

Microsoft Virtual Machine Converter 3.0

<https://technet.microsoft.com/en-us/library/dn873998.aspx>

Applies To: Hyper-V Server 2012, Windows Server 2012 R2, Windows Server 2012, Hyper-V Server 2012 R2, Azure, Windows Server 2008 R2 with SP1

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Note

For documents that contain information about Windows PowerShell cmdlets for Microsoft Virtual Machine Converter and the setup files, see [Microsoft Virtual Machine Converter](#) on the Microsoft Download Center.

For late-breaking information that is not available in the product documentation, see [Release Notes for Microsoft Virtual Machine Converter 2.0.](#)

Microsoft Virtual Machine Converter (MVMC) is a Microsoft-supported, stand-alone solution for the information technology (IT) pro or solution provider who wants to:

- Convert virtual machines and disks from VMware hosts to Hyper-V hosts and Microsoft Azure.
- Convert physical machines and disks to Hyper-V hosts.

This guide is intended for the enterprise customer in an IT role, such as the IT decision maker, IT pro, or IT implementer. It provides an overview of MVMC features and functionality, in addition to information about how to install and use MVMC as a conversion solution.

Benefits

MVMC can be deployed with minimal dependencies. Because MVMC provides native support for Windows PowerShell, it enables scripting and integration with datacenter automation workflows such as those authored and run within Microsoft System Center Orchestrator 2012 R2. It can also be invoked through the Windows PowerShell command-line interface. The solution is simple to download, install, and use. In addition to the Windows PowerShell capability, MVMC provides a wizard-driven GUI to facilitate virtual machine conversion.

New features in MVMC 3.0

MVMC 3.0 release of MVMC includes the following new feature:

- Online conversion of physical machines to virtual hard disks (VHDs) that can be uploaded to Hyper-V hosts.

Key MVMC features

In addition to the new feature listed previously, MVMC provides the following functionality:

- Converts and deploys virtual machines from VMware hosts to Hyper-V hosts on any of the following operating systems:
 - Windows Server 2012 R2
 - Windows Server 2012
 - Windows Server 2008 R2 with SP1
- Converts VMware virtual machines, virtual disks, and configurations for memory, virtual processor, and other virtual computing resources from the source to Hyper-V.
- Adds virtual network adapters to the converted virtual machine on Hyper-V
- Supports conversion of virtual machines from VMware vSphere 5.5, VMware vSphere 5.1, and VMware vSphere 4.1 hosts to Hyper-V
- Has a wizard-driven GUI, which simplifies performing virtual machine conversions
- Uninstalls VMware Tools before online conversion (online only) to provide a clean way to migrate VMware-based virtual machines to Hyper-V

◆ Important

MVMC takes a snapshot of the virtual machine that you are converting before you uninstall VMware Tools, and then shuts down the source machine to preserve state during conversion. The virtual machine is restored to its previous state after the source disks that are attached to the virtual machine are successfully copied. At that point, the source machine in VMware can be turned on, if required.

◆ Important

MVMC does not uninstall VMware Tools in an offline conversion. Instead, it disables VMware

services, drivers, and programs only for Windows Server guest operating systems. For file conversions with Linux guest operating systems, VMware Tools are not disabled or uninstalled. We highly recommend that you manually uninstall VMware Tools when you convert an offline virtual machine.

Important

Disconnect extra hardware and pass-through or USB devices, and uninstall any hardware-specific services or monitoring software that will not be needed from the virtual machine configuration.

- Supports conversion and provisioning of Linux-based guest operating systems from VMware hosts to Hyper-V hosts. For more information, see “Supported Configurations for Virtual Machine Conversion” later in this topic. (Does not apply to physical machine conversions.)
- Provides native Windows PowerShell capability that enables scripting and integration into IT automation workflows

Note

The command-line interface (CLI) in MVMC 1.0 has been replaced by Windows PowerShell in MVMC 2.0.

- Supports conversion of offline virtual machines. (Does not apply to physical machine conversions.)
- Supports the new virtual hard disk format (VHDX) when converting and provisioning in Hyper-V in Windows Server 2012 R2 and Windows Server 2012. (Does not apply to physical machine conversions.)
- Supports Windows Server 2008 through Windows Server 2012 R2, and Windows Vista through Windows 8.1 as guest operating systems that you can select for conversion, along with a number of Linux distributions. For more information, see “Supported Configurations for Virtual Machine Conversion” later in this topic.
- Includes Windows PowerShell capability for offline conversions of VMware-based virtual hard disks (VMDK) to a Hyper-V–based virtual hard disk file format (.vhd file).


Note

The offline disk conversion does not include driver fixes.

- Includes Windows PowerShell capability for online conversions of physical machines to VHD and provisioning in Hyper-V hosts

Supported configurations for converting virtual machines

The following table shows all supported configurations for virtual machine conversion.

VMware sources	VMware vSphere 5.5 (VMware ESXi 5.5)
	VMware vSphere 5.1 (VMware ESXi 5.1)
	VMware vSphere 4.1 (VMware ESXi/ESX 4.1)
	VMware vCenter Server 5.5
	VMware vCenter Server 5.1
Destination host servers	VMware vCenter Server 4.1
	Windows Server 2012 R2 Standard
	Windows Server 2012 R2 Datacenter
 Note	Windows Server 2012 Standard

Hyper-V must be enabled.

Windows Server 2012 Datacenter
Windows Server 2008 R2 Standard with Service Pack 1 (SP1)
Windows Server 2008 R2 Enterprise with Service Pack 1 (SP1)
Windows Server 2008 R2 Datacenter with Service Pack 1 (SP1)

Windows Server 2012 R2 Standard
Windows Server 2012 R2 Datacenter
Windows Server 2012 Standard

Operating systems on which MVMC can be installed

Windows Server 2012 Datacenter
Windows Server 2008 R2 Standard with Service Pack 1 (SP1)
Windows Server 2008 R2 Enterprise with Service Pack 1 (SP1)
Windows Server 2008 R2 Datacenter with Service Pack 1 (SP1)

Windows Server 2012 R2 Standard
Windows Server 2012 R2 Datacenter
Windows Server 2012 Standard
Windows Server 2012 Datacenter
Windows Server 2008 R2 Standard
Windows Server 2008 R2 Enterprise
Windows Server 2008 R2 Datacenter
Windows Server 2008 R2 with SP1

Microsoft guest operating systems for conversion to Hyper-V from VMware virtual machines

Windows Server 2008 Standard (x86/x64)
Windows Server 2008 Enterprise (x86/x64)
Windows Server 2008 Datacenter (x86/x64)
Windows 8.1 Enterprise (x86/x64)
Windows 8.1 Pro (x86/x64)
Windows 8 Enterprise (x86/x64)
Windows 8 Pro (x86/x64)
Windows 7 Enterprise (x86/x64)
Windows 7 Professional (x86/x64)
Windows 7 Ultimate (x86/x64)
Windows Vista Enterprise x86/x64

Red Hat Enterprise Linux 6 (x86/x64)
Red Hat Enterprise Linux 5 (x86/x64)
Ubuntu 12.04 (x86/x64)
Ubuntu 10.04 (x86/x64)

Linux operating systems for conversion from VMware virtual machines

SUSE Linux Enterprise Server 11 (x86/x64)
CentOS 6 (x86/x64)
CentOS 5 (x86/x64)
Debian GNU/Linux 7 (x86/x64)
Oracle Linux 6 (x86/x64)
Oracle Linux 5 (x86/x64)

Guest operating systems supported for

Windows Server 2012 R2 Standard

converting to Microsoft Azure

Note

The list of supported VMware hosts is identical to the list of VMware hosts for which conversion to Hyper-V is supported.

Windows Server 2012 R2 Datacenter
Windows Server 2012 Standard
Windows Server 2012 Datacenter
Windows Server 2008 R2 Standard
Windows Server 2008 R2 Enterprise
Windows Server 2008 R2 Datacenter
Windows Server 2008 R2 with SP1
Windows Server 2008 Standard (x86/x64)
Windows Server 2008 Enterprise (x86/x64)
Windows Server 2008 R2 Web x64
Ubuntu 12.04 (x86/x64)
SUSE Linux Enterprise Server 11 (x86/x64)
CentOS 6 (x86/x64)
CentOS 5 (x86/x64)
Debian GNU/Linux 7 (x86/x64)
Oracle Linux 6 (x86/x64)
Oracle Linux 5 (x86/x64)

Important

With Windows Server 2012 R2, the virtual machine must reside on a VMware vCenter Server 5.5/ESXi 5.5. It cannot be on any older versions of VMware vCenter Server ESXi.

Important

MVMC doesn't support EFI-based virtual machines.

Important

MVMC doesn't support a dynamic disk configuration in the source virtual machine.

Important

SUSE Linux Enterprise Server 11 (SP2 and SP3) require additional steps to enable Linux Integration Services when migrating from VMware to Hyper-V.

Perform these steps on the SUSE Linux Enterprise Server 11 SP2 or SUSE Linux Enterprise Server 11 SP3 virtual machine before conversion:

- Edit `/etc/sysconfig/kernel` to include the Hyper-V LIS modules. Add the `hv_` modules to the `INITRD_MODULES` line. It should look similar to this:

```
INITRD_MODULES="mptspi ata_piix ata_generic vmxnet3 vmw_pvscsi vmxnet hv_vmbus  
hv_netvsc hv_storvsc hv_blkvsc"
```

- Re-create the `initrd` with the following command. The kernel specified in the command must match the current kernel that the virtual machine boots with.

```
mkinitrd -k /boot/vmlinuz-3.0.13-0.27-pae.gz -i /boot/initrd-3.0.13-0.27-pae
```

◆ Important

For the following Linux versions, Linux Integration Services is available from Microsoft as a Red Hat Package Manager (RPM) package.

- Red Hat Enterprise Linux 5.8 and previous versions
- CentOS Linux 5.8 and previous versions
- Oracle Linux 5.8 and previous versions

Perform these steps on the Linux virtual machine before conversion:

- Install the latest Linux Integration Services package.
- Edit the `/etc/grub.conf` file:
 - Find the section that contains: **hda=notprobe hdb=notprobe**
 - Change this section to: **hda=probe hdb=probe**
 - Save the `/etc/grub.conf` file
 - Reboot the Linux virtual machine before converting to the Microsoft virtual machine


Supported configurations for disk conversion

The following VMware virtual disk types are supported for conversion:

- monolithicFlat
- monolithicSparse
- twoGbMaxExtentFlat
- twoGbMaxExtentSparse
- streamOptimized
- vmfs
- vmfsSparse
- delta disk conversion

Supported configurations for converting a physical machine to Hyper-V

The following table shows all supported configurations for physical machine to Hyper-V.

Destination host servers	Windows Server 2012 R2 Standard Windows Server 2012 R2 Datacenter Windows Server 2012 Standard Windows Server 2012 Datacenter Windows Server 2008 R2 Standard with SP1 Windows Server 2008 R2 Enterprise with SP1 Windows Server 2008 R2 Datacenter with SP1
 Note Hyper-V and the BITS Compact Server must be enabled.	Windows Server 2012 R2 Standard Windows Server 2012 R2 Datacenter Windows Server 2012 Standard Windows Server 2012 Datacenter Windows Server 2008 R2 Standard Windows Server 2008 R2 Enterprise
Operating systems that are supported for which MVMC can be installed	Windows Server 2012 R2 Standard Windows Server 2012 R2 Datacenter Windows Server 2012 Standard Windows Server 2012 Datacenter Windows Server 2008 R2 Standard Windows Server 2008 R2 Enterprise

Guest operating systems that are supported for conversion from physical machines to Hyper-V

Windows Server 2008 R2 Datacenter
Windows Server 2008 R2 with SP1
Windows 8.1
Windows 8.1 Enterprise
Windows 8
Windows 8 Enterprise
Windows 7 Standard
Windows 7 Enterprise
Windows 7 Datacenter

Windows Server 2012 R2 Standard
Windows Server 2012 R2 Datacenter
Windows Server 2012 Standard
Windows Server 2012 Datacenter
Windows Server 2008 R2 Standard
Windows Server 2008 R2 Enterprise
Windows Server 2008 R2 Datacenter
Windows Server 2008 R2 with SP1
Windows Server 2008 Standard (x86/x64)
Windows Server 2008 Enterprise (x86/x64)
Windows Server 2008 Datacenter (x86/x64)
Windows 8.1
Windows 8.1 Enterprise
Windows 8
Windows 8 Enterprise
Windows 7 Enterprise (x86/x64)
Windows 7 Professional (x86/x64)
Windows 7 Ultimate (x86/x64)
Windows Vista Enterprise (x86/x64)

Requirements for Conversion to Hyper-V Destination

1 out of 6 rated this helpful - [Rate this topic](#)

Updated: May 1, 2015

Applies To: Hyper-V Server 2012, Windows Server 2012 R2, Windows Server 2012, Hyper-V Server 2012 R2, Azure, Windows Server 2008 R2 with SP1

MVMC successfully performs virtual machine conversions to Hyper-V when the following conditions are met:

- The Windows user account that you are using has write access to the UNC path, which is specified on the destination Hyper-V host for copying the virtual hard disks.
- The Hyper-V host has the required disk space available for the converted virtual hard disks (VHDs).

In addition, ensure that the following conditions are met for online virtual machine conversions for Windows and Linux virtual machines.

Windows virtual machines

- For conversions in an online state, ensure that you meet the following conditions on the source virtual machine:
 - Disable the Windows Firewall.
 - Enable Remote Desktop Connection to enable remote desktop connections.
 - Ensure that the latest version of VMware Tools are installed.
- If you only want to set the source virtual machine state to **ON** after conversion, the virtual machine must have VMware Tools installed.
- The virtual machine is joined to an Active Directory domain.
- Remote access through Windows Management Instrumentation (WMI) is enabled on the VMware-based virtual machine to be converted and the destination Hyper-V host. For more details, see the [Troubleshoot Microsoft Virtual Machine Converter](#) section in this guide.
- The account, which is used to connect to the VMware-based virtual machine that has to be converted, is part of an Active Directory domain, and is also a local administrator on that virtual machine.

Linux virtual machines

❖ Important

Linux Integration Services must be installed on Linux virtual machines for full functionality with Windows Hyper-V and Microsoft Azure.

For more information about the availability and applicability of Linux Integration Services, see [Linux and FreeBSD Virtual Machines on Hyper-V](#). For Linux distributions and versions with Linux Integration Services (LIS) “built in,” no further action is necessary. If the Linux distribution or version does not have Linux Integration Services built in, you must install LIS.

- The virtual machine has VMware Tools installed.
- MVMC uses Secure Shell (SSH) to connect to the online Linux virtual machine to uninstall the VMware Tools on the virtual machine. To enable SSH communication to the virtual machine, ensure that SSH is enabled and is prepared to accept input on TCP port 22.

📌 Note

Root credentials are required to directly uninstall the VMware Tools; su or sudo is not currently supported.

📌 Note

The following assumptions are valid after a successful conversion:

- The destination virtual machine is in a started or stopped state depending on the settings chosen by the user.
- For online conversions, after the virtual disks that are attached to the virtual machine are copied successfully to the source machine on which MVMC is installed, the source virtual machine is restored to a started or stopped state, depending on the settings that were chosen by the user.
- For offline conversions, the source virtual machine is always restored to a stopped state.
- Product activation requires each instance of a Windows operating system installation to be activated as with any generic Windows operating system activation. This procedure applies to any Windows virtual machine that is created from a VHD. Because conversion creates a second

instance of the virtual machine on Hyper-V, this instance has to be activated.

Important

Managing Linux virtual machines in Microsoft Azure requires network and SSH connectivity to the virtual machine. In order to ensure that Linux virtual machines are accessible after migration from VMware to Microsoft Azure, perform the following recommended steps before migration:

- Ensure that you install Linux Integration Services (LIS) on the virtual machine – either built in or installed from RPM.
- Verify that the Linux firewall allows SSH (TCP port 22) inbound traffic.
- Remove the `/etc/udev/rules.d/70-persistent-net.rules` file, if it exists.
 - Remove or disable NetworkManager. To remove NetworkManager:
 - `rpm -e NetworkManager`
 - or-
 - `dpkg -r NetworkManager`
- Verify that the network adapter is configured to receive IP addresses from DHCP:
 - Modify `ifcfg-eth` or `interfaces`.
 - Ensure the `eth0` is set for auto start with DHCP.
 - Remove any MAC address or ID specification for `eth0` from the interface configuration file.
- Read [Azure Linux Agent User Guide](#).

Requirements for Conversion to Microsoft Azure

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Updated: May 1, 2015

Applies To: Hyper-V Server 2012, Windows Server 2012 R2, Windows Server 2012, Hyper-V Server 2012 R2, Azure, Windows Server 2008 R2 with SP1

MVMC performs virtual machine conversions to VHDs and uploads the disks to Microsoft Azure Blob storage when the following conditions are met:

- You have added a management certificate for Microsoft Azure that can be used for authentication with your subscription ID on Microsoft Azure.

For instructions, see [Create and Upload a Management Certificate for Azure](#). The management certificate is added to a Microsoft Azure subscription.

Note

Certificates have a thumbprint that provides a means to identify them in an unambiguous way. MVMC uses this thumbprint along with the subscription ID for uploading the converted VHDs to the Microsoft Azure blob storage.

To use the subscription identifier and the thumbprint when you are prompted in MVMC, sign in to the [Microsoft Azure Management Portal](#), and click **Settings**. You should see a list of

management certificates with the associated subscription identifier and the certificate thumbprint.

- The Microsoft Azure management certificate is imported to the following two stores: **Certificates - Current Users>Personal** and **Certificates - Current Users>Trusted Root Certification Authorities**.
- You have a storage account to upload and store the converted VHDs in Microsoft Azure. Before you use MVMC to perform conversions, ensure that a storage account is created in Microsoft Azure.

For instructions, see [How to Create a Storage Account](#).

To convert and upload to Microsoft Azure, you have to install Windows PowerShell Runtime 3.0 on the source machine on which MVMC is running.

In addition to these requirements, see the “Windows Virtual Machines” section within “Requirements for Conversion to Hyper-V Destination” earlier in this guide for requirements to convert and upload disks to Microsoft Azure, when the upload disks are attached to an online Windows virtual machine.

Important

The following Linux versions are supported by MVMC when migrating to Windows Hyper-V, but not for migrating to Microsoft Azure:

- Red Hat Enterprise Linux versions 5.8 and previous versions
- CentOS Linux versions 5.8 and previous versions
- Oracle Linux versions 5.8 and previous versions

Install Microsoft Virtual Machine Converter

0 out of 11 rated this helpful - [Rate this topic](#)

Updated: May 1, 2015

Applies To: Hyper-V Server 2012, Windows Server 2012 R2, Windows Server 2012, Hyper-V Server 2012 R2, Azure, Windows Server 2008 R2 with SP1

Prerequisites

Before you install Microsoft Virtual Machine Converter (MVMC), you must install the following software on the computer on which you want to run MVMC:

- Windows Server 2012 R2, Windows Server 2012, or Windows Server 2008 R2 with SP1 operating systems
- Microsoft .NET Framework 3.5 and .NET Framework 4 if you install MVMC on Windows Server 2008 R2 with SP1
- Microsoft .NET Framework 4.5 if you install MVMC on Windows Server 2012 R2, Windows Server 2012, or Windows 8

Note

Although MVMC installs on all of these versions, using the Windows PowerShell cmdlets that are released as part of MVMC requires Windows PowerShell Runtime 3.0, as the cmdlets function

only on Windows Server 2012 R2, Windows Server 2012, Windows Server 2008 R2 with SP1, or Windows 8.

- Visual C++ Redistributable for Visual Studio 2012 Update 1
- [Windows Management Framework 3.0](#)

In addition, enable the following features:

- Background Intelligent Transfer Service (BITS) feature in Windows Server on the destination host for physical machine conversion
- Hyper-V on the destination host

Installation

To install MVMC

1. Download the Microsoft Virtual Machine Converter Windows Installer package to your local server.
2. Run the Windows Installer package.
3. Enter a location where you want to install MVMC or use the default location and continue with the installation.

Important

The account that runs the Setup program must be the local administrator.

Use Microsoft Virtual Machine Converter

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Updated: May 1, 2015

Applies To: Hyper-V Server 2012, Windows Server 2012 R2, Windows Server 2012, Hyper-V Server 2012 R2, Azure, Windows Server 2008 R2 with SP1

After installing MVMC, you can use it to:

- Convert VMware virtual machines and virtual disks to Hyper-V by using Windows PowerShell.
- Convert and upload disks to Microsoft Azure.
- Convert VMware virtual machines and virtual disks to Hyper-V by using the GUI.
- Convert physical machines to Hyper-V by using the GUI.
- Convert physical machines to Hyper-V by using Windows PowerShell.

Convert VMware virtual machines and virtual disks by using Windows PowerShell

Before using the MVMC cmdlets, you must do the following:

- Run the MVMC Windows PowerShell cmdlets on Windows Server 2012 R2 or Windows Server 2012. You can also run MVMC Windows PowerShell cmdlets on Windows Server 2008 R2 with SP1 provided that you installed Windows PowerShell 3.0 and Microsoft .NET Framework 4.
- Import the MVMC Windows PowerShell module manifest from the MVMC installation location. Run the following example command:

```
PS C:\> Import-Module "C:\Program Files\Microsoft Virtual Machine
Converter\MvmcCmdlet.psd1"
```

For more information about using the Windows PowerShell cmdlets, see the Windows PowerShell cmdlet Help. The following script example is provided as a reference.

Sample Script

```
Start-Transcript "c:\Test\SampleLog.log"
# establish a connection to the source server
$sourceUser= 'root'
$sourcePassword = ConvertTo-SecureString 'SecurePassword' -AsPlainText -Force
$sourceCredential = New-Object PSCredential ($sourceUser, $sourcePassword)
$sourceConnection = New-MvmcSourceConnection -Server 'ContosoTestServer' -
SourceCredential $sourceCredential -verbose

# select the the virtual machine to convert
$sourceVM = Get-MvmcSourceVirtualMachine -SourceConnection $sourceConnection -
verbose | where {$_.Name -match 'testvm'}

# convert the source virtual machine
$destinationLiteralPath = 'c:\test'
$machineDriveCollection = ConvertTo-MvmcVirtualHardDiskOvf -SourceConnection
$sourceConnection -DestinationLiteralPath $destinationLiteralPath -GuestVmId
$sourceVM.GuestVmId -verbose

# copy the disks and .ovf file to the destination Hyper-V host. The .ovf file
contains the source virtual machine's configuration information
# NOTE: this step is not needed on 2-box conversions, this represents a 3-box
conversion.
$hyperVServerVhdPath = '\\ContosoTestDestination\c$\Test'
Copy-Item -Path $machineDriveCollection.Ovf.DirectoryName -Destination
$hyperVServerVhdPath -recurse
$destinationLiteralPath = Join-Path $hyperVServerVhdPath
$machineDriveCollection.Ovf.DirectoryName

# provision a Hyper-V virtual machine
$hyperVServer = 'ContosoTestDestination'
$convertedVM = New-MvmcVirtualMachineFromOvf -DestinationLiteralPath
$destinationLiteralPath -DestinationServer $hyperVServer

Stop-Transcript
```

Convert and upload disks to Microsoft Azure

Use the following procedure to convert and upload disks to Microsoft Azure.

To convert and upload disks to Microsoft Azure

1. Open MVMC, open the **Migration Destination** page, select **Migrate to Microsoft Azure**, and then click **Next**.

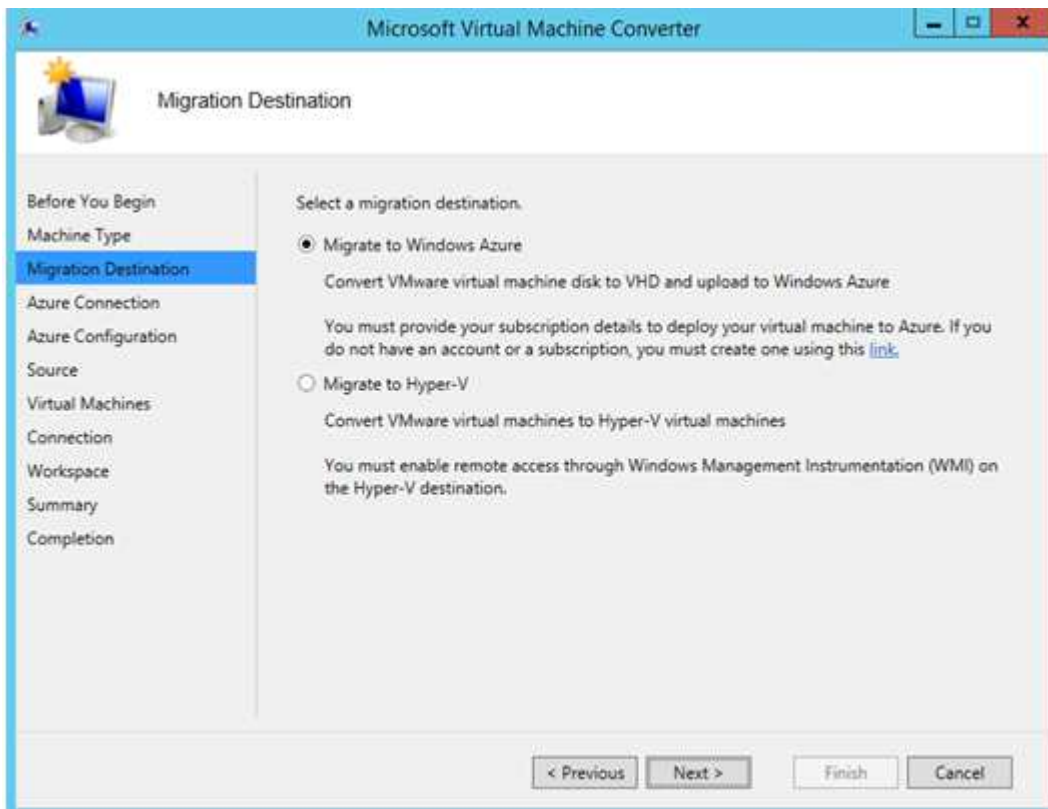


Figure 1. The Migration Destination page

2. On the **Azure Connection** page, specify the subscription ID and certificate thumbprint that you obtained before beginning the conversion process. For more information, see [Requirements for Conversion to Microsoft Azure](#) earlier in this guide.

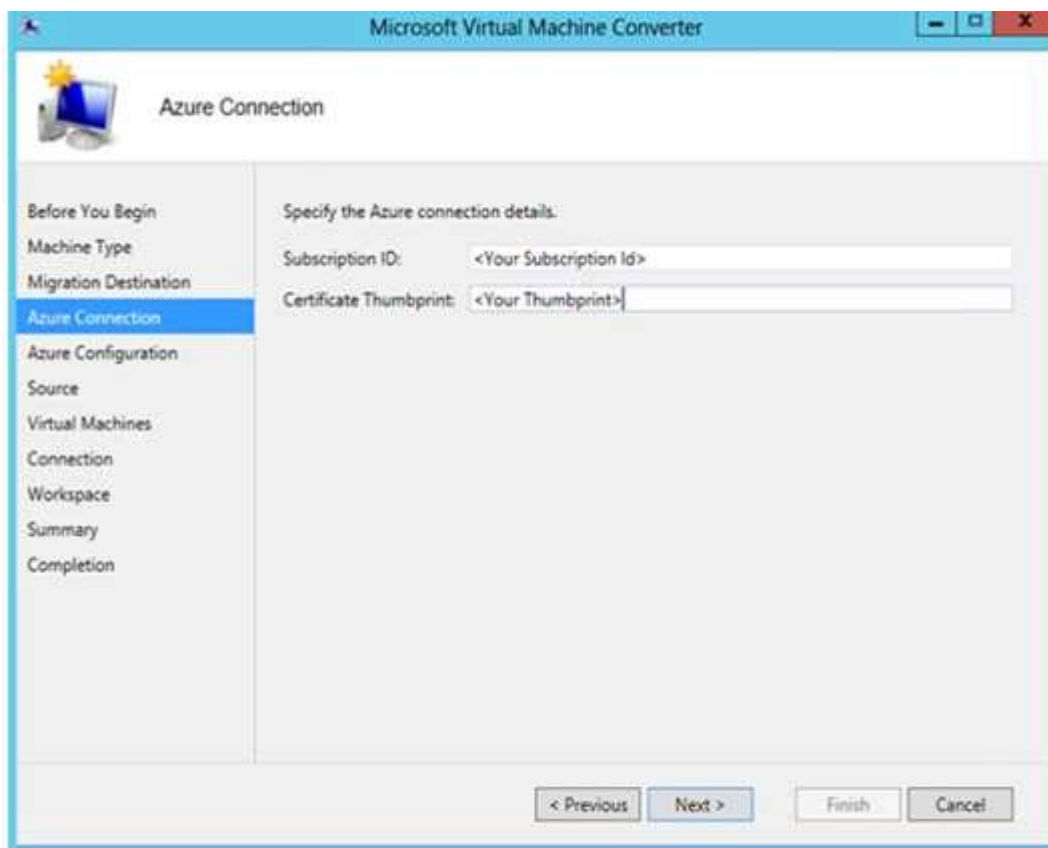


Figure 2. The Azure Connection page

3. On the **Azure Configuration** page, select the Microsoft Azure storage account that you created for storing the converted virtual hard disk. For more information, see [Requirements for Conversion to Microsoft Azure](#) earlier in this guide.

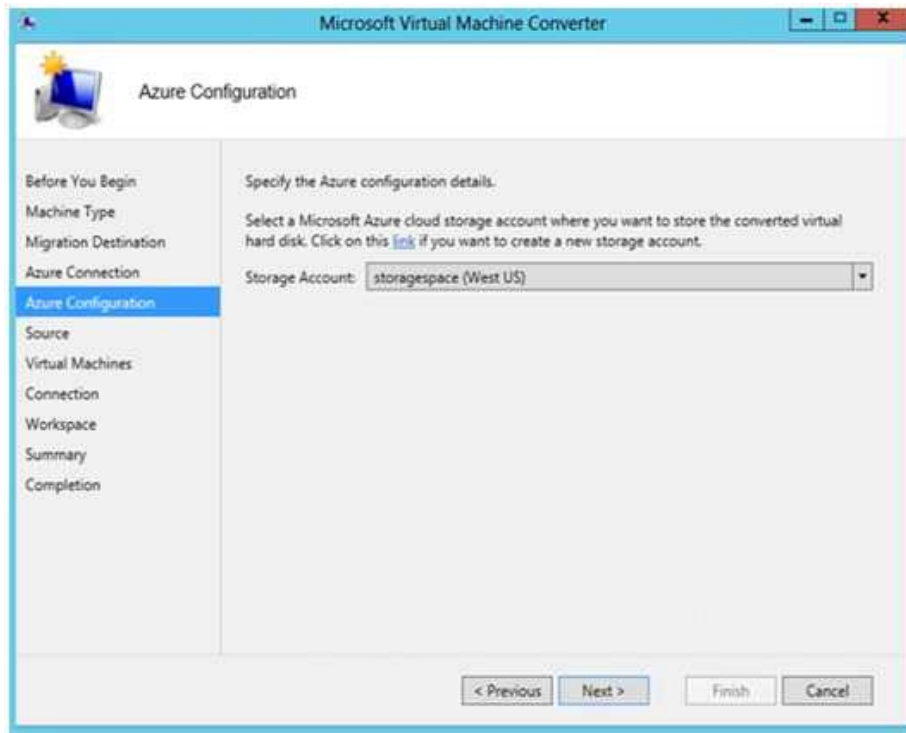


Figure 3. The Azure Configuration page

4. On the **Source** page, enter the following details to connect to a VMware vCenter Server, VMware ESX, or VMware ESXi server, and then click **Next**.
 - o In the **Address** box, type the server IP address or the name of the VMware source server.
 - o In the **User name** box, type the user name.
 - o In the **Password** box, type the password.

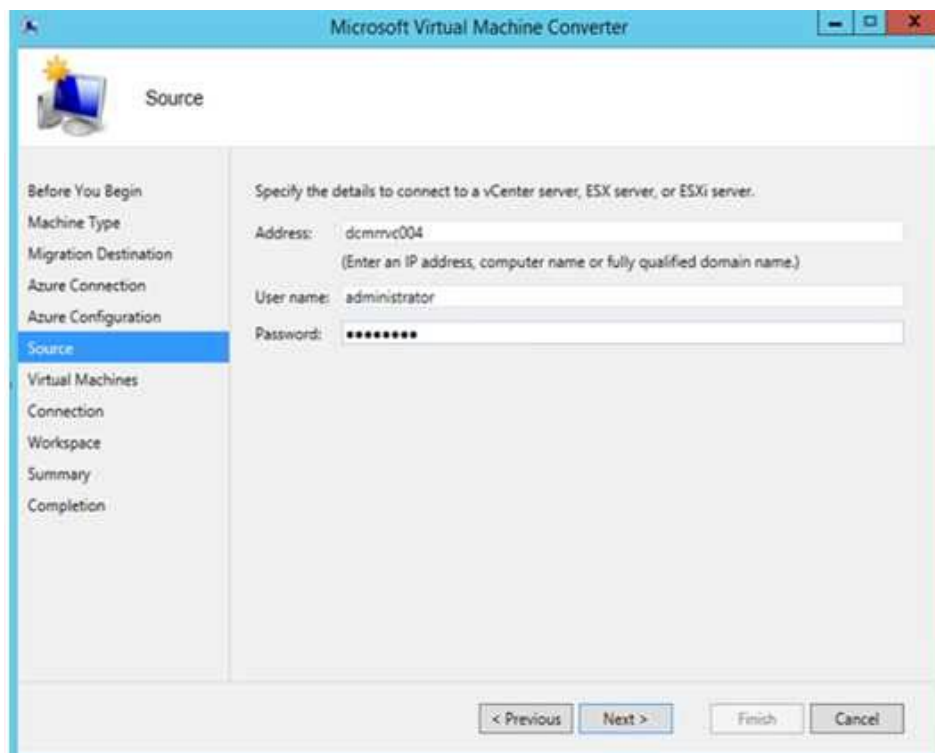


Figure 4. The Source page

5. On the **Virtual Machines** page, select a virtual machine to convert from the source VMware server, and then click **Next**.

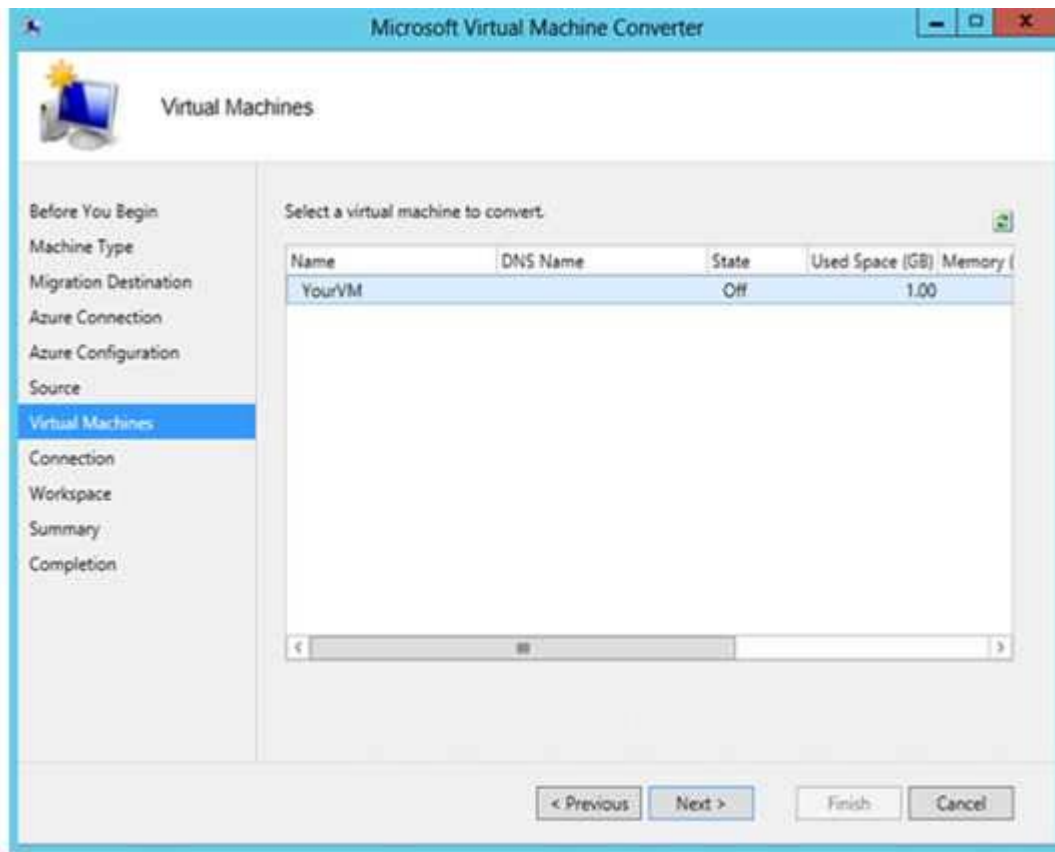


Figure 5. The Virtual Machines page

 **Note**

The disk that is attached to the source virtual machine is converted to an IDE-based VHD, and all data disks that are attached to the source virtual machine are converted to SCSI VHDs.

 **Important**

MVMC creates another instance of the virtual machine on Hyper-V that is based on the source virtual machine configuration. If the source virtual machine is online during conversion, it remains intact but is shut down during the conversion process.

6. On the **Virtual Machine Connection** page, enter the following credentials of an administrative account that can connect to the virtual machine, and then click **Next**.

 **Note**

The connection is required for uninstalling VMware Tools on the source virtual machine. The virtual machine must be joined to an Active Directory domain.

- In the **Virtual machine** box, type the name of the virtual machine.
- In the **User name** box, type the domain and user name.
- In the **Password** box, type the password.
- Under **Final state of source virtual machine**, click **On** or **Off** to indicate whether the source virtual machine should be turned on or off when the restoration is complete.

 **Note**

All of the previous items apply only to online conversions. In an offline conversion, the tool does not connect to the source virtual machine to uninstall the VMware Tools and

the source virtual machine is offline when it is restored.

- In the **Final state of destination virtual machine** option, click **On** or **Off** to indicate whether the destination virtual machine should be turned on or off when the conversion is complete.

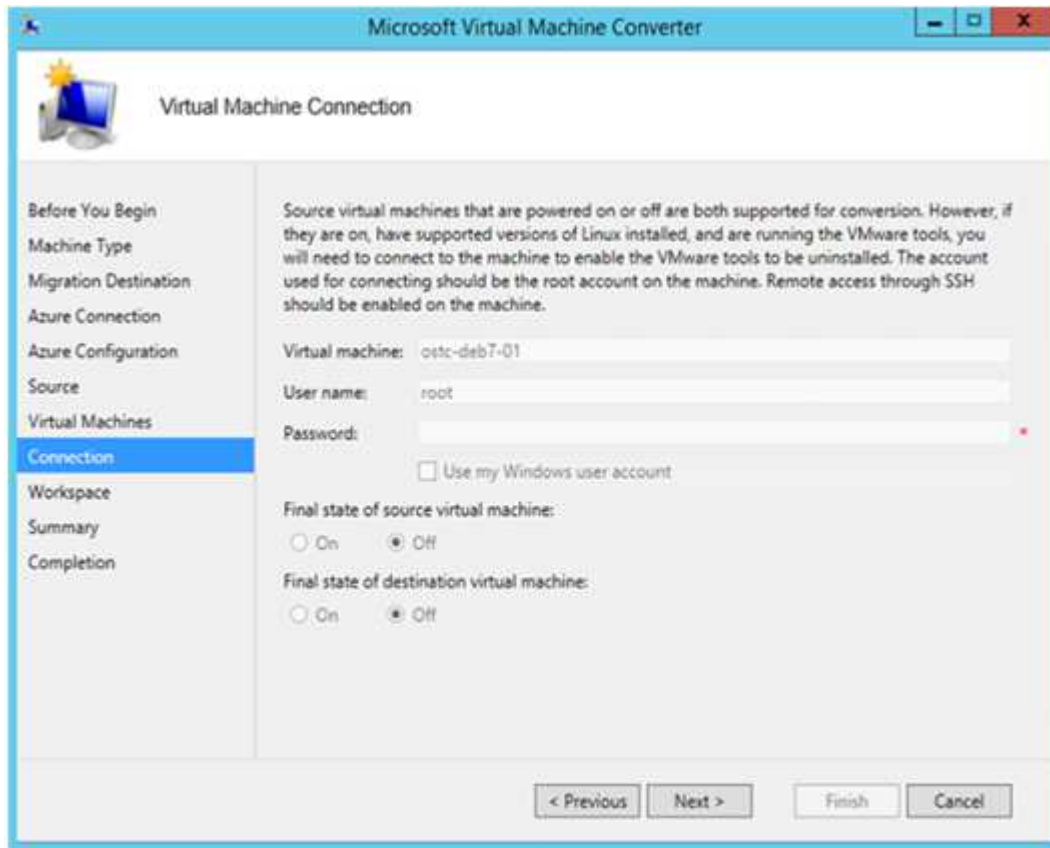


Figure 6. The Virtual Machine Connection page

◆ Important

MVMC always takes a snapshot of the original source virtual machine before the VMware Tools are uninstalled and restores the virtual machine to its original state after the disks that are attached to the virtual machine are successfully copied.

◆ Important

Remote access through Windows Management Instrumentation (WMI) must be enabled on the source virtual machine. For more information, see [Requirements for Conversion to Hyper-V Destination](#) in this guide.

7. On the **Workspace** page, click **Browse** to select the path to a workspace folder from where the user interface (UI) can be run (select a location that has enough free disk space for the converted virtual hard disks), and then click **Next**.

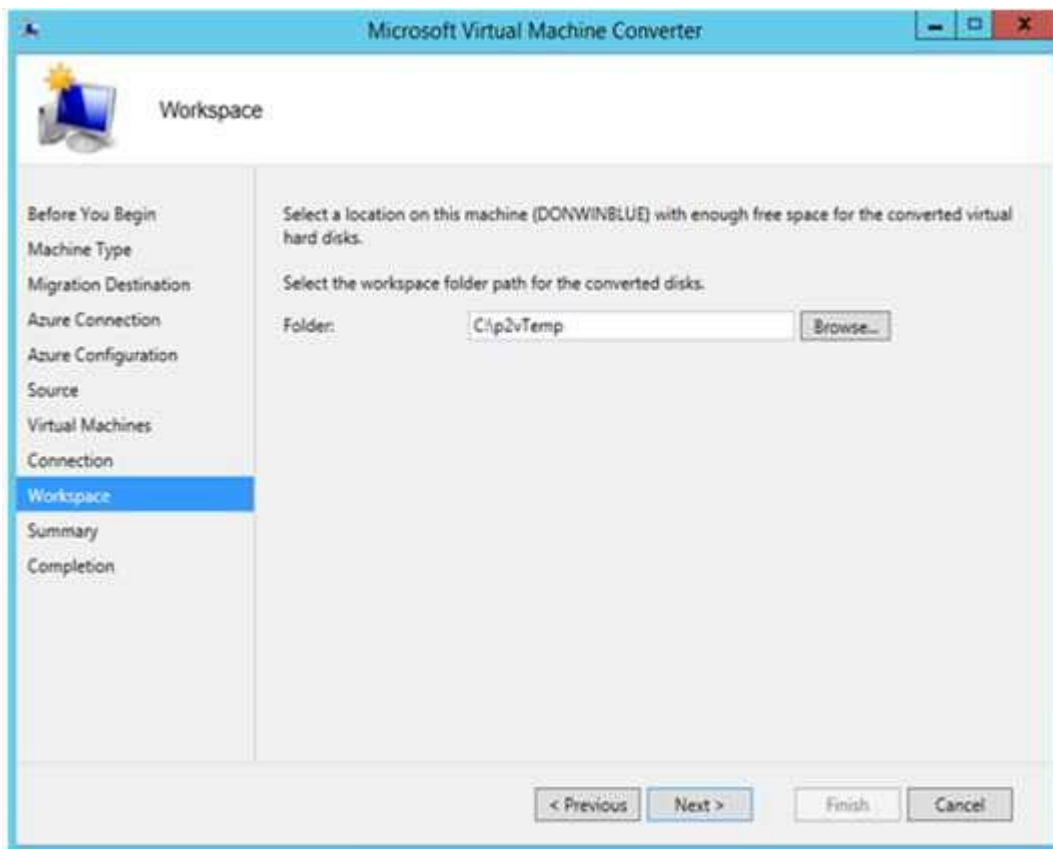


Figure 7. The Workspace page

8. On the **Summary** page, review the details, and then click **Finish** to complete the conversion. If warnings appear, review them before you proceed with the conversion.

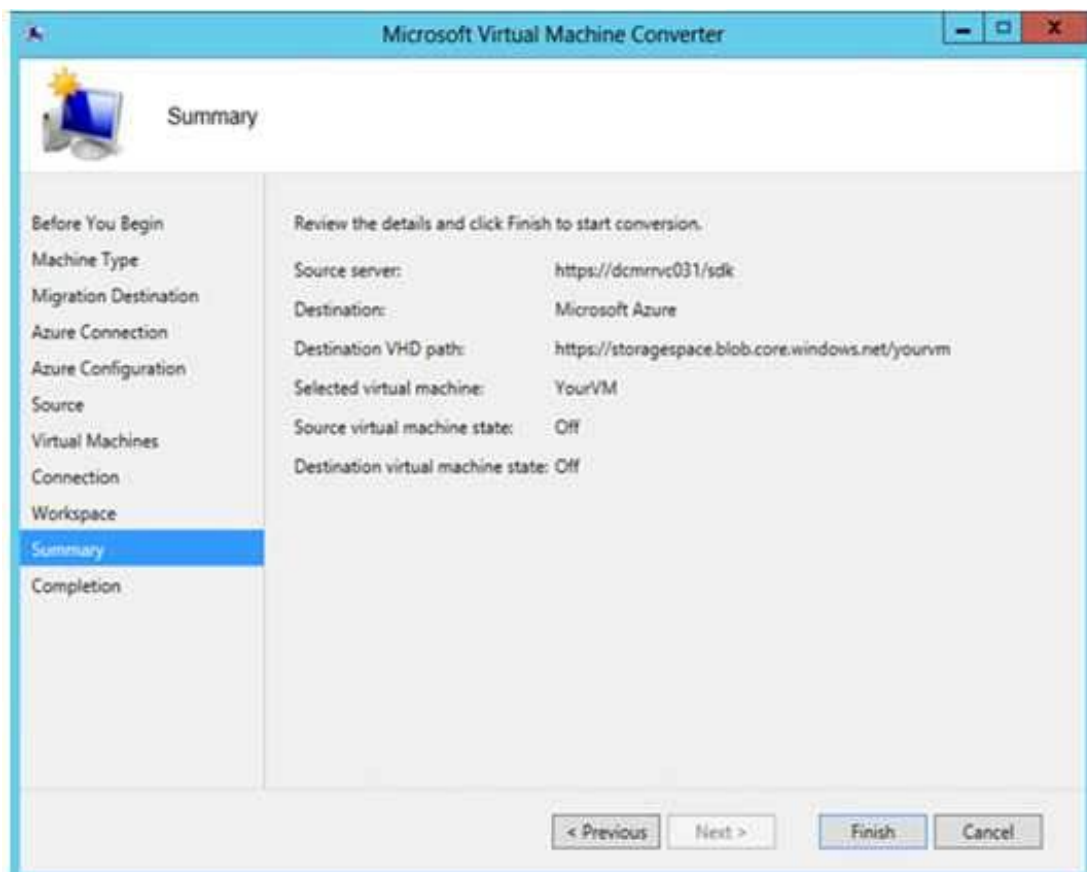


Figure 8. The Summary page

When the virtual machine conversion has finished successfully, the **Completion** page appears.

9. On the **Completion** page, when the virtual machine conversion is complete, click **Close**.

Convert VMware virtual machines and virtual disks to Hyper-V by using the GUI

Use the following procedure to convert a virtual machine to Hyper-V by using the GUI.

Note

For best performance, we recommend that you run the conversion on the destination host, which means that MVMC is installed and is run from the Hyper-V hypervisor.

To convert a virtual machine to Hyper-V by using the GUI

1. Open MVMC, open the **Migration Destination** page, and then click **Migrate to Hyper-V**, and then click **Next**.

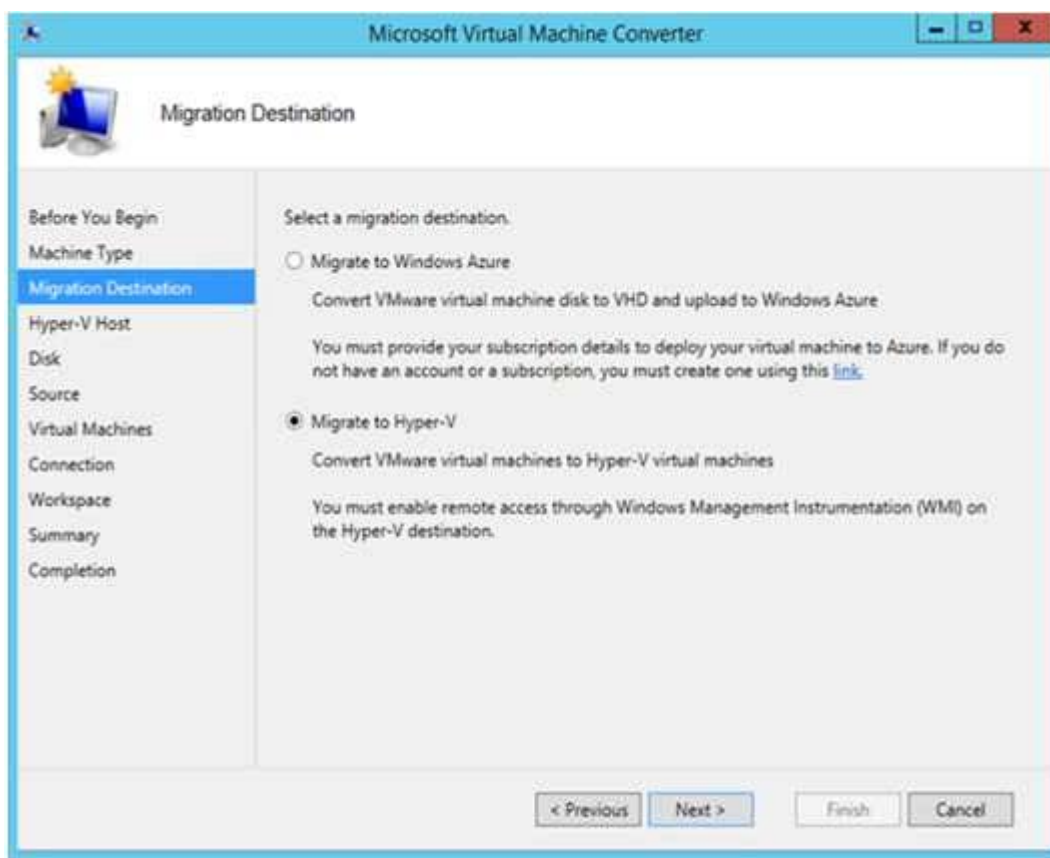
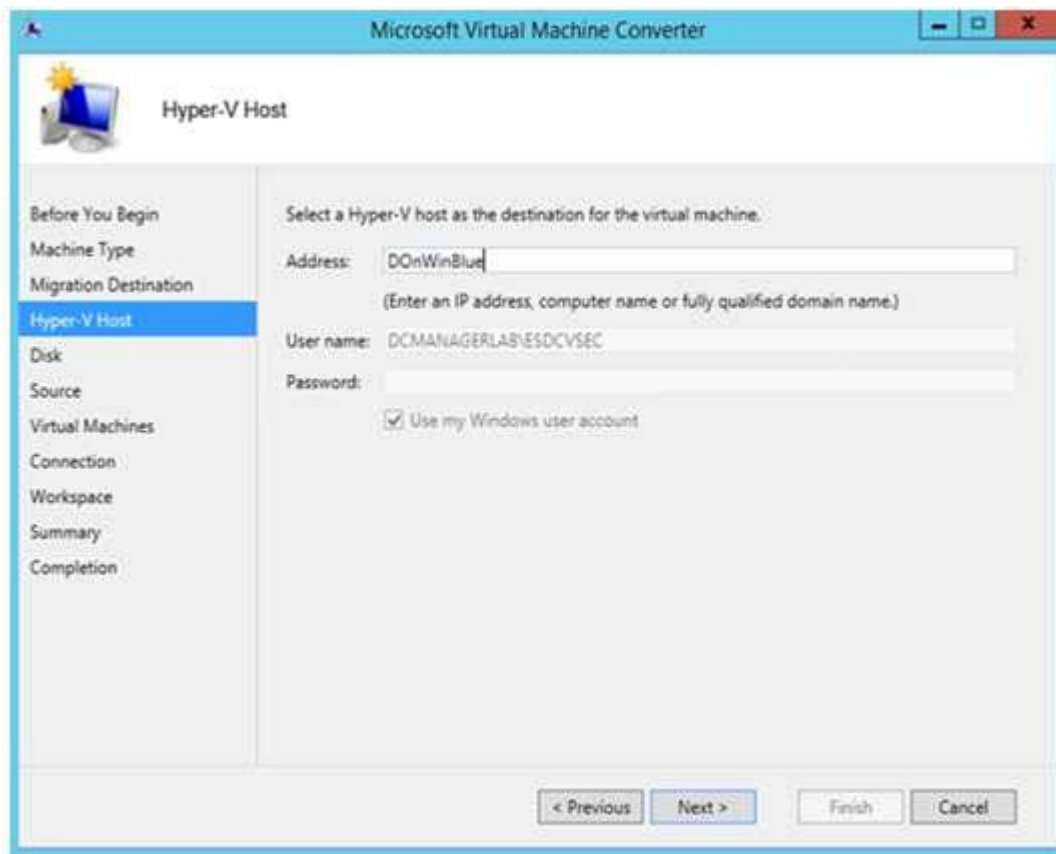


Figure 1A. The Migration Destination page

2. On the **Hyper-V Host** page, enter the following details to connect to the destination server running Hyper-V where the virtual machine is to be created after conversion, and then click **Next**.
 - o In the **Address** box, type the server IP address or the name of the Hyper-V source server.
 - o In the **User name** box, type the domain and user name.
 - o In the **Password** box, type the password.

Note

You should have access to the UNC path to be provided in the subsequent pages.



3. Figure 2A. The Hyper-V Host page
4. On the **Disk** page, specify the following information for the UNC path to place the VHD files if the destination is a remote server running Hyper-V, and then click **Next**.

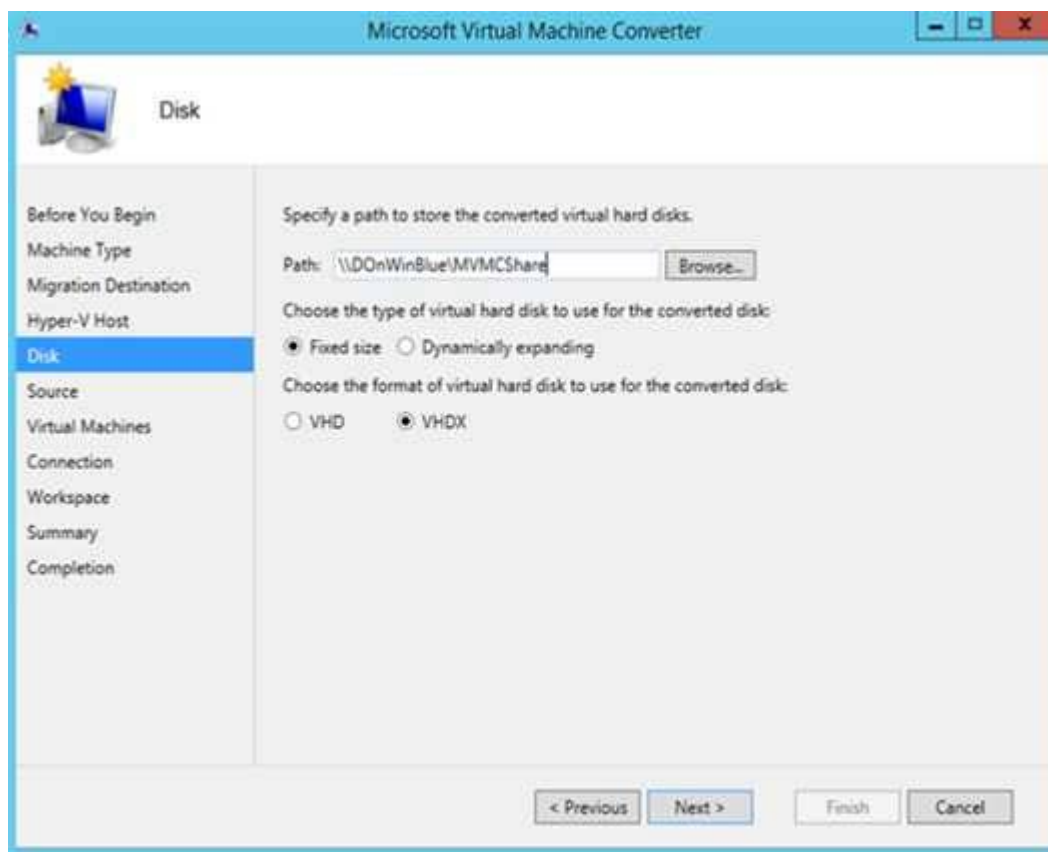
 **Note**

You can specify a local network share but MVMC only accepts a UNC path. The subsequent buttons are disabled if you specify a local path.

- In the **Path** box, click **Browse** to select the path to where the VHD file is copied on the destination server running Hyper-V.
- Click the type of virtual hard disk to use for the converted disk, **Fixed size** or **Dynamically expanding**.
- Click the format of virtual hard disk to use for the converted disk, **VHD** or **VHDX**.

 **Note**

VHDX format is supported only on servers running Windows 8 or Windows Server 2012 with Hyper-V.



5. Figure 3A. The Disk page

6. On the **Source** page, enter the following details to connect to a VMware vCenter Server, VMware ESX server, or VMware ESXi server, and then click **Next**.
- o In the **Address** box, type the server IP address or the name of the VMware source server.
 - o In the **User name** box, type the user name.
 - o In the **Password** box, type the password.

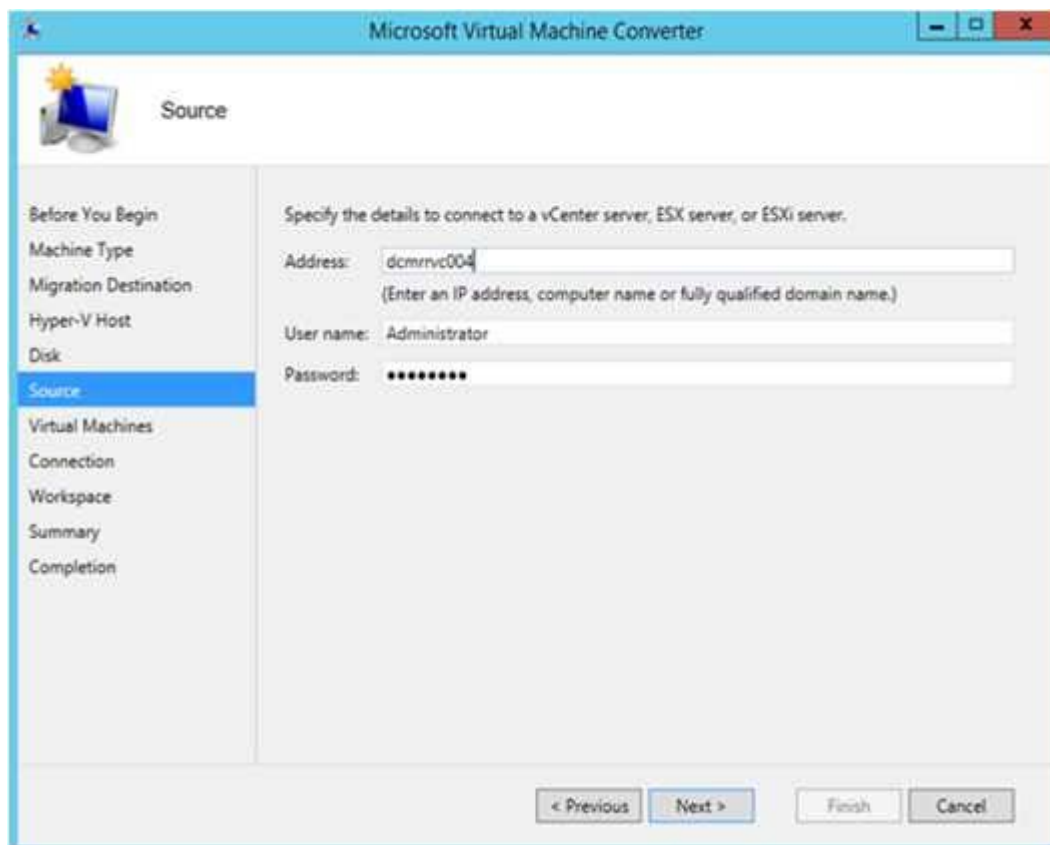


Figure 4A. The Source page

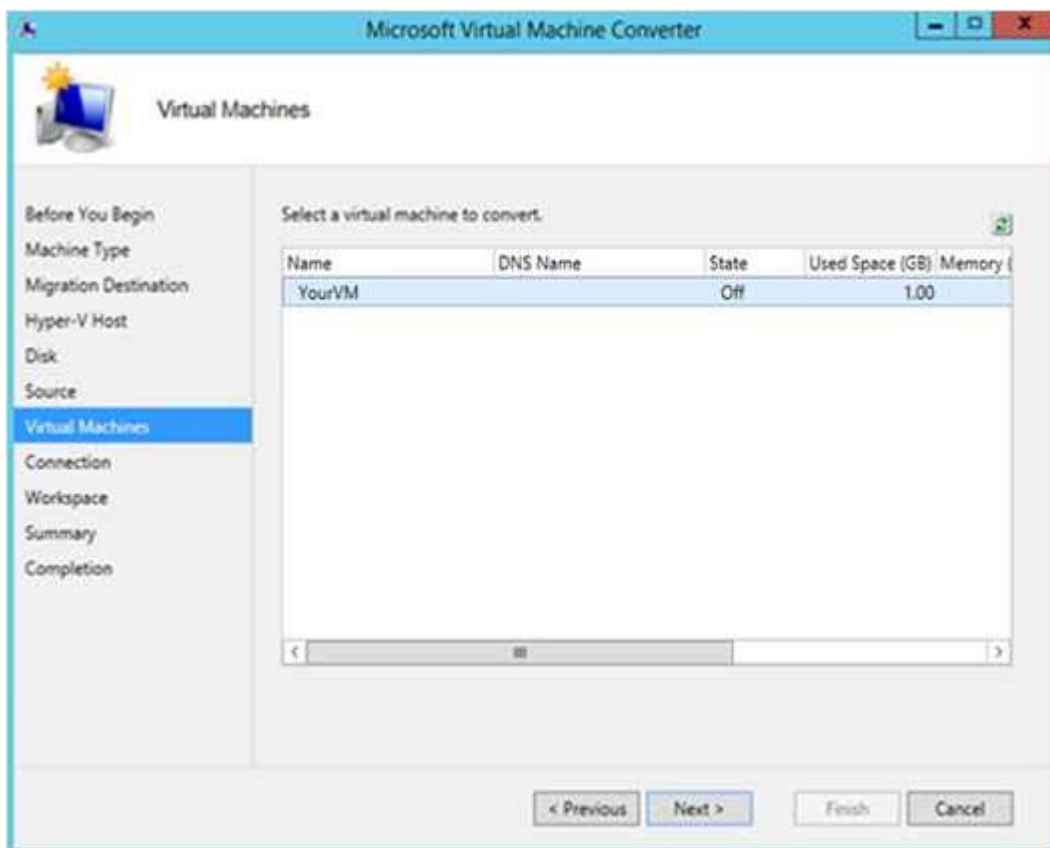
7. On the **Virtual Machines** page, select a virtual machine to convert from the source VMware server, and then click **Next**.

 **Note**

The disk that is attached to the source virtual machine is converted to an IDE-based VHD and all data disks that are attached to the source virtual machine are converted to SCSI VHDs.

 **Important**

MVMC creates another instance of the virtual machine on Hyper-V that is based on the source virtual machine configuration. If the source virtual machine is online during conversion, it remains intact but is shut down during the conversion process. The virtual machine stays turned on only if you have installed VMware Tools.



8. Figure 5A. The Virtual Machines page
9. On the **Virtual Machine Connection** page, enter the following credentials for an administrative account that can connect to the virtual machine, and then click **Next**.

 **Note**

The connection is required to uninstall VMware Tools on the source virtual machine. The virtual machine must be joined to an Active Directory domain.

- In the **Virtual machine** box, type the name of the virtual machine.
- In the **User name** box, type the domain and user name.
- In the **Password** box, type the password.
- Under **Final state of source virtual machine**, click **On** or **Off** to indicate whether the source virtual machine should be turned on or off when the restoration is complete.

 **Note**

All of the previous items apply only to online conversions. In an offline conversion, the tool does not connect to the source virtual machine to uninstall the VMware Tools, and the source virtual machine is offline when it is restored.

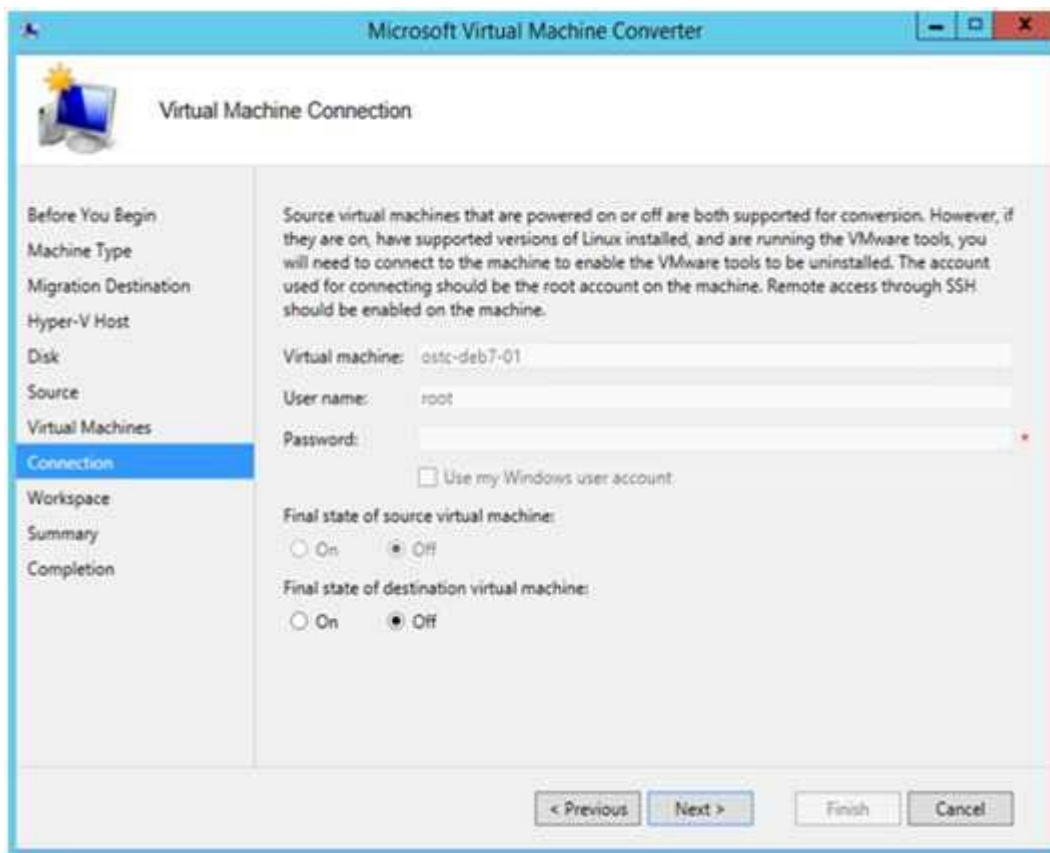
- Under **Final state of destination virtual machine**, click **On** or **Off** to indicate whether the destination virtual machine should be turned on or off when the conversion is complete.

◆ **Important**

MVMC always takes a snapshot of the original source virtual machine before the VMware Tools are uninstalled and restores the virtual machine to its original state after the disks that are attached to the virtual machine are successfully copied.

◆ **Important**

Remote access through Windows Management Instrumentation (WMI) must be enabled on the source virtual machine. For more information, see [Requirements for Conversion to Hyper-V Destination](#) in this guide.



10. Figure 6A. The Virtual Machine Connection page

11. On the **Workspace** page, click **Browse** to select the path, which can be a local path, to a workspace folder where the converted VHDs can be temporarily stored (select a location that has enough free disk space for the converted virtual hard disks), and then click **Next**.

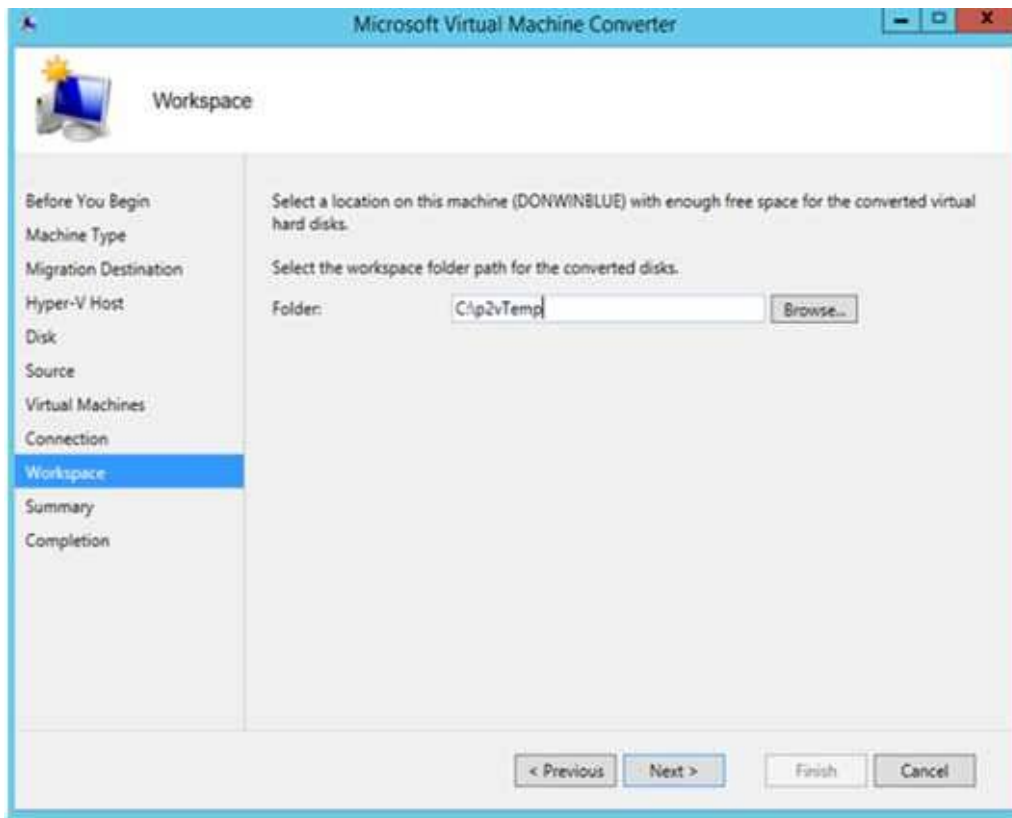


Figure 7A. The Workspace page

12. On the **Summary** page, review the details, and then click **Finish** to complete the conversion. If warnings appear, review them before you proceed with the conversion.

When the virtual machine conversion has finished successfully, the **Completion** page appears.

13. On the **Completion** page, when the virtual machine conversion is complete, click **Close**.

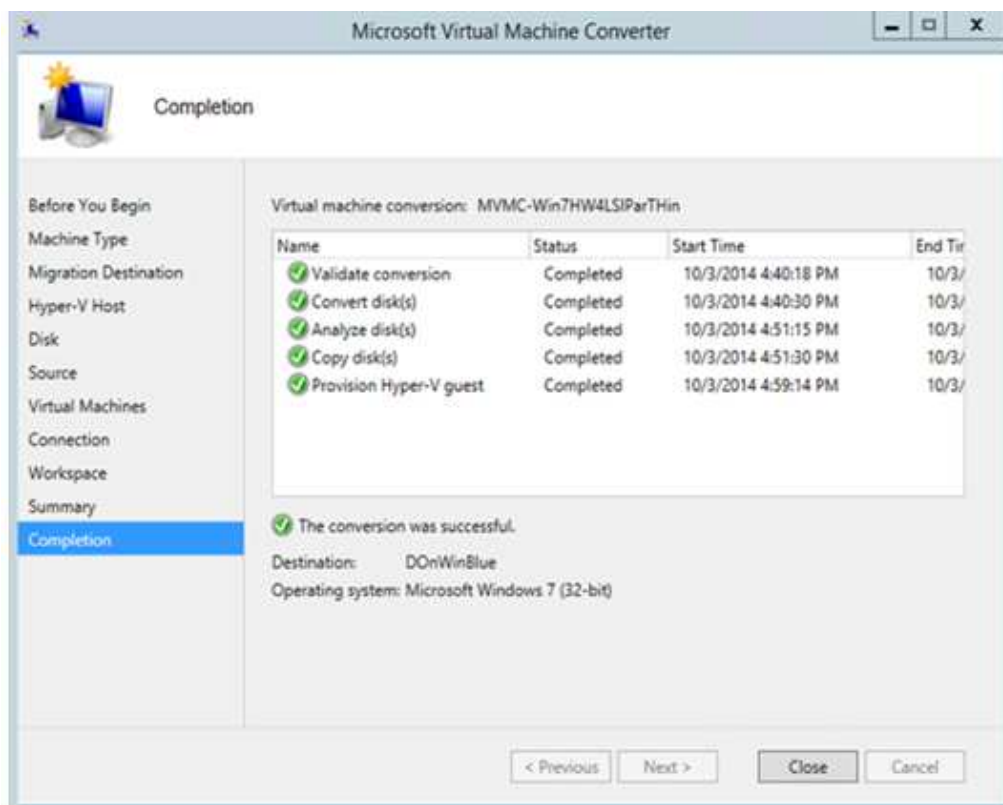


Figure 8A. The Completion page

Convert physical machine to Hyper-V by using the GUI

Use the following procedure to convert a physical machine to Hyper-V by using the GUI.

Note

For best performance, we recommend that you run the conversion on the destination host, which means that MVMC is installed and is run from the Hyper-V hypervisor.

To convert a physical machine to Hyper-V by using the GUI

1. Open MVMC, open the **Machine Type** page, click **Physical machine conversion**, and then click **Next**.

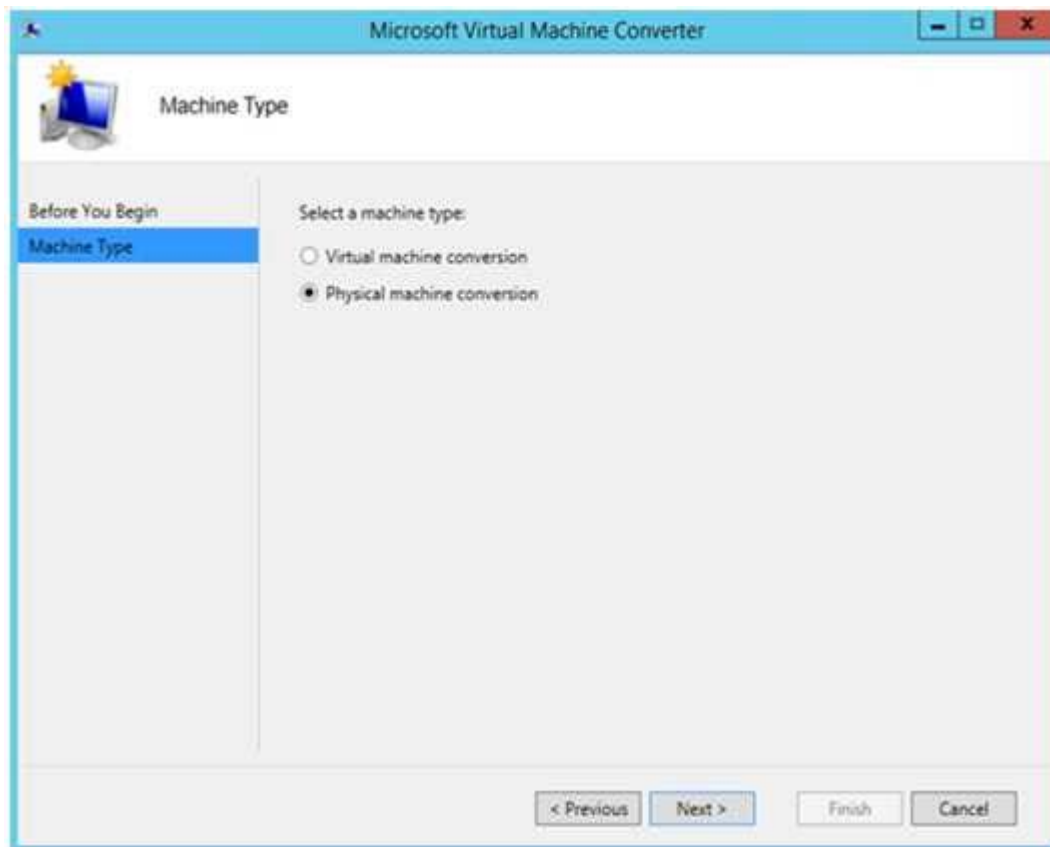


Figure 1B. The Machine Type page

2. On the **Source** page, enter the following details to connect to a physical machine, and then click **Next**.
 - o In the **Address** box, type the server IP address, computer name, or fully qualified domain name of the source physical machine.
 - o In the **User name** box, type the user name.
 - o In the **Password** box, type the password.

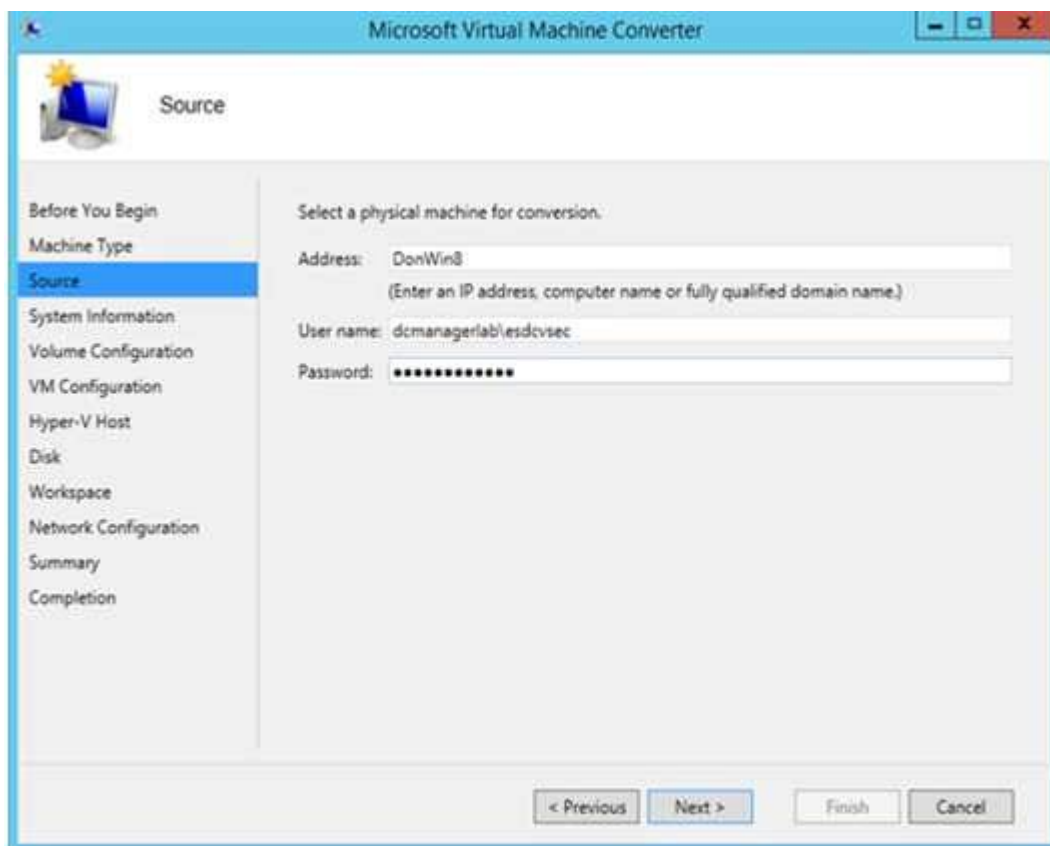


Figure 2B. The Source page

3. On the **System Information** page, click **Scan System** to temporarily install an agent on the source physical machine.

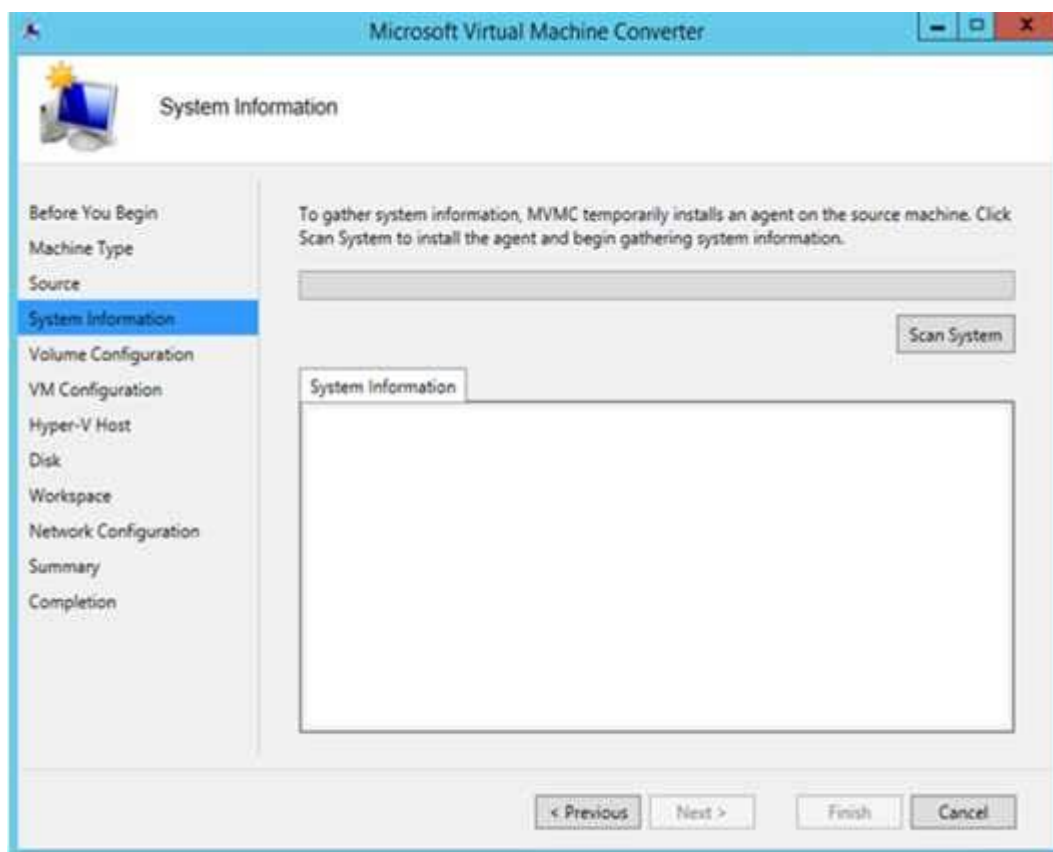
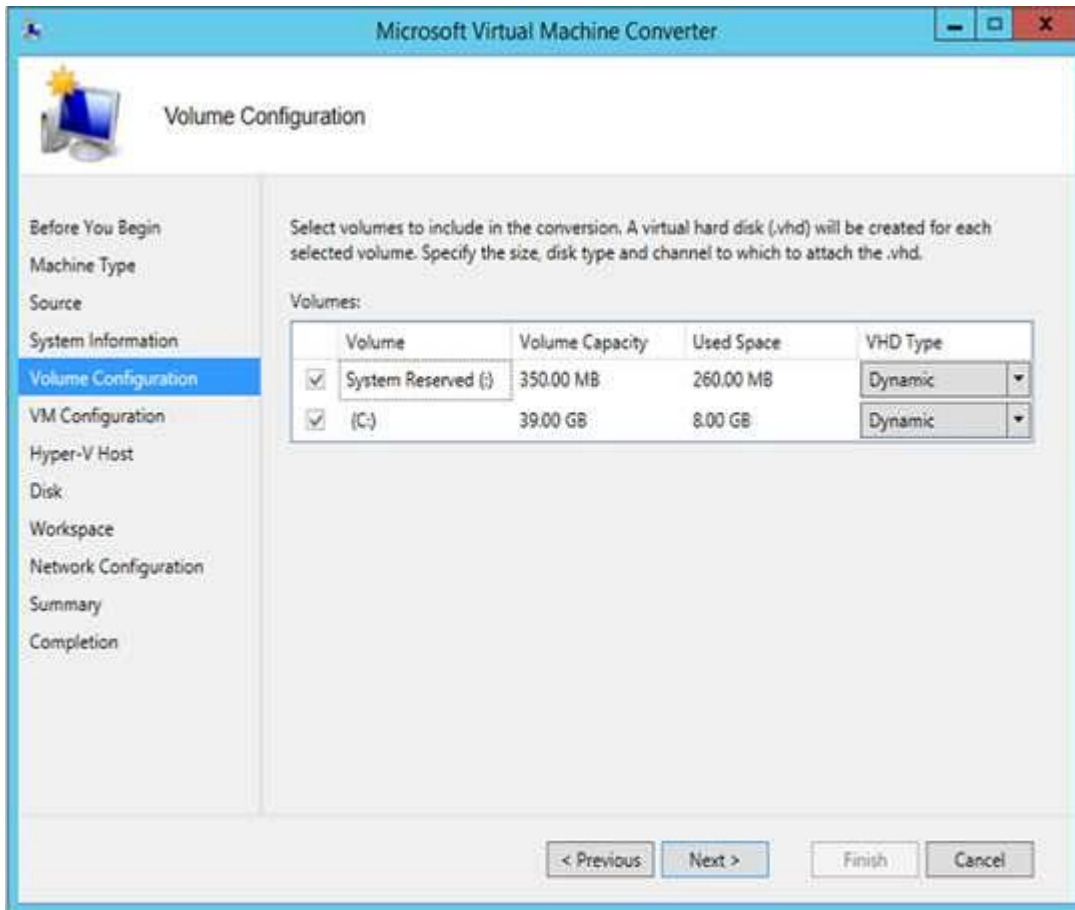


Figure 3B. The System Information page

- On the **Volume Configuration** page, select the volumes that you want to include in the conversion. Each converted virtual hard disk can be either fixed size or dynamically expanding. Click **Next**.

 **Note**

The boot volume is selected by default. If volumes are part of the same partition, you should select all those volumes to avoid failures.



- Figure 4B. The Volume Configuration page
- On the **VM Configuration** page, type the name, processors, and memory allocation for the target virtual machine, and then click **Next**.

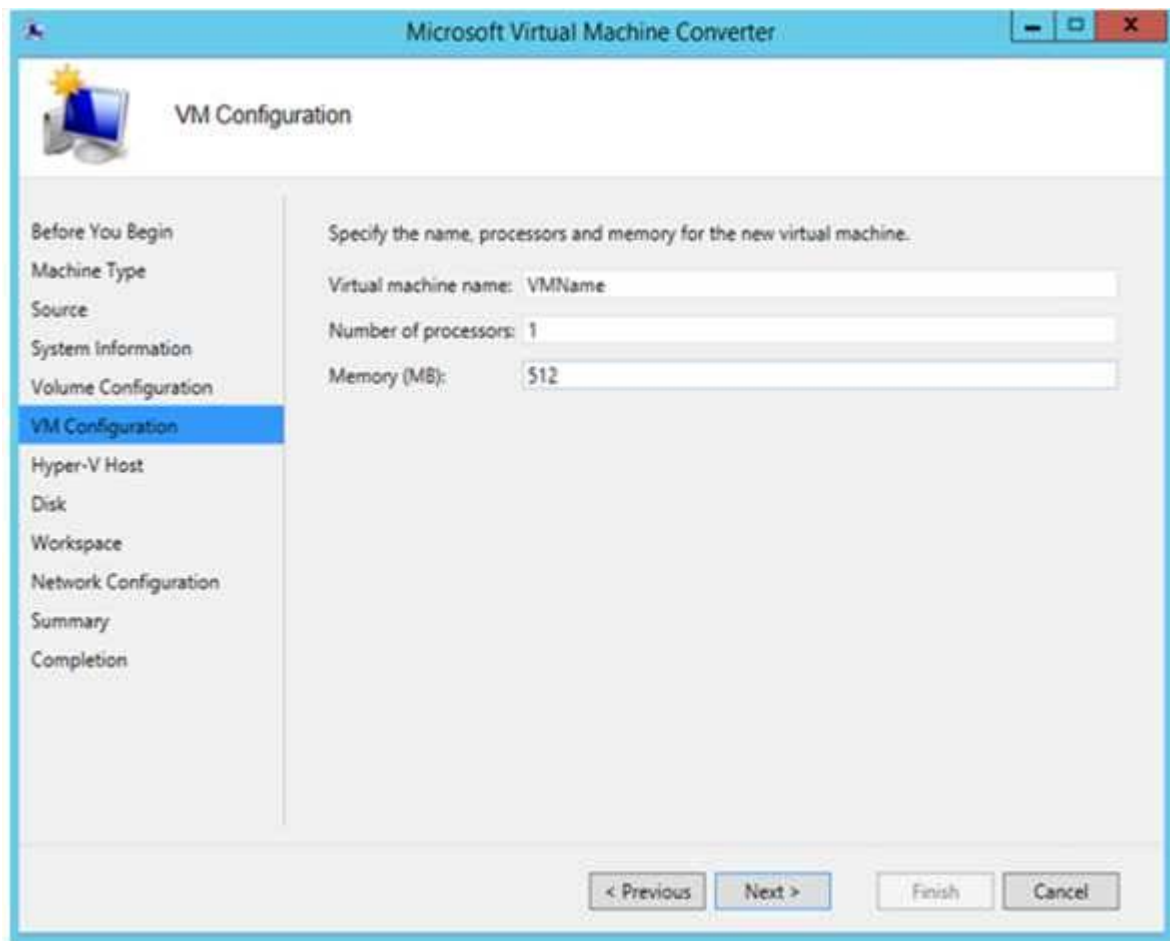
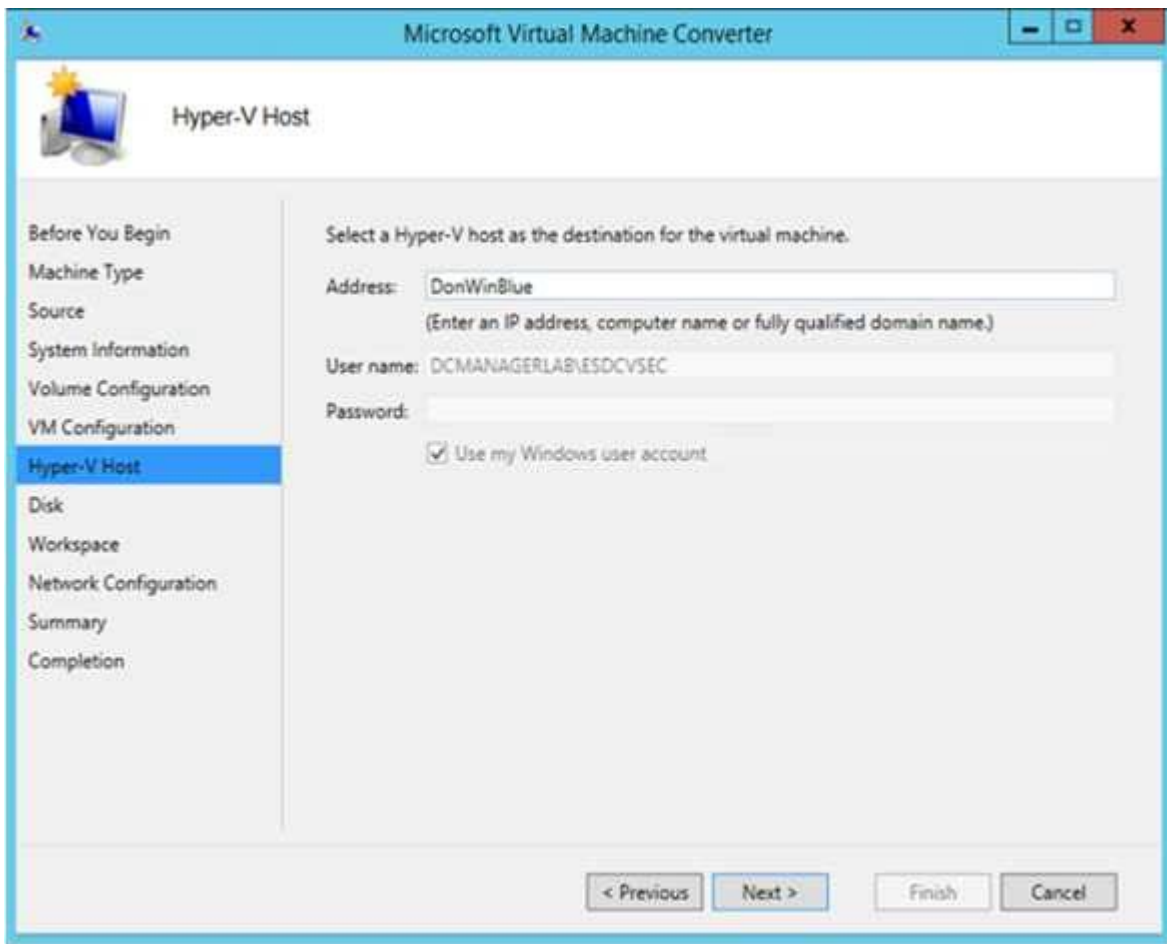


Figure 5B. The VM Configuration page

7. On the **Hyper-V Host** page, enter the following details to connect to the destination server running Hyper-V where the virtual machine is to be created after conversion, and then click **Next**.
 - In the **Address** box, type the server IP address or the name of the Hyper-V source server.
 - In the **User name** box, type the domain and user name.
 - In the **Password** box, type the password.

 **Note**

You should have access to the UNC path to be provided in the subsequent pages.

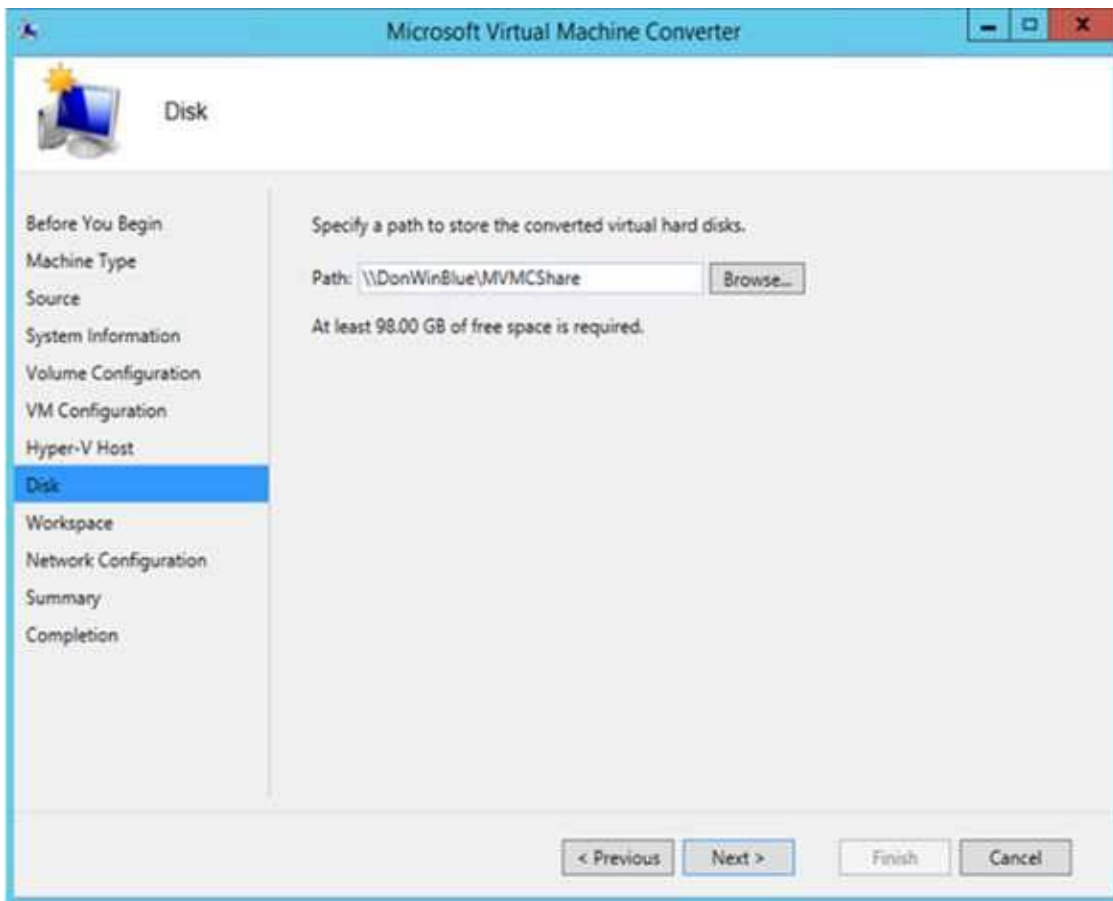


8. Figure 6B. The Hyper-V Host page

9. On the **Disk** page, In the **Path** box, click **Browse** to select the path to where the VHD file is copied on the destination server running Hyper-V, and then click **Next**.

 **Note**

You can specify a local network if the converter and destination host are on the same server.



10. Figure 7B.The Disk page

11. On the **Workspace** page, click **Browse** to select the path, which can be a local path, to a workspace folder where the converted VHDs can be temporarily stored (select a location that has enough free disk space for the converted virtual hard disks), and then click **Next**.

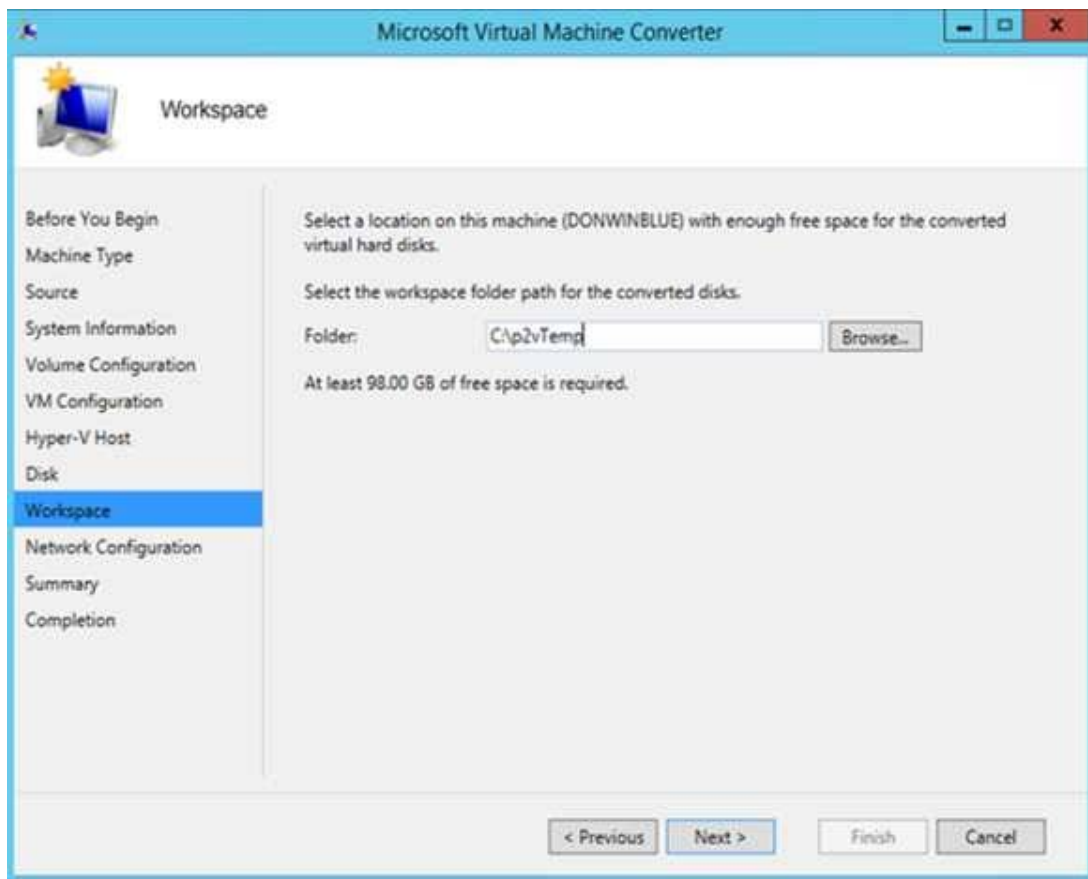
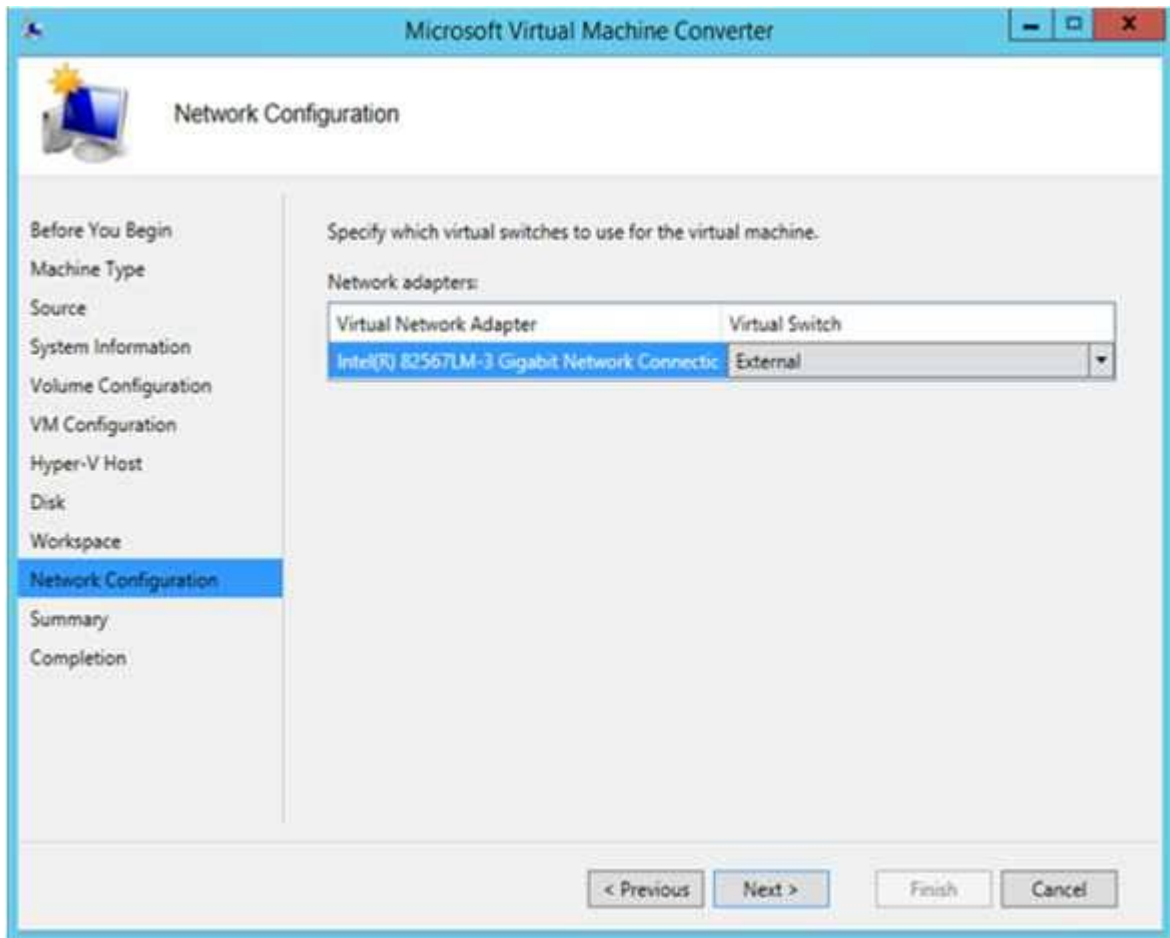


Figure 8B. The Workspace page

12. On the **Network Configuration** page, select any virtual switches to use for the target virtual machine, and then click **Next**.

Note

If the Hyper-V host doesn't have any virtual switches, the network adapters on the virtual machine will be **Not Connected**.



- 13.
14. Figure 9B. The Network Configuration page
15. On the **Summary** page, review the details, and then click **Finish** to complete the conversion. If errors appear, review them before you proceed with the conversion.

When the virtual machine conversion has finished successfully, the **Completion** page appears.

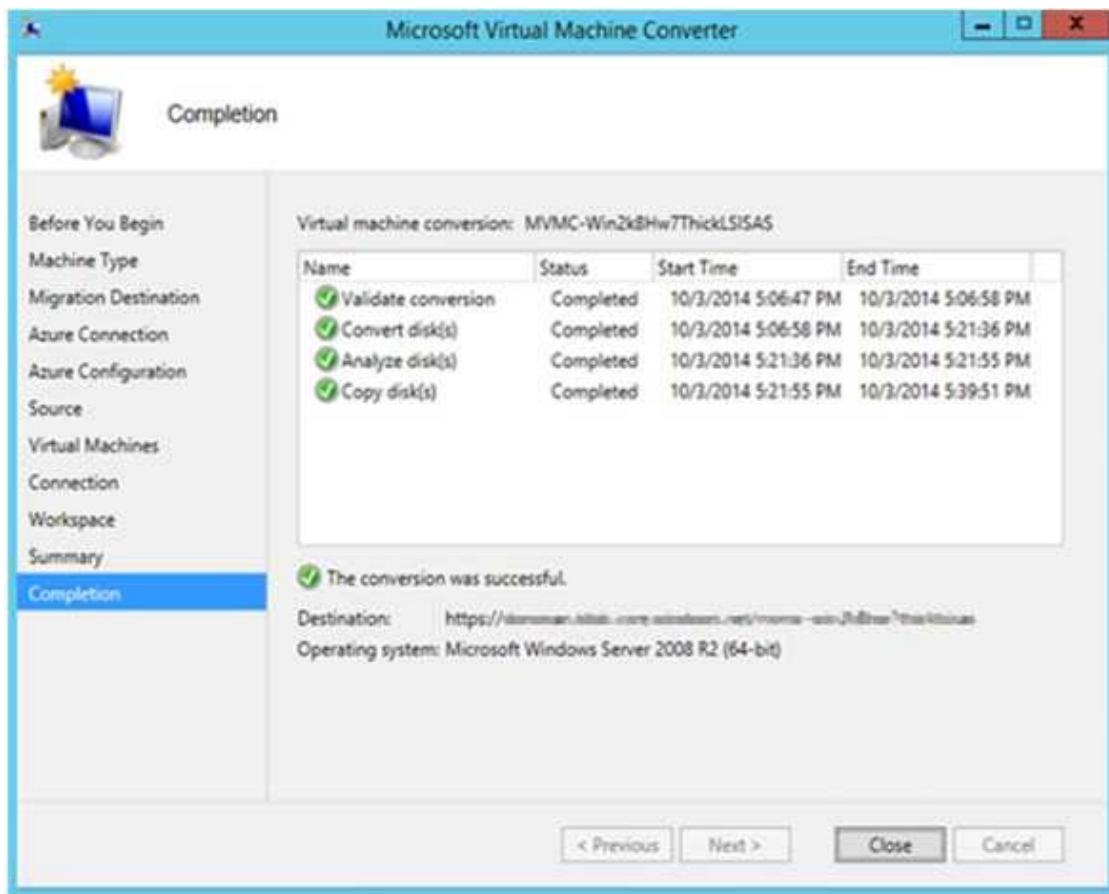


Figure 10B. The Completion page

16. On the **Completion** page, when the virtual machine conversion is complete, click **Close**.

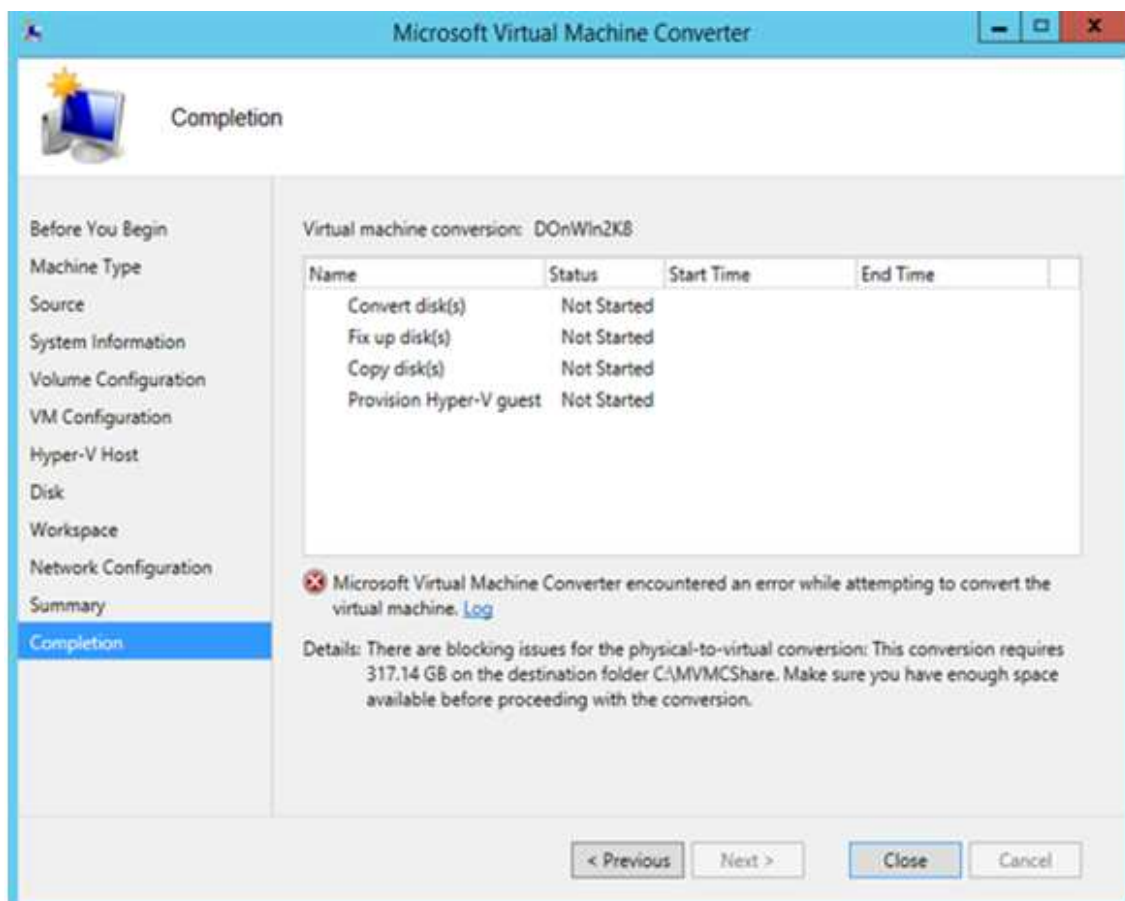


Figure 11B. The Completion page showing in error with a link to the log file

Convert physical machines to Hyper-V by using Windows PowerShell

Before using the MVMC cmdlets, you must do the following:

- Run the MVMC Windows PowerShell cmdlets on Windows Server 2012 R2 or Windows Server 2012. You can also run MVMC Windows PowerShell cmdlets on Windows Server 2008 R2 with SP1 provided that you installed Windows PowerShell 3.0 and Microsoft .NET Framework 4.
- Import the MVMC Windows PowerShell module manifest from the MVMC installation location. Run the following example command:

```
PS C:\> Import-Module "C:\Program Files\Microsoft Virtual Machine Converter\MvmcCmdlet.psd1"
```

For more information about using the Windows PowerShell cmdlets, see the Windows PowerShell cmdlet Help. The following script example is provided as a reference.

Note

All of the *italicized* variables need to be substituted with actual values.

Sample Script

```
## Create the credentials
$user = 'domain\username'
$pass = convertto-securestring 'Password' -asplaintext -force
$cred = new-object pscredential ($user, $pass)
## Import the module
Import-Module "C:\Program Files\Microsoft Virtual Machine Converter\MvmcCmdlet.psd1"

$SourceMachine = 'SourceMachineName'

$VMName = 'NameOfTheVM'

## Get system information and logical drives
$conn = new-mvmcp2vsourceconnection -physicalserver $SourceMachine -sourcecredential $cred
$sys = Get-MvmcP2VSourceSystemInformation -P2VSourceConnection $conn
$lcs = $sys.LogicalDrives
$lcs | ft driveletter
$nads = $sys.NetworkAdapters

## Create the P2V target VM configuration
$p2vparam = New-MvmcP2VRequestParam

## Disks created for the VM are "Dynamic" by default. To explicitly change the disk(s)
## to ## be fixed disks, the following step should be done.
## $lcs[0].IsFixed = $true

$p2vparam.SelectedDrives.AddRange($lcs)
$p2vparam.CpuCount = 1 ##Number of Processors on the destination VM
$p2vparam.StartupMemoryInMB = 512 ##Memory for the destination VM
$p2vparam.SelectedNetworkAdapters.add($nads[0], "NameOFVSwitch") ##VSwitch Name on
the HyperV Host

$HyperVHostName = 'NameOFDestination'
$HyperVHostUser = 'domain\username'
$HyperVHostPass = convertto-securestring 'Password' -asplaintext -force
$HyperVHostCred = new-object pscredential ($HyperVHostUser, $HyperVHostPass)

$hvconn = New-MVMCHyperVHostConnection -HyperVServer $HyperVHostName -HostCredential
$HyperVHostCred

$DestinationPath = 'path' #This can be a local path (c:\VMPATH), if the converter and
host are the same machine, else only a share path (\\Server\Share)
```



```
$TempWorkingFolder = 'tempPath' #this path is used for disk fixups, and must be a local path (c:\temp)
```

```
## P2V conversion  
ConvertTo-MvmcP2V -SourceMachineConnection $conn -DestinationLiteralPath  
$DestinationPath -DestinationHyperVHostConnection $hvconn -TempWorkingFolder  
$TempWorkingFolder -VmName $VMName -P2VRequestParam $p2vparam -Verbose -Debug
```

New cmdlets for MVMC 3.0

For a full list of the new cmdlets for MVMC 3.0, see [MVMC – Virtual Machine Conversion Cmdlets](#).

Troubleshoot Microsoft Virtual Machine Converter

1 out of 7 rated this helpful - [Rate this topic](#)

Updated: May 1, 2015

Applies To: Hyper-V Server 2012, Windows Server 2012 R2, Windows Server 2012, Hyper-V Server 2012 R2, Azure, Windows Server 2008 R2 with SP1

This section provides information about common or known issues that you might experience while you are using Microsoft Virtual Machine Converter and information about the techniques that you can use to troubleshoot these issues.

Use the MVMC log file

MVMC logs information and error details in the MVMC.log file in the user's Temp folder when MVMC is invoked through the user interface (UI).

Troubleshoot issues in the converter

Issue number 1

MVMC is not able to connect to an online Windows virtual machine.

- I get the following error when I run MVMC.exe:

"Microsoft.Accelerators.Mvmc.Engine.RpcServerUnavailableException: The RPC server is unavailable."
- I get an error when I click **Next** on the **Virtual Machine Connection** page in the MVMC Wizard.

Possible cause and solutions for issue number 1

Possible cause	Possible solutions
Remote access through Windows Management Instrumentation (WMI) is not enabled on the virtual machine.	Windows Management Instrumentation Ensure that Windows Management Instrumentation (WMI) is allowed through Windows Firewall . To allow WMI

1. Click **Start**, and then click **Control Panel**.
2. Click **Windows Firewall**, and then select **Allow a program through Windows Firewall**.
3. In the list of allowed programs and features, select **Windows Management Instrumentation**, and then select the **Domain** check box.

To enable WMI through Group Policy settings, enable the Remote Administration exception for computers that have **Windows Firewall** enabled. This exception opens TCP port 135. If you have another host firewall installed, you have to allow network traffic through this port.

To enable remote administration

1. Click **Start**, and then click **Run**. In the **Open** box, type **gpedit.msc**, and then click **OK**.
2. Under **Console Root**, expand **Computer Configuration > Administrative Templates > Network > Network Connections > Windows Firewall**, and then click **Domain Profile**.
3. Right-click **Windows Firewall: Allow remote administration exception**, and then click **Properties**.
4. Click **Enabled**, and then click **OK**.

File and Printer Sharing exception

Enable the File and Printer Sharing exception for computers that have **Windows Firewall** enabled. This exception opens TCP ports 139 and 445 and User Datagram Protocol (UDP) ports 137 and 138. If you have another host firewall installed, you have to allow network traffic through these ports.

Other troubleshooting resources

The WMI Diagnosis Utility can help system administrators diagnose and repair problems with the WMI service. To provide some in-depth troubleshooting, download [WMI Diagnosis Utility](#).

Issue number 2

I get the message **UNC Path \\SERVERIP\Share is not valid or does not have write permission** in the **Summary** page of the MVMC user interface (UI), and I am unable to click **Finish** to start the conversion.

Possible cause and solution for issue number 2

Possible cause	Possible solution
The virtual machine on which you are running the conversion and the destination Hyper-V host are not members of the same Active Directory domain.	Ensure that the virtual machine on which you are running the conversion and the destination Hyper-V host are members of the same Active Directory domain.

Issue number 3

I was able to successfully convert a virtual machine but when I logged on to the converted virtual machine and opened the Disk Management console, I noticed that one or more disks that were attached to the converted virtual machine were set to offline.

Possible cause and solutions for issue number 3

Possible cause

The guest operating system that is installed on the converted virtual machine is Windows Server 2008 R2 Datacenter, Windows Server 2008 R2 Enterprise, Windows Server 2008 Datacenter, or Windows Server 2008 Enterprise, with one or more disks that are connected to the SCSI controller.

This issue is due to a default policy setting on the guest operating system called VDS_SP_OFFLINE_SHARED that sets these nonbootable disks to offline.

For more details about the policy, see [article 971436](#) in the Microsoft Knowledge Base.

Possible solutions

To bring the disks online by using Diskmgmt.msc

1. To open the Disk Management console, run **Diskmgmt.msc** at a command prompt or type it into the **Run** dialog box on the **Start** menu.
2. Right-click the disk that you want to bring online, and then click **Online** on the **Action** menu.

To bring the disk online by using DiskPart.exe

1. Run DiskPart.exe.
2. Select the disk that has to be made available. Select **Disk <disk #>**.
3. If the disk is offline, bring it online by running **Online Disk**.
4. View the attributes by running **Detail Disk**.

Issue number 4

I see warnings in Device Manager when I log on to the converted virtual machine.

Possible cause and solution for issue number 4

Possible cause

Drivers are missing or not installed correctly on the converted guest operating system.

Possible solution

Repair the installation of the integration services.

To repair the installation of the integration services

1. Insert the Integration Services Setup disk through the Hyper-V console.
2. Click **Repair** to repair the installation.
3. Restart the guest operating system when

you are prompted.

Issue number 5

I am unable to contact an online Linux virtual machine through the MVMC user interface (UI) or when I run the `Convertto-MvmcVirtualHardDiskOvf` with the `UninstallVMTools` switch.

Possible cause and solution for issue number 5

Possible cause

Possible solution

To verify that SSH port 22 is enabled

SSH port 22 might not be enabled on the Linux source virtual machine.

1. If connecting by host name does not work, try connecting by IP address.
2. If WinSCP connects to the Linux source virtual machine by IP address, then there is a DNS name resolution issue that must be fixed before the conversion can proceed.
3. If WinSCP cannot connect to the Linux source virtual machine by host name or IP address, check the firewall settings for that Linux distribution and ensure that port 22 is open.

Issue number 6

I am unable to see the list of virtual machines in the **Virtual Machines** page in the MVMC user interface (UI). MVMC displays the error message **Receiving response from VMware failed after multiple attempts. See inner exception.**

Possible cause and solution for issue number 6

Possible cause

Possible solution

To see the list of virtual machines

This error might be due to a temporary connectivity issue with the VMware source server.

1. Wait a few minutes, and then refresh the virtual machine inventory in the MVMC GUI.
2. Click **Previous**, go back to the **Source** page, and reconnect to the source host.
3. Close the GUI, and then try running the GUI again.

Issue number 7

I am unable to connect to either a Windows or Linux virtual machine so that MVMC can uninstall VMware Tools as part of the conversion process. On the **Virtual Machine Connection** page, all of the controls are in a disabled state.

Possible causes and solutions for issue number 7

Possible causes

Possible solutions

- The Windows or Linux virtual machine is in an offline state.
- MVMC cannot connect to offline virtual machines and therefore does not uninstall VMware Tools if the virtual machine is offline. If you want VMware Tools to be automatically uninstalled as part of the conversion, ensure that the source virtual machine is in a running state.
- Check or configure the DNS settings for the virtual machine.
- The virtual machine does not have a valid domain name system (DNS) entry or fully qualified domain name (FQDN).

Issue number 8

My progress indicator shows 80 percent completion in the Validate Conversion step and does not proceed beyond that.

Possible cause and solution for issue number 8

Possible cause	Possible solution
You might have an ISO file mounted from the network share on the source virtual machine.	Check the source virtual machine to determine if any user interaction is required. You should be able to continue with the conversion after you delete any pop-up windows in the source virtual machine.

Issue number 9

My converted Linux virtual machine does not recognize the Ethernet network adapters.

Possible cause and solution for issue number 9

Possible cause	Possible solution
The Hyper-V network adapter MAC address settings do not match those of the original VMware Linux virtual machine.	<p>To match the Hyper-V network adapter MAC address settings to the original VMware Linux virtual machine</p> <ol style="list-style-type: none"> 1. Turn off the converted Linux virtual machine. 2. Update the Hyper-V network adapter MAC address settings to match those of the original VMware Linux virtual machine. 3. Turn on the converted Linux virtual machine.