Cisco Cyber Vision Administration Guide, Release 5.4.x

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CHAPTER 1

New and Changed Information

New and changed information in beta release 5.4.x

Cyber Vision beta release 5.4.x offers these features:

Table 1: Feature updates for beta release 5.4.x

Feature	Description
Protocol and time filter enhancements	You can quickly identify communications between assets, including those not currently displayed in your active view. If an asset interacts with another asset outside your active view filter, the map highlights the relevant nodes and links with dotted lines. Additionally, ungrouped assets are now displayed clearly in the group-to-group view. See Communication map features.
Group communications by network functionality	You can now view communication data by functional groups or network groups, making it simpler to analyze and understand your network interactions. See Communication map features.
Restrict users to a specific Preset category	This feature enables precise data access control by assigning preset categories to Cyber Vision user roles, limiting users to the **Explore** menu with read-only permissions. See Create a user role. **Note** Once you restrict a user to a specific preset category, they will not have access to the New UI.

Feature	Description
Sesnor geolocation	You can configure GPS coordinates (latitude/longitude) on sensors to allow Cisco Cyber Vision Center to map and manage them geographically. See Sensor geolocation data, on page 102.
MITRE mapping and additional details	The **Vulnerabilities** page provides additional details on each vulnerability, such as its MITRE ATT&CK tactics and techniques, attack vectors, and exploitability. See Vulnerabilities details, on page 141

CHAPTER 2

Introduction to Cyber Vision

Cisco Cyber Vision Installation

The GUI (graphical user interface) is an integral part of Cisco Cyber Vision center. It provides an easy-to-use, real-time visualization of industrial networks. Access to some features may depend on the license subscribed to and on the user rights assigned. The application is **collaborative**, meaning that actions performed may have an impact on the users of the platform and be visible to them. Using Cisco Cyber Vision requires the following:

1. The Center: hardware to configure network interfaces that collect data from the sensors and install Cisco Cyber Vision software.
2. Network sensors: to capture traffic and visualize data on the GUI.

If not installed yet, please refer to the corresponding quickstart guides.

At least one sensor has to be enrolled so that you can see it in the GUI. To do so, see the Sensors.

Overview

One of the aims of the GUI (Graphical User Interface) is to provide an easy-to-use, real-time visualization of industrial networks. Access to some features may depend on the license subscribed and on the user rights assigned. The application is **collaborative**; which means that actions performed may have an impact on the users of the platform and be visible to them.

Interactive Help

Cisco Cyber Vision offers contextual help through the Interactive Help feature. The Interactive Help menu offers easy access to a wide range of documentation resources, and to step-by-step walkthroughs of select taskflows.

Cisco may collect some anonymous product usage behavior data in accordance with the Cisco End User License Agreement and the Cisco Privacy Statement for optimal delivery of Interactive Help.

Access Interactive Help

Interactive Help is enabled by default. To access the Interactive Help menu:

- In the classic GUI, a vertical blue ribbon is displayed in the bottom right of the Cisco Cyber Vision window. Click the ribbon.
- In the new GUI, in addition to the vertical ribbon, you can access the menu by clicking the **?** icon in the top banner, and selecting **Interactive Help**.

To disable the Interactive Help feature, carry out the following steps.

Procedure

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

Step 2 To disable the feature, in the Interactive Help area, click the toggle button.

Presets

Presets are sets of selection criteria that

- enable focused filtering of network metadata processed by Cyber Vision,
- provide rapid access to views matching specific business needs, and
- offer multiple perspectives for efficient navigation of network data.

Presets are designed to simplify navigation and enhance business-oriented visibility into network activity and status, based on recommendations from Cyber Vision playbooks.

Preset views

A preset view is a display mode that

- stores data elements, such as components, tags, and activities,
- refreshes only when necessary or upon explicit user request to reduce system load, and
- optimizes system performance to prevent lags and application crashes, especially when managing large data flows.

Preset views help prevent system overload by showing previously computed data and relying on user actions for updates. This benefits users who interact with preset views frequently or occasionally.

Behavior of preset views

- The elements visible in preset views are based on the last completed computation.
- Data displayed in the user interface and database are asynchronous, lowering workload on the GUI.
- Computation frequency adapts to preset usage. Presets that are viewed frequently are recomputed often. Presets that are not used are skipped.
- An automated background process computes data when a preset is active, but does not auto-refresh the display.
- Two update buttons are available in preset views:
  - New data button: Appears when new computation is available, but the updated view may not show all new data.
  - Refresh button: Forces data computation and a full view refresh, which consumes more system resources. Use this when you expect changes, such as a new device or custom data updates.

Types of preset views

You can access different preset views for various perspectives. To do this, open the main menu, select **Explore**, and use the top navigation bar to choose a preset.

Table 2: Views

Name	Description
Dashboard	The dashboard view appears by default and gives you a preset data overview. This tag-oriented view lets you quickly review the network at a high level.
Map	Use the map view to see how devices and components in your industrial network are connected. You can organize them into groups and explore the network structure. The map view then shows devices, components, and activity based on your selected criteria. It also shows grayed-out items if they are needed to represent preset activities, even if they don't match the criteria.
Device list and Activity list	Use these views to filter and find specific data. You can see both general and technical details for each element in the preset.
Vulnerabilities	This view displays and lists all vulnerabilities detected in a preset.

Name	Description
Security Insights	Each tab displays the most frequent requests, the least frequent requests, and a list of all requests for you to review. **Flows with no tag**: This section lists traffic that Cyber Vision Center cannot analyze, often due to the use of unsupported protocols. To resolve this, first verify that the content should be on the network. Next, determine why analysis is not possible. Finally, check flows with a high number of packets.
Purdue Model	Use the Purdue model view to see how assets in your preset are distributed across the layers of the Purdue model architecture based on tags. This view organizes assets into those layers: • Level 0–1: Process and basic control (IO Modules) • Level 2: Area supervisory control (PLCs, SCADA stations) • Level 3–4: Manufacturing zone and DMZ (all others)

Communication display options in map preset view

Cyber Vision Center offers three options for presenting communications in the preset map view.

Table 3: Map view options

Option	Description
Show all activities	You can view all activities between groups or individual devices.
Aggregate activities by group	The system increases map readability by grouping and displaying communications between device groups.

Option	Description
Show only zones and conduits	To optimize performance with large data sets or to get a broad overview, show only top-level groups (zones) and summarized communications (conduits) between them. Devices not assigned to any zone appear in a separate group called **Ungrouped**. If group hierarchies segment the control system, the map displays zones and conduits that meet ISA/IEC 62443 standards. A conduit appears as a thick, dashed line and shows communication between two groups. If both the source and destination groups are known, an arrow indicates the direction of communication. By default, Conduits View mode is enabled. To disable it, select **Aggregate activities by group**.

Default preset categories

Generic presets are available by default in Cyber Vision, based on recommended practices and operational categories.

Table 4: Default categories

Preset category	Presets available
Basics	View all data or filter to information technology (IT) or operational technology (OT) components. • All data • Essential data • Active Discovery activities
Asset management	Identify and inventory assets associated with OT systems, facilities, and IT components. • OT devices • IT devices • IT infrastructure devices • All Microsoft Windows systems • All controllers

Preset category	Presets available
Control Systems Management	Check the state of industrial processes. • OT activities • Control system activities • Process control activities
IT Communication management	Flows categorized as OT, IT, infrastructure, IPv6 communications, and Microsoft flows • IT activities • Web activities • Email activities • File activities • Microsoft activities
Security	Remote access control and insecure activity monitoring • DNS activities • Remote procedure call activities • Remote access • Insecure activities • Encrypted activities • Authentication activities
Network Management	Network detection issue identification and resolution • IT infrastructure activities • IT technical activities • IPv6 communications • Multicast traffic only • Broadcast traffic only

Create a new category

Create a category to organize and locate your custom presets easily.

Use categories to order and search custom presets. You can bookmark entries saved on the **Explore** page with URL filters in your browser for quick access.

Procedure

Step 1 From the main menu, choose **Explore**.

Step 2 Click **New Category**.

Step 3 Enter the name and preset details.

Step 4 Click **Create**.

The new category appears on the **Explore** > **All Presets** page.

What to do next

- You can edit the category name and preset details or delete the category from **Explore** > **All Presets**.
- You can search for categories on the **Explore** page to view associated presets.

Create a new preset from an existing data set

Create a customized preset by selecting criteria from an existing data set tailored to your business logic

Customized presets help you tailor views to your operational needs. Presets that you create are available to other users.

Procedure

Step 1 From the main menu, choose **Explore** > **All Presets**.

Step 2 Select a predefined data preset from the **All Presets** list.

Step 3 Select the required criteria from **RISK SCORE**, **NETWORKS**, **DEVICE TAGS**, **ACTIVITY TAGS**, **GROUPS**, and **SENSORS**.

Step 4 Click **Save as**.

Step 5 Enter a new **Name** and select a **Category**.

Step 6 Click **OK**.

Your new preset uses the filter criteria you selected and appears in the category you chose.

What to do next

- Search for the selected category on the **Explore** page to view the newly created preset with your filter criteria.
- You can edit or delete presets from the **Explore** page.

Understanding Concepts

Filters

To access the filters, follow these steps:

1. From the main menu choose **Explore**.
2. Click the drop-down arrow in the top navigation bar and click **All Data** under **Basics**.
3. Click the drop-down arrow in the third filter of the top navigation bar and click **Dashboard**.

Create presets using the following filters:

Criteria

Enter keyword(s) in the field to apply the search function. Use **Select All**, **Reject All**, or **Default** to modify the list.

- Risk score: device individual risk
- Networks: device IPs
- Device tags: devices
- Activity tags: activities
- Groups: devices
- Sensors: device “location”

Filters work differently whether they are affecting devices or activities. Their combination limits the scope of data visualized in the different views for a preset. Each category allows you to define a subset of the components, or activities for the Activity filter. If filters are defined by several categories, the resulting dataset is the intersection of the selections for each category. Parameter and filter usage is explained below.

Risk Score

Use the Risk Score to filter devices based on their score or a range of Risk scores. Risk scores can be inclusive or exclusive filters. All devices will be filtered based on this range.

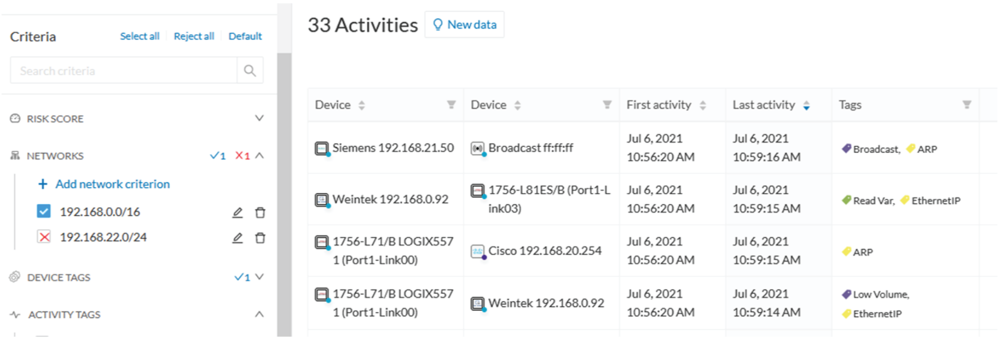
Networks

Define a filter based on two network settings: IP range or VLAN ID. This filter will have an impact on the Activity List. The result will be “all activities with one end belonging to this network.” Activities with at least one device in the corresponding network are selected.

Regarding the Device list, only the devices with at least one IP address in the corresponding network range are selected.

For instance, use exclusion and combination for this result:

Network filter – negative filter



Criteria Select all Reject all Default

Search criteria

RISK SCORE

NETWORKS ✓1 ✗1

+ Add network criterion

☑ 192.168.0.0/16

☒ 192.168.22.0/24

DEVICE TAGS ✓1

ACTIVITY TAGS

33 Activities New data

Device	Device	First activity	Last activity	Tags
Siemens 192.168.21.50	Broadcast ff:ff:ff	Jul 6, 2021 10:56:20 AM	Jul 6, 2021 10:59:16 AM	Broadcast, ARP
Weintek 192.168.0.92	1756-L81ES/B (Port1-Link03)	Jul 6, 2021 10:56:20 AM	Jul 6, 2021 10:59:15 AM	Read Var, EthernetIP
1756-L71/B LOGIX5571 (Port1-Link00)	Cisco 192.168.20.254	Jul 6, 2021 10:56:20 AM	Jul 6, 2021 10:59:15 AM	ARP
1756-L71/B LOGIX5571 (Port1-Link00)	Weintek 192.168.0.92	Jul 6, 2021 10:56:20 AM	Jul 6, 2021 10:59:14 AM	Low Volume, EthernetIP

Multiple negative selections are not supported on 4.0.0.

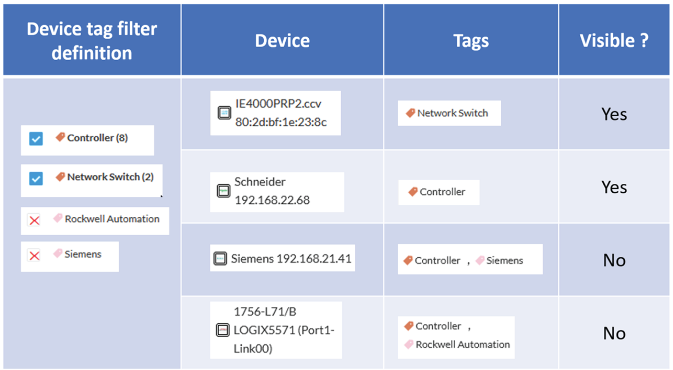
Filter combination

You can define filters in several categories simultaneously. The preset will be calculated first by filtering the activities with all the activity-based filters. Then, the devices will be filtered with their own filter criteria. The result is the preset dataset. This preset dataset is used to precompute the view that Cyber Vision presents to you. Select a time frame to further filter the preset dataset.

Device tag filters

Device tags are used to select components. Device tag filters are inclusive or exclusive. The combination of several device tags selects all the components with at least one of the selected device tags. If the device tag filter is exclusive, the system will ignore all components with the selected device tags. For example:

Device tag filters

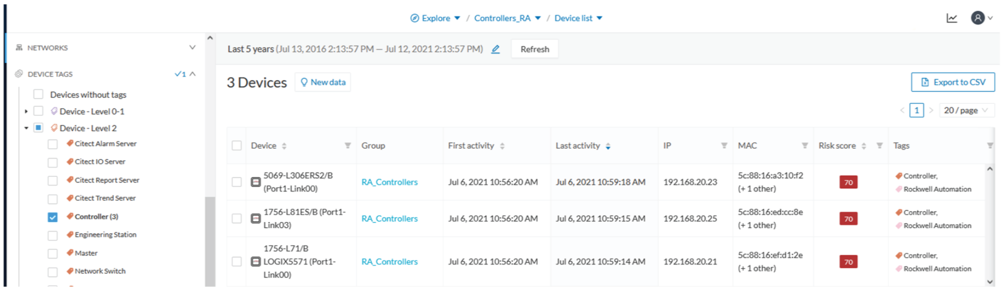


Device tag filter definition	Device	Tags	Visible ?
☑ Controller (8) ☑ Network Switch (2) ☒ Rockwell Automation ☒ Siemens	IE4000PRP2.ccv 80:2d:bf:1e:23:8c	Network Switch	Yes
	Schneider 192.168.22.68	Controller	Yes
	Siemens 192.168.21.41	Controller , Siemens	No
	1756-L71/B LOGIX5571 (Port1-Link00)	Controller , Rockwell Automation	No

When devices are filtered the **Device view only** presents the devices corresponding to the filter. For the other displays like activity list or map, the devices which are communicating with the selected devices will be displayed too (all engineering stations or HMI in our example).

It will give the following results:

Device tag filter, example of Controllers – list of devices



- □ Devices without tags
- □ Device - Level 0-1
- ■ Device - Level 2
  - □ Citect Alarm Server
  - □ Citect IO Server
  - □ Citect Report Server
  - □ Citect Trend Server
  - ☑ Controller (3)
  - □ Engineering Station
  - □ Master
  - □ Network Switch

Last 5 years (Jul 13, 2016 2:13:57 PM — Jul 12, 2021 2:13:57 PM) Refresh

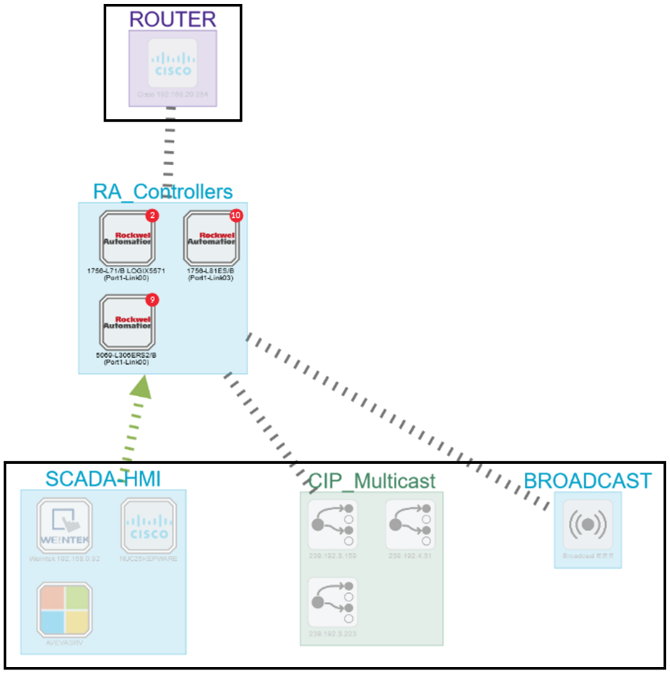
3 Devices New data Export to CSV

1 20 / page

Device	Group	First activity	Last activity	IP	MAC	Risk score	Tags
5069-L306ERS2/B (Port1-Link00)	RA_Controllers	Jul 6, 2021 10:56:20 AM	Jul 6, 2021 10:59:18 AM	192.168.20.23	5c:88:16:a3:10:f2 (+ 1 other)	70	Controller, Rockwell Automation
1756-L81ES/B (Port1-Link03)	RA_Controllers	Jul 6, 2021 10:56:20 AM	Jul 6, 2021 10:59:15 AM	192.168.20.25	5c:88:16:ed:cc:8e (+ 1 other)	70	Controller, Rockwell Automation
1756-L71/B LOGIX5571 (Port1-Link00)	RA_Controllers	Jul 6, 2021 10:56:20 AM	Jul 6, 2021 10:59:14 AM	192.168.20.21	5c:88:16:ef:d1:2e (+ 1 other)	70	Controller, Rockwell Automation

In the associated map, all the components which communicate with the controllers will also be displayed. These other components are shadowed to be recognized:

Device tag filter, example of Controllers - map



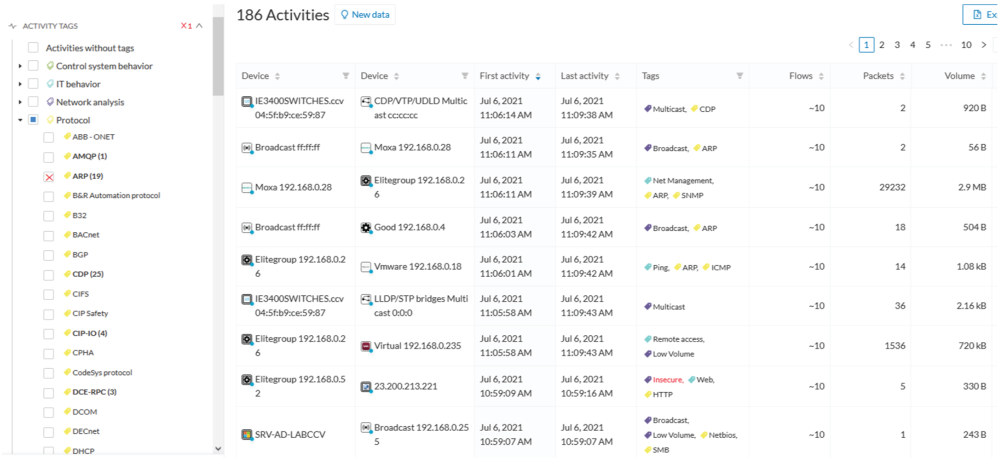
ROUTER
RA_Controllers
1756-L71/B LOGIX5571 (Port1-Link00)
1756-L81ES/B (Port1-Link03)
5069-L306ERS2/B (Port1-Link00)
SCADA-HMI
CIP_Multicast
BROADCAST

Activity Tags

Filtering on **Activity tags** will not have the same behavior than a filter based on **Devices**. Inclusive activity tag filters will be the same, but exclusive activity tag filters will remove activities only when all activity tags are included in the set of excluded tags. For example, if an activity has two tags, both tags need to be excluded to hide the activity.

For example, if an activity has two tags, both tags need to be excluded to hide the activity.

Activity filter – negative filter 1



ACTIVITY TAGS ×1

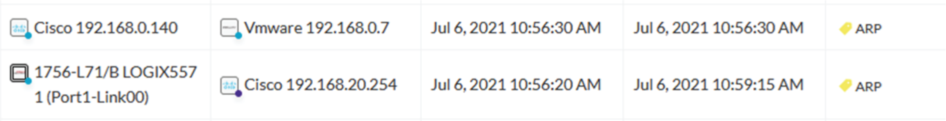
- □ Activities without tags
- □ Control system behavior
- □ IT behavior
- □ Network analysis
- ■ Protocol
  - □ ABB - ONET
  - □ AMQP (1)
  - ☒ ARP (19)
  - □ B&R Automation protocol
  - □ B32
  - □ BACnet
  - □ BGP
  - □ CDP (25)
  - □ CIFS
  - □ CIP Safety
  - □ CIP-IO (4)
  - □ CPHA
  - □ CodeSys protocol
  - □ DCE-RPC (3)
  - □ DCOM
  - □ DECnet
  - □ DHCP

186 Activities

Device	Device	First activity	Last activity	Tags	Flows	Packets	Volume
IE3400SWITCHES.ccv 04:5f:b9:ce:59:87	CDP/VTP/UDLD Multicast cc:cc:cc	Jul 6, 2021 11:06:14 AM	Jul 6, 2021 11:09:38 AM	Multicast, CDP	~10	2	920 B
Broadcast ff:ff:ff	Moxa 192.168.0.28	Jul 6, 2021 11:06:11 AM	Jul 6, 2021 11:09:35 AM	Broadcast, ARP	~10	2	56 B
Moxa 192.168.0.28	Elitegroup 192.168.0.26	Jul 6, 2021 11:06:11 AM	Jul 6, 2021 11:09:39 AM	Net Management, ARP, SNMP	~10	29232	2.9 MB
Broadcast ff:ff:ff	Good 192.168.0.4	Jul 6, 2021 11:06:03 AM	Jul 6, 2021 11:09:42 AM	Broadcast, ARP	~10	18	504 B
Elitegroup 192.168.0.26	Vmware 192.168.0.18	Jul 6, 2021 11:06:01 AM	Jul 6, 2021 11:09:42 AM	Ping, ARP, ICMP	~10	14	1.08 kB
IE3400SWITCHES.ccv 04:5f:b9:ce:59:87	LLDP/STP bridges Multicast 0:0:0	Jul 6, 2021 11:05:58 AM	Jul 6, 2021 11:09:43 AM	Multicast	~10	36	2.16 kB
Elitegroup 192.168.0.26	Virtual 192.168.0.235	Jul 6, 2021 11:05:58 AM	Jul 6, 2021 11:09:43 AM	Remote access, Low Volume	~10	1536	720 kB
Elitegroup 192.168.0.52	23.200.213.221	Jul 6, 2021 10:59:09 AM	Jul 6, 2021 10:59:16 AM	Insecure, Web, HTTP	~10	5	330 B
SRV-AD-LABCCV	Broadcast 192.168.0.255	Jul 6, 2021 10:59:07 AM	Jul 6, 2021 10:59:07 AM	Broadcast, Low Volume, Netbios, SMB	~10	1	243 B

In the example above, several activities show because the ARP tag is present, as well as other **Activity tags**. There is no exact match. The activity below is hidden.

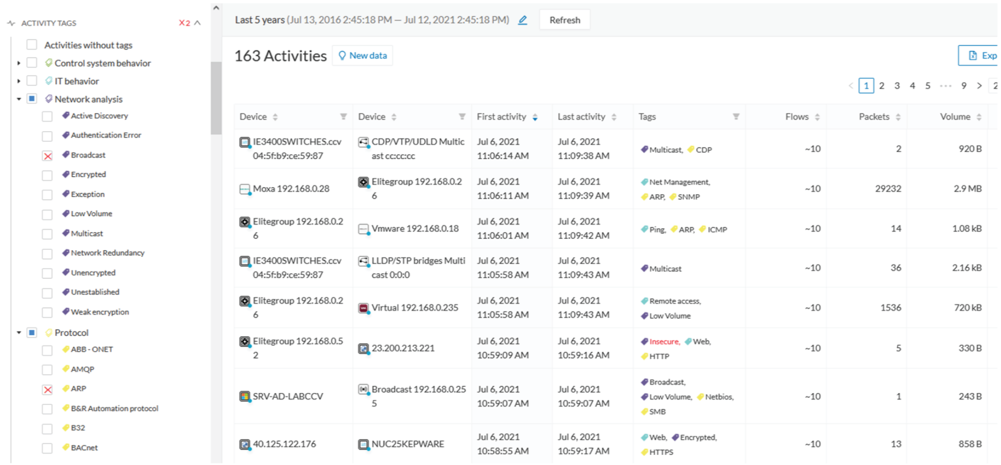
filter 2



Cisco 192.168.0.140	Vmware 192.168.0.7	Jul 6, 2021 10:56:30 AM	Jul 6, 2021 10:56:30 AM	ARP
1756-L71/B LOGIX5571 (Port1-Link00)	Cisco 192.168.20.254	Jul 6, 2021 10:56:20 AM	Jul 6, 2021 10:59:15 AM	ARP

To remove broadcast and ARP activities, select both activity tags, as shown below.

Activity filter – negative filter 3



ACTIVITY TAGS ×2

- □ Activities without tags
- □ Control system behavior
- □ IT behavior
- ■ Network analysis
  - □ Active Discovery
  - □ Authentication Error
  - ☒ Broadcast
  - □ Encrypted
  - □ Exception
  - □ Low Volume
  - □ Multicast
  - □ Network Redundancy
  - □ Unencrypted
  - □ Unestablished
  - □ Weak encryption
- ■ Protocol
  - □ ABB - ONET
  - □ AMQP
  - ☒ ARP
  - □ B&R Automation protocol
  - □ B32
  - □ BACnet

Last 5 years (Jul 13, 2016 2:45:18 PM — Jul 12, 2021 2:45:18 PM)

163 Activities

Device	Device	First activity	Last activity	Tags	Flows	Packets	Volume
IE3400SWITCHES.ccv 04:5f:b9:ce:59:87	CDP/VTP/UDLD Multicast cc:cc:cc	Jul 6, 2021 11:06:14 AM	Jul 6, 2021 11:09:38 AM	Multicast, CDP	~10	2	920 B
Moxa 192.168.0.28	Elitegroup 192.168.0.26	Jul 6, 2021 11:06:11 AM	Jul 6, 2021 11:09:39 AM	Net Management, ARP, SNMP	~10	29232	2.9 MB
Elitegroup 192.168.0.26	Vmware 192.168.0.18	Jul 6, 2021 11:06:01 AM	Jul 6, 2021 11:09:42 AM	Ping, ARP, ICMP	~10	14	1.08 kB
IE3400SWITCHES.ccv 04:5f:b9:ce:59:87	LLDP/STP bridges Multicast 0:0:0	Jul 6, 2021 11:05:58 AM	Jul 6, 2021 11:09:43 AM	Multicast	~10	36	2.16 kB
Elitegroup 192.168.0.26	Virtual 192.168.0.235	Jul 6, 2021 11:05:58 AM	Jul 6, 2021 11:09:43 AM	Remote access, Low Volume	~10	1536	720 kB
Elitegroup 192.168.0.52	23.200.213.221	Jul 6, 2021 10:59:09 AM	Jul 6, 2021 10:59:16 AM	Insecure, Web, HTTP	~10	5	330 B
SRV-AD-LABCCV	Broadcast 192.168.0.255	Jul 6, 2021 10:59:07 AM	Jul 6, 2021 10:59:07 AM	Broadcast, Low Volume, Netbios, SMB	~10	1	243 B
40.125.122.176	NUC25KEPWARE	Jul 6, 2021 10:58:55 AM	Jul 6, 2021 10:59:17 AM	Web, Encrypted, HTTPS	~10	13	858 B

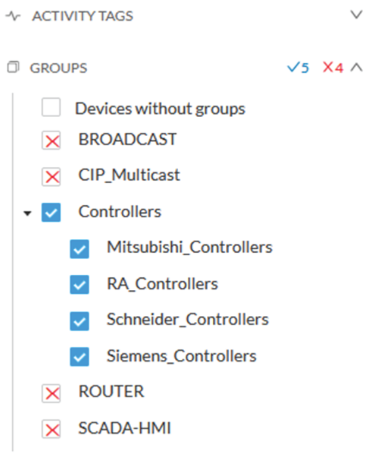
For very specific use cases, combine inclusive and exclusive tags. The above rules, for positive and negative selection, are combined, resulting in the following logic:

- Activities are selected as soon as at least one tag is in the set of included tags
- From this selection, activities which all tags are in the set of included AND excluded tags are hidden

Groups

Filter devices by Groups. Each group or sub-group could be added as an inclusive or exclusive filter.

Group filter



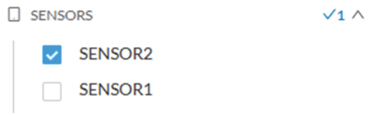
- □ Devices without groups
- ☒ BROADCAST
- ☒ CIP_Multicast
- ☑ Controllers
  - ☑ Mitsubishi_Controllers
  - ☑ RA_Controllers
  - ☑ Schneider_Controllers
  - ☑ Siemens_Controllers
- ☒ ROUTER
- ☒ SCADA-HMI

In the example above, only the devices belonging to the selected groups will be selected. Activities always involve two end points and are selected if either end point is part of a selected group, and none are part of an excluded group.

Sensors

Filter Activities based on the sensor that analyzed the associated packets. For tags, use inclusive and exclusive filters. Usually, either option is used but not both. Inclusive: selects data coming from a set of sensors. Exclusive: Ignore the data from a set of sensors.

Sensor filter

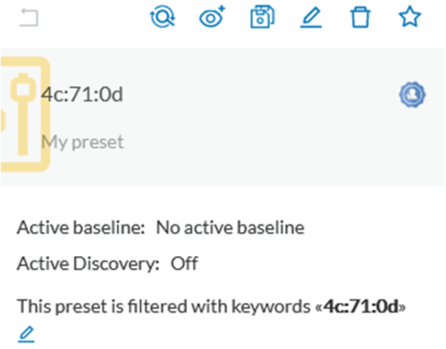


- ☑ SENSOR2
- □ SENSOR1

Keyword

A keyword can be used to filter devices using the “Search” section of the GUI. This keyword will be used to select devices based on their name, properties, IP, MAC and tags.

Keyword = 4c:71:0d



4c:71:0d

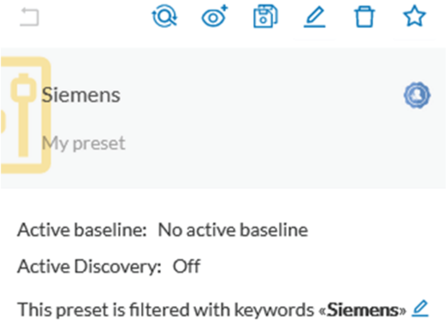
My preset

Active baseline: No active baseline

Active Discovery: Off

This preset is filtered with keywords «**4c:71:0d**»

Keyword =siemens



Siemens

My preset

Active baseline: No active baseline

Active Discovery: Off

This preset is filtered with keywords «**Siemens**»

Filter combination

The user can define filters in several categories simultaneously. The preset will be calculated first by filtering the activities with all the activity-based filters. Then, the devices will be filtered with their own filter criteria. The result is the preset dataset. This preset dataset is used to precompute the view that is proposed to the user. The user can select a time frame to further filter the preset dataset.

Component

In version 4.0.0, we introduced Device, an aggregation of components. This changed how data is processed and presented. A component is an object of the industrial network. It can be the network interface of a PLC, a PC, a SCADA station, etc., or a broadcast or multicast address. In the GUI, a component is as an icon in a box, either the manufacturer icon (if detected), or a more specific icon (a known PLC model), a default cogwheel, a planet for a public IP, etc.

Some examples of icons:

Manufacturers' icons	SIEMENS EMERSON CISCO	

SIEMENS PLC icons		A S7-300 PLC.
		A Scalance X300 switch.
Default cogwheel		The manufacturer has not been detected yet by or the manufacturer has not been assigned a specific icon in 's icon library.
Public IP		
Broadcast		Broadcast destination component.
Multicast		

Components are grouped under a device. In the UI map, you see a device's components with a single border on the right side panel and technical sheet. Components that don't belong to any device display as an icon with a double border.

For more information, refer to the Device section.

Components are detected from the MAC address of the properties and (if applicable) the IP address.

Note MAC addresses are all physical interfaces inside the network. IP addresses rely on the network configuration.

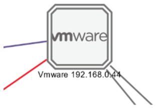
Cisco Cyber Vsion works by detecting network activity (emission or reception) by an object. Cyber Vision uses Deep Packet Inspection (DPI) technology to collate detailed information about a component. Information like IP address, MAC address, manufacturer, first and last activity, tags, OS, Model, and Firmware version depends on the data retrieved from the network. Data originates from the communications (i.e., flows) exchanged between the components.

Click a component on the map or a list. A side panel with the detailed component information opens.

Device

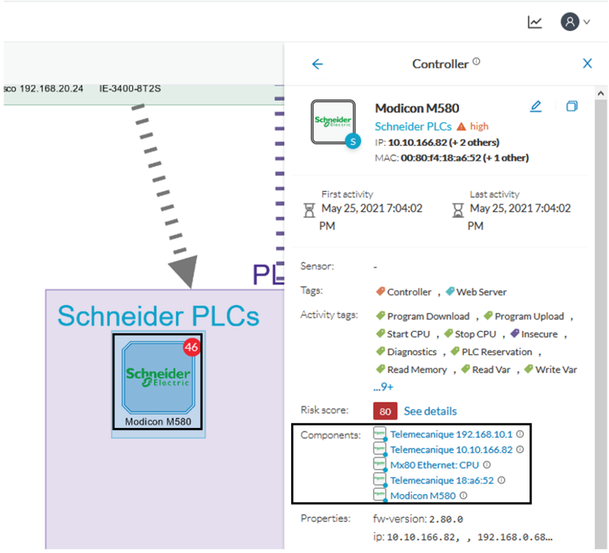
The term **Device** is an aggregation of components with similar properties. In Cisco Cyber Vision, a **Device** is a physical machine of the industrial network such as a switch, an engineering station, a controller, a PC, a server, etc. Devices simplify data presentation, especially on the map. Devices enhance performance because a single device shows in place of multiple components. Devices comply with the logic of management and inventory, focusing on your needs.

A device shows as an icon in a double border, either the manufacturer icon (if detected), or a more specific icon (i.e., a known PLC model). If no icon is available in Cisco Cyber Vision database yet, a default cogwheel displays.



Components can share same characteristics such as the same IP address, MAC address, NetBIOS name, etc. In addition, tags and properties which are found in protocols are associated to define the type of device. Aggregation of components into a device and definition of the device type are based on a large set of rules with priorities that can be more or less complex. For example:

Click on a Schneider controller. A right side panel opens showing its components.



Modicon M580
Schneider PLCs ⚠ high
IP: 10.10.166.82 (+ 2 others)
MAC: 00:80:f4:18:a6:52 (+ 1 other)

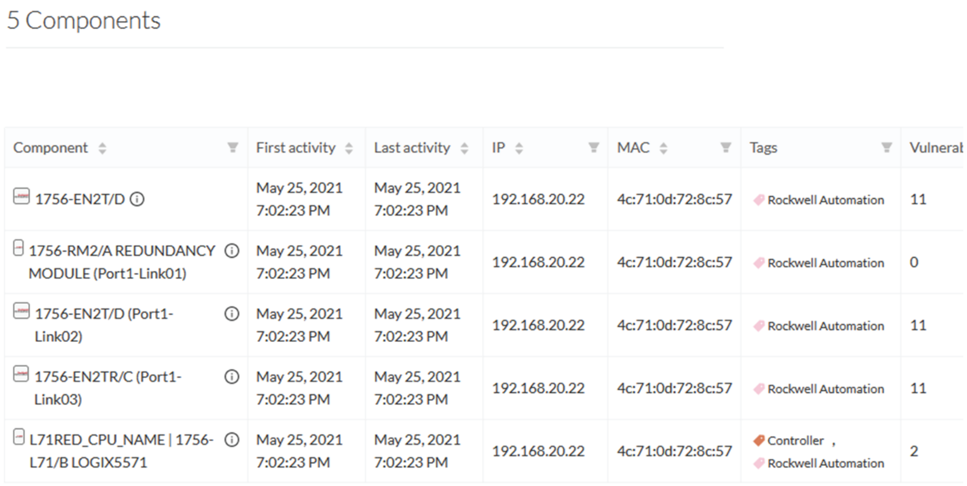
First activity
May 25, 2021 7:04:02 PM

Last activity
May 25, 2021 7:04:02 PM

Sensor: -
Tags: Controller , Web Server
Activity tags: Program Download , Program Upload , Start CPU , Stop CPU , Insecure , Diagnostics , PLC Reservation , Read Memory , Read Var , Write Var ...9+
Risk score: 80 See details
Components: Telemecanique 192.168.10.1
Telemecanique 10.10.166.82
Mx80 Ethernet: CPU
Telemecanique 18:a6:52
Modicon M580
Properties: fw-version: 2.80.0
ip: 10.10.166.82, , 192.168.0.68...

Devices can have a red counter badge. This is the number of vulnerabilities detected. For more information, refer to Vulnerabilities.

The list of a Rockwell Controller device's components (technical sheet > Basics > Components):



5 Components

Component	First activity	Last activity	IP	MAC	Tags	Vulnerab
1756-EN2T/D	May 25, 2021 7:02:23 PM	May 25, 2021 7:02:23 PM	192.168.20.22	4c:71:0d:72:8c:57	Rockwell Automation	11
1756-RM2/A REDUNDANCY MODULE (Port1-Link01)	May 25, 2021 7:02:23 PM	May 25, 2021 7:02:23 PM	192.168.20.22	4c:71:0d:72:8c:57	Rockwell Automation	0
1756-EN2T/D (Port1-Link02)	May 25, 2021 7:02:23 PM	May 25, 2021 7:02:23 PM	192.168.20.22	4c:71:0d:72:8c:57	Rockwell Automation	11
1756-EN2TR/C (Port1-Link03)	May 25, 2021 7:02:23 PM	May 25, 2021 7:02:23 PM	192.168.20.22	4c:71:0d:72:8c:57	Rockwell Automation	11
L71RED_CPU_NAME | 1756-L71/B LOGIX5571	May 25, 2021 7:02:23 PM	May 25, 2021 7:02:23 PM	192.168.20.22	4c:71:0d:72:8c:57	Controller , Rockwell Automation	2

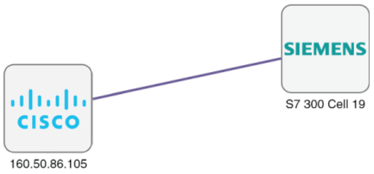
All these device's components have in common activity time, IPs, MACs, and tags. The Controller tag -which is a level 2 device tag, also considered as top priority in aggregation rules to define device type- detected on one of the components is applied at the device level and define the device type as Controller. The Rockwell Automation tag is a system tag which together with other properties is detected as the brand of the device.

For detailed information about which types of devices are detected per Level, see Tags.

Activity

An activity is the representation of the communications exchanged between devices or components. It is recognizable on the map by a line (or an arrow if the source and destination components are known) which links one component to another.

To access the map, choose **Explore** > **Control Systems Management** > **OT Activities** from the main menu. Click a component on the map to view its details.

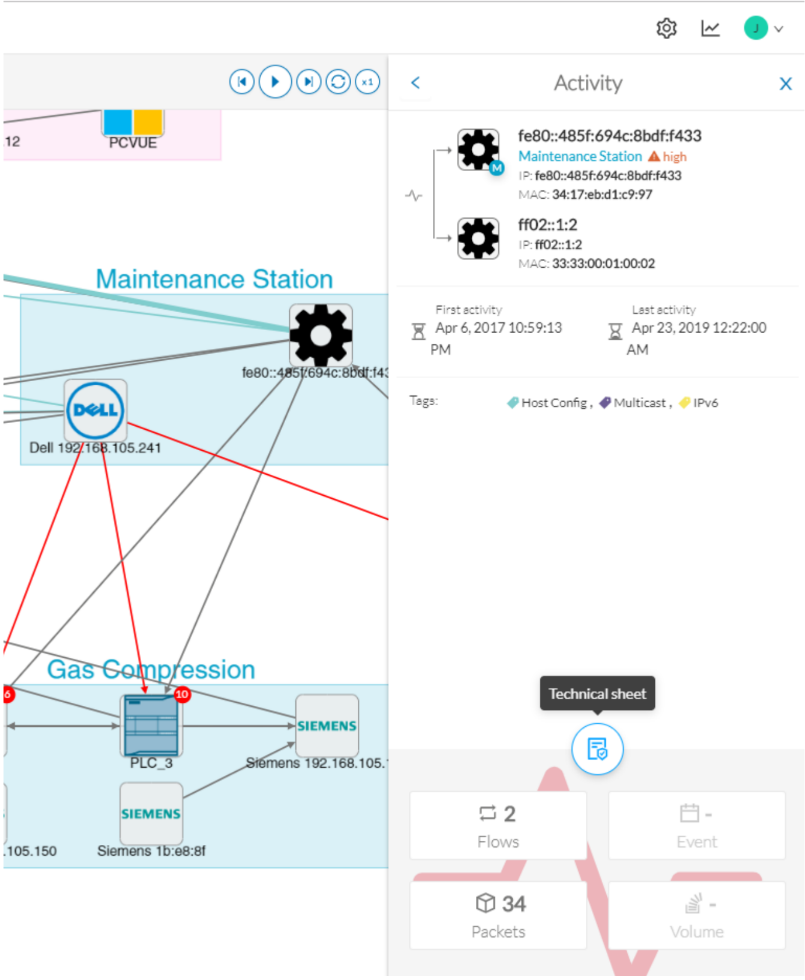


An activity between two components is actually a simplified view of the flows exchanged. You can have many types of flows going in both directions inside an activity, represented in the map.

When you click on an activity in the map, a right side panel opens, containing:

- The date of the first and last communication between the two components.
- Details about the components (name, IP, MAC and, if applicable, the group they are part of, and their criticality).
- The tags on the flows.
- The number of flows.

- The number of packets.
- The volume of data exchanged.
- The number of events.
- A button to access the technical sheet that shows more details about tags and flows.



fe80::485f:694c:8bdf:f433
Maintenance Station ⚠ high
IP: fe80::485f:694c:8bdf:f433
MAC: 34:17:eb:d1:c9:97

ff02::1:2
IP: ff02::1:2
MAC: 33:33:00:01:00:02

First activity
Apr 6, 2017 10:59:13 PM

Last activity
Apr 23, 2019 12:22:00 AM

Tags: Host Config , Multicast , IPv6

2
Flows

-
Event

34
Packets

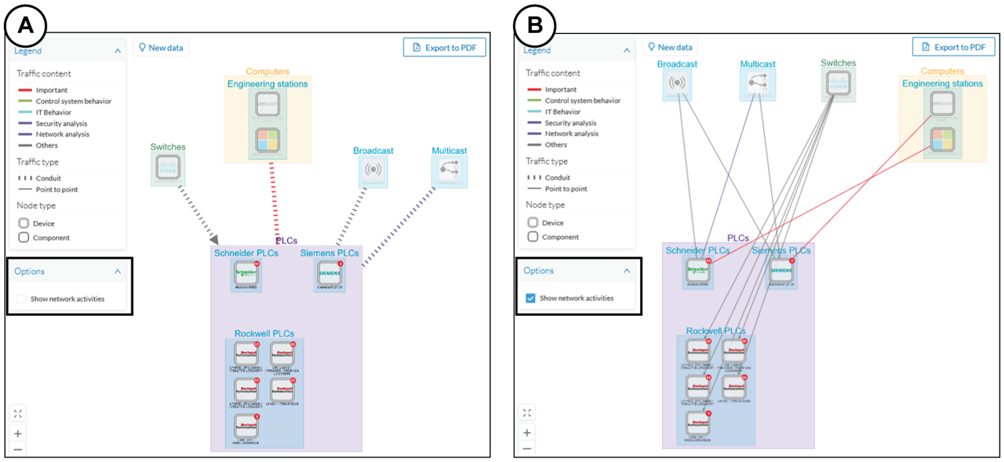
-
Volume

Devices or components with no activity does not mean that they did not have any interaction. In fact, a component can only be detected if it has been involved in a network activity (communication emission/reception). Lack of activity can mean that the other linked component is not part of the preset selected and so doesn't display.

Aggregated activities or conduits

When devices and components are placed inside groups, activities are aggregated to enhance visibility. Aggregated activities are called conduits..

Use the **Show network activities** button at the lower left side of the map to turn on/off the simplified view of the activities between groups. This feature is turned on by default.

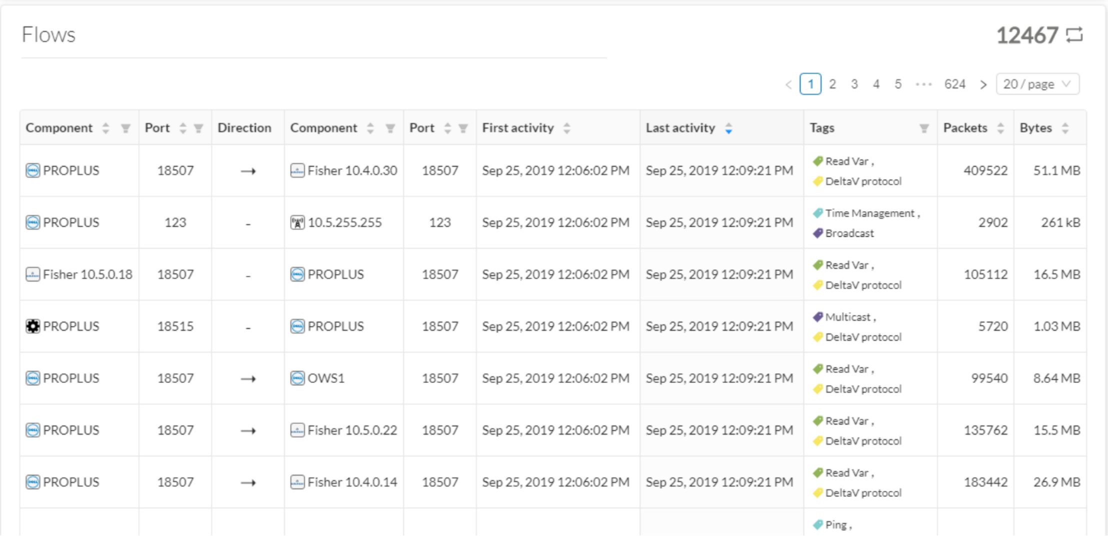


Flow

A flow is a single communication exchanged between two components. A group of flows forms an activity, which is identifiable on the Map by a line that links one component to another.

To access a flow: click a component on the map. The side panel appears. Click the Technical sheet icon > **Activity**. Or, click the **Flows** tile from the right side panel.

The Activity tab contains a list of flows which gives you detailed information about each single flow: number of flows in the activity, source and destination components (if known), ports used, first and last activity, and tags which characterize each flow.



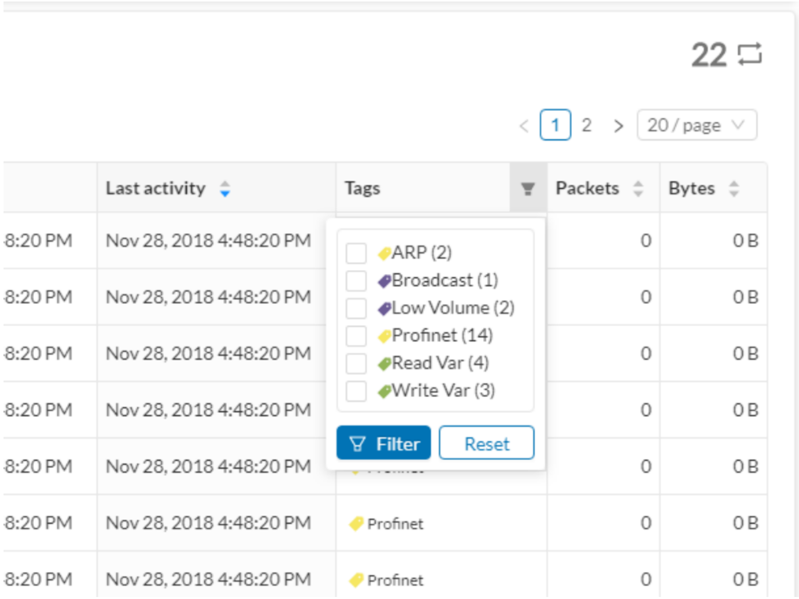
Flows

12467

< 1 2 3 4 5 ··· 624 > 20 / page

Component	Port	Direction	Component	Port	First activity	Last activity	Tags	Packets	Bytes
PROPLUS	18507	→	Fisher 10.4.0.30	18507	Sep 25, 2019 12:06:02 PM	Sep 25, 2019 12:09:21 PM	Read Var , DeltaV protocol	409522	51.1 MB
PROPLUS	123	-	10.5.255.255	123	Sep 25, 2019 12:06:02 PM	Sep 25, 2019 12:09:21 PM	Time Management , Broadcast	2902	261 kB
Fisher 10.5.0.18	18507	-	PROPLUS	18507	Sep 25, 2019 12:06:02 PM	Sep 25, 2019 12:09:21 PM	Read Var , DeltaV protocol	105112	16.5 MB
PROPLUS	18515	-	PROPLUS	18507	Sep 25, 2019 12:06:02 PM	Sep 25, 2019 12:09:21 PM	Multicast , DeltaV protocol	5720	1.03 MB
PROPLUS	18507	→	OWS1	18507	Sep 25, 2019 12:06:02 PM	Sep 25, 2019 12:09:21 PM	Read Var , DeltaV protocol	99540	8.64 MB
PROPLUS	18507	→	Fisher 10.5.0.22	18507	Sep 25, 2019 12:06:02 PM	Sep 25, 2019 12:09:21 PM	Read Var , DeltaV protocol	135762	15.5 MB
PROPLUS	18507	→	Fisher 10.4.0.14	18507	Sep 25, 2019 12:06:02 PM	Sep 25, 2019 12:09:21 PM	Read Var , DeltaV protocol	183442	26.9 MB
							Ping ,		

The number of flows can be very important (there could be thousands). Consequently, filters are available in the table to sort flows by typing a component, a port, selecting tags, etc.



	Last activity	Tags	Packets	Bytes
8:20 PM	Nov 28, 2018 4:48:20 PM		0	0 B
8:20 PM	Nov 28, 2018 4:48:20 PM		0	0 B
8:20 PM	Nov 28, 2018 4:48:20 PM		0	0 B
8:20 PM	Nov 28, 2018 4:48:20 PM		0	0 B
8:20 PM	Nov 28, 2018 4:48:20 PM		0	0 B
8:20 PM	Nov 28, 2018 4:48:20 PM	Profinet	0	0 B
8:20 PM	Nov 28, 2018 4:48:20 PM	Profinet	0	0 B

You can click on each flow in the list to have access to the flow's technical sheet for further information about the flow's properties and tags.

External Communication

An external communication is a communication initiated between a component/device inside a monitored network and an external component/device.

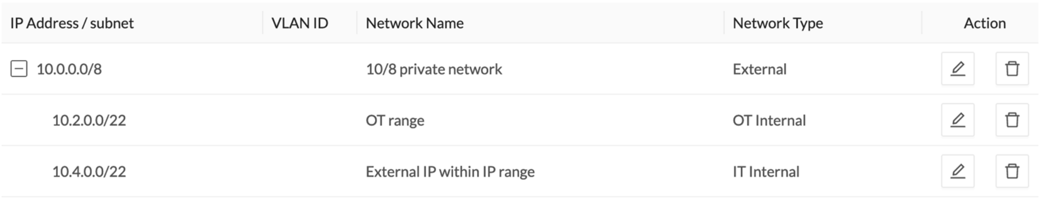
External communications are stored and listed in Cisco Cyber Vision, but not the external components/devices, nor their flows, to not obstruct the system. As a result, Cisco Cyber Vision's performances are increased, the GUI is cleared from unecessary data, and the license device count and risk scores are limited to inner devices and more accurate.

By default, external communications are defined as such through the detection of external components' IP addresses that **do not** meet with private IP address formats.

IP addresses that meet with private formats are considered as internal by default and are processed under stored components or devices and are displayed in Cisco Cyber Vision.

However, because sometimes public IP addresses are used in a private network of an industrial site, it is possible to manually define communications by declaring IP ranges as internal or external through the Network Organization administration page. For more information, refer to Cisco Cyber Vision GUI Administration Guide.

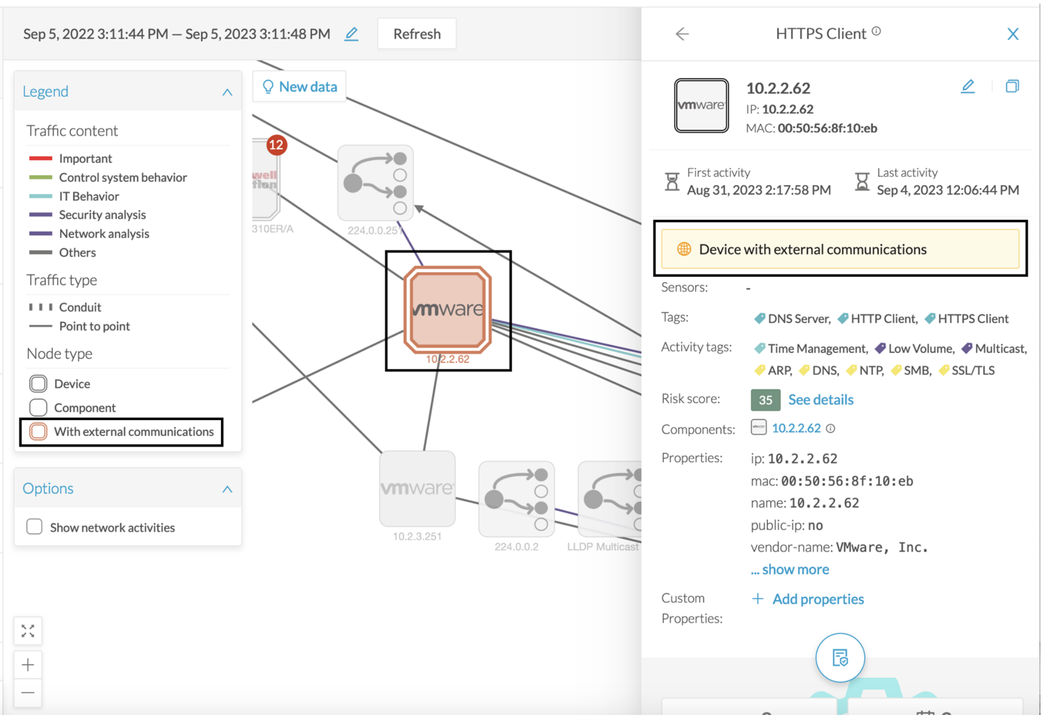
It is also possible to declare as external all or part of a private subnetwork. For example to filter some IT components/devices which are not relevant for Cisco Cyber Vision.



IP Address / subnet	VLAN ID	Network Name	Network Type	Action
⊟ 10.0.0.0/8		10/8 private network	External	✎ 🗑
10.2.0.0/22		OT range	OT Internal	✎ 🗑
10.4.0.0/22		External IP within IP range	IT Internal	✎ 🗑

In the GUI, a component with external communications is shown as an icon bordered in orange, or a double orange border for a device.

A device with external communications in the Map:



10.2.2.62
IP: 10.2.2.62
MAC: 00:50:56:8f:10:eb

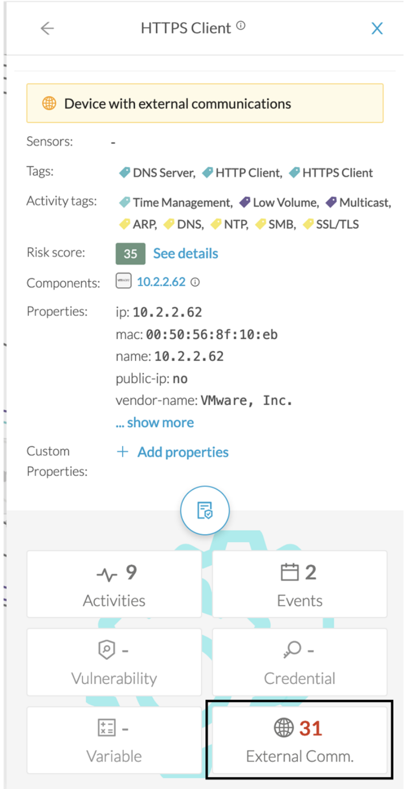
First activity Aug 31, 2023 2:17:58 PM
Last activity Sep 4, 2023 12:06:44 PM

Device with external communications

Sensors: -
Tags: DNS Server, HTTP Client, HTTPS Client
Activity tags: Time Management, Low Volume, Multicast, ARP, DNS, NTP, SMB, SSL/TLS
Risk score: 35 See details
Components: 10.2.2.62
Properties: ip: 10.2.2.62
mac: 00:50:56:8f:10:eb
name: 10.2.2.62
public-ip: no
vendor-name: VMware, Inc.
... show more
Custom Properties: + Add properties

If you click on this component, its right side panel will appear. The **External Communications** button with the number of external communications will open the component's technical sheet directly on the external communications list.

*The device's right side panel and the **External Communications** button:*



HTTPS Client

Device with external communications

Sensors: -

Tags: DNS Server, HTTP Client, HTTPS Client

Activity tags: Time Management, Low Volume, Multicast, ARP, DNS, NTP, SMB, SSL/TLS

Risk score: 35 See details

Components: 10.2.2.62

Properties:
ip: `10.2.2.62`
mac: `00:50:56:8f:10:eb`
name: `10.2.2.62`
public-ip: `no`
vendor-name: `VMware, Inc.`
... show more

Custom Properties: + Add properties

9 Activities

2 Events

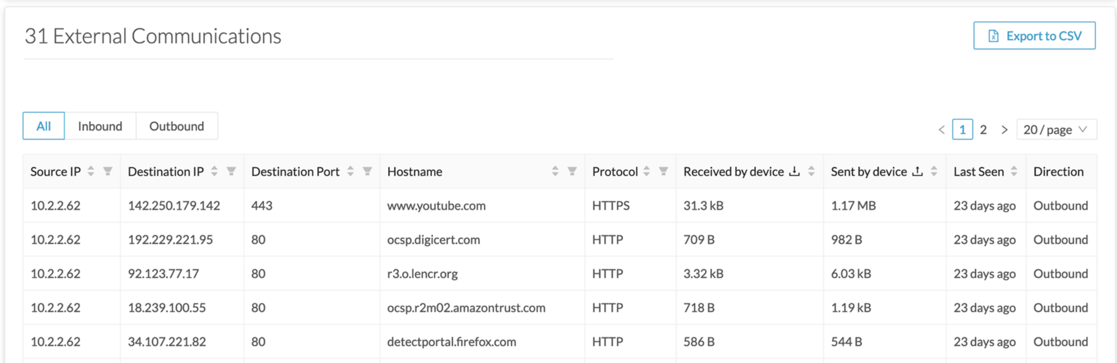
- Vulnerability

- Credential

- Variable

31 External Comm.

The external communications list in the device's technical sheet:



31 External Communications

Source IP	Destination IP	Destination Port	Hostname	Protocol	Received by device	Sent by device	Last Seen	Direction
10.2.2.62	142.250.179.142	443	www.youtube.com	HTTPS	31.3 kB	1.17 MB	23 days ago	Outbound
10.2.2.62	192.229.221.95	80	ocsp.digicert.com	HTTP	709 B	982 B	23 days ago	Outbound
10.2.2.62	92.123.77.17	80	r3.o.lencr.org	HTTP	3.32 kB	6.03 kB	23 days ago	Outbound
10.2.2.62	18.239.100.55	80	ocsp.r2m02.amazontrust.com	HTTP	718 B	1.19 kB	23 days ago	Outbound
10.2.2.62	34.107.221.82	80	detectportal.firefox.com	HTTP	586 B	544 B	23 days ago	Outbound

The list shows details about external communications such as source and destination IPs, destination port, hostname, protocol, whether they are inbound or outbound, etc.

It is possible to export this list using the **Export to CSV** button.

Time Span

Cisco Cyber Vision is a real-time monitoring solution. The views are continuously updated with network data. You can view the network activity during a defined period of time by selecting a **time span**. Use **time span** to filter data, based on the time you select. This feature is available on each preset's view.

To access the timespan settings, follow these steps:

- From the main menu, choose **Explore** > **All data**.
- Click the dropdwn arrow at the top center of the page.
- Select **Device list** from the drop-down list.
- To set a time span, click the pencil icon.

  The **TIMESPAN SETTING** window appears.
- To set a **Duration**, click the drop-down arrow and select duration time (from 10 seconds to 1 day) or a custom period up to the present.
- To set a **Time window**, select a start date and (optionally) an end date.

  Note If you don't select an end date, the end date will set to now.

  Set a time window to see everything that has happened during the selected period of time, such as historical data or to check the network activity (in case of on-site intrusion or accident).
- Click **Refresh** to compute network data.

Note No data display is often due to a time span set on an empty period. Remember to first set a long period of time (such as 12 months) before troubleshooting.

Recommendations:

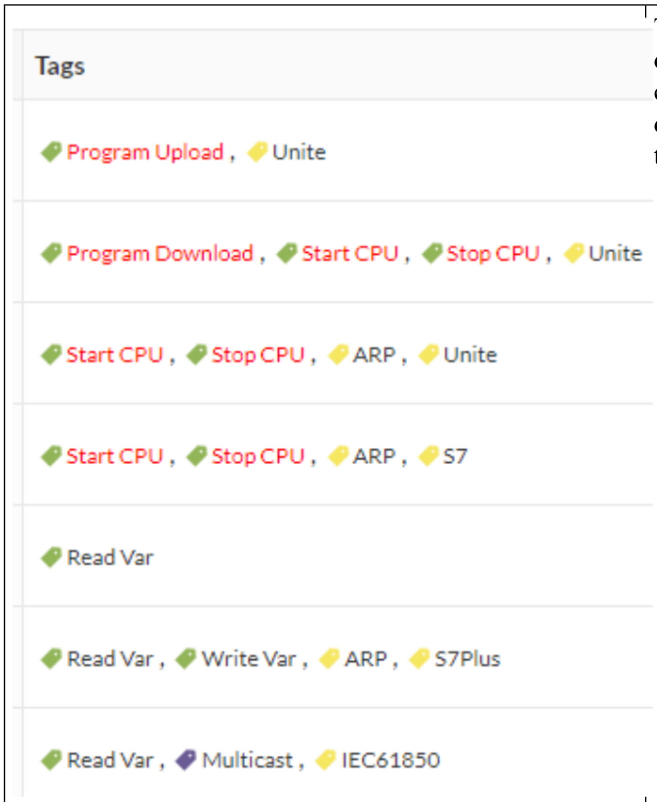
Generally, you can set the time period to 1 or 2 days. This setting is convenient to have an overall view of most supervised standard network activities. This includes daily activities such as maintenance checks and backups.

Adjust the time frame for the following:

- Set a period of a few minutes to have more visibility on what is *currently* happening on the network.
- Set a period of a few hours to have a view of the daily activity or set a time to see what has happened during the night, the weekend, etc.
- Set limits to view what happened during the night/weekend.
- Set limits to focus on a time frame close to a specific event.

Tags

Definition of Tags



Tags
Program Upload , Unite
Program Download , Start CPU , Stop CPU , Unite
Start CPU , Stop CPU , ARP , Unite
Start CPU , Stop CPU , ARP , S7
Read Var
Read Var , Write Var , ARP , S7Plus
Read Var , Multicast , IEC61850

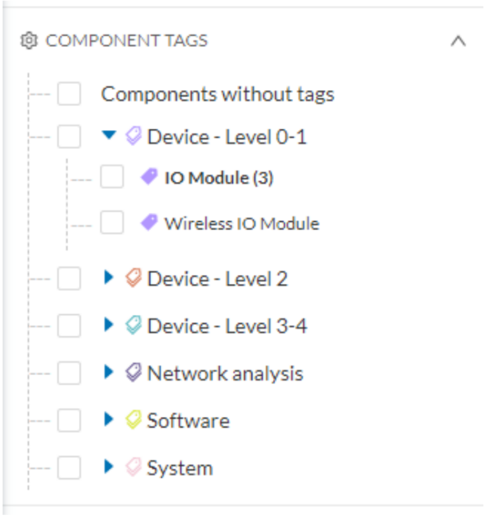
Tags are meaningful labels that succinctly describe a network. They can be applied to components or activities. Each tag has a description and an icon color which correspond to its category.

Tags are metadata on devices and activities. Tags are generated according to the properties of components. There are two types of tags:

- **Device tags** describe the functions of the device or component and are correlated to its properties. A device tag is generated at the component level and synthesized at the device level (which is an aggregation of components).
- **Activity tags** describe the protocols used and are correlated to its properties. An activity tag is generated at the flow level and synthesized at the activity level (which is a group of flows between two components).

Each tag is classified under categories, located in the filtering area.

The device tags categories (Device - Level 0-1, Device - Level 2, etc.) and some tags (IO Module, Wireless IO Module) in the filtering area:



COMPONENT TAGS

- □ Components without tags
- □ Device - Level 0-1
  - □ IO Module (3)
  - □ Wireless IO Module
- □ Device - Level 2
- □ Device - Level 3-4
- □ Network analysis
- □ Software
- □ System

Note Device levels are based on the definitions from the ISA-95 international standard.

Tag Use

Use Cisco Cyber Vision tags primarily to explore the network. Criteria set on presets are significantly based on tags to filter the different views.

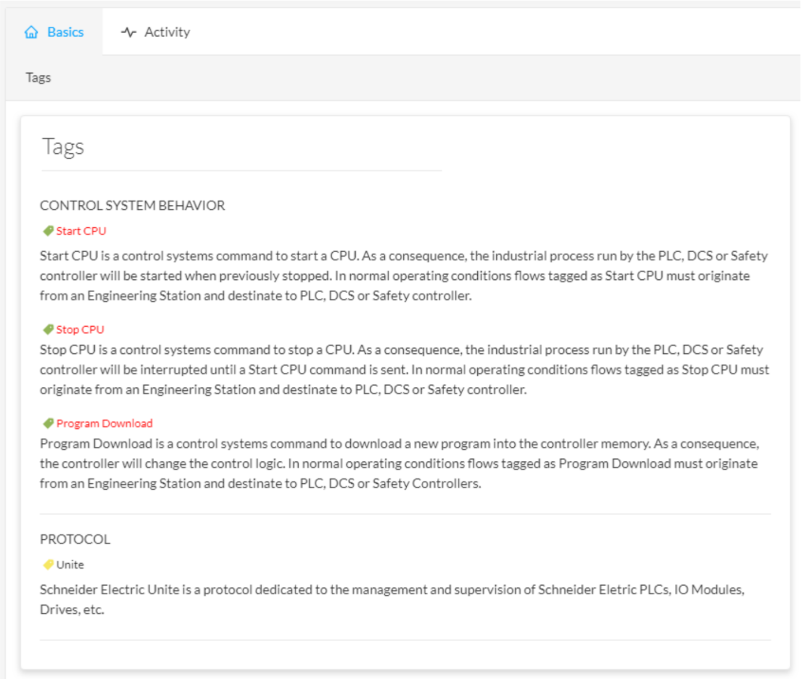
Use tags to define behaviors (i.e., in the Monitor mode) inside an industrial network when combined with information like source and destination ports and flow properties.

Tag Location

Find tags almost everywhere in Cisco Cyber Vision, from criteria, which are based on tags to filter network data, to the different views available. Views filter and use tags differently. For example, the dashboard shows the preset's results, showing tags over other correlated data. The device list highlights devices, over data like tags. For more information, see the different types of view in Navigating through Cisco Cyber Vision..

For detailed information about a tag, see the **Basic** tab inside a technical sheet.

Below is an example of tag definitions.



Tags

CONTROL SYSTEM BEHAVIOR

Start CPU

Start CPU is a control systems command to start a CPU. As a consequence, the industrial process run by the PLC, DCS or Safety controller will be started when previously stopped. In normal operating conditions flows tagged as Start CPU must originate from an Engineering Station and destinate to PLC, DCS or Safety controller.

Stop CPU

Stop CPU is a control systems command to stop a CPU. As a consequence, the industrial process run by the PLC, DCS or Safety controller will be interrupted until a Start CPU command is sent. In normal operating conditions flows tagged as Stop CPU must originate from an Engineering Station and destinate to PLC, DCS or Safety controller.

Program Download

Program Download is a control systems command to download a new program into the controller memory. As a consequence, the controller will change the control logic. In normal operating conditions flows tagged as Program Download must originate from an Engineering Station and destinate to PLC, DCS or Safety Controllers.

PROTOCOL

Unite

Schneider Electric Unite is a protocol dedicated to the management and supervision of Schneider Eletric PLCs, IO Modules, Drives, etc.

Properties

Property Definition

Properties are information such as IP and MAC addresses, hardware and firmware versions, serial number, etc. that qualify devices, components and flows. The sensor extracts flow properties from the packets captured. The Center then deduces components properties and then devices properties out of flow properties. Some properties are normalized for all devices and components and some properties are protocol or vendor specific.

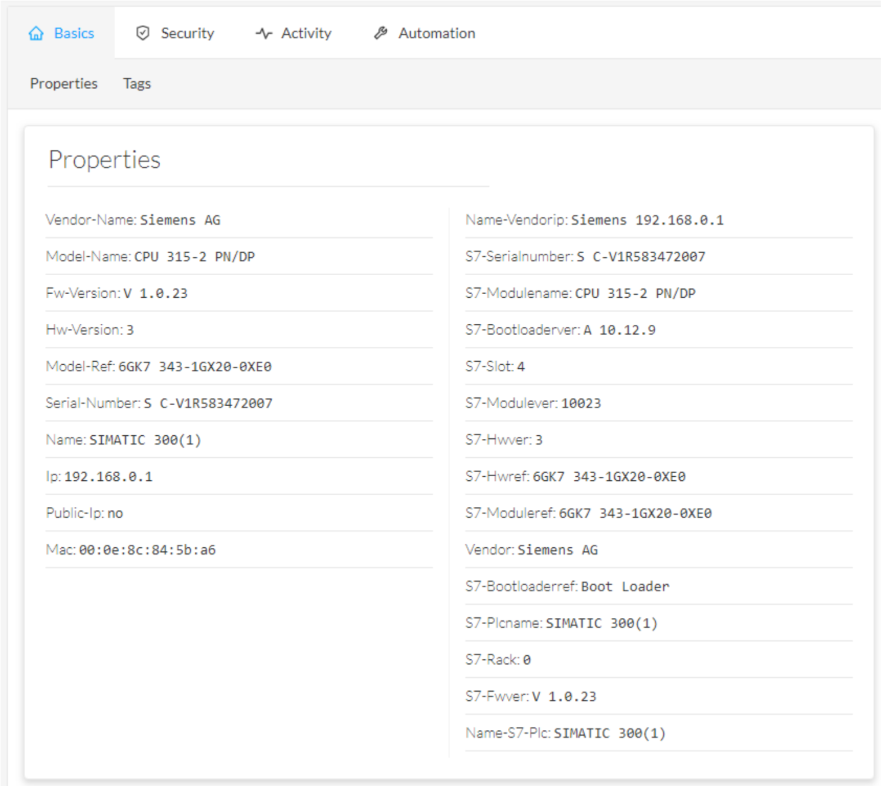
Property Use

Properties provide details about devices, components and flows, and are crucial in Cisco Cyber Vision in generating tags. A combination of properties and tags are used to define behaviors (i.e., in the Monitor mode) inside the industrial network.

Property Location

View Properties from devices and components right side panels and technical sheets under the **Basics** tab.

Below is an example of a technical sheet with normalized properties on the left column, and protocol and vendor specific properties on the right column.



Properties

Vendor-Name: Siemens AG

Model-Name: CPU 315-2 PN/DP

Fw-Version: V 1.0.23

Hw-Version: 3

Model-Ref: 6GK7 343-1GX20-0XE0

Serial-Number: S C-V1R583472007

Name: SIMATIC 300(1)

Ip: 192.168.0.1

Public-Ip: no

Mac: 00:0e:8c:84:5b:a6

Name-Vendorip: Siemens 192.168.0.1

S7-Serialnumber: S C-V1R583472007

S7-Modulename: CPU 315-2 PN/DP

S7-Bootloaderver: A 10.12.9

S7-Slot: 4

S7-Modulever: 10023

S7-Hwver: 3

S7-Hwref: 6GK7 343-1GX20-0XE0

S7-Moduleref: 6GK7 343-1GX20-0XE0

Vendor: Siemens AG

S7-Bootloaderref: Boot Loader

S7-Plcname: SIMATIC 300(1)

S7-Rack: 0

S7-Fwver: V 1.0.23

Name-S7-Plc: SIMATIC 300(1)

Note Protocol and vendor-specific properties evolve as more protocols are supported by Cisco Cyber Vision.

Vulnerability

Definition of Vulnerabilities

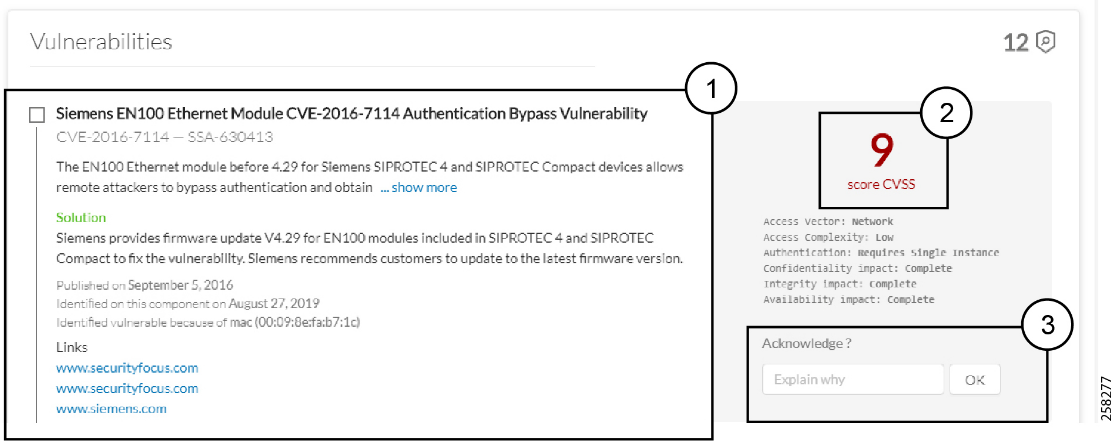
Vulnerabilities are weaknesses detected on devices that can be exploited by a potential attacker to perform malevolent actions on the network.

Cisco Cyber Vision detects **Vulnerabilities** in the rules stored in the **Knowledge** database. These rules are sourced from several CERTs (Computer Emergency Response Team), manufacturers and partner manufacturers (Schneider, Siemens, etc.). Vulnerabilities are generated from the correlation of the Knowledge database rules and normalized device and component properties. A vulnerability is detected when a device or a component matches a Knowledge database rule.

Important Always update the Knowledge database in Cisco Cyber Vision as soon as possible after notification of a new version. This protects your network against vulnerabilities. See Knowledge DB to update knowledge database.

Vulnerability Use

Below is an example of a Siemens component's vulnerability. See the technical sheet, Security tab.



Vulnerabilities 12

□ Siemens EN100 Ethernet Module CVE-2016-7114 Authentication Bypass Vulnerability

CVE-2016-7114 – SSA-630413

The EN100 Ethernet module before 4.29 for Siemens SIPROTEC 4 and SIPROTEC Compact devices allows remote attackers to bypass authentication and obtain ... show more

Solution

Siemens provides firmware update V4.29 for EN100 modules included in SIPROTEC 4 and SIPROTEC Compact to fix the vulnerability. Siemens recommends customers to update to the latest firmware version.

Published on September 5, 2016
Identified on this component on August 27, 2019
Identified vulnerable because of mac (00:09:8e:fa:b7:1c)

Links
www.securityfocus.com
www.securityfocus.com
www.siemens.com

9
score CVSS

```
Access Vector: Network
Access Complexity: Low
Authentication: Requires Single Instance
Confidentiality impact: Complete
Integrity impact: Complete
Availability impact: Complete
```

Acknowledge ?

Explain why OK

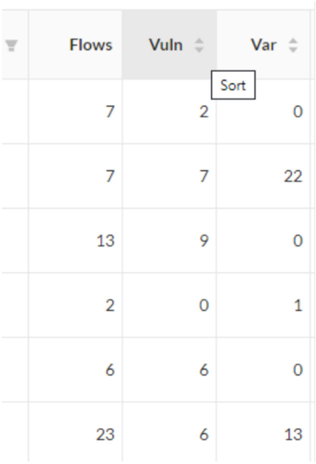
1. **Information** displayed about vulnerabilities includes the following: vulnerability type and reference, possible consequences, and solutions or actions to take on the network. Often, upgrading the device firmware alleviates a vulnerability. Links to the manufacturer website are also available.

2. A **score** reports the severity of the vulnerability. The score is calculated upon criteria from the Common Vulnerability Scoring System (CVSS). Criteria examples are: the ease of attack, its impacts, the importance of the component on the network, and whether actions can be taken remotely or not. Scores range from 0 to 10, with 10 being the most critical score.

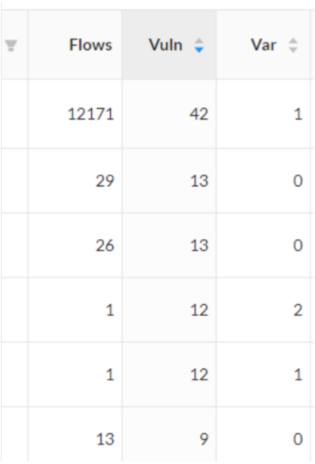
3. **Acknowledge** a vulnerability if you don't want to be notified about it anymore. For example: a PLC is detected as vulnerable but a firewall or a security module is placed ahead. The vulnerability is mitigated. Cancel an **Acknowledgment** at any time. Only the Admin, Product, and Operator users can access **Vulnerabilities Acknowledgment/Cancelation**.

Vulnerability Location

Access Vulnerabilities in any of the following ways: click **Explore** > **All Data** > **Vulnerabilities**, use **Vulnerabilities** preset view, or through the **Device list**. Use the **Sort arrows** to view the vulnerability column.

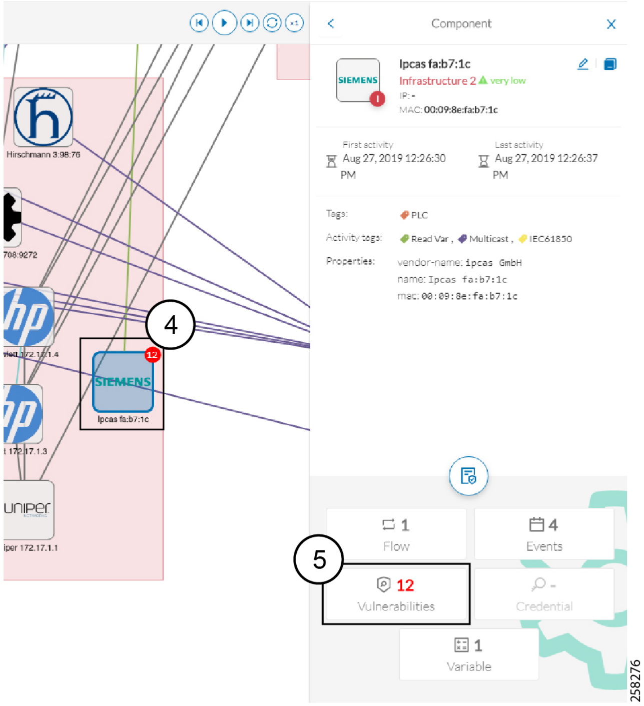


	Flows	Vuln	Var
	7	2	0
	7	7	22
	13	9	0
	2	0	1
	6	6	0
	23	6	13



	Flows	Vuln	Var
	12171	42	1
	29	13	0
	26	13	0
	1	12	2
	1	12	1
	13	9	0

Find vulnerabilities on the map by a device or a component with a red counter badge. Click the badge **(4)** and the side panel opens with the number of vulnerabilities shown in red.



Component

Ipcas fa:b7:1c
Infrastructure 2 very low
IP: -
MAC: 00:09:8e:fa:b7:1c

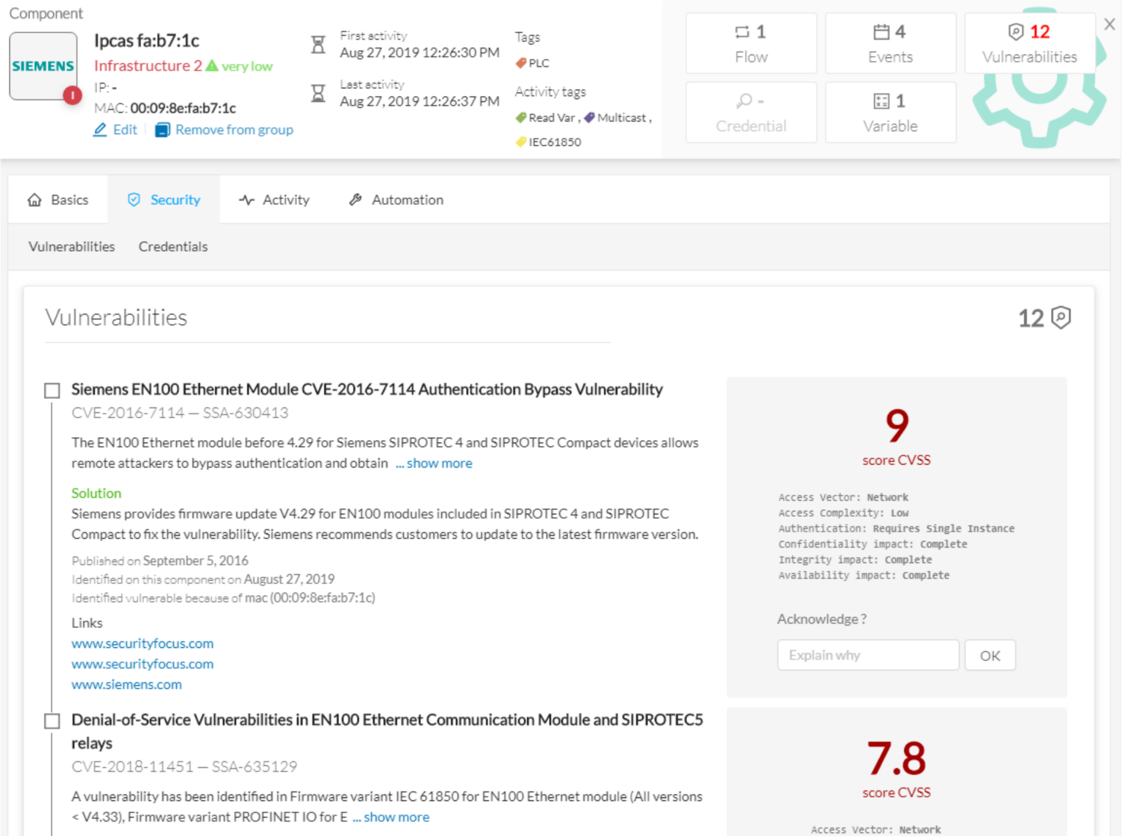
First activity
Aug 27, 2019 12:26:30 PM

Last activity
Aug 27, 2019 12:26:37 PM

Tags: PLC
Activity tags: Read Var , Multicast , IEC61850
Properties: vendor-name: ipcas GmbH
name: Ipcas fa:b7:1c
mac: 00:09:8e:fa:b7:1c

1 Flow
4 Events
12 Vulnerabilities
- Credential
1 Variable

Click the **Vulnerabilities** in red **(5)** and the device or component's technical sheet opens.



Component

Ipcas fa:b7:1c
Infrastructure 2 very low
IP: -
MAC: 00:09:8e:fa:b7:1c
Edit | Remove from group

First activity
Aug 27, 2019 12:26:30 PM

Last activity
Aug 27, 2019 12:26:37 PM

Tags
PLC

Activity tags
Read Var , Multicast , IEC61850

1 Flow
4 Events
12 Vulnerabilities
- Credential
1 Variable

Basics | Security | Activity | Automation

Vulnerabilities | Credentials

Vulnerabilities 12

□ Siemens EN100 Ethernet Module CVE-2016-7114 Authentication Bypass Vulnerability
CVE-2016-7114 — SSA-630413

The EN100 Ethernet module before 4.29 for Siemens SIPROTEC 4 and SIPROTEC Compact devices allows remote attackers to bypass authentication and obtain ... show more

Solution
Siemens provides firmware update V4.29 for EN100 modules included in SIPROTEC 4 and SIPROTEC Compact to fix the vulnerability. Siemens recommends customers to update to the latest firmware version.

Published on September 5, 2016
Identified on this component on August 27, 2019
Identified vulnerable because of mac (00:09:8e:fa:b7:1c)

Links
www.securityfocus.com
www.securityfocus.com
www.siemens.com

9
score CVSS

```
Access Vector: Network
Access Complexity: Low
Authentication: Requires Single Instance
Confidentiality impact: Complete
Integrity impact: Complete
Availability impact: Complete
```

Acknowledge ?
Explain why | OK

□ Denial-of-Service Vulnerabilities in EN100 Ethernet Communication Module and SIPROTEC5 relays
CVE-2018-11451 — SSA-635129

A vulnerability has been identified in Firmware variant IEC 61850 for EN100 Ethernet module (All versions < V4.33), Firmware variant PROFINET IO for E ... show more

7.8
score CVSS

```
Access Vector: Network
```

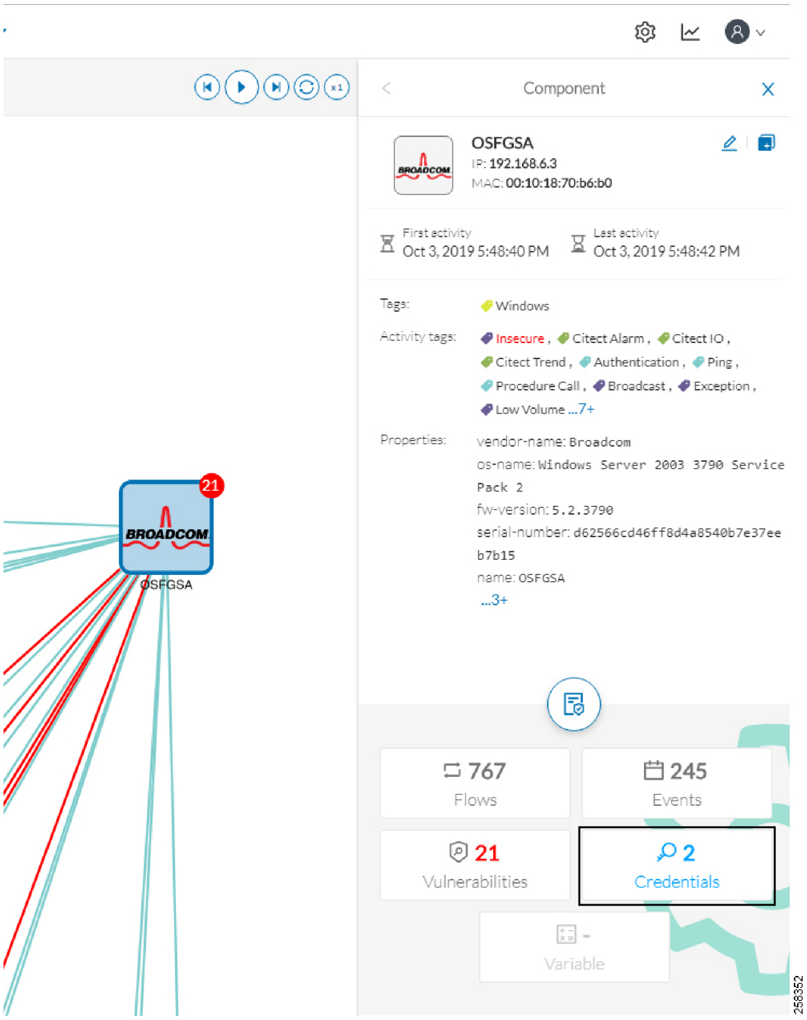
Events

An Events occurs if a device or component gets detected as vulnerable. You receive a notification. One event is generated per vulnerable component. An event is also generated each time a vulnerability is acknowledged or not vulnerable anymore.

Credentials

Credentials are logins and passwords that circulate between components over the network. Such sensitive data sometimes carry cleartext passwords when unsafe. If credentials are visible on Cisco Cyber Vision, then they are potentially visible to anyone on the network. Credential visibility triggers awareness and actions to be taken to properly secure the protocols used on a network.

*Below is a **Details** panel of a component showing the number of credentials detected.*



OSFGSA
IP: 192.168.6.3
MAC: 00:10:18:70:b6:b0

First activity
Oct 3, 2019 5:48:40 PM

Last activity
Oct 3, 2019 5:48:42 PM

Tags: Windows

Activity tags: Insecure , Citect Alarm , Citect IO , Citect Trend , Authentication , Ping , Procedure Call , Broadcast , Exception , Low Volume ...7+

Properties:
vendor-name: Broadcom
os-name: Windows Server 2003 3790 Service Pack 2
fw-version: 5.2.3790
serial-number: d62566cd46ff8d4a8540b7e37eeb7b15
name: OSFGSA
...3+

767 Flows
245 Events
21 Vulnerabilities
2 Credentials
- Variable

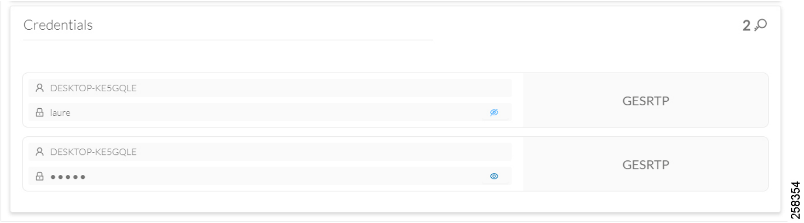
Credential frames are extracted from the network in Deep Packet Inspection. Use the technical sheet of a compoent to access **Credentials**. Click the **Security** tab.

1. The number of credentials found.
2. The protocol used.

3. The user name and password. If a password appears in clear text, then action should be taken to secure it whether it is hashed or not.

4. How to reveal the credentials.

An unsafe password:



Credentials 2

DESKTOP-KE5GQLE

laure

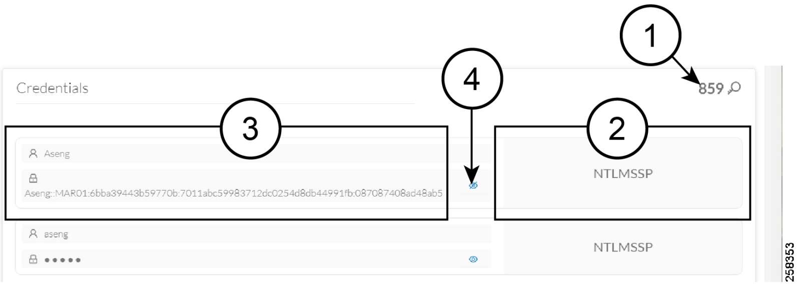
GESRTP

DESKTOP-KE5GQLE

•••••

GESRTP

A hashed password:



Credentials 859

Aseng

Aseng::MAR01:6bba39443b59770b:7011abc59983712dc0254d8db44991fb:087087408ad48ab5

NTLMSSP

aseng

•••••

NTLMSSP

Variable accesses

Variable accesses are process control monitoring records that

- track when devices, such as PLCs or data servers, read from or write to variables,
- record which component performed each access, and
- log the timestamp of each event for operational supervision and security auditing.

Table 5: Feature History Table

Feature	Release Information	Feature Description
Detect and process variable data	Release 5.3.x	Sensors capture and relay measurable variables, such as pressure or temperature, to Cisco Cyber Vision Center. Enable Variables Storage in the **Admin** > **Data Management** > **Ingestion Configuration** page of Cisco Cyber Vision Center. This allows the center to add the variables to the database for processing.

Significance of variable accesses

Industrial process equipment, like PLCs and OPC data servers, use variables to store values such as temperatures, control settings, or sensor readings. A variable access occurs whenever a system component reads or writes one of these values. Each access is associated with a specific variable name and a physical memory address on the equipment.

Monitor variable accesses to maintain process integrity. Unexpected writes can indicate an attacker attempting to influence equipment operation. Solutions like Cisco Cyber Vision automatically report detected variable accesses, helping operators identify unauthorized or abnormal activity.

Examples:

- Reading the temperature of an industrial oven from its PLC controller is a variable access.
- Writing a new temperature setpoint to the oven's PLC is also a variable access.
- Multiple controllers may access the same variable, as when one PLC reads a value that another PLC writes.

Variable accesses details

The variable accesses table provides detailed information on each variable access detected on industrial network equipment. You can review, sort, and investigate variable activity for operational or security purposes.

Table 6: Fields in the variable accesses table

Field	Description
Variable name	The identifier or label of the variable accessed.
Type	Indicates whether access is READ or WRITE, but does not show the variable's value.
Component	Shows which device or system accessed the variable (for example, a PLC model or OPC server).
First accessed	The timestamp of the first access event for the variable by the component.
Last accessed	The timestamp of the most recent access for the variable by the component.

To locate variable access information

- To view more details about variable accesses, open the technical sheet for the component. For a focused view, select **Automation** or refer to PLC access reports.
- The component list view displays the total number of variable accesses per device. You can sort this list by the "var" column.
- For detailed information on a specific component's variable accesses, click the component.

Enable variable processing in a sensor template

Variable processing enables the center to detect and collect measurable variables from network traffic for monitoring and analysis. Sensors identify these variables and return them to the center.

Before you begin

Enable **Variable Storage**.

1. From the main menu, choose **Admin** > **Data Management** > **Ingestion Configuration**.
2. Enable **Variable Storage** and save changes.

Note **Variable Storage** is disabled by default.

Procedure

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

Step 2 Locate the template and select **Edit** from the **Actions** column.

Note
You can also create a new template.

Step 3 Locate the protocols with variable inspection capability.

Step 4 Check the checkbox under the **Variable Processing** column.

Step 5 Save changes.

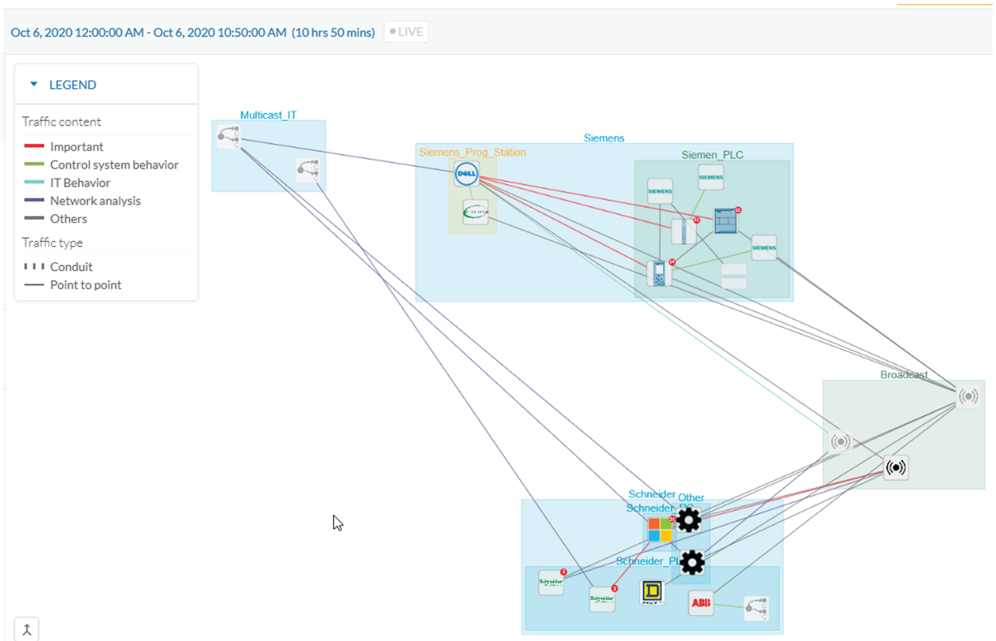
After you complete the configuration, the center sends information to the sensors. The sensors process and identify the variables. You can view detected variables in the center.

What to do next

To view **Variable accesses**, choose **Explore** > **All Data** > **Device list**, select a device, click **Variable** in the drawer, then click **Automation**.

Creating and Customizing Groups

Accessibility: Admin, Product and Operator users



You can organize devices and components into groups to add meaning to your network representation. For example, group components according to the devices' location, process, severity, type, etc. You can also create nested groups inside a parent's group. This adds a group into another group to create several layers and structure the data.

To create a group:

Procedure

Step 1 From the main menu, choose **Explore**.

Step 2 Click the drop-down arrow in the top navigation bar and select **All Data** under **Basics**.

Step 3 Click the drop-down arrow in the third filter of the top navigation bar and select **Device list** or **Map**.

Step 4 Select device(s) or components from the **Map** or the **Device list** interface.

Tip: To select multiple components in the map, press **Shift** and click the devices or components, or press **Ctrl** and draw a selection box. In the **Device list** view, use the check boxes.

A **My Selection** right-side panel appears.

Step 5 Click **Manage selection**.

The drop-down list appears.

Step 6 Click **Create a new parent group** from the drop-down list.

A **CREATE A NEW PARENT GROUP** window appears.

Step 7 Enter the **Name** of the new parent group.

Step 8 Enter **Description** to customize the group and define its industrial impact.

For example, a PLC that controls a robotic arm is highly critical.

Step 9 Change **Color** under **Customization** field.

Step 10 Enter **Properties**.

Step 11 Add the group to a parent group, if already created.

To create a parent group:

The following are several ways to create a hierarchy among groups:

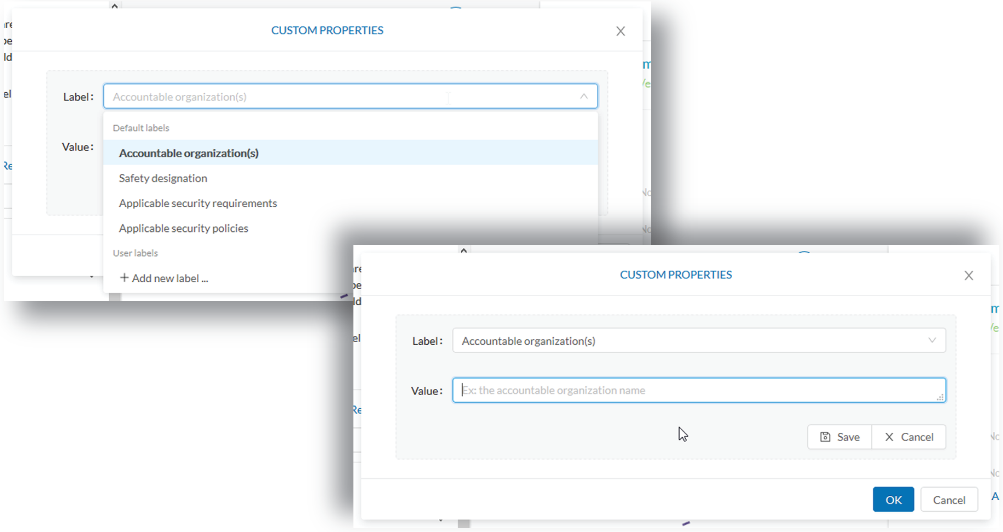
- Select two groups and create a group, as indicated above.
- Select a device or a component and move it into a group. Use the **Move selection to existing group** button.
- Select a group and move it to another group. Use **Move selection to existing group**.

Add group properties

Adding properties to a group can be useful to store specific information. The labels available fit the 62443 standard which specifies policies and requirements for system security. You can also add custom properties.

To add properties to a group:

- Select a group in the map and click **Edit** or **Add properties**.
- Choose/define a label and add a value.



CUSTOM PROPERTIES

Label: Accountable organization(s)

Value:

Default labels
Accountable organization(s)
Safety designation
Applicable security requirements
Applicable security policies
User labels
+ Add new label ...

CUSTOM PROPERTIES

Label: Accountable organization(s)

Value: Ex: the accountable organization name

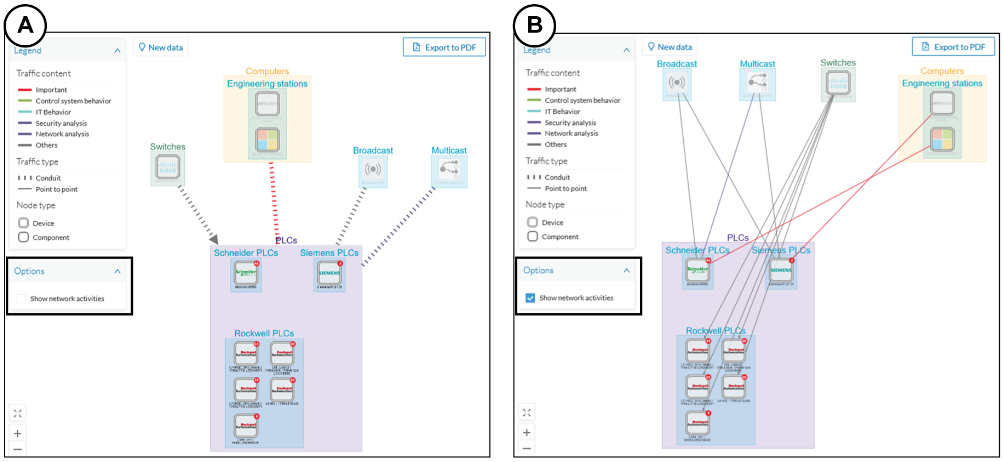
Save | Cancel

OK | Cancel

Aggregated activities are conduits

Placing devices and components inside groups aggregates the activities and enhances visibility. Aggregated activities are called conduits.

Use the **Show network activities** checkbox at the lower left side of the map to turn on/off the simplified view of the activities between groups. This feature is on by default.



Group Lock/Unlock

Locking a group:

- Prevents adding or removing components from the group.
- Prevents a group deletion.

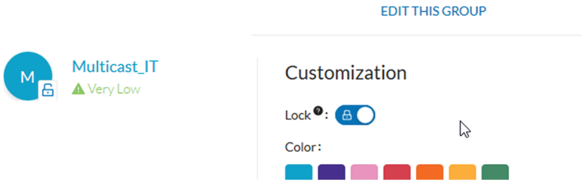
To switch on/off the **Lock** icon:

Step 12 Click a group. The **Group** details panel opens.

Step 13 Click the **Lock** icon on the Group's icon.

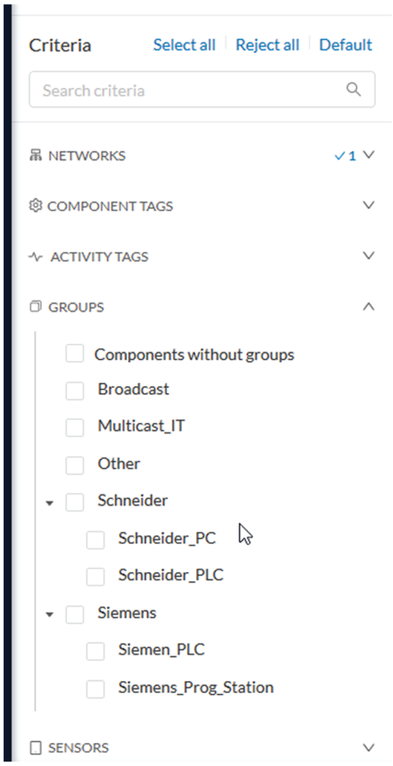
or

Click the **Edit** icon on the **Group** details panel and toggle on/off the **Lock** icon.



Step 14 **Groups used as criteria to filter data in Cisco Cyber Vision:**

Created groups are added into the filters to help you refine the dataset and compose presets.



Active Discovery

Active Discovery is a feature to enforce data enrichment on the network. **Active Discovery** is an optional feature that explores traffic in an active way. All components are not found by Cisco Cyber Vision because those devices have not been communicating from the moment the solution started to run on the network. Some information, like firmware version, can be difficult to obtain because it is not exchanged often between components.

With **Active Discovery** enabled, broadcast and/or unicast messages are sent to the targeted subnetworks or devices through sensors, to speed up network discovery. Returned responses are analyzed and tagged as **Active Discovery**. Components and activitiesare clarified with additional and more reliable information than may be found through passive DPI. The following table lists the supported protocols.

Broadcast	Unicast
EtherNet/IP	EtherNet/IP
Profinet	SiemensS7
SiemensS7	SNMPv2c
ICMPv6	SNMPv3
	WMI

Active Discovery is available on the following devices:

- Cisco Catalyst IE3300 10G Rugged Series Switch
- Cisco Catalyst IE3400 Rugged Series Switch
- Cisco Catalyst IE9300 Rugged Series Switch
- Cisco Catalyst 9300 Series Switch
- Cisco Catalyst 9400 Series Switch
- Cisco IC3000 Industrial Compute Gateway
- Cisco IR8340 Integrated Services Router Rugged

Active Discovery jobs can be launched at fixed time intervals or just once.

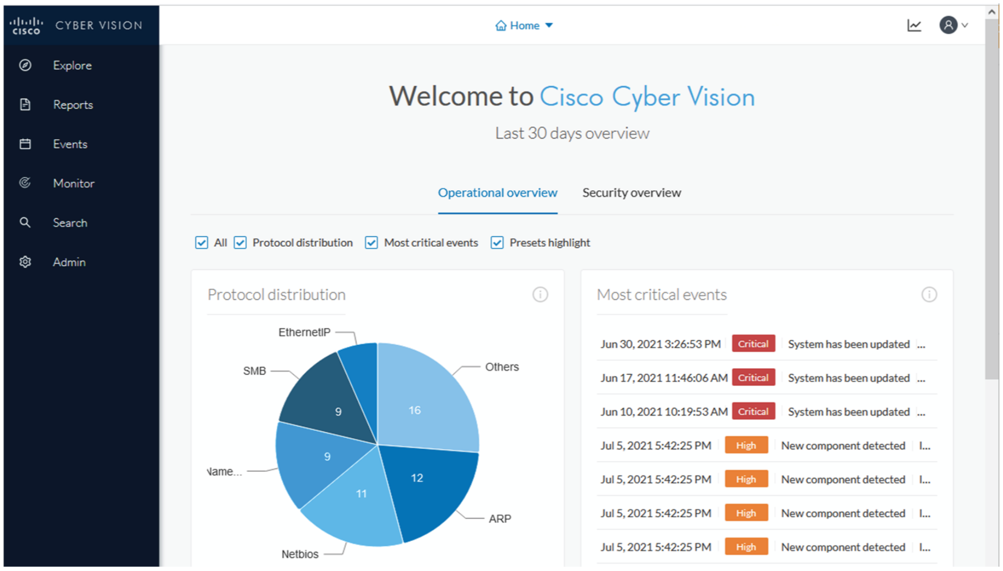
For more information and instructions on how to configure **Active Discovery** in Cisco Cyber Vision, refer to the Active Discovery Configuration Guide.

Navigating Through Cisco Cyber Vision

Home

The Cisco Cyber Vision Center's home page displays two tabs: **Operational Overview** and **Security Overview** of the industrial network over the last month.

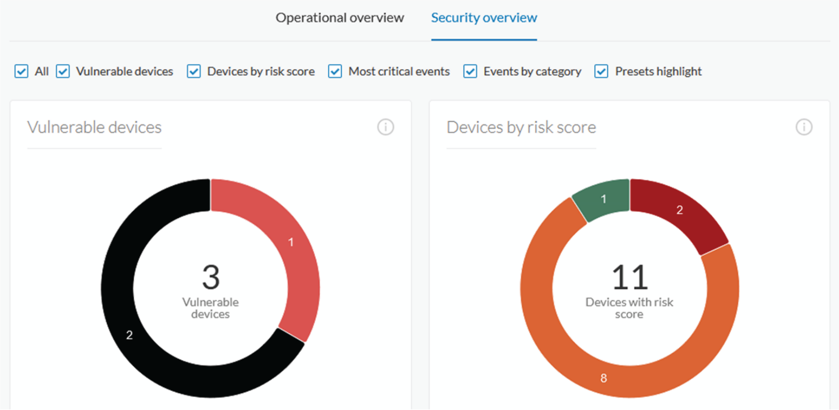
Use the checkboxes to edit the display. The **Operational Overview** shows the **Protocol distribution** pie chart and a list of the **Most critical events**.



Jun 30, 2021 3:26:53 PM	Critical	System has been updated	...
Jun 17, 2021 11:46:06 AM	Critical	System has been updated	...
Jun 10, 2021 10:19:53 AM	Critical	System has been updated	...
Jul 5, 2021 5:42:25 PM	High	New component detected	I...
Jul 5, 2021 5:42:25 PM	High	New component detected	I...
Jul 5, 2021 5:42:25 PM	High	New component detected	I...
Jul 5, 2021 5:42:25 PM	High	New component detected	I...

It also shows **Preset highlights**. Click **Edit favorite presets** to change what displays. Select the checkboxes of the presets and click **Save**.

Security Overview shows the **Vulnerable devices per severities** ring chart and the **Devices by risk score** ring chart.



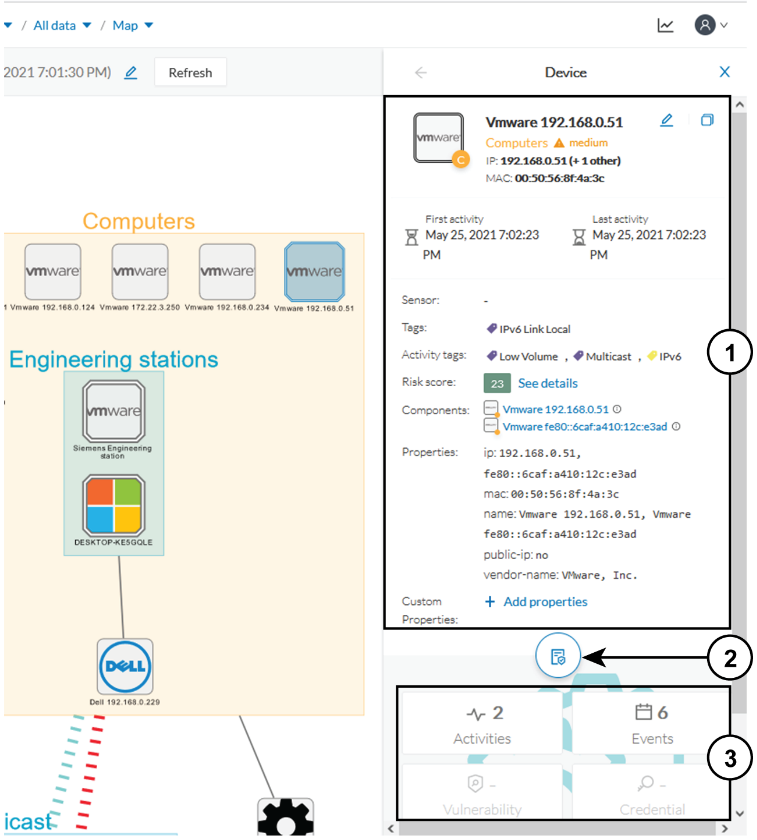
It also shows a list of the **Most critical events**, **Events by category**, and the **Preset highlights** that you can edit.

The navigation bar on the left provides access to all main pages of the Cisco Cyber Vision Center:

1. **Explore**: Shows the overview of all presets, by defaults or configured.
2. **Reports**: Shows the Reports page to export valuable information about the industrial network.
3. **Events**: Shows the Events page which contains graphics and a calendar of all events generated by .
4. **Monitor**: Shows the page to perform and automatize data comparisons of the industrial network.
5. **Search**: Shows the searching area to look for precise data in the industrial network.
6. **Admin**: Shows how to update the system, configure exports parameters, import and export the database, update the Knowledge DB and reset data and system settings.

Detail Panel

A Detail panel is a condensed view about a device, a component, a group of components or an activity's information without changing the background device list or a map. To access a detail panel, click a device, a component or an activity on the map or a list.



Device

Vmware 192.168.0.51
Computers ⚠ medium
IP: 192.168.0.51 (+ 1 other)
MAC: 00:50:56:8f:4a:3c

First activity May 25, 2021 7:02:23 PM
Last activity May 25, 2021 7:02:23 PM

Sensor: -
Tags: IPv6 Link Local
Activity tags: Low Volume , Multicast , IPv6
Risk score: 23 See details
Components: Vmware 192.168.0.51
Vmware fe80::6caf:a410:12c:e3ad
Properties: ip: 192.168.0.51, fe80::6caf:a410:12c:e3ad
mac: 00:50:56:8f:4a:3c
name: Vmware 192.168.0.51, Vmware fe80::6caf:a410:12c:e3ad
public-ip: no
vendor-name: VMware, Inc.
Custom Properties: + Add properties

2 Activities
6 Events
- Vulnerability
- Credential

The detail panel differs depending on the type of element you select. The upper portion **(1)** gives you general information about the element. If you select a device or a component, you can edit its name an add/remove it to/from a group.

The lower part contains a round button **(2)** which opens the element's technical sheet with all relevant information (available for devices, components and activities).

The rectangular buttons below **(3)** redirect to the corresponding information inside the technical sheet.

Technical Sheets

A technical sheet is an interactive and complete view of all information related to a device, a component, an activity or a flow. The views differ depending on the type of element selected.

To access the **technical sheet** of a device, component or an activity's Detail panel, follow these steps:

1. From the main menu, choose **Explore**.
2. From the top navigation bar, click the drop-down arrow of **All Presets** and select **All Data** from the drop-down list.
3. From the top navigation bar, click the drop-down arrow of the third filter and select **Map** from the drop-down list.
4. Click the **Technical sheet** icon.

The top box of the technical sheet recaps the information found in the **Detail** panel. The rectangular buttons on the right redirect to the corresponding information inside the technical sheet. In a device or a component's technical sheet, you can also edit the element's name, add/remove it to/from a group, and add custom properties.

The middle portion contains many tabs, depending on the selected element. In the above example, A **Device** detail contains the following tabs:

- **Basics** shows an element's properties and tags that are categorized with their definition. The components of the device also appear, if applicable.
- **Risk score** shows an overview and a more detailed and focused views.
- **Security** shows a component's vulnerabilities and credentials.
- **Activity** shows an activity's flows and contains a Mini Map, a view that is restricted to a device or a component and its activities. If applicable, a list of external communications with related information appears under the corresponding tab.
- **Automation** contains variable accesses.

- More information about properties.
- More information about tags.
- More information about the risk score.
- More information about vulnerabilities.
- More information about credentials.
- More information about flows.
- More information about the Mini Map.
- More information about external communications.
- More information about variables accesses.

Mini Map

The **Mini Map** is a visual representation restricted to a specific device or component and its activities. To access **Mini Map**, follow these steps:

1. From the main menu, choose **Explore**.
2. From the top navigation bar, click the drop-down arrow of **All Presets** and select **All Data** from the drop-down list.
3. From the top navigation bar, click the drop-down arrow of the third filter and select **Map** from the drop-down list.
4. Select a device from the map.
5. Click **Technical sheet** from the **Details** panel.
6. Click the **Activity** tab.
7. To view an exploded view of the devices, check the checkbox of **Show inner components**.
8. Click any element in the Mini Map to open its Detail panel for access to more information.

Reports

Reports enable you to export industrial network data from traffic captured and processed by Cisco Cyber Vision. You can uncover important information, such as sensitive entry points and acknowledged vulnerabilities for status reports. To access reports, click **Reports** from the main menu.

Install the **Reports extension** to use this page. To install the **Reports extension**, choose **Admin** > **Extensions** > **Import a new extension file** from the main menu. The extension file is available on cisco.com.

Reports allow you to create reports from a Preset, (default data) in Cisco Cyber Vision, or a custom one. Reports extensions include .docx and .pdf formats.

Reports enable you to create reports from a Preset (default data) in Cisco Cyber Vision or a custom one. Reports extensions include .docx and .pdf formats.

Add a logo, such as your company's logo, to customize the report. The report displays Cisco's logo by default. Use the table of contents menu to set which content appears in the report.

Create a Report

Note **Cyber Vision Reports Management** extension and **Cyber Vision Version** must be the same to generate the report.

Note Only users with 'Reports write' permission can create reports. Users with 'Reports read' permission can download reports.

Procedure

Step 1 From the main menu, choose **Reports**.

Step 2 Click **Create and run a Report**.

Step 3 Enter **Name**.

Step 4 (Optional) Add a **Description**.

Step 5 Click the drop-down arrow of the **Type** filter and select the report type from the drop-down list.

Report types are as follows:

- **Security Posture:**This report is an automated summary that captures all the vulnerabilities, risky acivities, and security events found on the devices in the selected preset by Cisco Cyber Vision.
- **Remote Access:**This report is an automated summary that captures a list of all Remote Access Gateways and the Remote Access related activities found on the devices in the selected preset by Cisco Cyber Vision.
- **Device Inventory**: This report provides an automated summary of devices, risk profiles, licensing requirements, and inventory distribution within the report's scope.

Step 6 (Optional) Add a **Customer logo**.

It will appear on the report.

Note
If no customer logo is uploaded, the default Cisco logo will be used.

Step 7 Choose the **Format**.

Step 8 Click **Next**.

Step 9 Click the drop-down arrow of **Preset** and choose a preset.

Step 10 In the Table of content, select the checkboxes of the sections and sub-sections you want to appear in the report.

Note
Content (sections and sub-sections) will vary depending on the type of report selected.

Step 11 Click **Save and Run**.

The new report appears in the list with the **Status: Processing**. When done, **Success** appears.

Step 12 To see the new report, choose **Reports** from the main menu.

Step 13 To download the report, click the name of the report under the **Name** column.

Step 14 In the **Details** panel, click the links to download the latest reports.

The **Previous Reports** tab contains older reports.

Step 15 To generate a new report, click the ellipsis (…) under the Actions column and then click **Run Again**.

Events

To access the **Events** page, choose **Admin** > **Events** from the main menu. Use Events to identify and track significant activities on the network. Events can be an activity, a property, or a change—whether it involves software or hardware components.

You can customize the severity of events on the **Events** administration page. By default, changes apply only to future events. However, you can apply new customized severities to past events by enabling the **Apply severity to existing events** option.

Important This action is irreversible and can take several minutes to complete.

Click **Reset severity to default** to reset the severity settings.

Use the toggle buttons to enable or disable **Syslog export** and **Database storage**. These two options are active by default. However, make sure the syslog has been configured before the export.

The following are examples of events:

- A wrong password entered on the GUI
- A new component connected to the network
- An anomaly detected in the Monitor Mode
- A component detected as vulnerable

The Dashboard of Events

The **Dashboard** shows event doughnut and line charts. Doughnut charts display color-coded event severity categories and percentages. To access the Events dashboard, choose **Events** from the main menu. You can use the filter at the top-right corner of the Events page to filter events by **Day**, **Week**, **Month**, or **Year**. Use the arrows for specific dates.

Doughnut charts present event numbers and percentages by category and severity.

Click a doughnut to see detailed List view filtered by the corresponding category and severity, allowing you to quickly access more event details.

To see the list of events per category, from the main menu, choose **Admin** > **Events**. See Events.

You find the Events graph at the bottom of the dashboard page. Use the filter in the top right corner to view data by **Day**, **Week**, **Month**, or **Year**. Hover over the event markers on the line chart to see event counts by category for specific dates. On the left of the graph, three tabs appear: **Cisco Cyber Vision Operations**, **Inventory Events**, and **Security Events**. Click these tabs for more details.

The List of Events

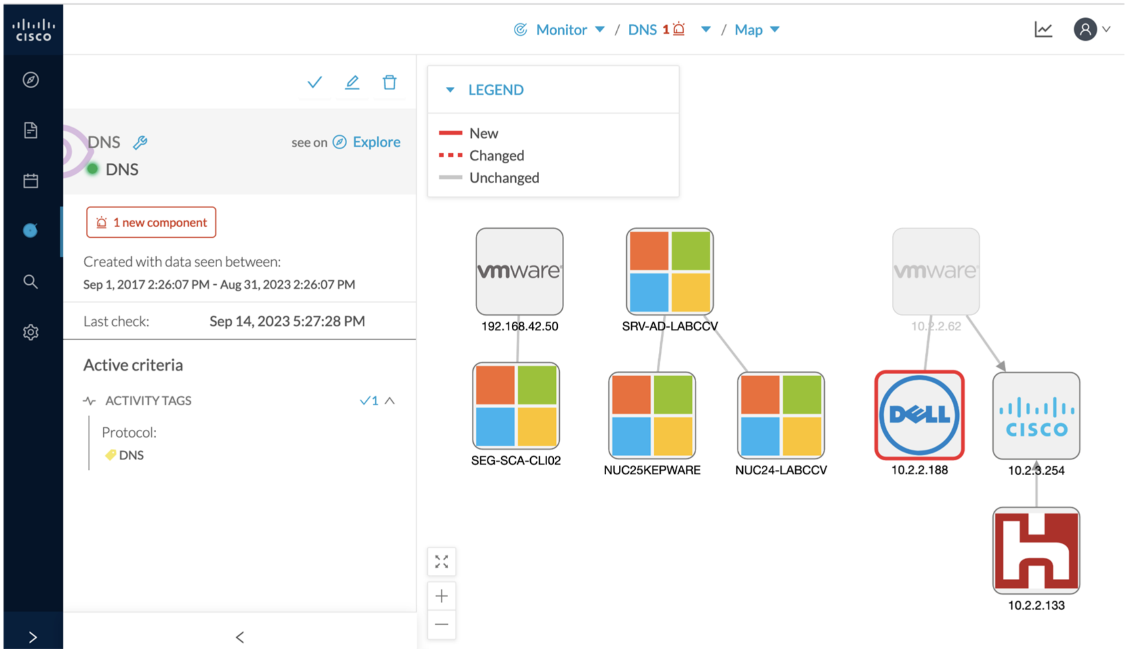
List is a chronological view in which you can see and search events. Use the search bar to find events by MAC and IP addresses, component name, destination and source flow, severity and category. You can search the Events on **Day, Week, Month** or **Year**. Use the arrows for exact dates.

To access **List**, follow these steps:

1. From the main menu, choose **Events** > **List**.
2. Click an event result for more details about the event.
   a. When an event is related to sensors, click **See Sensor Statistics** for more details.
   b. When an event is related to component or an activity, click **see Technical Sheet** for more details.

Monitor

Cisco Cyber Vision provides a monitoring tool called the Monitor mode to detect changes inside industrial networks. Because a network architecture (PLC, switch, SCADA) is constant and its behaviors tend to be stable over time, an established and configured network is predictable. However, some behaviors are unpredictable and can even compromise a network's operation and security. The Monitor mode aims to show the evolution of a network's behaviors, predicted or not, based on presets. Changes, either normal or abnormal, are noted as differences in the Monitor mode when a behavior happens. Using the Monitor mode is particularly convenient for large networks as a preset shows a network fragment and changes are highlighted and managed separately, in the Monitor mode's views.



Search

Use **Search** to find components among unstructured data. Search components by name, custom name, IP, MAC, tag and property value. To access the **Search** page, choose **Search** from the main menu.

> **Note** Devices are not available in this page yet.

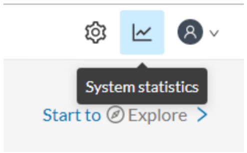
To search, enter the content in the search field and click **Search**.

To create a preset from your search results, click **Save this search as a Preset** . Presets will automatically update as new data is detected on the network.

For more information about a component, hover over it. The technical sheet **(2)** icon appears. The technical sheet gives you access to advanced data about the component.

System Statistics

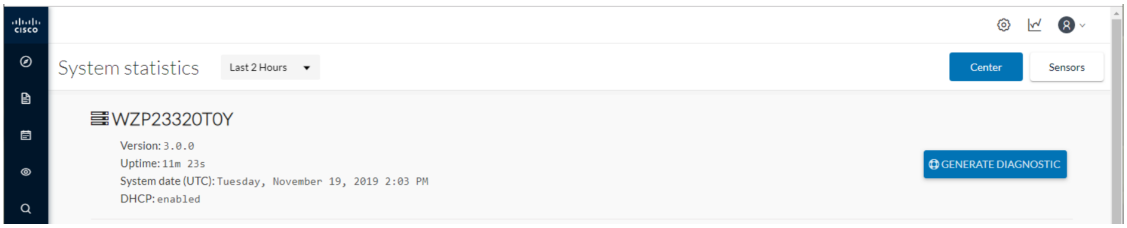
To access system statistics, click the **System statistics** icon in the top right corner of Cisco Cyber Vision interface.



Center

The **Center** statistics view provides data about the state of the Center CPU, RAM, disk, network interfaces bandwidth and database.

Note Use the drop-down arrow to change the time period.



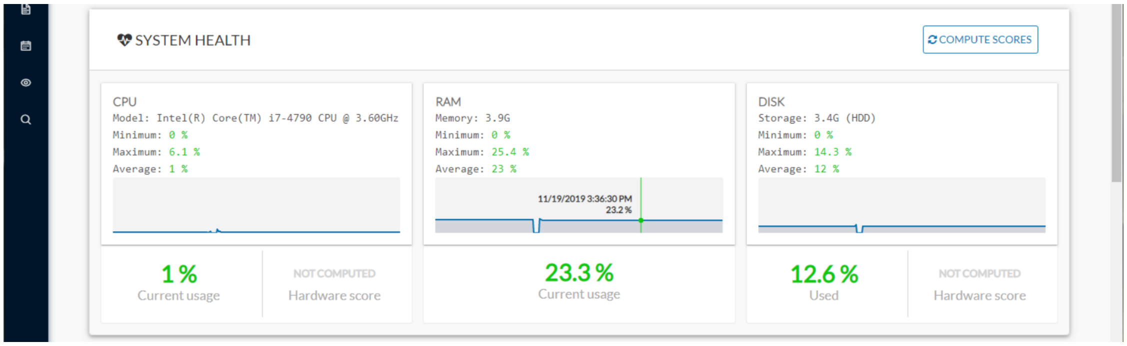
WZP23320T0Y

Version: 3.0.0
Uptime: 11m 23s
System date (UTC): Tuesday, November 19, 2019 2:03 PM
DHCP: enabled

The **Center** interface shows general information about the Center (the software version, the length of time that it has been operating (i.e., uptime), the Center system date and whether DHCP is enabled or not.

Click **Generate diagnostic** to create a file to help troubleshoot issues and for produt support .

System Health



CPU
Model: Intel(R) Core(TM) i7-4790 CPU @ 3.60GHz
Minimum: 0 %
Maximum: 6.1 %
Average: 1 %

1 % Current usage
NOT COMPUTED Hardware score

RAM
Memory: 3.9G
Minimum: 0 %
Maximum: 25.4 %
Average: 23 %

23.3 % Current usage

DISK
Storage: 3.4G (HDD)
Minimum: 0 %
Maximum: 14.3 %
Average: 12 %

12.6 % Used
NOT COMPUTED Hardware score

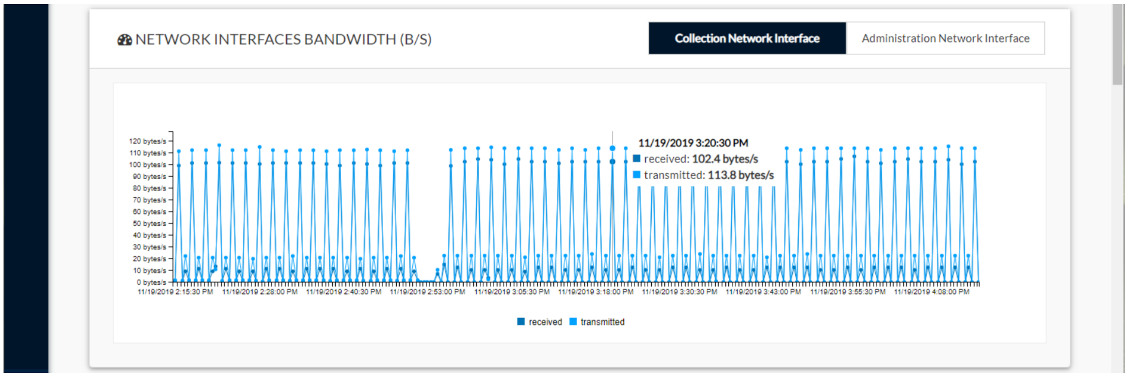
System health shows the status of the Center CPU, RAM and disk usage.

Usages (i.e., minimum, maximum and average) show for each of these system resources. For an absolute value, roll over the line chart.

The chart also shows the percentage of the system's Current usage and Hardware score, useful to product support.

The **Compute Scores** button initiates a new performance measure to compute a new score.

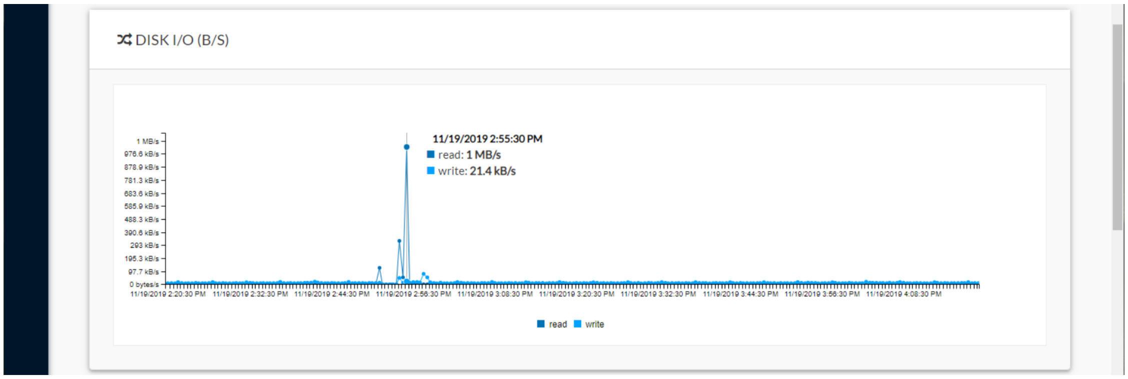
Network Interfaces Bandwidth



The line charts represent the Administration and Collection network interfaces bandwidth with the number of bytes received and sent by the Center per second.

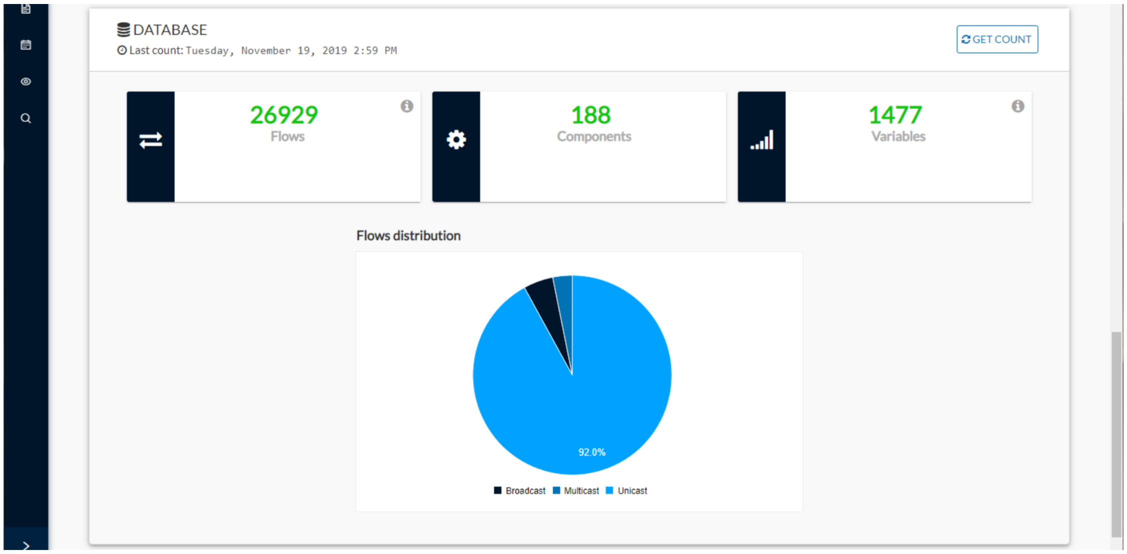
For example, the Collection Network interface activity lets you see the amount of data exchanged between the Center and the sensors.

Disk I/O



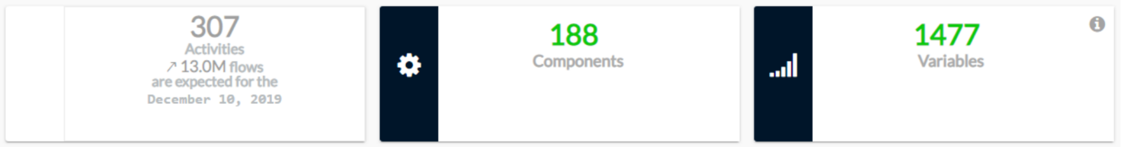
The line chart represents the Center hard disk usage in bytes/second.

Database

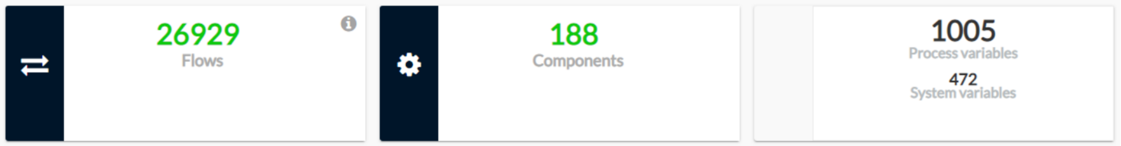


This section describes the database state by showing cards with the number of flows, components and variables that have been detected by Cisco Cyber Vision. Flows distribution is shown in a pie chart.

Data is updated each time you access the Center statistics view (the latest count is indicated on top of the database section). However, the Get Count button actualizes the database performance to the current time.

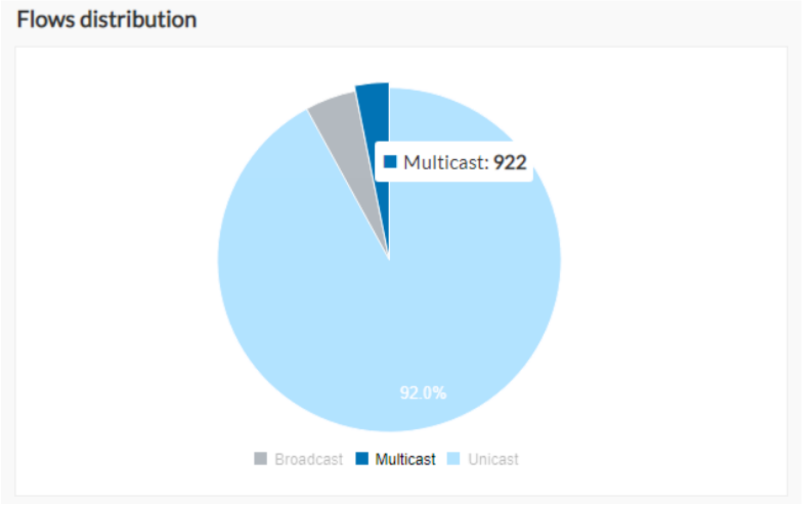


The flows card indicates the total number of flows (i.e. broadcast, multicast and unicast which are stored in the database) detected by . If you mouse over the card, you will get the number of activities and the flows evolution tendency. This information enables you to anticipate how the system load might be affected by flows in the future.



The variables card indicates the total number of variables detected by Cisco Cyber Vision. This indicator is important because an overload of variables could impact the Cisco Cyber Vision performances. If you mouse over the card you will get the number of process variables and the number of system variables.

- Process variables are the number of variables used by PLCs' software. Process variables are visible in the Monitor mode of the Cisco Cyber Vision GUI.
- System variables are the number of variables necessary to PLCs' proper operation. System variables are stored in the Cisco Cyber Vision database.



The flows distribution pie chart indicates the distribution of broadcast, multicast and unicast flows stored in the database. Mouse over the chart to see the absolute number of flows per flow type.

Services Statistics

The service status page indicates whether:

- all Cisco Cyber Vision background processes, such as services and extensions, are running correctly.
- all Cisco Cyber Vision background queues used to ingest data from sensors are not congested.

Checks are performed regularly.

Service Status:

This section shows the status of specific Cyber Vision services and extensions. Regular checks are conducted, and any service or extension that is down will be reported here.

- An **Update** button is available to refresh the services status; use it to ensure you have the latest information.
- A warning banner appears if a service is down, linking to this page, where the failing service is highlighted in red.

Queue Status:

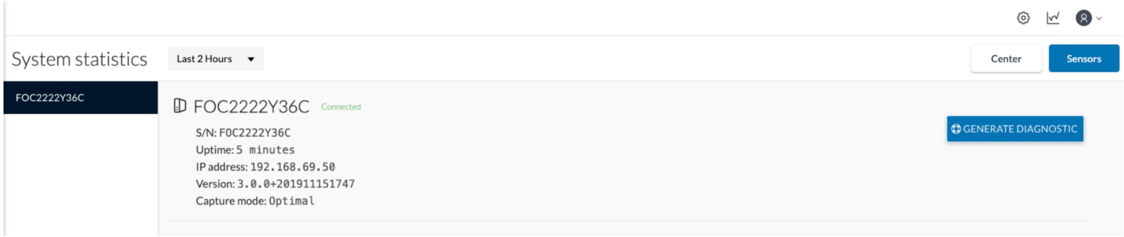
This section shows the status of the queues. If the monitored queues drop messages, this section reports it. Only sensor queues are monitored.

A list of congested queues will be provided to indicate system performance issues. A warning banner appears at the top of the application when a queue is congested, with the queue name highlighted in red.

Sensors

The **Sensors** statistics view provides data about the CPU, RAM, disk, network interfaces bandwidth and packets captured for each sensor enrolled in Cisco Cyber Vision.

Note Use the drop-down arrow to change the time period.



S/N: FOC2222Y36C
Uptime: 5 minutes
IP address: 192.168.69.50
Version: 3.0.0+201911151747
Capture mode: Optimal

A list of the sensors appears on the left. Click a sensor name to access its statistics.

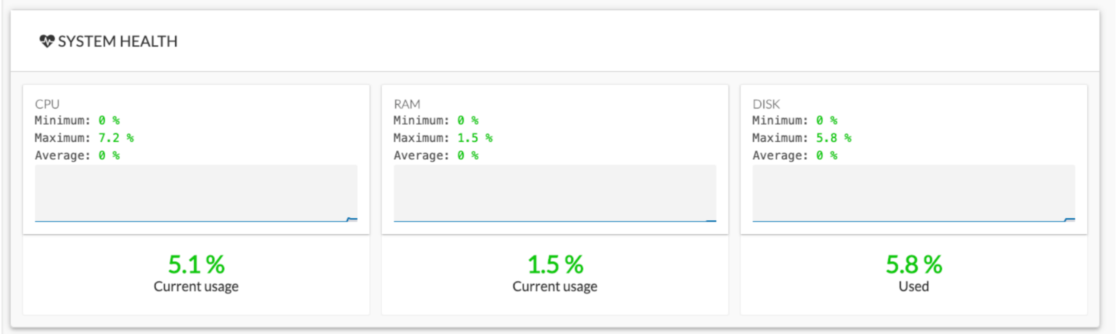
The **Sensors** statistics view shows general information about the sensor: the status (i.e., Connected), serial number, IP and MAC addresses, firmware version, the capture mode set, and the time it has been operating (i.e., uptime).

Click **Generate diagnostic** to create a file to help troubleshoot issues and for produt support.

System Health

System health shows the status of the sensor CPU, RAM and disk usage.

Usages (i.e., minimum, maximum and average) show for each of these system resources. For an absolute value, roll over the line chart.



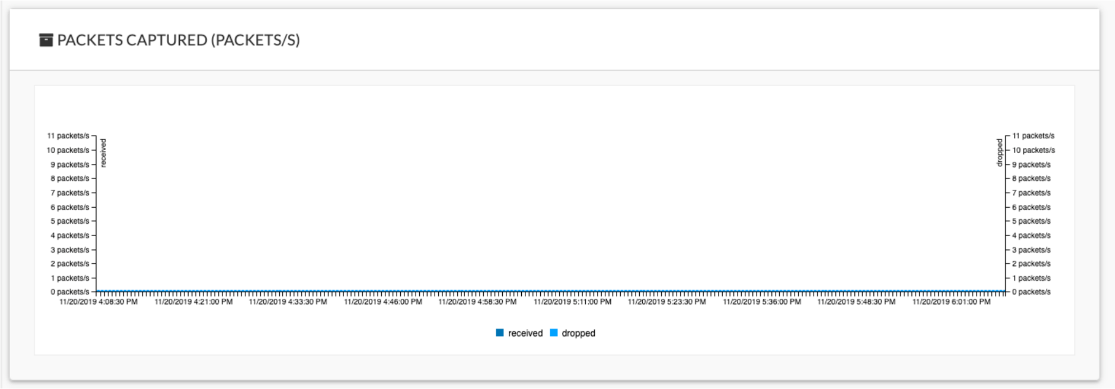
CPU
Minimum: 0 %
Maximum: 7.2 %
Average: 0 %
5.1 %
Current usage

RAM
Minimum: 0 %
Maximum: 1.5 %
Average: 0 %
1.5 %
Current usage

DISK
Minimum: 0 %
Maximum: 5.8 %
Average: 0 %
5.8 %
Used

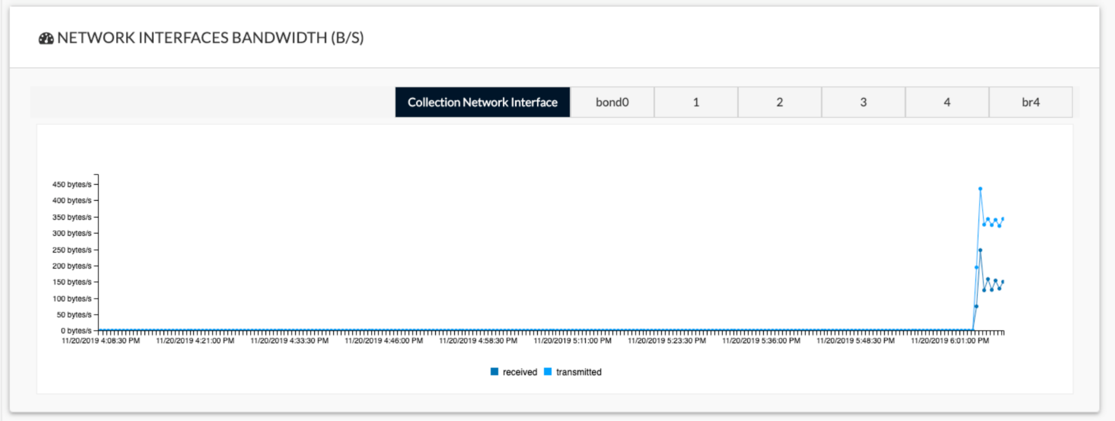
The chart also shows the percentage of the system's Current usage and Hardware score, useful to Cisco Cyber Vision product support.

Captured Packets



This line chart represents the number of packets that the sensor captures on the Industrial network interface (in bytes per second). It also shows dropped packets, but the value should be zero. If the dropped line shows activity, the sensor is overloaded and is not capturing traffic.

Network Interfaces Bandwidth

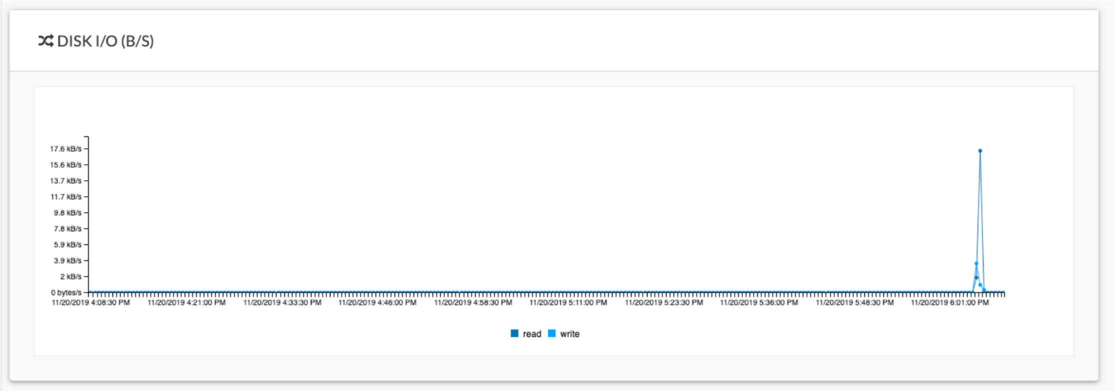


The line charts represent the Collection and Industrial network interfaces bandwidth with the number of bytes received and sent by the Center per second.

- The Collection Network interface activity chart shows the amount of data exchanged between the Center and the sensors.
- The Industrial cahrt shows the amount of data captured by the sensor on the industrial network through each port's couple.

  Data sent to the Industrial network is also represented, but the value should be zero. If the transmitted line shows activity, the sensor is not passive. If this happens, please contact Cisco Cyber Vision support immediately.

Disk I/O



The line chart shows the sensor hard disk usage with the number of Read-Write bytes per second.

My Settings

You must create your personal account in Cisco Cyber Vision Center. To create personal account, follow these steps:

1. Go to the user menu at the top right corner and click the drop-down arrow.
2. Click **My Settings** from the drop-down list.

   The **My Settings** page appears.
3. Enter **Firstname** and **Lastname** under the **General** fileld.
4. Click the radio button of the preferred interface language under the **Language** filed.
5. Enter your password.

   Passwords must contain at least 6 characters and comply with the rules below. Passwords:

   - Must contain a lower case character: a-z.
   - Must contain an upper case character: A-Z.
   - Must contain a numeric character: 0-9.
   - Cannot contain the user ID.
   - Must contain a special character: ~!"#$%&'()*+,-./:;<=>?@[]^_{|}.

Important Change your password regularly to ensure platform and industrial network security.

Note Your email will be requested for login access.

6. Select the checkbox of **Restore default parameters** to restore interface notifications.

7. Clear application cookies.

Risk Score

Risk Score Definition

A risk score is an indicator of the good health and criticality level of a device. The scale is from 0 to 100 with a color code indicating the level of risk.

Score	Color	Risk level
From 0 to 39	Green	Low
From 40 to 69	Orange	Medium
From 70 to 100	Red	High

Risk scores apply to the following:

- Filter criteria
- Device list
- Device technical sheet
- Device risk score widget (Home page)
- Preset highlight widget (Home page)

Risk Score Use

Risk score helps you easily identifying which devices are the most critical within the overall network. It provides limited and simple information on the cybersecurity of the monitored system. It is a first step in security management by showing values and providing solutions to reduce them. The goal: minimize values and keep risk scores as low as possible.

Proposed solutions are:

- Patch a device to reduce the surface of attack
- Remove vulnerabilities
- Update firmware
- Remove unsafe protocols whenever possible (e.g., FTP, TFTP, Telnet),
- Install a firewall
- Limit communications with the outside by removing external IPs

Cyber Vision allows you to define the importance of the devices in your system by grouping them and setting an industrial impact. This function increases or decreases the risk score, allowing you to focus on the most critical devices.

All these actions reduce the risk score which affect its variables, i.e., the impact and the likelihood of a risk. For example, removing unsafe protocols will affect the likelihood of the risk, but patching a device will act on the impact of the risk.

Risk score presents an opportunity to update usage and maintenance habits. However, it is NOT intended to replace a security audit.

In addition, risk scores are used in Cisco Cyber Vision to sort out information by ordering and filtering criteria in lists and to create presets.

Risk Score Computation

Risk score is computed as follows:

Risk = Impact x Likelihood

Impact is the device “criticality”, that is, what is its impact on the network? Does the device control a small, non-significant part of the network, or does it control a large, critical part of the network? Impact depends on:

- Device tags: Some device types are more critical. Each device type (or device tag) or device tag category is assigned an industrial impact score by Cisco Cyber Vision. For example, the device is a simple IO device that controls a limited portion of the system or it is a Scada that controls the entire factory. These will not have the same impact if they are compromised.
- You effect the device impact by moving it into a group and setting the group's industrial impact (from very low to very high).

Likelihood is the probability of this device being compromised Likelihood of risk depends on the following:

- Device activies and the activity tags. Some protocols are less secure than others. For example, Telnet is less secure than ssh.
- The exposure of the device communicating with an external subnet.
- Device vulnerabilities, taking into account their CVSS scoring.

For detailed information about a risk, see **Details** tab inside the technical sheet.

How to take action:

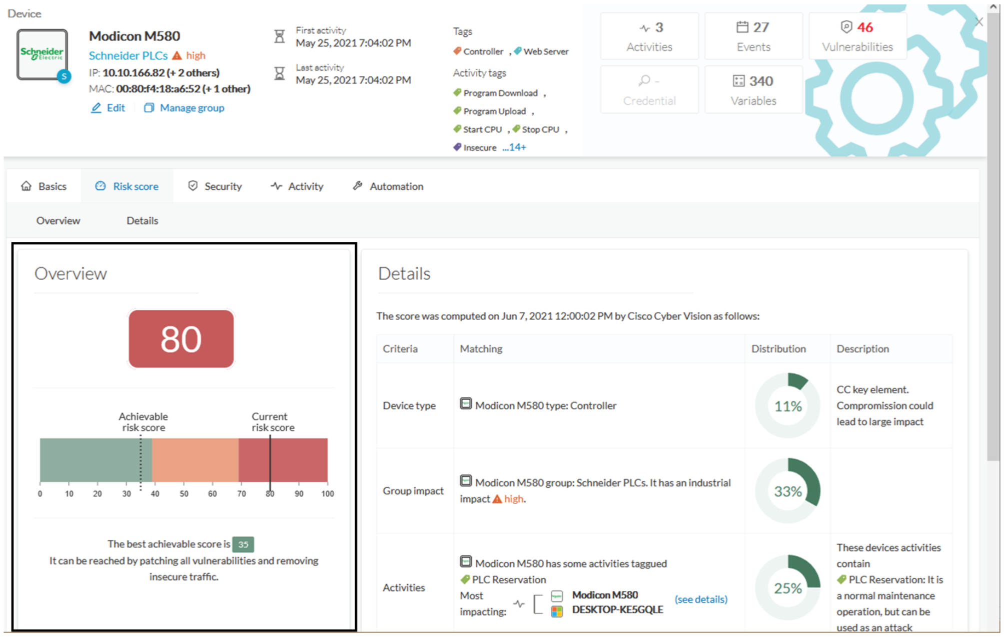
1. From the main menu, choose **Explore**.
2. Click the drop-down arrow in the top navigation bar and select **All Data** under **Basics**.
3. Click the drop-down arrow in the third filter of the top navigation bar and select **Device List**.
4. In the **Risk score** column, click the sort arrow to display the highest risk scores.
5. Click a device name under the **Device** column.

   The right-side panel appears.
6. In the **Risk score**, click **See details**.

   The technical sheet appears.

   In the **Overview** tab, the **Current** risk score and the **Achievable** risk are displayed.

   The achievable risk score is the best score you can reach if you patch all vulnerabilities on the device and remove all potential insecure network activities. The score cannot be zero because devices have intrinsic risks coming from their device type and, if applicable, their group industrial impact.



Device

Modicon M580
Schneider PLCs ⚠ high
IP: 10.10.166.82 (+ 2 others)
MAC: 00:80:f4:18:a6:52 (+ 1 other)

First activity
May 25, 2021 7:04:02 PM

Last activity
May 25, 2021 7:04:02 PM

Tags
Controller , Web Server

Activity tags
Program Download , Program Upload , Start CPU , Stop CPU , Insecure ...14+

3 Activities · 27 Events · 46 Vulnerabilities · - Credential · 340 Variables

Overview

80

The best achievable score is 35
It can be reached by patching all vulnerabilities and removing insecure traffic.

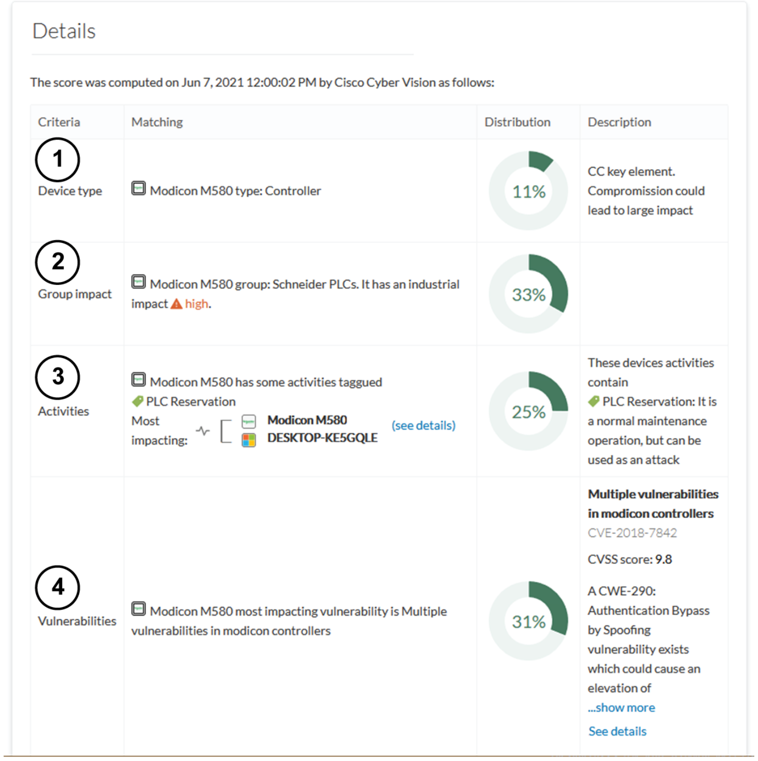
Details

The score was computed on Jun 7, 2021 12:00:02 PM by Cisco Cyber Vision as follows:

Criteria	Matching	Distribution	Description
Device type	Modicon M580 type: Controller	11%	CC key element. Compromission could lead to large impact
Group impact	Modicon M580 group: Schneider PLCs. It has an industrial impact ⚠ high.	33%	
Activities	Modicon M580 has some activities taggued PLC Reservation Most impacting: Modicon M580 DESKTOP-KE5GQLE (see details)	25%	These devices activities contain PLC Reservation: It is a normal maintenance operation, but can be used as an attack

The **Details** tab shows further information about the different risks impacting the device, the percentage of the risk they represent within a total risk score, and the solutions to reduce or even eliminate them.

Device type and **Group impact** affect the risk impact variable. **Activities** and **Vulnerabilities** affect the risk likelihood.



Details

The score was computed on Jun 7, 2021 12:00:02 PM by Cisco Cyber Vision as follows:

Criteria	Matching	Distribution	Description
1 Device type	Modicon M580 type: Controller	11%	CC key element. Compromission could lead to large impact
2 Group impact	Modicon M580 group: Schneider PLCs. It has an industrial impact ⚠ high.	33%	
3 Activities	Modicon M580 has some activities taggued PLC Reservation Most impacting: Modicon M580 DESKTOP-KE5GQLE (see details)	25%	These devices activities contain PLC Reservation: It is a normal maintenance operation, but can be used as an attack
4 Vulnerabilities	Modicon M580 most impacting vulnerability is Multiple vulnerabilities in modicon controllers	31%	**Multiple vulnerabilities in modicon controllers** CVE-2018-7842 CVSS score: **9.8** A CWE-290: Authentication Bypass by Spoofing vulnerability exists which could cause an elevation of ...show more See details

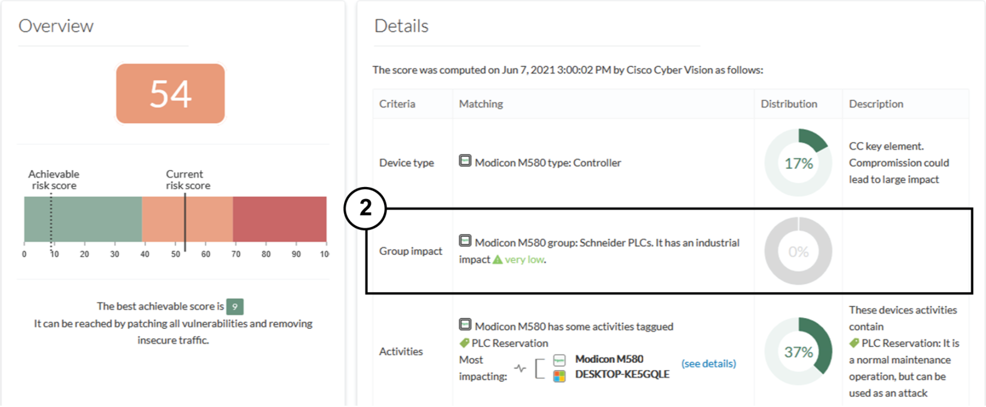
This page shows the last time the risk score was computed by Cisco Cyber Vision. Risk score computation occurs once an hour. To force immediate computation, use the following command on the Center shell prompt:

```
sbs-device-engine
```

Below is an example of the information retrieved during the last computation.

- **Device type**: Each device type corresponds to a device tag detected by Cisco Cyber Vision. No action is required at the device type level because each device tag is assigned a risk score by default.
- **Group impact**: Action is possible if the device belongs to a group. Decrease the impact by lowering the industrial impact of the group that the device belongs to.

  For example, if you set the group industrial impact to very low (previously high), the overall risk score decreases from 80 to 54.



The best achievable score is 9
It can be reached by patching all vulnerabilities and removing insecure traffic.

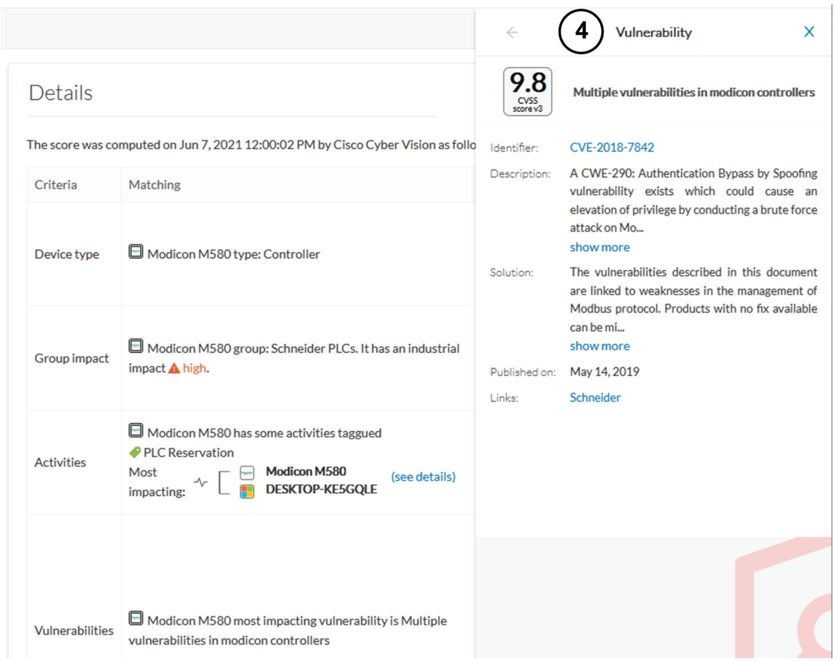
Details

The score was computed on Jun 7, 2021 3:00:02 PM by Cisco Cyber Vision as follows:

Criteria	Matching	Distribution	Description
Device type	Modicon M580 type: Controller	17%	CC key element. Compromission could lead to large impact
Group impact	Modicon M580 group: Schneider PLCs. It has an industrial impact ⚠ very low.	0%	
Activities	Modicon M580 has some activities taggued PLC Reservation Most impacting: Modicon M580 DESKTOP-KE5GQLE (see details)	37%	These devices activities contain PLC Reservation: It is a normal maintenance operation, but can be used as an attack

Note The new industrial impact will factor into the next risk score computation (once an hour).

- **Activities**: The most impactful activity tag displays. To lower the risk, remove all potential insecure network activities.
- **Vulnerabilities**: Click the **See details** link for more information about how to patch the vulnerabilities and so reduce the device risk score.



Details

The score was computed on Jun 7, 2021 12:00:02 PM by Cisco Cyber Vision as follo

Criteria	Matching
Device type	Modicon M580 type: Controller
Group impact	Modicon M580 group: Schneider PLCs. It has an industrial impact ⚠ high.
Activities	Modicon M580 has some activities taggued PLC Reservation Most impacting: Modicon M580 DESKTOP-KE5GQLE (see details)
Vulnerabilities	Modicon M580 most impacting vulnerability is Multiple vulnerabilities in modicon controllers

Vulnerability

9.8 CVSS score v3

Multiple vulnerabilities in modicon controllers

Identifier: CVE-2018-7842

Description: A CWE-290: Authentication Bypass by Spoofing vulnerability exists which could cause an elevation of privilege by conducting a brute force attack on Mo...
show more

Solution: The vulnerabilities described in this document are linked to weaknesses in the management of Modbus protocol. Products with no fix available can be mi...
show more

Published on: May 14, 2019

Links: Schneider

By taking these actions, the risk score should decrease considerably.

CHAPTER 3

Licensing

Cisco Cyber Vision Licenses

Manage your Cisco Cyber Vision smart licenses through the Cisco Smart Software Manager (CSSM), a centralized platform to track and manage all your Cisco licenses. You have real-time visibility into license usage and availability to help easily optimize and scale usage while ensuring compliance.

The set of Cisco Cyber Vision licenses include licenses for the center, sensor hardware appliances, and Talos subscriber licenses to run intrusion detection services on the sensors. For more information about the Cisco Cyber Vision license types and how to order them, see the Cisco Cyber Vision Data Sheet.

This document guides you through the registration and activation of the Cisco Cyber Vision Center licenses, Essentials, and Advantage.

You can also use CSSM satellite servers or Specific License Reservations for air-gapped networks that do not have a persistent internet connection.

Specific license reservations require special permissions. Contact your Cisco account manager if you require this license type.

Trial Licenses for Cisco Cyber Vision

When you install a Cisco Cyber Vision Center release for the first time, the evaluation mode is enabled by default. The evaluation mode is valid for 90 days and you have access to all the Cisco Cyber Vision features during this time. At the end of the 90 days, you must register a valid Cisco Cyber Vision license to continue using the center.

The evaluation mode is active automatically on a fresh install of Cisco Cyber Vision. To view the details of your evaluation mode, log in to your Cisco Cyber Vision center, and choose **Admin** > **License**. The page displays the number of days remaining in the evaluation mode, and you can start registering your smart licenses when you are prepared to do so.

When the evaluation licenses expire, you can only access the **License** page of the Cisco Cyber Vision center. You can't access any other page until you register valid licenses.

Essentials and Advantage Licenses

Cisco Cyber Vision Center licenses are available in two tiers, Essentials and Advantage. Each tier enables a set of features, with the Advantage license enabling a wider set of features that includes the features mapped to the Essentials license.

Features enabled by Cisco Cyber Vision Essentials license

Inventory

- Device inventory
- Identify communication patterns
- Generate inventory reports

Vulnerability

- Identify device vulnerabilities
- Generate vulnerability reports

Activities

- Track control system events
- Generate device activity reports

RESTful API: REST API programming interface

Features enabled by the Cisco Cyber Vision Advantage license

It includes Essentials features, plus:

Security posture: Device Risk Scoring

Intrusion detection

- Snort IDS on supported sensors
- Talos community signatures (New rules may be added 30 days after release)

Behavior monitoring

- Create baselines for asset behaviors
- Alerts on deviations

Advanced integrations

- XDR Ribbon

- pxGrid integration with Cisco ISE
- Firepower Host Attribute integration
- SIEM Integration – Splunk, IBM QRadar
- ServiceNow OT Management integration

Licenses for Intrusion Detection System Components

The Cyber Vision intrusion detection system (IDS) components use the following licenses to enable Talos subscriber rules. Each appliance or sensor in your network that has the IDS service enabled on it consumes a license.

License ID	Purpose of License
CV-IDS-CNTR	Talos subscriber rules license for Cyber Vision Center IDS (hardware and virtual appliance)
CV-IDS-IC3000	Talos subscriber rules license for Cyber Vision IDS on IC3000-2C2F-K9 sensors
CV-IDS-IR8300	Talos subscriber rules license for Cyber Vision IDS on Cisco Catalyst IR8300 sensors
CV-IDS-C9000	Talos subscriber rules license for Cyber Vision IDS on Cisco Catalyst 9300, 9300X, or 9400 sensors

Cisco Smart Software Manager Satellite for Air-Gapped Networks

Smart licensing typically requires an active communication channel between Cisco Cyber Vision and the Cisco Smart Software Manager (CSSM). If you cannot allow a direct Internet connection for your center, you can set up a Cisco Smart Software Manager satellite on your premises.

The satellite server contains a subset of Cisco Smart Software Manager functionality and must communicate with the latter periodically to operate.

Synchronize your satellite server with the Cisco portal periodically so that the most recent license purchase and utilization data are updated in both systems. For more information, see General CSSM On-Prem Help.

Register Your Essentials or Advantage Licenses

Before you begin

After your purchased licenses are available in your Cisco Software Central account, you must make note of the product registration token and the transport gateway URL (if applicable) to register your Cisco Cyber Vision center with the organizational smart licensing account.

Product registration tokens link new product instances to a virtual account. The Cisco Software Central account for your organization would typically contain all the Cisco licenses purchased. To link a new product instance to the organizational smart licensing account, use a product registration token:

1. Log in to your Cisco Software Central account.
2. From the main menu, choose **Inventory** > **Licenses**.

3. The **Product Instance Registration Tokens** area lists all the tokens that are already generated for this smart licensing account.
    a. To use an existing token, from the **Actions** column for a token, click **Copy**.
    b. To create a new token, click **New Token**.
    c. Copy the product token.
4. (Optional) If you want to use the Transport Gateway connection method, click **Smart Transport Registration URL** to copy the registration URL.

Procedure

Step 1 Log in to your Cisco Cyber Vision center.

Step 2 From the main menu, choose **Admin** > **License**.

Step 3 To choose the license tier (Essentials or Advantage), click **View/Edit** next to the **Software Subscription Licensing** under the **Status** field.

Step 4 Enable the toggle button in the displayed dialog box to choose a license tier.

Step 5 Click **OK**.

Step 6 To choose a connection method, click **View/Edit** next to the **Transport Settings**.

The **Transport settings** pop-up appears.

Step 7 Click the radio button to select **Transport settings**.

There are three types of transport settings, as given below:

- **Direct**, to connect to Cisco licensing servers through a direct HTTP connection if you have a persistent internet connection.
- **Transport Gateway**, to connect to Cisco licensing servers through Transport Gateway. In the **URL** field, enter the Smart Transport Registration URL you copied from Cisco Software Central.
- **HTTP/HTTPS Proxy,** to connect to Cisco licensing servers through a proxy server. Enter the details of the proxy server to use for this purpose.

Step 8 Click **OK**.

Step 9 In the registration dialog box, enter the **Product Instance Registration Tokens** that you copied from Cisco Software Central account.

Step 10 Click **Register**.

Register Licenses With CSSM On-Prem

Before you begin

For information on configuring a CSSM on-premises satellite, see Cisco Smart Software Manager. After the CSSM satellite is set up, make note of the product registration token and the transport gateway URL (if applicable) to register your Cisco Cyber Vision center with the CSSM satellite.

Product registration tokens link new product instances to a smart licensing account. The CSSM on-premises satellite collects licensing data and shares the same with the Cisco Software Manager at the configured syncs.

1. Log in to your CSSM On-Prem License Workspace.
2. From the main menu, choose **Inventory** > **Licenses**.
3. The **Product Instance Registration Tokens** area lists all the tokens that are already generated for this smart licensing account.
   a. To use an existing token, from the **Actions** column, click **Copy**.
   b. To create a new token,
      1. Click **New Token**.
      2. Enter a description, an expiry date and a maximum number of token uses.
      3. Click **Create Token**.
      4. The newly created token is added to the list. To copy the token, click **Actions** and choose **Copy**.
4. (Optional) If you want to use the Transport Gateway connection method, click **Smart Transport Registration URL** and copy the registration URL.

Procedure

Step 1 Log in to your Cisco Cyber Vision center.

Step 2 Choose **Admin** > **License**.

Step 3 To choose a connection method, click **View/Edit** next to the **Transport Settings**.

The **Transport settings** pop-up appears.

Step 4 Click the radio button to select **Transport settings**.

There are three types of transport settings, as given below:

- **Direct**, to connect to Cisco licensing servers through a direct HTTP connection if you have a persistent internet connection.
- **Transport Gateway**, to connect to Cisco licensing servers through Transport Gateway. In the **URL** field, enter the Smart Transport Registration URL you copied from Cisco Software Central.
- **HTTP/HTTPS Proxy,** to connect to Cisco licensing servers through a proxy server. Enter the details of the proxy server to use for this purpose.

Step 5 Click **OK**.

Step 6 In the registration dialog box, enter the **Product Instance Registration Tokens** that you copied from Cisco Software Central account.

Step 7 Click **Register**.

Reregister Your Licenses

You may need to reregister your licenses to troubleshoot license reporting or usage issues. You can do this through the **Admin** > **License** page of the Cisco Cyber Vision center. Click the **Actions** drop-down list at the top-right corner of the License page, and click **Reregister**. Generate a registration token and follow the steps detailed in Register Your Essentials or Advantage Licenses.

Deregister Your Licenses

When you deregister your licenses, you enter the evaluation mode again. If the evaluation mode has no remaining days, the center considers your evaluation license as expired, and you have limited access to the Cisco Cyber Vision center.

You can deregister your licenses through the **Admin** > **License** page of the Cisco Cyber Vision center. Click the **Actions** drop-down list at the top-right corner of the License page, and click **Deregister**.

Use Specific License Reservation

Specific license reservation is a smart licensing method that you can use when your organization's security requirements do not allow a persistent connection between Cisco Cyber Vision center and the Cisco Smart Software Manager (CSSM). Specific license reservation allows you to reserve license entitlements on a center.

The process to create and register a specific license reservation spans across Cisco Cyber Vision center and Cisco Software Manager.

If you don't want to proceed with the license reservation after you generate the reservation request code in Cisco Cyber Vision center, in the **License** page, click **Cancel Reservation Code**.

If you lose the reservation request code you created in Cisco Cyber Vision center, in the **License** page, click **View Reservation Request Code**.

Before you begin

Specific License Reservation is not available by default. If you want to use this licensing method, contact your Cisco account team to get the permission to use specific license reservation. After you licensing method is granted, you can carry out the following task to register specific license reservation on your Cisco Cyber Vision center.

Procedure

Step 1 In the Cisco Cyber Vision center, choose **Admin** > **License**

Step 2 Click **Register**.

Step 3 In the statement **If your Smart Account is authorized for License Reservation and you wish to reserve licenses, start here.**, click **start here**.

Step 4 Click, **Yes, My Smart Account is License Reservation Enabled**.

Step 5 Click **Generation Reservation Request Code**.

Step 6 To copy the reservation code, click **Save to File** or **Copy to clipboard**.

Step 7 Log in to Cisco Software Manager, and from the main menu, choose **Smart Software Manager** > **Manage Licenses**.

Step 8 Choose **Inventory** > **Licenses** to view your purchased smart licenses.

Step 9 Click **License Reservation**.

A **Smart License Reservation** workflow dialog box is displayed.

Step 10 In the **Step 1: Enter Request Code** tab, in the field that is displayed, enter the reservation code you received from Cisco Cyber Vision center.

Step 11 Click **Next**.

Step 12 In the **Step 2: Select Licenses** tab, click the **Reserve a specific license** radio button. Then, in the **Reserve** column of the table displayed, for each license type, enter the number of license entitlements you want to reserve.

Step 13 Click **Next**.

Step 14 In the **Step 3: Review and Confirm** tab, review the details of your specific license reservation, and click **Generate Authorization Code**.

Step 15 The **Step 4: Authorization Code** tab contains a field that displays the authorization code in the XML format. This XML content includes information about the license reservation and the Cisco Cyber Vision center for which the SLR is generated. Click **Download As File** to download the .txt file to your local system.

Step 16 In the **License** page of your Cisco Cyber Vision center, click **Enter Reservation Authorization Code**.

Step 17 You can paste the contents of the .txt file in the text box, or click **Upload** and choose the .txt file that you downloaded from Cisco Software Manager.

Step 18 Click **Install Authorization Code/File**.

Update Specific License Reservation

If you need to update the details of your specific license reservation, create a new reservation code in Cisco Software Central. Then, register the license reservation through the Cisco Cyber Vision center.

Procedure

Step 1 Log in to Cisco Software Manager, and from the main menu, choose **Smart Software Manager** > **Manage Licenses**.

Step 2 Choose **Inventory** > **Product Instances** to view the product instances that report license usage to Cisco Software Central.

Step 3 Find the Cisco Cyber Vision center for which you want to update the license reservation, and click the **Actions** drop-down menu in the same row.

Step 4 Click **Update Reserved Licenses**.

Step 5 In the **Step 1: Select Licenses** tab, click the **Reserve a specific license** radio button. Then, in the **Reserve** column of the table displayed, for each license type, enter the number of license entitlements you want to reserve.

Step 6 Click **Next**.

Step 7 In the **Step 2: Review and Confirm** tab, review the details of your specific license reservation, and click **Generate Authorization Code**.

Step 8 The **Step 3: Authorization Code** tab contains a field that displays the authorization code in the XML format. This XML content includes information about the license reservation and the Cisco Cyber Vision center for which the SLR is generated. Click **Download As File** to download the .txt file to your local system.

Step 9 In the Cisco Cyber Vision center, choose **Admin** > **License**

Step 10 Click **Update Reservation**.

Step 11 Enter the authorization code for the updated license reservation.

Step 12 Click **Register**.

Return Specific License Reservation

When you return a specific license reservation, the reserved licenses are released and available in your smart licensing account for reuse. You can use them as smart licenses or as part of another license reservation.

Procedure

Step 1 In the Cisco Cyber Vision center, choose **Admin** > **License**.

Step 2 Click **Return Reserved Licenses**.

Step 3 Click **Generate Reservation Return Code**.

Step 4 Copy the code displayed in the text box.

Step 5 Click **Return License**.

Step 6 Log in to Cisco Software Manager, and from the main menu, choose **Smart Software Manager** > **Manage Licenses**.

Step 7 Choose **Inventory** > **Product Instances** to view the product instances that report license usage to Cisco Software Central.

Step 8 From the **Actions** drop-down list for your specifc license reservation, choose **Remove**.

Step 9 Enter the reservation return code that you copied in Step 4, from Cisco Cyber Vision center.

Step 10 Click **Remove Product Instance**.

Managed Services License Agreement

Managed Services License Agreement (MSLA) is a post-paid utility service model for network providers who are Cisco partners. Through the MSLA licensing method, you pay for what you use, at the end of a monthly billing cycle. The provider holds the license entitlements and can enable or register licenses for multiple customers' centers.

In a Cisco Cyber Vision center that uses a MSLA license, you must set the center to utility mode. In the **Admin** > **License** page of the center, from the **Actions** drop-down list, choose **Change Utility Mode**.

There is no difference in the license registration process through the Cisco Cyber Vision center. The process outlined in the task Register Your Essentials or Advantage Licenses, on page 61 applies to MSLA licenses as well.

License Usage Compliance

Cisco Cyber Vision Essentials and Advantage licenses are typically term subscriptions for 1, 3, 5, or 7 years. To continue using Cisco Cyber Vision's many features and to receive product support, you must renew your licenses. If your Essentials or Advantage license expires, an alert is displayed in your Cisco Cyber Vision center to notify you of license expiry until you register new licenses.

In some noncompliance license usage scenarios, you can only access the **License** page in the Cisco Cyber Vision center until you purchase new licenses and register them. Existing configurations continue to run in your network even while your access is restricted.

- Your evaluation license has expired.
- You return your specific license reservation, and no other valid licenses are registered in your center.
- Your Essentials or Advantage licenses have expired, and you use the Cisco Smart Software satellite connection method.

If your IDS licenses expire or if overconsumption is reported because IDS is enabled on more sensors than you have licenses, a warning message is displayed in your Cisco Cyber Vision center until the issue is resolved.

CHAPTER 4

Get Started with Cisco Cyber Vision

Data management operations

Data management operations are Cyber Vision Center features that

- manage and optimize data stored on Cyber Vision Center,
- support tasks such as data clearance, setting data expiration, and customizing data ingestion, and
- improve system performance by enabling effective storage and retention policies.

Table 7: Feature History Table

Feature	Release Information	Feature Description
Clear multiple components using a VLAN ID	Release 5.3.x	When you clear data, you can enter a VLAN ID to purge all the components associated with it. You can clear data for one VLAN ID at a time.

Caution: Understand the impact before clearing all data

Clear all data only when absolutely necessary, such as when the database becomes overloaded.

Be aware of these consequences:

- The system deletes all network data, including components, flows, events, and baselines, from Cyber Vision Center.
- The GUI becomes empty.
- The system preserves only configuration settings, such as capture modes, event severity, and syslog settings.
- Clearing all data disrupts network monitoring.

Data storage and expiration settings

This table explains storage limits, expiration policies, and purge methods for each data type. You can use this information to manage system resources effectively.

Table 8: Settings

Data type	Storage	Expiration
Components or Devices	Storage is internal only. You receive a warning when you reach 120,000 components. Data ingestion stops at 150,000 components.	No expiration. Manual purge is needed.
Activities	Activities are stored internally and do not have a high storage limit.	The data does not expire. You must purge it manually.
Flows	You can enable or disable storage configuration; there is no upper storage limit. You can then define networks.	The system automatically deletes data after seven days of inactivity.
Events	You can configure the storage for each category, with a high limit of 10,000 per event category.	No expiration. The oldest event is purged when the 10,000 limit is reached.
External communications	Communications are stored externally only. You can save up to one million communications.	The system deletes data automatically after 30 days.
Variables	You can enable or disable the storage configuration, with no high storage limit.	The system deletes data automatically after seven days of inactivity.
Reports	You can set the storage period from three months to three years. The default is six months. The storage duration also depends on the maximum number of versions you set.	The system automatically deletes data when the creation date is older than the defined period or when the number of versions exceeds the limit.

Purge components from the database

Remove unnecessary or obsolete network components and devices to maintain optimal database performance and prevent data ingestion issues.

To protect the database, the system limits the number of components such as network interfaces, PCs, SCADA stations, broadcast or multicast addresses, and similar items.

- If the count exceeds 120,000, a pop-up and red banner alert you to purge.

- When the number of components reaches 150,000, data ingestion stops. The system deletes new data without processing or storing it. A pop-up and red banner alert you to purge.

Before you begin

- Ensure you have Admin access.

Procedure

Step 1 From the main menu, choose **Admin** > **Data Management** > **Clear Data**.

Step 2 Select **Components selection**.

Step 3 Choose the **Component Type**:

- **IT**: This selects components in the IP range with the **IT Internal** network type.
- **OT**: This selects components in the IP range with the **OT Internal** network type.
- Both: This selects components in the IP range with both network types.

Step 4 Specify any criteria for purging (all fields optional):

- IP Subnet
- VLAN ID (one at a time)
- Inactivity since
- Creation Start Time
- Creation End Time

Step 5 Click **Clear data** and confirm when prompted.

The database removes the specified components and related devices. The updated device count appears under **Explore** > **All Data**.

Note Purging components by VLAN, IP, or date triggers an event. If a Global Center is enrolled, those components are also purged in the Global Center after synchronization.

What to do next

Review the device list to ensure the correct components were removed.

Expiration settings

Expiration settings help you manage system storage and performance.

Key aspects of expiration settings:

- Expiration settings control the retention period and number of versions for reports only. Other data types (such as Components, Devices, Activities, Flows, Events, External communications, and Variables) have fixed retention periods.
- Expiration settings manage storage consumption by automatically purging reports older than the configured retention period.
- Increasing the retention period increases storage usage and may negatively impact system performance.
- Access expiration settings at **Admin** > **Data Management** > **Expiration Settings** in the Cyber Vision Center interface.

Ingestion configurations

An ingestion configuration is a data management feature that determines whether flow and variable traffic data are stored and processed by Cyber Vision Center.

You can enable or disable storage of flows and variables. By default, both options are disabled. To limit data storage, you can specify which flows from subnetworks are stored. These subnetworks are defined within Network Organization settings.

If flows and variables are disabled, data will not be stored in the database.

Flows Aggregation

- Cyber Vision records each flow that it detects, and includes details such as client and server ports for your reference.
- For protocols such as DNS, HTTP, or SSH, client ports can vary, so you may see many similar entries in your data.
- If you enable **Flow Aggregation**, Cyber Vision does not consider the client port for those specific protocols. This combines similar flows and limits the number of records in the database.

Port scan detection

Port scan detection helps you identify and respond to suspicious network probing, which may indicate cyberattack attempts.

Users

A user is an account holder in Cyber Vision Center that

- accesses and interacts with the Cyber Vision Center platform,
- is assigned one or more roles that define permissions and access privileges, and
- is managed using user management features, such as roles and security settings.

Table 9: Feature History Table

Feature	Release Information	Feature Description
Restrict users to a specific preset category	Release 5.4.x	This feature enables precise data access control by assigning preset categories to Cyber Vision user roles, limiting users to the Explore menu with read-only permissions. **Note** Once you restrict a user to a specific preset category, they will not have access to the New UI.

User roles and management

Cyber Vision Center provides default user roles such as Admin, Auditor, Operator, and Product. You can also create custom roles to tailor specific permissions and access levels for different users or groups. Roles control what actions you can perform within the platform. You can map user roles (except Admin) to external directory groups through LDAP. To provide admin privileges through LDAP, clone the admin role and map it to the external directory group.

User security settings

The Security settings page (**Admin** > **Users** > **Security settings**) allows configuration of password policies, such as password lifetime, login attempt limits, and password reuse restrictions, to help protect user accounts.

User roles

User roles define access and administrative privileges in the platform.

Table 10: User role types and privileges

Role	Privilege
Admin	If you have the admin role, you have full rights and oversee all sensitive actions. These actions include managing user rights, updating the system, configuring syslog, and setting up sensor reset or sensor capture mode.
Product	If you have the product role, you can access system, sensor, and event administration pages and manage sensors remotely. You may manage event severity and export events to syslog if an admin allows it.
Operator	If you have the operator role, you work in monitor mode and can manage groups, but do not have administration privileges. You can access all pages except system administration.

Role	Privilege
Auditor	If you have the auditor role, you have read-only access to Explore, Reports, Events, and Search pages. You can use non-persistent sorting features and generate reports.

Password requirements

Passwords protect user accounts and systems against unauthorized access.

Passwords must meet these requirements:

- Contain at least 6 characters.
- Must include:
  - A lowercase character from a to z
  - An uppercase character from A to Z
  - A numeric character from zero to nine
  - A special character (~!"#$%&'()*+,-./:;<=>?@[]^_{|})
- Not contain your user ID.

Additional best practices:

- Change your password regularly.
- Configure password lifetime settings in **Admin** > **Users** > **Security settings**.

Add a new user

Add a new user account to Cyber Vision Center to log in and access assigned roles.

Before you begin

Ensure you have administrator privileges in Cyber Vision Center.

Procedure

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

Step 2 Click **Add a new user**.

Step 3 Enter the required user details: **Firstname**, **Lastname**, **Email**, **Password**, and **Confirm password**.

Step 4 Select the appropriate role for the user.

Step 5 Click **OK**.

You can see the new user in the **Users management** page, and the user can log in with the assigned credentials.

What to do next

To edit or delete the user later, use the **Users management** page.

Create a user role

Create a user role in Cyber Vision with specific permissions to meet your needs.

Use user roles to define precise access and manage permissions for each user in Cyber Vision.

Before you begin

Ensure the **Cyber Vision New UI** is enabled for your center.

Procedure

Step 1 From the main menu, choose **Admin** > **Users** > **Role Management**.

Step 2 Click the add button **(+)** to create a new role.

Step 3 Enter the **Role Name** and **Role Description**.

Step 4 Set permissions for the new user role using one method:

- **Restrict user access to a single preset category**:

  a. Enable **Restrict user access to a single preset category**.

  b. Select a preset category and click **Save**.

  Note
  - To delete a preset category, first unassign it from any user role.
  - If a user is restricted to a preset category, they have read-only access to the **Explore** menu only.

- **Search/Add existing permission**:

  a. Select a role from **Search/Add existing permission**.

  b. Click **Save**

- **Add New Permissions**:

  a. Click **Add New Permissions**.

  b. Select required permissions (**Read** or **Read + Write**) from **Classic UI Permissions** and **New UI Permissions**.

  c. Click **Save**.

  Note
  You receive read access to **Explore** in the Classic UI and to **Assets and Vulnerabilities** in the New UI by default.

The new user role appears in the **Role Management** list.

What to do next

- You can edit or delete roles in **Role Management**.
- You can map custom roles to external directory groups in LDAP settings.

Center web server certificates

A center web server certificate is a digital security credential that

- enables encrypted communication between the Cyber Vision Center and web browsers,
- ensures data integrity and confidentiality during browser sessions, and
- allows client devices to verify the Center’s identity before exchanging sensitive data.

Options for managing web server certificates

You can manage Center web server certificates in two ways:

- Default internal certificate:
    - The system automatically generates a default internal (self-signed) certificate. To establish secure communication when using this certificate, you need to download it from the Center and install it on your laptop or client device. Adding this certificate to your device’s trusted certificate store secures your communications with the Center.
- Enterprise certificate management:
    - Alternatively, you can configure the Center to use an enterprise certificate. The Center can use an enterprise certificate by uploading a P12 file, generating a certificate signing request (CSR) for your Certificate Authority (CA), or using the ACME protocol. Once in place, browsers will automatically trust the Center web interface. For more information, see the "Configure the Center" chapter in the Center Installation Guide.

CHAPTER 5

Configure Cisco Cyber Vision

Network Organization

Network Organization page allows you to define the subnetworks inside the industrial network by setting up IP address ranges and declaring whether networks are internal or external. To access the **Network Organization** page, choose **Admin** > **Network Organization** from the main menu.

In Cisco Cyber Vision, all private IP addresses are classified as OT internal. They appear under the **IP Address / Subnet** column on the Network Organization page.

Every other IP address is considered as external, except for:

- Broadcast IPv4: 255.255.255.255
- IPv4 and IPv6 zero: 0.0.0.0 et 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 want to declare a public IP address as internal, you must add an exception by changing their network type.

Declaring a subnetwork as OT internal is useful in case public IP addresses are used in a private network of an industrial site. Conversely, declaring a set of IP addresses as external will exclude their flows from the database, and exclude their devices from the license device count and the risk score.

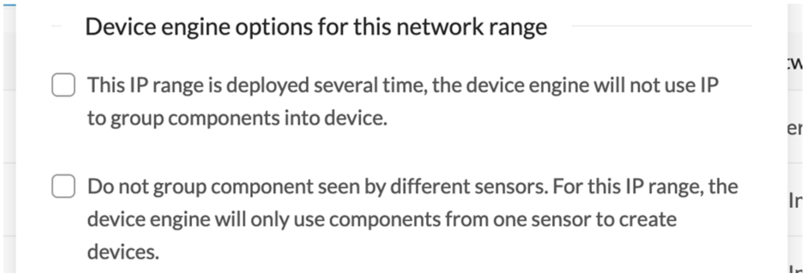
Overall, defining subnetworks in Cisco Cyber Vision is useful for several reasons:

- It allows you to choose afterwards how related flows should be stored through the Ingestion configuration page. Excluding unnecessary flows will have positive impact on performances.
- It will impact devices' risk scores, since a private network is considered as safer than an external one.

- Cisco Cyber Vision's license will be more accurate, because devices from an external network will be excluded from the licensing device count.

By default, Cisco Cyber Vision groups identical IP addresses detected inside the industrial network into a single device, because in most cases these belong to several components of a device. However, it can happen that the same IP address is used by several devices. In this case, you can choose to select the first option when declaring a subnetwork to prevent duplicate IP addresses from grouping within this subnetwork.

The second option is to be used when components with the same IP address are found by different sensors. This happens when same addressing parameters are used on several subnetworks, for example in case of identical production lines. By using this option, components detected by different sensors will not be aggregated into a single device.

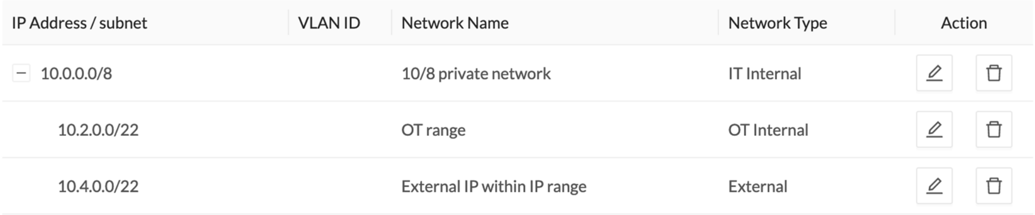


Device engine options for this network range

□ This IP range is deployed several time, the device engine will not use IP to group components into device.

□ Do not group component seen by different sensors. For this IP range, the device engine will only use components from one sensor to create devices.

IP ranges can be **organized into groups** which subranges can be defined like in the example below:



IP Address / subnet	VLAN ID	Network Name	Network Type	Action
− 10.0.0.0/8		10/8 private network	IT Internal	
10.2.0.0/22		OT range	OT Internal	
10.4.0.0/22		External IP within IP range	External	

Here, the user specified that the IP range 10.2.0.0/22 is OT internal and that 10.4.0.0/22 is external.

Thus, flow storage can be specificly set in the Ingestion configurations, on page 72 for the IP range set here as OT internal, whereas flows and devices from the IP range set as external will be excluded from the database and the license device count and risk score.

Note It is also possible to organize subnetworks through the API.

Define a Subnetwork

To define a subnetwork:

Procedure

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

Step 2 Click **Add a network**.

The **ADD A NEW NETWORK** pops-up appears.

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

Step 4 (Optional) Enter the **VLAN ID**.

This will allow you to create overlapping networks.

Step 5 Enter the **Network name**.

Step 6 Click the dropdown arrow of the **Network Type**.

Step 7 Select the network type from the dropdown list, such as **OT Internal**, **IT Internal**, or **External**.

Note
Setting the network type can impact Cisco Cyber Vision's performances by setting flow storage, device risk scores, and the license's device count.

Step 8 Check the **Use a device engine option for this network range** checkbox.

a) If applicable, select the radio button for the first option.

Note
Enable this option if several devices share the same IP across the monitored network.

Components will not be grouped by IP.

a) If applicable, select the radio button for the second option.

Note
Enable this option in case same addressing parameters are used within different subnetworks, for example, in identical production lines.

For that particular network range, the system will not aggregate components with the same IPs detected by sensors monitoring other subnetworks. The system will aggregate the components into devices when monitored subnetworks use the same IP ranges for several machines or production lines.

In this case, for a specific IP range, a component with an IP of that range seen by a sensor will be grouped with a component with the same IP only if both components are detected by the same sensor.

Step 9 Click **Add a network**.

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).

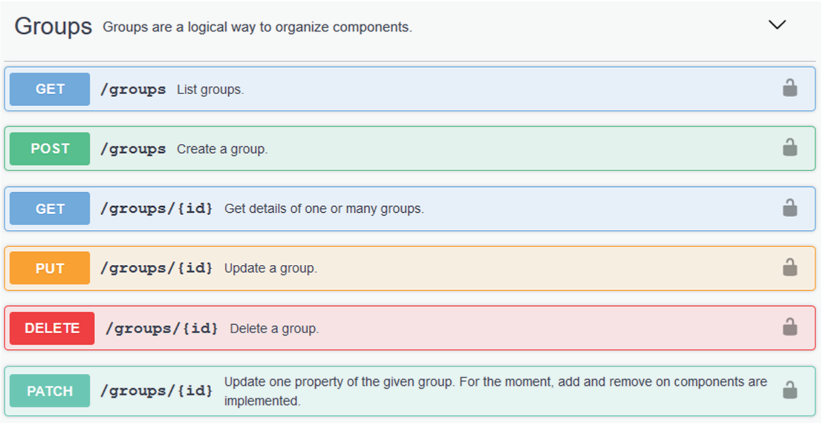
In addition to information research, this page allows you to perform basic tests and call the API by sending requests such as GET, DELETE and POST. You will get real results from the Center dataset. Specifications about routes are available such as the route's structure, and parameters and arguments 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:



Groups Groups are a logical way to organize components.

GET /groups List groups.

POST /groups Create a group.

GET /groups/{id} Get details of one or many groups.

PUT /groups/{id} Update a group.

DELETE /groups/{id} Delete a group.

PATCH /groups/{id} Update one property of the given group. For the moment, add and remove on components are implemented.

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**.

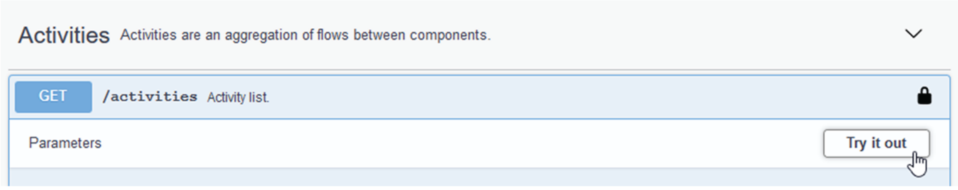
Close lockers displays. They indicate that routes are secured and authorization to use them is up.

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**.

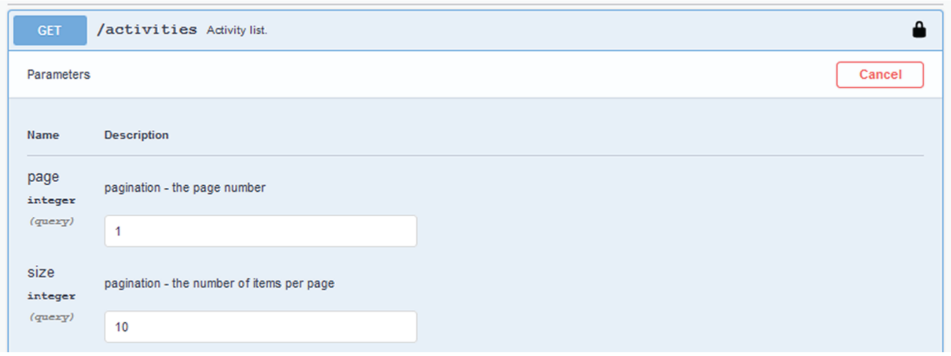


Activities Activities are an aggregation of flows between components.

GET /activities Activity list.

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

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

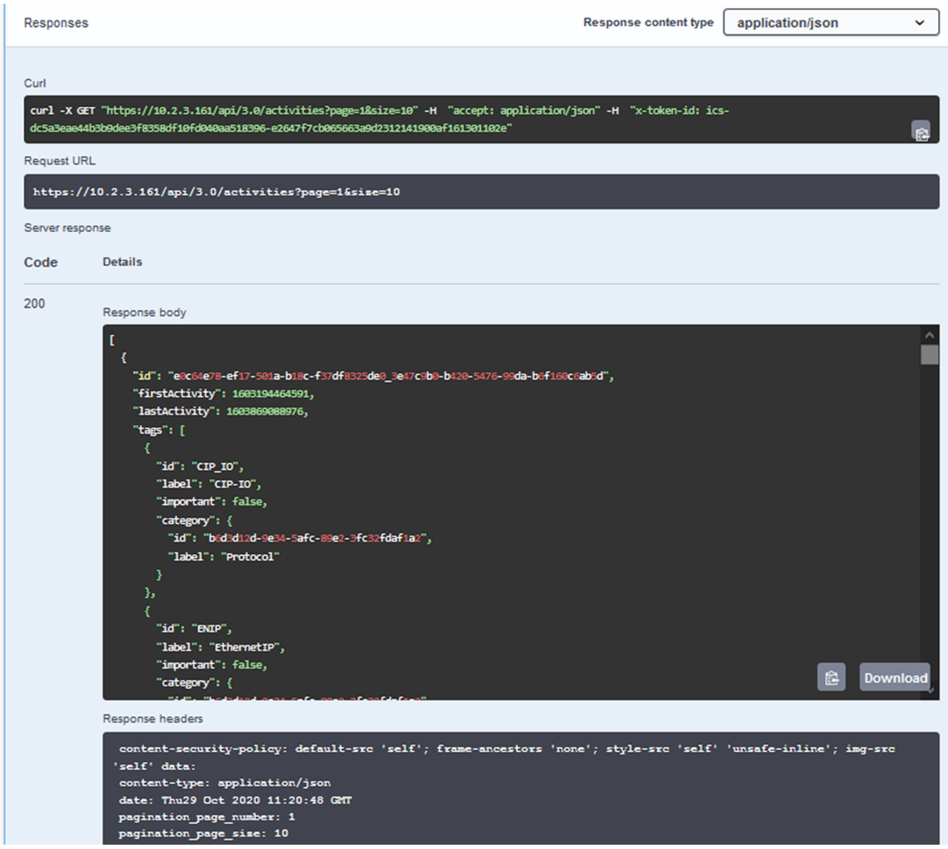


Name	Description
page integer (query)	pagination - the page number 1
size integer (query)	pagination - the number of items per page 10

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.



Curl

```
curl -X GET "https://10.2.3.161/api/3.0/activities?page=1&size=10" -H  "accept: application/json" -H  "x-token-id: ics-
dc5a3eae44b3b9dee3f8358df10fd040aa518396-e2647f7cb065663a9d2312141900af161301102e"
```

Request URL

```
https://10.2.3.161/api/3.0/activities?page=1&size=10
```

Server response

Code	Details
200	Response body

```
[
  {
    "id": "e0c64e78-ef17-501a-b18c-f37df8325de0_3e47c9b0-b420-5476-99da-b6f160c6ab5d",
    "firstActivity": 1603194464591,
    "lastActivity": 1603869088976,
    "tags": [
      {
        "id": "CIP_IO",
        "label": "CIP-IO",
        "important": false,
        "category": {
          "id": "b6d3d12d-9e34-5afc-89e2-3fc32fdaf1a2",
          "label": "Protocol"
        }
      },
      {
        "id": "ENIP",
        "label": "EthernetIP",
        "important": false,
        "category": {
```

Response headers

```
 content-security-policy: default-src 'self'; frame-ancestors 'none'; style-src 'self' 'unsafe-inline'; img-src
'self' data:
 content-type: application/json
 date: Thu29 Oct 2020 11:20:48 GMT
 pagination_page_number: 1
 pagination_page_size: 10
```

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.

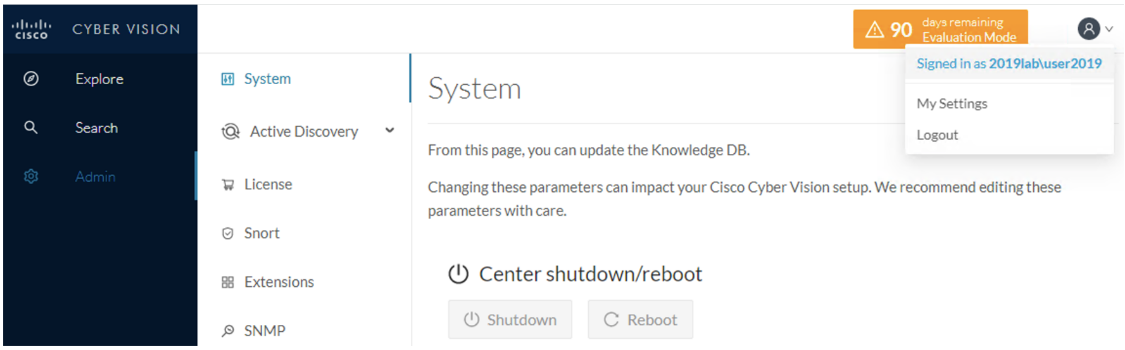
Note
For LDAP, the supported username format is <*domain_name*>\<*user_name*> (For example, cisco\john_doe).

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.



From this page, you can update the Knowledge DB.

Changing these parameters can impact your Cisco Cyber Vision setup. We recommend editing these parameters with care.

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 11: 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 Azure AD 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.

Azure AD single sign-on integrations

Azure AD single sign-on integrations are authentication solutions that:

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

Within Azure, a tenant is an entity that manages federated devices. A user can access these devices with their SSO account. Familiarize yourself with the Azure tenant organization before onboarding applications such as Cyber Vision Center.

Add an enterprise application in Azure

Add an enterprise application to your Azure tenant.

Before you begin

- You need 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 https://entra.microsoft.com/#home.

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 an 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 application is created and appears in **Home** > **Enterprise applications** > **All applications**.

What to do next

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

Configure Azure SSO for Cyber Vision Center

Enable authentication of Cyber Vision Center users through Azure Active Directory Single Sign-On (SSO).

Use this task to centralize user authentication and streamline role management by integrating Azure SSO with Cyber Vision Center.

Before you begin

- Create the Cyber Vision Center service provider application in Azure. See Add an enterprise application in Azure.
- Prepare your Azure tenant.
- 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. Roles are assigned to the user based on priority.

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

Procedure

Step 1 Sign in to Microsoft Entra at https://entra.microsoft.com/#home.

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

Step 3 Select the created application.

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

Step 5 Edit the **Basic SAML Configuration** section and enter:

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

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

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

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

Step 6 Edit **Attributes & Claims**:

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

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

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

d. Check the checkbox of **Customize the name of the group claim** under the **Advanced option**s.

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

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

Step 8 Record the these details from **SAML-Based Sign-On**:

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

Cyber Vision Center is configured to support Azure SSO, allowing users to sign in using their Azure Active Directory credentials.

What to do next

Configure Cyber Vision Center to complete Azure SSO integration. For details, 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.

Name	Description
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.
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.

Sensors Status

To access the sensor status, choose **Admin** > **Sensors** > **Sensor Explorer** from the main menu.

There are two types of sensor status:

- The **Health status**, which indicates the step of the enrollment process the sensor is at.
- The **Processing status**, which indicates the network connection state between the sensor and the Center.

Health status:

- **New**

  This is the sensor's first status when it is detected by the Center. The sensor is asking the DHCP server for an IP address.

- **Request Pending**

  The sensor has asked the Center for a certificate and is waiting for the authorization to be enrolled.

- **Authorized**

  The sensor has just been authorized by the Admin or the Product user. The sensor remains as "Authorized" for only a few seconds before displaying as "Enrolled".

- **Enrolled**

  The sensor has successfully connected with the Center. It has a certificate and a private key.

- **Disconnected**

  The sensor is enrolled but isn't connected to the Center. The sensor may be shut down, encountering a problem, or there is a problem on the network.

Processing status:

- **Disconnected**

  The sensor is enrolled but isn't connected to the Center. The sensor may be shut down, encountering a problem, or there is a problem on the network.

- **Not enrolled**

  The sensor is not enrolled. The health status is New or Request Pending. The user must enroll the sensor for it to operate.

- **Normally processing**

  The sensor is connected to the Center. Data are being sent and processed by the Center.

- **Waiting for data**

  The sensor is connected to the Center. The Center has treated all data sent by the sensor and is waiting for more data.

- **Pending data**

  The sensor is connected to the Center. The sensor is trying to send data to the Center but the Center is busy with other data treatment.

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 100.
- 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 103.
- 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 102.

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 12: Sensor applicability and correspondance table per deployment file

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

The PCAP Upload page allows you to upload PCAPs to view their data in Cisco Cyber Vision Center.

Procedure

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

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

The **UPLOAD A NEW FILE** window appears.

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

Step 4 Click **Upload**.

Note
During the upload, the status for DPI and Snort is displayed.

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

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 13:

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
UCD-DISKIO-MIB	.1.3.6.1.4.1.2021.13.15.1	Disk IO

CHAPTER 6

Integrate with Cisco Cyber Vision

pxGrid

From **Platform Exchange Grid** page, you can configure ISE pxGrid Cisco Cyber Vision integration.

Cisco Platform Exchange Grid (pxGrid) is an open, scalable data-sharing and threat control platform that allows seamless integration between multivendor identity, network, security and asset management systems.

To access the **Platform Exchange Grid** page, choose **Admin** > **Integrations** > **pxGrid** from the main menu.

For more information about how to perform this integration, refer to the manual "Integrating Cisco Cyber Vision with Cisco Identity Services Engine (ISE) via pxGrid".

XDR

Cisco Cyber Vision can be integrated with XDR, a cloud-native, built-in platform that connects the Cisco Secure portfolio with your infrastructure. This integration allows you to significantly reduce dwell time and human-powered tasks.

Note SecureX reached its end of life on July 31, 2024.

Cisco XDR is an online platform that centralizes security events from various Cisco software equipments through an API. For instance, events such as those from Cisco Cyber Vision or firewall activities can be transmitted to Cisco XDR and correlated, then presented across diverse dashboards.

XDR integration enables three features in Cisco Cyber Vision:

- Without XDR SSO login, the **Investigate in XDR Threat Response** button will appear on components' technical sheets.

- With XDR SSO login, the **Report to XDR** button will appear on certain events of the event calendar page. This button is utilized to push the events to XDR.
- With XDR SSO login, an XDR ribbon featuring several functionalities can be activated within Cisco Cyber Vision.

This section details the configuration of XDR in Cisco Cyber Vision and different authorized features.

XDR Configuration

Before you begin

The Cisco XDR configuration in Cisco Cyber Vision requests:

- An Admin access to Cisco Cyber Vision Center.
- A Cisco Cyber Vision Center with internet access.
- A XDR account with an admin role.

Procedure

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

Step 2 Click the dropdown arrow of the **Region** field.

Step 3 Select the region from dropdown list.

Step 4 Click **Enable XDR** to enable the link.

Once you enable the link, the button turns red to indicate **Disable XDR**.

By completing the steps above, you are now able to use the button **Investigate in XDR Threat Response** that will appear in the components' technical sheet. To install and use the XDR ribbon and the Report to XDR button, complete the steps herebelow.

Step 5 Click the user menu located in the top right corner of the GUI.

Step 6 Click **My Settings**.

A new **XDR** menu appears on the right of the **My settings** page.

Step 7 Click the **Log in** button.

A **Grant Application Access** popup appears with an authentication code.

Step 8 Click **Verify and Authorize**.

The browser opens a new page with the **Security Cloud Sign On** window to grant Cisco Cyber Vision access to **XDR**.

Step 9 Enter **Email** and click **Continue**.

Step 10 Click **Authorize Cyber Vision**.

A **Client Access Granted** popup appears.

Step 11 In **Cisco Cyber Vision Center** > **My Settings**, the XDR menu indicates that Cisco Cyber Vision is connected to XDR.

Step 12 Use the **Ribbon status** toggle button to enable the XDR ribbon.

Once you enable the **Ribbon status** toggle button, message appears.

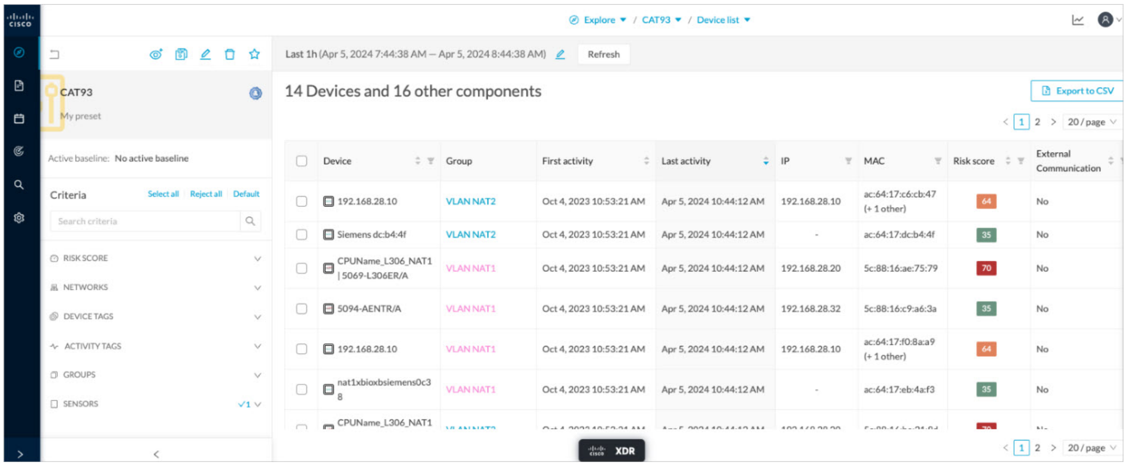
Step 13 To log out, click **Logout of XDR**.

Step 14 Click **Save settings**.

XDR Ribbon

Once configured and activated, the XDR ribbon will appear at the bottom of the Cisco Cyber Vision GUI of the Explore menu.

The XDR ribbon in the Device List view:

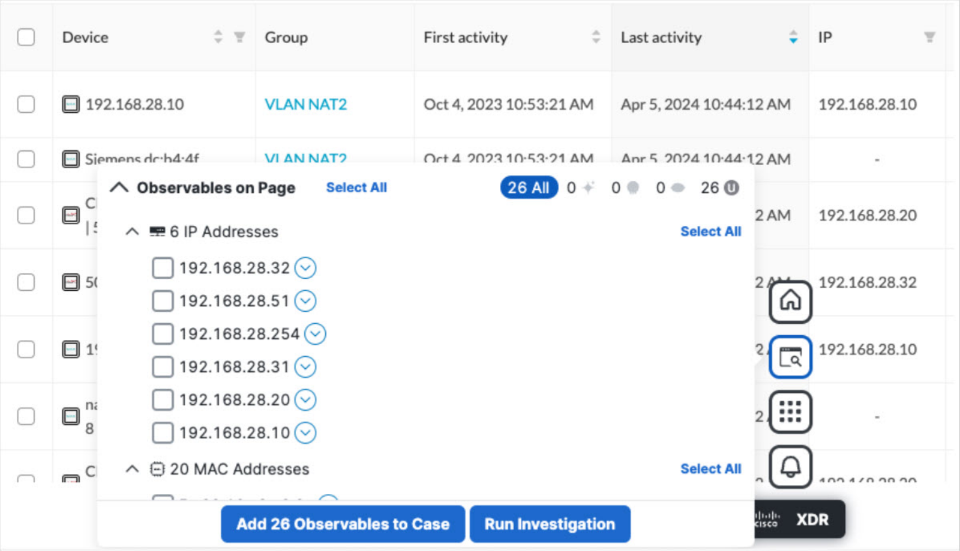


14 Devices and 16 other components

□	Device	Group	First activity	Last activity	IP	MAC	Risk score	External Communication
□	192.168.28.10	VLAN NAT2	Oct 4, 2023 10:53:21 AM	Apr 5, 2024 10:44:12 AM	192.168.28.10	ac:64:17:c6:cb:47 (+ 1 other)	64	No
□	Siemens dc:b4:4f	VLAN NAT2	Oct 4, 2023 10:53:21 AM	Apr 5, 2024 10:44:12 AM	-	ac:64:17:dc:b4:4f	35	No
□	CPUName_L306_NAT1 | 5069-L306ER/A	VLAN NAT1	Oct 4, 2023 10:53:21 AM	Apr 5, 2024 10:44:12 AM	192.168.28.20	5c:88:16:ae:75:79	70	No
□	5094-AENTR/A	VLAN NAT1	Oct 4, 2023 10:53:21 AM	Apr 5, 2024 10:44:12 AM	192.168.28.32	5c:88:16:c9:a6:3a	35	No
□	192.168.28.10	VLAN NAT1	Oct 4, 2023 10:53:21 AM	Apr 5, 2024 10:44:12 AM	192.168.28.10	ac:64:17:f0:8a:a9 (+ 1 other)	64	No
□	nat1xbioxbsiemens0c38	VLAN NAT1	Oct 4, 2023 10:53:21 AM	Apr 5, 2024 10:44:12 AM	-	ac:64:17:eb:4a:f3	35	No
□	CPUName_L306_NAT1							

The Cisco XDR Getting Started Guide explains how to use the XDR ribbon.

For example, to find observables and investigate them in XDR Threat Response, click the **Find Observables** icon like below:



□	Device	Group	First activity	Last activity	IP
□	192.168.28.10	VLAN NAT2	Oct 4, 2023 10:53:21 AM	Apr 5, 2024 10:44:12 AM	192.168.28.10
□	Siemens dc:b4:4f	VLAN NAT2	Oct 4, 2023 10:53:21 AM	Apr 5, 2024 10:44:12 AM	-

Observables on Page Select All 26 All 0 0 0 26

6 IP Addresses Select All

- □ 192.168.28.32
- □ 192.168.28.51
- □ 192.168.28.254
- □ 192.168.28.31
- □ 192.168.28.20
- □ 192.168.28.10

20 MAC Addresses Select All

Add 26 Observables to Case Run Investigation

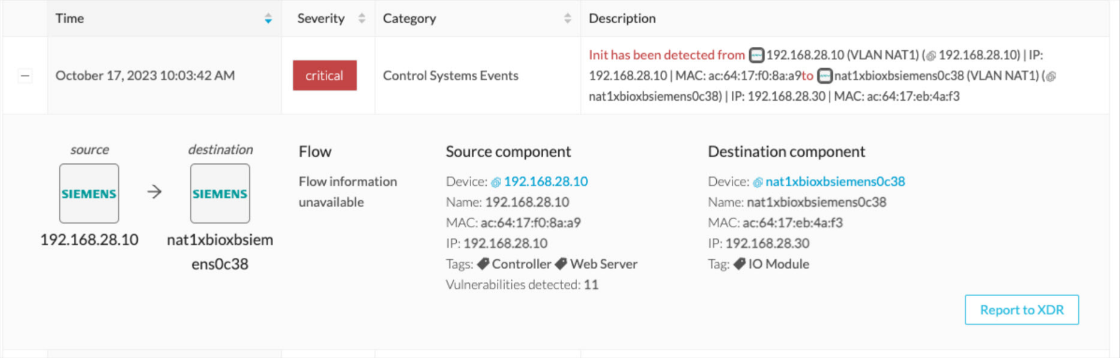
XDR Event Integration

Once XDR has been configured in Cisco Cyber Vision, a **Report to XDR** button appears on some events of the event calendar page. Using this button will push the event to XDR and create an incident.

The XDR button appears on three categories of event:

- Anomaly Detection
- Control Systems Events
- Signature Based Detection

The Report to XDR button on a Control Systems Events:



	Time	Severity	Category	Description
–	October 17, 2023 10:03:42 AM	critical	Control Systems Events	Init has been detected from 192.168.28.10 (VLAN NAT1) (192.168.28.10) | IP: 192.168.28.10 | MAC: ac:64:17:f0:8a:a9to nat1xbioxbsiemens0c38 (VLAN NAT1) (nat1xbioxbsiemens0c38) | IP: 192.168.28.30 | MAC: ac:64:17:eb:4a:f3

source SIEMENS 192.168.28.10 → *destination* SIEMENS nat1xbioxbsiemens0c38

Flow

Flow information unavailable

Source component

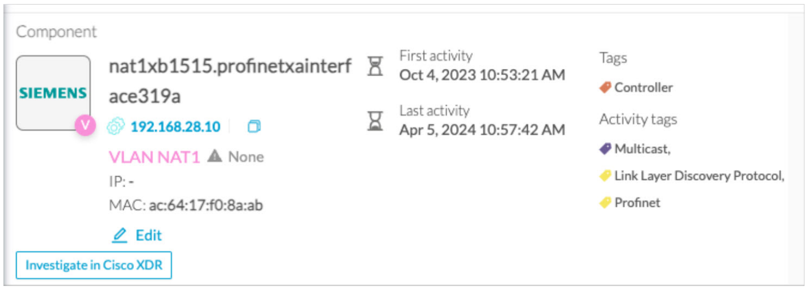
Device: 192.168.28.10
Name: 192.168.28.10
MAC: ac:64:17:f0:8a:a9
IP: 192.168.28.10
Tags: Controller Web Server
Vulnerabilities detected: 11

Destination component

Device: nat1xbioxbsiemens0c38
Name: nat1xbioxbsiemens0c38
MAC: ac:64:17:eb:4a:f3
IP: 192.168.28.30
Tag: IO Module

XDR Component Button

Once XDR has been configured in Cisco Cyber Vision, the button **Investigate in Cisco Threat Response** appears on the components' technical sheet. The component's IP and MAC addresses will be investigated in XDR Threat Response if you use this button.


Component

nat1xb1515.profinetxainterface319a

192.168.28.10

VLAN NAT1 ▲ None

IP: -

MAC: ac:64:17:f0:8a:ab

First activity
Oct 4, 2023 10:53:21 AM

Last activity
Apr 5, 2024 10:57:42 AM

Tags
Controller

Activity tags
Multicast,
Link Layer Discovery Protocol,
Profinet

External Resources for XDR Integration

Herebelow is the list of all URLs called by the Cisco Cyber Vision Center in case you need to authorize them, for example in a firewall.

Center:

North America

- Cisco XDR Platform: https://visibility.amp.cisco.com/iroh/
- Cisco XDR Private Intelligence: https://private.intel.amp.cisco.com/ctia/
- Cisco XDR Automation: https://automate.us.security.cisco.com/api/

Europe

- Cisco XDR Platform: https://visibility.eu.amp.cisco.com/iroh/
- Cisco XDR Private Intelligence: https://private.intel.eu.amp.cisco.com/ctia/
- Cisco XDR Automation: https://automate.eu.security.cisco.com/api/

Asia Pacific, Japan, and China

- Cisco XDR Platform: https://visibility.apjc.amp.cisco.com/iroh/
- Cisco XDR Private Intelligence: https://private.intel.apjc.amp.cisco.com/ctia/
- Cisco XDR Automation: https://automate.apjc.security.cisco.com/api/

Web client:

- conure.apjc.security.cisco.com
- conure.us.security.cisco.com
- conure.eu.security.cisco.com

Secure Equipment Access

Secure Equipment Access (SEA) is a Cisco offering that

- provides secure remote access for operations teams to manage and troubleshoot operational technology (OT) assets,

- eliminates the need for costly on-site service visits
- enables Zero Trust Network Access (ZTNA) gateway functionality.

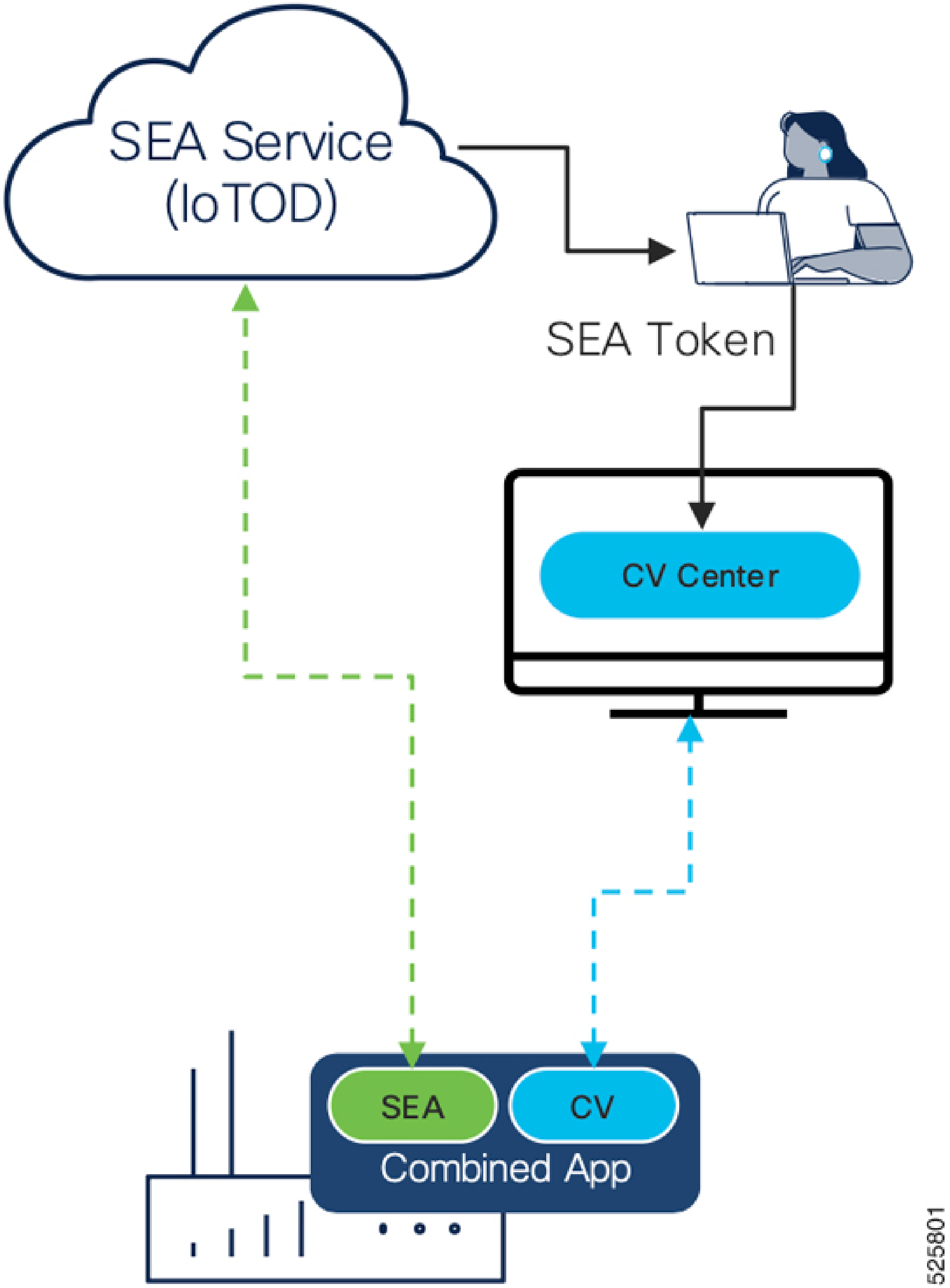
For more details, see the SEA documentation on Cisco DevNet.

You can integrate Secure Equipment Access (SEA) with Cisco Cyber Vision for unified management via the CV Center.

This integration requires the SEA agent, an IOx app, to be running on your network device. You can install the SEA agent while installing the CV sensor app using the same workflow. Both the SEA agent and CV sensor runtimes are packaged as a single IOx application.

This diagram illustrates how Cyber Vision integrates with Secure Equipment Access for industrial network management:

Figure 1: Integrate CV with SEA



Integrate Cisco Cyber Vision Center with SEA

The purpose of this integration is to enable seamless and unified management of both Secure Equipment Access (SEA) and Cisco Cyber Vision through the CV Center. This combined approach simplifies deployment and ongoing management of both components on the same device, while ensuring separation of their operations.

Before you begin

Ensure the following:

- Administrative access to Cisco Cyber Vision Center
- Tenant admin access to the SEA organization where you intend to connect with CV.

Procedure

Step 1 Log in to Cisco Cyber Vision Center, and from the main menu, choose **Admin** > **Integrations** > **SEA**.

Step 2 On the **SEA** page, in the **Configuration** section, select a region from the drop-down list and click **Connect**.

Step 3 Log in to the **IoT Operations Dashboard** with your IoT OD credentials.

Step 4 On the **IoT Operations Dashboard**, click **Connect**.

Step 5 On the **SEA** page, verify your details listed in the **Configuration** section.

Step 6 Click **Enable SEA**.

Step 7 (Optional) To validate the configuration, click **Validate configuration**.

A success message appears on the SEA page, indicating that SEA is configured.

What to do next

Install the compatible sensors. For more information, see the "Install sensors with the sensor management extension" topic in the *Cisco Cyber Vision Sensor Application for Cisco Switches Installation Guide*.

Cisco In Product Support

A **Cisco In Product Support** is a virtual assistant that:

- provides customers and partners with a unified self-service experience across multiple support domains,
- offers tools for managing cases, checking bug applicability, troubleshooting hardware, and managing licensing, and
- enables users to connect directly with case owners, managers, or Technical Assistance Center (TAC) duty managers for escalations or assistance.

Table 14: Feature History Table

Feature	Release Information	Feature Description
Cisco In Product Support	Release 5.3.x	Use Cisco In Product Support to manage your Cisco support cases and related tasks directly from the Center.

Functionality

Cisco In Product Support is designed to simplify and speed up support activities for Cisco customers and partners.

You can address technical challenges and manage support team interactions efficiently by using a single interface that consolidates multiple support services.

The tool integrates with Cisco's back-end systems to provide up-to-date case tracking, bug search, and device troubleshooting resources.

Examples

- A partner uses **Cisco In Product Support** to submit and track a hardware replacement (RMA) request.
- A customer uses the assistant to check whether a reported bug affects their installed software version.
- A network engineer leverages the self-service troubleshooting function to diagnose hardware issues without opening a formal support ticket.

Access Cisco In Product Support

Open **Cisco In Product Support** to interact with Cisco TAC support within your product.

Cisco In Product Support provides integrated access to Cisco TAC services. You can use **Cisco In Product Support** to open TAC cases, record screens, or upload files directly from your product interface.

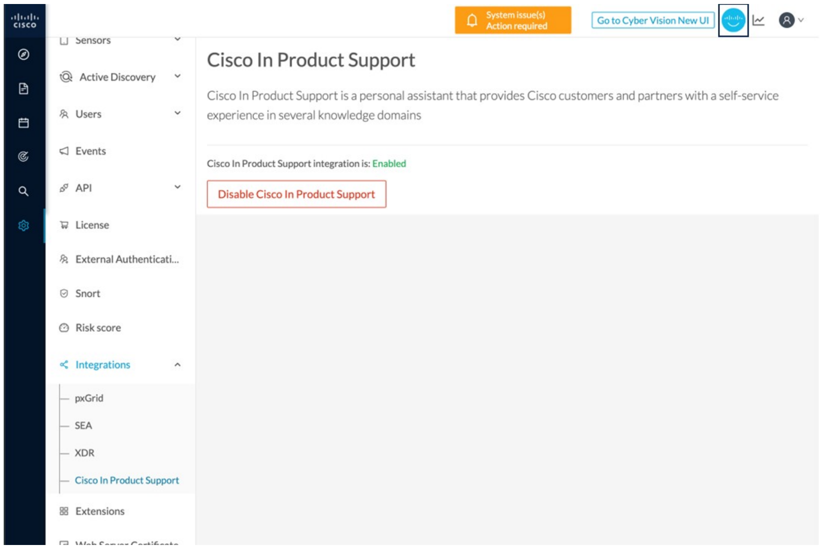
Before you begin

- Ensure you have a Cisco account with TAC access.

Procedure

Step 1 From the main menu, choose **Admin** > **Integrations** > **Cisco In Product Support**.

Note
Cisco In Product Support integration is enabled by default. Its icon is available on the page.



Cisco In Product Support

Cisco In Product Support is a personal assistant that provides Cisco customers and partners with a self-service experience in several knowledge domains

Cisco In Product Support integration is: Enabled

Cisco Confidential

Step 2 Click the **Cisco In Product Support** icon.

Step 3 Click **Sign In** to enable TAC’s virtual assistance.

After you enable Cisco In Product Support, you can:

- **Open Cisco Support Case**
- **Record Screen**
- **Upload Local File**

What to do next

To generate and upload diagnostics, click the **System Statistics** icon.

CHAPTER 7

Maintain and Monitor Cisco Cyber Vision

Monitored presets

To monitor your network using Cisco Cyber Vision Center, you must set up monitored presets. A monitored preset is any preset that is monitored against a baseline.

To view the presets in your Center, from the main menu, choose **Explore**. Click a preset to view the network data that matches the preset definition. You can also export the data as a PDF file.

Presets

A preset is a customizable view that allow you to focus on specific subsets of network data. A preset filters network data based on defined criteria and gives you a focused view of an organizational network for quick, meaningful analysis.

The parameters that you can configure for a preset include:

- Time
- Risk score range
- Networks, by IP subnets or VLAN IDs
- Device tags
- Activity tags

- Groups
- Sensors

Baseline

A baseline is a snapshot of a preset. It is the reference point against which network behavior is periodically compared to detect network deviations or anomalies by identifying changes such as new devices, altered communications, or unusual activities that may indicate security issues or operational problems.

Multiple baselines for a preset

You can create multiple baselines for a preset to monitor in various known states of your network.

For example, network activity baselines may differ for weekdays and weekends. Create two baselines for these scenarios, and activate the baseline that would be an accurate monitor for your network on any given day.

To activate one of multiple baselines for a monitored preset, see Configure monitored presets, on page 124

Create baselines

Procedure

Step 1 From the main menu, choose **Explore**.

Step 2 To create a baseline, you can create a baseline from a preset icon (👁) from two paths:

- The preset dashlet listed on the **Explore** page.
- The preset details page that is displayed when you click a preset dashlet.

Step 3 Enter a name and description for the preset.

Step 4 Click **Create**.

To view the newly created baseline, from the main menu, choose **Monitor**. All the baselines that are available in your Center are displayed in this page, categorized by the preset for which they were created.

Configure monitored presets

Before you begin

A monitored preset is a preset with a baseline. See Create baselines, on page 124.

In this task, you:

- Define the interval for checking the network against a monitored preset
- Choose the type of event differences you want to view alerts for

Any differences in the selected baseline and the current network status result in alerts that can review and acknowledge.

Procedure

Step 1 From the main menu, choose **Monitor**.

Step 2 For the monitored presets you want to configure, click the vertical ellipsis icon and choose **Monitored preset settings**.

Step 3 For the monitored preset:

a) Enter a monitoring interval, in seconds.
b) If you have created more than one baseline for the preset, in the **Monitored baseline** field, choose the preset you want to activate.
c) In the **Events severity** section, choose the severity level for the alerts generated for each event type.
d) In the **Advanced settings** section, choose the component, property, and activity differences for which you want to view alerts.
e) Click **OK**.

Manage monitored preset differences

This task guides you through acknowledging or reporting a single difference entry.

- To mark a reported event as normal for the network, acknowledge the entry.
- To identify a reported event as an anomaly and create an event in Cisco Cyber Vision Center, report the entry.

After you select a baseline in the **Monitor** page, you have two bulk management options:

- To acknowledge all differences across the components and activities, click the blue tick icon in the left pane
- To acknowledge or report multiple, specific differences in the components or activities listings, select the entries and click **Acknowledge Selection** or **Report Selection**.

Procedure

Step 1 From the main menu, choose **Monitor**.

Step 2 In the **What changed** area, for a monitored preset, click the baseline you want to examine.

Step 3 You can view the differences reported based on:

- New components
- New activities

Step 4 To view the communication flows that may have caused the reported difference, click **Investigate with flows**.

Step 5 In the components list, click an entry to view the details. You can choose from four options:

Action	Definition
Acknowledge Component	You can enter a message explaining your choice for reference. You have two acknowledgement options: • **Acknowledge and include**: Retain this alert and receive new alerts if something new happens with this component or activity. • **Acknowledge and keep warning**: Delete this alert and receive new alerts if the same event repeats.
Ack. with related activities	You can enter a message explaining your choice for reference. Click **Acknowledge and include** to retain the alert and receive alerts for any new events for the component and its activities.
Report component	You must enter a message explaining your choice for reference. You continue to receive alerts if the anomaly is detected again. Click **Report component** to create an event report for this anomaly.
Show details	View device tags and properties.

Step 6 In the activities list, click an entry to view the details. You can choose from three options:

Action	Definition
Acknowledge activity	Acknowledge the reported event as normal for the network. You can enter a message explaining your choice for reference. Two acknowledgement options are available to you: • **Acknowledge and include**: Retain this alert and receive alerts if something new happens with this component or activity. • **Acknowledge and keep warning**: Delete this alert and receive a new alert if the same event repeats.
Report activity	You must enter a message explaining your choice for reference. You continue to receive alerts if the anomaly is detected again. Click **Report activity** to create an event report for this anomaly.

Action	Definition
Show details	View activity tags and variables.

Center Shutdown/Reboot

You can trigger a safe shutdown and reboot of the **Center**.

Use **Reboot** to fix a minor bug, such as a system overload.

To access the **Center shutdown/reboot** page, choose **Admin** > **System** from the main menu.

Upgrade with a Combined Update File

Version releases include a **Cisco Cyber Vision Manual Update Center** update file. To access this file, choose **Admin** > **System** from the main menu.

Important Rolling back to an older Cisco Cyber Version version is not supported.

Requirements

- A combined update to retrieve from cisco.com.

Use the SHA512 checksum provided by Cisco to verify that the file you just downloaded is healthy.

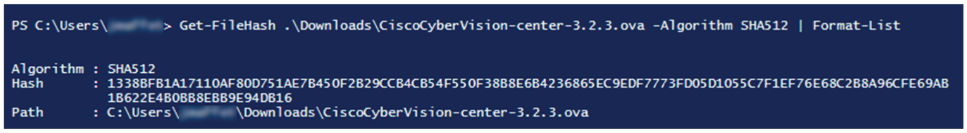
Windows users:

Procedure

Step 1 Retrieve the Cisco Cyber Vision combined update from cisco.com.

Step 2 Open a shell prompt such as Windows Powershell and use the following command to retrieve the file checksum:

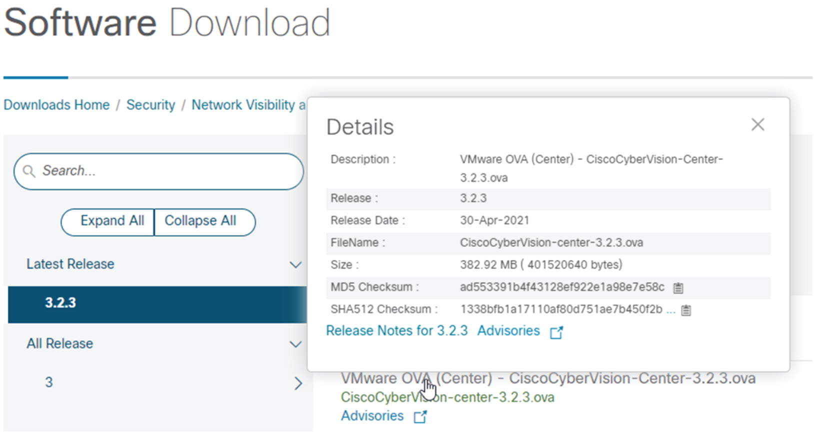
Get-FileHash .\CiscoCyberVision-<TYPE>-<VERSION>.<EXT> -Algorithm SHA512 | Format-List



```
PS C:\Users\[redacted]> Get-FileHash .\Downloads\CiscoCyberVision-center-3.2.3.ova -Algorithm SHA512 | Format-List


Algorithm : SHA512
Hash      : 1338BFB1A17110AF80D751AE7B450F2B29CCB4CB54F550F38B8E6B4236865EC9EDF7773FD05D1055C7F1EF76E68C2B8A96CFE69AB
            1B622E4B0BB8EBB9E94DB16
Path      : C:\Users\[redacted]\Downloads\CiscoCyberVision-center-3.2.3.ova
```

Step 3 In cisco.com, hover over the file and copy the SHA512 checksum.



Details

Description :	VMware OVA (Center) - CiscoCyberVision-Center-3.2.3.ova
Release :	3.2.3
Release Date :	30-Apr-2021
FileName :	CiscoCyberVision-center-3.2.3.ova
Size :	382.92 MB (401520640 bytes)
MD5 Checksum :	ad553391b4f43128ef922e1a98e7e58c
SHA512 Checksum :	1338bfb1a17110af80d751ae7b450f2b ...

VMware OVA (Center) - CiscoCyberVision-Center-3.2.3.ova
CiscoCyberVision-center-3.2.3.ova
Advisories

Step 4 Compare both checksums.

- If both checksums are identical, the file is healthy.
- If the checksums do not match, download the file again.
- If the checksums still don't match, please contact Cisco support.

To update the Center and all applicable sensors:

Step 5 Log in to Cisco Cyber Vision.

Step 6 From the main meu, choose **Admin** > **System**.

Step 7 Click **System update**.

Step 8 Select the update file CiscoCyberVision-update-combined-<VERSION>.dat

Step 9 Confirm the update.

As the Center and sensors update, a holding page appears. When done, click Center **Reboot**. You will be logged out.

Step 10 Log in.

If sensors were offline when the update occurred, repeat the procedure until all sensors update.

Syslog configurations

A syslog configuration is a network logging setup that

- forwards Cyber Vision events and alerts to an external syslog server,
- enables integration with Security Information and Event Management (SIEM) platforms, and
- supports Common Event Format (CEF) for standardized message structure.

Table 15: Feature History Table

Feature	Release Information	Feature Description
Non-CEF syslogs support removed	Release 5.3.x	You can no longer use non-CEF syslog formats with Cyber Vision Center. When you upgrade to Cisco Cyber Vision Center Release 5.3.x, any existing syslog connections that use non-CEF formats are automatically updated to CEF formats.

Configure syslog

Enable forwarding of Cyber Vision events and alerts to an external syslog server to integrate with a Security Information and Event Management (SIEM) system.

To configure syslog, follow these steps:

Before you begin

- Ensure you have administrator access to Cyber Vision Center.
- Confirm that the external syslog server is accessible. Obtain the host IP address, port, and the required protocol.
- If secure communication is required, ensure you have the P12 certificate from your SIEM administrator.
- Recent syslog format changes:
  - **Standard** and **RFC3164** formats are deprecated.
  - **Standard/CEF** is now named **CEF**.
  - **RFC3164/CEF** is now named **CEF Extended Time Precision**.

Note If the deployment had **Standard** or **RFC3164** formats configured, version 5.3.x setup migrates the configuration to CEF.

Procedure

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

Step 2 Click **Configure** in the **Syslog configuration** menu.

Step 3 Select **Protocol**.

Note
If secure communication is required, select **TCP + TLS** and import the P12 certificate.

Step 4 Enter the syslog server **Host** IP address and **Port** that are accessible from Cyber Vision Center.

Step 5 Select the required **Format**.

- **CEF**: This format, based on the Common Event Format (CEF) standard, sends events with second-precision timestamps.
- **CEF Extended Time Precision**: This format, based on the Common Event Format (CEF) and an extended syslog header, sends events with millisecond-precision timestamps.

Step 6 Save the configuration.

Cyber Vision Center sends events from the Classic UI to syslog with 'Version Number = 1.0.' It sends alerts from the New UI to syslog with 'Version Number = 2.0.

What to do next

To configure notifications for specific alert types, see Enable or disable syslog notifications for alert types

To export events using syslog, see "Configure event export to syslog (Classic UI)" in the "Cisco Cyber Vision Syslog Notification Format Configuration Guide".

Import/Export

Use the System interface to import and export the Cisco Cyber Vision database. To access the **Import/Export** page, choose **Admin** > **System** from the main menu.

Regularly export the database to back up the industrial network data on Cisco Cyber Vision or if you need to transfer the database to a different **Center**.

Exports database file limitation is up to 2 GB of data. This avoids side effects related to slow database exports. If the database is larger than 2 GB, you get an error message. In this case, connect to the Center using SSH and perform a data dump. Use the command: `sbs-db dump`.

Network data, events, and users are retained, as well as all customizations (e.g., groups, component names).

Only configurations created in Cisco Cyber Vision's GUI persist. If you change **Center**, perform a basic configuration of the Center and then configure Cisco Cyber Vision again. Refer to the corresponding Center Installation Guide.

Note The **Import** process may take one hour for big databases. Refresh the page to check that the import remains active (i.e., no error message).

Knowledge DB

Cisco Cyber Vision uses an internal database which contains a list of recognized vulnerabilities, icons, and threats.

Important To remain protected against vulnerabilities, always update the Knowledge DB in Cisco Cyber Vision as soon as possible after notification of a new version.

To update the Knowledge DB:

Procedure

Step 1 Download the latest.db file available from cisco.com.

Step 2 From the main menu, choose **Admin** > **System**.

Step 3 Click **Import a Knowledge DB** under the **Knowledge DB** field.

Step 4 Select the file and click **Open** to upload the file.

Importing the new database rematches your existing components against any new vulnerabilities and updates the network data.

Certificate fingerprints

A certificate fingerprint is a unique identifier that

- identifies a digital certificate,
- verifies the authenticity of certificates during enrollment and renewal, and
- enables secure communication between Global Centers and synchronized Centers.

Validity and renewal

Use the fingerprint during enrollment with a Global Center or when updating after certificate renewal. The fingerprint validates the certificate and authorizes secure connectivity with remote hosts. For more information on Global Center, see Information and characteristics.

Certificates are valid for 2 years. Upon expiration, renewal and fingerprint exchange typically occur automatically. If automatic renewal fails, perform a manual renewal and provide the new fingerprint to the Global Center. This action restores enrollment and connectivity statuses in the Global Center. See the the Centers Installation Guides for detailed instructions.

Note Always ensure the fingerprint matches the current certificate to maintain secure connections.

Cisco Cyber Vision Telemetry

Telemetry monitors your system to provide anonymous diagnostics and usage data, helps us to understand and enhance product usage. Cisco Cyber Vision telemetry data communication occurs as HTTPS traffic through Port 443 with https://connectdna.cisco.com/.

Telemetry is enabled by default. To disable this feature, follow these steps:

Procedure

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

Step 2 To disable telemetry, click the **ON** toggle button under the **Telemetry Collection** field.

The switch turns **OFF**.

Reset to Factory Defaults

Only use **Reset to Factory Defaults** *as a last resort*, after all other troubleshooting attempts fail. Get help from product support.

To access the **Reset**, choose **Admin** > **System** from the main menu.

A **Reset to Factory Defaults** deletes the following:

- Some Center configuration data elements.
- The GUI configuration (such as user accounts, the setup of event severities, etc.).
- Data collected by the sensors.
- The configuration of all known sensors (such as IP addresses, capture modes, etc.).

Root password, certificates and configurations from the Basic Center configuration persist.

After a **Reset to Factory Defaults** occurs, the GUI refreshes with the installation wizard. See the corresponding Center Installation Guide.

Snort

A Snort instance is a network intrusion detection system (NIDS) that

- analyzes network traffic for malicious activity using a rule matching engine,
- applies a set of rules that characterize potentially harmful network activity, and
- integrates with Cisco Cyber Vision to provide real-time intrusion detection alerts and management.

Table 16: Feature History Table

Feature	Release Information	Feature Description
Enable or disable Snort on a Center DPI interface	Release 5.3.x	You can enable or disable Snort IDS or IPS on a Cisco Cyber Vision Center DPI interface. Previously, Snort was always enabled by default and could not be changed.

Additional reference information

- Cisco Cyber Vision can run the Snort engine on the Center and compatible sensors. The Center manages rule configuration and distribution. It also intercepts alerts for display in the GUI.
- Snort is disabled by default on sensors. To enable it, activate features of the Intrusion Detection System (IDS). See Enable IDS on a sensor.
- On the Center's Deep Packet Inspection (DPI), Snort is enabled by default.
- Snort is available on the following Cisco devices:
  - Cisco IC3000 Industrial Compute Gateway
  - Cisco Catalyst 9300 Series Switches
  - Cisco IR8340 Integrated Services Router Rugged
  - It is also available by default on the Center DPI.

Snort rulesets and rule categories

The Snort rules are organized into two main rulesets: the Community ruleset and the Subscriber ruleset.

Community ruleset

- Distributed freely and certified by Talos, including rules contributed by the open source community and integrators.
- Represents a subset of the full ruleset available to subscribers.
- Does not include the most recent Snort rules and does not guarantee coverage against the latest threats.

Subscriber ruleset

- Contains all rules released by the Talos Security Intelligence and Research Team.
- Provides rapid access to the newest rules and early coverage of exploits and vulnerabilities.
- Remains aligned with ongoing Talos research for maximum detection capability.
- Requires Advantage licensing and an IDS sensor license for each enabled sensor.

Snort rules are organized into categories, each targeting a specific threat type or platform.

Table 17: Rule categories

Category	Description
Browser	Detects vulnerabilities in major browsers (e.g., Chrome, Firefox, Internet Explorer) and browser plugins such as ActiveX.
Deleted	Contains deprecated or replaced rules.
Experimental–DoS	Rules targeting Denial of Service (DoS) activities such as TCP SYN flooding or DNS/HTTP flooding.
Experimental–Scada	Detects attacks on industrial control system assets.
Exploit–Kit	Tailored to identify exploit kit activities.
File	Addresses vulnerabilities in various file types (executables, Microsoft Office, images, Java, PDF, etc.).
Malware–Backdoor	Identifies traffic to known backdoor command channels.
Malware–CNC	Detects botnet command and control activity (call home, data exfiltration, download of dropped files).
Malware–Other	Covers other malicious tools or miscellaneous malware activity.
Misc	Rules address protocol-specific threats, policy violations such as spam and unwanted applications, and indicators not categorized elsewhere.
OS–Other	Looks for vulnerabilities in various operating systems (Linux, mobile OS, Solaris, etc.).
OS–Windows	Targets vulnerabilities in Windows operating systems.
Server–Other	Deals with vulnerabilities in multiple server types (web servers, database servers, mail servers, etc.).
Server–Webapp	Pertains to attacks against server-based web applications.

Snort rules management features

The Snort rules management system in Cisco Cyber Vision Center includes these features:

Table 18: Snort rules management

Feature	Description
Snort community rules	Snort community rules are set by default in the Cyber Vision Center.
Subscriber rules	Click **Use Subscriber Rules** from the **Admin** > **Snort** page to enable snort subscriber rules (requires Advantage and intrusion detection system (IDS) sensor licenses).
Category-based management	Enable or disable entire rule categories via the GUI.
Direct rule file download	Download rule files per category from the interface.
Individual rule control	Enable or disable specific rules within categories, independent of category status. In the downloaded rule files, locate the rule and get the sid (signature id). Go to **Admin** > **Snort** and enter it in the **Rule sid** and click **Disable** or **Enable**.
Custom rule import	Import and manage user-created rules via the **IMPORT CUSTOM RULES FILE** function from the **Admin** > **Snort** page.
Rule synchronization	Apply synchronized rule sets to sensors using the **Synchronize rules on sensors** feature from the **Admin** > **Snort** page.
Reset to default	Click **RESET TO DEFAULT** from the **Admin** > **Snort** page to restore the entire rule configuration to factory defaults and remove all custom rule files.

Enable IDS on a sensor

Enable Intrusion Detection System (IDS) on a compatible Cisco sensor to activate Snort-based intrusion detection.

Use this task to activate Snort's intrusion detection capabilities on a supported Cisco sensor for network security monitoring.

Before you begin

Ensure your sensor is one of these compatible devices:

- Cisco IC3000 Industrial Compute Gateway
- Cisco Catalyst 9300 Series Switch
- Cisco IR8340 Integrated Services Router Rugged
- Center DPI Interface

Procedure

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

Step 2 Select the sensor you want to enable IDS on.

Step 3 Click **Enable IDS**.

IDS is now active on the selected sensor. Snort will now monitor network traffic for threats.

What to do next

If required, you can disable Snort's intrusion detection capabilities. To do this, select the sensor and click **Disable IDS**.

Risk Score

The **Risk score** page allows you to set up the time range used for risk score computation. To access the **Risk score** page, choose **Admin** > **Risk score** from the main menu. Computation occurs every hour but considers only the activities within the configured time period.

You can select a time range of 30 days (by default), 7 days, or set a custom one with a minimum of one day

For more information about risk scores, see the Risk Score Concept.

Extensions

From this page, you can manage Cisco Cyber Vision extensions. Extensions are optional add-ons to the Center which provide more features, such as the management of new device types, additional detection engines, or integrations with external services. To access the **Extensions** page, choose **Admin** > **Extensions** from the main menu.

Currently, there are two extensions available:

- **Cyber Vision sensor management**

  For more information about this extension and how to use it, see the Sensors.

- **Cyber Vision Reports Management**

  For more information about this extension and how to use it, see the Reports.

To install an extension, retrieve the extension file on cisco.com and click **Import a new extension file** to import.

CHAPTER 8

Cyber Vision New UI

Cyber Vision New UI

A Cyber Vision New UI is an asset-based user interface that

- organizes information around assets, which is a clearer representation of physical equipment, instead of discrete components or device entries,
- aggregates multiple network identities (including interfaces, IP addresses, and MAC addresses) that belong to the same physical equipment, and
- prioritizes the most relevant information, such as asset name, type, and version, to help users stay focused and reduce clutter.

Table 19: Feature History Table

Feature	Release Information	Feature Description
New UI	Release 5.3.x	Cisco Cyber Vision Center offers New UI that comprises simplified, structured views of assets, vulnerabilities, and alerts. The New UI includes a new method for automatically grouping assets using AI-based clustering. Click **Go to Cyber Vision New UI** in the top banner of your Center to get started.

Key differences between Classic UI and New UI

The Classic UI focuses on technical entities such as components and devices. Users need to manually define presets, such as baselines or monitoring sets. They often manage separate entries for each network identity, which results in complexity and confusion.

The Cyber Vision New UI connects the physical industrial environment and its digital representation. It visually groups all elements associated with a single physical equipment. Examples include production line equipment or customer installations.

Table 20: Contrast table

Feature	Classic UI	New UI
Entity focus	Components, devices	Assets—representation of physical equipment
Information grouping	Each network identity shown as a separate item	Multiple identities grouped by asset
User effort	Requires manual preset definitions	Provides automatic aggregation to improve clarity
Information display	Shows all details, often overwhelming	Displays only the most relevant attributes of each asset.

Assets

An asset is a network entity that

- serves as a core physical component within an industrial network, such as a programmable logic controller (PLC), a switch, a controller, or a server,
- may represent one or more modules with distinct identifiers, which may include serial number, reference, or type, even when MAC and IP addresses overlap; and
- is defined, categorized, and managed according to established rules in Cisco Cyber Vision to ensure effective asset inventory and operations.

Modular assets: If an asset is modular, such as a chassis with multiple modules, its summary shows details including slot, model name, type, firmware version, and serial number. Each module, such as a CPU, communication module, or I/O module, appears as a separate block in the chassis view.

Table 21: Feature History Table

Feature	Release Information	Feature Description
Search bar	Release 5.3.x	New UI contains a search bar in the global top banner. You can search for an asset by name, IP address, or MAC address.
Asset list CSV enhancements	Release 5.3.x	The CSV that you download from Cyber Vision Center includes a column that lists the sensors that have detected assets.

Asset interfaces

Assets use different network interfaces to communicate within the network. Interfaces may include MAC addresses, IP addresses, VLAN IDs, or combinations of these. The system collects interface properties from network traffic. It selects one interface as the primary interface for visualizations. If multiple interfaces exist, you can change which interface is primary. The asset list shows both the primary and additional interfaces for each asset.

Asset data management

The table presents the main functions available for managing asset data in the **Assets** page. It describes the specific capabilities and behavior of each function.

Function	Description
Delete assets	By default, the system deletes assets removed from the production line after 30 days. You can manually delete assets detected due to misconfiguration. If sensors detect the assets again, the system may re-add them to the inventory.
Search for assets	Enter at least three characters from an asset's name, IP address, or MAC address in the search bar to quickly locate details.
Export	Export all asset data to a CSV file. The export includes asset IDs so you can distinguish assets with the same name.

Function	Description
Filter asset data	Select **Assets** and use one of the these methods to manage the asset table: • Click **Focus** to sort the asset table by **Default**, **Network**, or **Security**. • Access the table settings menu to show or hide columns as needed.

Organization hierarchies

Organization hierarchies are structural models that

- group assets, sensors, and data sources within Cisco Cyber Vision Center,
- arrange those entities in a hierarchical tree of levels (nodes), and
- enable granular organization, management, and access control across multiple subdivisions.

Hierarchy management

- Each node in the hierarchy is a level.
- The system defines the Global level and places it at the top of the hierarchy. You cannot delete this level.
- You can add, edit, or delete levels. However, if a level contains child levels or assigned entities such as sensors or PCAPs, the system prevents deletion.
- The system supports nesting up to five sub-levels; after this limit, no additional levels can be added.
- You can add, edit, or delete levels in the hierarchy through **Configuration** > **Organization Hierarchy**.

Vulnerabilities

A vulnerability is a system weakness that

- enables attackers to gain unauthorized access or perform malicious actions,
- results from flaws in system design, implementation, or configuration, and
- requires mitigation through security measures to prevent exploitation.

The system detects vulnerabilities when an asset or component matches a rule in the Knowledge Database. These rules come from CERTs, manufacturers, and partner manufacturers (for example, Schneider or Siemens). Vulnerabilities are identified by correlating Knowledge Database rules with normalized asset and component properties.

The Vulnerabilities page lists all identified vulnerabilities and their details.

Vulnerability scores

Vulnerability scores are indicative of the potential risk level and impact associated with specific vulnerabilities. Vulnerability scores include these scoring systems:

Cisco Security Risk Score (CSRS)

The Cisco Security Risk Score, which is powered by Cisco Vulnerability Management is represented on a scale from 0-100. It quantifies the risk of a vulnerability by looking beyond technical severity to understand how real-world attackers are leveraging the vulnerability in the wild—if at all. A variety of vulnerability and threat variables are considered when calculating this score, including predictive modeling to forecast the weaponization of vulnerabilities, the availability of recorded exploits or exploit kits, the presence of near real-time exploitation, and much more. Explore Cisco Vulnerability Management and the Cisco Security Risk Score at your own pace through a click-through product demo.

Common Vulnerability Scoring System (CVSS)

The Common Vulnerability Scoring System (CVSS) provides a way to capture the principal characteristics of a vulnerability and produce a numerical score reflecting its severity. The numerical score can then be translated into a qualitative representation (such as low, medium, high, and critical) to help organizations properly assess and prioritize their vulnerability management processes. For more information, see https://www.first.org/cvss/.

Vulnerabilities details

The **Vulnerabilities** page lists all identified vulnerabilities and their details.

Table 22: Vulnerability field descriptions

Field name	Description	Possible values/examples
CVE ID	CVE ID stands for Common Vulnerabilities and Exposures Identifier. It is a unique, standardized identifier assigned to publicly known cybersecurity vulnerabilities. This ID allows for consistent referencing of specific vulnerabilities across different security products and databases.	CVE-2023-20198
Name	This field provides a concise, descriptive title for the vulnerability.	Out-of-bounds Write Vulnerability in Rockwell ControlLogix Communication Modules

Field name	Description	Possible values/examples
Cisco Security Risk Score (CSRS)	This is a proprietary risk assessment score developed by Cisco. It provides an evaluation of the vulnerability's severity and potential impact based on Cisco's internal analysis and threat intelligence. It's typically presented as a numerical score along with a severity level (e.g., High, Medium, Low).	• 67-100: High vulnerability • 34-66: Medium severity vulnerability • 0-33: Low severity vulnerability
CVSS Score	It is the industry standard for assessing the severity of computer system security vulnerabilities. It provides a numerical score (0-10) and a qualitative severity rating (Low, Medium, High, Critical) based on various metrics like attack vector, complexity, impact on confidentiality, integrity, and availability. Security teams use CVSS scores to prioritize severe vulnerabilities and strengthen system security.	• 9-10: Critical vulnerability • 7-8.9: High severity vulnerability • 4-6.9: Medium severity vulnerability • 0.1-3.9: Low severity vulnerability

Field name	Description	Possible values/examples
MITRE ATT&CK® Tactics	Indicates whether the vulnerability can be associated with specific tactics from the MITRE ATT&CK® framework. Tactics represent the "why" of an attack (for example, gaining initial access, privilege escalation). A technique describes the specific actions or methods an attacker uses to achieve a tactic. Each tactic may be achieved through multiple techniques. To view detailed information about the tactics and techniques associated with a specific vulnerability, click the CVE ID link and review the MITRE ATT&CK® section. The "3 Tactics matched" (for example) indicator suggests that the system has identified activities corresponding to three different MITRE ATT&CK tactics. Under each tactic, you can find one or more techniques used. For additional details, visit MITRE ATT&CK®.	Execution, Exfiltration, Persistence
Attack Vector	Describes the path or means by which an attacker can exploit the vulnerability. It indicates the context from which the vulnerability can be exploited (example, locally, over a network, physically).	Network, Adjacent Network, Local, Physical
Affected Assets	This number indicates how many of your monitored assets are currently identified as being vulnerable to this specific CVE. Clicking on the CVE ID provides a detailed list of these assets.	1 for CVE-2023-20198, 2 for CVE-2024-20437

Acknowledge or revert a vulnerability acknowledgement

Mark vulnerabilities as acknowledged, or undo acknowledgement as needed, to manage security alerts effectively.

Use this task when you need to acknowledge vulnerabilities affecting assets, or revert previous acknowledgements in the Cyber Vision Center.

Before you begin

Ensure you have access to the **Assets** or **Vulnerabilities** dashboards.

Procedure

Step 1 From the main menu, choose **Assets**.

Step 2 Select an asset.

Step 3 Select the **Vulnerabilites** tab.

Step 4 Select the relevant **CVE ID** to view vulnerability details.

Step 5 In the **Add/Edit Comment** field, enter a comment as needed.

Step 6 To acknowledge the vulnerability, select **Acknowledge on this asset**.

Step 7 To revert acknowledgement, select **Revert Acknowledgement**.

- When you acknowledge a vulnerability, the system clears the alerts from the **Alerts** dashboard.
- When you revert an acknowledgement, the alerts reappear in the **Alerts** dashboard.

Communication maps

A communication map is a network visualization tool that

- visually displays communication patterns among industrial assets,
- enables filtering and grouping of assets by protocol, network, or functional group, and
- supports investigation by providing details such as observed protocols, data exchange volumes, and source/destination asset information.

This functionality enables operational technology (OT) and information technology (IT) teams to quickly visualize and understand the communication context of industrial assets. It provides a clear visual reference to abnormal communications and potential risks.

Table 23: Feature History Table

Feature	Release Information	Feature Description
Protocol and time filter enhancements	Release 5.4.x	Easily spot communications between assets—even those outside your active view. When an asset communicates with another asset not included in your active view filter, the map highlights these nodes and links with dotted lines. Ungrouped assets now appear clearly in the group-to-group view.

Feature	Release Information	Feature Description
Group by network functionality in communications	Release 5.4.x	You can now view communication data by functional groups or network groups, making it simpler to analyze and understand your network interactions.
See functional group–centric views of the communication map	Release 5.3.x	The communications map displays the communication activity between the configured functional groups. The communication links between groups are not actionable.
Using asset vendor names and icons	Release 5.3.x	In the New UI, communication maps include vendor icons that make asset identification easier.

Communication map features

The communication map provides visualization and interaction options to help you explore asset relationships and network communication.

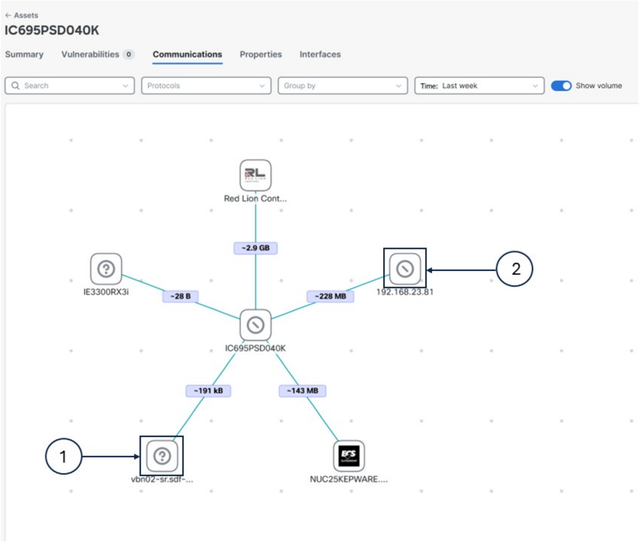
Table 24: Features

Feature	Description
Selected assets communication	• Select an asset from the **Assets** page to view its communication with other internal assets. The system represents connections using vendor icons, IP addresses or MAC addresses, and communication volumes. • Select a communication link to view details about observed protocols, data exchange volumes, and asset source or destination information.

Feature	Description
Group communications	• Group assets by **Networks** (subnet) or **Functional groups** to organize the communication map. **Note** Accept functional groups and configure networks before grouping assets. • Click a group node to display its internal asset communications. Click individual links to view group-to-group communication details. • If an asset communicates with another asset that is not included in the active view filter, the node and links for that asset appear as a dotted line. • Enable the **Show ungrouped** option on the **Communications** page to display assets not assigned to any group. These assets appear under a single ungrouped node. • The map displays non-communicating groups in grid view.
Time filter	• Use the time filter to focus on communications during specific periods for trend or activity analysis. • The **Last week** filter is enabled by default.
Protocol filter	• The protocol filter lists all protocols used between assets. • By default, all protocols appear, but **Traffic-Heavy Protocols** are deselected to improve clarity.
Assets identification	• The map shows the vendor icon and name for each asset. • If the vendor name is unavailable, the map shows the asset IP address or MAC address.

Figure 2: Icon descriptions

Use these descriptions to identify the vendor information.



Icon	Description
(1)	This icon indicates that no vendor information for the asset.
(2)	This icon indicates that the vendor is known, but its icon is unavailable.

Asset clustering

Asset clustering is a functional grouping that

- organizes assets based on their real-world network communication patterns,
- distinguishes between Operational Technology (OT) and Information Technology (IT) assets for grouping, and
- is generated automatically through algorithmic analysis.

Asset clustering simplifies asset management by creating groups that reflect actual communication behaviors in a network. The system suggests groupings, identifies transferable assets, and maintains cluster stability until network patterns change.

Table 25: Feature History Table

Feature	Release Information	Feature Description
Receive property-based and communication-based group suggestions from asset clustering algorithm	Release 5.3.x	Asset clustering algorithms suggest property-based groups (assets that share the same definition, network, or other properties), in addition to communication-based groups (assets that primarily communicate with each other).

Asset movement

- Asset clustering helps to identify assets that can move between functional groups, those that can move to an ungrouped list, and ones that can move from the ungrouped list into a group.
- The algorithm recommends which assets to transfer and then provides an updated list of functional groups.

Types of functional groups

Asset clustering suggests two types of functional groups to help organize your assets:

- Communication-based groups: Consist of OT assets that primarily communicate with each other rather than with the broader network. These groups serve as OT process function groups to align with automation stations.
- Property-based groups: Consist of assets that share common definitions, network attributes, or other properties.

Cluster assets into functional groups

Organize related assets into functional groups for easier management and monitoring.

Use asset clustering to group assets based on function or communication patterns. You can access asset clustering from configuration pages including **Functional Group**, **Sensor Applications**, **Assets**, or from an individual asset's detail page.

Follow these steps to perform asset clustering:

Procedure

Step 1 From the main menu, choose **Configuration** > **Functional Groups**.

Step 2 Click **Start asset clustering**.

The system suggests functional groups in the list.

Step 3 Click the **Functional Group** name to review group details.

Step 4 Click **Map** to view asset communications within the group.

Note
The lightning symbol indicates the most significant asset in the group.

Step 5 Click **Edit Name** to change the **Functional Group** name.

Step 6 Click **Accept** to create the functional group.

The assets are clustered into a new functional group.

What to do next

- Accept or discard the suggested functional groups before you run clustering again.

- If you click **Discard**, the system ungroups the recommended assets and includes them in the next clustering run.

Asset clustering methods

You can perform asset clustering for individual assets, groups, or sensors using several available methods. This table summarizes each method and its description:

Method	Description
For the set of assets	Use asset clustering to analyze a specific set of assets. This method excludes unrelated functional groups from the results. From the main menu, choose **Assets**. Check the checkboxes of the assets, click **More actions**, and select **Run asset clustering**.
For a functional group	Perform focused asset clustering for a specific functional group. Click the functional group name from the **Functional Group** column on the **Assets** page, click **More actions**, and select **Run asset clustering**.
For a sensor	Cluster assets detected by a specific sensor application. This process improves data organization and analysis. Select the sensor applications from **Configuration** > **Sensor Applications** and click **Run asset clustering**.
For an individual asset	Group similar assets by running the asset clustering function for a selected asset. Click the asset name on the **Assets** page, click **Functional group actions**, and select **Run asset clustering**.

Functional group actions and descriptions

Understand the available actions you can perform on functional groups, as well as the effect of each action.

The table lists the functional group actions and their descriptions.

Action	Description
Lock functional group	When you lock the group, it stays out of asset clustering. While locked, no assets can be added or removed from the group during clustering operations. From the **Assets** page, click the functional group name. Click **More actions** and select **Lock Group**.

Action	Description
Move asset from one functional group to another	You can manually adjust your functional group by moving assets between groups. The asset clustering process may not always be able to move assets automatically. From the **Assets** page, check the checkboxes of the assets. Click **More actions** and select **Add selected to group**. Select the functional group from the list and click **Add**.
Delete the functional group	Permanently removes the specified group from the system. Assets in the deleted group are no longer associated with that group. From the **Assets** page, click the functional group name and click **Delete group**.
Remove asset from functional group	Detaches an asset from its current functional group without moving it to another group. Check the checkbox of the asset from the **Assets** page, click the **More actions**, and select **Remove asset from group**. On the **Assets** page, select the checkbox for the asset. Click **More actions** and select **Remove asset from group**.

Note To access the **More actions** field, accept or discard the suggested functional groups.

Alerts

Alerts are system-generated notifications that

- indicate significant activity or irregularities detected within an industrial network,
- categorize information based on type, associated data, and network components, and
- provide warnings to help with security monitoring and response.

An alert is a notification that triggers when a user-defined rule’s condition is met. Cyber Vision sends alerts through Syslog when they are raised, cleared, or their status changes. For details about this configuration, see Enable or disable syslog notifications for an alert type.

You can acknowledge vulnerabilities on assets to clear corresponding alerts from the dashboard or revert acknowledgments to restore alerts.

Table 26: Feature History Table

Feature	Release Information	Feature Description
Active and cleared alerts	Release 5.3.x	The Alerts page displays two types of alerts: • Active • Cleared
Pause alert creations	Release 5.3.x	You can pause an alert type in the **Configure** > **Alerts**
Change vulnerability scoring system for alerts	Release 5.3.x	The Cisco Security Risk Score is the default scoring system applied to alert configurations. However, you can choose to update an alert configuration to apply the CVSS scoring system instead.
Alert for severe vulnerabilities in monitored entities	Release 5.3.x	Create and edit rules for the **Severe vulnerabilities in monitored entities** alert based on the Cisco Security Risk Score or the CVSS score.
Alert for prohibited vendors	Release 5.3.x	The **Configure** > **Alerts** page contains a default alert for prohibited vendors. The alert rule is based on an editable list of prohibited vendors.

Alert features and types

This section describes the alert stages, default types, default rules, and attributes used in the Cyber Vision center.

Alert stages

You can track alerts as they progress through different stages.

- **Active**: This tab displays current unresolved alerts. Alerts remain active while the underlying problem exists.
- **Cleared**: Once you resolve the issue, alerts appear in the Cleared tab. The system retains cleared alerts for up to 14 days and then purges them.

Default alert types and associated default rules

Severe vulnerabilities in monitored entities

- The system monitors assets and raises alerts for high-severity vulnerabilities.

- The default rule of this alert type is **Default_OH_Global**.

Prohibited vendors

- The system triggers alerts for assets linked to prohibited vendors.
- The default rule of this alert type is **Prohibited_list**.

Table 27: Alert details

Name	Description
Alert Type	Types include **Severe vulnerabilities in monitored entities** and **Prohibited Vendors**.
Trigger	Values vary by alert type, such as vulnerabilities or specific vendor names.
Instances	The number of assets impacted by the alert rule.
Severity	Severity levels are Critical, High, Medium, and Low.
Triggered By	The alert category causes the alert.
Last Detected	Displays the date and time when the alert was last triggered.

Alert type management and permitted alert rule actions

Configure alert types and permitted actions for each alert rule to manage alerts for monitored entities and prohibited vendors.

Alert type management options:

- You can pause or resume each alert type from the configuration interface (**Configuration** > **Alerts**).
- Pausing an alert type temporarily stops new alerts for its rules without affecting existing alerts.
- Resuming re-enables new alert notifications for its rules.

Table 28: Permitted alert rule actions for each alert type

Alert Type	Permitted alert rule actions
Severe vulnerabilities in monitored entities	Create, edit, duplicate, or delete alert rules
Prohibited vendors	Edit alert rules only

Use these options to maintain security awareness and ensure appropriate rule management for each alert type in your organization.

Create alert rules

Add alert rules to monitor asset vulnerabilities and receive timely notifications in the **Alerts** dashboard.

Use alert rules in the **Severe vulnerabilities in monitored entities** alert type to track severe vulnerabilities in assets. If a vulnerability matches a rule, you see an alert on the dashboard.

Before you begin

- You cannot create alert rules for the **Prohibited Vendors** alert type.
- You see only the default alert rules before creating new ones.

Procedure

Step 1 From the main menu, choose **Configuration** > **Alerts**.

Step 2 Select the **Severe vulnerabilities in monitored entities** alert type.

Step 3 Click **Create new rule**.

Step 4 Add an **Alert Rule Name**, then select the **Severity** and **Entity type**.

Entity types:

- **Functional Groups**: Triggers alerts for assets associated with functional groups.
- **Organization Hierarchy**: Triggers alerts for assets associated with selected organization hierarchy levels.

Step 5 On the **Entity selection** page, select organization hierarchy levels or functional groups.

- If selecting assets based on functional groups, check **Include Ungrouped assets** to include assets not in any functional group.
- If selecting assets based on organization hierarchy levels, check **Assets seen by Unknown data sources** to include unidentified or unmapped assets.

Note
The available **Entity selection** options depend on the **Entity type** you select in the **Rule name and entity type** step.

Step 6 In the **Scoring system and threshold** tab, select one scoring system:

- For **Cisco Security Risk Score**, enter a threshold number between 34 and 100.
- For **CVSS**, enter a threshold number between 7 and 10.

Note
Cisco Security Risk Score is the default, but you can select **CVSS**.

Step 7 Review your selections in the **Summary** and click **Save**.

The new alert rule appears on the **Configuration** > **Alerts** > **Severe vulnerabilities in monitored entities** page. You receive alerts when asset vulnerabilities match the new rule.

What to do next

- Regularly review the **Configuration** > **Alerts** page to manage and update alert rules as needed.
- To manage alert rules, navigate to **Configuration** > **Alerts**, select an alert type, and choose to edit, duplicate, or delete actions.

Syslog notification details for various alert types

The system sends syslog notifications to the configured syslog server when an alert is raised, cleared, or its status changes. Notifications include information that helps you track and investigate events.

Common syslog message fields

- CEF:0
- vendor: cisco
- product: Cyber Vision
- version: 2.0
- event_class_id: alert_raised or alert_cleared
- event_name: alert type name
- severity id: numeric value based on the severity of the alert rule
- cat: alert category
- SCVAuthorId (optional): User ID if a user manually acknowledged an alert; empty if the system cleared the alert
- alertRuleId: Alert rule UUID
- alertId: Alert UUID
- msg: Value changes based on alert type and event_class_id
- assetId
- assetName
- assetFunctionalGroupId: Empty when the asset is ungrouped
- center-id: UUID of the center
- sensorNames

Table 29: Additional fields for specific alert types

Alert type	Fields
Severe vulnerabilities in monitored entities	• vulnNumber: For example, CVE-2023-10025 • vulnName • vulnCVSSscore • vulnCSRSscore
Prohibited vendors	• vendorName: Listed when the alert involves prohibited vendors

These syslog notification details enable effective monitoring and response to system alerts of various types.

Enable or disable syslog notifications for alert types

You can manage whether the Cyber Vision Center sends syslog notifications for alerts of specific alert types to your configured syslog server.

Follow these steps to enable or disable syslog notifications for an alert type:

Before you begin

- Ensure you have administrator access to Cyber Vision Center.
- Confirm that a syslog server is configured. See Configure syslog.

Procedure

Step 1 From the Cyber Vision New UI, choose **Configuration** > **Alerts**.

Step 2 Select an alert type.

Step 3 Enable or disable **Syslog Notification**.

When you enable syslog notifications in the Cyber Vision Center, you receive syslog messages on the configured syslog server whenever the system raises (or unmutes), clears, or mutes an alert.

Filters

A filter is a New UI feature that

- narrows the information displayed on core Cyber Vision pages,
- allows users to focus on specific assets, network segments, or alerts, and
- leaves configuration actions unaffected.

Table 30: Feature History Table

Feature	Release Information	Feature Description
Filter Cyber Vision Center data by organization hierarchy	Release 5.3.x	All the data views in New UI can be filtered by organization hierarchy, sensors, or networks associated with an asset. At the top of the left menu, in the **Organization** filter, choose the hierarchy level you want to focus on. **Global** is the default choice and covers all assets.
Filter data in Cyber Vision Center by active view filter	Release 5.3.x	A product-level banner in the New UI allows you to filter data on every page except configuration pages. If you have not applied any filters, **No filter applied** is displayed. Click **Edit** to apply one or more filters from functional group, network or sensor, asset type, and vendor categories.

Filter views in Cyber Vision New UI

Narrow the information displayed in Cyber Vision New UI by applying filters to the Dashboard, Alerts, Assets, Vulnerabilities, and Communications pages.

Use filters to focus on specific assets, network segments, or alerts in Cyber Vision. This action does not affect Configuration pages.

Use these steps to filter data in Cyber Vision:

Procedure

Step 1 From the main menu, choose **Organization**.

Step 2 Select either **Sensors** or **Networks**.

Note
The **Sensors** tab is selected by default.

- To select all sensors or networks at a hierarchy level, select that level.
- To choose specific sensors or networks from a selected hierarchy level: open the organization drawer again, open **Sensor selection** or **Network selection**, select items, then click **Apply**.

Note
To select assets not linked to sensors or networks, choose **Unknown**.

- Use the search box to find sensors or networks by name.

Step 3 To clear your selected sensors or networks and return to the complete organization hierarchy, open the **Organization Hierarchy** drawer again and click the **Reset selection** icon.

Step 4 To edit the sensor or network selection for the selected organization hierarchy only, open the **Organization Hierarchy** drawer again and click the **Edit selection** icon.

Step 5 To refine your filter, click **Edit** on the active view bar.

Step 6 Use the **Select** buttons to add filters as needed.

Step 7 Click **Apply** to update or **Reset** to clear the filters.

The views show only data that matches your filter criteria.

What to do next

Review the filtered data on Dashboard, Alerts, Assets, Vulnerabilities, or Communications pages.

Network definitions

A network definition is a configuration element in Cyber Vision that

- specifies which networks (IP ranges and VLANs) should be monitored,
- allows classification of internal IT and OT assets to improve asset inventory accuracy, and
- enables exclusion or grouping of assets for focused security assessments.

Table 31: Feature History Table

Feature	Release Information	Feature Description
Assign a network to an organization hierarchy	Release 5.3.x	Assign a network to an organization hierarchy level.

Network definition details

- Cyber Vision includes network definitions preconfigured with the default RFC1918 addresses: 10.0.0.0/8, 172.16.0.0/12, and 192.168.0.0/16.
- By default, all assets detected through PCAP analysis or sensors are grouped into a single network. To improve asset accuracy and relevance, assign network definitions to one of three network types:
  - **OT Internal** ((for devices such as PLCs and HMIs))
  - **IT Internal** (for laptops and other IT assets)
  - **External** (for assets that are excluded from inventory)

- Network administrators choose network types and validate IP ranges to avoid duplication.
- In the Classic UI, you can create new network definitions. In the New UI, you can only view and assign existing definitions.

Assign a network to an organization hierarchy

Assign a specific network to a designated level within the organization hierarchy. This action aligns management access and policy controls with the organizational structure.

Perform this task when you need to organize network resources, apply hierarchical policies, or update the organizational assignment for the network.

Follow these steps to assign a network to an organization hierarchy:

Before you begin

You must have Network Definition permission with read/write access.

Procedure

Step 1 From the main menu, choose **Configuration** > **Network Definition**.

Step 2 Locate the network you want to assign and click **Assign**.

Step 3 Select the appropriate organization hierarchy level.

Step 4 Click **Assign** to complete the assignment.

The selected network is now associated with the specified level in the organization hierarchy.

Pcap files

A Packet Capture (PCAP) file is a file format that:

- records raw network traffic data as captured from a network interface,
- preserves the exact communication packets 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. Use the Classic UI to upload PCAP files. For more details, see PCAP Upload.

When you import the file, Cyber Vision 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.

Assign multiple PCAP files to an organization hierarchy

Before you begin

- Confirm you have appropriate permissions to assign PCAP files.
- Ensure the required PCAP files have already been uploaded.

Assign multiple packet capture (PCAP) files to an organization hierarchy to enable automated asset creation in Cisco Cyber Vision.

Use this task to organize and manage multiple PCAP files for asset management within an organization hierarchy.

Follow these steps to assign multiple PCAP files to the organization hierarchy:

Procedure

Step 1 From the main menu, choose **Configuration** > **PCAPs**.

Step 2 Select the PCAP files you want to assign to an organization hierarchy.

Step 3 Click **Assign Selected to Organization Hierarchy**.

Step 4 Choose the appropriate organization hierarchy.

Step 5 Click **Assign**.

The selected PCAP files are assigned to the chosen organization hierarchy, automatically initiating asset creation in Cisco Cyber Vision.

Each PCAP initiates asset creation in Cisco Cyber Vision.

Sensor applications

A sensor application is an embedded software component that

- runs on Cisco networking devices or runs as a standalone system,
- captures industrial network traffic and performs deep packet inspection to extract relevant information, and
- securely transmits metadata to the center for storage and analytics.

Sensor applications use Cisco’s IOx platform (IOx is Cisco's software framework) to integrate into existing Cisco routers, switches, or purpose-built appliances.

Sensor health and processing states

You can view all installed sensors in the **Configuration** > **Sensor Applications** section of the Cyber Vision New UI. Use this section to understand each sensor’s network device, health status, and processing status.

Health status

The table describes each operational lifecycle step of the sensor and the impact on connectivity and management requirements.

Status	Description
New	The first status of the sensor after detection by the Center. The sensor is requesting an IP address from the DHCP server.
Request pending	The sensor has requested a security certificate from the Center and is awaiting enrollment authorization.
Authorized	The sensor has just been authorized by an administrator or product user and will soon transition to “Enrolled.”
Enrolled	The sensor has completed enrollment, possesses a certificate and private key, and is actively connected to the Center.
Disconnected	The sensor was previously enrolled but is not currently connected to the Center. This may occur due to device shutdown, network disruptions, or sensor issues.

Processing status

The table provides information about the communication state of the sensor and data flow with the Center.

Status	Description
Disconnected	The sensor is enrolled but not currently connected to the Center.
Not enrolled	The sensor is not yet enrolled; typically paired with the “New” or “Request Pending” health status.
Normally processing	The sensor is connected and actively sending data to the Center for analysis.
Waiting for data	The Center has processed all received data and is awaiting new data from the sensor.
Pending data	The sensor is attempting to send data, but the Center is busy processing other incoming data.

Assign sensors to the Organization Hierarchy

Assign one or more sensors to an Organization Hierarchy to enable asset creation within Cisco Cyber Vision.

Use this task to map sensors in your environment to a defined organization hierarchy. Assignment enables Cisco Cyber Vision to organize asset data and operational context based on organization hierarchy.

Follow these steps to assign sensors to the organization hierarchy:

Procedure

Step 1 From the main menu, choose **Configuration** > **Sensor Applications**.

Step 2 To assign a single sensor, locate the sensor and click **Assign**.

Step 3 To assign multiple sensors, select the checkboxes for each sensor and click **Assign Selected to Organization Hierarchy**.

Step 4 Select the organization hierarchy.

Step 5 Click **Assign** to confirm.

Your selected sensors are assigned to the organization hierarchy. Each assigned sensor is responsible for asset creation in Cisco Cyber Vision.

Use Cases

Filter PLCs by organization hierarchy

Organize and review your PLC assets based on the organization hierarchy.

Before you begin

- Create your organization hierarchy.
- Assign sensors, networks, and PCAP to your organization hierarchy.

Procedure

Step 1 From the main menu, choose **Organization**.

Step 2 Select **Sensors** or **Networks**.

Step 3 Select the organization level.

Step 4 Click **Edit** on the active view bar.

Step 5 Apply the **Asset types** filter for PLCs.

Step 6 Click **Apply**.

The list displays PLCs organized by the selected organization hierarchy level.

Acknowledge critical vulnerabilities

Acknowledge critical vulnerabilities with a CVSS score greater than 9.0 to declutter dashboards, and reduce alert noise.

Use this task when you need to focus on vulnerabilities of the highest severity for an asset by filtering and acknowledging them.

Before you begin

- Ensure you have permission to view and acknowledge vulnerabilities.

Procedure

Step 1 From the main menu, choose **Assets** and click asset name.

Step 2 View the **Vulnerabilities** list for the selected asset.

Step 3 Click the filter icon of the table.

Step 4 Select **Critical** from the drop-down list in the **CVSS Score** column.

Step 5 Click **Acknowledge**.

When you acknowledge vulnerabilities, they no longer appear in dashboard counters and alerts. This simplifies ongoing risk management.

What to do next

Review acknowledged items periodically to ensure they remain appropriate.