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Purpose

This document describes basic deployment of the App Orchestration Integrated Provisioning feature. In addition to introducing the feature, it describes:

- Creating a Compute Resource, Integrated Provisioning Session Machine Catalog and Offering
- Tenant Import
- Capacity adjustments
- Tenant Subscription to the Offering.

Before you begin, make sure the following is complete:

- App Orchestration Group Policy Objects (GPOs) in place
- Any machines you are going to use are located in an App Orchestration OU/sub-OU where these policies are properly applied.

This guide does not describe how to create Delivery Sites or StoreFront Server Groups.

What is Integrated Provisioning?

Integrated Provisioning lets you automatically deploy both single-user and multi-user Session Machines from an existing virtual machine (VM). This is known as a template.

The App Orchestration Configuration Server installs the XenDesktop 7.1 VDA. You use Machine Creation Services to capture a snapshot of the VM, which is used as the template for additional machines.
System Requirements

Host

- XenServer
  - XenServer 6.2
  - XenServer 6.1
  - XenServer 6.0.2
- VMware vSphere: vSphere vCenter Linked Mode operation is not supported
  - VMware vSphere 5.1 Update 1
  - VMware vSphere 5.0 Update 2
- Microsoft Virtual Machine Manager 2012 and Microsoft Virtual Machine Manager 2012 SP1, and any version of Hyper-V that can register with those Virtual Machine Manager versions.

Session Machine

- Single-user machines
  - Microsoft Windows 8 and 8.1, Professional and Enterprise editions
  - Microsoft Windows 7 SP1, Professional, Enterprise and Ultimate editions
- Multi-user machines
  - Microsoft Windows Server 2012 and 2012 R2, Standard and Datacenter editions
  - Microsoft Windows Server 2008 R2 SP1, Standard, Enterprise, and Datacenter editions

XenDesktop

- XenDesktop 7.1
Template preparation

Before you begin, make sure you created a VM to use as the template for the Session Machine catalog.

This section does not describe:

- Initial VM creation.
- Installation for operating system, VM tools, and software, including, but not limited to OS and software updates.
- Joining the machine to the domain.

Note

The domain you use to prepare and create the template should be the same as the Shared Resource Domain defined in Global Settings.

1. Log on to the VM used as the template and from a command prompt, enter `gpupdate /force`.

![Command Prompt](image-url)
2. Make sure that the GPOs containing the settings for App Orchestration are applied to the computer, using `gpresult /r` or an `rsop.msc` to confirm.

3. Run `winrm qc` and allow Quick Config to open ports in the firewall as necessary.
4. Log in to the App Orchestration Configuration Server and then ping the template VM using the FQDN. Perform a reverse lookup using `nslookup` as shown in the following example:

![Powershell Output]

You can only prepare this VM once, so make sure that you have a backup or clone of the VM before proceeding with the following steps and before creating the Session Machine catalog.

5. Remove or delete any snapshots (XenServer or VMware) or checkpoints (Hyper-V) associated with the virtual machine.
Examples

The following examples show the snapshot or checkpoint configuration for each hypervisor.

**VMware**

![Snapshots for NCUP2-Win81Template](image)
Hyper-V

Checkpoint location: C:\ClusterStorage\Volume1\TESTHYPV000
XenServer

Virtual Machine Snapshots

There are currently no snapshots of this VM. To create a snapshot, click Take Snapshot.
Create a Compute Resource

After you have configured the VM to use as a template, the next step is to create a Compute Resource in App Orchestration.

Citrix recommends that if you use Hyper-V or VMware, you review the Hyper-V implementations and VMware SSL certificate installation sections of this guide before proceeding.

1. Select Define in the App Orchestration console.
2. Select **Compute Resource**.

3. On the Compute Resources page, click **Add Compute Resource**.
4. Click Create New Compute Resource.
5. On the **Enable Integrated Provisioning, Basic Settings** page, select the hypervisor type from **Compute Resource**, and then enter the appropriate credentials for this connection.
6. Enter the hypervisor connection string in **Address / URL** using the following formats:

   - **VMware** — https://<FQDN of vCenter server>

   **Note:** If you have not installed the vCenter SSL certificate already, you must do so now before proceeding. After installing the SSL certificate, you must close all instances of the browser before proceeding. See *VMware SSL Certificate Installation* to complete this process.

   - **Hyper-V** — IP Address or FQDN
7. Enter the credentials of the account that connects to the Compute Resource.
After you complete the information, the Configuration Server attempts to validate the Compute Resource.

8. When the validation completes, enter the maximum number of machines for this Compute Resource and click **Next**.

Note:

You can use the same configuration multiple times for different Compute Resource names, so this number does not represent a limit to the entire hypervisor infrastructure.
9. The Cluster Selection screen displays a breakdown of resources that the user account has permissions to view. Select the datacenter/pool/cluster on which to create your Session Machines.

10. On the Advanced Settings screen, you can modify the name of the Compute Resource, the short name and various storage and network related settings.

11. Optionally change the Compute Resource name and then click Edit next to Storage.
12. Modify the storage configuration as required by the implementation, keeping in mind that shared storage is required to support personal vDisks.
13. In **Network Isolation Settings**, next to **Shared controller management network**, select **Edit**. Enter the case-sensitive network name, or click **Browse** to select from a list of networks available on the Compute Resource.
14. Perform the same steps for the **Shared Delivery Group management network**, selecting the network that the template uses, and then click **Save & Continue**.

Upon successful completion, the Compute Resources page displays again with the newly added Compute Resource.

If you’ve already created a template, go to **Create a Session Machine catalog**.
Create a Session Machine Catalog

Using the template you created, you create an Integrated Provisioning Session Machine Catalog.

1. In the App Orchestration console, click Design.

2. Select Session Machine Catalogs.
3. Click New Catalog.

4. Click **Automatically create virtual machines on-demand**.
5. Complete the Basic Settings, and then select the newly created Compute Resource from the list.

The App Orchestration server displays the list of virtual machines available on the Compute Resource.
6. Select the virtual machine to use as a template and then click **Next**.

7. Complete the Advanced Settings screen fields, and then click **Save**.
Upon successful completion, the new Session Machine catalog appears in the list.
Creating an offer

After creating the Session Machine catalog, create an offering using that catalog.

1. From the console, select Design > Offerings.

![Design > Offerings](image)

2. On the Offerings screen, select New Offering.

![Offerings](image)
3. Click **Create a Desktop Offering**.

4. If offerings were already created, you are prompted to choose which Session Machine Catalog to use with the offering. If no offerings exist, accept the defaults and click **Save**.

The web console now displays the new offering.
Importing a tenant

After creating an offering, you import a tenant so that you can later subscribe the tenant to the offering, thereby granting user access to the desktop or application.

Before you begin this step, make sure you created a Delivery Site and a StoreFront Server Group to provide offerings.

1. In the console, select **Deliver > Tenants.**
2. Click **Import Tenant.**
3. On the Import New Tenant page, click **Import Tenant**.

4. In the **Location group**, enter the name of the Active Directory group to add to this tenant definition, and then click **Add Group**.

5. After verifying that the group appears in the list of location groups, click **Next**.
6. This example accepts the defaults. You can optionally modify the short name, StoreFront isolation mode and NetScaler Gateway isolation, and then click **Save**.

7. The new tenant appears in the Tenants page.
Adjust capacity

Before subscribing a tenant to an offering, and before making machines available through StoreFront, adjust the capacity so that the required number of VMs is available. Otherwise, members of the tenant group can only access a single machine.

1. In the console, select Deliver > Tenants.

2. On the Tenants screen, click the name of the tenant you intend to subscribe to the offering you created.
3. On the TestGroup page, Click **Edit Capacity**.

4. On the **Edit Capacity** page, Click **Edit Capacity**.

5. Select an offering to which this change applies and then click **Next**.
6. Update **New capacity** with the number of available desktops and then click **Save**.
Create a subscription

Before creating a subscription make sure you completed the following steps:

- Designated a virtual machine as a template
- Created a Compute Resource
- Created an Integrated Provisioning Session Machine Catalog.
- Imported a tenant and adjusted its associated capacity
- Created a Delivery Site and StoreFront Server (preferably one that is not in use)

Creating a subscription for the tenant to an offering is the last step in providing resources to users.

1. In the console, select Design > Offerings.
2. The Offering page displays the offering you created and the associated Session Machine catalog.

3. Select Deliver > Tenants.
4. On the Tenants page, click **Subscribe**.

5. On the New Subscriptions page, click **Create a Subscription**.
6. Select an option and then click Next.

7. Add directory groups and then click Save.

After successfully creating a subscription, the workflows to create a machine from the Session Machine catalog starts.
VMware SSL certificate installation

This section describes how to install the vCenter server SSL certificate on App Orchestration Configuration Servers for Windows Server 2012 R2 machines. The process is slightly different for Windows Server 2008 servers.

1. On an App Orchestration Configuration Server, or on a Delivery Controller deployed from the Delivery Sites, launch a browser and connect to the vCenter server website using https://<FQDN>.

2. In the address bar, click the Certificate Error warning message.
3. Click View certificates.

5. In the Certificate Import Wizard, set the Store Location to **Local Machine** and then click **Next**.

6. Select **Place all certificates in the following store** and then click **Browse**.
7. On the Select Certificate Store page, select the *Show physical stores* option and then select the top level *Trusted People* store as shown in the following example, and then click **OK**.

8. On the Certificate Store page click **Next**.
9. On the Completing the Certificate page, click **Finish**.

![Completing the Certificate Import Wizard](image1)

10. On the verification dialog, click **OK**.

![Certificate Import Wizard](image2)
Hyper-V implementation

*Virtual Machine Manager installation tips*

- Make sure you have installed Virtual Machine Manager on all App Orchestration Configuration Servers and Delivery Controllers you want to use for Integrated Provisioning. After installing the Virtual Machine Manager console, whether you are working with the App Orchestration Configuration servers or the XenDesktop Delivery Controllers, you must reboot.
- When running the Virtual Machine Manager Setup Wizard, you only need to select **VMM console**.

![Virtual Machine Manager Setup Wizard](image-url)
- Use the default port 8100 for Communication with the VMM management server.
• Confirm that the console connects to your Virtual Machine Manager server or Hyper-V cluster and that it displays an accurate depiction of your VMs.

After completing these tasks, you can add a Hyper-V Compute Resource by specifying the FQDN as the address or URL.
Computer Name value mismatch

The computer name identified in the template VM properties, under the General tab, must match the computer name set in the operating system. Hyper-V queries the VM for the computer name over a specified period of time, so it is not immediate. If the values do not match, then the workflow fails.
Multi DNS environments workaround

When using Machine Creation Services to provision VDA machines with Virtual Machine Manager 2012 SP1, the provisioned machines DNS properties reset. This is not an issue if a single DNS server registers the machine’s FQDN. However, a problem can result if multiple authorities DNS servers exist in the environment. The newly provisioned VDA machine cannot resolve the XenDesktop Domain Controllers’ FQDN to an IP address. Therefore, the VDA cannot join the XenDesktop site.

To resolve this problem, create a Group Policy Object that pushes out a startup script that sets the NIC’s DNS settings to point to the correct DNS servers. With the policy applied, newly provisioned machines can register with the correct DNS server, resolve the FQDN of the Delivery Controllers, and successfully join the XenDesktop site.

1. Make sure that PowerShell 3.0 is installed on the template or master image.

2. Copy the script that sets the DNS setting of NIC to the following folder on the template to `C:\Windows\Systems32\GroupPolicy\Machine\Scripts\Startup`.

3. Run `Gpedit.msc` on the template to open the Local Group Policy Editor.


5. Select the Scripts (Startup/Shutdown) node.

6. Right-click the Startup node on the right pane and select Properties.

7. Select the PowerShell Scripts tab.
8. Select **Add** and then click **Browse** in the Add a Script dialog.

![Add a Script dialog](image)

9. Select the script that was just copied to this location.

![Browse dialog](image)

10. Click **Open**.
11. In the Add a Script dialog, click OK.

12. In the Startup Properties dialog, select Run Windows PowerShell scripts first and click OK.

13. Close the Group Policy editor.
Sample scripts

1. Use the following sample script to create a PowerShell script that you can use as a startup script.

   ```powershell
   $niccard = Get-DnsClient | ? ConnectionSpecificSuffixSearchlist | get-netadapter
   set-netadapterbinding -name $niccard.name -ComponentID ms_tcpip6 -
   Enabled $false -verbose
   Set-DnsClientServerAddress -InterfaceAlias $niccard.name -
   ServerAddresses ('[your own DNS server]')
   set-dnsclient -InterfaceAlias $niccard.name -
   ConnectionSpecificSuffix '([your own DNS domain suffix])' -
   RegisterThisConnectionsAddress $true -UseSuffixWhenRegistering $true
   restart-service dnscache
   new-eventlog -logname Application -Source startupscript
   write-eventlog -logname Application -source startupscript -eventID
   3001 -entrytype Information -message "we set the DNS" -category 1 -
   rawdata 10,20
   
   2. Replace the "[your own DNS server]" string with the actual DNS server in the environment. The
   DNS server should be the server that the base VM uses to join the correct domain, and the VM
   was able to resolve the DDC’s FQDN.

   3. Replace the "[your own DNS domain suffix]" string with the environment’s DNS domain suffix.
Frequently asked questions

Can I use different hypervisors to support the same catalog?

Yes. You can use multiple or different hypervisors for the same catalog. Note that when using multiple hypervisors, the VM Name and Network Names must be identical.

Can I update a Session Machine Catalog using a previously used template?

No. Currently you must create a new template for each Session Machine catalog and each new update.

Can I use Integrated Provisioning for XenApp servers?

No. You can only provision XenDesktop Single-user and Multi-user Session Machines.

What happens if I need to delete a compute resource after I have used it to deploy Session Machines?

If you attempt to delete a compute resource that is being used to deploy Session Machines, App Orchestration displays a warning message indicating that all the machines using the compute resource will be deleted as well. However, the delivery groups to which the Session Machines belong are not deleted.

If you still want to delete the compute resource, ensure there is an alternate compute resource that can service the delivery groups that are associated with the compute resource you want to delete. This compute resource should have the same label and VM template as the compute resource you want to delete.

If you have only one compute resource in your deployment and you have used it to deploy Session Machines, deleting the compute resource will fail because there are no other compute resources with which to associate the existing delivery groups.

If you delete a compute resource that has not yet been used to deploy Session Machines, App Orchestration deletes the compute resource without further warning.