

StarWind iSCSI SAN Software

Hands-On Review

Luca Dell'Oca
April 2011

I've always been fascinated by those software that let you transform a computer into a SAN appliance.

The available uses of this kind of tools are varied, from reuse of a server with a large disk capacity, to create small SAN at a fraction of the cost of traditional hardware vendors, and other uses everybody can find.

There has always been some dedicated linux distribution for these goals, some of them well done while some less, and among them OpenFiler is the best known. However those solutions has usually a small set of features and not so good performances, and also a small hardware compatibility list.

So I decided to test StarWind.

StarWind is a software company founded in 2003 with the goal of developing SAN software. Among their products there is an iSCSI version, their leading product reviewed in this article, but also an iscsi virtual tape, software initiators for iscsi, AoE e FcoE, and a free V2V converter.

StarWind iSCSI SAN Software (from now on only "StarWind") is a software for microsoft operating systems that let you transform your windows server into a SAN.

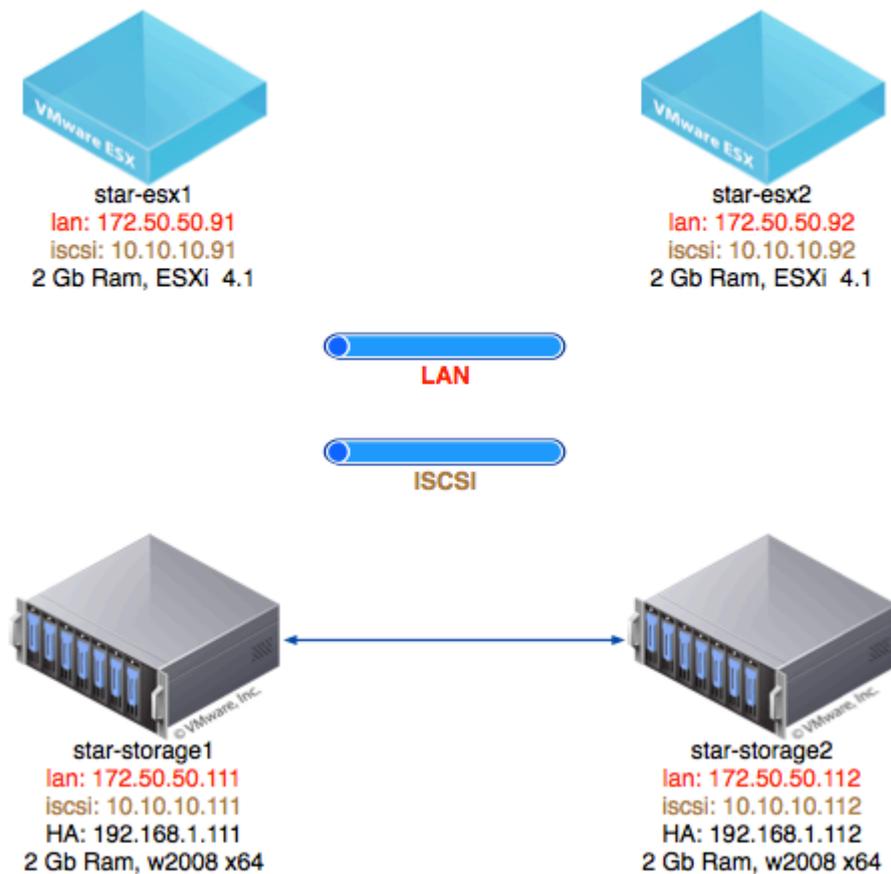
Starwind has several features (<http://www.starwindsoftware.com/features>) usually available in mid-size storage systems, such as HA with automatic failover, synchronous/asynchronous replica, snapshots, thin provisioning, Deduplication.

It's available in different editions (<http://www.starwindsoftware.com/editions-comparison>) with different level of managed Terabytes and availability of the features.

THE LAB

I have no “big server” in my home lab, so I realized a complete lab inside VMware Workstation 7.

The lab appears like this:



There are three separated networks to manage different traffics:
LAN is used for managing ESXi hosts, StarWind hosts, and the network of the virtual machines
iSCSI is used for iscsi traffic between ESXi hosts and StarWind hosts
HA is a private network between the two StarWind nodes.

VMware servers has been installed and configured with ESXi 4.1 U1.

StarWind servers has been installed and configured with Windows Server 2008 64 bit, and completely updated with Windows Update at the day of the review.

Having many features to test, I decided to split the review in two::

- This one will cover installation, configuration and operations with a single node
- A second one will analyze HA features with multiple nodes

INSTALLATION AND CONFIGURATION OF STARWIND

A fully functional trial version is available from StarWind at this address:

<http://www.starwindsoftware.com/download-free-trial>

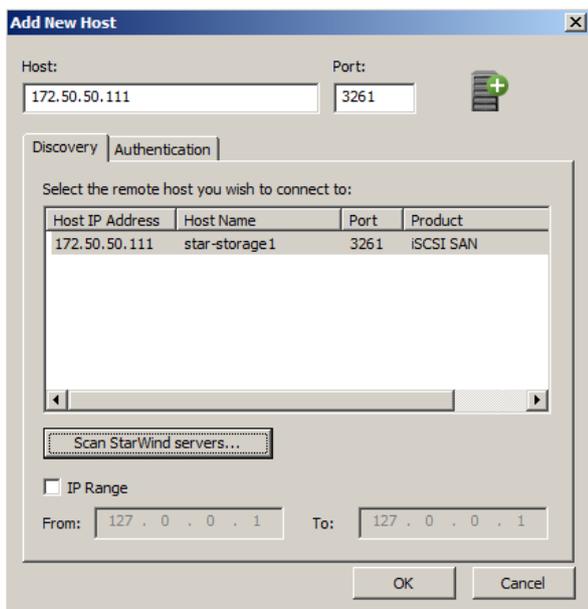
Once the lab is ready, I started the installation on the first Windows 2008 server. Installation wizard lets you install iSCSI service, drivers, management console and manuals. If you want, you can install the service on a system, and then manage it remotely using the console in another windows system. In my lab I opted for the complete installation. A first warning came out when the wizard asked me to have the windows native iscsi initiator installed or activated, so I got to stop the wizard to configure it. Maybe in future releases will be better to integrate iscsi initiator's activation directly into StarWind setup.

Once iscsi is activated on Windows 2008, installation goes on without a glitch. Only a warning about the drivers: probably they are not digitally signed, so Windows will ask you to confirm their installation.

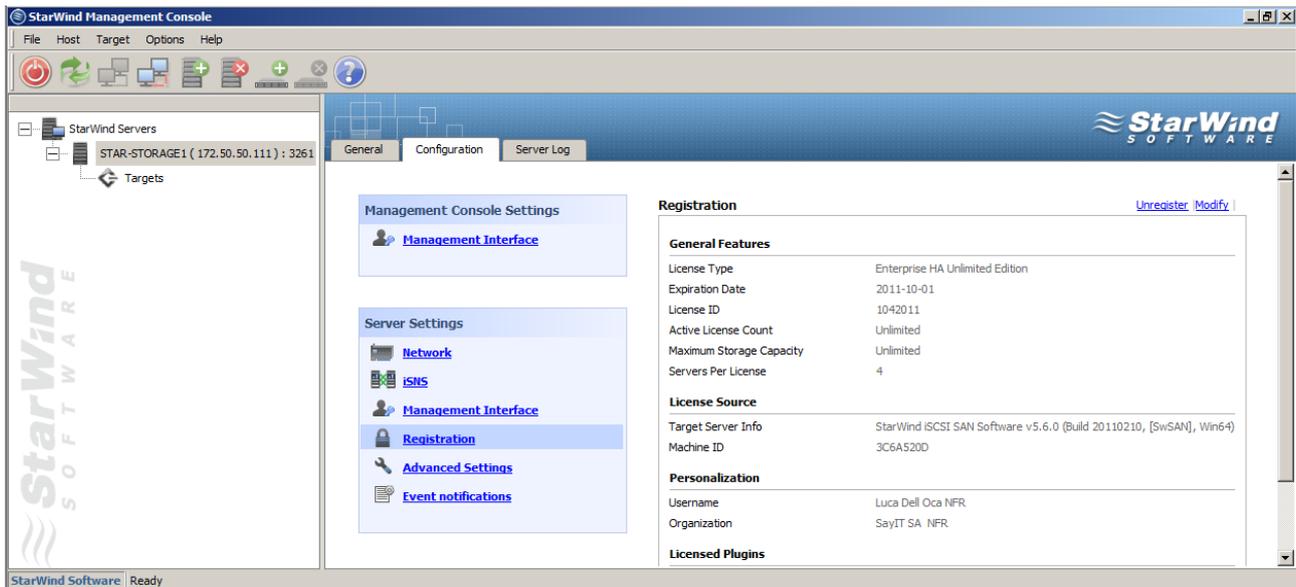
There are no other user interaction till the end of the setup wizard, and in few minutes the system is ready. Also, there is no reboot required. Overall, the setup is well-done.

USING THE CONSOLE

When you start the management console, the first task is connecting to the just installed system. You can input a specific ip address or hostname, or let the discovery feature find the installed systems. Network scan happens in few seconds, and this is the results:

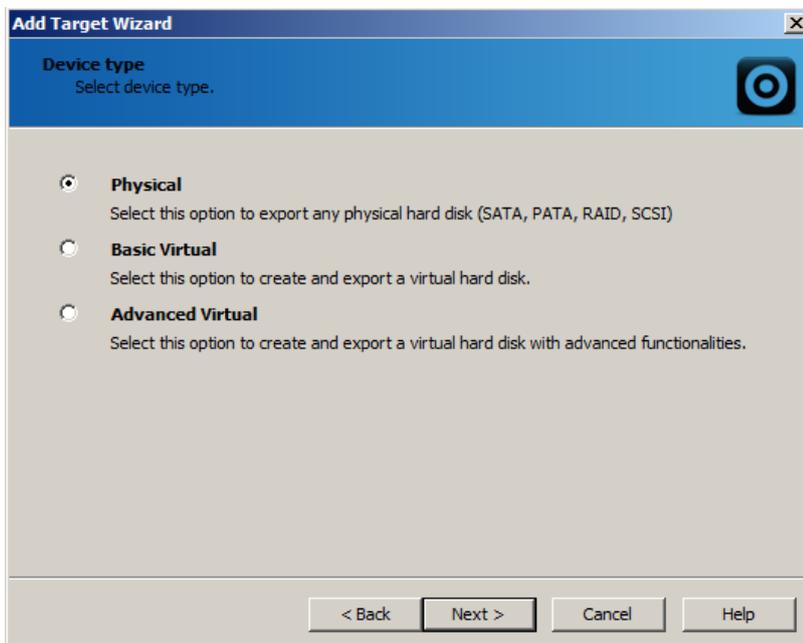


We move on to connecting to the host. Default user is root with “starwind” as password. An idea for future releases, better to force users to change the password during the first login.



This is an example of the management interface, is really well-made and easy to use. As you can see in the picture, I installed the NFR license I got to unlock the Enterprise HA Unlimited Edition, where all the features are enabled.

As my foremost use for the Starwind software would have been as an iscsi storage for vmware, I started to configure an iscsi target. After choosing a name and decided the type would have been "Hard Disk", a screen took my attention:



I opened up the manual to understand this choice (I had not read the manual until that and I installed all by myself, and that's a good point for the ease of use of the software itself). While Physical lets you map a LUN over a physical disk of the server or a raid array, the two Virtual modes create image files in different ways.

In basic mode we have an image file saved on disk, or a RAM disk loaded completely in memory to have really fast (please keep in mind RAM disk are completely lost at shutdown of the windows server!!)

In advanced mode, we have further features:



I started by creating two lun:

Vm-basic: basic virtual, image file device, 10 gb, enabling “fill with zeroes” and multiple iscsi connections, to use it on vmware clustering

Vm-ram: basic virtual, ram disk device, 1240 Mb (the minimum required by ESX)

During the creation of the LUNs I explored the menus, and I was shocked with pleasure for all the features in the software, “fill with zeroes”, caching management by single lun, and others usually sold on mid-size storage systems.

USE WITH VMWARE ESX

After proper configuration of the iscsi network, I mapped the two just created LUNs inside vmware node “star-esx1” and formatted it with VMFS filesystem and 8 mb blocksize.

Using some virtual machines template of mine, I created a small FreeBSD server and another virtual machine based on Windows XP, with 8 gb on disk.

The idea was to test usual work with vmware and check the behavior of Starwind, avoiding performance metrics since all the systems is virtualized in my lab notebook.

First, I tested online increase of the lun “vm-basic”.

In StarWind this activity requires only two clics on the image file. After growing the LUN from 10 to 12 Gb, using the Increase command on ESXi I also extended the corresponding VMFS filesystem, while the Windows XP virtual machine was running and downloading some torrent files. No problem at all.

Second test: trying to figure out the performance increase using RAM disk instead of image file, and I was curious since basically no other storage system in this price range offers this feature.

The FreeBSD virtual machine with his tiny disk usage was the ideal test machine for this.

The first boot from the image file took 1 min 07 sec

The second boot from the ram disk: 38 sec

These values are not scientifically exact, since I would need dedicated hardware to do more precise measurements, but it's anyway a proof of the value of this technology.

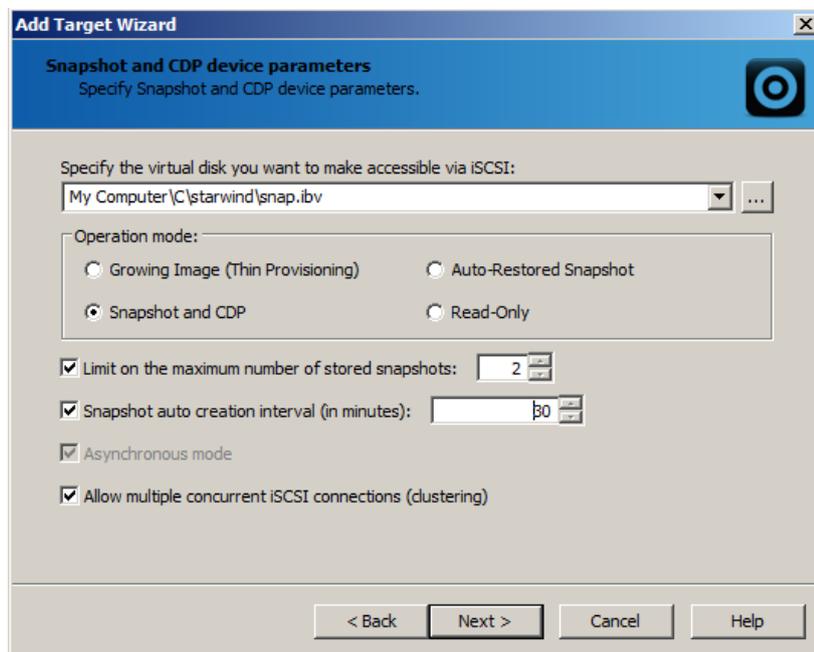
Using than the Windows XP virtual machine, I tested several vcenter commands involving disks: snapshot, restore from snapshot, storage vmotion and others. The StarWind software comes out really stable, even without having the possibility to push it to stress on dedicated hardware.

CDP AND SNAPSHOT

For sure the most interesting feature, available in all the editions, is the possibility to have a storage with CDP (continuous data protection) and Snapshots.

To create a volume for this purpose is simple: during the creation wizard we need to choose Advanced Virtual, Snapshot and CDP device, and create a virtual disk.

Small scolding to StarWind: there is no evidence in the software nor the manual that the image file for this usage needs to have the .ibv extension, I founded out by myself faking an import of an existing snapshot disk.



The options for number of stored snapshots and creation interval are disabled by default, we can enable them in this screen, verifying we have enough disk space for the growing snapshots.

30 minutes between two snapshot creations is the default value but also the minimum one can set, so near-CDP is a more precise term for this feature rather than CDP, anyway 30 minutes is enough in many environments.

Once the volume is created, I connected and formatted this LUN in vmware just like the others. I then moved the Windows XP virtual machine onto this new LUN.

To revert a snapshot, there is no one-click "revert" button in StarWind console. The procedure to revert a snapshot requires to mount a specific version of the snapshot just as it is a new LUN, and then from here finishing all the operations on the data inside the LUN.

The procedure can be enough if you use StarWind as a SAN for Microsoft or Linux systems and you need to restore single files; it's not so usable and becomes complicated if you use the LUNs for the VMFS filesystem in VMware.

CONCLUSIONS

StarWind is overall a really good product.

If you're looking for a software SAN and in the past you always looked at open source systems, for sure performances and features of StarWind exceed them and the price is right (995 USD with possibility to 2 Tb with CDP and Thin Provisioning).

And if you are evaluating SAN software from other vendors, StarWind can be a really good alternative.

Wait for a second article where I will analyze HA functions.

Acknowledgements to all the guys at StarWind for the help during the writing of this article.

Luca Dell'Oca

VCP Certified

VMUG.IT board member

ldelloca@sayit.ch

blog: <http://www.vuemuer.it>



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