VMware Aria Automation Load Balancing Guide

VMware Aria Automation 8.12

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

https://docs.vmware.com/

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Contents

VMware Aria Automation and VMware Aria Automation Orchestrator

1

This document describes the load balancing configuration of VMware Aria Automation and VMware Aria Automation Orchestrator in a distributed and highly available cluster deployment using VMware NSX, F5 Networks BIG-IP (F5), and Citrix NetScaler technologies.

This document is not an installation guide, but rather a configuration guide that supplements the VMware Aria Automation and VMware Aria Automation Orchestrator installation and configuration documentation available in the VMware Aria Automation product documentation.

This information is for the following products and versions.

Table 1-1.

Product	Version
NSX-T	2.4, 2.5, 3.0,3.1, and later
NSX-V	6.2.x, 6.3.x, 6.4.x, and later
F5 BIG-IP LTM	11.x, 12.x, 13.x, 14.x, 15.x
Citrix NetScaler ADC	10.5, 11.x, 12.x, 13.x
VMware Aria Automation	8.12 forward
VMware Aria Automation Orchestrator	8.12 forward

Refer to the VMware Product Interoperability Matrices for more details.

Load Balancing Concepts

2

Load balancers distribute work among servers in high-availability deployments. The system administrator backs up the load balancers on a regular basis at the same time as other components.

Follow your organization's policy for backing up load balancers, keeping in mind the preservation of network topology and VMware products backup planning.

This chapter includes the following topics:

SSL Pass-Through

SSL pass-through is used with the load balancing configurations.

SSL pass-through is used for these reasons:

- Ease of deployment
  - Not having to deploy the VMware Aria Automation or VMware Aria Automation Orchestrator certificates to the load balancer simplifies deployment and reduces complexity.
- No operational overhead
  - At the time of certificate renewal, no configuration changes are required to the load balancer.
- Ease of communication
  - The individual host names of the load-balanced components are the subject alternate name field of the certificates, so the client can easily communicate with the load balanced nodes.

Load balancer notifications

It is a recommended practice to enable notifications any time a VMware Aria Automation or VMware Aria Automation Orchestrator node in a server pool goes down.

VMware NSX Data Center supports enabling notifications when an alert is raised in VMware Aria Operations and VMware Aria Operations for Networks. Refer to the VMware Aria Operations and VMware Aria Operations for Networks documentation.

For NetScaler, configure specific SNMP traps and an SNMP manager to send alerts. Consult the NetScaler documentation for information on SNMP configuration.

You can set up email notification with F5 using these methods:

- Configuring the BIG-IP system to deliver locally generated email messages
- Configuring custom SNMP traps

One-arm and multi-arm topologies

One-arm and multi-arm deployments route load balancer traffic differently.

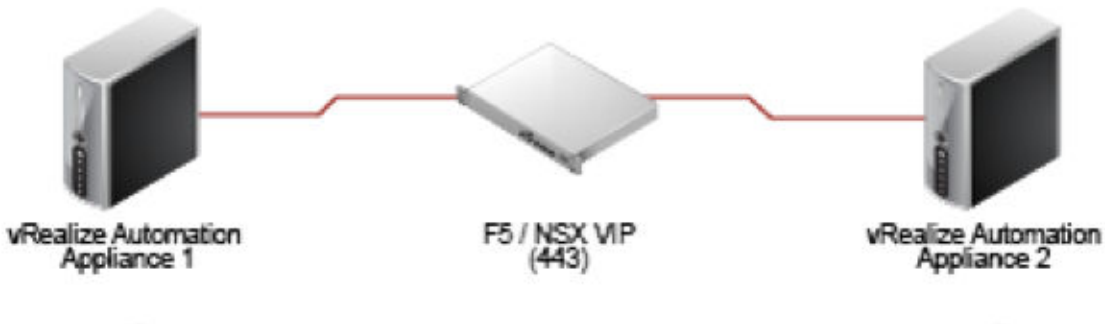
In one-arm deployment, the load balancer is not physically in line of the traffic, which means that the load balancer's ingress and egress traffic goes through the same network interface. Traffic from the client through the load balancer is network address translated (NAT) with the load balancer as its source address. The nodes send their return traffic to the load balancer before being passed back to the client. Without this reverse packet flow, return traffic would try to reach the client directly, causing connections to fail.

In a multi-arm configuration, the traffic is routed through the load balancer. The end devices typically have the load balancer as their default gateway.

The most common deployment is a one-arm configuration. The same principles apply to multi-arm deployments, and they both work with F5 and NetScaler.

For this document, the VMware Aria Automation and VMware Aria Automation Orchestrator components are deployed in a one-arm configuration. Multi-arm deployments are also supported, and their configuration are generally similar to the one-arm configuration.

One-arm configuration:



Prerequisites for configuring load balancers for VMware Aria Automation

3

Before configuring load balancers, perform these prerequisites.

- NSX - Before you can start a high-availability implementation of VMware Aria Automation or VMware Aria Automation Orchestrator using NSX as a load balancer, ensure that your NSX topology is configured and that your version of NSX is supported. This document covers the load balancing aspect of an NSX configuration and assumes that NSX is configured and validated to work properly on the target environment and networks. To verify that your version is supported, see the VMware Product Interoperability Matrix.
- F5 BIG-IP LTM - Before you can start a high-availability implementation of VMware Aria Automation or VMware Aria Automation Orchestrator using F5 LTM load balancer, ensure that the load balancer is installed and licensed and that the DNS server configuration is complete.
- NetScaler - Before you can start a high-availability implementation of VMware Aria Automation or VMware Aria Automation Orchestrator using the NetScaler load balancer, ensure that NetScaler is installed and has at least a Standard Edition license.
- Certificates - Request Certificate Authority (CA) signed certificate containing the load-balancer fully qualified domain name and the hostnames of the cluster nodes in the SubjectAltNames section. This configuration enables the load balancer to serve traffic without SSLerrors.
- Identity provider - The identity provider is Workspace ONE Access, which is deployed external to the VMware Aria Automation appliances and cluster.

For more information on installation and configuration, see VMware Aria Automation documentation on docs.vmware.com.

If necessary, an external VMware Aria Automation Orchestrator cluster can be configured to work with the VMware Aria Automation system. This can be done after the VMware Aria Automation system is up and running. However, a VMware Aria Automation Highly Available setup already includes an embedded VMware Aria Automation Orchestrator cluster.

This chapter includes the following topics:

Complete the VMware Aria Automation and VMware Aria Automation Orchestrator initial installation

You must configure your load balancer before completing the initial installation of VMware Aria Automation, VMware Aria Automation Orchestrator.

During the installation process of VMware Aria Automation or VMware Aria Automation Orchestrator, a load balancer typically will route half of the traffic to the secondary nodes, which will not yet be configured, causing the installation to fail. To avoid these failures and to complete the initial installation of VMware Aria Automation or VMware Aria Automation Orchestrator, you must perform these steps.

Procedure

1. Configure the F5, NSX, or NetScaler load balancer. See Chapter 6 Configuring F5 Big-IP LTM, Chapter 5 Configuring NSX-T, and Chapter 7 Configuring Citrix ADC (NetScaler ADC).
2. Turn off the health monitors or change them temporarily to default ICMP, and ensure traffic is still forwarding to your primary nodes.
3. Disable all secondary nodes from the load balancer pools.
4. Install and configure all system components as detailed in VMware Aria Automation / VMware Aria Automation Orchestrator installation and configuration documentation.
5. When all components are installed, enable all non-primary nodes on the load balancer.
6. Configure the load balancer with all monitors (health checks) enabled.

   After you complete this procedure, update the monitor that you created in Configure monitors.
7. Ensure that all nodes are in the expected state with the health monitor enabled in the load balancer after installation. The pool, service groups, and virtual server of the virtual appliance nodes should be available and running. All virtual appliance nodes should be available, running, and enabled.

Configuring NSX-V

4

You can deploy a new NSX-V Edge Services Gateway or reuse an existing one. However, it must have network connectivity to and from the VMware Aria Automation components being load balanced.

Note Refer to the VMware Workspace One load-balancing documentation in order to configure highly-available identity provider for VMware Aria Automation.

This chapter includes the following topics:

- Configure global settings
- Configure application profiles
- Configure service monitoring
- Configure server pools
- Configure virtual servers

Configure global settings

Configure global settings using these steps.

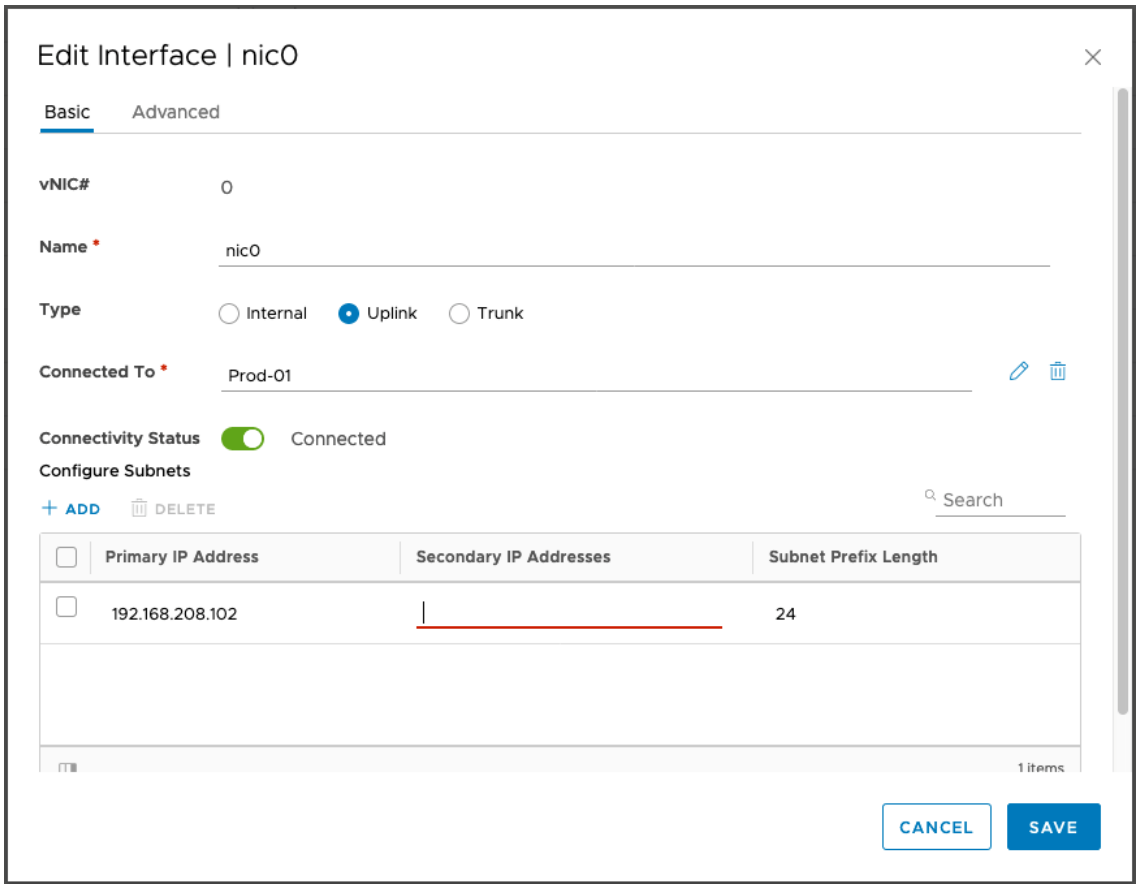
Procedure

1 Log in to the NSX-V, click **Manager > Settings** and select **Interfaces**.

2 Select your Edge device from the list.

3 Click **vNIC#** for the external interface that hosts the virtual IP addresses and click the **Edit** icon.

4 Select the appropriate network range for the NSX-V Edge and click the **Edit** icon.

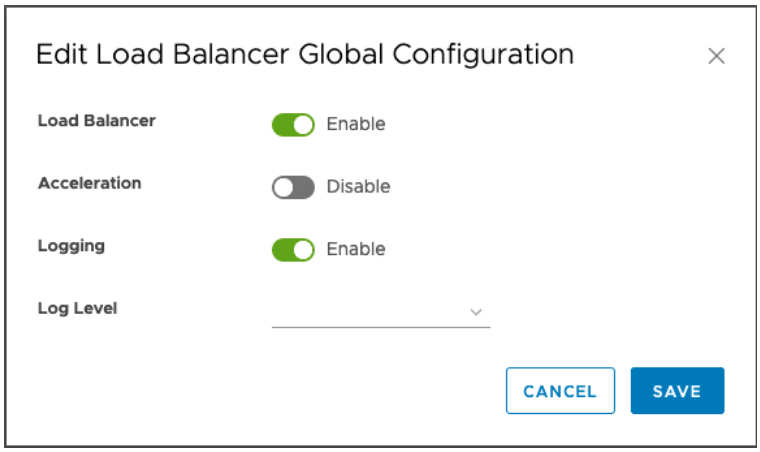


5 Add the IP addresses assigned to the virtual IPs and click **Save**.

6 Click **Ok** to exit the interface configuration page.

7 Navigate to the **Load Balancer** tab and click the **Edit** icon.

8 Select **Enable Load Balancer** and **Logging**, if necessary, and click **Save**.



Configure application profiles

It is required to add application profiles for VMware Aria Automation and for an external VMware Aria Automation Orchestrator (optional).

Procedure

1 Click **Application Profiles** in the left pane.

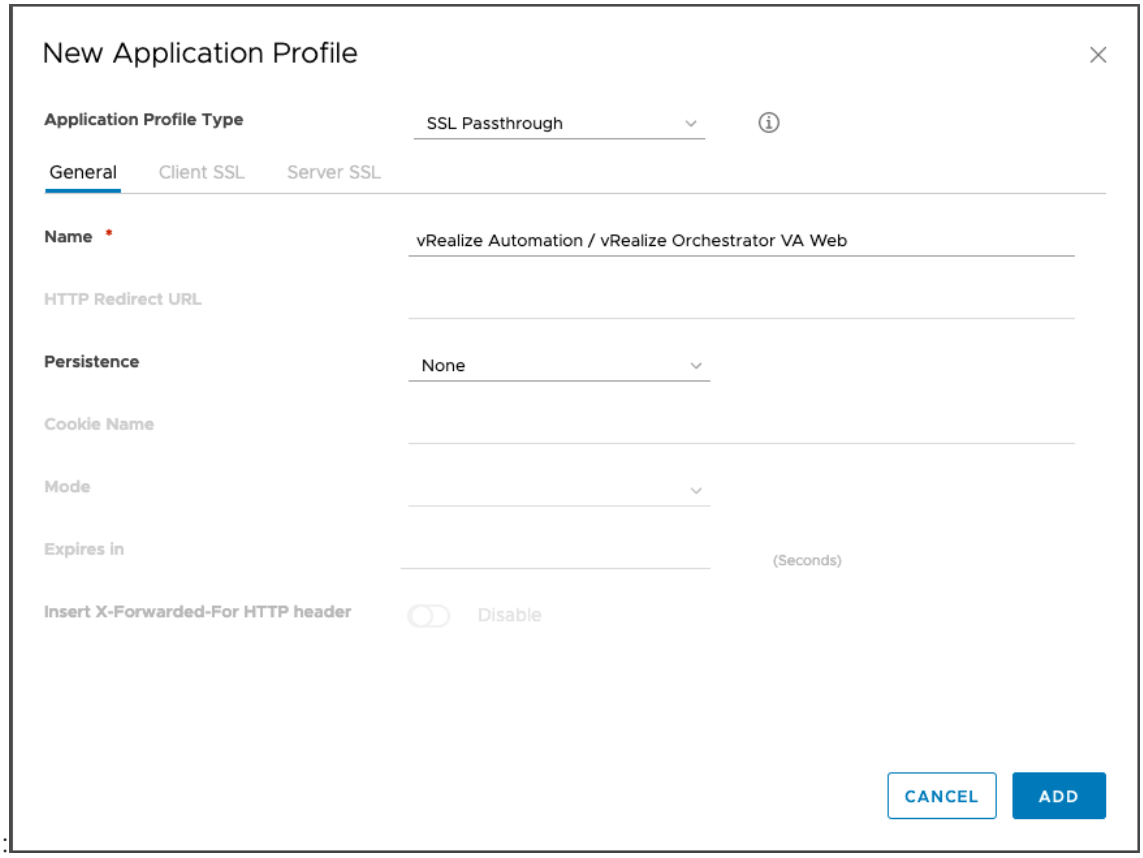
2 Click **Add** to create the application profiles required for the specific product as outlined in this table. Use the default value if nothing is specified.

Table 4-1. Application Profiles

Name	Type	Persistence	Expires In
VMware Aria Automation	SSL Passthrough	None	None
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	SSL Passthrough	None	None

Results

The completed configuration should look similar to this screen:



Configure service monitoring

It is required to add service monitors for VMware Aria Automation and for an external VMware Aria Automation Orchestrator (optional).

Procedure

1 Click **Service Monitoring** in the left pane.

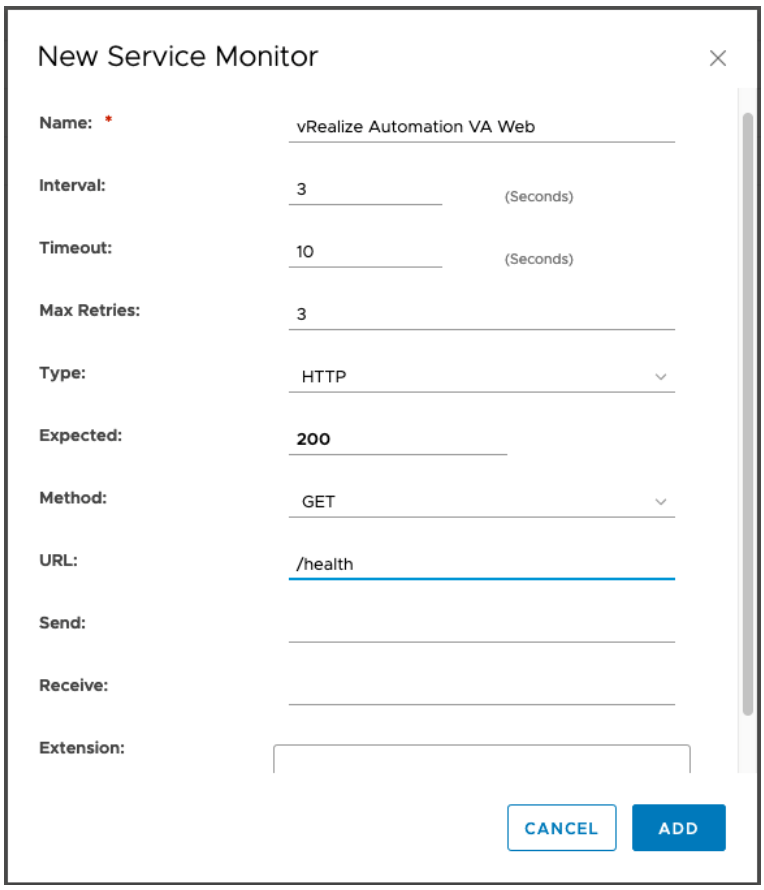
2 Click **Add** to create the service monitors required for the specific product as outlined in this table. Use the default value if nothing is specified.

Table 4-2. Service Monitoring

Name	Interval	Timeout	Retries	Type	Method	URL	Receive	Expected
VMware Aria Automation	3	10	3	HTTP	GET	/health	200	200
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	3	10	3	HTTP	GET	/health	200	200

Results

The completed configuration should look similar to this screen:



Configure server pools

It is required to create server pools for VMware Aria Automation, and for an external VMware Aria Automation Orchestrator (optional).

Procedure

1 Click **Pools** in the left pane.

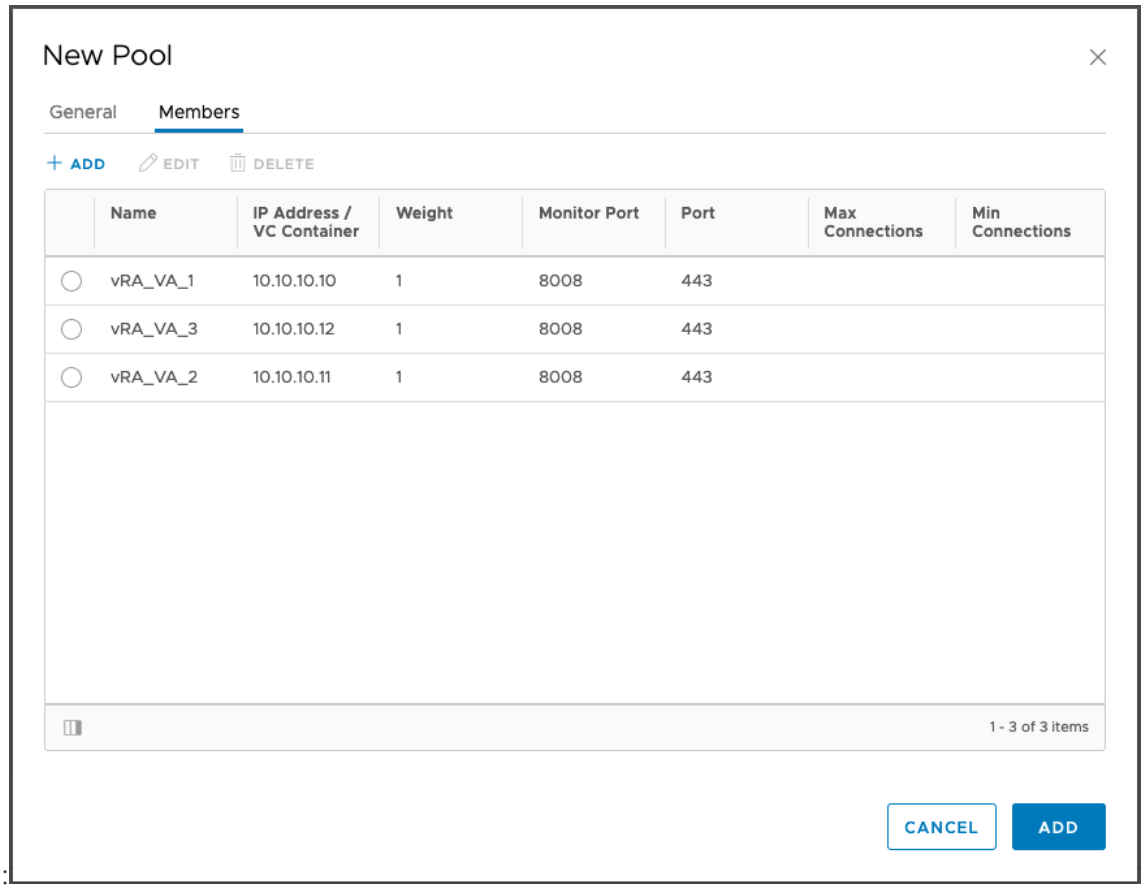
2 Click the **Add** icon to create the pools required for the specific product as outlined in this table.

Table 4-3. Server Pools

Pool Name	Algorithm	Monitors	Member Name	IP Address/ vCenter Container	Port	Monitor Port
VMware Aria Automation	Least connections	VMware Aria Automation	VA1 VA2 VA	IP Address	443	8008
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	Least connections	VMware Aria Automation Orchestrator	VA1 VA2 VA3	IP Address	443	8008

Results

The completed configuration should look similar to this screen:



Configure virtual servers

It is required to configure virtual servers for VMware Aria Automation, and for an external VMware Aria Automation Orchestrator (optional).

Procedure

1 Click **Virtual Servers** in the left pane.

2 Click the **Add** icon to create the virtual servers required for the different product as outlined in this table. Use default values if nothing is specified.

Name	Acceleration	IP Address	Protocol	Port	Default Pool	Application Profile
vVMware Aria Automation	Not enabled	IP Address	HTTPS	443	vRealize Automation	vRealize Automation
VMware Aria Automation Orchestrator **Note** Use only for external vRealize Orchestrator instances.	Not enabled	IP Address	HTTPS	443	vRealize Orchestrator	vRealize Orchestrator

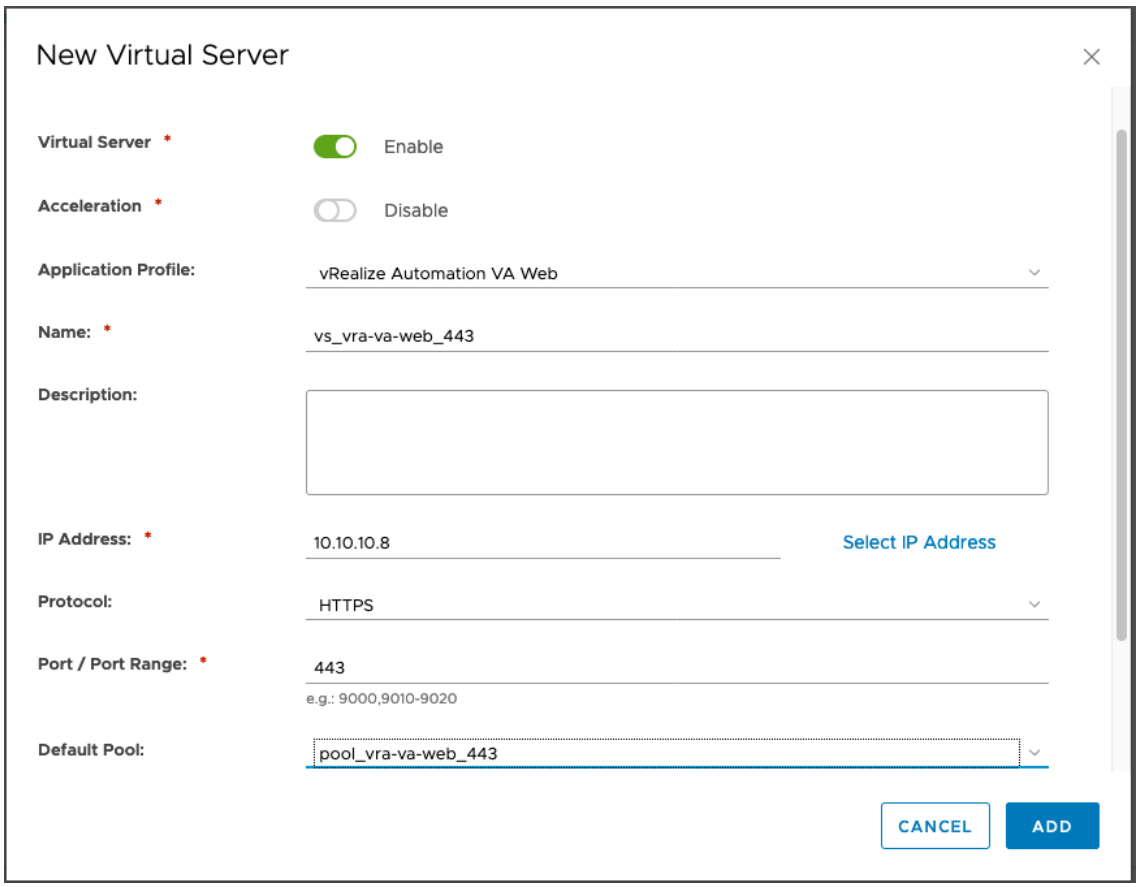
3 (Optional) When using VMware Aria Automation Orchestrator you may need to expose the health check port as a virtual server. In order to do that click the **Add** icon to create a new virtual server for the health check port. Use default values if nothing is specified.

Name	Acceleration	IP Address	Protocol	Port	Default Pool	Application Profile
VMware Aria Automation	Not enabled	IP Address	HTTP	8008	vRealize Automation	vRealize Automation
VMware Aria Automation Orchestrator **Note** Use only for external instances.	Not enabled	IP Address	HTTP	8008	vRealize Orchestrator	vRealize Orchestrator

4

Results

The completed configuration should look similar to this screen.


New Virtual Server
Virtual Server *
Enable
Acceleration *
Disable
Application Profile:
vRealize Automation VA Web
Name: *
vs_vra-va-web_443
Description:
IP Address: *
10.10.10.8
Select IP Address
Protocol:
HTTPS
Port / Port Range: *
443
e.g.: 9000,9010-9020
Default Pool:
pool_vra-va-web_443
CANCEL
ADD

Configuring NSX-T

5

Before configuring, the NSX-T must be deployed in the environment and the Tier-1 gateway with the load balancer must have access to the VMware Aria Suite components over a network.

Note Refer to the VMware Workspace One load-balancing documentation to configure highly-available identity provider for VMware Aria Automation.

This chapter includes the following topics:

- Configure NSX-T application profiles
- Configure NSX-T active health monitor
- Configure NSX-T server pools
- Configure NSX-T virtual servers
- Configure load balancer
- Add virtual servers to load balancer

Configure NSX-T application profiles

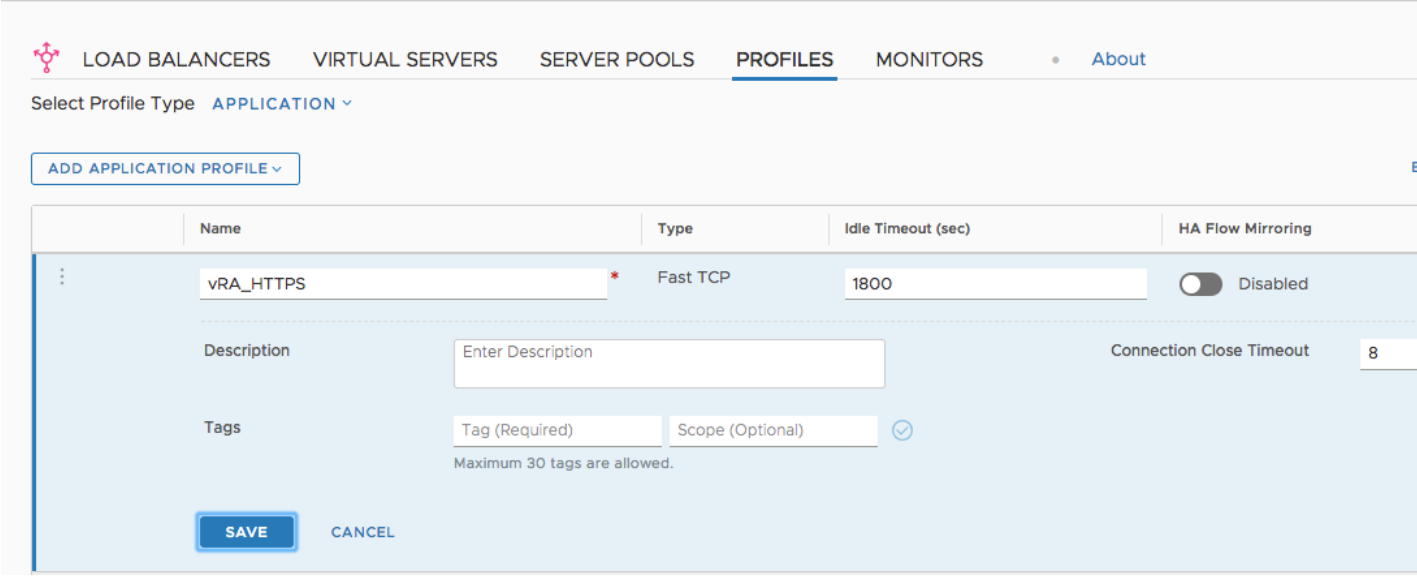
You can add an application profile in NSX-T for HTTPS requests.

Procedure

1. Navigate to **Networking > Load Balancing > Profiles**.
2. Select **Application** as the profile type.
3. Click **Add Application Profile** and select **Fast TCP Profile**.
4. Enter a name for the profile.

Results

The completed application profile for the HTTPS request should look similar to this screen:



Configure NSX-T active health monitor

To configure an active health monitor for NSX-T follow these steps.

Procedure

1 Navigate to **Networking > Load Balancing > Monitors**.

2 Click **Add Active Monitor** and select **HTTP**.

3 Enter a name for the health monitor.

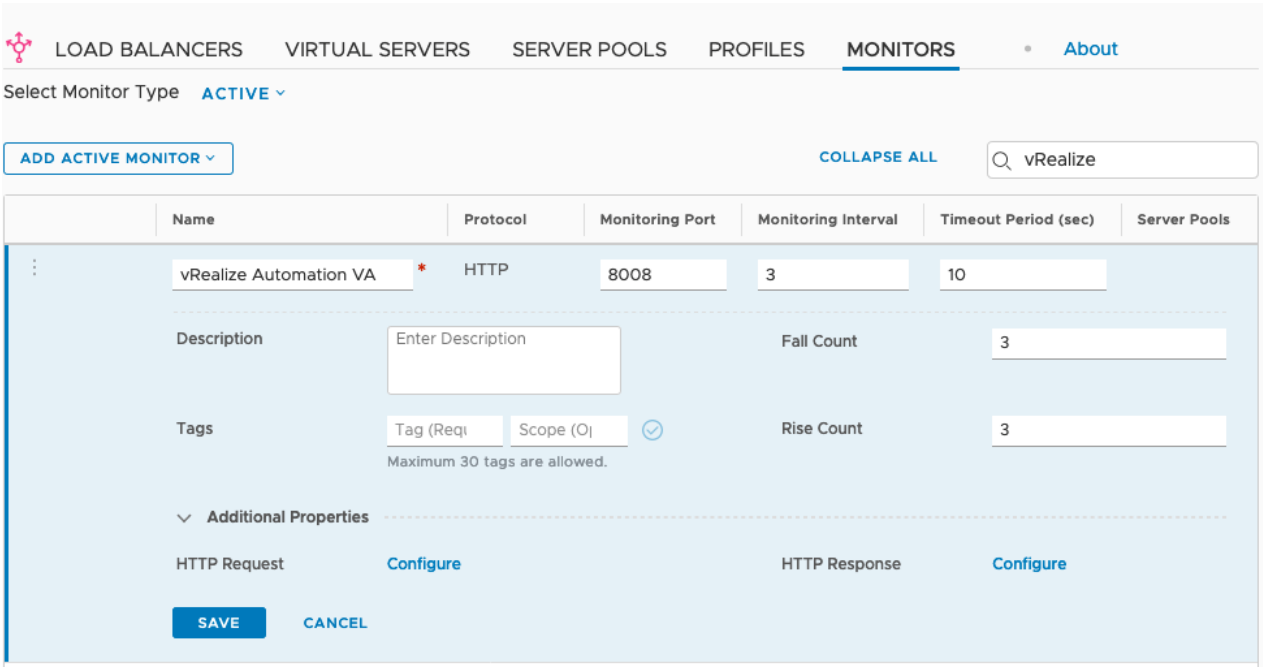
4 Configure the health monitor as outlined in this table:

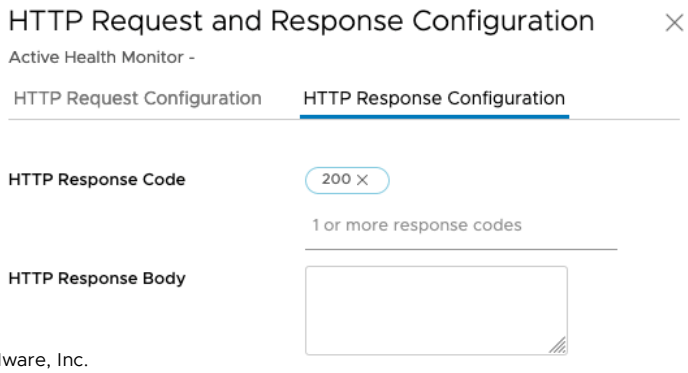
Table 5-1. Configure Health Monitor

Name	Monitoring Port	Interval	Timeout	Fall Count	Type	Method	URL	Response Code	Response Body
VMware Aria Automation	8008	3	10	3	HTTP	GET	/health	200	None
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	8008	3	10	3	HTTP	GET	/health	200	None

Results

The completed configuration should look similar to these screens.





Configure NSX-T server pools

You must configure server pools for VMware Aria Automation, and an external VMware Aria Automation Orchestrator (optional).

Procedure

1 Navigate to **Networking > Load Balancing > Server Pools**.

2 Click **Add Server Pool**.

3 Enter a name for the pool.

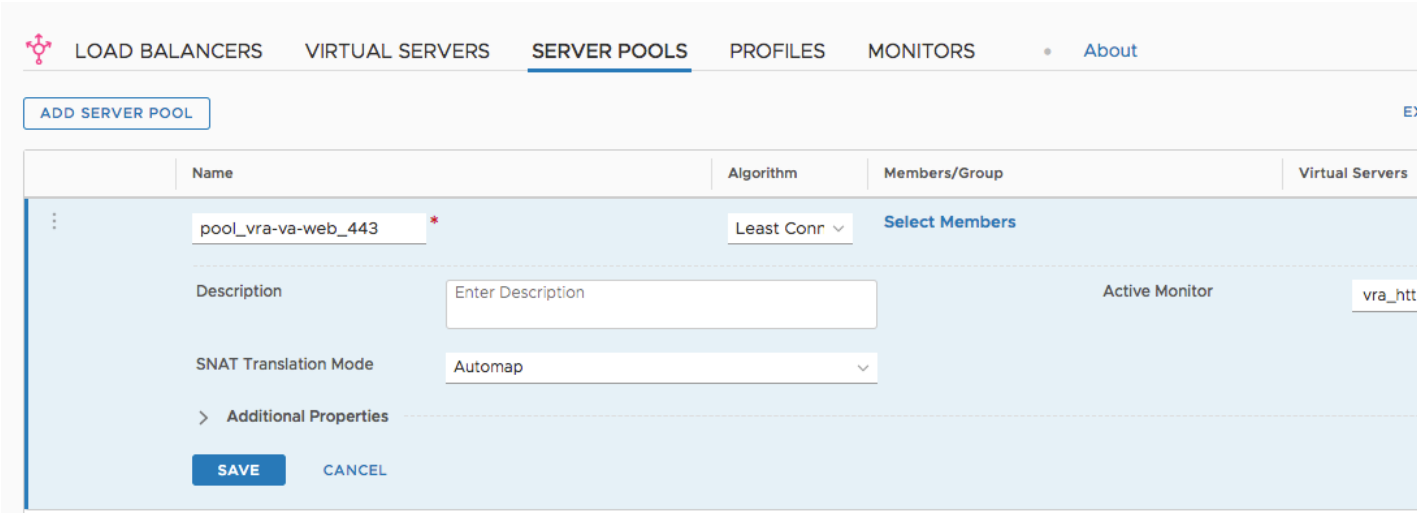
4 Configure the pool as outlined in this table:

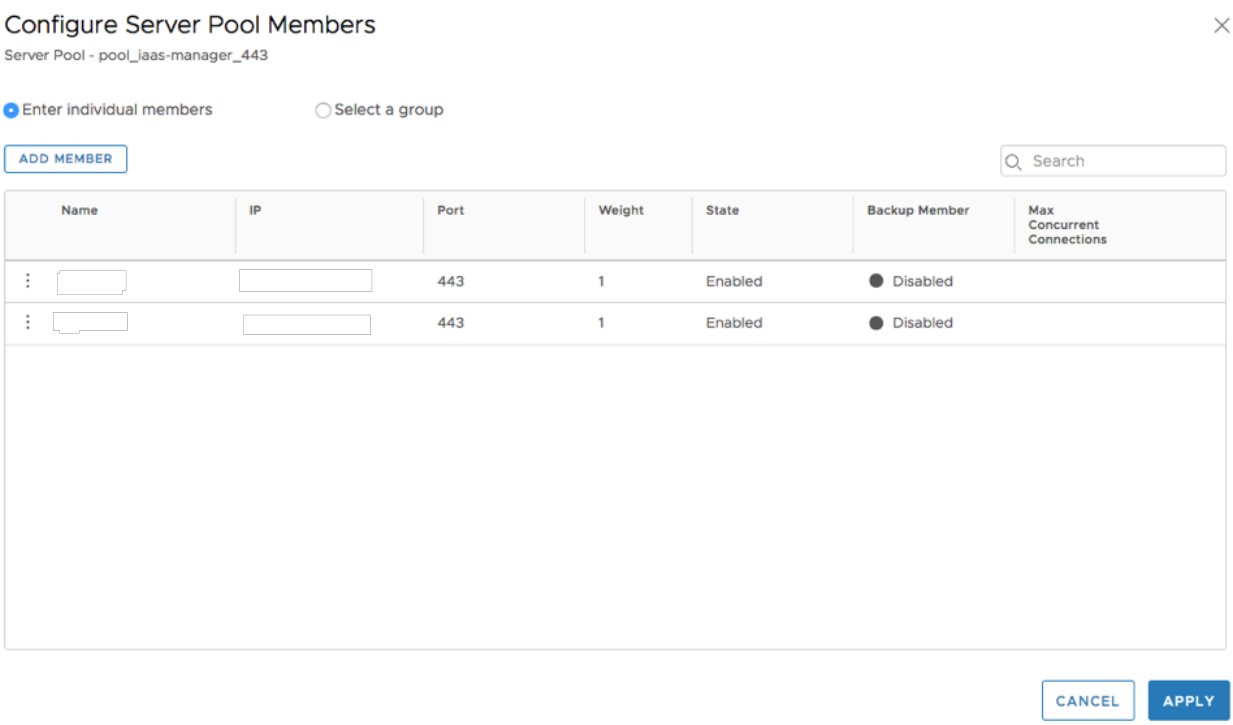
Table 5-2. Configure Server Pools

Pool Name	Algorithm	Active Monitor	Name	IP	Port
VMware Aria Automation	Least Connections	VMware Aria Automation	VA1 VA2 VA3	IP	443
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	Least Connections	VMware Aria Automation Orchestrator	VA1 VA2 VA3	IP	443

Results

The completed configuration should look similar to these screens.





Configure NSX-T virtual servers

It is required to configure virtual servers for VMware Aria Automation, and for an external VMware Aria Automation Orchestrator (optional).

Procedure

1 Navigate to **Networking > Load Balancing > Virtual Servers**.

2 Click **Add virtual server** and select **Layer**.

3 Configure the virtual servers as outlined in this table:

Table 5-3. Configure Virtual Servers

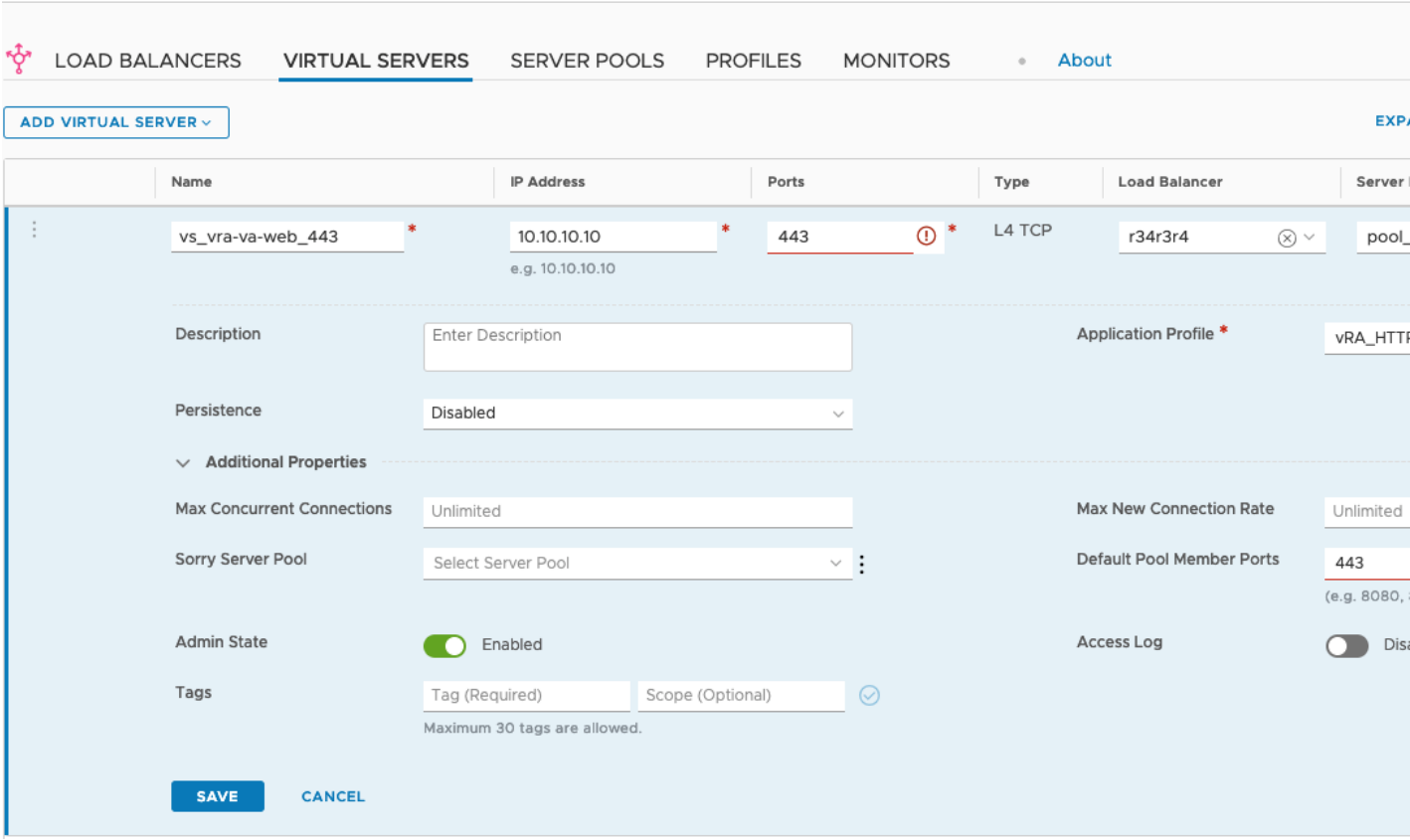
Name	Type	Application Profile	IP Address	Port	Server Pool	Persistence Profile
VMware Aria Automation	L4 TCP	VMware Aria Automation	IP	443	VMware Aria Automation	None
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	L4 TCP	VMware Aria Automation Orchestrator	IP	443	VMware Aria Automation Orchestrator	None

4 (Optional) In cases where VMware Aria Operations is used you may need to expose the health check port as a virtual server. In order to achieve that create a new virtual server according to the following table:

Name	Type	Application Profile	IP Address	Port	Server Pool	Persistence Profile
VMware Aria Automation	L4 TCP	VMware Aria Automation	IP	8008	VMware Aria Automation	None
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	L4 TCP	VMware Aria Automation Orchestrator	IP	8008	VMware Aria Automation Orchestrator	None

Results

The completed configuration should look similar to this screen.



Configure load balancer

Specify a load balancer for each VMware Aria Automation, and for an external VMware Aria Automation Orchestrator (optional) instance.

Procedure

1 Navigate to **Networking > Load Balancing > Load Balancers**.

2 Click **Add Load Balancer**.

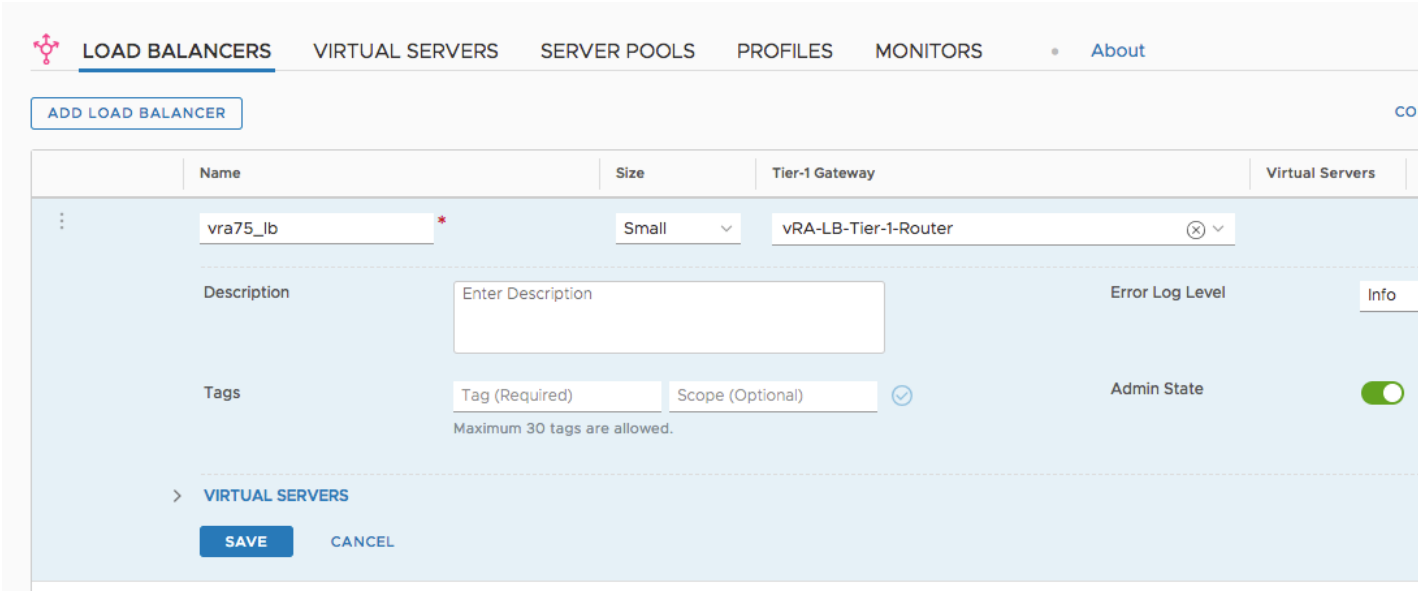
3 Enter a name and select the appropriate **Load Balancer Size** (depends on VMware Aria Automation cluster size).

4 Select the **Tier 1 Logical Router**.

> **Note** In NSX-T version 2.4, the monitor health checks are performed using the IP address of Tiers-1 uplink (or first service port for Tiers-1 standalone SR) for all load balancer server pools. Ensure that server pools are accessible from this IP address.

Results

The configuration should look similar to this screen:



Add virtual servers to load balancer

Once you've configured the load balancer, you can add virtual servers.

Procedure

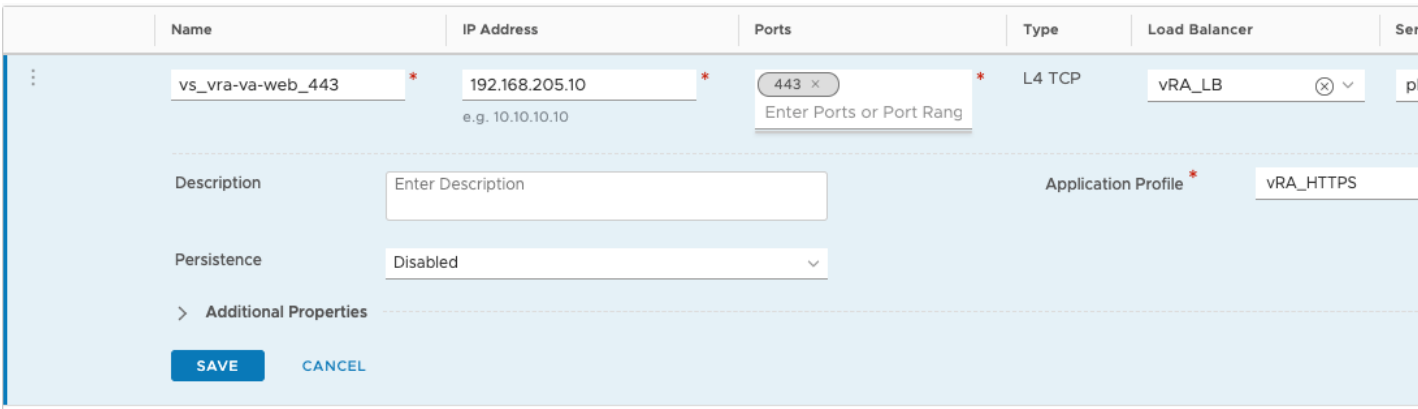
1 Navigate to **Networking > Load Balancing > Virtual Servers**.

2 Edit the configured virtual servers.

3 Assign the previously configured load balancer as the **Load Balancer**.

Results

The configuration should look similar to this screen:



Configuring F5 Big-IP LTM

6

Before configuring your F5 device, it must be deployed in the environment with access to VMware Aria Suite components over a network.

Note Refer to the Workspace One load-balancing documentation to configure highly-available identity provider for VMware Aria Automation.

For configuration, the F5 device must meet these requirements:

- The F5 device can be either physical or virtual.
- The F5 Local Traffic module (LTM) load balancer can be deployed in either one-arm or multi-arm topologies.
- The LTM must be configured and licensed as either Nominal, Minimum, or Dedicated. You can configure the LTM by navigating to **System > Resource Provisioning**.

If you are using an F5 LTM version older than 11.x, you might need to change your health monitor settings related to the Send string. For more information about how to set up your health monitor send string for the different versions of F5 LTM, see HTTP health checks may fail even though the node is responding correctly.

This chapter includes the following topics:

Configure monitors

It is required to add monitors for VMware Aria Automation, and for an external VMware Aria Automation Orchestrator (optional).

Procedure

1 Log in to the F5 load balancer and navigate to **Local Traffic > Monitor**.

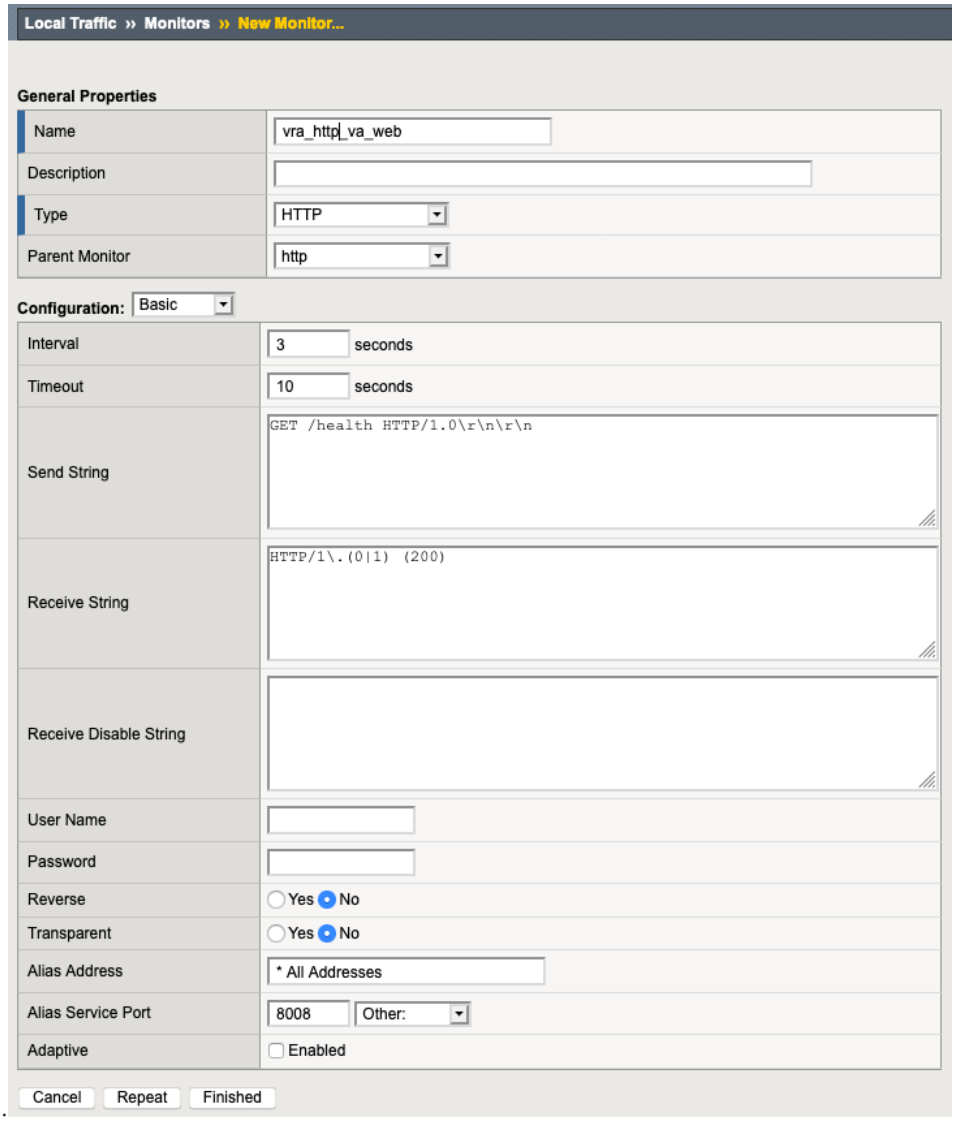
2 Click **Create** and configure the monitor as outlined in this table. Use the default value if nothing is specified.

Table 6-1. Configure Monitors

Name	Type	Interval	Timeout	Send String.	Receive String.	Alias Service Port
VMware Aria Automation	HTTP	3	10	GET /health HTTP/ 1.0\r\n\r\n	HTTP/1\.(0|1) (200)	8008
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	HTTP	3	10	GET /health HTTP/ 1.0\r\n\r\n	HTTP/1\.(0|1) (200)	8008

Results

The configuration should look similar to this



screen.

Configure F5 server pools

It is required to configure service pools for VMware Aria Automation, and for an external VMware Aria Automation Orchestrator (optional).

Procedure

1 Log in to the F5 load balancer and navigate to **Local Traffic > Pools**.

2 Click **Create** and configure the pool as outlined in this table. Use the default value if nothing is specified.

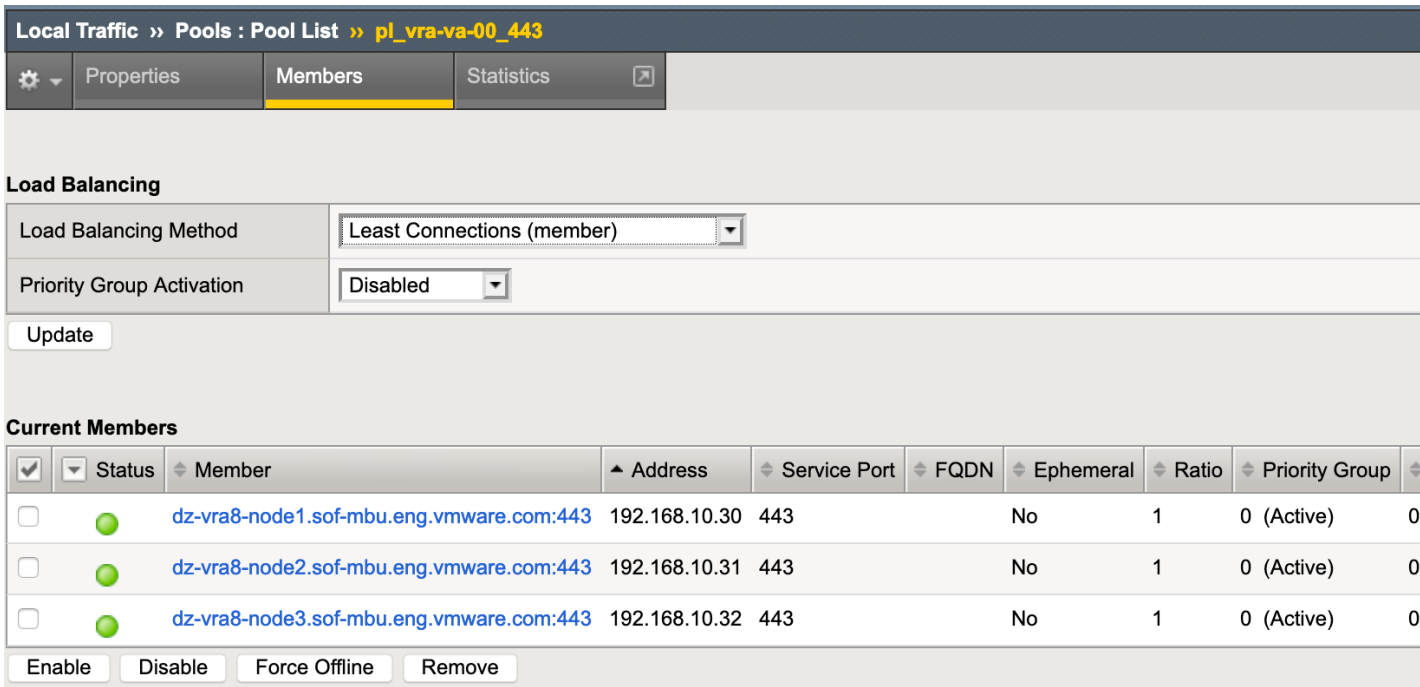
Table 6-2. Configure Server Pools

Name	Health Monitors	Load Balancing Method	Node Name	Address	Service Port
VMware Aria Automation	VMware Aria Automation	Least Connections (member)	VA1 VA2 VA3	IP Address	443
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	VMware Aria Automation Orchestrator	Least Connections (member)	VA1 VA2 VA3	IP Address	443

3 Enter each pool member as a **New Node** and add it to the **New Members** group.

Results

The configuration should look similar to this screen.



Configure F5 virtual servers

It is required to configure virtual servers for VMware Aria Automation, and for an external VMware Aria Automation Orchestrator (optional).

Procedure

1 Log in to the F5 load balancer and navigate to **Local Traffic > Virtual Servers**.

2 Click **Create** and configure the virtual server as outlined in this table. Use the default value if nothing is specified.

Table 6-3. Configure Virtual Servers

Name	Type	Destination Address	Service Port	Source Address Translation	Default Pool	Default Persistence Profile
VMware Aria Automation	Performance (Layer 4)	IP Address	443	Auto Map	VMware Aria Automation	None
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	Performance (Layer 4)	IP Address	443	Auto Map	VMware Aria Automation Orchestrator	None

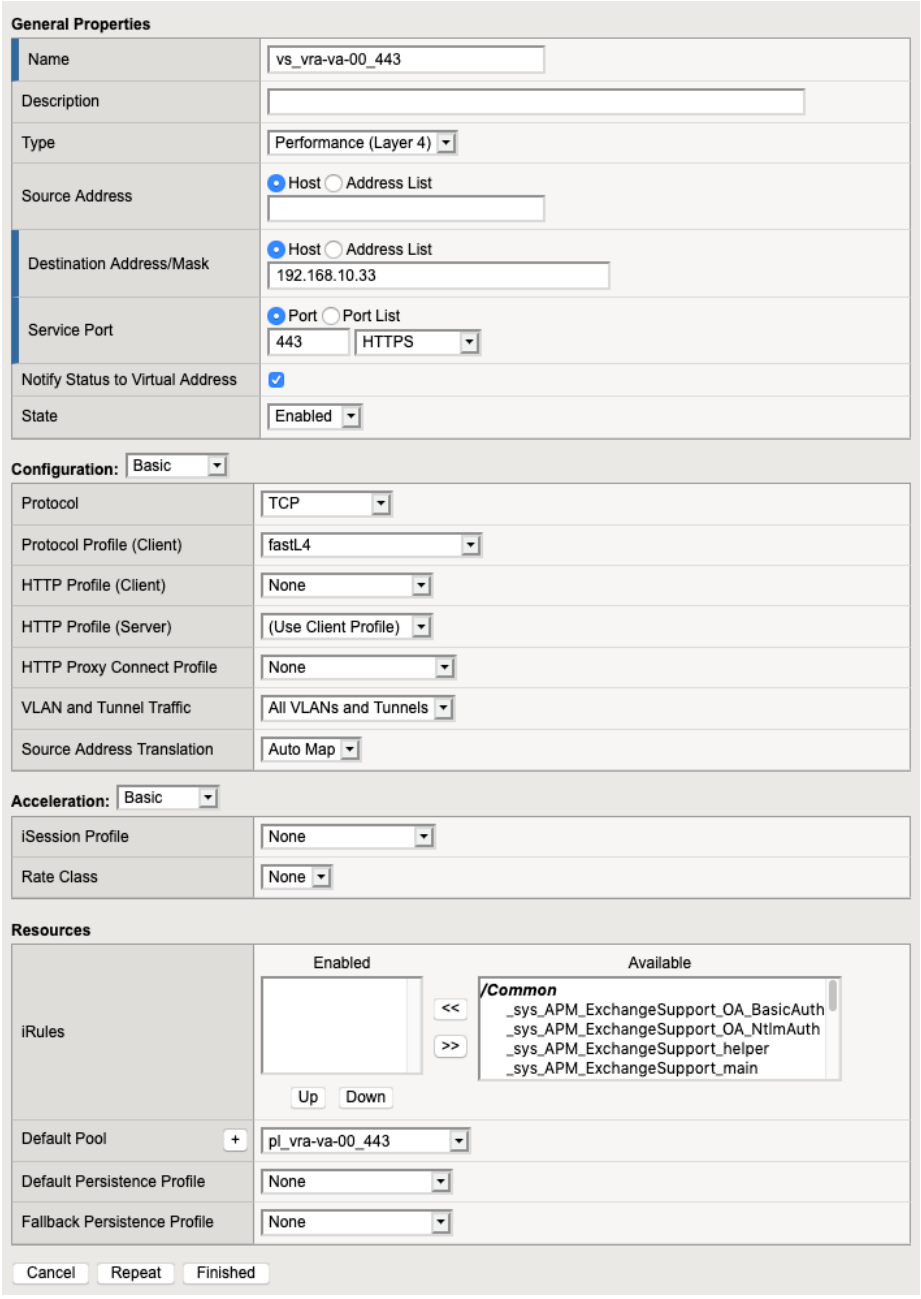
3 (Optional) In cases where VMware Aria Operations is used you may need to expose the health check port as a virtual server. In order to achieve that click **Create** and configure a new virtual server as outlined in this table. Use the default value if nothing is specified:

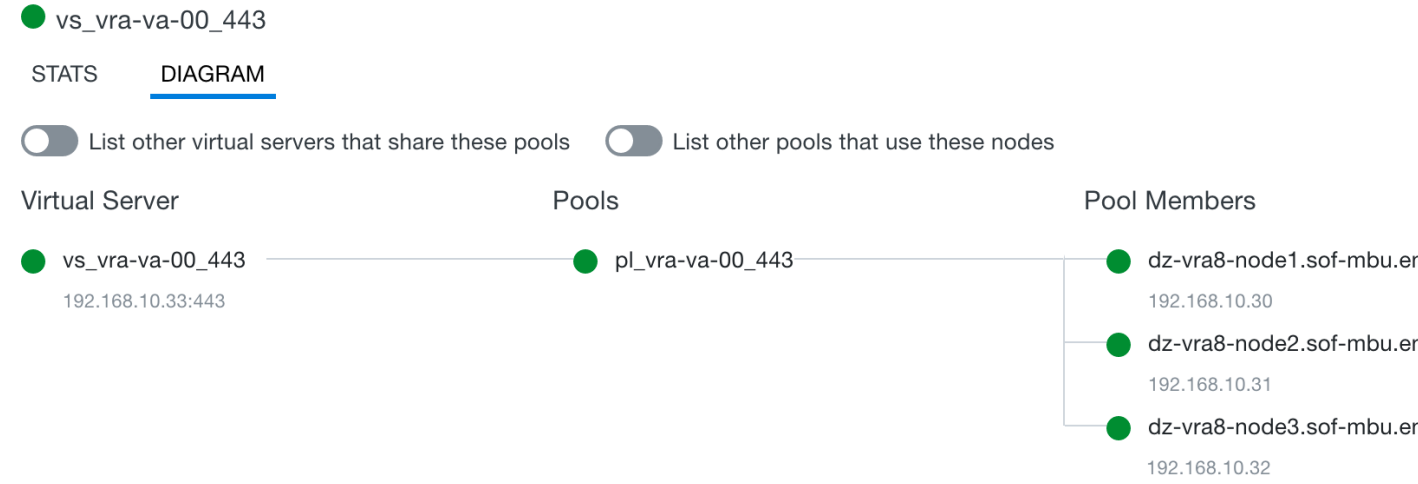
Name	Type	Destination Address	Service Port	Source Address Translation	Default Pool	Default Persistence Profile
VMware Aria Automation	Performance (Layer 4)	IP Address	8008	Auto Map	VMware Aria Automation	None
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	Performance (Layer 4)	IP Address	8008	Auto Map	VMware Aria Automation Orchestrator	None

4 For an overall view and the status of the virtual servers, select **Local Traffic > Virtual Servers**.

Results

The configuration should look similar to these screens.


General Properties
Name
vs_vra-va-00_443
Description
Type
Performance (Layer 4)
Source Address
Host
Address List
Destination Address/Mask
192.168.10.33
Service Port
Port
Port List
443
HTTPS
Notify Status to Virtual Address
State
Enabled
Configuration:
Basic
Protocol
TCP
Protocol Profile (Client)
fastL4
HTTP Profile (Client)
None
HTTP Profile (Server)
(Use Client Profile)
HTTP Proxy Connect Profile
None
VLAN and Tunnel Traffic
All VLANs and Tunnels
Source Address Translation
Auto Map
Acceleration:
Basic
iSession Profile
None
Rate Class
None
Resources
iRules
Enabled
Available
/Common
_sys_APM_ExchangeSupport_OA_BasicAuth
_sys_APM_ExchangeSupport_OA_NtlmAuth
_sys_APM_ExchangeSupport_helper
_sys_APM_ExchangeSupport_main
Up
Down
Default Pool
pl_vra-va-00_443
Default Persistence Profile
None
Fallback Persistence Profile
None
Cancel
Repeat
Finished


vs_vra-va-00_443
STATS
DIAGRAM
List other virtual servers that share these pools
List other pools that use these nodes
Virtual Server
Pools
Pool Members
vs_vra-va-00_443
192.168.10.33:443
pl_vra-va-00_443
dz-vra8-node1.sof-mbu.er
192.168.10.30
dz-vra8-node2.sof-mbu.er
192.168.10.31
dz-vra8-node3.sof-mbu.er
192.168.10.32

Configuring Citrix ADC (NetScaler ADC) 7

Before you configure Citrix ADC, ensure the NetScaler device is deployed in the environment with access to the vRealize Components.

For configuration, the Citrix ADC must meet these requirements:

- You can use either a virtual or physical NetScaler.
- The Citrix load balancer can be deployed in either a one-arm or multi-arm topologies.
- Enable the load balancer and SSL modules by navigating to **NetScaler > System > Settings > Configure > Basic Features**.

This chapter includes the following topics:

Configure Citrix monitors

You can configure a Citrix monitor by performing these steps.

Procedure

1 Log in to the NetScaler load balancer and navigate to **NetScaler > Traffic Management > Load Balancing > Monitors**.

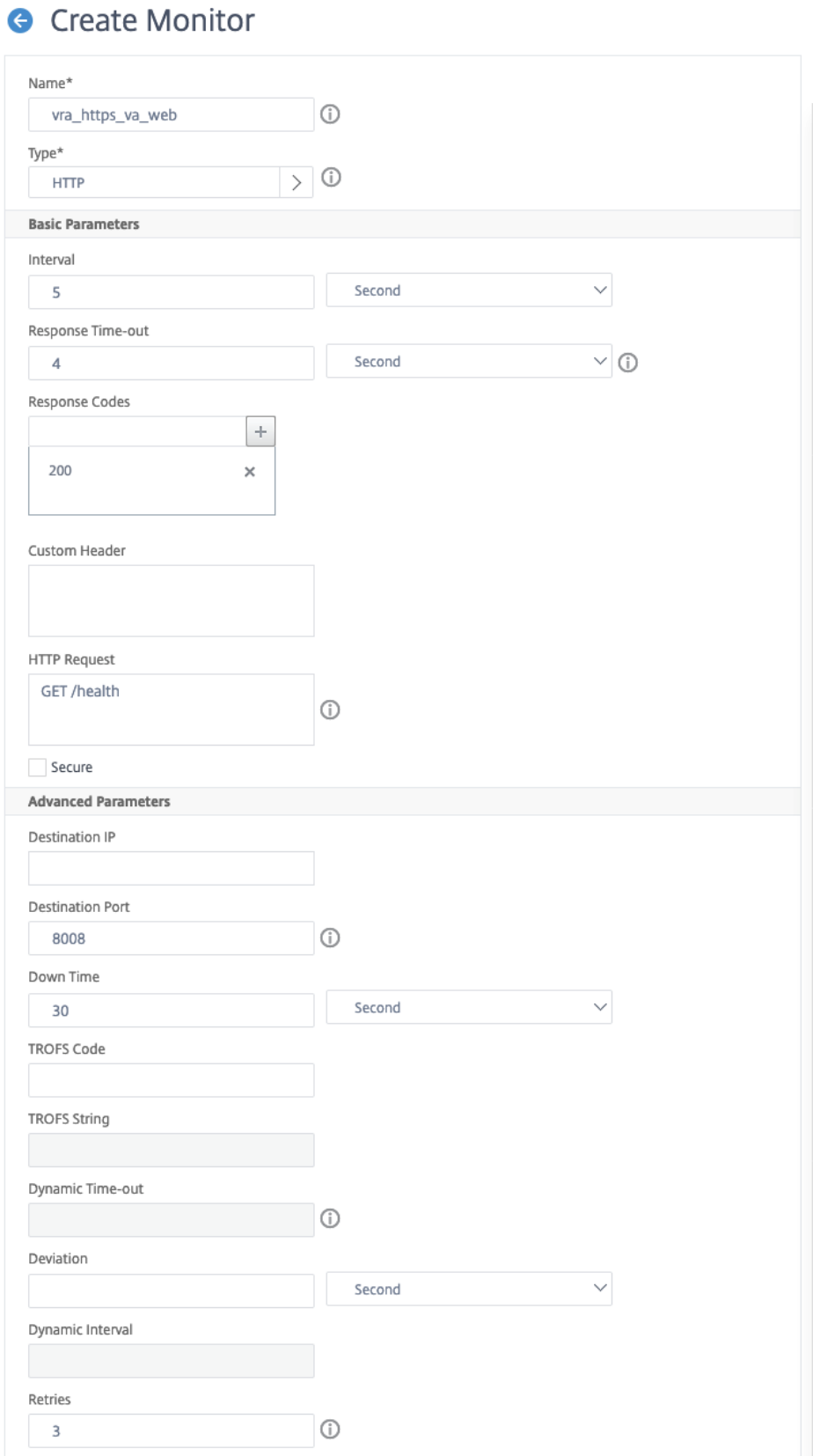
2 Click **Add** and configure the monitor as outlined in this table. Use the default value if nothing is specified.

Table 7-1. Configure Citrix Monitors

Name	Type	Interval	Timeout	Retries	Success Retries	HTTP Request/Send String	Response Codes	Receive String	Dest. Port	Secure
VMware Aria Automation	HTTP	5	4	3	1	GET /health	200	None	8008	No
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	HTTP	5	4	3	1	GET /health	200	None	8008	No

Results

The configuration should look similar to this



screen.

Configure Citrix Service Groups

You can configure service groups by performing these steps.

Procedure

1 Log in to the NetScaler load balancer and navigate to **NetScaler > Traffic Management > Load Balancing > Service Groups**.

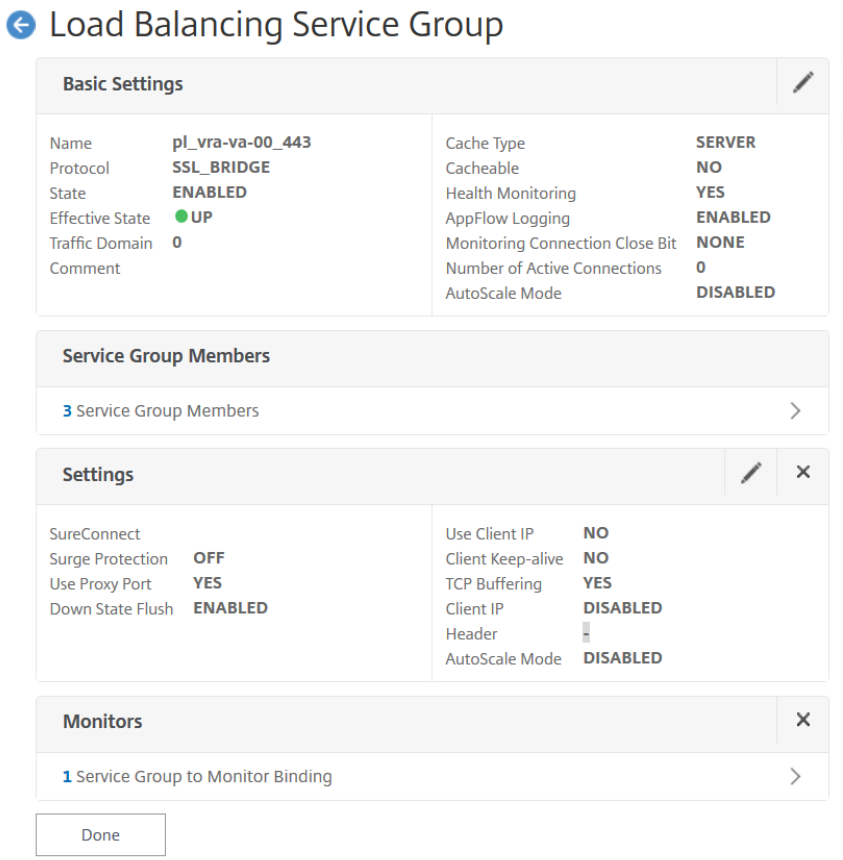
2 Click **Add** and configure the service groups as outlined in this table.

Table 7-2. Configure Service Groups

Name	Health Monitors	Protocol	SG Members	Address	Port
VMware Aria Automation	VMware Aria Automation	SSL Bridge	VA1 VA2 VA3	IP Address	443
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	VMware Aria Automation Orchestrator	SSL Bridge	VA1 VA2 VA3	IP Address	443

Results

The configuration should look similar to this



screen:

Configure Citrix Virtual Servers

You can configure virtual servers by performing these steps.

Procedure

1 Log in to the NetScaler load balancer and navigate to **NetScaler > Traffic Management > Load Balancing > Virtual Servers**.

2 Click **Add** and configure the virtual server as outlined in this table. Use the default value if nothing is specified.

Table 7-3. Configure Virtual Servers

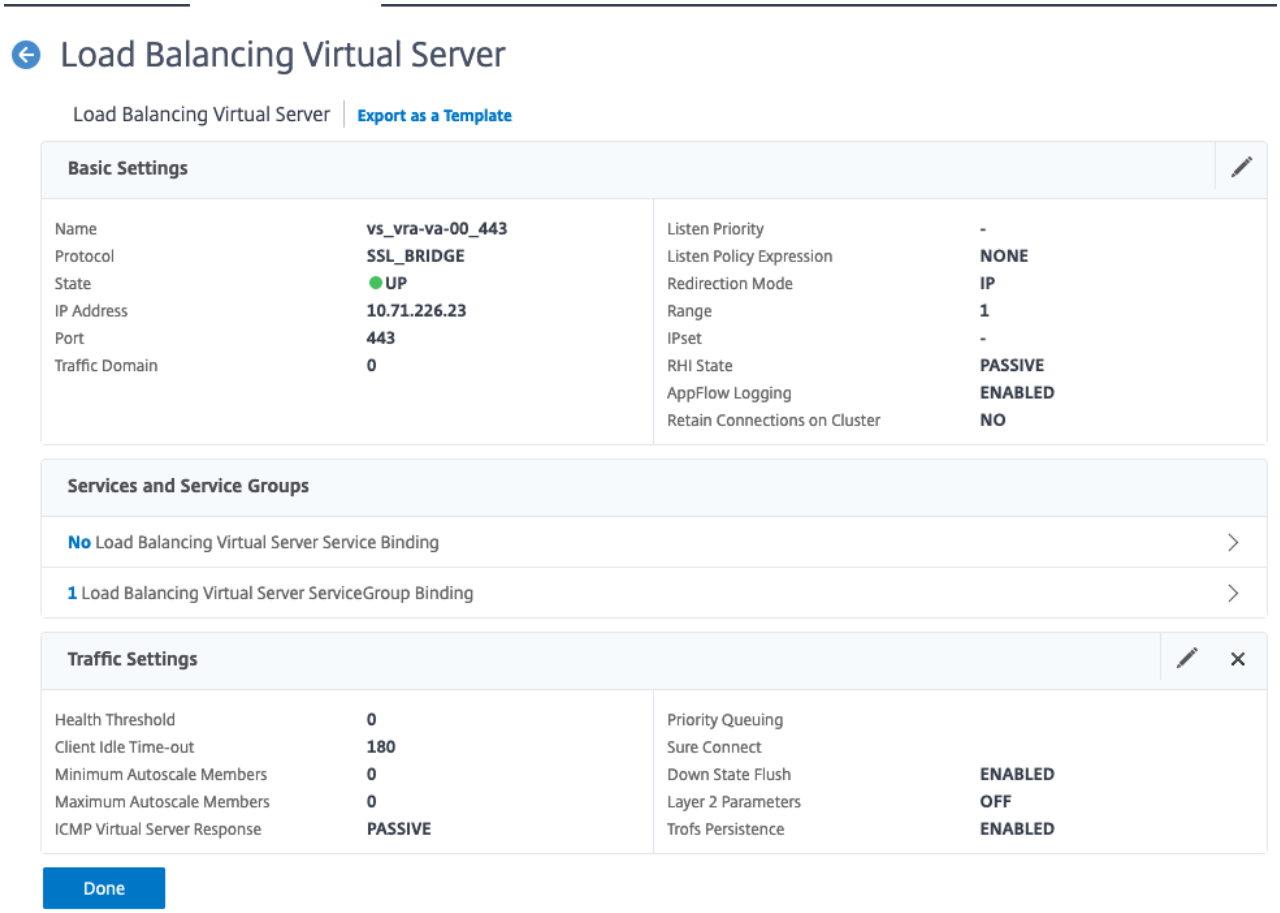
	Name	Protocol	Destination Address	Port	Load Balancing Method	Service Group Binding
	VMware Aria Automation	SSL Bridge	IP Address	443	Least Connections	VMware Aria Automation
	VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	SSL Bridge	IP Address	443	Least Connections	VMware Aria Automation Orchestrator

3 (Optional) In cases where vRealize Operations is used you may need to expose the health check port as a virtual server. Use the default value if nothing is specified. Click **Add** and configure new virtual server as outlined in this table.

	Name	Protocol	Destination Address	Port	Load Balancing Method	Service Group Binding
	VMware Aria Automation	HTTP	IP Address	8008	Least Connections	VMware Aria Automation
	VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	HTTP	IP Address	8008	Least Connections	VMware Aria Automation Orchestrator

Results

The configuration should look similar to this screen:


Load Balancing Virtual Server
Load Balancing Virtual Server
Export as a Template
Basic Settings
Name
vs_vra-va-00_443
Protocol
SSL_BRIDGE
State
UP
IP Address
10.71.226.23
Port
443
Traffic Domain
0
Listen Priority
-
Listen Policy Expression
NONE
Redirection Mode
IP
Range
1
IPset
-
RHI State
PASSIVE
AppFlow Logging
ENABLED
Retain Connections on Cluster
NO
Services and Service Groups
No Load Balancing Virtual Server Service Binding
1 Load Balancing Virtual Server ServiceGroup Binding
Traffic Settings
Health Threshold
0
Client Idle Time-out
180
Minimum Autoscale Members
0
Maximum Autoscale Members
0
ICMP Virtual Server Response
PASSIVE
Priority Queuing
Sure Connect
Down State Flush
ENABLED
Layer 2 Parameters
OFF
Trofs Persistence
ENABLED
Done

Configuring AVI Load Balancer

8

You can configure an AVI load balancer by performing these steps.

Ensure that you have deployed a Service Engine in the vCenter where the vRealize Automation instance is located and that the Service Engine interface is configured in the same network as the vRealize Automation.

This chapter includes the following topics:

Create a health monitor

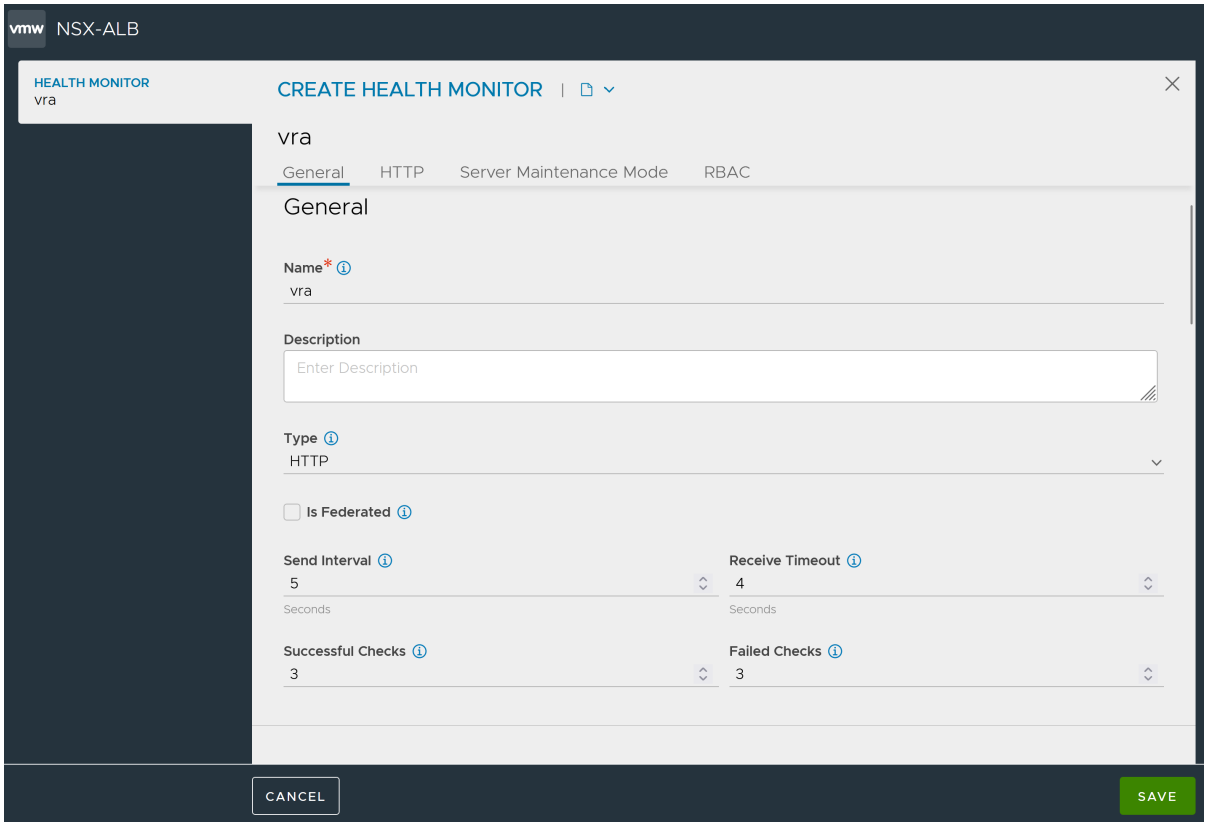
You can create an active monitor by following these steps.

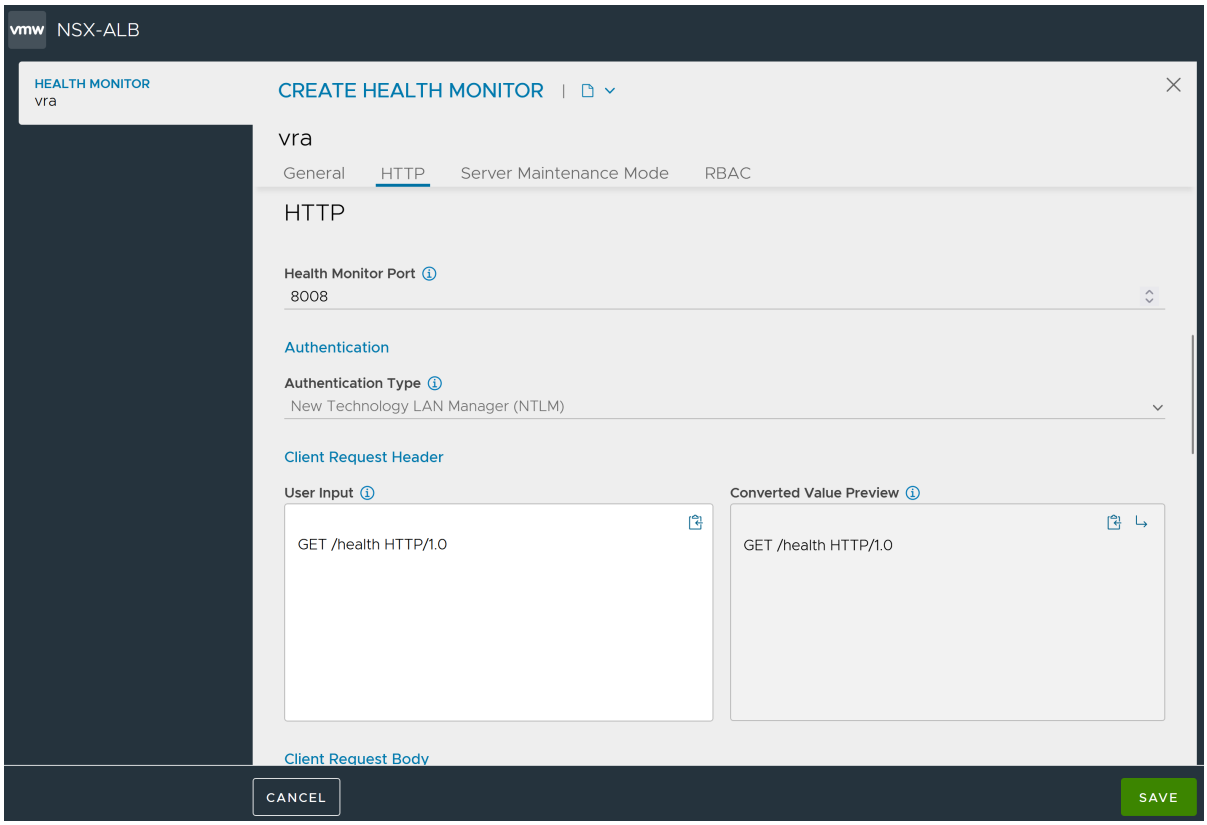
Procedure

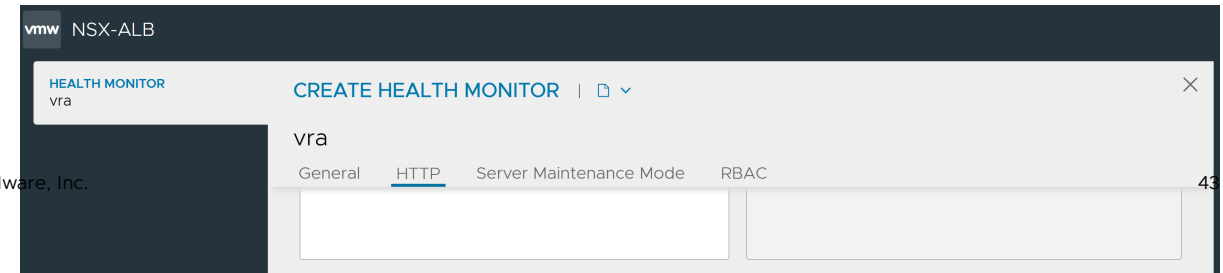
1 Go to **Templates** tab, under the Profiles click the **Health Monitors** entry.

2 Click `Create` and enter the following details.

Appliance Name	Type	Interval	Timeout	Successful checks	Failed checks	Health Monitor Port	Client request header	Response code
VMware Aria Automation	HTTP	5	4	3	3	8008	GET /health HTTP/1.0	2XX
VMware Aria Automation Orchestrator **Note** Use for external VMware Aria Automation Orchestrator instances only.	HTTP	5	4	3	3	8008	GET /health HTTP/1.0	2XX


NSX-ALB
HEALTH MONITOR
vra
CREATE HEALTH MONITOR
vra
General
HTTP
Server Maintenance Mode
RBAC
General
Name*
vra
Description
Enter Description
Type
HTTP
Is Federated
Send Interval
5
Seconds
Receive Timeout
4
Seconds
Successful Checks
3
Failed Checks
3
CANCEL
SAVE


NSX-ALB
HEALTH MONITOR
vra
CREATE HEALTH MONITOR
vra
General
HTTP
Server Maintenance Mode
RBAC
HTTP
Health Monitor Port
8008
Authentication
Authentication Type
New Technology LAN Manager (NTLM)
Client Request Header
User Input
GET /health HTTP/1.0
Converted Value Preview
GET /health HTTP/1.0
Client Request Body
CANCEL
SAVE


NSX-ALB
HEALTH MONITOR
vra
CREATE HEALTH MONITOR
vra
General
HTTP
Server Maintenance Mode
RBAC

Create a pool

You can create pools for an AVI load balancer by performing the following steps.

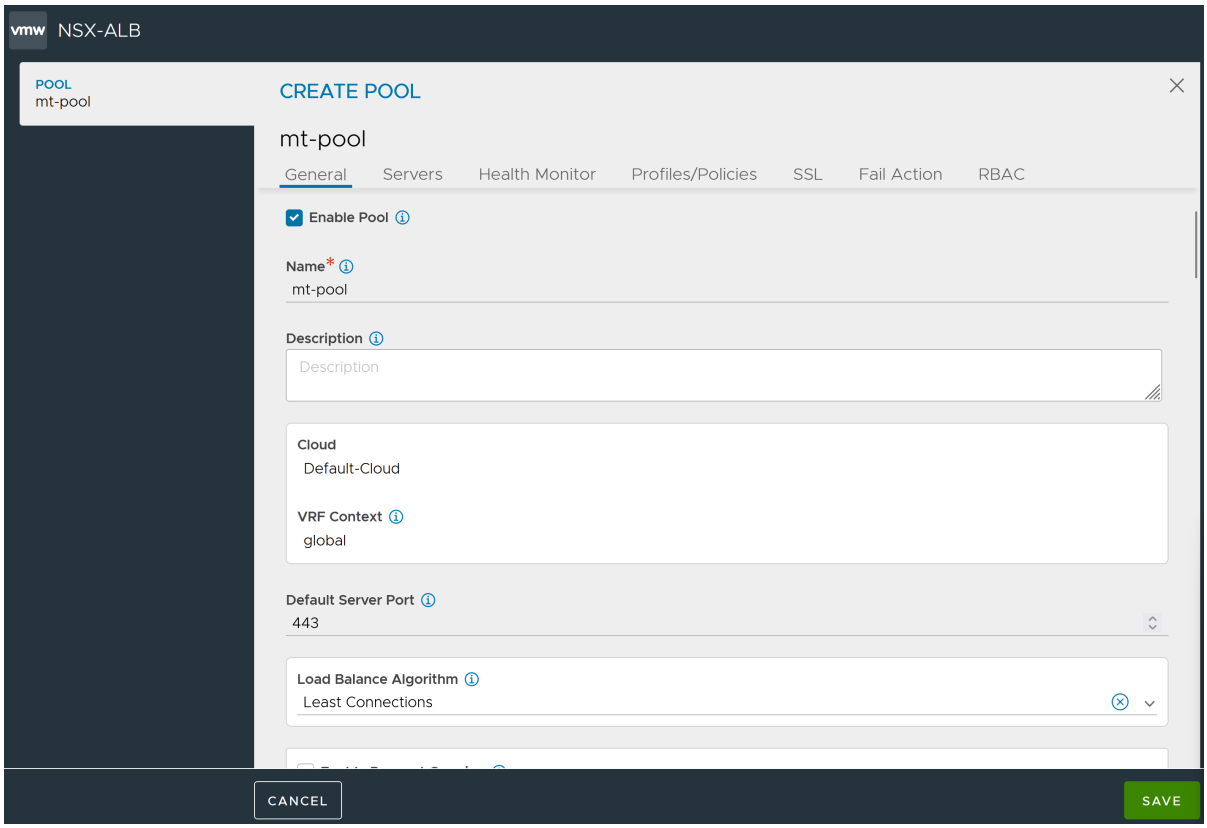
Procedure

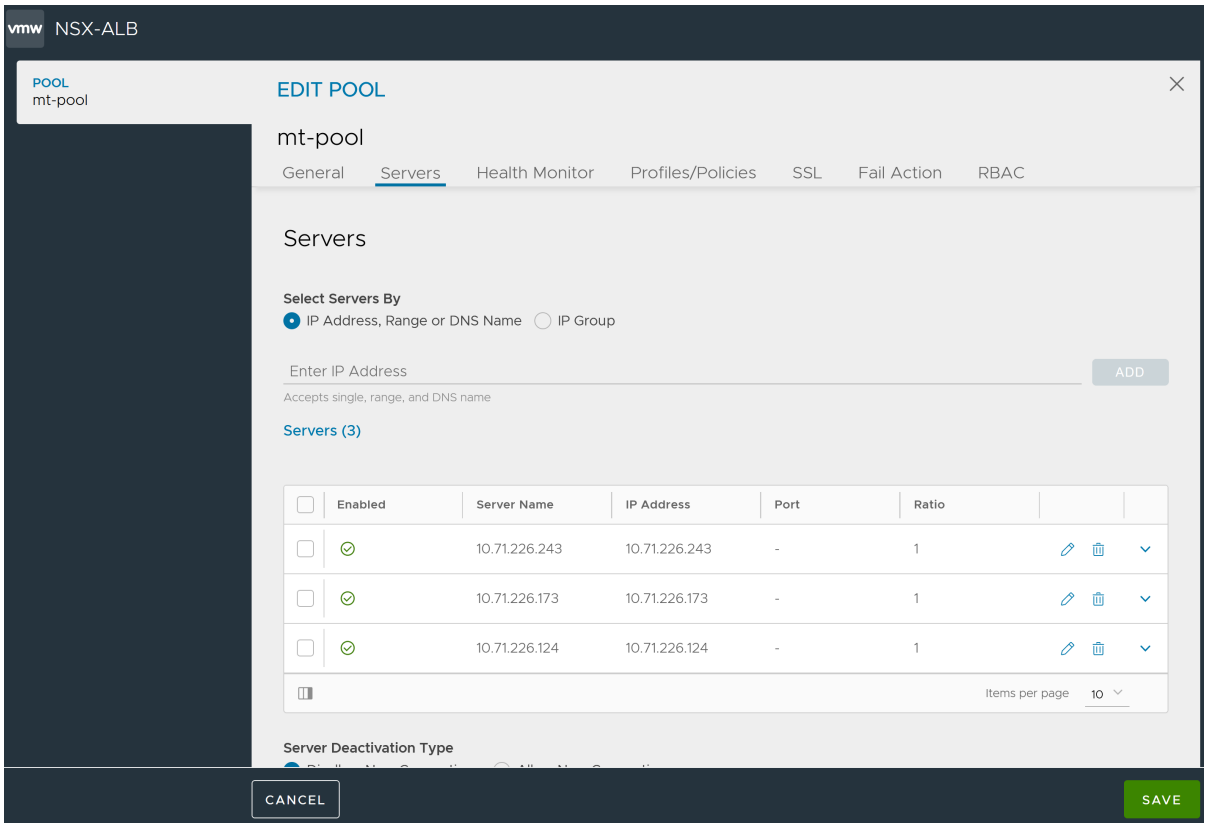
1 Navigate to the **Menu** and click **Applications**.

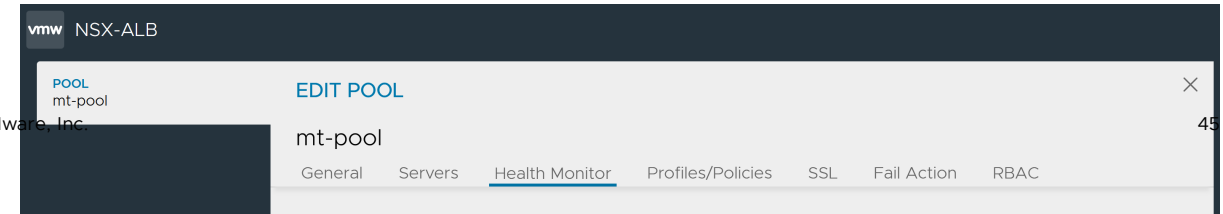
2 Click the **Pool** tab and enter the following details.

Appliance Name	Default Server Port	Lookup Server by Name	Real time metrics
VMware Aria Automation	443	Enabled	Enabled
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	443	Enabled	Enabled

3 Click **Next** and add servers to the pool.







Create virtual service VIP

Before creating a virtual service, you must create a virtual service VIP.

Procedure

1 Select **Applications**.

2 Select **VS VIPs**

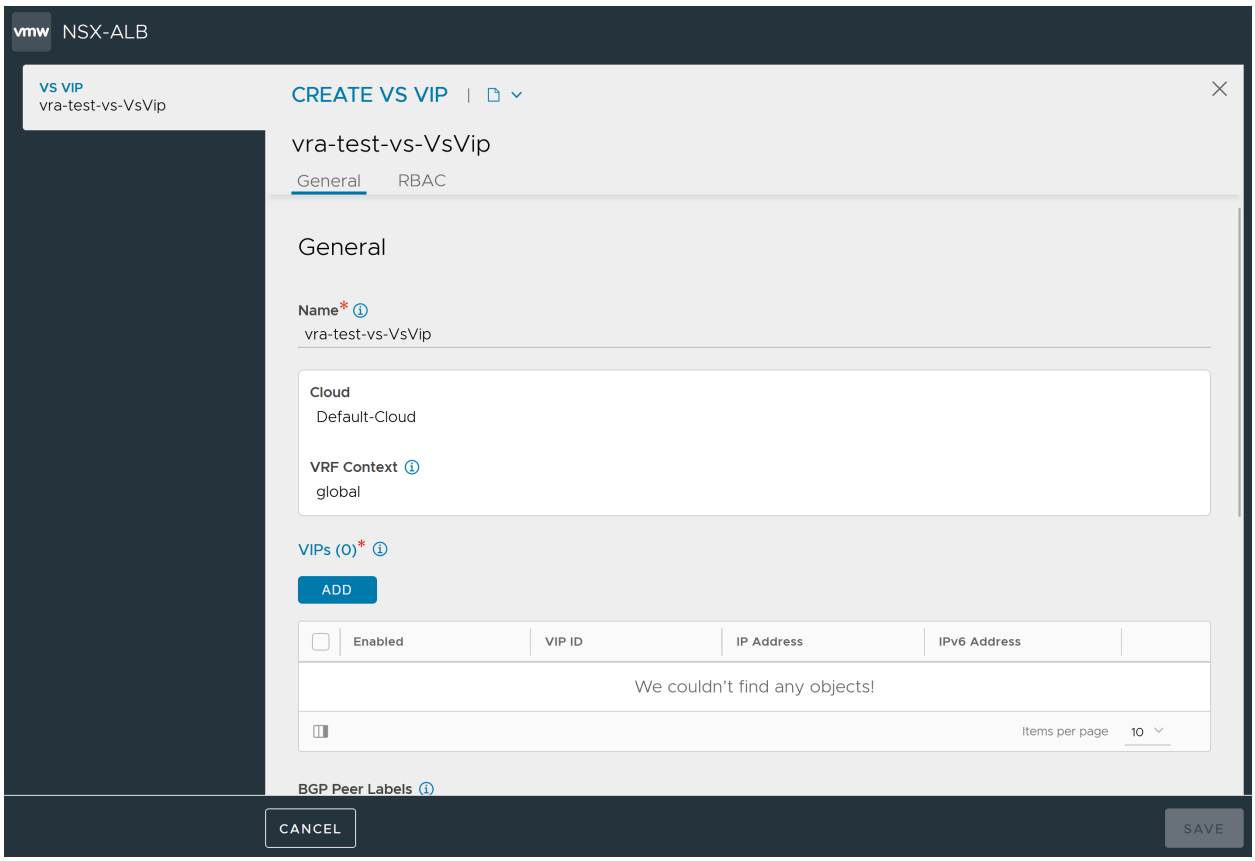
3 Select **Create**.

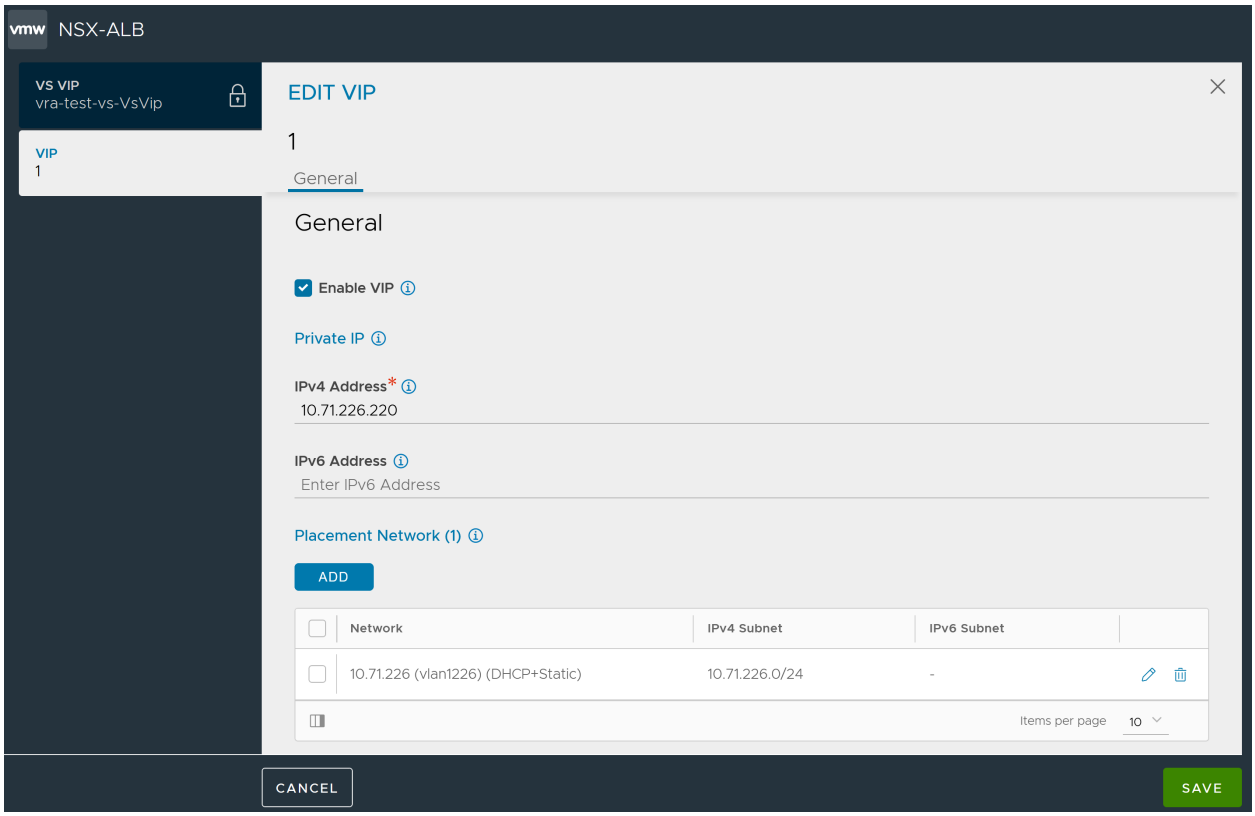
4 Respond to prompts in the creation wizard with the following information:

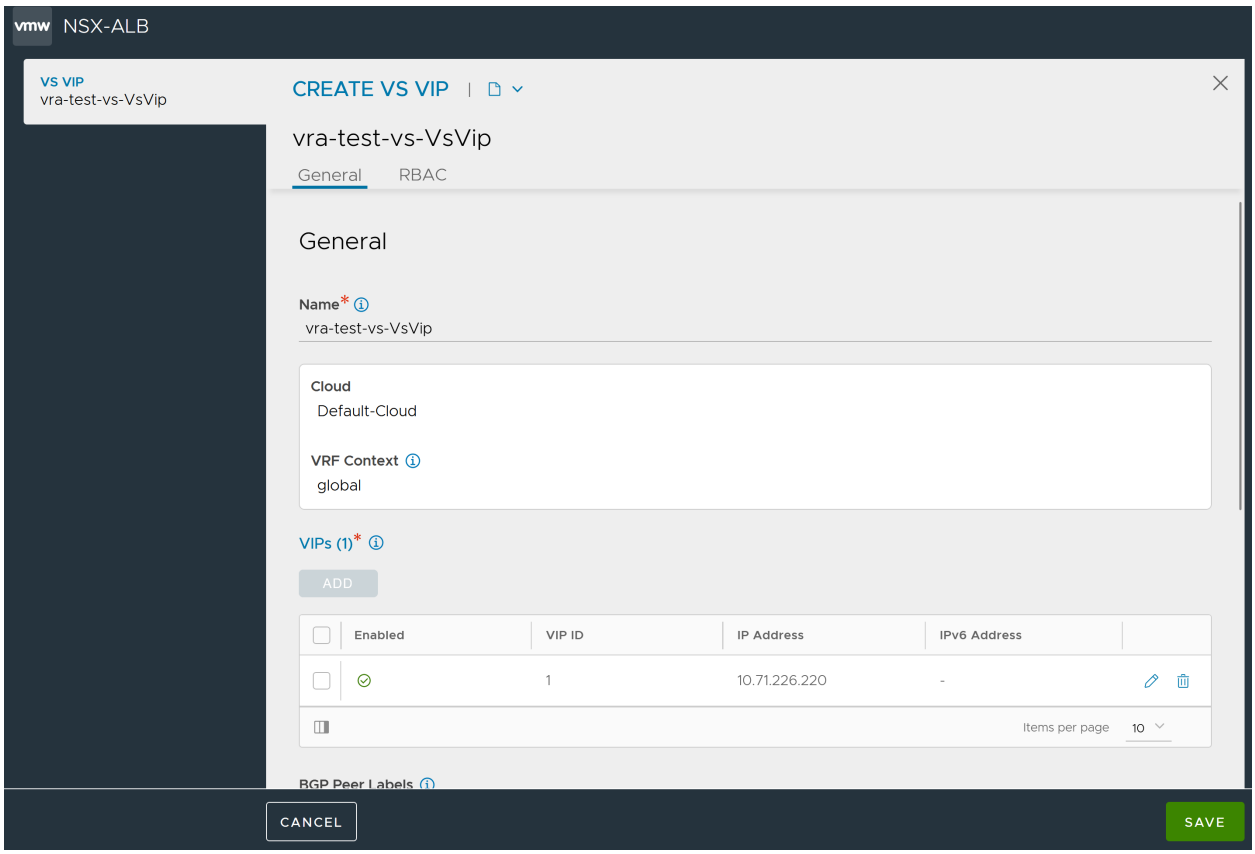
Appliance Name	Name	IPv4 Address	Placement Netowrk
VMware Aria Automation	Name of the VIP	Enter the IPv4 Address	Click *Add* and Select *Placement Network* from the list
VMware Aria Automation Orchestrator **Note** Use only for external VMware Aria Automation Orchestrator instances.	Name of the VIP	Enter the IPv4 Address	Click *Add* and Select *Placement Network* from the list

Example

Use the following screens as reference only.


NSX-ALB
VS VIP
vra-test-vs-VsVip
CREATE VS VIP
vra-test-vs-VsVip
General
RBAC
General
Name*
vra-test-vs-VsVip
Cloud
Default-Cloud
VRF Context
global
VIPs (0)*
ADD
Enabled
VIP ID
IP Address
IPv6 Address
We couldn't find any objects!
Items per page
10
BGP Peer Labels
CANCEL
SAVE


NSX-ALB
VS VIP
vra-test-vs-VsVip
VIP
1
EDIT VIP
1
General
General
Enable VIP
Private IP
IPv4 Address*
10.71.226.220
IPv6 Address
Enter IPv6 Address
Placement Network (1)
ADD
Network
IPv4 Subnet
IPv6 Subnet
10.71.226 (vlan1226) (DHCP+Static)
10.71.226.0/24
-
Items per page
10
CANCEL
SAVE



Configure virtual service

You can configure virtual service for an AVI load balancer by following these steps.

To configure virtual service:

Procedure

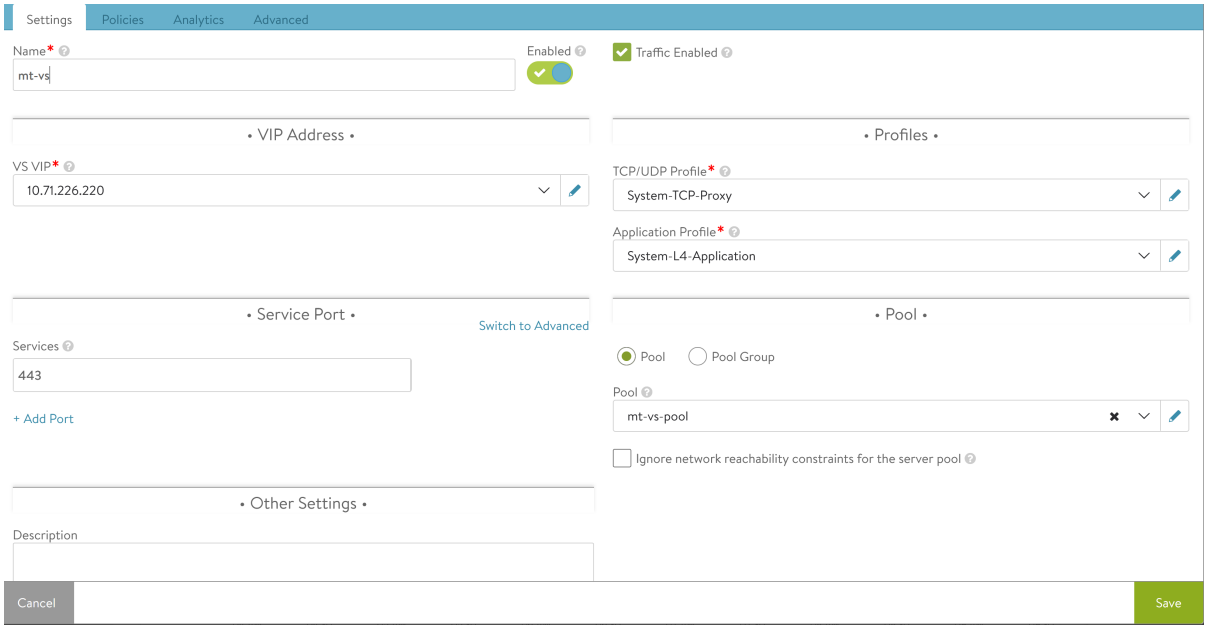
1 From the menu, click **Applications**.

2 Click the **Virtual Services** tab, and then click **Create Virtual Service**.

3 Enter these configuration details.

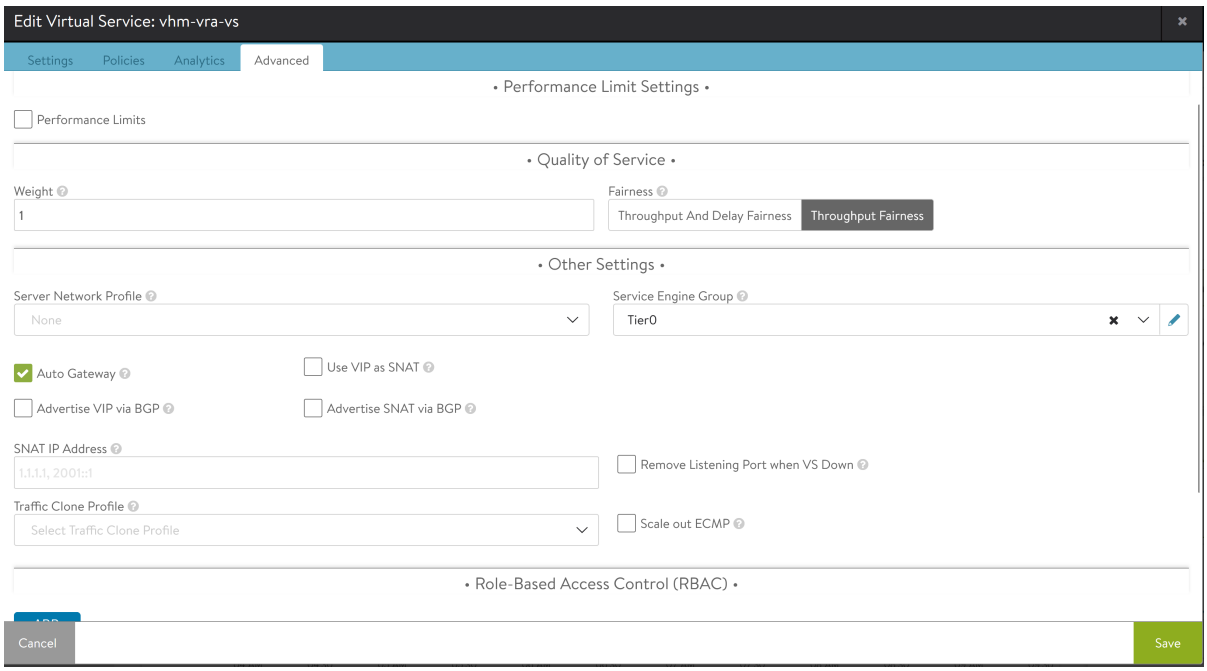
Appliance Name	VS VIP	TCP/UDP Profile	Application Profile	Services	Pool
VMware Aria Automation	VIP Address or FQDN	System-TCP-Proxy	System-L4-Application	443	vRealize Automation
VMware Aria Automation Orchestrator **Note** Use for external VMware Aria Automation Orchestrator instances only.	VIP Address or FQDN	System-TCP-Proxy	System-L4-Application	443	vRealize Orchestrator

Figure 8-1.



4 Click **Next** to navigate to the **Advanced** tab and enter the following information.

Appliance Name	Service Engine Group	Use VIP as SNAT
VMware Aria Automation	SE Group where the appropriate SE is located	Enabled and Disabled are supported
VMware Aria Automation Orchestrator **Note** Use for external VMware Aria Automation Orchestrator instances only.	SE Group where the appropriate SE is located	Enabled and Disabled are supported



5 (Optional) In cases where VMware Aria Operations is used you may need to expose the health check port as a virtual server. In order to do that create a new virtual server by clicking the **Virtual Services** tab, and then click **Create Virtual Service**. Use the information from the table below to achieve that:

Appliance Name	VS VIP	TCP/UDP Profile	Application Profile	Services	Pool
VMware Aria Automation	VIP Address or FQDN	System-TCP-Proxy	System-L4-Application	8008	vRealize Automation
VMware Aria Automation Orchestrator **Note** Use for external VMware Aria Automation Orchestrator instances only.	VIP Address or FQDN	System-TCP-Proxy	System-L4-Application	8008	vRealize Orchestrator

Click **Next** to navigate to the **Advanced** tab and enter the following information

Appliance Name	Server Network Profile	SE Group	Use VIP, as SNAT
VMware Aria Automation	System-TCP-Proxy	SE Group where the appropriate SE is located	Enabled and Disabled are supported
VMware Aria Automation Orchestrator **Note** Use for external VMware Aria Automation Orchestrator instances only.	System-TCP-Proxy	SE Group where the appropriate SE is located	Enabled and Disabled are supported

Troubleshooting

9

In this section you can find various of known problematic scenarios and common errors.

This chapter includes the following topics:

- Errors during VMware Aria Automation installation when using NSX-V as a load-balancer for Workspace ONE
- Provisioning failures when using OneConnect with F5 BIG-IP
- F5 BIG-IP license limits network bandwidth
- FortiGate specifics

Errors during VMware Aria Automation installation when using NSX-V as a load-balancer for Workspace ONE

If you see errors when installing VMware Aria Automation while using Workspace ONE as load-balancer, follow these troubleshooting steps.

When using NSX-V as a load-balancer for VMware Workspace ONE there might be specific network limitations which will result in errors and timeouts during the installation of VMware Aria Automation similar to:

```
2020-06-30 09:10:08.751+0000  INFO  16 --- [or-http-epoll-3]
com.vmware.identity.rest.RestClient : POST https://default-49-29.sqa.local/SAAS/API/1.0/
oauth2/token?grant_type=client_credentials
2020-06-30 09:10:08.755+0000  WARN  16 --- [or-http-epoll-3]
r.netty.http.client.HttpClientConnect : [id: 0x754860c7, L:/10.244.0.206:48686 !
R:default-49-29.sqa.local/10.198.49.29:443] The connection observed an error
reactor.netty.http.client.PrematureCloseException: Connection prematurely closed BEFORE
response
```

You can mitigate those errors by extending the NSX-V idle connection close time to 5 minutes instead of the default of 1 second.

This can be achieved with an application rule containing the following:

```
timeout http-keep-alive 300s
```

Provisioning failures when using OneConnect with F5 BIG-IP

When you use the OneConnect feature with F5 BIG-IP for a virtual server, provisioning tasks sometimes fail.

OneConnect ensures connections from the load balancer to the back-end servers are multiplexed and reused. This lowers the load on the servers and makes them more resilient.

Using OneConnect with a virtual server that has SSL pass-through is not recommended by F5 and might result in failed provisioning attempts. This happens because the load balancer attempts to establish a new SSL session over an existing session while the back-end servers expect the client to either close or renegotiate the existing session, which results in a dropped connection. Disable OneConnect to resolve this issue.

1 Log in to the F5 load balancer and navigate to **Local Traffic > Virtual Servers > Virtual Servers List**.

2 Click the name of the virtual server you want to modify.

3 In the **Acceleration** section, select **None** for the **OneConnect Profile**.

4 Click **Finish**.

F5 BIG-IP license limits network bandwidth

You might experience provisioning failures or problems loading VMware Aria Automation console pages due to load balancer network traffic exceeding the F5 BIG-IP license limit.

To check if the BIG-IP platform is experiencing this problem, see How the BIG-IP VE system enforces the licensed throughput rate.

FortiGate specifics

Applicable for cases where there is a Fortigate Firewall between the Load balancer and the vRealize Automation cluster nodes.

FortiGate firewall has service interface listening on 8008 and 8010 ports. In case there is a FortiGate firewall between the load balancer (of all kinds) and the VMware Aria Automation nodes, the monitoring would send requests to the port 8008 of the firewall and thus become invalid.

The obvious solution is to change the configuration of the FrotiGate firewall so it wouldn't listen on 8008.

Any other solution (like creating a DNAT on the firewall and chaning the above mentioned best practice settings) would be considered unsupported and should be performed at personal risk