Best practices for backing up virtual servers with Veeam software and StarWind storage

While virtualizing your applications increase their efficiency, you still need a backup solution to guarantee data protection of your workloads.
In a multi-hypervisor world, where VMware is still the undoubted leader, and Microsoft is slowly catching up, the use of powerful solutions that are able at the same time to support both environments can be the perfect solutions.

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StarWind iSCSI SAN is a powerful software solution that can turn a Windows Server into an iSCSI storage in less than 30 minutes.

On a Windows 2008 Server, that is equipped with compatible hardware, gigabit network connections, and a good amount of free storage space, you can install StarWind iSCSI SAN and create iSCSI targets to be used by VMware ESXi servers.
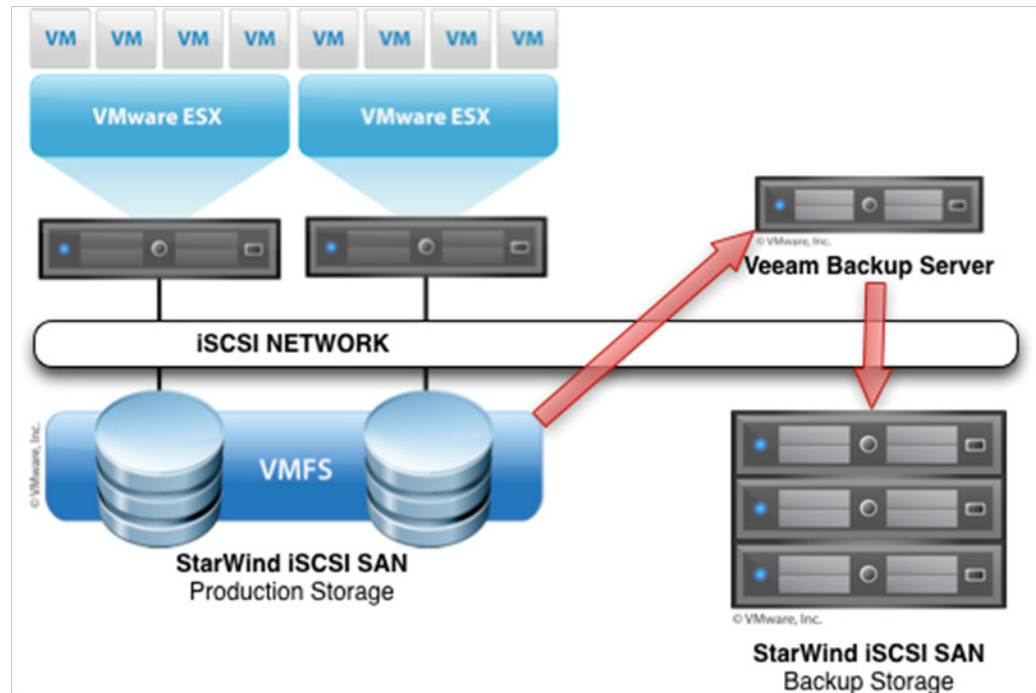
You can use StarWind iSCSI SAN systems both on the production storage to present LUNs to your ESXi servers, and as a backup target for your Veeam Backup server.

Since StarWind iSCSI SAN, as its name implies, exposes disks as LUNs via iSCSI protocol, your storage network can gain full advantage and run at its best if it is designed for both production and backup around this protocol.

First of all, iSCSI network should be isolated (electrically or by using VLAN) thus optimizing its performances and protecting it from fluctuations in network usage by other types of traffic.

Moving all your storage data inside this network will maximize the speed and availability of the overall environment and avoid data movement across the production network that is used by the VMs. Both production and backups will benefit from this.

To further protect your iSCSI network, you can configure the Access Rights on the StarWind SAN:

By using a security concept known as "Least Privilege", assign the minimum privilege that system needs to have to complete its tasks.

The StarWind iSCSI SAN deafault setup allows every remote initiator to connect to the LUNs. This is a good way to go from startup to production in a short time. However, when you need deeper security, you can change this ruleset to allow connections only to ESXi servers and to the Veeam Backup server.

STARWIND iSCSI SAN AS PRODUCTION STORAGE

Once StarWind is installed and you have connected it to the iSCSI network, you need to create an iSCSI target for the VMware datastores. Here, we will store VM virtual hard disks, and from here, Veeam Backup & Replication will extract them during backup activities.

In the StarWind console, the creation of a new "Target" is easily accomplished thanks to the use of wizards that guide you through the process.
To maximize the performance and take advantage of all the features StarWind offers, there are some hints you may follow:
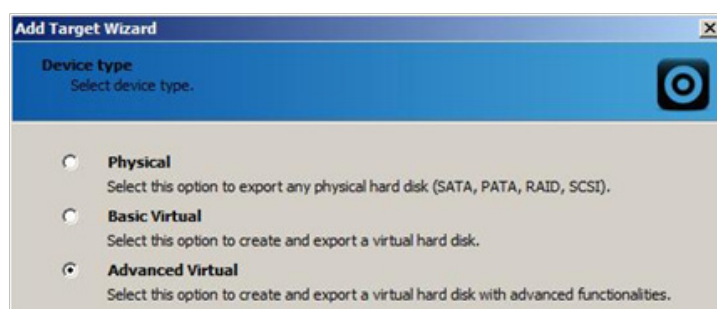
• Create your targets as "Advanced Virtual": this device type gives you all the advanced options of StarWind, such as Snapshots, CDP, Thin Provisioning and much more.

In this way you need not learn in the future you must destroy a target because the settings you chose are no longer useful.
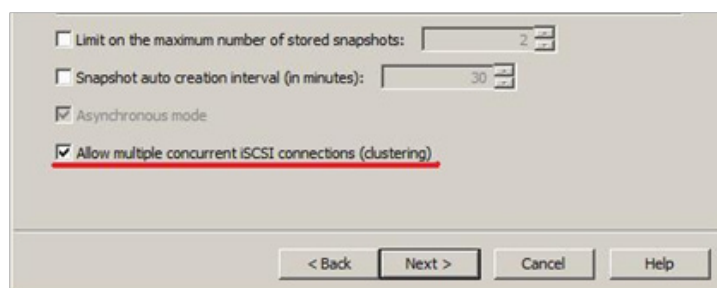
• Remember to configure the target for clustering.
This is a fundamental step you need to do: it allows the target you are creating to be read and written at the same time by the various ESXi servers, but it will also be accessed by Veeam Backup.

Once you have published the target to the ESXi servers, you can then load your VMs into this new datastore hosted into StarWind iSCSI SAN, and run all your virtual machines from there. All the features that you previously selected will help you optimize the production storage in terms of performance and high availability. For example the feature Snapshots gives you an ability to create a point in time copy of a running datastore without interrupting operations. Then, in case

of need, with a few clicks, you will be able to revert to a previous state without even using a restore from backup.

STARWIND iSCSI SAN AS BACKUP STORAGE

Once your production storage is running, it is time to configure your backup environment.

First of all, you have to remember the goal of a backup target, and design your storage hardware accordingly. While production storage needs to satisfy performance issues, at the end, the backup target needs plenty of disk space at a fair price. The more space you can have the longer retention time you can set on Veeam Backup & Replication thus ending with more restore points.

StarWind iSCSI SAN is an ideal solution also for backup storage. While in production you can choose among the several features it offers to maximize performances. In a backup scenario, you will leverage those features aimed to space savings such as Thin Provisioning and Global Deduplication and in this way, StarWind iSCSI SAN will allow for longer retention periods of Veeam backups.

A common design for this kind of storage is made of a fair amount of SATA disks, since they offer huge capacity at a very low price. To guarantee data redundancy, consider using a RAID card that is able to do Raid-5 since this configuration uses a N+1 disk array that gives you the best Price-per-Gb ratio. It is slower than other Raid configurations, but it is a good trade-off between performance and space.

Another element you need to consider is network connectivity. You do not want to have your backup target to be the primary bottleneck of backup operations. Veeam is able to gain high backup speed, and StarWind iSCSI SAN is able to "squeeze" every IOPS that the underlying hardware has to offer, but only if the backup target server is properly sized.

One advantage of using standard server hardware with StarWind Software on top of it, is that you can eventually upgrade the underlying server if its performance is too low. Unlike proprietary storage, you can start with a small hardware, do your tests, run your first backup, and upgrade the hardware if and when it's needed.
No unnecessary expenses at the beginning of your project, but small scale-ups in your storage as your environment grows, thanks to the use of storage software like StarWind iSCSI SAN.

VEEAM BACKUP & REPLICATION WITH STARWIND ISCSI SAN

Once you setup both your production and backup storage with StarWind iSCSI SAN, it's time for Veeam Backup & Replication to enter the stage.

By far, the best practice for executing backups in a VMware environment with iSCSI storage like

StarWind iSCSI SAN is the use of the so called "SAN mode". The Veeam Backup Server connects directly to the iSCSI fabric that is exposed by StarWind, extracts the .vmdk files that represent the virtual disks of the virtual machines, and saves them into the backup storage, all without interference with the LAN network.
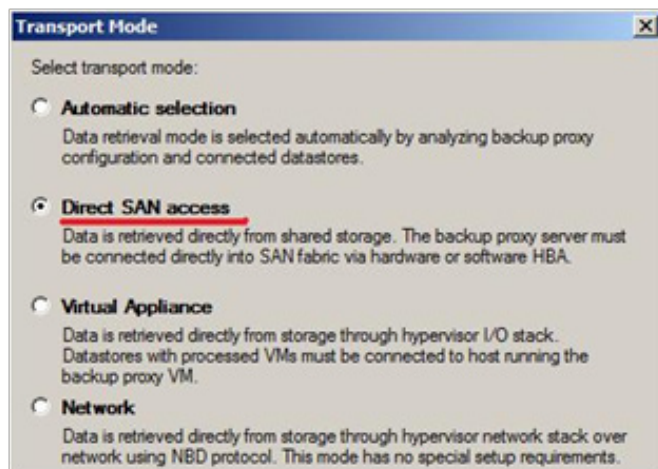
In this scenario you will use a physical Windows 2008 server where you will install Veeam Backup. For the sake of completeness, since iSCSI is a TCP-based protocol, it can also be connected to a virtual machine, thus you can realize the same configuration with Veeam installed in a VM. For best performance, however, a physical server is the best solution for hosting Veeam software.

This server will have two different Ethernet connections, one towards the lan network (to communicate with vCenter and manage snapshots creation/deletion) and the other towards the iSCSI network.

Through this second connection, Veeam connects to the Production StarWind iSCSI SAN and runs its backup jobs at maximum speed, thanks to dedicated CPU power of the underlying server. StarWind iSCSI SAN also manages the backup storage, sized accordingly to your backup needs, and is connected to the iSCSI network too.
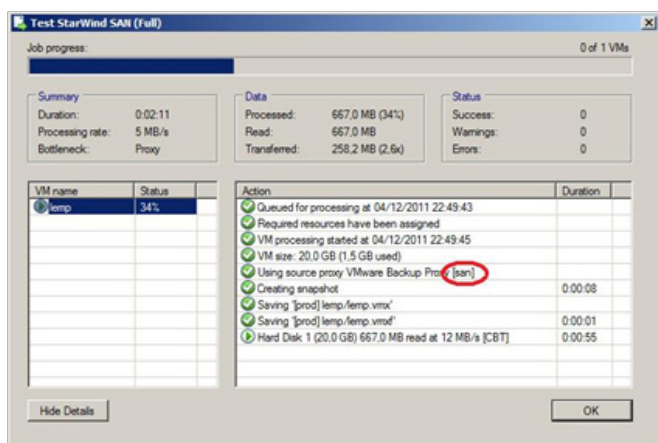
You can use another product by StarWind, the free StarWind iSCSI initiator, to connect the Veeam Backup Server to the LUN presented by StarWind, both in production and in backup.

When you run a backup job, you will be able to see the use of the Direct SAN mode inspecting the realtime statistics of the job itself: if you see the [san] text in the line marked in red, you will know Direct SAN mode is working.

With this design, you will have a completely dedicated iSCSI network for all your VMware operations. Data movements will use the separated network without any limit created by other network traffic and in this way, all the iSCSI data will flow around at the maximum possible speed.

CONCLUSIONS

Leveraging the advantages of a complete iSCSI network for both production and backup storage, the combined use of StarWind iSCSI SAN and Veeam Backup & Replication can give you a complete storage infrastructure where you can run your virtual machines and safely backup them.

Both StarWind iSCSI SAN and Veeam Backup & Replication are software products running above the Microsoft Windows server, so you can save money on the underlying hardware and scale it accordingly to your growing needs.