

Using
DataTrust[®] Secure Online Backup
To Protect Your
Hyper-V[®] Virtual Environment.



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Method 1: Back up the Guest OS with DataTrustOBM:

Backing up Guest OS (On OS platforms supported by DataTrustOBM):

Once the Guest Operating System is supported by DataTrustOBM then backing up the guest OS itself is only a matter of installing DataTrustOBM and performing both file, and system state backup with settings of your choice. This is essentially the same as configuring backup on a physical machine. Accordingly, this applies to all Guest Machines running the following Operating Systems:

- All Versions of Microsoft Windows Operating System
- MAC OS
- Linux / Unix
- Novell Netware

Backing up Guest OS (On OS platforms Running a Database Application):

If the database hosted on the Guest OS is supported by DataTrust Secure Online Backup; Simply install DataTrustOBM on the guest OS and perform file, system state, and database backup with the settings of your choice. This applies to all Database \ Database Applications directly supported by DataTrust Secure Online Backup:

- All Versions of Microsoft SQL Server (Including Express / MSDE Editions)
- MySQL Databases
- Exchange Server
- Lotus Notes
- Lotus Domino

If the database hosted on the guest OS is not supported by DataTrust Secure Online Backup; then to handle the backup of such a database, please follow the instructions below:

1. Use the pre/post backup command to shut down and start up the applications before and after a backup job (assuming that the database or application does not need to be online 24x7 and the database file is small enough to be transmitted to the DataTrust Secure Online Backup Server each night.
2. Use the pre-backup command to run a database specific command to export all database data to a dump file and upload this dump file using a file-type backup set.

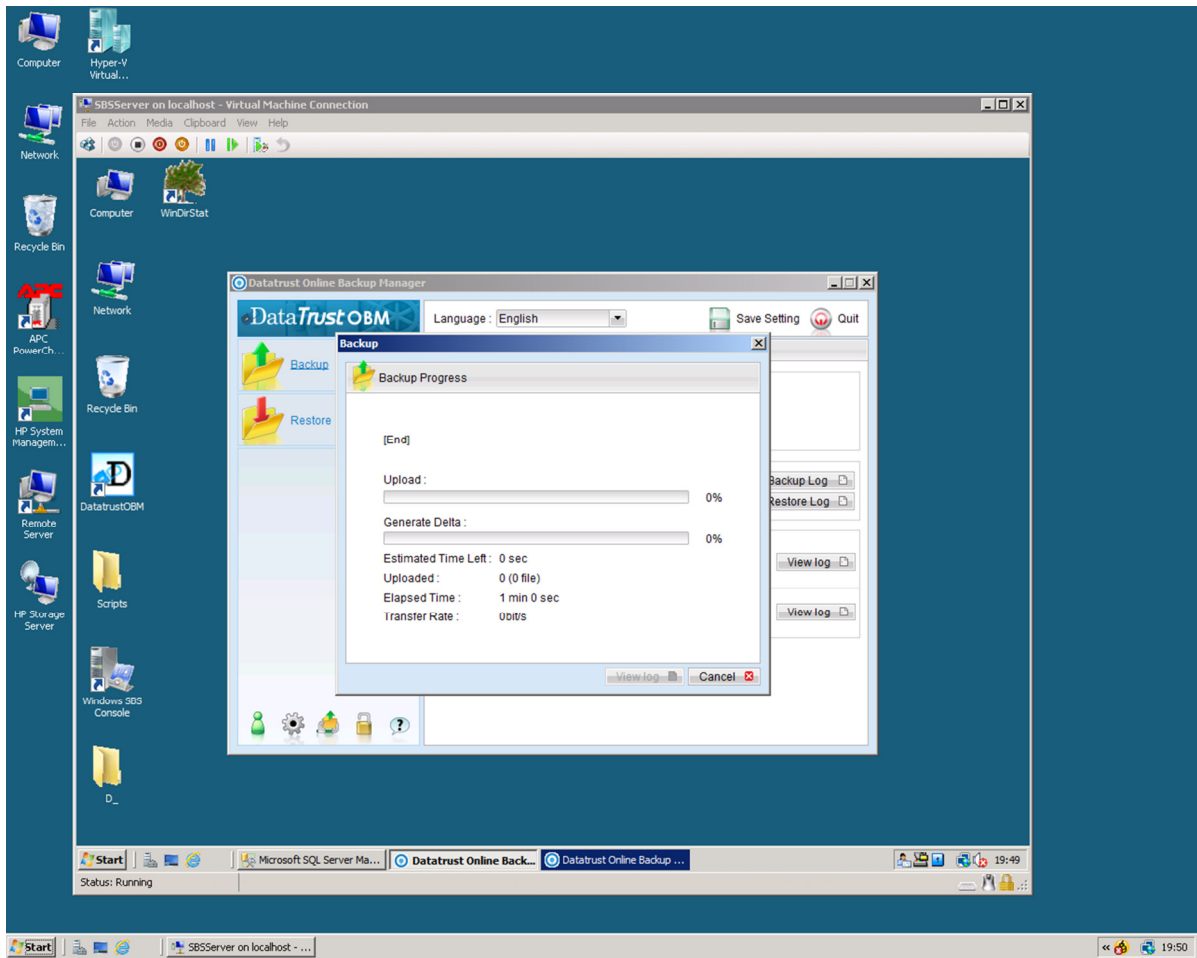


Figure 1.0 – A World Within a World! - DataTrustOBM Running on Hyper-V Guest Operating System

Method 2: Back up the Hyper-V virtual machine files:

For DataTrustOBM Version 6.3.0.0 or Later:

Simply use the MS VM backup module found in the DataTrustOBM application for backup of virtual machine on Hyper-V.

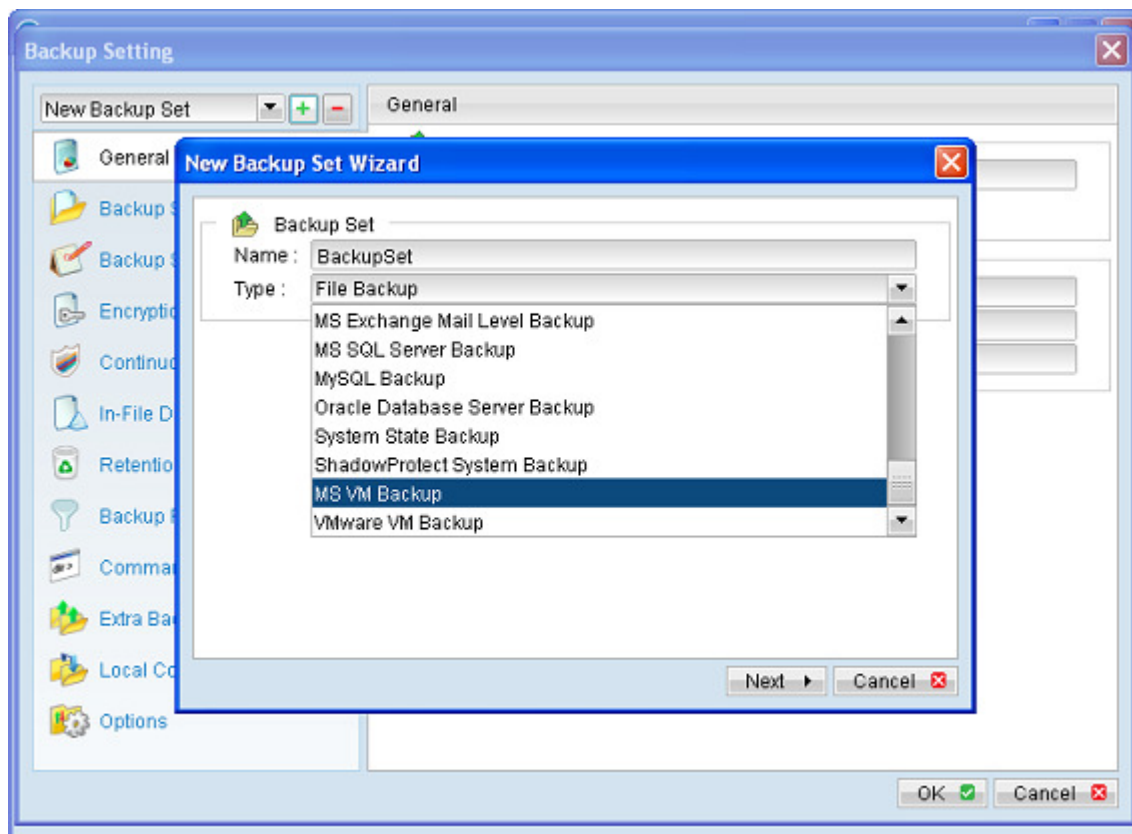


Figure 2.0 – DataTrustOBM Fully Understands HyperV Environment (New Backup Set Wizard - MS VM Backup)

For more details, please refer to the **DataTrust Online Backup Manager User's Guide**.

Available for download from: http://www.datatrust.ie/docs/DataTrust_User_Guide.pdf

For DataTrustOBM Version Prior to Version 6.3.0.0:

For DataTrustOBM version 6.3.0.0 or **below**, use the pre-backup command option found in the DataTrustOBM application to export each Hyper-V virtual machine for backup.

Each Hyper-V virtual machine contains a number of files associated with each Hyper-V virtual machine including:

- the configuration file (.XML)
- saved state file (.BIN & .VSV)
- virtual hard disk file (.VHD)

The Hyper-V server places these files within their respective destination(s) according to the administrator's configuration. This data can be exported, and then backed up using a file type backup set. Restoration of a virtual machine would simply require the restoration of the exported data associated with that virtual machine, and import of the data via the Hyper-V server console.

With this setup, DataTrustOBM is installed on the Hyper-V server. To ensure files that are backed up are not corrupt, all I/O operations to these files must be halted (Quiesced) prior to the backup operation. This can be accomplished by exporting the virtual machine.

During the export, virtual machine(s) that is / are running will be shutdown (or be forced into a saved state depending on your setup), its corresponding data is quickly exported, the machine started up, and then the backup carried out. This technique provides a compromise backup methodology that limits the downtime of the virtual machine while assuring that the virtual machine backed up is recoverable.

Please Note the Following Important Considerations for This Procedure:

To import / restore the Hyper-V virtual machine onto a different Hyper-V server, it is required that a virtual machine be shutdown (instead of suspended) prior to the export procedure. Only use the suspend (saved state) option if you are planning for restore on the same, original Hyper-V server.

The Powershell Feature is required to execute the Pre-Backup Command Script in this procedure:

Accordingly the Windows PowerShell feature has to be installed on the Hyper-V Host server. If the Windows PowerShell feature has not been installed, you can enable the PowerShell feature by opening the Server Manager application and adding the **Windows Powershell** feature.

Difficulty running Unsigned Scripts:

Due to Security Policy Settings in force, on the HyperV Host; the following error may be flagged for the first time the PowerShell script is ran:

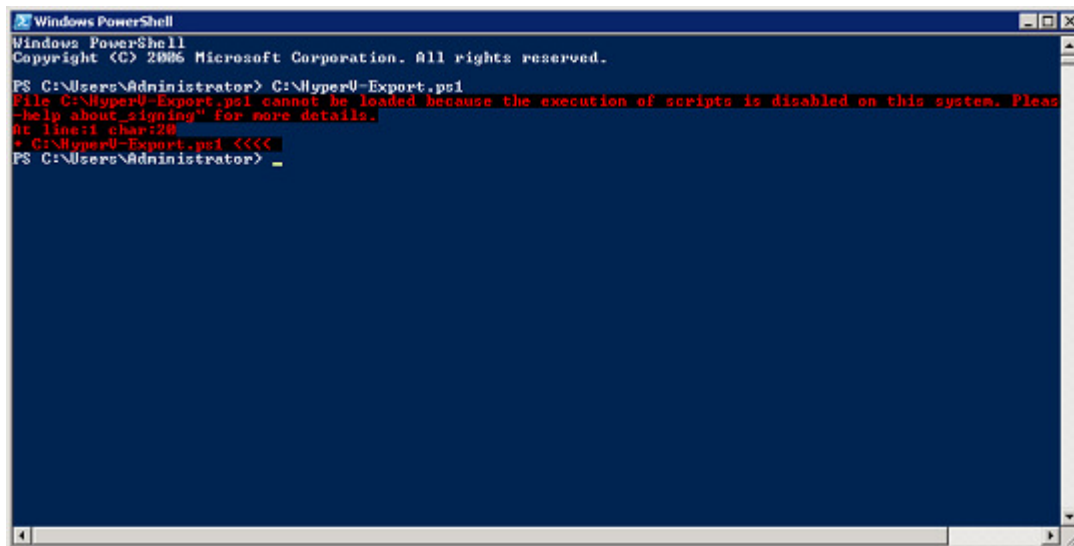


Figure 3.0 - File \\${ScriptName.ps1} cannot be loaded because the execution of scripts is disabled on this system.

The reason for this error is the security setting on the Hyper-V server that does not allow you to execute a script. By default, the Execution Policy is set to Restricted. This setting means that you may not run any PowerShell script. You have set PowerShell execution policy to allow unsigned local scripts.

You can execute the following command within PowerShell to allow the script to run:

“Set-ExecutionPolicy RemoteSigned”

This will allow scripts written on the local computer to be executed without a digital signature, but any script downloaded from outside must have an appropriate digital signature to execute.

Alternatively, you can opt to sign the downloaded PowerShell script file. The procedure for this is available from Microsoft Support.

Backing Up Hyper-V Guest Machines with DataTrustOBM Client Version earlier than 6.3.0.0:

1. **Download the HyperV-Export.zip file** from:
www.datatrust.ie/clients/HyperVExport/HyperV-Export.zip
2. Extract the HyperV-Export.zip file to **C:**. Two files are extracted:
 - **HyperV-Export.bat** is a batch file run by DataTrustOBM as a pre-backup command for the execution of the HyperV-Export.ps1 script
 - **HyperV-Export.ps1** is the PowerShell script for the export of the Hyper-V virtual machine(s)
3. Open the extracted HyperV-Export.ps1 file with a text editor, **modify the \$dest parameter** to reflect the Hyper-V export destination
4. **Modify the \$opt1 parameter** to specify individual virtual machine(s) for the export, or all virtual machine(s) for the export.
5. **Modify the \$opt2 parameter** to configure the script to shutdown, or suspend the corresponding virtual machine(s) during the export.
6. Create the Hyper-V export destination folder configured in Step 3 (Specified as **\$dest parameter**)
7. Open the DataTrustOBM console, create a file backup set for the Hyper-V Export Destination Folder.
8. Once the job has been created; select the Hyper-V backup set in the [Backup Setting] menu, select the [Command Line Tool]
9. Press the [Add] button under the Pre-Backup section on the right panel, enter the following entries in the corresponding text fields:
 - **Working Directory:** C:\
 - **Command:** HyperV-Export.bat

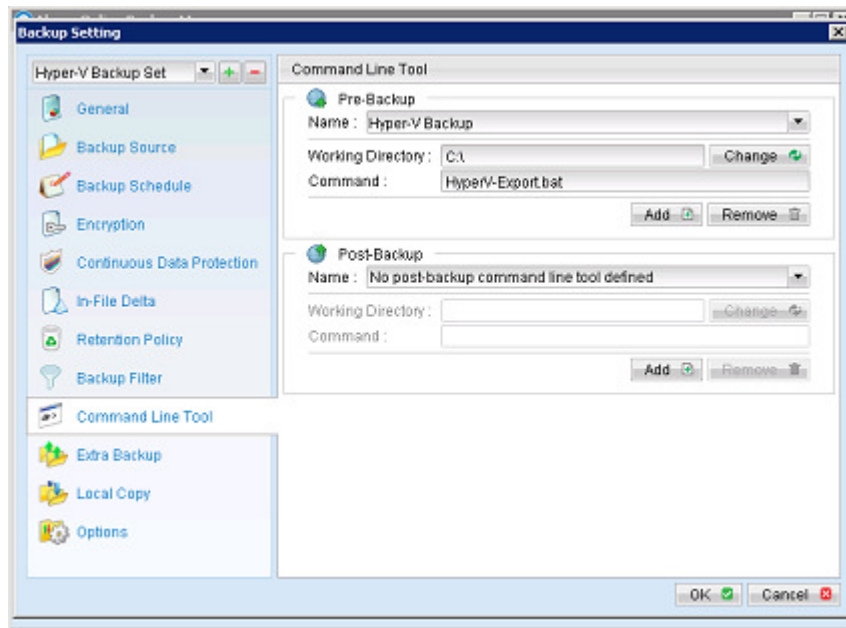


Figure 4.0: Using the DataTrust Pre-Backup Command Line Tool.

10. Press the [OK] button to save this setting
11. The Hyper-V virtual machine files can now be backed up by pressing the [Backup] button on the DataTrustOBM console.

Note: In-file delta can be applied to Hyper-V data backed up with this method.

Method 3: Back up the Hyper-V server and data volume (with MS Windows System Backup):

Perform full volume backup on the volume which the Hyper-V application is installed, and where the Hyper-V data is stored.

In this configuration, DataTrustOBM is installed on the Hyper-V server. Restoration of virtual machines would require a full volume restore of the volume in which the Hyper-V application is installed, and where the Hyper-V data is stored. A major benefit to performing volume backups at the host operating system level of your Hyper-V server is that doing so allows you to perform a bare metal recovery.

However, with the major benefit, there are also some major limitations that administrator needs to be aware of:

- ❖ **Dynamic Disks** -Virtual machines to be backed up cannot contain dynamic disks. All guest operating systems must treat all of their associated virtual hard drive files as basic disks.
- ❖ **Restoration of individual virtual machines** -You cannot restore individual virtual machines. The restoration process at the host level is an all or nothing proposition.
- ❖ **Virtual machines with Snapshot** -If a virtual machine contains multiple snapshots, you can still perform the backup. **However, you will not be able to restore the backup!**

To backup the Hyper-V Host Server and data volume, the following steps are required:

1. After the DataTrustOBM Secure Online Backup Client is installed and **before** the first Backup is attempted; the Hyper-V VSS Writer is reistered with Windows Server Backup as outlined in the procedure on Page 11 of this Document.
2. Create a MS Windows System backup set for the corresponding Hyper-V Host server
3. Configure the backup set to perform backup on the volume which the Hyper-V Host server is installed, and the volume which all virtual machines' data are stored

Required Registry Changes to Register the Hyper-V VSS Writer with Windows Server Backup:

Please Note: This procedure has only to be carried out once!

- i. Open the Registry Editor by entering the command "regedit" in command prompt
- ii. Create a new key "WindowsServerBackup" under:

HKEY_LOCAL_MACHINE\Software\Microsoft\WindowsNT\CurrentVersion

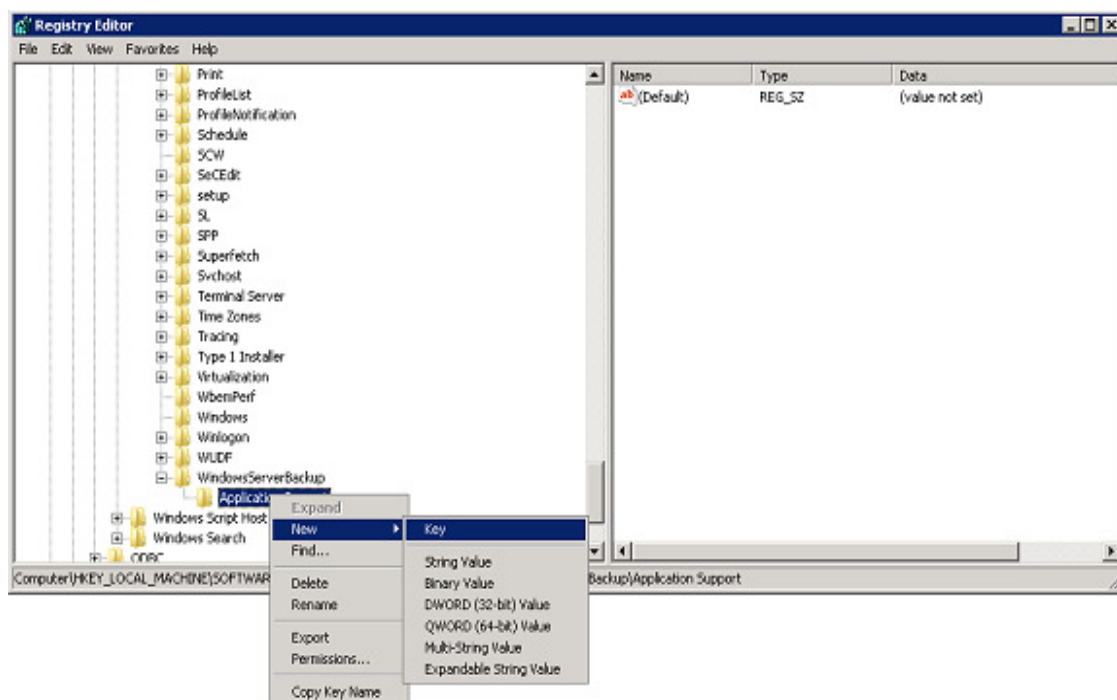
Note:Please note that the WindowsServerBackup key is not created when installing the Windows Server Backup feature, it must be created manually.

- iii. Create a new key "Application Support" under the key created in the previous step:

HKEY_LOCAL_MACHINE\Software\Microsoft\WindowsNT\CurrentVersion\WindowsServerBackup

- iv. Create a new key "{66841CD4-6DED-4F4B-8F17-FD23F8DDC3DE}" under the key created in the previous step:

HKEY_LOCAL_MACHINE\Software\Microsoft\WindowsNT\CurrentVersion\WindowsServerBackup\ApplicationSupport



- v. Create a String Value with the following name, type and value:

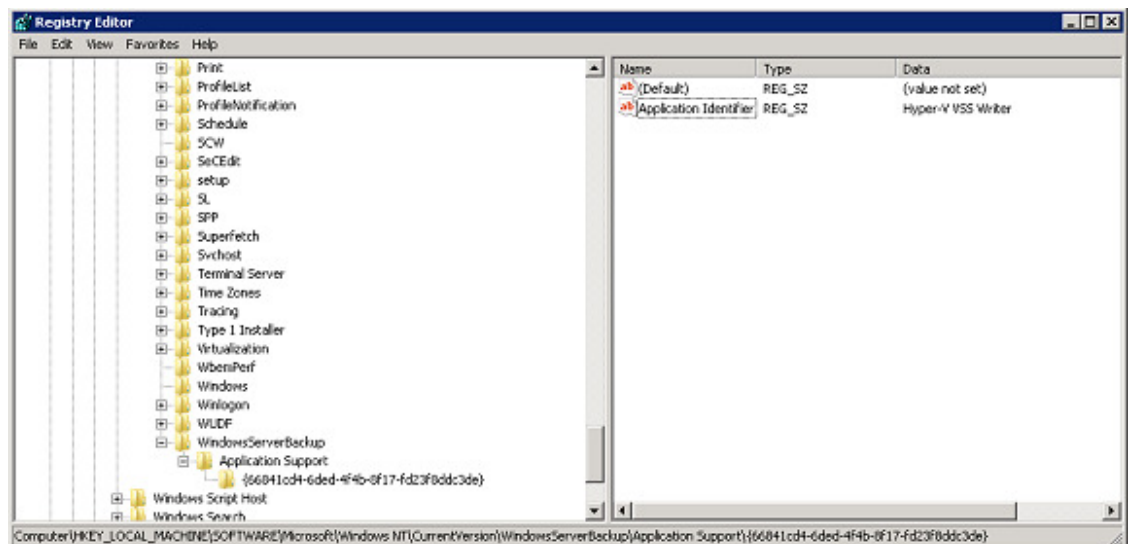
Name: Application Identifier

Type: REG_SZ

Value: Hyper-V

The registry path should now resemble the following:

HKEY_LOCAL_MACHINE\Software\Microsoft\WindowsNT\CurrentVersion\WindowsServerBackup\ApplicationSupport\{66841CD4-6DED-4F4B-8F17-FD23F8DDC3DE}

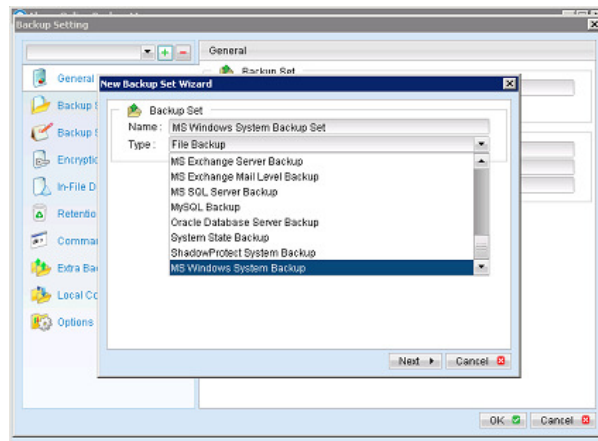


The following Pre-Requisite Assumptions are being made:

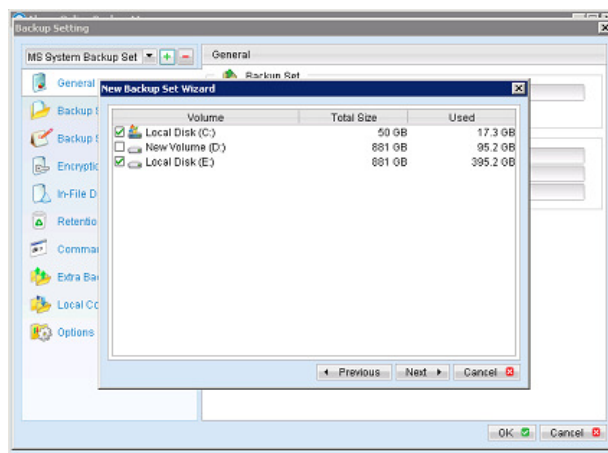
1. DataTrustOBM version 5.5.5.0 or above has been installed on the Hyper-V server
2. The Windows Server Backup Features, including the Windows Server Backup, and Command-line Tools have been installed on the HyperV Host.
3. The Hyper-V Server, itself, is installed on C:\ and the Hyper-V virtual machines' data are stored under E:\

Procedure for Backing up the Hyper-V server and data volume (with MS Windows System Backup) using DataTrust Secure Online Backup:

1. Open the DataTrustOBM console, create a MS Windows System backup set for the volume backup under the DataTrustOBM console.



2. Select the volume which the Hyper-V server is installed, and the volume which all virtual machines' data are stored as backup source



3. Accept the default encryption settings by pressing the [OK] button if no change is necessary