Apporto NextGen On-Premises Deployment Guide

Version: BETA

> The purpose of this document is to aid Apporto customers in setting up on-premises installations of Apporto NextGen software.
>
> *Last updated 21 May 2025*

Overview

Introduction

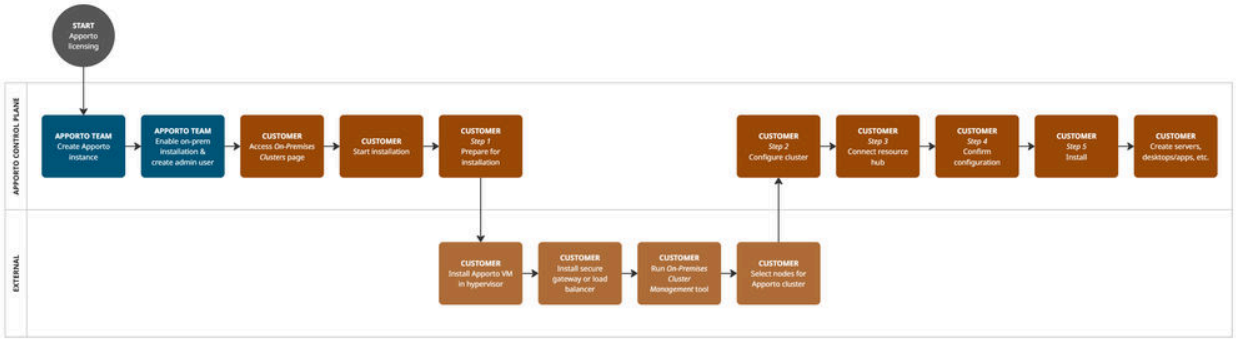
Apporto NextGen virtual desktop software is available for deployment to both cloud and on-premises environments. In both cases, the control plane is hosted in the cloud, making Apporto a hybrid system. This document details how an on-premises customer can connect their infrastructure to Apporto. Additional assistance may be provided by the Apporto Support team.

Product description

On-premises deployment of Apporto NextGen involves the following:

- Kubernetes clusters
  The cluster converts standard Remote Desktop Protocol (RDP) traffic to Apporto's Hyperstream. It consists of three (3) nodes deployed as virtual appliances.
- Apporto gateway appliance
  This appliance provides secure remote access for external users over https and balances loads across Apporto node connections. Use of the gateway is optional, but it is highly recommended for better streaming support and fault tolerance. Apporto can also use third-party gateways if preferred.
- Apporto load balancer
  This appliance balances loads for deployments of over 100 users or cases where internal users are not allowed to access their apps and desktops through the gateway. Similar to the gateway, the load balancer optional, and third-party load balancers may be used.

Deployment process



Prerequisites

To get started, ensure that the following prerequisites are met to ensure a successful deployment.

Browser requirements

Apporto is built to enable applications and desktops to run seamlessly via an HTML5/WebGL-compatible browser. This includes leading browsers like Google Chrome, Firefox, Safari, and Microsoft Edge.

While it may also function on other HTML-supporting browsers, Apporto validates its functionality against the latest releases of these four browsers. Google Chrome is recommended for optimal performance.

Apporto instance

Once your Apporto license has been executed, the Apporto team will set up your Apporto instance using the instance name (URL) determined during onboarding. Afterward, the Apporto Support team will provide your initial control plane login for configuration of your instance and desktops.

Hypervisors

Apporto NextGen can be deployed in a virtual environment on hypervisors or you may use physical servers.

Physical servers are not required unless customers have a desire to present physical GPU cards without the loss of performance and extra licensing fees associated with hypervisor pass-thru. Virtualized environments are recommended for the ability to utilize snapshots and automation for creation of virtual machines.

Apporto recommends that customers consider the capacity required to scale out the VDI / RDS deployment and Apporto node cluster as user adoption increases. For new deployments, a solid backup and disaster recovery plan is important to maintain a high level of service.

Apporto validates its functionality against the following hypervisors.

Hypervisor	Supported by Apporto
VMware vSphere	Version 6.5 Version 8.0 COMING SOON
Nutanix Prism	Operating system 6.5+
Proxmox Virtual Environment	Version 8.0+ COMING SOON

Some features might not be supported on all hypervisor platforms/versions. See the feature documentation for details.

Components

The following table lists the minimum requirements for the Apporto NextGen on-premises components.

Apporto appliance	Minimum each	Required
Apporto manager node	1vCPU, 4GB RAM, 50GB OS Disk, 50GB Data Disk	One is required per cluster
Apporto worker nodes	2vCPUs, 8GB RAM, 50GB OS Disk, 50GB Data Disk	At least two are required per cluster
Apporto gateway	1vCPU, 4GB RAM, 50GB Disk	Optional

Apporto load balancer	1vCPU, 4GB RAM, 50GB Disk	Optional

Virtual machines

Sizing guidelines

Apporto provides general guidance on sizing of virtual machines used to publish applications and desktops, though you may need to adapt things for your own environment and usage. It may help to refer to Microsoft's guidelines for sizing of workloads: Session host virtual machine sizing guidelines for Azure Virtual Desktop and Remote Desktop Services .

Workload types

Users can run different types of workloads on the session host virtual machines. The following table shows examples of a range of workload types to help you estimate what size your virtual machines need to be. After you set up your virtual machines, you should continually monitor their actual usage and adjust their sizes accordingly.

Workload	Example users	Example applications
Light	Users performing data entry tasks	• Data entry application • Command line interface
Medium	Consultants and market researchers	• Data entry application • Command line interface • Client server apps • Microsoft Word • Static web pages
Heavy	Software engineers, content creators	• Data entry application • Command line interface • Client server apps • Microsoft Word • Static web pages • Dynamic web pages • Microsoft Outlook • Software development
Power	Graphic designers, 3D engineers, machine learning research	• Data entry application • Command line interface • Client server apps • Microsoft Word • Static web pages • Dynamic web pages • Microsoft Outlook • Software development • Photo/video editing • CAD/CAM • Machine learning

Single-session VMs

Single-session VMs have only one user signed in to a session host VM at a time. For single-session VM, we suggest following Microsoft's recommendation of at least two physical CPU cores per VM, typically four vCPUs with hyper-threading. If you need more specific VM sizing recommendations for single-session scenarios, ask the software vendors specific to the applications running on your single-session VM to determine requirements. Sizing for single-session VMs usually aligns with physical device guidelines.

Workload type	Minimum vCPU / RAM / OS storage requirements
Light	2vCPUs, 4GB RAM, 32GB Disk
Medium	4vCPUs, 8GB RAM, 32GB Disk
Heavy	4vCPUs, 16GB RAM, 32GB Disk
Power	8vCPUs, 32GB RAM, 32GB Disk

Multi-session VMs

Multi-session VMs have more than one user signed into a session host VM at a time. For example, when you use server pools with the Windows Server 2022 multi-session operating system (OS), that's a multi-session deployment.

The following table lists the maximum suggested number of users per virtual central processing unit (vCPU) and the minimum VM configuration for standard or larger user workload.

Workload type	Maximum users per vCPU	Minimum vCPU / RAM / OS storage requirements
Light	6	8vCPUs, 16GB RAM, 32GB Disk
Medium	4	8vCPUs, 16GB RAM, 32GB Disk
Heavy	2	8vCPUs, 16GB RAM, 32GB Disk
Power	1	6vCPUs, 32GB RAM, 32GB Disk

Apporto recommends all multi-session VMs have more than two (2) cores. The user interface components in Windows rely upon the use of at least two parallel threads for some of the heavier rendering operations. Four (4) cores are the lowest recommended number of cores that a multi-session VM should have for best performance.

Multi-session VMs should not have more than thirty-two (32) cores. As the number of cores increases, the system's synchronization overhead also increases. For most workloads, over sixteen (16) cores results in a lower return on investment with most of the extra capacity offset by the synchronization overhead. User experience is better with two 16-core VMs instead of a single thirty-two (32) core VM.

Network

IP addresses

Each deployed component will require a static IP address to be assigned during configuration.

Fully qualified domain names (FQDNs)

FQDNs--including for Apporto's rdp-mgmt-gateway--must be configured for the hyperstream endpoints that will connect to your load balancer or gateway.

Required ports

The following are a list of common network ports used by Apporto NextGen. Ensure that your firewall allows the required traffic flow for the various components.

Source	Destination	Type	Port	Details
Apporto nodes	Apporto portal instance	TCP	443	Outbound connectivity to Apporto Control Plane
	VMware vCenter	TCP	443	Communications with VMware vCenter
	Nutanix Prizm	TCP	9440	Communications with Nutanix AHV
	Active Directory	TCP	636	LDAPS SSL connection
	DNS	TCP, UDP	53	Communication with DNS Server
	NTP	UDP	123	Used for NTP synchronization
	VDI / RDSH Servers	TCP	3389	Used for RDP connectivity to single-session and multi-session VMs
External users	Apporto gateway	TCP	443	External remote access over HTTPS
Internal users	Apporto load balancer / Apporto nodes floating IP	TCP	443	Internal access over HTTPS
Apporto gateway / Apporto load balancer	DNS	TCP, UDP	53	Communication with DNS server
	NTP	UDP	123	Used for NTP synchronization
	Apporto nodes	TCP	30443	Used for Hyperstream channels

SSL certificates

Apporto NextGen requires SSL certificates to secure all traffic. If you're using your own gateway or load balancer, install an SSL certificate within your appliance. If you will be using an Apporto-supplied gateway, contact Apporto Support for information on how to set up your certificate.

Licensing

Windows support is covered in this Beta release. Linux and Mac OS will be addressed in future versions.

In addition to your Apporto license, you should ensure you have the appropriate Microsoft licenses required when planning to utilize a single-session or multi-session virtual desktop deployment. Similarly, you should verify licensing compliance for any third-party applications running in the VDI or RDS environments.

Apporto provides general recommendations for Microsoft licenses. Consult your Microsoft licensing partner or Microsoft's licensing documentation for the latest requirements and compliance guidelines for your specific usage.

Scenario	Required licenses
RDS on Windows Server	Windows Server license RDS CALs (per user or per device) Office/M365 licenses (if needed)

VDI on Windows 10/11	Windows Enterprise E3/E5 Microsoft 365 E3/E5 or Windows VDA standalone Office/M365 licenses (if needed) Windows 11 volume licenses + SA (if needed)

Group policy settings

To optimize the performance and functionality of Remote Desktop Services (RDS) servers and VDI desktops in an Apporto deployment, specific settings must be configured. Apporto recommends configuring the following policy settings and applying them to the RDS servers and VDI desktops.

Apporto RDS/VDI settings

Use the table below to help you configure your system to work with Apporto.

Category	**Setting**	**Recommended value**
Remote session environment	Configure compression for RemoteFX data	Enabled
Remote session environment	RDP compression algorithm	Optimized to use less network bandwidth
Remote session environment	Configure H.264/AVC hardware encoding for remote desktop connections	Enabled
Remote session environment	Configure image quality for RemoteFX adaptive graphics	Enabled
Remote session environment	Image quality	Medium
Remote session environment	Configure RemoteFX adaptive graphics	Enabled
Remote session environment	RDP experience	Optimize for minimum bandwidth
Remote session environment	Enable RemoteFX encoding for RemoteFX clients designed for Windows 2008 R2 SP1	Enabled
Remote session environment	Prioritize H.264/AVC 444 graphics mode for remote desktop connections	Enabled
Remote session environment	Use advanced RemoteFX graphics for RemoteApp	Enabled
Remote session environment	Use hardware graphics adapters for all remote desktop services connections	Enabled
RemoteFX for Windows Server 2008 R2	Optimize visual experience for remote desktop services sessions	Enabled
RemoteFX for Windows Server 2008 R2	Visual experience	Rich multimedia
Security	Require secure RPC communication	Disabled
Security	Require use of specific security layer for remote (RDP) connections	Enabled
Security	Security layer	Negotiate

Security	Require user authentication for remote connections by using network-level authentication	Disabled
Security	Set client connection encryption level	Enabled
Security	Encryption level	Low level

Customers should also configure policy settings for Session Limits, Enable Fair Share to manage resources efficiently across multiple users in multi-session deployments, and profile management. See the following links for more information:

- Microsoft Fair Share - Fair Share technologies are enabled by default in Remote Desktop Services
- Microsoft FSLogix - What is FSLogix - FSLogix

Deployment

Deployment of Apporto is handled through the on-premises installer tool within the Apporto NextGen control plane. Full deployment includes setup/installation of the following:

- Apporto control plane setup
- On-premises cluster installation
- Hyperstream configuration & node discovery
- Load balancer or secure gateway installation

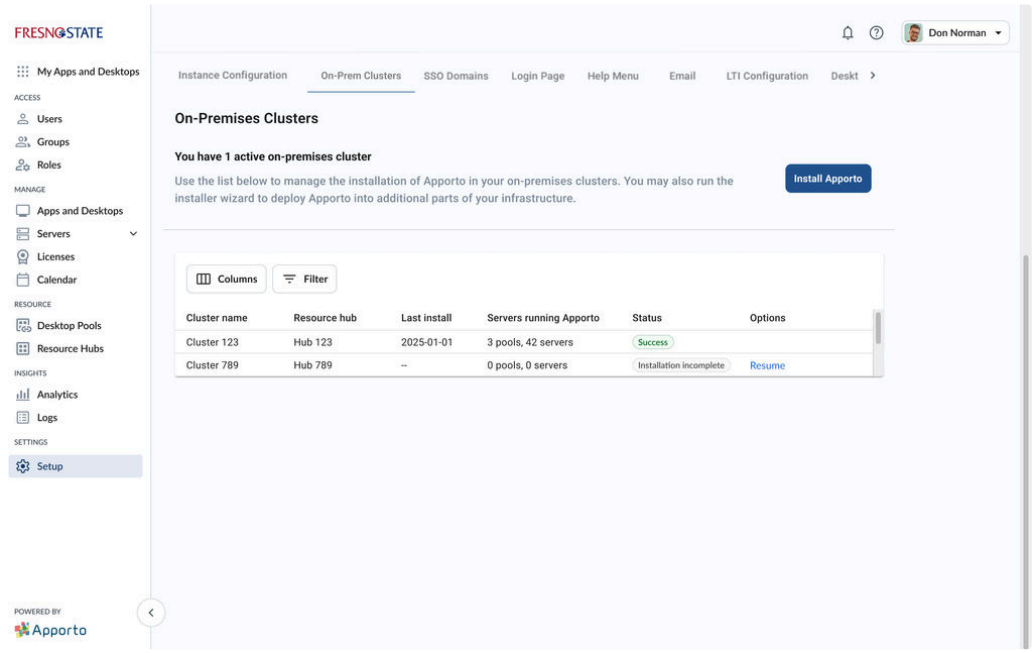
Accessing the control plane

Once your Apporto instance and initial administrator account have been set up, sign in to the control plane. Navigate to the *Setup* page, and click on the **On-Prem Clusters** tab.

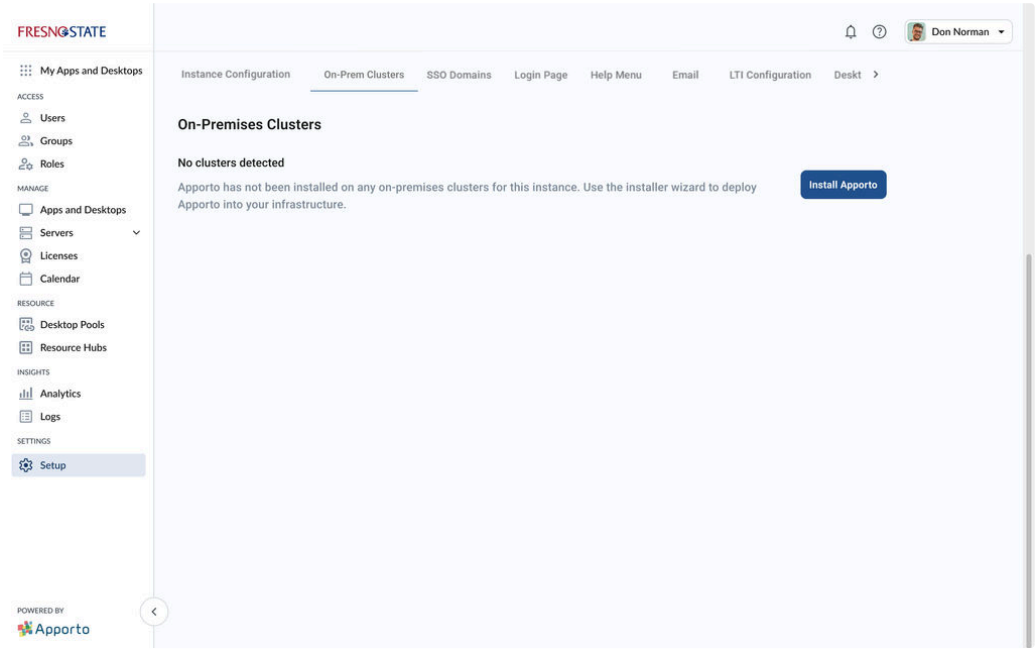
For more information on signing in to the control plane,

On-premises clusters

From the *Setup* section, the "On-Prem Clusters" tab contains a view of all existing on-premises clusters that are connected to Apporto.



If no clusters have been set up yet, a message will instruct you to start a new installation.



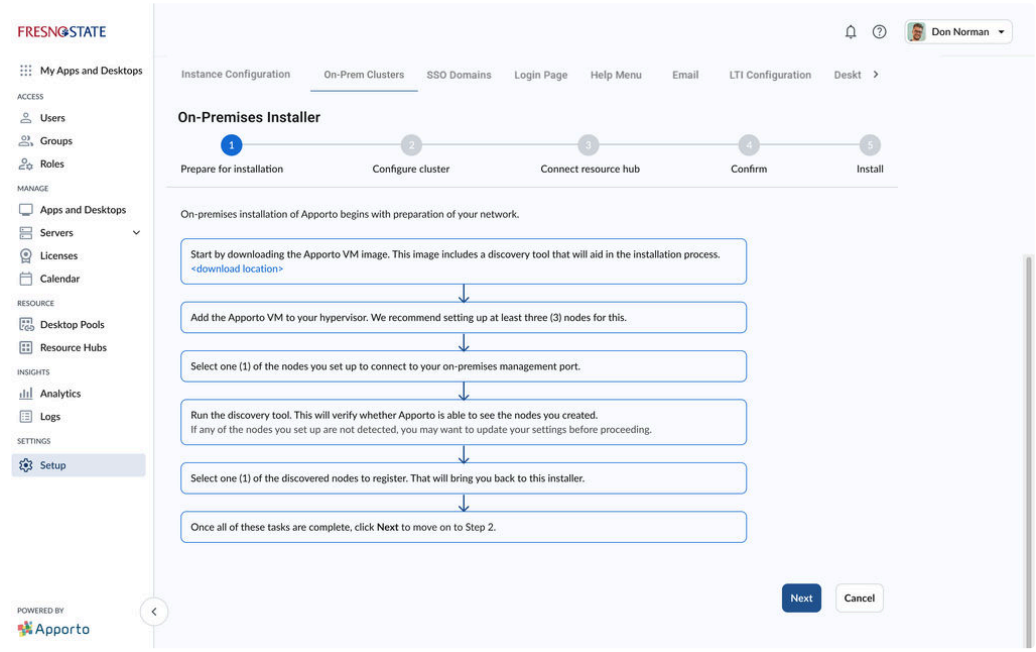
Installations of new clusters may be started at any time by clicking the **Install Apporto** button to trigger the installer wizard. You may also resume an incomplete installation by clicking **Resume** from the cluster list.

On-premises installer

To set up a new on-premises cluster, follow the steps below. Some tasks need to be completed outside of the Apporto NextGen control plane.

Step 1

The initial step of the installer explains how to install the Apporto VM into your hypervisor.



Download the Apporto VM file that is appropriate to your hyperstream provider's file format, and then follow the onscreen instructions for node registration. Packaged with the VM is a node discovery tool that will pass information back to the cluster

installer.

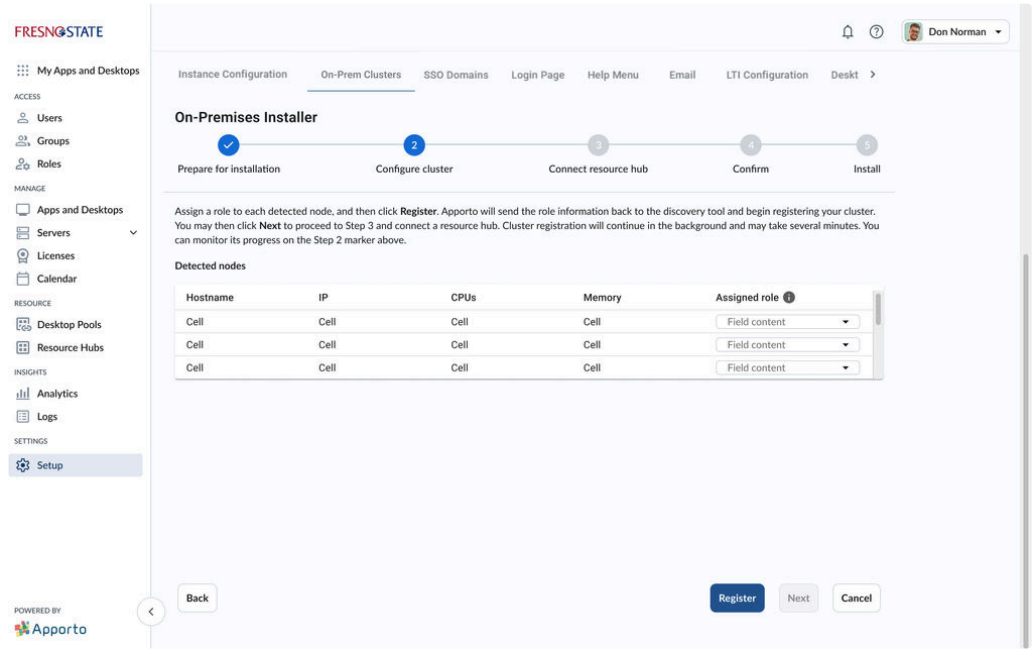
Refer to the additional instructions for your hypervisor:

- Nutanix Prism
- VMware vSphere
- Proxmox Virtual Environment COMING SOON

Additional hypervisor compatibility will be provided in future releases.

Step 2

Once you are transferred back to the installer, step 2 will display the nodes you selected.



You must have at least one manager and two worker nodes in your cluster. Select a role for each node. The available node types are:

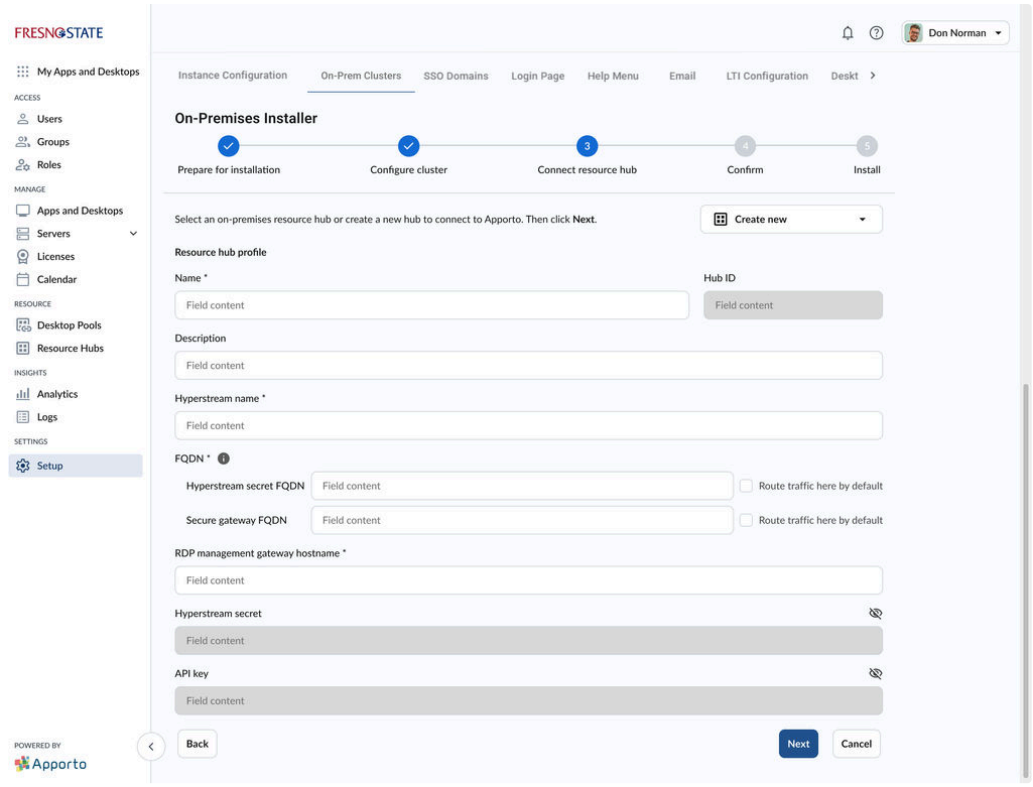
- Manager - This node will connect to the control plane.
- Mixed - If the same node will perform both functions, select this role.
- Worker

Once you have selected a role for each node, click **Register** for the installer to push a registration key to each node. This process may take several minutes, but you will see a confirmation message when registration begins and the **Next** button will be unlocked. You may proceed to Step 3 while registration is running.

Step 3

To connect Apporto to the servers that will be running virtual desktops and applications, the cluster must be linked to a resource hub. If you have already created one or more on-premises resource hubs, you may select the appropriate one from the resource hub dropdown. Existing values will populate in the Step 3 form and any missing mandatory values can be filled in.

You may also select the “Create new” option from the dropdown to create a resource hub on the fly. Please note that the hub values in this form are the minimum needed for cluster installation. Additional resource hub values can be configured by going to the *Resource Hubs* section of the control plane. You can learn more about resource hub values in the Apporto Help Center.



The table below shows the resource hub values that relate to cluster installation.

Field	Datatype	Required?	Notes
Name	String	Yes	
Hub ID	String	System-generated	This value will be generated by the system and used in back-end processes.
Description	String	No	
Hyperstream name	String	Yes	
Hyperstream secret FQDN	String	Conditional	At least one of the FQDN values must be entered; both can be filled if appropriate.
Secure gateway FQDN	String	Conditional	
Route traffic here by default	Boolean	Yes	If both FQDN values are entered, one of them must be selected for traffic routing. If only one FQDN is entered, the system will auto-select the matching radio button.
Hyperstream secret	String	System-generated	
API key	String	System-generated	

Once the form is filled in, click **Next** to advance to Step 4.

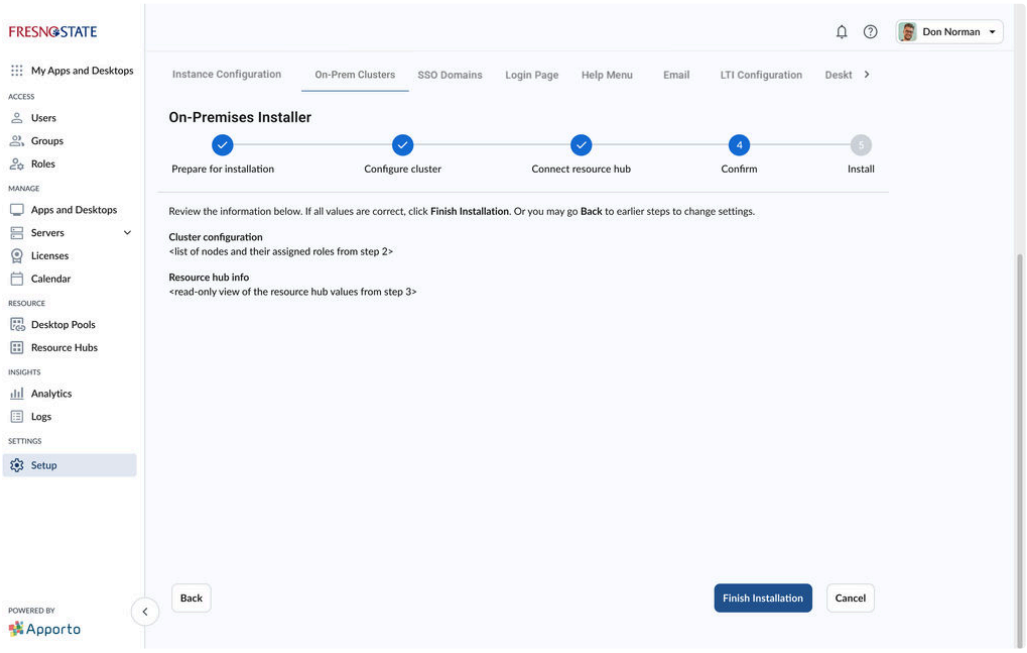
Step 4

Your node role assignments from Step 2 and resource hub values from Step 3 are displayed for confirmation. Review the settings, and go back to the earlier steps if anything needs to be altered.

⚠

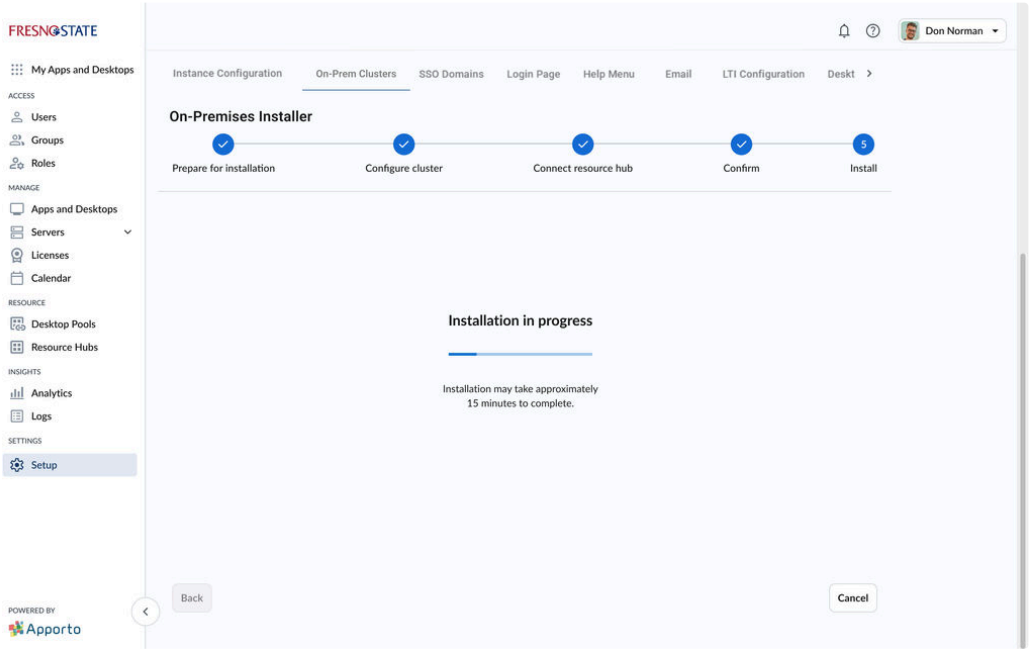
> Node role assignments cannot be edited once cluster registration is complete. If any Step 2 values are incorrect, contact Apporto Support for assistance.

If all settings are correct, click **Finish Installation**.

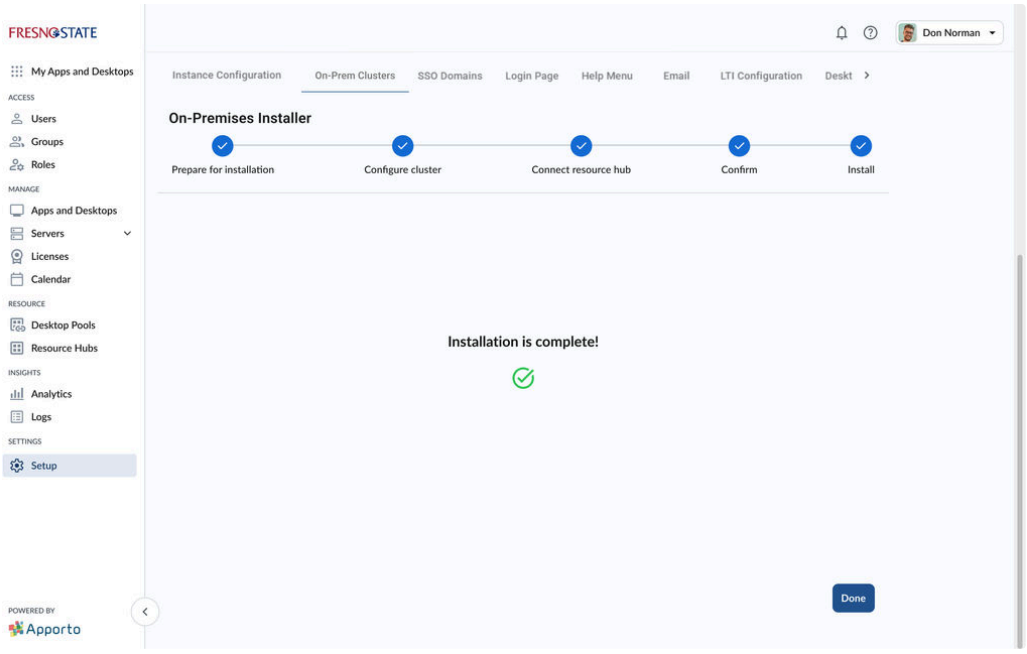


Step 5

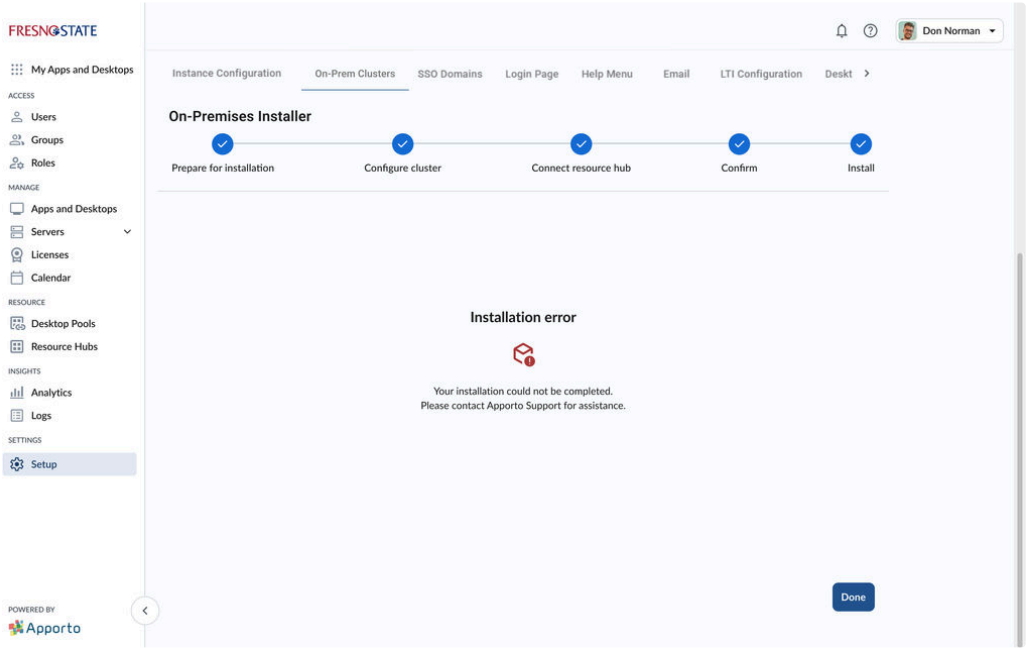
The final step of installation pushes Apporto software and services down to the cluster. You will see a progress bar while the installation is running.



Once installation has successfully completed, you will see a confirmation message. Click **Done** to return to the cluster list.



If there are any issues with the installation process, you will see an error message. Contact Apporto Support for assistance.

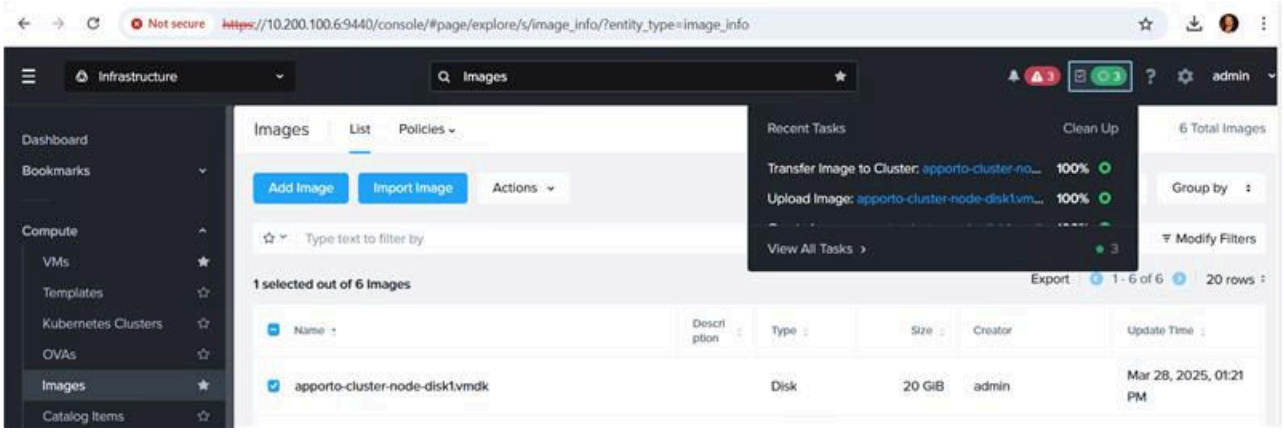


Hypervisor network configuration

Use the instructions below to add the Apporto VM to your hypervisor environment.

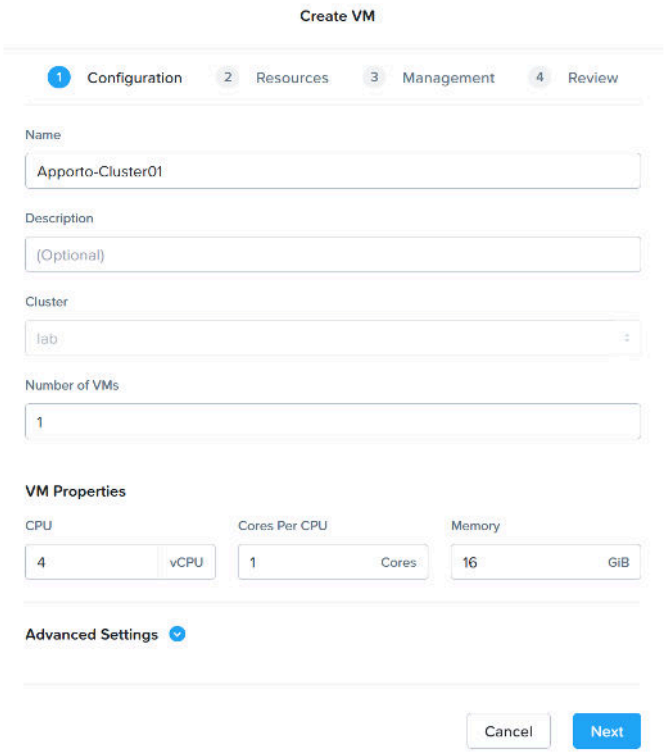
Nutanix Prism

1. Download the Apporto VM file from Step 1 of the installer. Different file formats are available to meet the needs of various hypervisors. For Nutanix, download the .OVA image.
2. Unzip the file using 7Zip or another appropriate tool.
3. From the Nutanix Prism web console, import the .VMDK file.

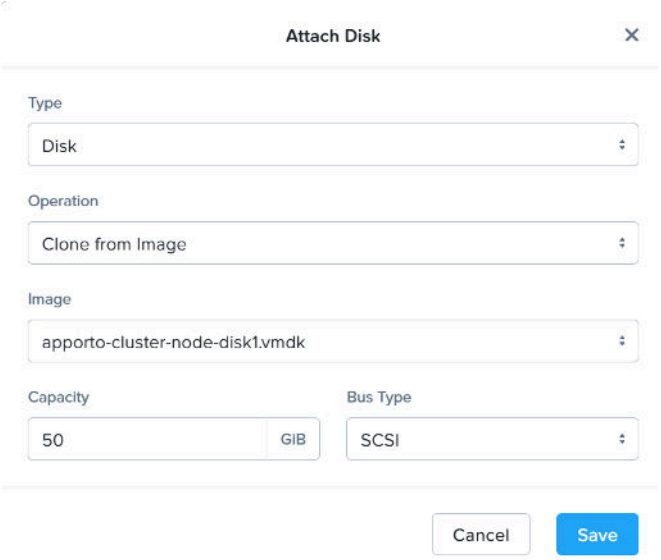


We recommend you update the file name to something unique, in case a situation arises that warrants a new upload. Nutanix may not reference the correct file if the names are the same.

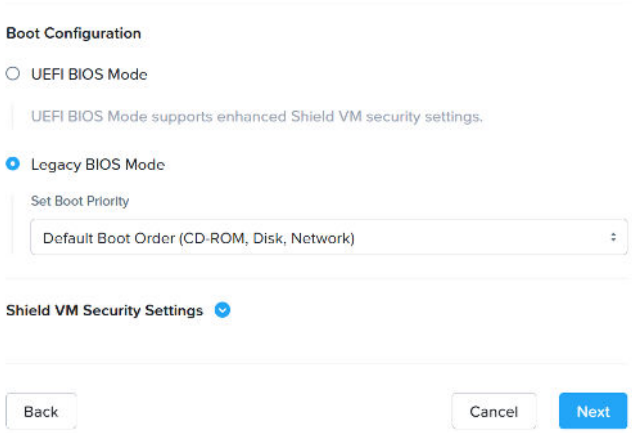
4. Create a new VM in Nutanix.



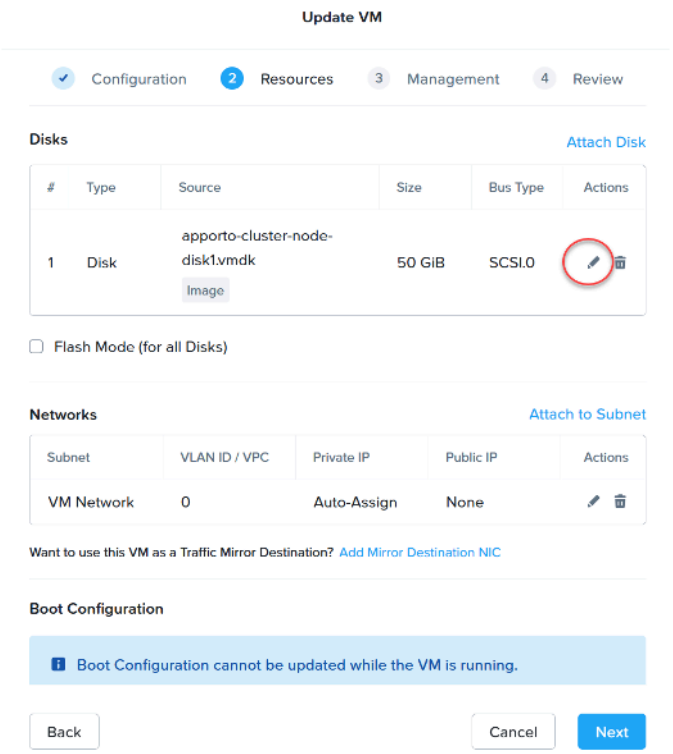
5. Attach the .VMDK image.



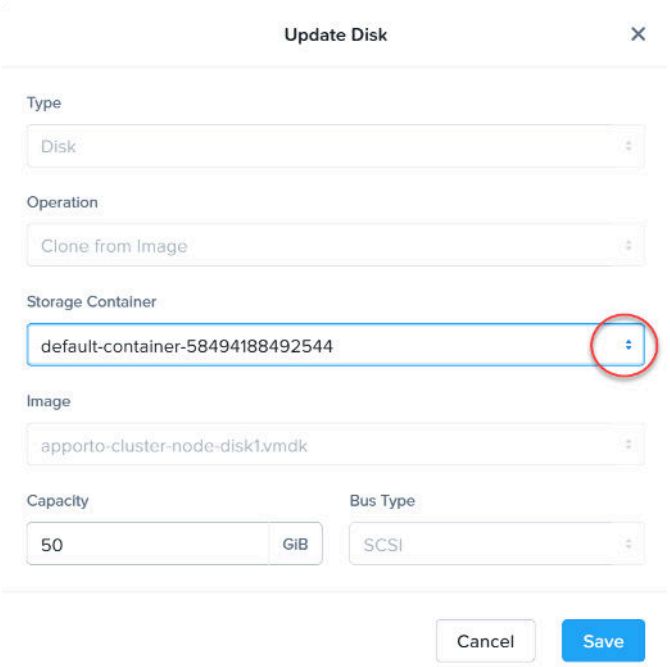
6. Adjust the BIOS mode.



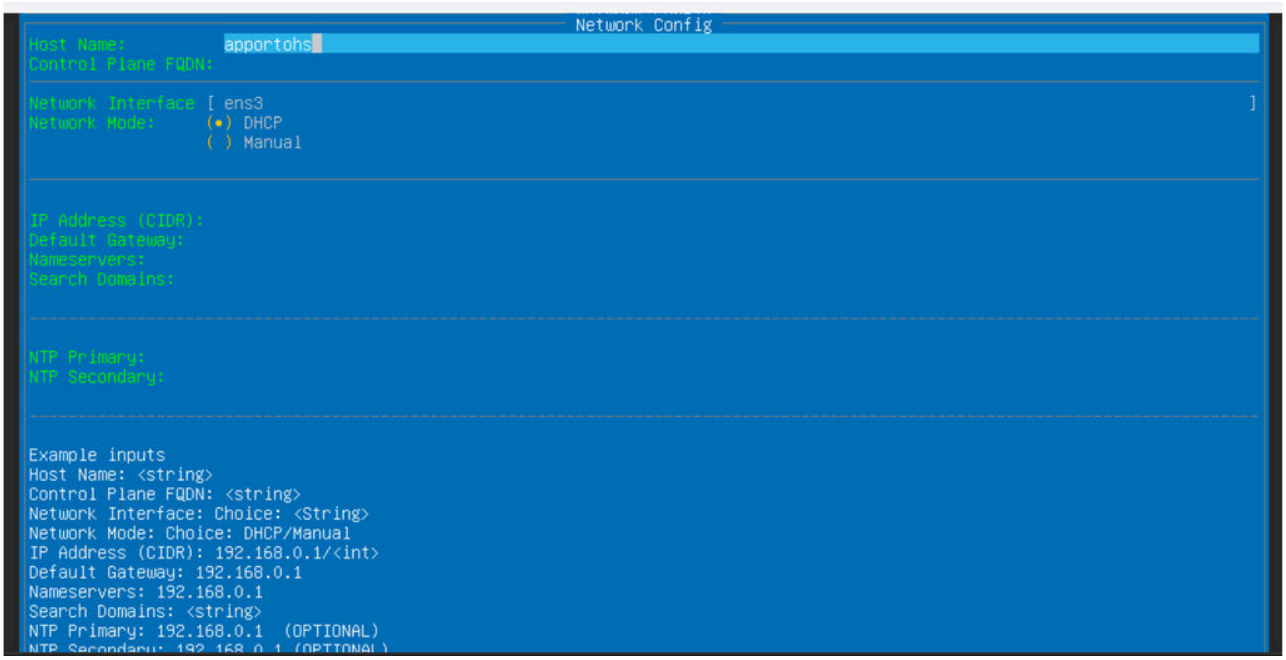
7. Once the VM has been created, access the *Update Disk* screen.



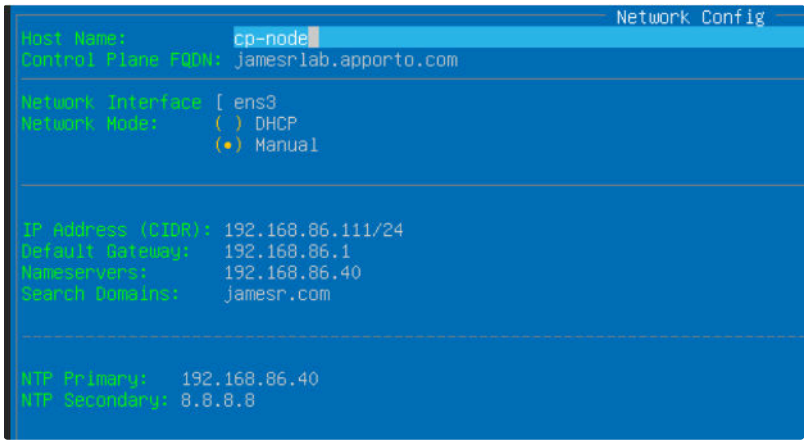
8. Ensure that the .VMDK is pointing to the correct storage container.



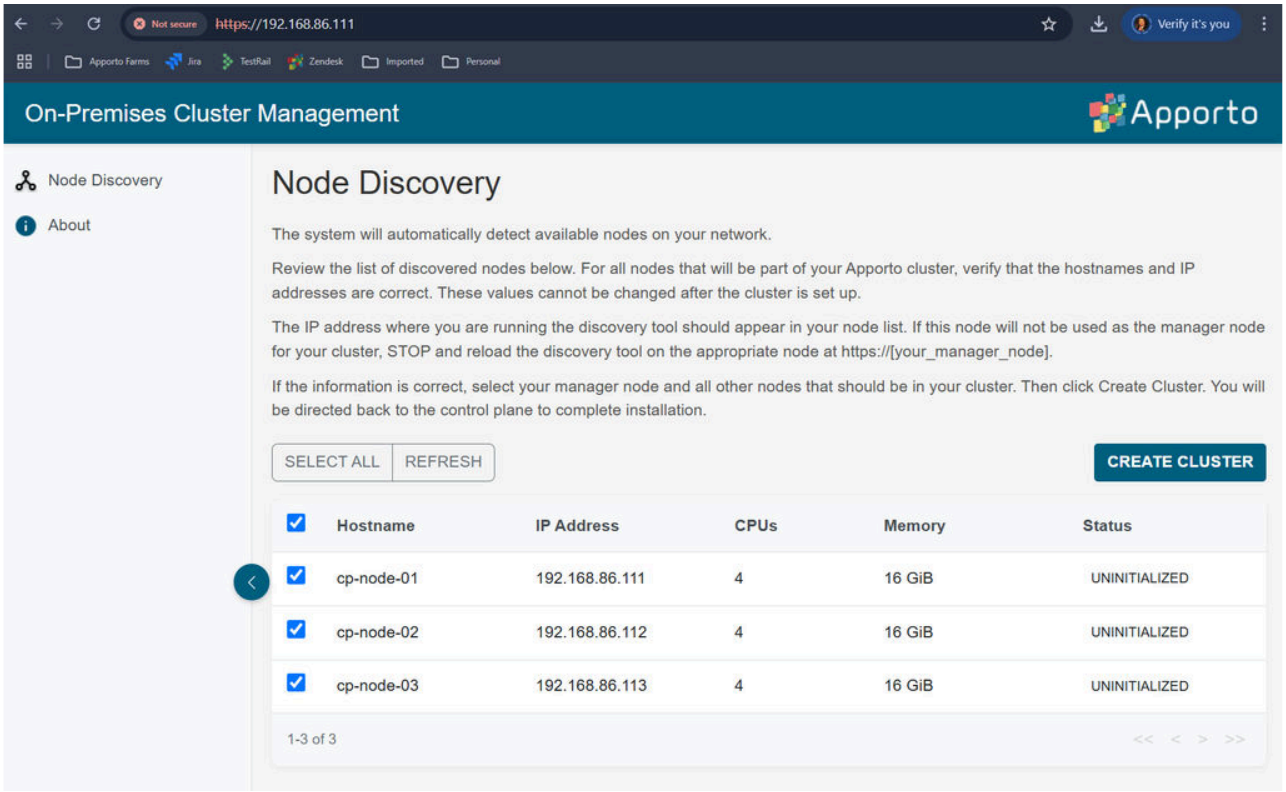
9. Power on the VM to access the *Network Config* screen.



10. Update the network config values to accommodate the Apporto VM, and click **Save** at the bottom of the screen. The image below shows sample values.



11. Open https://[your_manager_node] in a browser window. This will launch the On-Premises Cluster Management tool that was included with the Apporto VM file.



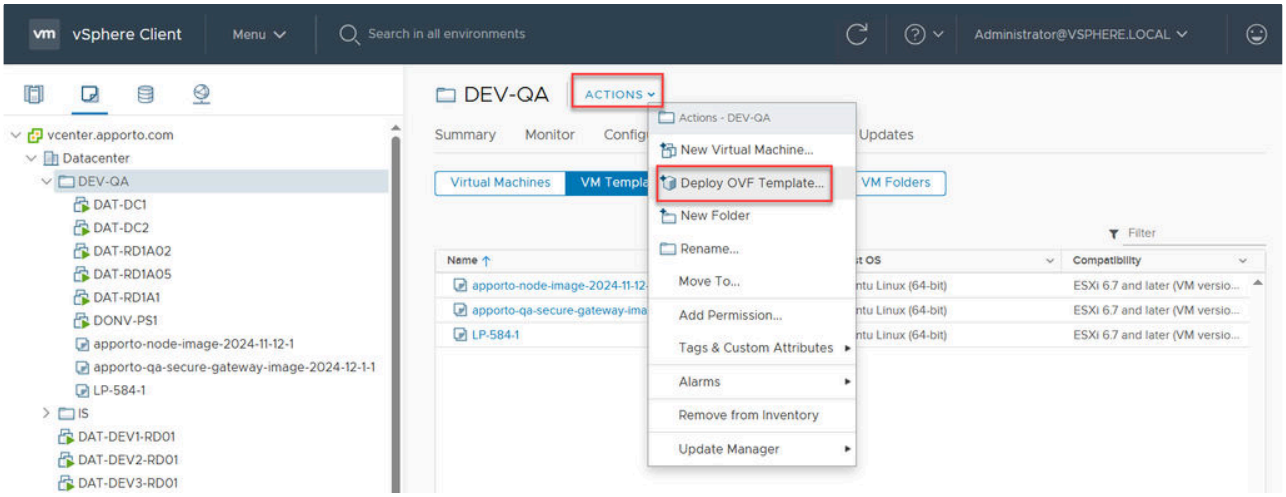
Any nodes that are detected in your container will appear in the *Node Discovery* list.

> If any nodes from your container do not appear in the list within a few minutes of loading the tool, you may want to click **Refresh**.

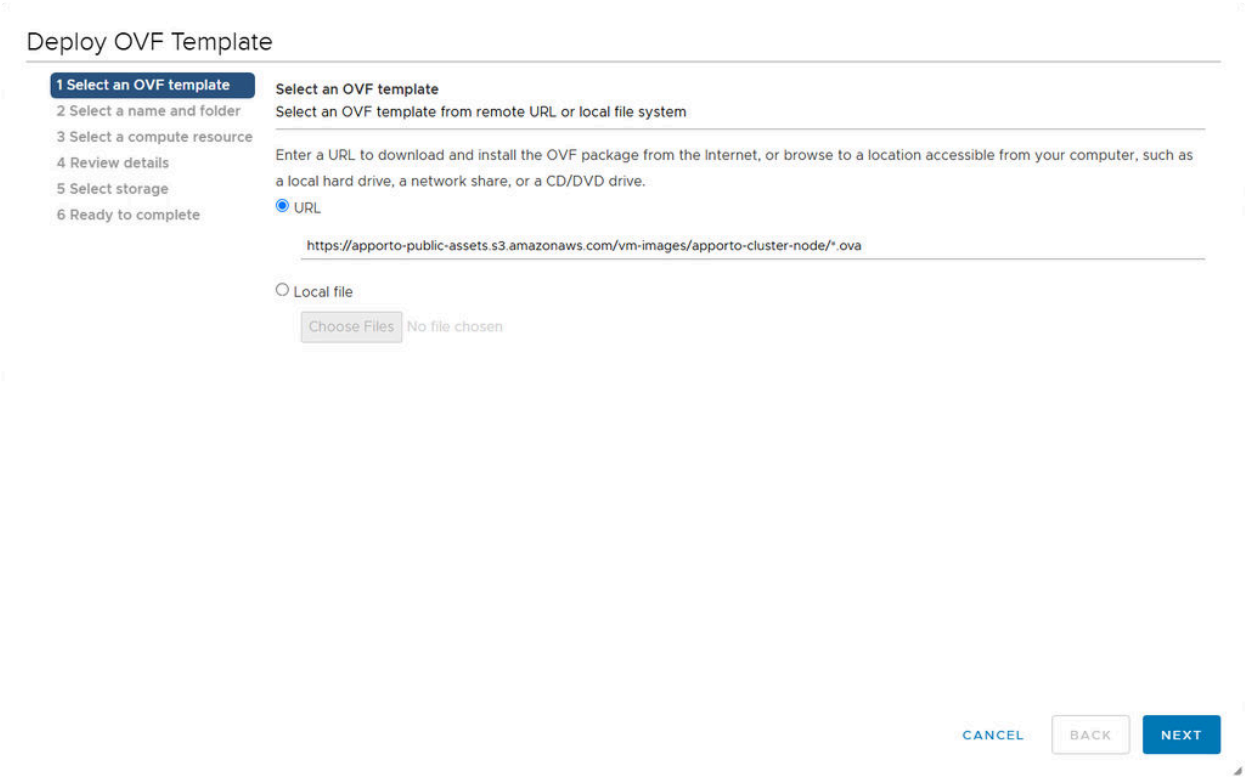
12. Select all nodes that you want to be connected to Apporto, then click **Create Cluster** to be transferred back to the Apporto NextGen control plane to continue cluster installation.

VMware vSphere

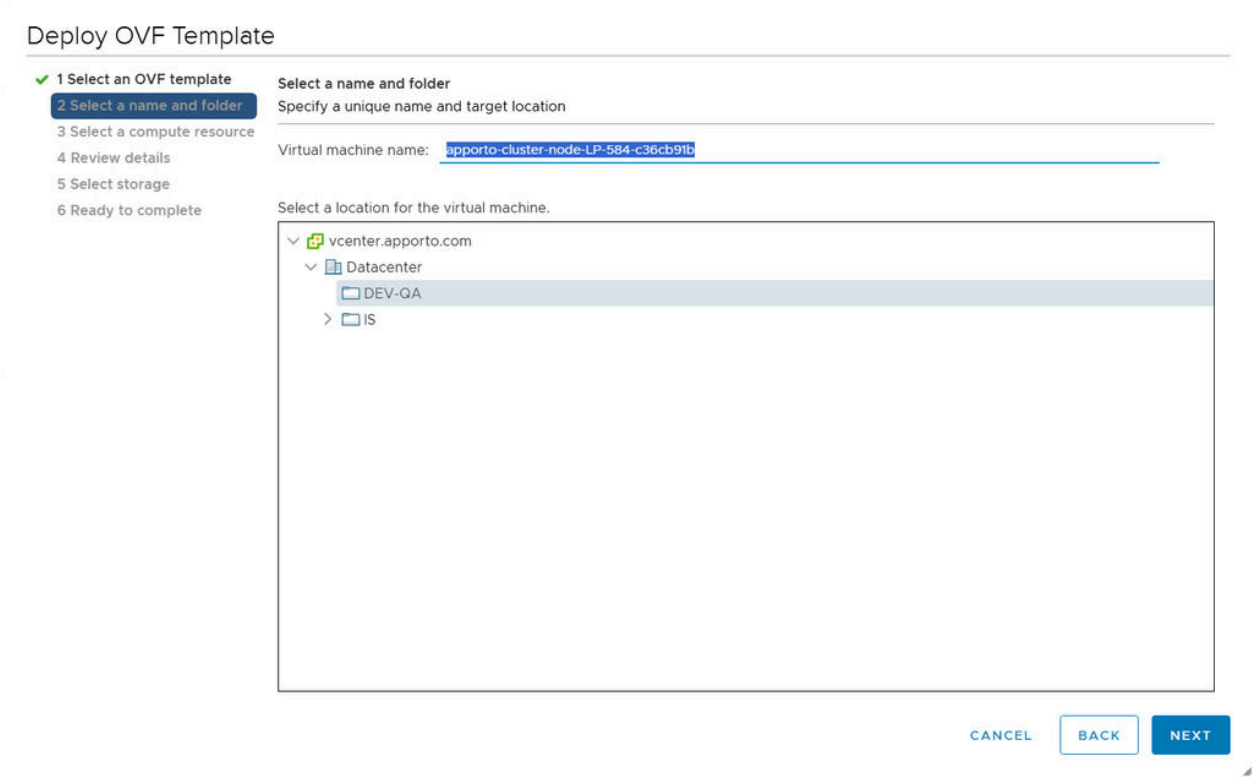
1. Download the Apporto VM file from Step 1 of the installer. Different file formats are available to meet the needs of various hypervisors. For VMware, download the .OVA image.
2. From the vSphere console, import the .OVA file as an OFV template. Alternatively, you can unzip the file and import the .VMDK disk image file.



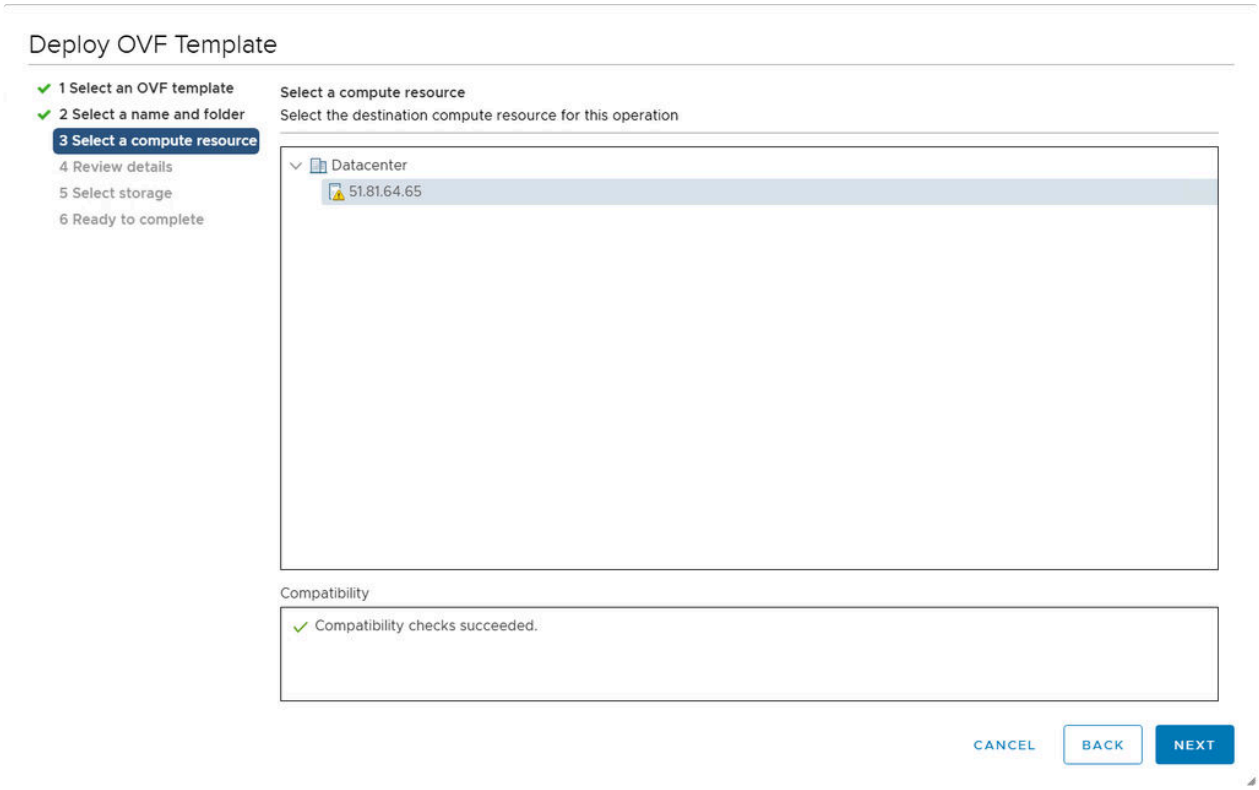
Both URL and local file options are provided onscreen. At this time, select the local file option to import the .OVA file. In the future, we may offer a public URL.



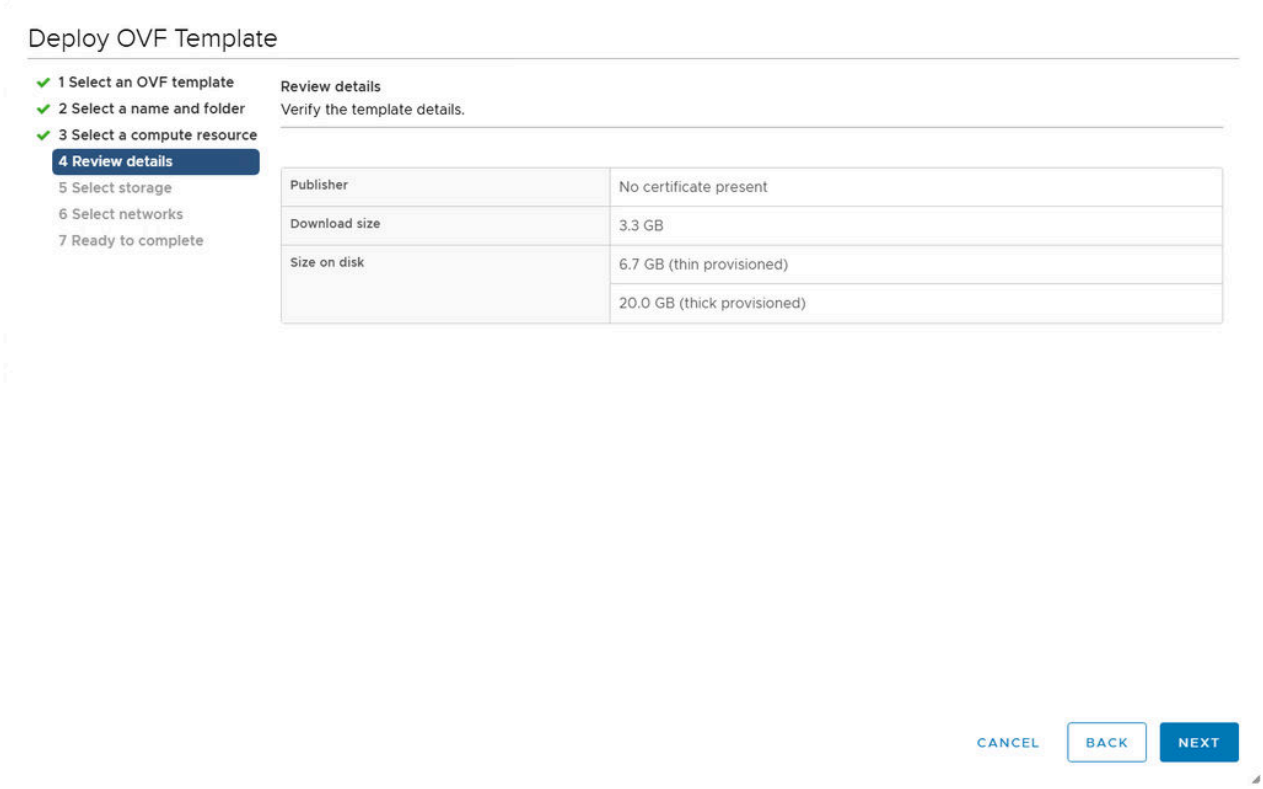
3. Create a new VM in vSphere.



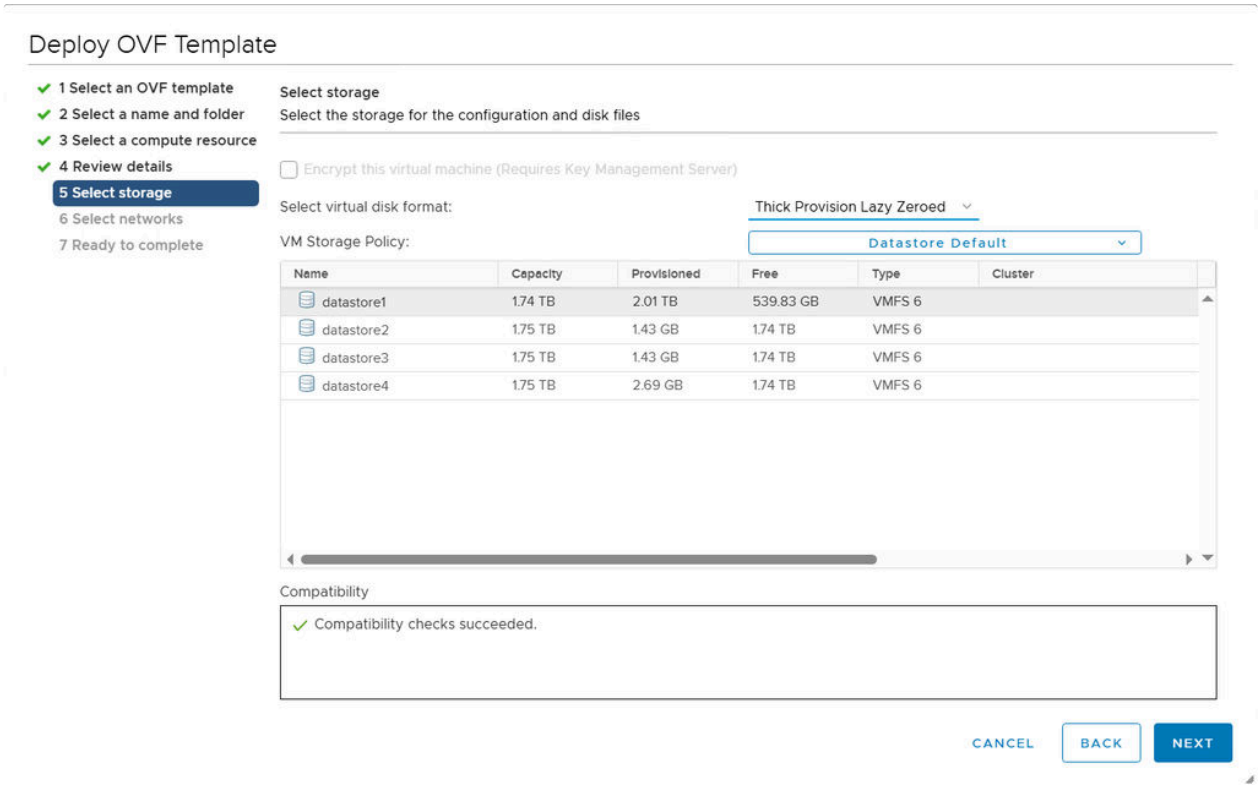
4. Select the appropriate compute resource.



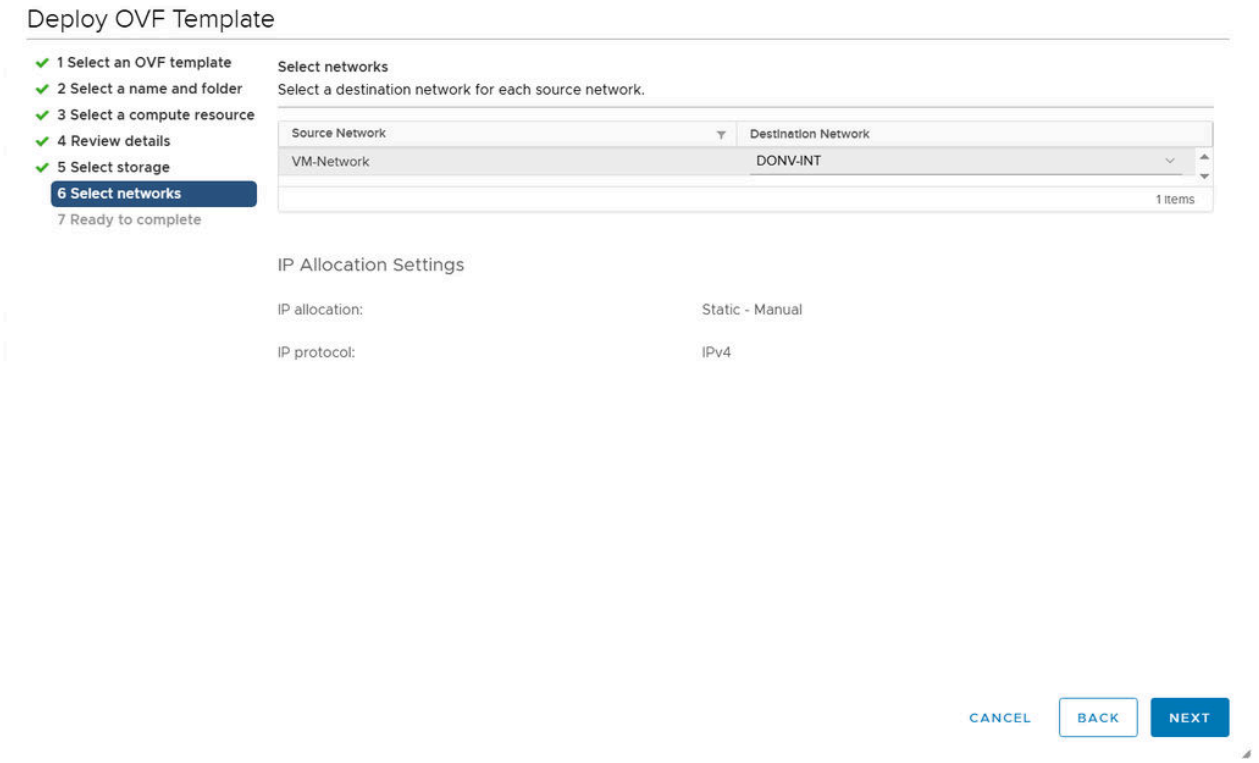
5. Review and confirm the template details.



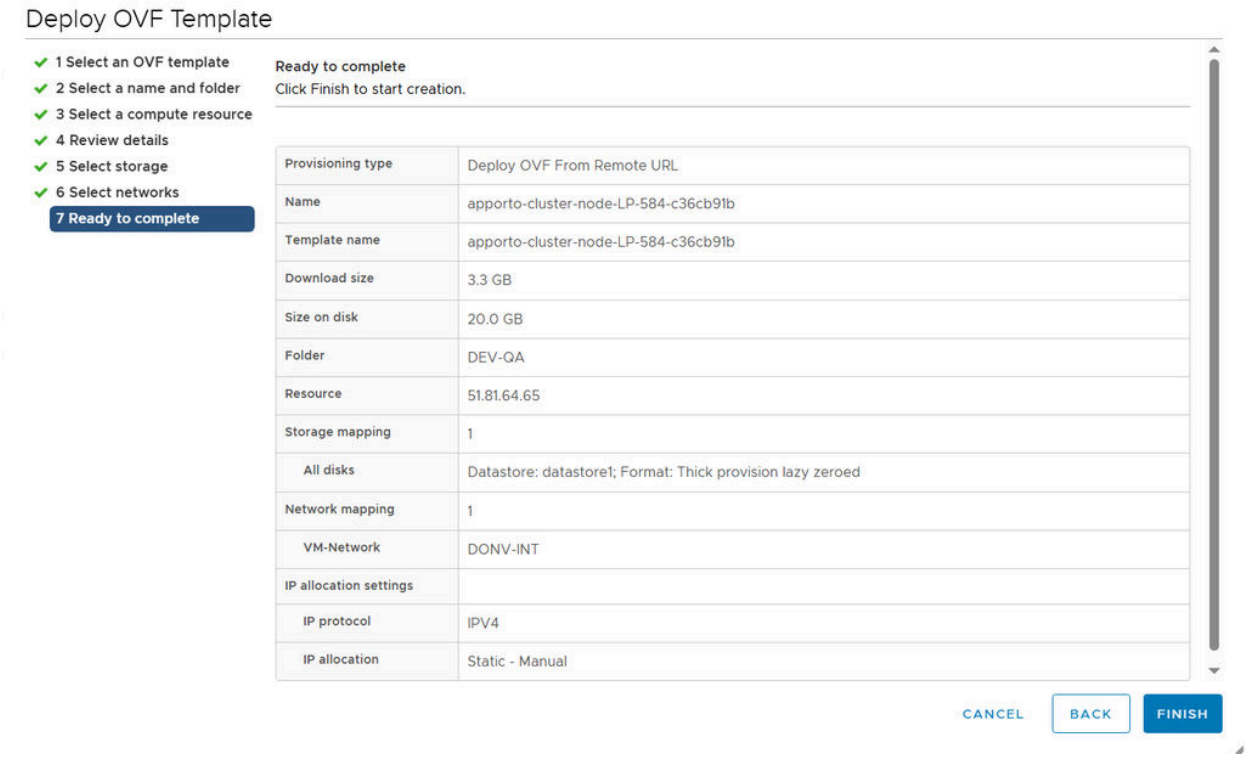
6. Select the appropriate storage container.



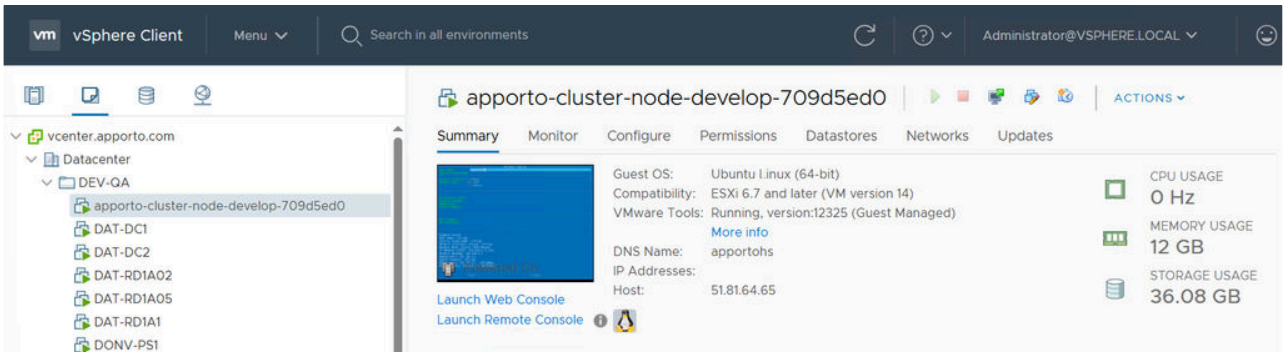
7. Select your destination network.



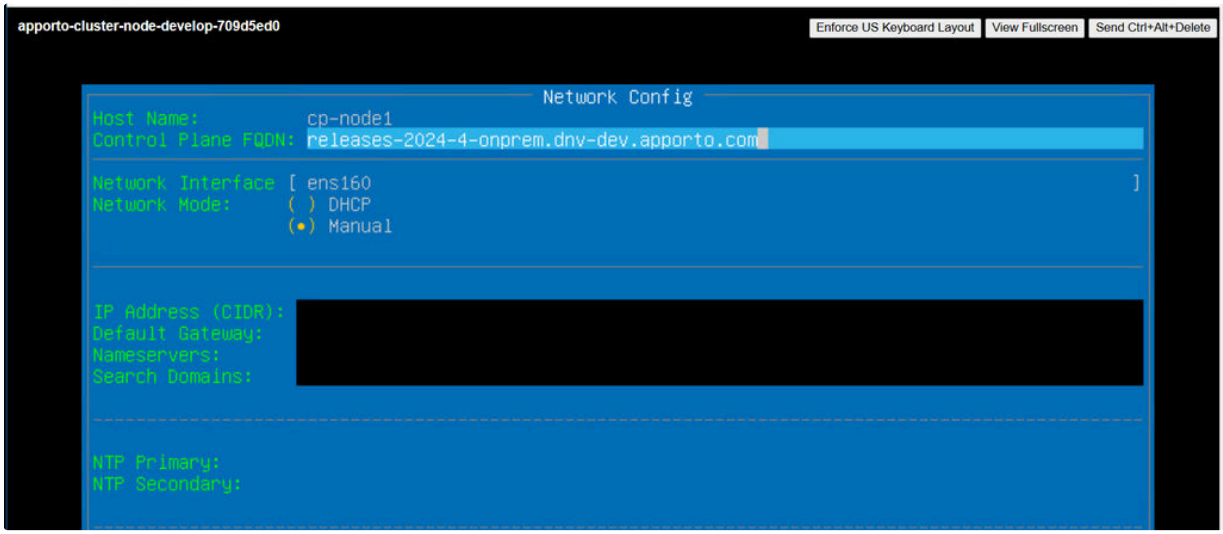
8. Confirm all values, and click **Finish** to deploy the template.



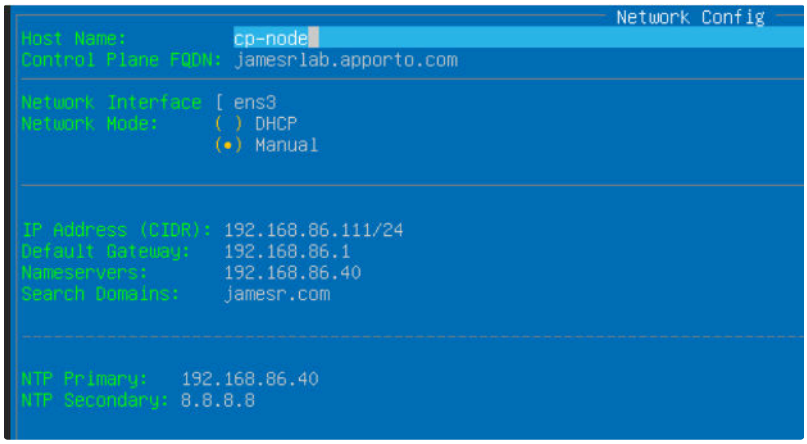
9. Once the VM has been created, view its details from your resource list.



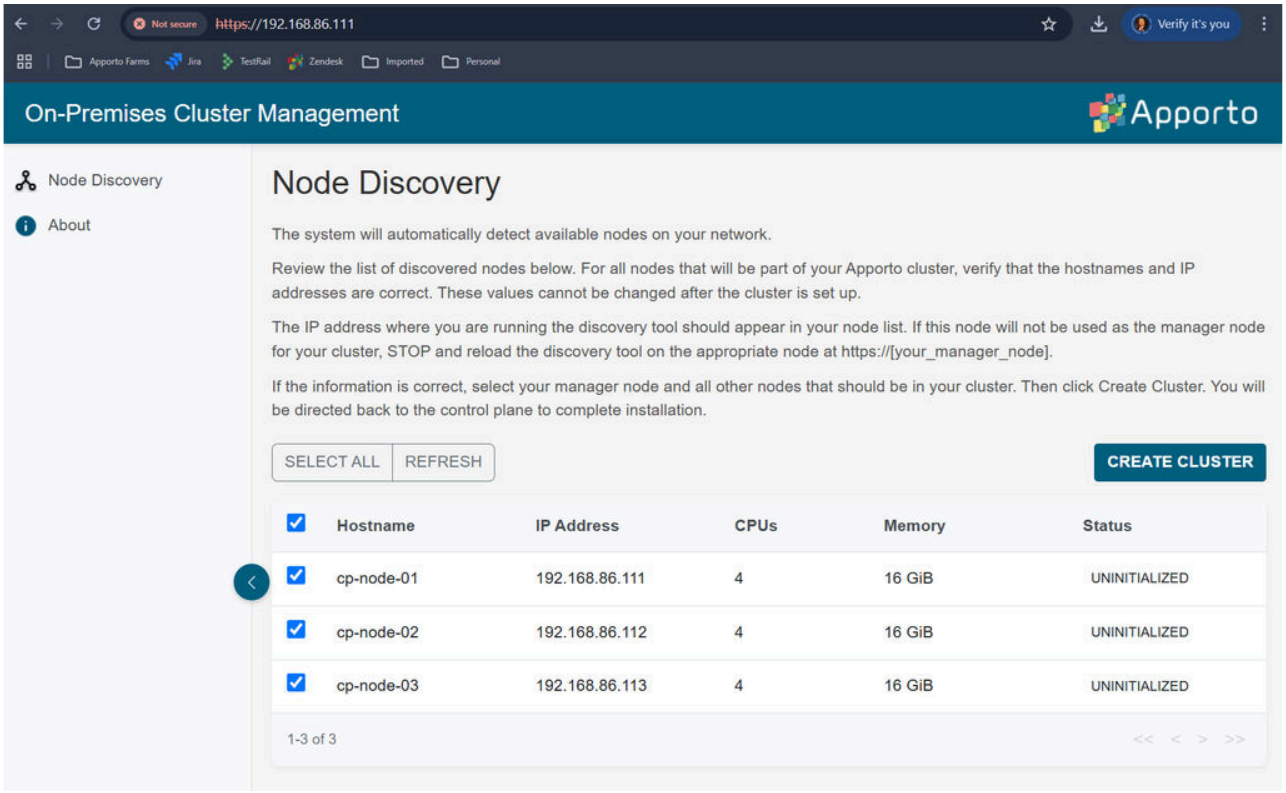
10. Power on the VM to access the *Network Config* screen.



11. Update the network config values to accommodate the Apporto VM, and click **Save** at the bottom of the screen. The image below shows sample values.



12. Open https://[your_manager_node] in a browser window. This will launch the On-Premises Cluster Management tool that was included with the Apporto VM file.



Any nodes that are detected in your container will appear in the *Node Discovery* list.

13. Select all nodes that you want to be connected to Apporto, then click **Create Cluster** to be transferred back to the Apporto NextGen control plane to continue cluster installation.

Proxmox Virtual Environment

COMING SOON

Adding a gateway or load balancer

Apporto requires the use of a secure gateway or load balancer appliance in conjunction with your on-premises cluster. If you do not have your own preferred appliance, Apporto can provide one for you.

Administration

Outside of the cluster deployment process, the Apporto NextGen control plane houses the configuration of users, servers, desktops/applications, and all other major parts of the platform. Details related to on-premises deployment are described below. For additional details, visit the Apporto Help Center.

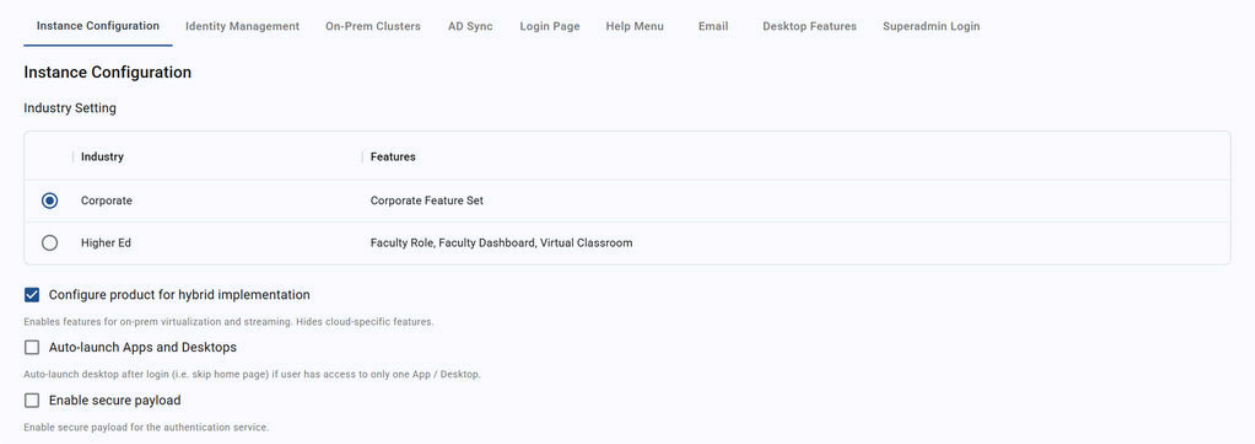
Setup

The *Setup* section provides configuration options for look and feel, identity management and authentication, desktop features, and more.

Instance configuration

For on-premises installations, the "Configure product for hybrid implementation" setting must be checked.

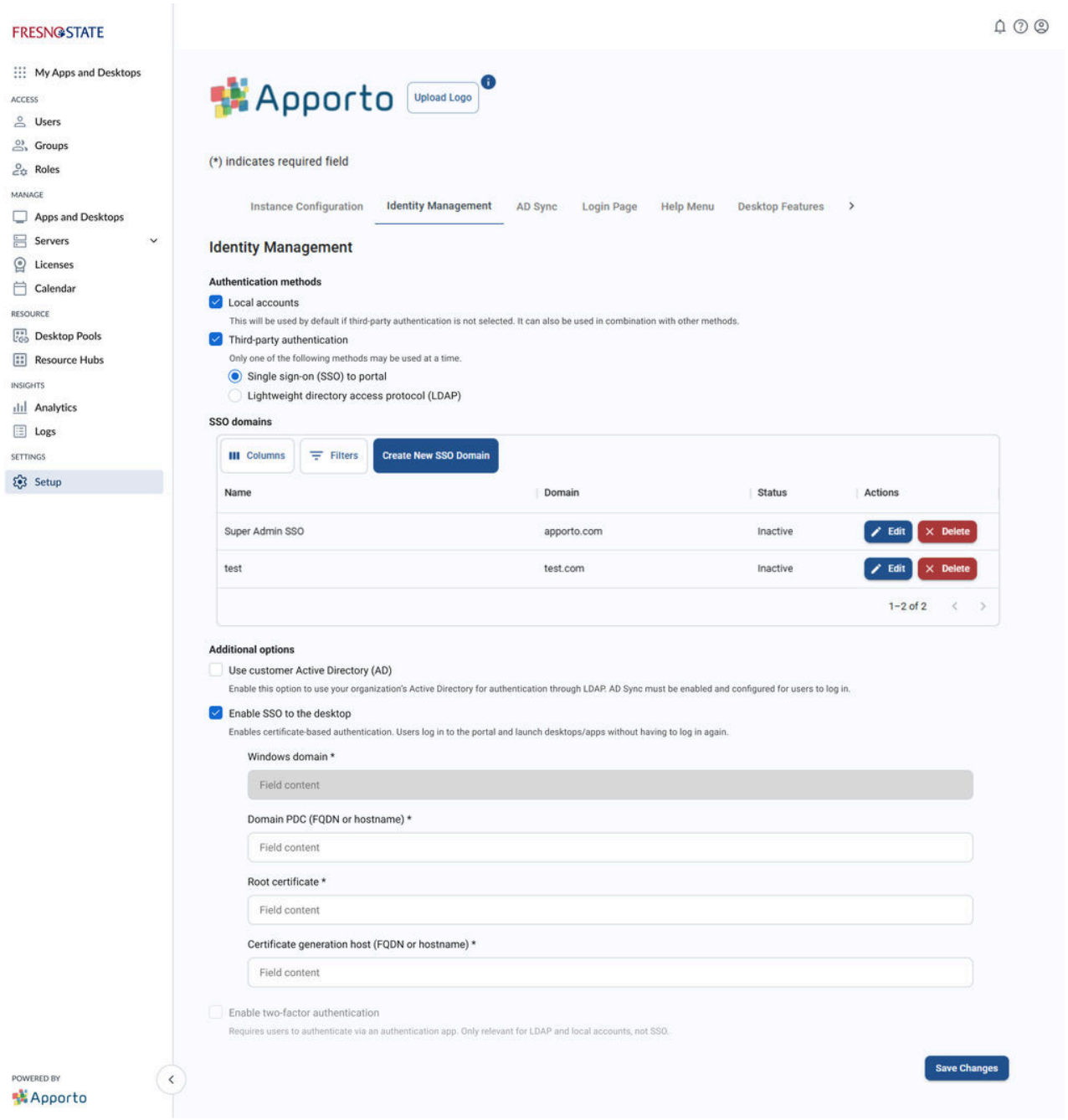
> ⚠ There will also be a subscription value that is hidden once the hybrid checkbox is checked. Fill this field with "Apps" prior to checking the hybrid implementation checkbox to ensure that your user account is recognized during installation.



> ⚠ Do not uncheck this checkbox. Doing so would hide the "On-Prem Clusters" tab and the cluster installer.

Identity management

The "Identity Management" tab provides your instance's authentication method settings.



Users can be authenticated through the following methods:

- Local accounts (email address & password)
- Single sign-on (SSO) to the control plane
- Lightweight directory access protocol (LDAP)

There are additional options for:

- Using your organization's Active Directory (AD)
  - If customer AD is selected for either SSO to the control plane or LDAP, the "AD Sync" tab will be visible.
- Single sign-on (SSO) being passed from the control plane to the desktop
  - If SSO to the desktop is enabled, certificate values are required.

Field	Datatype	Required?	Notes

Windows domain	String	System-generated	This value will be inserted by the system.
Domain PDC (FQDN or hostname)	String	Yes	Primary domain controller
Root certificate	String	Yes	Enter the full string of the certificate. In a future version, file upload may be made available.
Certificate generation host (FQDN or hostname)	String	Yes	

- Two-factor authentication (2FA)

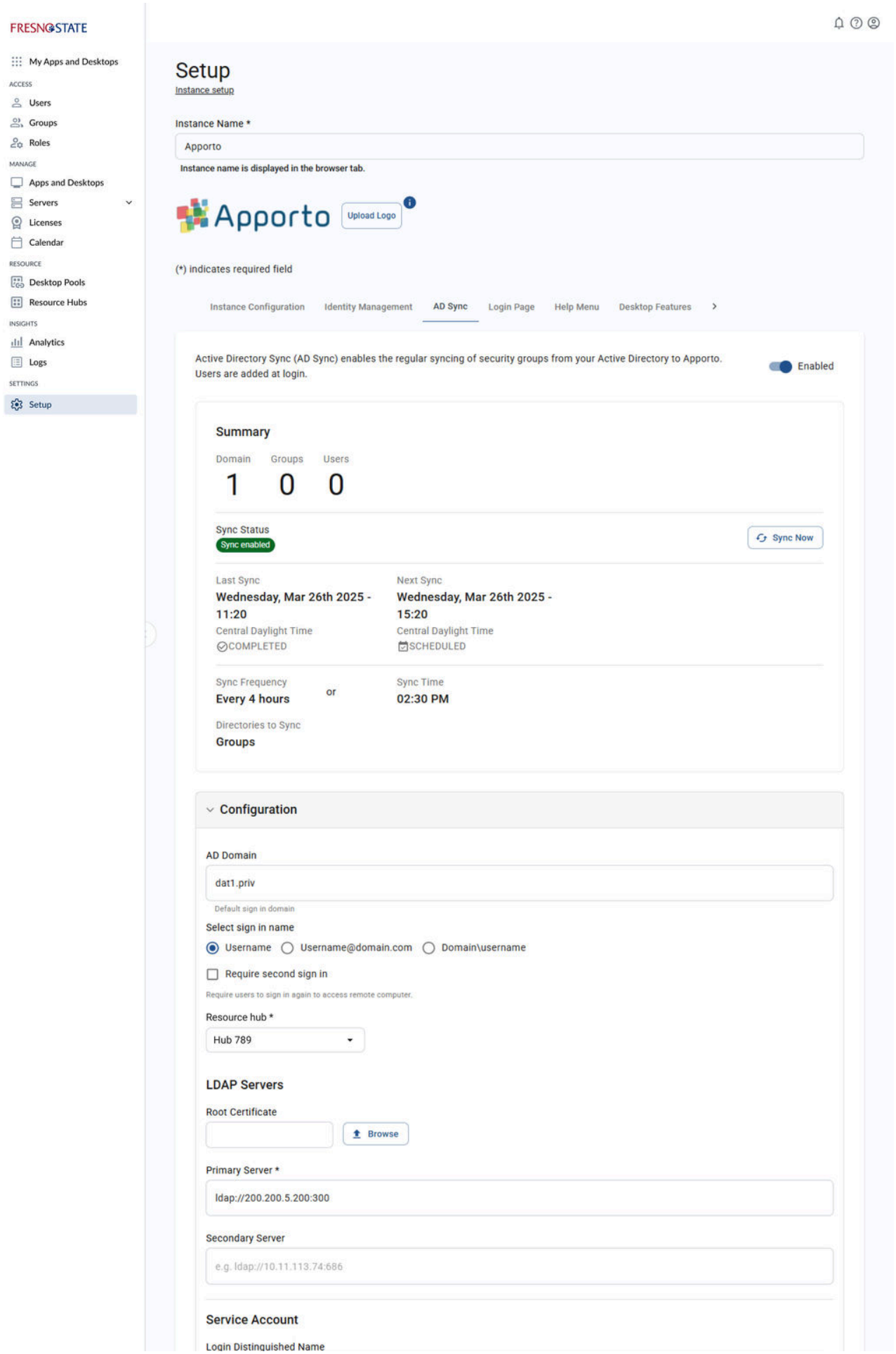
For information on how to configure authentication methods, visit the Apporto Help Center.

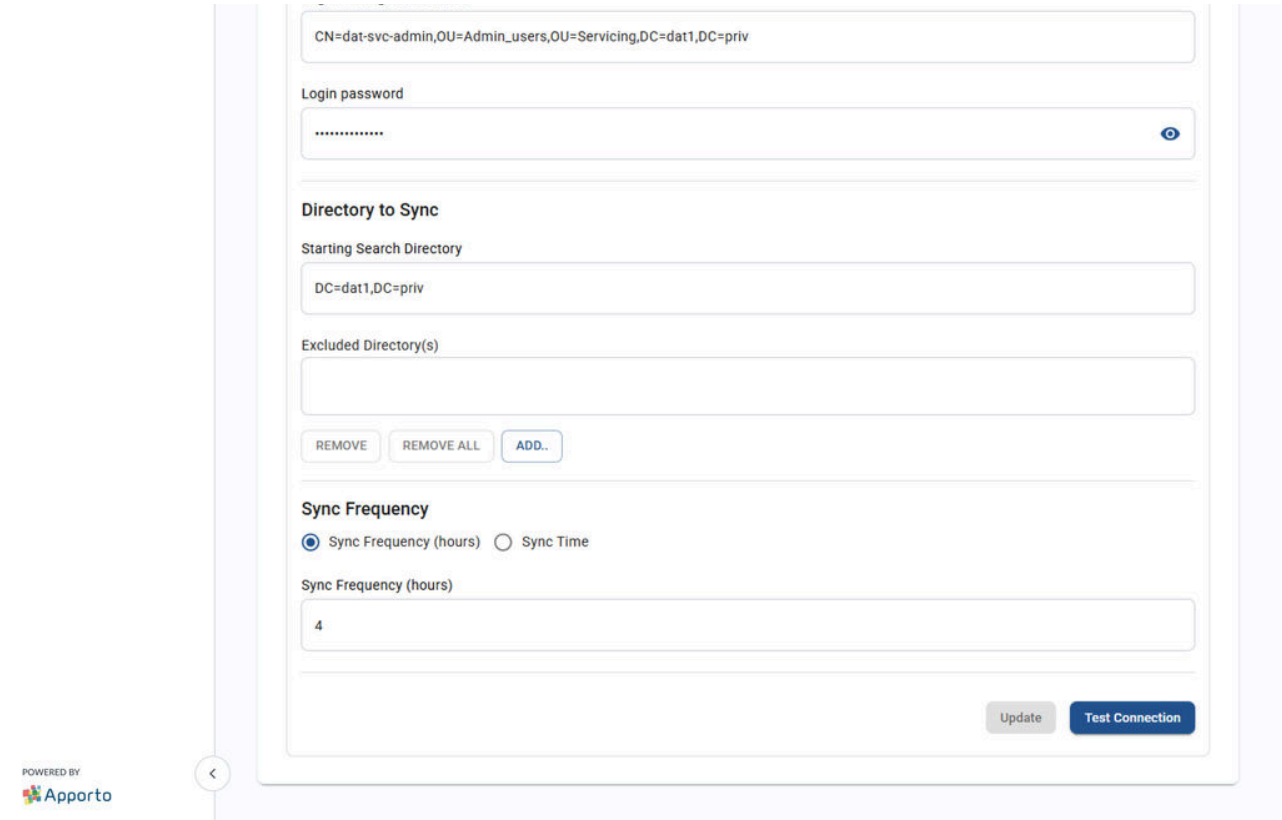
On-prem clusters

Information about this tab is available above in the Deployment section.

AD sync

This tab provides configuration options for Active Directory (AD) and LDAP sync.


FRESNO STATE
My Apps and Desktops
ACCESS
Users
Groups
Roles
MANAGE
Apps and Desktops
Servers
Licenses
Calendar
RESOURCE
Desktop Pools
Resource Hubs
INSIGHTS
Analytics
Logs
SETTINGS
Setup
Setup
Instance setup
Instance Name *
Apporto
Instance name is displayed in the browser tab.
Apporto
Upload Logo
(*) indicates required field
Instance Configuration
Identity Management
AD Sync
Login Page
Help Menu
Desktop Features
Active Directory Sync (AD Sync) enables the regular syncing of security groups from your Active Directory to Apporto. Users are added at login.
Enabled
Summary
Domain
Groups
Users
1
0
0
Sync Status
Sync enabled
Sync Now
Last Sync
Wednesday, Mar 26th 2025 - 11:20
Central Daylight Time
COMPLETED
Next Sync
Wednesday, Mar 26th 2025 - 15:20
Central Daylight Time
SCHEDULED
Sync Frequency
Every 4 hours
or
Sync Time
02:30 PM
Directories to Sync
Groups
Configuration
AD Domain
dat1.priv
Default sign in domain
Select sign in name
Username
Username@domain.com
Domain\username
Require second sign in
Require users to sign in again to access remote computer.
Resource hub *
Hub 789
LDAP Servers
Root Certificate
Browse
Primary Server *
ldap://200.200.5.200:300
Secondary Server
e.g. ldap://10.11.113.74:686
Service Account
Login Distinguished Name



For on-premises deployments, the resource hub that houses the sync server must be selected. More information is available in the AD sync section of the Help Center.

> ⚠ In the beta version of the installer, Apporto Support will need to manually connect LDAP to a resource hub. The field shown above will be added in an upcoming release. Please inform Support which resource hub houses your LDAP sync server.

Desktop features

The "Desktop Features" tab allows you to manage the features a user will see when in an active virtual desktop session. This list will change as new features are added. And there may be some differences in availability between cloud-based and on-premises instances.

For more details, visit the article on desktop features in the Help Center.

User accounts

Managing users

You will have an initial admin account created for you by Apporto staff. You may create additional user accounts based on your identity management selections. For information on how to manage users, visit the Apporto Help Center.

Forgot password

If you are unable to sign in to the initial admin account, use the "forgot password" function to reset your credentials.

1. From the Apporto instance *Sign In* page, click on **Forgot Password**.
2. Enter the email address associated with the user account and click **Send Password Reset Email**.
3. Password reset instructions will be sent to the email address provided. Click on the reset link in the email.
4. You will be directed to the *Reset Password* page. Enter and submit your desired password.
5. Once you receive a confirmation message, you can sign in with your new password.

Resources

Resource hubs

You will have at least 1 resource hub configured by the time you've completed cluster installation. However, the settings that are defined during installation are only the minimum hub values needed for the installation process. You will need to return to the *Resource hubs* section to fill in the remaining values. See the Apporto Help Center articles on creating and managing resource hubs for more information.

Desktop pools

Additional configuration can be made for handling multiple server pools as if they were a single virtual desktop. The Apporto Help Center articles on creating and managing desktop pools will help you configure these entities.

Servers and virtual machines

To provide app/desktop sessions to users, configure the multi-session and single-session servers that reside within your resource hub. There are a few Apporto Help Center articles that provide details on how to set up your servers. Visit the overview page on managing servers and VMs to get further instructions.

Applications and virtual desktops

Apporto customers can serve both applications and desktops to end users. The Apporto Help Center article on creating apps and desktops will explain how to get these items set up for your users.

Known issues

The following list addresses items that are present in the Beta version but are planned for resolution in upcoming releases:

- There is a subscription value in the "Instance Configuration" tab of *Setup* that is hidden once the hybrid checkbox is checked. Fill this field with "Apps" prior to checking the hybrid implementation checkbox to ensure that your user account is recognized during installation.
- In the beta version of the installer, Apporto Support will need to manually connect LDAP to a resource hub. Inform Apporto Support which resource hub houses your LDAP sync server.