Ordr and HPE Aruba ClearPass Policy Manager Integration Guide

Organizations in healthcare, manufacturing, retail, transportation, and logistics are embracing digital transformation, powered by connected devices including Internet of Things (IoT) and Operational Technology (OT). The enterprise IT network is now the melting pot for a highly eclectic, hyperconnected mix of devices that businesses must manage and protect or face immediate security risk.

Ordr allows organizations to rapidly inventory every **thing** in their network, classify it based on type and business function, and assess it for risk. Ordr learns behaviors and creates device flow genomes, so security teams can baseline what each device or group of devices should be talking to. When combined with HPE Aruba ClearPass Policy Manager (CPPM), organizations can quickly gain complete visibility into every connected device and deploy segmentation to proactively protect and reactively respond and mitigate threats. This includes Zero Trust policy enforcement and microsegmentation to isolate groups or individual devices from non-essential access while protecting them from attack and compromise on existing networking and security infrastructure.

This guide describes in detail how to configure Ordr SCE with HPE Aruba CPPM to provide advanced connected device discovery (including IoT/OT), classification, and the simplification of secure network access control and segmentation policy to all networked users and devices.

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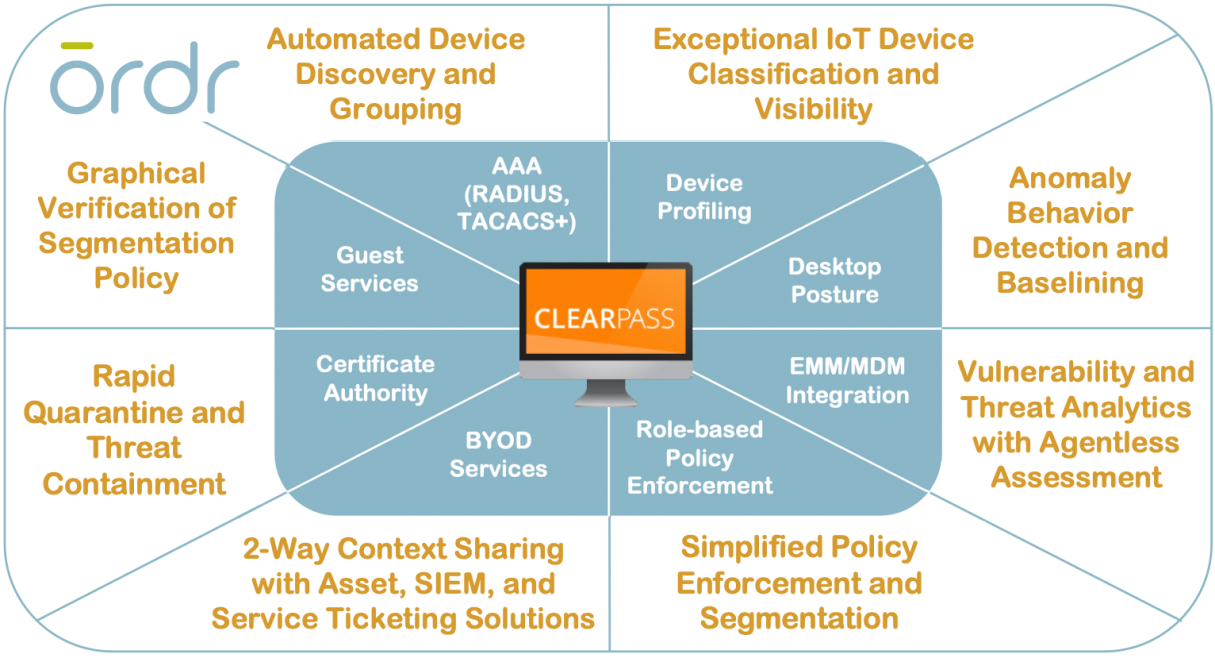
Ordr SCE and HPE Aruba CPPM Integration

HPE Aruba ClearPass Policy Manager (to be referenced simply as CPPM or ClearPass from this point on) provides endpoint visibility and identity-based access control for the Enterprise. To make these technologies effective for IoT requires additional intelligence and automation. This is where Ordr Systems Control Engine (SCE) adds significant value. Ordr SCE helps you to maximize your HPE Aruba CPPM investment to deliver effective IoT and digital OT security to devices previously hard to secure. Its device classification, network awareness, security intelligence, and ability to suggest enforcement rules simplifies the process of creating, provisioning, and managing your IoT segmentation policy.

Ordr SCE complements HPE Aruba CPPM to simplify the tasks that often overwhelm and stall IoT security initiatives by:

- Automating IoT inventory discovery, classification, and categorization, and sharing detailed device context with ClearPass
- Providing rich analytics about the behavior of all devices that guides segmentation design, streamlines the segmentation implementation, and audits the result to assure accuracy and effectiveness
- Quickly contain threats and protect at-risk devices
- Accelerating ClearPass deployments with powerful yet easy-to-use tools that provide accurate device information and automate steps that are traditionally error-prone and labor intensive



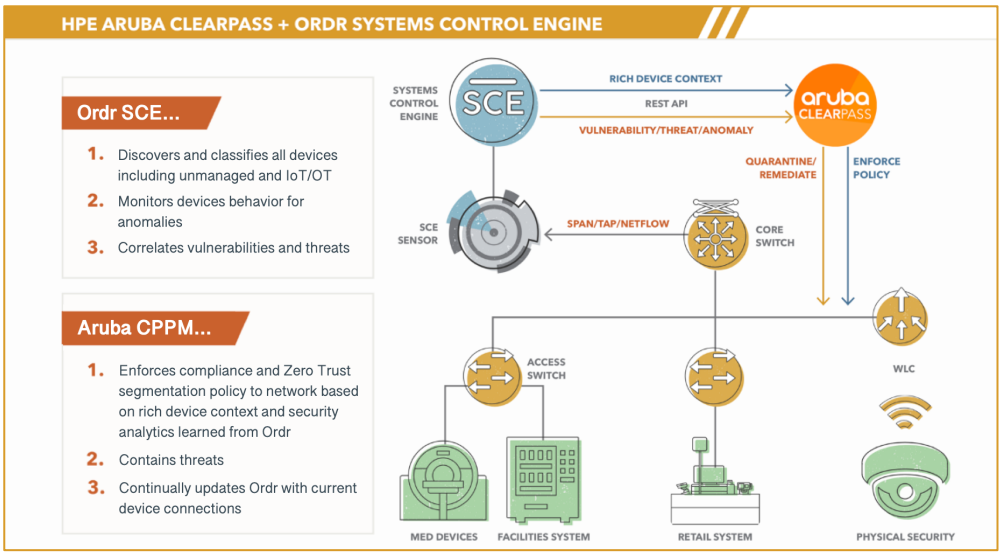
The integrated Ordr SCE and HPE Aruba CPPM solution makes it easy to get rich visibility for IoT and unmanaged devices and to simplify segmentation projects. The solution provides detailed classification and context for every connected device, automatically groups devices into CPPM policy groups for role-based access and facilitates software-defined segmentation to provide more precise controls for every IoT device in the network. By providing continuous, multi-level security monitoring of all device communications, Ordr SCE detects anomalous behavior and shares this information with ClearPass to implement network access control based on vulnerability, threat, and risk ratings. Ordr SCE also integrates with HPE Aruba CPPM to streamline the process of containing threats based on the organization's access policy such as blocking unauthorized devices, quarantining them, or limiting their network access.

Ordr SCE and HPE Aruba CPPM Integration Use Cases

This document focuses on how to integrate Ordr SCE with HPE Aruba CPPM for the following use cases:

- Seamless sharing of Ordr SCE device classification, grouping, and high-definition details
- Continuous update of device compliance, threats, vulnerabilities and risk scores—all without the use of agents
- Dynamic containment of threats based on anomalous behavior or other indicators of compromise
- Automatic learning of device behavior and detection of abnormal traffic to augment ClearPass anomaly tracking

The diagram below illustrates the integration of Ordr SCE with HPE Aruba CPPM. Ordr SCE Sensors provide agentless, passive data collection which feeds the Ordr SCE Analytics Server. Sensors may be centralized or distributed based on collection requirements. The Analytics Server analyzes the data to automatically discover and classify all IoT and non-IoT devices. It then feeds the rich contextual data to ClearPass.



Providing advanced IoT device information to ClearPass is only one piece of the puzzle. To move to segmentation and the enforcement of policies, NAC administrators must understand which traffic to allow and deny. Ordr SCE provides this insight by tracking all device communications to assist administrators in the creation of segmentation and enforcement policies in HPE Aruba CPPM.

Once granted network access by ClearPass, Ordr SCE continuously tracks all devices for known threats and vulnerabilities and monitors communication flows for anomalous traffic and threat activity. Ordr SCE can notify HPE Aruba CPPM of at-risk, vulnerable, and compromised devices to trigger the necessary quarantine and remediation response.

Configuration

Prerequisites

Supported Software Versions

- Ordr SCE version 7.2.R6 and above
- ClearPass Policy Manager version 6.8.7 and above

Communication Ports

- API from the Ordr service integration node to CPPM server: TCP/443

> ***Note:*** *All communications between Ordr SCE and Aruba CPPM occur through the Ordr service integration node. While the Ordr integration node can be deployed on a dedicated hardware or virtual appliance, it is commonly enabled on one of the existing Ordr Sensors with Service Node set to 'Yes'. This ensures a secure communication channel between an on-premises node and the ClearPass servers.*

Be sure to have at least one Network Device Group configured in CPPM to facilitate the provisioning of quarantine and segmentation policies from Ordr SCE. Network Device Groups are referenced in CPPM Enforcement Profiles.

It is also recommended to perform a backup of the ClearPass Policy Manager configuration database and export all endpoint data as well as enforcement policies and profiles prior to starting the integration.

RADIUS Change of Authorization

Dynamic containment of threats is based on the Ordr SCE blocklisting feature. Realtime enforcement of blocklisted/quarantined devices relies on RADIUS Change of Authorization (CoA) support. RADIUS CoA allows network sessions to be reauthorized

on demand and not wait for the client to manually reconnect or the network device to reauthentication based on a fixed interval. To support on-demand reauthorization, Aruba CPPM must be configured for RADIUS Change of Authorization (CoA). Additionally, the wired switches and wireless controllers to which target devices are connected must also be configured for RADIUS CoA. The RADIUS CoA standard is defined by RFC 3576 so some network device configurations may refer to this specification. For example, Aruba wireless controllers should define Aruba CPPM as an RFC 3576 (CoA) server. If RADIUS CoA is not configured, or improperly configured, then the Ordr blocklisting feature can still function, but the quarantine enforcement policy will not take effect until the client manually disconnects/reconnects to the network, or the network device performs a periodic reauthentication on the session.

Overview

- Part 1: Basic setup
  - Configure ClearPass API access for Ordr SCE
  - Configure Ordr SCE Service Integration with ClearPass
- Part 2: Rich device context sharing to ClearPass
  - Verify creation of new custom dictionary attributes in ClearPass
  - Verify automated device update and context sharing from Ordr SCE to ClearPass
  - Verify enhanced visibility in ClearPass Policy Manager and Insight
- Part 3: Blocklisting and dynamic quarantine of threats
  - Bind quarantine Enforcement Profile to Ordr blocklisted devices
  - Trigger device blocklisting in Ordr SCE
  - Verify endpoint quarantine in ClearPass

Part 1: Basic ClearPass Setup

Ordr SCE integration with HPE Aruba CPPM uses the ClearPass REST APIs secured through an OAuth2 framework. CPPM supports the use of different grant types for OAuth. SCE uses the *password* grant-type.

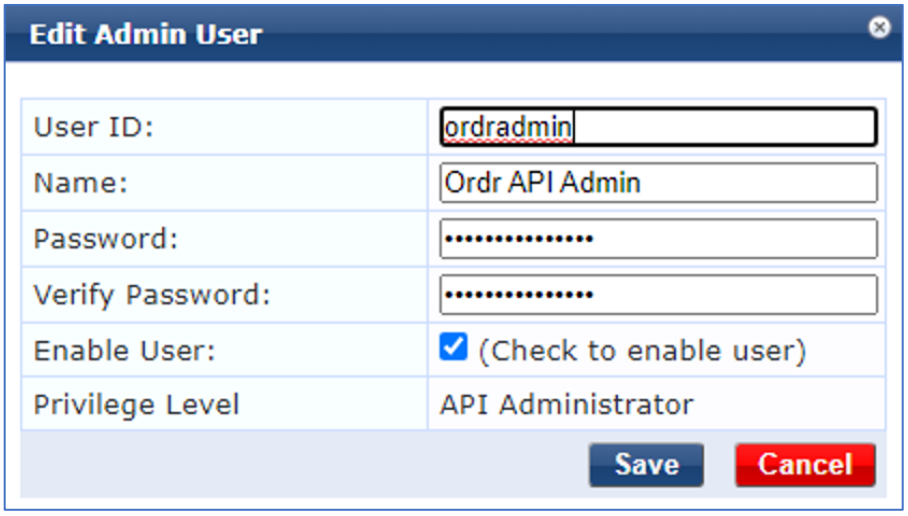
Ordr SCE can also leverage the legacy “tips” XML API. For the legacy XML API, basic HTTP authentication is used. The XML API is an optional API that can be enabled/disabled to directly update CPPM’s derived endpoint fingerprint/classification for a profiled endpoint.

These steps enable Ordr SCE to update ClearPass endpoints with rich device context and facilitate threat containment.

Step 1 Create an Ordr API admin user

For Ordr SCE to share rich device context with ClearPass Policy Manager and ClearPass Insight, as well as automate policy enforcement and segmentation, an admin account is required that provides the minimal but necessary access using ClearPass APIs.

1) Login to ClearPass Policy Manager and define a new admin user for Ordr SCE integration under **Administration > Users and Privileges > Admin Users**.
2) Click **Add** in the upper right corner and complete the form as shown in the example:
    a. Assign a User ID such as **ordradmin**. Store the User ID and Password values in a secure location. These credentials will be required to complete the integration from Ordr SCE.
    b. Verify the user account is enabled.
    c. Set Privilege Level to **API Administrator.** Specific API access privileges will be configured for the API client in the following steps.

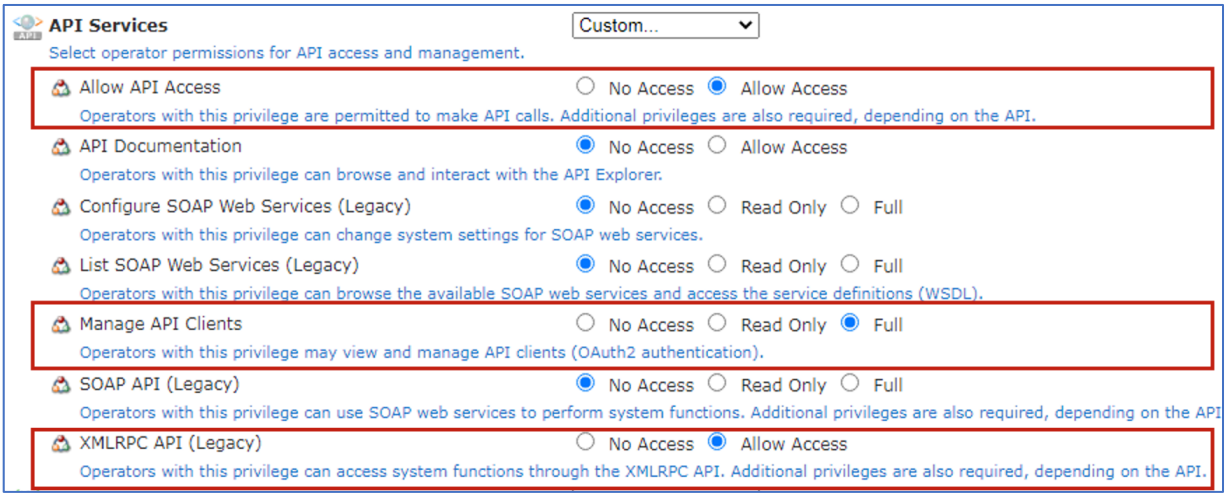


3) Click **Add** when finished.

Step 2 Configure a new ClearPass operator profile

Operator Profiles are used extensively within ClearPass to secure access to any CPPM function. Operator Proles were originally created to administer and control ClearPass Guest access but have since been extended to control access to Policy Manager functions as well. The profiles also provide granular control over API access using configurable permissions over policy functions that include no-access, read, read/write, and read/write/delete.

1) Login to ClearPass Guest and configure a new Operator Role under **Administration > Operator Logins > Profiles**.
2) Click **Create a new operator profile** in the upper right corner.
3) Assign a name to the new role such as **Ordr API Administrator**
4) The Access section is used to configure access permissions. By default, the new Operator Profile should have “No Access” assigned to all functions.
    a. Change the Operator Privileges for API Services from “No Access” to “Custom…” and then set the individual privileges as shown in the example:



b. Change the Operator Privileges for Policy Manager from “No Access” to “Custom…” and then set the individual privileges as shown in the table:

Policy Manager Permissions	No Access	Read	Read, Write	Read, Write, Delete
Agentless OnGuard - Settings	●			
Agentless OnGuard - Subnet Mappings	●			
Application Licenses	●			
Authentication - Methods	●			
Certificate - Revocation List	●			
Certificate - Trust List	●			
Certificates	●			
Clearpass Portal	●			
Configuration - Network Scan	●			
Configuration - Services	●			
Device Profiler - Device Fingerprint	●			
Dictionaries - Attributes				●
Dictionaries - Context Server Actions				●
Dictionaries - Fingerprints				●
Dynamic Authorization - Session Action				●
Events - Login Audit	●			
Events - System Events	●			
External Accounts	●			
External Accounts - Profiler Subnet Mappings	●			
External Servers - Endpoint Context Servers	●			
External Servers - File Backup Server	●			
External Servers - SNMP trap receivers	●			
External Servers - Syslog Export Filters				●

External Servers - Syslog Targets				●
Identity - Endpoints				●
Identity - Local Users	●			
Identity - LocalUser Password Policy	●			
Identity - Role Mapping				●
Identity - Roles				●
Identity - Static Host Lists				●
Insight - Endpoints				●
Messaging Services - Messaging Setup	●			
Network - Device Groups				●
Network - Devices				●
Network - Event Sources				●
Network - Proxy Targets	●			
OnGuard - Policy Manager Zones	●			
OnGuard - Settings	●			
Platform - Access Control				●
Platform - Cluster Wide Parameters	●			
Platform - Device Insight	●			
Platform - Policy Manager Zones	●			
Platform - Server SNMP	●			
Platform - Servers		●		
Platform - Service Parameters	●			
Platform - Services	●			
Users and Privileges - Admin Privileges	●			
Users and Privileges - Admin User Password Policy	●			
Users and Privileges - Admin Users				●

5) Click **Save Changes** to commit the changes.
6) From the list of Operator Profiles, select the newly created profile for Ordr SCE API access, and then click **Show Details**. The profile information including permission settings should appear like the following example:

Ordr API Administrator — Ordr API user to update ClearPass Policy Manager endpoint attributes and enable automated policy enforcement

Hide Details | Edit | Delete | Duplicate | Show Usage

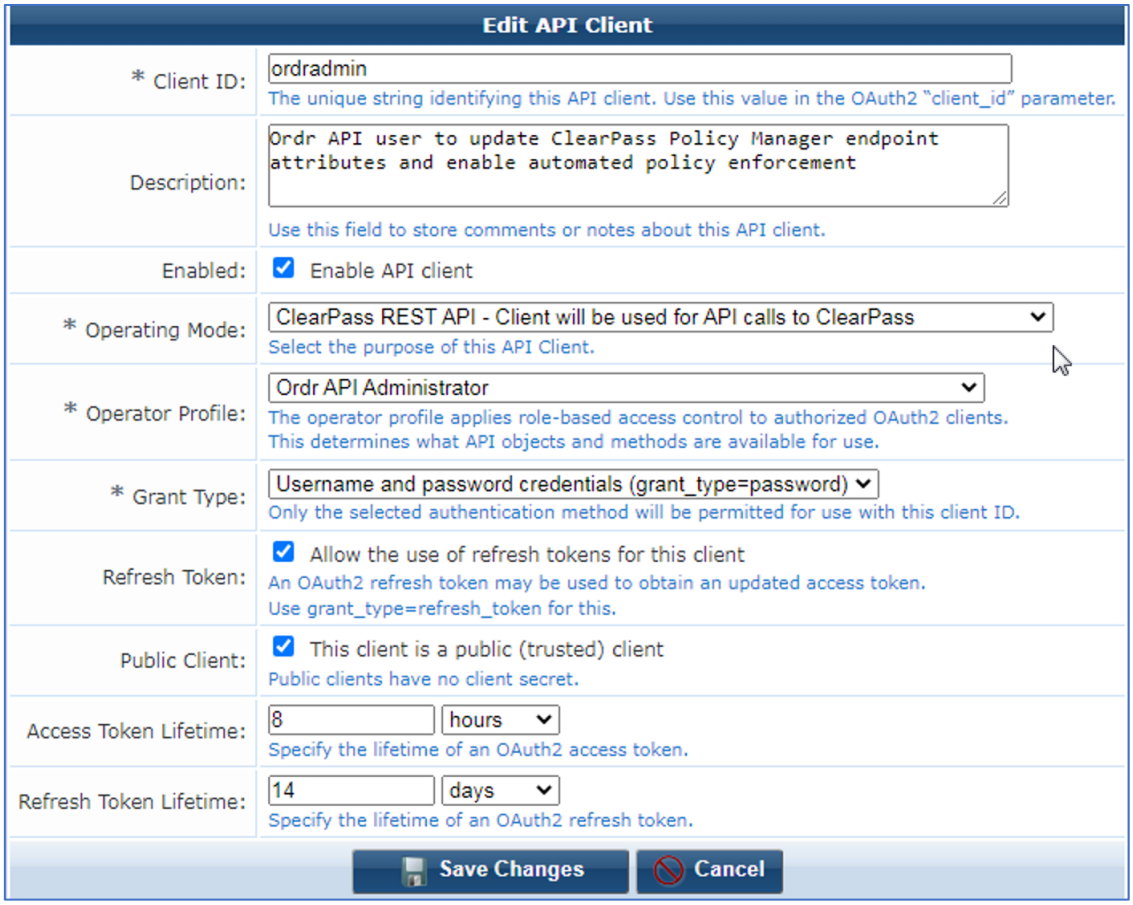
Operator Profile

Name:	**Ordr API Administrator**
Description:	Ordr API user to update ClearPass Policy Manager endpoint attributes and enable automated policy enforcement
Operator logins:	Enabled
Privileges:	**API Services** — **Custom** Allow API Access — Allow Access Manage API Clients — Full Access XMLRPC API (Legacy) — Allow Access **Policy Manager** — **Custom** Dictionaries - Attributes — Full Access Dictionaries - Context Server Actions — Full Access Dictionaries - Fingerprints — Full Access Dynamic Authorization - Session Action — Full Access External Servers - Syslog Export Filters — Full Access External Servers - Syslog Targets — Full Access Identity - Endpoints — Full Access Identity - Role Mapping — Full Access Identity - Roles — Full Access Identity - Static Host Lists — Full Access Insight - Endpoints — Full Access Network - Device Groups — Full Access Network - Devices — Full Access Network - Event Sources — Full Access Platform - Access Control — Full Access Platform - Servers — Read Only Users and Privileges - Admin Users — Full Access
Skin:	
Start Page:	(Default)
Language:	(Default)
Time Zone:	(GMT-05:00) America/New York; Eastern (most areas)

If changes are required, simply click **Edit** under the profile name and make changes as needed. Be sure to click **Save Changes** when finished.

Step 3 Configure an API client with new operator role

1) In the ClearPass Guest interface, navigate to **Administration > API Services > API Clients**.
2) Click **Create API Client** in upper right corner.
3) Complete the form as shown in the example:
    a. For Client ID, assign the same name used to create the Ordr API Admin in Step 1 (**ordradmin** in our example).
    b. Under Operating Mode, select **ClearPass REST API – Client will be used for API calls to ClearPass**
    c. Under Operator Profile, select the profile created in the previous steps (**Ordr API Administrator** in our example).
    d. Set Grant Type to Username and password credentials (grant_type=password).
    e. Enable the checkbox **This client is a public (trusted) client**.

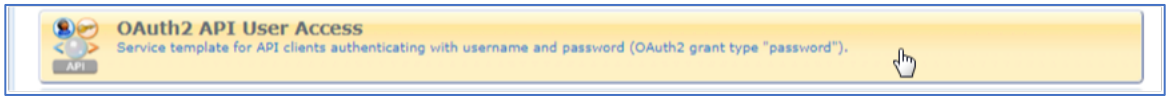


4) Click **Create API Client** to commit the changes.

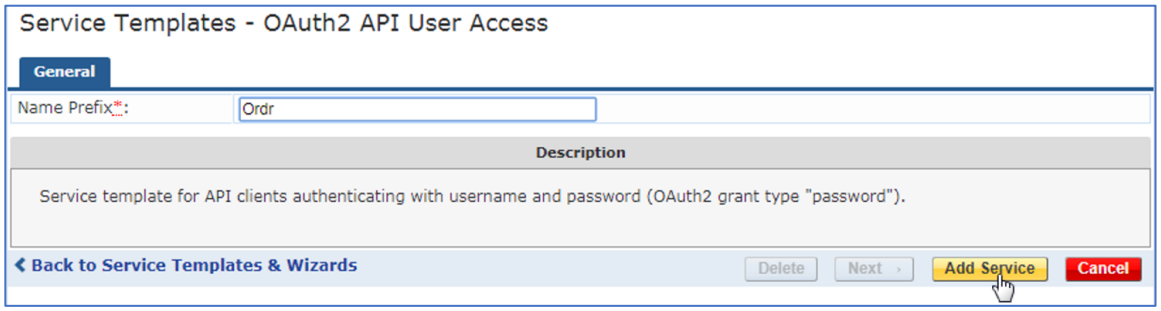
Step 4 Configure ClearPass service to enable OAuth2 API User Access

To permit the Ordr API client to authenticate to ClearPass using grant_type=password, it is necessary to add an OAuth2 application service to ClearPass Policy Manager that uses the Admin User Repository for checking credentials. A Service Template will be used to simplify the process.

1) Return to the ClearPass Policy Manager interface and navigate to **Configuration > Service Templates & Wizards**.
2) Select **OAuth2 API User Access** from the list:



3) Enter **Ordr** under Name Prefix and click **Add Service:**



4) A new Service should appear under **Configuration > Services** named **Ordr OAuth2 API User Access**. Verify that the OAuth2 service is listed with status enabled ✅.
5) Open the OAuth2 service and under the Summary tab, verify the Admin User Repository is listed as an Authentication Source. This is the repository where the Ordr API Admin User was created in Step 1.

Configuration » Services » Edit - OrdrAPIClientAuthService

Services - OrdrAPIClientAuthService

Summary | Service | Authentication | Roles | Enforcement

Service:

Name:	OrdrAPIClientAuthService
Description:	Authentication Service for Applications
Type:	Aruba Application Authentication
Status:	Enabled
Monitor Mode:	Disabled
More Options:	-

Service Rule

Match ANY of the following conditions:

	Type	Name	Operator	Value
1.	Application	Name	EQUALS	OAuth2

Authentication:

Authentication Sources:	1. [Admin User Repository] [Local SQL DB] 2. [Local User Repository] [Local SQL DB]
Strip Username Rules:	-

Roles:

Role Mapping Policy:	[Guest Roles]

Enforcement:

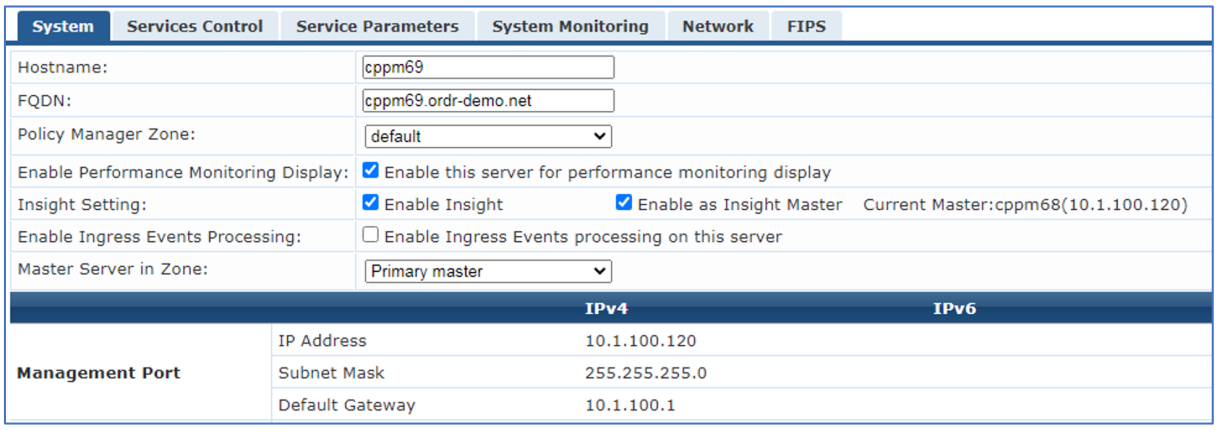
Use Cached Results:	Disabled
Enforcement Policy:	[Guest Operator Logins]

6) From the Authentication tab, select **Admin User Repository** in the list and **Move Up** above Local User Repository. This will ensure the Admin User Repository is checked first for the new API user account.

Note: *The Local User Repository is not required for Ordr API access.*

Step 5 Optional: Enable ClearPass for Insight Integration

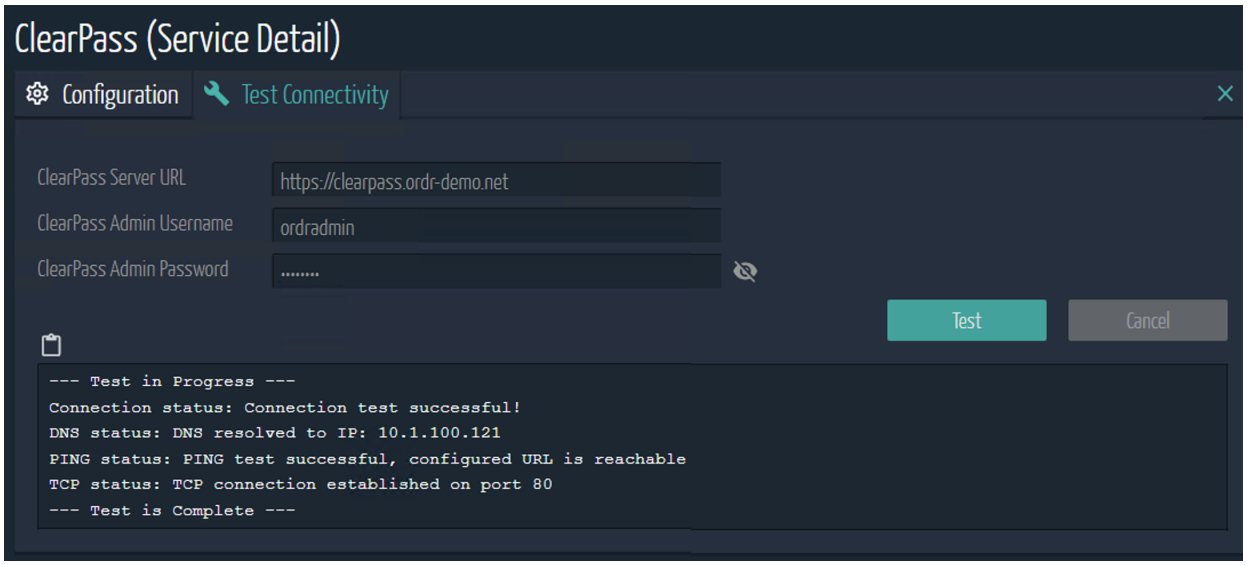
1) From the ClearPass Policy Manager interface, navigate to **Administration > Server Manager > Server Configuration**.
2) Select the ClearPass Policy Manager node for Insight integration.
3) Under the **System** menu tab, verify **Enable Insight** is checked under the Insight Setting field.



4) If changes made, click **Save** when finished.

Step 6 Configure Ordr SCE Service Integration for ClearPass

1) From the Ordr SCE management interface, navigate to **Network > Network Services > Policy** and select **ClearPass** from the list of Policy Servers.
2) Test the connection to the ClearPass Policy Manager server:
    a. From the **Test Connectivity** tab, complete the form:
        i. Enter the **ClearPass Server URL** based on FQDN or IP address of the ClearPass Policy Manager
        ii. Enter the **ClearPass Admin Username** and **Password** using the credentials of the Ordr API Admin User defined in Step 1.
    b. Click the **Test** button. All test results should be successful as shown in the example:

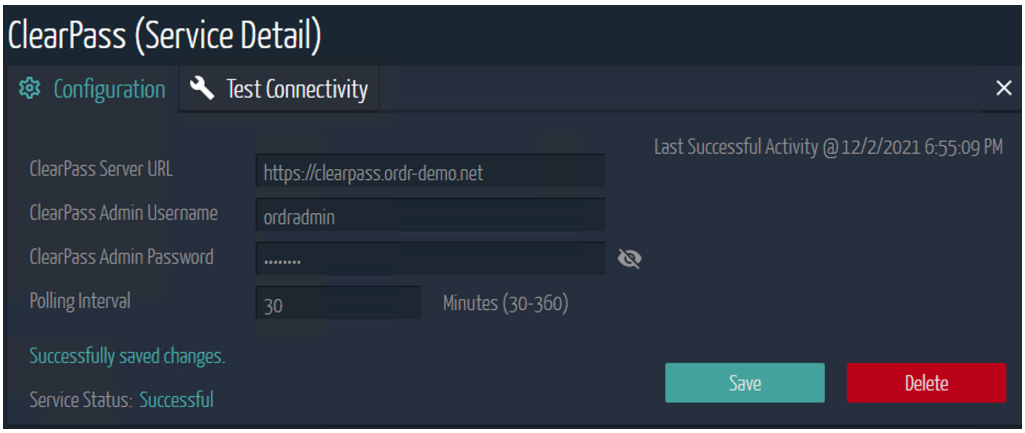


If any failures, check the following:

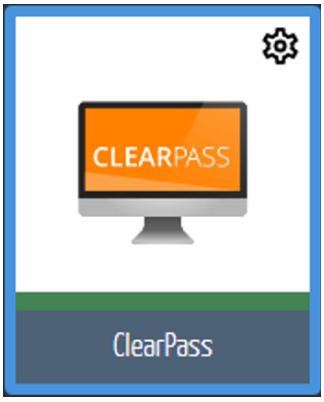
i. Ensure the credentials are correct and re-save values in Ordr SCE.
ii. Ensure TCP/443 (or designated API port) is permitted between the Ordr integration/services node and ClearPass Policy Manager. This node is typically an existing Ordr sensor with the specific designation of Services Node. All communications between Ordr SCE and Aruba CPPM occur through an integration/services node. Therefore, verify connectivity between this nodes management IP address and CPPM.
iii. Verify DNS is properly configured on the Ordr appliances and CPPM and that the ClearPass FQDN is configured in DNS if using its name rather than IP address in the connection URL.
iv. Verify the ClearPass Server URL is using secure HTTP, or http**s**. There will be an error if you enter http://.

3) Once Test Connectivity is successful, go to the **Configuration** tab and re-enter the Server URL and Ordr API admin credentials. Leave the Polling Interval at its default setting unless instructed otherwise. This sets the interval used to poll for any new client authentications not received via Context Server notifications.

4) Click **Save** when finished.



5) Once successfully integrated, the status bar in the Service Integration icon for ClearPass should turn green as shown:

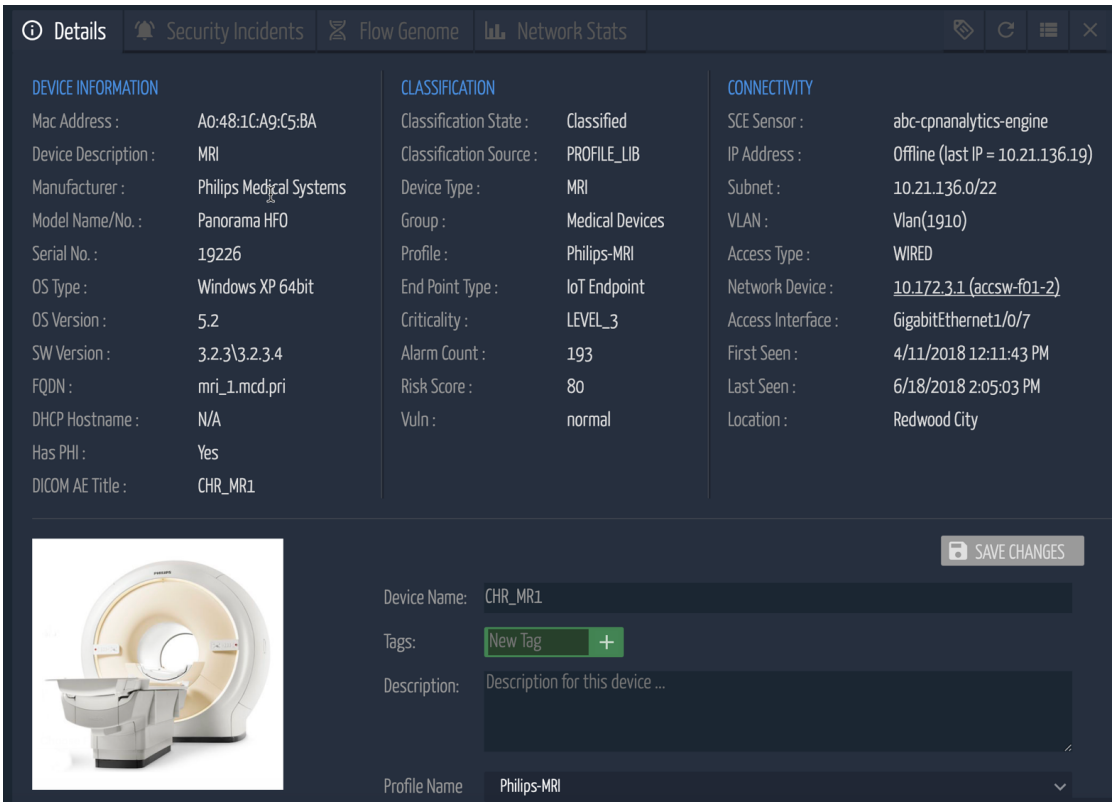


If the status bar turns red, repeat the Test Connectivity step and review the troubleshooting hints provided.

Part 2: Rich Device Context Sharing

Ordr Systems Control Engine automatically classifies all devices on the network inclusive of medical and industrial IoT, building automation, media, phones, printers,

servers, and user workstations and mobile devices. Beyond dynamic classification and grouping by Device Type, Device Category, and Device Profile, Ordr SCE collects detailed asset and device attributes such as manufacturer, model/serial number, hardware/software versions, vulnerability/threat risk ratings, and other rich data.



This information is shared with ClearPass to provide exceptional visibility and context needed to make enforcement and segmentation policy decisions for IoT and other non-authenticating devices.

Step 1 Verify creation of new custom dictionary attributes in ClearPass

1) From ClearPass Policy Manager, navigate to **Administration > Dictionaries > Dictionary Attributes**.
2) Apply a filter to display only attributes where **Name contains** “**Ordr”** and click **Go.**
3) The list displays attributes populated by the Ordr SCE API as shown in the example.

Administration » Dictionaries » Dictionary Attributes

Dictionary Attributes

Add
Import
Export All

The Attributes dictionary page allows you to specify unique sets of criteria for local users, guest users, endpoints, and devices.

Filter: Name contains Ordr Go Clear Filter Show 50 records

#	Name	Entity	Data Type	Is Mandatory	Allow Multiple
1.	OrdrBehaviorState	Endpoint	String	No	No
2.	OrdrBlacklist	Endpoint	Boolean	No	No
3.	OrdrCategory	Endpoint	String	No	No
4.	OrdrCurrIpAddress	Endpoint	IPv4Address	No	No
5.	OrdrDeviceType	Endpoint	String	No	No
6.	OrdrDhcpHostname	Endpoint	String	No	No
7.	OrdrEndPointType	Endpoint	String	No	No
8.	OrdrEnforcementProfile	Endpoint	String	No	No
9.	OrdrFirstSeen	Endpoint	Date-Time	No	No
10.	OrdrHasAlarms	Endpoint	Boolean	No	No
11.	OrdrLastSeen	Endpoint	Date	No	No
12.	OrdrLongMfgName	Endpoint	String	No	No
13.	OrdrModelNameNo	Endpoint	String	No	No
14.	OrdrOsType	Endpoint	String	No	No
15.	OrdrPolicyStatus	Endpoint	String	No	No
16.	OrdrProfile	Endpoint	String	No	No
17.	OrdrRiskScore	Endpoint	Integer32	No	No
18.	OrdrVlanId	Endpoint	Integer32	No	No
19.	OrdrVuln	Endpoint	String	No	No

Step 2 Verify automated endpoint creation and context sharing from Ordr SCE to ClearPass

1) Within ClearPass Policy Manager, navigate to **Configuration > Identity > Endpoints**
    a. Filter the list to display all endpoints where **Description contain "Ordr"** as shown in the example. All endpoints discovered by Ordr SCE and populated automatically into the ClearPass Policy Manager endpoint repository are displayed.

Endpoints

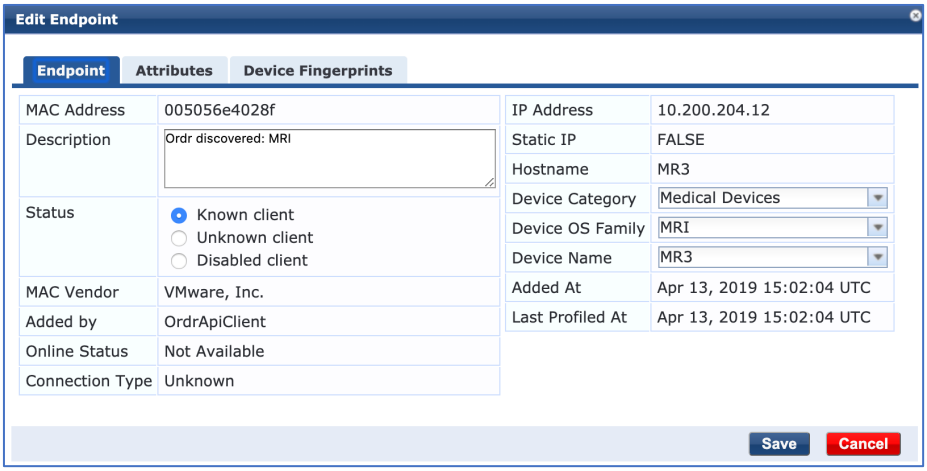
This page automatically lists all authenticated endpoints. An endpoint device is an Internet-capable hardware device on a TCP/IP network (e.g. laptops, smart phones, tablets, etc.).

Filter: Description contains Ordr Go Clear Filter Show 50 records

#	MAC Address	Hostname	Device Category	Device OS Family	Status	Profiled
1.	600308c7eb39	GreatRoAppleTV2	Media Devices	Television	Known	Yes
2.	0009ef00a0a1		Media Devices	Badge	Known	Yes
3.	005056d797db	MR2	Medical Devices	MRI	Known	Yes
4.	0050565457f0	CT5	Medical Devices	CT Scanner	Known	Yes
5.	00505640f6e4		Medical Devices	MRI	Known	Yes
6.	0050568239c9	CR1	Medical Devices	CR Reader	Known	Yes
7.	0009fb479c49		Medical Devices	Patient Monitoring	Known	Yes
8.	02accd000001		Medical Devices	Hemodialysis Machine	Known	Yes
9.	0050567a21ae	CT4	Medical Devices	CT Scanner	Known	Yes
10.	00163e6d3602		Medical Devices	Infusion Pump	Known	Yes
11.	00505664e393	CT7	Medical Devices	CT Scanner	Known	Yes
12.	005056ac9c8c	US5	Medical Devices	Ultrasound	Known	Yes
13.	00409d594bbc		Medical Devices	Spectrum Infusion Pump	Known	Yes
14.	00163e1c989a		Medical Devices	Infusion Pump	Known	Yes
15.	005056ec6a69		Medical Devices	CR Reader	Known	Yes
16.	005056e4028f	MR3	Medical Devices	MRI	Known	Yes
17.	0009fbf669f7		Medical Devices	Patient Monitoring	Known	Yes
18.	005056fc78ba	MR5	Medical Devices	MRI	Known	Yes
19.	0050564a0843	CT2	Medical Devices	CT Scanner	Known	Yes
20.	005056e1f33a	US4	Medical Devices	Ultrasound	Known	Yes
21.	0050566460cb	CR2	Medical Devices	CR Reader	Known	Yes
22.	005056355212	US2	Medical Devices	Ultrasound	Known	Yes
23.	005056bf880e	CT3	Medical Devices	CT Scanner	Known	Yes

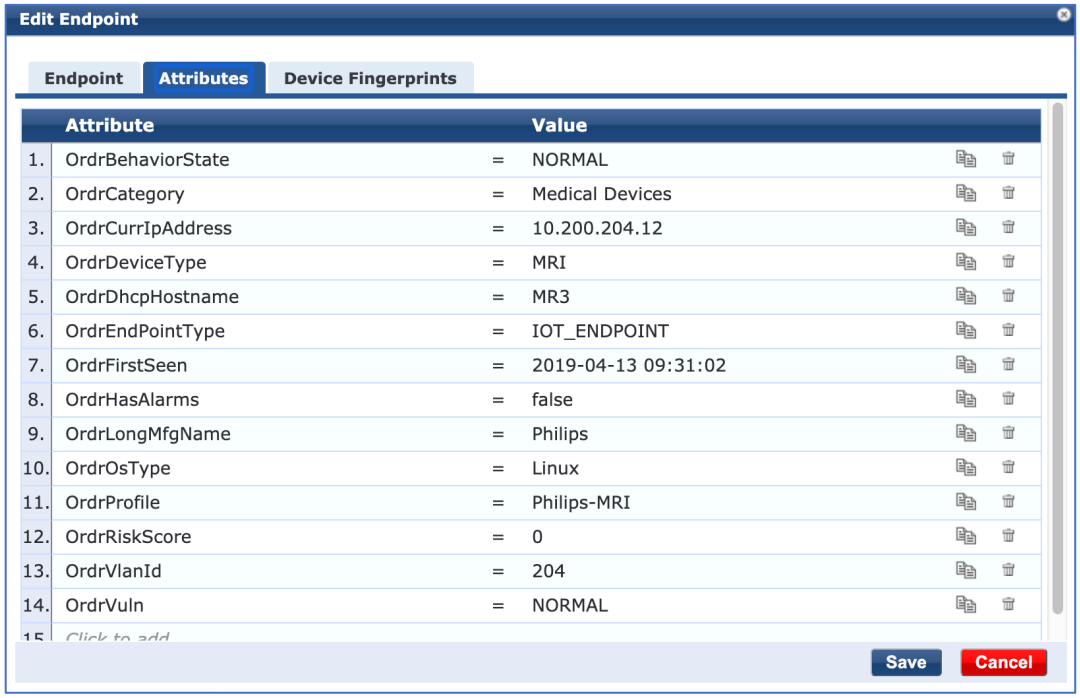
Note: *By default, Ordr does not populate the Device Category, Device OS and Device Name fields to avoid potential conflict with existing ClearPass policies that may reference these fields. Please contact Ordr if prefer to have these fields updated by SCE based on the values for Ordr device classification Group, Manufacturer, and Classification Profile, respectively.*

b. Click on the MAC Address for one of the endpoints and view the Endpoint details:



Note the Description field has been auto-populated as “Ordr discovered: MRI”. Ordr will not update this field for devices already discovered by CPPM, but the custom dictionary attributes for all devices known to Ordr will be populated to the ClearPass endpoint repository.

c. Click the **Attributes** tab to view the rich device context automatically populated to the selected endpoint by Ordr SCE.

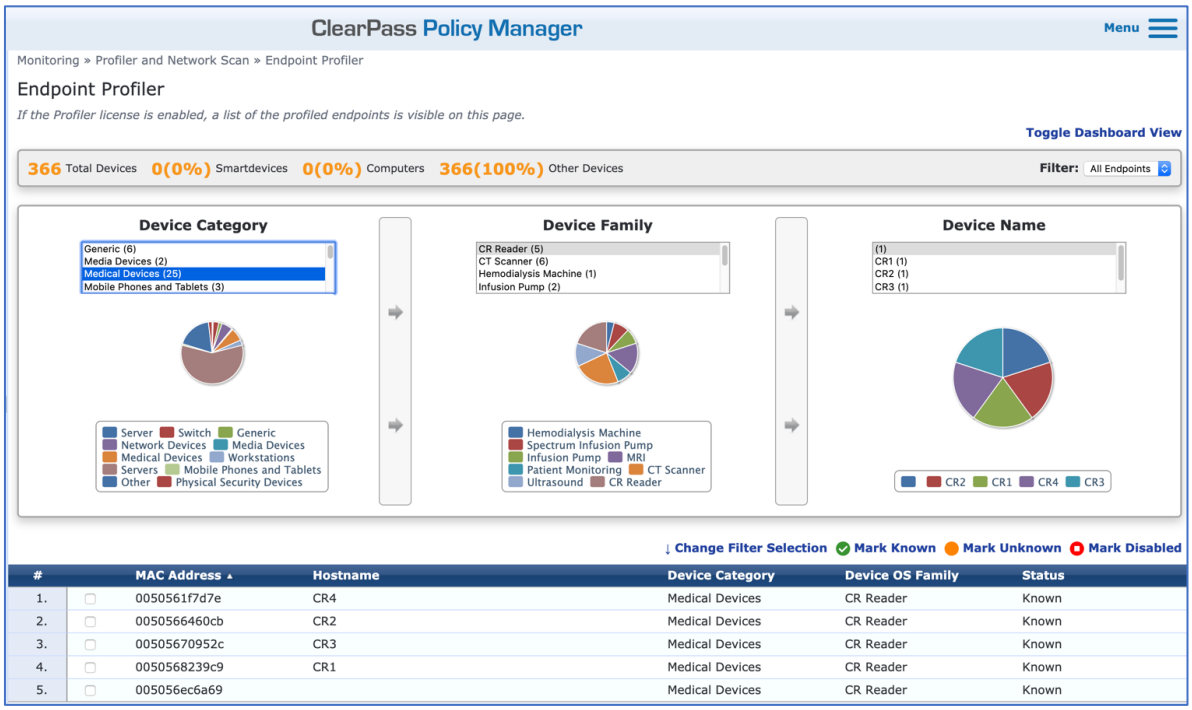


d. Click **Cancel** when finished.

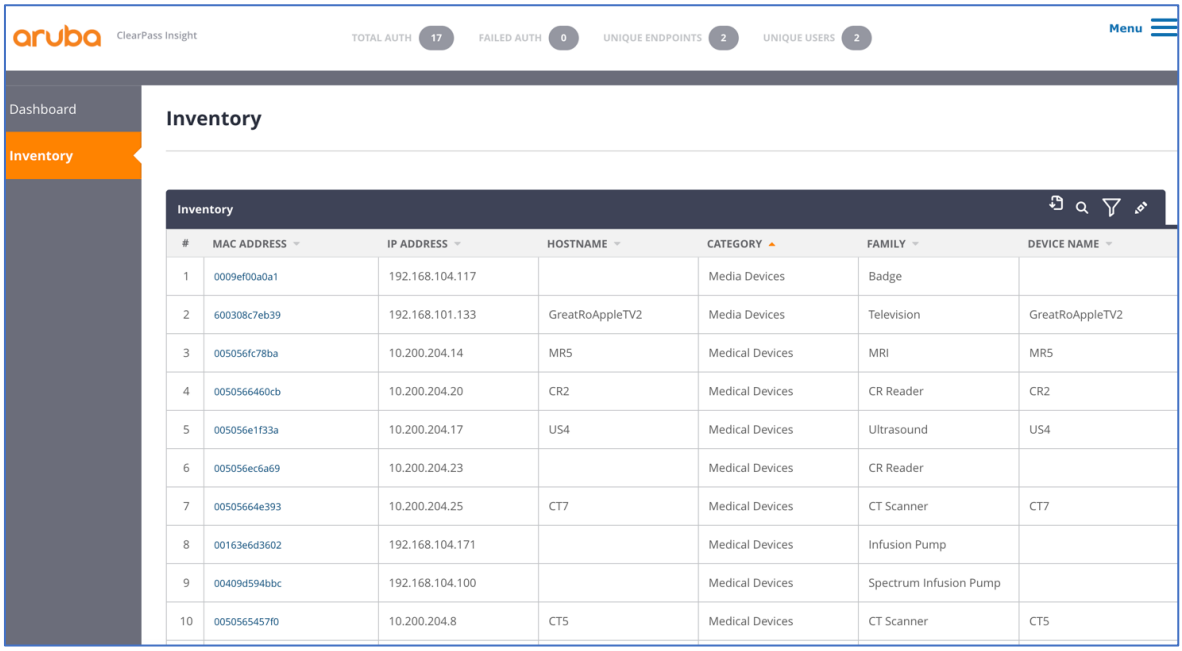
Step 3 Verify enhanced visibility in ClearPass Policy Manager (Optional)

If elected to have Ordr SCE populate the Device Category, Device OS and Device Name, the results can be viewed under CPPM Endpoint Profiler.

1) Navigate to **Monitoring > Profiler and Network Scan > Endpoint Profiler**. If enabled by Ordr support, SCE will automatically update ClearPass **Device Category**, **Device Family**, and **Device Name** attributes based on its high-fidelity classification and data collection engine. Select various values to show the impact of Ordr SCE device context updates and the resulting list of matching endpoints.



2) The same data can be viewed in the ClearPass Insight database. If Insight is enabled, Open the Insight interface and navigate to **Inventory**. Again, the results are enhanced by additional context and update of the Device Category, OS Family, and Device Name attributes by Ordr SCE.



#	MAC ADDRESS	IP ADDRESS	HOSTNAME	CATEGORY	FAMILY	DEVICE NAME
1	0009ef00a0a1	192.168.104.117		Media Devices	Badge	
2	600308c7eb39	192.168.101.133	GreatRoAppleTV2	Media Devices	Television	GreatRoAppleTV2
3	005056fc78ba	10.200.204.14	MR5	Medical Devices	MRI	MR5
4	0050566460cb	10.200.204.20	CR2	Medical Devices	CR Reader	CR2
5	005056e1f33a	10.200.204.17	US4	Medical Devices	Ultrasound	US4
6	005056ec6a69	10.200.204.23		Medical Devices	CR Reader	
7	00505664e393	10.200.204.25	CT7	Medical Devices	CT Scanner	CT7
8	00163e6d3602	192.168.104.171		Medical Devices	Infusion Pump	
9	00409d594bbc	192.168.104.100		Medical Devices	Spectrum Infusion Pump	
10	0050565457f0	10.200.204.8	CT5	Medical Devices	CT Scanner	CT5

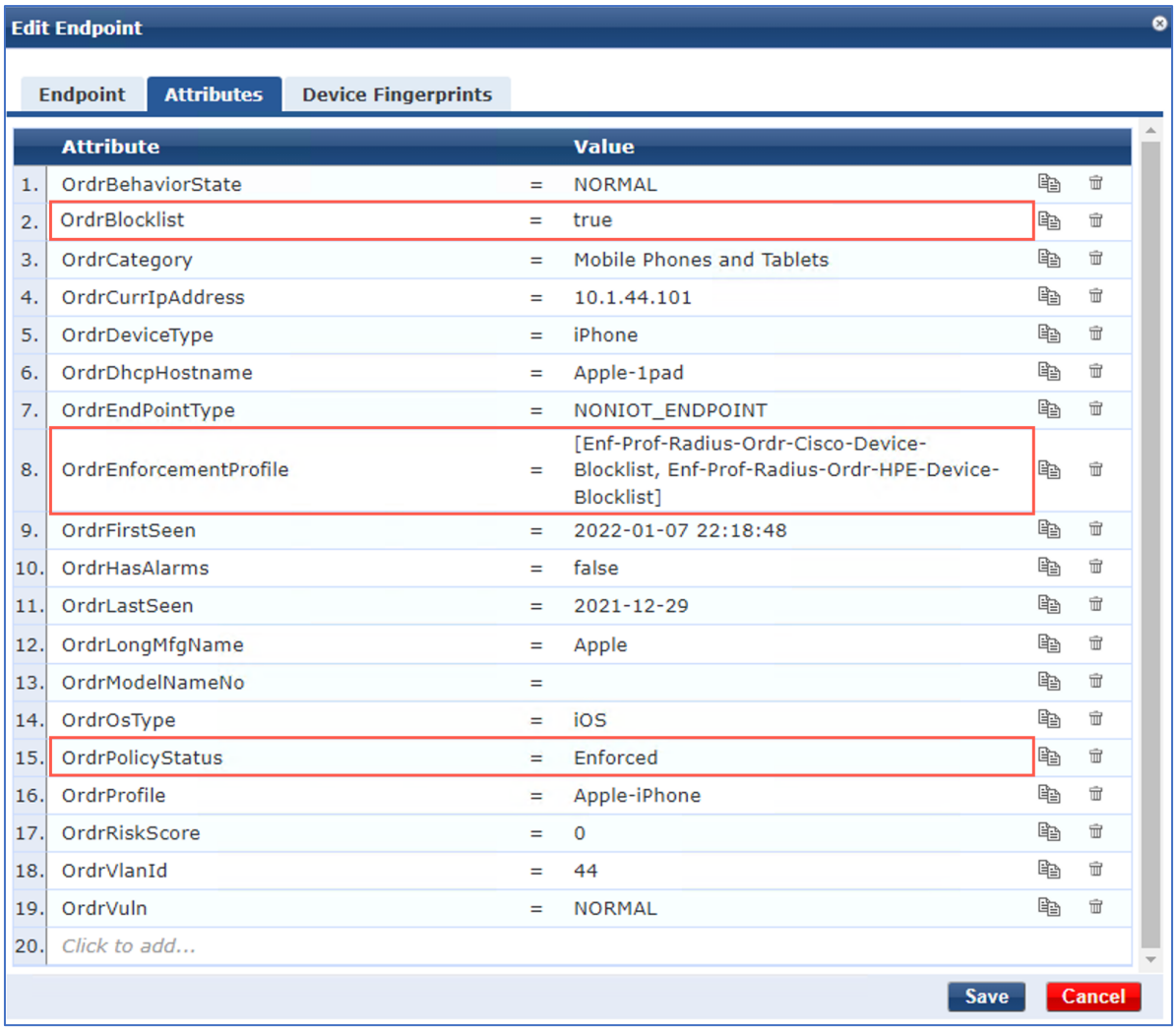
Part 3: Blocklisting and Dynamic Quarantine of Threats

Blocklisting enables network and security operators to quickly quarantine endpoints deemed high-risk or a security threat and their access needs immediate containment. This feature enables operators to deny or restrict network access to these endpoints through ClearPass by automatically triggering a policy which blocks their access. The specific policy for blocklisted endpoints is entirely configurable within ClearPass Policy Manager, based on the enforcement policy.

Note: *Realtime blocklisting/quarantine requires RADIUS CoA (RFC3576) to be enabled and properly configured on Aruba CPPM and the network devices where endpoints connect to the network. Without CoA support, policy changes will not take effect until the device reconnects or reauthenticates to the network. RADIUS CoA configuration for different network device vendors, models, and versions is beyond the scope of this guide. Please refer to your network*

device and Aruba CPPM documentation for details on specific configuration steps to support RADIUS CoA.

When a device is blocklisted from Ordr SCE its endpoint attributes in ClearPass are dynamically updated to mark the endpoint for active quarantine. Additionally, during the initial integration with Ordr SCE, sample enforcement profiles are created in ClearPass to facilitate the quarantine of blocklisted devices connected to HPE-Aruba wireless controllers and Cisco wired switches.



	Attribute		Value
1.	OrdrBehaviorState	=	NORMAL
2.	OrdrBlocklist	=	true
3.	OrdrCategory	=	Mobile Phones and Tablets
4.	OrdrCurrIpAddress	=	10.1.44.101
5.	OrdrDeviceType	=	iPhone
6.	OrdrDhcpHostname	=	Apple-1pad
7.	OrdrEndPointType	=	NONIOT_ENDPOINT
8.	OrdrEnforcementProfile	=	[Enf-Prof-Radius-Ordr-Cisco-Device-Blocklist, Enf-Prof-Radius-Ordr-HPE-Device-Blocklist]
9.	OrdrFirstSeen	=	2022-01-07 22:18:48
10.	OrdrHasAlarms	=	false
11.	OrdrLastSeen	=	2021-12-29
12.	OrdrLongMfgName	=	Apple
13.	OrdrModelNameNo	=	
14.	OrdrOsType	=	iOS
15.	OrdrPolicyStatus	=	Enforced
16.	OrdrProfile	=	Apple-iPhone
17.	OrdrRiskScore	=	0
18.	OrdrVlanId	=	44
19.	OrdrVuln	=	NORMAL
20.	*Click to add...*		

The example above highlights the custom Ordr attributes updated for a blocklisted endpoint. These include:

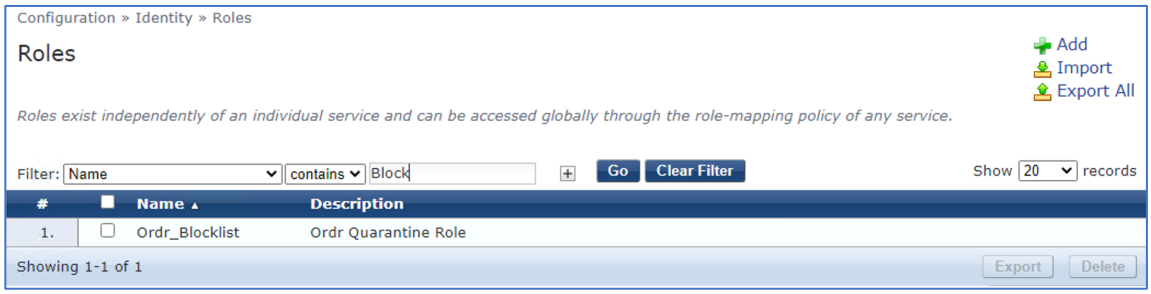
- **OrdrBlocklist:** Value set to “true” if device is blocklisted from Ordr SCE
- **OrdrEnforcementProfile** = Value set to the name or names of applicable ClearPass Enforcement Profiles to quarantine the blocklisted endpoint
- **OrdrPolicyStatus:** Value set to “Enforced” when policy is enforced from Ordr SCE

Using these attributes, an administrator can easily apply an enforcement policy and profile in ClearPass to limit or block network access to an Ordr-blocklisted device. While there are many ways these attributes can be leveraged for dynamic threat containment, one of the simplest options would be to match endpoints with the OrdrBlocklist attribute is set to “true” and apply the desired quarantine policy in Aruba CPPM.

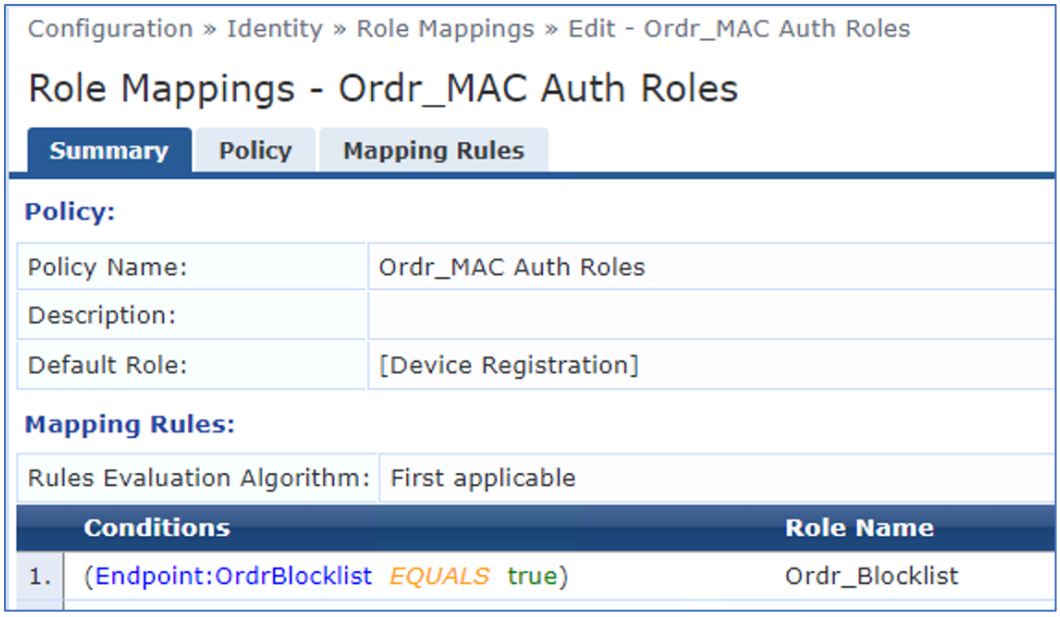
The following steps illustrate one example of how to apply a restricted access policy to a blocklisted endpoint.

Step 1 Create a ClearPass role for Quarantine/Blocklist devices

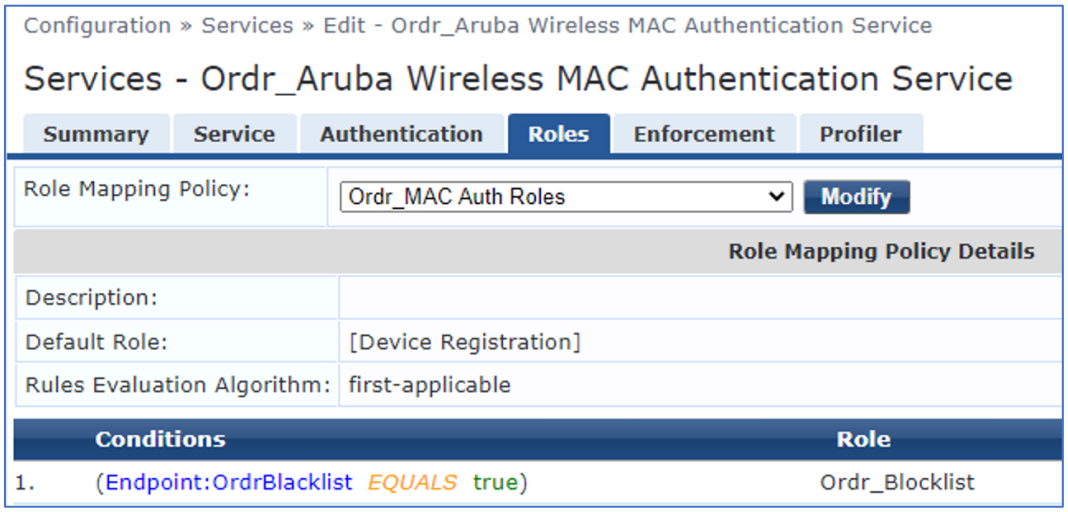
1) From ClearPass Policy Manager, navigate to **Configuration > Identity > Roles**.
2) Click **Add** from the upper right window and enter the Name of the new role such as “Ordr_Blocklist” and include an optional Description.



3) Under **Configuration > Identity > Role Mappings**, create a new role mapping (or update an existing role mapping) that includes a rule to match endpoints with OrdrBlocklist attribute equal to “true” and maps them to the blocklist role created above (for example, Ordr_Blocklist).

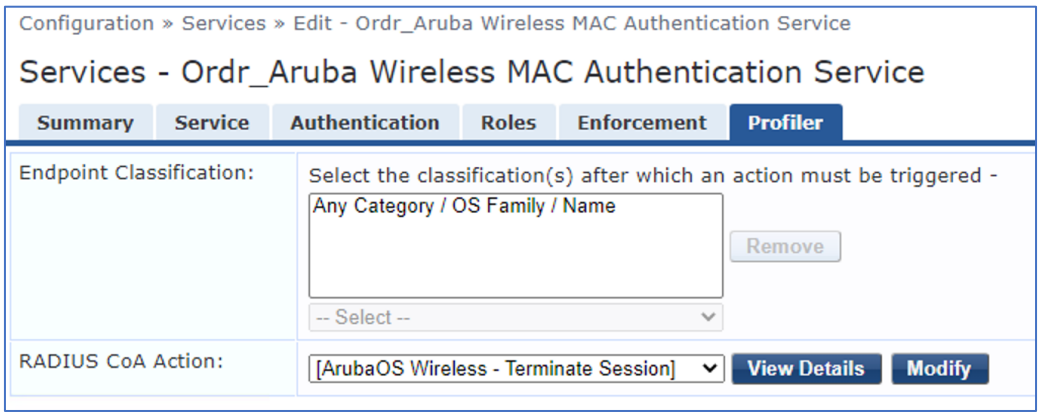


The Role Mapping policy used should be the one defined in your organization's ClearPass Services to enforce authentication and authorization for devices to be quarantined as defined under **Configuration > Services**.



4) Under the Enforcement tab of the selected Services policy, make note of the associated Enforcement Policy.

5) Under the Profiler tab, verify the RADIUS CoA Action setting is correct for triggering reauthorization of endpoints using this Services policy.



Step 2 Bind an Enforcement Profile to Ordr blocklisted devices

1) Go to **Configuration > Enforcement > Policies** and select the enforcement policy identified in Step 1.
2) Go to the Rules tab and map the Tips:Role=Ordr_Blocklist (or name assigned to Ordr Quarantine Role) to the desired Enforcement Profile.
    a. For endpoints connected to Aruba wireless controllers, you can leverage the Enforcement Profile preconfigured by Ordr SCE to deny all IP network access to blocklisted devices.

Configuration » Enforcement » Policies » Edit - Ordr Aruba Wireless Enforcement Policy

Enforcement Policies - Ordr Aruba Wireless Enforcement Policy

Summary | Enforcement | Rules

Enforcement:

Name:	Ordr Aruba Wireless Enforcement Policy
Description:	
Enforcement Type:	RADIUS
Default Profile:	[Allow Access Profile]

Rules:

Rules Evaluation Algorithm:	Evaluate all

	Conditions	Actions
1.	(Tips:Role *EQUALS* Ordr_Blocklist)	Enf-Prof-Radius-Ordr-HPE-Device-Blocklist

Note: *Be sure to move the Quarantine rule to the top of the list.*

This specific profile uses an Aruba Downloadable User Roles (DUR) for centralized policy and access control.

Enforcement Profiles - Enf-Prof-Radius-Ordr-HPE-Device-Blocklist

Summary | **Profile** | **Role Configuration**

Profile:

Name:	Enf-Prof-Radius-Ordr-HPE-Device-Blocklist
Description:	
Type:	Aruba_DUR
Action:	Accept
Device Group List:	1. Cisco Wired 2. Aruba Wired 3. Aruba Wireless
Product:	Mobility Controller

Role Configuration:

Captive Portal Profile:	-
Policer Profile:	-
QoS Profile:	-
VoIP Profile:	-
Re-authentication Interval Time (0-4096):	- minutes
VLAN:	
VLAN ID <1-4094>:	-
VLAN Name:	-
ACL:	Ordr-HPE-Device-Blocklist [Session]
User Role Configuration:	ip access-list session Ordr-HPE-Device-Blocklist any any any deny ! user-role cppmrole access-list session Ordr-HPE-Device-Blocklist !

b. For endpoints connected to Cisco wired switches, you can leverage the Enforcement Profile preconfigured by Ordr SCE to deny all IP network access to blocklisted devices.

Configuration » Enforcement » Policies » Edit - Ordr Cisco Wired Enforcement Policy

Enforcement Policies - Ordr Cisco Wired Enforcement Policy

Summary | Enforcement | Rules

Enforcement:

Name:	Ordr Cisco Wired Enforcement Policy
Description:	
Enforcement Type:	RADIUS
Default Profile:	[Allow Access Profile]

Rules:

Rules Evaluation Algorithm:	Evaluate all

	Conditions	Actions
1.	(Tips:Role *EQUALS* Ordr_Blocklist)	Enf-Prof-Radius-Ordr-Cisco-Device-Blocklist

Note: *Be sure to move the Quarantine rule to the top of the list.*

This specific profile uses a Cisco Downloadable ACL (dACL) for centralized policy and access control.

Configuration » Enforcement » Profiles » Edit Enforcement Profile - Enf-Prof-Radius-Ordr-Cisco-Device-Blocklist

Enforcement Profiles - Enf-Prof-Radius-Ordr-Cisco-Device-Blocklist

Summary | Profile | Attributes

Profile:

Name:	Enf-Prof-Radius-Ordr-Cisco-Device-Blocklist
Description:	
Type:	RADIUS
Action:	Accept
Device Group List:	1. Cisco Wired 2. Aruba Wired 3. Aruba Wireless

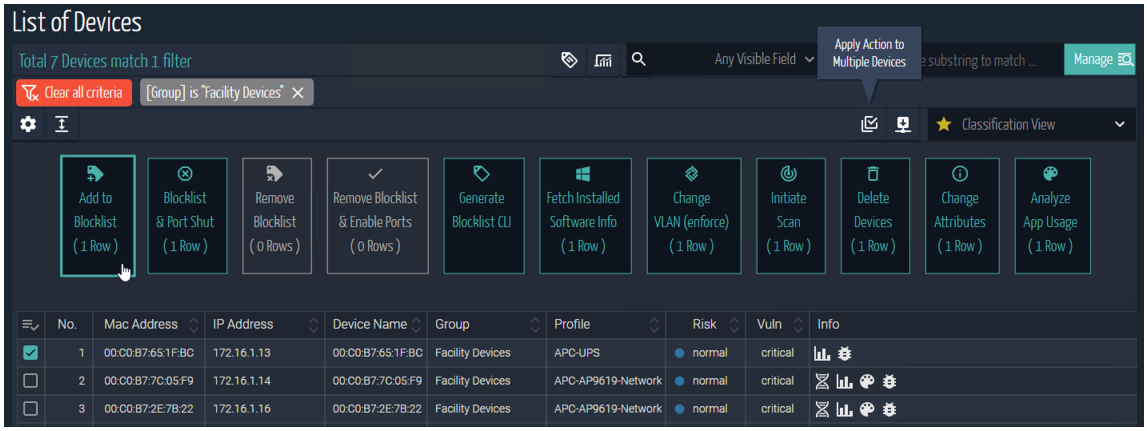
Attributes:

	Type	Name		Value
1.	Radius:Cisco	Cisco-IP-Downloadable-ACL	=	deny ip any any

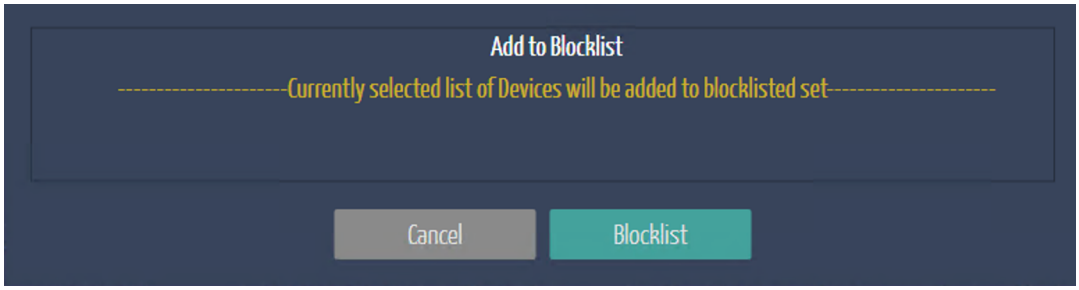
3) Click **Save** to add the rule and click **Save** again to save the updated policy.

Step 3 Trigger device blocklisting in Ordr SCE

1) From the Ordr SCE management interface, go to **Device > Device List**.
2) Click the Bulk Action icon. This displays a list of actions that may be taken across one or multiple devices at one time.
3) Select the device or devices to be quarantined and click the **Add to Blocklist** box.



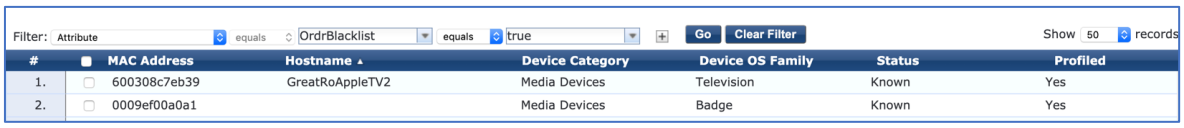
4) Confirm the **Blocklist** operation.



Note: *To remove a device from quarantine, select the device in Ordr SCE and click the* ***Remove Blocklist*** *box and confirm the operation.*

Step 4 Verify endpoint quarantine in ClearPass Policy Manager

1) From ClearPass Policy Manager, navigate to **Configuration > Identity > Endpoints**.
2) Filter the list of endpoints by “Attributes equals OrdrBlocklist equals true”.



#	MAC Address	Hostname	Device Category	Device OS Family	Status	Profiled
1.	600308c7eb39	GreatRoAppleTV2	Media Devices	Television	Known	Yes
2.	0009ef00a0a1		Media Devices	Badge	Known	Yes

The list displays all endpoints where Ordr SCE has updated the quarantine flag (OrdrBlocklist set to “true”) for the device and have been assigned a quarantine role. This role is assigned a Blocklist Enforcement Profile. The default Blocklist profiles can be modified to ensure the desired policy is applied to endpoints blocklisted through Ordr SCE.

Step 5 Verify new policy assignment for the blocklisted endpoint(s)

1) From ClearPass Policy Manager, navigate to **Monitoring > Live Monitoring > Access Tracker**.
2) Find the entry in the table for endpoint(s) blocklisted from Ordr.
3) Verify the correct Service, Role, Enforcement Policy, Enforcement Profile applied.

Summary

Without Ordr SCE, customers can struggle for months or years to achieve a comprehensive inventory and device visibility. Often the topic of real NAC enforcement and microsegmentation is just a distant vision as the classification of endpoints with confidence becomes the all-consuming task. With Ordr SCE integration, the ability to accurately identify endpoints—IoT and non-IoT—is drastically accelerated allowing customers to seamlessly apply policy enforcement and microsegmentation using HPE Aruba CPPM.

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