Contents

Introduction ........................................................................................................................................3
Version Upgrade Methods ..................................................................................................................3
  Version Upgrade Overview .............................................................................................................3
Upgrade catalog version for externally provisioned machines .........................................................4
  Multi-user catalogs .......................................................................................................................5
  Single-user catalogs with static assignment ..................................................................................10
Upgrade catalog version for machines using integrated provisioning ............................................13
  Step 1: Create a single-user catalog with random assignment ....................................................13
  Step 2: Create an offering .............................................................................................................14
  Step 3: Create a subscription to the offering ..................................................................................15
  Step 4: Create a new virtual machine template ..............................................................................15
  Step 5: Create a new version of the catalog ..................................................................................16
Automatic catalog versioning for machines using Provisioning Services ........................................18
Version Management and Effects on App Orchestration ................................................................19
  Offerings exist in the previous version but not in the latest version ............................................19
  Offerings exist in the new version but not in the previous version ..............................................19
  Import new machines while Version Upgrade is in process .........................................................19
  Remove or delete machines while version upgrade is in process ................................................20
Additional resources ......................................................................................................................21
Introduction

In App Orchestration 2.0, the primary objective of upgrading Session Machine Catalogs is to have an in-place upgrade process for changing business requirements. For example, you might need to apply software hotfixes, add new applications that you provide as offerings, or upgrade machines to newer hardware. This process saves a lot of revenue as well as time for the administrator as machines are recycled.

By upgrading the catalog, you do not need to create a new catalog every time a customer requests a new offering. When you upgrade a catalog, App Orchestration waits until all current user sessions are logged off, according to the interval you specify or until users terminate their sessions, before beginning the upgrade process. When the machines are rebooted, the machines are updated to the latest catalog version depending on the source of creation. If needed, you can also modify the number of machines in the catalog while the upgrade occurs.

You can take advantage of this feature with machines that use integrated provisioning and machines that you provision externally through scripting or with tools like Citrix Provisioning Services.

Version Upgrade Methods

You can use the following methods to upgrade catalogs in App Orchestration:

- **Manual.** This method suspends the update process after the machines are put in maintenance mode. The administrator patches the machines and then lets App Orchestration know when the machines are ready. Use this method with machines that use integrated provisioning or that you provision externally.

- **Automatic.** This method does not require manual intervention but only reboots the machines. This process assumes that updates will be applied automatically. Use this method with machines you provision through Provisioning Services.

Version Upgrade Overview

The following list describes important considerations to keep in mind when upgrading Session Machine Catalogs:

- In the App Orchestration web console, the Session Machines tab on the Session Machine Catalog page displays the current version of the catalog to which it is allocated.
The Session Machine Catalog version upgrade process includes two settings:

- **Force users to log off by.** This optional date-time field defines the time at which sessions will be forced to terminate. If this setting is not configured, user sessions never forced to terminate; the upgrade workflow waits until all users terminate their sessions. If this setting is configured, a warning message is sent to current sessions 15 minutes (by default) before they are actually forced to be terminated.

- **Complete upgrade process without admin intervention.** If this check box is selected, no manual intervention from the administrator is needed to complete the catalog upgrade process. Select this option if the machine is provisioned via PVS or another image-streaming technology such that a simple restart is sufficient to upgrade the machine. By default, all session machines are restarted after all user sessions are terminated. If this check box is not selected, the administrator must apply the upgrade after the machines have restarted. This option is not available for Session Machine Catalog that contain static-assigned single-user Session Machines.

When you upgrade a Session Machine Catalog, you must have at least one unallocated machine available in the catalog. By default, unallocated machines are the first machine to be upgraded. If there are no unallocated machines in the catalog, then the upgrade process does not begin. If the catalog you want to upgrade has no unallocated machines and you cannot wait for an existing machine to become unallocated, you can import a new machine to the catalog to initiate the upgrade process.

If the catalog uses integrated provisioning, App Orchestration requires you to specify a new virtual machine as the base template for the new catalog version. For more information, see “Upgrade catalog version for machines using integrated provisioning” on page 13.

If the catalog does not use integrated provisioning, and the Complete upgrade process without admin intervention option is not selected, then the process stops. The App Orchestration web console displays an Update complete button next to the name of the each Session Machine. You will need to click this button after you make the changes required for the new version to complete the upgrade process.

### Upgrade catalog version for externally provisioned machines

App Orchestration enables you to create the following types of Session Machine Catalogs:

- Multi-user catalogs with machines running either XenDesktop or XenApp
- XenDesktop single-user catalogs with random assignment
- XenDesktop single-user catalogs with static assignment
The version upgrade process is the same for XenDesktop and XenApp multi-user catalogs, and for XenDesktop single-user catalogs with random assignment.

Multi-user catalogs

This section provides a tutorial that steps you through the following tasks:

1. Create a multi-user catalog and add Session Machines to it
2. Create an offering
3. Import a tenant and subscribe the tenant to the offering
4. Update the unallocated machines by adding a new application
5. Upgrade the catalog

You can also use these steps to upgrade XenDesktop single-user catalogs with random assignment; however, the option for administrator intervention is removed.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Task: Create a XenDesktop Multi User catalog</td>
</tr>
<tr>
<td></td>
<td>1. From the App Orchestration web console, click Design &gt; Session Machine Catalogs.</td>
</tr>
<tr>
<td></td>
<td>2. Click New Catalog.</td>
</tr>
<tr>
<td></td>
<td>3. Click Import externally-created Session Machines.</td>
</tr>
<tr>
<td></td>
<td>4. On the New Session Machine Catalog page, enter the name of the catalog and, in OS Type, select Multi User.</td>
</tr>
<tr>
<td></td>
<td>5. In Delivery Controller Type, click Edit and then select XenDesktop 7.1.</td>
</tr>
<tr>
<td></td>
<td>6. Click Save. App Orchestration creates the Session Machine Catalog.</td>
</tr>
</tbody>
</table>
2  Task: Import two Session Machines to the catalog
   1. From the App Orchestration web console, click **Design > Session Machine Catalogs**.
   2. Select the catalog to which you want to import the machines.
   3. Click **Add Machines**.
   4. Enter the FQDN of each machine you want to add, and select the appropriate network, resource domain, and datacenter. Click **Next**.
   5. Click **Save**. App Orchestration imports the machines to the catalog.

After the machine import workflows have completed successfully, App Orchestration displays the machines in the catalog:

![App Orchestration session machine catalog](image)

3  Task: Create an offering
   6. From the App Orchestration web console, click **Design > Offerings**.
   7. Click **Create a Desktop offering**.
   8. Select the appropriate isolation mode for the offering and then click **Save**.

4  Task: Subscribe a tenant to the offering

This task assumes you have imported a tenant already.

   1. From the App Orchestration web console, click **Deliver > Tenants**.
   2. On the **Tenants** page, click **Subscribe**.
   3. Select the offerings you want to make available to tenants. Click **Next**.
   4. Select the tenants you want to subscribe to the offering. Click **Next**.
   5. Specify the user groups who can access the offering. Click **Save**.

When you complete this task, one of the machines is allocated to the tenant and one machine is unallocated.
5  Task: Update the unallocated machine

Install an application on the unallocated machine in the catalog. During the upgrade progress, App Orchestration uses this machine to collect the application information for the new catalog version. Therefore, a catalog can be upgraded only when there are unallocated machines in the catalog.

6  Task: Create a new version of the Session Machine Catalog

1. From the App Orchestration web console, click Design > Session Machine Catalogs.
2. Select the catalog you want to upgrade.

3. Click Create New Version and configure the following settings:
   
   - **Force users to log off by.** Select the time and date by which App Orchestration automatically terminates any remaining user sessions.
   - **Complete upgrade process without admin intervention.** Select this option only when a reboot is used to upgrade the machine to the new version. If an administrator has to manually install the updates for the new catalog version, then leave this option cleared. By default, this option is not selected.

4. Click Save.
Task: App Orchestration completes upgrade workflows

After you create the new catalog version, App Orchestration completes the workflow to upgrade the Session Machine Catalog.

After these workflows are completed, App Orchestration displays a notification next to the catalog name indicating the machines are not the latest version. This notification means that the catalog has been upgraded but the machines are still being upgraded.

Even though all the machines are not yet at the latest version, the App Orchestration web console already knows all the applications in the latest catalog version. This means that the application you installed in Step 5 is available in the list of offerings.
Task: App Orchestration terminates remaining user sessions and administrator completes update

While the upgrade workflows complete, App Orchestration ends any remaining user sessions on the allocated machine, depending on the time interval mentioned in Step 6.

Install the application from Step 5 on the allocated machine. After completing this task, click Update complete.

App Orchestration displays a notification prompting you to confirm that all necessary updates have been completed.

To confirm, click Update is complete. App Orchestration moves both machines to the new catalog version.
Single-user catalogs with static assignment

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Task: Create a XenDesktop single-user catalog  
1. From the App Orchestration web console, click **Design > Session Machine Catalogs**.  
2. Click **New Catalog**.  
3. Click **Import externally-created Session Machines**.  
4. On the **New Session Machine Catalog** page, enter the name of the catalog and, in **OS Type**, select **Single User**. Click **Next**.  
5. In **Type of Desktop**, click **Edit** and then select **Static**.  
6. Click **Save**. App Orchestration creates the Session Machine Catalog. |
| 2    | Task: Import two Session Machines to the catalog  
Note: The Session Machines you choose to import must have a supported desktop operating system installed.  
1. From the App Orchestration web console, click **Design > Session Machine Catalogs**.  
2. Select the catalog to which you want to import the machine.  
3. Click **Add Machines**.  
4. Enter the FQDN of each machine you want to add, and select the appropriate network, resource domain, and datacenter. Click **Next**.  
5. Click **Save**. App Orchestration imports the machines to the catalog. |

After the machine import workflows have completed successfully, App Orchestration displays the machines in the catalog:
3 Task: Create an offering and subscribe a tenant to it

This task assumes you have imported a tenant already.

1. From the App Orchestration web console, click Design > Offerings.
2. Click Create a Desktop offering.
3. Select the appropriate isolation mode for the offering and then click Save.
4. Click Deliver > Tenants.
5. On the Tenants page, click Subscribe.
6. Select the offerings you want to make available to tenants. Click Next.
7. Select the tenants you want to subscribe to the offering. Click Next.
8. Specify the user groups who can access the offering. Click Save.

When you complete this task, one of the machines is allocated to the tenant and one machine is unallocated.

4 Task: Update the unallocated machine

Install an application on the unallocated machine in the catalog. During the upgrade progress, App Orchestration uses this machine to collect the application information for the new catalog version. Therefore, a catalog can be upgraded only when there are unallocated machines in the catalog.

5 Task: Create a new version of the Session Machine Catalog

1. From the App Orchestration web console, click Design > Session Machine Catalogs.
2. Select the catalog you want to upgrade.
3. Click Create New Version and configure the Force users to log off by setting.
4. Click **Save**.

6. **Task: App Orchestration completes upgrade workflows**

After you create the new catalog version, App Orchestration completes the workflow to upgrade the Session Machine Catalog.
Upgrade catalog version for machines using integrated provisioning

As with externally provisioned machines, machines that use integrated provisioning can be included in Single User or Multi User catalogs. Single-user machines can be assigned randomly or to a specific user. When you create a new catalog version, App Orchestration requires you to specify a new virtual machine as a base template.

This section provides a tutorial that steps you through the following tasks:

1. Create a single-user catalog
2. Create an offering
3. Import a tenant and subscribe the tenant to the offering
4. Create a new virtual machine template for the new catalog version
5. Create a new version of the catalog

Step 1: Create a single-user catalog with random assignment

1. From the App Orchestration web console, click Design > Session Machine Catalogs.
2. Click New Catalog.
3. Click Automatically create virtual machines on-demand.
4. On the New Session Machine Catalog page, enter the name of the catalog.
5. In OS Type, select Single User.
6. In Type of desktop, select Random.
7. In **Compute resource**, select the compute resource and then select the virtual machine you want to use as a template. Click **Next**.

8. Click **Save**. App Orchestration creates the Session Machine Catalog.

Step 2: Create an offering

1. From the App Orchestration web console, click **Design > Offerings**.
2. Click **Create a Desktop offering**.
3. Select the appropriate isolation mode for the offering and then click **Save**.
Step 3: Create a subscription to the offering

1. From the App Orchestration web console, click **Deliver > Tenants**.
2. On the **Tenants** page, click **Subscribe**.
3. Select the offerings you want to make available to tenants. Click **Next**.
4. Select the tenants you want to subscribe to the offering. Click **Next**.
5. Specify the user groups who can access the offering. Click **Save**.

After you complete this task, one machine is allocated to the tenant.

Step 4: Create a new virtual machine template

Before you create a new version of a catalog that uses integrated provisioning, you must create a new virtual machine that includes the applications and other updates you want to introduce to the catalog. This virtual machine acts as the new template from which subsequent Session Machines are provisioned. This template must not have any snapshots included, as App Orchestration requires that it create the first snapshot when provisioning machines. If any snapshots are included in the template, App Orchestration cannot use it to provision updated machines.
Step 5: Create a new version of the catalog

1. From the App Orchestration web console, click **Design > Session Machine Catalogs**.
2. Select the integrated provisioning catalog you want to upgrade.
3. Click **Create New Version**.
4. Select the **Compute Resource** hosting the template you want to use for the new catalog version, and then select the template.

5. In **Force users to log off by**, select the date and time at which App Orchestration terminates any remaining sessions.
6. Click **Save**.
After you click **Save**, App Orchestration launches workflows to upgrade the Session Machine Catalog. You can monitor these workflows from the Workflows tab in the web console.

As App Orchestration completes these workflows, the Session Machine Catalogs page of the console displays a notification indicating machines in the catalog are not at the latest version. At this stage in the process, the applications you installed on the new template are available as offerings.
App Orchestration logs off any remaining sessions on the allocated machine, according to the Force users to log off by setting. App Orchestration then creates a new machine from the new template you specified.

Automatic catalog versioning for machines using Provisioning Services

When changes are implemented in a catalog – for example, a new application is added – they are first applied to one of the Session Machines. App Orchestration then uses the concept of versioning to apply the change to all remaining machines in the catalog.

When you create a new version of a catalog for machines that use Provisioning Services, you have the option of specifying that the upgrade complete without administrator intervention:
This option is available because Provisioning Services has its own versioning mechanism that allows a vDisk to remain in use while changes are applied, minimizing downtime for users. When the new version is ready, the targets reboot with the new, updated vDisk.

Because Provisioning Services has its own update mechanism, the Create New Version function in App Orchestration does not apply to provisioned machines. Indeed, even versions of Provisioning Services that do not include any versioning capability (such as Version 5.6) can implement updates without any additional intervention by App Orchestration outside of handling the reboot of the targets.

**Version Management and Effects on App Orchestration**

**Offerings exist in the previous version but not in the latest version**

**Scenario:** Some Session Machines have been moved to the latest version of a catalog and offerings that exist in the previous catalog version do not exist in the latest catalog version.

**Effects:** These older offerings are listed with a warning indicating they are not available in the latest catalog version. Also, you cannot create new subscriptions for these offerings.

**Resolution:** Manually delete these previous offerings using the App Orchestration web console.

**Offerings exist in the new version but not in the previous version**

**Scenario:** Some machines are in the latest catalog version, though not all in the catalog. The administrator can create offerings for the new applications in the latest version and a notification is displayed next to each offering indicating that all machines are not in the latest version.

**Effect:** Tenants’ users might not be able to access the application if they are allocated a machine from the previous catalog version.
Import new machines while Version Upgrade is in process

**Scenario:** While upgrading a catalog, you continue to import new Session Machines to it.

**Effect:** All the machines imported while the version upgrade is still in process are allocated to the latest version.

Remove or delete machines while version upgrade is in process

**Scenario:** You can remove allocated and unallocated machines from a catalog while it is undergoing a version upgrade.

**Effect:** When you remove an allocated machine, App Orchestration drains it. Draining is the process of waiting for all user sessions to be terminated, either by App Orchestration forcing termination or by users themselves terminating their sessions. When you remove an unallocated machine, App Orchestration moves it immediately from the catalog because there are no user sessions to drain.
Additional resources

- Citrix Blogs: Provisioning Services 6.0: From Single Image Delivery to Single Image Management
- Citrix eDocs, Provisioning Services: Updating vDisks