Migrating Machine Creation Services to Provisioning Services

How to Transition Machine Creation Services Desktops to Provisioning Services
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Introduction

With the release of XenDesktop 5, organizations have two ways to perform single image management delivery for virtual desktops: Provisioning Services and Machines Creation Services. While Provisioning Services focuses on flexibility, Machine Creation Services focuses on simplicity. Because of the simplicity, many organizations, regardless of size, utilize Machine Creation Services.

However, as organizations continue to provision desktops to match the increasing demand, they will surpass the abilities of Machine Creation Services. Larger, more complex environments often require the ability to deliver images to physical/virtual XenApp servers, physical desktop endpoints, blade PCs or even physical servers. Because Machine Creation Services is limited to delivering desktops to a hypervisor, organizations usually find that they require the flexibility of Provisioning Services.

By the time an organization reaches the point where it needs to use Provisioning Services, it is likely that the environment already includes many desktop images and virtual machines configured for their own specific use cases and rebuilding each image would be time consuming. This Implementation Guide shows how to migrate Machine Creation Services images and Machine Creation Services created virtual machines to Provisioning Services ready images and virtual machines.

This implementation guide is not meant to demonstrate how to install and configure Machine Creation Services and Provisioning Services. It is meant to show how to migrate an image from Machine Creation Services to Provisioning Services. It is assumed that the following actions and configurations are in place.

1. Machine Creation Services was successfully implemented in the creation of virtual machines.

2. Provisioning Services is setup, configured, and integrated within the infrastructure.

This document is divided into the following sections:

- Prepare the Machine Creation Services Image
- Create the Master vDisk
- Create the Provisioning Services Target Devices
- Migrate the Desktop Group

**Note:** It is assumed that the reader has knowledge about how Machine Creation Services and Provisioning Services operate.
Prepare the Machine Creation Services Image

Clone the master Machine Creation Services image.

It is recommended to not make modifications to the master Machine Creation Services image. However, in order to migrate the master image, it is necessary to create a clone. By performing all the migration operations on the clone of the master image, any potential issues that might impact users can be avoided. This document will refer to the clone of the master image as “Copied Image”.

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>XenCenter</td>
<td><img src="image1.png" alt="XenCenter Screenshot" /></td>
<td>• Make sure that the master Machine Creation Services image is shut down.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Right click the virtual machine and select Copy VM…</td>
</tr>
<tr>
<td></td>
<td><img src="image2.png" alt="Copy Virtual Machine" /></td>
<td>• Give the copied virtual machine a name.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Select Full Copy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Click Copy.</td>
</tr>
</tbody>
</table>

- Make sure that the master Machine Creation Services image is shut down.
- Right click the virtual machine and select Copy VM…
- Give the copied virtual machine a name.
- Select Full Copy.
- Click Copy.
Prepare the master image for Provisioning Services.

The Provisioning Services Target Device Software enables communication between the targeted device and the Provisioning Services console. Once the master image virtual machine is cloned, the clone will serve as the image that will migrate to Provisioning Services.

<table>
<thead>
<tr>
<th>Location</th>
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</tr>
</thead>
</table>
| XenCenter | ![XenCenter Screenshot](image1.png) | - Start the Copied Image virtual machine by selecting the virtual machine and clicking Start.
- Once the virtual machine has started, select the General tab for the Copied Image virtual machine.
- Select Properties.
- Change the boot order so that Network is at the top of the list.
- Click the Console tab.
- Logon to the virtual machine. |
| Copied Image | ![Copied Image Screenshot](image2.png) | - Logon to the desktop as the domain administrator, click Start, then Run…
- Run “services.msc”. Click OK. |
Prepare the master image for Provisioning Services

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
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<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Locate Citrix Desktop Service.</td>
</tr>
<tr>
<td>• Right click the service and select Properties.</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td><strong>Prepare the master image for Provisioning Services</strong></td>
<td></td>
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</table>

<table>
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<tr>
<th>Location</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Change the Startup type to Manual.</td>
</tr>
<tr>
<td>• Stop the service by clicking on Stop under “Service status”.</td>
</tr>
<tr>
<td>• Click Apply.</td>
</tr>
<tr>
<td>• Click OK.</td>
</tr>
<tr>
<td>• Close the Services window.</td>
</tr>
<tr>
<td>Location</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>Copied Image</td>
</tr>
</tbody>
</table>
|                      | ![](Screenshot) | • Click “Target Device Installation”.

Prepare the master image for Provisioning Services

- Launch the Provisioning Services install media.
- Click “Target Device Installation”.

![ Provisioning Services](Screenshot)
<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image1.png" alt="Screenshot" /></td>
<td>• Click Next.</td>
</tr>
</tbody>
</table>
|          | ![Screenshot](image2.png) | • Accept the license terms.  
• Click Next. |
### Prepare the master image for Provisioning Services

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
|          | ![Citrix Provisioning Services Target Device](image1.png) | - Enter a username and select “only for me (*username*)”.  
- Click Next.  
- Click Next for Destination Folder screen.  
- Click Install. |
|          | ![Citrix Provisioning Services Target Device](image2.png) | - Make sure that “Launch Imaging Wizard” is selected.  
- Click Finish. |

*Note: The screenshots show the Citrix Provisioning Services Target Device window.*
Create the Master vDisk

A vDisk is a file that contains an image of a device’s hard drive, including operating system and any installed applications. Provisioning Services streams the image to defined target devices.

<table>
<thead>
<tr>
<th>Create the Master vDisk</th>
<th>Screen shot</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Screenshot</td>
<td></td>
</tr>
<tr>
<td>Copied Image</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Welcome to the Provisioning Services Imaging Wizard**

The Imaging Wizard automates the process of imaging one or more hard drives into a virtual disk.

**Note:** For alternative methods, refer to the Provisioning Services Administrator’s Guide.

- Click Next.

**Connect to Farm**

Enter the name or IP address of a server in the farm to connect to.

- Enter the IP address of the Provisioning Services server.
- Select “Use these credentials”.
- Enter the domain administrator credentials.
- Click Next.
<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
| Create the Master vDisk | ![Screenshot](image1.png) | • Select “Create new vDisk”.  
• Click Next. |
| | ![Screenshot](image2.png) | • Give the vDisk a name.  
• Select Fixed in the vDisk type drop down menu.  
• Click Next. |
- Make sure to allow enough room in the Free Space section to bring the total allocated space to at least 8192 MB. This is the minimum required by the Windows XP operating system. The size of the vDisk is completely dependent on the number of applications stored within the associated vDisk.

- Remember that the space allocated to a fixed vDisk will always occupy that amount of space in storage. Be mindful of any storage concerns when allocating space to vDisks.

- Click Next.

- Give the target device a name.

- Verify the MAC address is entered correctly.

- Ensure that correct device collection is shown in the Collection drop-down menu.

- Click Next.
<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
| Create the Master vDisk | ![Screenshot](image1.png) | - Click “Optimize for Provisioning Services”.
| | ![Screenshot](image2.png) | - Click OK.
| | ![Screenshot](image3.png) | - Back on the “Summary of Farm Changes” window, click Finish.
| | | - Wait for the vDisk to be created.
| | | - Once the vDisk has been successfully created, reboot the virtual machine by clicking Yes.
| | | - When the machine is rebooted, the wizard will continue the imaging process.
| | | - Once this is completed, click Finish.
| | | - A vDisk has now been created in the image of this machine.
Create the Master vDisk

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
|          | ![Screenshot](image1.png) | • When the Imaging Process is complete, click Start, then Run.  
• Type “services.msc”. |
|          | ![Screenshot](image2.png) | • Locate the Citrix Desktop Service.  
• Right click it and select Properties. |
Create the Master vDisk

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
|          |![Screenshot](image1.png) | - Change the Startup type to Automatic.  
- Start the service.  
- Click Apply.  
- Click OK.  
- Shut down the virtual machine.  

Provisioning Services: Provisioning Services Console

|          | ![Screenshot](image2.png) | - Select the vDisk Pool in the left pane.  
- Right click on the vDisk and select File Properties.  

Provisioning Services: Provisioning Services Console
### Create the Master vDisk

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>vDisk File Properties</strong></td>
<td><img src="image1.png" alt="Screenshot" /></td>
</tr>
</tbody>
</table>

**Table Description**

- Click on the Mode tab.
- Change the Access mode to Standard.
- Cache type is set to “Cache on server disk” by default.

- Click on the Options tab.
- Select Active Directory machine account password management.
- Click OK.
Create the Provisioning Services Target Devices

A target device is any desktop or server that receives a streamed image from a vDisk. All of the virtual machines created with Machine Creation Services will need to have a Provisioning Services target device account in order to be delivered with Provisioning Services. The following section will demonstrate the auto-add process. For a PowerShell version of adding target devices, please refer to the Appendix.

Create the Provisioning Services Target Devices

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provisioning Services: Provisioning Services Console</td>
<td></td>
<td>• Click on the collection within PVS Farm &gt; Sites &gt; PVS Site &gt; Device Collections &gt; PVS Collection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Right click the device.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Select Properties.</td>
</tr>
</tbody>
</table>

![Provisioning Services: Provisioning Services Console](image)

![Target Device Properties](image)

• Change the “Boot from” selection to vDisk.
• Click OK.
### Create the Provisioning Services Target Devices

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
|          | ![Screenshot](image1.png) | • Right click the device again.  
• Select Set Device as Template. |

#### Provisioning Services Console

**Set device XP/Server as the template device for this collection?**

- **Yes**
- **No**

- Right click the device again.  
- Select Auto-Add wizard...
### Create the Provisioning Services Target Devices

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image1.png" alt="Welcome screen" /></td>
<td>• <strong>Click Next on the Welcome screen.</strong></td>
</tr>
</tbody>
</table>
|          | ![Auto-Add Wizard](image2.png) | • **Select “Enable auto-add”.**  
  • **Click Next.** |
**Create the Provisioning Services Target Devices**

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
|          | ![Auto-Add Wizard](image) | - Click Next on the Select Site window.  
- Click Next on the Select Collection window.  
- Click Next on the Select Template Device. |

- In the Prefix field, use the same naming convention that was used when naming the virtual machines that were created with Machine Creation Services.  
- Specify the number length and zero fill.  
- Click Next.
### Create the Provisioning Services Target Devices

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image1.png" alt="Auto-Add Wizard" /></td>
<td>• Click Finish.</td>
</tr>
</tbody>
</table>
|          | ![XenCenter](image2.png) | • Select any of the Machine Creation Services created virtual machines.  
• Click on the General tab.  
• Click Properties.  
• Select Startup Options.  
• Click on Network then click Move Up until it is at the top of the boot order list.  
• Do this for all of the virtual machines created through Machine Creations Services. |
|          | ![Machine Creation Services Created Machines](image3.png) | • Start up any of the virtual machines, created with Machine Creation Services, which have been setup to boot from the network.  
• Login and verify that the machines are booting from the vDisk as shown in the picture. |
### Create the Provisioning Services Target Devices

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provisioning Services:</td>
<td></td>
<td>Notice that the machines have been auto-added to the Provisioning Services console as target device.</td>
</tr>
<tr>
<td>Provisioning Service</td>
<td></td>
<td>Console</td>
</tr>
<tr>
<td>Provisioning Service</td>
<td></td>
<td>Console</td>
</tr>
</tbody>
</table>

Because the Machine Creation Services created virtual machines are now launching with Provisioning Services, it is possible to remove the Identity and Difference Disks. If the target device’s write cache storage is going to be used then a local store must be created for each of the VM’s in the environment.

### Migrate the Desktop Group

In order for XenDesktop to deliver virtual desktops through Provisioning Services, a streamed desktop group is required. The original desktop group must be deleted and a new one created. It is possible to delete the original group without deleting the virtual machines within the group. These virtual machines can then be integrated into a new desktop group. Since the Assignment was left intact, all the previous configurations will still be in effect with the new streamed desktop group.
### Migrate the Desktop Group

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
| XenDesktop: Desktop Studio | | - Logon to the XenDesktop controller and open the Desktop Studio.  
- In the left pane, select Assignments.  
- Right-click the Desktop group in the middle pane.  
- Enable Maintenance mode.  
- In the left pane, click Machines.  
- Ensure that the virtual machines created through Machine Creation Services (the ones in the catalog) are shut down.  
- Right-click the desktop group in the center pane.  
- Select Delete Catalog.  
- Verify that “Leave virtual machines intact” is selected.  
- Click Next. |
## Migrate the Desktop Group

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Steps</strong></td>
<td><img src="image1" alt="Desktop Studio" /></td>
<td><strong>Click Finish.</strong></td>
</tr>
</tbody>
</table>
| **Machine deletion options** | ![Desktop Studio](image2) | **Right-click Machines.**  
**Click Create Catalog.** |
| **Summary** | ![Desktop Studio](image3) | **Select Streamed for the machine type.**  
**Enter the IP address of the Provisioning Services server.**  
**Make sure that the domain is selected.**  
**Verify that Virtual is selected for target device type.**  
**Click Next.** |
<p>| <strong>DeleteCatalog WMIC/POWER</strong> | <img src="image4" alt="Desktop Studio" /> | |</p>
<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
| Migrate the Desktop Group Location | [Image] | • Select the appropriate collection that houses the target devices on the Provisioning Services server.  
• Click Next. |
| Screenshot | [Image] | • Add any administrators that are needed for the administration of the catalog.  
• Give the catalog a description.  
• Click Next. |
| Screenshot | [Image] | • Give the catalog a name.  
• Click Finish. |
### Migrate the Desktop Group

<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
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</tr>
</thead>
</table>
|          | ![Screenshot](image1.png) | - On the left pane, click Assignments.  
- Right click the original desktop group that was created during the Machine Creation Services virtual machine creation.  
- Click Add Desktops. |
<p>|          | <img src="image2.png" alt="Screenshot" /> | - Click on the catalog and choose the number of machines to add. |
|          | <img src="image3.png" alt="Screenshot" /> | - Click Finish. |</p>
<table>
<thead>
<tr>
<th>Location</th>
<th>Screenshot</th>
<th>Description</th>
</tr>
</thead>
</table>
| Migrate the Desktop Group | ![Screenshot](image1.png) | - Right-click the Desktop Group and click Disable maintenance mode.  
- When asked “Are you sure you want to take the selected Desktop Group out of maintenance mode”, select Yes. |
| Client Device | ![Screenshot](image2.png) | - Logon to a client device.  
- Open an internet browser and browse to the XenDesktop Web Interface. The address can be found from the Desktop Delivery Controller.  
- Enter the credentials of a user within the domain that is set to access delivered desktops.  
- Click on the icon.  
- Launch the Provisioning Services delivered virtual desktop. |
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Appendix

PowerShell Export Script for XenDesktop on Hyper-V

Even though the Auto-Add feature in the Provisioning Services console is efficient, there are other methods and options to further automate this process, such as PowerShell. Below is a PowerShell script that can be used to export information from a XenDesktop Hyper-V installation and import it back into the Provisioning Services console.

This PowerShell script should be run from the SCVMM server that manages the XenDesktops that are being imported into Provisioning Server.

```powershell
#Purpose: Create a CSV file that can be important by Provisioning Services

if ($args -eq $null -or $args.Count -lt 5) {
    write-output "Usage: GenPVSFile.ps1 SiteName CollectionName Description ImportFileName VMMatchCriteria"
    write-output "Example: .\GenPVSFile.ps1 """""""" PVS Site"" """" PVS Collection"" """" XD Desktop""
    """"c:\PVSImport.csv"" ""XPMCS"
    exit 1
} # Pulls the VM Name Match criteria off the command-line
```

• Provisioning Services deployed virtual machine initially created through Machine Creation Services.
$VMNameMatches = $args[4]

# Connects to the local SCVMM Server
$VMMServer = Get-VMMServer -Computername "localhost"

# Finds all matching VMs and sorts by their machine name
$AllVMs = Get-VM | where { $_.Name -match "$VMNameMatches" } | sort Name

# The following loop gets the MAC address of the primary NIC then writes
# that output to the CSV file along with the other fields required for the PVS import
# most of which were supplied as parameters on the command-line.
foreach ($vm in $AllVms)
{
    $nicDetails = Get-VirtualNetworkAdapter -VM $vm
    $csvString = "\{0\},\{1\},\{2\},\{3\},\{4\}" -f $vm.Name, $nicDetails[0].PhysicalAddress, $args[0], $args[1], $args[2]
    write $csvString | out-File $args[3] –Append
}

After the file is created, there are two options for importing the data into the Provisioning Server. It is best to configure a default template for the collection and set the appropriate vDisk for that template. By doing so, the virtual machines that are imported will be assigned to the vDisk set to the template.

<table>
<thead>
<tr>
<th>PowerShe Script for XenDesktop</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
</tr>
<tr>
<td>Provisioning Services:</td>
</tr>
<tr>
<td>Provisioning Services Console</td>
</tr>
<tr>
<td><strong>Screenshot</strong></td>
</tr>
<tr>
<td><img src="image" alt="Provisioning Services Console" /></td>
</tr>
<tr>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>• In the right pane, right-click on the PVS Collection.</td>
</tr>
<tr>
<td>• Select Target Device &gt; Import Devices…</td>
</tr>
<tr>
<td>• Follow the Import Device Wizard.</td>
</tr>
</tbody>
</table>
The other method would be using the MCLI command-line utility that is included with the Provisioning Server. The MCLI utility can be found at %ProgramFiles%\Citrix\Provisioning Services folder. The importing command line would be in this format:

```
MCLI run importdevices -p filename=\server\share\pvsimport.csv copy Template=1
```
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