

StarWind iSCSI SAN Software: Using MetaSAN to Share iSCSI Volumes

www.starwindsoftware.com Copyright © StarWind Software 2008-2011. All rights reserved.

COPYRIGHT

Copyright © StarWind Software 2008-2011. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written consent of StarWind Software.

TRADEMARKS

"StarWind", "StarWind Software" and the StarWind and the StarWind Software logos are trademarks of StarWind Software which may be registered in some jurisdictions. All other trademarks are owned by their respective owners.

CHANGES

The material in this document is for information only and is subject to change without notice. While reasonable efforts have been made in the preparation of this document to assure its accuracy, StarWind Software assumes no liability resulting from errors or omissions in this document, or from the use of the information contained herein. StarWind Software reserves the right to make changes in the product design without reservation and without notification to its users.

TECHNICAL SUPPORT AND SERVICES

If you have questions about installing or using this software, check this and other documents first - you will find answers to most of your questions here or there. If you need further assistance, please contact us.



Table of Contents

Introduction	4
Configuring StarWind Server	5
Configuring the First Client as MetaSAN	13
Configuring the Second Client as MetaSAN	23
Connecting the Third Client by Using the MetaLAN	27
Conclusion	30



Guide

Introduction

Today more and more customers are willing to use SAN for the concurrent multi-initiator access to the same disk volume(s) and the same set(s) of the files. Movie rendering farms, huge distributed databases, clusters – virtually everybody wants to benefit from IP SAN performance (compared to the slow NAS implementations utilizing the same hardware). However iSCSI itself does not solve the task of maintaining distributed write locks and keeping file caches coherent. Tiger Technologies had developed **MetaSAN**, revolutionary solution allowing NTFS to be used as a SAN file system with **MetaSAN** software acting as a metadata manager on the top of it. This manual describes how to use **StarWind** iSCSI Target for Microsoft Windows together with the **MetaSAN** from **Tiger Technologies**. We've picked up **StarPort**, our own iSCSI Initiator for Microsoft Windows however any other one should work as well.



Configuring StarWind Server

Launch the **StarWind** console selecting **Start -> All Programs -> StarWind Software -> StarWind -> StarWind**. After the console is launched its icon appears in the system tray. Double click the icon with the left mouse button or single click it with the right and select **Start Management** pup-up menu item.

From the **StarWind Servers** tree please select the server you want to connect to. Press the right mouse button over the desired host and select the **Connect** popup menu item. You will be prompted to enter the login and password. Default ones are: root, starwind. You can always change them later.

Press Add Target button to continue.

In the Wizard that appears, specify a target name. The name must be a unique name by which the device will be declared to the iSCSI initiators connecting to StarWind over an IP network.

mmon target p Specify target a	arameters ias and target name			
Target Alias:				
meta-san-iscsi-	target			
Target Name				
ign.2008-08.co	m.starwindsoftware:	eva-meta-san-is	scsi-target	



Select Image File device.





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





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

Add Target Wizard	
Virtual disk para Specify virtual	meters disk parameters.
New virtual disk lo	ocation and name:
My Computer \C	meta_san_guide.img
Size in MBs:	2048
Compressed	nat will have access to this image
Password:	
Fill with zeroes	s < <u>B</u> ack Next > Cancel Help



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

Add Target Wizard	×
Image File device parameters Specify Image File device parameters.	\approx
Select virtual disk you want to make accessible via iSCSI:	
My Computer\C\meta_san_guide.img	▼
Asynchronous mode	
Read-Only mode	
Allow multiple concurrent iSCSI connections (dustering)	
Advanced options	
File system buffering	
Header size in sectors: 0	
< <u>B</u> ack <u>N</u> ext > Cancel	Help



An Image File device can have additional parameters. Refer to the online help for details regarding the additional parameters (**Cache mode, Cache size in MBs** and **Cache block expiry period in ms**).

Add Target Wizard	
Image File device cache paramete Specify Image File device cache para	rs ameters.
Cache Normal (no caching)	▼
Cache size in MBs:	64 🛋
Note: cache size is subject to sh memory.	rink w/o notice if specified too large for destination machine
Cache block expiry period in ms:	5000
	< Back Next > Cancel Help



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





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



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



Configuring the First Client as MetaSAN

Launch the **StarPort** console selecting **Start** -> **All Programs** -> **StarWind Software** -> **StarPort** -> **StarPort**. After the console is launched its icon appears in the system tray. Double click the icon with the left mouse button or single click it with the right and select Start Management menu item from the pop-up menu.



Select the **Add Device...** menuitem to continue.



New device installation wizard will appears. On this step of Wizard please select **Remote iSCSI device**.

Type of the Device selection page	
Device Type Please select type of device you wish t	to create
Device type:	
Local <u>R</u> AM disk device	
Remote iSCSI device	
Virtual <u>D</u> VD device	
🔘 Image File device	
Remote <u>AoE</u> (ATA-over-Ethernet) d	levice
🔘 RAID-1 (Mirror) device	
RAID-0 (Stripe) device	
JBOD device	
	< <u>B</u> ack <u>N</u> ext > Cancel



Type in the **IP address** of the computer with **StarWind** installed and port of that machine.

Remote iSCSI device parameters	×
New Remote iSCSI device parameters Please specify new Remote iSCSI device parameters	
Remote iSCSI device IP Address or Machine Name:	
192.168.1.17	
Remote iSCSI device Port number: 3260 Maximum allowed connections: 1	
Configure IP Security	
< <u>B</u> ack	Next > Cancel



Select **"meta-san-iscsi-target"** from the list and check the **Automount This Device** checkbox.

Remote iSCSI device Target address selection	×
iSCSI target selection Please select iSCSI target	
Please select a target you wish to connect to:	
iqn.2008-08.com.starwindsoftware:eva-meta-san-iscsi-target	
A <u>d</u> ditional iSCSI parameter(s):	
Use <u>C</u> HAP authentication	
✓ Automount this device	
< <u>Back</u> <u>N</u> ext >	Cancel



After the target is connected you need to initialize and format it. Launch the **Computer Management** console, expand the **Storage node** and select the **Disk Management** menu item. The **Initialize and Convert Disk Wizard** appears. Follow the instructions of the wizard to initialize a new iSCSI disk device. When the initialization is complete, you have to create a new partition on the device by right clicking on the unallocated space and selecting the **New Partition...** menu item from the pop-up context menu. Follow the instructions to create a new primary partition. The wizard will offer to specify formatting options. Select the **NTFS** file system and specify **MetaSAN** as the disk label. As a result of these actions a new drive with **"MetaSAN"** volume label should appear on your PC.

New Partition Wizard
Format Partition To store data on this partition, you must format it first.
Choose whether you want to format this partition, and if so, what settings you want to use.
C Do not format this partition
 Format this partition with the following settings:
Eile system: NTFS
Allocation unit size: Default
Volume label: MetaSAN
Perform a quick format
Enable file and folder compression
< <u>B</u> ack <u>N</u> ext > Cancel

Press the **Next** button to continue. On the next page press the **Finish** to complete the wizard.



Now we install **MetaSAN** on the first client machine. Run the **MetaSAN** installer. Accept the license agreement. After the installation is completed, the "MetaSAN Configuration Wizard" appears.





Select the **Create** option to create a new profile.

MetaSAN Configuratio	on Wizard 🔀
	You can add your machine to an existing SAN definition or search for SAN definitions through other machines.
	Create
MetaSAN	Select Create to create new SAN definition.
	Add to existing SAN definition(s) Select Add to add to existing SAN definition(s).
	< <u>B</u> ack <u>Next</u> > Cancel



Select the iSCSI drive (uncheck the others) and assign **iSCSI** as the profile name.

🞽 MetaSAN Configuration	n Wizard			×
	Write the name of y	vour SAN defin	ition ISCSI	
MetaSAN	MetaSAN has dete Place a check mar SAN definition.	cted the follow k next to each	ving volumes on your computer. volume you want to add to the	
	IName	Size	SAN	
	D (D:) MetaSAN (17.76 GB 7.91 GB		1
		< <u>B</u> ack	Next > Cancel	

Press the **Next** button to continue. Press the **Yes** button on the alert that appears.



Select Floating Metadata Master option.





Now you can specify the time interval to check the Data Master availability. Leave it without changes and press the **Next** button. You will be offered to restart your PC. Accept it and press the **Finish** button. You will be offered to run optimization. Reject this offer by pressing **No** button. You PC will be restarted now. After reboot the access to the iSCSI disk is **forbidden**. To gain access to the disk you need to register you version of **MetaSAN**.

Now we register just installed copy of **MetaSAN**. Open the **Control Panel** and run **MetaSAN**. Press **Activate MetaSAN**. Select **Manual Activation** and press **Continue**. On the **MetaSAN** web site supply your serial number and obtain the activation code. Enter it in the **MetaSAN** registration window and press **OK**. Now your copy of **MetaSAN** is activated and the access to the iSCSI drive is granted.



Configuring the Second Client as MetaSAN

Now we can proceed with the configuration of the second client on which **MetaSAN** will be installed as well. Connecting of the second client to iSCSI target is done in the same way as it was with the first client. As a result of all these actions performed new drive appears on the second PC. Now install **MetaSAN**. Run the **MetaSAN** installer. Accept the license agreement. After the installation is completed the **MetaSAN Configuration Wizard** appears.





Select Add To Existing SAN Definition(s) option to join the existing profile.

🞽 MetaSAN Configurati	on Wizard X
	You can add your machine to an existing SAN definition or search for SAN definitions through other machines.
MetaSAN	C <u>C</u> reate Select Create to create new SAN definition.
	 Add to existing SAN definition(s) Select Add to add to existing SAN definition(s).
	< <u>B</u> ack <u>Next></u> Cancel



Select **Add to SAN Definitions** option. Check the **iSCSI** checkbox profile. Remove the checkbox from all other profiles.

🞽 MetaSAN Configura	tion Wizard	×
RA	 Add to SAN definitions MetaSAN has detected the following SAN definitions on this 	
	machine:	r
-	SAN Definition	
MetaSAN		
	Place a check mark next to each definition you want to add your workstation to. Join/Search on other machines Browse	
at at	Password:	
	< <u>B</u> ack <u>Next></u> Cancel	

Press the **Next** button to continue. When offered to run optimization press the **OK** button.



You will be offered to restart your PC. Accept it by pressing the **Finish** button. Your PC will be restarted. After reboot the access to the iSCSI disk is **forbidden**. To gain access to the disk you need to register you version of **MetaSAN**. The registration is done in the same way as for the first client PC. When registration is done your copy of **MetaSAN** is activated and the access to the shared iSCSI drive is granted. Now you have two PCs with the active connections to the same iSCSI target. Disk access arbitration is done by **MetaSAN + StarPort + StarWind**. **"Metadata Master"** access control services automatically migrate from one client to another one if a client is turned off or some malfunction occurs.



Connecting the Third Client by Using the MetaLAN

It's possible to use **MetaLAN** to connect to the iSCSI target indirectly, w/o need of iSCSI Initiator software. Let's configure third PC to use **MetaLAN** only. Here' **MetaLAN** installation process. Run the **MetaSAN** installer. Accept the license agreement. After the installation is complete, the **MetaSAN Configuration Wizard** appears. Press **Cancel** to reject from configuring. The warning will appear – confirm your actions by pressing **Yes**. You will be offered to restart your PC. Accept by pressing the **Finish** button. Your PC will be rebooted. Now we need to use **MetaLAN** to connect the third PC. Open any **MetaSAN**-enabled client which is connected to the same local network. Configure the user connection to the **iSCSI** profile. Open the **Control Panel** and run **MetaSAN**. Open the **SAN Management** tab. Press the **Members** button. In the window that appears press **Add Member**.



Specify the IP-address of the client which you wish to add and uncheck the **Add as LAN Client** checkbox.

Add Machi	ine to SAN		×
<u>A</u> ddress:	192.168.1.6		<u>R</u> esolve
	Add as LA	N Client	
Brov	vse	OK	Cancel



As the result of that the user will be added. Press **Apply** and **Close**. Close **MetaSAN**. Now the disk is available on the third client PC as well. But the disk access is **forbidden** yet. **MetaLAN** registration process described. Let's register **MetaLAN** for the third client PC. Open the **Control panel** and run **MetaSAN**. Press the **Activate MetaLAN** button. Select the **iSCSI** profile and choose **Manual Activation**. On the **MetaSAN** web site supply your serial number and obtain the activation code. Enter it in the **MetaSAN** registration window and press **OK**. Now this particular **MetaLAN** copy is activated and the whole disk access is granted.

iSCS	l de la constante de
Activa	ated for: Not Activated (1 free license)
- Cho	ose Activation Method
С	Automatic Activation
	Activation key is generated automatically by sales order and password
æ	Manual Activation
	Activation key is obtained manually by serial number

Press the **Continue** button to continue.



Conclusion

If you had followed these advices correctly you should manage to have distributed SAN volume access at this moment. Two machines would use MetaSAN working thru the established iSCSI connection for concurrent access arbitration and third PC should use either first or second client as a "bridged router". You can easily expand listed configuration adding extra shared SAN volumes to one or multiple iSCSI targets and also increase number of clients.



Contacts

Support:	www.starwindsoftware.com/support	
Support Forum:	www.starwindsoftware.com/forums	
Sales E-mail:	sales@starwindsoftware.com	

US Headquarters

Direct phone number:	1-617-449-7717
Fax:	1-617-507-5845

EMEA, APAC

Direct phone numbers:	+44-0-2071936727
	+44-0-2071936350
Voice Mail:	1-866-790-2646

StarWind Software Inc. 40 Mall Rd., Burlington MA 01803, USA

www.starwindsoftware.com