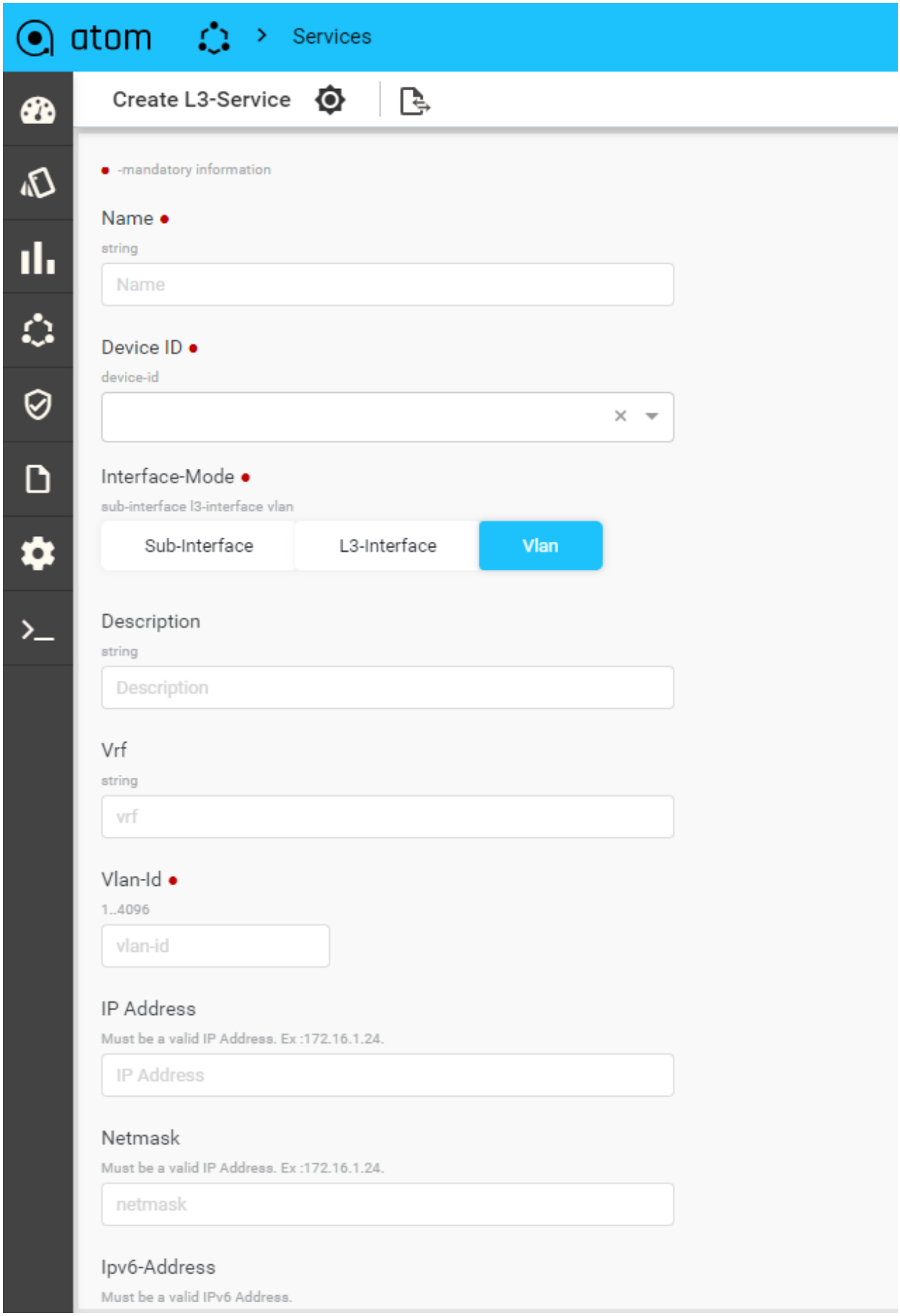
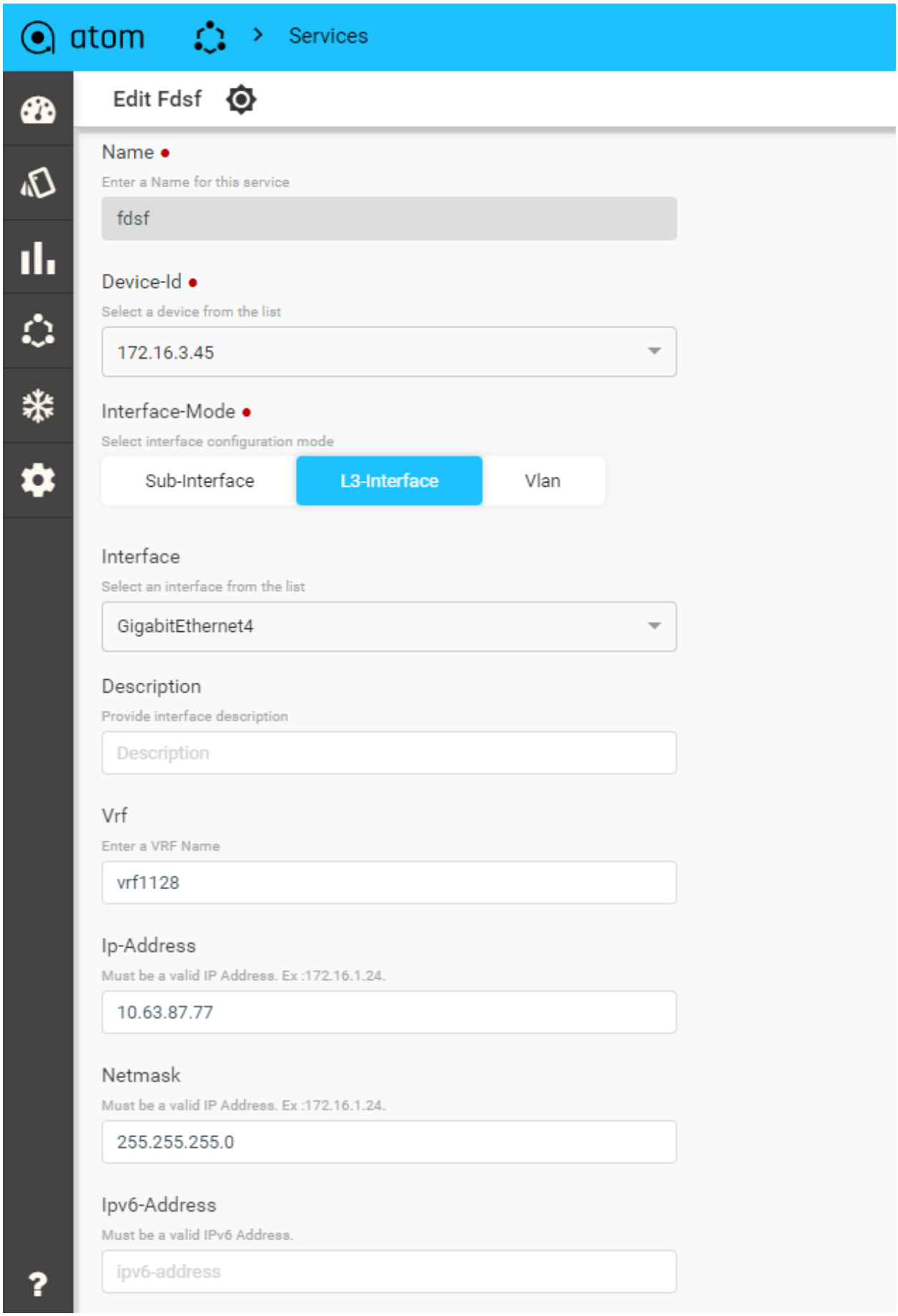
anuta networks

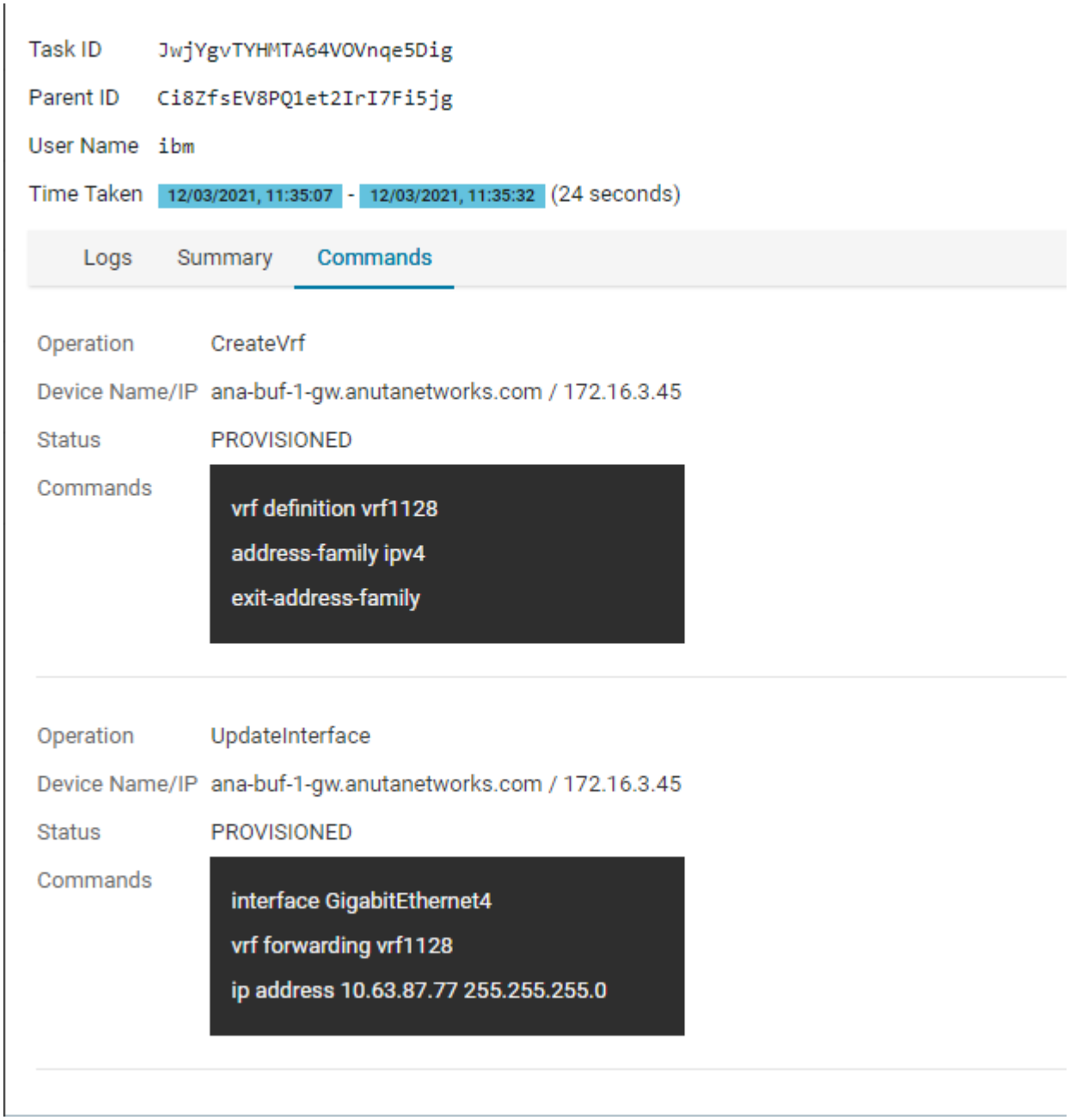
L3 Service Automation

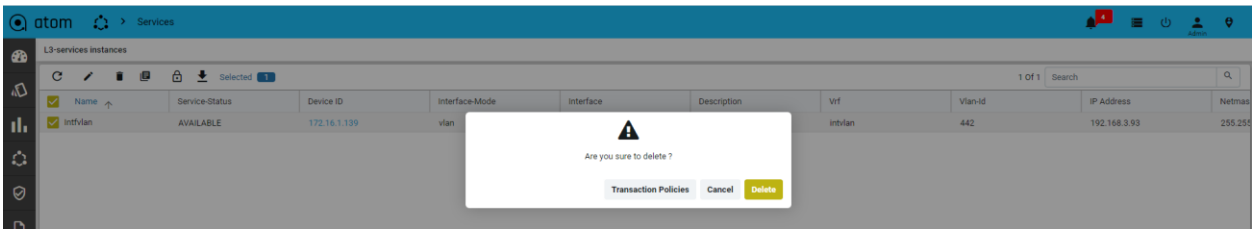
Package Version - 8.x

Compatible ATOM Versions - 10.x


atom
Services
Create L3-Service
-mandatory information
Name
string
Name
Device ID
device-id
Interface-Mode
sub-interface l3-interface vlan
Sub-Interface
L3-Interface
Vlan
Description
string
Description
Vrf
string
vrf
Vlan-Id
1..4096
vlan-id
IP Address
Must be a valid IP Address. Ex :172.16.1.24.
IP Address
Netmask
Must be a valid IP Address. Ex :172.16.1.24.
netmask
Ipv6-Address
Must be a valid IPv6 Address.


atom
Services
Edit Fdsf
Name •
Enter a Name for this service
fdsf
Device-Id •
Select a device from the list
172.16.3.45
Interface-Mode •
Select interface configuration mode
Sub-Interface
L3-Interface
Vlan
Interface
Select an interface from the list
GigabitEthernet4
Description
Provide interface description
Description
Vrf
Enter a VRF Name
vrf1128
Ip-Address
Must be a valid IP Address. Ex :172.16.1.24.
10.63.87.77
Netmask
Must be a valid IP Address. Ex :172.16.1.24.
255.255.255.0
Ipv6-Address
Must be a valid IPv6 Address.
ipv6-address





Intended Audience

This document is intended for Network Administrators & Operators that are using ATOM to perform L3 Service Automation.

References

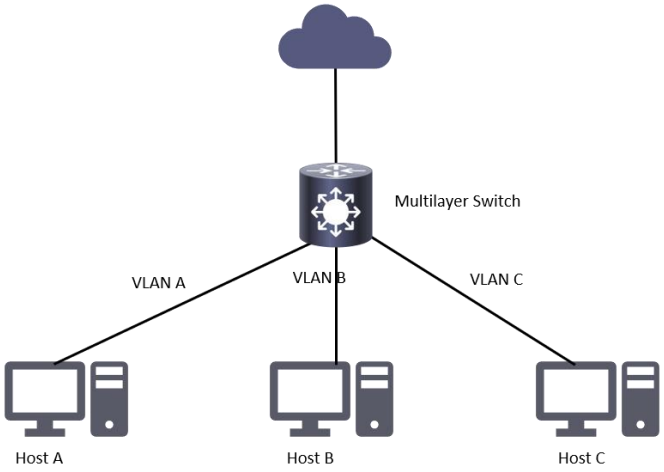
1. Anuta ATOM Overview
2. ATOM User Guide
3. ATOM Platform Guide - Discusses Service model, Device model and Workflow development

Please reach out to support@anutanetworks.com for more information on ATOM Documentation or Release Information.

L3 Service Provisioning

Anuta ATOM offers out-of-box support for L3 service provisioning. The model defines service configuration elements that can be used to maintain traffic separation across a layer 3 boundary.

The Layer 3 service model is architected to cater to different modes such as Layer 3 Subinterfaces, Layer 3 Interfaces, and Layer 3 VLAN Interfaces.



ATOM's Layer 3 Service model offers lifecycle management through an abstracted interface to request, configure, and manage Layer 3 Service components. The configuration of network elements may be done using the CLI or other southbound interfaces such as NETCONF in conjunction with ATOM's device models based on CLI, Native YANG, or OpenConfig.

ATOM Layer 3 Service Model Design

The Layer 3 service model is structured such that the user can configure multiple flavors from the user form. In the below section, different flavors of Layer 3 service provisioning is discussed.

The table below captures each of the Layer 3 service definitions supported by Anuta ATOM

Service Definition Name	Service Attributes
Layer 3 Subinterface	Layer 3 Subinterface for Cisco IOS-XE devices 802.1Q endpoint interface types Gigabit & FastEthernet Interface Support

	Virtual Routing Function IPv4 & IPv6 Support
Layer 3 Interface	Layer 3 Interface for Cisco IOS-XE devices Gigabit & FastEthernet Interface Support Virtual Routing Function IPv4 & IPv6 Support
Layer 3 VLAN Interfaces	Layer 3 Interface VLAN for Cisco-IOS-XE devices Gigabit & FastEthernet Interface Support Virtual Routing Function IPv4 & IPv6 Support

The following sections show the configuration data on the Layer 3 switch when you use this service definition to create the service shown in **<point to topology diagram>**

Configuration on Layer 3 Switch

Layer 3 Subinterface

This module describes the configurations pushed to the devices to provision a Layer 3 Subinterface. The configurations include dot1q VLAN subinterface on a Layer3 interface, and VRF creation, and attachment to interface, and IPv4 & IPv6 assignment to the physical interface.

The following sections show the configuration data on a Layer 3 switch when you use this service definition to create the service shown

VRF Provisioning

```
vrf definition vrf66
address-family ipv4
Exit-address-family

Subinterface Provisioning

interface GigabitEthernet3.3321
vrf forwarding vrf66
encapsulation dot1q 3321
ip address 10.63.87.22 255.255.255.0
no shutdown
```

Layer 3 Interface

This module describes the configurations pushed to the devices to provision a Layer 3 Interface. The configurations include VRF creation and attachment to a physical interface, and IPv4 & IPv6 assignment to the physical interface.

The following sections show the configuration data on a Layer 3 switch when you use this service definition to create the service shown.

```
VRF Provisioning

vrf definition vrf1128
 address-family ipv4
 exit-address-family

Interface Provisioning

interface GigabitEthernet4
 vrf forwarding vrf1128
 ip address 10.63.87.77 255.255.255.0
```

Layer 3 VLAN Interface

This module describes the configurations pushed to the devices to provision a Layer 3 Interface. The configurations include VLAN interface creation, VRF creation and attachment to a VLAN interface, and IPv4 & IPv6 assignment to the VLAN interface.

The following sections show the configuration data on a Layer 3 switch when you use this service definition to create the service shown

VRF Provisioning

```
vrf definition vrf1567
 address-family ipv4
 exit-address-family
```

Interface Provisioning

```
 interface Vlan1567
   vrf forwarding vrf1567
   ip address 192.168.11.97 255.255.255.0
   no shutdown
```

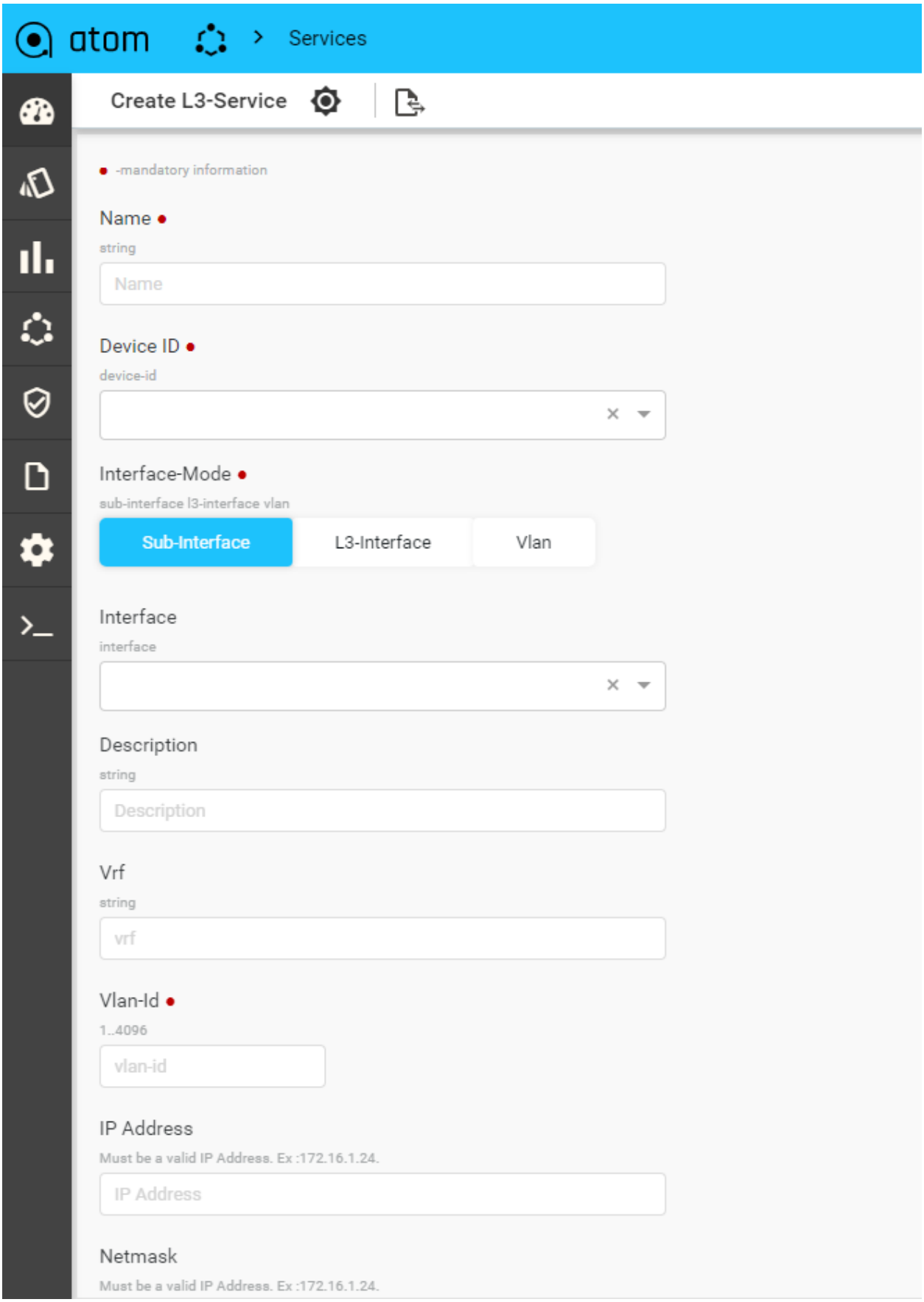
Creating a Layer 3 Service Definition

Creating a Layer 3 Subinterface Definition

Use this procedure to create a Layer 3 Subinterface configuration on a Layer 3 switch.

Field	Action
Name (Mandatory)	Enter a name for Service Definition **Note:** The field accepts only a string value.
Device ID (Mandatory)	Select a device ID from the drop down list
Interface-Mode (Mandatory)	To create a Layer 3 Subinterface, select Sub-Interface as the Interface-Mode.
Interface	Select the physical interface on the device chosen in the Device ID field.
Description (Optional)	Enter a brief description that should appear on the interface **Note:** The field accepts only a string value.

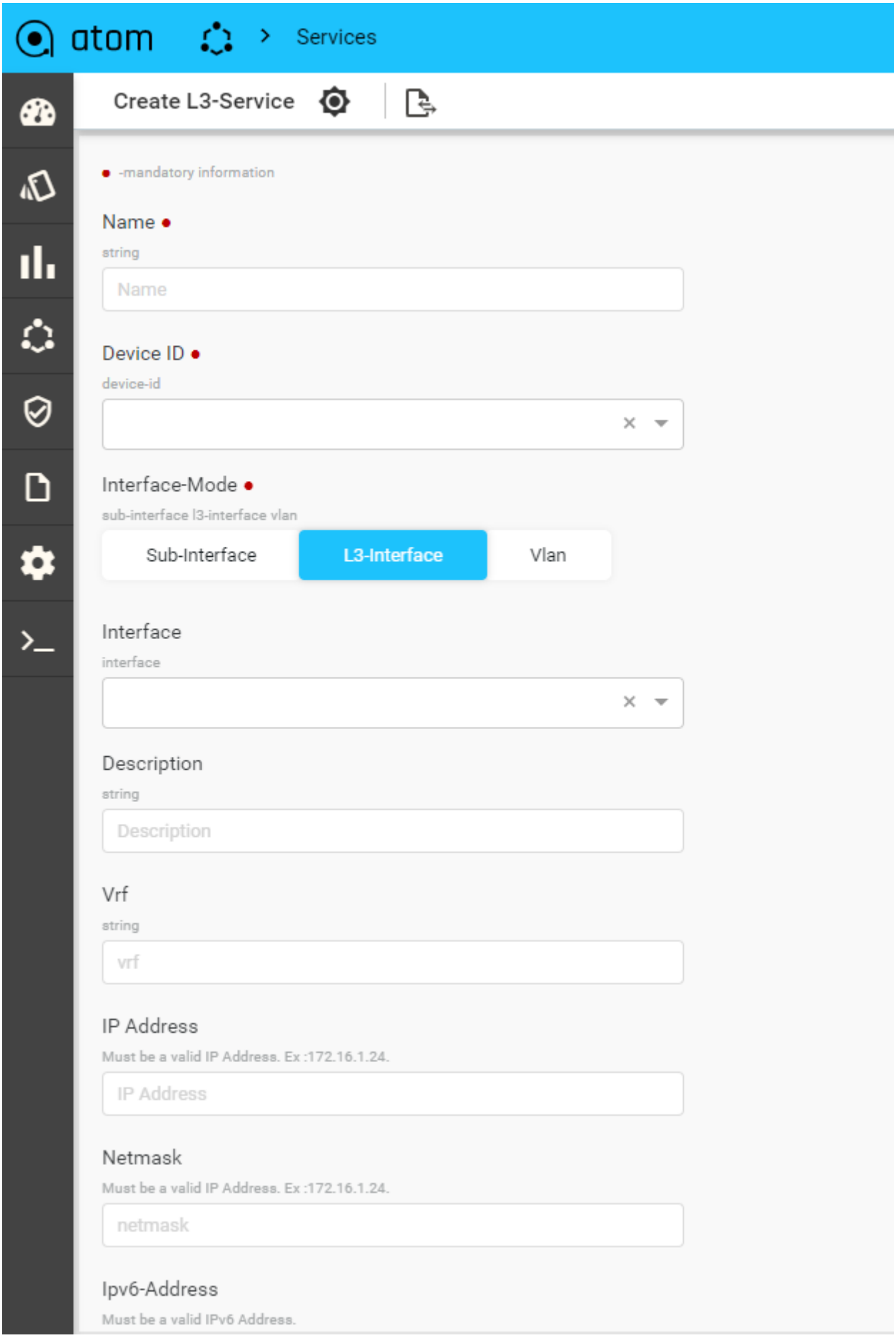
Vrf (Optional)	Enter a name for the Virtual Routing Function
Vlan-Id (Mandatory)	Specify a VLAN Id to create a dot1q interface **Note:** Range 1 through 4096
IP Address	Enter a valid IP address
Netmask	Enter the corresponding Netmask for the IP Address entered above
Ipv6-Address	Enter a valid IPv6 address
Ipv6-Prefix-Length	Enter a prefix length for the IPv6 address entered above **Note**: Provide CIDR notation


atom
Services
Create L3-Service
-mandatory information
Name
string
Name
Device ID
device-id
Interface-Mode
sub-interface l3-interface vlan
Sub-Interface
L3-Interface
Vlan
Interface
interface
Description
string
Description
Vrf
string
vrf
Vlan-Id
1..4096
vlan-id
IP Address
Must be a valid IP Address. Ex :172.16.1.24.
IP Address
Netmask
Must be a valid IP Address. Ex :172.16.1.24.

Creating a Layer 3 Interface Definition

Use this procedure to create a Layer 3 Interface configuration on a Layer 3 switch.

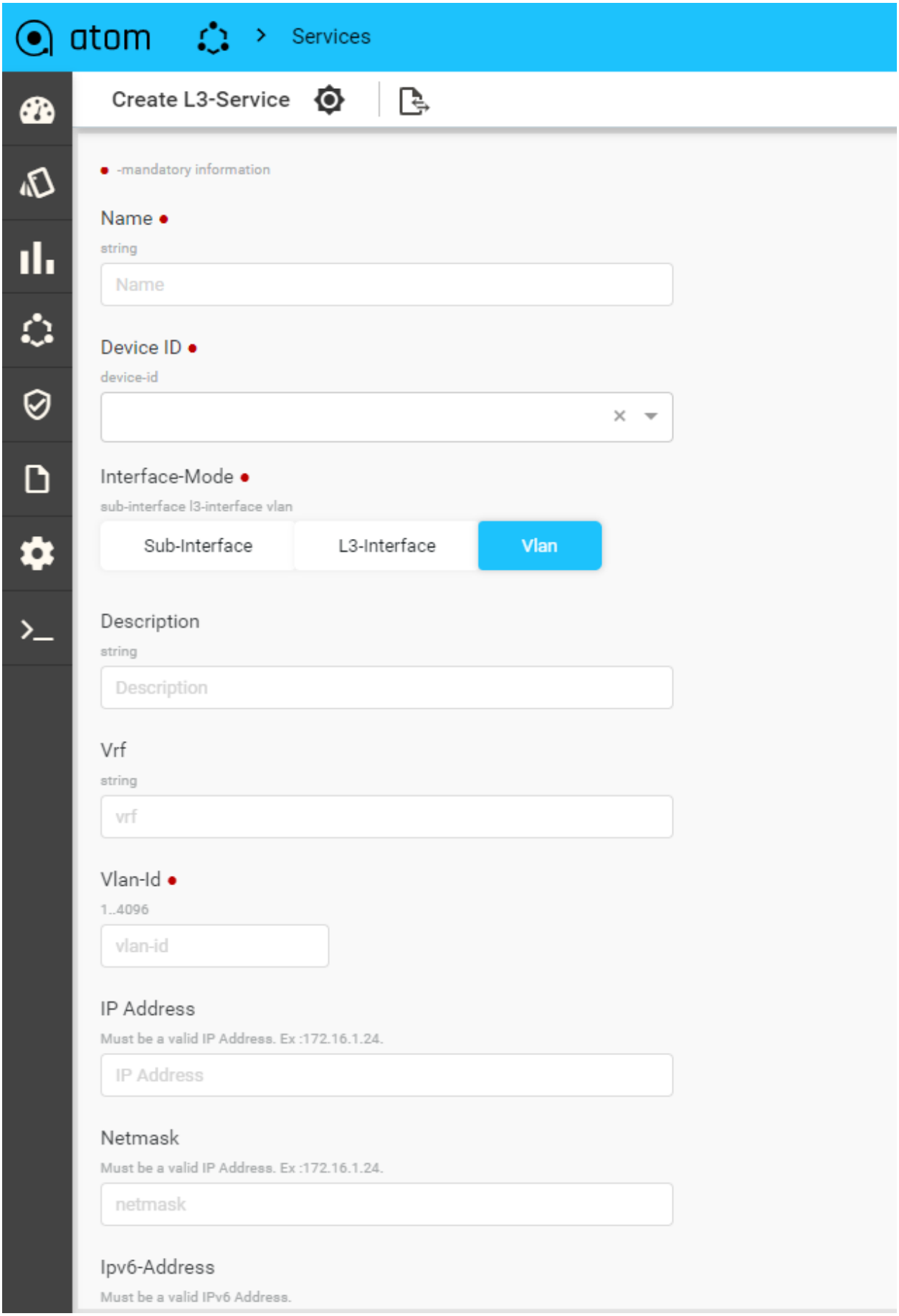
Field	Action
Name (Mandatory)	Enter a name for Service Definition **Note:** The field accepts only a string value.
Device ID (Mandatory)	Select a device ID from the drop down list
Interface-Mode (Mandatory)	To create a Layer 3 Interface, select L3-Interface as the Interface-Mode.
Interface	Select the physical interface on the device chosen in the Device ID field.
Description (Optional)	Enter a brief description that should appear on the interface **Note:** The field accepts only a string value.
Vrf (Optional)	Enter a name for the Virtual Routing Function
IP Address	Enter a valid IP address
Netmask	Enter the corresponding Netmask for the IP Address entered above
Ipv6-Address	Enter a valid IPv6 address
Ipv6-Prefix-Length	Enter a prefix length for the IPv6 address entered above **Note**: Provide CIDR notation


atom
Services
Create L3-Service
-mandatory information
Name
string
Name
Device ID
device-id
Interface-Mode
sub-interface l3-interface vlan
Sub-Interface
L3-Interface
Vlan
Interface
interface
Description
string
Description
Vrf
string
vrf
IP Address
Must be a valid IP Address. Ex :172.16.1.24.
IP Address
Netmask
Must be a valid IP Address. Ex :172.16.1.24.
netmask
Ipv6-Address
Must be a valid IPv6 Address.

Creating a Layer 3 VLAN Interface Definition

Use this procedure to create a Layer 3 Interface configuration on a Layer 3 switch.

Field	Action
Name (Mandatory)	Enter a name for Service Definition **Note:** The field accepts only a string value.
Device ID (Mandatory)	Select a device ID from the drop down list
Interface-Mode (Mandatory)	To create a Layer 3 VLAN Interface, select Vlan as the Interface-Mode.
Interface	Select the physical interface on the device chosen in the Device ID field.
Description (Optional)	Enter a brief description that should appear on the interface **Note:** The field accepts only a string value.
Vrf (Optional)	Enter a name for the Virtual Routing Function
Vlan-Id (Mandatory)	Specify a VLAN Id to create a dot1q interface **Note:** Range 1 through 4096
IP Address	Enter a valid IP address
Netmask	Enter the corresponding Netmask for the IP Address entered above
Ipv6-Address	Enter a valid IPv6 address
Ipv6-Prefix-Length	Enter a prefix length for the IPv6 address entered above **Note**: Provide CIDR notation


atom
Services
Create L3-Service
-mandatory information
Name
string
Name
Device ID
device-id
Interface-Mode
sub-interface l3-interface vlan
Sub-Interface
L3-Interface
Vlan
Description
string
Description
Vrf
string
vrf
Vlan-Id
1..4096
vlan-id
IP Address
Must be a valid IP Address. Ex :172.16.1.24.
IP Address
Netmask
Must be a valid IP Address. Ex :172.16.1.24.
netmask
Ipv6-Address
Must be a valid IPv6 Address.

Deploying Layer 3 Service configurations to devices

Deploying Layer 3 Subinterface configurations to devices

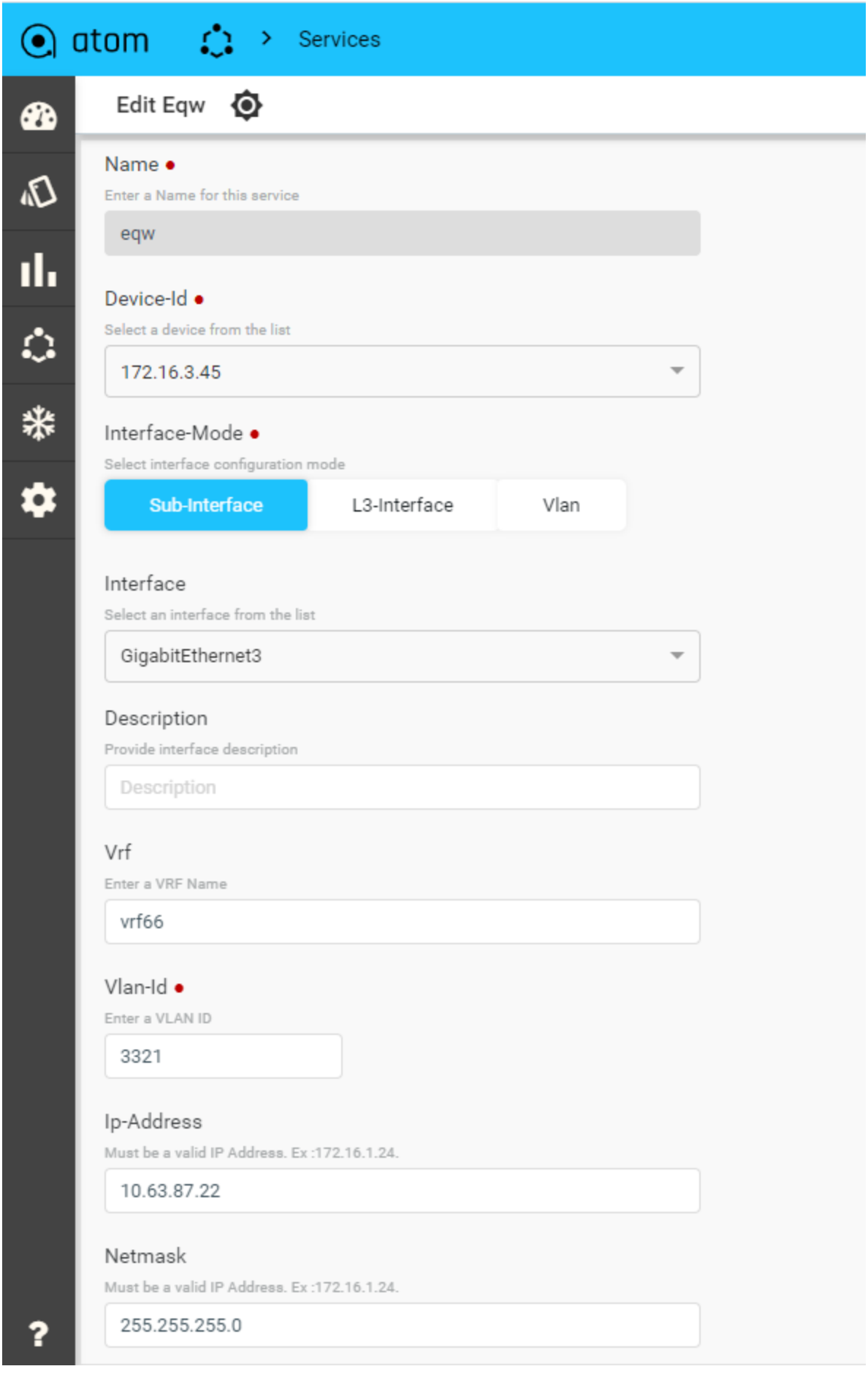
To provision a Layer 3 Subinterface using Anuta ATOM perform the below actions:

1. On the ATOM instance navigate to **Services** > **Catalog** tab
2. Click on the L3-services to navigate to the **L3-services** instances
3. From the L3-services instances Click on the + to create a new L3 service
4. In the Create L3-service form perform the following actions:
    a. Enter the Name for the Service definition
    b. Select the device-id from the drop down list offered

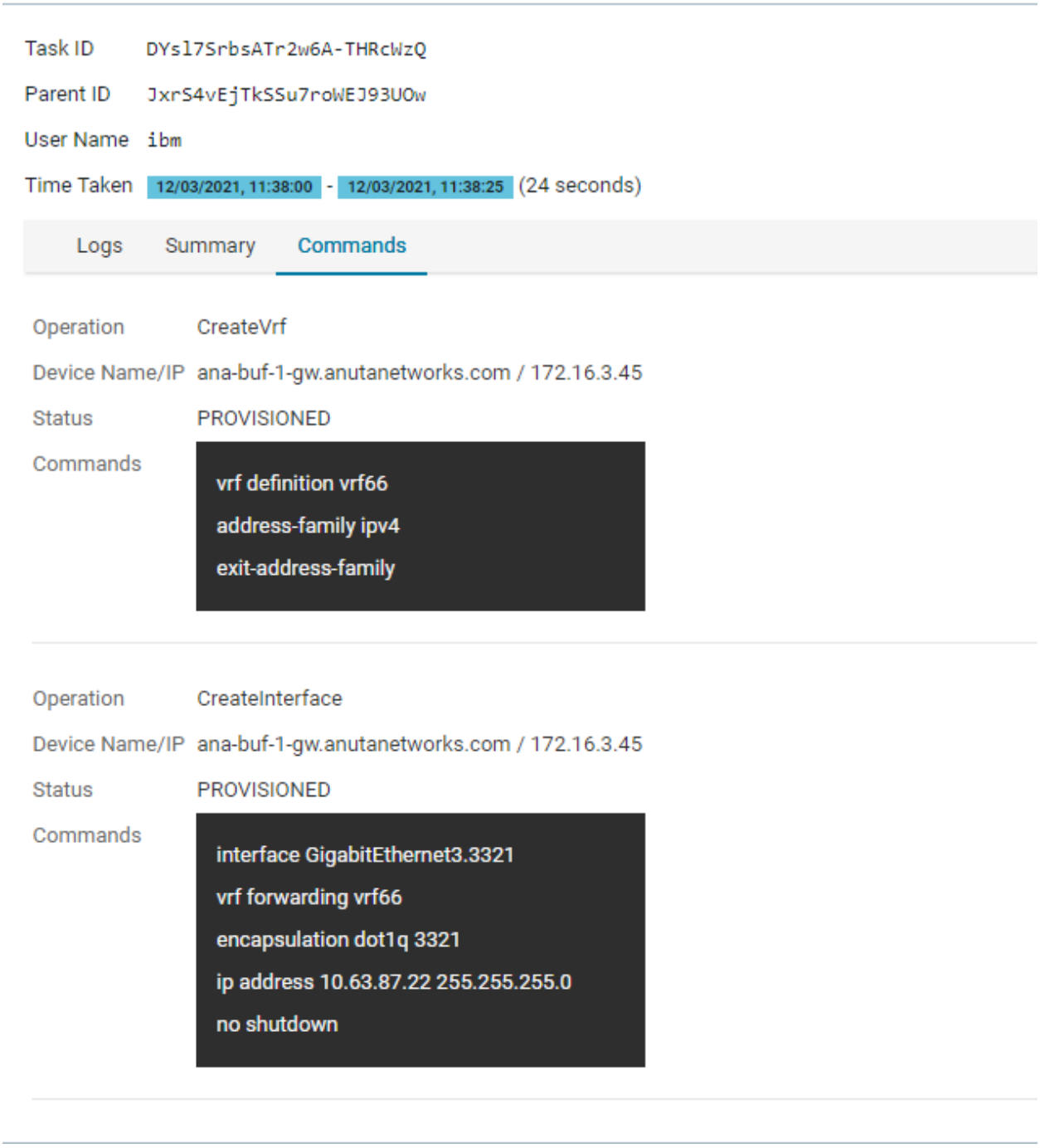
    > **Note**: You can add only one device at a time

    c. Select the **Sub-Interface** in the **Interface-Mode** field.
    d. Select the corresponding physical **Interface** on the chosen device. The physical interface will be used to create the sub-interface.
    e. Provide a **Description** for the sub-interface. The sub-interface will be updated with an interface description
    f. Enter a **Vrf** name. A new VRF will be created on the device and will be attached to the sub-interface created. If the VRF already exists, the same will be utilized.
    g. Enter a **Vlan-Id**. A corresponding sub-interface will be created using the physical interface in step d.
    h. Enter a valid **Ip-Address**. The IP Address will be attached to the sub-interface created.
    i. Enter the corresponding **Netmask** to capture the subnet mask.
    j. Enter a valid **Ipv6-Address.** The IPv6 Address will be attached to the sub-interface created.
    k. Enter the corresponding v6 prefix in **Ipv6-Prefix-Length** to complete the fields for provisioning
    l. Click on the ✔ to start the device provisioning process.
    m. In the Tasks pane, check for **Create: l3-service**, and navigate to **Commands** to view the configurations..

The screenshot below shows the fields populated to provision a Layer 3 Subinterface service.


atom
Services
Edit Eqw
Name
Enter a Name for this service
eqw
Device-Id
Select a device from the list
172.16.3.45
Interface-Mode
Select interface configuration mode
Sub-Interface
L3-Interface
Vlan
Interface
Select an interface from the list
GigabitEthernet3
Description
Provide interface description
Description
Vrf
Enter a VRF Name
vrf66
Vlan-Id
Enter a VLAN ID
3321
Ip-Address
Must be a valid IP Address. Ex :172.16.1.24.
10.63.87.22
Netmask
Must be a valid IP Address. Ex :172.16.1.24.
255.255.255.0

The screenshot below shows the commands generated and pushed to the devices to provision a Layer 3 Subinterface.



Deploying Layer 3 Interface configurations to devices

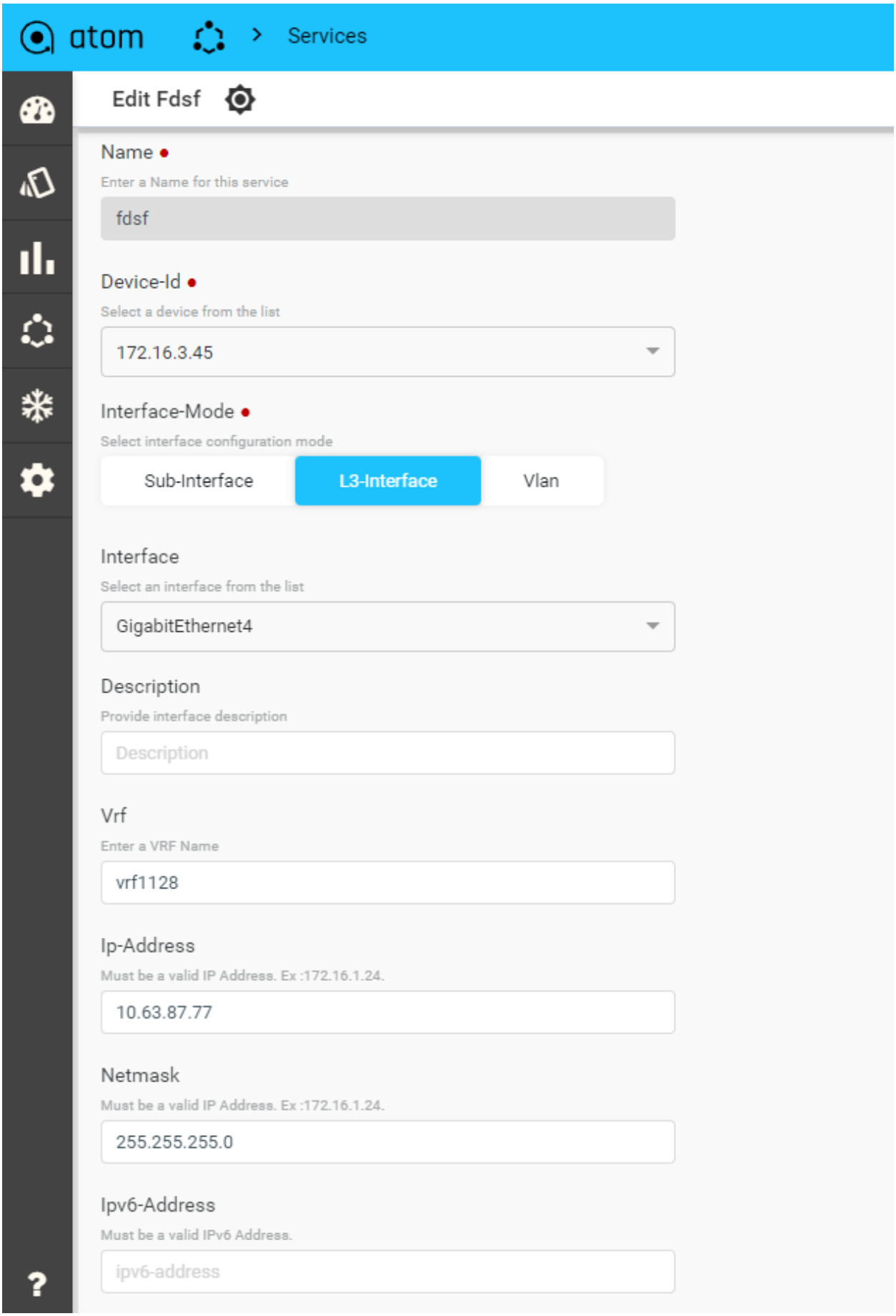
To provision a Layer 3 Subinterface using Anuta ATOM perform the below actions:

1. On the ATOM instance navigate to **Services** > **Catalog** tab
2. Click on the L3-services to navigate to the **L3-services** instances
3. From the L3-services instances Click on the + to create a new L3 service
4. In the Create L3-service form perform the following actions:
    a. Enter the Name for the Service definition
    b. Select the device-id from the drop down list offered

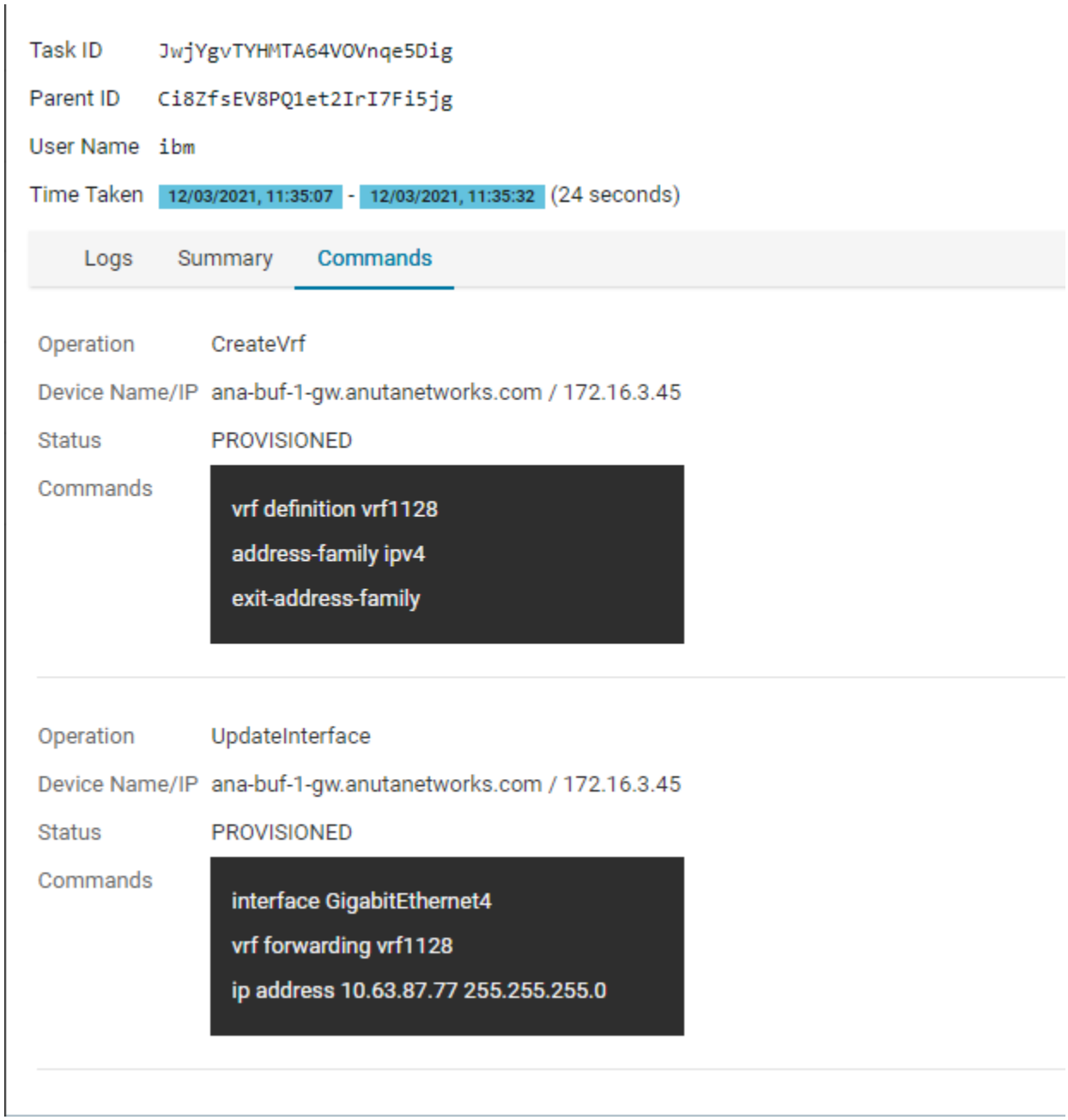
> **Note**: You can add only one device at a time

    c. Select the **L3-Interface** in the **Interface-Mode** field.
    d. Select the corresponding physical **Interface** on the chosen device.
    e. Provide a **Description** for the sub-interface. The sub-interface will be updated with an interface description
    f. Enter a **Vrf** name. A new VRF will be created on the device and will be attached to the sub-interface created. If the VRF already exists, the same will be utilized.
    g. Enter a valid **Ip-Address**. The IP Address will be attached to the sub-interface created.
    h. Enter the corresponding **Netmask** to capture the subnet mask.
    i. Enter a valid **Ipv6-Address.** The IPv6 Address will be attached to the sub-interface created.
    j. Enter the corresponding v6 prefix in **Ipv6-Prefix-Length** to complete the fields for provisioning
    k. Click on the ✔ to start the device provisioning process.
    l. In the Tasks pane, check for **Create: l3-service**, and navigate to **Commands** to view the configurations..

The screenshot below shows the fields populated to provision a Layer 3 Interface.


atom
Services
Edit Fdsf
Name •
Enter a Name for this service
fdsf
Device-Id •
Select a device from the list
172.16.3.45
Interface-Mode •
Select interface configuration mode
Sub-Interface
L3-Interface
Vlan
Interface
Select an interface from the list
GigabitEthernet4
Description
Provide interface description
Description
Vrf
Enter a VRF Name
vrf1128
Ip-Address
Must be a valid IP Address. Ex :172.16.1.24.
10.63.87.77
Netmask
Must be a valid IP Address. Ex :172.16.1.24.
255.255.255.0
Ipv6-Address
Must be a valid IPv6 Address.
ipv6-address

The screenshot below shows the commands generated and pushed to the devices to provision a Layer 3 Subinterface.



Deploying Layer 3 VLAN Interface configurations to devices

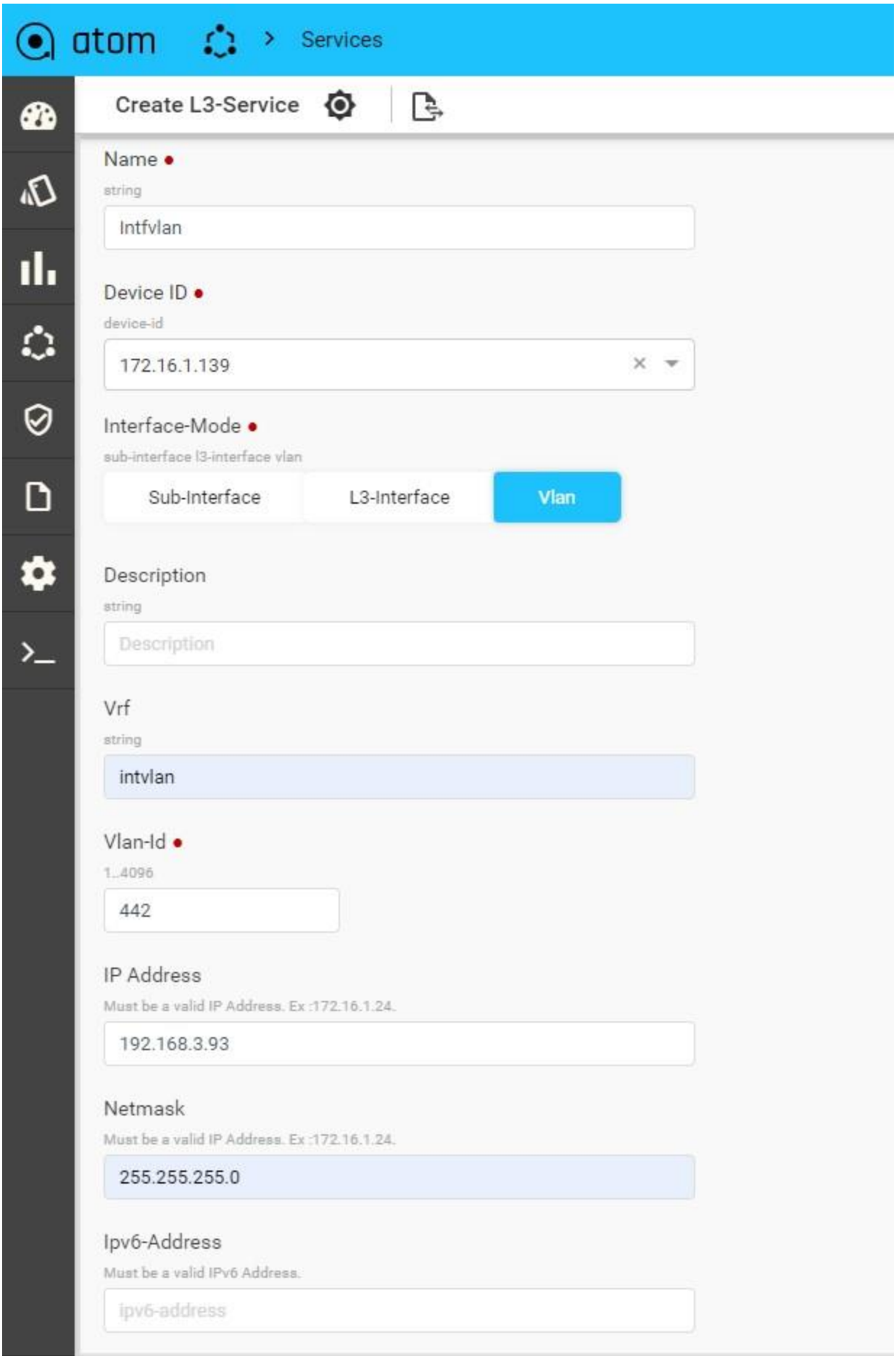
To provision a Layer 3 VLAN Interface using Anuta ATOM perform the below actions:

1. On the ATOM instance navigate to **Services** > **Catalog** tab
2. Click on the L3-services to navigate to the **L3-services** instances
3. From the L3-services instances Click on the + to create a new L3 service
4. In the Create L3-service form perform the following actions:
    a. Enter the Name for the Service definition
    b. Select the device-id from the drop down list offered

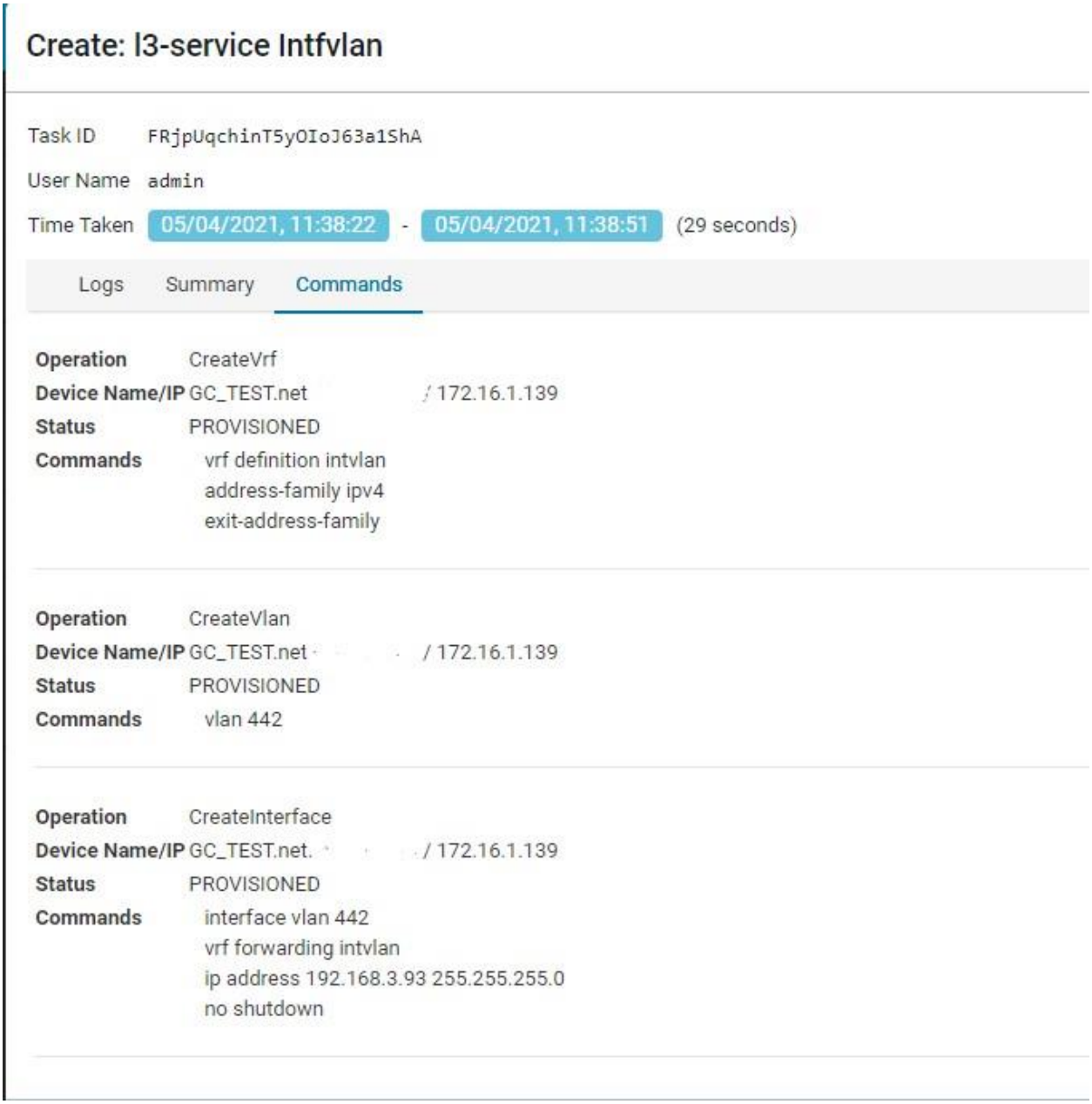
> **Note**: You can add only one device at a time

    c. Select **Vlan** in the **Interface-Mode** field.
    d. Provide a **Description** for the sub-interface. The sub-interface will be updated with an interface description
    e. Enter a **Vrf** name. A new VRF will be created on the device and will be attached to the sub-interface created. If the VRF already exists, the same will be utilized.
    f. Enter a **Vlan-Id**. A corresponding VLAN interface will be created on the device.
    g. Enter a valid **Ip-Address**. The IP Address will be attached to the new VLAN interface created.
    h. Enter the corresponding **Netmask** to capture the subnet mask.
    i. Enter a valid **Ipv6-Address.** The IPv6 Address will be attached to the VLAN interface created.
    j. Enter the corresponding v6 prefix in **Ipv6-Prefix-Length** to complete the fields for provisioning
    k. Click on the ✔ to start the device provisioning process.
    l. In the Tasks pane, check for **Create: l3-service**, and navigate to **Commands** to view the configurations..

The screenshot below shows the fields populated to provision a Layer 3 VLAN Interface.


atom
Services
Create L3-Service
Name
string
Intfvlan
Device ID
device-id
172.16.1.139
Interface-Mode
sub-interface l3-interface vlan
Sub-Interface
L3-Interface
Vlan
Description
string
Description
Vrf
string
intvlan
Vlan-Id
1..4096
442
IP Address
Must be a valid IP Address. Ex :172.16.1.24.
192.168.3.93
Netmask
Must be a valid IP Address. Ex :172.16.1.24.
255.255.255.0
Ipv6-Address
Must be a valid IPv6 Address.
ipv6-address

The screenshot below shows the commands generated and pushed to the devices to provision a Layer 3 VLAN interface.

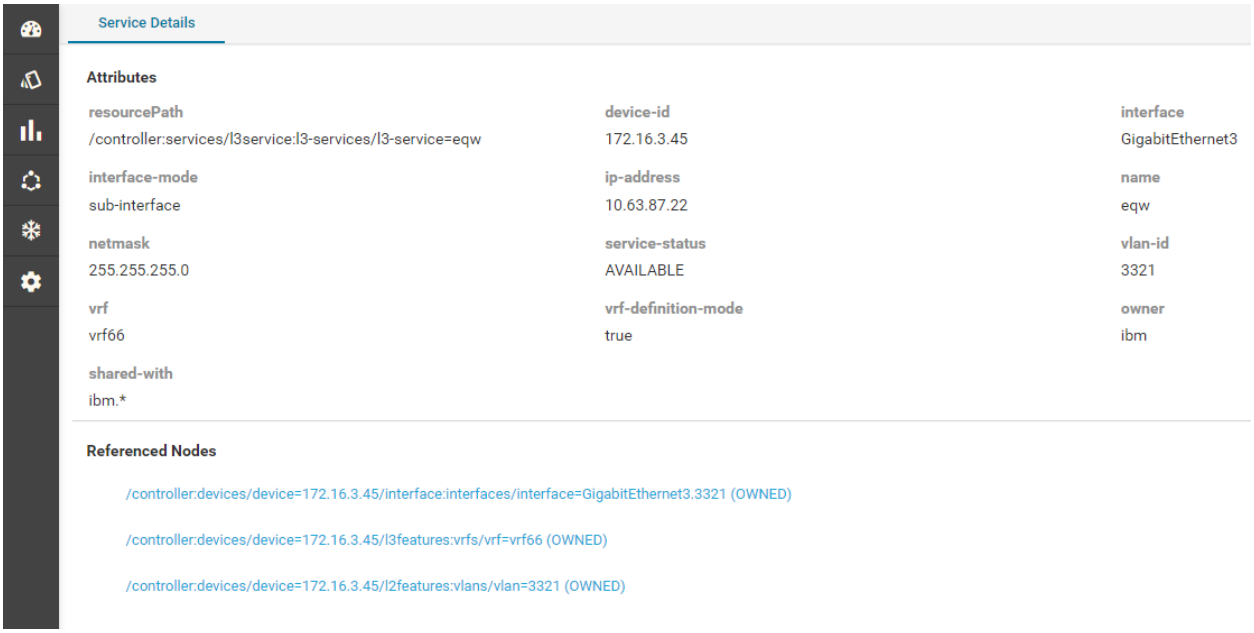


Working with Layer 3 Service orders

Viewing Layer 3 Services

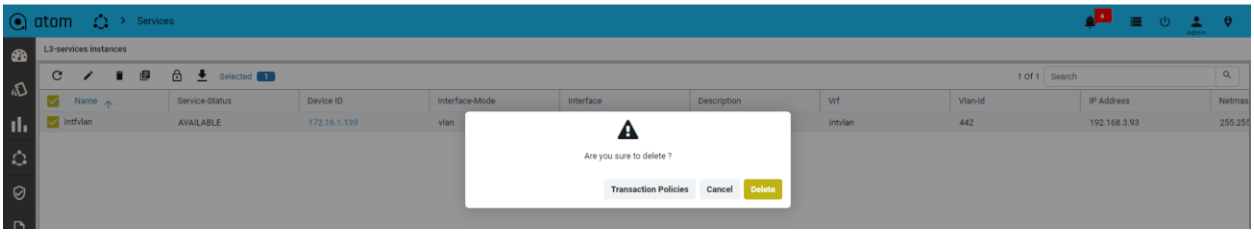
1. Once the Layer 3 services are created, the service instances can be seen under **Services > Catalog > L3-services**

2. Click on the Service instance to view the Service Details. An example for Layer 3 Subinterface is shown below.



Deleting Layer 3 Services

1. To delete the Layer 3 services created, navigate to **Services > Catalog > L3-services**
2. Check ✔ on the Service instance to be deleted and choose the delete icon.
3. The Task pane will capture the deletion progress. An example for Layer 3 Subinterface is shown below



Additional Resources

For detailed information on Anuta ATOM and its rich set of features, please refer to the resources section on anutanetworks.com