

# Installing, Configuring, and Upgrading App Launchpad

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VMware Cloud Director App Launchpad 2.0

You can find the most up-to-date technical documentation on the VMware website at:

<https://docs.vmware.com/>

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# What is App Launchpad

# 1

App Launchpad is a VMware Cloud Director service extension which service providers can use to create and publish catalogs of deployment-ready applications. Tenant users can then deploy the applications with a single click.

As a service provider, you install App Launchpad in your data center.

App Launchpad supports the use of applications from the Bitnami applications catalog that is available in the VMware Marketplace.

You can also create catalogs of your custom, in-house applications and configure App Launchpad to work with these catalogs.

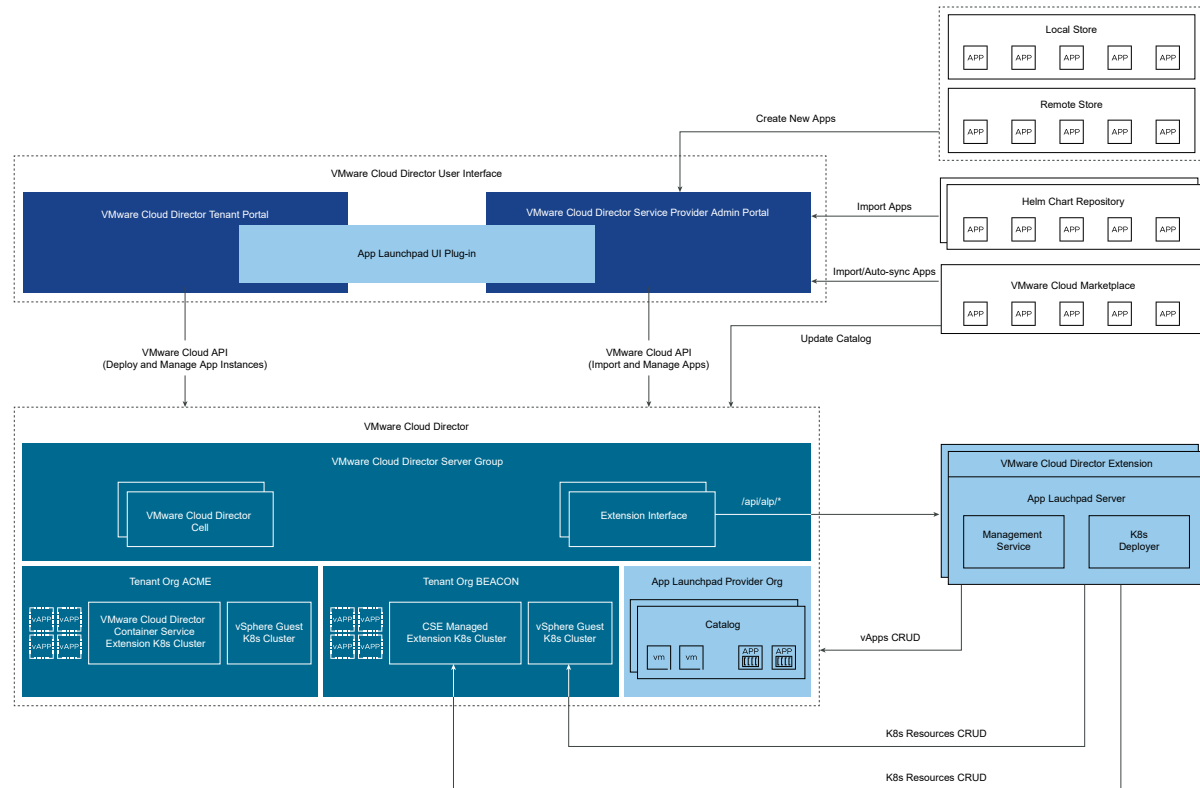
Starting with App Launchpad 2.0, you can also connect to Helm Chart repositories and import container applications. App Launchpad exposes the configuration parameters, so that tenant users can fine-tune the advanced settings of the container applications during deployment. You must configure a Kubernetes cluster as a deployment target for the container applications.

You can also use a mixture of all supported applications sources.

## Architecture of App Launchpad

During the installation and configuration procedures, the App Launchpad user interface registers as a plug-in to VMware Cloud Director. As a result, you can access the App Launchpad user interface from the VMware Cloud Director service provider admin portal and the VMware Cloud Director tenant portal.

The following diagram illustrates the architecture of App Launchpad.



## Components of App Launchpad

App Launchpad consists of three components.

Component	Description
App Launchpad Service	A Java service responsible for the App Launchpad back end and for the VMware Cloud Director extension service.
Command-Line Utility ( <code>alp</code> )	Contains the scripts required for configuring and managing App Launchpad.
App Launchpad Kubernetes Deployer ( <code>alp-deployer</code> )	A backend service responsible for the deployment of container applications to Kubernetes clusters.
App Launchpad User Interface Plug-in for VMware Cloud Director	You use the <code>alp</code> command-line utility to install the user interface plug-in. The App Launchpad user interface plug-in registers as a plug-in to VMware Cloud Director and you can access the App Launchpad user interface directly from the VMware Cloud Director service provider admin portal and the VMware Cloud Director tenant portal.

# Before You Begin

## 2

Before you install and configure App Launchpad, verify that your target environment meets the specific requirements.

This chapter includes the following topics:

- External Components Requirements
- Network Requirements
- Kubernetes Requirements
- VMware Cloud Director Requirements
- VMware Cloud Director Service Requirements
- Supported Application Sources and Sources Requirements
- High Availability Considerations

## External Components Requirements

App Launchpad requires external components and supports specific versions that you must deploy and configure.

**Table 2-1. Versions of Required External Components**

Required Component	Supported Versions
VMware Cloud Director	<ul style="list-style-type: none"><li>■ 10.3</li><li>■ 10.2</li><li>■ 10.1</li><li>■ 10</li></ul>
AMQP Broker	<p>Depends on the AMQP Broker that your version of VMware Cloud Director supports. For information, see the VMware Cloud Director Release Notes for the version of VMware Cloud Director that you run.</p> <p>If you use VMware Cloud Director 10.1 or 10, an AMQP broker is required.</p> <p>If you use VMware Cloud Director 10.2, configuring an AMQP broker is not required.</p>

## System Requirements

App Launchpad is available for an installation on CentOS Linux 7 and 8 distribution versions.

## Hardware Requirements

The following table lists the hardware requirements for minimal and optimal deployments of App Launchpad.

Deployment Type	Hardware Requirements
Minimal	<ul style="list-style-type: none"><li>■ 2 Core CPU</li><li>■ 4 GB RAM</li><li>■ 8 GB Free Disk Space</li></ul>
Optimal	<ul style="list-style-type: none"><li>■ 4 Core CPU</li><li>■ 16 GB RAM</li><li>■ 120 GB Free Disk Space</li></ul>

## Network Requirements

App Launchpad does not require inbound access and does not expose network ports to the Internet.

App Launchpad communicates only with VMware Cloud Director and the AMQP Broker in your environment. If you use VMware Cloud Director 10.2, App Launchpad only communicates with VMware Cloud Director and does not require communicating with an AMQP broker.

App Launchpad requires outbound access to the Internet to connect to VMware Marketplace, customer defined Helm Chart repositories, VMware Cloud services, and the services used by the Customer Experience Improvement Program. Make sure that outbound access is allowed for the following destinations:

- For connections to VMware Marketplace, allow access to `https://gtw.marketplace.cloud.vmware.com/*`.
- For connections to VMware Cloud services, allow access to `https://console.cloud.vmware.com/*`.
- For connections to services used by the Customer Experience Improvement Program, allow access to `https://scapi.vmware.com/*`.

The following diagram illustrates the network architecture and the connections between internal and external components of App Launchpad.





## VMware Marketplace Requirements

To import VM applications from VMware Marketplace, make sure that the public REST API endpoint of VMware Cloud Director is accessible for VMware Marketplace. When importing VM applications, VMware Marketplace creates or updates the catalogs of App Launchpad by using VMware Cloud Director API. Make sure that VMware Marketplace can access the following VMware Cloud Director API endpoints:

- `/api/admin/org/%s/catalogs`
- `/api/catalog/%s`
- `/api/admin/catalog/%s`
- `/action/sync`

## Container Service Extension Requirements

To use the Container Service Extension of VMware Cloud Director as an application deployment target, App Launchpad requires outbound access to the control plane node of each Kubernetes cluster that the Container Service Extension manages.

## Kubernetes Requirements

To enable your tenant users to deploy container applications, deploy a Kubernetes cluster.

App Launchpad supports Container Service Extension of VMware Cloud Director version 2.6.1 or later.

The version of Container Service Extension that App Launchpad supports also depends on the VMware Cloud Director version that you run. Following is a list of the combinations of versions of VMware Cloud Director and Container Service Extension that App Launchpad supports.

VMware Cloud Director Version	Container Service Extension Version
10.0.X	2.6.X
10.1.X	2.6.X
10.2.X	3.0.X

Install and configure the Container Service Extension with VMware Cloud Director before deploying App Launchpad.

If you deploy Container Service Extension after App Launchpad, you must manually add the Kubernetes related permissions to the **App-Launchpad-Service** role.

To use the Container Service Extension as an application deployment target, App Launchpad requires outbound access to the control plane node of each Kubernetes cluster that the Container Service Extension manages.

For information about installing and configuring the Container Service Extension, see [https://vmware.github.io/container-service-extension/cse2\\_6/INTRO.html](https://vmware.github.io/container-service-extension/cse2_6/INTRO.html).

If you deploy the Kubernetes cluster behind an organization routed network, additional configuration is required. See <https://kb.vmware.com/s/article/83215>.

## VMware Cloud Director Requirements

If you plan to import applications from VMware Marketplace, make sure that the network configuration of VMware Cloud Director allows inbound access from VMware Marketplace.

To make use of VMware Marketplace applications, make sure that the network configuration of VMware Cloud Director also allows outbound access to AWS S3.

VMware Marketplace uses the AWS S3 to store the OVA files for the applications from the Bitnami applications catalog.

## Communication Between App Launchpad and VMware Cloud Director

Configure the extensibility of VMware Cloud Director before deploying App Launchpad.

If you configure use VMware Cloud Director 10.2 or later, use the MQTT protocol for the communication between App Launchpad and VMware Cloud Director.

If you use earlier version of VMware Cloud Director, configure the extensibility of VMware Cloud Director using an AMQP broker.

Under the same AMQP virtual host that VMware Cloud Director uses, create a direct type of exchange that is reserved for App Launchpad.

Create a dedicated AMQP user that has full permissions to the virtual host of the AMQP broker.

If you use an SSL port to connect to the AMQP broker, make sure that the extensibility of VMware Cloud Director is configured to accept all certificates.

By default, VMware Cloud Director extensibility has a short timeout setting regardless if you use the MQTT protocol or an AMQP broker. To avoid service availability errors, it is a best practice to increase the extensibility timeout setting using the VMware Cloud Director Cell Management Tool. To increase the timeout setting, run the `/opt/vmware/vcloud-director/bin/cell-management-tool manage-config -n extensibility.timeout -v 60` script. For more information about working with the Cell Management tool, see [Cell Management Tool Reference](#).

If multiple instances of VMware Cloud Director and App Launchpad are connected to a single instance of RabbitMQ, you can use the same virtual host. Make sure that you create a dedicated RabbitMQ queue and routing key for every instance of App Launchpad that you plan to deploy.

## VMware Cloud Director Service Requirements

If you are deploying App Launchpad to a VMware Cloud Director service environment, make sure that your VMware Cloud Director service instance meets the following requirements.

- You need a provider account for VMware Cloud Director service that is assigned with the **System Administrator** role or an account with a permission equivalent role. You use this account to complete the configuration of App Launchpad.
- Create a provider virtual data center (VDC) and a network pool in an SDDC. You use the resources to create a virtual machine that is dedicated for App Launchpad services.
- Deploy a CentOS Linux virtual machine to your provider virtual data center. You use the virtual machine as a target for deploying App Launchpad.
- Use the user interface of vCenter Server to create a connection between App Launchpad and a network that is backed by the Compute Gateway (CGW). Make sure that the virtual machine has access to all tier-1 edge gateways of the tenant organizations where the Kubernetes clusters are deployed.
- Configure a gateway firewall rule that allows access from App Launchpad to external networks. The virtual machine to which you deploy App Launchpad does not require inbound access and requires a limited outbound access to the following destinations:
  - The VMware Cloud Director service instance on AWS
  - VMware Cloud Services
  - VMware Marketplace
  - VMware Analytics Cloud
- If your customers plan to deploy container applications to a tenant organization, configure external addresses for the Kubernetes clusters in the tenant organization. Make sure that the external addresses of the Kubernetes clusters on the tier-1 edge gateway are known and accessible for App Launchpad. See <https://kb.vmware.com/s/article/83215>.

For more information about VMware Cloud Director service, see <https://docs.vmware.com/en/VMware-Cloud-Director-service/index.html>.

For more information about VMware Cloud on AWS, see <https://docs.vmware.com/en/VMware-Cloud-on-AWS/index.html>.

## Supported Application Sources and Sources Requirements

App Launchpad supports the following application sources.

- Custom Catalogs
- Bitnami applications catalog available in the VMware Marketplace
- Helm Chart Repositories

To use custom catalogs as application sources, create the catalogs in the AppLaunchpad provider organization in VMware Cloud Director, upload application VMs and vApps to the catalogs, and publish the catalogs.

To use applications from the Bitnami catalog, get an account with permissions to access the VMware Marketplace and import the applications to App Launchpad.

To import container applications from Helm Chart repositories, create and configure the repository, and import the applications to App Launchpad.

## High Availability Considerations

To achieve high availability of App Launchpad, deploy multiple App Launchpad instances using the same configuration parameters.

If you configure RabbitMQ as your AMQP broker, with a direct exchange type, App Launchpad can achieve a round robin load balancing out of the box. See <https://www.rabbitmq.com/tutorials/amqp-concepts.html>.

If you configure App Launchpad with VMware Cloud Director 10.2, App Launchpad supports both AMQP and MQTT messaging protocols. MQTT does not support high availability out of the box. To achieve high availability, use the AMQP protocol for the connection between App Launchpad and VMware Cloud Director.

If you configure App Launchpad with RabbitMQ and want to switch the connection protocol to MQTT, run the `alp connect` script and add the `--mqtt` argument. For more information about the script, see [step 3a](#) in *Install App Launchpad*.

If you configure App Launchpad to use the MQTT protocol and want to switch to using AMQP, first delete the App Launchpad service extension from VMware Cloud Director:

- 1 Delete the API filter.
- 2 Deactivate the service extension.
- 3 Delete the service extension.

For more information about deleting a service extension, see the API documentation for your vCloud API version.

After you delete the service extension from VMware Cloud Director, run the `alp connect` script providing the required AMQP details.

# Access Control and User Roles

## 3

Any active VMware Cloud Director user can access App Launchpad.

Service providers access the App Launchpad user interface from the VMware Cloud Director service provider admin portal. Tenant users access the App Launchpad user interface from the VMware Cloud Director tenant portal.

## User Roles and Rights

The rights assigned to your user account in VMware Cloud Director define your user role in App Launchpad.

The following table lists App Launchpad roles and the associated VMware Cloud Director rights.

App Launchpad User Role	Description	VMware Cloud Director Rights and Roles
PROVIDER_ADMIN	A service provider account that accesses App Launchpad from the VMware Cloud Director service provider admin portal.	Accessing all service provider capabilities of App Launchpad, requires the VMware Cloud Director <b>System Administrator</b> role.
TENANT_USER	A tenant user account that accesses App Launchpad from the VMware Cloud Director tenant portal.	<p>To deploy applications, the organization user must have the VMware Cloud Director <b>vApp User</b> role.</p> <p>Following is a list of all VMware Cloud Director rights required to enable all capabilities of App Launchpad for tenant users:</p> <ul style="list-style-type: none"> <li>■ <b>UI Plugins: View</b></li> <li>■ <b>Organization: View</b></li> <li>■ <b>Organization vDC: View</b></li> <li>■ <b>Organization vDC Network: View Properties</b></li> <li>■ <b>Organization vDC Distributed Firewall: View Rules</b></li> <li>■ <b>Organization vDC Resource Pool: View</b></li> <li>■ <b>Organization Network: View</b></li> <li>■ <b>vApp: Power Operations</b></li> <li>■ <b>vApp: VM Boot Options</b></li> <li>■ <b>vApp: Use Console</b></li> </ul>
App-Launchpad-Service	<p>This service role is used by the App Launchpad back-end system and contains all VMware Cloud Director rights related to the App Launchpad capabilities.</p> <p>During the command-line configuration of App Launchpad with VMware Cloud Director, the <code>alp connect</code> script creates a service account user for the back end of App Launchpad if such account does not exist in VMware Cloud Director.</p> <p>Later, during the initial configuration of App Launchpad through the VMware Cloud Director service provider admin portal, App Launchpad creates the service role named <b>App-Launchpad-Service</b>. App Launchpad assigns the role to the service account user that is created during the configuration of App Launchpad.</p>	<p>The <b>App-Launchpad-Service</b> role is automatically created and assigned with the following VMware Cloud Director rights:</p> <ul style="list-style-type: none"> <li>■ <b>Access All Organization VDCs</b></li> <li>■ <b>Adopt Resource Pool: View</b></li> <li>■ <b>Catalog: Add vApp from My Cloud</b></li> <li>■ <b>Catalog: CLSP Publish Subscribe</b></li> <li>■ <b>Catalog: Create / Delete a Catalog</b></li> <li>■ <b>Catalog: Edit Properties</b></li> <li>■ <b>Catalog: Shadow VM View</b></li> <li>■ <b>Catalog: VCSP Publish Subscribe Caching</b></li> <li>■ <b>Catalog: View ACL</b></li> <li>■ <b>Catalog: View Published Catalogs</b></li> <li>■ <b>Catalog: View Private and Shared Catalogs</b></li> <li>■ <b>Datastore: View</b></li> <li>■ <b>Disk: View Properties</b></li> </ul>

App Launchpad User Role	Description	VMware Cloud Director Rights and Roles
		<ul style="list-style-type: none"> <li>■ General: Administrator View</li> <li>■ General: View Error Details</li> <li>■ Global Role: View</li> <li>■ Group / User: View</li> <li>■ Host: View</li> <li>■ Multisite: System Operations</li> <li>■ Organization: View</li> <li>■ Organization: view metrics</li> <li>■ Organization: Edit Properties</li> <li>■ Organization: Perform Administrator Queries</li> <li>■ Organization vDC: View</li> <li>■ Organization vDC Network: View Properties</li> <li>■ Organization vDC Network: View</li> <li>■ Organization vDC Distributed Firewall: View Rules</li> <li>■ Organization vDC Compute Policy: View</li> <li>■ Organization vDC Compute Policy: Admin View</li> <li>■ Organization vDC Resource Pool: View</li> <li>■ Organization vDC: Extended View</li> <li>■ Organization vDC Gateway: View</li> <li>■ Organization vDC Gateway: View NAT</li> <li>■ Organization Network: View</li> <li>■ Provider Network: View</li> <li>■ Resource Pool: Open</li> <li>■ Resource Pool: View</li> <li>■ Right: View</li> <li>■ Site: View</li> <li>■ Stranded Item: View</li> <li>■ System Settings: View</li> <li>■ System Organization: View</li> <li>■ Task: View Tasks</li> <li>■ Task: Update</li> <li>■ Task: Resume, Abort, or Fail</li> <li>■ UI Plugins: View</li> <li>■ UI Plugins: Define, Upload, Modify, Delete, Associate or Disassociate</li> <li>■ vApp Template: Open in vSphere</li> <li>■ vApp Template: Checkout</li> </ul>

App Launchpad User Role	Description	VMware Cloud Director Rights and Roles
		<ul style="list-style-type: none"> <li>■ vApp Template: Import</li> <li>■ vApp Template: Download</li> <li>■ vApp Template / Media: View</li> <li>■ vApp Template / Media: Copy</li> <li>■ vApp Template / Media: Edit</li> <li>■ vApp Template / Media: Create / Upload</li> <li>■ vApp: Open in vSphere</li> <li>■ vApp: Change Owner</li> <li>■ vApp: Download</li> <li>■ vApp: Upload</li> <li>■ vApp: Copy</li> <li>■ vApp: Import Options</li> <li>■ vApp: Create / Reconfigure</li> <li>■ vApp: Edit Properties</li> <li>■ vApp: Edit VM CPU</li> <li>■ vApp: Edit VM Memory</li> <li>■ vApp: Edit VM Network</li> <li>■ vApp: Edit VM Compute Policy</li> <li>■ vApp: Edit VM Hard Disk</li> <li>■ vApp: Edit VM CPU and Memory reservation settings in all VDC types</li> <li>■ vApp: View ACL</li> <li>■ vApp: Power Operations</li> <li>■ vApp: VM Boot Options</li> <li>■ vApp: View VM metrics</li> <li>■ vApp: Shadow VM View</li> <li>■ vApp: Sharing</li> <li>■ vApp: Use Console</li> <li>■ vApp: Delete</li> <li>■ vCenter: View</li> <li>■ vSphere Server: View</li> <li>■ Custom entity: View custom entity definitions</li> <li>■ External Service: View</li> <li>■ vmware:tkgcluster: Administrator View</li> <li>■ vmware:tkgcluster: View</li> <li>■ cse:nativeCluster: Administrator View</li> <li>■ cse:nativeCluster: View</li> </ul>



# Installing and Configuring App Launchpad

# 4

Starting with App Launchpad 2.0.0.1, you can install and configure App Launchpad with an instance of VMware Cloud Director service.

You deploy App Launchpad by installing an RPM package on a dedicated Linux virtual machine. Then use the `alp` command-line utility to configure App Launchpad services to work with a VMware Cloud Director instance.

When you deploy the RPM, App Launchpad creates a user group named **vmware-alp** and a user named **vmware-alp**. Only users that belong to the **vmware-alp** user group and the **root** user can operate the App Launchpad command-line utility. You can add users to the user group. The **vmware-alp** is reserved for the management and deployer service of App Launchpad.

If you want to use the `alp` scripts, the `diagnose`, and the support bundle tools as a non-root user, use the `useradd -g vmware-alp <sample>` command to add more users to the **vmware-alp** user group.

During the configuration of App Launchpad with VMware Cloud Director, the `alp connect` script creates a dedicated service account using the name that you specify in the arguments of the script and pull the required AMQP broker configuration.

When you configure App Launchpad with VMware Cloud Director, you can optionally select one of the existing system user accounts to become the App Launchpad service account. If you do not select an existing user account, App Launchpad creates a VMware Cloud Director user account. This user account becomes the service account. A best practice is to name a dedicated service account user.

Later, when you go through the initial configuration, App Launchpad creates a VMware Cloud Director organization named **AppLaunchpad** that is reserved for the App Launchpad services. Do not delete the **AppLaunchpad** organization.

Use this organization to host your application catalogs. You cannot edit the Bitnami VM applications in your catalogs that are subscribed to the VMware Marketplace. You can customize your Bitnami container application catalogs and the in-house application catalogs.

You can change the name of the service account and the VMware Cloud Director organization by using the App Launchpad command-line interface. Editing the service account and organization names does not impact existing application deployments.

The applications that tenant users deploy belong to the **AppLaunchpad** organization in VMware Cloud Director. Whenever a tenant user performs an operation within App Launchpad, for example deploy an application or search for an application, the service account is used to authorize the operation. For more information about the **App-Launchpad-Service** role, see [Chapter 3 Access Control and User Roles](#).

This chapter includes the following topics:

- [Deploy App Launchpad](#)
- [Configure Highly Available Environment of App Launchpad Instances](#)
- [Configure App Launchpad](#)
- [Uninstall App Launchpad](#)

## Deploy App Launchpad

App Launchpad is distributed as an RPM installation file with a name in the format `vmware-vcd-alp-v.v.v-nnnnnnnn.el7.x86_64.rpm`, where *v.v.v* is the product version and *nnnnnnnn* is the build number. For example, `vmware-vcd-alp-2.0.0-36472856.el7.x86_64.rpm`.

### Prerequisites

- Verify that your target environment meets the deployment requirements of App Launchpad. For more information, see [Chapter 2 Before You Begin](#).
- Verify that you have the credentials of a VMware Cloud Director system administrator account. You need the credentials of a system administrator to create the **App-Launchpad-Service** account.
- Verify that the installation RPM package is uploaded to the `/tmp` directory of the target machine.

### Procedure

- 1 Open an SSH connection to the installation target Linux virtual machine, log in and use `su` to obtain root privileges.
- 2 Install the RPM package by running the installation command.

```
rpm -ivh vmware-vcd-alp-v.v.v-nnnnnnnn.el7.x86_64.rpm
```

If Java SE JDK 11 is installed on the deployment target machine, to avoid installation issues, append the `--nodeps` argument.

```
rpm -ivh --nodeps vmware-vcd-alp-v.v.v-nnnnnnnn.el7.x86_64.rpm
```

### 3 Configure App Launchpad with VMware Cloud Director.

To configure App Launchpad with VMware Cloud Director, use the `alp connect` script. By using this script, you establish a connection between App Launchpad and VMware Cloud Director, define or create the **App-Launchpad-Service** account, and install the App Launchpad user interface plug-in for VMware Cloud Director. The `alp connect` script also configures App Launchpad with your AMQP broker.

- a Configure the connection between App Launchpad and VMware Cloud Director.

If you are connecting to VMware Cloud Director 10.2 or later, run the following command:

```
alp connect --sa-user account-to-become-alp-service-account --sa-pass 'service-account-pass' --url Cloud-Director-URL --admin-user Cloud-Director-system-administrator@system --admin-pass 'Cloud-Director-system-administrator-pass' --mqtt
```

If you are connecting to a version of VMware Cloud Director that is earlier than 10.2, run the following command:

```
alp connect --sa-user account-to-become-alp-service-account --sa-pass 'service-account-pass' --url Cloud-Director-URL --admin-user Cloud-Director-system-administrator@system --admin-pass 'Cloud-Director-system-administrator-pass' --amqp-exchange dedicated-exchange-name --amqp-user dedicated-amqp-user --amqp-pass 'dedicated-amqp-user-password' --amqp-queue dedicated-amqp-queue --amqp-routingkey dedicated-amqp-routing-key
```

The following table describes the argument values that you must enter.

Argument	Description
<code>--sa-user</code>	<p>The user name of the VMware Cloud Director user account that becomes the <b>App-Launchpad-Service</b> account. Later, during the initial configuration of the App Launchpad services, App Launchpad assigns the <b>App-Launchpad-Service</b> role to it.</p> <p>This account is dedicated to App Launchpad and cannot be the same as the <code>--admin-user</code> account.</p> <p>Enter the user name using only lowercase and do not add the VMware Cloud Director organization suffix.</p> <p>If a user account for the user name that you enter does not exist in VMware Cloud Director, the <code>alp connect</code> script creates it.</p>
<code>--sa-password</code>	<p>The password for the VMware Cloud Director user account that becomes the <b>App-Launchpad-Service</b> account.</p>
<code>--url</code>	<p>The public endpoint of VMware Cloud Director.</p> <p>Make sure that you do not enter a trailing slash at the end of the URL. For example, enter <code>https://cloud.example.com</code> instead of <code>https://cloud.example.com/</code>.</p>
<code>--admin-user</code>	<p>The user name of a VMware Cloud Director system administrator.</p>

Argument	Description
<code>--admin-pass</code>	The password for the VMware Cloud Director system administrator user account.
<code>--amqp-user</code>	The user name of the dedicated AMQP broker user account that you created for App Launchpad. Add the <b>@system</b> organization suffix to the user name.
<code>--amqp-pass</code>	The password for the dedicated AMQP broker user account that you created for App Launchpad.
<code>--amqp-exchange</code>	The name of the dedicated AMQP broker direct exchange that is reserved for App Launchpad. Make sure that: <ul style="list-style-type: none"> <li>■ you use a direct type of AMQP exchange.</li> <li>■ VMware Cloud Director and App Launchpad use the same virtual host of the AMQP broker.</li> </ul>
<code>--amqp-queue</code>	If multiple instances of VMware Cloud Director use a single RabbitMQ virtual host, to prevent failures of App Launchpad services, specify the dedicated AMQP queue for the current instance of App Launchpad. To make sure that the requests are routed to the correct queue, use this argument together with the <code>--amqp-routingkey</code> argument. By default, the argument value is <code>alp</code> , so if you do not require specific routing of requests, you can skip this argument.
<code>--amqp-routingkey</code>	The routing key for your requests. To make sure that requests are correctly routed, use this argument together with the <code>--amqp-queue</code> argument. By default, the argument value is <code>alpkey</code> , so if you do not require specific routing of requests, you can skip this argument.
<code>--mqtt</code>	If you configure App Launchpad with VMware Cloud Director 10.2 or later, you can use the MQTT protocol for the communication between App Launchpad and VMware Cloud Director. When you use the MQTT protocol, all configuration details that App Launchpad requires are automatically extracted from VMware Cloud Director. When running the <code>alp connect</code> script, if you provide both the <code>--mqtt</code> and the <code>--amqp-exchange</code> arguments, the MQTT configuration takes precedence. If VMware Cloud Director is configured to use MQTT, App Launchpad ignores the AMQP configuration.

For VMware Cloud Director 10.2 and later:

```
alp connect --sa-user alpadmin --sa-pass 'Change!7' --url https://cloud.example.com
--admin-user administrator@system --admin-pass 'Change!7' --mqtt
```

For VMware Cloud Director earlier than 10.2:

```
alp connect --sa-user alpadmin --sa-pass 'Change!7' --url https://cloud.example.com
--admin-user administrator@system --admin-pass 'Change!7' --amqp-exchange alpevt
--amqp-user alp-user --amqp-pass 'Change!7'
```

To get help about the script, you can run the `alp connect -h` command.

The system returns information about the VMware Cloud Director certificate and the End User License Agreement (EULA) for App Launchpad.

- b Accept the EULA.
  - c Accept the certificate of VMware Cloud Director.
- 4 Verify that the configurations of VMware Cloud Director and the AMQP broker are successful by running the `alp show` command.

The system returns all VMware Cloud Director and AMQP broker configuration details.

- 5 (Optional) To retrieve the password for the service account, append the `--show-password` argument to the `alp show` command.
- 6 Start the App Launchpad service by running the `systemctl start alp` command.
- 7 Verify the status of the App Launchpad service by running the `systemctl status alp` command.

If the system does not return errors, proceed to configuring App Launchpad. See [Configure App Launchpad](#). If the system returns an error, proceed to [Step 8](#).

- 8 Diagnose deployment errors by running the `/opt/vmware/alp/bin/diagnose` executable file.

The diagnose tool verifies that the services are up and running and that all configuration requirements are met. The list of diagnostics includes:

- Initialization of the App Launchpad service
- Assignment of the **App-Launchpad-Service** account
- AMQP or MQTT broker configuration
- App Launchpad API endpoint configuration
- App Launchpad service listening port

If there are no deployment errors, the system returns the following message:

```
Step 1: System diagnose
-----
- App Launchpad service is initialized.

Step 2: Cloud Director diagnose
-----
- Service Account for App Launchpad is good.
- App Launchpad's extension is ready.
```

```
Step 3: AMQP diagnose
```

```
-----  
- Cloud Director AMQP for extensibility is ready.
```

```
Step 4: Integration diagnose
```

```
-----  
- App Launchpad API is up, and version is 1.0.0-34386167.
```

```
Step 5: App Launchpad diagnose
```

```
-----  
- App Launchpad service is listening on port 8086
```

## Configure Highly Available Environment of App Launchpad Instances

To achieve high availability of App Launchpad, deploy multiple App Launchpad instances using the same configuration parameters.

Deploy the first instance of App Launchpad and configure the remaining components. After you configure the first instance, export the configuration parameters and import the configuration to the remaining instances in your environment.

When exporting the configuration parameters, you protect the `.tar` file with a password. For security purposes, App Launchpad validates the complexity of the password. When you set password, make sure that the password contains:

- At least eight characters
- Minimum one uppercase character
- Minimum one lowercase character
- Minimum one numeric digit character
- Minimum one non-alphanumeric character.

Use only visible ASCII characters. Do not use space and non-printing control characters, such as BEL or NUL.

### Prerequisites

Verify that your target environment meets the requirements for high availability of App Launchpad. For more information, see the *Considerations for High Availability of App Launchpad* section in [Chapter 2 Before You Begin](#).

### Procedure

- 1 Deploy the first instance of App Launchpad in your environment. See [Deploy App Launchpad](#).
- 2 Export the configuration parameters by running the `alp export` command.

```
alp export --file-name=tar-file-path --key=password
```

For example:

```
alp export --file-name=/tmp/config-params.tar --key=pass
```

To avoid the password complexity verification, you can optionally append the `--force` argument to the command.

### 3 Deploy additional instances of App Launchpad.

- a Open an SSH connection to the target machine.
- b Install the RPM package by running the installation command.

```
rpm -ivh vmware-vcd-alp-v.v.v-nnnnnnnn.el7.x86_64.rpm
```

If Java SE JDK 11 is installed on the deployment target machine, to avoid installation issues, append the `--nodeps` argument.

```
rpm -ivh --nodeps vmware-vcd-alp-v.v.v-nnnnnnnn.el7.x86_64.rpm
```

Deploy as many additional instances, as required.

---

**Important** Do not configure any of the additional instances.

---

### 4 Import the configuration parameters to the additional instances of App Launchpad.

- a Copy the exported configuration parameters from the first instance of App Launchpad to all additional instances.
- b For every additional instance, import the configuration parameters by running the `alp import` command.

```
alp import --file-name=tar-file-path --key=password
```

For example:

```
alp import --file-name=/tmp/config-params.tar --key=pass
```

- c Restart the App Launchpad service by running the `systemctl restart alp` command.


## Configure App Launchpad

Configuring App Launchpad consists of setting a target provider organization for onboarding catalogs of applications and completing the initial configuration wizard.

### Prerequisites

Verify that you installed the App Launchpad RPM and configured the connections from App Launchpad to VMware Cloud Director and to an AMQP Broker. See [Deploy App Launchpad](#) .

## Procedure

- 1 Access the App Launchpad user interface.
  - a In a Web browser, go to the VMware Cloud Director service provider admin portal URL.  
For example, `https://vcloud.example.com/provider`.
  - b Log in with the **system administrator** user name and password.
  - c From the main menu () , select App Launchpad.

The **Welcome to App Launchpad** page displays.

- 2 To start the initial configuration wizard, click **Launch Setup**.
- 3 Set up the App Launchpad infrastructure, and click **Next**.

Option	Description
Option	Action
<b>Automatic</b>	<p>If you want to configure the infrastructure for App Launchpad automatically, select <b>Yes, set it up</b>.</p> <p>Starting with version 2.0.0.1, to improve the storage usage efficiency, App Launchpad uses a thin provisioning storage policy when creating the organization virtual data center.</p>
<b>Manual</b>	<p>If you want to configure the infrastructure for App Launchpad manually, select <b>No, I will set it up on my own</b> and create the following entities:</p> <ul style="list-style-type: none"> <li>■ A new VMware Cloud Director organization named <b>AppLaunchpad</b> that stores all data related to App Launchpad services.</li> <li>■ A new Pay-As-You-Go organization virtual data center predefined with storage policy and disk sizes.</li> <li>■ A global service role named <b>App-Launchpad-Service</b>.</li> <li>■ A system administrator user account to which the <b>App-Launchpad-Service</b> role is assigned.</li> </ul> <p>Leave the current browser window open, because App Launchpad tracks your progress.</p>

- a Select a provider virtual data center to use for App Launchpad services. The dedicated organization is created in this provider virtual data center.
  - b Select a storage policy.
  - c Select a disk size (in GB).
- 4 Create sizing templates for the applications.
  - a Enter a name for the sizing template.
  - b Enter a vCPU count, a memory size (in GB), and a disk size (in GB).
  - c (Optional) Select the current template as the default sizing template.
  - d (Optional) Add more sizing templates by clicking **Add More** and completing steps [4a](#) to [4c](#).



5 To complete the initial configuration of App Launchpad, click **Finish**.

### Results

You are redirected to the App Launchpad home page and the **Next Steps** card displays.

### What to do next

Provide single-click application deployment capabilities to your tenants.

- 1 Make sure that the default rights bundle is published to the AppLaunchpad organization in VMware Cloud Director. See [Publish or Unpublish a Rights Bundle](#) in the *VMware Cloud Director Service Provider Admin Portal Guide*.
- 2 Add applications to App Launchpad. See [Adding Applications to App Launchpad](#).
- 3 Set featured applications. See [Add or Remove Featured Applications](#).
- 4 Edit application deployment settings. See [Edit Application Deployment Settings](#).
- 5 To make applications available for deployment, publish catalogs. See [Publish an Application to a VMware Cloud Director Organization](#).

## Uninstall App Launchpad

You can uninstall App Launchpad when you no longer need it or you must reconfigure your system.

To uninstall App Launchpad, run the following command:

```
rpm -e vmware-alp
```

If you install a new App Launchpad RPM afterwards, you do not need to reconfigure your system. The following files and directories remain on the server machine after the uninstall process:

- /etc/ALPEnvironments
- /etc/ALPSystem
- /opt/vmware/alp/

To remove App Launchpad completely or if you want to perform a complete re-configuration of App Launchpad, you must remove these files and directories manually.

If you have configured a highly available environment, verify that all App Launchpad server nodes apply the same configurations after re-installation. See [Configure Highly Available Environment of App Launchpad Instances](#).

# Upgrade App Launchpad

## 5

You can perform an in-place upgrade directly to App Launchpad 2.0.0.1 from versions 2.0 and 1.0.

### Procedure

- 1 Download the App Launchpad RPM package file to a location that is accessible from the App Launchpad machine.
- 2 Open an SSH connection to the App Launchpad machine and log in as root.
- 3 Replace the RPM package.

```
rpm -U /path-to-new-RPM/vmware-alp-version_number-build_number.x86_64.rpm
```

- 4 Upgrade App Launchpad.

If you are upgrading from version 1.0 to version 2.0.0.1, run the following command.

```
alp upgrade --admin-user=Cloud-Director-system-administrator@system --admin-pass='Cloud-Director-system-administrator-pass'
```

If you are upgrading from version 2.0, you do not need to provide credentials of a system administrator. Run the `alp upgrade` command.

- 5 Restart the App Launchpad service.

```
systemctl restart alp
```