Global Settings Guide

VeloCloud SD-WAN 7.0.1

Version 7.0.1

Arista.com

Headquarters	Support	Sales
5453 Great America Parkway Santa Clara, CA 95054 USA +1-408-547-5500	+1-408-547-5502 +1-866-476-0000	+1-408-547-5501 +1-866-497-0000
www.arista.com/en/	support@arista.com	sales@arista.com

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Chapter 1

VeloCloud Global Settings Guide

The VeloCloud Global Settings guide provides information about features residing under the Enterprise Global Settings service. These features are shared across all services.

Chapter 2

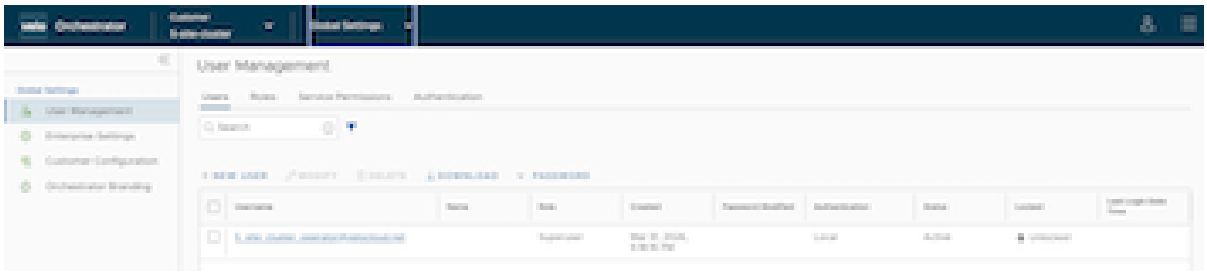
Overview

Given the number of services available in the Orchestrator, the Administration section has evolved from the SD-WAN service into its own centralized settings shared across services. Thus, the original Administration section is split into Global Settings and SD-WAN Settings. All Edge or SD-WAN-specific settings are moved to Service Settings within the SD-WAN service, and all Administration-related or shared settings across services are moved to the Global Settings service.

The Enterprise **Global Settings** service is located in the **Enterprise Applications** drop-down menu along with **SD-WAN** services. The features under **Global Settings** are shared across all services.

The following features reside under Enterprise **Global Settings**:

Figure 2-1: Global Settings



Selecting the **Global Settings** service displays the **User Management** screen by default.

For additional information on each of these features, see the topics below:

- User Management - Enterprise
- Enterprise Settings
- Configure Customers

  Note: This feature is available only for Operator users.

- Orchestrator Branding for Enterprise

Chapter 3

User Management - Enterprise

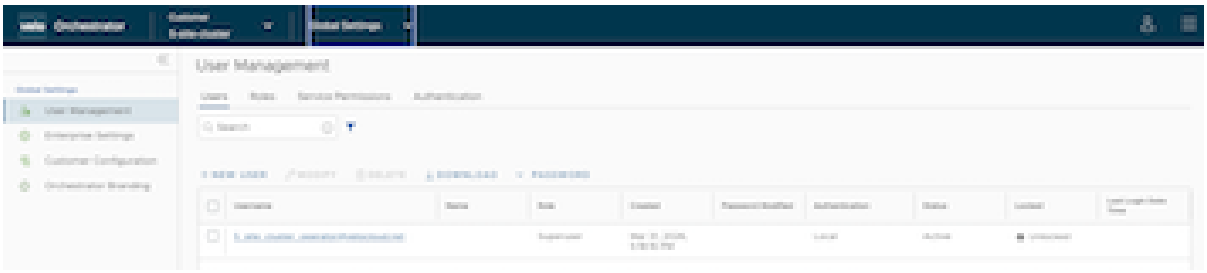
The User Management feature allows managing users, their roles, service permissions (formerly known as Role Customization), and authentication.

As an Enterprise Superuser, follow the steps below to access the **User Management** screen:

1. In the **Enterprise** portal, on the **Global Navigation** bar, expand the **Enterprise Applications** drop-down menu.
2. Select the **Global Settings** service.

   The **User Management** screen appears by default.

   Figure 3-1: User Management



3. The **User Management** window displays four tabs: **Users**, **Roles**, **Service Permissions**, and **Authentication**.

   For additional information on each of these tabs, see:

   - Users
   - Roles
   - Service Permissions
   - Authentication

3.1 Users

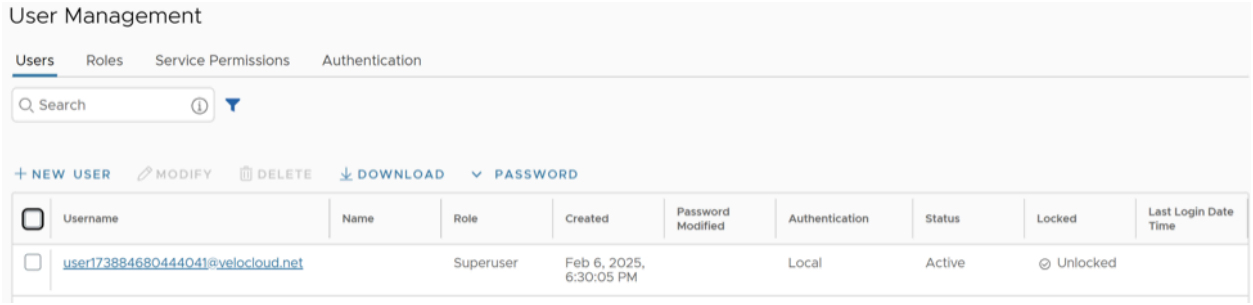
This tab displays the existing Admin users. Only Enterprise Superusers can create new Admin users with different roles and configure API tokens for each Admin user.

To access the **Users** tab:

1. In the **Enterprise** portal, on the **Global Navigation** bar, expand the **Enterprise Applications** drop-down menu.
2. Select the **Global Settings** service.

3. From the left menu, select **User Management**. The **Users** tab displays by default.

Figure 3-2: Users Tab



4. On the **Users** screen, perform the following activities:

Table 1: Users Tab - Options and Descriptions

Option	Description
New User	Creates a new Admin user. For additional information, see Add New User.
Modify	Allows to modify the properties of the selected Admin user. Alternatively, users can select the link to the username to modify the properties.
Delete	Deletes the selected user. The Orchestrator does not allow deleting default users.
Download	Select this option to download the details of all the users into a file in a CSV format.
Password	Select this option and choose to either enforce the new password policy or reset the already enforced policy for the selected user. Modify the password policies by navigating to the **Authentication** tab.

5. The following are the other options available in the **Users** tab:

Table 2: Additional Options and Descriptions

Option	Description
Search	Enter a search term to search for the matching text across the table. Use the advanced search option to refine the search results.
Show or Hide Columns	Select the columns to be displayed or hidden on the page.
Refresh	Select to refresh the page and display the most current data.

See API Tokens.

3.1.1 Add New User

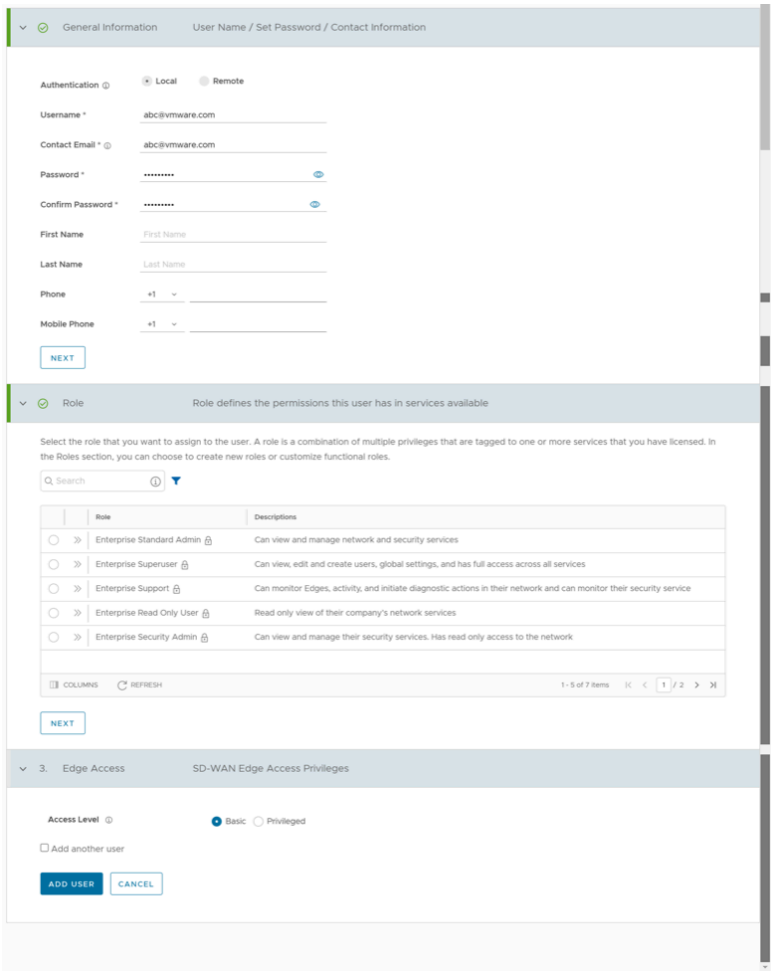
Standard Administrator Superusers and Standard Administrators can create new Admin users. The SSH username is automatically created for the user. To add a new user, perform the following steps:

Note: These steps are valid for all customers, except those created in a 5.2.0 Orchestrator where they are not assigned to a Partner, which have certain limitations. These limitations are outlined in an Important note at the end of the article.

1. In the **Enterprise** portal, go to **Enterprise Applications** > **Global Settings**.
2. From the left menu, select **User Management**, and then select the **Users** tab.

3. Select **New User**.

Figure 3-3: New User



4. Enter the following details for the new user:

> **Note:** The **Next** button is activated only after entering all the mandatory details in each section.

Table 3: New User - Options and Descriptions

Option	Description
General information	Enter the required personal details of the user. **Note:** Starting with the 4.5 release, the use of the special character "<" in passwords is no longer supported. In cases where users have already used "<" in their passwords in previous releases, they must remove it to save any changes on the page.
Role	Select a role to assign to the user. For information on roles, refer to the topic **Roles**.
Edge Access	Choose one of the following options: • **Basic:** Enables to perform various basic debugging operations, such as ping, tcpdump, pcap, and remote diagnostics. • **Privileged:** Grants the root-level access to perform all basic debug operations along with Edge actions such as restart, deactivate, reboot, hard reset, and shutdown. Additionally, users can access the Linux shell. The default value is **Basic**.

5. Select the **Add another user** checkbox to create another user, and then select **Add User**. The new user appears in the **User Management** > **Users** page. Select the link to the user to view or modify the details. An Enterprise Administrator can manage the Roles, Service Permissions, and API Tokens for the Enterprise users.

Note: Enterprise Administrator should manually delete inactive Identity Provider (IdP) users from the Orchestrator to prevent unauthorized access via API Token.

3.1.2 API Tokens

Access the Orchestrator APIs using tokens instead of session-based authentication. An Enterprise Superuser can manage the API tokens and create multiple API tokens for a user.

Note:

- For Enterprise Read-Only users and MSP Business Specialist users, token-based authentication is not activated.
- Enterprise Superuser should manually delete inactive Identity Provider (IdP) users from the **Orchestrator** to prevent unauthorized access via API Token.

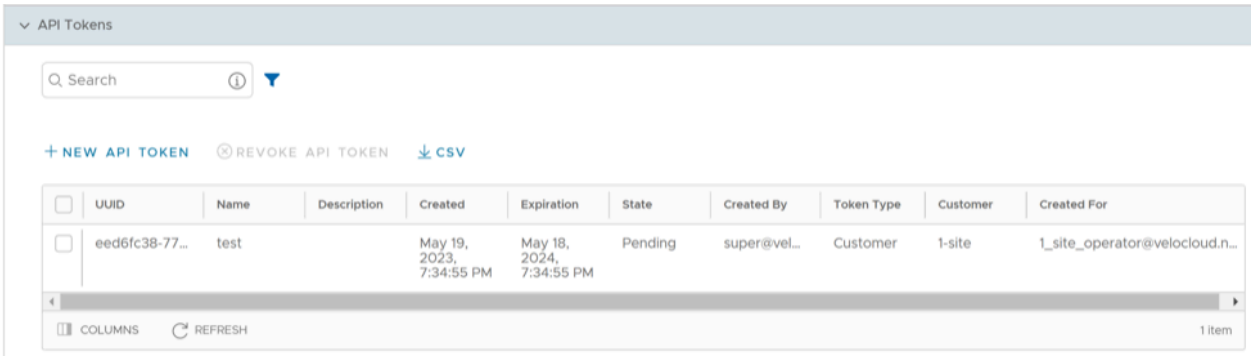
Users can create, revoke, and download the tokens based on their roles.

To manage the API tokens:

1. In the **Enterprise** portal, on the **Global Navigation** bar, expand the **Enterprise Applications** drop-down menu.
2. Select the **Global Settings** service.
3. Navigate to **User Management** > **Users**.

4. Select a user and select **Modify**, or select the link to the username. Go to the **API Tokens** section.

   Figure 3-4: API Tokens



5. Select **New API Token**.

   Figure 3-5: New Token



6. In the **New Token** window, enter a **Name** and **Description** for the token, and then choose the **Lifetime** from the drop-down menu.
7. Select **Save**. The new token is displayed in the **API Tokens** table. Initially, the token status displays as `Pending`. After downloading it, the status changes to `Enabled`.
8. To download the token, select the token and then select **Download API Token**.
9. To deactivate a token, select the token and then select **Revoke API Token**. The status of the token is displayed as `Revoked`.
10. Select **CSV** to download the complete list of API tokens in a .csv file format.
11. When the Lifetime of the token is over, the status changes to `Expired`.

> **Note:** Only the user associated with a token can download it, and after downloading, the token ID displays alone. Users can download a token only once. After downloading the token, the user can send it in the Authorization Header of the request to access the Orchestrator API.

The following example shows a sample snippet of the code to access an API.

```
curl -k -H "Authorization: Token <Token>"
  -X POST https://vco/portal/
  -d '{ "id": 1, "jsonrpc": "2.0", "method": "enterprise/getEnterpriseUsers", "params":
 { "enterpriseId": 1 }}'
```

The following are the other options available in the **API Tokens** section:

Table 4: Additional Options and Descriptions

Option	Description
Search	Enter a search term to search for the matching text across the table. Use the advanced search option to refine the search results.
Columns	Select the columns to be displayed or hidden on the page.
Refresh	Select to refresh the page to display the most current data.

3.2 Roles

The Orchestrator consists of two role types.

Note: Starting from the 5.1.0 release, **Functional Roles** are renamed as **Privileges**, and **Composite Roles** are renamed as **Roles**.

The roles are categorized as follows:

- **Privileges** – Privileges are a set of roles relevant to a functionality. You can tag a privilege with one or more of the following services: **SD-WAN** and **Global Settings**. Users require privileges to carry out business processes. For example, a Customer Support role in SD-WAN is a privilege required by an SD-WAN user to perform various support activities. Every service defines such privileges based on its supported business functionality.
- **Roles** – The privileges from various categories can be grouped to form a role. By default, the following roles are available for a Customer:

  Table 5: Roles and Services

Role	SD-WAN Service	Global Settings Service
Enterprise Standard Admin	SD-WAN Enterprise Admin	Global Settings Enterprise Admin
Enterprise Superuser	SD-WAN Enterprise Superuser	Global Settings Enterprise Superuser
Enterprise Support	SD-WAN Enterprise Support	Global Settings Enterprise Support
Enterprise Read Only User	SD-WAN Enterprise Read Only	Global Settings Enterprise Read Only
Enterprise Security Admin	SD-WAN Security Enterprise Admin	Global Settings Enterprise Admin
Enterprise Security Read Only	SD-WAN Security Enterprise Read Only	Global Settings Enterprise Read Only
Enterprise Network Admin	SD-WAN Enterprise Admin	Global Settings Enterprise Admin

  If required, you can customize the privileges of these roles. For additional information, see Service Permissions.

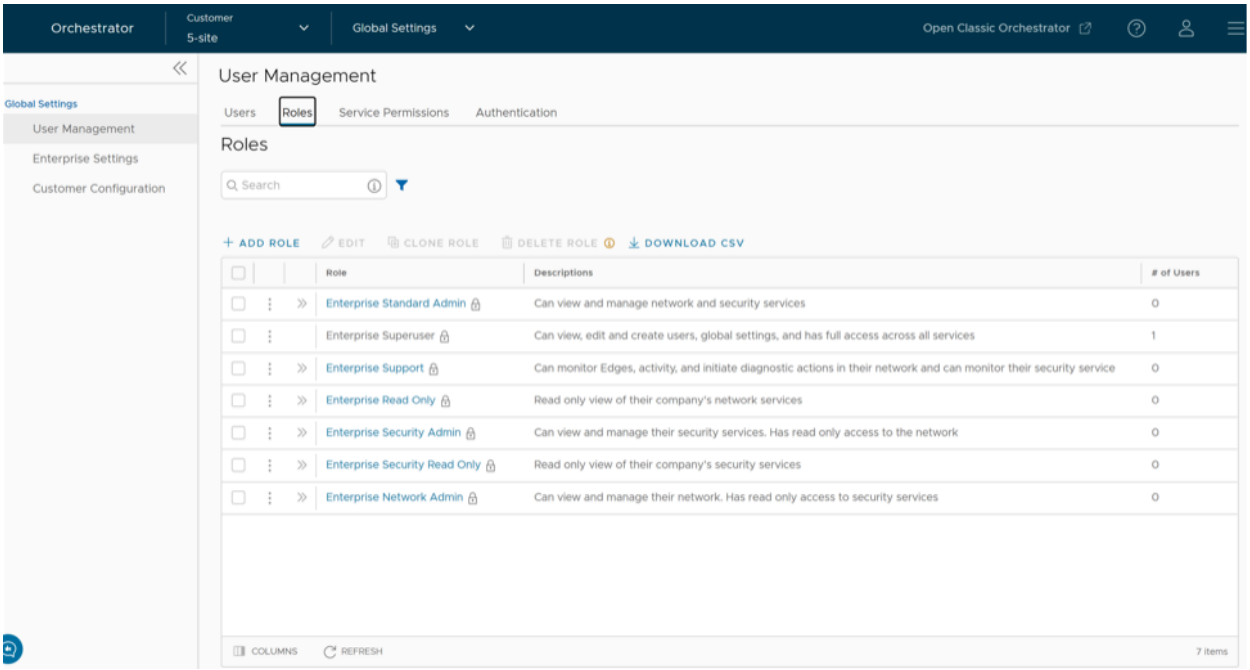
As a Customer, you can view the list of existing standard roles and their corresponding descriptions. You can add, edit, clone, or delete a new role. However, you cannot edit or delete a default role.

To access the **Roles** tab:

1. In the **Enterprise** portal, on the **Global Navigation** bar, expand the **Enterprise Applications** drop-down menu.
2. Select the **Global Settings** service.

3. From the left menu, select **User Management**, then select the **Roles** tab. The following screen appears:

Figure 3-6: Roles Tab



4. On the **Roles** screen, you can perform the following activities:

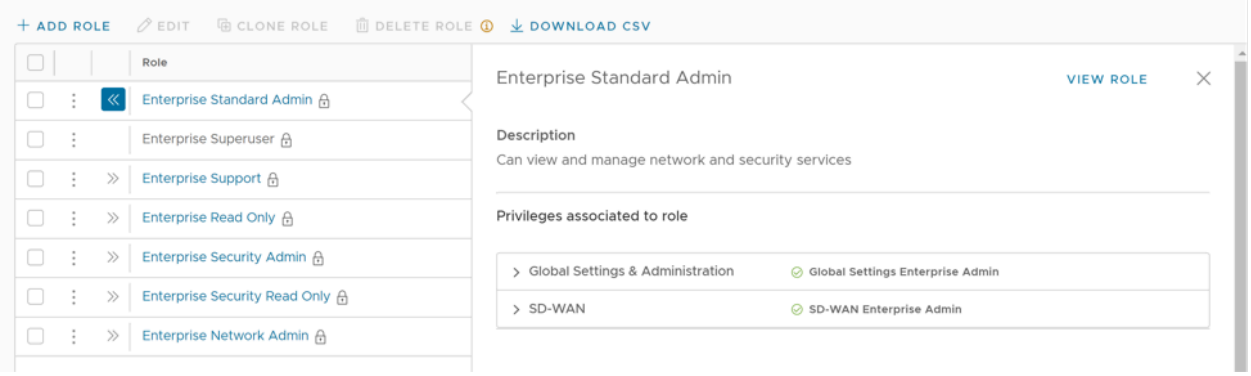
Table 6: Roles Tab - Options and Descriptions

Option	Description
Add Role	Creates a new custom role. For additional information, see Add Role.
Edit	Allows you to edit only the custom roles. You cannot edit the default roles. Also, you cannot edit or view the settings of a Superuser.
Clone Role	Creates a new custom role by cloning the selected role's settings. You cannot clone the settings of a Superuser.
Delete Role	Deletes the selected role. You cannot delete the default roles. You can delete only custom composite roles. Ensure that you have removed all the users associated with the selected role before deleting the role.
Download CSV	Downloads the details of user roles into a file in CSV format.

Note: You can also access the **Edit**, **Clone Role**, and **Delete Role** options from the vertical ellipsis of the selected Role.

5. Select the **Open** icon **>>** displayed before the Role link, to view additional details about the selected Role, as shown below:

Figure 3-7: Role Details



6. Select the **View Role** link to view the privileges associated with the selected role for the activated services.

> **Note:** By default, only the **Global Settings and Administration** service are activated for a Customer. Only an Operator can activate an additional service.

7. The following are the other options available in the **Roles** tab:

Table 7: Additional Options and Descriptions

Option	Description
Search	Enter a search term to search for the matching text across the table. Use the advanced search option to refine your search results.
Columns	Select the columns to be displayed or hidden on the page.
Refresh	Select to refresh the page and display the most current data.

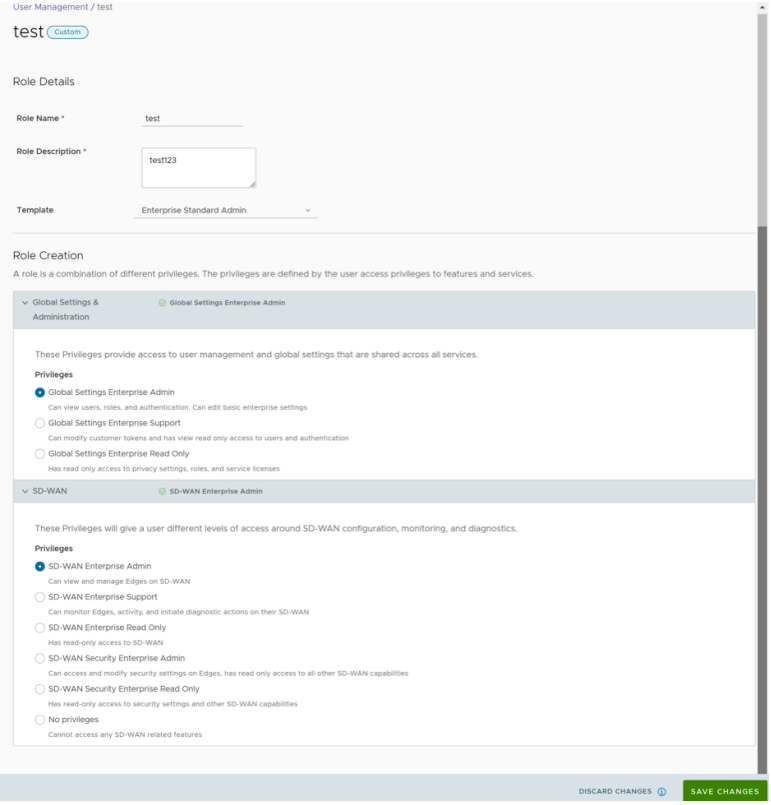
3.2.1 Add Role

To add a new role for a Customer, perform the following steps:

1. In the **Enterprise** portal, on the **Global Navigation** bar, expand the **Enterprise Applications** drop-down menu.
2. Select the **Global Settings** service.
3. From the left menu, select **User Management**, then select the **Roles** tab.

4. Select **Add Role**.

Figure 3-8: Add Role



5. Enter the following details for the new custom role:

Table 8: Add Role - Options and Descriptions

Option	Description
Role Details	
Role Name	Enter a name for the new role.
Role Description	Enter a description for the role.
Template	Optionally, select an existing role as a template from the drop-down list. The privileges of the selected template are assigned to the new role.
Role Creation	
Global Settings and Administration	These privileges provide access to user management and global settings that are shared across all services. Choosing one of the privileges is mandatory. By default, **Global Settings Enterprise Read Only** is selected.
SD-WAN	These privileges provide the Enterprise Administrator with different levels of access to SD-WAN configuration, monitoring, and diagnostics. Optionally, choose an SD-WAN privilege. The default value is **No Privileges**.

Note: The **Role Creation** section displays the privileges only for which the Customer has licenses.

6. Select **Save Changes**.

The new custom role appears in the **User Management** > **Roles** page. Select the link to the custom role to view the settings.

3.3 Service Permissions

Service Permissions allow an Administrator to granularly define actions (Read, Create, Update, and Delete) assigned to each Privilege (such as Cloud Security Service and Customer Segment configuration) within a Privilege Bundle.

Note:

- Starting from the 5.1.0 release, **Role Customization** is renamed as **Service Permissions**.
- To activate this feature, an Operator must navigate to **Global Settings** > **Customer Configuration** > **Additional Configuration** > **Feature Access**, and then select the **Role Customization** checkbox.

You can customize roles by modifying the service permissions assigned to each role. You can customize both default roles and new roles. Roles are created based on the selected default role. Operator, Partner, and Enterprise roles are defined separately. So, there are default roles for each level, such as Operator Superuser, Partner Standard Admin, and Enterprise Support.

When customizing a role, you must select both the user level and the role. Typically, Operator roles have more privileges by default than Partners or Enterprise Customers. When creating a user, you must assign a role. Any change to a specific role's privileges takes effect immediately for all users assigned to that role. Role customizations only apply to one role at a time. For example, changes to Operator Standard Admin roles do not get applied to Enterprise Standard Admin roles.

For additional information, refer to the topic Roles.

The Service Permissions are applied to the privileges as follows:

- Customizations made at the Enterprise level take precedence over those at the Partner or Operator level.
- Customizations made at the Partner level take precedence over those at the Operator level.
- Only when no customizations are made at the Partner or Enterprise level are the Operator's customizations applied globally to all users in the Orchestrator.

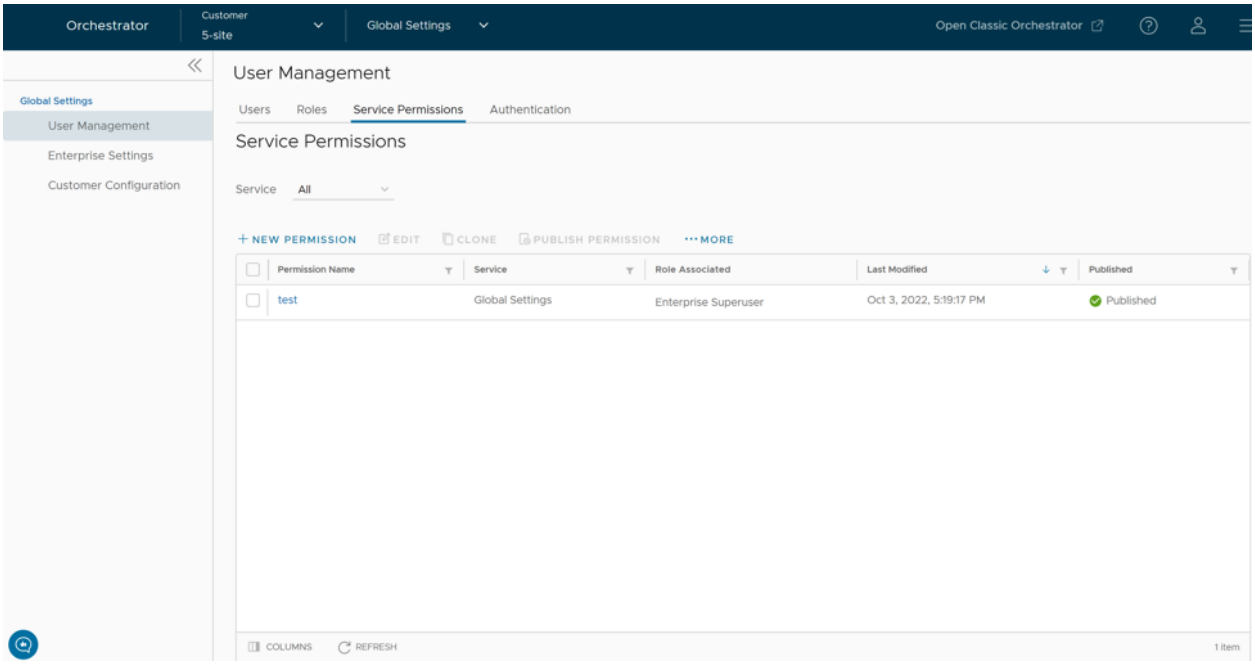
Note: For information on user privileges, refer to the topic List of User Privileges.

To access the **Service Permissions** tab:

1. In the **Enterprise** portal, on the **Global Navigation** bar, expand the **Enterprise Applications** drop-down menu.
2. Select the **Global Settings** service.

3. From the left menu, select **User Management**, then select the **Service Permissions** tab. The following screen appears:

Figure 3-9: Service Permissions Tab



4. On the **Service Permissions** screen, you can perform the following activities:

Table 9: Service Permissions Tab - Options and Descriptions

Option	Description
Service	Select the service from the drop-down menu. The available services are: • **All** • **Global Settings** • **SD-WAN** Each service comprises a set of related grouped permissions. Custom service permissions, if any, associated with the selected service are displayed. By default, all custom service permissions are displayed.
New Permission	Allows you to create a new set of privileges. The newly created permission is displayed in the table. For additional information, see the topic New Permission.
Edit	Allows you to edit the settings of the selected permission. You can also select the **Permission Name** to edit the settings.
Clone	Allows you to create a copy of the selected permission.
Publish Permission	Applies the customization available in the selected package to the existing permission. This option modifies the privileges only at the current level. If there are customizations available at the Operator level or a lower level for the same role, then the lower level takes precedence. For example, customizations defined by an Enterprise Superuser take precedence over customizations defined by an Operator Superuser.
More	Allows you to select from the following additional options: • **Delete:** Deletes the selected permission. You cannot delete a permission if it is already in use. **Note:** A permission can only be deleted if it is in draft mode. The **Delete** option is deactivated for a published permission. If you want to delete a published permission, you must reset it to the system default, which puts it in draft mode and activates the **Delete** option for the permission. • **Download JSON:** Downloads the list of permissions into a file in JSON format. • **Upload Permission:** Allows you to upload a JSON file of a customized permission. • **Unpublish Permissions:** Allows you to unpublish the selected permission, changing it to a 'Draft' state. You can modify the permission and save it again, which changes it to the "Published" state.

5. The table displays the following columns:

Table 10: Service Permissions Column - Options and Descriptions

Option	Description
Permission Name	Displays the newly created permission.
Service	Displays the service of the new permission.
Scope	Displays the scope of the new permission.
Role Associated	Displays the associated roles using the same Privilege Bundle.
Last Modified	Displays the date and time when the permission was last modified.
Published	Displays either "Published" or "Draft" depending on the state of the permission.

6. The following are the other options available on the **Service Permissions** tab:

Table 11: Additional Options and Descriptions

Option	Description
Columns	Select and select the columns to be displayed or hidden on the page.
Refresh	Select to refresh the page and to display the most current data.

Note:

- The Orchestrator does not support customization of multiple privilege bundles.
- Service Permissions are version dependent, and a service permission created on an Orchestrator using an earlier software release will not be compatible with an Orchestrator using a later release. For example, a service permission created on an Orchestrator that is running Release 3.4.x does not work properly if the Orchestrator is upgraded to a 4.x Release. Additionally, a service permission created on an Orchestrator running Release 3.4.x does not function properly when the Orchestrator is upgraded to a 4.x.x Release. In such cases, the user must review and recreate the service permission for the newer release to ensure proper enforcement of all roles.

3.3.1 New Permission

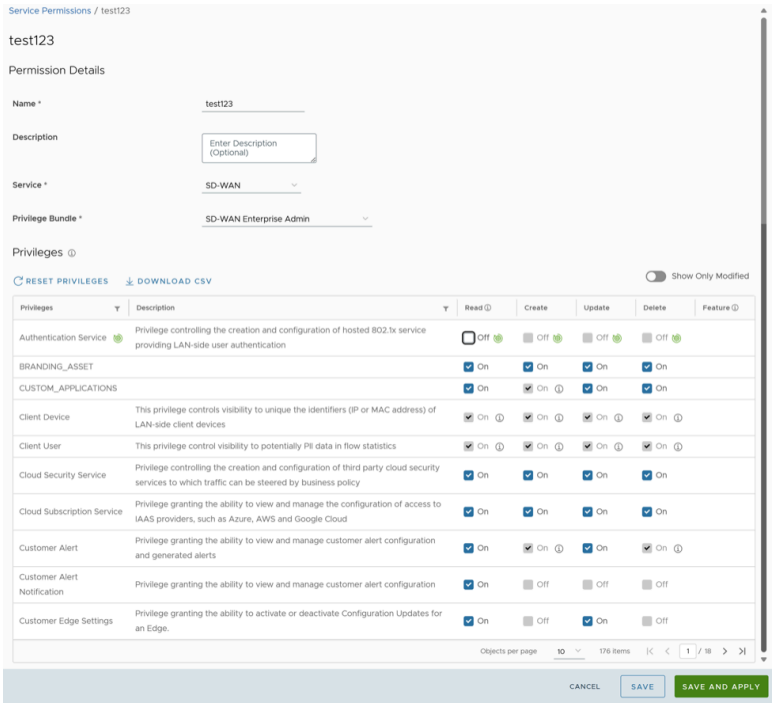
You can customize the privileges and apply them to the existing permissions in the Orchestrator.

To add a new permission, perform the following steps:

1. In the **Enterprise** portal, on the **Global Navigation** bar, expand the **Enterprise Applications** drop-down menu.
2. Select the **Global Settings** service.
3. From the left menu, select **User Management**, then select the **Service Permissions** tab.

4. Select **New Permission**. The following screen appears:

Figure 3-10: New Permission



5. Enter the following details to create a new permission:

Table 12: New Permission - Options and Descriptions

Option	Description
Name	Enter an appropriate name for the permission. **Note:** The permission name must be unique within the Orchestrator upon which it is hosted.
Description	Enter a description. This field is optional.
Service	Select a service from the drop-down menu. The available services are: • **Global Settings** • **SD-WAN**
Privilege Bundle	Select a privilege bundle from the drop-down menu. The privileges are populated depending on the selected **Service**.
Privileges	Displays the list of privileges based on the selected **Privilege Bundle**. You can edit only those privileges that are eligible for customization.

To activate or deactivate a specific privilege, select or clear the corresponding checkbox in the **Privileges** table. The available checkboxes are **Read**, **Create**, **Update**, and **Delete**.

Starting from Release 6.4.0, a green icon is displayed whenever a privilege is modified. This icon is displayed next to the modified checkbox and the privilege name.

Some privileges do not support selecting an independent action. In this case, if you select any one action checkbox, all the other checkboxes are also selected. A tool tip is provided for such privileges.

Additionally, the **Read** action checkbox does not allow independent selection. When selected, all other checkboxes for that privilege are automatically selected.

Note: You can edit only those privileges that are eligible for customization.

6. Slide the **Show Only Modified** toggle button, located at the top right of the privileges table, to view only the modified privileges.
7. Select **Reset Privileges** to reset all the changes.
8. Select **Download CSV** to download the list of all privileges, their description, and associated actions, into a file in a CSV format. You can choose from the options below:

Table 13: Privileges List

Default Privileges	Downloads the original privileges, ignoring all the current modifications.
Modified Privileges	Downloads only the privileges that were modified.
Current Privileges	Downloads all the current privileges.

Note: If you select **Reset Privileges**, then select **Download CSV**, the **Default Privileges** and **Current Privileges** options both display the same list.

9. Select **Save** to save the new permission. Select **Save and Apply** to save and publish the permission.

Note: The **Save** and **Save and Apply** buttons are activated only after you modify the permissions.

The new permission displays on the **Service Permissions** page. If you create another permission with the same scope and service, the privilege displays the last-modified settings by default.

3.3.2 List of User Privileges

This section lists all the user privileges available in the **Enterprise** portal.

Below is a table listing the user privileges. The columns in the table indicate the following:

- **Allow Privilege** – Do the privileges have allow access?
- **Deny Privilege** – Do the privileges have deny access?
- **Customizable** – Is the privilege available for customization on the **Service Permissions** tab, along with the **Create**, **Read**, **Update**, and **Delete** customizations?

Note: The features that an Enterprise Superuser can completely customize are listed in a separate table at the end of this topic.

Table 14: List of User Privileges

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
Monitor > **Edges** > **Select Edge**	Overview						
			Read Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No
		Top Applications Top Categories Top Operating Systems	Read Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No
		Top Sources	View Flow Stats	Grants the ability to view collected flow statistics	Yes	Yes	Yes
	Sources		Read Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No
			View Edge Sources	Grants the ability to view the Monitor Edge Sources tab	Yes	Yes	Yes
		Devices	View User Identifiable Flow Stats	Grants the ability to view potentially user identifiable flow source attributes	Yes	Yes	Yes
		Change Hostname	Create Client Device Read Client Device Update Client Device Delete Client Device Manage Client Device	Controls visibility to unique identifiers (IP or MAC address) of LAN-side client devices	Yes	No	No

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		Operating Systems	Create Client User Read Client User Update Client User Delete Client User Manage Client User	Controls visibility to potentially Personal Identifiable Information(PII) in flow statistics	Yes	No	No
	Applications Sources Destinations		Read Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No
			View Flow Stats	Grants the ability to view collected flow statistics	Yes	Yes	Yes
	Events from this Edge		Read Customer Event	Grants the ability to view customer-level events	Yes	No	No
	Remote Actions		Read Remote Actions	Grants access to view and execute remote actions	No	Yes	Yes
	Remote Actions Generate Diagnostic Bundle Remote Diagnostics		Read Diagnostics	Controls creation of and access to diagnostics bundles, both Edge and Gateway. Combine with Edge and Gateway privileges to control access to each type individually	Yes	Yes	Yes
	Generate Diagnostic Bundle		Create Diagnostic Bundle		No	Yes	Yes
	Remote Diagnostics		Read Remote Diagnostics	Privilege granting access to view and execute remote diagnostics	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
Monitor	Edges		Read Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No
		Edge Cluster	Read Edge Cluster	Controls the ability to create and configure Edge Clusters	No	Yes	Yes
	Network Services		Read Network Service	Grants the ability to view and manage services with the Network Services configuration block	Yes	No	No
		Non SD-WAN Destinations via Gateway Non SD-WAN Destinations via Edge	Read Customer Event	Grants the ability to view customer level events	Yes	No	No
		Non SD-WAN Destinations via Gateway Non SD-WAN Destinations via Edge	Read Non SD-WAN Destination via Gateway	Grants the ability to view and manage Non SD-WAN Destinations via Gateway and Non SD-WAN Destinations via Edge	No	Yes	Yes
		BGP Gateway Neighbor State	Read Network Service	Grants the ability to view and manage services with the Network Services configuration block	Yes	No	No
		BGP Edge Neighbor State	Read Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No
		Edge VNFs	Read VNF Network Service	Grants the ability to manage VNF Network Services	No	Yes	Yes
		Edge Cluster	Read Edge Cluster	Controls the ability to create and configure Edge Clusters	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
	Routing		Read Network Addressing	Grants the ability to view and manage address block configuration in the legacy Network profile mode	Yes	No	No
			Read Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No
			View Customer Routing	Grants the ability to view the customer Routing	Yes	No	No
	Alerts		Create Customer Alert	Grants the ability to view and manage customer alert configuration and generated alerts	Yes	No	No
			Read Customer Alert			Yes	Yes
			Update Customer Alert				
			Delete Customer Alert			No	No
			Manage Customer Alert				
	Events		Create Customer Event	Grants the ability to view customer level events	Yes	No	No
			Read Customer Event				
			Update Customer Event				
			Delete Customer Event				
			Manage Customer Event				
	Reports		Update Customer	Grants the ability to view and manage Customers, from the Partner or Operator level	Yes	Yes	Yes
			Read Customer			No	No
	Firewall	Firewall Logging	View Firewall Logs	Grants the ability to view collected firewall logs	Yes	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
			Read Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No
			Read Customer Event	Grants the ability to view customer level events	Yes	No	No
Configure > **Edge** > **Select Edge**	Edge Overview		Edge Overview	Controls the ability to view or modify Edge overview page	No	Yes	Yes
		Properties	Create Edge Overview Properties	Controls the ability to view or change items within the properties section of the Edge overview page	No	Yes	Yes
			Read Edge Overview Properties			No	No
			Update Edge Overview Properties			Yes	Yes
			Delete Edge Overview Properties				
		Name	Read Edge Overview Properties Name	Controls the ability to view or change Edge name on the Edge overview page	No	Yes	Yes
			Update Edge Overview Properties Name				
		Description	Read Edge Overview Properties Description	Controls the ability to view or change Edge description on the Edge overview page	No	Yes	Yes
			Update Edge Overview Properties Description				
		Enable Alerts	Read Edge Overview Properties Enable Alerts	Controls the ability to view or change Edge alert configuration on the Edge overview page	No	Yes	Yes
			Update Edge Overview Properties Enable Alerts				

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		Authentication Mode	Read Edge Overview Properties Auth Mode Update Edge Overview Properties Auth Mode	Controls the ability to view or change Edge PKI configuration on the Edge overview page	No	Yes	Yes
			Read Customer PKI Update Customer PKI	Grants the ability to view and manage enterprise PKI settings	Yes	No	No
		Serial Number	Read Edge Overview Properties Serial Number Update Edge Overview Properties Serial Number	Controls the ability to view or change Edge serial number, prior to activation, on the Edge overview page	No	Yes	Yes
		Generate New Activation Key	Read Edge Overview Properties Activation Expiration Update Edge Overview Properties Activation Expiration	Controls the ability to view or change the activation key expiration period on the Edge overview page	No	Yes	Yes
		Send Activation Email button	Create Edge Overview Properties Activation Email Read Edge Overview Properties Activation Email	Controls the ability to generate an activation email on the Edge overview page	No	Yes	Yes
		Local Credentials	Read Overview Properties Local Credentials Update Overview Properties Local Credentials	Grants the ability to view and configure Edge local credentials	No	Yes	Yes
		View	Read Edge Update Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
			Read Customer Keys Update Customer Keys	Grants the ability to view and manage enterprise security keys such as Edge administrator credentials and IPsec keys	Yes	Yes	Yes
		License	Read License Update License	Grants the ability to view and manage Edge licensing	Yes	Yes	Yes
		Profile	Create Edge Overview Profile	Controls visibility and control of Edges assigned profile on the Edge overview page	No	Yes	Yes
			Read Edge Overview Profile			No	No
			Update Edge Overview Profile			Yes	Yes
			Delete Edge Overview Profile				
		RMA Reactivation	Create Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	Yes	Yes
	Device						
		Authentication Settings	Create Edge Device Authentication Settings Read Edge Device Authentication Settings Update Edge Device Authentication Settings Delete Edge Device Authentication Settings	Controls the ability to view or change Edge Device Authentication Settings	No	Yes	Yes
		DNS Settings	Update Edge Device DNS Settings	Controls the ability to view or change Edge Device DNS Settings	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		Netflow Settings	Create Edge Device Netflow Settings Read Edge Device Netflow Settings Update Edge Device Netflow Settings Delete Edge Device Netflow Settings	Controls the ability to view or change Edge Device Netflow Settings	No	Yes	Yes
		LAN-Side NAT Rules	Update Edge Device LAN-Side NAT Rules	Controls the ability to view or change Edge Device LAN-Side NAT Rules	No	Yes	Yes
		Voice Quality Monitoring Settings	Read Edge Device VQM Settings Update Edge Device VQM Settings	Controls the ability to view or change Edge Device VQM Settings	No	Yes	Yes
		Syslog Settings	Read Edge Device Syslog Settings Update Edge Device Syslog Settings	Controls the ability to view or change Edge Device Syslog Settings	No	Yes	Yes
		Static Route Settings	Update Edge Device Static Route Settings	Controls the ability to view or change Edge Device Static Route Settings	No	Yes	Yes
		ICMP Probes	Read Edge Device ICMP Probes Update Edge Device ICMP Probes	Controls the ability to view or change Edge Device ICMP Probes	No	Yes	Yes
		ICMP Responders	Read Edge Device ICMP Responders Update Edge Device ICMP Responders	Controls the ability to view or change Edge Device ICMP Responders	No	Yes	Yes
		VRRP Settings	Update Edge Device VRRP Settings	Controls the ability to view or change Edge Device VRRP Settings	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		Cloud VPN	Read Edge Device Cloud VPN Update Edge Device Cloud VPN	Controls the ability to view or change Edge Device Cloud VPN	No	Yes	Yes
		BFD Rules	Update Edge Device BFD Rules	Controls the ability to view or change Edge Device BFD Rules	No	Yes	Yes
		BGP Settings	Read Edge Device BGP Settings Update Edge Device BGP Settings	Controls the ability to view or change Edge Device BGP Settings	No	Yes	Yes
		Multicast Settings	Read Edge Device Multicast Settings Update Edge Device Multicast Settings	Controls the ability to view or change Edge Device Multicast Settings	No	Yes	Yes
		Cloud Security Service	Read Edge Device Cloud Security Service Update Edge Device Cloud Security Service	Controls the ability to view or change Edge Device Cloud Security Service	No	Yes	Yes
		Gateway Handoff Assignment	Update Edge Device Gateway Handoff Assignment	Controls the ability to view or change Edge Device Gateway Handoff Assignment	No	Yes	Yes
		High Availability	Create Edge Device High Availability Read Edge Device High Availability Update Edge Device High Availability Delete Edge Device High Availability	Controls the ability to view or change Edge Device High Availability	No	Yes	Yes
			Enable HA Standby Pair	Grants the ability to configure standby HA	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
			Enable HA Cluster	Grants the ability to configure HA Clustering	No	Yes	Yes
			Enable HA VRRP Pair	Grants the ability to configure VRRP HA	No	Yes	Yes
		Configure VLAN	Read Edge Device Settings	Controls the ability to view or change Edge Device Settings	No	Yes	Yes
		Management IP	Read Edge Device Management IP Update Edge Device Management IP	Controls the ability to view or change Edge Device Management IP	No	Yes	Yes
		Device Settings	Create Edge Device Settings Read Edge Device Settings Update Edge Device Settings Delete Edge Device Settings	Controls the ability to view or change Edge Device Settings	No	Yes	Yes
		Interface Settings	Update Edge Device Interface Settings	Controls the ability to view or change Edge Device Interface Settings	No	Yes	Yes
		WAN Settings	Update Edge Device WAN Settings	Controls the ability to view or change Edge Device WAN Settings	No	Yes	Yes
		Security VNF	Update Edge Device Security VNF	Controls the ability to view or change Edge Device Security VNF	No	Yes	Yes
		Wi-Fi Radio Settings	Create Edge Device Wi-Fi Settings Read Edge Device Wi-Fi Settings	Controls the ability to view or change Edge Device Wi-Fi Settings	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
			Update Edge Device Wi-Fi Settings				
			Delete Edge Device Wi-Fi Settings				
		Multi-Source QoS	Read Edge Device Cloud VPN QoS Settings	Controls the ability to view or change Edge Device Cloud VPN QoS Settings	No	Yes	Yes
			Update Edge Device Cloud VPN QoS Settings				
		TACACS Settings	Create Network Service	Grants the ability to view and manage services with the Network Services configuration block	Yes	Yes	Yes
			Read Network Service			No	No
			Update Network Service			Yes	Yes
			Delete Network Service				
			Create Customer Keys	Grants the ability to view and manage enterprise security keys such as Edge administrator credentials and IPsec keys	Yes	Yes	Yes
			Read Customer Keys				
			Update Customer Keys				
			Delete Customer Keys				
			Manage Customer Keys			No	No
		L2 Settings	Update Edge Device L2 Settings	Controls the ability to view or change Edge Device L2 Settings	No	Yes	Yes
		SNMP Settings	Create Edge Device SNMP Settings	Controls the ability to view or change Edge Device SNMP Settings	No	Yes	Yes
			Read Edge Device SNMP Settings				
			Update Edge Device SNMP Settings				
			Delete Edge Device SNMP Settings				

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		NTP	Read Edge Device NTP Settings Update Edge Device NTP Settings	Controls the ability to view or change Edge Device NTP Settings	No	Yes	Yes
		Visibility Mode	Update Edge Device Config Visibility Mode	Controls the ability to view or change Edge Device Config Visibility Mode	No	Yes	Yes
		Analytics Settings	Read Edge Update Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No
	Business Policy		Edge Business Policy	Controls the ability to view or change Edge business policy page	No	Yes	Yes
		SD-WAN Overlay Rate Limit	Read Edge Business Policy Rate Limit Update Edge Business Policy Rate Limit	Controls the ability to read and update the rate limiting business policy feature	No	Yes	Yes
		SD-WAN Overlay Rate Limit SD-WAN Traffic Class and Weight Mapping	Read Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No
			Read Customer Profile	Grants the ability to view and edit enterprise configuration profiles	Yes	Yes	Yes
	Firewall		Edge Firewall	Controls the ability to view or change Edge firewall page	No	Yes	Yes
		Firewall Logging Syslog Forwarding Stateful Firewall	Configure Edge Firewall Logging	Grants the ability to configure Edge's level firewall logging	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
			Read Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No
		Syslog Forwarding	View Syslog Forwarding	Grants the ability to see Syslog forwarding	No	Yes	Yes
			Read Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No
		Stateful Firewall Settings, Network and Flood Protection Settings, Edge Access	Create Edge Firewall Edge Access Read Edge Firewall Edge Access Update Edge Firewall Edge Access Delete Edge Firewall Edge Access	Privilege granting or denying visibility and control of an Edge Stateful Firewall Settings, Network and Flood Protection Settings, and Edge Access on the Edge firewall page	No	Yes	Yes
	Events from this Edge		Read Customer Event	Grants the ability to view customer level events	Yes	No	No
	Remote Actions		Read Remote Actions	Privilege granting access to view and execute remote actions	No	Yes	Yes
	Remote Actions Generate Diagnostic Bundle Remote Diagnostics		Read Diagnostics	Controls the creation of and access to diagnostics bundles, both Edge and Gateway. Combine with Edge and Gateway privileges to control access to each type individually	Yes	Yes	Yes
	Generate Diagnostic Bundle		Create Diagnostic Bundle		No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
	Remote Diagnostics		Read Remote Diagnostics	Grants the access to view and execute remote diagnostics	No	Yes	Yes
Configure > **Profiles** > **Select Profile**	Profile Overview		Profile Overview	Controls the ability to view or change profile overview page	No	Yes	Yes
		Description	Create Profile Overview Description	Controls the ability to view or change Profile Overview Description	No	Yes	Yes
			Read Profile Overview Description			No	No
			Update Profile Overview Description			Yes	Yes
			Delete Profile Overview Description				
		Local Credentials	Read Overview Properties Local Credentials	Grants the ability to view and configure Edge local credentials	No	Yes	Yes
			Update Overview Properties Local Credentials				
	Device						
		Authentication Settings	Create Profile Device Authentication Settings	Controls the ability to view or change Profile Device Authentication Settings	No	Yes	Yes
			Read Profile Device Authentication Settings				
			Update Profile Device Authentication Settings				
			Delete Profile Device Authentication Settings				
		DNS Settings	Update Profile Device DNS Settings	Controls the ability to view or change Profile Device DNS Settings	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		Netflow Settings	Create Profile Device Netflow Settings Read Profile Device Netflow Settings Update Profile Device Netflow Settings Delete Profile Device Netflow Settings	Controls the ability to view or change Profile Device Netflow Settings	No	Yes	Yes
		LAN-Side NAT Rules	Update Profile Device LAN-Side NAT Rules	Controls the ability to view or change Profile Device LAN-Side NAT Rules	No	Yes	Yes
		Voice Quality Monitoring Settings	Read Profile Device VQM Settings Update Profile Device VQM Settings	Controls the ability to view or change Profile Device VQM Settings	No	Yes	Yes
		Syslog Settings	Read Profile Device Syslog Settings Update Profile Device Syslog Settings	Controls the ability to view or change Profile Device Syslog Settings	No	Yes	Yes
		Cloud VPN	Read Profile Device Cloud VPN Update Profile Device Cloud VPN	Controls the ability to view or change Profile Device Cloud VPN	No	Yes	Yes
		BFD Rules	Update Profile Device BFD Rules	Controls the ability to view or change Profile Device BFD Rules	No	Yes	Yes
		OSPF Areas	Read Profile Device OSPF Settings Update Profile Device OSPF Settings	Controls the ability to view or change Profile Device OSPF Settings	No	Yes	Yes
		BGP Settings	Read Profile Device BGP Settings Update Profile Device BGP Settings	Controls the ability to view or change Profile Device BGP Settings	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		Multicast Settings	Read Profile Device Multicast Settings Update Profile Device Multicast Settings	Controls the ability to view or change Profile Device Multicast Settings	No	Yes	Yes
		Cloud Security Service	Read Profile Device Cloud Security Service Update Profile Device Cloud Security Service	Controls the ability to view or change Profile Device Cloud Security Service	No	Yes	Yes
		Gateway Handoff Assignment	Update Profile Device Gateway Handoff Assignment	Controls the ability to view or change Profile Device Gateway Handoff Assignment	No	Yes	Yes
		Configure VLAN	Read Profile Device Settings	Controls ability to view or change Profile Device Settings	No	Yes	Yes
		Management IP	Read Profile Device Management IP Update Profile Device Management IP	Controls ability to view or change Profile Device Management IP	No	Yes	Yes
		Device Settings	Create Profile Device Settings Read Profile Device Settings Update Profile Device Settings Delete Profile Device Settings	Controls ability to view or change Profile Device Settings	No	Yes	Yes
		Interface Settings	Update Profile Device Interface Settings	Controls the ability to view or change Profile Device Interface Settings	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		Wi-Fi Radio Settings	Create Profile Device Wi-Fi Settings Read Profile Device Wi-Fi Settings Update Profile Device Wi-Fi Settings Delete Profile Device Wi-Fi Settings	Controls the ability to view or change Profile Device Wi-Fi Settings	No	Yes	Yes
		L2 Settings	Update Profile Device L2 Settings	Controls the ability to view or change Profile Device L2 Settings	No	Yes	Yes
		Multi-Source QoS	Read Profile Device Cloud VPN QoS Settings Update Profile Device Cloud VPN QoS Settings	Controls the ability to view or change Profile Device Cloud VPN QoS Settings	No	Yes	Yes
		SNMP Settings	Create Profile Device SNMP Settings Read Profile Device SNMP Settings Update Profile Device SNMP Settings Delete Profile Device SNMP Settings	Controls the ability to view or change Profile Device SNMP Settings	No	Yes	Yes
		NTP	Read Profile Device NTP Settings Update Profile Device NTP Settings	Controls the ability to view or change Profile Device NTP Settings	No	Yes	Yes
		Visibility Mode	Update Profile Device Config Visibility Mode	Controls the ability to view or change Profile Device Config Visibility Mode	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		Analytics Settings	Read Profile Device Analytics Settings Update Profile Device Analytics Settings	Controls the ability to view or change Profile Device Analytics Settings	No	Yes	Yes
			Create Profile Device Network Settings Read Profile Device Network Settings Update Profile Device Network Settings Delete Profile Device Network Settings	Controls the ability to view or change Profile Device Network Settings	No	Yes	Yes
	Business Policy		Profile Business Policy	Controls the ability to view or change profile business policy page	No	Yes	Yes
		SD-WAN Overlay Rate Limit	Read Profile Business Policy Rate Limit Update Profile Business Policy Rate Limit	Controls the ability the ability to read and update the rate limiting business policy feature	No	Yes	Yes
		Firewall Logging Syslog Forwarding Stateful Firewall	Configure Profile Firewall Logging	Grants the ability to configure profile level firewall logging	No	Yes	Yes
			Read Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No
			Read Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	No	No

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		Stateful Firewall Settings Network & Flood Protection Settings Edge Access	Create Edge Firewall Edge Access	Controls visibility and control of Stateful Firewall Settings, Network & Flood Protection Settings, and Edge Access on the profile firewall page	No	Yes	Yes
			Read Edge Firewall Edge Access			No	No
			Update Edge Firewall Edge Access			Yes	Yes
			Delete Edge Firewall Edge Access				
Configure	Edges		Create Edge	Grants the ability to view and manage Edge objects and their properties in general	Yes	Yes	Yes
			Read Edge			No	No
			Update Edge				
			Delete Edge			Yes	Yes
			Manage Edge			No	No
			Read Customer Profile	Grants the ability to view and edit enterprise configuration profiles	Yes	Yes	Yes
	New Edge	Authentication	Create Customer PKI	Grants the ability to view and manage enterprise PKI settings	Yes	No	No
	Select Edge/ Edges	Local Credentials	Read Overview Properties Local Credentials	Grants the ability to view and configure Edge local credentials	No	Yes	Yes
			Update Overview Properties Local Credentials				
	Select Edge/ Edges	Assign Profile	Assign Edge Profile	Grants the ability to assign profiles to Edges	No	Yes	Yes
	Select Edge/ Edges	Update Pre-Notifications	Update Edge Overview Properties Enable Alerts	Controls ability to view or change Edge alert configuration on the Edge overview page	No	Yes	Yes
	Select Edge/ Edges	Assign Edge License					
	Select Edge/ Edges	Update Customer Alerts					
		Edge Cluster	Read Edge Cluster	Grants the ability to view Edge clusters	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		Create Cloud Edge	Create DMZ Gateway	Grants the ability to create DMZ Gateways	No	Yes	Yes
	Profiles		Create Customer Profile	Grants the ability to view and edit enterprise configuration profiles	Yes	Yes	Yes
			Read Customer Profile				
			Update Customer Profile				
			Delete Customer Profile				
			Manage Customer Profile			No	No
		Duplicate Profile	Duplicate Customer Profile	Grants the ability to edit duplicate customer level profiles	No	Yes	Yes
			Create Profile	Grants access to view and manage profiles at any level	No	Yes	Yes
			Read Profile				
			Update Profile				
			Delete Profile				
	Object Groups		Create Object Group	Grants the ability to manage Object Group	Yes	Yes	Yes
			Read Object Group				
			Update Object Group				
			Delete Object Group				
			Manage Object Group			No	No
			Read Customer Profile	Grants the ability to view and edit enterprise configuration profiles	Yes	Yes	Yes
	Segments/ Networks		Create Network Addressing	Grants the ability to view and manage address block configuration in the legacy Network profile mode	Yes	Yes	Yes
			Read Network Addressing			No	No
			Update Network Addressing			Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
			Delete Network Addressing				
			Manage Network Addressing			No	No
			Create Customer Segment	Grants the ability to view and manage the creation of segments and their assignment to configuration profiles	No	Yes	Yes
			Read Customer Segment				
			Update Customer Segment				
			Delete Customer Segment				
	Overlay Flow Control		Create Overlay Flow Control	Grants the ability to view and manage data and configuration presented on the Overlay Flow Control page	No	Yes	Yes
			Read Overlay Flow Control				
			Update Overlay Flow Control				
			Delete Overlay Flow Control				
			Read Customer Profile	Grants the ability to view and edit enterprise configuration profiles	Yes	Yes	Yes
			Update Customer Profile				
	Network Services		Create Network Service	Grants the ability to view and manage services with the Network Services configuration block	Yes	Yes	Yes
			Read Network Service			No	No
			Update Network Service			Yes	Yes
			Delete Network Service				
			Manage Network Service			No	No
			Create Customer Keys	Grants the ability to view and manage enterprise security keys such as Edge administrator credentials and IPsec keys	Yes	Yes	Yes
			Read Customer Keys				
			Update Customer Keys				

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
			Read Customer Profile	Grants the ability to view and edit enterprise configuration profiles	Yes	Yes	Yes
		Edge Cluster	Create Edge Cluster Read Edge Cluster Update Edge Cluster Delete Edge Cluster	Controls the ability to create and configure Edge Clusters	No	Yes	Yes
		Cloud VPN Hubs	Create VPN Hub Network Service Read VPN Hub Network Service Update VPN Hub Network Service Delete VPN Hub Network Service	Grants the ability to manage VPN Hubs as Network Services	No	Yes	Yes
		Non SD-WAN Destinations via Gateway Non SD-WAN Destinations via Edge	Create Non SD-WAN Destination via Gateway Read Non SD-WAN Destination via Gateway Update Non SD-WAN Destination via Gateway Delete Non SD-WAN Destination via Gateway	Grants the ability to view and manage Non SD-WAN Destinations via Gateway and Non SD-WAN Destinations via Edge	No	Yes	Yes
		Cloud Security Service	Create Cloud Security Service Read Cloud Security Service Update Cloud Security Service Delete Cloud Security Service	Controls creation and configuration of third party cloud security services to which the traffic can be steered by business policy	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		VNFs	Create VNF Network Service Read VNF Network Service Update VNF Network Service Delete VNF Network Service	Grants the ability to manage VNF Network Services	No	Yes	Yes
		VNF Licenses	Create VNF License Network Service Read VNF License Network Service Update VNF License Network Service Delete VNF License Network Service	Grants the ability to manage VNF licenses with Network Services	No	Yes	Yes
		DNS Services	Create DNS Network Service Read DNS Network Service Update DNS Network Service Delete DNS Network Service	Controls the ability to create and configure DNS services for use in profiles	No	Yes	Yes
		Private Network Names	Create Private Network Name Network Service Read Private Network Name Network Service Update Private Network Name Network Service	Grants the ability to manage Private Network Name with Network Services	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
			Delete Private Network Name Network Service				
		Authentication Services	Create Authentication Service	Controls the creation and configuration of hosted 802.1x service providing LAN-side user authentication	No	Yes	Yes
			Read Authentication Service				
			Update Authentication Service				
			Delete Authentication Service				
		TACACS Services	Create Network Service	Grants the ability to view and manage services with the Network Services configuration block	Yes	Yes	Yes
			Read Network Service			No	No
			Update Network Service			Yes	Yes
			Delete Network Service				
			Create Customer Keys	Grants the ability to view and manage enterprise security keys such as Edge administrator credentials and IPsec keys	Yes	Yes	Yes
			Read Customer Keys				
			Update Customer Keys				
			Delete Customer Keys				
			Manage Customer Keys			No	No
		Cloud Subscriptions	Create Cloud Subscription Service	Grants the ability to view and manage the configuration of access to IAAS providers, such as Azure, AWS and Google Cloud	No	Yes	Yes
			Read Cloud Subscription Service				
			Update Cloud Subscription Service				
			Delete Cloud Subscription Service				
	Alerts & Notifications		Read Customer Alert Notification	Grants the ability to view and manage customer alert configuration	No	Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
			Create Customer Alert	Grants the ability to view and manage customer alert configuration and generated alerts	Yes	No	No
			Read Customer Alert			Yes	Yes
			Update Customer Alert				
			Delete Customer Alert			No	No
			Manage Customer Alert				
		SMS Alert	Update Customer SMS Alert	Grants the ability to configure SMS alerts at the customer level	No	Yes	Yes
	Customer		Update Enterprise	Grants the ability to view and manage Customers, from the Partner or Operator level	Yes	Yes	Yes
		Other Settings	Read User Agreement	Privilege granting access to configure the customer user agreement feature	Yes	No	No
			Update User Agreement				
Test & Troubleshoot			Read Diagnostics	Controls creation of and access to diagnostics bundles, both Edge and Gateway. Combine with Edge and Gateway privileges to control access to each type individually	Yes	Yes	Yes
	Remote Diagnostics		Create Remote Diagnostics	Grants access to view and execute remote diagnostics	No	No	No
			Read Remote Diagnostics			Yes	Yes
			Update Remote Diagnostics			No	No
			Delete Remote Diagnostics				
			Manage Remote Diagnostics			Yes	Yes

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		Gateway	Remote Cloud Traffic Routing		No	Yes	Yes
		Reset USB Modem	Remote Reset USB Modem	Grants the ability to execute the Edge USB modem reset remote action	No	Yes	Yes
		Scan for nearby Wi-Fi	Remote Scan for Wi-Fi Access Points	Grants the ability to execute the Edge Wi-Fi scan remote action	No	Yes	Yes
		VPN Test	Remote VPN Test	Grants the ability to execute the Edge VPN test remote action	No	Yes	Yes
	Remote Actions		Create Remote Actions Read Remote Actions Update Remote Actions Delete Remote Actions	Grants access to view and execute remote actions	No	Yes	Yes
		Select Edge > **Shutdown button**	Shutdown Edge	Grants the ability to execute the Edge shutdown remote action	No	Yes	Yes
		Select Edge > **Deactivate button**	Deactivate Edge	Grants the ability to execute the deactivate Edge remote action	No	Yes	Yes
	Diagnostic Bundles/ Packet Capture	404 resource not found page	Create Diagnostics Read Diagnostics Update Diagnostics Delete Diagnostics	Controls creation of and access to diagnostics bundles, both Edge and Gateway. Combine with Edge and Gateway privileges to control access to each type individually	Yes	Yes	Yes
			Manage Diagnostics			No	No

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
	Diagnostic Bundles/ Packet Capture	Request Diagnostic Bundle	Create Diagnostic Bundle	Grants the ability to view and request Diagnostic bundles as part of remote diagnostics functionality	No	Yes	Yes
		404 resource not found page	Read Diagnostic Bundle				
			Update Diagnostic Bundle				
		Delete Diagnostic Bundle	Delete Diagnostic Bundle				
		Request PCAP Bundle	Create PCAP Bundle	Grants the ability to view and request PCAP bundles as part of remote diagnostics functionality	No	Yes	Yes
		404 resource not found page	Read PCAP Bundle				
			Update PCAP Bundle			No	No
			Delete PCAP Bundle			Yes	Yes
	Diagnostic Bundles/ Packet Capture	404 resource not found page	Manage PCAP Bundle				
		Download Diagnostic Bundle	Download Edge Diagnostics	Grants the ability to download Edge Diagnostics	No	Yes	Yes
Administration							
	System Settings		Read Customer Delegation	Grants the ability to view and manage the delegation of privileges from the customer to Partners or the Operator	Yes	Yes	Yes
	General Information	General Information	Read Customer General Information	Controls visibility and control of Customer General Information on the System Settings General Information page	No	Yes	Yes
			Update Customer General Information				

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		Default Edge Authentication	Read Customer PKI Update Customer PKI	Grants the ability to view and manage enterprise PKI settings	Yes	No	No
		Edge Configuration	Read Customer Edge Settings Update Customer Edge Settings	Controls visibility and control of Customer Edge Settings on the System Settings General Information page	No	Yes	Yes
		Privacy Settings	Read Customer Privacy Settings Update Customer Privacy Settings	Controls visibility and control of Customer Privacy Settings on the System Settings General Information page	No	Yes	Yes
		Privacy Settings > **Enforce PCI**	Update Customer User	Grants the ability to view and manage Customer administrators	Yes	Yes	Yes
		Contact Information	Read System Settings Contact Info Update System Settings Contact Info	Controls visibility and control of System Settings Contact Info on the System Settings General Information page	No	Yes	Yes
	Authentication		Create Customer Authentication Read Customer Authentication Update Customer Authentication Delete Customer Authentication Manage Customer Authentication	Grants the ability to view and manage customer authentication mode, for example SSO, Radius or Native	Yes	Yes	Yes

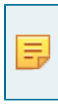
Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
		API Tokens	Read Customer Token	Grants the ability to view and manage authentication tokens at the Customer level	Yes	No	No
			Update Customer Token				
	Administrators		Create Customer User	Grants the ability to view and manage Customer administrators	Yes	Yes	Yes
			Read Customer User				
			Update Customer User				
			Delete Customer User				
			Manage Customer User			No	No
	Select Enterprise User	API Tokens	Create Customer Token	Grants the ability to view and manage authentication tokens at the Customer level	Yes	No	No
			Read Customer Token				
			Update Customer Token				
			Delete Customer Token				
			Manage Customer Token				
	Service Permissions		Create Service Permissions Package	Grants access to manage Service Permissions packages	Yes	No	No
			Read Service Permissions Package				
			Update Service Permissions Package				
			Delete Service Permissions Package				
			Manage Service Permissions Package				
	Edge Licensing		Create License	Grants the ability to view and manage Edge licensing	Yes	No	No
			Read License			Yes	Yes
			Update License				
			Delete License			No	No

Navigation Path in the Enterprise Portal	Name of the Tab	Elements in the Tab	Name of the Privilege	Description	Allow Privilege	Deny Privilege	Customizable
			Manage License				
VeloCloud Support Access Role			Create Customer Delegation	Grants the ability to view and manage the delegation of privileges from the customer to Partners or the Operator	Yes	Yes	Yes
			Read Customer Delegation				
			Update Customer Delegation				
			Delete Customer Delegation				
			Manage Customer Delegation			No	No

When the corresponding user privilege is denied, the Orchestrator window displays the *404 resource not found* error.

Below table provides a list of customizable feature privileges:

Table 15: Customizable Feature Privileges

Navigation Path in the Enterprise Portal	Name of the Tab	Name of the Privilege	Description
Configure > **Edges** > **Select Edges**	Overview	Assign Edge Profile	Grants the ability to assign a Profile to Edges
Configure > **Edges** > **Select Edges**	Firewall	Configure Edge Firewall Logging	Grants the ability to configure Edge level firewall logging
Configure > **Profiles** > **Select Profile**	Firewall	Configure Profile Firewall Logging	Grants the ability to configure Profile level firewall logging
Diagnostics > **Remote Actions**	**Select Edge** > **Deactivate**	Deactivate Edge	Grants the ability to reset the device configuration to its factory default state
Global Settings > **Enterprise Settings** > **Information Privacy Settings** > **SD-WAN PC**	Enforce PCI Compliance	Deny PCI Operations	Denies access to sensitive Customer data including PCAPs, etc., on the Edges and Gateways, for all users.
Diagnostics > **Diagnostic Bundles**	**Select Edge** > **Download Bundle**	Download Edge Diagnostics	Grants the ability to download Edge Diagnostics
s**Gateway Management** > **Diagnostic Bundles**	**Select Gateway** > **Download Bundle**	Download Gateway Diagnostics	Grants the ability to download Gateway Diagnostics
Configure > **Profiles**	Duplicate	Duplicate Customer Profile	Grants the ability to edit duplicate customer level Profiles
Configure > **Segments/ Configure** > **Profiles/ Configure** > **Edges**	Segments drop-down menu	Edit Tab Segments	Grants the ability to edit within the Segments tab
Configure > **Edges** > **Select Edge**	Device	Enable HA Cluster	Grants the ability to configure HA Clustering
Configure > **Edges** > **Select Edge**	Device	Enable HA Active/Standby Pair	Grants the ability to configure active/standby HA
Configure > **Edges** > **Select Edge**	Device	Enable HA VRRP Pair	Grants the ability to configure VRRP HA
Diagnostics > **Remote Diagnostics**	Clear ARP Cache	Remote Clear ARP Cache	Grants the ability to clear the ARP cache for a given interface
Diagnostics > **Remote Diagnostics** > **Gateway**	Cloud Traffic Routing (drop-down menu)	Remote Cloud Traffic Routing	Grants the ability to route cloud traffic remotely
Diagnostics > **Remote Diagnostics**	DNS/DHCP Service Restart	Remote DNS/DHCP Restart	Grants the ability to restart the DNS/DHCP service
Diagnostics > **Remote Diagnostics**	Flush Flows	Remote Flush Flows	Grants the ability to flush the Flow table, causing user traffic to be re-classified
Diagnostics > **Remote Diagnostics**	Flush NAT	Remote Flush NAT	Grants the ability to flush the NAT table
Diagnostics > **Remote Diagnostics** > **LTE SIM Switchover**	LTE Switch SIM Slot  **Note:** This is for 610-LTE and 710 5G devices only.	Remote LTE Switch SIM Slot	Grants the ability to activate the SIM Switchover feature. After the test is successful, you can check the status from **Monitor** > **Edges** > **Overview tab**
Diagnostics > **Remote Diagnostics**	List Paths	Remote List Paths	Grants the ability to view the list of active paths between local WAN links and each peer
Diagnostics > **Remote Diagnostics**	List current IKE Child SAs	Remote List current IKE Child SAs	Grants the ability to use filters to view the exact Child SAs you want to see

Navigation Path in the Enterprise Portal	Name of the Tab	Name of the Privilege	Description
Diagnostics > **Remote Diagnostics**	List current IKE SAs	Remote List Current IKE SAs	Grants the ability to use filters to view the exact SAs you want to see
Diagnostics > **Remote Diagnostics**	MIBs for Edge	Remote MIBS for Edge	Grants the ability to dump Edge MIBs
Diagnostics > **Remote Diagnostics**	NAT Table Dump	Remote NAT Table Dump	Grants the ability to view the contents of the NAT table
Diagnostics > **Remote Diagnostics**	**Select Edge** > **Rebalance Hub Cluster**	Remote Rebalance Hub Cluster	Grants the ability to either redistribute Spokes in Hub Cluster or redistribute Spokes excluding this Hub
Diagnostics > **Remote Actions**	Reset USB Modem	Remote Reset USB Modem	Grants the ability to execute the Edge USB modem reset remote action
Diagnostics > **Remote Diagnostics**	Scan for Wi-Fi Access Points	Remote Scan for Wi-Fi Access Points	Grants the ability to scan the Wi-Fi functionality for the VeloCloud Edge
Diagnostics > **Remote Diagnostics**	System Information	Remote System Information	Grants the ability to view system information such as system load, recent WAN stability statistics, monitoring services
Diagnostics > **Remote Diagnostics**	VPN Test	Remote VPN Test	Grants the ability to execute the Edge VPN test remote action
Diagnostics > **Remote Diagnostics**	WAN Link Bandwidth Test	Remote WAN link Bandwidth Test	Grants the ability to re-test the bandwidth of a WAN link
Diagnostics > **Remote Actions**	**Select Edge** > **Shutdown**	Shutdown Edge	Grants the ability to execute the Edge shutdown remote action
Service Settings > **Alerts & Notifications**	**Notifications** > **Email/SMS**	Update Customer SMS Alert	Grants the ability to configure SMS alerts at the customer level
Monitor > **Edges** > **Select Edge**	Top Sources	View Edge Sources	Grants the ability to view Monitor Edge Sources tab
Monitor > **Firewall**	Firewall Logging	View Firewall Logs	Grants the ability to view collected firewall logs
Monitor > **Edges** > **Select Edge**	Top Sources	View Flow Stats	Grants the ability to view collected flow statistics
Monitor > **Firewall Logs**	Firewall Logs	View Profile Firewall Logging	Grants the ability to view the details of firewall logs originating from Arista VeloCloud Edges
Configure > **Profiles**	Firewall	View Stateful Firewall	Grants the ability to view collected flow statistics
Configure > **Profiles**	**Firewall tab** > **Configure Firewall** > **Syslog Forwarding**	View Syslog Forwarding	Grants the ability to view logs that are forwarded to a configured syslog collector
Operator portal > **Gateway Management**	Gateways	View Tab Gateway List	Grants the ability to view the Gateway list tab
Operator portal > **Administration**	Operator Profiles	View Tab Operator Profile	Grants the ability to view and configure settings within the Operator Profile menu tab
Monitor > **Edges** > **Select Edge**	Top Sources	View User Identifiable Flow Stats	Grants the ability to view potentially user-identifiable flow source attributes.

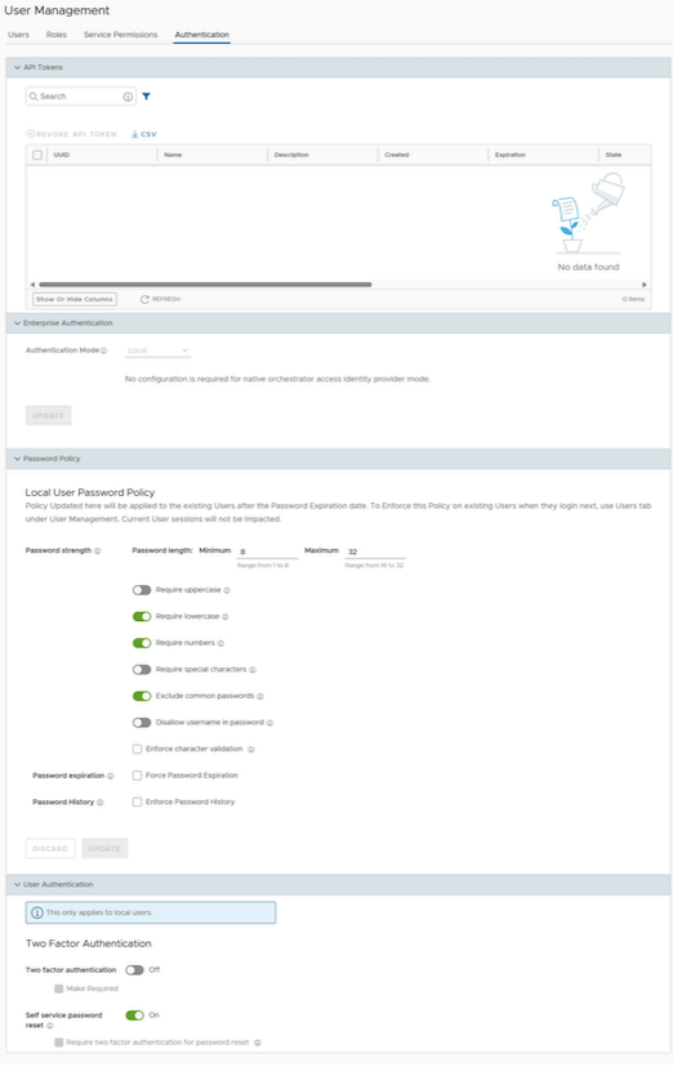
3.4 Authentication

The Authentication feature allows users to set the authentication mode for an Enterprise user and view the existing API tokens.

To access the **Authentication** tab:

1. In the **Enterprise** portal, on the **Global Navigation** bar, expand the **Enterprise Applications** drop-down menu.
2. Select the **Global Settings** service.
3. From the left menu, select **User Management**, then select the **Authentication** tab. The following screen appears:

   Figure 3-11: Authentication Tab



4. **API Tokens:**
   - Users can access the Orchestrator APIs using token-based authentication, irrespective of the authentication mode. Users can view the API tokens issued to the Enterprise users. If required, revoke the API tokens.
   - By default, the API Tokens are activated. To deactivate them, contact your Operator.

> **Note:** Enterprise Administrator should manually delete inactive Identity Provider (IdP) users from the Orchestrator to prevent unauthorized access via API Token.

- The following are the options available in this section:

Table 16: API Tokens - Options and Descriptions

Option	Description
Search	Enter a search term to search for the matching text across the table. Use the advanced search option to narrow your results.
Revoke API Token	Select the token and select this option to revoke it. Only an Operator Super User or the user associated with an API token can revoke the token.
CSV	Select this option to download the complete list of API tokens in a .csv file format.
Columns	Select the columns to be displayed or hidden on the page.
Refresh	Select to refresh the page and display the most current data.

For information on creating and downloading API tokens, see API Tokens.

5. **Enterprise Authentication:**

   a. Select one of the following Authentication modes:

   - **Local:** This is the default option and requires no additional configuration.

   b. **Single Sign-On:** Single Sign-On (SSO) is a session and user authentication service that allows users to log in to multiple applications and websites with a single set of credentials. Integrating an SSO service with Orchestrator enables Orchestrator to authenticate users from OpenID Connect (OIDC)-based Identity Providers (IdPs).

   c. For information on configuring Single Sign-On for Enterprise Users, see Enterprise Settings.

   To enable Single Sign On (SSO) for Orchestrator, enter the **Orchestrator** application details in the Identity Provider (IdP). **Global Settings- Enterprise Authentication** each of the following links for step-by-step instructions to configure the following supported IdPs:

   - Azure AD

     > **Note:** Customers using Azure must use the **/v2.0** endpoint version.

   - Okta
   - OneLogin
   - PingIdentity

Configure the following options for **Single Sign-on** authentication mode.

Figure 3-12: Enterprise Authentication

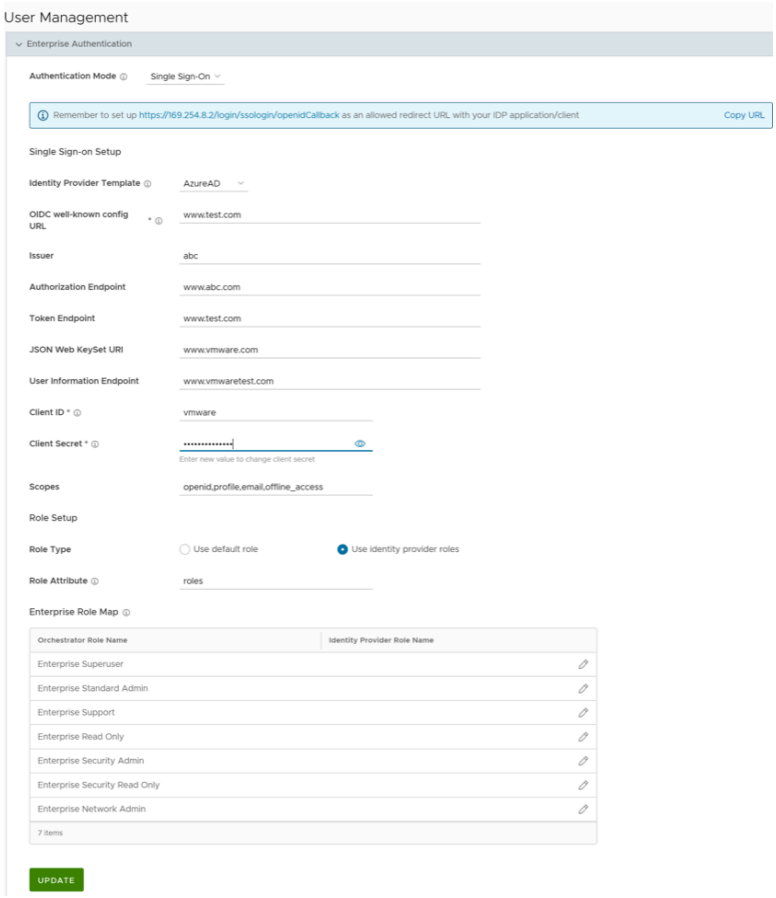


Table 17: Enterprise Authentication - Options and Descriptions

Option	Description
Identity Provider Template	From the drop-down menu, select your preferred Identity Provider (IdP) configured for Single Sign On. This pre-populates fields specific to your IdP. **Note:** Users can also manually configure your own IdPs by selecting **Others** from the drop-down menu.
OIDC well-known config URL	Enter the OpenID Connect (OIDC) configuration URL for your IdP. For example, the URL format for Okta will be: `https://{oauth-provider-url}/.well-known/openid-configuration`.
Issuer	This field is auto-populated based on your selected IdP.
Authorization Endpoint	This field is auto-populated based on your selected IdP.
Token Endpoint	This field is auto-populated based on your selected IdP.
JSON Web KeySet URI	This field is auto-populated based on your selected IdP.
User Information Endpoint	This field is auto-populated based on your selected IdP.
Client ID	Enter the client identifier provided by your IdP.
Client Secret	Enter the client secret code provided by your IdP, which the client uses to exchange an authorization code for a token.
Scopes	This field is auto-populated based on your selected IdP.
Role Type	Select one of the following two options: • Use the default role • Use identity provider roles **Note:** When using IdP-provided roles, it is necessary to map each possible role defined in the IdP to one or more predefined Orchestrator roles. Use this option if there are subsets of users that need fewer permissions. Otherwise, use the "default role" option so that all users who sign in via SSO have that role.
Role Attribute	Enter the name of the attribute set in the IdP to return roles.
Enterprise Role Map	Map the IdP-provided roles to each of the Enterprise user roles.

Select **Update** to save the entered values. The SSO authentication setup is complete in the Orchestrator.

6. **User Authentication:** Configure two-factor authentication and self-service password reset in this section.

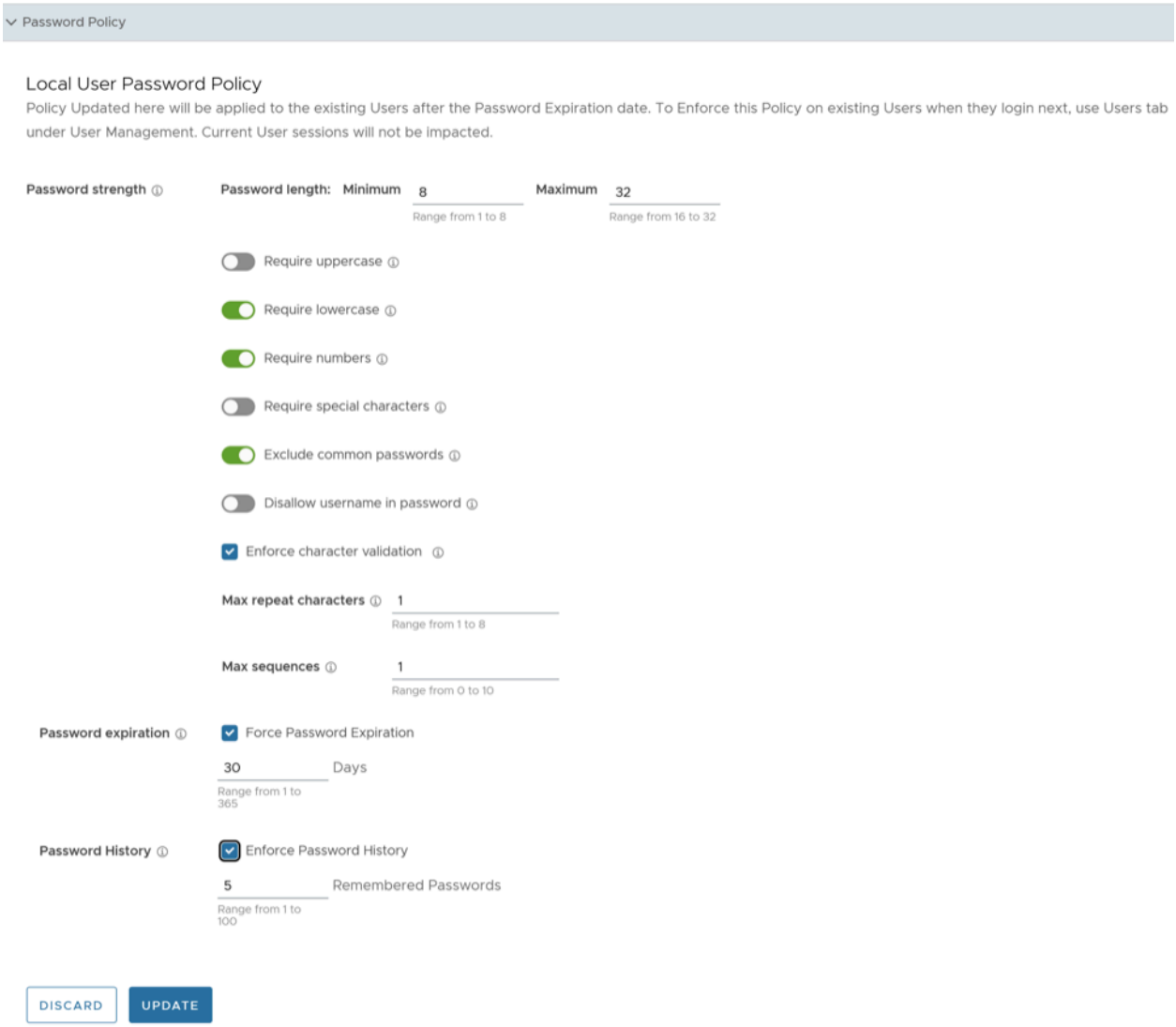
Table 18: User Authentication - Options and Descriptions

Option	Description
Two factor authentication	Choose from the following options: • **None**: Select this option to disable the two-factor authentication. • **TOTP**: Select this option to activate the two-factor authentication via TOTP. The TOTP (Time-based One Time Passcode) authentication is more secure than the SMS-based authentication. After a user selects this option, a confirmation dialog appears. Activating TOTP prevents users from switching back to the SMS option. For more information, refer to Time-Based One Time Passcode (TOTP). • **SMS**: Select this option to activate the two-factor authentication via SMS. Only users with mobile phone numbers associated with their user accounts can activate this feature. This option appears only when a user has previously selected SMS. After the user selects TOTP and saves the selection, the SMS option disappears from the screen, preventing the user from switching back to it.
Require two factor authentication for Login	Selecting the **TOTP** option enables this checkbox. Select the **Yes** checkbox to make two-factor authentication mandatory for user logins, preventing users from skipping TOTP enrollment before proceeding with authentication. If the checkbox remains unselected, then users can skip the enrollment and immediately complete authentication. However, the Orchestrator continues to prompt users to enroll on every login until they complete enrollment.
Self service password reset	Enable this feature to allow users to change their passwords using the link on the Login screen.
Require two factor authentication for password reset	Select the **Yes** checkbox to make two-factor authentication mandatory during password resets.

7. Select **Update** to save the changes.

8. **Password Policy:** Starting from the Release 6.4.0, Enterprise Superusers can set their own password policies directly from the **Authentication** screen. This section appears when the **Authentication Mode** is set to **Local**.

Figure 3-13: Password Policy



a. Configure the following parameters:

Table 19: Password Policy - Options and Descriptions

Option	Description
Password Strength	
Password length	Specify the minimum and maximum length of the password. The minimum length value must be in the range from 1 to 8, whereas the maximum length value must be in the range from 16 to 32. The default values are 8 and 32, respectively.
Require uppercase	Slide the toggle button to activate this parameter. If activated, the password must contain at least one uppercase letter.
Require lowercase	Slide the toggle button to activate this parameter. If activated, the password must contain at least one lowercase letter.
Require numbers	Slide the toggle button to activate this parameter. If activated, the password must contain at least one number.
Require special characters	Slide the toggle button to activate this parameter. If activated, the password must contain at least one special character. Hover the mouse on the information icon to view the valid special characters.
Exclude common passwords	Slide the toggle button to activate this parameter. If activated, users are not allowed to use the most commonly used passwords.
Disallow username in password	Slide the toggle button to activate this parameter. If activated, the username cannot be set as the password.
Enforce character validation	Select this check box to ensure that the password meets the following criteria for strength and security: • **Max repeat characters:** Enter the maximum number of characters that can be repeated in the password. The accepted range is from 1 to 8. The default value is 1. • **Max sequences:** Enter the maximum number of consecutive characters or sequences that can be allowed in the password. The accepted range is from 0 to 10. The default value is 1.
Password Expiration	Select the **Force Password Expiration** check box and set the duration after which users must change their passwords. The accepted range is from 1 to 365. The default value is 30.
Password History	Select the **Enforce Password History** check box and enter a value that determines the number of previously created passwords that cannot be reused as the new password. This enhances the overall security. The accepted range is from 1 to 100. The default value is 5.



Note: Only Enterprise Superusers can modify these settings. Enterprise Standard Admins can view this section, but cannot modify anything.

b. Select **Update** to save the new settings.

c. Select **Discard** to reset the settings.

d. Users who are already logged in are not affected by this update. To enforce the new password policy, an Enterprise Superuser must perform the following steps:

1. Navigate to **User Management** > **Users**, and select a user.
2. Select **Password** > **Enforce Policy**, and then select **Yes, Enforce**. This forces the selected user to change their password as per the new password policy. Current user sessions are not terminated.

The **Password Modified** column on the **Users** screen displays the date and time when the user has modified the password.

9. **Session Limits:** The following options are available in this section. After configuring the options, select **Update** to save the selected values.

Table 20: Session Limits - Options and Descriptions

Option	Description
Concurrent logins	Allows setting a limit on concurrent logins per user. By default, **Unlimited** is selected, indicating that unlimited concurrent logins are allowed for the user.
Session limits for each role	Allows setting a limit on the number of concurrent sessions based on user role. By default, **Unlimited**= is selected, indicating that unlimited sessions are allowed for the role. **Note:** The roles already created by the Enterprise on the **Roles** tab are displayed in this section.

Note: To view this section, an Operator user must navigate to **Orchestrator** > **System Properties**, and set the value of the system property `session.options.enableSessionTracking` to **True**.

3.4.1 Time-Based One Time Passcode (TOTP)

Release 7.0.0 introduces a new feature, the Time-based One-Time Passcode (TOTP) mechanism, for Two Factor Authentication (2FA). This feature replaces the current text-based 2FA mechanism (SMS) and mandates all future 2FA to use TOTP. Arista recommends selecting the TOTP authentication because it is more secure than the SMS-based authentication.

Note: Only an Operator user can activate the TOTP feature for Partners and Customers.

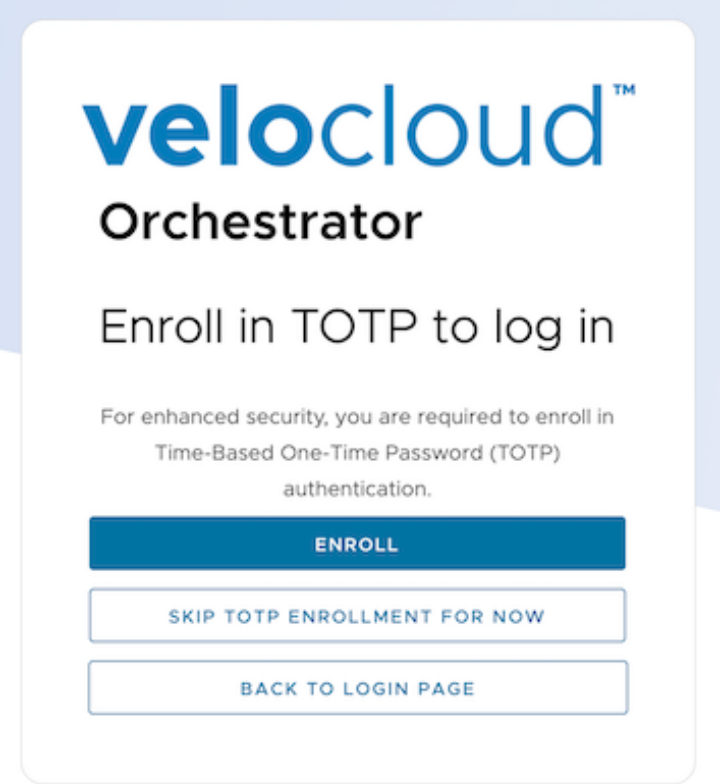
When a user enables TOTP under **User Management** > **Authentication**, the Orchestrator prompts all users who log in to either enroll (if not already enrolled) or provide the TOTP to complete authentication.

The procedure below explains the enrollment flow.

1. After enabling the TOTP, re-login to the VeloCloud Orchestrator.

The following screen appears if the user has not completed the TOTP enrollment.

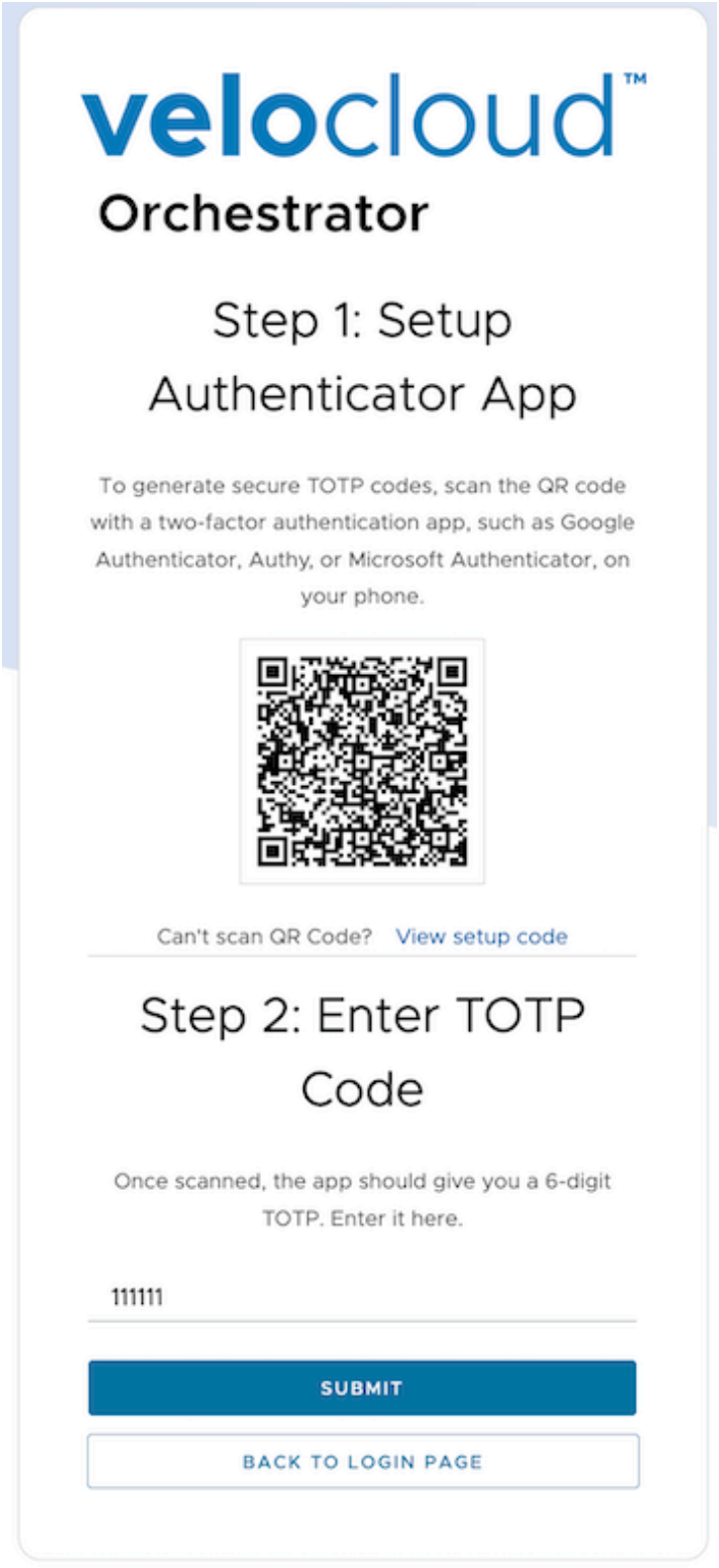
Figure 3-14: TOTP Enrollment



2. **Enroll**: Perform the below steps.
   a. Click **Enroll** to start the TOTP enrollment.
      The email address verification screen appears.
   b. After verifying the email address, enter the OTP sent to that email.

c. Select **Verify**.

Figure 3-15: Setup the Authenticator App



d. Scan the QR code using an authenticator application on your mobile phone.

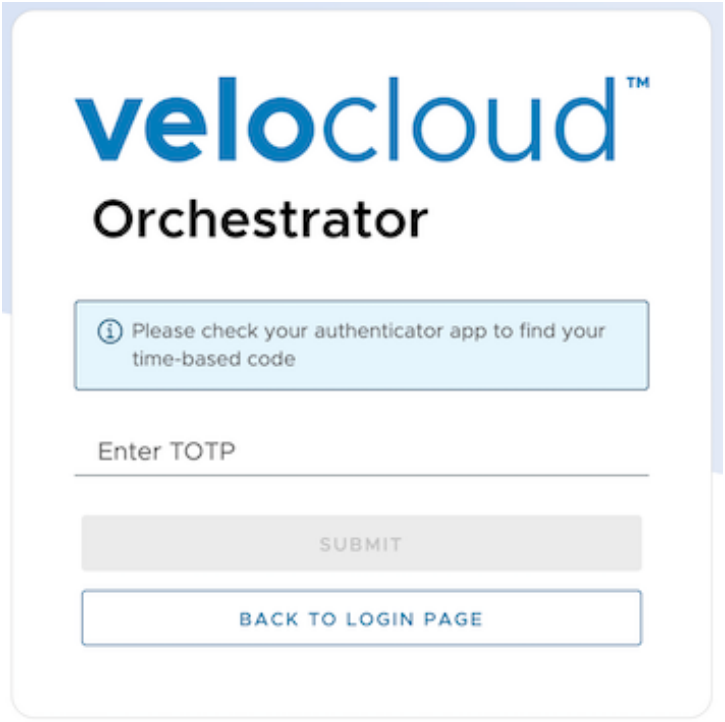
e. Enter the six digit TOTP, and then select **Submit**.
A success message appears on the screen.

f. Select the **Back To Login Page** button.

g. Enter the username and password, and select **Login**.

h. Enter the new TOTP generated on the authenticator application, and then select **Submit**.

Figure 3-16: Enter TOTP



Note: The Authenticator application generates a new TOTP every 30 seconds.

3. Click **Skip TOTP Enrollment for now** to skip the enrollment temporarily. This option appears only when the **Require two factor authentication for Login** checkbox under the **User Management** > **Authentication** > **User Authentication** section remains clear.
4. Click **Back to Login Page** to go to the user login page.

Resetting a TOTP

Users can reset TOTP from the **My Account** page.

1. On the User Information panel, click **My Account**.
2. In the **Profile** tab, select the **Reset TOTP Enrollment** button.

Note: Changing the account password causes the TOTP reset. However, resetting TOTP does not require changing the password.

For more information, see the topic *Configure User Account Details* in the *Arista VeloCloud Operator Guide.*

3.4.2 Configure Microsoft Entra ID for Single Sign On

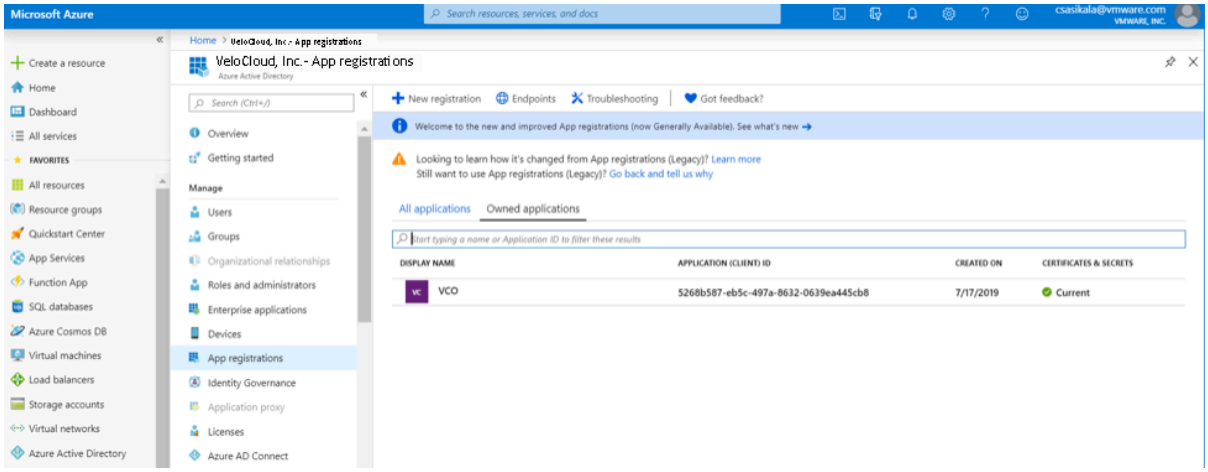
Ensure you have a Microsoft Entra ID account to sign in.

Important: Before configuring the Identity Provider, you must define an SSO Domain for your Enterprise. Navigate to **Global Settings** > **Enterprise Settings** and populate the **Domain** field. This domain will be used as the unique identifier on the SSO login screen.

To set up an OpenID Connect (OIDC)-based application in Microsoft Entra ID for Single Sign On (SSO), perform the following steps:

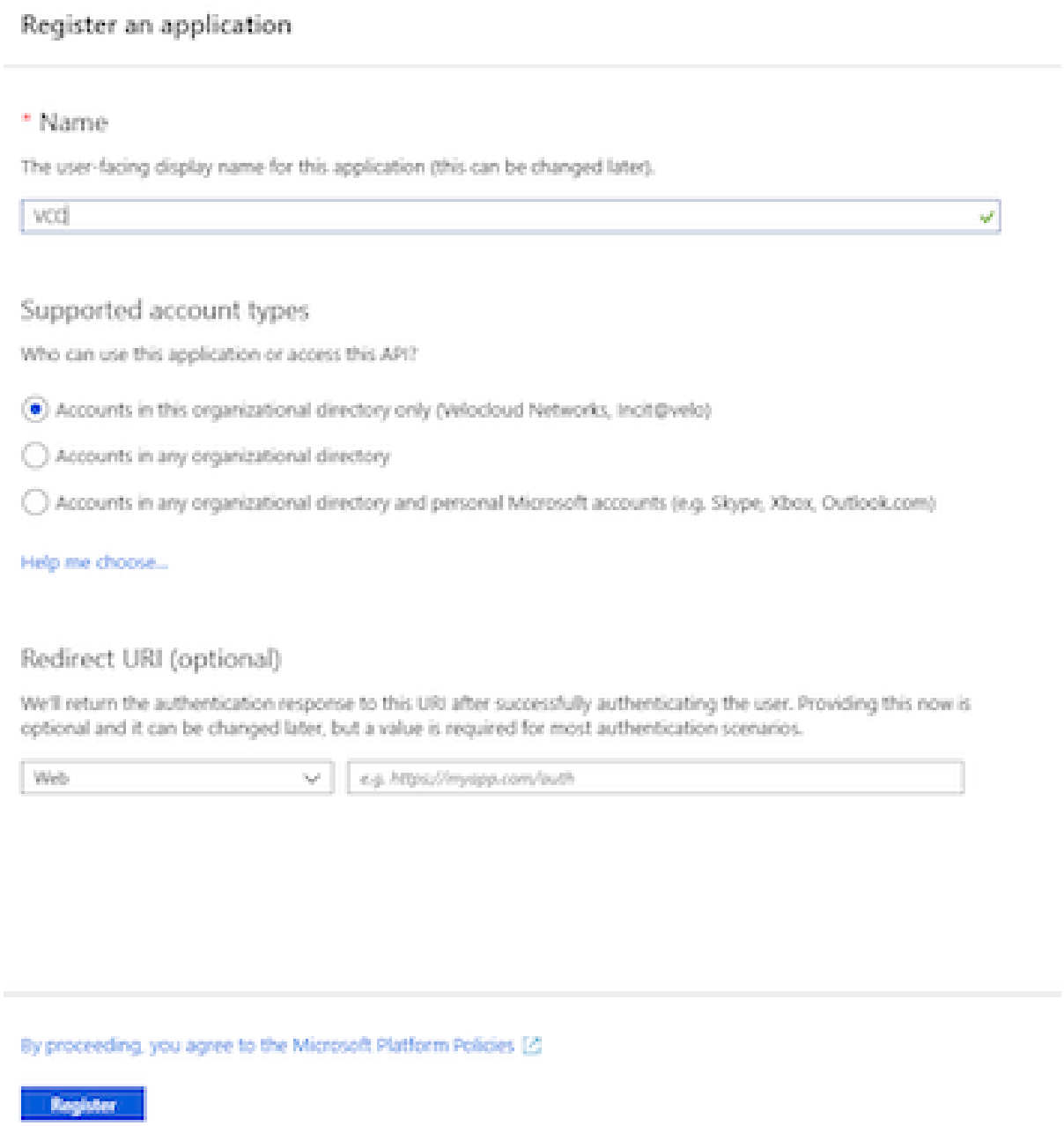
1. Log in to your Microsoft Azure account as an Admin user. The **Microsoft Azure** home screen appears.
2. To create a new application:
   a. Search and select the **Microsoft Entra ID** service.

Figure 3-17: Microsoft Azure



b. Go to **App registration** > **New registration**. The **Register an application** screen appears.

Figure 3-18: Register an Application



c. In the **Name** field, enter the name for your Orchestrator application.

d. In the **Redirect URL** field, enter the redirect URL that your Orchestrator application uses as the callback endpoint.

   In the Orchestrator application, at the bottom of the **Configure Authentication** screen, you can find the redirect URL link. Ideally, the redirect URL will be in this format: `https://<Orchestrator URL>/login/ssologin/openidCallback`.

e. Select **Register**.

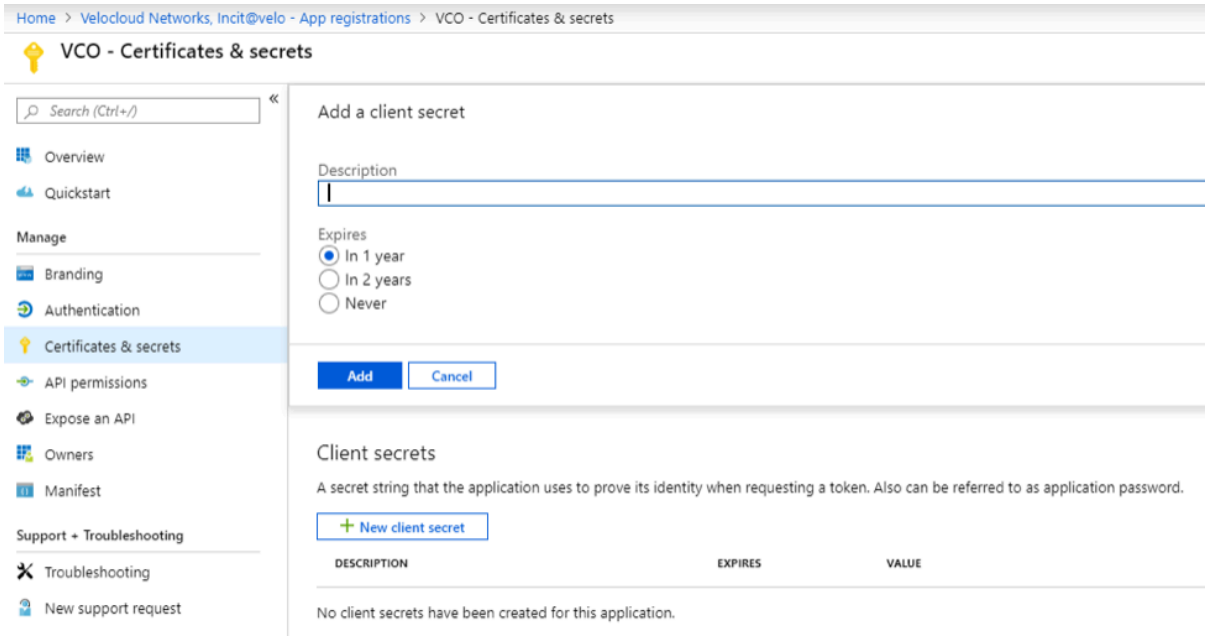
Your Orchestrator application is registered and displayed in the **All applications** and **Owned applications** tabs. Make sure to note down the Client ID/Application ID to use during SSO configuration in Orchestrator.

f. Select **Endpoints** and copy the well-known OIDC configuration URL to be used during the SSO configuration in Orchestrator.

g. To create a client secret for your Orchestrator application, on the **Owned applications** tab, select your Orchestrator application.

h. Go to **Certificates and secrets** > **New client secret**. The **Add a client secret** screen appears.

Figure 3-19: Add a Client Secret

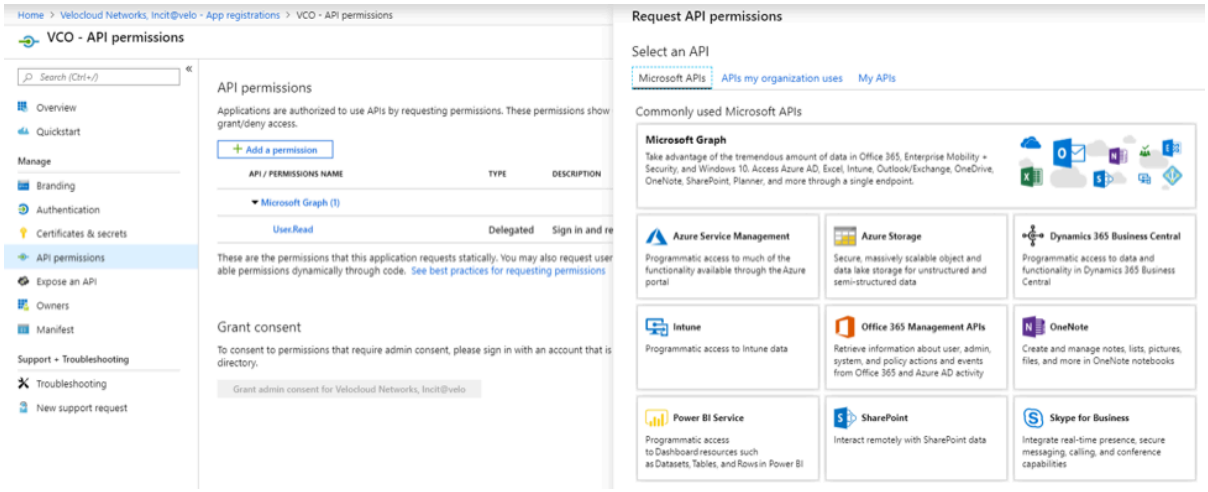


i. Provide details such as description and expiry value for the secret and select **Add**.

The client secret is created for the application. Note down the new client secret value to be used during the SSO configuration in the Orchestrator.

j. To configure permissions for your Orchestrator application, select your Orchestrator application and go to **API permissions** > **Add a permission**. The **Request API permissions** screen appears.

Figure 3-20: API Permissions



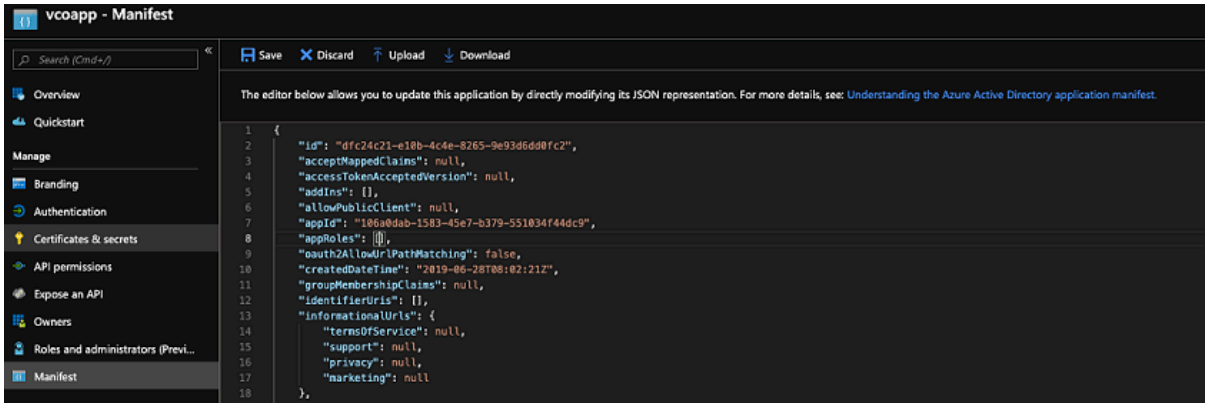
k. Select **Microsoft Graph** then select **Application permissions** as the type of permission for your application.

l. Under **Select permissions**, from the **Directory** drop-down menu, select **Directory.Read.All** and from the **User** drop-down menu, select **User.Read.All**.

m. Select **Add permissions**.

n. To add and save roles in the manifest, select your Orchestrator application and from the application **Overview** screen, select **Manifest**. A web-based manifest editor opens, allowing you to edit the manifest within the portal. Optionally, you can select **Download** to edit the manifest locally, and then use **Upload** to reapply it to your application.

Figure 3-21: Manifest Screen Options



o. In the manifest, search for the appRoles array and add one or more role objects as shown in the following example, and select **Save**.

Note: The value property from appRoles must be added to the **Identity Provider Role Name** column of the **Role Map** table, located on the **Authentication** tab, in order to map the roles correctly.

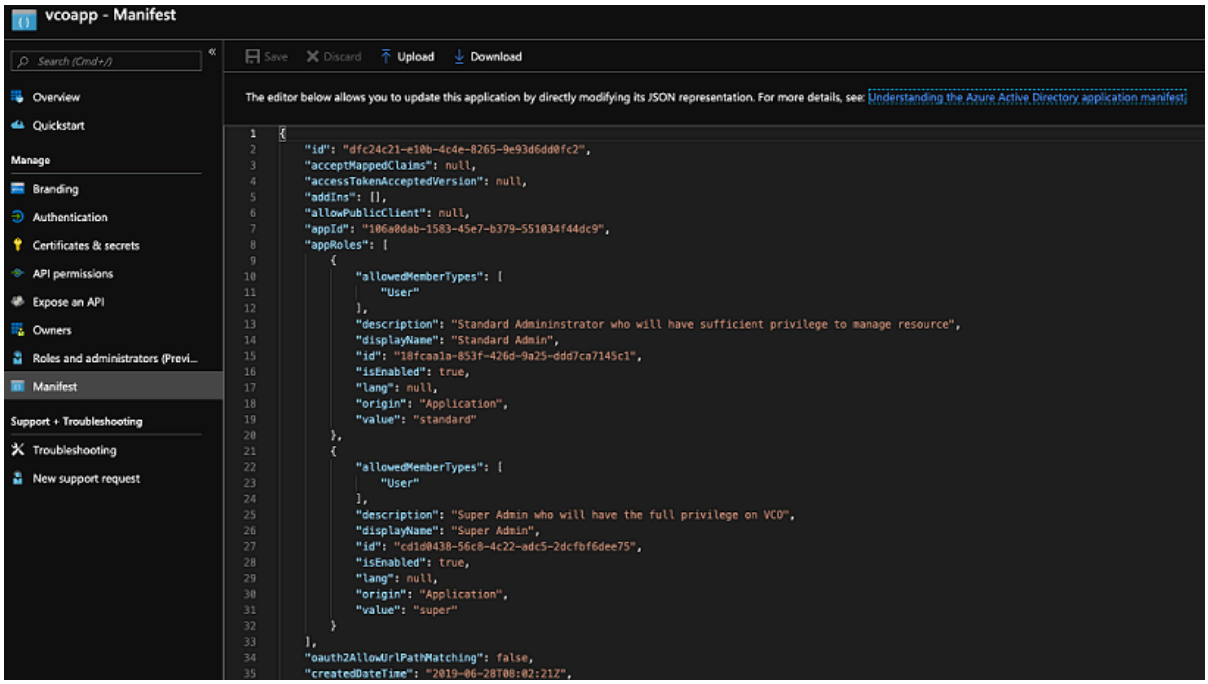
Example: Sample role objects

```
{
            "allowedMemberTypes": [
                "User"
            ],
            "description": "Standard Administrator who will have sufficient privilege to
 manage resource",
            "displayName": "Standard Admin",
            "id": "18fcaa1a-853f-426d-9a25-ddd7ca7145c1",
            "isEnabled": true,
            "origin": "Application",
            "value": "standard"
        },
        {
            "allowedMemberTypes": [
                "User"
            ],
            "description": "Super Admin who will have the full privilege on Orchestrator",
            "displayName": "Super Admin",
            "id": "cd1d0438-56c8-4c22-adc5-2dcfbf6dee75",
            "isEnabled": true,
            "origin": "Application",
            "value": "superuser"
        }
```

Note: Make sure to set id to a newly generated Global Unique Identifier (GUID) value. You can generate GUID values online using web-based tools (for example, https://www.guidgen.com/), or by running the following commands:

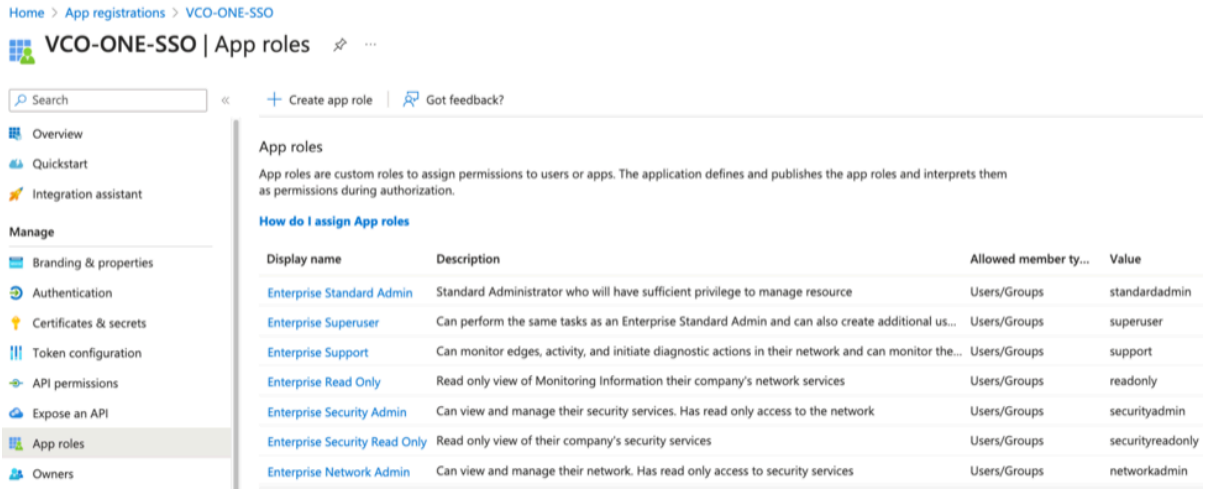
- Linux/OSX - uuidgen
- Windows - powershell [guid]::NewGuid()

Figure 3-22: Manifest



Roles are manually set up in the Orchestrator and must match the ones configured in the **Microsoft Azure** portal.

Figure 3-23: App Roles



3. To assign groups and users to your Orchestrator application:

> **Note:** Ensure that all assigned users have a fully populated **Email** field under the **Contact Information** tab of their Entra ID user profile. VeloCloud requires this claim to authenticate the user successfully.

   a. Go to **Microsoft Entra ID** > **Enterprise applications**.

   b. Search and select your Orchestrator application.

   c. Select **Users and groups** and assign users and groups to the application.

   d. Select **Submit**. You have completed setting up an OIDC-based application in Microsoft Entra ID for SSO.

Configure Single Sign On in Orchestrator.

3.4.3 Configure Okta for Single Sign On

Ensure you have an Okta account to sign in.

To support OpenID Connect (OIDC)-based Single Sign On (SSO) from Okta, you must first set up an application in Okta. To set up an OIDC-based application in Okta for SSO, perform the following steps:

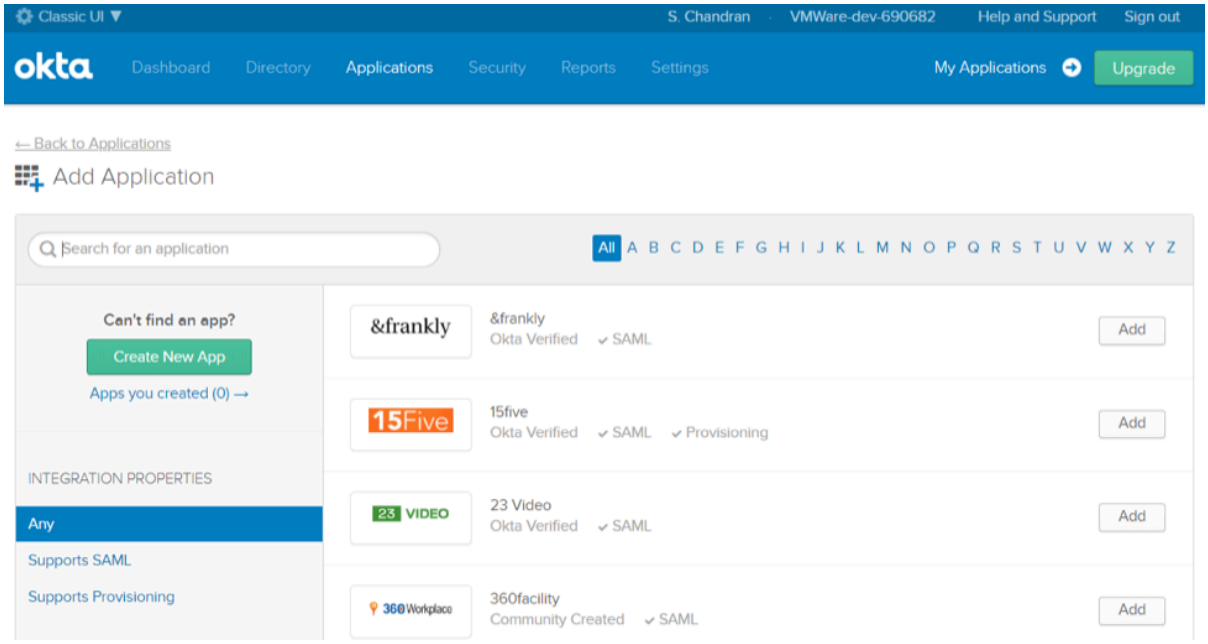
1. Log in to your Okta account as an Admin user. The **Okta** home screen appears.

> **Note:** If you are in the **Developer Console** view, then you must switch to the Classic UI view by selecting **Classic UI** from the **Developer Console** drop-down list.

2. To create a new application:

a. In the upper navigation bar, select **Applications** > **Add Application**. The **Add Application** screen appears.

Figure 3-24: Add Application

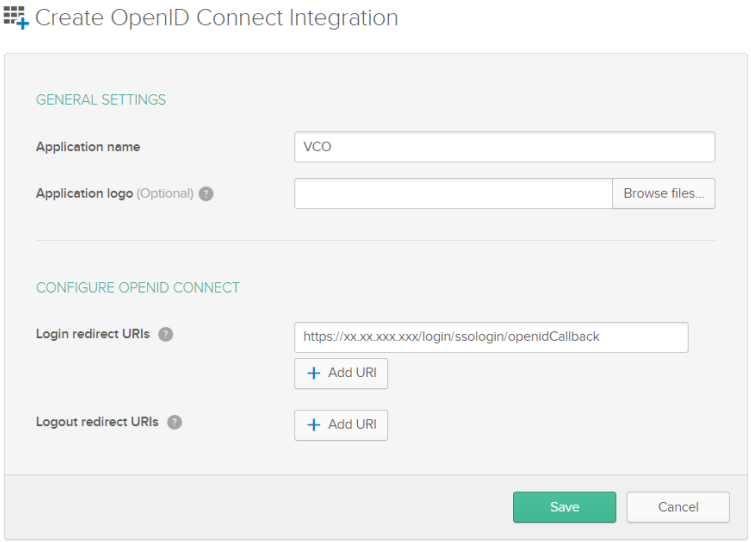


b. Select **Create New App**.
The **Create a New Application Integration** dialog box appears.

c. From the **Platform** drop-drop menu, select **Web**.

d. Select **OpenID Connect** as the Sign on method then select **Create**.
The **Create OpenID Connect Integration** screen appears.

Figure 3-25: Create OpenID Connect Integration



e. Under the **General Settings** area, in the **Application name** text box, enter the name for your application.

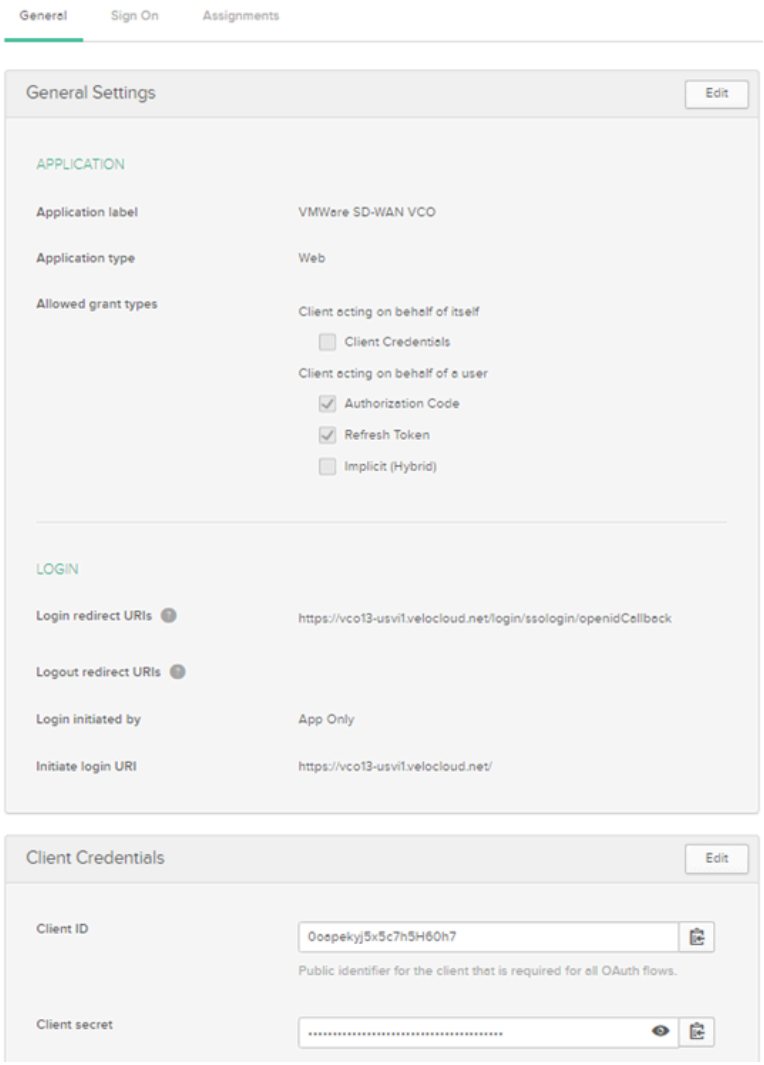
f. Under the **CONFIGURE OPENID CONNECT** area, in the **Login redirect URIs** text box, enter the redirect URL that your Orchestrator application uses as the callback endpoint.

   In the Orchestrator application, at the bottom of the **Configure Authentication** screen, you can find the redirect URL link. Ideally, the Orchestrator redirect URL will be in this format: `https://<Orchestrator URL>/login/ssologin/openidCallback`.

g. Select **Save**. The newly created application page appears.

h. On the **General** tab, select **Edit** then select **Refresh Token** for Allowed grant types. Now, select **Save**. Note down the Client Credentials (Client ID and Client Secret) to be used during the SSO configuration in the Orchestrator.

   Figure 3-26: General Tab



i. Select the **Sign On** tab and under the **OpenID Connect ID Token** area, select **Edit**.

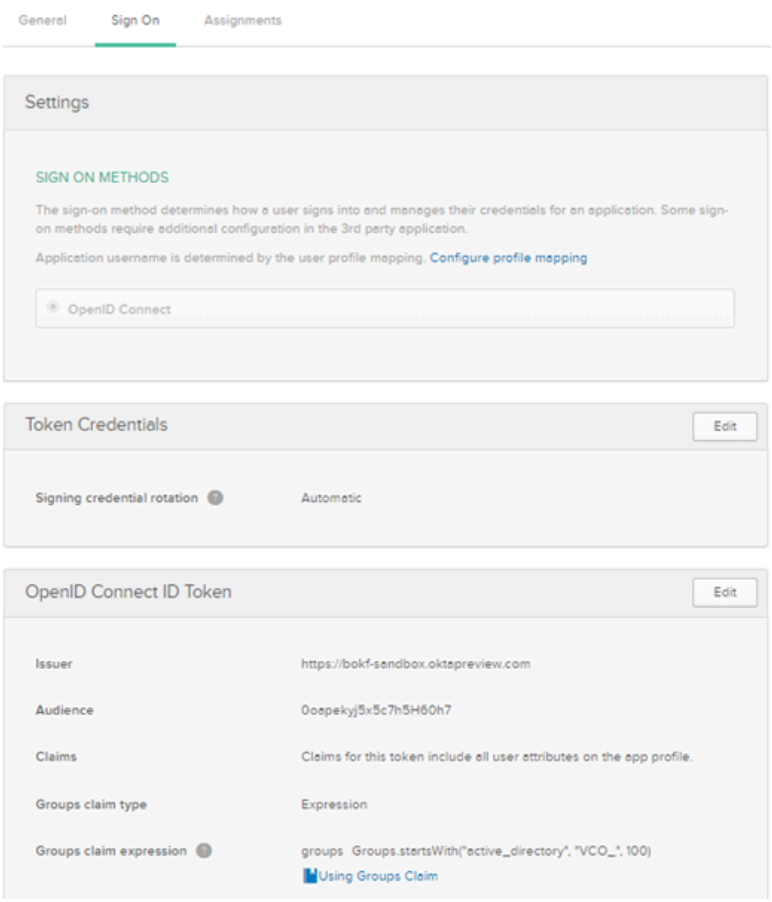
j. From the **Groups claim type** drop-down menu, select **Expression**. By default, the Groups claim type is set to **Filter**.

k. In the **Groups claim expression** text box, enter the claim name that will be used in the token, and an Okta input expression statement that evaluates the token.

l. Select **Save**.

The application is set up in IDP. You can assign user groups and users to your Orchestrator application.

Figure 3-27: Sign On Tab



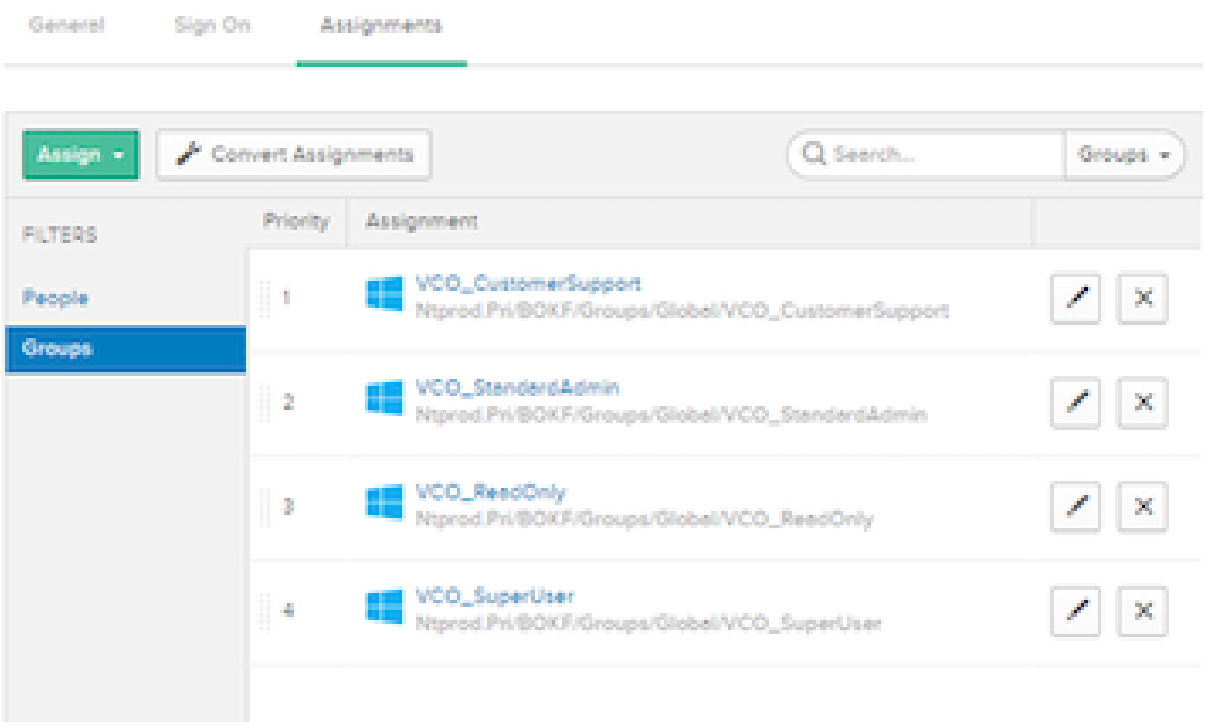
3. To assign groups and users to your Orchestrator application:

a. Go to **Application** > **Applications**, and select your Orchestrator application link.

b. On the **Assignments** tab, from the **Assign** drop-down menu, select **Assign to Groups** or **Assign to People**. The **Assign <Application Name> to Groups** or **Assign <Application Name> to People** dialog box appears.

c. Select **Assign** next to available user groups or users you want to assign the Orchestrator application, and select **Done**. The users or user groups assigned to the Orchestrator application are displayed.

Figure 3-28: Assignments Tab



You have completed setting up an OIDC-based application in Okta for SSO.

Configure Single Sign On in Orchestrator.

3.4.4 Configure OneLogin for Single Sign On

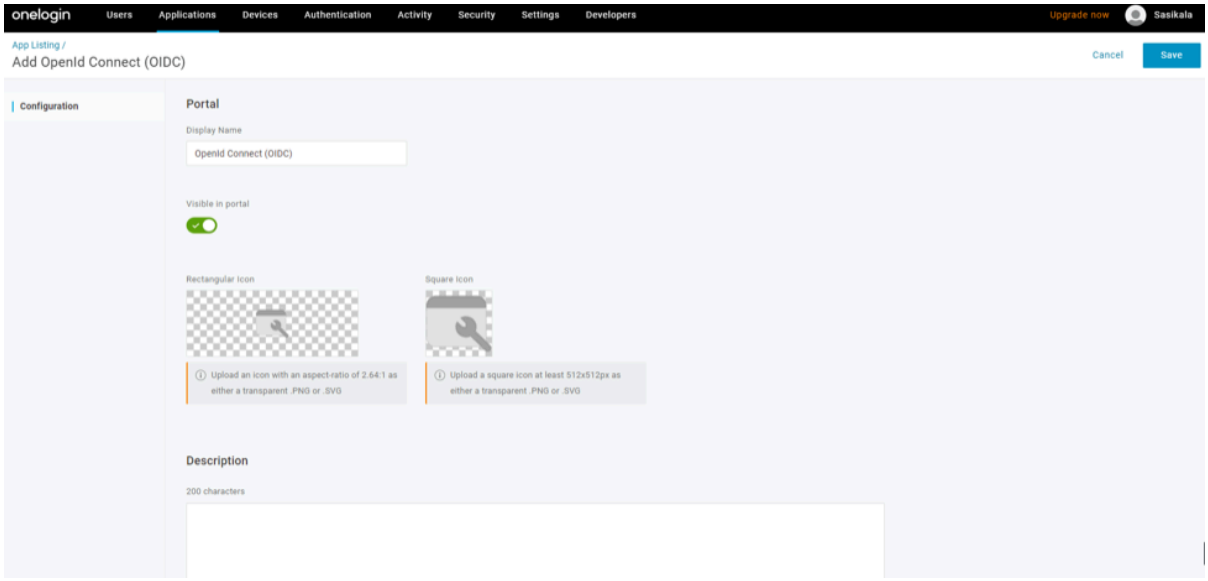
Ensure you have a OneLogin account to sign in.

To set up an OpenID Connect (OIDC)-based application in OneLogin for Single Sign On (SSO), perform the steps below:

1. Log in to your OneLogin account as an Admin user. The **OneLogin** home screen appears.
2. To create a new application:
   a. In the upper navigation bar, select **Apps** > **Add Apps**.

b. In the **Find Applications** text box, search for “OpenId Connect” or “oidc”, then select the **OpenId Connect (OIDC)** app. The **Add OpenId Connect (OIDC)** screen appears.

Figure 3-29: Add OpenID Connect (OIDC)

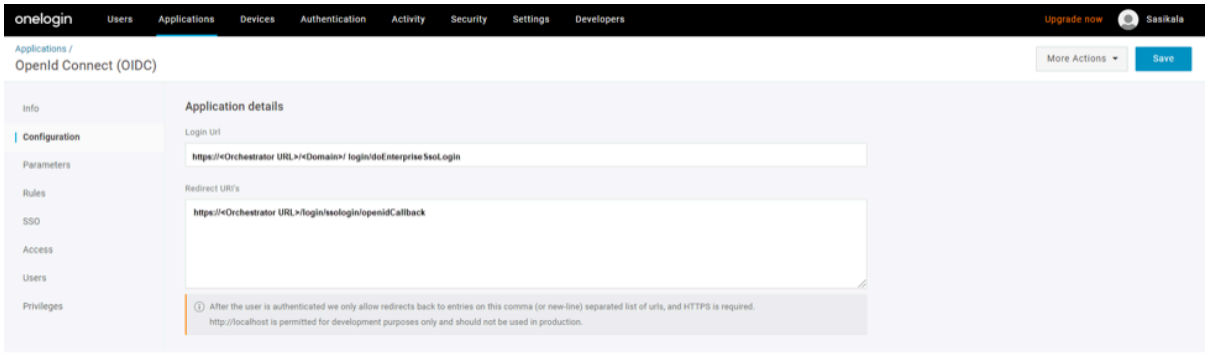


c. In the **Display Name** text box, enter the name for your application and select **Save**.

d. On the **Configuration** tab, enter the Login URL (auto-login URL for SSO) and the Redirect URI that Orchestrator uses as the callback endpoint, and select **Save**.

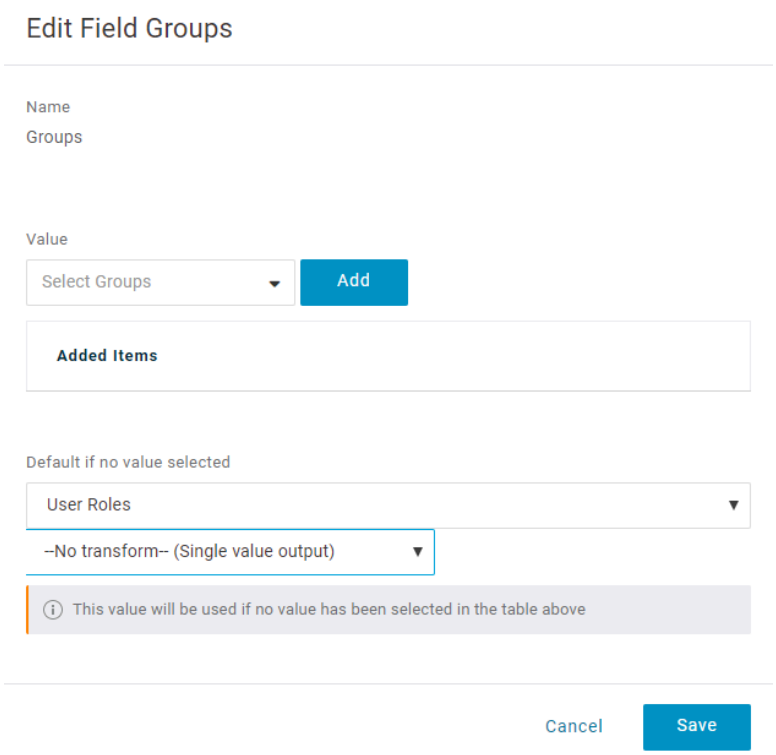
- **Login URL**- The login URL will be in this format: `https://<Orchestrator URL>/<Domain>/ login/doEnterpriseSsoLogin`. Where, <Domain> is the domain name of your Enterprise that you must have already set up to enable SSO authentication for the Orchestrator. You can get the Domain name from the **Enterprise portal** > **Administration** > **System Settings** > **General Information** page.
- **Redirect URI's**- The Orchestrator redirect URL will be in this format: `https://<Orchestrator URL>/login/ssologin/openidCallback`. In the Orchestrator application, at the bottom of the **Authentication** screen, you can find the redirect URL link.

Figure 3-30: Configuration Settings



e. On the **Parameters** tab, under **OpenId Connect (OIDC)**, double select **Groups**. The **Edit Field Groups** pop-up appears.

Figure 3-31: Edit Field Groups

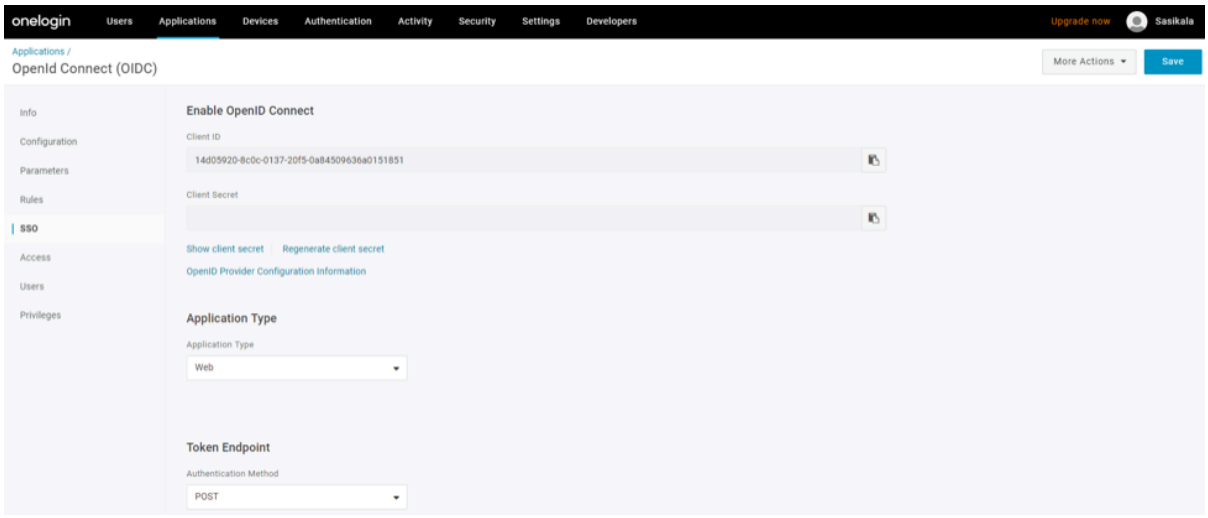


f. Configure User Roles with value “--No transform--(Single value output)” to be sent in the groups attribute and select **Save**.

g. On the **SSO** tab, from the **Application Type** drop-down menu, select **Web**.

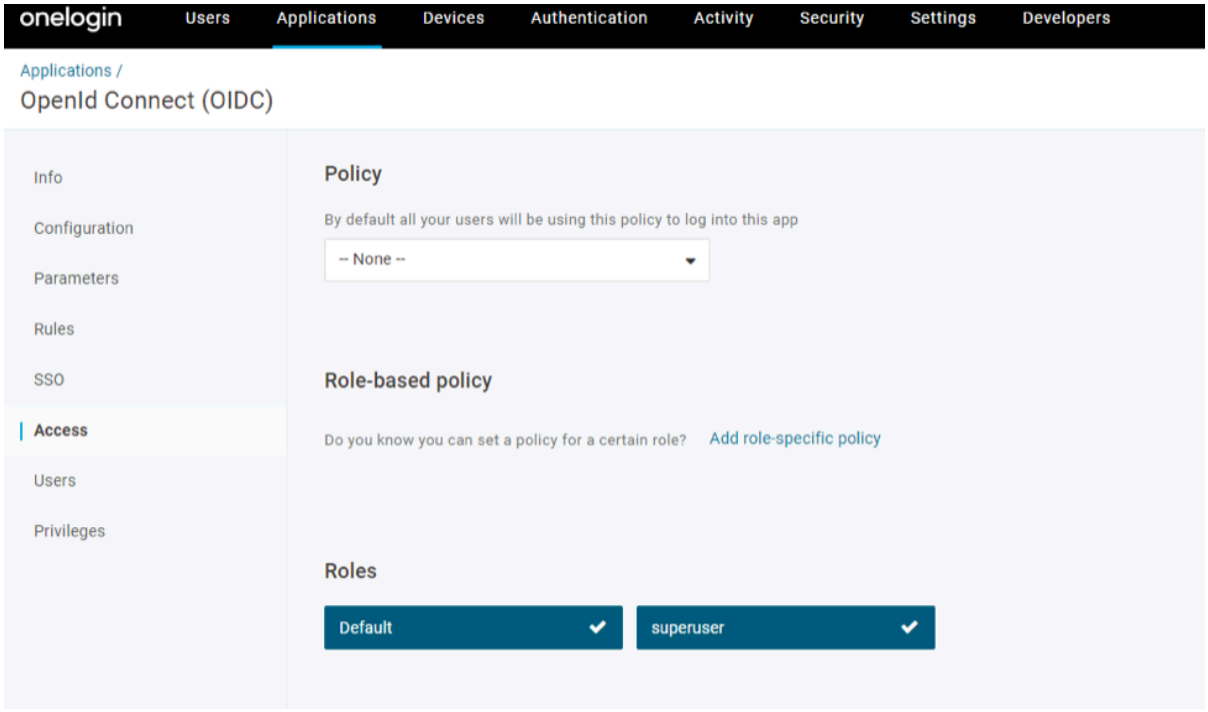
h. From the **Authentication Method** drop-down menu, select **POST** as the Token Endpoint and select **Save**. Note down the Client Credentials (Client ID and Client Secret) to be used during the SSO configuration in the Orchestrator.

Figure 3-32: SSO Settings



i. On the **Access** tab, choose the roles that will be allowed to login and select **Save**.

Figure 3-33: Access Settings



3. To add roles and users to your Orchestrator application:

a. Select **Users** and select a user.

b. On the **Application** tab, from the **Roles** drop-down menu, on the left, select a role to be mapped to the user.

c. Select **Save Users**. You have completed setting up an OIDC-based application in OneLogin for SSO.

Configure Single Sign On in Orchestrator.

3.4.5 Configure PingIdentity for Single Sign On

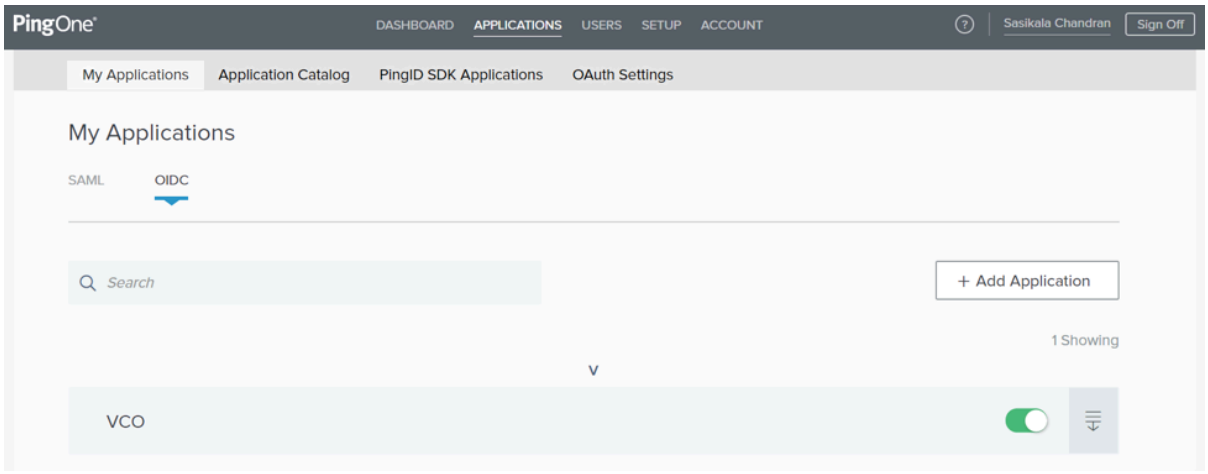
Ensure you have a PingOne account to sign in.

> **Note:** Currently, Orchestrator supports PingOne as the Identity Partner (IDP). However, any PingIdentity product supporting OIDC can be easily configured.

To set up an OpenID Connect (OIDC)-based application in PingIdentity for Single Sign On (SSO), perform the following steps:

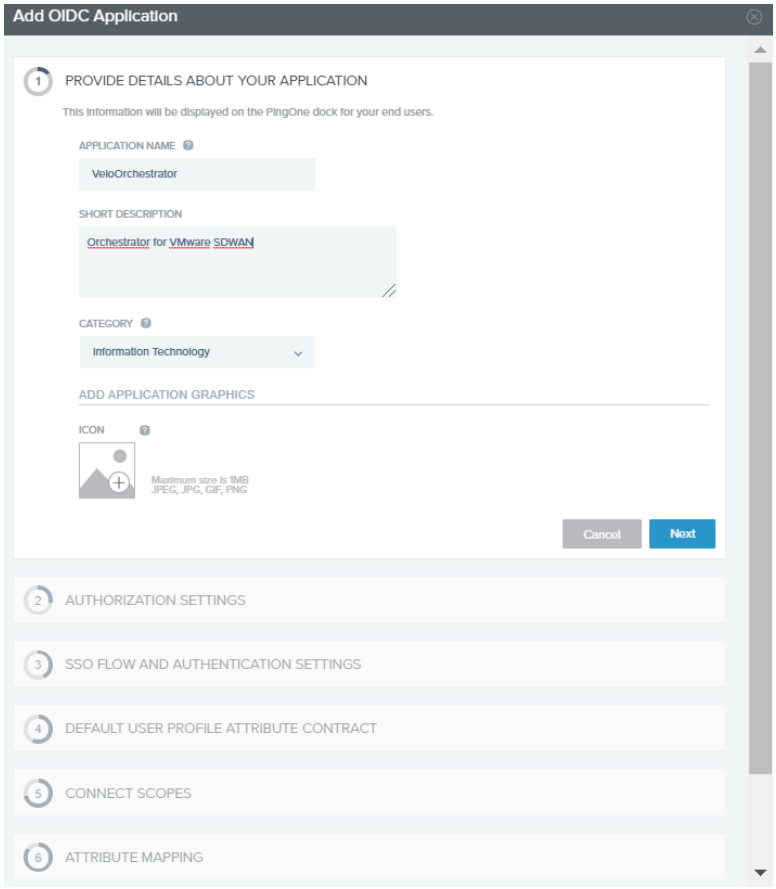
1. Log in to your PingOne account as an Admin user. The **PingOne** home screen appears.
2. To create a new application:
   a. In the upper navigation bar, select **My Applications**.

Figure 3-34: My Applications Tab



b. On the **My Applications** tab, select **OIDC** , then select **Add Application**. The **Add OIDC Application** pop-up window appears.

Figure 3-35: Add OIDC Application



c. Provide basic details such as name, short description, and category for the application and select **Next**.

d. Under **AUTHORIZATION SETTINGS**, select **Authorization Code** as the allowed grant types then select **Next**. Note down the Discovery URL and the Client Credentials (Client ID and Client Secret) to be used during SSO configuration in Orchestrator.

e. Under **SSO FLOW AND AUTHENTICATION SETTINGS**, provide valid values for Start SSO URL, and Redirect URL and select **Next**.

In the Orchestrator application, at the bottom of the **Configure Authentication** screen, you can find the redirect URL link. Ideally, the Orchestrator redirect URL will be in this format: `https://<Orchestrator URL>/login/ssologin/openidCallback`. The Start SSO URL will be in this format: `https://<Orchestrator URL>/<domain name>/login/doEnterpriseSsoLogin`.

f. Under **DEFAULT USER PROFILE ATTRIBUTE CONTRACT**, select **Add Attribute** to add additional user profile attributes.

g. In the **Attribute Name** text box, enter *group_membership* then select the **Required** check box, then select **Next**.

> **Note:** The *group_membership* attribute is required to retrieve roles from PingOne.

h. Under **CONNECT SCOPES**, select the scopes that can be requested for your Orchestrator application during authentication then select **Next**.

i. Under **Attribute Mapping**, map your identity repository attributes to the claims available to your Orchestrator application.

> **Note:** The minimum required mappings for the integration to work are email, given_name, family_name, phone_number, sub, and group_membership (mapped to memberOf).

j. Under **Group Access**, select all user groups that should have access to your Orchestrator application then select **Done**. The application will be added to your account and will be available on the **My Application** screen.

You have completed setting up an OIDC-based application in PingOne for SSO.

Configure Single Sign On in Orchestrator.

Chapter 4

Enterprise Settings

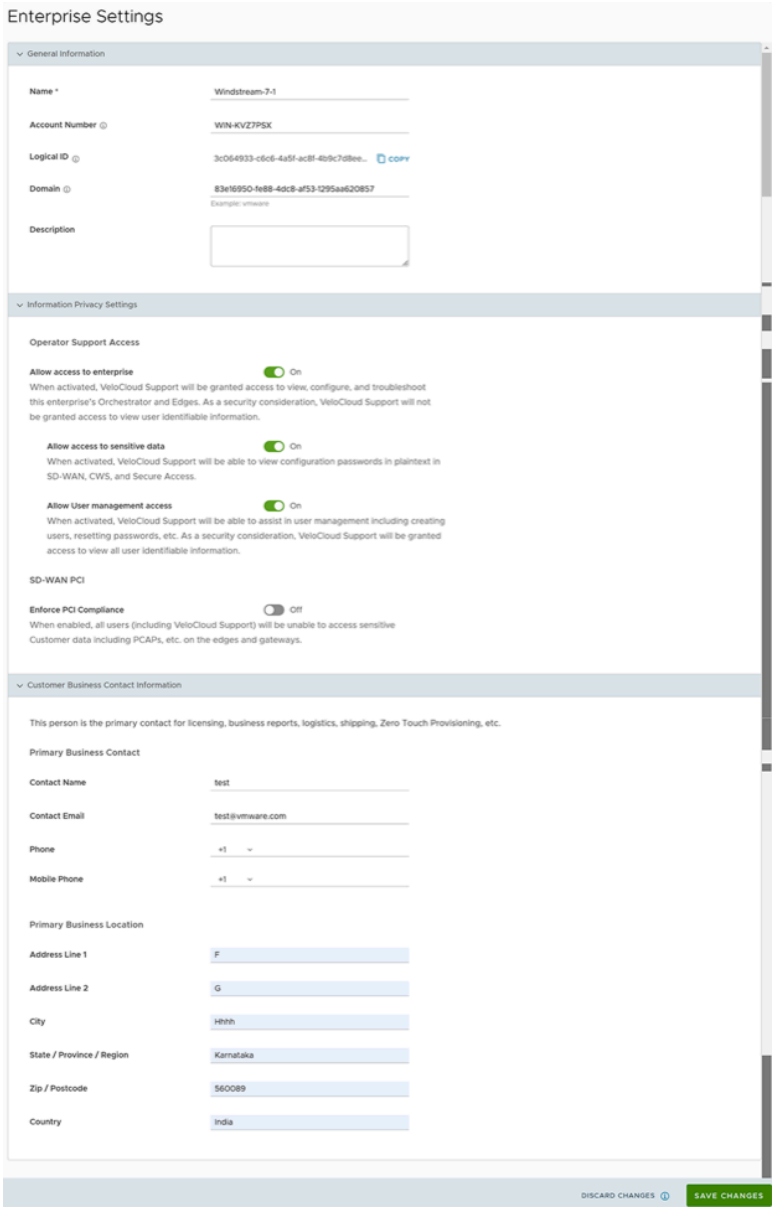
The Enterprise Settings option allows configuring user information, privacy settings, and primary contact details for Enterprise users.

Follow the below steps to configure Enterprise Settings:

1. In the **Enterprise** portal, on the **Global Navigation** bar, expand the **Enterprise Applications** drop-down menu.
2. Select the **Global Settings** service.
3. From the left menu, select **Enterprise Settings**.

The following screen appears:

Figure 4-1: Enterprise Settings



4. Configure the following parameters, and then select **Save Changes**:

Table 21: Enterprise Settings - Options and Descriptions

Option	Description
General Information	
Name	Enter the name of the new Customer. This field is mandatory.
Account Number	Enter the account number for the Customer.
Logical ID	Displays a unique identifier. Copy this unique ID to be used by the APIs.
Domain	The domain name activates SSO authentication for Orchestrator.  **Note:** This Domain is not the domain of the IdP, but of the Enterprise. It does not correspond to any URL domain. It is only present to differentiate various SSO configurations.
Description	Enter a description. This field is optional.
Information Privacy Settings	Use the toggle button to allow or deny access to sensitive data and user management. Turn on the **Enforce PCI Compliance** to prevent operations that are disallowed for PCI compliance reasons. Currently, the only operation this option prevents is the ability to request PCAP Diagnostic Bundles from the Edge.
Customer Business Contact Information	Enter primary contact details of the Customer such as contact name, email address, phone number, location details etc.

After configuring the Enterprise Settings, set up the SSO Authentication. Before setting up the SSO authentication, set up Users and Roles. For more information, see User Management - Enterprise.

Log into the Orchestrator using Single Sign On. For additional information, see the topic *Log in to Orchestrator using Single Sign On* in *Arista VeloCloud SD-WAN Administration Guide*.

Chapter 5

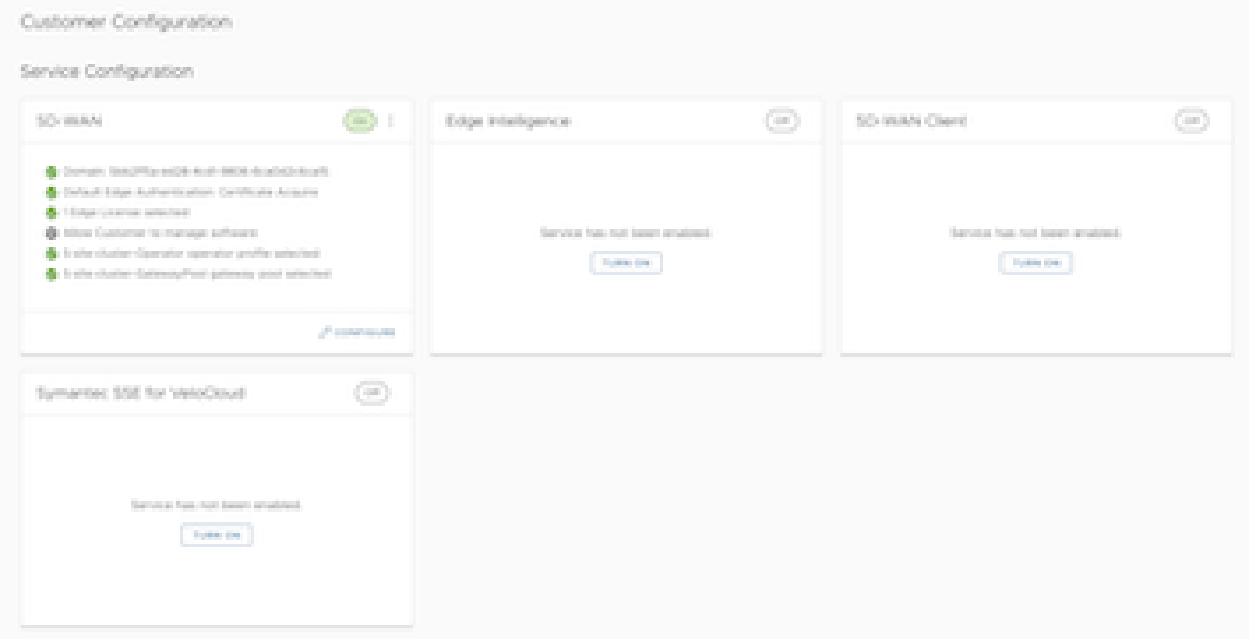
Configure Customers

After creating a Customer, configure the feature options and settings that the Customer can access. Choose the settings that the Customer can modify. Only an Operator user can configure Customer settings.

After creating a new Customer, the **Customer Configuration** page appears, where users can configure the Customer settings. Users can also navigate to the **Customer Configuration** page by following the steps below:

1. In the **Enterprise** portal, on the **Global Navigation** bar, expand the **Enterprise Applications** drop-down menu.
2. Select the **Global Settings** service.
3. From the left menu, select **Customer Configuration**. The following screen appears:

   Figure 5-1: Customer Configuration

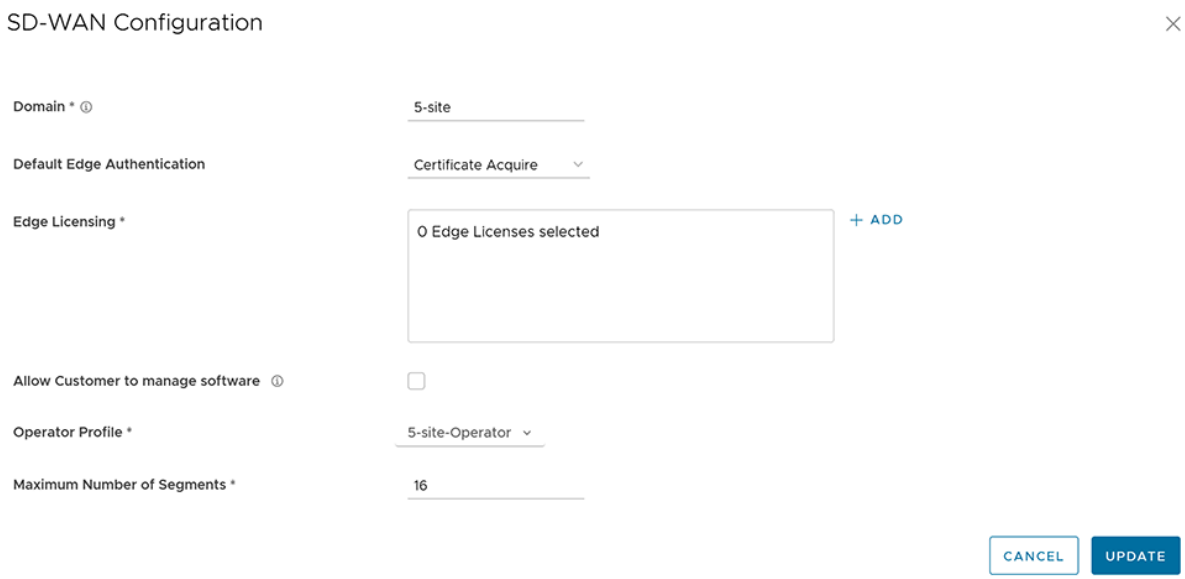


4. The **Service Configuration** section includes the **SD-WAN** service. Select the **Turn On** button to activate the service.
5. Select the vertical ellipsis in the top-right corner of the tile to turn off or configure the service. Alternatively, use the **Configure** option in the bottom-right corner of the tile to configure the service. The tile displays the configuration summary.

> **Note:** On selecting the **Turn off** option, a pop-up window appears asking for confirmation. Select the checkbox and select **Turn Off Service**.

a. Selecting the **Configure** option displays the following pop-up window.

Figure 5-2: SD-WAN Configuration



b. Configure the following settings, and then select **Update**.

Table 22: SD-WAN Configuration - Options and Descriptions

Option	Description
Domain	Enter the domain name to be used to activate Single Sign On (SSO) authentication for the Orchestrator.
Default Edge Authentication	Choose the default option to authenticate the Edges associated with the Customer from the drop-down menu. • **Certificate Deactivated:** Edge uses a pre-shared key mode of authentication. • **Certificate Acquire:** This is the default option and instructs the Edge to acquire a certificate from the Orchestrator's certificate authority by generating a key pair and sending a certificate signing request to the Orchestrator. Once acquired, the Edge uses the certificate for authentication with the Orchestrator and for establishing VCMP tunnels. **Note:** After acquiring the certificate, the Orchestrator allows the option to be updated to **Certificate Required**. • **Certificate Required:** Edge uses the PKI certificate. Operators can change the certificate renewal time window for Edges using the system property `edge.certificate.renewal.window`.
Edge Licensing	The existing Edge Licenses appear. Select **Add** to add or remove the licenses. **Note:** The license types can be used on multiple Edges. Arista recommends providing Customers with access to all types of licenses to match their edition and region. For more information, see the topic *Edge Licensing* in the *Arista VeloCloud SD-WAN Administration Guide*.
Allow Customer to Manage Software	Select the checkbox to allow an Enterprise Superuser to manage the software images available for the Enterprise. For additional information, see the topic *Edge Image Management* in the *Arista VeloCloud SD-WAN Administration Guide*.
Operator Profile	Select an Operator profile to be associated with the Customer from the available drop-down menu. This field is not available if **Allow Customer to Manage Software** is selected. For more information on Operator profiles, see the topic *Manage Operator Profiles* in the *Arista VeloCloud SD-WAN Operator Guide*.
Maximum Number of Segments	Enter the maximum number of segments that can be configured. The valid range is 1 to 16. The default value is 16.

6. Configure the following additional settings on the **Customer Configuration** page:

Table 23: Additional Options and Descriptions

Option	Description
Global	
User Agreement Display	Select either of the following from the drop-down menu: • Inherit • Override to Hide • Override to Show **Note:** This field is available only when the system property `session.options.enableUserAgreements` is set to **True**.

Option	Description
Feature Access	Provides access to the selected features. Select one or more checkboxes from the below list to activate these features for the Customer: • **Enterprise Auth:** By default, only the Operator can activate or deactivate two-factor authentication for an Enterprise. On selecting this checkbox, the Enterprise Admins can configure the two-factor authentication on their own. This option also controls the activation and deactivation of Single Sign On (SSO). • **Enable Premium Service:** This is the default option. Premium Service refers to the On-Demand Remediation feature, a core part of SD-WAN's Dynamic Multipath Optimization (DMPO). DMPO is used for all traffic that traverses a VeloCloud Gateway. When Premium Service is selected, the Gateway uses Forward Error Correction (FEC) for customer traffic that is impacted by high levels of WAN link jitter or loss and cannot be steered to a better-quality WAN link. When Premium Service is not selected, traffic still traverses the VeloCloud Gateway and benefits from other components of DMPO, such as Continuous Monitoring, Dynamic Application Steering, and Secure Traffic Transmission. However, traffic impacted by high levels of WAN link jitter or loss does not benefit from error correction by the Gateway. For additional information, see the topic *Dynamic Multipath Optimization (DMPO)* in the *Arista VeloCloud SD-WAN Administration Guide*. • **Service Permissions:** Allows an Enterprise Super user to customize the role privileges for other Enterprise users. • **Route Backtracking:** Allows the device to choose the best route in the order of prefix length. • **In-product Contextual Help Panel:** Provides access to the 'In Product Help' panel integrated within the Orchestrator. This feature is deactivated by default. An Operator must activate this option for the Enterprise Customers. • **Enable VeloBrain AI Assistant:** Activates the VeloBrain Assistant in the Orchestrator for Enterprise users. • **Enable Firewall Logging to Orchestrator:** By default, Edges cannot send their Firewall logs to the Orchestrator. Select this checkbox to allow an Edge to send Firewall logs to the Orchestrator. • **Customizable QoE:** Allows the Customer to configure the minimum and maximum latency threshold values for Voice, Video, and Transactional application categories on an Edge. • **Enable Link Insights:** Activates the **Insights** tab for Customers. This feature helps monitor and identify degraded connections. • **FIPS Mode:** This mode activates the Federal Information Processing Standard (FIPS) 140-3 for an Enterprise only if the Diffie–Hellman (DH) Group and Perfect Forward Secrecy (PFS) in the Customer Security Policy IPsec configuration are set to 14 or higher. **Note:** If the DH Group and PFS in the Security Policy do not meet these requirements, the system will display a FIPS Compliance warning. This warning advises users to select a DH Group and a PFS of 14 or higher to ensure compliance with FIPS-compliant tunnels. **Note:** Enterprises that have `ENTERPRISE_EXPORT_RESTRICTION_ENABLED` set to `True` cannot enable FIPS at any tier.
Delegate Management To Customer	Allows the Customer to modify the settings of the selected property. Following two properties are always visible to the Customers: • **Enable CoS Mapping:** Allows the configuration of CoS mapping while configuring a business policy. • **Enable Service Rate Limiting:** Allows for rate limit services in a business policy.
Gateway Pool	

Option	Description
Current Gateway Pool	Displays the current Gateway pool associated with the selected Customer. If required, choose a different Gateway pool available in the drop-down menu and **Save Changes**.
Gateways in this Pool	Displays the Gateway details in the current pool.
Partner Hand Off	Activating the **Gateway Pool** option displays the **Configure Hand Off** section. If the Gateways available in the Gateway pool have been assigned with Partner Gateway role, handoff the Gateways to Partners. For additional information, see Configure Partner Handoff.
Security Policy	
Hash	By default, no authentication algorithm is configured for the VPN header, since AES-GCM is an authenticated encryption algorithm. After selecting the **Turn off GCM** checkbox, select one of the following as the authentication algorithm for the VPN header from the drop-down menu: • **SHA 1** • **SHA 256** • **SHA 384** • **SHA 512**  **Note:** Starting from the 6.4.0 release, Edges support **SHA-256** only for IKEv2 Parent SA creation for VCMP tunnels. However, responders continue to support **SHA-1** and **SHA-2** algorithms for backward compatibility with old Edges.
Encryption	Select either **AES 128** or **AES 256** as the AES algorithm's key size to encrypt data. The default encryption algorithm mode is **AES 128**.  **Note:** The AES configuration affects only phase 2 tunnels.
DH Group	Select the Diffie-Hellman (DH) Group algorithm to be used when exchanging a pre-shared key. The DH Group sets the strength of the algorithm in bits. The supported DH Groups are 2, 5, 14, 15, 16, 19, 20, and 21. DH Groups 19, 20, and 21 are available starting in Release 5.2.0.  **Note:** It is recommended to use DH Group 14, which is the default value.
PFS	Select the Perfect Forward Secrecy (PFS) level for additional security. The supported PFS Groups are 2, 5, 14, 15, 16, 19, 20, and 21. PFS Groups 19, 20, and 21 are available starting in Resale 5.2.0. By default, PFS is deactivated.
Turn off GCM	Select this checkbox to activate **Hash** and select an authentication algorithm for the VPN header.
IPSec SA Lifetime Time(min)	Time when Internet Security Protocol (IPSec) rekeying is initiated for Edges. The minimum IPsec lifetime is 3 minutes, and the maximum IPsec lifetime is 480 minutes. The default value is 480 minutes.  **Note:** It is not recommended to configure a low lifetime value for IPsec (less than 10 minutes), as it can cause traffic interruption in some deployments due to rekeys. The low lifetime values are for debugging purposes only.
IKE SA Lifetime(min)	Time when Internet Key Exchange (IKE) rekeying is initiated for Edges. The minimum IKE lifetime is 10 minutes, and the maximum IKE lifetime is 1440 minutes. The default value is 1440 minutes.  **Note:** It is not recommended to configure low lifetime values for IKE (less than 30 minutes), as it can cause traffic interruption in some deployments due to rekeys. The low lifetime values are for debugging purposes only.
Secure Default Route Override	Select the checkbox so that the destination of traffic matching a secure default route (either Static Route or BGP Route) from a Partner Gateway can be overridden using Business Policy.

Option	Description
Edge Network Function Virtualization: Allows to activate NFV on the Edges and allows Customers to deploy third party VNFs on service ready Edge platforms. Currently, the service ready Edge platform models are 520v and 840. When an Operator user activates **Edge NFV**, Customers can configure and deploy VNFs and VNF licenses from their network services.	
Edge NFV	Select this option to activate the ability to deploy VNFs on Edges. After deploying one or more VNFs on Edges, users cannot deactivate this option.
Security VNFs	Select the relevant checkboxes to deploy the corresponding security VNFs on Edges. For additional information, see the topic *Security VNFs* in the *Arista VeloCloud SD-WAN Administration Guide*.
SD-WAN Settings	
OFC Cost Calculation	Select the required checkbox: • **Distributed Cost Calculation:** Select this checkbox to delegate route cost calculation to Edges/Gateways. **Note:** This option is available only for the Edges/Gateways with version 3.4.0 and later. After activating **Distributed Cost Calculation**, Arista recommends to refresh the routes by navigating to **Configure** > **Overlay Flow Control** in the **SD-WAN** service of the **Enterprise** portal. For additional information, see Configure Distributed Cost Calculation. • **Use NSD Policy:** Select this checkbox to use NSD policy for route cost calculation to Edges/Gateways. **Note:** This option is available only for the Edges/Gateways with version 4.2.0 and later.
Multiple-DSCP tags per Flow Path Calculation	This feature is used when the original user traffic is encapsulated in another tunnel (GRE/IPsec), and the DSCP labels are saved in the new IP header. The feature activates path calculation for a single flow (same source/destination) with multiple DSCP tags and offers path differentiations based on the DSCP values in the flow. Select the **Include DSCP value as part of flow lookup** checkbox to include DSCP values as part of flow look-up and path calculation. **Note:** This field is available only when the system property `session.options.enableFlowParametersConfig` is set to **True**. For more information, see Configure Path Calculation with Multiple DSCP Labels per Flow.
Feature Access	
Stateful Firewall	Select the **Stateful Firewall** checkbox to override the Stateful Firewall settings activated on the Enterprise Edge.
Enhanced Firewall Services	Select the **Enhanced Firewall Services** checkbox to activate the Enhanced Firewall Services using the Firewall functionality in Edge Cloud Orchestrator. **Note:** For Enhanced Firewall Services (EFS) to work, ensure the Edge version is upgraded to 5.2.0.0. **Note:** Unselecting this option will only deactivate the EFS feature in the UI. To deactivate the EFS feature for an existing customer, first deactivate the EFS feature in the SD-WAN service of the Enterprise portal by navigating to **Configure** > **Profiles/ Edges** > **Firewall** > **Enhanced Firewall Services** and then by unselecting this checkbox in Global Settings. For additional information about configuring Enhanced Firewall Services Policy rule, see the topic *Configure Enhanced Firewall Services* in the *Arista VeloCloud SD-WAN Administration Guide*.

Option	Description
ETM Next-Gen Firewall	Select the **ETM Next-Gen Firewall** checkbox to activate the Edge Threat Management feature for a Profile. For more information, see *Arista VeloCloud Edge Threat Management Guide*.

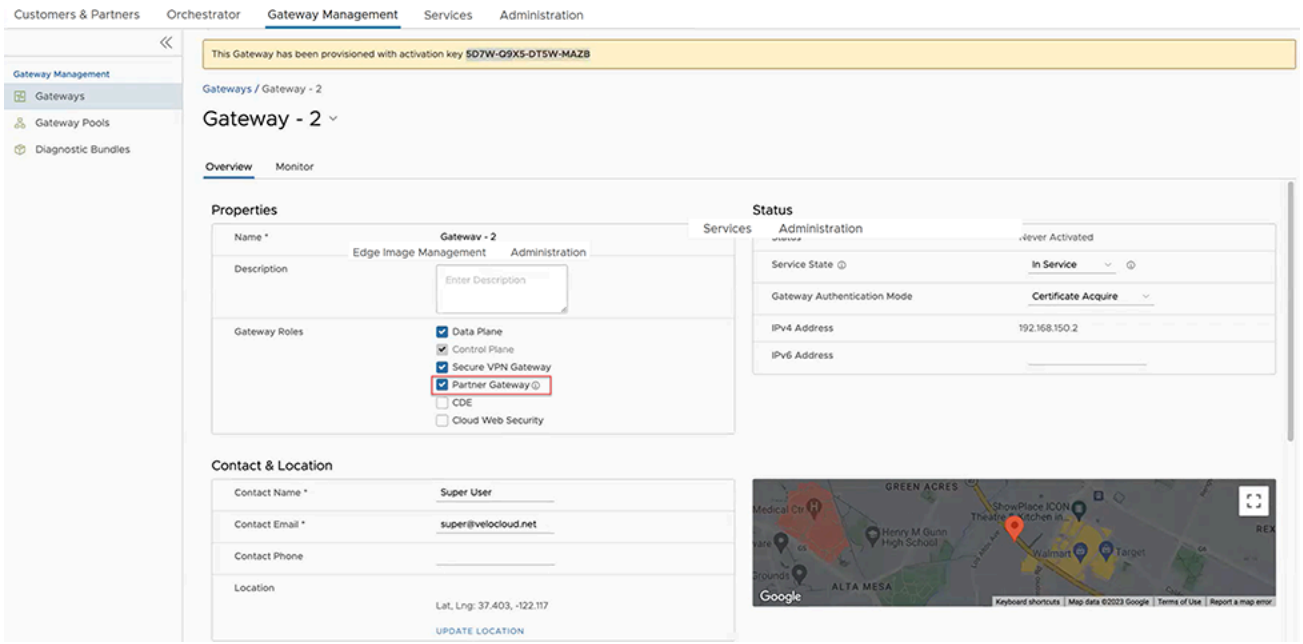
7. Select **Save Changes**.

> **Note:** Modifying the **Security Policy** settings may cause interruptions to the current services. In addition, these settings may reduce overall throughput and increase the time required for VCMP tunnel setup, which may impact branch to branch dynamic tunnel setup times and recovery from Edge failure in a cluster.

5.1 Configure Partner Handoff

Ensure that the Gateway to be handed off is assigned the Partner Gateway role. In the **Orchestrator** portal (Operator or Partner), select the **Gateways** and select the link to an existing Gateway. In the **Properties** section of the selected Gateway's Overview page, enable the **Partner Gateway** role as shown in the following screenshot:

Figure 5-3: Gateway Management



Configure a Gateway to hand off to Partners. The Gateway acts as a Partner Gateway that enables configuration of the Hand off Interface, Static Routes, BGP, and other settings.

To configure the Handoff settings, perform the following steps:

1. In the **Enterprise** portal, on the **Global Navigation** bar, expand the **Enterprise Applications** drop-down menu.
2. Select **Global Settings** service, and then from the left menu, select **Customer Configuration**.
3. In the **Customer Configuration** window, scroll down to **Additional Configuration** and expand the **Gateway Pool** area.
4. Turn on the **Partner Hand Off** toggle button.

5. In the **Configure Hand Off** area, configure the following options:

Figure 5-4: Partner Hand Off

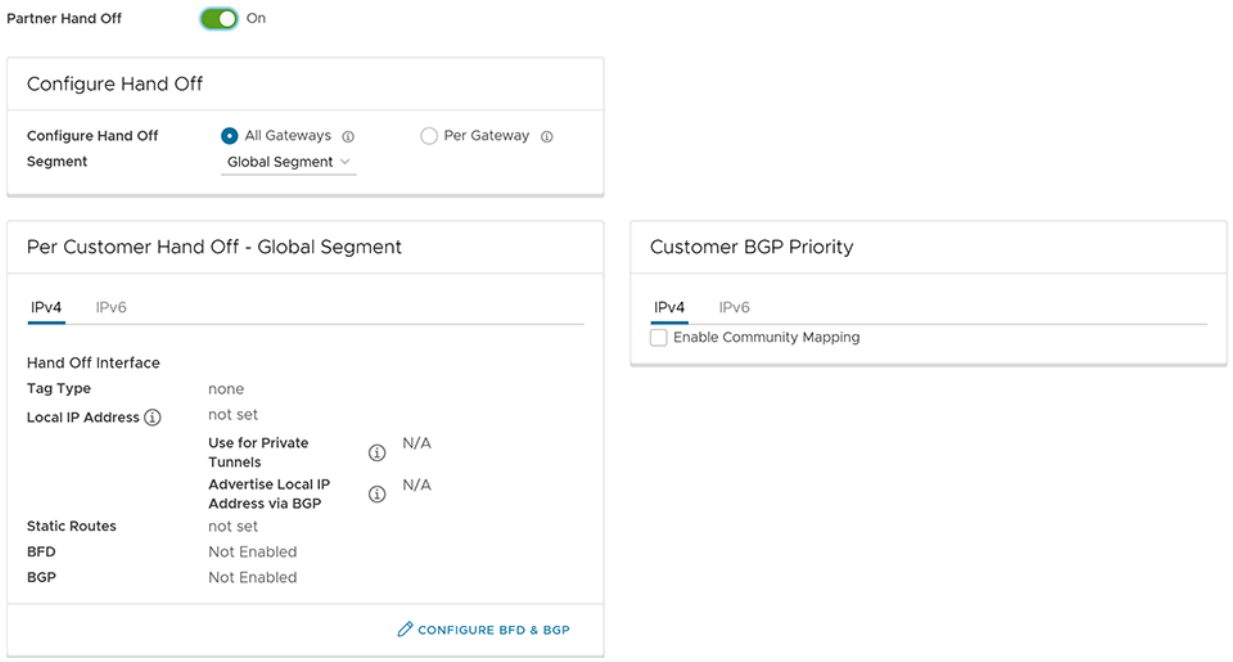
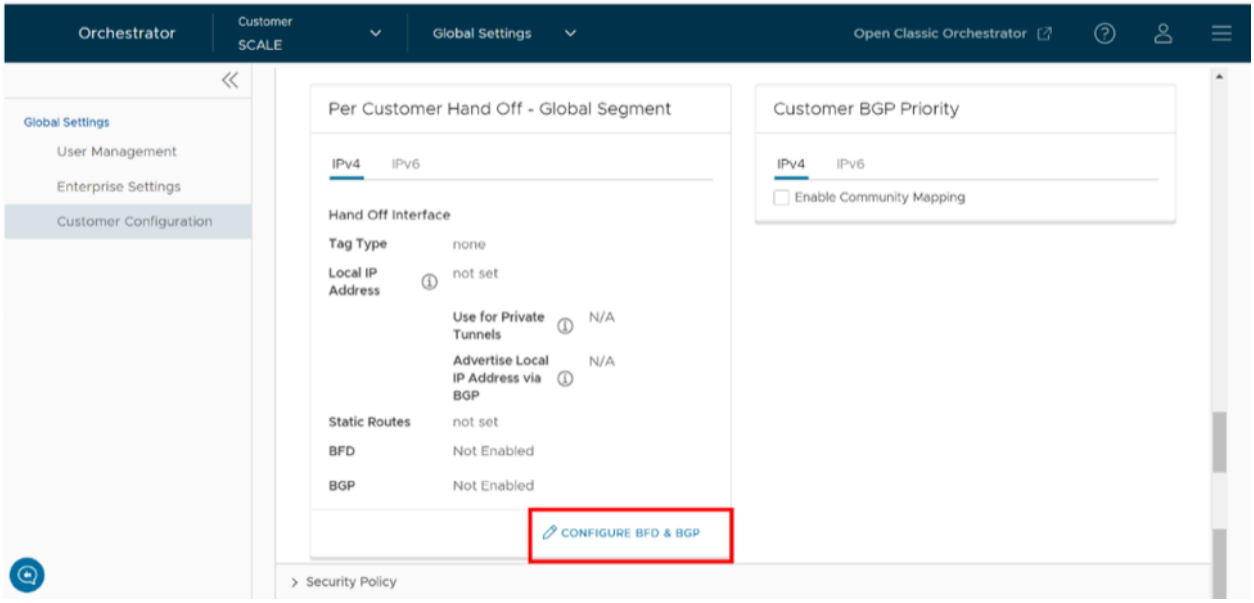


Table 24: Partner Handoff - Options and Descriptions

Option	Description
Configure Hand Off	By default, the hand off configuration is applied to all the Gateways. To configure a specific Gateway, choose **Per Gateway**, and then select the Gateway from the drop-down menu.
Segment	By default, **Global Segment** is selected, which means that the hand off configuration is applied to all the segments. To configure a specific segment, select the segment from the drop-down menu.
Hand Off Interface	This section displays the values that are configured on the **Configure BGP and BFD** page.
Customer BGP Priority	Select the checkbox and configure the Community Mapping details.

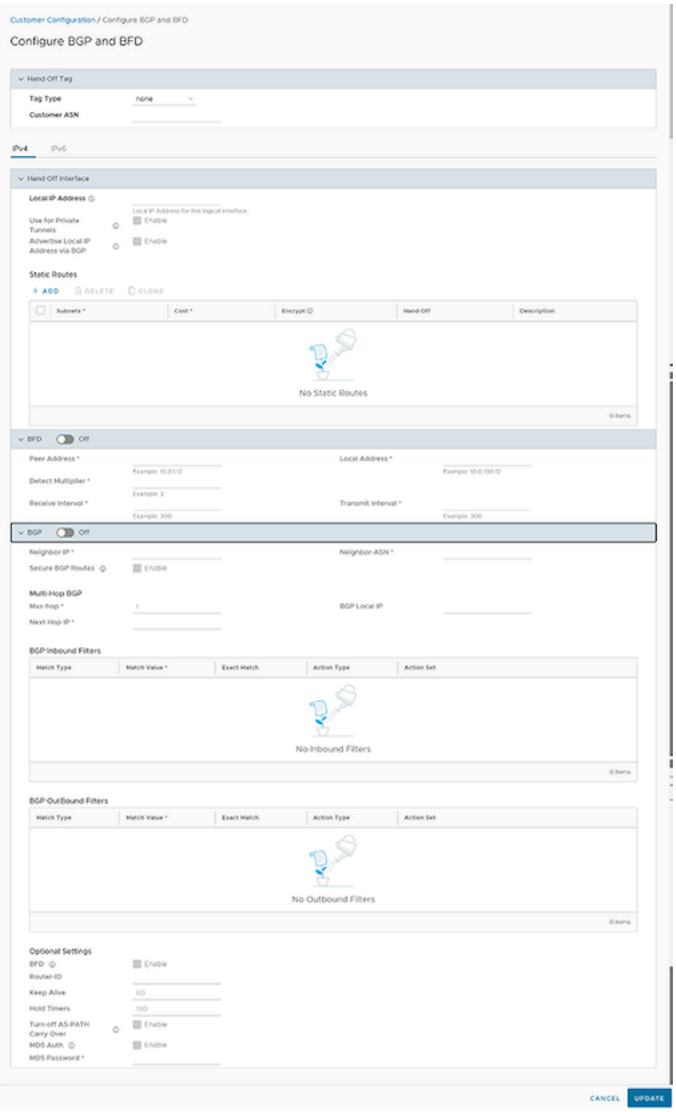
6. At the bottom of the **Per Customer Hand Off – Global Segment** area, select the **Configure BFD and BGP** link, as shown in the image below:

Figure 5-5: Per Customer Hand Off – Global Segment



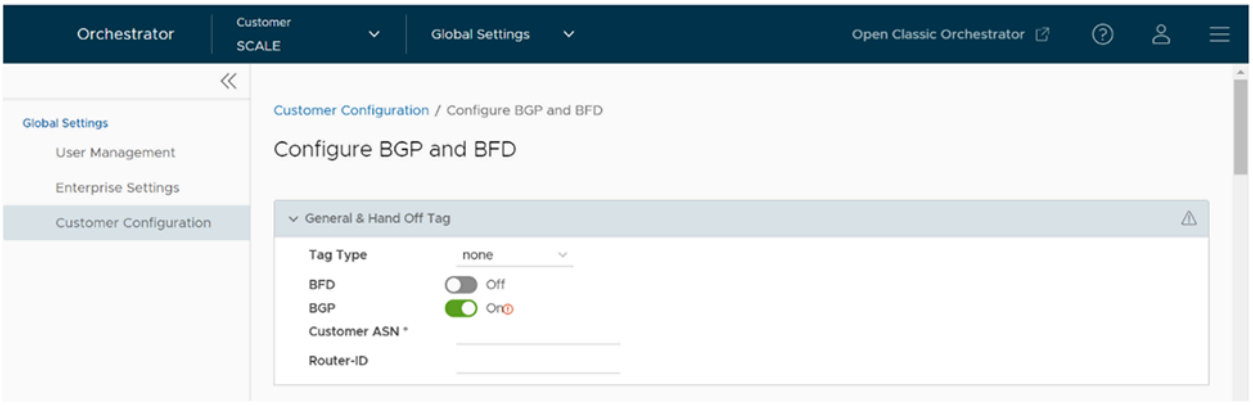
The **Configure BGP and BFD** screen appears:

Figure 5-6: Configure BGP and BFD



7. Expand the **General & Hand Off Tag** section and turn the **BGP** option to the **On** position.

Figure 5-7: General and Hand Off Tag



8. Scroll down to the **BGP** section and expand it.
9. Configure the following options:

Table 25: General and Hand Off Tag - Options and Descriptions

Option	Description
Hand Off Tag	
Tag Type	Choose the tag type, which is the encapsulation, in which the Gateway hands off customer traffic to the Router. The following are the types of tags available: • **None:** Untagged. Choose this during a single tenant hand off or a hand off towards shared services VRF. • **802.1Q:** Single VLAN tag • **802.1ad / QinQ(0x8100) / QinQ(0x9100):** Dual VLAN tag
Customer ASN	Enter the Customer Autonomous System Number.
Hand Off Interface: Configure the following IPv4 and IPv6 settings.	
Local IP Address	Enter the Local IP address for the logical Hand Off interface.
Use for Private Tunnels	Select the checkbox so that private WAN links connect to the private IP address of the Partner Gateway. If private WAN connectivity is activated on a Gateway, the Orchestrator audits to ensure that the local IP address is unique for each Gateway within an Enterprise.
Advertise Local IP Address via BGP	Select the checkbox to automatically advertise the private WAN IP of the Partner Gateway through BGP. The connectivity is provided using the existing Local IP address.
Static Routes: Add, delete, or clone a static route.	
Subnets	Enter the IP address of the Static Route Subnet that the Gateway should advertise to the Edge.
Cost	Enter the cost to apply weightage on the routes. The range is from 0 to 255.
Encrypt	Select the checkbox to encrypt the traffic between Edge and Gateway.
Hand off	Select the hand off type as either **VLAN** or **NAT**.
Description	Enter a descriptive text for the static route. This field is optional.
BFD: Turn the toggle button to On to activate this section.	
Peer Address	Enter the IP address of the remote peer to initiate a BFD session.
Detect Multiplier	Enter the detection time multiplier. The remote transmission interval is multiplied by this value to determine the detection timer for connection loss. The range is from 3 to 50.
Receive Interval	Enter the minimum time interval, in milliseconds, at which the system can receive the control packets from the BFD peer. The range is from 300 to 60000 milliseconds.
Local Address	Enter a locally configured IP address for the peer listener. This address is used to send the packets.
Transmit Interval	Enter the minimum time interval, in milliseconds, at which the system can send the control packets from the BFD peer. The range is from 300 to 60000 milliseconds.
BGP: Turn the toggle button to On to activate this section.	
Neighbor IP	Enter the IP address of the configured BGP neighbor network.
Secure BGP Routes	Select the checkbox to allow encryption for data-forwarding over BGP routes.
Max-hop	Enter the number of maximum hops to allow multi-hop for the BGP peers. The Max-hop range is 1 to 255, with and default value of 1.  **Note:** This field is available only for eBGP neighbors when the local ASN and the neighboring ASN are different.

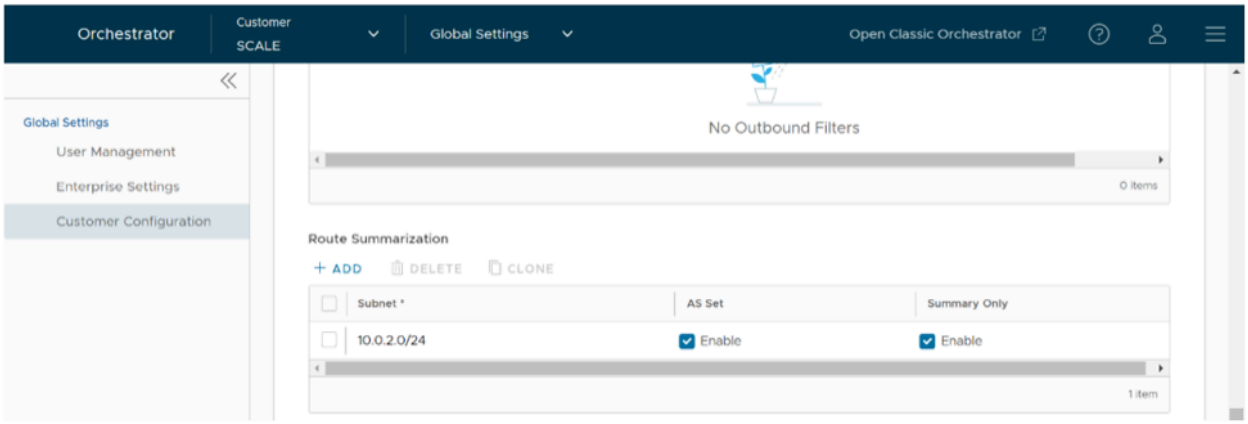
Option	Description
Next Hop IP	Enter the next-hop IP address to be used by BGP to reach the multi-hop BGP peer. **Note:** This option is available only for multi-hop eBGP with a Max-hop count greater than 1.
Neighbor-ASN	Enter the Autonomous System Number of the Neighbor network.
BGP Local IP	Local IP address is the equivalent of a loopback IP address. Enter an IP address that the BGP neighborships can use as the source IP address for the outgoing BGP packets. If a user does not enter any value, the IP address of the **Hand Off Interface** is used as the source IP address.
BGP Inbound Filters	Displays the BGP inbound filters.
BGP Outbound Filters	Displays the BGP outbound filters.
BGP Optional Settings	
BFD	Select the checkbox to subscribe to the BFD session.
Router-ID	Enter the Router ID to identify the BGP Router.
Keep Alive	Enter the BGP Keep Alive time in seconds. The default timer is **60** seconds.
Hold Timers	Enter the BGP Hold time in seconds. The default timer is 180 seconds.
Turn off AS-PATH Carry Over	Select the checkbox to turn off AS-PATH carry over, which influences the outbound AS-PATH to make the L3-routers prefer a path towards a PE. When selecting this option, ensure to tune the network to avoid routing loops. It is recommended not to select this checkbox.
MD5 Auth	Select the checkbox to activate BGP MD5 authentication. This option is used in a legacy or federal network and serves as a security guard for BGP peering.
MD5 Password	Enter a password for MD5 authentication. **Note:** Starting from the 4.5 release, the use of the special character "<" in the password is no longer supported. In cases where users have already used "<" in their passwords in previous releases, they must remove it to save any changes on the page.

Route Summarization

Route Summarization is introduced in the 5.2 release. For an overview, use case, and black hole routing details for Route Summarization, see the section *Route Summarization* in the *Arista SD-WAN Administration Guide*. For Route Summarization configuration details, follow the steps below:

1. Scroll down to the **Route Summarization** area in the **BGP** section.

   Figure 5-8: Route Summarization



2. Configure the following options:

   Table 26: Route Summarization - Options and Descriptions

Option	Description
+Add	Select **+Add** to add a new row in the **Route Summarization** area. **Note:** To Clone or Delete a route summarization, use the appropriate buttons, located next to **+Add**.
Subnet	Enter the IP subnet.
AS Set	Generate AS set path information from the summarized routes (while advertising the summarized route to the peer). Select the **Enable** checkbox if applicable.
Summary Only	Select the **Enable** checkbox to allow only the summarized route to be sent.

3. Select **Update** to save the settings.

5.2 Configure Distributed Cost Calculation

Ensure the following before activating the Distributed Cost Calculation feature.

- All the Edges and Gateways must use software version 3.4.0 or later.
- The software image associated with the Operator Profile must use version 3.4.0 or later.

By default, the Orchestrator is actively involved in learning the dynamic routes. VeloCloud SD-WAN Edges and Gateways rely on the Orchestrator to calculate initial route preferences and return them to the Edge and Gateway. The Distributed Cost Calculation feature enables users to distribute the route cost calculation to the Edges and Gateways. Only an Operator user can configure Customer settings, including Distributed Cost Calculation.

Note:

Anybody experiencing an issue with Orchestrator based route calculation must enable **Distributed Cost Calculation**.

This default method of involving the Orchestrator in both dynamic route calculation and the distribution of those routes to Edges and Gateways has the following drawbacks:

- If the Orchestrator is under high load, route convergence time can be significantly high (e.g., up to 40 seconds for 2000+ routes), as the Orchestrator spends that time calculating preferences for all synchronized routes and returning them to the Edges and Gateways.
- Using the Orchestrator for route calculation means that new dynamic routes learned while the Orchestrator was unreachable are not advertised until the Orchestrator becomes reachable again.

When a customer enterprise uses Distributed Cost Calculation, the Orchestrator is no longer actively involved in the route preference calculation and instead routes are properly inserted in order by the Edge and Gateway instantly upon learning them and then convey these preferences to the Orchestrator.

When users choose to enable Distributed Cost Calculation for the Edges and Gateways, the feature provides the following benefits:

- Minimizes the impact on route learning when an Orchestrator is unreachable.
- Route convergence time is reduced from minutes to seconds in large networks with thousands of dynamic routes.
- Network delays are significantly reduced.
- Provides instantaneous Data Plane convergence.
- Supports enhanced re-ordering and pinning of routes on the Overlay Flow Control.
- Provides an option to refresh routes in the **Overlay Flow Control** page. Whenever the Overlay Flow Control policy changes, the Refresh Routes option applies the changes to the existing routes immediately, without requiring a restart of the Edge or Gateway.

Enabling Distributed Cost Calculation has the following impacts on the Customer Enterprise network:

- All local dynamic routes are refreshed, and their preference and advertisement actions are updated. This updated information is advertised to the Gateway and Orchestrator, and eventually the Enterprise. The customer's network needs to completely rebuild the route table, which for most customer deployments will take less than 5 seconds. A large scale customer deployment (like 100,000+ routes) may take up to 2 minutes. While the route table is being rebuilt, customer traffic across all sites is impacted.
- Any existing flows using these routes may be affected by changes to the routing entries.

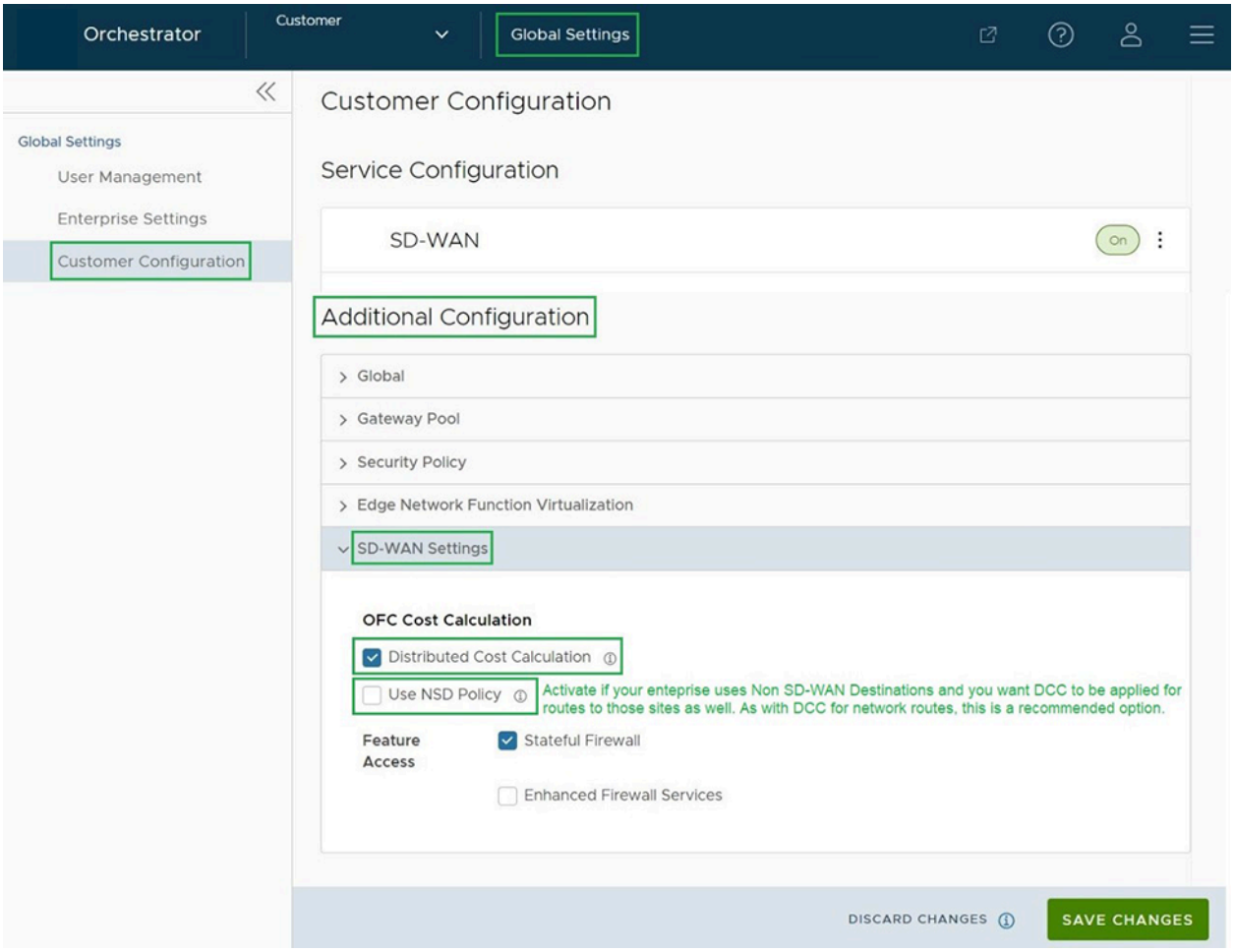


Note: It is recommended to enable Distributed Cost Calculation in a maintenance window to minimize the impact on the Customer Enterprise.

To configure **Distributed Cost Calculation** for a customer:

1. In the **Enterprise** portal, go to **Global Settings** > **Customer Configuration**.

   Figure 5-9: Distributed Cost Calculation



2. On the **Customer Configuration** page, navigate to the **Additional Configuration** > **SD-WAN Settings** > **OFC Cost Calculation** section and configure the following:

   - Select the **Distributed Cost Calculation** check box to delegate the cost calculation of routes to Edges and Gateways.
   - Select the **Use NSD Policy** check box to use the Non SD-WAN Destination policy for route cost calculation of Edges and Gateways. This option is available only for Edges and Gateways that are running Software version 4.3.0 or later.

3. Select **Save Changes**.



Note:

- After enabling **Distributed Cost Calculation**, it is recommended to refresh the routes on the **Overlay Flow Control** page in the **SD-WAN** service of the Enterprise portal.
- When an Enterprise has **Distributed Cost Calculation** activated and a user tries to deactivate the software update on the **Operator Profile** page, the user must ensure that, no Edges in the Enterprise are downgraded to software image versions lower than 3.4.0. in the future. If one or more Edges in the Enterprise are using software image version below 3.4.0, the Enterprise traffic may take a sub-optimal path. The sub-optimal path will be corrected only when the Edge is upgraded to 3.4.0 or later versions.

  The following are some of the scenarios in which the software versions can change, and the user must make sure the Edges are using the software image version 3.4.0 or later:

  - **Factory Reset** - When an Edge is reset to factory settings, it restores the Edge's software version to the factory image version, which may be below 3.4.0.
  - **Edge Activation** - When an Edge is activated, it may come up with software versions below 3.4.0.

Once the **Distributed Cost Calculation** is activated, all dynamic routes are assigned new preferences and advertise actions based on the Distributed Cost Calculation. The new information is propagated across the Enterprise Network.

The Orchestrator is no longer actively involved in the route preference calculation. Instead, the routes are properly inserted in order by the Edge, and Gateway instantly upon learning them, and then these preferences are conveyed to the Orchestrator.

The Overlay Flow Control policy is sent to Edges and Gateways in Control Plane Configuration updates. Edges and Gateways send the routes with computed costs and the advertised action to the Orchestrator. Edges and Gateways determine the order of routes based on cost and route attributes.

To view a summary of all the routes in the network, select **Configure** > **Overlay Flow Control** in the **SD-WAN** service of the **Enterprise** portal. Users can view the routes and advertise action in the **Overlay Flow Control** page. For more information, see the topic *Overlay Flow Control* in the *Arista VeloCloud SD-WAN Administration Guide*.

5.3 Configure Path Calculation with Multiple DSCP Labels per Flow

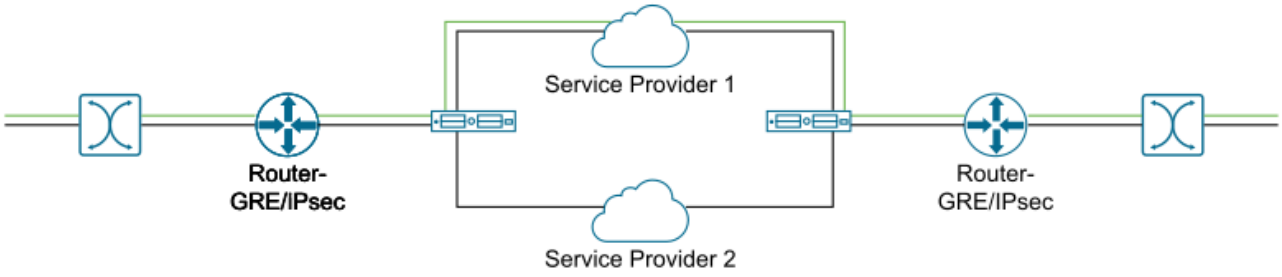
An Edge classifies traffic flows based on the first packets in each flow. Users can create business policies in an application based on the Differentiated Service Code Point (DSCP) and different DSCP markings to determine flow treatment.

Business Policy and QoS marking determine the flow treatment. Once the flow is classified, an entry with five tuple information of the flow is created in the flow cache table. Subsequent packets in the flow will use the five-tuple lookup against the flow cache table.

For network topologies with Layer 3 network devices doing encapsulation or encryption before the traffic arrives at the Edge, this creates a challenge for the Edge to forward traffic based on the Business Policy. The

traffic from the end users is multiplexed into a single flow with the same source and destination IP addresses and protocols by the Layer 3 encapsulation/encryption device, as illustrated in the following image:

Figure 5-10: Single Flow Traffic



The impact of multiplexing end user flows into a single tunnel creates polarization of the flow forwarding using the five tuples of flow cache table, which results in WAN links not being utilized.

The Path Calculation with Multiple DSCP Labels per Flow allows the DSCP value to be included, in addition to the five tuples, as part of the flow cache table lookup. Use the path calculation with multiple DSCP tags when the original user traffic is encapsulated in another tunnel, like GRE or IPsec, and DSCP labels are preserved in the new IP header. This option enables path calculation for a single flow with multiple DSCP labels that share the same source and destination IP addresses and provides path differentiation based on the DSCP labels in the flow.

When users enable the **Multiple-DSCP tags per Flow Path Calculation**, the Edges can differentiate the traffic flows based on the DSCP marked labels.

To enable Multiple-DSCP tags per Flow Path Calculation, perform the following steps:

1. Create a new system property.
   a. In the **Operator** portal, select **Orchestrator** > **System Properties**.
   b. Select **New**.
   c. In the **New System Property** window, create a system property with the following parameters:
      - **Name:** *session.options.enableFlowParametersConfig*
      - **Data Type:** *Boolean*
      - **Value:** *True*
   d. Select **Save Changes**.
2. In the **Enterprise** portal, navigate to **Global Settings** > **Customer Configuration**.
3. On the **Customer Configuration** page, go to the additional configuration settings section, then under **SD-WAN settings**, select the **Include DSCP value as part of flow lookup** check box for **Multiple-DSCP tags per Flow Path Calculation**.

   Note: This option is available only when the system property `session.options.enableFlowParametersConfig` is set to **True**.

4. Select **Save Changes**.

In the Edges, different flows are created based on different DSCP labels.

Note: When users select **Include DSCP value as part of flow lookup**, the interoperability with previous versions is undefined.

While configuring the business policy for an Edge, choose to match a DSCP label for an application. For more information, see the topic *Configure Business Policy Rule* in the *Arista VeloCloud SD-WAN Administration Guide*.

When traffic arrives at the Edge, if the traffic flow matches the selected application and DSCP tag, then the corresponding action is performed.

Create additional business policies different DSCP labels to match with different traffic flows and apply different treatments to those flows.

Limitations:

- The path calculation with multiple DSCP labels per Flow is not applicable for the Gateways. Enable this option only for Edge-to-Edge tunnels, where Edge-to-Edge can be any of the following:
  - Edge-to-Edge through Hub
  - Spoke-to-Hub
  - Dynamic Branch-to-Branch

  Use this option for On-Premise deployment, where the Gateway is used only for control plane functionality and not for data plane traffic.
- The path calculation with multiple DSCP labels per Flow is intended only for GRE or IPSec traffic. The direct Internet traffic does not carry multiple DSCP labels within a single flow.
- After enabling the path calculation option, when the traffic flow consists of packets with the same five-tuple information but different DSCP markings, LAN side NAT might not work as expected.

Chapter 6

Orchestrator Branding for Enterprise

This section provides guidelines to customize the Orchestrator user interface (UI) to your company's brand. As an Enterprise user, you can brand the Orchestrator UI by applying your company's name, logo, and colors at a customer level.

To enable Enterprise users to customize the orchestrator UI branding, the "Operator only Branding" feature must be deactivated. If this feature is turned on in your orchestrator, contact your Operator to deactivate the "Operator only Branding" feature.



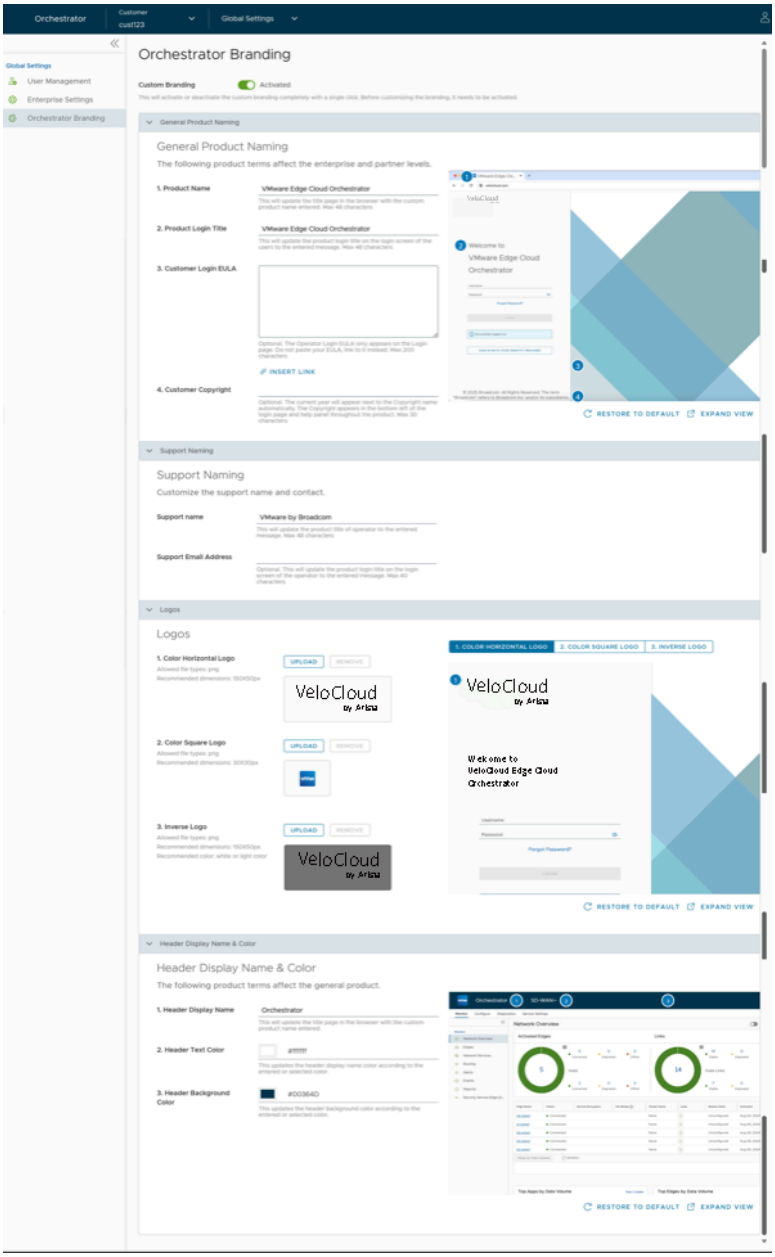
Note: Deactivating the "Operator only Branding" feature will override any existing Operator branding settings.

As an Enterprise user, to customize the branding at a customer level, perform the following steps:

1. In the **Enterprise** portal, from the **Services** drop-down menu, select **Global Settings**.

2. From the left menu, select **Orchestrator Branding**. The **Orchestrator Branding** page appears.

Figure 6-1: Orchestrator Branding



3. To customize branding, activate the "Custom Branding" feature by turning on the **Custom Branding** toggle button.
4. You can customize the following branding aspects of the Orchestrator UI:
   a. General Product Naming
   b. Support Naming
   c. Logos
   d. Header Display Name and Color
5. As you customize the branding, the changes are applied to the Preview image on the right. Select **Expand View** to expand the preview image. Select **Restore to Default** to restore the branding settings to default.

6. Once you are done with branding customization, select **Save Changes** and refresh the Orchestrator to view the applied custom branding at the Enterprise level.

> **Note:** The custom branding changes made by Enterprise users will not be applied to the login page.

7. To deactivate the "Custom Branding" feature, turn off the **Custom Branding** toggle button. All branding settings will be restored to their default values.

General Product Naming Branding

You can customize the following textual elements located on the Enterprise Login screen.

Figure 6-2: General Product Naming

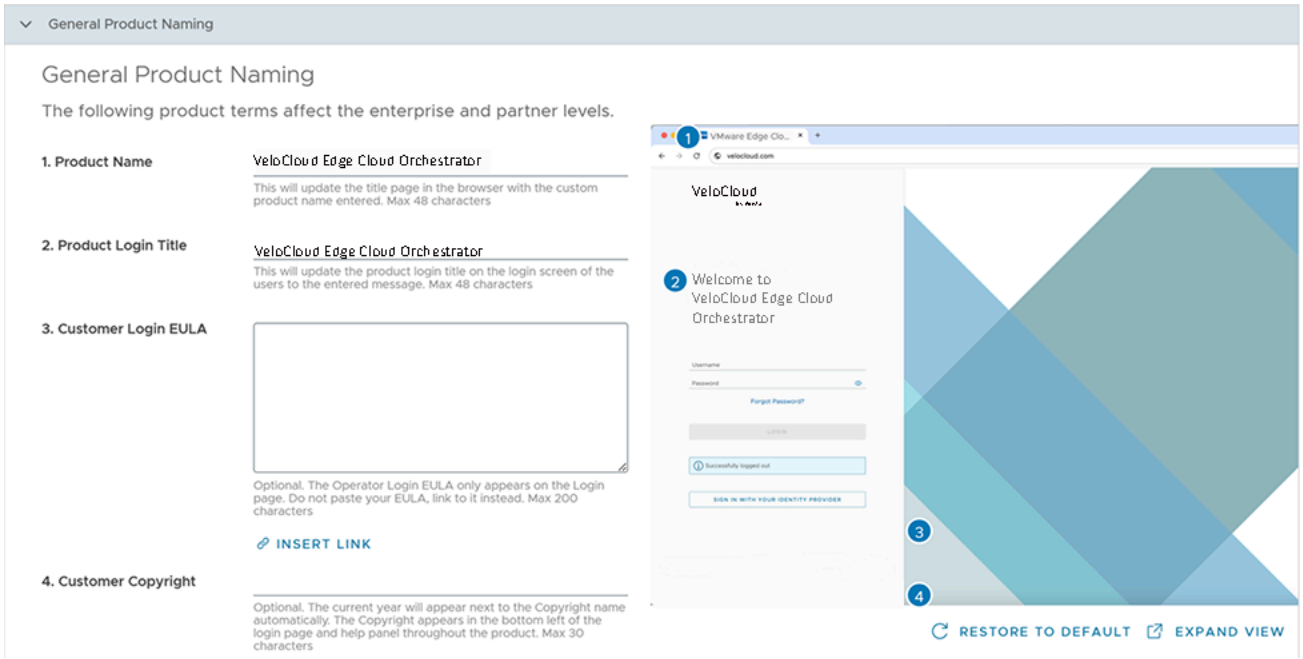


Table 27: General Product Naming - Options and Descriptions

Option	Description
Product Name	Enter your product name. This updates the title page in the browser with the custom product name entered. The product name can be up to 48 characters.
Product Login Title	Enter your product login title. This updates the product login title on the login screen of the users to the entered text. The product login title can be up to 48 characters.
Customer Login EULA	This is optional. Add your Customer login EULA, limited to 200 characters. The Customer login EULA only appears on the login screen. You can either enter your EULA in the box and then add a link by selecting the EULA, or directly add a link to the EULA login by selecting **Insert Link**.
Customer Copyright	This is optional. Enter your Customer copyright name and text. The current year will appear next to the copyright name automatically. The copyright appears at the bottom left of the Customer login page and in the help panel throughout the product. The Customer copyright text may be up to 30 characters. If you have not entered any customized copyright text, the default copyright will be displayed.

Support Naming Branding

Users can customize the Support name and contact details.

Figure 6-3: Support Naming

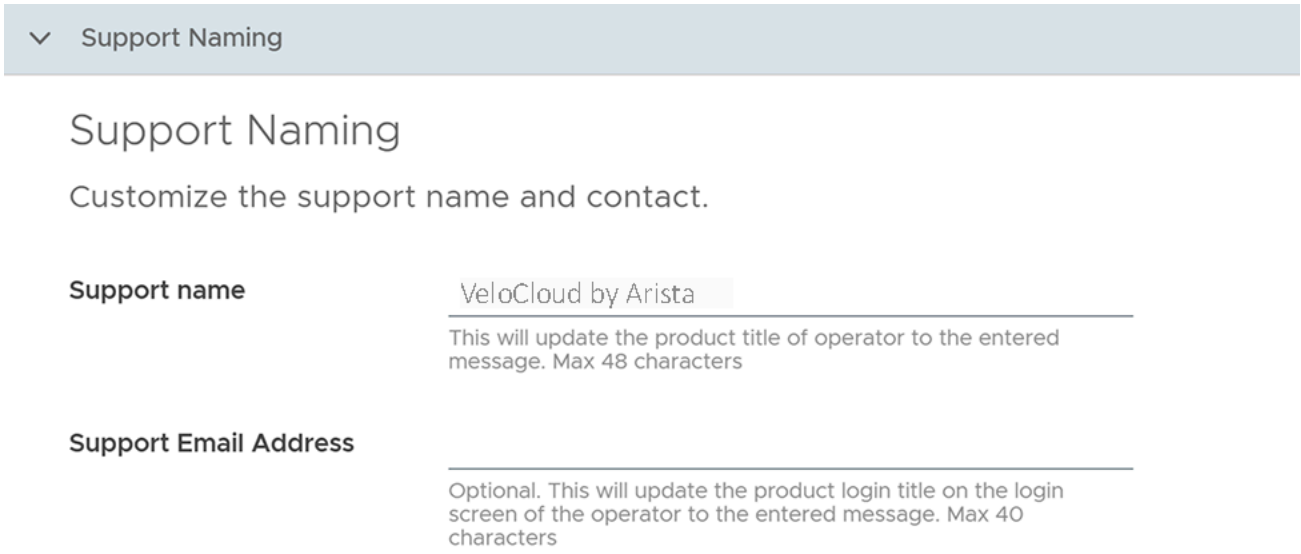


Table 28: Support Naming - Options and Descriptions

Option	Description
Support Name	Enter your custom support name. This updates the product title of Operator to the entered text. The support name can be up to 48 characters.
Support Email Address	This is optional. Enter your custom support email address. This updates the product login title on the login screen of the Operator to the entered text. The support email address must be no more than 40 characters.

Logos Branding

Your logo will be displayed on the top, left corner of the Login page of the Orchestrator UI. You can customize the following logo elements.

Figure 6-4: Logos

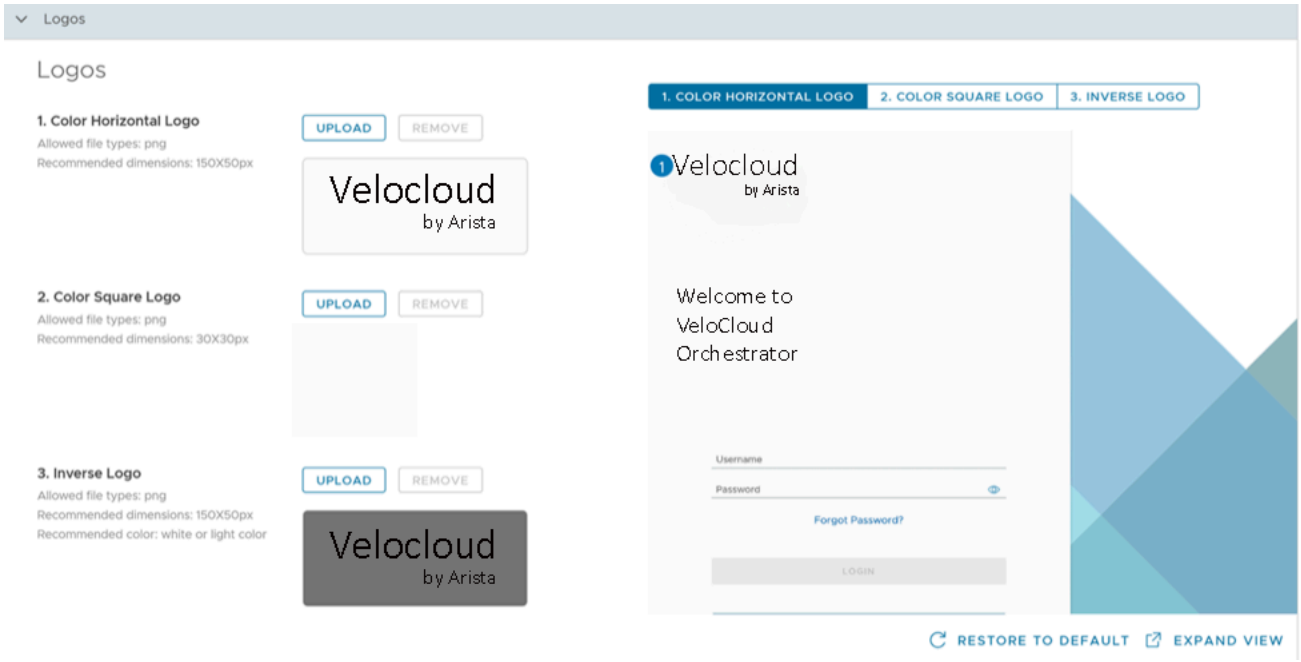


Table 29: Logos - Options and Descriptions

Option	Description
Color Horizontal Logo	Upload your custom horizontal logo by selecting **Upload**. Adhere to the following Logo requirements: • Allowed file types: PNG • Recommended dimensions: 150X50px
Color Square Logo	Upload your custom square logo by selecting **Upload**. Adhere to the following Logo requirements: • Allowed file types: PNG • Recommended dimensions: 30X30px
Inverse Logo	Upload your custom inverse logo by selecting **Upload**. Adhere to the following Logo requirements: • Allowed file types: PNG • Recommended dimensions: 150X50px • Recommended color: white or light color

Header Display Name and Color Branding

You can customize the following textual and visual elements located on the Orchestrator UI header.

Figure 6-5: Header Display Name and Color

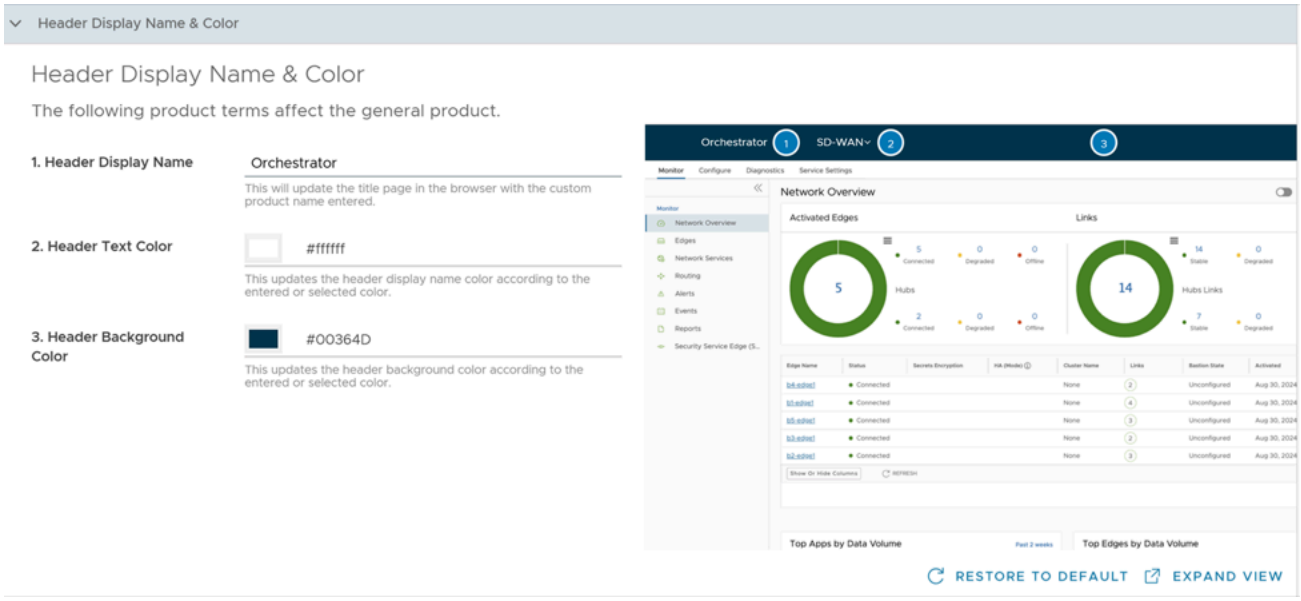


Table 30: Header Display Name and Color - Options and Descriptions

Option	Description
Header Display Name	Enter your header display name. This updates the title page in the browser with the custom product name entered.
Header Text Color	Enter or select the header text color. This updates the header display name color according to the entered or selected color.
Header Background Color	Enter or select the header background color. This updates the header background color according to the entered or selected color.

Chapter 7

Licensing

Direct Enterprise customers can view and manage SD-WAN licenses and utilization data using the Orchestrator UI. The Licensing feature is not accessible from the Orchestrator for the Partners and Partner customers. Partners can still view and manage licenses using the VeloCloud Licensing portal. For additional information, see the *VeloCloud SD-WAN License Management Guide*.

As an Enterprise Superuser, follow the below steps to access the **Licensing** screen:

1. In the **Enterprise** portal, on the **Global Navigation** bar, expand the **Enterprise Applications** drop-down menu.
2. Select **Global Settings** service.
3. From the left menu, select **Licensing**. The **Licensing** window appears:

The **Licensing** window displays four tabs: **Utilization**, **SD-WAN Entitlements**, **SASE Entitlements**, and **Add-Ons**.

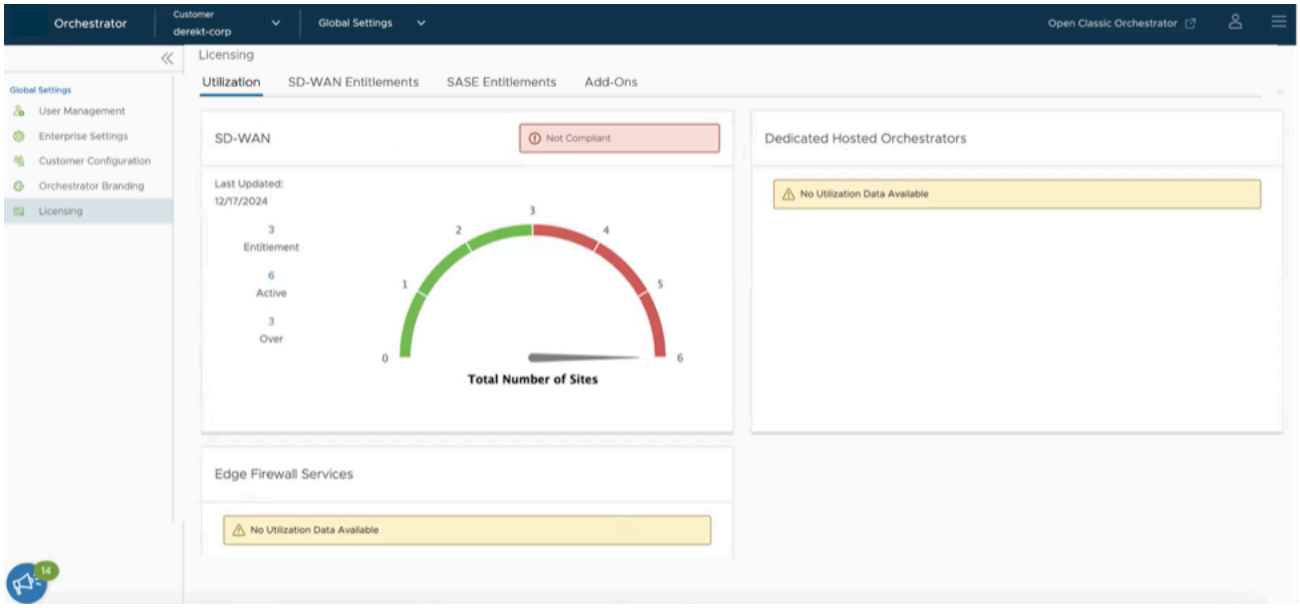
Utilization

The **Utilization** tab displays subscription usage information for different SKU types, such as SD-WAN, Dedicated Hosted Orchestrator, Dedicated Hosted Gateway, Enhanced Firewall Services (EFS), and so on. Each SKU tile has data and a gauge to show a visual representation of subscription usage. Usage information includes the following data:

- **Active Entitlements**- Displays the number of licenses that the account has purchased through orders.
- **Active Sites**- Displays the number of active Edges that are under the account.
- **Over Utilization Sites**- Displays the number of over utilized sites. If an account has more Edges than licenses, that means it is over using.

Select **Download Report** to download an Excel file with the License utilization information.

Figure 7-1: Utilization Tab



Note: If the Enterprise customers do not have active licenses available, the Orchestrator displays an action message asking them to contact their respective account executives to address the deployment of SD-WAN sites potentially exceeding the number of current subscriptions.

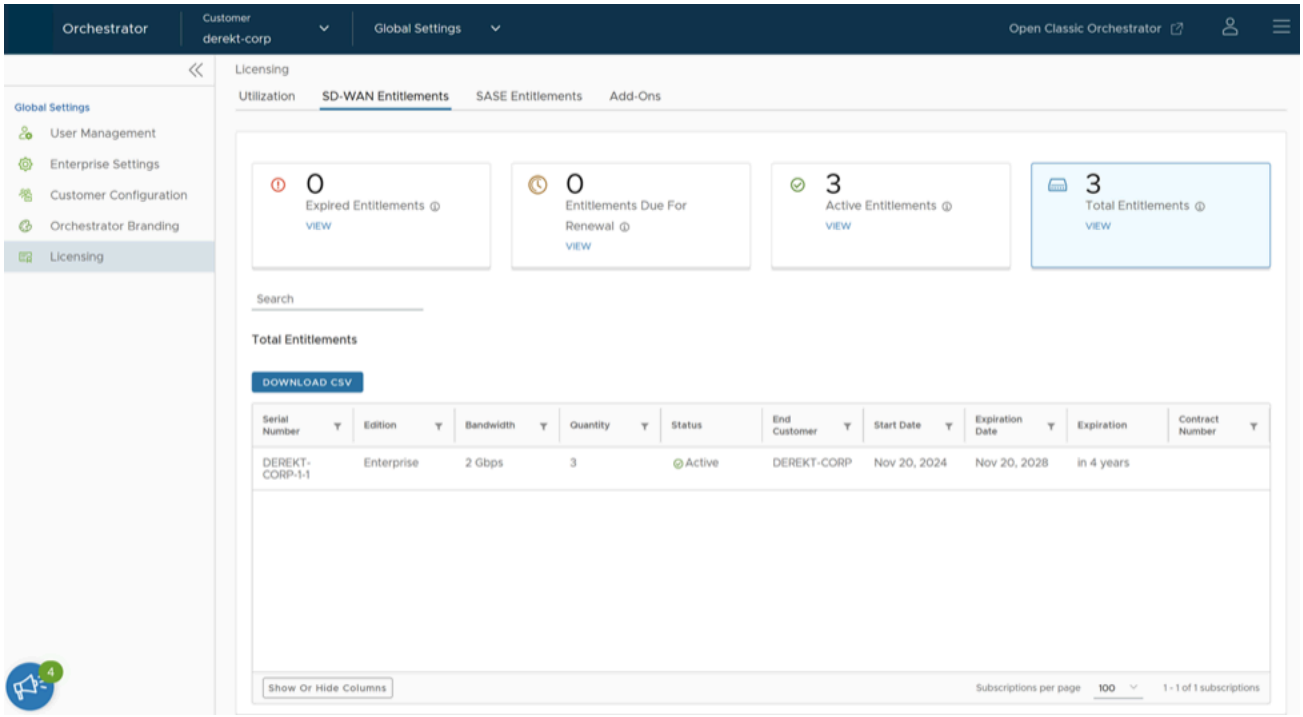
SD-WAN Entitlements

The **SD-WAN Entitlements** tab provides detailed information about the SD-WAN subscriptions purchased by the Enterprise customer. In this page, users can find details about expired entitlements, entitlements due for renewal, active entitlements, total entitlements, and so on.

- **Expired Entitlements**- Displays the count of all the SD-WAN subscriptions that are currently expired and assigned to an Edge. Ensure to resolve the compliance issue by renewing the expired subscription or assigning an available subscription to replace the expired subscription. Selecting **View** will display the detailed information about the entitlements in the Subscriptions table below.
- **Entitlements Due For Renewal**- Displays the count of all the SD-WAN subscriptions that are due to expire within the next 90 days. Users must take action on these within the next 90 days. Renew the subscriptions or assign an available subscription to the expiring subscription's Edge.
- **Active Entitlements**- Displays the count of all the SD-WAN subscriptions that are currently unexpired. These subscriptions also include those due for renewal within the next 90 days.
- **Total Entitlements**- Displays the total count of all the purchased subscriptions. This includes all active subscriptions, expired subscriptions, and subscriptions due for renewal.

Use the **Search** field to find the entitlements by SKU, Serial number, Customer name, and Contract number.

Figure 7-2: SD-WAN Entitlements Tab



The **Entitlements** table lists all the details:

Table 31: Total Entitlements - Options and Descriptions

Option	Descriptions
Product	Displays the name of the product. Default is SD-WAN.
Serial Number	Displays the software subscription's unique identifier.
Edition	Displays either Enterprise, Premium, or Standard
Bandwidth	Displays the license throughput or bandwidth.
Quantity	Displays the count of SD-WAN subscriptions.
Status	Displays the license status.
End Customer	Displays the name of the End Customer who will utilize the license.
End Customer ERP Name	Displays the ERP name of the End Customer who will utilize the license.
End Customer ERP Number	Displays the ERP number of the End Customer who will utilize the license.
Partner	Displays the name of the Partner associated with the license.
Partner ERP Name	Displays the ERP name of the Partner associated with the license.
Partner ERP Number	Displays the ERP number of the Partner associated with the license.
Start Date	Displays the date the license begins.
Expiration Date	Displays the date the license expires.
Expiration	Displays the length of time remaining on the license.
SKU	Displays the SKU that is assigned to the license.
Contract Number	Displays the contract number, which is linked to the license.
Contract Line Number	Displays the contract line number, which is linked to the license.
Description	Displays a description of the SD-WAN subscription.
Download CSV button	Select to download an Excel file of details from the Subscriptions table.
Show or Hide Columns	Select the column fields to be displayed in the Subscriptions table.
Subscriptions per page	From the **Subscriptions per page** drop-down menu, choose the number of records to display (10-5000).

On the **Entitlements** page, perform the following actions:

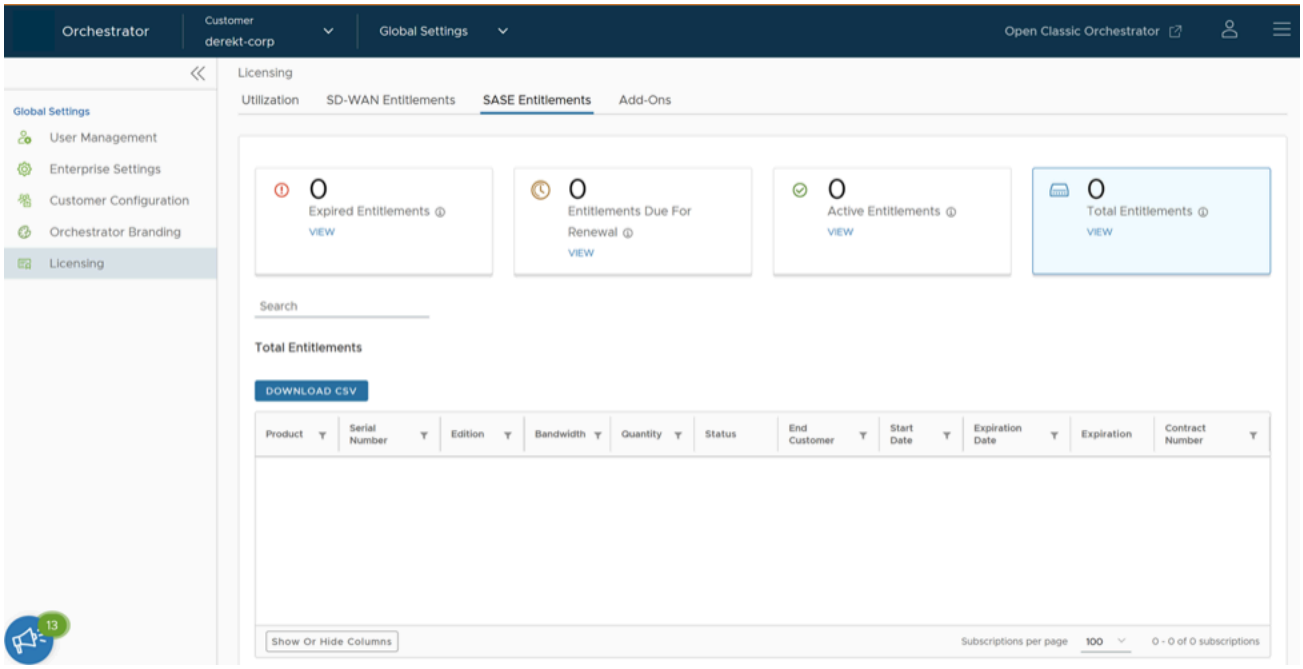
- **Download CSV**- Select to download an Excel file of details from the Subscriptions table.
- **Show or Hide Columns**- Select and select the column fields to display in the Entitlements table.
- **Subscriptions per page**- Choose the number of records to display (10-5000) in the Entitlements table.

SASE Entitlements

The **SASE Entitlements** tab provides detailed information about the SASE subscriptions purchased by the Enterprise customer. In this page, users can find details about expired entitlements, entitlements due for renewal, active entitlements, total entitlements, and so on.

Note: Edge assignment is not supported.

Figure 7-3: SASE Entitlements Tab



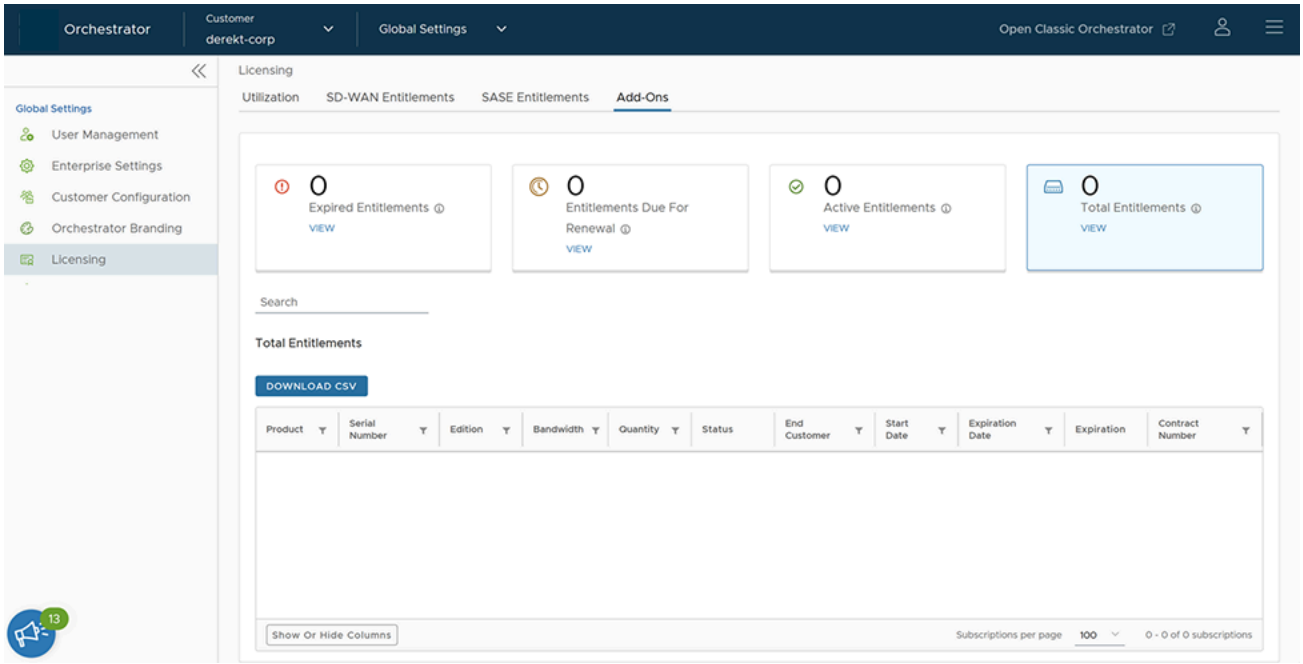
For descriptions of entitlement parameters, refer to the **Entitlements Information** table.

Add-Ons

The **Add-Ons** tab provides detailed information about subscription Add-On purchases. Examples include: dedicated hosted Orchestrator, dedicated hosted Gateway, Enhanced Firewall Services (EFS), and so on.

Note: Add-Ons cannot be linked to an Edge.

Figure 7-4: Add-Ons Tab



For descriptions of entitlement parameters, refer to the **Entitlements Information** table.

Appendix A

References

This topic contains the following section:

- Related Documents

A.1 Related Documents

Arista provides the following documentation for **VeloCloud SD-WAN**:

- *Arista VeloCloud SD-WAN Operator Guide*
- *Arista VeloCloud SD-WAN Administration Guide*
- *Arista VeloCloud SD-WAN Gateway Monitoring Guide*
- *Arista VeloCloud SD-WAN Partner Guide*
- *Arista VeloCloud SD-WAN Troubleshooting Guide*
- *Arista VeloCloud SD-WAN Orchestrator Deployment and Monitoring Guide*
- *Arista VeloCloud SD-WAN Design Guide for Enhanced Firewall Services*
- *Arista VeloCloud SD-WAN 6.4 API*
- *Arista VeloCloud Portal API 6.4*