Backup Exec 16 Virtualization Enhancements

The purpose of this technical brief is to introduce the enhancements made to Veritas Backup Exec 16 for virtualization.

Backup Exec 16: VMware Enhancements

Support for vSphere 6.5

The planned release date for vSphere 16 also known as vSphere 6.5 is mid-November 2016. VMware has an N-2, N+1 parity support policy for VDDK versions. This means that a given VDDK version will support 2 prior versions and 1 forward version. Backup Exec 16 continues to use VDDK 6.0.2 to support vSphere 6.5 as well as vSphere versions 6.0, 5.5, and 5.1. Some of the new features of vSphere 6.5 that Backup Exec 16 supports are:

- Virtual hardware version 13.
- Non-Volatile Memory Express or NVMe controllers. These are logical interfaces for solid state devices or SSDs.
- Remote Direct Memory Access or RDMA controllers, which is a direct memory access from the memory of one computer into that of another without involving either one's operating system.
- EFI secure boot. Secure Boot is a security standard developed to ensure that a computer boots using only software that is trusted by the PC manufacturer.
- Force EFI setup. The time between when a user powers on the virtual machine and when it exits the BIOS or EFI, and launches the guest operating system software can be short. A user can change the boot delay or force the virtual machine to enter the BIOS or EFI setup screen after power on.

Note that Backup Exec 16 does not support the encrypted virtual machines feature of vSphere 6.5.

Changes to the Backup Exec VSS provider

The Backup Exec VSS provider is installed when the Remote Agent for Windows Servers or RAWS software is installed on a VMware virtual machine. Prior to vSphere 6.5, the RAWS installer would remove the VSS component from the VMware tools installation. Removing the VSS component effectively disabled the VMware tools VSS provider. This allowed the Backup Exec VSS provider to run without a conflict. As of vSphere 6.5, for VMware tools 10.1 and higher, the RAWS installer updates the `tools.conf` file in `C:\ProgramData\Vmware\VmwareTools` to include the lines:

- `[vmbackup]`
- `enableVSS=false`

For VMware tools versions prior to 10.1, the behavior remains unchanged. Fault tolerant virtual machines and encrypted virtual machines do not support the Backup Exec VSS provider, hence a GRT enabled backup of these virtual machines cannot be performed.

Backup Exec 16: Hyper-V Enhancements

Backup Exec 16 - Hyper-V 2016: Supported features

All the features supported for virtual machines running on Windows 2012 and Windows 2012 R2 Hyper-V hosts are now supported for Windows 2016 Hyper-V hosts by Backup Exec 16. Some of these supported features include:

- Backups of Windows 2016 Hyper-V host at a server level - C, System State , and so on
- Backups of virtual machines running on the Windows 2016 Hyper-V host
- Full, Incremental, and Differential Hyper-V backups to disk, tape and cloud storage
- Integration with the Hyper-V platform for optimized backup and recovery processes
- Granular file and application object recovery of Hyper-V

The two new features that Backup Exec 16 now supported with Windows 2016 Hyper-V are:

- Instant Recovery of Hyper-V virtual machines
- Physical to virtual conversion and backup to virtual conversion of Hyper-V virtual machines

Hyper-V 2016 Physical to Virtual (P2V) and Backup to Virtual (B2V) support

Towards the end of Physical to Virtual or Backup to Virtual conversion, there is a driver injection phase, which allows the virtual machine to boot successfully. For this purpose, the P2V or B2V wizard requests for the Hyper-V Integration components ISO or the VMware tools ISO.

With Hyper-V 2016, the integration services that were traditionally installed separately inside the guest virtual machines are now delivered through Windows update. The ISO image is no longer required to update the integration components. As a result, the **Browse** button is disabled if the Hyper-V host is running on Windows Server 2016 or later.
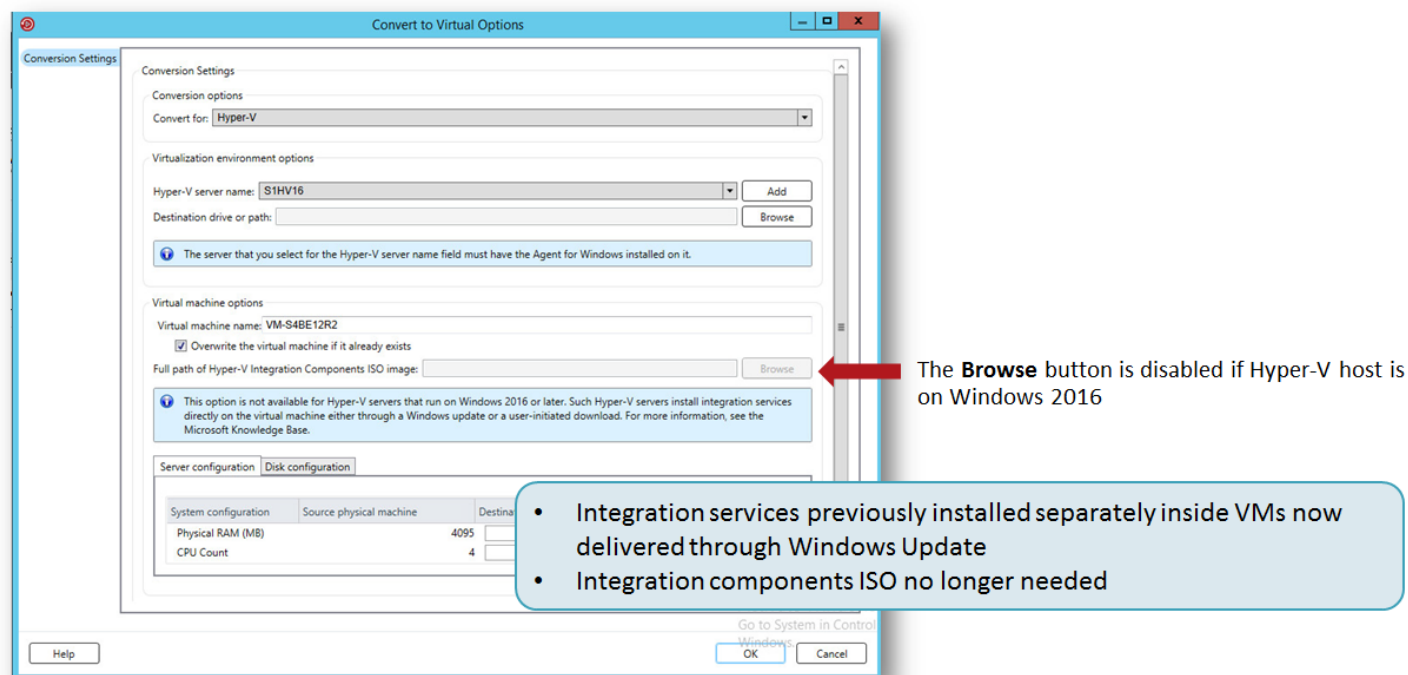

Figure 1 – Browse button is disabled if the Hyper-V host is running on Windows Server 2016 or later

Hyper-V 2016 Instant Recovery

In Hyper-V 2016, the virtual machine configuration files use a new format, which makes reading and writing configuration data more efficient. The new format also makes data corruption less likely if a storage failure occurs. In Hyper-V 2016, the virtual machine configuration data file uses the `.VMCX` format, while in Hyper-V 2012 R2, it used the `.XML` format. The runtime state data files use the `.VMRS` format in Hyper-V 2016. Virtual machines imported to Hyper-V 2016 have the same format as the source virtual machine. An instantly recovered virtual machine has the same format as was present during the backup.

Figure 2 – Hyper-V 2016 file formats

Configuration file	Format in Hyper-V 2016	Format in Hyper-V 2012 R2
Virtual machine configuration data file	.VMCX	.XML
Runtime state data files	.VMRS	

Figure 3 – Hyper-V 2016 and Hyper-V 2012 R2 file formats

Summary

Backup Exec 16 introduces several virtualization enhancements. Backup Exec 16 continues to use VDDK 6.0.2 to support vSphere 6.5 as well as vSphere versions 6.0, 5.5, and 5.1. As of vSphere 6.5, for VMware tools 10.1 and higher, the RAWS installer updates the tools.conf file. All the features supported for virtual machines running on Windows 2012 and Windows 2012 R2 Hyper-V hosts are now supported for Windows 2016 Hyper-V hosts by Backup Exec 16. With Hyper-V 2016, the integration services that were traditionally installed separately inside the guest virtual machines are now delivered through Windows update. An instantly recovered virtual machine has the same format as was present during the backup.

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