NetJapan ActiveImage Protector 2016 Hyper-V - Best practice

1. Supported OS for Hyper-V host based online backup:

Here is a list from Microsoft per Hyper-V host OS version:

Hyper-V 2016: https://technet.microsoft.com/en-us/windows-server-docs/compute/hyper-v/supported-windows-guest-operating-systems-for-hyper-v-on-windows

Hyper-V 2012 R2: https://technet.microsoft.com/en-us/library/dn792027(v=ws.11).aspx

Hyper-V 2012: https://technet.microsoft.com/en-us/library/dn792028(v=ws.11).aspx

Hyper-V 2008 R2: https://technet.microsoft.com/en-us/library/cc794868(v=ws.10).aspx

- What Windows Server OS version is the Hyper-V host running?
- What Windows Server / Desktop OS versions are the Hyper-V guests?

This basic question is because if a virtual guest OS is newer as the physical host OS, a online backup is not supported by Microsoft, even the virtual guest running on these hosts. **Note:** This rule is valid up to Hyper-V 2012 hosts, Hyper-V 2012 R2 and newer hosts are not affected.

A possible workaround would the following if you see in the virtual guest Windows Application event logs:

Event ID: 13
Source: vmicvss
Description: Windows cannot perform an online backup of this system because scoped snapshots are enabled.

So solve this issue, you need to add the following registry value on this virtual guest in Windows registry, be careful this is not a recommend work around:

Run the command prompt as Administrator.

Run "regedit" to start Windows registry editor.

Location: HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\SystemRestore\

Create a new DWORD 32-bit entry with this name: **ScopeSnapshots** as value use: **0**

2. The guest OS and host OS both supported by Microsoft, but the virtual guest machines don't backup in online state:

A) Quick test for Hyper-V online backup support:

To identify problematic virtual guests, which not fit Microsoft requirements for Hyper-V host online backup, you can run the follow command on the Hyper-V host:

1. Open as Administrator a command prompt
2. Run the command:
diskshadow /L C:\vss-hyper-v-test.txt
3. Run the command:
list writers
4. Wait a few minutes you can close the command prompt later entering exit
5. Open the file "vss-hyper-v-test.txt" stored on C:\ volume and search for the key words "Offline" and "Saved"

All listed virtual guest machine which have either "Offline" or "Saved" are don't match Microsoft requirements for Hyper-V host online backup and you can check with the following list next.

B) Here is a check list of possible reasons why specific virtual guest machines won't run a online backup:

- The Hyper-V guest "Integration Services" need to be up-to-date, from Hyper-V 2008 R2 until Hyper-V 2012 R2 you can upgrade them using the Hyper-V manager for each single Hyper-V guest by clicking on "Action" > "Insert Integration Services Setup Disk". Since Hyper-V 2016 you need to use Windows update feature to get latest Hyper-V guest "Integration Services". Here is a overview of all versions:
https://social.technet.microsoft.com/wiki/contents/articles/33631.hyper-v-integration-components-versions.aspx

- All Hyper-V guests need to have at least one SCSI controller attached even not virtual disk file is added to this controller type. To add a SCSI controller you need to shut down the Hyper-V guest and add them through the Hyper-V manager.

- Open the Hyper-V manager console and in the Hyper-V guest settings at the "Integration Services" tab, the option "Backup (volume snapshot)" need to be enabled.

- The Windows Hyper-V guests should only contain FAT32/NTFS/ReFS formatted virtual hard disks. Additional check for unformatted or RAW partitions, or any iSCSI or pass-through disks, they also not support for Hyper-V online backup.

- The free space on the Hyper-V host disks and the virtual guest machine disks need to be at least 10%.

- The Shadow Storage space size should be set at least to 5% for Hyper-V host and virtual guest machine.

- Make sure that for the virtual guest machine is no Shadow Storage space assignment of a volume set to different volume. The Shadow Storage space assignment need to be stay on each disk by itself.

- Check in the Windows guest machine at the disk management for Windows dynamic disks, which are not supported by Microsoft Hyper-V, only basic disks are supported (this is not related to VHD/VHDX dynamic disks on the Hyper-V host itself).

- In the virtual guest machine the VSS provider "Hyper-V Volume Shadow Copy Requestor" service need to be at running state (this doesn't apply at Hyper-V 2008 R2).

- The Hyper-V Host checkpoint file location should be stored at the same volume as the virtual disk file location for the virtual guest machines.

Notes:

- In really rare cases it might necessary to restart every time the VSS provider "Hyper-V Volume Shadow Copy Requestor" service 5 minutes before the Hyper-V host backup starts. This is may require for a specific virtual guest machine which fits all Microsoft requirements, but the virtual guest machine still only backs up in Offline or Saved state. This is a possible workaround for such kind of issues. You can trigger a Windows scheduler task, to automatically restart these "Hyper-V Volume Shadow Copy Requestor" service 5 minutes before every backup task, which will be a possible option, but we also recommend to contact Microsoft Support for assistance.

- In other rare cases you might face Hyper-V-VMMS error on creating Hyper-V checkpoint for specific virtual guest machines. You may find the following event log errors - source: Hyper-V-VMMS, with Event ID 10150, 18012, 3280 and 16010.

If you have this kind of issue, a possible solution are the following steps:

1. Open the Hyper-V manager console and in the Hyper-V guest settings at the "Integration Services" tab, you need to disable the option "Backup (volume snapshot)".

2. Now run a Hyper-V host based backup, since this option is now disabled for this virtual guest machine, this kind of backup does not use VSS method and is only to fix this kind of Hyper-V-VMSS checkpoint creating issue. Note: Do not run this backup task at regular working hours to avoid glitches during the productive virtual guest is running.

3. After this one time backup without this option enabled is done, you can now go back to the "Integration Services" tab and you need to re-enable the option "Backup (volume snapshot)".

4. Now run a new Hyper-V host based backup and the Hyper-V-VMMS checkpoint creation errors should be gone.

If you still have issues we recommend to contact Microsoft Support for assistance.

3. Hyper-V VSS trouble shooting:

For Hyper-V hosts, the following can help to improve Hyper-V virtual guest VSS backup timeout.

Run the command prompt as Administrator.

Run "regedit" to start Windows registry editor.

Location: HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Virtualization

Change the following value "**VssRevertTimeout**" to **360** (decimal). If it not exist, create a new DWORD 32-bit value.

4. Hyper-V backup checkpoints are not deleted:

In some rare cases you might face Hyper-V-VMMS error at deleting stage for Hyper-V backup checkpoint for specific virtual guest machines. You may find the following event log errors - source: Hyper-V-VMMS, with Event ID 10154. In most scenarios the "Hyper-V Virtual Machine Management" service hang, in the most cases a restart of this service will merge afterwards the Hyper-V backup checkpoints automatically.

If mentioned solution does not solve the problem a other method is to use Windows PowerShell.

1. Run PowerShell as Administrator (important step, even you already a admin user)
2. You can check first all related Hyper-V backup checkpoints for the specific virtual guest machines, with the following command:

Get-VMSnapshot -ComputerName "*YOUR_HOST*" -VMName "*YOUR_VM*"

Note: It might be necessary to use the Fully-Qualified Domain Name (FQDN) from your Hyper-V host.

3. To remove the Hyper-V backup checkpoints, you need to run the following command:

Get-VMSnapshot -ComputerName "*YOUR_HOST*" -VMName "*YOUR_VM*" | Remove-VMSnapshot

4. This process can take some serious time, depending how large are the Hyper-V checkpoint file and how fast the storage from this host. In some cases if you could shut down the specific virtual guest machine before you merge the Hyper-V backup checkpoint to improve the speed for this task.

5. General usage with ActiveImage Protector 2016 for Hyper-V

A) Backup creation

Stand-alone Hyper-V Host

If you use a backup image file that does not meet the requirements, you may get the problem that you fail to ReZoom (restore) a virtual machine from the backup image file.

ReZoom feature does not support backup image files created by Cold Backup feature.

- The volume (disk) which the configuration file of the virtual machine, virtual hard disk file and snapshot file are saved in, and system volume (disk) have to be included in the backup source.

Hyper-V Cluster Shared Volume

To back up Hyper-V cluster shared volume (CSV) configured with Windows Server Failover Clustering (WSFC), please make sure that you use a backup image file meeting the following requirements.

If you use a backup image file that does not meet the requirements, you may get the problem that you fail to ReZoom (restore) a virtual machine from the backup image file.

For Windows Server 2008 R2 Hyper-V Hosts:

Please select a cluster shared volume (or disk) where the configuration file of the virtual machine, virtual hard disk file and the snapshot file are saved as the backup source.

- Disks and volumes set with no ownership are not supported to back up. Please select a backup source set with ownership.

- Before you start running a backup task, please make sure that the entire virtual guest machines on CSV are shut down.

- Only full backup is supported. Incremental backup is not supported.

In order to ReZoom virtual machines from a backup image file, you need to obtain information from the respective virtual machines ownership nodes while backing up. Go to [*Advanced Setting*] - [*Cluster Node*] in Backup Wizard, and enter credentials for domain administrator in Domain Admins group of Windows Server Failover Clustering (WSFC).

* The maximum number of ownership node of which information can be obtained should differ depending on the license you have. For more detailed information please contact NetJapan Sales staff.

For Windows Server 2012 Hyper-V or later Hosts:

Please select a CSVFS volume where the configuration file of the virtual machine, virtual hard disk file and the snapshot file are saved as the backup source.

- Go to [*Preference*] - [*General*] and disable [*Skip CSVFS volume with no ownership*] option, so that CSVFS volume with no ownership can be backed up.

- If you want to schedule another backup task at the same time for the same CSVFS source volume on a different node, please ensure that the above option is not disabled. If the option is disabled, depending on the status of the source volume's ownership, execution of a backup task may cause VSS confliction.

- Only one CSVFS volume can be backed up by running one task. ReZoom feature does not support a virtual machine configured across multiple CSVFS.

- In order to ReZoom virtual machines from a backup image file, you need to obtain information from the respective virtual machines ownership nodes while backing up. Go to [*Advanced Setting*] - [*Cluster Node*] in Backup Wizard, and enter credentials for domain administrator in Domain Admins group of Windows Server Failover Clustering (WSFC).

* The maximum number of ownership node of which information can be obtained should differ depending on the license you have. For more detailed information please contact NetJapan Sales staff.

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