Configure ISE as an External Authentication for DNAC GUI

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Introduction

This document describes how to configure Cisco Identity Services Engine (ISE) as an external authentication for Cisco DNA Center GUI administration.

Prerequisites

Requirements

Cisco recommends that you have the knowledge of these topics:

- TACACS+ and RADIUS protocols
- Cisco ISE Integration with Cisco DNA Center
- Cisco ISE Policy Evaluation

Components Used

The information in this document is based on these software and hardware versions:

- Cisco Identity Services Engine (ISE) Version 3.4 Patch1
- Cisco DNA Center Version-2.3.5.5

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure

that you understand the potential impact of any command.

Before You Begin

- Ensure you have at least one RADIUS authentication server configured on **System > Settings > External Services > Authentication and Policy Servers**.
- Only a user with SUPER-ADMIN-ROLE permissions on Cisco DNA can perform this procedure.
- Enable external authentication fallback.

⚠ **Caution**: In releases earlier than 2.1.x, when external authentication is enabled, Cisco DNA Center falls back to local users if the AAA server is unreachable or the AAA server rejects an unknown username. In the current release, Cisco DNA Center does not fall back to local users if the AAA server is unreachable or the AAA server rejects an unknown username. When external authentication fallback is enabled, external users and local admins can log in to Cisco DNA Center.

To enable external authentication fallback, SSH to the Cisco DNA Center instance and enter the this CLI command (**magctl rbac external_auth_fallback enable**).

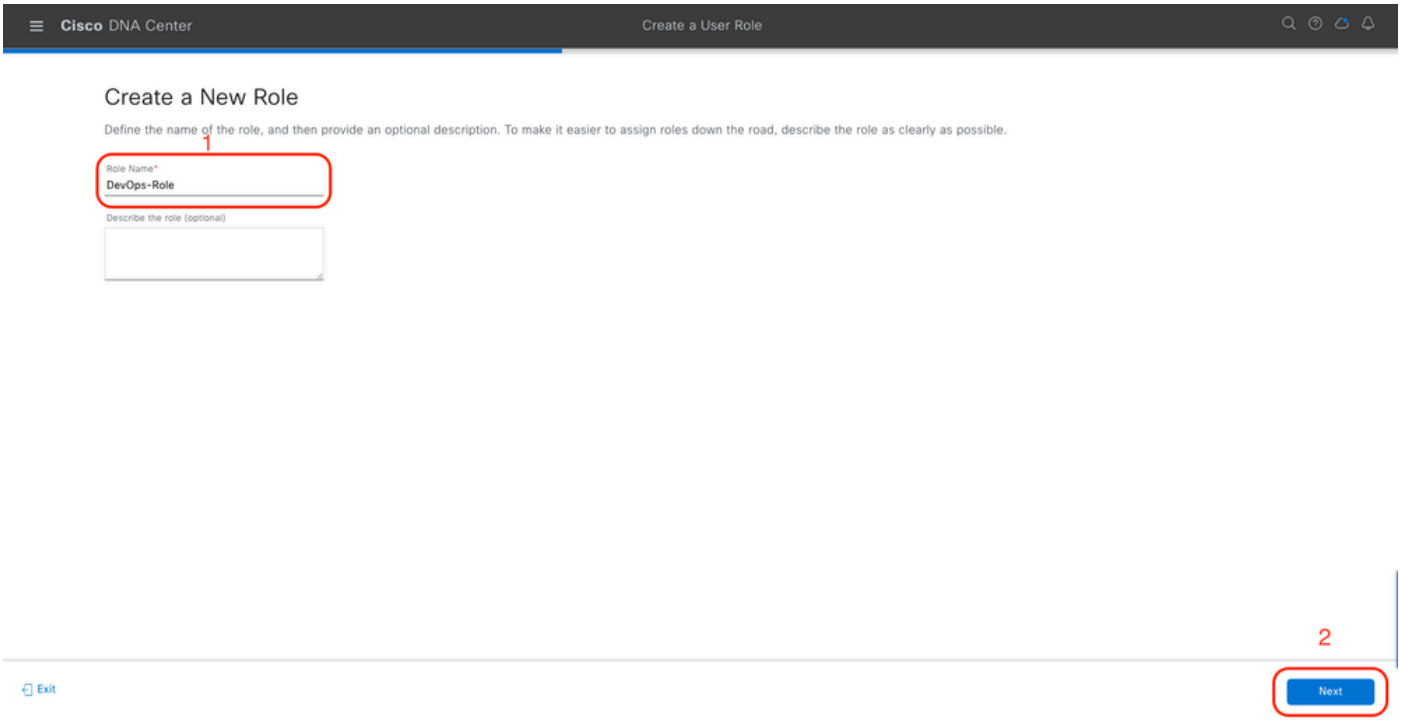
Configure

(Option 1) Configure Cisco DNA External Authentication Using RADIUS

Step 1. (Optional) Define Custom Roles.
Configure your custom roles that fulfils your requirement, instead, you can use the default User Roles. This can be done from the tab **System > Users & Roles > Role Based Access Control**.

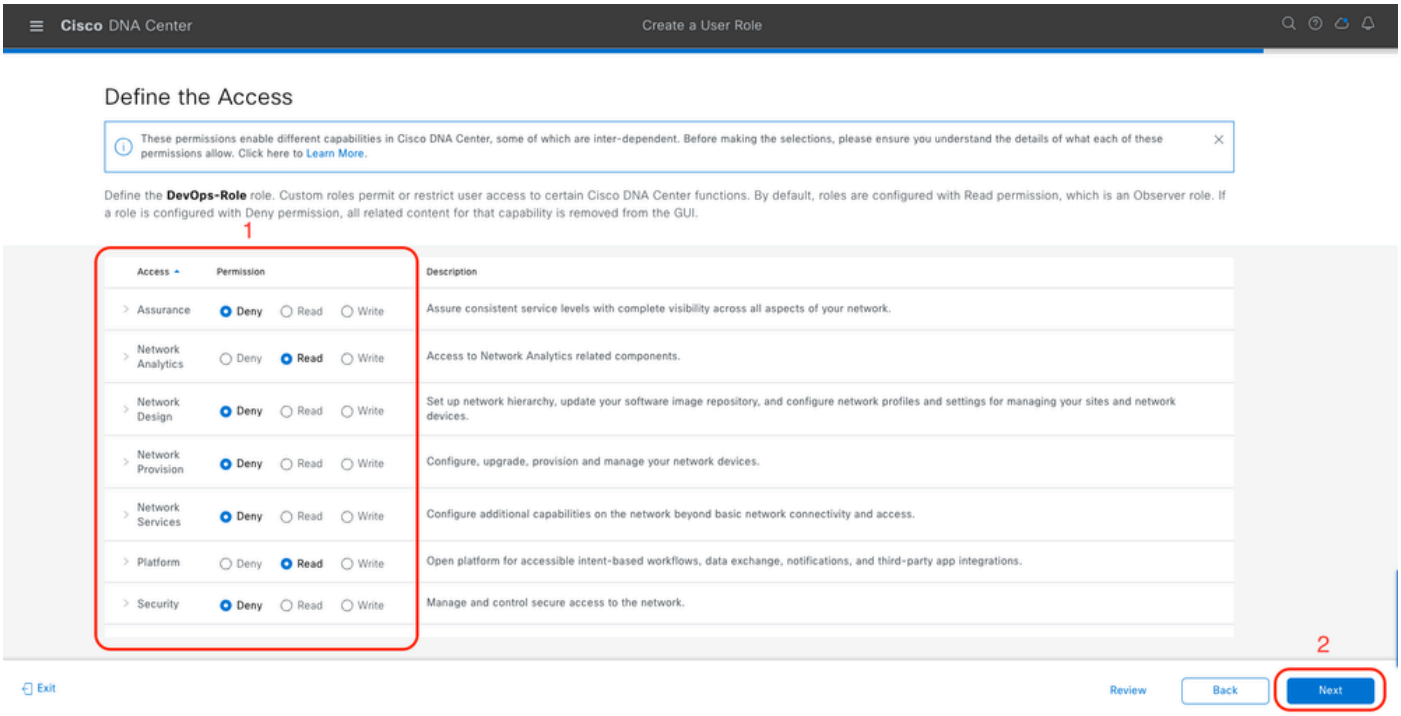
Procedure

a. Create a New Role.



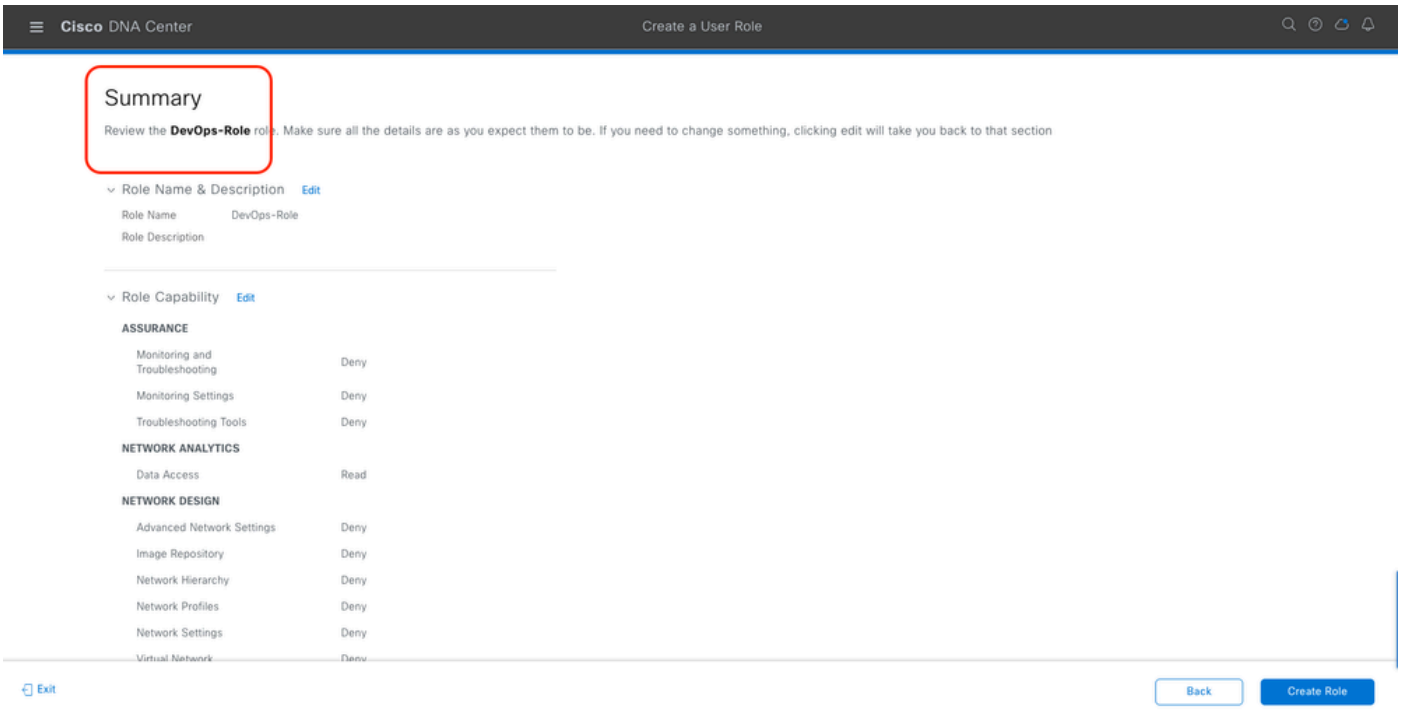
DevOps Role Name

b. Define the Access.

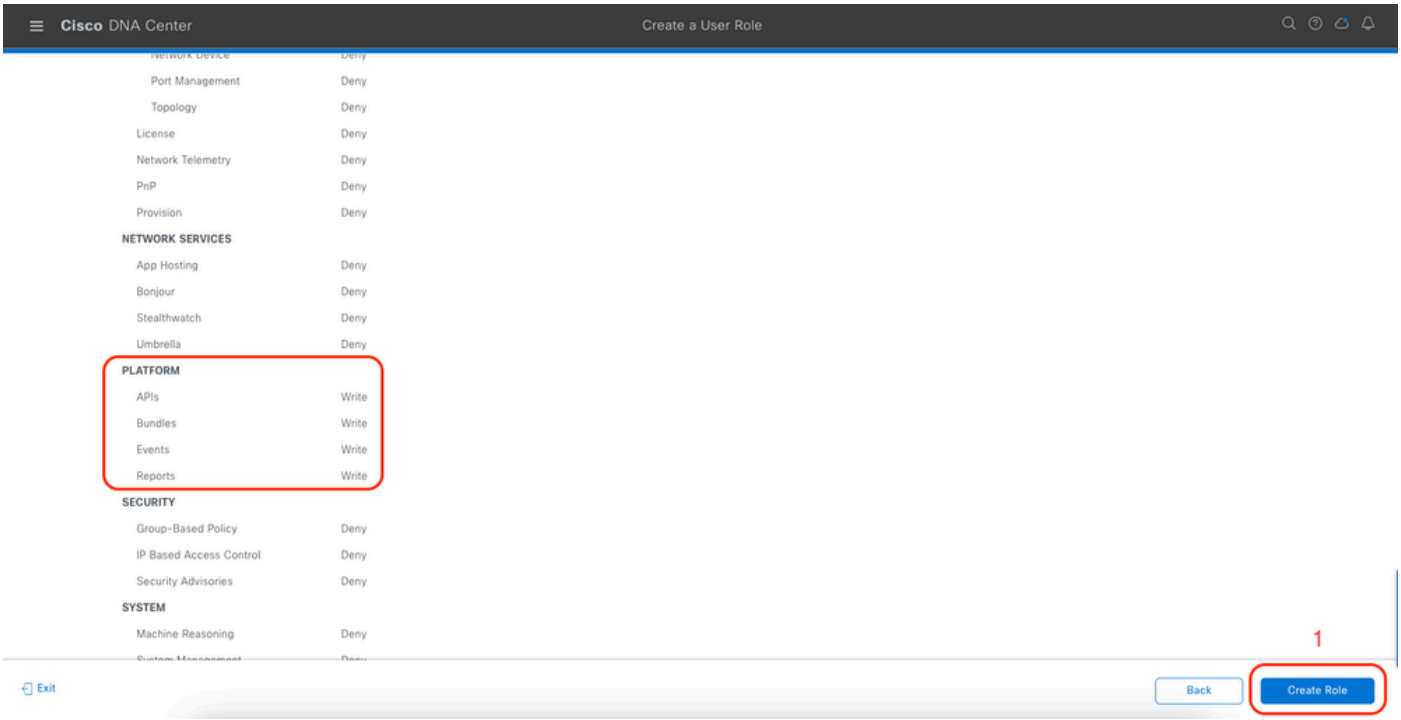


DevOps Role Access

c. Create the New Role.



DevOps Role Summary



Review and Create DevOps Role

Step 2. Configure External Authentication Using RADIUS.
This can be done from the tab **System > Users & Roles > External Authentication**.

Procedure

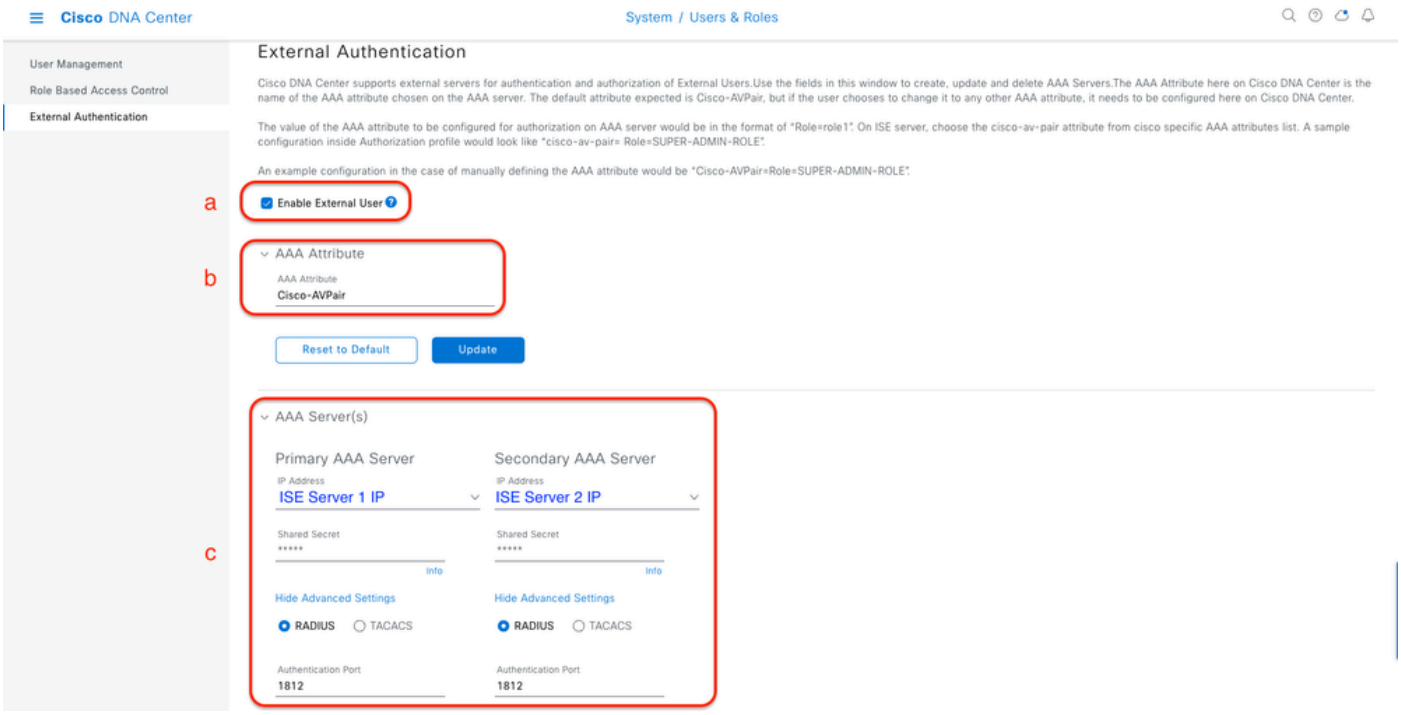
a. To enable external authentication in Cisco DNA Center, check the **Enable External User** check box.

b. Set the **AAA attributes**.

Enter **Cisco-AVPair** in the **AAA attributes** field.

c. (Optional) Configure Primary and Secondary AAA Server.

Ensure **RADIUS** protocol is enabled on **Primary AAA Server** at least, or on both Primary and Secondary server.



(RADIUS) External Authentication Configuration Steps

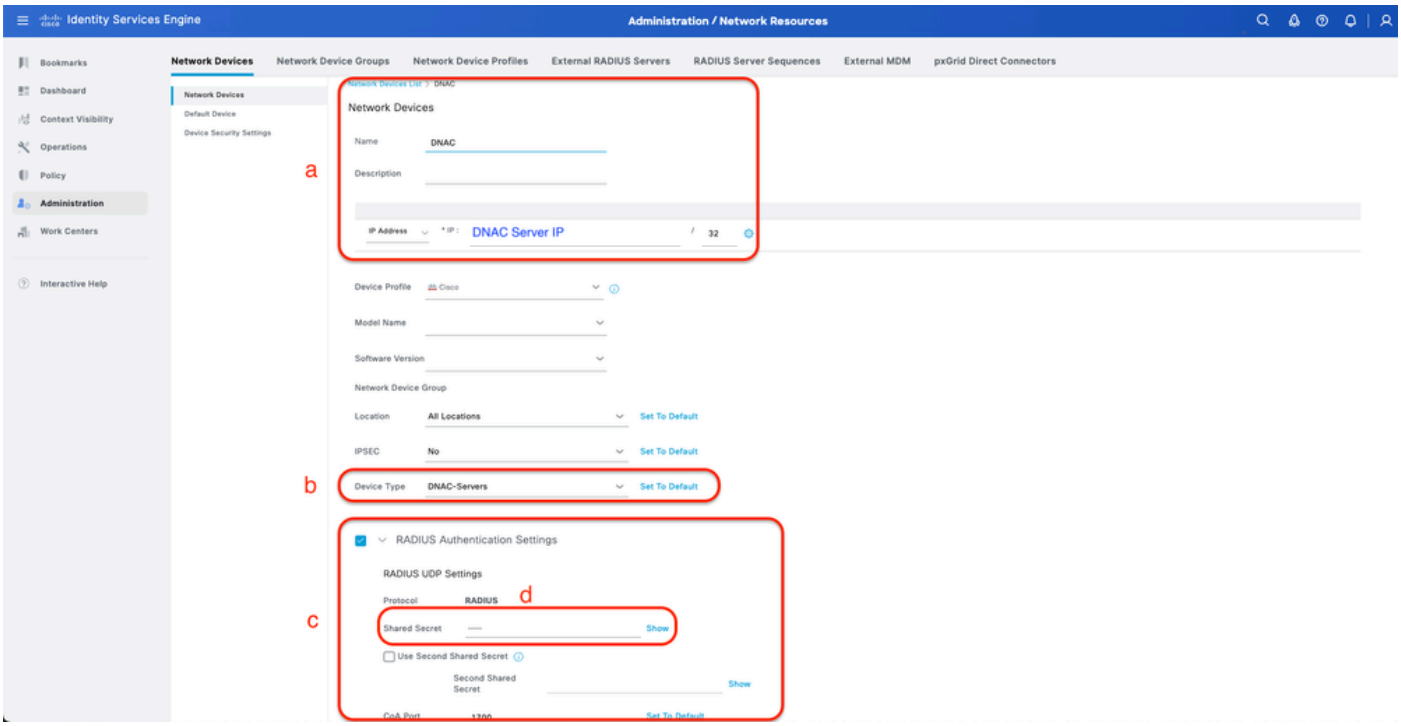
(Option 2) Configure ISE for RADIUS

Step 1. Add **Cisco DNA server** as a Network Device on ISE.

This can be done from the tab **Administration > Network Resources > Network Devices**.

Procedure

a. Define (Cisco DNA) **Network Device name** and **IP**.
b. (Optional) Classify **Device Type** for Policy Set condition.
c. Enable **RADIUS Authentication Settings**.
d. Set **RADIUS Shared Secret**.



ISE Network Device (DNAC) for RADIUS

Step 2. Create RADIUS Authorization Profiles.

This can be done from the tab **Policy > Policy Elements > Results > Authorization > Authorization Profiles**.

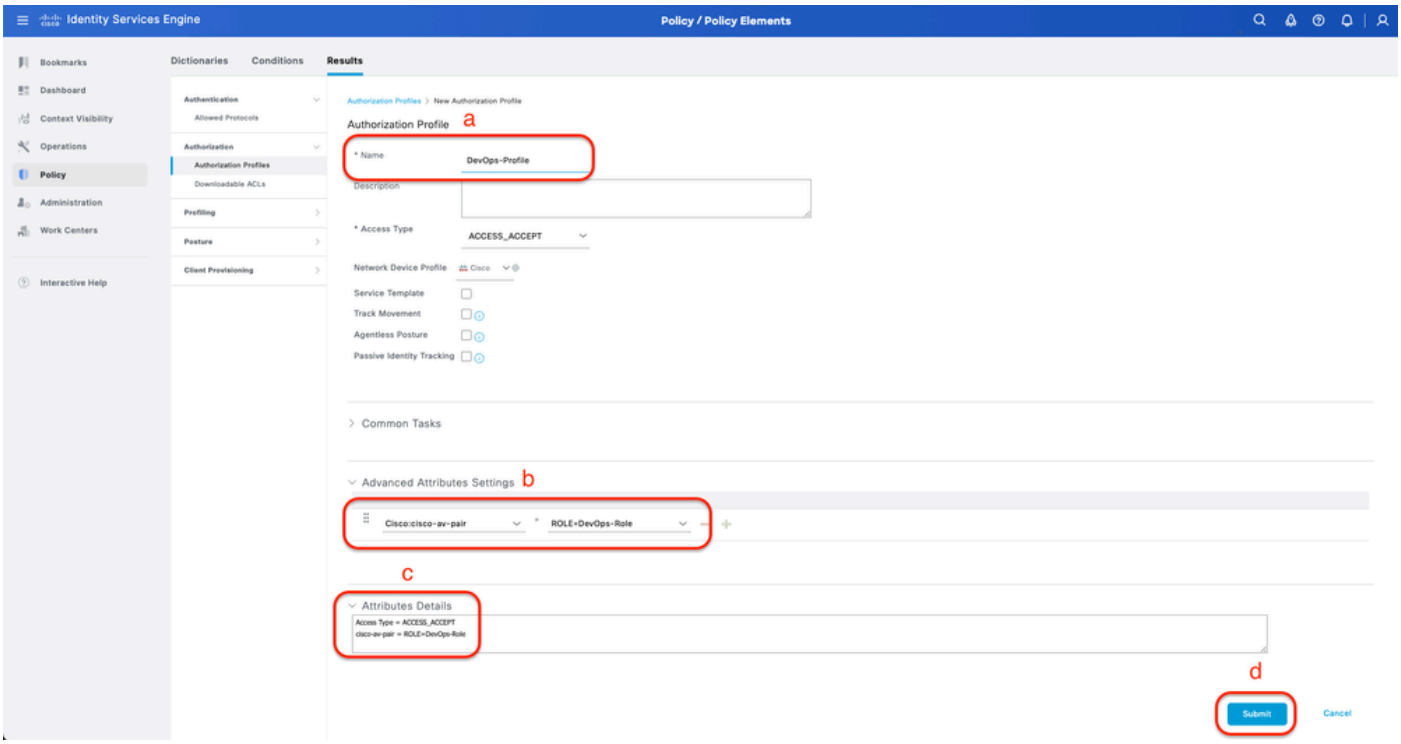
Note: Create 3x RADIUS Authorization Profiles, one for each User Role.

Procedure
a. Click **Add** and define the **RADIUS Authorization Profile name**.

b. Enter the **Cisco:cisco-av-pair** in the Advanced **Attributes Settings** and fill the correct **User role**.

- For the (DecOps-Role) user role, enter **ROLE=DevOps-Role**.
- For the (NETWORK-ADMIN-ROLE) user role, enter **ROLE=NETWORK-ADMIN-ROLE**.
- For the(SUPER-ADMIN-ROLE) user role, enter **ROLE=SUPER-ADMIN-ROLE**.

c. Review the **Attribute Details**.
d. Click **Save**.



Create Authorization Profile

Step 3. Create User Group.

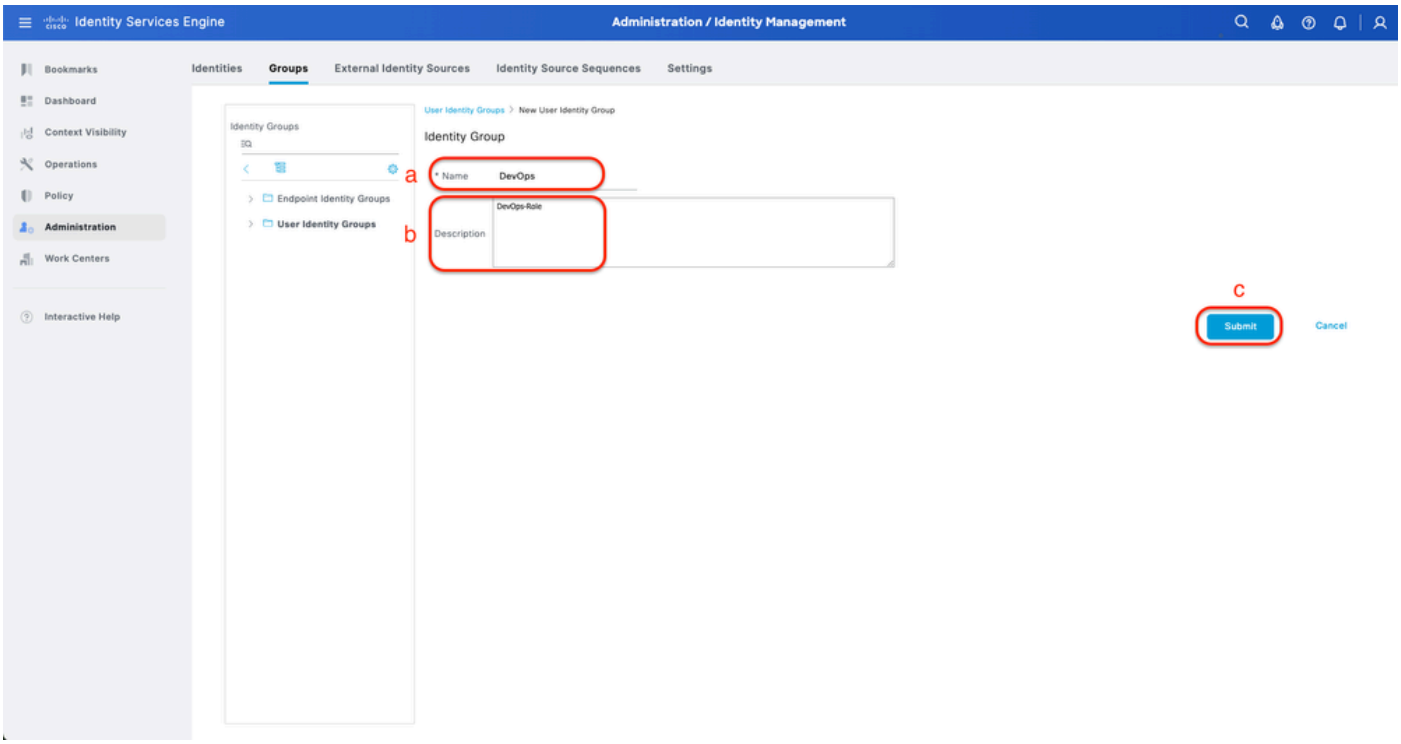
This can be done from the tab **Administration > Identity Management > Groups > User Identity Groups**.

Procedure

a. Click **Add** and define the **Identity Group name**.

b. (Optional) Define the **Description**.

c. Click **Submit**.



Create User Identity Group

Step 4. Create Local User.

This can be done from the tab **Administration > Identity Management > Identities > Users**.

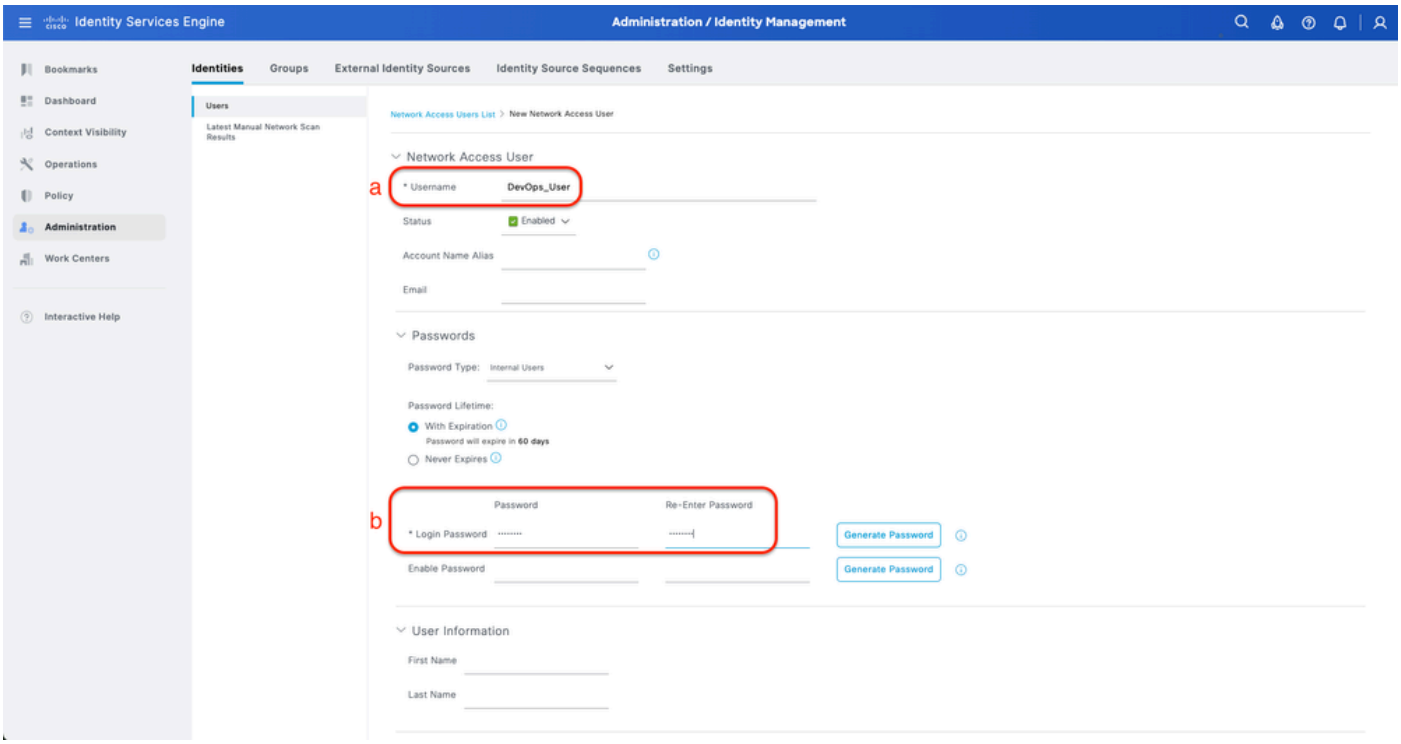
Procedure

a. Click **Add** and define the **Username**.

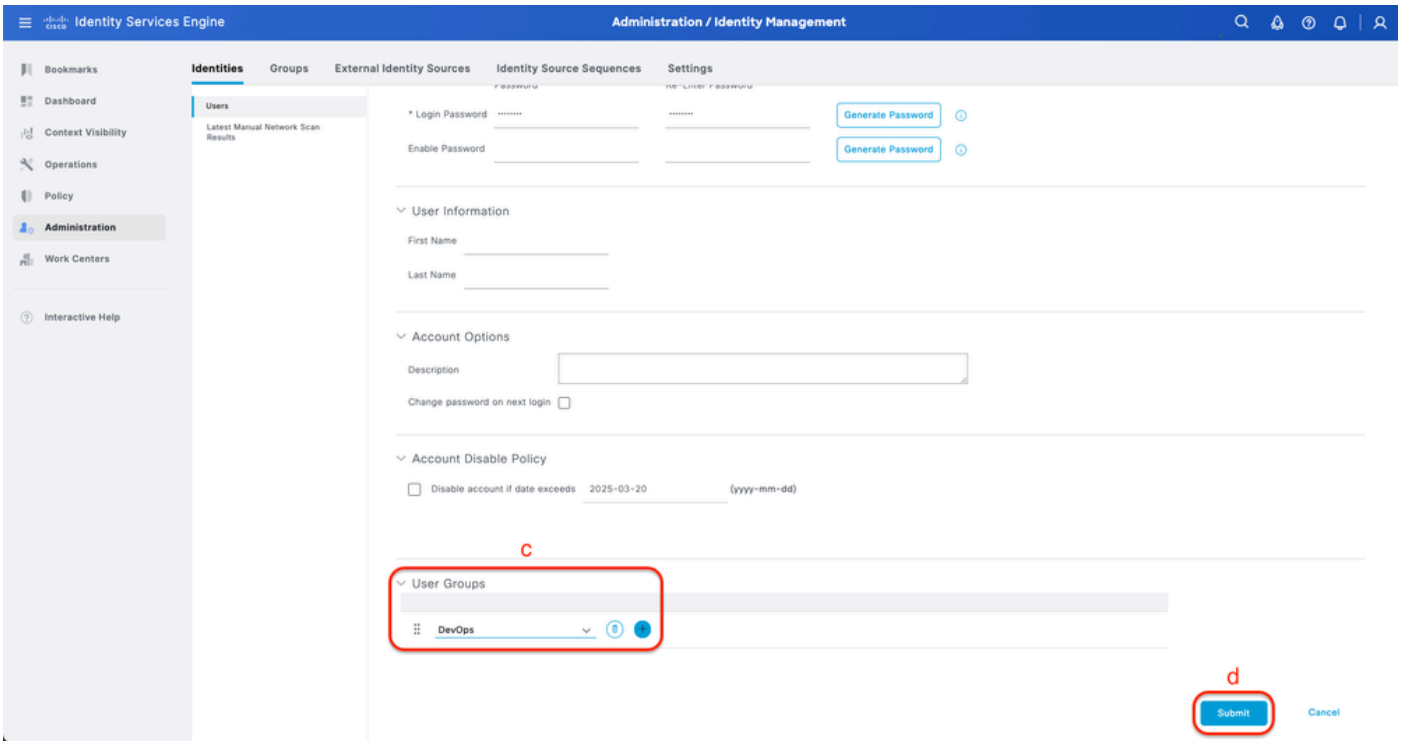
b. Set the **Login Password**.

c. Add the **user** to the related user group.

d. Click **Submit**.



Create Local User 1-2



Create Local User 2-2

Step 5. (Optional) Add RADIUS Policy Set.

This can be done from the tab **Policy > Policy Sets**.

Procedure

a. Click **Actions** and **choose** (**Insert new row above**).

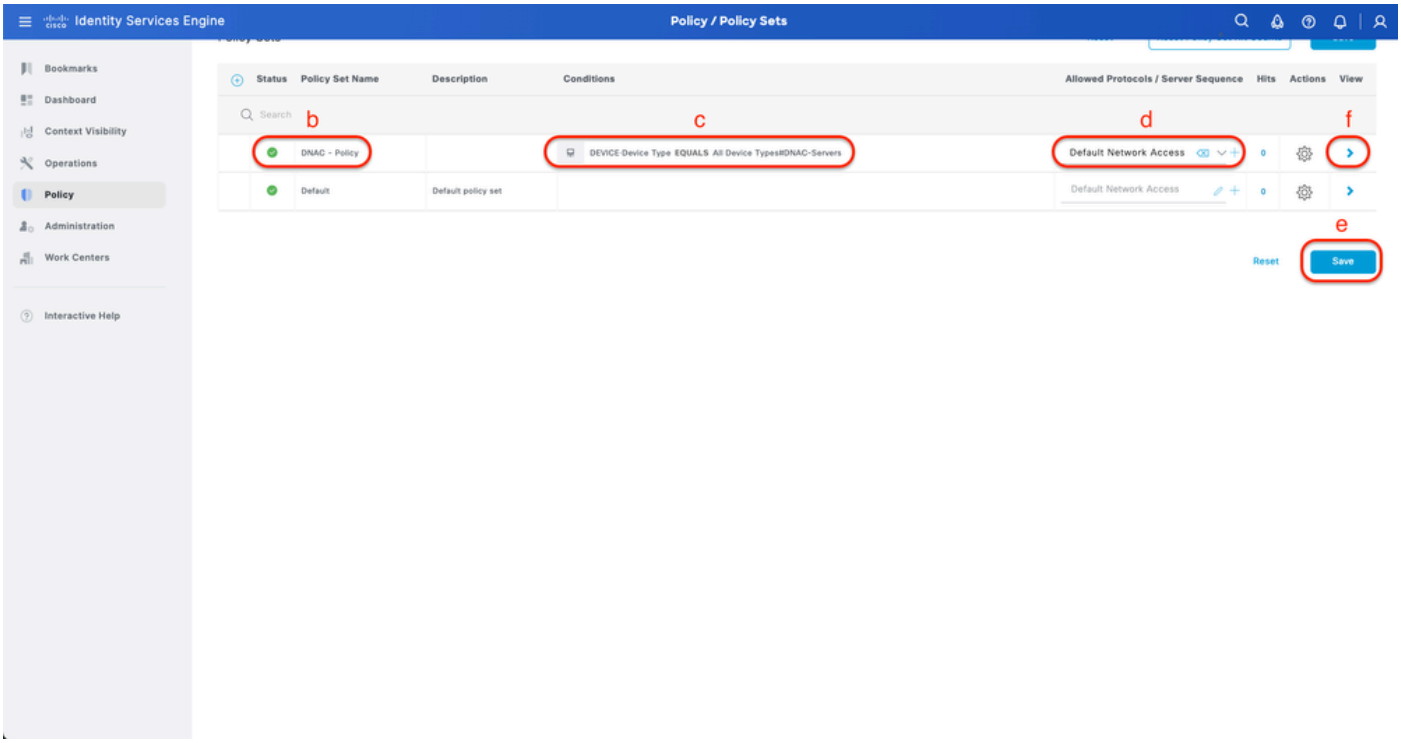
b. Define the **Policy Set name**.

c. Set the **Policy Set Condition** to **Select** Device Type you created previously on (Step1 > b).

d. Set the Allowed protocols.

e. Click **Save**.

f. Click (>) Policy Set View to configure authentication and authorization rules.



Add RADIUS Policy Set

Step 6. Configure RADIUS Authentication Policy.

This can be done from the tab **Policy > Policy Sets > Click (>)**.

Procedure

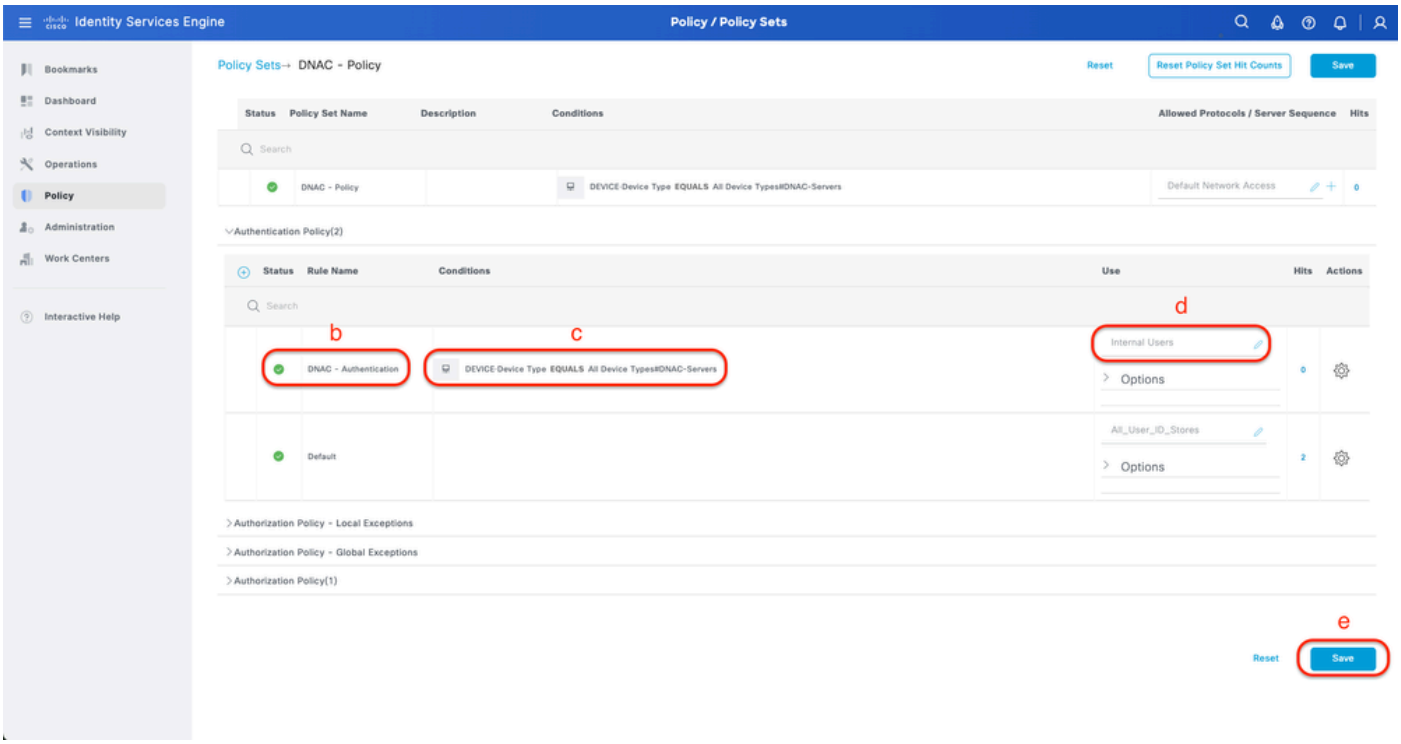
a. Click **Actions** and **choose** (**Insert new row above**).

b. Define the **Authentication Policy name.**

c. Set the Authentication Policy **Condition** and **Select** Device Type you created previously on (Step1 > b).

d. Set the Authentication Policy **Use** for Identity source.

e. Click **Save**.



Add RADIUS Authentication Policy

Step 7. Configure RADIUS Authorization Policy.

This can be done from the tab **Policy > Policy Sets> Click (>)**.

This step creates Authorization Policy for each User Role:

- SUPER-ADMIN-ROLE
- NETWORK-ADMIN-ROLE
- DevOps-Role

Procedure

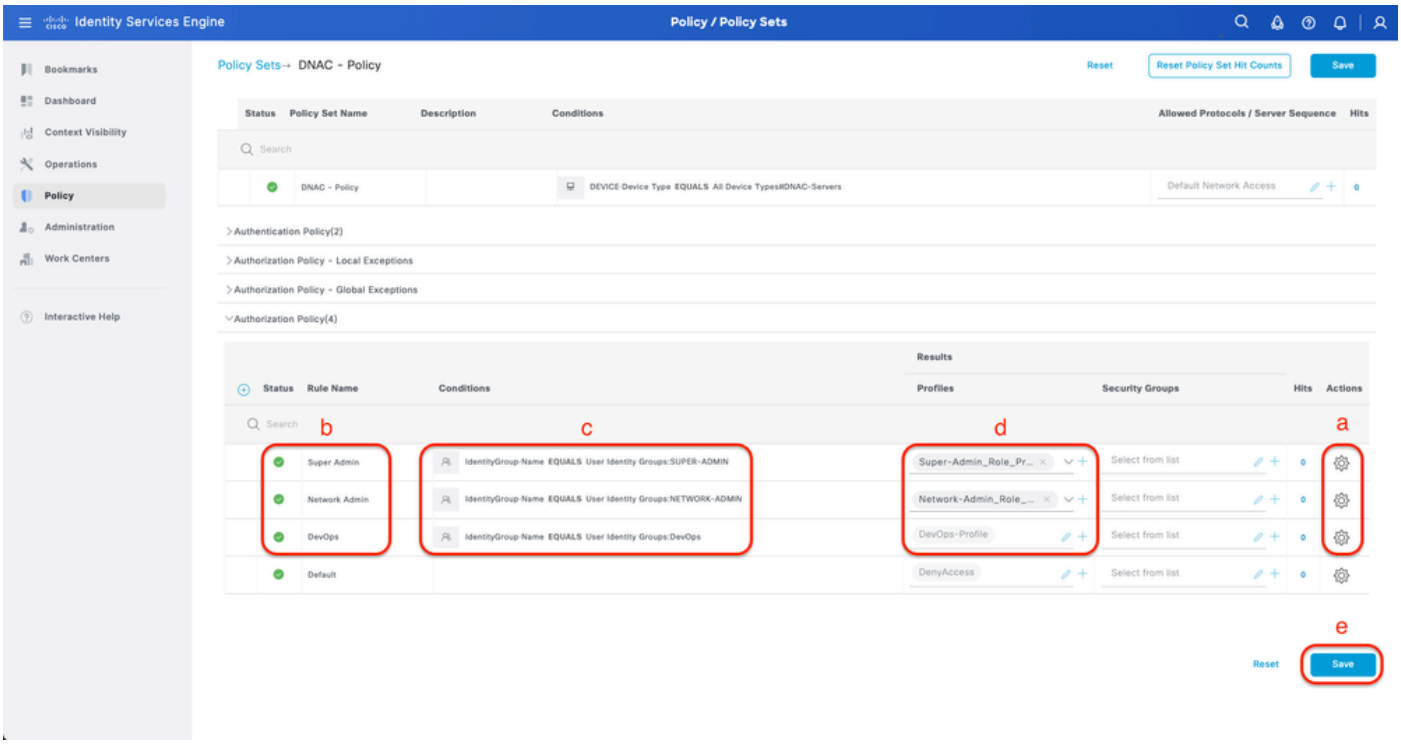
a. Click **Actions** and **choose** (**Insert new row above**).

b. Define the Authorization Policy **name**.

c. Set the Authorization Policy **Condition** and **Select** User Group that you created in (Step3).

d. Set the Authorization Policy **Results/Profiles** and **Select** Authorization Profile that you created in (Step2).

e. Click **Save**.



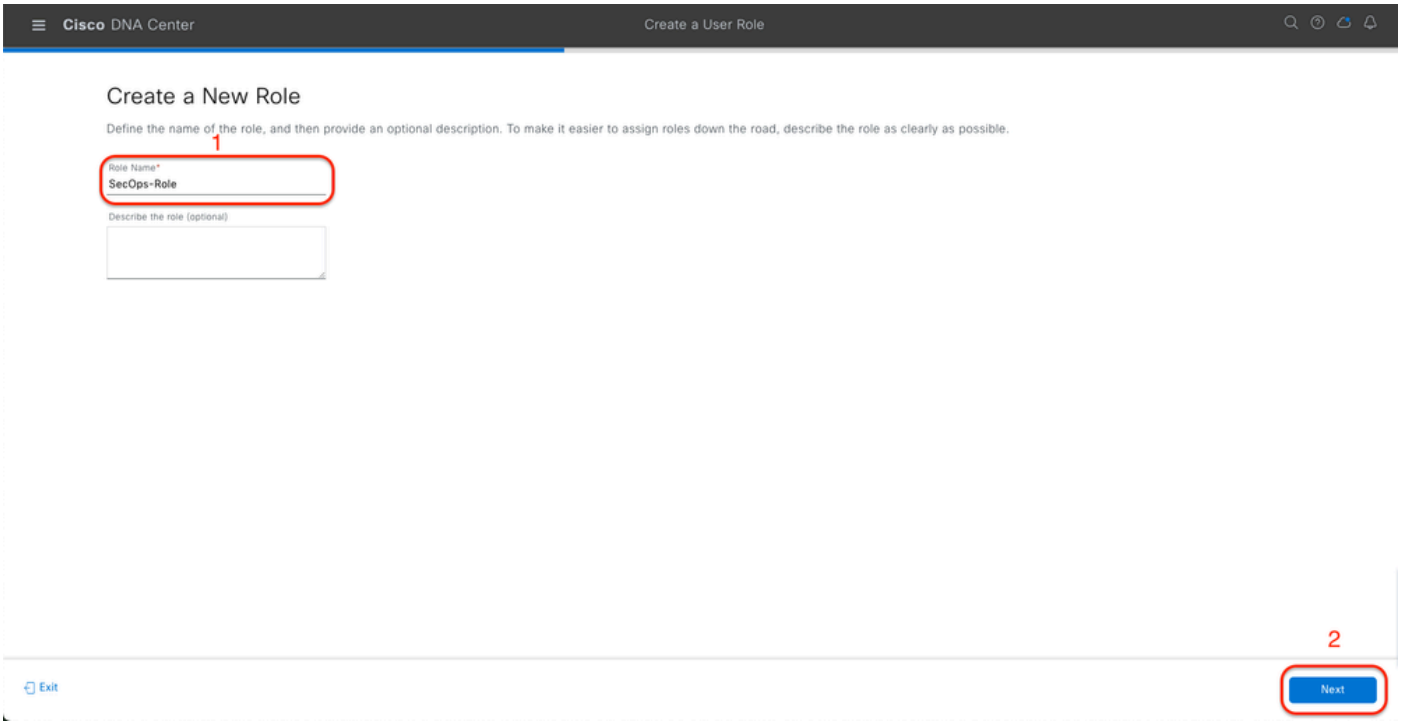
Add Authorization Policy

(Option 3) Configure Cisco DNA External Authentication Using TACACS+

Step 1. (Optional) Define Custom Roles.
Configure your custom roles that fulfils your requirement, instead, you can use the default User Roles. This can be done from the tab **System > Users & Roles > Role Based Access Control**.

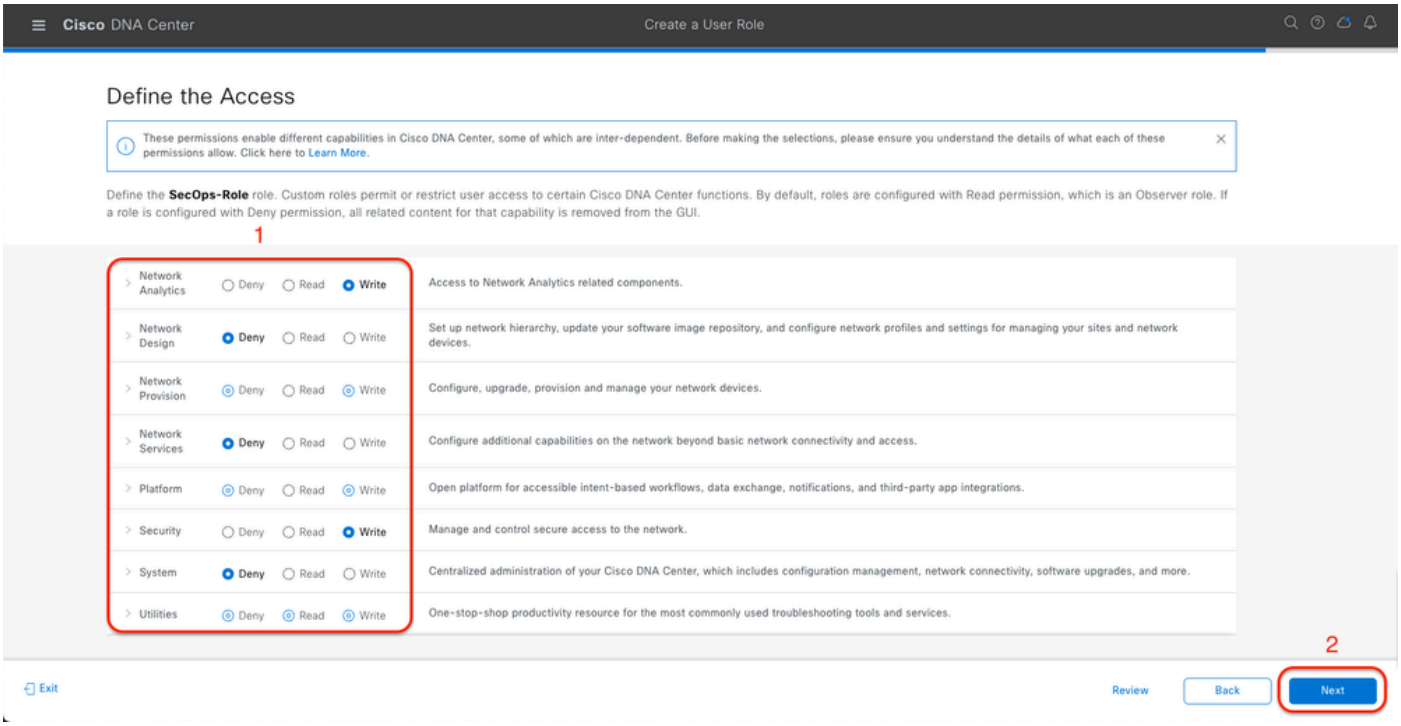
Procedure

a. Create a New Role.



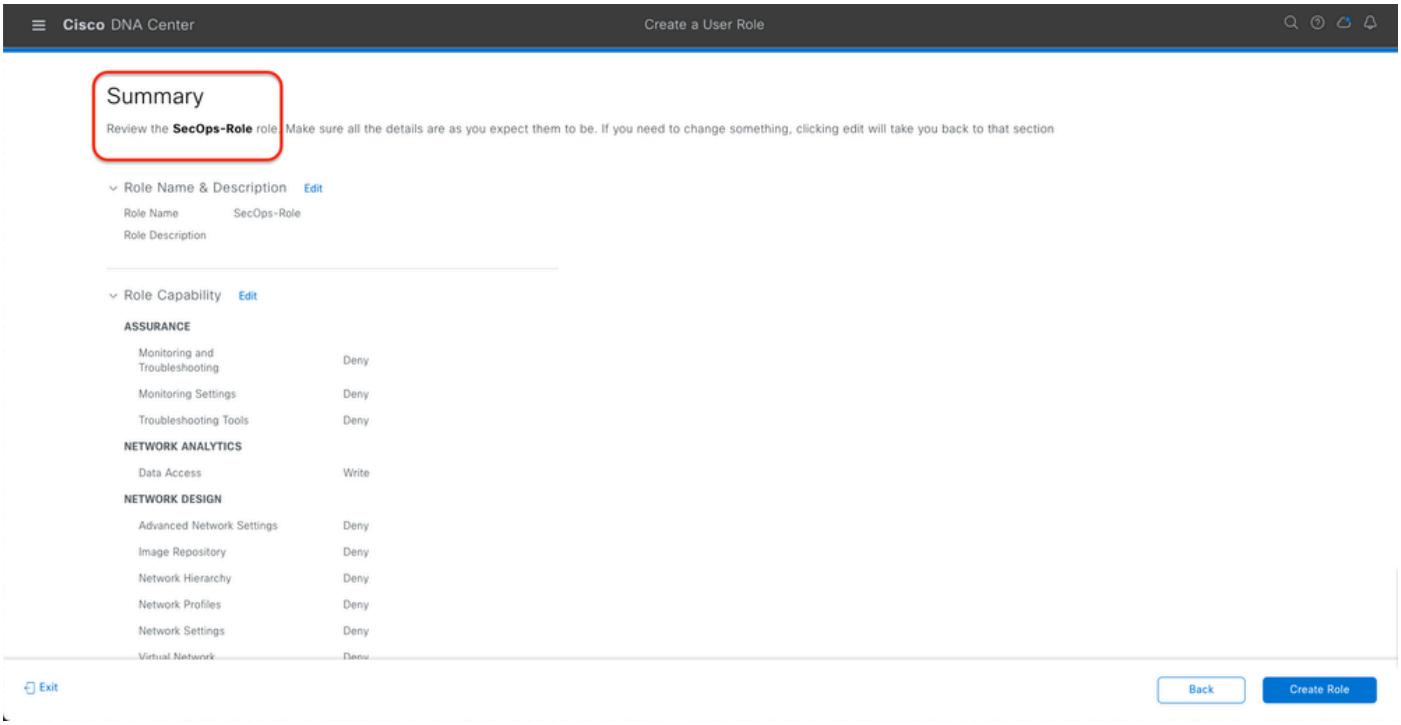
SecOps Role Name

b. Define the Access.

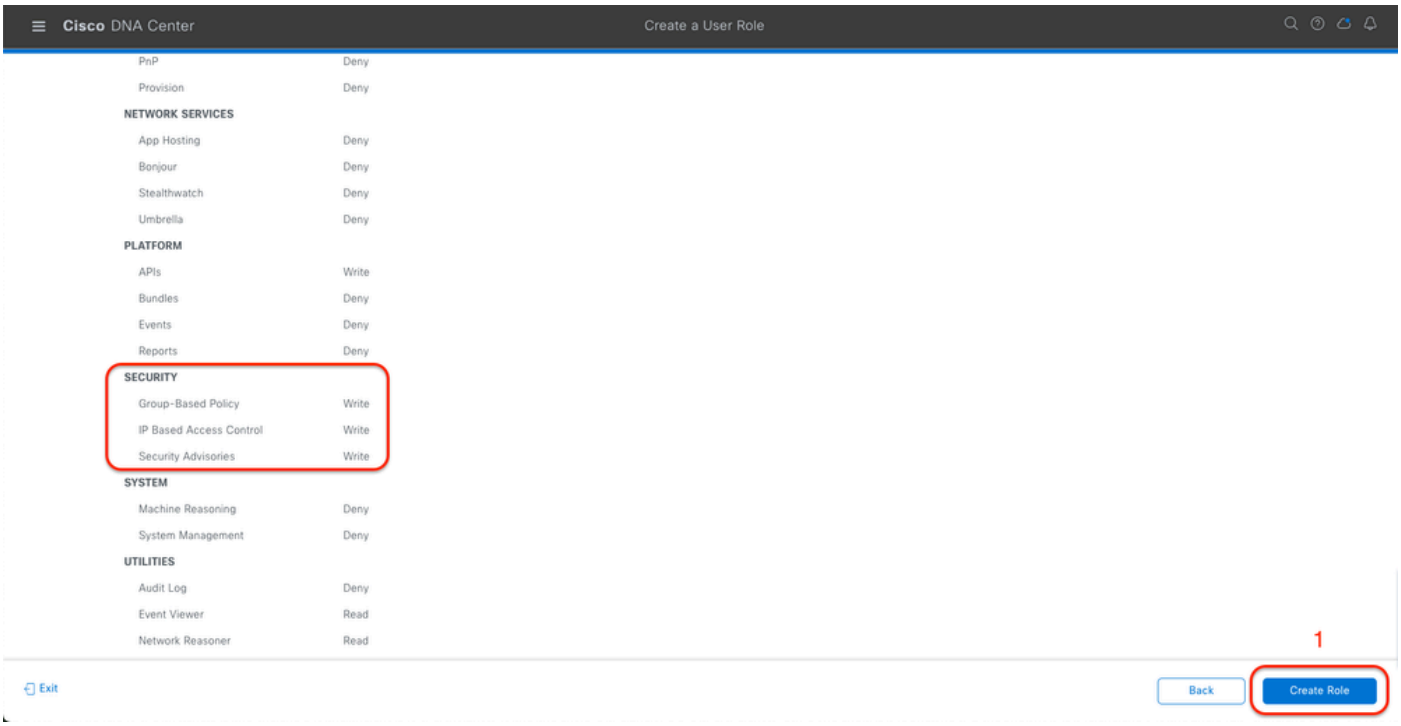


SecOps Role Access

c. Create the New Role.



SecOps Role Summary



Review and Create SecOps Role

Step 2. Configure External Authentication Using TACACS+.
This can be done from the tab **System > Users & Roles > External Authentication**.

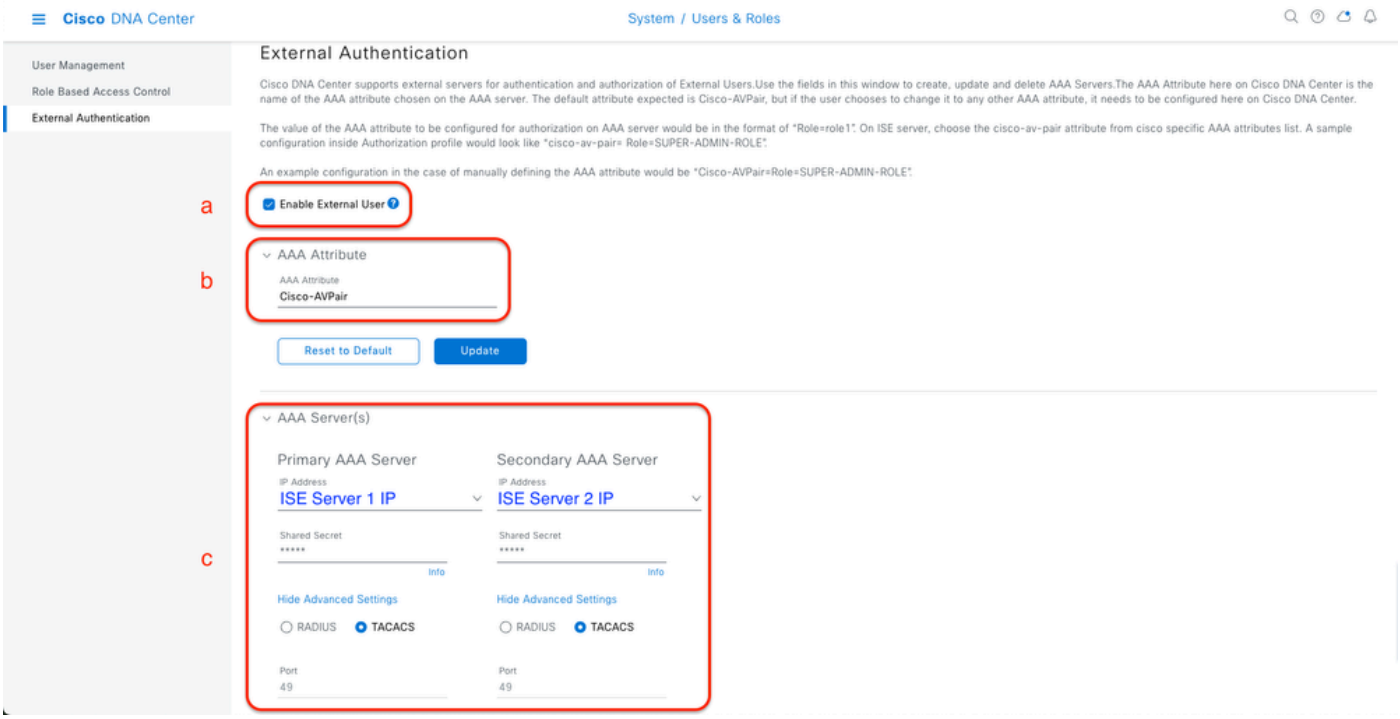
a. To enable external authentication in Cisco DNA Center, check the **Enable External User** check box.

b. Set the **AAA attributes**.

Enter **Cisco-AVPair** in the **AAA attributes** field.

c. (Optional) Configure **Primary** and **Secondary AAA Server**.

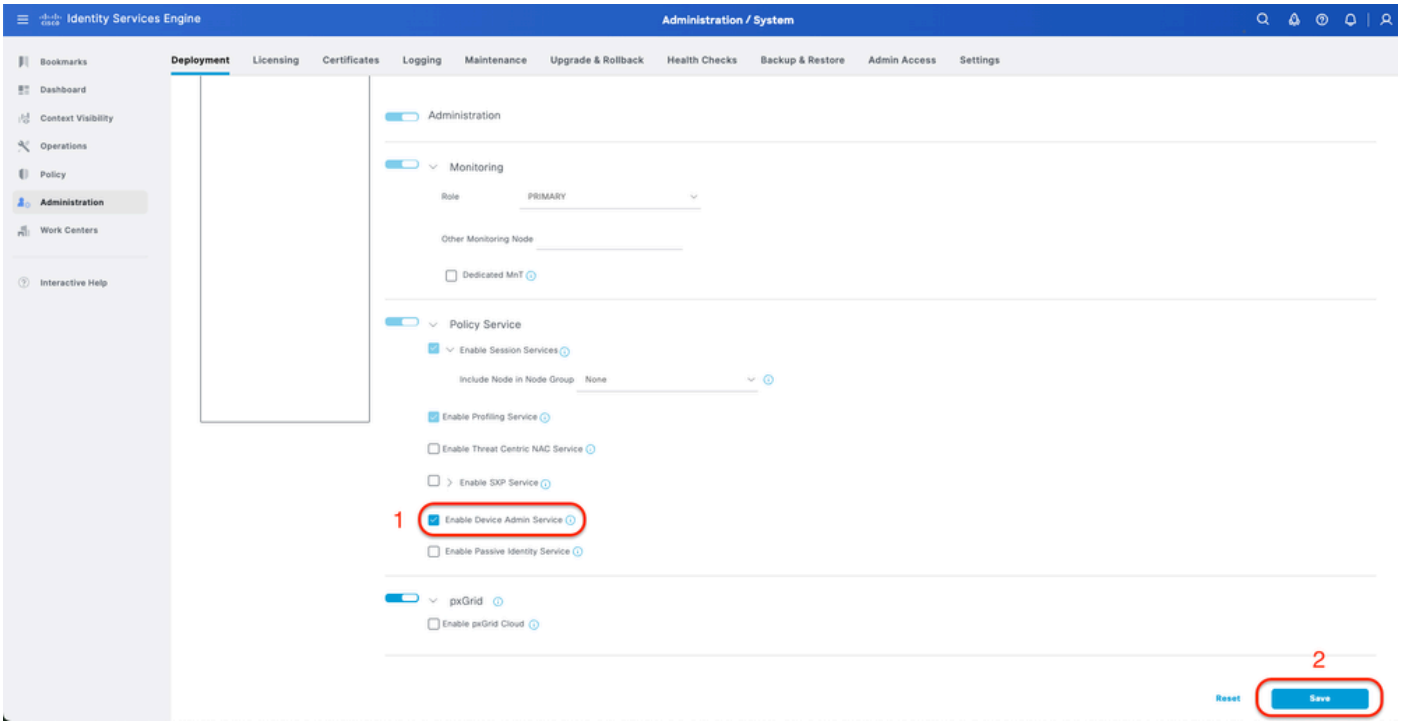
Ensure **TACACS+** protocol is enabled on **Primary AAA Server** at least, or on both Primary and Secondary server.



(TACACS+) External Authentication Configuration Steps

(Option 4) Configure ISE for TACACS+

Step 1. Enable Device Admin Service.
This can be done from the tab **Administration > System > Deployment > Edit** (ISE PSN Node) **> Check Enable Device Admin Service**.



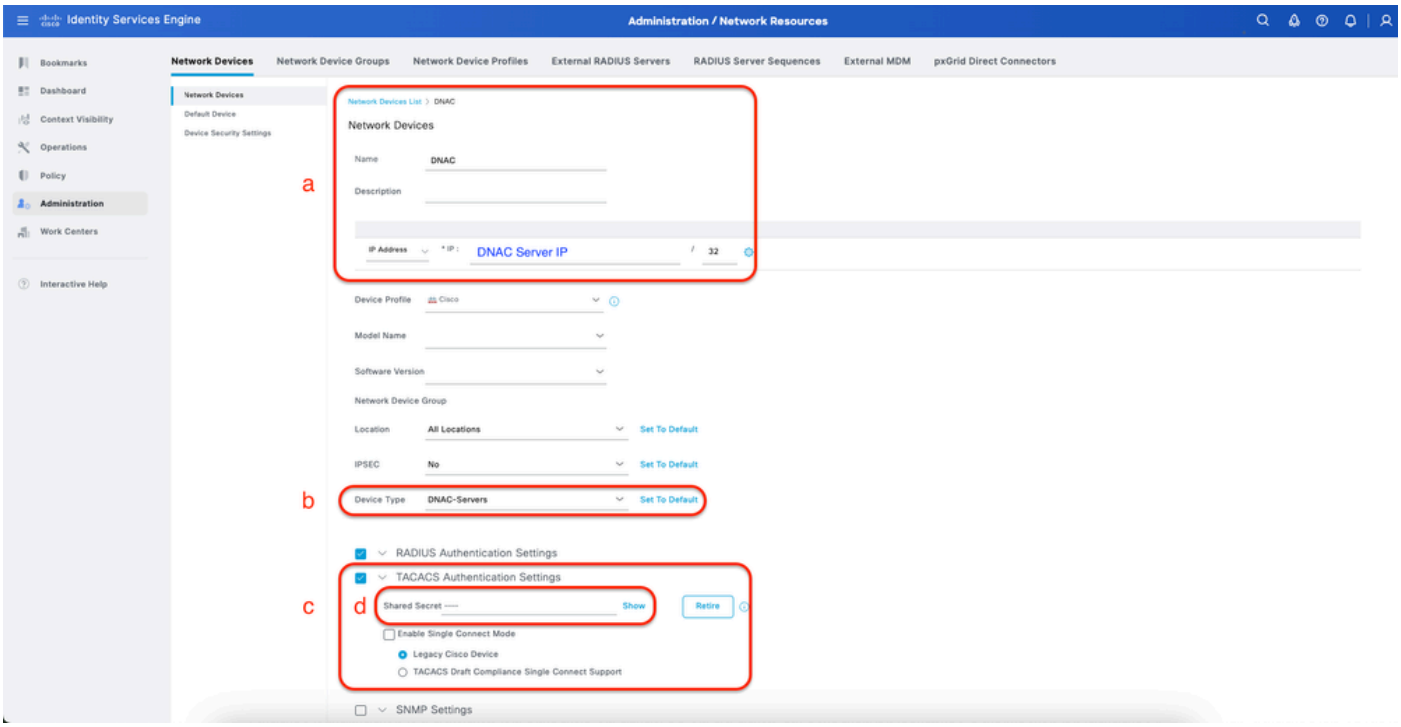
Enable Device Admin Service

Step 2. Add Cisco DNA server as a Network Device on ISE.

This can be done from the tab **Administration > Network Resources > Network Devices**.

Procedure

a. Define (Cisco DNA) **Network Device name** and **IP**.
b. (Optional) Classify **Device Type** for Policy Set condition.
c. Enable **TACACS+ authentication Settings**.
d. Set **TACACS+ Shared Secret**.



ISE Network Device (DNAC) for TACACS+

Step 3. Create TACACS+ Profiles for each Cisco DNA role.

This can be done from the tab **Work Centers > Device Administration > Policy Elements > Results > TACACS Profiles**.

Note: Create 3x TACACS+ Profiles, one for each User Role.

Procedure

a. Click **Add** and define the **TACACS Profile** name.

b. Click the **Raw View** tab.

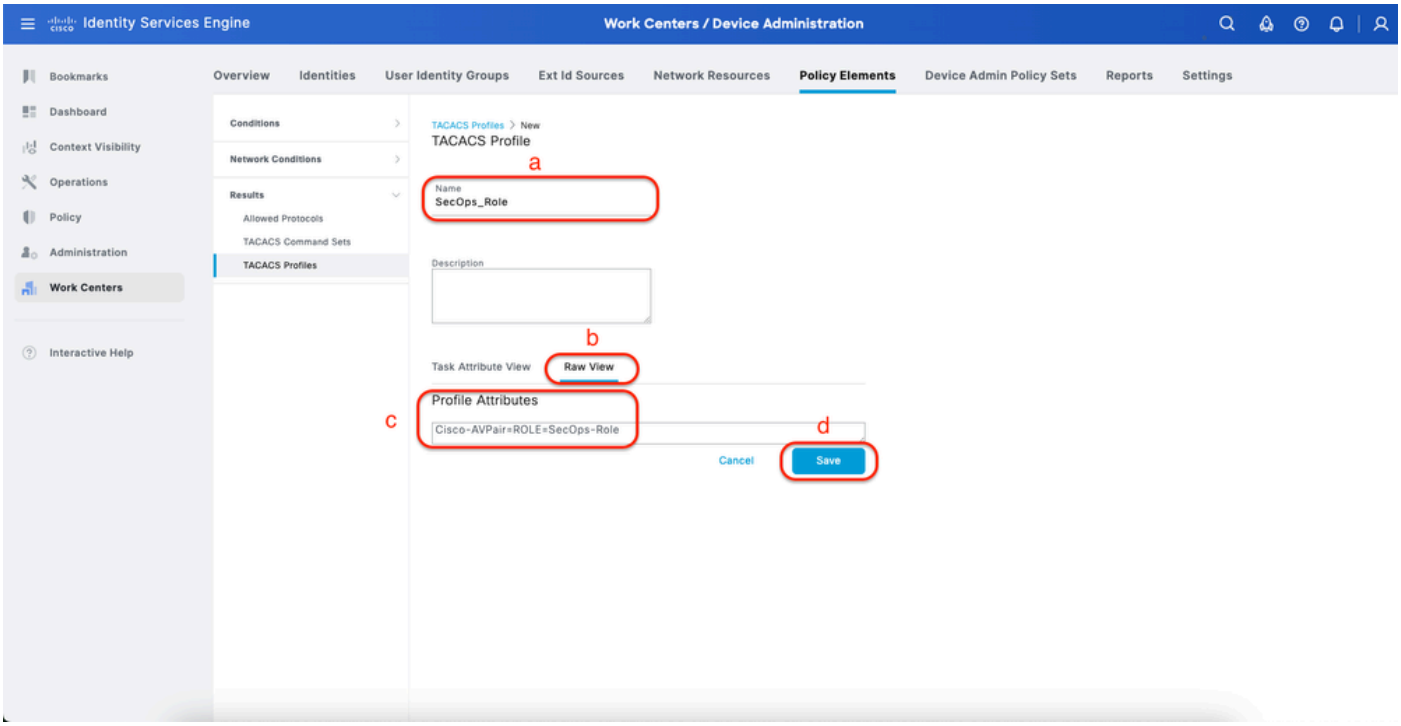
c. Enter the **Cisco-AVPair=ROLE=** and fill the correct **User role**.

- For the (SecOps-Role) user role, enter **Cisco-AVPair=ROLE=SecOps-Role**.
- For the (NETWORK-ADMIN-ROLE) user role, enter **Cisco-AVPair=ROLE=NETWORK-ADMIN-ROLE**.
- For the(SUPER-ADMIN-ROLE) user role, enter **Cisco-AVPair=ROLE=SUPER-ADMIN-ROLE**.

Note: Remember AVPair value (**Cisco-AVPair=ROLE=**) is case-sensitive and ensure it is matching to the Cisco DNA User Role.

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d. Click **Save**.



Create TACACS Profile (SecOps_Role)

Step 4. Create User Group.

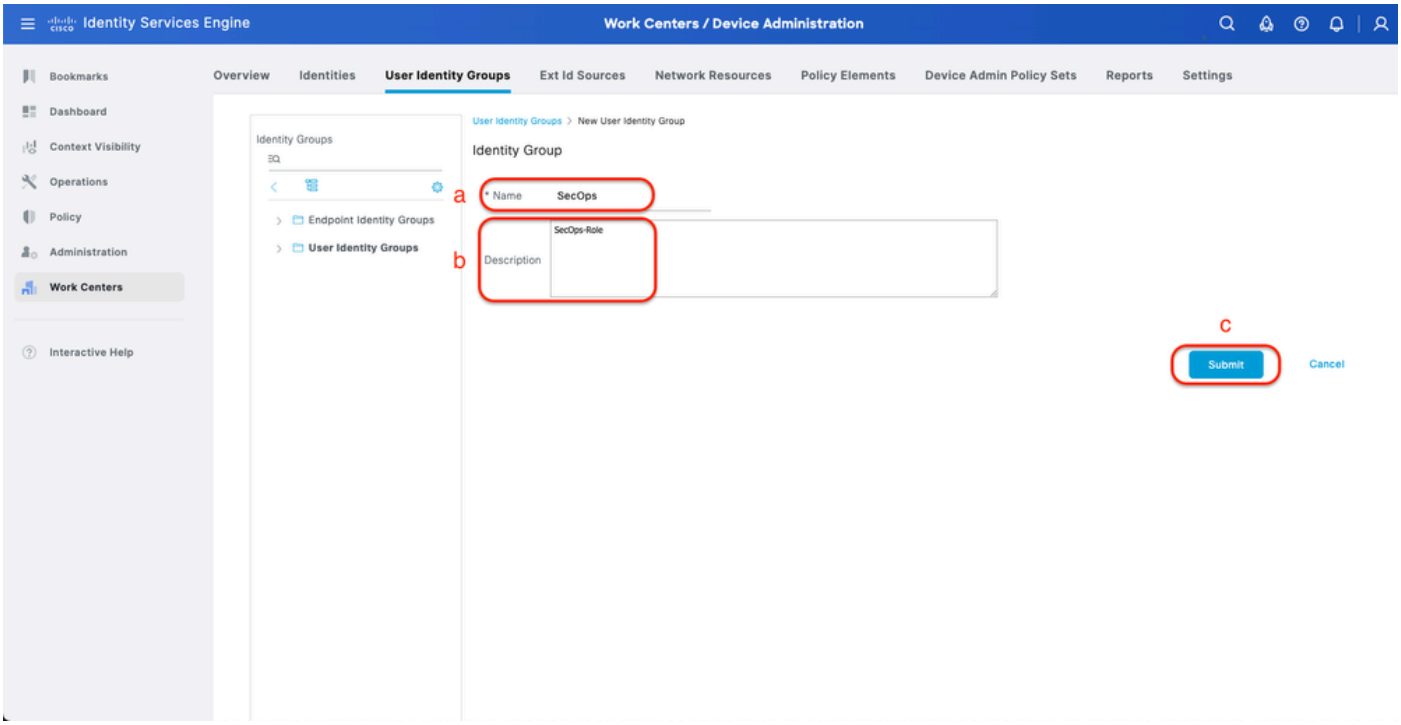
This can be done from the tab **Work Centers > Device Administration > User Identity Groups**.

Procedure

a. Click **Add** and define the **Identity Group name**.

b. (Optional) Define the **Description**.

c. Click **Submit**.



Create User Identity Group

Step 5. Create Local User.

This can be done from the tab **Work Centers > Device Administration > Identities > Users**.

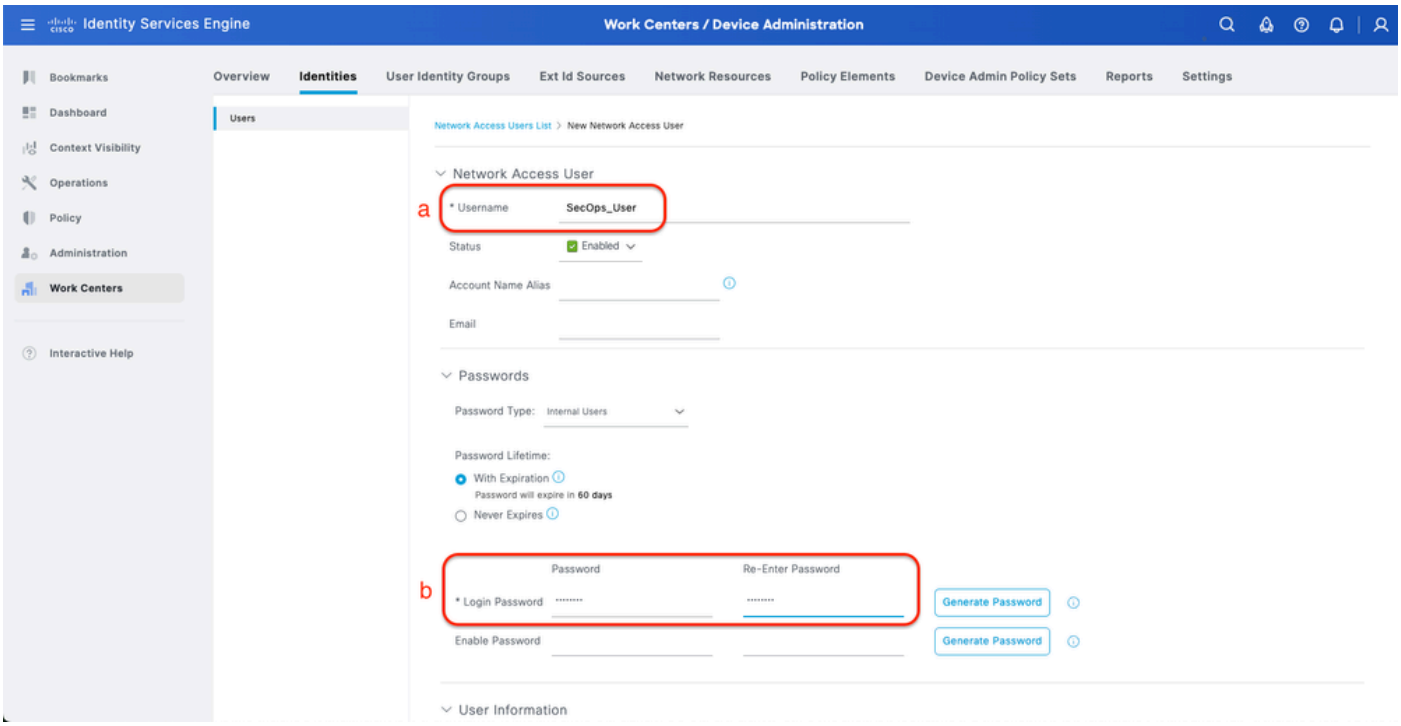
Procedure

a. Click **Add** and define the **Username**.

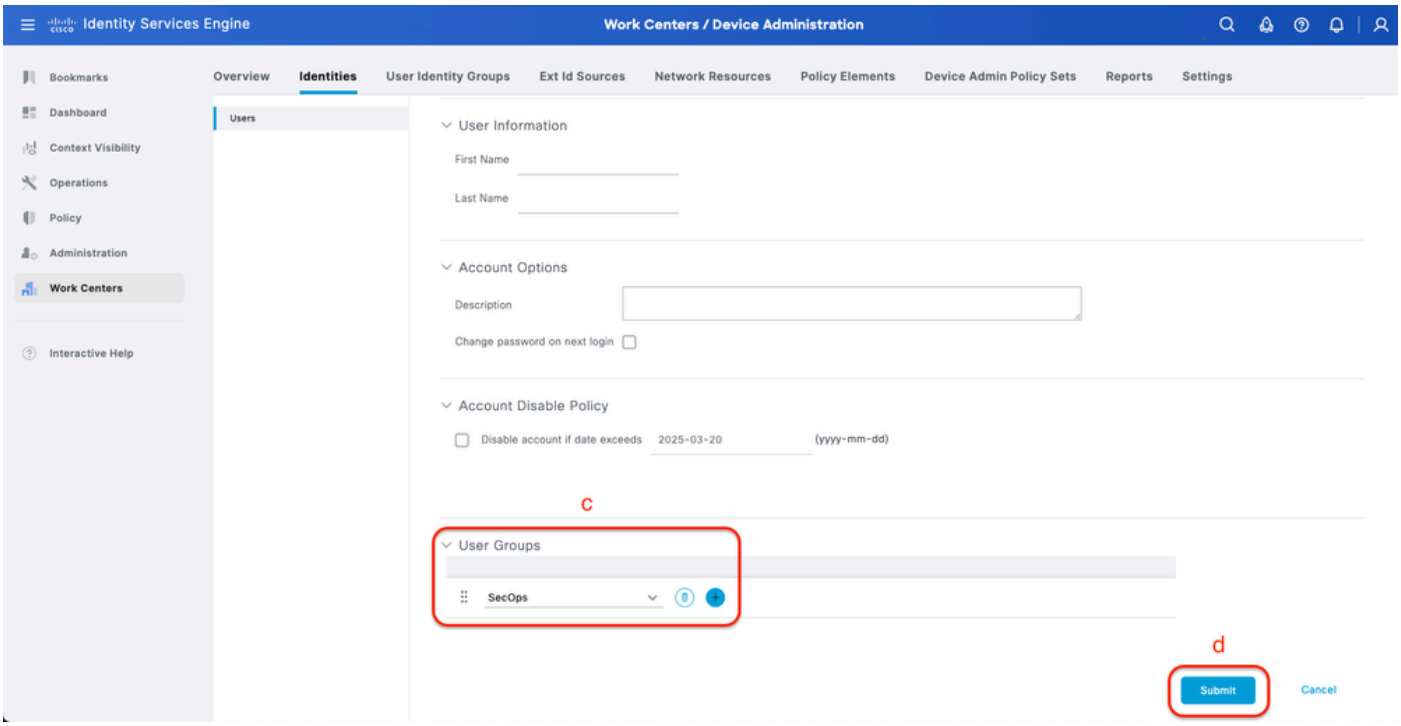
b. Set the **Login Password**.

c. Add the **user** to the related user group..

d. Click **Submit**.



Create Local User 1-2



Create Local User 2-2

Step 6. (Optional) Add TACACS+ Policy Set.

This can be done from the tab **Work Centers > Device Administration > Device Admin Policy Sets**.

Procedure

a. Click **Actions** and **choose** (**Insert new row above**).

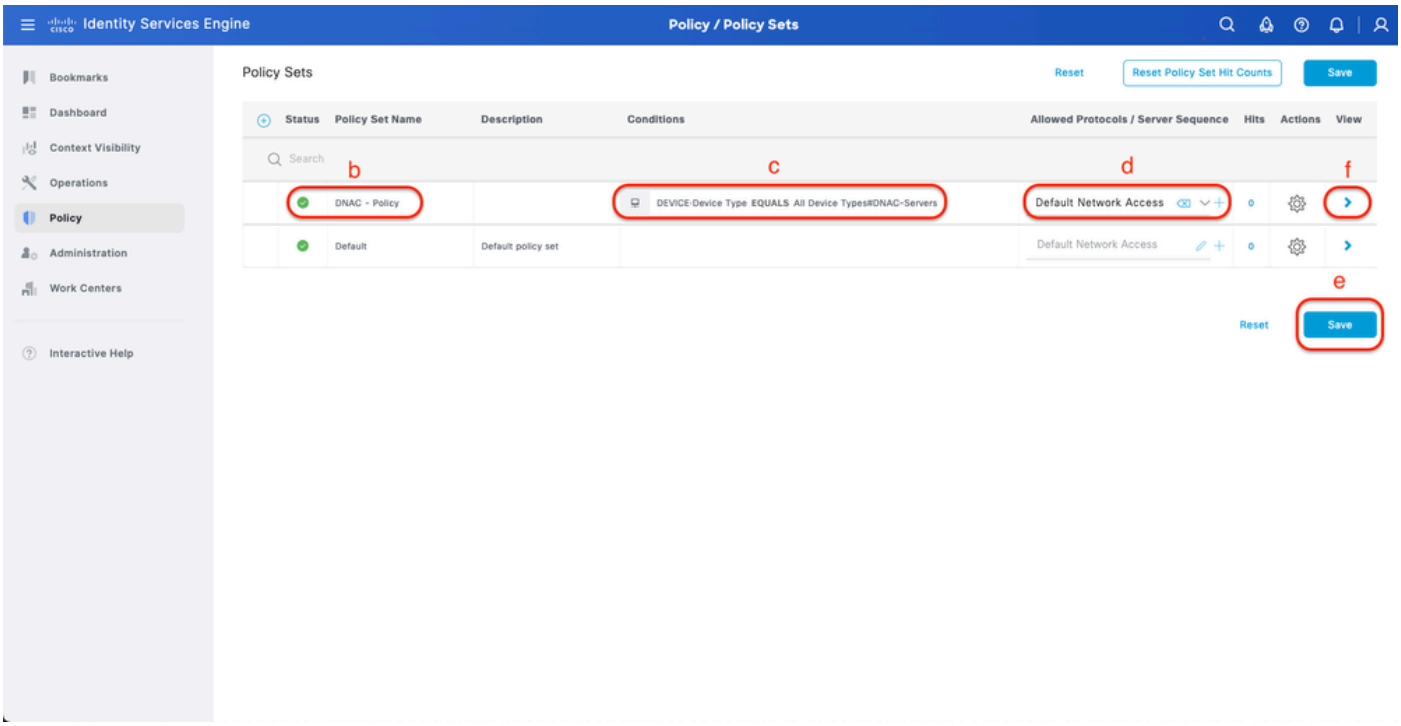
b. Define the **Policy Set name**.

c. Set the Policy Set **Condition** to **Select** Device Type you created previously on (Step2 > b).

d. Set the **Allowed protocols**.

e. Click **Save.**

f. Click (>) Policy Set View to configure authentication and authorization rules.



Add TACACS+ Policy Set

Step 7. Configure TACACS+ Authentication Policy.

This can be done from the tab **Work Centers > Device Administration > Device Admin Policy Sets > Click (>)**.

Procedure

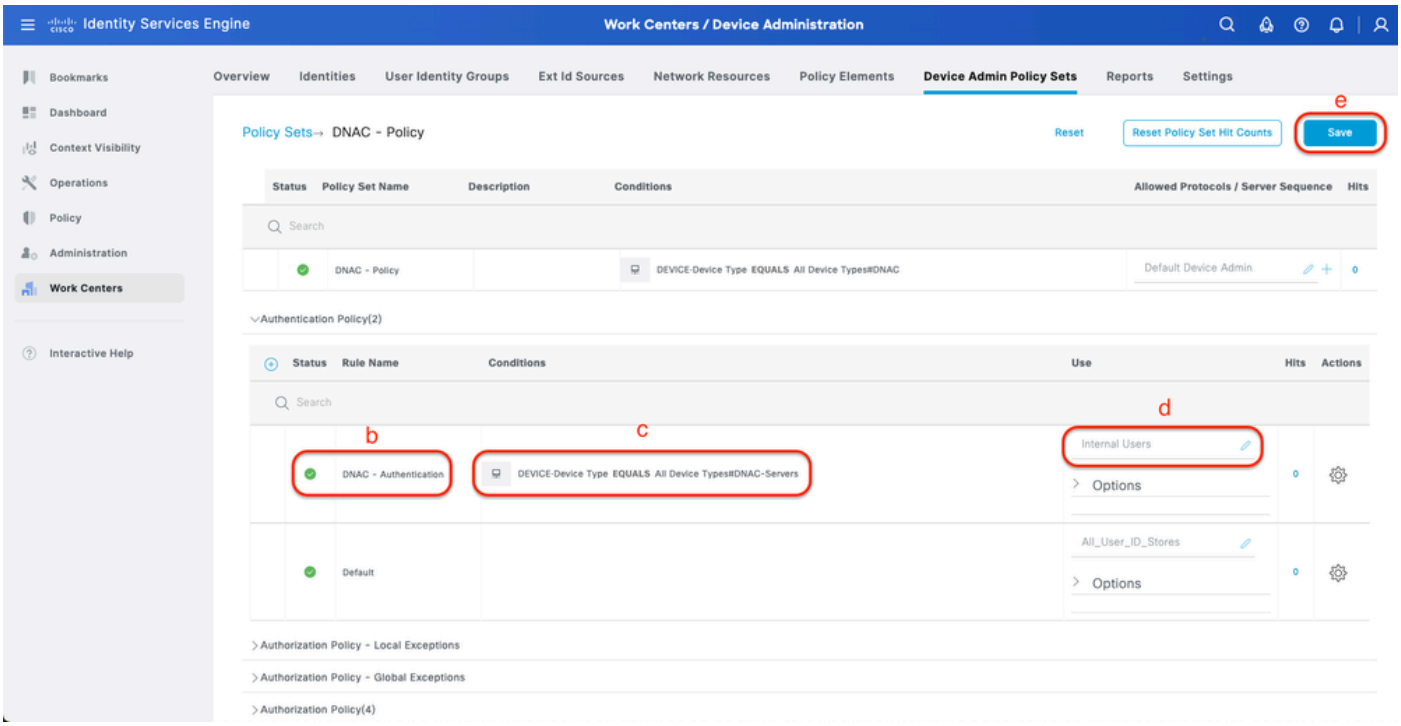
a. Click **Actions** and **choose** (**Insert new row above**).

b. Define the **Authentication Policy name**.

c. Set the Authentication Policy **Condition** and **Select** Device Type you created previously on (Step2 > b).

d. Set the Authentication Policy **Use** for Identity source.

e. Click **Save.**



Add TACACS+ Authentication Policy

Step 8. Configure TACACS+ Authorization Policy.

This can be done from the tab **Work Centers > Device Administration > Device Admin Policy Sets > Click (>)**.

This step to create Authorization Policy for each User Role:

- SUPER-ADMIN-ROLE
- NETWORK-ADMIN-ROLE
- SecOps-Role

Procedure

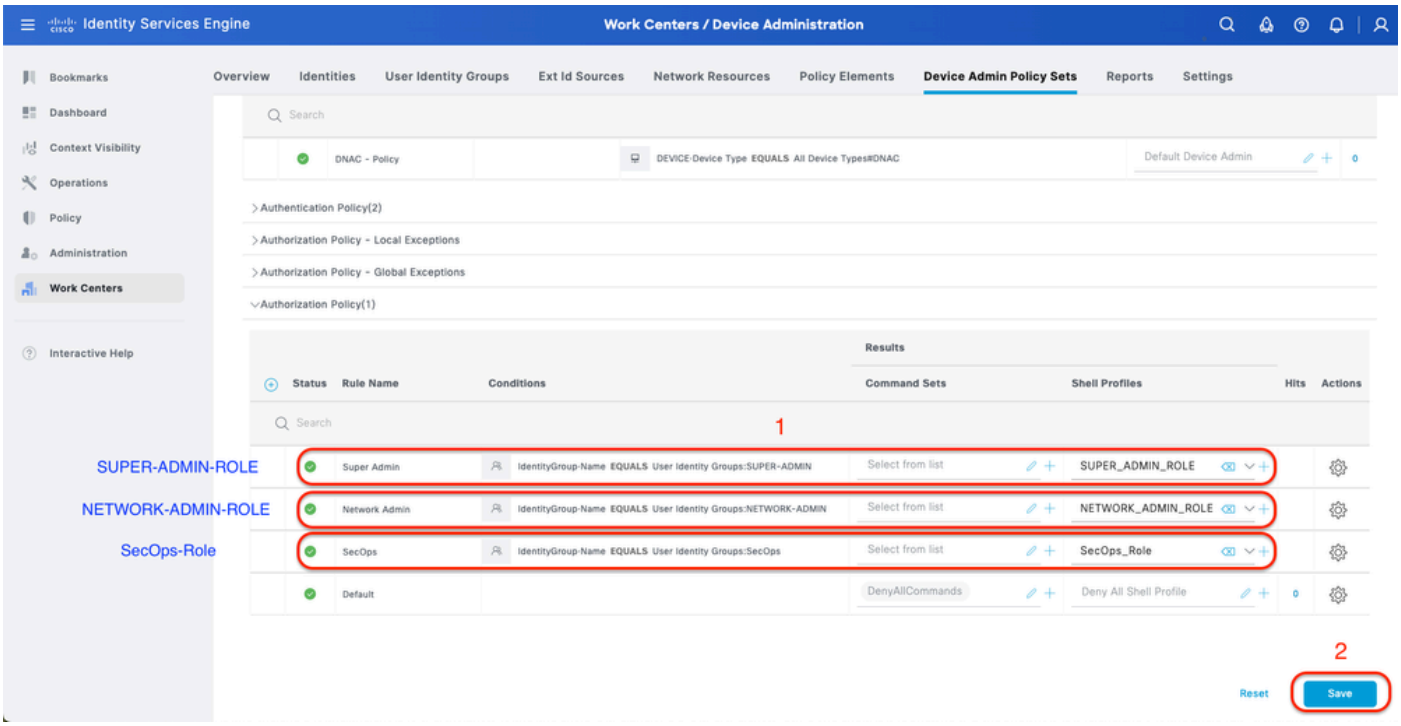
a. Click **Actions** and **choose** (**Insert new row above**).

b. Define the **Authorization Policy name.**

c. Set the Authorization Policy **Condition** and **Select** User Group that you created in (Step4).

d. Set the Authorization Policy **Shell Profiles** and **Select** TACACS Profile that you created in (Step3).

e. Click **Save.**

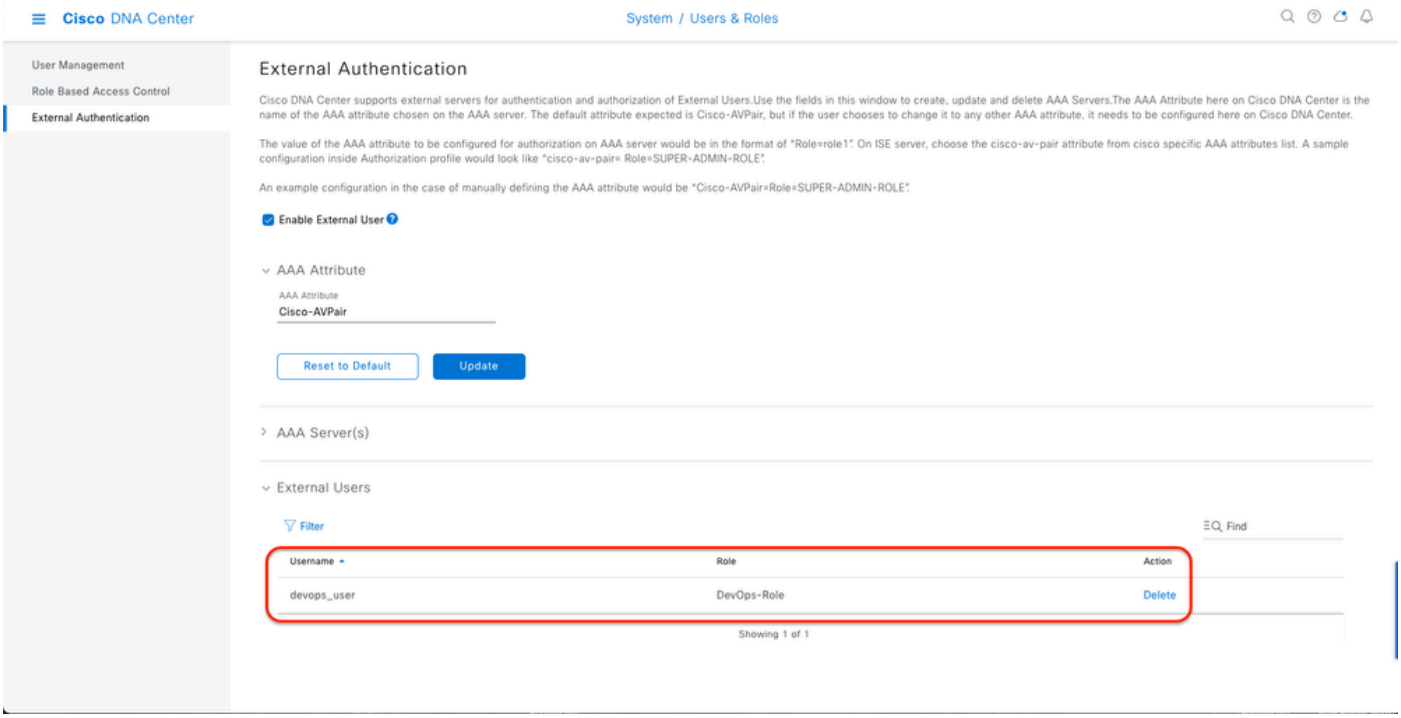


Add Authorization Policy

Verify

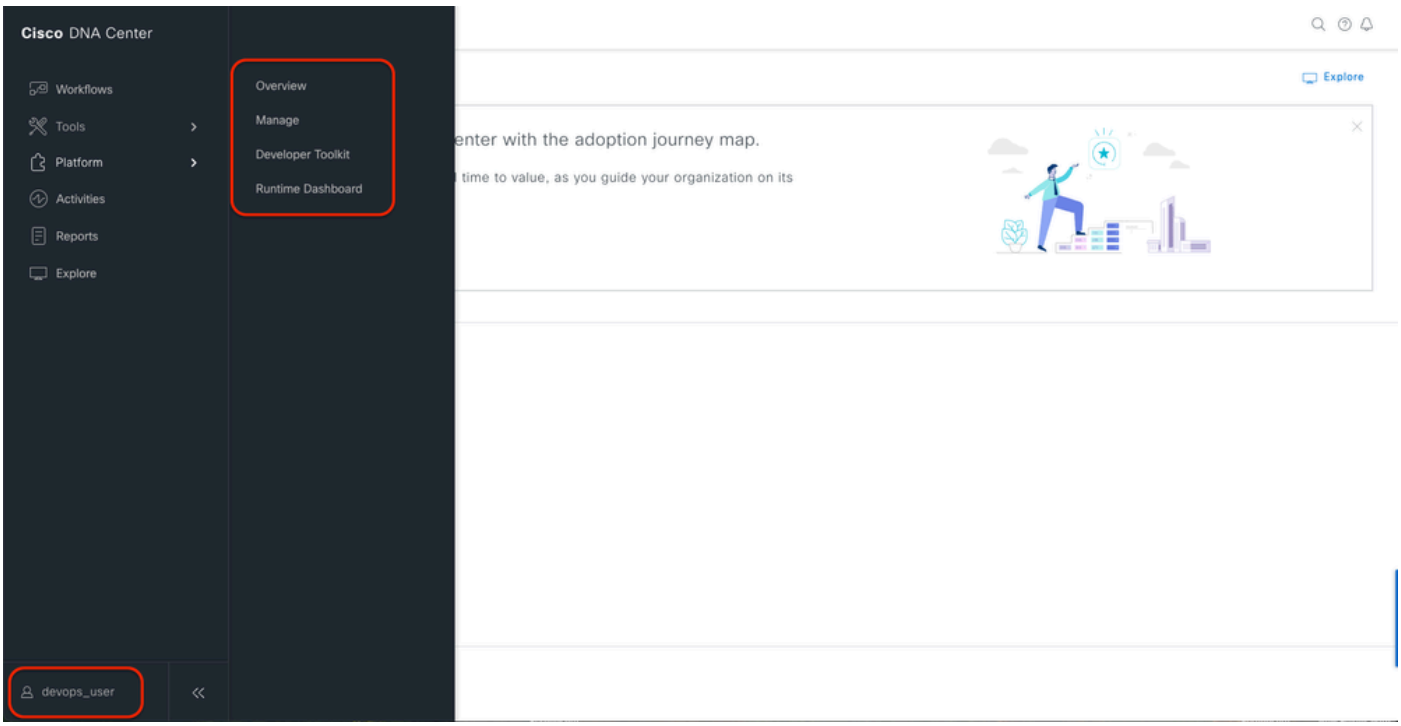
Verify RADIUS Configuration

1- Cisco DNA - Display External Users **System > Users & Roles > External Authentication > External Users**.
You can view the list of external users who have logged in through RADIUS for the first time. The information that is displayed includes their usernames and roles.



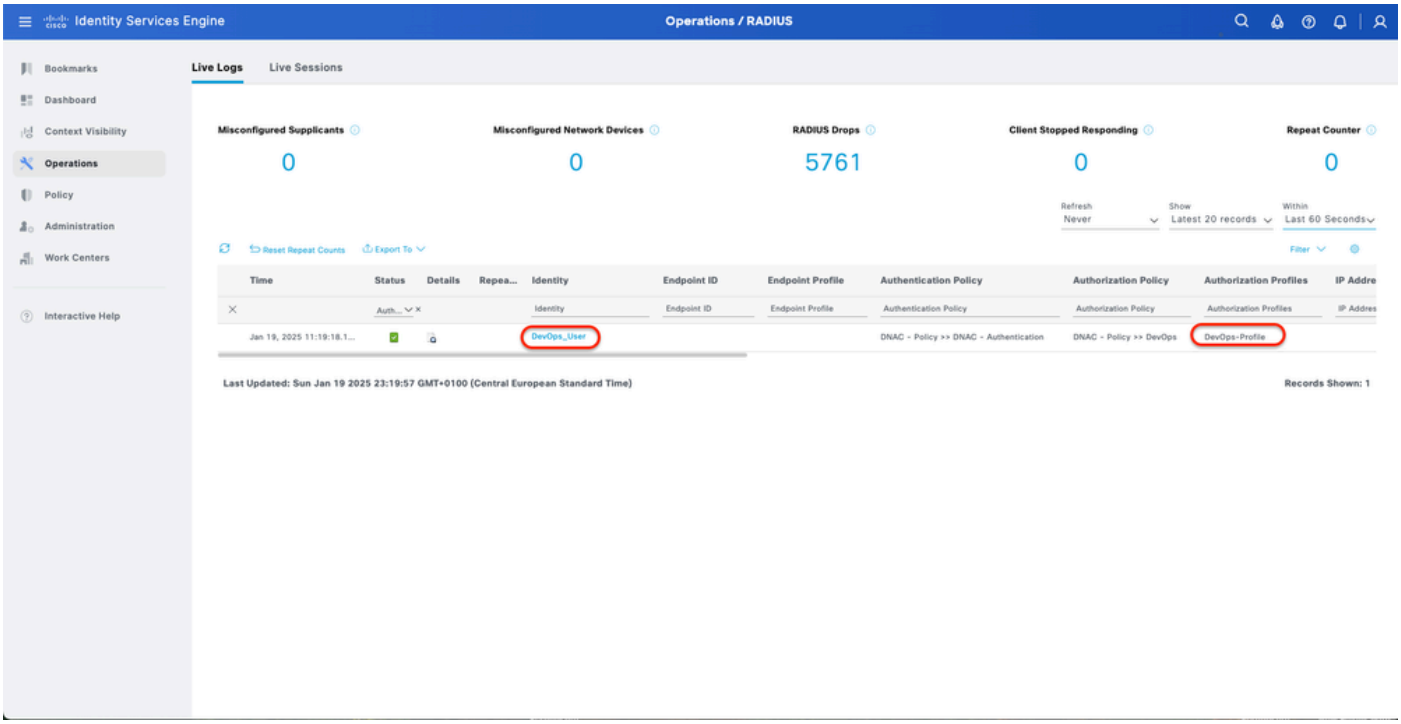
External Users

2. Cisco DNA - Confirm user access.



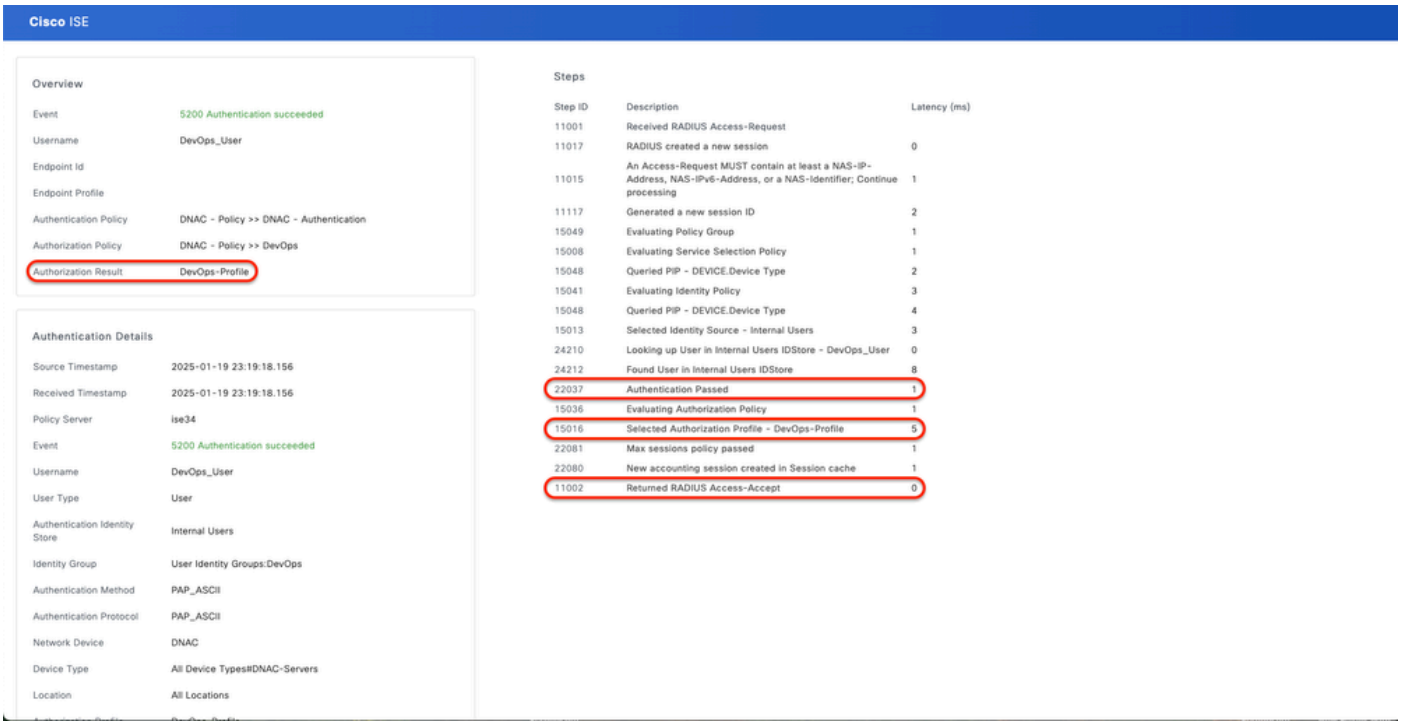
Limited User Access

3.a ISE - RADIUS Live-Logs **Operations > RADIUS > Live-Logs**.

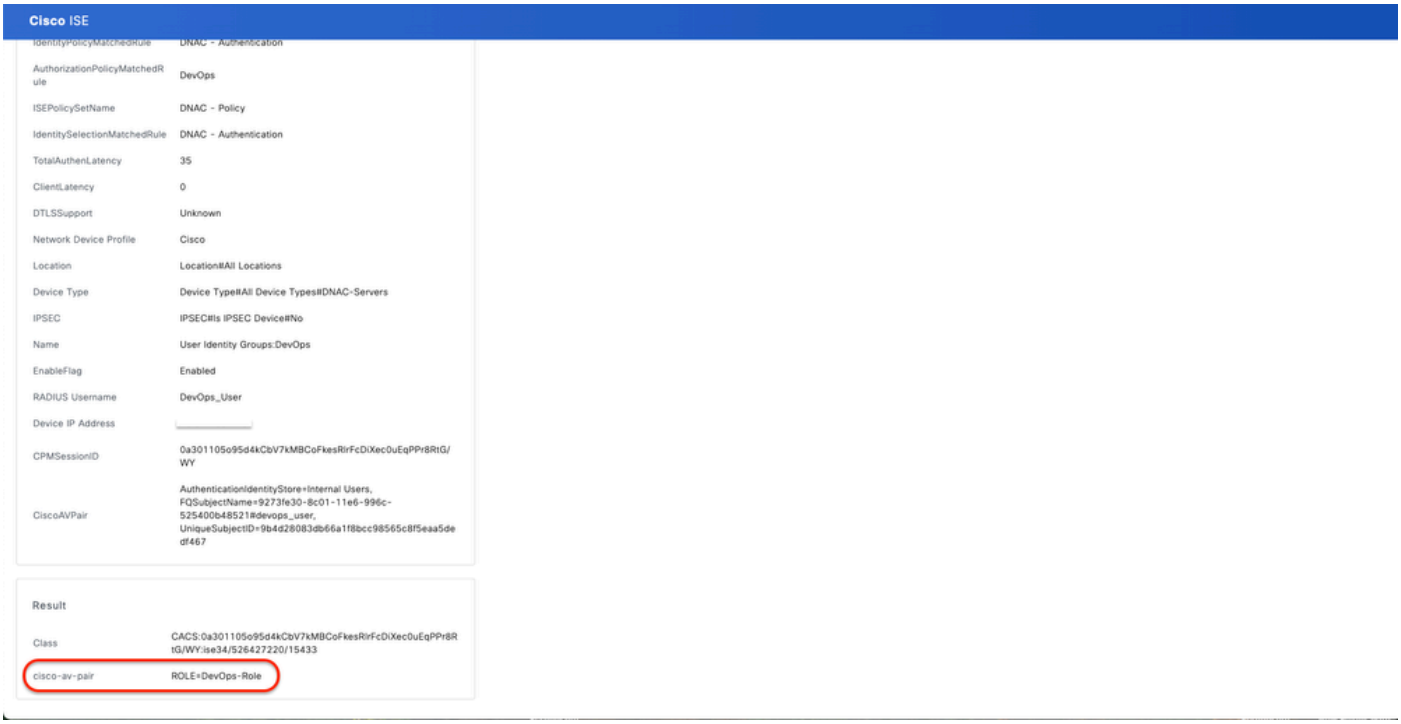


RADIUS Live-Logs

3.b ISE - RADIUS Live-Logs **Operations > RADIUS > Live-Logs > Click (Details) for Authorization log.**



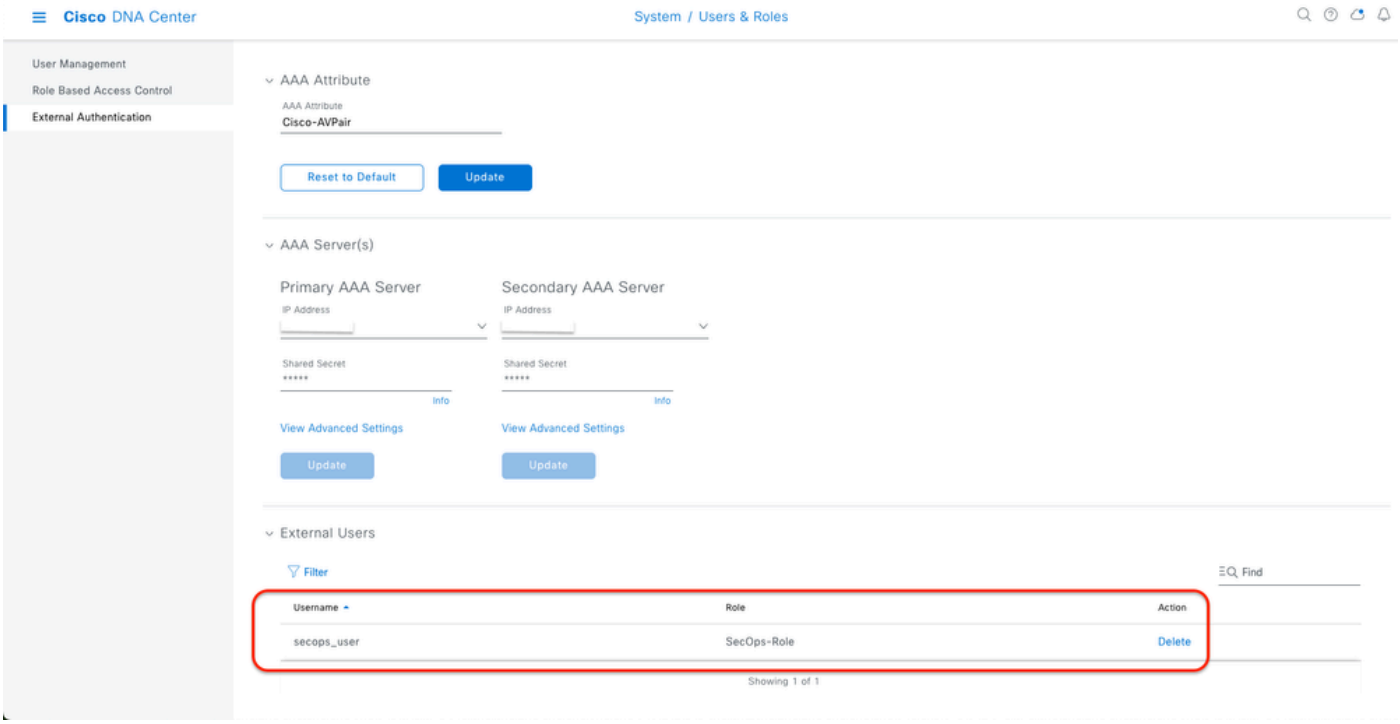
RADIUS Detailed Live-Logs 1-2



RADIUS Detailed Live-Logs 2-2

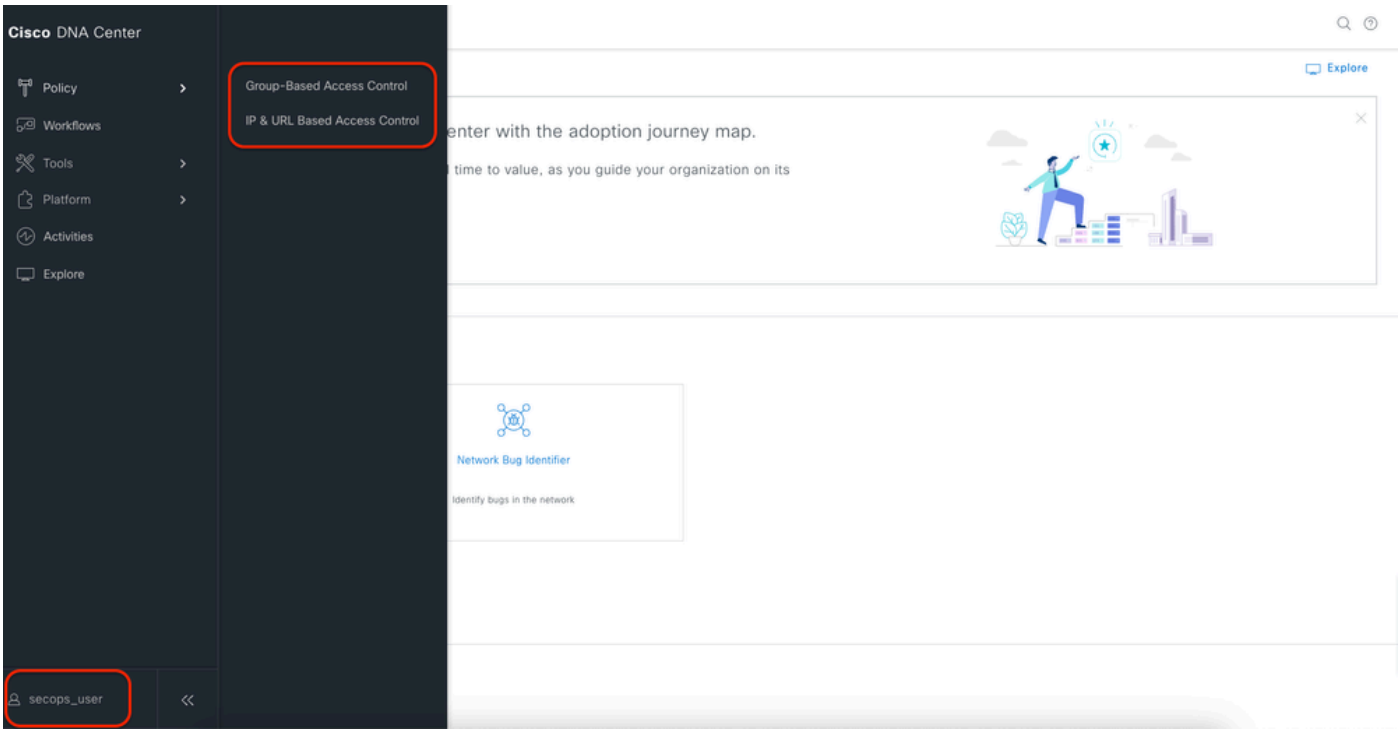
Verify TACACS+ Configuration

1- Cisco DNA - Display External Users **System > Users & Roles > External Authentication > External Users**.
You can view the list of external users who have logged in through TACACS+ for the first time. The information that is displayed includes their usernames and roles.



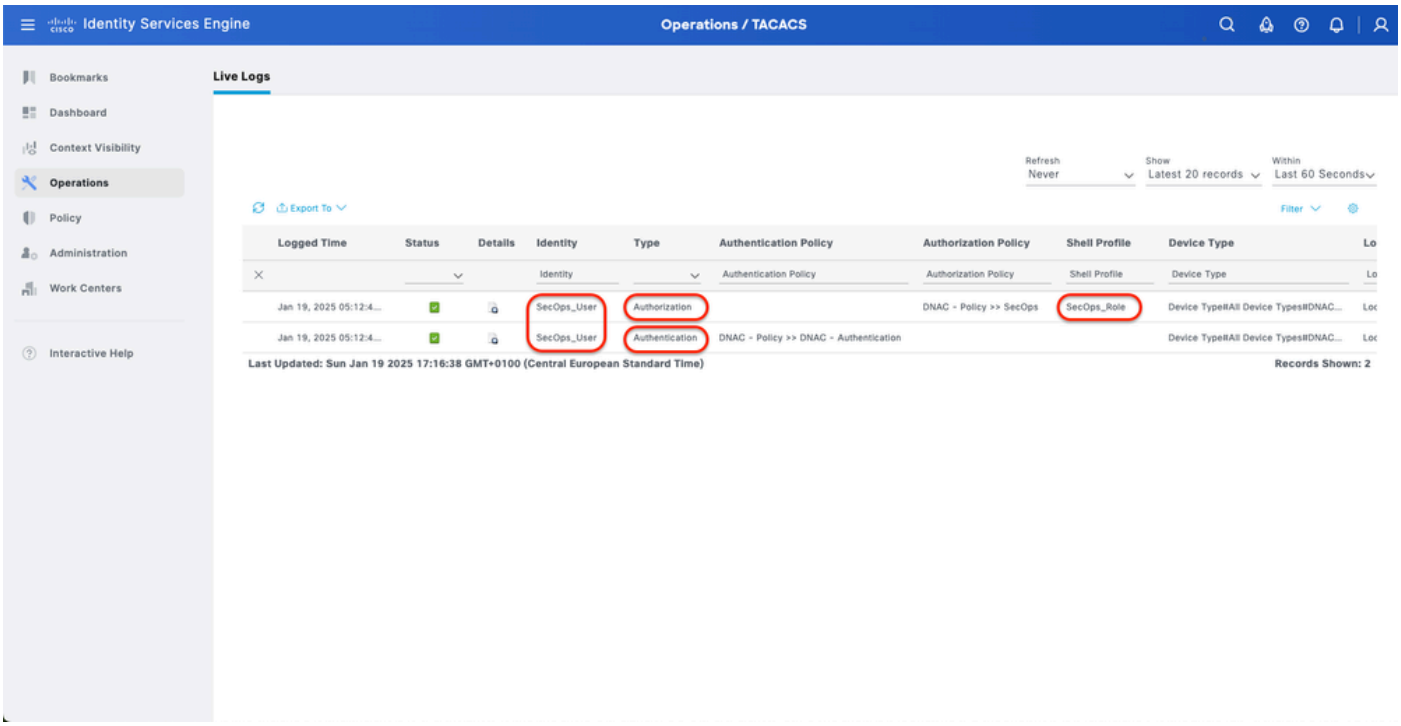
External Users

2. Cisco DNA - Confirm user access.



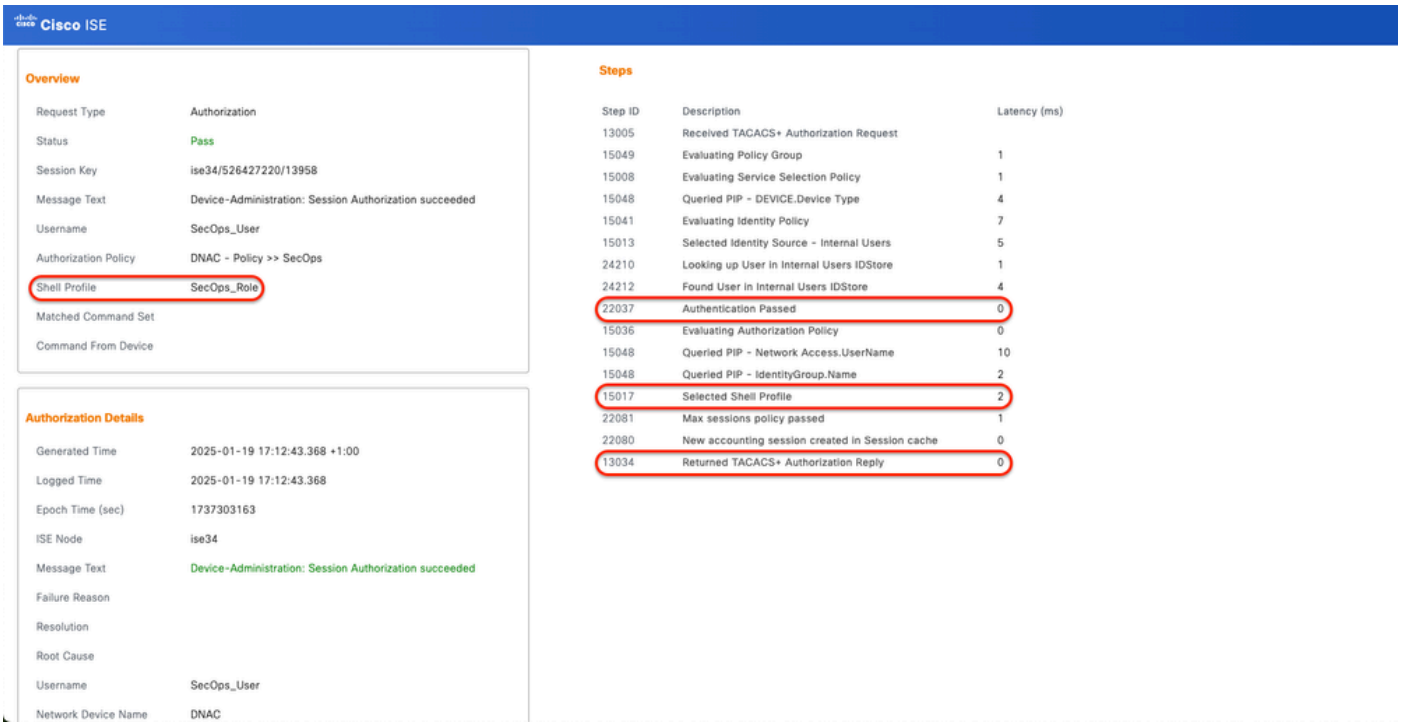
Limited User Access

3.a ISE - TACACS+ Live-Logs **Work Centers > Device Administration > Overview > TACACS Livelog**.

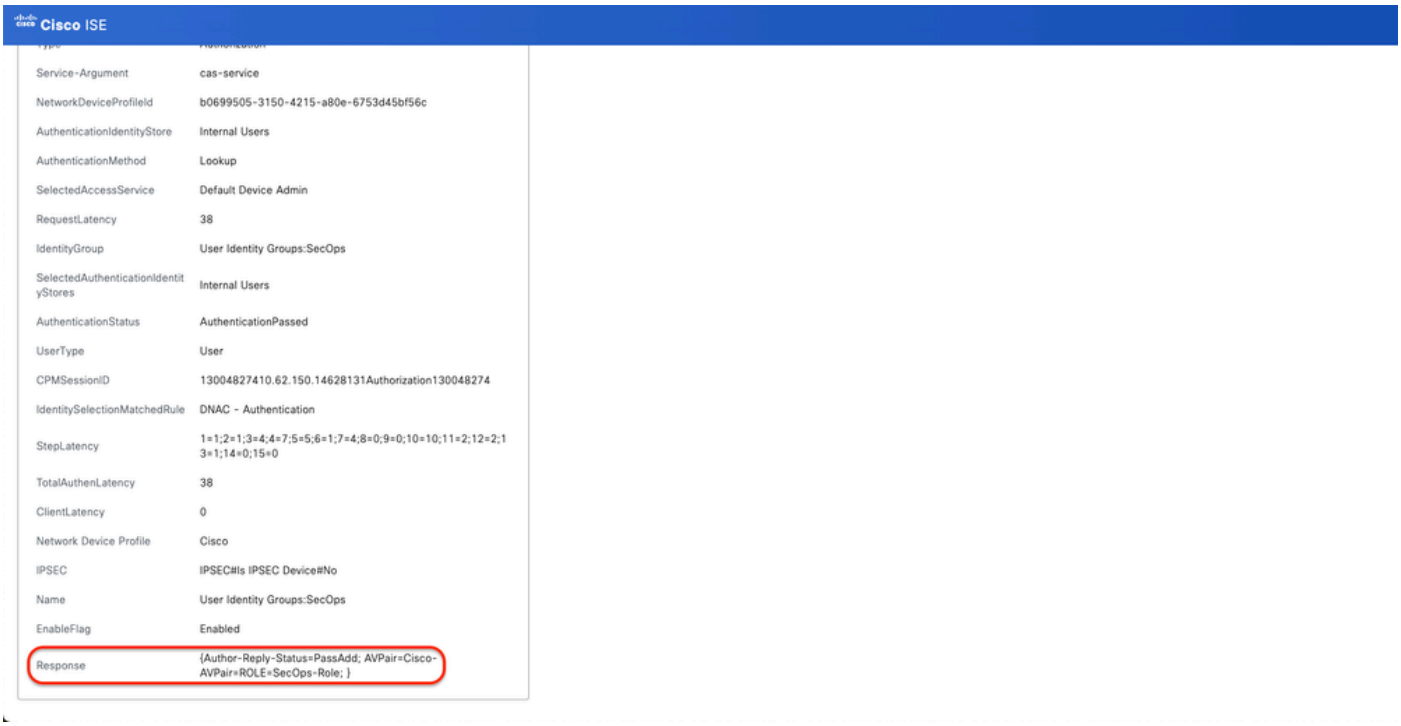


TACACS Live-Logs

3.b ISE - detailed TACACS+ Live-Logs **Work Centers > Device Administration > Overview > TACACS Livelog > Click (Details)** for Authorization log.



TACACS+ Detailed Live-Logs 1-2



TACACS+ Detailed Live-Logs 2-2

Troubleshoot

There is currently no specific diagnostic information available for this configuration.

References

- Cisco Identity Services Engine Administrator Guide, Release 3.4 > Device Administration
- Cisco DNA Center Administrator Guide, Release 2.3.5

- Cisco DNA Center: Role Based Access Control with External Authentication