

# Symantec Backup Exec 2010 R2 Agent for Microsoft Hyper-V FAQ

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**All information in this FAQ applies to both Backup Exec 2010 and Backup Exec 2010 “R2” versions except where specifically noted.**

## Overview

### 1. What is the Backup Exec 2010 Agent for Microsoft Hyper-V?

**Answer-**

The Symantec Backup Exec Agent for Microsoft Hyper-V (Agent for Microsoft Hyper-V) is installed as a separate, add-on component of Backup Exec.

This new Agent allows both physical and virtual systems on Hyper-V hosts to be protected from a single backup and recovery solution, Backup Exec 2010.

### 2. What components of Hyper-V does the Agent for Hyper-V protect?

**Answer-**

The Symantec Backup Exec Agent for Microsoft Hyper-V lets you backup and restore the following resources:

- Microsoft Windows Server 2008/2008 R2 Hyper-V hosts.
- All virtual machines that reside on the Hyper-V hosts.

- Clustered Hyper-V hosts, including virtual machines that reside on cluster shared volumes (CSV).

### 3. How does the Agent for Microsoft Hyper-V work?

#### Answer-

Backup Exec Agent for Microsoft Hyper-V provides Full backups of Guest virtual machines through Hyper-V VSS snapshots using the Microsoft Hyper-V VSS writer infrastructure. All backups are correctly performed at a complete image-level of the Guest virtual machine and can be done while the Guest virtual machine is online or offline. All necessary files of the Guest virtual machine are automatically protected.

### 4. What are the main features of the Agent for Microsoft Hyper-V?

#### Answer-

Backup Exec 2010 Agent for Microsoft Hyper-V includes a number of features designed to solve the major problems affecting Hyper-V virtual machine backup and recovery today, including:

- **New!** Support for Microsoft Server 2008 Hyper-V and 2008 Server Hyper-V **R2**.
- **New!** Support for 2008 Server Hyper-V R2 Cluster Shared Volumes (CSVs).
- Protection of both physical and virtual systems from a single application to eliminate the need for separate backup applications for physical and virtual machines.
- Built-in support of Hyper-V's VSS snapshot technology for fast snapshot-based image backup of online and offline Guest virtual machines without scripts.
- **New!** Fast "single-pass" image backup of Guest virtual machines with multiple levels of restore using Backup Exec's Granular Recovery Technology for granular recovery of:
  - Individual files/folders from within a Windows Guest virtual machine.
  - Individual Exchange mailboxes, messages, calendar items, contacts, folders, etc.
  - Individual SQL databases with full SQL control of the recovery experience.
  - Individual Active Directory objects including OU's, user accounts, printer objects, even individual attributes of objects **all without a reboot of Active Directory Domain Controllers.**
- **New!** Dynamic inclusion of newly created Guest virtual machines since the last backup.
- **New!** Optionally inclusion or exclusion of powered off Guest virtual machines from backup to avoid unnecessary backups of non-production test or development Guest virtual machines.
- Automatically powering off a running virtual machine to overwrite it before a restore
- Automatically powering on a virtual machine after restore.
- Redirection of a Guest virtual machine to an alternate location for recovery including alternate Hyper-V hosts.
- Option to automatically skip non-VSS compliant running virtual machines that must be taken offline during backup.

### 5. Does the Backup Exec Agent for Hyper-V need to be installed on the Hyper-V server?

#### Answer-

Yes, the Agent for Microsoft Hyper-V can be activated with a single license key per Hyper-V or Hyper-V R2 host within the Backup Exec console. The license key activates the Hyper-V support on the Backup Exec media server if it installed directly on the Hyper-V host system or in the Backup Exec Agent for Windows Systems that is then installed to the remote Hyper-V server. Once this has been completed, the Backup Exec Agent for Windows Systems can be push-

installed to the Hyper-V host to perform backups of the virtual machines and the Hyper-V host system.

You can install the Agent for Microsoft Hyper-V when you install Backup Exec. Or, you can install it after Backup Exec has been installed and evaluate it up to 60 days without any license key needed.

**6. Do I have to install the Backup Exec Agent for Windows Systems or Linux inside of any Guest virtual machines?**

**Answer-**

No, Backup Exec Agents such as the Agent for Windows Systems (AWS) and the Agent for Remote Linux and Unix Servers (RALUS) are not required to be installed in each virtual machine to perform backups of them. However, in the following circumstances, you may want to have these Agents installed inside of the virtual machines:

- Restoring individual files or folders directly to a running Guest virtual machine.
- Granular Recovery of data from applications such as Microsoft Exchange, SQL, and Active Directory.
- Protection of pass-through disks, iscsi disks, or .vhd files located on remote Windows shares instead of the local Hyper-V server.

Please see the [Licensing](#) section of this document for information on how these Agents are licensed.

**7. Is there any licensing cost or fee for installing the Backup Exec Agent for Windows Systems or Linux inside of any Guest virtual machines?**

**Answer-**

No, the Agent for Hyper-V includes the right to deploy the Agent for Windows Systems or Linux inside of any Guest virtual machines on a Hyper-V host that has been properly licensed with an Agent for Hyper-V license. Please see the [Licensing](#) section of this document for additional licensing information.

**8. Does Backup Exec 2010 support the free version of Microsoft Hyper-V Server?**

**Answer-**

Yes, Backup Exec 2010's Agent for Hyper-V fully supports the Hyper-V Server installations with all of the same features as Hyper-V.

## **Virtual Machine Backup**

**1. Can Backup Exec 2010's Agent for Microsoft Hyper-V backup Guest virtual machines while they are online and running?**

**Answer-**

Yes, Backup Exec's Agent for Microsoft Hyper-V can back up virtual machines that are online or that are in an offline state or a saved state. Virtual machines that use Microsoft Windows 2003 (with Hyper-V Integration Services) or later can be backed up while they are online. You can include both online and offline virtual machines in the same backup job. During the backup of an online virtual machine, Backup Exec takes a snapshot backup of the Hyper-V host. The host in

turn takes a snapshot of the virtual machines on the host. This process enables Backup Exec to back up virtual servers without any downtime.

## **2. How are offline Guest virtual machines protected?**

### **Answer-**

If an online backup cannot be performed, then an offline backup is performed automatically by default. An offline backup will result in Hyper-V taking the Guest virtual machine offline for a short period of time during the backup. A variety of factors can affect the time required to take an offline backup. If the virtual machine is running or paused, it is put into a saved state as part of the offline backup process. After the backup is completed, the virtual machine is resumed to its previous online state automatically.

Virtual machines that are not VSS compatible, such as Linux, Windows 2000, and Windows NT 4.0, must be placed briefly into a saved state during the backup. Additionally, just being VSS compatible does not guarantee that the virtual machine will be backed up online. For example, Hyper-V temporarily takes virtual machines offline if they have dynamic disks. This option can be configured to be done automatically by Backup Exec during the backup of these types of virtual machines.

An online backup can be performed with no downtime on a running virtual machine when all of the following conditions are met:

- The virtual machine is running a VSS-enabled operating system including Windows 2003, Windows Vista, Windows 7, and Windows 2008/2008 R2.
- Microsoft virtual machine integration services are installed and the backup integration service has not been disabled.
- All disks being used by the virtual machine are configured within the guest operating system as NTFS-formatted basic disks. Virtual machines that use dynamic disks or the FAT32 file system prevent an online backup from being performed.
- VSS must be enabled on all volumes used by the virtual machine with a specific configuration. Each volume must use itself as the storage location for its shadow copies and that mapping must be available to the Hyper-V VSS writer. The shadow copy storage of C: drive should be located on C: drive, the shadow copy storage of D: drive should be on D: drive.

To automatically exclude offline virtual machines, on the Properties page for the backup job, select Hyper-V settings, and then select the "Exclude offline virtual machines" check box.

## **3. Can I protect applications like Microsoft Exchange, SQL, and Active Directory running inside of Guest virtual machines?**

### **Answer-**

Yes, Backup Exec performs a single-pass backup to protect the host configuration data, all virtual machines, and VSS-aware applications that are installed on the virtual machines. Backup Exec's Granular Recovery Technology (GRT) is enabled by default for backup jobs. You can use a GRT-enabled backup to restore individual files and folders from a Windows virtual machine without restoring the entire virtual machine. In addition, you can restore individual items from Microsoft Exchange and Active Directory applications that reside on virtual machines. You can also restore individual databases from Microsoft SQL when it resides on virtual machines. Please see the **Database and Application Protection** section of this document for complete details on how to protect applications inside of Guest virtual machines.

**4. Can I perform an Incremental or Differential backup of Microsoft Hyper-V data?**

**Answer-**

No, Microsoft's Hyper-V VSS snapshot writer does not currently provide any means to perform incremental or differential backups of online virtual machines. Currently, incremental or differential backups of virtual machines can only be performed using traditional file-level backup methods of using a Backup Exec Remote Agent for Windows Systems or Remote Agent for Linux/Unix Servers inside of the virtual machine. For customers interested in further reducing Hyper-V backup times and the overall storage costs of Hyper-V data, please see the [Deduplication of Hyper-V Data](#) section below in this document.

**5. Do I have to back up the entire virtual machine and files within it separately to recover individual files/folders or application data?**

**Answer-**

When you create a backup job for Microsoft Hyper-V, Full is the only available backup method. Even though a full image backup is created, Granular Recovery Technology (GRT) enables individual files and folders to be restored. GRT is enabled by default for individual files and folders on virtual machines and for individual items from VSS-aware applications that reside on virtual machines. VSS-aware applications include Microsoft Exchange, SQL, and Active Directory. By default, Backup Exec uses the resource credentials of the parent virtual machine.

**6. Does the Backup Exec Continuous Protection Agent (CPA) support Microsoft Hyper-V environments?**

**Answer-**

Yes, the Backup Exec 2010 Continuous Protection Agent is tested and supported running in Windows Guest virtual machines as part of the Backup Exec Agent for Windows Systems (AWS). The CPA can be installed on the Windows guest virtual machines, assuming the guest operating system is supported. Continuous Protection is not supported for running directly on Linux or Hyper-V servers. Please see the Backup Exec 2010 Software Compatibility List for details and any limitations. [Backup Exec 2010 Software Compatibility List \(SCL\)](#).

## **Cluster Shared Volume Support**

**1. How does Backup Exec 2010 protect Cluster Shared Volumes?**

**Answer-**

Backup Exec 2010 Agent for Microsoft Hyper-V includes comprehensive protection of the new Microsoft Server 2008 Hyper-V R2 Cluster Shared Volumes (CSV). Backup Exec 2010 Agent for Hyper-V automatically protects the highly-available (HA) configuration of Guest virtual machines on a Hyper-V R2 CSV.

**2. How will Backup Exec display highly available virtual machines?**

**Answer-**

When virtual machines are configured for high availability, they are moved to a new node in the backup selection list. Clustered virtual machines appear under the name of the Hyper-V cluster, in the Highly Available Hyper-V Machines node. Non-clustered virtual machines remain in the Microsoft Hyper-V node. When you make a backup selection, Backup Exec checks for highly

available virtual machines. If highly available virtual machines are discovered, Backup Exec reminds you to select those virtual machines for backup.

**3. Does Backup Exec 2010 also support Microsoft Hyper-V LiveMigration during a backup?**

**Answer-**

Yes, Backup Exec 2010 Agent for Hyper-V backups are unaffected by the LiveMigration process and can continue to automatically protect Guest virtual machines if they move to another Hyper-V host. The backup will complete normally during a LiveMigration event.

**4. How does Backup Exec restore highly available virtual machines?**

**Answer-**

You can restore a highly available virtual machine in the same way you restore any other virtual machine. Backup Exec automatically maintains the virtual machine's high availability configuration. However, if you redirect the restore to another Hyper-V host, reconfiguration of the virtual machine is required in order to be highly available by simply re-running the Windows Cluster Configuration Wizard.

## **Database and Application Protection**

**1. How are virtualized applications, like Microsoft SQL, Exchange, and Active Directory, properly protected during a backup of a Guest virtual machine?**

**Answer-**

Backup Exec 2010 introduces a new industry-first technology for virtualized applications using its patented Granular Recovery Technology (GRT) in combination with the Agent for Hyper-V. When you create a backup job, Backup Exec automatically locates VSS-aware applications on virtual machines. During the backup job, Backup Exec backs up the data from the VSS-aware applications by using Granular Recovery Technology (GRT). This combination allows application object granular recovery and point-in-time recovery of the application itself all from a single pass backup of just the virtual machine.

This new virtualized application GRT capability removes the need for separate regular database or application level backups of virtualized applications such as:

- **Microsoft SQL Server** (2005-2008)
- **Microsoft Exchange Server** (2003-2010, please note that Exchange 2010 Distributed Availability Groups are not supported for virtualized application GRT restores)
- **Microsoft Active Directory** (2003-2008 R2)

No separate Backup Exec Agent for SQL, Exchange, or Active Directory backup is required to be performed. For example, after installing the Backup Exec Agent for Exchange license on the Backup Exec 2010 server, and placing the Backup Exec Agent for Windows Systems inside of the Guest virtual machine, you can recover an individual Microsoft Exchange mailbox, message, contact, calendar item, or database just by backing up the Guest virtual machine containing Exchange.

**2. Do I still need to purchase and install Backup Exec Database or Application Agents for Application GRT?**

**Answer-**

Yes, it is extremely important that Backup Exec Database or Application Agents continue to be licensed and installed inside of Guest virtual machines. Backup Exec 2010 Agent for Hyper-V can interact with these applications when the Backup Exec Agent for Windows Systems is installed inside of the Guest virtual machine and the appropriate Backup Exec Agent for SQL, Exchange, or Active Directory is licensed.

**3. How are application transaction logs handled during an Application GRT-enabled backup?**

**Answer-**

Application transaction logs are an important element to protecting your virtualized applications. Backup Exec 2010 provides new capabilities to assist you in the proper protection of your virtualized applications and their transaction logs.

Exchange and Active Directory transaction logs will be properly truncated automatically as part of your normal backups of the Guest virtual machine.

SQL installations inside of Guest virtual machines will still require a separate Log-level backup to properly truncate the transaction log of SQL.

**4. What are the requirements to use the Application GRT feature for Microsoft SQL, Exchange, and Active Directory?**

**Answer-**

The following items are required to protect data for Microsoft Exchange, SQL, and Active Directory on virtual machines:

- The virtual machine must be turned on.
- You must enter the appropriate credentials for the virtual machine and ensure that the credentials for the virtual machine allow access to the VSS-aware applications.
- The media server must be able to connect to the virtual machine using the network name or IP address.
- The Backup Exec Remote Agent for Windows Systems must be installed on the virtual machine.
- The correct number of licenses must be entered for the applications that you want to protect on the virtual machines.
- The operating system on the virtual machine must support VSS.

**5. How are applications that are not VSS-compliant protected?**

**Answer-**

Applications installed in Windows or Linux Guest virtual machines that are not VSS-compliant, such as Lotus Domino, Oracle, SAP, DB2, etc, cannot be properly quiesced using the Hyper-V or Backup Exec VSS Requestor/Provider.

It is recommended that Backup Exec Database or Application Agents be used inside of the Guest virtual machine to protect these applications.

These applications and databases require regular log truncation, database maintenance, consistency checks, etc that are performed only as part of a regular Backup Exec database or application Agent-level backup outside of Hyper-V virtual machine backups. If these separate Database Agent-level backups are not performed regularly, application log files could continue to accumulate, eventually fill the entire disk, and cause application or database failure.

Other applications are supported directly via Backup Exec Agents:

- Microsoft SharePoint
- Oracle
- Lotus Domino
- SAP
- Enterprise Vault
- IBM DB2

**6. How are Backup Exec 2010 Database and Application Agents licensed in Guest virtual machines?**

**Answer-**

Existing Backup Exec Database and Application Agent licensing for physical systems also applies to virtual environments. Each Guest virtual machine running an application to be properly protected by Backup Exec requires Backup Exec Agent license for that application. Please see the [Licensing](#) section of this document for specific information and examples.

## **Deduplication of Hyper-V Data**

**1. Does Backup Exec 2010 support deduplication of Hyper-V backups?**

**Answer-**

Backup Exec 2010 also introduces a new option for data deduplication during your backups to further reduce backup windows and reduce storage space consumption by your backups. The Backup Exec Deduplication Option allows for three different types of deduplication from a single Backup Exec 2010 server:

- **Client/Source-side deduplication-** Deduplication is performed remotely on the protected system via the Backup Exec Agent for Windows Systems.
- **Media Server-side deduplication-** Deduplication is performed locally on the Backup Exec 2010 media server during the backup.
- **Appliance deduplication-** Deduplication is performed by a 3<sup>rd</sup> party hardware-based deduplication appliance from supported partners, such as Exagrid, Data Domain, and Quantum.

Backup Exec 2010 Agent for Hyper-V supports each type of deduplication listed above differently once the Backup Exec 2010 Deduplication Option has been installed on the Backup Exec 2010 media server. Deduplication results will vary by type of deduplication being performed and the amount of change happening inside of the Guest virtual machine in between backups.

For **client-side deduplication (recommended)**, Backup Exec 2010 Agent for Hyper-V provides the necessary license right per licensed Hyper-V or vSphere host to deploy the Backup Exec Agent for Windows Systems inside of Guest virtual machines running Windows 2000-2008 R2 to perform client-side deduplication. Deduplication will occur across all Guest virtual machines that are using the Backup Exec Agent for Windows Systems. However, these backups must be set up and configured to run separately from the Backup Exec Agent for Hyper-V backups of the entire Guest virtual machine.

For **media server-side deduplication**, Backup Exec 2010 can perform media server-side deduplication of Backup Exec Agent for Hyper-V backups at the .vhd level. Deduplication rates and ratios will vary greatly between virtual machine backups depending on the change rate of the



data inside of each Guest virtual machine and the uniqueness of the data across multiple .vhd files. This method of deduplication will provide much lower overall deduplication rates than client-side deduplication.

For **appliance-side deduplication**, Backup Exec 2010 leverages the Symantec OpenStorage Technology (OST) to write data directly to a dedicated deduplication appliance. Each vendor's deduplication appliance will vary in its ability to deduplicate .vhd file backups. Please consult your preferred vendor's website for information on the appliance's capabilities to deduplicate Hyper-V data before purchasing. For a complete list of supported deduplication appliances, please see the Backup Exec 2010 Hardware Compatibility List (HCL).  
[Backup Exec 2010 Hardware Compatibility List \(HCL\)](#)

## Virtual Machine Recovery

### 1. Do I have to recover the entire virtual machine?

**Answer-**

No, while backups of Guest virtual machines are done at full image-level of the entire Guest virtual machine, restores can be done at multiple levels including:

- The entire Guest virtual machine.
- Individual files and folders within a .vhd file (Windows only).
- Individual Exchange mailboxes, messages, calendar items, contacts, folders, etc.
- Individual SQL databases with full SQL control of the recovery experience.
- Individual Active Directory objects including OU's, user accounts, printer objects, even individual attributes of objects **all without a reboot of Active Directory Domain Controllers.**

Each of these individual objects requires a Backup Exec Agent to be installed in the Guest virtual machine that you are recovering these items to.

### 2. How can I use Backup Exec's Granular Recovery Technology (GRT) to recover individual files and folders directly to Guest virtual machines?

**Answer-**

There are two possible methods for recovering individual files/folders directly to a Guest virtual machine with Backup Exec's GRT technology;

- Install a Backup Exec Agent for Windows Systems (AWS) into the Guest virtual machine and perform the restore like any other Backup Exec restore operation.
- Redirect the restore of files and folders to the local Backup Exec server and then use Windows Explorer to copy the files and folders manually to the guest virtual machine. This option does not require any Backup Exec Agent to be installed on the guest virtual machine.

### 3. How are individual files restored from within a .vhd file?

**Answer-**

Backup Exec 2010 Agent for Hyper-V allows for the recovery of individual files and folders from a complete single-pass backup of a Windows Guest virtual machine using Backup Exec's Granular

Recovery Technology (GRT). GRT allows the Agent for Hyper-V to catalog and open .vhd files directly for restore purposes from within the Backup Exec console. No separate utilities or consoles are required to do this if Backup Exec is installed on a Microsoft Windows Server 2008 or 2008 R2 server with the Hyper-V “role” installed. For Windows 2003-based Backup Exec servers, you can install the VHDmount component from Microsoft Virtual Server 2005 R2 SP1.

**4. Does Backup Exec GRT work from tape and disk-based backups?**

**Answer-**

Yes, both tape and disk-based backups are supported for GRT-enabled recoveries of Windows Guest virtual machines. For tape-based backups, the specific .vhd file is automatically staged to a temporary disk location where the individual files and folders are recovered from it. The files and folders are deleted from the temporary staging location after the restore job completes. GRT restores from tape devices will require additional disk space on the Backup Exec server as well as additional time to process the data from tape to disk before performing the GRT restore.

**5. How are entire Guest virtual machines recovered?**

**Answer-**

Restores of Guest virtual machines can be initiated from within the Backup Exec 2010 console’s Restore view along with your traditional physical system backups. Guest virtual machines can be restored to several different locations, including:

- Original locations on the Hyper-V host
- Alternate Hyper-V hosts
- Windows file system locations as a flat file (e.g. c:\temp\test.vhd)

## **Supported Configurations**

**1. What versions of Microsoft Hyper-V are supported with the Backup Exec 2010 Agent for Microsoft Hyper-V?**

**Answer-**

Backup Exec 2010 Agent for Hyper-V supports Windows Server 2008 Hyper-V and Windows Server 2008 Hyper-V R2. Please see the official Backup Exec 2010 Software Compatibility List for the latest detailed information on specific versions supported and limitations here, [Backup Exec 2010 Software Compatibility List \(SCL\)](#).

**2. What Guest virtual machine operating systems are supported for backup?**

**Answer-**

Any Guest OS supported by Microsoft Hyper-V is also supported by the Backup Exec Agent for Microsoft Hyper-V. For the latest detailed information on specific versions supported and limitations, please see the Microsoft Hyper-V Guest OS support list. <http://www.microsoft.com/windowsserver2008/en/us/hyperv-supported-guest-os.aspx>

**3. What types of Hyper-V storage and network types can the Agent for Hyper-V support?**

**Answer-**

Almost all storage types and network transports are supported with Agent for Hyper-V, including:

- Direct-attached storage
- Fibre Channel SAN's
- iSCSI SAN's

iSCSI-based storage is supported for backup by the Microsoft Hyper-V when the storage is connected through the parent partition and the storage is used for virtual hard disks.

#### **4. What type of disk configurations are supported for Guest virtual machines?**

**Answer-**

Most common disk configurations of virtual machines are supported for online backup, including:

- Fixed disks
- Dynamically Expanding disks
- Differencing disks

However, both Microsoft Hyper-V and Hyper-V R2 currently have several important limitations that prevent online backup of virtual machines per Microsoft documentation <http://technet.microsoft.com/en-us/library/cc754747.aspx> including:

- Remote iSCSI disks
- Physical or pass-through disks
- Dynamic disks

For virtual machines configured with these disk types, Backup Exec Remote Agents can be installed in the Guest virtual machine to back up their data using traditional backup methods as if they were physical machines.

#### **5. Are both tape and disk-based backup devices supported?**

**Answer-**

Yes, both tape and disk devices are supported with Backup Exec 2010 Agent for Hyper-V. Disk-based backups work best and are generally recommended to be done as part of a disk-to-disk-to-tape (D2D2T) backup strategy. Please ensure the tape device is a supported device on the Backup Exec 2010 Hardware Compatibility List.

[Backup Exec 2010 Hardware Compatibility List \(HCL\)](#)

#### **6. Can Backup Exec 2010 be installed directly on a Microsoft Hyper-V physical server?**

**Answer-**

Yes, Backup Exec Media Servers can be installed directly on the Microsoft Hyper-V host system and may provide the best performance in this configuration since virtual machine data will be local to the Backup Exec server.

Please note that Backup Exec Media Servers cannot be directly installed on a Microsoft Windows 2008 **Core** Server installation of Hyper-V. Only Backup Exec Agents can be installed on a Hyper-V Core Server installation to protect it to a remote Backup Exec server.

#### **7. Can Backup Exec Media Servers be installed inside a Guest virtual machine running on a Microsoft Hyper-V server?**

**Answer-**

Yes, Backup Exec 2010 media servers can be installed in a supported Guest virtual machine OS running on a Hyper-V server to protect the entire server.

However, in this configuration where the Backup Exec server is virtualized in a Guest virtual machine, only backup-to-disk (B2D) devices can be used for backup targets for Backup Exec. Microsoft Hyper-V cannot currently support pass-through SCSI support for tape devices to a Guest virtual machine. This will prevent Backup Exec 2010 from providing any tape device support when it has been virtualized and is running inside of a virtual machine.

## Licensing

### 1. How is Backup Exec 2010 Agent for Microsoft Hyper-V licensed?

**Answer-**

Backup Exec 2010 Agent for Hyper-V is licensed simply on a per-Hyper-V server basis. No additional licenses such as, “per CPU”, “per terabyte”, or “per Guest virtual machine” licenses, are required. Simply count the number of Hyper-V servers in the environment hosting the Guest virtual machines that need to be protected.

For example, three (3) Hyper-V servers hosting ten (10) Guest virtual machines each to be protected would require:

- One (1) Backup Exec 2010 Media Server license
- Three (3) Backup Exec 2010 Agent for Hyper-V licenses

### 2. How are Backup Exec Remote Agents for Windows Systems and Remote Agent for Linux or UNIX Systems licensed with Agent for Microsoft Hyper-V?

**Answer-**

Each Backup Exec 2010 Agent for Hyper-V license includes the licensed right to deploy Backup Exec Agent for Windows Systems (AWS) and Backup Exec Agent for Linux/Unix Servers (RALUS) to any Guest virtual machine on an Hyper-V host that has been licensed with the Agent for Hyper-V. For example, if there are 10 Windows Guest virtual machines and 10 Linux Guest machines on a Hyper-V server licensed with Agent for Hyper-V, no additional licenses are required to be purchased and these Agents can be installed in each Guest virtual machine if desired.

### 3. How are Backup Exec 2010 Database and Application Agents licensed in Guest virtual machines?

**Answer-**

Existing Backup Exec Database and Application Agent licensing for physical systems also applies to virtual environments. Each Guest virtual machine running an application to be protected will require a separate Backup Exec Database or Application Agent to be licensed and installed in it.

For example, one (1) Hyper-V 3.5 server running three (3) Guest virtual machines each running Windows 2003 and Microsoft SQL 2005 to be protected would require:

- One (1) Backup Exec 2010 Media Server license
- One (1) Backup Exec Agent for Hyper-V license
- Three (3) Backup Exec 2010 Agent for Microsoft SQL Server licenses

**4. How does LiveMigration between multiple Hyper-V hosts systems affect licensing of the Backup Exec Agent for Hyper-V?**

**Answer-**

The Backup Exec Agent for Hyper-V fully supports LiveMigration between Hyper-V hosts. As a result, each Hyper-V host system must be licensed with a separate Backup Exec Agent for Hyper-V license as any of the hosts may be used to process the backup or restore request.

## **Best Practices**

**1. What type of backup performance should I expect?**

**Answer-**

Backup performance will be largely determined by the slowest component of the entire backup data path from the Hyper-V Server to the Backup Exec storage location (i.e Tape or Disk). These components are:

- Hyper-V server system resources: CPU (Ghz)
- Hyper-V system disk I/O capabilities (Gbps)
- Network type (Fibre Channel 1/2/4/8GB, iSCSI, 1/10GB Ethernet, etc)
- Backup Exec 2010 server system resources

Here are some basic guidelines:

- Install Backup Exec on a dedicated physical machine to protect large numbers of both physical and virtual machines.
- Size the Hyper-V server and Backup Exec 2010 CPU to support 10 MHz of CPU available per 1 MB/second of data throughput in and out of the Hyper-V server.
- The internal bus of the Backup Exec server should be fast enough to support the I/O devices connected to it. If multiple I/O ports are used, a system with multiple internal buses should be considered to support the additional I/O.
- I/O performance is generally more important than CPU performance for most backup operations when client-side deduplication is not being used. For example, a 2 Gb Fibre connection should be able to transfer backup data at a nominal transfer rate of 140 MB/second. Backups over iSCSI or Gigabit Ethernet will likely be much slower, while 4/8 Gb FibreChannel connections should be significantly faster.
- Use the following equation to determine the amount of disk space required on the Backup Exec media server:
  - Disk Size (GB) = (NUM\_VM) x (AVG\_SIZE)
    - Where: NUM\_VM = Largest number of Guest virtual machines to be backed up simultaneously and AVG\_SIZE = Average size of the largest Guest virtual machines to be backed up simultaneously.
  - For example, if five Guest virtual machines are to be backed up simultaneously, take the five largest VMs in the environment, calculate their average size, and use that number as (AVG\_SIZE) in this equation.

**2. What type of restore performance can I expect?**

**Answer-**

Expect Guest virtual machine recoveries to take slightly longer than backups when restoring entire virtual machines. However, Backup Exec's Granular Recovery Technology ensures that individual files/folders as well as application data from Exchange, SQL, and Active Directory can all be recovered from a single backup of the virtual machine, without having to restore the entire virtual machine. This will greatly increase restore performance when restoring this type of data compared to competitive backup solutions for Hyper-V.

**3. What is the recommended number of Guest virtual machines to protect with a single Backup Exec 2010 server?**

**Answer-**

There is no limit to the number of Guest virtual machines a single Backup Exec 2010 server can protect. This is highly dependent on the number of Guest virtual machines, the size of the .vhd files for each Guest virtual machine, and the physical backup infrastructure.

**4. Will there be future enhancements for Backup Exec regarding the Agent for Microsoft Hyper-V?**

**Answer-**

Yes, absolutely. If you have suggestions on what features and functionality you would like to see for future versions, please feel free to submit your requests for Backup Exec at the [Backup Exec Ideas Forum](#).