# vCenter Converter Standalone 6.6

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# Release Notes

Includes product enhancements and notices, bug fixes, and resolved issues.

## VMware vCenter Converter Standalone 6.6 Release Notes

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### Introduction

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### What's in the Release Notes

The release notes cover the following topics.

### What is New

- Added support for powered on virtual machines running under Red Hat KVM and Nutanix AHV.
- Migrated the vCenter Converter helper ISO to Photon OS operating system.
- Added support for Red Hat Enterprise Linux 8.0 (64-bit) and later minor versions.
- Added support for Red Hat Enterprise Linux 9.0 (64-bit) and later minor versions.
- Added support for Ubuntu Linux 18.04 LTS (64-bit).
- Added support for Ubuntu Linux 20.04 LTS (64-bit).
- Added support for Ubuntu Linux 22.04 LTS (64-bit).
- Updated the icons in the graphical user interface.

### About vCenter Converter Standalone

VMware vCenter Converter Standalone provides an easy-to-use solution that automates the process of creating VMware virtual machines from physical machines (running Windows and Linux) and other virtual machine formats. Through an intuitive wizard-driven interface and a centralized management console, Converter Standalone can quickly and reliably convert multiple local and remote physical machines without any disruptions or downtime.

- Convert physical machines running Windows or Linux operating systems to VMware virtual machines quickly and without any disruption or downtime.
- Enable centralized management of remote conversions of multiple physical servers or virtual machines simultaneously.
- Ensure conversion reliability through quiesced snapshots of the guest operating system on the source machine before data migration.
- Enable non-disruptive conversions through hot cloning, with no source server downtime or reboot.

### Installation and Upgrade

You can download, install, and run VMware vCenter Converter Standalone in English only.

Users with limited rights cannot install Converter Standalone on Windows. You must log in as an elevated administrator to install Converter Standalone.

**Product Interoperability**

For the most up-to-date interoperability of Converter Standalone with VMware Desktop products and VMware vCenter virtual machines, check the VMware Product Interoperability Matrix. In addition, Converter Standalone 6.6 supports as sources physical machines running an operating system noted in the *Supported Guest Operating Systems* section.

**Note:** The interoperability information for VMware Workstation Player is published under the VMware Workstation product with matching versions. For example, for interoperability with VMware Workstation Player 17.5, see VMware Workstation 17.5.

**Supported Platforms**

You can install VMware Converter Standalone 6.6 on the following platforms:

- Windows Server 2012 (64-bit)
- Windows Server 2012 R2 (64-bit)
- Windows 10 (32-bit and 64-bit)
- Windows Server 2016 (64-bit)
- Windows Server 2019 (64-bit)
- Windows 11 (64-bit)
- Windows Server 2022 (64-bit)

VMware Converter Standalone can convert offline virtual machines from the following Hyper-V servers:

- Windows Server 2012 (64-bit)
- Windows Server 2012 R2 (64-bit)
- Windows 10 (64-bit)
- Windows Server 2016 (64-bit)
- Windows Server 2019 (64-bit)
- Windows 11 (64-bit)
- Windows Server 2022 (64-bit)

VMware Converter Standalone can convert offline virtual machines from the following VMware products and versions:

- VMware vSphere 7.0
- VMware vSphere 7.0 (Update 1)
- VMware vSphere 7.0 (Update 2)
- VMware vSphere 7.0 (Update 3)
- VMware vSphere 8.0
- VMware vSphere 8.0 (Update 1)
- VMware vSphere 8.0 (Update 2)
- VMware Workstation 17 and 17.5
- VMware Fusion 13 and 13.5

**Supported Guest Operating Systems**

Converter Standalone 6.6 supports the following guest operating systems:

- Windows Server 2012 (64-bit)
- Windows Server 2012 R2 (64-bit)
- Windows 10 (32-bit and 64-bit)

- Windows Server 2016 (64-bit)
- Windows Server 2019 (64-bit)
- Windows 11 (64-bit)
- Windows Server 2022 (64-bit)
- CentOS 6.x (32-bit and 64-bit)
- CentOS 7.x (64-bit)
- Red Hat Enterprise Linux 6.x (32-bit and 64-bit)
- Red Hat Enterprise Linux 7.x (64-bit)
- Red Hat Enterprise Linux 8.x (64-bit)
- Red Hat Enterprise Linux 9.x (64-bit)
- Ubuntu 14.04 LTS (32-bit and 64-bit)
- Ubuntu 16.04 LTS (32-bit and 64-bit)
- Ubuntu 18.04 LTS (64-bit)
- Ubuntu 20.04 LTS (64-bit)
- Ubuntu 22.04 LTS (64-bit)

**CAUTION:** During cloning of powered on Linux machines, Converter Standalone preserves the following source file systems on the destination: ext2, ext3, ext4, reiserfs, vfat, and xfs. All other source file systems are converted into ext3 or ext4 file systems on the destination virtual machine.

For more information about the operating systems supported by Converter Standalone and other system requirements, see [VMware vCenter Converter Standalone System Requirements](#).

## Product Support Notice

Support for authenticating with RSA SHA1 algorithms is deprecated. Instead, you can use newer algorithms or switch to password-based authentication.

## Customer Experience Improvement Program

This product participates in VMware's Customer Experience Improvement Program ("CEIP"). Details regarding the data collected through CEIP and the purposes for which it is used by VMware are set forth at the Trust & Assurance Center at https://www.broadcom.com/company/legal/privacy/data-usage-programs/ceip. To join or leave the CEIP for this product, please start Converter Standalone and select **Customer Experience Improvement Program** from the **Administration** menu on the toolbar. Select the check box to join the CEIP or deselect the check box to leave the program.

**Note:** You can join the CEIP during the installation of vCenter Converter Standalone.

## Caveats and Limitations

- vCenter Converter Standalone 6.5 does not exist. Version 6.5 is skipped on purpose to avoid possible confusion with VMware vSphere 6.5.
- vCenter Converter Standalone supports source and destination disk drives with 512B (512e and 512n) disk sector size only. 4K native (4Kn) disk drives are not supported.

## Resolved Issues
### Converter Standalone fails to start when installed on a computer without internet access

After you install Converter Standalone on a computer without internet connection, Converter Standalone services fail to start. The following message is displayed: `Error 1053: The service did not respond to the start or control request in a timely fashion`. This issue occurs because the DNS server is not able to resolve host names online and the file integrity check exceeds the default timeout of 30 seconds due to failed access to public certificate authority stores. This issue is resolved in this release.

**After a P2V conversion of an Ubuntu Linux machine, the converted machine might not start**

When you convert an Ubuntu Linux machine and the root volume is a logical volume, the start of the converted VM might fail with an error message: `"Kernel panic - not syncing: VFS: Unable to mount root fs on unknown-block(0,0)"`. This issue is resolved in this release.

**After a P2V conversion of a Linux machine, the converted machine might not start**

When the converted VM starts, the boot screen displays error messages with repeating lines containing the following error: `can't find command `:'`. This issue is resolved in this release.

**Reconfiguration of Linux VM fails at 97-98%, with message: "Error: Unable to reconfigure the destination virtual machine" and the status contains "message: FATAL: kernel too old"**

Some Linux distributions have unsupported combinations of Linux kernel and grub loader. This issue is resolved in this release.

**Destination virtual machine might not boot if you change the disk controller type while converting a Linux virtual machine**

In Linux virtual machines, the root device can be defined using the block device name (such as `/dev/sda1`) in `/boot/grub/grub.conf`, `/boot/grub/menu.lst`, or `/etc/fstab`. If you change the disk controller type while converting the virtual machine, the destination virtual machine might not boot. This is because the root device now has a different name (for example, it might have been changed to `/dev/hda1`). This issue is resolved in this release.


<u>**Known Issues**</u>

The known issues are grouped as follows.


<u>**Installation**</u>
**Converter Standalone installation fails when the selected installation folder name contains non-ASCII characters**

Converter Standalone installation fails if the installation folder name contains non-ASCII characters and the OS locale is different from the locale of the characters. If there are characters from two different locales mixed in the folder name, the installation fails because there is always a character with different locale than the OS locale.

Workaround: Make sure that all the non-ASCII characters in the folder name are from the same locale as the OS locale.

**If the name of the Converter Standalone installation directory contains non-ASCII characters, you might experience conversion and configuration problems**

If the name of the Converter Standalone installation directory contains non-ASCII characters, the following issues might occur:

- Conversion and configuration of Windows virtual machines might fail with an error message `Unable to reconfigure destination virtual machine`. In the `vmware-converter-worker.log`, this error generates a message similar to `Error 3 (error restoring key: Unknown error 3 (0x3) (3)) restoring registry key C:\ã—ã™ãŸã•ã‹ãnÂ°...\data\SKUNKWORKS_FILLER into...`.
- If you try to convert a Linux physical machine, you might receive an error message in the **Convert Machine** wizard `Unable to obtain hardware information`.

Workaround: None.

**You must restart machines that run 64-bit Windows Vista or later before reinstalling Converter Standalone**

If you uninstall Converter Standalone from a 64-bit Windows Vista, Windows Server 2008, or Windows 7 machine and do not restart it, a subsequent Converter Standalone installation might fail with the following error message: `Error 29144. Could not install service Vstor2 MntApi 1.0 Driver (shared). Please reboot and try to install again.`

Workaround: Restart the Windows Vista, Windows Server 2008, or Windows 7 machine and try installing Converter Standalone again.

**Users with limited rights cannot install Converter Standalone on Windows**

If you are logged in to Windows as a non-administrator user, the following error message is displayed while the InstallShield is extracting files for Converter Standalone installation: `Unable to save file: C:\WINDOWS \Installer\ The system cannot find the path specified`. The error is displayed because limited user accounts do not have the required write permissions.

Workaround: Select the `%TEMP%` directory to extract the installation files:

1. Click **OK** in the error message. A Save As dialog box appears.
2. Browse to the `Temp` folder of the current user (for example, `C:\Documents and Settings\"username"\Local Settings\Temp` ) and click **OK**.

NOTE: You still need to log in as an administrator to install Converter Standalone.

## General
### Disk-based cloning of a powered off machine image to a Virtual Volumes datastore destination might fail

You might not be able to perform a disk-based cloning of a powered off machine image to a Virtual Volumes datastore destination. The conversion might fail at 1% with a message `Operation experienced network error` if the size of the source disk is not a number that is a multiple of a MB.

Workaround: Use volume-based cloning, if the option is available.

**Creation of virtual machine with thick destination disk type of certain size fails on VSAN datastore even if it seems to have enough space**

If you try to perform disk-based conversion with thick destination disk type of certain size on VSAN datastore, the creation of virtual machine might fail with the following error `'converter.fault.InsufficientManagedDiskSpace'` , even if it seems to have enough space.

Workaround: Change the destination disk type to thin.

**If you try to convert a source physical or virtual machine to a managed destination by using thick provisioned disks with large empty spaces on them, the conversion task might fail**

If you try to perform a disk-based cloning of a physical or virtual machine to a managed destination by using thick provisioned disks with large empty spaces on them, the conversion task might fail with an error message `Unable to clone disk` *source_disk* `on the virtual machine` *virtual_machine_name* . The following messages appear in the log file:

```
[03200 warning 'Default'] [,0] [NFC ERROR] NfcNetTcpRead: bRead: -1[03200 warning
'Default'] [,0] [NFC ERROR] NfcNet_Recv: requested 264, recevied only 0 bytes[03200
warning 'Default'] [,0] [NFC ERROR] NfcFile_Stream: Failed to get message from
source[03200 warning 'Default'] [,0] [NFC ERROR] NFC_NETWORK_ERROR
```

The destination ESXi server must return an acknowledgement after each processed NFC write request. If the source sends a large block of zeroes that must be written it might take a long time for the ESXi to return the acknowledgement. Thus, the Converter assumes that the operation has timed out and closes the connection, no matter that the ESXi server is still writing to the target disk.

Workaround: Change the destination disk type to thin.

**A running P2V conversion job fails if you create a new conversion job for the same Windows source machine and use a different port to deploy the Converter Standalone agent**

If, while running a P2V conversion job, you start creating another conversion job for the same powered on Windows source machine, and specify a port for the connection, Converter Standalone deploys the Converter Standalone agent

using the port you specified. If the connection port is different from the one that is being used for the already running conversion job, both jobs fail. The following error message appears in the Job summary tab for the first conversion job: `FAILED: A general system error occurred: No connection could be made because the target machine actively refused it`. The following error message appears in the Job summary tab for the second conversion job: `FAILED: Unable to create a VSS snapshot of the source volume(s). Error code: 2147754774 (0x80042316)`.

Workaround: None.

**You cannot copy running conversion or configuration jobs**

If you open the Copy As New wizard for a running configuration or conversion job when the source is a virtual machine or a backup image and you click **Next**, the wizard displays the error message `Unable to obtain hardware information for the selected machine`.

Workaround: Wait for the job to complete before selecting **Copy as New** in its pop-up menu.

**Linked Cloning of source images greater than 2 GB to a network share that does not support large files fails**

Creating linked clones from source images that are larger than 2 GB to a network share that does not support large files (for example, to a Linux SMB share) fails. Converter Standalone does not split the source files into smaller chunks. If the source is larger than the supported file size on the destination, the conversion tasks fails.

Workaround: None.

**Creating a conversion job to convert a standalone VMware source with a VMDK file greater than 2 GB from a network share that does not support large files, fails**

If you select a standalone virtual machine source with VMDK file greater than 2 GB residing on a remote network location that does not support large files (for example, Linux SMB share), the following error message appears in the Converter wizard on clicking **Next** or **View source details**: `Unable to obtain hardware information for the selected machine`.

Workaround: Map the network shared folder to the machine where Converter Standalone runs, and select the source from there.

**Converter Standalone cannot detect the power state of VMware Workstation or other VMware hosted source virtual machines if they are located on a read-only network share**

If the source machine is a Workstation or another VMware hosted source and is located on a network share with read-only permissions, Converter Standalone cannot detect if the source is powered on or suspended. This might lead to data inconsistency on the destination machine if changes are made to the powered on source virtual machine during conversion.

Workaround: Perform one or more of the following tasks.

- Verify that the source virtual machine is powered off prior to conversion.
- Provide write privileges to the network share where the source virtual machine resides.

**Converting source volumes with unrecognized file systems might prevent the destination virtual machines from starting**

While you are setting up a volume-based cloning task in one of the Converter Standalone wizards, the volume name might be missing in some rows of the **Source Volumes** tab. This means that Converter Standalone does not recognize the file system on those volumes. The destination virtual machine that is created as a result of such a conversion task might fail to start up. Nevertheless, Converter Standalone copies the source volume data to the destination using block-level copying.

Workaround: Configure the destination virtual machine after the conversion.

**Converting standalone VMware sources with a VMDK file greater than 2 GB to a hosted destination that resides on a network share that does not support large files, fails**

If you select a standalone virtual machine source with VMDK file greater than 2 GB and try to convert it to hosted destination residing on a remote network location that does not support large files (for example, Linux SMB or NFS share), the conversion job might fail with one of following error messages:

- `Unable to connect to the virtual disk`
- `Remote server closed connection after 0 response bytes read`
- `An error occurred during an operation on a virtual disk`

If conversion is successful, the following error message related to the VMDK file might appear when you power on the destination virtual machine: `Internal Inconsistency errors`

Workaround:

1. In the main application window of Converter Standalone, right-click the failed job and select **Copy As New...**
2. Go to the Options page and select **Data to Copy**.
3. In the Data to Copy pane, select the volumes to copy and click **Advanced**.
4. On the **Destination layout** tab, select **Split not pre-allocated** or **Split pre-allocated** as the destination disk type.
5. Click **Next** to view a summary of the conversion job.
6. On the Ready to Complete page, click **Finish** to resubmit the job.

**Converter Standalone is unable to detect the system volume if it resides on a SCSI disk and IDE disks are present in the source machine**

On source machines with SCSI and IDE disks, Converter is unable to detect the system volume if the system volume resides on a SCSI disk. Converter only checks the first IDE disk in such configurations.

Workaround: None.

**If the hardware configuration of the source machine is modified while the Conversion wizard is open, you need to restart the conversion wizard if you want to view correct source details**

Source machine details are retrieved per wizard session, as this is a time-consuming process. If some changes occur on the source machine (such as adding memory or hard drives) after this information is retrieved, the Conversion wizard does not show information about the changes.

Workaround: Restart the conversion wizard.

**Cloning a source that contains file system errors might result in a damaged virtual machine**

See Cloning a source that contains file system errors may result in a damaged copy (KB 1006689).

**Timeout on SSL handshake when converting over a WAN link**

Converter Standalone does not support conversion over a WAN. When trying to perform a conversion over a WAN link, you might experience an SSL timeout because the timeout for SSL handshakes is two minutes.

Workaround:

1. To avoid the two-minute handshake, perform a conversion to a hosted destination machine (for example, Workstation) in the same LAN.
2. Copy the temporary virtual machine and send it over the WAN to the remote site.
   If the intended destination is a Workstation virtual machine, this completes the process.
3. If the intended destination is ESXi, import the Workstation virtual machine to the ESXi server.

**The Reconfigure Virtual Machine wizard does not display correctly the vDS port group name**

When you reconfigure a virtual machine that uses dvSwitch and you navigate to the Network interface settings pane, the Network name text box does not display the name of the dvSwitch after the port group name. Only `port group` is displayed instead.

Workaround: None.

**The reported network transfer rate might not be correct**

The reported network transfer rate might be higher than the actual one because of the inherent compression used by the network protocol. This does not affect the network throttling.

Workaround: None.

**Multiboot configurations are not supported for conversion**

Converter does not recognize proper boot and system volumes in multiboot source machines due to the multiple choices and the reconfiguration of the virtual machine might fail.

Workaround: Remove the multiboot configuration and leave only one to be converted.

## Windows Sources
**When starting a Windows P2V conversion with synchronization, an error message might be displayed**

On the **Options** page of the vCenter Conversion wizard, if **Data to copy** in selected in the options list, some volumes might be displayed by default as `Min size`. When starting a volume-based conversion of a Windows source machine, vCenter Converter treats these volumes as resized and triggers file-level cloning. As a result the conversion operation might fail with the following error message: `Synchronization cannot be enabled if one or more volumes require file-level cloning.`

Workaround: Perform the following tasks.

1. In the vCenter Conversion wizard, on the **Options** page, click **Data to copy**.
2. Ensure that all volumes have **Destination size** set to `Maintain size.`

**A conversion operation might fail with an error message**

When Microsoft Windows operating system fails to create a VSS snapshot of a mirrored volume, that is formatted with FAT or FAT32 file system, the conversion operation in vCenter Converter might fail with the following error message: `FAILED: Unable to create a VSS snapshot of the source volume(s).`

Workaround: Before the conversion operation, perform one or more of the following tasks.

- Exclude the mirrored FAT or FAT32 volume.
- Break the mirrored volume on the source machine.

**After a successful conversion of a Windows machine that uses LDM, mounted volumes without drive letters on the source machine might be presented with drive letters on the destination machine**

This is expected behavior. During the conversion process, vCenter Converter assigns drive letters to all volumes on the destination machine.

Workaround: Remove the drive letters, then mount the volumes to the desired folders.

**Conversion operation of a Windows machine with EFI firmware and a mirrored system volume might fail**

The conversion operation might fail at 96% - 98% for powered on or volume-based powered off Windows machines with UEFI firmware, where the system volume resides on a mirrored dynamic disk. The following error message appears in the status line of the task progress tab: "`FAILED: Unable to find the system volume, reconfiguration is not possible.`"

Workaround: Before the conversion, remove the mirroring on the source machine.

**During a conversion operation, the services that run on source machine, might fail to stop**

During the final synchronization of a Windows P2V conversion operation, the services on the source machine might fail to stop and no error or warning message is displayed.

Workaround: Before the final synchronization, stop the services manually.

**When converting a remote Windows Server 2012 or Windows Server 2008 R2 machine, the conversion operation might fail**

During the conversion operation of a remote Windows Server 2012 or Windows Server 2008 R2 machine, vCenter Converter might fail to deploy the Converter agent with the following error message: `Unable to complete Converter agent installation on ... Error code: 1603`. The manual installation of the agent on the source machine might fail with the following error message: openssl.exe - System Error The program can't start because api-ms-win-crt-stdio-l1-1-0.dll is missing from your computer. Try reinstalling the program to fix this problem.

Workaround: Perform one or more of the following tasks.

- Install the latest Windows updates on the source machine.
- In the operating system of the source machine, download and install Visual C++ Redistributable for Visual Studio 2015.

**During a cloning operation of a remote Windows machine, the deployed vCenter Converter agent service might not start.**

After deployment of the vCenter Converter agent, the agent might fail to start with the following error message: `Unable to complete Converter agent installation on ... Error code 1603`.

Workaround: Wait for a few seconds and retry the operation.

**A volume-based conversion operation of a Windows Server 2019, Windows Server 2022, or Windows 11 machine with EFI firmware to hosted destination, such as VMware Workstation, VMware Player, or VMware Fusion, might fail**

This is a conversion limitation, and the error is due to vCenter Converter not being able to clone the ESP (EFI system partition). Typically, the conversion operation fails at 1% with the following error in the status line of the task progress tab: `FAILED: An error occurred during the conversion: 'Cannot format volume.'`

Workaround: None.

**A converted virtual machine might enter the BIOS screen instead of starting**

The converted machine might not start, if the source is a powered off VM with a non-bootable disk on IDE controller, the bootable disk is on IDE controller, and the conversion is set to preserve disk controllers.

Workaround: In the properties of the converted virtual machine, change the controller type of bootable disk to SATA or SCSI.

**When converting an offline Windows 11 machine or Windows machine with encryption on the disk or the hypervisor policy, the conversion operation might fail**

The conversion operation might fail with the following error message: `FAILED: An error occurred during the conversion: 'Unable to open destination disk'`.

Workaround: In the vSphere inventory, locate the virtual machine and change the encryption options.

1. From the vSphere Client home page, select Hosts and Clusters.
2. In the vSphere inventory, right-click the virtual machine that you want to modify and select **Manage Snapshots**.
3. In the Snapshot Manager, select **Delete all**.
4. In the vSphere inventory, right-click the virtual machine that you want to modify and select **Edit Settings**.
5. On the **Virtual Hardware** tab, expand **Hard disk**, and change **VM storage** policy to Datastore Default or any policy without encryption.
6. On the **Virtual Hardware** tab, locate the **Trusted Platform Module** entry, move your pointer over the device and click the **Remove** icon.
7. On the **Virtual Hardware** tab, click **Delete** to confirm you want to remove the device.
8. On the **VM Options** tab, expand **Encryption**.
9. From the **Encrypt VM** drop-down menu, select None.
10. Deselect the check box for **Virtualization Based Security**.

11. Click **OK**.

**After a successful conversion of a powered-on Windows source machine, one or more volumes might be missing from the destination machine**

After a successful conversion of a powered-on Windows source machine, one or more volumes might be missing from the destination machine. This issue occurs if there are raw volumes on the source Windows machine because the Converter Standalone might not be able to detect them and might skip them during the query and the conversion.

Workaround: If the source machine has raw volumes, format them with a file system that is supported by the source's operating system before moving forward with the conversion.

**After a successful conversion of a Windows machine that uses LDM, the drive letters of dynamic volumes from the source machine might not be preserved on the destination virtual machine**

After the conversion of a Windows machine that uses LDM, the drive letters of dynamic volumes from the source machine might not match the drive letters of the corresponding volumes on the destination machine.

Workaround: You can assign drive letters to volumes manually. If the letter you wish to assign to a volume is already in use by another device, you can make it available either by assigning a different drive letter to this device or by removing the drive letter.

**Cannot virtualize a physical machine from within VMware Fusion 10.x**

Interoperability with VMware Fusion 10.x does not work.

Workaround:

1. Create a shared folder on the destination machine and give the local Administrators group full control.
2. Connect Converter to a host such as `localhost` and use a user from the local Administrators group.
3. Verify that the firewall, the UAC, and the remote-UAC are deactivated for the source and the destination machines.
4. Start the conversion job by selecting the source machine under **Powered on**: **This local machine** or **Remote Windows machine**.
5. Select as target **VMware Workstation or other VMware virtual machine** and then select the appropriate destination format **VMware Fusion 8.x**.

Note: For more details, see Select a Powered On Windows Machine to Convert, and Select a Hosted Destination in the vCenter Converter Standalone documentation set.

**Attempting to convert a remote Windows machine with Windows Vista or later with a remote administrative user results in "Permission denied" or "Unable to perform operation" errors, or the remote machine refuses to accept the administrator account**

When you attempt to convert a remote Windows machine with Windows Vista or later by deploying and using the Converter Agent, the installation of the agent results in `"Permission denied"` or `"Unable to perform operation"` errors, or if the Agent is installed on the remote machine, the machine refuses to accept the administrator account. This is the result of the Remote Connection UAC which does not allow administrators to perform administrative tasks when connected remotely.

Workaround: Deactivate the Remote Connection UAC.

1. Modify the policy.
   - For Windows Vista and Windows Server 2008, open the `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System` registry key and create or modify a `DWORD32` value `LocalAccountTokenFilterPolicy = 1`.
   - For Windows 7 and later, deactivate the policy named `"User Account Control: Run all administrators in Admin Approval Mode"` in `gpedit.msc:Computer Configuration/Windows Settings/Security Settings/Local Policies/Security Options/`.
2. Restart the source machine.

3.   Convert the machine, then restore the settings on the source and the destination machines.

**When customizing a Windows 10 or Windows Server 2016 machine, sysprep started by the customization process might fail**

When customizing a Windows 10 or Windows Server 2016 machine, sysprep started by the customization process might fail with the following error "`Windows installation encountered an unexpected error. Error code: 0xC0000005`" , making the target VM unusable.

Workaround: Do not apply customization on the target VM. Do the operations manually in the VM after the conversion.

**Customization might not be applied on Windows source machines**

After the conversion of a Windows source machine, the selected customization options are not applied on the resulting VM and the `c:\windows\system32\sysprep\panther\setuperr.log` file might be empty or contain the following lines similar to:

```
2015-12-04 01:51:21, Error SYSPRP Failed to remove staged package
Microsoft.Windows.Photos_15.1120.13270.0_x64__8wekyb3d8bbwe: 0x80070002.[gle=0x00000002]
2015-12-04 01:51:21, Error SYSPRP Failed to remove apps for the current user:
0x80070002.2015-12-04 01:51:21, Error SYSPRP Exit code of RemoveAllApps thread was
0x2.2015-12-04 01:51:21, Error SYSPRP Failed to remove all apps: 0x80070002.2015-12-04
01:51:21, Error [0x0f0082] SYSPRP ActionPlatform::LaunchModule: Failure occurred
while executing 'SysprepGeneralize' from C:\Windows\System32\AppxSysprep.dll;
dwRet = 0x22015-12-04 01:51:21, Error SYSPRP ActionPlatform::ExecuteAction:
Error in executing action; dwRet = 0x22015-12-04 01:51:21, Error SYSPRP
ActionPlatform::ExecuteActionList: Error in execute actions; dwRet = 0x22015-12-04
01:51:21, Error SYSPRP SysprepSession::Execute: Error in executing actions from C:\Windows
\System32\Sysprep\ActionFiles\Generalize.xml; dwRet = 0x22015-12-04 01:51:21, Error SYSPRP
RunPlatformActions:Failed while executing SysprepSession actions; dwRet = 0x22015-12-04
01:51:21, Error [0x0f0070] SYSPRP RunExternalDlls:An error occurred while running registry
sysprep DLLs, halting sysprep execution. dwRet = 0x22015-12-04 01:51:21, Error [0x0f00a8]
SYSPRP WinMain:Hit failure while processing sysprep generalize internal providers; hr =
0x80070002
```

Note: The error code `0x80070002` and the application `Microsoft.Windows.Photo` are used as an example and might be different in the `c:\windows\system32\sysprep\panther\setuperr.log` file on the resulting VM.

This is a result of multiple users logging in to the machine and installing or updating the Metro Apps.

Workaround: Perform one or more of the following tasks.

*   On the source machine, apply the workaround in Sysprep fails after you remove or update Windows Store apps that include built-in Windows images, and repeat the conversion operation.
*   On the destination machine, apply the workaround in Sysprep fails after you remove or update Windows Store apps that include built-in Windows images, and run the following command: `c:\windows\system32\sysprep \sysprep.exe /generalize /oobe /reboot /unattend:c:\sysprep\sysprep.xml`
*   After the conversion, configure the destination virtual machine and reapply the customization steps.

**Conversion job with no volume selected for shrinking fails with the following error message: 'An error occurred during the conversion: 'Block level cloning does not support shrinking volumes'**

Converting a Windows source that has an LDM volume that is larger than 2 TB and the first disk of the volume is an MBR disk fails with the following error message: '`An error occurred during the conversion: 'Block level cloning does not support shrinking volumes'` . Converter attempts to create an MBR disk larger than 2 TB on the destination but the limit of MBR disks is 2 TB.

The error does not occur on LDM volumes with a GPT first disk, because the destination disk type supports sizes larger than 2 TB.

Workaround: Convert the LDM volume at file level. Trigger the file-level cloning by shrinking volume size.

**Unsupported guest operating systems are labeled Other and fail to assign correct values for disk and network controllers**

If you convert a virtual machine that is running on a Windows 8, Windows 8.1, or Windows 10 guest operating system to ESXi version earlier than 6.0, the conversion results in a VM that cannot boot or does not have networking. The VM settings list the guest operating system as **Other** instead of Windows 8, Windows 8.1, or Windows 10.

Workaround: Perform one or more of the following tasks.

- Select a destination ESXi which supports Windows 8, Windows 8.1, or Windows 10.
- Manually select disk controller and network controller before conversion.

**If you convert a source machine with Windows 2008 and above operating system, some disk(s) may be offline or read-only**

If you convert a source machine with Windows 2008 and above operating system, some disk(s) in the destination VM may be offline or read-only.

Workaround:

- If the disk is offline, in the Disk Management console `diskmgmt.msc` , right-click the disk and select `Online` .
- If the disk is read-only, run `diskpart.exe` with administrator's rights, and then run the following commands:
  a. `DISKPART> list disk`
     Lists all disks and their status: online/offline.
  b. `DISKPART> select disk #`
     Where "#" is the number of disk in offline state.
  c. `DISKPART> attribute disk clear readonly`
  d. `DISKPART> online disk`
  e. Repeat steps 2-4 for every offline disk.
  f. `DISKPART> exit`

**Configuration of Windows virtual machines with multiple active partitions might not complete**

For Windows virtual machines with multiple active partitions, Converter Standalone might not recognize the boot partition and might not be able to complete the reconfiguration of the destination virtual machine. In such cases, after the conversion job is 96-98% complete, the conversion job status changes to Failed and an error message appears. For example: `FAILED: Unable to find the system volume, reconfiguration is not possible.` In the Worker/Agent log this issue is identified by the following statement: `[#### warning 'Default'] ERROR: [Mntapi_GetFirstBootDisk] more that *one* active volume found. Current active disk #0, another active disk #1` .

Workaround: Perform one or more of the following tasks.

- Mark all non-boot active partitions on the destination machine as inactive and run configuration on the destination machine.

1. Boot into Windows Recovery Console on the destination machine.
2. Run diskpart.exe.
   The diskpart command prompt appears.
3. (Optional) To list the available disks, enter `list disk` .
4. Enter `select disk <disk_number>` .
5. (Optional) To list the partitions on the selected disk, enter `list partition` .
6. Enter `select partition <partition_number>` .
7. Enter `inactive` .
8. Repeat steps 4-7 to mark another partition as inactive.

9. Power off the destination machine.
10. Run Converter Standalone and configure the destination machine.

- Mark all non-boot active partitions on the destination machine as inactive and run configuration on the destination machine.

1. On the source machine, run diskpart.exe.
   The diskpart command prompt appears.
2. (Optional) To list the available disks, enter `list disk`.
3. Enter `select disk <disk_number>`.
4. (Optional) To list the partitions on the selected disk, enter `list partition`.
5. Enter `select partition <partition_number>`.
6. Enter `inactive`.
7. Repeat steps 2-6 to mark another partition as inactive.
8. Run Converter Standalone and start the conversion again.

### Conversion of a local powered on source machine fails at 1%

If you select **This local machine** as a conversion source and a Converter Standalone agent from a previous Converter Standalone version is installed on the source machine, the conversion task fails at 1%. The following error message appears in the Status line of the **Task progress** tab: `FAILED: Unable to create a VSS snapshot of the source volume(s). Error code: 127 (0x0000007F)`. This is because the Converter Standalone installer cannot upgrade previous versions of Converter Standalone agents.

Workaround: Manually uninstall Converter Standalone agent from the source machine and create a new conversion task.

### Converter Standalone worker process stops responding if you try to copy a configuration job during guest operating system customization

If you right-click a running configuration job and select **Copy As New** while the destination machine is being customized, Converter Standalone worker process stops responding.

Workaround: Wait for the configuration job to complete before you copy it.

### Subsequent P2V conversions of remote source machines that run 64-bit Windows Vista or later might fail after a successful conversion

If you convert successfully a remote source machine that runs 64-bit Windows Vista, Windows Server 2008, or Windows 7 operating system and then try converting it again, the conversion fails with the error message `Converter Standalone Agent installation failed on x.x.x.x Error code: 1603`, where x.x.x.x is the IP address of the source machine. This error message might occur if automatic uninstall of remote Converter Standalone agent has been enabled during the first successful conversion.

Workaround: Restart the remote source machine and try running the conversion task again.

### Converter Standalone does not preserve disabled network adapters during conversion of physical machine sources that run on Windows

During P2V conversion of Windows source machines, Converter Standalone does not detect disabled network adapters on the source and does not preserve them on the destination virtual machine.

Workaround: On the Options page of the Converter Standalone wizard, click **Networks** to add network adapters to the destination virtual machine.

### Converter Standalone does not support cloning of powered on sources with Windows Server 2008 or later with FAT/FAT32 volume file system

VSS under Windows Server 2008 or later does not support FAT/FAT32. Trying to convert a FAT/FAT32 volume causes the conversion task to fail.

Workaround: Deselect all FAT/FAT32 volumes on the Options page of the Conversion wizard.

**Previous Converter versions cannot convert source machines that have Converter Standalone 6.x agent installed on them**

Converter Standalone 6.x agent is deployed on the source machine during conversion. If Converter Standalone 6.x agent is not uninstalled after the conversion, older Converter versions cannot deploy their agents on top of the newer Converter Standalone agent version. Therefore, you cannot use previous Converter versions to convert sources that have already been converted with Converter Standalone 6.x.

Workaround: Uninstall Converter Standalone 6.0 agent before trying to convert the source with an older Converter version.

**Owner name and organization are not displayed properly after customizing the guest operating system**

After customizing the guest operating system, Unicode characters used for owner name and organization on the Computer Information page do not appear the way they were set in the Conversion or the Configuration wizard.

For all Windows operating systems except Windows Vista, customization parameters such as user name and organization must use characters only from the local encoding of the default user profile of the guest. For example, you can use Japanese characters for the user name only on a guest whose default user profile's local encoding is set to Japanese. These restrictions do not apply to Windows Vista guests because Windows Vista uses a UTF-8 encoded XML file to store the Microsoft sysprep parameters. Earlier versions of Windows use the `sysprep.inf` file, and the Microsoft Windows mini-setup process reads that file in the local encoding only.

Workaround: Avoid Unicode characters when assigning owner name and organization name for the destination virtual machine.

**Converter can convert FAT/FAT32 volumes during hot cloning only if the source machine has at least one NTFS volume**

For source machines running under Windows versions earlier than Windows Server 2008, VSS can take snapshots of FAT/FAT32 volumes only if the source machine has at least one NTFS volume. For all operating systems that support volume-based cloning, you need at least one NTFS volume for VSS to work.

Workaround: None.

**Converter Standalone agent does not start automatically after reboot**

If the source machine starts up too slowly, Converter Standalone agent might not start automatically after the source machine is restarted.

Workaround: Start the Converter Standalone agent manually.

1. Right-click My Computer and select **Manage**.
2. In the Computer Management window, select **Services and Applications** > **Services** on the left.
3. In the list on the right, double-click **VMware Converter Standalone Agent**.
4. Click **Start** to start the process.
5. Click **Apply** followed by **OK**.

**Sysprep deletes drive letter mappings during customization**

If you choose customization options and the destination virtual machine fails at a Please Wait screen after the second sysprep reboot, you need to rerun the conversion task without customization. This issue occurs because of a problem with Microsoft sysprep, which deletes the drive letter mappings, preventing access to certain files.

Workaround: None.

**User Account Control (UAC) prevents installing Converter Standalone agent if you are not using the default Administrator account to connect to a powered on source machine**

If you are setting up a task to convert a powered on source machine that runs Windows Server 2008, Windows Vista, Windows 7, Windows Server 2012, or Windows 8 and you use a non-default Administrator account to log in to the source machine, the following error message might appear when you try to install Converter Standalone agent on the source machine: `Insufficient permissions to connect to xxxxxxx` . Here `xxxxxxx` is the IP address of the source machine. This is because Converter Standalone server cannot install Converter Standalone agent when UAC is activated and you are logged in to the source as non-default Administrator user.

Workaround: Deactivate the UAC on the source machine before you start the Conversion wizard. You can search the Microsoft Web site for procedures on deactivating the UAC depending on the source operating system. For Windows Server 2012 and Windows 8, in addition to deactivating UAC, you must perform the following steps:

1. In the Windows Start menu, type `gpedit.msc` . The **Local Group Policy Editor** opens.
2. Navigate to **Computer Configuration > Windows Settings > Security Settings > Local Policies > Security Options**.
3. Disable the **Run all administrators in Admin Approval Mode** setting.
4. Restart.

**Adding a virtual machine to a domain might fail if you specify a fully qualified user name**

When configuring a virtual machine, you might not be able to add the virtual machine to a domain if you use a fully qualified user name (DOMAIN_NAME\USER_NAME).

Workaround: Specify the user name without including the domain name.


**Linux Sources**
**After a conversion operation of a source machine with a volume that is formatted with `ext4` , the volume might be formatted with `ext3` in the destination machine.**

When the source machine is running a RHEL 6.x or Ubuntu 14.04 operating system and has volumes formatted with `ext4` file system, during the conversion process the volumes are formatted with `ext3` file system instead. The change of the file system occurs due to the migration of the vCenter Converter helper ISO to Photon OS operating system. The Converter helper service formats the volume with `ext3` file system to allow RHEL 6.x and Ubuntu 14.04 operating systems to read the volume after the conversion.

To preserve the `ext4` volume in the destination machine, convert the source machine by using vCenter Converter 6.4.

**After a conversion operation of a source machine with EFI secure boot enabled, the destination machine might not be able to start**

If secure boot is enabled, a converted machine might fail to start due to the version of the installed operating system and you might receive the following error message on the UEFI boot screen: `Attempting to startup from: <OS>..Security Violation.` , where **<OS>** is the operating system of the machine.

Workaround: Perform one or more of the following tasks.

• After the conversion operation, in the VM settings of the virtual machine, disable the secure boot feature.
• Before the conversion operation, in the vCenter Converter wizard, select a virtual machine hardware version 19 or earlier.
  Note: This workaround is not applicable to all operating systems.

**Conversion operation of a Linux machine where the boot volume resides on a BtrFS file system might fail**

The conversion might fail with an error message in the status line of the task progress tab similar to:

```
 'FAILED: An error occurred during the conversion: 'boost::filesystem::rename:
 No such file or directory, "/mnt/p2v-src-root/root/boot/initramfs-3.10.0-1160.el7.x86_64.img"'
```

If `/boot` is a directory in the root volume and the root volume is on a BtrFS file system, the same issue might occur.

Workaround: None.

**Converting a Red Hat Enterprise Linux 7.6 or a CentOS 7.6 machine fails at 98% with Error: Unable to reconfigure the destination virtual machine**

Converting a powered-on Red Hat Enterprise Linux 7.6 or CentOS 7.6 machine with a kernel that was updated to 3.10.0-957.5.1 fails at 98% with the following error: `Unable to reconfigure the destination virtual machine`. In the **Task Progress** tab, you see the following: `An error occurred during the conversion: 'SysCommandWrapper: Error encountered in SysCommand: SysCommand failed to wait /usr/lib/vmware-converter/chrootAndExec.sh to terminate.`

Workaround:

1. Before the conversion, open a command line on the source machine and run the following command: `yum downgrade lvm2-libs-2.02.180-10.el7_6.2.x86_64 lvm2-2.02.180-10.el7_6.2.x86_64 device-mapper-event-libs-1.02.149-10.el7_6.2.x86_64 device-mapper-1.02.149-10.el7_6.2.x86_64 device-mapper-libs-1.02.149-10.el7_6.2.x86_64 device-mapper-event-1.02.149-10.el7_6.2.x86_64`
2. After the conversion, run `yum update` on the target machine.

**Converting a powered-on Linux machine fails with the following error: "Unable to partition the destination disks"**

Converting a powered-on Linux machine fails with the following error: `Unable to partition the destination disks`. A message similar to: An error occurred during the conversion: `Failed to find matching disk device for VMODL Param Disk #0, 1447909153, controller: scsi, bus ID: 0, and unit ID: 0` appears in the **Status** line of the **Task progress** tab. This issue occurs if the disk controller type of the destination machine is set to SCSI BusLogic.

Workaround: Select another disk controller type for the destination virtual machine.

**Converter cannot query Linux source when a volume is mounted more than once**

When the source machine has more than one mount point, you receive the following error message: `Unable to query the live Linux source machine`. The worker log contains entry similar to: `2017-11-10T14:04:16.686+08:00 error vmware-converter-worker[03260] [Originator@6876 sub=Default] No disks for volume with id '/dev/xvda2' and label ''`. Converter expects each source file system to have a unique mount point. Having more than one mount point per file system breaks the analysis of volumes and partitions.

Workaround: Unmount any of the double mounted file systems in the source machine so that there is only one mount point per file system. Do not unmount the root (/) or boot (/boot) mount points. If any of them are mounted more than once, unmount the other mount point or points.

**Converted powered on Linux machines cannot start up**

If you convert a powered on Linux machine that has a non-standard LVM filter saved in the `/etc/lvm.conf` file, the converted virtual machine might fail to start up. The following error message appears in the virtual machine console: `Unable to access resume device (dev//)`

Workaround: Before the conversion, edit the filter in the `lvm.conf` file on the source Linux machine to allow all devices. For Red Hat Linux, the default value of the filter is `[ "a/.*/" ]`.

**Linux P2V conversion fails in the beginning with the following error message:** `'A general system error occured: <source_server_dns_name>: Connection closed by remote host'`

If the source machine sshd is configured to allow less than 3 unauthenticated connections, it may sever the converter connection.

Workaround: Check MaxStartups in `/etc/ssh/sshd_config` and ensure it is either commented out or its first number is 3 or higher.

**X Server might fail to start in destination virtual machines converted from sources that run Linux**

When the destination virtual machine starts, X server might fail to start with an error `Fatal X server Error`. This is due to incompatibility issues between the display driver used in the Linux source and the display adapter of the destination VMware virtual machine.

Workaround: Perform one or more of the following tasks.

- Install VMware Tools on the destination virtual machine.
- Configure the X server on the destination virtual machine to change the refresh rate and the display resolution.

**Linked cloning of standalone VMware sources to Linux SMB shared destination fails**

Linked cloning tasks of VMware standalone sources to SMB shared destinations that run on Linux fail with the following error: `converter.fault.FileIOFault`.

Workaround: None.

**The number of LVM logical volumes per volume group is limited to 12 for powered on Linux sources**

During the conversion of powered on Linux machines, Converter Standalone converts LVM volume groups into new disks on the destination virtual machine. The number of LVM logical volumes on a source LVM volume group cannot exceed 12.

Workaround: Move volumes out of the new disk to other destination disks.

1. On the Options page of the Conversion wizard, click **Data to copy**.
2. From the **Data copy type** drop-down menu, select **Select Volumes to copy** and click **Advanced**.
3. On the **Destination layout** tab, select a volume to move and click **Move Up** or **Move Down** until it is moved to the destination disk.
   You can move volumes between disks only if they are not Active `/boot` or System `/` volumes.
4. (Optional) To create a new destination disk, click **Add Disk**.

**Source volumes on top of volume managers other than LVM are not recognized during conversion of powered on Linux machines**

Converter Standalone recognizes only managed source volumes that run on the LVM volume manager. Other volume managers, including but not limited to Veritas Volume Manager (VxVM), are not recognized.

Workaround: None.

**Converter Standalone does not recognize source volumes that reside on Linux Software RAID configurations**

During cloning of powered on Linux machines, Converter Standalone does not recognize source volumes that are part of a Software RAID configuration (also referred to as multiple disk, or MD, configurations).

Workaround: None.

# Using VMware vCenter Converter Standalone

The *Using VMware vCenter Converter Standalone* provides information about installing and using VMware®
vCenter Converter Standalone.

At VMware by Broadcom, we value inclusion. To foster this principle within our customer, partner, and internal community, we create content using inclusive language.

All our documentation also comes in PDF format, which you can access by selecting the PDF download icon while reading a page or viewing a search result.

### Intended Audience

This guide is intended for users who want to install, upgrade, or use VMware vCenter Converter Standalone.

This guide is written for information systems engineers, software developers, QA engineers, trainers, and anyone who wants to convert physical and virtual machines into VMware virtual machines.

## Introduction to VMware vCenter Converter Standalone

VMware®vCenter Converter Standalone provides an easy-to-use solution that automates the process of creating VMware virtual machines from physical machines (running Windows and Linux) and from other virtual machine formats.

Converter Standalone eases the exchange of virtual machines among the following products:

- VMware hosted products can be both conversion sources and conversion destinations.
    - VMware Workstation™
    - VMware Fusion Pro®
    - VMware Workstation Player™
- Virtual machines running on an ESXi instance that  vCenter Server manages can be conversion sources and the corresponding ESXi and vCenter Server instances can be conversion destinations.
- Virtual machines running on unmanaged ESXi hosts can be conversion sources and the corresponding ESXi hosts can be conversion destinations.

## Migration with Converter Standalone

Migration with Converter Standalone involves converting physical machines and virtual machines for use in VMware hosted and managed products.

You can convert virtual machines that vCenter Server manages for use in other VMware products. You can use Converter Standalone to perform various types of conversion tasks.

- Import running remote physical and virtual machines as virtual machines to standalone ESXi hosts or to ESXi hosts that vCenter Server manages.
- Import virtual machines hosted by  or Microsoft Hyper-V Server to ESXi hosts that vCenter Server manages.
- Export virtual machines managed by vCenter Server hosts to other VMware virtual machine formats.
- Configure virtual machines managed by vCenter Server so that they are bootable, and install  or customize their guest operating systems.
- Customize guest operating systems of virtual machines in the vCenter Server inventory (for example, change the host name or network settings).
- Reduce the time that is necessary to set up new virtual machine environments.
- Migrate legacy servers to new hardware without reinstalling operating systems or application software.
- Perform migrations across heterogeneous hardware.

- Readjust volume sizes and place volumes on separate virtual disks.

# Converter Standalone Components

The Converter Standalone application consists of Converter Standalone server, Converter Standalone worker, Converter Standalone client, and Converter Standalone agent.

**Converter Standalone server**

Enables and performs the import and export of virtual machines. The Converter Standalone server comprises two services, Converter Standalone server and Converter Standalone worker. The Converter Standalone worker service is always installed with the Converter Standalone server service.

**Converter Standalone agent**

The Converter Standalone server installs the agent on Windows source machines to import them as virtual machines. You can choose to remove the Converter Standalone agent from the source machine automatically or manually after the import is complete.

**Converter Standalone client**

The Converter Standalone server works with the  Converter Standalone client. The client component consists of the Converter Standalone user interface, which provides access to the **Conversion** and the **Configuration** wizards, and lets you to manage the conversion and the configuration tasks.

# Cloning and System Configuration of Physical and Powered On Virtual Machines

When you convert a source machine, Converter Standalone uses cloning and system reconfiguration steps to create and configure the destination virtual machine so that it works successfully in vCenter Server and hosted environments. The migration process does not delete or modify the source and you can continue to use the original source machine after the conversion completes.

Cloning is the process of copying the source disks or volumes for the destination virtual machine. Cloning involves copying the data on the source machine's hard disk and transferring that data to a destination virtual disk. The destination virtual disk might have a different size, file layout, and other characteristics, and therefore might not be an exact copy of the source disk.

System reconfiguration adjusts the migrated operating system so that it to functions on the new virtual hardware.

If you plan to run an imported virtual machine on the same network as the source machine, you must modify the network name and IP address on one of the machines so that the source and destination machines can coexist. Besides, you must make sure that the Windows source machine and the destination virtual machine have different computer names.

> **NOTE**
> Before converting a Windows machine, verify that you have the necessary Windows license.

## Hot Cloning of Physical and Virtual Powered On Machines

With Converter Standalone, you can perform hot cloning.

Hot cloning, also called live cloning, or online cloning, consists in converting the source machine while it is running its operating system. Hot cloning lets you clone machines without shutting them down.

During conversion, processes continue to run on the source machine, so the resulting virtual machine is not an exact copy of the source machine.

When converting Windows sources, you can set Converter Standalone to synchronize the destination virtual machine with the source machine after hot cloning. Synchronization is performed by transferring from the source to the destination the blocks that were changed during the initial cloning period. To avoid loss of data on the destination virtual machine, Converter Standalone can shut down certain Windows services before the synchronization. Based on your settings, Converter Standalone shuts down the selected Windows services so that no critical changes occur on the source machine while destination is being synchronized.

Converter Standalone can shut down the source machine and power on the destination machine when the conversion process is complete. When combined with synchronization, this action allows seamless migration of a source machine to a virtual machine destination. The destination machine takes over the source machine operations with the least possible downtime.

> **NOTE**
> When you hot clone dual-boot systems, you can clone only the default operating system to which the `boot.ini` file or the BCD points. To clone the nondefault operating system, change the `boot.ini` file or the BCD to point to the other operating system and reboot. After the other operating system is booted, you can hot clone it. If your second operating system is Linux, you can boot it and clone it using the standard procedure for cloning Linux powered on source machines.

## Remote Hot Cloning of Powered On Source Machines That Are Running Windows

You can use the **Conversion** wizard to set up conversion tasks and Converter Standalone components perform all the cloning tasks.

The following workflow is an example of remote hot cloning in which the powered on machine that is being cloned experiences no downtime.

> **NOTE**
> With Converter Standalone 6.6, you can convert source Windows machines that have no direct access to the destination ESXi server by using the proxy mode feature. The feature is available only for conversion of powered on Windows sources to managed destinations.

1. Converter Standalone prepares the source machine for the conversion.
   Converter Standalone installs the agent on the source machine, and obtains information about the hardware and the operating system of the source machine.
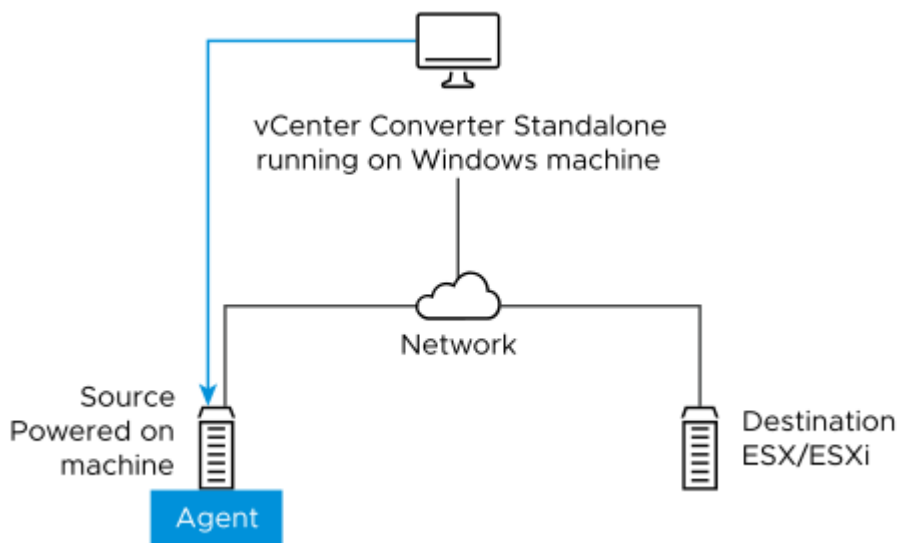
2. Converter Standalone creates a virtual machine on the destination machine.
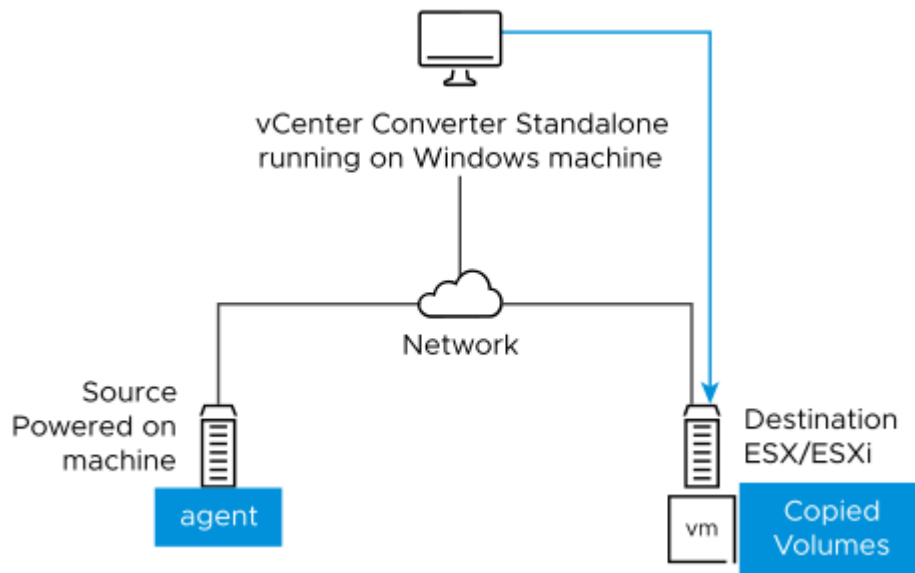
3. Converter Standalone agent takes a snapshot of the source volumes and copies the source volumes machine to the destination hypervisor.

If the proxy mode feature is off, the data traffic passes from the source machine directly to the destination server.
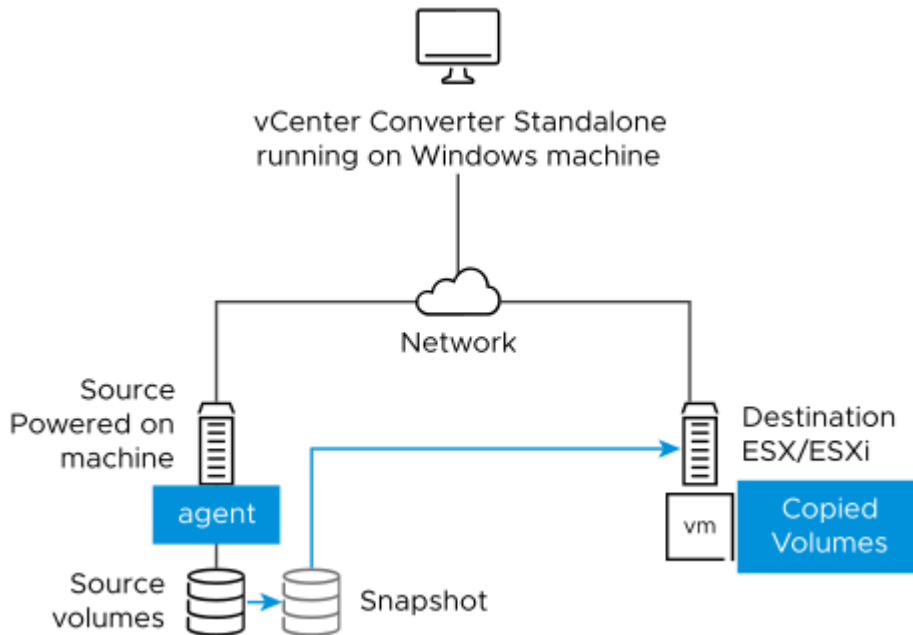


If the proxy mode feature is on, the data traffic passes from the source machine through the Converter Standalone server to the destination server.
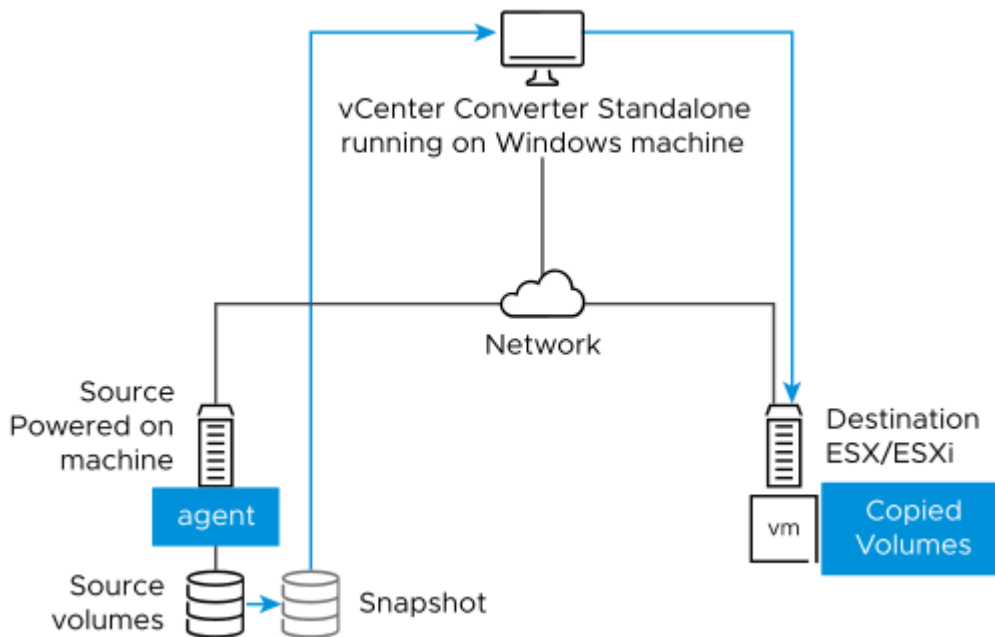
4. Converter Standalone finishes the conversion process.

   The agent installs the drivers required for the operating system to start in a virtual machine and personalizes the virtual machine (changes the IP information, for example).
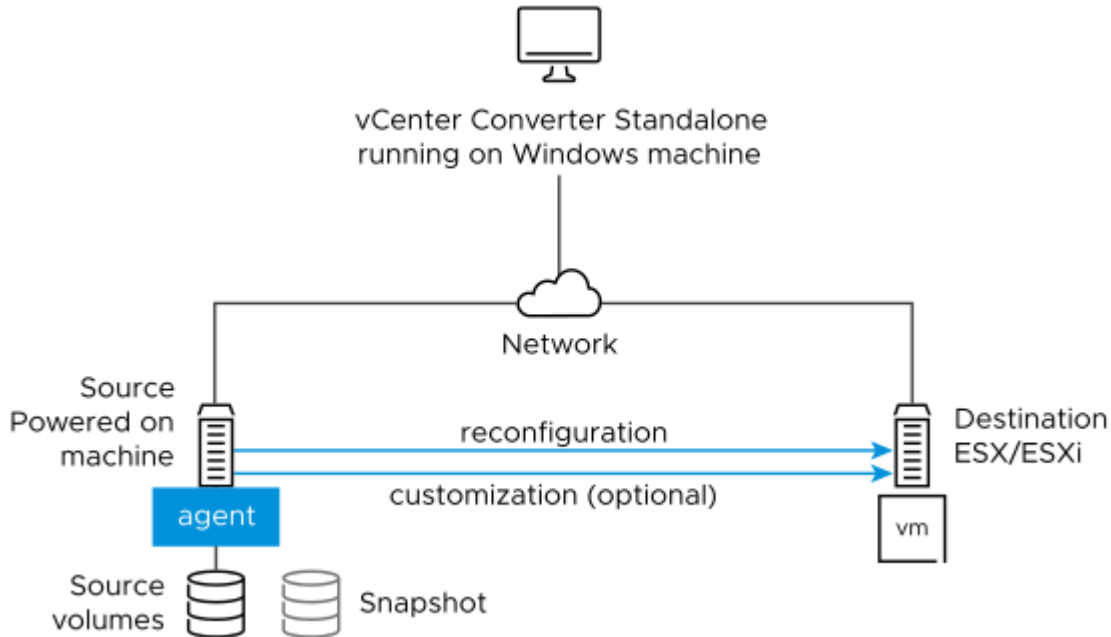


5. Optionally, Converter Standalone uninstalls the agent from the source machine.

   The virtual machine is ready to run on the destination server.

## Remote Hot Cloning of Powered On Source Machines That Are Running Linux

The conversion process of powered on machines that are running Linux operating systems differs from the conversion of Windows machines.

In Windows conversions, the Converter Standalone agent is installed on the source machine and the source information is pushed to the destination.

In Linux conversions, no agent is deployed on the source machine. Instead, a helper virtual machine is created and deployed on the destination ESXi host. The source data is then copied from the source Linux machine to the helper virtual machine. After the conversion is complete, the helper virtual machine shuts down to become the destination virtual machine the next time you power it on.

Converter Standalone supports conversion of Linux sources only to managed destinations.

The following workflow demonstrates the principles of hot cloning powered on source machines that run Linux to managed destinations.

1. Converter Standalone uses SSH to connect to the source machine, deploys the sysinfo utility, and retrieves source information. Converter Standalone creates an empty helper virtual machine based on your conversion task settings. The helper virtual machine serves as a container for the new virtual machine during conversion. Converter Standalone deploys the helper virtual machine on the managed destination, an ESXi host. The helper virtual machine boots from a `*.iso` file that is located on the Converter Standalone server machine.
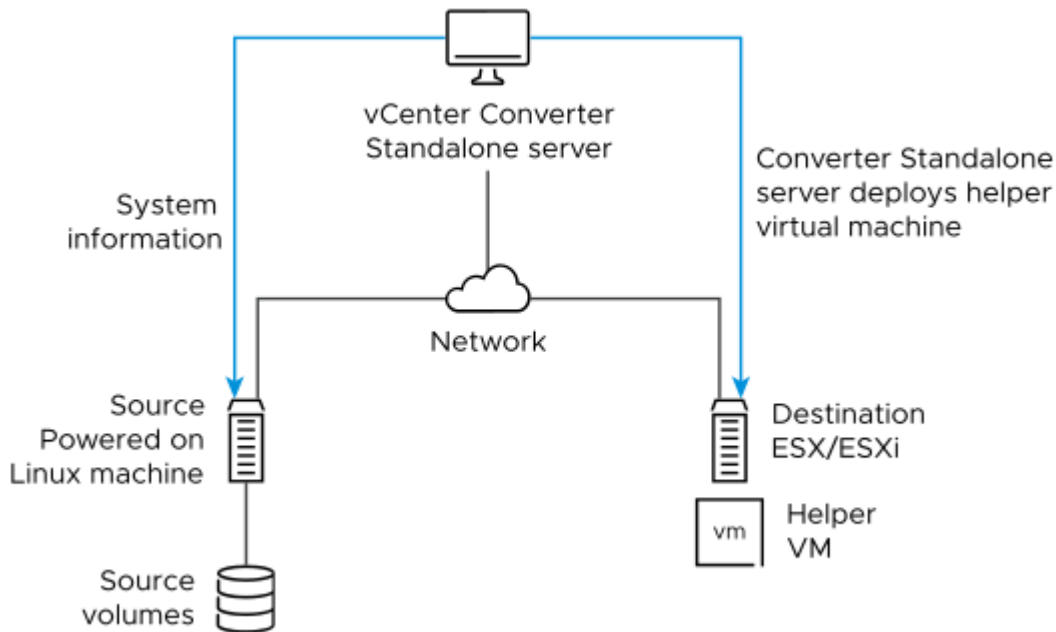
2.  The helper virtual machine powers on, boots from the Linux image, connects to the source machine through SSH, and starts retrieving the selected data from the source. While you set up the conversion task, you can select which source volumes to be copied to the destination machine.
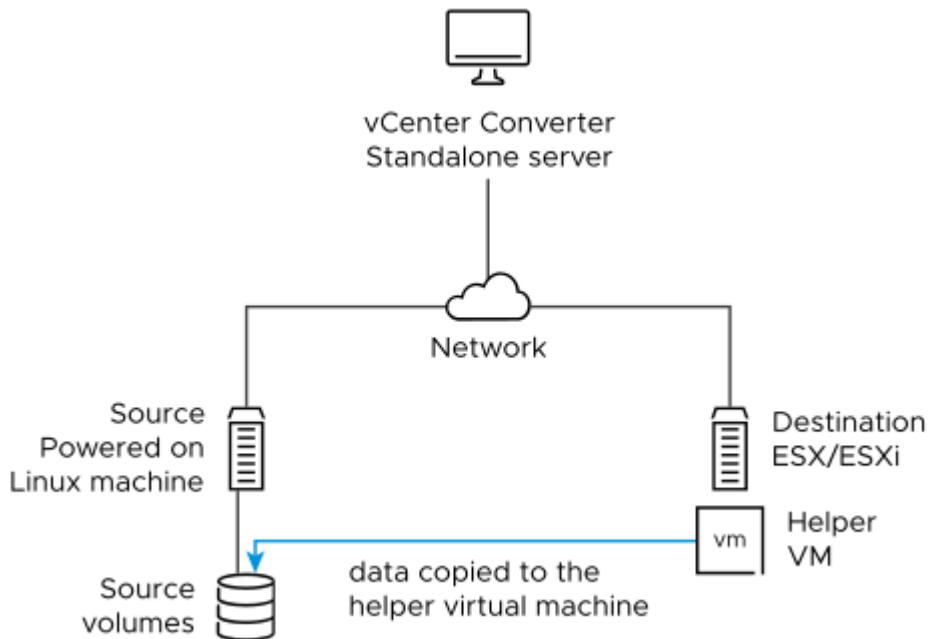


3.  After data is copied, the destination virtual machine is reconfigured to allow the operating system to start in a virtual machine.
4.  Converter Standalone shuts down the helper virtual machine. The conversion process is complete.
    You can configure Converter Standalone to power on the newly created virtual machine after the conversion is complete.

# Types of Data Cloning Operations

Converter Standalone supports disk-based cloning, volume-based cloning, and linked-cloning modes.

**Table 1: Cloning Modes**

| Data Copy Types | Application | Description |
| --- | --- | --- |
| Volume based | Copy volumes from the source machine to the destination machine. | Volume-based cloning is relatively slow. File-level cloning is slower than block-level cloning. Dynamic disks are converted into basic volumes on the target virtual machine. |
| Disk based | Create copies of the powered off source machines, for all types of basic and dynamic disks. | You cannot select which data to copy. Disk-based cloning is faster than volume-based cloning. |
| Linked clone | Use to quickly check compatibility of VMware images. | Linked cloning is the fastest (but incomplete) cloning mode that Converter Standalone supports. |

## Volume-Based Cloning

During volume-based cloning, volumes from the source machine are copied to the destination machine. Converter Standalone supports volume-based cloning during hot cloning, and during the import of existing virtual machines.

During volume-based cloning, all volumes in the destination virtual machine, except LVM2 logical volumes, are converted to basic volumes, regardless of their type in the corresponding source volume. LVM2 logical volumes can be preserved as logical volumes during conversion.

Volume-based cloning is performed at the file level or block level, depending on the destination volume size that you select.

**Volume-based cloning at the file level**

Performed when you select a size smaller than the original volume for NTFS volumes or you choose to resize a FAT volume.

For FAT, FAT32, NTFS, ext2, ext3, ext4, XFS, and ReiserFS file systems, Converter Standalone preserves the file system type during a volume-based cloning at the file level.

Dynamic source disks are read but not preserved during volume-based conversions. Dynamic disks are converted into basic volumes on the target virtual machine. Volume-based cloning of dynamic source disks at the file level is supported only for Windows.

**Volume-based cloning at the block level**

Performed when you choose to preserve the size of the source volume or when you specify a larger volume size for NTFS source volumes. Volume-based cloning at the block level is supported only for Windows.

## Disk-Based Cloning

Converter Standalone supports disk-based cloning to import existing virtual machines.

Disk-based cloning transfers all sectors from all disks and preserves all volume metadata. The destination virtual machine receives partitions of the same type, size, and structure, as the partitions of the source virtual machine. All volumes on the source machine's partitions are copied as they are.

Disk-based cloning supports all types of basic and dynamic disks.

## Full and Linked Clones

Clones can be full or linked depending on the amount of data copied from the source to the destination machine.

A full clone is an independent copy of a virtual machine that shares nothing with the parent virtual machine after the cloning operation. Ongoing operation of a full clone is separate from the parent virtual machine.

Because a full clone does not share virtual disks with the parent virtual machine, full clones generally perform better than linked clones. Full clones take longer to create than linked clones. Creating a full clone can take several hours or even days if the files involved are large.

You can create a full clone by using any disk clone type other than the linked clone type.

A linked clone is a copy of a virtual machine that shares virtual disks with the parent virtual machine in an ongoing manner. A linked clone is a fast way to convert and run a new virtual machine. You can create a linked clone from the current state, or snapshot, of a powered off virtual machine. This practice conserves disk space and lets multiple virtual machines use the same software installation.

All files available on the source machine at the moment of the snapshot continue to remain available to the linked clone. Ongoing changes to the virtual disk of the parent do not affect the linked clone, and changes to the disk of the linked clone do not affect the source machine.

A linked clone must have access to the source. Without access to the source, you cannot use a linked clone.

For more information about how to create a linked clone, see  Create a Linked Clone .

## Using Converter Standalone with Virtual Machine Sources

With Converter Standalone, you can convert virtual machines and configure VMware virtual machines.

**Converting virtual machines**

You can convert VMware virtual machines from and to , , , ESXi Embedded, and ESXi Installable. You can also convert virtual machines that Hyper-V Server manages into VMware virtual machines.

To run an imported VMware virtual machine and its source virtual machine on the same network, you must modify the network name and IP address on one of the virtual machines.

**Configuring virtual machines**

If the VMware virtual machines have disks that have been populated by using a backup of a physical host, Converter Standalone prepares the image to run on VMware virtual hardware. If you have used third-party virtualization software to create a virtual machine on an ESXi host, you can use Converter Standalone to reconfigure it. You can also reconfigure any operating system installed on a multiboot machine if you have imported the virtual machine to an ESXi host. Before you reconfigure a multiboot machine, you must change the `boot.ini` file or the BCD.

## System Settings Affected by Conversion

A VMware virtual machine that is created by Converter Standalone contains a copy of the disk state of the source physical or virtual machine. Some hardware-dependent drivers and sometimes the mapped drive letters might not be preserved.

The following source computer settings remain unchanged:

- Operating system configuration (computer name, security ID, user accounts, profiles, preferences, and so on)
- Applications and data files
- Volume serial number for each disk partition

Because the target and the source virtual machines have the same identities (name, SID, and so on), running them on the same network might result in conflicts. To redeploy the source virtual machine, make sure that you do not run the source and target virtual machines on the same network at the same time.

For example, if you use Converter Standalone to test whether you can run a Hyper-V Server virtual machine as a VMware virtual machine without first decommissioning the original Hyper-V Server machine, you must first resolve the duplicate ID problem. You can resolve this problem by customizing the virtual machines in the **Conversion** or the **Configuration** wizard.

## Changes to Virtual Hardware After Virtual Machine Migration

After conversion, most applications function correctly on the VMware virtual machine because their configuration and data files have the same location as on the source virtual machine. However, applications might not work if they depend on specific characteristics of the underlying hardware, such as the serial number or the device manufacturer.

Several hardware changes might occur after you migrate a virtual machine.

**Table 2: Hardware Changes After Virtual Machine Migration**

| Hardware | Behavior |
|---|---|
| CPU model and serial numbers | Might change after migration. They correspond to the physical computer hosting the VMware virtual machine. |
| Ethernet adapters | Might change for AMD PCNet or VMXnet and get different MAC addresses. The IP address of each interface must be individually reconfigured. |
| USB adapters | Might be updated during the cloning process. |
| Graphics cards | Might change after migration (VMware SVGA card). |
| Disks and partitions | The number of disks and partitions might change during the cloning process. Each disk device might have a different model and different manufacturer strings. |
| Primary disk controllers | Might differ from the source machine. |

Applications that depend on devices that are not available within a virtual machine might not work after you migrate the virtual machine.

# System Requirements

You must consider the compatibilities and the interoperabilities among the systems on which and with which the Converter Standalone components work.

## Supported Operating Systems

You can install Converter Standalone components only on Windows operating systems. Converter Standalone supports Windows and Linux operating systems as sources for powered-on-machine conversions and virtual-machine conversions. You cannot reconfigure Linux distributions.

**Table 3: Supported Operating Systems**

| Supported Operating Systems | Converter Standalone Support | Source for Powered On Machine Conversions | Source for Virtual Machine Conversions | Configuration Source |
|---|---|---|---|---|
| Windows Server 2012 (64-bit) | Yes | Yes | Yes | Yes |
| Windows Server 2012 R2 (64-bit) | Yes | Yes | Yes | Yes |
| Windows 10 (32-bit and 64-bit) | Yes | Yes | Yes | Yes |
| Windows Server 2016 (64-bit) | Yes | Yes | Yes | Yes |

| Supported Operating Systems | Converter Standalone Support | Source for Powered On Machine Conversions | Source for Virtual Machine Conversions | Configuration Source |
|---|---|---|---|---|
| Windows Server 2019 (64-bit) | Yes | Yes | Yes | Yes |
| Windows 11 (64-bit) | Yes | Yes | Yes | Yes |
| Windows Server 2022 (64-bit) | Yes | Yes | Yes | Yes |
| CentOS 6.x (32-bit and 64-bit) | No | Yes | Yes | No |
| CentOS 7.x (64-bit) | No | Yes | Yes | No |
| Red Hat Enterprise Linux 6.x (32-bit and 64-bit) | No | Yes | Yes | No |
| Red Hat Enterprise Linux 7.x (64-bit) | No | Yes | Yes | No |
| Red Hat Enterprise Linux 8.x (64-bit) | No | Yes | Yes | No |
| Red Hat Enterprise Linux 9.x (64-bit) | No | Yes | Yes | No |
| Ubuntu 14.04 LTS (32-bit and 64-bit) | No | Yes | Yes | No |
| Ubuntu 16.04 LTS (32-bit and 64-bit) | No | Yes | Yes | No |
| Ubuntu 18.04 LTS (64-bit) | No | Yes | Yes | No |
| Ubuntu 20.04 LTS (64-bit) | No | Yes | Yes | No |
| Ubuntu 22.04 LTS (64-bit) | No | Yes | Yes | No |

## Supported Firmware Interfaces

With Converter Standalone you can perform conversions from BIOS and UEFI sources.

Converter Standalone preserves the firmware interface during the conversion. You cannot convert BIOS sources to UEFI destinations and the reverse.

**Table 4: Supported Sources Based on Operating System and Firmware Interface**

| Operating System | BIOS | 64-Bit UEFI |
|---|---|---|
| Windows Server 2012 | Yes | Yes |
| Windows 8.1 | Yes | Yes |
| Windows Server 2012 R2 | Yes | Yes |
| Windows 10 | Yes | Yes |
| Windows Server 2016 | Yes | Yes |
| Windows Server 2019 | Yes | Yes |
| Windows 11 | No | Yes |
| Windows Server 2022 | Yes | Yes |
| CentOS 6.x | Yes | Yes |

| Operating System | BIOS | 64-Bit UEFI |
|---|---|---|
| CentOS 7.x | Yes | Yes |
| Red Hat Enterprise Linux 6.x | Yes | Yes |
| Red Hat Enterprise Linux 7.x | Yes | Yes |
| Red Hat Enterprise Linux 8.x | Yes | Yes |
| Red Hat Enterprise Linux 9.x | Yes | Yes |
| Ubuntu Linux 14.04 LTS | Yes | Yes |
| Ubuntu Linux 16.04 LTS | Yes | Yes |
| Ubuntu Linux 18.04 LTS | Yes | Yes |
| Ubuntu Linux 20.04 LTS | Yes | Yes |
| Ubuntu Linux 22.04 LTS | Yes | Yes |

# Supported Source Types

With Converter Standalone, you can convert remote powered on machines, powered off VMware virtual machines and Hyper-V Server virtual machines.

**Table 5: Supported Sources**

| Source Type | Sources |
|---|---|
| Powered on machines | <ul><li>Remote Windows physical machines</li><li>Remote Linux physical machines</li><li>Local Windows physical machines</li><li>Powered on VMware virtual machines</li><li>Powered on Hyper-V Server virtual machines</li><li>Powered on Amazon EC2 Windows and Linux machines</li><li>Powered on virtual machines running under Red Hat KVM and Nutanix AHV<br>**NOTE**<br>Converter Standalone does not support paravirtualized kernels.</li></ul> |
| VMware vCenter virtual machines | For information about the interoperability between powered off VMware vCenter virtual machines and vCenter Converter Standalone, see VMware Product Interoperability Matrices. |
| VMware virtual machines | For information about the interoperability between vCenter Converter Standalone and powered off hosted  and  virtual machines, see VMware Product Interoperability Matrices. |
| Hyper-V Server virtual machines | For Hyper-V Server versions distributed with Windows Server 2012, Windows Server 2012 R2, Windows 10, Windows Server 2016, Windows Server 2019, Windows 11, and Windows Server 2022, powered off virtual machines with the following guest operating systems:<ul><li>Windows Server 2012 (64-bit)</li><li>Windows Server 2012 R2 (64-bit)</li><li>Windows 10 (64-bit) (except Home editions)</li><li>Windows Server 2016 (64-bit)</li><li>Windows Server 2019 (64-bit)</li><li>Windows 11 (64-bit)</li><li>Windows Server 2022 (64-bit)</li></ul>For other Hyper-V Server sources, perform the procedure for powered on source machines. |

# Supported Destination Types

With Converter Standalone, you can create virtual machines compatible with VMware hosted and managed products.

## Managed Destinations

You can create a virtual machine to use with an unmanaged ESXi host or with an ESXi host that vCenter Server manages. For information on the compatibility between Converter Standalone and current or earlier versions of ESXi and vCenter Server, see VMware Product Interoperability Matrices.

## Hosted Destinations

You can create a virtual machine for use with  or . For information on the interoperability between Converter Standalone and  and , see VMware Product Interoperability Matrices.

# Supported Source Disk Types

Converter Standalone supports conversions from master boot record (MBR) and GUID partition table (GPT) disks with some limitations that depend on the selected data cloning mode.

> **NOTE**
> Converter Standalone preserves the partitioning scheme during the conversion. You cannot convert an MBR source disk to a GPT destination disk and the reverse.

Converter Standalone supports all types of basic and dynamic disks for disk-based conversions except for GPT/MBR hybrid disks.

Converter Standalone supports source and destination disk drives with 512B (512e and 512n) disk sector size only. 4K native (4Kn) disk drives are not supported.

**Table 6: Supported and Nonsupported Source Volumes and Disks**

| Source | Supported Volumes and Disks | Nonsupported Volumes and Disks |
|---|---|---|
| Virtual machine | • Basic volumes<br>• All types of dynamic volumes<br>• Master boot record (MBR) disks<br>• GUID partition table (GPT) disks | • RAID<br>• GPT/MBR hybrid disks<br>• RDM disks |
| Powered on machine | • All types of source volumes that the operating system recognizes<br>• GUID partition table (GPT) disks<br>• Master boot record (MBR) disks | • RAID<br>• GPT/MBR hybrid disks<br>• Linux volumes mounted by Device Mapper multipath |

# Supported Destination Disk Types

Several destination disk types might be available for the selected destination.

**Table 7: Destination Disk Types**

| Destination | Available Disk Types |
|---|---|
| VMware vSphere virtual machine | **Thick**<br><br>Copies the entire source disk size to the destination, regardless of i<br>**Thin**<br><br>For managed destinations that support thin provisioning through GU<br>example, if the source disk size is 10 GB, but only 3 GB is used, th<br>GB.<br><br>Managed destinations of virtual machine version 10 and later support disks with size of up to 62 TB. Earlier virtual machine versions support disks with size of up to 2 TB. |
| or other VMware virtual machine | **Pre-allocated**<br><br>Copies the entire source disk size to the destination, regardless of i<br>**Not pre-allocated**<br><br>Creates an expanding disk on the destination. For example, if the s<br>created destination disk is 5 GB but can expand to 20 GB. Take this<br>space on the destination datastore.<br>**Split pre-allocated**<br><br>For disks smaller than 2 TB, splits the source disk into 2 GB section<br>For disks larger than 2 TB, splits the source disk into 2 TB sections<br>**Split not pre-allocated**<br><br>For disks smaller than 2 TB, creates 2 GB sections on the destinati<br>disk. As the destination disk expands, new 2 GB sections are creat<br>that of the original source disk.<br>For disks larger than 2 TB, creates 2 TB sections on the destinatior<br>As the destination disk expands, new 2 TB sections are created to the original source disk.<br><br>Hosted destinations of virtual machines support up to 8 TB disks.<br>Hosted destinations support disks sizes larger than 2040 GB only if the **Split not pre-allocated** disk type is selected. |

To support destination virtual disks on FAT file systems, split the source data into 2 GB files.

> **NOTE**
> Converter Standalone supports destination disk drives with 512B (512e and 512n) disk sector size only. 4K native (4Kn) disk drives are not supported.

## Change the Default Destination Provisioning Disk Type from Thick to Thin

With Converter Standalone 6.6, you can change the default destination provisioning disk type from thick to thin.

1. Navigate to the `%ProgramData%\VMware\VMware vCenter Converter Standalone` directory.
2. Open the `converter-worker.xml` file in a text editor.
3. Locate the `<defaultValues><preferThinDiskType>` tag and change its value to `true`.
4. Restart the worker service for the change to take effect.

This change affects all future conversions until the value is restored to `false` and the service is restarted.

## Supported Security Features

Since Converter Standalone 6.4, security features are preserved during the conversion process of virtual machines.

When you use Converter Standalone to convert virtual machines, the enabled security features on the source machine are preserved on the destination machine.

**Table 8: List of Supported Security Features**

| Security Feature | Description |
|---|---|
| UEFI Secure Boot | UEFI Secure Boot is a security standard that helps ensure that your PC boots using only software that is trusted by the PC manufacturer. For certain virtual machine hardware versions and operating systems, you can activate secure boot just as you can for a physical machine.For more information, see *Activate or Deactivate UEFI Secure Boot for a Virtual Machine* in the *vSphere Security* documentation. |
| Virtualization-based Security | Microsoft VBS, a feature introduced in Windows 10 and Windows Server 2016 operating systems, uses hardware and software virtualization to enhance system security by creating an isolated, hypervisor-restricted, specialized subsystem. For more information, see *Securing Windows Guest Operating Systems with Virtualization-based Security* in the *vSphere Security* documentation. |

# Support for IPv6 in Converter Standalone

Converter Standalone supports both IPv4 and IPv6 Internet protocols with several limitations.

Internet Protocol version 6 (IPv6 or IPng) is the successor to Internet Protocol version 4 (IPv4), which is the currently used protocol for assigning IP addresses to computers on the Internet. IPv6 was adopted to overcome the expected exhaustion of IPv4 addresses.

IPv4 uses 32-bit addresses and IPv6 uses 128-bit addresses. IPv6 addresses can have different formats or notations.

- 1040:0:0:0:0:0:0:1
- 1040::1
- 21DA:00D3:0010:2F3B:02AA:00FF:FE28:9C5A
- [2001:0db8:85a3:08d3:1319:8a2e:0370:7344]:443

Converter Standalone supports all IPv6 notations for all components of the system.

- Converter Standalone installer
- Converter Standalone client
- Converter Standalone agent
- All destinations supported in Converter Standalone

While providing higher security level and much larger address space, IPv6 brings about some compatibility tasks that have not been resolved yet. For example, IPv4-only nodes cannot communicate directly with IPv6 nodes and need additional routing, which makes the end-to-end support of mixed IPv4 and IPv6 environments precarious.

# Screen Resolution Requirements

To display wizards properly, Converter Standalone requires a screen resolution of at least 1024x768 pixels.

# Configuring Permissions for vCenter Server Users

To convert virtual machines to vCenter Server machines with Converter Standalone, you must have certain vCenter Server permissions set at the data center level.

To start using Converter Standalone, you must set various minimum privileges at the data center level.

- **Datastore** > **Allocate space**
- **Datastore** > **Browse datastore**
- **Host** > **Local operations** > **Create virtual machine**
- **Host** > **Local operations** > **Delete virtual machine**
- **Host** > **Local operations** > **Reconfigure virtual machine**
- **Network** > **Assign network** (required only if you plan to connect the destination virtual machine to a network)
- **Resource** > **Assign virtual machine to resource pool**
- **Virtual machine** > **Configuration**
- **Virtual machine** > **Interaction** > **Power On** (required only if you choose to power on the destination virtual machine after conversion)
- **Virtual machine** > **Inventory**
- **Virtual machine** > **Provisioning** > **Allow disk access**
- **Virtual machine** > **Provisioning** > **Allow read-only disk access**

Converting Linux and powered on Windows machines might require additional vCenter Server privileges.

- **Virtual machine** > **Interaction** > **Configure CD media** (required only if you need to boot a converted Linux virtual machine to install media after the conversion)
- **Virtual machine** > **Snapshot management** > **Create snapshot** (required only if you want to synchronize changes between the source and destination Windows virtual machine)
- **Virtual machine** > **Snapshot management** > **Remove Snapshot** (required only if you want to synchronize changes between the source and destination Windows virtual machine)

For more information about setting permissions, see vSphere Permissions and User Management Tasks.

# TCP/IP and UDP Port Requirements for Conversion

To enable conversion, the Converter Standalone server and client must be able to send data to each other, to remote machines, and to vCenter Server. Also, the source and destination hosts must receive data from each other. Designated ports are reserved for this communication.

If any of these ports is blocked, the corresponding conversion task fails.

> **NOTE**
> If you are using non-default ports to connect to a remote source machine, an ESXi host, vCenter Server, or Converter Standalone server, you can enter a value for the port after the IP address or the FQDN of the respective machine.
>
> For IPv4, enter `FQDN-or-IP address:port number`.
>
> For IPv6, enter `FQDN:port number` or `[IP address]:port number`.

**Ports Used When Converting a Powered On Machine Running Windows**

Table 9: Ports Required During Windows P2V contains a list of the ports that must be open during the conversion of powered on source machines running Windows.

**Table 9: Ports Required During Windows P2V**

| Communication Paths | Communication Ports | Notes |
|---|---|---|
| Converter Standalone server to powered on source machine | TCP - 445, 139, 9089 UDP - 137, 138 | If the source computer uses NetBIOS, port 445 is not required. If NetBIOS is not being used, ports 137, 138, and 139 are not required. When in doubt, make sure that none of the ports are blocked.<br>**NOTE**<br>Unless you have installed Converter Standalone server or agent on the source computer, the account used for authentication to the source computer must have a password, the source computer must have network file sharing enabled, and it cannot be using Simple File Sharing. |
| Converter Standalone server to vCenter Server | TCP - 443 | Required only if the conversion destination is vCenter Server. |
| Converter Standalone client to vCenter Server | TCP - 443 | Required only if the Converter Standalone server and client components are on different machines. |
| Converter Standalone server to the destination ESXi | TCP - 902 | Converter server always requires access to ESXi at port 902. |
| Powered on source machine to ESXi | TCP - 443, 902 | If the conversion destination is vCenter Server, only port 902 is required.<br>If the proxy mode feature is on, port 902 is not required. |

**Ports Used When Converting a Powered On Machine Running Linux**

Table 10:  Ports Required During Linux P2V contains a list of the ports that must be open during the conversion of powered on source machines running Linux.

**Table 10: Ports Required During Linux P2V**

| Communication Paths | TCP Ports | Notes |
|---|---|---|
| Converter Standalone server to powered on source machine | 22 | Used to establish an SSH connection between the Converter Standalone server and the source machine. |
| Converter Standalone client to Converter Standalone server | 443 | Required only if the Converter Standalone server and client components are on different machines. |
| Converter Standalone server to vCenter Server | 443 | Required only if the conversion destination is a vCenter Server. |
| Converter Standalone server to ESXi host version 7.x or earlier | 443, 902 | If the ESXi host is managed by a vCenter Server, port 902 is required.<br>If the ESXi host is not managed by a vCenter Server, both ports are required. |
| Converter Standalone server to ESXi host version 8.0 or later | 443 | |
| Converter Standalone server to helper virtual machine | 443 | |

| Communication Paths | TCP Ports | Notes |
|---|---|---|
| Helper virtual machine to powered on source machine | 22 | Used to establish an SSH connection between the helper virtual machine and the source machine. By default, the IP address of the helper virtual machine is assigned by DHCP. If no DHCP server is available on the destination network, you must manually assign the helper virtual machine an IP address. |

**Ports Used When Converting Virtual Machine Sources**

Table 11:  Ports Required During V2V contains a list of the ports that must be open during the conversion of virtual machines.

**Table 11: Ports Required During V2V**

| Communication Paths | Communication Ports | Notes |
|---|---|---|
| Converter Standalone server to Fileshare path | TCP - 445, 139 UDP - 137, 138 | Required only for standalone virtual machine sources or destinations. If the computer hosting the source or destination path uses NetBIOS, port 445 is not required. If NetBIOS is not being used, ports 137, 138, and 139 are not required. When in doubt, make sure that none of the ports are blocked. |
| Converter Standalone client to Converter Standalone server | TCP - 443 | Required only if the Converter Standalone server and client components are on different machines. |
| Converter Standalone server to vCenter Server | TCP - 443 | Required only if the conversion destination is a vCenter Server. |
| Converter Standalone server to ESXi | TCP - 443, 902 | If the conversion destination is a vCenter Server, only port 902 is required. |

# Requirements for Remote Hot Cloning of Windows Operating Systems

To avoid problems related to permissions and network access, ensure that simple file sharing is turned off and that Windows Firewall does not block file and printer sharing. Also, to access file and printer sharing ports, you might need to change the scope of the IP addresses that the firewall allows.

To ensure successful remote hot cloning of Windows platforms, verify the following conditions on the source machine before you start the application:

- Ensure that simple file sharing is turned off.
- Ensure that Windows Firewall is not blocking file and printer sharing.
- If you are running Windows 8 or later on the source machine, turn off Remote UAC. For more details, see Prerequisites for Converting a Powered On Windows Machine.

You must allow incoming file share connections in the following situations:

- When you use the machine to host standalone images.
- When you use the machine as a standalone destination.
- When you hot clone the machine remotely.

For Windows Vista and later, you must either use an administrator account for Converter Standalone when logging to the source machine, or deactivate UAC on the source machine.

To activate customization of the guest operating system, install Microsoft Sysprep files on the machine where Converter Standalone server is running.

**Ensure that Windows Firewall Does Not Block File and Printer Sharing**

If Converter Standalone fails to connect to a remote Windows machine and issues a `bad username/password` error message, ensure that file and printer sharing is not blocked by Windows Firewall.

1. Select **Start** > **Settings** > **Control Panel** > **Administrative Tools** > **Local Security Policy**.

2. In the Security Settings list on the left, select **Local Policies** > **Security Options**.

3. In the policies list on the right, select **Network access: Sharing and Security model for local accounts**.

4. Verify that **Classic – local users authenticate as themselves** is selected.

For troubleshooting information about file and printer sharing, search the Microsoft TechNet Web site.

For information about setting file and printer sharing on other Windows systems, see the documentation for your system.

# Conversion Limitations

When you are aware of the conversion limitations of Converter Standalone, you might be able to avoid conversion and post-conversion problems, and handle them more easily.

## Conversion Limitations for Powered On Machines

When you convert a powered on machine, some conversion features might not be available for certain source operating systems.

**Table 12: Limitations for Powered On Machine Conversion**

| Source Operating System | Limitations |
|---|---|
| Windows | • When you convert UEFI sources, Converter Standalone does not copy any UEFI variables to the destination.<br>• Synchronization is supported only for volume-based cloning at the block level.<br>• If the file system is ReFS, changing the cluster size during a conversion operation is not supported. |
| Linux | • Only volume-based cloning at the file level is supported.<br>• Only managed destinations are supported.<br>• Converting powered on Linux machines is supported only if the source operating system uses GRUB boot loader. Alternative boot loaders, such as LILO and LOADLIN, and additional software that alters the GRUB configuration or boot process, such as Trusted Boot, are not supported.<br>• When you convert UEFI sources, Converter Standalone copies only the current UEFI boot entry option to the destination.<br>• Simultaneous cloning of multiple disks and volumes is supported only when converting a virtual Linux source.<br>• Installing VMware Tools on Linux guest operating systems is not supported.<br>• Converting volumes that are formatted with `ext4` file system, where the Linux machine is running Red Hat Enterprise Linux 6.0 and later minor versions or Ubuntu Linux 14.04 operating systems, does not preserve the file system. The volumes of the destination machine are formatted with `ext3` file system.<br>• When converting powered on Linux machines that are running Red Hat Enterprise Linux 6.0 and later minor versions or CentOS 6.0 and later minor versions, key based authentication is not supported. Instead, you can use password-based authentication. |

# Conversion Limitations for Virtual Machines

Certain limitations exist when you convert a virtual machine.

You must power off source virtual machines before you convert them. You can convert running virtual machines if you follow the procedure for converting powered on machines.

For volume-based conversions of virtual machine sources that run Windows 8 or Windows Server 2012, Converter Standalone does not preserve storage pools on the destination.

For volume-based conversions of UEFI sources, Converter Standalone does not preserve the UEFI settings. The UEFI settings are preserved during disk-based conversions.

When you convert a virtual machine with snapshots, the snapshots are not transferred to the destination virtual machine.

For volume-based conversions of powered-off virtual machine sources at file level, the Converter Standalone server host operating system must support the file system of the source volume. For example, when the Converter Standalone is running on Windows Server 2008, you cannot convert source volumes with ReFS.

Certain limitations are applicable when you convert Linux virtual machine sources.

- Only disk-based cloning is supported for Linux guest operating systems.
- Configuration or customization is not supported for Linux guest operating systems.
- Installing VMware Tools is not supported on Linux guest operating systems.

# Limitations Related to Creating Snapshots of Windows Sources

Converter Standalone uses VSS snapshots to save the state of source volumes during hot cloning of physical and virtual machines that run Windows. VSS snapshots are also used to synchronize the destination virtual machine with the source machine after the initial conversion. Some of the VSS-related issues are inherited in Converter Standalone and can prevent the proper completion of your conversion tasks.

Read the limitations listed in Table 13:  VSS Snapshotting Limitations before you initiate a conversion task.

If your conversion task fails with an VSS-related error message, you can check the table for possible reasons and workarounds.

**Table 13: VSS Snapshotting Limitations**

| VSS Limitations | Error Messages | Workarounds |
|---|---|---|
| For all operating systems that support volume-based cloning, you need at least one NTFS volume for VSS to work. | | There is no workaround for this limitation. |
| VSS under Windows Vista and later does not support FAT and FAT32. | | Deselect all FAT and FAT32 volumes on the View/Edit Options page of the vCenter Converter wizards. |
| VSS under Windows Server 2008 does not support unformatted or unrecognized volumes. | `Failed to create VSS snapshot of source volume. Error code :2147754764 (0x8004230C)` | • Format all unformatted or unrecognized volumes and try the conversion again.<br>• Deselect all unformatted or unrecognized volumes while setting up the conversion task in the Data to copy pane of the View/Edit Options page. |

| VSS Limitations | Error Messages | Workarounds |
|---|---|---|
| If the space in the VSS snapshot storage area is not enough for VSS to create a snapshot, the conversion fails. | `Failed to create VSS snapshot of source volume. Error code: 2147754783(0x8004231F)` | Clean up the source volumes, especially the system volume and all NTFS volumes, and try to convert the source again. |
| Importing powered-on Hyper-V sources fails if the following two VSS services are not started or are not operating properly on the source machine:<br>• Microsoft Software Shadow Copy Provider Service<br>• Volume Shadow Copy Service | `Failed to create VSS snapshot of source volume. Error code: 2147754758 (0x80042306)` | 1. Set the starting mode for Microsoft Software Shadow Copy Provider Service and Volume Shadow Copy Service to **Automatic**.<br>2. Restart the source machine and try cloning it again. |

# Installing and Uninstalling Converter Standalone

You can install Converter Standalone on a physical or a virtual machine. You can also modify or repair a Converter Standalone installation.

The Local setup installs the Converter Standalone server, Converter Standalone agent, and Converter Standalone client for local use.

**NOTE**
Local installation of Converter Standalone complies with the following security restrictions:

• After the initial setup, the use of an administrator account requires physical access to the product.
• You can manage Converter Standalone only from the machine where it is installed.

During the client-server installation, you can select the Converter Standalone components that you want to install on your system. You can also choose to join the Customer Experience Improvement Program. See Configuring the Customer Experience Improvement Program

When you install the Converter Standalone server and Remote access, the local machine becomes a server for conversions, which you can manage remotely. When you install the Converter Standalone server and the Converter Standalone client, you can use the local machine to access remote Converter Standalone servers or create conversion jobs locally.

If you install only Converter Standalone client, you can connect to a remote Converter Standalone server. You can then use the remote machine to convert hosted virtual machines, managed virtual machines, or remote physical machines.

## Perform a Local Installation on Windows

You can install Converter Standalone on a physical or a virtual machine. The local setup installs the Converter Standalone server, Converter Standalone agent, and Converter Standalone client for local use.

Verify that your system meets the Converter Standalone system requirements.

Verify that you have Administrator privileges.

If you have an earlier version of Converter Standalone agent on the system, uninstall Converter Standalone agent.

If you install Converter Standalone in local mode, you can create and manage conversion tasks only from the machine on which you installed the application. During the installation you can choose to join the Customer Experience Improvement Program. See Configuring the Customer Experience Improvement Program.

1. Log in to the Broadcom Support Portal and download the latest version of Converter Standalone.

2. In the folder that contains the installer file you downloaded, double-click the `VMware-converter-6.6.x-<xxxxx>.exe` file, where `<xxxxx>` is the number of the build.

3. Follow the prompts till the End-User License Agreement page appears.

4. Select **I agree to the terms in the License agreement** and click **Next**.

5. On the Destination Folder page, select the location to install Converter Standalone and click **Next**.

   The default location is `C:\Program Files\VMware\VMware vCenter Converter Standalone.`

6. On the Setup Type page, select **Local installation** and click **Next**.

7. Optional: On the User Experience Setting page, you can select the check box to join the Customer Experience Improvement Program, and click **Next**.

   > **NOTE**
   > If you do not want to join the Customer Experience Improvement Program, deselect the check box instead.

8. On the Ready to Install page, click **Install**.

9. Optional: On the Installation Completed page, deselect **Run VMware vCenter Converter Standalone Client now** if you want to start the application later.

10. On the Installation Completed page, click **Finish**.

    A prompt might ask you to restart your system.

Converter Standalone is installed on the local machine and is ready for use.
You can use Converter Standalone to convert physical or virtual machine sources to virtual machine destinations.

## Perform a Client-Server Installation in Windows

Perform a client-server installation so that you can create and manage conversion tasks remotely.

Verify that your system meets the Converter Standalone system requirements.

Verify that you have Administrator privileges.

If you have an earlier version of Converter Standalone agent on the system, uninstall Converter Standalone agent.

During the client-server installation, you can select the Converter Standalone components that you want to install on your system. You can also choose to join the Customer Experience Improvement Program. See Configuring the Customer Experience Improvement Program

1. Log in to the Broadcom Support Portal and download the latest version of Converter Standalone.

2. In the folder that contains the installer file you downloaded, double-click the `VMware-converter-6.6.x-<xxxxx>.exe` file, where `<xxxxx>` is the number of the build.

3. Follow the prompts till the End-User License Agreement page appears.

4. Select **I agree to the terms in the License agreement** and click **Next**.

5. On the Destination Folder page, select the location to install Converter Standalone and click **Next**.

   The default location is `C:\Program Files\VMware\VMware vCenter Converter Standalone.`

6. On the Setup Type page, select **Client-Server installation (advanced)** and click **Next**.

7. On the Custom Setup page, select the components that you want to install and click **Next**.

| Option | Description |
|---|---|
| **Converter server** | Converter Standalone server manages the conversion tasks. It handles the communication between the Converter Standalone clients and Converter Standalone agents. You cannot install Converter server alone. You must install Converter Standalone server together with Remote access or with the Converter Standalone client, or with both. |
| **Remote access** | If you install Remote access, local and multiple remote Converter Standalone clients can connect to the local Converter Standalone server. With Remote access you can create and manage conversion tasks remotely. For remote access, you must perform a client-server installation. |
| **Converter agent** | Install Converter Standalone agent so that the local machine can be a source machine for conversions. |
| **Converter client** | If you install only Converter Standalone client, you can connect to a remote Converter Standalone server. You can then use the remote machine to convert hosted virtual machines, managed virtual machines, or remote physical machines. |

When you install the Converter Standalone server and Remote access, the local machine becomes a server for conversions, which you can manage remotely. When you install the Converter Standalone server and the Converter Standalone client, you can use the local machine to access remote Converter Standalone servers or create conversion jobs locally.

8. Optional: If you decided to install Remote access or Converter Standalone agent, modify the Web service ports on the Port Settings page.

   - Type the HTTPS port service number.
   - Type the HTTP port service number.
   - Type the Agent port service number.

9. Optional: On the User Experience Setting page, you can select the check box to join the Customer Experience Improvement Program, and click **Next**

   > **NOTE**
   > If you do not want to join the Customer Experience Improvement Program, deselect the check box instead.

10. On the Ready to Install page, click **Install**.

11. Optional: If you installed the Converter Standalone client, deselect **Run Converter Standalone Client now** to complete the installation without starting the application at this time.

12. On the Installation Completed page, click **Finish**.

    A prompt might ask you to restart your system.

The selected Converter Standalone components are installed on the local machine and are ready for use.

You can use Converter Standalone to convert physical or virtual machine sources to virtual machine destinations.

# Perform a Command-Line Installation in Windows

You can install Converter Standalone from the Command Prompt or by writing a Windows batch file (`.bat`) to automate the installation process.

Verify that your system meets the Converter Standalone system requirements.

Verify that you have Administrator privileges.

If you have an earlier version of Converter Standalone agent on the system, uninstall Converter Standalone agent.

1. Log in to the Broadcom Support Portal and download the latest version of Converter Standalone.

2. Open a Command Prompt window.

3. At the command line, navigate to the local directory to which you downloaded the installer.

4. To install Converter Standalone silently with the log file written to the `temp` directory, enter:
   `VMware-converter-6.6.x-<build>.exe /s /v"/qn ADDLOCAL=ALL /l*v %TEMP%\vmconvservermsi.log VMCE_ENABLE_TELEMETRY=true"` where `VMware-converter-6.6.x-<build>.exe` is the full installer filename.
   For more command-line options, see Command-Line Options for Windows Installation.

You can use Converter Standalone to convert physical or virtual machine sources to virtual machine destinations.

# Command-Line Options for Windows Installation

You can use the command-line installation options when you install Converter Standalone from the Command Prompt in Windows or by writing a Windows batch file (`.bat`).

**Table 14: Command-Line Options**

| Option | Action |
|---|---|
| `/s` | Does not display the Windows Installer version check. |
| `/v"params"` | Passes parameters to the `msiexec.exe` file. |
| `/qn` | Runs the `msi` command in silent mode. |
| `/qb` | Runs the `msi` command in basic mode. |
| `/qf` | Runs the `msi` command in full mode. |
| `/l*v Logfile` | Records login information in the file provided in `Logfile`. |
| `/x` | Uninstalls vCenter Converter Standalone. |
| `ADDLOCAL="ALL"` | Installs full package. The parameter is case-sensitive. |
| `PROPERTY=property value` | Sets the value of a property to `property value`. |
| `VMCE_HTTP_PORT` | Sets the HTTP port. The default is 80. Remote machines connect to the server through this port to download the Converter Standalone client. |
| `VMCE_HTTPS_PORT` | Set the HTTPS port. The default is 443. Remote Converter Standalone clients connect to this port on the server and submit conversion tasks. |
| `VMCE_AGENT_PORT` | Sets an Agent port. The default is 9089. Remote Converter Standalone servers connect to this port to convert this machine. |
| `VMCE_ENABLE_TELEMETRY` | Controls whether to join the Customer Experience Improvement Program. |

# Modify Converter Standalone in Windows

To change the installed Converter Standalone agent or the communication ports for the Converter Standalone components, you must modify the Converter Standalone installation.

Verify that you have Administrator privileges.

Close the Converter Standalone application before you start the installer wizard.

1. To start the Converter Standalone installer, perform one of the following actions:

   - Go to the folder that contains the installer file and double-click the `VMware-converter-6.6.x-<xxxxx>.exe` file, where `<xxxxx>` is the number of the build. Check the number of the build to see if it matches the build you installed.
   - Select **Add or Remove Programs** from Control Panel, select Converter Standalone from the list, and click **Change**.

2. On the Welcome page of the installer wizard, click **Next**.

3. On the **Program Maintenance** page, select **Modify** and click **Next**.

4. On the Custom Setup page, select the components that you want to install and click **Next**.

| Option | Description |
|---|---|
| **Converter server** | Converter Standalone server manages the conversion tasks. It handles the communication between the Converter Standalone clients and Converter Standalone agents. You cannot install Converter server alone. You must install Converter Standalone server together with Remote access or with the Converter Standalone client, or with both. |
| **Remote access** | If you install Remote access, local and multiple remote Converter Standalone clients can connect to the local Converter Standalone server. With Remote access you can create and manage conversion tasks remotely. For remote access, you must perform a client-server installation. |
| **Converter agent** | Install Converter Standalone agent so that the local machine can be a source machine for conversions. |
| **Converter client** | If you install only Converter Standalone client, you can connect to a remote Converter Standalone server. You can then use the remote machine to convert hosted virtual machines, managed virtual machines, or remote physical machines. |

When you install the Converter Standalone server and Remote access, the local machine becomes a server for conversions, which you can manage remotely. When you install the Converter Standalone server and the Converter Standalone client, you can use the local machine to access remote Converter Standalone servers or create conversion jobs locally.

5. Optional: If you decided to install Remote access or Converter Standalone agent, modify the Web service ports on the Port Settings page.

   - Type the HTTPS port service number.
   - Type the HTTP port service number.
   - Type the Agent port service number.

6. On the **Ready to Modify** page, click **Install**.

7. Optional: If you installed the Converter Standalone client, deselect **Run Converter Standalone Client now** to complete the installation without starting the application at this time.

8. On the Installation Completed page, click **Finish**.

   A prompt might ask you to restart your system.

The selected Converter Standalone components are installed on the local machine and are ready for use.

You can use Converter Standalone to convert physical or virtual machine sources to virtual machine destinations.

# Repair Converter Standalone in Windows

You can repair the Converter Standalone installation to check for and reinstall the Converter Standalone client or Converter Standalone agent.

Verify that you have Administrator privileges.

Close the Converter Standalone application before you start the installer wizard.

1. To start the Converter Standalone installer, perform one of the following actions:

   • Go to the folder that contains the installer file and double-click the `VMware-converter-6.6.x-<xxxxx>.exe` file, where `<xxxxx>` is the number of the build. Check the number of the build to see if it matches the build you installed.

   • Select **Add or Remove Programs** from Control Panel, select Converter Standalone from the list, and click **Change**.

2. On the Welcome page of the installer wizard, click **Next**.

3. On the Program Maintenance page, select **Repair** and click **Next**.

4. On the Ready to Repair page, click **Install**.

5. On the Installation Completed page, click **Finish**.

   A prompt might ask you to restart your system.

You can use Converter Standalone to convert physical or virtual machine sources to virtual machine destinations.

# Uninstall Converter Standalone in Windows

You can uninstall Converter Standalone by using the Microsoft Windows Add or Remove Programs utility from the Control Panel.

Verify that you have Administrator privileges.

Close the Converter Standalone application before you start the installer wizard.

Alternatively, you can uninstall Converter Standalone by using the VMware vCenter Converter Standalone installer wizard.

1. To start the Converter Standalone installer, perform one of the following actions:

   • Go to the folder that contains the installer file and double-click the `VMware-converter-6.6.x-<xxxxx>.exe` file, where `<xxxxx>` is the number of the build. Check the number of the build to see if it matches the build you installed.

   • Select **Add or Remove Programs** from Control Panel, select Converter Standalone from the list, and click **Change**.

2. On the Welcome page of the installer wizard, click **Next**.

3. On the **Program Maintenance** page, select **Remove** and click **Next**.

4. On the **Ready to Remove** page, click **Remove**.

5. On the Installation Completed page, click **Finish**.

   A prompt might ask you to restart your system.

## Connect to a Remote Converter Standalone Server

You can use the Converter Standalone client to connect to a Converter Standalone server installed on a remote machine.

Ensure that the Converter Standalone server and agent are installed on the remote machine.

1. Start Converter Standalone.

2. Follow the procedure that is applicable for your installation type.

| Option | Action |
|---|---|
| **Local installation** | 1. Select **Administration** > **Connect to another server**.<br>2. On the Converter Standalone login page, select **Enter the IP address or host name of the Converter Standalone server**.<br>3. Provide the IP address and Administrator credentials, and click **Login**. |
| **Client-server installation with remote access** | 1. On the Converter Standalone login page, select **Enter the IP address or host name of the Converter Standalone server**.<br>2. Provide the IP address and Administrator credentials, and click **Login**. |

You can now use the remote Converter Standalone server to set up and manage conversion tasks.

## Enable TLS 1.0 and TLS 1.1 Protocols in vCenter Converter Standalone

By default vCenter Converter Standalone 6.6 supports only TLS 1.2 security protocol. If needed, you can enable the TLS 1.0 and TLS 1.1 protocols manually.

1. Navigate to the `%ProgramData%\VMware\VMware vCenter Converter Standalone` directory.

2. Open the `converter-client.xml`, `converter-server.xml`, `converter-worker.xml`, and `converter-agent.xml` files in a text editor.

   The `converter-client.xml` file is located in the `%ProgramFiles(x86)%\VMware\VMware vCenter Converter Standalone` folder.

3. Change the value of the `<sslOptions>` tag for each of the files.

   a) Locate the `<sslOptions>` tag in the file and to enable the TLS 1.1 protocol, change value of the tag from `123422720` to `391858176`.

      **NOTE**
      If you change the value to `56313856`, you enable the TLS 1.0, TLS 1.1, and TLS 1.2 security protocols.

   b) Save the changes to the file.

4. Restart the Converter Standalone services for the changes to take effect.

   **NOTE**
   If you install Converter Agent on a remote machine, you must repeat this procedure by using the `converter-agent.xml` file on the remote machine.

# Configuring the Customer Experience Improvement Program

When you choose to participate in the Customer Experience Improvement Program (CEIP), VMware receives anonymous information to improve the quality, reliability, and functionality of VMware products and services.

## Categories of Information That VMware Receives

This product participates in VMware's Customer Experience Improvement Program ("CEIP").

Details regarding the data collected through CEIP and the purposes for which it is used by VMware are set forth at the Trust & Assurance Center at https://www.broadcom.com/company/legal/privacy/data-usage-programs/ceip.

To join or leave the CEIP for this product, please see Join or Leave the Customer Experience Improvement Program.

## Join or Leave the Customer Experience Improvement Program

You can choose to join the Customer Experience Improvement Program (CEIP), or leave the CEIP at any time.

> **NOTE**
> You can join the CEIP during the installation of Converter Standalone.

1. From the **Administration** menu on the toolbar, select **Customer Experience Improvement Program**.

2. Select the check box to activate CEIP or deselect the check box to deactivate the program.

3. Click **OK**.

# Convert a Physical or Virtual Machine

You can create a conversion job to convert a physical or virtual machine to a variety of destinations. You can convert powered on physical machines, VMware virtual machines, and Hyper-V Server virtual machines into VMware standalone virtual machines or virtual machines that vCenter Server manages.

The approach you take for creating the conversion job is determined by the type of source and the type of destination that you select.

Source type

A powered on physical or virtual machine, a vSphere virtual machine running on an ESXi host, or a standalone virtual machine.

Standalone virtual machines include VMware virtual machines, such as  machines.

For a complete list of supported source types and product versions, see Supported Source Types.

Destination type

ESXi host, ESXi host that vCenter Server manages, or a VMware standalone virtual machine.

For a complete list of supported destination types and product versions, see Supported Destination Types.

## Start the Wizard for a Conversion

The **Conversion** wizard guides you through the steps of creating a conversion job.

1. Start the Converter Standalone application.

2. Click **Convert machine** in the application menu.

The **Conversion** wizard opens on the Source System page.

You can now select the source machine type to convert.

# Select a Source Machine to Convert

You can select from several source options for the type of machine to convert.

Before you select a source machine to convert, verify that it is listed in the list of supported source types. See Supported Source Types.

## Prerequisites for Converting a Powered On Windows Machine

Before you continue with the conversion, you must prepare the source Windows machine.

- Make sure that the Windows version installed on the powered on machine is supported. For a list of supported operating systems, see Supported Operating Systems.
- Make sure that the Converter Standalone server machine has network access to the Windows source machine.
- Turn off firewall applications running on the source machine.
- Deactivate simple file sharing on the source Windows machine.
- Stop or deactivate anti-virus software running on the source machine.
- Turn off User Account Control (UAC) or use local administrator account on the source machine.
- If you are running Windows 8 or later on the source machine, turn off Remote UAC.
  - If you are logged in as a member of the local Administrators group, you must deactivate the **User Account Control: Use Admin Approval Mode for the built-in Administrator account** policy in the `Security Options` folder of the **Local Group Policy Editor**. You must reboot for the changes to take effect.
  - If you are logged in as the Administrator, you must deactivate the **User Account Control: Turn on Admin Approval Mode** policy in the `Security Options` folder of the **Local Group Policy Editor**. You don't need to reboot for the changes to take effect.
    > **NOTE**
    > The `Security Options` folder is located in `Computer Configuration/Windows Settings/ Security Settings/Local Policies`.
- Make sure that no other conversion job is using the source you select.
- Remove any Converter Standalone 4.x and Converter Standalone 5.x installations manually from the source machine.

## Select a Powered On Windows Machine to Convert

You can select a powered on Windows machine to convert. The source machine can be a physical or a virtual machine.

Verify that your Windows machine is prepared for conversion. See Prerequisites for Converting a Powered On Windows Machine.

1. On the **Source System** page of the **Conversion** wizard, select the **Powered on** radio button.

2. From the drop-down menu, select a menu item that corresponds to your source machine location.

   > **NOTE**
   > If you have connected a Converter Standalone client to a remote Converter Standalone server, the menu item **This local machine** is not available and you can convert the local machine only as a remote machine.

| Source Location | Action |
|---|---|
| Local | Click **This local machine**. |
| Remote | Click **Remote Windows machine** and provide the IP address or name of the machine and administrator credentials. |
| | The default Converter Standalone Agent port for remote Windows machines is 9089. If you previously modified the Converter Standalone Agent port service number, enter *IP_Address*:*Port* , where *IP_Address* is the IP address |

| Source Location | Action |
|---|---|
|  | of the remote Windows machine and *Port* is the Agent port service number.<br><br>**NOTE**<br>You can provide the user name in the `domain \user` credentials format. Alternatively, you can enter a user name without a domain name and Converter Standalone will attempt to log you in to the remote machine by using the `machine\user` format. |

3.  Optional: Click **View source details** to see the hardware and software information about the source machine.

4.  Click **Next**.

    If you convert a remote machine and the Converter Standalone agent is not already installed on the source machine, a dialog box prompts you to confirm the installation and select an uninstallation method for the Converter Standalone agent.

5.  Optional: Select the uninstallation procedure for Converter Standalone agent and click **Yes**.

    Converter Standalone agent is installed on the source machine.

Converter Standalone agent prepares the source machine for conversion.

On the **Destination System** page, you can select the destination type for the new virtual machine.

## Select a Powered On Linux Machine to Convert

You can select a powered on Linux machine to convert. The source machine can be a physical or virtual machine.

Before you continue with the conversion, you must prepare the source Linux machine.

*   Enable SSH on the source Linux machine.
*   Make sure that you use the root account or account with sudo privileges without password prompt for all commands to convert a powered on Linux machine.
*   Make sure that the Converter Standalone server machine has network access to the Linux source machine.
*   Make sure that no other conversion job is using the source you select.

You can convert powered on machines that run Linux only if the source operating system uses GRUB boot loader on the source machine. Alternative boot loaders, such as LILO and LOADLIN, and additional software that alters the GRUB configuration or boot process, such as Trusted Boot, are not supported.

1.  On the **Source System** page of the **Conversion** wizard, select the **Powered on** radio button.

2.  Select **Remote Linux machine** from the drop down menu.

3.  Provide the IP address or DNS name and select authentication method. Provide the IP address or DNS name and root credentials for the Linux machine you want to convert.

    The default SSH daemon port for remote Linux machines is 22. If you previously modified the SSH daemon port service number, enter *IP_Address:Port* , where *IP_Address* is the IP address of the remote Linux machine and *Port* is the SSH daemon port service number.

| Option | Description |
|---|---|
| **Password** | Enter the root credentials for the Linux machine you want to convert. |
| **Private key file** | Select the private key file and enter the passphrase. |

4. Click **Next**.

Converter Standalone connects to the powered on Linux machine and prepares it for conversion.

On the **Destination System** page, you can select the destination type for the new virtual machine.

## Customize a Path for Temporary Files During Linux Queries

You can provide a path to a folder where the `vmware-sysinfo` files are extracted and executed during a Linux migration.

If the Linux policy does not allow running code as a privileged user from the `/tmp` directory, you can configure Converter Standalone to place its temporary files in another directory during Linux conversions.

1. Navigate to the `%ProgramData%\VMware\VMware vCenter Converter Standalone` directory.

2. Open the `converter-worker.xml` file in a text editor.

3. Locate and uncomment the `<sysinfoTmpRoot>` tag.

4. Change the value of the `<sysinfoTmpRoot>` tag to a proper directory and save the change.

5. Restart the worker service for the change to take effect.

This change affects all future Linux conversions until the value is restored and the service is restarted.

## Select an ESXi or vCenter Server Virtual Machine to Convert

You can convert a powered off virtual machine that is located on an ESXi host, or on an ESXi host managed by vCenter Server.

If the source machine that you want to convert resides on a VMware DRS cluster that vCenter Server manages, set VMware DRS Power Management (DPM) to manual so that DPM does not power off the ESXi hosts used by Converter Standalone. When the conversion process completes, restore DPM to its original settings. For information about how to change DPM settings, see vSphere Resource Management.

Power off the source machine before the conversion.

You cannot convert a running or suspended virtual machine by using this procedure. For powered on virtual machines, use the procedures for powered on source machines.

If you connect to a vCenter Server that is part of an environment that contains multiple vCenter Server instances, Converter Standalone displays only ESXi hosts managed directly by the currently connected vCenter Server.

1. On the Source System page of the **Conversion** wizard, select the **Powered off** radio button and then select **VMware Infrastructure virtual machine** from the **Select source type** drop-down menu.

2. Provide the IP address or host name and credentials for authentication with the ESXi host or the vCenter Server, and click **Next**.

The **Source Machine** page appears, displaying the host name or IP address and the inventory of the ESXi host or the vCenter Server.

On the Source Machine page of the **Conversion** wizard, you can browse the virtual infrastructure inventory and select the virtual machine to convert.

### Specify the vCenter Server Virtual Machine to Convert

If you choose to convert a virtual machine managed by vCenter Server or an ESXi host, you must browse the inventory to locate the source virtual machine.

On the Source System page of the **Conversion** wizard, select **VMware Infrastructure virtual machine** as the conversion source and click **Next** to proceed to the Source Machine page.

1. Optional: If you are connected to a vCenter Server, select a virtual machine view from the **Specify machine with** drop-down menu.

| Option | Description |
|---|---|
| **Hosts and Clusters** | The Inventory tree pane provides a view of hosts, clusters, resource pools, and vApps. If you select a host managed by a cluster, you see the full list of virtual machines and templates in the virtual machine list view. If you select a standalone host or a cluster, you see only the virtual machines that are not deployed in the resource pools of that host or cluster. |
| **VMs and Templates** | The Inventory tree pane provides a view of datacenters and virtual machine folders. |

2. Optional: If you are connected to a vCenter Server, select an object from the Inventory tree pane.

| Option | Description |
|---|---|
| **Hosts and Clusters** | Select cluster, ESXi host, resource pool, or vApp. |
| **VMs and Templates** | Select datacenter or virtual machine folder. |

3. From the virtual machines list, select the virtual machine you want to convert.

   You can search for virtual machines in the virtual machine list by typing one or more letters of their names in the **Search for name with** text box. You can clear your search by clicking **Clear**.

   > **NOTE**
   > You cannot select a virtual machine from an ESXi host that is powered off, connected to another vCenter Server, or in maintenace mode.

4. Optional: To refresh the inventory, click **Refresh**.

5. Optional: To view more details about a machine, select it and click **View source details**.

6. Click **Next** to proceed to the **Destination System** page.

On the **Destination System** page, you can select the destination type for the new virtual machine.

## Select a VMware Hosted Virtual Machine to Convert

You can convert a virtual machine created or used in a VMware hosted product, such as , VMware Player, and .

Verify that your source machine is a supported VMware Desktop products virtual machine. For more information, see Supported Source Types.

If you plan to use a network path to locate the source, verify that the machine where Converter Standalone server runs has access to that network path.

Power off the source machine before the conversion.

1. On the Source System page of the **Conversion** wizard, select the **Powered off** radio button and then select **VMware Workstation or other VMware virtual machine** from the **Select source type** drop-down menu.

2. Locate the virtual machine source.

   - If you are connected to a remote Converter Standalone server, provide a network path to the source virtual machine file (`.vmx`) in the **Virtual machine file** text box. For example, `\\server\virtual_machines\virtual_machine.vmx`.
   - If you are connected to a local Converter Standalone server, provide a network path or a local path to the `.vmx` file.

   By default, only VMware virtual machine `*.vmx` files are displayed.

3. If you are connected to a remote Converter Standalone server, type user credentials for accessing the source virtual machine.

   You do not have to provide user credentials if you are connected to a local Converter Standalone server. In such cases, Converter Standalone uses the Windows credentials to connect to the source machine.

4. Optional: To view more information about the selected source, click **View source details**.

5. Click **Next** to proceed to the **Destination System** page.

On the **Destination System** page, you can select the destination type for the new virtual machine.

## Select a Hyper-V Server Virtual Machine to Convert

You can convert virtual machines that Hyper-V Server manages.

Power off the source Hyper-V virtual machine.

1. On the Source System page, select the **Powered off** radio button and then select **Hyper-V Server** from the **Select source type** drop-down menu.

2. Provide the IP address or DNS name and administrative credentials to authenticate with the Hyper-V Server and click **Next**.

   If Converter Standalone agent is not already installed on the Hyper-V Server, a dialog box appears. In it, you confirm the installation of Converter Standalone agent.

3. Optional: Select an uninstallation procedure for Converter Standalone agent and click **Yes**.

Converter Standalone agent is installed on the source Hyper-V Server.
On the Source Machine page, browse the Hyper-V Server inventory to locate the source virtual machine to convert.

### Specify the Hyper-V Server Virtual Machine to Convert

If you choose to convert a virtual machine managed by a Hyper-V Server, you must browse the inventory to locate the source virtual machine.

On the Source System page, select **Hyper-V Server** as the source type and navigate to the Source Machine page.

1. On the Source Machine page, select the virtual machine you want to convert.

   You can search for virtual machines in the inventory by typing one or more letters of their names in the **Search for name with** text box. You can clear your search by clicking **Clear**.

   > **NOTE**
   > You can select only powered off virtual machines. To convert a running machine, on the Source System page select **Powered on machine** as the source type. To convert a suspended machine, power it off and convert it as a Hyper-V Server virtual machine, or power it on and convert it as a powered on source.

2. Optional: To refresh the inventory, click **Refresh**.

3. Optional: To view more details about the virtual machine to convert, click **View source details**.

4. Click **Next** to proceed to the **Destination System** page.

The Converter Standalone agent prepares the Hyper-V source machine for conversion.

On the **Destination System** page, you can select the destination type for the new virtual machine.

## Converting an Amazon EC2 Instance to a VMware Virtual Machine

With Converter Standalone, you can convert Amazon Elastic Compute Cloud (Amazon EC2) Windows and Linux instances to VMware virtual machines.

You can perform a conversion operation of an Amazon EC2 instance to a VMware virtual machine in the following ways.

- Import the source machine directly to an ESXi host that a vCenter Server instance manages.
- Convert the Amazon EC2 Windows instance to a  virtual machine and then manually import the virtual machine to an ESXi host.

## Convert an Amazon EC2 instance to a VMware virtual machine

Since Converter Standalone 6.4, you can convert remote Amazon EC2 Windows and Linux instances that have no direct access to the destination ESXi host. The vCenter Server instance that manages the ESXi host can be located either on-premises or in VMware Cloud.

> **NOTE**
> The conversion of remote Windows instances without direct access to the destination ESXi host, requires the use of proxy mode. For more information on conversion of remote Windows machines, see Remote Hot Cloning of Powered On Source Machines That Are Running Windows. For more information on conversion of remote Linux machines, see Remote Hot Cloning of Powered On Source Machines That Are Running Linux.

### Prerequisites

- Verify that the Amazon EC2 source machine is powered on. Conversion of powered-off virtual machines (VMs) is not supported.

### Prepare the Amazon EC2 Source Machine

- Prepare your Amazon EC2 Windows machine.
  a. In the AWS console, under Security groups, add a new inbound rule and enable port 9089 for the Converter Standalone server IP address.
  b. Install the Converter Standalone agent in the source machine.
     a. Navigate to the folder where Converter Standalone is installed.
        By default, Converter Standalone is installed in `C:\Program Files (x86)\VMware\VMware vCenter Converter Standalone`.
     b. Copy `VMware-Converter-Agent.exe` to your source machine.
     c. Run `VMware-Converter-Agent.exe`.
- Prepare your Amazon EC2 Linux machine.
  a. In the VMware Cloud console, select **Open NSX Manager**.
  b. Navigate to the **Networking & Security** > **Overview** tab.
  c. Under **Default Compute Gateway**, view the Source NAT public IP address.
  d. In the AWS console, under Security groups, add a new inbound rule and enable port 22 for the Converter Standalone server IP and Source NAT public IP addresses.
  e. If you want to import the Linux machine into VMware Cloud, in the `converter-worker.xml` configuration file, change the value of the `UseHostIPForWebSocketTicket` property to `true` and restart the worker service.
     In VMware Cloud, ESXi hosts use their IP addresses, instead of Fully Qualified Domain Names (FQDNs), to register with vCenter Server.

### Prepare the Destination Machine in VMware Cloud

If you are importing your source machine to VMware Cloud, perform the following steps.

1. If you are converting a Windows machine, create a VM with Windows operating system and in the VM, install Converter Standalone.

2.  Provide Converter Standalone with network access to the vCenter Server instance and ESXi host in VMware Cloud.
    a.  In the VMware Cloud console, select **Open NSX Manager**.
    b.  Navigate to the **Security** > **Gateway Firewall** > **Management Gateway** tab.
    c.  Create a Management Gateway Firewall rule and add the Converter Standalone server IP address to the rule.
    d.  Add a new rule that allows network access to your vCenter Server instance and enable the **HTTPS** service.
    e.  Add a new rule that allows network access to your ESXi host and enable the **HTTPS** and **Provisoning and Remote Control** services.

    For more information on managing NSX Firewall rules in VMware Cloud, see *SDDC Network Administration with NSX Manager* in the *VMware Cloud on AWS Networking and Security* documentation.

### Convert the Amazon EC2 Source Machine to the Destination VMware Virtual Machine

1.  Start the Converter Standalone application.
    See Start the Wizard for a Conversion.
2.  Select a remote powered on Linux or Windows machine to convert.
    See Select a Source Machine to Convert.
3.  Select a destination for your virtual machine.
    If you are importing a remote Windows machine, on the **Destination System** page of the **Conversion** wizard, select the **Use proxy mode** check box. As a result, the data traffic passes through the Converter Standalone server machine.
    See Select a Destination for the New Virtual Machine.
4.  Configure the virtual hardware resources that the destination virtual machine uses.
    See Configure the Hardware of the Destination Virtual Machine.
5.  Configure the guest operating system and enable it to operate in a virtual environment.
    See Configure the Software on the Destination Virtual Machine.
6.  Configure the conversion process and select the behavior of the source and destination machine during and after conversion.
    See Configure the Conversion Job.
7.  Check the summary of your conversion job before adding it to the job list.
    See Review the Summary and Submit the Conversion Job.

### Import an Amazon EC2 Windows Instance to VMware Workstation

You can convert an Amazon EC2 Windows instance to a  virtual machine (VM), and then manually import the VM to an ESXi host.

Verify that the source Amazon Elastic Compute Cloud (Amazon EC2) Windows instance has a temporary volume that is large enough to accommodate the image of your Amazon EC2 Windows instance. This temporary drive must be excluded from the conversion.

1. Install Converter Standalone on the Amazon EC2 Windows instance that you want to convert.

2. Create a conversion task to import the Amazon EC2 Windows instance as a  destination.

   a) Start Converter Standalone on the Amazon EC2 Windows instance.
   b) Click **Convert Machine** in the application menu to start the Conversion wizard.
   c) On the **Source System** page, select **Powered on** from the **Select source type** menu and click **This local machine**.
   d) Click **Next** to proceed to the **Specify Destination** page.
   e) On the **Destination System** page, select **VMware Workstation or other VMware virtual machine** from the drop-down menu and select a suitable  version from the VMware product list.
   f) Click **Next** to proceed to the **Options** page.
   g) On the **Options** page, select **Data to Copy** in the list of options.
   h) Deselect the check box in front of the temporary volume to exclude it from the conversion task.
   i) Click **Next** to proceed to the **Summary** page.

   VM files, such as `vmx` and `vmdk` files, are created during the conversion.

3. On the temporary volume of the Amazon EC2 Windows instance, locate the  VM files that were created during the conversion.

4. Transfer the  VM files to a location that is accessible to your virtual infrastructure and to Converter Standalone. You have several options to transfer the files:

   • Upload the files to a local FTP server using an FTP client that runs inside the Amazon EC2 Windows instance.
   • Upload the files from the Amazon EC2 Windows instance to Amazon S3 and download them to a location that is accessible to your virtual infrastructure and to Converter Standalone.
   • Upload the files from the Amazon EC2 Windows instance to Amazon S3 and use Amazon AWS Import/Export to retrieve the data on a physical storage device. For more information about this procedure, see Amazon Web Services.

To import the  VM image to an ESXi host, follow the procedures described in Select a VMware Hosted Virtual Machine to Convert and in Select a Managed Destination.

## Select a Destination for the New Virtual Machine

When you set up a conversion job, you must select a destination for the new virtual machine.

When you use a VMware DRS cluster as the destination, you must set VMware DRS Power Management (DPM) to manual. This setting ensures that DPM does not power off the ESXi hosts that Converter Standalone uses. When the conversion process completes, restore DPM to its original settings. For information about how to change DPM settings, see vSphere Resource Management.

> **NOTE**
> For conversions of powered on source machines that run Linux, the only supported destination is a vSphere destination.

# Select a Managed Destination

You can convert a virtual machine to use with ESXi or with an ESXi host that vCenter Server manages.

1. On the Destination System page, select **VMware Infrastructure virtual machine** from the **Select destination type** drop-down menu.

2. Provide the IP address or host name and credentials for authentication with the ESXi host or vCenter Server.

3. When you convert a remote machine that has no direct access to the destination ESXi server, select the **Use proxy mode** check box.

   Proxy mode passes the data traffic through the Converter Standalone server machine.

4. Click **Next** to proceed to the Destination Virtual Machine page.

On the Destination Virtual Machine page, you can specify the name of the destination virtual machine and select the folder in which it should reside.

## Name the Destination Virtual Machine and Select a Folder

For vSphere destinations, you can select the destination folder and rename the destination virtual machine.

On the Destination System page of the **Conversion** wizard, select **VMware Infrastructure virtual machine** as the destination type.

If you connect to an ESXi host directly, you can view only the list of virtual machines. Therefore, you cannot select a destination folder.

1. On the **Destination Virtual Machine** page, select the datacenter to accommodate the destination virtual machine.

   If you use folders in your virtual environment to manage groups of virtual machines, you can select a folder to accommodate the destination virtual machine.

2. In the **Name** text box, enter a name for the destination virtual machine.

   By default, Converter Standalone assigns the source machine name in this text box.

   > **NOTE**
   > Search the list of virtual machines in the datacenter or folder you selected to ensure that the name you assign to the destination virtual machine does not exist. Virtual machines are filtered as you type. You can clear your search by clicking **Clear**.

3. Optional: To refresh the inventory, click **Refresh**.

4. Click **Next** to proceed to the **Destination Location** page.

On the **Destination Location** page, you can modify the destination environment for the new virtual machine. This includes selecting a host, resource pool, or cluster to accommodate the destination virtual machine, selecting a datastore to hold the files of the destination virtual machine, and selecting the virtual hardware version to install on the destination virtual machine.

## Customize the Location of the Destination Virtual Machine

For vSphere destinations, you can select an ESXi host, a resource pool, or a cluster. You can also select a datastore and the virtual hardware version to be installed on the destination.

On the Destination Virtual Machine page, name the destination virtual machine. If the destination is a vCenter Server, select the destination folder.

1. On the Destination Location page of the **Conversion** wizard, select a datacenter object from the inventory to accommodate the destination virtual machine.

   - Select an ESXi host.
   - Select a resource pool.
   - Select a cluster.

     On the selected cluster, if DRS is not running in the automated mode, you can select an ESXi host that belongs to the selected cluster from the **Host** drop-down menu.

2. Optional: From the **Datastore** drop-down menu, select the datastore to hold the destination virtual machine files.

3. Optional: From the **Virtual machine version** drop-down menu, select the virtual hardware version for the destination virtual machine.

   The **Virtual machine version** drop-down menu lists only the virtual hardware versions that are compatible with the destination location. For more information about virtual machine compatibility, see *Hardware Features Available with Virtual Machine Compatibility Settings* in the *vSphere Virtual Machine Administration* documentation.

4. Click **Next** to proceed to the **Options** page.

On the **Options** page, you can set up the parameters of the conversion task. These settings include data layout, network settings, and guest operating system customization.

## Select a Hosted Destination

You can convert a virtual machine for use with , , or .

If you plan to use a network path to locate the destination, verify that you have access to that network path.

1. On the **Destination System** page, select **VMware Workstation or other VMware virtual machine** from the **Select destination type** drop-down menu.

2. Select the destination VMware hosted product from the **Select VMware product** drop-down menu.

3. Provide a name for the destination virtual machine in the **Name** text box.

4. Specify the location to store the destination virtual machine files.

   - If you are connected to a remote Converter Standalone server, provide a network path to the destination directory. For example, `\\server\virtual_machines\`.
   - If you are connected to a local Converter Standalone server, provide a network path or a local path to the destination directory.

5. Optional: If the destination directory is password-protected, provide valid user credentials.

   You do not have to provide user credentials if the destination location is on the local storage of the machine where Converter Standalone server runs.

6. Click **Next** to proceed to the **Options** page.

On the **Options** page, you can set up the parameters of the conversion task. These settings include data layout, network settings, and guest operating system customization.

## Configure the Hardware of the Destination Virtual Machine

You can configure the virtual hardware resources that the destination virtual machine uses.

## Organize the Data to Be Copied on the Destination Machine

Your selected source and destination determine the available data cloning options. For a conversion job, you can copy all disks to the destination or select the volumes to be copied or to be excluded. For destinations with multiple datastores, you can select the data location on specific datastores in your virtual environment.

On the **Options** page of the **Conversion** wizard, click **Data to copy** in the options list.

If you selected a source with multiple disks and volumes, you can set Converter to start concurrent data transfers. For details, see Set the Number of Data Connections per Task.

In the Data to copy pane, select a copy mode from the **Data copy type** drop-down menu.

| Option | Description |
|---|---|
| **Copy all disks and maintain layout** | Results in disk-based cloning. You can preserve the source disk layout in the destination virtual machine. This option is not available for powered on source machines. |
| **Select volumes to copy** | Results in volume-based cloning. Volume-based cloning is performed at file or block level. You can select the volumes to be copied to the destination virtual machine. You can also resize and reorganize the volume layout. This option is available for powered on source machines that run Windows and Linux, and for all other supported sources that run Windows. |
| **Linked clone** | Results in creating a VMware virtual machine that shares the virtual disk of the source machine. This option is available only for hosted sources and hosted destinations. |

The destination that you select determines the destination disk types that are available to you. To support destination virtual disks on FAT file systems, divide the source data into 2 GB files. For detailed information about destination virtual disks types, see Supported Destination Disk Types.

### Resize a Volume

To manage disk space on the destination datastore, you can resize the disk volumes before you begin the conversion.

On the **Options** page of the **Conversion** wizard, click **Data to copy** in the options list.

1. From the **Data copy type** drop-down menu, select **Select volumes to copy**.

2. In the Destination size column, select an option to specify the size of a destination volume.

| Option | Description |
|---|---|
| **Maintain size** | Maintains the original source volume size.<br><br>**NOTE**<br>If the volume is nearly full, Converter Standalone allocates a buffer amount and displays a volume amount greater than the source volume. |
| **Min size** | Copies only the used space of the source volume.<br><br>**NOTE**<br>Converter Standalone allocates a buffer amount and displays a volume amount greater than the source volume. |
| **Type size in GB** | Allows you to type a custom size in GB for the destination volume. The value cannot be smaller than the used space on the source volume, but can be larger than the total size of the |

| Option | Description |
|---|---|
| | source volume. The maximum allowed volume size for the destination is 999999 GB. |
| **Type size in MB** | Allows you to type a custom size in MB for the destination volume. The value cannot be smaller than the used space on the source volume, but can be larger than the total size of the source volume. The maximum allowed volume size for the destination is 999999 GB. |

3.  Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

## Change a Volume Cluster Size

To enhance performance and storage space, you can change the volume cluster size before the conversion. Modifying the cluster size changes the cloning mode from block level to file level.

On the **Options** page of the **Conversion** wizard, click **Data to copy** in the options list.

Ensure that the source is a Windows machine.

1.  From the **Data copy type** drop-down menu, select **Select volumes to copy**.

2.  Click **Advanced** and select the **Destination layout** tab.

3.  Select the volume for which you want to change the cluster size.

4.  In the Cluster size column, select an option to specify the cluster size of the destination volume.

| Option | Description |
|---|---|
| **Default cluster size** | Applies a default cluster size to the destination volume. |
| **Keep source cluster size** | Preserves the cluster size of the original source volume. |
| **Select a predefined size** | Allows you to select a cluster size for the destination volume from a list of supported values. |

In the Copy type column, you can verify that the cloning operation type is set to file level.

5.  Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |

| Option | Description |
|---|---|
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

## Exclude a Source Volume from the Conversion Process

When you choose not to copy a volume, Converter Standalone ignores the deselected volumes during the conversion process.

On the **Options** page of the **Conversion** wizard, click **Data to copy** in the options list.

The source virtual machine must have more than one volume to be able to deselect existing volumes.

1. From the **Data copy type** drop-down menu, select **Select volumes to copy**.

2. Deselect the volumes that you do not want to copy to the destination virtual machine.

3. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

The deselected volumes are ignored during the conversion process and do not appear on the destination virtual machine.

## Move a Volume to a Different Virtual Disk

You can add virtual disks to the destination virtual machine and move source volumes in the new disks.

On the **Options** page of the **Conversion** wizard, click **Data to copy** in the options list.

The number of virtual disks you can create depends on the number of volumes that exist on the source virtual machine. For example, if you have only one volume on the source virtual machine, you cannot add a virtual disk to the destination virtual machine.

You cannot move the system volume where the guest operating system is installed. For example, if your Windows operating system is installed on `C:`, you cannot move the `C:` volume.

1. From the **Data copy type** drop-down menu, select **Select volumes to copy**.

2. Click **Advanced** and select the **Destination layout** tab.

3. Select a volume from the list and click **Add disk**.

   A new virtual disk appears in the Destination layout column.

4. Select a source volume and use the **Move up** or **Move down** buttons to accommodate the volume in the new virtual disk.

   The partitioning scheme of the first source volume that you move will determine the type of the new virtual disk on the destination virtual machine.

   If you leave the virtual disk empty, Converter Standalone does not create the virtual disk on the destination virtual machine.

The selected source volume is copied to a new virtual disk on the destination virtual machine.

## Select the Destination Datastore for a Source Volume

You can store a disk volume in a datastore different from the one that accommodates the virtual machine configuration file (`.vmx`).

On the **Options** page of the **Conversion** wizard, click **Data to copy** in the options list.

You can select the destination datastore for a volume only for managed destinations with more than one datastore.

1. From the **Data copy type** drop-down menu, select **Select volumes to copy**.

2. Click **Advanced** and select the **Destination layout** tab.

3. Select a volume from the list and click **Add disk**.

   A new virtual disk appears in the Destination layout column.

4. Select a source volume and use the **Move up** or **Move down** buttons to accommodate the volume in the new virtual disk.

   The partitioning scheme of the first source volume that you move will determine the type of the new virtual disk on the destination virtual machine.

   If you leave the virtual disk empty, Converter Standalone does not create the virtual disk on the destination virtual machine.

5. Highlight the new virtual disk and select a different datastore from the **Destination datastore** drop-down menu.

6. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard. <br><br> • The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane. <br> • The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

The virtual disk file (`.vmdk`) that contains the volume is stored in the selected datastore.

## Add a Virtual Disk

You can add additional virtual disks to the destination virtual machine .

You must have more than one volumes on the source machine to be able to add an additional virtual disk.

On the **Options** page of the **Conversion** wizard, click **Data to copy** in the options list.

The number of virtual disks on the destination virtual machine depends on the number of volumes that exist on the source virtual machine . For example, if you have only one volume on the source virtual machine, you cannot add a virtual disk to the destination virtual machine.

1. From the **Data copy type** drop-down menu, select **Select volumes to copy**.

2. Click **Advanced** and select the **Destination layout** tab.

3. Click **Add disk**.

   A new virtual disk appears in the Destination layout column.

4. Click on the new virtual disk to select it.

5. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

The new virtual disk is created on the destination datastore.

## Set Up a Virtual Disk as a Logical-Volume Group Container

To preserve the LVM structure when converting a Linux source, you can set up a virtual disk as a logical-volume container. Converter Standalone allows you to preserve and modify the source LVM structure.

Ensure that the source is a Linux machine and supports LVM.
Only LVM2 is supported.

You can manage logical volumes and logical-volume groups in the same way as basic volumes and disks.

Logical-volume groups are listed together with virtual disks and are marked with a different icon.

You cannot move active and system volumes in a logical-volume group.

1. From the **Data copy type** drop-down menu, select **Select volumes to copy**.

2. Click **Advanced** and select the **Destination layout** tab.

3. Select a disk and click **To LVG**.

## Move a Disk to a Different Datastore

You can use disk-based cloning to select a different datastore for a destination virtual disk.

On the **Options** page of the **Conversion** wizard, click **Data to copy** in the options list.

You can change the destination datastore for a disk only for managed destinations with more than one datastore.

1. From the **Data copy type** drop-down menu, select **Copy all disks and maintain layout**.

2. Click the name of the virtual disk to relocate and select a different datastore from the **Destination datastore** drop-down menu.

3. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

The virtual disk file (`.vmdk`) is stored in the selected datastore.

## Create an Expandable Disk on a Managed Destination

To save space on the destination datastore, you can copy only the existing data from a source and create an expandable disk on the destination.

On the **Options** page of the **Conversion** wizard, click **Data to copy** in the options list.

You can create expandable disks on managed destinations that support thin provisioning through their GUI.

You can create an expandable disk by using volume-based or disk-based cloning.

• Use disk-based cloning to create an expandable disk.
   a) From the **Data copy type** drop-down menu, select **Copy all disks and maintain layout**.
   b) Click a virtual disk and select **Thin** from the **Type** drop-down menu.
   c) To apply your settings, select another option from the options list or click **Next**.
• Use volume-based cloning to create an expandable disk.
   a) From the **Data copy type** drop-down menu, select **Select volumes to copy** and click **Advanced**.
   b) Select the **Destination layout** tab, click a virtual disk, and select **Thin** from the **Type** drop-down menu.
   c) To apply your settings, select another option from the options list or click **Next**.

Converter Standalone copies only the existing data to the destination datastore. The empty disk space from the virtual disk is not copied to the datastore. As you use the destination virtual machine and write new data to the disk, the size of the destination disk grows.

## Create an Expandable Disk on a Hosted Destination

You can save space on the destination virtual machine by coping only the existing data from a source virtual disk.

You must select a hosted destination, such as VMware Workstation, to use the **Not pre-allocated** disk option.

On the **Options** page of the **Conversion** wizard, click **Data to copy** in the options list.

You can create an expandable disk by using volume-based or disk-based cloning.

- Use disk-based cloning to create an expandable disk.
   a) From the **Data copy type** drop-down menu, select **Copy all disks and maintain layout**.
   b) From the **Type** drop-down menu, select **Not pre-allocated**.
   c) To apply your settings, select another option from the options list or click **Next**.
- Use volume-based cloning to create an expandable disk.
   a) From the **Data copy type** drop-down menu, select **Select volumes to copy** and click **Advanced**.
   b) Select the **Destination layout** tab, select a virtual disk, and select **Not pre-allocated** from the **Type** drop-down menu.
   c) To apply your settings, select another option from the options list or click **Next**.

Converter Standalone copies only the existing data to the destination datastore. The empty disk space from the virtual disk is not copied to the datastore. As you use the destination virtual machine and write new data to the disk, the size of the destination disk grows.

## Exclude a Source Disk from the Conversion Process

You can select a disk from the source machine and delete it from the disk layout of the destination virtual machine.

The source machine must have more than one hard disk.

On the **Options** page of the **Conversion** wizard, click **Data to copy** in the options list.

1. From the **Data copy type** drop-down menu, select **Select volumes to copy**.
2. Delete the disk.

| Option | Description |
|---|---|
| **Preserve the volumes associated with the disk** | 1. Click **Advanced** and select the **Destination layout** tab. <br> 2. Move the volumes from the disk that you want to delete to another virtual disks. <br> 3. Highlight the empty disk and click **Remove disk**. |
| **Delete the volumes associated with the disk** | 1. Click **Advanced** and select the **Source volumes** tab. <br> 2. Deselect the volumes associated with the disk that you want to delete. |

3. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard. <br><br> • The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane. <br> • The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

## Copy All Disks to the Destination

To preserve the source disks on the destination virtual machine, you can copy all disks to the destination.

On the **Options** page of the **Conversion** wizard, click **Data to copy** in the options list.

Disk-based cloning is not available for powered on source machines.

1. From the **Data copy type** drop-down menu, select **Copy all disks and maintain layout**.

2. Optional: If the destination datastore is low on disk space, click a virtual disk and select a different datastore from the **Destination datastore** drop-down menu.

> **NOTE**
> You must have access to more than one datastore to move a disk to a different datastore.

3. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

Converter Standalone copies the disks to the selected datastores and preserves the source disk layout.

## Create an Optimized Partition Layout

By default, Converter Standalone optimizes the disk partitions alignment to improve the performance of the destination virtual machine.

On the **Options** page of the **Conversion** wizard, click **Data to copy** in the options list.

1. From the **Data copy type** drop-down menu, select **Select volumes to copy**.

2. Select the **Create optimized partition layout** check box.

3. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

Creating an optimized partition layout aligns the partitions on a 1 MB boundary for Windows sources and on a 64 KB boundary for Linux sources.

### Create a Linked Clone

A linked clone is a VMware virtual machine that shares the virtual disk of the source virtual machine.

- Turn off the source virtual machine.
- Verify that your source type is a supported source. See Supported Source Types.

You can create linked clones only after you convert a virtual machine and both the source and destination VMs are in a hosted destination. You cannot create a linked clone if the source image is password-protected.

1. On the Destination System page, select **VMware Workstation or other VMware virtual machine** as a destination and click **Next**.

2. On the Options page, click **Data to copy** in the left pane.

3. In the **Data copy type** drop-down menu, select **Linked clone**.

4. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

You have set up a conversion job to create a linked clone.

## Edit the Number of Processor Sockets and Cores

You can change the number of virtual sockets and the number of processor cores per socket that the destination virtual machine uses.

Make sure the destination host and the guest operating system support the number of processor cores you assign to the destination virtual machine.

> **NOTE**
> You can change the number of cores per socket on virtual hardware version 8 and later.

On the **Options** page of the **Conversion** wizard, click **Devices** in the options list.

1. Click the **Other** tab.

2. From the **Number of virtual sockets** drop-down menu on the CPU Settings panel, select the number of virtual sockets for the destination virtual machine.

3. From the **Number of cores per socket** drop-down menu on the CPU Settings panel, select the number of cores per socket for the destination virtual machine.

4. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |

| Option | Description |
|---|---|
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

The destination virtual machine is configured with the number of virtual processor sockets and cores that you selected. If Converter Standalone shows a message that the destination hardware does not support the number of cores you selected, you must select a supported number of sockets and cores.

## Allocate Memory for the Destination Virtual Machine

You can change the amount of memory allocated to the destination virtual machine.

On the **Options** page of the **Conversion** wizard, click **Devices** in the options list.

By default, Converter Standalone recognizes the amount of memory on the source machine and allocates it to the destination virtual machine.

1. Click the **Memory** tab.

2. In the Memory panel, use the slider or the spin-box to specify the amount of memory for the destination virtual machine.

3. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

Converter Standalone validates the amount of memory. A warning appears if you set the memory amount to more than the maximum supported or to less than the required minimum.

## Select a Disk Controller for the Destination Virtual Machine

You can select the disk controller type for the destination virtual disks.

On the **Options** page of the **Conversion** wizard, click **Devices** in the options list.

1. Click the **Other** tab.

2. From the **Disk controller** drop-down menu, select a disk controller for the destination virtual disk or retain the selected recommended type.

| Option | Description |
|---|---|
| **SCSI Bus Logic** | Use SCSI virtual disks in the destination virtual machine. |
| **IDE** | Use IDE virtual disks in the destination virtual machine. |
| **SCSI LSI Logic** | Use LSI Logic SCSI virtual disks in the destination virtual machine. |
| **SCSI LSI Logic SAS** | Use LSI Logic SCSI (SAS) virtual disks in the destination virtual machine. |
| **Paravirtual SCSI** | Use Paravirtual SCSI virtual disks in the destination virtual machine. |
| **SATA** | Use SATA virtual disks in the destination virtual machine. |
| **NVMe** | Use NVMe virtual disks in the destination virtual machine. |
| **Preserve source** | Use the same types of disk controllers as those installed on the source machine. If they are not supported on the destination virtual machine, replace them with supported ones. This option is not available for powered on Linux sources. |

> **NOTE**
> Depending on your OS version and the target ESXi version, different **Disk controller** options are listed in the VMware vCenter Converter Standalone user interface.

3. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

## Configure the Network Settings of the Destination Virtual Machine

You can change the number of network adapters and select the network that the destination virtual machine uses.

For managed destinations, you can also select the controller type for each network adapter.

1. On the Options page of the **Conversion** wizard, select **Networks** from the options list.

2. From the **Network adapters to connect** drop-down menu, select the number of network adapters to be used by the destination virtual machine.

3. Configure each of the network adapters for the destination.

| Option | Description |
|---|---|
| **For managed destinations** | 1. From the **Network** drop-down menu, select the network that the adapter connects to. |

| Option | Description |
|---|---|
|  | 2. From the **Controller type** drop-down menu, select the controller type. |
| **For hosted destinations** | From the **Connection type** drop-down menu, select the connection type. |

4. To connect an adapter when you power on the destination virtual machine, select the **Connect at power-on** check box.

5. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

## Configure the Network for the Helper Virtual Machine

When you convert a powered on Linux machine, Converter Standalone creates a helper virtual machine on the destination. The helper virtual machine needs network access to the source machine to clone the source files. By default, the IP address of the helper virtual machine is assigned by DHCP. Default conversion settings enforce automatic acquisition of an IPv4 address, IPv6 address, and a DNS server for the helper virtual machine, but you can set up this network connection manually.

1. On the Options page of the **Conversion** wizard, click **Helper VM network**.

2. Optional: To assign a static IPv4 address to the helper virtual machine, on tab **IPv4** select **Use the following IP address** and specify the IPv4 address, subnet mask, and default gateway.

   Make sure that the IP address you specify for the helper virtual machine is not already in use on the network.

3. Optional: If you want the Helper virtual machine to use only IPv4 address, on tab **IPv6** deselect the **Use IPv6** check box.

4. Optional: To assign a static IPv6 address to the Helper virtual machine, on tab **IPv6** select **Use the following IPv6 address** and specify the IPv6 address, subnet prefix length, and default gateway.

   Make sure that the IP address you specify for the Helper virtual machine is not already in use on the network.

5. Optional: If you want the Helper virtual machine to use only IPv6 address, on tab **IPv4** deselect the **Use IPv4** check box.

6. Optional: Select **Use the following DNS server address** and type the preferred DNS server address to configure the DNS server address manually.

   Optionally, you can type an alternative DNS server address as well.

7. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |

| Option | Description |
|---|---|
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

Converter Standalone uses the IP address and DNS server you specify to copy data from the source Linux machine to the Helper virtual machine during conversion.

# Configure the Software on the Destination Virtual Machine

You can configure the guest operating system so that it is ready to operate in a virtual environment.

Software configuration includes various settings.

## Customize the Windows Guest Operating System

You can customize guest operating systems running Windows so that the virtual machine is prepared to work immediately in the destination environment.

• On the Options page of the **Conversion** wizard, click **Advanced options**, click the **Post-conversion** tab, and select **Customize guest preferences for the virtual machine**. Click **Next** to view and adjust the available customization options.

### Customize the Identity of the Destination Virtual Machine

To configure the identity of the destination VM for the destination network, you can customize the guest OS identity and generate a new security ID.

On the Options page of the **Conversion** wizard, click **Advanced options**, click the **Post-conversion** tab, and select **Customize guest preferences for the virtual machine**. Click **Next** to view and adjust the available customization options.

1. On the Customizations page, select **Computer information** from the options list.

2. Customize the guest operating system identity.

   a) In the **Computer Name** text box, type a computer name to identify the virtual machine on the network.

   Valid characters include A-Z, a-z, 0-9, and the hyphen (-). The underscore (_) is nonstandard, but Converter Standalone permits it. The recommended length for most languages is 15 characters or less. Computer names cannot consist only of numerals.

   b) In the **Owner Name** text box, type the name of the owner of the virtual machine.

   Valid characters include A-Z, a-z, 0-9, and the hyphen (-). The underscore (_) is nonstandard, but Converter Standalone permits it. The owner name cannot have more than 63 characters or consist only of numerals.

   c) In the **Organization** text box, type an organization name.

   Valid characters include all printable characters (A-Z, a-z, 0-9, symbols, and space). The limit is 63 characters.

3. Optional: To create a new security identifier, select **Generate New Security ID (SID)**.

   By default, the **Generate New Security ID (SID)** check box is selected for source systems that run Windows Vista or later and cannot be deselected.

The identifiers of the destination virtual machine are assigned according to your settings.

You can select another option to set or click **Next** to view a summary of the conversion job. If the **Next** button is inactive, check the Current settings list for other settings that need your attention on this page.

## Enter the Windows License Information

Ensure that you provide licensing information for all destination virtual machines running guest operating systems as necessary.

On the Options page of the **Conversion** wizard, click **Advanced options**, click the **Post-conversion** tab, and select **Customize guest preferences for the virtual machine**. Click **Next** to view and adjust the available customization options.

> **NOTE**
> Because of third-party licensing policies, you might not be able to transfer the license from the source machine and you might need to provide a new valid license for the destination virtual machine.

1. On the Customizations page, select **Windows license** from the options list.

2. In the **Product ID** text box, type the licensing information for the destination virtual machine.

3. Optional: If the guest operating system is Windows Server 2008, select **Include server license information**.

4. Select a **Server license mode** option.

| Option | Description |
|---|---|
| **Per seat** | For individual user licenses. |
| **Per server** | For a concurrent user license. When you select this option, you need to type a value in the **Maximum connections** text box. |

The Windows license information is saved to the destination virtual machine after the conversion.

You can select another option to set or click **Next** to view a summary of the conversion job. If the **Next** button is inactive, check the Current settings list for other settings that need your attention on this page.

## Set the Time Zone for the Destination Virtual Machine

You can set the time zone if you are converting a virtual machine to use in a different time zone.

On the Options page of the **Conversion** wizard, click **Advanced options**, click the **Post-conversion** tab, and select **Customize guest preferences for the virtual machine**. Click **Next** to view and adjust the available customization options.

1. On the Customizations page, select **Time zone** from the options list.

2. Select the target time zone from the **Time zone** drop-down menu.

The time zone is set on the destination virtual machine after the conversion.

You can select another option to set or click **Next** to view a summary of the conversion job. If the **Next** button is inactive, check the Current settings list for other settings that need your attention on this page.

## Configure the Network Adapters

You can configure the network settings of the virtual machine to work with the network configuration of the destination environment.

On the Options page of the **Conversion** wizard, click **Advanced options**, click the **Post-conversion** tab, and select **Customize guest preferences for the virtual machine**. Click **Next** to view and adjust the available customization options.

The option for configuring network adapters is available for all supported destinations.

1. On the Customizations page, select **Network interface settings** from the options list.

2. Select a network adapter and click **Customize** to configure its properties.
    a) On the **IPv4** tab, type the IPv4 address and DNS server address.
    b) On the **IPv6** tab, type the IPv6 address and DNS server address.
    c) On the **DNS** tab, configure the DNS connections by adding DNS suffixes.
    d) Type a DNS suffix and click **Add**.
       You can add more than one DNS suffix.
    e) If you have provided multiple DNS suffixes, use **Move up** and **Move down** to set the order in which the guest operating system uses the connections.
    f) On the **WINS** tab, type the primary and secondary WINS IPv4 address in the text box.

When powered on, the destination virtual machine uses the network settings that you configured.

You can select another option to set or click **Next** to view a summary of the conversion job. If the **Next** button is inactive, check the Current settings list for other settings that need your attention on this page.

## Assign a Workgroup or Domain Details

You can set up the workgroup and the domain in which the destination virtual machine belongs.

On the Options page of the **Conversion** wizard, click **Advanced options**, click the **Post-conversion** tab, and select **Customize guest preferences for the virtual machine**. Click **Next** to view and adjust the available customization options.

1. On the Customizations page, select **Workgroup/Domain** from the options list.

2. Select how the virtual machine participates in the destination network.

| Option | Description |
|---|---|
| **Workgroup** | The text box must have a value. Valid characters include A-Z, a-z, 0-9, space, and the hyphen (-). The maximum length is 15 characters. |
| **Windows server domain** | The text box must have a value. Valid characters include A-Z, a-z, 0-9, space, period, and the hyphen (-). The maximum length is 64 characters. User credentials are required. |

The destination virtual machine connects to the specified workgroup and domain server.

You can select another option to set or click **Next** to view a summary of the conversion job. If the **Next** button is inactive, check the Current settings list for other settings that need your attention on this page.

## Install VMware Tools on the Destination Virtual Machine

When converting Windows source machines, you can install VMware Tools to improve graphics performance of the guest operating system. Other enhancements include automatic grab and release of the mouse pointer, copy and paste operations between guest and host, and improved mouse performance.

On the **Options** page of the **Conversion** wizard, click **Advanced options** in the options list.

1. Click the **Post-conversion** tab.

2. In the Post-conversion processing section, select the **Install VMware Tools on the destination virtual machine** check box.

3. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard. <br><br> • The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane. <br> • The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

Converter Standalone installs VMware Tools on the destination machine when the destination machine is powered on for the first time after the conversion job.

## Remove System Restore Checkpoints

When you convert source machines running Windows, you can remove System Restore checkpoints so that the conversion process is faster.

On the **Options** page of the **Conversion** wizard, click **Advanced options** in the options list.

System Restore is enabled on Windows systems by default. If you are performing volume-based file-level cloning, System Restore checkpoints are removed automatically from the destination virtual machine, regardless of whether the **Remove System Restore checkpoints on destination** check box is selected or deselected. If you are performing disk-based cloning or volume-based block-level cloning, deselecting the check box instructs Converter Standalone to keep the System Restore checkpoints in the destination virtual machine.

Removing System Restore checkpoints prevents the target machine from reverting to a preconversion state. In the target virtual machine, restoring a checkpoint that was created before you cloned the source machine can damage the system and prevent the destination virtual machine from starting up.

1. Click the **Post-conversion** tab.

2. In the Post-conversion processing section, select the **Remove System Restore checkpoints on destination** check box.

3. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |

| Option | Description |
|---|---|
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard. <br><br> • The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane. <br> • The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

# Configure the Conversion Job

You can configure the conversion process and select the behavior of the source and destination machine during and after conversion. You can change the status of the source and destination services only when the source machine is running a Windows operating system.

## Set the Startup Mode for Destination Services

To minimize downtime for a Windows service, you can select the service and set the service startup mode to automatic, manual, or disabled.

On the **Options** page of the **Conversion** wizard, click **Services** in the options list.

You can change the settings for the destination services only when you convert source machines that run Windows.

1. If you are converting a powered on source machine, click the **Destination services** tab.

    If the source machine is powered off, the Services pane displays no tabs. You can modify only the starting mode of destination services.

2. On the services list, select the startup mode for each service.

| Option | Description |
|---|---|
| **Automatic** | The service starts automatically after the destination machine is powered on. |
| **Manual** | The service does not start after the destination machine is powered on, but you can start it manually. |
| **Disabled** | The service is disabled and does not start after the destination machine is powered on. |

3. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard. <br><br> • The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane. <br> • The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

## Stop Services Running on the Source Machine

You can make sure that you do not lose data from services running on the source machine. You can select the services that you want to stop before Converter Standalone synchronizes the data between the source and destination machine. As a result, the services do not generate data while source and destination machines are synchronized.

On the **Options** page of the **Conversion** wizard, click **Services** in the options list.

You can stop services on the source only when you convert a powered on Windows machine.

1.  Click the **Source services** tab.

2.  To stop a service on the source machine before synchronization, highlight a service and select the **Stop** check box to the right.

3.  Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

Converter Standalone stops the selected source services before it synchronizes the destination machine with the source machine.

## Synchronize the Destination Machine with Changes Made to the Source Machine

When you convert a powered on Windows machine, Converter Standalone copies data from the source machine to the destination machine while the source machine is still running and generating changes. This process is the first transfer of data. You can transfer data for the second time by copying only the changes made during the first transfer of data. This process is called synchronization.

Stop various source services to make sure they do not generate additional changes during the final synchronization, as that might lead to data loss.

On the **Options** page of the **Conversion** wizard, click **Advanced options** in the options list.

Synchronization is available only for Windows source operating systems and managed destinations.

If you resize FAT volumes or shrink NTFS volumes, or change the cluster size on the destination volume, you cannot use the synchronization option.

You cannot add or remove volumes on the source machine between two cloning tasks of a synchronizable job because it might cause conversion to fail.

1. Click the **Synchronize** tab.

2. Select **Synchronize changes**.

3. Specify when you want to perform the synchronization.

| Option | Description |
|---|---|
| **Click Run immediately after cloning** | Synchronization is performed immediately after the cloning is complete. |
| **Click Schedule** | Synchronization is performed at the scheduled time and date. Use the **Run at** text box to specify the start date and time for the synchronization. |

4. Select **Perform final synchronization** if you do not plan to make further synchronizations between the source and the destination.

5. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

## Power Off the Source Machine After Conversion

If your source machine is running services that you want to start on the destination virtual machine after conversion, you can power off the source machine to avoid interference between source and destination services.

On the **Options** page of the **Conversion** wizard, click **Advanced options** in the options list.

1. Click the **Post-conversion** tab.

2. In the **Post-conversion power state** panel, select **Power off source machine**.

   This option appears in the **Post-conversion power state** panel only if the conversion source is a remote powered on machine.

3. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |

| Option | Description |
|--------|-------------|
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

Converter Standalone powers off the source machine after the conversion is complete.

## Power On the Destination Virtual Machine After Conversion

You can minimize the downtime of important services by powering on the destination virtual machine immediately after the conversion is complete.

On the **Options** page of the **Conversion** wizard, click **Advanced options** in the options list.

1. Click the **Post-conversion** tab.

2. In the **Post-conversion power state** panel, select **Power on destination machine**.

3. Save your settings.

| Option | Description |
|--------|-------------|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard.<br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane.<br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

After the conversion, Converter Standalone powers on the destination machine.

## Limit the Amount of Resources Used by the Conversion Job

A conversion job competes for computing resources with other processes. To limit the impact of the conversion job on other workloads, you can throttle the job. If you do not throttle conversion jobs, they are carried out with normal priority and depending on the available computing resources during conversion.

A powered on source machine runs its own conversion job. You can limit the impact of the conversion job on other workloads running on the powered on machine.

For source machines that are not powered on, you can limit the resources used on the machine where Converter Standalone server is installed.

Throttling controls the CPU and network resources that the conversion process uses. You cannot throttle disk I/O from the Converter Standalone interface, but can throttle it indirectly by throttling the network bandwidth.

**NOTE**

You cannot throttle conversion jobs for powered on source machines that run Linux. You cannot throttle conversion jobs for powered off virtual machines to VMware hosted destinations.

1. On the Options page, select **Throttling** from the options list.

2. From the **CPU throttling** drop-down menu, select the priority of the conversion task.

| Option | Description |
|---|---|
| **None** | The priority of the current conversion task is set to normal. |
| **Light** | The priority of the current conversion task is reduced slightly below normal. |
| **Medium** | The priority of the current conversion task is set to lowest. |

**NOTE**

Converter Standalone reduces the thread priorities of conversion tasks to control the CPU resources they consume.

3. Optional: Select **Network bandwidth throttling** and specify the maximum network bandwidth at which Converter Standalone performs the conversion jobs.

4. Save your settings.

| Option | Description |
|---|---|
| **Select another option from the options list** | Saves your settings and displays the pane for the selected option. |
| **Click Next** | Saves your settings and displays the next page of the **Conversion** wizard. <br><br>• The **Customizations** page is displayed if you select **Customize guest preferences for the virtual machine** in the Advanced options pane. <br>• The **Summary** page is displayed if you do not select **Customize guest preferences for the virtual machine** in the Advanced options pane. |

## Uninstall Converter Standalone Agent from the Source Machine

When setting up a conversion job for a powered on Windows source or a Hyper-V Server virtual machine, you can choose how you want to remove the Converter Standalone agent from the source after the conversion. If the Converter Standalone agent is installed by the Converter Standalone server, it is uninstalled automatically. Otherwise, you must uninstall it manually.

Use Add or Remove Programs on the source machine to uninstall the Converter Standalone agent.

1. In Windows, run **Add or Remove Programs**.

2. In the list of installed programs, locate and click **VMware vCenter Converter Standalone Agent**.

3. Click **Remove**.

4. In the confirmation dialog box, click **Yes**.

Windows installer uninstalls the Converter Standalone agent from the source machine.

# Review the Summary and Submit the Conversion Job

On the **Summary** page, you can view a summary of the conversion job before you add it to the job list.

You must complete all steps in the **Conversion** wizard to access the **Summary** page.

The summary includes information about the source machine, the destination virtual machine, and destination customization settings (if any). Converter Standalone performs job validation at this stage.

1. Review the summary of the job.

2. Click **Finish** to submit the job.

Converter Standalone validates the job parameters. This might take several minutes. If the validation succeeds, the conversion job appears in the Job View list in the main application window. You can find information about the tasks of the job in the Task View. If the validation fails, you must click **Back** and correct the invalid parameters as prompted.

# Configure Virtual Machines

You might need to configure a virtual machine after you convert it so that it is ready to run in the destination virtual environment. You might also need to configure virtual machines if their virtual environment changes or if you need to improve their performance.

> **NOTE**
> You can configure only VMware virtual machines that run Windows. You cannot configure virtual machines that run operating systems other than Windows.

Unlike the conversion process, which is nondestructive to the source machine, the configuration process affects the source. When you create a configuration job, your settings are applied to the configuration source machine and cannot be reverted.

## Start the Configuration Wizard

You can configure VMware desktop virtual machines or virtual machines managed by ESXi hosts or vCenter Server.

A powered on machine cannot be a configuration source.

You can configure only powered off virtual machines.

1. Start the VMware vCenter Converter Standalone application.

2. Click **Configure machine** in the application menu.

The **Configuration** wizard opens.

Select the source machine to configure.

## Select a Source Machine to Configure

You can select a powered off VMware virtual machine as the source for a configuration task.

On the **Source System** page of the **Configuration** wizard, select a source type from the drop-down menu.

On the **Options** page of the **Configuration** wizard, you can select the required configuration options.

### Select a vSphere Virtual Machine to Configure

You can configure vSphere virtual machines. A vSphere virtual machine is a virtual machine that runs on an ESXi host or on an ESXi host managed by vCenter Server.

Power off the source machine before the configuration.

In the main application window of Converter Standalone, click **Configure machine** to open the **Configuration** wizard.

1. On the **Source System** page of the **Configuration** wizard, select **VMware Infrastructure virtual machine** from the **Select source type** drop-down menu.

2. Provide the IP address or host name and credentials for authentication with the ESXi host or the vCenter Server, and click **Next**.

The **Source Machine** page appears, displaying the host name or IP address and the inventory of the ESXi host or the vCenter Server.

On the **Source Machine** page of the **Configuration** wizard you can browse the virtual infrastructure inventory and select the virtual machine to configure.

### Specify the vCenter Server Virtual Machine to Configure

If you choose to configure a virtual machine managed by a  or ESXi host, you must browse the inventory to locate the source virtual machine.

On the Source System page of the **Configuration** wizard, select **VMware Infrastructure virtual machine** as the configuration source and click **Next** to proceed to the Source Machine page.

1. Optional: If you are connected to a vCenter Server, select a virtual machine view from the **Specify machine with** drop-down menu.

| Option | Description |
|---|---|
| **Hosts and Clusters** | The Inventory tree pane provides a view of hosts, clusters, resource pools, and vApps. If you select a host managed by a cluster, you see the full list of virtual machines and templates in the virtual machine list view. If you select a standalone host or a cluster, you see only the virtual machines that are not deployed in the resource pools of that host or cluster. |
| **VMs and Templates** | The Inventory tree pane provides a view of datacenters and virtual machine folders. |

2. Optional: If you are connected to a vCenter Server, select an object from the Inventory tree pane.

| Option | Description |
|---|---|
| **Hosts and Clusters** | Select cluster, ESXi host, resource pool, or vApp. |
| **VMs and Templates** | Select datacenter or virtual machine folder. |

3. From the virtual machines list, select the virtual machine you want to configure.

   You can search for virtual machines in the virtual machine list by typing one or more letters of their names in the **Search for name with** text box. You can clear your search by clicking **Clear**.

   > **NOTE**
   > You cannot select a virtual machine from an ESXi host that is powered off, connected to another vCenter Server, or in maintenace mode.

4. Optional: To refresh the inventory, click **Refresh**.

5. Optional: To view more details about a machine, select it and click **View source details**.

6. Click **Next** to proceed to the **Options** page.

On the **Options** page of the **Configuration** wizard, you can select the required configuration options.

### Select a VMware Desktop Virtual Machine to Configure

You can configure standalone VMware virtual machines created with , , or VMware Player.

If you plan to use a network path to locate the source, verify that the machine where Converter Standalone server runs has access to that network path.

In the main application window of Converter Standalone, click **Configure machine** to open the **Configuration** wizard.

1. On the Source System page of the **Configuration** wizard, select **VMware Workstation or other VMware virtual machine**.

2. Locate the virtual machine source.

   - If you are connected to a remote Converter Standalone server, provide a network path to the source virtual machine file (`.vmx`) in the **Virtual machine file** text box. For example, `\\server\virtual_machines\virtual_machine.vmx`.
   - If you are connected to a local Converter Standalone server, provide a network path or a local path to the `.vmx` file.

   By default, only VMware virtual machine `*.vmx` files are displayed.

3. If you are connected to a remote Converter Standalone server, type user credentials for accessing the source virtual machine.

   You do not have to provide user credentials if you are connected to a local Converter Standalone server. In such cases, Converter Standalone uses the Windows credentials to connect to the source machine.

4. Optional: To view more information about the selected source, click **View source details**.

5. Click **Next** to proceed to the **Options** page.

On the **Options** page of the **Configuration** wizard, you can select the required configuration options.

## Select the Options to Configure

When you create a configuration job, you can select the steps of the configuration process that you want to run.

- On the Options page, select one or more configuration steps to perform and click **Next**.

| Option | Description |
|---|---|
| **Install VMware Tools on the destination virtual machine** | Installs VMware Tools to enhance the performance of the destination virtual machine. |
| **Customize guest preferences for the virtual machine** | Lets you customize Windows guest operating systems so that you can prevent and resolve licensing and networking issues. |
| **Remove System Restore checkpoints on destination** | Removes System Restore checkpoints from the destination virtual machine. |
| **Reconfigure destination virtual machine** | Modifies the configuration of the virtual machine so that it is prepared to boot and work properly in the destination virtual environment. |

On the basis of the configuration options you selected, you can either customize the guest operating system of the source virtual machine or view the Summary page of the **Configuration** wizard.

### Install VMware Tools on a Virtual Machine

Install VMware Tools to improve graphics performance for the guest operating system of a configured virtual machine.

Install VMware Tools on the virtual machine you are configuring. VMware Tools enhancements include automatic grab and release of the mouse pointer, copying and pasting between guest and host, improved mouse performance, and so on.

On the Options page of the **Configuration** wizard, select **Install VMware Tools on the destination virtual machine** and click **Next**.

vCenter Converter Standalone installs VMware Tools on the configured virtual machine.

You can customize the guest operating system or view the **Summary** page of the **Configuration** wizard.

## Customize the Windows Guest OS

As a part of the configuration job, you can customize virtual machines running Windows.

- On the Options page of the **Configuration** wizard, select **Customize guest preferences for the virtual machine** and click **Next** to view and modify the available customization options.

### Customize the Identity of a Virtual Machine

To configure the identity of a virtual machine on a virtual network, personalize the virtual machine by editing its name, owner, and organization name, and by generating a new security ID.

On the Options page of the **Configuration** wizard, select **Customize guest preferences for the virtual machine** and click **Next** to view and modify the available customization options.

1. On the Customizations page, select **Computer information** from the options list.

2. Customize the guest operating system identity.

   a) In the **Computer Name** text box, type a computer name to identify the virtual machine on the network.

      Valid characters include A-Z, a-z, 0-9, and the hyphen (-). The underscore (_) is nonstandard, but Converter Standalone permits it. The recommended length for most languages is 15 characters or less. Computer names cannot consist only of numerals.

   b) In the **Owner Name** text box, type the name of the owner of the virtual machine.

      Valid characters include A-Z, a-z, 0-9, and the hyphen (-). The underscore (_) is nonstandard, but Converter Standalone permits it. The owner name cannot have more than 63 characters or consist only of numerals.

   c) In the **Organization** text box, type an organization name.

      Valid characters include all printable characters (A-Z, a-z, 0-9, symbols, and space). The limit is 63 characters.

3. Optional: To create a new security identifier, select **Generate New Security ID (SID)**.

   By default, the **Generate New Security ID (SID)** check box is selected for source systems that run Windows Vista or later and cannot be deselected.

The identifiers of the configured virtual machine are assigned according to your settings.

You can select another option to set or click **Next** to view a summary of the configuration job. If the **Next** button is inactive, check the Current settings list for other settings that need your attention on this page.

### Specify the Windows License Information

Ensure that you provide licensing information for all destination virtual machines running guest operating systems as necessary.

On the Options page of the **Configuration** wizard, select **Customize guest preferences for the virtual machine** and click **Next** to view and modify the available customization options.

1. On the Customizations page, select **Windows license** from the options list.

2. In the **Product ID** text box, type the licensing information for the destination virtual machine.

3. Optional: If the guest operating system is Windows Server 2008, select **Include server license information**.

4. Select a **Server license mode** option.

| Option | Description |
|---|---|
| **Per seat** | For individual user licenses. |
| **Per server** | For a concurrent user license. When you select this option, you need to type a value in the **Maximum connections** text box. |

The Windows license information is saved to the configuration source machine when the configuration task is completed.

You can select another option to set or click **Next** to view a summary of the configuration job. If the **Next** button is inactive, check the Current settings list for other settings that need your attention on this page.

## Set the Time Zone on Destination Machine

You can configure the time zone for a virtual machine.

On the Options page of the **Configuration** wizard, select **Customize guest preferences for the virtual machine** and click **Next** to view and modify the available customization options.

1. On the Customizations page, select **Time zone** from the options list.

2. Select the target time zone from the **Time zone** drop-down menu.

The time zone is set on the destination machine when the configuration job completes.

You can select another option to set or click **Next** to view a summary of the configuration job. If the **Next** button is inactive, check the Current settings list for other settings that need your attention on this page.

## Reconfigure the Network Adapters

You can change the network settings of a virtual machine to work with the network configuration of the virtual environment.

On the Options page of the **Configuration** wizard, select **Customize guest preferences for the virtual machine** and click **Next** to view and modify the available customization options.

The options for configuring network adapters are available for all supported customization sources.

1. On the Customizations page, select **Network interface settings** from the options list.

2. Select a network adapter and click **Customize** to configure its properties.

   a) On the **IPv4** tab, type the IPv4 address and DNS server address.

   b) On the **IPv6** tab, type the IPv6 address and DNS server address.

   c) On the **DNS** tab, configure the DNS connections by adding DNS suffixes.

   d) Type a DNS suffix and click **Add**.

      You can add more than one DNS suffix.

   e) If you have provided multiple DNS suffixes, use **Move up** and **Move down** to set the order in which the guest operating system uses the connections.

   f) On the **WINS** tab, type the primary and secondary WINS IPv4 address in the text box.

When powered on, the configured virtual machine uses the network settings that you specified.

You can select another option to set or click **Next** to view a summary of the configuration job. If the **Next** button is inactive, check the Current settings list for other settings that need your attention on this page.

## Configure a Workgroup or Domain Details

You can assign a workgroup and the domain for a virtual machine.

On the Options page of the **Configuration** wizard, select **Customize guest preferences for the virtual machine** and click **Next** to view and modify the available customization options.

1. On the Customizations page, select **Workgroup/Domain** from the options list.

2. Select how the virtual machine participates in the destination network.

| Option | Description |
|---|---|
| **Workgroup** | The text box must have a value. Valid characters include A-Z, a-z, 0-9, space, and the hyphen (-). The maximum length is 15 characters. |
| **Windows server domain** | The text box must have a value. Valid characters include A-Z, a-z, 0-9, space, period, and the hyphen (-). The maximum length is 64 characters. User credentials are required. |

The configured virtual machine connects to the specified workgroup and domain server.

You can select another option to set or click **Next** to view a summary of the configuration job. If the **Next** button is inactive, check the Current settings list for other settings that need your attention on this page.

## Remove System Restore Checkpoints From Source Machine

You can prevent newly imported source machines to revert to a pre-conversion state by removing their system restore checkpoints.

For other configuration source machines, removing System Restore checkpoints helps you save disk space by deleting unnecessary data.

On the Options page of the **Configuration** wizard, select **Remove System Restore checkpoints on the destination** and click **Next**.

The System Restore checkpoints are deleted from the configuration source machine.

You can customize the guest operating system or view the **Summary** page of the **Configuration** wizard.

## Reconfiguring a Virtual Machine To Boot Properly

If a newly converted virtual machine does not start properly in the destination virtual environment, try reconfiguring it with Converter Standalone.

A number of configuration issues might prevent a newly created virtual machine from starting properly. For example, Converter Standalone might need to deactivate some legacy drivers to allow the virtual machine to operate. If the operating system on the source machine is not on the default drive, the `boot.ini` file or the BCD might need to be modified so that the destination virtual machine can start.

On the Options page of the **Configuration** wizard, select **Reconfigure destination virtual machine** and click **Next**. Converter Standalone reconfigures the destination virtual machine so it can boot in the virtual environment.

## Review and Submit the Configuration Job

After you review your settings on the Summary page of the **Configuration** wizard, you can go back and change a setting or submit the job.

1.  Review the summary of the settings for the source virtual machine.

2.  Click **Finish** to submit the configuration job.

The job appears in the jobs list in the Job View list of the main application window. You can view the progress of the current task on the **Task progress** tab in Task View.

To view details about the configuration task, click the **Summary** tab.

# Manage Conversion and Configuration Jobs and Tasks

Converter Standalone provides a manager for managing conversion and configuration jobs and tasks.

After you create a conversion or configuration job by using the Converter Standalone wizards, you can use the Task View and the Job View of the Converter Standalone manager to monitor and manage the existing jobs and their tasks.

Scheduled synchronized conversion jobs can contain multiple tasks.

## Manage Jobs in the Job List

The Job View of the Converter Standalone manager provides a list of all jobs that are submitted. You can use the main application menus to control the way jobs appear in the job list and to edit them.

You must submit a conversion or configuration job to view it in the job list.

You must be in the Job View of the Converter Standalone manager to access the application menus for job managing.

## Add a Job to the Job List

With Converter Standalone you can create and run conversion and configuration jobs.

On the Summary page of the **Conversion** or the **Configuration** wizard, make sure no settings need adjustment, and click **Finish** to add a conversion or configuration job.

The job appears at the beginning of the job list in the Job View and its tasks appear in the Task View.

In the job list, you can view the job status, which task of the job is currently running, and other details. You can also delete a job, and perform other job operations.

## View the Running Task of a Job

You can switch from Job View to Task View to view and edit the currently running task of a job.

1. From the **View by** drop-down menu on the toolbar, select **Jobs**.

2. From the job list, select a job.

3. On the main menu, select **Job** > **Go to running task**.

The Converter Standalone manager switches to Task View and preselects the currently running task of the job you selected in Job View. If none of the job's tasks is running, no selection is made.

## Deactivate a Job

You can deactivate an active job without applying any changes to the destination machine.

> **NOTE**
> You can deactivate a job only if none of its tasks is currently running.

1. From the **View by** drop-down menu on the toolbar, select **Jobs**.

2. From the job list, select the job you want to deactivate.

3. From the main menu, select **Job** > **Deactivate**.

The job state changes to inactive and no changes are applied to the destination.

> **NOTE**
> An inactive job cannot be reactivated.

## Delete a Job

You can delete a job and all its tasks.

You can delete only deactivated jobs.

1. From the **View by** drop-down menu on the toolbar, select **Jobs**.

2. From the job list, select the job you want to delete.

3. From the main menu, select **Job** > **Delete**.

The job is removed from the job list, and all the tasks of the job are removed from the task list.

## Create a Job by Copying an Existing Job

You can create a new job by creating a copy of an existing job and modifying its settings in the Conversion or the Configuration wizard.

The settings for the original job appear at each step of the wizard so that you can reuse or change them.

**NOTE**

You can copy only jobs that were created with the Converter Standalone client.

1. From the **View by** drop-down menu on the toolbar, select **Jobs**.

2. From the job list, select the job you want to copy.

3. Select **Job** > **Copy As New**.

4. Follow the prompts to modify the job settings.

5. Click **Finish** to add the new job the job list.

## Filter the Jobs in the Jobs List

You can select the jobs that you want the job list to display by filtering them.

You can filter jobs by history, status, or multiple criteria.

### Filter Jobs by History

You can filter the list so that it displays only the last submitted jobs. By default, the job list displays the last twenty jobs.

1. From the **View by** drop-down menu on the toolbar, select **Jobs**.

2. On the main menu, click **View** > **History Filter** and select a level of filtering.

Only jobs that correspond to selected filtering level remain in the job list.

### Filter Jobs by Status

You can filter the job list to display jobs based on their status. By default, the job list displays all jobs.

1. From the **View by** drop-down menu on the toolbar, select **Jobs**.

2. On the main menu, select **View** > **Filter by**.

3. Select a level of display from the drop-down menu.

If you are connected to a remote Converter Standalone server, you can select **My own** to view only jobs that you have created.

### Filter Jobs by Multiple Criteria

You can combine filtering criteria to filter jobs in the job list.

1. From the **View by** drop-down menu on the toolbar, select **Jobs**.

2. Use the drop-down menus in the toolbar to select the status and the history criteria.

The two filtering conditions combine to show only jobs that comply with both conditions.

## Add a Synchronization Task to a Conversion Job

You can add a synchronization task to an active conversion job and modify the synchronization settings in the Conversion wizard.

The conversion job must be active and allow synchronization.

No synchronization task that belongs to this job must be running.

> **NOTE**
> You can add synchronization tasks only to jobs that were created with the Converter Standalone client.

1. From the **View by** drop-down menu on the toolbar, select **Jobs**.

2. From the job list, select the conversion job to which you want to add a synchronization task.

3. From the main menu, select **Job** > **Synchronize**.

4. Follow the prompts to modify the synchronization settings.

5. Click **Finish** to save changes.

# Manage Tasks in the Task List

The Task View of the Converter Standalone manager provides a list of all tasks that are submitted.

You must submit a conversion or configuration job to view its tasks in the task list.

You must be in the Tasks View of the Converter Standalone manager to access the application menus for managing task.

You can use the main application menus to control the way tasks appear in the task list and to edit them.

## Control the Number of Tasks Running Concurrently

To improve the conversion speed, you can limit the number of tasks that run concurrently.

Limiting the number of concurrent tasks helps you reduce the required network resources and to limit the CPU load on the machine where the Converter Standalone server runs. You can set the number of concurrent tasks to any number from 1 to 12. The default number of concurrent tasks is set to **Maximum**.

1. On the main menu, select **Administration** > **Maximum Concurrent Tasks**.

2. In the **Custom** spin-box, specify a number.

3. Click **OK**.

The setting takes effect immediately for all newly added tasks. See Limiting the Number of Concurrent Tasks .

### Limiting the Number of Concurrent Tasks

Assume that Converter Standalone is running 12 tasks. If you change the number of concurrent tasks to 6, these 12 tasks continue running, but all newly added tasks remain pending in the task list. When the number of running tasks drops to 5, a new task from the wait list starts.

## Set the Number of Data Connections per Task

If you are converting sources with multiple disks and volumes, you can decrease the conversion time by cloning multiple disks and volumes concurrently. This option is supported for conversions of Windows sources and Linux virtual sources.

When you clone multiple disks and volumes in parallel, each data transfer uses a separate TCP connection.

> **NOTE**
> For managed sources and destinations, the number of the concurrent data connections within a conversion task must not exceed the TCP connections limit of the corresponding ESXi host. Otherwise, the conversion task might not complete successfully.

The source conversion completes and the task of configuring the destination starts only when all data transfers are complete.

1. On the main menu, select **Administration** > **Data Connections per Task**.

2. Select the number of concurrent data connections.

| Option | Description |
|---|---|
| **Select the Maximum check-box .** | All disks and volumes of the source are cloned simultaneously. |
| **In the Custom spin-box, select a number between 1 and 12.** | Only a specific number of disks and volumes are cloned simultaneously. The default number of concurrent data connections per task is set to 1. |

3. Click **OK.**

The setting takes effect immediately for all newly added tasks.

## View the Job to Which a Task Belongs

You can switch from Task View to Job View to view and edit the job to which a selected task belongs.

1. From the **View by** drop-down menu on the toolbar, select **Tasks**.

2. From the task list, select a task.

3. On the main menu, select **Task** > **Go to job**.

The Converter Standalone manager switches to Job View. The job that contains the task you selected in Task View is preselected in the list and complies with the current filter of the Job View.

## Cancel a Task

You can cancel a task that is in the queue or in progress.

When you cancel a conversion task that is running, the task is stopped. When you cancel a conversion task that is queued, the task is removed from the queue. When you cancel a task that is not a synchronization task, the job to which the task belongs is deactivated. Canceled tasks cannot be restarted.

> **NOTE**
> You cannot cancel configuration tasks.

1. From the **View by** drop-down menu on the toolbar, select **Tasks**.

2. From the task list, select the task you want to cancel.

3. Click **Cancel**.

The task is now stopped or removed from the queue, and the time of cancellation appears in the End Time column.

## Filter the Tasks in the Task List

The number of archived tasks can expand to be very large. To minimize clutter in the task list, you can lower the number of tasks that appear.

You can select the tasks that you want the task list to display by filtering them by history, status, or multiple criteria.

**Filter Tasks by History**

You can use the date on which a task is created to filter the task list.

This option does not affect tasks in progress. Tasks in progress always appear in the task list.

1. From the **View by** drop-down menu on the toolbar, select **Tasks**.

2. On the main menu, click **View** > **History Filter** and select a level of filtering.

Only tasks that correspond to the selected filtering level remain in the task list.

**Filter Tasks by Status**

You can change which tasks appear in the task list based on their running status.

1. From the **View by** drop-down menu on the toolbar, select **Tasks**.

2. On the main menu, select **View** > **Filter by**.

3. Select a level of display from the drop-down menu.

   If you are connected to a remote Converter Standalone server, you can select **My own** to view only tasks of jobs that you create.

**Filter Tasks by Multiple Criteria**

You can combine criteria to filter tasks in the task list. Tasks that are currently running are displayed regardless of the filtering criteria.

1. From the **View by** drop-down menu on the toolbar, select **Tasks**.

2. Use the drop-down menus to select the status and history criteria.

   The two filtering conditions combine to show only tasks that comply with both conditions.

# Verify Jobs and Tasks Progress and the Log Files

You can observe the progress and the state of the listed jobs and tasks by using the Task View and Job View of the Converter Standalone user interface.

If certain problems cause a job or task to fail, you can also review information in the log files.

## View Task Progress

The Task view and the Details view show the progress of tasks. You can view the estimated time left to the completion of a conversion task in the End Time column.

You can obtain a general indication of a task's progress by looking at its row in the task list of the Task view. You can view the **Task progress** tab in the Details view for more information.

1. From the **View by** drop-down menu on the toolbar, select **Tasks**.

2. Select the row in the task list for the task to view.

   The information for that task appears in the Details pane below the tasks list.

3. To view the task status and log highlights, click the **Task progress** tab.

## Export the Log Files for a Job

You can export the log files for one or more jobs. Then, you can review the log files or send a copy of log files to VMware technical support.

1. From the **View by** drop-down menu on the toolbar, select **Jobs**.

2. Select a job in the job list.

3. On the main menu, select **Job** > **Export Logs**.

4. Select a location to which you want to save the files and click **Save**.

The log files for all tasks of the selected job are saved to the selected location.

## Export the Log Files for a Task

You can review information about any task in the log files. You can also export the log files for a specific task in the task list.

1. From the **View by** drop-down menu on the toolbar, select **Tasks**.

2. Select the task in the task list.

3. In the Details pane, click the **Task Progress** tab.

4. Click **Export Logs**.

5. Select a location to which you want to save the files and click **Save**.

The log files for this task are saved to the selected location.

## Back-End and Client Log Files Locations

Converter Standalone saves log files as it operates.

Table 15:  Log Files Locations lists the default locations where log files are saved. You can view the log files or send them to VMware support, if necessary.

If you are running a remote hot clone, these file locations are also the file locations on the remote machine. To send these log files from a remote machine to VMware support, you must manually compress and send them.

**Table 15: Log Files Locations**

| Log Files | File Path |
|---|---|
| Converter Standalone server and agent log files | `%ALLUSERSPROFILE%\VMware\VMware vCenter Converter Standalone\` |
| Converter Standalone client log files | `%USERPROFILE%\Local Settings\Application Data\VMware\VMware vCenter Converter Standalone Client\` |

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