Tenable OT Security 3.16 User Guide

Last Revised: March 12, 2024

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Welcome to Tenable OT Security

Tenable OT Security Functionality

Tenable OT Security (OT Security) (formerly Tenable.ot) protects industrial networks from cyber threats, malicious insiders, and human error. From threat detection and mitigation to asset tracking, vulnerability management, configuration control and Active Query checks, OT Security's ICS security capabilities maximize your operational environment's visibility, security, and control.

OT Security offers comprehensive security tools and reports for IT security personnel and OT engineers. It provides visibility into converged IT/OT segments and ICS activity, and makes you aware of situations across all sites and their respective OT assets—from Windows Servers to PLC backplanes—in a single pane of glass.

OT Security has the following key features:

- **360-Degree Visibility** — Attacks can easily propagate in an IT/OT infrastructure. With a single platform to manage and measure cyber risk across your OT and IT systems, you have complete visibility into your converged attack surface. OT Security also natively integrates with IT security and operational tools, such as your Security Information and Event Management (SIEM) solution, log management tools, next-generation firewalls, and ticketing systems. Together, this builds an ecosystem where all of your security products can work together as one to keep your environment secure.

- **Threat Detection and Mitigation** — OT Security leverages a multi-detection engine to find high-risk events and behaviors that can impact OT operations. These engines include policy, behavioral and signature-based detection.

- **Asset Inventory and Active Detection** — Leveraging patented technology, OT Security provides visibility into your infrastructure—not only at the network level, but down to the device level. It uses native communication protocols to query both IT and OT devices in your ICS environment in order to identify all of the activities and actions occurring across your network.

- **Risk-Based Vulnerability Management** — Drawing on comprehensive and detailed IT and OT asset tracking capabilities, OT Security generates vulnerability and risk levels using Predictive Prioritization for each asset in your ICS network. These reports include risk-scoring and detailed insights, along with mitigation suggestions.

- **Configuration Control** — OT Security provides a full granular history of device configuration changes over time, including specific ladder logic segments, diagnostic buffers, tag tables and more. This enables administrators to establish a backup snapshot with the “last known good state” for faster recovery and compliance with industry regulations.

> **Tip:** The *Tenable OT Security User Guide* and user interface are available in English, Japanese, German, French, and Simplified Chinese. To change the user interface language, see Local Settings.

For additional information on Tenable OT Security, review the following customer education materials:

- Tenable OT Security Introduction (Tenable University)

OT Security Technologies

The OT Security comprehensive solution comprises two core collection technologies:

- **Network Detection** — OT Security network detection technology is a passive deep-packet inspection engine designed to address the unique characteristics and requirements of industrial control systems. Network Detection provides in depth, real-time visibility into all activities performed over the operational network, with a unique focus on engineering activities. This includes firmware downloads/uploads, code updates, and configuration changes performed over proprietary, vendor-specific communication protocols. Network detection alerts in real time for suspicious/unauthorized activities and produces a comprehensive event log with forensic data. Network Detection generates three types of alerts:

  - **Policy Based** — You can activate predefined policies or create custom policies which allow list and/or block list specific granular activities indicative of cyber threats or operational mistakes to trigger alerts. Policies can also be set to trigger Active Query checks for predefined situations.

  - **Behavioral Anomalies** — The system detects deviations from a network traffic baseline, which was established based on traffic patterns during a specified time range. It also detects suspicious scans that are indicative of malware and reconnaissance behaviors.

  - **Signature Detection Policies** — These policies use signature-based OT and IT threat detection to identify network traffic that is indicative of intrusion threats. The detection is based on rules that have been cataloged in Suricata's Threats engine.

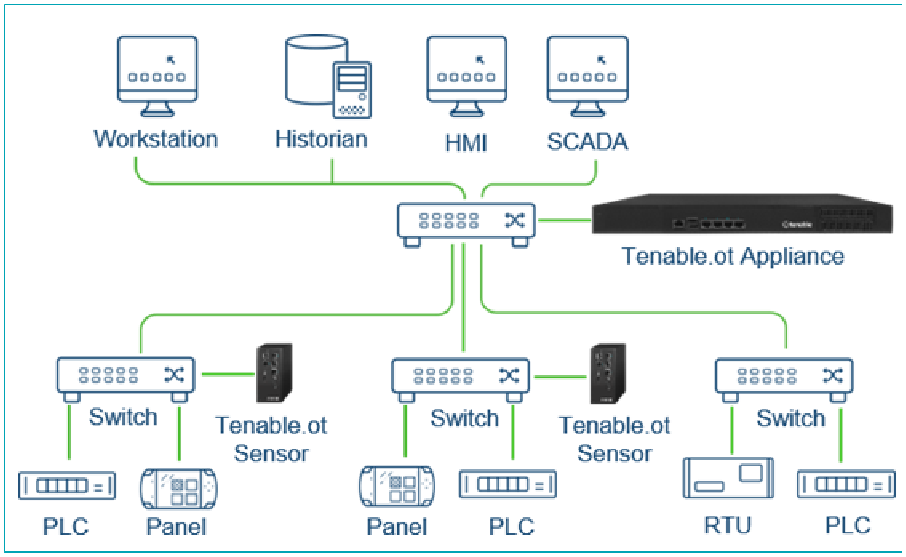
- **Active Query** — OT Security’s patented querying technology monitors devices that are on the network by periodically surveying the metadata of control devices in the ICS network. This capability enhances OT Security’s ability to automatically discover and classify all the ICS assets, including lower-level devices such as PLCs and RTUs, even when they aren't active in the network. It also identifies locally implemented changes in the device’s metadata (for example firmware version, configuration details, and state) as well as changes in each code/function block of the device’s logic. Since it uses read-only queries in the native controller communication protocols, it is safe and has no impact on the devices. Queries can be run periodically based on a predefined schedule or on-demand by the user.

Solution Architecture

OT Security Platform Components

The OT Security solution is composed of these components:

- **OT Security** — This component collects and analyzes the network traffic directly from the network (via a span port or network tap) and/or using a data feed from the Tenable OT Security Sensor (OT Security Sensor). The OT Security appliance executes both the Network Detection and Active Query functions.
- **OT Security Sensors** — These are small devices deployed on network segments that are of interest, up to one sensor per managed switch. The sensors are available in two form factors: compact rack mount or DIN-Rail mount. OT Security sensors provide full visibility into these network segments by capturing all the traffic, analyzing it and then communicating the information to the OT Security appliance. You can configure Sensors version 3.14 and later to send out active queries to the network segments on which they are deployed.



Network Components

OT Security supports interaction with the following network components:

- **OT Security user (management)** — You can create user accounts to control access to the OT Security Management Console. You can access the Management Console through a browser (Google Chrome) via a secure socket-layer authentication (HTTPS).

> **Note**: You can only access OT Security user interface from the latest version of Chrome.

- **Active Directory Server** — User credentials can optionally be assigned using an LDAP server, such as Active Directory. In this case, user privileges are managed on the Active Directory.
- **SIEM**— Send OT Security Event logs to a SIEM using Syslog protocol.
- **SMTP Server** — OT Security sends event notifications by email to specific groups of employees via an SMTP server.
- **DNS Server** — Integrate DNS servers into OT Security to help in resolving asset names.
- **Third-party applications** — External applications can interact with OT Security using its REST API or access data using other specific integrations[1].

[1] For example, OT Security supports integration with Palo Alto Networks Next Generation Firewall (NGFW) and Aruba ClearPass, enabling OT Security to share asset inventory info with these systems. OT Security can also integrate with other Tenable platforms such as Tenable Vulnerability Management and Tenable Security Center. Integrations are configured under **Local Settings** > **Integrations**, see Integrations.

System Elements

Assets

Assets are the hardware components in your network such as controllers, engineering stations, servers, and so on. OT Security's automated asset discovery, classification, and management provides an accurate asset inventory by continuously tracking all changes to devices. This simplifies sustaining of operational continuity, reliability, and safety. It also plays a key role in planning maintenance projects, prioritizing upgrades, patch deployments, incident response, and mitigation efforts.

Risk Assessment

OT Security applies sophisticated algorithms to assess the degree of risk posed to each asset on the network. A Risk Score (from 0 to 100) is given for each Asset in the network. The Risk score is based on the following factors:

- **Events** — Events in the network that affected the device (weighted based on Event severity and how recently the Event occurred).

  > **Note**: Events are weighted according to currency, so that more recent Events have a greater impact on the Risk score than older Events.

- **Vulnerabilities** — CVEs that affect assets in your network, as well as other threats identified in your network (for example, obsolete operating systems, usage of vulnerable protocols, vulnerable open ports, and so on.). In the OT Security, these are detected as plugin hits on your assets.

- **Asset Criticality** — A measure of the importance of the device to the proper functioning of the system.

  > **Note**: For PLCs that are connected to a backplane, the Risk score of other modules that share the backplane affect the PLC’s Risk score.

Policies and Events

Policies define specific types of events that are suspicious, unauthorized, anomalous, or otherwise noteworthy that take place in the network. When an event occurs that meets all the Policy Definition conditions for a particular Policy, OT Security generates an Event. OT Security logs the Event and sends notifications in accordance with the Policy Actions configured for the policy.

There are two types of policy events:

- **Policy-based Detection** — Triggers events when the precise conditions of the policy, as defined by a series of event descriptors, are met.

- **Anomaly Detection** — Triggers events when anomalous or suspicious activity is identified in the network.

The system features a set of predefined policies (out-of-the-box). In addition, the system offers the ability to edit the predefined policies or define new custom policies.

Policy-Based Detection

For Policy-based detection, you configure the specific conditions for what events in the system trigger Event notifications. Policy-based Events are triggered only when the precise conditions of the policy are met. This ensures zero false positives, as the system alerts for actual events that take place in the ICS network, while providing meaningful detailed information about the ‘who’, ‘what’, ‘when’, ‘where’, and ‘how’. The policies can be based on various Event types and descriptors.

The following are some examples of possible policy configurations:

- **Anomalous or unauthorized ICS control-plane activity (engineering)** — An HMI should not query the firmware version of a controller (may indicate reconnaissance), and a controller should not be programmed during operational hours (may indicate unauthorized, potentially malicious activity).
- **Change to controller’s code** — A change to the controller logic was identified (“Snapshot mismatch”).
- **Anomalous or unauthorized network communications**— An un-allowed communication protocol was used between two network assets or a communication took place between two assets that never communicated before.
- **Anomalous or unauthorized changes to the asset inventory** — A new asset was discovered or an asset stopped communicating in the network.
- **Anomalous or unauthorized changes in asset properties** — The asset firmware or state has changed.
- **Abnormal writes of set-points** — Events are generated for changes made to specific parameters. The user can define the allowed ranges for a parameter and generate Events for deviations from that range.

Anomaly Detection

Anomaly Detection policies discover suspicious behavior in the network based on the system's built-in capabilities for detecting deviations from 'normal' activity. The following anomaly detection policies are available:

- **Deviations from a network traffic baseline**: the user defines a baseline of 'normal' network traffic based on the traffic map during a specified time range and generates alerts for deviations from the baseline. The baseline can be updated at any time.
- **Spike in Network Traffic**: a dramatic increase in the volume of network traffic or number of conversations is detected.
- **Potential network reconnaissance/cyber-attack activity**: Events are generated for activities indicative of reconnaissance or cyber-attack activity in the network, such as IP conflicts, TCP port scans, and ARP scans.

Policy Categories

The Policies are organized by the following categories:

- **Configuration Event Policies** – these Policies relate to the activities that take place in the network. There are two sub-categories of Configuration Event Policies:
  - **Controller Validation** - these Policies relate to changes that take place in the controllers in the network. This can involve changes in the state of a controller as well as changes to the firmware, asset properties, or code blocks. The Policies can be limited to specific schedules (for example firmware upgrade during a work day), and/or specific controller/s.
  - **Controller Activities** – these policies relate to specific engineering commands that impact controllers' state and configuration. It is possible to define specific activities that always generate Events or to designate a set of criteria for generating Events. For example, if certain activities are performed at certain times and/or on certain controllers. Both black listing and white listing of assets, activities and schedules are supported.
- **Network Events Policies** – these Policies relate to the assets in the network and the communication streams between assets. This includes assets that were added to or removed from the network. It also includes traffic patterns that are anomalous for the network or that have been flagged as raising particular cause for concern. For example, if an engineering station communicates with a controller using a protocol that is not part of a pre-configured set of protocols (for example protocols that are used by controllers manufactured by a specific vendor), an Event is triggered. These policies can be limited to specific schedules and/or specific assets. Vendor-specific protocols are organized by vendor for convenience, while any protocol can be used in a policy definition.
- **SCADA Event Policies** – these Policies detect changes in set-point values which can harm the industrial process. These changes may result from a cyber-attack or human error.
- **Network Threats Policies** – these Policies use signature-based OT and IT threat detection to identify network traffic that is indicative of intrusion threats. The detection is based on rules that have been cataloged in Suricata's Threats engine.

Groups

An essential component in the definition of Policies in OT Security is the use of Groups. When configuring a Policy each of the parameters is designated by a Group as opposed to individual entities. This greatly streamlines the Policy configuration process.

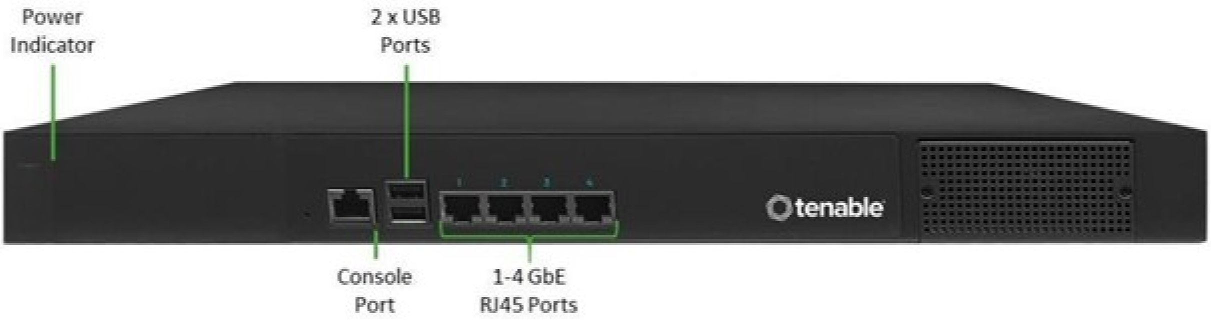
Events

When an event occurs that matches the conditions of a Policy, an Event is generated in the system. All Events are displayed on the Events screen and can also be accessed through the relevant Inventory and Policy screens. Each Event is marked with a severity level, indicating the degree of risk posed by the Event. Notifications can be automatically sent out to email recipients and SIEMs as specified in the Policy Actions of the Policy that generated the Event.

An Event can be marked as resolved by an authorized user and a comment can be added.

OT Security Hardware Components

OT Security Appliance



Component	Description
Power Indicator	Indicates when the OT Security appliance is turned on (Green) or off.
Console Port*	For service or local access.
USB Ports	For reimaging or upgrading the appliance in the offline mode.
Ethernet Ports	Four GbE ports used to connect to management and operational networks as follows: Port 1 – by default, this port is used for both Management (User Interface) and as the Active Query port (that communicates with the network assets). This port configuration could be changed (both during the setup and later in the Settings page) to include just the Queries. This is done in order to separate the management interface from the controllers' network. Port 2 – Mirror port - used as the destination of the mirroring session (SPAN). This port receives a copy of the network traffic. This port has no IP address. Port 3 – if the port separation option is enabled, this port is used for management (user interface) only and can be connected to a network that is not part of the controller's network. Port 4 - Reserved port, used by OT Security's Professional Services for remote or local support.

*Baud rate of 115200 bps with an 8N1 configuration.

Rear Panel

Component	Description
Cooling Fans	Two cooling fans. Make sure that the fans are not obstructed.
Power Switch	ON/OFF switch. (Press and hold for a few seconds to turn the power off.)
Power Supply Port	AC power connector; 100 – 240 V AC

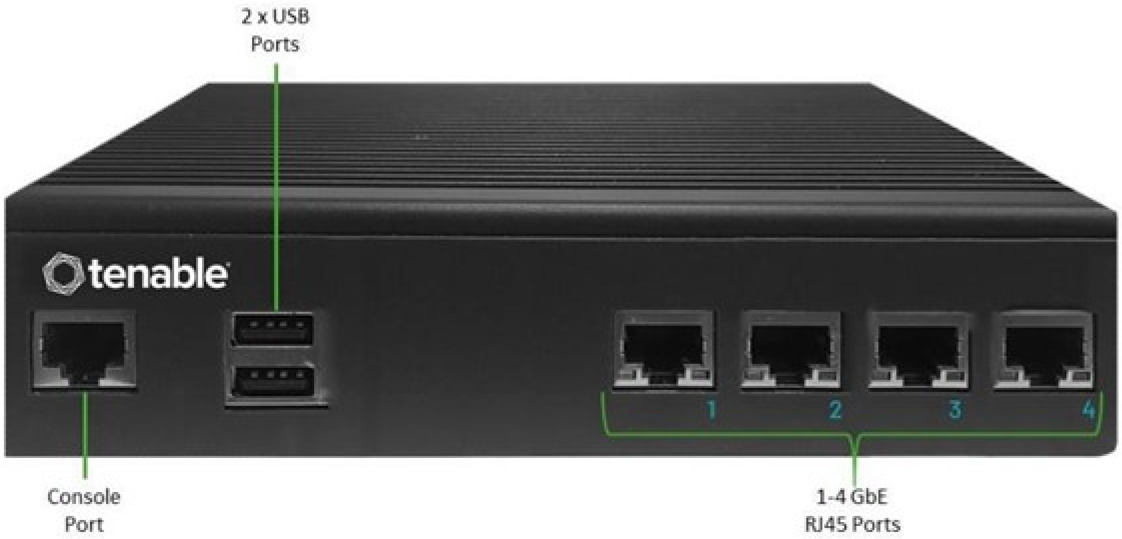
Package Contents

Component	Description
Two Ethernet Cables	Two standard RJ45 Ethernet cables. Use these cables to connect the OT Security appliance to the network switch.
Power Supply Port	AC power connector; 100 – 240 V AC.
Mount Brackets	2 x 1U rack mount brackets.

OT Security Sensor

Rack Mount Sensor

Note: The Rack Mount sensor is being discontinued. Instead, Tenable now offers an adapter kit that enables you to attach the Configurable Sensor model to a rack mount.



Front Panel

Component	Description
Console Port*	For service or local access.
USB Ports	For reimaging or upgrading the appliance in the offline mode.
Ethernet Ports	Four 1 GbE ports used to connect to management and operational networks as follows: Port 1 – Management port – used for managing the device. Port 2 – Mirror port - used as the destination of the mirroring session (SPAN). This port receives a copy of the network traffic. This port has no IP address. Port 3 – Not in use. Port 4 – Not in use.

*Baud rate of 115200 bps with an 8N1 configuration.

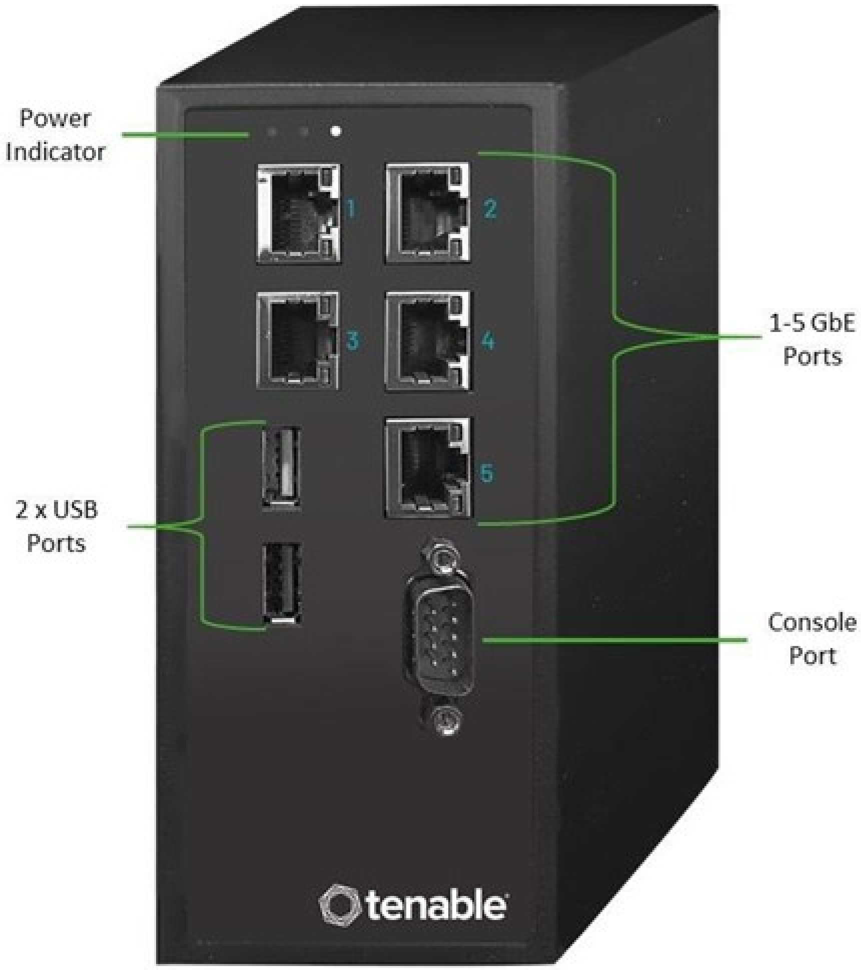
Rear Panel

Power Button	Stand-by mode in red; Power-on mode in green.
Reset Button	Reboots the system without turning off the power.
Power Switch	ON/OFF switch. (Press and hold for a few seconds to turn the power off.)
Power Supply Port	AC power connector; 100 – 240 V AC

Package Contents

Component	Description
Ethernet Cable	A standard RJ45 Ethernet cable. Use this cable to connect the sensor to the network switch.
Power Cable	A standard local AC power cable.
Power Supply	60W AC power adaptor; 100 – 240 V AC.
Mount Brackets	2 x 1U L-shaped rack mount brackets.
Screws Pack	

Configurable Sensor



> **Note**: This model can be mounted either on a DIN rail, or on a mounting rack (using the adapter kit). In the past, this model was referred to as the DIN Rail Sensor.

Front Panel

Component	Description
Power Indicator	Indicates when the sensor is turned on (Green) or off.
Console Port*	For service or local access.
USB Ports	For reimaging or upgrading the appliance in the offline mode.
Ethernet Ports	Five GbE ports used to connect to management and operational networks as follows:

	Port 1 – Management port – used for managing the device. Port 2 – Not in use. Port 3 – Mirror port - used as the destination of the mirroring session (SPAN). This port receives a copy of the network traffic. This port has no IP address. Port 4 – Not in use. Port 5 - Not in use.

*Baud rate of 115200 bps with an 8N1 configuration.

Package Contents

Component	Description
Power Cable	A standard local AC power cable.
Power Supply	60W AC power adaptor; 100 – 240 V AC.
Ethernet Cable	A standard RJ45 Ethernet cable. Use this cable to connect the sensor to the network switch.
Mounting Ears	2 x 1U L-shaped rack mount brackets (“Ears”).
Screws Pack	

Configure Ports for Active Queries

You can configure the sensor ports for active query in Tenable Core.

To change your sensor ports:

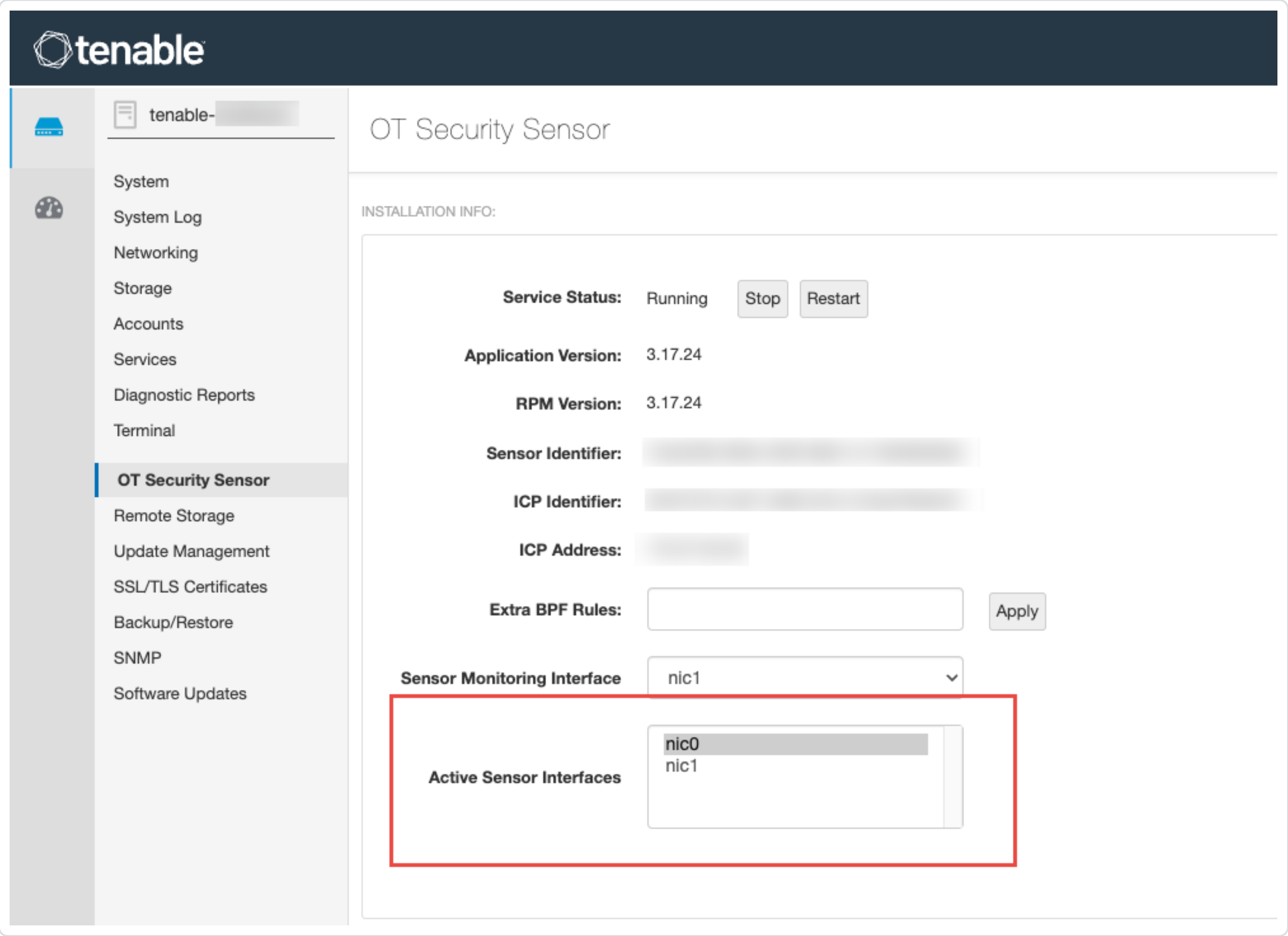
1. In Tenable Core, in the left navigation bar, select **OT Security Sensor**.

   The **OT Security Sensor** appears.

2. In the **Active Sensor Interfaces** box, select one or more ports as needed. By default, Port 1 is selected.

   > **Note**: You can press the **Ctrl** key + click to select multiple ports as you can use multiple interfaces for active queries. For example, when a sensor connects to multiple switches or non-routable

networks in the same area.



OT Security Sensor

INSTALLATION INFO:

Service Status: Running

Application Version: 3.17.24

RPM Version: 3.17.24

Sensor Identifier: [redacted]

ICP Identifier: [redacted]

ICP Address: [redacted]

Extra BPF Rules:

Sensor Monitoring Interface: nic1

Active Sensor Interfaces: nic0, nic1

Firewall Considerations

In setting up your OT Security system, it is important to map out which ports should remain open so that the Tenable system can operate correctly. The following tables indicate which ports should be left open for use with the OT Security Core Platform and OT Security Sensors. There are also tables showing the ports needed for running Active Queries and for integration with Tenable Vulnerability Management and Tenable Security Center.

OT Security Core Platform

The following ports should remain open for communication with the OT Security Core Platform.

Flow Direction	Port	Communicates With	Purpose
Inbound	TCP 443 and TCP 28304	OT Sensor	Sensor authentication, pairing, and receiving sensor information.
Inbound	TCP 8000	Web interface for Tenable Core	Browser access to Tenable Core
Inbound	TCP 28304	ICP/OT Security	Sensor Communication
Inbound	TCP 22	Appliance for SSH Access	Command line access to OS or appliance
Outbound	TCP 443	Tenable Security Center	Sends data for integration
Outbound*	TCP 443	cloud.tenable.com	Sends data for integration
Outbound*	Various Industrial protocols	PLCs/controllers	Active query
Outbound*	TCP 25 or 587	Email server for alerts	SMTP (alert emails, reports)
Outbound*	UDP 514	Syslog server	Sends policy event alerts and syslog messages
Outbound*	UDP 53	DNS server	Name Resolution
Outbound*	UDP 123	NTP server	Time service
Outbound*	TCP 389 or 636	AD server	AD LDAP authentication
Outbound*	TCP 443	SAML Provider	Single Sign On

Outbound*	UDP 161	SNMP Server	SNMP monitoring to Tenable Core
Outbound*	TCP 443	*.tenable.com	Automatic Plugin, Application and OS Updates**

*Optional services

**Offline procedure available

OT Security Sensors

The following ports should remain open for communication with OT Security Sensors.

Flow Direction	Port	Communicates With	Purpose
Inbound	TCP 8000	Web interface	Browser access to user GUI
Inbound	TCP 22	Appliance for SSH Access	Command-line access to OS or appliance
Outbound*	TCP 25	Email server for alerts	SMTP (alert emails, reports)
Outbound*	UDP 53	DNS server	Name Resolution
Outbound*	UDP 123	NTP server	Time service
Outbound*	UDP 161	SNMP Server	SNMP monitoring to Tenable Core
Outbound	TCP 28303	ICP/OT Security Sends communication from sensor, receives on ICP/OT Security	Unauthenticated / passive only sensor connection
Outbound	TCP 443 and TCP 28304	ICP/OT Security Sends communication from sensor, receives on ICP/OT Security	Authenticated / secure tunnel between sensor and ICP

*Optional services

Active Query

The following ports should remain open in order to use the Active Query function.

Flow Direction	Port	Communicates With	Purpose
Outbound	TCP 80	OT Devices	HTTP fingerprinting
Outbound	TCP 102	OT Devices	S7/S7+ protocol
Outbound	TCP 443	OT Devices	HTTPS fingerprinting
Outbound	TCP 445	OT Devices	WMI queries
Outbound	TCP 502	OT Devices	Modbus protocol
Outbound	TCP 5432	OT Devices	PostgreSQL queries
Outbound	TCP 44818	OT Devices	CIP protocol
Outbound	TCP/UDP 53	OT Devices	DNS
Outbound	ICMP	OT Devices	Asset Discovery
Outbound	UDP 161	OT Devices	SNMP queries
Outbound	UDP 137	OT Devices	NBNS queries
Outbound	UDP 138	OT Devices	NetBIOS queries

Note: The ports used by the devices vary depending on the vendor and product line. For a list of relevant ports and protocols needed to ensure active queries are successful, see Identification and Details Query.

OT Security Integrations

The following ports should remain open for communication with the Tenable Vulnerability Management and Tenable Security Center Integrations.

Flow Direction	Port	Communicates With	Purpose
Outbound	TCP 443	cloud.tenable.com	Tenable Vulnerability Management Integration
Outbound	TCP 443	Tenable Security Center	Tenable Security Center Integration

Identification and Details Query

You can use the following ports for Identification and Details queries:

> **Note**: You may need to open the ports on the firewall for OT Security or its sensors to reach the relevant port for your assets.

Port	Port Name
21	FTP
80	HTTP
102	Step-7 / S7+
111	Emerson OVATION
135	WMI
161	SNMP
443	HTTPS
502	MODBUS / MMS
1911	Niagara FOX
2001	Profibus
2222	PCCC_AB-ETH
2404	IEC 60870-5
3500	Bachmann
4000	Emerson ROC
4911	Niagara FOX TLS
5002	Mitsubishi MELSEC
5007	Mitsubishi MELSEC

5432	PSQL / SEL
18245	SRTP
20000	DNP3
20256	PCOM
44818	EthernetIP / CIP
47808	BACNET (udp)
48898	ADS
55553	Honeywell CEE
55565	Honeywell FTE

Install the OT Security Appliance

Step 1 – Set up the OT Security Appliance

You can either mount the OT Security appliance on a rack or simply place it on top of a flat surface such as a desktop.

Rack Mounting

To mount the OT Security appliance on a standard 19-inch rack:

1. Insert the server unit into an available 1U slot in the rack.

   > **Note**:
   >
   > - Make sure that the rack is electrically grounded.
   > - Make sure that the cooling fan air intake (located in the back panel) and the air ventilation holes (on the top panel) are not obstructed.

2. Secure the unit to the rack by fastening the rack-mount brackets (supplied) to the rack frame, using the appropriate screws for rack mounting (not supplied).

3. Plug in the supplied AC power supply cable to the power supply port in the rear panel and plug this cable to the AC power supply (mains).

Flat Surface

To install the OT Security appliance on a flat surface:

1. Place the appliance unit on a dry and flat surface (such as a desktop).

   > **Note**:
   >
   > - Make sure that the tabletop is flat and dry.
   > - Make sure that the cooling fan air intake (at the back panel) and the air ventilation holes (on the top panel) are not obstructed.
   > - If you place a unit within a stack of other electrical appliances, make sure there is ample space behind the cooling fan (located in the back panel) to allow proper ventilation and cooling.

2. Plug in the supplied AC power supply cable to the power supply port in the rear panel and plug this cable to the AC power supply (mains).

Step 2 – Connect OT Security to the Network

OT Security works for both Network Monitoring and Active Query.

- **Network Monitoring** — Connect the unit to a mirroring port on the network switch connected to the appropriate controllers/PLCs.
- **Active Query** — Connect the unit to a regular port that has an IP address on the network switch connected to the appropriate controllers/PLCs.

In their default configuration, the Active Query and the Management Console use the same port on the unit (Port 1). However, after the initial setup you can separate the Management port from the Active Query port, by configuring the management on Port 3. After this configuration, you can connect Port 3 on the unit to a regular port on the switch to perform the management as described in Step 7 – Connect the Separate Management Port (for Port Separation Option).

For the initial setup, connect Port 1 to a regular port on the network switch and connect Port 2 to a mirroring port.

To connect the OT Security appliance to the network:

1. On the OT Security appliance, connect the Ethernet cable (supplied) to Port 1.
2. Connect the cable to a regular port on the network switch.
3. On the unit, connect another Ethernet cable (supplied) to Port 2.
4. Connect the cable to a mirroring port on the network switch.

Step 3 – Log in to the Management Console

To log in to the management console:

1. Do one of the following:

   - Connect the Management Console workstation (for example: PC, laptop, and so on) directly to Port 1 of the OT Security appliance using the Ethernet cable.

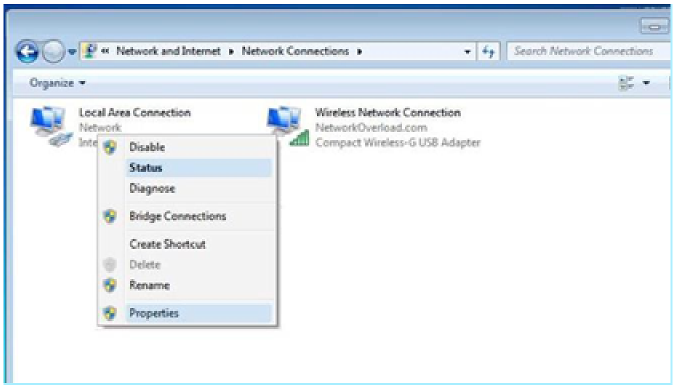
   - Connect the Management Console workstation to the network switch.

> **Note**: Ensure that the Management Console workstation is either part of the same subnet as the OT Security appliance (192.168. 1.0/24) or routable to the unit.

2. Set up a static IP to connect to the OT Security appliance as follows:

   a. Go to **Network and Internet** > **Network and Sharing Center** > **Change adapter settings**.

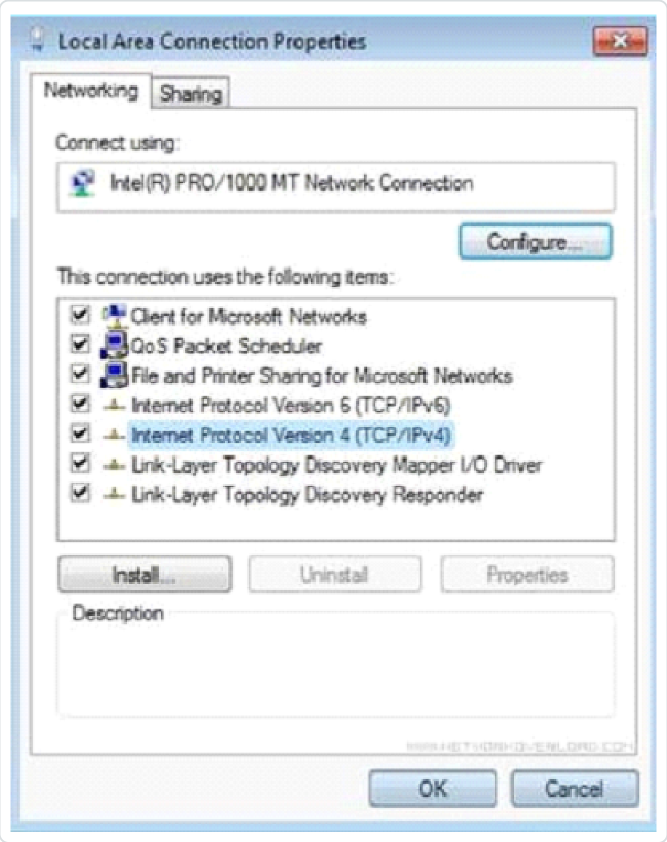
   The **Network Connections** screen appears.



> **Note**: Navigation may vary slightly for different versions of Windows.

   b. Right-click on **Local Area Connections** and select **Properties**.

   The **Local Area Connections** window appears.



Local Area Connection Properties

Networking | Sharing

Connect using:

Intel(R) PRO/1000 MT Network Connection

Configure...

This connection uses the following items:

- ☑ Client for Microsoft Networks
- ☑ QoS Packet Scheduler
- ☑ File and Printer Sharing for Microsoft Networks
- ☑ Internet Protocol Version 6 (TCP/IPv6)
- ☑ Internet Protocol Version 4 (TCP/IPv4)
- ☑ Link-Layer Topology Discovery Mapper I/O Driver
- ☑ Link-Layer Topology Discovery Responder

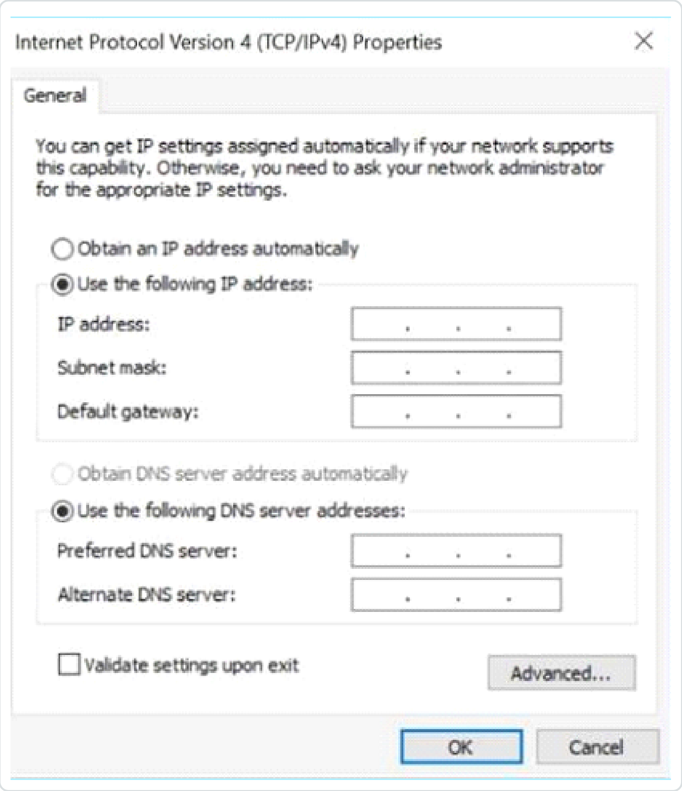
Install... | Uninstall | Properties

Description

OK | Cancel

c. Select **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**.

The **Internet Protocol Version 4 (TCP/IPv4) Properties** window appears.



Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically

● Use the following IP address:

IP address: . . .

Subnet mask: . . .

Default gateway: . . .

○ Obtain DNS server address automatically

● Use the following DNS server addresses:

Preferred DNS server: . . .

Alternate DNS server: . . .

□ Validate settings upon exit

d. Select **Use the Following IP address**.

e. In the **IP address** box, type 192.168.1.10.

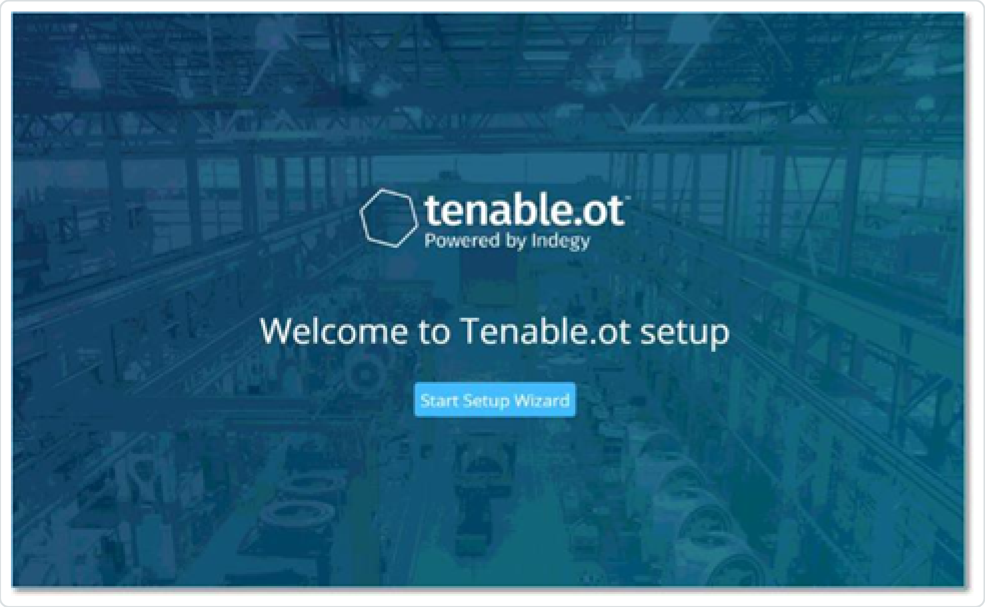
f. In the **Subnet mask** box, type 255.255.255.0.

g. Click **OK**.

OT Security applies the new settings.

3. From your Chrome browser, navigate to https://192.168.1.5.

The **Welcome** screen of the setup wizard opens.


tenable.ot
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Welcome to Tenable.ot setup

Note: Access to the user interface requires the latest version of Chrome.

4. Click **Start Setup Wizard**.

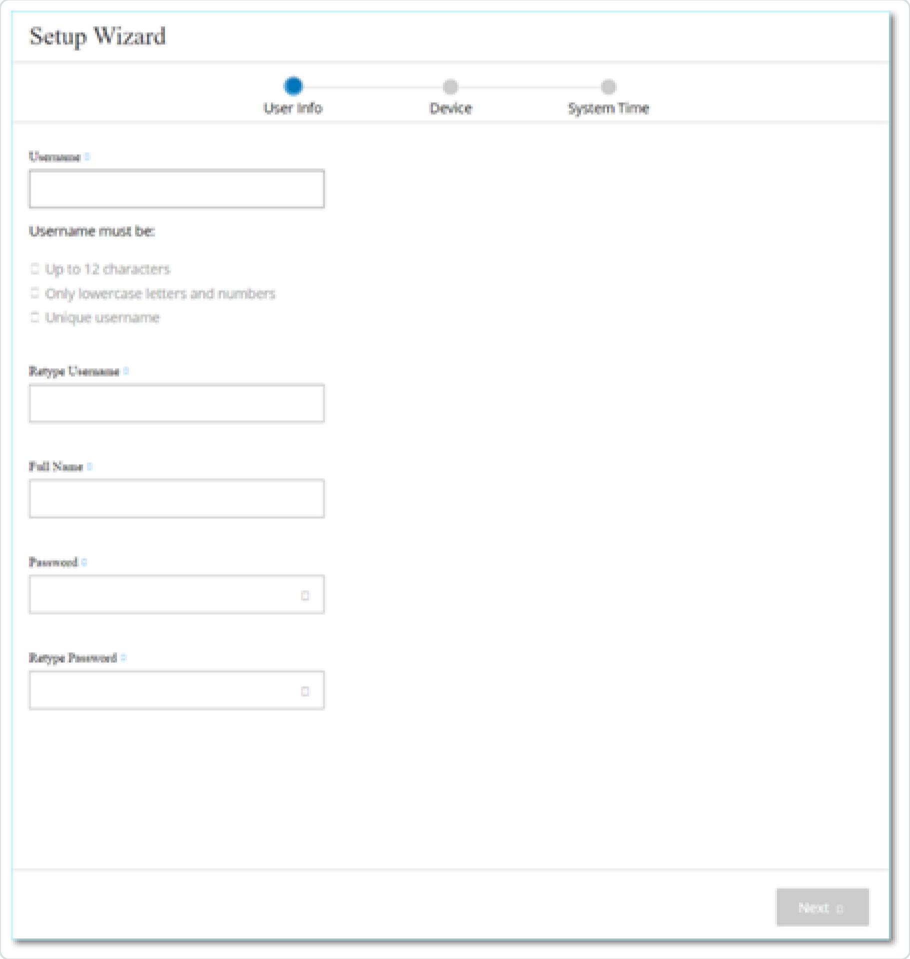
   The setup wizard opens with the **User Info** page.

Step 4 – Setup Wizard

The OT Security setup wizard takes you through the configuration of the basic system settings.

> **Note**: You can change the configuration later, if necessary in the **Settings** screen in the Management Console (user interface).

User Info



Setup Wizard

Username

Username must be:

- □ Up to 12 characters
- □ Only lowercase letters and numbers
- □ Unique username

Retype Username

Full Name

Password

Retype Password

On the **User Info** page, fill in your user account information.

> **Note**: In the setup wizard, you can configure the credentials for an Administrator account. After you log in to the user interface, you can create additional user accounts. For more information about user accounts, see the section Users and Roles.

1. In the **Username** box, type a username for logging into the system.

   The username can have up to 12 characters and must include only lowercase letters and numbers.

2. In the **Retype Username** box, re-type the username.
3. In the **Full Name** section, type your complete **First and Last Name**.

   > **Note**: This is the name that appears in the header bar and on your activity logs in the system.

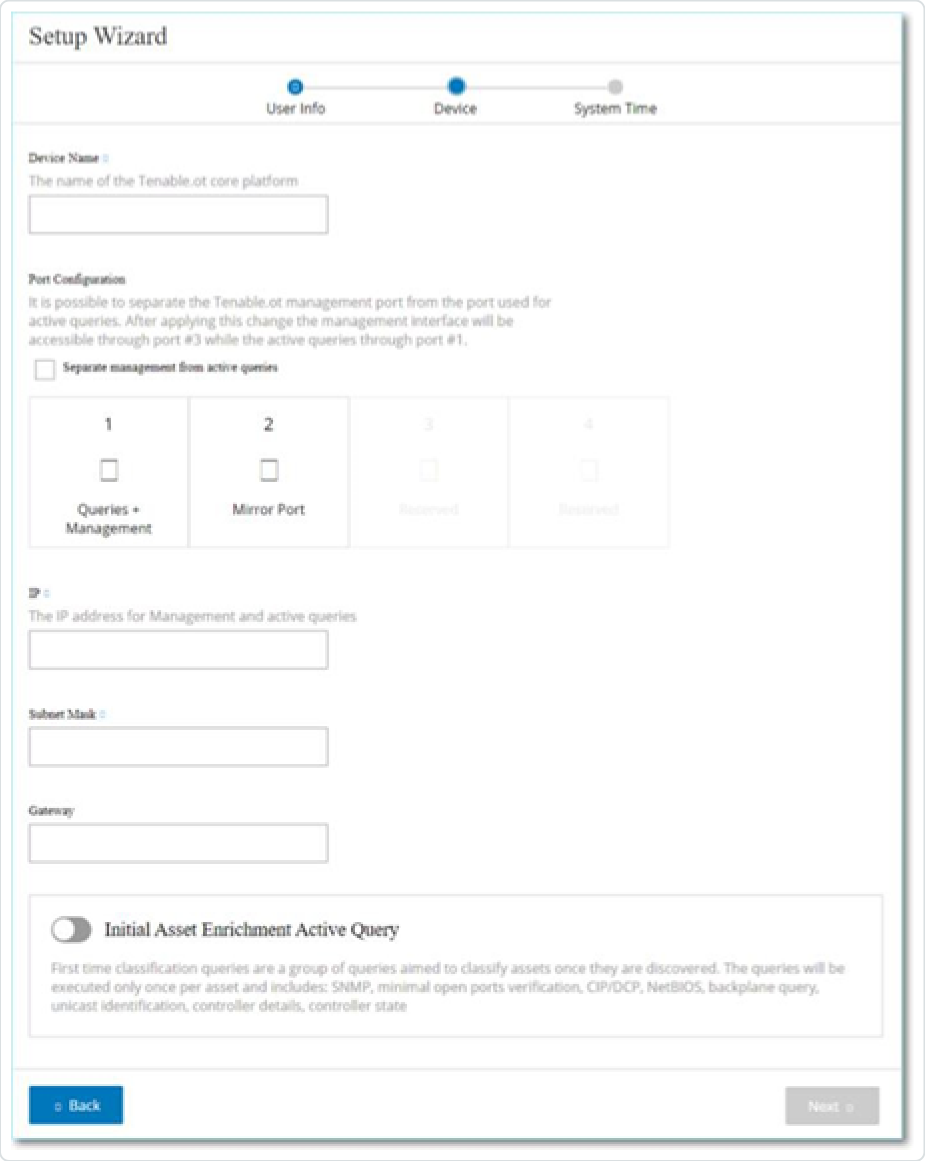
4. In the **Password** box, type a password for logging into the system. The passwords must contain at least:

   - 12 characters
   - One uppercase letter
   - One lowercase letter
   - One digit
   - One special character

5. In the **Retype Password** box, re-type the identical password.
6. Click **Next**.

   The **Device** page of the setup wizard opens.

Device



Setup Wizard

Device Name

The name of the Tenable.ot core platform

Port Configuration

It is possible to separate the Tenable.ot management port from the port used for active queries. After applying this change the management interface will be accessible through port #3 while the active queries through port #1.

□ Separate management from active queries

IP

The IP address for Management and active queries

Subnet Mask

Gateway

Initial Asset Enrichment Active Query

First time classification queries are a group of queries aimed to classify assets once they are discovered. The queries will be executed only once per asset and includes: SNMP, minimal open ports verification, CIP/DCP, NetBIOS, backplane query, unicast identification, controller details, controller state

On the **Device** page, provide information about the OT Security platform:

1. In the **Device Name** box, type a unique identifier for the OT Security platform.
2. In the **Port Configuration** section, do one of the following:

    - **Port separation** — If you want to use one port for management and a separate port for Queries, select the **Separate management from active queries** check box. Selecting this option configures Port 1 as the Queries only port and Port 3 as the Management only port.

> **Note**: On some systems, the Port separation option may not be available. Contact your support agent for assistance.

- **No separation** — If you want to maintain the Queries and Management in the same port, do not select the **Separate management from active queries** check box. In this case, you can skip instructions number 3-5 of this procedure and proceed to number 6.

3. If you select the **port separation** option:

   a. In the **Active Queries IP** box, type the IP address of the unit's Queries port.

      This port is connected to a regular port in the network switch, which can communicate with or routable to the controllers. As OT Security connects to the controllers, it needs an IP address within the network subnet.

   b. In the **Active Queries Subnet Mask** box, type the subnet mask of the Queries port.

   c. In the **Active Queries Gateway** box (optional), type the IP address of the gateway in the operations network.

4. In the **Management IP** box, type an IP address (within the network subnet) to apply to the OT Security platform.

   This becomes the OT Security management IP address. This IP address is also the Queries address if there is no separation between the ports.

5. In the **Management Subnet Mask** box, type the subnet mask of the network.

6. (Optional) If you want to set up a Gateway, in the **Management Gateway** box. type the Gateway IP for the network.

   > **Note**: If you do not provide the Management Gateway IP, OT Security cannot communicate with external components outside of the subnet, such as email servers, syslog servers, and so on.

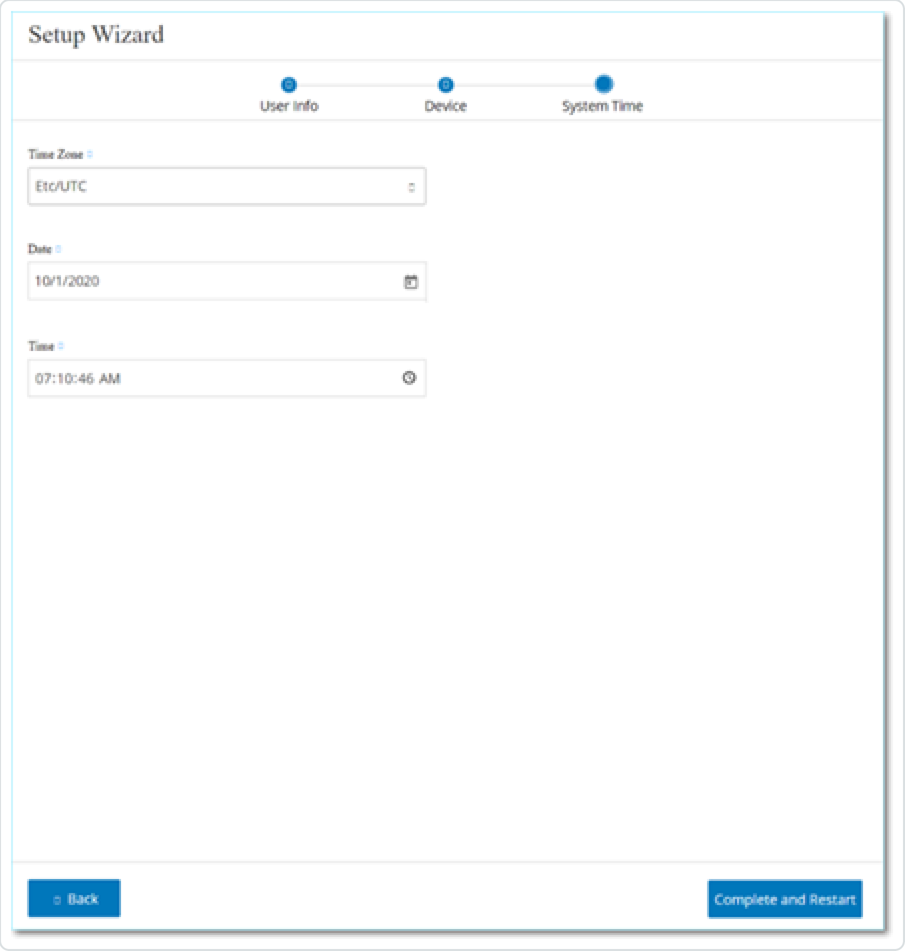
7. **Initial Asset Enrichment Active Query** comprises a set of queries executed on every asset detected within the system.

   This allows OT Security to classify the assets. To run these queries on each new asset that OT Security discovers, enable the **Initial Asset Enrichment Active Query** toggle.

8. Click **Next**.

   The **System Time** page of the setup wizard opens.

System Time



Setup Wizard

Time Zone: Etc/UTC

Date: 10/1/2020

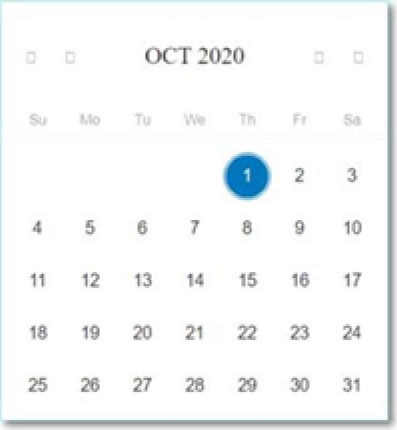
Time: 07:10:46 AM

> **Note**: Setting the correct date and time is essential for accurate recording of logs and alerts.

In the **System Time** page, the correct time and date appear automatically. If not, do the following:

1. In the **Time Zone** drop-down box, select the local time zone at the site location.
2. In the **Date** box, click the calendar icon 📅.

   A pop-up calendar appears.



Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

3. Select the current date.
4. In the **Time** box, select hours, minutes, and seconds AM/PM respectively and type the correct number using either the keyboard or the up and down arrows.

> **Note**: If you want to edit any of the previous pages of the setup wizard, click **Back**. After clicking **Complete** and **Restart** you cannot return to the setup wizard. However, you can change the configuration settings on the **Settings** page of the user interface.

5. To complete the setup, click **Complete and Restart**.

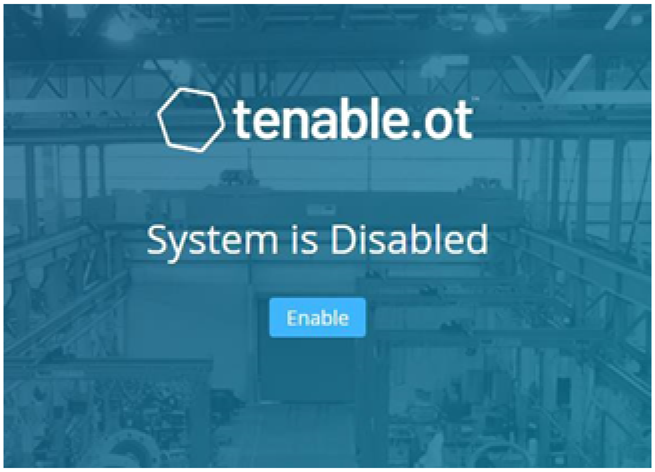
   Once the restart completes, OT Security redirects you to the **Licensing** window.

Step 5 - Licensing

Before you can activate the system, you must activate your OT Security license. For information about activating your license, see OT Security License Workflow.

Step 6 - Enable the OT Security System

After completing the license activation, OT Security displays the **Enable** button.



You must enable OT Security in order to activate the system's core functionality, such as:

- Identifying assets in the network.
- Collecting and monitoring of all network traffic.
- Logging 'Conversations' on the network.

You can view all compiled data and analysis from these functionalities in the user interface.

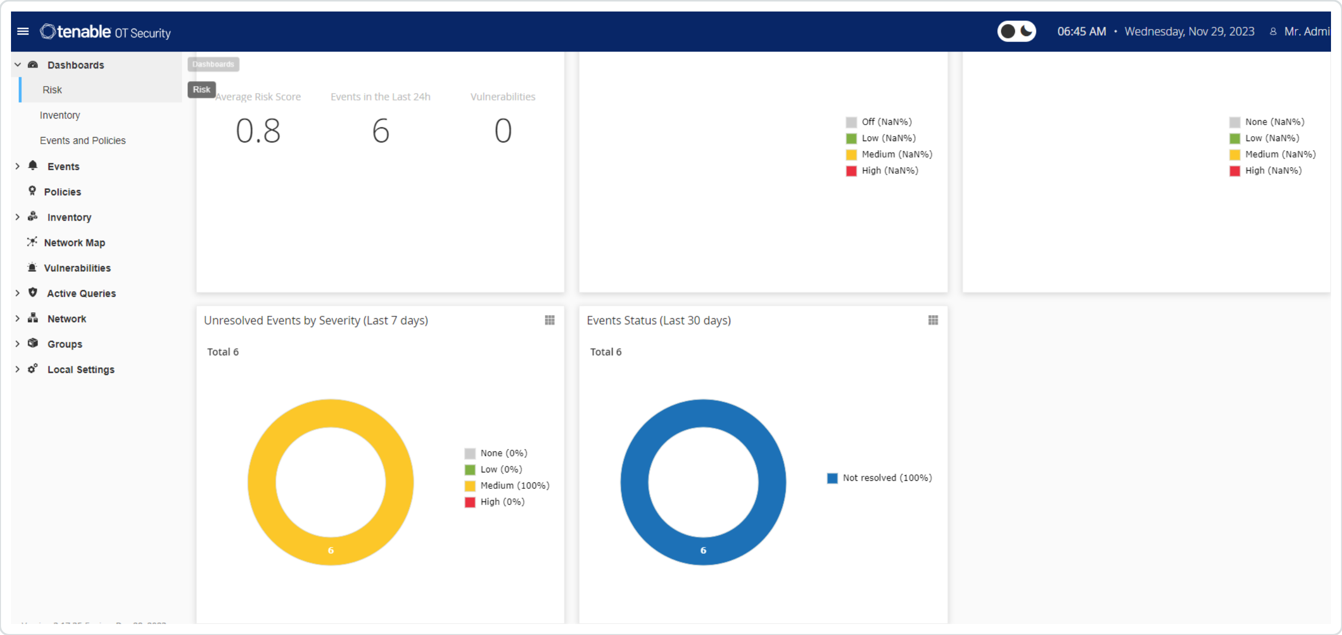
> **Note**: These are ongoing processes that continue over time, so it may take some time for the user interface to display fully updated results.

You can configure and activate additional functions such as Active Queries on the **Local Settings** window in the Management Console (user interface), For more information, see Active Queries.

To enable OT Security:

1. Click **Enable**.

   OT Security enables the system and shows the **Dashboard** > **Risk** window.



Average Risk Score 0.8

Events in the Last 24h 6

Vulnerabilities 0

Unresolved Events by Severity (Last 7 days)

Total 6

Events Status (Last 30 days)

Total 6

Note: It takes a few minutes for the system to identify your assets. You may need to refresh the page to start showing the data.

Step 7 – Connect the Separate Management Port (for Port Separation Option)

If you selected the port separation option (to separate Queries from the Management), you must connect Port 3 on the OT Security appliance (now the management port) to a port in a network switch. This can be a different network switch, such as a network switch of the IT network.

To connect the management port:

1. On the OT Security appliance, connect an Ethernet cable (supplied) to Port 3.
2. Connect the cable to a port on a network switch.

Install OT Security Sensor

Pair Sensors with the ICP

Note: The following section describes the procedure for configuring a sensor version 3.14 and later. To configure an earlier model sensor, follow the procedure described in Appendix 1 – Install a Sensor (Version 3.13 and earlier).

To pair sensors with the Industrial Core Platform (ICP), use both the ICP management console and the sensor's Tenable core user interface.

You can either enable automatic approval for incoming pairing requests, or disable automatic approval and allow only manual approval for each new sensor pairing request.

Before you begin

Make sure that the following conditions are met:

- The Sensor hardware is properly installed (see Set up the Sensor).
- The Sensor is connected to your network switch (see Connect the Sensor to the Network).
- The Sensor has its own static IPv4 address (see Access the Sensor Setup Wizard).
- The Sensor is connected to the Tenable Core platform and you have a username and password for logging into the Core User Interface. For more information on using the Tenable Core user interface, see https://docs.tenable.com/tenable-core/OT-security/Content/TenableCore/Introduction_OT.htm.
- A valid certificate in the ICP console (see Certificate).

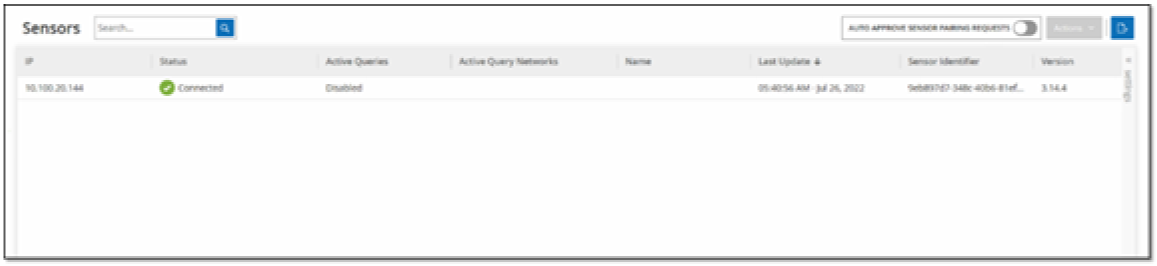
Note: Tenable recommends a dedicated ICP user with administrator role for the process of pairing sensors, to prevent disruptions in connectivity (see Adding Local Users). You can add a new administrator user to pair multiple sensors.

Note: For information about applying offline updates to your Tenable Core machine, see Update Tenable Core Offline.

Pair the Sensor

To pair a Sensor version 3.14 or later with the ICP:

1. In the ICP Management Console (user interface), navigate to the **Local Settings** > **Sensors** window.



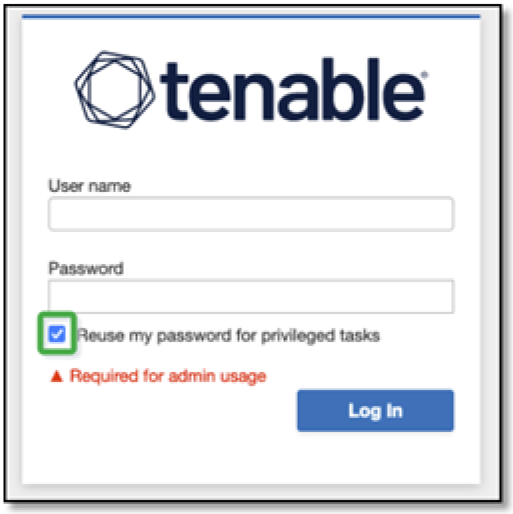
IP	Status	Active Queries	Active Query Networks	Name	Last Update	Sensor Identifier	Version
10.100.20.144	Connected	Disabled			05:40:56 AM · Jul 26, 2022	9eb897d7-348c-40b6-81ef...	3.14.4

2. To enable automatic approval of Sensor Pairing, ensure that the **Auto Approve Incoming Sensor Pairing Requests** switch at the top of the page is toggled to **ON**. If not, all pairing requests require manual approval.

3. Open a new tab, leaving the ICP tab open, and type **<Sensor IP>:8000** to open the Sensor's Tenable Core user interface.

> **Note**: You can only access the Tenable Core user interface from the latest version of Chrome.

4. In the Tenable Core console login window, type your **Username** and **Password**, select the **Reuse my password for privileged tasks** checkbox, and click **Log In**.

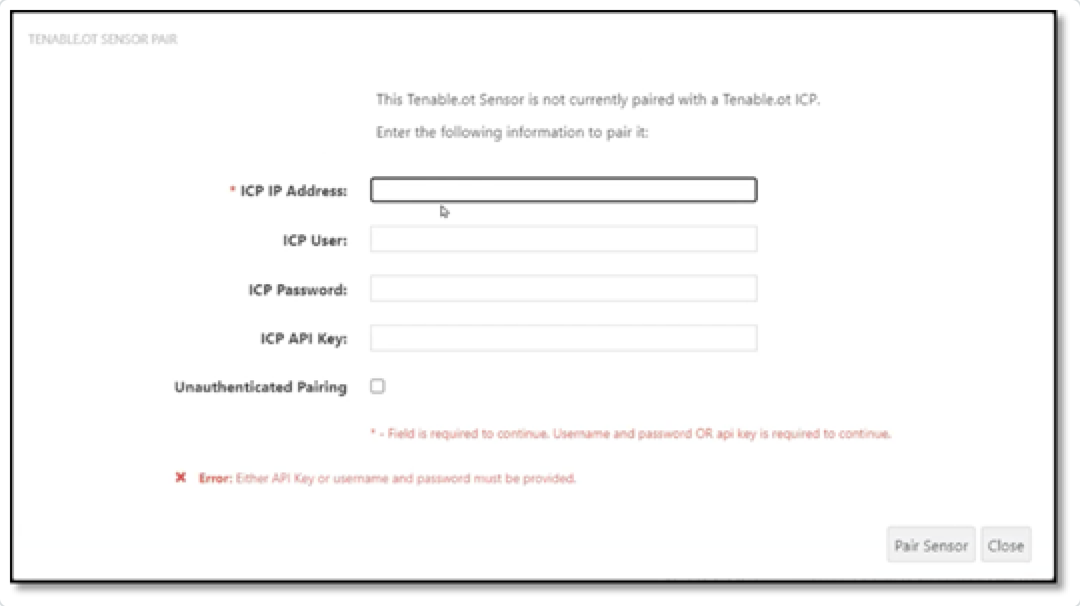


tenable
User name
Password
☑ Reuse my password for privileged tasks
▲ Required for admin usage
Log In

> **Note**: If you do not select the **Reuse my password for privileged tasks** upon login, you cannot restart the sensor service.

5. In the navigation menu bar, click **OT Security Sensor**.

The **OT Security Sensor Pair** window appears.



TENABLE.OT SENSOR PAIR

This Tenable.ot Sensor is not currently paired with a Tenable.ot ICP.

Enter the following information to pair it:

* ICP IP Address:

ICP User:

ICP Password:

ICP API Key:

Unauthenticated Pairing □

* - Field is required to continue. Username and password OR api key is required to continue.

✕ Error: Either API Key or username and password must be provided.

> **Note**: The **Tenable OT Security Sensor Pair** window only appears the first time the page loads. To open the window after this, click the ☑ button in the **Pairing Info** section of the **Tenable Core** console.

6. In the **ICP IP Address** box, type the IPv4 address for the ICP to pair with this sensor.

7. To use unauthenticated (unencrypted) pairing, select **Unauthenticated Pairing** and skip to step 8.

> **Note**: Sensors that use **Unauthenticated Pairing** can only passively scan their network segments and the ICP cannot manage them to send Active Queries.

8. To authenticate the pairing, do one of the following:

   - In the **ICP User** box, type the ICP username and the ICP password in the **ICP Password** box.

   - In the **ICP API Key** box, type an API Key for the ICP.

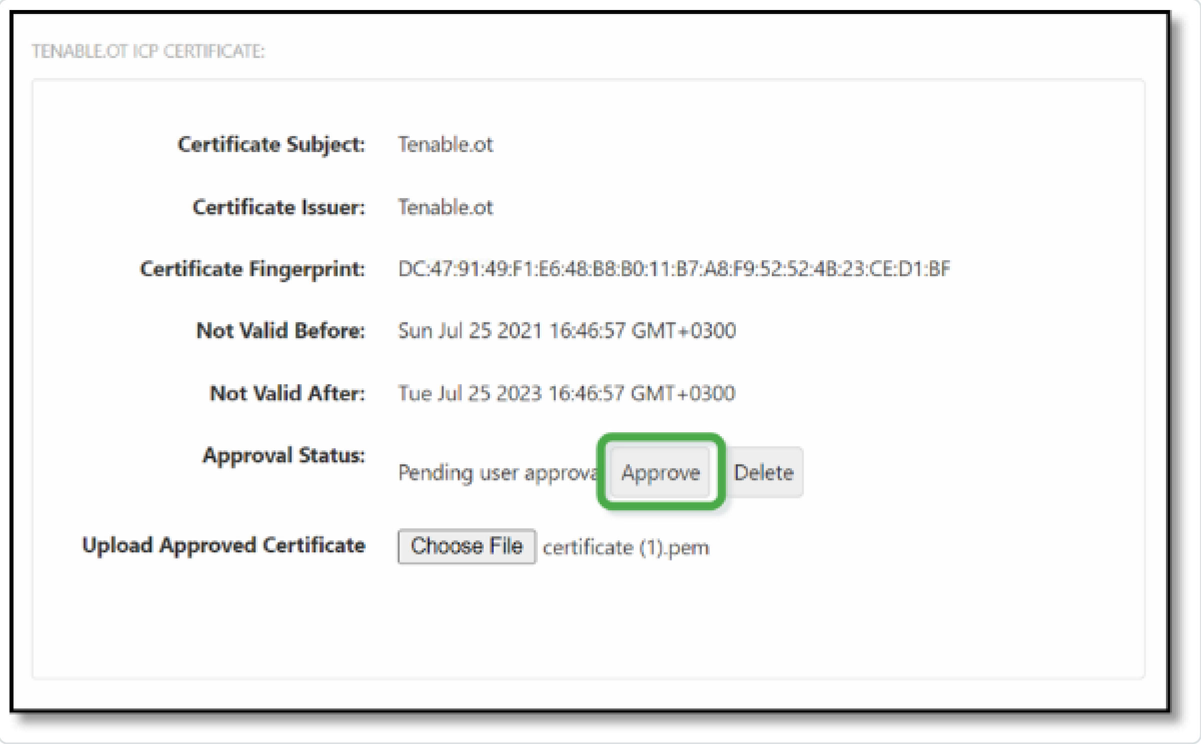
> **Note**: Tenable recommends that you create a dedicated ICP user for pairing sensors in order to ensure connectivity during the pairing process (see Adding Local Users).

> **Note**: The authentication method that uses username and password offers the advantage of non-expiring credentials unlike an API Key, which eventually ages out.

9. Click **Pair Sensor**.

10. To use a certificate offered from the ICP:

    a. In **Tenable Core**, in the **Tenable ICP Certificate** section, under **Approval Status**, wait for the certificate information to load.

    TENABLE.OT ICP CERTIFICATE:

    Certificate Subject: Tenable.ot

    Certificate Issuer: Tenable.ot

    Certificate Fingerprint: DC:47:91:49:F1:E6:48:B8:B0:11:B7:A8:F9:52:52:4B:23:CE:D1:BF

    Not Valid Before: Sun Jul 25 2021 16:46:57 GMT+0300

    Not Valid After: Tue Jul 25 2023 16:46:57 GMT+0300

    Approval Status: Pending user approva

    Upload Approved Certificate

    certificate (1).pem

    b. Click **Approve** to approve the certificate.

    c. In the **Confirm Accept Tenable OT Security Server Certificate** window, click **Accept This Certificate**.

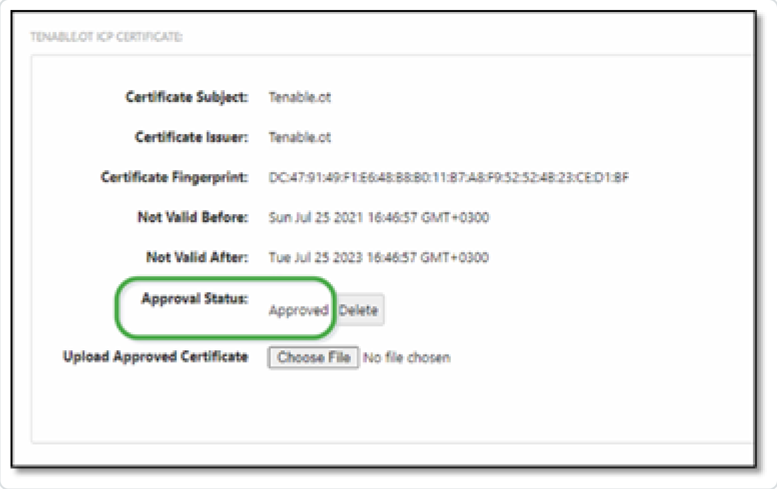
    If you prefer to upload a certificate manually:

    a. In the **Tenable ICP** console, follow the procedure described in **Generating an HTTPS Certificate**.

b. In **Tenable Core**, in the **Tenable ICP Certificate** section, under **Upload Approved Certificate**, click **Choose File**.

c. Navigate to the `.pem` certificate file to upload.

   Once a valid certificate loads correctly, its **Approval Status** in the **OT Security ICP Certificate** table shows as **Approved**.

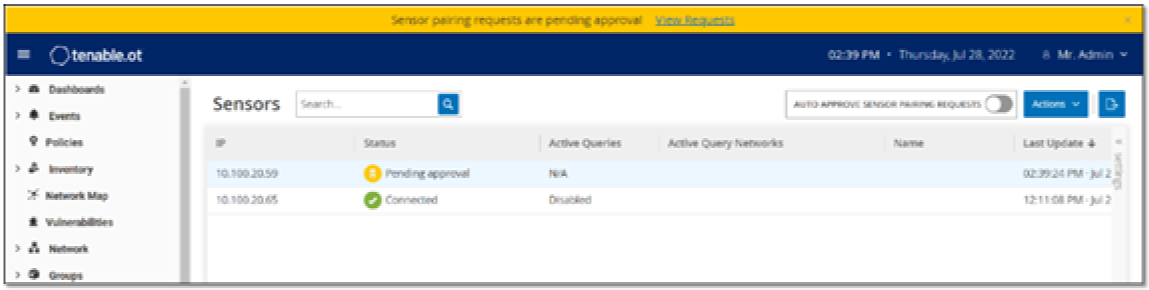


TENABLE.OT ICP CERTIFICATE

Certificate Subject:	Tenable.ot
Certificate Issuer:	Tenable.ot
Certificate Fingerprint:	DC:47:91:49:F1:E6:48:B8:B0:11:87:A8:F9:52:52:48:23:CE:D1:BF
Not Valid Before:	Sun Jul 25 2021 16:46:57 GMT+0300
Not Valid After:	Tue Jul 25 2023 16:46:57 GMT+0300
Approval Status:	Approved
Upload Approved Certificate	No file chosen

11. In the ICP user interface, navigate to **Local Settings** > **System Configuration** > **Sensors**.

    OT Security displays the new sensor in the table, and the **Status** shows **Pending Approval**.

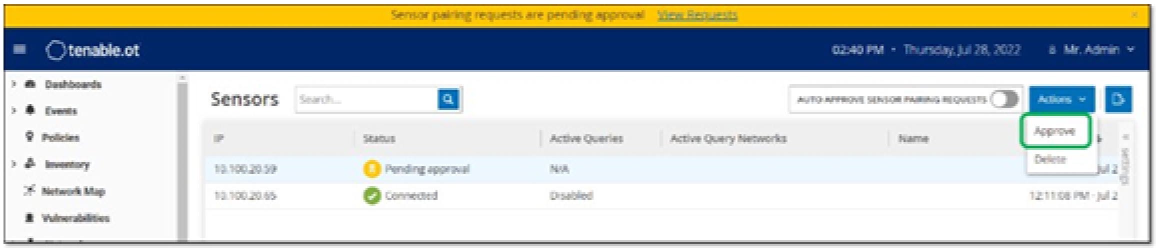


Sensor pairing requests are pending approval View Requests

02:39 PM • Thursday, Jul 28, 2022

IP	Status	Active Queries	Active Query Networks	Name	Last Update
10.100.20.59	Pending approval	N/A			02:39:24 PM · Jul 2
10.100.20.65	Connected	Disabled			12:11:08 PM · Jul 2

12. Click on the Sensor's row, then click **Actions** (or right-click on the row) and select **Approve**.



Sensor pairing requests are pending approval View Requests

02:40 PM • Thursday, Jul 28, 2022

IP	Status	Active Queries	Active Query Networks	Name	Last Update
10.100.20.59	Pending approval	N/A			Jul 2
10.100.20.65	Connected	Disabled			12:11:08 PM · Jul 2

The **Status** switches to **Connected**, indicating a successful pairing. Other possible statuses are:

- **Connected (Unauthenticated)** — The sensor is connected in unauthenticated mode. The sensor can only execute passive network detection.
- **Paused** — The sensor is connected properly, but paused.
- **Disconnected** — The sensor is not connected. For an authenticated sensor, this may result from an error in the pairing process. For example: tunnel error and API issue.
- **Connected (Tunnel error)** — The pairing is successful, but communication over the tunnel is inoperable. Check the connectivity of the port 28304 from the sensor to the ICP. For more information, see Firewall Considerations.

13. Once OT Security completes the pairing for an Authenticated Sensor, you can configure Active Queries to run on that Sensor. See Configuring Active Queries.

> **Note**: Once the pairing completes, Tenable recommends that you use only the ICP page to manage the Sensor, and not the Tenable Core user interface.

Set up the Sensor

There are two models of the Sensor: the Rack Mount Sensor and the Configurable Sensor, as described in OT Security Sensor. The Rack Mount model can be mounted on a standard 19-inch rack or rested on top of a flat surface. The Configurable model can be installed in a DIN rail or mounted on a standard 19-inch rack (using the “mounting ears” adapter kit).

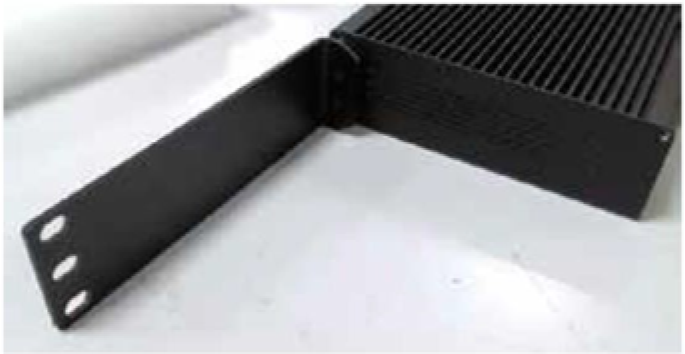
Set up a Rack Mount Sensor

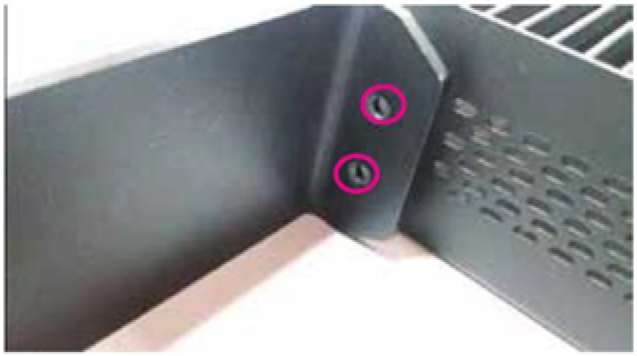
You can either mount the sensor on a standard 19-inch rack or place it on top of a flat surface (such as a desktop).

Rack Mounting (for Rack Mount model)

To mount the OT Security Sensor on a standard 19-inch rack:

1. Attach the L-shaped brackets to the screw holes on each side of the sensor as shown in the following image.





2. Insert two screws on each side and fasten them with a screwdriver to secure the brackets in place.
3. Insert the sensor with the brackets into an available 1U slot in the rack.
4. Secure the unit to the rack by fastening the supplied rack-mount brackets to the rack frame, using the appropriate screws for rack mounting (not supplied).

Important:

- Make sure that the rack is electrically grounded.
- Make sure that the cooling fan air intake (located in the back panel) and the air ventilation holes (on the top panel) are not obstructed.

5. Plug in the AC power supply cable (supplied) to the power supply port in the rear panel, then plug the cable to the AC power supply (mains).

Flat Surface

To install the OT Security Sensor on a flat surface:

1. Place the sensor on a dry, flat, leveled surface (such as a desktop).

Important:

- Make sure that the tabletop is flat and dry.
- Make sure that the cooling fan air intake (located in the back panel) and the air ventilation holes (on the top panel) are not obstructed.

2. If the unit is placed within a stack of other electrical appliances, make sure there is ample space behind the cooling fan (located in the back panel) to allow proper ventilation and cooling.
3. Plug in the AC power supply cable (supplied) to the power supply port in the rear panel, then plug the cable to the AC power supply (mains).

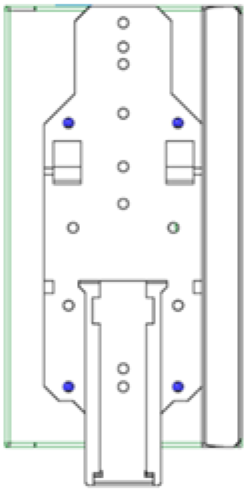
Set up a Configurable Sensor

You can either mount the Configurable Sensor on a DIN rail or on a standard 19-inch mounting rack (using the “mounting ears” adapter kit).

DIN Rail Mounting

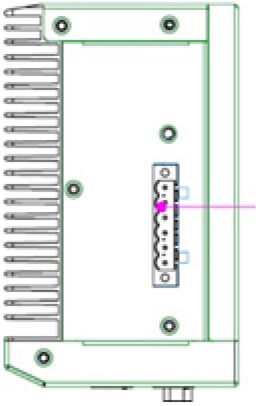
To mount the OT Security Configurable Sensor on a standard DIN rail:

1. Use the bracket, located on the back of the Sensor, to mount the Sensor on to a DIN rail.



2. Connect the power using one of the following methods:

   - **DC Power** — Connect the DC power chord to the Sensor by inserting the 12-36V DC 6-pin Phoenix Contact connector into the side of the Sensor unit and tightening the embedded screws at the top and bottom of the connector. Then, connect the other end of the chord to a DC power source.



- **AC Power** — Connect the AC power supply to the Sensor by inserting the 12-36V DC 6-pin Phoenix Contact connector into the side of the Sensor unit and tightening the embedded screws at the top and bottom of the connector.

Then, insert the AC power supply cable (provided) into the power supply unit, and plug the other end into an AC outlet.

Rack Mounting (for Configurable model)

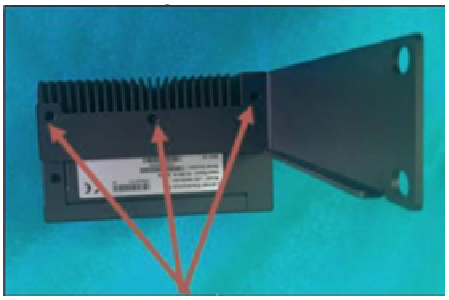
A Configurable Sensor can be attached to a mounting rack, using the “mounting ears” that are provided.

To mount the Configurable Sensor on a standard (19-inch) rack:

1. Prepare the unit for rack mounting:

   a. Remove 3 screws from each side of the unit.

   b. Attach the "mounting ears" on both sides of the unit, using new screws (provided).



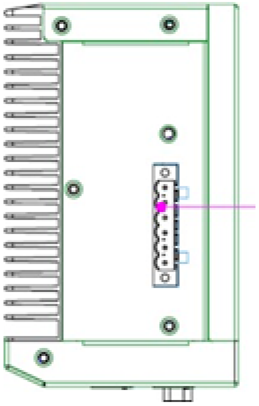
2. Insert the server unit into an available 1U slot in the rack.

> **Note**:
>
> - Make sure that the rack is electrically grounded.
> - Make sure that the cooling fan air intake (located in the back panel) and the air ventilation holes (on the top panel) are not obstructed.

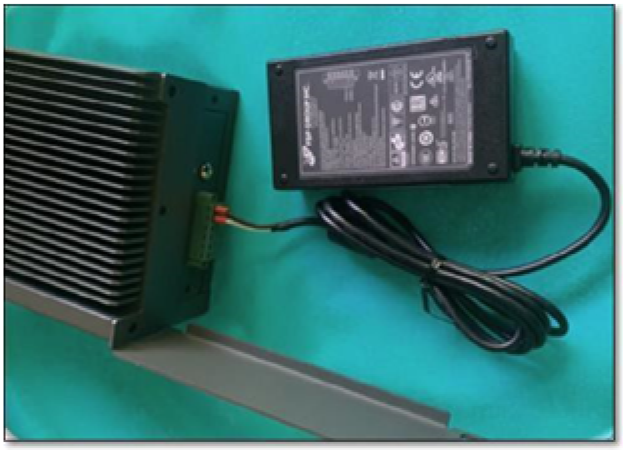
3. Secure the unit to the rack by fastening the “mounting ears” to the rack frame using the mounting screws (provided).

4. Connect the power using one of the following methods:

   - **DC Power** — Connect the DC power chord to the Sensor by inserting the 12-36V DC 6-pin Phoenix Contact connector into the side of the Sensor unit and tightening the embedded screws at the top and bottom of the connector. Then, connect the other end of the chord to a DC power source.



- **AC Power** — Connect the AC power supply to the Sensor by inserting the 12-36V DC 6-pin Phoenix Contact connector into the side of the Sensor unit and tightening the embedded screws at the top and bottom of the connector.



Then, insert the AC power supply cable (provided) into the power supply unit, and plug the other end into an AC outlet.

Connect the Sensor to the Network

OT Security Sensor is used to collect and forward network traffic to the OT Security Appliance. To perform Network Monitoring, connect the unit to a mirroring port on the network switch, which is connected to the controllers/PLCs of interest.

To manage the sensor, connect the unit to a network. This can be a different network than the one that is used to perform network monitoring.

To connect the OT Security Rack Mount Sensor to the network:

1. On the OT Security Sensor, connect the Ethernet cable (supplied) to **Port 1**.
2. Connect the cable to a regular port on the network switch.
3. On the unit, connect another Ethernet cable (supplied) to **Port 2**.
4. Connect the cable to a mirroring port on the network switch.

To connect the OT Security Configurable Sensor to the network:

1. On the OT Security Sensor, connect the Ethernet cable (supplied) to **Port 1**.
2. Connect the cable to a regular port on the network switch.
3. On the unit, connect another Ethernet cable (supplied) to **Port 3**.
4. Connect the cable to a mirroring port on the network switch.

Access the Sensor Setup Wizard

To log in to the Management Console.

1. Do one of the following:

    - Connect the Management Console workstation (for example: PC, laptop, and so on.) directly to Port 1 of the OT Security Sensor using the Ethernet cable.

    - Connect the Management Console workstation to the network switch.

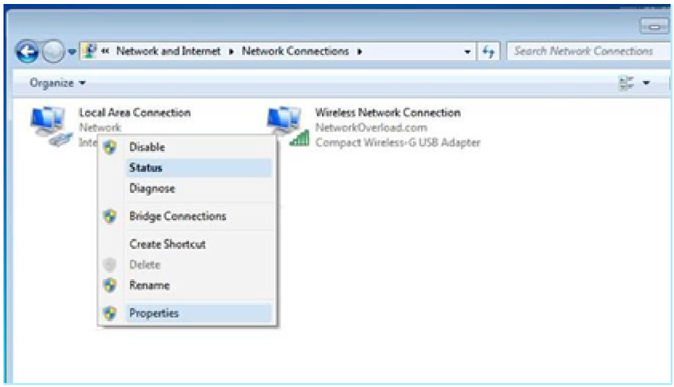
2. Ensure that the Management Console workstation is part of the same subnet as the OT Security Sensor (which is 192.168.1.5) or is routable to the unit.

3. Use the following procedure to set up a static IP (you must set up a static IP in order to connect to the OT Security Sensor):

    a. Go to **Network and Internet** > **Network and Sharing Center** > **Change adapter settings**.

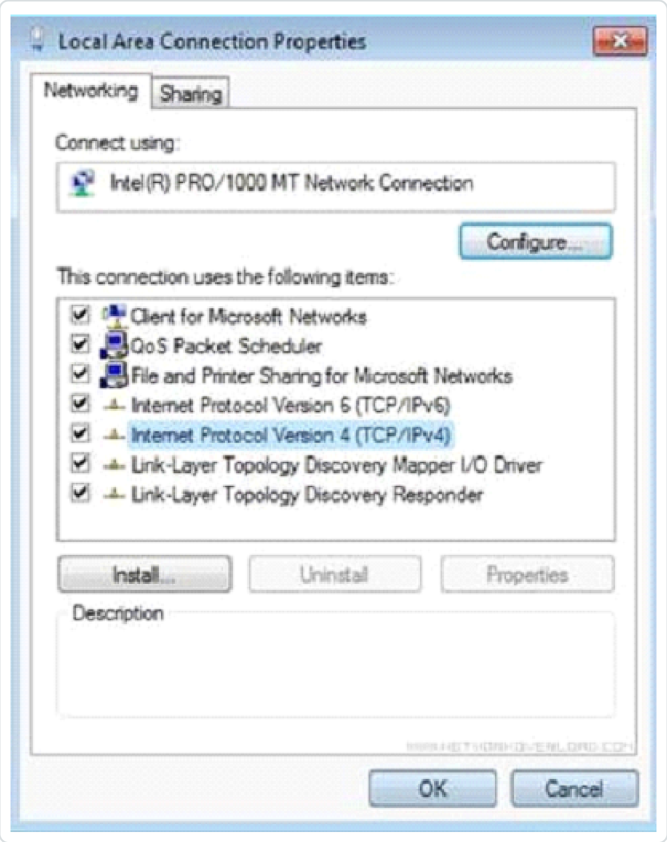
    > **Note**: Navigation may vary slightly for different versions of Windows.

    The **Network Connections** window appears.



    b. Right-click **Local Area Connections** and select **Properties**.

    The **Local Area Connections** window appears.



Connect using:

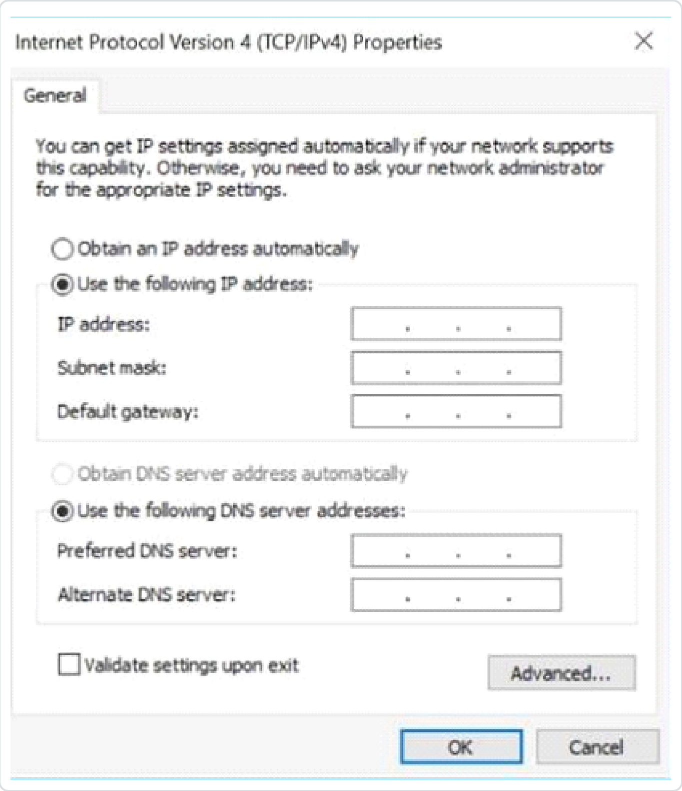
Intel(R) PRO/1000 MT Network Connection

This connection uses the following items:

☑ Client for Microsoft Networks
☑ QoS Packet Scheduler
☑ File and Printer Sharing for Microsoft Networks
☑ Internet Protocol Version 6 (TCP/IPv6)
☑ Internet Protocol Version 4 (TCP/IPv4)
☑ Link-Layer Topology Discovery Mapper I/O Driver
☑ Link-Layer Topology Discovery Responder

c. Select **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**.

The **Internet Protocol Version 4 (TCP/IPv4) Properties** window appears.


Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

○ Obtain an IP address automatically

● Use the following IP address:

IP address: . . .

Subnet mask: . . .

Default gateway: . . .

○ Obtain DNS server address automatically

● Use the following DNS server addresses:

Preferred DNS server: . . .

Alternate DNS server: . . .

□ Validate settings upon exit

d. Select **Use the Following IP address**.

e. In the IP address box, type **192.168.1.10**.

f. In the **Subnet mask** box, type 255.255.255.0

g. Click **OK**.

   OT Security applies the new settings.

4. From your Chrome browser, navigate to https://192.168.1.5:8000.

> **Note**: The user interface can only be accessed from a Chrome browser. Use the latest version of Chrome.

5. Pair the sensor.

OT Security License Workflow

Licenses for Tenable accounts are calculated based on the number of unique IPs in the system. Each IP requires a separate license. For example, even if more than one device shares the same IP address, multiple devices connected to the same backplane that share the same three IPs, the licenses can still be based on the number of IPs. In this case, you need three licenses, regardless of the number of devices.

After you install the OT Security Appliance, the next step is to activate your license.

> **Note**: To update or reinitialize your OT Security license, reach out to your Tenable Account Manager. Once your Tenable account manager updates your license, you can update or reinitialize your license.

Before you Begin

- Install the OT Security Appliance.
- Make sure that you have the license code (20 characters letter/numbers), which you received from Tenable when you ordered your device.
- Make sure you have access to the internet. If your OT Security device is not connected to the Internet, you can register the license from any PC.
- Make sure you have access to the Tenable Provisioning portal. For access, contact your Tenable Customer Success Manager.

Activate your OT Security license

You can activate your OT Security license and facilitate the Tenable provisioning portal for creating new sites to manage your assets.

To activate your OT Security license:

1. Log in to the Tenable Provisioning portal using your community account.

   The **Provisioning** page appears with the products for which you have licenses.

2. In the left pane, select **Tenable OT Security**.

   The OT Security licenses appear with details such as the purchase date, expiration date, and number of licensed IPs and sites.

3. From the **Code** column, copy the 20-digit OT Security license code.

4. Generate activation certificate in OT Security:

   a. Go to the OT Security **License Activation** page.

   b. In step 1, click **Enter new license code**.

      The **Enter new license code** panel appears on the right.

   c. In the **License code** box, paste the code that you copied from the provisioning portal.

   d. Click **Verify**.

      OT Security enables the **Generate activation certificate** section.

   e. Click **Generate Certificate**.

      The **Generate Certificate** panel appears on the right.

   f. Click **Copy text to clipboard**, then click **Done**.

      OT Security generates the certificate, which you must provide in the Tenable Provisioning Portal to add your sites.

5. In the Tenable Provisioning portal, navigate to the **Tenable OT Security Provisioning** page and click ⊕**Add Site**.

   The **Add New Tenable OT Security Site** window appears.

   a. (Optional) In the **Label** box, type a name for the site.

   b. In the **IPs** box, type the number of IP addresses you want to assign to this site. Use the **+** and **-** buttons to increase or decrease the value.

      > **Tip**: To adjust the number of IP addresses assigned to the license, you can also use the slider located under the **IPs** box.

   c. In the **Activation Certificate** box, paste the certificate that you copied from OT Security. See step f.

   d. Click **Create**.

A dialog box appears with an activation code. This is a one-time generated code that you must copy to the OT Security instance.

e. Click the ⧉ button, then click **Confirm**.

6. Navigate back to the OT Security instance and in the step **3 Enter activation code** section, click **Enter Activation Code**.

   The **Enter Activation Code** panel appears on the right.

7. In the **Activation Code** box, paste the one-time generated code that you copied from the **Tenable OT Security Provisioning** page. See step e.

8. Click **Activate**.

   OT Security shows a confirmation message that the system activated successfully and the OT Security interface appears.

9. Click **Enable**.

   OT Security is now enabled and ready to use.

10. Navigate back to the Tenable Provisioning portal and in the one-time generated activation code dialog box, click the **I have saved this certificate information or copied it to Tenable.ot for activation** checkbox.

11. Click **Confirm**.

    The newly added site appears in the **Provisioning** page for OT Security.

Update your license

When you want to increase your asset limit, extend your license period, or change your license type, you can update your license.

Before you Begin

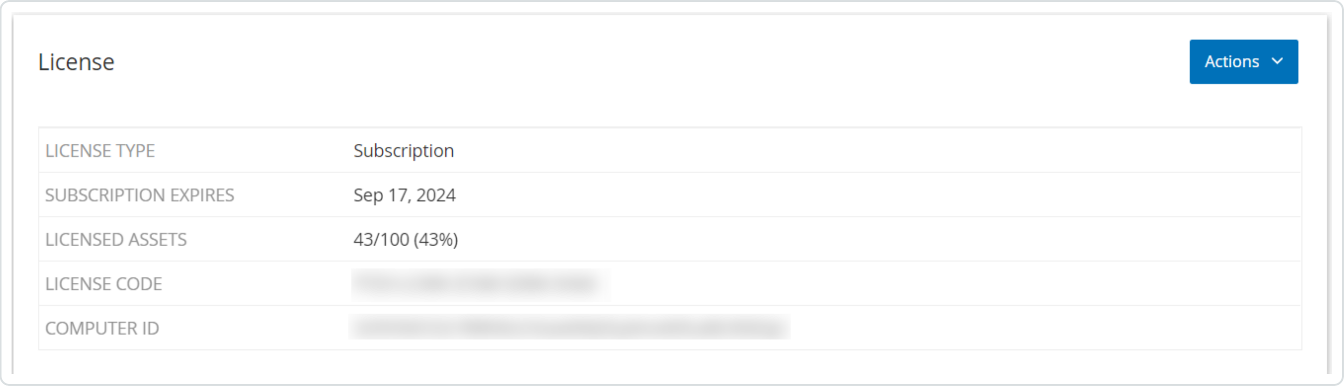
- Your Tenable Account Manager must have already updated your license information in their system before you can update the new license.

- You need access to the internet. If your OT Security device is not connected to the Internet, you can register the license from any PC.

To update your license:

1. Go to **Local Settings** > **System Configuration** > **License**.

   The **License** window appears.

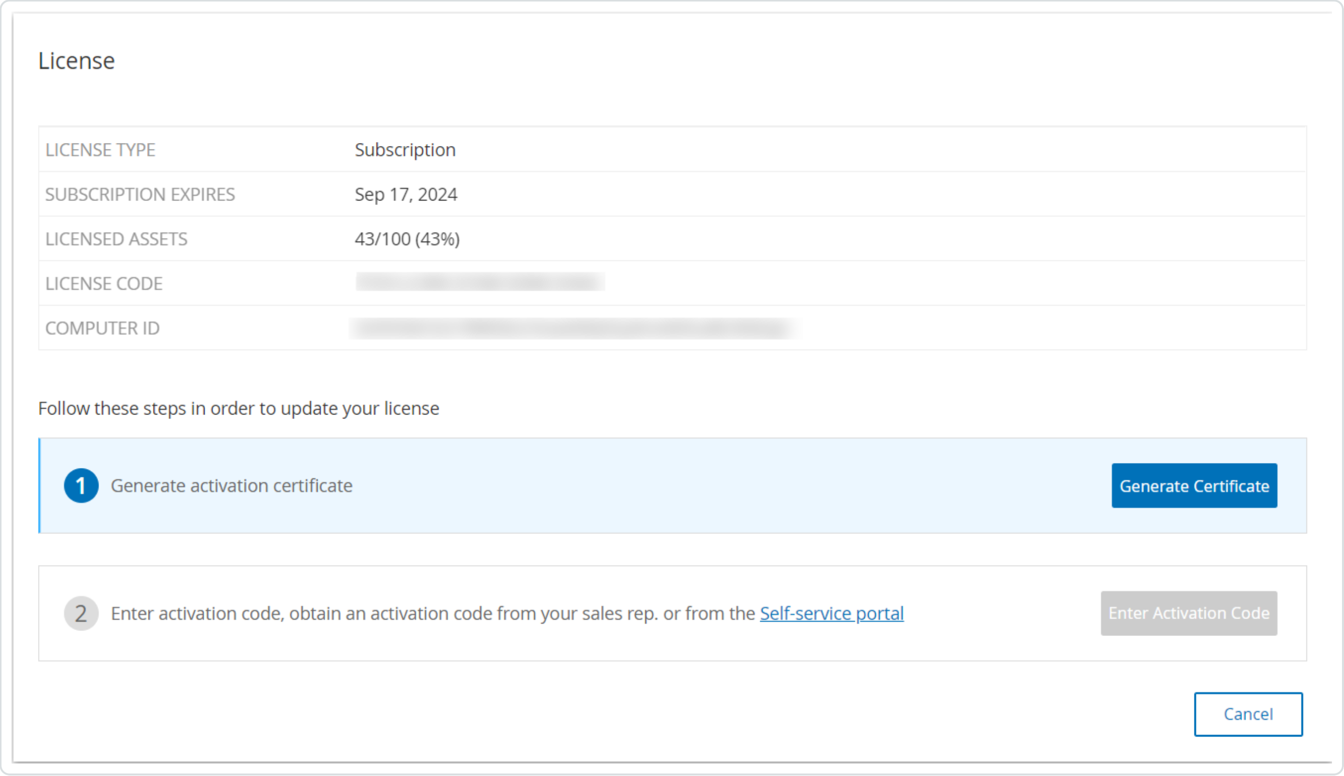


License

LICENSE TYPE	Subscription
SUBSCRIPTION EXPIRES	Sep 17, 2024
LICENSED ASSETS	43/100 (43%)
LICENSE CODE	[redacted]
COMPUTER ID	[redacted]

2. From the **Actions** menu, select **Update license**.

   The **Generate Certificate** and **Enter Activation Code** steps appear.



License

LICENSE TYPE	Subscription
SUBSCRIPTION EXPIRES	Sep 17, 2024
LICENSED ASSETS	43/100 (43%)
LICENSE CODE	[redacted]
COMPUTER ID	[redacted]

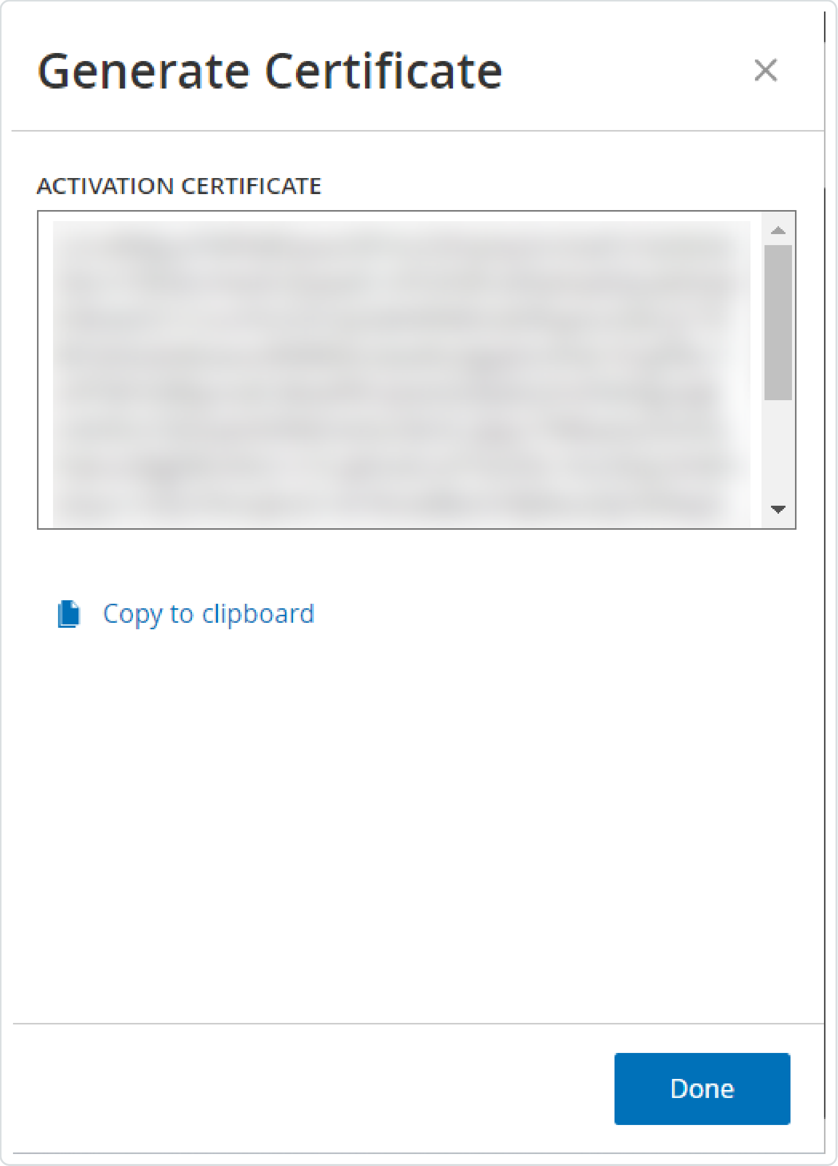
Follow these steps in order to update your license

1 Generate activation certificate

2 Enter activation code, obtain an activation code from your sales rep. or from the Self-service portal

3. In the **(1) Generate activation certificate** box, click **Generate Certificate**.

   The **Generate Certificate** panel appears with the **Activation Certificate**.



4. Click **Copy text to clipboard**, then click **Done**.

   The side panel closes.

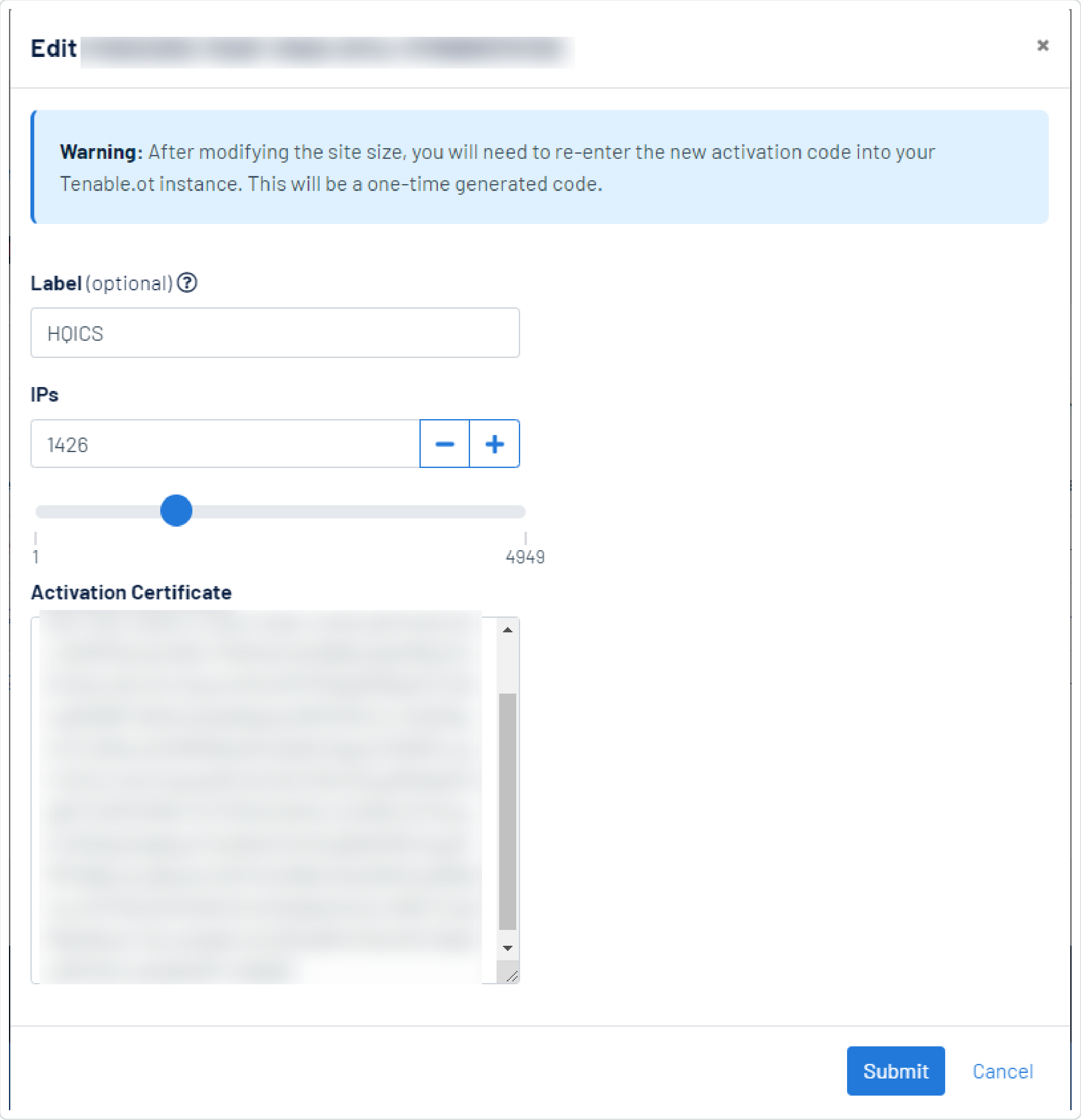
5. Edit the site details in the Tenable Provisioning portal:

   a. In the [Tenable Provisioning](#) portal, navigate to the **Tenable OT Security Provisioning** page and in the row of the site that you want to update, click the ··· button.

      A menu appears.

   b. Click **Edit Site**.

The edit window for the site appears.



Edit

Warning: After modifying the site size, you will need to re-enter the new activation code into your Tenable.ot instance. This will be a one-time generated code.

Label (optional)

HQICS

IPs

1426

Activation Certificate

c. Adjust the details as needed.

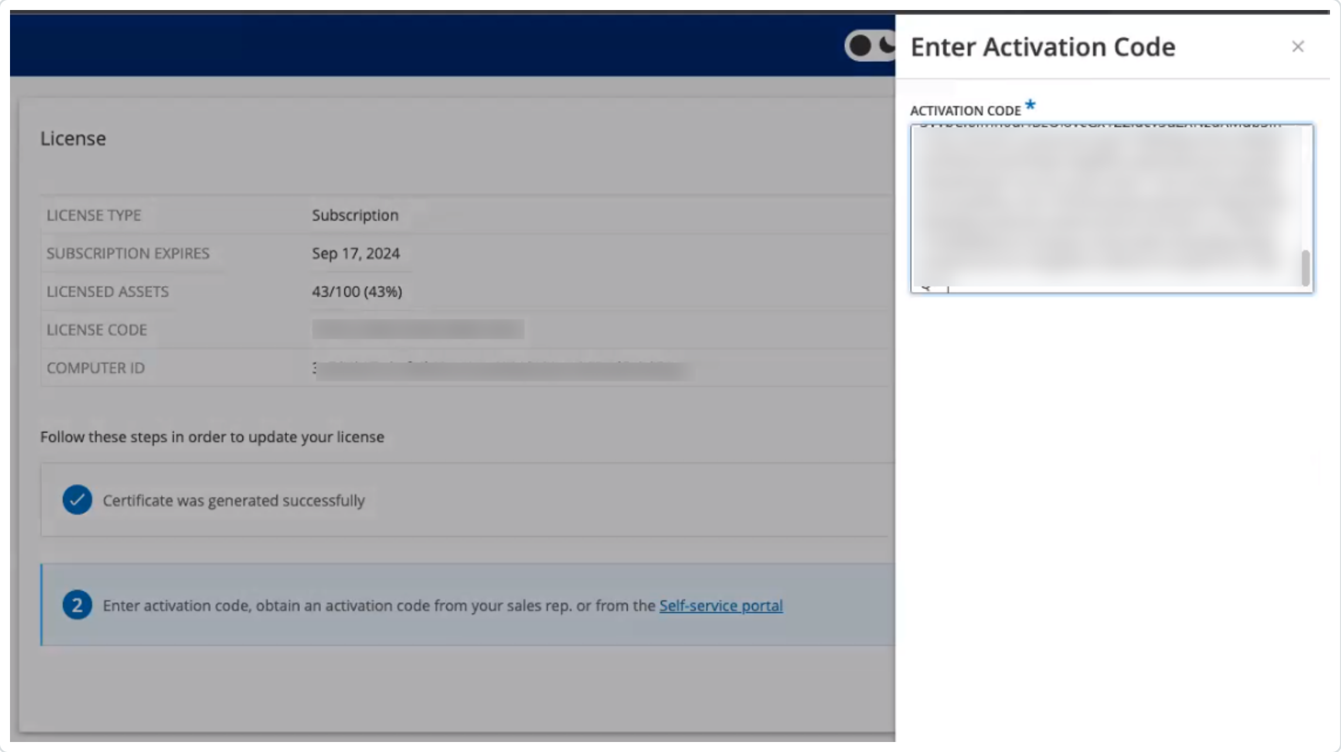
d. In the **Activation Certificate** box, paste the certificate that you copied from the **Generate Certificate** window in OT Security.

e. Click **Submit**.

The portal displays a dialog box with an activation code. This is a one-time generated code that you must copy to the OT Security instance.

f. Click the ⧉ button, then click **Confirm**.

6. Navigate back to the OT Security instance.
7. In the **(2) Enter activation code** box, click **Enter Activation Code**.
8. In the **Activation Code** box, paste the one-time generated code that you copied from the **Tenable OT Security Provisioning** page.



Enter Activation Code

ACTIVATION CODE *

[redacted]

License

LICENSE TYPE	Subscription
SUBSCRIPTION EXPIRES	Sep 17, 2024
LICENSED ASSETS	43/100 (43%)
LICENSE CODE	[redacted]
COMPUTER ID	[redacted]

Follow these steps in order to update your license

✓ Certificate was generated successfully

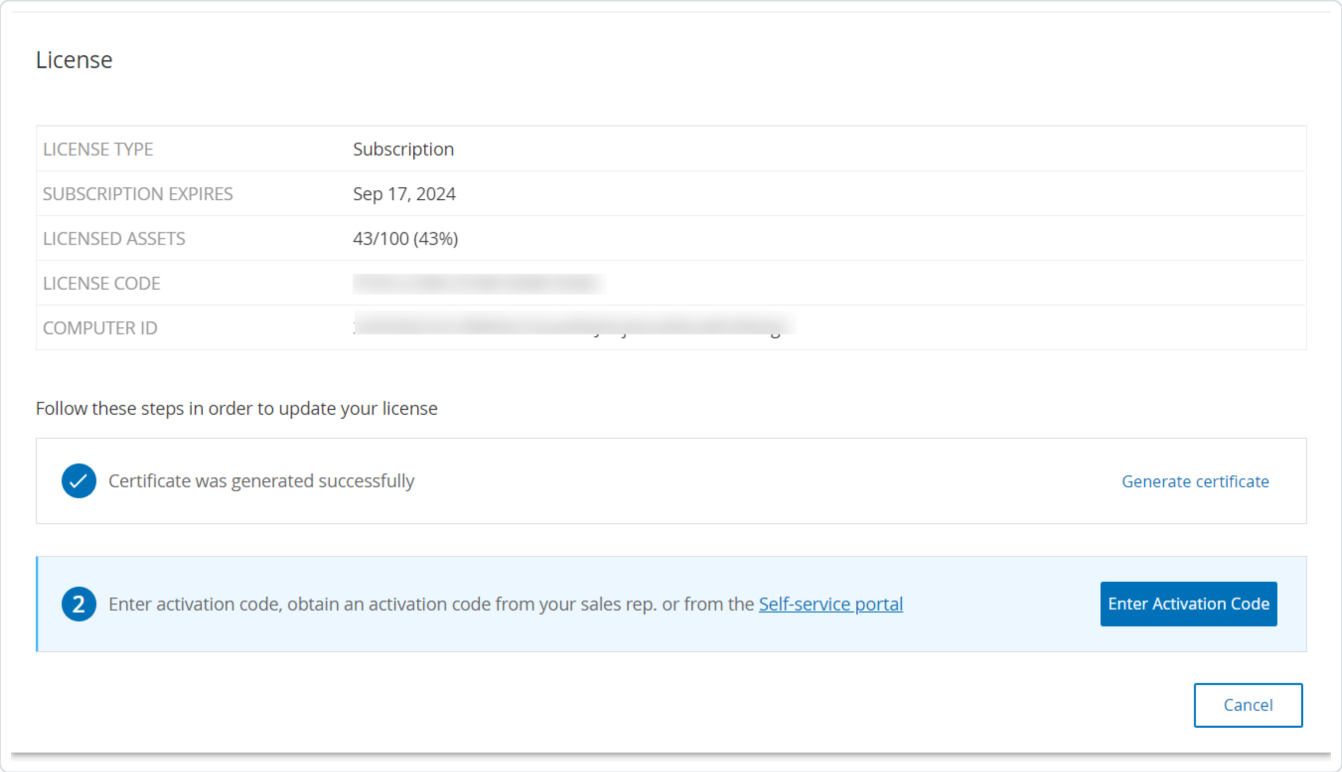
2 Enter activation code, obtain an activation code from your sales rep. or from the Self-service portal

9. Click **Activate**.

   OT Security shows a confirmation message that the system was activated successfully and the **License** page shows the updated license details.

Update your license in offline mode

1. Perform steps 1 to 4 as mentioned in the Update your license section.
2. In the **(2) Enter activation code** box, click the Self-service portal link.



License

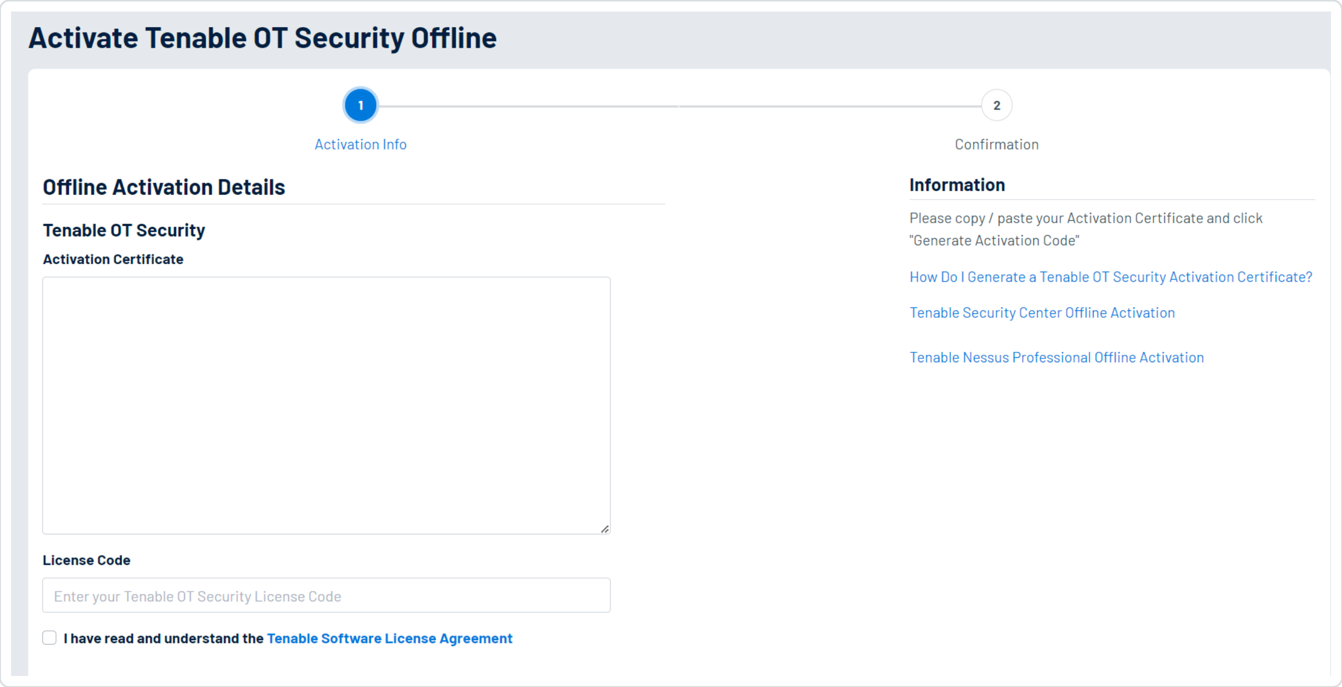
LICENSE TYPE	Subscription
SUBSCRIPTION EXPIRES	Sep 17, 2024
LICENSED ASSETS	43/100 (43%)
LICENSE CODE	[redacted]
COMPUTER ID	[redacted]

Follow these steps in order to update your license

✓ Certificate was generated successfully — Generate certificate

2 Enter activation code, obtain an activation code from your sales rep. or from the Self-service portal — Enter Activation Code

The **Activate OT Security Offline** window opens in a new tab.



Activate Tenable OT Security Offline

Offline Activation Details

Tenable OT Security

Activation Certificate

License Code

Enter your Tenable OT Security License Code

□ I have read and understand the Tenable Software License Agreement

Information

Please copy / paste your Activation Certificate and click "Generate Activation Code"

How Do I Generate a Tenable OT Security Activation Certificate?

Tenable Security Center Offline Activation

Tenable Nessus Professional Offline Activation

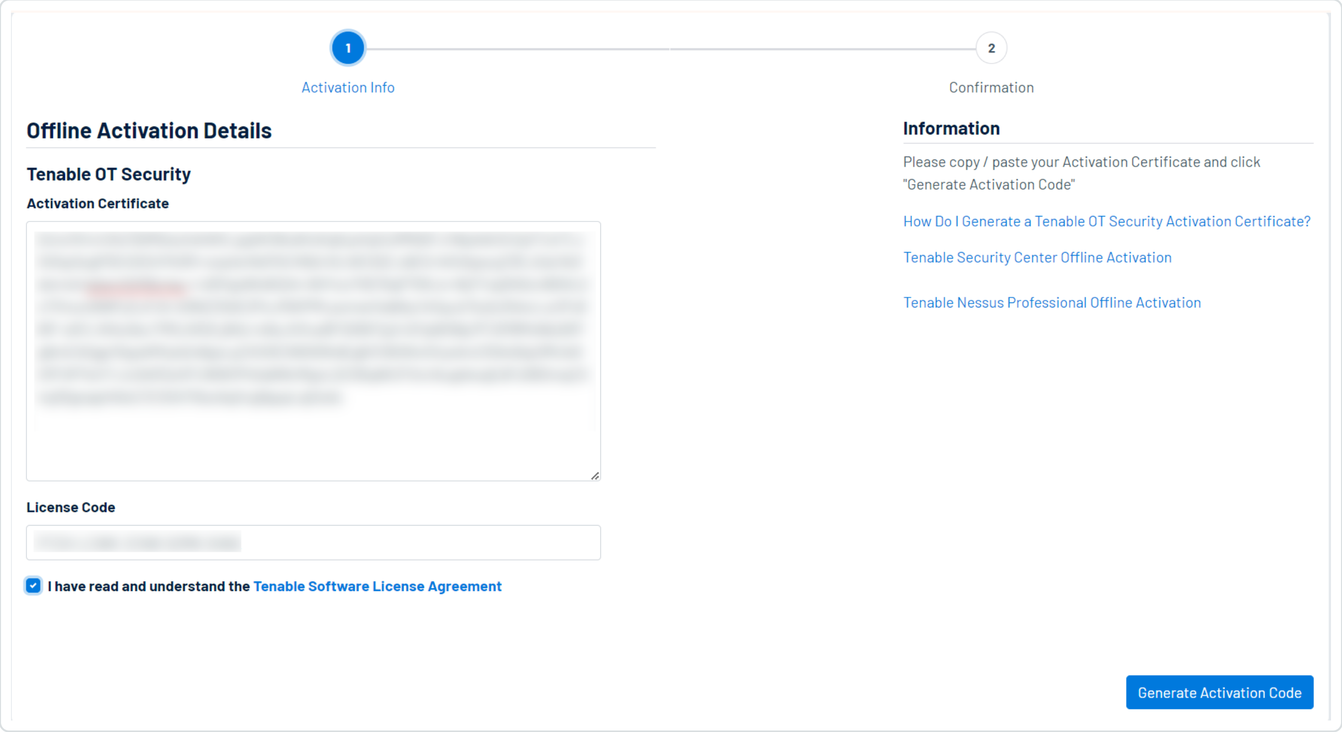
> **Note**: You can access the Activate OT Security Offline screen from an Internet-connected device using the following URL: https://provisioning.tenable.com/activate/offline/tenable-ot.

> **Note**: If you are not logged in to tenable.com, you can log in using your email address and password. Use the email account where you received your **License Code**. If you do not have the login credentials, you can either click on **Don't remember your password** (and follow the prompts) or reach out to your Tenable account manager.

3. In the **Activation Certificate** box, paste the **Activation Certificate**.

4. In the **License Code** box, type your 20-character **License Code** (which you can copy and paste from the **License** screen).

5. Click the **I have read and understand the Tenable Software License Agreement** checkbox.



Offline Activation Details

Tenable OT Security

Activation Certificate

[redacted]

License Code

[redacted]

☑ I have read and understand the Tenable Software License Agreement

Information

Please copy / paste your Activation Certificate and click "Generate Activation Code"

How Do I Generate a Tenable OT Security Activation Certificate?

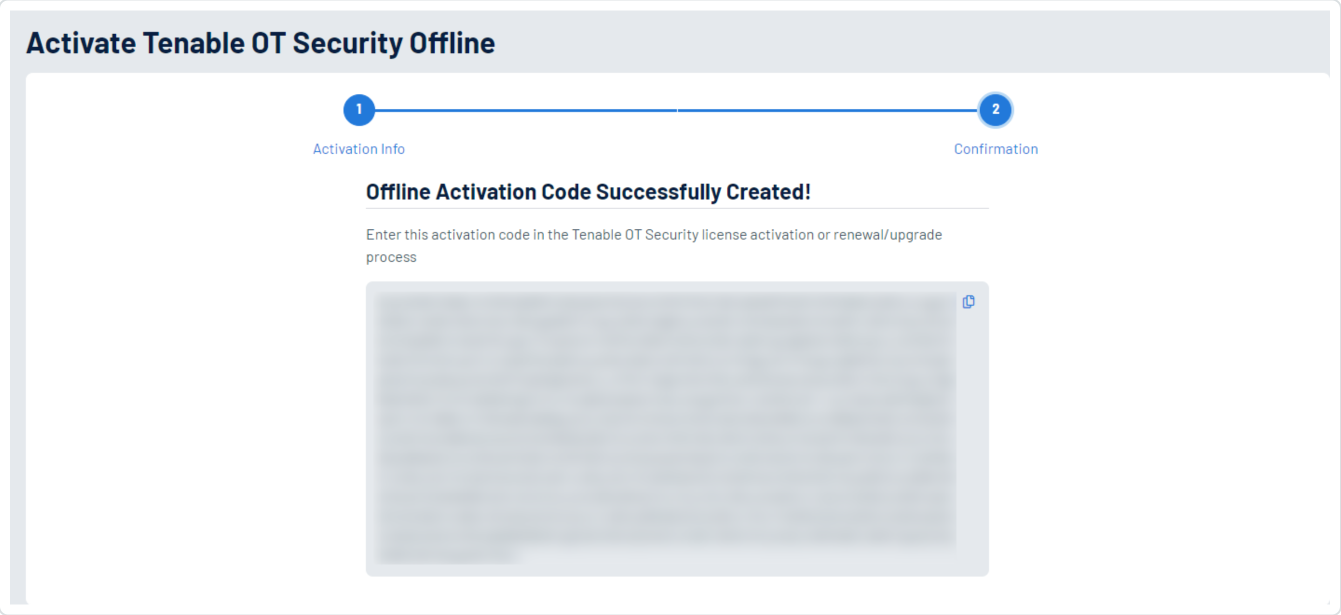
Tenable Security Center Offline Activation

Tenable Nessus Professional Offline Activation

> **Note**: To view the license agreement, click the **Tenable Software License Agreement** link.

6. Click **Generate Activation Code**.

   The **Offline Activation Code Successfully Created!** window appears.



Activate Tenable OT Security Offline

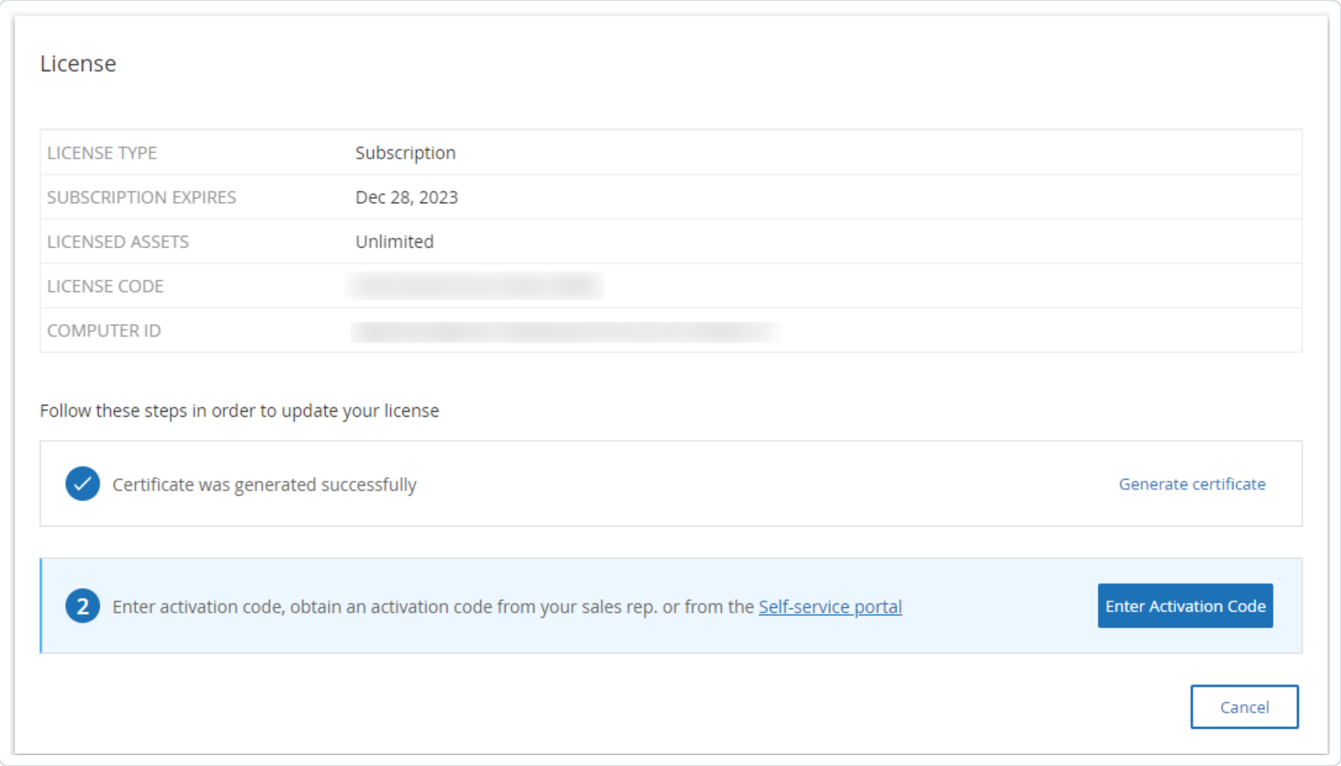
Offline Activation Code Successfully Created!

Enter this activation code in the Tenable OT Security license activation or renewal/upgrade process

[redacted]

7. Click the ⧉ button.

8. Navigate back to the **License** tab, and click **Enter Activation Code**.



License

LICENSE TYPE	Subscription
SUBSCRIPTION EXPIRES	Dec 28, 2023
LICENSED ASSETS	Unlimited
LICENSE CODE	[redacted]
COMPUTER ID	[redacted]

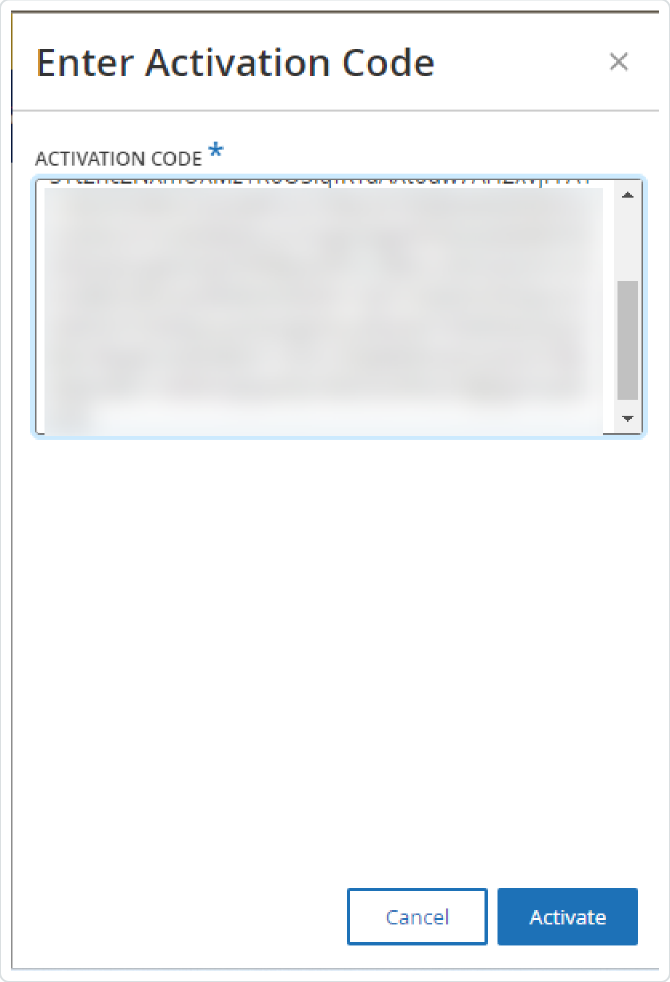
Follow these steps in order to update your license

✓ Certificate was generated successfully

2 Enter activation code, obtain an activation code from your sales rep. or from the Self-service portal

The **Enter Activation Code** side panel appears.

9. In the **Activation Code** box, paste your activation code and click **Activate**.



The side panel closes, and OT Security updates the license.

Reinitialize your license

Reinitializing your license removes your current license from the system and activates a new license, similar to the license activation during your system startup. If you need to reinitialize your license (that is, if you are issued a new license), use the following procedure.

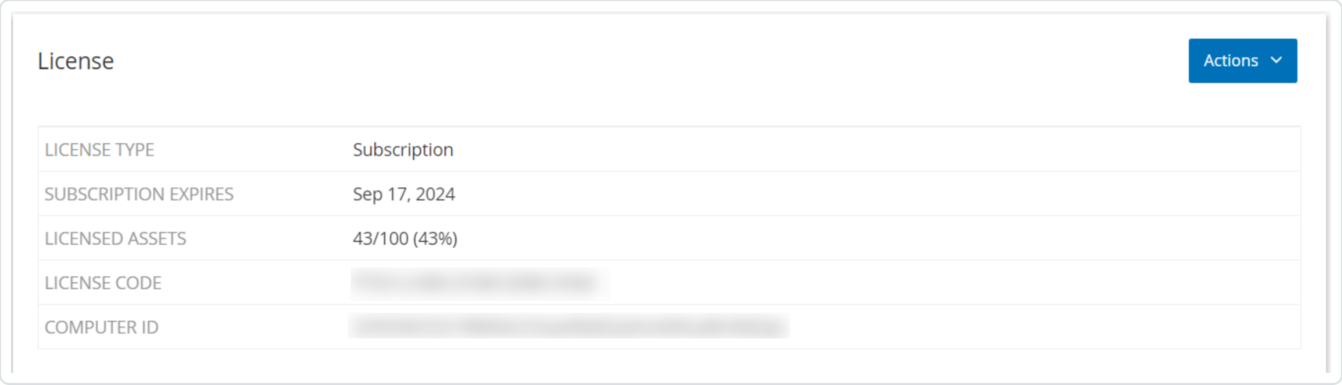
Before you Begin

- Your Tenable account manager must have already issued your new license in their system and provided you with a License Code (20 characters letter/numbers).

- You need access to the Internet. If your OT Security device is not connected to the Internet, you can register the license from any PC.

To reinitialize your license:

1. Go to **Local Settings** > **System Configuration** > **License**.



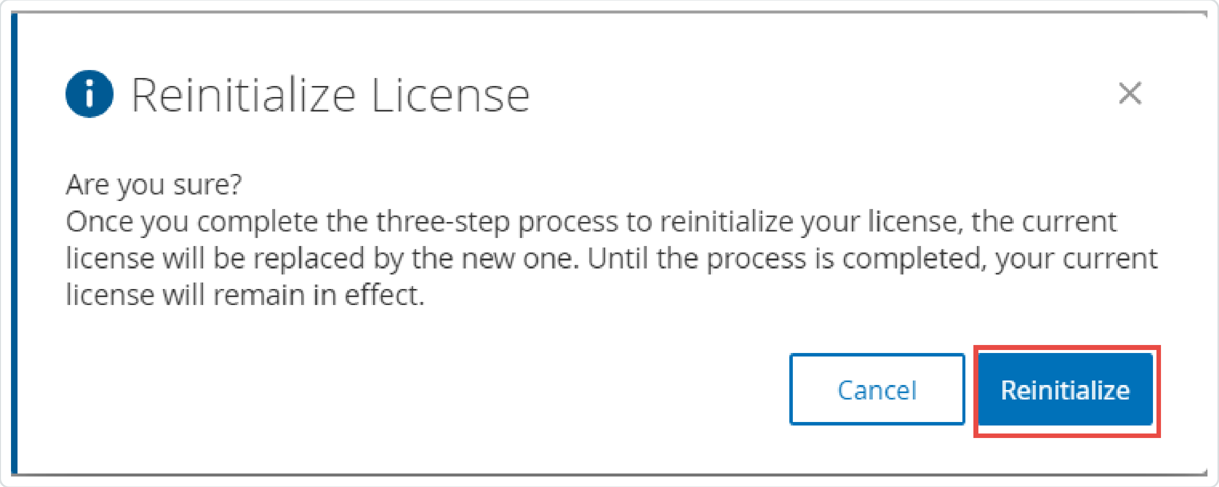
License

LICENSE TYPE	Subscription
SUBSCRIPTION EXPIRES	Sep 17, 2024
LICENSED ASSETS	43/100 (43%)
LICENSE CODE	[redacted]
COMPUTER ID	[redacted]

2. From the **Actions** menu, select **Reinitialize license**.

   A confirmation window appears.

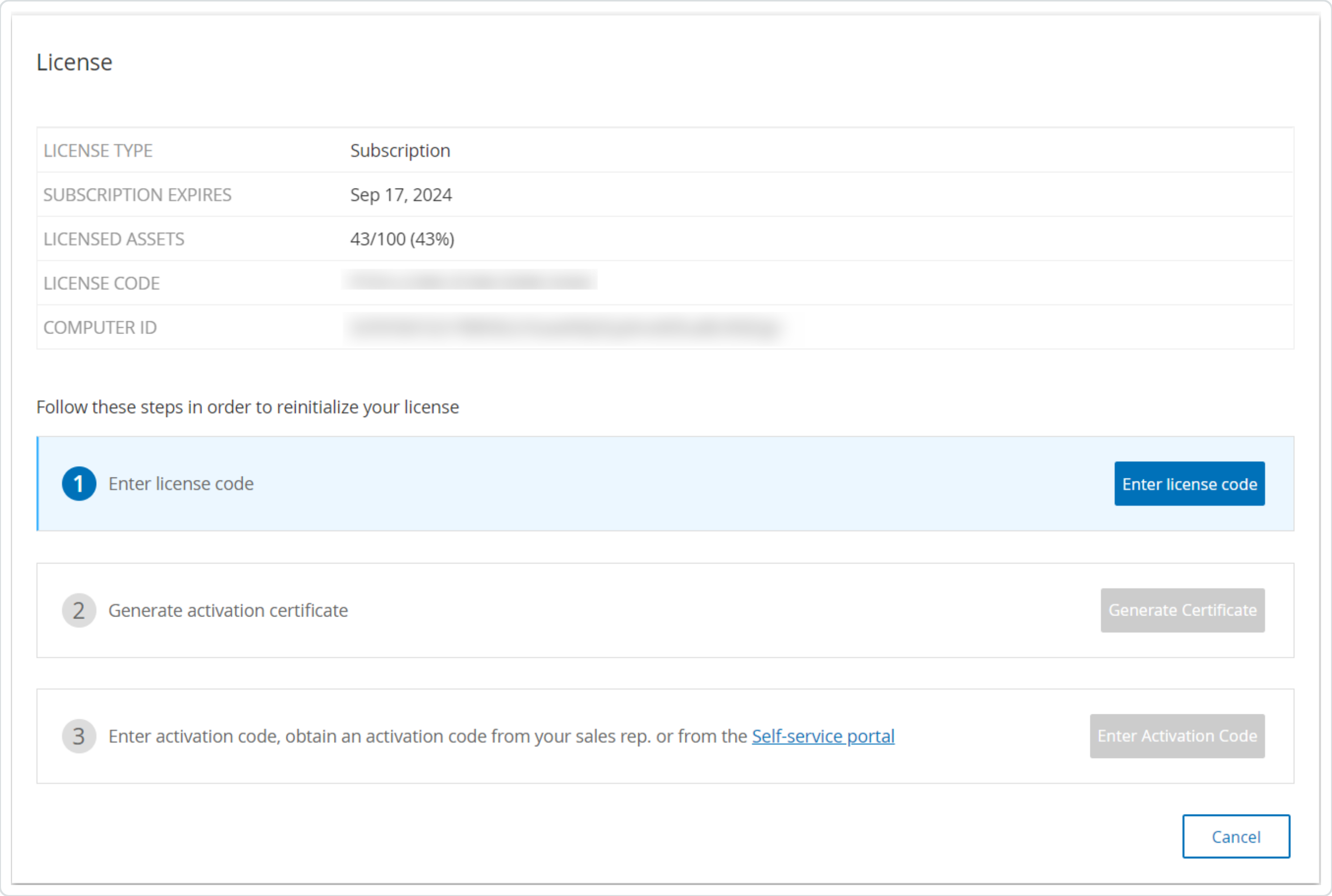
3. Click **Reinitialize**.



Reinitialize License

Are you sure?
Once you complete the three-step process to reinitialize your license, the current license will be replaced by the new one. Until the process is completed, your current license will remain in effect.

The **License** window appears with the three reinitialization steps.



License

LICENSE TYPE	Subscription
SUBSCRIPTION EXPIRES	Sep 17, 2024
LICENSED ASSETS	43/100 (43%)
LICENSE CODE	[redacted]
COMPUTER ID	[redacted]

Follow these steps in order to reinitialize your license

1. Enter license code — Enter license code
2. Generate activation certificate — Generate Certificate
3. Enter activation code, obtain an activation code from your sales rep. or from the Self-service portal — Enter Activation Code

Cancel

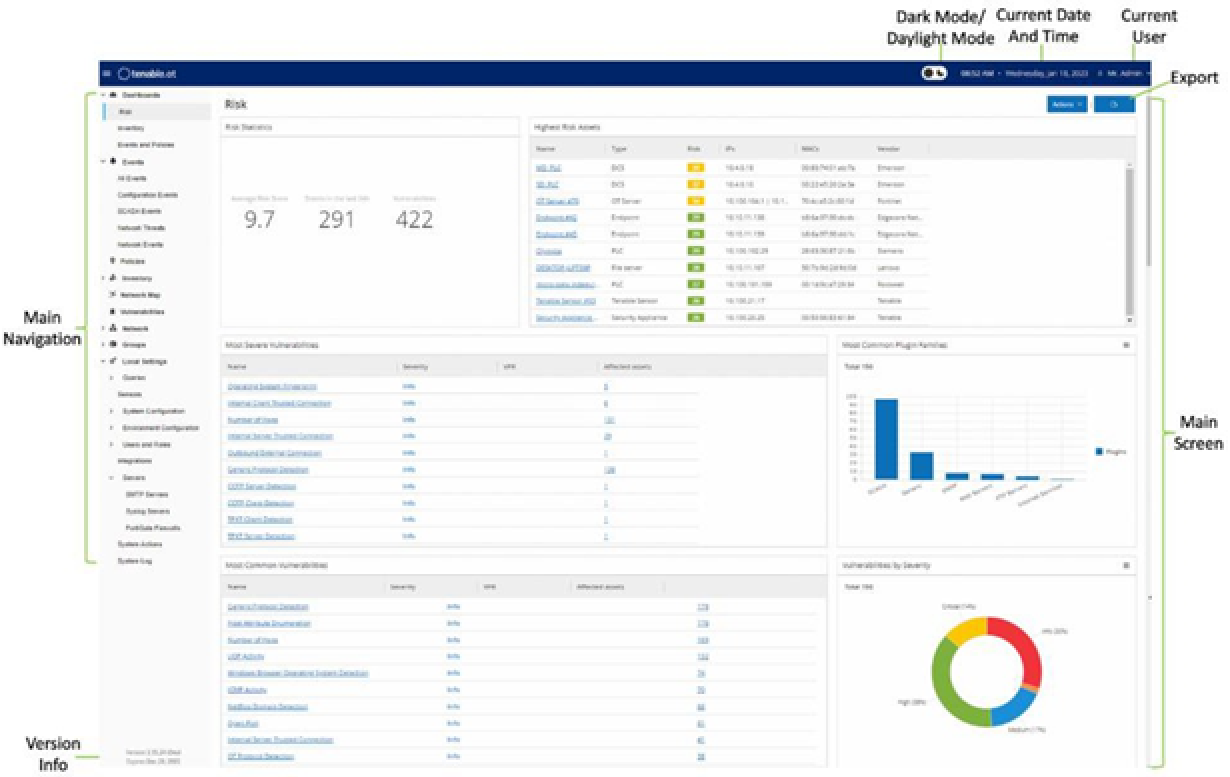
4. Follow the system start-up steps for activating your license. See Activate your License.

   After you provide your **Activation Code**, your new license replaces your current license.

Management Console User Interface Elements

The Management Console user interface provides easy access to important data related to asset management, network activity, and security events that OT Security discovers. You can use the user interface to configure the OT Security platform functionality according to your needs.

Main User Interface Elements



The following table describes the main user interface elements.

User interfaceElement	Description
Main Navigation	Main navigation menu. Click the ☰ icon to show/hide the main navigation menu.
Current Date and Time	Shows the current date and time as registered in the system.
Current User Name	Shows the name of the user who is currently logged into the system. Click the down arrow for a selection menu. Menu options are **About** (shows software info) and **Logout**.
License Info	Shows the OT Security software version and the license expiration date.
Main Screen	Shows the screen that you select in the main navigation.

Dark Mode/Daylight Mode	Changes the display color scheme to Dark mode or Daylight mode.
Export	Downloads a PDF of the dashboard.

Enable or Disable Dark Mode

You can use the **Dark Mode** color scheme on all screens by enabling the Dark Mode toggle.

To enable or disable Dark Mode:

1. Click the ●◐ (Dark Mode) toggle at the top of the window.

   OT Security applies the selected setting to all screens.

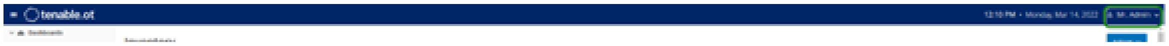
2. To restore the daylight mode setting, click the ☀● (Daylight Mode) toggle.

Check Current Software Version

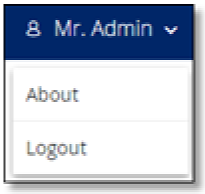
You can check the version your software using the user profile icon in the upper-right corner of the header bar.

To display the current software version:

1. In the main header bar, click the 👤 icon in the upper-right corner to open the menu.

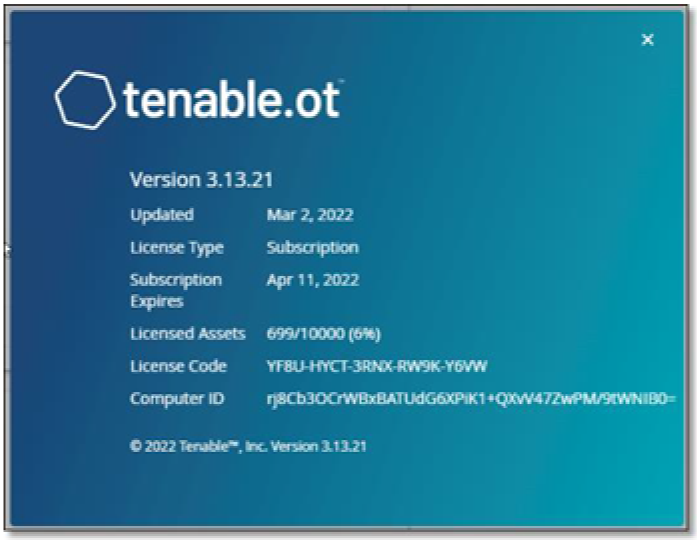
   

   OT Security displays the user menu.

2. Click **About**.

OT Security displays the current software version.



Version 3.13.21

Updated	Mar 2, 2022
License Type	Subscription
Subscription Expires	Apr 11, 2022
Licensed Assets	699/10000 (6%)
License Code	YF8U-HYCT-3RNX-RW9K-Y6VW
Computer ID	rj8Cb3OCrWBxBATUdG6XPiK1+QXvV47ZwPM/9tWNIB0=

© 2022 Tenable™, Inc. Version 3.13.21

Navigate OT Security

You can access the following main pages from the left navigation panel:

- **Dashboards** — Shows widgets containing graphs and tables that give an at-a-glance view of your network's inventory and security posture. There are separate dashboards for risk, inventory, events, and policies. See Dashboards.
- **Events** — Shows all events that occurred as a result of Policy violations. A screen shows All Events with separate screens for each specific type of event. For example: Configuration Events, SCADA Events, Network Threats, or Network Events. See Events.
- **Policies** — View, edit, and activate policies in the system. See Policies.
- **Inventory** — Shows an inventory of all the discovered assets, allowing comprehensive asset management, status monitoring of each asset, and viewing their related events. A screen shows All Assets with separate screens for specific type of assets: Controllers and Modules, Network Assets, and IoT. See Inventory.
- **Network Map** — Shows a visual representation of the network assets and their connections.
- **Vulnerabilities** — Shows a detailed list of all the threats in the network that OT Security plugins detected, and provides recommended remediation steps. This section includes CVEs as well as other threats to the assets in your network. For example: obsolete operating systems, usage of vulnerable protocols, vulnerable open ports, and so on.
- **Network** — Provides a comprehensive view of the network traffic by showing data about conversations that took place between assets in the network over time. See Network.
  OT Security displays this information in three separate windows:
  - **Network Summary** — Shows an overview of network traffic.
  - **Packet Captures** — Shows full-packet captures of network traffic.
  - **Conversations** — Shows a list of all detected network conversations, with details about the time of occurrence and involved assets and so on.
- **Groups** — View, create and edit groups, which are used in policy configuration. See Groups.
- **Local Settings** - View and configure the system settings. See Local Settings.

Customize Tables

OT Security pages display data in a table format with a list for each item. These tables have standardized customization features, enabling you to access the relevant information.

Note: The examples given here are for the **All Events** and **All Assets** pages, but similar functionality is available for most of the pages. You can revert to the default display settings at any time by clicking **Settings** > **Reset table to default**.

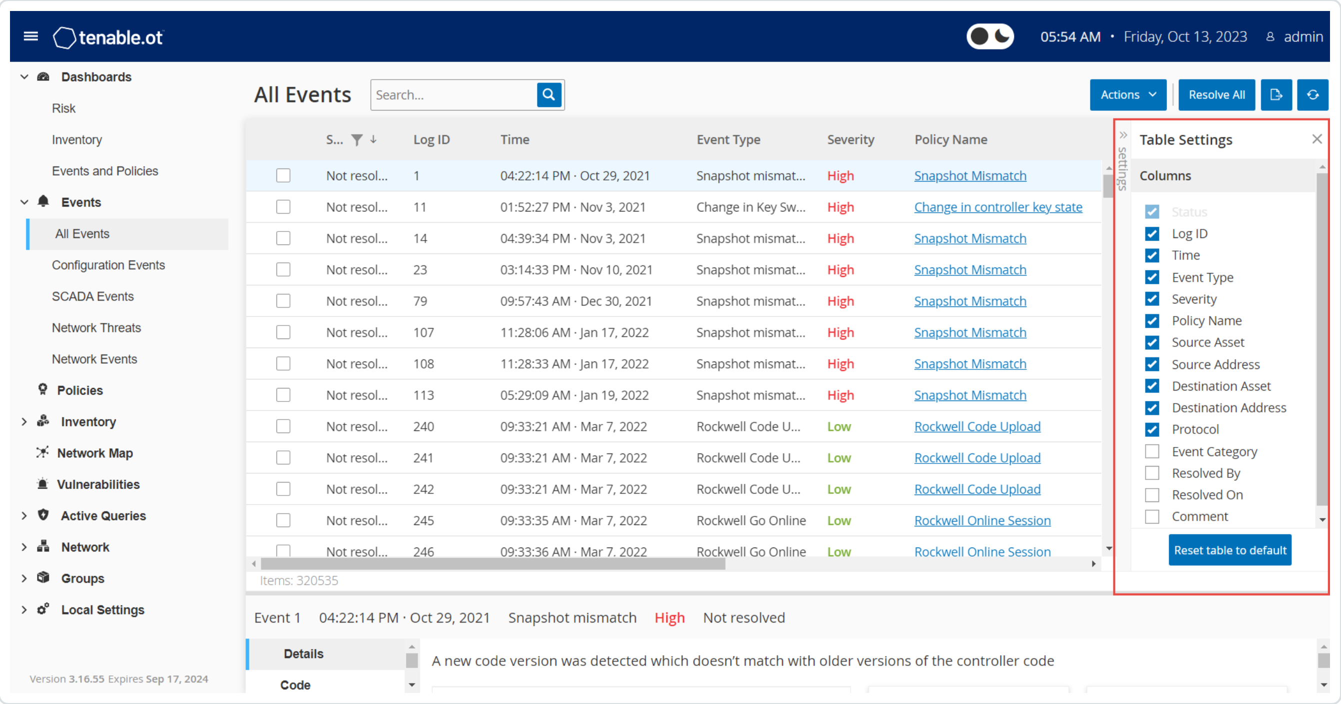
Customize the Column Display

You can customize which columns are displayed and how they are organized.

To specify which columns are displayed:

1. On the right of the table, click **Settings**.

   The **Table Settings** panel appears with the **Columns** section.



	S...	Log ID	Time	Event Type	Severity	Policy Name
□	Not resol...	1	04:22:14 PM · Oct 29, 2021	Snapshot mismat...	High	Snapshot Mismatch
□	Not resol...	11	01:52:27 PM · Nov 3, 2021	Change in Key Sw...	High	Change in controller key state
□	Not resol...	14	04:39:34 PM · Nov 3, 2021	Snapshot mismat...	High	Snapshot Mismatch
□	Not resol...	23	03:14:33 PM · Nov 10, 2021	Snapshot mismat...	High	Snapshot Mismatch
□	Not resol...	79	09:57:43 AM · Dec 30, 2021	Snapshot mismat...	High	Snapshot Mismatch
□	Not resol...	107	11:28:06 AM · Jan 17, 2022	Snapshot mismat...	High	Snapshot Mismatch
□	Not resol...	108	11:28:33 AM · Jan 17, 2022	Snapshot mismat...	High	Snapshot Mismatch
□	Not resol...	113	05:29:09 AM · Jan 19, 2022	Snapshot mismat...	High	Snapshot Mismatch
□	Not resol...	240	09:33:21 AM · Mar 7, 2022	Rockwell Code U...	Low	Rockwell Code Upload
□	Not resol...	241	09:33:21 AM · Mar 7, 2022	Rockwell Code U...	Low	Rockwell Code Upload
□	Not resol...	242	09:33:21 AM · Mar 7, 2022	Rockwell Code U...	Low	Rockwell Code Upload
□	Not resol...	245	09:33:35 AM · Mar 7, 2022	Rockwell Go Online	Low	Rockwell Online Session
□	Not resol...	246	09:33:36 AM · Mar 7, 2022	Rockwell Go Online	Low	Rockwell Online Session

Items: 320535

Table Settings

Columns

- ☑ Status
- ☑ Log ID
- ☑ Time
- ☑ Event Type
- ☑ Severity
- ☑ Policy Name
- ☑ Source Asset
- ☑ Source Address
- ☑ Destination Asset
- ☑ Destination Address
- ☑ Protocol
- □ Event Category
- □ Resolved By
- □ Resolved On
- □ Comment

Reset table to default

Event 1 04:22:14 PM · Oct 29, 2021 Snapshot mismatch High Not resolved

A new code version was detected which doesn't match with older versions of the controller code

2. In the **Columns** section, select the check box next to the columns you want to show.

3. Clear the check box next to the columns you want to hide.

   OT Security displays only the selected columns.

4. To close the **Table Settings** window, click **x** or the **Settings** tab.

To adjust the order of display of the columns:

1. Click a column header and drag it to the desired position.

Group Lists by Categories

For the **Inventory** pages, you can group the lists by various parameters that are relevant to that particular screen.

To group the lists:

1. Click the **Settings** tab along the right edge of the table.

   The **Table Settings** pane appears on the right with the **Columns** and **Grouping** sections.

2. Scroll down to the **Grouping** section.

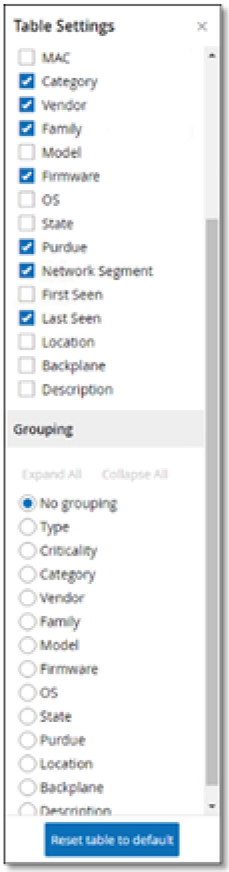


Table Settings

- ☐ MAC
- ☑ Category
- ☑ Vendor
- ☑ Family
- ☐ Model
- ☑ Firmware
- ☐ OS
- ☐ State
- ☑ Purdue
- ☑ Network Segment
- ☐ First Seen
- ☑ Last Seen
- ☐ Location
- ☐ Backplane
- ☐ Description

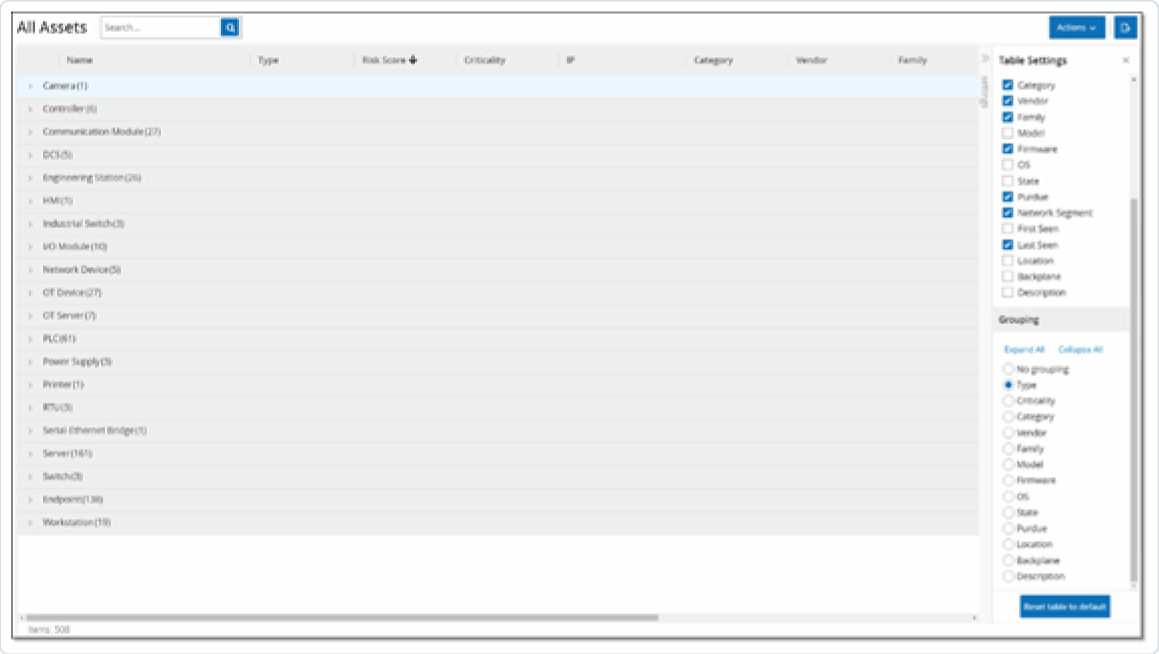
Grouping

Expand All Collapse All

- ● No grouping
- ○ Type
- ○ Criticality
- ○ Category
- ○ Vendor
- ○ Family
- ○ Model
- ○ Firmware
- ○ OS
- ○ State
- ○ Purdue
- ○ Location
- ○ Backplane
- ○ Description

3. Select the parameter by which you want to group the lists. For example, **Type**.

   OT Security displays the grouped categories.



All Assets

Search...

Actions

Name	Type	Risk Score	Criticality	IP	Category	Vendor	Family

- Camera(1)
- Controller(6)
- Communication Module(27)
- DCS(5)
- Engineering Station(26)
- HMI(1)
- Industrial Switch(3)
- I/O Module(10)
- Network Device(5)
- OT Device(27)
- OT Server(7)
- PLC(61)
- Power Supply(3)
- Printer(1)
- RTU(3)
- Serial Ethernet Bridge(1)
- Server(161)
- Switch(3)
- Endpoint(136)
- Workstation(19)

Items: 508

Table Settings

☑ Category
☑ Vendor
☑ Family
☐ Model
☑ Firmware
☐ OS
☐ State
☑ Purdue
☑ Network Segment
☐ First Seen
☑ Last Seen
☐ Location
☐ Backplane
☐ Description

Grouping

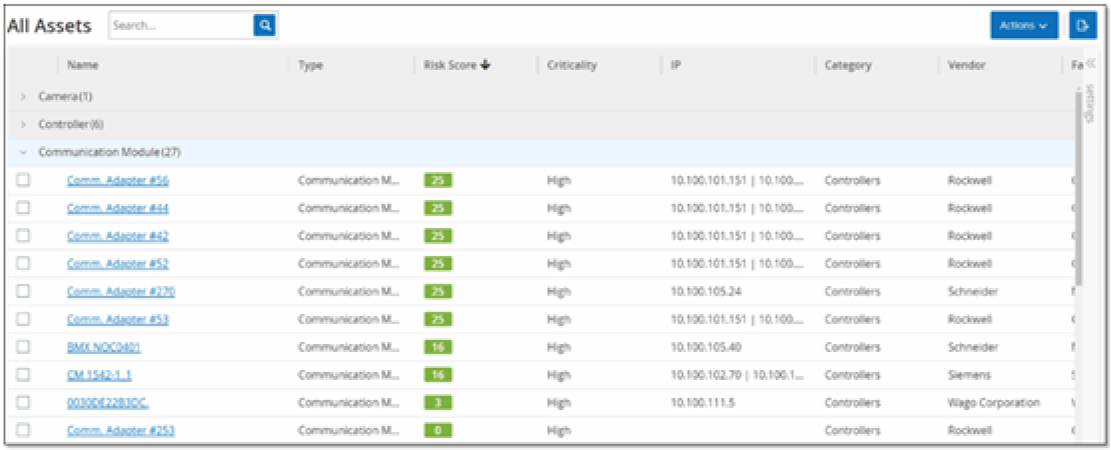
Expand All Collapse All

○ No grouping
● Type
○ Criticality
○ Category
○ Vendor
○ Family
○ Model
○ Firmware
○ OS
○ State
○ Purdue
○ Location
○ Backplane
○ Description

Reset table to default

4. To close the **Table Settings** window, click **x** or the **Settings** tab.

5. Click on the arrow next to a category to show all instances for that category.



All Assets

Search...

Actions

	Name	Type	Risk Score	Criticality	IP	Category	Vendor
	Camera(1)						
	Controller(6)						
	Communication Module(27)						
☐	Comm. Adapter #56	Communication M...	25	High	10.100.101.151 | 10.100...	Controllers	Rockwell
☐	Comm. Adapter #44	Communication M...	25	High	10.100.101.151 | 10.100...	Controllers	Rockwell
☐	Comm. Adapter #42	Communication M...	25	High	10.100.101.151 | 10.100...	Controllers	Rockwell
☐	Comm. Adapter #52	Communication M...	25	High	10.100.101.151 | 10.100...	Controllers	Rockwell
☐	Comm. Adapter #270	Communication M...	25	High	10.100.105.24	Controllers	Schneider
☐	Comm. Adapter #53	Communication M...	25	High	10.100.101.151 | 10.100...	Controllers	Rockwell
☐	BMX NOC0401	Communication M...	16	High	10.100.105.40	Controllers	Schneider
☐	CM 1542-1.1	Communication M...	16	High	10.100.102.70 | 10.100.1...	Controllers	Siemens
☐	0030DE2283DC	Communication M...	3	High	10.100.111.5	Controllers	Wago Corporation
☐	Comm. Adapter #253	Communication M...	0	High		Controllers	Rockwell

Sort Columns

To sort the lists:

1. Click a column heading to sort the assets by that parameter. For example, click the **Name** heading to display the assets in alphabetical order by Name.
2. Click the column heading a second time if you want to reverse the display order (that is, A→ Z, Z→ A).

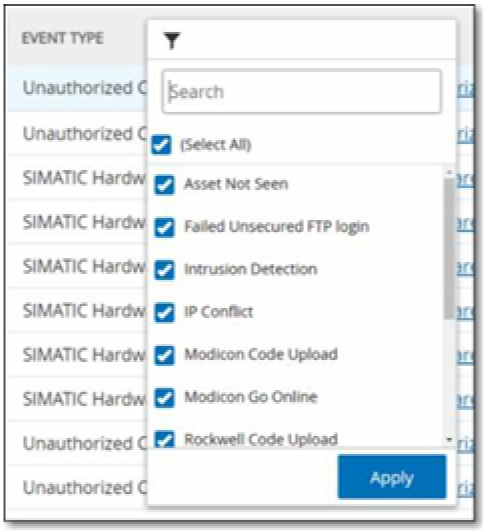
Filter Columns

You can set filters for one or more column headings. The filters are cumulative so that only lists that fit all the filter criteria are displayed. The filter options are specific to each column heading. Each screen offers a selection of relevant filters. For example, in the **Controllers Inventory** window you can filter by **Name**, **Addresses**, **Type**, **Backplane**, **Vendor**, and so on.

To filter the lists:

1. Hover over a column heading to show the filter icon ▼.
2. Click the filter icon ▼.

   A list of filter options appears. The options are specific to each parameter.

   ☑ (Select All)
   ☑ Asset Not Seen
   ☑ Failed Unsecured FTP login
   ☑ Intrusion Detection
   ☑ IP Conflict
   ☑ Modicon Code Upload
   ☑ Modicon Go Online
   ☑ Rockwell Code Upload

3. Select the elements you want to display and clear the check boxes next to the elements you want to hide.

   > **Note**: You can start by clearing the **Select All** check box and then selecting the ones you want to show.

4. You can search the list for filters and select or clear them.
5. Click **Apply**.

   OT Security filters the lists as specified.

> The filter ▼ button next to the column heading indicates that the results are being filtered by that parameter.

To remove the filters:

1. Click filter ▼ button.
2. Click **Select All** check box to clear all selections.
3. Click a second time on the **Select All** check box to select all elements.
4. Click **Apply**.

Search

On each page, you can search for specific records.

To search the lists:

1. In the **Search** box, type the search text.
2. Click the 🔍 button.
3. To clear the search text, click the **x**.

Export Data

You can export data from any of the lists shown in the OT Security UI (For example: Events, Inventory and so on.) as a CSV file.

> **Note**: The exported file includes all data for that page, even if filters have been applied to the current display.

To export data:

1. Go to the screen for which you want to export data.

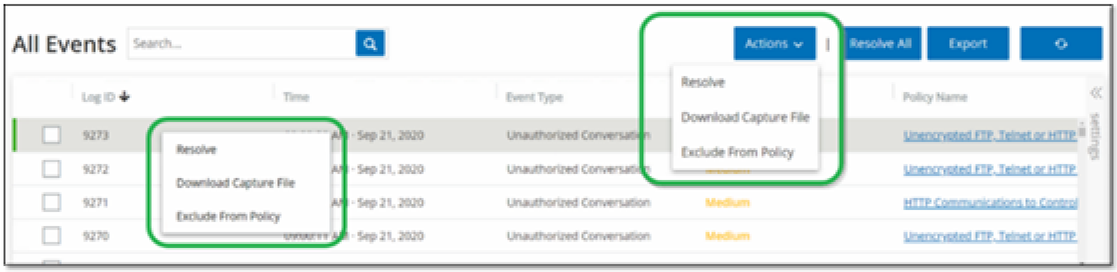
2. In the header bar, click **Export**.

Actions Menu

Each screen has a series of actions that you can take for the elements on the screen. For example, in the **Policies** screen, you can **View**, **Edit**, **Duplicate** or **Delete** a Policy; in the **Events** screen, you can **Resolve** or **Download Capture File** for an event and so on.

To access the **Actions** menu, do one of the following:

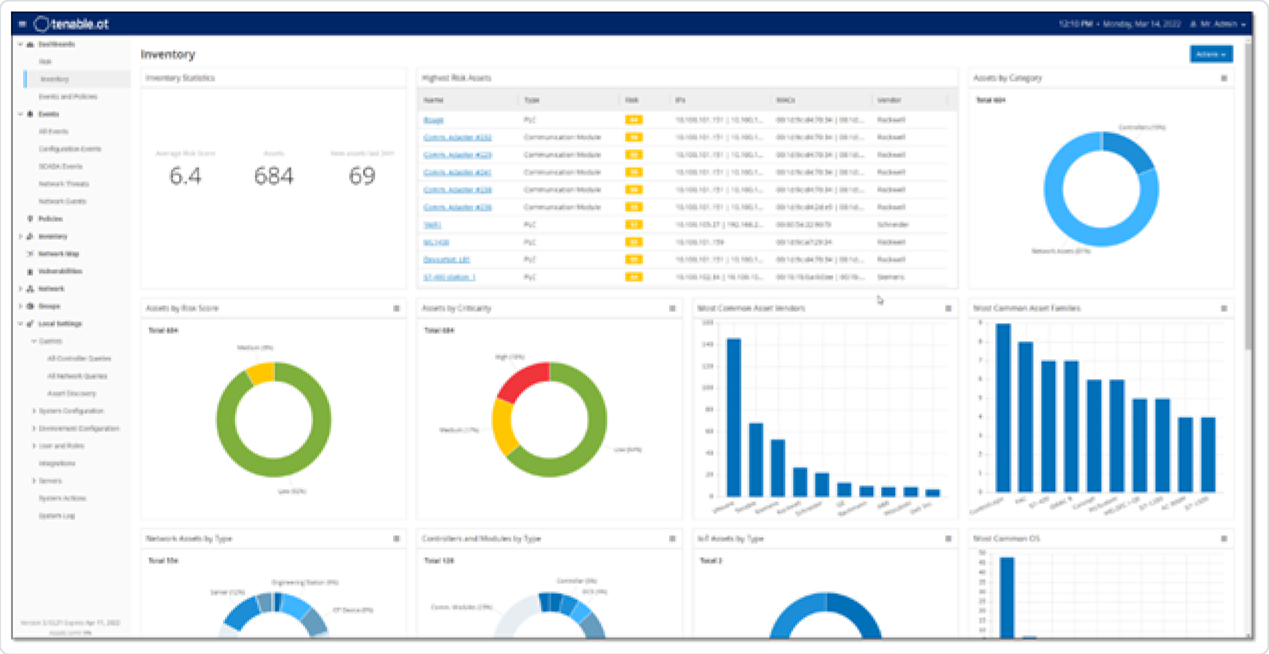
- Select an element, then click **Actions** in the header bar.
- Right-click the element, then select **Actions**.



Log ID	Time	Event Type		Policy Name
9273	AM · Sep 21, 2020	Unauthorized Conversation		Unencrypted FTP, Telnet or HTTP
9272	AM · Sep 21, 2020	Unauthorized Conversation		Unencrypted FTP, Telnet or HTTP
9271	AM · Sep 21, 2020	Unauthorized Conversation	Medium	HTTP Communications to Control
9270	AM · Sep 21, 2020	Unauthorized Conversation	Medium	Unencrypted FTP, Telnet or HTTP

Dashboards

There are three dashboards: **Risk**, **Inventory**, and **Events and Policies**. The dashboards contain widgets that offer an at-a-glance view of your network's inventory and security posture.



To select a dashboard:

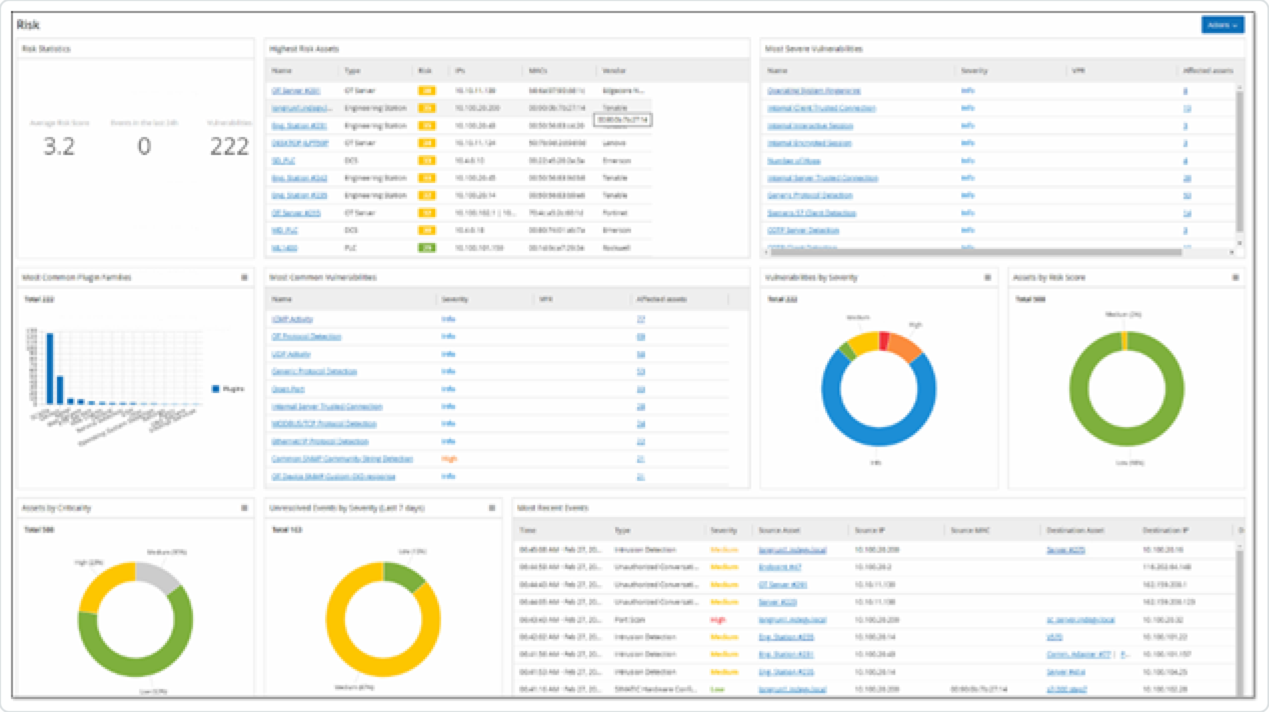
- In the main navigation menu, click **Dashboards**.

The **Risk** dashboard is the initial default view; however, you can change the default view to a different dashboard.

You can interact with dashboards by adjusting the display settings and setting filters, see Interacting with Dashboards.

Risk Dashboard

The **Risk** dashboard provides insights on the network's cyber exposure by looking into asset risk scores and vulnerability management metrics.

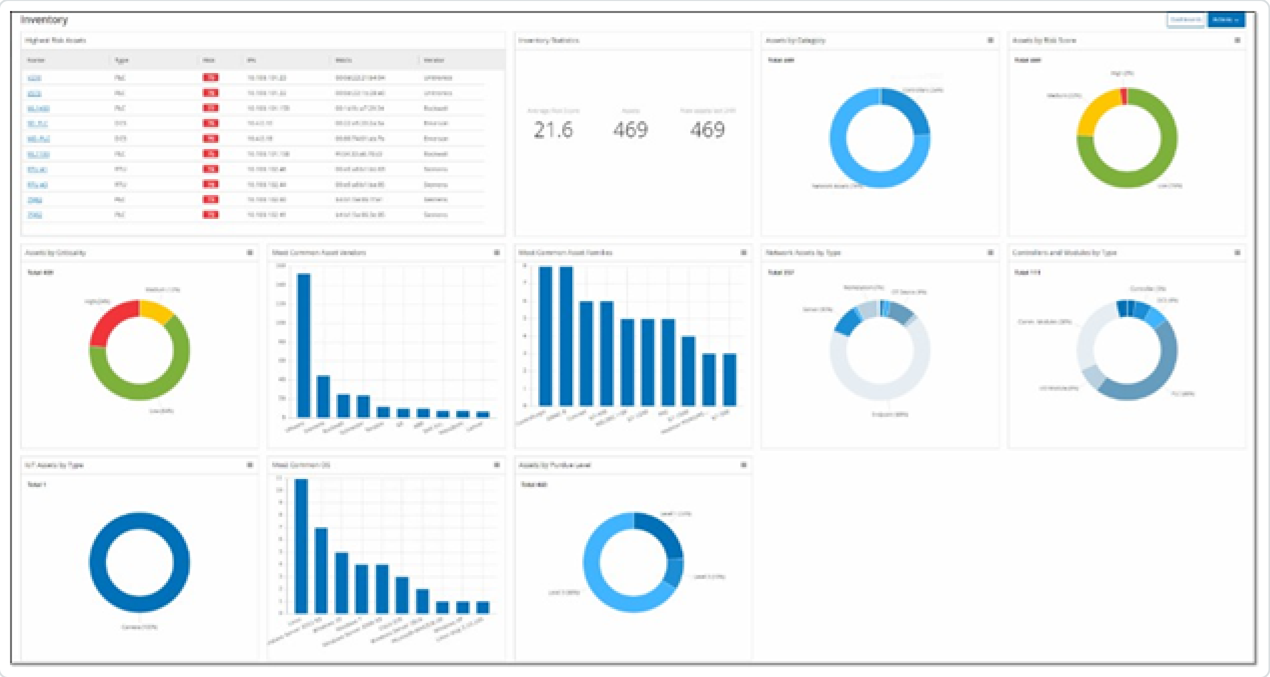


The **Risk** dashboard shows widgets such as: Risk Statistics, Assets by Risk Score, Assets by Criticality, Events by Severity, Most Common Vulnerabilities, and so on.

Clicking an asset or vulnerability link takes you to the corresponding element on the **Inventory** or **Vulnerabilities** screen, respectively.

Inventory Dashboard

The **Inventory** dashboard provides visibility into the asset inventory, facilitating asset management, and tracking.

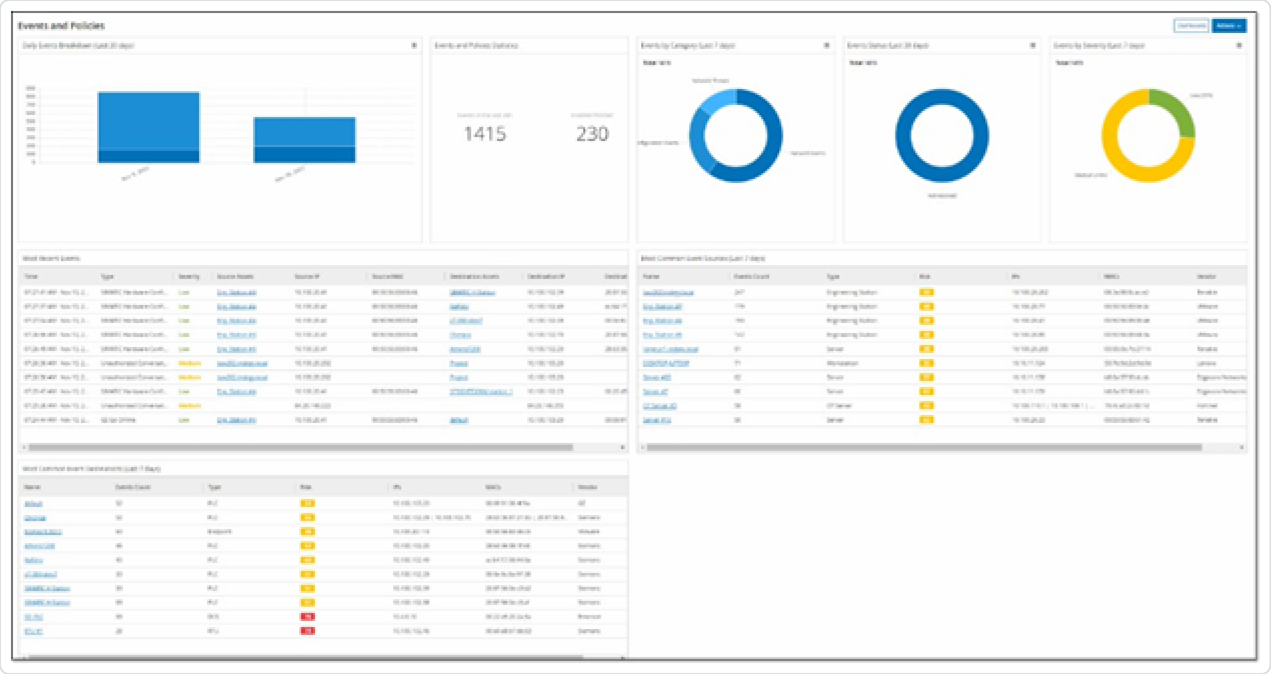


The **Inventory** dashboard shows widgets such as: Highest Risk Assets, Inventory Statistics, Assets by Risk, Controllers, and Modules by Type, Assets by Purdue Level and so on.

Clicking an asset link takes you to the corresponding asset on the **Inventory** screen.

Events and Policies Dashboard

The **Events and Policies** dashboard provides a means to detect network threats by monitoring the identified events and the policies violations that they generate.



The **Events and Policies** dashboard shows widgets such as: Daily Events Breakdown, Events and Policies Statistics, Events Status, Most Common Event Destinations and so on.

Clicking an asset or event link takes you to the corresponding element in the **Inventory** or **Events** screens respectively.

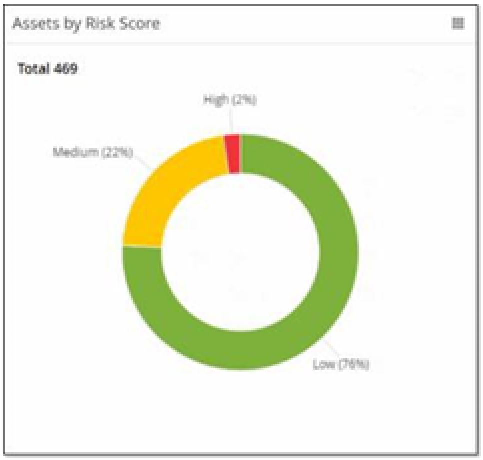
Interacting with Dashboards

You can adjust the dashboard display by interacting with widgets. There are two modes for showing data on the dashboards: Graph mode and Table mode. Some widgets have a fixed display mode, while others allow you to toggle them between modes. Widgets with a symbol in the upper-right corner appear in graph mode or table mode. Click on the table/graph symbol to toggle between modes.

Note: You can only apply filters in table mode. Once you set a filter, it applies in graph mode.

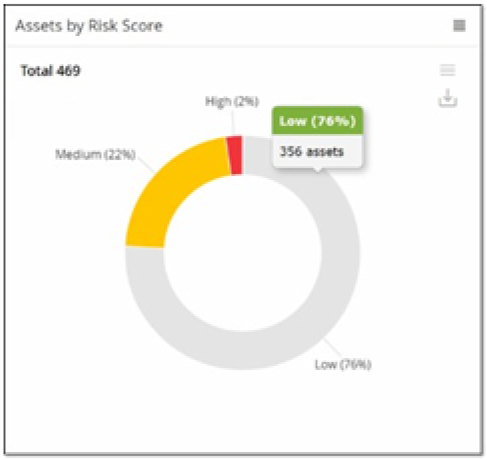
Graph mode

Graph mode shows a graphic visualization of the widget data.

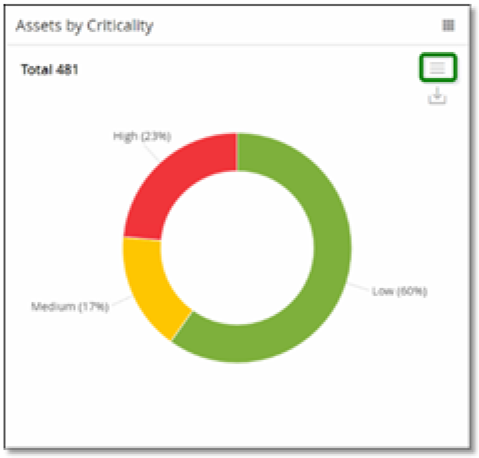


You can interact with the widgets in the following ways:

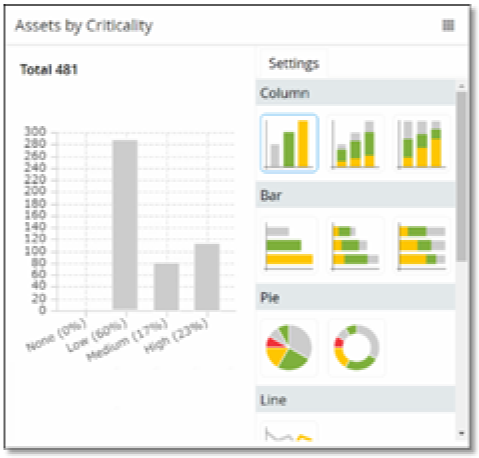
- Hover over a point on the graph to display a window with data specific to that segment of the graph.



- You can adjust the type of chart used for the display by clicking on **Settings** button in the top-right corner.



- You can select one of the other chart types from the **Settings** menu.



- When viewing a widget in graph mode, you can download an image of the graph by hovering over the widget and clicking the **Download** icon.

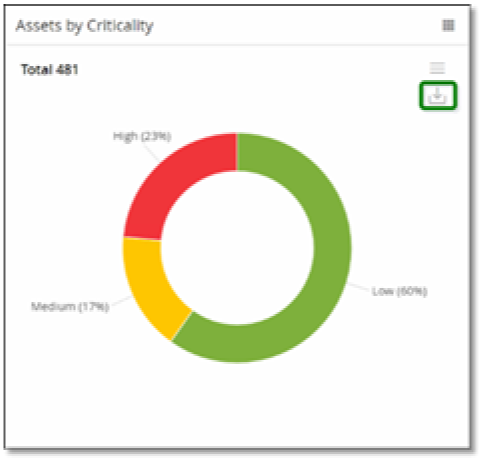
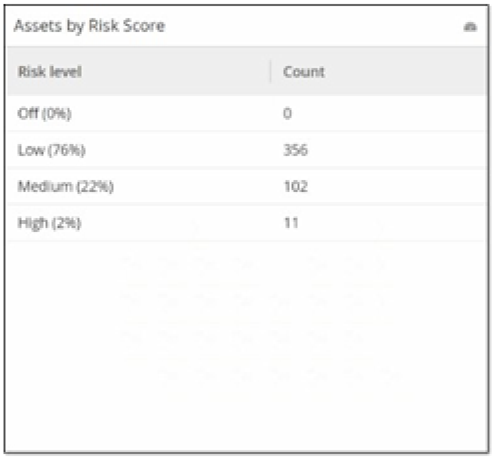


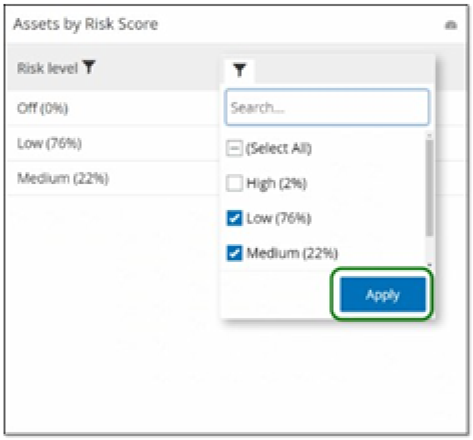
Table mode



Assets by Risk Score

Risk level	Count
Off (0%)	0
Low (76%)	356
Medium (22%)	102
High (2%)	11

When viewing a widget in table mode you can filter each column by hovering over the column header, clicking on the filter icon, choosing your filters, and clicking **Apply**. The filters also apply to the graph if you switch to graph mode.

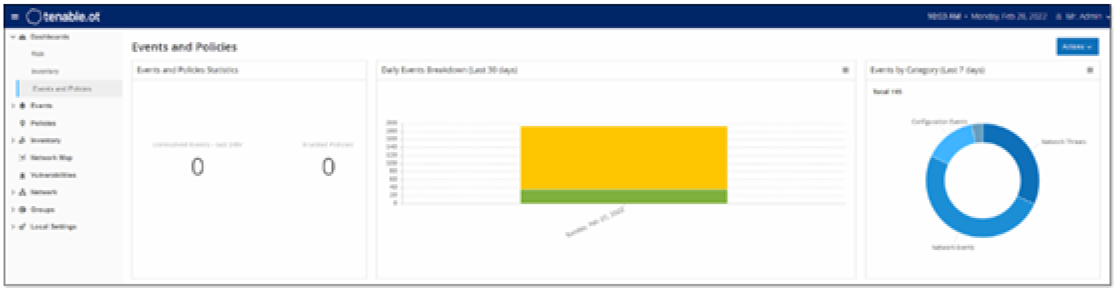


Changing the Default Dashboard

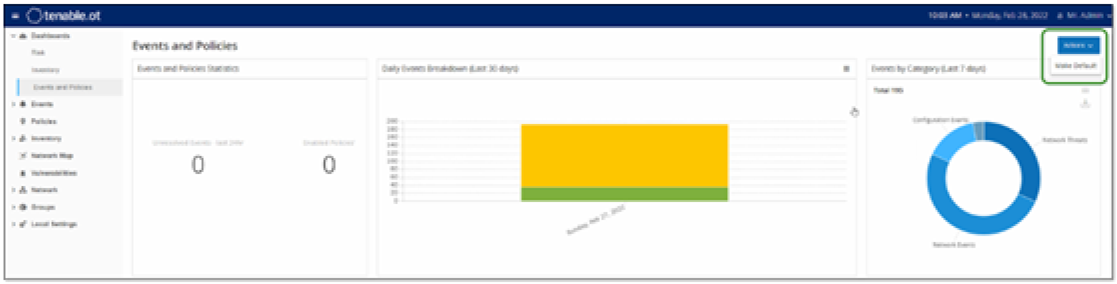
The Risk dashboard is the initial default view of the Management Console. You can designate a different dashboard to be shown as the default view.

To change the default dashboard view:

1. Navigate to the dashboard to use as the default view.


tenable.ot
Events and Policies
Events and Policies Statistics
Daily Events Breakdown (Last 30 days)
Events by Category (Last 7 days)
Actions
0
0

2. Click **Actions** > **Make default**.


tenable.ot
Events and Policies
Events and Policies Statistics
Daily Events Breakdown (Last 30 days)
Events by Category (Last 7 days)
Actions
Make Default
0
0

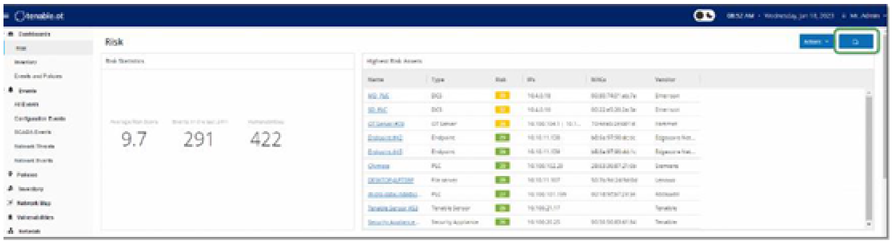
OT Security updates the default dashboard and shows it the next time you access the Management Console

Export the Dashboard

The **Export** button of the Dashboard screen exports a PDF with each Dashboard widget on a separate page.

To export the Dashboard:

1. In the upper-right corner of the Dashboard, click **Export**.

   The PDF downloads automatically to the default download folder.

   > **Note**: Make sure to leave the Dashboard tab open in your browser while the PDF download is in progress (2-3 seconds).

2. After the file download completes, navigate to the downloaded file to view or share it.

Policies

OT Security includes policies that define specific types of events that are suspicious, unauthorized, anomalous, or otherwise noteworthy that occur in the network. When an event occurs that meets all of the Policy Definition conditions for a particular policy, the system generates an event. The system logs the event and sends notifications in accordance with the Policy Actions configured for the policy.

- **Policy-based Detection** — Triggers an event when the precise conditions of the policy, as defined by a series of event descriptors, are met.
- **Anomaly Detection** — Triggers an event when OT Security detects anomalous or suspicious activity in the network.

OT Security features a set of predefined policies (out-of-the-box). In addition, you can edit the predefined policies or define new custom policies.

Note: By default, most policies are turned on. To turn Policies on/off, see Enable or Disable Policies.

Policy Configuration

Each policy consists of a series of conditions that define a specific type of behavior in the network. This includes considerations such as the activity, the assets involved, and the timing of the event. Only an event that conforms to all the parameters set in the policy triggers an event for that policy. Each policy has a designated Policy Actions configuration, which defines the severity, notification methods, and logging of the event.

Groups

An essential component in the definition of policies in OT Security is the use of Groups. When configuring a policy, each policy parameter belongs to a group as opposed to individual entities. This streamlines the policy configuration process. For example, if the Activity Firmware update is considered a suspicious activity when it is performed on a controller during certain hours of the day (for example, during work hours), instead of creating a separate policy for each controller in your network, you can create a single policy that applies to the Asset Group Controllers.

Policy configuration uses the following types of groups:

- **Asset Groups** — The system comes with predefined Asset Groups based on asset type. You can add custom groups based on other factors such as location, department, criticality, and so on.

- **Network Segments** — The system creates auto-generated Network Segments based on asset type and IP range. You can create custom Network Segments defining any group of assets having similar communication patterns.

- **Email Groups** — Group multiple email accounts that receive email notifications for specific events. For example, grouping by role, department, and so on.

- **Port Groups** — Group ports used in a similar manner. For example, ports that are open on Rockwell controllers.

- **Protocol Groups** — Group communication protocols by the type of protocol (for example, Modbus), the manufacturer (for example, Rockwell allowed protocols), and so on.

- **Schedule Groups** — Group several time ranges as a schedule group that has a certain common characteristic. For example, work hours, weekends, and so on.

- **Tag Groups** — Group tags that contain similar operational data in various controllers. For example, tags that control furnace temperature.
- **Rule Groups** — Group-related rules identified by their Suricata Signature IDs (SIDs). These groups are used as a policy condition for defining Intrusion Detection Policies.

Policies can only be defined using groups configured in your system. The system comes with a set of predefined groups. You can edit these groups and add your own groups, see Groups

> **Note**: Policy parameters can only be set using groups, even if you want a policy to apply to an individual entity, you must configure a group that includes only that entity.

Severity Levels

Each policy has a specific severity level assigned to it that indicates the degree of risk posed by the situation that triggered the event. The following table describes the various severity levels:

Severity	Description
None	The event is not cause for concern.
Low	No immediate reason for concern. Should be checked out when convenient.
Medium	Moderate concern that potentially harmful activity has occurred. Should be dealt with when convenient.
High	Severe concern that potentially harmful activity has occurred. Should be dealt with immediately.

Event Notifications

When an event occurs that matches the conditions of the policy, an event is triggered. The **Events** section shows **All Events**. The **Policy** page lists the event under the policy that triggered the event and the **Inventory** page lists the event under the affected Asset. In addition, you can configure policies to send notification of events to an external SIEM using the Syslog protocol and/or to designated email recipients.

- **Syslog Notification** — Syslog messages use the CEF protocol with both Standard Keys and Custom Keys (configured for use with OT Security). For an explanation of how to interpret Syslog notifications see the OT Security Syslog Integration Guide.
- **Email Notifications** — Email messages include details about the event that generated the notification and the steps to mitigate the threat.

Policy Categories and Sub-Categories

OT Security organizes the policies by the following categories:

- **Configuration Events** — These policies relate to the activities that occur in the network. There are two sub-categories:
  - **Controller Validation** — These Policies relate to changes that take place in the controllers in the network. This can involve changes in the state of a controller as well as changes to the firmware, asset properties, or code blocks. The policies can be limited to specific schedules (for example, firmware upgrade during a work day), and/or specific controllers.
  - **Controller Activities** — These policies relate to specific engineering commands that impact controllers' state and configuration. It is possible to define specific activities that always generate events or to designate a set of criteria for generating events. For example, if certain activities are performed at certain times and/or on certain controllers. Both block lists and allowlists of assets, activities, and schedules are supported.
- **Network Events** — These policies relate to the assets in the network and the communication streams between assets. This includes assets added to or removed from the network. It also includes traffic patterns that are anomalous for the network or flagged as raising cause for concern. For example, if an engineering station communicates with a controller using a protocol that is not part of a pre-configured set of protocols (for example, protocols used by controllers manufactured by a specific vendor), the policy triggers an event. You can limit these policies to specific schedules and/or specific assets. Vendors organize vendor-specific protocols for convenience, while any protocol can be used in a policy definition.
- **SCADA Event Policies** — These policies detect changes in set-point values, which can harm the industrial process. These changes may result from a cyber-attack or human error.

- **Network Threats Policies** — These policies use signature-based OT and IT threat detection to identify network traffic that is indicative of intrusion threats. The detection is based on rules cataloged in Suricata's Threats engine.

Policy Types

Within each category and sub-category, there are a series of different types of policies. OT Security includes the predefined policies of each type. You can also create your own custom policies of each type. The following tables explain the various Policy Types, grouped by category.

Configuration Event — Controller Activities Event Types

Controller Activities relate to the activities that occur in the network. For example, the "commands" implemented between assets in the network. There are many different types of Controller Activity Events. The type of controller on which the activity occurs and the specific activity defines the Controller Activity type. For example, Rockwell PLC stop, SIMATIC code download, Modicon online session, and so on.

The policy definition parameters or policy conditions that apply to Controller Activity Events are Source Asset, Destination Asset, and Schedule.

Configuration Event — Controller Validation Event Types

The following table describes the various types of Controller Validation Events.

> **Note**: Policy conditions relating to Affected Assets, Sources, or Destinations can be specified by selecting either an Asset Group or a Network Segment.

Event Type	Policy Conditions	Description
Change in key switch	Affected Asset, Schedule	A change to the controller state by adjusting the physical key position. Currently supports Rockwell controllers only.
Change in state	Affected Asset, Schedule	The controller changed from one operational state to another. For example, running, stopped, test, and so on.
Change in firmware	Affected Asset,	A change to the firmware running on the controller.

version	Schedule	
Module not seen	Affected Asset, Schedule	Detects a previously identified module that removed from a backplane.
New module discovered	Affected Asset, Schedule	Detects a new module added to an existing backplane.
Snapshot mismatch	Affected Asset, Schedule	The most recent Snapshot (which captures the current state of the program deployed on a controller) of a controller was not identical to the previous Snapshot of that controller.

Network Event Types

The following table describes the various types of Network Events.

> **Note**: Policy conditions relating to Affected Assets, Sources, or Destinations can be specified by selecting either an Asset Group or a Network Segment.

Event Type	Policy Conditions	Description
Asset not seen	Not seen for, Affected Asset, Schedule	Detects previously identified assets in the Affected Asset Group that are removed from the network for the specified duration of time during the specified time range.
Change in USB configuration	Affected Assets, Schedule	Detects when a USB device is connected to or removed from a Windows-based workstation. The policy applies to changes to an asset in the Affected Asset Group during the specified time range.
IP conflict	Schedule	Detects multiple assets in the network using the same IP Address. This may indicate a cyber-attack

		or it may result from poor network management. The policy applies to IP Conflicts that OT Security discovers during the specified time range.
Network Baseline Deviation	Source, Destination, Protocol, Schedule	Detects new connections between assets that did not communicate with each other during the Network Baseline sampling. This option is only available once a Network Baseline is set up in the system. To set the initial Network Baseline or to update the Network Baseline, see Setting a Network Baseline. The policy applies to communication from an asset in the Source Asset Group to an asset in the Destination Asset Group using a Protocol from the Protocol Group during the specified time range.
New asset discovered	Affected Asset, Schedule	Detects new assets of the type specified in the Source Asset Group that appears in your network during the specified time range.
Open port	Affected Asset, Port	Detects new open ports in your network. Unused open ports can pose a security risk. The policy applies to assets in the Affected Asset Group and to ports that are in the Port Group.
Spike in network traffic	Time window, Sensitivity level, Schedule	Detects anomalous spikes in the network traffic volume. The policy applies to spikes relative to the specified time window and based on the specified sensitivity level. It is also limited to the specified time range.
Spike in conversation	Time window, Sensitivity level, Schedule	Detects anomalous spikes in the number of conversations in the network. The policy applies to spikes relative to the specified time window and based on the specified sensitivity level. It is also limited to the specified time range.
RDP connection	Source,	An RDP (Remote Desktop Connection) was made in

(authenticated)	Destination, Schedule	the network using authentication credentials. The Policy applies to asset in the Source Asset Group connecting to an asset in the Destination Asset Group during the specified time range.
RDP connection (not authenticated)	Source, Destination, Schedule	An RDP (Remote Desktop Connection) made in the network without using authentication credentials. The policy applies to asset in the Source Asset Group connecting to an asset in the Destination Asset Group during the specified time range.
Unauthorized conversation	Source, Destination, Protocol, Schedule	Detects communication sent between assets in the network. The policy applies to communication sent from an asset in the Source Asset Group to an asset in the Destination Asset Group using a Protocol from the Protocol Group during the specified time range.
Successful unsecured FTP login	Source, Destination, Schedule	OT Security considers FTP as an unsecure protocol. This policy detects successful logins using FTP.
Failed unsecured FTP login	Source, Destination, Schedule	OT Security considers FTP as an unsecure protocol. This policy detects failed login attempts using FTP.
Successful unsecured Telnet login	Source, Destination, Schedule	OT Security considers Telnet as an unsecure protocol. This policy detects successful logins using Telnet.
Failed unsecured Telnet login	Source, Destination, Schedule	OT Security considers Telnet as an unsecure protocol. This policy detects failed login attempts using Telnet.
Unsecured Telnet login attempt	Source, Destination, Schedule	OT Security considers Telnet as an unsecure protocol. This policy detects login attempts using Telnet (for which the result status is not detected).

Network Threat Event Types

The following table describes the various types of Network Threat Events.

> **Note**: Policy conditions relating to Affected Assets, Sources, or Destinations can be specified by selecting either an Asset Group or a Network Segment.

Event Type	Policy Conditions	Description
Intrusion Detection	Source, Affected Asset, Rule Group, Schedule	Intrusion Detection Policies use signature-based OT and IT threat detection to identify network traffic that is indicative of intrusion threats. The detection is based on rules that are cataloged in Suricata's Threats engine. The rules are grouped into categories (for example, ICS Attacks, Denial of Service, Malware, and so on.) and sub-categories (for example, ICS Attacks - Stuxnet, ICS Attacks – Black Energy, and so on). The system comes with a series of predefined groups of related rules. You can also configure your own custom groupings of various rules. **Note**: You cannot edit the **Source** and **Destination** asset groups for Intrusion Detection System (IDS) events.
ARP scan	Affected Asset, Schedule	Detects ARP scans (network reconnaissance activity) that are run in the network. The policy applies to scans that are broadcasted in the Affected Asset Group during the specified time range.
Port scan	Source Asset, Destination Asset, Schedule	Detects SYN scans (network reconnaissance activity) that are run in the network to detect open (vulnerable) ports. The policy applies to communication from an asset in the Source Asset Group to an asset in the Destination Asset Group during the specified time range.

SCADA Event Types

The following table describes the various types of SCADA Event types.

Note: Policy conditions relating to Affected Assets, Sources, or Destinations can be specified by selecting either an Asset Group or a Network Segment.

Event Type	Policy Conditions	Description
Modbus illegal data address	Source Asset, Destination Asset, Schedule	Detects "illegal data address" error code in Modbus protocol. The policy applies to communication from an asset in the Source Asset Group to an asset in the Destination Asset Group during the specified time range.
Modbus illegal data value	Source Asset, Destination Asset, Schedule	Detects "illegal data value" error code in Modbus protocol. The policy applies to communication from an asset in the Source Asset Group to an asset in the Destination Asset Group during the specified time range.
Modbus illegal function	Source Asset, Destination Asset, Schedule	Detects "illegal function" error code in Modbus protocol. The policy applies to communication from an asset in the Source Asset Group to an asset in the Destination Asset Group during the specified time range.
Unauthorized write	Source Asset, Tag Group, Tag value, Schedule	Detects unauthorized tag writes to the specified tags on a controller (currently supported for Rockwell and S7 controllers) in the specified Source Asset Group. You can configure the policy to detect any new write, a change from a specified value or a value outside of a specified range. The policy only applies during the specified time range.

ABB - Unauthorized write	Source Asset, Destination Asset, Schedule	Detects write commands sent over MMS to ABB 800xA controllers that are out of the allowed range.
IEC 60870-5-104 Commands (Start/Stop Data Transfer, Interrogation Command, Counter Interrogation Command, Clock Synchronization Command, Reset Process Command, Test Command with Time Tag)	Source Asset, Destination Asset, Schedule	Detects specific commands sent to IEC-104 parent or child units that are considered to be risky.
DNP3 Commands	Source Asset, Destination Asset, Schedule	Detects all main commands sent using DNP3 protocol. For example Select, Operate, Warm/Cold Restart, and so on. Also detects errors originating from internal indicators such as unsupported function codes and parameter errors.

Enable or Disable Policies

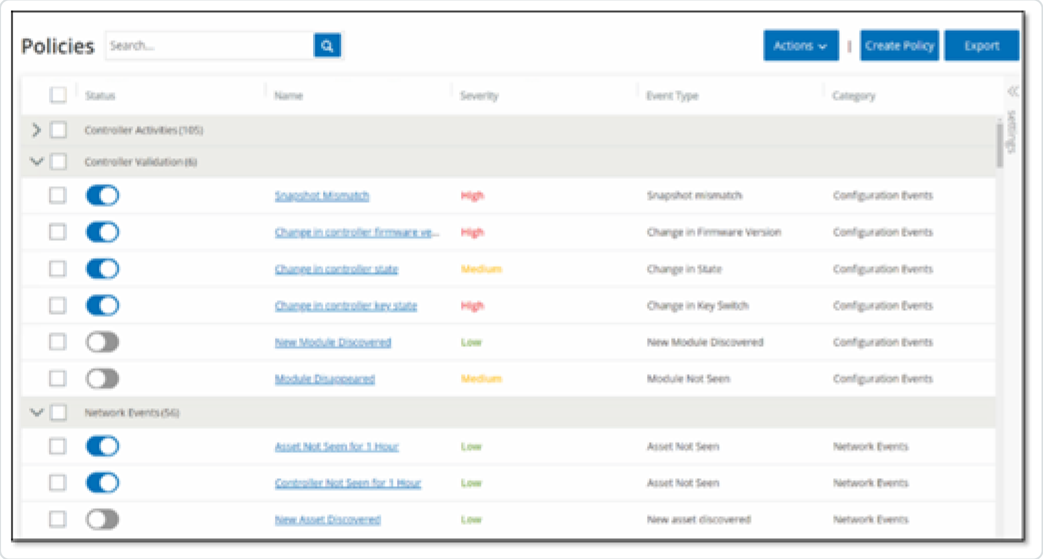
You can enable or disable any configured policy in your system (both pre-configured and user-defined). You can turn on/off individual policies or you can select multiple policies to turn on/off in a bulk process.

> **Note**: Most of the policies depend on queries to collect data. If some or all of the query functions are disabled, then the related policies are not effective. You can activate queries from **Active Queries**, see Active Queries.

To enable or disable a policy:

1. Go to **Policies**.

   The page lists all policies configured in the system, grouped by Policy Category.



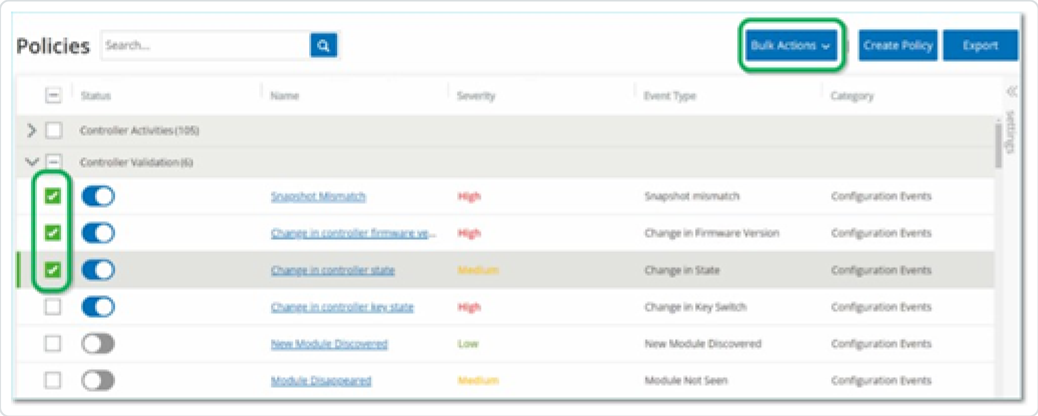
□	Status	Name	Severity	Event Type	Category
□	Controller Activities (105)				
□	Controller Validation (6)				
□	●	Snapshot Mismatch	High	Snapshot mismatch	Configuration Events
□	●	Change in controller firmware ve...	High	Change in Firmware Version	Configuration Events
□	●	Change in controller state	Medium	Change in State	Configuration Events
□	●	Change in controller key state	High	Change in Key Switch	Configuration Events
□	○	New Module Discovered	Low	New Module Discovered	Configuration Events
□	○	Module Disappeared	Medium	Module Not Seen	Configuration Events
□	Network Events (56)				
□	●	Asset Not Seen for 1 Hour	Low	Asset Not Seen	Network Events
□	●	Controller Not Seen for 1 Hour	Low	Asset Not Seen	Network Events
□	○	New Asset Discovered	Low	New asset discovered	Network Events

2. To enable or disable the policy, click the **Status** toggle next to the relevant policy.

To turn on/off multiple policies:

1. Go to **Policies**.

   The page lists all policies configured in the system, grouped by Policy Category.



☐	Status	Name	Severity	Event Type	Category
☐	Controller Activities (105)				
☐	Controller Validation (6)				
☑	●	Snapshot Mismatch	High	Snapshot mismatch	Configuration Events
☑	●	Change in controller firmware ve...	High	Change in Firmware Version	Configuration Events
☑	●	Change in controller state	Medium	Change in State	Configuration Events
☐	●	Change in controller key state	High	Change in Key Switch	Configuration Events
☐	○	New Module Discovered	Low	New Module Discovered	Configuration Events
☐	○	Module Disappeared	Medium	Module Not Seen	Configuration Events

2. Select the check box next for each of the policies you want to turn on/off. Use one of the following selection methods:

    - **Select individual Policies** — Click the check box next to specific policies.
    - **Select Policy Types** — Click the check box next to a policy type heading.
    - **Select all Policies** — Click the check box in the title bar at the top of the table.

3. From the **Bulk Actions** drop-down box, select the desired action (**Enable** or **Disable**).

    OT Security enables or disables the selected policies.

View Policies

The **Policies** screen lists all configured policies in your system. The lists are grouped for each Policy Category in separate tabs. The page lists both pre-configured policies and user-defined policies. Each policy includes a toggle that shows the current status of the policy as well as several parameters indicating the policy configuration.

You can show/hide columns and sort and filter the asset lists as well as search for keywords. For information about customizing the list, see Management Console User Interface Elements.

The following table describes the policy parameters:

Parameter	Description
Status	Shows if the policy is turned on or off. If the system automatically disabled a policy because it generated too many events, then a warning icon appears next to the toggle. Toggle the status switch to turn a Policy ON/OFF.
Policy ID	A unique identifier for the policy in the system. Policy IDs are grouped by category, with a different prefix for each category. For example, P1 for Controller Activities, P2 for Network Events, and so on.
Name	The name of the policy.
Severity	The degree of severity of the event. Possible values are: None, Low, Medium, or High. See section Severity Levels for a description of the severity levels.
Event Type	The specific type of event that triggers this Event Policy.
Category	The general category of the event type that triggers this Event Policy. Possible values are: Configuration, SCADA, Network Threats, or Network Event. For more information about the various categories, see Policy Categories and Sub-Categories.
Source	A policy condition. The source Asset Group/Network Segment (that is, the asset that initiated the Activity) to which the policy applies.
Destination/	A policy condition. The destination Asset Group/Network Segment (that is

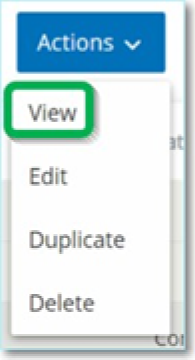
Affected Asset	the asset that receives the Activity) to which the policy applies. For policies that involve a single asset (no source and destination), this parameter shows the asset affected by the event.
Schedule	A policy condition. The time range for which the policy applies.
Syslog	The Syslog server (SIEM) that logs the events for this policy.
Email	The Email Group that sends the event notifications for this policy.
Sub Category	The sub-category classification of the event. The Configuration Events category comprises these sub-categories: Controller Activities and Controller Validation. For information about different sub-categories, see View Policies.
Number of Events per Policy	Lists the number of events that every policy generates. You can click the column to sort the list so that you can focus on the policies with the most violations/events.
Exclusions	Lists the number of exclusions added to each policy. For more information, see Events.

View Policy Details

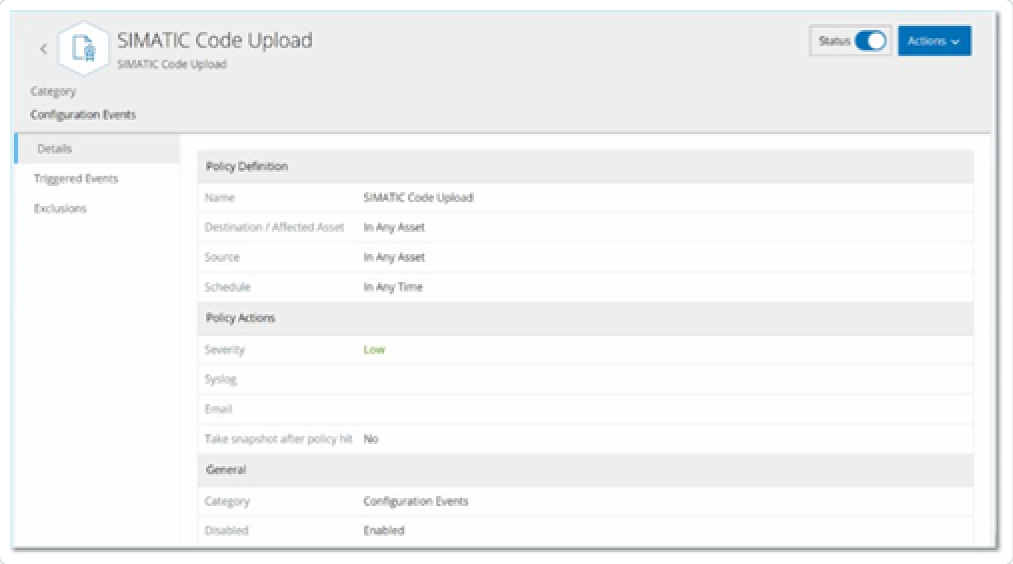
The **Policy Details** page for a policy shows additional details about the policy. This page lists all policy conditions and events that the policy triggered.

To open the **Policy Details** screen for a particular policy:

1. On the **Policies** page, select the desired policy.
2. From the **Actions** drop-down box, select **View**.



The Policy Details screen appears for the selected policy.



SIMATIC Code Upload
SIMATIC Code Upload

Category
Configuration Events

Policy Definition	
Name	SIMATIC Code Upload
Destination / Affected Asset	In Any Asset
Source	In Any Asset
Schedule	In Any Time
Policy Actions	
Severity	Low
Syslog	
Email	
Take snapshot after policy hit	No
General	
Category	Configuration Events
Disabled	Enabled

> **Note**: Alternatively, you can access the Actions menu by right-clicking on the relevant Policy.

The Policy Details page contains the following elements:

- **Header bar** – Shows the Name, Type, and Category of the policy. The page includes a toggle switch to turn the enable or disable the policy and a drop-down list of available **Actions** (**Edit**, **Duplicate**, and **Delete**).
- **Details tab** – Shows details about the policy configuration in these sections:
  - **Policy Definition** – Shows all policy conditions. This includes all relevant fields according to the policy type.
  - **Policy Actions** – Shows the severity level as well as destination (Syslog, Email) of Event notifications. Also, shows whether the **Take Scapshot after policy hit** feature is activated.
  - **General** – Shows the category and status of the policy.
- **Triggered Events** – Shows a list of events triggered by this policy. It also shows details about the assets involved in the event and the nature of the event. The information on this tab is identical to the information on the **Events** page except that this tab shows only events for the specified policy. For an explanation of the event information, see Viewing Events.

  Exclusions tab – If a policy generates events for specific conditions that do not pose a security threat, you can exclude those conditions from the policy (that is, stop generating events for those particular conditions). You can add exclusions on the **Events** page, see Events. The **Exclusions** tab shows all exclusions applied to this Policy and for each exclusion, it shows the specific excluded conditions. From this tab, you can also delete an exclusion thereby enabling the system to resume generating events for the specified conditions.

Create Policies

You can create custom policies based on the specific considerations of your ICS network. You can determine precisely what type of events must be brought to the attention of your staff and how the notifications are delivered. You have complete flexibility in determining how specific or broad a definition you want to give to each policy.

Note: Policies are defined by using groups configured in your system. If the drop-down list for a certain parameter doesn't show the specific grouping to which you want the policy to apply, then you can create a new Group according to your needs, see Groups.

When creating a new Policy, you start by selecting the Category and Type of Policy that you would like to create. The Create Policy wizard guides you through the setup process. Each Policy Type has its own set of relevant Policy condition parameters. The Create Policy wizard shows you the relevant Policy condition parameters for that selected Type of Policy.

For the Source, Destination, and Schedule parameters, you can designate whether to allowlist or block list the specified Group.

- select **In** to allowlist the specified Group (that is, include it in the Policy), OR
- select **Not in** to block list the specified Group (that is, leave it out of the Policy).

For Asset Group and Network Segment parameters (that is, Source, Destination and Affected Assets) you can use logical operators (and/or) to apply the Policy to various combinations or subsets of your pre-defined Groups. For example, if you want a Policy to apply to any device that is either an ICS Device or an ICS Server, then select ICS Devices or ICS Servers. If you want a Policy to apply only to Controllers which are located in Plant A, then select Controllers and Plant A Devices.

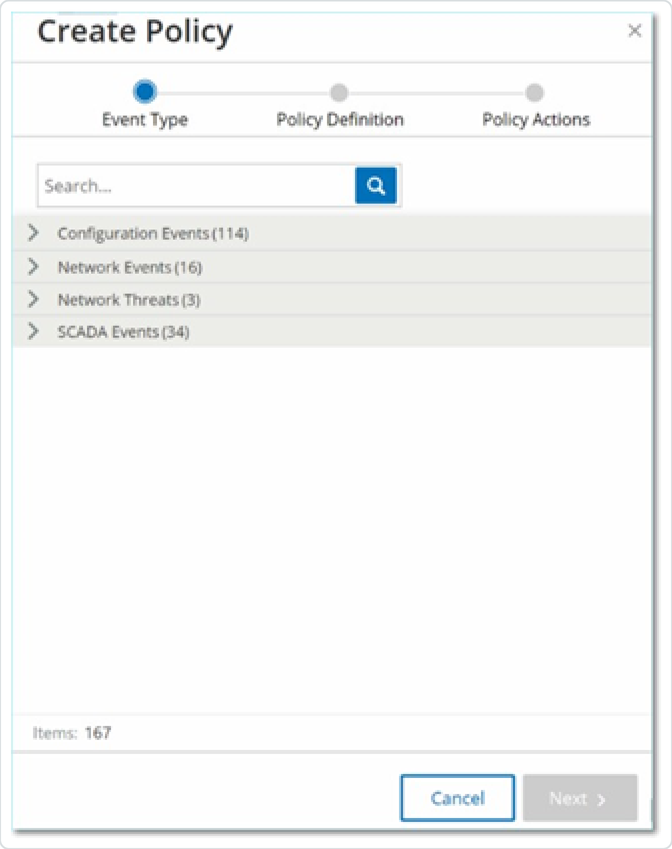
If you would like to create a new Policy with similar parameters to an existing Policy, you can Duplicate the original Policy and make the necessary changes, see section Create Policies.

Note: After creating a Policy, if you find that the Policy is generating events for situations that don’t require attention, you can exclude specific conditions from the Policy, see Events.

To create a new policy:

1. On the **Policies** screen, click **Create Policy**.

   The **Create Policy** wizard opens.



Create Policy

Event Type · Policy Definition · Policy Actions

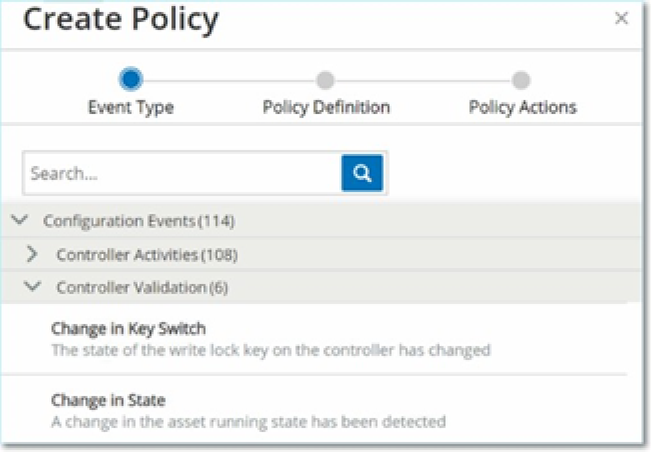
Search...

- Configuration Events (114)
- Network Events (16)
- Network Threats (3)
- SCADA Events (34)

Items: 167

2. Click on a **Policy Category** to show the sub-categories and/or Policy Types.

   A list of all sub-categories and/or Types included in that category are displayed.



Create Policy

Event Type · Policy Definition · Policy Actions

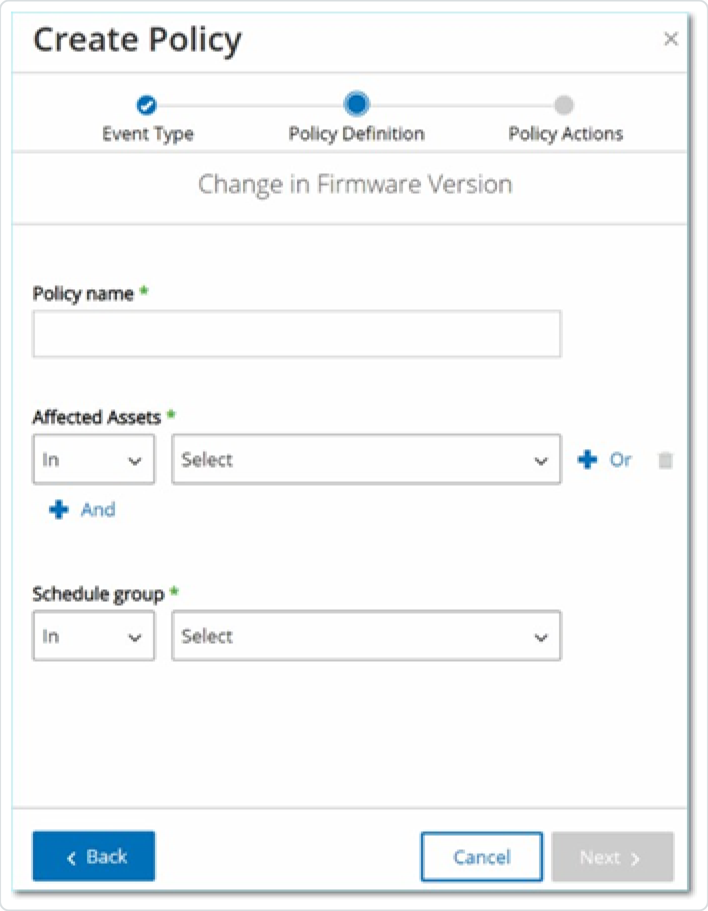
Search...

- Configuration Events (114)
  - Controller Activities (108)
  - Controller Validation (6)

Change in Key Switch
The state of the write lock key on the controller has changed

Change in State
A change in the asset running state has been detected

3. Select a Policy Type.



4. Click **Next**.

   A series of parameters for defining the Policy are displayed. This includes all relevant Policy conditions for the selected Policy Type.

5. In the **Policy Name** field, enter a name for this Policy.

   > **Note**: Choose a name that describes the specific nature of the type of Event that the Policy is intended to detect.

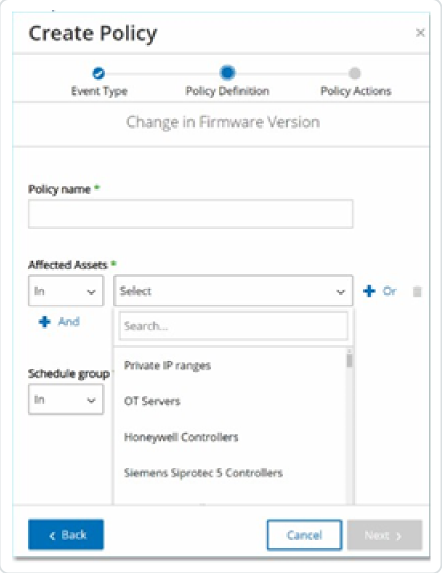
6. For each parameter:

   > **Important**: You cannot edit the **Source** and **Destination** asset groups for Intrusion Detection System (IDS) events.

a. Where relevant, select **In** (default) to allowlist the selected element or Not in to block list the selected element.

b. Click **Select**.

A drop-down list of relevant elements (for example Asset Group, Network Segment, Port Group, Schedule Group etc.) is shown.



c. Select the desired element.

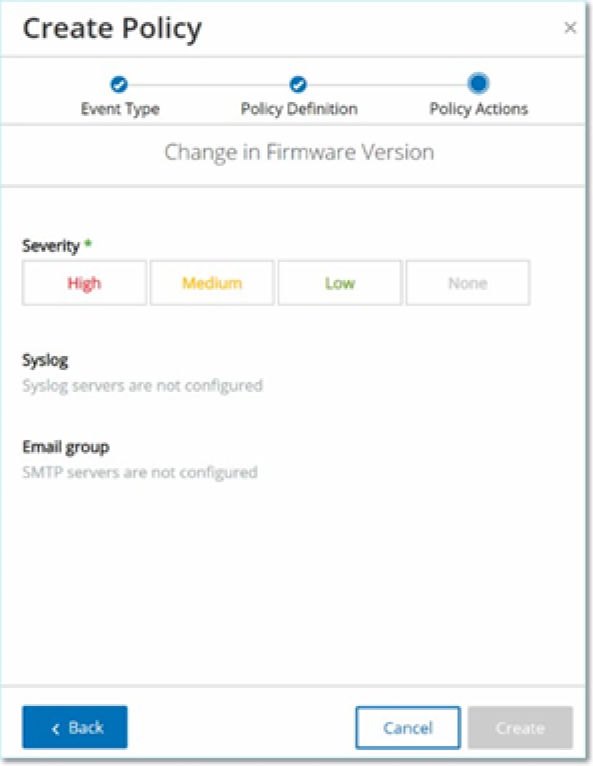
> **Note**: If the precise grouping to which you would like to apply the Policy does not exist, then you can create a new Group according to your needs, see Groups.

d. For Asset parameters (that is Source, Destination and Affected Assets), if you want to add an additional Asset Group/Network Segment with an "Or" condition, click on the blue **+ Or** button next to the field and select another Asset Group/Network Segment.

e. For Asset parameters (that is Source, Destination and Affected Assets), if you want to add an additional Asset Group/Network Segment with an "And" condition, click on the blue **+ And** button next to the field and select another Asset Group/Network Segment.

7. Click **Next**.

A series of Policy Action parameters (that is the actions taken by the system when a Policy hit occurs) are shown.



Change in Firmware Version

Severity *

Syslog
Syslog servers are not configured

Email group
SMTP servers are not configured

8. In the **Severity** section, click on the desired severity level for this Policy.
9. If you would like to send Event logs to one or more Syslog servers, in the **Syslog** section, select the checkbox next to each server where you would like to send the Event logs.

> **Note**: To add a Syslog server, see Syslog Servers.

10. If you would like to send email notifications of Events, in the Email group field, select from the drop-down list the Email Group to be notified.

> **Note**: To add an SMTP server, see SMTP Servers.

11. In the **Additional Actions** section, where the specified action is relevant:
    - If you would like to disable the Policy after the first time that a Policy hit occurs, select the **Disable policy after first hit** checkbox. (This action is relevant for some types of Network Event Policies and some types of SCADA Event Policies.)

- If you would like to initiate an automatic snapshot of the affected asset whenever a Policy hit is detected, then select the **Take snapshot after policy hit** checkbox. (This action is relevant for some types of Configuration Events Policies.)

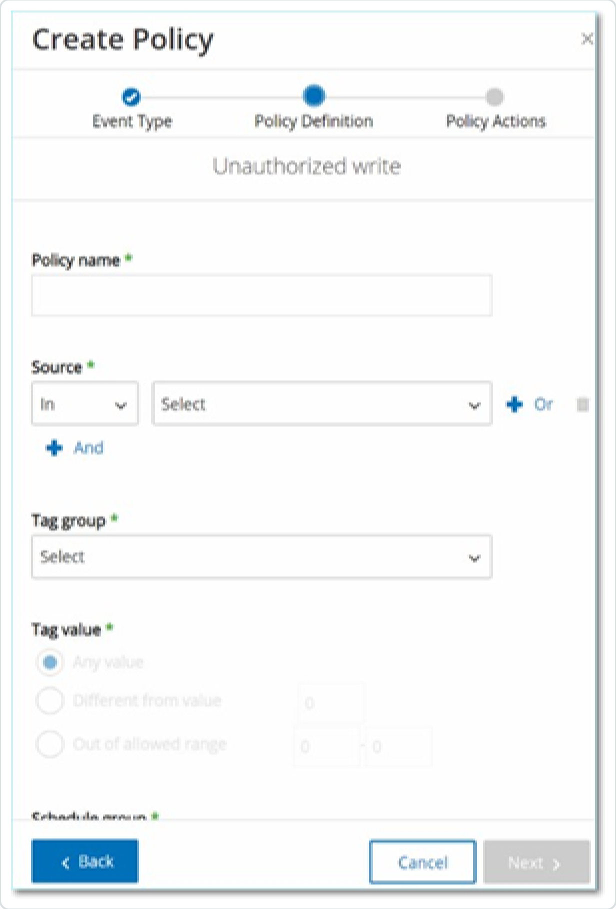
12. Click **Create**. The new Policy is created and automatically activated. The Policy is shown in the list on the Policies screen.

Create Unauthorized Write Policies

This type of Policy detects unauthorized writes to controller tags. The Policy Definition involves specifying the relevant Tag Groups and the type of write that generates a Policy hit.

To set the Policy Definition for an Unauthorized Write Policy:

1. Create a new Unauthorized Write Policy as described in Create Policies.



2. In the Policy Definition section, in the **Tag Group** field, select the Tag Group to which this Policy applies.

3. In the **Tag value** section, select the desire option by clicking the radio button and filling in the required fields. Options are:

- **Any value** – select this option to detect any change to the tag value.
- **Different from value** – select this option to detect any value other than the specified value. Enter the specified value in the field next to this selection.
- **Out of allowed range** – select this option to detect any value outside of the specified range. Enter the lower and upper limits of the allowed range in the respective fields next to this selection.

  > **Note**: The Different from value and Out of allowed range options are only available for standard tag types (for example Integer, Boolean etc.) but not for customized tags or strings.

4. Complete the Policy creation procedures as described in Create Policies.

Other Actions on Policies

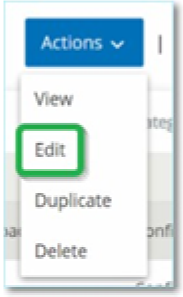
Edit Policies

You can edit the configuration of both predefined and user-defined policies. For most policies, you can adjust both the **Policy Definition** parameters (policy conditions) and the **Policy Action** parameters. For **Intrusion Detection Policies**, you can only adjust the **Policy Action** parameters.

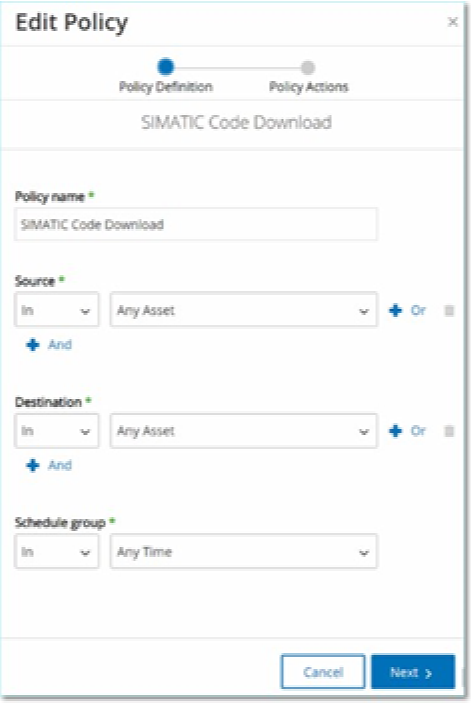
You can also edit the **Policy Action** parameters for multiple policies in a bulk action.

To edit a policy:

1. On the **Policies** window, select the check box next to the required policy.
2. In the **Actions** drop-down box, select **Edit**.



3. The **Edit Policy** window appears with the current configuration.



Edit Policy

SIMATIC Code Download

Policy name *: SIMATIC Code Download

Source *: In | Any Asset

Destination *: In | Any Asset

Schedule group *: In | Any Time

4. Adjust the **Policy Definition** parameters as needed.

> **Note**: You cannot edit the **Source** and **Destination** asset groups for Intrusion Detection System (IDS) events.

5. Click **Next**.

6. Adjust the **Policy Actions** parameters as needed.

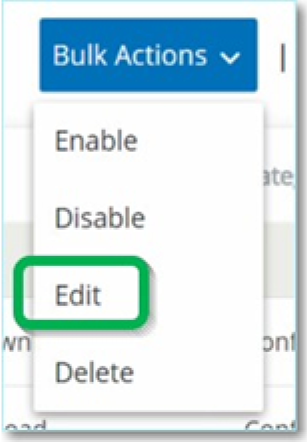
7. Click **Save**.

   OT Security saves the policy with the new configuration.

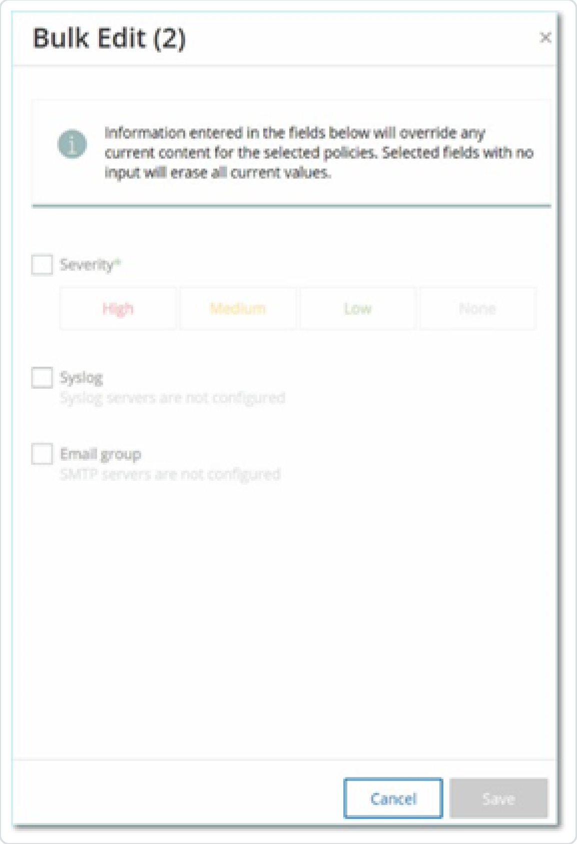
To edit multiple policies (bulk process):

1. On the **Policies** window, select the check box next to two or more policies.

2. In the **Bulk Actions** drop-down box, select **Edit**.



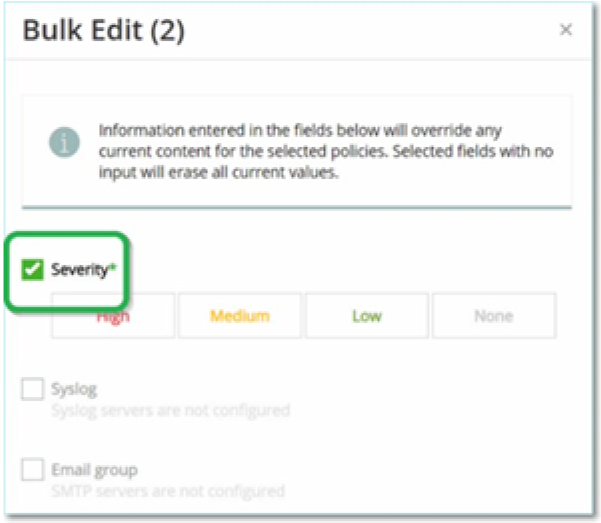
3. The **Bulk Edit** window appears with the Policy Actions available for bulk editing.



Information entered in the fields below will override any current content for the selected policies. Selected fields with no input will erase all current values.

□ Severity*
High
Medium
Low
None
□ Syslog
Syslog servers are not configured
□ Email group
SMTP servers are not configured
Cancel
Save

4. Select the check box next to each of the parameters that you want to edit: **Severity**, **Syslog**, and **Email Group**.



Bulk Edit (2)

Information entered in the fields below will override any current content for the selected policies. Selected fields with no input will erase all current values.

☑ Severity*

□ Syslog
Syslog servers are not configured

□ Email group
SMTP servers are not configured

5. Set each parameter as needed.

> **Note**: Information entered in the **Bulk Edit** window overrides any current content for the selected policies. If you select the check box next to a parameter but do not enter a selection, then the current values for that parameter are erased.

6. Click **Save**.

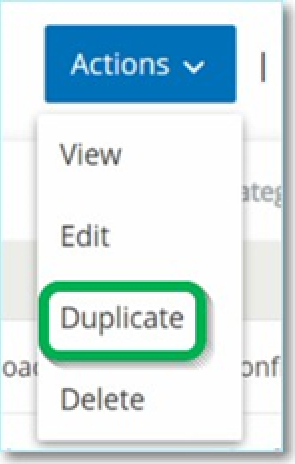
   OT Security saves the policies with the new configuration.

Duplicate Policies

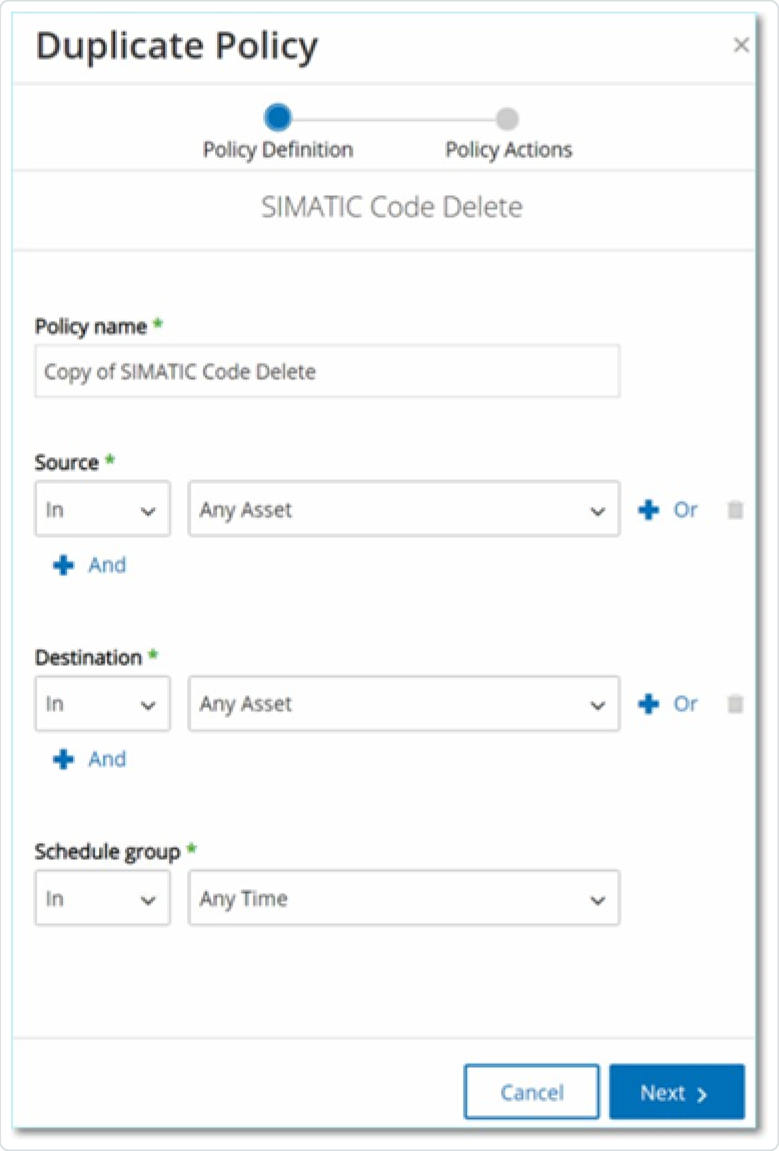
You can create a new policy that is similar to an existing policy by duplicating the original policy and making the required adjustments. You can duplicate both predefined and user-defined policies (except for **Intrusion Detection Policies**).

To duplicate a policy:

1. On the **Policies** window, select the check box next to the required policy.
2. In the **Actions** drop-down box, select **Duplicate**.



3. The **Duplicate Policy** window appears with the current configuration and the name is set to the default "*Copy of <Original Policy Name>*".



Duplicate Policy

SIMATIC Code Delete

Policy name *

Copy of SIMATIC Code Delete

Source *

In | Any Asset

Destination *

In | Any Asset

Schedule group *

In | Any Time

4. Adjust the **Policy Definition** parameters as needed.

5. Click **Next**.

6. Adjust the **Policy Actions** parameters as needed.

7. Click **Save**.

   OT Security saves the policy with the new configuration.

Delete Policies

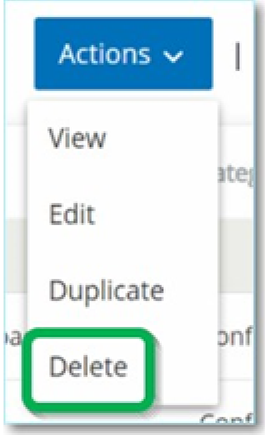
You can delete a policy from the system. You can delete both predefined and user-defined policies (except for **Intrusion Detection Policies**, which can't be deleted).

You can also delete multiple policies in a bulk action.

> **Note**: Once you delete a policy from the system you cannot reactivate it. An alternative option is to toggle the status to **OFF** to deactivate it temporarily while reserving the option to reactivate it later.

To delete a policy:

1. On the **Policies** window, select the check box next to the required policy.
2. In the **Actions** drop-down box, select **Delete**.

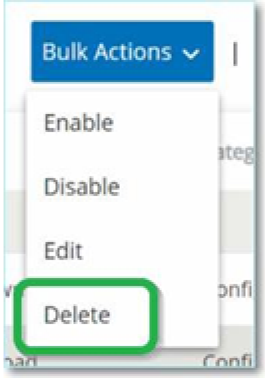
   

   A confirmation window appears.
3. Click **Delete**.

   OT Security deletes the policy from the system.

To delete multiple policies (bulk action):

1. On the **Policies** window, select the check box next to each of the required policies.
2. In the **Bulk Actions** drop-down box, select **Delete**.



A confirmation window appears.

3. Click **Delete**.

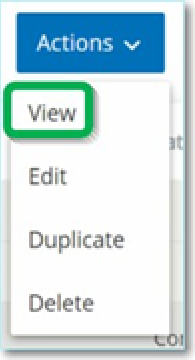
   OT Security deletes the policies from the system.

Delete Policy Exclusions

If you want to delete an exclusion that has been applied to a particular policy, you can do so on the **Policies** window.

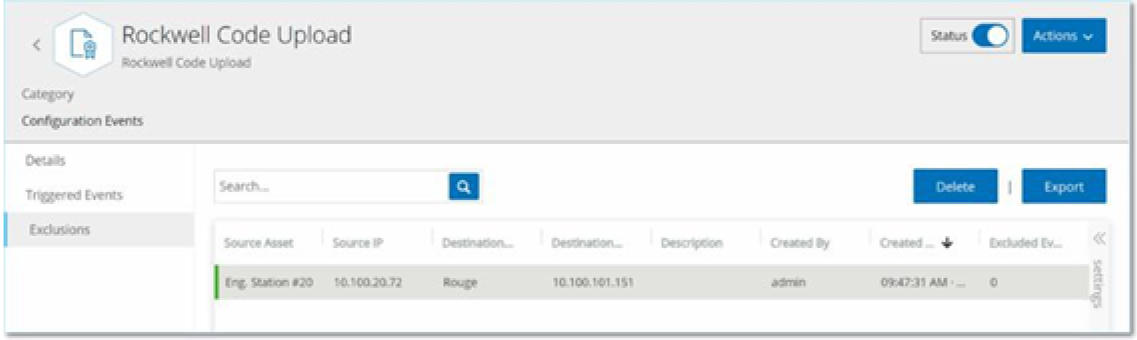
To delete a Policy Exclusion:

1. On the **Policies** window, select the required policy.
2. In the **Actions** drop-down box, select **View**.



> **Note**: Alternatively, you can access the Actions menu by right-clicking on the relevant Policy.

3. Click the **Exclusions** tab.



Rockwell Code Upload

Rockwell Code Upload

Category

Configuration Events

Source Asset	Source IP	Destination...	Destination...	Description	Created By	Created ...	Excluded Ev...
Eng. Station #20	10.100.20.72	Rouge	10.100.101.151		admin	09:47:31 AM · ...	0

A list of exclusions appears.

4. Select the policy exclusion you want to delete.
5. Click **Delete**.

   A confirmation window appears.
6. In the confirmation window, click **Delete**.

   OT Security deletes the exclusion from the system.

Groups

Groups are the fundamental building blocks to construct Policies. When you configure a Policy, you set each policy condition using Groups instead of individual entities. OT Security comes with some predefined Groups. You can also create your own user-defined Groups. To streamline the process of editing and creating Policies, Tenable recommends that you configure the Groups you need in advance.

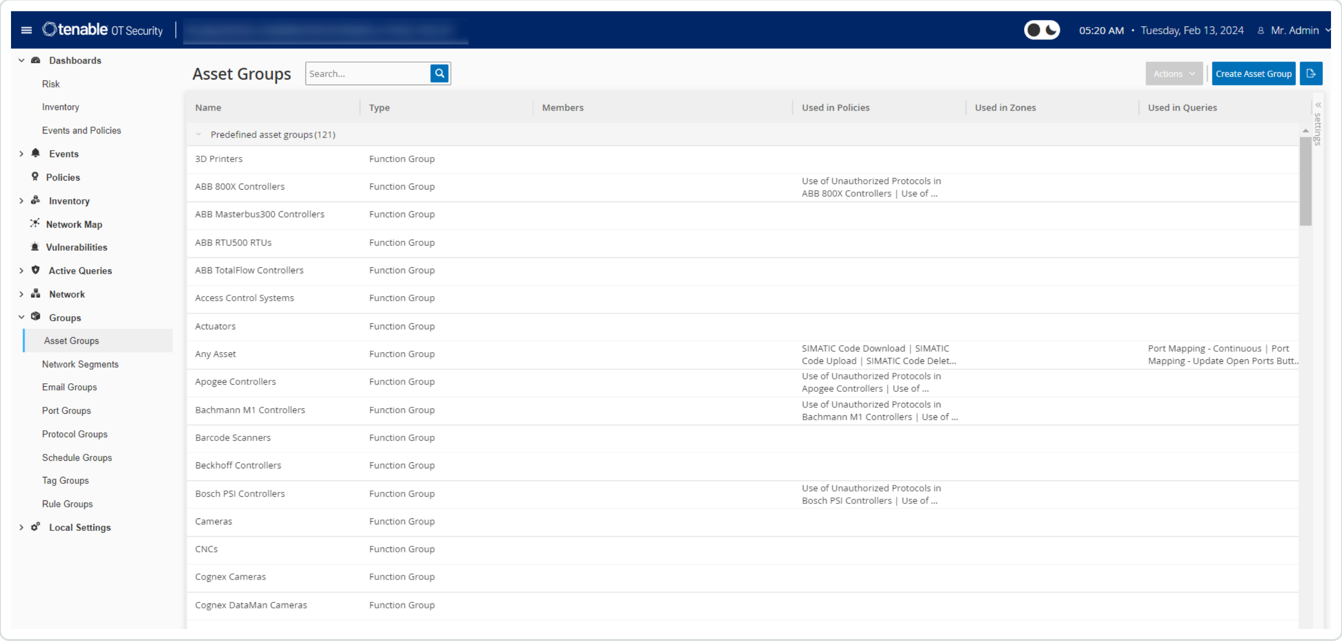
> **Note**: You can only set Policy parameters using Groups. If you want a Policy to apply to an individual entity you must configure a Group that includes only that entity.

View Groups

To view groups:

1. In the left navigation bar, click **Groups**.

   The **Groups** section expands to display the group types.



Name	Type	Members	Used in Policies	Used in Zones	Used in Queries
Predefined asset groups(121)					
3D Printers	Function Group				
ABB 800X Controllers	Function Group		Use of Unauthorized Protocols in ABB 800X Controllers | Use of ...		
ABB Masterbus300 Controllers	Function Group				
ABB RTU500 RTUs	Function Group				
ABB TotalFlow Controllers	Function Group				
Access Control Systems	Function Group				
Actuators	Function Group				
Any Asset	Function Group		SIMATIC Code Download | SIMATIC Code Upload | SIMATIC Code Delet...		Port Mapping - Continuous | Port Mapping - Update Open Ports Butt...
Apogee Controllers	Function Group		Use of Unauthorized Protocols in Apogee Controllers | Use of ...		
Bachmann M1 Controllers	Function Group		Use of Unauthorized Protocols in Bachmann M1 Controllers | Use of ...		
Barcode Scanners	Function Group				
Beckhoff Controllers	Function Group				
Bosch PSI Controllers	Function Group		Use of Unauthorized Protocols in Bosch PSI Controllers | Use of ...		
Cameras	Function Group				
CNCs	Function Group				
Cognex Cameras	Function Group				
Cognex DataMan Cameras	Function Group				

Under **Groups** you can view all Groups configured in your system. Groups are divided into two categories:

- **Predefined Groups** — These are pre-configured and you cannot edit these groups.
- **User-Defined Groups** — You can create and edit these groups.

There are several different types of Groups, each of which is used for the configuration of various Policy types. Each Group type is shown on a separate screen under Groups. The Group types are:

- **Asset Groups** — Assets are hardware entities in the network. Asset Groups are used as a Policy condition for a wide range of Policy types.
- **Network Segments** — Network Segmentation is a method of creating groups of related network assets, assisting in the logical isolation of one group of assets from another.

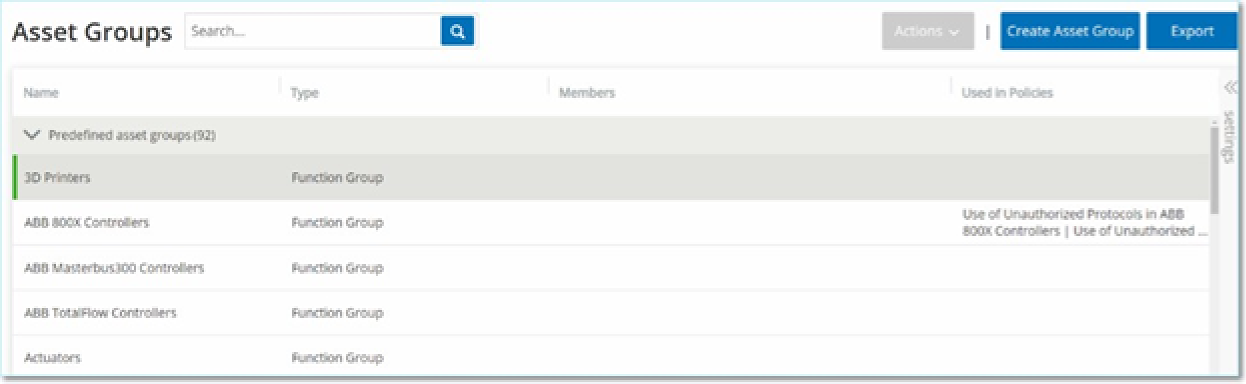
- **Email Groups** — Groups of emails that are notified when a Policy event occurs. Used for all Policy types.
- **Port Groups** — Groups of Ports used by assets in the network. Used for Policies that identify open ports.
- **Protocol Groups** — Groups of Protocols by which conversations are conducted between assets in the network. Used as a Policy condition for **Network Events**.
- **Schedule Groups** — Schedule Groups are time ranges used to configure at what time the specified event must occur to fulfill the policy conditions.
- **Tag Groups** — Tags are parameters in controllers that contain specific operational data. Tag Groups are used as a Policy condition for SCADA Events.
- **Rule Groups** — Rule Groups comprises a group of related rules, identified by their Suricata Signature IDs (SIDs). These groups are used as a Policy condition for defining Intrusion Detection Policies.

The procedure for creating each type of Group is described in the following sections. In addition, you can View, Edit, Duplicate, or Delete an existing Group, see Actions on Groups.

Asset Groups

Assets are hardware entities in the network. Grouping similar assets together enables you to create policies that apply to all the assets in the group. For example, you can use an Asset Group Controller to create a policy that alerts for firmware changes to any controller. Asset Groups are used as a policy condition for a wide range of policy types. Asset Groups can be used to specify the Source asset, the Destination asset, or the Affected asset for various Policy types.

View Asset Groups



Name	Type	Members	Used in Policies
Predefined asset groups (92)			
3D Printers	Function Group		
ABB 800X Controllers	Function Group		Use of Unauthorized Protocols in ABB 800X Controllers | Use of Unauthorized ...
ABB Masterbus300 Controllers	Function Group		
ABB TotalFlow Controllers	Function Group		
Actuators	Function Group		

The **Asset Groups** screen shows all Asset Groups that are currently configured in the system. The **Predefined asset groups** tab includes groups that are built into the system, which you cannot edit, duplicate, or delete. The **User-defined asset groups** tab includes custom groups created by the user. You can edit, duplicate, or delete these groups.

The Asset Groups table shows the following information:

Parameter	Description
Status	Shows if the policy is turned on or off. If the system automatically disables the policy because it was generating too many events, then the system displays a warning icon. Toggle the status switch to turn a Policy ON/OFF.
Name	The name of the Policy.
Severity	The severity of the event. Possible values are: None, Low, Medium, or High. See section Severity Levels for more information.

Event Type	The event type that triggers this Event Policy.
Category	The category of the event that triggers this Event Policy. Possible values are: Configuration, SCADA, Network Threats, or Network Event. For an explanation of the various categories see Policy Categories and Sub-Categories.
Source	A Policy condition. The source Asset Group to which the Policy applies. An Asset group is the asset that initiated the Activity.
Name	The name to identify the Group.
Type	The Group type. Options are: • **Function** — A predefined Asset Group created to serve a particular function. • **Asset List** —Specified assets are included in the Group. • **IP List** — Assets with the specified IP address. • **IP Range** — Assets within the specified range of IP addresses.
Members	Shows the list of assets included in this Group. No value is shown for Function Groups. **Note**: If there is no room to display all assets in this row then click **Table Actions** > **View** > **Members** tab.
Used in Policies	Shows the name of each policy that uses this Asset Group in its configuration. **Note**: To view more details about the policies in which the Group is used, click **Table Actions** > **View** > **Used in Policies** tab.
Used in Queries	Shows the name of the query that uses this Asset Group.

The procedures for creating various types of Asset Groups are described in the following section. In addition, you can View, Edit, Duplicate, or Delete an existing Group, see Actions on Groups.

Create Asset Groups

You can create custom Asset Groups to use when configuring Policies. By grouping together similar assets, you enable creation of policies that apply to all assets in the group.

There are three types of User-defined asset groups:

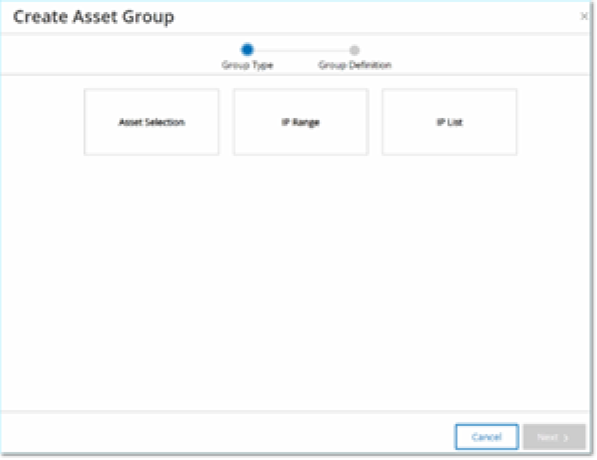
- **Asset List** — Specify the specific assets included in the Group.
- **IP List** — Specify the IP addresses of the Assets included in the Group.
- **IP Range** — Specify the range of IP addresses of the Assets that are included in the Group.

There are different procedures for creating each type of Asset Group.

To create an asset selection type asset group:

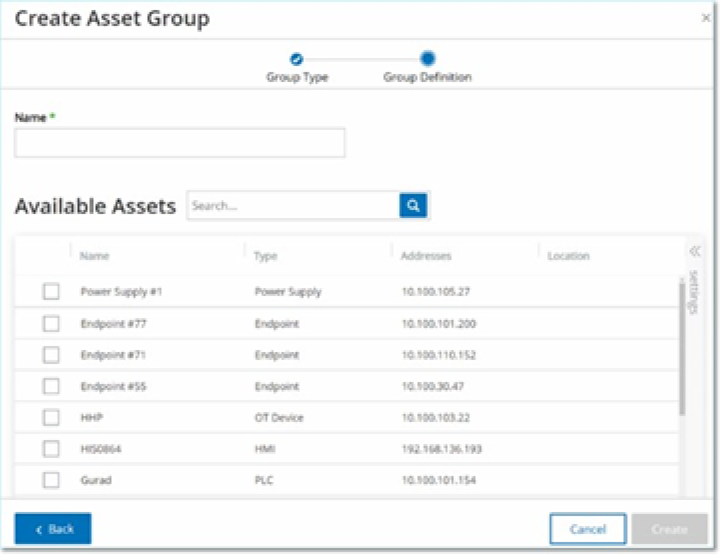
1. Go to **Groups** > **Asset Groups**.
2. Click **Create Asset Group**.

   The **Create Asset Group** panel appears.

3. Click **Asset Selection**.
4. Click **Next**.

   The list of **Available Assets** appears.



	Name	Type	Addresses	Location
□	Power Supply #1	Power Supply	10.100.105.27	
□	Endpoint #77	Endpoint	10.100.101.200	
□	Endpoint #71	Endpoint	10.100.110.152	
□	Endpoint #55	Endpoint	10.100.30.47	
□	HHP	OT Device	10.100.103.22	
□	HIS0864	HMI	192.168.136.193	
□	Gurad	PLC	10.100.101.154	

5. In the **Name** box, type a name for the group.

   Choose a name that describes a common element that categorizes the assets included in the group.

6. Select the check box next to each asset you want to include in the group.

7. Click **Create**.

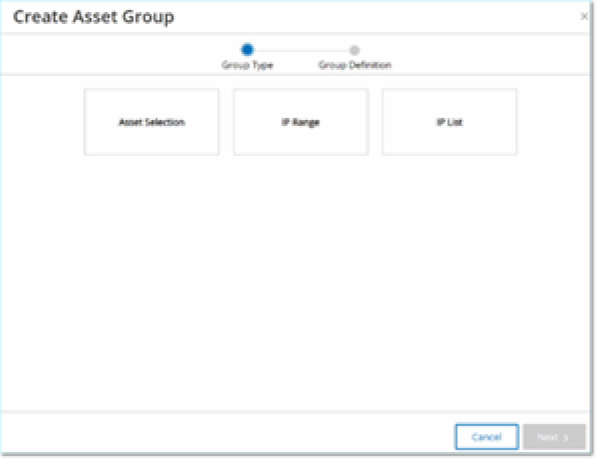
   OT Security creates the new asset group and displays it on the **Asset Groups** screen. You can now use this group when configuring policies.

To create an IP range type asset group:

1. Go to **Groups** > **Asset Groups**.

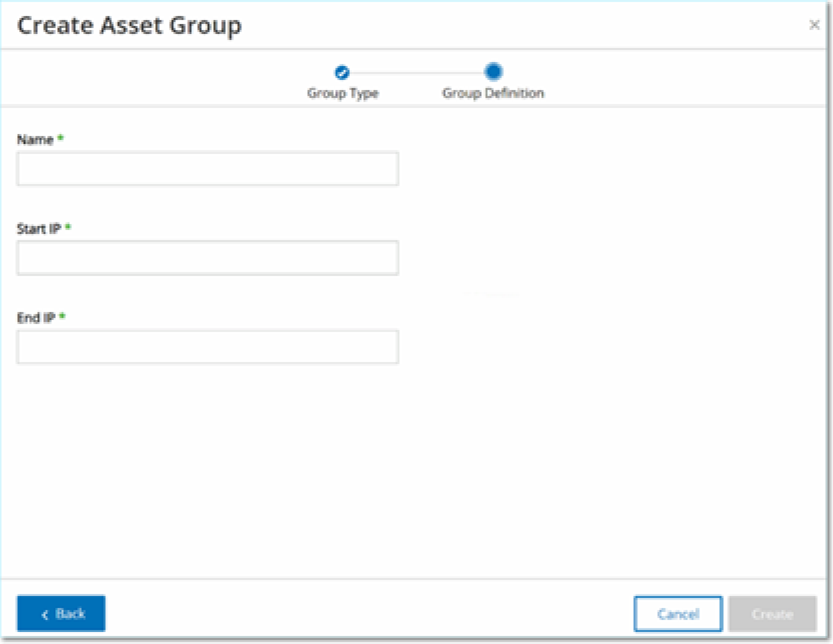
2. Click **Create Asset Group**.

   The **Create Asset Group** panel appears.



3. Click **IP Range**.
4. Click **Next**.

   The IP Range selection panel appears.



5. In the **Name** box, type a name for the group.

   Choose a name that describes a common element that categorizes the assets included in the group.

6. In the **Start IP** box, type the IP address at the beginning of the range you want to include.

7. In the **End IP** box, type the IP address at the end of the range you want to include.

8. Click **Create**.

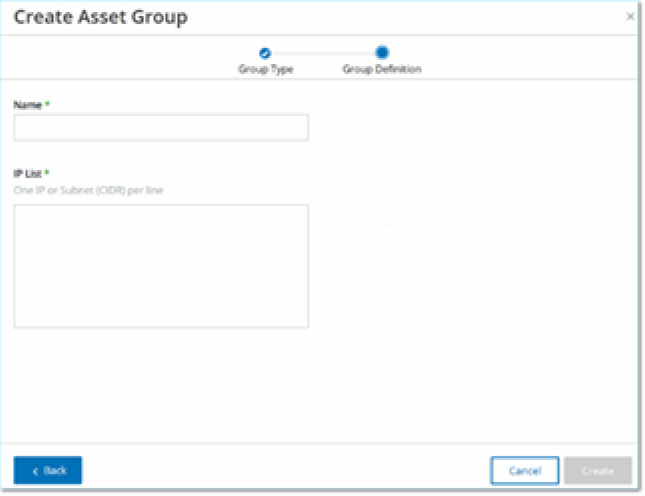
   OT Security creates the new Asset Group displays it on the **Asset Groups** screen. You can now use this group when configuring policies.

To create an IP list type Asset Group:

1. Go to **Groups** > **Asset Groups**.

2. Click **Create Asset Group**.

   The **Create Asset Group** panel appears.

3. Click **IP List**.

4. Click **Next**.

   The **IP List** panel appears.

5. In the **Name** box, type a name for the group.

   Choose a name that describes a common element that categorizes the assets that are included in the group.

6. In the **IP List** box, type an IP Address or a Subnet to be included in the group.

7. To add more assets to the Group, type each additional IP address or Subnet on a separate line.

8. Click **Create**.

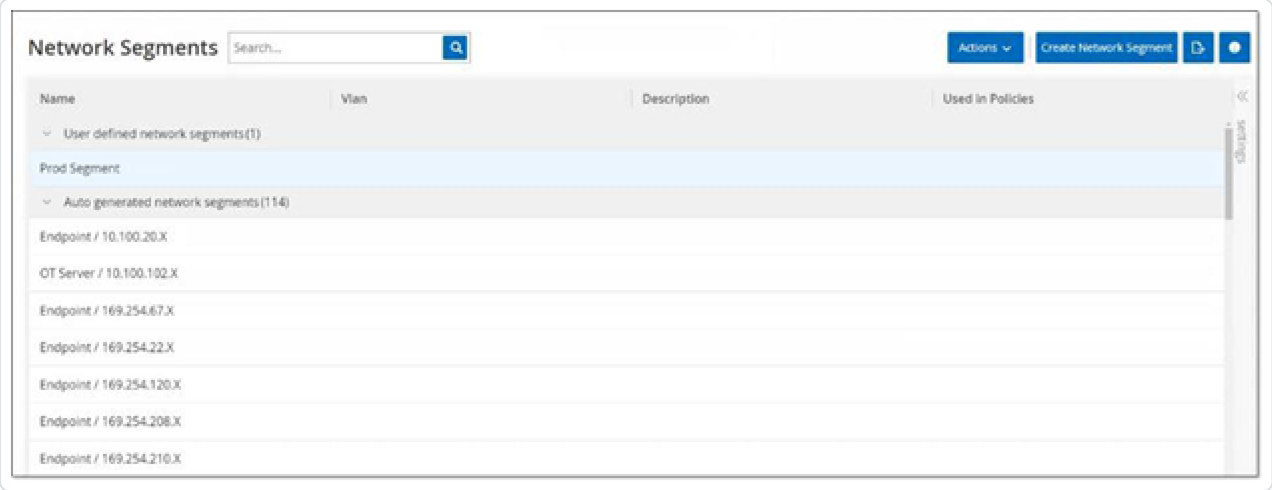
   OT Security creates the new Asset Group and displays it on the **Asset Groups** screen. You can now use this group when configuring policies.

Network Segments

With Network Segmentation, you can create groups of related network assets, enabling you to logically isolate asset groups from one-another. OT Security automatically assigns each IP address that is associated with an asset in your network to a Network Segment. For assets with more than one IP address, each IP is associated with a Network Segment. Each auto-generated segment includes all Assets of a specific Category (Controller, OT Servers, Network Devices, and so on) that have IPs with the same class C network address (that is, the IPs have the same first 24 bits).

You can create user-defined Network Segments, and specify which assets are assigned to that segment. A column on the **Inventory** screen shows the Network Segment for each asset, making it easy to sort and filter your assets by Network Segment.

View Network Segments



Name	Vlan	Description	Used in Policies
User defined network segments (1)			
Prod Segment			
Auto generated network segments (114)			
Endpoint / 10.100.20.X			
OT Server / 10.100.102.X			
Endpoint / 169.254.67.X			
Endpoint / 169.254.22.X			
Endpoint / 169.254.120.X			
Endpoint / 169.254.208.X			
Endpoint / 169.254.210.X			

The **Network Segments** screen shows all Network Segments that are currently configured in the system. The **Auto-generated** tab includes Network Segments that the system automatically generates. The **User-defined** tab includes custom Network Segments created by the user.

The Network Segments table shows the following details:

Parameter	Description
Name	The name used to identify the Network Segment.

VLAN	The VLAN number of the Network Segment. (Optional)
Description	A description of the Network Segment. (Optional)
Used in Policies	Shows the names of the Policies that apply to this Network Segment. **Note**: To view more details about the Policies in which the Network Segment is used, click **Actions** > **View** > **Used in Policies** tab.

You can View, Edit, Duplicate, or Delete an existing Network Segment. For more information, see Actions on Groups.

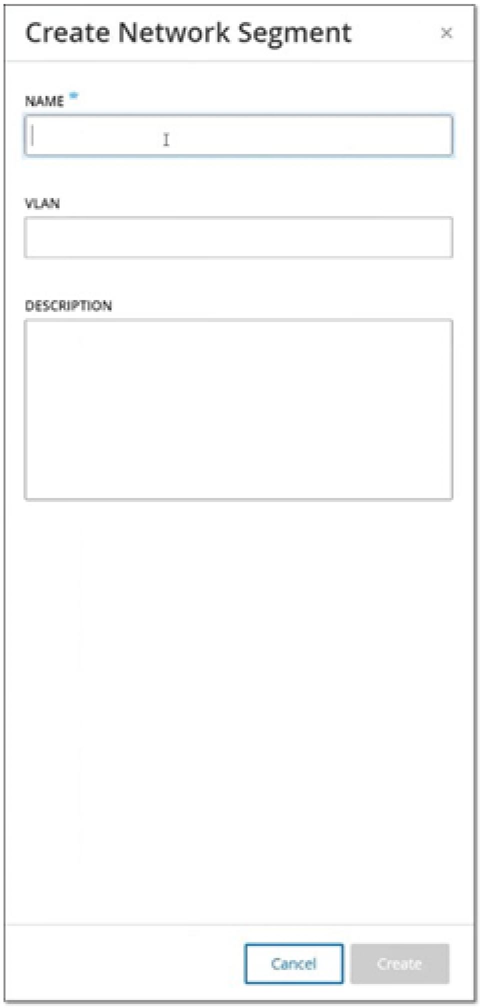
Create Network Segments

You can create Network Segments to be used in the configuration of Policies. By grouping together related network assets you enable the creation of Policies that define acceptable network traffic for Asset in that segment.

To create a network segment:

1. Go to **Groups** > **Network Segments**.
2. Click **Create Network Segment**.

   The **Create Network Segment** panel appears.



3. In the **Name** box, type a name for the Network Segment.

4. (Optional) In the **VLAN** box, type a VLAN number for the Network Segment.

5. (Optional) In the **Description** box, type a description of the Network Segment.

6. Click **Create**.

   OT Security creates the new Network Segment and shows it in the list of Network Segments.

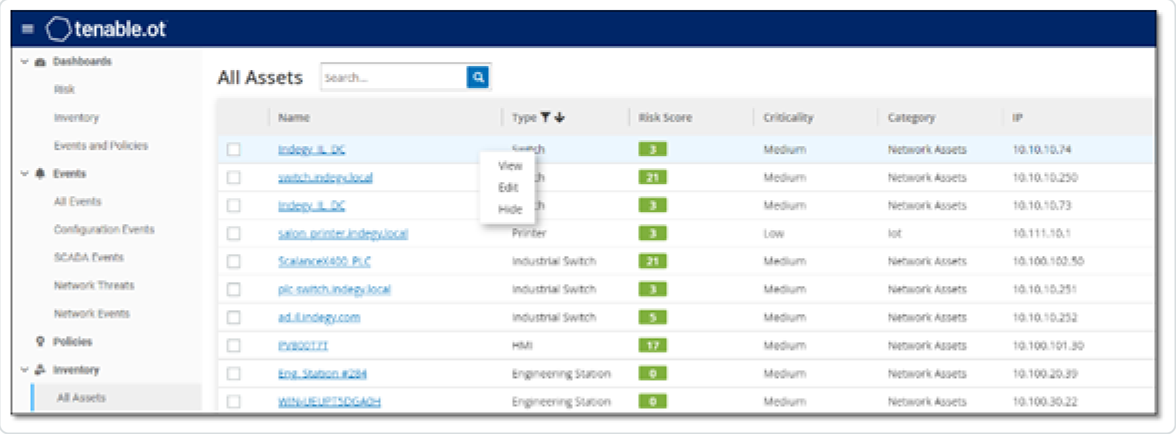
7. To assign the assets to the newly created Network Segment:

   a. Go to **Inventory** > **All Assets**.

   b. Do one of the following:

- Right-click the asset you want to assign to the newly created Network Segment and select **Edit**.

- Hover over the asset you want to assign, then from the **Actions** menu, select **Edit**.

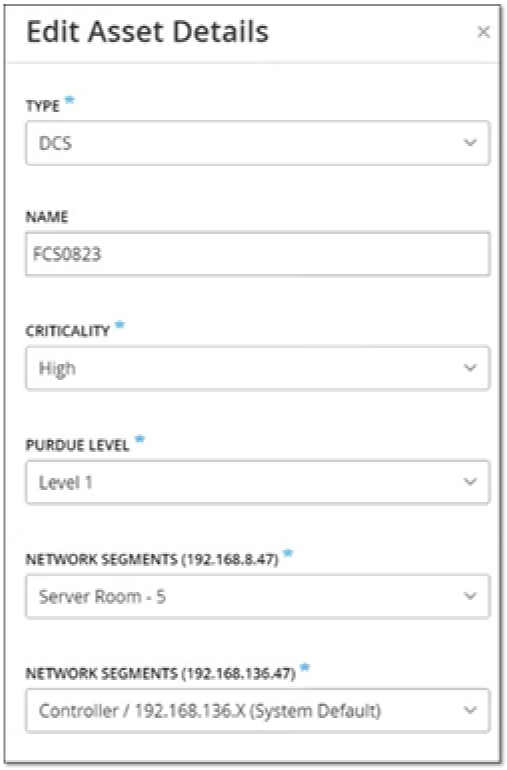


All Assets

	Name	Type	Risk Score	Criticality	Category	IP
□	Indegy_IL_DC	Switch	3	Medium	Network Assets	10.10.10.74
□	switch.indegy.local	h	21	Medium	Network Assets	10.10.10.250
□	Indegy_IL_DC	h	3	Medium	Network Assets	10.10.10.73
□	salon_printer.indegy.local	Printer	3	Low	Iot	10.111.10.1
□	ScalanceX400_PLC	Industrial Switch	21	Medium	Network Assets	10.100.102.50
□	plc.switch.indegy.local	Industrial Switch	3	Medium	Network Assets	10.10.10.251
□	ad.il.indegy.com	Industrial Switch	5	Medium	Network Assets	10.10.10.252
□	PV800T.T1	HMI	17	Medium	Network Assets	10.100.101.30
□	Eng. Station #284	Engineering Station	0	Medium	Network Assets	10.100.20.39
□	WIN-UEUPT5DGA0H	Engineering Station	0	Medium	Network Assets	10.100.30.22

The **Edit Asset Details** window opens.

8. In the **Network Segments** drop-down box, select the required Network Segment.



Edit Asset Details

TYPE *
DCS

NAME
FCS0823

CRITICALITY *
High

PURDUE LEVEL *
Level 1

NETWORK SEGMENTS (192.168.8.47) *
Server Room - 5

NETWORK SEGMENTS (192.168.136.47) *
Controller / 192.168.136.X (System Default)

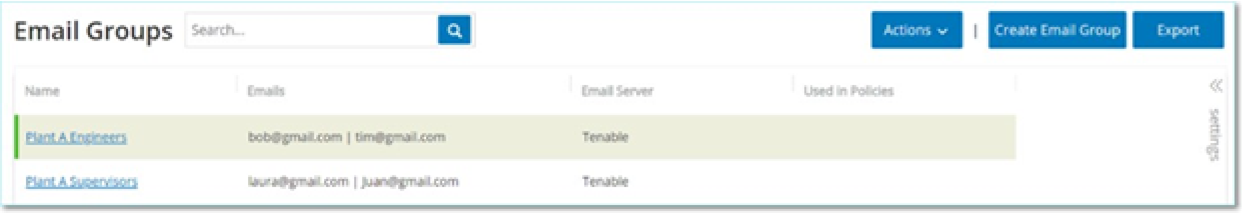
Note: Some assets have more than one associated IP address, and you can select the required Network Segment for each one.

OT Security applies the Network Segment to the asset and shows it in the **Network Segment** column. You can now use this Network Segment when configuring Policies.

Email Groups

Emails Groups are groups of emails of relevant parties. Email Groups are used to specify recipients for Event notifications triggered by specific Policies. For example, grouping by role, department, and so on enables you to send the notifications for specific Policy Events to the relevant parties.

View Email Groups



Name	Emails	Email Server	Used in Policies
Plant A Engineers	bob@gmail.com | tim@gmail.com	Tenable	
Plant A Supervisors	laura@gmail.com | juan@gmail.com	Tenable	

The **Email Groups** screen shows all Email Groups that are currently configured in the system.

The Email Groups table shows the following information:

> **Note**: You can view additional details about a specific Group by selecting the Group and clicking **Actions** > **View**.

Parameter	Description
Name	The name used to identify the Group.
Emails	The list of emails included in the Group. **Note**: If there is no space to display all members of the Group, then click **Actions** > **View** > **Members** tab.
Email Server	The name of the SMTP server used to send emails to the Group.
Used in Policies	Shows the names of the Policies for which notifications are sent to this Group. **Note**: To view more details about the Policies in which the Group is used, click **Actions** > **View** > **Used in Policies** tab.

In addition, you can View, Edit, Duplicate, or Delete an existing Group. For more information, see Actions on Groups.

Create Email Groups

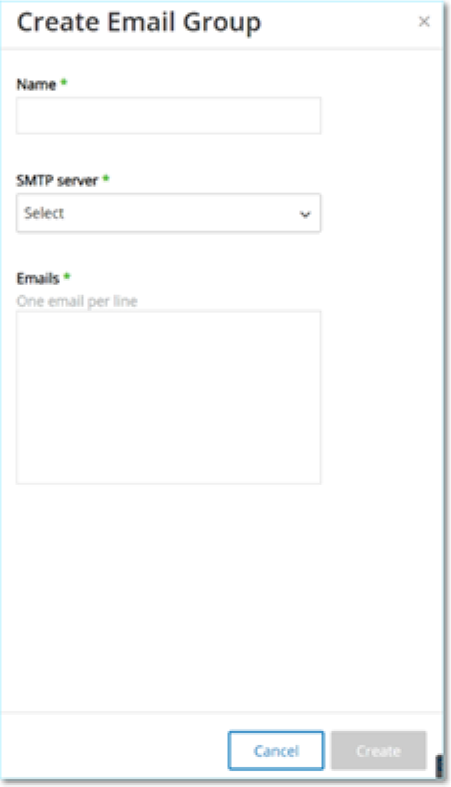
You can create Email Groups to be used in the configuration of Policies. By grouping related emails, you set Policy Event notifications to be sent to all relevant personnel.

> **Note**: You can only assign one Email Group to each Policy. Therefore, it is useful to create both broad, inclusive Groups as well as specific, limited Groups so that you can assign the appropriate Group to each Policy.

To create an Email Group:

1. Go to **Groups** > **Email Groups**.
2. Click **Create Email Group**.

   The **Create Email Group** panel appears.

3. In the **Name** box, type a name for the Group.

4. In the **SMTP server** drop-down box, select the server used for sending out the email notifications.

   > **Note**: If no SMTP server is configured in the system, then you must first configure a server before you can create an Email Group, see SMTP Servers.

5. In the **Emails** box, type the email of each member of the Group on a separate line.

6. Click **Create**.

   OT Security creates the new Email Group and shows it on the **Email Groups** page. You can now use this Group when configuring Policies.

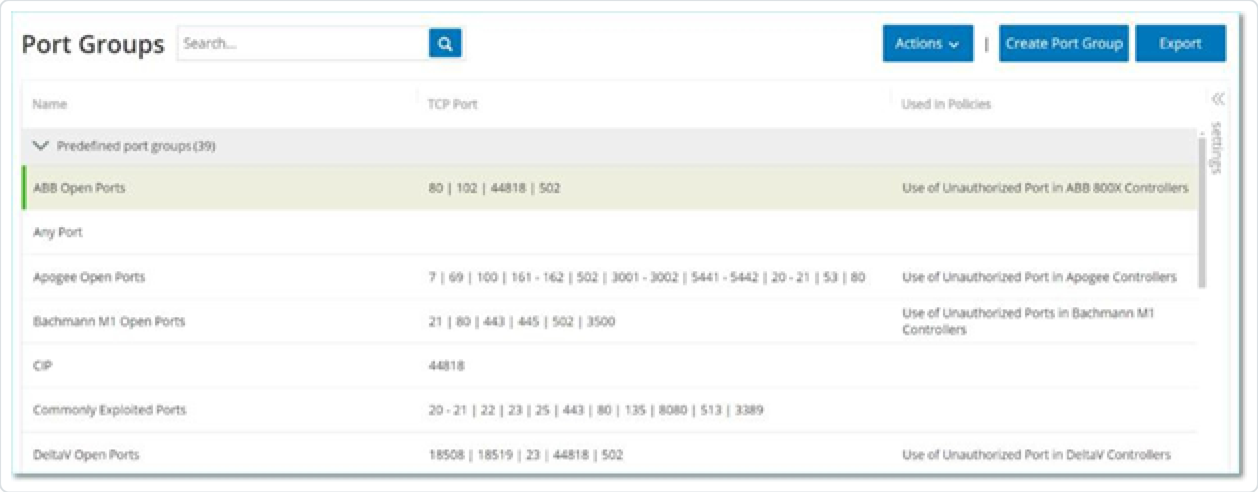
Port Groups

Port Groups are groups of ports used by assets in the network. Port Groups are used as a policy condition for defining **Open Port** Network Event Policies, which detect open ports in the network.

The **Predefined** tab shows the Port Groups that are predefined in the system. These Groups comprise ports expected to be Open on controllers from a specific vendor. For example, the Group Siemens PLC Open Ports includes: 20, 21, 80, 102, 443 and 502. This enables configuration of Policies that detect open ports that are not expected to be opened for controllers from that vendor. These Groups cannot be edited or deleted but they can be duplicated.

The **User-defined** tab includes custom Groups created by the user. You can edit, duplicate, or delete these Groups.

View Port Groups



Name	TCP Port	Used in Policies
Predefined port groups (39)		
ABB Open Ports	80 | 102 | 44818 | 502	Use of Unauthorized Port in ABB 800X Controllers
Any Port		
Apogee Open Ports	7 | 69 | 100 | 161 - 162 | 502 | 3001 - 3002 | 5441 - 5442 | 20 - 21 | 53 | 80	Use of Unauthorized Port in Apogee Controllers
Bachmann M1 Open Ports	21 | 80 | 443 | 445 | 502 | 3500	Use of Unauthorized Ports in Bachmann M1 Controllers
CIP	44818	
Commonly Exploited Ports	20 - 21 | 22 | 23 | 25 | 443 | 80 | 135 | 8080 | 513 | 3389	
DeltaV Open Ports	18508 | 18519 | 23 | 44818 | 502	Use of Unauthorized Port in DeltaV Controllers

The View Port Groups table includes the following details:

Parameter	Description
Name	The name used to identify the Group.
TCP Port	The list of ports and/or ranges of ports that are included in the Group. **Note**: If the table does not display all members of the Group, you can view them on **Actions** > **View** > **Members** tab.

Used in Policies	Shows the name of each Policy that uses this Port Group in its configuration. **Note**: To view additional information about the Policies in which this Group is used, click **Actions** > **View** > **Used in Policies** tab.

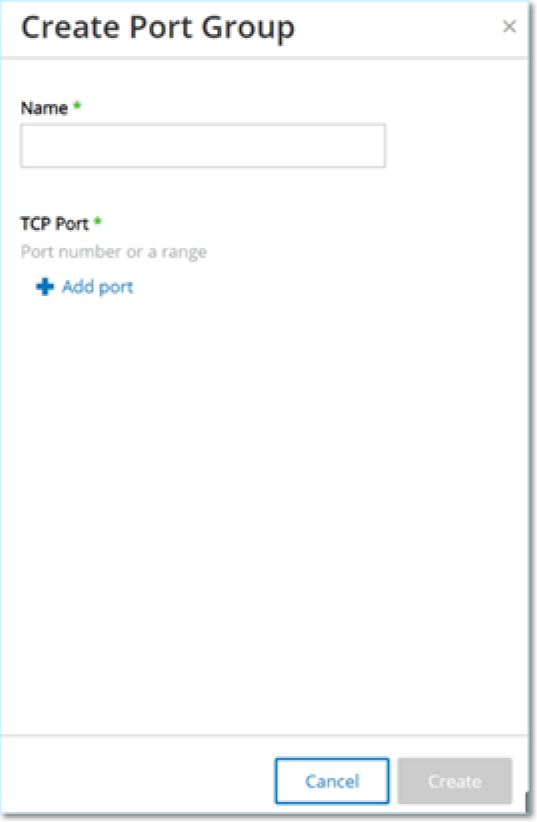
Create Port Groups

You can create user-defined Port Groups that you can use in the configuration of Policies. By grouping together similar ports, you enable creation of Policies that alert for open ports that pose a particular security risk.

To create a Port Group:

1. Go to **Groups** > **Port Groups**.
2. Click **Create Port Group**.

   The **Create Port Group** panel appears.

3. In the **Name** box, type a name for the Group.

4. In the **TCP Port** box, type a single port or a range of ports to be included in the Group.

5. To add additional Ports to the Group:

   a. Click **+ Add Port**.

      A new Port Selection box appears.

   b. In the new **Port number** box, type a single port or a range of ports to be included in the Group.

6. Click **Create**.

   OT Security creates the new Port Group is created and shows it in the list of Port Groups. You can now use this Group when configuring Policies.

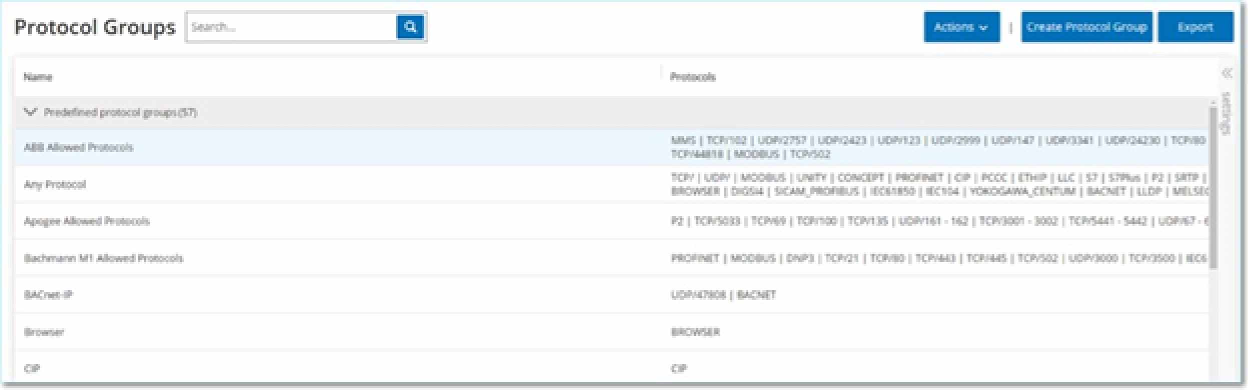
Protocol Groups

Protocol Groups are a set of protocols used for conversations between assets on a network. Protocol Groups are a Policy condition for Network Policies They also define what Protocols used between particular assets trigger a Policy.

OT Security comes with a set of predefined Protocol Groups which comprise related protocols. These Groups are available for use in Policies. You cannot edit or delete these Groups. Protocols can be grouped by which protocols are allowed by a specific vendor.

For example, Schneider allowed protocols include: TCP:80 (HTTP), TCP:21 (FTP), Modbus, Modbus_UMAS, Modbus_MODICON, TCP:44818 (CIP), UDP:69 (TFTP), UDP:161 (SNMP), UDP:162 (SNMP), UDP:44818, UDP:67-68 (DHCP). They can also be grouped by type of protocol, that is, Modbus, PROFINET, CIP and so on. You can also create your own user-defined Protocol Groups.

View Protocol Groups



Name	Protocols
Predefined protocol groups (57)	
ABB Allowed Protocols	MMS | TCP/102 | UDP/2757 | UDP/2423 | UDP/123 | UDP/2999 | UDP/147 | UDP/3341 | UDP/24230 | TCP/80 | TCP/44818 | MODBUS | TCP/502
Any Protocol	TCP/ | UDP/ | MODBUS | UNITY | CONCEPT | PROFINET | CIP | PCCC | ETHIP | LLC | S7 | S7Plus | P2 | SRTP | BROWSER | DIGSI4 | SICAM_PROFIBUS | IEC61850 | IEC104 | YOKOGAWA_CENTUM | BACNET | LLDP | MELSEC
Apogee Allowed Protocols	P2 | TCP/5033 | TCP/69 | TCP/100 | TCP/135 | UDP/161 - 162 | TCP/3001 - 3002 | TCP/5441 - 5442 | UDP/67 - 6
Bachmann M1 Allowed Protocols	PROFINET | MODBUS | DNP3 | TCP/21 | TCP/80 | TCP/443 | TCP/445 | TCP/502 | UDP/3000 | TCP/3500 | IEC6
BACnet-IP	UDP/47808 | BACNET
Browser	BROWSER
CIP	CIP

The **Protocol Groups** screen shows all Protocol Groups that are currently configured in the system. The **Predefined** tab shows Groups that are built into the system. You cannot edit or delete these Groups, but you can duplicate them. The **User-defined** tab shows the custom Groups that you create. You can edit, duplicate, or delete these Groups.

The Protocol Groups table shows these details:

Parameter	Description
Name	The name to identify the Group.

Protocols	The list of protocols included in the Group. **Note**: If you are unable to view all members of the Group, then click **Actions** > **View** > **Members** tab.
Used in Policies	Shows the name of each Policy that uses this Protocol Group in its configuration. **Note**: To view additional details about the Policies in which this Group is used, click **Actions** > **View** > **Used in Policies** tab.

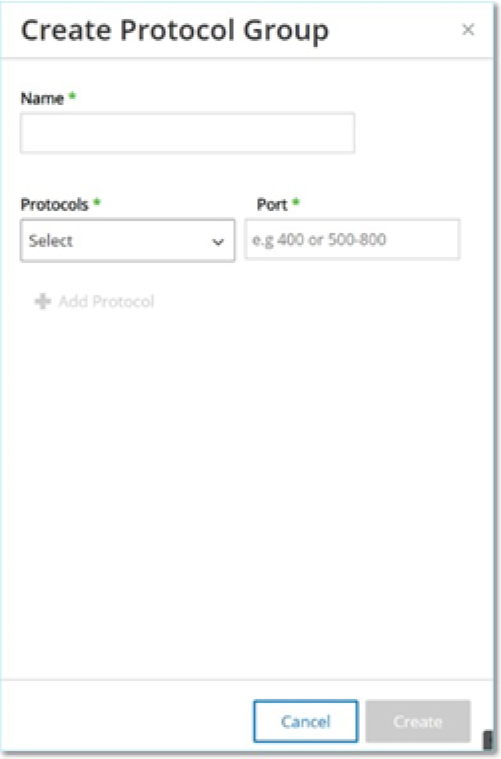
Create Protocol Groups

You can create custom Protocol Groups used in the configuration of Policies. By grouping together similar Protocols, you enable creation of Policies that define which protocols are suspicious.

To create a Protocol Group:

1. Go to **Groups** > **Protocol Groups**.
2. Click **Create Protocol Group**.

   The **Create Protocol Group** appears.



Create Protocol Group

Name *

Protocols * Select

Port * e.g 400 or 500-800

3. In the **Name** box, type a name for the Group.

4. In the **Protocols** drop-down box, select a Protocol type.

5. If the selected Protocol is TCP or UDP, in the **Port** box, type a Port number or range of Ports.

   For other Protocol types, you do not have to enter any value in the **Port** box.

6. To add additional Protocols to the Group:

   a. Click **+ Add Protocol**.

      A new **Protocol Selection** box appears.

   b. Fill in the new **Protocol Selection** in the manner described in steps 4-5.

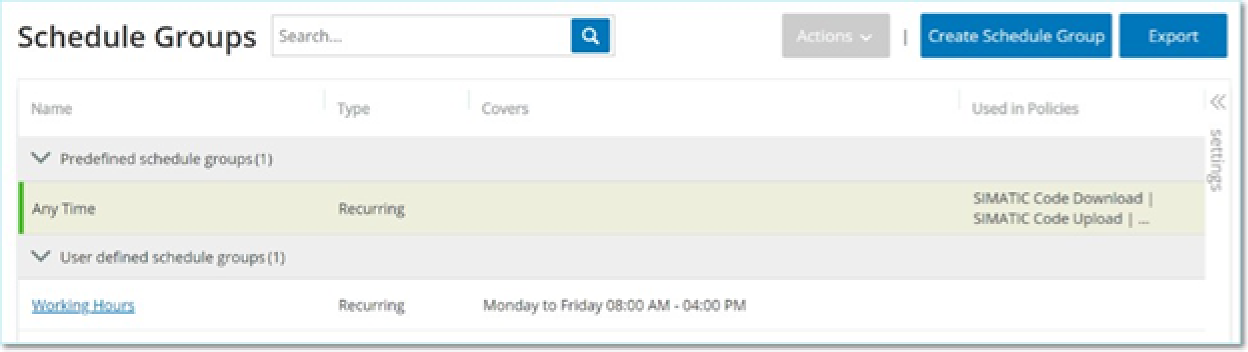
7. Click **Create**.

   OT Security creates the new Protocol Group and shows in the list of Protocol Groups. You can now use this Group when configuring Policies.

Schedule Group

A Schedule Group defines a time range or group of time ranges that has particular characteristics that make activities that happen during that time period noteworthy. For example, certain activities are expected to occur during work hours while other activities are expected to occur during down-time.

View Schedule Groups



Name	Type	Covers	Used in Policies
Predefined schedule groups (1)			
Any Time	Recurring		SIMATIC Code Download | SIMATIC Code Upload | ...
User defined schedule groups (1)			
Working Hours	Recurring	Monday to Friday 08:00 AM - 04:00 PM	

The **Schedule Groups** screen shows all Schedule Groups that are currently configured in the system. The **Predefined schedule groups** tab includes Groups that are built into the system. You cannot edit, duplicate, or delete these Groups. The **User-defined schedule groups** tab shows the custom groups you created. You can edit, duplicate, or delete these Groups.

The Schedule Groups table shows the following details:

Parameter	Description
Name	The name to identify the Group.
Type	The Group type. Options are: • **Function** — A predefined Schedule Group created to serve a particular function. • **Recurring** — A schedule that recurs on a daily or weekly basis. For example, a Work Hours schedule can be defined as Monday to Friday from 9 AM to 5 PM.

	- **Interval** — A schedule that occurs on a specific date or range of dates. For example, a Plant Renovation schedule can be defined by the period from June 1 to August 15.
Covers	A summary of the schedule settings. **Note**: If you are unable to view all members of the Group, then click **Actions** > **View** > **Members** tab.
Used in Policies	Shows the Policy ID of each Policy that uses this Schedule Group in its configuration. **Note**: To view additional details about the Policies in which this Group is used, click **Actions** > **View** > **Used in Policies** tab.

Create Schedule Groups

You can create custom Schedule Groups to be used in the configuration of Policies. Designate a time range or group of time ranges with shared characteristics to highlight the events that happen during that time period.

There are two types of Schedule Groups:

- **Recurring** — Schedules that recur on a weekly basis. For example, a Work Hours schedule can be defined as Monday to Friday from 9 AM to 5 PM.
- **Once** — Schedules that occur on a specific date or range of dates. For example, a Plant Renovation schedule could be defined by the period from June 1 to August 15. There are different procedures for creating each type of Schedule Group.

There are different procedures for creating each type of Schedule Group.

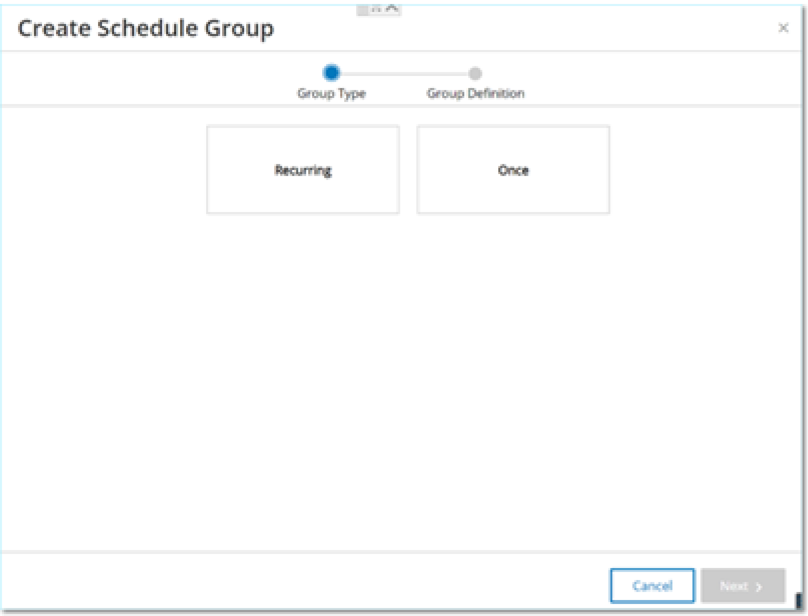
To create a Recurring Type Schedule Group:

1. Go to **Groups** > **Schedule Groups**.

   The **Schedule Groups** page appears.

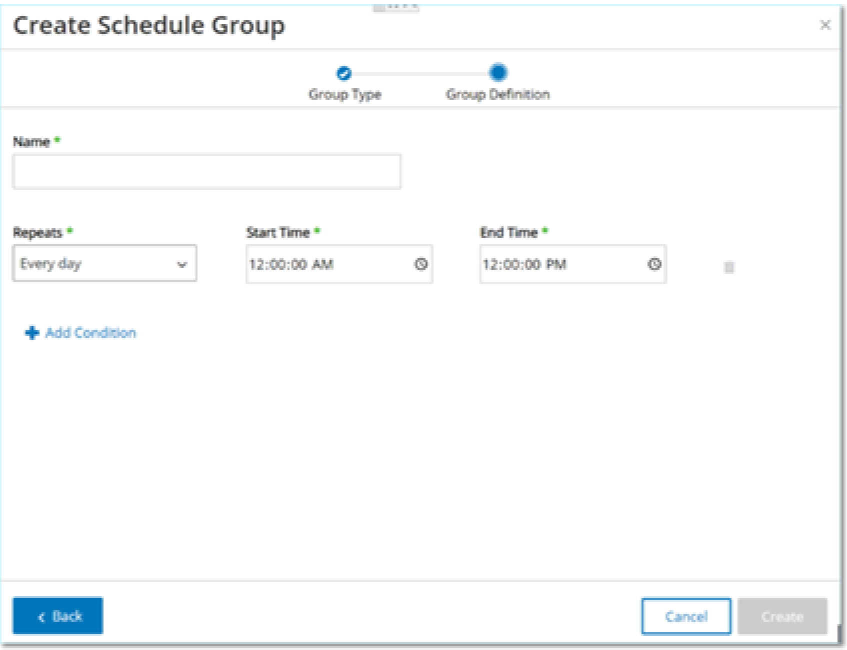
2. Click **Create Schedule Group**.

   The **Create Schedule Groups** panel appears.



3. Click **Recurring**.
4. Click **Next**.

   The parameters for defining a Recurring Schedule group appear.



Name *

Repeats * Every day

Start Time * 12:00:00 AM

End Time * 12:00:00 PM

5. In the **Name** box, type a name for the Group.

6. In the **Repeats** box, select which days of the week are included in the Schedule Group.

   Options are: Every day, Monday to Friday or a specific day of the week.

   > **Note**: If you want to include particular days of the week, for example Monday and Wednesday, then you need to add a separate condition for each day.

7. In the **Start Time** box, type the time of day (HH:MM:SS AM/PM) of the beginning of the time range included in the Schedule Group.

8. In the **End Time** box, type the time of day (HH:MM:SS AM/PM) of the end of the time range included in the Schedule Group.

9. To add additional Conditions (that is, additional time ranges) to the Schedule Group:

   a. Click **+ Add Condition**.

      A new row of Schedule selection parameters appears.

   b. Fill in the schedule fields as described above in step 5-7.

10. Click **Create**.

    OT Security creates the new Schedule Group and shows the list of Schedule Groups. You can now use this Group when configuring Policies.

To create a one-time Schedule Group:

1. Go to **Groups** > **Schedule Groups**.

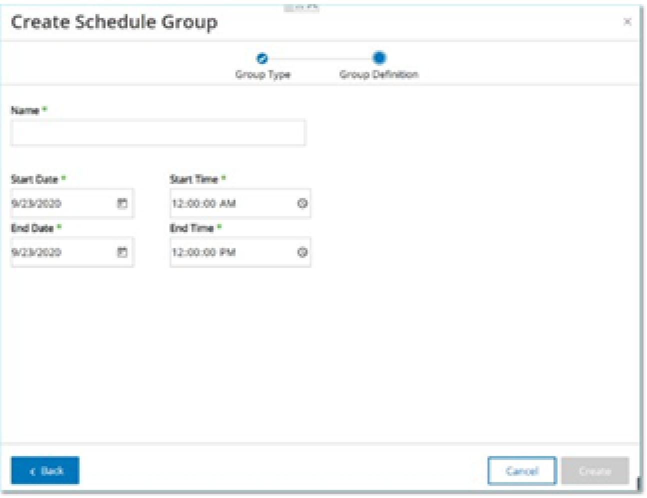
2. Click **Create Schedule Group**.

   The **Create Schedule Group** wizard appears.

3. Select **Time Range**.

4. Click **Next**.

   The parameters for defining a time range schedule group appear.



Create Schedule Group

Name *

Start Date * 9/23/2020

Start Time * 12:00:00 AM

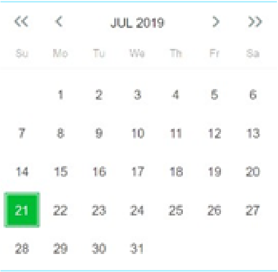
End Date * 9/23/2020

End Time * 12:00:00 PM

5. In the **Name** box, type a name for the Group.

6. In the **Start Date** box, click the calendar icon 📅.

   A calendar window opens.



JUL 2019

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

7. Select the date on which the Schedule Group begins. Default: the current date.

8. In the **Start Time** box, type the time of day (HH:MM:SS AM/PM) of the beginning of the time range included in the Schedule Group.

9. In the **End Date** box, click the calendar icon 📅.

   A calendar window opens.

10. Select the date on which the Schedule Group ends. (Default: the current date)

11. In the **End Time** box, type the time of day (HH:MM:SS AM/PM) of the end of the time range included in the Schedule Group.

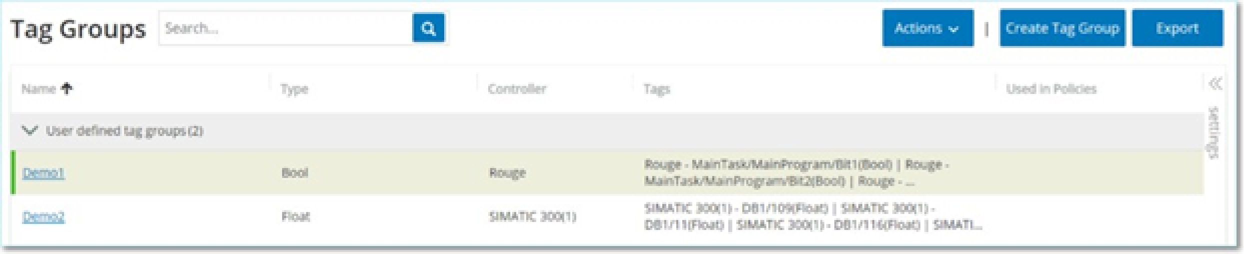
12. Click **Create**.

OT Security creates the new Schedule Group and shows it in the list of Schedule Groups. You can now use this Group when configuring Policies.

Tag Groups

Tags are parameters in controllers that contain specific operational data. Tag Groups are used as a Policy condition for **SCADA Events** policies. By grouping together tags that play similar roles, you can create Policies that detect suspicious changes to the specified parameter. For example, by grouping together Tags that control furnace temperature, you can create a Policy that detects temperature changes that can be harmful to the furnaces.

View Tag Groups



Name	Type	Controller	Tags	Used in Policies
User defined tag groups (2)				
Demo1	Bool	Rouge	Rouge - MainTask/MainProgram/Bit1(Bool) | Rouge - MainTask/MainProgram/Bit2(Bool) | Rouge - ...	
Demo2	Float	SIMATIC 300(1)	SIMATIC 300(1) - DB1/109(Float) | SIMATIC 300(1) - DB1/11(Float) | SIMATIC 300(1) - DB1/116(Float) | SIMATI...	

The **Tag Groups** screen shows all Tag Groups that are currently configured in the system.

The Tag Groups table shows the following details:

Parameter	Description
Name	The name to identify the Group.
Type	The data type of the Tag. Possible values are: Bool, Dint, Float, Int, Long, Short, Unknown (for Tags of a type that OT Security was unable to identify) or Any Type (which can include Tags of different Types).
Controller	The controller on which the Tag is being monitored.
Tags	Shows each Tag that is included in the Group as well as the name of the controller in which it is located. **Note**: If you are unable to view all Tags in this row, then click **Actions** > **View** > **Members** tab.
Used in Policies	Shows the Policy ID of each Policy that uses this Schedule Group in its configuration.

	Note: To view additional details about the Policies in which this Group is used, click **Actions** > **View** > **Used in Policies** tab.

You can View, Edit, Duplicate, or Delete an existing Group, see Actions on Groups.

Create Tag Groups

You can create custom Tag Groups for use in Policy configuration. By grouping together similar Tags, you can create Policies that apply to all Tags in the Group. Select the Tags that are of a similar type and give them a name that represents the common element of the Tags.

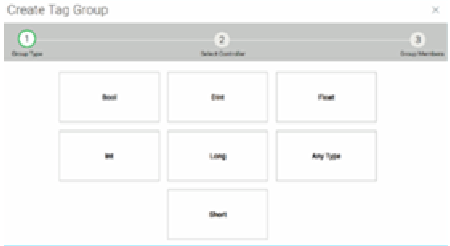
You can also create Groups that include Tags of different types by selecting the **Any Type** option. In this case, Policies that are applied to this Group can only detect changes to **Any Value** for the specified Tags but cannot be set to detect specific values.

You can edit, duplicate, or delete Tag Groups.

To create a new tag group:

1. Go to **Groups** > **Tag Groups**.
2. Click **Create Tag Group**.

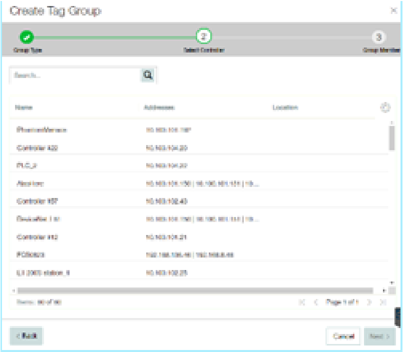
   The **Create Tag Group** panel appears.

3. Select a Tag type.

   Options are: Bool, Dint, Float, Int, Long, Short, or Any Type (which can include Tags of different Types).
4. Click **Next**.

   A list of controllers in your network appears.



Create Tag Group

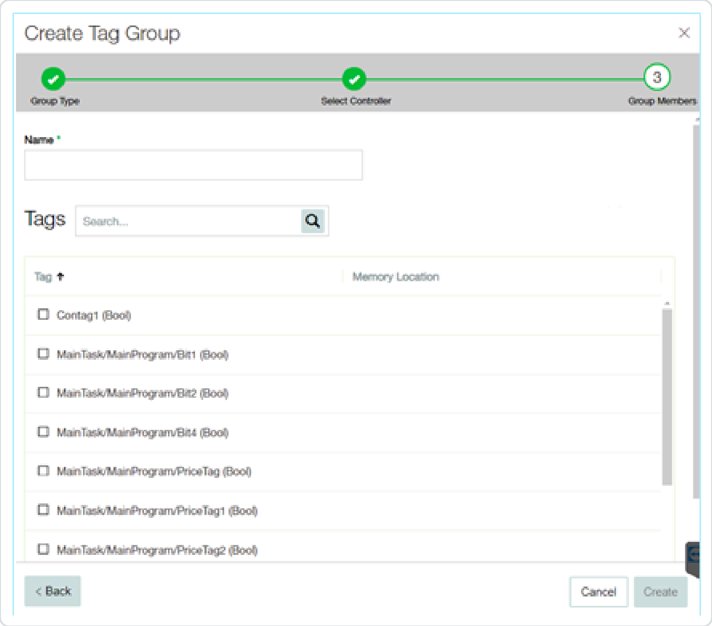
Name	Addresses	Location
[illegible]	10.100.101.197	
Controller 420	10.100.104.20	
PLC_2	10.100.104.20	
[illegible]	10.100.101.150 | 10.100.101.111 | 10...	
Controller 157	10.100.102.40	
[illegible]	10.100.101.150 | 10.100.101.111 | 10...	
Controller 412	10.100.101.21	
[illegible]	192.168.100.46 | 192.168.8.46	
LX 2005 station_8	10.100.102.25	

Items: 90 of 90 Page 1 of 1

5. Select a controller for which you want to include Tags in the Group.

6. Click **Next**.

   A list of Tags of the specified type on the specified controller appears.



Create Tag Group

- ☐ Contag1 (Bool)
- ☐ MainTask/MainProgram/Bit1 (Bool)
- ☐ MainTask/MainProgram/Bit2 (Bool)
- ☐ MainTask/MainProgram/Bit4 (Bool)
- ☐ MainTask/MainProgram/PriceTag (Bool)
- ☐ MainTask/MainProgram/PriceTag1 (Bool)
- ☐ MainTask/MainProgram/PriceTag2 (Bool)

7. In the **Name** box, type a name for the Group.

8. Select the check box next to each of the Tags that you want to include in the Group.

9. Click **Create**.

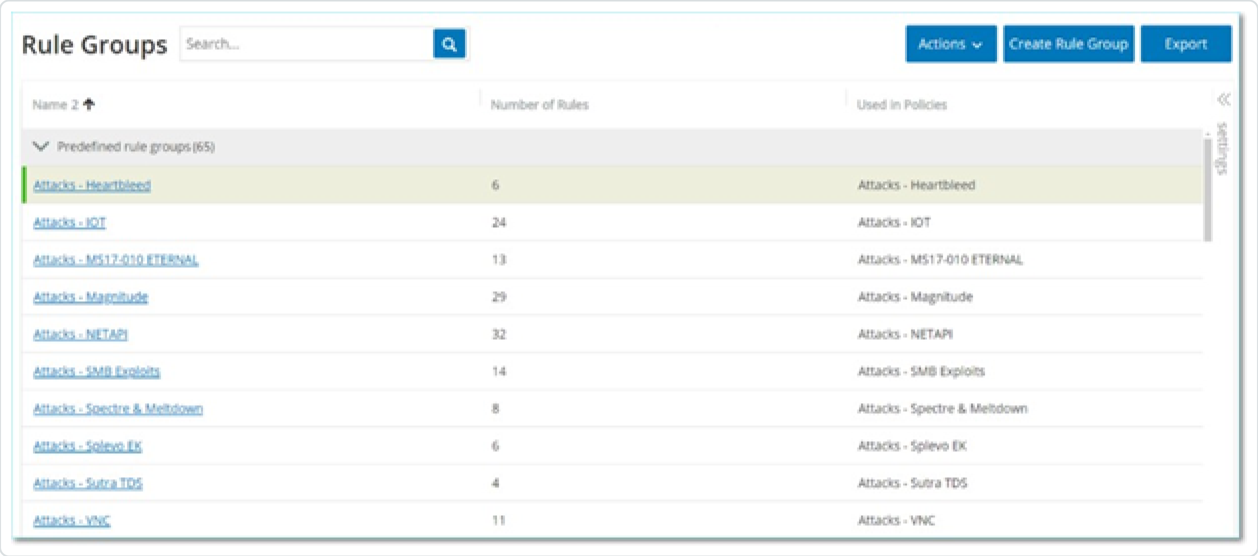
   OT Security creates the new Tag Group and shows in the list of Tag Groups. You can now use this Group when configuring SCADA Event Policies.

Rule Groups

Rule Groups comprise a group of related rules, identified by their Suricata Signature IDs (SIDs). These groups are used as a Policy condition for defining Intrusion Detection Policies.

OT Security provides a set of predefined groups of related vulnerabilities. In addition, you can select individual rules from our repository of vulnerabilities and create your own custom Rule Groups.

View Rule Groups



Name 2	Number of Rules	Used in Policies
Predefined rule groups (65)		
Attacks - Heartbleed	6	Attacks - Heartbleed
Attacks - IOT	24	Attacks - IOT
Attacks - MS17-010 ETERNAL	13	Attacks - MS17-010 ETERNAL
Attacks - Magnitude	29	Attacks - Magnitude
Attacks - NETAPI	32	Attacks - NETAPI
Attacks - SMB Exploits	14	Attacks - SMB Exploits
Attacks - Spectre & Meltdown	8	Attacks - Spectre & Meltdown
Attacks - Splevo EK	6	Attacks - Splevo EK
Attacks - Sutra TDS	4	Attacks - Sutra TDS
Attacks - VNC	11	Attacks - VNC

The **Rule Groups** screen shows all Rule Groups that are currently configured in the system. The Predefined tab includes Groups that are built into the system. You cannot edit, duplicate, or delete these groups. The **User-defined** tab shows the custom Groups created by the user. You can edit, duplicate, or delete these groups.

The Rule Groups table shows the following details:

Parameter	Description
Name	The name used to identify the Group.
Number of Rules	The number of rules (SIDs) that comprise this Rule Group.

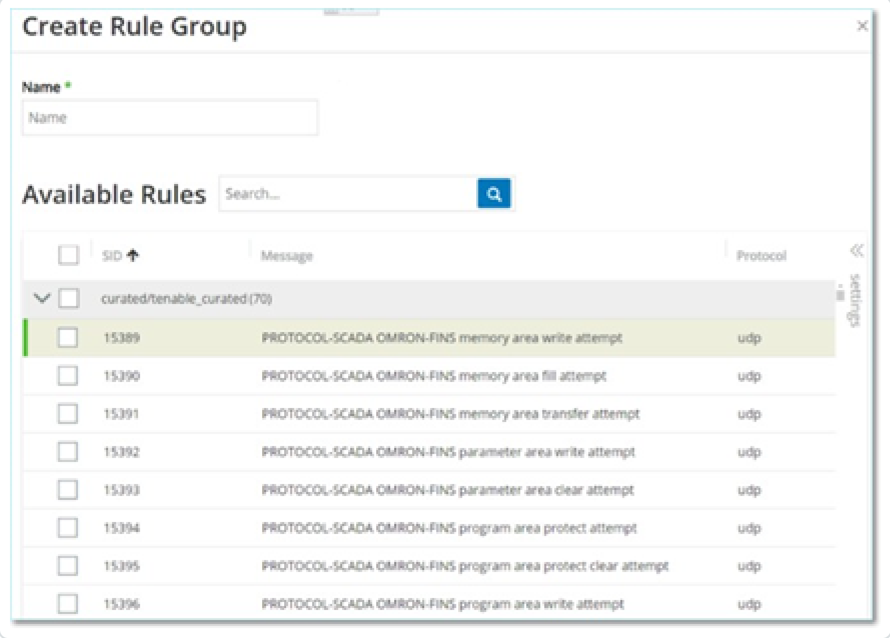
Used in Policies	Shows the Policy ID of each Policy that uses this Rule Group in its configuration. **Note**: To view additional details about the Policies in which this Group is used, click **Actions** > **View** > **Used in Policies** tab.

Create Rule Groups

To create a new Rule Group:

1. Go to **Groups** > **Rule Groups**.
2. Click **Create Rule Group**.

   The **Create Rule Group** panel appears.



Create Rule Group

Name *

Name

Available Rules

Search...

□	SID	Message	Protocol
□	curated/tenable_curated (70)		
□	15389	PROTOCOL-SCADA OMRON-FINS memory area write attempt	udp
□	15390	PROTOCOL-SCADA OMRON-FINS memory area fill attempt	udp
□	15391	PROTOCOL-SCADA OMRON-FINS memory area transfer attempt	udp
□	15392	PROTOCOL-SCADA OMRON-FINS parameter area write attempt	udp
□	15393	PROTOCOL-SCADA OMRON-FINS parameter area clear attempt	udp
□	15394	PROTOCOL-SCADA OMRON-FINS program area protect attempt	udp
□	15395	PROTOCOL-SCADA OMRON-FINS program area protect clear attempt	udp
□	15396	PROTOCOL-SCADA OMRON-FINS program area write attempt	udp

3. In the **Name** box, type a name for the group.
4. In the **Available Rules** section, select the check box next to each of the rules you want to include in the group.

   > **Note**: Use the search box to find the desired rules.

5. Click **Create**.

OT Security creates the new Rule Group and shows it in the list of Rule Groups. You can now use this Group when configuring Intrusion Detection Policies.

Actions on Groups

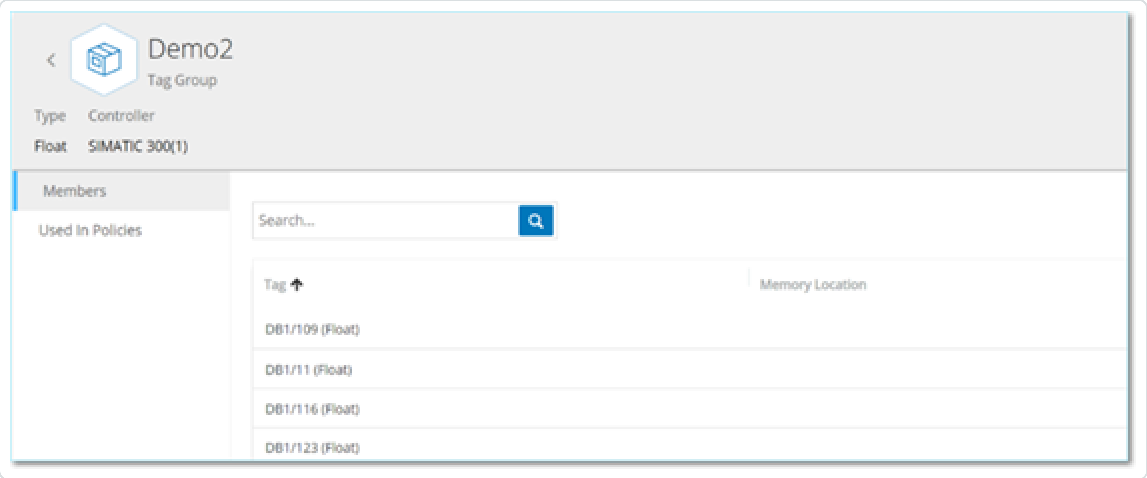
When you select a Group on any of the Group screens, you can do the following from the **Actions** menu on the top of the screen:

- **View** — Shows details about the selected Group, such as which entities are included in the group and which Policies use the Group as a policy condition. See View Group Details
- **Edit** — Edit details of the Group. See Edit a Group
- **Duplicate** — Create a new Group with a similar configuration to the specified Group. See Duplicate a Group
- **Delete** — Delete the Group from the system. See Delete a Group

> **Note**: You cannot edit or delete predefined Groups. Some predefined Groups also cannot be duplicated. You can also access the **Actions** menu by right-clicking a Group.

View Group Details

When you select a group and click **Actions** > **View** the Group Details screen appears for the selected group.



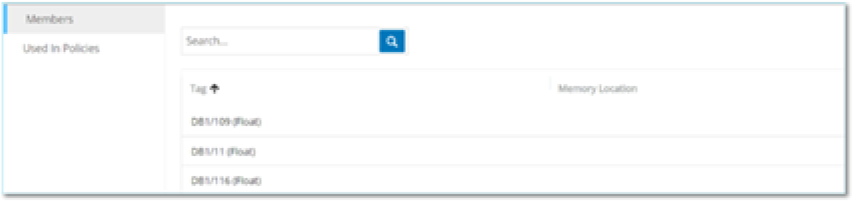
Demo2
Tag Group

Type	Controller
Float	SIMATIC 300(1)

Tag	Memory Location
DB1/109 (Float)	
DB1/11 (Float)	
DB1/116 (Float)	
DB1/123 (Float)	

The **Group Details** screen has a header bar that shows the name and type of the Group. It has two tabs:

- **Members** — Shows a list of all members of the Group.



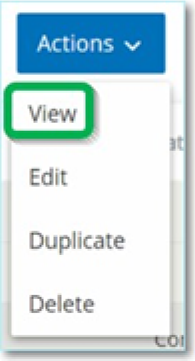
Tag	Memory Location
DB1/109 (Float)	
DB1/11 (Float)	
DB1/116 (Float)	

- **Used in Policies** — Shows a listing for each Policy for which the specified Group is used as a policy condition. The Policy listing includes a toggle switch for turning the Policy On/Off. For more information, see View Policies.

To view details of a Group:

1. In **Groups**, select the required type of Group.
2. Do one of the following:
   - Click **Actions**.
   - Right-click the required group.

     A menu appears.
3. Select **View**.



   The Group details screen appears.

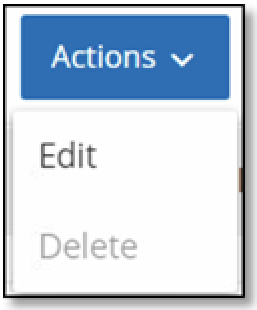
Edit a Group

You can edit the details of an existing Group.

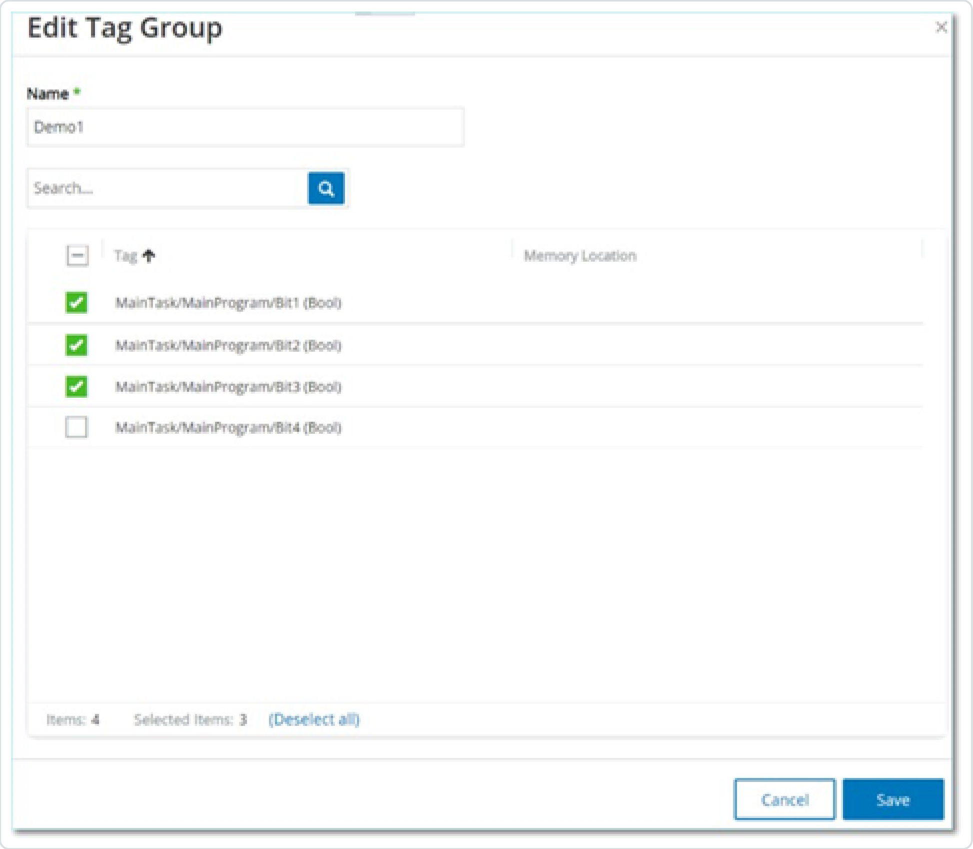
To edit details of a Group:

1. Under **Groups**, select the desired type of Group.
2. Do one of the following:
   - Click **Actions**.
   - Right-click the required group.

   A menu appears.
3. Select **Edit**.



4. The **Edit Group** window appears, showing the relevant parameters for the specified Group type.



Edit Tag Group

Name *

Demo1

⊟	Tag ↑	Memory Location
☑	MainTask/MainProgram/Bit1 (Bool)	
☑	MainTask/MainProgram/Bit2 (Bool)	
☑	MainTask/MainProgram/Bit3 (Bool)	
□	MainTask/MainProgram/Bit4 (Bool)	

Items: 4 Selected Items: 3 (Deselect all)

5. Modify as needed.

6. Click **Save**.

   OT Security saves the group with the new settings.

Duplicate a Group

To create a new Group with similar settings to an existing Group, you can duplicate the existing Group. When you duplicate a Group, the new Group is saved under a new name, in addition to the original Group.

To duplicate a Group:

1. Under **Groups**, select the desired type of Group.

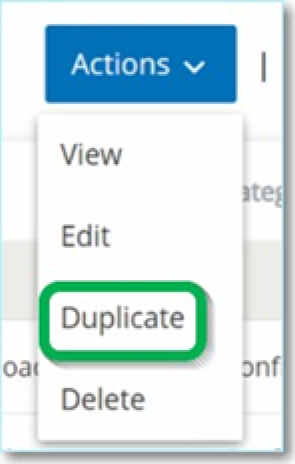
2. Select the existing Group on which you want to base the new Group.

3. Do one of the following:

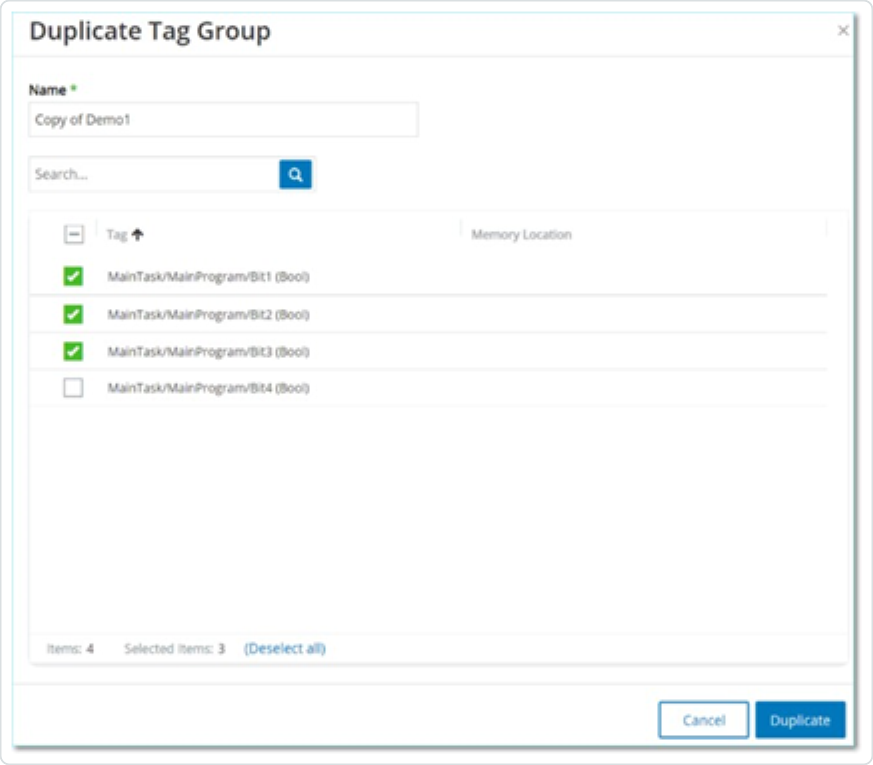
- Click **Actions**.
- Right-click the required group.

  A menu appears.

4. Select **Duplicate**.



The **Duplicate Group** window appears, showing the relevant parameters for the specified Group type.



Duplicate Tag Group

Name *

Copy of Demo1

⊟	Tag 🡑	Memory Location
☑	MainTask/MainProgram/Bit1 (Bool)	
☑	MainTask/MainProgram/Bit2 (Bool)	
☑	MainTask/MainProgram/Bit3 (Bool)	
□	MainTask/MainProgram/Bit4 (Bool)	

Items: 4 Selected Items: 3 (Deselect all)

5. In the **Name** box, type a name for the new group. By default, the new group is named 'Copy of' the original Group name.

6. Make the desired changes to the group settings.

7. Click **Duplicate**.

   OT Security saves the new Group with the new settings, in addition to the existing Group.

Delete a Group

You can delete user-defined Groups but not predefined Groups. You cannot delete a user-defined policy, if it is being used as a policy condition for one or more Policies.

To delete a Group:

1. Under **Groups**, select the required type of Group.

2. Select the Group that you want to delete.

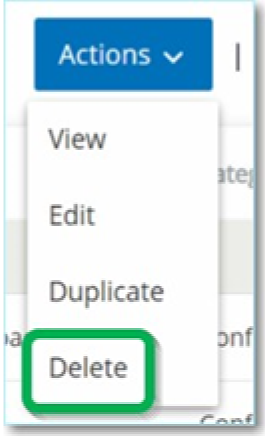
3. Do one of the following:

   - Click **Actions**.

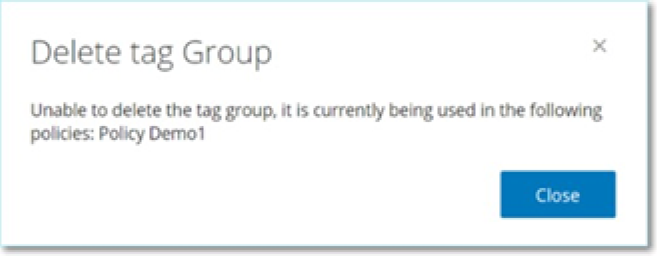
   - Right-click the required group.

     A menu appears.

4. Select **Delete**.

   A confirmation window appears.



Delete tag Group

Unable to delete the tag group, it is currently being used in the following policies: Policy Demo1

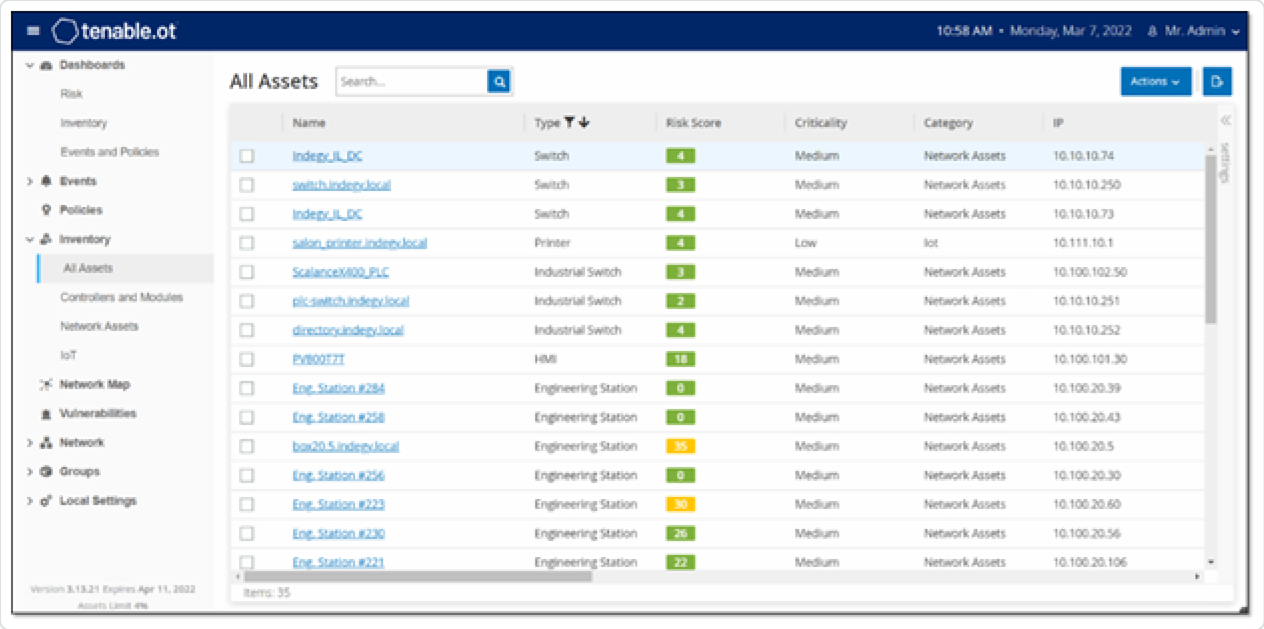
5. Click **Delete**.

   OT Security permanently deletes the group from the system.

Inventory

OT Security's Automated Asset Discovery, Classification, and Management provides an accurate, up-to-date asset inventory by continuously tracking all changes to devices. This simplifies sustaining of operational continuity, reliability, and safety. It also plays a key role in planning maintenance projects, prioritizing upgrades, patch deployments, incident response, and mitigation efforts.

Viewing Assets



	Name	Type	Risk Score	Criticality	Category	IP
□	Indegy_IL_DC	Switch	4	Medium	Network Assets	10.10.10.74
□	switch.indegy.local	Switch	3	Medium	Network Assets	10.10.10.250
□	Indegy_IL_DC	Switch	4	Medium	Network Assets	10.10.10.73
□	salon_printer.indegy.local	Printer	4	Low	Iot	10.111.10.1
□	ScalanceX400_PLC	Industrial Switch	3	Medium	Network Assets	10.100.102.50
□	plc-switch.indegy.local	Industrial Switch	2	Medium	Network Assets	10.10.10.251
□	directory.indegy.local	Industrial Switch	4	Medium	Network Assets	10.10.10.252
□	PV800T7T	HMI	18	Medium	Network Assets	10.100.101.30
□	Eng. Station #284	Engineering Station	0	Medium	Network Assets	10.100.20.39
□	Eng. Station #258	Engineering Station	0	Medium	Network Assets	10.100.20.43
□	box20.5.indegy.local	Engineering Station	35	Medium	Network Assets	10.100.20.5
□	Eng. Station #256	Engineering Station	0	Medium	Network Assets	10.100.20.30
□	Eng. Station #223	Engineering Station	30	Medium	Network Assets	10.100.20.60
□	Eng. Station #230	Engineering Station	26	Medium	Network Assets	10.100.20.56
□	Eng. Station #221	Engineering Station	22	Medium	Network Assets	10.100.20.106

Items: 35

All of the assets in the network are shown on the Inventory screens. Detailed data about each asset is shown, enabling comprehensive asset management as well as monitoring of the status of each asset and its related Events. The data shown in the Inventory screens is gathered using the OT Security Network Detection and Active Query capabilities. The All screen shows data for all types of assets. In addition, specific subsets of the assets are shown on separate screens for each of the following asset types: **Controllers and Modules**, **Network Assets**, and **IoT**.

> **Note**: The Network Assets screen includes all types of assets that aren't included in the Controllers and Modules or IoT screens.

For each of the asset screens (All, Controllers and Modules, Network Assets and IoT), you can customize the display settings by adjusting which columns are displayed and where each column is positioned. You can also sort and filter the Asset lists as well as perform a search. For an explanation of the customization features, see Management Console User Interface Elements.

The following table describes the parameters shown on the Inventory screens.

Parameters marked with an "*" are only shown on the Controllers screen.

Parameter	Description

Name	The name of the asset in the network. Click the name of the asset to view the Asset Details screen for that asset (See Inventory.)
IP	The IP address of the asset. **Note**: An asset may have multiple IP addresses. **Note**: IP addresses labeled as Direct are ones with which Tenable has established a direct connection. If there is no label, it means Tenable has discovered the IP without direct communication. **Note**: Assets can be filtered by IP range. For more on filtering, see Management Console User Interface Elements.
MAC	The MAC address of the asset.
Network Segment	The Network Segment that the IP/s of this asset are assigned to.
Type	The type of asset, Controller, I/O, or Communication, etc. see Asset Types.
Backplane*	The backplane unit that the asset is connected to. Additional details about the backplane configuration are shown in the Asset Details screen.
Slot*	For assets that are on backplanes, shows the number of the slot to which the asset is attached.
Vendor	The asset vendor.
Family*	The family name of the product as defined by the asset vendor.
Firmware	The firmware version currently installed on the asset.
Location	The location of the asset as input by the user in the OT Security asset details. See Inventory.
Last Seen	The time at which the device was last seen by OT Security. This is the last time that the device was connected to the network or performed an activity.
OS	The OS running on the asset.
Model Name	The model name of the asset.

State*	The device state. Possible values: • Backup – the controller is running as a backup to a primary controller. • Fault – the controller is in fault mode. • NoConfig – no configuration has been set for the controller. • Running – the controller is running. • Stopped – the controller is not running. • Unknown – the state is unknown.
Description	A brief description of the asset, as configured by the user in the OT Security asset details. See Inventory.
Risk	A measure of the degree of risk related to this asset on a scale from 0 (no risk) to 100 (extremely high risk). For an explanation of how the Risk score is calculated, see Risk Assessment.
Criticality	A measure of the importance of this asset to the proper functioning of the system. A value is assigned automatically to each asset based on the asset type. You can manually adjust the value.
Purdue Level	The Purdue level of the asset (0=Physical process, 1=Intelligent devices, 2=Control systems, 3=Manufacturing operations systems, 4=Business logistics systems).
Custom Field	You can create custom fields to tag your assets with relevant info. The custom field can be a link to an external resource.

Asset Types

The following table describes the various types of assets identified by OT Security. It also shows the icon by which each asset type is represented in the OT Security Management Console (for example on the Network Map screen).

Category	Default Criticality Level / Purdue Level	Description	Sub-Types	
Controllers	High / 1	An industrial computer control system that continuously monitors the state of input devices and makes decisions based upon a custom program to control the state of output devices. This category includes all types of controllers and their related components.		Controller
				PLC
				DCS
				IED
				RTU
				BMSController
				Robot
				Communication Module
				I/O Module
				CNC

			⚡	PowerSupply
				BackplaneModule
Field Devices	High / 1	An industrial device (for example sensor, actuator, electric motor) that uses industrial protocols to send information to ICS systems.		FieldDevice
				PowerMeter
				RemoteI/O
				Relay
				Inverter
				IndustrialSensor
				Drive
				Actuator
OT Devices	Medium / 2	This category		OTDevice

		includes all types of OT devices.		
				IndustrialRouter
				IndustrialSwitch
				IndustrialGateway
				Industrial NetworkDevice
				IndustrialPrinter
OT Servers	Medium / 2	A computer/device that is used to access industrial data. This category includes all types of OT servers and their related components.		OTServer
				Historian
				HMI
				DataLogger

Network Devices	Medium / 3	A networking device (for example a switch or a router). This category includes all types of network devices and their related components.		NetworkDevice
				Router
				Switch
				Serial-EthernetBridge
				Gateway
				Hub
				Wireless AccessPoint
				Firewall

				Converter
				Repeater
				Radio
Workstations	Low / 3	A computer that is connected to the network and used to control the PLCs. This category includes all types of workstations and their related components.		Workstation
				OT Workstation
				EngineeringStation
				VirtualWorkstation
Servers	Low / 3	This category includes various types of IT servers.		Server

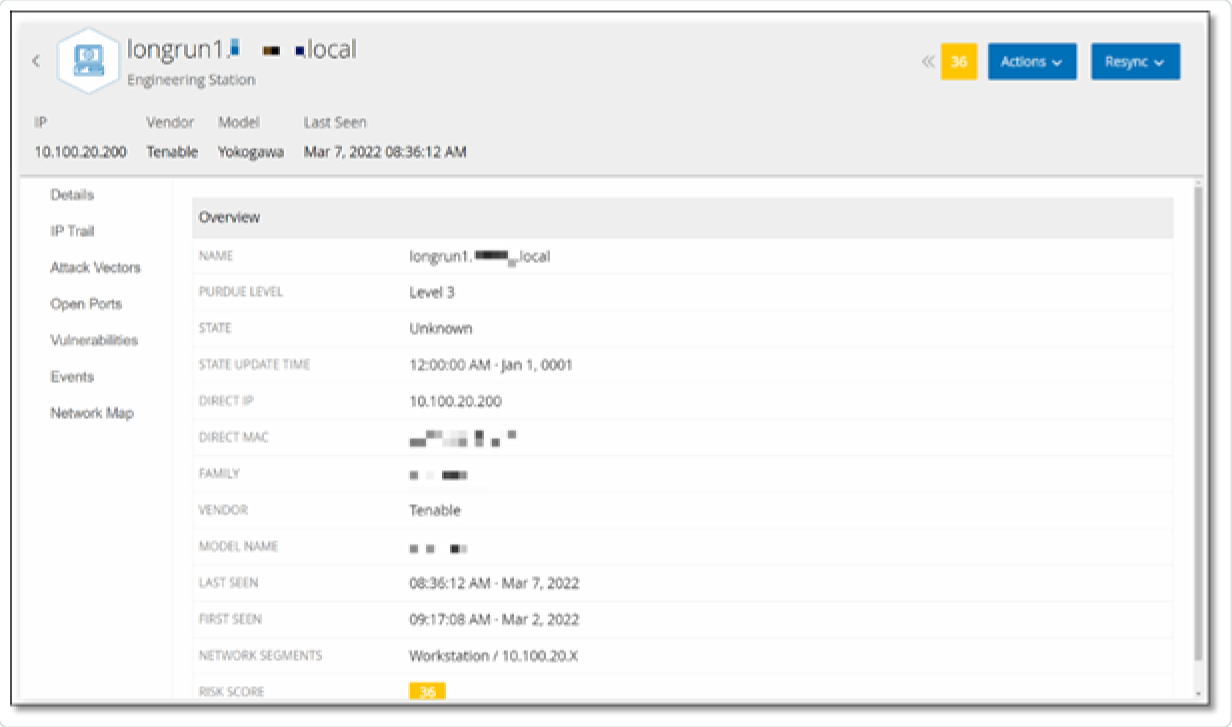
			🖥	FileServer
			🖥	WebServer
			🖥	VirtualServer
			🖥	SecurityAppliance
			🖥	TenableICP
			🖥	TenableEM
			((o))	TenableSensor
			🖥	Domain Controller
			☁	IoT
IoTs	Low / 3	This category includes various		Camera

		type of interrelated devices.		
				Panel
				Projector
				VOIPDevice
				3DPrinter
				Printer
				UPS
				IP Phone
				SmartSensor
				BarcodeScanner

			🔑	Access ControlSystem
			💡	LightingControl
			🌡	HVACModule
			🏠	SmartHub
			📺	SmartTV
			✱	MedicalDevice
			▯	Tablet
			📱	MobileDevice
			🛢	StorageDevice
Endpoints	Low / 3	An unidentified IP address in the network.	▭	Endpoint

View Asset Details

The **Asset Details** page shows comprehensive details about all data that OT Security discovers for a selected asset. The details appear in the Header bar as well as in a series of tabs and subsections. Some tabs and subsections are relevant only for specific Asset Types.



longrun1.[redacted].local
Engineering Station

IP	Vendor	Model	Last Seen
10.100.20.200	Tenable	Yokogawa	Mar 7, 2022 08:36:12 AM

Overview

NAME	longrun1.[redacted].local
PURDUE LEVEL	Level 3
STATE	Unknown
STATE UPDATE TIME	12:00:00 AM · Jan 1, 0001
DIRECT IP	10.100.20.200
DIRECT MAC	[redacted]
FAMILY	[redacted]
VENDOR	Tenable
MODEL NAME	[redacted]
LAST SEEN	08:36:12 AM · Mar 7, 2022
FIRST SEEN	09:17:08 AM · Mar 2, 2022
NETWORK SEGMENTS	Workstation / 10.100.20.X
RISK SCORE	36

To access the **Asset Details** page for a specific asset:

1. Do one of the following:

   - Click the asset name on any of these pages where the asset name appears as a link: **Inventory**, **Events**, or **Network**.

   - In the **Inventory** page, click **Actions** > **View**.

The following elements are included in the **Asset Details** window (for relevant asset types):

- **Header Pane** – shows an overview of essential info about the asset and its current state. It also contains an Actions menu that enables you to edit the listing for that asset.

- **Details** – shows detailed information divided into subsection with specific data that is relevant to various asset types.

- **Code Revisions** (for controllers only) — shows information about current as well as previous code revisions as discovered by the OT Security 'snapshot' function. This includes details of all the specific changes that were introduced to the code, that is the sections (code blocks/rungs) that were added, deleted, or changed.

- **IP Trail** — shows all current and historical IPs that are related to the asset.

- **Attack Vectors** — shows vulnerable attack vectors, that is the routes that an attacker can use to gain access to this asset. You can generate an attack vector automatically, to show the most critical attack vector or you can manually generate attack vectors from specific assets.

- **Open Ports** — shows info about open ports on the asset.

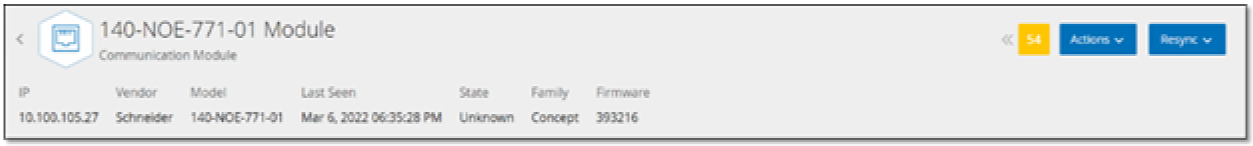
- **Vulnerabilities** — shows the vulnerabilities the system identified for the selected asset, such as obsolete Windows operating systems, usage of vulnerable protocols, and open communications ports which are known to be risky or non-essential for specific types of devices, see Vulnerabilities.

- **Events** — a list of Events in the network involving the asset.

- **Network Map** — shows a graphic visualization of the network connections of the asset.

- **Device Ports** (for network switches) — shows info about ports on the network switch.

Header Pane



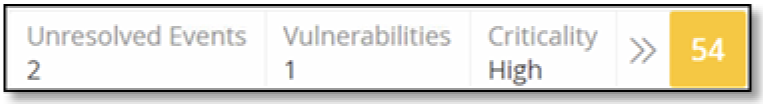
140-NOE-771-01 Module

Communication Module

IP	Vendor	Model	Last Seen	State	Family	Firmware
10.100.105.27	Schneider	140-NOE-771-01	Mar 6, 2022 06:35:28 PM	Unknown	Concept	393216

The Header Pane shows an overview of the current state of the asset. The display includes the following elements:

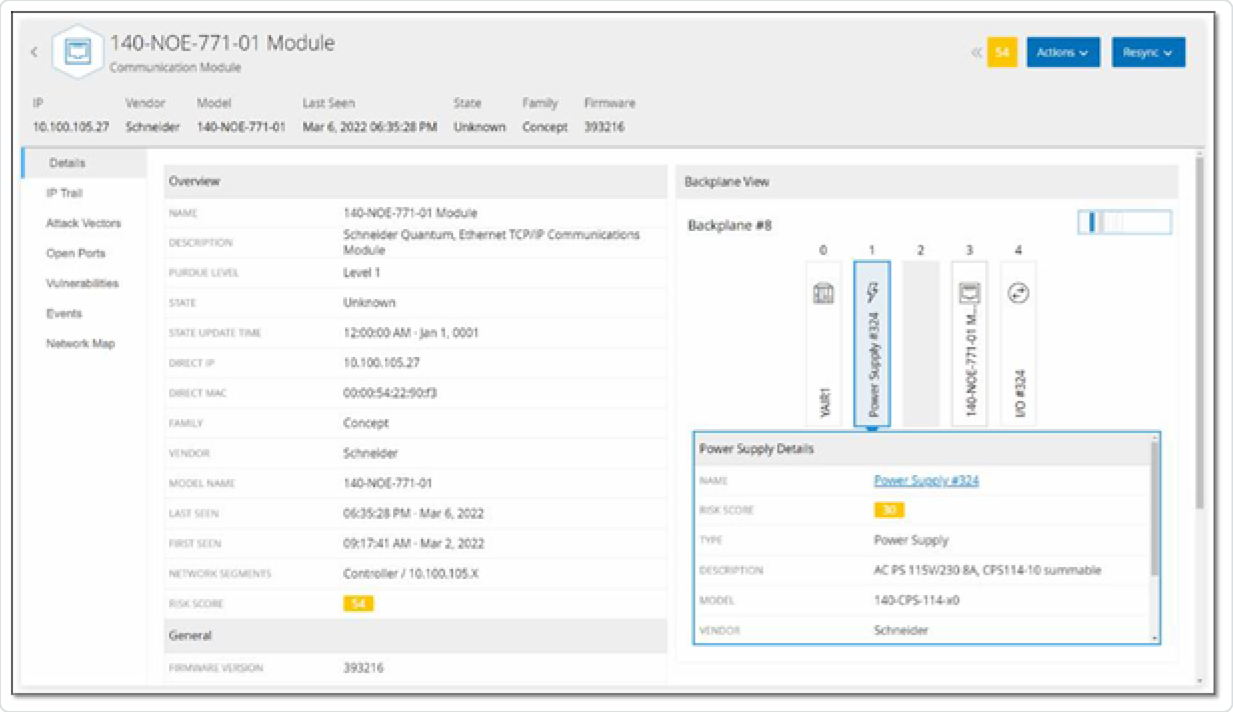
- **Name** – the name of the asset.
- **Back** (link) – sends you back to the screen from which you accessed this asset screen.
- **Asset Type** – shows icon and name of the asset type.
- **Asset Overview** – shows essential info about the asset, including IP/s, Vendor, Family, Model, Firmware, and Last Seen (date and time).
- **Risk Score Widget** – shows the Risk score for the asset. The Risk score is an assessment (from 1 to 100) of the degree of threat posed to the asset. For an explanation of how the value is determined, see Risk Assessment. Click on the Risk Score indicator to show an expanded widget with a breakdown of the factors that contribute to assessing the Risk level (Unresolved Events, Vulnerabilities, and Criticality). Some of the elements are a link to the relevant screen that shows details about that element.

Unresolved Events	Vulnerabilities	Criticality
2	1	High

- **Actions Menu** – Allows you to edit the asset details or run a Tenable Nessus scan.
- **Resync Button** – click on this button to manually run one or more of the queries that are available for this asset. See Header Pane.

Details Tab



140-NOE-771-01 Module

Communication Module

IP	Vendor	Model	Last Seen	State	Family	Firmware
10.100.105.27	Schneider	140-NOE-771-01	Mar 6, 2022 06:35:28 PM	Unknown	Concept	393216

Overview

NAME	140-NOE-771-01 Module
DESCRIPTION	Schneider Quantum, Ethernet TCP/IP Communications Module
PURDUE LEVEL	Level 1
STATE	Unknown
STATE UPDATE TIME	12:00:00 AM - Jan 1, 0001
DIRECT IP	10.100.105.27
DIRECT MAC	00:00:54:22:90:f3
FAMILY	Concept
VENDOR	Schneider
MODEL NAME	140-NOE-771-01
LAST SEEN	06:35:28 PM - Mar 6, 2022
FIRST SEEN	09:17:41 AM - Mar 2, 2022
NETWORK SEGMENTS	Controller / 10.100.105.X
RISK SCORE	54

General

FIRMWARE VERSION	393216

Backplane View

Backplane #8

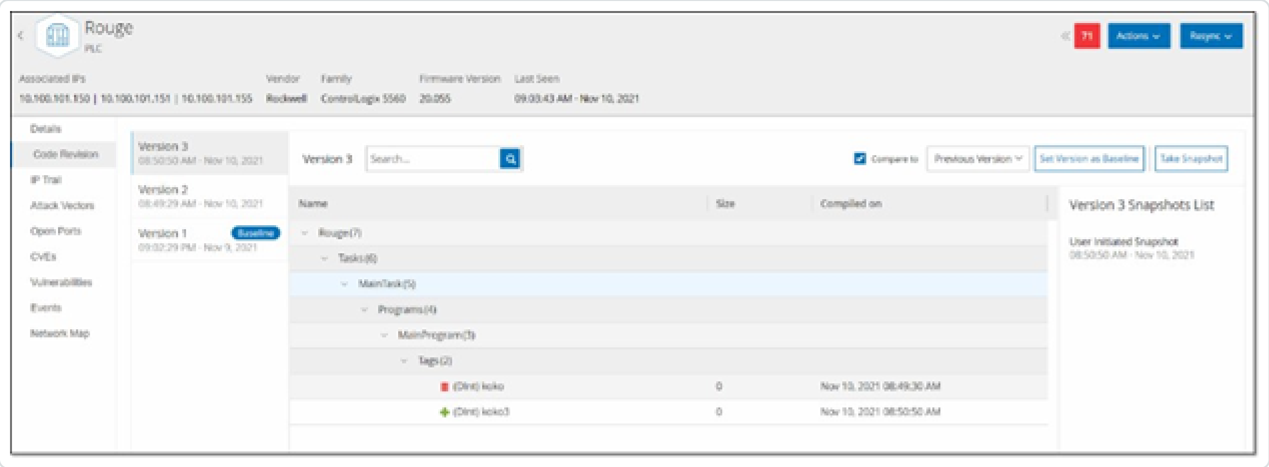
Power Supply Details

NAME	Power Supply #324
RISK SCORE	30
TYPE	Power Supply
DESCRIPTION	AC PS 115V/230 8A, CPS114-10 summable
MODEL	140-CPS-114-x0
VENDOR	Schneider

The **Details** tab shows additional details about the selected asset. The information is divided into sections showing various types of system and configuration data for the specified asset. Only sections that are relevant for the specified asset are shown. The following is a list of all of the section categories that may be shown for various types of assets: Overview, General, Project, Memory, Ethernet, Profinet, OS, System, Hardware, Devices & Drives, USB Devices, Installed Software, IEC-61850, and Interface Status.

For assets that are connected to a backplane, there is also a Backplane View section, which shows a graphic representation of the backplane configuration, including the slot position of each connected device. Select a device to show its details in the lower pane.

Code Revisions



Associated IPs	Vendor	Family	Firmware Version	Last Seen
10.100.101.150 | 10.100.101.151 | 10.100.101.155	Rockwell	ControlLogix 5560	20.055	09:03:43 AM · Nov 10, 2021

Version 3
08:50:50 AM · Nov 10, 2021

Version 2
08:49:29 AM · Nov 10, 2021

Version 1
09:02:29 PM · Nov 9, 2021

Version 3

Name	Size	Compiled on
Rouge(7)		
Tasks(6)		
MainTask(5)		
Programs(4)		
MainProgram(3)		
Tags(2)		
🟥 (Dint) koko	0	Nov 10, 2021 08:49:30 AM
+ (Dint) koko3	0	Nov 10, 2021 08:50:50 AM

Version 3 Snapshots List

User Initiated Snapshot
08:50:50 AM · Nov 10, 2021

The Code Revision tab (for Controllers only) shows the various versions of the controller's code that were captured by OT Security “snapshots”. Each "snapshot" version includes information about the code revision at the time that the "snapshot" was taken, including details about specific sections (code blocks/rungs) and tags. Whenever a "snapshot" isn't identical to the previous "snapshot" of that controller, a new Version of the code revision is created. You can compare between versions to see what changes were made to the controller code.

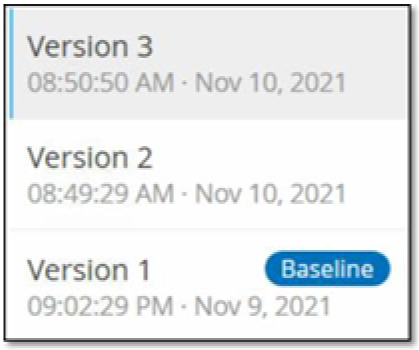
A snapshot can be triggered in the following ways:

- **Routine** – snapshots are taken at regular intervals, as set by the user in the system settings screen.
- **Activity Triggered** – the system triggers a snapshot when a particular code activity is detected (for example a code download).
- **User Initiated** – the user can manually trigger a snapshot by clicking the Take Snapshot button for a specific asset.

You can configure a “Snapshot Mismatch” Policy to detect additions, deletions, or changes made to a controller’s code, see Configuration Event — Controller Activities Event Types.

The following sections describe the various sections of the Code Revision display as well as how to compare different "snapshot" versions.

Version Selection Pane



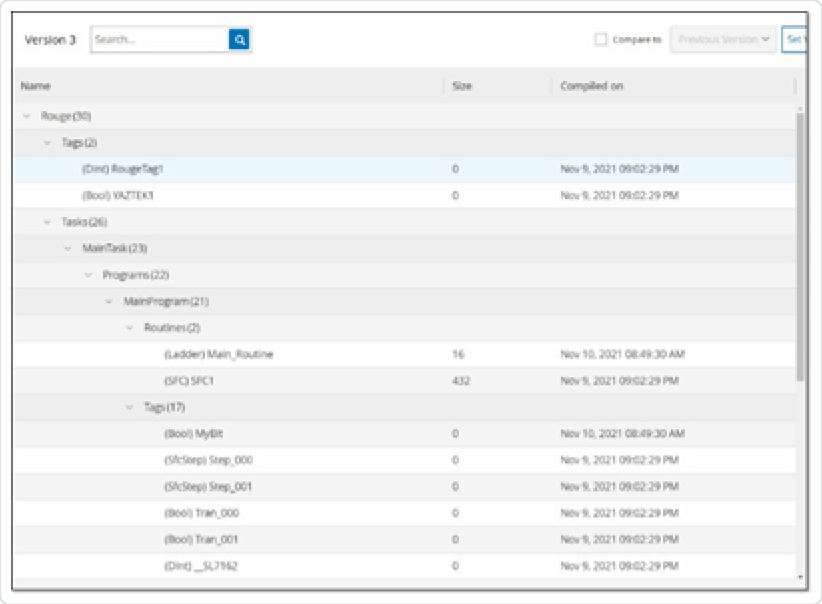
Version 3
08:50:50 AM · Nov 10, 2021

Version 2
08:49:29 AM · Nov 10, 2021

Version 1 Baseline
09:02:29 PM · Nov 9, 2021

This pane shows a list of all available versions of the code revision for this controller. For each version the Start time that the version is known to have been in place is displayed. A new version is created each time that a change is detected from the previous "snapshot". The "Baseline" tag indicates which version is currently set as the baseline version for the purpose of comparison. Select a version to show its code revisions in the Snapshot Details pane.

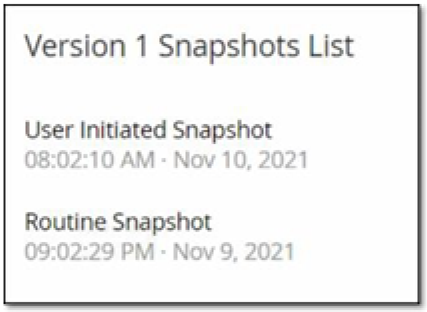
Snapshot Details Pane



Name	Size	Compiled on
Rouge (30)		
Tags (2)		
(Dint) RougeTag1	0	Nov 9, 2021 09:02:29 PM
(Bool) YAZTEK1	0	Nov 9, 2021 09:02:29 PM
Tasks (26)		
MainTask (23)		
Programs (22)		
MainProgram (21)		
Routines (2)		
(Ladder) Main_Routine	16	Nov 10, 2021 08:49:30 AM
(SFC) SFC1	432	Nov 9, 2021 09:02:29 PM
Tags (17)		
(Bool) MyBit	0	Nov 10, 2021 08:49:30 AM
(SfcStep) Step_000	0	Nov 9, 2021 09:02:29 PM
(SfcStep) Step_001	0	Nov 9, 2021 09:02:29 PM
(Bool) Tran_000	0	Nov 9, 2021 09:02:29 PM
(Bool) Tran_001	0	Nov 9, 2021 09:02:29 PM
(Dint) __SL7162	0	Nov 9, 2021 09:02:29 PM

The details pane shows detailed information about the specific code blocks, rungs and tags for the selected snapshot version. The code elements are displayed in a tree structure with arrows for expanding/minimizing the details shown. For each element, the name, size, and date compiled are shown. You can compare the selected version to the previous version or to the "baseline" version to see what changes were made, see Comparing Snapshot Versions.

Version History Pane



Version 1 Snapshots List

User Initiated Snapshot
08:02:10 AM · Nov 10, 2021

Routine Snapshot
09:02:29 PM · Nov 9, 2021

This pane shows details about the "snapshot" that captured the selected version, including the method by which it was initiated as well as the date and time that it was captured.

If no changes were made between snapshots, then several snapshots are grouped together as a single version. All the identical snapshots are listed in the Snapshot History pane for that version.

Comparing Snapshot Versions

You can compare a Snapshot version either to the previous version or to the baseline version. Once a comparison has been run, the Snapshot Details pane shows the changes that were made to the controller's code between the two snapshots.

Changes are marked in the following manner:

➕ Added – new code that was added in the selected version.

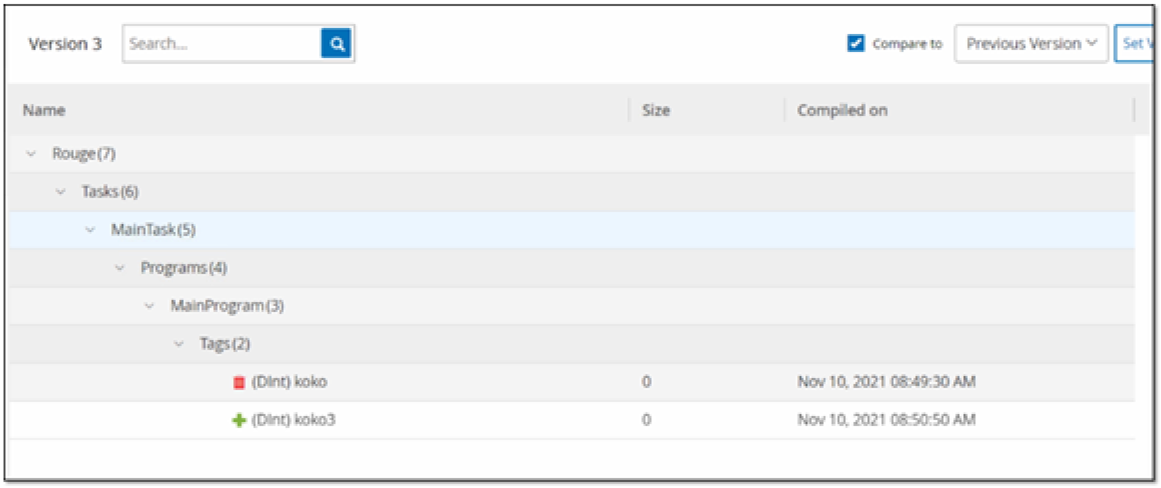
🗑 Deleted – code that was deleted from the selected version.

✏ Edited – code that was edited in the selected version.

To compare a snapshot version to the previous version:

1. On the **Inventory** > **Controllers** screen, select the desired controller.
2. Click on the **Code Revision** tab.
3. In the **Version Selection** pane, select the version that you would like to analyze.
4. At the top of the **Snapshot Details** pane, in the comparison field, select **Previous Version** from the dropdown menu.
5. Click the **Compare to** checkbox.

   The Snapshot Details pane shows all differences between the two versions. For each change, an icon indicates the type of change that occurred.



Version 3 | Search... | ☑ Compare to | Previous Version | Set V

Name	Size	Compiled on
Rouge (7)		
Tasks (6)		
MainTask (5)		
Programs (4)		
MainProgram (3)		
Tags (2)		
🗑 (DInt) koko	0	Nov 10, 2021 08:49:30 AM
➕ (DInt) koko3	0	Nov 10, 2021 08:50:50 AM

To compare a snapshot version to an earlier version (other than the previous version):

1. On the **Inventory** > **Controllers** screen, select the desired controller.
2. Click on the **Code Revision** tab.
3. In the **Version Selection** pane, select the version that you would like to use as the baseline for comparison.
4. In the top of the **Snapshot Details** pane, click **Set Version as Baseline**.

   The **Baseline** tag is shown for the selected version, indicating that it is set as the baseline version.

   > **Note**: Setting a version as the baseline affects only comparisons made using this screen. It does not affect Policies that check for Snapshot Mismatch.

5. In the **Version Selection** pane, select the version that you would like to compare to the baseline.
6. Click the Compare to checkbox. In the field next to the Compare to checkbox, select Baseline Version from the dropdown menu.
7. The Snapshot Details pane shows all differences between the two versions. For each change, an icon indicates the type of change that occurred.

Creating a Snapshot

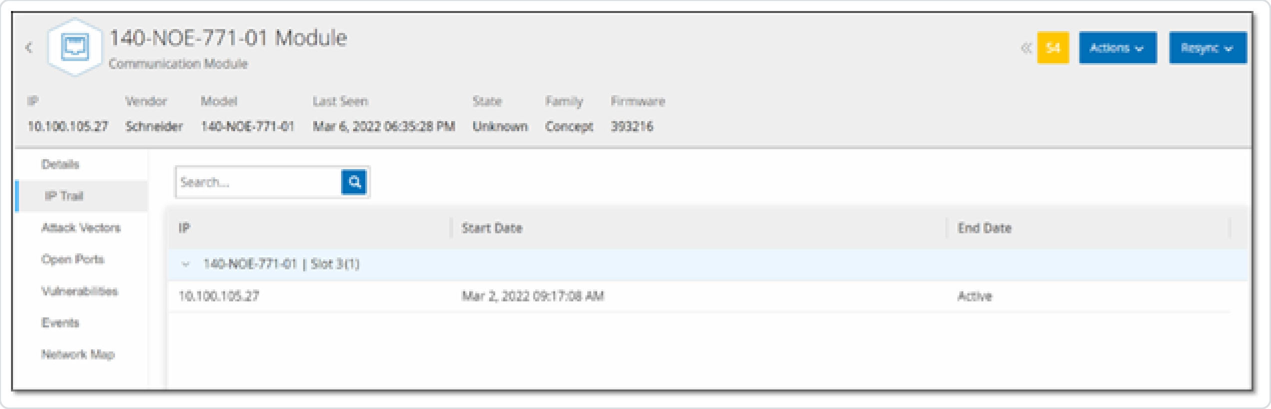
A snapshot can be initiated manually by the user. For example, it is recommended to perform a snapshot before and after a technician services a controller.

To create a snapshot of a controller:

1. On the **Inventory** > **Controllers** screen, select the desired controller.
2. Click on the **Code Revision** tab.
3. In the upper right-hand corner of the **Snapshot Details** pane, click **Take Snapshot**.

   The User Initiated Snapshot is created.
4. If no changes are identified, then a new User Identified Snapshot is added to the Revision History pane for the latest version. If changes are identified, then a new version is created showing the code revision changes.

IP Trail



IP	Vendor	Model	Last Seen	State	Family	Firmware
10.100.105.27	Schneider	140-NOE-771-01	Mar 6, 2022 06:35:28 PM	Unknown	Concept	393216

IP	Start Date	End Date
140-NOE-771-01 | Slot 3(1)		
10.100.105.27	Mar 2, 2022 09:17:08 AM	Active

The IP Trail tab shows all IPs relevant to this asset. The Network Card column shows a listing of network cards used by this asset. Click on the arrow next to a network card to expand the listing to show the IPs of all assets connected to the shared backplane.

The lists include the Start and End Dates of the usage of the IP address. The options for End Date are:

- **Active** – the IP address is currently being used for this asset.
- **{date/time}** – the last date and time the IP address was active for this asset (if it has been active within the last 30 days).
- **{date/time} (Inactive)** – the last date and time the IP address was active for this asset (if it has been inactive for 30 days or more).
- **Inactive** – the IP address is being used by another asset.

Attack Vectors

An attacker can compromise a critical access by taking advantage of a vulnerable “weak link” in the network to gain access to the critical asset. The critical asset is the target (destination) of the attack, and the Attack Vector is the route the attacker uses to gain access to that asset.

How do we determine the attack vector?

Once the target asset is specified, the system calculates all of the potential attack vectors that could enable access to this asset and identify the path that has the highest risk potential for compromising this asset. The calculation factors in multiple parameters and uses a risk-based approach in order to identify the most critical attack vector. The parameters that are used include:

- Asset risk level
- Length of the path
- Asset to asset communication method
- External communication (Internet/Corporate) vs. internal communication

Recommended Mitigation Steps

In order to minimize the risk of a potential attack using the selected vector, the recommended mitigation steps include the following:

- Reducing the associated and individual risk scores of the assets which are included in the attack vector.
- Minimizing or removing network access to external networks (Internet or corporate networks)
- Examining the communication paths along the chain and validating their relevance to the process. In case they are not vital, they should be removed (for example Port closing or service removal) in order to eliminate the potential attack path.

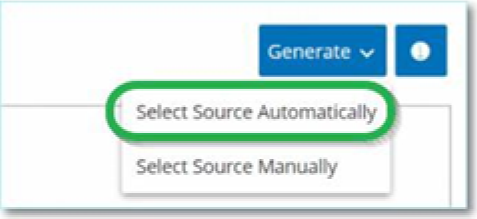
Generating Attack Vectors

Attack Vectors need to be generated manually for each relevant target asset. This is done on the Attack Vectors tab for the desired target asset. There are two methods for generating Attack Vectors:

- **Automatic** – OT Security assesses all potential attack vectors and identifies the most vulnerable path.
- **Manual** – You specify a particular source asset and OT Security shows you the potential path (if any) that can be used to access your target asset.

To generate an automatic Attack Vector:

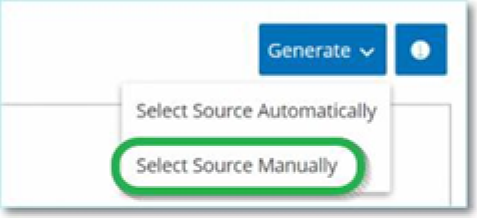
1. Navigate to the **Asset Details** page for the desired target asset and click on the **Attack Vector** tab.
2. Click **Generate** and then click **Select Source Automatically** from the dropdown list.



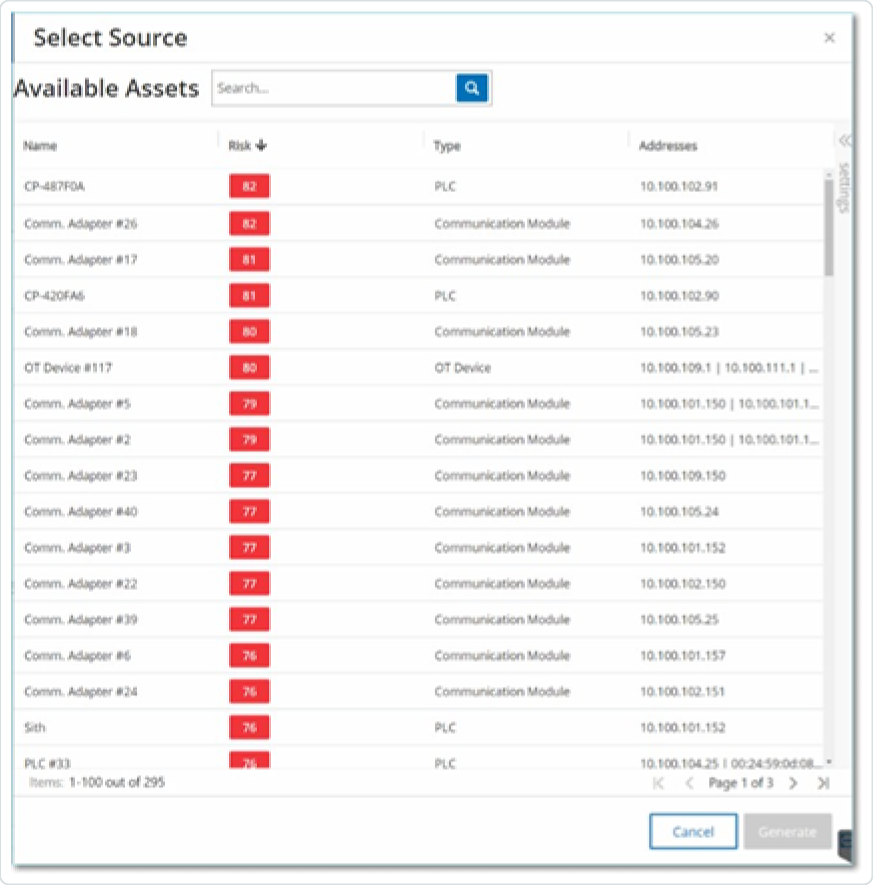
The Attack Vector is generated automatically and is displayed in the **Attack Vector** tab.

To generate a manual Attack Vector:

1. Navigate to the **Asset Details** page for the desired target asset and click on the **Attack Vector** tab.
2. Click **Generate** and then click **Select Source Manually** from the dropdown list.



The **Select Source** window is displayed.



Name	Risk	Type	Addresses
CP-487F0A	82	PLC	10.100.102.91
Comm. Adapter #26	82	Communication Module	10.100.104.26
Comm. Adapter #17	81	Communication Module	10.100.105.20
CP-420FA6	81	PLC	10.100.102.90
Comm. Adapter #18	80	Communication Module	10.100.105.23
OT Device #117	80	OT Device	10.100.109.1 | 10.100.111.1 | ...
Comm. Adapter #5	79	Communication Module	10.100.101.150 | 10.100.101.1...
Comm. Adapter #2	79	Communication Module	10.100.101.150 | 10.100.101.1...
Comm. Adapter #23	77	Communication Module	10.100.109.150
Comm. Adapter #40	77	Communication Module	10.100.105.24
Comm. Adapter #3	77	Communication Module	10.100.101.152
Comm. Adapter #22	77	Communication Module	10.100.102.150
Comm. Adapter #39	77	Communication Module	10.100.105.25
Comm. Adapter #6	76	Communication Module	10.100.101.157
Comm. Adapter #24	76	Communication Module	10.100.102.151
Sith	76	PLC	10.100.101.152
PLC #33	76	PLC	10.100.104.25 | 00:24:59:0d:08...

Items: 1-100 out of 295   Page 1 of 3

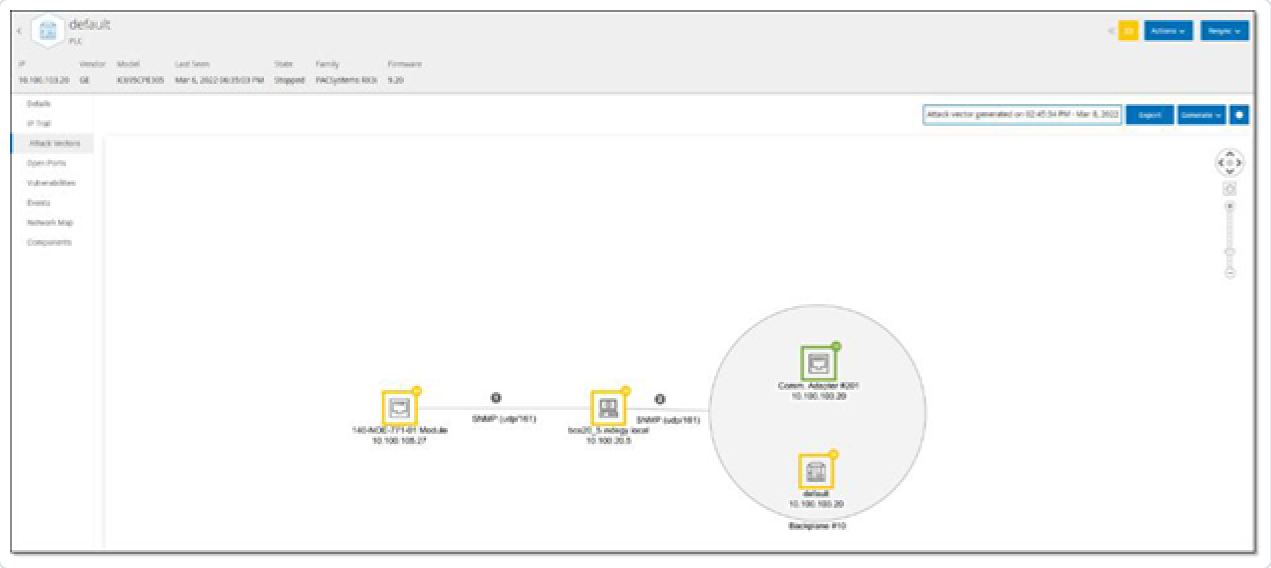
Note: By default, the source assets are sorted by Risk score. You can adjust the display settings or search for the desired asset.

3. Select the desired source asset.

4. Click **Generate**.

   The Attack Vector is generated and is displayed in the **Attack Vector** tab.

Viewing Attack Vectors

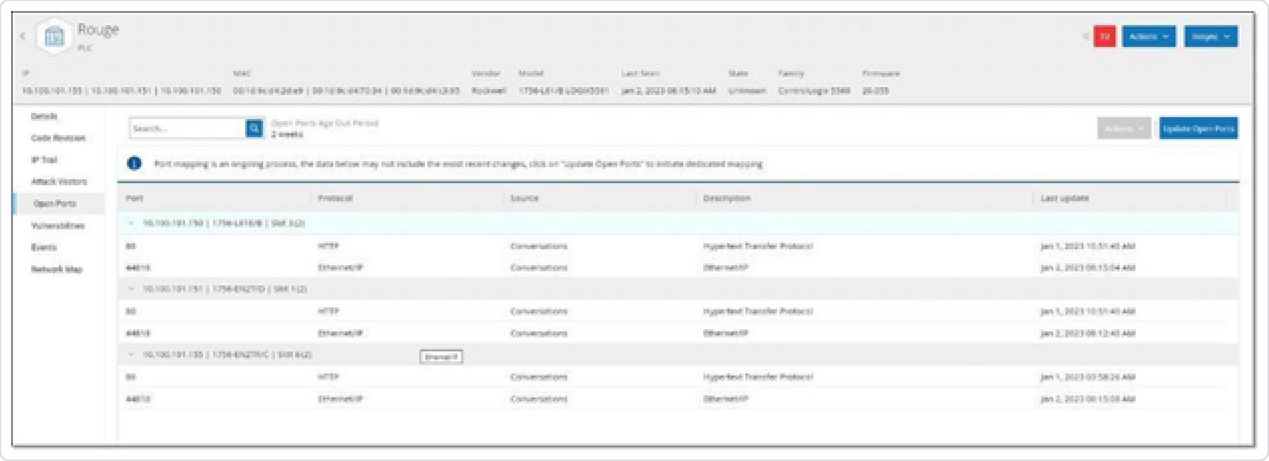


The Attack Vectors tab shows a diagram of the most recently generated Attack Vector for the specified target asset. The box next to the Generate button shows the date and time that the displayed Attack Vector was generated. The Attack Vector diagram includes the following elements:

- For each asset that is included in the Attack Vector, the risk level and IP addresses are shown. Click on an asset icon to show additional details about its risk factors.
- For each network connection, the communication protocol is shown.
- For assets that share a backplane, the assets are surrounded by a circle.

> **Note**: Click on the help button in the top right corner of the Attack Vectors tab for an explanation of the Attack Vector feature.

Open Ports



IP: 10.100.101.155 | 10.100.101.151 | 10.100.101.150
MAC: 00:1d:9c:d4:2d:e9 | 00:1d:9c:d4:70:34 | 00:1d:9c:d4:c3:93
Vendor: Rockwell
Model: 1756-L61/B LOGIX5561
Last Seen: Jan 2, 2023 08:15:10 AM
State: Unknown
Family: ControlLogix 5560
Firmware: 20.055

Open Ports Age Out Period
2 weeks

Port mapping is an ongoing process, the data below may not include the most recent changes, click on "Update Open Ports" to initiate dedicated mapping

Port	Protocol	Source	Description	Last update
10.100.101.150 | 1756-L61/B | Slot 3 (2)				
80	HTTP	Conversations	Hypertext Transfer Protocol	Jan 1, 2023 10:51:40 AM
44818	Ethernet/IP	Conversations	Ethernet/IP	Jan 2, 2023 08:15:04 AM
10.100.101.151 | 1756-EN2T/D | Slot 1 (2)				
80	HTTP	Conversations	Hypertext Transfer Protocol	Jan 1, 2023 10:51:40 AM
44818	Ethernet/IP	Conversations	Ethernet/IP	Jan 2, 2023 08:12:40 AM
10.100.101.155 | 1756-EN2TR/C | Slot 6 (2)				
80	HTTP	Conversations	Hypertext Transfer Protocol	Jan 1, 2023 03:58:26 AM
44818	Ethernet/IP	Conversations	Ethernet/IP	Jan 2, 2023 08:15:08 AM

The **Open Ports** tab shows a list of open ports on this asset. For each open port details are given about which protocol it uses, a description of its function, the date and time that the data was last updated, and the source of information (Active Queries, Port Mapping, Conversations, Tenable Nessus Network Monitor, or Tenable Nessus Scans) that indicated that the port is open. A separate list of open ports is shown for each IP available to the asset (including ports that are accessed through a shared backplane). Click on the arrow next to an IP to expand the listing to show its open ports.

There as an automatic **Open Ports Age Out Period**, after which an open port listing will be automatically deleted from the list if no further indication has been received that the port is still open. The default period of time is two weeks. To adjust the length of the Open Ports Age Out Period, see Device.

The open port scanning parameters are configured in Active Queries. You can also run a manual query of the selected asset to update the list of open ports.

To manually update the list of open ports:

1. In the **Inventory** > **Controllers/Network Assets** screen, select the desired asset.

   The **Asset Details** screen is displayed.

2. Click on the **Open Ports** tab.

3. In the upper right-hand corner of the Open Ports pane, click **Update Open Ports**.

   A new scan is run, updating the open ports shown for this controller.

Additional Actions in the Open Ports Tab

In the Open Ports tab for a specific asset, you can take the following further actions for a specific open port.

- Scan – run a scan of the selected port.
- View – shows additional device details and diagnostics by accessing the web interface of the device.

To run a scan on a specific port:

1. In the **Inventory** > **Controllers/Network Assets** screen, select the desired asset.

   The **Asset Details** screen is displayed.

2. Click on the **Open Ports** tab.
3. Select a specific port.
4. Click on the **Actions** menu.
5. From the drop-down menu, select **Scan**.

   OT Security runs a scan on the selected port.

To view the asset's portal:

> **Note**: This option is only available when port 80 (used for web-access) is one of the open ports.

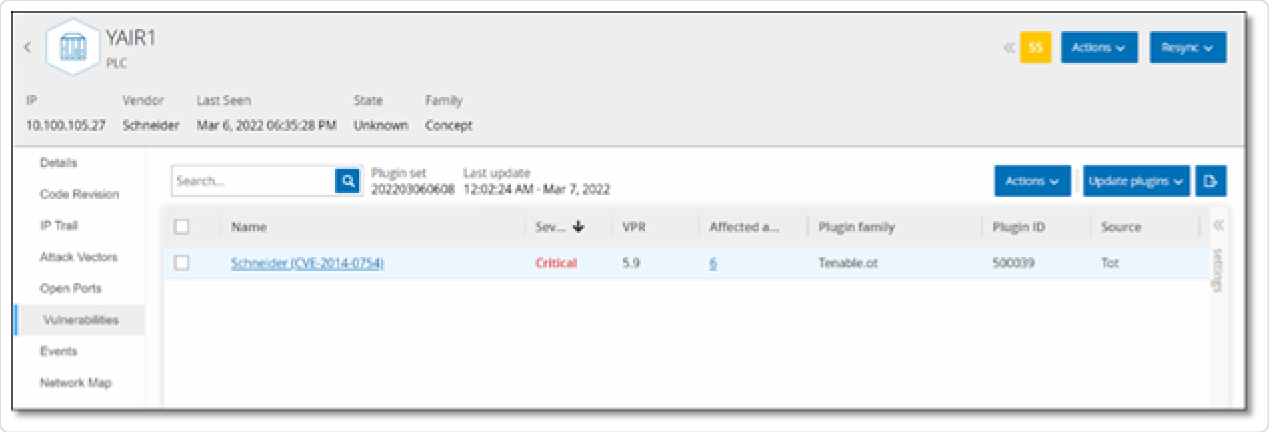
1. In the **Inventory** > **Controllers/Network Assets** screen, select the desired asset.

   The **Asset Details** screen is displayed.

2. Click on the **Open Ports** tab.
3. Select a specific port.
4. Click on the **Actions** menu.
5. From the drop-down menu, select **View**.

   A new browser tab opens showing the asset portal of that asset.

Vulnerabilities



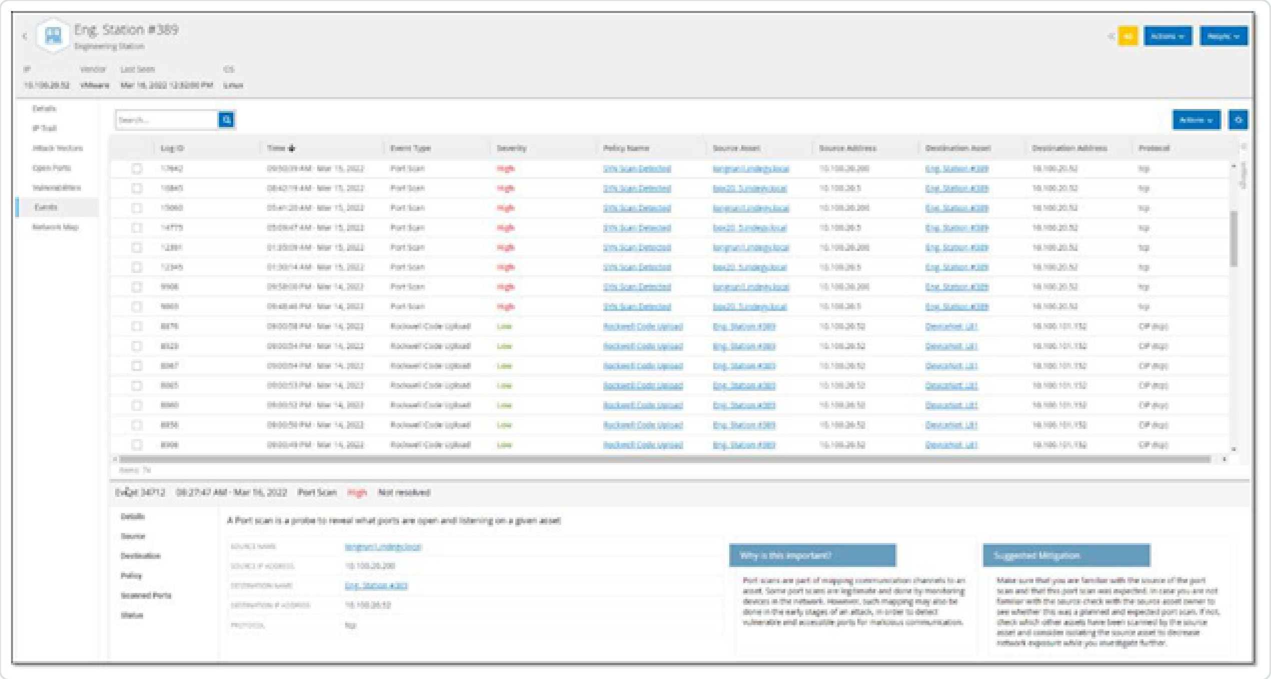
IP	Vendor	Last Seen	State	Family
10.100.105.27	Schneider	Mar 6, 2022 06:35:28 PM	Unknown	Concept

Plugin set 202203060608
Last update 12:02:24 AM · Mar 7, 2022

□	Name	Sev...	VPR	Affected a...	Plugin family	Plugin ID	Source
□	Schneider (CVE-2014-0754)	Critical	5.9	6	Tenable.ot	500039	Tot

The **Vulnerabilities** tab shows a list of all Vulnerabilities that affect the specified asset, as detected by OT Security Plugins. The system identifies vulnerabilities such as obsolete Windows operating systems, usage of vulnerable protocols and open communications ports which are known to be risky or non-essential for specific types of devices. Each listing shows details about the nature of the threat and its severity. The information shown in this tab is identical to the information shown on the **Risk** > **Vulnerabilities** screen, except that only vulnerabilities relevant to the specified asset are shown here. For an explanation of the vulnerabilities information, see Vulnerabilities.

Events



Eng. Station #389
Engineering Station

IP	Vendor	Last Seen	OS
10.100.20.52	VMware	Mar 16, 2022 12:32:00 PM	Linux

	Log ID	Time	Event Type	Severity	Policy Name	Source Asset	Source Address	Destination Asset	Destination Address	Protocol
□	17642	09:50:39 AM · Mar 15, 2022	Port Scan	High	SYN Scan Detected	[illegible]	10.100.20.200	Eng. Station #389	10.100.20.52	tcp
□	10845	08:42:19 AM · Mar 15, 2022	Port Scan	High	SYN Scan Detected	[illegible]	10.100.20.5	Eng. Station #389	10.100.20.52	tcp
□	15060	05:41:20 AM · Mar 15, 2022	Port Scan	High	SYN Scan Detected	[illegible]	10.100.20.200	Eng. Station #389	10.100.20.52	tcp
□	14775	05:09:47 AM · Mar 15, 2022	Port Scan	High	SYN Scan Detected	[illegible]	10.100.20.5	Eng. Station #389	10.100.20.52	tcp
□	12391	01:35:09 AM · Mar 15, 2022	Port Scan	High	SYN Scan Detected	[illegible]	10.100.20.200	Eng. Station #389	10.100.20.52	tcp
□	12345	01:30:14 AM · Mar 15, 2022	Port Scan	High	SYN Scan Detected	[illegible]	10.100.20.5	Eng. Station #389	10.100.20.52	tcp
□	9908	09:58:00 PM · Mar 14, 2022	Port Scan	High	SYN Scan Detected	[illegible]	10.100.20.200	Eng. Station #389	10.100.20.52	tcp
□	9865	09:48:48 PM · Mar 14, 2022	Port Scan	High	SYN Scan Detected	[illegible]	10.100.20.5	Eng. Station #389	10.100.20.52	tcp
□	8876	09:00:58 PM · Mar 14, 2022	Rockwell Code Upload	Low	Rockwell Code Upload	Eng. Station #389	10.100.20.52	[illegible]	10.100.101.152	CIP (tcp)
□	8523	09:00:54 PM · Mar 14, 2022	Rockwell Code Upload	Low	Rockwell Code Upload	Eng. Station #389	10.100.20.52	[illegible]	10.100.101.152	CIP (tcp)
□	8067	09:00:54 PM · Mar 14, 2022	Rockwell Code Upload	Low	Rockwell Code Upload	Eng. Station #389	10.100.20.52	[illegible]	10.100.101.152	CIP (tcp)
□	8065	09:00:53 PM · Mar 14, 2022	Rockwell Code Upload	Low	Rockwell Code Upload	Eng. Station #389	10.100.20.52	[illegible]	10.100.101.152	CIP (tcp)
□	8060	09:00:52 PM · Mar 14, 2022	Rockwell Code Upload	Low	Rockwell Code Upload	Eng. Station #389	10.100.20.52	[illegible]	10.100.101.152	CIP (tcp)
□	8856	09:00:50 PM · Mar 14, 2022	Rockwell Code Upload	Low	Rockwell Code Upload	Eng. Station #389	10.100.20.52	[illegible]	10.100.101.152	CIP (tcp)
□	8908	09:00:49 PM · Mar 14, 2022	Rockwell Code Upload	Low	Rockwell Code Upload	Eng. Station #389	10.100.20.52	[illegible]	10.100.101.152	CIP (tcp)

Items: 74

Event 34712 08:27:47 AM · Mar 16, 2022 Port Scan High Not resolved

Details
Source
Destination
Policy
Scanned Ports
Status

A Port scan is a probe to reveal what ports are open and listening on a given asset

SOURCE NAME	[illegible]
SOURCE IP ADDRESS	10.100.20.200
DESTINATION NAME	Eng. Station #389
DESTINATION IP ADDRESS	10.100.20.52
PROTOCOL	tcp

Why is this important?

Port scans are part of mapping communication channels to an asset. Some port scans are legitimate and done by monitoring devices in the network. However, such mapping may also be done in the early stages of an attack, in order to detect vulnerable and accessible ports for malicious communication.

Suggested Mitigation

Make sure that you are familiar with the source of the port scan and that this port scan was expected. In case you are not familiar with the source check with the source asset owner to see whether this was a planned and expected port scan. If not, check which other assets have been scanned by the source asset and consider isolating the source asset to decrease network exposure while you investigate further.

The **Events** tab displays a detailed list of Events in the network involving the asset, as detected by OT Security Plugins. You can customize the display settings by adjusting which columns are displayed and where each column is positioned. The events can be grouped according to different categories (for example Event type, Severity, Policy Name). You can also sort and filter the Event lists as well as searching for search text. For an explanation of the customization features, see Management Console User Interface Elements.

The bottom of the screen shows detailed information about the selected Event, divided into tabs. Only tabs relevant to the Event type of the selected Event are shown. For more information about Events, see Events.

There is an **Actions** button at the top of the pane, which enables you to take the following Action on the selected Event/s:

- Resolve – Mark this Event as Resolved.
- Download PCAP – Download the PCAP file for this Event.
- Exclude – Create a Policy Exclusion for this Event.

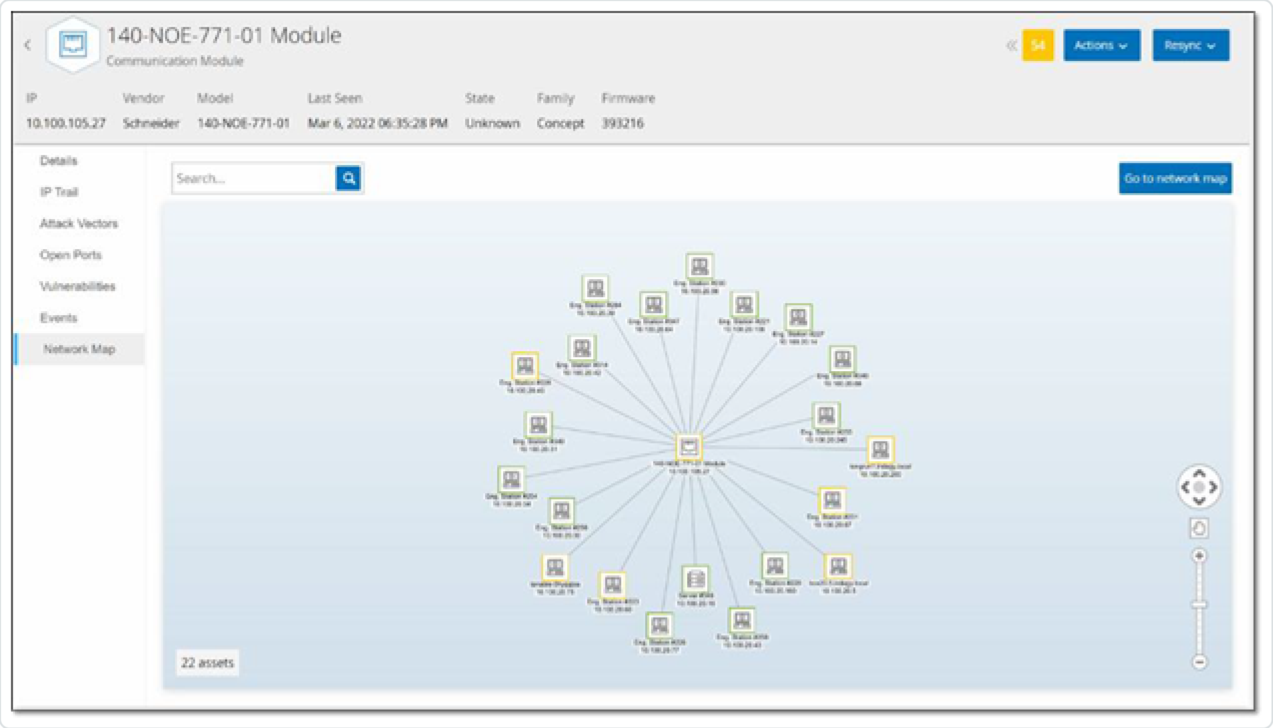
Detailed information about these actions is given in the Events chapter.

The information shown for each Event listing is described in the following table:

Parameter	Description
Log ID	The ID generated by the system to refer to the Event.
Time	The date and time that the Event occurred.
Event Type	Describes the type of activity that triggered the Event. Events are generated by Policies that are set up in the system. For an explanation of the various types of Policies, see Policy Types.
Severity	Shows the severity level of the Event. The following is an explanation of the possible values: • None – No reason for concern. • Info – No immediate reason for concern. Should be checked out when convenient. • Warning – Moderate concern that potentially harmful activity has occurred. Should be dealt with when convenient. • Critical – Severe concern that potentially harmful activity has occurred. Should be dealt with immediately.
Policy Name	The name of the Policy that generated the Event. The name is a link to the Policy listing.
Source Asset	The name of the asset that initiated the Event. This field is a link to the Asset listing.
Source Address	The IP or MAC of the asset that initiated the Event.
Source Address	The IP or MAC of the asset that initiated the Event.
Destination Asset	The name of the asset that was affected by the Event. This field is a link to the Asset listing.
Destination Address	The IP or MAC of the asset that was affected by the Event.

Protocol	When relevant, this shows the protocol used for the conversation that generated this Event.
Event Category	Shows the general category of the Event. NOTE: On the All Events screen, Events of all types are shown. Each of the specific Event screens shows only Events of the specified category. The following is a brief explanation of the Event categories (for a more detailed explanation see Policy Categories and Sub-Categories): • Configuration Events – this includes two sub-categories • Controller Validation Events – These policies detect changes that take place in the controllers in the network. • Controller Activity Events – Activity Policies relate to the Activities that occur in the network (that is, the “commands” implemented between assets in the network). • SCADA Events – policies that identify changes made to the data plane of controllers. • Network Threats Events – these Policies identify network traffic that is indicative of intrusion threats. • Network Events – Policies that relate to the assets in the network and the communication streams between assets.
Status	Shows whether or not the Event has been marked as resolved.
Resolved By	For resolved Events, shows which user marked the Event as resolved.
Resolved On	For resolved Events, shows when the Event was marked as resolved.
Comment	Shows any comments that were added when the Event was resolved.

Network Map



IP	Vendor	Model	Last Seen	State	Family	Firmware
10.100.105.27	Schneider	140-NOE-771-01	Mar 6, 2022 06:35:28 PM	Unknown	Concept	393216

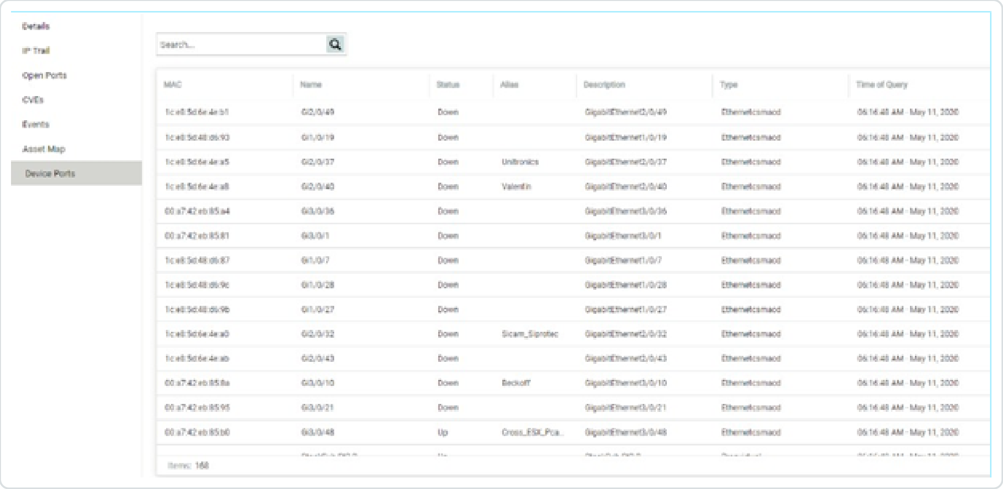
The **Network Map** tab shows a graphic visualization of the network connections of the asset. This view shows all of the connections that the selected asset made during the past 30 days.

The information shown in this tab is similar to the information shown on the **Network Map** screen, but it is limited to connections involving this specific asset. Also, this screen shows connections to individual assets and not to groups of assets as shown in the main Network Map screen. For an explanation of the information shown in this tab, see Network Map.

To view the Network Map for all assets, click the **Go to network map** button. When clicked, the Network Map will zoom in dynamically and focus on this asset and show its connections to other groups of assets.

Clicking on any of the connected assets on the map shows details of that asset, and clicking on the link in the asset’s name takes you to the selected asset’s Details screen.

Device Ports



MAC	Name	Status	Alias	Description	Type	Time of Query
1c:e8:5d:6e:4e:b1	Gi2/0/49	Down		GigabitEthernet2/0/49	Ethernetcsmacd	06:16:48 AM - May 11, 2020
1c:e8:5d:48:d6:93	Gi1/0/19	Down		GigabitEthernet1/0/19	Ethernetcsmacd	06:16:48 AM - May 11, 2020
1c:e8:5d:6e:4e:a5	Gi2/0/37	Down	Unitronics	GigabitEthernet2/0/37	Ethernetcsmacd	06:16:48 AM - May 11, 2020
1c:e8:5d:6e:4e:a8	Gi2/0/40	Down	Valentin	GigabitEthernet2/0/40	Ethernetcsmacd	06:16:48 AM - May 11, 2020
00:a7:42:eb:85:a4	Gi3/0/36	Down		GigabitEthernet3/0/36	Ethernetcsmacd	06:16:48 AM - May 11, 2020
00:a7:42:eb:85:81	Gi3/0/1	Down		GigabitEthernet3/0/1	Ethernetcsmacd	06:16:48 AM - May 11, 2020
1c:e8:5d:48:d6:87	Gi1/0/7	Down		GigabitEthernet1/0/7	Ethernetcsmacd	06:16:48 AM - May 11, 2020
1c:e8:5d:48:d6:9c	Gi1/0/28	Down		GigabitEthernet1/0/28	Ethernetcsmacd	06:16:48 AM - May 11, 2020
1c:e8:5d:48:d6:9b	Gi1/0/27	Down		GigabitEthernet1/0/27	Ethernetcsmacd	06:16:48 AM - May 11, 2020
1c:e8:5d:6e:4e:a0	Gi2/0/32	Down	Sicam_Siprotec	GigabitEthernet2/0/32	Ethernetcsmacd	06:16:48 AM - May 11, 2020
1c:e8:5d:6e:4e:ab	Gi2/0/43	Down		GigabitEthernet2/0/43	Ethernetcsmacd	06:16:48 AM - May 11, 2020
00:a7:42:eb:85:8a	Gi3/0/10	Down	Beckoff	GigabitEthernet3/0/10	Ethernetcsmacd	06:16:48 AM - May 11, 2020
00:a7:42:eb:85:95	Gi3/0/21	Down		GigabitEthernet3/0/21	Ethernetcsmacd	06:16:48 AM - May 11, 2020
00:a7:42:eb:85:b0	Gi3/0/48	Up	Cross_ESX_Pca...	GigabitEthernet3/0/48	Ethernetcsmacd	06:16:48 AM - May 11, 2020

Items: 168

The Device Ports tab is shown for network switches. It shows detailed information about the ports on the network switch. This data is collected by using SNMP queries to the switch. For each port, the following info is shown: the MAC address, Name, connection Status (up or down), Alias and Description.

> **Note**: This tab is only available if it was activated for your account. To activate this feature, contact your Support agent.

Edit Asset Details

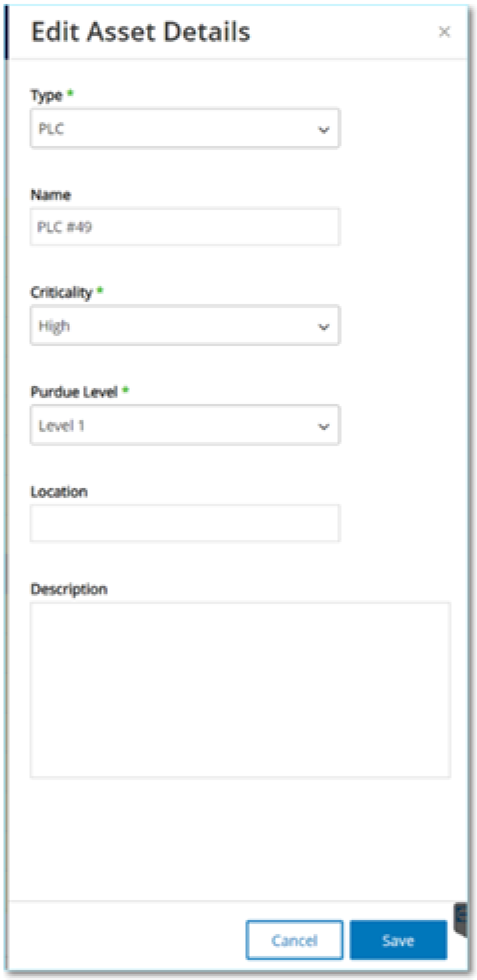
OT Security automatically identifies the Asset Type and Name based on its internal data and based on its activity in the network. If the system couldn’t gather this information or if you feel that the automatic identification is not accurate, you can edit these parameters either directly through the UI or by uploading a CSV file. You can also add a general description of the asset and a description of the location of the unit.

Editing Asset Details through the UI

To edit asset details for a single asset:

1. Under **Inventory**, click on **Controllers** or **Network Assets**.
2. Select the desired asset.
3. In the Header bar, click on the **Actions** button.
4. From the drop-down list, select **Edit**.

   The **Edit Asset Details** window opens.



Edit Asset Details

Type *: PLC

Name: PLC #49

Criticality *: High

Purdue Level *: Level 1

Location:

Description:

5. In the **Type** field, select the asset type from the dropdown list.
6. In the **Name** field, enter a name by which the asset will be identified in the OT Security UI.
7. In the **Criticality** field, enter the level of criticality of this asset to the system.

8. In the **Purdue Level** field, enter the Purdue level based on the asset type.

9. In the **Backplane** field (for Controllers), enter the name of the backplane on which the asset is installed.

10. In the **Location** field, enter a description of the asset's location. This is an optional field. The data is shown in the assets table as well as on the Asset Details screen for this asset.

11. In the **Description** field, enter a description of the asset. This is an optional field. The data is shown on the Asset Details screen for this asset.

12. Click **Save**.

    The edited details are saved for that asset.

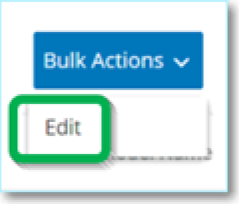
To Edit multiple assets (bulk process):

1. Under **Inventory**, click on **Controllers** or **Network Assets**.

2. Select the checkbox next to each of the desired assets.

    > **Note**: Alternatively, you can select multiple assets by pressing the Shift key while clicking on each of the desired assets.

3. Click on the **Bulk Actions** menu and select **Edit** from the dropdown list.

    The **Bulk Edit** screen is shown with the parameters that are available for bulk editing.

4. Select the checkbox next to each of the parameters that you would like to edit (Type, Criticality, Purdue Level, Network Segments, Location and Description).

    > **Note**: When bulk editing Network Segments, first filter your assets by Type, then select the assets you wish to bulk edit. Assets with multiple IP addresses can't be included in a bulk edit for Network Segments; you will need to edit each asset manually.

5. Set each of the parameters as desired.

> **Note**: Information entered in the Bulk Editing fields overrides any current content for the selected asset. If you select the checkbox next to a parameter but do not enter a selection, then the current values for that parameter will be erased.

6. Click **Save**.

   The assets are saved with the new configuration.

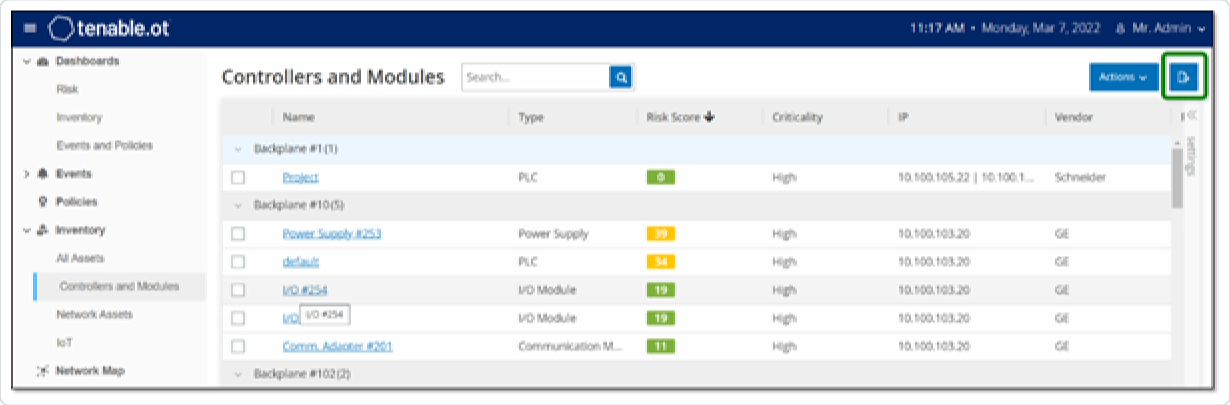
Editing Asset Details by Uploading a CSV

This method of editing asset details allows you to edit a large number of assets through a csv file instead of editing them manually in the UI. The following details can be edited using this method: Type, Name, Criticality, Purdue Level, Location, Description and custom fields.

To edit asset details through a CSV:

1. Under **Inventory**, click on **All Assets**, **Controllers and Modules**, or **Network Assets**.

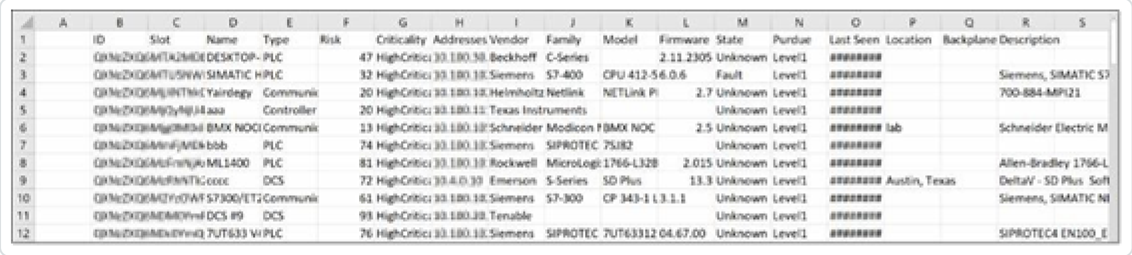
2. Click the **Export** button.



	Name	Type	Risk Score	Criticality	IP	Vendor
Backplane #1 (1)						
□	Project	PLC	0	High	10.100.105.22 | 10.100.1...	Schneider
Backplane #10 (5)						
□	Power Supply #253	Power Supply	39	High	10.100.103.20	GE
□	default	PLC	34	High	10.100.103.20	GE
□	I/O #254	I/O Module	19	High	10.100.103.20	GE
□	I/O I/O #254	I/O Module	19	High	10.100.103.20	GE
□	Comm. Adapter #201	Communication M...	11	High	10.100.103.20	GE
Backplane #102 (2)						

A csv file of the inventory is downloaded.

3. Navigate to the file that was just downloaded and open it.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1		ID	Slot	Name	Type	Risk	Criticality	Addresses	Vendor	Family	Model	Firmware	State	Purdue	Last Seen	Location	Backplane	Description	
2		[illegible]		DESKTOP-	PLC	47	HighCritic	10.100.50.	Beckhoff	C-Series		2.11.2305	Unknown	Level1	########				
3		[illegible]		SIMATIC H	PLC	32	HighCritic	10.100.10.	Siemens	S7-400	CPU 412-5	6.0.6	Fault	Level1	########			Siemens, SIMATIC S7	
4		[illegible]		Yairdegy	Communi	20	HighCritic	10.100.10.	Helmholtz	Netlink	NETLink PI	2.7	Unknown	Level1	########			700-884-MPI21	
5		[illegible]		aaa	Controller	20	HighCritic	10.100.11	Texas Instruments				Unknown	Level1	########				
6		[illegible]		BMX NOC	Communi	13	HighCritic	10.100.10	Schneider	Modicon F	BMX NOC	2.5	Unknown	Level1	########	lab		Schneider Electric M	
7		[illegible]		bbb	PLC	74	HighCritic	10.100.10.	Siemens	SIPROTEC	7SJ82		Unknown	Level1	########				
8		[illegible]		ML1400	PLC	81	HighCritic	10.100.10	Rockwell	MicroLogi	1766-L32B	2.015	Unknown	Level1	########			Allen-Bradley 1766-L	
9		[illegible]		cccc	DCS	72	HighCritic	10.4.0.10	Emerson	S-Series	SD Plus	13.3	Unknown	Level1	########	Austin, Texas		DeltaV - SD Plus Soft	
10		[illegible]		S7300/ET2	Communi	61	HighCritic	10.100.10.	Siemens	S7-300	CP 343-1 L	3.1.1	Unknown	Level1	########			Siemens, SIMATIC NE	
11		[illegible]		DCS #9	DCS	93	HighCritic	10.100.20.	Tenable				Unknown	Level1	########				
12		[illegible]		7UT633 V	PLC	76	HighCritic	10.100.10.	Siemens	SIPROTEC	7UT63312	04.67.00	Unknown	Level1	########			SIPROTEC4 EN100_E	

4. Edit the allowable parameters by changing the content of the cells. (Allowable parameters are: Type, Name, Criticality, Purdue Level, Location, Description and custom fields.)

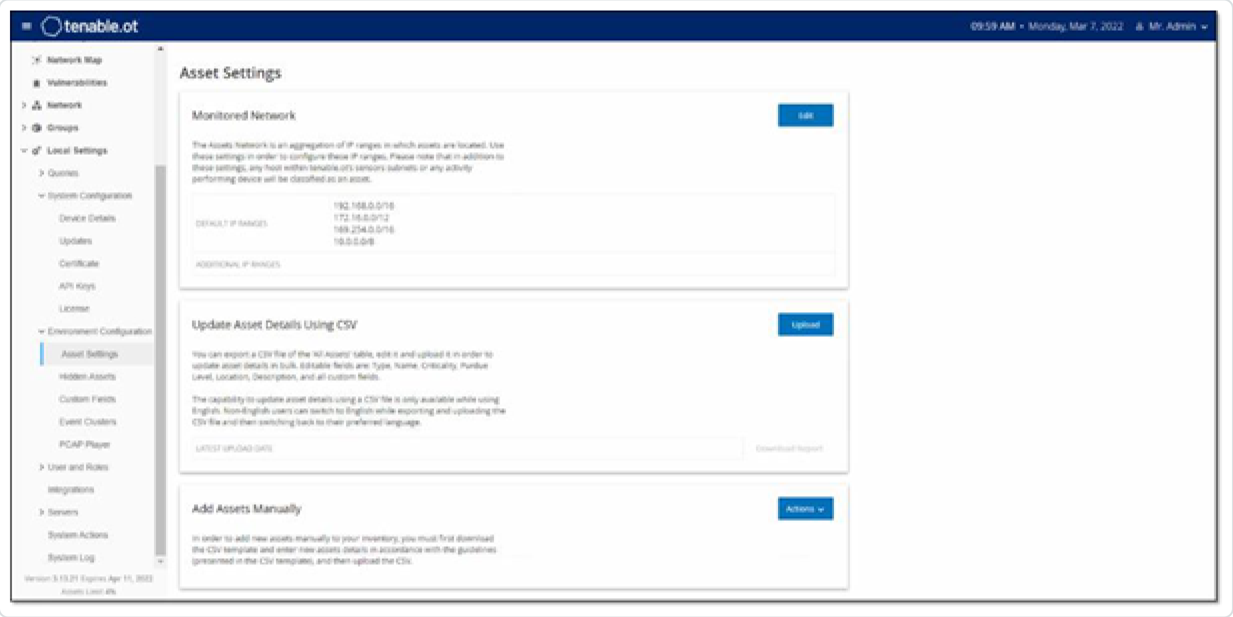
> **Note**: You must enter valid data for parameters that require specific options (for example Type, Criticality, Purdue Level). Otherwise, the corresponding asset will fail to update.

5. Save the file as a csv file type.

> **Note**: Only the assets that you modify will be updated in the system. Assets that are not included in the csv, or rows that you did not modify will remain unchanged in the system. It is not possible to delete assets using this method.

6. Under **Local Settings**, go to **Environment Configuration** > **Asset Settings**.

   The **Asset Settings** screen is shown.



Asset Settings

Monitored Network

The Assets Network is an aggregation of IP ranges in which assets are located. Use these settings in order to configure these IP ranges. Please note that in addition to these settings, any host within tenable.ot's sensors subnets or any activity performing device will be classified as an asset.

DEFAULT IP RANGES 192.168.0.0/16
172.16.0.0/12
169.254.0.0/16
10.0.0.0/8

ADDITIONAL IP RANGES

Update Asset Details Using CSV

You can export a CSV file of the 'All Assets' table, edit it and upload it in order to update asset details in bulk. Editable fields are: Type, Name, Criticality, Purdue Level, Location, Description, and all custom fields.

The capability to update asset details using a CSV file is only available while using English. Non-English users can switch to English while exporting and uploading the CSV file and then switching back to their preferred language.

LATEST UPLOAD DATE

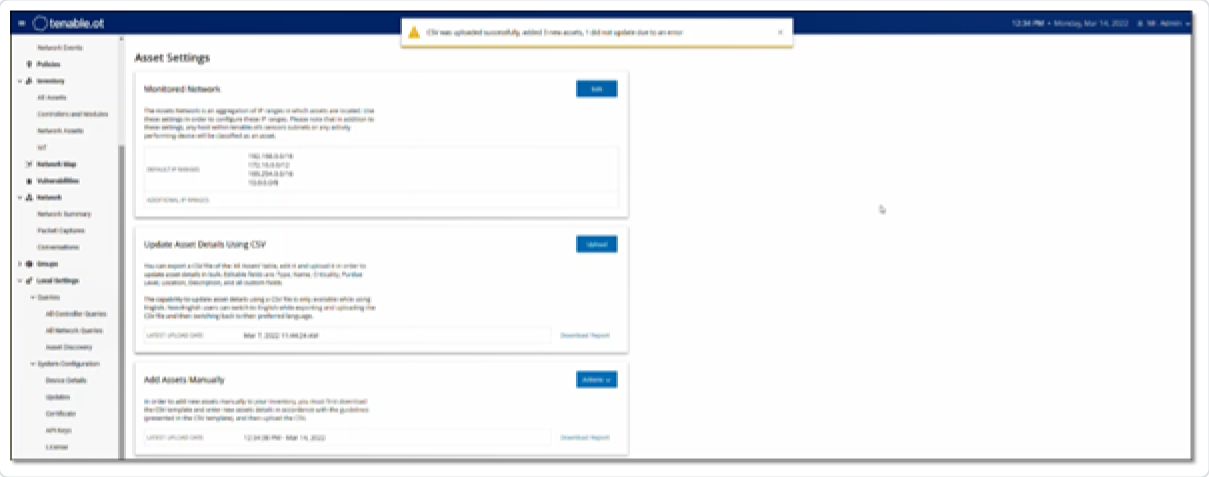
Add Assets Manually

In order to add new assets manually to your inventory, you must first download the CSV template and enter new assets details in accordance with the guidelines presented in the CSV template, and then upload the CSV.

7. In the **Update asset details using CSV** section, click **Upload**.

8. Follow your device’s navigation prompts to upload the csv file that you just saved.

   A confirmation is shown indicating the number of rows successfully updated.



CSV was uploaded successfully, added 3 new assets, 1 did not update due to an error

Asset Settings

Monitored Network

Update Asset Details Using CSV

LATEST UPLOAD DATE Mar 7, 2022 11:44:24 AM

Add Assets Manually

LATEST UPLOAD DATE 12:34:08 PM · Mar 14, 2022

The Latest Upload Date field in the Update asset details using CSV section is updated.

9. If you would like to see more info about the results of the upload, in the **Update asset details using CSV** section, click **Download Report**.

   A csv file is downloaded that details which Asset IDs were successfully updated and which ones failed.

Hiding Assets

You can hide one or more assets from the asset inventory. An asset that has been hidden isn't shown in the Inventory and it is removed from Groups. However, Events and network activity are still shown for the hidden asset.

An asset that was hidden can be restored from the **Local Settings** > **Assets** > **Hidden Assets** screen, see LOCAL SETTINGS.

To hide one or more assets:

1. Under **Inventory**, click on **Controllers** or **Network Assets**.
2. Select the checkbox next to one or more assets that you would like to remove.
3. In the Header bar, click on the **Actions** button.
4. From the drop-down list, select **Hide Asset**.

   The **Hidden Assets** window opens.
5. In the **Comments** field, you can add free text comments about the asset/s. (Optional)

   > **Note**: Comments are shown in the list of removed assets, on the **Local Settings** > **Assets** > **Hidden Assets** screen.
6. Click **Hide**.

   The asset/s are hidden from the Inventory and Groups.

Perform Asset Specific Tenable Nessus Scan

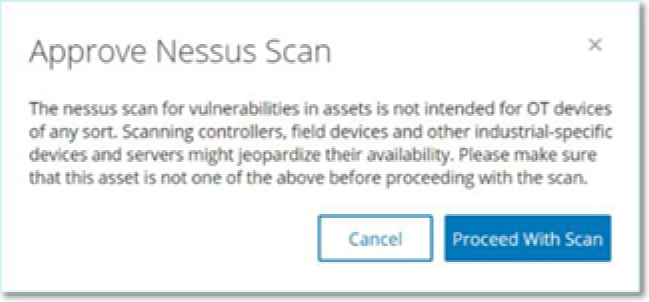
Tenable Nessus is a tool that scans IT devices to detect vulnerabilities. OT Security enables you to run the Tenable Nessus "Basic Network Scan" on specific IT assets within your OT network. This is an active full system scan that gathers additional information about vulnerabilities on the servers and network devices. This scan will use the WMI and SNMP credentials if they were provided by the user. This action is only available for relevant PC based machines. The results of the scan are shown on the Vulnerabilities screen. You can also create customized scans to run a specific set of Tenable Nessus Plugins on a particular set of network assets, see Tenable Nessus Plugin Scans.

> **Note**: Tenable Nessus is an invasive tool which works best in IT environments. It is not recommended for use on OT devices, as it may interfere with their normal operation.

To manually run a Tenable Nessus Scan:

1. Under **Inventory**, click on **Network Assets**.
2. Select the desired asset.
3. In the header bar, click on the **Actions** button.
4. From the drop-down list, select **Nessus Scan**.

   The **Approve Nessus Scan** confirmation window is displayed.



Approve Nessus Scan

The nessus scan for vulnerabilities in assets is not intended for OT devices of any sort. Scanning controllers, field devices and other industrial-specific devices and servers might jeopardize their availability. Please make sure that this asset is not one of the above before proceeding with the scan.

5. Click **Proceed with Scan**.

   The Tenable Nessus Scan is run.

Perform Resync

The Resync function initiates one or more queries to the network and the controller to capture up-to-date information for this asset. You can run all available queries or specific queries.

The following are the queries available for Resync:

- **Backplane scan** — Discovers modules and their specifications within a backplane.
- **DNS scanning** — Searches for the DNS names of the assets in the network.
- **Details query** — Retrieves the controller's hardware and firmware details. The result appears in the **Firmware** field in the **Assets** > **Controllers and Modules** page.
- **Identification query** — Uses multiple protocols to identify the asset.
- **NetBIOS query**— Sends a NetBIOS unicast packet that is used to classify and detect Windows machines in the network.
- **SNMP query (for SNMP enabled assets)** — Retrieves configuration details for SNMP-enabled assets.
- **State** — Detects the current status of the asset (**Running**, **Stopped**, **Fault**, **Unknown**, and **Test**).
- **ARP** — Retrieves the MAC address of new IPs detected in the network. The result appears in the **Details** > **Overview** section.

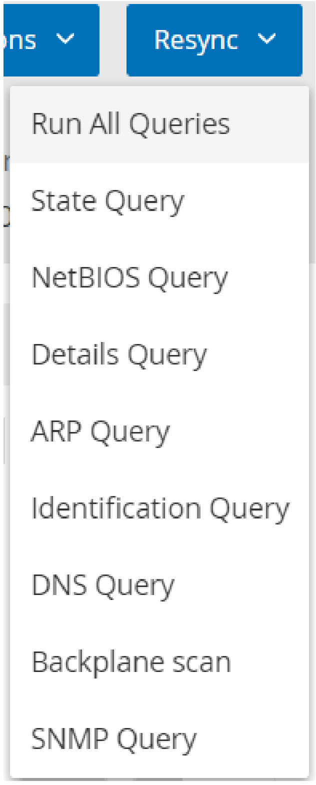
The **Resync** button may be disabled under specific conditions. Possible reasons include:

- The device is unreachable or lacks available queries.
- Permission configured on the **Active Queries** page may restrict non-administrator accounts from initiating certain queries.
- Queries are not enabled on this OT Security deployment.
- All queries in the **Active Queries** > **Manual** section are disabled.
- The asset lacks a known IP address for querying.

To run Resync asset data:

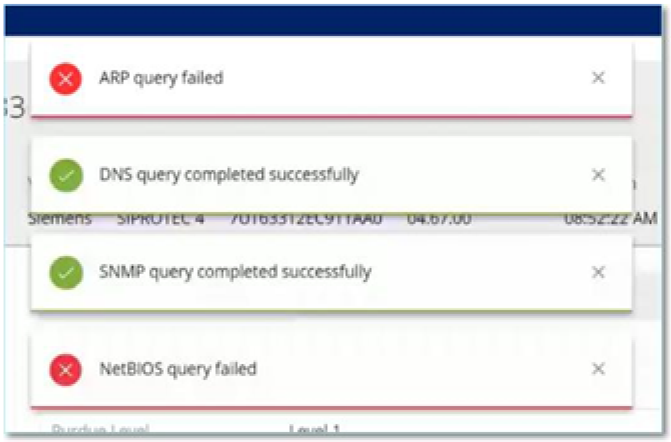
1. On the **Asset Details** page for the desired asset, in the upper-right corner, click **Resync**.

   A drop-down list of queries appears.

2. Click the query that you want to run or click on **Run All Queries** to run all available queries.

   As each query runs, a notification appears with the status of the query.

   ARP query failed

   DNS query completed successfully

   SNMP query completed successfully

   NetBIOS query failed

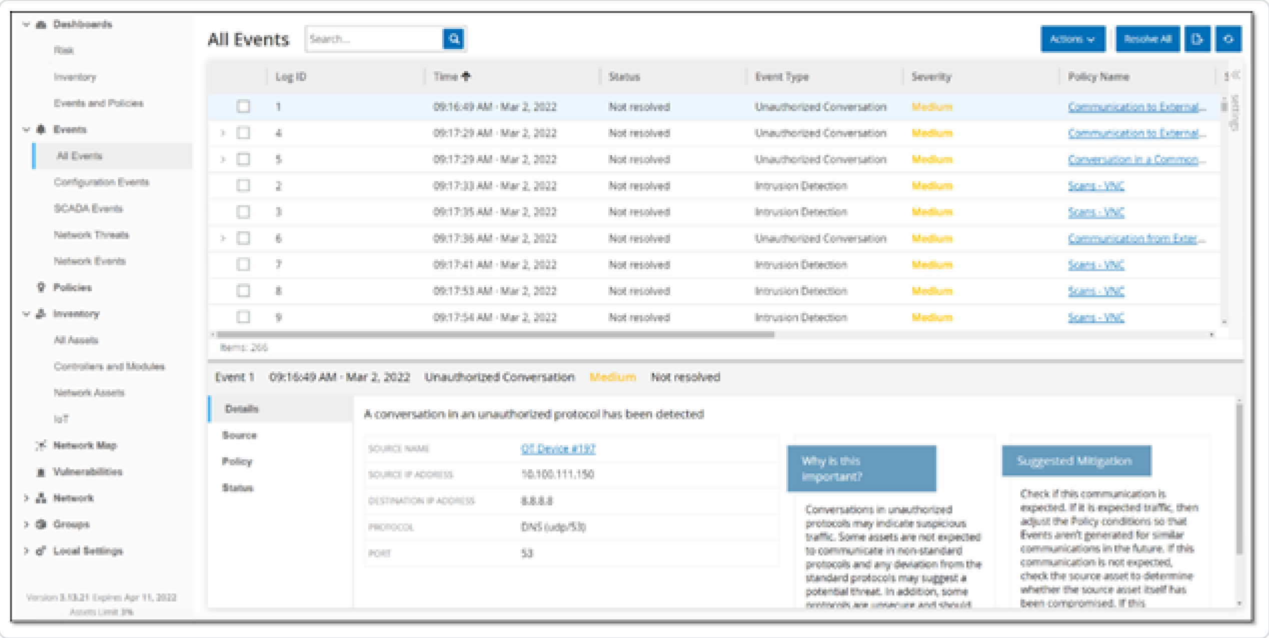
For each completed query, OT Security updates the system data for that asset based on the new data.

Events

Events are notifications that have been generated in the system to call attention to potentially harmful activity in the network. Events are generated by Policies that are set up in the system in one of the following categories: Configuration Events, SCADA Events, Network Threats, or Network Events. A Severity level is assigned to each Policy, indicating the severity of the Event.

Once a Policy has been activated, any event in the system that fits the Policy conditions triggers an Event log. Multiple events with the same characteristics are clustered together into a single cluster.

Viewing Events



	Log ID	Time	Status	Event Type	Severity	Policy Name
☐	1	09:16:49 AM · Mar 2, 2022	Not resolved	Unauthorized Conversation	Medium	Communication to External...
☐	4	09:17:29 AM · Mar 2, 2022	Not resolved	Unauthorized Conversation	Medium	Communication to External...
☐	5	09:17:29 AM · Mar 2, 2022	Not resolved	Unauthorized Conversation	Medium	Conversation in a Common...
☐	2	09:17:33 AM · Mar 2, 2022	Not resolved	Intrusion Detection	Medium	Scans - VNC
☐	3	09:17:35 AM · Mar 2, 2022	Not resolved	Intrusion Detection	Medium	Scans - VNC
☐	6	09:17:36 AM · Mar 2, 2022	Not resolved	Unauthorized Conversation	Medium	Communication from Exter...
☐	7	09:17:41 AM · Mar 2, 2022	Not resolved	Intrusion Detection	Medium	Scans - VNC
☐	8	09:17:53 AM · Mar 2, 2022	Not resolved	Intrusion Detection	Medium	Scans - VNC
☐	9	09:17:54 AM · Mar 2, 2022	Not resolved	Intrusion Detection	Medium	Scans - VNC

Items: 266

Event 1 09:16:49 AM · Mar 2, 2022 Unauthorized Conversation Medium Not resolved

A conversation in an unauthorized protocol has been detected

SOURCE NAME	OT Device #197
SOURCE IP ADDRESS	10.100.111.150
DESTINATION IP ADDRESS	8.8.8.8
PROTOCOL	DNS (udp/53)
PORT	53

Conversations in unauthorized protocols may indicate suspicious traffic. Some assets are not expected to communicate in non-standard protocols and any deviation from the standard protocols may suggest a potential threat. In addition, some protocols are unsecure and should

Check if this communication is expected. If it is expected traffic, then adjust the Policy conditions so that Events aren't generated for similar communications in the future. If this communication is not expected, check the source asset to determine whether the source asset itself has been compromised. If this

All Events that occurred in the system are shown on the **All Events** screen. Specific subsets of the Events are shown on separate screens for each of the following Event categories: **Configuration Events**, **SCADA Events**, **Network Threats**, and **Network Events**.

The top of the screen shows a listing for each Event. For each of the Events screens (Configuration Events, SCADA Events, Network Threats, and Network Events), you can customize the display settings by adjusting which columns are displayed and where each column is positioned. The events can be grouped according to different categories (for example Event type, Severity, Policy Name). You can also sort and filter the Event lists as well as searching for search text. For an explanation of the customization features, see Management Console User Interface Elements.

There is an **Actions** button in the header bar, which enables you to take the following Action on the selected Event/s:

- Resolve – Mark this Event as Resolved.
- Download PCAP – Download the PCAP file for this Event.
- Exclude – Create a Policy Exclusion for this Event.

Detailed information about these actions is given in the following sections.

The bottom of the screen shows detailed information about the selected Event, divided into tabs. Only tabs relevant to the Event type of the selected Event are shown. The following tabs are shown for various types of Events: Details, Code, Source, Destination, Policy, Ports Scanned and Status.

> **Note**: You can drag the panel divider up or down to enlarge/reduce the bottom panel display.

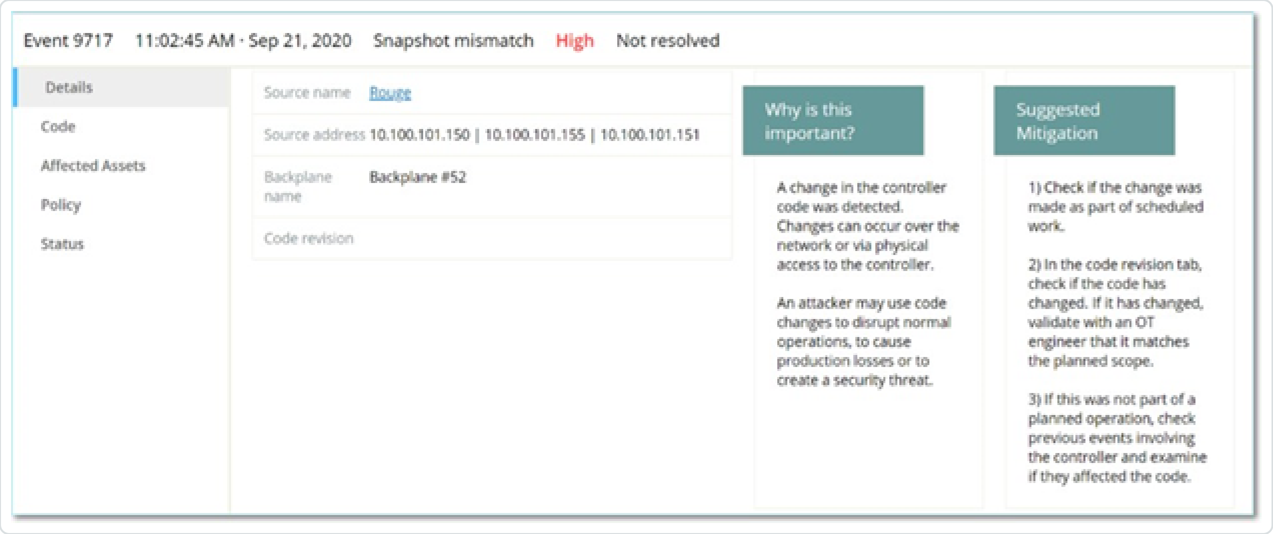
You can download the packet capture file associated with each Event, see Network. The information shown for each Event listing is described in the following table:

Parameter	Description
Name	The name of the device in the network. Click the name of the asset to view the Asset Details Screen for that asset, see Inventory.
Addresses	The IP and/or MAC address of the asset. **Note**: An asset may have multiple IP addresses.
Type	The asset type. See Asset Types for an explanation of the various asset types.
Backplane	The backplane unit that the controller is connected to. Additional details about the backplane configuration are shown in the Asset Details screen.
Slot	For controllers that are on backplanes, shows the number of the slot to which the controller is attached.
Vendor	The asset vendor.
Family	The family name of the product as defined by the controller vendor.
Firmware	The firmware version currently installed on the controller.
Location	The location of the asset, as input by the user in the OT Security asset details. See Inventory.
Last Seen	The time at which the device was last seen by OT Security. This is the last time that the device was connected to the network or performed an activity.
OS	The OS running on the asset.

Log ID	The ID generated by the system to refer to the Event.
Time	The date and time that the Event occurred.
Event Type	Describes the type of activity that triggered the Event. Events are generated by Policies that are set up in the system. For an explanation of the various types of Policies, see Policy Types.
Severity	Shows the severity level of the Event. The following is an explanation of the possible values: None – No reason for concern. Info – No immediate reason for concern. Should be checked out when convenient. Warning – Moderate concern that potentially harmful activity has occurred. Should be dealt with when convenient. Critical – Severe concern that potentially harmful activity has occurred. Should be dealt with immediately.
Policy Name	The name of the Policy that generated the Event. The name is a link to the Policy listing.
Source Asset	The name of the asset that initiated the Event. This field is a link to the Asset listing.
Source Address	The IP or MAC of the asset that initiated the Event.
Destination Asset	The name of the asset that was affected by the Event. This field is a link to the Asset listing.
Destination Address	The IP or MAC of the asset that was affected by the Event.
Protocol	When relevant, this shows the protocol used for the conversation that generated this Event.
Event	Shows the general category of the Event.

Category	**Note**: On the All Events screen, Events of all types are shown. Each of the specific Event screens shows only Events of the specified category. The following is a brief explanation of the Event categories (for a more detailed explanation see Policy Categories and Sub-Categories): • Configuration Events – this includes two sub-categories • Controller Validation Events – These policies detect changes that take place in the controllers in the network. • Controller Activity Events – Activity Policies relate to the Activities that occur in the network (that is, the “commands” implemented between assets in the network). • SCADA Events – policies that identify changes made to the data plane of controllers. • Network Threats Events – these Policies identify network traffic that is indicative of intrusion threats. • Network Events – Policies that relate to the assets in the network and the communication streams between assets.
Status	Shows whether or not the Event has been marked as resolved.
Resolved By	For resolved Events, shows which user marked the Event as resolved.
Resolved On	For resolved Events, shows when the Event was marked as resolved.
Comment	Shows any comments that were added when the Event was resolved.

Viewing Event Details



Event 9717 11:02:45 AM · Sep 21, 2020 Snapshot mismatch High Not resolved

Source name Rouge

Source address 10.100.101.150 | 10.100.101.155 | 10.100.101.151

Backplane name Backplane #52

Code revision

Why is this important?

A change in the controller code was detected. Changes can occur over the network or via physical access to the controller.

An attacker may use code changes to disrupt normal operations, to cause production losses or to create a security threat.

Suggested Mitigation

1) Check if the change was made as part of scheduled work.

2) In the code revision tab, check if the code has changed. If it has changed, validate with an OT engineer that it matches the planned scope.

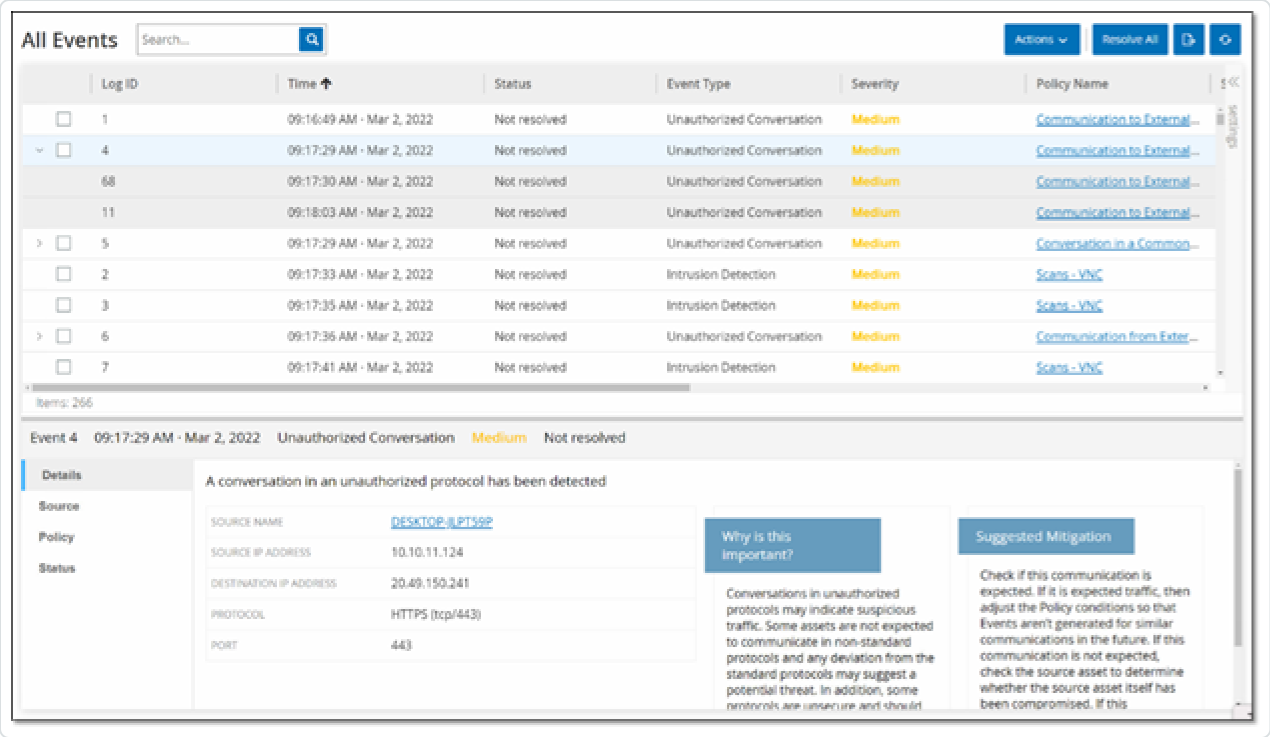
3) If this was not part of a planned operation, check previous events involving the controller and examine if they affected the code.

The bottom of the Events screen shows additional details about the selected Event. The information is divided into tabs. Only tabs that are relevant for the selected Event are displayed. The detailed information includes links to additional information about the relevant entities (Source Asset, Destination Asset, Policy, Group, etc.)

- **Header** – shows an overview of essential info about the Event.
- **Details** – gives a brief description of the Event as well as an explanation of why this information is important and suggested steps that should be taken to mitigate the potential harm caused by the Event. In addition, it shows the source and destination assets that were involved in the Event.
- **Rule Details** (for Intrusion Detection Events) – shows information about the Suricata rule that applies to the Event.
- **Code** – This tab is shown for Controller activities such as code download and upload, HW configuration, and code deletion. It shows detailed information about the relevant code, including specific code blocks, rungs, and tags. The code elements are displayed in a tree structure with arrows for expanding/minimizing the details shown.
- **Source** – shows detailed information about the Source Asset for this Event.
- **Destination** – shows detailed information about the Destination Asset for this Event.
- **Affected Asset** – shows detailed information about the Asset Affected by this Event.

- **Scanned Ports** (for Port Scan Events) – shows the ports that were scanned.
- **Scanned Address** (for ARP Scan Events) – shows the addresses that were scanned.
- **Policy** – shows detailed information about the Policy that triggered the Event.
- **Status** – shows whether or not the Event has been marked as resolved. For resolved Events, shows details about which user marked it as resolved and when it was resolved.

Viewing Event Clusters



	Log ID	Time	Status	Event Type	Severity	Policy Name
□	1	09:16:49 AM · Mar 2, 2022	Not resolved	Unauthorized Conversation	Medium	Communication to External...
˅ □	4	09:17:29 AM · Mar 2, 2022	Not resolved	Unauthorized Conversation	Medium	Communication to External...
	68	09:17:30 AM · Mar 2, 2022	Not resolved	Unauthorized Conversation	Medium	Communication to External...
	11	09:18:03 AM · Mar 2, 2022	Not resolved	Unauthorized Conversation	Medium	Communication to External...
› □	5	09:17:29 AM · Mar 2, 2022	Not resolved	Unauthorized Conversation	Medium	Conversation in a Common...
□	2	09:17:33 AM · Mar 2, 2022	Not resolved	Intrusion Detection	Medium	Scans - VNC
□	3	09:17:35 AM · Mar 2, 2022	Not resolved	Intrusion Detection	Medium	Scans - VNC
› □	6	09:17:36 AM · Mar 2, 2022	Not resolved	Unauthorized Conversation	Medium	Communication from Exter...
□	7	09:17:41 AM · Mar 2, 2022	Not resolved	Intrusion Detection	Medium	Scans - VNC

Items: 266

Event 4 09:17:29 AM · Mar 2, 2022 Unauthorized Conversation Medium Not resolved

A conversation in an unauthorized protocol has been detected

SOURCE NAME	DESKTOP-JLPT59P
SOURCE IP ADDRESS	10.10.11.124
DESTINATION IP ADDRESS	20.49.150.241
PROTOCOL	HTTPS (tcp/443)
PORT	443

Why is this important?

Conversations in unauthorized protocols may indicate suspicious traffic. Some assets are not expected to communicate in non-standard protocols and any deviation from the standard protocols may suggest a potential threat. In addition, some protocols are unsecure and should

Suggested Mitigation

Check if this communication is expected. If it is expected traffic, then adjust the Policy conditions so that Events aren't generated for similar communications in the future. If this communication is not expected, check the source asset to determine whether the source asset itself has been compromised. If this

To facilitate the monitoring of events, multiple events with the same characteristics are clustered together into a single cluster. The clustering is based on event type (that is share the same Policy), source and destination assets, and the time range in which the Events occur. For information on configuring Event Clusters, see Event Clusters.

Clustered Events are denoted with an arrow next to the Log ID. To view the individual Events in a Cluster, click on the record to expand the list.

Resolve Events

Once an authorized technician assesses an event and takes the necessary actions to address the problem or determines that there is no action required, then the event can be marked as **Resolved**. When one event that is part of a cluster is resolved, all events in that cluster are marked as resolved. You can select several events and mark them as **Resolved** in a batch process. You can also mark all events (or all events of a particular category) as **Resolved** simultaneously.

Resolve Individual Events

To mark specific events as resolved:

1. In the relevant **Events** page (Configuration Events, SCADA Events, Network Threats, or Network Events), select the check box next to one or more events that you want to mark as **Resolved**.

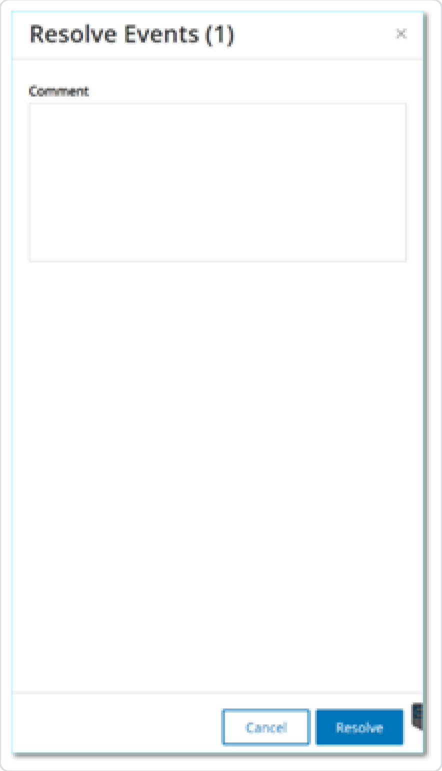
2. In the header bar, click **Actions**.

   A drop-down menu appears.

   > **Note**: When you are marking multiple events as **Resolved**, you must click the **Resolve** button to resolve all selected events, and not the **Resolve All** button. The **Resolve All** button is used to resolve all events, even those that are not selected.

3. Select **Resolve**.

   The **Resolve Event** window appears.



4. (Optional) In the **Comment** box, you can add a comment to describe the mitigation steps to resolve the issues.
5. Click **Resolve**.

   The status of the selected event/s is marked as **Resolved**.

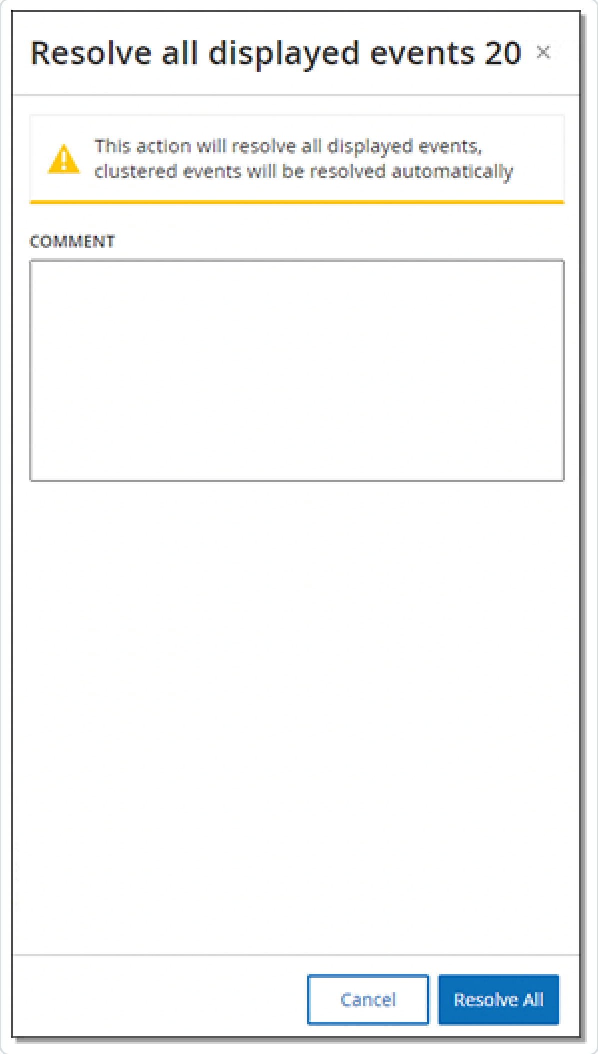
Resolve All Events

The **Resolve All** action applies to all events on the current page based on the filters that are currently applied to the display. For example, if the **Configuration Events** page is open, then **Resolve All** resolves Configuration Events, but not SCADA Events and so on. For clustered events, all events in the cluster are marked as resolved.

To mark all events as resolved:

1. In the relevant **Events** page (Configuration Events, SCADA Events, Network Threats, or Network Events), click **Resolve All** in the header bar.

   The **Resolve All Events** window appears with the number of events to be resolved.



Resolve all displayed events 20

This action will resolve all displayed events, clustered events will be resolved automatically

COMMENT

2. (Optional) In the **Comment** box, you can add a comment about the group of events being resolved.

3. Click **Resolve**.

   OT Security displays a warning message.

4. Click **Resolve**.

   OT Security marks all events in the current display as **Resolved**.

Create Policy Exclusions

If a policy generates events for specific conditions that do not pose a security threat, you can exclude those conditions from the policy (that is, stop generating events for those particular conditions). For example, if you have a policy that detects changes in Controller State that occur during Workday hours, but you determine that for a particular controller it is normal for the state to change during those times, you can exclude that controller from the policy.

You can create exclusions from the **Events** page, based on events generated by your policies. You can specify which conditions of a particular event you want to exclude from the policy.

To resume generating events for the specified conditions at a later time, you can delete the exclusion, see Policies.

To create a policy exclusion:

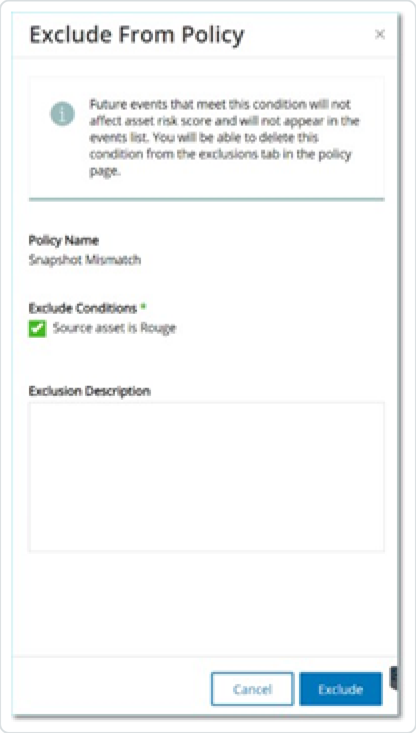
1. In the relevant **Events** page, (Configuration Events, SCADA Events, Network Threats, or Network Events), select the event for which you want to create an exclusion.
2. In the header bar, click **Actions** or right-click the event).

   The **Actions** menu appears.
3. Click **Exclude from Policy**.

   The **Exclude from Policy** window opens.
4. In the **Exclude Condition** section, by default all conditions are selected.

   This causes events with any of the specified conditions to be excluded from the policy. You can deselect the check box next to each condition for which you want to continue generating events.

   > **Note**: For example, in the following window, to exclude the specified source and destination assets and IPs from this policy, but to continue applying this policy to UDP conversations between other assets in the network, then you should deselect “Protocol is UDP”.



Exclude From Policy

Future events that meet this condition will not affect asset risk score and will not appear in the events list. You will be able to delete this condition from the exclusions tab in the policy page.

Policy Name
Snapshot Mismatch

Exclude Conditions *
☑ Source asset is Rouge

Exclusion Description

Note: The set of conditions that can be excluded differ depending on the type of policy, see the following table.

5. (Optional) In the **Exclusion Description** box, you can add a comment about the exclusion.

6. Click **Exclude**.

   OT Security creates the exclusion.

   The following table shows the conditions that can be excluded for each type of event.

Policy Category	Event Type	Excludable Conditions
Controller Activities	Configuration Events (Activities)	• Source asset • Source IP • Destination asset • Destination IP
Controller	Change in Key State	Source asset

Validation		
	Change in Controller State	Source asset
	Change in FW Version	Source asset
	Module Not Seen	Source asset
	Snapshot Mismatch	Source asset
Network	Asset Not Seen	Source asset
	Change in USB Configuration	• Source asset • USB Device ID
	IP Conflict	• MAC Addresses • IP Address
	Network Baseline Deviation	• Source asset • Source IP • Destination asset • Destination IP • Protocol
	Open Port	• Source asset • Source IP • Port
	RDP Connection	• Source asset • Source IP • Destination asset

		• Destination IP
	Unauthorized Conversation	• Source asset • Source IP • Destination asset • Destination IP • Protocol
	FTP Log In (Failed and Successful)	• Source asset • Source IP • Destination asset • Destination IP
	Telnet Log In (Attempt, Failed and Successful)	• Source asset • Source IP • Destination asset • Destination IP
Network Threat	Intrusion Detection	• Source asset • Source IP • Destination asset • Destination IP • SID
	ARP Scan	• Source asset

		• Source IP
	Port Scan	• Source asset • Source IP
SCADA	Modbus Illegal Data Address	• Source asset • Source IP • Destination asset • Destination IP
	Modbus Illegal Data Value	• Source asset • Source IP • Destination asset • Destination IP
	Modbus Illegal Function	• Source asset • Source IP • Destination asset • Destination IP
	Unauthorized Write	• Source asset • Destination asset • Tag Name
	IEC60870-5-104 StartDT IEC60870-5-104 StopDT	• Source asset • Source IP

		• Destination asset • Destination IP
	IEC60870-5-104 function code-based events	• Source asset • Source IP • Destination asset • Destination IP • COT
	DNP3 events	• Source asset • Source IP • Destination asset • Destination IP • Source DNP3 address • Destination DNP3 address

Download Individual Capture Files

OT Security stores the packet capture data associated with each Event in the network. The data is stored as PCAP files, which can be downloaded and analyzed using Network Protocol Analysis tools (for example, Wireshark, and so on). You can also download PCAP files for the entire network, see Network.

Note: PCAP files are only available if the Packet Capture feature is activated. The Packet Capture feature can be activated from the **Local Settings** > **System Configuration** > **Packet Captures**, see Packet Captures. PCAP files are only available for events that relate to network activity, such as, Controller Activities, Network Threats, SCADA Events, and some types of Network Events.

Download a PCAP File

To download a PCAP file:

1. In the **Events** page, select the check box next to the event for which you want to download the PCAP file.
2. In the header bar, click **Actions**.

   The **Actions** menu appears.
3. Select **Download Capture File**.

   The zipped PCAP file is downloaded to your local machine.

Create FortiGate Policies

The FortiGate integration allows you to use certain OT Security Events to create firewall policies/rules in the FortiGate Next Generation Firewall. The Event types that allow this capability (supported events) are Baseline Deviation, Unauthorized Conversation, Intrusion Detection, and RDP Connection (authenticated and not authenticated). The FortiGate policy is set to automatically apply to the source and destination assets involved in the OT Security Event. By default, the policy causes FortiGate to deny (that is block) traffic of the specified type. A FortiGate administrator can adjust the policy settings in the FortiGate application.

Before you suggest FortiGate policies, you need to set up the integration for your FortiGate Firewall server with OT Security. See FortiGate Firewalls.

To suggest a FortiGate policy:

1. In the relevant **Events** page (Configuration Events, SCADA Events, Network Threats, or Network Events), select the event for which you want to create a FortiGate policy.

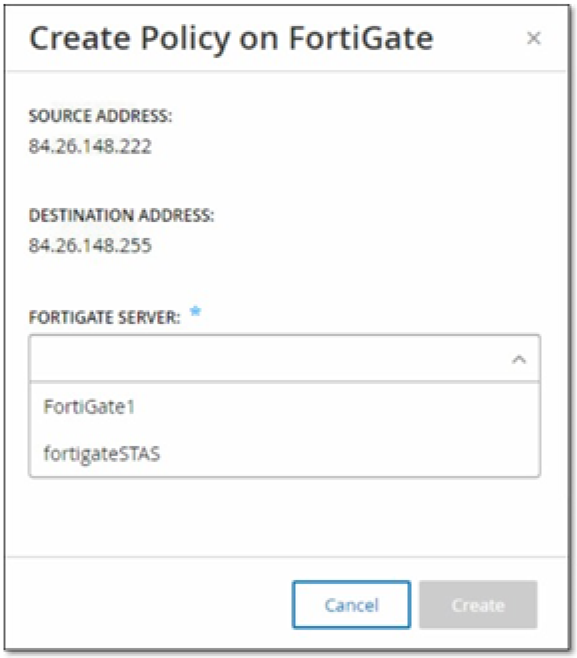
2. In the header bar, click **Actions** or right-click the event.

   A drop-down menu appears.

3. Select **Create FortiGate Policy**.

   The **Create Policy** on FortiGate panel opens, with the **Source Address** and **Destination Address** of the assets involved in the OT Security Event already filled in.

4. In the **FortiGate Server** drop-down box, select the required server.



Create Policy on FortiGate

SOURCE ADDRESS:
84.26.148.222

DESTINATION ADDRESS:
84.26.148.255

FORTIGATE SERVER: *

5. Click **Create**.

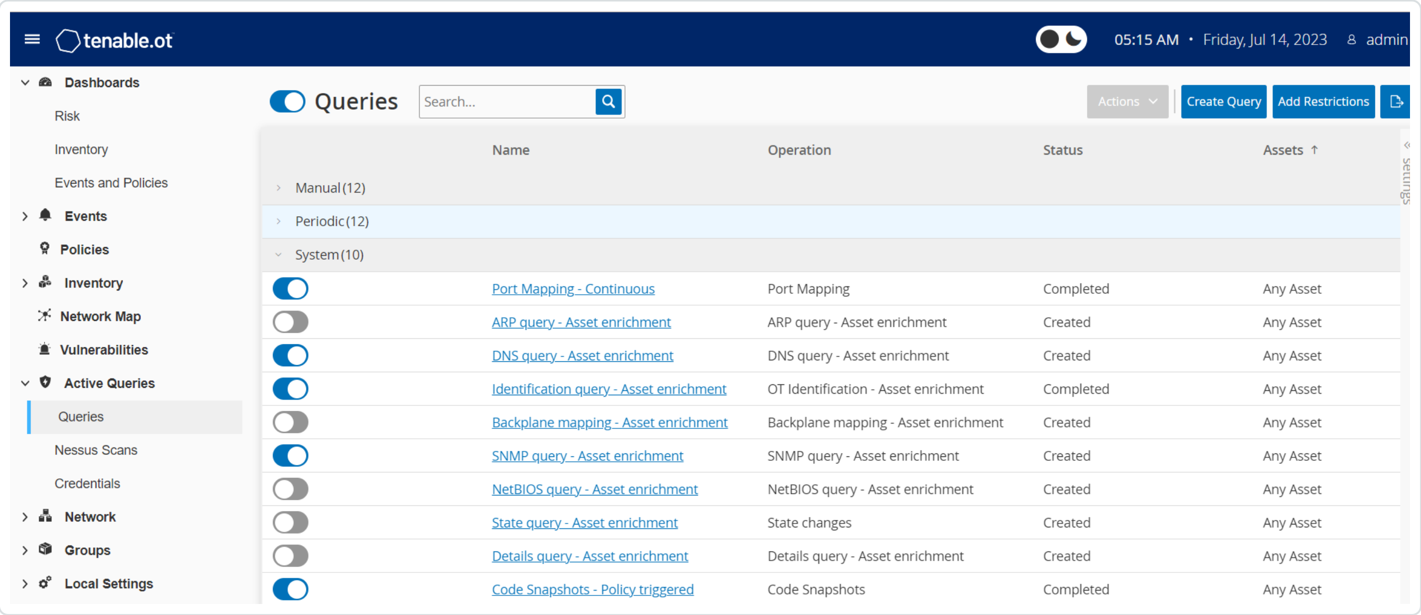
   The policy is created in FortiGate and the panel closes. You can view the new policy in the FortiGate application. A FortiGate administrator can adjust the settings as needed.

Active Queries

The OT Security **Queries** window allows you to configure and activate the queries features. For a general explanation of the Queries technology, see OT Security Technologies. As part of the initial setup, Tenable recommends that you activate all query capabilities. At any time, you can activate/de-activate any query functions. You can also adjust the settings for when and how to execute the queries.

In addition to the automatic queries that run periodically, you can initiate queries on demand by clicking the toggle next to the query.

> **Note**: Turning off queries may cause assets to remain unidentified. OT Security keeps track of devices through passive monitoring as well as active querying.



	Name	Operation	Status	Assets ↑
› Manual (12)				
› Periodic (12)				
˅ System (10)				
●	Port Mapping - Continuous	Port Mapping	Completed	Any Asset
○	ARP query - Asset enrichment	ARP query - Asset enrichment	Created	Any Asset
●	DNS query - Asset enrichment	DNS query - Asset enrichment	Created	Any Asset
●	Identification query - Asset enrichment	OT Identification - Asset enrichment	Completed	Any Asset
○	Backplane mapping - Asset enrichment	Backplane mapping - Asset enrichment	Created	Any Asset
●	SNMP query - Asset enrichment	SNMP query - Asset enrichment	Created	Any Asset
○	NetBIOS query - Asset enrichment	NetBIOS query - Asset enrichment	Created	Any Asset
○	State query - Asset enrichment	State changes	Created	Any Asset
○	Details query - Asset enrichment	Details query - Asset enrichment	Created	Any Asset
●	Code Snapshots - Policy triggered	Code Snapshots	Completed	Any Asset

You can activate and configure queries from the **Active Queries** > **Queries** page. There are three options available to control Active Queries in a granular manner: **Manual**, **Periodic**, and **System**.

Manual — This controls queries that you can execute when reviewing a single asset by using the **Resync** option for that asset. Manual queries allow you to control the product functionality for specific kinds of queries when reviewing a single monitored asset. Enabling the options for resync allow you to perform those queries when reviewing an asset. For more information about the **Resync** option, see Perform Resync.

Periodic — These are queries that run on a regular time interval that you set. Once enabled, the query performs according to the schedule that you specify in the **Repeats** column on this page. You can run all periodic queries on-demand by right-clicking them and selecting **Run Now**. Doing so does not affect the schedule or time set for the next query. All queries that you create manually have the periodic setting.

System — These are queries that OT Security handles automatically based on certain criteria or conditions. For example, Asset Enrichment-based queries occur whenever Tenable initially observes a device passively or actively. With Asset Enrichment, OT Security fingerprints and identifies the device as soon as it appears on the network. Asset Enrichment also controls the **Policy Triggered Snapshots** under the control of the policy configuration for controller-based events.

Note: If you use Asset Enrichment, ensure that you enable these queries:

- Port Mapping — Continuous
- Identification Query — Asset enrichment

The Queries table shows the following information:

Column	Description
Enable or Disable toggle	Click the toggle next to the query name to enable or disable the query.
Name	Name of the query.
Operation	The type of query: Discovery, Periodic, or System query.
Status	The status of the query: **Created**, **Ongoing**, **Preparing**, **Completed**, and **Failed**.
Assets	The asset groups that this query must poll. **Note**: You can build your own asset groups to use in the queries that you configure.

Create Query

You can create queries for different projects and functions to control which query runs and when it runs.

For example, you can configure custom queries for the following scenarios:

- Different maintenance times for different parts of the plant.
- Different projects and criticality for different assets.
- Different queries for OT functions and IT functions.

To create a query:

1. Go to **Active Queries** > **Queries**.

   The **Queries** window appears.

2. Click **Create Query**.

   The **Create Query** panel appears.

3. Select the required Query type from one of the following options:

   - **Discovery** — These are queries that detect live assets in the network that OT Security monitors.

     - **Asset Discovery** leverages Internet Control Message Protocol (ICMP) or ping to detect live and responding IP addresses.
     - **Active Asset Tracking** regularly attempts to ping a known, monitored asset to ensure that it is still up and available.
     - **Controller Discovery** sends a set of multicast packets to the network to provoke controllers or ICS devices to reply directly to OT Security with their information.

   - **IT** — These are queries to fetch additional data points from monitored IT-type assets that OT Security observed. With the exception of NetBIOS, these IT-type queries require credentials.

  - **NetBIOS query** attempts to discover any devices listening for NetBIOS in the broadcast range of OT Security Sensoror OT Security itself. This type of query is suitable for identifying nearby Windows devices.

  - **SNMP query** uses SNMP v2 or SNMP v3 credentials solicit network infrastructure or networked devices supporting SNMP for their identification details. OT Security queries for SNMP system description and other parameters to help add asset context and assist with fingerprinting.

  - **WMI details query** fetches a variety of important data points from Windows-based systems. This requires the queried system to have a Windows account (local or domain) with sufficient permissions to poll the Windows Management Instrumentation (WMI) service.

  - **WMI USB State** queries determine if removable media like USB-drives or portable hard-drives are connected to the Windows device, such as an engineering workstation or server. This query is closely related to the policy **Change in USB Configuration on Windows Machines** as it is a prerequisite for this policy to work correctly.

- **OT** — These are queries designed to poll controllers and embedded devices safely for more information using their proprietary protocols. OT Security performs read-only queries to gather device information. In some cases, OT Security queries more than just device identification details and can show information, such as PLC running state, or other modules connected to the backplane. OT Security attempts to query devices that are listening for proprietary protocols that OT Security supports. For more information about customizing queries or protocols used, see the documentation.

4. Click **Next**.

   The **Query definition** panel appears.

5. In the **Name** box, type a name for the query.

6. In the **Description** box, type a description about the query.

7. In the **Assets** drop-down box, select the assets.

   Note: You can also use the **Search** box to search for a specific asset.

8. In the **Repeats Every** section, type a number and select **Days** or **Weeks** from the drop-down box, . For certain queries, you can also set **Minutes** and **Hours**.

   If you select **Weeks**, indicate the days of the week to run the queries.

9. In the **At** box, set the time of day to run the queries (in HH:MM:SS) by clicking on the clock icon and selecting the time, or by typing the time manually.

10. Click the **Query State** toggle to enable the query.

11. (Only for Asset Discovery) In the **IP Ranges** box, type the IP addresses of assets.

12. (Only for Discovery Queries) In the **Number of Assets to poll simultaneously** drop-down box, select the number of assets. Available options are: 10 Assets, 20 Assets, or 30 Assets.

13. (Only for Discovery Queries) In the **Time Between Discovery Queries** drop-down box, select the time between the discovery queries. Available options are: 1 second, 2 second, or 3 second.

Add Restrictions

You can block queries from running on specific assets, such as IP ranges, OT servers, Tablets, Medical Devices, Domain Controllers, and so on.

To add restrictions:

1. Go to **Active Queries** > **Queries**.

   The **Queries** window appears.

2. In the **Blocked Assets** drop-down box, select the required assets to block.

   > **Note**: You can use the search box to search for specific assets.

3. In the **Restricted Clients** drop-down box, select the required clients.

4. In the **Blackout Period** drop-down box, select the duration for which you want to block the assets. Available options are: **None**, **Working Hours**.

5. Click **Save**.

   OT Security applies the restrictions on the specific clients and assets.

View Query

To view details of a query:

1. Go to **Active Queries** > **Queries**.

   The **Queries** window appears.

2. In the row of the query you want to view, do one of the following:

   - Right-click the query and select **View**.

   - Select the query, then from the **Actions** menu, select **View**.

   A window appears with the details of the query.

Edit Query

To edit details of a query:

1. Go to **Active Queries** > **Queries**.

   The **Queries** window appears.

2. From the list of queries, select the one you want to edit and do one of the following:

   - Right-click the query and select **Edit**.
   - Select the query and select **Edit** from the **Actions** menu.

   The **Edit Query** panel appears.

   > **Note**: You can also edit a query from the **Query Details** page.

3. Modify the query as needed.

4. Click **Save**.

Duplicate a Query

Note: You can only create a duplicate query for **Periodic** queries.

1. Go to **Active Queries** > **Queries**.

   The **Queries** window appears.

2. From the list of queries, select the one you want to create a copy and do one of the following:

   - Right-click the query and select **Duplicate**.
   - Select the query and then from the **Actions** menu, select **Duplicate**.

   The **Duplicate Query** panel appears with details of the query.

   Note: You can also create a duplicate of a query from the Query Details page.

3. Rename the query and modify the details as needed.

4. Click **Save**.

   OT Security saves the query in the Queries Table.

Run a Query

You can run periodic queries when needed.

> **Note**: The **Run Now** option is available only for **Periodic** queries.

To run a query:

1. Go to **Active Queries** > **Queries**.

   The **Queries** window appears.

2. From the list of queries, select the one you want to run and do one of the following:

   - Right-click the query and select **Run now**.

   - Select the query, then from the **Actions** menu, select **Run now**.

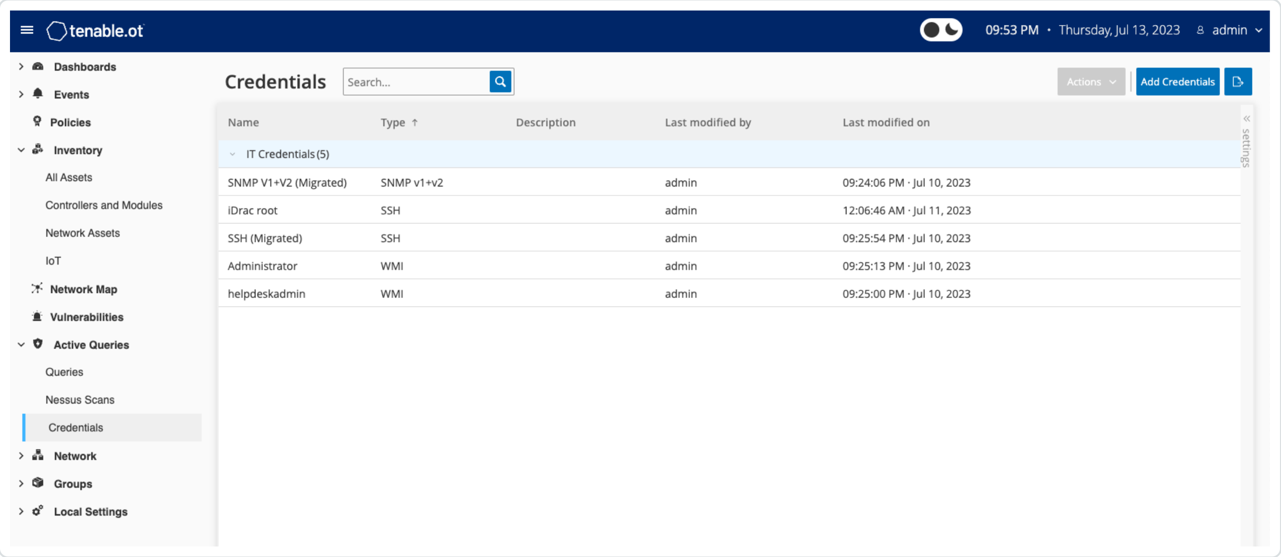
   A message asks for confirmation to run the query.

3. Click **Ok**.

   OT Security runs the selected query.

Credentials

Use the **Credentials** page to configure device credentials where required. In many cases, devices do not require credentials as long as you are communicating in their native network protocols, or proprietary protocols. However, certain devices that OT Security support may require credentials to perform asset discovery.



Name	Type ↑	Description	Last modified by	Last modified on
IT Credentials (5)				
SNMP V1+V2 (Migrated)	SNMP v1+v2		admin	09:24:06 PM · Jul 10, 2023
iDrac root	SSH		admin	12:06:46 AM · Jul 11, 2023
SSH (Migrated)	SSH		admin	09:25:54 PM · Jul 10, 2023
Administrator	WMI		admin	09:25:13 PM · Jul 10, 2023
helpdeskadmin	WMI		admin	09:25:00 PM · Jul 10, 2023

Add Credentials

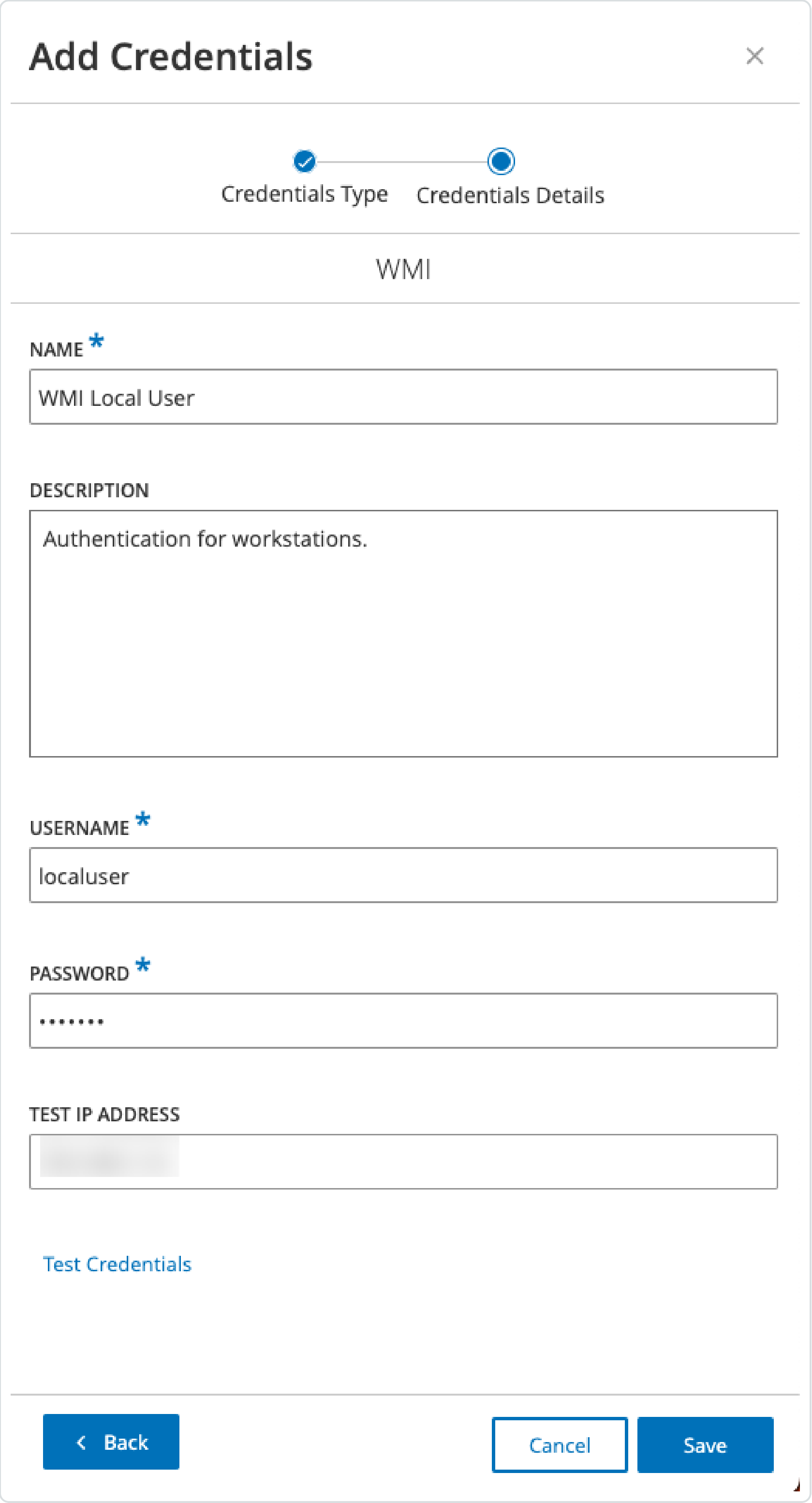
To add credentials:

1. Go to **Active Queries** > **Credentials**.

   The **Credentials** window appears.

2. In the upper-right corner, click **Add Credentials**.

   The **Add Credentials** panel appears.



Add Credentials

WMI

NAME *

WMI Local User

DESCRIPTION

Authentication for workstations.

USERNAME *

localuser

PASSWORD *

•••••••

TEST IP ADDRESS

[redacted]

3. Click to select the credential type. The following options are available:

   - ABB RTU 500

   - Bachmann

   - Concept

   - Sel

   - SicamA8000

   - SIPROTEC 5

   - SNMP v1+v2

   - SNMP v3

   - SSH

   - WMI

4. Click **Next**.

   The **Credentials Details** panel appears.

5. Provide the following details:

   - **Name** — A name for the credentials.

   - **Description** — A description for the credentials.

   - **Username** — The username that you want to use.

   - **Password** — The password for the credentials.

   - **Test IP Address** — An IP address for testing the credentials.

6. Click **Test Credentials** to test that the credentials work.

7. Click **Save**.

   OT Security saves the credentials and they appear in the **Credentials** page.

Edit Credentials

You can edit your credential details.

To edit credentials:

1. Go to **Active Queries** > **Credentials**.

   The **Credentials** window appears.

2. Do one of the following:

   - Right-click the required credential and select **Edit**.
   - Select the required credential, then from the **Actions** menu, select **Edit**.

   The **Edit Credentials** panel appears.

3. Modify the details as needed.
4. Click **Save**.

Delete Credentials

You can delete the credentials that you no longer need.

To delete credentials:

1. Go to **Active Queries** > **Credentials**.

   The **Credentials** window appears.

2. Do one of the following:

   - Right-click the required credential and select **Delete**.

   - Select the required credential, then from the **Actions** menu, select **Delete**.

   OT Security deletes the selected credentials.

WMI Accounts

To enable OT Security to perform Windows Management Instrumentation (WMI) queries, you can set up a WMI account. OT Security relies on WMI queries to obtain more information about Windows systems.

OT Security depends on the same WMI methods as Tenable Nessus when performing WMI queries. To set up a WMI account for scanning, see the Enable Windows Logins for Local and Remote Audits section in the Tenable Nessus User Guide.

Nessus Plugin Scans

The Tenable Nessus plugin scan launches an advanced Nessus scan that executes a user-defined list of Plugins on the assets specified in the list of CIDRs and IP addresses.

The OT Security executes the scan on responsive assets within the designated CIDRs. However, to protect your OT devices, only confirmed network assets in the given range (non-PLCs) are scanned. Assets of the type “Endpoint” are not scanned.

Note: Tenable Nessus is an invasive tool which works best in IT environments. It is not recommended for use on OT devices, as it may interfere with their normal operation.

To run a basic Nessus scan on any one asset, see Inventory.

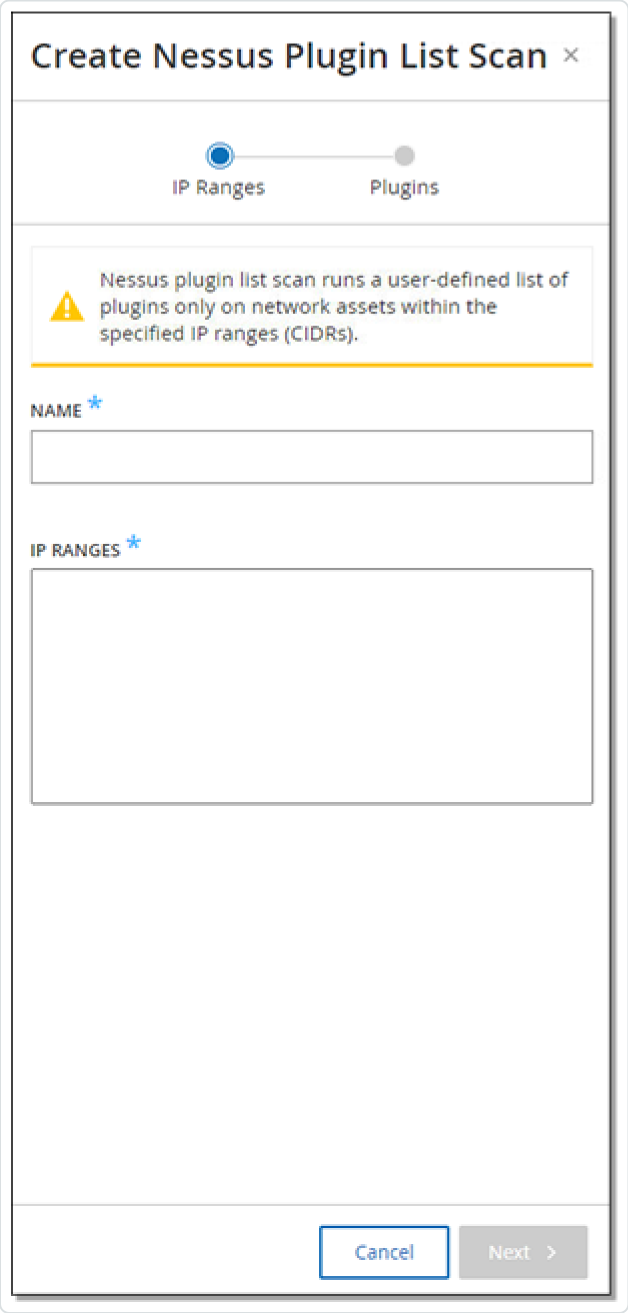
Note: The basic scan can be run on assets of type “Endpoint”.

To create a Nessus Plugin Scan:

1. Go to **Active Queries** > **Nessus Scans**.

2. Click **Create Scan**.

   The **Create Nessus Plugin List Scan** panel appears.


Create Nessus Plugin List Scan

Nessus plugin list scan runs a user-defined list of plugins only on network assets within the specified IP ranges (CIDRs).

NAME *

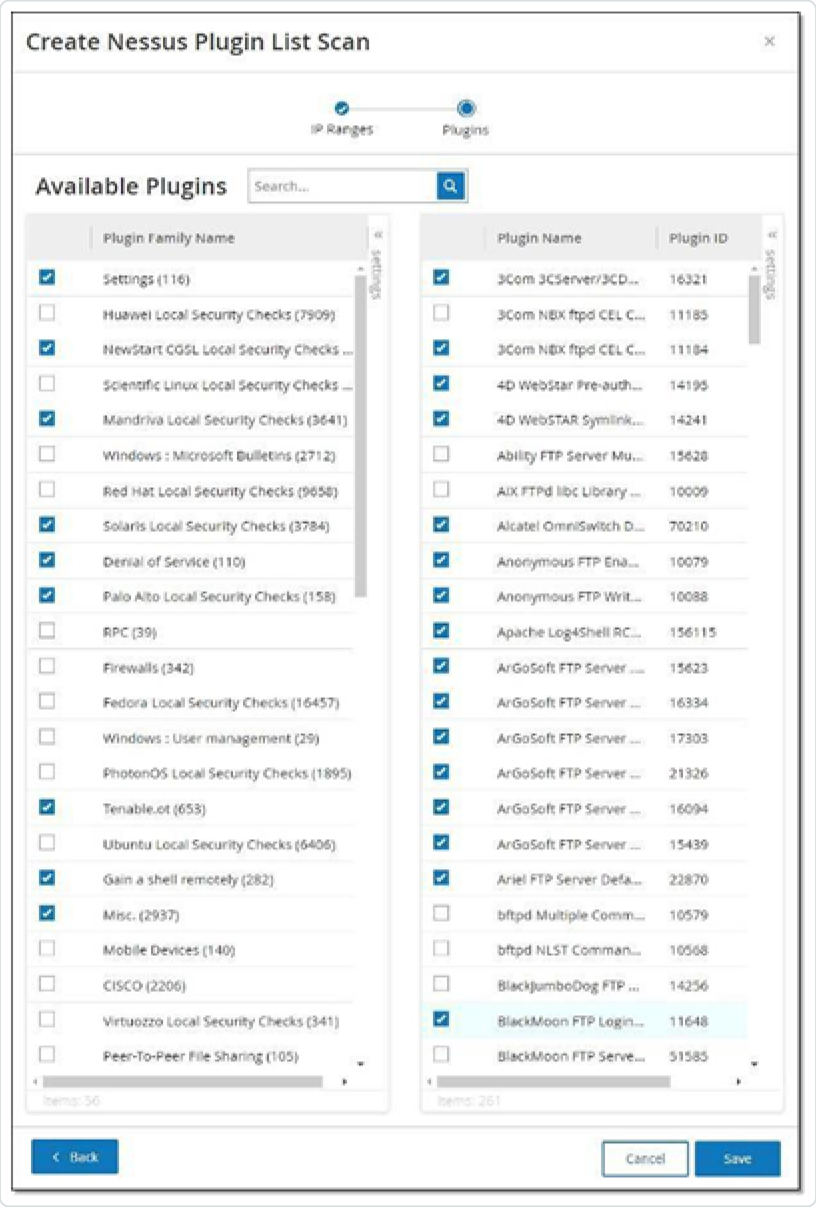
IP RANGES *

3. In the **Name** box, type a name for the Nessus scan.

4. In the **IP Ranges** box, type a range of IPs or CIDRs.

5. Click **Next**.

   The **Plugins** pane appears.



Available Plugins

	Plugin Family Name
☑	Settings (116)
□	Huawei Local Security Checks (7909)
☑	NewStart CGSL Local Security Checks ...
□	Scientific Linux Local Security Checks ...
☑	Mandriva Local Security Checks (3641)
□	Windows : Microsoft Bulletins (2712)
□	Red Hat Local Security Checks (9658)
☑	Solaris Local Security Checks (3784)
☑	Denial of Service (110)
☑	Palo Alto Local Security Checks (158)
□	RPC (39)
□	Firewalls (342)
□	Fedora Local Security Checks (16457)
□	Windows : User management (29)
□	PhotonOS Local Security Checks (1895)
☑	Tenable.ot (653)
□	Ubuntu Local Security Checks (6406)
☑	Gain a shell remotely (282)
☑	Misc. (2937)
□	Mobile Devices (140)
□	CISCO (2206)
□	Virtuozzo Local Security Checks (341)
□	Peer-To-Peer File Sharing (105)

	Plugin Name	Plugin ID
☑	3Com 3CServer/3CD...	16321
□	3Com NBX ftpd CEL C...	11185
☑	3Com NBX ftpd CEL C...	11184
☑	4D WebStar Pre-auth...	14195
☑	4D WebSTAR Symlink...	14241
□	Ability FTP Server Mu...	15628
□	AIX FTPd libc Library ...	10009
☑	Alcatel OmniSwitch D...	70210
☑	Anonymous FTP Ena...	10079
☑	Anonymous FTP Writ...	10088
☑	Apache Log4Shell RC...	156115
☑	ArGoSoft FTP Server ...	15623
☑	ArGoSoft FTP Server ...	16334
☑	ArGoSoft FTP Server ...	17303
☑	ArGoSoft FTP Server ...	21326
☑	ArGoSoft FTP Server ...	16094
☑	ArGoSoft FTP Server ...	15439
☑	Ariel FTP Server Defa...	22870
□	bftpd Multiple Comm...	10579
□	bftpd NLST Comman...	10568
□	BlackJumboDog FTP ...	14256
☑	BlackMoon FTP Login...	11648
□	BlackMoon FTP Serve...	51585

> **Note**: The listed plugins are device-specific. Your license must be up to date in order to receive new Plugins. To update your license, see License.

6. Select Plugin Families as desired in the left column to include them in the scan, and deselect individual Plugins as desired in the right column.

> **Note**: For more information about Tenable Nessus Plugin Families, see https://www.tenable.com/plugins/nessus/families.

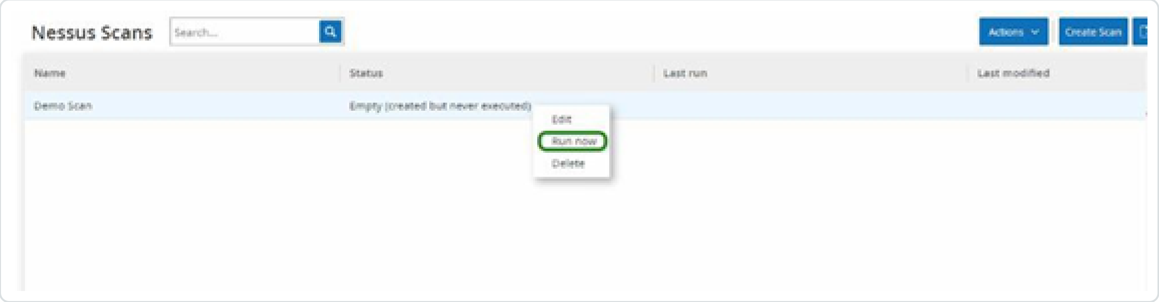
7. Click **Save**.

The new Nessus scan appears in the **Nessus Scans** screen.

> **Note**: To edit or delete an existing Tenable Nessus Scan, right-click the desired Scan row and select **Edit** or **Delete**.

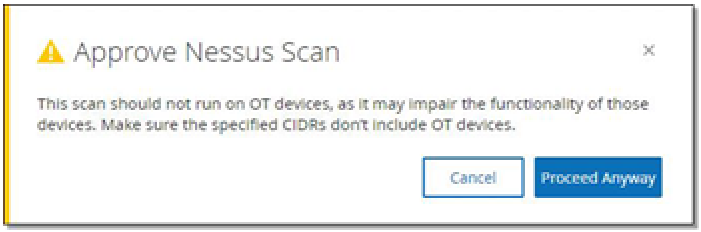
To run a Nessus Plugin Scan:

1. On the **Nessus Scans** screen, select the desired Scan row, right-click and select **Run now**, or click **Actions** > **Run now**.



Name	Status	Last run	Last modified
Demo Scan	Empty (created but never executed)		

The **Approve Nessus Scan** dialog appears.


Approve Nessus Scan

This scan should not run on OT devices, as it may impair the functionality of those devices. Make sure the specified CIDRs don't include OT devices.

2. If you know there are no OT devices included in the scan, click **Proceed Anyway**.

   The dialog closes and the Scan is saved.

3. To run the Scan, right-click on the Scan row again and select **Run now**.

   The **Approve Nessus Scan** dialog appears again.

4. Click **Proceed Anyway**.

   The scan is now running. Scans may be paused/resumed, stopped, and killed, depending on their current status.

Network

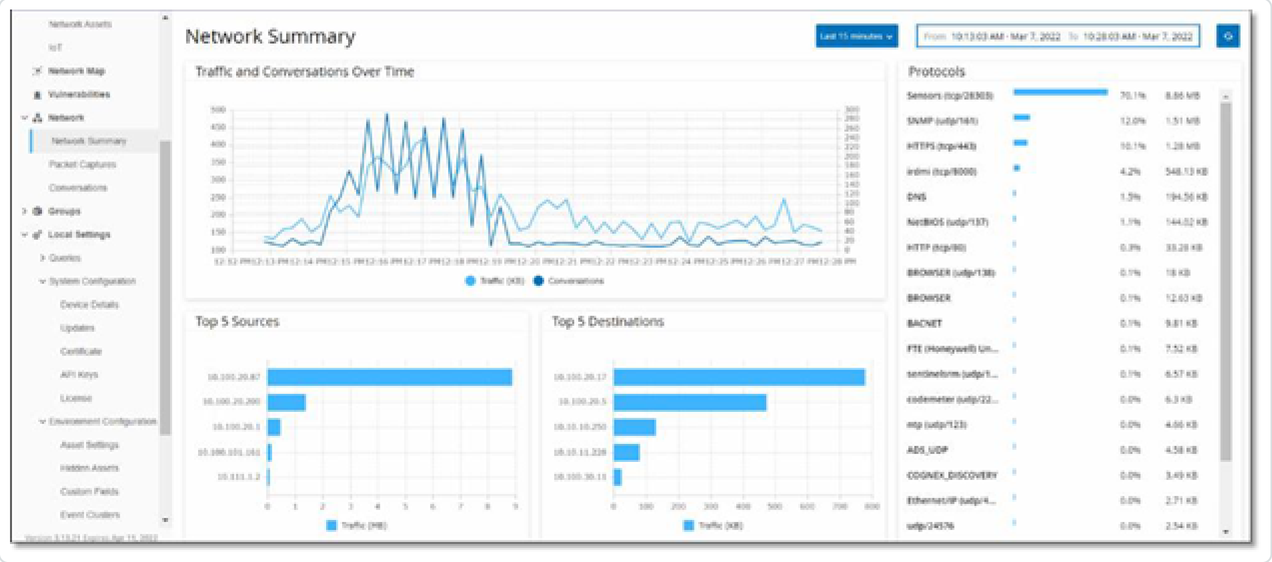
OT Security monitors all activity in your network and shows this information in the **Network** page.

OT Security shows the network data on three separate windows.

- **Network Summary**— Shows an overview of the network activity.
- **Packet Captures** — Shows a listing of the PCAP files captured by the system.
- **Conversations** — Shows a list of all conversations detected in the network, with details about the time they occurred, involved assets, and so on.

Network Summary

The **Network Summary** screen shows visual graphs that summarize the network activity. You can set the timeframe for which the page shows the data. You can also interact with the widgets to show additional details.



Sensors (tcp/28303)	70.1%	8.86 MB
SNMP (udp/161)	12.0%	1.51 MB
HTTPS (tcp/443)	10.1%	1.28 MB
irdmi (tcp/8000)	4.2%	548.13 KB
DNS	1.5%	194.56 KB
NetBIOS (udp/137)	1.1%	144.02 KB
HTTP (tcp/80)	0.3%	33.28 KB
BROWSER (udp/138)	0.1%	18 KB
BROWSER	0.1%	12.63 KB
BACNET	0.1%	9.81 KB
FTE (Honeywell) Un...	0.1%	7.52 KB
sentinelsrm (udp/1...	0.1%	6.57 KB
codemeter (udp/22...	0.0%	6.3 KB
ntp (udp/123)	0.0%	4.66 KB
ADS_UDP	0.0%	4.58 KB
COGNEX_DISCOVERY	0.0%	3.49 KB
EthernetIP (udp/4...	0.0%	2.71 KB
udp/24576	0.0%	2.54 KB

The screen includes four widgets:

- **Traffic and Conversations over Time** — A graph showing the volume of traffic in GB/MB and the number of conversations over the network.
- **Top 5 sources** — A bar chart showing the five source assets that initiated the most network activity. For each source, the bars represent the volume of traffic. When you hover the cursor over the graph, the tooltip shows the number of conversations.
- **Top 5 destinations**— A bar chart showing the five destination assets that received the most network activity. For each destination, the bars represent the volume of incoming traffic. When you hover the cursor over the graph, the tooltip shows the number of conversations.
- **Protocols** — A bar chart showing the communication protocols used in the network, ordered by frequency. For each protocol, the graph displays its rate of use (as a percentage of the total traffic) and the volume of traffic.

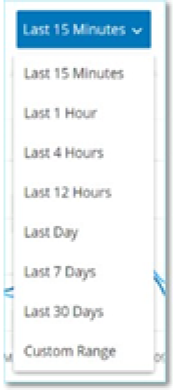
Set the Timeframe

The **Network** screen displays all data that represent activity in the network during a specified timeframe. The header bar shows the range of time for the current data display. The default timeframe is for the **Last 15 minutes**. The header bar shows the Start and End times of the selected timeframe.

To set the timeframe:

1. In the header bar, click **timeframe selection**. The default is **Last 15 Minutes**.

   The drop-down box lists the timeframe options.

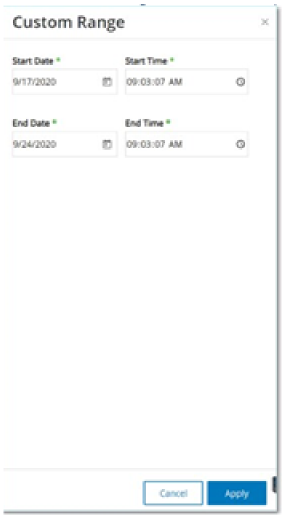
   

2. Select a time range using one of the following methods:

   - Select a preset time range by clicking the desired range. Options are: Last 15 Minutes, Last 1 Hour, Last 4 Hours, Last 12 Hours, Last Day, Last 7 Days, or Last 30 Days).
   - Set a custom time range:

     a. Click **Custom**.

        The **Custom Range** window appears.



Custom Range

Start Date * 9/17/2020

Start Time * 09:03:07 AM

End Date * 9/24/2020

End Time * 09:03:07 AM

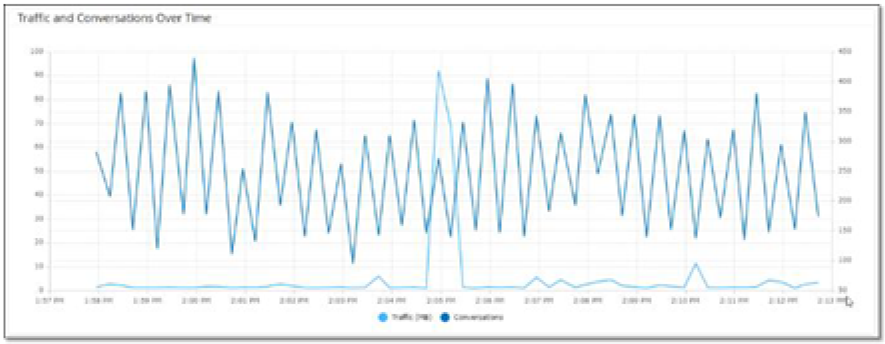
b. Provide the **Start Date**, **Start Time**, **End Date**, and **End Time** in the appropriate boxes.

c. Click **Apply**.

Once you set timeframe, the header bar shows the start and end date/time next to the timeframe selection. OT Security refreshes the screen to present only data within the chosen timeframe.

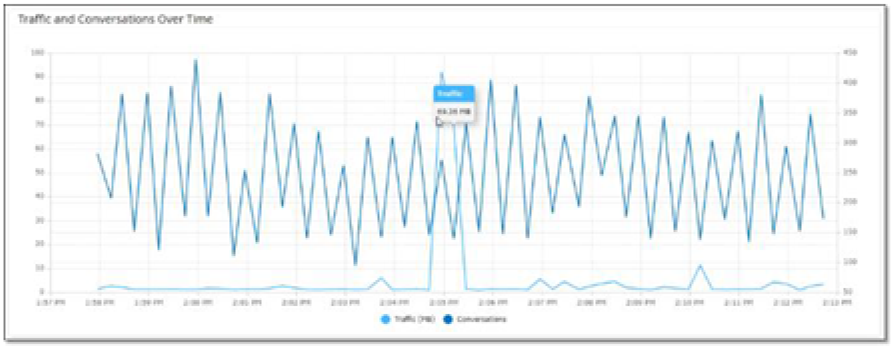
Traffic and Conversations over Time

A line graph displays the volume of traffic (measured in KB/MB/GB) and the number of conversations that took place in the network over time. The legend key appears at the top of the graph.



To display data for a specific time segment:

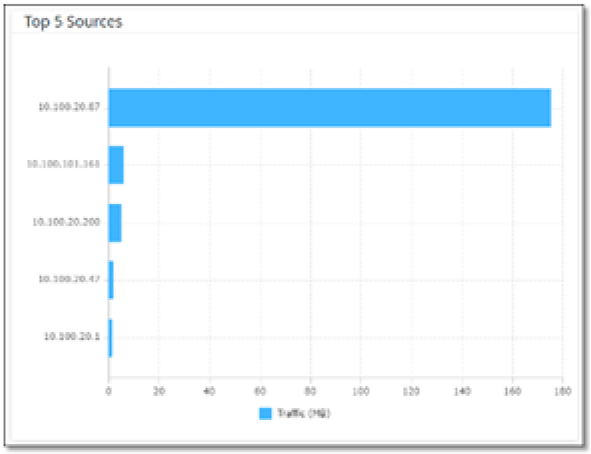
1. Hover over a point on the graph to display a pop-out window with specific data about the traffic and conversations that took place during that time segment.



> **Note**: The length of the time segment is adjusted according to the time scale displayed in the graph. For example, a 15-minute timeframe data shows each minute separately, while a 30-day timeframe shows the data for 6 hour segments.

Top 5 Sources

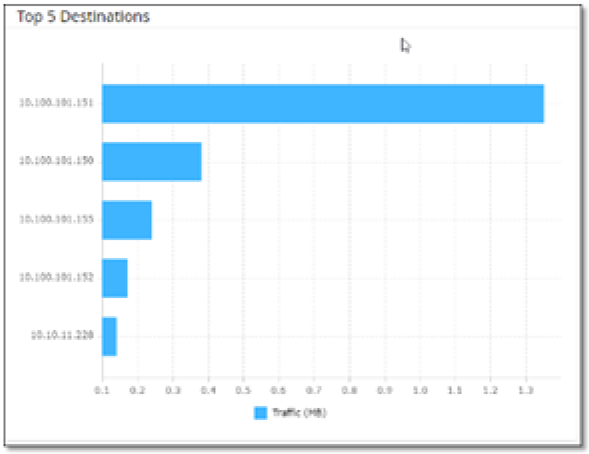
The Top 5 Sources widget shows the number of conversations and the amount of traffic for each of the top 5 assets that sent communications through the network during the specified timeframe.



The source assets are identified by their IP addresses. Hovering over a bar graph shows the number of conversations and volume of traffic coming from that asset.

Top 5 Destinations

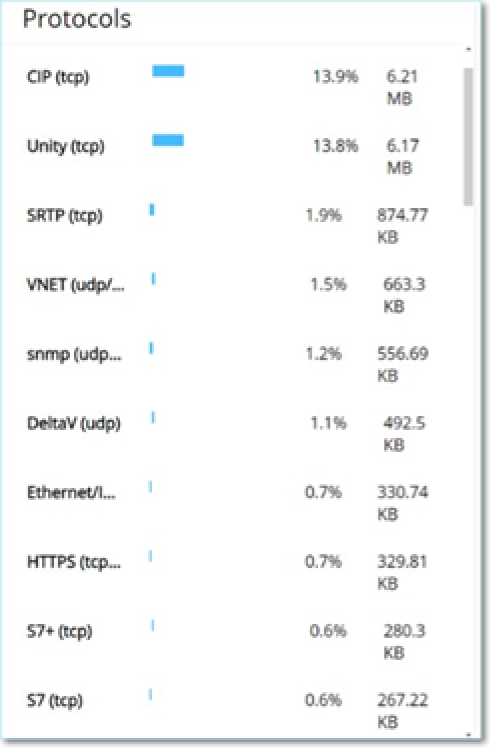
The Top 5 Destinations widget shows the number of conversations and amount of traffic for each of the top 5 assets that received communications through the network during the specified timeframe.



The destination assets are identified by their IP addresses. Hovering over a bar graph shows the number of conversations and volume of traffic that asset received.

Protocols

The **Protocols** widget shows data about the usage of various protocols for communication within the network during the specified timeframe.



Protocols

CIP (tcp)	13.9%	6.21 MB
Unity (tcp)	13.8%	6.17 MB
SRTP (tcp)	1.9%	874.77 KB
VNET (udp/...	1.5%	663.3 KB
snmp (udp...	1.2%	556.69 KB
DeltaV (udp)	1.1%	492.5 KB
Ethernet/I...	0.7%	330.74 KB
HTTPS (tcp...	0.7%	329.81 KB
S7+ (tcp)	0.6%	280.3 KB
S7 (tcp)	0.6%	267.22 KB

The protocols rank from most used (top) to least used (bottom). Each protocol shows the following information:

- A bar graph showing the rate of usage, with a full bar indicating the top usage and partial bars indicating the extent of usage relative to the top used protocol).
- Percentage of usage.
- Total volume of communication.

Packet Captures

The system stores files containing full network packet captures of activities in the network. The data is stored as PCAP files, which can be analyzed using Network Protocol Analysis tools (for example, Wireshark and so on.). This enables in-depth forensic analysis of critical events. When the storage capacity of the system exceeds 1.8 TB, the system deletes older files.

The **Packet Captures** screen displays all the Packet Capture files in the system. The **Completed** tab shows lists for each completed file that is available for download. The Ongoing tab shows details about the packet capture that is currently underway in the system.

The header bar shows the oldest captured file that is still available in the system. It also contains an option for downloading files and for manually closing the current Packet Capture.

In the file lists table, you can show or hide columns, sort, and filter the lists as well as search for keywords. For an explanation of the customization features, see Management Console User Interface Elements.

> **Note**: You can also download the PCAP file for an individual event from the **Events** screen, see Download Files.

Packet Capture Parameters

The Packet Capture list shows the following details:

Parameter	Description
Start Time	The date and time when the Packet Capture began.
End Time	The date and time when the Packet Capture ended.
Status	The status of the capture. Possible values: **Completed** or **Ongoing**.
Sensor	The OT Security Sensor that captured the packet. For packets captured directly by the OT Security appliance, the value is given as local.
File Name	The name of the file.
File Size	The size of the file, given in KB/MB.

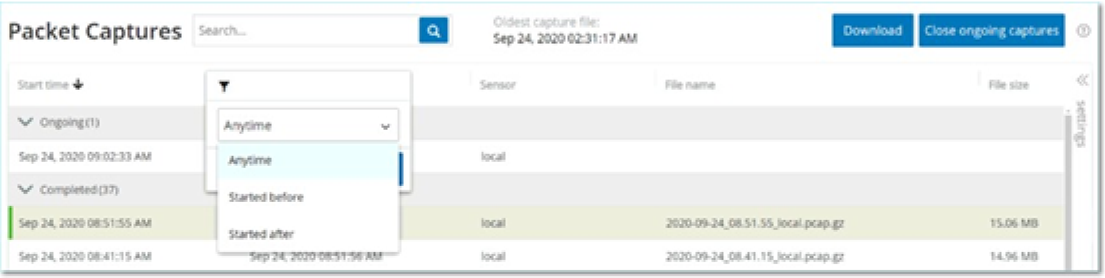
Filter Packet Capture Display

You can filter the Packet Captures display to find a specific PCAP by entering the parameters for the start time and/or the end time.

To filter Packet Captures:

1. Go to **Network**> **Packet Captures**.
2. To filter by the start time, hover over **Start time** and click the ▽ icon that appears.

   A drop-down menu opens.

   Oldest capture file:
   Sep 24, 2020 02:31:17 AM

Start time		Sensor	File name	File size
Ongoing (1)				
Sep 24, 2020 09:02:33 AM		local		
Completed (37)				
Sep 24, 2020 08:51:55 AM		local	2020-09-24_08.51.55_local.pcap.gz	15.06 MB
Sep 24, 2020 08:41:15 AM	Sep 24, 2020 08:51:56 AM	local	2020-09-24_08.41.15_local.pcap.gz	14.96 MB

   Set the filter as follows:

   a. Select the required filter. Options are: **Anytime (default)**, **Started before** or **Started after**.

   b. If you select **Started before** or **Started after**, a window opens with **Date** and **Time** fields allowing you to choose the desired date and time.

   c. Click **Apply**.

3. To filter by end time, click on the ▽ icon next to **End time**.

   A drop-down menu opens. Set the filter as follows:

   a. Select required filter. Options are: **Anytime (default)**, **Started before**, or **Started after**.

   b. If **Started before** or **Started after** are selected, a window opens with **Date** and **Time** fields allowing you to choose the desired date and time.

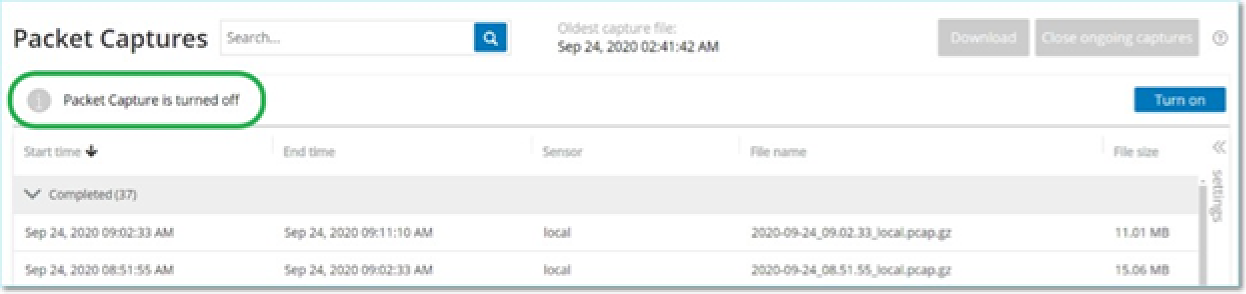
   c. Click **Apply**

   OT Security applies the filter, and only the files generated within the selected timeframe are displayed.

Activate/Deactivate Packet Captures

Packet Capture can be activated or deactivated on the **Local Settings** > **System Configuration** > **Device** , see Packet Captures.

If the **Packet Capture** feature is turned off, then the **Packet Captures** screen shows a message informing you that it is turned off.



Oldest capture file:
Sep 24, 2020 02:41:42 AM

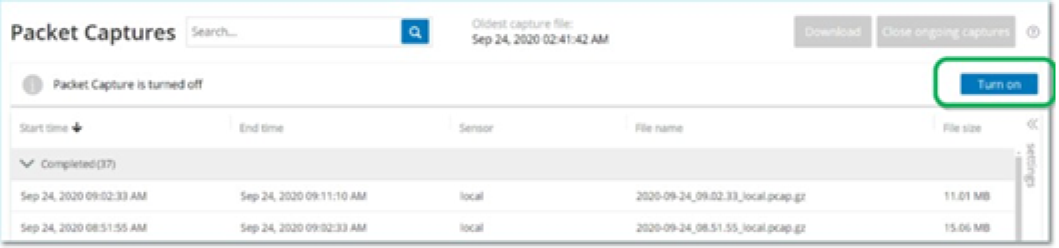
Packet Capture is turned off

Start time	End time	Sensor	File name	File size
Completed (37)				
Sep 24, 2020 09:02:33 AM	Sep 24, 2020 09:11:10 AM	local	2020-09-24_09.02.33_local.pcap.gz	11.01 MB
Sep 24, 2020 08:51:55 AM	Sep 24, 2020 09:02:33 AM	local	2020-09-24_08.51.55_local.pcap.gz	15.06 MB

You can activate (but not deactivate) Packet Capture from **Network** > **Packet Capture**.

To activate Packet Capture from the Packet Capture screen:

1. Go to **Network**> **Packet Captures**.
2. In the **Header** bar, click **Turn on**.



Oldest capture file:
Sep 24, 2020 02:41:42 AM

Packet Capture is turned off

Start time	End time	Sensor	File name	File size
Completed (37)				
Sep 24, 2020 09:02:33 AM	Sep 24, 2020 09:11:10 AM	local	2020-09-24_09.02.33_local.pcap.gz	11.01 MB
Sep 24, 2020 08:51:55 AM	Sep 24, 2020 09:02:33 AM	local	2020-09-24_08.51.55_local.pcap.gz	15.06 MB

The system begins Packet Capture.

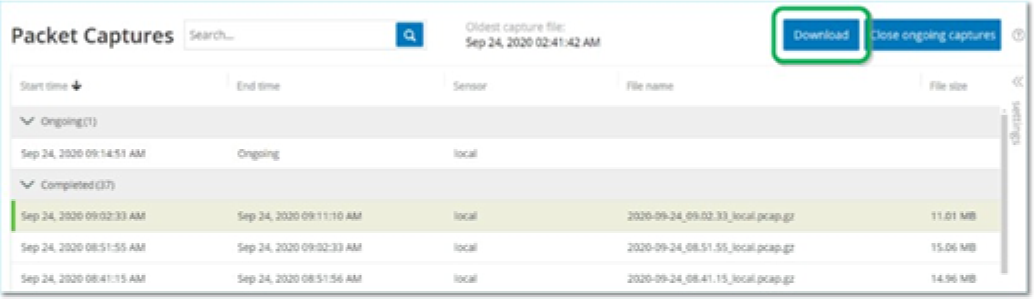
Download Files

You can download any of the **Completed** PCAP files to your local machine. The PCAP files can then be analyzed using Network Protocol Analysis tools (for example, Wireshark and so on.).

File captures that are still ongoing are not yet available for download. You can manually close an ongoing capture in order to close the current file and begin capturing information for a new file.

To download a completed file:

1. Go to **Network**> **Packet Captures**.
2. Select the desired file from the Packet Capture lists.
3. In the **Header** bar, click **Download**.



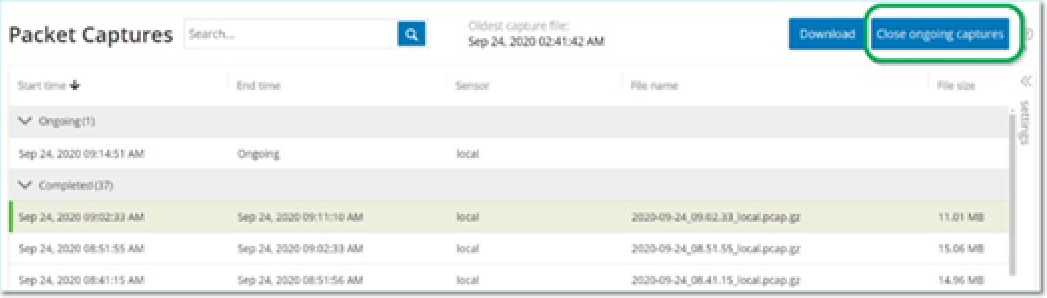
Oldest capture file:
Sep 24, 2020 02:41:42 AM

Start time	End time	Sensor	File name	File size
Ongoing (1)				
Sep 24, 2020 09:14:51 AM	Ongoing	local		
Completed (37)				
Sep 24, 2020 09:02:33 AM	Sep 24, 2020 09:11:10 AM	local	2020-09-24_09.02.33_local.pcap.gz	11.01 MB
Sep 24, 2020 08:51:55 AM	Sep 24, 2020 09:02:33 AM	local	2020-09-24_08.51.55_local.pcap.gz	15.06 MB
Sep 24, 2020 08:41:15 AM	Sep 24, 2020 08:51:56 AM	local	2020-09-24_08.41.15_local.pcap.gz	14.96 MB

OT Security downloads the zipped PCAP file to your local machine.

To manually close the current Packet Capture:

1. Go to **Network** >**Packet Captures**.
2. In the **Header** bar, click **Close ongoing capture**.



Oldest capture file:
Sep 24, 2020 02:41:42 AM

Start time	End time	Sensor	File name	File size
Ongoing (1)				
Sep 24, 2020 09:14:51 AM	Ongoing	local		
Completed (37)				
Sep 24, 2020 09:02:33 AM	Sep 24, 2020 09:11:10 AM	local	2020-09-24_09.02.33_local.pcap.gz	11.01 MB
Sep 24, 2020 08:51:55 AM	Sep 24, 2020 09:02:33 AM	local	2020-09-24_08.51.55_local.pcap.gz	15.06 MB
Sep 24, 2020 08:41:15 AM	Sep 24, 2020 08:51:56 AM	local	2020-09-24_08.41.15_local.pcap.gz	14.96 MB

OT Security stops the current capture, and the file becomes available for download. A new Packet Capture is automatically started.

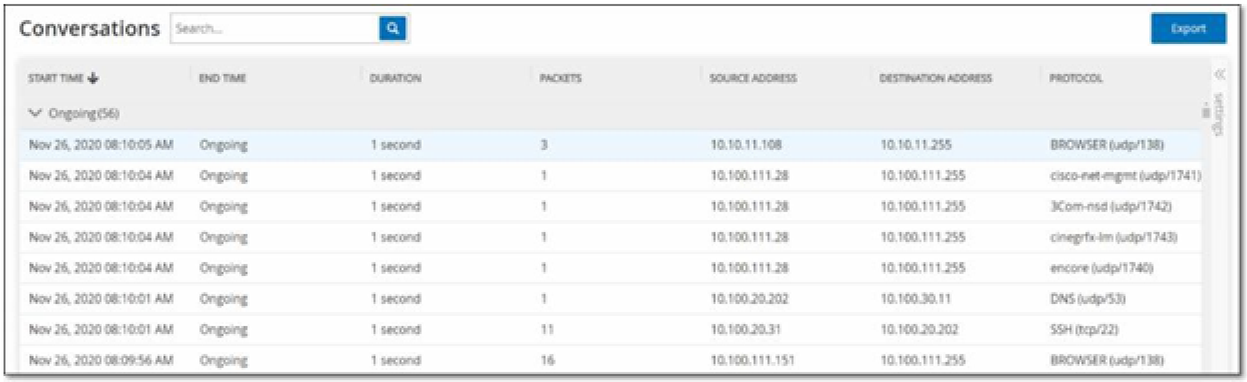
Conversations

Conversations are network communications between two assets — a source and a destination. For example, an interaction between an engineering workstation and a PLC, or between two servers. The **Conversations** screen displays a list of the current and past conversations, including the detailed information about the conversations.

The **Conversations** screen has the following additional functionalities:

- **Search** — Search for specific conversations by entering identifying information into the **Search** box.
- **Export** — Export all data from the **Conversations** tab onto your local machine as a `.csv` file by clicking **Export**.

> **Note**: The Conversations table shows the last 10,000 network conversations.



START TIME ↓	END TIME	DURATION	PACKETS	SOURCE ADDRESS	DESTINATION ADDRESS	PROTOCOL
⌄ Ongoing (56)						
Nov 26, 2020 08:10:05 AM	Ongoing	1 second	3	10.10.11.108	10.10.11.255	BROWSER (udp/138)
Nov 26, 2020 08:10:04 AM	Ongoing	1 second	1	10.100.111.28	10.100.111.255	cisco-net-mgmt (udp/1741)
Nov 26, 2020 08:10:04 AM	Ongoing	1 second	1	10.100.111.28	10.100.111.255	3Com-nsd (udp/1742)
Nov 26, 2020 08:10:04 AM	Ongoing	1 second	1	10.100.111.28	10.100.111.255	cinegrfx-lm (udp/1743)
Nov 26, 2020 08:10:04 AM	Ongoing	1 second	1	10.100.111.28	10.100.111.255	encore (udp/1740)
Nov 26, 2020 08:10:01 AM	Ongoing	1 second	1	10.100.20.202	10.100.30.11	DNS (udp/53)
Nov 26, 2020 08:10:01 AM	Ongoing	1 second	11	10.100.20.31	10.100.20.202	SSH (tcp/22)
Nov 26, 2020 08:09:56 AM	Ongoing	1 second	16	10.100.111.151	10.100.111.255	BROWSER (udp/138)

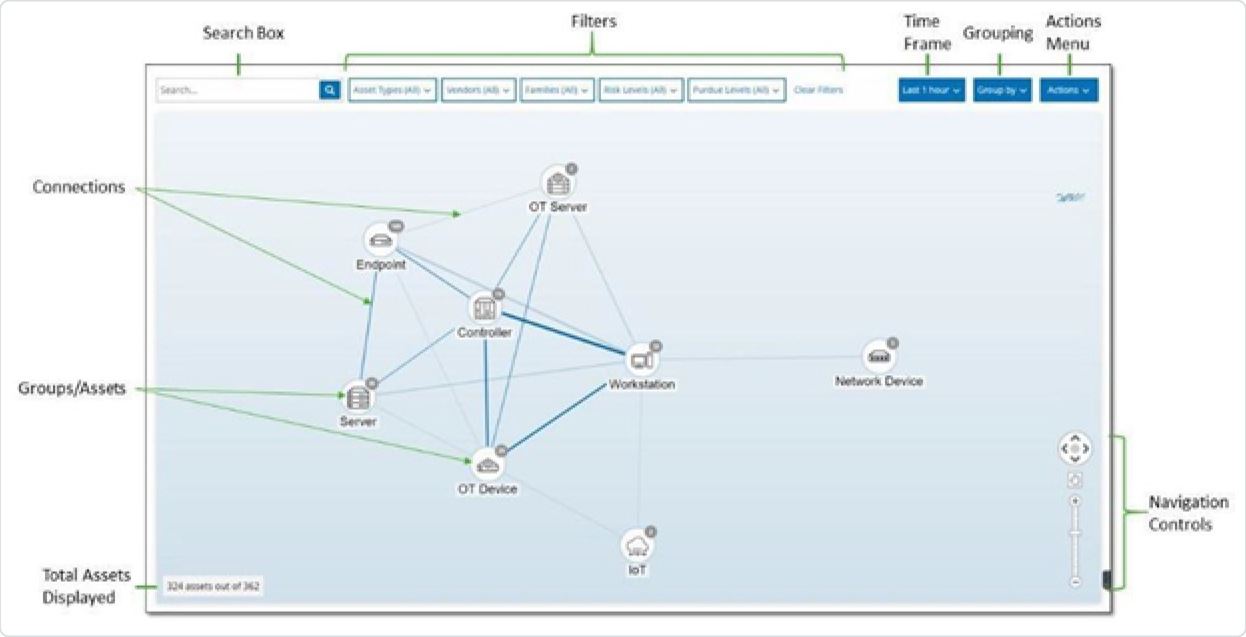
The Conversations tab shows the following details:

Parameter	Description
Start Time	The time when the conversation began.
End Time	The time when the conversation ended. Shows **Ongoing** for conversations that are still in progress.
Duration	The amount of time that the conversation was in progress.
Packets	The number of data packets sent.
Source	The IP of the asset that sent the data.

Address	
Destination Address	The IP of the asset that received the data.
Protocol	The protocol that used for the communication.

Network Map

The **Network Map** screen offers a visual representation of the network assets and their connections over time, that OT Security's Network Detection capabilities discovered. Network Detection provides in-depth and real-time visibility into all activities over the operational network, focusing on control-plane engineering activities, such as firmware downloads or uploads, code updates and configuration changes, performed over proprietary, and vendor-specific protocols. Network Map shows the assets by groups of related assets or as individual assets.



The **Network Map** shows all assets and connections that Tenable discovered during the specified timeframe.

The **Network Map** page shows the following details:

- **Search Box** — Type a search text to search for assets in the display. The Network Map shows the search results by highlighting all groups that match the search text. You can drill down into each group to see the relevant assets.

- **Filters** — Filter the map display by one or several of the specified categories: **Asset Type**, **Vendors**, **Families**, **Risk Levels**, and **Purdue Levels**. For an explanation of asset types, see Asset Types.

- **Time Frame** — The Network Map shows assets and network connections detected during the specified timeframe. The default timeframe is set for **Last 30 days**. In the timeframe drop-down box, select a different timeframe.

- **Grouping** — Specify the category used to group the assets in the display. The options are: **Asset type**, **Purdue level**, **Risk level**, or **No grouping**. The **Collapse all groups** option keeps the current grouping selection visible but collapses all other open groups.

- **Actions** — You can select the following actions from the drop-down menu:

  - **Set as baseline** — Set the baseline used for detecting anomalous network activity, see Set a Network Baseline.

  - **Auto arrange** — Automatically optimize the map display for the entities currently being displayed.

- **Groups/Assets** — An icon on the map represents each group of assets, with a distinct icon depicting each asset type. as described in Asset Types. For groups, the number at the top of the icon indicates the number of assets in that group. You can drill down to show separate icons for each sub-group until you get to the individual asset icons. For individual assets, the color of the frame around the asset indicates its risk level (red, yellow, green).

  > **Note**: You can drag the groups and assets and reposition them to get a better view of the assets and their connections.

- **Connections** — Each communication between groups of assets and/or individual assets, according to the degree of granularity currently displayed in the map. The thickness of the line indicates the volume of communication through that connection.

- **Total Assets Displayed** — Shows the number of assets detected in the network (and displayed in the map) based on the specified timeframe and asset filters. This number is shown relative to the total number of assets detected in your network.

- **Navigation Controls** — You can adjust the display by zoom in and out and navigate to show the desired elements using either the onscreen controls or standard mouse controls.

Asset Groupings

The **Network Map** page can show assets grouped by various categories. It shows connections between groups of assets. You can click on an asset to drill-down to the elements in that group. You can also drill-down in multiple groups simultaneously. OT Security offers multiple layers of embedded groups, so that drill-down gives you a more granular view of the included assets.

The following are the Groupings that you can apply to the main display and the drill-down options for that selection.

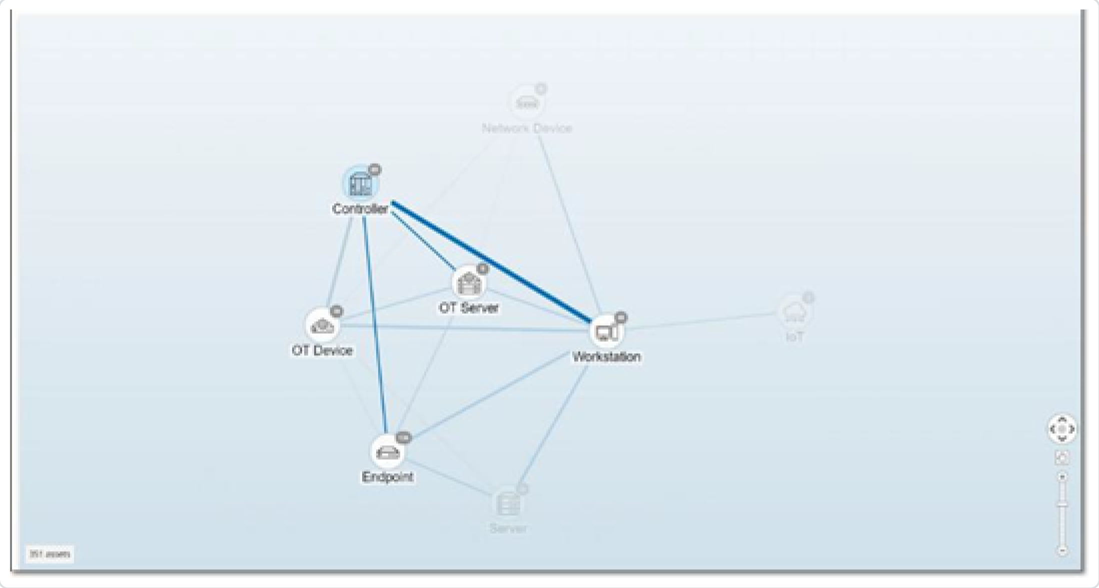
When the map displays groups by **Asset Type** (default), the drill-down hierarchy is as follows: **Asset Type** > **Vendor** > **Family** > **Individual Asset**.

When the Map displays groups by **Risk Level** or **Purdue Level**, it adds an additional level above the Asset Type grouping to give this hierarchy: **Purdue Level**/**Risk Level** > **Asset Type** > **Vendor** > **Family** > **Individual Asset**. A circle surrounds the included groups/assets, representing each level.

The following example shows how you can drill down to the display:

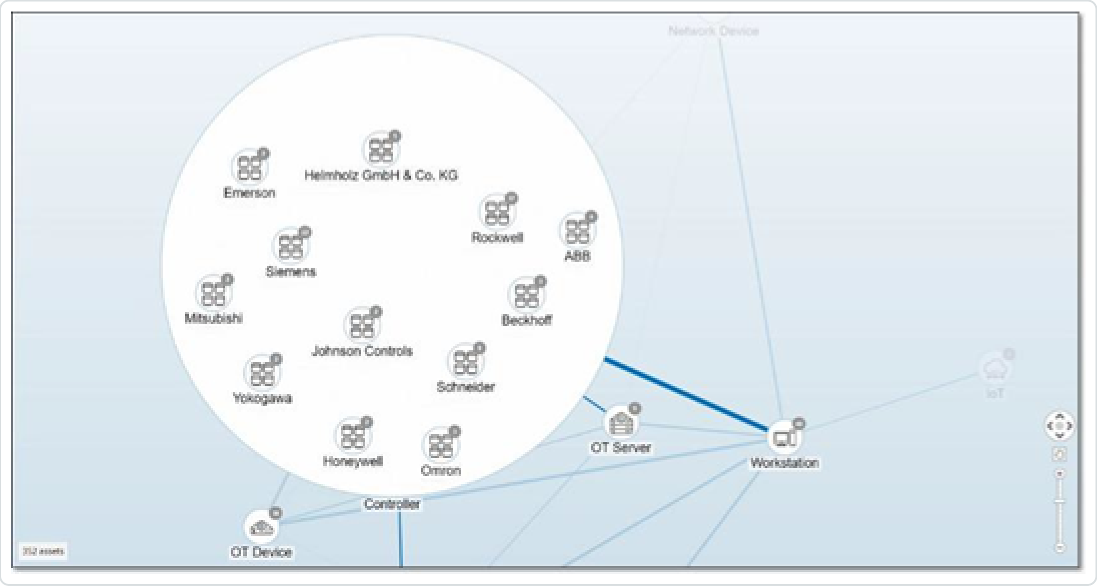
To drill down to an Asset Type Group:

1. By default, the **Network Map** screen opens with the assets grouped by Asset type.

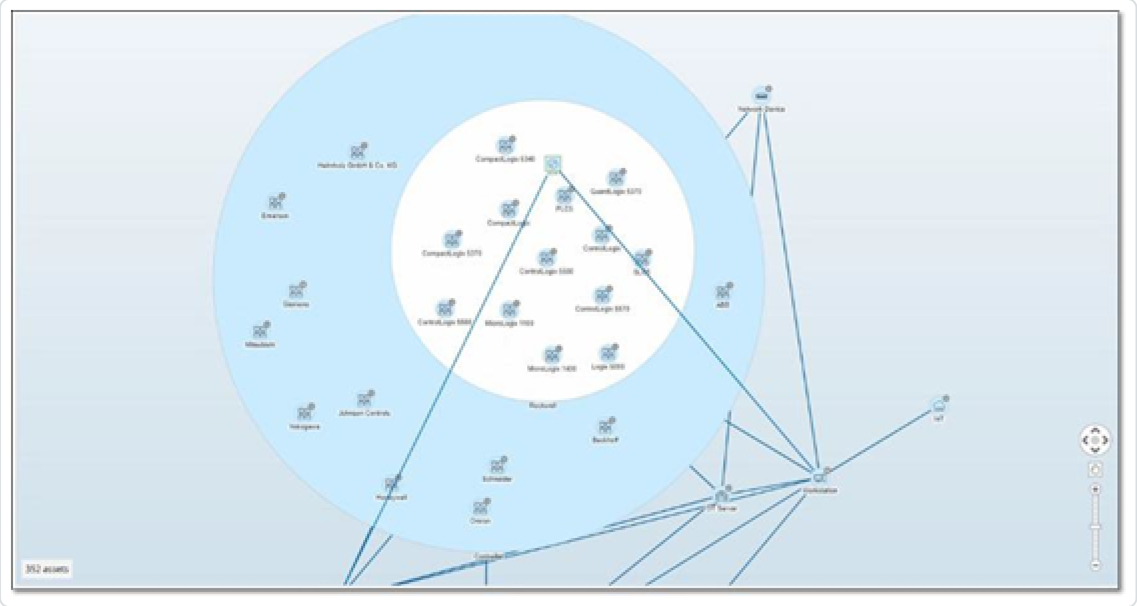


2. Double-click on the group icon that you want to drill down into (for example, Controller).

   The group expands to display the Vendor groups within that group.

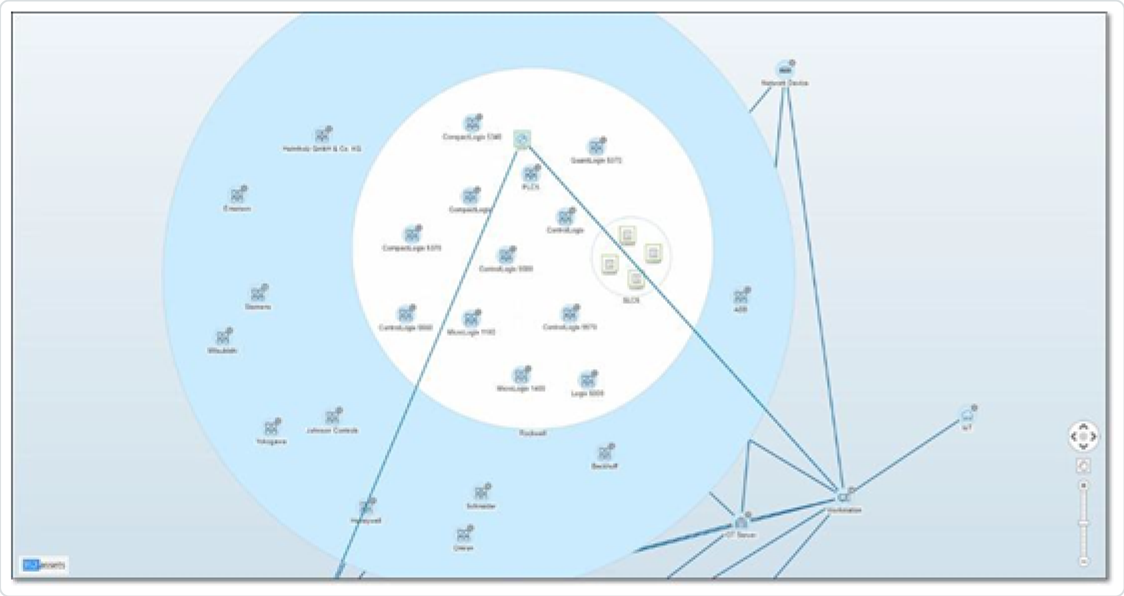


3. To drill down further, click a Vendor group (for example, Rockwell).



4. To drill down further, click a Family group (for example, SLC5).

   The individual assets within that group appear.



5. You can now click a specific asset to see details for that asset and its connections, see Inventory.

To collapse the display:

1. Click on **Group by**.
2. Click **Collapse all groups**.

   The display shows the top-level groups again.

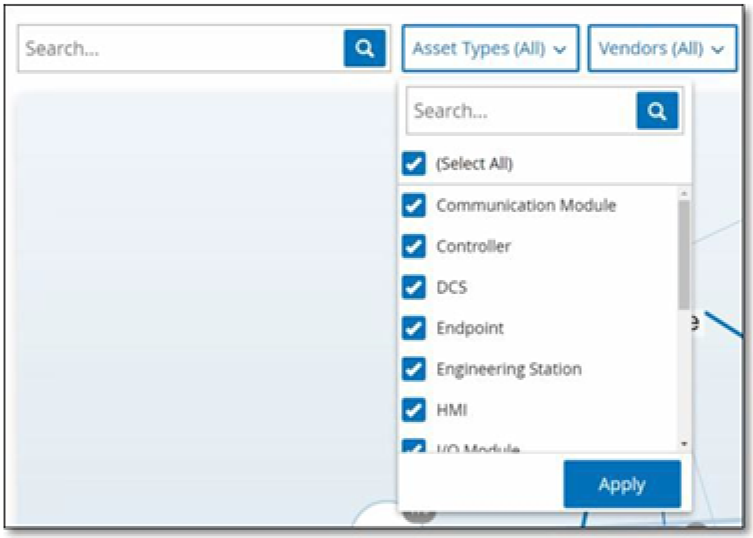
To remove all grouping:

1. Click on the **Group by** button.
2. Select **No grouping**.

   The map shows all single assets without any grouping.

Applying Filters to the Map Display

You can filter the map display by one or several of the specified categories: Asset Type, Vendors, Families, Risk Levels, Purdue Levels.



To apply filters to the map:

1. Click the required filter category.
2. Select or clear the check boxes for each element that you want to include or exclude from the display.

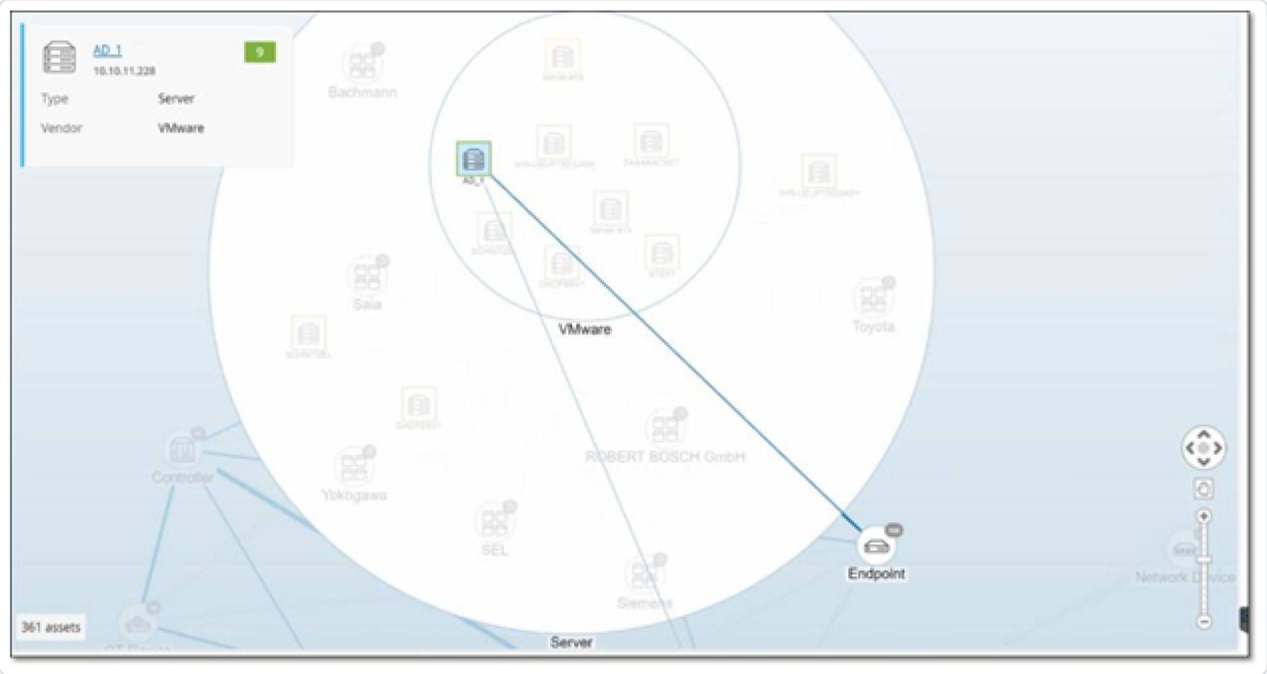
   > **Note**: By default, the filter includes all elements.

3. You can click the **Select All** check box to clear all the values and add the desired values.
4. You can perform a search in the filter search box to find a specific value in the filter window.
5. Repeat the process for each filter category, as needed.
6. Click **Apply**.

   The map shows only the selected elements.

Viewing Asset Details

You can click a specific asset to display basic information about the asset and its network activities, including the risk level, IP address, asset type, vendor, and family. The map displays connections from the selected asset to all of the other assets that communicate with it. You can then click the asset name link to go to the **Asset Details** screen for more details about the asset.



AD_1 9
10.10.11.228

Type	Server
Vendor	VMware

Set a Network Baseline

A Network Baseline is a map of all conversations that took place between assets in the network during a specified time period. The Network Baseline serves for Network Baseline Deviation Policies, which alert for anomalous conversations in the network, see Network Event Types.

Assets that did not interact during the Baseline sample trigger a Policy alert for each conversation (assuming it falls within the scope of the specified Policy conditions). To enable the creation of Network Baseline Deviation policies, you must first create an initial Network Baseline on the **Network Map** screen. You can update the Network Baseline anytime by setting a new Network Baseline.

To set a Network Baseline:

1. On the **Network Map** screen, select the time range of the conversations to include in the Network Baseline using the **Time Frame Selection** at the top of the screen.

   The **Network Map** for the selected time frame appears.

2. In the upper-right corner, select **Actions** > **Set as baseline**.

   OT Security configures the new network baseline and applies the baseline to all Network Baseline Deviation Policies.

Vulnerabilities

OT Security identifies various types of threats that affect the assets in your network. As information about new vulnerabilities is discovered and released into the general public domain, Tenable research staff designs programs to enable Tenable Nessus to detect them.

These programs are named Plugins, and are written in the Tenable Nessus proprietary scripting language, called Tenable Nessus Attack Scripting Language (NASL). Plugins detect CVEs as well as other threats that can affect assets in your network (for example, obsolete operating systems, usage of vulnerable protocols, vulnerable open ports, and so on.)

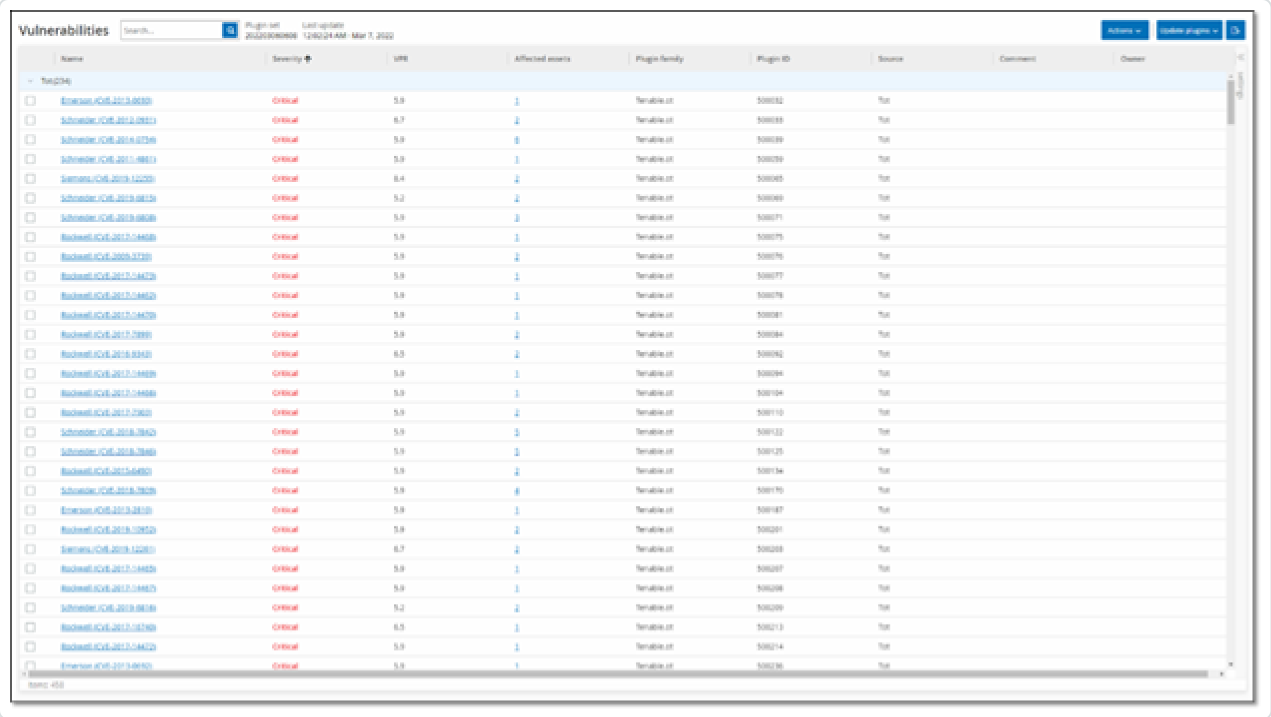
Plugins contain vulnerability information, a generic set of remediation actions, and the algorithm to test for the presence of the security issue.

For information about updating your Plugin set, see Environment Configuration.

Vulnerabilities Screen

The **Vulnerabilities** screen shows a list of all vulnerabilities detected by the Tenable Plugins that affect your network and assets.

You can customize the display settings by adjusting which columns are displayed and where each column is positioned. For an explanation of the customization features, see Management Console User Interface Elements.

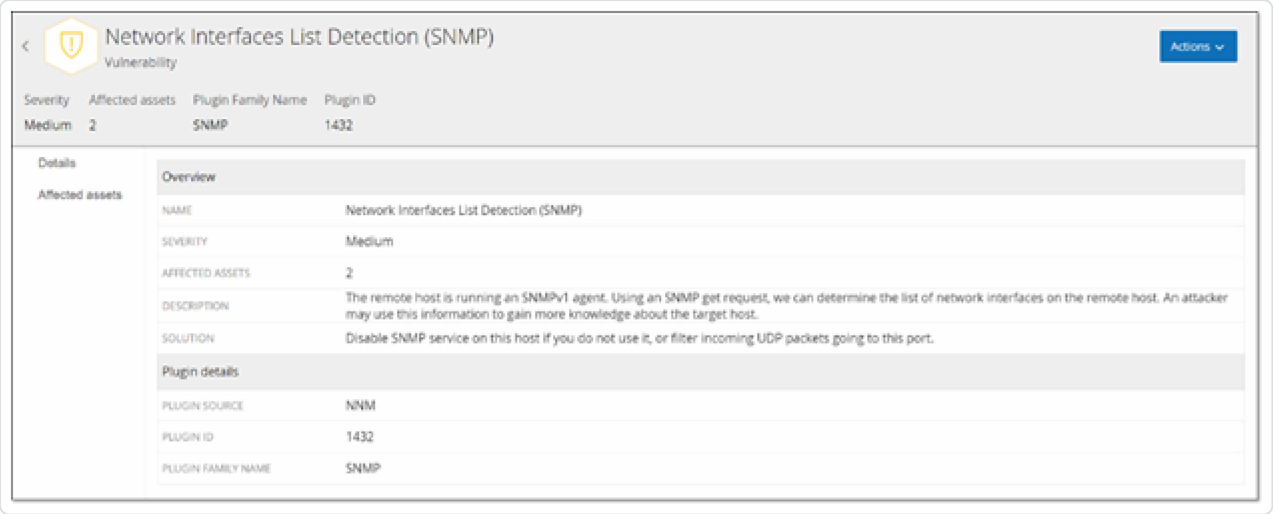


The Vulnerabilities page shows the following details:

Parameter	Description
Name	The name of the vulnerability. The name is a link to show the full vulnerability listing.
Severity	This score indicates the severity of the threat detected by this Plugin. Possible values: Info, Low, Medium, High, or Critical.
VPR	Vulnerability Priority Rating (VPR) is a dynamic indicator of the severity level, which is constantly updated based on the current exploitability of the vulnerability. Tenable generates this value as the output of Tenable Predictive

	Prioritization, which assesses the technical impact and threat posed by the vulnerability. VPR values range from 0.1-10.0, with a higher value representing a higher likelihood of exploitation.
Plugin ID	The unique identifier of the Plugin.
Affected Assets	The number of assets in your network affected by this vulnerability.
Plugin family	The family (group) with which this Plugin is associated.
Comment	You can add free text comments about this Plugin.

Plugin Details



Network Interfaces List Detection (SNMP)

Vulnerability

Severity	Affected assets	Plugin Family Name	Plugin ID
Medium	2	SNMP	1432

Overview	
NAME	Network Interfaces List Detection (SNMP)
SEVERITY	Medium
AFFECTED ASSETS	2
DESCRIPTION	The remote host is running an SNMPv1 agent. Using an SNMP get request, we can determine the list of network interfaces on the remote host. An attacker may use this information to gain more knowledge about the target host.
SOLUTION	Disable SNMP service on this host if you do not use it, or filter incoming UDP packets going to this port.
Plugin details	
PLUGIN SOURCE	NNM
PLUGIN ID	1432
PLUGIN FAMILY NAME	SNMP

To view the plugin details:

1. In the row of the vulnerability for which you want to view the details, click the vulnerability name.

   The Vulnerability details window appears.

The Vulnerability details window shows the following details:

- **Header bar** — Shows basic information about the specified vulnerability. From the **Actions** menu, select **Edit Details** to edit vulnerability details. See Edit Vulnerability Details.

- **Details tab** — Shows the full description of the vulnerability and gives links to relevant resources.

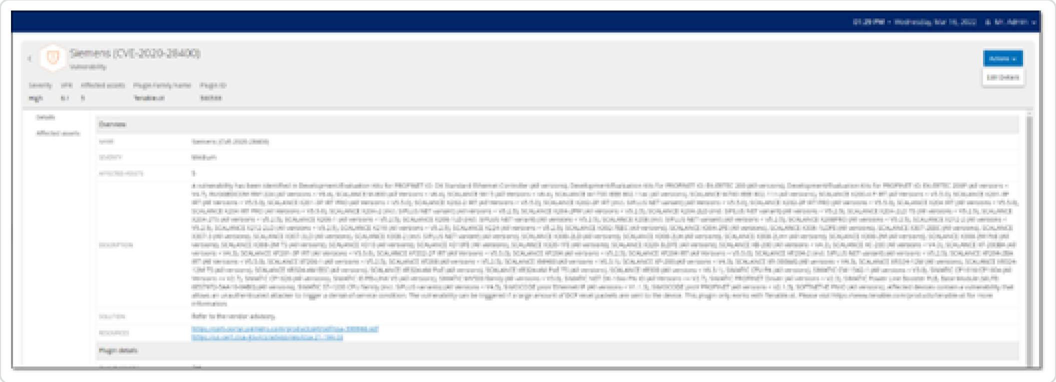
- **Affected Assets tab** — Shows a listing of all assets affected by the specified vulnerability. Each listing includes detailed information about the asset, as well as a link to view the Asset Details window for that asset.

Edit Vulnerability Details

To edit vulnerability details:

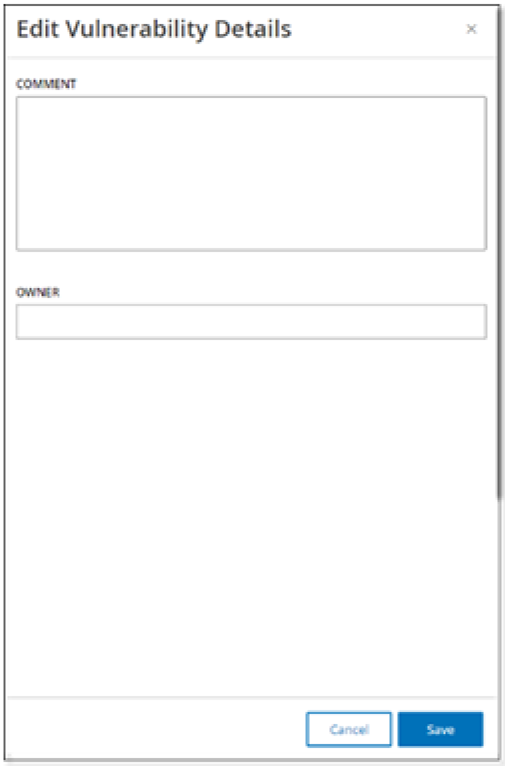
1. In the relevant **Vulnerability Details** page, in the upper-right corner, click the **Actions** menu.

   The **Actions** menu appears.



2. Click **Edit Details**.

   The **Edit Vulnerability Details** panel appears.



3. In the **Comments** box, type comments about the vulnerability.
4. In the **Owner** box, type the name of the person assigned to address the vulnerability.
5. Click **Save**.

View Plugin Output

Plugin output for asset provides context or an explanation as to why a particular plugin is reported for an asset.

To view the plugin output details from the Vulnerabilities page:

1. Go to **Vulnerabilities**.

   The **Vulnerabilities** page appears.

2. In the list of vulnerabilities, select the one for which you want to view the details and do one of the following:

   - Click the vulnerability link.
   - Right-click the vulnerability and select **View**.
   - From the **Actions** drop-down box, select **View**.

   The Vulnerability Details page appears with the **Plugin Output** panel and shows the following information:

   - Hit date
   - Source
   - Port
   - Plugin output

     > **Note**: Plugin output is not available for all plugins.

To view the plugin output details from the Inventories page:

1. Go to **Inventories** > **All Assets**.

   The **Inventories** page appears.

2. In the list of assets, select the one for which you want to view the details and do one of the following:

- Click the asset link.
- Right-click the asset and select **View**.
- Select the check box next to the asset, and then from the **Actions** drop-down box, select **View**.

The Asset Details page appears.

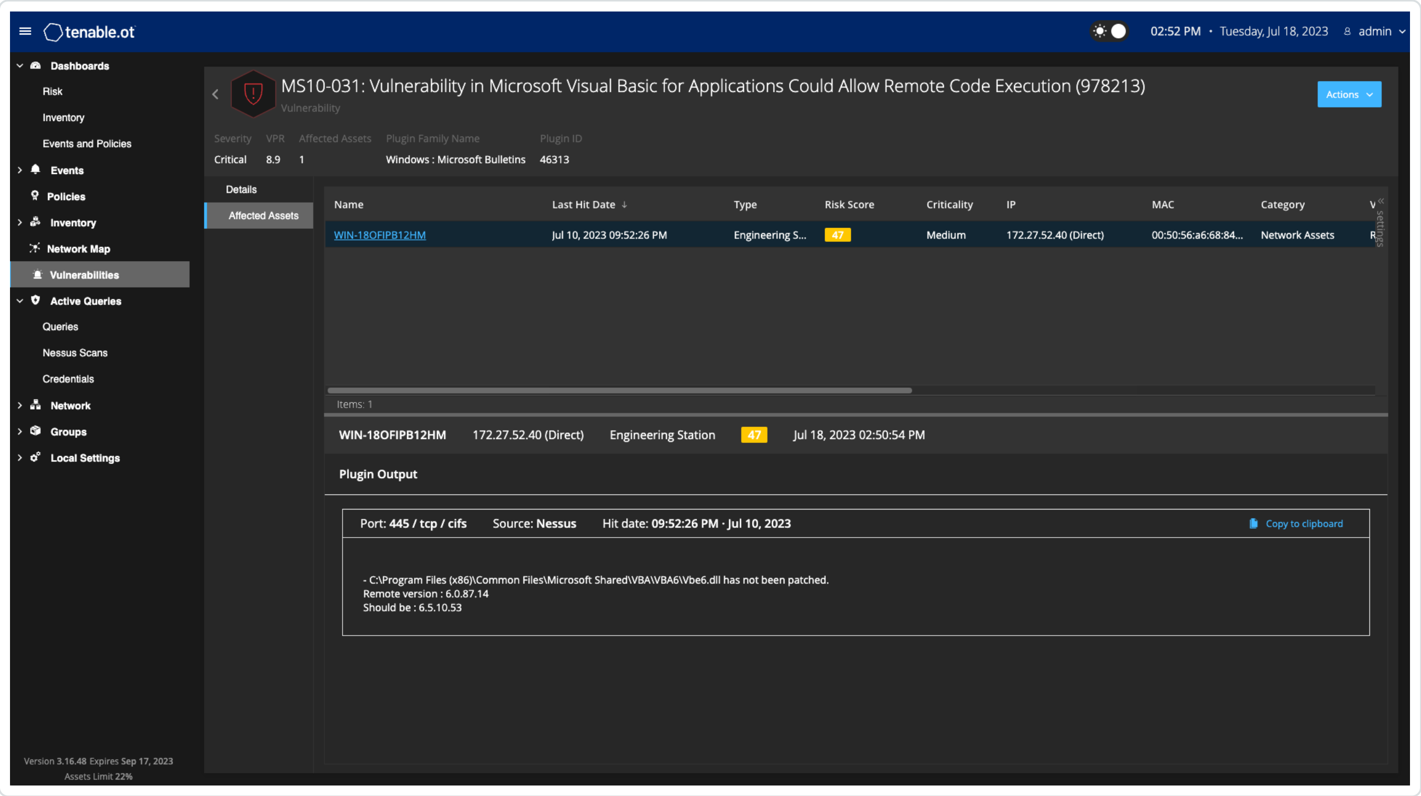
3. Click the **Vulnerabilities** tab.

   The list of vulnerabilities appears and shows the **Plugin Output** panel with the following information:

   - Hit date
   - Source
   - Port
   - Plugin output

   > **Note**: Plugin output is not available for all plugins.

Example of a plugin output for a Tenable Nessus Plugin



MS10-031: Vulnerability in Microsoft Visual Basic for Applications Could Allow Remote Code Execution (978213)

Vulnerability

Severity	VPR	Affected Assets	Plugin Family Name	Plugin ID
Critical	8.9	1	Windows : Microsoft Bulletins	46313

Name	Last Hit Date	Type	Risk Score	Criticality	IP	MAC	Category
WIN-18OFIPB12HM	Jul 10, 2023 09:52:26 PM	Engineering S...	47	Medium	172.27.52.40 (Direct)	00:50:56:a6:68:84...	Network Assets

Items: 1

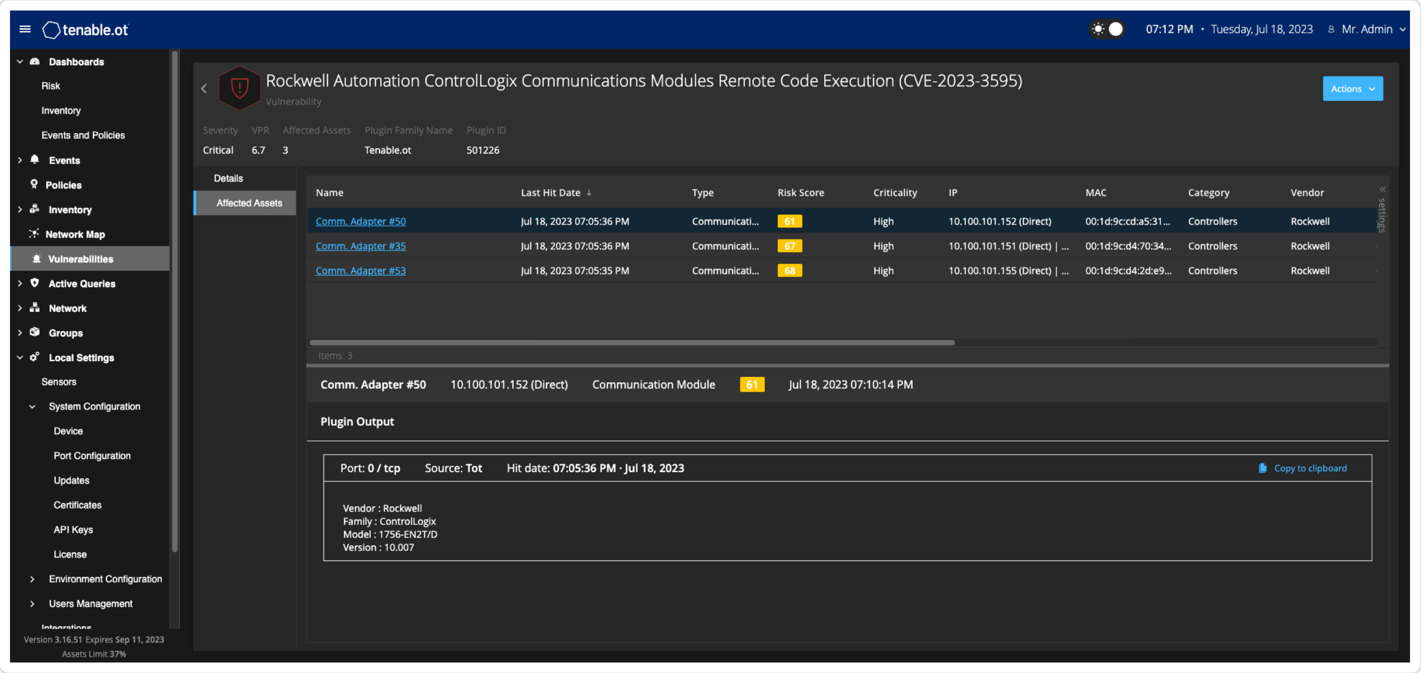
WIN-18OFIPB12HM 172.27.52.40 (Direct) Engineering Station 47 Jul 18, 2023 02:50:54 PM

Plugin Output

Port: 445 / tcp / cifs Source: Nessus Hit date: 09:52:26 PM · Jul 10, 2023

```
- C:\Program Files (x86)\Common Files\Microsoft Shared\VBA\VBA6\Vbe6.dll has not been patched.
Remote version : 6.0.87.14
Should be : 6.5.10.53
```

Example of a plugin output for OT Security Plugin



Rockwell Automation ControlLogix Communications Modules Remote Code Execution (CVE-2023-3595)

Vulnerability

Severity	VPR	Affected Assets	Plugin Family Name	Plugin ID
Critical	6.7	3	Tenable.ot	501226

Name	Last Hit Date	Type	Risk Score	Criticality	IP	MAC	Category	Vendor
Comm. Adapter #50	Jul 18, 2023 07:05:36 PM	Communicati...	61	High	10.100.101.152 (Direct)	00:1d:9c:cd:a5:31...	Controllers	Rockwell
Comm. Adapter #35	Jul 18, 2023 07:05:36 PM	Communicati...	67	High	10.100.101.151 (Direct) | ...	00:1d:9c:d4:70:34...	Controllers	Rockwell
Comm. Adapter #53	Jul 18, 2023 07:05:35 PM	Communicati...	68	High	10.100.101.155 (Direct) | ...	00:1d:9c:d4:2d:e9...	Controllers	Rockwell

Items: 3

Comm. Adapter #50 10.100.101.152 (Direct) Communication Module 61 Jul 18, 2023 07:10:14 PM

Plugin Output

Port: 0 / tcp Source: Tot Hit date: 07:05:36 PM · Jul 18, 2023

```
Vendor : Rockwell
Family : ControlLogix
Model : 1756-EN2T/D
Version : 10.007
```

Local Settings

The **Local Settings** section in OT Security includes most of the configuration pages for OT Security. The following pages are available under **Local Settings**:

Active Queries — Activate/deactivate query functions and adjust their frequency and settings. See Active Queries.

Sensors — View and manage sensors, approve or delete incoming Sensor pairing requests, and configure Active Queries performed by Sensors. See Sensors.

System Configuration

- **Device** — View and edit device details and network information. For example, system time, automatic logout (that is, inactivity timeout).

> **Note**: You can configure DNS servers in Tenable Core. For more information, see Manually Configure a Static IP Address in the Tenable Core + Tenable OT Security User Guide.

- **Port Configuration** — View how the ports on the device are configured. For more information on Port Configuration, see Installing the OT Security Appliance > Step 4 – Setup Wizard > Screen 2 – Device.
- **Updates** — Perform updates of plugins either automatically or manually through the cloud, or offline.
- **Certificate**— View information about your HTTPS certificate and ensure a secure connection by either generating a new HTTPS certificate in the system or uploading your own. See System Configuration.
- **API Keys** — Generate API keys to enable third-party apps to access OT Security via API. All users can create API keys. The API key has the same permissions as the user that created it, according to their role. An API key is shown once, when it is first generated; you must save it in a secure location for later use.
- **License** — View, update, and renew your license. See License.

Environment Configuration

- **Asset Settings**
  - **Monitored Network** — View and edit the aggregation of IP ranges in which the system classifies assets.
  - **Update Asset Details Using CSV** — Update the details of your assets using a CSV template.
  - **Add Assets Manually** — Add new assets to your assets list using a CSV template.

> **Note**: The maximum number of IP ranges that can be sent to the Tenable Nessus Network Monitor is 128, therefore Tenable recommends not exceeding this limit. In addition to the specified IP ranges, any host within the OT Security platform's subnets or any activity performing device is classified as an asset.

  - **Hidden Assets** — View a list of hidden assets in the system. These are assets removed from the asset listings, see Inventory. You can restore hidden assets from this page.
  - **Custom Fields** — Creates custom fields to tag assets with relevant information. The custom field can be plain text or it can be a link to an external resource.
  - **Event Clusters** — Allows you to cluster together multiple similar events that occur within a designated time range for monitoring them. See Event Clusters.
  - **PCAP Player**— Allows you to upload a PCAP file containing recorded network activity and "play" it on OT Security, loading the data into your system. See PCAP Player.
- **Users and Roles** — View, edit, and export information about all user accounts.
  - **User Settings** — View and edit information about the user who is currently logged into the system (Full Name, Username, and Password) and change the language used in the user interface (English, Japanese, Chinese, French, or German).
  - **Local Users** — An administrator user can create local user accounts for specific users and assign a role to the account, see Users and Roles.
  - **User Groups** — An administrator user can view, edit, add, and delete user groups. See Users and Roles.

  - **Authentication Servers** — User credentials can optionally be assigned using an LDAP Server, such as Active Directory. In this case, user privileges are managed on the Active Directory. See Users and Roles.

- **Integrations** — Set up integration with other platforms. OT Security currently supports integration with Palo Alto Networks Next Generation Firewall (NGFW) and Aruba ClearPass, as well as with other Tenable products (Tenable Security Center and Tenable Vulnerability Management). See Integrations.

- **Servers** — View, create, and edit servers configured in your system. Separate screens are available for:

  - **SMTP Servers** — SMTP servers enable Event notifications to be sent via email.

  - **Syslog Servers** — Syslog servers enable Event logs to be logged on an external SIEM.

  - **FortiGate Firewalls** — The OT Security-FortiGate integration allows you to send firewall policy suggestions to a FortiGate firewall based on the OT Security network events.

- **System Actions** — Shows a sub-menu of system activities. The sub-menu includes the following options:

  - **System Backup** — Allows you to back up your OT Security appliance (except packet capture data). To restore the system from a backup file, see Manual Restore of a OT Security Backup. During the backup process, OT Security is unavailable to all users.

  - **Export Settings** — Export OT Security platform configuration settings as an `.ndg` file to the local computer. This serves as a backup in case of a system reset or to import to a new OT Security platform.

  - **Import Settings** — Imports OT Security platform configuration settings saved as an `.ndg` file on the local computer.

  - **Download Diagnostic Data** — Creates a file with diagnostic data on the OT Security platform and stores it on the local computer.

  - **Restart** — Restarts the OT Security platform. This is needed for activation of certain configuration changes.

- **Disable** — Disable all monitoring activities. You can reactivate the monitoring activities at any time.
- **Shut Down** — Shuts down the OT Security platform. To power on, press the Power button on the OT Security appliance.
- **Factory Reset** — Returns all settings to the factory default settings. Warning:

  > **Caution**: This operation cannot be undone and all data in the system will be lost.

- **System Log** — Shows a log of all system events that occurred in the system. For example, Policy turned on, Policy edited, Event Resolved, and so on. You can export the log as a CSV file or send it to a Syslog server. See System Log.

Sensors

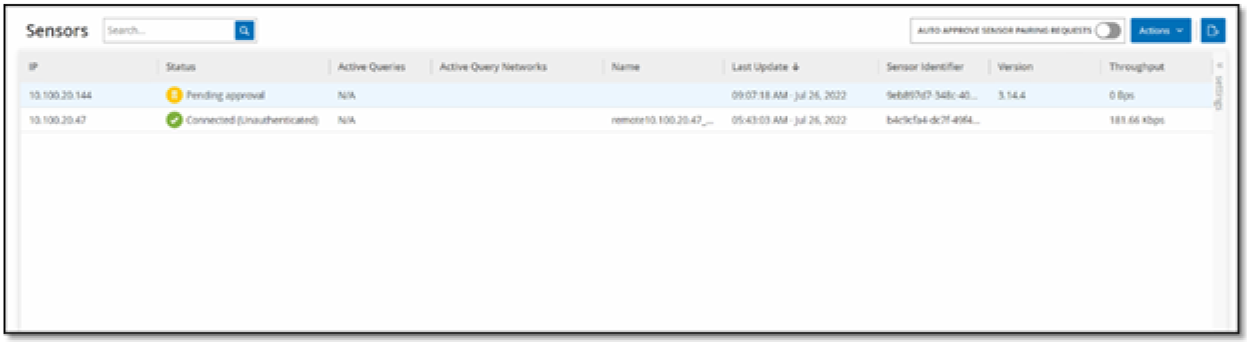
After sensors are paired using the Tenable Core user interface, you can approve new pairings, view, and manage sensors using the **Edit**, **Pause**, and **Delete** functions in the **Actions** menu. You can also choose to enable automatic approval for sensor pairing requests using the **Auto Approve Sensor Pairing Requests** toggle.

> **Note**: Sensors models preceding version 2.214 do not appear in the ICP Sensors page. However, they can still be used in unauthenticated mode.

> **Note**: You can pair an unlimited number of sensors with ICP, but there's a cap on the total combined SPAN (Switched Port Analyzer) traffic volume per appliance. For instance, you could have 10 sensors, each transmitting between 10 Mbps to 20 Mbps, but the overall traffic must not exceed the ICP's limit. For more information, see the System and License Requirements in the Tenable Core + OT Security User Guide.

View Sensors

The Sensors table shows a list of all Sensors v. 2.214 and later in the system.



IP	Status	Active Queries	Active Query Networks	Name	Last Update ↓	Sensor Identifier	Version	Throughput
10.100.20.144	Pending approval	N/A			09:07:18 AM - Jul 26, 2022	9eb897d7-348c-40...	3.14.4	0 Bps
10.100.20.47	Connected (Unauthenticated)	N/A		remote10.100.20.47_...	05:43:03 AM - Jul 26, 2022	b4c9cfa4-dc7f-49f4...		181.66 Kbps

The Sensors table includes the following details:

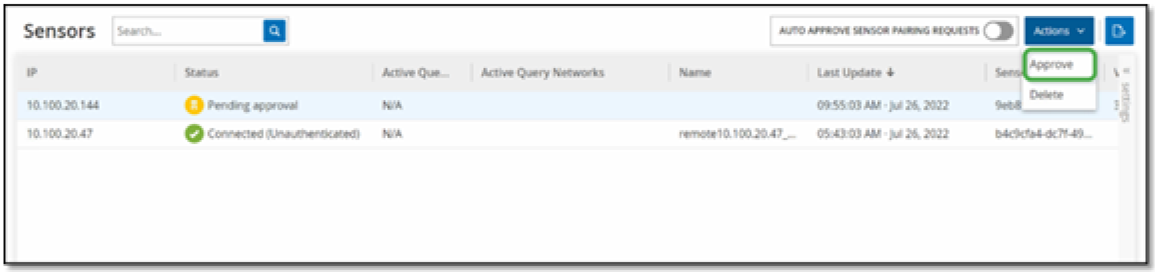
Parameter	Description
IP	The IPv4 address of the sensor.
Status	The status of the sensor: **Connected**, **Connected (Unauthenticated)**, **Pending approval**, **Disconnected**, or Paused.
Active Queries	The capacity of the sensor to send Active Queries: **Enabled**, **Disabled**, or **N/A**.
Active Query Networks	The network segments to which the sensor is assigned.
Name	The name of the sensor in the system.
Last Update	The date and time that the sensor information was last updated.
Sensor Identifier	The sensor Universal Unique Identifier (UUID), a 128-bit value used to uniquely identify an object or entity on the internet.
Version	The sensor version.
Throughput	A measure of how much data is streaming through the sensor (in kilobytes per second).

Manually Approve Incoming Sensor Pairing Requests

If the **Auto Approve Sensor Pairing Request**s setting is toggled to **OFF**, incoming sensor pairing requests must be manually approved before they are successfully connected.

To manually approve a sensor pairing request:

1. Go to **Local Settings** > **Sensors**.
2. Click a row in the table with a status of **Pending Approval**.
3. Click **Actions** > **Approve**, or from the right-click menu, select **Approve**.



IP	Status	Active Que...	Active Query Networks	Name	Last Update	Sens
10.100.20.144	Pending approval	N/A			09:55:03 AM - Jul 26, 2022	9eb8
10.100.20.47	Connected (Unauthenticated)	N/A		remote10.100.20.47_...	05:43:03 AM - Jul 26, 2022	b4c9cfa4-dc7f-49...

> **Note**: To delete a sensor, click **Actions** > **Delete**, or right-click and select **Delete**.

Configure Active Queries

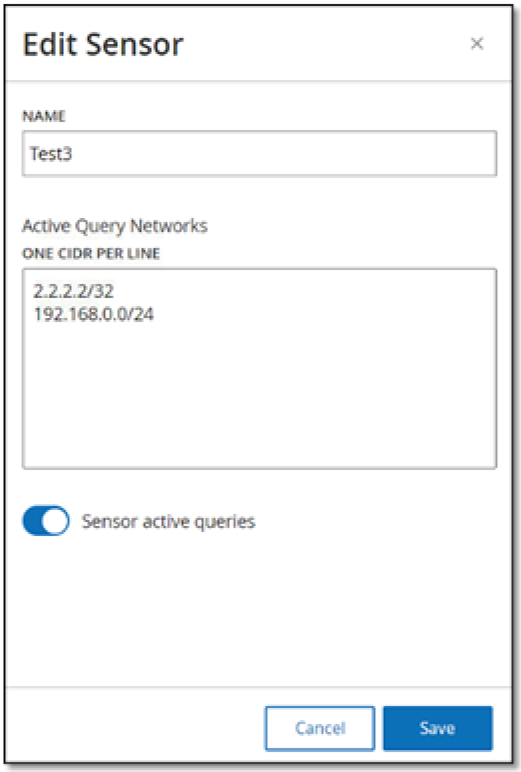
Once a sensor is connected in the authenticated mode, it can be configured to perform Active Queries in the network segments to which it is assigned. You need to specify which network segments it queries.

> **Note**: Sensors perform passive Network Detection on all available segments independent of this configuration.

To configure Active Queries:

1. Under **Local Settings**, go to **System Configuration** > **Sensors**.
2. Click a row in the table with a status of **Connected**.
3. Click **Actions** > **Edit**, or right-click and select **Edit**.

   The **Edit Sensor** panel is displayed.



Edit Sensor

NAME: Test3

Active Query Networks
ONE CIDR PER LINE
2.2.2.2/32
192.168.0.0/24

Sensor active queries: on

4. To rename the Sensor, edit the text in the **Name** box.

5. In the **Active Query Networks** box, add or edit relevant network segments to which the Sensor sends active queries, using CIDR notation and adding each subnetwork on a separate line.

   > **Note**: Queries can only be performed on CIDRs that are included in the monitored network ranges. Make sure to add only CIDRs that are accessible through this Sensor. Adding CIDRs that are not accessible may interfere with the ICP's ability to query those segments by other means.

6. Click the **Sensor active queries** toggle to enable active queries.

7. Click **Save**.

   The panel closes. In the **Sensors** table, in the **Active Queries** column, the enabled sensors now display **Enabled**.

Update Sensors

Starting from version 3.16, OT Security Sensor receives software and security updates from the ICP that manages it. Once a sensor is paired with authentication, it relies on the site to provide any OS and software updates necessary. The sensor only needs to reach OT Security for receiving software updates. OT Security allows you to update all your sensors from the centralized **Sensors** page.

If the sensor requires an update, you receive an alert during the following:

- Startup.
- Pairing completion between sensor and ICP.
- Periodic check.
- Using the **Check for updates** option.

> **Note**: The sensor must be paired to OT Security with authentication for updating remote sensors. For more information on pairing, see Pairing Sensors with ICP.

To update authenticated sensor version 3.16 or later with the ICP:

1. Go to **Local Settings** > **Sensors**.

   The **Sensors** page appears.

2. Check the **Version** column to see if the version is up to date or if it needs an update.
3. If the version needs an update, do one of the following:

   ### To update a single sensor:

   - Right-click the required sensor and select **Update**.
   - Select the checkbox next to the required sensor, then from the **Actions** menu, select **Update**.

   ### To update multiple sensors:

   - Select one or more sensors that requires an update, then from the **Actions** menu, select **Update**.

OT Security updates the selected sensors.

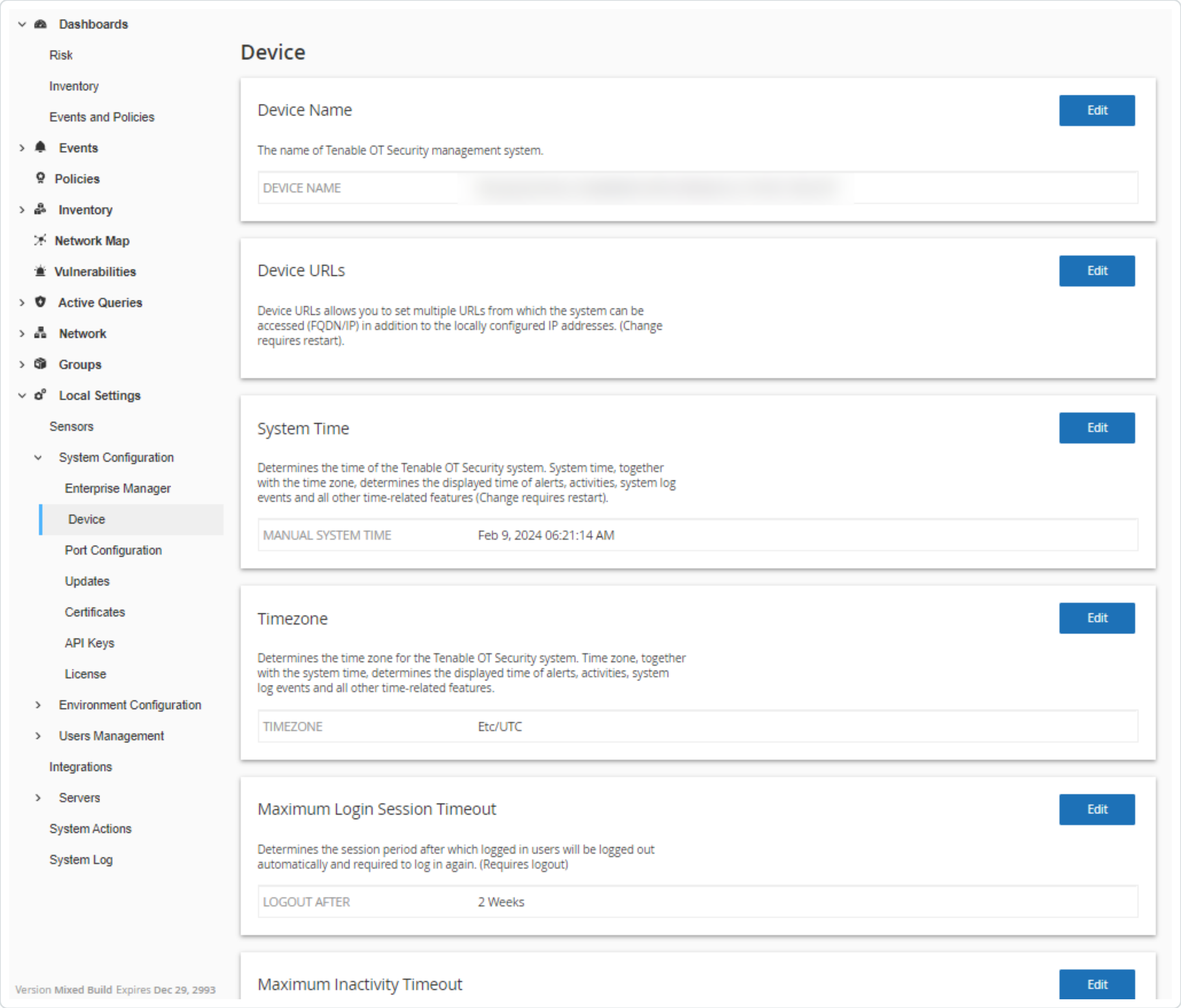
Note: During the update, the sensor may be unavailable.

System Configuration

The OT Security **System Configuration** pages allow you to automatically configure and manually perform Plugin updates, as well as view and update details regarding your device, HTTPS certificate, API Keys, and license.

Device

The **Device** page shows detailed information about your OT Security configuration. You can view and edit the configuration in this page.



Device

Device Name

The name of Tenable OT Security management system.

DEVICE NAME [redacted]

Device URLs

Device URLs allows you to set multiple URLs from which the system can be accessed (FQDN/IP) in addition to the locally configured IP addresses. (Change requires restart).

System Time

Determines the time of the Tenable OT Security system. System time, together with the time zone, determines the displayed time of alerts, activities, system log events and all other time-related features (Change requires restart).

MANUAL SYSTEM TIME Feb 9, 2024 06:21:14 AM

Timezone

Determines the time zone for the Tenable OT Security system. Time zone, together with the system time, determines the displayed time of alerts, activities, system log events and all other time-related features.

TIMEZONE Etc/UTC

Maximum Login Session Timeout

Determines the session period after which logged in users will be logged out automatically and required to log in again. (Requires logout)

LOGOUT AFTER 2 Weeks

Maximum Inactivity Timeout

Device Name

A unique identifier for the OT Security appliance.

Device URLs

Allows you to set the single URL from which the system can be accessed (FQDN).

> **Important**: Editing the Device URL is a critical change. The new FQDN is not presented again. Failure to make note of the exact string makes the user interface inaccessible. Make sure to verify the resolution before proceeding.

System Time

The correct time and date are set automatically, but you can edit it.

> **Note**: Setting the correct date and time is essential for the accurate recording of logs and alerts.

Timezone

Select the local time zone at the site location from the drop-down list. To change the timezone, click **Edit**

Maximum Login Session Timeout

The session period after which users are logged out automatically and are required to log in again. To change the login session timeout period, click **Edit**. Available options for the time period: 2 weeks, 30 minutes, 1 hour, 4 hours, 12 hours, 1 day, 1 week, and 2 weeks.

Maximum Inactivity Timeout

The inactivity period after which logged in users are logged out automatically and required to log in again. To change the inactivity period, click **Edit**.

Open Ports Age Out Period

Determines the period after which Open Port listings are removed from the individual **Asset Details** screen if no further indication is received that the port is still open. Default setting is two weeks. For more information, see Inventory.

Ping Requests

Turning on Ping Requests activates the OT Security platform's automatic response to ping requests.

To activate ping requests, click the **Ping Requests** toggle to enable ping requests.

Packet Capture

Turning on the full packet capture capability activates continuous recording of full-packet captures of all traffic in the network. This enables extensive troubleshooting and forensic investigation capabilities. When the storage capacity exceeds 1.8 TB, the system deletes older files. You can view and download available files from the **Network** > **Packet Captures** page, see section Network.

To activate packet captures, click the **Packet Capture** toggle to enable packet captures.

> **Note**: You can stop the Packet Capture feature at any time by toggling the switch to **OFF**.

Auto Approve Sensor Pairing Requests

Enabling automatic approval of incoming sensor pairing requests ensures all sensor pairing requests are approved without any additional administrator. If this option is not selected, final manual approval is required for any new sensors to connect to your network.

To enable auto approval for incoming sensor pairing requests, click the **Auto Approve Incoming Sensor Pairing Requests** toggle to enable automatic approval.

Enable Usage Statistics

The **Enable Usage Statistics** option specifies whether Tenable collects anonymous telemetry data about your OT Security deployment. When enabled, Tenable collects telemetry information that cannot be attributed to a specific individual; it is only collected at the company level. This information does not include personal data or personally identifiable information (PII). Telemetry information includes, but is not limited to, data about your visited pages, your used reports and dashboards, and your configured features. Tenable uses the data to improve your user experience in future OT Security releases and for other reasonable business purposes in accordance with the Tenable Master Agreement. This setting is enabled by default.

To enable telemetry collection, click the **Enable Usage Statistics**.

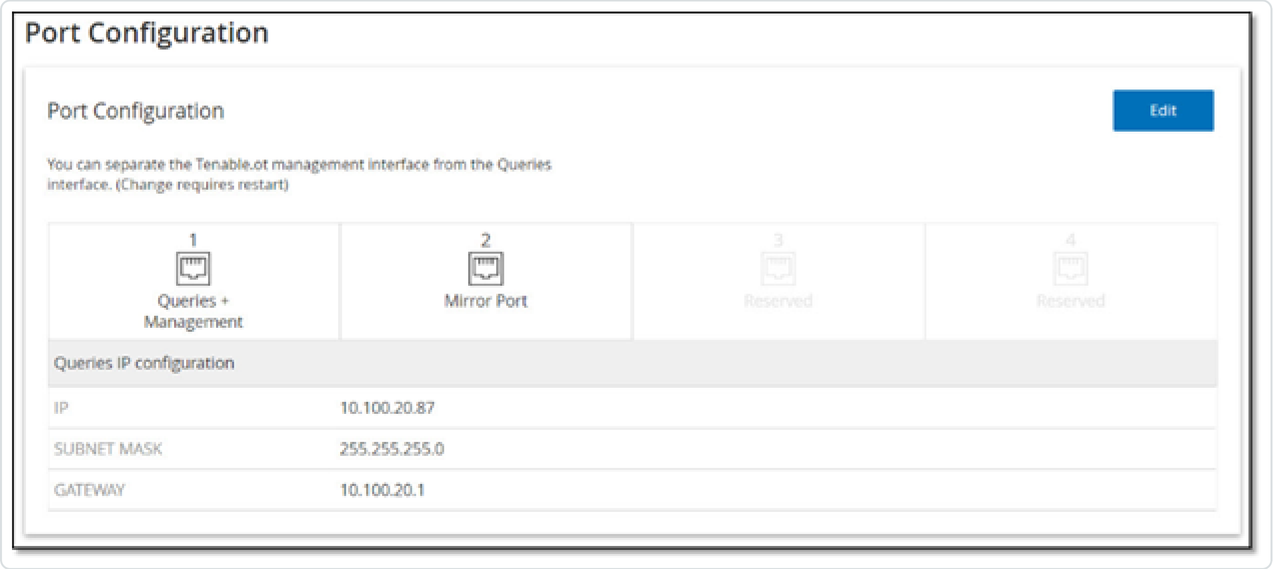
> **Note**: You can disable sharing of usage statistics at any time by clicking the toggle switch.

GraphQL Playground

An in-browser GraphQL IDE. Enable or disable this toggle to use the playground in production to test your API queries.

Port Configuration

The **Port Configuration** page shows how the ports on the device are configured. For more information on Port Configuration, see **Installing the OT Security Appliance > Step 4 – Setup Wizard > Screen 2 – Device**.



Port Configuration

Port Configuration

You can separate the Tenable.ot management interface from the Queries interface. (Change requires restart)

Queries IP configuration

IP	10.100.20.87
SUBNET MASK	255.255.255.0
GATEWAY	10.100.20.1

Updates

Keeping Plugins and IDS Engine Ruleset up to date ensures that your assets are monitored for all of the latest known vulnerabilities. Updates can be performed through the cloud, both automatically and manually, and can be performed offline as well.

> **Note**: Updates can also be performed from the **Vulnerabilities** window by clicking on the **Update plugins** button.

> **Note**: If the user license expires, the option to download new updates are blocked, and plugins cannot be updated.

Tenable Nessus Plugin Set Updates

Cloud Updates

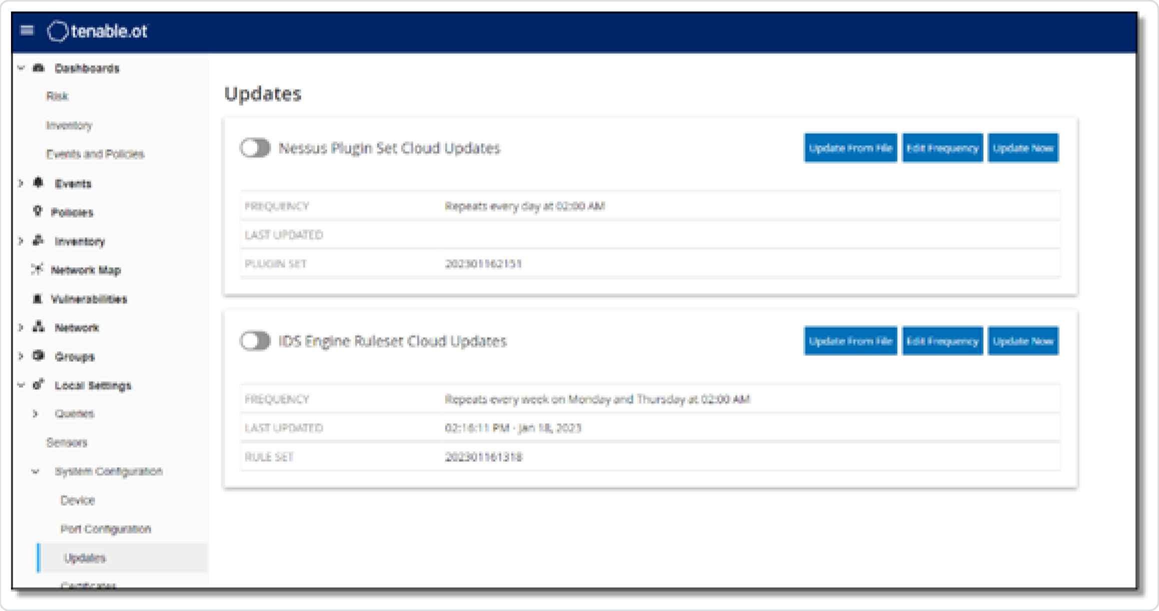
Users with an internet connection can update plugins through the cloud. When automatic updates are turned on, plugins update at the time and frequency set by the user (Default: daily at 02:00 AM).

Setting Automatic Cloud Updates of Plugins

To enable automatic updates of plugins:

1. Go to **Local Settings** >**System Configuration** > **Updates**.

   The **Updates** window appears with **Nessus Plugin Set Cloud Updates**, showing the number of your Plugin Set, when it was last updated and the update schedule.

   Updates

   Nessus Plugin Set Cloud Updates

   FREQUENCY Repeats every day at 02:00 AM

   LAST UPDATED

   PLUGIN SET 202301162151

   IDS Engine Ruleset Cloud Updates

   FREQUENCY Repeats every week on Monday and Thursday at 02:00 AM

   LAST UPDATED 02:16:11 PM · Jan 18, 2023

   RULE SET 202301161318

2. Click the **Nessus Plugin Set Cloud Updates** toggle to enable automatic updates.

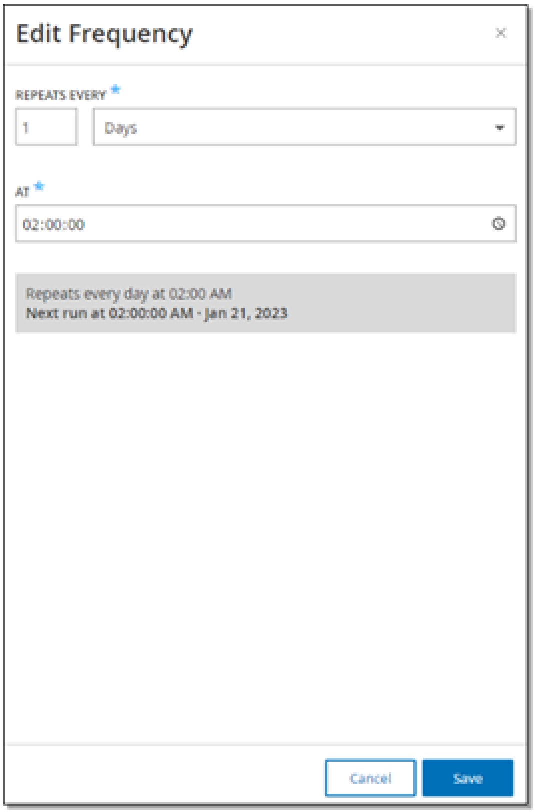
To edit the schedule of automatic updates of Plugins:

1. Go to **Local Settings** > **System Configuration** > **Updates**.

   The **Updates** window appears with **Nessus Plugin Set Cloud Updates**, showing the number of your Plugin Set, when it was last updated and the update schedule.

2. Click **Edit Frequency**.

   The **Edit Frequency** side panel appears.



Edit Frequency

REPEATS EVERY *

1 Days

AT *

02:00:00

Repeats every day at 02:00 AM
Next run at 02:00:00 AM - Jan 21, 2023

3. In the **Repeats Every** section, set the time interval at which you want to update the plugins by typing a number and selecting a unit of time (Days or Weeks) from the drop-down box.

   If you select **Weeks**, select which days of the week you want to perform a weekly update on the plugins.

4. In the **At** section, set the time of day at which you want to update the Plugins (in HH:MM:SS) by clicking on the clock icon and selecting the time, or by typing the time manually.

5. Click **Save**.

   A message appears confirming that OT Security updated the frequency successfully.

Performing Manual Cloud Updates of Plugins

To update plugins manually:

1. Go to **Local Settings**> **System Configuration** > **Updates**.

   The **Updates** page appears with **Nessus Plugin Set Cloud Updates**, showing the last updated version of your Plugin Set, when it was last updated and the update schedule.

2. Click **Update Now**.

   A message appears to confirm that update has started. When the update is complete, the **Plugin Set** displays the number of the current Plugin Set.

   > **Tip**: While the **Plugin Set** update is in progress, keep the browser window open and do not refresh the page.

Offline Updates

Users without an internet connection on their OT Security device can manually update their Plugins by downloading the latest Plugin set from the Tenable Customer Portal and uploading the file.

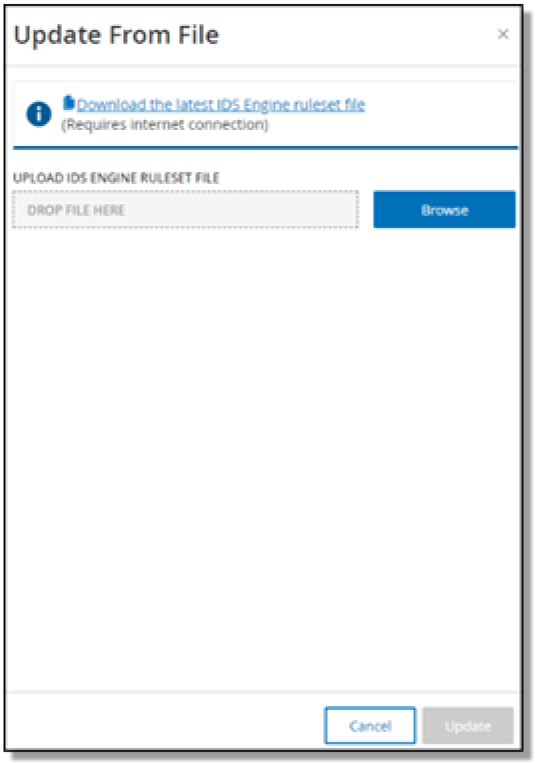
To update plugins offline:

1. Go to **Local Settings** > **System Configuration** > **Updates**.

   The **Updates** page appears with **Nessus Plugin Set Cloud Updates**, showing the number of your Plugin Set, when it was last updated and the update schedule.

2. Click **Update From File**.

   The **Update From File** window appears.



Update From File

Download the latest IDS Engine ruleset file
(Requires internet connection)

UPLOAD IDS ENGINE RULESET FILE

DROP FILE HERE

3. If you have not yet done so, click the link to download the latest Plugin file, then return to the **Update From File** window.

> **Note**: Downloading the latest Plugin file from the link is only possible through an internet connection, such as with an internet-connected PC.

4. Click **Browse** and navigate to the Plugin set file you downloaded from the OT Security Customer portal.

5. Click **Update**.

IDS Engine Ruleset Updates

Cloud Updates

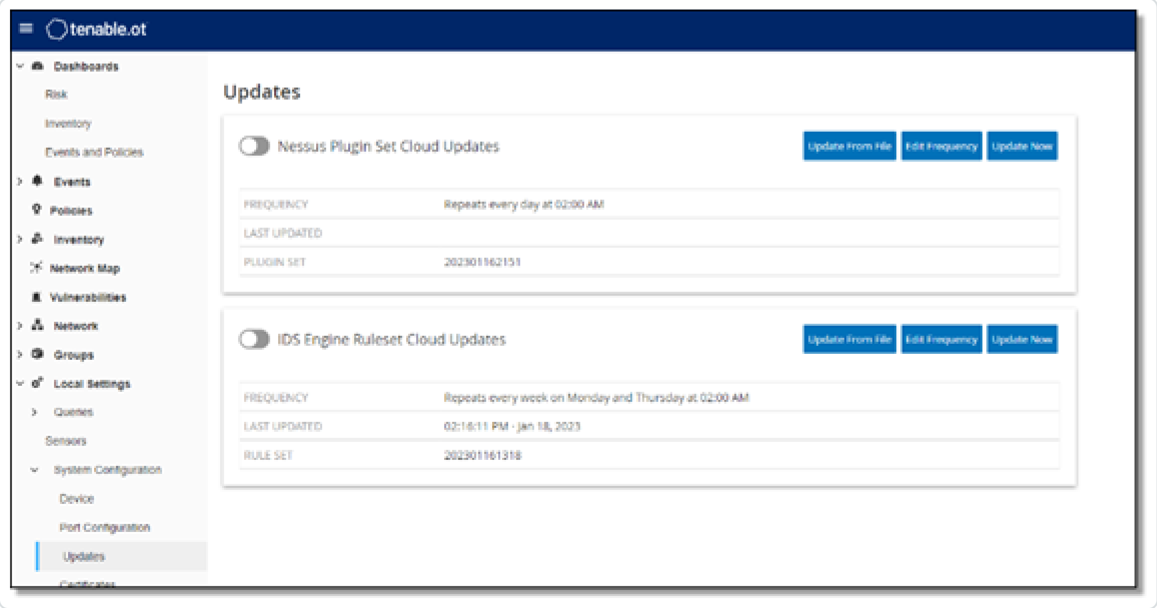
Users with an internet connection can update their IDS Engine Ruleset through the cloud. When automatic updates are turned on, the IDS Engine Ruleset can update at the time and frequency set by the user (Default: Repeats every week on Monday and Thursday at 02:00 AM).

Setting Automatic Cloud Updates of the IDS Engine Ruleset

To enable automatic updates of the IDS Engine Ruleset:

1. Go to **Local Settings** > **System Configuration** > **Updates**.

   The **Updates** page appears with **IDS Engine Ruleset Cloud Updates**, showing the number of your Rule Set, when it was last updated and the update schedule.

   Updates

   Nessus Plugin Set Cloud Updates

FREQUENCY	Repeats every day at 02:00 AM
LAST UPDATED	
PLUGIN SET	202301162151

   IDS Engine Ruleset Cloud Updates

FREQUENCY	Repeats every week on Monday and Thursday at 02:00 AM
LAST UPDATED	02:16:11 PM · Jan 18, 2023
RULE SET	202301161318

2. Click the **IDS Engine Ruleset Cloud Updates** toggle to enable automatic updates.

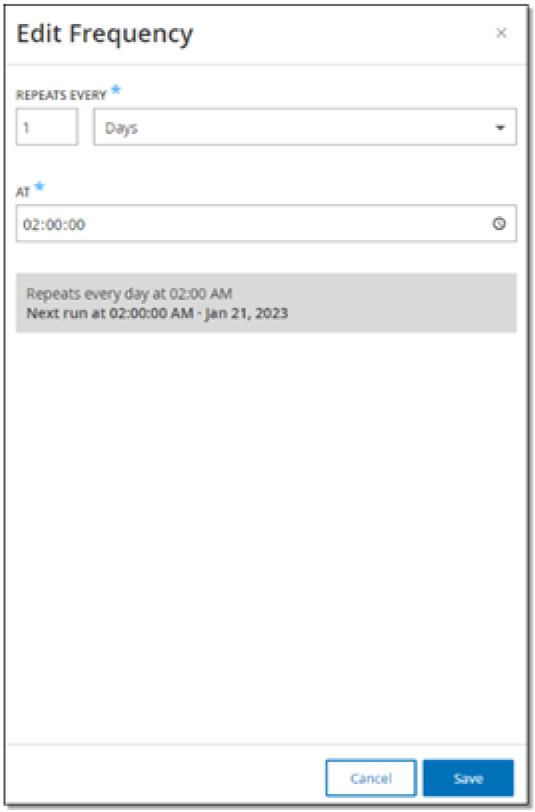
To edit the schedule of automatic updates of the IDS Engine Ruleset:

1. Go to **Local Settings** >**System Configuration** > **Updates**.

   The **Updates** page appears with **IDS Engine Ruleset Cloud Updates**, showing the number of your Rule Set, when it was last updated and the update schedule.

2. Click **Edit Frequency**.

   The **Edit Frequency** side panel appears.

   REPEATS EVERY * 1 Days

   AT * 02:00:00

   Repeats every day at 02:00 AM
   Next run at 02:00:00 AM - Jan 21, 2023

3. In the **Repeats Every** section, set the time interval at which you want to update the Ruleset, by typing a number and selecting a unit of time (Days or Weeks) from the drop-down box.

   If you select **Weeks**, select which days of the week you would like to perform a weekly update on the Ruleset.

4. In the **At** section, set the time of day at which you would like to update the IDS Engine Ruleset (in HH:MM:SS) by clicking the clock icon and selecting the time, or by entering the time manually.

5. Click **Save**.

   A message appears confirming that the frequency is updated successfully.

Performing Manual Cloud Updates of the IDS Engine Ruleset

To update the IDS Engine Ruleset manually:

1. Go to **Local Settings** > **System Configuration** > **Updates**.

   The **Updates** page appears with **IDS Engine Ruleset Cloud Updates**, showing the number of your Rule Set, when it was last updated and the update schedule.

2. Click on the **Update Now** button.

   A dialog is displayed, letting you know that the update has started. When the update is completed, the **Ruleset** field displays the number of the current IDS Engine Ruleset.

Offline Updates

Users without an internet connection on their OT Security device can manually update their IDS Engine Ruleset by downloading the latest Ruleset from the Tenable Customer Portal and uploading the file.

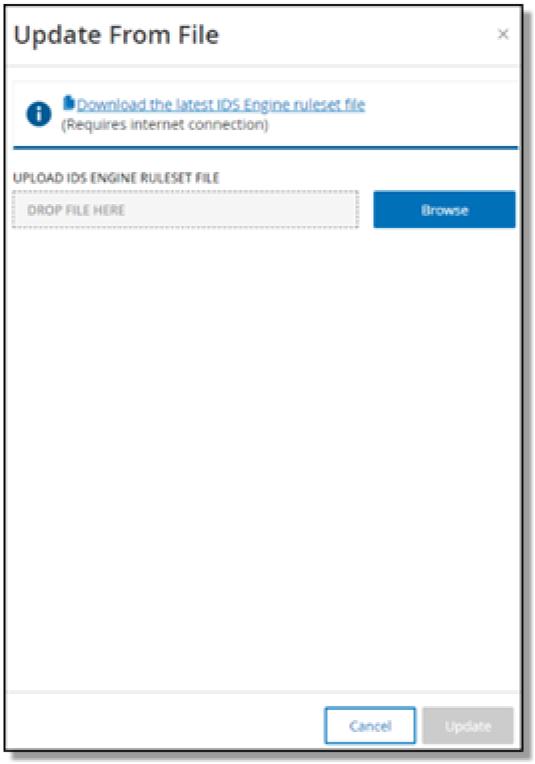
To update the IDS Engine Ruleset offline:

1. Go to **Local Settings** > **System Configuration** > **Updates**.

   The **Updates** screen appears with **IDS Engine Ruleset Cloud Updates**, showing the number of your Ruleset, when it was last updated and the update schedule.

2. Click **Update From File**.

   The **Update From File** window appears.



Update From File

Download the latest IDS Engine ruleset file
(Requires internet connection)

UPLOAD IDS ENGINE RULESET FILE

3. If you have not yet done so, click the link to download the latest IDS Engine ruleset file.

> **Note**: Downloading the latest IDS Engine ruleset file from the link is only possible through an internet connection, such as with an internet-connected PC.

4. Click **Browse** and navigate to the IDS Engine ruleset set file you downloaded from the OT Security Customer portal.

5. Click **Update**.

Certificate

Generate an HTTPS Certificate

The HTTPS certificate ensures the system is using a secure connection to the OT Security appliance and server. The initial certificate ages out after two years. You can generate a new self-signed certificate at any time. The new certificate is valid for one year.

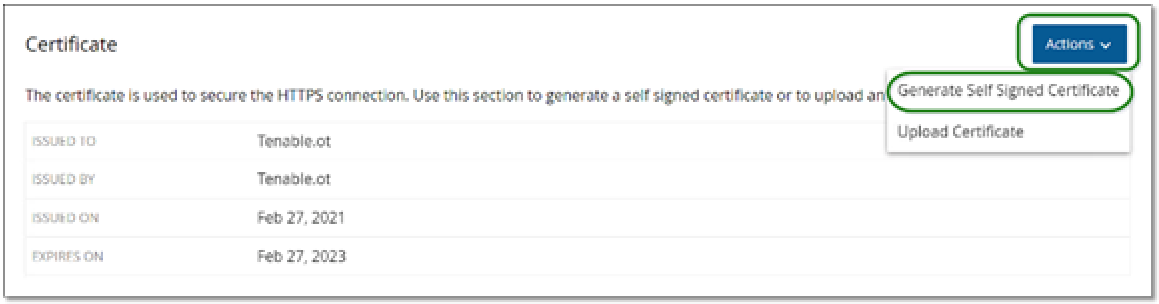
> **Note**: Generating a new certificate overrides the current certificate.

To generate a self-signed certificate:

1. Go to **Local Settings** >**System Configuration** > **Certificates**.

   The **Certificates** window appears.

2. From the **Actions** menu, select **Generate Self-Signed Certificate**.

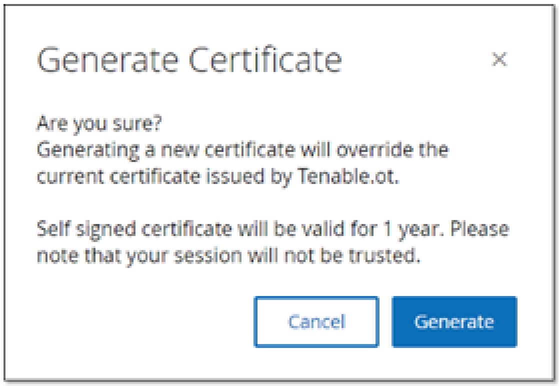
   

   Certificate

   The certificate is used to secure the HTTPS connection. Use this section to generate a self signed certificate or to upload an

ISSUED TO	Tenable.ot
ISSUED BY	Tenable.ot
ISSUED ON	Feb 27, 2021
EXPIRES ON	Feb 27, 2023

   The Generate Certificate confirmation window appears.

   Generate Certificate

   Are you sure?
   Generating a new certificate will override the current certificate issued by Tenable.ot.

   Self signed certificate will be valid for 1 year. Please note that your session will not be trusted.

3. Click **Generate**.

OT Security generates the self-signed certificate and you can view the certificate in the **Local Settings** > **System Configuration** > **Certificate** page.

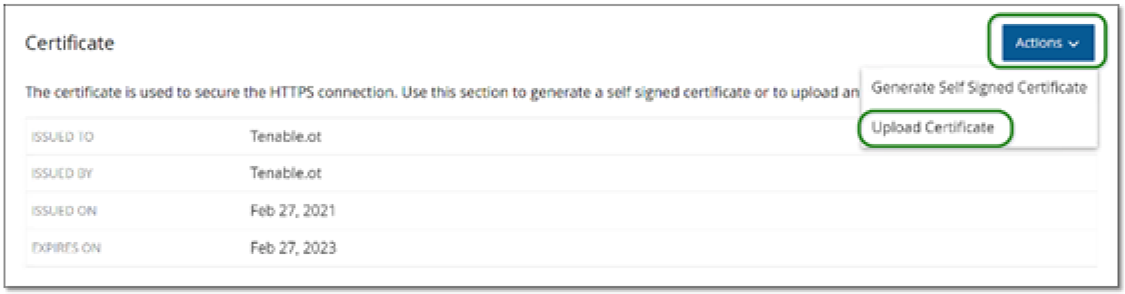
Uploading an HTTPS Certificate

To upload an HTTPS Certificate:

1. Go to **Local Settings** >**System Configuration** > **Certificates**.

   The **Certificates** window appears.

2. From the **Actions** menu, select **Upload Certificate**.

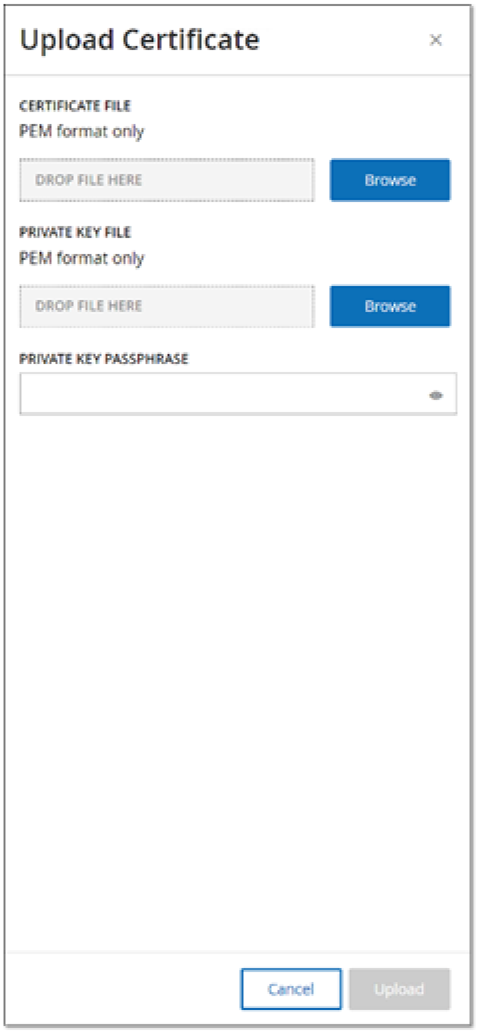
   

   Certificate

   The certificate is used to secure the HTTPS connection. Use this section to generate a self signed certificate or to upload an

ISSUED TO	Tenable.ot
ISSUED BY	Tenable.ot
ISSUED ON	Feb 27, 2021
EXPIRES ON	Feb 27, 2023

   The **Upload Certificate** side panel appears.



Upload Certificate

CERTIFICATE FILE

PEM format only

PRIVATE KEY FILE

PEM format only

PRIVATE KEY PASSPHRASE

3. In the **Certificate File** section, click **Browse** and navigate to the certificate file you want to upload.

4. In the **Private Key File** section, click **Browse** and navigate to the Private Key file you want to upload.

5. In the **Private Key Passphrase** box, type the private key passphrase.

6. Click **Upload**to upload the files.

   The side panel closes.

   > **Note**: After replacing the certificate, Tenable recommends that you reload the browser tab to ensure the HTTP Certificate update is successful. If the upload is unsuccessful, OT Security displays a warning message.

License

When you need to update or reinitialize your OT Security license, reach out to your Tenable account manager. Once your Tenable account manager updates your license, you can update or reinitialize your license. For more information, see the OT Security License Workflow.

Environment Configuration

Add Assets Manually

To track your inventory, you may want to view some additional assets you possess, even though OT Security has not yet detected these assets. You can manually add these assets to your inventory by downloading and editing a CSV file, and then uploading the file to the system. You can only upload assets with IPs that are not already in use by an existing asset in the system. In the event that the system detects an asset communicating over the network with the same IP, it uses the information retrieved about the detected asset and overwrites the previously uploaded information. The system begins handling the asset as a regular one when it is detected communicating in the network.

The IP addresses of uploaded assets are counted as part of the system licensing.

Uploaded assets display a risk score of 0 until OT Security detects these assets.

> **Note**: When assets are added manually, events are not detected for those assets until OT Security detects their communication in the network.

To add assets manually:

1. Go to **Local Settings** >**Environment Configuration** > **Asset Settings**.

   The **Asset Settings** screen appears.

2. In **Add Assets Manually**, from the **Actions** menu, select **Download CSV template**.

   OT Security downloads the tot_Assets template document.

3. Open the tot_Assets template document.

4. Edit the tot_Assets template precisely in accordance with the instructions found in the file, leaving only the column headers (Name, Type, and so on.) and the values you enter.

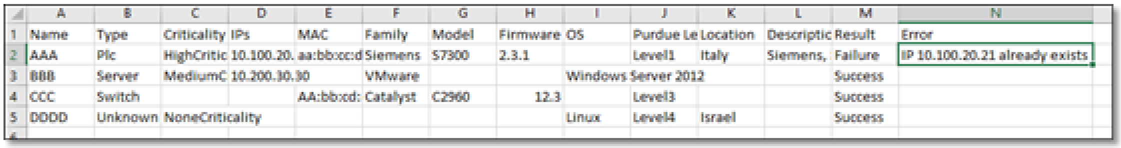
5. Save the edited file.

6. Return to the **Assets Settings** screen.

7. From the **Actions** menu, select **Upload CSV** and navigate to and open the desired CSV file to upload it.

8. In **Add Assets Manually**, click **Download Report**.

   A CSV file with report appears, showing successes and failures in the Result column. Details of errors are shown in the Error column.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Name	Type	Criticality	IPs	MAC	Family	Model	Firmware	OS	Purdue Le	Location	Descriptic	Result	Error
2	AAA	Plc	HighCritic	10.100.20.	aa:bb:cc:d	Siemens	S7300	2.3.1		Level1	Italy	Siemens,	Failure	IP 10.100.20.21 already exists
3	BBB	Server	MediumC	10.200.30.30		VMware			Windows Server 2012				Success	
4	CCC	Switch			AA:bb:cd:	Catalyst	C2960	12.3		Level3			Success	
5	DDDD	Unknown	NoneCriticality						Linux	Level4	Israel		Success	

Event Clusters

To facilitate the monitoring of events, multiple events with the same characteristics are clustered together into a single cluster. The clustering is based on event type (that is, events that share the same policy), source, and destination assets, and so on.

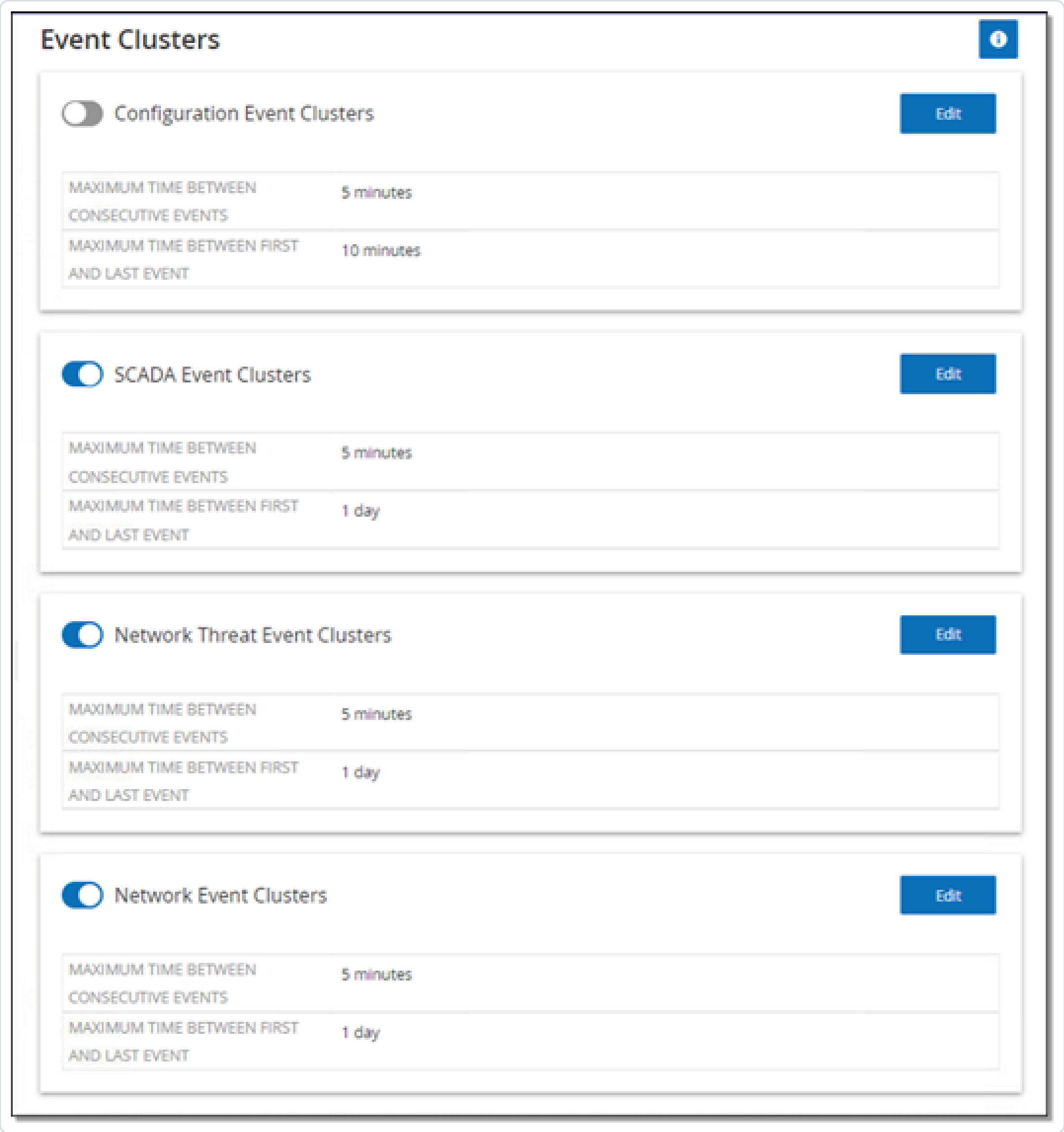
To cluster events, they must be generated within the following configured time intervals:

- **Maximum time between consecutive events** — Sets the maximal time interval between events. If this time passes, the consecutive events are not clustered.
- **Maximum time between the first and last event** — Sets the maximal time interval for all events to be shown as a cluster. An event that is generated after this time interval is not be part of the cluster.

To enable clustering:

1. Go to **Local Settings**, go to **Environment Configuration** > **Event Clusters**.

   The **Event Clusters** screen appears.



Event Clusters

○ Configuration Event Clusters

MAXIMUM TIME BETWEEN CONSECUTIVE EVENTS	5 minutes
MAXIMUM TIME BETWEEN FIRST AND LAST EVENT	10 minutes

● SCADA Event Clusters

MAXIMUM TIME BETWEEN CONSECUTIVE EVENTS	5 minutes
MAXIMUM TIME BETWEEN FIRST AND LAST EVENT	1 day

● Network Threat Event Clusters

MAXIMUM TIME BETWEEN CONSECUTIVE EVENTS	5 minutes
MAXIMUM TIME BETWEEN FIRST AND LAST EVENT	1 day

● Network Event Clusters

MAXIMUM TIME BETWEEN CONSECUTIVE EVENTS	5 minutes
MAXIMUM TIME BETWEEN FIRST AND LAST EVENT	1 day

2. Click the toggle to enable desired categories for clustering.

3. To configure the time intervals for a category, click **Edit**.

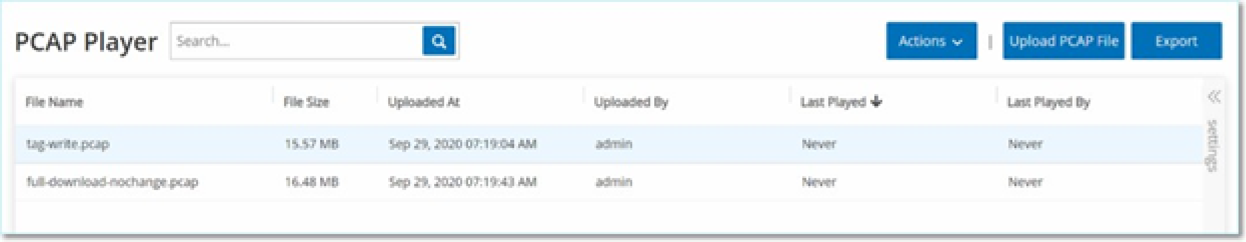
   The **Edit Configuration** window appears.

4. Type the required number value in the number box and select the unit of time using the drop-down box.

   > **Note**: For more information about clustering and time intervals, click the ⓘ icon.

5. Click **Save**.

PCAP Player



File Name	File Size	Uploaded At	Uploaded By	Last Played	Last Played By
tag-write.pcap	15.57 MB	Sep 29, 2020 07:19:04 AM	admin	Never	Never
full-download-nochange.pcap	16.48 MB	Sep 29, 2020 07:19:43 AM	admin	Never	Never

OT Security enables you to upload a PCAP (Packet Capture) file containing recorded network activity and “play” it on OT Security. When you “play” a PCAP file, OT Security monitors the network traffic and records all information about detected assets, network activity, and vulnerabilities as if the traffic occurred within your network. You can use this feature for simulation purposes or in order to analyze traffic that occurs outside of the network that OT Security monitors. For example, remote plants.

> **Note**:PCAP Player supports these file types: `.pcap`, `.pcapng`, `.pcap.gz`, `.pcapng.gz`. You can use files that are recorded by an instance of OT Security or other network monitoring tools.

Upload a PCAP File

To upload a PCAP file:

1. Go to **Local Settings** > **Environment Configuration** > **PCAP Player**.

2. Click **Upload PCAP File**.

   The **File Explorer** opens.

3. Select the required PCAP recording.

4. Click **Open**.

   OT Security uploads the PCAP file to the system.

Play a PCAP File

To play a PCAP file:

1. Go to **Local Settings** >**Environment Configuration** > **PCAP Player**.
2. Select the PCAP recording you want to play.
3. Click **Actions** > **Play**.

   The **Play PCAP** wizard appears.
4. In the **Play Speed** drop-down box, select the speed at which you want the system to play the file.

   Options are: 1X, 2X, 4X, 8X or 16X.

   > **Note**: Playing a PCAP file injects data into the system, you cannot undo or stop this operation once it runs.
5. Click **Play**.

   The system plays the PCAP file. All network activity in the PCAP file is registered in the system and assets identified by the system are added to the assets inventory.

   > **Note**: You cannot play another PCAP file while a file is still playing.

Users and Roles

Access to the OT Security Console is controlled by user accounts that designate the permissions that are available for that user. The user's permissions are determined by the User Groups to which they are assigned. Each User Group is assigned a role, which defines the set of permissions that are available for its members. So, for example, if the Site Operators User Group has the role Site Operator, then all users assigned to that group have the set of permissions associated with the Site Operator role.

The system comes with a set of pre-defined User Groups, which correspond to each of the available roles, **Administrators User Group** > **Administrator role**, **Site Operators User Group** > **Site Operator role** and so on. You can also create custom User Groups and specify their roles.

There are three methods for creating users in the system:

- **Adding Local Users** – Create user accounts to authorize individual users to access the system. Assign users to User Groups that define their roles.
- **Authentication Servers** – Use your organization's authentication servers (for example, Active Directory, LDAP) to authorize users to access the system. You can assign OT Security roles based on your existing groups in Active Directory.
- **SAML** – Set up an integration with your Identity Provider (for example, Microsoft Entra ID) and assign users to your OT Security application.

Local Users

User Groups

User Roles

Authentication Servers

SAML

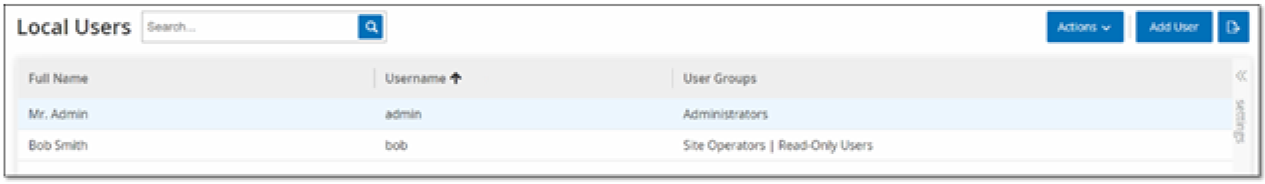
Local Users

An administrator user can create new user accounts and edit existing accounts. Each user is assigned to one or more User Groups which determine the roles assigned to the user.

Note: You can add users to the User Groups either during the creation or editing of the user's account or the User Group.

View Local Users

The **Local Users** window shows a list of all local users in the system.



Full Name	Username	User Groups
Mr. Admin	admin	Administrators
Bob Smith	bob	Site Operators | Read-Only Users

The **Local Users** window shows the following details:

Parameter	Description
Full Name	The full name of the user.
Username	The username of the user, used for login.
User Groups	The User Groups to which the user is assigned.

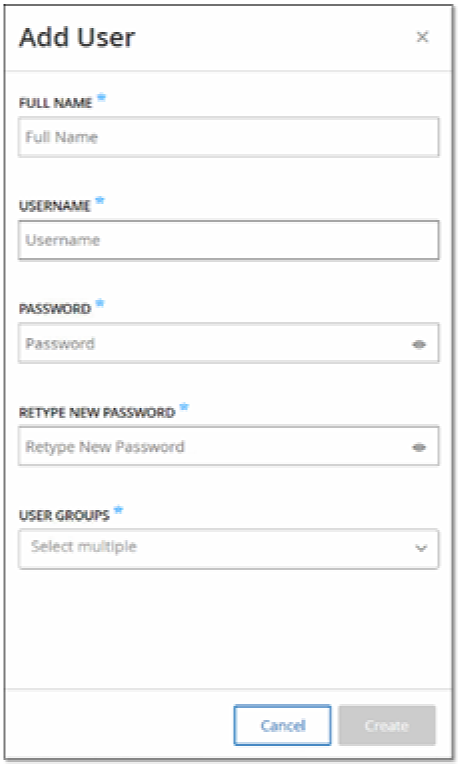
Add Local Users

You can create user accounts to authorize individual users to access the system. Each user must be assigned to one or more User Groups.

To create a User Account:

1. Go to **Local Settings** > **User Management** > **Local Users**.
2. Click **Add User**.

   The **Add User** pane appears.

   Add User

   FULL NAME *

   Full Name

   USERNAME *

   Username

   PASSWORD *

   Password

   RETYPE NEW PASSWORD *

   Retype New Password

   USER GROUPS *

   Select multiple

3. In the **Full Name** box, type the first and last name.

   > **Note**: The name that you enter appears in the header bar when the user is signed in.

4. In the **Username** box, type a user name to be used for logging in to the system.
5. In the **Password** box, type a password.
6. In the **Retype Password** box, type the identical password.

> **Note**: This is the password that the user uses for the initial login. The user can change the password in the **Settings** window after logging into the system.

7. In the **User Groups** drop-down box, select the check box for each User Group to which you want to assign this user.

   > **Note**: The system comes with a set of pre-defined User Groups, which correspond to each of the available roles, **Administrators User Group** > **Administrator role**, **Site Operators User Group** > **Site Operator role** and so on. For an explanation of the available roles, see Local Users.

8. Click **Create**.

   OT Security creates the new user account in the system and adds to the list of users in **Local Users**.

Additional Actions on User Accounts

Edit a User Account

You can assign a user to additional User Groups or remove the user from a group.

To change a user's User Groups:

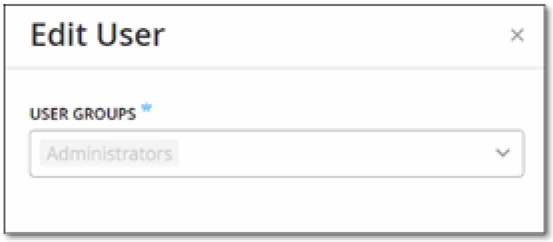
1. Go to **Local Settings** >**User Management** > **Local User**.

   The **Local Users** screen appears.

2. Right-click the required user and select **Edit User**.

   > **Note**: Alternatively, you can select a user and then from the **Actions** menu, select **Edit User**.

3. The **Edit User** pane appears, showing the User Groups to which the user is assigned.

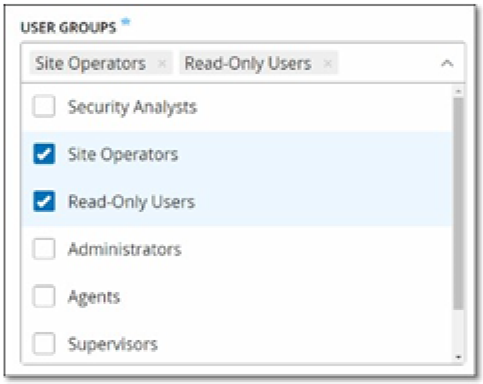


Edit User ×

USER GROUPS *

Administrators

4. In the **User Groups** drop-down box, select or clear the required user groups.



USER GROUPS *

Site Operators × Read-Only Users ×

☐ Security Analysts
☑ Site Operators
☑ Read-Only Users
☐ Administrators
☐ Agents
☐ Supervisors

5. Click **Save**.

Change a User's Password

> **Note**: This procedure is for an administrator user to change the password for any account in the system. Any user can change their own password by going to **Local Settings** > **User**.

To change a user's password:

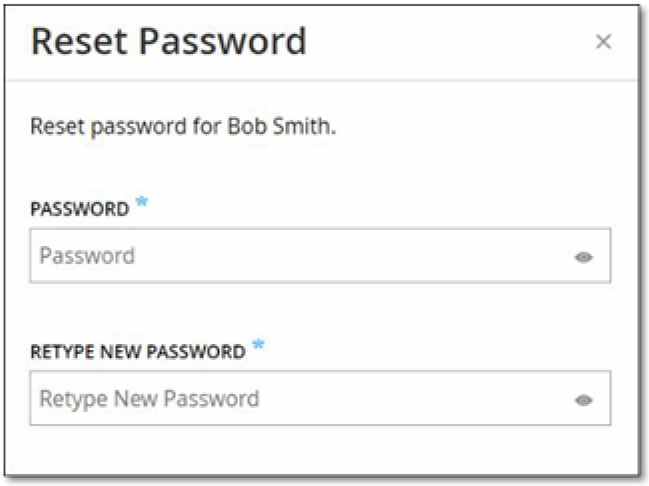
1. Go to **Local Settings** > **User Management** > **Local User**.

   The **Local Users** screen appears.

2. Right-click the required user and select **Reset Password**.

   > **Note**: Alternatively, you can select a user and from the **Actions** menu, select **Reset Password**.

   The **Reset Password** window appears.



Reset Password

Reset password for Bob Smith.

3. In the **New Password** box, type a new password.

4. In the **Retype New Password** box, re-type the new password.

5. Click **Reset**.

   OT Security applies the new password to the specified user account.

Delete Local Users

To delete a user account:

1. Go to **Local Settings** > **User Management** > **Local User**.

   The **Local Users** screen appears.

2. Right-click the required user and select **Delete User**.

   > **Note**: Alternatively, you can select a user and from the **Actions** menu, select **Delete User**.

   A confirmation window appears.

3. Click **Delete**.

   OT Security deletes the user account from the system.

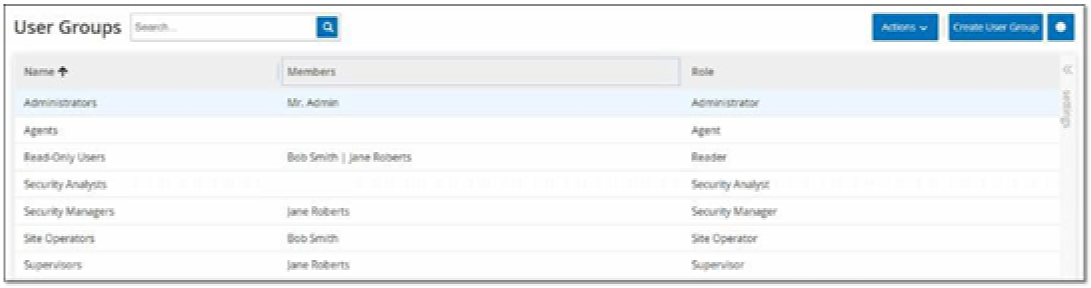
User Groups

An administrator user can create new User Groups and edit existing groups. Each user is assigned to one or more User Groups, which determine the roles assigned to the user.

The system comes with a set of pre-defined User Groups, which correspond to each of the available roles, Administrators User Group > Administrator role, Site Operators User Group > Site Operator role, and so on. For an explanation of the available roles, see User Roles.

Viewing User Groups

The User Groups page shows a list of all User Groups in the system.



Name	Members	Role
Administrators	Mr. Admin	Administrator
Agents		Agent
Read-Only Users	Bob Smith | Jane Roberts	Reader
Security Analysts		Security Analyst
Security Managers	Jane Roberts	Security Manager
Site Operators	Bob Smith	Site Operator
Supervisors	Jane Roberts	Supervisor

The following details are available in the User Groups page:

Parameter	Description
Name	The name of the User Group.
Members	A list of all members assigned to the group.
Role	The role given to this group. For an explanation of the permissions associated with each role, see User Roles Table.

Add User Groups

You can create new User Groups and assign users to that Group.

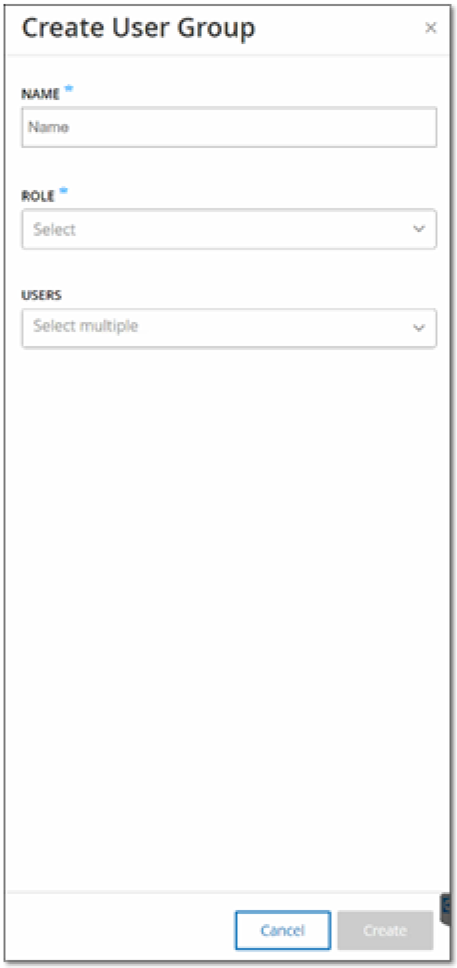
To create a user group:

1. Go to **Local Settings** >**User Management** > **User Groups**.

   The **User Groups** screen appears.

2. Click **Create User Group**.

   The **Create User Group** pane appears.

   Create User Group

3. In the **Name** box, type a name for the group.

4. In the **Role** drop-down box, select from the drop-down list the role that you want to assign to this group. Available roles are:

    - Read Only
    - Security Analyst
    - Security Manager
    - Site Operator
    - Supervisor

5. In the **Users** drop-down box, select one or more users that you want to assign to this group.

6. Click **Create**.

    OT Security creates the new User Group and adds to the list of groups shown in the **User Groups** screen.

Additional Actions on User Groups

Edit User Groups

You can edit the settings and add or remove members to an existing User Group by editing the group.

> **Note**: Alternatively, you can select a user and then from the **Actions** menu, select **Delete User**.

To edit a User Group:

1. Go to **Local Settings** >**User Management** > **User Groups**.

   The **User Groups** screen appears.

2. Do one of the following:

   - Right-click the required user group and select **Edit**.
   - Select the user group you want to edit. The **Actions** menu appears. Select **Actions** > **Edit**.

   The **Edit User Group** panel appears, showing the group's settings.

3. Click **Save**.

Delete User Groups

> **Note**: You can only delete a User Group that does not currently have users assigned to it. If users are assigned to a group, you need to first remove the users from the group before you can delete the group.

To delete a user group:

1. Go to **Local Settings** >**User Management** > **User Groups**.

   The **User Groups** screen appears.

2. Do one of the following:

- Right-click the required User Group and select **Delete**.
- Select the user group you want to delete. The **Actions** menu appears. Select **Actions** > **Delete**.

A confirmation window appears.

3. Click **Delete**.

   OT Security deletes the **User Group**.

User Roles

The following are the available roles:

- **Administrator** — Has maximum privileges to do all operational as well as administrative tasks in the system, including creating new user accounts.
- **Read-Only** — Can view data (asset inventory, events, network traffic), but cannot act in the system.
- **Security Analyst** — Can view data in the system and resolve security events.
- **Security Manager** — Can manage security-related capabilities, including configuring policies, viewing data in the system, and resolving events.
- **Site Operator** — Can view data in the system and manage the asset inventory.
- **Supervisor** — Has full privileges to do all operational tasks in the system and some limited administrative tasks excluding creating new users and other sensitive activities.

User Roles Table

The following table gives a detailed breakdown of precisely which permissions are enabled for each role.

Permission	Admin (Local)	Admin (External/AD)	Supervisor	Security Manager	Security Analyst	Site Operator	Read only
Events							
View events	✓	✓	✓	✓	✓	✓	✓
Resolve	✓	✓	✓	✓	✓	✗	✗
Download capture file	✓	✓	✓	✓	✓	✓	✓
Exclude from policy	✓	✓	✓	✓	✗	✗	✗
Resolve all	✓	✓	✓	✓	✓	✗	✗
Export	✓	✓	✓	✓	✓	✓	✓
Create Policy on FortiGate	✓	✓	✓	✓	✗	✗	✗
Refresh	✓	✓	✓	✓	✓	✓	✓
Policies							
View policies	✓	✓	✓	✓	✓	✓	✓
Enable/Disable	✓	✓	✓	✓	✗	✗	✗

View action	✓	✓	✓	✓	✓	✓	✓
Edit	✓	✓	✓	✓	✗	✗	✗
Duplicate	✓	✓	✓	✓	✗	✗	✗
Delete	✓	✓	✓	✓	✗	✗	✗
Create policy	✓	✓	✓	✓	✗	✗	✗
Export	✓	✓	✓	✓	✓	✓	✓
Assets							
View assets	✓	✓	✓	✓	✓	✓	✓
View action	✓	✓	✓	✓	✓	✓	✓
Edit	✓	✓	✓	✗	✗	✓	✗
Delete	✓	✓	✓	✗	✗	✓	✗
Import (upload new assets by csv)	✓	✓	✓	✗	✗	✓	✗
Hide	✓	✓	✓	✗	✗	✓	✗
Export	✓	✓	✓	✓	✓	✓	✓
Resync	✓	✓	✓	✓	✓	✓	✗
Nessus scan	✓	✓	✓	✓	✓	✓	✗
Take snapshot	✓	✓	✓	✓	✓	✓	✗

(single asset)							
Update open ports (single asset)	✓	✓	✓	✓	✓	✗	✗
Update port state (single asset)	✓	✓	✓	✓	✓	✗	✗
View in browser (single asset)	✓	✓	✓	✓	✓	✓	✓
View in main asset map (single asset)	✓	✓	✓	✓	✓	✓	✓
Generate attack vector (single asset)	✓	✓	✓	✓	✓	✓	✓
Vulnerabilities (Plugins)							
View plugin hits	✓	✓	✓	✓	✓	✓	✓
View action	✓	✓	✓	✓	✓	✓	✓
Edit comment	✓	✓	✓	✓	✓	✗	✗

Update plugin set	✓	✓	✓	✓	✗	✗	✗
Export	✓	✓	✓	✓	✓	✓	✓
Network							
Turn on packet capture	✓	✓	✓	✗	✗	✗	✗
Close ongoing captures	✓	✓	✓	✓	✓	✓	✗
Download PCAP file	✓	✓	✓	✓	✓	✓	✓
Export conversations table	✓	✓	✓	✓	✓	✓	✓
Set as baseline	✓	✓	✓	✓	✗	✗	✗
Generate map	✓	✓	✓	✓	✓	✓	✓
Refresh map	✓	✓	✓	✓	✓	✓	✓
Groups							
View groups	✓	✓	✓	✓	✓	✓	✓
View action	✓	✓	✓	✓	✓	✓	✓
Edit	✓	✓	✓	✓	✗	✗	✗

Duplicate	✓	✓	✓	✓	✕	✕	✕
Delete	✓	✓	✓	✓	✕	✕	✕
Create group	✓	✓	✓	✓	✕	✕	✕
Export	✓	✓	✓	✓	✓	✓	✓
Report							
View reports	✓	✓	✓	✓	✓	✓	✓
Generate	✓	✓	✓	✓	✓	✓	✓
Download	✓	✓	✓	✓	✓	✓	✓
Export	✓	✓	✓	✓	✓	✓	✓
Network Segments							
View Network Segments	✓	✓	✓	✓	✓	✓	✓
Edit	✓	✓	✓	✓	✕	✕	✕
Delete	✓	✓	✓	✓	✕	✕	✕
Create	✓	✓	✓	✓	✕	✕	✕
Export	✓	✓	✓	✓	✓	✓	✓
Learn More	✓	✓	✓	✓	✓	✓	✓
Local Settings							
Queries	✓	✓	✓	✕	✕	✕	✕
System Configurati	✓	✓	✓	✕	✕	✕	✕

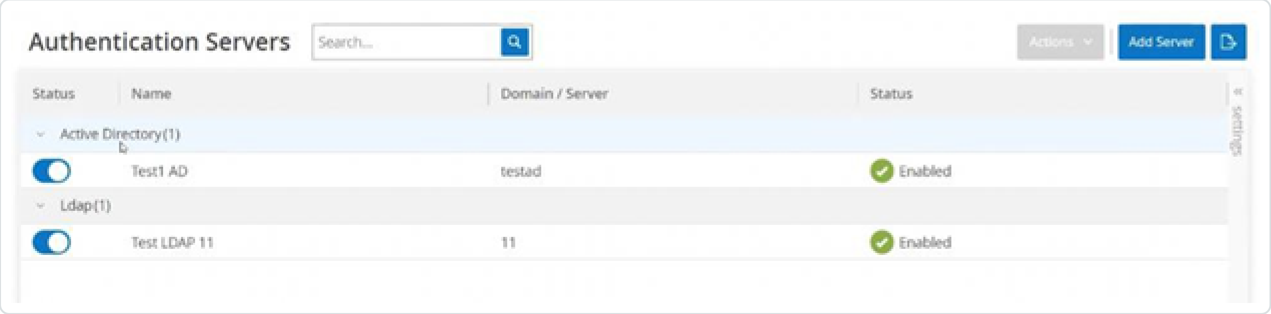
on – Device Details							
System Configuration – Sensors	✓	✓	✓	✓(No Actions)	✓ (No Actions)	✓ (No Actions)	✓ (No Actions)
System Configuration – Port Configuration	✓	✓	✓	✗	✗	✗	✗
System Configuration – Updates	✓	✓	✓	✗	✗	✗	✗
System Configuration – Certificate (HTTPS)	✓	✓	✗	✗	✗	✗	✗
System Configuration – API Keys	✓	✗	✓ (Only Local Users)	✓ (Only Local Users)	✓ (Only Local Users)	✓ (Only Local Users)	✓ (Only Local Users)
System Configuration – License	✓	✓	✗	✗	✗	✗	✗
Environment	✓	✓	✓	✗	✗	✗	✗

Configuration – Asset Settings							
Environment Configuration – Hidden Assets	✓	✓	✓	✓ - no restore	✓ - no restore	✓	✓ - no restore
Environment Configuration – Custom Fields	✓	✓	✓	✗	✗	✗	✗
Environment Configuration -Event Clusters	✓	✓	✓	✗	✗	✗	✗
Environment Configuration – PCAP Player	✓	✓	✓	✗	✗	✗	✗
Users and Roles – User Settings	✓	✓	✓	✗	✗	✗	✗
Users and Roles – Local	✓	✗	✗	✗	✗	✗	✗

Users							
Users and Roles – User Groups	✓	✕	✕	✕	✕	✕	✕
Users and Roles – Active Directory	✓	✕	✕	✕	✕	✕	✕
Integrations	✓	✓	✕	✕	✕	✕	✕
Servers	✓	✓	✓	✓ (No Actions)	✓ (No Actions)	✓ (No Actions)	✓ (No Actions)
System Actions	✓	✓ without factory reset	✓ only backup and diagnostics	✓ only diagnostics	✕	✕	✕
System log	✓	✓	✓	✓	✓	✓	✓ no syslog
Enable (on setup and after disable)	✓	✓	✕	✕	✕	✕	✕
Delete Assets	✓	✓	✓	✕	✕	✕	✕

Authentication Servers

The **Authentication Servers** page shows your existing integrations with authentication servers. You can add a server by clicking the **Add server** button.



Status	Name	Domain / Server	Status
Active Directory(1)			
●	Test1 AD	testad	✓ Enabled
Ldap(1)			
●	Test LDAP 11	11	✓ Enabled

Active Directory

You can integrate OT Security with your organization’s Active Directory (AD). This enables users to log in to OT Security using their Active Directory credentials. The configuration involves setting up the integration and then mapping groups in your AD to User Groups in OT Security.

> **Note**: The system comes with a set of pre-defined User Groups, which correspond to each of the available roles, **Administrators User Group** > **Administrator role**, **Site Operators User Group** > **Site Operator role**, and so on. For an explanation of the available roles, see Authentication Servers.

To configure Active Directory:

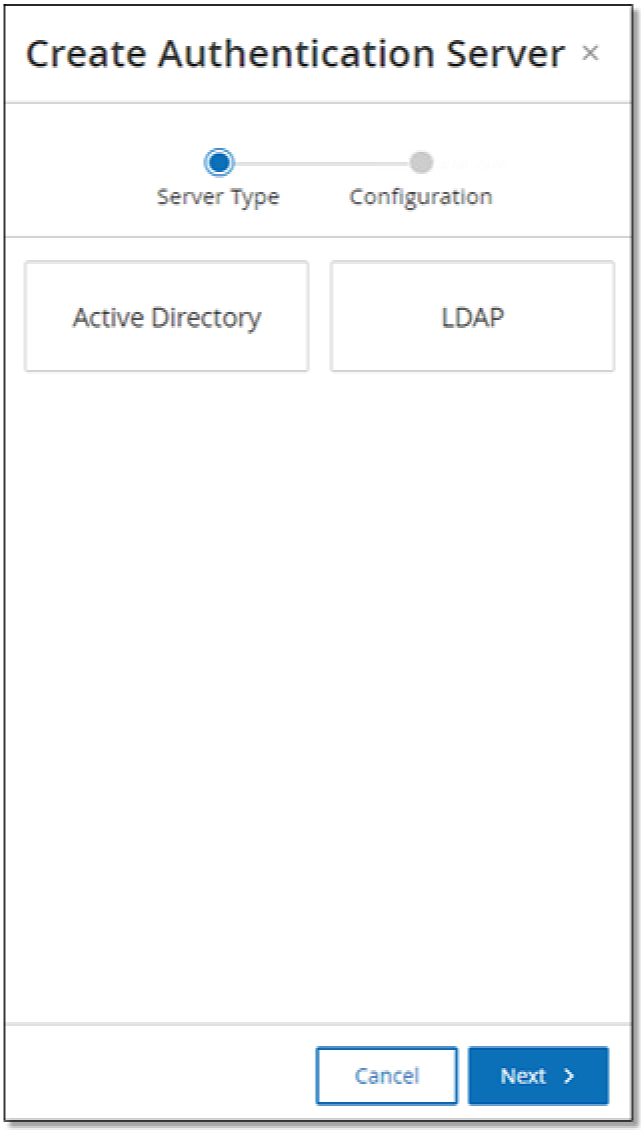
1. Optionally, you can obtain a CA Certificate from your organization’s CA or Network Administrator and load it onto your local machine.

2. Go to **Local Settings** >**Users Management** > **Authentication Servers**.

   The **Authentication Servers** window appears.

3. Click **Add server**.

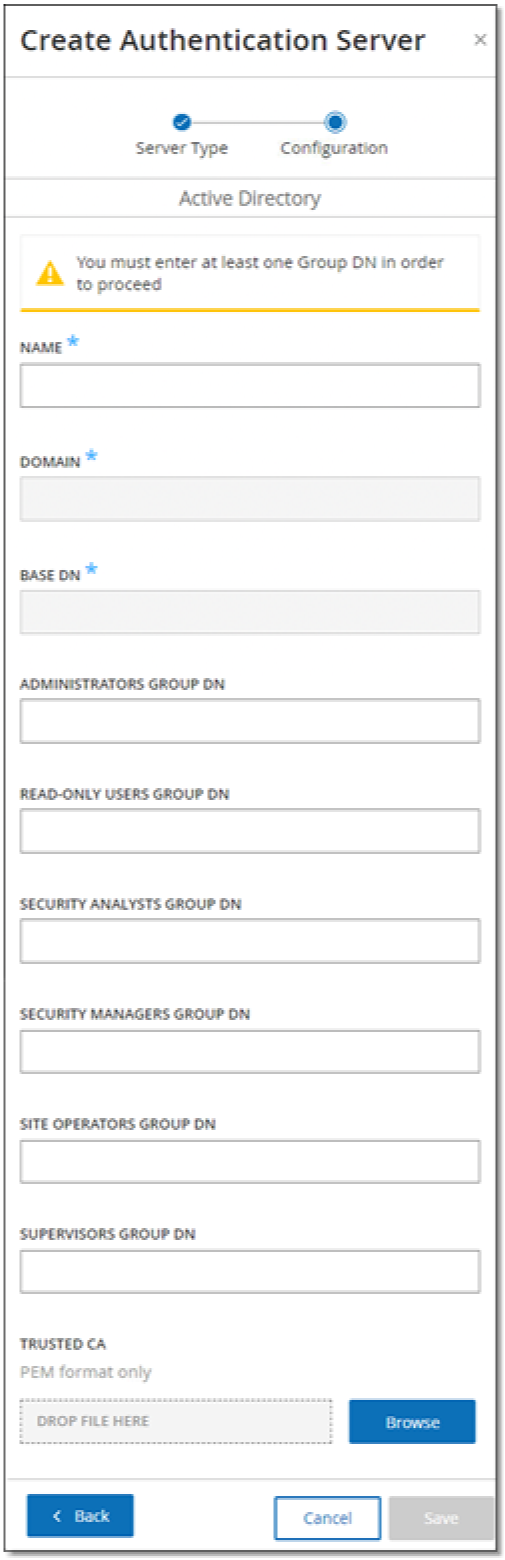
   The **Create Authentication Server** panel opens with the **Server Type**.



Create Authentication Server

4. Click **Active Directory**, then click **Next**.

   The **Active Directory** configuration pane appears.



Create Authentication Server

Server Type — Configuration

Active Directory

You must enter at least one Group DN in order to proceed

NAME *

DOMAIN *

BASE DN *

ADMINISTRATORS GROUP DN

READ-ONLY USERS GROUP DN

SECURITY ANALYSTS GROUP DN

SECURITY MANAGERS GROUP DN

SITE OPERATORS GROUP DN

SUPERVISORS GROUP DN

TRUSTED CA

PEM format only

5. In the **Name** box, type the name to be used in the login screen.

6. In the **Domain** box, type the FQDN of the organizational domain (for example, company.com).

> **Note**: If you are not aware of your Domain, you can find it by entering the command “set” in Windows CMD or Command Line. The value given for the “USERDNSDOMAIN” attribute is the Domain Name.

7. In the **Base DN** box, type the distinguished name of the domain. The format for this value is ‘DC={second-level domain},DC={top-level domain}’ (for example DC=company,DC=com).

8. For each of the Groups that you want to map from an AD group to a OT Security User Group, type the DN of the AD group in the appropriate box.

   For example, to assign a group of users to the Administrators User Group, type the DN of the Active Directory group to which you want to assign administrator privileges in the **Administrators Group DN** box.

   > **Note**: If you are not aware of the DN of the group that you would like to assign OT Security privileges, you can view a list of all groups configured in your Active Directory which contain users by entering the command `dsquery group -name Users*` in the Windows CMD or Command Line. Type the name of the group that you want to assign in the identical format in which it is shown (for example “CN=IT_Admins,OU=Groups,DC=Company,DC=Com”). The Base DN must also be included at the end of each DN.

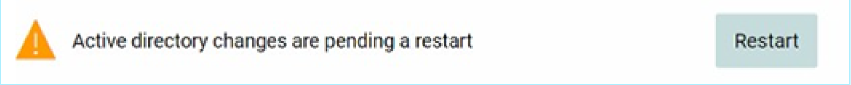
   > **Note**: These fields are optional. If a field is empty, no AD users are assigned to that User Group. You can set up an integration with no groups mapped, but in that case no users can access the system until you add at least one group map ping.

9. (Optional) In the **Trusted CA** section, click **Browse** and navigate to the file that contains your organization’s CA Certificate (which you obtained from your CA or Network Administrator).

10. Select the **Enable Active Directory** check box.

11. Click **Save**.

    A message prompts you to restart the unit to activate the Active Directory.

    Active directory changes are pending a restart

12. Click **Restart**.

    The unit restarts. Upon reboot, OT Security activates the Active Directory settings. Any user assigned to the designated groups can access the OT Security platform using their organizational credentials.

Note: To log in using Active Directory, the User Principal Name (UPN) must be used on the login page. In some cases, this means simply adding @<domain>.com to the username.

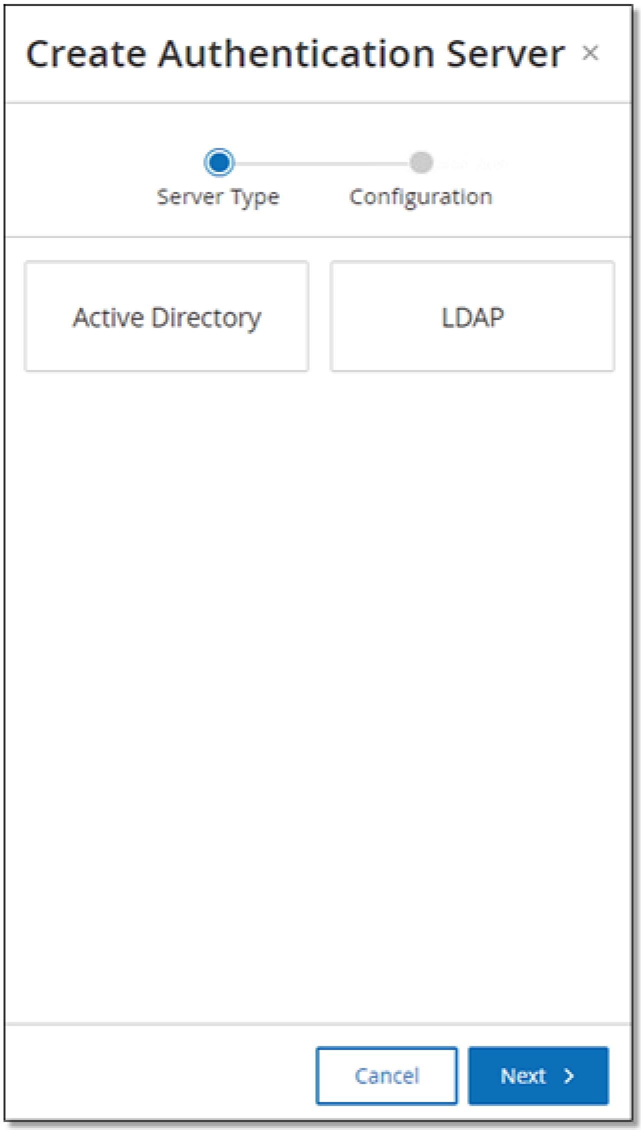
LDAP

You can integrate OT Security with your organization's LDAP. This enables users to log in to OT Security using their LDAP credentials. The configuration involves setting up the integration and then mapping groups in your AD to User Groups in OT Security.

To configure LDAP:

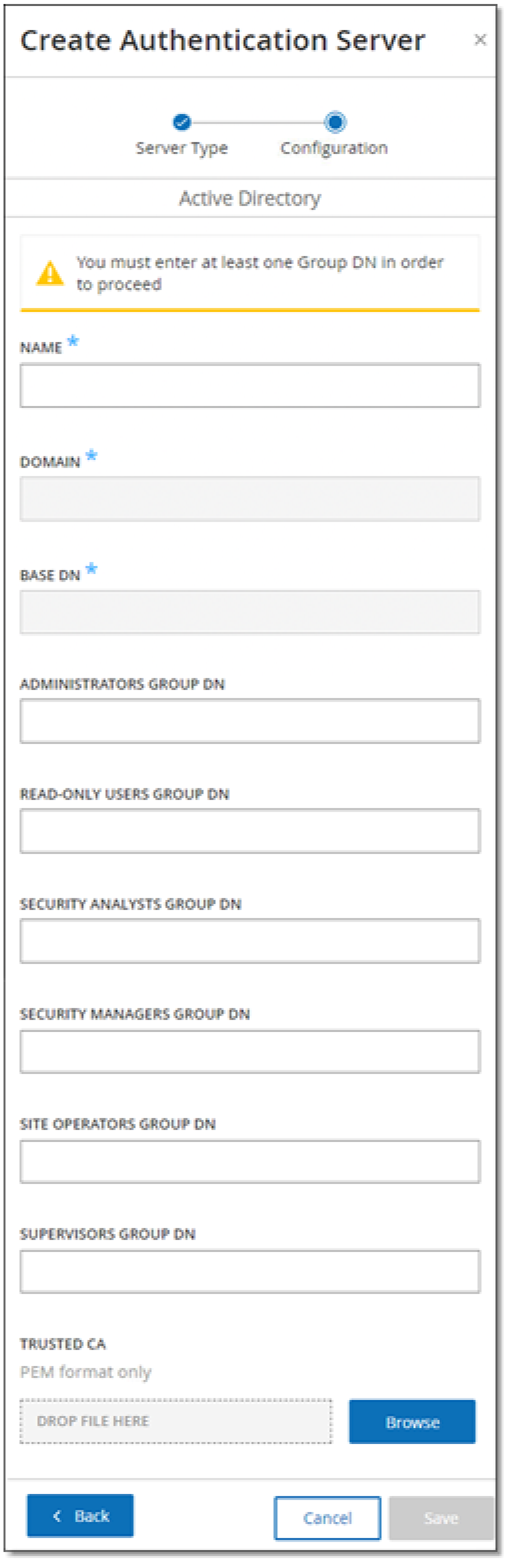
1. Go to **Local Settings**> **User Management** > **Authentication Servers**.
2. Click **Add Server**.

   The **Add Authentication Server** panel opens with the **Server Type**.



3. Select **LDAP**, then click **Next**.

   The **LDAP Configuration** pane appears.



Create Authentication Server

You must enter at least one Group DN in order to proceed

4. In the **Name** box, type the name to be used in the login screen.

> **Note**: The login name must be distinctive and indicate that it is used for LDAP. In the event both LDAP and Active Directory are configured, only the login name differentiates between the different configurations on the login screen.

5. In the **Server** box, type the FQDN or the login address.

> **Note**: If using a secure connection, Tenable recommends using the FQDN and not an IP address to ensure that the secure Certificate provided is verified.

> **Note**: If a hostname is used, it must be in the list of DNS Servers in the OT Security system. See System Configuration > Device.

6. In the **Port** box, type 389 to use a non-secure connection, or 636 to use a secure SSL connection.

> **Note**: If Port 636 is chosen, a Certificate is required to complete the integration.

7. In the **User DN** box, type the DN with parameters in DN format (for example, for a server name of AD_1.qa.com, the user DN can be CN=Administrator,CN=Users,DC=qa,DC=com).

8. In the **Password** box, type the password of the User DN.

> **Note**: The OT Security configuration with LDAP only continues to work as long as the User DN password is currently valid. Therefore, in the event that the User DN password changes or ages out, the OT Security configuration must also be updated.

9. In the **User Base DN** box, type the base domain name in DN format. For example, DC=qa,DC=com.

10. In the **Group Base DN** box, type the Group base domain name in DN format.

11. In the **Domain append** box, type the default domain that is appended to the authentication request in the event the user did not apply a domain they are a member of.

12. In the relevant group name boxes, type the Tenable group names for the user to use with the LDAP configuration.

13. If using Port 636 for the configuration, under **Trusted CA**, click **Browse**, and navigate to a valid PEM certificate file.

14. Click **Save**.

    OT Security starts the Server in **Disabled** mode.

15. To apply the configuration, click the toggle switch to **ON**.

    The **System Restart** dialog appears.

16. Click **Restart Now** to restart and apply the configuration immediately, or **Restart Later** to temporarily continue using the system without the new configuration.

    > **Note**: Enabling/disabling LDAP configuration is not completed until the system is restarted. If you do not restart the system immediately, click the **Restart** button on the banner at the top of the screen when you are ready to restart.

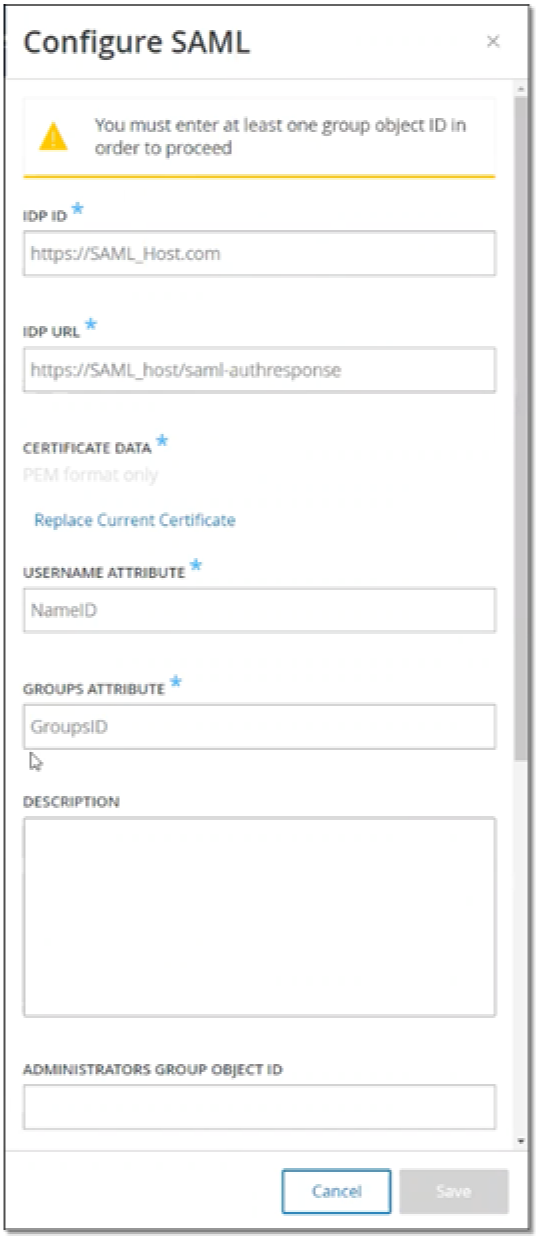
SAML

You can integrate OT Security with your organization's identity provider (for example, Microsoft Azure). This enables users to authenticate using their identity provider. The configuration involves setting up the integration by creating a OT Security application within your identity provider, entering information about your created OT Security application and uploading your identity provider's Certificate to the OT Security **SAML** page, and then mapping groups from your identity provider to User Groups in OT Security. For a detailed tutorial for integrating OT Security with Microsoft Azure, see Appendix 2 — SAML Integration for Microsoft Entra ID

To configure SAML:

1. Go to **Local Settings** >**Users Management** > **SAML**.
2. Click **Configure**.

   The **Configure SAML** panel appears.



Configure SAML ×

You must enter at least one group object ID in order to proceed

IDP ID *
https://SAML_Host.com

IDP URL *
https://SAML_host/saml-authresponse

CERTIFICATE DATA *
PEM format only

Replace Current Certificate

USERNAME ATTRIBUTE *
NameID

GROUPS ATTRIBUTE *
GroupsID

DESCRIPTION

ADMINISTRATORS GROUP OBJECT ID

3. In the **IDP ID** box, type the Identity Provider's ID for the OT Security application.

4. In the **IDP URL** box, type the Identity Provider's URL for the OT Security application.

5. In **Certificate Data**, click **Drop File Here**, navigate to the Identity Provider's Certificate file you downloaded for use with the OT Security application and open it.

6. In the **Username Attribute** box, type the username attribute from the Identity Provider for the OT Security application.

7. In the **Groups Attribute** box, type the groups attribute from the Identity Provider for the OT Security application.

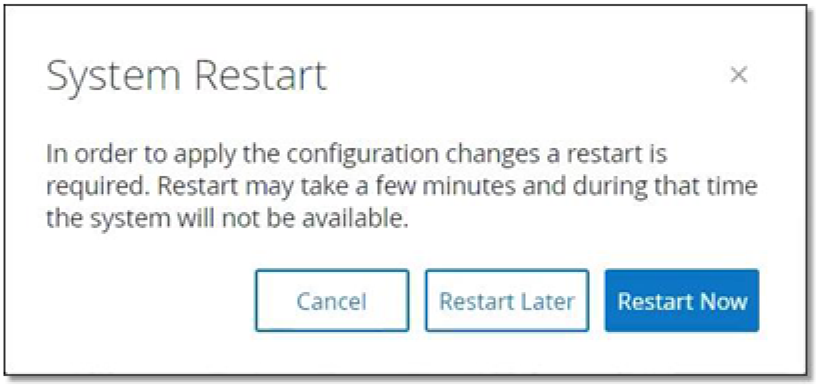
8. (Optional) In the **Description** box, type a description.

9. For each group mapping that you want to configure, access the Identity Provider's **Group Object ID** for a group of users and enter it into the desired **Group Object ID** field to map it to the desired OT Security User Group.

10. Click **Save** to save and close the side panel.

11. On the **SAML** window, click the **SAML single sign on login** toggle to enable single sign-on login.

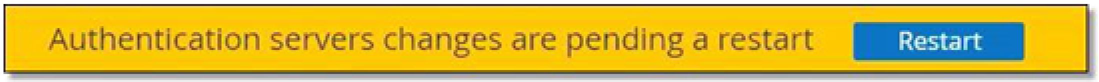
    The **System Restart** notification window appears.

    System Restart

    In order to apply the configuration changes a restart is required. Restart may take a few minutes and during that time the system will not be available.

12. Click **Restart Now** to restart the system and apply the SAML configuration immediately, or click **Restart Later** to delay the application of the SAML configuration the next time the system is restarted. If you choose to restart later, OT Security shows following banner until the restart is done:

    Authentication servers changes are pending a restart

    Upon reboot, the settings are activated, and any user assigned to the designated groups can access the OT Security platform using their Identity Provider credentials.

Integrations

You can set up integrations with other supported platforms to allow OT Security to sync with your other cybersecurity platforms.

Tenable Products

You can integrate OT Security with Tenable Security Center and Tenable Vulnerability Management. OT Security shares data with the other platforms through these integrations. The synced data includes OT vulnerabilities as well as data discovered by IT-type Tenable Nessus scans initiated from OT Security.

Note: OT Security does not send data for **Hidden** assets to Tenable Security Center and Tenable Vulnerability Management via the integration.

Note: To integrate the platforms, OT Security must be able to reach Tenable Security Center and/or Tenable Vulnerability Management via port 443. Tenable recommends that you create a specific user on Tenable Security Center and/or Tenable Vulnerability Management to be used as the integration user to OT Security.

Tenable Security Center

To integrate Tenable Security Center, create a **Universal Repository** in Tenable Security Center to store OT Security data and take a note of the repository ID. For more information, see Universal Repositories.

> **Note**: Tenable recommends creating a specific user on Tenable Security Center that is used to integrate with OT Security. The user should have the role of Security Manager/Security Analyst or Vulnerability Analyst and be assigned to the "Full Access" group.

To integrate Tenable Security Center:

1. Go to **Local Settings** > **Integrations**.

   The **Integrations** page appears.

2. In the upper-right corner, click **Add Integration Module**.

   The **Add Integration Module** panel appears.

3. In the **Module Type** section, select Tenable Security Center.

4. Click **Next**.

   The **Module Definition** panel with the relevant fields appears.

5. In the **Hostname/IP** box, type the hostname or IP of your Tenable Security Center.

6. In the **Username** box, type the account user ID.

7. In the **Password** box, type the password of your account.

8. In the **Repository ID**, provide the Universal Repository ID.

9. In the **Sync Frequency** drop-down box, set the frequency to sync the data.

10. Click **Save**.

    OT Security creates the integration and shows the new integration on the Integrations page.

11. Right-click the new integration and click **Sync**.

Tenable Vulnerability Management

Note: You need to first generate an API key in the Tenable Vulnerability Management console (**Settings** > **My Account** > **API Keys** > **Generate**). You are given an **Access Key** and a **Secret Key** which you can then enter in the OT Security console when configuring the integration.

To integrate Tenable Vulnerability Management:

1. Go to **Local Settings** > **Integrations**.

   The **Integrations** page appears.

2. In the upper-right corner, click **Add Integration Module**.

   The **Add Integration Module** panel appears.

3. In the **Module Type** section, select Tenable Vulnerability Management.

4. Click **Next**.

   The **Module Definition** panel with the relevant fields appears.

5. In the **Access Key** box, provide the access key.

6. In the **Secret Key** box, provide the secret key.

7. In the **Sync Frequency** drop-down box, select the frequency to sync the data.

Palo Alto Networks – Next Generation Firewall

You can share asset inventory information discovered by OT Security with your Palo Alto system.

To integrate OT Security with your Palo Alto Networks Next Generation Firewalls (NGFW):

1. Go to **Local Settings** > **Integrations**.

   The **Integrations** page appears.

2. In the upper-right corner, click **Add Integration Module**.

   The **Add Integration Module** panel appears.

3. In the **Module Type** section, select Palo Alto Networks NGFW.
4. Click **Next**.
5. In the **Hostname/IP** box, type the hostname or IP address of your Palo Alto NGFW account.
6. In the **Username** box, type the username of your NGFW account.
7. In the **Password** box, type the password of your NGFW account.
8. Click **Save**.

   OT Security saves the integration.

Aruba – ClearPass Policy Manager

You can share asset inventory information discovered by OT Security with your Aruba system.

To integrate OT Security with your Aruba ClearPass account:

1. Go to **Local Settings** > **Integrations**.

   The **Integrations** page appears.

2. In the upper-right corner, click **Add Integration Module**.

   The **Add Integration Module** panel appears.

3. In the **Module Type** section, select Aruba Networks ClearPass.

4. Click **Next**.

5. In the **Hostname/IP** box, type the hostname or IP address of your Aruba Networks ClearPass account.

6. In the **Username** box, type the username of your Aruba Networks ClearPass account.

7. In the **Password** box, type the password of your Aruba Networks ClearPass account.

8. In the **Client ID** box, type the client ID of your Aruba Networks ClearPass account.

9. In the **API Client Secret** box, type the API Client Secret of your Aruba ClearPass account.

10. Click **Save**.

    OT Security saves the integration.

Servers

You can set up SMTP servers and Syslog servers in the system to enable event notifications to be sent via email and/or logged on an SIEM. You can also set up FortiGate firewalls to send firewall policy suggestions to FortiGate based on the OT Security network events.

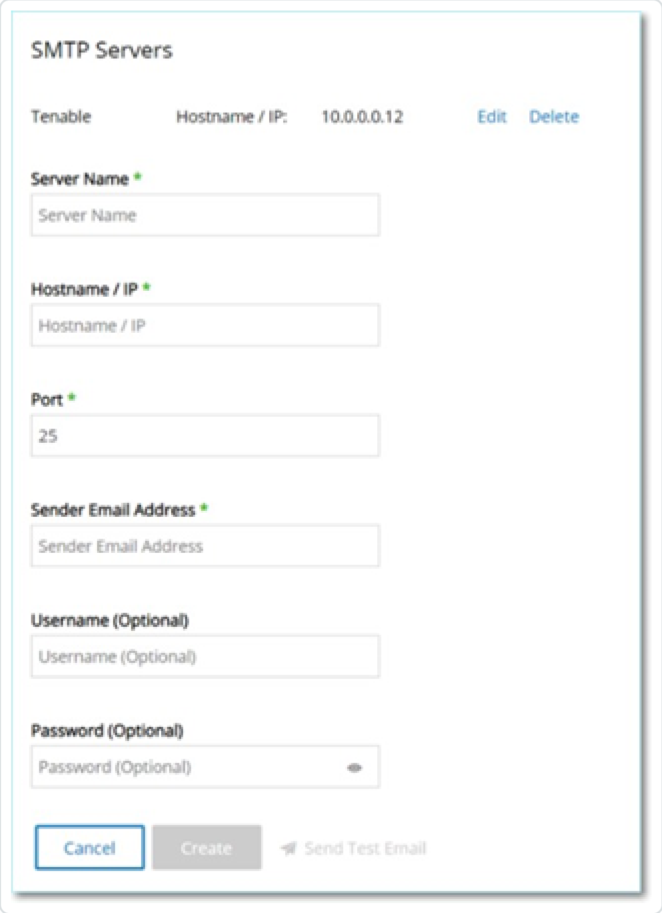
SMTP Servers

To enable sending event notifications via email to the relevant parties you need to set up an SMTP Server in the system. If you do not set up an SMTP server, the system cannot send out email notifications whenever events are generated. Under any circumstances, all events can be viewed in the Management Console (user interface) on the **Events** screen.

To set up an SMTP server:

1. Go to **Local Settings** > **Servers** > **SMTP Servers**.
2. Click **Add SMTP Server**.

   The **SMTP Servers** configuration window appears.



SMTP Servers

Tenable Hostname / IP: 10.0.0.0.12 Edit Delete

Server Name *: Server Name

Hostname / IP *: Hostname / IP

Port *: 25

Sender Email Address *: Sender Email Address

Username (Optional): Username (Optional)

Password (Optional): Password (Optional)

3. In the **Server Name** box, type the name of an SMTP server you want to use for email notifications.

4. In the **Hostname\IP** box, type a hostname or an IP address of the SMTP server.
5. In the **Port** box, type the port number on which the SMTP server listens for the Events (Default: 25).
6. In the **Sender Email Address** box, type an email address that is shown as the sender of the Event notification email.
7. (Optional)In the **Username** and **Password** boxes, type a username and password that is used to access the SMTP server.
8. To send a test email to verify that the configuration was successful, click **Send Test Email**, then type the email address to send to and check the inbox to see if the email arrived. If the email did not arrive, then troubleshoot to discover the cause of the problem and correct it.
9. Click **Save**.

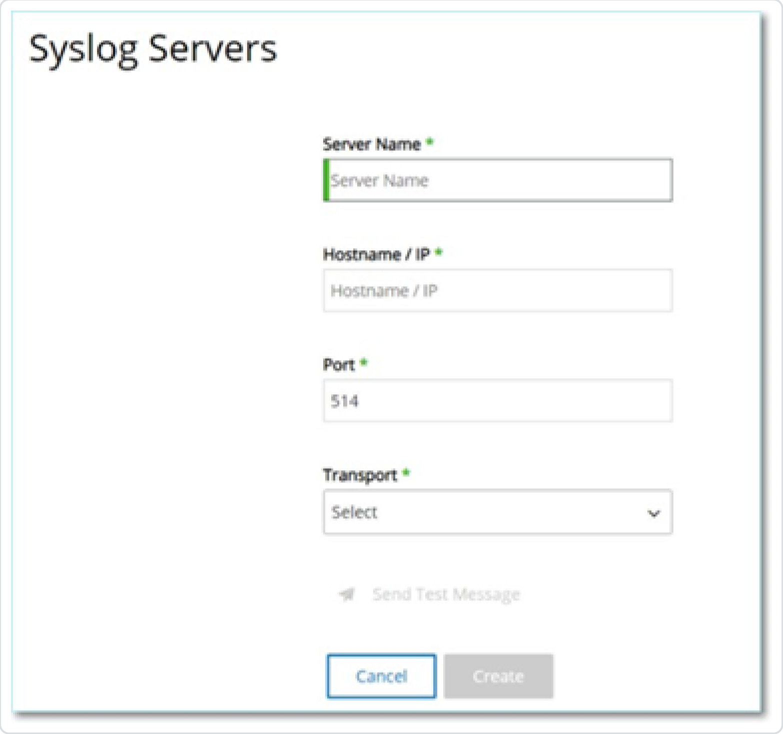
   You can set up additional SMTP Servers by repeating the procedure.

Syslog Servers

To enable collection of log events on an external server you need to set up a Syslog Server in the system. If you do not want to set up a Syslog Server, then the event logs are saved only on the OT Security platform.

To set up a Syslog server:

1. Go to **Local Settings** >**Servers** > **Syslog Servers**.
2. Click **+ Add Syslog Server**. The **Syslog Servers** configuration window appears.



3. In the **Server Name** box, type the name of a Syslog Server you want to use for logging system events.
4. In the **Hostname\IP** box, type a hostname or an IP address of the Syslog server.
5. In the **Port** box, type the port number on the Syslog server to which the events are sent. Default: 514

6. In the **Transport** drop-down box, select the transport protocol to be used. Options are TCP or UDP.
7. To send a test message to verify that the configuration was successful, click **Send Test Message**, and check if the message has arrived. If the message did not arrive, then troubleshoot to discover the cause of the problem and correct it.
8. Click **Save**.

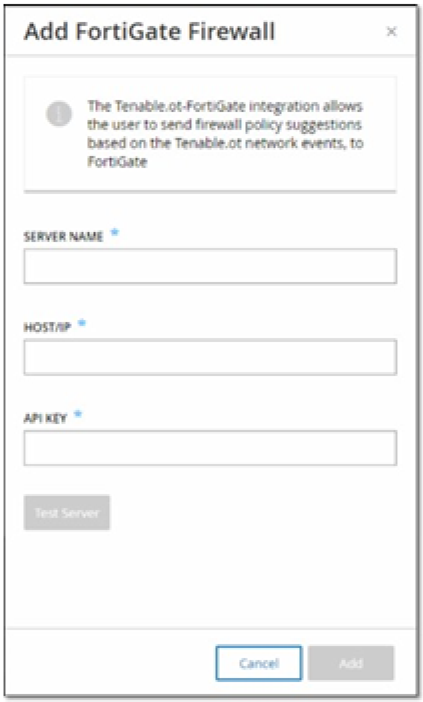
   You can set up additional Syslog Servers by repeating the procedure.

FortiGate Firewalls

To set up a FortiGate server:

1. Go to **Local Settings** > **Servers** > **FortiGate Firewalls**.
2. Click **Add Firewall**.

   The **Add FortiGate Firewall** configuration window appears.

   Add FortiGate Firewall

   The Tenable.ot-FortiGate integration allows the user to send firewall policy suggestions based on the Tenable.ot network events, to FortiGate

3. In the **Server Name** box, type the name of a FortiGate Server you want to use.
4. In the **Host/IP** box, type a hostname or an IP address of the FortiGate server.
5. In the **API Key** box, type the API token you generated from FortiGate.

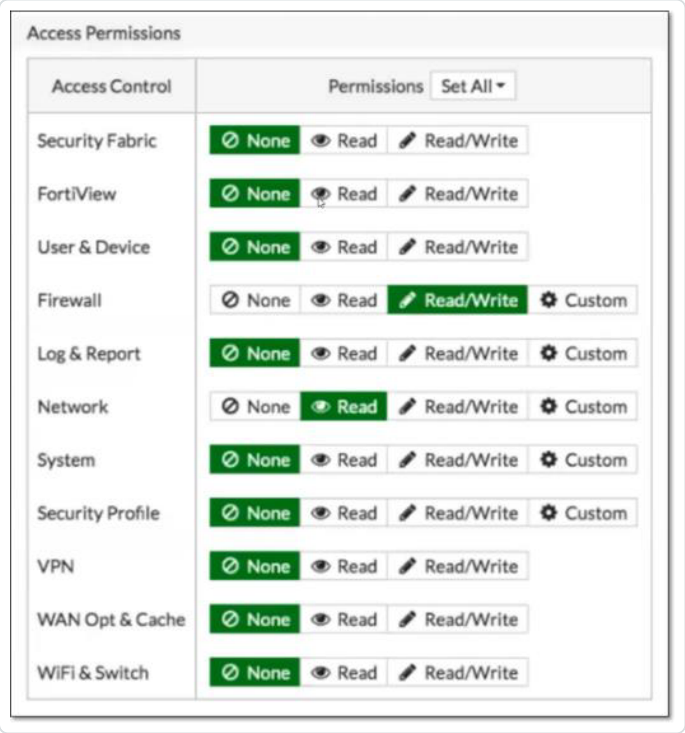
   > **Note**: For instructions on generating a FortiGate API token, see: https://registry.terraform.io/providers/fortinetdev/fortios/latest/docs/guides/fgt_token.

6. Click **Add**.

   OT Security creates the FortiGate Firewall server.

Note: For the source address (which is needed to ensure the API token can only be used from trusted hosts), use your OT Security unit IP address.

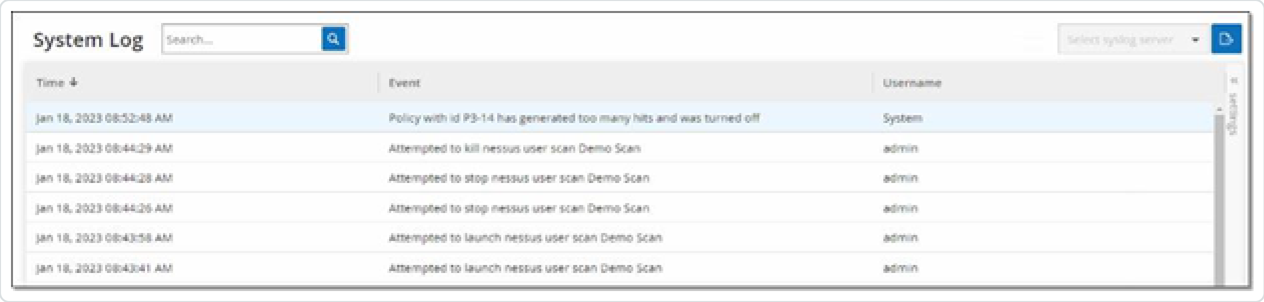
When creating an Administrator profile for OT Security, make sure to apply access permissions according to the following settings:



Access Permissions

Access Control	Permissions Set All ▾
Security Fabric	[✓ None] Read Read/Write
FortiView	[✓ None] Read Read/Write
User & Device	[✓ None] Read Read/Write
Firewall	None Read [✓ Read/Write] Custom
Log & Report	[✓ None] Read Read/Write Custom
Network	None [✓ Read] Read/Write Custom
System	[✓ None] Read Read/Write Custom
Security Profile	[✓ None] Read Read/Write Custom
VPN	[✓ None] Read Read/Write
WAN Opt & Cache	[✓ None] Read Read/Write
WiFi & Switch	[✓ None] Read Read/Write

System Log



Time	Event	Username
Jan 18, 2023 08:52:48 AM	Policy with id P3-14 has generated too many hits and was turned off	System
Jan 18, 2023 08:44:29 AM	Attempted to kill nessus user scan Demo Scan	admin
Jan 18, 2023 08:44:28 AM	Attempted to stop nessus user scan Demo Scan	admin
Jan 18, 2023 08:44:26 AM	Attempted to stop nessus user scan Demo Scan	admin
Jan 18, 2023 08:43:58 AM	Attempted to launch nessus user scan Demo Scan	admin
Jan 18, 2023 08:43:41 AM	Attempted to launch nessus user scan Demo Scan	admin

The **System Log** screen shows a list of all system events (for example, Policy turned on, Policy edited, Event Resolved, and so on.) that occurred in the system. This log includes both user-initiated events as well as automatically occurring system events (for example, Policy turned off automatically because of too many hits). This log does not include policy-generated events, which you can view on the **Events** screen. You can export the logs as a CSV file. You can also configure the system to send the System Log events to a Syslog server.

Each logged event includes the following details:

Parameter	Description
Time	The time and date when the event occurred.
Event	A brief description of the event that occurred.
Username	The name of the user that initiated the event. For events that occur automatically, no username is given.

Sending System Log to a Syslog Server

To configure the system to send system events to a Syslog server:

1. Go to **Local Settings** > **System Log**.

2. In the upper-right corner, click the drop-down box to display the list of servers.

   > **Note**: To add a Syslog server, see Syslog Servers.

3. Select the desired server.

   OT Security sends the System Log events to the specified Syslog server.

Appendix 1 — Install a Sensor (Version 3.13 and earlier)

The following procedure explains the complete flow for configuring a Sensor version 3.13 and earlier. Some of the initial steps are relevant also for newer sensors. However, the setup wizard has been replaced by the pairing procedure described in Pairing the Sensor.

Step 1 Set up the Sensor

Install the Sensor hardware. For instructions about setting up the sensor, seeSet up the Sensor.

Step 2 Connect the Sensor to the Network

Connect the sensor to your network switch. For instructions about connecting the sensor to the network, see Connecting the Sensor to the Network.

Step 3 Access the Sensor Setup Wizard

Access the Sensor using its own static IPv4 address. For instructions about how to set up a static IP, see Accessing the Sensor Setup Wizard.

Step 4 – Sensor Setup Wizard

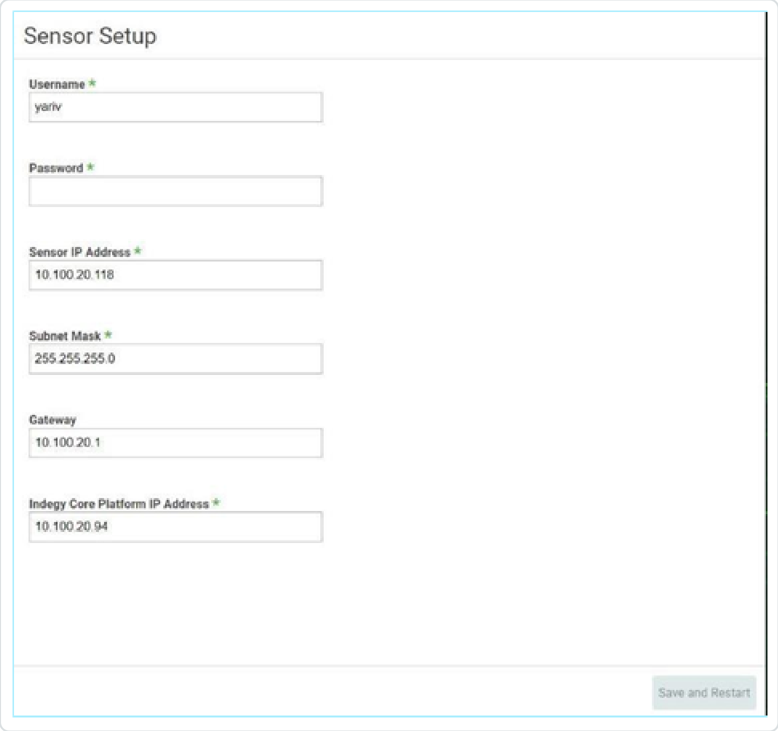
The OT Security setup wizard takes you through the process of configuring the basic system settings.

Note: If you would like to change the configuration later, you will be able to do so on the **Settings** screen in the Management Console (UI).

To set up the sensor:

1. On the welcome screen, click **Start Setup**.

   The setup screen is displayed.

   Sensor Setup

   Username *
   yariv

   Password *

   Sensor IP Address *
   10.100.20.118

   Subnet Mask *
   255.255.255.0

   Gateway
   10.100.20.1

   Indegy Core Platform IP Address *
   10.100.20.94

2. In the **Username** field, enter a username to be used for logging into the system. The username can have up to 12 characters and must include only lowercase letters and numbers.

3. In the **Password** field, enter a password to be used for logging into the system. The passwords must contain at least:

- 12 characters
- One uppercase letter
- One lowercase letter
- One digit
- One special character

4. In the **Retype Password** field, re-enter the identical password.

5. In the **Sensor IP Address** field, enter an IP address (within the network subnet) to be applied to the OT Security Sensor. It is strongly recommended to change the default IP address.

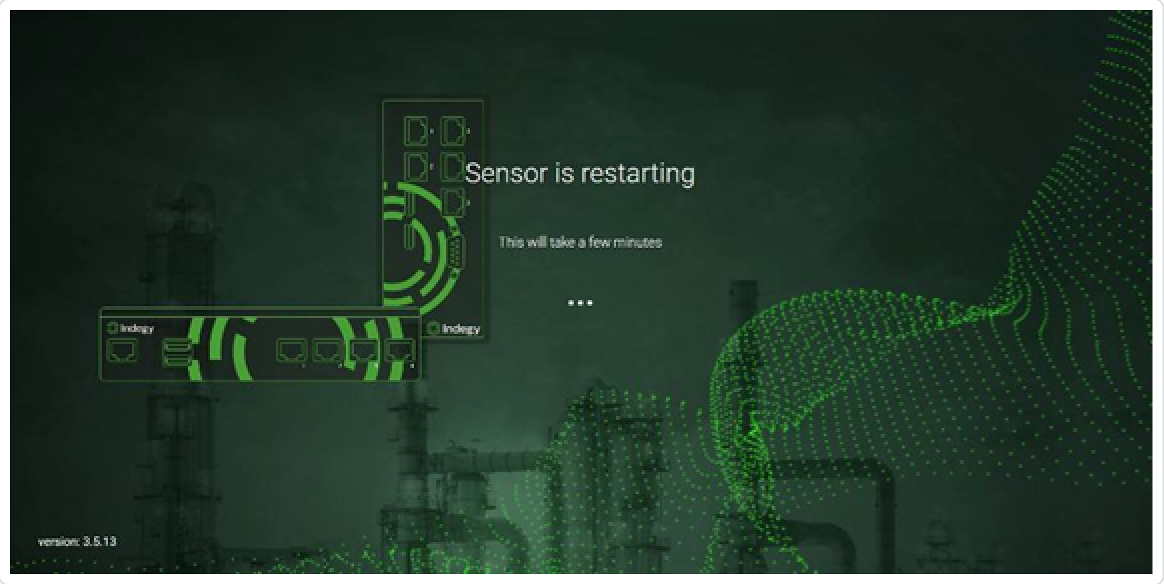
6. In the **Subnet Mask** field, enter the Subnet Mask of the network.

7. If you would like to set up a Gateway (optional), enter the Gateway IP for the network in the **Gateway** field.

8. In the **IP Address** field, enter the IP address of the OT Security platform.

9. Click **Save and Restart**.

   The sensor will perform a restart:

   Sensor is restarting

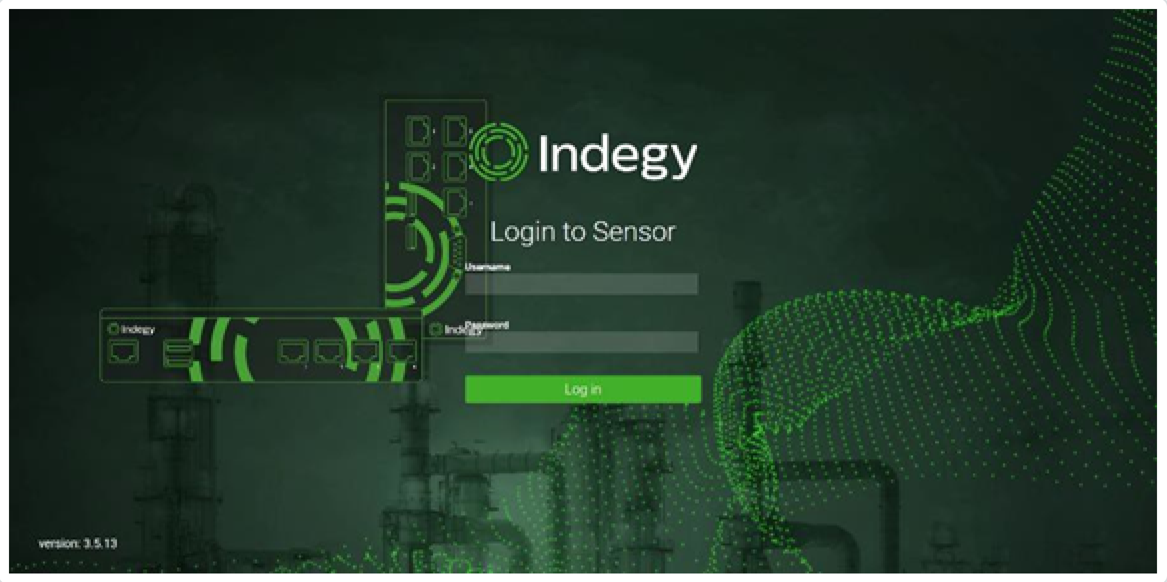
   This will take a few minutes

   ...

   version: 3.5.13

10. Following the restart process, the network traffic will be forwarded to the OT Security platform. If you want to modify the configuration, you will be able to login to the sensor using

the configured IP address and the credentials that you have configured:



Appendix 2 – SAML Integration for Microsoft Entra ID

OT Security supports integration with Microsoft Entra ID via SAML protocol. This enables Azure users who were assigned to OT Security to log in to OT Security via SSO. You can use group mapping to assign roles in OT Security according to the groups to which users are assigned in Azure.

Setting up the Integration

This section explains the complete flow for setting up a Single Sign-on (SSO) integration for OT Security with Microsoft Entra ID. The configuration involves setting up the integration by creating a OT Security application in Microsoft Entra ID, entering information about your created OT Security application and uploading your identity provider’s Certificate to the OT Security SAML page, and then mapping groups from your identity provider to User Groups in OT Security.

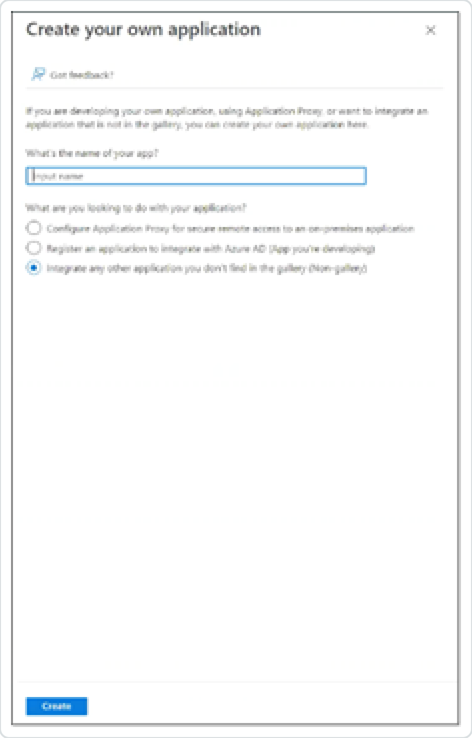
To set up the configuration, you need to be logged in as an admin user in both Microsoft Entra ID and OT Security.

Step 1 - Creating the Tenable Application in Microsoft Entra ID

To create the Tenable application in Microsoft Entra ID:

1. In Microsoft Entra ID, go to Microsoft Entra ID > **Enterprise Applications**, click **+ New application** to display the **Browse Microsoft Entra ID Gallery**, and click **+ Create your own application**.

   The **Create your own application** side panel appears.

   Create your own application

   If you are developing your own application, using Application Proxy, or want to integrate an application that is not in the gallery, you can create your own application here.

   What's the name of your app?

   Input name

   What are you looking to do with your application?

   ○ Configure Application Proxy for secure remote access to an on-premises application

   ○ Register an application to integrate with Azure AD (App you're developing)

   ● Integrate any other application you don't find in the gallery (Non-gallery)

2. In the **What's the name of your app?** field, enter a name for the application (for example Tenable_OT) and select **Integrate any other application you don't find in the gallery (Non-gallery)** (default selected), then click **Create** to add the application.

Step 2- Initial Configuration

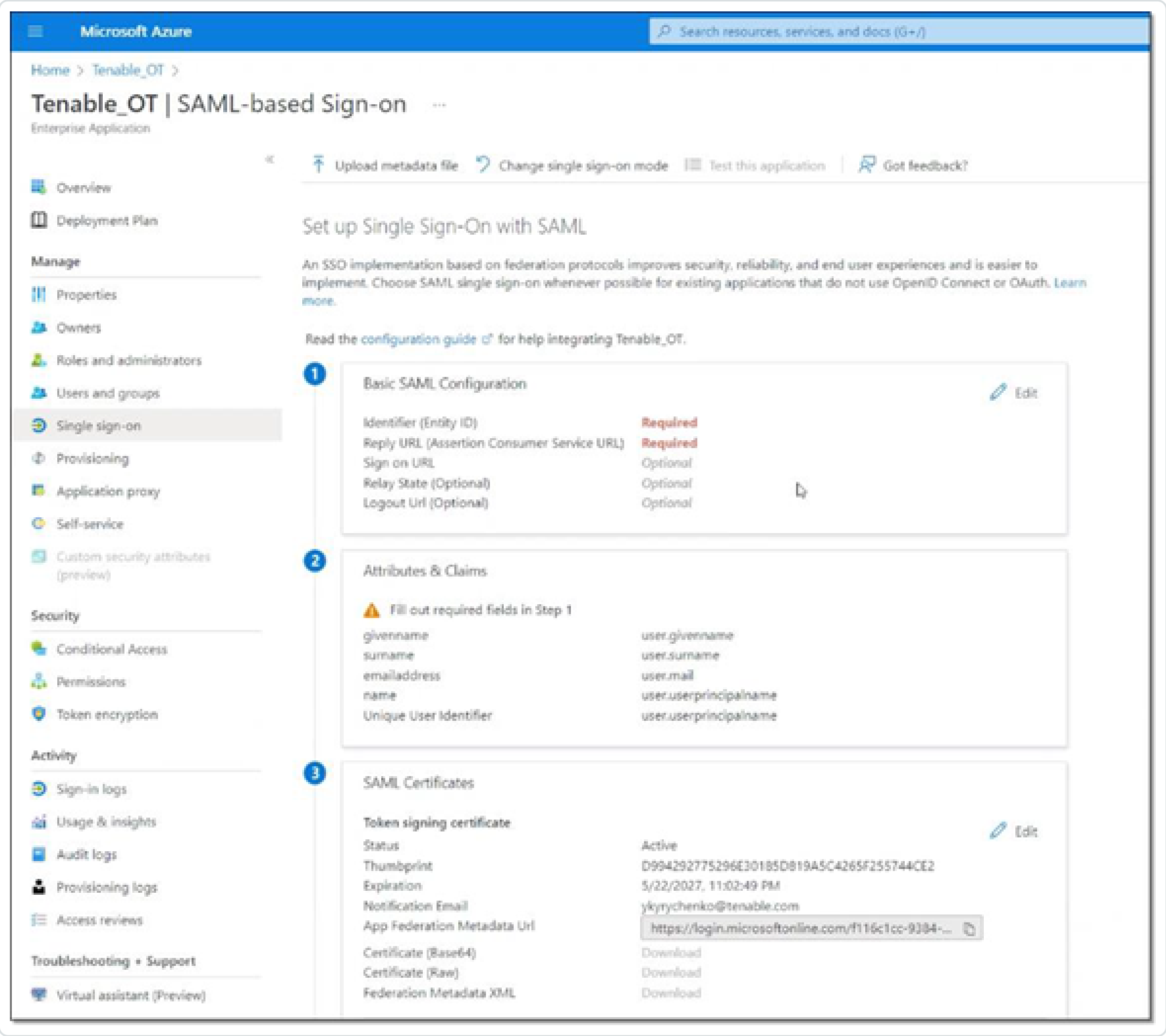
This step is the initial configuration of the OT Security application in Azure, consisting of creating temporary values for Basic SAML Configuration values Identifier and Reply URL, in order to enable download of the required Certificate.

> **Note**: Only fields specified in this procedure must be configured. Other fields may be left with their default values.

To do initial configuration:

1. In the Microsoft Entra ID navigation menu, click **Single sign-on**, then selected SAML as the single sign-on method.

   The **SAML-based Sign-on** screen appears.



Tenable_OT | SAML-based Sign-on ...

Enterprise Application

Set up Single Sign-On with SAML

An SSO implementation based on federation protocols improves security, reliability, and end user experiences and is easier to implement. Choose SAML single sign-on whenever possible for existing applications that do not use OpenID Connect or OAuth. Learn more.

Read the configuration guide for help integrating Tenable_OT.

1 Basic SAML Configuration

Identifier (Entity ID)	Required
Reply URL (Assertion Consumer Service URL)	Required
Sign on URL	Optional
Relay State (Optional)	Optional
Logout Url (Optional)	Optional

2 Attributes & Claims

⚠ Fill out required fields in Step 1

givenname	user.givenname
surname	user.surname
emailaddress	user.mail
name	user.userprincipalname
Unique User Identifier	user.userprincipalname

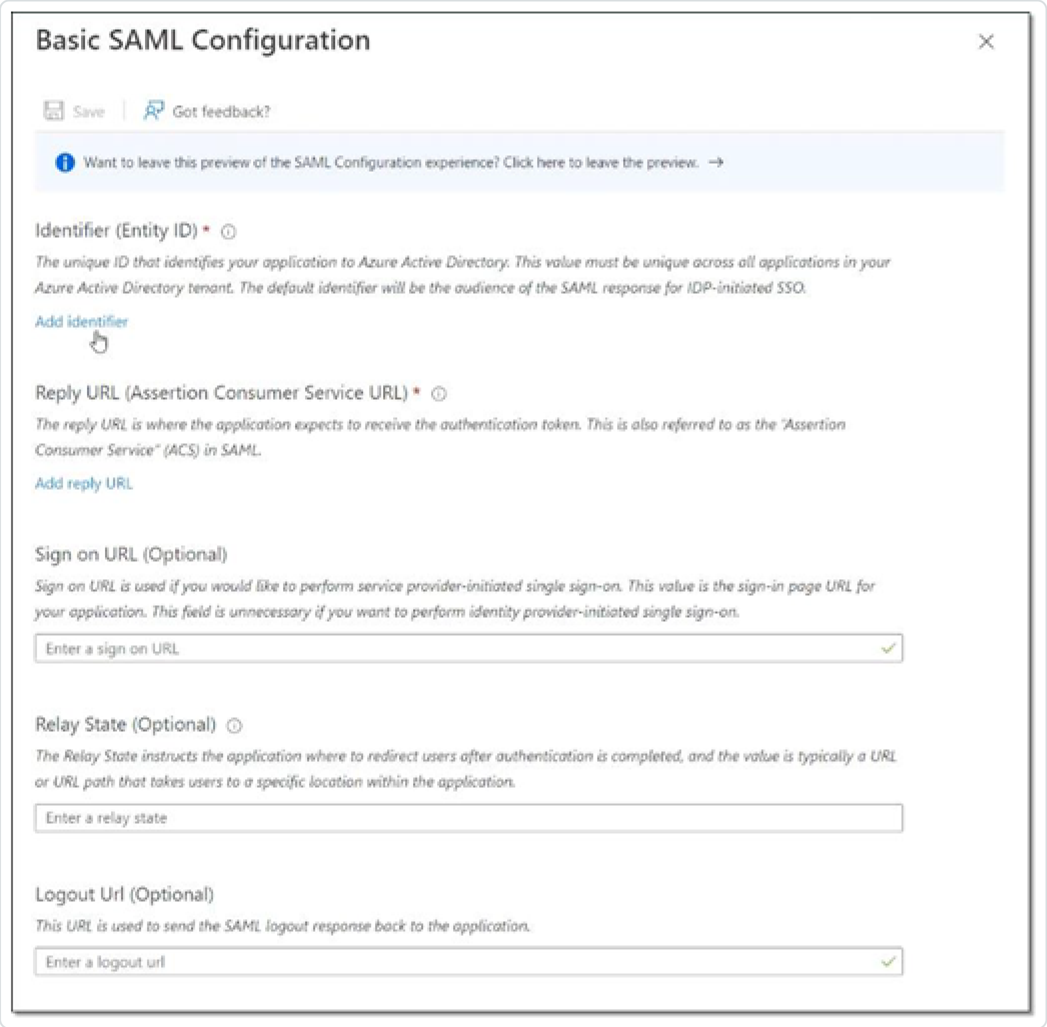
3 SAML Certificates

Token signing certificate

Status	Active
Thumbprint	D994292775296E30185D819A5C4265F255744CE2
Expiration	5/22/2027, 11:02:49 PM
Notification Email	ykyrychenko@tenable.com
App Federation Metadata Url	https://login.microsoftonline.com/f116c1cc-9384-...
Certificate (Base64)	Download
Certificate (Raw)	Download
Federation Metadata XML	Download

2. In section 1 – **Basic SAML Configuration**, click on Edit 🖉 .

   The **Basic SAML Configuration** side panel appears.



Basic SAML Configuration

Want to leave this preview of the SAML Configuration experience? Click here to leave the preview. →

Identifier (Entity ID) *

The unique ID that identifies your application to Azure Active Directory. This value must be unique across all applications in your Azure Active Directory tenant. The default identifier will be the audience of the SAML response for IDP-initiated SSO.

Add identifier

Reply URL (Assertion Consumer Service URL) *

The reply URL is where the application expects to receive the authentication token. This is also referred to as the "Assertion Consumer Service" (ACS) in SAML.

Add reply URL

Sign on URL (Optional)

Sign on URL is used if you would like to perform service provider-initiated single sign-on. This value is the sign-in page URL for your application. This field is unnecessary if you want to perform identity provider-initiated single sign-on.

Enter a sign on URL

Relay State (Optional)

The Relay State instructs the application where to redirect users after authentication is completed, and the value is typically a URL or URL path that takes users to a specific location within the application.

Enter a relay state

Logout Url (Optional)

This URL is used to send the SAML logout response back to the application.

Enter a logout url

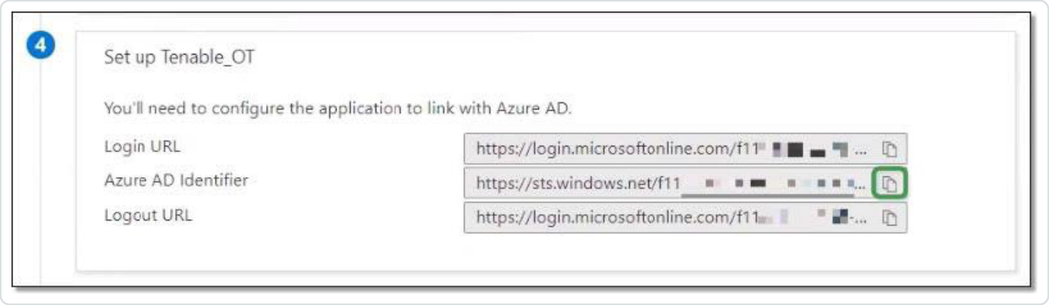
3. In the **Identifier (Entity ID)** field, enter a temporary ID for the Tenable application (for example tenable_ot).

4. In the **Reply URL (Assertion Consumer Service URL)** field, enter a valid URL (for example https://OT Security).

> **Note**: Both the Identifier and Reply URL is changed later in the configuration process.

5. Click **Save** to save the temporary values and close the **Basic SAML Configuration** side panel.

6. In section 4 - **Set up**, click the **copy** icon to copy the **Microsoft Entra ID Identifier**.



4

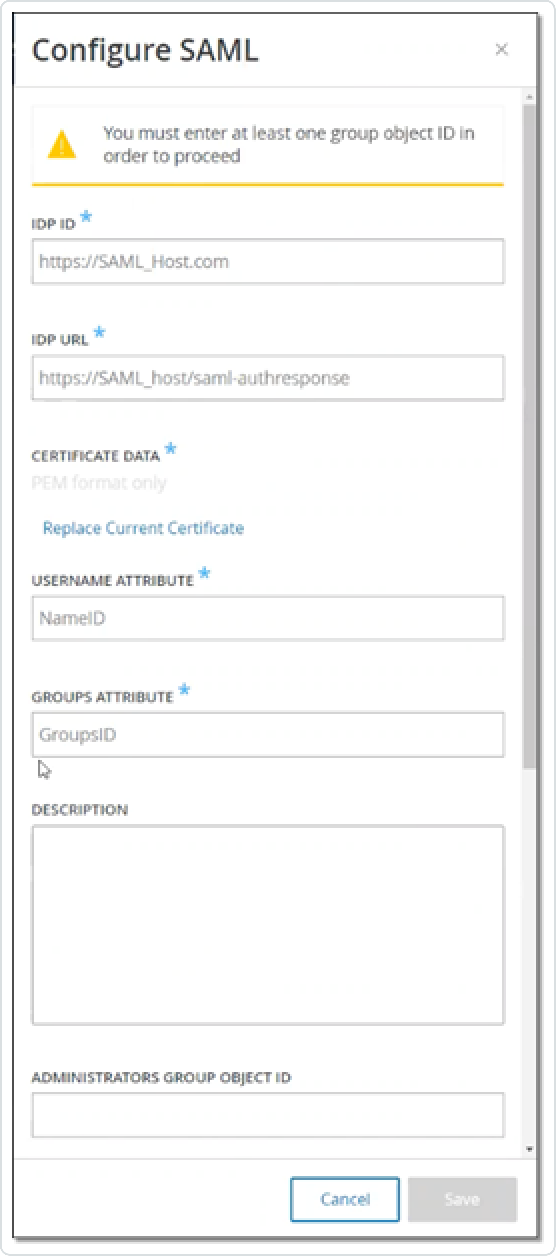
Set up Tenable_OT

You'll need to configure the application to link with Azure AD.

Login URL	https://login.microsoftonline.com/f11[redacted]...
Azure AD Identifier	https://sts.windows.net/f11[redacted]...
Logout URL	https://login.microsoftonline.com/f11[redacted]...

7. Switch to the OT Security console, and go to **Users and Roles** > **SAML**.

8. Click **Configure** to display the **Configure SAML** side panel, and paste the copied value into the **IDP ID** field.



Configure SAML

You must enter at least one group object ID in order to proceed

IDP ID *

https://SAML_Host.com

IDP URL *

https://SAML_host/saml-authresponse

CERTIFICATE DATA *

PEM format only

Replace Current Certificate

USERNAME ATTRIBUTE *

NameID

GROUPS ATTRIBUTE *

GroupsID

DESCRIPTION

ADMINISTRATORS GROUP OBJECT ID

9. In the **Azure** console, click the icon to copy the **Login URL**.

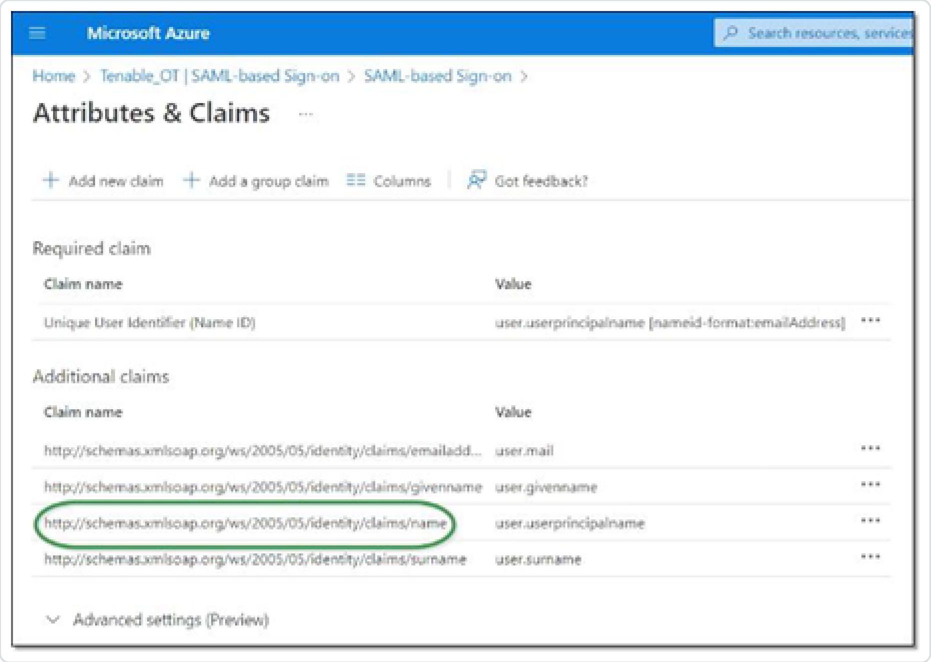
10. Return to the **OT Security** console and paste the copied value into the **IDP URL** field.

11. In the **Azure** console, in section 3 - **SAML Certificates**, for **Certificate (Base64)**, click **Download**.

12. Return to the **OT Security** console, and under **Certificate Data**, click **Browse**, then navigate to the security certificate file and select it.

13. In the **Azure** console, in section 2 – **Attributes & Claims**, click 🖉 **Edit**.

14. Under **Additional claims**, select and copy the **Claim name** URL corresponding to the Value **user.userprincipalname**.



Home > Tenable_OT | SAML-based Sign-on > SAML-based Sign-on >

Attributes & Claims ...

Required claim

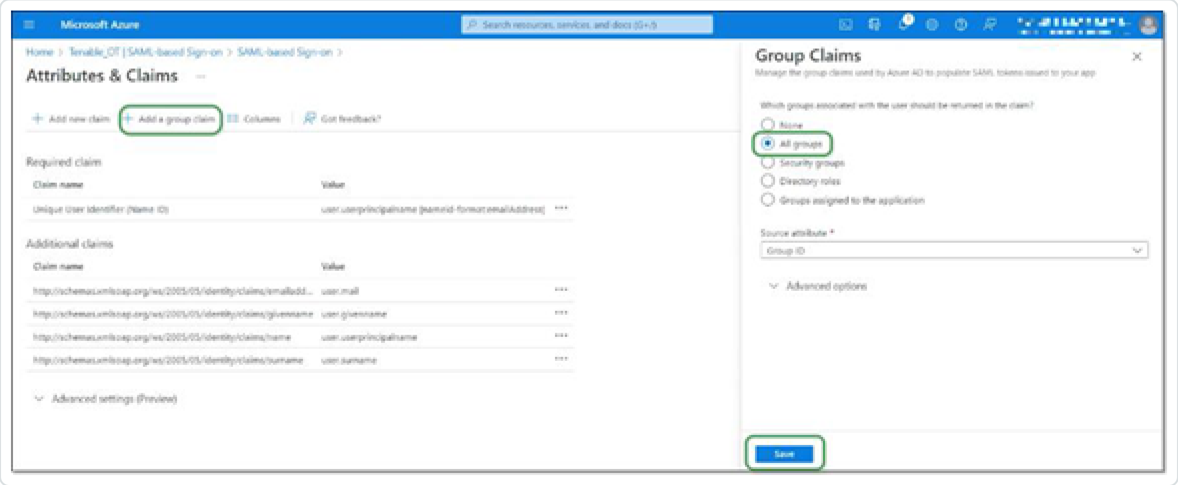
Claim name	Value
Unique User Identifier (Name ID)	user.userprincipalname [nameid-format:emailAddress] •••

Additional claims

Claim name	Value
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailadd...	user.mail •••
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/givenname	user.givenname •••
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/name	user.userprincipalname •••
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/surname	user.surname •••

15. Return to the **Tenable** console and paste this URL in the **Username Attribute** field.

16. In the Azure console, click on **+ Add a group claim** to display the **Group Claims** side panel, and under **Which groups associated with the user should be returned in the claim?** Choose **All Groups** and click **Save**.



Home > Tenable_OT | SAML-based Sign-on > SAML-based Sign-on >

Attributes & Claims ...

Required claim

Claim name	Value
Unique User Identifier (Name ID)	user.userprincipalname [nameid-format:emailAddress] •••

Additional claims

Claim name	Value
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailadd...	user.mail •••
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/givenname	user.givenname •••
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/name	user.userprincipalname •••
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/surname	user.surname •••

Group Claims

Manage the group claims used by Azure AD to populate SAML tokens issued to your app

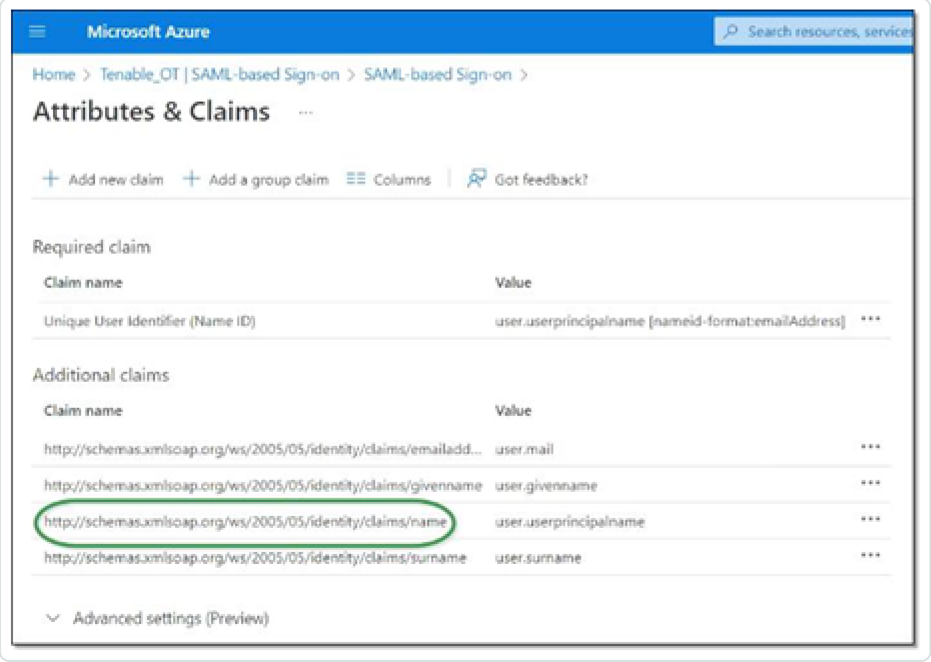
Which groups associated with the user should be returned in the claim?

○ None
● All groups
○ Security groups
○ Directory roles
○ Groups assigned to the application

Source attribute *: Group ID

> **Note**: If you have groups setting enabled in Microsoft Azure, you may choose Groups assigned to the application instead of All Groups, and Azure provides only the user groups that are assigned to the application.

17. Under **Additional claims**, highlight and copy the **Claim name** URL associated with the Value user.groups [All].


Microsoft Azure
Search resources, services
Home > Tenable_OT | SAML-based Sign-on > SAML-based Sign-on >
+ Add new claim
+ Add a group claim
Columns
Got feedback?
Advanced settings (Preview)

Attributes & Claims

Required claim

Claim name	Value
Unique User Identifier (Name ID)	user.userprincipalname [nameid-format:emailAddress]

Additional claims

Claim name	Value
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailadd...	user.mail
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/givenname	user.givenname
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/name	user.userprincipalname
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/surname	user.surname

18. Return to the **Tenable** console and paste the copied URL in the **Groups Attribute** field.

19. If you would like to add a description of the SAML configuration, enter it in the **Description** field.

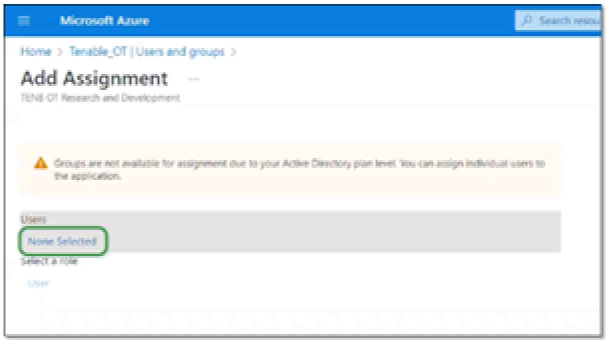
Step 3 - Mapping Azure Users to Tenable Groups

In this step, Microsoft Entra ID users are assigned to the OT Security application. The permissions granted to each user are designated by mapping between the Azure groups to which they are assigned and a pre-defined OT Security User Group, which has an associated role and set of permissions. The OT Security pre-defined User Groups are: Administrators, Read-Only User, Security Analysts, Security Managers, Site Operators, and Supervisors. For more information, see Users and Roles. Each Azure user must be assigned to at least one group that is mapped to a OT Security User Group.

> **Note**: Admin users logged in via SAML are considered Admin (External) users, and are not granted all the privileges of local Admins. Users assigned to multiple User Groups are granted the highest possible permissions from among their groups.

To map Azure users to OT Security:

1. In **Microsoft Azure**, navigate to the **Users and groups** page and click on **+ Add user/group**.
2. In the **Add Assignment** screen, under **Users**, click **None Selected**.



TENB OT Research and Development

Groups are not available for assignment due to your Active Directory plan level. You can assign individual users to the application.

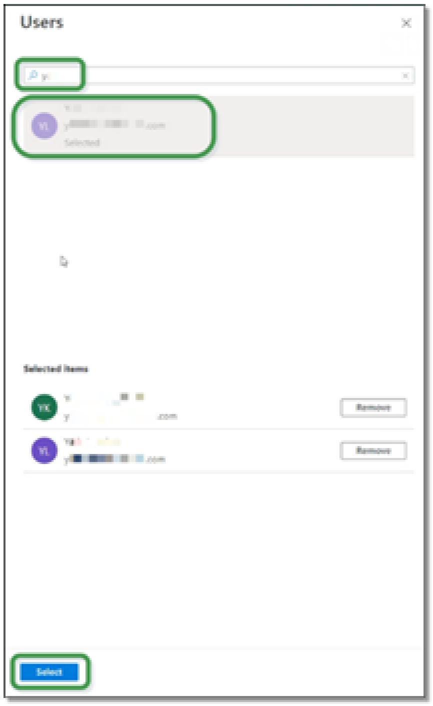
Users
None Selected

Select a role
User

The Users side panel appears.

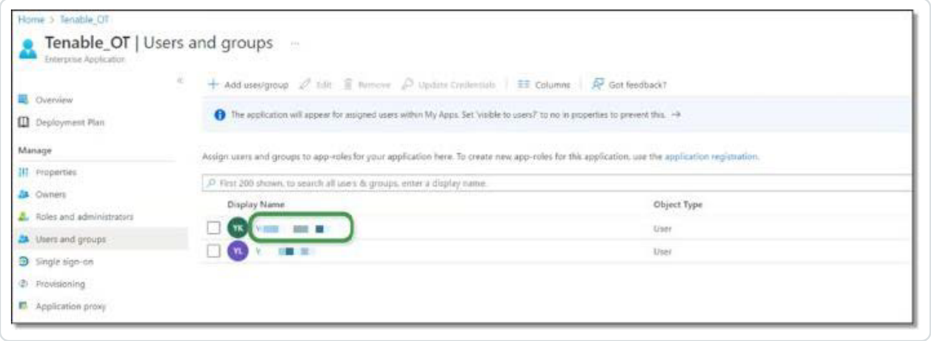
> **Note**: If you have groups setting enabled in Microsoft Azure and have previously selected **Groups assigned to the application** instead of All Groups, you may choose to assign groups instead of individual users.

3. Search for and click on all desired users, then click **Select**, then click **Assign** to assign them to the application.



The **Users and groups** page appears.

4. Click on the **Display Name** of a user (or group) to display that user’s (or group’s) Profile.



The application will appear for assigned users within My Apps. Set 'visible to users?' to no in properties to prevent this. →

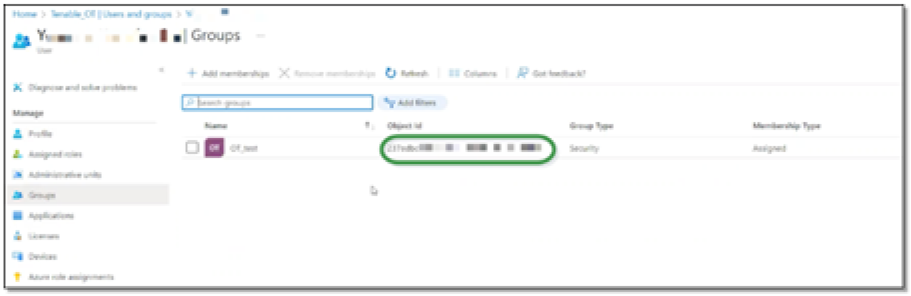
Assign users and groups to app-roles for your application here. To create new app-roles for this application, use the application registration.

First 200 shown, to search all users & groups, enter a display name.

	Display Name	Object Type
□	YK [redacted]	User
□	YL [redacted]	User

5. In the **Profile** screen, in the left-side navigation bar, select **Groups** to display the **Groups** screen.

6. Under **Object Id**, highlight and copy the value for the group that will be mapped to Tenable.

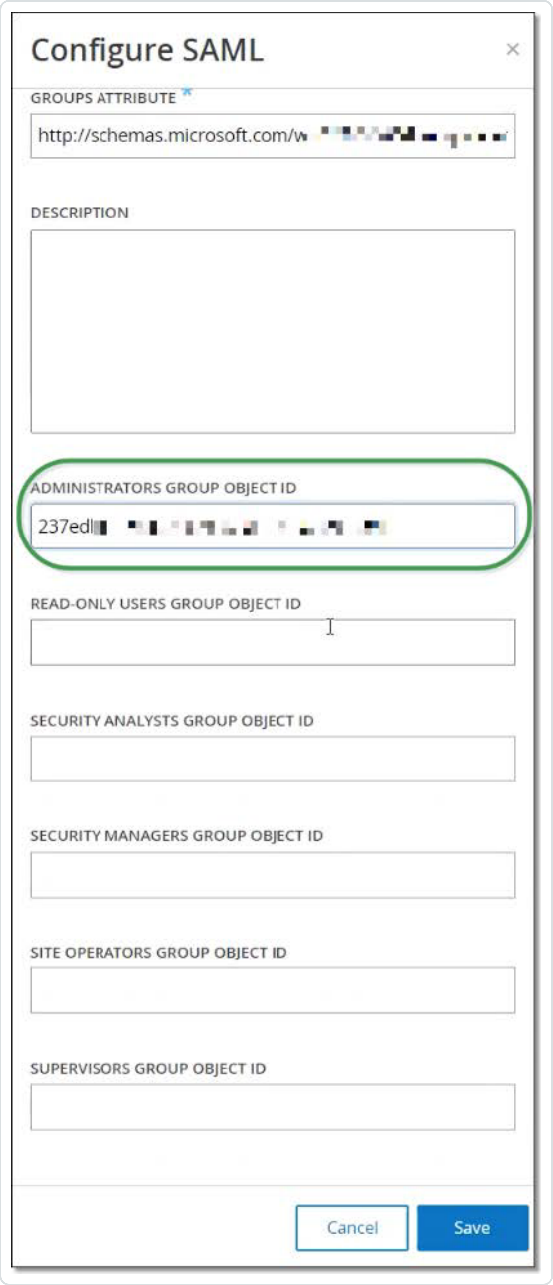


Name	Object Id	Group Type	Membership Type
OT_test	237edbc[redacted]	Security	Assigned

7. Return to the **OT Security** console and paste the copied value in the desired **Group Object ID** field (for example Administrators Group Object ID).

8. Repeat steps 1-7 for each group that you would like to map to a distinct User Group in OT Security.

9. Click **Save** to save and close the side panel.



Configure SAML

GROUPS ATTRIBUTE *

http://schemas.microsoft.com/w[redacted]

DESCRIPTION

ADMINISTRATORS GROUP OBJECT ID

237edl[redacted]

READ-ONLY USERS GROUP OBJECT ID

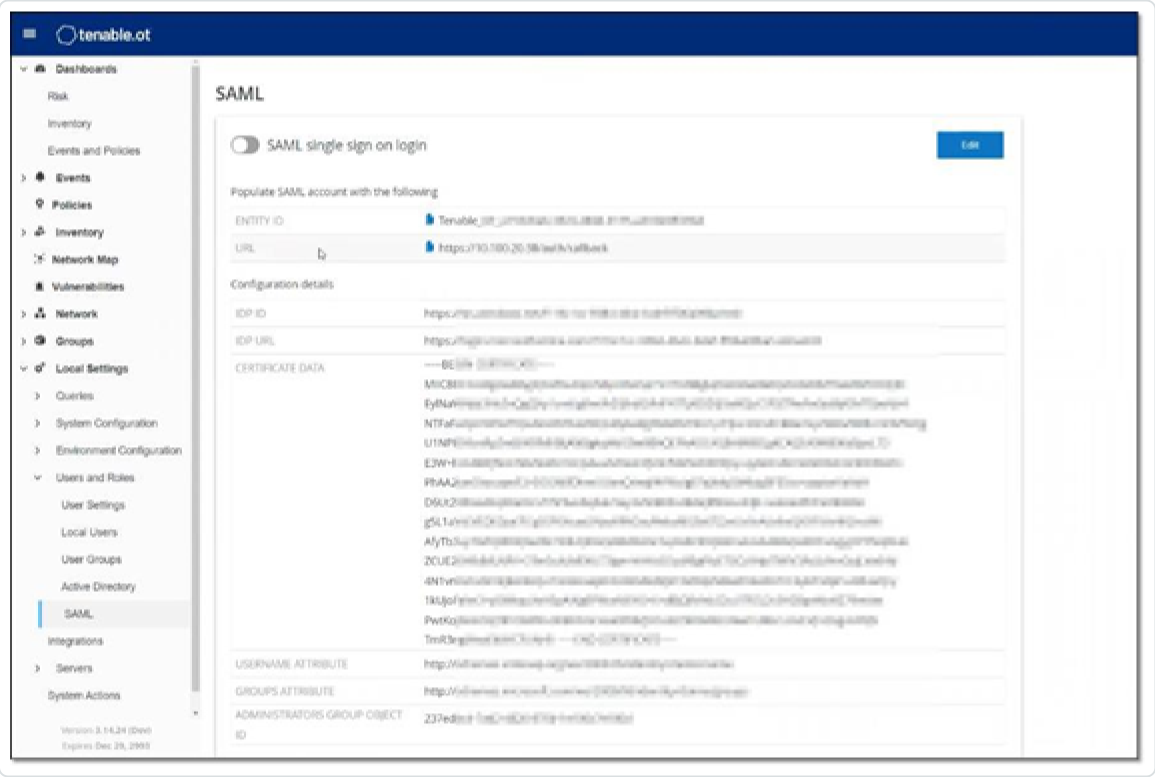
SECURITY ANALYSTS GROUP OBJECT ID

SECURITY MANAGERS GROUP OBJECT ID

SITE OPERATORS GROUP OBJECT ID

SUPERVISORS GROUP OBJECT ID

The SAML screen appears in the OT Security console with the configured information.



SAML

○ SAML single sign on login

Populate SAML account with the following

ENTITY ID	Tenable_ot_[redacted]
URL	https://10.100.20.38/auth/callback

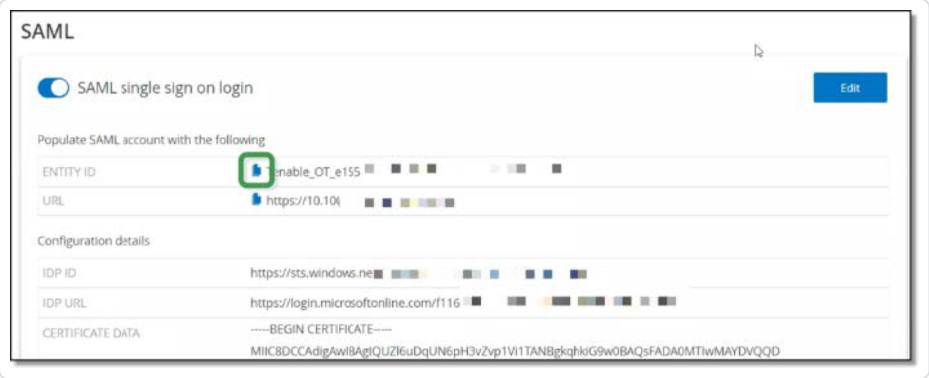
Configuration details

IDP ID	https://[redacted]
IDP URL	https://[redacted]
CERTIFICATE DATA	-----BE[redacted]----- MIICB[redacted] EylNa[redacted] NTFaF[redacted] U1NP[redacted] E3W+[redacted] PhAA2[redacted] D5Ut2[redacted] g5L1a[redacted] AfyTb[redacted] ZCUE2[redacted] 4NTvr[redacted] 1kUjoF[redacted] PwtKo[redacted] TmR3e[redacted]-----END CERTIFICATE-----
USERNAME ATTRIBUTE	http://[redacted]
GROUPS ATTRIBUTE	http://[redacted]
ADMINISTRATORS GROUP OBJECT ID	237ed[redacted]

Step 4 - Finalizing the Configuration in Azure

To finalize the configuration in Azure:

1. In the OT Security **SAML** screen, under **Entity ID**, click the copy icon.



SAML

SAML single sign on login

Edit

Populate SAML account with the following

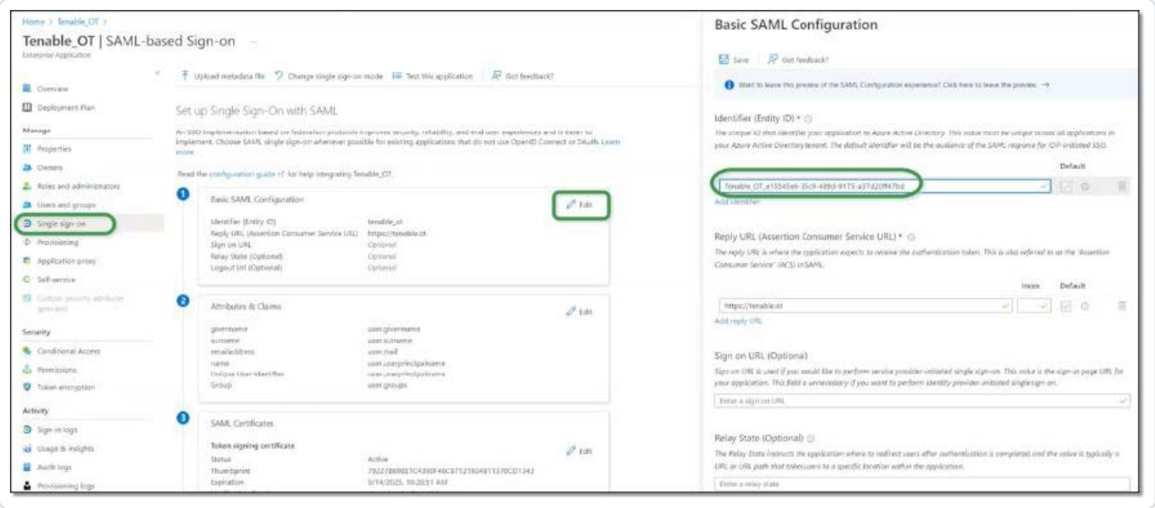
ENTITY ID	Tenable_OT_e155 [redacted]
URL	https://10.10([redacted]

Configuration details

IDP ID	https://sts.windows.ne [redacted]
IDP URL	https://login.microsoftonline.com/f116 [redacted]
CERTIFICATE DATA	-----BEGIN CERTIFICATE----- MIIC8DCCAdigAwIBAgIQUZI6uDqUN6pH3vZvp1Vi1TANBgkqhkiG9w0BAQsFADA0MTIwMAYDVQQD

2. Switch to the **Azure** screen and click **Single sign-on** in the left-side navigation menu to open the **SAML-based Sign-on** page.

3. In section 1 - **Basic SAML Configuration**, click ✎ **Edit**, and paste in the copied value in the **Identifier (Entity ID)** field, replacing the temporary value you previously entered.



Home > Tenable_OT >

Tenable_OT | SAML-based Sign-on

Set up Single Sign-On with SAML

Basic SAML Configuration

Identifier (Entity ID)	tenable_ot
Reply URL (Assertion Consumer Service URL)	https://tenable.ot
Sign on URL	Optional
Relay State (Optional)	Optional
Logout Url (Optional)	Optional

Attributes & Claims

givenname	user.givenname
surname	user.surname
emailaddress	user.mail
name	user.userprincipalname
Unique User Identifier	user.userprincipalname
Group	user.groups

SAML Certificates

Token signing certificate

Status	Active
Thumbprint	[illegible]
Expiration	9/14/2025, 10:20:51 AM

Basic SAML Configuration

Identifier (Entity ID) *

Tenable_OT_e15545e6-35c9-489d-9175-a37d20ff47bd

Reply URL (Assertion Consumer Service URL) *

https://tenable.ot

Sign on URL (Optional)

Enter a sign on URL

Relay State (Optional)

Enter a relay state

4. Return to the OT Security **SAML** screen, and under **URL**, click the copy icon.

5. In the **Azure** console, and In the **Basic SAML Configuration** side panel, under **Reply URL (Assertion Consumer Service URL)**, paste the copied URL, replacing the temporary URL you

previously entered.

6. Click 🖫 **Save** to save the configuration, and close the side panel.

   The configuration is complete, and the connection appears on the **Azure Enterprise applications** screen.

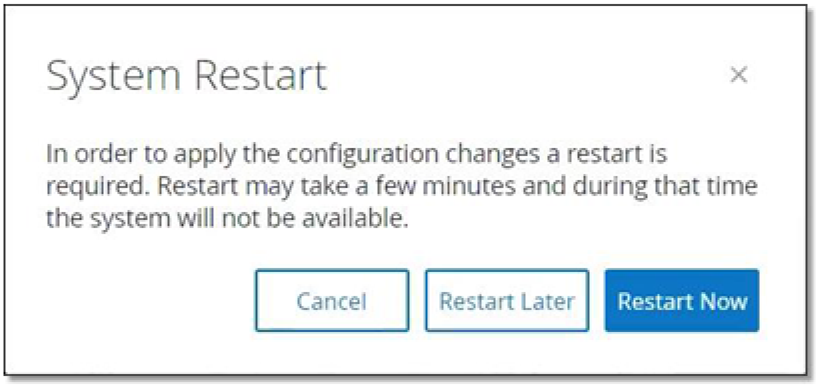
Step 5 – Activating the Integration

To activate the SAML integration, OT Security must be restarted. The user may restart the system immediately or choose to restart it later.

To activate the integration:

1. In the OT Security console, on the **SAML** screen, click to toggle the **SAML single sign on login** button **ON**.

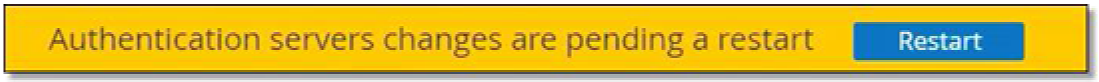
   The **System Restart** notification window appears.



System Restart

In order to apply the configuration changes a restart is required. Restart may take a few minutes and during that time the system will not be available.

2. Click **Restart Now** to restart the system and apply the SAML configuration immediately, or click **Restart Late**r to delay the application of the SAML configuration the next time the system is restarted. If you choose to restart later, the following banner is shown until the restart is done:



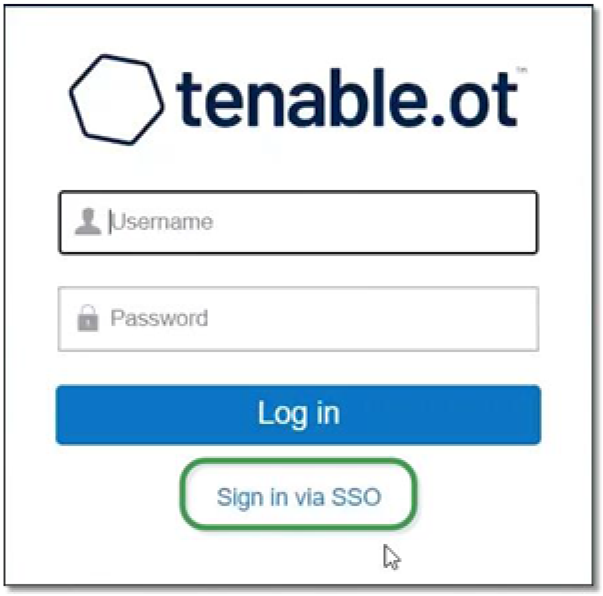
Authentication servers changes are pending a restart

Signing in Using SSO

Upon restarting, the **OT Security** login window has a new **Sign in via SSO** link underneath the Log in button. Azure users who were assigned to OT Security can log in to OT Security using their Azure account.

To sign in using SSO:

1. On the **OT Security** login screen, click the **Sign in via SSO** link.



If you are already logged in to Azure, you are taken directly to the OT Security console, otherwise you are redirected to the Azure sign-in page.

Users with more than one account are redirected to the Microsoft **Pick an account** page, where they can select the desired account for login.

Revision History

Product version: OT Security document revision history:

Document Revision	Date	Description
1.0	October 8, 2018	Created first version of User Guide for Version 2.5
1.1	January 28, 2019	Updated for version 2.7
1.2	August 20, 2019	Updated for version 3.1
1.3	October 10, 2019	Revised for currently supported features
1.4	January 12, 2019	Updated for version 3.3
1.5	March 24, 2020	Updated for version 3.4
1.6	April 6, 2020	Updated for version 3.5
1.7	April 27, 2020	Added documentation of Sensors
1.8	June 3, 2020	Updated for version 3.6
1.9	August 8, 2020	Updated for version 3.7
2.0	October 11, 2020	Updated for version 3.8
2.1	December 2, 2020	Updated for version 3.9
2.2	April 6, 2021	Updated for version 3.10
2.3	June 30, 2021	Updated for version 3.11
2.4	December 12, 2021	Updated for version 3.12
2.5	March 25, 2022	Updated for version 3.13
2.6	August 22, 2022	Updated for version 3.14
2.7	September 25, 2022	Added SAML integration (SP1)

2.8	January 31, 2023	Updated for version 3.15
2.9	July 25, 2023	Updated for version 3.16
3.0	September 11, 2023	Updated for version 3.17