# iStorage Server: High-Availability iSCSI SAN for Citrix Xen Server

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KernSafe Technologies, Inc.

www.kernsafe.com

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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.

Citrix Xen Server<sup>™</sup> is the only enterprise-class, cloud-proven virtualization platform that delivers the critical features of live migration and centralized multi-server management at no cost. Xen Server is an open and powerful server virtualization solution that radically reduces datacenter costs by transforming static and complex datacenter environments into more dynamic, easy to manage IT service delivery centers.

High availability is the implementation of technology so that if a component fails, another can take over for it. By using highly available platforms, the downtime for a system can be reduced, and, in many cases, it can be reduced to a short enough time that the users of the system do not see the failure.

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 Citrix XenServer.

We need two targets which has the same name and the same size on two servers, in this document, we used servernode1 192.168.0.101 and servernode2 192.168.0.102.

#### **Install Xen Server**

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

### **Configuring on Server1**

Open iStorage Server Management Console.

3 iStorage Server Management Console			_ <b>D</b> X
File Server Storage Clients Vie	ew Tools Help		
Create Delete Start Stop	Refresh Add Remove Vi	ew Access Settings Print About	
Servers Tree X	iStorage Server: 192.16	8.0.101	
ServerNode1 (192.168.0.101:32	General Targets Applications IF	Filters Users Groups Logs	
Applications Applications Busers Browns	Storage General Pro	operties	Properties
Logs 	General		
Applications	Hostname:	192.168.0.101	
Users	Bind Address:	All Address	=
	Port:	3260	
	Management Method:	Password	
	State:	ок	
	Status		
	Status:	Started	
	License:	Ultimate License	
	Server Portal		-
< <u> </u>	•	III	(Ultimate Licence)
		( Connected, 192,168,0,101	onimate Literise) .::

#### **Create Target**

Launch the **iStorage Server Management Console**, press the **Create** button on the toolbar of iStorage Server management console, the **Create Device Wizard** is shown.

Select a device type



Choose Hard Disk.

Press the **Next** button to continue.

Select a medium type.

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

Choose Image File in iSCSI Medium Type window.

Then press **Next** button to continue.

Select an Image type.

Create iSCSI Target Wizard	×
<b>iSCSI Image Type</b> Select image type of the iSCSI disk you want to create.	2
<ul> <li>Standard Image File Create iSCSI disk by using a standard disk image file.</li> <li>Virtual Hard Disk (VHD) Create iSCSI disk by using a Virtual Hard Disk image file.</li> </ul>	
< <u>B</u> ack <u>N</u> ext >	Cancel

Choose Standard Image File.

Press the **Next** button to continue.

Specify image file path and size.

Create iSCSI Target Wizard	×
Virtual Image Disk Configuration Specify a image file full path and parameters.	2
Image file parameters	
Create a new image file     O Use existing image file	
Full path and name of the image file:	
C:\XenData.img	Browse
Device Size in MBs: 102400	
Fill with zeros	
File system options	
Sparse file (Recommended for image files smaller then 1TB)	
Compressed (Enable file system compress feature)	
Encrypted (Enable NTFS encryption feature)	
< Back Next >	Cancel

Specify the image file.

Specify the device size.

If you check **Use sparse file on NTFS file system**, the size of disk image file only depend 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, Anonymous, CHAP or IP filter.	
<ul> <li>Anonymous Select this option to disable any authorization.</li> <li>CHAP</li> </ul>	
Select this option to use CHAP authorization. IP Filter Select this option to use IP address authorization.	
<ul> <li>Mixed Select this option to use both CHAP and IP address authorization.</li> <li>Inherit security roles from global settings.</li> </ul>	
< Back Next > Car	ncel

Choose Anonymous 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	
Target Name:	
iqn.2006-03.com.kemsafe:ServerNode1.XenTarget1	
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.	
< <u>B</u> ack Finish Cancel	

Type a target name in the Target Name field, we use **KernSafe. XenTarget1** as an example.

Check the **Enable multiple initiators with full access connected (sharing and clustering)** check box.

Press the **Finish** button to complete create target.

### **Configuring on Server2**

Open iStorage Server Management Console.

iStorage Server Management Console			
File Server Storage Clients View To	ools Help		
Create Delete Start Stop Ref	resh Add Remove View	Access Settings Print About	
Servers Tree ×	iStorage Server: 192.1	68.0.102	
Ernsare Servers En@ ServerNode1 (192.168.0.101:3261)	General Targets Applications	IPEilters Users Groups Logs	
ia Targets IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Storage General Pr	roperties	Pr
Groups Logs ServerNode2 (192.168.0.102:3261)	General		
Applications	Hostname:	192.168.0.102	
	Bind Address:	All Address	Ξ
Groups	Port:	3260	
Eogs	Management Method:	Password	
	State:	ОК	
	Status		
	Status:	Started	
	License:	Ultimate License	
	Server Portal		<b>.</b>
	•	III	•
		Connected: 192.168.0.102 (Ultim	ate License)

# **Create Target**

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

Select a device type

Create iSCSI Target Wizard
iSCSI Device Type Select which device type of the iSCSI target you want to create.
Hard Disk Create iSCSI target by using physical disk, partition, standard image file or VHD.
Optical 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.
Advanced Device Create advanced iSCSI target such as CDP device and snapshot linked device.
< <u>Back</u> Next > Cancel

Choose Hard Disk.

Press the **Next** button to continue.

Select a medium type.

Create iSCSI Target Wizard	X
<b>iSCSI Medium Type</b> Select medium of the iSCSI disk you want to create.	
<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</li> <li>Create iSCSI disk images for each initiators, any image is individual for each initiator.</li> <li>Dials Restriction</li> </ul>	
Create iSCSI target by using a disk partition.	
Physical Disk Create iSCSI target by using physical disk.	
< Back Next > Ca	incel

Choose Image File in iSCSI Medium Type window.

Then press **Next** button to continue.

Select an Image type.

Create iSCSI Target Wizard	×
<b>iSCSI Image Type</b> Select image type of the iSCSI disk you want to create.	<u></u>
Standard Image File Create iSCSI disk by using a standard disk image file.	
Virtual Hard Disk (VHD) Create iSCSI disk by using a Virtual Hard Disk image file.	
< Back Next >	Cancel

Choose Standard Image File.

Press the **Next** button to continue.

Specify image file path and size.

Create iSCSI Target Wizard
Virtual Image Disk Configuration Specify a image file full path and parameters.
Image file parameters
<u>C</u> reate a new image file     O Use existing image file
Full path and name of the image file:
C:\XenData.img Browse
Device Size in MBs: 102400
Fill with zeros
File system options
Sparse file (Recommended for image files smaller then 1TB)
Compressed (Enable file system compress feature)
Encrypted (Enable NTFS encryption feature)
< <u>B</u> ack <u>N</u> ext > Cancel

Specify the image file.

Specify the device size.

If you check **Use sparse file on NTFS file system**, the size of disk image file only depend 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, Anonymous, CHAP or IP filter.	
<ul> <li>Anonymous Select this option to disable any authorization.</li> <li>CHAP</li> </ul>	
Select this option to use CHAP authorization. IP Filter Select this option to use IP address authorization.	
<ul> <li>Mixed Select this option to use both CHAP and IP address authorization.</li> <li>Inherit security roles from global settings.</li> </ul>	
< Back Next > Car	ncel

#### Choose **Anonymous** Authorization.

Press the **Next** button to continue.

Finish creating iSCSI Target

Create iSCSI Target Wizard	x
Completing the Create iSCSI Wizard You can specify a target name and other options to complete iSCSI target creating.	
Basic Target Information	
Target Name:	
iqn.2006-03.com.kemsafe:ServerNode2.XenTarget2	
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.	
< <u>B</u> ack Finish Can	cel

Type a target name in the Target Name field, the target name must be the same as the target on server1.

Check the Enable multiple initiators with full access connected (sharing and clustering) check box.

Press the **Finish** button to complete create target.

### **Creating Application on server1**

On Server1, right click **Applications** on the left tree of the main interface, choose **Create Application** on the pop-up menu, the **Create Application Wizard** widow will be shown.

Create Application Wizard	×
Application Type Select which type application that you want to create.	
<ul> <li>Synchronous Replication Create real-time remote synchronous replication to iSCSI target or image file.</li> <li>Asynchronous Replication Create real-time remote asynchronous replication to iSCSI target or image file.</li> <li>High Availability Node Create a high-availability iSCSI SAN node or synchronizing with other iSCSI targets.</li> <li>Automatic Snapshots Create automatical snapshots and replications to other iSCSI targets.</li> </ul>	
< <u>Back</u> <u>N</u> ext > Cancel	

Choose Failover iSCSI SAN Node.

Then press **Next** to continue.

reate Application Wizard		×
Failover Configuration You can specify two servers to fail over each other.		2
Base Target		
Target Name	Device Type	
iqn.2006-03.com.kemsafe:ServerNode1.XenTarget1	Disk	
Partner Target		Setting
< <u>B</u> ack	<u>N</u> ext >	Cancel

Check the KernSafe.XenTarget1 storage and click Edit to find the mirror target.

Select iSCSI Tar	rget 🛛 🔍
- iSCSI Source	;е —
Host Name:	192.168.0.102 Port: 3260
CHAP	
	Use CHAP to logon
User Name:	
Secret:	
- Target	
Target:	iqn.2006-03.com.kemsafe:ServerNode2.XenTarget2
	Discovery OK Cancel

Input the IP and port of server2 in **iSCSI Source** tab, and then click **Discovery** on the bottom of the window to find the mirror target, choose the **KernSafe.XenTarget2** in the down-list.

Press **OK** button to continue.

**Note**: If the target needs CHAP authorization, you should provide User name and secret to logon.

Failover Configuration You can specify two servers to fail over each other.	
ase Target	
Target Name	Device Type
iqn.2006-03.com.kemsafe:ServerNode1.XenTarget1	Disk
artner Target iqn.2006-03.com.kemsafe:ServerNode2.Xen Target2	Setting
	Next > Cana

The mirror target will be added to the window, then click **Next** button to continue.

Create Application Wi	zard			×
<b>Synchronizatio</b> You can specif	n Settings y parameters for synchroniza	ation.		3
Sync Interface				
Local Address:	192.168.1.101	•	Local Port:	Any 👻
Remote Address:	192.168.1.102	•	Remote Port:	3260
Heartbeat Interface				
Local Address:	192.168.0.101	•	Local Port:	Any 👻
Remote Address:	192.168.0.102	•	Remote Port:	3260
Specify a folder to	o save temporary data dump	(folder must exist):		
C:\Temp\				Browse
		< <u>B</u> ack	<u>N</u> ext >	Cancel

Specify local interface, port for Sybc interface and Heartbeat interface, if you have two NIC for each server ,you can sepcify different address-pair for Sync interface and Heartbeat interface, if you have only one NIC for synchronous, you can use same address for Sync and Heartbeat.

Specify the portal and port.

Press Next to continue

М	lirror Synchronization
	Synchronization Type
	Create mirror device with full synchronization from base iSCSI target
	Create mirror device without synchronization (Manual Initialization)
	Synchronization Progress
	Warning: all data on the mirror device will be destroyed after synchronization.
	OK Cancel

Now, the mirror target should be synchronized to the base target, if the two targets are both the new one and do not be initialized, we can choose **Create mirror device without synchronization (Manual Initialization)**, otherwise, we must choose **Create mirror device with full synchronization from base iSCSI target**.

Press **OK** button to continue.

Create Application Wizard	
	Completing the Create Applicatio Wizard
	Application name: SAN Cluster Cluster type: iSCSI Local node: iqn.2006-03.com.kemsafe:ServerNode1.XenTarget Local portal: Any:Auto Remote node: iqn.2006-03.com.kemsafe:ServerNode2.XenTarg Remote portal: 192.168.0.102:3260 Work path: C:\Temp\
	To close this wizard, click Finish.

Click **Finish** button to complete the application creation.

### **Creating Application on server2**

On Server2, right click **Applications** on the left tree of the main interface, choose **Create Application** on the pop-up menu, the **Create Application Wizard** widow will be shown.

Create Application Wizard	×
Application Type Select which type application that you want to create.	
<ul> <li>Synchronous Replication Create real-time remote synchronous replication to iSCSI target or image file.</li> <li>Asynchronous Replication Create real-time remote asynchronous replication to iSCSI target or image file.</li> <li>High Availability Node Create a high-availability iSCSI SAN node or synchronizing with other iSCSI targets.</li> <li>Automatic Snapshots Create automatical snapshots and replications to other iSCSI targets.</li> </ul>	
< <u>Back</u> <u>N</u> ext > Cancel	

Choose Failover iSCSI SAN Node.

Then press **Next** to continue.

Create Application Wizard		×
Failover Configuration You can specify two servers to fail over each other.		
Base Target		
Target Name	Device Type	
Iqn.2006-03.com.kemsafe:ServerNode2.XenTarget2	Disk	
Partner Target	Next >	Setting

Check the KernSafe.XenTarget2 storage and click Edit to find the mirror target.

iSCSI Sourc	e ———						
Host Name:	192.168.0.	101			Por	t	3260
CHAP							
	📃 Use CH.	AP to log	Ion				
User Name:							
Secret:							
Target —							
Target:	iqn.2006-0	3.com.ke	emsafe:S	erverN	ode1.Xer	Ta	rget 1 🔽

Input the IP and port of server1 in **iSCSI Source** tab, and then click **Discovery** on the bottom of the window to find the mirror target, choose the **KernSafe.XenTarget1** in the down-list.

Press **OK** button to continue.

**Note**: If the target needs CHAP authorization, you should provide User name and secret to logon.

Te Application Wizard Failover Configuration You can specify two servers to fail over each other.	
lase Target	
Target Name	Device Type
Iqn.2006-03.com.kemsafe:ServerNode2.XenTarget2	Disk
Partner Target	
Ign.2006-03.com.kemsare:serverNode I.Xen Target I	Setting
< <u>B</u> ack	Next > Cance

The mirror target will be added to the window, then click **Next** button to continue.

Synchronizatio You can specif	n Settings y parameters for synchronizatior	ι.		
Sync Interface				
Local Address:	192.168.1.102	▼ Loc	al Port:	Any 🗸
Remote Address:	192.168.1.101	✓ Rei	mote Port:	3260
Heartbeat Interface				
Local Address:	192.168.0.102	✓ Loc	al Port:	Any 🗸
Remote Address:	192.168.0.101	▼ Rei	mote Port:	3260
Specify a folder to	o save temporary data dump (fol	der must exist):	(	Province
C. (Tomp (				browse

Specify Sync and Heartbeat interface.

Press the Next button to continue.

Mirror Synchronization	x
Synchronization Type	
Create mirror device with full synchronization from base iSCSI target	
Oreate mirror device without synchronization (Manual Initialization)	
Synchronization Progress	
A Warning: all data on the mirror device will be destroyed after synchronization.	
OK Cancel	

Now, the mirror target should be synchronized to the base target, if the two targets are both the new one and do not be initialized, we can choose **Create mirror device without synchronization (Manual Initialization)**, otherwise, we must choose **Create mirror device with full synchronization from base iSCSI target**.

Press **OK** button to continue.

Create Application Wizard	×
	Completing the Create Applicatio Wizard
	Application name: SAN Cluster Cluster type: iSCSI Local node: iqn.2006-03.com.kemsafe:ServerNode2.XenTarget Local portal: Any:Auto Remote node: iqn.2006-03.com.kemsafe:ServerNode1.XenTarg Remote portal: 192.168.0.101:3260 Work path: C:\Temp\
	To close this wizard, click Finish.

Click **Finish** button to complete the application creation.

### **Configuring Xen Server**

### Log On to Xen Server

Open Xen Server console.

😣 Xen	Center										-	-		
<u>F</u> ile	<u>V</u> iew	<u>P</u> ool	Server	VM	Stor	rage	Templates	Too <u>l</u> s	<u>W</u> indow <u>H</u>	elp				100
G Ba	ack • (	Forv	ward 👻	- A	dd N	ew Ser	ver   🏪	New Pool	New Stor	age	New VM	Shut Down	Reboot	✓ No System Alerts 🗸
Views:	Server	. View			•	0	localhost							
Search.					2	Gene	eral Logs							
	XenCen	ter alhost				Ev	ent Log		🔽 🚫 🛙	rrors	🔽 🛕 <u>A</u> lerts	🔽 Ӧ Actio <u>n</u> s	🔽 🕦 Information	Clear
		annost												

Click Add New Server in the tool bar.

Add New Server dialog is shown.

😣 Connect to	Server	x
Enter your u	sername and password to connect to this server.	
Server:	192.168.0.189	-
User login c	redentials	
User name:	root	
Password:		
	<u>C</u> onnect Cancel	

Input IP address / Name with which running Xen Server, User name and password.

Press the **Connect** button to continue.

The XenCenter which is connected to Xen Server is shown.



### **Enable Multipathing**

Before to add storage, we must ensure that the Xen Server have enabled multipathing, we should to this by entering maintenance mode and change this property, click **Server->Enter Maintenance mode**, the following window is shown.

😣 Enter Ma	aintenance Mode -localhost.localdomain	? ×
Th ma	is operation will migrate all running VMs from this server and transition it aintenance mode.	into
Virtual m	achines on this server:	
	Enter Maintenance	Cancel

Click Enter Maintenance button, the server will enter maintenance mode.

Click **Server->properties**, click **Multipathing** on the left panel of the pop-up window, the following window is shown.



Check **Enable multipathing on this server** and press **OK** button to exit, this server have now enabled multipathing.

After enabling multipath on server you need to add a KernSafe device to multipath configuration file.

You can do it by switching to server console and starting typing fallowing commands:

# cd etc vi multipath.conf



After you will start editing (by pressing i) that document, find **## Use user friendly names, instead** of using WWIDs as names. and add default settings.

## Use user friendly names, instead of using WWIDs as names.

defaults {

user\_friendly\_names no

path\_grouping\_policy group\_by\_prio/multibus

polling\_interval\_10

}



Save the document by pressing **ESC** and :wq.

Then Exit Maintenance Mode......

Next step is to restart multipath service by typing:

#### # chkconfig multipathd reset



In the next step we need to discover and connect to our iSCSI targets.

We can discover targets using this command:

#### # iscsiadm -m discovery -t sendtargets --portal 192.168.0.101



Do the fallowing for second portal as well.

#### # iscsiadm -m discovery -t sendtargets --portal 192.168.0.102

After you will successfully discover two targets you can log into then using this command:

# iscsiadm -m node -T iqn.2006-03.com.kernsafe:ServerNode1.XenTarget1 -p

#### 192.168.0.101 -- op update -n node.startup -v automatic

It will also connect automatically to iSCSI target upon boot.



Do the fallowing for second target as well.

#### # iscsiadm -m node -T iqn.2006-03.com.kernsafe:ServerNode2.XenTarget2 -p

192.168.0.102 -- op update -n node.startup -v automatic

Then restart the iscsi service :

# Service iscsi restart - Restart iscsi service:

Other useful commands

# iscsiadm -m node -T iqn.2006-03.com.kernsafe:KernSafe.XenTarget1 -p 192.168.0.101 -u -- Log out the target

For more information, please visit <a href="http://support.citrix.com/article/CTX118791">http://support.citrix.com/article/CTX118791</a>.

#### Add iSCSI storage device into Xen Server

Click New Storage, New Storage Repository dialog is shown.

😣 New Storage Repository - loca	Ihostlocaldomain	- • ×
💣 Choose the type of ne	w storage	0
Type Location	Virtual disk storage NFS VHD Software iSCSI Hardware HBA Advanced StorageLinktechnology ISO library Windows File Sharing (CIFS) NFS ISO	Shared Logical Volume Manager (LVM) support is available using either iSCSI or Fibre Channel access to a shared LUN. Using the LVM-based shared SR provides the same performance benefits as unshared LVM for local disk storage, however in the shared context, SCSI or Fibre Channel-based SRs enable VM agility — VMs may be started on any server in a pool and migrated between them.
		< Previous Next > Finish Cancel

😣 New Storage Repository	- localhost.localdomain					
What do you want to call this Storage Repository?						
Type Name	Provide a name and a description (optional) for your SR.					
Location	Name:       iSCSI virtual disk storage         Image: Autogenerate description based on SR settings (e.g., IP address, LUN etc.)         Description:					
CITRIX	< <u>P</u> revious <u>N</u> ext > Cancel					

Input IP address and port (if not 3260) of the Host that runs iStorage Server, press the **Discover IQNs** button, a list of Targets in drop-down control is shown.

New Storage Repositor	localhost	• × •				
Type Name Location	Provide a target host for your ISCSI storage, indicating your target IQN and your target LUN before proceeding.					
	Target Host:         192.106.0.101,192.106.0.102         :         5.           Image:         Use CHAP         User:         Image: Chap         Image: Chap	200				
	Target IQN:       * (192.168.0.101,192.168.0.102:3260)       ▼       Discover I         Target LUN:       ▼       Discover L	QNs UNs				
CİTRIX'	< <u>P</u> revious <u>Einish</u> C	ancel				

Select desired target in the list.

If the target you want to connect to has CHAP Authentication, check **Use CHAP** and input user name and secret.

Press the **Discover LUNs** button.

The iSCSI Target now contains a valid LUN. Here we create a 10G image file device as a demo.

pe me	Provide a target proceeding.	host for your ISCSI storage, indicating your target IQN and your targe	t LUN before
cation	Target <u>H</u> ost:	192.168.0.101,192.168.0.102	: 3260
	Use <u>C</u> HAP		
	Pass <u>w</u> ord: Target <u>I</u> QN:	* (192.168.0.101,192.168.0.102:3260)	Discover IQNs
	Target <u>L</u> UN:	LUN 0: 01CDFA002253E580: 100 GB (KernSafe)	<u>D</u> iscover LUNs

Press the **Finish** button to continue.

The following dialog is shown, press the **Yes** button to proceed.



Now Xen Server is carrying on a series of operations, such as **Creating SR**, to create data structures required by data repositories.

XenCenter		
	Creating SR	
	Cancel	

Sorted! You now see an iSCSI storage device successfully added into Xen Server.



At the bottom of this interface you can see there are 2 of 2 paths active.

If by some reasons you will see only 1 path active, go back to your server console and type:

#### # /opt/xensource/sm/mpathcount.py

This causes to refresh multipath status in virtual storage.



After you will do it, you should be able to see proper 2 out of 2 paths active.

You can type:

#multipath -II

[root@localhost ~]# multipath -ll	
201cdfa002253e580 dm-1 KernSafe,iSCSI Adapter	
[size=100G][features=0][hwhandler=0][rw]	
round-robin 0 [prio=2][active]	
_ 18:0.0.0 Sab 8:16 [active][ready]	
N_ 14:0:0:0 sdc_8:32 [active][ready]	
[root@localhost ~]#	

# Create a virtual machine

Click **New VM** on Xen Server console.

Select **Windows 7 x64** in the following wizard.

😣 New VM - localhost.localdoma	in 🔄	
Select an operating s	system for the new virtual machine	?
Template Name Location CPU & Memory Virtual Disks Virtual Interfaces Finish	Templates: SUSE Linux Enterprise Server 9 SP4 SUSE Linux Enterprise Server 10 SP1 SUSE Linux Enterprise Server 10 SP2 SUSE Linux Enterprise Server 10 SP2 x64 SUSE Linux Enterprise Server 11 SP2 x64 SUSE Linux Enterprise Server 11 x64 Windows 7 Windows 7 x64 Windows Server 2003 Windows Server 2003 Windows Server 2008 R2 x64	4 m
CITRIX.	Windows 7 x64 Description: Clones of this template will automatically provision their storage when first booted a then reconfigure themselves with the optimal settings for Windows 7 x64. VCPUs: 1 Memory: 2 GB	and
	< Previous Next > Finish	Cancel

Input the desired name and description.

😣 New VM - localhost.localdom	ain		_ <b>_</b> ×
💼 Enter a name and de	scription for the r	new virtual machine	()
Template Name Location CPU & Memory Virtual Disks Virtual Interfaces Finish	Name: Description:	Windows 7 x64 (1)	
CITRIX.		< Previous Next > Finisl	Cancel

Press the **Next** to continue.

Select installation media for operating system.

😣 New VM - localhost.localdoma	ain		_ <b>_</b> ×
💼 Enter the location of	the guest operating system in	stallation media	•
Template Name	Select a physical DVD/CD-RO for your guest operating syste media.	M drive and insert the installation media em, or use an ISO image of your installation	
Location	Physical DVD Drive:	DVD drive 0 on localhost.localdomain	-
CPU & Memory Virtual Disks	ISO Image:	xs-tools.iso	-
Virtual Interfaces			
Finish			
CITRIX			
		< Previous Next > Finish	Cancel

Choose **physical DVD Drive** on XenServer.

Press the **Next** button to continue.

Specify the number of CPUs and memory size.

New VM - localhost.localdom	PUs and the initial memory allocation for the new VM
Template Name Location CPU & Memory Virtual Disks Virtual Interfaces Finish	Number of vCPUs:       Image: Comparison of the second secon
	< Previous Next > Finish Cancel

Select number of vCPUs.

Specify initial memory size.

Press the **Next** button to continue.

Select storage device.

New VM - localhost.localdomai	n		
Enter the information	about the virtual	disks for the new virtual maching	ne 😗
Template Name	The default vir You can add, r	tual disks for the template you have s modify or delete virtual disks, if requir	elected are listed below. ed. When you have finished, click "Next" to
Location CPU & Memory	Virtual disks in	stalled on the new machine:	Shared
Virtual Disks	9	iSCSI virtual disk storage	Yes
Virtual Interfaces Finish			
CITRIX		(	Add Edit Delete
		< Previous	s Next > Finish Cancel

First you see an **iSCSI Virtual disk storage** device, which is previously created by iStorage Server. It is Xen Server's default storage device. If you want to add other virtual disk, press the **Add** button.

Select **iSCSI virtual disk storage...** and then press the **Next** button, the **Disk Settings dialog** is shown.

Disk Settings			×
Enter the settings for the Size: 5.0 G	e new virtual disk B 🔲 Read Only Lowest	Disk Access I	Priority Highest :
Name	Description	Size (GB)	Free Space (GB)
iSCSI virtual disk stor	iSCSI SR [192.168.0.195 (iqn.2006-03.co	9	9
Local storage on loca		29	29
		Ok	Cancel

Specify the size of the new virtual disk.

Press the **OK** button to finish the wizard.

A virtual machine is built.

Note that before Version 5.5 update1 in the Storage labels of your virtual machine, you need to exchange the position of iSCSI Virtual Storage and Local Storage (make sure iSCSI Virtual Storage at position 0) so that the operating system can be installed on this iSCSI device.

#### **Install Operating system**

Run the virtual machine and set up the operating system.

The process is just like that on real machine.

![](_page_49_Picture_0.jpeg)

Press the Install Now button to install OS.

XenCenter			
File View Pool Server	VM Storage Ter	mplates Tools Window Help	No System Alerts
Shows Server View	Windows 7 x64		Logged in an Local root account
Show: Server view 2	General Storage Net	(1)	Logged in as: Local root account
□ 🗐 localhost.localdom 🐨 Windows 7 x64	DVD Drive: DVD dri	ive 0 on localhost.localdomain	<ul> <li>Looking for guest console</li> </ul>
<ul> <li>DVD drives</li> <li>SCSI virtual dis</li> <li>Local storage</li> <li>Removable stor</li> </ul>	ì°	Where do you want to install Windows?         Name       Total Size       Pres Space       Type         Divid 8 Unallocated Space       80 GB       90 GB         *g Editech       Divie options (gdvance)         *g Editech       Divie options (gdvance)         *the recommended free space for installation is 10338 M8.	
4 III +	Send Ctrl-Alt-Del	🗹 Scale 🖉 Undock (Al	t+Shift+U) Fullscreen (Ctrl+Alt)

Select the 9G disk. Just like that on a real hard disk.

XenCenter				X
File View Pool Server	VM Storage Ten	nplates Tools Window Help	0	
Back • 🕑 Forward •	Add New Server	New Pool Yew Storage Mew VM	Shut Down Vo System	Alerts =
Show: Server View 🔎 🔻	Vindows 7 x64 (	1)	Logged in as: Local root a	account
E 🔀 XenCenter	General Storage Net	vork Console Performance Snapshots Logs		
Windows 7 x64	DVD Drive: DVD dri	ve 0 on localhost.localdomain	<ul> <li>Looking for guest const</li> </ul>	sole
DVD drives				
iSCSI virtual dis		Ar Install Windows		
😭 Removable stor		Installing Windows		
		That's all the information we need right now. Your computer will re	start several times during	
		installation.		
		Copying Windows files Expanding Windows files (0%)		
		Installing features Installing updates		
		Completing installation		
	<b>N</b>			
	1 Colle	cting information 2 Installing Windows		
		<u> </u>		
4	Send Ctrl-Alt-Del	Scale	Undock (Alt+Shift+U) Fullscreen (Cl	trl+Alt)
				.:

#### Setup starts copying files

Last, with all work done, we'll see iSCSI virtual storage device in the virtual operating system.

XenCenter		_ <b>D</b> X
File View Pool Server VM Storage	Templates Tools Window Help	
G Back 👻 💮 Forward 👻 🛛 📑 Add New Se	erver   🎼 New Pool 🔮 New Storage 💼 New VM   🕘 Shut Down	🧹 No System Alerts 💂
Show: Server View 🔎 💌 🚯 Windows 7	7 x64 (1) Logg	ed in as: Local root account
□ Storage □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	Network Console Performance Snapshots Logs	
Windows 7 x64 DVD Drive: D	DVD drive 0 on localhost.localdomain	oking for guest console
iSCSI virtual dis	File Action View Help	
Removable stor	🗢 📫 🖄 QEMU HARDDISK ATA Device Properties	
	Computer         General         Pattors         System         Status         Actions           V System         Tax         The volumes contained on this disk are listed below.         Filles the status in the stat	t <b>n</b>
	Conception of the second space of the sec	
	Volume Capacity Gille (C) 9114 MB Gille System Reserved 100 MB Properties	
	Cancel     W     DK     Cancel     Cancel     Cancel     W     DVnallocated     Primary partition	Da
	😉 🏈 🚞 😹	9:43 AM 5/25/2010
Send Ctrl-Alt-E	Del 🖉 Scale 💭 Undock (Alt+Shift+U	) Fullscreen (Ctrl+Alt)
		.::

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

### Contact

Support:	support@kernsafe.com
Sales:	sales@kernsafe.com
Marketing:	marketing@kernsafe.com
Home Page:	http://www.kernsafe.com
Product Page:	http://www.kernsafe.com/product/istorage-server.aspx
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![](_page_52_Picture_2.jpeg)

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