IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service
2.11.0

User Guide

IBM

Note

Before using this document and the product it supports, read the information in "Notices" on page 23.

Edition notice

Publication number: GC27-3920-10. This publication applies to version 2.11.0 of the IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service and to all subsequent releases and modifications until otherwise indicated in a newer publication.

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About this guide

This guide describes how to install and configure the IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service.

Who should use this guide

This guide is intended for system and storage administrators who are familiar with the Microsoft Windows Server environment, the Microsoft VSS framework, the supported IBM storage system(s) being used, and the VMware ESX, vCenter, and vSphere environments (if used).

Supported IBM storage systems include:

- IBM XIV® Storage System
- IBM Spectrum Accelerate
- IBM FlashSystem® A9000
- IBM FlashSystem A9000R

Refer to the *IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service Release Notes* for this release for information about the specific releases of the systems listed above that are supported by this release.

Conventions used in this guide

These notices are used to highlight key information.

Note: These notices provide important tips, guidance, or advice.

Important: These notices provide information or advice that might help you avoid inconvenient or difficult situations.

Attention: These notices indicate possible damage to programs, devices, or data. An attention notice appears before the instruction or situation in which damage can occur.

Related information and publications

You can find additional information and publications related to the IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service on the following information sources.

- IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service in IBM Documentation (ibm.com/docs/en/spectrumaccel-vss)
- IBM XIV Storage System in IBM Documentation (ibm.com/docs/en/xiv-storage-system)
- IBM Spectrum Accelerate in IBM Documentation (ibm.com/docs/en/spectrum-accelerate)
- IBM FlashSystem A9000 in IBM Documentation (ibm.com/docs/en/flashsystem-a9000)
- IBM FlashSystem A9000R in IBM Documentation (ibm.com/docs/en/flashsystem-a9000r)
- IBM Hyper-Scale Mobility Overview and Usage (www.redbooks.ibm.com/redbooks.nsf/redpieceabstracts/redp5007.html)
- Microsoft MSDN web page for Volume Shadow Copy Service (msdn.microsoft.com/en-us/library/bb968832.aspx)
- Microsoft Windows Server troubleshooting center (technet.microsoft.com/en-us/windowsserver)
- VMware ESXi and ESX Info Center (www.vmware.com/products/vsphere/esxi-and-esx)
- VMware Product Support for VMware vSphere (www.vmware.com/support/product-support/vsphere), including support for ESX, ESXi, and vCenter
- VMware knowledgebase (kb.vmware.com)

- Videos Related to IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service (www.youtube.com/channel/UCRIw6cXxi--bHnMWG45VgNw)

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  – Page, table, or illustration numbers that you are commenting on

  – A detailed description of any information that should be changed

Chapter 1. Introduction

The IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service (VSS), also referred to as the IBM Spectrum Accelerate Family VSS Provider (or simply as VSS Provider for short), is a software module that runs as a service on Microsoft Windows Server and automatically creates snapshots of Windows-based or VMware-based applications.

The module uses the Windows Server VSS framework for its management interface and a supported IBM storage system to store and maintain snapshot data.

Supported IBM storage systems include:

- IBM XIV Storage System
- IBM Spectrum Accelerate
- IBM FlashSystem A9000
- IBM FlashSystem A9000R

Refer to the *IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service Release Notes* for this release for information about the specific releases of the systems listed above that are supported by this release.

VSS mirrored snapshots

IBM Spectrum Accelerate Family VSS Provider supports the creation of VSS mirrored snapshots.

When this feature is enabled, a remote mirrored snapshot is created (using the remote mirroring feature of the IBM storage system being used) for any locally-created VSS snapshot copy. Remote shadow copies are created through either synchronous or asynchronous mirroring and can be used as an aid tool in Disaster Recovery (DR) scenarios.

Note: When a locally-created VSS snapshot copy is deleted, the remote mirrored snapshot cannot be deleted automatically by IBM Spectrum Accelerate Family VSS Provider.

High availability with HyperSwap

HyperSwap®, included in IBM FlashSystem A9000 and IBM FlashSystem A9000R, starting with version 12.1.0, delivers highly-available, non-disruptive storage service, through partial or complete system failures and disasters, in the same data center and between metro-distant data centers.

HyperSwap high availability is based on active-active pairing of storage systems per volume or per consistency group. Each volume or consistency group pair uses synchronous replication to keep both systems updated at all times. For more information, refer to "High availability with HyperSwap" chapter in the *IBM FlashSystem A9000 Product Overview* or *IBM FlashSystem A9000R Product Overview*.

VSS high availability snapshots

IBM Spectrum Accelerate Family VSS Provider supports the creation of VSS high availability (HA) snapshots using the HyperSwap feature in IBM FlashSystem A9000 and IBM FlashSystem A9000R, starting with version 12.1.0.

When this feature is enabled, a remote HA snapshot is created using the HyperSwap feature of the IBM FlashSystem A9000 or IBM FlashSystem A9000R storage system being used for any locally-created VSS snapshot copy. Remote shadow copies are created through the HyperSwap relationship and can be used as an aid tool in Disaster Recovery (DR) scenarios.

Note:

- The HA snapshots feature is disabled by default. Refer to Enabling and verifying high availability snapshots functionality to learn how to enable the feature (after installation is complete).

- If you want to use regular snapshots on a HyperSwap volume, leave the HA snapshots feature disabled or disable it. Again, refer to Enabling and verifying high availability snapshots functionality.
- When a locally-created VSS snapshot copy is deleted, the remote HA snapshot cannot be deleted automatically by IBM Spectrum Accelerate Family VSS Provider.

Integration with VMware environments

The IBM Spectrum Accelerate Family VSS Provider supports full integration with VMware ESX or vCenter server environments, enabling Windows Server to issue snapshots of VMware virtual platforms as well.

Because the copy service performs a volume-level copy, the IBM Spectrum Accelerate Family VSS Provider uses Raw Device Mapping (RDM) to physically attach an entire volume to a virtual machine.

To manipulate RDM disks during the snapshot operation, the IBM Spectrum Accelerate Family VSS Provider interacts with VMware ESX or vCenter servers via the vSphere API that runs on the server as a web service.

NPIV snapshots

The IBM Spectrum Accelerate Family VSS Provider supports the creation of N_Port ID Virtualization (NPIV) snapshots.

NPIV delivers significant advantages for running multiple virtual machines and managing workload across multiple physical servers. You have the ability to control access to LUNs on a per virtual machine basis.

NPIV allows a single host bus adaptor (HBA) or target port on a storage array to register multiple world wide port names (WWPNs) and N_Port identification numbers. Each virtual server has a unique WWPN on the Storage Area Network (SAN) and has access to its own storage, but no other virtual server's storage.

If NPIV is configured, the IBM Spectrum Accelerate Family VSS Provider performs the following NPIV snapshot functions.

Create snapshot
During the snapshot creation process, the IBM Spectrum Accelerate Family VSS Provider maps all the snapshot target LUNs to both the physical HBA WWPNs and virtual WWPNs. Then the LUN is assigned to the virtual machine from the ESX server as the Raw Device Mapping (RDM) disk.

Delete snapshot
During deletion, the IBM Spectrum Accelerate Family VSS Provider first unassigns the RDM disk from the virtual machine. Then the LUN is masked from both physical HBA WWPNs and virtual WWPNs.

Import snapshot
During import, the IBM Spectrum Accelerate Family VSS Provider first maps the snapshot target LUN to both the physical HBA WWPNs and virtual WWPNs of the destination server. Then the LUN is assigned to the virtual machine from the ESX server as the RDM disk.

Mask snapshot
The mask operation removes the RDM disk from the virtual machine. Then the LUN is masked from both physical HBA WWPNs and virtual WWPNs.

Volume snapshot capabilities

Refer to the following table for information about specific volume snapshot types for supported IBM storage systems that the IBM Spectrum Accelerate Family VSS Provider supports or does not support.

Table 1. Supported and unsupported volume snapshot types	
Snapshot type	**Supported or unsupported by the VSS Provider**
Single volume	Supported
Single mirrored volume	Supported
Single high availability volume	Supported

Table 1. Supported and unsupported volume snapshot types (continued)	
Snapshot type	**Supported or unsupported by the VSS Provider**
Migrated volume (Hyper-Scale Mobility)	Supported; refer to "Configuring volumes for Hyper-Scale Mobility" on page 20.
A group of OS volumes (CG)	Unsupported
A group of OS volumes (CG) residing on two (or more) different IBM storage systems	Unsupported

Chapter 2. Installation

This chapter describes topics associated with the installation of the IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service.

Refer to the following installation-related topics:

- "Download site" on page 5
- "Compatibility and requirements" on page 5
- "Performing pre-installation checks" on page 5
- "Using the compatible installation package" on page 7
- "Running the installation wizard" on page 7

Download site

The IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service software package is available for download from the IBM Fix Central (www.ibm.com/support/fixcentral).

Compatibility and requirements

For the complete and up-to-date information about the compatibility and requirements of the IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service, refer to the latest release notes in IBM Documentation (ibm.com/docs/en/spectrum-vss).

Note: Refer to the relevant VMware documentation for information about how to install the compatible versions of VMware vCenter, ESX or ESXi, and vSphere.

Performing pre-installation checks

Perform the following checks prior to installing the IBM Spectrum Accelerate Family VSS Provider package.

- Windows Server and IBM storage system connectivity checks
- VMware environment checks
- Microsoft environment checks

Windows Server and IBM storage system connectivity checks

Perform the following checks for the Windows Server host and the IBM storage systems that you are using.

- Verify that your Windows Server version, service pack, and architecture is supported. For more information, refer to the release notes.
- Verify that IP connectivity has been established with the IBM storage system. For more information, refer to the *IBM XIV Host Attachment Guide*.
- Verify that you have **storage administrator** credentials on the IBM storage system.

VMware environment checks

Perform the following checks if you intend to use the IBM Spectrum Accelerate Family VSS Provider in a VMware environment.

- Verify that the VMware Tools package is installed. The VMware Tools allow you to establish communication between the ESX web services and the virtual machines. The guest-related information,

such as the IP address and host name is collected by using the VMware Tools. For information about how to install the VMware Tools package, refer to the VMware documentation.

- Verify that the vSphere web services are up and running on the ESX or vCenter Server. Use your web browser to access the following address: `https://x.x.x.x/mob` (where **x.x.x.x** is the server IP address). If the vSphere web services are down, configure the `proxy.xml` file as needed. For more information, refer to the relevant VMware documentation.

- Verify that the VMware user privileges are set to allow user access to the following admin options:

  - Host > Configuration > **Storage partition configuration**
  - Virtual machine > Configuration > **Raw device**
  - Virtual machine > Configuration > **Change resource**
  - Virtual machine > Configuration > **Add or remove device**

  Important: In the VMware vSphere configuration, the Read-Only role must be assigned to the datacenter to which the ESX server belongs. In the role definition for the datacenter, ensure the **Propagate** check box is selected.

- The compatibility mode of virtual RDM disks must be physical, as shown in the following figure.
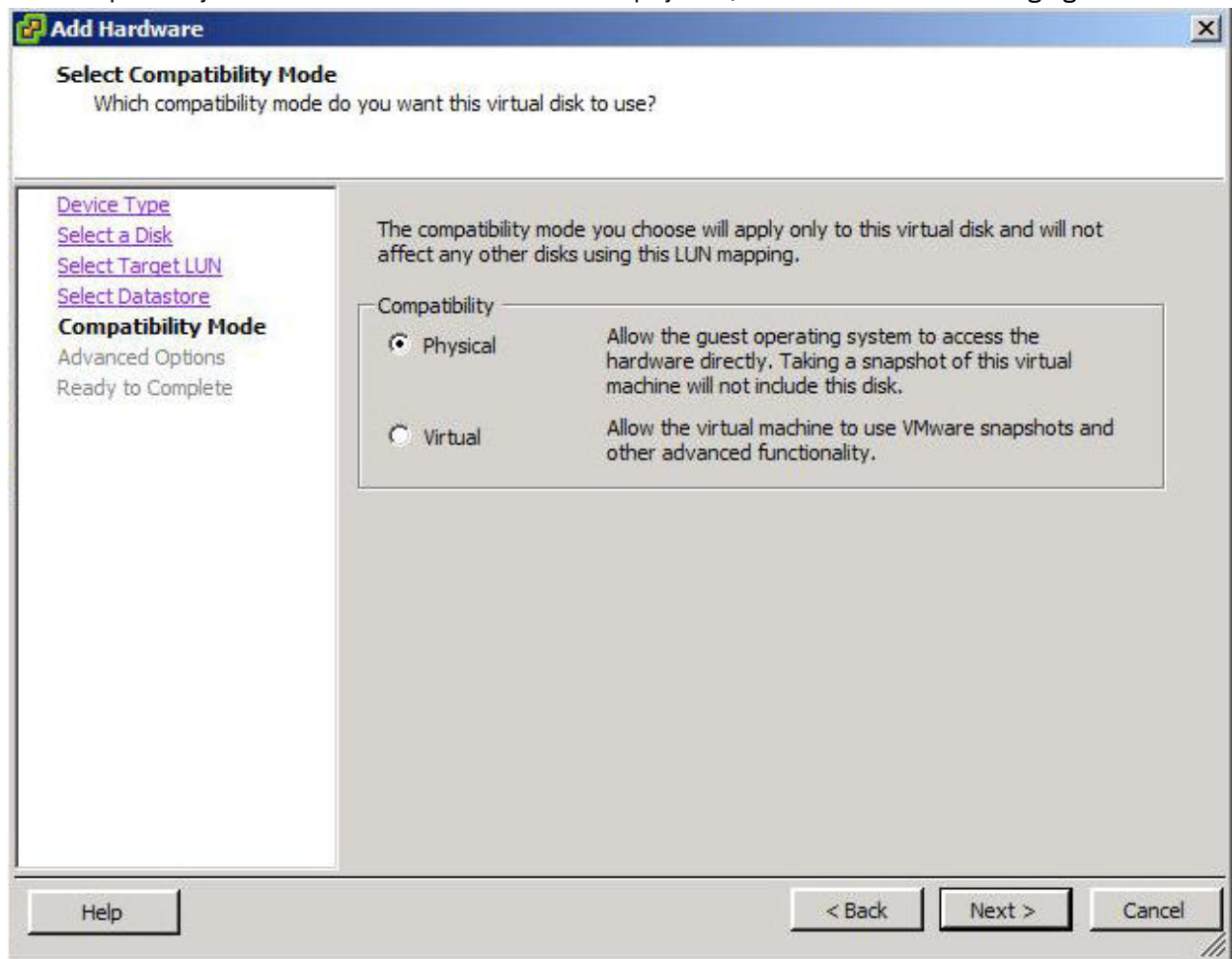

Figure 1. Virtual disk compatibility mode selection (in VMware vSphere)

Microsoft environment checks

Perform the following Microsoft environment checks.

- Verify that the following packages are installed:

  - Microsoft Visual C++ 2012 Redistributable-64

– Microsoft Visual C++ 2012 Redistributable-86

Using the compatible installation package

Choose the compatible installation package depending on the operating system and architecture that you use.

Table 2. IBM Spectrum Accelerate Family VSS Provider installation packages

Package name	Use with
`xProvSetup-2.11.0-x86.exe`	Windows Server 2008 x86
`xProvSetup-2.11.0-x64.exe`	Windows Server 2008 x64
	Windows Server 2008 R2 x64
	Windows Server 2012 x64
	Windows Server 2012 R2 x64
	Windows Server 2016 x64
	Windows Server 2019 x64

Running the installation wizard

The installation wizard guides you through the steps required to install the IBM Spectrum Accelerate Family VSS Provider on your Windows Server host.

Procedure

1. Run the compatible installation package (see Table 2 on page 7).

   The installation wizard is displayed.

Figure 2. IBM Spectrum Accelerate Family VSS Provider Installation Wizard Language panel

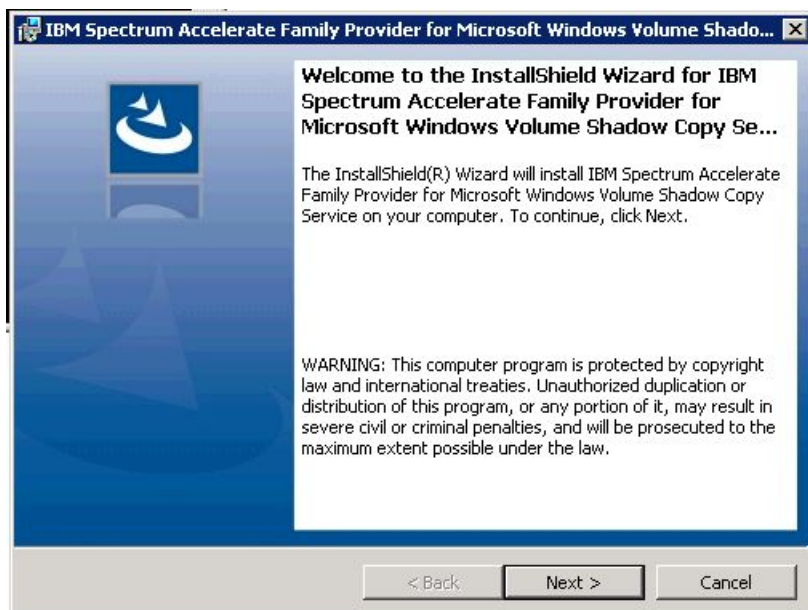2. Select your preferred language, and click **OK**.

Figure 3. IBM Spectrum Accelerate Family VSS Provider Installation Wizard Welcome panel

3. Click **Next**.

   The License Agreement panel is displayed.

4. Read the license agreement, select **I Agree**, and then click **Next**.
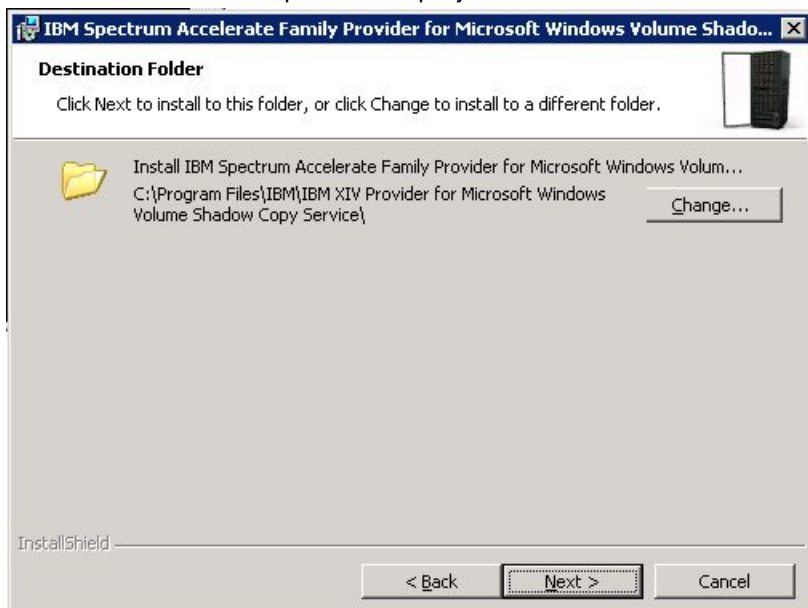
   The Destination Folder panel is displayed.

Figure 4. Destination Folder panel

5. Set the installation folder, and then click **Next**.

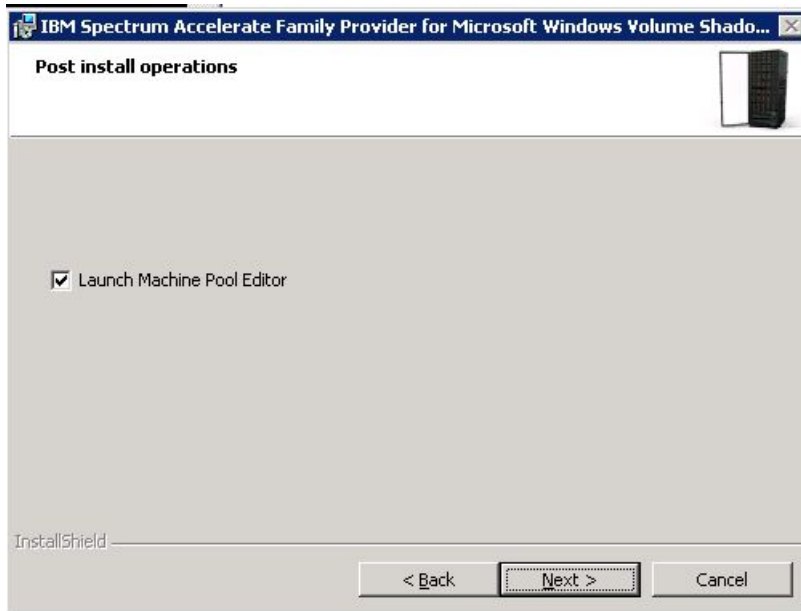   The Post Install Operations panel is displayed.

Figure 5. Post install operations panel

6. Keep the **Launch Machine Pool Editor** option selected (see Figure 5 on page 9) if you want to start the Machine Pool Editor utility immediately after the installation. Then, click **Next**.

   The Ready to Install the Program panel appears.

7. Click **Install**.

   The installation begins.

8. When the installation completes, click **Finish**.

   The Machine Pool Editor GUI appears if you previously selected to launch it after the installation.

Performing an upgrade

When installing upon a previously installed version, the upgrade wizard guides you through the steps required to upgrade the version of the IBM Spectrum Accelerate Family VSS Provider on your Windows Server host.

Procedure

1. Run the compatible installation package (see Table 2 on page 7).

   The language selection panel is displayed.

2. Select your preferred language, and then click **OK**.

   The **Previous Version Found** message box is displayed.

Figure 6. IBM Spectrum Accelerate Family VSS Provider Installation Wizard Welcome panel with upgrade confirmation

3. Click **OK** to upgrade the version of the IBM Spectrum Accelerate Family VSS Provider on your Windows Server host.

4. Click **Next**.

   The License Agreement panel is displayed.

5. Read the license agreement, select **I Agree**, and then click **Next**.

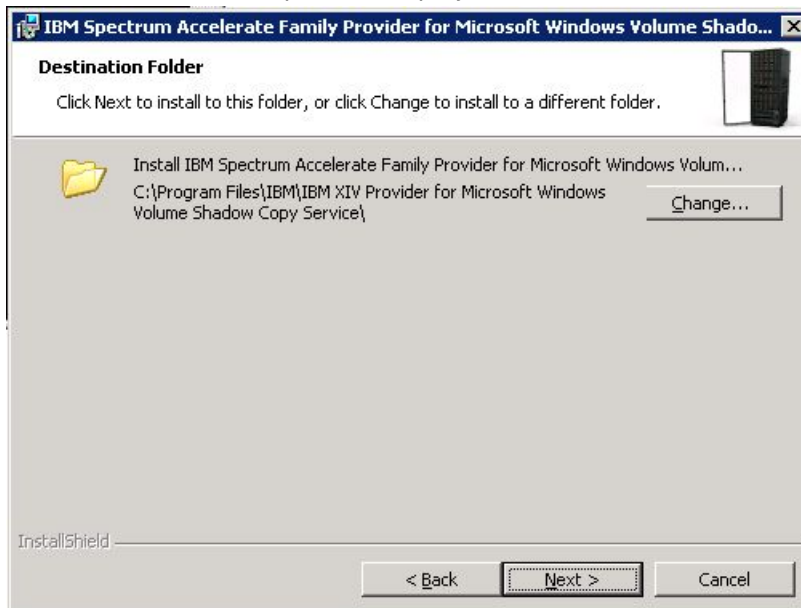   The Destination Folder panel is displayed.

Figure 7. Destination Folder panel

6. Set the installation folder, and then click **Next**.

   The Post Install Operations panel is displayed.

7. Keep the **Launch Machine Pool Editor** option selected (see Figure 5 on page 9) if you want to start the Machine Pool Editor utility immediately after the installation. Then, click **Next**.

   The Ready to Install the Program panel appears.

8. Click **Install**.

The installation begins.
9. When the installation completes, click **Finish**.

   The Machine Pool Editor GUI appears if you previously selected to launch it after the installation.

Chapter 3. Configuration

This chapter describes how you can configure the IBM Spectrum Accelerate Family VSS Provider.

The configuration tasks and options include:

- "Adding an IBM storage system from the Machine Pool Editor" on page 13
- Using the Machine Pool command-line interface (CLI)
- Configuring the VMware environment
- Enabling and verifying the replicated snapshot functionality
- Configuring volumes for Hyper-Scale Mobility

Adding an IBM storage system from the Machine Pool Editor

Use the Machine Pool Editor utility to connect at least one supported IBM storage system to the Windows Server host on which you intend to use the IBM Spectrum Accelerate Family VSS Provider service.

About this task

For each IBM storage system to which you want to connect a Windows Server host, enter the IBM storage system IP/hostname and login parameters as detailed in the following procedure.

Note: The Machine Pool Editor utility is available only for Windows Server hosts. For VMware hosts, use the Machine Pool CLI (see "Using the Machine Pool command-line interface" on page 15).

Procedure

1. In the Machine Pool Editor (starts automatically after the installation if **Launch Machine Pool Editor** was selected in the installation wizard; see Figure 5 on page 9), click **File** > **New System** (alternatively, right-click anywhere in the application window, and then select **New System**).

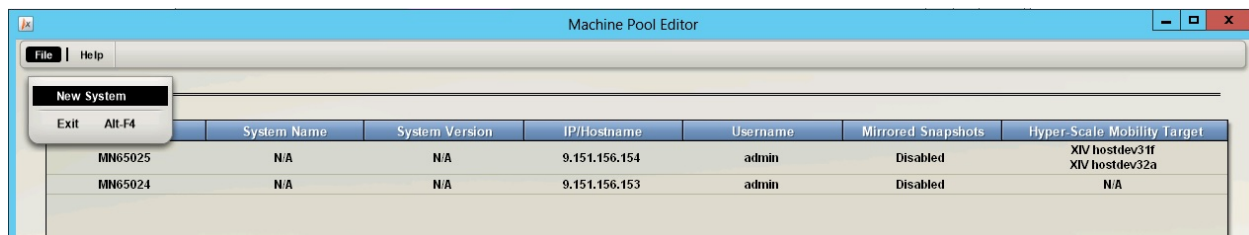|	System Name	System Version	IP/Hostname	Username	Mirrored Snapshots	Hyper-Scale Mobility Target
MN65025	N/A	N/A	9.151.156.154	admin	Disabled	XIV hostdev31f XIV hostdev32a
MN65024	N/A	N/A	9.151.156.153	admin	Disabled	N/A

Figure 8. Machine Pool Editor panel

The Add Storage System dialog box appears.

Figure 9. Add Storage System dialog box

2. Enter your storage administrator user name and password, as well as the IP address or hostname (domain based) of the IBM storage system that you want to add. If you want the VSS Provider to support mirrored snapshots for this IBM storage system, select **Enable Mirrored Snapshots**.

   Note: You can enable mirrored snapshots at a later stage, as explained in "Enabling and verifying the mirrored snapshot functionality" on page 20.

3. Click **Add**.

   The IBM storage system to which you logged-in is added to the systems list in the Machine Pool Editor.
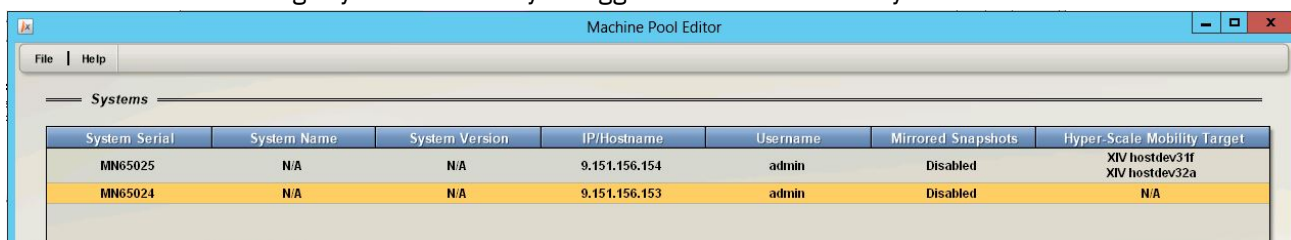
Figure 10. IBM storage system added

The IBM storage system information is saved to a local XML file. The file name and path are indicated in the status bar.

You can validate the connection to the storage system by right-clicking on its row and then clicking **Revalidate** (see Figure 12 on page 20.

Note: The validate operation cannot fix incorrect IP addresses.

The IBM Spectrum Accelerate Family VSS Provider is now configured to work as the snapshot management system for the added IBM storage system. You can add more IBM storage systems by repeating the procedure.

What to do next
Check the following information on the added IBM storage systems list:

- **System Serial** – Serial number of the added IBM storage system.
- **System Name** – The user-given name of the added IBM storage system.
- **System Version** – Microcode version of the added IBM storage system.
- **IP/Hostname** – IP address or hostname of the added IBM storage system.
- **Username** – The storage admin username that is used to access the added IBM storage system.

- **Mirrored Snapshots** – Indicates whether the VSS Provider is configured to support mirrored snapshots for the added IBM storage system.
- **Hyper-Scale Mobility Target** – The user-given name of the IBM storage system to which volumes are migrated when the Hyper-Scale Mobility feature is used. For more information about the IBM Hyper-Scale Mobility feature, refer to the product overview for the IBM storage system(s) being used and to the Redbooks publication IBM Hyper-Scale Mobility Overview and Usage (www.redbooks.ibm.com/redbooks.nsf/redpieceabstracts/redp5007.html).

At any time, if you want to disconnect from an IBM storage system and remove it from the list, right-click its row and then click **Remove** on the pop-up menu (see Figure 12 on page 20).

Using the Machine Pool command-line interface

The Machine Pool command-line interface (CLI) is a command-prompt utility.

The Machine Pool CLI utility can complete the following operations:

- Adding, removing and listing IBM storage systems
- Adding, removing and listing EXSi host or vCenter (when working in VMware environments)
- Adding, removing and listing Hyper host connection (when working in Hyper-V environments)

You can use the utility as an optional tool on Windows Server hosts instead of using the GUI-based Machine Pool Editor. In addition, you can also use the CLI utility in scripts or other applications when the IBM Hyper-Scale Manager management GUI cannot be used.

You can find the `MachinePoolCLI.exe` utility in the `.NET` folder of the installation directory, and use it for:

- Adding an IBM storage system
- Listing IBM storage systems
- Removing an IBM storage system
- Configuring the VMware environment
- Configuring the Hyper-V environment

Adding an IBM storage system from the CLI

You can use the Machine Pool CLI utility to connect to (add) IBM storage systems.

To add an IBM storage system from the CLI and enable mirrored snapshots support, enter the following command:

```
MachinePoolCLI /a <user> <password> <ip> [/rs|replicate_snaphots]
```

Note: <user>, **<password>**, and **<ip>** are system-specific login variables. **[/rs|replicate_snaphots]** is optional and enables mirrored snapshots support.

To add an IBM storage system from the CLI and enable high availability snapshots support, enter the following command:

```
MachinePoolCLI /a <user> <password> <ip> [/ha|ha_snaphots]
```

Note: <user>, **<password>**, and **<ip>** are system-specific login variables. **[/ha|ha_snaphots]** is optional and enables high availability snapshots support.

Listing IBM storage systems on the CLI

You can display a list of all the IBM storage systems to which the host is currently connected.

To display the list of IBM systems, enter the following command:

```
MachinePoolCLI /l [/v]
```

Note:

1. The optional **/v** flag displays the name and microcode version of each IBM storage system being used.

2. The **Validate** option is available only from the Machine Pool Editor GUI (see "Adding an IBM storage system from the Machine Pool Editor" on page 13).

```
c:\Program Files\IBM\IBM XIV Provider\.NET>MachinePoolCLI /l
System Serial    System Version    IP/Hostname    Username    Mirrored Snapshots    Hyper-Scale
Mobility Target
  MN625025           N/A           9.151.156.154  admin         Disabled             XIV
hostdev31f;XIV hostdev32a
  MN65024            N/A           9.151.156.153  admin         Disabled
N/A
```

Figure 11. Example output from the CLI list command

Removing an IBM storage system through the CLI

You can use the CLI to disconnect your host from an IBM storage system.

To disconnect from a specific IBM storage system, enter the following command along with the unique serial number of that system:

```
MachinePoolCLI /d <machine_serial_number>
```

Configuring the VMware environment

Complete the following tasks to configure the VMware environment.

Important: For information about the VMware environment requirements, see "VMware environment checks" on page 5.

- "Adding a VMware host on the IBM storage system" on page 16
- Setting the VMware parameters
- "Enabling and verifying the NPIV snapshot functionality" on page 17

Adding a VMware host on the IBM storage system

Any VMware host (ESX, ESXi, or vCenter – if used) must be defined on the IBM storage system in order to enable the VSS Provider functionality on that host.

About this task

Use the IBM Hyper-Scale Manager management GUI to define the VMware host on the storage system, as detailed in the following procedure.

Note: For more detailed information about VMware host connectivity, refer to the *IBM XIV Host Attachment Guide*.

Procedure

1. In the IBM Hyper-Scale Manager management GUI, go to **Host and Clusters** > **Hosts Connectivity**.
2. Click **Add Host** and then enter the name of the host.
3. Right-click the newly created host name and then select **Add Port** to add FC or iSCSI ports.
4. After the host is defined, verify the connectivity between the VMware host and the IBM storage system.

Setting the VMware host connectivity parameters

When using the IBM Spectrum Accelerate Family VSS Provider in a VMware environment, you must define several parameters that are specific to the VMware guest OS feature.

The guest OS feature allows the IBM Spectrum Accelerate Family VSS Provider to communicate with the vSphere web services and manipulate the RDM disks during a snapshot creation. This communication is required when:

- The snapshot disk is discovered by the VMware server through Fibre Channel, and mapped to a virtual machine as an RDM disk.
- The snapshot disk is discovered by the VMware server through iSCSI, and mapped to a virtual machine as an RDM disk.

Note: For more information about how to set these parameters, refer to the relevant VMware documentation.

Managing VMware platform credentials

You can use the Machine Pool CLI utility to perform the following VMware-specific credential operations.

- Create or modify VMware credential information:

```
MachinePoolCLI.exe /ae <username> <password> <ESX server|vCenter name(IP)>
MachinePoolCLI.exe root password 109.110.111.112
```

- List credential information:

```
MachinePoolCLI.exe /le
ESX Server | vCenter URL: https://109.110.111.112/sdk
ESX Server | vCenter User: root
```

- Delete credential information:

```
MachinePoolCLI.exe /de
```

- Set Soap timeout information:

```
MachinePoolCLI.exe /se <timeout>
MachineCLI.exe /se 700000
```

Note: The timeout default value is 600000.

Enabling and verifying the NPIV snapshot functionality

Before you can use the NPIV snapshots feature, you must enable it for each VMware host on the IBM storage system being used.

You must have two hosts for the NPIV snapshot functionality: one for physical HBA port WWPNs, and one for virtual port WWPNs. At least one RDM disk must be attached to each host, and each LUN must be mapped to both hosts.

For more information about how to define and configure hosts, refer to "Adding a VMware host on the IBM storage system" on page 16 and "Setting the VMware host connectivity parameters" on page 17.

You can verify that the NPIV snapshots feature is functional by locating virtual WWPNs on the physical ESX server.

Configuring the Microsoft Hyper-V environment

Before you configure the Microsoft Hyper-V environment, ensure that you have the required applications.

Before you begin

You must have the following applications to create shadow copies in the Microsoft Hyper-V guest operating system (OS):

- IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service 2.11.0
- The preferred server configuration for Microsoft Windows Server 2012 Hyper-V (or later)
- Microsoft Windows Server 2012 Hyper-V (or later)

About this task

The configuration is the same as the physical host if the following items are true:

- You installed the software iSCSI initiator on the guest OS
- You do not plan to use Fibre Channel (FC) protocol or iSCSI protocol on the host

Procedure

Complete the following steps to configure the host to create shadow copies in a Microsoft Hyper-V guest OS:

1. Install one of the following servers:

   - Microsoft Windows Server 2012
   - Microsoft Windows Server 2012 R2

2. Use the Server Manager to install the Microsoft Hyper-V role on the Windows Server.

3. Restart the server.

4. Issue the following commands to disable automount for the disks on the host:

   ```
   C:\diskpart
   DISKPART>automount disable
   ```

5. Issue the following command so the Windows firewall can allow remote administration on the physical host:

   ```
   netsh firewall set service RemoteAdmin enable
   ```

6. Use the Microsoft Hyper-V manager to install and configure the Microsoft Hyper-V guest OS. The guest OS can be Microsoft Windows Server 2008 or later.

7. On the physical host, download and install Microsoft Visual C++ 2008 SP1 Redistributable Package. You can download the packages from the following sites:

   Microsoft Visual C++ 2008 SP1 Redistributable Package (x64) (http://www.microsoft.com/en-us/download/details.aspx?id=2092)
   Microsoft Visual C++ 2008 SP1 Redistributable Package (x86) (http://www.microsoft.com/en-us/download/details.aspx?id=5582)

   Note: Both the x64 and x86 versions must be installed.

What to do next

Tip:

The procedures to take, delete, mask, resynchronize, and import snapshots are the same as the snapshot procedures for the physical host. The provider attaches the target LUNs to the physical host and then assigns the target LUN to the guest OS as a pass-through disk when taking or importing a snapshot. When you delete or mask a snapshot, the IBM Spectrum Accelerate Family Provider for Microsoft Windows

Volume Shadow Copy Service Hardware Provider removes the target LUN from the guest OS before detaching it from the physical host.

Microsoft Hyper-V platform credentials

You can use the Machine Pool CLI utility to change Microsoft Hyper-V platform credentials.

Add or modify Microsoft Hyper-V credential information
Issue the following example command to add or modify Microsoft Hyper-V information:

```
MachinePoolCLI /ah <username> <password> <hyper-v domain>
```

For example:

```
MachinePoolCLI.exe /ah administrator password vss
```

where

administrator is the username
password is the password
vss is the Hyper-V domain

List credential information
Issue the following example command to list the credential information:

```
MachinePoolCLI /lh
```

For example:

```
Hyper-V Host Domain: vss
Hyper-V Host User: administrator
```

Delete credential information
Issue the following example command to delete the credential information:

```
MachinePoolCLI /dh
```

Configuring source volumes with Microsoft Hyper-V

IBM Spectrum Accelerate Family Provider for Microsoft Windows Volume Shadow Copy Service only takes shadow copies for volumes that are based on disks from the supported IBM storage system being used. Therefore, disks must be assigned to the guest OS by pass-through mode.

Procedure

Complete the following steps to configure source volumes with Microsoft Hyper-V:
1. Add the guest OS into the same domain as the Microsoft Hyper-V Host.
2. Shut off the guest OS and add the iSCSI Controller to the guest OS.
3. Add the pass-through disk drive to the guest OS.

   Note: The guest OS can be in the running state, but it is better to have the disks on the host in the offline state. If the disks are in the offline state, they can appear in the physical hard box combobox.
4. Log on to the guest OS.
5. Create a volume on one of the new hard disks and assign a drive letter or mount point to the volume.

Enabling and verifying the mirrored snapshot functionality

Before you can use the mirrored snapshots feature, you must enable it for each IBM storage system to which the host is connected.

To enable the mirrored snapshots feature from the Machine Pool Editor GUI, right-click the row of the relevant IBM storage system, and then click **Enable Mirrored Snapshots** on the pop-up menu.
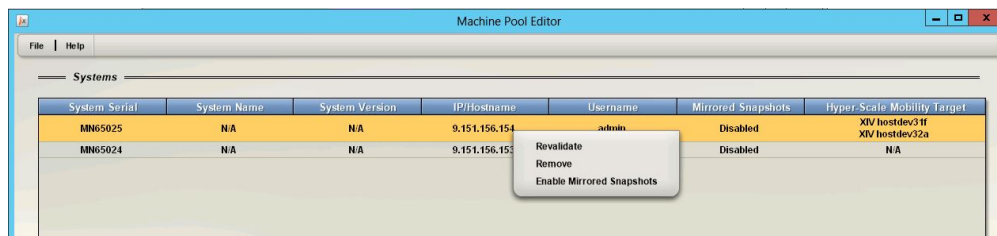
Figure 12. Machine Pool Editor right-click menu

For more information about how to enable this feature using Machine Pool CLI utility, refer to "Adding an IBM storage system from the CLI" on page 15.

Important: After enabling the mirrored snapshot functionality, you must restart the IBM Spectrum Accelerate Family VSS Provider service and the Microsoft VSS service on the Windows Server host.

When the mirrored snapshots feature is enabled and functional, snapshots are created on a mirrored volume of the remote IBM storage system. All remote snapshot files contain the **VSS-** prefix, and each file name is matched to the local VSS snapshot.

You can verify that the mirrored snapshots feature is functional by locating these snapshots on the remote IBM storage system.

Enabling and verifying high availability snapshots functionality

Before you can use the high availability (HA) snapshots feature, you must enable it for each IBM storage system to which the host is connected.

To enable the HA snapshots feature from the `MachinePool.xml` file, set the `create_ha_snapshots` value for the IBM storage system to **true**, as shown below, and then save the file.

```
<machine serial="6013800" username="admin" create_mirror_snapshots="false"
create_ha_snapshots="true" password="LZnLBheVIybKTxpbCkMeDQ==">
<aserver hostname="9.151.156.59" port="7778" /> </machine>
```

Note: To disable the HA snapshots feature after it is enabled, repeat the above procedure, but set the `create_ha_snapshots` value for the IBM storage system to **false** and then save the file.

Important: The `create_mirror_snapshots` and `create_ha_snapshots` parameters should not be set to **true** at the same time.

Important: After enabling (or disabling) the HA snapshot functionality, you must restart the IBM Spectrum Accelerate Family VSS Provider service and the Microsoft VSS service on the Windows Server host.

Configuring volumes for Hyper-Scale Mobility

When used, the IBM Hyper-Scale Mobility feature requires hosts, IBM storage systems, and volumes to be configured as detailed in this section.

About this task
If you want to use the IBM Spectrum Accelerate Family VSS Provider with migrated volumes and allow snapshots of migrated volumes, you need to pre-configure these volumes accordingly. Use the IBM

storage system management tools (Hyper-Scale Manager management GUI or storage system CLI) to configure the source and target IBM storage systems.
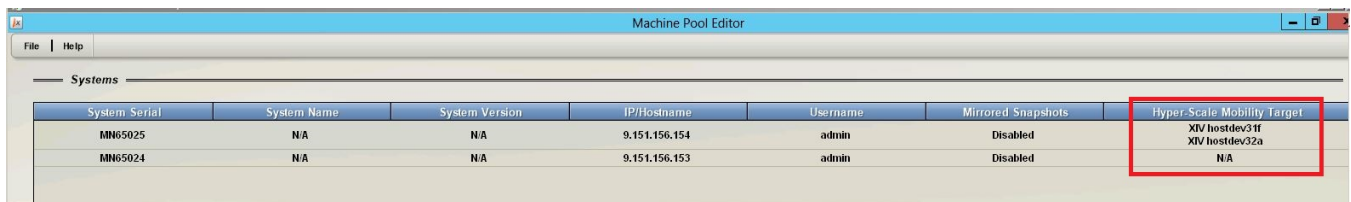
For more information about the IBM Hyper-Scale Mobility feature, refer to the product overview for the IBM storage system being used and the Redbooks publication IBM Hyper-Scale Mobility Overview and Usage (www.redbooks.ibm.com/redbooks.nsf/redpieceabstracts/redp5007.html).

Procedure

In this example procedure, 'Volume A' resides on the Hyper-Scale Mobility Target **source** IBM storage system.

1. Use the Hyper-Scale Manager management GUI or storage system CLI to map 'Volume A' to the host upon which the IBM Spectrum Accelerate Family VSS Provider is installed and running.
2. Use the Hyper-Scale Manager management GUI or storage system CLI to define the same host (with the same name) on the Hyper-Scale Mobility Target **target** IBM storage system.
3. On the **source** IBM storage system, use the **olvm_create** storage system CLI command on 'Volume A' (or use the matching Hyper-Scale Manager management GUI function).
4. On the **source** IBM storage system, use the **olvm_activate** storage system CLI command on 'Volume A' (or use the matching Hyper-Scale Manager management GUI function).
5. On the **source** IBM storage system, use the **olvm_proxy** storage system CLI command on 'Volume A' (or use the matching Hyper-Scale Manager management GUI function).
6. On the host upon which the IBM Spectrum Accelerate Family VSS Provider is installed and running, add both the **source** IBM system and the Hyper-Scale Mobility target IBM system to the list of available IBM systems (see "Adding an IBM storage system from the Machine Pool Editor" on page 13).

   Both systems should be listed and available for use by the IBM Spectrum Accelerate Family VSS Provider.

Figure 13. Hyper-Scale Mobility Target column on the Machine Pool Editor

The following message appears when IBM storage systems with Hyper-Scale Mobility targets are added:

```
The Hyper-Scale Mobility Target feature is enabled on the current XIV
system. If you want to create snapshots of a proxy volume or a proxy
ownership, you must first add the target XIV system to the list of systems.
```

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