iStorage Server and WinCE iSCSI Initiator For Windows CE Embedded and Windows Mobile

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KernSafe Technologies, Inc.

www.kernsafe.com

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KernSafe iStorage Server is an advanced and powerful, full-featured software-only iSCSI Target that fully conforms to the latest iSCSI Standard 1.0 (former Draft 20). It is an IP SAN solution allowing you to quickly export existing storages such as disk images, VHD files, physical disks, partitions, CD/DVD-ROMs, tapes or any other type of SCSI based devices and even a variety of popular CD/DVD images to the client machines. The software thus delivers immediate benefits, as it allows storage to be consolidated, virtualized and centrally managed. iStorage Server also provides RAID-1 (mirror) feature enabling you to create two iSCSI devices for mirror backup. 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.

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

KernSafe Free WinCE iSCSI Initiator enables connection to a computer that is running any iSCSI SAN like iStorage Server from any Windows CE based devices, such as: WinCE Embedded device and Windows Mobile, in order to connect to iSCSI Target storage over Wi-Fi, 3G or 4G network. WinCE iSCSI Initiator can be used over existing wired and wireless (Wi-Fi, 3G, 4G etc.) networks to create storage area networks (SANs). That will help iSCSI Initiator device to expand their virtual storage without any additional hardware requirements which is a huge benefit for home and business solutions.

An embedded system is a computer system designed to do one or a few dedicated and/or specific functions often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts. Embedded systems control many devices in common use today.

Windows Mobile is a mobile operating system developed by Microsoft that is used in smartphones and mobile devices. It is very common and easy to use since it looks similar to desktop version of Windows operating system.

This article demonstrates how to connect to iSCSI Target created by iStorage Server using KernSafe WinCE iSCSI Initiator on Windows Mobile device.

Configuring iStorage Server

Creating Target

Open iStorage Server Management Console.

IStorage Server Management Console				
<u><u><u>F</u>ile <u>S</u>erver <u>S</u>torage <u>C</u>lients <u>V</u>iew <u>T</u>oc</u></u>	əls <u>H</u> elp			
Create Delete Start Stop	Refresh Add Remove	View Access Settings	Print About	
Eerry Safe Servers Ferry Safe Matt (127.0.0.1:3261) Gene Targets Applications Gene	iStorage Server: LocalH ral Targets Applications IPFilte	ost rs Users Groups Logs		
- IPFilters - & Users - & Groups - & Groups - J Logs	Storage General Pro	operties	Properties	
	General			
	Hostname:	LocalHost		
	Bind Address:	All Address		=
	Port:	3260		
	Management Method:	Password		
	State:	ОК		
	Status			
	Status:	Started		
	License:	Ultimate License		
< >	Server Portal			
	100.100.10	0000	🔇 Connected: L	.ocalHost (Ultimate License)

Launch the **iStorage Server Management Consolle**, press the **Create** button on the toolbar, the **Create iSCSI Target Wizard** will appear.

Select device type.



Chose Hard Disk.

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.	
	—
< <u>Back</u> <u>N</u> ext > Cancel	

Choose Image File in iSCSI Medium Type page.

Create iSCSI Target Wizard	×
iSCSI Image Type Select image type of the iSCSI disk you want to create.	4
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>Back</u> Next >	Cancel

Chose Standard Image File in iSCSI Image Type.

Create iSCSI Target Wizard
Image Disk Configuration You can specify a image file as an iSCSI device.
Device Parameters
Use existing image file Oreate a new image file
D:\WinCE.img Browse
Device Size in MBs: 1024
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
< <u>Back</u> <u>N</u> ext > Cancel

Select **Create a new image file** or **Use existing image file** if you already have one. Then specify the device size.

Checking **Use sparse file on NTFS file system** will save your hard disk space by expanding image file depending on its content used.

Create iSCSI Target Wizard	×
Authorization You can select an authorization mode, Anonymous, CHAP or IP filter.	<u></u>
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.	
< Back Next >	Cancel

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

If you check **Inherit security roles from global settings**, all client security roles are form global settings, otherwise, each client will have its own permission.

For purpose of this article, I will choose **Anonymous**.

Create iSCSI Target Wizard	x
Completing the Create iSCSI Wizard You can specify a target name and other options to complete iSCSI target creating.	۵.
Basic Target Information Enter Target Name: iqn.2006-03.com.kemsafe:WinCE ✓ 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

Enter the name for your target device.

If you check **Report as readonly device when initiator cannot get write access**, the system will give you a report when you load the target without write access.

Press the **Finish** button to continue.

🍓 iStorage Server Management Console				
<u><u> </u></u>	ls <u>H</u> elp			
Create Delete Start Stop	Refresh Add Remove	View Access Settings	t About	
E-Wein KernSafe Servers	Target IQN: iqn.2006-03.	com.kernsafe:WinCE		
Gener	al Initiators CHAP IPFilters			
- Applications - O IPFilters - & Users - O Groups	arget General Prop	erties	Properties	
Logs	General			
	IQN:	iqn.2006-03.com.kernsafe:WinCE		
	Device Type:	Disk Drive		E
	Media Type:	Image File		
	Authorization Method:	Anonymous		
	Capacity:	1.00G		
	Status			
	Status:	Enabled		
	File Name:	D:\WinCE.img		
	Server Portal			
Done	100 100 1 7	0000	🔇 Connected: LocalHost (Ultim	nate License)

We successfully created iSCSI Target. We can now connect to it using KernSafe WinCE iSCSI Initiator.

Logging on to the target

After installing KernSafe WinCE iSCSI initiator on either WinCE or Windows Mobile device, please turn on Initiator. I will use Windows Mobile but the procedure on WinCE device is exactly the same.

Adding portal

To add a new portal, you can either **tap and hold** stylus in **Portals** group and choose **Add Portal**.

月 Initiator	÷	€ 1:33	X
Portals:			
Address		Port	
	Add Portal		
	<u>R</u> emove		
Targets:			
Target Name		Status	
iSCSI		Help	

Or you can access same option by taping on **iSCSI** button, **Portal-->Add Portal**.

🐴 Initiator	‡ ‡ 4 € 1:33 🗙
Portals:	
Address	Port
Targets:	
Target Name	Status
<u>P</u> ortal →	<u>A</u> dd Portal
<u>T</u> arget →	<u>R</u> emove
<u>R</u> efresh	
Exit	
iSCSI	🕮 Help

When you will do it, you will be prompted to type **IP address** or **DNS** name. (Default port is 3260.)

😚 Initiator	🗱 ୶€ 1:33	ok
IP address or DNS name: 192.168.0.199		
Port: 3260		
ОК	Cancel	

After finishing, tap on **OK** button to connect to the portal. You will notice that portal was successfully discovered as well as all targets within this portal.

🚰 Initiator 💦	ដ 📢 1:34 🛛 🗙
Portals:	
Address	Port
192.168.0.199	3260
Targets:	
Target Name	Status
ign.2006-03.com.kemsafe:WinCE	Inactivate
iscsi	Help
	P

You can add multiple portals to WinCE iSCSI Initiator.

NOTE: If you will type incorrect IP or DNS, portal won't appear on the list.

Connecting to target

You can connect to new target in two ways. First one is to tap and **hold stylus** on **target name** in target list, and choose **Logon**.

🚰 Initiator 🗸	▲€ 1:34 🗙
Portals:	
Address	Port
192.168.0.199	3260
Targets:	
Target Name	Status
iqn.2006-03.com.kemsafe:WinCE	Inactivate
iSCSI	Help

Or you can tap on target and then tap on **iSCSI** button--->**Target-->Logon**.

🐴 Initiator	÷	↓ € 1:35	×
Portals:			
Address		Port	
192.168.0.199		3260	
_			
Targets:			
Target Name		Status	
ign.2006-03.com.	kemsafe:WinCE	Inactivate	_
	1		
<u>P</u> ortal →			
<u>T</u> arget →	<u>L</u> ogon		
Refresh	Logout	_	
	Logout All		
<u>E</u> xit	Log <u>o</u> ac Hil		
iSCSI		Help	

You will see new screen with all login information.

‡ ‡ 4 € 1:35 ok
forwings
on startup
OK Cancel

Checking **Automatically logon on startup** option will result that target will be automatically mounted upon turning on the device.

You may connect to as many targets as you want.

Upon successful connection to the iSCSI Target, you will notice window asking to format new memory card.



This is because we connected to RAW target that was created in iStorage Server. This information will appear only for the first time using this target. Tap **Yes** to continue.

🚰 Initiator 🛛 👯	 € 1:36	×
Portals:		
Address	Port	
192.168.0.199	3260	
Targets:		
Target Name	Status	
iqn.2006-03.com.kemsafe:WinCE	Connected	
iSCSI	Help	

You may now access this storage trough File Explorer.

Accessing data

Upon successful connection to the iSCSI Target, you can access data stored on it.

😚 Initiator	# ◀€ 1:36	×
Portals:		
Address	Port	
192.168.0.199	3260	
Targets:		
Tawat Naraa	Chatur	
Farget Hame	Status Cosposted	Ц
Iqn.2006-05.com.kemsare.minor	E Connected	
iscsi	Help	

You may now access this storage trough File Explorer.

😚 File Explorer		Y _× 4€	×
📕 My Device 👻		Name	1 -
Application D			-
ConnMgr			
Documents a			
🔜 Help			
📸 iscsi			
My Documents			=
Program Files			
🔄 Temp			
Windows			
iscsi 📄	7/1/11	17.7K	E
Maip_lang	7/1/11	28.0K	Ш
🖄 mxip_notify	7/1/11	132K	Ш
a pim	7/1/11	272K	H
Doncspan2sh3	6/20/11	24 SK	1
Up	1000	Menu	

You can now copy, move and delete files to and from iSCSI Target.

😚 File Explorer	#	Y _x 46 🗙
🚆 iscsi 🗸		Name +
Documents		
Pictures		
Uideos		Courses a
Sample DOC	6/14/11	250K
🏄 Sample File	5/11/11	951K
Up	1000	Menu

Logout from target

To logout from target to what you are currently connected to, you can either tap and hold your stylus on that target and choose **Logout**.

🐴 Initiator	‡ ‡ 4 € 1:37 🗙	
Portals:		
Address	Port	
192.168.0.199	3260	1
Targets:		
Target Name	Status	1
ign.2006-0: Logoi	nCE Connected	1
Logo	it	
iscst	Help	1

Or you can tap on target then tap on **iSCSI** button and choose **Target**-->**Logout**.

월 Initiator	47	€ 1:37	×
Portals:			
Address		Port	
192.168.0.199		3260	
Targets:			
Target Name		Status	
ign.2006-03.com.	kemsafe:WinCE	Connected	
	1		
<u>P</u> ortal →		_	
<u>T</u> arget →	Logon		
Refresh	Logout	_	
	Logout All		
Exit	52411		
iSCSI		Help	

Then you will successfully logout from selected target.

😚 Initiator 🗸	≹ € 1:37	×
Portals:		
Address	Port	
192.168.0.199	3260	
Targets:		
Tarriet Name	Status	
ign.2006-03.com.kernsafe:WinCE	Inactivate	-4
	110000000	
iscsi 🔤	Help	

If you are connected to more then one target, and you wish to disconnect from all of them, you may do so by taping on **iSCSI** button and choose **Target-->Logout All**. That will result in logging out from all active targets.

Removing portal

To remove portal, simply either tap and hold stylus on **portal IP** on the portals list, and choose **Remove**.

😚 Initiator	#‡ +€ 1	:37 🗙
Portals:	_	
Address	Port	
Add Portal	3260	
Remove		
_		
Targets:		
Target Name	Status	
iqn.2006-03.com.kemsafe:Wind	CE Inactiv	ate
iSCSI 🚟	Н	elp

Or tap on portal IP and tap on **iSCSI** button and choose **Portal-->Remove**.

월 Initiator	÷:		7 🗙
Portals:			
Address		Port	
192,168.0,199		3260	
Tamata			
Targets:			
Target Name		Status	
iqn.2006-03.com.l	kernsafe:WinCE	Inactivate	
Portal 1	Add Portal		
Target	Pemove		
	Kennove		
<u>R</u> efresh			
Euit			
Exic			
iSCSI		Help)

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
	http://www.kernsafe.com/product/wince-iscsi-initiator.aspx
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