

Foglight™ for Microsoft Hyper-V
ActionPack 6.3.0

User and Reference Guide



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Legend

■ **WARNING:** A WARNING icon indicates a potential for property damage, personal injury, or death.

! **CAUTION:** A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.

i **IMPORTANT NOTE, NOTE, TIP, MOBILE, or VIDEO:** An information icon indicates supporting information.

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Using the ActionPack for Microsoft Hyper-V

This *Foglight for Microsoft Hyper-V™ ActionPack User and Reference Guide* provides requirements, configuration instructions, conceptual information, and instructions on how to use the Foglight for Microsoft Hyper-V™ ActionPack to connect Foglight to Hyper-V hosts and manage virtual machines on those hosts.

This guide is intended for any user who wants to manage Hyper-V virtual machines using Foglight.

This chapter provides information about requirements that need to be met for the ActionPack for Microsoft Hyper-V to work properly, and about the actions included in the ActionPack.

ActionPack for Microsoft Hyper-V Requirements

Hyper-V ActionPack Support Matrix

Table 1. Support Matrix

| ActionPack | ActionPack Version | Requires vFoglight Version | Supported Target Systems |
|-------------------|--------------------|----------------------------|----------------------------------|
| Microsoft Hyper-V | 5.6.0 | 6.6 | Microsoft Windows Server 2008 R2 |

You must install and enable the vFoglight Cartridge for Hyper-V 6.3.0 before you can enable the ActionPack for Microsoft Hyper-V 5.6.2.

Hyper-V Agent

You must install the Hyper-V agent to use this ActionPack. For more information, see the *Installing the Hyper-V Management Capabilities* guide.

PowerShell Requirements

- 1 Install Microsoft .NET 2.0 (if necessary).
- 2 Install PowerShell v2 (if necessary).
- 3 Make sure *powershell.exe* is on the user's PATH.
- 4 Configure PowerShell to enable script files execution. For example:

```
powershell -command "& {Set-ExecutionPolicy remotesigned}"
```

- 5 Reboot the OS.

Services Requirements

Ensure that the **Server** service and **Remote Registry** service are running on the workstation where the COM server resides.

Local Security Settings

All settings in this section are configured using the **Local Security Policy** console.

To launch the console:

- 1 Open the Windows **Control Panel**.
- 2 Go to **Administrative Tools**.
- 3 Start the **Local Security Policy**. The **Local Security Settings** window opens.

Sharing and security model for local accounts

Navigate to **Security Settings > Local Policies > Security Options > Network access: Sharing and security model for local accounts**. Change the setting to **Classic**.

This only applies to Windows computers that are not a part of a domain.

DCOM Restrictions Policy

Make sure that the user account used has permissions to access, launch, and activate COM/DCOM/Automation objects.

To grant these permissions:

- Add the user to the predefined local group: *Administrators* for Windows XP; or *Distributed COM Users* for Windows Vista, Windows 2003, Windows 2008, and Windows 7.

If you cannot grant the group permission to the user, do the following:

- 1 Create a local user in the **Users** group.
- 2 Navigate to **Control Panel > Administrative Tools > Local Security Policy > Security Settings > Local Policies > Security Options**.
- 3 Double-click **DCOM: Machine Access Restrictions policy**. Click **Edit Security**. Add the user created above. Enable the **Remote Access** option.
- 4 Double-click **DCOM: Machine Launch Restrictions policy**. Click **Edit Security**. Add the user created above. Enable **Local Launch**, **Remote Launch**, **Local Activation**, and **Remote Activation** options.
- 5 Navigate to **Control Panel > Administrative Tools > Component Services > Computers**. Right-click **My Computer**, click **Properties**, and open the **COM Security** tab.
- 6 In the **Access Permissions** section, click **Edit Default**. Add the user created above. Enable the **Remote Access** option.
- 7 In the **Launch and Activation Permissions** section, click **Edit Default**. Add the user created above. Enable the **Local Launch**, **Remote Launch**, **Local Activation**, and **Remote Activation** options.

i | NOTE: In the Component Services section you can navigate to a specific component and grant permission from there, instead of doing so from the My Computer menu.

User Account Control

For Windows machines that are not part of a domain:

- 1 Open **Security Settings > Local Policies > Security Options**.
- 2 Disable the **User Account Control: Run all administrators in Admin Approval Mode** option.

Firewall Settings

To configure the firewall:

- 1 Enable all incoming traffic to the default DLL surrogate (*dllhost.exe*).
 - Create a rule that allows all incoming traffic for %systemroot%\system32\dlhhost.exe.
 - For 64-bit systems only: create a rule that allows all incoming traffic for %systemroot%\SysWOW64\dlhhost.exe.
- 2 Enable COM network access.
 - For Windows XP only: create a rule that allows all incoming traffic for TCP Port 135 (DCE/RPC Locator service).
 - For Windows Vista, 2003, and 2008: enable **COM+ Network Access (DCOM-In)** rule for active profile.
- 3 Enable **File and Printer sharing access**.
 - For Windows XP: enable **File and Printer sharing exception** rule.
 - For Windows Vista, 2003, and 2008: enable all rules in the **File and Printer sharing** group for active profile.

i | NOTE: Make sure that the scope defined for rules includes the host, which runs vFoglight.

Configuration Script

Use the script below to configure the firewall.

- 1 On the target machine create a file named *firewall-config.ps1* with the script listed below.
- 2 Run the script with Administrator's privileges using the following command:
`powershell -File firewall-config.ps1`

```
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# you entered into with Quest.
#
```



```

$OS = Get-WmiObject Win32_OperatingSystem
$OSBuildNumber = $OS.BuildNumber

$OSCaption = $OS.Caption

$useAdvancedFirewall = $true
$COMNetworkAccessGroup = "COM+ Network Access (DCOM-In)"
if (($OSBuildNumber -eq 2600) -or ($OSBuildNumber -eq 3790)) {
    $useAdvancedFirewall = $false
}

if ($OSBuildNumber -eq 7600) {
    # Windows 7
    $COMNetworkAccessGroup = "Windows Management Instrumentation (WMI)"
}

if ($useAdvancedFirewall) {
    Echo "Configuring firewall for Windows Vista/2008/7"
    netsh advfirewall firewall add rule name="DLL Host (32-Bits)" dir=in
action=allow program="%systemroot%\system32\dllhost.exe"
    netsh advfirewall firewall add rule name="DLL Host (64-Bits)" dir=in
action=allow program="%systemroot%\SysWOW64\dllhost.exe"
    netsh advfirewall firewall set rule group=$COMNetworkAccessGroup new enable=yes
    netsh advfirewall firewall set rule group="File and Printer Sharing" new
enable=yes
}
else {
    Echo "Configuring firewall for Windows XP/2003"
    netsh firewall add allowedprogram "%systemroot%\system32\dllhost.exe" "DLL Host
(32-Bits)" ENABLE
    netsh firewall add allowedprogram "%systemroot%\SysWOW64\dllhost.exe" "DLL Host
(64-Bits)" ENABLE
    netsh firewall add portopening TCP 135 "DCE/RPC Locator service" ENABLE
    netsh firewall set service FileAndPrint ENABLE}

```

COM and Automation Objects

The **COM** and **Automation** objects are required to perform remote tasks on Windows machines that are not configured for remote activation. Therefore additional configuring of the DLL surrogate is required.

Registry Permissions

Make sure that the Administrator user has Full Control access to the following registry keys:

- HKEY_LOCAL_MACHINE/Software/Classes/AppID
- HKEY_LOCAL_MACHINE/Software/Classes/CLSID/{0D43FE01-F093-11CF-8940-00A0C9054228}
- HKEY_LOCAL_MACHINE/Software/Classes/CLSID/{13709620-C279-11CE-A49E-444553540000}
- HKEY_LOCAL_MACHINE/Software/Classes/CLSID/{72C24DD5-D70A-438B-8A42-98424B88AFB8}
- HKEY_LOCAL_MACHINE/Software/Classes/CLSID/{76A64158-CB41-11D1-8B02-00600806D9B6}

Configuration Script

Use the script below to configure DCOM.

- 1 Create a file named *dcom-config.ps1* that contains the script below on the target machine.

2 Run the script on behalf of the **Administrator** user using the following command:

```
runas /user:Administrator powershell -File dcom-config.ps1
```

```
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#

Function ConfigureAppID($appId,$appDescription,$systemGlobal) {
    Echo "Processing $appId ($appDescription)"

    if ($systemGlobal) {
        $classesKey = "HKLM:\Software\Classes"
    }
    else {
        $classesKey = "HKCU:\Software\Classes"
    }

    $AppIDKey = $classesKey + "\AppID"

    if (!(Test-Path $AppIDKey)) {
        $item=New-Item -Name "AppID" -Path $classesKey -Type directory
    }

    $CLASS_AppIDKey = $AppIDKey + "\{$appId}"
    if (!(Test-Path $CLASS_AppIDKey)) {
        $item=New-Item -Name "{$appId}" -Path $AppIDKey -Type directory
    }
    Set-ItemProperty -Path $CLASS_AppIDKey -Name "(default)" -Value
"$appDescription"
    Set-ItemProperty -Path $CLASS_AppIDKey -Name "DllSurrogate" -Value ""
}

Function ConfigureCLSID($clsId,$appId,$systemGlobal) {
    Echo "Processing $clsId"

    $name = (Get-ItemProperty -Path "HKLM:\Software\Classes\CLSID\{$clsId}\ProgID" -
Name "(default)")."(default)"
    Echo $name

    if ($systemGlobal) {
        $classesKey = "HKLM:\Software\Classes"
    }
    else {
        $classesKey = "HKCU:\Software\Classes"
    }
    $CLSIDKey = $classesKey + "\CLSID"
    $AppIDKey = $classesKey + "\AppID"

    if (!(Test-Path $CLSIDKey)) {
        $item=New-Item -Name "CLSID" -Path $classesKey -Type directory
    }
}
```

```

$CLASS_CLSIDKey = $CLSIDKey + "\{$clsId}"
if (!(Test-Path $CLASS_CLSIDKey)) {
    $item=New-Item -Name "{$clsId}" -Path $CLSIDKey -Type directory
}
Set-ItemProperty -Path $CLASS_CLSIDKey -Name "AppID" -Value "{$appId}"
}

Function ConfigureDCOM($appId,$systemGlobal) {
    if (!$appId) {
        $appId = [System.Guid]::NewGuid()
    }
    $appDescription = "Default DLL Surrogate"

    ConfigureAppID -appId $appId -appDescription $appDescription -systemGlobal
    $systemGlobal

    $CLSIDS = @(
        # Scripting.FileSystemObject
        "0D43FE01-F093-11CF-8940-00A0C9054228",
        # Shell.Application
        "13709620-c279-11ce-a49e-444553540000"
        # WScript.Shell
        "72C24DD5-D70A-438B-8A42-98424B88AFB8"
        # WbemScripting.SWbemLocator
        "76A64158-CB41-11D1-8B02-00600806D9B6"
    )

    foreach ($clsId in $CLSIDS) {
        ConfigureCLSID -clsId $clsId -systemGlobal $systemGlobal -appId $appId
    }
}
ConfigureDCOM -systemGlobal $true

```

Workflows

The Foglight for Microsoft Hyper-V ActionPack includes a number of pre-defined workflows, which are accessible from the Workflow Library in the Automation Workflow Studio.

If none of these workflows suit your needs, you can create your own workflows using the actions described in the next section.

Actions

This section contains information about the actions included in the Cartridge for Microsoft Hyper-V ActionPack.

Add Network Adapter

Adds a network adapter to a virtual machine. This action cannot be stopped.

Pre-conditions:

- VM must be Stopped.
- MAC address must have a valid format. For example, "00155D010101" for the address "00:15:5D:01:01:01".

Table 2. Add Network Adapter Input Parameters

| Name/Scripting Name | Type | Description |
|--------------------------------|----------------|--|
| Virtual machine/virtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine to which a new network adapter will be added. |
| Network/network | TopologyObject | [HPVVirtualNetwork]. Network that will be assigned to the created network adapter. |
| Legacy/legacy | Boolean | If true, the legacy network adapter will be created. |
| MAC address/macAddress | String | MAC address to set onto the created network adapter. |

Table 3. Add Network Adapter Output Parameters

| Name/Scripting Name | Type | Description |
|------------------------|----------------|------------------------------------|
| Created NIC/createdNIC | TopologyObject | [HPVNIC]. Created network adapter. |

Apply Snapshot

Restores the saved snapshot of a Hyper-V virtual machine.

Table 4. Apply Snapshot Input Parameters

| Name/Scripting name | Type | Description |
|---------------------|----------------|---|
| snapshot/Snapshot | TopologyObject | [HPVSnapshot]. The snapshot to restore. |

Attach Disk

Attaches a virtual hard disk to Hyper-V virtual machine. This action cannot be stopped.

Pre-conditions:

- VM must be Stopped.
- The specified VM location in the specified controller is free for target VM.

Table 5. Attach Disk Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------------|----------------|--|
| Virtual machine/virtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine to which a virtual hard disk will be attached |
| VHD Path/vhdPath | String | The path to virtual hard disk. |
| is SCSI controller/isSCSI | Boolean | If true, the virtual hard disk will be attached to a SCSI controller; otherwise it will be attached to an IDE controller |

Clone VM

Clones an existing Hyper-V virtual machine. This action cannot be stopped.

The target server, which will host the cloned VM, should run a network interface that the original VM uses. For example:

- The source server runs 2 networks: *Network1* and *Network2*.
- The target server runs 2 networks: *Network2* and *Network3*.
- VM1 and VM2 are running on the source server.
- VM1 is connected to *Network1*.
- VM2 is connected to *Network2*.

In such configuration you cannot create a clone of VM1 on the target server because it does not run *Network1*. However, you can create a clone of VM2 on the target server, because it has the *Network2* interface.

Table 6. Clone VM Input Parameters

| Name/Scripting name | Type | Description |
|------------------------------------|----------------|--|
| Virtual machine/VirtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine to be cloned. |
| Target Hyper-V server/targetServer | TopologyObject | [HPVServer]. Hyper-V server where the clone will be created. |
| Target folder/targetFolder | String | The folder where the clone will be stored. |
| Virtual Machine Name/vmName | String | The cloned virtual machine name. |

Table 7. Clone VM Output Parameters

| Name/Scripting name | Type | Description |
|--------------------------------------|----------------|--|
| Virtual machine/targetVirtualMachine | TopologyObject | [HPVVirtualMachine]. The cloned virtual machine. |

Configure Network Adapter

Configures a network adapter of a Hyper-V virtual machine. This action cannot be stopped.

Pre-conditions

- VM must be Stopped.
- MAC address must have a valid format, for example "00155D010101" for the address "00:15:5D:01:01:01".

Table 8. Configure Network Adapter Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------------|----------------|--|
| Network adapter/networkAdapter | TopologyObject | [HPVNIC]. Network adapter to configure. |
| Network/network | TopologyObject | [HPVVirtualNetwork]. Network that will be assigned to the network adapter. |
| MAC address/macAddress | String | MAC Address of the network adapter. |

Create Differencing VHD

Creates a differencing virtual hard disk (.VHD) file. The VHD name must not contain characters that are forbidden in Windows file names.

Table 9. Create Differencing VHD Input Parameters

| Name/Scripting name | Type | Description |
|------------------------------|----------------|---|
| Hyper-V server/server | TopologyObject | [HPVServer]. Hyper-V server, which will be used for creating the VHD. |
| Storage Folder/storageFolder | String | The path to the folder where the VHD will be created. |
| VHD name/vhdName | String | Name of the new virtual hard disk. |
| Parent VHD/parentVhd | String | The parent VHD path. |

Table 10. Create Differencing VHD Output Parameters

| Name/Scripting name | Type | Description |
|---------------------|--------|-----------------------|
| VHD Path/vhdPath | String | The created VHD path. |

Create Dynamic VHD

Creates a dynamically-expanding virtual hard disk (.VHD) file. The VHD name must not contain characters that are forbidden in Windows file names.

Table 11. Create Dynamic VHD Input Parameters

| Name/Scripting name | Type | Description |
|------------------------------|----------------|---|
| Hyper-V server/server | TopologyObject | [HPVServer]. Hyper-V server, which will be used for creating the VHD. |
| Storage Folder/storageFolder | String | [HPVStorageFolder]. The folder where the VHD will be created. |
| VHD name/vhdName | String | Name of the new virtual hard disk. |
| VHD size (GB)/vhdSizeGB | Integer | Size of the virtual hard disk in GB. |

Table 12. Create Dynamic VHD Output Parameters

| Name/Scripting name | Type | Description |
|---------------------|----------------|--|
| VHD/createdVHD | TopologyObject | [HPVVirtualDisk]. Created virtual hard disk. |

Create Fixed Size VHD

Creates a fixed-sized virtual hard disk (.VHD) file. The VHD name must not contain characters that are forbidden in Windows file names.

Table 13. Create Fixed Size VHD Input Parameters

| Name/Scripting name | Type | Description |
|------------------------------|----------------|---|
| Hyper-V server/server | TopologyObject | [HPVServer]. Hyper-V server, used for creating the VHD. |
| Storage Folder/storageFolder | String | The folder where the VHD will be created. |
| VHD name/vhdName | String | Name of the new virtual hard disk. |
| VHDsize (GB)/SizeGB | Integer | Size of the virtual hard disk in GB. |

Table 14. Create Fixed Size VHD OutputParameters

| Name/Scripting name | Type | Description |
|---------------------|----------------|--|
| VHD | TopologyObject | [HPVVirtualDisk]. Created virtual hard disk. |

Create Snapshot

Creates a snapshot of a virtual machine.

Table 15. Create Snapshot Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------------|----------------|--|
| Virtual machine/virtualMachine | TopologyObject | [HPVVirtualMachine]. Target virtual machine. |
| Snapshot name/snapshotName | String | Name of a snapshot that will be created. |

Table 16. Create Snapshot Output Parameters

| Name/Scripting name | Type | Description |
|--------------------------|----------------|--|
| Snapshot/createdSnapshot | TopologyObject | [HPVVirtualMachineSnapshot]. Created snapshot. |

Create VM

Creates a virtual machine.

Table 17. Create VM Input Parameters

| Name/Scripting name | Type | Description |
|-------------------------------|----------------|---|
| Hyper-V server/targetServer | TopologyObject | [HPVServer]. Microsoft Hyper-V Server where the VM will be located. |
| VM location/vmLocation | String | The virtual machine location. This is an optional parameter. If absent the server's default virtual machine location is used. |
| VM name/vmName | String | Name of the virtual machine. |
| Memory size (MB)/memorySizeMB | String | Amount of memory to allocate to the VM. |
| CPU count/cpuCount | Integer | Number of virtual CPUs for the VM. |

Table 17. Create VM Input Parameters

| Name/Scripting name | Type | Description |
|--|---------|---------------------------------------|
| Virtual machine reserve/ <code>cpuReservation</code> | Integer | Virtual machine reserve (percentage). |
| Virtual machine limit/ <code>cpuLimit</code> | Integer | Virtual machine limit (percentage). |
| Relative weight/ <code>cpuWeight</code> | Integer | Relative weight. |
| Notes/ <code>notes</code> | String | Notes about virtual machine. |

Table 18. Create VM Output Parameters

| Name/Scripting name | Type | Description |
|--|----------------|---|
| Virtual machine/ <code>virtualMachine</code> | TopologyObject | <code>[HPVVirtualMachine]</code> . The created virtual machine. |

Delete VM

Deletes a Hyper-V virtual machine.

Table 19. Delete VM Input Parameters

| Name/Scripting name | Type | Description |
|--|----------------|---|
| Virtual machine/ <code>virtualMachine</code> | TopologyObject | <code>[HPVVirtualMachine]</code> . Virtual machine to delete. |
| Delete content/ <code>deleteContent</code> | Boolean | If <code>true</code> , the virtual machine content (for example VHD images) will be deleted (default value is <code>false</code>). |

Edit Drive

Connects a new virtual disk image to a virtual hard drive.

Pre-conditions

- VM must be Turned Off. Any other state will result in an `Illegal` state for this operation exception.

Table 20. Edit Drive Input Parameters

| Name/Scripting name | Type | Description |
|------------------------------------|----------------|--|
| Hard Drive/ <code>hardDrive</code> | TopologyObject | <code>[HPVVirtualMachinePhysicalDisk]</code> . The hard drive. |
| VHD path/ <code>vhdPath</code> | String | The path to the virtual hard disk |

Edit VM

Changes the Hyper-V virtual machine basic settings. You should specify all parameters. If you are not going to modify a parameter, specify its current value.

Changing the CPU count and memory size requires the virtual machine to be in the Turned Off state.

Table 21. Edit VM Input Parameters

| Name/Scripting name | Type | Description |
|--|----------------|---|
| Virtual machine/virtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine to edit. |
| VM name/vmName | String | The virtual machine name. Cannot be null or empty. |
| VM notes/notes | String | The virtual machine notes. Null and empty values are accepted. |
| Virtual memory size/memorySizeMb | Integer | The virtual memory size in MB. Valid range is between 8 and 4094 MB. |
| Virtual processor count/cpuCount | Integer | The virtual processor count. Valid range is between 1 and the actual number of processors on the physical machine. |
| Virtual machine reserve/cpuReservation | Integer | Percent of the logical CPU that is set aside for the running virtual machine. As each VM is started, the available capacity on the Hyper-V server is reduced. |
| Virtual machine limit/cpuLimit | Integer | Percentage of logical CPU that a running virtual machine is not allowed to exceed. |
| Relative weight/cpuWeight | Integer | How CPU is distributed when there is contention among all running virtual machines. The higher the number, the more processing power is allocated to the VM. |

Move VM

Moves a powered off virtual machine.

Pre-conditions

- Virtual machine must be located on a shared storage.

The target server, which will host the VM, should run a network interface that the VM uses. For example:

- The source server runs 2 networks: *Network1* and *Network2*.
- The target server runs 2 networks: *Network2* and *Network3*.
- VM1 and VM2 are running on the source server.
- VM1 is connected to *Network1*.
- VM2 is connected to *Network2*.

In such configuration you cannot move the VM1 to the target server, because it does not have the *Network1*. However, you can move VM2 to the target server, because it has the *Network2* interface.

Table 22. Move VM Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------------|----------------|---|
| Virtual machine/virtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine to move. |
| MS Hyper-V server/targetServer | TopologyObject | [HPVServer]. Server to which the virtual machine will be moved. |

Table 23. Move VM Output Parameters

| Name/Scripting name | Type | Description |
|---------------------|----------------|---------------------------------------|
| VM/resultVM | TopologyObject | [HPVVirtualMachine]. Virtual machine. |

Pause VM

Pauses a virtual machine. It must be Running to be paused.

Table 24. Pause VM Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------------|----------------|--|
| Virtual machine/virtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine to pause. |

Reboot Hyper-V Server

Reboots a Hyper-V server. The Hyper-V server must be Powered On.

Table 25. Reboot Hyper-V Server Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------|----------------|--|
| MS Hyper-V server/server | TopologyObject | [HPVServer]. The Hyper-V server to reboot. |
| Reason/reason | String | The reason for the shutdown operation. |
| Force/force | Boolean | If true, forces applications to close despite having unsaved data. |

Remove All Network Adapters

Removes all network adapters for the selected virtual machine. The virtual machine must be Stopped.

Table 26. Remove All Network Adapters Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------------|----------------|---|
| Virtual machine/virtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine on which network adapters will be removed. |

Remove All Snapshots

Removes all snapshots of the specified Hyper-V virtual machine.

Table 27. Remove All Snapshots Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------------|----------------|--|
| Virtual machine/virtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine from which snapshots are to be removed. |

Remove Drive

Disconnects a virtual hard disk from a virtual machine, but does not delete the .VHD file.

Table 28. Remove Drive Input Parameters

| Name/Scripting name | Type | Description |
|---------------------|----------------|---|
| Hard drive/drive | TopologyObject | [HPVHardDrive]. Hard drive that will be disconnected. |

Remove Network Adapter

Removes a network adaptor of the selected virtual machine. The virtual machine must be Stopped.

Table 29. Remove Network Adapter Input Parameters

| Name/Scripting name | Type | Description |
|---------------------|----------------|--------------------------------------|
| Network adaptor/nic | TopologyObject | [HPVNIC]. Network adapter to remove. |

Remove Snapshot

Deletes a virtual machine snapshot.

Table 30. Remove Snapshot Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------------|----------------|---|
| Snapshot/snapshot | TopologyObject | [HPVVirtualMachineSnapshot]. Snapshot to delete. |
| Delete children/removeChildren | Boolean | If true, the entire snapshot sub-tree is deleted. |

Rename Snapshot

Renames a virtual machine snapshot.

Table 31. Rename Snapshot Input Parameters

| Name/Scripting name | Type | Description |
|----------------------------|----------------|--|
| Snapshot/snapshot | TopologyObject | [HPVVirtualMachineSnapshot]. Snapshot to rename. |
| Snapshot name/snapshotName | String | A user-defined string that specifies the new name. |

Resume VM

Resumes a paused virtual machine.

Table 32. Resume VM Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------------|----------------|---|
| Virtual machine/virtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine to resume. |

Revert to Snapshot

Restores virtual machine from a snapshot.

Table 33. Revert to Snapshot Input Parameters

| Name/Scripting name | Type | Description |
|---------------------|----------------|--|
| Snapshot/snapshot | TopologyObject | [HPVVirtualMachineSnapshot]. Snapshot to revert. |

Save VM

Saves the guest session image into a file. The virtual machine must be either Running or Paused.

Table 34. Save VM Input Parameters

| Name/Scripting name | Type | Description |
|------------------------------------|----------------|--|
| Virtual machine/ virtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine on which to save the guest session image. |

Set MAC Address

Sets the MAC address of a virtual machine.

Pre-conditions:

- VM must be Stopped.
- MAC address must have a valid format. For example, "00155D010101" for the address "00:15:5D:01:01:01".

Table 35. Set MAC Address Input Parameters

| Name/Scripting name | Type | Description |
|---------------------------------|----------------|--|
| Network Adapter/Network Adapter | TopologyObject | [HPVVirtualMachineNetworkInterface] Network adapter for the virtual machine. |
| MAC Address/ MAC Address | String | MAC address to assign to the virtual machine. |

Set Network

Sets the network for a virtual machine.

Table 36. Set Network Input Parameters

| Name/Scripting name | Type | Description |
|---------------------------------|----------------|--|
| Network Adapter/Network Adapter | TopologyObject | [HPVVirtualMachineNetworkInterface] Network adapter for the virtual machine. |
| Network/network | TopologyObject | [HPVVirtualSwitch]. Network that will be assigned to the network adapter. |

Shutdown Hyper-V Server

Shuts down a Hyper-V server. The Hyper-V server must be Running.

Input Parameters

Table 37. Shutdown Hyper-V Server Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------|----------------|--|
| MS Hyper-V server/server | TopologyObject | [HPVServer]. Microsoft Hyper-V server to shut down. |
| Reason/reason | String | The reason for the shutdown operation. This is a user-defined string. |
| Force/force | Boolean | If <code>true</code> , forces applications to close despite having unsaved data. |

Shutdown VM

Shuts down a virtual machine. The virtual machine must be Running.

Table 38. Shutdown VM Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------------|----------------|--|
| Virtual machine/virtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine that will be shut down. |
| Reason/reason | String | The reason for the shutdown operation. This is a user-defined string. |
| Force/force | Boolean | If <code>true</code> , forces applications to be closed despite having unsaved data. |

Start VM

Powers on a virtual machine. The virtual machine must be Stopped, Saved, or Paused.

Table 39. Start VM Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------------|----------------|---|
| Virtual machine/virtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine to start. |
| Wait OS start/waitOSStart | Boolean | If <code>true</code> , the action will wait while the OS of the VM starts (default value is false). |

Stop VM

Powers off a virtual machine. The virtual machine must be Running.

Table 40. Stop VM Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------------|----------------|--|
| Virtual machine/virtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine to power off. |

Wait VM State

Wait for the virtual machine to enter a specified state.

Table 41. Wait VM State Input Parameters

| Name/Scripting name | Type | Description |
|--------------------------------|----------------|--|
| Timeout | Integer | The amount of time to wait for the action to complete. |
| Expected State | String | A string describing the state of the virtual machine. |
| Virtual machine/virtualMachine | TopologyObject | [HPVVirtualMachine]. Virtual machine name. |

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