# iStorage Server: iSCSI SAN for ESX/ESXi Server

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KernSafe Technologies, Inc.

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#### **Overview**

iStorage Server is a network based storage virtualization software powered by KernSafe Technologies, Inc. Being a powerful, full-featured and software-only iSCSI Target SAN solution, that can quickly convert existing Windows computer into IP SAN. Storage media of iSCSI Target can include existing storage devices such as the entire hard disks or partitions, CD-RWs, tapes and USB storage devices, as well as disk image file or CD image files including ISO9660(,iso), .bin, .mdf, .cdi, .b5i, .nrg, .ccd, .sub, .img, .raw and other image file formats. Furthermore, iStorage Server also supports a lot of features such as: VHD (Virtual Hard Disk) target, snapshots, STPI, RAID-1 and failover, these features are very important and poplar in storage industry world and make iStorage Server is suitable for any size of business.

VMware ESX and VMware ESXi are "bare-metal" hypervisors, meaning they install directly on top of the physical server and partition it into multiple virtual machines that can run simultaneously, sharing the physical resources of the underlying server. Each virtual machine represents a complete system, with processors, memory, networking, storage and BIOS, and can run an unmodified operating system and applications.

The functionality and performance of VMware ESX and ESXi are the same; the difference between the two hypervisors resides in their architecture and operational management. VMware ESXi is the latest hypervisor architecture from VMware. It has an ultra thin footprint with no reliance on a general-purpose OS, setting a new bar for security and reliability. The small footprint and hardware-like reliability of VMware ESXi enable it to also be available preinstalled on industry standard x86 servers.

This article demonstrates how iStorage Server works under VMware ESX Server. Such powerful combination will expand the application scope of your virtual server, thereby enabling WINDOWS server to expand the storage of your virtualized server. It also allows you to directly use the storage devices of the existing Windows server for VMware ESX Server. With IP SAN solution provided by iStorage Server, you may set up operating system, install application and server software, as well as store data required by your virtual machines. Your ESX Server storage can be expanded in the following 3-most-commonly-used ways:

• Use Virtual Image File Disk Device to create a file-based virtual storage device for VMware ESX Server, this allows quick data migration and backup.

- Directly use the physical disk or partition of Windows server. This enables you to make good use of resource. No additional configurations, just add the storage media to iSCSI Targets.
- Use CD/DVD/RW bridge device or Virtual CD/DVD to map physical CD/DVD drives or CD/DVD image files (iso, .bin, .mdf, .cdi, .b5i, .nrg, .ccd, .sub, .img, .raw) on your Windows server to CD/DVD devices on VMware ESX Server virtual machine.

After iStorage Server 2.0, it supports server side mirroring, synchronous replication and failover which allows user to create a high-availability iSCSI SAN for VMware ESX / ESXi Server.

### **Install ESX Server**

You need a server running ESX Server. ESX Server must first be installed on to a suitable machine that will be used to create the virtual environment. For learning how to obtain or install VMware ESX Server, please contact the VMware supplier.

### **Configuring on iStorage Server**

### **Choose the Authentication Mechanism**

Decide which authentication mechanisms you would want to use: **Anonymous, CHAP, IP address** or **Mixed** authentication.

#### 1) Anonymous:

All initiators will get full access permission without any authorization required.

#### 2) CHAP (Challenge-handshake authentication protocol)

All initiators need to specify a CHAP user and secret to connect to the target. iStorage Server has a built-in user called "Guest", which is used for initiators without CHAP secret specified.

3) IP Filters

All initiators will be authorized by the incoming IP address defined by IP Filter roles.

#### 4) Mixed

Security policy is determined by both CHAP and IP Filters.

Open iStorage Server Management Console.

🍓 iStorage Server Managen	ent Console		
<u>S</u> torage <u>C</u> lients <u>V</u> iew	<u>T</u> ools <u>H</u> elp		
Create Delete	Start Stop Refresh	Add Remove	
E- B kernsafe-PC	iStorage Server: kerns:	afe-PC	
	General Targets Applications IP Fil	ters Users Groups Logs	
	Storage General Pro	operties	•
	General		
	Hostname:	kernsafe-PC	Е
	Bind Address:	All Address	
	Port:	3260	
	Management Method:	Active Directory	
	State:	ок	
	Status		
	Status:	Started	
	License:	Ultimate License	Ŧ
	•	4	
		🔇 Connected: kernsafe-PC (Ultimate License)	

#### **Create User**

Right click **Users** Tree Node on the left tree view.

Press **Add** button in the tool bar.

The **Create/Edit User** dialog is shown.

Create/Edit User		
User Name:	ESXUser 👻	
Password:	•••••	
Confrim password:	•••••	
User name and	d password are case sensitive.	
	OK Cancel	

Type user name and password as you like, but we recommend that the password should be 12-16 characters. We take the user name **ESXUser** and password **11111111111111** as an example.

Press the **OK** button to complete creating user.

#### Create group

After creating user, we need a group to hold this user.

Right click the **Groups** tree node in the left tree view.

Press the Add button on the toolbar, the Create/Edit Group Dialog is shown.

Create/Edit Group			<b></b>
Group name:	ESXGroup		
Default Access:	Full Access		-
Members:			
a ESXUser			
Add	Remove		
		ОК	Cancel

Take a group name as you like, we take **ESXGroup** as an example.

Press the **Add** button and then select the user which we just created.

Press the **OK** button to continue.

# **Create Target**

Launch the **iStorage Server management consolle**, press the **Create** button on the toolbar, the **Create Device Wizard** is shown.

Select device type

Create iSCSI Target Wizard	×
<b>iSCSI Device Type</b> Select which device type of the iSCSI target you want to create.	<u></u>
Iterate is the second secon	
CD/ DVD Device Create iSCSI target by using physical optical drive or CD / DVD image file.	
Generic SCSI Create iSCSI target by using generic SCSI device, such as disk, CD-ROM, tape, printer.	
	`ancel

Choose Hard Disk.

Press the **Next** button to continue.

Select a medium type.

Create iSCSI Target Wizard	×
<b>iSCSI Medium Type</b> Select medium of the iSCSI disk you want to create.	<u></u>
<ul> <li>Image File Create iSCSI disk by using standard image file or Virtual Hard Disk (.VHD).</li> <li>RAM Space Create iSCSI disk by using memory space.</li> </ul>	
<ul> <li>Security Images         Create iSCSI disk images for each initiators, any image is individual for each initiator.     </li> <li>Disk Partition         Create iSCSI target by using a disk partition     </li> </ul>	
Physical Disk Create iSCSI target by using physical disk.	
< Back Next > C	ancel

Choose Image File in iSCSI Medium Type window.

Then press **Next** button to continue.

Select an Image type.



Choose Standard Image File.

Press the **Next** button to continue.

Specify image file path and size.

Create iSCSI Target Wizard	×
Image Disk Configuration You can specify a image file as an iSCSI device.	2
O Use existing image file   Create a new image file	
F:\ESXData.img Browse	
Device Size in MBs: 4096	
Options Use sparse file on NTFS file system Note: Using sparse file can save your harddisk space, the size of disk image file only depend on its content used. But we recommentd that using this feature when image file size is less than 1T bytes	
< Back Next > Ca	ancel

Choose **Create a new image file** to create a new image file or choose **Use existing image file** if you have one.

Specify image file full name path.

Specify the device size.

If you check **Use sparse file on NTFS file system**, the size of disk image file only depends on its content used, it can save your hard disk space.

Press the **Next** button to continue.

Set authorization mode.

Create iSCSI Target Wizard	×
Authorization You can select an authorization mode, Anonymouns, CHAP or IP filter.	
Anonymous Select this option to disable any authorization.	
CHAP Select this option to use CHAP authorization.	
<ul> <li>IP Filter</li> <li>Select this option to use IP address authorization.</li> </ul>	
Mixed Select this option to use both CHAP and IP address authorization.	
Inherit security roles from global settings.	
< Back Next > Car	ncel

Choose **CHAP** Authorization.

Press the **Next** button to continue.

Finish creating iSCSI Target.

Create iSCSI Target Wizard	×
Completing the Create iSCSI Wizard You can specify a target name and other options to complete iSCSI target creating.	
Basic Target Information Enter Target Name: iqn.2006-03.com.kemsafe.KemSafe.ESXTarget Report as readonly device when initiator can not get write access Enable multiple initiators with full access connected (sharing and clustering)	
Note By default, only one client has full access right, when the second initiaor log on with full access, it will fail. But this option is usfull for clustering, disk sharing and NAS.	
< Back Finish C	ancel

Type a target name in the Target Name field, or use the default.

Press the Finish button to continue.

### **Configure VMware ESX Server**

## **Install VMware Infrastructure Client 4.0**

Run VMware Infrastructure Client installation, the following interface is shown.



Press the **Next** button to continue.

Install VMware Infrastructure Client.

🛃 VMware	vSphere Client 4.0
Installing The prog	VMware vSphere Client 4.0 pram features you selected are being installed.
17	Please wait while the installation wizard installs VMware vSphere Client 4.0. This may take several minutes.
	Status:
	Copying new files
InstallShield –	Cancel

After coping files is completed, press the **Finish** button to complete VMware Infrastructure Client installation.

## Log on to ESX Server

Run VMware Infrastructure Client, VMware Infrastructure Client Log on dialog is shown.

🚱 VMware vSphere Client	
vmware VMware vSphere <sup>∞</sup> Client	
To directly manage a sing To manage multiple hosts, vCenter Server.	e host, enter the IP address or host name. , enter the IP address or name of a
IP address / Name:	192.168.0.109
User name:	root
Password:	*****
	Use Windows session credentials
	Login Close Help

Type IP address / Name with which running ESX Server.

Type user name and password.

Press the Login button to continue.

# **Configure ESX Server's networking**

Open VMware Infrastructure Client.

💋 192.168.0.109 - vSp	here Client							x
File Edit View Inve	entory Administration Plug-in	s Help						
🖸 🔂 🔥 Но	me 🕨 🚮 Inventory 🕨 🗊 Ir	ventory						
+ 192.168.0.109	localhost VMware ESX, 4.0.0	208167   Ev	aluation (59 d	lays remaining)				
	Getting Started Summary	Virtual Machin	es Resource/	Allocation Perfor	mance Configuration	Jsers & Groups Events	Permissio	ns 🛛 🕨
	Hardware					Reset S	Sensors Re	fresh 💼
	<ul> <li>Health Status</li> </ul>		Sensor		Status		Reading	
	Processors		± 🗐		🥏 N	ormal		
	Memory							
	Storage							
	Networking Storage Adaptore							
	Network Adapters							
	Advanced Settings							=
	Software							
	Licensed Features							
	Time Configuration							
	Virtual Machine Startun/Shi	itdown						
	Virtual Machine Swapfile Lo	ation						
	Security Profile							
	System Resource Allocation		•		III			+ -
I							_	•
Recent Tasks						,		×
Name	Target S	tatus	Details	Initiated by	Requested Start Ti	Start Time	Complete	d Time
			П	1				•
🖉 Tasks						Evaluation Mode: 59 day	/s remaining	root //

Click **Networking** link in the **Hardware** group, the built-in Virtual Switch is shown.



For using iSCSI, we need create a new Network, click **Add Networking** link, an **Add Network Wizard** is shown.

🕢 Add Network Wizard	
Connection Type Networking hardware can	be partitioned to accommodate each service that requires connectivity.
Connection Type Network Access Connection Settings Summary	Connection Types          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 services: VMware VMotion, iSCSI, and NFS.         Service Console         Add support for host management traffic.
Help	< Back Next > Cancel

On the first page of this wizard, select **VmKernel** which allows your virtual machines can use the iSCSI.

Press the **Next** button to continue.

Select which virtual switch will handle the network traffic.

😰 Add Network Wizard				_ <b>D</b> _ X
VMkernel - Network Acce The VMkernel reaches ne	<b>ss</b> etworks through uplink adapters attac	ched to virtual s	switches.	
Connection Type Network Access	Select which virtual switch will han using the unclaimed network adap	dle the network ters listed belov	t traffic for this connection. You may also create a new v.	virtual switch
<ul> <li>Connection Settings</li> <li>Summary</li> </ul>	Create a virtual switch	Speed	Networks	
	Use vSwitch0     Vmnic0	Speed	Networks	
		10001 di		
	Preview:			
	-VMkernel Port VMkernel -Virtual Machine Port Group -VM Network -Service Console Port Service Console vswif0 : 192.168.0.109		hysical Adapters wmnic0	
Help			< Back Next >	Cancel

Select User vSwitch0 option.

Press the **Nex**t button to continue.

Type the identification of the network adapters.

Add Network Wizard			
VMkernel - Connection Se Use network labels to ide	<b>:ttings</b> :ntify VMkernel connections while ma	naging your hosts and datacenters.	
Connection Type Network Access Connection Settings IP Settings Summary	Port Group Properties Network Label: VLAN ID (Optional):	VMkernel Use this port group for VMotion Use this port group for Fault Tolerance logging	
	Preview: VMkernel Port	Physical Adapters vmnic0 Q	
Help		< Back Next >	Cancel

Give the name of the new network.

Press the **Next** button to continue.

**IP Settings** 

🕢 Add Network Wizard				_ <b>_</b> X
VMkernel - IP Connection Specify VMkernel IP set	<b>n Settings</b> tings			
Connection Type Network Access Connection Settings IP Settings Summary	Obtain IP settings automatically Use the following IP settings: IP Address: Subnet Mask: VMkernel Default Gateway:  Preview: VMkernel 192.168.0.102 Virtual Machine Port Group	192 . 168 . 0 . 102         255 . 255 . 255 . 1               Physical Adapters	Edit	
Help	VM Network	< Back	Next >	Cancel

Input IP Address and Subnet mask, we take 192.168.0.102 and 255.255.255.0 as an example.

Press the **Next** button to continue.

Complete add networking

😰 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 vSwitches: Preview:  VMkernel Port VMkernel  192.168.0.102 Virtual Machine Port Group VM Network
	Service Console Port Service Console vswif0 : 192.168.0.109
Help	< Back Finish Cancel

Check if the parameters are correct and press the **Back** button if any changes are required.

Press the **Finish** button to complete creating add networking.

### **Configure iSCSI Storage**

Click Storage Adapters link in the Hardware group.

Click Properties link.

The iSCSI Initiator (vmmhba34) Properties Dialog is shown.

Now we need to disable **Delayed Ack**. Having Delayed Ack enabled can sometimes result in slow read performance that can interfere with High Availability between servers and SAN itself.

To read more about it, please visit:

http://kb.vmware.com/selfservice/microsites/search.do?language=en\_US&cmd=displayKC&externalId= 1002598

😰 iSCSI Initiator (vmhba34) Properties	
General Dynamic Discovery Static Discovery	
iSCSI Properties	
Name: iqn.1998-01.com.vmware:localhost-5e10cd34	
Target discovery methods: Send Targets, Static Target	
Software Initiator Properties	
Status: Enabled	
CHAP Advanced Co	onfigure
Close	Help

To disable delayed ACK, please click on Advanced... button.

Then please scroll down and uncheck **Delayed Ack**.

2	Advanced Settings				×
	Min: 10	Max: 30			*
	NoopInterval				60
	iSCSI option : No-Op Interv	al			
	Min: 1	Max: 60			
	InitR2T			Γ	
	iSCSI option : Init R2T				
	ImmediateData			$\overline{\checkmark}$	
	iSCSI option : Immediate D	ata			
	DelayedAck				
	iSCSI option : Delayed Ack				
			ОК	Cancel	Help

Press **OK** button to continue.

General       Dynamic Discovery       Static Discovery         iSCSI Properties       iqn. 1998-01.com.vmware:localhost-5e 10cd34         Alias:       Target discovery methods:       Send Targets, Static Target         Software Initiator Properties       Status:       Enabled         CHAP       Advanced       Configure	😰 iSCSI Initiator (vmhba34) Prope	erties	_ <b>–</b> ×			
Name:       iqn. 1998-01.com.vmware:localhost-5e10cd34         Alias:       Target discovery methods:         Send Targets, Static Target         Software Initiator Properties         Status:       Enabled         CHAP       Advanced	General Dynamic Discovery Static Discovery					
Target discovery methods:       Send Targets, Static Target         Software Initiator Properties       Status:         Enabled       CHAP         Advanced       Configure	Name: Alias:	iqn.1998-01.com.vmware:localhost-5e10c	:d34			
Software Initiator Properties         Status:       Enabled         CHAP       Advanced         Configure	Target discovery methods:	Send Targets, Static Target				
Status:     Enabled       CHAP     Advanced   Configure	Software Initiator Properties					
CHAP Advanced Configure	Status:	Enabled				
	CHAP Advanced	]	Configure			
Close Help		Close	e Help			

In the General page, press the Configure... button.

The **General Properties** dialog is shown.

Select **Enabled** check box in the **Status** group.

Press the **OK** button to continue.

🕢 General Properti	es	x
iSCSI Properties iSCSI Name: iSCSI Alias:	qn. 1998-01.com.vmware:localhost-5e10c	d34
Status		
	OK Cancel He	lp

Add iSCSI Target discovery.

💋 iSCSI Initiator (vmhba34) Properties	
General Dynamic Discovery Static Discovery	
Send Targets	
Discover iSCSI targets dynamically from the following IP addresses:	
iSCSI Server Address	
Add Remove	Settings,.,
Clos	e Help

In **Dynamic Discovery** page, press the **Add** button, the **Add Send Targets Server** dialog is shown.

💋 Add Send Target S	erver X
iSCSI Server:	192.168.0.195
Port:	3260
Inheritance:	
Authentication be established	on may need to be configured before a session can ed with any discovered targets.
	CHAP Advanced,,,
	OK Cancel Help

Input iSCSI Server address and port with which is running the iStorage Server.

Press the **OK** button to proceed.

Specify CHAP authentication information.

😰 iSCSI Initiator (vmhba34) Prope	erties	_ <b>_</b> ×
General Dynamic Discovery Stat	tic Discovery	
Name: Alias:	iqn.1998-01.com.vmware:localhost-5e10	cd34
Target discovery methods:	Send Targets, Static Target	
Software Initiator Properties	Epshled	
CHAP Advanced		Configure
	Close	e Help

If you choose CHAP user authorization mode in target of iStorage Server, this step cannot be skipped. Press the **CHAP** button, the **CHAP Credentials** dialog is shown.

🕖 CHAP Credent	tials
All iSCSI targets otherwise specifi The CHAP ( CHAP (target a	are authenticated using these credentials unless ied in the target's CHAP settings. secret and Mutual CHAP secret must be different. authenticates host)
Select option:	Use CHAP
	Use initiator name
Name:	ESXUser
Secret:	*********
	nost authenticates target)
Select option:	Do not use CHAP
	Use initiator name
Name:	
Secret:	
	OK Cancel Help

Type CHAP user name and secret in the CHAP (target authenticates host) group.

As described previously in this article, we have created a user named ESXUser so we will specify it in this dialog. Or if you do not choose CHAP authentication, you should select Do not use CHAP.

Press the **OK** button in this dialog.

Press the **Close** button in the **iSCSI Initiator (vmmhba34) Properties** dialog to finish iSCSI Target configuration.

A prompt dialog is shown.



Press the Yes button to continue.

Please wait for a while, you will find an iSCSI device appears in the following interface:



Now, the iSCSI configuration is completed.

# **Configure Storage device**

Click **Storage** link in the **Hardware** group.

🕢 Add Storage	
Select Storage Type Specify if you want to form	at a new volume or use a shared folder over the network?
Disk/LUN Select Disk/LUN Current Disk Layout Properties Formatting Ready to Complete	Storage Type  Disk/LUN Create a datastore on a Fibre Channel, iSCSI, or local SCSI disk, or mount an existing VMFS volume.  Network File System Mount a shared folder over a network connection as a datastore.  Adding a datastore on Fibre Channel or iSCSI will add this datastore to all hosts that have access to the storage media.
Help	< Back Next > Cancel

Click Add Storage link, the Add Storage Wizard is shown.

Select Disk/LUN

💋 Add Storage						x	
Select Disk/LUN Select a LUN to create a datastore or expand the current one							
Select Disk/LUN	Name, Identifier, Path ID, LUN, Capacit	y, Expandable or VM	FS Label c <del>-</del>			Clear	
Current Disk Layout	Name	Path ID	LUN	Capacity V	'MFS Label		
Properties	KernSafe iSCSI Disk (eui.000000000	iqn.2006-03.com	0	4.00 GB			
Help		<	Back	Next >	Cance		

Select KernSafe iSCSI Disk device with the Identifier of iqn.2006-03.com.kernsafe....

Press the **Next** button to continue.

Partition and format the entire device.

🕢 Add Storage						
Current Disk Layout You can partition and format the entire device, all free space, or a single block of free space.						
Disk/LUN Select Disk/LUN Current Disk Layout Properties Formatting Ready to Complete	Review the current disk layout:         Capacity Available LUN         KernSafe iSCSI Disk (eui.000000000000000000000000000000000000					
	There is only one layout configuration available. Use the Next button to proceed with the other wizard pages. A partition will be created and used					
Help	< Back Next > Cancel					

Just use the default.

Press the **Next** button to continue.

Type the data store name.

🕢 Add Storage		
Properties Specify the properties for th	e datatore	
Disk/LUN     Select Disk/LUN     Current Disk Layout     Properties     Formatting     Ready to Complete	Enter a datastore name	
Help		: Back Next > Cancel

Type iStorage Server in the Enter a datastore name.

Press the **Next** button to continue.

Format entire device

😰 Add Storage		
Disk/LUN - Formatting Specify the maximum file siz	e and capacity of the datastore	
<u>Disk/LUN</u> <u>Select Disk/LUN</u> <u>Current Disk Layout</u> <u>Properties</u> <b>Formatting</b>	Maximum file size Large files require large block size. The minimu block size.	m disk space used by any file is equal to the file system
Ready to Complete	256 GB , Block size: 1 MB	•
	Capacity Maximize capacity	4.00 <u></u> GB
Help		< Back Next > Cancel

Leave the default recommend settings.

Press the **Next** button to continue.

Complete data store creating

🕖 Add Storage				
Ready to Complete Review the disk layout an	d click Finish to add storage			
<u>Disk/LUN</u>	Disk layout:			
Ready to Complete	Device KernSafe iSCSI Disk (eui.00000000000000 Location /vmfs/devices/disks/eui.00000000000000000	Capacity 4.00 GB	Available 4.00 GB	LUN O
	Primary Partitions VMFS (KernSafe iSCSI Disk (eui.0000000000	Capacity 4.00 GB		
	File system: Properties			
	Datastore name: iStorage Server			
	Formatting File system: VMFS-3 Block size: 1 MB Maximum file size: 256 GB			
<u> </u>			1	
Help		< Back	Finish	Cancel

OK, now, the storage is going to be created, press the **Finish** button to finish the wizard.

Press the **Yes** button in the following prompt dialog, so that the ESX Server formats the storage.

After this, you can see the storage device in the following interface.

💋 192.168.0.109 - vSphere Client				_ <b>D</b>		
File Edit View Inventory Administration Plug-ins Help						
🕞 💽 🏡 Home 🕨 🚮 Inventory 🕨 🕅 Inventory						
	aluation (59 days remaining)					
Getting Started Summary Virtual Machin	es Resource Allocation Perfo	rmance Configuration	Users & Groups Events Permissi	ions		
Hardware	View: Datastores Devices					
Health Status	Datastores		Refresh Delete	Add Storage		
Processors	Identification De	vice Capa	city Free Type Last	Update		
Memory	👔 Storage1 Lo	cal ATA Disk (t 147.75	GB 139.78 GB vmfs3 5/25	/2010 7:24:40 PM		
► Storage	iStorage Server Ke	rnSafe iSCSI Di 3.75	GB 3.46 GB vmfs3 5/25	/2010 7:24:41 PM		
Networking						
Storage Adapters						
Advanced Settings						
Advanced Seconds	•			•		
Software	Datastore Details			Properties		
Licensed Features						
Time Configuration						
DNS and Routing						
Virtual Machine Startup/Shutdown						
Virtual Machine Swapfile Location						
Security Profile						
Advanced Settings						
Advanced Seconds	,					
Recent Tasks				×		
Name Target Status	Details Initiated by	Requested Start Ti 🗸 🛛 S	Start Time Completed	l Time		
🚰 Refresh host storage s 📋 192.168.0.109 🥝 Completed	root	5/25/2010 7:23:19 PM 5	5/25/2010 7:23:19 PM 5/25/2010	7:24:41 PM		
Create VMFS datastore 📋 192.168.0.109 📀 Completed	root	5/25/2010 7:23:06 PM 5	5/25/2010 7:23:06 PM 5/25/2010	7:24:28 PM		
Tasks			Evaluation Mode: 59 day	ys remaining root //		

Now, we have the storage to store virtual machines, so next we will install virtual machine on it.

# Manage and Install virtual machine

🚱 192.168.0.109 - vSphere Client						x
File Edit View Inventory Administration Plu	g-ins Help					
🔄 🔄 🏠 Home 🕨 🖓 Inventory 🕨 🕅	Inventory					
		<b>A</b>				
	19 🖻 🌬	<b>V</b>				
192.168.0.109 localhost VMware ESX	, 4.0.0, 208167   Ev	aluation (59 days remainii	ıg)			
Getting Started Summ	ary Virtual Machine	es Resource Allocation Pe	rformance Configuratio	n Users & Groups Even	ts Permissions	
			Name, State	or Guest OS contains: -	C	lear
Name	State	Provisione	d Space Lised Space	Host CPU - MHz Host	Mem - MB Guest Mem	- %
Ivane	State	Provisione	appace osea space	Hoat CPO - Hinz Hoat	Hem Hb Gueschen	1 - 70
•		III				- F
Recent Tasks						×
Name Target	Status	Details Initiated by	Requested Start Ti 🗸	Start Time	Completed Time	
🖉 Unregister virtual mach 🗿 Unknown	Completed	root	5/25/2010 7:26:09 PM	5/25/2010 7:26:09 PM	5/25/2010 7:26:09 PM	
🛛 🛐 Unregister virtual mach 🚡 Unknown 1	Completed	root	5/25/2010 7:26:09 PM	5/25/2010 7:26:09 PM	5/25/2010 7:26:09 PM	=
🛛 🌮 Refresh host storage s 📋 192.168.0.109	Completed	root	5/25/2010 7:23:19 PM	5/25/2010 7:23:19 PM	5/25/2010 7:24:41 PM	
Create VMFS datastore 📋 192.168.0.109	Completed	root	5/25/2010 7:23:06 PM	5/25/2010 7:23:06 PM	5/25/2010 7:24:28 PM	-
Tasks				Evaluation Mod	le: 59 days remaining re	oot //

In the **Virtual Machine** tab page of VMware Infrastructure Client, right click on the black page, and then select **New Virtual Machine...**, the **New Virtual Machine Wizard** is shown.

Select the appropriate configuration.

🕜 Create New Virtual Machine	
Configuration Select the configuration fo	Virtual Machine Version: 7
Configuration Name and Location Datastore Guest Operating System Create a Disk Ready to Complete	Configuration  Typical Create a new virtual machine with the most common devices and configuration options.  Custom Create a virtual machine with additional devices or specific configuration options.
Help	< Back Next > Cancel

Select Typical option.

Press the **Next** button to continue.

Type the virtual machine name.

😰 Create New Virtual Machin	e 📃 🗖 🗮 🏹
Name and Location Specify a name and locati	Virtual Machine Version: 7
Configuration Name and Location Datastore Guest Operating System Create a Disk Ready to Complete	Name: windows xp Virtual machine (VM) names may contain up to 80 characters and they must be unique within each vCenter Server VM folder. VM folders are not viewable when connected directly to a host. To view VM folders and specify a location for this VM, connect to the vCenter Server.
Help	< Back Next > Cancel

Type in the virtual machine name, we take **windows xp** as an example.

Press the **Next** button to continue.

Choose a data store for storing files of the virtual machine.

🖉 Create New Virtual Machine							_ 🗆 🗙
Datastore       Virtual Machine Version: 7         Select a datastore in which to store the virtual machine files							
Configuration Name and Location	Select a datastore in	which to store t	the virtual mach	ine files:			
Datastore	Name	Capacity	Provisioned	Free	Туре	Thin Provisioning	Access
Guest Operating System	[Storage1]	147.75 GB	7.97 GB	139.78 GB	VMFS	Supported	Single host
Create a Disk	[iStorage Serve	3.75 GB	301.00 MB	3.46 GB	VMFS	Supported	Single host
	Compatibility: Validation not applica	able this time.		III			•
Help					< Bad	Next >	Cancel

Specify a data store to store the virtual machine, select **iStorage Server**.

Press the **Next** button to continue.

Choose the guest operation system.

🔗 Create New Virtual Machine		
Guest Operating System Specify the guest operatin	g system to use with this virtual machine	
Configuration Name and Location Datastore Guest Operating System Create a Disk Ready to Complete	Guest Operating System:	
Help	< Back Next > Cancel	

Select operation system, we select Microsoft Windows XP Professional (64-bit) as an example.

Press the **Next** button to continue.

Specify the size of virtual disk that will be used by the guest machine.

💋 Create New Virtual Machine			
Create a Disk Specify the virtual disk size	and provisioning policy		Virtual Machine Version: 7
Configuration Name and Location Datastore Guest Operating System Create a Disk Ready to Complete	Datastore: Available space (GB): Virtual disk size: Allocate and commit spa The virtual disk file start Support clustering featu Selecting this option will	iStorage Server         3.5         ▶         GB         sce on demand (Thin Provisioning)         s small and grows as more virtual disk space is         arces such as Fault Tolerance         increase the time it takes to create the virtual	used. machine.
Нер		< Back	Next > Cancel

Press the **Next** button to continue.

Check if the parameters are correct and press the **Back** button if any changes are required.

😰 Create New Virtual Machine	
Ready to Complete Click Finish to start a task t	Virtual Machine Version: 7
Configuration	Settings for the new virtual machine:
Datastore Guest Operating System Create a Disk Ready to Complete	Name: windows xp Host/Cluster: localhost Datastore: iStorage Server Guest OS: Microsoft Windows XP Professional (32-bit) Virtual Disk Size: 3 GB
	Edit the virtual machine settings before completion
	Creation of the virtual machine (VM) does not include automatic installation of the guest operating system. Install a guest OS on the VM after creating the VM.
Help	< Back Finish Cancel

Right click on the **Windows XP**, select **Edit Settings...** on the pop-up menu, the **Virtual Machine Properties** widow is shown. In this window, we click **CD/DVD Drive1 (edited)** link in the **Hardware** group and then select **Host Device** we will install OS form client computer.

🔗 windows xp - Virtual Machine Properties		
Hardware Options Resources		Virtual Machine Version: 7
Show All Devices	Add Remove	Device Status Connected
Hardware	Summary	Connect at power on
<ul> <li>Memory</li> <li>CPUs</li> <li>Video card</li> <li>VMCI device</li> <li>Floppy drive 1</li> <li>Hard disk 1</li> <li>CD/DVD Drive 1 (edited)</li> <li>Network adapter 1</li> </ul>	256 MB 1 Video card Restricted Client Device Virtual Disk /dev/scd0 VM Network	Device Type         Client Device         Note: To connect this device, you must power on the virtual machine and then click the Connect CD/DVD button in the toolbar.         Host Device         /dev/scd0         Jatastore ISO File         Browse         Mode         Passthrough IDE (recommended)         Emulate IDE         Virtual Device Node         IDE (1:0) CD/DVD Drive 1
<	•	
Help		OK Cancel

#### Choose the **Connect at power on** checkbox.

Press the **OK** button to continue.

Press the **Finish** button to complete creating of virtual machine.

Insert windows XP installation CD, and then power on the virtual machine just created, you will see the windows XP installation interface:



Formats the partition C:



Copy files

🤣 Windows XP on localhost	
File View VM  File View VM  K  K  K  K  K  K  K  K  K  K  K  K  K	
Windows XP Professional Setup	
Please wait while Setup copies files to the Windows installation folders. This might take several minutes to complete.	
Setup is copying files 2%	
Copying: mp	or.dll

Continue windows install



Likewise, you may install Windows Server 2003, Vista, Windows Server 2008 and Windows 7 or even any version of Linux as you wish.

## Contact

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