

Backup Options

When migrating a physical system to a virtual system, more backup choices become available.

The “Gold Standard” Backup

The other techniques discussed below are useful for on-line, system-running, backups. But, a 100% perfect backup can be achieved by shutting down VMS and CHARON, and copying the container files (and configuration file!) to somewhere else. This is sort of like a “standalone backup” of the old days.

If VMS-format SAN mount points are used, one of the other techniques will have to be used, because VMS is required to access the drives. However, you should boot VMS from an different system disk so that the “live” system disk can be backed up -- /IGNORE=INTERLOCK can invalidate a backup, especially if the queue manager is running.

A No-No: Windows File Backup

When VMS has a disk open, copying its container file or SAN mount point with Windows tools is likely to produce an unusable backup. Windows tools have no way to flush VMS transactions out to disk, making it “quiet” long enough for a backup. CHARON opens the disk for exclusive read/write access in Windows, which should serve as a warning to not back up the file or mount point.

Another No-No: Windows File Shares

It would seem quick and easy to create virtual tapes or disks on a Windows file share, sometimes referred to “NAS” storage. This isn't possible for most CHARON products, because CHARON is running as the SYTEM user, which doesn't usually have the privileges to access NAS storage. This is especially true for systems running CHARON as a Windows service. Even if it works, it's neither tested nor supported by Stromasys.

Physical Tape Backup

This is the traditional approach to backup. Tapes are large, sometimes much bigger than the disks on a physical system. For systems with lots of disk, automatic tape loading (“jukebox”) drives allow unattended writing of multiple tapes.

Tapes are slow, but that's not generally a problem with doing a backup. Tapes don't support random access, so retrieving a single file from a backup can be very slow. But the primary purpose of tape backup is the ability to recover from a disaster.

This option is supported by CHARON. Not all autoloaders are supported, since support depends on the SCSI commands used to control the loader. Stromasys has a list of tested and supported models.

In order to use tape backup, the host system must have a SCSI interface that is compatible with the desired tape drive. If the drive is new enough that Windows installs a device driver, configuration is extremely easy. If Windows does not have a device driver, some, but not all, CHARON products can run the SCSI bus directly, which allows any type of SCSI tape drive to be used.

Virtual Tape Backup

Most CHARON products support the concept of “virtual tapes”. Operation from inside VMS are

identical to physical tapes, but the “tape” is actually a Windows file that holds the VMS tape structure and data. Once the tape is dismounted in VMS, a Windows backup tool can come by and archive the “tape”. The Windows tool that archives new backups should date-stamp the file, because most CHARON products require that any “tapes” to be restored have the name and directory as specified in the CHARON configuration file.

A virtual tape can be many times faster than a physical tape, which speeds single-file restore. Also, a virtual tape can be of any size, only limited by the size of available disk space.

Virtual Disk Backup

This could be similar to Virtual Tape, in that the backup could be done to a virtual disk. Once the virtual disk is dismounted in VMS, a Windows tool can come by and archive the disk image.

One downside of this approach is that the virtual disk is a fixed size, configured in advance. The big disadvantage is that CHARON does not allow a different disk image to be swapped in while CHARON is running, so any restores will require an outage.

DECnet Backup

DECnet allows the BACKUP tool to create savesets on another DECnet node without the need for local storage on the system creating the backup. It also preserves all VMS file attributes. This is the easiest way to backup across a network that allows DECnet traffic. DECnet is available for Linux.

Savesets should be verified once received on the remote system – transient network issues are not handled gracefully by BACKUP, causing blocks of the saveset to silently disappear.

File restores are a problem, because BACKUP can write *to* a saveset on a remote system, but cannot read *from* a saveset on a remote system. The way around this is to copy the saveset to a “scratch” area on the system, much like the FTP Backup approach.

FTP Backup

FTP backup isn't used by most physical systems because it requires a large (> largest single disk) “scratch” area on the system. Most physical systems don't have disk space to “burn” -- because the disks are expensive or unavailable, or because a physical limit has been reached on the disk controller.

But for CHARON systems, it's pretty straightforward – do a backup to a “scratch” virtual disk, optionally ZIP the saveset to save VMS file characteristics and reduce transfer time, and then FTP to some system with an FTP server.

Restores of single files does require that the appropriate saveset be copied back to the scratch area so it can be accessed by VMS.

SAN Backup

This isn't really a technique, it's a variation. Put the virtual tape or virtual disk on a Windows-formatted SAN mount point, and then use built-in SAN backup tools to capture those tapes/disks.

SAN LUN's that hold VMS file structures shouldn't be backed up by the SAN while CHARON is running, because the contents are worthless, as described earlier in this document.

Copyright 2015 by Stanley F. Quayle, stan@stanq.com. All rights reserved.