Configure and Troubleshoot Radius Authentication on UCSM

Contents

Introduction

This document describes the steps to configure and troubleshoot Radius on UCS Manager using a Windows Server 2022 DataCenter.

Prerequisites

- UCS Manager - 4.2(3o) or higher
- Windows Server 2022 DataCenter

Configuration on Windows Server

Install Active Directory Domain Services

Refer Microsoft document - **Install AD DS using Server Manager on Windows Server 2022.**

Create the Active Directory User (Login Account)

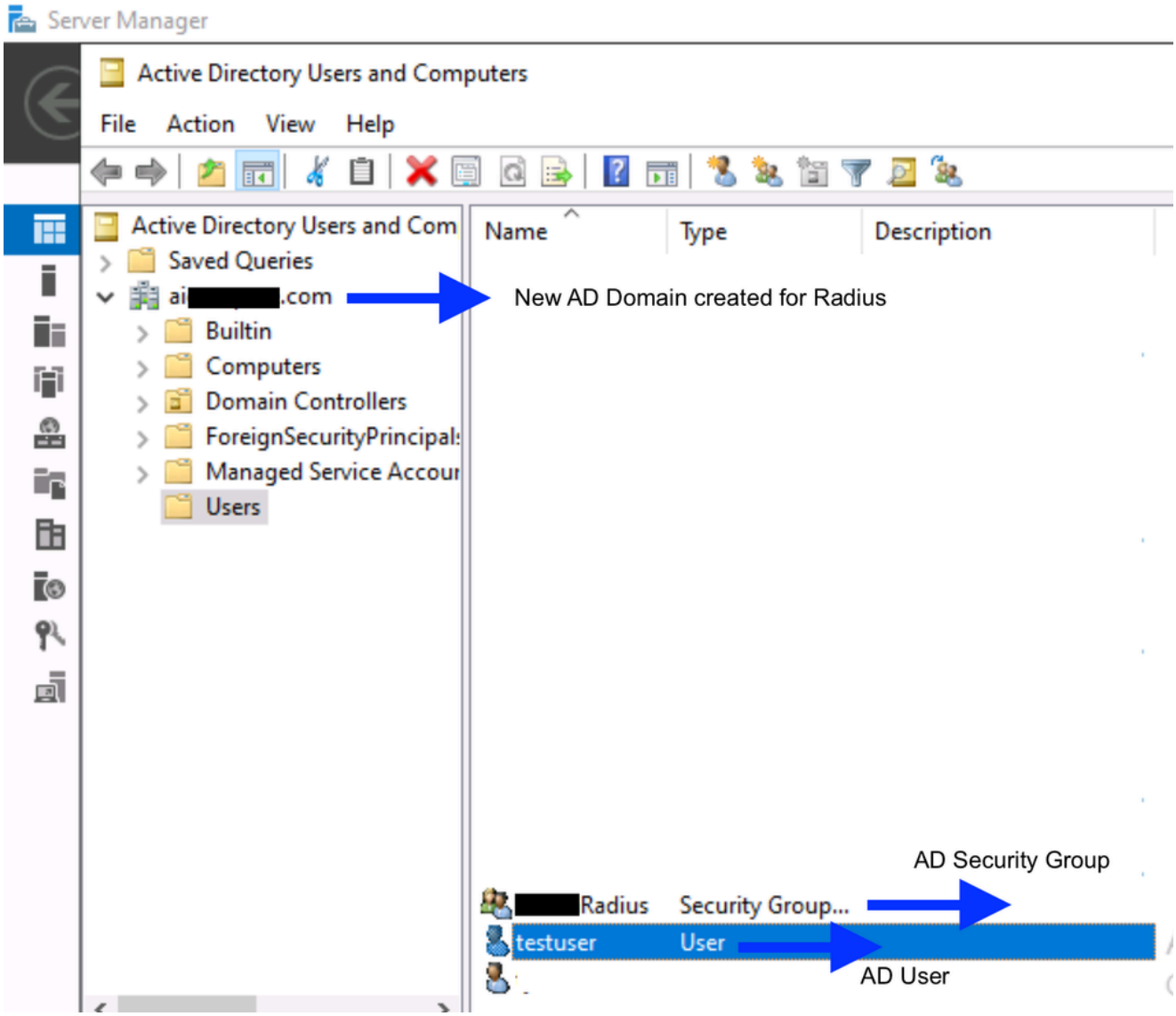
1. Open **Server Manager > Tools > Active Directory Users and Computers**.

2. Right-click your created domain **New > User**.

3. Enter the login name (Example - testuser), set a password, uncheck **User must change password at next logon**, and check **Password never expires** (for a service/admin account) **> Finish** (subject to your local security requirements/policies).

Create an AD ecSurity Group for UCS Admins

- In the same console, right-click your domain **New > Group (Example - testRadius, Security)**. Add the AD user **testuser**) to this group.
- This group name is what you have to later map to a UCS role.

- 

Install the NPS (RADIUS role) and Register NPS in Active Directory

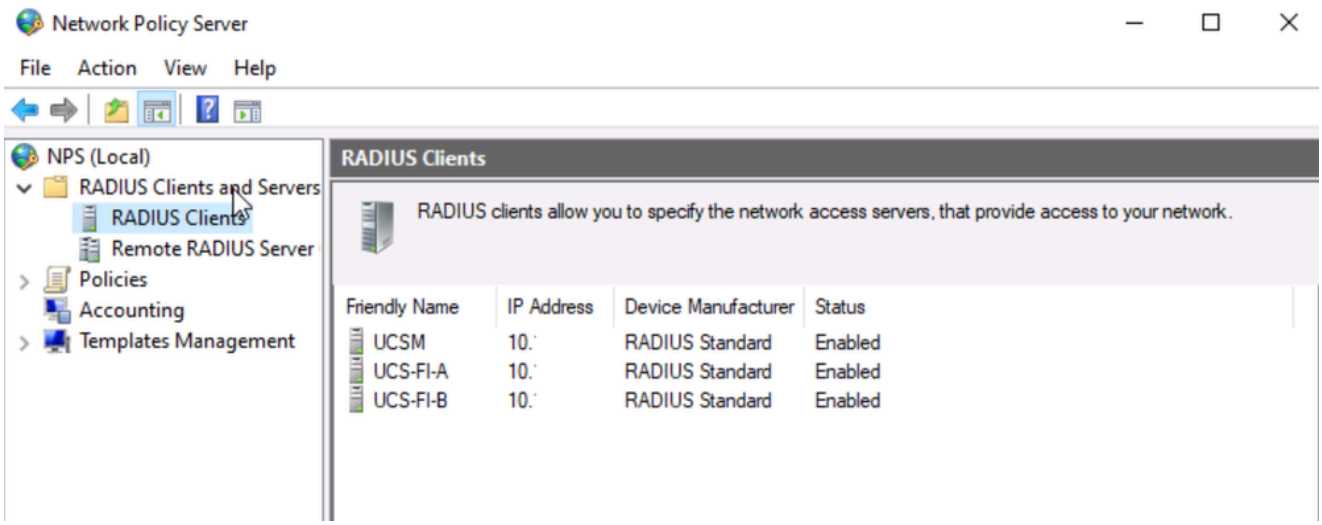
1. Navigate to S**erver Manager > Manage > Add Roles and Features**.

2. Select **Network Policy and Access Services > Complete the wizard to install Network Policy Server (NPS)**.

3. Open **Tools > Network Policy Serve**r. Right-click **NPS (Local) > Register server in Active Directory > OK**. This lets NPS read AD user/group membership.

Add the UCS Fabric Interconnects as RADIUS Clients

- This tells NPS to trust requests from UCSM. In NPS, expand **RADIUS Clients and Servers > RADIUS Clients**. right-click **New**.
- Provide:

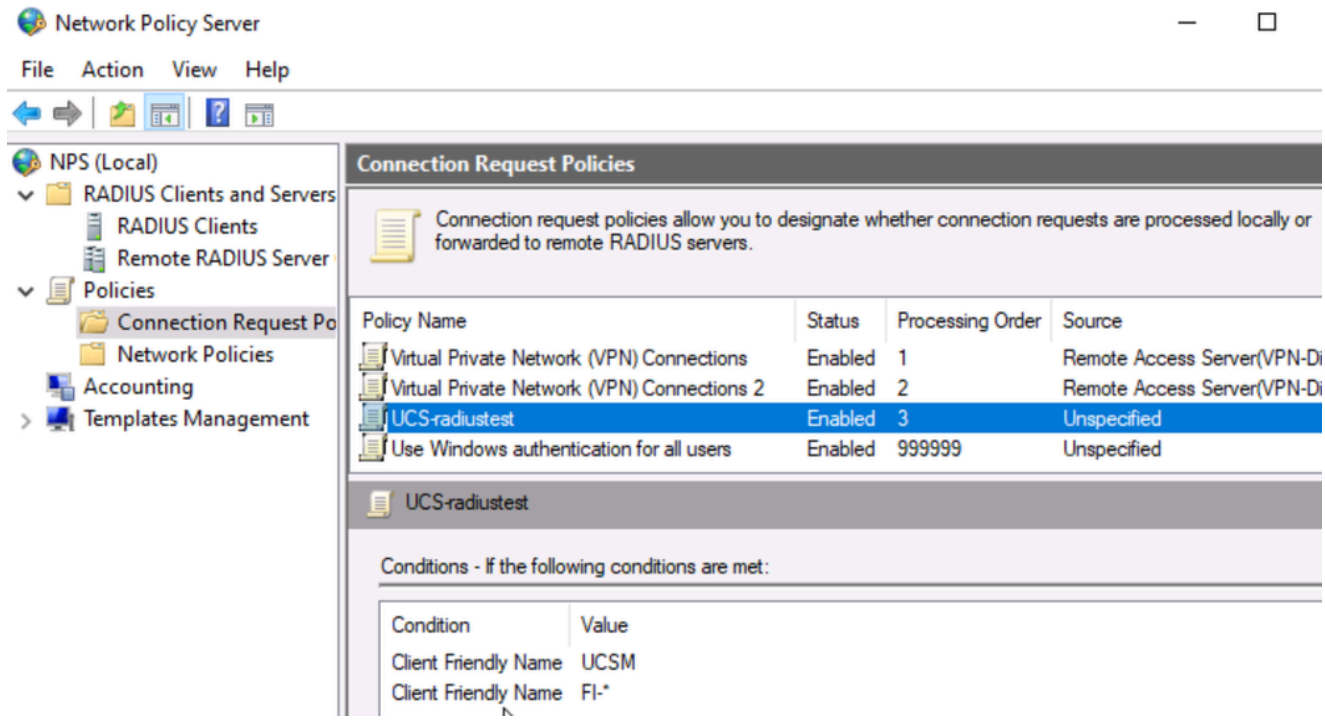
    - Friendly name: Example - UCSM
    - Address (IP): the management IP of FI-A
    - Shared Secret: create a strong secret and write it down — you are to enter this exact shared secret string in UCSM later.
- Repeat for Fabric Interconnect B and, if you are to authenticate against the cluster VIP, add that IP too.
- 

Radius Clients

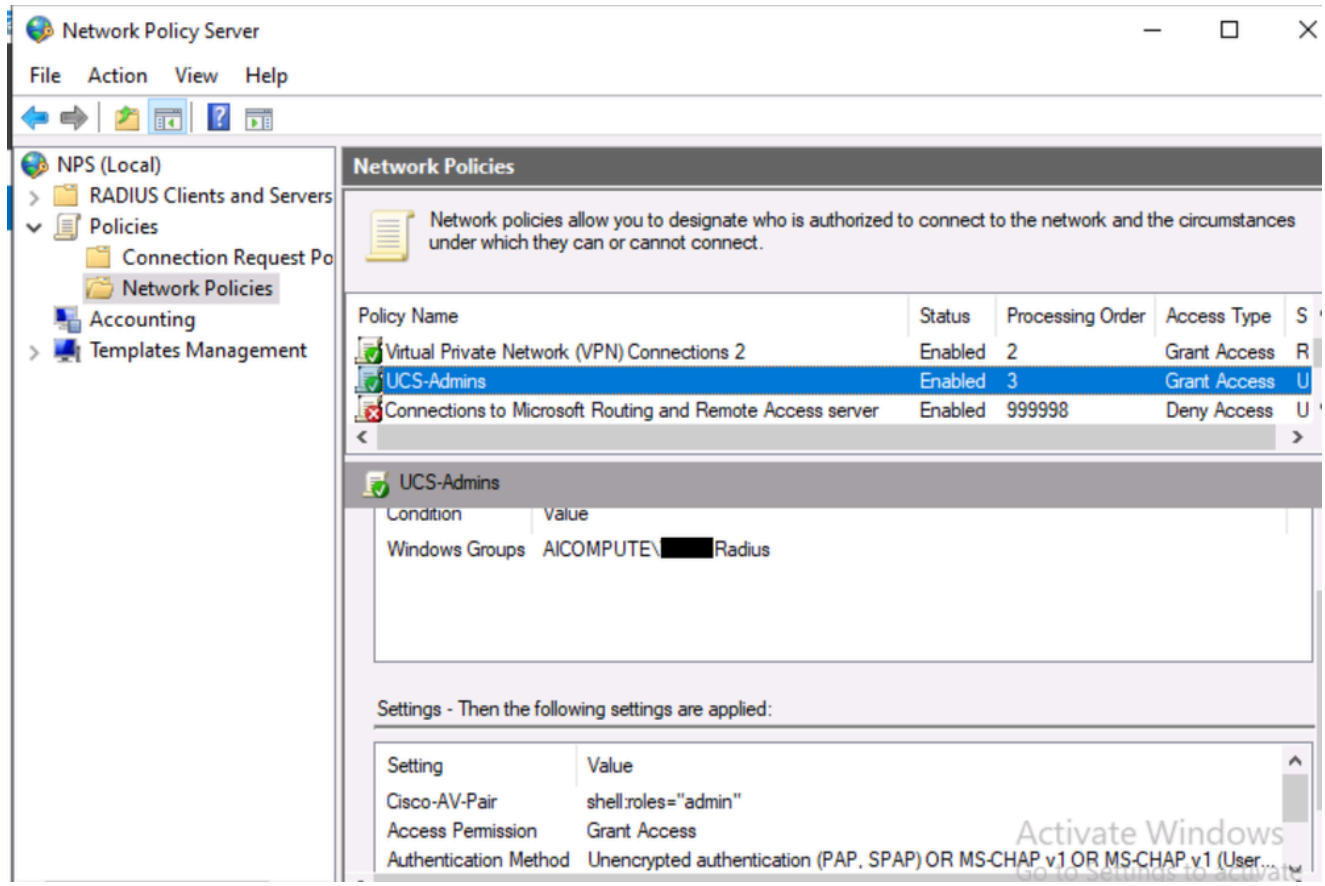
Create a Connection Request Policy and Network Policy (Authorization and Role Mapping)

- **Policies > Connection Request Policies > New > Name it (Example - UCS-radiustest)**, add the condition for 'Client Friendly Name' which allows it to authenticate locally. For example : FI-* or UCSM,
- **Policies > Network Policies > New > Policy name**
    - Conditions: add Windows Groups. Select the testRadius group you made in Step 3.
    - Access permission: Grant access
    - Authentication Methods: enable Unencrypted authentication (PAP/SPAP) and/or the methods UCS uses. (UCS RADIUS commonly uses PAP.)
- **Configure Settings > Vendor Specific Attributes** (this is the key part that maps the AD user to a UCS role): Add a **Vendor-Specific attribute > Cisco AV-Pair**
    - Set the value to the UCS role/locale string, Example - shell:roles="admin" (If you skip this attribute, the user logs in as read-only).

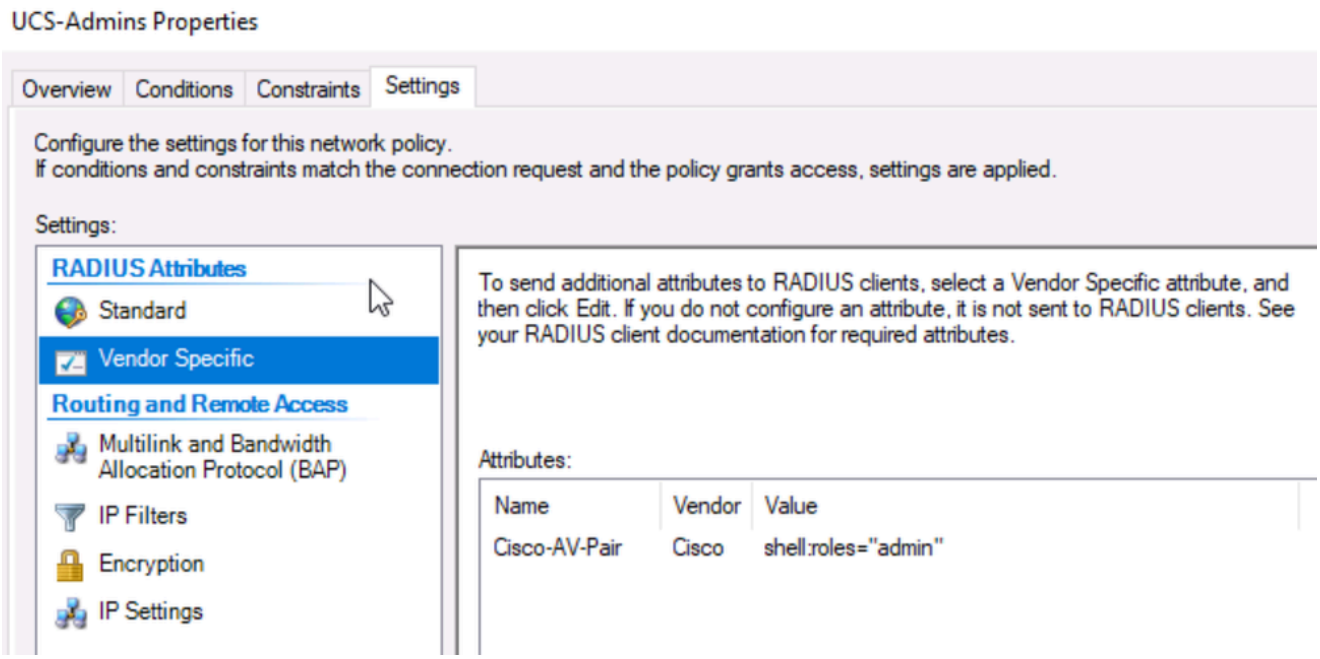
Connection Request Policy

- 

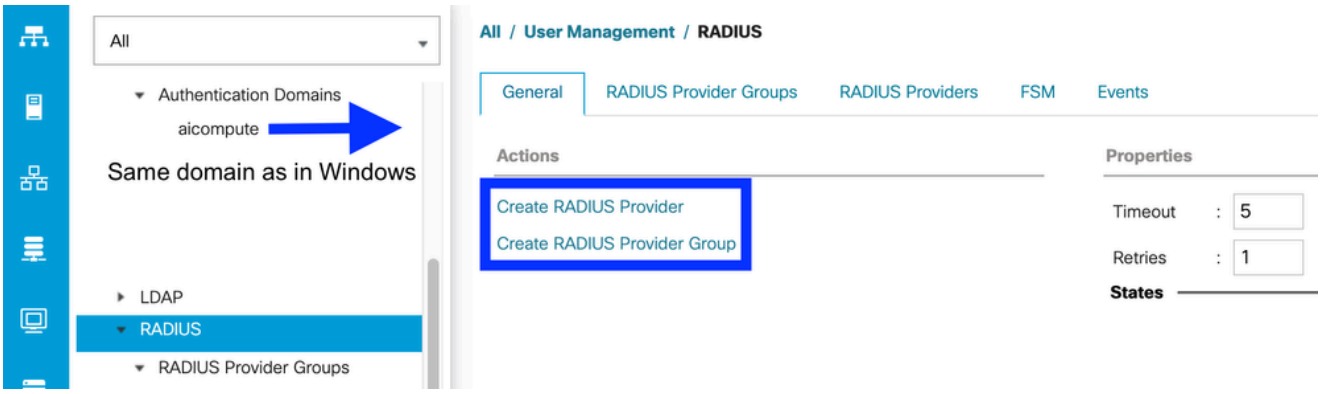
Network Policy

- 

Vendor Specific Attribute



Configuration on UCSM



Create a Radius Provider and Add to a Provider Group

1. Log in to UCS Manager GUI and navigate to **Admin > User Management > RADIUS.**

2. Click **Create RADIUS Provide**r (the **+/ Create** option) and fill in:

- **Hostname/FQDN or IP**: your Windows NPS server.
- **Key**: the exact Shared Secret you set in NPS Step 5.
- **Authorization Port**: 1812 (must match NPS)
- **Timeout / Retries**: leave defaults to start.

3. Under **Admin >User Management > RADIUS**, create a Provider Group (Example - RADIUS-Grp) and add the provider from earlier.

Create an Authentication Domain

This is the piece that ties it all together.

1. Navigate to **Admin > User Management > Authentication > Authentication Domains**.

2. Click **Create a Domain** (Example - RADIUS - domain name recommended to be the same as the domain created in NPS).

3. Set **Realm = RADIUS**.

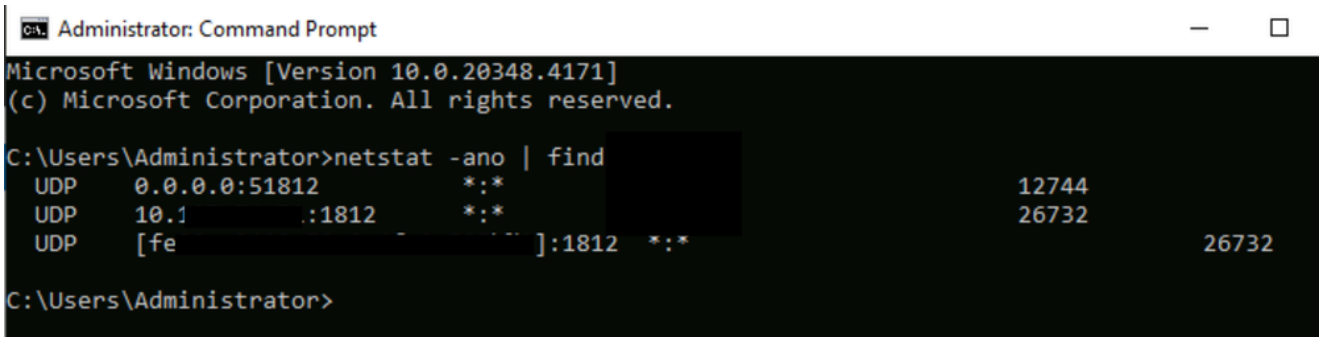
4. Assign the Provider Group you created (RADIUS-Grp) and Save.

Verify

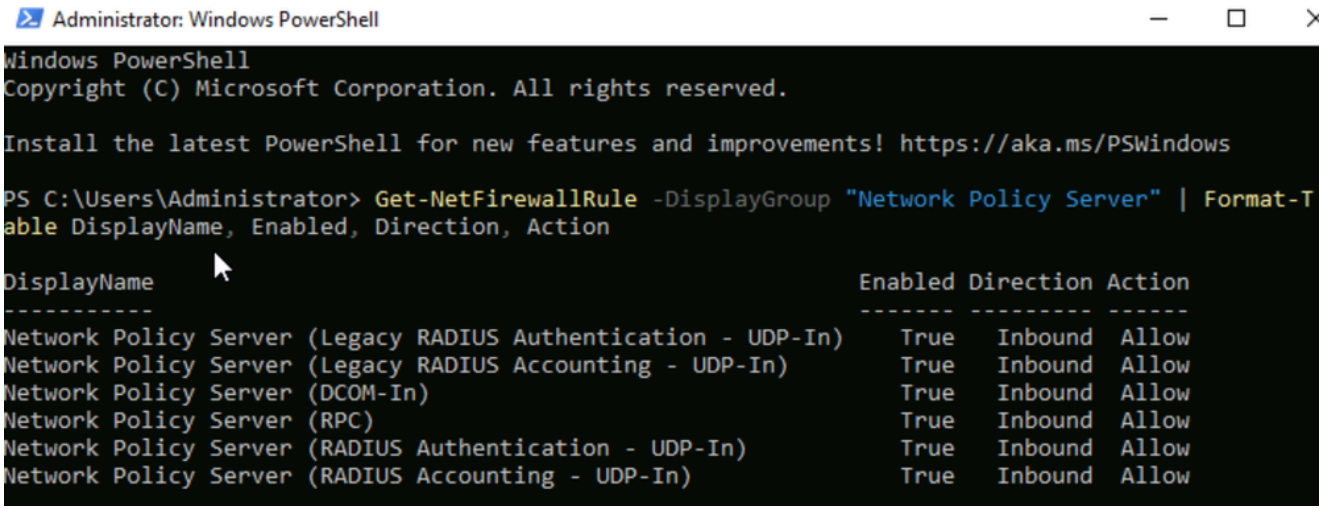
From Windows Server - Confirm Firewall / Ports

RADIUS authentication uses UDP port 1812 (and accounting 1813). Ensure the Windows firewall and any network firewall allow these from the FI mgmt IPs.

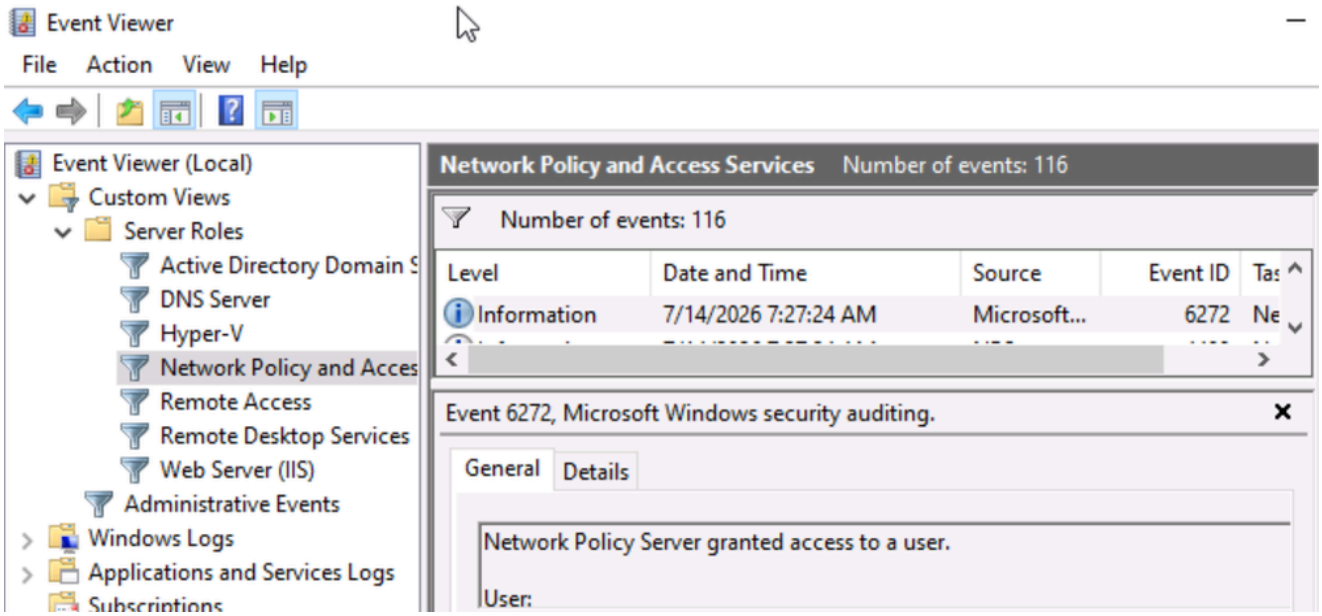
1. Confirm NPS / Radius service is listening through the **netstat -ano | findstr 1812** command.

- (You are to see a line with UDP and *:1812 (or the server IP:1812). This confirms the NPS/RADIUS service is actively listening.
- If nothing shows, NPS could not be running — check **Services > Network Policy Server (IAS) is Started.**)
- 

- On Windows Powershell, run the command :
  - **Get-NetFirewallRule -DisplayGroup "Network Policy Server" | Format-Table DisplayName, Enabled, Direction, Action**.

- 

- On Windows Event Viewer :
  - **Custom Views > Server Roles > Network Policy and Access Services > Packets are reaching.**

- 

Test Login From UCSM

1. Log out and Login by choosing **Domain** dropdown as per the created Radius domain.

2. Configure user password. (Refer to Windows configuration Step 2).

- If the login works and you land with admin privileges, the Cisco AV-Pair mapping (Windows configuration Step 6) is correct.

Troubleshoot Radius Authentication

From Windows Server

1. Execute these commands in Powershell for packet capture:

- **pktmon filter add -p 1812**
- **pktmon start --capture --pkt-size 0 -f C:\radius_capture.etl**

2. Initiate login from UCSM and stop capture using commands :

- **pktmon stop**
- **pktmon etl2pcap C:\radius_capture.etl -o C:\radius_capture.pcap**

3. Open radius_capture.pcap in Wireshark: **RADIUS > Attribute Value Pairs > confirm Message-Authenticator** (or **attribute 80**) is present. This implies NPS is signing the reply.

From UCSM CLI

When running pktmon on Windows, simultaneously from UCSM CLI,

1. run:

- **connect nxos**
- **terminal monitor**
- **debug radius all**

2. attempt a UCSM login after initiating debug.

A successful login looks similar to **2026 Jul 3 09:54:02.917044 radius:Verified Message Authenticator in response from: 10.xxx.xx.xx**.

- If packets are sent and received but login is failing with **message authenticator is probably incorrect.** in the debug output - this implies the port and reachability are fine.
  - Try reconfiguring the shared secret in Windows NPS server and the UCSM key once again (these need to be exactly matched).
  - If issue persists while logging in post reconfiguring, we could be hitting a known Cisco bug ID CSCwm80801 : User cannot login to UCSM using Radius after Microsoft patch KB5040434 requiring an upgrade to a mentioned fixed release.

Related Information

- Cisco UCS Manager Administration Management Guide 4.2 - Remote Authentication