Configure Cisco Cyber Vision

- Network organizations, on page 1
- API Token, on page 4
- Active Discovery Policies, on page 7
- LDAP, on page 8
- Single sign-on (SSO), on page 10
- Sensors, on page 20
- PCAP files, on page 33
- SNMP, on page 34

Network organizations

A network organization is a network-management interface that

- enables you to define subnetworks within an industrial network by setting up ranges of IP addresses,
- allows you to specify whether subnetworks are considered internal (OT) or external, and
- impacts how Cyber Vision manages device licensing, flow storage, and risk assessment.

IP-address classification

In Cyber Vision, all private IP addresses are automatically classified as **OT Internal**. These addresses appear in the **IP Address / subnet** column on the **Network Organization** page. Public IP addresses are considered **External** by default, except for:

- Broadcast IPv4: 255.255.255.255
- IPv4 and IPv6 zero: 0.0.0.0 and 0:0:0:0:0:0:0:0
- Loopback IPv4 and IPv6: 127.0.0.1 and ::1
- Link Local Multicast IPv4 and IPv6: 224.0.0.0/8 and ff00::/8

If you need to treat a public IP address as **OT Internal**, change its network type to add an exception. This is useful for industrial sites that use public IP addresses in private networks. Marking a set of IP addresses as **External** will:

- exclude their associated flows from the database,

- remove their devices from the device license count, and
- omit them from risk scoring.

Feature history table

Feature	Release Information	Feature Description
Network based auto grouping	Release 5.5.x	The network based auto grouping feature streamlines device management. It automatically organizes devices based on established network definitions. Groups are created and named according to your network names. You can use this feature for easier ISE API integration and device classification.

Define a Subnetwork

Allow precise management and monitoring of devices by defining subnetworks and specifying their characteristics.

Use this task to add a new subnetwork to your network organization. Customize IP ranges, VLANs, and network types to improve device grouping and monitoring.

Before you begin

- Ensure you have the required IP addresses and subnets.
- Obtain VLAN ID information if applicable.

Procedure

Step 1 From the main menu, choose **Admin** > **Network Organization**.

Step 2 Click **Add a network**.

Step 3 Enter an IP address range and its subnet in the **IP address/subnet** field.

Step 4 (Optional) Enter the **VLAN ID** to enable overlapping networks.

Step 5 Enter the **Network name**.

Step 6 Select the **Network Type** (Options include **OT Internal**, **IT Internal**, or **External**).

Select the network type to change Cyber Vision performance, flow storage, device risk scoring, and device license count.

Step 7 Enable **Use a device engine option for this network range**.

- If devices share the same IP in the monitored network, select the first option. This prevents grouping components by IP.

- If identical addressing is used in different subnetworks (for example, production lines), select the second option. In this case, components detected by the same sensor with the same IP are grouped together only if they are seen by the same sensor.

Step 8 Click **Add a network** to save and apply the new subnetwork.

You have added the subnetwork with the specified IP range, VLAN, network type, and device engine options. This enables accurate grouping and monitoring of network components.

Create network groups

Group your assests automatically according to your network definitions. These groups enable easier device management and allow you to segment your network using Cisco Identity Services Engine (ISE) integration.

Each group is named after its associated network name.

Before you begin

Ensure your network definitions are accurate and complete. From the main menu, choose **Admin** > **Network Organization** to review existing definitions.

Procedure

Step 1 From the main menu, choose **Admin** > **Network Organization**.

Step 2 Click **Create groups based on network**.

Note

- For each defined network, the system creates one group and names it after the **Network Name**.
- Loopback, link-local, local unicast, multicast, and broadcast networks are excluded from network groups.

Step 3 Select **Yes** or **No**, for the presented options:

- Automatically assign any newly discovered network devices to the groups.
- Delete the existing groups.

  Caution
  If you select **Yes**, all existing network groups and user-defined groups are deleted.

  If you have existing Cisco Identity Services Engine (ISE) and Firewall integrations, be very careful when deleting groups. Deleting groups may disrupt these integrations and affect their operation.

Step 4 Click **Submit**.

The system creates groups using your network definitions.

What to do next

- From the main menu, choose **Explore**. Select any preset and view the groups under the **GROUPS** tab to see the created groups.
- Once groups are created based on network definitions, you can synchronize them with Cisco ISE security groups. For integration details, see the “Integrate Cisco Cyber Vision with Cisco Identity Services Engine (ISE)” guide, particularly the "Chapter: Integrate Cisco Cyber Vision and Cisco Identity Services Engine (ISE) through Cisco ISE API".

API Token

Cisco Cyber Vision provides a REST API. To use it you first need to create a token through the API administration page.

A token is a random password which authenticates a request to Cisco Cyber Vision to access or even modify the data in the Center through the REST API. For instance, you can request the latest 10 components detected on Cisco Cyber Vision or create new references. Requests can be used by external applications like a SOC solution.

Note Best practice: create one token per application so you can remove or expire accesses separately.

To create API token, follow these steps:

1. From the main menu, choose **Admin** > **API** > **Token**.
2. Click **+ New token**.

   The **Token** window appears.
3. Enter a name.
4. Use the **Status** toggle button to disable authorization for the token if you plan to use it later and want to prevent access until then.
5. Set an **Expiration time**.
6. Click **Create**.

   After the token creation, token appears in the list available on the **API** page.
7. Click **Show** to view the token.
8. Click copy icon to copy it.

For more information about the REST API refer to the REST API user documentation available on cisco.com.

API Documentation

This page is a simplified API development feature. It contains an advanced API documentation with a list of all possible routes that can be used and, as you scroll down the page to Models, a list of possible data responses (data type, code values and meaning).

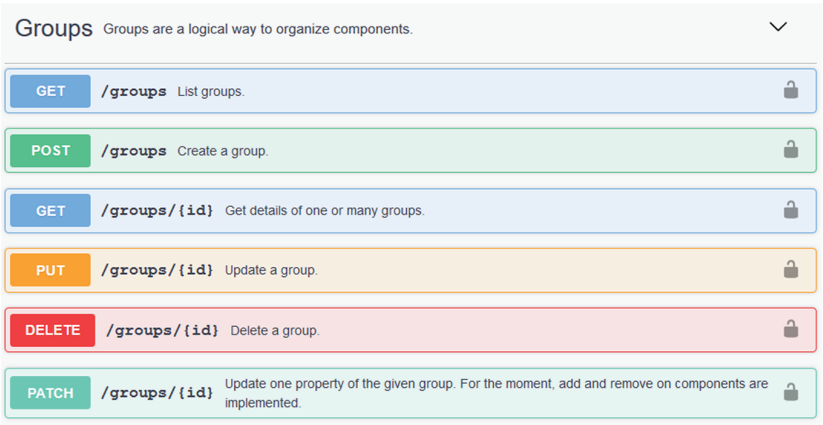
In addition to information research, this page allows you to perform basic tests and call the API by sending requests such as GET, DELETE and POST. You will get real results from the Center dataset. Specifications about routes are available such as the route's structure, and parameters and arguments that can be set. An URL is generated and curl can be used in a terminal as it is.

However, for an advanced use, you must create an application that will send requests to the API (refer to the REST API documentation).

Important All routes other than GET will modify data on the Center. As some actions cannot be reversed, use DELETE, PATCH, POST, PUT with caution.

Routes are classified by 's elements type (activities, baselines, components, flows, groups, etc.).

The category "Groups" containing all possible group routes:



To authorize API communications:

Procedure

Step 1 From the main page, choose **Admin** > **API** .

Step 2 Click **Token** to create and/or copy a token.

Step 3 Click **Documentation**.

Step 4 Click **Authorize**.

The **Available authorizations** panel appear.

Step 5 Paste the token in **Value** field..

Step 6 Click **Authorize**.

Step 7 Click **Close**.

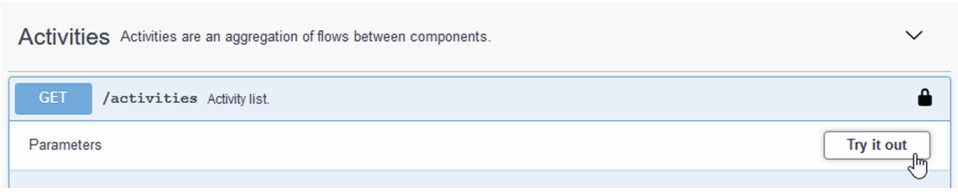
Close lockers displays. They indicate that routes are secured and authorization to use them is up.

To use a route:

Step 8 Click a route to deploy it.

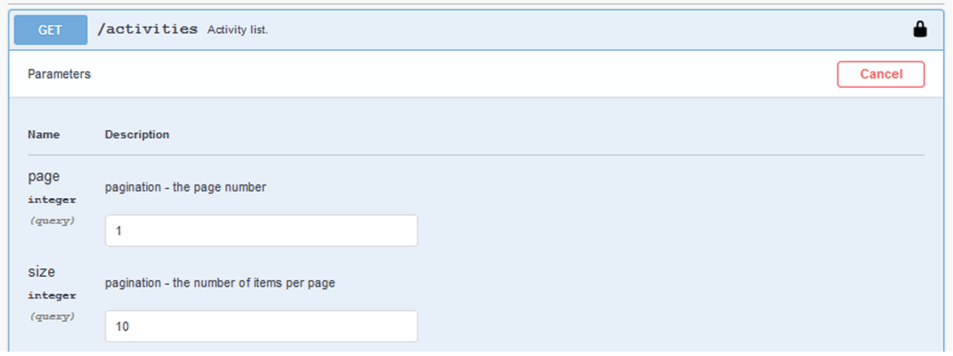
In the example, we choose Get activity list.

Step 9 Click **Try it out**.



Step 10 You can set some **Parameters**.

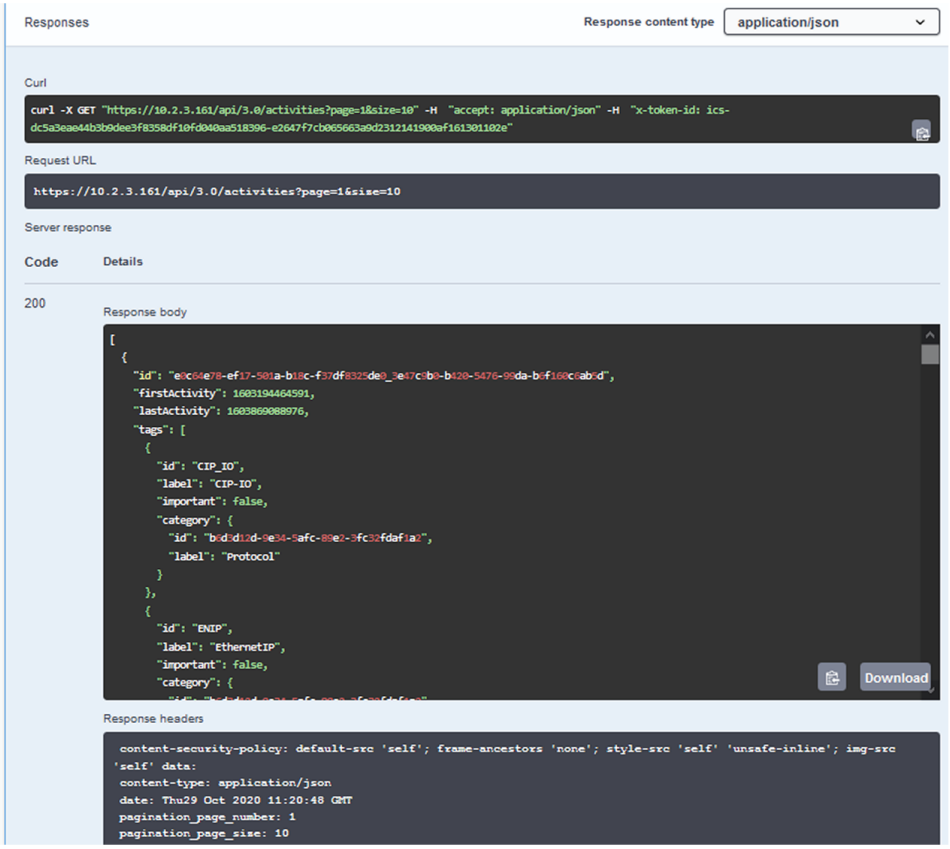
In the example, we set page to 1 and size to 10.



Step 11 Click **Execute**.

Note
You can only execute one route at a time.

A loading icon appears for a few moments. Responses display with curl, Request URL and the server response that you can copy or even download.



Step 12 When you are finished, click the **Authorize** button.

Step 13 Log out to clear the token variable, and click **Close**.

Active Discovery Policies

Active Discovery is used to allow a sensor to send packets to the network to discover previously unseen devices and gather additional properties for known devices.

Active Discovery operates in Broadcast and Unicast, and responses received will be analyzed by Cisco Cyber Vision.

An Active Discovery policy is a list of settings which define protocols and their parameters that will be used to scan the industrial network. The policy will be used in a preset and be applied on a list of sensors and components.

To acces the **Active Discovery policies** page, choose **Admin** > **Active Discovery** > **Policies** from the main menu.

For more information, refer to the Active Discovery Configuration Guide.

LDAP

Cisco Cyber Vision can delegate user authentication to external services that use LDAP (Lightweight Directory Access Protocol), specifically Microsoft Active Directory and AD LDS services.

To configure an LDAP connection, from the main menu, choose **Admin** > **External Authentication** > **LDAP**.

Configuring LDAP:

LDAP integration can be done through an unencrypted connection, or in a secure way by using certificates for encryption, depending on installation compatibility.

Mapping Cisco Cyber Vision roles with Microsoft Active Directory groups:

User groups available in the external directory can be mapped to Cisco Cyber Vision Product, Operator and Auditor user roles or custom roles. See Users to create custom roles.

Because the Admin user role is exclusively reserved for Cisco Cyber Vision intersnal usage, it cannot be mapped to any external users and thus is not proposed in LDAP settings.

Testing LDAP connection:

After setting up LDAP, the connection between the Cisco Cyber Vision Center and the external directory is to be tested. On the LDAP test connection window, you will use a user login and a password set in the external directory. The Center will attempt to authenticate on the directory server with these credentials. In return, you will get either a successful authentication, or a failed one with an error message.

Login in Cisco Cyber Vision:

When logging into Cisco Cyber Vision, the login format used will determine the base (i.e. internal or external) to be queried:

- If you use an email, the Cisco Cyber Vision database is queried.
- If you use the Active Directory format <domain_name>\<user_name> (e.g. cisco\john_doe), then the external directory is used to authenticate users.

Configure LDAP

This taskflow takes you through configuring LDAP in Cisco Cyber Vision using an unencrypted connection or a secure connection.

You can establish two types of secure connections:

- For a highly secure connection, choose the **LDAP over TLS/SSL** setting to use a CA-signed certificate with a trust chain. You must upload the certificate into the Center during the configuration task.
- For internal applications where trust is not a primary concern, choose the **Use self signed certificate** setting. The Center automatically generates and uses self-signed certificates for this connection type. You don't need to provide a self-signed certificate.

Procedure

Step 1 From the main menu, choose **Admin** > **External Authentication** > **LDAP**.

Step 2 Click **New Settings**.

Step 3 In the **Settings** tab,

a) Choose **LDAP over TLS/SSL** or **Use self signed certificate**, or neither.

b) Enter **Primary Server Address**.

c) Enter **Primary Server Port**.

d) (Optional) Enter **Secondary Server Address**.

e) (Optional) Enter **Secondary Server Port**.

f) In the **Base DN** field, enter the distinguished name by which LDAP API recognize this LDAP connection.

g) (Optional) Check the **Modify search filter** check box. Then, in the **Search Filter** field, enter a search filter.

The default search filter retrieves a user's groups by binding with the user's credentials. You can also modify the filter to target a different attribute, and the specified attribute's value is then used for both group search and binding (login).

In the **Search Filter** field, you must include the *$user* variable. The variable is replaced with the username entered when logging in.

h) In the **Server Response Time** field, enter a timeout value, in seconds, after which the Center attempts to connect to the secondary server instead of the primary server.

i) (Optional) Check the **Use Service Account** check box. When an LDAP user doesn't have access to their own group, a service account is used. When this setting is enabled, the service account is used to search for and retrieve the user's groups.

1. Enter a service account username.
2. Enter a service account password.

j) If you chose **LDAP over TLS/SSL** in **Step a**, a certificate upload field is displayed. Upload or drag-and-drop a PEM file, root or chain certificate.

The uploaded certificate is displayed at the bottom of the settings page.

Step 4 In the **Role Mapping** tab,

a) Map at least one role, default (Product, Operator, or Auditor) or custom, with an Active Directory group. You can create custom roles in the **Custom roles** area.

Note
Enter the exact group names as configured in the remote directory for successful retrieval and mapping to user roles.

The Admin role is not listed as a default role because it is reserved for Cisco Cyber Vision internal usage and cannot be mapped to external users.

Step 5 Click **OK**.

Step 6 Click **Test connection**.

Step 7 Enter the user credentials to test the connection between Cisco Cyber Vision and Active Directory.

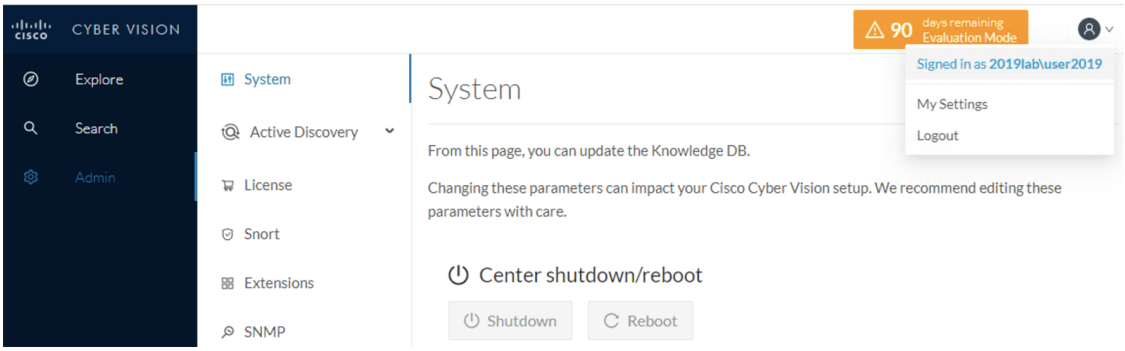
Note
For LDAP, the supported username format is <*domain_name*>\<*user_name*> (For example, cisco\john_doe).

For LDS, the supported username formats are:

- <*user_name*> (For example, john_doe).
- <*email-address*> (For example, john@example.com)

Step 8 Click **OK**.

You can also test the connection by logging out of Cisco Cyber Vision and logging in with different mapped user credentials. The Center menu changes according to the permissions granted to the user.



Single sign-on (SSO)

Single sign-on (SSO) is an authentication mechanism that

- allows users to access multiple applications using a single set of credentials,
- reduces the need for multiple logins and password management, and
- enhances security by centralizing authentication.

Table 1: Feature History Table

Feature	Release Information	Feature Description
SAML 2.0 SSO authentication support	Release 5.3.x	Cisco Cyber Vision Center supports SAML 2.0 SSO authentication.

Central authentication and authorization

This security mechanism uses a central identity provider (IdP) to manage user credentials and access permissions across multiple platforms. It consolidates authentication into a streamlined process.

Federated service provider applications

Applications configured to work with SSO, allowing users to access resources through federated authentication.

Additional reference information

With SSO, a user logs in once to access all authorized service provider applications without re-entering credentials, resulting in improved user experience and streamlined access control.

SAML single sign-on

SAML single sign-on is an authentication approach that:

- enables users to authenticate once and gain access to multiple applications through a central identity provider,
- uses Security Assertion Markup Language (SAML) 2.0 to securely exchange authentication and authorization data, and
- eliminates the need for repeated login credentials for each service.

After successful authentication by the identity provider (IdP), users are redirected back to their service. The browser manages all communication between the service and the IdP. As a result, services such as Cisco Cyber Vision Center do not require a direct network connection to the IdP.

Examples

The Cisco Cyber Vision Center supports SAML single sign-on with any single sign-on provider that uses the SAML 2.0 standard, for example, Azure Active Directory and Cisco Duo.

Reference links

- For Azure setup: See Microsoft Entra ID single sign-on integrations.
- For Cisco Duo setup: See Duo Single Sign-On solutions.

Requirement: SSO configuration for Cisco Cyber Vision Center

Ensure that you meet these requirements when configuring SSO for Cisco Cyber Vision Center:

- Only admin users authenticated internally can configure SSO.
- Use only one SSO provider at a time (for example, Azure or Duo).
- Initiate SSO only from the Cisco Cyber Vision Center, not from the identity provider (IdP).
- Review audit logs to monitor login and log out events for SSO. The Cyber Vision Center records and sends these events through syslog.
- Ensure that the Cyber Vision Center host name (FQDN) is DNS resolvable.
- A center can only be configured with SSO if LDAP is disabled or not configured.

Single sign-on user accounts

A single sign-on user account is a user identity credential that

- allows access to multiple applications, systems, or services with a single set of login credentials,

- uses a central identity provider (IdP) to handle authentication, and
- simplifies the user experience by removing the need for separate logins for each system.

Role of the Identity Provider (IdP)

The identity provider (IdP) manages users and groups directly or imports them from external directories such as Active Directory, RADIUS, or LDAP. The IdP sets most account details for SSO users, including usernames and passwords.

Single sign-on (SSO) accounts on Cisco Cyber Vision Center

A single sign-on account appears on the Cisco Cyber Vision Center users page only after the user has logged in successfully for the first time.

Email address requirement

Both single sign-on accounts and the NameID attribute provided by the IdP during SAML login require valid email addresses. By default, many IdPs use the user's username as the NameID attribute. Confirm your IdP's behavior when configuring it and when creating user accounts for SSO access to Cyber Vision Center.

User role mappings for SSO users

Role mappings for SSO users are configuration mappings that:

- associate user groups from an identity provider (IdP) with roles in the Cyber Vision Center,
- use role attributes to determine user permissions dynamically, and
- enable centralized management of user access through SSO integration.

Coordination with the IdP

- Role assignment: Set up user roles at the Cyber Vision Center and coordinate them with your SSO IdP application settings. Assign roles to groups defined in the IdP.
- SSO federation understanding: Review how users, groups, and roles are organized in your IdP and configure user role mapping effectively. Consult the IdP vendor documentation for guidance on creating or importing users or groups.

Role attribute

- Role attribute at the IdP: The IdP sends a role attribute, which lists the groups a user belongs to in the IdP.
- SSO configuration details: The SSO configuration specifies the name of the role attribute and includes a list of expressions mapped to Cyber Vision Center user roles.

Email address attribute usage for SSO migration

Provide the email address attribute only if you need to migrate local users to SSO. When you configure SSO with the email address attribute, the system identifies the logged-in user's email address from the SAML

assertion. If a user exists with that email address, the system removes that user from local authentication. Afterward, the user can only log in with SSO. If needed, create a new internal user.

Microsoft Entra ID single sign-on integrations

A Microsoft Entra ID single sign-on integration is an authentication solution that

- uses Microsoft's multi-tenant, cloud-based Azure Active Directory to manage user identities,
- enables secure and centralized access to both cloud and on-premises applications (such as Cyber Vision Center), and
- allows users to authenticate with a single account across multiple services through federation.

Within Azure, a tenant is an entity that manages joined devices for one or more organizations. With a single sign-on account, you can access these devices seamlessly. Familiarize yourself with the Azure tenant structure before onboarding applications like Cyber Vision Center.

Add an enterprise application to your Azure tenant

Allow integration of external services or custom apps with your organization's Azure environment.

Before you begin

- Ensure you have an Azure account with an active subscription. Create a free account at Build in the cloud with an Azure account.
- Your account must have the **Application Developer** role or higher.

Procedure

Step 1 Sign in to the Microsoft Entra admin center.

Step 2 From the main page, choose **Applications** > **Enterprise applications** > **All applications**.

Step 3 Select **New application** and click **Create your own application**.

Step 4 Enter the application name.

Step 5 Enable **Integrate any other application you don't find in the gallery (Non-gallery)**.

Step 6 Click **Create**.

Step 7 Enter the display name and select **Supported account types**.

Step 8 Click **Register**.

The new application appears in **Home** > **Enterprise applications** > **All applications**.

What to do next

To configure the new application further, open it from **Home** > **Enterprise applications** > **All applications**. For further details, see Configure Azure SSO for Cyber Vision Center.

Configure Azure SSO for Cyber Vision Center

Set up Azure SSO integration so Cyber Vision Center users can authenticate using their Azure Active Directory credentials.

Use this procedure to integrate Cyber Vision Center with Azure SSO. This enables centralized authentication and simplifies role assignments managed via Azure groups.

Before you begin

- Create the Cyber Vision Center service provider application in Azure. See Add an enterprise application in Azure.
- Prepare your Azure tenant for integration.
- Ensure the Cyber Vision Center hostname is a resolvable DNS entry.
- Verify that usernames and NameID attributes are valid email addresses.
- You can provide multiple groups. Assign roles to users based on priority.

Note If Cyber Vision Center offers multiple accessible URLs, SSO users must always use the configured login URL.

Procedure

Step 1 Sign in to the Microsoft Entra admin center.

Step 2 From the main menu, choose **Applications** > **Enterprise applications** > **All applications**.

Step 3 Select the created application.

Step 4 Click **Single sign-on** and select **SAML**.

Step 5 In **Basic SAML Configuration**:

- For **Identifier (Entity ID)**, use: Append /saml/metadata to the Cyber Vision Center login URL.

  Format: https://{Hostname}/saml/metadata

- For **Reply URL (Assertion Consumer Service URL)**, use: Append /saml/acs to the login URL.

  Format: https://{Hostname}/saml/acs

Step 6 In **Attributes & Claims**:

a. Click **Add a group claim**.

b. Select **All groups** to show the groups associated with the user in the **Group Claims** panel.

c. Select **Group ID** as a **Source attribute**.

d. Select **Customize the name of the group claim** under **Advanced options**.

e. Enter **Name (required)** and save.

Step 7 Assign existing Azure users and groups to the Cyber Vision Center service application.

Step 8 Record these details from **SAML-Based Sign-On** for later use:

- **Login URL**
- **Microsoft Entra Identifier**
- **Certificate (Base64)** file (download it)
- **Federation Metadata XML** (download it)
- **Object ID** (Group ID)

When Cyber Vision Center is ready to support Azure SSO, you can sign in using your Azure Active Directory credentials.

What to do next

To complete Azure SSO integration, configure Cyber Vision Center. For more information, see Configure Cyber Vision Center for Azure SSO.

Configure Cyber Vision Center for Azure SSO

Enable Azure Single Sign-On (SSO) authentication for users accessing Cyber Vision Center.

Follow these steps to configure the Cyber Vision Center for Azure SSO:

Before you begin

- Use the SAML SSO management application to configure a service provider application for the Cyber Vision Center and assign users or groups to it. See Configure Azure SSO for Cyber Vision Center.
- Have the following Azure configuration details from Configure Azure SSO for Cyber Vision Center.
  - **Name (Required)**
  - **Federation Metadata XML**
  - **Login URL**
  - **Microsoft Entra Identifier**
  - **Certificate (Base64)**
  - **Object ID** (Group ID)

Procedure

Step 1 From the main menu, choose **Admin** > **External Authentication** > **Single Sign-On**.

Step 2 Click **New Settings**.

Step 3 Add **Role Attribute** and **Email Attribute** (Optional).

For **Role Attribute**, enter **Name (Required)** used for the group claim.

Step 4 Configure Azure SSO credentials using one of these methods:

a. Upload the **Federation Metadata XML** file under the **Upload XML file** field.

b. For **Manual Configuration**:

- Enter the **Login URL** in the **Identity Provider Single Sign-On (SSO) URL** field.
- Enter the **Microsoft Entra Identifier** in the **Identity Provider (Idp) Issuer URL** field.
- Add the **Certificate (Base64)** in the **X509** field.

Step 5 Click **Role Mapping**.

Step 6 Enter the **Object ID** (Group ID) in the **Default roles** or **Customer roles** field.

Step 7 Click **OK**.

The **Login with SSO** button appears on the Cyber Vision Center login screen.

What to do next

Click **Login with SSO** to access the Cyber Vision Center using Azure SSO authentication.

Duo Single Sign-On solutions

A Duo single sign-on (SSO) is a cloud-hosted identity provider that

- facilitates inline user enrollment,
- offers self-service device management, and
- supports various authentication methods, including passkeys and security keys, Duo Push, or Verified Duo Push in the Universal Prompt.

You add two-factor authentication and flexible security policies to any SAML application with Duo Single Sign-On.

Duo Single Sign-On (SSO)

Cyber Vision Center uses Duo's strong authentication and flexible policy engine in the applications that comply with Security Assertion Markup Language (SAML) 2.0 or OpenID Connect (OIDC) authentication standards. Duo Single Sign-On serves as an identity provider (IdP). It authenticates users through existing on-premises Active Directory or any SAML 2.0 identity provider, and requires two-factor authentication before granting access to the service provider's application.

Plans and policy control

Duo Single Sign-On offers various plans for different needs:

- Duo Premier: Includes advanced features and support.
- Duo Advantage: Builds on the Basic plan with additional features.

- Duo Essentials: Provides essential security features.

Administrators can define application policies based on their plan. For example, some applications may enforce two-factor authentication at each login, while others limit login to once every seven days. Duo evaluates the user, device, and network against the application policy to determine access.

Requirement: Prerequisites for Duo Single Sign-On setup

To set up Duo Single Sign-On (SSO), ensure you meet these requirements:

- Obtain Duo Admin access with one of the following roles:
  - Owner
  - Administrator
  - Application Manager
- Configure a primary authentication source by setting up either:
  - An Active Directory connection, or
  - A Security Assertion Markup Language (SAML) 2.0 identity provider
- Complete all authentication source setup steps for Duo Single Sign-On (SSO) separately from any directory sync setup.
- If you use Active Directory as your authentication source:
  - Provide at least one standalone server (Windows or Linux) that can communicate with your Active Directory domain controllers.
  - Supply service account credentials for Active Directory.
  - Ensure access to DNS for the user email domains associated with SSO so you can add TXT records as required.
- Provide a SAML 2.0 service provider or OpenID Connect (OIDC) relying party web application to protect with Duo SSO.
- Verify the fully qualified domain name (FQDN) of the Cyber Vision Center is reachable.

Configure Cyber Vision Center application in Duo

Integrate the Cyber Vision Center application with Duo for user authentication using SAML Single Sign-On.

Use this procedure to configure Duo as a SAML identity provider for the Cyber Vision Center application.

Before you begin

- Ensure you have users and groups configured in Duo.
- Verify that Duo users have an authentication source and a proxy. For details, see https://duo.com/docs/sso#external-authentication-sources.

Procedure

Step 1 Log in to the Duo Admin Panel.

Step 2 From the main menu, choose **Applications** > **Application Catalog**.

Step 3 Locate the **Generic SAML Service Provider** labeled "SSO". Click **+ Add**.

Use the **Documentation** link to review integration requirements and steps before adding the new application.

Step 4 Enter **Application name**.

Step 5 Select **User access** option.

Note
Users cannot access new applications until user access is granted.

Step 6 Enter these details under **Service Provider**:

- **Entity ID**:
  - Use the "/saml/metadata" with the Cyber Vision Center login URL.
  - Format: https://{Hostname}/saml/metadata
- **Assertion Consumer Service (ACS) URL**:
  - Use the path "/saml/acs" with the login URL.
  - Format: https://{Hostname}/saml/acs

The Metadata section presents SAML identity provider details for Duo Single Sign-On in the table.

Name	Description
Entity ID	The global, unique name for Duo Single Sign-On. Sometimes referred to as "Issuer."
Single Sign-On URL	The authentication URL for Duo Single Sign-On. This is sometimes referred to as "SSO URL" or "Login URL". The URL is used to start IdP-initiated authentications.
Single Log-Out URL	This optional field specifies the logout URL for Duo Single Sign-On, sometimes referred to as the “SLO URL” or “Logout Endpoint. This field is optional.
Metadata URL	This URL can be used by service providers to download the XML metadata from Duo Single Sign-On.
SHA - 1 Fingerprint	The SHA-1 fingerprint of the SAML certificate. Sometimes service providers will request a fingerprint instead of uploading a SAML certificate.

Name	Description
SHA - 256 Fingerprint	The SHA-256 fingerprint of the SAML certificate. Service providers may request a fingerprint instead of a SAML certificate.
Certificate	The certificate used by the service providers to validate the signature on the SAML response sent by Duo Single Sign-On. Click **Copy certificate**.
SAML Metadata	Service providers use the XML SAML Metadata from Duo Single Sign-On to configure settings. Click the **Download XML** to download the xml file.

Step 7 In **Map attributes**:

a. Select **Email Address** in the **IdP Attribute** field.

b. Enter an attribute name in the **SAML Response Attribute** field. For example, "email".

Note
Configuring the Email attribute is optional.

Step 8 In **Role attribute**,

a. Add an **Attribute name**, for example "GroupName".

b. Map **Service Provider's Role** with **Duo groups**.

Step 9 Click **Save**.

The Cyber Vision Center application is integrated with Duo and ready to use SAML for authentication.

What to do next

Configure the Cisco Cyber Vision Center for Duo. See Configure Cisco Cyber Vision Center for Duo.

Configure Cisco Cyber Vision Center for Duo

Enable SSO login on Cisco Cyber Vision Center using Duo as an identity provider.

Use these steps to centrally configure SSO authentication after preparing Duo configuration details.

Before you begin

Obtain these Duo SSO details from Configure Cyber Vision Center application in Duo.

- **Attribute name**
- **SAML Response Attribute**
- **SAML Metadata** xml file
- **Single Sign-On URL**

- **Entity ID**
- **Certificate**
- **Service Provider's Role**

Procedure

Step 1 From the main menu, choose **Admin** > **External Authentication** > **Single Sign-On**.

Step 2 Click **New Settings**.

Step 3 Enter **Attribute name** in the **Role Attribute** field.

Step 4 Enter **SAML Response Attribute** in the **Email Attribute** field.

Note
Configuring the Email attribute is optional.

Step 5 Complete the configuration using one of these methods:

a. Upload the **SAML Metadata** XML file under the **Upload XML file** field.

b. For **Manual Configuration**:

- Enter the **Single Sign-On URL** in the **Identity Provider Single Sign-On (SSO) URL** field.
- Enter the **Entity ID** in the **Identity Provider (Idp) Issuer URL** field.
- Add the **Certificate** in the **X509** field.

Step 6 Select the **Role Mapping** tab.

Step 7 Enter **Service Provider's Role** details in the **Default roles** or **Custom roles** field.

Step 8 Click **OK**.

After you complete the configuration, the **Login with SSO** button appears on the Cyber Vision Center login screen.

What to do next

Use the **Login with SSO** button to test SSO login via Duo.

Sensors

Sensor Explorer

The **Sensor Explorer** page allows you to install, manage, and obtain information about the sensors monitoring your industrial network. To access the **Sensor Explorer** page, choose **Admin** > **Sensors** > **Sensor Explorer** from the main menu.

First, you need to know that sensors can be used in two modes, and for different purposes:

- **Online mode**: A sensor in online mode is placed at a particular and strategic point of the industrial network and will continually capture traffic.

  Applicable to: Cisco IE3400, IE3300 10G, Cisco IC3000, Catalyst 9300 and Cisco IR1101.

- **Offline mode**: A sensor in offline mode allows you to easily connect it at different points of the industrial network that may be isolated or difficult to access to occasionally make traffic captures. Traffic is captured on a USB drive. The file will then be imported in Cisco Cyber Vision.

  Only applicable to Cisco IC3000.

On the Sensor Explorer page, you will see a list of your folders and sensors (when installed) and buttons that will allow you to perform several actions.

Installation modes, features, and information will be available depending on the sensor model and the mode in which it's being used.

Additional information and actions are available as you click a sensor in the list. A right side panel will appear allowing you to see this information such as the serial number, and buttons to perform other actions.

Filter and Sort the Sensor List

Filtering

Use the Filter button to filter the folders and sensors in the list by label, IP address, version, location, health, and processing status.

To filter the sensor list, follow thses steps:

1. From the main menu, choose **Admin** > **Sensors** > **Sensor Explorer**.
2. Click the **Filter** icon from the top right corner of the table.
3. Type in the field or select from the drop-down menu to locate the folder(s) or sensor(s).
4. Click **Apply**.

Sorting

The sort icons next to the column titles allow you to organize sensors by label, IP address, version, location, health, and processing status in either alphabetical or ascending/descending order. The icons appear when you hover over them or apply them.

Sensor statuses

Use sensor status indicators to track the enrollment stage of each sensor, check its connection to the Center, and monitor or troubleshoot deployments. Two sensor status types are available.

- **Health status**: Shows the sensor's progress in the enrollment and authorization process.
- **Processing status**: Shows the current state of network data processing and communication between a sensor and the Center.

Table 2: Health status indicators

Indicator	Description
New	The sensor's initial status when first detected. The sensor requests an IP address from the DHCP server.
Request Pending	The sensor has requested a certificate and is waiting for authorization to enroll.
Authorized	The sensor has just been authorized by an administrator or product user. Remains briefly before changing to Enrolled.
Enrolled	The sensor is successfully connected with the Center and has a certificate and private key.
Disconnected	The sensor is enrolled but not connected to the Center (may be offline or there may be a network issue).
Bad Credentials	The sensor is enrolled but credentials to access the Local Manager are not correct.

Table 3: Processing status indicators

Indicator	Description
Disconnected	The sensor is enrolled but not connected to the Center (shut down, problem, or network issue).
Not enrolled	The sensor is not enrolled (Health status is New or Request Pending). You must enroll the sensor to operate it.
Normally processing	The sensor is connected to the Center; data is being sent and processed.
Waiting for data	The sensor is connected; the Center has processed all data and is waiting for more to be sent.
Pending data	The sensor is connected; the sensor attempts to send data but the Center is processing other data.

Sensors Features

The Sensor Explorer page provides several features to manage and use your sensors. Some buttons are accessible directly from the Sensor Explorer page to manage one or more sensors, while other buttons become available when clicking a sensor in the list. To access the sensor features, follow these steps:

1. From the main menu, choose **Admin** > **Sensors** > **Sensor Explorer**.
2. Click the sensor name from the **Label** column.

   A right-side panel appears with all the features.

The features of sensors are as follows:

- The **Start recording** button records a traffic capture on the sensor. Records can be used for traffic analysis and may be requested by support in case of malfunctions. You can download the recording clicking the link below.

Note This feature is targeted for short captures only. Performing long captures may cause the sensor overload and packets loss.

- The **Move to** button is to move the sensor through different folders. For more information, refer to Organize Sensors, on page 25.
- The **Download package** button provides a configuration file to be deployed on the sensor when installing the sensor manually (online mode). Only applicable to the Cisco IC3000. Refer to its Installation Guide.
- The **Capture Mode** button can be used to set a filter on a sensor sending data to the Center. Refer to the procedure for Setting a capture mode.
- The **Redeploy** button can be used to partly reconfigure the sensor, for example to change its parameters such as its IP address.
- The **Enable IDS** button can be used to enable the SNORT engine embedded in some sensors to analyze traffic by using SNORT rules. SNORT rules management is available on the SNORT administration page.
- The **Reboot** button can be used to reboot the sensor in case of a malfunction.
- The **Shutdown** button triggers a clean shutdown of the sensor from the GUI.

Note After performing a shutdown, you must switch the sensor ON directly and manually on the hardware.

- The **Uninstall** button can be used to remove an uninstalled sensor from the list or to fully uninstall a sensor. Diverse options are available according to the sensor model or deployment mode. In the case of a sensor deployed through the management extension, the IOx app can be removed from the device, whereas a reset to factory defaults can be performed in other cases. In any case, the sensor will be removed from the Center.

Install Sensor

From the **Sensor Explorer** page, you can install a sensor. To access the **Sensor Explorer** page, choose **Admin** > **Sensors** > **Sensor Explorer** from the main menu. There are three ways to install a sensor, as follows:

- Install a sensor manually.
- Install a sensor via the IOx extension. To use the Install via extension button you must first install the sensor management extension via the Extensions page.
- Capture traffic with an offline sensor (only applicable to Cisco IC3000).

  For more information about how to install a sensor, refer to the corresponding Sensor Installation Guide.

Sensor Self Update

Cisco Cyber Vision now allows sensor updates regardless of the installation method (for example, without the extension) and provides the necessary foundation for sensor self-updates. However, the self-update feature will only be functional in future releases. You can update all sensors automatically. The required steps are:

- Select sensors to update.
- The Center adds a new job to the sensor queue.
- The sensor automatically collects and validates the update file.
- The sensor restarts with the new version.

Update Warnings

In the Cisco Cyber Vision Center on the Sensor Explorer page, you receive an alert to update the sensor. When this occurs, the latest version number appears in red, and a blue arrow with a tooltip indicates the sensor is upgradeable.

To update the senosr, follow thses steps:

- From the main menu, choose **Admin** > **Sensors** > **Sensor Explorer**.
- Click the sensor that is upgradeble from the **Label** column.
- The right side panel appears with sensor details.
- Click **Update**.

Update Procedure

Procedure

Step 1 From the main menu, choose **Admin** > **Senors** > **Sensor Explorer**.

Step 2 Check the checkboxes to select multiple sensors.

Step 3 Click the drop-down arrow of the **More Actions** button.

Step 4 Click **Update sensors** from the drop-down list.

The **UPDATE SENSORS** pop-up appears.

Step 5 Click **OK**.

During the update, a blue circle appears in the **Update status** column. After the update is complete, the version number turns black, and a green symbol appears in the same column.

Update Failure

If the update is unsuccessful, the **Update Status** column displays a red cross and a detailed message. To view the failure message, choose **Admin** > **Sensors** > **Sensor Explorer** from the main menu. Hover over the red cross in the **Update Status** column to see the details of the update failure.

Manage Credentials

You can use the **Manage credentials** button to register your global credentials if configured before in the Local Manager.

This feature can be used to register your global credentials in Cisco Cyber Vision. This will allow you to enter these credentials only once and they will be used when performing actions that require these credentials, that is installing and updating sensors via the IOx extension.

Only one set of global credentials can be used per Cisco Cyber Vision instance, which means that you cannot have several set of sensors accessible by different global credentials in a single instance. If there are several sensor administrators, they must use the same global credentials registered in Cisco Cyber Vision. However, you can have a set of sensors using a single global credentials and other sensors with their own single credentials.

Global credentials are stored in Cisco Cyber Vision but are set at the switch level in the Local Manager. Consequently, if you lose your global credentials, you must refer to the switch customer support and documentation.

The Manage credentials button can be used the first time you register your global credentials and each time global credentials are changed in the Local Manager. To do so, follow these steps:

1. From the main menu, choose **Admin** > **Sensors** > **Sensor Explorer**.
2. Click **Manage Cisco devices**.
3. Click **Manage credentials** from the drop-down list.

   The **SET GLOBAL CREDENTIALS** window appears.
4. Enter the **Login** and **Password**.
5. Click **Update**.
6. After you register the global credentials, the feature is enabled in the **Install via extension** procedure. Check the **Use global credentials** checkbox to use your global credentials.

Organize Sensors

You can create folders to organize your sensors more clearly. Folders can be categorized by location, person in charge, or type of sensor, such as disconnected sensors.

To create a folder and move a sensor into it, follow these steps:

Procedure

Step 1 From the main menu, choose **Admin** > **Sensors** > **Sensor Explorer**.

Step 2 Click **Organize**.

Step 3 Click **+ Create folder** from the dropdown list.

Step 4 Enter the **folder name**.

Step 5 (Optional) Enter **Location** and **Description**.

Step 6 Click **Ok**.

A success message appears, and the system displays the new folder in the sensor list.

Step 7 Check the checkbox of the sensor that you want to move.

Step 8 Click **Move selection to**.

The **Move selection to** pop-up appears.

Step 9 Click the drop-down arrow of the **Destination** field.

The three options are as follows:

a) Select the required folder to move the sensor.
b) Click **+New folder** to create a new folder and move the sensor.
c) Click **Root** to move sensors back into the primary list.

Step 10 Click **Ok**.

After you move the sensor into the folder, the sensor version, health status, and processing status display in the folder line.

If you move a sensor in a disconnected state into this folder, its information displays in the folder line instead of the connected sensor's information. Less secure sensor statuses are prioritized to draw your attention.

Set a Capture Mode

The Capture Mode feature allows you to select which network communications will be analyzed by the sensors. To access the Capture Mode feature, follow these steps:

1. From the main menu, choose **Admin** > **Sensors** > **Sensor Explorer**.
2. Click the name of the sensor from the label column.

   The right side panel appears with the sensor details.
3. Click **Capture mode**.

   The **CAPTURE MODE** window appears.
4. Click the radio button to select **Capture Mode**.

The aim is mainly to focus the monitoring on relevant traffic but also to reduce the load on the Center.

For example, a common filter in a firewall can consist of removing the network management flows (SNMP). This can be done by setting a filter like "not (port 161 and host 10.10.10.10)" where "10.10.10.10" is the network management platform.

By using Capture Mode, Cisco Cyber Vision performance can be improved on large networks.

Capture modes operate because of filters applied on each sensor. Filters are set to define which types of incoming packets are to be analyzed by the sensors. You can set a different filter on each sensor according to your needs.

You can set the capture mode in the installation wizard when enrolling the sensors during the Center installation. This option is recommended if you already know which filter to set. Otherwise, you can change it at any time on the Sensor Explorer page in the GUI (provided that the SSH connection is allowed from the Center to the sensors).

The different capture modes are:

- **ALL**: The sensor analyzes all incoming flows without applying a filter. It stores all flows in the Center database.
- **OPTIMAL (Default)**: The filter selects the most relevant flows based on Cisco Cyber Vision expertise. It does not record multicast flows. Use this capture mode for long-term capture and monitoring.
- **INDUSTRIAL ONLY**: The filter selects only industrial protocols like Modbus, S7, and EtherNet/IP. This means that the sensor does not analyze IT flows of the monitored network, and they do not appear in the GUI.
- **CUSTOM (advanced users)**: Use this capture mode to fully customize the filter. Use the tcpdump syntax to define the filtering rules.

Sensor geolocation data

Sensor geolocation data is the GPS coordinates (longitude and latitude) of CV sensor applications deployed on network devices. This data enables accurate mapping and visualization of the platform hosting the CV sensor application, supporting effective monitoring, management, and optimization of geographically distributed deployments.

GPS coordinates configuration

You can configure GPS coordinates on sensors in two ways, depending on the platform's hardware capabilities:

- Platforms without the capability to gather GPS coordinates by themselves require manual input of the GPS coordinates on the UI. You can set the coordinates on the **Sensor Explorer** page. For more information, see Configure GPS coordinates on sensors, on page 28.
- Platforms with the capability to gather GPS coordinates by themselves can automatically discover and update their GPS coordinates. Once the GPS module is activated on the platform, the sensors will seamlessly display the GPS data received from the GPS module, ensuring the coordinates are always current without further manual intervention. For more information, see Enable the GPS module on the platform, on page 27.

Enable the GPS module on the platform

Activate the GPS module on the platform to continuously transmit GPS data to the CV Center for sensor geolocation.

Use CLI commands on a Cisco router to configure the cellular controller to transmit GPS NMEA (National Marine Electronics Association) data to a specific IP destination over UDP.

Before you begin

- Verify the correct cellular controller interface name and number (For example, Cellular 0/1/0).
- Obtain the Capture VPG IP address and the sensor's Capture IP address (from eth1 of the IOx app).

Follow these steps to enable GPS module on your platform:

Procedure

Step 1 Log in to the router using SSH.

Step 2 Enter the privileged EXEC mode.

```
router# enable
Password:
router#
```

Step 3 Enter Global Configuration Mode:

```
router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
router(config)#
```

Step 4 Specify the satellite from which GPS data needs to be collected.

```
router(config-if)# lte gps constellation gnss
```

Step 5 Enable GPS on the device.

```
router(config-if)# lte gps nmea
```

Step 6 Configure transmission of GPS NMEA data over UDP:

```
lte gps nmea ip udp <Capture_VPG_IP> <Sensor_Capture_IP> 5555 stream 1
```

Replace <Capture_VPG_IP> and <Sensor_Capture_IP> with the actual IP addresses of your device. 5555 is the port number.

The GPS module begins transmitting NMEA data over UDP to the specified destination, and the CV sensors display current GPS coordinates in the **GPS Coordinates** field. When you hover over the value, an indicator confirms that the sensor is in GPS mode.

What to do next

Verify GPS data reception at the target IP. Confirm that the coordinates are current on the **Sensor Explorer** page.

For more information on enabling the GPS module on a router, see Configuring GPS in the *Cellular Pluggable Interface Module Configuration Guide*.

Configure GPS coordinates on sensors

Manually assign GPS location data to sensors for better geographic mapping and device management.

Configure GPS coordinates on sensors when deploying new sensors on network devices.

Before you begin

- Identify the sensors you want to set or update with GPS coordinates.
- Obtain the correct latitude and longitude values for each sensor location.

Follow these steps to manually set GPS coordinates on sensors:

Procedure

Step 1 From the main menu, choose **Admin > Sensors > Sensor Explorer**.

Step 2 On the **Sensor Explorer** page, click the sensor whose GPS coordinates you want to set.

Step 3 On the right side, click the pencil icon next to **GPS Coordinates**.

Step 4 In the SENSOR COORDINATES window, enter the latitude and longitude values. Click **Check on map** to verify the entered values.

Step 5 Once the values are verified, click **Add**.

Step 6 (Optional) To update or delete the values, click the pencil icon again.

The GPS coordinates you set appear in the **GPS Coordinates** field. When you hover over the value, an indicator confirms that the coordinates were set manually.

Deployment Tokens

Zero Touch Provisioning allows you to automate Cisco Cyber Vision deployment on sensor batches. It is to be used with third-party tools such as Cisco Catalyst WAN Manager. Refer to its documentation on cisco.com to complete sensor deployment.

From this page, you can create, edit, enable, disable and delete deployment tokens for Zero Touch Provisioning.

To access the Deployment Tokens page, choose **Admin** > **Sensors** > **Deployment Tokens** from the main menu.

You will start with adding a deployment phase, that is a group of tokens, with a number of uses and an expiration time.

The application will request a token valid for an application type. A token contains the application name and a PSK (pre-shared key).

Once proper configuration is done on Cisco Catalyst WAN Manager, it will deploy the sensors and apply parameters which will allow each sensor to on-board itself on the Center.

Communication between the sensors and the Center starts after the sensors present the PSK to the Center and the Center delivers all necessary information for enrollment.

Deployment will fail:

- if the number of sensors exceed the number of tokens.
- if the deployment occurs after the expiration time.

If so, you can edit the deployment phase to modify the number of uses accordingly and extend the expiration time.

Table 4: Sensor applicability and correspondance table per deployment file

Sensors	Deployment files
IE3x00, IR1101, IR18xx, IE9300	cviox-aarch64.tar

Sensors	Deployment files
IE3x00, IR1101, IR18xx, IE9300 **with Active Discovert**	cviox-active-discovery-aarch64.tar
IC3000	cviox-ic3000-x86-64.tar
IC3000 **with Active Discovery**	cviox-active-discovery-x86-64.tar
Catalyst 9300, 9400, IR8340	cviox-x86-64.tar
Catalyst 9300, 9400, IR8340 **with Active Discovery**	cviox-active-discovery-x86-64.tar

Create Deployment Tokens

To create tokens, follow these steps:

Procedure

Step 1 From the main menu, choose **Admin** > **Sensors** > **Deployment Tokens**.

The **Deployment Tokens** page appears.

Step 2 Click **Add Tokens**.

The **Add new deployment tokens** panel appears.

Step 3 Fill in the following details in **Add new deployment tokens** panel:

a) Enter a name for the deployment phase.
b) Add the **Number of uses** for the number of devices to be deployed.
c) Set the token's **Expiration time**.
d) Use the **Enabled** toggle button to enable the token to continue the deployment process.

Step 4 Click **Create**.

The deployment phase with tokens per device type appears.

Note
You can view, copy, edit, disable, and delete the token.

What to do next

Refer to Cisco Catalyst WAN Manager documentation in cisco.com to continue and complete sensor deployment.

Templates

This page allows you to create and set templates with protocol configurations and assign them to specific sensors.

Sensor templates contain protocol configurations which allow you:

- To enable or disable protocol DPI (Deep Packet Inspection) engines.
- To map UDP and TCP ports for each protocol's packet received by the sensor.

Enable or disable a protocol DPI engine to choose which protocols to analyze.

Disable a protocol DPI engine to avoid false positives in Cisco Cyber Vision. This occurs when a protocol appears on the user interface but is not present because the same UDP/TCP ports can be used by other non-standardized protocols.

The Default template disables some protocols because they are not commonly used or are specific to fields like transportation. The Default template applies to all compatible sensors.

Although UDP/TCP port configurations are mostly standardized, conflicts still occur with field-specific or with limited usage. Map UDP/TCP port numbers to ensure packets are sent to the correct DPI engine for accurate analysis and representation in the user interface.

Sending the protocol's packet to the wrong port results in related information appearing in Security Insights/Flows without a tag.

A sensor associates with only one template. Template deployment fails

- if the sensor is disconnected,
- if there is connection issues, or
- if the sensor version is too old.

Create Templates

Procedure

Step 1 From the main menu, choose **Admin** > **Sensors** > **Templates**.

Step 2 Click the **Add sensor template** button.

The **CREATE SENSOR TEMPLATE** window appears.

Step 3 Add a name to the template.

(Optional) You can add a description.

Step 4 Click **Next**.

The list of protocol DPI engines with their basic configurations appears.

Step 5 In the search bar, type the protocol you want to configure.

Step 6 To edit its settings, click the **pen** icon under the **Port Mapping** column, .

The protocol's port mapping window appears.

Step 7 Enter the port numbers you want to add.

Note

If you have continuous port numbers, you can enter a port range. For example, type 15000-15003 for ports 15000, 15001, 15002, and 15003.

Step 8 Click **OK**.

The port number is added to the protocol's default settings.

Step 9 Enable the toggle button **Displayed modified only** to quickly find the protocol.

Step 10 Click **Next**.

Step 11 Select the checkboxes for the sensors to which you want to apply the template.

Step 12 Click **Next**.

Step 13 Check the template configurations and click **Confirm**.

The configuration is sent to the sensors. Configuration deployment will take a few moments.

The OPCUA template appears in the template list with its two assigned sensors.

Export Templates

You can use this feature to define the template at one center and then migrate it to another. To export the template, follow these steps:

Procedure

Step 1 From the main menu, choose **Admin** > **Sensors** > **Templates**.

Step 2 Locate the template and hover over the ellipsis (…) in the **Actions** column.

Step 3 Click **Export** from the drop-down list.

Your system downloads the template to its local location.

Import Templates

To import the template, follow these steps:

Procedure

Step 1 From the main menu, choose **Admin** > **Sensors** > **Templates**.

Step 2 Click **Import sensor template**.

The system’s local folder will opens.

Step 3 Select the template and click **Open**.

The system displays the imported template on the **Configuration Template** page.

Step 4 Locate the template and hover over the ellipsis (…) in the **Actions** column.

Step 5 Click **Edit** from the dropdown list.

Step 6 From the **Select sensors** tab, check the checkboxes of the sensors to which you want to apply the template.

Step 7 Click **Next**.

Step 8 Check the details and click **Update**.

The template recovers all the changes made in the previous center, and will be applied to the selected sensors.

Management Jobs

Since some deployment tasks on sensors can take several minutes, this page displays the execution status and progress for each sensor deployed with the Sensor Management Extension. The page is visible only when the Sensor Management Extension is installed in the Cisco Cyber Vision Center.

To access the **Management jobs** page, choose **Admin** > **Sensors** > **Management jobs** from the main menu.

You will find the following jobs:

- **Single deployment**:

  This job is launched when clicking the **Deploy Cisco device** button in the sensor administration page, that is when a new IOx sensor is deployed.

- **Single redeployment**:

  This job is launched when clicking the **Reconfigure Redeploy** button in the sensor administration page, that is when deploying on a sensor that has already been deployed. This option is used for example to change the sensor's parameters like enabling active discovery.

- **Single removal**:

  This job is launched when clicking the **Remove** button from the sensor administration page.

- **Update all devices**:

  This job is launched when clicking the **Update Cisco devices** button from the sensor administration page. A unique job is created for all managed sensors that are being updated.

If a job fails, you can click on the **error icon** to view detailed logs.

PCAP files

A packet capture (PCAP) file is a file format that

- records raw network traffic data captured from a network interface,
- preserves the exact communication packets that are exchanged between various assets, and
- enables network analysis and asset identification when imported into Cyber Vision Center.

PCAP file usage

To analyze traffic from your OT network, upload PCAP files to Cyber Vision Center. Use the Cyber Vision Classic UI to upload PCAP files.

When you import the file, Cyber Vision Center creates and identifies assets and associates them with their properties and communication patterns. You can then view these assets throughout the system, including on the main dashboard.

Upload a PCAP file

Upload a PCAP file to the system to analyze network diagnostic or security information.

Uploading a PCAP file allows you to review and inspect captured packet data using system analysis tools. This is typically performed during troubleshooting or forensic investigations.

Before you begin

- Ensure you have the required permissions to upload files.
- Have the PCAP file ready and accessible from your local system.

Procedure

Step 1 From the main menu, choose **Admin** > **Sensors** > **PCAP Upload**.

Step 2 Click **Upload a new file**.

Step 3 Click **Choose a file or drag and drop to upload**. Add the file in the box.

Step 4 Click **Upload** to start the process.

Note
The system displays the status for **DPI** and **Snort** during the upload.

If you upload a large file, you can pause the upload. To resume, select the same PCAP file with the browse button and click **Resume**.

After you upload the PCAP file, you can analyze it in the system.

What to do next

- Review the upload confirmation.
- Analyze the uploaded PCAP if needed.

SNMP

SNMP Protocol in Cisco CyberVision is used for remote monitoring purposes. To access the **SNMP Global Configuration** page, choose **Admin** > **SNMP** from the main menu.

Supported versions are:

- SNMP V2C
- SNMP V3

Older versions are not supported.

Important It is highly recommended to use version 3 of the SNMP protocol. Version 2c is available due to a large number of infrastructures still using it. However, take into account that risks in terms of security are higher.

Snmp information:

- CPU % per core
- Load 0 to 100 (combination of CPU and I/O loads)
- RAM kilobytes
- Swap kilobytes
- Traffic for all physical interfaces (nb bytes in and out/interface (since the snmp service startup))
- Data storage (% - 250G)
- Packets stats (packets/sec/int)

Configure SNMP

This section explains how to configure SNMP on a CyberVision Center.

Procedure

Step 1 From the main menu, choose **Admin** > **SNMP**.

Step 2 Enable the **SNMP agent** toggle button.

A configuration menu appears.

Step 3 Enter the IP address of the monitoring host in the **Monitoring hosts (IPv4)** field.

Step 4 Click the radio buttons to select a version. Version options are as follows:

- Version 3
- Version 2c

Note
For security reasons, it is recommended to use SNMP version 3.

a) **Version 3**

- **Security type**: When the security type is **NoAuth**, only a username is required. No authentication password required.

  Username: Add the username that will be used for the SNMP authentication. "ics" is used by default.

- **Security type**: When the security type is **Auth** with **NoPriv**, a username and an encrypted password are required.

  Username: Add the username that will be used for the SNMP authentication. "ics" is used by default.

Authentication: Add the Hash algorithm needed and its password. It must be at least 8 characters long.

- **Security type**: When the security type is **Auth** with **Priv**, only AES encryption is available. A username, an encrypted password, and AES encryption are required.

  Username: Add the username that will be used for the SNMP authentication. "ics" is used by default.

  Authentication: Add the Hash algorithm needed and its password. It must be at least 8 characters long.

  Privacy: Add the AES password. It must be at least 8 characters long.

b) **Version 2c**

Add the community string for the Center to communicate with the monitoring host.

Step 5 Enable the **Trap** toggle button.

The configuration menu appears:

Step 6 Set up traps to be delivered.

a) If SNMP v3 has been selected, the Engine ID field (i.e. the Center id) is displayed so you can customize it.

b) Select and set the CPU and memory rate limit and threshold according to your needs.

Step 7 Click **Save Configuration**.

SNMP MIB

Table 5:

MIB	OID prefix	Description
MIB-2	.1.3.6.1.2.1.1	System
IF-MIB	.1.3.6.1.2.1.2.2.1.1	All physical interfaces
IF-MIB	.1.3.6.1.2.1.31.1.1	All physical interfaces
HOST-RESOURCES-MIB	.1.3.6.1.2.1.25.1	System
HOST-RESOURCES-MIB	.1.3.6.1.2.1.25.2.3	Storage
HOST-RESOURCES-MIB	.1.3.6.1.2.1.25.3.3	CPU
UCD-SNMP-MIB	.1.3.6.1.4.1.2021.4	Memory
UCD-SNMP-MIB	.1.3.6.1.4.1.2021.9	Disk
UCD-SNMP-MIB	.1.3.6.1.4.1.2021.10	Load
UCD-SNMP-MIB	.1.3.6.1.4.1.2021.11	CPU

MIB	OID prefix	Description
UCD-DISKIO-MIB	.1.3.6.1.4.1.2021.13.15.1	Disk IO