Offline Data Transfer to VMware vCloud Air

vCloud Connector 2.7.0

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Offline Data Transfer to VMware vCloud Air

The Offline Data Transfer to VMware vCloud Air document provides information about using VMware vCloud® Connector™ to migrate large amounts of data to VMware vCloud® Air™.

To use this feature, you must have a vCloud Air account.

**Intended Audience**

This information is intended for users who want to migrate data from their private, enterprise data center to vCloud Air using vCloud Connector. This information is written for cloud administrators who are familiar with VMware virtualization products and technology, including VMware® vCenter Server™, VMware® vSphere® Client™, and VMware vCloud Director®.
You can use the VMware vCloud® Connector™ Offline Data Transfer feature to migrate large amounts of data from your private vSphere or vCloud Director-based datacenter to vCloud Air.

To use this feature, you must have a vCloud Air account.

This chapter includes the following topics:

- “Overview,” on page 7
- “Offline Data Transfer Process,” on page 8
- “vCloud Connector Components Used for Offline Data Transfer,” on page 9

**Overview**

The vCloud Connector Offline Data Transfer feature enables you to migrate large numbers of virtual machines, vApps, and templates securely from your private data center to vCloud Air. You can transfer data from a vSphere or vCloud Director-based data center.

From vCloud Connector, you export your data to an external storage device provided by a vCloud Air operator and ship it back to the operator. The operator imports the data into vCloud Air. vCloud Connector encrypts the data before writing it to the device, ensuring a secure transfer.

During export, you can select the networks for your virtual machines and vApps in vCloud Air from a list of available networks. As all virtual machines and vApps are first copied to vCloud Director-based clouds as vApp templates, you can choose whether to deploy virtual machines and vApps from the templates and whether to retain the templates in the destination catalog after they are deployed. You can also specify whether to power on the virtual machines and vApps after they are deployed. You can set these options individually or apply them to all items being exported.

The vCloud Air operator also uses vCloud Connector to import the data to a vCenter Server datastore in vCloud Air. vCloud Connector uploads the data, decrypts it, and moves it into your vCloud Air datacenter. vCloud Connector then applies the network, power, and deployment settings that you specified during export.

This data transfer process is enabled through the common use of an Offline Data Transfer (ODT) node that is deployed in vCloud Air and used both by you during export and the vCloud Air operator during import. The vCloud Air operator deploys the ODT node and sends you the node URL. Both you and the vCloud Air operator register the ODT node with your own vCloud Connector servers using your own organizations and credentials.

Your vCloud Connector instance accesses the ODT node during export and stores encrypted information on it that will be used during import.
Offline Data Transfer Process

Figure 1-1. Exporting Data to vCloud Air

1. You install vCloud Connector on premise.
2. You initiate an ODT data transfer request.
3. A vCloud Air operator deploys an Offline Data Transfer (ODT) node in the vCloud Air environment for your data transfer.
4. The vCloud Air operator sends you the ODT node URL.
5. The vCloud Air operator ships an external storage device to you.
6. You register the ODT node deployed in vCloud Air with your on-premise vCloud Connector server.
7. You mount the storage device to the vCloud Connector node associated with your private cloud, that is, the vSphere or vCloud Director instance from which you want to transfer data.
8. You export data using the vCloud Connector user interface.
   - vCloud Connector transfers data from the data center to the storage device. Data is encrypted to ensure secure transfer.
   - vCloud Connector communicates with the ODT node deployed in vCloud Air to store information that will be used later for import.
9. You ship the storage device back to the vCloud Air operator.
10. The vCloud Air operator mounts the storage device to the ODT node deployed in vCloud Air.
11. The vCloud Air operator imports data using the vCloud Connector user interface.
12. vCloud Connector transfers data from the storage device to a vCenter Server datastore in vCloud Air, decrypts it, and uploads it to your virtual data center.
The vCloud Air operator notifies you when the import process is completed.
You log in to vCloud Air and verify that your data has been transferred as expected.
You unregister the ODT node deployed in vCloud Air from your vCloud Connector server.

**vCloud Connector Components Used for Offline Data Transfer**

The following vCloud Connector components are used for Offline Data Transfer.

- **vCloud Connector server**
  You install a vCloud Connector server in your private data center, that is, in an on-premise vSphere or vCloud Director instance. You only need one vCloud Connector server.

- **vCloud Connector nodes**
  You install one or more vCloud Connector nodes on premise. Install a node for each vSphere or vCloud Director instance from which you want to export data.

- **Offline Data Transfer Node (ODT node)**
  VMware installs an Offline Data Transfer node in vCloud Air and sends you the node URL. You register this node with your on-premise vCloud Connector server. This node is only used for Offline Data Transfer.

*Note* The vCloud Connector multi-tenant node installed by VMware on vCloud Air is not required for Offline Data Transfer. The multi-tenant node is used only if you want to view and manage your vCloud Air virtual data center in vCloud Connector.
Transferring Data from Your Private Data Center to vCloud Air

To transfer data from your private data center to vCloud Air, you install vCloud Connector on premise, register the Offline Data Transfer node deployed in vCloud Air with your vCloud Connector server, mount the external storage device, and export data.

This chapter includes the following topics:

- “Prepare Your Environment for Offline Data Transfer,” on page 11
- “Register ODT Node Deployed in vCloud Air with Your vCloud Connector Server,” on page 12
- “Mount External Storage Device to vCloud Connector Node,” on page 13
- “Export Data to External Storage Device,” on page 15
- “Unmount the Storage Device,” on page 18

Prepare Your Environment for Offline Data Transfer

To transfer data from your private vSphere or vCloud Director-based data center to vCloud Air, you must install vCloud Connector in your private data center, if you have not installed it already. This enables you to export data.

Procedure

1. Install vCloud Connector in your private data center, that is, on premise.
   a. Install and configure a vCloud Connector server in a vSphere or vCloud Director instance.
   b. Install and configure a vCloud Connector node for every vSphere or vCloud Director instance from which you want to transfer data.
   c. Register the nodes with the server.
   d. Register the user interface with a vCenter Server. vCloud Connector then appears as a plug-in in vSphere Client.

   See Installing and Configuring vCloud Connector for information on the installation process.

2. Log in to the vCloud Connector user interface in vSphere Client and add the clouds from which you want to export data.

   See Add a Cloud to vCloud Connector in Using vCloud Connector for information.

3. Initiate an offline data transfer request.

4. Add a catalog in your vCloud Air virtual data center.

   See Add a Catalog in vCloud Air Virtual Data Center in Installing vCloud Connector for VMware vCloud Air.
The vCloud Air operator will prepare the vCloud Air environment for your data transfer and send you a storage device and an Offline Data Transfer (ODT) node URL.

**What to do next**

Wait until you receive the storage device and ODT node URL from the vCloud Air operator, then register the ODT node with your vCloud Connector server.

### Register ODT Node Deployed in vCloud Air with Your vCloud Connector Server

Before you can export data, you must register the Offline Data Transfer (ODT) node deployed in vCloud Air with the vCloud Connector server in your private data center.

Use the ODT node URL you received from the vCloud Air operator to register the ODT node. If the URL includes a port number, ensure that you specify the port number.

**Prerequisites**

- You have received the URL of the ODT node deployed in vCloud Air from VMware.
- You have installed vCloud Connector in your private data center, that is, on premise.

**Procedure**

2. Log in as admin.
   The default password is vmware.
3. Click the Nodes tab, then click Register Node.
4. Register the ODT node using the URL you received from the vCloud Air operator and your own vCloud Air credentials.

<table>
<thead>
<tr>
<th>Node Info Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>A name for the ODT node. The node will appear by this name in the Manage Nodes page in the server Admin Web console.</td>
</tr>
<tr>
<td>Description</td>
<td>(optional) A description of the ODT node.</td>
</tr>
<tr>
<td>URL</td>
<td>The URL of the ODT node, obtained from the vCloud Air operator. The URL contains either the IP address of the node or its fully qualified domain name (FQDN).</td>
</tr>
<tr>
<td></td>
<td><strong><a href="https://vCCNodeIPaddress">https://vCCNodeIPaddress</a></strong></td>
</tr>
<tr>
<td></td>
<td>For example: <a href="https://10.10.100.10">https://10.10.100.10</a></td>
</tr>
<tr>
<td></td>
<td><strong><a href="https://vCCNodeFQDN">https://vCCNodeFQDN</a></strong></td>
</tr>
<tr>
<td></td>
<td>For example: <a href="https://node1.company.com">https://node1.company.com</a></td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong>: If the ODT node URL that you receive includes a port number, ensure that you specify the port number.</td>
</tr>
</tbody>
</table>

| Public | Select this option. |
Node Info Option | Description
--- | ---
**Use Proxy** | Select this option if your vCloud Connector server needs to use a proxy to reach the ODT node in vCloud Air. If you are using a proxy, you must also specify proxy settings in the **Network - Proxy** tab.

**Ignore SSL Certificate** | The ODT node in vCloud Air has SSL enabled and a certificate from DigiCert installed. To use the certificate, you must add a DigiCert High Assurance CA-3 intermediate certificate to your vCloud Connector server trusted keystore. Obtain the certificate and then see "Add CA Root Certificate to Trusted Keystore" in Installing and Configuring vCloud Connector for information on how to upload the certificate. If you have added the intermediate certificate to your vCloud Connector server trusted keystore, deselect this option. If you have not added the certificate, you must select this option.

Cloud Info Option | Description
--- | ---
**Cloud Type** | Select vCloud Director.
**vCD Org Name** | Specify the name of your virtual datacenter in vCloud Air.
**Username** | Your vCloud Air user name.
**Password** | Your vCloud Air password.

5 Click Register.

The ODT node is registered with your vCloud Connector server. The Export icon ( ) is enabled in the vCloud Connector user interface, which allows you to export data.

**Note** You cannot use the ODT node to add the cloud to your vCloud Connector user interface. The ODT node is intended exclusively for offline data transfer.

**What to do next**
Mount the external storage device to the vCloud Connector node associated with your private data center.

**Mount External Storage Device to vCloud Connector Node**
Connect and mount the NAS storage device that you received from the vCloud Air operator to the vCloud Connector node in your private datacenter.

**Connect Storage Device to Switch**
Connect the NAS storage device to a port in the network switch providing connectivity to your vSphere environment.

Follow these guidelines.
- Use only the power supply cable provided with the device.
- Do not use the device near water. Do not spill liquid on the device.
- Do not place the device on an unstable surface.
- Do not place the device near or on a radiator or heat register.
- Ensure the device has ample ventilation, at least 6 inches, at the front and back.
- Do not place anything on the power cord.
Procedure

1. Connect the provided Ethernet cable to Ethernet port 1 at the back of the device and to a port in the network switch providing connectivity to your vSphere environment.

2. Connect the provided power supply cable to the device and to a power outlet.

What to do next

Mount the storage device to the vCloud Connector node associated with your private data center.

Mount Storage Device to vCloud Connector Node

Mount the storage device to the vCloud Connector node associated with the cloud from which you want to export data.

Prerequisites

Read the IP address from the front of the NAS storage device.

Procedure

1. Use SSH to log in to the vCloud Connector node.
   
   Log in as `admin`. The default password is `vmware`.

2. Change to root.

   `su`

   The default password is `vmware`.

3. Create a directory to mount the device, for example, `/data/ODT`.

   `mkdir /data/ODT`

4. Mount the device.

   `mount -t nfs NASdeviceIP:/nfs/ODT directoryPath -o nolock`

   For example:

   `mount -t nfs NASdeviceIP:/nfs/ODT /data/ODT -o nolock`

5. Confirm that the device was mounted.

   `df -h`
Export Data to External Storage Device

Export virtual machines, vApps, and templates from your private data center to the external storage device. Your data is encrypted before it is written to the device, ensuring a secure transfer.

You can export data from either a vSphere or vCloud Director cloud.

During export, specify the deployment, network, and power settings for the virtual machines and vApps in the destination vCloud Air virtual data center. You can specify these settings for individual objects or for all the objects that you are exporting.

vCloud Connector appends a unique number to the name of each exported object to avoid naming conflicts. The objects appear by these unique names when they are imported into vCloud Air. For example, when you export myVM, it appears as myVM_123456 in vCloud Air. You can rename the objects in vCloud Air later.

Use these guidelines to export data.

- All objects that you select for export must be powered off.
- From a vCloud Director cloud, you can only export vApps. You cannot export individual virtual machines.
- You can only select data of one type to export: virtual machines, vApps, or templates. For example, you cannot export both virtual machines and vApps at the same time. To export data of different types, export data of one type first, then use the Export wizard again to export data of another type.
- All virtual machines, vApps, and templates are transferred to vCloud Air as vApp templates. During export, you can select the Deploy option to deploy the objects after they are exported. If you choose to deploy an object, its template is deleted after it is deployed. If you do not want the template to be deleted, select the Keep Catalog option during export.
- Re-exporting an object to the disk creates a duplicate object. The previously-exported object is not overwritten.
- You can export data from more than one source cloud. See Chapter 3, “Exporting Data from Multiple Clouds,” on page 19 for information.

Prerequisites

- You have mounted the external storage device that you received from the vCloud Air operator to the vCloud Connector node associated with your private data center.
- You have registered the Offline Data Transfer (ODT) node deployed in vCloud Air with your vCloud Connector server, using the node URL you received from the vCloud Air operator.
- You have started vCloud Connector from the vSphere Client.

Procedure

1. In the Browser panel, expand the Clouds tree and select the cloud from which you want to transfer data.
2. Click the Templates, vApps, or Virtual Machines tab based on the type of data that you want to transfer.
3. Power off each virtual machine or vApp that you want to export by selecting it and clicking the Power Off icon.
4. Select the virtual machines, vApps, or templates that you want to export.
   To select multiple objects, keep the CTRL key on a PC or the CMD key on a Mac pressed while selecting objects.
The Export icon ( ) is enabled only if all the selected objects are powered off.

The Export icon is disabled if you select a virtual machine on a vCloud Director cloud. You can only export vApps from a vCloud Director cloud.

The objects you select must be of the same type, that is, they must all be virtual machines or vApps or templates. To export data of different types, export data of one type first, then use the Export wizard again to export data of another type.

5 Click the Export icon ( ) at the top of the Inventory panel.

6 In the Export Wizard, type the mount path of the external storage device, then click Next. You must specify a valid path that has write permissions.

7 If you are exporting vApps from a vCloud Director cloud, specify a catalog in the source cloud in which to store temporary vApp templates.

vCloud Connector needs to create temporary vApp templates while exporting vApps from vCloud Director. It deletes the templates after exporting the data.

**Note** The Select a catalog page does not appear for the source cloud if you are exporting data from vSphere or if you are exporting templates from a vCloud Director catalog.

8 In the Cloud Details page, specify information about the vCloud Air cloud instance to which you are transferring data.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cloud URL</strong></td>
<td>The URL of the vCloud Director instance underlying your vCloud Air cloud instance. To get the URL, do the following.</td>
</tr>
<tr>
<td></td>
<td>a Log in to the vCloud Air portal.</td>
</tr>
<tr>
<td></td>
<td>b Click the virtual data center to which you want to transfer data.</td>
</tr>
<tr>
<td></td>
<td>c Under Related Links, click vCloud Director URL.</td>
</tr>
<tr>
<td></td>
<td>d Copy and paste the URL into this field.</td>
</tr>
<tr>
<td><strong>VDC Org Name</strong></td>
<td>The name of your vCloud Air virtual data center.</td>
</tr>
<tr>
<td><strong>Cloud user name</strong></td>
<td>Your vCloud Air user name.</td>
</tr>
<tr>
<td><strong>Cloud password</strong></td>
<td>Your vCloud Air password.</td>
</tr>
<tr>
<td><strong>Node URL</strong></td>
<td>The ODT node URL that you received from the vCloud Air operator.</td>
</tr>
</tbody>
</table>

9 Click Next.

If the cloud details are not valid, you get an error.

10 Select the virtual data center to which you want to transfer data.

All virtual data centers in vCloud Air are listed.

11 Select the catalog in which to store the data.

All the catalogs in the virtual data center you selected are listed.

**Note** Virtual machines, vApps, and templates are always copied to vCloud Air as vApp templates.

12 Click Next.

13 Specify deployment options for the virtual machines, vApps, or templates in the destination cloud.

- To specify deployment options for individual objects, select them in the table.
For each object, make your selections in the Keep Catalog, Deploy, Power state after deploy, and Network columns.

**Note** You must select Deploy first for the other options to be enabled.

To specify deployment options for multiple objects, select them in the fields above the table.

- Select all or multiple rows in the table.
- In the set of fields above the table, select Deploy.
- In the Power state after deploy field, select the power state for all selected objects.
- In the Network field, select a network for all selected objects.
- Click Apply to selected row(s).

Your selections are applied to the selected rows. You can change any of the settings individually in the table.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deploy</td>
<td>Select this option if you want to deploy the virtual machine or vApp from the vApp template in the destination cloud.</td>
</tr>
<tr>
<td>Power state after deploy</td>
<td>Select Power On to power on the virtual machine or vApp after it is deployed in the destination cloud, Power Off otherwise.</td>
</tr>
</tbody>
</table>
| Keep catalog            | Select this option if you want to retain the vApp template in the catalog after the virtual machine or vApp has been deployed. If you do not select this option, the template will be deleted after the object is deployed.  
**Note** Virtual machines, vApps, and templates are always copied to destination vCloud Director-based clouds as vApp templates. These vApp templates are uploaded to the catalog you selected in the previous page. |
| Network                 | Select the network to which you want to connect the object in vCloud Air. All available networks are listed. |

14 Click Next.

15 In the Ready to Complete page, review your settings, then click Finish.

16 Monitor the progress of the export in the Tasks panel.

There is a task for each item that is exported. You can click on a task to view its details.

vCloud Connector copies the virtual machines, vApps, or templates to the external storage device at the mount path you specified. The data is encrypted before it is written to the device and a unique encryption key is generated.

During the export process, vCloud Connector also communicates with the ODT node in vCloud Air and stores information in the ODT node, which will be used to decrypt and import the data into vCloud Air.
What to do next
After you have successfully exported your data to the storage device, unmount the device from the vCloud Connector node and ship it back to the vCloud Air operator.

Unmount the Storage Device
After you export data to the storage device, unmount the device from the vCloud Connector node.

Procedure
1. Log in to the vCloud Connector node as admin.
   The default password is vmware.
2. Unmount the storage device.
   
   umount mountPath
   For example, umount /data/odt.
3. Power off the storage device and disconnect it.

What to do next
Ship the device back to the vCloud Air operator, using the return shipping label provided.
You can export data from multiple clouds to the storage device for offline data transfer. Each cloud from which you want to export data must have a vCloud Connector node associated with it.

**Procedure**

1. Plug in the storage device and mount it to the vCloud Connector node associated with the first cloud from which you want to export data.
   

2. Select the virtual machines, vApps, or templates you want to export from the cloud and use the Export wizard to export the data to the storage device.

   See “Export Data to External Storage Device,” on page 15 for information.

3. Unmount the device from the vCloud Connector node, then detach it.

4. Plug in and mount the device to the vCloud Connector node associated with the next cloud from which you want to export data, select the virtual machines, vApps, or templates to export, and use the Export wizard to export the data to the storage device.

5. When you have exported data from all the clouds, send the storage device back to the vCloud Air operator.
Verify Imported Data and Unregister ODT Node

After you receive notification from the vCloud Air operator that your data has been imported into vCloud Air, log in to the vCloud Air portal and verify that your data has been imported successfully. All imported objects appear with a unique number appended to their name. You can rename the objects.

Procedure

1. Log in to the vCloud Air portal.
2. Verify that the data you exported has been imported into vCloud Air as expected.
3. Inform the vCloud Air operator that the data transfer is complete.
4. Unregister the Offline Data Transfer (ODT) node deployed in vCloud Air from your vCloud Connector server.
   b. Log in as admin.
      The default password is vmware.
   c. Click the Nodes tab.
   d. Click the gears icon next to the ODT node, then select Unregister from the pop-up menu.
      The ODT node is unregistered from the server.
   e. Log out of the server Admin Web console.
5. Inform the vCloud Air operator that you have unregistered the ODT node.
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