Configuring RADIUS NAC Support

ISE NAC Support

The Cisco Identity Services Engine (ISE) is a next-generation, context-based access control solution that provides the functions of Cisco Secure Access Control System (ACS) and Cisco Network Admission Control (NAC) in one integrated platform.

Cisco ISE was introduced in Cisco Wireless Release 7.0.116.0. Cisco ISE can be used to provide advanced security for your deployed network. It is an authentication server that you can configure on your controller. When a client associates with a controller on a ISE NAC–enabled WLAN with OPEN/Layer 2 + MAC Filtering, the controller forwards the request to the Cisco ISE server without verifying in the local database.

Note ISE NAC was previously known as RADIUS NAC.

This section contains the following subsections:

Device Registration

Device registration enables you to authenticate and provision new devices on the WLAN with RADIUS NAC enabled. When a device is registered on the WLAN, it can use the network based on the configured ACL.

Central Web Authentication

In the case of Central Web Authentication (CWA), web authentication occurs on the Cisco ISE server. The web portal in the Cisco ISE server provides a login page to a client. After the credentials are verified on the Cisco ISE server, the client is provisioned. The client remains in the POSTURE_REQD state until a change of authorization (CoA) is reached. The credentials and ACLs are received from Cisco ISE server.

Note

- In a CWA and MAC filtering configuration scenario, if a change in VLAN occurs during pre-authentication and post-authentication, dissociation request is sent to clients and the clients are forced to go through DHCP again.
- Inter-controller roaming with non-802.1X L2 security, with MAC filtering and CWA, is not supported prior to 8.9.

For new clients, the RADIUS access accept message carries redirected URL for port 80 and pre-auth ACLs or quarantine VLAN. Definition of ACL is defined in the controller (IP addresses and ports).

Clients will be redirected to the URL provided in the access accept message and put into a new state until posture validation is done. Clients in this state validate themselves against ISE server and the policies configured on the ISE NAC server.

The NAC agent on the clients initiates posture validation (traffic to port 80): The agent sends HTTP discovery request to port 80, which the controller redirects to the URL provided in the access accept message. Cisco ISE knows that the client is trying to reach and responds directly to the client. This way, the client learns about the Cisco ISE IP address and from now on, the client talks directly with the Cisco ISE.

The controller allows this traffic because the ACL is configured to allow this traffic. In case of VLAN override, the traffic is bridged so that it reaches the Cisco ISE.

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After the client completes the assessment, a RADIUS CoA-Req with reauth service is sent to the controller. This initiates reauthentication of the client (by sending EAP-START). Once reauthentication succeeds, the Cisco ISE sends an access accept message with a new ACL (if any) and no URL redirect, or access VLAN.

The controller has support for CoA-Req and Disconnect-Req as per RFC 3576. The controller needs to support CoA-Req for re-auth service, as per RFC 5176.

Instead of downloadable ACLs, pre-configured ACLs are used on the controller. Cisco ISE sends the ACL name, which is already configured in the controller.

This design should work for both VLAN and ACL cases. In case of VLAN override, the port 80 is redirected and allows (bridge) rest of the traffic on the quarantine VLAN. For the ACL, the pre-auth ACL received in the access accept message is applied.

Here is the workflow:

1. The guest user associates with the controller.
2. The controller sends a MAB Request to ISE.
3. ISE matches the first authorization rules, and sends the redirect parameters (ACL and URL).
4. The controller redirects the GUEST to ISE.
5. After the guest is authenticated, ISE makes a second authorization, which is called RADIUS Change of Authorization (CoA). In this second authorization, a profile must be returned so that the guest is permitted access to the network. We can use usecase: guestflow to easily match this second authorization.

Note Guest clients connecting to a web-auth WLAN in a CWA setup may also reach the internal virtual interface web-auth login page using port 80 or by using port 443 when the web authentication secure web is enabled in the Cisco AireOS controllers. This behavior is in line with how Cisco AireOS controllers handle all web authentication redirect scenarios and have no potential risk or vulnerability.

Local Web Authentication

Local web authentication is not supported for RADIUS NAC.

Table 1: ISE Network Authentication Flow

WLAN Configuration	CWA	LWA	Device Registration
RADIUS NAC Enabled	Yes	No	Yes
L2 PSK	802.1X	PSK	No
L3 None	N/A	Internal/External	N/A
MAC Filtering Enabled	Yes	No	Yes

Guidelines and Restrictions on ISE NAC Support

Guidelines

- When a client moves from one WLAN to another, the Cisco WLC retains the client's audit session ID if it returns to the WLAN before the idle timeout occurs. As a result, when the client associates with the Cisco WLC before the idle timeout session expires, it is immediately moved to Run state. The client is validated if it reassociates with the Cisco WLC after the session timeout.
- If you have two WLANs, and WLAN 1 is configured on a Cisco WLC (WLC1) and WLAN2 is configured on another Cisco WLC (WLC2) and both are ISE NAC enabled, the client first connects to WLC1 and moves to the RUN state after posture validation. Assume that the client now moves to WLC2. If the client connects back to WLC1 before the PMK expires for this client in WLC1, the posture validation is skipped for the client. The client directly moves to Run state by passing posture validation because the Cisco WLC retains the old audit session ID for the client that is already known to Cisco ISE.
- When deploying ISE NAC in your wireless network, do not configure a primary and secondary Cisco ISE server. Instead, we recommend that you configure High Availability (HA) between the two Cisco ISE servers. Having a primary and secondary ISE setup will require posture validation to occur before the clients move to the Run state. If HA is configured, the client is automatically moved to the Run state in the fallback Cisco ISE server.
- Do not swap AAA server indexes in a live network because clients might get disconnected and have to reconnect to the RADIUS server, which might result in log messages to be appended to the ISE server logs.
- Enable AAA override on the WLAN to use ISE NAC.
- ISE NAC is supported with open authentication/Layer 2 (PSK/802.1x) + MAC Filtering security types.

- During slow roaming, clients go through posture validation.
- If the AAA url-redirect-acl and url-redirect attributes are expected from the AAA server, the AAA override feature must be enabled on the controller.

Restrictions

- For ISE NAC WLANs, the MAC authentication request is always sent to the external RADIUS server. The MAC authentication is not validated against the local database. This functionality is applicable to Releases 8.5, 8.7, 8.8, and later releases via the fix for CSCvh85830.
- The ISE NAC functionality does not work if the configured accounting server is different from the authentication (Cisco ISE) server. You should configure the same server as the authentication and accounting server if Cisco ISE functionalities are used. If Cisco ISE is used only for Cisco ACS functionality, the accounting server can be flexible.
- The controller software configured with ISE NAC does not support a CoA on the service port.
- Guest tunneling mobility is supported only for ISE NAC–enabled WLANs.
- VLAN select is not supported.
- Workgroup bridges are not supported.
- The AP Group over NAC is not supported in ISE NAC.
- When ISE NAC is enabled, the RADIUS server overwrite interface is not supported.
- Audit session ID is not supported across mobility domains if the controller belongs to a different mobility domain.

Configuring ISE NAC Support (GUI)

Step 1 Choose **WLANs**.

Step 2 Click the WLAN ID.

The **WLANs > Edit** page appears.

Step 3 Click the **Advanced** tab.

Step 4 From the **NAC State** drop-down list, choose from the following options:

- **None**
- **SNMP NAC**—Uses SNMP NAC for the WLAN.
- **ISE NAC**—Uses ISE NAC for the WLAN.

Note AAA override is automatically enabled when you use ISE NAC on a WLAN.

Step 5 Save the configuration.

Configuring ISE NAC Support (CLI)

Enter the following command:

config wlan nac radius {**enable** | **disable**} *wlan_id*