PROFITAP VTAP

USER MANUAL

PROFI TAP

www.profitap.com

If you have any questions, you can contact us through our website:

www.profitap.com

or by email:

support@profitap.com

For the latest documentation and software, visit our Resource Center:

https://resources.profitap.com/

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1. vTAP System Architecture

1.1 Abbreviations

VDS	Virtual Distributed Switch
VCSA	vCenter Server Appliance
vNPB	Virtual Network Packet Broker
VM	Virtual Machine

1.2 Overview

Profitap vTAP consists of two components: the **vTAP Manager**, and the **vNPB** (or vBroker).

The vTAP Manager is an orchestrator for the virtual TAPs and filtering machines (vNPB). It has complete visibility over the entire virtual environment: VMs, VDS, hosts, and VCSA.

The vNPB must be deployed on the same host as the tapped VMs, while the vTAP Manager can be deployed on any host having a constant connection to the VCSA.

1.3 Prerequisites

vSphere 6.5, 7, or 8
Virtual Distributed Switch
vCenter Server Appliance

1.4 Minimum Resource Requirements

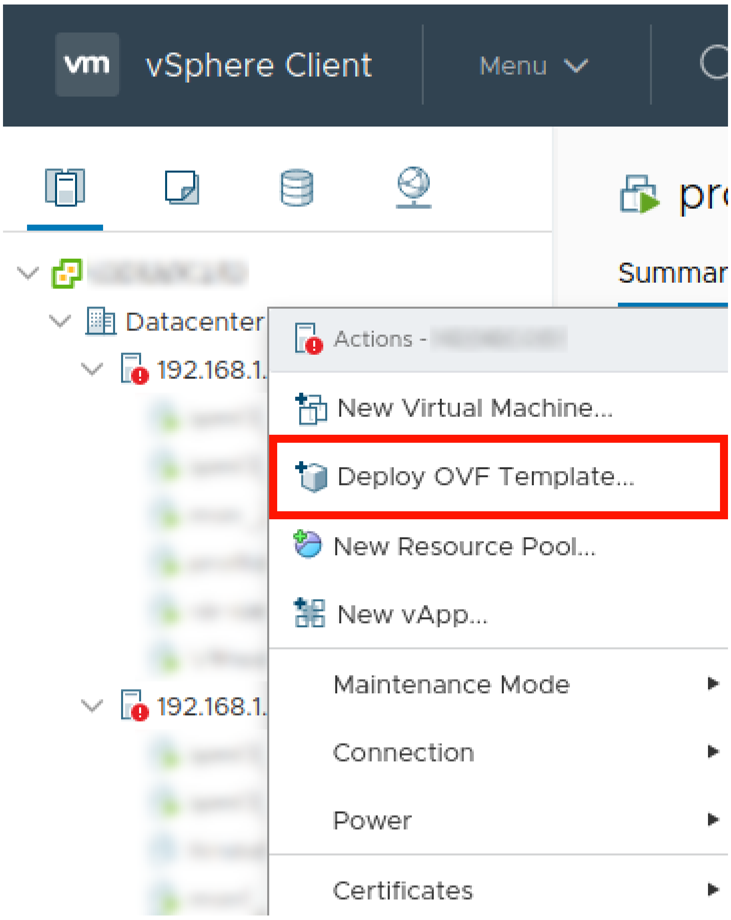
vTAP Manager: 1 vCPU, Memory 2 GB, Hard Drive 12 GB
vNPB: 1 vCPU, Memory 2 GB, Hard Drive 12 GB

2. vTAP Deployment

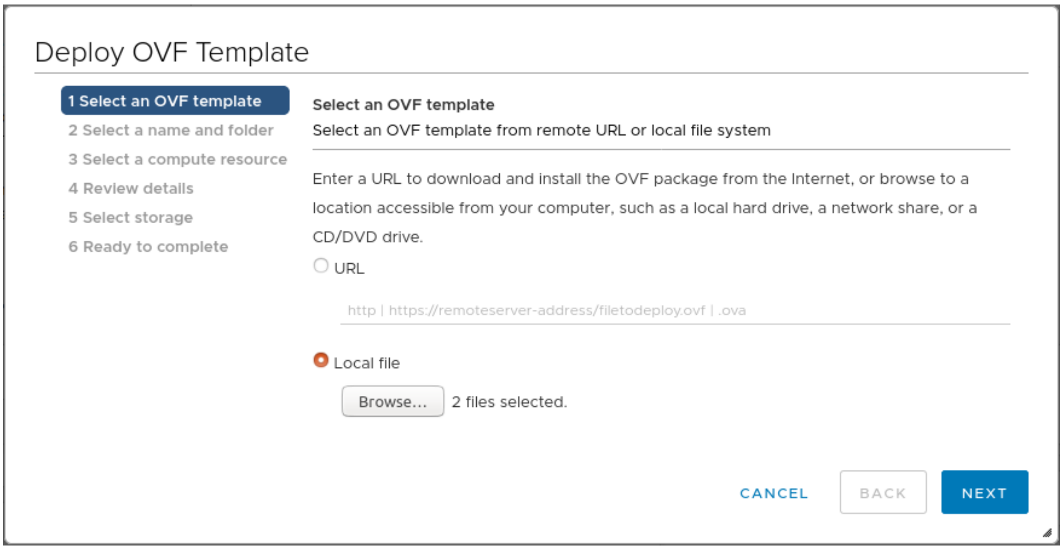
Deploying the vTAP on a host will deploy the vTAP Manager. vNPB deployment is done automatically by the vTAP Manager on any host on which it is required by the filter rules (see Rule Sets section).

The Profitap vTAP release consists of the following files:
profitap_vtap.ovf
profitap_vtap.vmdk

To deploy the vTAP, connect to your vSphere client, select *Deploy OVF Template* on the desired ESXi host, and follow the wizard.



2.1 Select an OVF Template


Deploy OVF Template

Select an OVF template

Select an OVF template from remote URL or local file system

Enter a URL to download and install the OVF package from the Internet, or browse to a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.

○ URL

http | https://remoteserver-address/filetodeploy.ovf | .ova

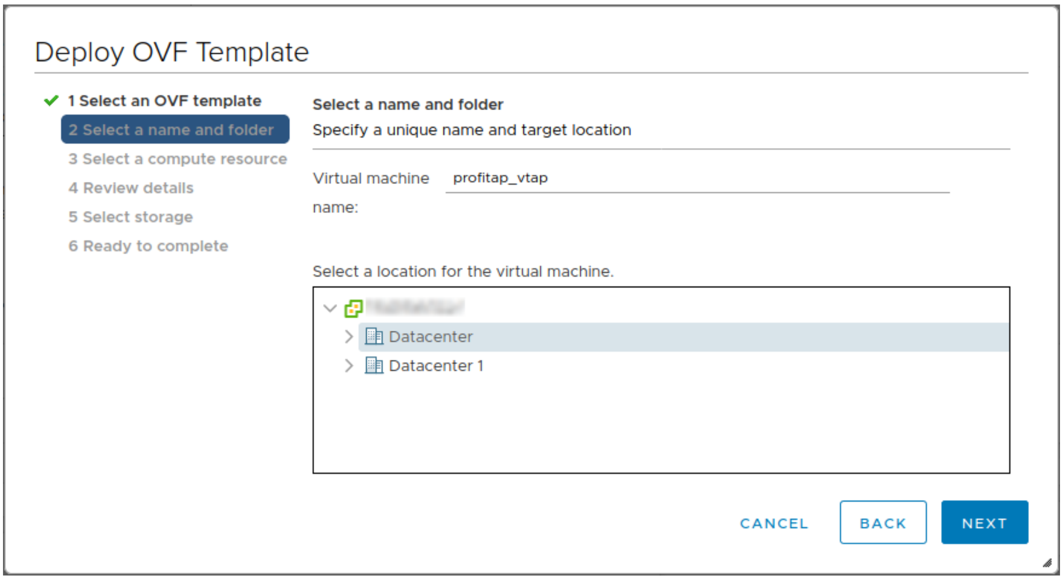
● Local file

Browse... 2 files selected.

- Select *Local file*
- Click *Browse*
- Navigate to the location of the vTAP files
- Select **both** files (OVF and VMDK)
- Click *Next*

> **Note:** It is important to select both the OVF and VMDK file. To select multiple files, use CTRL on PC, and CMD on Mac.

2.2 Select a Name and Folder


Deploy OVF Template

Select a name and folder

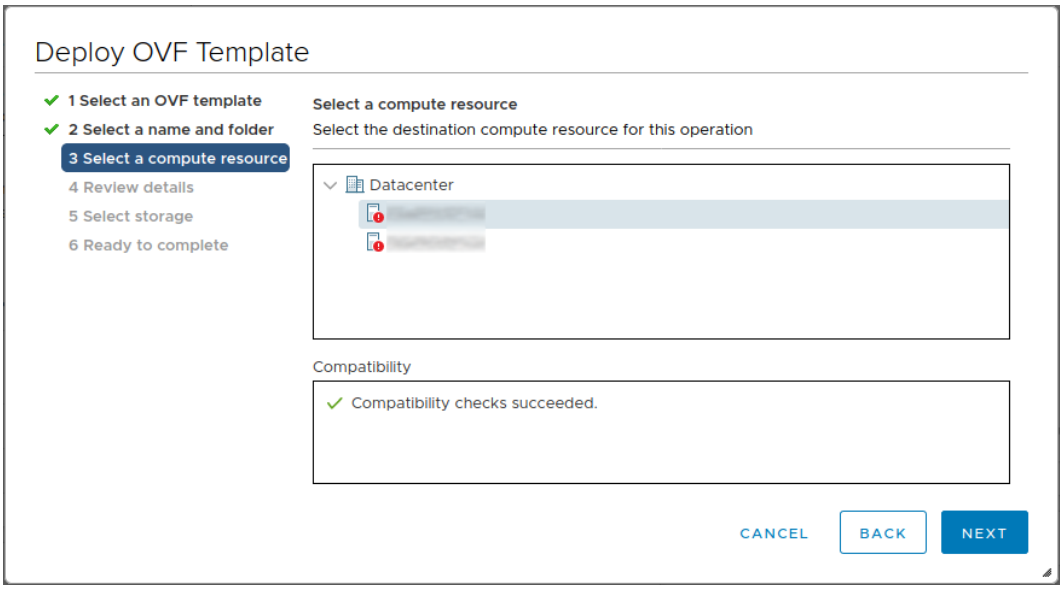
Specify a unique name and target location

Virtual machine name: profitap_vtap

Select a location for the virtual machine.

- Enter a VM name
- The appropriate VM location should already be selected, but a different one can be selected if desired
- Click *Next*

2.3 Select a Compute Resource



Deploy OVF Template

✓ 1 Select an OVF template
✓ 2 Select a name and folder
3 Select a compute resource
4 Review details
5 Select storage
6 Ready to complete

Select a compute resource
Select the destination compute resource for this operation

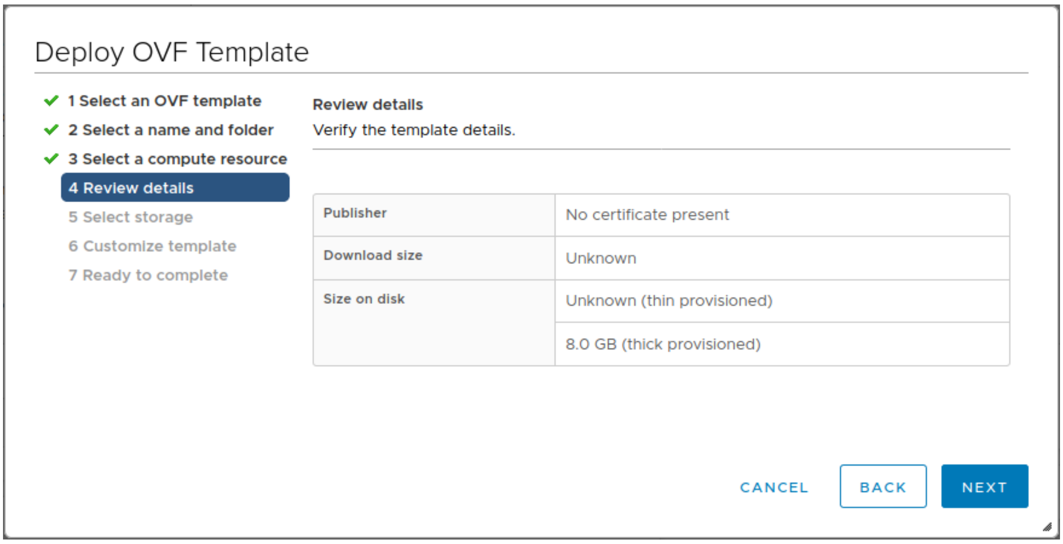
Datacenter
[redacted]
[redacted]

Compatibility

✓ Compatibility checks succeeded.

- The appropriate compute resource should already be selected, but a different one can be selected if desired
- Click *Next*

2.4 Review Details



Deploy OVF Template

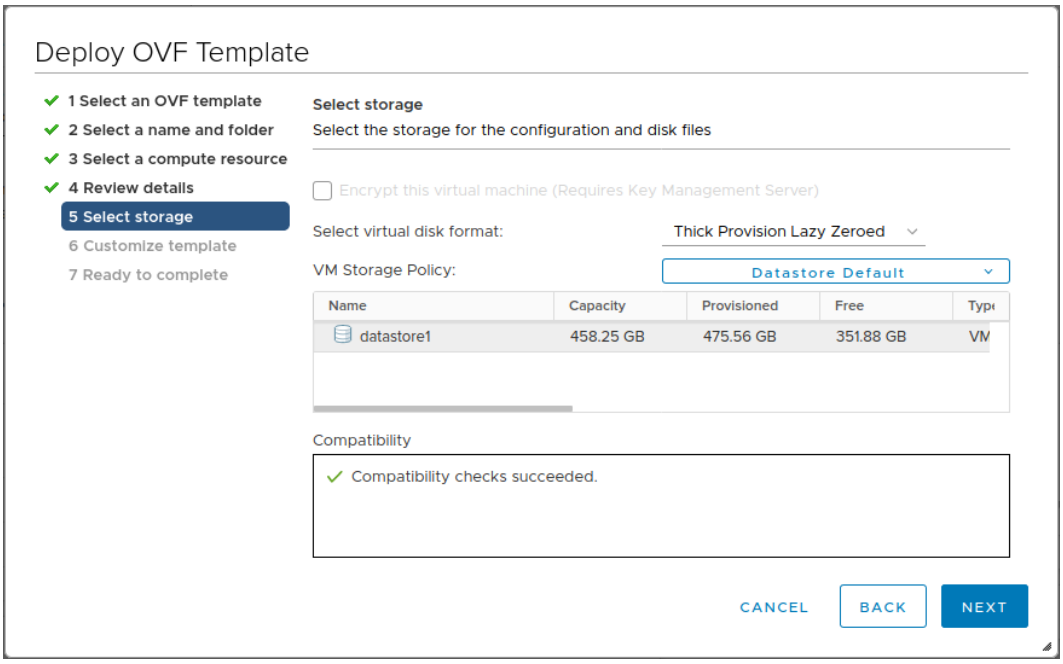
✓ 1 Select an OVF template
✓ 2 Select a name and folder
✓ 3 Select a compute resource
4 Review details
5 Select storage
6 Customize template
7 Ready to complete

Review details
Verify the template details.

Publisher	No certificate present
Download size	Unknown
Size on disk	Unknown (thin provisioned)
	8.0 GB (thick provisioned)

- Verify the template details
- Click *Next*

2.5 Select Storage



Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- 5 Select storage
- 6 Customize template
- 7 Ready to complete

Select storage

Select the storage for the configuration and disk files

□ Encrypt this virtual machine (Requires Key Management Server)

Select virtual disk format: Thick Provision Lazy Zeroed

VM Storage Policy: Datastore Default

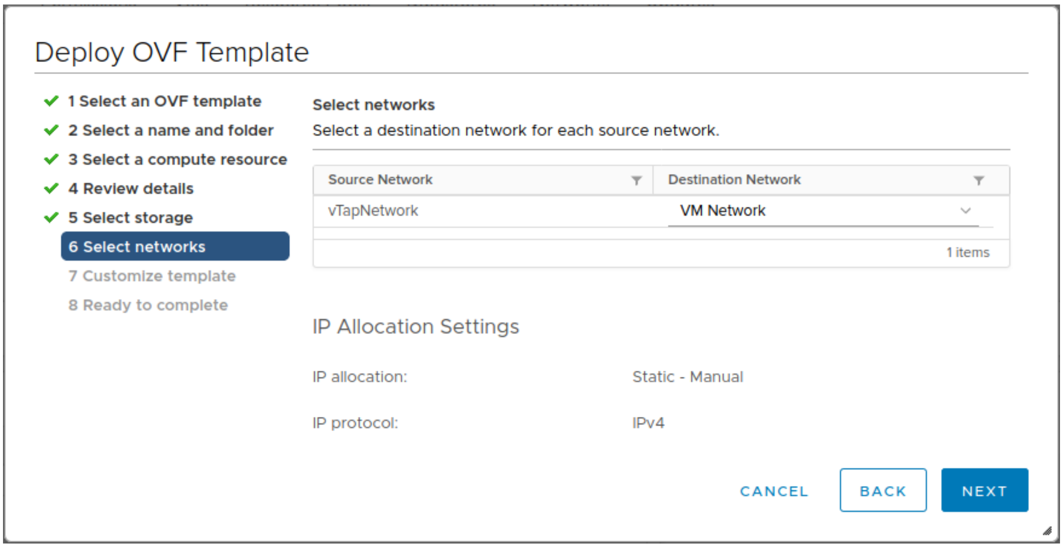
Name	Capacity	Provisioned	Free	Typ
datastore1	458.25 GB	475.56 GB	351.88 GB	VM

Compatibility

✓ Compatibility checks succeeded.

- Select the storage for the configuration and disk files
- Click *Next*

2.6 Select Networks



Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 Select storage
- 6 Select networks
- 7 Customize template
- 8 Ready to complete

Select networks

Select a destination network for each source network.

Source Network	Destination Network
vTapNetwork	VM Network

1 items

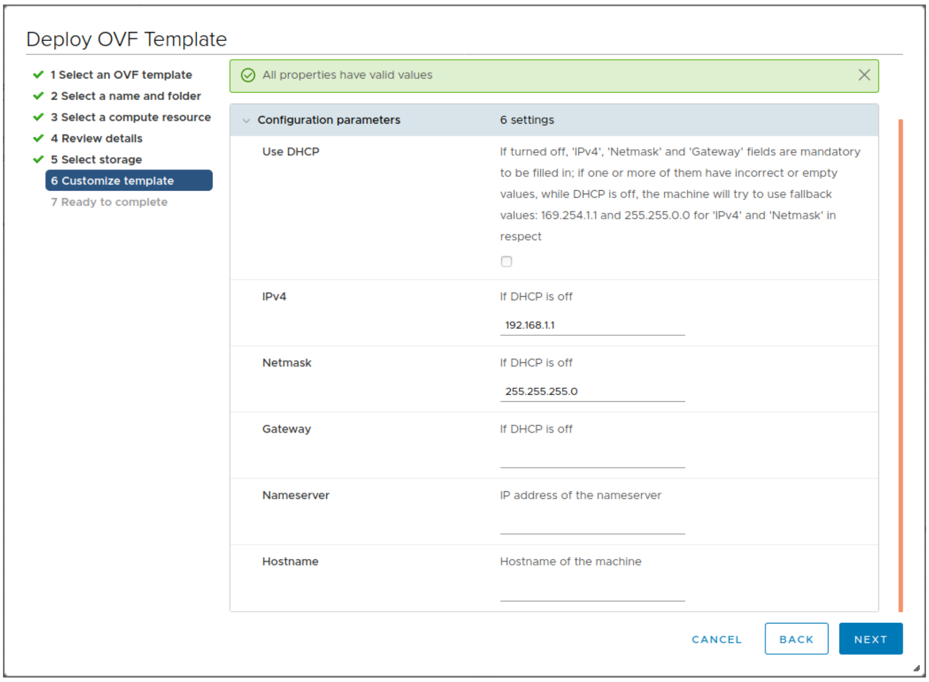
IP Allocation Settings

IP allocation: Static - Manual

IP protocol: IPv4

- Select the network for the vTAP Manager VM to connect to. The network must be reachable by the user (via HTTPS), by the VCSA, and by the ESXi hosts where vNPBs will be deployed.
- Click *Next*

2.7 Customize Template



Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 Select storage
- 6 Customize template
- 7 Ready to complete

All properties have valid values

Configuration parameters — 6 settings

Use DHCP: If turned off, 'IPv4', 'Netmask' and 'Gateway' fields are mandatory to be filled in; if one or more of them have incorrect or empty values, while DHCP is off, the machine will try to use fallback values: 169.254.1.1 and 255.255.0.0 for 'IPv4' and 'Netmask' in respect

□

IPv4: If DHCP is off

192.168.1.1

Netmask: If DHCP is off

255.255.255.0

Gateway: If DHCP is off

Nameserver: IP address of the nameserver

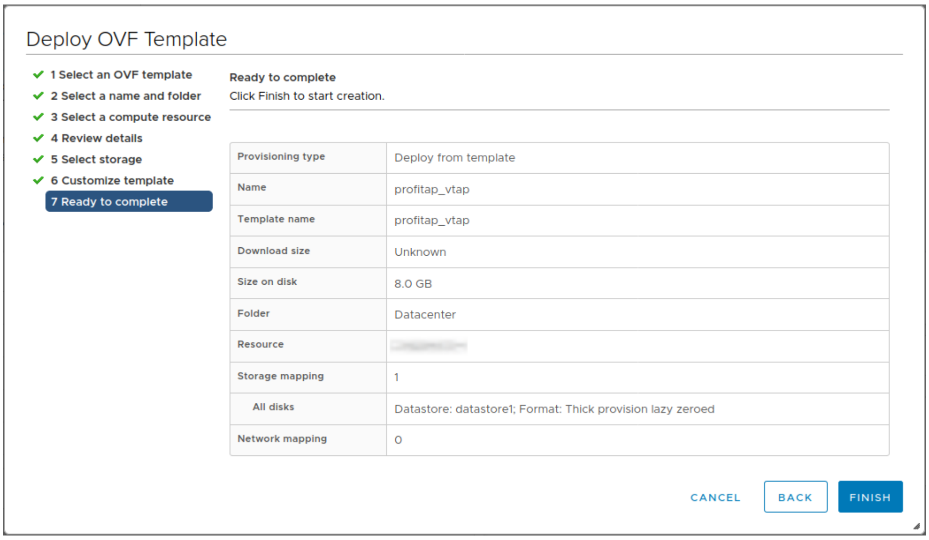
Hostname: Hostname of the machine

Configure network settings for the vTAP Manager on this window.

If *Use DHCP* is enabled, the vTAP Manager will attempt to get network settings from a DHCP server. If the vTAP Manager cannot receive network settings from a DHCP server (no DHCP server available, or no allocatable IP addresses available), it will use *169.254.1.1* as fallback IP and *255.255.0.0* as netmask. The *IPv4*, *Netmask*, and *Gateway* fields are ignored.

If *Use DHCP* is disabled, the *IPv4* and *Netmask* fields are required. If these fields are empty, or filled but malformed, the vTAP Manager will use *169.254.1.1* as fallback IP and *255.255.0.0* as netmask.

2.8 Ready to Complete



Deploy OVF Template

- ✓ 1 Select an OVF template
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Review details
- ✓ 5 Select storage
- ✓ 6 Customize template
- 7 Ready to complete

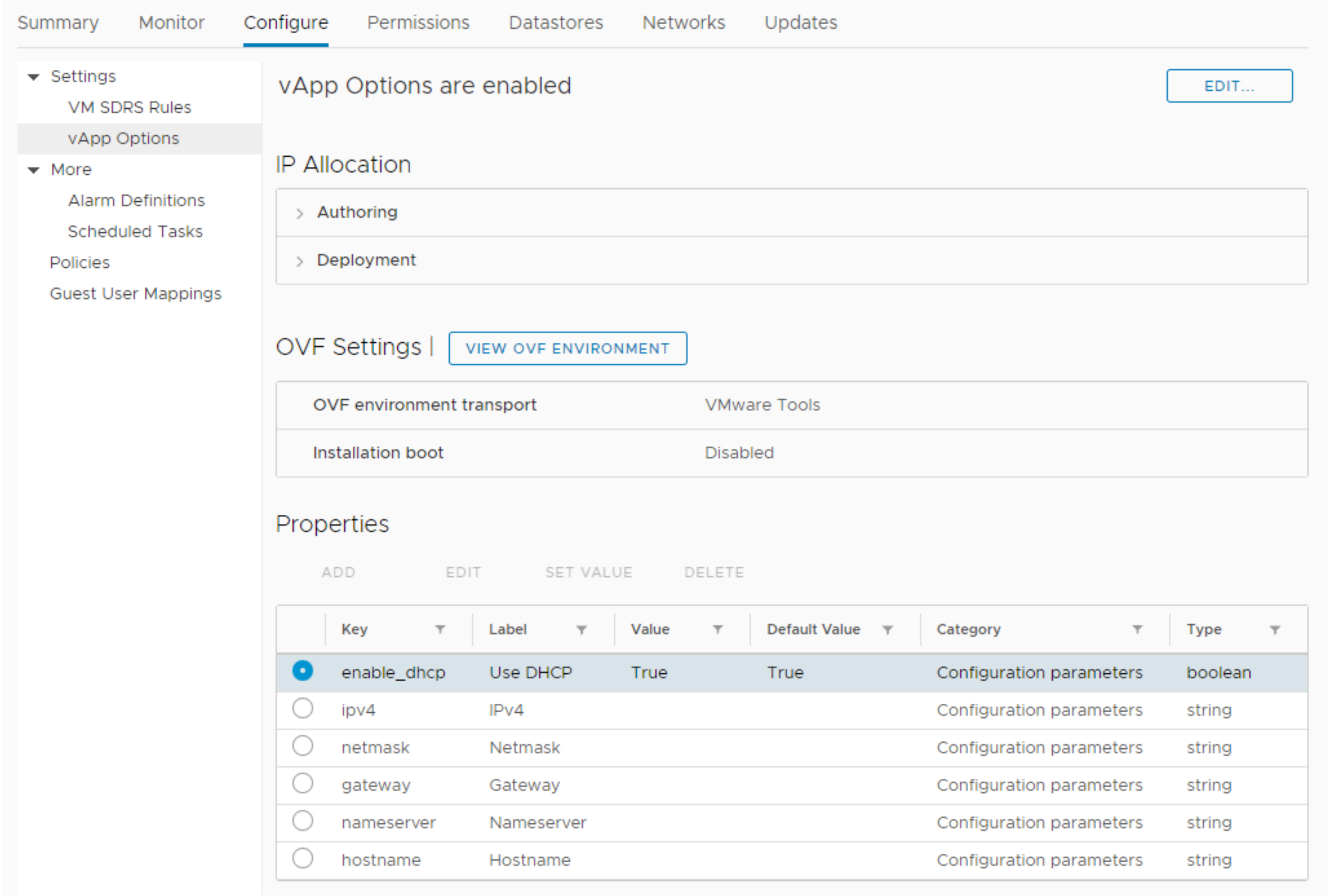
Ready to complete

Click Finish to start creation.

Provisioning type	Deploy from template
Name	profitap_vtap
Template name	profitap_vtap
Download size	Unknown
Size on disk	8.0 GB
Folder	Datacenter
Resource	[redacted]
Storage mapping	1
All disks	Datastore: datastore1; Format: Thick provision lazy zeroed
Network mapping	0

Review the template deployment summary and click *Finish*.

2.9 Adjust Network Settings



vApp Options are enabled

IP Allocation

- Authoring
- Deployment

OVF Settings

OVF environment transport	VMware Tools
Installation boot	Disabled

Properties

	Key	Label	Value	Default Value	Category	Type
●	enable_dhcp	Use DHCP	True	True	Configuration parameters	boolean
○	ipv4	IPv4			Configuration parameters	string
○	netmask	Netmask			Configuration parameters	string
○	gateway	Gateway			Configuration parameters	string
○	nameserver	Nameserver			Configuration parameters	string
○	hostname	Hostname			Configuration parameters	string

Network settings can be adjusted in the vTAP Manager VM's properties.

With the vTAP Manager VM turned off, navigate to ***Configure > Settings > vApp Options > Properties***, and adjust these properties as needed.

The *Use DHCP* option can be enabled or disabled in this window.

If *Use DHCP* is enabled, the *IPv4*, *Netmask*, and *Gateway* properties are ignored.

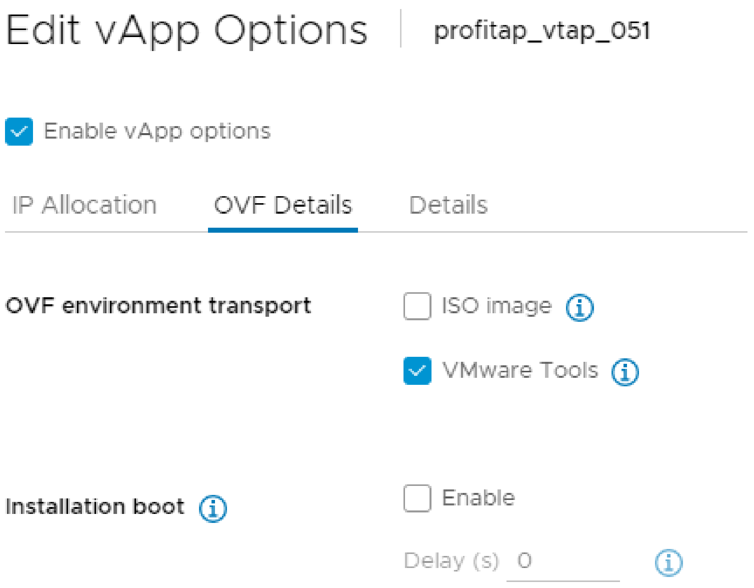
If *Use DHCP* is disabled, the *IPv4* and *Netmask* properties are required.

The vTAP Manager VM checks these properties when it is booted, and uses them if they have been changed since the last boot. Modifying the VM's network settings can also be done from within the vTAP Manager's user interface, in which case these displayed properties will not be updated, although they can still be modified, which will update the VM's network settings the next time it is booted.

NOTE: If the vTAP Manager is migrated (either manually, or during a VMware environment upgrade) the vApp options will need to be recreated.

With the vTAP Manager VM turned off, navigate to ***Configure > Settings > vApp Options > Properties***, and recreate these properties as needed (see image above).

Additionally, the *VMware Tools* option **needs to be enabled**. To do so, click the *EDIT* button at the top right corner of the *vApp Options* page, navigate to the *OVF Details* tab, and tick the *VMware Tools* checkbox.



Edit vApp Options | profitap_vtap_051

☑ Enable vApp options

OVF environment transport: ☐ ISO image ☑ VMware Tools

Installation boot: ☐ Enable

Delay (s) 0

2.10 IP Address

The vTAP Manager VM's IP address will appear in *IP Addresses* on the VM's *Summary* page. Note that it may take 1-2 minutes to appear after the VM has been turned on.

3. vTAP Manager Configuration

3.1 Login

Open a web browser and enter the vTAP Manager's IP address in the address bar.

Login, using the appropriate account credentials.

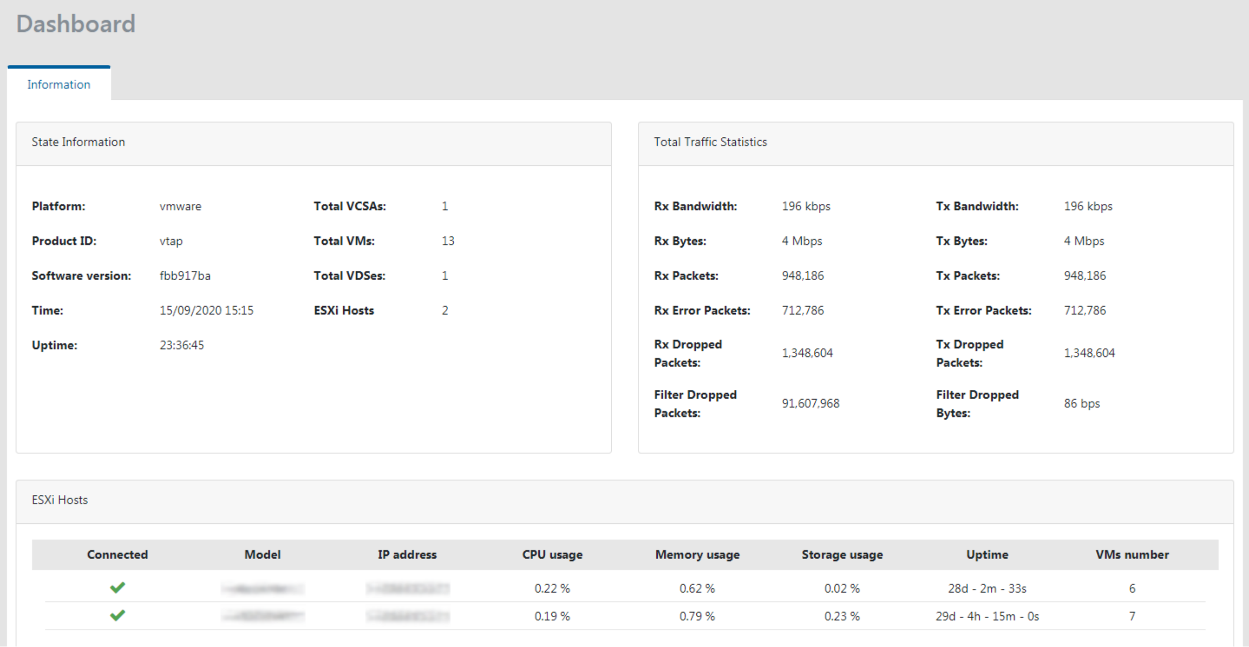
The initial credentials are as follows:

- Username: **admin**
- Password: **admin**

> **Note:** It is strongly recommended to change the default administrator password when first accessing the vTAP Manager.

To change the default password, click the *Admin* link at the bottom left of the screen and enter a new password in the Edit User window.

3.2 Dashboard



Dashboard

Information

State Information

Platform:	vmware	**Total VCSAs:**	1
Product ID:	vtap	**Total VMs:**	13
Software version:	fbb917ba	**Total VDSes:**	1
Time:	15/09/2020 15:15	**ESXi Hosts**	2
Uptime:	23:36:45		

Total Traffic Statistics

Rx Bandwidth:	196 kbps	**Tx Bandwidth:**	196 kbps
Rx Bytes:	4 Mbps	**Tx Bytes:**	4 Mbps
Rx Packets:	948,186	**Tx Packets:**	948,186
Rx Error Packets:	712,786	**Tx Error Packets:**	712,786
Rx Dropped Packets:	1,348,604	**Tx Dropped Packets:**	1,348,604
Filter Dropped Packets:	91,607,968	**Filter Dropped Bytes:**	86 bps

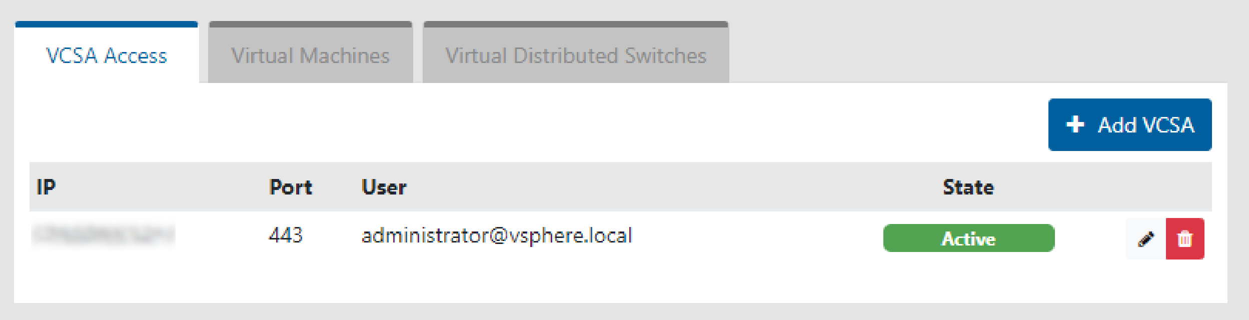
ESXi Hosts

Connected	Model	IP address	CPU usage	Memory usage	Storage usage	Uptime	VMs number
✓	[redacted]	[redacted]	0.22 %	0.62 %	0.02 %	28d - 2m - 33s	6
✓	[redacted]	[redacted]	0.19 %	0.79 %	0.23 %	29d - 4h - 15m - 0s	7

The Dashboard page contains general information and statistics about the vTAP software and the network(s) it is connected to.

3.3 Virtual Environments

3.3.1 VCSA Access

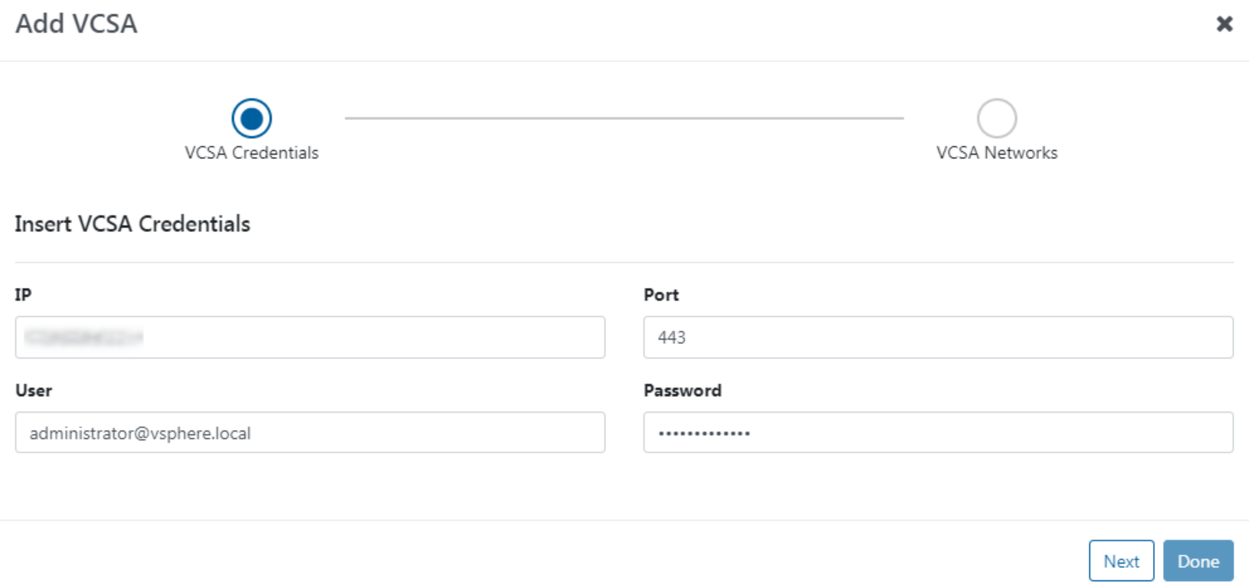


IP	Port	User	State
[redacted]	443	administrator@vsphere.local	Active

The VCSA Access page lists VCSAs that the vTAP has been configured to connect to, and their current status (*Active*, *Loading*, *Wrong Credentials*, or *Unavailable*).

The permissions on this page for the different user roles are as follows:

Role	Permissions
Admin	Add, edit, remove VCSAs
Operator	Read-only
Viewer	Read-only



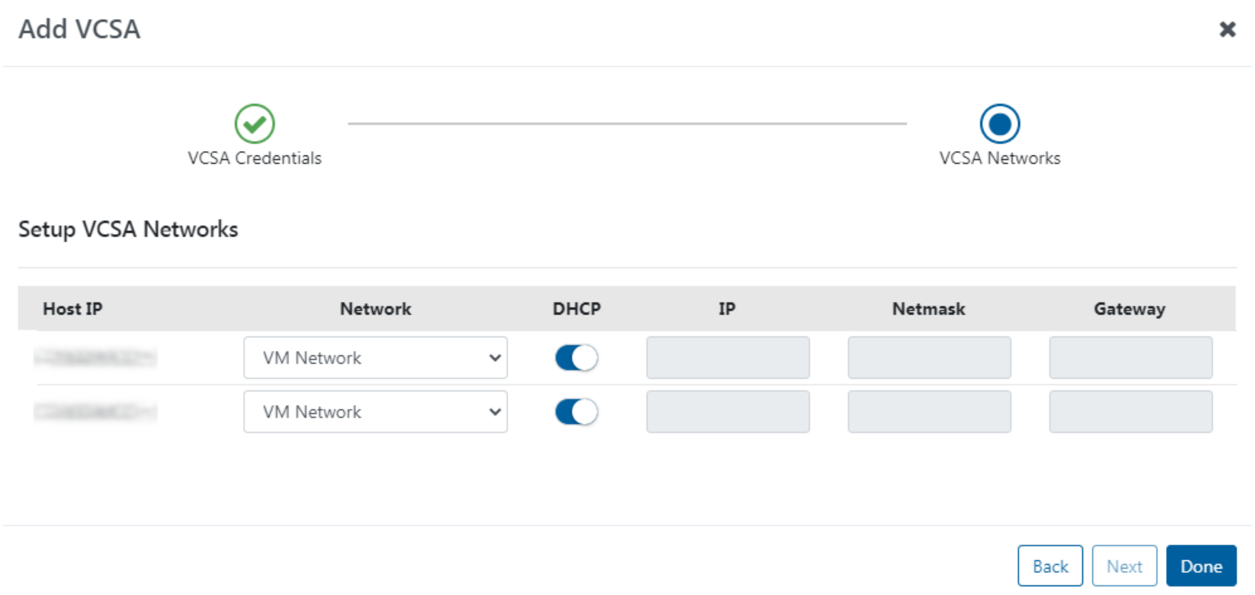
Insert VCSA Credentials

IP: [redacted]

Port: 443

User: administrator@vsphere.local

Password: •••••••••••••



Setup VCSA Networks

Host IP	Network	DHCP	IP	Netmask	Gateway
[redacted]	VM Network	●			
[redacted]	VM Network	●			

To add a VCSA, click the *Add VCSA* button. The *Add VCSA* window will appear. Fill in the fields: IP, Port, User, and Password. Click the *Next* button. If the vTAP is able to connect using the provided information, the next page will appear. Select the network and network settings for each ESXi host, then click *Done*. The VCSA will be added to the list.

To edit a current VCSA entry, click the *edit* button ✎ on the line of the VCSA entry you would like to edit. The *Edit VCSA* window will appear. The process is the same as when adding a VCSA.

To remove a VCSA, click the *remove* button 🗑 on the line of the VCSA entry you would like to remove.

The following permissions are required on the vSphere account used to connect to a VCSA:

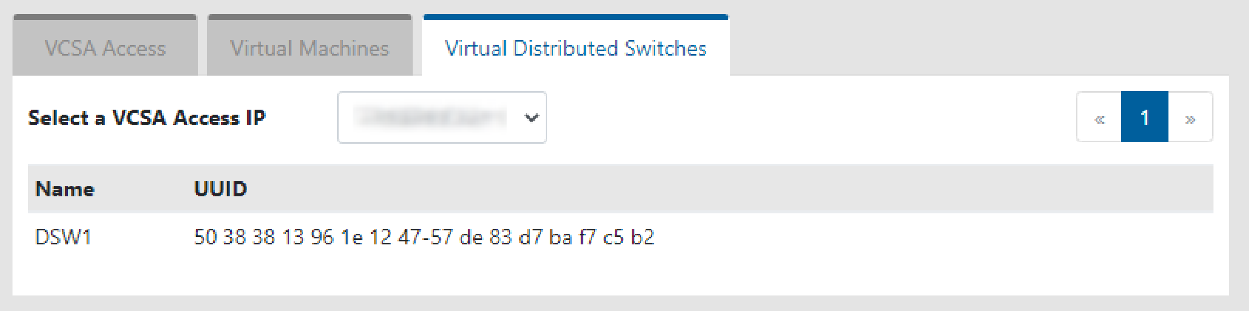
- **dvPort group**
    - Create
    - Delete
    - Modify
- **Distributed switch**
    - VSPAN operation
- **Datastore**
    - Allocate space
    - Remove file
    - Update virtual machine files
    - Update virtual machine metadata
- **Global**
    - Cancel task
- **Host**
    - Local operations
        - Create virtual machine
        - Delete virtual machine
        - Reconfigure virtual machine
- **Network**
    - Assign network
    - Configure
    - Remove
- **Virtual machine**
    - Change Configuration
        - Add new disk
        - Add or remove device
        - Modify device settings
        - Rename
        - Reset guest information
    - Edit Inventory
        - Create new
        - Remove
    - Interaction
        - Console interaction
        - Guest operating system management by VIX API
        - Power off
        - Power on
    - Provisioning
        - Deploy template
- **vAPP**

3.3.2 Virtual Machines

The Virtual Machines page lists all VMs on the currently-selected VCSA, providing their name, ESXi host on which they are present, UUID, number of NICs, and IP address(es) of each NIC.

To select a different VCSA, use the *Select a VCSA Access IP* drop-down menu.

3.3.3 Virtual Distributed Switches



Select a VCSA Access IP [redacted]

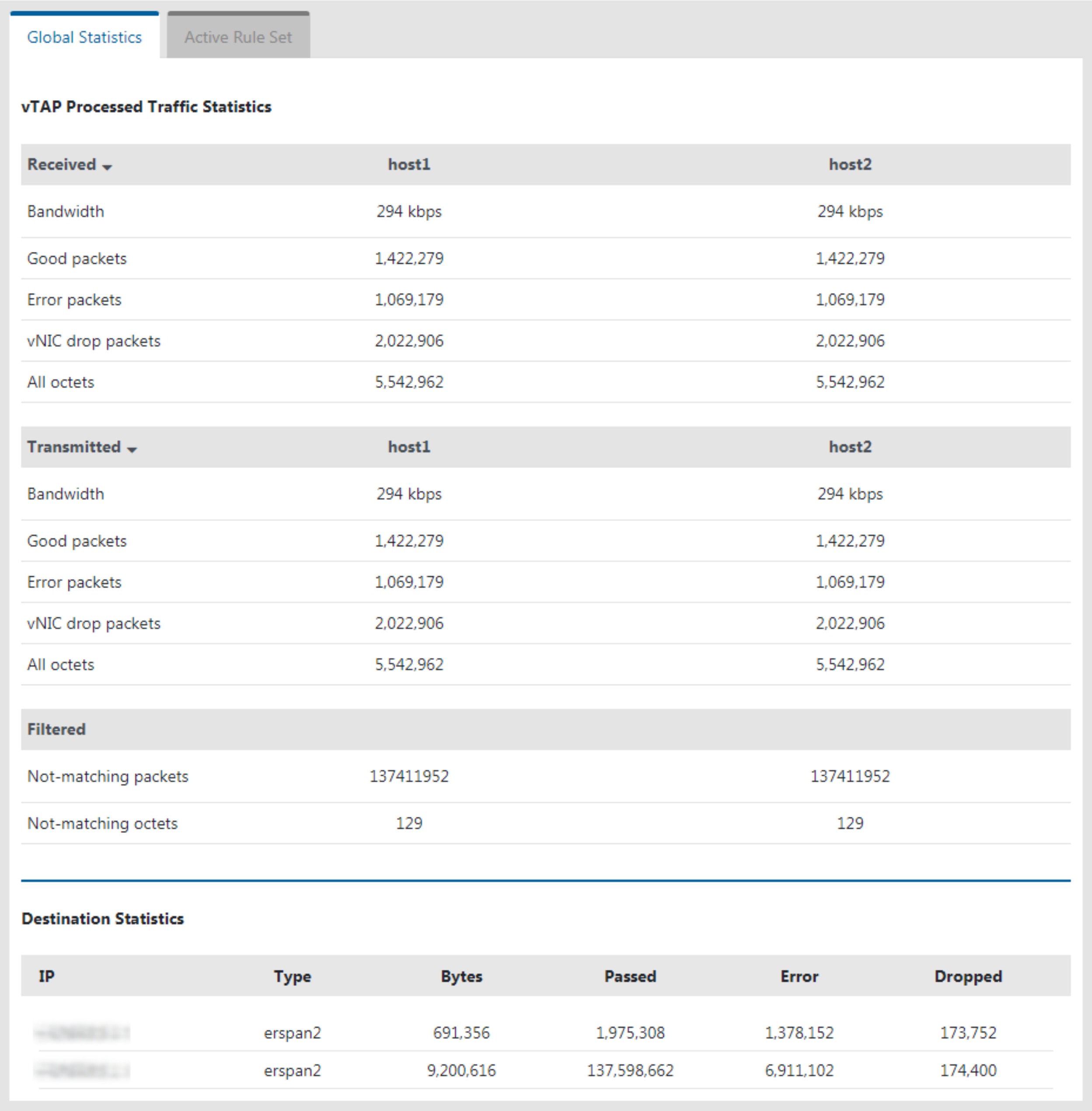
Name	UUID
DSW1	50 38 38 13 96 1e 12 47-57 de 83 d7 ba f7 c5 b2

The Virtual Distributed Switches page lists all VDSes on the currently-selected VCSA, providing their name and UUID.

To select a different VCSA, use the *Select a VCSA Access IP* drop-down menu.

3.4 Statistics

3.4.1 Global Statistics



vTAP Processed Traffic Statistics

Received	host1	host2
Bandwidth	294 kbps	294 kbps
Good packets	1,422,279	1,422,279
Error packets	1,069,179	1,069,179
vNIC drop packets	2,022,906	2,022,906
All octets	5,542,962	5,542,962

Transmitted	host1	host2
Bandwidth	294 kbps	294 kbps
Good packets	1,422,279	1,422,279
Error packets	1,069,179	1,069,179
vNIC drop packets	2,022,906	2,022,906
All octets	5,542,962	5,542,962

Filtered		
Not-matching packets	137411952	137411952
Not-matching octets	129	129

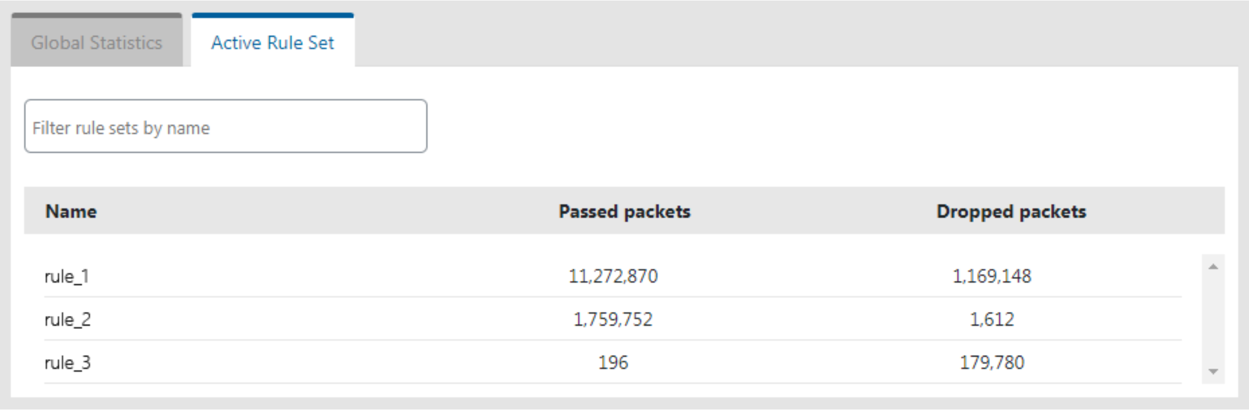
Destination Statistics

IP	Type	Bytes	Passed	Error	Dropped
[redacted]	erspan2	691,356	1,975,308	1,378,152	173,752
[redacted]	erspan2	9,200,616	137,598,662	6,911,102	174,400

The vTAP Processed Traffic Statistics section provides aggregated statistics for all the hosts that are visible to the vTAP.

The Destination Statistics section provides traffic statistics for each of the interfaces set as destination in the active rule set.

3.4.2 Active Rule Set



Name	Passed packets	Dropped packets
rule_1	11,272,870	1,169,148
rule_2	1,759,752	1,612
rule_3	196	179,780

The Active Rule Set page provides statistics for each of the rules in the active rule set.

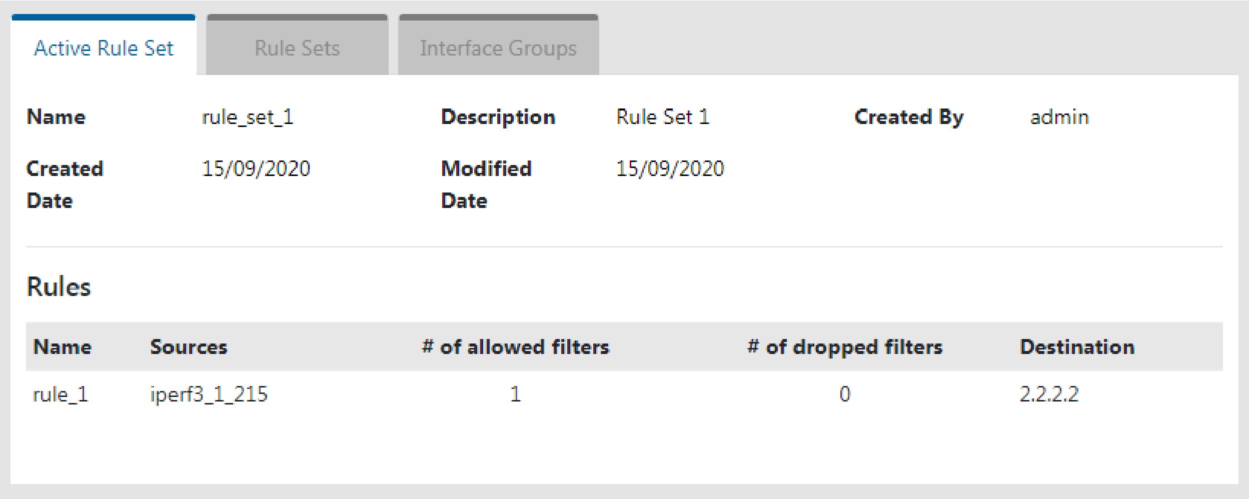
3.5 Traffic Management

Traffic management is done via Rule Sets. A rule set can contain any number of rules, with each rule containing any number of filters. Multiple different rule sets can be created to fit different needs and requirements, with only one being active at a time.

Each rule within a rule set defines one or more tapping points, the destination for the tapped traffic, and the filters applied to that traffic. Rules operate independently from each other.

Each filter within a rule defines which part of the traffic will be allowed or dropped. Filters within a rule operate in conjunction with each other, allowing for precise targeting of the desired traffic.

3.5.1 Active Rule Set



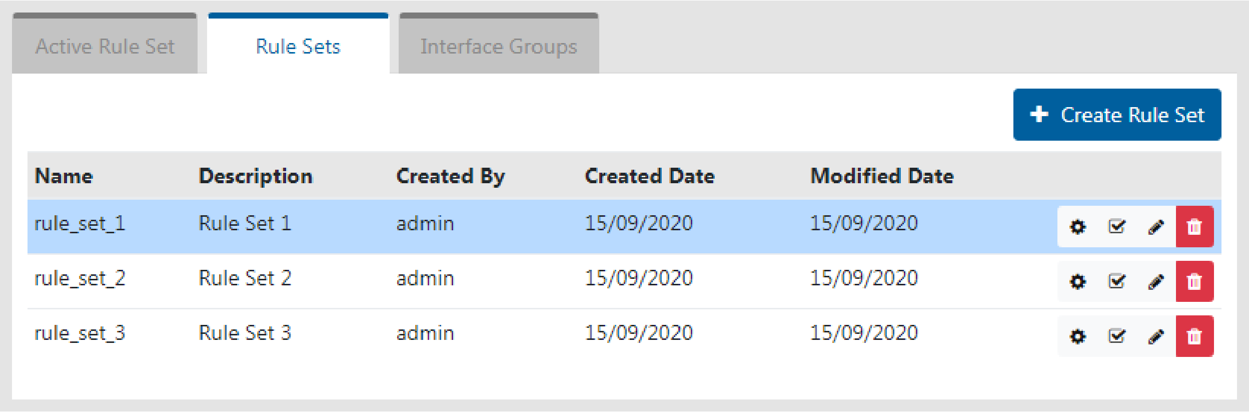
Name	rule_set_1	Description	Rule Set 1	Created By	admin
Created Date	15/09/2020	Modified Date	15/09/2020		

Rules

Name	Sources	# of allowed filters	# of dropped filters	Destination
rule_1	iperf3_1_215	1	0	2.2.2.2

The Active Rule Set page provides information about the currently active rule set, and about the rules it contains.

3.5.2 Rule Sets



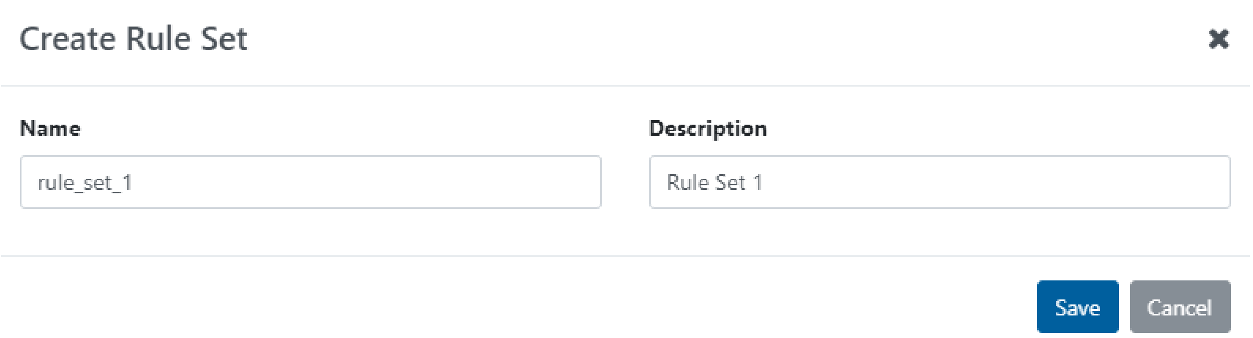
Name	Description	Created By	Created Date	Modified Date
rule_set_1	Rule Set 1	admin	15/09/2020	15/09/2020
rule_set_2	Rule Set 2	admin	15/09/2020	15/09/2020
rule_set_3	Rule Set 3	admin	15/09/2020	15/09/2020

The Rule Sets page lists the existing rule sets, highlights the current active rule set, and provides the ability to add, rename, configure, duplicate, activate, and remove rule sets.

A rule set can contain multiple rules. Each rule defines which traffic will be tapped, and the destination the tapped traffic will be sent to.

Note: Only one rule set can be active at a time. The current active rule set is highlighted in blue in the rule set list.

Note: Modifications to the active rule set require the rule set to be applied again to take effect.


Create Rule Set

Name: rule_set_1

Description: Rule Set 1

To add a rule set, click the *Create Rule Set* button. The *Create Rule Set* window will appear. Give the rule set a name by filling in the *Name* field. A description can also be given to the rule set by filling in the *Description* field. Click the *Save* button. An empty rule set will be created, to which rules can now be added (see Rule Set Configuration section).

To rename a rule set, click the *edit* button ✎ on the line of the rule set you would like to rename. The *Edit Rule Set* window will appear. The process is the same as when adding a rule set.

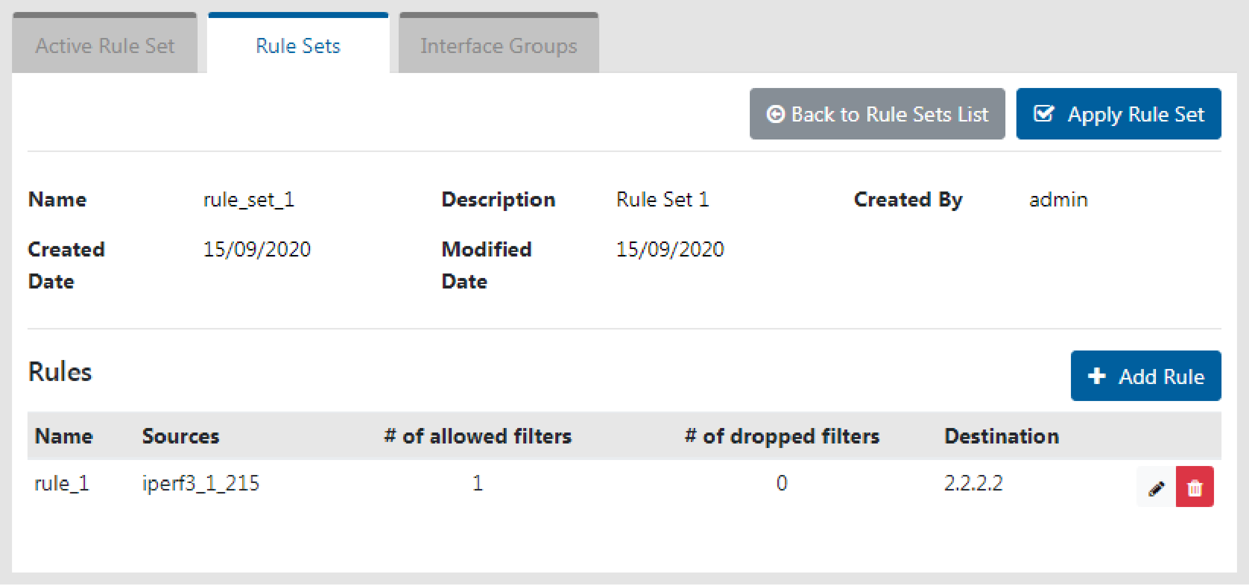
To configure a rule set, click the *configure* button ⚙ on the line of the rule set you would like to configure. Refer to the Rule Set Configuration section for more information.

To duplicate a rule set, click the *duplicate* button on the line of the rule set you would like to duplicate.

To activate a rule set, click the *apply* button ☑ on the line of the rule set you would like to activate.

To remove a rule set, click the *remove* button 🗑 on the line of the rule set you would like to remove.

3.5.2.1 Rule Set Configuration



Name rule_set_1 **Description** Rule Set 1 **Created By** admin

Created Date 15/09/2020 **Modified Date** 15/09/2020

Rules

Name	Sources	# of allowed filters	# of dropped filters	Destination	
rule_1	iperf3_1_215	1	0	2.2.2.2	✎ 🗑

The Rule Set Configuration page provides information about the rule set, and lists the rules it contains. It provides the ability to add, edit, duplicate, and remove rules, to activate the rule set, and to go back to the list of rule sets.

To activate the rule set, click the *Apply Rule Set* button.

To go back to the list of rule sets without activating the rule set, click the *Back to Rule Sets List* button.

3.5.2.2 Rule Configuration

Rules are processed independently from each other. Each rule can contain complex filters for targeting specific traffic.

Each rule defines the following:
- the interface(s) and/or group(s) of interfaces
- the direction of the traffic for each interface and/or group of interfaces
- the filter(s) that will be applied to the tapped traffic
- the destination for the tapped traffic

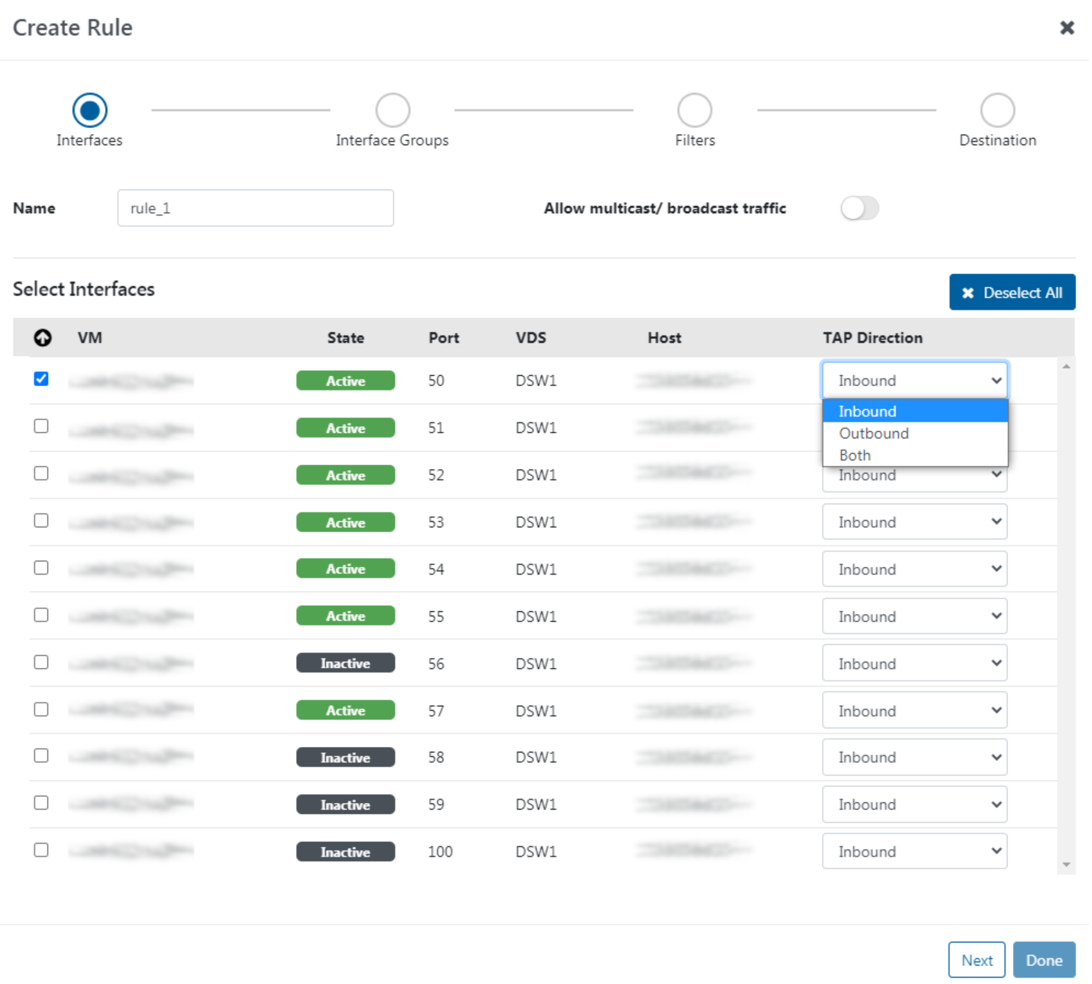
To add a rule to the rule set, click the *Add Rule* button. The *Create Rule* window will appear. Refer to the Create Rule section for information about the rule creation process.

To edit a rule, click the *edit* button ✎ on the line of the rule you would like to edit. The *Edit Rule* window will appear. The process is the same as when creating a rule.

To duplicate a rule, click the *duplicate* button on the line of the rule you would like to duplicate.

To remove a rule, click the *remove* button 🗑 on the line of the rule you would like to remove.

3.5.2.3 Create Rule — Interfaces



Create Rule

Name: rule_1

Allow multicast/ broadcast traffic: off

Select Interfaces

	VM	State	Port	VDS	Host	TAP Direction
☑	[redacted]	Active	50	DSW1	[redacted]	Inbound
□	[redacted]	Active	51	DSW1	[redacted]	
□	[redacted]	Active	52	DSW1	[redacted]	Inbound
□	[redacted]	Active	53	DSW1	[redacted]	Inbound
□	[redacted]	Active	54	DSW1	[redacted]	Inbound
□	[redacted]	Active	55	DSW1	[redacted]	Inbound
□	[redacted]	Inactive	56	DSW1	[redacted]	Inbound
□	[redacted]	Active	57	DSW1	[redacted]	Inbound
□	[redacted]	Inactive	58	DSW1	[redacted]	Inbound
□	[redacted]	Inactive	59	DSW1	[redacted]	Inbound
□	[redacted]	Inactive	100	DSW1	[redacted]	Inbound

Fill in the *Name* field to name the rule. If empty, a rule name will be automatically created.

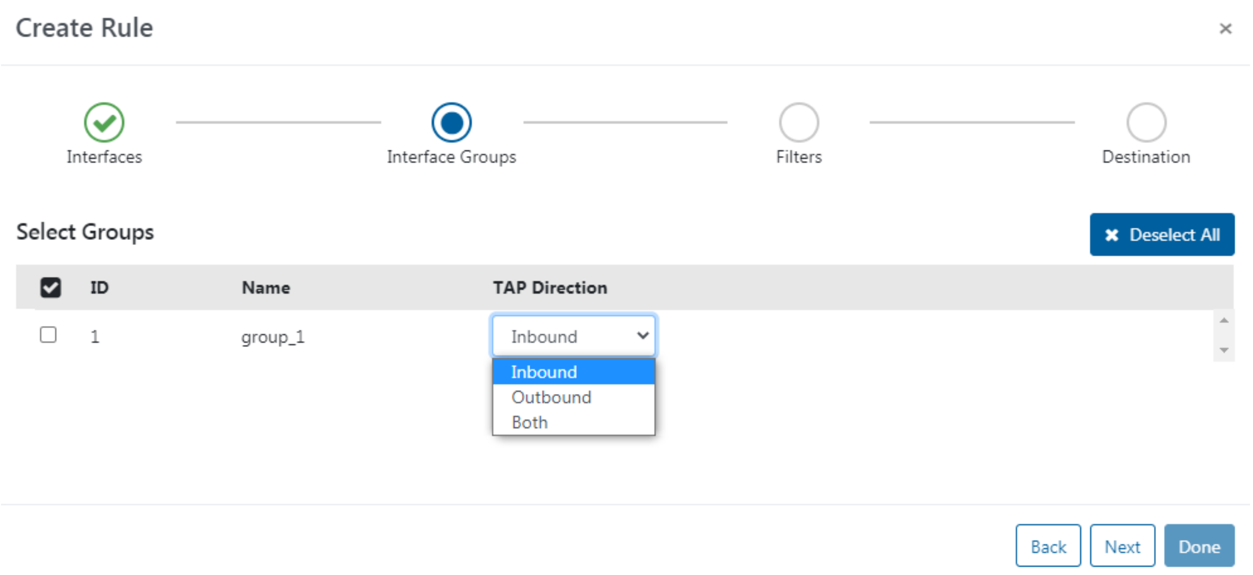
Click the *Allow multicast/broadcast traffic* switch to include multicast and broadcast traffic in the tapped traffic.

Select the interfaces you would like to tap by ticking their checkbox. For each of the selected interfaces, select whether you would like to tap inbound traffic, outbound traffic, or both, in the *TAP Direction* drop-down menu.

Clicking the icon above the checkboxes reorders the list so that all currently selected interfaces appear at the top of the list, for a better overview of selected interfaces.

> **Note:** Selecting interfaces on this page is not required. However, at least one interface or interface group must be selected to complete the rule creation process. Interface groups can be selected on the next page.

3.5.2.4 Create Rule — Interface Groups



☑	ID	Name	TAP Direction
□	1	group_1	Inbound

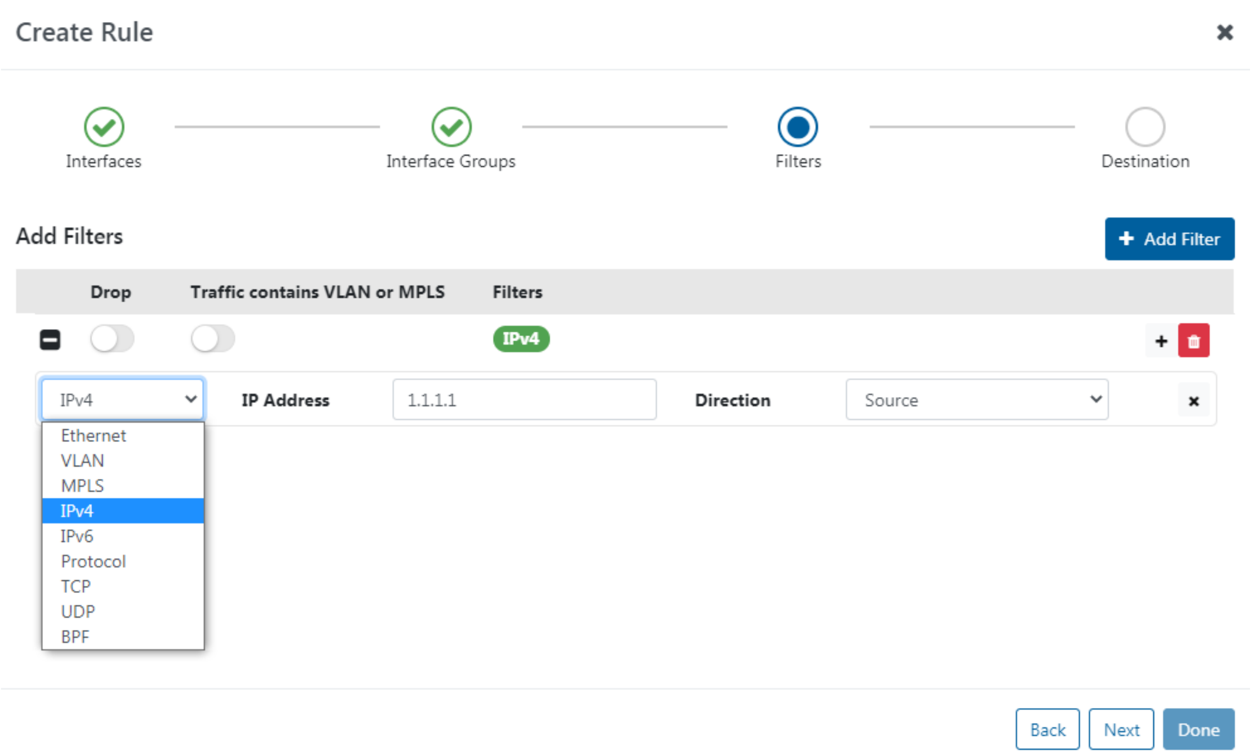
Select the interface groups you would like to tap by ticking their checkbox. For each of the selected interface groups, select whether you would like to tap inbound traffic, outbound traffic, or both, in the *TAP Direction* drop-down menu.

> **Note:** Selecting interface groups on this page is not required. However, at least one interface or interface group must be selected to complete the rule creation process. Individual interfaces can be selected on the previous page.

> **Note:** The *TAP Direction* setting of individually selected interfaces supersedes that of the selected group(s) they are part of.

> **Note:** For interfaces that are present in two or more of the selected groups, the *TAP Direction* setting of those groups are merged (i.e. *Inbound* + *Outbound*, *Inbound* + *Both*, and *Outbound* + *Both* are treated as *Both*).

3.5.2.5 Create Rule — Filters



IPv4 | IP Address: 1.1.1.1 | Direction: Source

Multiple filter rows can be created, and each filter row can contain one or more statements.

To add a filter row, click the *Add Filter* button. A filter row with one statement will be created. To add more statements to a filter row, click the *add statement* button ✚ of that specific filter row. To remove a statement from a filter row, click the *remove statement* button ✖ of that specific statement. To remove a filter row, click the *remove* button 🗑 of that specific filter row.

No filters

If no filter rows are present, all traffic for the selected interfaces and their selected TAP direction will be tapped and sent to the destination.

"Allow" filter rows (Drop option off)

"Allow" filter rows are logically disjunctive (OR), and thus any traffic matching any "allow" filter row will be tapped and sent to the destination, except for the parts of that traffic that match "drop" filter rows.

"Drop" filter rows (Drop option on)

"Drop" filter rows are logically disjunctive (OR), and thus any traffic matching any "drop" filter row will be dropped.

If only "drop" filter rows are set, all traffic will be tapped and sent to the destination, except for traffic that matches any of these "drop" filters.

Traffic contains VLAN or MPLS

When enabled on a filter row, this feature includes VLAN- and MPLS-tagged traffic for this filter row (up to 2 layers of encapsulation).

Filter statements

Statements within a filter row are logically conjunctive (AND), and thus each filter row only applies to traffic which matches all of the statements within that filter row.

Filter types

The **Filters** column of each filter row provides an overview of the filter types of all statements present in the filter row.

The leftmost drop-down menu of each statement allows the selection of the type of filter for this statement. The rest of the fields and drop-down menus in that statement will depend on the selected filter type.

Ethernet

MAC Address: specify a MAC address.
Direction: select whether the targeted traffic should match the specified MAC address as Source, Destination, or both.

VLAN

VLAN ID: specify the VLAN ID that the targeted traffic should match.

MPLS

MPLS Label: specify the MPLS label that the targeted traffic should match.

IPv4

IP Address: specify an IPv4 address.
Direction: select whether the targeted traffic should match the specified IPv4 address as Source, Destination, or both.

IPv6

IP Address: specify an IPv6 address.
Direction: select whether the targeted traffic should match the specified IPv6 address as Source, Destination, or both.

Protocol

Select the protocol that the targeted traffic should match.

TCP

Select whether the targeted traffic should match a specific TCP port (Single) or a range of TCP ports (Range).

If *Single* is selected, type in the TCP port in the *Port* field.

If *Range* is selected, type in the first TCP port of the port range in the *Begin* field, and the last TCP port of the port range in the *End* field.

Direction: select whether the targeted traffic should match the specified TCP port or TCP port range as Source, Destination, or both.

UDP

Select whether the targeted traffic should match a specific UDP port (Single) or a range of UDP ports (Range).

If *Single* is selected, type in the UDP port in the *Port* field.

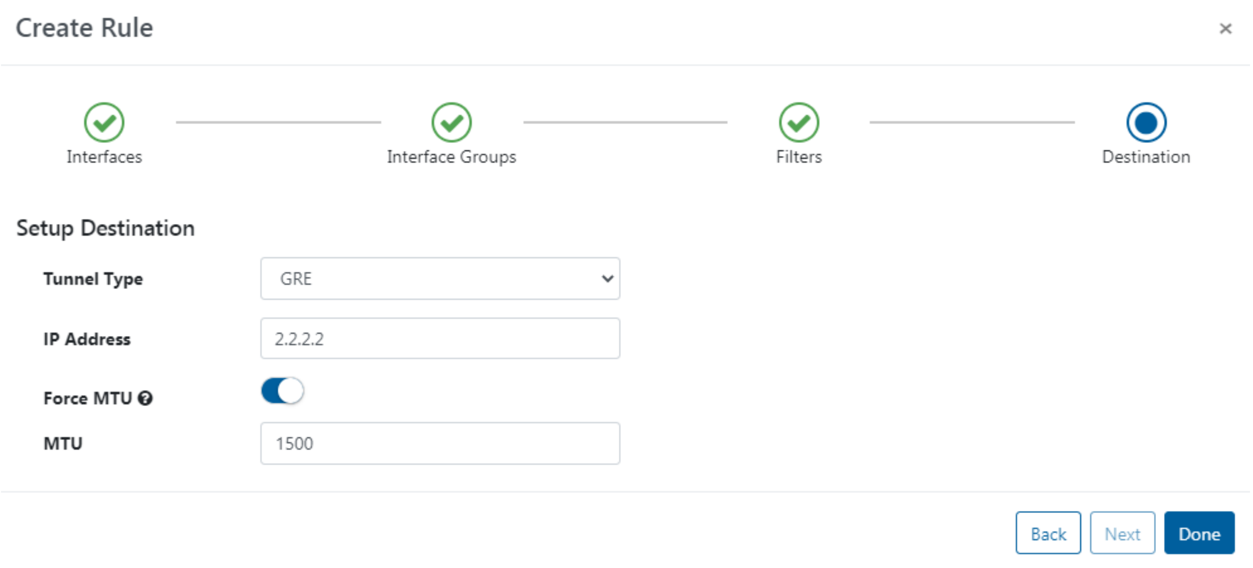
If *Range* is selected, type in the first UDP port of the port range in the *Begin* field, and the last UDP port of the port range in the *End* field.

Direction: select whether the targeted traffic should match the specified UDP port or UDP port range as Source, Destination, or both.

BPF

BPF allows the input of expressions using the Berkeley Packet Filter syntax.

3.5.2.6 Create Rule — Destination


Create Rule

Setup Destination

Tunnel Type: GRE

IP Address: 2.2.2.2

Force MTU: on

MTU: 1500

Specify the destination to which the traffic will be sent, and which tunneling protocol to use.

The supported tunneling protocols are GRE and ERSPANv2.

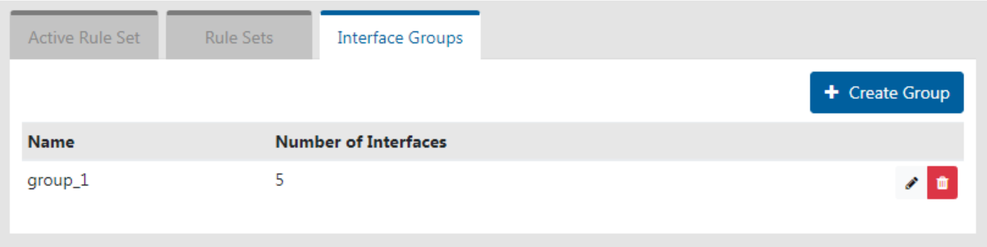
Select a protocol, and type in the destination IP address in the *IP Address* field. If ERSPANv2 is selected, a tunnel ID must also be provided in the *Tunnel ID* field.

> **Note:** The destination must be reachable from the vNPB in order for it to receive the traffic.

If *Force MTU* is disabled, the packets can be larger than the MTU of the network, which would lead such packets to be dropped. If the user is certain that the packets will always be smaller than the MTU (for example, VoIP packets are usually ~500 bytes), this setting can be disabled, leading to increased performance of the virtual broker.

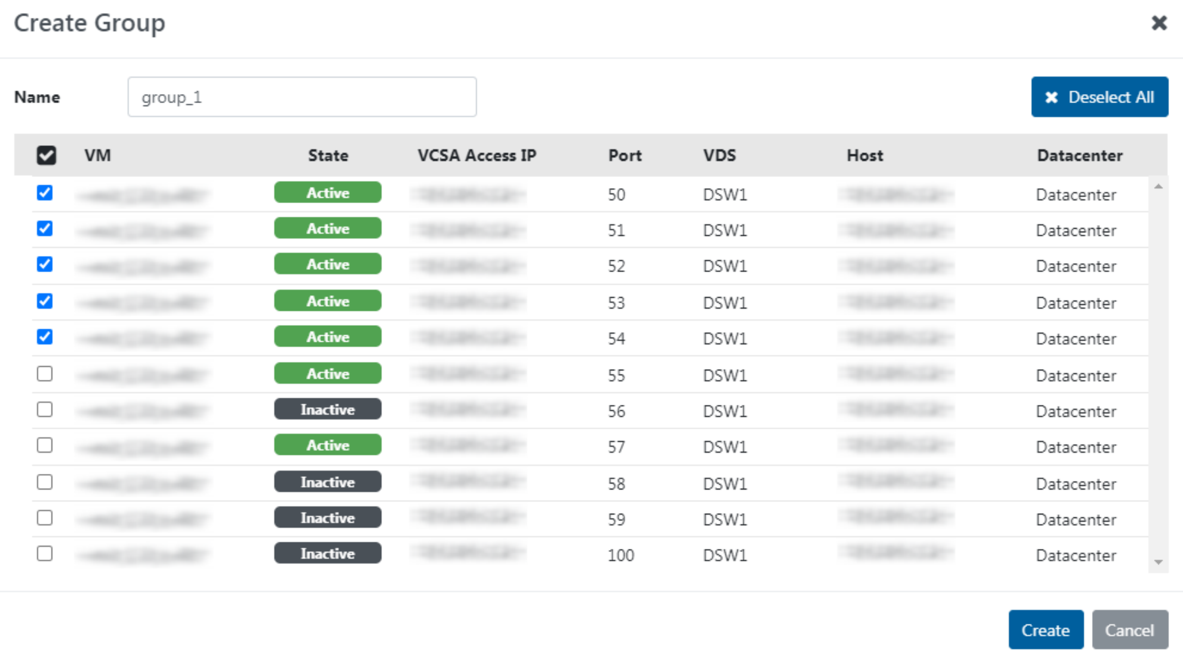
If *Force MTU* is enabled, the final size of the packets can be controlled with the corresponding setting (in bytes).

3.5.3 Interface Groups



Name	Number of Interfaces
group_1	5

The Interface Groups page lists the existing interface groups, and provides the ability to add, edit, and remove interface groups.



Name: group_1

☑	VM	State	VCSA Access IP	Port	VDS	Host	Datacenter
☑	[redacted]	Active	[redacted]	50	DSW1	[redacted]	Datacenter
☑	[redacted]	Active	[redacted]	51	DSW1	[redacted]	Datacenter
☑	[redacted]	Active	[redacted]	52	DSW1	[redacted]	Datacenter
☑	[redacted]	Active	[redacted]	53	DSW1	[redacted]	Datacenter
☑	[redacted]	Active	[redacted]	54	DSW1	[redacted]	Datacenter
□	[redacted]	Active	[redacted]	55	DSW1	[redacted]	Datacenter
□	[redacted]	Inactive	[redacted]	56	DSW1	[redacted]	Datacenter
□	[redacted]	Active	[redacted]	57	DSW1	[redacted]	Datacenter
□	[redacted]	Inactive	[redacted]	58	DSW1	[redacted]	Datacenter
□	[redacted]	Inactive	[redacted]	59	DSW1	[redacted]	Datacenter
□	[redacted]	Inactive	[redacted]	100	DSW1	[redacted]	Datacenter

To add an interface group, click the *Create Group* button. The *Create Group* window will appear. Give the group a name by filling in the *Name* field, then select the interfaces you would like to include in the group. Click the *Create* button.

Clicking the icon above the checkboxes reorders the list so that all currently selected interfaces appear at the top of the list, for a better overview of selected interfaces.

To edit an interface group, click the *edit* button ✎ on the line of the group you would like to edit. The *Edit Group* window will appear. The process is the same as when adding a group.

> **Note:** The list of interfaces only shows interfaces which can be tapped.

To remove an interface group, click the *remove* button 🗑 on the line of the group you would like to remove.

3.6 Authentication

3.6.1 Users

The **Users** tab allows users logged in as administrators to add new users or edit existing users and their privilege levels.

The user permissions for each Role are as follows:

Role	Permissions
Admin	Full access
Operator	Full access, except: - VCSA Access page read-only - Users page inaccessible - Administration page inaccessible
Viewer	- All pages read-only - Users page inaccessible - Administration page inaccessible

The minimum requirements for the passwords are as follows:

- 8 characters;
- one letter uppercase;
- one letter lowercase;
- one digit.

3.6.2 TACACS+

The **TACACS+** tab allows adding one or more TACACS+ servers, and configuring the following details:

- priority (sets the order in which the servers will be taken into account, if more are added, with a lower number corresponding to a higher priority);
- login type (chap, login, pap);
- server hostname;
- port;
- secret key;
- timeout (waiting time for response from the TACACS+ server, can be set between 1 and 15 seconds);
- privilege mapping (translates the 15 privilege levels from TACACS+ into those of the viewers, users and admins; can be configured).

3.6.3 RADIUS

The **RADIUS** tab allows adding one or more RADIUS servers, and configuring the following details:

- priority (sets the order in which the servers will be taken into account, if more are added, with a lower number corresponding to a higher priority);
- server hostname;
- port;
- secret key;
- timeout (waiting time for response from the RADIUS server, can be set between 1 and 15 seconds);
- privilege level mappings (allows adding one or more rules for users. These rules are integer or string **type** attributes, requiring a **name** and a **value**. During authentication, the system checks if a user matches the rules. If there is a match between a user and a rule, then a **role** is applied for the user);

  Note: To add a new rule, click the ⊕ button. To apply the rule, click the ☑ button.
- fallback role (comes into place when there isn't a match between a user and a rule, with the 'none' option denying authentication access to *any* user).

3.6.4 Custom Authentication Configuration

vTAP Manager allows users to not only define multiple authentication methods, but also to configure how the different methods are used. Clicking the *Configure Authentication* button on either the *Users*, *TACACS+*, or *RADIUS* page allows users to see the list of available authentication methods and change their priority and activation strategy.

For each method, one of the following strategies can be selected:

- **Enable**: The method is activated and will be used to authenticate users;
- **Disable**: The method is not active and its configuration will be ignored;
- **Restrict**: A restricted authentication method is activated only if all higher priority methods are failing access. In the case of RADIUS or TACACS+ methods, this means that no server is responding (or no server is programmed). If only one of the registered RADIUS/TACACS+ servers replies with a rejection, the following restricted methods will be skipped. Note that *Local Users* are always available, meaning that any *restrict* method after that will never be activated.

3.7 Administration

3.7.1 License Information

The **License Information** section of the **Setup** tab provides information about the current vTAP license, and the ability to activate a license, and edit or deactivate the current license.

State: displays the current state of the license. The possible states and their meaning are as follows:

License State	Meaning
Inactive	No licence has been activated. The maximum amount of licensed taps is 10, and the license state will change to *Expired* after 6 hours.
Active	A license is currently active. The maximum amount of licensed taps and the expiration date are defined by the type of license.
Expired	The license has expired. The vTAP is disabled until a valid license is activated.
Suspended	The license has been suspended. The vTAP is disabled.
Grace period over	The vTAP was unable to verify the license for a certain amount of time. The vTAP is disabled until the license can be verified.
Error	An internal error. Please review system logs and contact support.

License Key: shows the current license key. To enter a new license key, press the *edit* button ✎, enter the license key in the now-active field, then click the *activate license key* button ✓ to activate the license.

Deactivate button: deactivates the license on the current vTAP instance. Can be used in order to be able to activate the license on a different vTAP instance. After successful deactivation, the current vTAP instance license state will switch to *license expired* after 10 minutes.

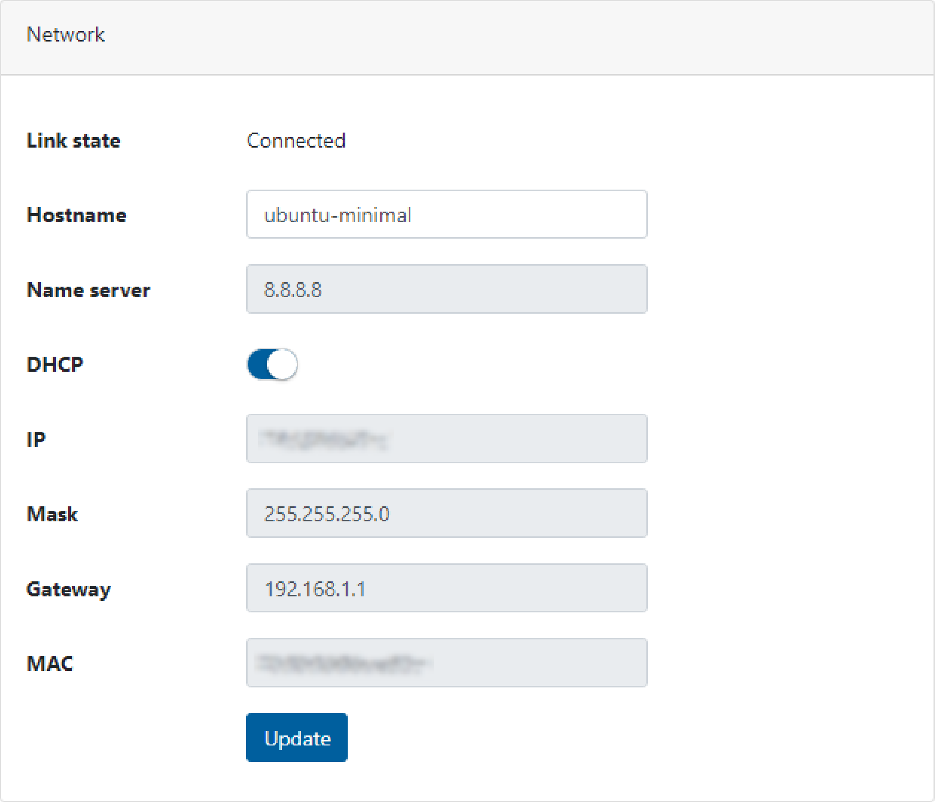
Licensed Taps: displays the amount of tap points in the active rule set, and the maximum amount of tap points for the current license.

3.7.2 Configuration Backup and Restore

The **Configuration Backup and Restore** section of the **Setup** tab allows the exporting and importing of the vTAP instance configuration. The data can be exported by inserting a passphrase, selecting the parts to be exported, and pressing the *Export* button. The system will generate an encrypted archive that can be safely stored as backup. This package can be imported back to the vTAP instance via a similar process: insert the passphrase, select the parts of the configuration you wish to import, press the *Import* button, and select the archived configuration file.

Note: The same passphrase as the one used for exporting the configuration file is required for importing it.

3.7.3 Network



Network

Link state	Connected
Hostname	ubuntu-minimal
Name server	8.8.8.8
DHCP	●
IP	[redacted]
Mask	255.255.255.0
Gateway	192.168.1.1
MAC	[redacted]

The Network section provides information about the vTAP network information, and the ability to edit it. The IP, Mask, and Gateway fields can be edited if DHCP is disabled.

3.7.4 CA Certificates

CA certificates can be added in this section.

This is necessary, for instance, in cases in which the environment the vTAP is installed in has its own certificate authority, which does not allow a secure access to the internet from inside the vTAP, and thus prevents connections to the Cryptlex server, which is necessary to activate and maintain the license.

3.7.5 Syslog

The **Syslog** tab displays the logs of the vTAP system. On this page, the system logs can be refreshed, downloaded, or reset. The Syslog tab can also be used to configure remote collectors for the system logs. This can be done by clicking the *Remote Servers* button and using the view that appears to configure the remote logging server details.

3.7.6 Support

The **Support** tab provides access to support files embedded in the vTAP instance: the user manual (this document), REST API documentation, and Ansible library.

Legal

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