Managing Horizon Images From the Cloud

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VMware Horizon Cloud Service
You can find the most up-to-date technical documentation on the VMware website at:
https://docs.vmware.com/
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Managing Horizon Images from the Cloud

_Manging Horizon Images from the Cloud_ describes how to use Horizon Image Management Service, including how to set up the service and how to create, customize, and publish versions of images for use by desktop assignments across your cloud-connected Horizon pods.

**Intended Audience**

This information is intended for anyone who wants to set up, customize, and publish system images for VMware Horizon desktop assignments. The information is written for experienced Windows system administrators who are familiar with virtual machine technology and data center operations.
Introduction to Horizon Image Management Service

Horizon Image Management Service is a cloud-based service that simplifies and automates the management of system images used by desktop assignments, such as desktop pools and farms, across your cloud-connected Horizon pods.

The Horizon workflow depends upon the timely and diligent administration of the system images underlying the virtual machines and desktop assignments provisioned to end users. The management of system images can be a tedious and time-consuming process, as every customization to an image requires the administrator to update the associated desktop assignments one by one.

Horizon Image Management Service simplifies and streamlines this process by offering the following features and benefits.

- Centralized catalog for images managed across your sites and cloud-connected Horizon pods.
- Automated replication of system images across your cloud-connected Horizon pods. Desktop assignments on different pods and sites can easily reuse the same images managed by the service.
- Automated version control and tracking of images.
- Automated updates of desktop assignments with customized images, by using reference markers. You can easily and efficiently update desktop assignments in this way across your sites and cloud-connected Horizon pods.

Horizon Image Management Service significantly reduces the time and effort required to maintain desktop assignments with the latest images, allowing administrators to devote more attention to customizing the business-critical operating system settings and applications on the images themselves.

This chapter includes the following topics:

- Getting Started with Horizon Image Management Service
- System Requirements
- System Architecture of the Horizon Image Management Service
- Understanding the Image Management Workflow
Getting Started with Horizon Image Management Service

This topic provides the high-level steps that you must complete to start using the features in this product. Upon the completion of these steps, your environment will be set up and ready for the Horizon Image Management Service.

**Note** Some of these high-level steps refer to more detailed instructions documented in the public *Horizon Cloud Deployment Guide* or *Horizon Cloud Administration Guide*. Use the hypertext links provided in the high-level steps to open the HTML documentation pages containing detailed instructions.

1. Familiarize yourself with the **System Requirements**.
2. Connect your Horizon pod to Horizon Cloud to make it a cloud-connected pod.
   - Follow the steps in the Deployment Guide, starting with *High-Level Workflow When You are Onboarding an Existing Manually Deployed Horizon Pod as Your First Pod to Your Horizon Cloud Tenant Environment*.
3. Set up the participating vCenter Server instances for the service.
   - a. Verify that the vCenter Server instances meet the prerequisites described in **System Requirements**.
   - b. Configure the vCenter Server login credentials. See **Configure the vCenter Server Instances**.
4. Import images into the image catalog and publish the image versions. See **Import an Image into the Image Catalog** and **Publish an Image Version**.
5. Create desktop assignments that use managed images from the image catalog. See **Create a New Desktop Pool for Multi-Cloud Assignments** and **Create an Automated Farm from a Managed Image**.

In this guide, a **desktop assignment** refers to one of the following:
- Automated full-clone desktop pool
- Automated instant-clone desktop pool
- Automated instant-clone farm

The Horizon Image Management Service is now up and running in your environment.
System Requirements

To support the use of Horizon Image Management Service, ensure that your system environment and components meet the following requirements.

Horizon Cloud Account Requirements

You must have a Horizon Cloud customer account that is appropriately configured for your use of Horizon Image Management Service.

Horizon Pod Requirements

To support Horizon Image Management Service, a VMware Horizon pod must be:

- Hosted on-premises
- Running Horizon Connection Server version 7.12 or later, with a valid license
- Configured according to the Horizon documentation, as described in Configuring VMware Horizon for the First Time.
- Cloud-connected to Horizon Cloud using Horizon Cloud Connector version 1.5 or later. It is recommended that you always upgrade to the most recent version of Horizon Cloud Connector.

**Note**  If your Horizon pod is cloud-connected using Horizon Cloud Connector 1.8 or later, Horizon Image Management Service is supported if you deployed Horizon Cloud Connector with the Full Feature profile or if you deployed with the Basic Feature profile and then manually activated the Image Locality Service. For more information, see the Manually Activate Horizon Cloud Services for Horizon Cloud Connector 1.8 or Later topic in the Horizon Cloud Administration Guide.

For more information about setting up a cloud-connected pod for use with Horizon Image Management Service, see Getting Started with Horizon Image Management Service.

vCenter Server Requirements

To support Horizon Image Management Service, ensure that:

- You are running vCenter Server 6.0 or later in all the sites that you want to manage.
  
  To use vSphere content libraries for image replication and storage, Horizon Image Management Service requires an appropriate version of vCenter Server.

- All vCenter Server instances have network line-of-sight and authentication trust established with another. You must manually configure the network line-of-sight and authentication trust.

  **Note**  Horizon Image Management Service does not support a clustered topology, in which different groups of vCenter Server instances use different identity providers.
The vCenter Server user is configured with all the standard privileges required by a Horizon environment, as described in Privileges Required for the vCenter Server User. In addition to these standard privileges, Horizon Image Management Service requires the following privileges:

- **Virtual Machine**: All privileges in this group
- **vApp**: All privileges in this group
- **Content Library**: All privileges in this group (grant access to the vCenter Server user under Global Permissions)

### Image Requirements

To manage Horizon images from the cloud, observe the following requirements:

- Verify that the latest Windows updates and system patches are installed on the images and that the installation process for these items is complete.

  **Note**: If any of these installations are still in progress when you attempt to publish an image, this can cause the agent installation to get stuck.

- Verify that all Windows configuration (such as time zone, region, and keyboard layout) has been completed.

- Verify that the latest version of VMware Tools is installed on the operating systems of the images.

- This release of Horizon Image Management Service supports the management of images saved in the following formats: virtual machine (VM) templates and VM snapshots. The images must be resident on a vCenter Server instance.

- Before you can use an image for a full-clone desktop pool, you must perform certain preparation steps on the image's operating system. For detailed instructions, visit the VMware Horizon Documentation page, navigate to the Setting Up Virtual Desktops in Horizon guide, and then to the topic “Prepare Windows Server Operating Systems for Desktop Use.”

- Before using the service, prepare the source image in the format required by your use case.

  - A **VM template** is a copy of a virtual machine that you can use to create automated desktop pools containing full virtual machines. For information about creating a VM template on vCenter Server, see the VMware vSphere Documentation.

  - A **VM snapshot** is a vCenter Server object that captures the state and data of a parent virtual machine at the time you take the snapshot. You can use VM snapshots to create instant-clone desktop pools. For information on how to take a VM snapshot, see the VMware vSphere Documentation.
System Architecture of the Horizon Image Management Service

The following diagram illustrates the relationship between the core components of the Horizon Image Management Service.

Figure 1-1. Architecture of the Horizon Image Management Service

Understanding the Image Management Workflow

The end-to-end workflow for using Horizon Image Management Service to set up, customize, and publish images to desktop assignments involves a certain sequence of tasks.

1. In Horizon Cloud Administration Console, specify the login credentials for the vCenter Server instances that you want to configure for Horizon Image Management Service.
See [Configure the vCenter Server Instances](#).

2 In Horizon Cloud Administration Console, import the baseline images into the image catalog. When specifying import options, tag each baseline image with the appropriate marker (for example, *Prod*).

   See:
   - [Import an Image into the Image Catalog](#)
   - [Working with Markers](#)

3 Publish the image versions that you want to make available for desktop assignments.

   See [Publish an Image Version](#).

4 In Horizon Console, create desktop assignments that use managed images from the image catalog. Make sure to tag each desktop assignment with the same marker (for example, *Prod*) that you associated with the corresponding image.

   See:
   - [Create a New Desktop Pool for Multi-Cloud Assignments](#)
   - [Create an Automated Farm from a Managed Image](#)

   At this point, Horizon Image Management Service is configured for use, and you can entitle your end users to desktop assignments based on managed images.

   To customize a managed image and update all the associated desktop assignments across your pods with the newly customized image, you perform the following tasks.

5 In Horizon Cloud Administration Console, create a new version of the image that you want to customize.

   See [Create a New Image Version](#).

6 Using vSphere Client, make the necessary customizations to the image version.

   See [Customize an Image](#).

7 In Horizon Cloud Administration Console, publish the customized image version.

   See [Publish an Image Version](#).

8 To update existing desktop assignments to use the new image version, move the associated marker (for example, *Prod*) from the original image version to the new version.

   Moving the marker prompts Horizon Image Management Service to refresh all associated desktop assignments with the new image version.

---

**Working with Images in Horizon Image Management Service**

In the context of Horizon Image Management Service, an image is a collection of image versions that can be associated with desktop assignments across your cloud-connected pods.
The previous figure illustrates the process of importing an image into the image catalog and publishing it to the cloud-connected pods in your environment. The steps of this process are summarized as follows:

1. When you initiate the **Import** action on a selected image, Horizon Image Management Service registers the image with the service by storing the image's metadata in the image catalog. Horizon Image Management Service also performs certain preparation steps on the image in its source pod. Horizon Cloud Connector enables the connection between the image's source pod and the service.

   In the figure, On-premises Pod 4 is the source pod for the Win10POS image undergoing the import operation.
2. After the import operation is complete, the image is added to the image catalog as image version 1.0. This image version shows the **Deployment Complete** status, indicating that it is ready to be published.

   In the figure, Win10POS is the image newly created in the catalog.

3. When you initiate the **Publish** action on image version 1.0, Horizon Image Management Service publishes the image version to all the cloud-connected pods that are present at the time of publication. The service replicates and places a copy of the underlying image in the content library of each pod. Each image copy resides in a datastore within the content library, which in turn resides on the vCenter Server instance of that pod.

4. The Horizon Cloud Connector instance for each pod finalizes the image copy on that pod. The image version in the catalog changes to the **Available** status, indicating that it is now ready for use in desktop assignments.

**Working with Markers**

You use markers to associate your desktop assignments with specific image versions in an image stream.

The following figure depicts the initial state of an image management scenario.

**Figure 1-3. Initial State of Associated Marker**

![Image Management Scenario Diagram]

In this scenario, several desktop pools use different versions within the Win10CorpKnow image stream. The administrator uses markers to associate specific image versions with specific pools. For example, the administrator has provisioned Pool 1 to a user group dedicated to user acceptance testing. By tagging both Pool 1 and image version 19 with the **UAT** marker, the administrator ensures that the desktops in Pool 1 are cloned from image version 19.
Now suppose that the administrator wants to provide the user acceptance testers with a modified desktop image. To accomplish this task, the administrator first creates a new version 20 in the image catalog. Then they customize the underlying image on the vCenter Server instance of the source pod and publish the customized version 20 to all the other pods. Finally, they reassociate the UAT marker from version 19 to version 20, as shown in the following figure.

Figure 1-4. Edited State of Associated Marker

By reassociating the UAT marker, the administrator redefines the image used for Pool 1. The marker reassociation triggers an automatic process in which all the desktops in Pool 1 are refreshed with image version 20.

Known Limitations of the Current Release

Before you begin using this release of Horizon Image Management Service, review the following list of known issues and feature limitations.

- Horizon pods located in VMware Cloud on AWS are not supported.
- Horizon Image Management Service only supports vCenter Server authentication based on user name and password credentials.
- During image publishing operations, you must prevent activities occurring in vCenter Server that might cause guest VM migrations on the image's underlying VMs. Guest VM migrations that occur at the same time as image publishing operations on the VMs can affect the image publishing operations.
- The system default setting is to have three import or publish operations in progress at a time. As an example, importing can be in progress for one image while publishing is in progress for two images. You can change the default on the console's General Settings page. Increasing the setting will increase the time to complete the replication.
- Horizon Image Management Service does not support the management of images for linked-clone workspace assignments. In addition, this release requires that you deactivate Horizon View Composer on any pods that you want to manage. You cannot publish images successfully when Horizon View Composer is enabled.

- Horizon Image Management Service requires the privileges of the full, built-in Windows administrator to create a directory and install Horizon Agent on the virtual machines (VMs) cloned from managed images. For more information, see the Microsoft documentation topic Enable and Disable the Built-in Administrator Account.
Setting Up Horizon Image Management Service

To set up Horizon Image Management Service, you must first configure the participating vCenter Server instances. Then you can add images to the image catalog and create desktop assignments based on these managed images.

This chapter includes the following topics:

- Configure the vCenter Server Instances
- Overview of the Images Page
- Adding Images to the Image Catalog
- Publish an Image Version
- Creating Desktop Assignments with Managed Images

Configure the vCenter Server Instances

To start using the Horizon Image Management Service, you must first establish authentication trust between all the vCenter Server instances that contain managed images. Then you must set up your vCenter Server credentials.

You use the Setup vCenter Credentials wizard to specify the user login information for accessing the participating vCenter Server instances. Configuring this login information ensures that Horizon Image Management Service has access to the images resident on your vCenter Server instances.

Prerequisites

- Cloud-connect the Horizon pods that you want to have participate in the Horizon Image Management Service. See Getting Started with Horizon Image Management Service.
- Verify that your vCenter Server instances meet the prerequisites described in System Requirements.
Procedure

1. Establish authentication trust between the vCenter Server instances.
   a. Using a web browser, navigate to the URL of a vCenter Server instance.
   b. On the lower right corner of the vSphere home page, right-click **Download trusted root CA certificates** and download the certificates folder to your local system.
      The downloaded folder contains the .crt certificate file required to set up the trust.
   c. Navigate to the URL of another vCenter Server instance and click **Launch vSphere Client (HTML)**. Log in to vSphere Client.
   d. In vSphere Client, navigate to **Menu > Administration > Certificate Management**. Enter the vCenter Server credentials and click **Login and Manage Certificates**.
   e. At the bottom of the page, under Trusted Root Certificates, click **Add** and upload the .crt certificate file that you downloaded in step b.
   f. Repeat steps c, d, and e for every other vCenter Server instance that you want to configure for Horizon Image Management Service.

2. In the left pane of the Horizon Cloud Administration Console, select **Inventory > Images**.
   - If you have not set up the Horizon Image Management Service yet, the **Welcome to Images** screen appears, prompting you to configure your vCenter Server credentials.
   - If you have already set up the Horizon Image Management Service, the main **Images** page appears. You can use the menu selection on this page to edit the credentials for an already configured vCenter Server instance, if these credentials have changed.

3. Click **Setup vCenter Credentials** on the **Welcome to Images** screen or select **vCenter > Setup Credentials** on the main **Images** page.
   The Setup vCenter Credentials wizard appears, displaying a list of all the vCenter Server instances associated with your cloud-connected pods.
4 If you have multiple vCenter Server instances that all use the same login credentials, enable the **Use same credentials for all vCenters** toggle.

When you enable this toggle and enter the credentials for one vCenter Server, the same credentials are applied to the other vCenter Server instances.

5 On the Details page, enter the user name and password for the administrator account on the vCenter Server. Repeat this step for each vCenter Server in the list. Then click **Next**.

6 On the Summary page, verify that the correct credentials are displayed for the vCenter Server. Then click **Finish**.

**Overview of the Images Page**

The Images page in the Horizon Cloud Administration Console provides a dashboard display of the images registered in the image catalog, allowing you to view details about managed images and image versions. The Images page also serves as a command center where you can initiate Horizon Image Management Service actions.

To display the Images page, in the left pane of the Horizon Cloud Administration Console, select **Inventory > Images**.

The main page is displayed. You can view details and initiate actions for your managed images on the main page. From this main page, you can also navigate to subpages that show more details about the versions of an image.
Main Page

To display the main Images page, in the left pane of the Horizon Cloud Administration Console, select **Inventory > Images**.

### Table 2-1. Per-Image Information Columns on the Main Images Page

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>The availability status of the image:</td>
</tr>
<tr>
<td></td>
<td>- During the import and publishing processes, this column displays the in-progress (รอ) status.</td>
</tr>
<tr>
<td></td>
<td>- After the image publication is complete, this column displays the <strong>Available</strong> status, indicating that the image is ready to be managed and used in desktop assignments.</td>
</tr>
<tr>
<td>Image Name</td>
<td>The name of the image that you defined when you added the image to the image catalog.</td>
</tr>
<tr>
<td>Description</td>
<td>The description of the image that you optionally defined when you added the image to the image catalog.</td>
</tr>
<tr>
<td>OS</td>
<td>Operating system of the image.</td>
</tr>
<tr>
<td>Modified on</td>
<td>Timestamp of the most recent changes made to the image.</td>
</tr>
</tbody>
</table>

The main page also contains buttons that allow you to initiate the actions described in the following table. To access many of these action buttons, you must first select an image by clicking the selection button at the far left of its row.

### Table 2-2. Actions Available from the Main Images Page

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Download OS Optimization Tool (Beta)</td>
<td>At the top of the page, there is a banner containing a link to a download page for the VMware OS Optimization Tool, which is a Beta product that prepares and optimizes Microsoft Windows and Microsoft Windows Server systems for use with Horizon Cloud.</td>
</tr>
<tr>
<td>Import</td>
<td>Opens the Import Images wizard that lets you import a source image from a vCenter Server instance into the image catalog. See <a href="#">Import an Image into the Image Catalog</a>.</td>
</tr>
<tr>
<td>Edit</td>
<td>Allows you to edit the name and description of an image registered in the image catalog. See <a href="#">Edit the Details of an Image</a>.</td>
</tr>
<tr>
<td>Disable</td>
<td>Puts the image in deactivated state. When you deactivate an image, you cannot use any of its versions under that image for new desktop assignments. Existing desktop assignments that already use a version of the image are not affected.</td>
</tr>
<tr>
<td>Setup Credentials</td>
<td>Allows you to configure the user login information for accessing your vCenter Server instances. See <a href="#">Configure the vCenter Server Instances</a>. Select vCenter &gt; Setup Credentials to use this option.</td>
</tr>
<tr>
<td>Scan Image Inventory</td>
<td>Scans your vCenter Server instances for images. Select vCenter &gt; Scan Image Inventory to use this option.</td>
</tr>
<tr>
<td>Enable</td>
<td>Returns a deactivated image to enabled state. New desktop assignments can use the versions of an enabled image.</td>
</tr>
</tbody>
</table>
Table 2-2. Actions Available from the Main Images Page (continued)

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rescan Status</td>
<td>Rescans the topology of the pod (vCenter Servers, datastores, hosts, clusters, datastore paths) and reports any changes that have occurred since the pod was connected.</td>
</tr>
<tr>
<td></td>
<td>- This task cannot be performed while image preparation in progress.</td>
</tr>
<tr>
<td></td>
<td>- The <strong>Import</strong> and <strong>Setup Credentials</strong> options are not available while the rescan is running.</td>
</tr>
<tr>
<td>Refreshes the page display.</td>
<td></td>
</tr>
<tr>
<td>Downloads the Image Catalog Usage Report, containing all image and image version data in CSV format.</td>
<td></td>
</tr>
</tbody>
</table>

Clicking the name of an image opens the detailed subpage for that image.

**Image Details Page**

To open the details page for an image, click the image name in the main Images page.

Information about the image appears the header at the top of the page. This information includes the image's name, status, and OS, and the number of versions registered under the image.

The image versions appear in a list below the header. Information about each image version appears in the columns of the list.

Table 2-3. Per-Version Information Columns on the Image Details Page

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>The availability status of the image version:</td>
</tr>
<tr>
<td></td>
<td>- When you first import, create, or publish a version, this column displays the in-progress (&gt;Loading&lt;&gt;) status. The in-progress status also applies to the image version when it undergoes other types of changes, such as a change in marker association.</td>
</tr>
<tr>
<td></td>
<td>- After the import or creation of the version is complete, this column displays the <strong>Deployment Complete</strong> status, indicating that the version is ready to be published.</td>
</tr>
<tr>
<td></td>
<td>- After the publication of the version is complete, this column displays the <strong>Available</strong> status, indicating that the version is ready for use in desktop assignments.</td>
</tr>
<tr>
<td></td>
<td>- If a problem occurred while attempting to import or publish the version, this column displays the <strong>Failed</strong> status. If it is available, you can click the information icon next to the status to view details about the possible cause of the failure.</td>
</tr>
<tr>
<td>Version</td>
<td>The numeric label of the image version.</td>
</tr>
<tr>
<td></td>
<td>- Major versions are labeled as whole integers (for example, 2.0).</td>
</tr>
<tr>
<td></td>
<td>- Minor versions are labeled in dot increments (for example, 1.1).</td>
</tr>
<tr>
<td>Marker(s)</td>
<td>List of markers assigned to the image version.</td>
</tr>
</tbody>
</table>
Table 2-3. Per-Version Information Columns on the Image Details Page (continued)

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>The description of the image version that you optionally defined when you created the version.</td>
</tr>
<tr>
<td>Modified on</td>
<td>Timestamp of the most recent changes made to the image version.</td>
</tr>
</tbody>
</table>

The image details page also contains buttons that allow you to initiate the actions described in the following table. To access many of these action buttons, you must first select an image version by clicking the selection button at the far left of the row.

Table 2-4. Actions Available from the Image Details Page

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Image</td>
<td>Opens the New Image dialog box which lets you create an image using the selected image version as the baseline. See Create an Image in the Catalog.</td>
</tr>
<tr>
<td>New Version</td>
<td>Opens the New Version dialog box which lets you create an image version using the selected version as the baseline. See Create a New Image Version.</td>
</tr>
<tr>
<td>Edit Markers</td>
<td>Opens the Edit Marker(s) dialog box which lets you associate new or existing markers with the image version. See Update Desktop Assignments with a Customized Image.</td>
</tr>
<tr>
<td>Disable</td>
<td>Puts the image version in deactivated state. When you deactivate an image version, you cannot use the version for new desktop assignments. Existing desktop assignments that already use the image version are not affected.</td>
</tr>
<tr>
<td>Publish</td>
<td>Opens the Publish Image dialog box which lets you specify configuration options for publishing the image version. See Publish an Image Version. To access the Publish button, click the more (…) button that displays the menu of advanced commands.</td>
</tr>
<tr>
<td>Enable</td>
<td>Returns a deactivated image version to enabled state. Enabling an image version makes it available again for use in desktop assignments. To access the Enable button, click the more (…) button that displays the menu of advanced commands.</td>
</tr>
</tbody>
</table>
| Rescan Status| Rescans the topology of the pod (vCenter Servers, datastores, hosts, clusters, datastore paths) and reports any changes that have occurred since the pod was connected.  
□ This task cannot be performed while image preparation in progress.  
□ The Import and Setup Credentials options are not available while the rescan is running. |
|              | Refreshes the page display.                                                  |
|              | Downloads the Image Catalog Usage Report, containing all image and image version data in CSV format. |

Clicking the version number in a row opens the details page for that image version.
Image Version Details Page

To open the details page for an image version, click the version number in the image details page.

The page header displays the name of the image that the version belongs to, the version number, and the status of the image version. Below the header, one list provides information about the copies of the image version located in vCenter content libraries across your cloud-connected pods. Another list provides information about the desktop assignments that use the image version.

Table 2-5. Information About Image Versions on the Version Details Page

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>The availability status of each copy of the image version:</td>
</tr>
<tr>
<td></td>
<td>- During the replication process as the image version is being copied to the</td>
</tr>
<tr>
<td></td>
<td>content library of a pod, this column displays the in-progress ((\in)) status.</td>
</tr>
<tr>
<td></td>
<td>- After the image version is copied to the content library of the source pod, the</td>
</tr>
<tr>
<td></td>
<td>status changes to <strong>Deployment Complete</strong>.</td>
</tr>
<tr>
<td></td>
<td>- After the image version is copied to the content library of a pod other than the</td>
</tr>
<tr>
<td></td>
<td>source, the status changes to <strong>Available</strong>.</td>
</tr>
<tr>
<td></td>
<td>- If a problem occurred while attempting to copy the image version, this column</td>
</tr>
<tr>
<td></td>
<td>displays the <strong>Failed</strong> status. If it is available, you can click the information icon next</td>
</tr>
<tr>
<td></td>
<td>to the status to view details about the possible cause of the failure.</td>
</tr>
<tr>
<td>Pod</td>
<td>Name of the Horizon pod in which the copy of the image version resides.</td>
</tr>
<tr>
<td>vCenter</td>
<td>IP address or fully qualified domain name of the vCenter Server that holds the</td>
</tr>
<tr>
<td></td>
<td>content library in which the copy of the image version resides.</td>
</tr>
<tr>
<td>Datastore</td>
<td>Name of the datastore in which the copy of the image version resides.</td>
</tr>
<tr>
<td>Template/Snapshot</td>
<td>Name of the VM template or VM snapshot underlying the image version.</td>
</tr>
</tbody>
</table>
### Adding Images to the Image Catalog

You add images to the image catalog by importing and publishing a virtual machine (VM) template or VM snapshot. You can also create an image that is based an existing image version in the catalog.

#### Import an Image into the Image Catalog

Use the following procedure to import an image into the image catalog and prepare it for publication to your cloud-connected pods. When you import an image, it is added to the catalog as version 1.0 of a new image.

**Prerequisites**

- Set up the participating vCenter Server instances. See [Configure the vCenter Server Instances](#).
- Verify that VMware Tools is installed on the image's operating system. The import operation fails if VMware Tools is not installed on the operating system.
- Before you can use an image for a full-clone desktop pool, you must perform certain preparation steps on the image's operating system. For detailed instructions, visit the [Horizon Documentation](#) page, navigate to the *Setting Up Virtual Desktops in Horizon* guide, and then to the topic "Prepare Windows Server Operating Systems for Desktop Use."
- For best results, verify that the latest Windows update patches are installed on the image's operating system. These updates facilitate any silent installations of Horizon Agent on the image in the future.

**Procedure**

1. In the left pane of the Horizon Cloud Administration Console, select **Inventory > Images**.
2. Click **Import**.

   The Import Images wizard appears.
3 On the Definition page of the wizard, specify the filtering parameters for the type of image that you want to import into the catalog. To import a VM template or VM snapshot that is in use by a desktop assignment, enable the **In Use By Pool** toggle. Then specify search filters as described in **Filtering Parameters for VM Templates and VM Snapshots**.

The Images list displays all the available images that match the filtering parameters you specified.

4 Select an image and click **Next**.

**Note** If you select an image that has the Horizon Agent already installed, you can choose not to install the agent during the image publishing process. See **Publish an Image Version**.

5 On the Details page of the wizard, enter configuration options for the image.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter a name for the image. Horizon Image Management Service uses this name when displaying the image in the image catalog.</td>
</tr>
<tr>
<td>Username</td>
<td>Enter the correct user name of the built-in Windows super-administrator account for this image. If you enter the incorrect user name, the publishing operation fails. <strong>Note</strong> Horizon Image Management Service requires the privileges of the full, built-in Windows administrator to create a directory and install Horizon Agent on the VMs cloned from this image.</td>
</tr>
<tr>
<td>Password</td>
<td>Enter the correct password of the built-in Windows super-administrator account for this image. If you enter the incorrect password, the publishing operation fails.</td>
</tr>
<tr>
<td>Description</td>
<td><em>(Optional)</em> Enter a description for the image.</td>
</tr>
<tr>
<td>Marker(s)</td>
<td>Define one or more reference markers that you want to associate with the image. The markers are associated with version 1.0 of the image.</td>
</tr>
</tbody>
</table>

6 Click **Next**.

7 On the Summary page of the wizard, review the information for the image and then click **Finish**.

Horizon Image Management Service starts to import the image into the catalog and creates a new image in the list. The in-progress (️) icon appears in the Status column for the image on the Images page.

8 To monitor the import progress, click the name of the image on the Images page.

The details page for the image appears.
The in-progress (⊙) icon appears in the Status column for version 1.0 while the import is underway. During this process, Horizon Image Management Service creates a copy of the image in the content library of the source pod. It also registers the image with the service by storing the image’s metadata in the image catalog. When the import is complete, the status of image version 1.0 changes to Deployment Complete.

What to do next

Publish image version 1.0 to your cloud-connected pods. See Publish an Image Version.

Filtering Parameters for VM Templates and VM Snapshots

This topic describes the filtering parameters that you can use to find and select VM templates and VM snapshots for import into the image catalog.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Use By Pool</td>
<td>To limit your search to VM templates and VM snapshots that are currently in use by desktop assignments, turn on this toggle.</td>
</tr>
<tr>
<td></td>
<td><strong>Important</strong> If you turn on this setting, you must do one of the following to ensure that publishing the image does not fail:</td>
</tr>
<tr>
<td></td>
<td>■ Before publishing the image, uninstall the Horizon Agent manually. You can do this using the usual Microsoft Windows uninstall process or using the MSI command-line option described in the Horizon documentation.</td>
</tr>
<tr>
<td></td>
<td>■ While publishing the image, select the option to skip installing the Horizon Agent.</td>
</tr>
<tr>
<td>Type</td>
<td>■ If you turned off the In Use By Pool toggle, select VM template.</td>
</tr>
<tr>
<td></td>
<td>■ If you enabled the In Use By Pool toggle, select VM template or VM snapshot.</td>
</tr>
</tbody>
</table>
Create an Image in the Catalog

You can create an image based on an existing image version in the catalog. This capability lets you quickly branch an existing image into a new collection of image versions.

Prerequisites

Set up the participating vCenter Server instances. See Configure the vCenter Server Instances.

Procedure

1. In the left pane of the Horizon Cloud Administration Console, select Inventory > Images.
   The Images page displays all the images registered in the image catalog.

2. Click the name of the existing image containing the version that will serve as the basis for the new image.
   The details page for the image appears, listing all its image versions.

3. Select the version on which you want to base the new image, and then click New Image.
   The New Image dialog box appears.

---

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pod</td>
<td>From the drop-down menu, select the cloud-connected pod that contains the image you want to import. Specifying the pod narrows down your vCenter Server choices to just the instances associated with that pod.</td>
</tr>
<tr>
<td>vCenter</td>
<td>From the drop-down menu, select the vCenter Server instance that contains the image you want to import.</td>
</tr>
</tbody>
</table>
Specify the options for the new image.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Image Version</td>
<td>This read-only field shows the version number of the source for the new image.</td>
</tr>
<tr>
<td>Image Name</td>
<td>Enter the name of the new image.</td>
</tr>
<tr>
<td>Description</td>
<td>(Optional) Enter a description for the new image.</td>
</tr>
<tr>
<td>Version</td>
<td>This read-only field shows the version number of the new image. By default, the new image is created as version 1.0.</td>
</tr>
<tr>
<td>Description</td>
<td>(Optional) Enter a description for the new image version.</td>
</tr>
<tr>
<td>Marker(s)</td>
<td>(Optional) Define one or more reference markers to associate with the new image.</td>
</tr>
</tbody>
</table>

Click Submit.

Horizon Image Management Service creates the image and adds it to the image catalog. The new image contains a 1.0 version based on the source image.

What to do next

Publish image version 1.0 to your cloud-connected pods. See Publish an Image Version.
Publish an Image Version

After importing an image into the catalog or creating an image version, you must publish the image version to your cloud-connected pods. Publishing an image version makes it available for use in desktop assignments.

Prerequisites

- Set up the participating vCenter Server instances. See Configure the vCenter Server Instances.
- Import the image. See Import an Image into the Image Catalog.
- Ensure that there are no pending Windows updates on the parent image or template of the image version that you want to publish. If there are Windows updates pending, the publication of the image fails.

Procedure

1. In the left pane of the Horizon Cloud Administration Console, select Inventory > Images. The Images page displays all the images registered in the image catalog.
2. Click the name of the image containing the version that you want to publish. The details page for the image appears, listing all its versions.
3. On the image details page, select the version that you want to publish. Click the more (... ) button and select Publish from the menu.

The Publish Image dialog box appears.
Specify the options for the published image version.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Clone Type**      | Select from the following options:  
|                     | - Full Clone  
|                     | - Instant Clone |
| **Image Type**      | Select from the following options:  
|                     | - VDI  
|                     | - Session Desktop  
|                     | - Remote Application |
| **Install Horizon Agent** | Deselect this option to publish the image without installing Horizon Agent.  
|                     | **Note** Only deselect this option if you installed the agent on the image before you imported it. In this case, you are responsible for confirming that the correct agent version was installed. |
| **Horizon Agent Features** | (Optional) To specify the availability of each Horizon Agent feature, turn on or turn off the toggle for each feature.  
|                     | If you have multiple versions of the Horizon Agent, there is a column for each version showing the options available for that version. The header of each column also indicates the number of pods using that Horizon Agent version. Placing your pointer on the header shows the names and locations of the pods.  
|                     | **Caution** If you have multiple versions of the Horizon Agent, you must confirm that the version installed on the image is not higher than the lowest version shown here. If the installed version is higher than the lowest shown here, uninstall it manually to prevent a failed agent installation.  
|                     | For information about Horizon Agent features, see the [VMware Horizon Documentation](#). |

5. Click **Submit**.

The publication process begins. During this operation, Horizon Image Management Service replicates and places a copy of the image version in the content library of every cloud-connected pod in your configuration.

The image version shows the in-progress (🕒) status while the publishing operation is underway.

6. To monitor the publication progress, click the version number on the image details page. The version details page appears.
The Image Copies section shows the status of the image version as it is replicated to the vCenter content library of each cloud-connected pod. During the replication process, the version copy shows the in-progress (_deploying_ ) status. When the replication is complete, the status changes to **Available**.

The source pod from which you originally imported the image shows two version copies. The **Deployment Complete** copy represents the source image that was replicated to the pod's content library. The **Available** copy represents the published image version that you can use for desktop assignments.

A published image version is static and unchangeable.

**What to do next**

- To create a desktop assignment based on the newly published image, see [Creating Desktop Assignments with Managed Images](#).
- To reassociate an existing desktop assignment to use the newly published image, see [Update Desktop Assignments with a Customized Image](#).

### Creating Desktop Assignments with Managed Images

After you set up the Horizon Image Management Service by importing and publishing images, you can create desktop assignments based on these managed images.

Horizon Image Management Service supports the use of managed images for the following types of desktop assignments:

- Automated full-clone desktop pools
- Automated instant-clone desktop pools
- Automated instant-clone farms
Create an Automated Desktop Pool from a Managed Image

You can create an automated instant-clone desktop pool or an automated desktop pool that contains full virtual machines based on a managed image in the image catalog template. Markers allow you to associate the desktop pool with a specific version of the image.

Prerequisites

- Prepare the managed image that Horizon will use to create the machines. The image must be available in the image catalog in the Horizon Cloud Administration Console. Perform the procedures described in:
  - Import an Image into the Image Catalog
  - Publish an Image Version
- Gather the configuration information you must provide to create the automated instant-clone desktop pool or automated desktop pool that contains full virtual machines. For detailed instructions, visit the Horizon Documentation page and navigate to the Setting Up Virtual Desktops in Horizon guide.
- If you intend to provide access to your desktops and applications through Workspace ONE Access, create the desktop and application pools as a user who has the Administrators role on the root access group in Horizon Administrator. If you give the user the Administrators role on an access group other than the root access group, Workspace ONE Access will not recognize the SAML authenticator you configure in Horizon, and you cannot configure the pool in Workspace ONE Access.

Procedure

1. In Horizon Console, select Inventory > Desktops.
2. Click Add.
3. Select Automated Desktop Pool and click Next.
4. Choose to create an automated instant-clone desktop pool or an automated desktop pool that contains full virtual machines.
   - To create an instant-clone desktop pool, select Instant Clone, and click Next.
   - To create an automated desktop pool that contains full virtual machines, select Full Virtual Machines, and click Next.
5 Follow the prompts through the wizard until you reach the **vCenter Settings** page.

![vCenter Settings](image)

6 Under Virtual Machine Template, select **Image Catalog** as the image source.

7 Under Stream, click **Browse**.

   The **Select Stream** dialog box appears.

   **Note** Horizon Console uses the term "stream" to refer to images.

8 Select the image that you want to use for the desktop pool.

   a To display all the images from the image catalog, regardless of the images' status, select **Show all streams**.

      **Note** Selecting this option displays all images from the image catalog, including images that are not yet ready or available for use with a desktop pool.

   b To search for a specific image in the catalog, start typing the name of the image in the filter text box.

   c To update the display list with the latest images from the image catalog, click the refresh (⟳) icon.

   d In the display list, select the image to serve as the basis for the desktop pool.

   e Click **Submit**.

9 On the **vCenter Settings** page, select an option from the **Marker** drop-down menu.

   The marker that you select determines the specific version of the image that is used to create the desktop pool. For more information, see **Working with Markers**.
10 To complete the creation of the desktop pool, continue to follow the prompts through the remaining options and pages of the wizard.

You can go directly back to any wizard page by clicking the page name in the navigation pane.

11 To verify the association between the desktop pool and the image version, go to the Horizon Cloud Administration Console and select **Inventory > Images**. On the Images page, click the name of the associated image to open the image details page. Then click the version number of the version tagged with the same marker that you associated with the desktop pool.

On the version details page, verify that the newly created desktop pool appears under the Pools list.

What to do next

Entitle users to access the pool. For detailed instructions, visit the Horizon Documentation page and navigate to the **Setting Up Virtual Desktops in Horizon** guide.

**Create an Automated Farm from a Managed Image**

You can create an automated instant-clone farm that contains RDS hosts based on a managed image in the image catalog template. Markers allow you to associate the farm with a specific version of the image.

You create an automated instant-clone farm as part of the process to give users access to published applications or published desktops.

**Prerequisites**

- Prepare the managed image that Horizon will use to create the machines. The image must be available in the image catalog in the Horizon Cloud Administration Console. Perform the procedures described in:
  - Import an Image into the Image Catalog
## Publish an Image Version

Gather the configuration information you must provide to create the farm. For detailed instructions, visit the Horizon Documentation page and navigate to the Setting Up Published Desktops and Applications in Horizon guide.

### Procedure

1. In Horizon Console, select **Inventory > Farms**.
2. Click **Add**.
3. Select **Automated Farm** and click **Next**.
4. Select **Instant clone** and click **Next**.
5. Follow the prompts to proceed through the wizard until you reach the **vCenter Settings** page.
6. Select **Image Catalog** as the image source.
7. Under Stream, click **Browse**.

   The Select Stream dialog box appears.

   **Note**  Horizon Console uses the term "stream" to refer to images.
8 Select the image that you want to use for the farm.
   a To display all the images from the image catalog, regardless of the images' status, select Show all streams.
      
      **Note** Selecting this option displays all images from the image catalog, including images that are not yet ready or available for use with a farm.
   b To search for a specific image in the catalog, start typing the name of the image in the filter text box.
   c To update the display list with the latest images from the image catalog, click the refresh (↻) icon.
   d In the display list, select the image to serve as the basis for the farm.
   e Click Submit.

9 On the vCenter Settings page, select an option from the Marker drop-down menu.
   The marker that you select determines the specific version of the image that is used to create the farm. For more information, see Working with Markers.

10 To complete the farm creation, continue to follow the prompts through the remaining options and pages of the wizard.
   You can go directly back to any wizard page by clicking the page name in the navigation pane.

11 To verify the association between the farm and the image version, go to the Horizon Cloud Administration Console and select Inventory > Images. On the Images page, click the name of the associated image to open the image details page. Then click the version number of the version tagged with the same marker that you associated with the farm.
   On the version details page, verify that the newly created farm appears under the Pools list.
What to do next

Create a published application pool or a published desktop pool. For detailed instructions, visit the Horizon Documentation page and navigate to the Setting Up Published Desktops and Applications in Horizon guide.
Updating Desktop Assignments

Horizon Image Management Service allows you to easily update desktop assignments across your pods with images that you have modified. Once you have set up the proper associations between your desktop assignments and images, you can update these associations by using markers.

To accomplish the automated updating of desktop assignments, perform the following tasks in the listed order:

1. Create a new version of the existing image used by the desktop assignments. See Create a New Image Version.
2. Make the required customizations to the new image version. See Customize an Image.
4. Update desktop assignments by moving the associated marker from the current image version to the newly customized version. See Update Desktop Assignments with a Customized Image.

This chapter includes the following topics:

- Create a New Image Version
- Customize an Image
- Update Desktop Assignments with a Customized Image

Create a New Image Version

To initiate the workflow for updating your desktop assignments with a customized image, you first create a new version of the image in the image catalog. The new version receives any edits you make to the underlying image on the vCenter Server.

Procedure

1. In the left pane of the Horizon Cloud Administration Console, select **Inventory > Images**.
   
   The Images page displays all the images registered in the image catalog.
2 Click the name of the image for which you want to add a new version.
   The details page for the image appears, listing all its current versions.

3 Click the selection button to the far left of the source version on which you want to base the new version, and then click **New Version**.
   The New Version dialog box appears.

4 Specify the options for the new version.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Image Version</td>
<td>This read-only field shows the image version to be incremented.</td>
</tr>
<tr>
<td>Version type</td>
<td>Specify how to increment the new version number:</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Major</strong> increments the number by a full integer value (for example, 1.0 to 2.0).</td>
</tr>
<tr>
<td></td>
<td>▪ <strong>Minor</strong> increments the number by a dot value (for example, 1.1 to 1.2).</td>
</tr>
<tr>
<td>Description</td>
<td>(Optional) Enter a description for the new version.</td>
</tr>
<tr>
<td>Marker(s)</td>
<td>(Optional) Define one or more reference markers to associate with the new version.</td>
</tr>
</tbody>
</table>

5 Click **Submit**.
   The in-progress (○) icon appears in the Status column for the new version while Horizon Image Management Service creates the version in the catalog and prepares its underlying image in the source pod. When the image preparation is complete, the status of the new version changes to **Deployment Complete**.

   The underlying image of the new version is a copy of the source version's underlying image. You can now edit the new version's underlying image without affecting the source image version.

**What to do next**

Use vSphere Client to make edits and customizations to the new version's underlying image. See [Customize an Image](#).

**Customize an Image**

To customize the OS and application settings for an image version registered in the image catalog, use vSphere Client to make the necessary changes to the image on the vCenter Server.

After creating an image version but before publishing it to your pods, you can customize the underlying image to include all the settings and capabilities you want to provide in your end users’ desktops.
Your customization tasks might include:

- Installing the third-party applications that you want make available in your end users' desktops.
- Customizing the Windows guest OS, such as installing special drivers required by your organization, applying wallpaper, setting default colors and fonts, configuring taskbar settings, and other such OS-level tasks.

Prerequisites

- Create a New Image Version

Procedure

1. Identify the source image that you want to customize.
   
   a. In the left pane of the Horizon Cloud Administration Console, select **Inventory > Images**.
   
   b. Click the name of the image containing the version that you want to customize.
   
   c. On the image details page, click the version number of the image version that you want to customize.
   
   d. On the version details page, in the **Image Copies** section, note the following:
      
      - The IP address or fully qualified domain name of the source vCenter Server, listed under **vCenter**.
      
      - The name of the image listed under **Template/Snapshot**. This is the name of the source image in the vCenter content library.
2 Locate the source image on the vCenter Server.
   a Using a web browser and the IP address you obtained in the previous step, navigate to the URL of the source vCenter Server.
   b Click Launch vSphere Client (HTML) and log in to vSphere Client.
   c In vSphere Client, search for the source image name that you obtained in the previous step.

3 After locating the source image on the vCenter Server, make the required customizations to the image. For detailed instructions, see the VMware vSphere Documentation.

What to do next

Publish the customized image version to the pods in your environment. See Publish an Image Version.

Update Desktop Assignments with a Customized Image

By managing markers, you can update a desktop assignment to use a different image version from the one that it currently uses. To update a desktop assignment, move its associated marker from the current image version to the new version.

Prerequisites

- Create a New Image Version
- Customize an Image
- Publish an Image Version

Procedure

1 In the left pane of the Horizon Cloud Administration Console, select Inventory > Images. The Images page displays all the images registered in the image catalog.

2 Click the name of the image containing the updated image version that you want the desktop assignment to use. The details page for the image appears, listing all its current versions.

3 Click the selection button to the far left of the version that you want the desktop assignment to use, and then click Edit Markers. The Edit Marker(s) dialog box appears.
4  In the Marker(s) text box, enter the name of the marker that is associated with the desktop assignment.

**Note**  If the specified marker is currently associated with another image version, an alert message appears. The message notifies you that a change in the association between marker and image version results updates all associated desktop assignments with the newly marked image version.

5  To proceed with the marker reassociation and all applicable desktop assignment updates, click **Save**.

Reassociating the marker prompts Horizon Image Management Service to refresh all associated desktop assignments with the new image version.
Managing Images and Versions in the Image Catalog

You can perform certain administrative tasks on images and versions in the image catalog. You can edit, delete, deactivate, and enable images and versions.

This chapter includes the following topics:
- Edit the Details of an Image
- Deactivate an Image or Version
- Enable an Image or Version
- Delete an Image or Image Version

Edit the Details of an Image

You can edit the name and description of an image that is registered in the image catalog.

Procedure
1. In the left pane of the Horizon Cloud Administrator Console, select Inventory > Images.
   - The Images page displays all the images registered in the image catalog.
2. Click the selection button to the far left of the image that you want to edit, and then click Edit.
3. In the Edit Image dialog box, enter the new name and optional description for the image, and click Save.
   - The image appears with the new name and description on the Images page.

Deactivate an Image or Version

You can use the Disable button to put an image or version in a deactivated state. A deactivated image or version is no longer available for use in new desktop assignments.

When you deactivate an image version, the version is no longer available for use in new desktop assignments. Disabling an entire image deactivates all the versions under that image.
The disabling operation does not affect existing desktop assignments. If an existing desktop assignment uses an image version that is later deactivated, it can continue to use the same image version even in deactivated state.

**Note** You cannot change the marker associations for a deactivated image version. For example, you cannot create a marker or associate any additional markers with a deactivated image version.

**Procedure**

1. In the left pane of the Horizon Cloud Administration Console, select **Inventory > Images**. The Images page displays all the images registered in the image catalog.

2. Choose to deactivate an entire image or a specific image version.
   - To deactivate an entire image, click the selection button to the far left of the image, and then click **Disable**.
   - To deactivate a specific image version, first click the name of the image containing that version. In the image details page, click the selection button to the far left of the image version. Then click **Disable**.

**Enable an Image or Version**

You can use the **Enable** command to return a deactivated image or version to an available state. Enabling an image or version makes it available again for use by new desktop assignments.

Enabling an entire image enables all the versions of that image.

**Procedure**

1. In the left pane of the Horizon Cloud Administration Console, select **Inventory > Images**. The Images page displays all the images registered in the image catalog.

2. Choose to enable an entire image or a specific image version.
   - To enable an entire image, click the selection button to the far left of the image. Then click the more (…) button and select **Enable**.
   - To enable a specific image version, first click the name of the image containing that version. In the image details page, click the selection button to the far left of the version. Then click the more (…) button and select **Enable**.

**Delete an Image or Image Version**

This release of Horizon Image Management Service provides the capability to delete an image version that is not being used by an assignment. To delete an entire image, you must first delete all the versions under that image.
When you apply the delete operation to an image version, Horizon Image Management Service deletes that version from the image catalog and deletes the image assets underlying the version from the source vCenter Server instance.

**Note** You cannot delete an image version that is being used by an assignment.

**Procedure**

1. In the left pane of the Horizon Cloud Administration Console, select **Inventory > Images**. The Images page displays all the images registered in the image catalog.

2. Click the name of the image containing the version that you want to delete. The image details page appears, listing all its versions.

3. On the image details page, select the version that you want to delete. Click the more (... ) button and select **Delete** from the menu. A confirmation dialog box appears.

4. Click **Continue**. Horizon Image Management Service deletes the image version. The image version is no longer visible to the service, and you can no longer perform image management on it.

5. To delete an entire image, repeat steps 2 through 4 to delete every version under the image. The system automatically deletes the entire image when you have deleted the last remaining version.
If you encounter problems when working with the Horizon Image Management Service, the cause might lie in one or more of the components in your system configuration.

As the first step in troubleshooting a problem, verify that your system configuration meets the requirements of the Horizon Image Management Service and that you have set up the correct credentials for your system components where needed. Carefully review the notes and prerequisites in the following topics:

- System Requirements
- Configure the vCenter Server Instances
- Import an Image into the Image Catalog
- Publish an Image Version

If an image version displays the **Failed** status after you attempt to import or publish it, click the information icon next to the status to view details about the possible cause of the failure. Sometimes this information icon might appear only on the version details page.

This chapter includes the following topics:

- Images page is not available
- Images get stuck in Pending state
- Image publishing fails with error "Unable to connect to vCenter"
- vCenter Server or datastore does not appear in Setup vCenter Credentials or Import Images wizard
- Image publishing fails with error "A general system error occurred: vix error codes = (1, 0)"
- Image publishing fails with error "This operation is not allowed in this state"
- Image publishing fails with error "Install script execution timed out"
- Image replication fails with error "Failed to fetch session token from vCenter Server"
- Image replication fails with the error message "Cloning VM Failed on all eligible datastores"
- Image replication fails with error "Failed to create subscribed library for URL"
- Creation of desktop assignment fails with error "customization error in multi VLAN environment"
Images page is not available

Images page is not accessible due to problems with the vCenter Server.

Problem
When you select **Inventory > Images** in the Horizon Cloud Administration Console, you do not see the Images page showing the contents of the image catalog.

Cause
The participating vCenter Server instances are not properly configured.

Solution
- Set up your participating vCenter Server instances, as described in Configure the vCenter Server Instances.

Images get stuck in Pending state

One or more images get stuck in a Pending state for an extended period of time.

Problem

Cause
This issue can occur because one of your pods has lost connectivity.

Solution
- Confirm that the pod has an active Horizon Cloud Connector session.
- Confirm that vCenter Server can be reached securely from within Horizon Cloud Connector.

When these connectivity issues are resolved, the images are updated to the correct status.

Image publishing fails with error "Unable to connect to vCenter"

Image publishing fails due to problems with vCenter Server.

Problem

Cause
One or more vCenter Server credentials are incorrectly configured.
Solution

1. Set up your participating vCenter Server instances, as described in Configure the vCenter Server Instances. Make sure to configure a valid user name and password for each vCenter Server instance.

2. Delete the failed image as described in Delete an Image or Image Version.

3. Re-import the image as described in Import an Image into the Image Catalog.

4. Republish the image as described in Publish an Image Version.

vCenter Server or datastore does not appear in Setup vCenter Credentials or Import Images wizard

vCenter Server or datastore cannot be found due to problems with the system configuration.

Problem

The intended vCenter Server instance or datastore does not appear in Setup vCenter Credentials or Import Images wizard.

Cause

Your environment does not meet one or more of the system configurations required by the Horizon Image Management Service.

Solution

1. Verify that you have a Horizon Cloud customer account properly set up for using Horizon Image Management Service.

2. Verify that you are running Horizon Connection Server version 7.12 or later, with a valid license.

3. Verify that you are running vCenter Server 6.0 or later in all the sites that you want to manage.

Image publishing fails with error "A general system error occurred: vix error codes = (1, 0)"

Image publishing fails due to incorrect Windows credentials.

Problem

Image publishing fails with the error message, "A general system error occurred: vix error codes = (1, 0)."

Cause

Horizon Image Management Service lacks the appropriate Windows credentials to deploy the image.
Solution

1. Verify that the image was imported using the credentials for the built-in Windows super-administrator account for the image.

2. If the incorrect credentials were provided, delete the failed image as described in Delete an Image or Image Version.

3. Re-import the image with the user name and password of the built-in Windows super-administrator account. See Import an Image into the Image Catalog.

4. Republish the image as described in Publish an Image Version.

Image publishing fails with error "This operation is not allowed in this state"

Image publishing fails due to the lack of Windows updates.

Problem

Image publishing fails with the error message, “This operation is not allowed in this state.”

Cause

The image’s operating system does not have the latest Windows updates installed.

Solution

1. Delete the failed image as described in Delete an Image or Image Version.

2. Locate the source image on the vCenter Server and install the latest Windows update patches on the image’s operating system. See the VMware vSphere Documentation.

3. Re-import the image with the user name and password of the built-in Windows super-administrator account. See Import an Image into the Image Catalog.

4. Republish the image as described in Publish an Image Version.

Image publishing fails with error "Install script execution timed out"

Image publishing fails due to an issue with Horizon Cloud Connector.

Problem

Image publishing fails with the error message "Install script execution timed out."

Cause

This error is caused by an issue with Horizon Cloud Connector 1.5.
Solution

- Upgrade to Horizon Cloud Connector 1.6.

**Image replication fails with error "Failed to fetch session token from vCenter Server"**

Image replication fails due to problems between Horizon Cloud Connector and vCenter Server.

**Problem**

Image replication fails with the error message, "Failed to fetch session token from vCenter Server."

**Cause**

Horizon Cloud Connector cannot resolve the vCenter Server domain name.

**Solution**

1. Verify that the vCenter Server domain name is properly configured. See the VMware vSphere Documentation.
2. Verify that you have registered the specified pod's Active Directory domain with Horizon Cloud. See Performing Your First Active Directory Domain Registration in the Horizon Cloud Environment.
3. Delete the failed image as described in Delete an Image or Image Version.
4. Re-import the image as described in Import an Image into the Image Catalog.
5. Republish the image as described in Publish an Image Version.

**Image replication fails with the error message "Cloning VM Failed on all eligible datastores"**

Image replication fails due to insufficient space in the datastore.

**Problem**

Image replication fails with the error message "Cloning VM Failed on all eligible datastores."

**Cause**

There is not enough space in the datastore of the specified vCenter Server to store the replicated image.

**Solution**

1. Verify that the status of all components of the pod is green.
2. Verify that datastores have sufficient space and are writable and accessible.
3 Contact the vCenter administrator to troubleshoot further.

**Image replication fails with error "Failed to create subscribed library for URL"**

Image replication fails due to lack of authentication trust between participating vCenter Server instances.

**Problem**

Image replication fails with the error message, "Failed to create subscribed library for URL."

**Cause**

Authentication trust between participating vCenter Server instances is not established.

**Solution**

1. Manually configure authentication trust between your vCenter Server instances. See [Configure the vCenter Server Instances](#).
2. Delete the failed image as described in [Delete an Image or Image Version](#).
3. Re-import the image as described in [Import an Image into the Image Catalog](#).
4. Republish the image as described in [Publish an Image Version](#).

**Creation of desktop assignment fails with error "customization error in multi VLAN environment"**

The creation of a desktop assignment fails due to insufficient network configuration.

**Problem**

The creation of a desktop assignment fails with the error message, “customization error in multi VLAN environment.”

**Cause**

The network specified for the deployment of the desktop assignment does not have line-of-sight with the Horizon Connection Server.

**Solution**

- Configure your network environment such that it has line-of-sight with the Horizon Connection Server. See the [Horizon Documentation](#).