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

Citrix Xen Server[™] 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 | | | - • × |
|--|---------------------------------|--------------------------------|-----------------------|
| File Server Storage Clients Vie | ew Tools Help | | |
| Create Delete Start Stop | | ew Access Settings Print About | |
| Servers Tree × | iStorage Server: 192.16 | 8.0.101 | |
| E | General Targets Applications IF | Filters Users Groups Logs | |
| Applications IPFilters Users Groups | Storage General Pro | operties | Properties |
| ↓ | General | | |
| Applications | Hostname: | 192.168.0.101 | |
| Users Groups | Bind Address: | All Address | E |
| Logs | Port: | 3260 | |
| | Management Method: | Password | |
| | State: | ок | |
| | Status | | |
| | Status: | Started | |
| | License: | Ultimate License | |
| | Server Portal | | - |
| < <u> </u> | • | III S Connected: 192.168.0.101 | (Illtimate License) |
| | | (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. | <u></u> |
| 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 > Ca | ancel |

Choose Image File in iSCSI Medium Type window.

Then press **Next** button to continue.

Select an Image type.

| Create iSCSI Target Wizard | × |
|--|--------|
| iSCSI Image Type Select image type of the iSCSI disk you want to create. | 2 |
| 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. | |
| | |
| < <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.

| reate iSCSI Target Wizard | × |
|--|--------|
| Virtual Image Disk Configuration Specify a image file full path and parameters. | 4 |
| 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. | |
| Anonymous Select this option to disable any authorization. CHAP Select this option to use CHAP authorization. IP Filter Select this option to use IP address authorization. Mixed Select this option to use both CHAP and IP address authorization. Inherit security roles from global settings. | |
| Select this option to use CHAP authorization. IP Filter Select this option to use IP address authorization. | |
| Mixed Select this option to use both CHAP and IP address authorization. Inherit security roles from global settings. | |
| < 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:ServerNode1.XenTarget1 | |
| | |
| 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.

| 3 iStorage Server Management Console | | |
|---|----------------------------------|--|
| File Server Storage Clients View Too | ls Help | |
| Create Delete Start Stop Refr | | Access Settings Print About |
| Servers Tree × | iStorage Server: 192.168 | .0.102 |
| Errsare servers Èrragi ServerNode1 (192.168.0.101:3261) | General Targets Applications IPF | itters Users Groups Logs |
| argets | | |
| ServerNode1.XenTarget1 Applications IPFilters ServerNode1.XenTarget1 ServerNode1.XenTarget1 ServerNode1.XenTarget1 ServerNode1.XenTarget1 ServerNode1.XenTarget1 ServerNode1.XenTarget1 | Storage General Prop | perties Pr |
| Groups Groups () Logs ServerNode2 (192.168.0.102:3261) | General | |
| | Hostname: | 192.168.0.102 |
| | Bind Address: | All Address |
| | Port: | 3260 |
| Logs | Management Method: | Password |
| | State: | ок |
| | Status | |
| | Status: | Started |
| | License: | Ultimate License |
| | Server Portal | - |
| | • | |
| | | Sconnected: 192.168.0.102 (Ultimate 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>B</u> ack <u>N</u> ext > Cancel |

Choose Hard Disk.

Press the **Next** button to continue.

Select a medium type.

| Create iSCSI Target Wizard | X |
|--|-------|
| 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. | |
| < 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 | × |
|---|--------|
| iSCSI Image Type Select image type of the iSCSI disk you want to create. | |
| 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. | |
| Anonymous Select this option to disable any authorization. CHAP Select this option to use CHAP authorization. IP Filter Select this option to use IP address authorization. Mixed Select this option to use both CHAP and IP address authorization. Inherit security roles from global settings. | |
| Select this option to use CHAP authorization. IP Filter Select this option to use IP address authorization. | |
| Mixed Select this option to use both CHAP and IP address authorization. Inherit security roles from global settings. | |
| < 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. | <u>.</u> |
| Basic Target Information | |
| Target Name: | |
| iqn.2006-03.com.kemsafe:ServerNode2.XenTarget2 | |
| 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 Can | icel |

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. | |
| Synchronous Replication Create real-time remote synchronous replication to iSCSI target or image file. Asynchronous Replication Create real-time remote asynchronous replication to iSCSI target or image file. High Availability Node Create a high-availability iSCSI SAN node or synchronizing with other iSCSI targets. Automatic Snapshots Create automatical snapshots and replications to other iSCSI targets. | |
| < <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. | | 3 |
| 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 | e |
| 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.

| 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:ServerNode1.XenTarget1 | Disk |
| artner Target qn.2006-03.com.kemsafe:ServerNode2.Xen Target2 | Setting |
| < Back | |

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

| Create Application Wi | zard | | | × |
|--|--|----------------------|----------------|---------|
| Synchronizatio You can specify | n Settings y parameters for synchroniza | ition. | | <u></u> |
| 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 | irror 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 | x |
|---------------------------|---|
| | 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. | |
| Synchronous Replication Create real-time remote synchronous replication to iSCSI target or image file. Asynchronous Replication Create real-time remote asynchronous replication to iSCSI target or image file. High Availability Node Create a high-availability iSCSI SAN node or synchronizing with other iSCSI targets. Automatic Snapshots Create automatical snapshots and replications to other iSCSI targets. | |
| < <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 | | | Po | ort: | 3260 |
| CHAP | | | | | | | |
| | 📃 Use CH/ | AP to log | Ion | | | | |
| User Name: | | | | | | | |
| Secret: | | | | | | | |
| Target — | | | | | | | |
| Target: | iqn.2006-0 | 3.com.ke | emsafe:S | erverN | ode1.Xe | nTa | 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.

| Failover Configuration You can specify two servers to fail over each other. | 4 |
|--|-------------|
| Base Target | |
| Target Name | Device Type |
| viqn.2006-03.com.kemsafe:ServerNode2.XenTarget2 | Disk |
| ^p artner Target iqn.2006-03.com.kemsafe:ServerNode1.Xen Target1 | Setting |

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

| Synchronizatio You can specif | n Settings y parameters for synchronization | on. | |
|----------------------------------|--|--------------------|--------|
| Sync Interface | | | |
| Local Address: | 192.168.1.102 | ▼ Local Port: | Any 🚽 |
| Remote Address: | 192.168.1.101 | ✓ Remote Port: | 3260 |
| Heartbeat Interface | | | |
| Local Address: | 192.168.0.102 | Local Port: | Any 🚽 |
| Remote Address: | 192.168.0.101 | ✓ Remote Port: | 3260 |
| | o save temporary data dump (रि | older must exist): | |
| C:\Temp\ | | | 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 | | | | | | | | |
| Create mirror device without synchronization (Manual Initialization) | | | | | | | | |
| Synchronization Progress | | | | | | | | |
| | | | | | | | | |
| Warning: all data on the mirror device will be destroyed after synchronization. | | | | | | | | |
| OK Cance | el | | | | | | | |

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 | | | | | | | | | | | - | | |
|---------|---------|--------|--------|-----|------|--------|-----------|----------|---------|----------------|-------------------|----------------------|-----------------|----------------------|
| | | | | | | | | | Window | | | | | 100 |
| G Ba | ack • (| Forv | ward 👻 | - A | dd N | ew Ser | ver | New Pool | New Ste | orage | New VM | Shut Down | Reboot | ✓ No System Alerts 🗸 |
| Views: | | . View | | | • | Ø | localhost | | | | | | | |
| Search. | | | | | Q | Gene | eral Logs | | | | | | | |
| | XenCen | | | | | Ev | ent Log | | 🗹 🔕 | <u>E</u> rrors | 🔽 <u> A</u> lerts | 🔽 🙆 Actio <u>n</u> s | 🔽 🚺 Information | <u>C</u> lear |
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| | | | | | | | | | | | | | | |

Click Add New Server in the tool bar.

Add New Server dialog is shown.

| 😣 Connect to | Server | x | | | | | |
|---|---------------|---|--|--|--|--|--|
| Enter your username and password to connect to this server. | | | | | | | |
| Server: | 192.168.0.189 | - | | | | | |
| User login c | redentials | | | | | | |
| User name: | root | | | | | | |
| Password: | | | | | | | |
| | 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 Maintenance Mode -localhost.localdomain | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|
| This operation will migrate all running VMs from this server and transition it into maintenance mode. | | | | | | | | | |
| Virtual machines on this server: | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 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 http://support.citrix.com/article/CTX118791.

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, BCSI 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 - loo | calhost.localdomain |
|------------------------------|---|
| What do you want to | call this Storage Repository? |
| Type Name | Provide a name and a description (optional) for your SR. |
| Location | Name: [SCSI virtual disk storage] Image: Autogenerate description based on SR settings (e.g., IP address, LUN etc.) Description: Image: Comparison of the setting |
| 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 Image: Storage Repositor | y - localhost your iSCSI storage | × - × - × - × - × - × - × - × - × - |
|--|---|--|
| Type Name Location | Provide a target I proceeding. Target <u>H</u> ost: | host for your ISCSI storage, indicating your target IQN and your target LUN before 192.168.0.101,192.168.0.102 : 3260 |
| | Use <u>C</u> HAP User: Pass <u>w</u> ord: | |
| | Target IQN: Target <u>L</u> UN: | * (192.168.0.101,192.168.0.102:3260) ✓ Discover IQNs ✓ Discover LUNs |
| citrix. | | < <u>P</u> revious <u>F</u> inish Cancel |

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.

| ipe ame | 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 I <u>Q</u> Ns |
| | 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 | 1 |
| | | <u></u> |

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] |
| |
| N_ 18:0:0:0 sdb 8:16 [active][ready] |
| N_ 14:0:0:0 sdc 8:32 [active][ready] |
| [root@localhost ~]# |
| |
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Create a virtual machine

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

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

| 😣 New VM - localhost.localdom | 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 SP1 x64 SUSE Linux Enterprise Server 10 SP2 SUSE Linux Enterprise Server 10 SP2 x64 SUSE Linux Enterprise Server 11 SUSE Linux Enterprise Server 11 SUSE Linux Enterprise Server 11 SUSE Linux Enterprise Server 11 x64 Windows 7 x64 Windows 7 x64 Windows Server 2003 Windows Server 2003 Windows Server 2003 Windows Server 2008 Windows Server 2008 SUSE | · |
| CİTRIX. | 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 | | > | × |
|---|-----------------------|--------------------------|--------|---|
| 💼 Enter a name and de | scription for the r | new virtual machine | 6 | |
| Template Name Location CPU & Memory Virtual Disks Virtual Interfaces Finish | Name: Description: | Windows 7 x64 (1) | | |
| CITRIX. | | < Previous Next > Finish | Cancel | |

Press the **Next** to continue.

Select installation media for operating system.

| 😣 New VM - localhost.localdoma | ain | | _ _ × |
|--------------------------------|-------------------------------|---|--------------|
| 💼 Enter the location of | the guest operating system in | stallation media | • |
| Template Name | | 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.localdomain | | | | |
|-------------------------------------|-------------------|--|--|--|
| | about the virtual | disks for the new virtual machin | 1e U | |
| Template Name | | tual disks for the template you have s modify or delete virtual disks, if require | elected are listed below. ed. When you have finished, click "Next" to | |
| Location | Virtual disks in | stalled on the new machine: | | |
| CPU & Memory | Size (GB) | Location | Shared | |
| Virtual Disks Virtual Interfaces | 9 | iSCSI virtual disk storage | Yes | |
| Finish | | | | |
| | | | | |
| CITRIX | | [| Add Edit Delete | |
| | | < Previous | i 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 | | 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.



Press the Install Now button to install OS.

| XenCenter | | | |
|-----------------------|---|---|---|
| File View Pool Server | | | |
| GBack • Droward • | Add New Server | 👫 New Pool 💣 New Storage 👕 New VM 🗆 🕘 Shut Dow | vn 🖌 🖌 No System Alerts 🚽 |
| Show: Server View 🔎 💌 | Windows 7 x64 | (1) | Logged in as: Local root account |
| XenCenter | General Storage Net | | |
| Windows 7 x64 | DVD Drive: DVD drive 0 on localhost.localdomain - | | Looking for guest console |
| | 1 ° | Install Windows Where do you want to install Windows? Imme Tetal Size Fee Spece Type Disk 8 Unaffocated Spece 80 GB Speciesh Drive options (given Imme Tet recommended free space for installation is 10338 MB. | nce/ |
| 4 111 | Send Ctrl-Alt-Del | 🗹 Scale 🛛 💭 Undock (/ | Alt+Shift+U) Fullscreen (Ctrl+Alt) |
| | | | |

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

XenCenter - - × File View Pool Server VM Storage Templates Tools Window Help 🔇 Back 🔹 🛞 Forward 🕞 📑 Add New Server 🕴 🎬 New Pool 💣 New Storage 📷 New VM 🗏 🔘 Shut Down 🧹 No System Alerts Show: Server View 🔎 💌 😼 Windows 7 x64 (1) Logged in as: Local root account 🖃 🔕 XenCenter General Storage Network Console Performance Snapshots Logs 🖃 🌆 localhost.localdom Windows 7 x64 DVD Drive: DVD drive 0 on localhost.localdomain -Looking for guest console... iSCSI virtual dis Local storage 对 Install Window Removable stor Installing Windows... That's all the information we need right now. Your computer will restart several times during Copying Windows files Expanding Windows files (0%) Installing updates Completing installa 1 Send Ctrl-Alt-Del ✓ Scale Undock (Alt+Shift+U) Fullscreen (Ctrl+Alt)

Setup starts copying files

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

| XenCenter | | _ 🗆 X |
|---|--|-------------------------------|
| File View Pool Server VM Storage | Templates Tools Window Help | |
| G Back 👻 💮 Forward 👻 📑 Add New Ser | rver 🏥 New Pool 💣 New Storage 📸 New VM 🕘 Shut Down | 🧹 No System Alerts 👳 |
| Show: Server View 🔎 🔻 🐻 Windows 7 | ' x64 (1) Log | ged in as: Local root account |
| □ 🐼 XenCenter □ 🔓 localhost.localdom | Network Console Performance Snapshots Logs | |
| Windows 7 x64 DVD Drive: DV | VD drive 0 on localhost.localdomain 🔹 💷 | ooking for guest console |
| isCSI virtual dis | File Action View Help | |
| Removable stor | | |
| | Computer General Pakaces Volume Diner Details Jord System System System System System System Secondary The volumes contained on this disk are listed below. Secondary System Secondary Secondary | |
| | | ns • |
| | 😏 🧀 📇 🛃 🕨 | 9:43 AM 5/25/2010 |
| Send Ctrl-Alt-D | 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

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