Installing, Configuring, and Upgrading vCloud Availability On-Premises

VMware vCloud Availability 3.5

vmware®

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VMware, Inc.
3401 Hillview Ave.
Palo Alto, CA 94304
www.vmware.com

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vCloud Availability Overview On-Premises 1

VMware vCloud Availability is a Disaster Recovery-as-a-Service (DRaaS) solution. vCloud Availability provides replication and failover capabilities for VMware vCloud Director and vCenter Server workloads both at the virtual machine and at the vApp level.

vCloud Availability is available through the VMware Cloud Provider Program. The solution provides multi-tenant workload recovery to cloud sites and to on-premises environments. vCloud Availability provides:

- Replication management and monitoring from an on-premises site to a cloud site and reverse.
- Replication and recovery of vApps and virtual machines between vCloud Director sites.
- Failback of recovered in the cloud workloads to the on-premises site.
- Migration of protected virtual machines in the cloud site back to the on-premises site.
- Self-service protection and failover workflows per virtual machine.
- Each deployment can serve as both a source and a recovery site. There are no dedicated source and destination sites.
- Symmetrical replication flow that can be started from either the source or the recovery site.
- A single-site vCloud Availability can migrate virtual machines and vApps between Virtual Data Centers belonging to a single vCloud Director organization.
- Built-in secure tunneling that requires no incoming allowed ports in the firewall in the on-premises site.
- Built-in end-to-end TLS encryption of the replication traffic that is terminated at each vCloud Availability appliance.
- Optional compression of the replication traffic.
- vCloud Availability vSphere Client Plug-In integration with the existing vSphere environment.
- Support for multiple vCenter Server and ESXi versions.
- Single installation package, distributed as a Photon-based virtual appliance.

vCloud Availability Deployment Architecture On-Premises

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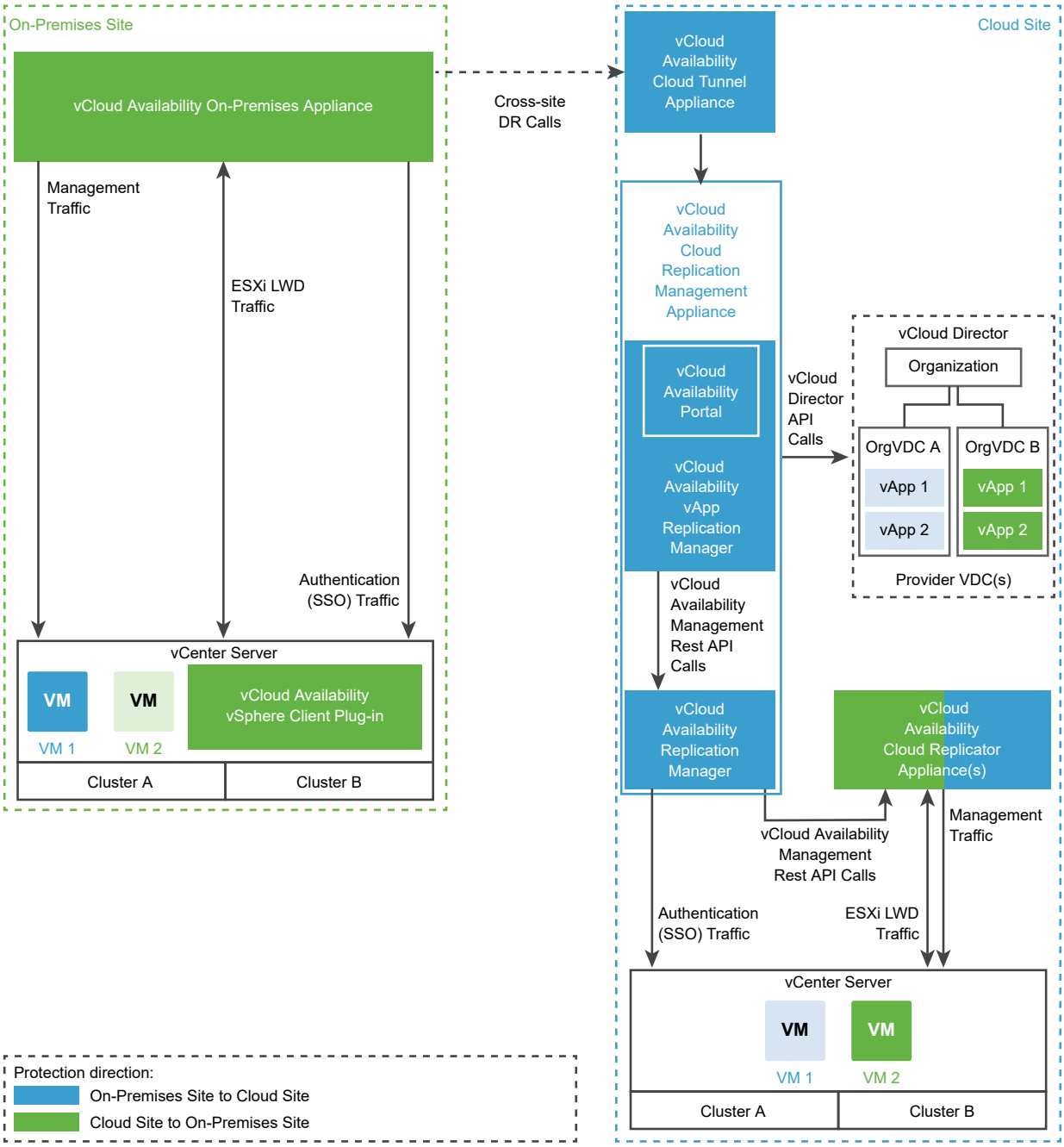
The architecture of the vCloud Availability solution shows replication operations between the on-premises site and the cloud site.

In a vCenter Server environment, each organization administrator can protect or migrate on-premises workloads to a cloud site. Then fail over the recovered virtual machines from the cloud site back to the on-premises site. vCloud Availability always initiates the network connection from the on-premises site to the cloud site.

On-premises Appliance Deployment

In the on-premises site, vSphere administrators deploy and configure one or more on-premises vCloud Availability appliances. Each appliance contains a vCloud Availability Replicator and a vCloud Availability Tunnel service.

In the diagram, the cells without color show the existing components in the on-premises environment. The colored cells show the vCloud Availability services that you deploy during the vCloud Availability appliance installation and configuration procedures.


On-Premises Site
vCloud Availability On-Premises Appliance
Management Traffic
ESXi LWD Traffic
Authentication (SSO) Traffic
vCenter Server
VM
VM
vCloud Availability vSphere Client Plug-in
VM 1
VM 2
Cluster A
Cluster B
Cross-site DR Calls
Cloud Site
vCloud Availability Cloud Tunnel Appliance
vCloud Availability Cloud Replication Management Appliance
vCloud Availability Portal
vCloud Availability vApp Replication Manager
vCloud Availability Replication Manager
vCloud Director API Calls
vCloud Director
Organization
OrgVDC A
OrgVDC B
vApp 1
vApp 2
vApp 1
vApp 2
Provider VDC(s)
vCloud Availability Management Rest API Calls
vCloud Availability Cloud Replicator Appliance(s)
vCloud Availability Management Rest API Calls
Management Traffic
Authentication (SSO) Traffic
ESXi LWD Traffic
vCenter Server
VM
VM
VM 1
VM 2
Cluster A
Cluster B
Protection direction:
On-Premises Site to Cloud Site
Cloud Site to On-Premises Site

Installing and Configuring VMware vCloud Availability On-Premises

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Deploy a vCloud Availability On-Premises Appliance to replicate and fail over from the on-premises vCenter Server to a cloud site and reverse.

This chapter includes the following topics:

- On-Premises vCloud Availability Deployment Requirements
- Deploying the vCloud Availability On-Premises Appliance
- Configuring the vCloud Availability On-Premises Appliance

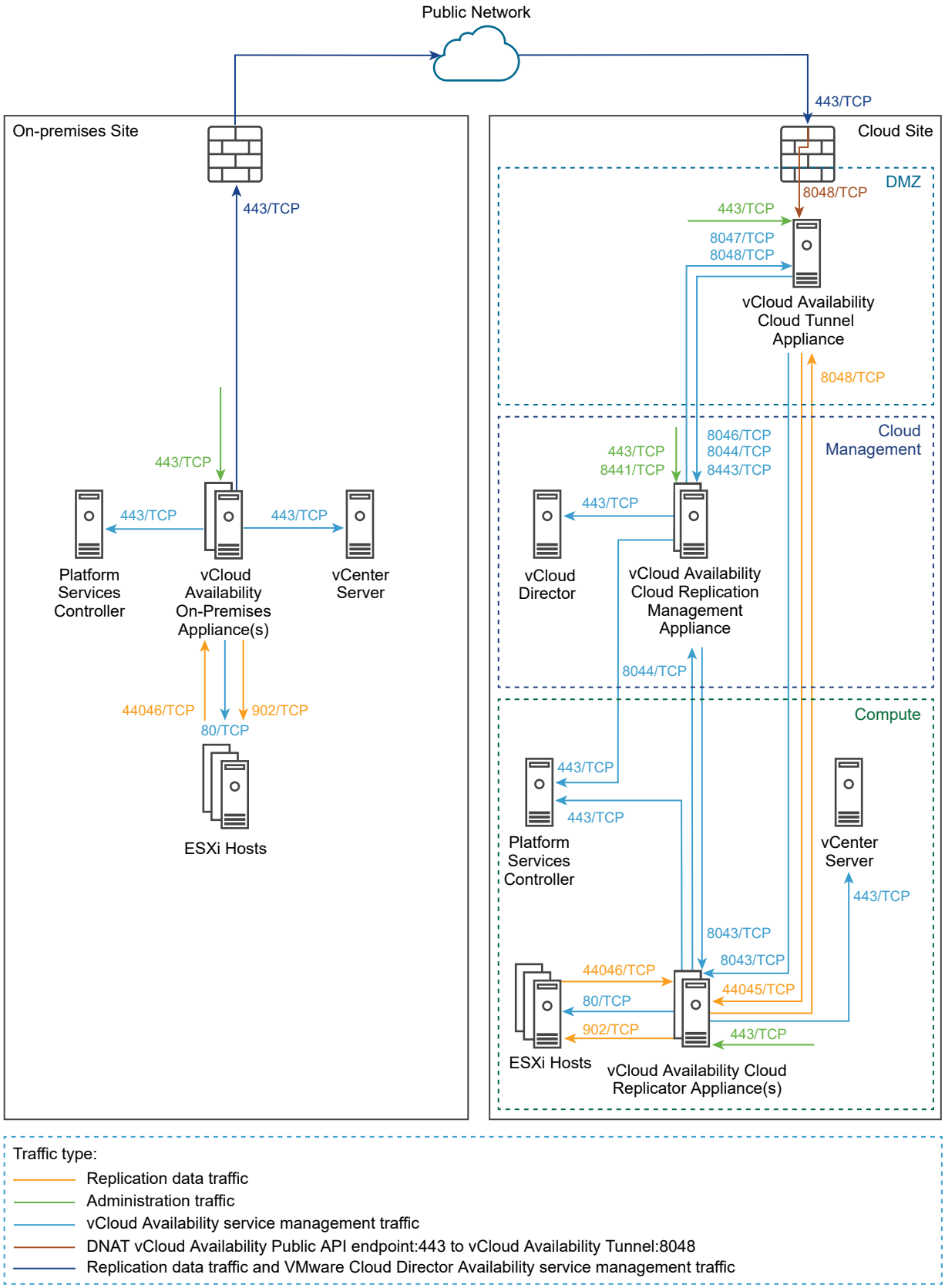
On-Premises vCloud Availability Deployment Requirements

Before installing the vCloud Availability On-Premises Appliance, verify that the on-premises site meets the deployment requirements. Also, allow the network communication within the on-premises site and to the cloud site.

Network Ports Requirements

To get a list of the required firewall ports to be opened, see vCloud-Availability Network Ports.

The following diagram shows the direction of the data flow and the type of data traffic. Also, see the required network ports for the communication between the vCloud Availability On-Premises Appliance and the disaster recovery infrastructure.


Public Network
443/TCP
On-premises Site
443/TCP
443/TCP
443/TCP
443/TCP
Platform Services Controller
vCloud Availability On-Premises Appliance(s)
vCenter Server
44046/TCP
902/TCP
80/TCP
ESXi Hosts
Cloud Site
DMZ
8048/TCP
443/TCP
8047/TCP
8048/TCP
vCloud Availability Cloud Tunnel Appliance
8048/TCP
Cloud Management
443/TCP
8441/TCP
8046/TCP
8044/TCP
8443/TCP
443/TCP
vCloud Director
vCloud Availability Cloud Replication Management Appliance
8044/TCP
Compute
443/TCP
443/TCP
Platform Services Controller
vCenter Server
443/TCP
8043/TCP
8043/TCP
44046/TCP
44045/TCP
80/TCP
902/TCP
443/TCP
ESXi Hosts
vCloud Availability Cloud Replicator Appliance(s)
Traffic type:
Replication data traffic
Administration traffic
vCloud Availability service management traffic
DNAT vCloud Availability Public API endpoint:443 to vCloud Availability Tunnel:8048
Replication data traffic and VMware Cloud Director Availability service management traffic

Connectivity Requirements

The vCloud Availability appliances must be able to communicate with each other and with the disaster recovery infrastructure. The vCloud Availability On-Premises Appliance must have a TCP access to the resource vCenter Server, where the resource vCenter Server Lookup service is hosted and to all the vCloud Availability Cloud Replicator Appliance(s) in the cloud site.

Note vCloud Availability uses end-to-end encryption for the communication across sites. For example, when the vCloud Availability On-Premises Appliance is communicating to the vCloud Availability Replicator in the cloud site, vCloud Availability expects that the TLS session is terminated at both the vCloud Availability On-Premises Appliance and the cloud site vCloud Availability Replicator.

vCloud Availability does not support any TLS terminating products or solutions placed between the appliances, for example, HAProxy, Nginx, Fortinet, and others. If such tools are in place, they must be configured in pass-thru mode, also known as TCP mode, to prevent from interfering with the TLS traffic of vCloud Availability.

Hardware Requirements

From a hosting perspective, the vCloud Availability On-Premises Appliance is a virtual machine with the following hardware requirements.

- 4 vCPUs
- 4 GB RAM
- 10 GB Storage

Deployment Requirements

- In the ESXi hosts, a VMkernel interface can be dedicated for the replication traffic. By default, ESXi handles the replication traffic through its management VMkernel interface. As a good practice, you can separate the management traffic from the replication traffic by creating a dedicated replication VMkernel interface. Use the following tags when creating a VMkernel interface for the replication traffic:
  - Use the `vSphere Replication` tag to configure the ESXi host for the outgoing replication traffic.
  - Use the `vSphere Replication NFC` tag to configure the ESXi host for the incoming replication traffic.

  Configure the replication VMkernel interface in its own IP subnet and connect the vCloud Availability On-Premises Appliance to the same virtual port group. Using this configuration, the replication traffic between the ESXi hosts and the vCloud Availability On-Premises Appliance stays in the same broadcast domain. As a result, uncompressed replication traffic avoids crossing a router and saves the network bandwidth. For information about configuring a dedicated replication VMkernel interface, see Set Up a VMkernel Adapter for vSphere Replication Traffic on a Source Host in the vSphere Replication documentation.

- If more than one vCenter Server instances exist in the on-premises site:
  - vCenter Server instances dedicated for management operations
  - vCenter Server instances dedicated for resources

  vCloud Availability uses the resource vCenter Server instances to locate and authenticate to resources and create or edit inventory objects. Register the vCloud Availability On-Premises Appliance with the vCenter Server Lookup service, provided by the Platform Services Controller used by the resource vCenter Server instances.

vCloud Availability Interoperability

Before installing the vCloud Availability On-Premises Appliance, verify the supported versions of ESXi and vSphere. For the interoperability between vCloud Availability and other VMware products, see VMware Product Interoperability Matrices.

Deploying the vCloud Availability On-Premises Appliance

In an on-premises environment, you can use VMware vCloud Availability after deploying a vCloud Availability On-Premises Appliance. By using a single `OVA` file, you can deploy the vCloud Availability On-Premises Appliance either by using the vSphere Client, or by using VMware OVF Tool.

The vCloud Availability On-Premises Appliance comes as a preconfigured virtual machine that is optimized for running the vCloud Availability services.

The appliance is distributed with a name of the form `VMware-Cloud-Director-Availability-On-Premises-`*`x.x.x.xxxx-yyyyyyyy`*`_OVF10.ova`, where *x.x.x* represents the product version and *yyyyyyyy* the build number.

Deploy vCloud Availability On-Premises Appliance by Using the vSphere Client

In the vSphere Client, you can deploy an on-premises vCloud Availability appliance by using a single `OVA` file.

Prerequisites

- Download vCloud Availability 3.x Appliance for Tenants (On-premise Sites) as the `VMware-vCloud-Availability-OnPrem-`*`release_number-xxx-build_number`*`_OVF10.ova` file, containing the binaries for the vCloud Availability On-Premises Appliance.
- If using a version of vSphere earlier than 6.5, install the Client Integration Plug-in to use **Deploy OVF Template** in the vSphere Web Client.

Procedure

1. Log in to the vCenter Server by using the vSphere Client.
2. Navigate to a target object where you want to deploy the vCloud Availability On-Premises Appliance.

   As a target object you can use: a data center, a folder, a cluster, a resource pool, or a host.

3 Right-click the target object and from the drop-down menu select **Deploy OVF Template**.

   The **Deploy OVF Template** wizard opens. The following steps depend on the vSphere version that you use.

4 On the **Select an OVF template** page, browse to the `VMware-vCloud-Availability-OnPrem-`*`release_number-xxx-build_number`*`_OVF10.ova` file location and click **Next**.

5 On the **Select a name and folder** page, enter a name for the on-premises appliance, select a deployment location, and click **Next**.

6 On the **Select a compute resource** page, select a host, or cluster as a compute resource to run the appliance on, and click **Next**.

7 On the **Review details** page, verify the `OVF` template details and click **Next**.

8 On the **License agreements** page, select the **I accept all license agreements** check box and click **Next**.

9 On the **Select storage** page, select the virtual disk format and the storage policy for the appliance and click **Next**.

10 On the **Select networks** page, optionally configure the network settings, then click **Next**.

11 On the **Customize template** page, customize the deployment properties of the on-premises appliance and click **Next**.

   a Enter and confirm the initial password for the appliance **root** user.

      When you log in for the first time, you must change the initial **root** user password.

   b Select the **Enable SSH** check box.

      If you do not enable SSH, you can configure the appliance later. For more information to allow the SSH access, see the *Administering vCloud Availability* document.

   c In the **NTP Server** section, enter the NTP server address for the appliance to use.

      Important In your disaster recovery environment, ensure that vCenter Server, ESXi, Platform Services Controller, vCloud Director, and the vCloud Availability appliance all use the same NTP server.

12 On the **Ready to complete** page, review the settings, and to begin the `OVA` installation process, click **Finish**.

Results

The **Recent Tasks** pane shows a new task for initializing the OVA deployment. After the task is complete, the new appliance is created on the selected resource.

Deploying by Using the VMware OVF Tool

To deploy vCloud Availability by using the VMware OVF Tool, define deployment parameters and run a deployment script.

Defining the OVF Tool Parameters for Deployment

Before you deploy the vCloud Availability appliances, you must define the specific VMware OVF Tool parameters for deployment.

The following table describes the parameters you must define when deploying the vCloud Availability appliances by using the VMware OVF Tool scripts.

Parameter	Description
OVA	The local client path to the installation OVA package. For example, use OVA="*local_client_path*/VMware-Cloud-Director-Availability-*Deployment-release.number-xxxx-build_number*_OVF10.ova", where *Deployment* is **Provider** or **On-Premises**.
VMNAME	Virtual machine name.
VSPHERE_DATASTORE	The VSPHERE_DATASTORE value is the datastore name as it is displayed in the .
VSPHERE_NETWORK	The name of the network on which the appliance to run.
VSPHERE_ADDRESS	The IP address of the vCenter Server instance on which you deploy the appliance.
VSPHERE_USER	User name for a vCenter Server administrator.
VSPHERE_USER_PASSWORD	Password for a vCenter Server administrator.
VSPHERE_LOCATOR	The VSPHERE_LOCATOR value contains the target data center name, the tag *host*, the name of the target cluster, and the IP address or the fully qualified domain name (FQDN) of the target ESXi host. The VSPHERE_LOCATOR value depends on the topology of your vSphere environment. Following are examples for valid VSPHERE_LOCATOR values. ■ /*data-center-name*/host/*cluster-1-name*/*ESXi-host-fully-qualified-domain-name* ■ /*data-center-name*/host/*cluster-2-name*/*ESXi-host-IP-address* If the target ESXi host is not part of a cluster, skip the *cluster-name* element, as shown in the following examples. ■ /*data-center-name*/host/*ESXi-host-fully-qualified-domain-name* ■ /*data-center-name*/host/*ESXi-host-IP-address* For more information about the VSPHERE_LOCATOR value, run the `./ovftool --help locators` command.

Deploy an On-Premises vCloud Availability Appliance by Using the OVF Tool

In the OVF Tool console, you can deploy an on-premises vCloud Availability appliance by using a single OVA file. You define deployment parameters in the OVF Tool console and run the deployment script.

Prerequisites

- Download the vCloud Availability 3.0 Appliance for Tenants (On-premise Sites)vCloud-Availability-OnPrem-*release_number-xxx-build_number*_OVF10.ova file, containing the binaries for the VMware vCloud Availability appliance.
- Verify that the OVF Tool is installed and configured.

Procedure

1 Log in to a server where the OVF Tool is running, by using a Secure Shell (SSH) client.

2 Define deployment parameters in the OVF Tool console by running the following commands.

```
# VMNAME="Name-to-be-Assigned-to-the-VM"

# VSPHERE_DATASTORE="vSphere-datastore"

# VSPHERE_NETWORK="VM-Network"

# OVA="local_client_path/VMware-vCloud-Availability-OnPrem-release_number-xxx-
build_number_OVF10.ova"

# VSPHERE_USER="vCenter-Server-admin-user"

# VSPHERE_USER_PASSWORD="vCenter-Server-admin-user-password"

# VSPHERE_ADDRESS="vCenter-Server-IP-address"

# VSPHERE_LOCATOR="vSphere-locator"
```

3 Deploy an on-premises vCloud Availability appliance.

The following example script deploys a vCloud Availability appliance on-premises and sets a static IP address.

```
# echo $VMNAME

#./ovftool/ovftool --name="${VMNAME}" --datastore="${VSPHERE_DATASTORE}" --acceptAllEulas
--powerOn --X:enableHiddenProperties --X:injectOvfEnv --X:waitForIp
--ipAllocationPolicy=fixedPolicy --machineOutput --noSSLVerify
--overwrite --powerOffTarget "--net:VM Network=${VSPHERE_NETWORK}" --diskMode=thin
--prop:guestinfo.cis.appliance.root.password='Your-Root-Password'
--prop:guestinfo.cis.appliance.ssh.enabled=True
--prop:guestinfo.cis.appliance.net.ntp='Your-ntp-server-ip-address'
--prop:vami.DNS.VMware_vCloud_Availability='Your-DNS-Server-Address'
--prop:vami.domain.VMware_vCloud_Availability='Your-Domain-Name'
--prop:vami.gateway.VMware_vCloud_Availability='Your-Gateway-IP-Address'
--prop:vami.ip0.VMware_vCloud_Availability='IP-to-be-Assigned-to-the-Appliance'
--prop:vami.netmask0.VMware_vCloud_Availability='Your-Netmask-Address'
--prop:vami.searchpath.VMware_vCloud_Availability='Your-Search-Path-Address'
"${OVA}" "vi://${VSPHERE_USER}:${VSPHERE_USER_PASSWORD}@${VSPHERE_ADDRESS}${VSPHERE_LOCATOR}"
```

The console outputs the IP address of the vCloud Availability appliance.

Configuring the vCloud Availability On-Premises Appliance

After deploying the vCloud Availability On-Premises Appliance, to enable pairing, you must first configure the appliance. You can perform the initial configuration either by using the vSphere Client, or by using the management interface of the appliance.

Configure the vCloud Availability On-Premises Appliance by Using the vSphere Client

In vSphere 7.0, you can complete the registration and pairing of the vCloud Availability On-Premises Appliance, without navigating to the appliance management interface.

Prerequisites

- Verify that your on-premises site is running vSphere 7.0. If your vSphere version is earlier than 7.0, skip this procedure and see Configure the On-Premises vCloud Availability Appliance.
- Install and power on the vCloud Availability On-Premises Appliance. For more information, see Deploying the vCloud Availability On-Premises Appliance.
- Verify that the cloud provider enabled the replication policy for your organization.
- Obtain the vCloud Availability Public API endpoint address from the DRAAS powered cloud provider.

Procedure

1. In a Web browser, go to the vSphere Client and log in as an administrator.
2. From the Home menu, select **VMware Cloud Director Availability**.
3. On the **Getting Started** tab, to register the newly deployed appliance, click the **Register** link.
4. In the **Register on-premise appliance** window, enter the details of the vCloud Availability On-Premises Appliance.
   a. Enter the IP address of the vCloud Availability On-Premises Appliance.
   b. Enter the appliance password of the **root** user.
   c. Verify the thumbprint and accept the SSL certificate of the vCloud Availability On-Premises Appliance.
   d. Click **Register**.
   e. To establish a new user session, log out from the vSphere Client and log back in to the vSphere Client as an administrator.

   On the **Getting Started** tab, you can see a `Successfully registered the on-premise appliance` message.
5. From the Home menu, select **VMware Cloud Director Availability**.
6. Under the **Dashboard** tab, click **Pair now**.
7. On the **Site Details** page, enter a **Site Name**, optionally enter a **Site Description**, and click **Next**.

   Important The site name is used as an identifier and cannot be changed later without impacting the active replications.
8. On the **Lookup Service Details** page, enter a **`lookup-service-IP-address`**, the **`single sign-on`** user credentials, and click **Next**.

9 Verify the thumbprint and accept the SSL certificate of the vCenter Server Lookup service and click **Next**.

10 On the **Cloud Service Details** page, pair the vCloud Availability On-Premises Appliance and the cloud provider.

   a Enter the vCloud Availability Public API endpoint address, provided by the cloud provider.

   b Enter the vCloud Director `admin@org` organization user credentials.

   c (Optional) Select **Allow Access from Cloud**.

   By selecting this option, you allow the cloud provider and the organization administrators without authenticating to the on-premises site to perform operations from the vCloud Availability Portal:

   - Discover on-premises workloads and replicate them to the cloud.
   - Reverse existing replications to the on-premises site.
   - Replicate cloud workloads to the on-premises site.

   By leaving this option deselected, only users authenticated to the on-premises vCloud Availability Portal can configure new replications and existing replications cannot be reversed from the vCloud Availability Portal.

   d Verify the thumbprint and accept the SSL certificate of the vCloud Availability Public API endpoint and click **Next**.

11 Optionally join the **VMware Customer Experience Improvement Program**, confirm your choice, and click **Next**.

12 On the **Ready to Complete** page, optionally select to configure the local placement now, and to complete the wizard click **Finish**.

   - You can configure data center to cloud replications and you can leave **Configure local placement now** deselected.
   - To enable the cloud to data center replications, select **Configure local placement now**.

What to do next

If you skipped configuring local placement in the last step of the wizard, you can proceed with Configure Local Placement.

Configure the On-Premises vCloud Availability Appliance

To configure the on-premises appliance, you must first change the initial **root** user password that you set during the OVA deployment. Then register the on-premises appliance with a vCenter Server Lookup service.

Prerequisites

- Install and power on the on-premises vCloud Availability appliance.
- Verify that the cloud provider enabled the replication policy for your organization.

- Obtain the vCloud Availability Public API endpoint address from the cloud provider.

Procedure

1. In a Web browser, go to `https://On-Prem-Appliance-IP-address`.
2. Log in by using the **root** user password that you set during the OVA deployment.
3. If you log in to the appliance for the first time, you must change the initial **root** user password.
   a. Enter the initial **root** user password that you set during the OVA deployment.
   b. Enter and confirm a new password.

      The password that you enter must be a secured password with a minimum of eight characters and it must consist of:

      - At least one lowercase letter.
      - At least one uppercase letter.
      - At least one number.
      - At least one special character, such as & # %.

   c. Click **Apply**.

      The **Getting Started** tab opens.
4. Click **Run initial setup wizard**.

   The **Initial Setup** wizard opens.
5. On the **Site Details** page, enter a **Site Name**, optionally enter a **Site Description**, and click **Next**.

   Important The site name is used as an identifier and cannot be changed later without impacting the active replications.
6. Optionally, to bypass pairing with the cloud site select **Provide cloud pairing details later** and skip to step 10.
7. On the **Lookup service details** page, enter a `lookup-service-IP-address`, the `single sign-on` user credentials, and click **Next**.
8. Verify the thumbprint and accept the SSL certificate of the vCenter Server Lookup service and click **Next**.
9. On the **Cloud Details** page, pair the on-premises vCloud Availability appliance and the cloud provider.
   a. Enter the vCloud Availability Public API endpoint address, provided by the cloud provider.
   b. Enter the vCloud Director `admin@org` organization user credentials.

c (Optional) Select **Allow Access from Cloud**.

By selecting this option, you allow the cloud provider and the organization administrators without authenticating to the on-premises site to perform operations from the vCloud Availability Portal:

- Discover on-premises workloads and replicate them to the cloud.
- Reverse existing replications to the on-premises site.
- Replicate cloud workloads to the on-premises site.

By leaving this option deselected, only users authenticated to the on-premises vCloud Availability Portal can configure new replications and existing replications cannot be reversed from the vCloud Availability Portal.

d Verify the thumbprint and accept the SSL certificate of the vCloud Availability Public API endpoint and click **Next**.

10 Optionally join the **VMware Customer Experience Improvement Program**, confirm your choice, and click **Next**.

11 On the **Ready to complete** page, optionally select to configure the local placement, and complete the initial setup wizard by clicking **Finish**.

- You can configure data center to cloud replications and you can leave **Configure local placement now** deselected.
- To enable the cloud to data center replications, select **Configure local placement now**.

Note For more information, see Configure Local Placement.

The on-premises vCloud Availability appliance is now configured. After you log in to the vCloud Availability vApp Replication Manager appliance and navigate to **Sites**, you can see both cloud and on-premises sites.

What to do next

If you skipped configuring local placement in the initial wizard, you can perform that next.

Configure Local Placement

To enable replications from the cloud to the on-premises site, in the on-premises appliance you must configure the local placement settings.

Follow this procedure if you skipped **Configure local placement now** during the initial setup wizard of the vCloud Availability On-Premises Appliance.

Procedure

1 In a Web browser, go to `https://On-Prem-Appliance-IP-address`.

2 Log in by using the **root** user password that you changed during the initial setup of the appliance.

3 In the left pane, click **Configuration**.

4 Under **Site details**, next to **Placement to newly recovered VMs on this site** click **Edit**.

   The **Configure Placement** wizard opens.

5 On the **VM Folder** page, select the location for storing the recovered virtual machines and click **Next**.

6 On the **Compute Resource** page, select the destination compute resource for the recovered virtual machines and click **Next**.

7 On the **Default Network** page, select the network that the virtual machines connect to after their failover and click **Next**.

   If you skip to select a network, the incoming virtual machine replications are recovered with their NICs disconnected.

8 On the **Datastore** page, select the datastore in which to store the virtual machines and their disk files and click **Next**.

   Datastore clusters are not supported for the on-premises local placement and the clusters are not listed to select.

9 On the **Ready To Complete** page, verify that the selected configuration is correct and click **Finish**.

   To view the placement setup summary, expand **Placement to newly recovered VMs on this site**.

What to do next

You can start creating and managing replications from the on-premises site by accessing one of the interfaces:

- Log in to your vCenter Server by using vSphere Client, authenticate with the Single Sign-On administrator credentials and access the on-premises vCloud Availability plug-in. For more information, see the *Using vCloud Availability*.
- Navigate to the cloud portal vCloud Availability Public API endpoint and log in by using the organization administrator credentials.

Upgrading VMware vCloud Availability On-Premises

4

After the cloud site is upgraded, you can upgrade the on-premises appliance. Follow the upgrade path and use an upgrade method according to the current vCloud Availability version. Then select a source repository for the upgrade files and upgrade the vCloud Availability On-Premises Appliance.

Upgrade Paths

To upgrade the vCloud Availability On-Premises Appliance to the latest version, use the following upgrade methods according to the current vCloud Availability version.

Currently Installed vCloud Availability Version	Next vCloud Availability Version	Upgrade Method
vCloud Availability 3.0.x	vCloud Availability 3.5.x	Use the service management interface, see Upgrading vCloud Availability On-Premises by Using the Service Management Interface.
vCloud Availability 3.0	vCloud Availability 3.5.x	Use the on-premises appliance command-line interface, see Upgrading vCloud Availability On-Premises by Using the Command-Line Interface.

Selecting an Upgrade Repository

To upgrade vCloud Availability on-premises, you can configure the vCloud Availability On-Premises Appliance to download the upgrade files from the following source repositories.

Repository	Description
Default VMware repository	Use the default repository for environments that allow the external Internet access to the VMware repository.
An ISO image	Use an upgrade ISO file mounted in the virtual appliance CD-ROM drive for environments without an external Internet access.
A specified repository	Use a specified local repository as a content mirror where you can upload the upgrade files. Use the local repository for environments without an external Internet access.

This chapter includes the following topics:

- Upgrading vCloud Availability On-Premises by Using the Service Management Interface
- Upgrading vCloud Availability On-Premises by Using the Command-Line Interface
- Configure vCloud Availability On-Premises Post-Upgrade

Upgrading vCloud Availability On-Premises by Using the Service Management Interface

To upgrade the vCloud Availability components from version 3.x, you can use the management interface of the on-premises appliance, select an upgrade repository, and follow the management interface upgrade procedures for the selected repository.

- If upgrading from vCloud Availability 3.x, you can follow the current chapter and use the service management interface for the upgrade.
- If upgrading from vCloud Availability 3.0, you must follow the Upgrading vCloud Availability On-Premises by Using the Command-Line Interface procedure.

Upgrade vCloud Availability On-Premises by Using the Default Repository

You can configure the on-premises vCloud Availability appliance to use the default VMware repository for the upgrade.

Procedure

1 In a Web browser, go to **`https://`***`On-Prem-Appliance-IP-address`*.

2 Install updates.

   a On the **Configuration** tab, click **Edit** against the **Update repository** entry .

   b Select **Use Default Repository** and click **Apply**.

   c Click **Check for update** against the **Product version** entry.

   d Click **Update** and wait for the update to install.

   The appliance restarts automatically.

What to do next

After you upgrade the on-premises vCloud Availability appliance, complete the upgrade with a post-upgrade configuration. For more information, see Configure vCloud Availability On-Premises Post-Upgrade.

Upgrade vCloud Availability On-Premises by Using an ISO Image

You can configure the on-premises vCloud Availability appliance to download the upgrade package from an ISO image file that is mounted to the CD-ROM drive of the appliance.

Procedure

1. Download the vCloud Availability 3.0.x Upgrade Disk Image `VMware-vCloud-Availability-`*`release_number-xxx-build_number`*`.iso` file from the My VMware download site.
2. Copy the ISO image file to a datastore that is accessible from the vCenter Server instance that you use with vCloud Availability.
3. Mount the ISO file to the on-premises vCloud Availability appliance.
   a. Log in to the vSphere Client.
   b. In the Home page, click **Hosts and Clusters**.
   c. Right-click the virtual machine that hosts the vCloud Availability appliance and select **Edit Settings**.
   d. On the **Virtual Hardware** tab, select **CD/DVD Drive > Datastore ISO File**.
   e. Follow the prompts to add the CD/DVD drive to the vCloud Availability virtual machine and select the **Connected** option.
4. In a Web browser, navigate to **`https://`***`On-Prem-Appliance-IP-address`***`/ui/admin`**.
5. Install updates.
   a. On the **Configuration** tab, click **Edit** against the **Update repository** entry .
   b. Select the **Use CDROM Updates** option and click **Apply**.
   c. Click **Check for update** against the **Product version** entry.
   d. Click **Update** and wait for the update to install.

   The appliance restarts automatically.
6. Unmount the ISO image.
   a. In the vSphere Client, shut down the virtual machine that hosts the vCloud Availability appliance.
   b. Right-click the virtual machine and select **Edit Settings**.
   c. In the **Virtual Hardware** tab, select **CD/DVD Drive** and deselect **Connected** and **Connect At Power On**.
   d. Power on the virtual machine.

What to do next

After you upgrade the on-premises vCloud Availability appliance, complete the upgrade with a post-upgrade configuration. For more information, see Configure vCloud Availability On-Premises Post-Upgrade.

Upgrade vCloud Availability On-Premises by Using a Specified Repository

You can configure the on-premises vCloud Availability appliance to use a local repository for the upgrade.

Procedure

1 Prepare the local repository for upgrades.

   a Install and configure a local Web server.

   b Download the vCloud Availability 3.0.x Upgrade Disk Image `VMware-vCloud-Availability-`*`release_number-xxx-build_number`*`.iso` file from the My VMware download site.

   c Mount the ISO image and copy the `update` directory to the local Web server.

   The `update` directory should contain `manifest` and `package-pool` directories.

2 In a Web browser, navigate to **`https://`***`On-Prem-Appliance-IP-address`***`/ui/admin`**.

3 Install updates.

   a On the **Configuration** tab, click **Edit** against the **Update repository** entry .

   b Select the **Use Specified Repository** option.

   c Enter the URL address of the local repository by pointing to the `update` directory of the local Web server.

   For example, `http://local-Web-server-address/update`.

   d To authenticate to the repository, enter your user name and password.

   e Click **Apply**.

   f Click **Check for update** against the **Product version** entry.

   g Click **Update** and wait for the update to install.

   The appliance restarts automatically.

What to do next

After you upgrade the on-premises vCloud Availability appliance, complete the upgrade with a post-upgrade configuration. For more information, see Configure vCloud Availability On-Premises Post-Upgrade.

Upgrading vCloud Availability On-Premises by Using the Command-Line Interface

To upgrade the vCloud Availability on-premises appliance from version 3.0 you must use the appliance command-line interface. You can also upgrade from version 3.x by using the command-line interface.

Upgrade vCloud Availability On-Premises from the Command Line by Using the Default VMware Repository

You can upgrade the on-premises vCloud Availability appliance by using the default VMware repository.

Prerequisites

Provide the on-premises vCloud Availability appliance with an external Internet access to the VMware repository.

Procedure

1. Connect to the vCloud Availability appliance by using a Secure Shell (SSH) client.
   a. Open an SSH connection to *Appliance-IP-Address*.
   b. Authenticate as the **root** user.
2. Check for upgrades.

```
/usr/bin/sudo /opt/vmware/bin/vamicli update --check
```

3. Install the upgrade.

```
/usr/bin/sudo /opt/vmware/bin/vamicli update --install latest --accepteula
```

4. Read and accept the end-user license agreement.
5. Reboot the on-premises vCloud Availability appliance.

```
reboot
```

What to do next

After you upgrade the on-premises vCloud Availability appliance, complete the upgrade with a post-upgrade configuration. For more information, see Configure vCloud Availability On-Premises Post-Upgrade.

Upgrade vCloud Availability On-Premises from the Command Line by Using an ISO Image

You can upgrade the on-premises vCloud Availability appliance by using an ISO image file that contains the upgrade binaries.

Procedure

1. Download the vCloud Availability 3.0.x Upgrade Disk Image `VMware-vCloud-Availability-`*`release_number-xxx-build_number`*`.iso` file from the My VMware download site.
2. Copy the ISO image file to a datastore that is accessible from the vCenter Server instance that you use with vCloud Availability.
3. Mount the ISO image to the on-premises vCloud Availability appliance.
   a. Log in to the vSphere Client in the site where you want to upgrade vCloud Availability.
   b. On the **Home** page, click **Hosts and Clusters**.

c Right-click the virtual machine that hosts the vCloud Availability component and select **Edit Settings**.

d On the **Virtual Hardware** tab, select **CD/DVD Drive > Datastore ISO File**.

e Follow the prompts and add the CD/DVD drive to the vCloud Availability virtual machine and select the **Connected** option.

4 Upgrade the on-premises vCloud Availability appliance.

a Connect to the on-premises appliance by using a Secure Shell (SSH) client and log in as the **root** user.

b Set the virtual CD/DVD drive of the on-premises appliance as a repository that contains the upgrade files.

```
/usr/bin/sudo /opt/vmware/bin/vamicli update --repo cdrom://
```

c Check for upgrades.

```
/usr/bin/sudo /opt/vmware/bin/vamicli update --check
```

d Install the upgrade.

```
/usr/bin/sudo /opt/vmware/bin/vamicli update --install latest --accepteula
```

e Read and accept the end-user license agreement.

f Reboot the on-premises vCloud Availability appliance.

```
reboot
```

What to do next

After you upgrade the vCloud Availability appliance, complete the upgrade with a post-upgrade configuration. For more information, see Configure vCloud Availability On-Premises Post-Upgrade.

Upgrade vCloud Availability On-Premises from the Command Line by Using a Specified Repository

You can upgrade the on-premises vCloud Availability appliance by using a specified repository that contains the upgrade binaries.

Prerequisites

Provide the on-premises vCloud Availability appliance with a network access to the specified repository.

Procedure

1 Prepare the specified repository for upgrades.

   a Install and configure a local Web server.

   b Download the vCloud Availability 3.0.x Upgrade Disk Image `VMware-vCloud-Availability-`*`release_number-xxx-build_number`*`.iso` file from the My VMware download site.

   c Mount the ISO image file to a local computer.

   d From the mounted ISO, copy the `update` directory containing the `manifest` and the `package-pool` sub-directories to the local Web server.

2 Upgrade the on-premises vCloud Availability appliance.

   a Connect to the on-premises appliance by using a Secure Shell (SSH) client and log in as the **root** user.

   b Use the specified repository as an upgrade source.

```
/usr/bin/sudo /opt/vmware/bin/vamicli update --repo specified-repository-URL
```

   c Check for upgrades.

```
/usr/bin/sudo /opt/vmware/bin/vamicli update --check
```

   d Install the upgrade.

```
/usr/bin/sudo /opt/vmware/bin/vamicli update --install latest --accepteula
```

   e Read and accept the end-user license agreement.

   f Reboot the on-premises vCloud Availability appliance.

```
reboot
```

What to do next

After you upgrade the on-premises vCloud Availability appliance, complete the upgrade with a post-upgrade configuration. For more information, see Configure vCloud Availability On-Premises Post-Upgrade.

Configure vCloud Availability On-Premises Post-Upgrade

After upgrading the on-premises vCloud Availability appliance, complete the upgrade by reconfiguring the on-premises appliance with the vCenter Server Lookup service.

Procedure

1. Log in to the management interface of the vCloud Availability On-Premises Appliance.
   a. In a Web browser, go to `https://On-Prem-Appliance-IP-address/ui/admin`.
   b. Log in as the **root** user.
2. Reconfigure the on-premises vCenter Server Lookup service appliance with the vCenter Server Lookup service.
   a. In the left pane, click **Configuration**.
   b. Under **Service endpoints**, next to **Lookup service address** click **Edit**.
   c. In the **Lookup Service Details** window, enter the single sign-on user name and password, and click **Apply**.
3. Verify that the vCloud Availability vSphere Client Plug-In is upgraded.
   a. Log in to your vCenter Server by using the vSphere Client.
   b. From the **Home** menu, select **Administration**.
   c. In the left pane, under **Solutions**, click **Client Plug-Ins**.
   d. On the **Client Plug-Ins** page, verify that under **Version**, vCloud Availability shows the upgraded version.

Results

The on-premises vCloud Availability appliance is successfully upgraded and you can configure new replications. For more information, see *Using vCloud Availability*.