



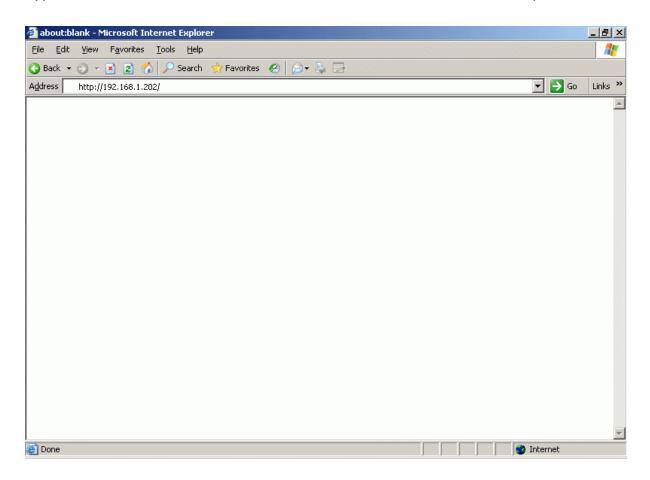
## **Configure Virtual Infrastructure**

This section describes the operations you need to complete to create and format the datastore in the way that ESX Servers can create and install virtual machines on it.



## Virtual Infrastructure Client Install

Type the IP address of the ESX Server host in the browser address panel.



Hit Enter to continue.



#### VMware EXS Server 3 Welcome page appears.



Click the **Download the VMware Infrastructure Client** link and save the executable file to disk. Run the file to install the Virtual Infrastructure Client.



Launch the Virtual Infrastructure Client application. Specify the name of the **ESX Server** to connect to and provide the **Username** and **Password** as configured previously.

🛃 Virtual Infrastructure	Client	×
I vmware Virtual Infra	structure Clier	nt CP
Server:	192.168.1.202	
Server:	192.166.1.202	
<u>U</u> sername:	root	
<u>P</u> assword:	****	
	Log In <u>C</u> lo:	se <u>H</u> elp

Press the **Log In** button to connect to the ESX Server.



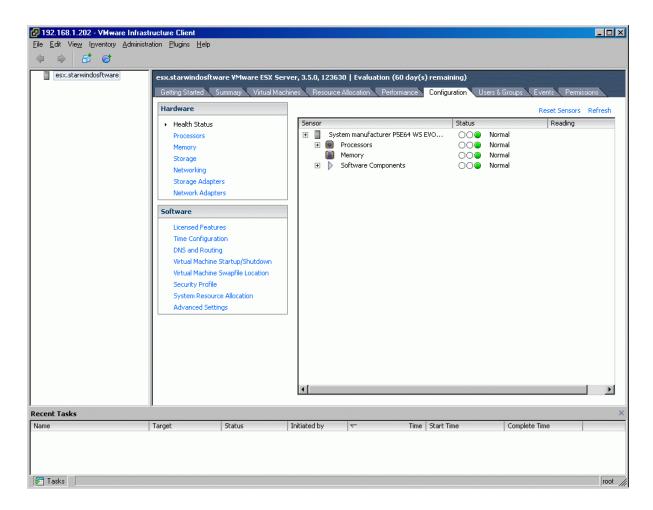
If successful, the **Virtual Infrastructure Client** window should look like the sample picture provided below.

starwindosftware	esx.starwindosftw	are ¥Mware ESX	Server, 3.5.0, 123630   Evaluatio	n (60 day(s) remaining)	
	Getting Started	Gummary Virtual	Machines Resource Allocation P	erformance Configuration Users	& Groups Events Permiss
	What is a Hos	it?			close tab 🗵
	as ESX Server CPU and mem	, to run virtual i ory resources t	s virtualization software, such machines. Hosts provide the hat virtual machines use and to storage and network	Virtual Machines	
	You can add a one or by impo		e to a host by creating a new appliance.		Host
	virtual appliand machine with a installed. A new	ce. A virtual ap n operating sy ⊮ virtual machir	ual machine is to import a oliance is a pre-built virtual stem and software already ne will need an operating s Windows or Linux.		
				VI Client	
	Basic Tasks				
	📑 Import a	virtual applia	nce		
	🗗 Create a	new virtual m	achine	Explore Further	
					<b>re Infrastructure</b> eliminate downtime, load r with VMotion, and more
				📃 Evaluate VMware I	nfrastructure
sks					
	Target	Status	Initiated by 🗸 🤝	Time   Start Time	Complete Time



### Configuring ESX Server to work with iSCSI connections Configure the VMkernel TCP/IP Networking Stack

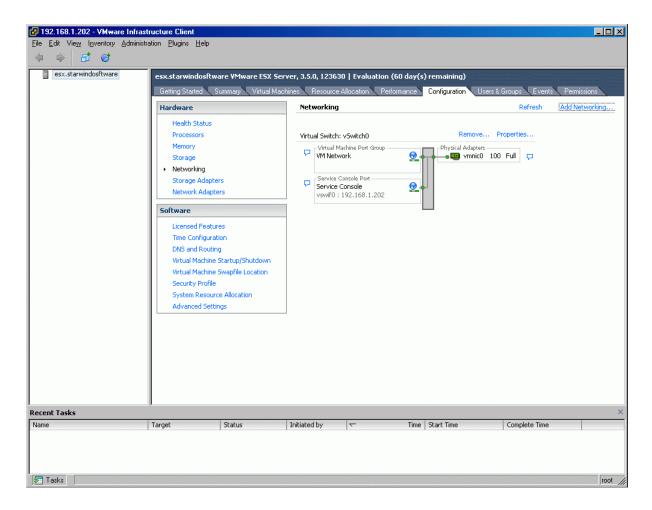
Click the **Configuration** tab.



Then click Networking.



The current Network configuration appears.



Click the Add Networking link.



### Select the VMkernel option.

🛃 Add Network Wizard		- 🗆 ×
Connection Type Networking hardware can	be partitioned to accommodate each service requiring connectivity.	
Connection Type Network Access Connection Settings Summary	Connection Types Virtual Machine Add a labeled network to handle virtual machine network traffic. VMkernel The VMkernel TCP/IP stack handles traffic for the following ESX server services: VMware VMotion, iSCSI, and NFS. Service Console Add support for host management traffic.	
Help	≤ Back Next ≥	Cancel



Select the vSwitch you to use or select the **Create a virtual switch** option to create new virtual switch.

/Mkernel - Network A				
	es networks through uplink adapters attached	to virtual switches.		
onnection Type	Select which virtual switch will bandle th	he network traffic for th	is connection. You may also create a new virtual switc	ch
etwork Access	using the unclaimed network adapters I			
onnection Settings ummary	C Create a virtual switch	Speed	Networks	
	Use vSwitch0	Speed	Networks	
		100 Full	192.168.1.128-192.168.1.254	
	Preview: VMkemel Port	Physical Adapt		
	- VMkernel Port - VMkernel - Virtual Machine Port Group			
	-VMkernel Port -VMkernel -Virtual Machine Port Group -VM Network - Service Console Port	9 • • • • • • • vmni		
	-VMkernel Port -VMkernel -Virtual Machine Port Group -VM Network - Service Console Port	👱 🔸 🖕 📲 vmni		



Specify the Network label. Also type the IP address and subnet mask. Optionally check **Use this port for VMotion** item.

🛃 Add Network Wizard			- 🗆 ×
VMkernel - Connection Se Use network labels to ide	<b>ttings</b> Intify VMkernel connections while mai	naging your hosts and datacenters.	
Connection Type Network Access Connection Settings Summary	Port Group Properties Network Label: VLAN ID (Optional):	iSCSI	
	IP Settings IP Address: Subnet Mask:	192 , 168 , 1 , 203 255 , 255 , 255 , 0	
	Preview:		
	VMkernel Port ISCSI 192.168.1.203 Virtual Machine Port Group VM Network Service Console Port Service Console Port	Physical Adapters	
Help	vswif0 : 192.168.1.202		Iancel



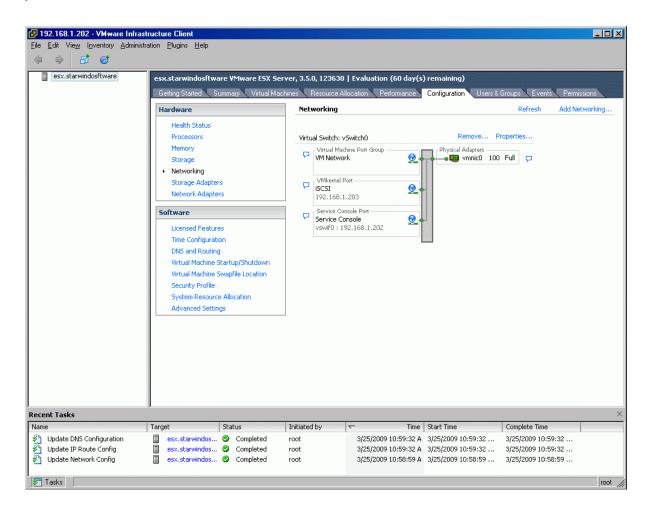
Check if all of the parameters are correct. Press the **Back** button should any changes be required.

🛃 Add Network Wizard		- 🗆 ×
Ready to Complete Verify that all new and m	odified virtual switches are configured appropriately.	
Connection Type Network Access Connection Settings Summary	Host networking will include the following new and modified v5witches: Preview: VMIkemel Port ISCSI 192.168.1.203 Virtual Machine Port Group VM Network Service Console Vswif0 : 192.168.1.202	
Help	<u>≤Back</u> <u>Einish</u> Ca	ancel

Press the **Finish** button to close the wizard.



If successful, the **VI Client** window should look like the sample picture provided below.



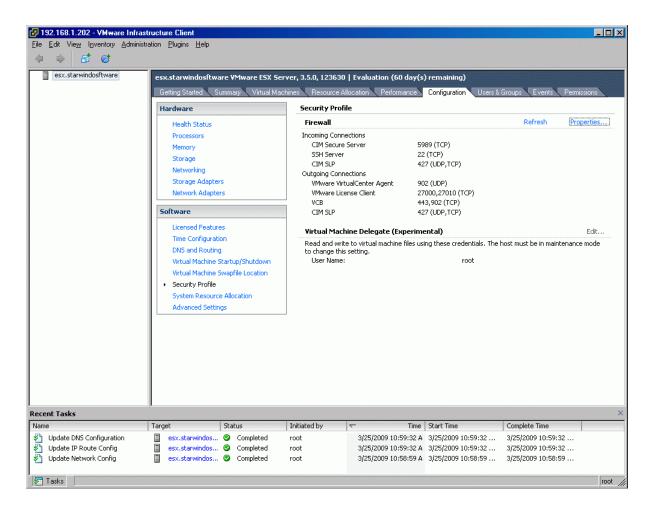


#### **Configuring Firewall**

For working with iSCSI connectios you need to permit them in the firewall settings.

#### Click the **Configuration** tab. Then click **Security Profile**.

The **Virtual Infrastructure Client** displays a list of currently active incoming and outgoing connections with the corresponding firewall ports.



Click the **Properties** link.



# The Firewall Properties dialog box will appear.

	note Access	· · · · · · · · · · · · · · · · · · ·	All the later of the sector Proceeding		
	efault, remote clients are prevented fr assing services on remote hosts.	om accessing services on	i this host, and local clients	are prevented f	rom
	rovide access to a service or client, o matically when any of their ports are o			erwise, daemons	s will start
30(0)					
	Label	Incoming Ports	Outgoing Ports	Protocols	Daemon
Req	juired Services				
Sec	ure Shell				
✓	SSH Server	22		TCP	Running 🔔
	SSH Client		22	TCP	N/A
Sim	ple Network Management Proto	ocol			
	SNMP Server	161	162	UDP	N/A
Ung	prouped				
	Software iSCSI Client		3260	TCP	N/A
$\square$	VMware VirtualCenter Agent		902	UDP	N/A
$\checkmark$	VCB		443,902	TCP	N/A
┛	Active Director Kerberos		464.88	тср	
				Refresh	Options

#### Find Software iSCSI Client in the list

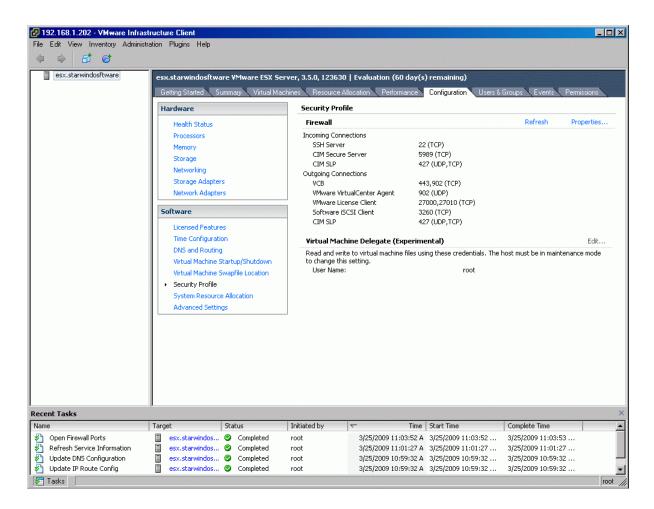


Tick the option (set checkbox) to allow outgoing connection on the port shown (3260).

By di	note Access efault, remote clients are prevented fi	om accessing services on	this host, and local client:	s are prevented f	rom
acce	essing services on remote hosts.				
	rovide access to a service or client, o			erwise, daemons	: will start
autoi	matically when any of their ports are o	ppened and stop when all	or their ports are closed.		
	Label	Incoming Ports	Outgoing Ports	Protocols	Daemon 🔺
Dee	juired Services	Incoming Fores	Oddgolng Fords	Trococois	
	ure Shell				
징	SSH Server	22		TCP	Running
H	SSH Client		22	TCP	N/A
Sim	ple Network Management Prot	ocol			
	SNMP Server	161	162	UDP	N/A
Ung	jrouped				
☑	Software iSCSI Client		3260	TCP	N/A
$\mathbf{\nabla}$	VMware VirtualCenter Agent		902	UDP	N/A
≤	VCB		443,902	TCP	N/A
Π.	Active Director Kerberos		464.88	TCP	N/A
<u></u>					
				Refresh	Options



If successful, the **Virtual Infrastructure Client** window should look like the sample picture provided below.





#### Configure the iSCSI Software Initiator

#### Enabling iSCSI Software Initiator.

Click the **Configuration** tab. Then click **Storage Adapters.** The list of available storage adapters appears.

🚱 192.168.1.202 - VMware Infras							_ 🗆 ×
<u>File Edit View</u> Inventory Administr	ation <u>P</u> lugins <u>H</u> elp						
(† †) <b>6 6</b>							
esx.starwindosftware	esx.starwindosft	vare VMware ESX S	erver, 3.5.0, 123630	Evaluation (60 day(s	) remaining)		
	Getting Started	Summary Virtual Ma	achines Resource A	llocation Performance	Configuration Users &	Groups Events Per	missions
	Hardware		Storage Adap	ters			Rescan
	Health Status		Device		Туре	SAN Ide	entifier 🔺
	Processors			DE Controller (ICH9)			
	Memory		G vmhba32 C vmhba0		SCSI SCSI		
	Storage		iSCSI Softwar	e Adapter	5051		
	Networking		🎯 iSCSI Sof		iSCSI		
	<ul> <li>Storage Adapt</li> </ul>						<b>–</b>
	Network Adapters		•				
	Software		Details				
	Licensed Featu Time Configura DNS and Routi	ation	vmhba33 Model: 2 Targets: 1 SCSI Target		ICH9)	н	de LUNs
		e Swapfile Location	Path	Canonical Path	n Type C	apacity LUN I	D
	Security Profile		vmhba33:0:	0 vmhba33:0:0	disk 93	1.51 GB	0
	System Resou Advanced Set						
Recent Tasks	J						×
Name	Target	Status	Initiated by	▽ Time	Start Time	Complete Time	
狗 Open Firewall Ports	esx.starwindos.		root		3/25/2009 11:03:52	3/25/2009 11:03:53	
Refresh Service Information	esx.starwindos.		root		3/25/2009 11:01:27	3/25/2009 11:01:27	
Update DNS Configuration		🥝 Completed 🥝 Completed	root root		3/25/2009 10:59:32 3/25/2009 10:59:32	3/25/2009 10:59:32 3/25/2009 10:59:32	
Tasks				- Loteory recover	-1-112003 1010510E 111		root //



Select iSCSI Software Adapter.

🚱 192.168.1.202 - VMware Infra	structure Client			
<u>File Edit View</u> Inventory Adminis	stration <u>P</u> lugins <u>H</u> elp			
(† †) 🗗 😅				
esx.starwindosftware	esx.starwindosftware ¥Mware ESX	< Server, 3.5.0, 123630   Evaluation (60 day	(s) remaining)	
		Machines Resource Allocation Performance		Events Permissions
	Hardware	Storage Adapters		Rescan
		Device	Туре	SAN Identifier
	Health Status	4 port SATA IDE Controller (ICH9)	1790	
	Processors	() vmhba32	SCSI	
	Memory	S vmhba0	SCSI	
	Storage Networking	iSCSI Software Adapter		
	Storage Adapters	SCSI Software Adapter	iSCSI	
	Network Adapters	•		
		Details		
	Software			Properties
	Licensed Features	Model:	IP Address:	
	Time Configuration	iSCSI Name: iSCSI Alias:	Discovery Methods:	
	DNS and Routing		Targets:	
	Virtual Machine Startup/Shutdown			
	Virtual Machine Swapfile Location			
	Security Profile			
	System Resource Allocation			
	Advanced Settings			
Recent Tasks				×
Name	Target Status	Initiated by 🔽 Tim	e   Start Time   Complete	Time
Open Firewall Ports	esx.starwindos S Completed			9 11:03:53
Refresh Service Information	esx.starwindos 📀 Completed			9 11:01:27
🛛 🛐 Update DNS Configuration	esx.starwindos 🤡 Completed	root 3/25/2009 10:59:32	A 3/25/2009 10:59:32 3/25/200	9 10:59:32 —
Update IP Route Config	📋 esx.starwindos 🥝 Completed	root 3/25/2009 10:59:32	A 3/25/2009 10:59:32 3/25/200	9 10:59:32 💌
🛃 Tasks				root //

Click Properties.



# iSCSI Initiator Properties dialog appears.

🛃 iSCSI Initiator (iSC	SI Software Adapter) Properties	
General Dynamic Disc	overy   Static Discovery   CHAP Authentic	ation
iSCSI Properties		
iSCSI name:		
iSCSI alias:		
Target discovery m	nethods:	
Software Initiator Pr	operties	
Status:	Disabled	
		Configure
		Close Help

Press the **Configure** button.



To enable the initiator check the **Enabled** check box.

General Properties			×
Status Enabled			
iSCSI Properties			
-	ОК	Cancel	Help

Press the **OK** button to close the **General Properties** dialog and return to the **iSCSI Initiator** properties dialog.



The dialog will now show the initiator's status, default name, and alias.

ć	iSCSI Initiator (vmhba34) Pro	operties	<u>_ D ×</u>
	General Dynamic Discovery Sta	atic Discovery CHAP Authentication	
	- iSCSI Properties		
	iSCSI name:	ign.1998-01.com.vmware:esx-57b79142	
	iSCSI alias:	esx.starwindosftware	
	Target discovery methods:	Send Targets	
	– Software Initiator Properties –		
	Status:	Enabled	
			Configure
		Close	



# Switch to the **Dynamic Discovery** tab.

🛃 iscsi I	nitiator (vmhba34)	Properties				_ 🗆 ×
General	Dynamic Discovery	Static Discovery	CHAP Au	hentication		
Obtain	F <b>argets</b> information about tar irgets command.	get devices directly	y from the	following iSCSI	servers u	sing the
ISCSI S	Server					
		Ad	id	Edit	R	emove
				C	lose	Help

Press the Add... button



The Add Send Targets Server dialog is shown. Specify the IP address of the StarWind iSCSI target server.

Send Targets -		
iSCSI Server:	192 . 168 . 1 . 201	
Port:	3260	
	ation may need to be configured before a sessic tablished with any discovered targets.	on

Press the **OK** button.



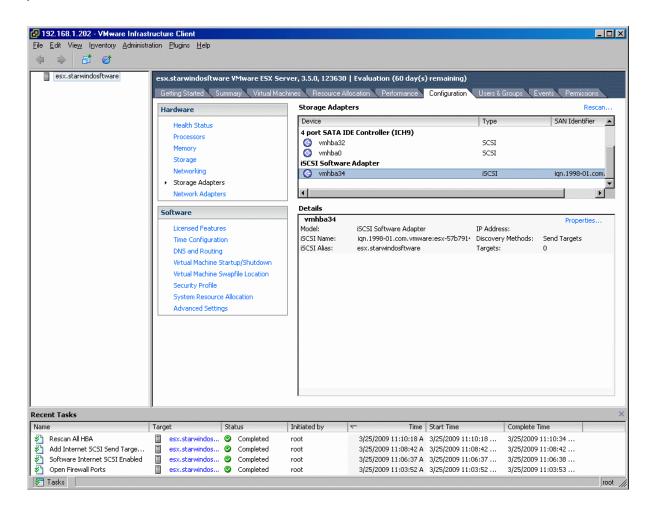
You will be returned to the **iSCSI Initiator** properties dialog.

🛃 iscsi I	nitiator (vmhba34)	Properties				_ 🗆 🗵
General	Dynamic Discovery	Static Discovery	/ CHAP Au	thentication ]		
Obtain	f <b>argets</b> information about tar rgets command.	get devices direc	tly from the	following iSCSI	servers usi	ng the
iSCSI 9	Server					
	58.1.201:3260					
			Add	Edit	Rer	nove
					lose	Help

Press the **Close** button.



The **Virtual Infrastructure Client** window should look like the sample picture provided below.



Infrastructure client will prompt you to rescan for new iSCSI LUNs. If not - press **Rescan...** button.



Rescan dialog appears.

🔂 Rescan	×							
Scan for New Storage Devices								
Rescan all host bus adapters for new storage devices. Rescanning all adapters can be slow.								
Scan for New VMFS Volumes								
Rescan all known storage devices for new VMFS volumes that have been added since the last scan. Rescanning known storage for new filesystems is faster than rescanning for new storage.								
OK Cancel Help								

Leave the default values and press the **OK** button.



If successful, the **Virtual Infrastructure Client** window should look like the sample picture provided below.

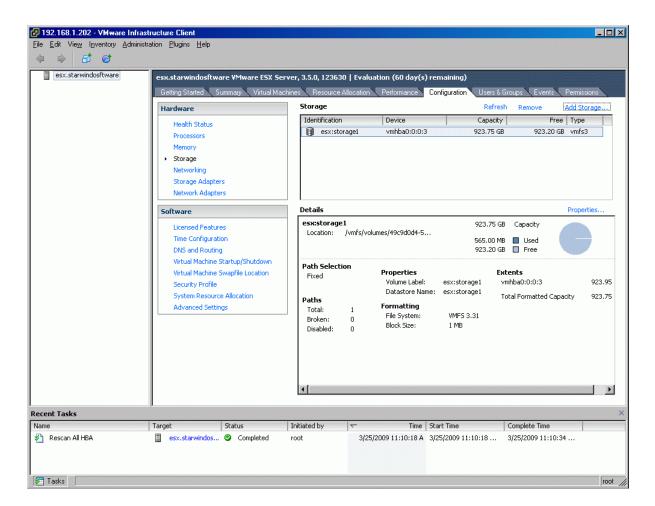
Note that the **StarWind** target **"SCSI Target 0"** is now shown.

Eile     Edit     View     Inventory     A       Image: start window of the start window of		Server, 3.5.0, 123630   Evaluation (60 day(s) remaining)
	Getting Started Summary Virtual M	Aachines Resource Allocation Performance Configuration Users & Groups Events Permissions
	Hardware	Storage Adapters Rescan
	Health Status	Device Type SAN Identifier
	Processors	4 port SATA IDE Controller (ICH9)
	Memory	🚱 vmhba32 SCSI
	Storage	SCSI SCSI
	Networking	iSCSI Software Adapter Symbols of the second
	<ul> <li>Storage Adapters</li> </ul>	
	Network Adapters	
	Software	Details
	Licensed Features Time Configuration DNS and Routing Virtual Machine Startup/Shutdown Virtual Machine Swapfile Location Security Profile System Resource Allocation Advanced Settings	vmhba34     Properties       Model:     iSCSI Software Adapter     IP Address:       ISCSI Name:     ign.1998-01.com.vmware.esx-57b791*     Discovery Methods:     Send Targets       ISCSI Alias:     esx.starwindosftware     Targets:     1       SCSI Target 0     iSCSI Alias:     iSCSI Alias:     I       Target LUNs:     1     Hide LUNs       Path     Canonical Path     Type     Capacity     LUN ID       vmhba34:0:0     vmhba34:0:0     disk     5.00 GB     0
Recent Tasks Name Marcan All HBA	Target Status	Initiated by
_		



# Set Up the Datastore

Click the Configuration tab. Then click Storage (SCSI, SAN, and NFS).



Press the Add Storage... link.



# Add Storage dialog appears. Select **Disk/LUN** storage type.

🛃 Add Storage Wizard	
Select Storage Type Do you want to format a	new volume or use a shared folder over the network?
Disk/LUN Device Location Current Disk Layout Properties Formatting Ready to Complete	<ul> <li>Storage Type</li> <li>Disk/LUN         Choose this option if you want to create a datastore or other volume on a Fibre Channel, iSCSI or local SCSI disk.     </li> <li>Network File System         Choose this option if you want to use a shared folder over a network connection as if it were a VMware datastore. A mount point must be created on the host before it is added as a datastore.     </li> </ul>
Help	Back Next ≥ Cancel



#### Select the device.

<u>/LUN</u> Device Location			SAN I	dentifier contains:	•	
Current Disk Layout	Device	Capacity	Available SAN I	Identifier	LUN	
Properties	vmhba34:0:0	5.00 GB	4.99 GB esxst		0	
Formatting	vmhba1:0:0	931.51 GB	831.50 GB Not A		0	
dy to Complete	vmhba33:0:0	931.51 GB	831.50 GB Not A	Applicable	0	



### Review the disk layout.

🚱 Add Storage Wizard				
Current Disk Layout	: the entire device, all free space, or a	a single block of free	space.	
			594601	
	Review the current disk layout:			
Device Location Current Disk Layout Properties Formatting Ready to Complete	Device /vmfs/devices/disks/	Capacity 5.00 GB	Target Identifier vmhba34:0:0	LUN O
Keady to Complete		The hard disk is l	blank.	
Help			≤Back Next ≥	Cancel



### Specify the Datastore Name.

🚱 Add Storage Wizard		
Disk/LUN - Properties Labels provide stable access	to VMFS volumes that is not affected by hardware variations	
Disk/LUN Device Location Current Disk Layout Properties Formatting Ready to Complete	Datastore Name	
Help	<u></u>	Back Next ≥ Cancel



# Specify the Disk/LUN formatting options.

🛃 Add Storage Wizard		×
Disk/LUN - Formatting The format of your file sy:	em determines which class of virtual machines it will be able to support.	
Disk/LUN     Device Location     Current Disk Layout     Properties     Formatting     Ready to Complete	Maximum file size — Large files require large block size; the minimum disk space used by any file is equal to the file system block size. These values are adjusted by VMF5-3 file systems on demand. 256 GB , Block size: 1 MB	]
	Maximize capacity GB	
Help		



Confirm that the device parameters are correct and press the **Back** button should any changes be required.

🛃 Add Storage Wizard				_ 🗆 ×
<b>Ready to Complete</b> Review this summary befor	e completing the wizard.			
<u>Disk/LUN</u> Ready to Complete	Review the proposed disk layout:			
Keady to complete	Device /vmfs/devices/disks/	Capacity 5.00 GB	Target Identifier vmhba34:0:0	LUN O
	Primary Partitions VMFS	Capacity 4.99 GB	Description	
	The following VMware file system will b	e created:		
	Datastore name: esxstorage			
	Formatting File system: VMFS-3 Block size: 1 MB Maximum file size: 256 GB			
Help			<u>≤</u> Back <u>F</u> inish	Cancel

Press the **Finish** button to close the wizard.



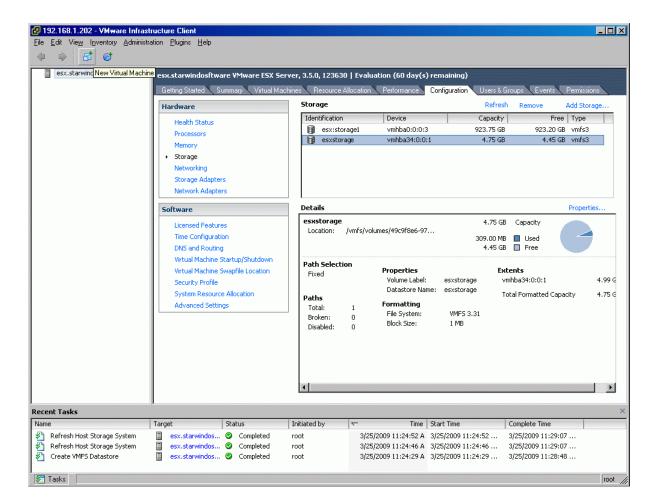
If everything went fine, the **Virtual Infrastructure Client** window should look like the sample picture provided below.

esx.starwindosftware	esx.starwindosftware YMware ESX Server, 3.5.0, 123630   Evaluation (60 day(s) remaining) Getting Started Summary Virtual Machines Resource Allocation Performance Configuration Users & Groups Events Permissions			
	Hardware	Storage Refresh Remove Add Storage		
	Health Status Processors Memory • Storage Networking Storage Adapters	Identification     Device     Capacity     Free     Type            ⓐ esx:storage1         vmhba0:0:0:3         923.75 GB         923.20 GB         vmfs3            ⓑ esx:storage         vmhba34:0:0:1         4.75 GB         4.45 GB         vmfs3		
	Network Adapters	Details Properties		
	Licensed Features Time Configuration DNS and Routing	esxstorage Location: /vmfs/volumes/49c9f8e6-97 309.00 MB ■ Used 4.45 GB ■ Free		
	Virtual Machine Startup/Shutdown Virtual Machine Swapfile Location Security Profile System Resource Allocation Advanced Settings	Path Selection Fixed         Properties Volume Label:         Extents           Volume Label:         esxstorage         vmhba34:0:0:1         4.99           Datastore Name:         esxstorage         Total Formatted Capacity         4.79           Paths         Formatting         Total:         1         Formatting           Broken:         0         File System:         VMFS 3.31           Disabled:         0         Block Size:         1 MB		
ent Tasks				
ne Refresh Host Storage System	Target Status  esx.starwindos Score	Initiated by                    Time                       Start Time                       Complete Time           root		



### **Create a New Virtual Machine**

Press the right mouse button over the server and select New Virtual Machine.



Alternatively you can press **Ctrl+N** combination.



# New Virtual Machine Wizard appears.

New Virtual Machine Wiz	ard State and State a
Select the Appropriate C How would you prefer to	onfiguration Virtual Machine Version: - configure your virtual machine?
Wizard Type Name and Location Datastore Guest Operating System CPUs Memory Network Virtual Disk Capacity Ready to Complete	Virtual Machine Configuration • Typical Create a new virtual machine with the most common devices and configuration options. • Custom Choose this option if you need to create a virtual machine with additional devices or specific configuration options.
Help	≤Back Next ≥ Cancel



New Virtual Machine Wizard		
	ion for this Virtual Machine Version: 4 I this virtual machine and where do you want it located?	
Wizard Type Name and Location Datastore Guest Operating System CPUs Memory Network Virtual Disk Capacity Ready to Complete	Provide a name for the new virtual machine and select its location in the inventory panel below. Virtual machine names can contain up to 80 characters, but they must be unique within each inventory folder. Name: SWS_VM1 Virtual machine folders are unavailable when connected directly to the host.	
Help	<u>≤ Back</u> Cancel	



New Virtual Machine Wi Choose a Datastore for U Where do you want to s	the Virtual Machine	e files?			Virtual M	Aachine Version: 4
<u>Wizard Type</u> <u>Name and Location</u> <b>Datastore</b> Guest Operating System CPUs	Select a datastore It is advisable to c virtual disk files, se	hoose a datasto	re that is large e	nough to accor	e. nodate the virtual machine	e and all its
Memory	Name	Capacity	Free	Туре	Access	
Network	[esx:storage1]	923.75 GB	923.20 GB	VMES	Single host	
Virtual Disk Capacity	[esxstorage]	4.75 GB	4.45 GB	VMES	Single host	
Help				<u>≤</u> B	ack Next >	Cancel



New Virtual Machine Wiza Choose the Guest Operating What Guest operating system		Virtual Machine Version: 4
Wizard Type Name and Location Datastore Guest Operating System Memory Network Virtual Disk Capacity Ready to Complete	Guest Operating System:   Microsoft Windows  Kinux  Novell NetWare  Solaris  Other  Version:  Microsoft Windows Server 2003, Enterprise Edition (32-bit)  Note: The selection on this page allows the wizard to provide defaults for va parameters suitable for the guest OS you intend to install. Your selection is a virtual machine's configuration to allow hosts to optimize scheduling and othmachine for the targeted guest OS. This wizard does not install any guest OS	also recorded as part of the er handling of the virtual
Help	<u>&lt;</u> Back	Next ≥ Cancel



PNew Virtual Machine Wizard						
Virtual CPUs Configure the number of	<b>Virtual CPUs</b> Configure the number of virtual processors in the virtual machine.					
Wizard Type						
Name and Folder	Number of virtual processors:	1				
Datastore						
Guest Operating System CPUs						
Memory						
Network						
Virtual Disk Capacity						
Ready to Complete						
Help			<u>&lt;</u> Back	Next > C	ancel	



Provide the virtual Machine Wiza Memory Configure the virtual mach			× Virtual Machine Version: 4
Wizard Type           Name and Location           Datastore           Guest Operating System           Memory           Network           Virtual Disk Capacity           Ready to Complete	Specify the amount of memory allocated to the The memory size must be a multiple of 4MB.         Memory for this virtual machine:         Image: Imag	256 📩 MB ues, you may	
Help		<u>≤</u> Back Nex	t ≥ Cancel



Which network connections	t Land Land Land Land Land Land Land Land
Wizard Type Name and Location Datastore Guest Operating System Memory Network Virtual Disk Capacity Ready to Complete	Create Network Connections How many NICs do you want to connect? I Connect at Power On NIC 1: MINEtwork Flexible Flexible Flexible  Adapter choice can affect both networking performance and migration compatibility. Consult the VMware KnowledgeBase for more information on choosing among the network adapters supported for various guest operating systems and hosts.
Help	<u>≤</u> Back Next ≥ Cancel

## StarWind Software Technical Reference Series



🚱 New Virtual Machine Wiza	rd			
Define Virtual Disk Capacit	Virtual Machine Version: 4			
What size do you want this	s virtual disk to be?			
Wizard Type	Set the maximum size for I	the virtual disk.		
Name and Location Datastore	Datastore:	esxstorage		
Guest Operating System				
Memory Network	Available Space (GB):	4.4		
Virtual Disk Capacity	Disk Size:	3.5 🛨 GB 💌		
Ready to Complete				
Help			<u>≤</u> Back	Next ≥ Cancel



🛃 New Virtual Machine Wiza	rd	
Ready to Complete New Vi Are these the options you		Virtual Machine Version: 4
Wizard Type         Name and Location         Datastore         Guest Operating System         Memory         Network         Virtual Disk Capacity         Ready to Complete	When you click Finish, a task will be started that will create the new virtual machine.         The virtual machine will be created with the following options:         Name:       SWS_VM1         Host/Cluster:       esx.starwindosftware         Resource Pool:       Resources         Datastore:       esxstorage         Guest OS:       Microsoft Windows Server 2003, Enterprise Edition (32-bit)         Memory       256 MB         NICs:       1         NIC 1 Network:       VM Network         NIC 1 Type:       Flexible         Virtual Disk Size:       3.5 GB	
	<ul> <li>Edit the virtual machine settings before submitting</li> <li>Creation of the virtual machine does not include any automatic installation of the system. You will need to install the guest OS just as you would on a new physical</li> </ul>	
Help	<u>≤</u> Back <u>E</u> inis	h Cancel

Press the **Finish** button to close the wizard.

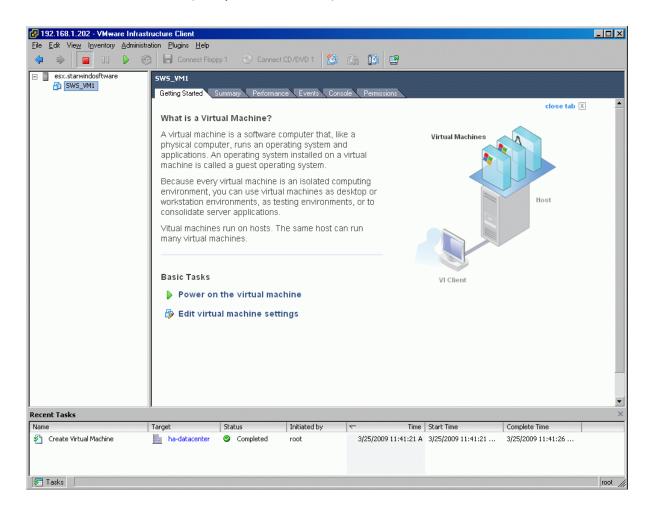


If successful, the **Virtual Infrastructure Client** window should look like the sample picture provided below.

sx.starwindosftware SWS_VM1	esx.starwindosftw	are ¥Mware ESX	5erver, 3.5.0, 1236	30   Evaluation	(60 day(s) remaining)		
2002_001	Getting Started	Summary Virtual N	lachines Resource	Allocation	ormance Configuration	Users & Groups \ Events \ Permis	
	What is a Hos	t?				close tab 🛛	
	as ESX Server CPU and memo	, to run virtual n bry resources th	virtualization so nachines. Hosts p nat virtual machir o storage and ne	rovide the es use and	Virtual Machi	nes the second se	
	You can add a one or by impo		to a host by cre ppliance.		Host		
	virtual appliant machine with a installed. A new	The easiest way to add a virtual machine is to import a virtual appliance. A virtual appliance is a pre-built virtual nachine with an operating system and software already nstalled. A new virtual machine will need an operating system installed on it, such as Windows or Linux.					
	Basic Tasks				VI Client		
		Basic Lasks					
		Import a virtual appliance     Create a new virtual machine			Explore Further		
					Manage multiple	'Mware Infrastructure hosts, eliminate downtime, load icenter with VMotion, and more	
					📃 Evaluate VMw	are infrastructure	
[asks	,						
	Target	Status	Initiated by		Time Start Time	Complete Time	



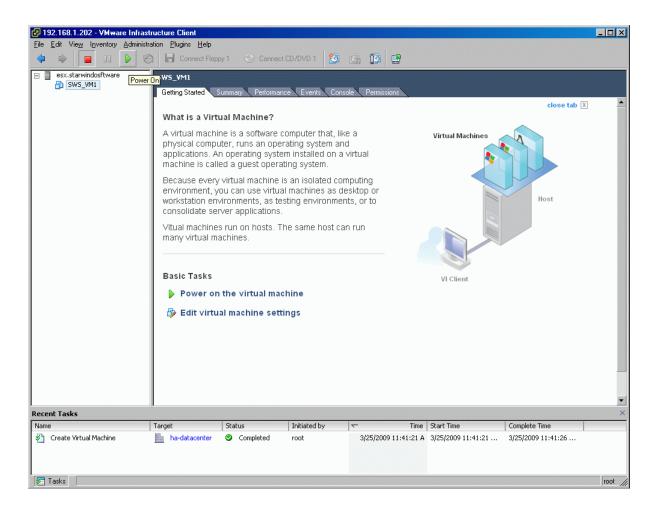
Click over the recently created virtual machine name in the inventory panel to view the information (see picture below).



Before the virtual machine is powered on, check the **Licensed Features** on **Configuration** tab. You should specify **License Server** or provide **Host License File**.



Press the **Power On** button to start the virtual machine.



Optionally the virtual machine configuration may be editing by pressing the **Edit Settings** link.



Launch the console by pressing the **Open Console** button.

🛃 192.168.1.202 - VMware Infrast	ructure Client							- 🗆 🗵
<u>File Edit View</u> Inventory Administra	ation <u>P</u> lugins <u>H</u> elp							
🗢 🗣 🔳 🚺 🕨 🧐	Connect Floppy	1 💿 Connec	t CD/DVD 1 🔯		2 E			
	SWS_VM1	mmary Performan Microsoft Winde 1 √CPU 256 MB	nce Events Cons		Emissions   Resources   CPU usage:   Host memory usage:   Guest memory usage:   Datastore   Image:   exstorage   Network   Image:   VM Network	29.00 MB 192.00 MB Capacity 4.75 GB	Free 971.00 MB	
								-
Recent Tasks								×
Name	-	Status	Initiated by	~	Time Start Time		te Time	
Power On Virtual Machine Create Virtual Machine	-	Completed Completed	root root		5/2009 11:47:29 A 3/25/2009 5/2009 11:47:19 A 3/25/2009		009 11:47:47 009 11:47:24	▼ root

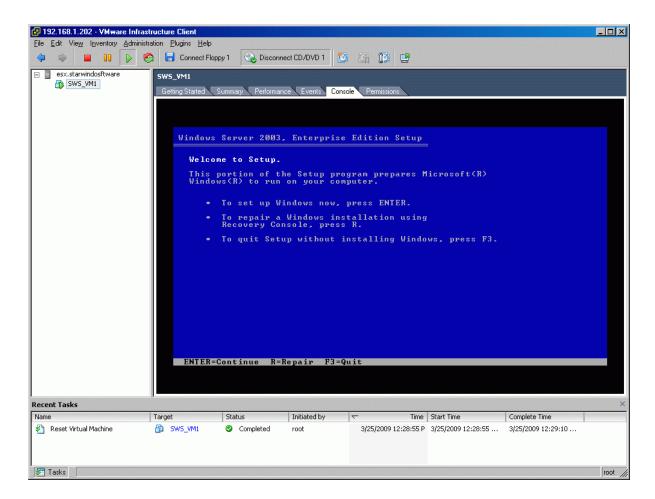


🚱 192.168.1.202 - VMware Infrastructure Client \_ 🗆 × <u>File Edit View Inventory Administration Plugins Help</u> 💠 💠 🔲 🗊 🕨 🊱 🖬 Connect Floppy 1 💿 Connect CD/DVD 1 🔯 🚱 🔯 esx.starwindosftware Connect to E: SWS\_VM1 Connect to G: Getting Started Summ sole Permissions Connect to ISO image Recent Tasks Name Target Status Initiated by 🤝 Time Start Time Complete Time -Power On Virtual Machine B SWS\_VM1 70% 📃 🗌 root 3/25/2009 11:53:08 A 3/25/2009 11:53:08 ... Completed root 3/25/2009 11:47:29 A 3/25/2009 11:47:29 ... 3/25/2009 11:47:47 ... -🚰 Tasks

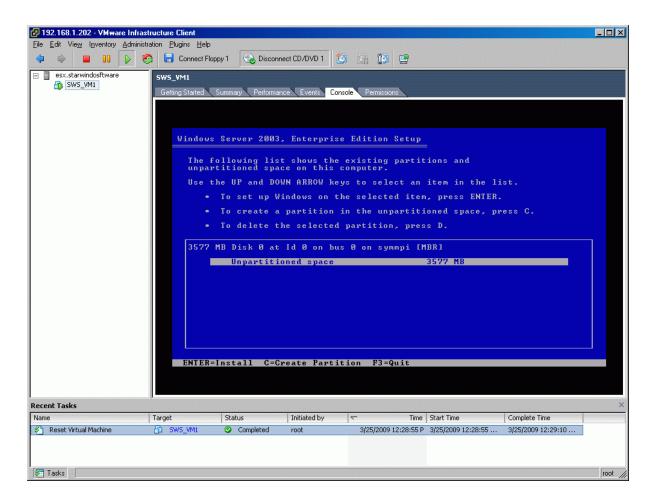
Specify path to the OS installation media or ISO.



The following screen captures show the installation of Microsoft's Windows 2003 Server operating system to an ESX Server managed through Virtual Infrastructure client using iSCSI for storage.







Install the OS in the usual way.

## Conclusion





## Contacts

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