SEP sesam Online Backup for VMware ESX

This document describes the technique utilized by the SEP sesam VMware module to backup VMware ESX environments and the relevant licenses required. SEP sesam supports VMware Consolidated Backup (VCB). For enhanced understanding of our software we are providing a brief, technical discussion for VMware ESX without VCB and a further discussion which includes VCB.

VMware ESX Backup without VCB

Conventional Backup Solution:

In VMware environments (also with ESX) all servers (guests) are currently backed up the same as standard host based servers, or through a regular database backup solution. A backup agent for each guest is required. Such a configuration creates a higher demand or CPU utilization of the target server or VMware Host.

Another backup method is to completely copy the virtual disks using the VMware Service Console within ESX. The disadvantage to this solution is the large amount of data from each backup and the requisite data storage required as well as the manual labor that must be performed during such operations. One of the main disadvantages is that a recovery is only possible for the entire system. The restore of individual files or directories isn't possible.

VMware ESX Backup with VCB Backup Proxy (VCB)
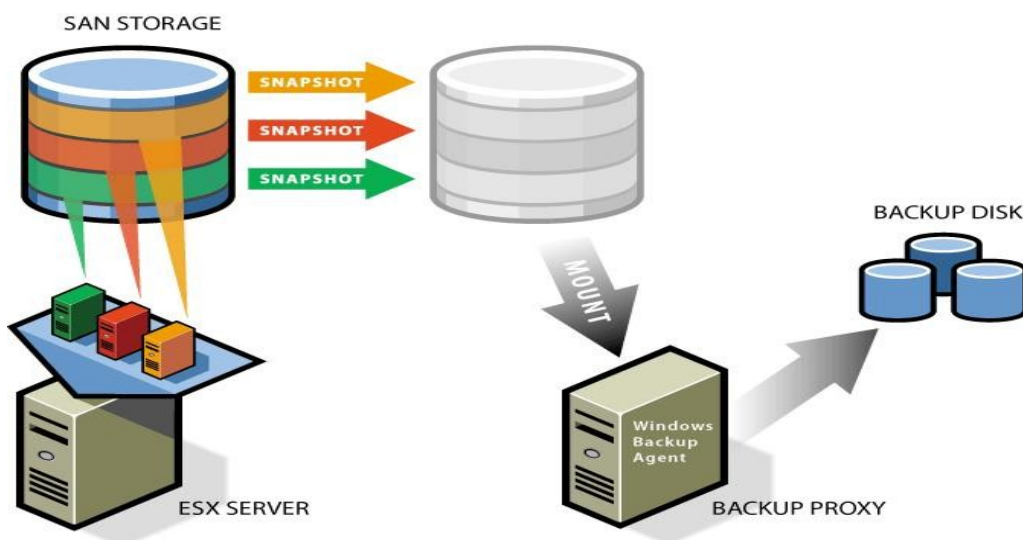
VMware Consolidated Backup is an access method from VMware and allows the backup of the virtual machine from a central Backup Proxy, directly from a SAN, without diverting or directing data over the LAN. The Proxy is a physical Server running Microsoft Windows Server 2003, and it must have access to the same SAN where ESX is running. Ideally the server should be connected to and controlling its own streaming drives or a Tape Library. The Proxy could also be connected to a remote backup device, e.g. disk farm on a NAS.

However, VMware Consolidated Backup is not a backup program, it delivers only the access to the virtual disk drives on the Windows guest. The actual backup process must be taken over and completed by a backup solution.

A backup using VCB works on a Snapshot Basis and must use a custom Stop/Start scripted procedure which also provides access to the working database to function and provide a consistent backup of the guest systems. Using VMware Tools you gain access to the user specific scripts to work on the guest virtual machine.

Since the Backup Proxy cannot write on the virtual disk of a running virtual machine the recreation or restore of individual files onto the guest system always occurs via the LAN.

VMware ESX Backup with VCB and SEP sesam

The basic description for the backup is also the framework for a backup performed by SEP sesam. The illustration below shows the SEP sesam Clients (Guest system on the ESX server) and the ESX Server.
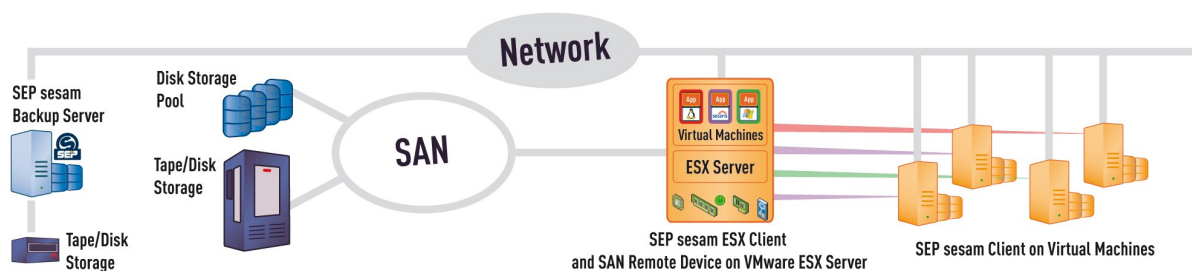
The SEP sesam Backup Server adjoins and complements via the ESX Client backup procedure. The backup follows the processes allowed by VCB and the Snapshots from the Guest system on the ESX Server are created and tendered for backup by SEP sesam. The location of the Snapshots also follows the configuration of the ESX Server environment in SAN, NAS or locally on the VMware ESX Server!

The second step stores the generated data on the available storage space (disk or tape) and is controlled by the SEP sesam Server. The data transfer runs from VMware ESX Server (SEP sesam Client) over the LAN to the SEP sesam Backup Server.

With the additional installation of a SEP sesam SAN Remote Device (SRD) on the ESX Server it is possible to store data within the guest snapshot on the SAN. The SAN Remote Device has access to the Save Sets on the SAN connected devices. The timely and logical control of the backup is performed via the SEP sesam server, the dataflow, however, stays completely within the SAN (LANfree backup) and only travels on the ESX Server when using a physical Tape Device (Loader) or a virtual Tape Library.

Independent of whether the backup proceeds as a LANfree Backup or over the LAN we recommend the additional installation of SEP sesam Client Software on the Guest Systems. This combination of regular and responsive backups of snapshots along with daily incremental backups of the LAN environment for the Guest Systems offers optimal performance for strategic VMware environments. Data volume will be greatly reduced and SEP sesam offers the added benefit of fast full backups. Implementing this solution allows exact data restores of single or multiple files, **without regard to the Operating System running on the Guest .**

## VMware ESX Backup with VCB Backup Proxy and SEP sesam

The utilization of a VMware Backup Proxy in an environment with SEP sesam is also possible. This requires the installation of a SEP sesam Client on the Backup Proxy (Windows 2003 Server). The SEP sesam Server is combined with the Backup Proxy of the guest system on the VMware ESX Server. Data is requested from the Backup Proxy via a (Snapshot) and copied to the local disk. (SAN Device ESX to Backup Proxy Disk). The Snapshot Data are then transported over the LAN to the backup device and stored.
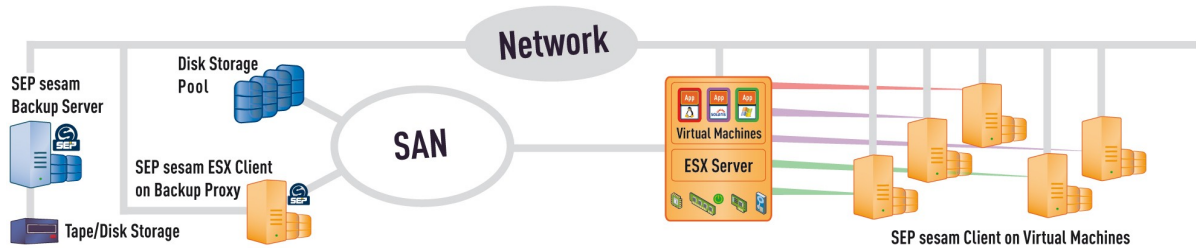
In a VMware ESX Server environment with Backup Proxy you can also use a SAN Remote Device (SRD).

Installation and Licensing Requirements
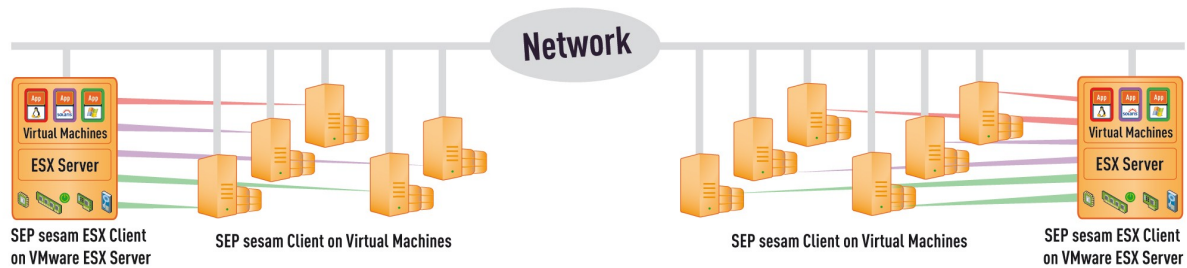
Stand-Alone ESX Server
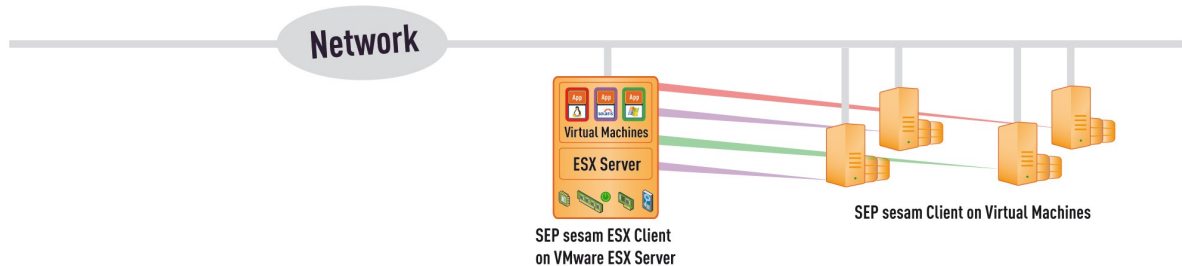
Installation:

1x SEP Client on Guest and ESX Computer (5x)
1x ESX Package (RPM)

Licenses Required:

4x Data backup clients (BC)
1x ESX Server Client (5 Seat)

In this rather simple environment the data from the guest systems are combined as one Snapshot (on the ESX Server) and completed as an incremental backup. The number of the guest systems is covered by the initial SEP sesam Backup Client for ESX Server. The dataflow is completely directed through the LAN. Each SEP sesam Backup Client for ESX Server includes a SEP sesam Backup Client. This simpler configuration does not require additional licenses.

Whitepaper

ESX Server Combination (VMotion possible)

Installation:
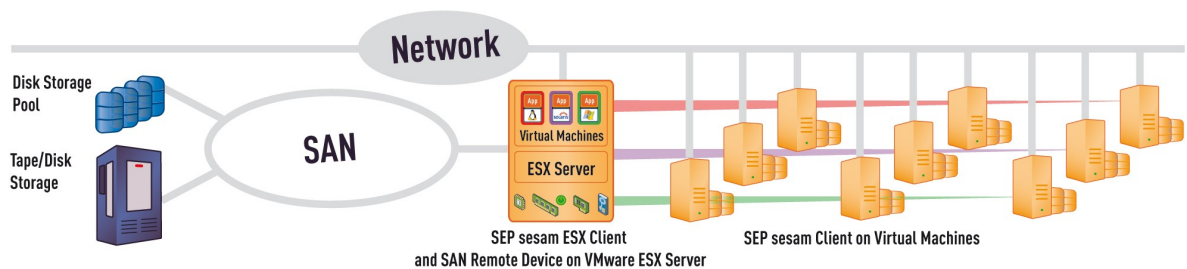
1x SEP Client on Guest and ESX Computer (13x)
2x ESX Package (RPM)

Licenses Required:

11x Data backup clients (BC)
2x ESX Server Client (5 Seat)
1x ESX 5 Seat Add-on

The environment with two VMware ESX Servers and a greater number of guest systems also stores all data via the LAN to the backup device. Licensing of the Guest Servers (Seats) is handled by SEP sesam globally. Each SEP sesam Backup Client for ESX Server includes a SEP sesam Backup Client and this configuration does not require additional licenses.

ESX Server Combination (VMotion possible) LANfree

Installation:

1x SEP Client on Guest and ESX Computer (10x)
1x ESX Package (RPM)
1x Remote Device

Licenses Required:

9x Data backup clients (BC)
1x ESX Server Client (5 Seat)
1x SEP sesam SAN Remote Device
1x ESX 5 Seat Add-on

In this environment VMware ESX Server becomes an active backup component with the installation of SEP sesam Remote Device. The data stream does not flow over the LAN to the SEP sesam backup server, but rather to the SAN Remote Device Function and directly to SAN connected tape loader. In the event a tape library is connected to a SAN, a per-slot license (SEP sesam Autoloader Support) is required.

Basic information for SEP sesam Options and Licenses can be found on

www.sep.de / www.sepsoftware.com.