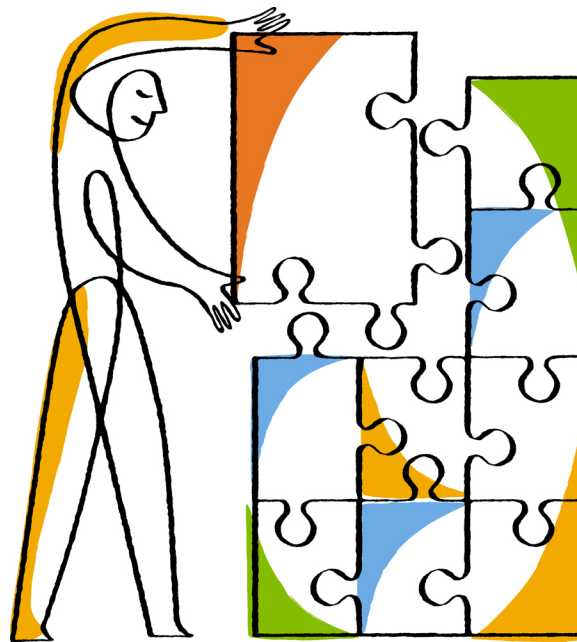




NetApp®

OnCommand® Shift 1.1

Installation and Setup Guide



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Product overview

OnCommand Shift is a Windows PowerShell-based interface that enables you to convert virtual machines from one hypervisor format to another.

The product leverages NetApp FlexClone technology to support rapid bidirectional conversion of virtual machine hard drives as follows:

- VMware ESXi to Microsoft Hyper-V
- Microsoft Hyper-V to VMware ESXi

OnCommand Shift replaces the MAT4Shift tool.

OnCommand Shift components

You should be familiar with OnCommand Shift components before you install the product.

Shift server

The Shift server executes OnCommand Shift operations. It uses VMware Power CLI and the Hyper-V Server PowerShell module to communicate with VMware ESXi and Microsoft Hyper-V.

You can install Shift on a Microsoft Hyper-V server or on a standalone Windows server (physical or virtual). For supported Shift Server hosts, see the NetApp Interoperability Matrix.

Data ONTAP SVM

A Storage Virtual Machine (SVM) is a logical storage server that provides data access to LUNs and the Network Attached Storage (NAS) namespace. It is a best practice to create a new SVM for use during OnCommand Shift operations.

Depending on the direction of the conversion you want to perform, you use VMware vSphere Storage vMotion or Microsoft Hyper-V Storage Live Migration to move the VMs you want to convert to this SVM. The SVM uses NFS for Hyper-V storage and CIFS for ESXi storage.

For more information about SVMs, see the *Clustered Data ONTAP System Administration Guide*.

PowerShell module

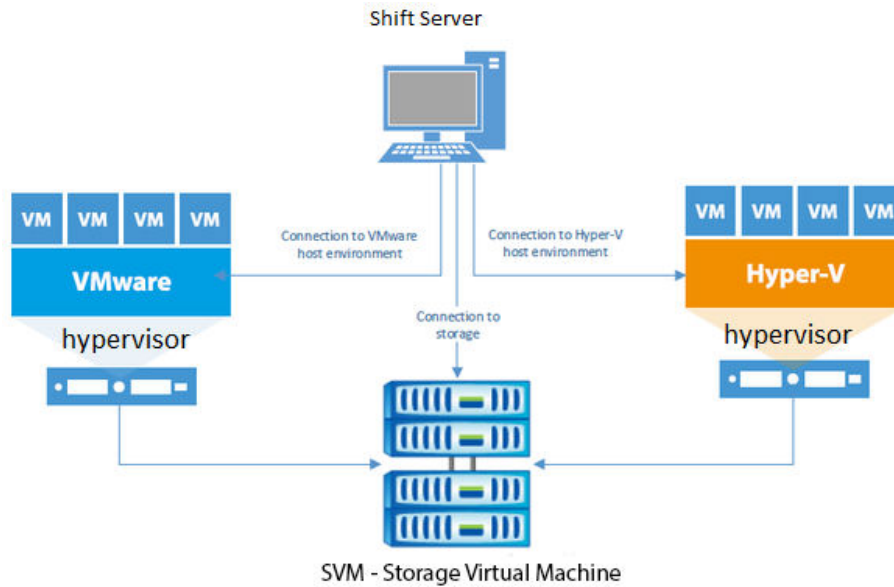
The OnCommandShift PowerShell module contains the PowerShell cmdlets installed with Shift. This module is the client of the Shift server.

Related information

[Clustered Data ONTAP 8.3 System Administration Guide](#)
[NetApp Interoperability Matrix Tool](#)

How OnCommand Shift works

At conversion time, OnCommand Shift connects the Shift server to Microsoft Hyper-V and VMware ESXi hosts and to shared NetApp storage. The server leverages NetApp FlexClone technology to convert VM hard drives from one hypervisor format to the other.



Protocols and communication methods

You should be familiar with the protocols and communication methods that OnCommand Shift uses during its operations.

HTTPS

Used by the OnCommandShift PowerShell module to communicate with the Shift server. Also used by the Shift server to communicate with the Data ONTAP cluster. IPv6 is not supported. IPv4 is supported.

VI Java (VI SDK), VMware PowerCLI

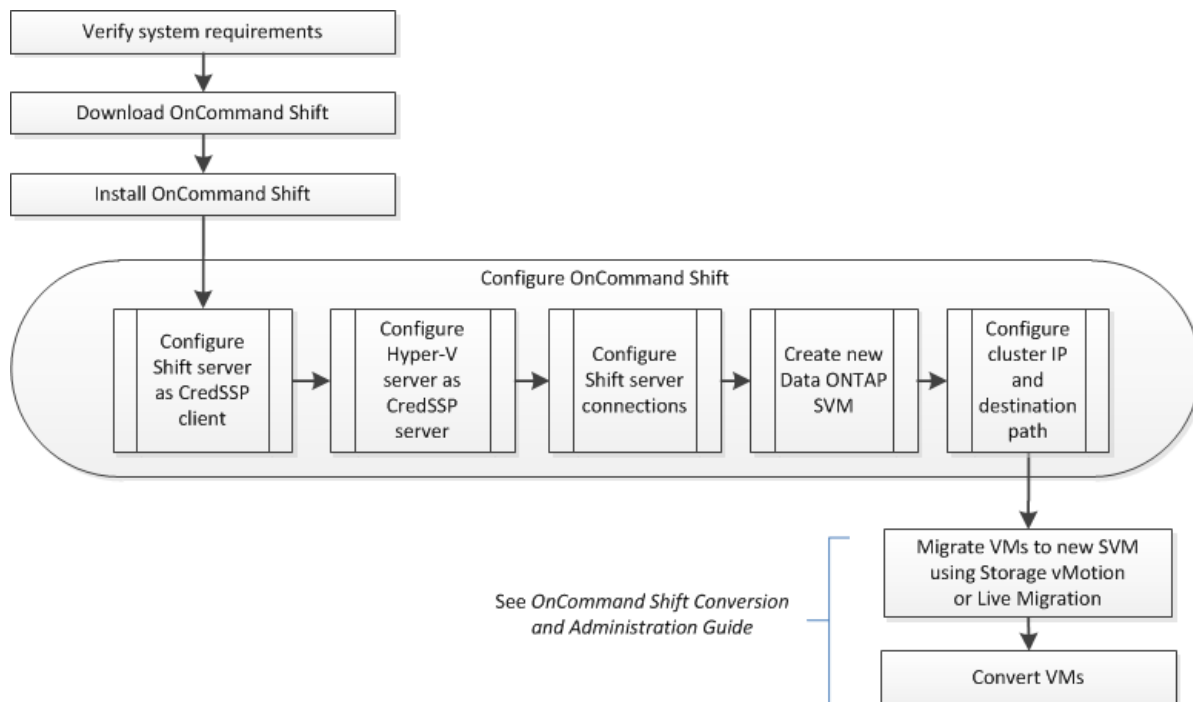
Used to communicate with VMware ESXi.

Windows PowerShell module or PowerShell ISE

Used to communicate with Microsoft Hyper-V.

Deployment workflow

Before you can convert VMs with OnCommand Shift, you must install and configure the product, and migrate VMs to the Data ONTAP SVM you have created.



Verifying system requirements

Before deploying OnCommand Shift, you must ensure that your system meets hardware, software, storage system, licensing, and other requirements.

Related references

[Connectivity requirements](#) on page 8

[Supported hypervisor operating systems and switches](#) on page 8

[Supported disk formats for VMware ESXi and Microsoft Hyper-V](#) on page 9

[Supported operating systems](#) on page 9

[Shift Server host hardware requirements](#) on page 10

[Software requirements](#) on page 10

[Data ONTAP license requirements](#) on page 10

Connectivity requirements

You must configure your hypervisor and storage environment so that OnCommand Shift can interact properly with all components in your environment.

- You can install OnCommand Shift on a Microsoft Hyper-V server or on a standalone Windows server (physical or virtual).
- The Shift server, Data ONTAP CIFS server, Hyper-V server, and guest operating systems must be on the same Windows domain.
- CIFS and NFS must use the same data LIF. The Hyper-V server and ESXi hosts access the Storage Virtual Machine (SVM) at the IP address of this LIF.
- For CIFS operations, the time settings for the Windows domain controller and the NetApp storage controller must be synchronized.

Supported hypervisor operating systems and switches

You must ensure that your hypervisors are using operating systems and switches supported by Shift.

Hypervisor	Supported versions	Supported switches
Microsoft Hyper-V	• Windows Server 2012 (x64), Datacenter Full Edition • Windows Server 2012 R2 (x64), Datacenter Full Edition • Windows Server 2012 R2 (x64), Datacenter Server Core • Microsoft Hyper-V Server 2012 R2 (x64)	• Virtual switches only • Logical switches not supported
VMware ESXi	• VMware ESXi 5.0, 5.1, 5.5, and 6.0	• Standard switches only • Distributed switches not supported

Related information

[NetApp Interoperability Matrix Tool](#)

Supported disk formats for VMware ESXi and Microsoft Hyper-V

You must ensure that the ESXi and Hyper-V disk formats you are converting to and from are supported by Shift.

ESXi source disk type	Hyper-V destination disk type	Supported
VMDK - Monolithic Flat	VHD - fixed	No
VMDK - Monolithic Flat	VHD - dynamic	No
VMDK - Monolithic Flat	VHDX - fixed	No
VMDK - Monolithic Flat	VHDX - dynamic	Yes

Hyper-V source disk type	ESXi destination disk type	Supported
VHD - fixed	VMDK- Monolithic Flat	Yes
VHD - dynamic	VMDK - Monolithic Flat	No
VHDX - fixed	VMDK - Monolithic Flat	Yes
VHDX - dynamic	VMDK - Monolithic Flat	Yes

Supported operating systems

You must ensure that you are using supported versions of Windows for guest operating systems and for the Shift server, and that Shift supports your version of Data ONTAP.

Supported VM guest operating systems

The following versions of Windows are supported as guest operating systems for VM conversions:

- Windows Server 2008

Note: If you are running Windows Server 2008 on the guest OS, you must install Windows PowerShell 2.0. PowerShell is not installed by default on Server 2008.

- Windows Server 2008 R2
- Windows Server 2012
- Windows Server 2012 R2
- Windows 7
- Windows 8
- Windows 8.1

Note: Windows Server 2012 Foundation is not supported.

Supported versions of Windows Server

The following versions of Windows Server are supported for the Shift server platform:

- Windows Server 2012
- Windows Server 2012 R2

Supported versions of Data ONTAP

OnCommand Shift supports platforms running clustered Data ONTAP 8.2.1 or later.

Shift Server host hardware requirements

You must ensure that your Shift server host meets minimum hardware requirements. Depending on your network configuration and the number of virtual machines you are converting, you might experience performance degradation or other problems if your host does not meet the minimum requirements.

Hardware	Requirements
Memory	512 MB minimum
Available disk space	10 GB You must have 150 MB temporary disk space available for installation.
CPU	• Dual-core 2.0 GHz minimum • Quad-core 2.6 GHz recommended

Software requirements

You must ensure that you have installed and verified the required software on the Shift server.

You should install the required software in the following order:

1. Windows PowerShell 3.0 or 4.0
2. Microsoft .NET Framework 3.5, which includes .NET 2.0
3. VMware vSphere PowerCLI 5.5

Data ONTAP license requirements

You must ensure that each Data ONTAP controller has licenses for CIFS, FlexClone, and NFS. No licenses are required for Windows or ESXi hosts.

Installing OnCommand Shift

You can install OnCommand Shift on a Microsoft Hyper-V server or on a standalone Windows server (physical or virtual). You can use an interactive wizard or the command line to run the installation.

Related tasks

[Downloading OnCommand Shift](#) on page 11

[Using the wizard to install OnCommand Shift](#) on page 11

[Using the command line to install OnCommand Shift](#) on page 12

[Verifying the installation](#) on page 13

Downloading OnCommand Shift

Before installing OnCommand Shift, you must download the OnCommand Shift software package from the NetApp Support Site.

Before you begin

You must have a NetApp Support Site account.

Steps

1. Log in to the NetApp Support Site.
2. Go to the **Download Software** page.
3. Locate OnCommand Shift and select the operating system on which you want to install OnCommand Shift.
4. Click **Go!**
5. Follow the instructions on the OnCommand Shift page to download the software.

Related information

[NetApp Support](#)

Using the wizard to install OnCommand Shift

You can use a standard installation wizard to install OnCommand Shift interactively. It is a good idea to use the wizard the first time you install OnCommand Shift because it provides convenient access to the Shift configuration wizard after the installation is complete.

Before you begin

You must have the following credentials and software:

- Login credentials for the Windows Administrator account. This can be any user (including a non-administrator domain user) who is a member of the local Administrator account on the Windows host.
- VMware vSphere PowerCLI 5.5 or later
- Microsoft .NET Framework 3.5 (which includes .NET 2.0)

Steps

1. Log in to the Windows system using an Administrator account.
Both local and domain administrators are supported.
2. In the folder that contains the OnCommand Shift software package, double-click the package name.
The installation wizard opens.
3. Complete the steps in the wizard:

On this page...	Do this...
Port Configuration	Enter the port number. The default HTTPS port is 8443. You should not alter the port number unless absolutely necessary.
OnCommand Shift Server credentials	Set the password for the Shift server “admin” user. You use the credentials of the “admin” user to connect to the Shift server. You cannot change the “admin” user name.
Ready To Install	Click Install .

Result

When the installation is complete, the wizard displays the InstallShield Wizard Completed page, with the status of the OnCommand Shift server. As long as the Shift server is running successfully, you can click **Run Config Wizard** to start the Shift configuration wizard.

Related tasks

[Accessing the configuration wizard](#) on page 14

You can open the configuration wizard from the last page of the installation wizard or by using a PowerShell cmdlet. The installation must have completed before you start the configuration.

Using the command line to install OnCommand Shift

You can install OnCommand Shift in silent mode, from the Windows command line.

Before you begin

You must have the following credentials and software:

- Login credentials for the Windows Administrator account. This can be any user (including a non-administrator domain user) who is a member of the local Administrator account on the Windows host.
- VMware vSphere PowerCLI 5.5 or later
- Microsoft .NET Framework 3.5 (which includes .NET 2.0)

Steps

1. Log in to the Windows system using an Administrator account.
Both local and domain administrators are supported.
2. From a Windows command prompt window, navigate to the folder that contains the OnCommand Shift software package.
3. Run the following command, replacing variables with your data:

```
"OnCommand_Shift_x.x.exe" /silent /debuglog"DirPath\LogFileName" /
AGENT_HTTPS_PORT:Port /CONFIRMPASSWORD=Password /USERPASSWORD=Password
```

Enter the following for each variable:

Variable	Description
<i>DirPath\LogFileName</i>	The location and name of the installation log file.
<i>Port</i>	The port number for OnCommand Shift. The default HTTPS port is 8443. You should not alter the port number unless absolutely necessary.
<i>Password</i>	The password for the Shift server “admin” user. You use the credentials of the “admin” user to connect to the Shift server.

After you finish

You should verify the installation before configuring OnCommand Shift.

Related tasks

[Verifying the installation](#) on page 13

Verifying the installation

You can use PowerShell cmdlets to verify that a silent installation completed successfully. You will know that an interactive installation succeeded if the InstallShield Wizard Completed page shows that the Shift server is running successfully.

Steps

1. From PowerShell, verify that the OnCommandShift PowerShell module is installed:

```
Get-Module -ListAvailable
```

The command should return a list that includes OnCommandShift.

2. Verify that the Shift server is running:

```
Get-ShiftServerState -host shift_server_host_ipaddress -port  
shift_server_port -timeoutsec timeout_value
```

The command should return `Shift server is running`. If the Shift server is not running, start the Apache Tomcat 7.0 service in **Control Panel > Services**.

3. Ensure that cmdlets can be executed in unrestricted mode:

```
Set-ExecutionPolicy Unrestricted
```

Set-ExecutionPolicy Unrestricted does not change the execution policy for external scripts. See "Troubleshooting OnCommand Shift" in the [OnCommand Shift 1.1 Conversion and Administration Guide](#) for more information.

Configuring OnCommand Shift

You can use an interactive wizard or PowerShell cmdlets to configure OnCommand Shift. It is a good idea to use the wizard the first time you configure Shift so that you can be sure you supply all the required information.

Related tasks

[Using the wizard to configure OnCommand Shift](#) on page 14

[Using PowerShell cmdlets to configure OnCommand Shift](#) on page 21

Using the wizard to configure OnCommand Shift

You can use the Shift configuration wizard to simplify the initial setup of the product or to modify parameters later. Throughout the configuration wizard you can hover over a field to display a tool tip.

Steps

1. [Accessing the configuration wizard](#) on page 14
You can open the configuration wizard from the last page of the installation wizard or by using a PowerShell cmdlet. The installation must have completed before you start the configuration.
2. [Configuring WinRM and CredSSP](#) on page 15
You can use the configuration wizard to configure the Shift server as a CredSSP client. You can use a PowerShell cmdlet on the Hyper-V server to configure the server as a CredSSP server.
3. [Configuring Shift server connections](#) on page 17
You can use the configuration wizard to configure Shift server connections to the Hyper-V and ESX hosts and to the guest OS of the VMs to be converted. You can also use it to create a network mapping between the VMware network and the Hyper-V switch.
4. [Creating a new SVM](#) on page 19
The VMs you want to convert must first be moved to a Data ONTAP Storage Virtual Machine (SVM) using Storage vMotion or Live Migration. It is a best practice to configure a new SVM for the VMs, so that you can be sure you are not converting VMs on a production SVM. You can use the configuration wizard to create the new SVM.
5. [Configuring the cluster IP address and destination path](#) on page 21
You can use the configuration wizard to specify the IP address of the target cluster management LIF and the destination of the VMs you plan to convert. For ESX to Hyper-V conversion, the destination path specifies the fully qualified path name of the CIFS share. For Hyper-V to ESX conversion, the destination path specifies the fully qualified path name of the NFS share.

Accessing the configuration wizard

You can open the configuration wizard from the last page of the installation wizard or by using a PowerShell cmdlet. The installation must have completed before you start the configuration.

About this task

The first time you configure Shift you should complete each step in the wizard in the order shown on the OnCommand Shift Configuration page. You can stop the configuration at any time and finish it later. You must complete the entire initial configuration before you can convert VMs.

Steps

1. Access the configuration wizard using one of the following methods:

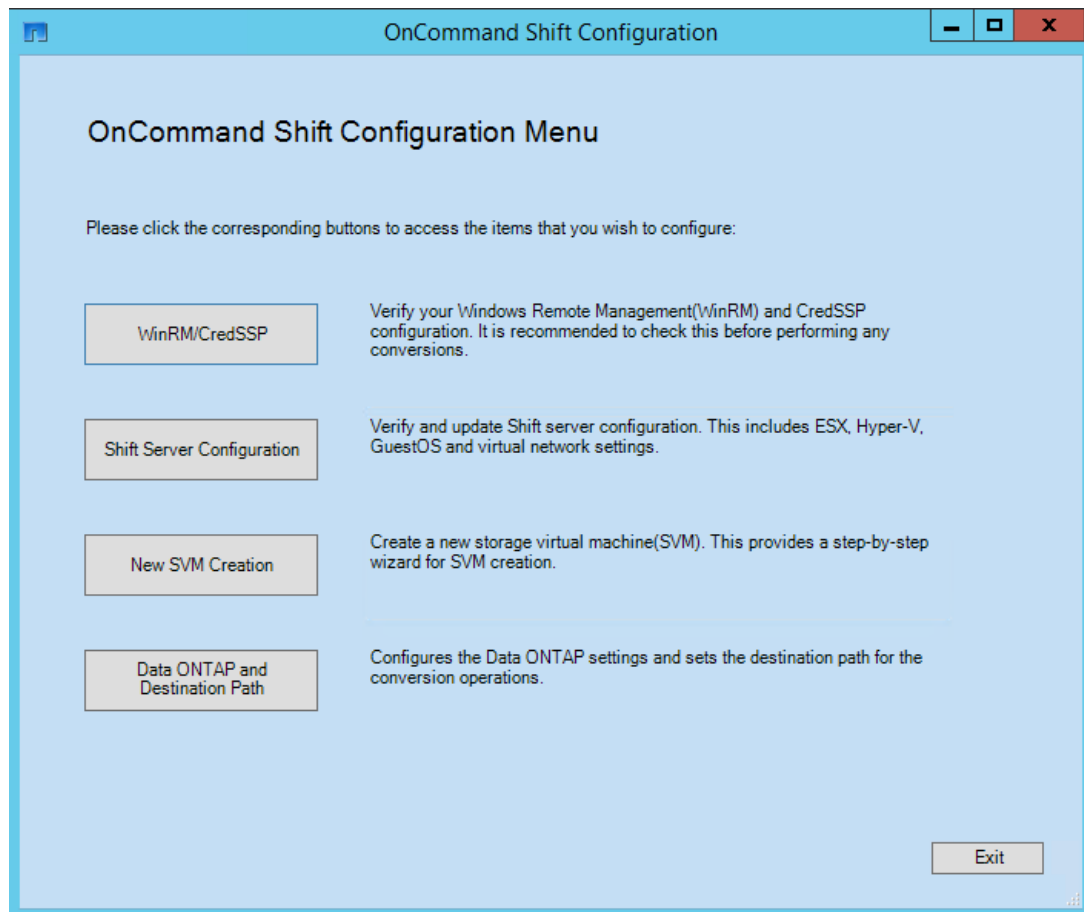
- From the last page of the installation wizard, click **Run Config Wizard**.
- From PowerShell, enter **C:\Program Files (x86)\NetApp\OnCommand Shift\ShiftConfigWizard.ps1 *port***, where *port* is the port number for OnCommand Shift.

You can omit *port* if you installed Shift on the default port (8443).

The login page opens. The Shift Server status should show that it is running successfully.

2. Log in to the configuration wizard using the Shift credentials you created during the installation.

The OnCommand Shift Configuration page opens:



Configuring WinRM and CredSSP

You can use the configuration wizard to configure the Shift server as a CredSSP client. You can use a PowerShell cmdlet on the Hyper-V server to configure the server as a CredSSP server.

During the conversion process, the Shift server runs a number of scripts on the guest OS of the VM being converted. The credentials to run these scripts are passed via a "double-hop" from the Shift server to the guest OS through the Hyper-V server.

OnCommand Shift leverages Windows Remote Management (WinRM) and the Credential Security Service Provider (CredSSP) to manage the credentials transfer.

Steps

1. [Configuring the Shift server as a CredSSP client](#) on page 16

You can use the configuration wizard to configure the Shift server as a CredSSP client. Doing so enables the Shift server to delegate credentials to the Hyper-V server.

2. [Configuring the Hyper-V server as a CredSSP server](#) on page 16

You can use the `Enable-WSManCredSSP` cmdlet on the Hyper-V server to configure the server as a CredSSP server. Doing so enables the Hyper-V server to receive credentials from the Shift server.

Configuring the Shift server as a CredSSP client

You can use the configuration wizard to configure the Shift server as a CredSSP client. Doing so enables the Shift server to delegate credentials to the Hyper-V server.

Steps

1. From the **OnCommand Shift Configuration Menu**, click **WinRM/CredSSP**.

The WinRM/CredSSP Settings for Shift Server page opens.

2. Verify that the WinRM status is Running and the CredSSP value is `true`.

Note: If WinRM is not running, start the Windows Remote Management (WS-Management) service in **Control Panel > Services**. If the status of the service is Disabled, open the properties window for the service and set the **Startup type** to Automatic or Manual, then click **Start**.

3. In the **Hyper-V (FQDN)** field, enter the fully qualified domain name of the Hyper-V server to which the Shift server will delegate credentials and click **Add CredSSP**.

If you installed OnCommand Shift on a Hyper-V server and you plan to delegate credentials to that server, you must enter its FQDN.

The FQDN is displayed in the text below the **Hyper-V (FQDN)** field.

4. In the **Trusted Hosts** field, enter the trusted hosts for the Shift server and click **Save**.

You can use a wildcard character (*) to match multiple hosts (all the hosts in a domain, for example).

5. Test the connection to the Hyper-V server:

- a. Enter the FQDN in the **Hyper-V Hostname** field and click **Test**.

Note: The Hyper-V server must be configured as a CredSSP server for the test to work.

- b. Enter the user name and password for the Hyper-V server administrator and click **OK**.

You should see a success notification next to the **Test** button.

6. Click **Back to Main Menu** to return to the **OnCommand Shift Configuration Menu** or click **Exit** to quit the wizard.

Configuring the Hyper-V server as a CredSSP server

You can use the `Enable-WSManCredSSP` cmdlet on the Hyper-V server to configure the server as a CredSSP server. Doing so enables the Hyper-V server to receive credentials from the Shift server.

About this task

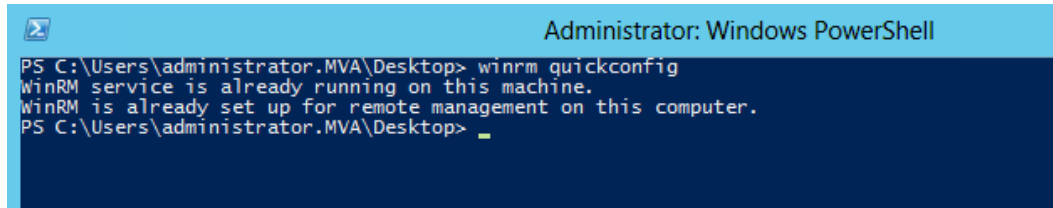
You issue these commands from the Hyper-V server using the administrator PowerShell window.

Steps

1. Verify that WinRM is enabled:

WinRM quickconfig

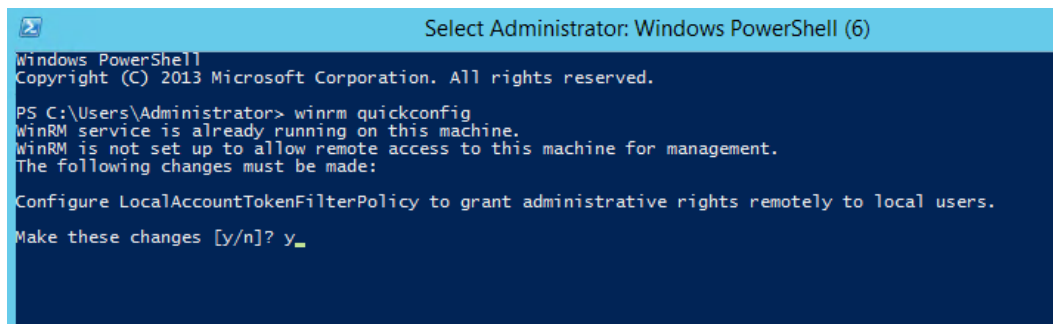
If WinRM is running and set up for remote management, the following is displayed:



```

Administrator: Windows PowerShell
PS C:\Users\administrator.MVA\Desktop> winrm quickconfig
WinRM service is already running on this machine.
WinRM is already set up for remote management on this computer.
PS C:\Users\administrator.MVA\Desktop>
  
```

If WinRM is not set up for remote management, the following is displayed:



```

Select Administrator: Windows PowerShell (6)
Windows PowerShell
Copyright (C) 2013 Microsoft Corporation. All rights reserved.

PS C:\Users\Administrator> winrm quickconfig
WinRM service is already running on this machine.
WinRM is not set up to allow remote access to this machine for management.
The following changes must be made:

Configure LocalAccountTokenFilterPolicy to grant administrative rights remotely to local users.
Make these changes [y/n]? y
  
```

2. Enter **y** if WinRM is not set up for remote management.

WinRM is automatically configured.

3. Enable the Hyper-V server to receive credentials from the Shift server:

Enable-WSManCredSSP -role server

Configuring Shift server connections

You can use the configuration wizard to configure Shift server connections to the Hyper-V and ESX hosts and to the guest OS of the VMs to be converted. You can also use it to create a network mapping between the VMware network and the Hyper-V switch.

Before you begin

You must have configured WinRM and CredSSP.

About this task

Tasks on the Shift Server Configuration pages can be performed in any order. Tasks in **bold** are mandatory.

Steps

1. From the **OnCommand Shift Configuration Menu**, click **Shift Server Configuration**.
2. On the **Hyper-V Settings** page, enter the following information:

In this field...	Enter...
Hostname (FQDN)	The FQDN of the Hyper-V server.
IP address	The IP address of the Hyper-V server.

In this field...	Enter...
Username	The Hyper-V server administrator user name.
Password	The Hyper-V server administrator password.

You can verify the FQDN by comparing it to the Hyper-V server FQDN on the WinRM/CredSSP Settings page.

- Click **Test** to verify that the Shift server can access the Hyper-V server.
- Click **Save** to save your settings.
- On the **ESX Settings** page, enter the following information:

In this field...	Enter...
Hostname	The FQDN or IP address of the ESXi host.
IP address	The IP address of the ESXi host.
Username	The ESXi host administrator user name.
Password	The ESXi host administrator password.
Datacenter	The name of the vSphere datacenter.

- Click **Test** to verify that the Shift server can access the ESXi host.
- Click **Save** to save your settings.
- On the **Guest OS Settings** page, enter the following information:

In this field...	Enter...
Username	The user name for the guest OS on the VMs to be converted. Tip: Use the same guest OS credentials across VMs as a default set. If that is not possible, you can pass different credentials when you perform the conversion.
Password	The password for the guest OS on the VMs to be converted.
Domain	The domain name of the guest OS on the VMs to be converted.

The Shift server cannot communicate with the guest OS until configuration is complete, so you cannot test the guest OS connection from this page.

- Click **Save** to save your settings.
- On the **Virtual Network Settings** page, click **Add** to create a network mapping between the VMware network and the Hyper-V switch, called a *hypervisor network configuration*.

The Add Hypervisor Network Configuration dialog opens.

- In the **Add Hypervisor Network Configuration** dialog, enter the following information:

In this field...	Enter...
Network configuration name	The name of the hypervisor network configuration.
VM port group name	The name of the VM port group for the VMware network. Note: The name is case-sensitive. Each word must begin with an upper-case character. The Shift server automatically changes non-conforming names during VM conversion. For example, <code>vm network</code> is changed to <code>VM Network</code> .

In this field...	Enter...
Hyper-V switch name	The name of the Hyper-V switch.
vLanId	The VLAN ID (optional).

Note: You can use PowerShell cmdlets to discover the networks in your environment. For more information, see [Adding network mappings](#) on page 28.

12. Click **Save** to save your settings and return to the **Virtual Network Settings** page.

13. On the **Virtual Network Settings** page, modify your entries as follows:

Click...	To...
In a field	Edit the text. You cannot edit the name of the network configuration.
Add	Create another hypervisor network configuration.
Refresh	Update the selected hypervisor network configuration.
Delete	Delete the selected hypervisor network configuration. You must specify at least one configuration. The wizard prevents you from deleting a configuration if it is the only entry in the table. Click Delete All to delete all entries.
Delete All	Delete all the hypervisor network configurations. The wizard substitutes a sample entry in the table. You must replace the sample entry with your own configuration.

14. Click **Back to Main Menu** to return to the **OnCommand Shift Configuration Menu** or click **Exit** to quit the wizard.

Creating a new SVM

The VMs you want to convert must first be moved to a Data ONTAP Storage Virtual Machine (SVM) using Storage vMotion or Live Migration. It is a best practice to configure a new SVM for the VMs, so that you can be sure you are not converting VMs on a production SVM. You can use the configuration wizard to create the new SVM.

Before you begin

You must have configured Shift server connections.

About this task

You should perform the following steps in the order shown in the wizard.

Steps

1. From the **OnCommand Shift Configuration Menu**, click **New SVM Creation**.
2. In **Step 1** of the wizard, perform the following actions:

In this field...	Do this...
Cluster IP Address	Enter the IP address of the cluster management LIF. This is the cluster to which you plan to move the VMs to be converted.
Username	Enter the cluster administrator user name.

In this field...	Do this...
Password	Enter the cluster administrator password.
SVM Name	Enter the name of the SVM.
Aggregate	From the drop-down list, select the aggregate to assign to the SVM. The list is populated based on your entries in the preceding fields.
Port for CIFS and NFS LIFs	From the drop-down list, select the port number for the CIFS and NFS data LIF. The list is populated based on your entries in the preceding fields.
DNS Domain Name	Enter the SVM DNS domain name.
DNS Name Servers	Enter the IP addresses of the DNS name servers, in a comma-separated list.

3. In Step 2 of the wizard, enter the following information:

In this field...	Enter...
Name of the volume to be created	The name of the data volume. The name must start with an alphabetic character (a to z or A to Z) and be 150 or fewer characters for Infinite Volumes, and 203 or fewer characters for all other volume types. Volume names must be unique within a SVM. The volume name cannot contain dashes (-). Only thick volumes are supported.
Size of the volume in GB	The size of the data volume in gigabytes. The size of the volume should be less than the available space in the aggregate. You can find the available space on the aggregate by running <code>aggr show</code> on the cluster console.
IP Address for CIFS and NFS LIFs	The IP address of the CIFS and NFS data LIF. CIFS and NFS must use the same data LIF. A cluster LIF cannot be on the same subnet as a management or data LIF.
Netmask for CIFS and NFS LIFs	The netmask of the CIFS and NFS data LIF.
CIFS Server Name	The name of the CIFS server. This is the CIFS server NetBIOS name. The name cannot exceed 15 characters.
CIFS Share Name	The name of the CIFS share. The name cannot exceed 256 characters. The wizard creates a qtree for the CIFS share with an NTFS security style.
Domain Administrator Name	The name of the domain administrator used to create the CIFS server.
Domain Administrator Password	The password of the domain administrator used to create the CIFS server.

4. In Step 3 of the wizard, enter the following information:

In this field...	Enter...
ESX Server IP address	The ESX server management IP address.
ESX mount point	The ESX mount point. This is the NFS share name. The wizard creates a qtree for the NFS share with a UNIX security style.

In this field...	Enter...
ESX datastore name	The ESX datastore to be created. This is the datastore name as it will appear in vCenter.
Destination address	The IP address and subnet mask of the destination network. The routing group on the SVM defines routes to the destination network.
Gateway IP address	The IP address of the gateway server for the destination network.

- Click **Finish** to create the new SVM.

The wizard starts the create SVM job. Click **Check Job Status** to view the status of the job. In the job information window, click **Refresh** to update the status.

- Click **Back to Main Menu** to return to the **OnCommand Shift Configuration Menu**.

Configuring the cluster IP address and destination path

You can use the configuration wizard to specify the IP address of the target cluster management LIF and the destination of the VMs you plan to convert. For ESX to Hyper-V conversion, the destination path specifies the fully qualified path name of the CIFS share. For Hyper-V to ESX conversion, the destination path specifies the fully qualified path name of the NFS share.

About this task

You should change the value of the destination path whenever you change the direction of the conversion.

Steps

- From the **OnCommand Shift Configuration Menu**, click **Data ONTAP and Destination Path**.
- On the **Data ONTAP and Destination Path Settings** page, enter the following information:

In this field...	Enter...
Cluster IP Address	The IP address of the target cluster management LIF. This is the cluster to which you plan to move the VMs to be converted.
Username	The cluster administrator user name.
Password	The cluster administrator password.
Destination path	- For ESX to Hyper-V conversion, the fully qualified path name of the CIFS share. - For Hyper-V to ESX conversion, the fully qualified path name of the NFS share.

- Click **Test** to verify that the Shift server can access the cluster.
- Click **Save** to save your settings.
- Click **Back to Main Menu** to return to the **OnCommand Shift Configuration Menu** or click **Exit** to quit the wizard.

Using PowerShell cmdlets to configure OnCommand Shift

You can use PowerShell cmdlets to modify an OnCommand Shift configuration parameter or to configure OnCommand Shift in scripts.

PowerShell cmdlets

The OnCommandShift PowerShell module contains the PowerShell cmdlets installed with Shift.

The PowerShell module contains the following cmdlets. These cmdlets are described in detail in the [OnCommand Shift 1.1 Cmdlet Reference Guide](#).

Cmdlet	Description
Connect-ShiftServer	Connects the client to the Shift server
Convert-ShiftVirtualMachine	Converts the VM from the source hypervisor to the destination hypervisor
Disconnect-ShiftServer	Disconnects the client from the Shift server
Get-ShiftGuestOSConfig	Returns the configuration for the VM guest OS (user name, password, and domain)
Set-ShiftGuestOSConfig	Specifies the configuration for VM guest OS (user name, password, and domain)
Get-ShiftHypervisorConfig	Returns the configuration for the VMware ESXi and Microsoft Hyper-V hypervisors
Set-ShiftHypervisorConfig	Specifies the configuration for the VMware ESXi and Microsoft Hyper-V hypervisors
Get-ShiftJobStatus	Returns the Shift conversion job list or individual job information
Get-ShiftNetworkConfig	Returns the network mapping configuration
Set-ShiftNetworkConfig	Specifies a network mapping configuration
Remove-ShiftNetworkConfig	Deletes a network mapping configuration
Get-ShiftOntapConfig	Returns the credential information for the Data ONTAP environment
Set-ShiftOntapConfig	Specifies the credential information for the Data ONTAP environment
Get-ShiftReport	Generates a report in .csv format for the VMs converted with OnCommand Shift
Get-ShiftServerState	Returns the current state of the Shift server
Set-ShiftServerCredentials	Specifies the credentials to be used with the Shift server
New-ShiftSVM	Creates a new SVM to be used with OnCommand Shift
Restore-ShiftVirtualMachine	Restores a VM to its original, preconversion state in case of a VM conversion failure

Verifying and importing the PowerShell module

The OnCommandShift PowerShell module is imported by default with OnCommand Shift. You should verify that the import operation was successful. If not, you must import the PowerShell module manually.

About this task

You issue these commands from the Shift server using a PowerShell or PowerShell ISE prompt.

Steps

1. Verify that the OnCommand Shift PowerShell module has been imported:

Get -Module

OnCommandShift should appear in the output list. If OnCommandShift does not appear in the output, go to step 2.

2. Import the OnCommand Shift PowerShell module:

Import-Module OnCommandShift

Using PowerShell cmdlets to configure WinRM and CredSSP

You can use PowerShell cmdlets to configure the Shift server as a CredSSP client and the Hyper-V server as a CredSSP server.

During the conversion process, the Shift server runs a number of scripts on the guest OS of the VM being converted. The credentials to run these scripts are passed via a "double-hop" from the Shift server to the guest OS through the Hyper-V server.

OnCommand Shift leverages Windows Remote Management (WinRM) and the Credential Security Service Provider (CredSSP) to manage the credentials transfer.

Steps

1. [Configuring the Shift server as a CredSSP client](#) on page 23
You can use the Enable-WSManCredSSP cmdlet to configure the Shift server as a CredSSP client. Doing so enables the Shift server to delegate credentials to the Hyper-V server with which it communicates.
2. [Configuring the Hyper-V server as a CredSSP server](#) on page 25
You can use the Enable-WSManCredSSP cmdlet on the Hyper-V server to configure the server as a CredSSP server. Doing so enables the Hyper-V server to receive credentials from the Shift server.

Configuring the Shift server as a CredSSP client

You can use the Enable-WSManCredSSP cmdlet to configure the Shift server as a CredSSP client. Doing so enables the Shift server to delegate credentials to the Hyper-V server with which it communicates.

About this task

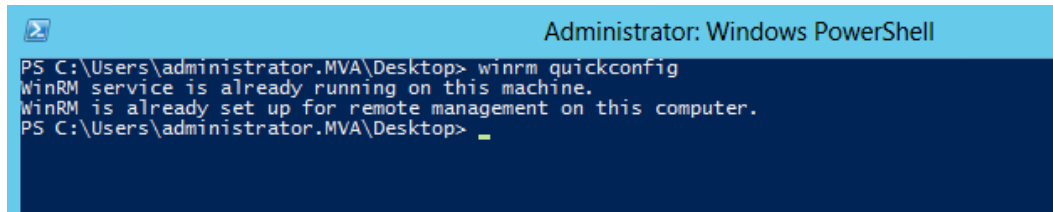
You issue these commands from the Shift server using the administrator PowerShell window.

Steps

1. Verify that WinRM is enabled:

WinRM quickconfig

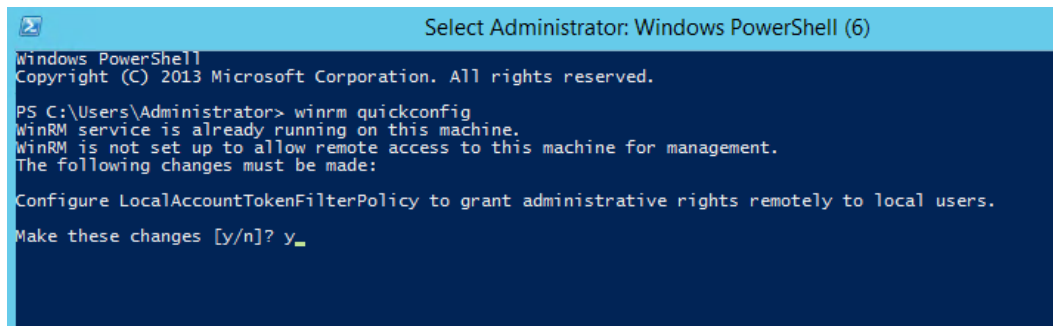
If WinRM is set up for remote management, the following is displayed:



```

Administrator: Windows PowerShell
PS C:\Users\administrator.MVA\Desktop> winrm quickconfig
WinRM service is already running on this machine.
WinRM is already set up for remote management on this computer.
PS C:\Users\administrator.MVA\Desktop>
  
```

If WinRM is not set up for remote management, the following is displayed:



```

Select Administrator: Windows PowerShell (6)
Windows PowerShell
Copyright (C) 2013 Microsoft Corporation. All rights reserved.

PS C:\Users\Administrator> winrm quickconfig
WinRM service is already running on this machine.
WinRM is not set up to allow remote access to this machine for management.
The following changes must be made:

Configure LocalAccountTokenFilterPolicy to grant administrative rights remotely to local users.
Make these changes [y/n]? y_
  
```

2. Enter **y** if WinRM is not set up for remote management.

WinRM is automatically configured.

3. Check the state of the client configuration settings:

```
winrm get winrm/config/client
```

A list of client authentication protocols is returned. Assuming the Shift server is not configured as a CredSSP client, CredSSP will have a value of false and TrustedHosts will be empty.

4. Retrieve the WinRM configuration:

```
Get-WSManCredSSP
```

The following is displayed:

The machine is not configured to allow delegating fresh credentials.

This computer is not configured to receive credentials from a remote client computer.

5. Enable the Shift server to delegate credentials to the Hyper-V server:

```
Enable-WSManCredSSP -role client -DelegateComputer hyperv_server_fqdn
```

hyperv_server_fqdn is the fully qualified domain name of the Hyper-V server.

6. Confirm the settings:

```
Get-WSManCredSSP
```

The following is displayed:

The machine is configured to allow delegating fresh credentials to the following target(s): *list_of_targets*

This computer is configured to receive credentials from a remote client computer.

7. Verify that the Shift server is configured as a CredSSP client:

```
winrm get winrm/config/client
```

CredSSP should have a value of true.

8. Add the Hyper-V server as a trusted host for the Shift server client:

```
Set-Item WSMAN:\localhost\Client\TrustedHosts hyperv_server_fqdn
```

hyperv_server_fqdn is the fully qualified domain name of the Hyper-V server.

Note: You can use a wildcard character (*) to match multiple hosts (all the hosts in a domain, for example).

9. Verify that the Hyper-V server is a trusted host for the Shift server client:

```
winrm get winrm/config/client
```

Configuring the Hyper-V server as a CredSSP server

You can use the Enable-WSManCredSSP cmdlet on the Hyper-V server to configure the server as a CredSSP server. Doing so enables the Hyper-V server to receive credentials from the Shift server.

About this task

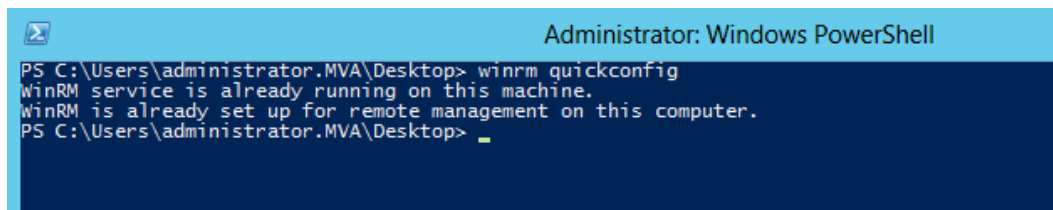
You issue these commands from the Hyper-V server using the administrator PowerShell window.

Steps

1. Verify that WinRM is enabled:

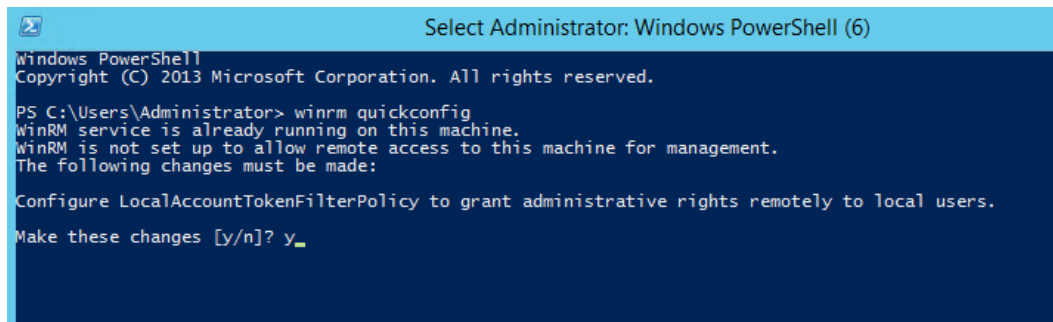
```
WinRM quickconfig
```

If WinRM is running and set up for remote management, the following is displayed:



```
Administrator: Windows PowerShell
PS C:\Users\administrator.MVA\Desktop> winrm quickconfig
WinRM service is already running on this machine.
WinRM is already set up for remote management on this computer.
PS C:\Users\administrator.MVA\Desktop> _
```

If WinRM is not set up for remote management, the following is displayed:



```
Select Administrator: Windows PowerShell (6)
Windows PowerShell
Copyright (C) 2013 Microsoft Corporation. All rights reserved.

PS C:\Users\Administrator> winrm quickconfig
WinRM service is already running on this machine.
WinRM is not set up to allow remote access to this machine for management.
The following changes must be made:

Configure LocalAccountTokenFilterPolicy to grant administrative rights remotely to local users.
Make these changes [y/n]? y_
```

2. Enter **y** if WinRM is not set up for remote management.
WinRM is automatically configured.
3. Enable the Hyper-V server to receive credentials from the Shift server:
Enable-WSManCredSSP -role server

Connecting to the Shift server

To perform most operations on the Shift server, you must first connect to the server using `Connect-ShiftServer`.

About this task

You must run `Connect-ShiftServer` before issuing any other PowerShell cmdlets, except `Get-ShiftServerState`.

You issue these commands from the Shift server using a PowerShell or PowerShell ISE prompt.

Steps

1. Check the Shift server status:

```
Get-ShiftServerState -host shift_server_host_ipaddress -port  
shift_server_port -timeoutsec timeout_value
```

The command should return `Shift server is running`. If the Shift server is not running, start the Apache Tomcat 7.0 service in **Control Panel > Services**.

2. Connect to the Shift server:

```
Connect-ShiftServer -host shift_server_host_ipaddress -port  
shift_server_port -credential PSCredential -timeoutsec timeout_value
```

If you do not specify the `-credential` parameter, you are prompted for your user name and password.

Example

The following example connects to the Shift server with the default host “localhost” at the default port number 8443:

```
Connect-ShiftServer
```

Example

The following example connects to the Shift server with a specified host name and port number:

```
Connect-ShiftServer -host yourshiftserver.yourdomain.com -port 8181
```

Example

The following example connects to the Shift server with the default host “localhost” at the default port number 8443 using a saved credential object:

```
$password = ConvertTo-SecureString -AsPlainText -Force "password"  
$cred = new-object -typename System.Management.Automation.PSCredential -  
argumentlist "admin", $password  
Connect-ShiftServer -credential $cred
```

Using Set-ShiftHypervisorConfig to configure Shift server connections

You can use the `Set-ShiftHypervisorConfig` cmdlet to configure Shift server connections to the Hyper-V and ESX hosts.

Before you begin

The Shift server must already be connected.

About this task

You issue these commands from the Shift server using a PowerShell or PowerShell ISE prompt.

Steps

1. Configure Shift server connections to the VMware ESXi hypervisor:

```
Set-ShiftHypervisorConfig -name VMWARE -IPaddress hypervisor_IPaddress -hostname hypervisor_host_name -datacenter data_center -force
```

- The `-name` parameter is not case sensitive, so both VMWARE and vmware can be used. The `(-)` in Hyper-V is required.
- The `-datacenter` parameter is the name of the data center you are connecting to.
- If you do not specify the `-credential` parameter, you are prompted for your ESXi host user name and password.

Example

Updating the VMware ESXi hypervisor configuration:

```
Set-ShiftHypervisorConfig -name vmware -IPaddress 10.0.0.1
```

2. Configure Shift server connections to the Microsoft Hyper-V hypervisor:

```
Set-ShiftHypervisorConfig -name HYPER-V -IPaddress hypervisor_IPaddress -hostname hypervisor_host_name -datacenter data_center -force
```

If you do not specify the `-credential` parameter, you are prompted for your Hyper-V administrator host user name and password.

Example

Updating the Hyper-V hypervisor configuration using a saved credential object:

```
$password = ConvertTo-SecureString -AsPlainText -Force  
"HypervisorPassword"
```

```
$cred = new-object -typename System.Management.Automation.PSCredential -argumentlist "HypervisorUsername", $password
```

```
Set-ShiftHypervisorConfig -name vmware -IPaddress 10.0.0.1 -cred $cred
```

3. To script this command, you can add the `-credential` parameter and a saved credential object.

For more information about creating saved credential objects, see Microsoft documentation about Get-Credential: [Microsoft TechNet Script Center: Get-Credential](#).

Using Set-ShiftGuestOSConfig to set default guest OS credentials

When converting virtual machines, you can enter guest OS credentials for each VM to be converted. If the credentials are always the same, you can use the `Set-ShiftGuestOSConfig` cmdlet to set default guest OS credentials.

Before you begin

The Shift server must already be connected.

About this task

You issue these commands from the Shift server using a PowerShell or PowerShell ISE prompt.

Steps

1. Update the existing guest OS configuration from the command prompt:

```
Set-ShiftGuestOSConfig -credential PSCredential -domain vm_domain -force
```

The `-domain` parameter is the current domain of the VM to be converted. It is only required if the `-credential` parameter is specified. If you do not specify the `-credential` parameter, you are prompted for your guest OS user name and password.

Example

Updating the default guest OS configuration:

```
Set-ShiftGuestOSConfig -domain eng
```

Example

Updating the default guest OS configuration with credentials provided in the `$cred` parameter:

```
$password = ConvertTo-SecureString -AsPlainText -Force "GuestOSpassword"
```

```
$cred = new-object -typename System.Management.Automation.PSCredential  
argumentlist "GuestOSusername", $password
```

```
Set-ShiftGuestOSConfig domain eng -cred $cred
```

2. To script this command, you can add the `-credential` parameter and a saved credential object.

For more information about creating saved credential objects, see Microsoft documentation about Get-Credential: [Microsoft TechNet Script Center: Get-Credential](#).

Using PowerShell cmdlets to configure network mappings

Network settings within VMs are automatically detected, but the external networks configured within ESXi (also known as *vmPortGroups*) and Hyper-V (also known as *Hyper-V switches*) are not. Before you can convert a VM, you must use the configuration wizard or the `Add-ShiftNetworkConfig` cmdlet to define the network mappings so that the VM can continue to communicate on the network.

Related tasks

[Adding network mappings](#) on page 28

[Removing network mappings](#) on page 29

Adding network mappings

You can use the `Add-ShiftNetworkConfig` cmdlet to add a network mapping.

Before you begin

The Shift server must already be connected.

To create network adapters on the converted virtual machine, you must have mapped existing Microsoft Hyper-V virtual switches to VMware ESXi standard switches.

About this task

You issue these commands from the Shift server using a PowerShell or PowerShell ISE prompt.

Steps

1. Find all the networks that exist in your environment:
 - For ESXi, run `Get-VirtualPortGroup`.

- For Hyper-V, run `Get-VMSwitch`.

A table is returned showing all the associated network adapters. These network adapters are listed in the Name column.

2. Find all the networks a VM is connected to:

- For ESXi, run the following:

```
Get-VM -Name VMName | Get-NetworkAdapter
```

- For Hyper-V, run the following:

```
Get-VMNetworkAdapter -VMName "VirtualMachineName"
```

A table is returned showing all the network adapters associated with the VM. For ESXi, the adapters are listed in the NetworkName column. For Hyper-V, the network adapters are listed in the SwitchName column.

3. Add the network mapping:

```
Add-ShiftNetworkConfig -name hypervisor_network_name -vmPortGroup  
vm_port_group_name -hypervSwitch hyperv_switch_name -vLanId vlan_id -  
force
```

OnCommand Shift does not verify the names of the network. Be sure that they are entered correctly based on the information gathered in the previous steps.

Example

Assume that the ESXi network ESX10Network connects the VM to be converted to the 10.10.10.0 network. Assume that the Hyper-V network HyperV10Network connects to the 10.10.10.0 network. The following command creates a network mapping with the name Shift10Network:

```
Add-ShiftNetworkConfig -name Shift10Network - vmPortGroup ESX10Network -  
hypervSwitch HyperV10Network -vLanId 0-force
```

4. Repeat the previous step for each pair of switches to be mapped.

After you finish

If you change your credentials or settings, you are prompted to reenter your credentials.

Removing network mappings

You can use PowerShell cmdlets to remove a single network mapping, or to reset all your network mappings and start over. Removing OnCommand Shift network mappings does not affect configurations on the hypervisors.

Steps

1. Retrieve the hypervisor network name for the network mapping you want to remove:

```
Get-ShiftNetworkConfig
```

2. Remove the network mapping:

- To remove a single network mapping:

```
Remove-ShiftNetworkConfig -name hypervisor_network_name -force
```

- To reset all the network mappings:

```
Get-ShiftNetworkConfig | ForEach-Object {Remove-ShiftNetworkConfig -  
name $_.hypervisorNetworkConfigName -force -Verbose}
```

Using New-ShiftSVM to create an SVM

The VMs you want to convert must first be moved to a Data ONTAP Storage Virtual Machine (SVM) using Storage vMotion or Live Migration. It is a best practice to configure a new SVM for the VMs, so that you can be sure you are not converting VMs on a production SVM. You can use the New-ShiftSVM cmdlet to create a new SVM.

You can also create a new SVM in the Shift configuration wizard or in OnCommand System Manager. Whichever method you choose, the SVM must have enough space to store all the VMs you want to convert.

Note: If New-ShiftSVM fails, OnCommand Shift reverses the SVM creation process before exiting the cmdlet.

Related tasks

[New-ShiftSVM parameters](#) on page 30

[Using a text file for New-ShiftSVM parameters](#) on page 33

[Validating the Data ONTAP SVM](#) on page 33

New-ShiftSVM parameters

You can use the New-ShiftSVM cmdlet to create an SVM for the VMs you want to convert.

Parameters are as follows:

Parameter	Description	Example
file	An external file that includes all required input parameters. [Value format: .txt]. Optional.	<i>svm_params.txt</i>
vserverName	The name of the SVM you are creating.	<i>Shift</i>
aggrName	The name of the aggregate to assign to the SVM. To find the aggregate name, log in to the cluster console and run <code>aggr show</code> .	<i>myAggr</i>
cifsPort	The port for the CIFS data LIF. This is a string identifying the data port for the node associated with the specified aggregate. Run <code>net int show</code> to show the list of network interfaces available on the cluster. The CIFS and NFS LIF must be on the same data port.	<i>e1a</i>

Parameter	Description	Example
nfsPort	The port for the NFS data LIF. This is a string identifying the data port for the node associated with the specified aggregate. Run <code>net int show</code> to show the list of network interfaces available on the cluster. The CIFS and NFS LIF must be on the same data port.	<i>e1a</i>
dataVolumeName	The name of the data volume to create. [Short form: -volName] You can name this whatever you want. A volume's name must start with an alphabetic character (a to z or A to Z) and be 150 or fewer characters in length for Infinite Volumes, and 203 or fewer characters in length for all other volume types. Volume names must be unique within a SVM. The volume name cannot contain dashes (-). Only thick volumes are supported through New-ShiftSVM cmdlet.	<i>vmdata</i>
volumeSizeGig	The size of the new data volume in gigabytes. [Short form: -volSize] The size of the volume should be less than the available space in the aggregate. You can find the available space on the aggregate by running <code>aggr show</code> on the cluster console.	<i>200</i>
nfsIpAddress	The NFS data LIF IP address. [Short form: -nfsIP] You must choose this based on your network. A cluster management LIF cannot be on the same subnet as a data LIF. CIFS and NFS IP addresses must be the same.	<i>10.255.13.144</i>
cifsIpAddress	The CIFS data LIF IP address. [Short form: -cifsIP] You must choose this based on your network. A cluster management LIF cannot be on the same subnet as a data LIF. CIFS and NFS IP addresses must be the same.	<i>10.255.13.144</i>

Parameter	Description	Example
nfsNetMask	The NFS data LIF netmask. The CIFS and NFS netmasks must be the same.	<i>255.255.252.0</i>
cifsNetMask	The CIFS data LIF netmask. The CIFS and NFS netmasks must be the same.	<i>255.255.252.0</i>
domaincred	The domain credential used to create the CIFS server. [Short form: -cred] This is the domain administrator credential of the domain controller. If using -file, you are prompted for your domain administrator user name and password.	Prompted if left blank
cifsServerName	The CIFS server name. This is the name of the CIFS server you want to create (up to 15 characters). This is the CIFS server NetBIOS name.	<i>shiftCifsServer</i>
cifsShareName	The CIFS share name. This parameter specifies the name of the CIFS share you want to create. A share name can be up to 256 characters long. The cmdlet creates a qtree for the CIFS share with an NTFS security style.	<i>shiftCifsShare</i>
esxMountPoint	The ESX mount point. This is the NFS share name. The cmdlet creates a qtree for the NFS share with a UNIX security style.	<i>shiftNfsShare</i>
dnsDomain	The DNS domain.	<i>domain.company.com</i>
dnsNameServers	The DNS name servers.	<i>10.225.12.103, 10.225.12.104</i>
datastoreName	The ESXi datastore to be created. This is the name as it will appear in vCenter.	<i>Shift_dataStore</i>
esxIpAddr	The ESXi server management IP address.	<i>10.225.24.190</i>
destinationAddress	The IP address and subnet mask of the destination network. [Short form: -destAddress]. The routing group on the new SVM defines routes to the destination network.	<i>10.225.12.0/22</i>

Parameter	Description	Example
gatewayAddress	The IP address of the gateway server for the destination network.	10.225.12.1

Using a text file for New-ShiftSVM parameters

Rather than enter the New-ShiftSVM parameters each time you run the cmdlet, you can create a text file listing the parameters and their values. You then need only edit the file if you enter a parameter incorrectly or if you want to create another SVM.

You use the `-file` parameter to specify the name of the text file:

New-SVM -file svm_params.txt

`svm_params.txt` might contain the following parameters:

```
vserverName=Shift
aggrName=myAggr
cifsPort=ela
nfsPort=ela
dataVolumeName=vmdata
volumeSizeGig=200
nfsIpAddress=10.225.13.144
cifsIpAddress=10.225.13.144
nfsNetMask=255.255.252.0
cifsNetMask=255.255.252.0
cifsServerName=shiftCifsServer
cifsShareName=shiftsCifsShare
esxMountPoint=shiftNfsShare
dnsDomain=domain.company.com
dnsNameServers=10.255.12.103,10.225.12.104
datastoreName=Shift_DataStore
esxIpAddr=10.225.24.198
destinationAddress=10.225.12.0/22
gatewayAddress=10.225.12.1
```

When you run the cmdlet, you will be prompted for the domain administrator credentials only, not for the other parameters.

Validating the Data ONTAP SVM

You can manually validate that your Data ONTAP SVM is correctly configured for OnCommand Shift.

Steps

1. Check whether CIFS and NFS protocols are enabled:

vserver show-protocols -vserver shift

- a. If the protocols are not enabled, enable them using **vserver add-protocols**.

```
cluster::> vserver show -vserver shift -protocols

Vserver: shift
Protocols: nfs, cifs, fcp, iscsi, ndmp
```

2. Check whether the SVM has a data LIF with NFS and CIFS protocols:

net int show -vserver shift

- a. If CIFS and NFS are configured on different data LIFs, delete the LIFs and create a single data LIF for CIFS and NFS.

- b. If there is no data LIF, create it:

```
net int create -vserver shift -lif datalif -role data -data-protocol  
cifs,nfs,fcache -home-node node-b -home-port e1a -address 10.10.10.1 -  
netmask 10.10.10.4 -status-admin up
```

```
cluster::> net int show -vserver shift
```

Current Is Vserver Port	Logical Interface Home	Status Admin/Oper	Network Address/Mask	Current Node
shift	shift_data	up/up	10.10.10.1/22	node-a
true				e1a

```
cluster::> net int show -vserver shift -lif  
shift_data  
(network interface show)
```

```

Vserver Name: shift
Logical Interface Name: shift_data
Role: data
Data Protocol: nfs, cifs
Home Node: node-b
Home Port: e1a
Current Node: node-b
Current Port: e1a
Operational Status: up
Extended Status: -
Is Home: true
Network Address: 10.10.10.1
Netmask: 10.10.10.4
Bits in the Netmask: 22
IPv4 Link Local: -
Subnet Name: -
Administrative Status: up
Failover Policy: system-defined
Firewall Policy: data
Auto Revert: false
Fully Qualified DNS Zone Name: none
DNS Query Listen Enable: false
Failover Group Name: 10.10.10.2/22
FCP WWPN: -
Address family: ipv4
Comment: -
IPspace of LIF: Default

```

3. Check for the network routing group route:

```
net routing-groups show-lifs -vserver shift
```

- a. If you see no valid route entry, create one:

```
net routing-groups create -vserver shift -destination 10.10.10.5/22 -  
gateway 10.10.10.3
```

```
cluster::> net routing-groups show-lifs -vserver shift
```

Vserver: shift	Gateway	Logical Interfaces
Destination		
10.10.10.5/22	10.10.10.3	shift_data

```
cluster::> net routing-groups show -vserver shift
```

```
(network route show)
Vserver      Destination      Gateway      Metric
-----
shift        10.10.10.5/22    10.10.10.3    20
```

4. Verify the DNS configuration:

```
vserver services dns show -vserver shift
```

- a. If you need to configure the DNS, enter:

```
vserver services dns create -vserver shift -domains  
yourdomain.yourcompany.com -name-servers 10.10.10.6,10.10.10.7 -state  
enabled
```

```
cluster::> vserver services dns show -vserver shift

Vserver: shift
Domains: yourdomain.yourcompany.com
Name Servers: 10.10.10.6, 10.10.10.7
Enable/Disable DNS: enabled
Timeout (secs): 2
Maximum Attempts: 1
```

5. Check that the CIFS server is running:

```
cifs server show -vserver shift
```

- a. If CIFS server status is down, bring it up:

```
cifs server modify -vserver shift -status-admin up
```

- b. If there is no CIFS server, create it:

```
cifs server create -vserver shift -cifs-server SHIFTCIFSSEVER -domain  
YOURDOMAIN.YOURCOMPANY.COM -status-admin up
```

```
cluster::> cifs server show -vserver shift

Vserver: shift
CIFS Server NetBIOS Name: SHIFTCIFSSEVER
NetBIOS Domain/Workgroup Name: YOURDOMAIN
Fully Qualified Domain Name:
YOURDOMAIN.YOURCOMPANY.COM
Default Site Used by LIFs Without Site Membership:
Authentication Style: domain
CIFS Server Administrative Status: up
CIFS Server Description:
List of NetBIOS Aliases: -
```

6. Verify that the NFS Server is running and meets requirements: **nfs show -vserver shift**.

"NFS v3" must be enabled and "General NFS Access" must be set to true.

- a. If the NFS server is not running or does not meet requirements, create it:

```
nfs create -vserver shift -access true -v3 enabled
```

```
cluster::> nfs show -vserver shift

Vserver: shift
General NFS Access: true
NFS v3: enabled
NFS v4.0: disabled
UDP Protocol: enabled
TCP Protocol: enabled
Default Windows User: -
```

```

NFSv4.0 ACL Support: disabled
NFSv4.0 Read Delegation Support: disabled
NFSv4.0 Write Delegation Support: disabled
NFSv4 ID Mapping Domain: defaulttv4iddomain.com
NFSv4 Grace Timeout Value (in secs): 45
Preserves and Modifies NFSv4 ACL (and NTFS File Permissions in
Unified Security
Style): enabled
NFSv4.1 Minor Version Support: disabled
Rquota Enable: disabled
NFSv4.1 Parallel NFS Support: enabled
NFSv4.1 ACL Support: disabled
NFS vStorage Support: disabled
NFSv4 support for Numeric Owner IDs: enabled
Default Windows Group: -
NFSv4.1 Read Delegation Support: disabled
NFSv4.1 Write Delegation Support: disabled
NFS Mount Root Only: enabled
NFS Root Only: disabled
Permitted Kerberos Encryption Types: des, des3, aes-128, aes-256
Showmount Enabled: disabled
Set the Protocol Used for Name Services Lookups for Exports: udp

```

7. Verify the export rule for ESX server IP address: **export-policy rule show -vserver shift.**

- a. If it is incorrect, create it:

```

export-policy rule create -vserver shift -policyname default -
clientmatch 10.10.10.8 -rorule any -rwrule any -protocol nfs,cifs -
superuser any

```

```
cluster::> export-policy rule show -vserver shift
```

Vserver Rule	Policy Name	Rule Index	Access Protocol	Client Match	RO
shift	default	1	cifs, nfs	10.10.10.8	any

8. Verify the user mapping for Windows and UNIX:

```
name-mapping show -vserver shift
```

- a. If mappings are missing, create win-unix:

```

name-mapping create -vserver shift -direction win-unix -position 1 -
pattern YourDomain\\Administrator -replacement root

```

- b. If mappings are missing, create unix-win:

```

cluster::> name-mapping create -vserver shift -direction unix-win -
position 1 -pattern root -replacement YourDomain\\Administrator

```

```
cluster::> name-mapping show -vserver shift
```

Vserver	Direction	Position	
shift	win-unix	1	Pattern: YourDomain\\Administrator Replacement: root
shift	unix-win	1	Pattern: root Replacement: YourDomain\\Administrator

2 entries were displayed.

9. You can either use an existing volume or create a new volume.

Make sure that the volume satisfies the following rules:

- The security style of the volume must be mixed or NTFS.
- If compression is enabled on the volume, the compression type must be adaptive compression.

```
//security style
cluster::> volume show -vserver shift -volume datavol -fields
security-style
vserver volume      security-style
-----
shift    datavol mixed

cluster::> volume show -vserver shift -volume datavol -fields
security-sty

// compression check

cluster::> efficiency show -vserver shift -volume datavol

There are no entries matching your query.
```

- 10.** Create a qtree for the CIFS share:

```
qtree create -vserver shift -volume datavol -qtree Shiftcifsshare -
security-style ntfs
```

Vserver	Volume	Qtree	Style	Oplocks	Status
shift normal	datavol	""	mixed		enable
shift normal	datavol	Shiftcifsshare	ntfs		enable
shift normal	datavol	Shiftnfsshare	unix		enable

- 11.** Create a qtree for the NFS share or mount point:

```
qtree create -vserver shift -volume datavol -qtree Shiftnfsshare -
security-style unix
```

cluster::> qtree show -vserver shift -volume datavol					
Vserver	Volume	Qtree	Style	Oplocks	Status
shift	datavol	""	mixed		enable
normal					
shift	datavol	Shiftcifsshare	ntfs		enable
normal					
shift	datavol	Shiftnfsshare	unix		enable
normal					

- 12.** Create a CIFS share for the data volume:

```
cifs share create -vserver shift -share-name datavol -path /datavol -
share-properties oplocks,browsable,changenotify
```

```

cluster::> cifs share show -vserver shift -volume datavol
Vserver      Share      Path      Properties Comment  ACL
-----
shift datavol /datavol  oplocks   -         Everyone / Full
Control
browsable

```

```

changenotify

continuously-available
shift Shiftcifsshare /datavol/Shiftcifsshare oplocks
Everyone / Full Control

browsable
changenotify
continuously-available

```

13. Create a CIFS share at /datavol/Shiftcifsshare:

```

cifs share show -vserver shift -share-name Shiftcifsshare -path /
datavol/Shiftcifsshare -share-properties
oplocks,browsable,changenotify,continuously-available

```

```

cluster::> cifs share show -vserver shift -volume datavol
Vserver      Share      Path      Properties Comment  ACL
-----
shift datavol /datavol oplocks -      Everyone / Full
Control

browsable
changenotify

continuously-available
shift Shiftcifsshare /datavol/Shiftcifsshare oplocks
Everyone / Full Control

browsable
changenotify
continuously-available

```

14. Create a datastore from the ESX server:
- From the vSphere Client, select your ESX server.
 - Select the **Configuration** tab.
 - Under **Hardware**, select **Storage**.
 - Select the **Add Storage** link.
 - Select the **Network File System** option and click **Next**.
 - For the **Server** field, enter the NFS LIF IP address.
 - For the **Folder** field, enter the path of the NFS qtree (/datavol/Shiftnfsshare) created earlier.
 - For the **Datastore Name** field, enter any datastore name.
 - Follow the screen instructions to create the datastore.

Using Set-ShiftOntapConfig to configure the cluster IP address and destination path

You can use the Set-ShiftOntapConfig cmdlet to specify the IP address of the target cluster management LIF and the destination of the VMs you plan to convert. For ESX to Hyper-V

conversion, the destination path specifies the fully qualified path name of the CIFS share. For Hyper-V to ESX conversion, the destination path specifies the fully qualified path name of the NFS share.

Before you begin

The Shift server must already be connected.

About this task

You should change the value of the destination path whenever you change the direction of the conversion.

You issue these commands from the Shift server using a PowerShell or PowerShell ISE prompt.

Steps

1. Configure the Data ONTAP settings:

```
Set-ShiftOntapConfig -clusterIp cluster_management_LIF_ipaddress -destinationPath fqdn_cifs|nfs_share -force
```

- For ESX to Hyper-V conversion, -destinationPath is the fully qualified path name of the CIFS share.
- For Hyper-V to ESX conversion, -destinationPath is the fully qualified path name of the NFS share.

If you do not specify the -credential parameter, you are prompted for your cluster management administrator user name and password.

Example

```
Set-ShiftOntapConfig -clusterIp 10.0.0.1 -destinationPath /dest/vm
```

2. To script this command, you can add the -credential parameter and a saved credential object. For more information about creating saved credential objects, see Microsoft documentation about Get-Credential: [Microsoft TechNet Script Center: Get-Credential](#).

Sample configuration

You might find it useful to consult a sample of the basic Shift server setup and configuration workflow.

This example is based on the assumption that you have correctly installed OnCommand Shift and configured Windows Remote Management.

Typical configuration commands

```
# OnCommand Shift PowerShell Cmdlets Example

Get-ShiftServerState
Connect-ShiftServer -host 10.0.0.1 -port 8443

Set-ShiftOntapConfig -clusterIp "10.0.0.2" -destinationPath "/Volume/Share/Folder" -force
Get-ShiftOntapConfig
winrm get winrm/config/client

Set-ShiftHypervisorConfig -name "VMWARE" -IPAddress "10.0.0.3" -hostname "10.0.0.3" -datacenter "ha-datacenter" -Force
Set-ShiftHypervisorConfig -name "HYPER-V" -IPAddress "10.0.0.4" -hostname "YOURHOST.YOURDOMAIN.COM" -datacenter "myDataCenter" -Force
Get-ShiftHypervisorConfig

Add-ShiftNetworkConfig -name "Primary Network" -sourceSwitch "ESX"
```

```
Standard Switch 1" -destinationSwitch "Hyper-V Virtual Switch 1" -vLanId  
100  
Add-ShiftNetworkConfig -name "Secondary Network" -sourceSwitch "ESX  
Standard Switch 2" -destinationSwitch "Hyper-V Virtual Switch 2" -vLanId  
100  
Get-ShiftNetworkConfig  
  
Set-ShiftGuestOSConfig -domain LOCAL -force  
Get-ShiftGuestOSConfig
```

Repairing and uninstalling OnCommand Shift

You can repair and uninstall OnCommand Shift using either the installation wizard or silent mode.

Repairing OnCommand Shift

You can use the OnCommand Shift installer to repair Shift in the event of an installation problem. If the problem persists, you can uninstall and reinstall OnCommand Shift.

Before you begin

The OnCommand Shift software must already exist on your system.

About this task

During silent repair, no interface, progress bars, or error messages are displayed. Any error messages are written to a log file that is located in a specified log file path (for example, `/debuglog"C:\OnCommand Shiftlogfile.log"`).

Steps

1. Log in to the Windows system with an Administrator account.
Both local and domain administrators are supported.
2. You can repair OnCommand Shift in two ways: using the wizard, or silently, using the command line:

Option	Actions
Wizard	a. Navigate to the directory that contains the OnCommand Shift software package and double-click the package name. b. Follow the steps in the setup wizard. c. When prompted, choose Repair. d. Press Finish.
Command line (silent)	a. From the command line, switch to the directory to which you saved the executable file. b. Run the executable: C:\Users\Administrator\Desktop\OnCommand_Shift_x.x.exe /silent /repair /debuglog "DirPath\LogFileName". <i>DirPath\LogFileName</i> is the location and name of the installation log file. The process begins and runs in the background.

Uninstalling OnCommand Shift

You can uninstall OnCommand Shift from the host by using the installation wizard, the Control Panel, or the command line (silent uninstallation). You can uninstall and reinstall if necessary to troubleshoot any issues with the software.

About this task

After you uninstall OnCommand Shift, all your Shift Server configurations are removed. There is no way to uninstall OnCommand Shift and preserve your settings.

During a silent uninstall process, no interface, progress bars, or error messages are displayed. Any error messages are written to a log file that is located in a specified log file path (for example, /debuglog"C:\OnCommand Shift\logfile.log").

Steps

1. If you want to uninstall all components associated with OnCommand Shift, complete the following steps:
 - a. Uninstall Apache Tomcat 7.0.
 - b. Uninstall JRE 1.7.
2. You can uninstall OnCommand Shift in three ways:

Option	Action
Control Panel	Select the Windows Control Panel > All Control Panel Items > Programs and Features utility.
Wizard	a. Navigate to the directory that contains the OnCommand Shift software package and double-click the package name. b. Complete the steps in the wizard. c. When prompted, click Uninstall. d. Click Finish.
Command line (silent)	a. From the command line, switch to the directory to which you saved the executable file. b. Run the executable: C:\Users\Administrator\Desktop\OnCommand_Shift_x.x.exe" /silent /remove /debuglog "DirPath\LogFileName". <i>DirPath\LogFileName</i> is the location and name of the installation log file. The process begins and runs in the background.

Silent install, repair, and uninstall syntax

When you want to run an install, repair, or uninstall process in the background, you construct a command to do so using a particular set of parameters and variables.

Silent install

The installer passes the parameters in the following order:

```
"C:\Users\Administrator\Desktop\OnCommand Shift.exe" /debuglog"C:\OnCommand Shiftlogfile.log" /silent /AGENT_HTTPS_PORT:8443 /USERPASSWORD=password /CONFIRMPASSWORD=password
```

Silent repair

The installer passes the parameters in the following order:

```
"C:\Users\Administrator\Desktop\OnCommand Shift.exe" /debuglog"C:\OnCommand Shiftlogfile.log" /silent /repair
```

Silent uninstall

The installer passes the parameters in the following order:

```
"C:\Users\Downloads\OnCommand Shift.exe" /silent /remove /debuglog"C:\OnCommand_Shift_Suite_Remove.log"
```

Parameters and variables

silent

Specifies silent mode.

AGENT_HTTPS_PORT

Specifies the Shift Server port number.

USERPASSWORD

Specifies the administrator password for the Shift Server.

repair

Specifies to run the installer in repair mode against an existing instance of OnCommand Shift.

remove

Specifies to uninstall OnCommand Shift.

debuglog"path"

Optional: Specifies where to save the operation log. Do not put a space between the parameter and the path.

Where to go next

After you have installed and configured OnCommand Shift, you are ready to move your VMs onto the Data ONTAP SVM and convert them using the OnCommand Shift PowerShell cmdlets. In addition, you can manage your Shift Server, manage your configurations, and troubleshoot issues.

You can find more information about these tasks, as well as release-specific information for the OnCommand Shift, in the following documentation:

- [*NetApp OnCommand Shift product library*](#)
Contains links to the OnCommand Shift documentation set.
- [*OnCommand Shift 1.1 Conversion and Administration Guide*](#)
Describes how to convert VMs, modify configurations, and troubleshoot OnCommand Shift.
- [*OnCommand Shift 1.1 Cmdlet Reference Guide*](#)
Provides descriptions, parameters, syntax, and examples for OnCommand Shift PowerShell cmdlets.
- [*OnCommand Shift 1.1 Release Notes*](#)
Provides information about features, limitations, and known issues for OnCommand Shift.
- [*NetApp Knowledgebase*](#)
Contains articles you can use to troubleshoot OnCommand Shift.

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