Configure Address Objects

For supported software information, click here.

Traffic that enters Versa Operating System^{TM} (VOS^{TM}) devices through physical network interfaces (PNICs) or virtual network interfaces (VNICs) is associated with a security zone, which applies the appropriate zone protection to ensure that only clean traffic enters the VOS device. Versa SD-Security allows you to apply various types of security policies and profiles to the traffic it enters a security zone, including policies and profiles for stateful firewalls, DDoS, and SD-WAN. All these security policies have match criteria based on source zone, destination zone, source address, destination address, geolocation, IP headers, service, and schedule. When you define a security policy, you can configure objects such as addresses, address groups, services, schedules, and logging profiles. You can reuse these objects in multiple security policies. You can add a maximum of 32,000 address objects for each tenant.

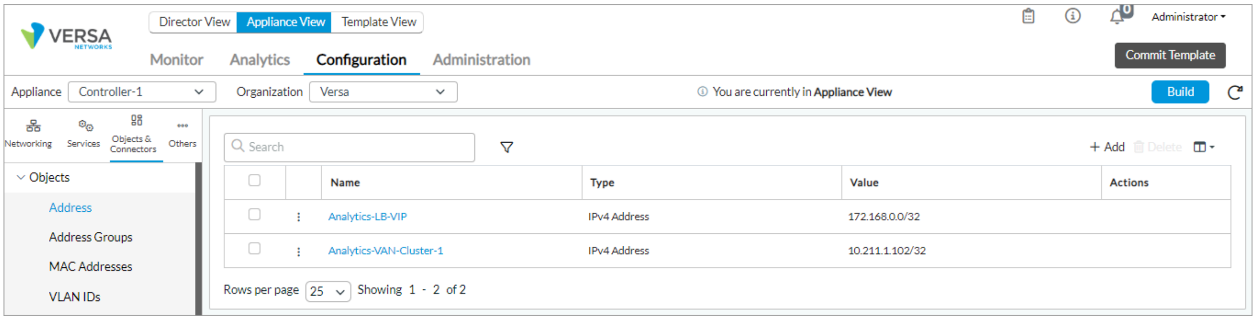
This article describes how to configure address objects that you can include in security policies and profiles. For information about defining security policies that include address objects and address group objects, see Configure Security Access Policy Rules in the Configure Stateful Firewall article.

Configure Address Objects

An address object specifies match criteria based on source IP address, destination IP address, or a combination of both. You include address objects in a policy rule, and you can use the same address object in multiple policies and policy rules.

To configure an address object:

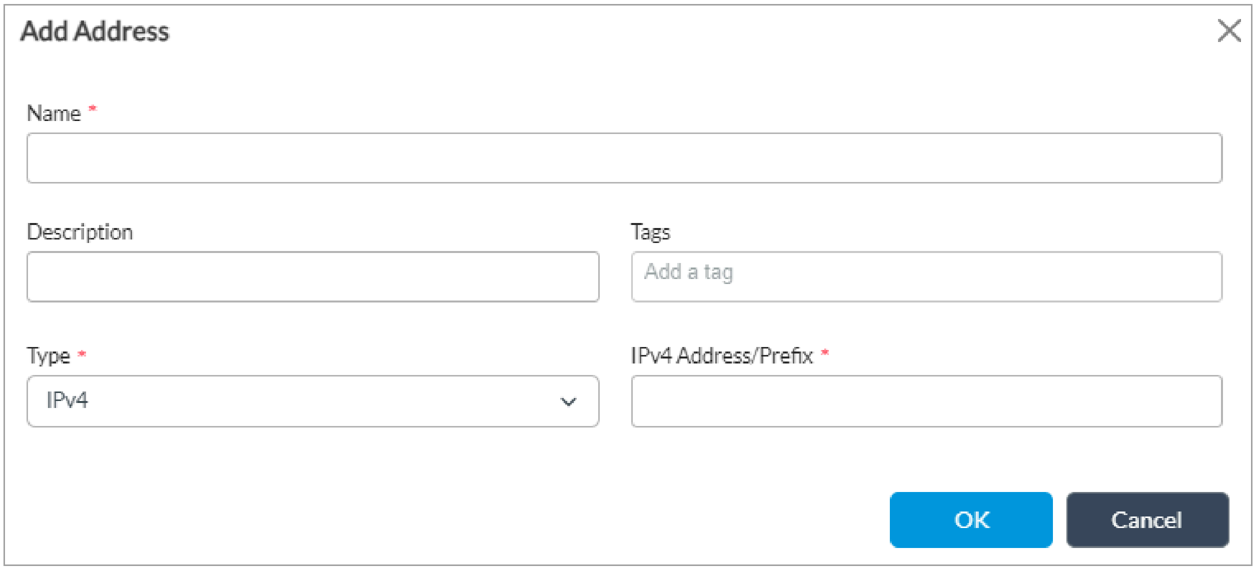
1. In Director view:
    a. Select the Administration tab in the top menu bar.
    b. Select Appliances in the left menu bar.
    c. Select a device name in the main panel. The view changes to Appliance view.
2. Select the Configuration tab in the top menu bar.
3. Select Objects & Connectors > Objects > Address in the left menu bar.



Name	Type	Value	Actions
Analytics-LB-VIP	IPv4 Address	172.168.0.0/32	
Analytics-VAN-Cluster-1	IPv4 Address	10.211.1.102/32	

Rows per page 25 Showing 1 - 2 of 2

4. Click the ⊞ Add icon. In the Add Address window, enter information for the following fields.



Add Address

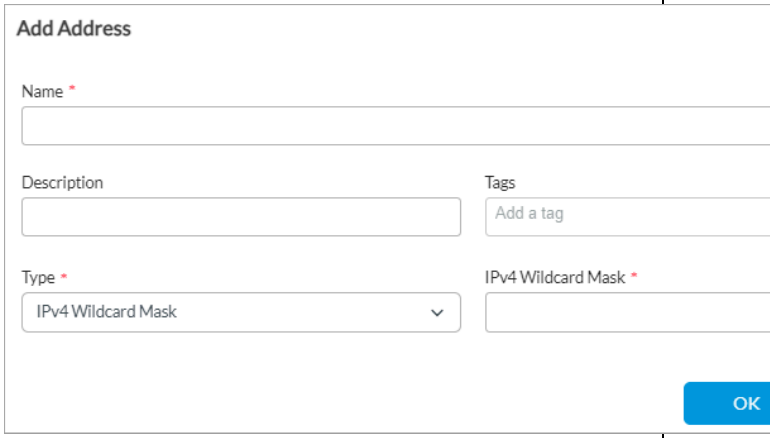
Name *

Description

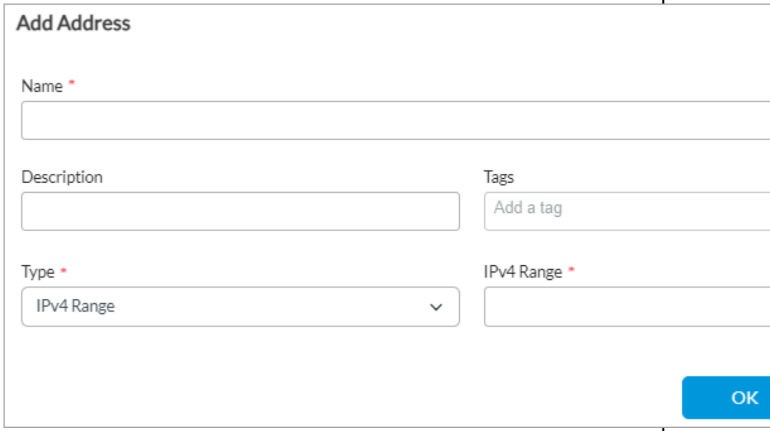
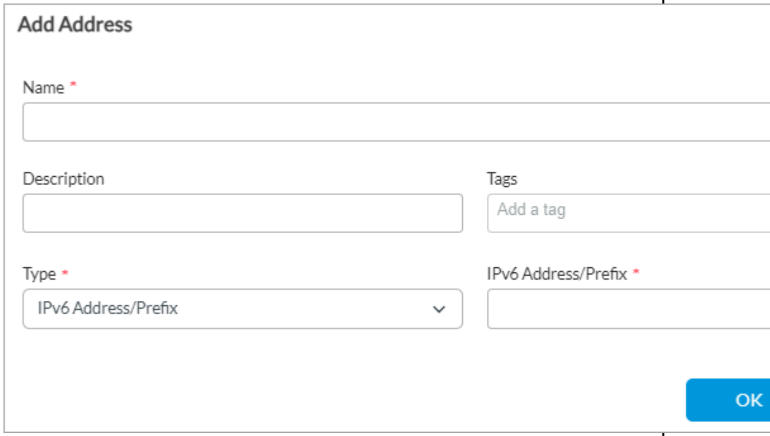
Tags
Add a tag

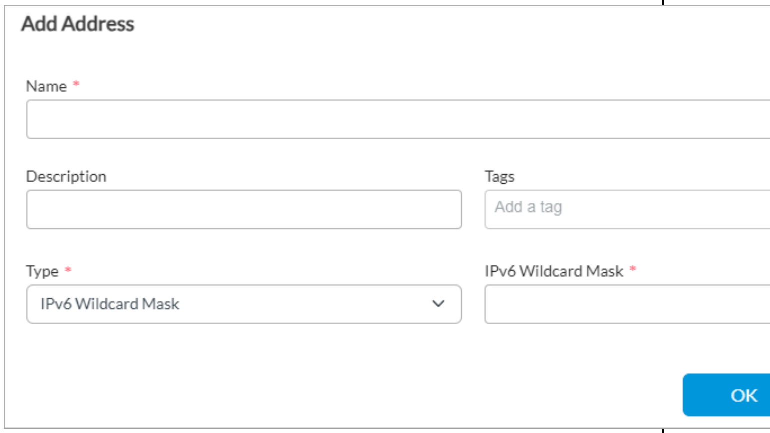
Type *
IPv4

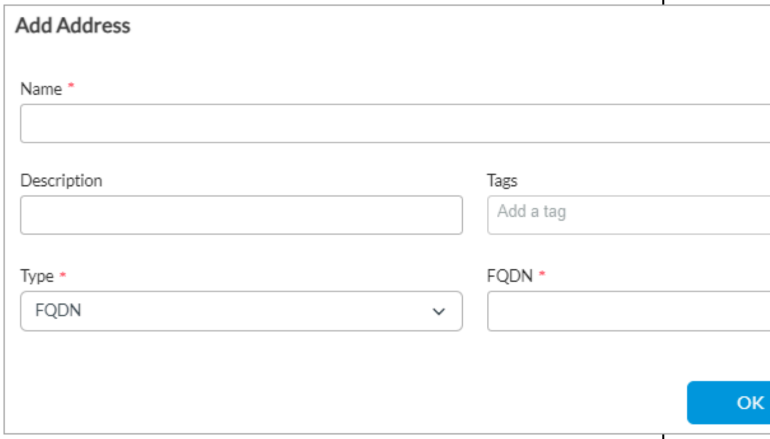
IPv4 Address/Prefix *

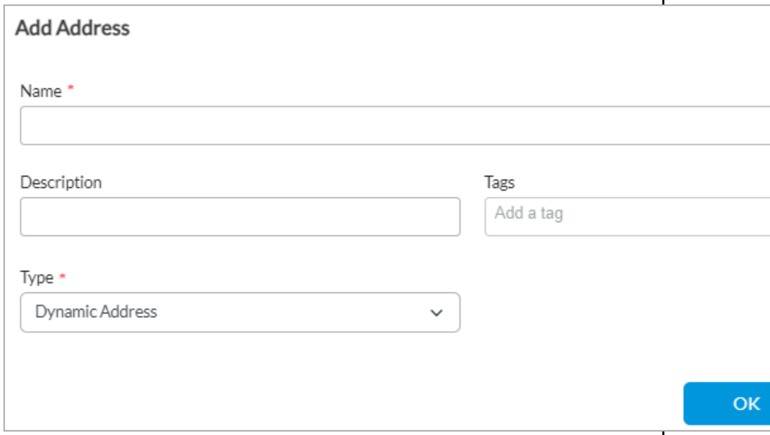
Field	Description
Name (Required)	Enter a name for the address object. *Value*: Text string from 1 through 255 characters *Default*: None
Description	Enter a text description for the address object. *Value*: Text string from 1 through 255 characters *Default*: None
Tags	Enter a keyword or phrase that allows you to filter the address object. *Value*: Text string from 1 through 255 characters *Default*: None
Type and Address/Prefix (Required)	Select the type of IP address to match and the value to match. The name of the Address/Prefix field changes depending on the value you select in the Type field.
◦ IPv4 (type); IPv4 Address/Prefix (match)	Evaluate the address match using an IP address within the IPv4 prefix specified in the IPv4 Address/ Prefix field. This is the default.
◦ IPv4 Wildcard Mask (type); IPv4 Wildcard Mask (match)	 Add Address Name * Description Tags: Add a tag Type *: IPv4 Wildcard Mask IPv4 Wildcard Mask * OK (For Releases 20.2.2 and later.) Enter a wildcard

	mask for an IPv4 address. The bits in the mask can be on (1) or off (0). Only the bits that are enabled in the mask are used to determine whether an IPv4 address matches. For example, if you enter the IPv4 wildcard mask 100.100.0.0/255.255.0.0, the IP address 100.100.5.6 matches and the IP address 200.100.5.6 does not match. As another example, if you enter the IPv4 wildcard mask 1.1.0.1/ 255.255.0.255, the IP address 1.1.20.1 matches, while 1.1.20.5 does not match. You can configure overlapping wildcard addresses. A single session can match a maximum of 16 wildcard addresses. You can configure wildcard address objects individually or as part of address groups. You cannot combine an address prefix (or range) match with wildcard addresses to match a source or destination address. You can define IPv4 address wildcard masks in address object rules used for rules in the following types of policies: ◦ Application QoS (App QoS)—For more information, see Configure CoS. ◦ Policy-based forwarding (PBF)—For more information, see Configure Policy-Based Forwarding. ◦ SD-WAN—For more information, see Configure SD-WAN Policy and Configure SD-WAN Traffic Steering. ◦ Security—For more information, see Configure NGFW. You cannot use IPv4 address wildcard masks for rules in the following types of policies: ◦ CGNAT—For more information, see Configure CGNAT. ◦ HTTP/HTTPS proxy—For more information, see Configure HTTP/HTTPS Proxy.

	◦ IP filtering—For more information, see Configure IP Filtering. ◦ QoS—For more information, see Configure CoS.
◦ IPv4 Range (type); IPv4 Range (range)	 Add Address Type *: IPv4 Range Name * Description Tags Add a tag IPv4 Range * OK Evaluate the address match using an IP address within the IPv4 address range specified in the IPv4 Range field.
◦ IPv6 Address/Prefix (type); IPv6 Address/Prefix (range)	 Add Address Type *: IPv6 Address/Prefix Name * Description Tags Add a tag IPv6 Address/Prefix * OK Evaluate the address match using any of the IP addresses within the IPv6 address range specified in the IPv6 Address/Prefix field.

◦ IPv6 Wildcard Mask (type); IPv6 Wildcard Mask (match)	 Add Address Name * Description Tags: Add a tag Type *: IPv6 Wildcard Mask IPv6 Wildcard Mask * (For Releases 22.1.2 and later.) Enter a wildcard mask for an IPv6 address. The bits in the mask can be on (1) or off (0). Only the bits that are enabled in the mask are used to determine whether an IPv6 address matches. For example, if you enter the IPv6 wildcard mask 2002:E000::/20, the first 20 bits must be an exact match, and the IPv6 address must start with 2002:E. You can configure overlapping wildcard addresses. A single session can match a maximum of 16 wildcard addresses. You can configure wildcard address objects individually or as part of address groups. You cannot combine an address prefix (or range) match with wildcard addresses to match a source or destination address. You can define IPv6 address wildcard masks in address object rules used for rules in the following types of policies: ◦ Application QoS (App QoS)—For more information, see Configure CoS. ◦ Policy-based forwarding (PBF)—For more information, see Configure Policy-Based Forwarding. ◦ SD-WAN—For more information, see Configure

	SD-WAN Policy and Configure SD-WAN Traffic Steering. ◦ Security—For more information, see Configure NGFW. You cannot use IPv6 address wildcard masks for rules in the following types of policies: ◦ CGNAT—For more information, see Configure CGNAT. ◦ HTTP/HTTPS proxy—For more information, see Configure HTTP/HTTPS Proxy. ◦ IP filtering—For more information, see Configure IP Filtering. ◦ QoS—For more information, see Configure CoS.
◦ FQDN (type); FQDN (match)	 Add Address Name * Description Tags Add a tag FQDN * OK Type * FQDN Evaluate the address match using an IP address returned in a DNS query that resolves the fully qualified domain name (FQDN) into an IP address. The FQDN cannot contain any wildcard characters. Ensure that you also configure a routing instance through which the DNS server is reachable so that the VOS device can resolve the FQDN. For more information, see Configure DNS Servers.

- Dynamic Address (type); no range	 Add Address Name * Description Tags Add a tag OK Type *: Dynamic Address (For Releases 22.1.3 and later.) Use a dynamic address object, which is a container for an IP address list that can change dynamically. Using dynamic addresses in a policy allows you to perform a configuration before the IP addresses are known, thus avoiding the need to update the configuration each time IP addresses are added or deleted. You typically configure dynamic address objects for hosts whose IP addresses may change later, for example, if you are performing a live migration of virtual machines (VMs) using the vSphere vMotion technology to migrate a VM from one cluster to another, which changes the IP address of the VM. To configure a dynamic address object, issue the **set orgs org-services** *tenant name* **objects addresses** *address object name* **dynamic-address** CLI command. To update the list of IP addresses associated with a dynamic address object without updating the configuration, issue the **request orgs org-services** *tenant name* **objects dynamic-address add name** *tenant name* **address** *private-internet-IP address* CLI command.

5. Click OK.

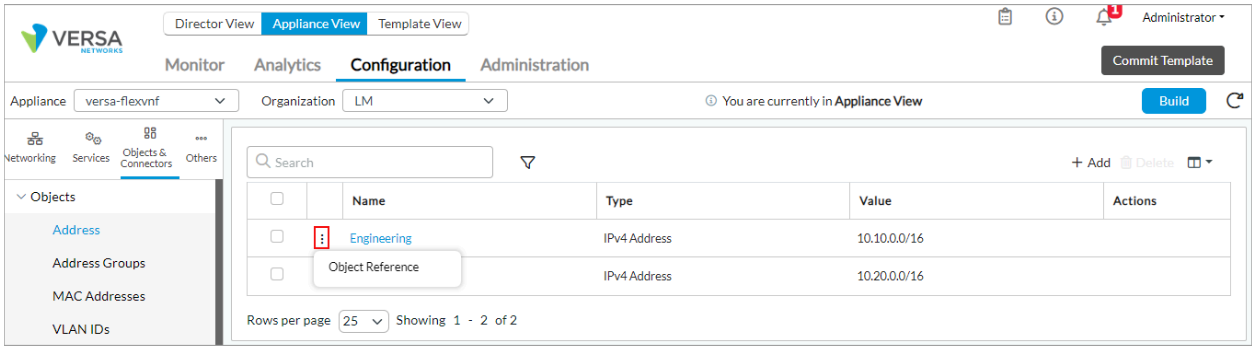
View References to and Edit Address Objects

For Releases 22.1.3 and later.

For address objects that you have created, you can display the templates and devices that reference them. If the address object is referenced by a common template, also called a datastore template, different service templates for the same tenant can refer to the same address objects. When the address objects are displayed, you can edit them.

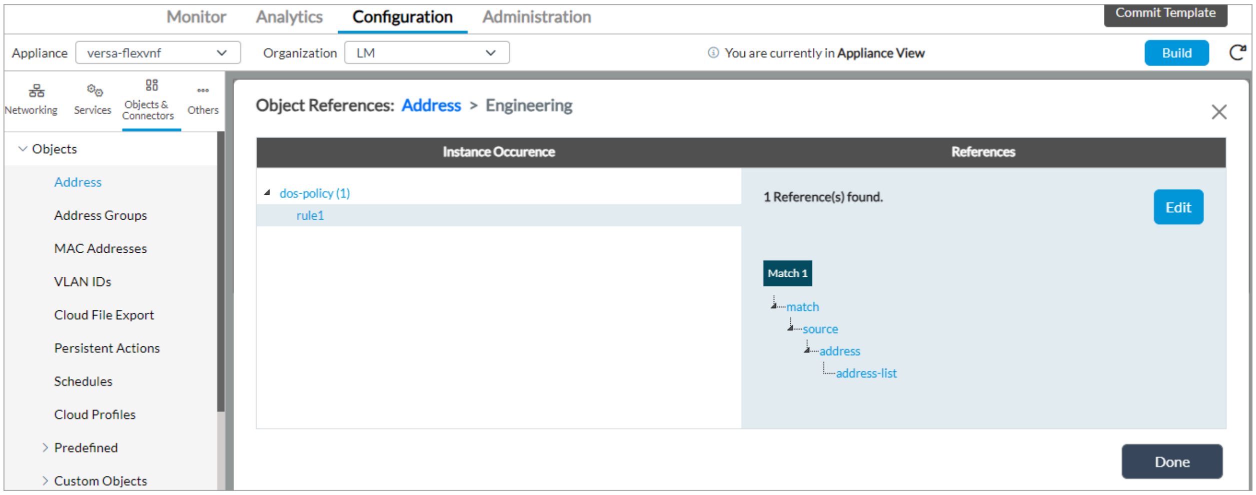
To view and edit the references to an address object:

1. In Director view:
    a. Select the Administration tab in the top menu bar.
    b. Select Appliances in the left menu bar.
    c. Select a device name in the main panel. The view changes to Appliance view.
2. Select the Configuration tab in the top menu bar.
3. Select Objects & Connectors > Objects > Address in the left menu bar.
4. Click the ⋮ vertical ellipsis to view the references to the address object.



□		Name	Type	Value	Actions
□	⋮	Engineering	IPv4 Address	10.10.0.0/16	
□			IPv4 Address	10.20.0.0/16	

5. In the Address horizontal bar, click an item in the Instance Occurrence column to display where the address objects are referred.



6. Click Edit icon to edit the address object.

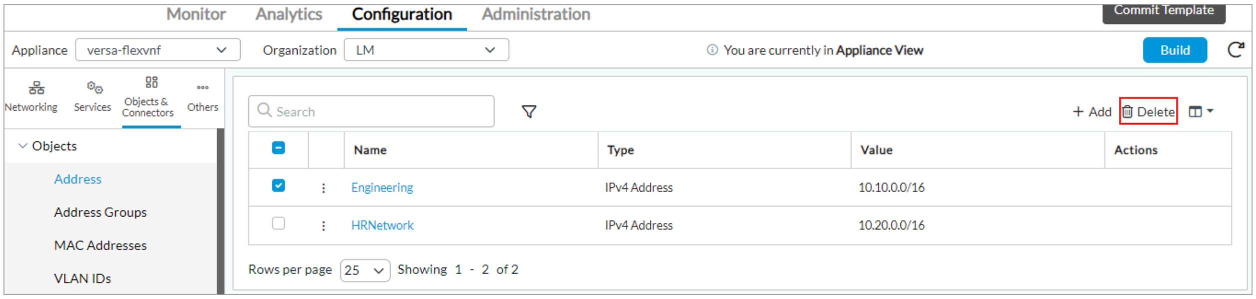
Delete Address Object References

For Releases 22.1.3 and later.

You can delete an object reference, which allows you to delete it from a template or device.

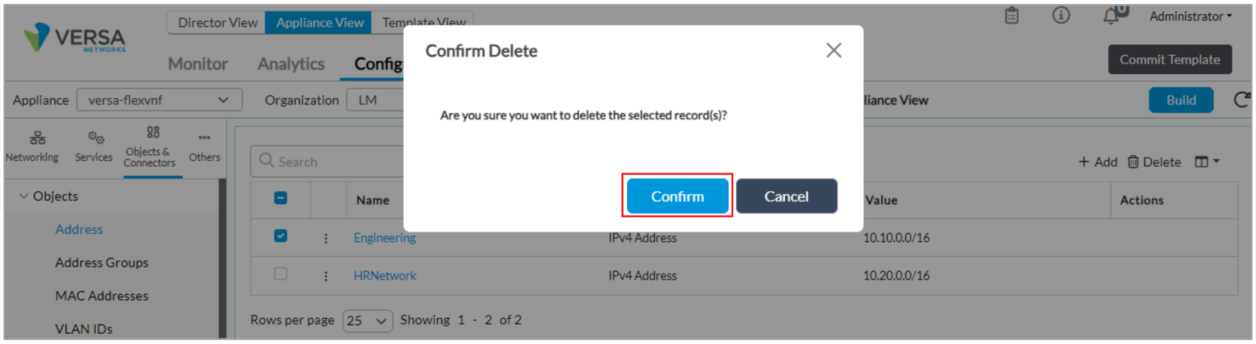
To delete an address object reference:

1. In Director view:
    a. Select the Administration tab in the top menu bar.
    b. Select Appliances in the left menu bar.
    c. Select a device name in the main panel. The view changes to Appliance view.
2. Select the Configuration tab in the top menu bar.
3. Select Objects & Connectors > Objects > Address.
4. Select the device, and then click the Delete icon.



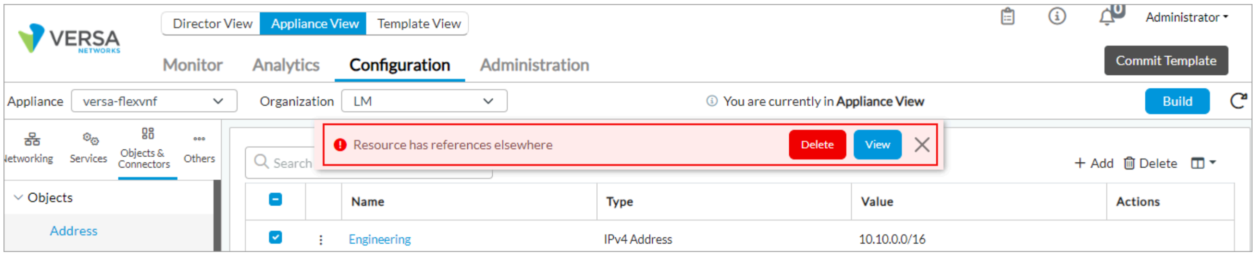
		Name	Type	Value	Actions
☑	⋮	Engineering	IPv4 Address	10.10.0.0/16	
□	⋮	HRNetwork	IPv4 Address	10.20.0.0/16	

5. In the Confirm Delete popup window, click Yes.


Confirm Delete

Are you sure you want to delete the selected record(s)?

6. If an address object is referenced in a template or device, a popup window displays.


Resource has references elsewhere

7. To view the address object references, click View Reference.
8. Click Delete Anyway to delete the address object reference.

Upload Address Files

You can upload address files to block (deny list) or allow (accept list) an IP address or a group of IP addresses. You can then associate an address file with an address group and apply the address group to a security access policy. Depending on the policy, the addresses are allowed or blocked.

The address file must be a text file saved in CSV format.

Each entry must include the following:

- Name—Name of the address file to associate with the IP address or IP address group
- Type—IPv4-prefix, IPv4-range, IPv6-prefix, or IPv6-range
- Value—IP address, subnet mask, or range

For example:

```
address_list1,ipv4-prefix,167.114.0.0/16
address_list2,ipv4-range,223.252.16.1-223.252.16.10
address_list3,ipv4-prefix,223.252.11.0/24
address_list4,ipv6-prefix,2a03:2880:2040:7f21:face:b00c:0:25de/128
address_list5,ipv6-prefix,2a03:2880:2040:7f21:face:b00c::/96
```

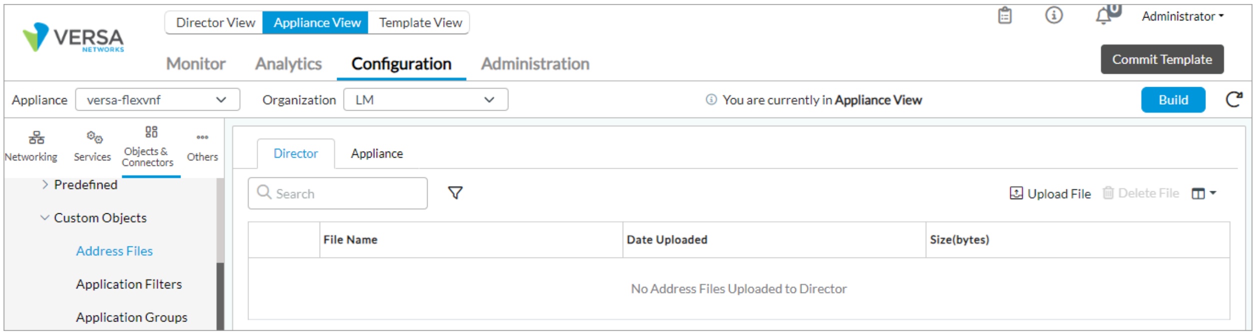
If you create a Microsoft Excel file and save it as a .csv file, you must enter the Name, Type, and Value data in separate columns without commas after each entry. For example:

Row	Name	Type	Value
1	address_list1	ipv4-prefix	167.114.0.0/16
2	address_list2	ipv4-range	223.252.16.1–223.252.16.10
3	address_list3	ipv4-prefix	223.252.11.0/24
4	address_list4	ipv6-prefix	223.252.11.0/24
5	address_list5	ipv6-prefix	2a03:2880:2040:7f21:face:b00c:0:25de/128
6	address_list6	ipv6-prefix	2880:2040:7f21:face:b00c::/96

Note that if you upload a file that has the same name as an existing file, it replaces the existing file and overwrites all the addresses in the file.

To upload an address file:

1. In Director view:
   a. Select the Administration tab in the top menu bar.
   b. Select Appliances in the left menu bar.
   c. Select a device name in the main panel. The view changes to Appliance view.
2. Select the Configuration tab in the top menu bar.
3. Select Objects & Connectors > Objects > Custom Objects > Address Files in the left menu bar. The main pane displays a table of uploaded address files, and the Director tab in the horizontal menu is selected.



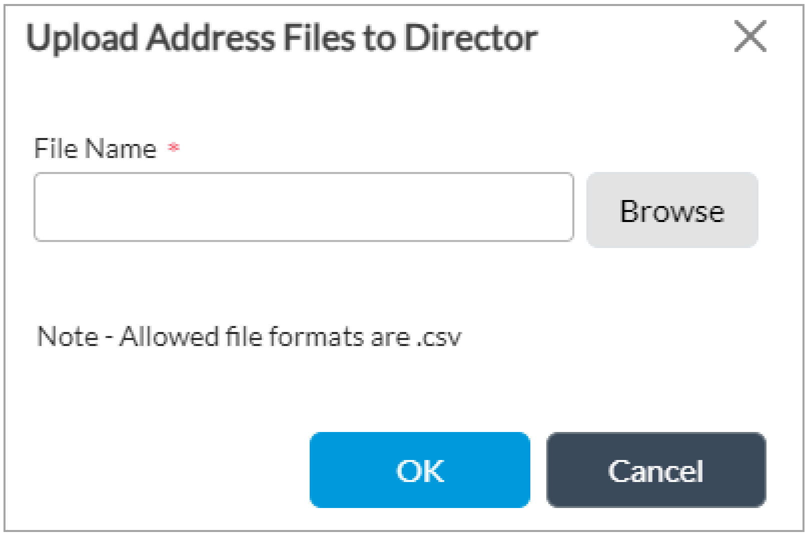
Appliance: versa-flexvnf

Organization: LM

You are currently in Appliance View

	File Name	Date Uploaded	Size(bytes)
	No Address Files Uploaded to Director		

4. Click the Upload icon. The Upload Address Files to Director popup window displays.

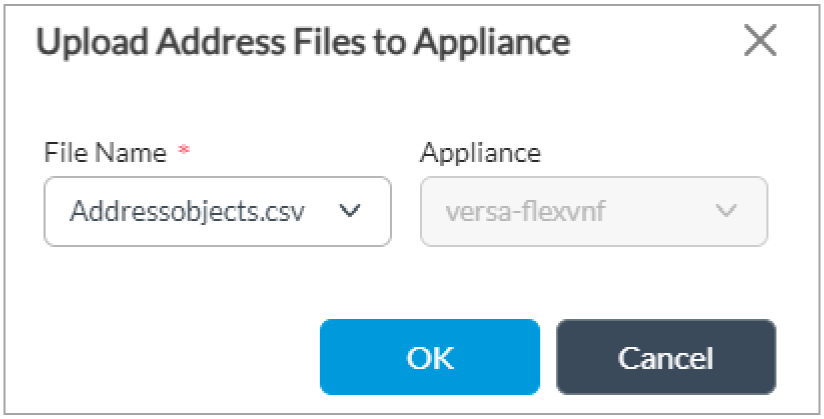


Upload Address Files to Director

File Name *

Note - Allowed file formats are .csv

5. Click Browse, select an address file, and then click OK. The main pane displays the address file that has been uploaded to the Director node.
6. Select the Appliance tab.
7. Click the Upload icon. The Upload Address Files to Appliance popup window displays.



Upload Address Files to Appliance

File Name *: Addressobjects.csv

Appliance: versa-flexvnf

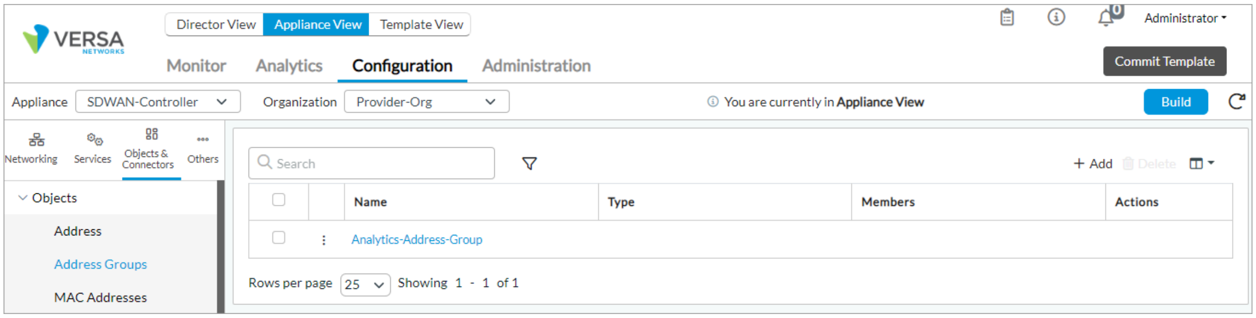
8. In The Filename field, select an address file. This drop-down list displays the files that you upload from the Director tab.
9. Click OK.

Configure Address Group Objects

You can group website addresses, address objects, and other address groups to form address groups. Grouping addresses allows you to collectively apply the same security policies and rules to multiple addresses that require the same security handling instead of having to apply security policies to addresses individually. There is not limit to the address objects that you can add in an address group.

To configure address group objects:

1. In Director view:
   a. Select the Administration tab in the top menu bar.
   b. Select Appliances in the left menu bar.
   c. Select a device name in the main panel. The view changes to Appliance view.
2. Select the Configuration tab in the top menu bar.
3. Select Objects & Connectors > Objects > Address Groups. The main pane displays the configured address group objects.



Appliance: SDWAN-Controller

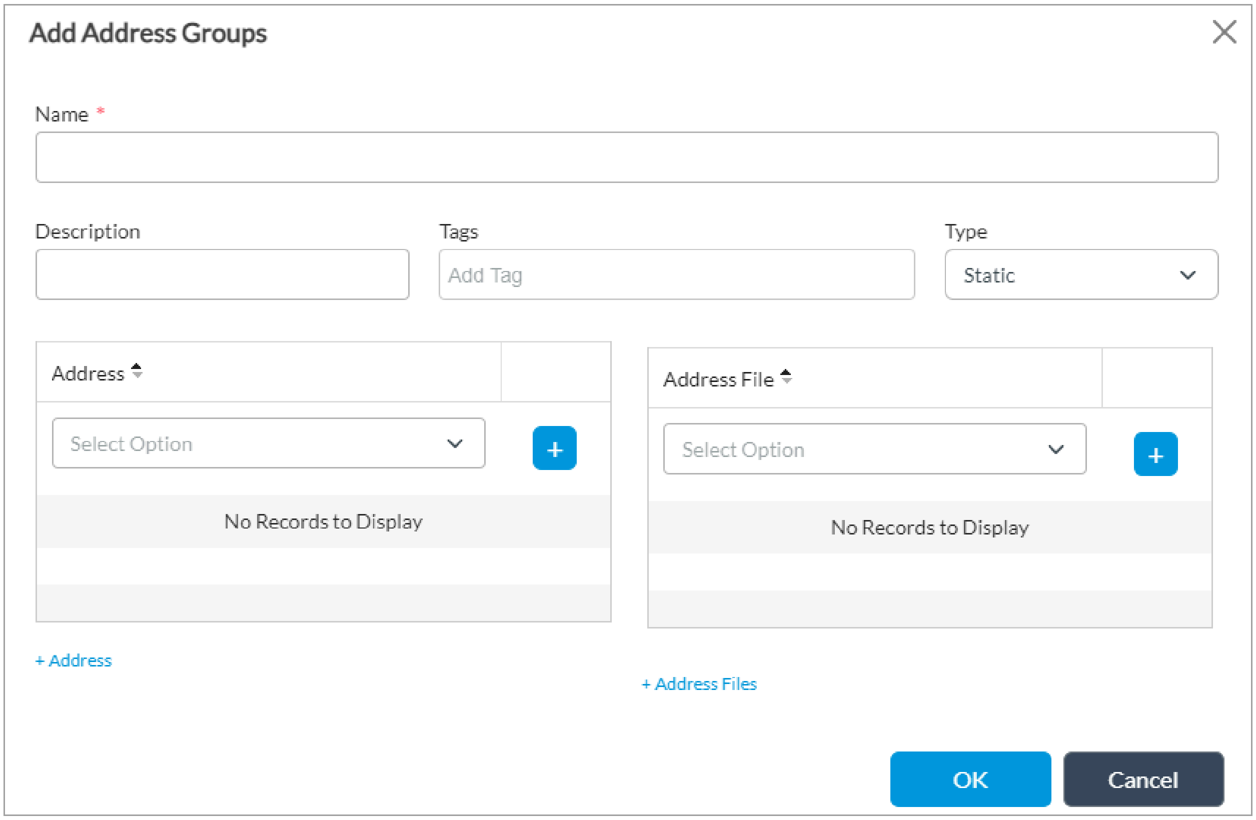
Organization: Provider-Org

You are currently in **Appliance View**

	Name	Type	Members	Actions
□	Analytics-Address-Group			

Rows per page 25 Showing 1 - 1 of 1

4. Click the + Add icon. The Add Address Group window displays. If you select Static as the value for Type, the following screen displays. Enter information for the following fields.


Add Address Groups

Name *

Description

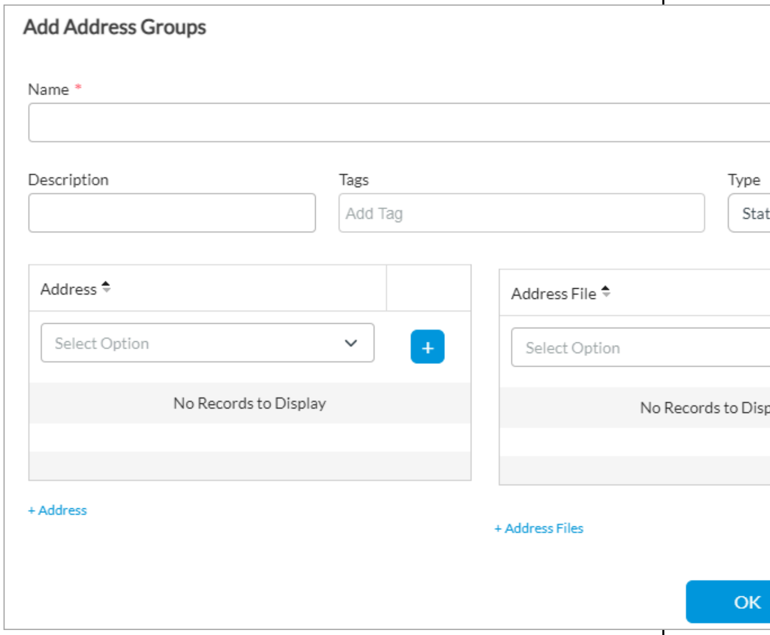
Tags: Add Tag

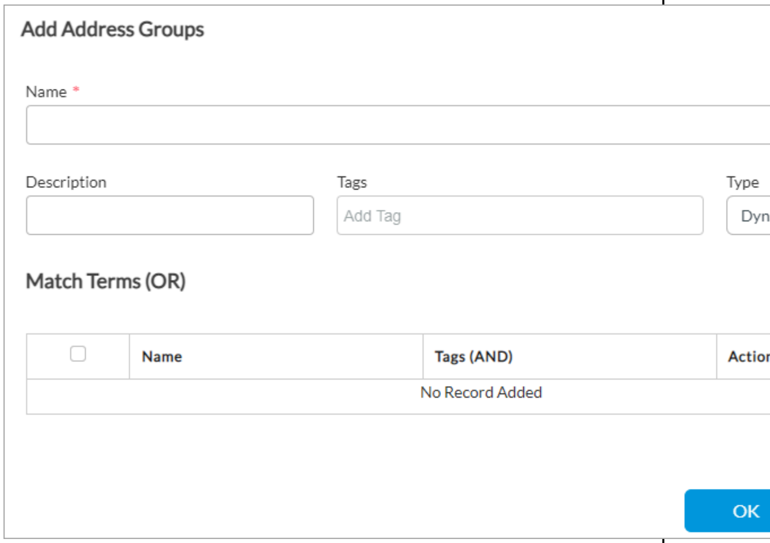
Type: Static

Address	
Select Option	+
No Records to Display	

Address File	
Select Option	+
No Records to Display	

Field	**Description**
Name (Required)	Enter a name for the address group object. *Value*: Text string from 1 through 255 characters *Default*: None
Description	Enter a text description for the address group object. *Value*: Text string from 1 through 255 characters *Default*: None
Tags	Enter a keyword or phrase that allows you to filter the address object. *Value*: Text string from 1 through 255 characters *Default*: None
Type	(For Releases 22.1.1 and later.) Select the address type for the group: ◦ Static (default) ◦ Dynamic If you select Static, the following fields display in the lower part of the screen:

	 Add Address Groups Name * Description Tags Add Tag Type Stat Address Select Option + No Records to Display Address File Select Option No Records to Disp + Address + Address Files OK ◦ Address—Click the + icon to select IP addresses or address groups to add to the address group object. Click +New Address to add a new address object. For more information, see Configure Address Objects, above. ◦ Address File—Click the + icon to select an address file. For more information about uploading address files, see Upload Address Files, above. Select Dynamic to add dynamic IP addresses address for cloud resources. The following screen displays:



Add Address Groups

Name *

Description

Tags

Add Tag

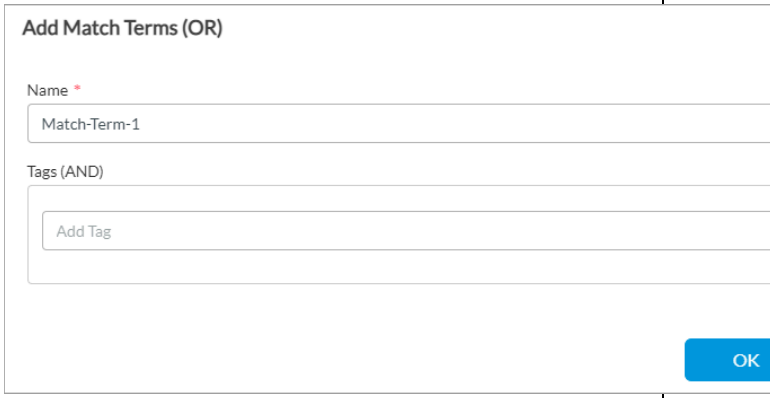
Type

Dyn

Match Terms (OR)

☐	Name	Tags (AND)	Actior
No Record Added			

(For Releases 22.1.1 and later.) Click + Add in the Match Terms (OR) section to add matching terms. The Add Match Terms (OR) screen displays.



Add Match Terms (OR)

Name *

Match-Term-1

Tags (AND)

Add Tag

- Match Term—Enter a name for the match term. The term Match Term displays by default followed by the serial number of the match term, which you can edit. For example, the first match term name display sas Match-Term-1.
- Tags (AND)—If cloud workload protection (CWP) is enabled for the CMS connector, this field displays the tags for the cloud service provider associated with CMS connector. You can select the necessary tag. If cloud resource tags are not displayed, you can enter custom tags. For more information, see Add a CMS Connector.

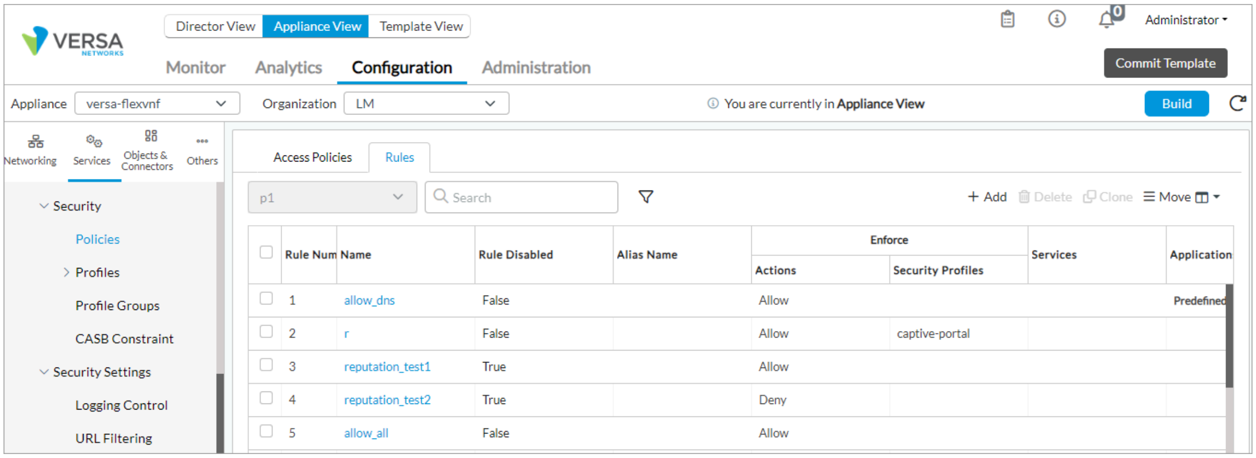
5. Click OK.

Apply an Address Object to an Access Policy

You apply an address object, address or address group, to a security access policy. To define and configure a security access policy, see Configure Security Access Policy Rules in the Configure Stateful Firewall article.

To apply an address object to an access policy:

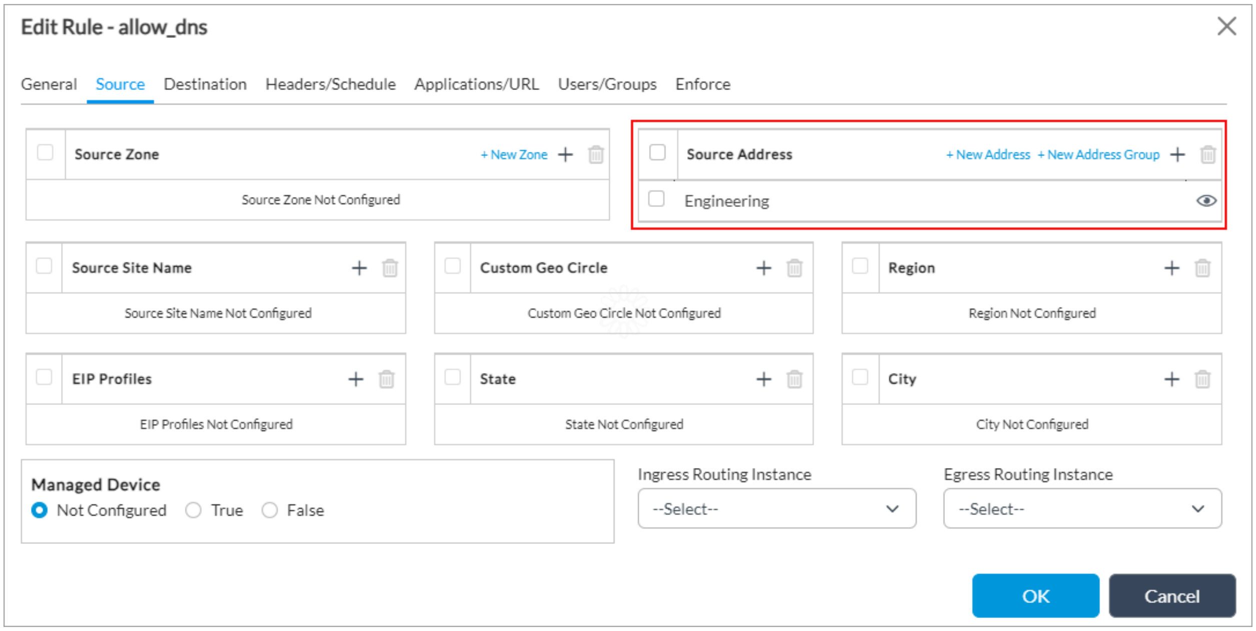
1. In Director view:
   a. Select the Administration tab in the top menu bar.
   b. Select Appliances in the left menu bar.
   c. Select a device name in the main panel. The view changes to Appliance view.
2. Select the Configuration tab in the top menu bar.
3. Select Services > Next Gen Firewall > Security > Policies in the left menu bar.
4. Click the Rules tab and select a security access policy rule.



Appliance: versa-flexvnf
Organization: LM
You are currently in Appliance View
p1

	Rule Num	Name	Rule Disabled	Alias Name	Enforce		Services	Application
					Actions	Security Profiles		
□	1	allow_dns	False		Allow			Predefined
□	2	r	False		Allow	captive-portal		
□	3	reputation_test1	True		Allow			
□	4	reputation_test2	True		Deny			
□	5	allow_all	False		Allow			

5. In the Edit Rule popup window, click Source tab.



Source Zone: Source Zone Not Configured

Source Address: □ Engineering

Source Site Name: Source Site Name Not Configured

Custom Geo Circle: Custom Geo Circle Not Configured

Region: Region Not Configured

EIP Profiles: EIP Profiles Not Configured

State: State Not Configured

City: City Not Configured

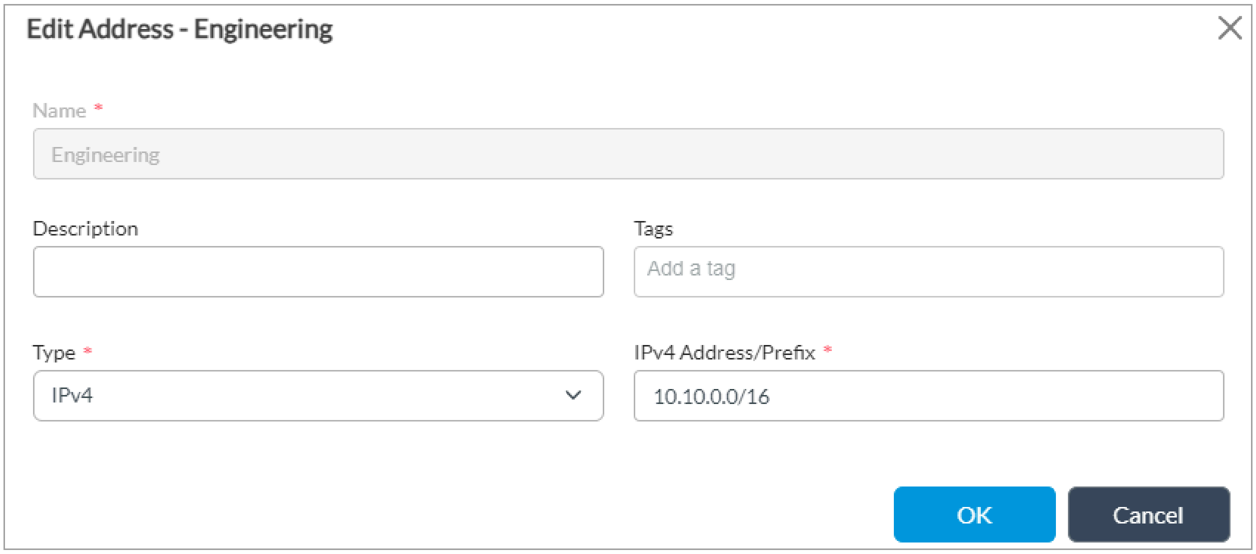
Managed Device: ● Not Configured ○ True ○ False

Ingress Routing Instance: --Select--

Egress Routing Instance: --Select--

6. Click + in the Source Address section to select address objects or address groups objects to associate with the rule. For more information, see Configure Address Objects and Configure Address Group Objects, above.
7. To add an address object click + New Address. The Add Address screen displays. For more information, see Configure Address Objects, above.
8. To add an address group object click + New Address Group. The Add Address Groups screen displays. For more information, see Configure Address Group Objects, above.

9. Click the 👁 eye icon to edit the object address. The Edit Address screen displays. For more information, see Configure Address Objects, above.



Name *: Engineering

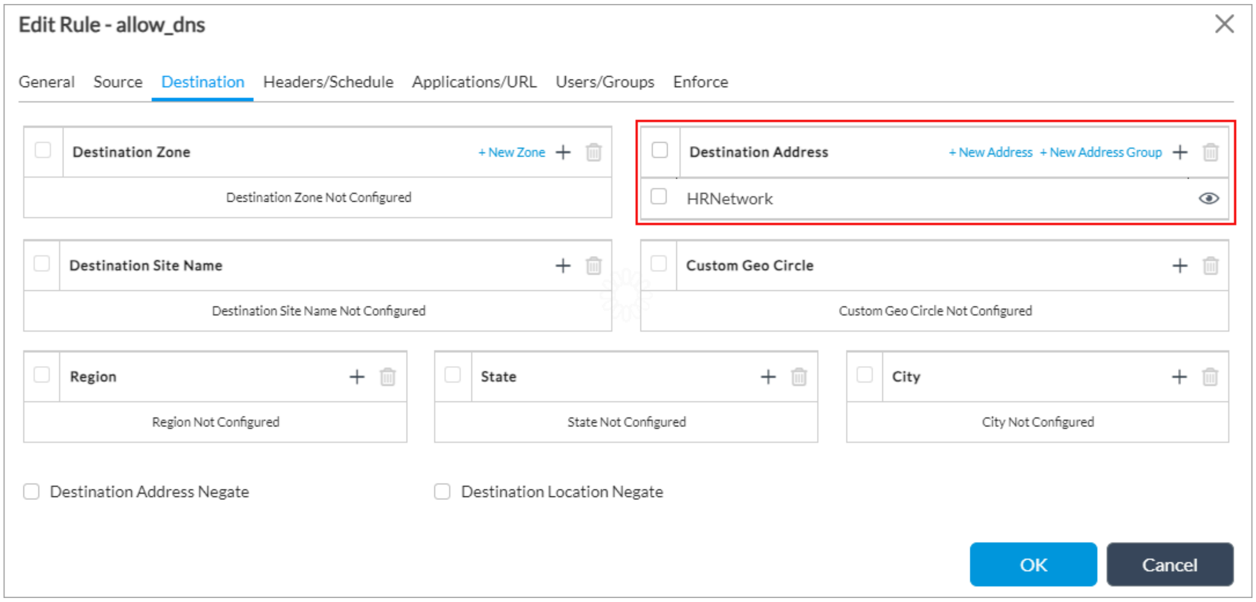
Description:

Tags: Add a tag

Type *: IPv4

IPv4 Address/Prefix *: 10.10.0.0/16

7. Click OK.
8. Click the Destination tab.



Edit Rule - allow_dns

General | Source | Destination | Headers/Schedule | Applications/URL | Users/Groups | Enforce

□ Destination Zone — + New Zone
Destination Zone Not Configured

□ Destination Address — + New Address + New Address Group
□ HRNetwork

□ Destination Site Name
Destination Site Name Not Configured

□ Custom Geo Circle
Custom Geo Circle Not Configured

□ Region
Region Not Configured

□ State
State Not Configured

□ City
City Not Configured

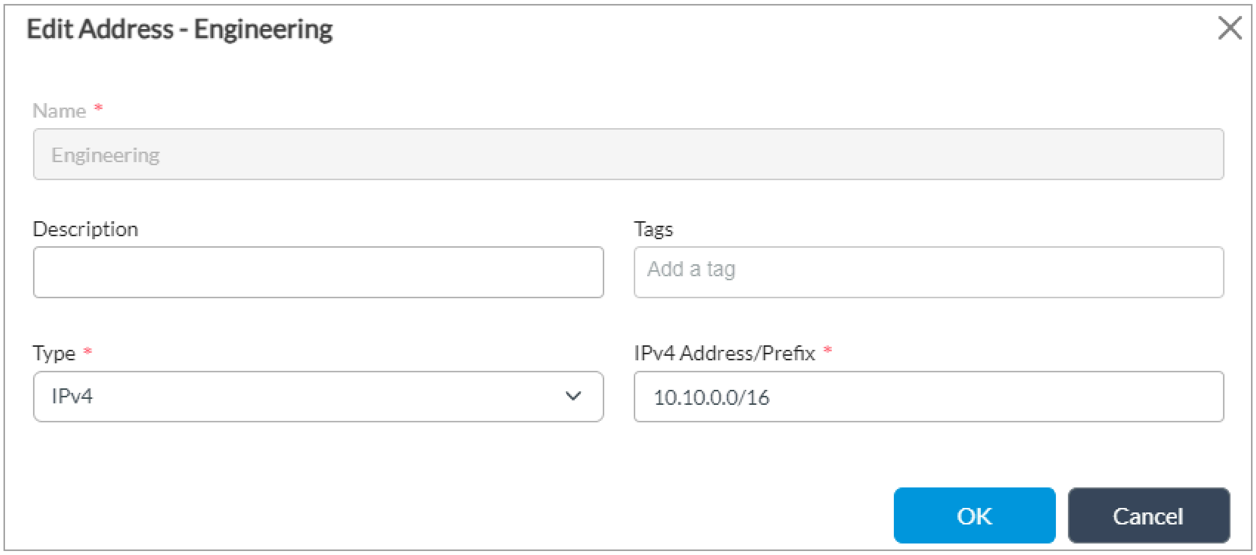
□ Destination Address Negate

□ Destination Location Negate

OK | Cancel

9. Click + in the Destination Address section to select address objects or address groups objects to associate with the rule. For more information, see Configure Address Objects and Configure Address Group Objects, above.
10. To add an address object click + New Address. The Add Address screen displays. For more information, see Configure Address Objects, above.
11. To add an address group object click + New Address Group. The Add Address Groups screen displays. For more information, see Configure Address Group Objects, above.

12. Click the 👁 eye icon to edit the object address. The Edit Address screen displays. For more information, see Configure Address Objects, above.



Edit Address - Engineering

Name *: Engineering

Description:

Tags: Add a tag

Type *: IPv4

IPv4 Address/Prefix *: 10.10.0.0/16

OK | Cancel

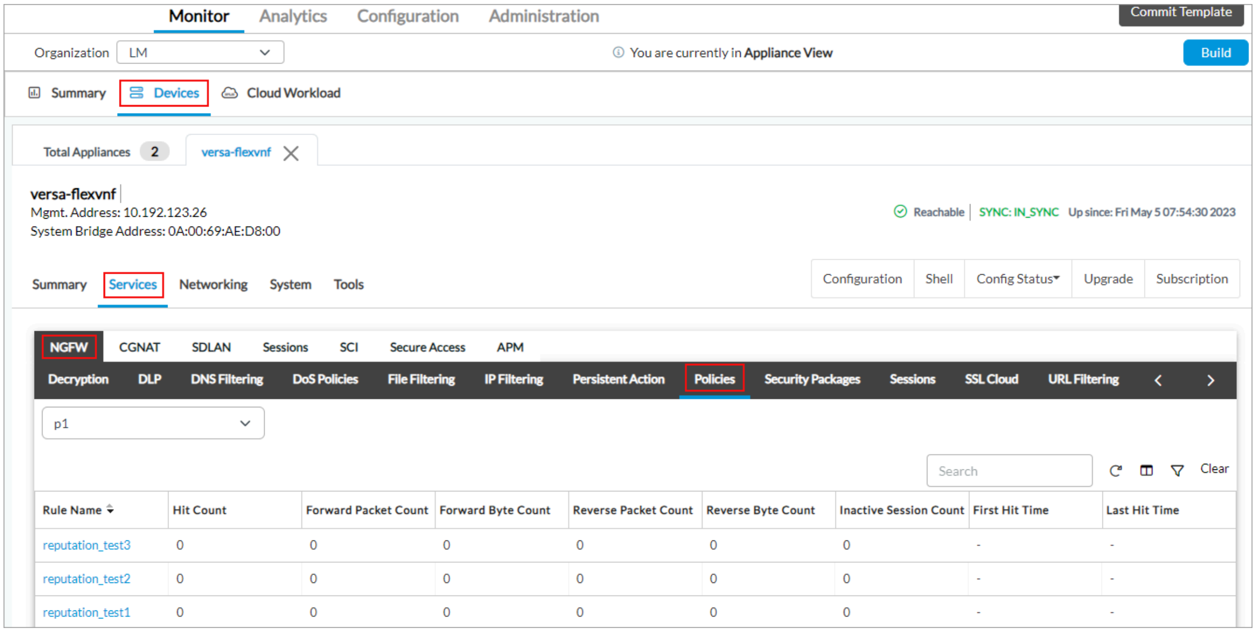
13. Click OK.

Monitor Policies

You monitor policies that you associate with address objects to view the traffic flow details when a policy is used. For more information, see Monitor Device Services.

To monitor policies:

1. Select the Administration tab in the top menu bar.
    a. Select Appliances in the left menu bar.
    b. Select a device name in the main panel. The view changes to Appliance view.
2. Select the Monitor tab in the top menu bar.
3. Select the Provider Organization > Services tab.
4. Select NGFW > Policies. The NGFW policy statistics displays.



Organization: LM

You are currently in Appliance View

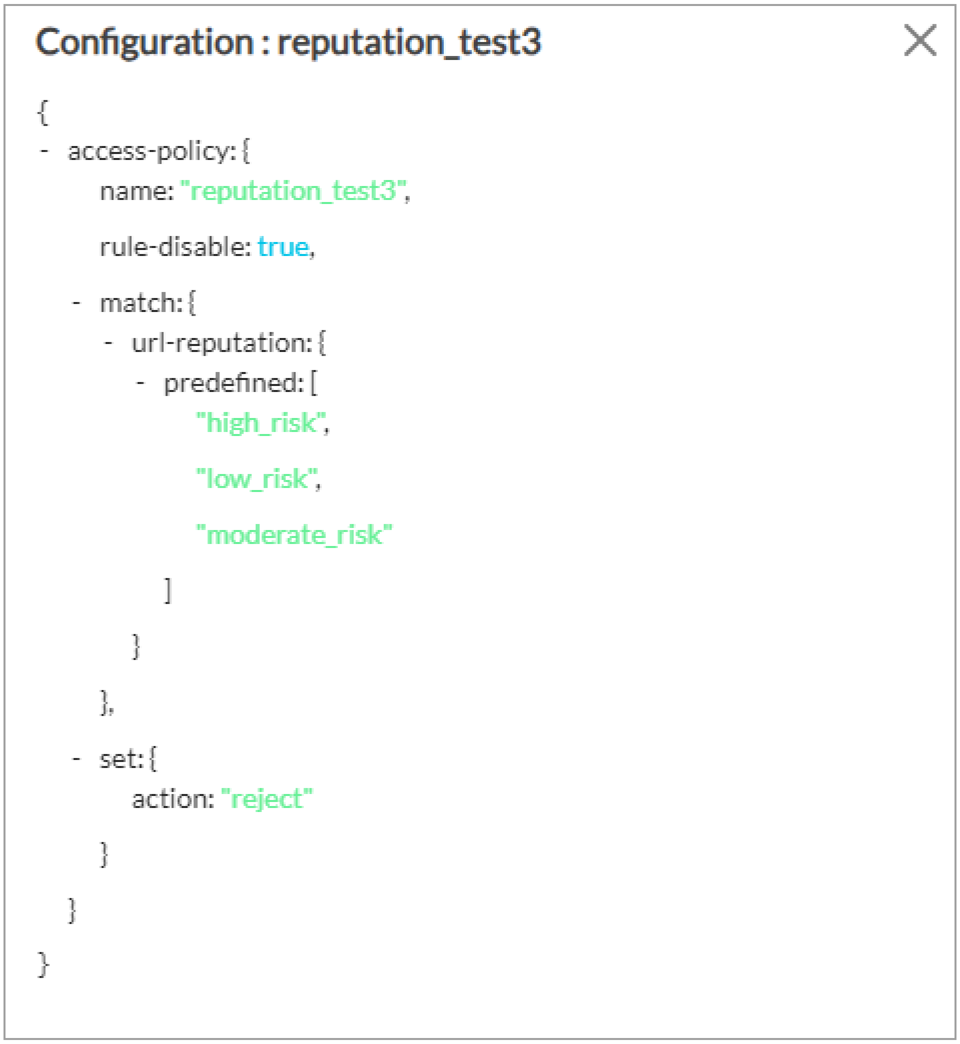
versa-flexvnf
Mgmt. Address: 10.192.123.26
System Bridge Address: 0A:00:69:AE:D8:00

Reachable | SYNC: IN_SYNC Up since: Fri May 5 07:54:30 2023

p1

Rule Name	Hit Count	Forward Packet Count	Forward Byte Count	Reverse Packet Count	Reverse Byte Count	Inactive Session Count	First Hit Time	Last Hit Time
reputation_test3	0	0	0	0	0	0	-	-
reputation_test2	0	0	0	0	0	0	-	-
reputation_test1	0	0	0	0	0	0	-	-

Click a rule name to view its configuration.



Configuration : reputation_test3

```
{
- access-policy: {
      name: "reputation_test3",
      rule-disable: true,
    - match: {
        - url-reputation: {
            - predefined: [
                  "high_risk",
                  "low_risk",
                  "moderate_risk"
              ]
          }
      },
    - set: {
          action: "reject"
      }
  }
}
```

Supported Software Information

Releases 20.2 and later support all content described in this article, except:

- Release 22.1.1 adds support for adding match terms and cloud workload protection tags for dynamic address groups.
- Release 22.1.2 adds support for specifying a wildcard mask in IPv6 addresses.
- Release 22.1.3 adds support for viewing, editing, and deleting address object references.

Additional Information

Configure CGNAT
Configure CoS
Configure DNS Servers

Configure HTTP/HTTPS Proxy
Configure IP Filtering
Configure NGFW
Configure Policy-Based Forwarding
Configure SD-WAN Policy
Configure SD-WAN Traffic Steering
Configure Stateful Firewall
Monitor Device Service
Overview of Configuration Templates