

VMware Telco Cloud Automation Deployment Guide

VMware Telco Cloud Automation 1.9

VMware Telco Cloud Automation Control Plane 1.9.0

VMware Telco Cloud Automation Manager 1.9.0

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

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

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About This Guide

VMware[®] Telco Cloud Automation has two component services: VMware Telco Cloud Automation Manager and VMware Telco Cloud Automation Control Plane (TCA-CP). The *VMware Telco Cloud Automation Deployment Guide* describes how to plan for installation of these components and how to deploy them. It includes step-by-step installation and activation procedures.

Intended Audience

This information is for anyone who wants to deploy and activate the VMware Telco Cloud Automation Manager and TCA-CP services. For information on how to use VMware Telco Cloud Automation, see the *VMware Telco Cloud Automation User Guide*.

VMware Technical Publications Glossary

VMware Technical Publications provides a glossary of terms that might be unfamiliar to you. For definitions of terms used in the VMware technical documentation, go to <http://www.vmware.com/support/pubs>.

Overview

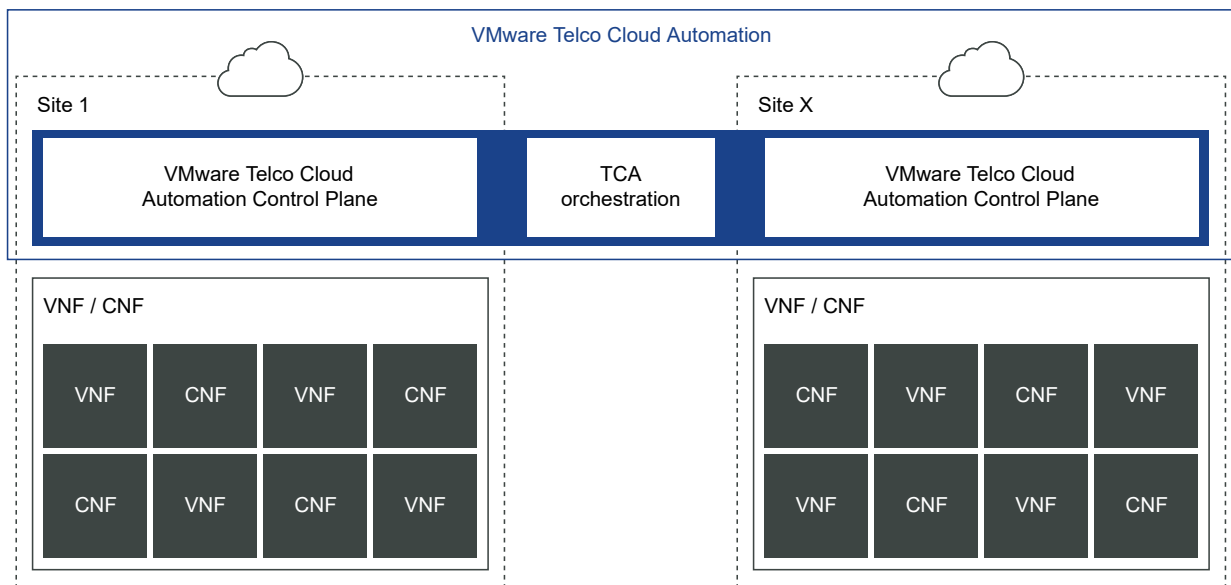
1

The VMware Telco Cloud Automation Control Plane (TCA-CP) and VMware Telco Cloud Automation Manager components work together to provide VMware Telco Cloud Automation services.

VMware Telco Cloud Automation has various benefits:

- Multi-cloud operational management, simplifying the design, onboarding, and management of both network functions and services across data centers and tenants of the Telco Cloud.
- Streamlining of the CSP orchestration with a native integration into VMware cloud technologies.
- Building Telco Cloud architectures with open multi-vendor Telco Cloud eco systems.

VMware Telco Cloud Automation Manager provides orchestration and management services for Telco clouds. Through VMware Telco Cloud Automation, you connect the virtual infrastructure in the Telco edge, aggregation, and core sites using VMware Telco Cloud Automation Control Plane.



VMware Telco Cloud Automation Control Plane (TCA-CP) provides the infrastructure abstraction for placing workloads across clouds using Telco Cloud Automation. VMware Telco Cloud Automation Control Plane supports the following virtual infrastructure manager (VIM) types: vCenter Server, vCloud Director, VMware Integrated Open Stack, and Kubernetes.

This guide provides the instructions for installing and activating both the TCA-CP and Telco Cloud Automation Manager components. For information about using VMware Telco Cloud Automation, see the *VMware Telco Cloud Automation User Guide*.

Planning for Installation

2

Deploying the TCA-CP and VMware Telco Cloud Automation Manager appliances require information about your vCenter Server sites, networks, and configurations.

Note To ensure high availability, deploy the TCA-CP and VMware Telco Cloud Automation Manager appliances on a vSphere HA-enabled cluster. When the primary ESXi host where the virtual machine is deployed becomes unavailable, vSphere HA migrates the virtual machine to a secondary ESXi host and the appliances are restored. Restoration time can vary according to the environment, but ideally, it takes between 5 and 10 minutes to restore the appliances and its services. For more information about vSphere HA, see <https://docs.vmware.com/en/VMware-vSphere/7.0/com.vmware.vsphere.avail.doc/GUID-33A65FF7-DA22-4DC5-8B18-5A7F97CCA536.html>.

Collecting the required configuration details in advance can greatly reduce the time and resources to deploy. Use the checklists provided in this document for pre-installation planning.

Installation Checklist

This installation checklist applies to both TCA-CP and VMware Telco Cloud Automation Manager.

Note If you are installing TCA-CP with VMware Cloud Director, gather additional information as listed in "Installation Checklist for VMware Cloud Director."

Checklist item	Details
Software versions	Verify that VMware software versions meet the minimum requirements. See Chapter 5 Software Version Support and Interoperability .
License key	Obtain the key from your VMware account team.
Installer OVA downloaded	Download the installer OVA before the installation date.
Service account available on vCenter	Verify that a service account with administrator privileges exists in the vCenter.

Checklist item	Details
NSX preparation and credentials	(Not required for installing VMware Telco Cloud Automation Manager) <ul style="list-style-type: none"> ■ Determine that all hosts in the cluster are NSX prepared and the transport zone is known. ■ Verify the NSX Manager credentials, which are required to pair TCA-CP with the NSX Manager.
Cluster or Resource Pool name	Confirm the location where the components are deployed.
Network name	Identify the Distributed Virtual Port Group name to which the TCA-CP connects.
IP address for component Manager	Confirm the IP address assigned to the TCA-CP or VMware Telco Cloud Automation Manager component on the Management VLAN.
Prefix length	Confirm the prefix length of the Management VLAN.
Gateway IP address	Confirm the IP address of the Management VLAN gateway.
Datastore	Identify the datastore where the TCA-CP and VMware Telco Cloud Automation Manager components are deployed. Each requires a minimum of 60 GiB.
DNS Server	Verify the IP address and hostname of the DNS Server. Name resolution is required for activation and for the VMware Telco Cloud Automation components.
Network Time Protocol Server name	Verify the IP address and hostname of the NTP Server. Time synchronization is required for activation and for the VMware Telco Cloud Automation components. <p>Note All vSphere components must be synchronized using NTP.</p>
vRealize Orchestrator credentials	Gather the administrative credentials for vRealize Orchestrator.

Installation Checklist for VMware Cloud Director Deployments

Gather these installation details when installing TCA-CP in VMware Cloud Director environments.

Checklist Item	Details
Org quotas	Take note of Quotas present on the Org. For example, this quota can be a virtual machine limit. Determine how many vCenters and NSX servers are configured in VMware Cloud Director.
VMware Cloud Director credentials	Gather the system administrator credentials for configuring TCA-CP with VMware Cloud Director.
vCenter and NSX credentials	Gather the administrative credentials for both the vCenter Server and NSX Manager.

Checklist Item	Details
vRealize Orchestrator credentials	Gather the administrative credentials for vRealize Orchestrator.
VMware Cloud Director notifications	<ul style="list-style-type: none"> ■ Determine if RabbitMQ (RMQ) is enabled in VMware Cloud Director. ■ Identify the RMQ type. Only non-SSL or SSL with credentials is supported. ■ Gather the RMQ Notifications user name and password.
VMware Cloud Director public addresses	<p>Determine if VMware Cloud Director public addresses are set:</p> <ul style="list-style-type: none"> ■ API: VMware Cloud Director secure public REST API base URL ■ API: VMware Cloud Director secure public REST API certificate chain ■ Web Console: VMware Cloud Director secure public URL ■ Web Console: VMware Cloud Director secure certificate chain

System Requirements

3

Before installing or deploying VMware Telco Cloud Automation Manager and TCA-CP, consider the minimum required resources for each component appliance and the deployment scaling requirements.

Resource Requirements

Component	vCPU	Memory	Disk Space/IOPS
VMware Telco Cloud Automation Manager	4	12 GB	60 GB
TCA-CP	4	12 GB	60 GB

Scaling Requirements

For detailed configuration limits, see <https://configmax.vmware.com/home>.

Component	VIM	Scaling Requirement
VMware Telco Cloud Automation Manager	Not applicable	One per Telco Central Site.
TCA-CP	VMware vSphere Server with CaaS Infrastructure	One per VIM. The number of Kubernetes clusters deployed per VIM depends on the VMware Telco Cloud Automation version. For the latest configuration limits, see https://configmax.vmware.com/home .
TCA-CP	VMware vSphere Server	One per VIM.
TCA-CP	VMware Cloud Director	One per VMware Cloud Director. Note Providing TCA-CP on one VMware Cloud Director covers all organizations associated with that VMware Cloud Director.

Component	VIM	Scaling Requirement
TCA-CP	VMware Integrated Open Stack (VIO)	One per VIM.
TCA-CP	Kubernetes cluster	<p>The number of Kubernetes Clusters deployed per TCA-CP depends on the VMware Telco Cloud Automation version. For the latest configuration limits, see https://configmax.vmware.com/home.</p> <p>For clusters that are not deployed through VMware Telco Cloud Automation, a single TCA-CP appliance can manage up to 30 Kubernetes clusters.</p>

Ports and Protocols

4

VMware Telco Cloud Automation is accessed through predetermined TCP and UDP ports. If you manage network components from outside a firewall, you might be required to reconfigure the firewall to allow access on the appropriate ports.

For the list of all supported ports and protocols in VMware Telco Cloud Automation, see the VMware Ports and Protocols Tool™ at <https://ports.vmware.com/home/VMware-Telco-Cloud-Automation>.

Software Version Support and Interoperability

5

This interoperability information defines the qualified components and software versions you can use with VMware Telco Cloud Automation.

The following tables describe the supported cloud types, Kubernetes Cluster, and Tanzu Kubernetes Grid versions for vSphere clouds, and vRealize Orchestrator versions.

Table 5-1. VMware vSphere

Cloud Version	vSphere Version	NSX Type	NSX Version
6.7	6.7	NSX-T	2.5.1
7.0	7.0	NSX-T	3.0.2
7.0 U1	7.0 U1	NSX-T	3.1
7.0 U2	7.0 U2	NSX-T	3.1.1

Table 5-2. Kubernetes and Tanzu Kubernetes Grid Support for vSphere Cloud

vSphere Cloud Version	Tanzu Kubernetes Grid (TKG) Version	Kubernetes Version	
		Management Cluster	Workload Cluster
6.7	1.3	1.20.4	1.17.16, 1.18.16, 1.19.8, 1.20.4
7.0	1.3	1.20.4	1.17.16, 1.18.16, 1.19.8, 1.20.4
7.0 U1	1.3	1.20.4	1.17.16, 1.18.16, 1.19.8, 1.20.4
7.0 U2	1.3	1.20.4	1.17.16, 1.18.16, 1.19.8, 1.20.4

Table 5-3. VMware Cloud Director and RabbitMQ

VMware Cloud Director Cloud Version	vSphere Version	NSX Type	NSX Version	Other Components
9.7	6.5	NSX-V	6.4.6	RabbitMQ - 3.7+
9.7	6.7	NSX-V	6.4.6	RabbitMQ - 3.7+
9.7.03	6.7 U3	NSX-T	2.5.0	RabbitMQ - 3.7+
10	6.5	NSX-T	2.5.0	RabbitMQ - 3.7+
10	6.7	NSX-T	2.5.1	RabbitMQ - 3.7+
10.1	6.7	NSX-T	2.5.1	RabbitMQ - 3.7+

Table 5-3. VMware Cloud Director and RabbitMQ (continued)

VMware Cloud Director Cloud Version	vSphere Version	NSX Type	NSX Version	Other Components
10.1.1	7.0	NSX-T	3.0	RabbitMQ - 3.7+
10.1.2	7.0	NSX-T	3.0.2	RabbitMQ - 3.7+
10.2	7.0	NSX-T	3.1	RabbitMQ - 3.7+

Table 5-4. VMware Integrated OpenStack

VMware Integrated OpenStack Cloud Version	vSphere Version	NSX Type	NSX Version
7	7.0	NSX-T	3.0.2
7.0.1	7.0 U1	NSX-T	3.1

Table 5-5. Kubernetes

Kubernetes Version	vSphere Version	NSX Type	NSX Version
1.17	6.5–7.0	NSX-T	2.5.x - 3.1
1.18	6.5–7.0	NSX-T	2.5.x - 3.1
1.19	6.5–7.0	NSX-T	2.5.x - 3.1
1.20	6.5–7.0	NSX-T	2.5.x - 3.1

Table 5-6. vRealize Orchestrator Supported Versions

vRealize Orchestrator Version
7.4.0
7.5.0
7.6.0
8.0
8.0.1
8.1
8.2
8.3

Installing the System

6

This section describes how to install and activate TCA-CP and VMware Telco Cloud Automation Manager components.

This chapter includes the following topics:

- [Downloading the VMware Telco Cloud Automation OVA File](#)
- [Deploying the VMware Telco Cloud Automation OVA in the vSphere Client](#)
- [Activating Your Appliances](#)
- [Configuring the Appliances](#)

Downloading the VMware Telco Cloud Automation OVA File

To deploy the component software in the vCenter Server, download the VMware Telco Cloud Automation OVA file.

The VMware Telco Cloud Automation OVA is a single file with two components for deployment – VMware Telco Cloud Automation Control Plane (TCA-CP) and VMware Telco Cloud Automation Manager. Deploy the TCA-CP component on each managed infrastructure and deploy VMware Telco Cloud Automation Manager once. The VMware Telco Cloud Automation Manager acts as a central control manager.

To download the OVA file, perform the following steps:

Procedure

- 1 Navigate to <https://downloads.vmware.com>.
- 2 Scroll down to **VMware Telco Cloud Automation** under **Infrastructure & Operations Management**.
- 3 Click **Download Product** against **VMware Telco Cloud Automation**.
- 4 In the Download VMware Telco Cloud Automation page, click **Go to Downloads** against **VMware Telco Cloud Automation**.
- 5 Against **VMware Telco Cloud Automation <version>** , click **Download Now**.

Results

This VMware Telco Cloud Automation OVA file updates itself to the most current service updates.

Deploying the VMware Telco Cloud Automation OVA in the vSphere Client

To Deploy the VMware Telco Cloud Automation OVA file, perform a standard OVF template deployment through the vSphere Client.

Prerequisites

Ensure that you have downloaded the VMware Telco Cloud Automation OVA file.

Procedure

- 1 Right-click any inventory object that is a valid parent object of a virtual machine, such as a data center, folder, cluster, resource pool, or host, and select **Deploy OVF Template**.
- 2 On the **Select an OVF template** page, browse and select the <filename>.ova file, and click **Next**.
- 3 On the **Select a name and folder** page, enter an unique virtual machine name and the inventory location. Click **Next**.
- 4 On the **Select a compute resource** page, select a compute resource location, and click **Next**.
- 5 On the **Review details** page, verify the OVA template details, and click **Next**.
- 6 On the **License agreements** page, read and accept the VMware End User License Agreement, and click **Next**.
- 7 On the **Select storage** page, select the virtual disk format, storage policy, storage name, and then click **Next**.
- 8 On the **Select networks** page, select the destination network, and click **Next**.
- 9 On the **Customize Template** page. set the appropriate deployment properties:
 - **Passwords** - Configure the CLI Admin password and Root user password.
 - **Network Properties** - Enter the network properties for the default gateway. Optionally, provide the IPv4 gateway, IPv6 gateway, the prefix length, and gateway IP address for any network that cannot be accessed through the default gateway.
 - **Host Name** - Enter a host name for the virtual machine that you are installing.
 - **Enable DHCP for IPv4** - Select the check box to enable DHCP for IPv4. If DHCPv4 is enabled, the IPv4 address, IPv4 prefix length, and the IPv4 gateway fields are ignored. For an IPv6-only configuration, disable DHCPv4 and leave the IPv4 address field empty.

- **Network 1 IPv4 Address** - Enter the IPv4 address for this interface.
- **Network 1 IPv4 Prefix Length** - Enter the IPv4 prefix length for this interface.
- **Default IPv4 Gateway** - Enter the default IPv4 gateway address for this virtual machine.
- **Enable DHCP for IPv6** - Select the check box to enable DHCP for IPv6. If DHCPv6 is enabled, the IPv6 address, IPv6 prefix length, and the IPv6 gateway fields are ignored. For an IPv4-only configuration, disable DHCPv6 and leave the IPv6 address field empty.
- **Network 1 IPv6 Address** - Enter the IPv6 address for this interface.
- **Network 1 IPv6 Prefix Length** - Enter the IPv6 prefix length for this interface.
- **Default IPv6 Gateway** - Enter the default IPv6 gateway address for this virtual machine.
- **Static Routes** - Add a static route for a destination subnet or host.
- **DNS**
 - **DNS Server List** - Enter the list of DNS servers for this virtual machine.
 - **Domain Search List** - Domains that you enter are searched in the order you list them, and the search stops when a valid name is found.
- **Services Configuration**
 - Optional. **Configure Appliance Role** - Select an appliance role from the drop-down menu. The options are:
 - **Control Plane** - VMware Telco Cloud Automation Control Plane (TCA-CP)
 - **Manager** - VMware Telco Cloud Automation Manager

If you do not make a selection now, you are prompted to select a role during the initial configuration.
 - **NTP Server List** - Enter the list of NTP servers and ensure that the NTP server can be reached from the virtual machine. If the NTP time is out of sync, services fail to start.

10 Click **Next**.

11 Review the deployment settings and click **Finish**.

What to do next

- Allow up to 5 minutes for initialization, then browse to the appliance management interface for the initial activation using `https://tca-ip-or-fqdn:9443`.

Activating Your Appliances

After you have deployed the VMware Telco Cloud Automation OVA file, activate the appliances and perform the initial configuration immediately when you next open the appliance management interface.

Activate VMware Telco Cloud Automation Manager

VMware Telco Cloud Automation Manager is the user interface used to orchestrate your NFVs and automate their deployments and configurations.

Prerequisites

Deploy the VMware Telco Cloud Automation OVA. After deploying, allow up to five minutes for the services to initialize.

Procedure

- 1 Browse to the appliance management interface and log in using the admin user credentials.

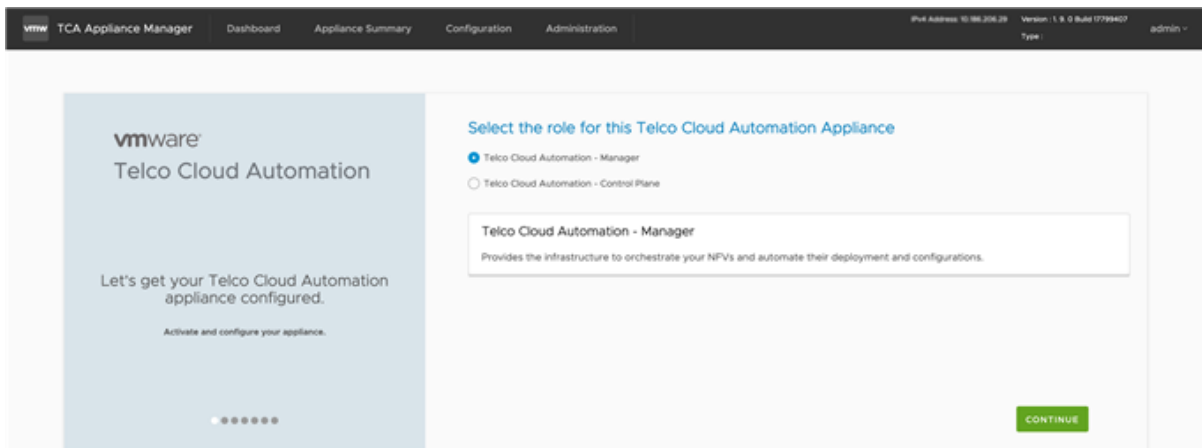
Browse to `https://tca-ip-or-fqdn:9443`.

After you log in, the installation welcome screen appears.

- 2 Click **Continue**.

The **Select the role for this Telco Cloud Automation Appliance** screen appears.

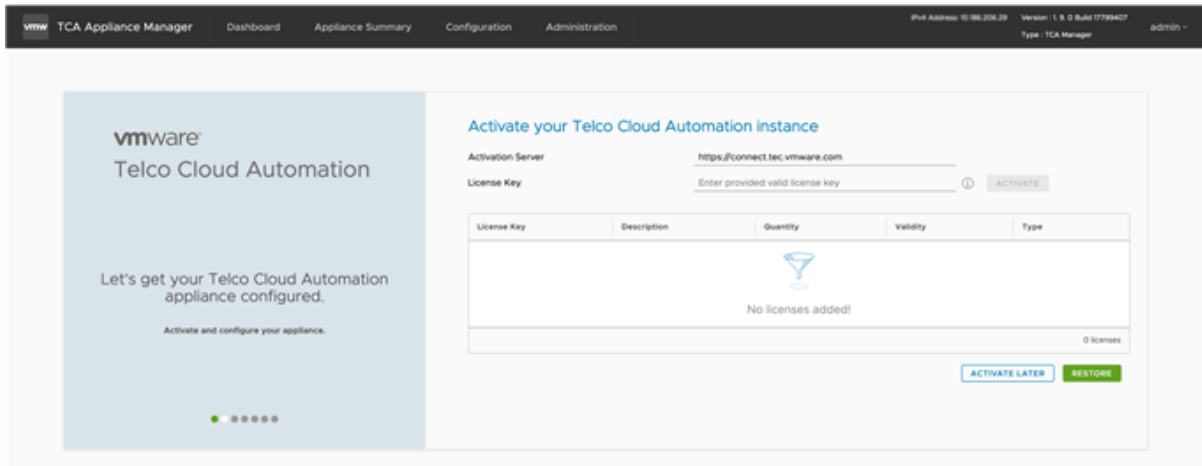
- 3 Select **Telco Cloud Automation - Manager** and click **Continue**.



- 4 In the **Activate your Telco Cloud Automation instance** screen:

- If you want to activate the instance of the VMware Telco Cloud Automation, enter the license key and click **Activate**.
- If you want to activate the VMware Telco Cloud Automation instance at a later stage, click **Activate later**. When you click **Activate Later**, the system navigates to the **Configuration** tab for configuring the datacenter location.

- To restore an earlier version of VMware Telco Cloud Automation, click **Restore**. The system navigates to the **Backup & Restore** tab for backup and restore operations.



Note If there is a proxy server in the environment for outbound HTTPS connections, you can configure it from the **Administration** tab. If you enter a proxy server, add the local vCenter Server, ESXi, NSX, SSO, and TCA-CP systems as exceptions not to be sent to the proxy server.

What to do next

Configure VMware Telco Cloud Automation Manager. See [Configure VMware Telco Cloud Automation Manager](#).

Activate VMware Telco Cloud Automation Control Plane

VMware Telco Cloud Automation Control Plane or TCA-CP is a component of VMware Telco Cloud Automation that provides the infrastructure to place workloads across clouds.

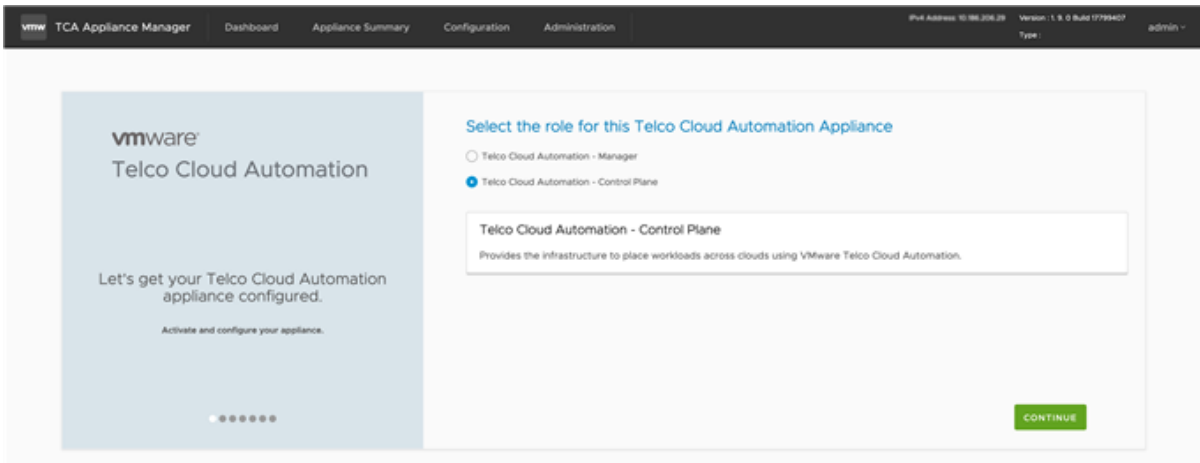
Prerequisites

Deploy the VMware Telco Cloud Automation OVA. After deploying, allow up to five minutes for the services to initialize.

Procedure

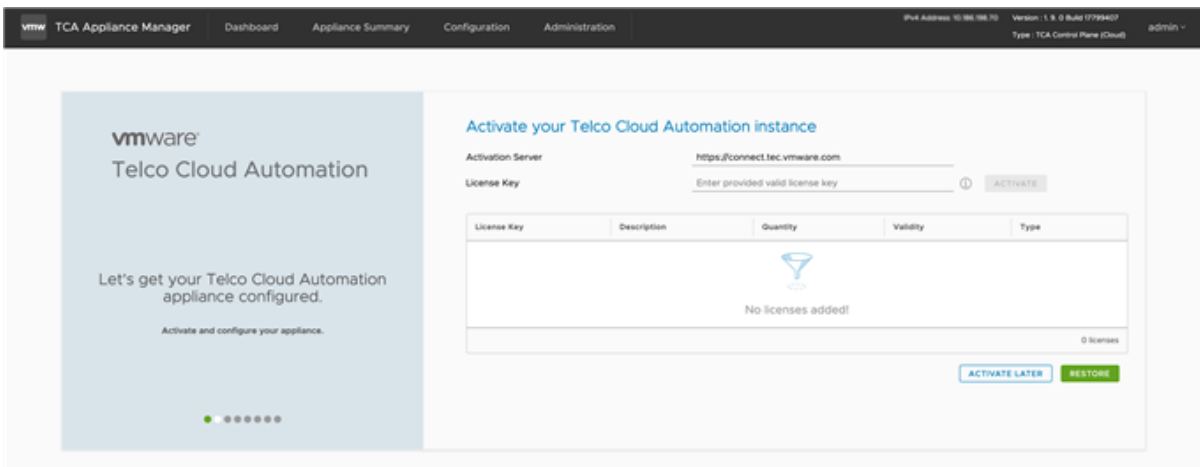
- 1 Browse to the appliance management interface and log in using the admin user credentials.
Browse to `https://tca-cp-or-fqdn:9443`.
After you log in, the installation welcome screen appears.
- 2 Click **Continue**.
The **Select the role for this Telco Cloud Automation Appliance** screen appears.

3 Select Telco Cloud Automation - Control Plane Appliance and click Continue.



4 In the Activate your Telco Cloud Automation instance screen:

- To activate the instance of the VMware Telco Cloud Automation, enter the license key and click **Activate**.
- To activate the VMware Telco Cloud Automation instance at a later stage, click **Activate later**. When you click **Activate Later**, the system navigates to the **Configuration** tab for configuring the datacenter location.
- To restore an earlier version of VMware Telco Cloud Automation, click **Restore**. The system navigates to the **Backup & Restore** tab for backup and restore operations.



Note If there is a proxy server in the environment for outbound HTTPS connections, you can configure it from the **Administration** tab. If you enter a proxy server, add the local vCenter Server, ESXi, NSX, SSO, and TCA-CP systems as exceptions not to be sent to the proxy server.

What to do next

Configure TCA-CP. See [Configure VMware Telco Cloud Automation Control Plane](#).

Configuring the Appliances

After you have activated the components, perform the initial configuration immediately when you next open the appliance management interface.

Configure VMware Telco Cloud Automation Manager

Configure VMware Telco Cloud Automation Manager.

Prerequisites

You must have selected VMware Telco Cloud Automation - Manager as the role and activated it.

Procedure

- 1 In the system location screen, enter the location where you are deploying the system.

Select the nearest major city to where the VMware Telco Cloud Automation system is geographically located. VMware Telco Cloud Automation sites are represented visually in the Dashboard.

- 2 Click **Continue**.

- 3 Enter the system name, and click **Continue**.

The system displays a screen prompting you for the vCenter Server information.

- 4 Enter the vCenter location and credentials, and click **Continue**.

The system displays a screen prompting you for the SSO URL.

- 5 Enter the SSO server URL, and then click **Continue**.

The SSO URL must be either the vCenter Server URL or the Platform Services Controller (PSC) URL.

The system verifies the information and generates a configuration summary.

- 6 Review the system summary information.

The system verifies the configuration and then generates a configuration summary.

- 7 To reload the system, click **Restart**.

It can take several minutes to reinitialize the system completely. During this process, the appliance management interface is not available.

To schedule a restart, click **Restart Later**.

Results

After the system reloads, it displays the appliance management dashboard. For more information about the dashboard, see [Understanding the Appliance Management Dashboard](#).

What to do next

For information on using VMware Telco Cloud Automation, see the *VMware Telco Cloud Automation User Guide*.

Configure VMware Telco Cloud Automation Control Plane

Configure VMware Telco Cloud Automation Control Plane (TCA-CP).

Prerequisites

You must have selected **VMware Telco Cloud Automation - Control Plane** as the role and activated it.

Note Import self-signed certificates from the **Administration > Trusted CA Certificates** tab.

Procedure

- 1 In the system location screen, enter the location where you are deploying the system.
Select the nearest major city to where the VMware Telco Cloud Automation system, is geographically located. VMware Telco Cloud Automation sites are represented visually in the Dashboard.
- 2 Click **Continue**.
A screen appears prompting you for a system name.
- 3 Enter the system name, and click **Continue**.
A screen appears prompting you to select the cloud instance type.
- 4 Select the cloud instance to which TCA-CP is connected: vSphere, vCloud Director, VMware Integrated OpenStack, or Kubernetes. Click **Continue**.

Note TCA-CP can connect to only one cloud instance per deployment.

5 Enter the configuration details of the selected cloud instance.

After entering the information, click **Continue** to proceed to the next screen.

Cloud Instance	Configuration Parameters
<p>vSphere</p>	<p>a Enter the vCenter Server and NSX details:</p> <ol style="list-style-type: none"> 1 vCenter Server <ul style="list-style-type: none"> ■ vCenter URL ■ User name ■ Password 2 Enter the NSX details: <ul style="list-style-type: none"> ■ NSX URL ■ User name ■ Password <p>b Enter the SSO details:</p> <ul style="list-style-type: none"> ■ vCenter Server or Platform Services Controller URL <p>c Enter the VMware vSphere role-mapping details.</p> <p>d Enter the vRealize Orchestrator details.</p>
<p>VMware Cloud Director</p>	<p>a Enter the VMware Cloud Director details.</p> <ul style="list-style-type: none"> ■ VMware Cloud Director URL ■ System Administrator user name ■ System Administrator password <p>b Enter the vCenter Server and NSX details.</p> <hr/> <p>Note TCA-CP fetches the vCenter Server and NSX URLs automatically.</p> <ol style="list-style-type: none"> 1 vCenter Server <ul style="list-style-type: none"> ■ User name ■ Password 2 NSX <ul style="list-style-type: none"> ■ User name ■ Password <p>c Enter the AMQP details:</p> <hr/> <p>Note TCA-CP fetches the AMQP parameters automatically. Edit the parameters as appropriate.</p> <ul style="list-style-type: none"> ■ AMQP Hostname ■ Port ■ vHost ■ User name ■ Password ■ Use SSL <p>d Enter the vRealize Orchestrator details.</p>

Cloud Instance	Configuration Parameters
<p>VMware Integrated OpenStack</p>	<p>a Skip the OMS configuration.</p> <p>b Enter the Keystone URL and port number.</p> <p>c Enter the Domains and Projects details:</p> <hr/> <p>Note You can add Multiple VIO Domains and Projects.</p> <hr/> <p>1 Add New Domain.</p> <p>For each Domain, provide the following details.</p> <ul style="list-style-type: none"> ■ Domain Name (select from drop-down) ■ User name ■ Password ■ Projects (optional) <p>For each Domain, you can add multiple Projects.</p> <ul style="list-style-type: none"> ■ Project Name (select from drop-down) ■ User name ■ Password <p>d Enter the vCenter and NSX details:</p> <p>1 vCenter Server</p> <ul style="list-style-type: none"> ■ vCenter URL ■ User name ■ Password <p>2 NSX</p> <ul style="list-style-type: none"> ■ NSX URL ■ User name ■ Password <p>e By default, external access to RabbitMQ Advanced Message Queuing Protocol (AMQP) is disabled in VMware Integrated OpenStack. To enable RabbitMQ, perform the following steps:</p> <p>1 Log in to the OMS server through SSH and run the following command:</p> <pre>kubectl edit service rabbitmq -n openstack</pre> <p>2 Update the type from ClusterIP to NodePort.</p> <p>3 Fetch the port number on which RabbitMQ is running. Run the following command:</p> <pre>kubectl get svc -n openstack grep 'rabbitmq ' awk {'print\$5'} cut -d '/' -f1 cut -d ':' -f2</pre> <p>4 The user name to enter into RabbitMQ is rabbitmq.</p> <p>5 To fetch the password, run the following command:</p> <pre>kubectl -n openstack get secret managedpasswords -o yaml grep rabbit_password awk {'print \$2'} base64 -decode</pre> <p>The vHost value is / always.</p> <p>f Enter the vRealize Orchestrator details.</p>
<p>Kubernetes</p>	<p>a URL - Kubernetes Master API Server URL.</p>

Cloud Instance	Configuration Parameters
	<ul style="list-style-type: none"> b Cluster Name - Logical name that uniquely identifies this cluster. c Kubernetes Configuration - The kubeconfig YAML file for authentication. d Enter the vRealize Orchestrator details.

6 Review the system summary information.

The system verifies the configuration and then generates a configuration summary.

7 To reload the system, click **Restart**.

It can take several minutes to reinitialize the system completely. During this process, the appliance management interface is not available.

To schedule a restart, click **Restart Later**.

Results

After the system reloads, it displays the appliance management dashboard. For more information about the dashboard, see [Understanding the Appliance Management Dashboard](#).

What to do next

For information on using VMware Telco Cloud Automation, see the *VMware Telco Cloud Automation User Guide*.

Managing System Settings

7

Use the appliance management interface for viewing, configuring, and managing system-level functions.

The appliance management interface is reached by navigating to the management port: `https://tca-ip-or-fqdn:9443`. This interface uses the system administration credentials set up during the OVA deployment.

The appliance management interface provides access to the system Dashboard, Appliance Summary, Configuration, and Administration information.

This chapter includes the following topics:

- [Network Ports and Protocols](#)
- [Understanding the Appliance Management Dashboard](#)
- [Updating the Time Settings](#)
- [Updating the System Name](#)
- [Managing CA and Self-Signed Certificates](#)
- [Reboot an Appliance](#)
- [Change Appliance Password](#)
- [Update License Key](#)
- [Backing Up and Restoring the System](#)
- [Technical Support Logs](#)

Network Ports and Protocols

To enable connections between devices, configure these ports in your environment.

Activation and Service Updates

This table lists the required connections for activation, publishing system updates, and enhanced support.

The perimeter firewall controlling internet-bound traffic must be configured to allow the following connections.

Source	Destination	Service	Purpose
TCA-CP	<ul style="list-style-type: none"> ■ connect.tec.vmware.com ■ hybridity-depot.vmware.com 	TCP-443	<ul style="list-style-type: none"> ■ Activation and entitlement. ■ Access to published TCA-CP updates.
VMware Telco Cloud Automation Manager	<ul style="list-style-type: none"> ■ connect.tec.vmware.com ■ hybridity-depot.vmware.com 	TCP-443	<ul style="list-style-type: none"> ■ Activation and entitlement. ■ Access to published VMware Telco Cloud Automation Control Plane updates.
VMware Telco Cloud Automation Manager	TCA-CP	TCP-443	VIM configuration and management.

TCA-CP Connections

Allow these connections between TCA-CP and the local VIM environment.

Source	Destination	Service	Purpose
TCA-CP	vCenter Server	TCP-443	vSphere SSO Lookup Service
TCA-CP	ESXi host	TCP-443	
TCA-CP	NSX Manager	TCP-443	NSX API
TCA-CP	VMware Cloud Director	TCP-443	vCD API access
TCA-CP	AMQP/RabbitMQ Broker	TCP-5671/5672	Advanced Message Queue Protocol (SSL or non-SSL notifications)
TCA-CP	vRealize Orchestrator	TCP-8281	vRealize Orchestrator integrations
Web Portal	TCA-CP	TCP-443	VMware Telco Cloud Automation UI
Web Portal	TCA-CP	TCP-9443	VMware Telco Cloud Automation UI

Telco Cloud Automation Environment Connections

Allow these connections between VMware Telco Cloud Automation and local environments.

Source	Destination	Service	Purpose
VMware Telco Cloud Automation	vCenter Server	TCP-443, TCP-7444	vSphere SSO Lookup Service
VMware Telco Cloud Automation	SVNFM	TCP-443	SVNFM integration

Source	Destination	Service	Purpose
Web portal	VMware Telco Cloud Automation	TCP-443	VMware Telco Cloud Management service UI
Web portal	VMware Telco Cloud Automation	TCP-9443	Telco Cloud Management appliance management UI

Management Services Connections

The perimeter firewall controlling internet-bound traffic must be configured to allow the following connections.

Source	Destination	Service	Purpose
TCA-CP	DNS Server	TCP-53	Name services
TCA-CP	NTP Server	TCP-123	Synchronized time
TCA-CP	DNS Server	TCP-53	Name services
TCA-CP	NTP Server	TCP-123	Synchronized time

Understanding the Appliance Management Dashboard

The system Dashboard provides access to status and services, configuration settings, and system-level administration tasks.

The Dashboard is the first screen that appears after you log in to the appliance management interface port (:9443). It provides access to various system management settings through a set of tabs at the top of the display.

Dashboard Tab	Description
Dashboard	<p>Displays the appliance status as a set of summary panels:</p> <ul style="list-style-type: none"> ■ System information and resource use ■ NSX status ■ vCenter status ■ SSO status ■ Public Access URL status <p>The panels visible in the display depend on the VMware Telco Cloud Automation Control Plane installation type. To change the configuration settings for a panel, click Manage. The system redirects you to the Configuration tab, where you can update the settings.</p>
Appliance Summary	<p>Displays the status of services running on the system:</p> <ul style="list-style-type: none"> ■ Hybridity Services ■ Common Services ■ System Level Services <p>Options are provided to stop and restart services. The list of services in the display varies based on the installation type.</p>

Dashboard Tab	Description
Configuration	<p>Displays the list of service configuration settings.</p> <ul style="list-style-type: none"> ■ Licensing ■ vCenter ■ vRealize Orchestrator ■ SSO ■ Public Access URL ■ vSphere Role Mapping ■ Data center location <p>To display the current settings, click an item in the list. To modify the current settings, click Edit.</p>
Administration	<p>Displays the list of system-level configuration settings.</p> <ul style="list-style-type: none"> ■ General Settings <ul style="list-style-type: none"> ■ Time Settings ■ Syslog Server ■ System Name ■ Network Settings <ul style="list-style-type: none"> ■ General Network ■ DNS Servers ■ Proxy ■ Static Routes ■ Troubleshooting <ul style="list-style-type: none"> ■ Technical Support ■ Logs ■ Upgrade ■ Back up & Restore ■ Certificate <ul style="list-style-type: none"> ■ Trusted CA Certificate ■ Server Certificate <p>To display or edit the settings, click an item.</p>

Updating the Time Settings

The system provides initial NTP Server settings during the OVA deployment in the vCenter Server. These settings can be updated in the appliance management interface.

Caution Editing NTP Settings requires restarting the Appliance Management Service. You can restart this service from within the **Appliance Summary** tab.

Editing and Removing the NTP Server Configuration

NTP Settings can be modified in the appliance management interface.

VMware Telco Cloud Automation Control Plane (TCA-CP) requires a valid NTP server synchronized time for integrated systems operations.

1 Navigate to the appliance management interface: <https://tca-cp-or-fqdn:9443>.

- 2 Navigate to the **Administration** tab.
- 3 Select **Time Settings** on the side menu, click **Edit** (or **Unconfigure NTP Servers**).
- 4 Enter the NTP server.
Multiple servers can be specified using a separated comma-separated list.
- 5 Navigate to the Appliance Summary tab in the dashboard, locate the Appliance Management Service, and click **Restart**.

Updating the System Name

The initial Hostname is provided during the OVA deployment. The system name can be updated in the Appliance Management interface.

Editing the System Name

- 1 Navigate to the Appliance Management interface `https://tca-cp-ip-or-fqdn:9443`.
- 2 Navigate to the **Administration** tab.
- 3 Select **System Name** on the side menu, then click **Edit**.
- 4 Enter the System Name. Click **Save**.

Managing CA and Self-Signed Certificates

Use the appliance management interface for adding or removing certificates from the system certificate store.

Importing Certificates with a Remote Site URL

To pair the sites when the remote system uses self-signed certificates, perform the following steps:

- 1 Navigate to the appliance management interface `https://tca-cp-ip-or-fqdn:9443`.
- 2 Navigate to the **Administration** tab.
- 3 Select **Certificate > Trusted CA Certificate** on the side menu.
- 4 Click **Import** and select the **URL** option.
- 5 Enter the URL for the target system.

Reboot an Appliance

You can reboot an appliance from the Appliance Management user interface.

Procedure

- 1 Navigate to the appliance management interface `https://tca-cp-ip-or-fqdn:9443`.

- 2 From the top-right corner of the screen, click Admin > Reboot.
- 3 From the confirmation screen, click Reboot.

Results

The appliance reboots.

Change Appliance Password

You can update the admin user password using the Appliance Management user interface.

Procedure

- 1 Navigate to the appliance management interface `https://tca-cp-ip-or-fqdn:9443`.
- 2 From the top-right corner of the screen, click Admin > Change Password.
- 3 In the Change Password screen, enter the new password and confirm it.
- 4 Click Update.

You are logged out of the Appliance Management user interface. Log in again using your new password.

Update License Key

You can update the license key in the Appliance Management interface.

Procedure

- 1 Navigate to the Appliance Management interface `https://tca-cp-ip-or-fqdn:9443`.
- 2 Navigate to the **Configuration** tab.
- 3 Select **Licensing** on the side menu.
- 4 In the Managing License Keys page, click the **Option** button (⋮) against the current activation license, and click **Edit**.

Manage License Keys

Activation Server `https://192.168.177.100`

License Key `Enter Upgrade License Key` **ADD**

License Key	Description	Validity	Type
Edit x-XXXXX-XXXXX-XXXXX	VMware Telco Cloud Automation - 9443 Edition (17%)	Perpetual License	ACTIVATION
1 license			

- 5 Enter the license key and click OK.

Edit License

YYYYY-YYYYY-YYYYY-YYYYY-YYYYY|

CANCEL

OK

Results

Your appliance license key is updated.

Backing Up and Restoring the System

You can back up and restore the appliance from the appliance management interface.

Backup and restore operations are available in the TCA Appliance Manager interface except when restricted by a cloud service provider.

Using the TCA Appliance Manager interface, you can:

- Generate a backup of the VMware Telco Cloud Automation Manager and VMware Telco Cloud Automation Control Plane (TCA-CP)
- Use the backup file to restore to a healthy system.
- Schedule a backup operation on an hourly, daily, or weekly frequency or generate a backup manually.
- Upload the backup file to an SFTP or FTP server.
- Download the backup file to your local machine.

Backing Up VMware Telco Cloud Automation Control Plane

You use the appliance management interface to create a backup file.

This operation backs up the following information:

- Inventory data
- Configuration files
- Certificates
- System UUID

The backup file is saved in the tar.gz format.

Procedure

1 Log in to the appliance management interface: <https://tca-cp-ip-or-fqdn:9443>.

2 Navigate to **Administration > Troubleshooting > Backup & Restore**.

3 (Optional) Set up an FTP server for uploading the backup file:

a Click the **FTP server setting** tab.

b Click **Add**.

Note The best practice to use a Linux-based OpenSSH host for file transfer operations.

c Enter the FTP server information and click **Save**.

Note Ensure that the backup directory path you provide is unique for every VMware Telco Cloud Automation appliance instance.

4 (Optional) Configure a backup schedule:

Note The best practice is to schedule **Daily** backups. Restoring from backup files that are more than two days old is not supported due to potential inventory changes from the backup time to present.

a Click the **Scheduling** tab.

b Click **Add**.

The scheduling window appears.

c Select the Backup Frequency.

d Enter the hour and minute of the backup.

e Click **Save**.

5 Click the **Backup and Restore** tab.

6 Click **Generate**.

If a backup schedule is configured, the system creates the backup file at the scheduled time.

7 For manual backups, save the backup file:

Note If you have scheduled backups, the system automatically generates the backup file at the scheduled time and saves the file to the FTP server.

◆ To save the generated file to an FTP server, select the box **Upload to server** .

◆ To download the generated file to the client browsing system, click **Download**.

Restoring the System

You use the appliance management interface to restore the system from a backup file. The restore operation is used in cases where the system has become corrupt or unusable due to resource or system failures.

This operation restores the appliance to the state it was in at the time of the backup. The contents of the backup file supersede configuration changes made before restoring the appliance.

Prerequisites

You have deployed a replacement system that is clean of prior configuration settings. The replacement system has the same software version and IP address as the original system.

Note A clean system deployment requires only the minimum configuration to be manageable and that the system is network reachable from the operator or client system.

Procedure

- 1 Log in to the appliance management interface: `https://tca-cp-ip-or-fqdn:9443`.
- 2 Navigate to **Administration > Troubleshooting > Backup & Restore**.
- 3 If backup files stored in a SFTP or an FTP server, the list is displayed under **Restore**.
- 4 Select the backup file to restore and click **Restore**.
- 5 If you have stored the backup file in a local repository, click **Choose File**, browse to the backup file, and open it.

Note Restoring from backup files that are more than two days old is not supported.

- 6 Click **Continue**.
The system verifies the uploaded file.
- 7 Click **Restore**.
The restoration begins. This process can take several minutes to complete.
- 8 Verify that the system is operating properly:
 - a Navigate to the **Dashboard** tab and confirm that the component status is green.
 - b Navigate to the **Appliance Summary** tab and ensure that the Hybridity Services, Common Services, and System Level Services are running.

Restoring the Appliance

Using the backup files, you can restore VMware Telco Cloud Automation Manager or VMware Telco Cloud Automation Control Plane (TCA-CP) to the state of the provided backup. To perform this operation, deploy the OVA of the appliance in the vSphere Client and log in to the Appliance Management console.

After deploying the OVA and logging in to the Appliance Management console, the role selection screen is displayed. In this example, we list the steps to restore the VMware Telco Cloud Automation Manager appliance.

Prerequisites

- You must have saved a backup file of the VMware Telco Cloud Automation in the `tar.gz` format.
- Before restoring an appliance, ensure that the virtual machine running its previous instance is powered down.

Procedure

- 1 In the role selection screen, select **Telco Cloud Automation - Manager**.
- 2 In the **Activate your Telco Cloud Automation instance** screen, click **Restore**.
The **Backup and Restore** screen is displayed.
- 3 Select and upload the VMware Telco Cloud Automation Manager backup `tar.gz` file. Click **Choose File**.
- 4 Click **Continue**.
The backup file is uploaded to the Appliance Manager.
- 5 Click **Restore**.

Results

The restore operation restores the database, configuration files, certificates, and network settings of the appliance to the settings in the `tar.gz` file.

Technical Support Logs

If VMware Telco Cloud Automation does not run as expected, you can collect the relevant logs for requesting technical support.

You can collect the following types of logs:

- Crash logs.
- MongoDB dump.

- Kubernetes Cluster logs.

Note

- Collect Workload cluster logs from the VMware Telco Cloud Automation Control Plane where you have deployed its corresponding Management cluster.
 - The time taken to collect Kubernetes Cluster logs depends on the number of objects within the clusters.
 - You can collect the logs of up to five Management clusters at a time.
-

Procedure

- 1 Log in to the appliance management interface: <https://tca-cp-or-fqdn:9443>.
- 2 Navigate to **Troubleshooting > Technical Support Logs**.
- 3 Select the logs.
- 4 For Kubernetes Cluster logs, select the Management cluster logs from the table. You can select up to five Management clusters.
- 5 Click **Generate**.