Tenable OT Security 3.18 User Guide

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Welcome to Tenable OT Security

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 Industrial Control Systems (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)

Getting Started with OT Security

To get started with OT Security, follow the sequence of steps mentioned in Get Started with OT Security.

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

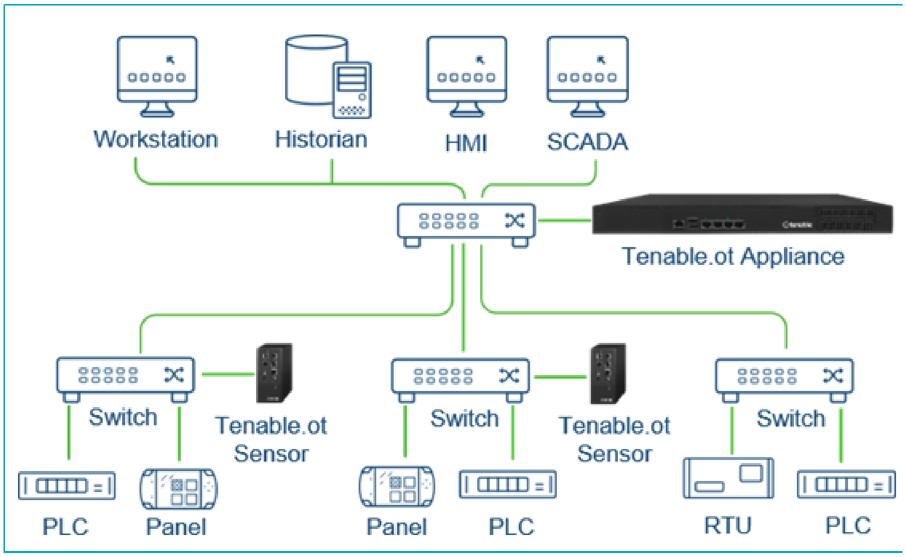
OT Security Platform Components

Note: In this document, the OT Security Appliance is referred to as ICP (Industrial Core Platform).

The OT Security solution is composed of these components:

- **ICP** (**OT Security Appliance**)— 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 ICP 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. OT Security sensors provide full visibility into these network segments by capturing all the traffic, compressing the data 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.

Tenable OT Security Hardware Specifications

ICP and Sensor Specifications

The following are the specifications for the OT Security hardware appliances for Industrial Core Platform (ICP):

Regular ICP

Category	Regular ICP
CPU	Intel® Xeon™ D-218dIT, 2.0 GHz
Cores	14
RAM	64 GB
Storage	256 GB SSD 800 GB NVMe 2 TB HDD
Network (Copper Ethernet)	4 x 1 Gbps
Network (Fiber Ethernet)	N/A
Power Supply	Single 110-220v
Form Factor	1U Half Depth
Dimensions (LxWxH)	209 x 43 x 376 mm 8.2 x 1.7 x 14.8 in
Weight	3.6 Kg
Operating Temperature	5 ~ 45° C (41 ~ 113 F)

Storage Temperature	
Relative Humidity	8% ~ 90% non-condensing
Max Span Throughput	500 Mbps

XL ICP

Category	XL ICP
CPU	2x Xeon® Silver 4314
Cores	2 x 16
RAM	256 GB
Storage	960 GB SSD SAS FIPS-140 SED 960 GB SSD SAS FIPS-140 SED 2X2.4TB SAS HDD FIPS-140 SED **Note**: The hardware is fully encrypted and FIPS-140 compliant.
Network (Copper)	6 x 1 Gbps
Network (Fiber)	2 x 10 GB SFP+
Power Supply	Redundant 110-220v, 165W
Form Factor	1U Full Depth
Dimensions (WxHxD)	Width*: 482.0mm (18.98") x Height: 42.8mm (1.69") x Depth*: 698 mm (27.5") *Dimensions include bezel.
Weight	22 Kg
Operating Temperature	0 ~ 40° C (32 ~ 104 F)
Storage Temperature	-10 ~ 50° C (14 ~ 122° F)

Relative Humidity	5% ~ 90% non-condensing
Certifications	CE / FCC/ RoHS CB, CCC, UL, RCM, NOM
Max Span Throughput	1 Gbps

Sensor

Category	Sensor
CPU	Intel® Core™ 13-8145UE, 2.2GHz
Cores	2
RAM	4 GB
Storage	128GB SATA M.2
Network (Copper)	2 x 1 Gbps
Network (Fiber)	N/A
Power Supply	Terminal Block 12~28 VDC
Form Factor	Extra Small Form Factor
Dimensions (WxHxD)	179 x 88 x 34.5 mm 7.05 x 3.46 x 1.36 in
Weight	0.72 Kg
Operating Temperature	0 ~ 50° C (32 ~ 122° F)
Storage Temperature	-40 ~ 60° C (-40 ~ 140° F)
Relative Humidity	20% ~ 80% non-condensing
Max Span Throughput	NA

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 License Components

This topic breaks down the licensing process for Tenable OT Security as a standalone product. It also explains how assets are counted, lists add-on components you can purchase, explains how licenses are reclaimed, and describes what happens during license overages or expirations.

> **Tip**: To update or reinitialize your license, see OT Security License Workflow.

Licensing Tenable OT Security

You can purchase Tenable OT Security in subscription or perpetual/maintenance versions.

To license Tenable OT Security, you purchase licenses based on your organizational needs and environmental details. Tenable OT Security then assigns those licenses to your *assets*: all detected devices with IP addresses, one license for each IP address.

When your environment expands, so does your asset count, so you purchase more licenses to account for the change. Tenable licenses use progressive pricing, so the more you purchase, the lower the per-unit price. For prices, contact your Tenable representative.

How Assets are Counted

In Tenable OT Security, your license count is based on the number of unique IP addresses in your environment. Assets are licensed from the moment they are detected.

> **Note**: Assets on internal networks behind live IP addresses do not count towards your license. For example, in a redundantly connected Programmable Logic Controller (PLC) chassis with two live IP addresses and 10 modules behind these, only the two live IP addresses count towards your license.

> **Note**: While you can connect a standalone purchase of OT Security to your instance of Tenable One, that does not handle the licensing of those assets. Tenable One customers have a plethora of Tenable solutions that are licensed to them, including OT Security, but the licenses must be part of the Tenable One license first. You can work with your customer success managers (CSM) to update the account accordingly.

Tenable OT Security Components

You can customize Tenable OT Security for your use case by adding components. Some components are add-ons that you purchase.

Included with Purchase	Add-on Component
• Virtual Core Appliance. • Tenable Security Center.	• Tenable OT Security Enterprise Manager. • Tenable OT Security Configurable Sensor. • Tenable OT Security Certified Configurable Sensor. • Tenable OT Security Certified Core Platform. • Tenable OT Security Core Platform. • Tenable OT Security XL Core Platform.

Reclaiming Licenses

When you purchase licenses, your total license count is static for the length of your contract unless you purchase more licenses. However, Tenable OT Security reclaims licenses in real time as your asset count changes.

Tenable OT Security reclaims the following assets:

- Hidden assets
- Assets that have been offline for more than 30 days
- Assets you remove or hide in the user interface

Exceeding the License Limit

In Tenable OT Security, you can only use your allocated number of licenses unless you purchase more licenses.

When you exceed your license limit:

- Non-administrators can no longer access Tenable OT Security.
- A message that your license has been exceeded appears in the user interface.

- You can no longer restore assets from the Tenable OT Security Settings.
- You can no longer update vulnerability plugins or IDS Signatures (Feed updates).

Note: When you exceed your license limit, Tenable OT Security can still detect and add new assets.

Expired Licenses

The Tenable OT Security licenses you purchase are valid for the length of your contract. 30 days before your license expires, a warning appears in the user interface. During this renewal period, work with your Tenable representative to add or remove products or change your license count.

After your license expires, Tenable OT Security is disabled and you cannot use it.

Error Messages

The following table describes the error messages that may appear in Tenable OT Security.

Category	Error Category Name	Error Description	User Interface Message	Recommended Action
Active Query Management	**NoRoutesForClient**	A query received a routing error from the network.	There may be a network connectivity issue. Please check network connectivity and retry the query.	Check your network connectivity and retry the active query.
Active Query Management	**InternalError**	An internal error occurred in	An unexpected error	Retry the query after some time.

		the query attempt.	occurred. Try again later, and if the issue persists, contact Technical Support.	If the issue persists, contact Tenable Support.
Active Query Management	**DnsError**	A DNS hostname not found for the target IP.	A DNS hostname could not be found for the target IP. Please ensure that reverse DNS is enabled and a PTR record is defined for the IP.	Verify if the reverse DNS Lookup is enabled and the DNS pointer record (PTR) is defined for the IP.
Active Query Management	**HostUnreachableError**	A query target cannot be reached. Check your routing.	Could not reach the device. This might be due to a network connectivity issue. Please check your network or firewall settings and	Check your network connectivity and firewall settings and retry the active query.

			try again.	
Active Query Management	**TimeoutError**	A query has received no response from the target and reached timeout.	Network Timeout. This may be due to temporary network issues or a slow response from the device. Please try the query again later.	Retry the query after some time.
Active Query Management	**NetworkError**	A query has received an error response from the network.	A network error has occurred. This may be due to temporary network issues or firewall restrictions. Please check your network connectivity and retry the query.	Check your network connectivity and retry the query.
Active Query Management	**ProtocolError**	A query has received an	Unsupported	Check whether the

		unexpected response from the target.	response format from the destination. This could be due to an incompatible protocol version on the device or a temporary network issue. Please check device compatibility or try the query again later.	destination device is compatible with or retry the query after some time.
Active Query Management	**AuthenticationError**	Invalid authentication credentials were used in the query.	Failed to authenticate to the device. Credentials may be incorrect or missing, Please verify your credentials.	Verify your credentials and retry the query.
Active Query Management	**LimitExceededError**	OT Security	Active	There are

		has reached the limit for failed queries against the target.	queries to this device are paused due to too many failed queries. Try again later and If the issue persists, contact support	several failed queries to the device. Retry the query after some time, and if the issue persists, contact Technical Support.
Active Query Management	**NoPotentialClients**	No valid clients exist in the target query range (CIDR block, asset list, or IP range).	Active query found no accessible devices in the target range. User-applied restrictions might block some devices (CIDR block, asset list, or IP range). Please review your selection and access controls.	The target devices may not be accessible because of user-applied restrictions. Review your access control settings and retry the query.
Active Query Management	**NoAllowedClients**	No allowed	Active query	The target

		clients exist in the target query range (CIDR block, asset list, or IP range).	found no compatible devices in the target range (CIDR block, asset list, or IP range). Please review your selection and access controls.	devices may not be compatible with OT Security settings. Review your access control settings and retry the query.
IoT	**ServiceUnavailable**	Service is unavailable, may be and issue with startup or after reset.	The IoT Connector Service is not available or has encountered an issue, try again later and if the issue persists, contact support.	Retry the query after some time as the IoT Connector service may be temporarily down. If the issue persists, contact Technical Support.
IoT	**IotConnectorSecureModeError**	The IoT connector cannot connect with a remote installed IoT	IoT connector secure mode error. The IoT Agent on the remote	Reinstall the IoT Agent on the remote system and retry the connection.

		agent.	system must be reinstalled to allow connections again.	
IoT	**IotConnectorIpAlreadyExists**	The user is trying to add a connector with an IP that already exists.	Connector creation failed. The provided IP address is already in use by another connector. Please provide a unique IP address and try again.	Provide a unique IP address and try to add the connector.
Server Pairing: (Enterprise Manager (EM), External Server, FW)	**WrongCertificate**	The user is trying to pair ICP to EM with an invalid certificate.	The pairing server presented an invalid security certificate. Please verify the server certificate and try again. If this persists, consult the	Generate a new security certificate and try pairing the ICP to EM. If the issue persists, contact the server administrator.

			server administrator.	
Server Pairing: (EM, External Server, FW)	**MissingEmAddress**	Only via API	No server address was provided for pairing. Please enter the IP address or hostname of the server you want to connect to and try again.	Provide the IP address or hostname of the server you want to connect and try again.
Server Pairing: (EM, External Server, FW)	**MissingPassword**	Only via API	The provided credentials are incomplete. Please enter a password for the pairing server and try again.	Provide a username and password for the server and try again.
Server Pairing: (EM, External Server, FW)	**MissingCredentials**	Only via API	Missing connection credentials for the pairing server.	Provide valid credentials for the server and try again.

			Please provide the required credentials (e.g., username and password) and try again.	
Server Pairing: (EM, External Server, FW)	**BothApiKeyAndUserCredentials**	Only via API	Only one authentication method is allowed for pairing with this server. Please remove either the API key or user credentials and try again.	Use either API key or user credentials for pairing.
OT Feeds: PII/Suricata/Nessus	**NessusNotReady**	Service is unavailable, may be an issue with startup or after reset.	The Nessus service is not yet available or has encountered an issue, try again later, and If the	The Nessus service may be down, so try reaching the service after some time, or if the issue persists,

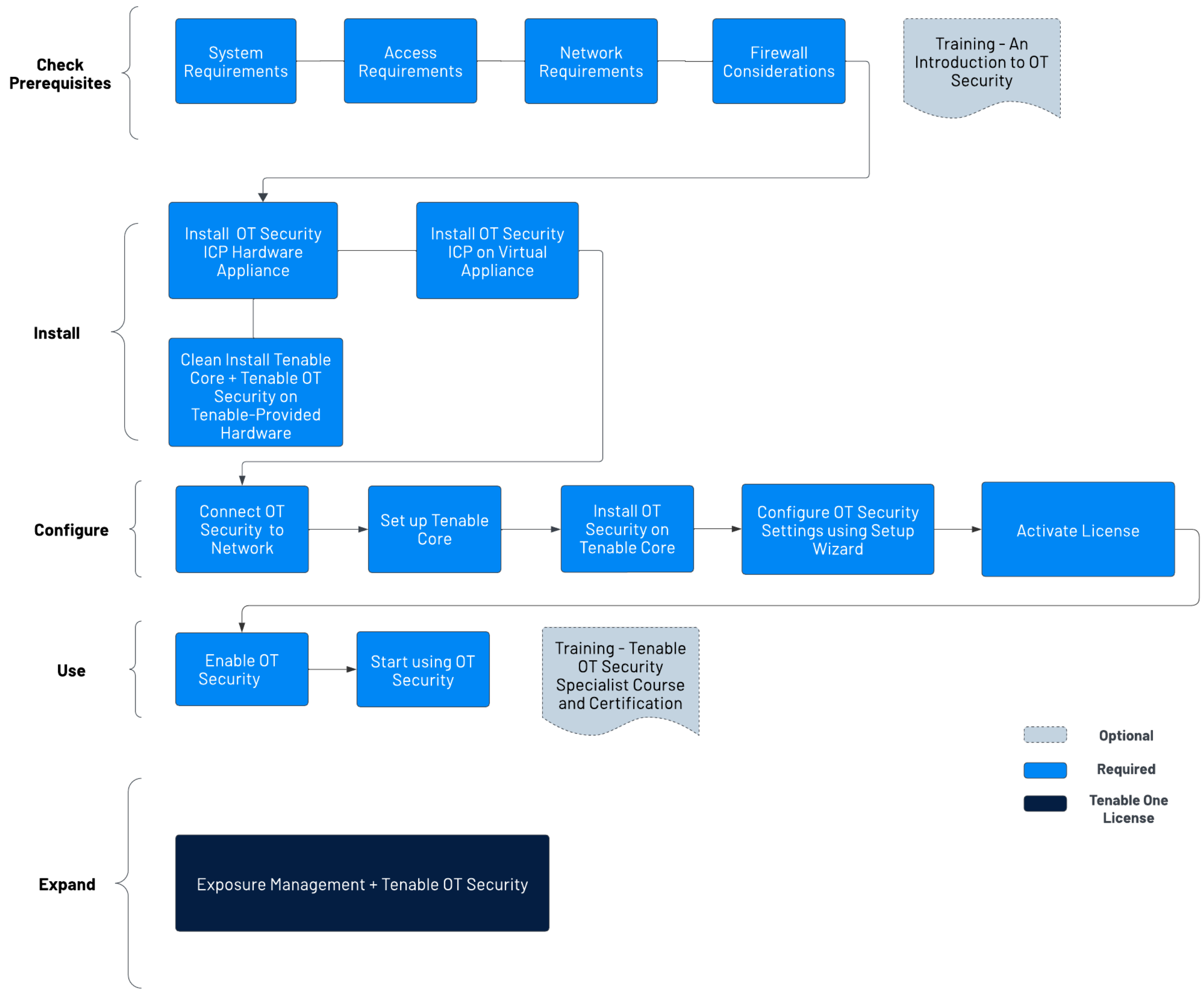
			issue persists, contact support.	contact Tenable Support.
OT Feeds: PII/Suricata/Nessus	**MissingFile**	Only via API	No configuration file attached. Please upload a valid configuration file in the supported format to proceed.	Upload a valid configuration file.
OT Feeds: PII/Suricata/Nessus	**InvalidFile**	The uploaded file is invalid.	The uploaded file is invalid. It may be due to an unsupported format or missing version information. Please review the documentation for supported formats and required fields, and	Check whether the format or version of the uploaded file is valid before uploading the file.

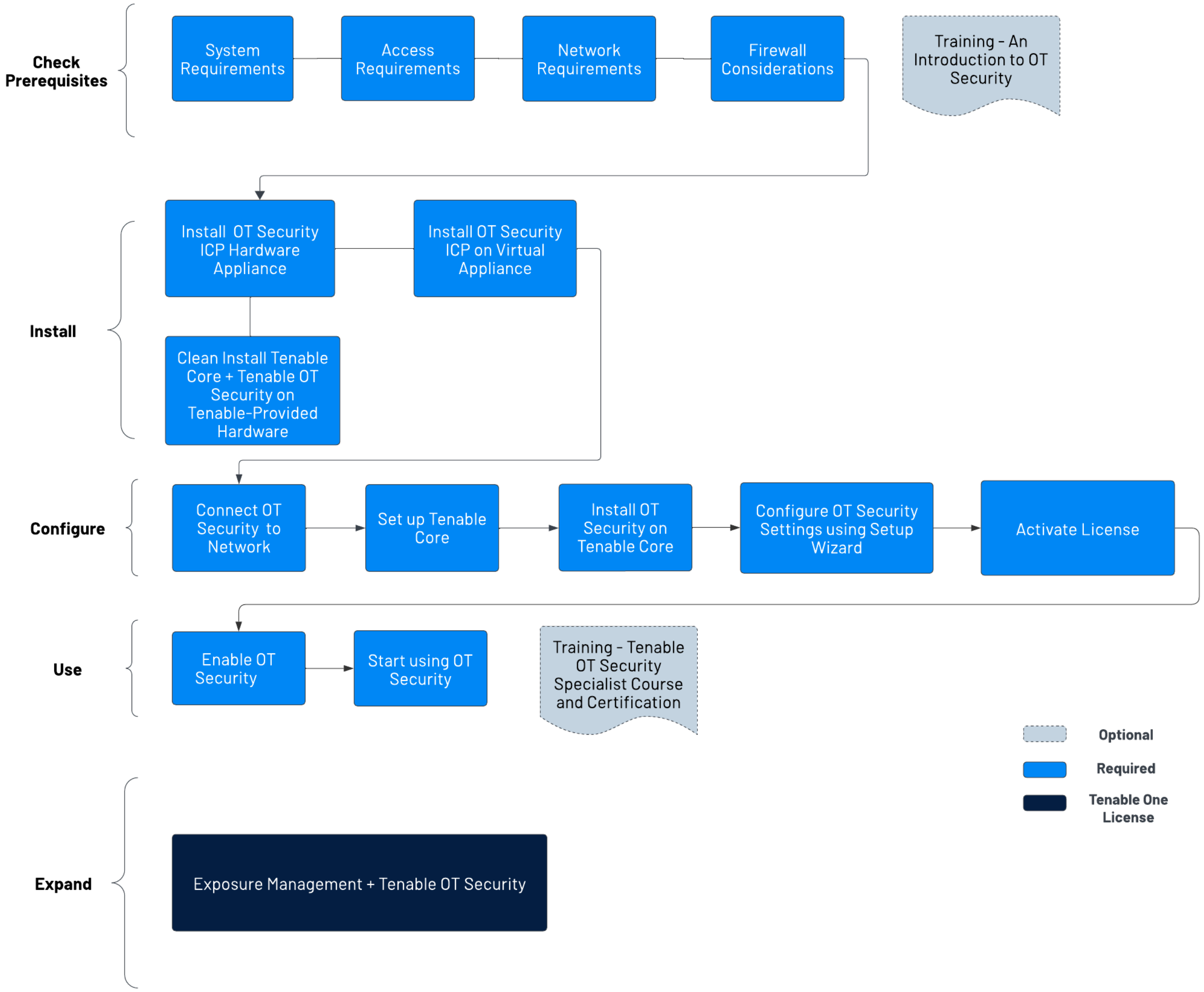
			try again.	
OT Feeds: PII/Suricata/Nessus	**NoSpaceLeftOnDevice**	Uploading a file during online or offline mode while there is no space left on the device for the new one.	The device does not have enough storage space to accommodate the new configuration file. Please free up some space on the device and try again.	Free up space on the device and try uploading the configuration file.
OT Feeds: PII/Suricata/Nessus	**OldLicense**	The user is using a license without valid credentials.	Action not allowed due to an outdated version format. Please obtain a new license in the supported format and try again.	Upgrade your OT Security license in the supported format.
OT Feeds: PII/Suricata/Nessus	**UpdateAlreadyInProgress**	The user is currently running an update while there	An update is already in progress for this device. Please wait	Wait for the current update to complete before you

		is already one job in progress, and only one update can run at a time.	for the current update to finish before attempting another one.	try again.
OT Feeds: PII/Suricata/Nessus	**OlderVersionUpdateAttempt**	The user is attempting to downgrade to an earlier version.	File upload failed due to an active newer version. Ensure you have the latest updated file and try uploading again.	Ensure the file you are trying to upload is the latest version.

Get Started with OT Security

Use the following getting started sequence to install and start using OT Security.


Check Prerequisites
System Requirements
Access Requirements
Network Requirements
Firewall Considerations
Training - An Introduction to OT Security
Install
Install OT Security ICP Hardware Appliance
Install OT Security ICP on Virtual Appliance
Clean Install Tenable Core + Tenable OT Security on Tenable-Provided Hardware
Configure
Connect OT Security to Network
Set up Tenable Core
Install OT Security on Tenable Core
Configure OT Security Settings using Setup Wizard
Activate License
Use
Enable OT Security
Start using OT Security
Training - Tenable OT Security Specialist Course and Certification
Expand
Exposure Management + Tenable OT Security
Optional
Required
Tenable One License


Check Prerequisites
System Requirements
Access Requirements
Network Requirements
Firewall Considerations
Training - An Introduction to OT Security
Install
Install OT Security ICP Hardware Appliance
Install OT Security ICP on Virtual Appliance
Clean Install Tenable Core + Tenable OT Security on Tenable-Provided Hardware
Configure
Connect OT Security to Network
Set up Tenable Core
Install OT Security on Tenable Core
Configure OT Security Settings using Setup Wizard
Activate License
Use
Enable OT Security
Start using OT Security
Training - Tenable OT Security Specialist Course and Certification
Optional
Required
Tenable One License
Expand
Exposure Management + Tenable OT Security

Check Prerequisites

- Prerequisites — Review the system, hardware, virtual, and license requirements for OT Security.

  - System Requirements — Review the requirements to install and run Tenable Core + OT Security.

  - Access Requirements — Review the internet and port requirements to run Tenable Core + OT Security.

- Network Considerations — Review the network interfaces to connect OT Security.
- Firewall Considerations — Review the ports that must be open for OT Security to function correctly.
- Introduction to Tenable OT Security — Go through the training material for an understanding of OT Security.

Install OT Security ICP

OT Security is an application running on top of the Tenable Core operating system, and it is subject to the base requirements of Tenable Core. Use the following guidelines to install and configure Tenable Core + OT Security.

To install OT Security:

1. Install OT Security ICP
   - Install OT Security ICP Hardware Appliance - Set up OT Security as a hardware appliance.

     > **Note**: Tenable-provided Tenable Core hardware comes with Tenable Core+ OT Security pre-installed. If you are installing an older or dated appliance, you might opt for a clean install. For more information, see Clean Install Tenable Core + Tenable OT Security on Tenable-Provided Hardware.

   - Install OT Security ICP Virtual Appliance— Deploy Tenable Core + OT Security as a virtual machine using the pre-configured `.ova` file containing the standard virtual machine configuration, or customize your appliance using the installation `.iso` file.
2. Connect OT Security to the Network— Connect OT Security hardware and virtual appliance to the network.
3. Configure OT Security ICP
   a. Set up Tenable Core — Configure Tenable Core via CLI or the user interface.
   b. Install OT Security on Tenable Core - Manually complete the installation of Tenable OT Security in Tenable Core.

c. Configure OT Security Settings using Setup Wizard — Use the setup wizard to configure basic settings in OT Security.

   - Log in to the OT Security console and configure the User Info, Device, System Time, and Port Separation settings.

4. Activate OT Security License — Activate your license after you complete the OT Security installation.

Use OT Security

Launch OT Security

1. Enable OT Security — Enable OT Security after you activate your license.

2. Start using OT Security — Configure your monitored networks, port separation, users, groups, authentication servers, and so on to start using OT Security.

   > **Tip**: To gain hands-on experience and to obtain Tenable OT Security Specialist Certification, take the Tenable OT Security Specialist Course.

Expand OT Security into Tenable One

> **Note**: This requires a Tenable One license. For more information about trying Tenable One, see Tenable One.

Integrate OT Security with Tenable One and leverage the following features:

- Access the **Exposure View** page, where you can reveal converged risk levels and uncover hidden weaknesses across the IT-OT boundary. You can continuously monitor and track potential vulnerabilities with enhanced OT data:

  - View and manage cyber exposure cards.

  - View CES and CES trend data for the Global and **Operational Technologies** exposure cards.

  - View Remediation Service Level Agreement (SLA) data.
  - View Tag Performance data.
- Access the **Exposure Signals** page, where you can generate exposure signals that use queries to search for asset *violations*. Simply put, if an asset is impacted by a weakness related to the query, then the asset is considered a *violation*. Using this, you can gain visibility into your most critical risk scenarios.
  - Find top active threats in your environment with up-to-date feeds from Tenable Research.
  - View, generate, and interact with the data from queries and their impacted asset violations.
  - Create custom exposure signals to view business-specific risks and weaknesses
- Access the **Inventory** page, enrich asset discovery with OT-specific insights, such as firmware versions, vendors, models & operational states. Access OT intelligence that standard IT security tools cannot provide:
  - View and interact with the data on the **Assets** tab:
    - Review your AD assets to understand the strategic nature of the interface. This should help set your expectations on what features to use within Tenable Exposure Management, and when.
    - Familiarize yourself with the Global Asset Search and its objects and properties. Bookmark custom queries for later use.
    - Find devices, user accounts, software, cloud assets, SaaS applications, networks, and their weaknesses.
    - Drill down into the **Asset Details** page to view asset properties and all associated context views.
  - View and interact with the data on the **Weaknesses** tab:
    - View key context on vulnerability and misconfiguration weaknesses to make the most impactful remediation decisions.

- View and interact with the data on the **Software** tab:
  - Gain full visibility of the software deployed across your business and better understand the associated risks.
  - Identify what software may be out of date, and which pieces of software may soon be End of Life (EoL).
- View and interact with the data on the **Findings** tab:
  - View instances of weaknesses (vulnerabilities or misconfigurations) appearing on an asset, identified uniquely by plugin ID, port, and protocol.
  - Review insights into those findings, including descriptions, assets affected, criticality, and more to identify potential security risks, visibility on under-utilized resources, and support compliance efforts.

- Access the **Attack Path** page, where you can optimize risk prioritization by exposing risky attack paths that traverse the attack surface, including web apps, IT, OT, IoT, identities, ASM, and prevent material impact. Streamline mitigation by identifying choke points to disrupt attack paths with mitigation guidance, and gain deep expertise with AI insights **(Not supported in FedRAMP environments)**.
  - View the **Dashboard** tab for a high-level view of your vulnerable assets such as the number of attack paths leading to these critical assets, the number of open attack techniques and their severity, a matrix to view paths with different source node exposure score and ACR target value combinations, and a list of trending attack paths.
    - Review the **Top Attack Path Matrix** and click the **Top Attack Paths** tile to view more information about paths leading to your “Crown Jewels”, or assets with an ACR of 7 or above.

    You can adjust these if needed to ensure you’re viewing the most critical attack path data.
  - On the **Top Attack Techniques** tab, view all attack techniques that exist in one or more attack paths that lead to one or more critical assets by pairing your data with advanced graph analytics and the MITRE ATT&CK® Framework to create attack techniques, which allow you to understand and act on the unknowns that enable and amplify threat impact

on your assets and information.

  - On the **Top Attack Paths** tab, generate attack path queries to view your assets as part of potential attack paths:
    - Generate an Attack Path with a Built-in Query
    - Generate an Attack Path Query with the Attack Path Query Builder
    - Generate an Asset Query with the Asset Query Builder

    Then, you can view and interact with the Attack Path Query and Asset Query data via the query result list and the interactive graph.

  - Interact with the **MITRE ATT&CK Heatmap** tab, select the **ICS** heatmap option to focus on ICS (Industrial Control Systems) tactics and techniques

- View and interact with the data in the **Tags** page:
  - Create a new dynamic tag for your OT assets, where:
    - Operator = **Host System Type**
    - Value = **PLC**
  - Create and manage tags to highlight or combine different asset classes.
  - View the **Tag Details** page to gain further insight into the tags associated with your assets.

Prerequisites

Objective: Ensure you have everything you need for a successful ICP installation.

Tenable OT Security is an application running on top of the Tenable Core operating system, and it is subject to the base requirements of Tenable Core.

Tenable Core + Tenable OT Security is available for deployment both on hardware and as a virtual machine appliance. A virtual machine deployment must meet the minimal requirements as mentioned in Hardware Requirements.

Hardware Requirements

Multiple sizes of dedicated Tenable Core + Tenable OT Security hardware appliances are available (purchased separately). For hardware specifications, see Tenable OT Security Physical Hardware Sheet.

The Tenable Core operating system and the Tenable OT Security application are pre-installed on all available hardware appliances.

You can also install Tenable Core + Tenable OT Security on custom hardware that meets the requirements. For instructions, contact Tenable Support or your Customer Success Manager.

For information about the requirements for Tenable Core + Tenable OT Security, see the following:

- System Requirements
- Access Requirements

Virtual Appliance Requirements

Tenable Core + Tenable OT Security can be deployed in the following ways:

- Using the `.ova` file — This file is ready to deploy and includes all the standard and supported virtual machine configuration.
- Using the `.iso` file — This is a general-purpose installation disk image. Deploy this on a properly configured virtual machine, which meets the requirements.

License Requirements

For general information about licensing for OT Security, see OT Security License Components.

For the licensing workflow, see OT Security License Activation.

System Requirements

To install and run Tenable Core + OT Security or OT Security Sensor, your application and system must meet the following requirements.

Tip: OT Security offers turnkey appliances that ship directly that come pre-imaged. This option is much easier to use and deploy, with a faster time to value. However, you can also source your own hardware and apply our ISO image to it. If you supply your own or choose to use ours, please refer to our Tenable OT ardware specs as a guideline or best practice. All components of OT Security, the ICP EM and Sensor can e ran on any hardware that meets the specs.

Note: Tenable does not recommend deploying multiple applications on a single instance of Tenable Core. If you want to deploy several applications on Tenable Core, deploy a unique instance for each application.

Note: Tenable Support does not assist with issues related to your host operating system, even if you encounter them during installation or deployment.

Environment		Tenable Core File Format	More Information
Virtual Machine	VMware	`.ova` file	Deploy Tenable Core in VMware
	Microsoft Hyper-V	`.zip` file	
Hardware Tenable-provided hardware		`.iso` image	Install Tenable Core on Hardware

Note: While you could use the packages to run Tenable Core in other environments, Tenable does not provide documentation for those procedures.

OT Security Hardware Requirements

For more information about hardware requirements specifically for OT Security or OT Security Sensor, see Tenable OT Security Hardware Specifications in the *General Requirements Guide*.

OT Security Virtual Hardware Requirements

Enterprise networks can vary in performance, capacity, protocols, and overall activity. Resource requirements to consider for deployments include raw network speed, the size of the network to monitor, and the configuration of the application.

The following chart outlines basic guidelines for operating Tenable Core + OT Security in a virtual environment.

Tenable Core + OT Security requires CPUs with AVX and AVX2 (for example, Intel Haswell or newer).

Installation Scenario	CPU Cores	Memory	Disk Space
Virtual Machine	8 cores	16 GB RAM	200 GB

Storage Requirements

Tenable recommends installing OT Security on direct-attached storage (DAS) devices, preferably solid-state drives (SSD), for best performance. Tenable strongly encourages the use of solid-state storage (SSS) that have a high drive-writes-per-day (DWPD) rating to ensure longevity.

Tenable does not support installing OT Security on network-attached storage (NAS) devices. Storage area networks (SAN) with a storage latency of 10 milliseconds or less, or Tenable hardware appliances, are a good alternative in such cases.

Disk Space Requirements

Enterprise networks can vary in performance, capacity, protocols, and overall activity. Resource requirements to consider for deployments include raw network speed, the size of the network to monitor, and the configuration of the application. Processors, memory, and network card selection are heavily based on these deployment configurations. Disk space requirements vary depending on usage based on the amount of data, and length of time, you store data on the system.

OT Security needs to perform full packet captures of monitored traffic, and the size of the policy event data stored by OT Security depends on the number of devices and the type of environment.

You can calculate storage requirements per day (GB/day) by multiplying the traffic rate (Mbps) * 2.7 - based on a compression factor of 0.25.

In an example with two sensors receiving 23 Mbps SPAN traffic each, the storage requirements per day (GB/day) is calculated as (23*2)*2.7=124 GB of space per day for traffic storage.

> **Note**: If compliance or security requirements require that you store up to 30 days of traffic, then you need a PCAP (Packet Capture) storage drive of 3.75 TB to accommodate this requirement. Once the stored traffic data reaches the maximum size, OT Security overwrites the oldest PCAP data and replaces it with new traffic.

ICP System Requirement Guidelines

Maximum SPAN/TAP Throughput (Mbps)	CPU Cores[1]	Memory (DDR4)	Storage Requirements	Network Interfaces
50 Mbps or less	4	16 GB RAM	128 GB	Minimum 4 x 1 Gbps
50-150 Mbps	16	32 GB RAM	512 GB	Minimum 4 x 1 Gbps
150-300 Mbps	32	64 GB RAM	1 TB	Minimum 4 x 1 Gbps
300 Mbps to 1 GB	32-64	128 GB RAM or more	2 TB or more	Minimum 4 x 1 Gbps

Disk Partition Requirements

OT Security uses the following mounted partitions:

Partition	Content
/	operating system
/opt	application and database files
/var/pcap	packet captures (full packet capture, event, query)

The standard install process places these partitions on the same disk. Tenable recommends moving these to partitions on separate disks to increase throughput. OT Security is a disk-intensive application and using disks with high read/write speeds, such as SSDs, results in the best performance. Tenable recommends using an SSD with high DWPD ratings on customer-supplied hardware installations when using the packet capture feature in OT Security.

Tip: Deploying OT Security on a hardware platform configured with a redundant array of independent disks (RAID 0) can dramatically boost performance.

Tip: Tenable does not require RAID disks for even our largest customers. However, in one instance, response times for queries with a faster RAID disk for a customer with more than one million managed vulnerabilities moved from a few seconds to less than a second.

Network Interface Requirements

You must have two (or more) network interfaces present on your device before installing OT Security. Tenable recommends the use of gigabit interfaces. The VMWare OVA creates these interfaces automatically. Create these interfaces manually when you are installing the ISO (such as Hyper-V).

> **Note**: Tenable does not provide SR-IOV support for the use of 10 G network cards and does not guarantee 10 G speeds with the use of 10 G network cards.

NIC Requirements

- OT Security requires only one NIC for EM.
- OT Security requires a minimum of two NICs for the ICP and Sensors.
- OT Security requires static IP addresses to be used for ICP/EM/Sensors.
- Both the sensor and ICP can be configured to monitor multiple SPAN interfaces.

> **Note**: Starting from OT Security 4.1, the profile names for network interfaces are as follows:
>
> - nic0 — System port 1
> - nic1 — System port 2
> - nic2 — System port 3
> - nic3 — System port 4

nic0 or **System port 1** (192.168.1.5) and **nic3** or **System port 4** (192.168.3.3) have static IP addresses when you install Tenable Core + OT Security in a hardware, or virtual, environment. Other network interface controllers (NICs) use DHCP.

nic3 or **System port 4** (192.168.3.3) has a static IP address when you deploy Tenable Core + OT Security on VMware. Other NICs use DHCP. Confirm that the Tenable Core + OT Security **nic1** or **System port 2** MAC address matches the NIC MAC address in your VMware passive scanning configuration. Modify your VMware configuration to match your Tenable Core MAC address if necessary.

For more information, see Manually Configure a Static IP Address, Manage System Networking, and the *VMware Documentation*.

[1] CPU Cores reference PHYSICAL cores, assumes server-class CPU (Xeon, Opteron).

Access Requirements

Your deployment must meet the following requirements.

- Internet Requirements
- Port Requirements

Internet Requirements

You must have internet access to download Tenable Core files and perform online installs.

After you transfer a file to your machine, internet access requirements to deploy or update Tenable Core vary depending on your environment.

Note: You must reach `appliance.cloud.tenable.com` to install from the online ISOs (and to get online updates) and `sensor.cloud.tenable.com` to pick up scan jobs.

Environment		Tenable Core Format	Internet Requirement
Virtual Machine	VMware	`.ova` file	Does not require internet access to deploy or update Tenable Core.
Hardware		`.iso` image	Requires internet access to install or update Tenable Core.

Tip: You do not need access to the internet when you install updates to via an offline `.iso` file. For more information, see Update Tenable Core Offline.

Port Requirements

Your Tenable Core deployment requires access to specific ports for inbound and outbound traffic. Tenable Security Center also requires application-specific port access. For more information, see Port Requirements in the *Tenable Security Center User Guide*.OT Security also requires application-specific port access. For more information, see Firewall Considerations.

Inbound Traffic

Allow inbound traffic to the following ports:

> **Note**: Inbound traffic refers to traffic from users configuring Tenable Core.

Port	Traffic
TCP 22	Inbound SSH connections.
TCP 443	Inbound communications to the OT Security interface.
TCP 8000	Inbound HTTPS communications to the Tenable Core interface.

Outbound Traffic

Allow outbound traffic to the following ports:

Port	Traffic
TCP 22	Outbound SSH connections, including remote storage connections.
TCP 443	Outbound communications to the `appliance.cloud.tenable.com` and `sensor.cloud.tenable.com` servers for system updates.
UDP 53	Outbound DNS communications for OT Security and Tenable Core.

Network Considerations

The OT Security appliance (both physical and virtual) requires a few network connections, referred to as Interface Roles.

Management and Active Query Interface

This is an interface configured with an IP address that allows network reachability to manage and configure the appliance. This interface allows the appliance to reach assets on the network for active querying (recommended, but optional).

Management and Active Query Roles Separation (Split-Port)

You can split the Management and Active Query roles between two separate interfaces. This enables, for instance, a connection to an IT network for management purposes and a separate connection to an OT network to access the OT assets using Active Query.

For this purpose, prepare and connect two separate interfaces each dedicated to one of the roles.

Basic management connectivity to the ICP through the Active Query interface is allowed and operational as long as the ICP system allows network connectivity.

To finalize the OT Security setup, you require management connectivity. You can configure Split-Port and Active Query connectivity later.

On Tenable-provided hardware appliances, OT Security is automatically installed, with the default interface roles (combined management and Active Query roles).

> **Note**: When configuring the IP address for both interfaces, Tenable recommends to only configure a **Default-Gateway** for the interface dedicated to the Management role. You can specify a dedicated gateway for Active Query when configuring Split Port.

Monitoring Interfaces

One or more network interfaces can be used for passive network monitoring. Passive monitoring (SPAN) interfaces:

- Monitor and collect traffic for analysis
- Must be connected to a Mirroring, Switch Port Analyzer (SPAN), or Remote Switch Port Analyzer (RSPAN) destination interface of a switch.

> **Note**: Traffic that cannot be directly monitored by the appliance interfaces can be collected using OT Sensors or Encapsulated Remote SPAN (ERSPAN) configuration.

Firewall Considerations

In setting up your OT Security system, it is important to map out the open ports to allow the Tenable system to operate correctly. The following tables indicate the ports to reserve for use with the OT Security ICP and OT Security Sensors as well as those needed for running Active Queries and for integration with Tenable Vulnerability Management and Tenable Security Center.

> **Note**: For information about the list of Tenable websites and domains that you must allow through the firewall, see the Knowledge Base article.

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.
Outbound	TCP 443 and TCP 28305	OT Security EM	ICP and EM pairing
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 *.nessus.org	Automatic Plugin, Application, and OS Updates**
Outbound	TCP 10146 (secure port)	IoT Connector	Connects ICP to IoT connector agent

*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 Queries.

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	UDP and 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 OT Security ICP

Objective: Get the OT Security ICP installed and ready for use.

Before you Begin

- See Prerequisites.

Follow these steps as required to install and connect OT Security ICP to the network:

- Install OT Security ICP Hardware Appliance

  > **Note**: Tenable-provided Tenable Core hardware comes with Tenable Core+ OT Security pre-installed. If you are installing an older or dated appliance, you might opt for a clean install. For more information, see Clean Install Tenable Core + Tenable OT Security on Tenable-Provided Hardware.

- Install OT Security ICP Virtual Appliance

Next Step

- Connect OT Security to the Network

Install OT Security ICP Hardware 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.

Tip: Tenable recommends that you complete the basic configuration and setup described in Set up Tenable Core and OT Security setup wizard at the comfort of your desk, before moving the appliance to a rack or any other remote location.

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).

For more information about connectivity, see Network Considerations.

What to do next

Connect OT Security to the Network

Clean Install Tenable Core + Tenable OT Security on Tenable-Provided Hardware

Tenable Core + OT Security are pre-installed out-of-the-box on official Tenable-provided hardware. In some cases, a clean-install (also referred to as re-flashing) is recommended.

> **Note**: If you have recently received a new appliance, you can skip this procedure.

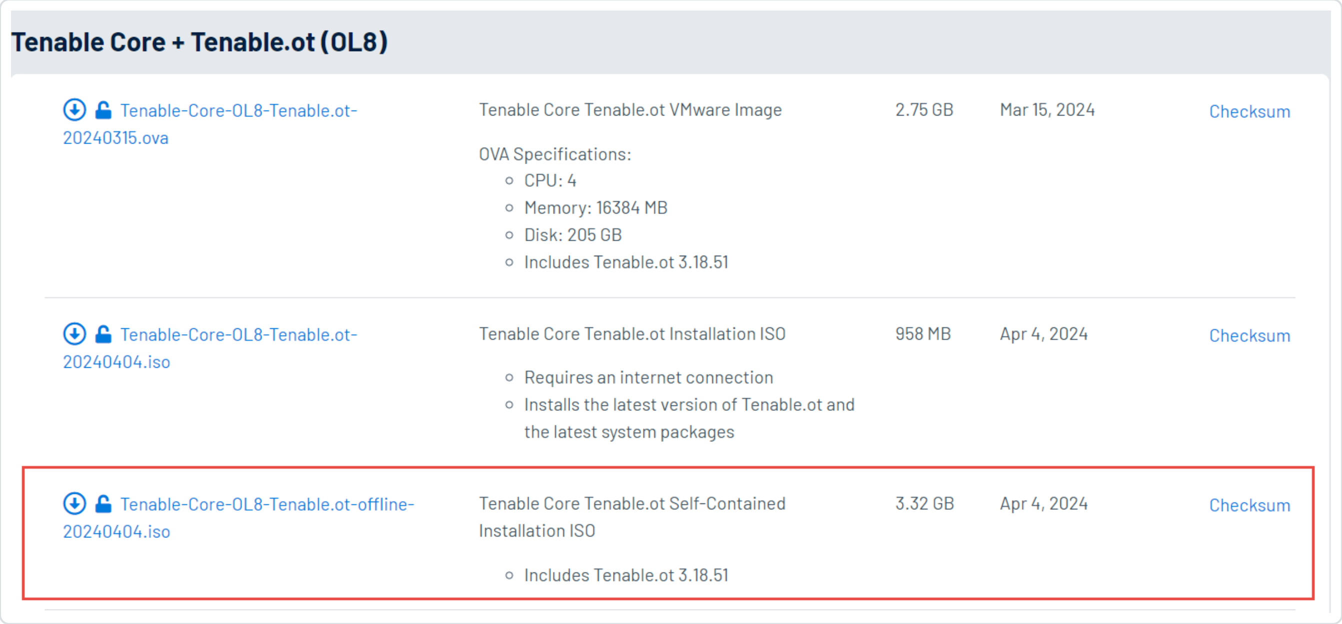
Before you Begin

Make sure you have the following:

- An application to format and create bootable USB flash drives, such as Rufus.
- A serial cable.
- A serial terminal application, such as PuTTY.
- A USB drive ~8 GB+.

To install Tenable Core + OT Security ISO file:

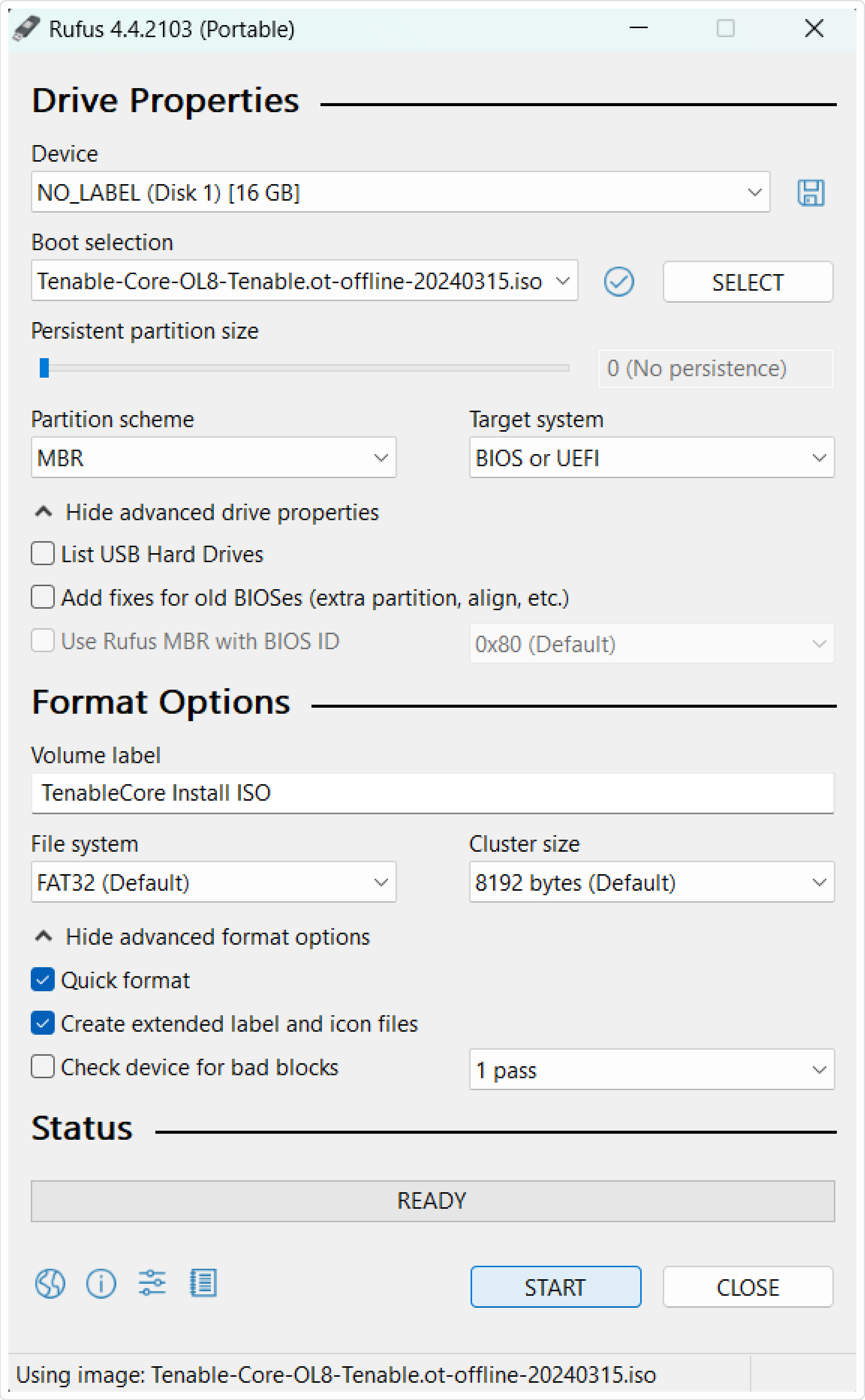
1. Download the latest Offline ISO file from Tenable Downloads.



Tenable Core + Tenable.ot (OL8)

Tenable-Core-OL8-Tenable.ot-20240315.ova	Tenable Core Tenable.ot VMware Image OVA Specifications: ○ CPU: 4 ○ Memory: 16384 MB ○ Disk: 205 GB ○ Includes Tenable.ot 3.18.51	2.75 GB	Mar 15, 2024	Checksum
Tenable-Core-OL8-Tenable.ot-20240404.iso	Tenable Core Tenable.ot Installation ISO ○ Requires an internet connection ○ Installs the latest version of Tenable.ot and the latest system packages	958 MB	Apr 4, 2024	Checksum
Tenable-Core-OL8-Tenable.ot-offline-20240404.iso	Tenable Core Tenable.ot Self-Contained Installation ISO ○ Includes Tenable.ot 3.18.51	3.32 GB	Apr 4, 2024	Checksum

2. Plug the USB drive into a PC and flash the ISO onto the flash drive in DD mode.



Rufus 4.4.2103 (Portable)

Drive Properties

Device: NO_LABEL (Disk 1) [16 GB]

Boot selection: Tenable-Core-OL8-Tenable.ot-offline-20240315.iso

Persistent partition size: 0 (No persistence)

Partition scheme: MBR

Target system: BIOS or UEFI

☐ List USB Hard Drives

☐ Add fixes for old BIOSes (extra partition, align, etc.)

☐ Use Rufus MBR with BIOS ID: 0x80 (Default)

Format Options

Volume label: TenableCore Install ISO

File system: FAT32 (Default)

Cluster size: 8192 bytes (Default)

☑ Quick format

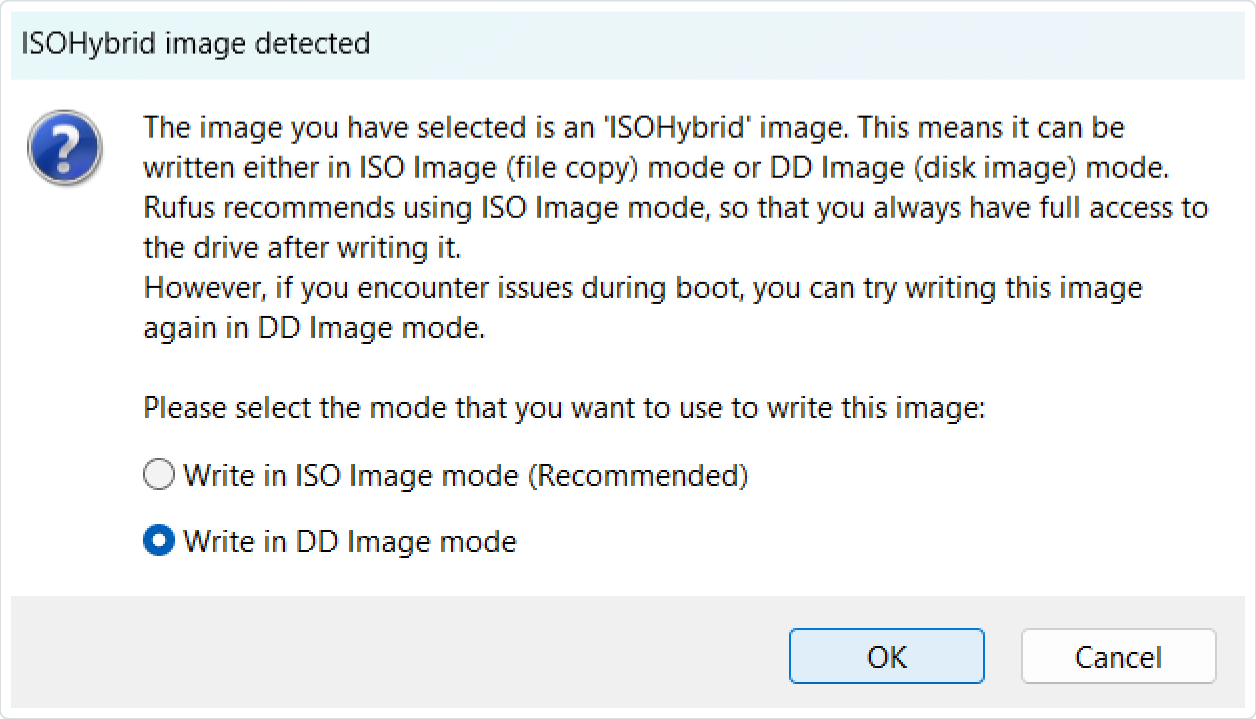
☑ Create extended label and icon files

☐ Check device for bad blocks: 1 pass

Status

READY

Using image: Tenable-Core-OL8-Tenable.ot-offline-20240315.iso



ISOHybrid image detected

The image you have selected is an 'ISOHybrid' image. This means it can be written either in ISO Image (file copy) mode or DD Image (disk image) mode. Rufus recommends using ISO Image mode, so that you always have full access to the drive after writing it.
However, if you encounter issues during boot, you can try writing this image again in DD Image mode.

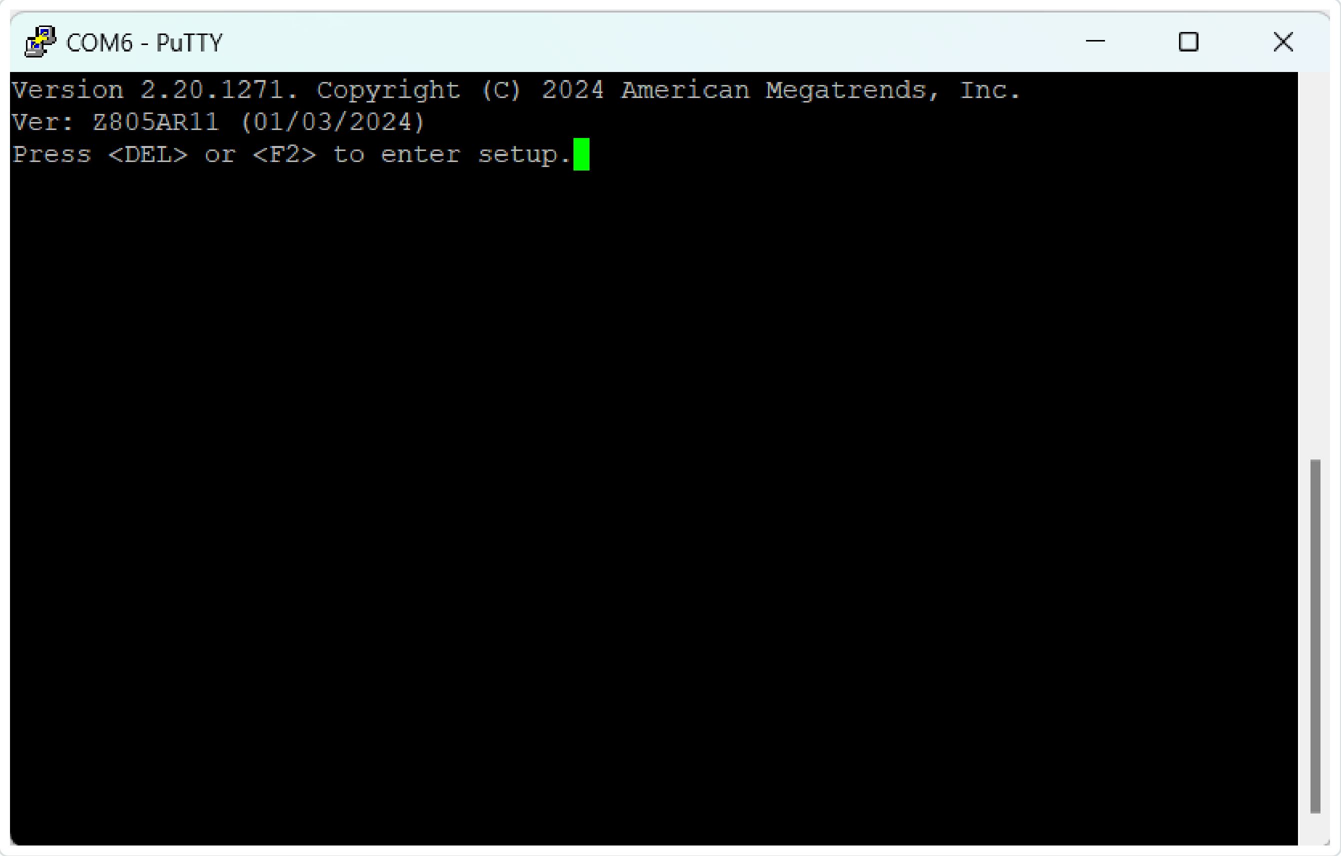
Please select the mode that you want to use to write this image:

○ Write in ISO Image mode (Recommended)

● Write in DD Image mode

3. When finished, plug the USB drive into a USB port on the OT Security appliance.

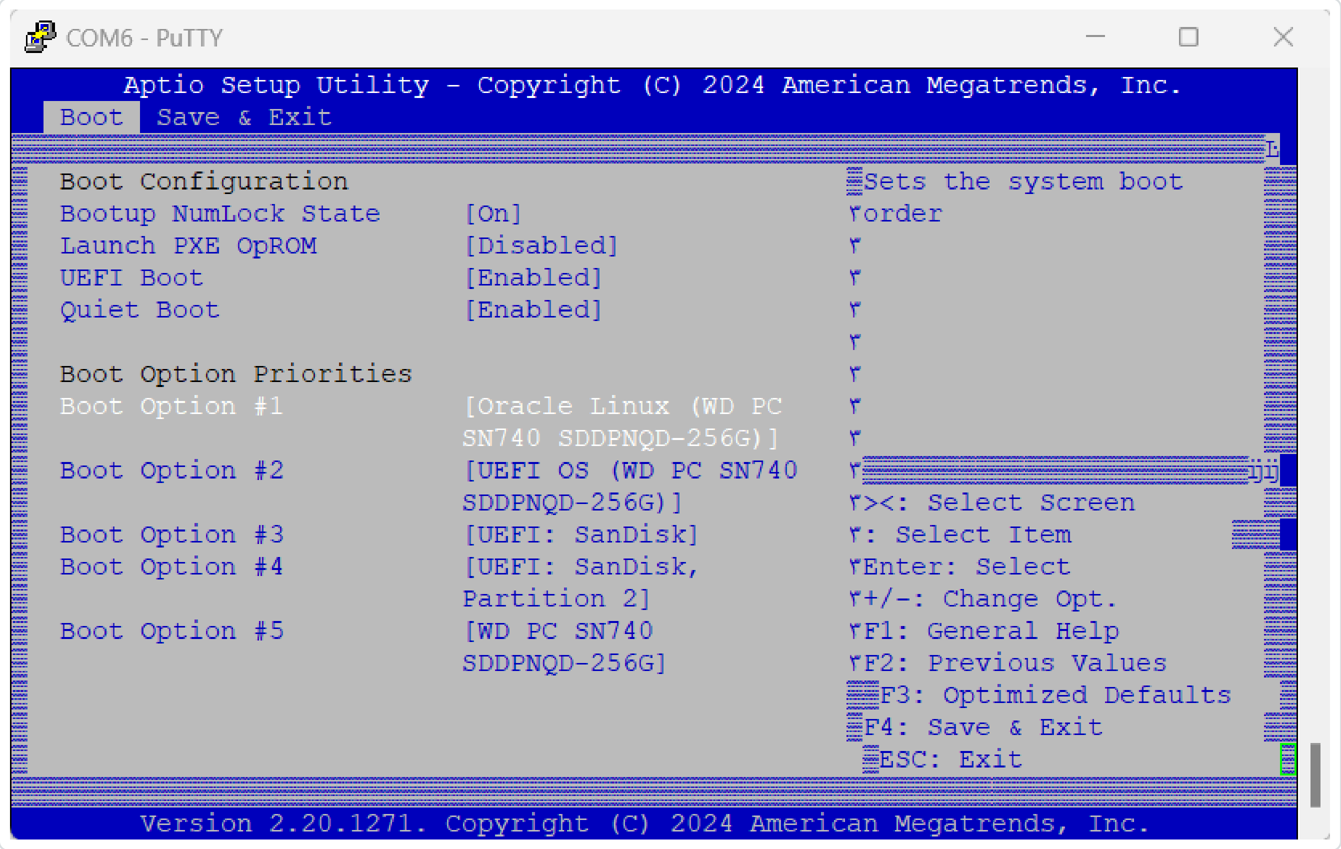
4. Connect to the appliance via the Console Serial interface (Baud rate of 115200 bps with an 8N1 configuration), and power it on.



```
Version 2.20.1271. Copyright (C) 2024 American Megatrends, Inc.
Ver: Z805AR11 (01/03/2024)
Press <DEL> or <F2> to enter setup.
```

5. When prompted, press <DEL> to enter the setup.

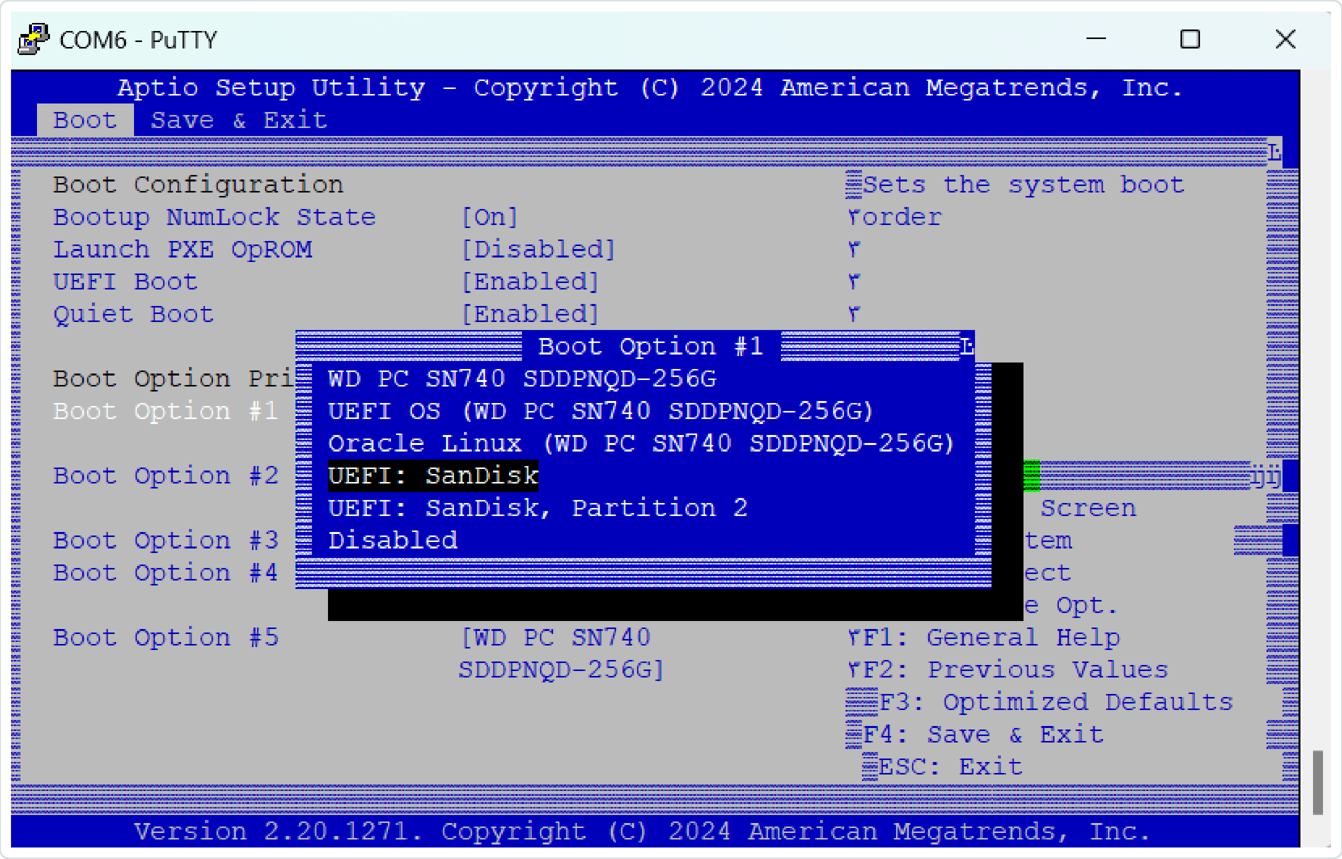
6. In the system setup, use the arrow keys to navigate to the **Boot** section.



```
     Aptio Setup Utility - Copyright (C) 2024 American Megatrends, Inc.
  Boot  Save & Exit

   Boot Configuration                                   Sets the system boot
   Bootup NumLock State       [On]                      order
   Launch PXE OpROM           [Disabled]
   UEFI Boot                  [Enabled]
   Quiet Boot                 [Enabled]

   Boot Option Priorities
   Boot Option #1             [Oracle Linux (WD PC
                              SN740 SDDPNQD-256G)]
   Boot Option #2             [UEFI OS (WD PC SN740
                              SDDPNQD-256G)]            ><: Select Screen
   Boot Option #3             [UEFI: SanDisk]           : Select Item
   Boot Option #4             [UEFI: SanDisk,           Enter: Select
                              Partition 2]              +/-: Change Opt.
   Boot Option #5             [WD PC SN740              F1: General Help
                              SDDPNQD-256G]             F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit

      Version 2.20.1271. Copyright (C) 2024 American Megatrends, Inc.
```

7. Select **Boot Option #1**, and change it to your USB drive.

> **Note**: Use the Unified Extensible Firmware Interface (UEFI) option.



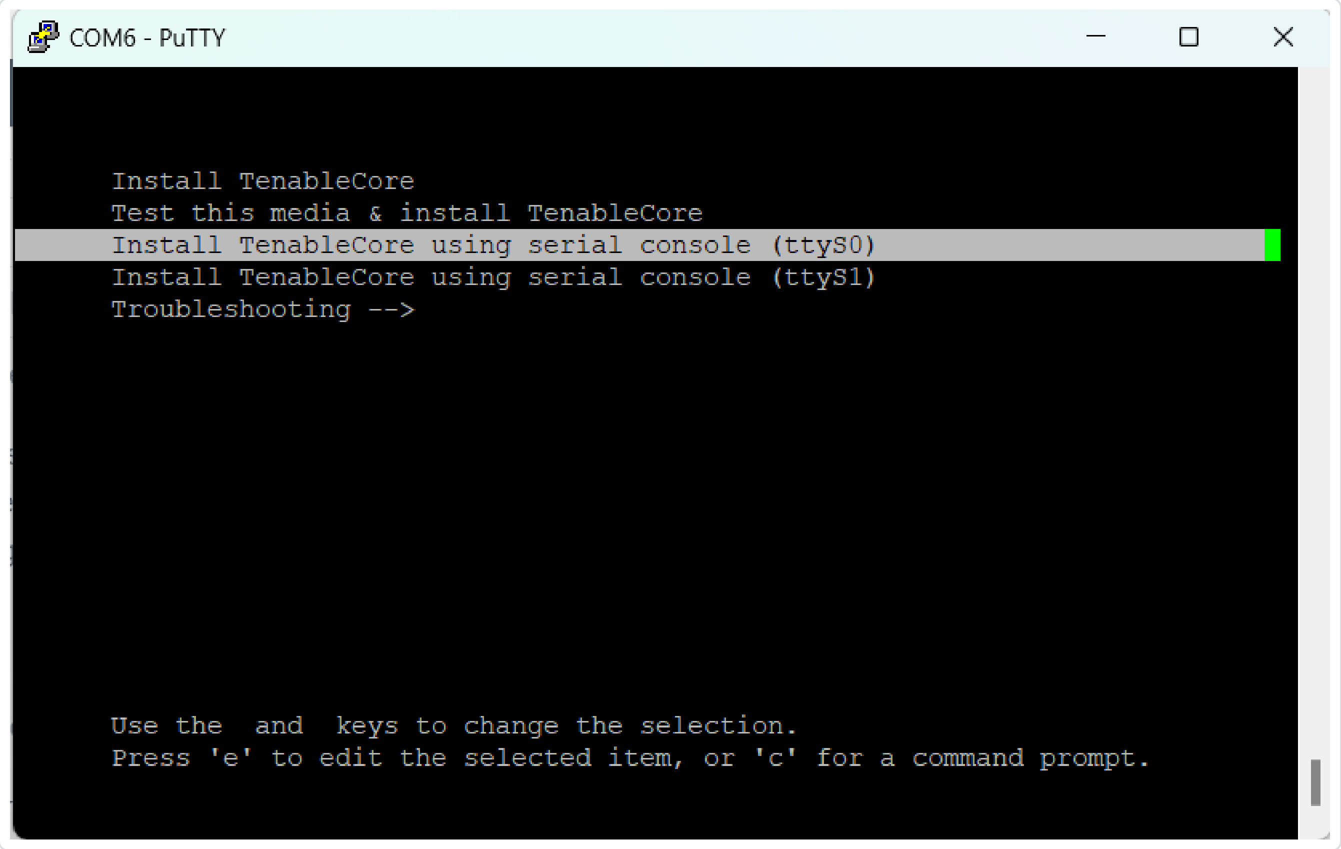
```
       Aptio Setup Utility - Copyright (C) 2024 American Megatrends, Inc.
  Boot   Save & Exit

  Boot Configuration                                  Sets the system boot
  Bootup NumLock State        [On]                    order
  Launch PXE OpROM            [Disabled]
  UEFI Boot                   [Enabled]
  Quiet Boot                  [Enabled]
                            Boot Option #1
  Boot Option Pri   WD PC SN740 SDDPNQD-256G
  Boot Option #1    UEFI OS (WD PC SN740 SDDPNQD-256G)
                    Oracle Linux (WD PC SN740 SDDPNQD-256G)
  Boot Option #2    UEFI: SanDisk
                    UEFI: SanDisk, Partition 2                Screen
  Boot Option #3    Disabled                                 tem
  Boot Option #4                                             ect
                                                             e Opt.
  Boot Option #5              [WD PC SN740                F1: General Help
                              SDDPNQD-256G]               F2: Previous Values
                                                           F3: Optimized Defaults
                                                          F4: Save & Exit
                                                           ESC: Exit
     Version 2.20.1271. Copyright (C) 2024 American Megatrends, Inc.
```

> **Note**: You can use "One-shot boot" on appliances that support the feature.

8. In the **Save & Exit** section, select **Save Changes and Reset**.

9. After the appliance restarts, and at the prompt, select **Install TenableCore using serial console (ttyS0)**. This ensures that the installation output is pushed into the serial console connection of the appliance.

> **Note**: If your hardware supports a monitor output (VGA, HDMI, and so on), you can select the **Install TenableCore** option. In this case, the output of the installation appears on your connected monitor.



```
      Install TenableCore
      Test this media & install TenableCore
      Install TenableCore using serial console (ttyS0)
      Install TenableCore using serial console (ttyS1)
      Troubleshooting -->







      Use the  and  keys to change the selection.
      Press 'e' to edit the selected item, or 'c' for a command prompt.
```

Allow the appliance to finish the installation. The system might reboot multiple times. The installation is complete when a login prompt appears. The system might shut down after the installation completes, by design on some appliances.

> **Note**: The system might perform a few installation procedures even after the login prompt appears. Tenable recommends that you wait a few minutes before starting the Tenable Core setup wizard.

10. Unplug the USB drive only after the installation is complete.

What to do next

[Connect OT Security to the Network]

Install OT Security ICP Virtual Appliance

To deploy Tenable Core + OT Security as a VMware virtual machine, you must download the Tenable Core + OT Security `.ova` file and deploy it on a hypervisor.

Note: If deploying the `.iso` file instead of the pre-configured `.ova`:

- Follow the system requirements for Tenable Core + OT Security.
- When prompted to choose a setup method, select **Install Tenable Core**. See Clean Install Tenable Core + Tenable OT Security.
- Follow and monitor the installation process using the installation user interface via the virtual machine console. The installation process is fully automated and so do not interact with the system until the installation is fully complete.

Before you begin:

- Confirm your environment supports your intended use of the instance, as described in System Requirements.
- Confirm your internet and port access supports your intended use of the instance, as described in Access Requirements.

To deploy Tenable Core + OT Security as a virtual machine:

1. Download the Tenable Core + OT Security `.ova` file from the Tenable Downloads page.
2. Open your VMware virtual machine in the hypervisor.
3. Import the Tenable Core + OT Security VMware `.ova` from your computer to your virtual machine.
   For information about configuring your virtual machines, see the VMware documentation.
4. In the setup prompt, configure the virtual machine to meet your organization's storage needs and requirements, and those described in OT Security System Requirements.
5. Launch your Tenable Core + OT Security instance.

   The virtual machine boot process appears in a terminal window. The boot process may take several minutes to complete.

   Note:The system might perform a few last installation procedures even after the login prompt appears.Tenable recommends that you wait a few minutes before starting the Tenable Core setup wizard.

Tip: If you want to increase your disk space to accommodate your organization's data storage needs, see Disk Management.

What to do next

Connect OT Security to the Network

Connect OT Security to the Network

You can use OT Security for both Network Monitoring and Active Query. Make sure that you prepare your network infrastructure accordingly. For more information, see Network Considerations.

Management and Active Query

Connect the selected network interface to a network switch interface configured to allow management connectivity to the ICP as required.

Make sure to configure an IP address and other connectivity settings on the selected OT Security appliance interface via Tenable Core.

If you want to separate the Management and the Active Query roles, make sure each selected interface is connected to its dedicated switch interface. Assign IP addresses for each and configure the switch interfaces as needed to allow network reachability for both functionalities.

For more information, see Management and Active Query Roles Separation (Split-Port).

Network Monitoring

Connect one or more of the appliance interfaces selected for passive network monitoring to a configured port-mirroring destination (SPAN/RSPAN) interface on a network switch. You must configure port-mirroring to allow proper visibility of the OT network protocols and communications.

Note: You can use OT Sensors or Encapsulated Remote SPAN (ERSPAN) to capture traffic that cannot be directly monitored by the appliance interfaces.

To connect the OT Security appliance to the network:

On a hardware appliance:

Tenable-provided hardware appliances may come with various quantities and types (RJ45 or SFP) of network interfaces. OT Security comes pre-installed with the default interfaces selected for each role. You may change this configuration at a later stage as required.

On non-Tenable-provided hardware, you must select interfaces for each role before manually initiating the OT Security installation process. Make sure to correctly utilize the available interfaces for each role.

On a virtual appliance:

If you deployed the appliance using the `.ova` file, the appliance comes pre-configured with four network interfaces. You can add additional network adapters/interfaces during the deployment or at a later stage.

If you deployed a custom virtual appliance using the `.iso` or `.zip` (Hyper-V) file, configure the required number of network interfaces.

Make sure to configure the virtual machine as per the requirements described in System Requirements. For more information on configuring networking on virtual machines, see the VMware documentation or the Hyper-V documentation.

Configure OT Security ICP

Objective: Prepare the software for activation.

After you install OT Security ICP, you can configure your OT Security. Configuration involves the following steps:

1. Set up Tenable Core — Complete the initial setup for Tenable Core via CLI or the user interface.

2. Install OT Security on Tenable Core — Complete your OT Security installation on Tenable Core.

3. Configure OT Security Settings using Setup Wizard — Configure basic settings of your OT Security ICP using the Setup Wizard.

Set up Tenable Core

You can do the initial configuration of Tenable Core from both the CLI and the Tenable Core user interface.

Using the Tenable Core user interface is mandatory to finish the configuration for virtual appliance deployments.

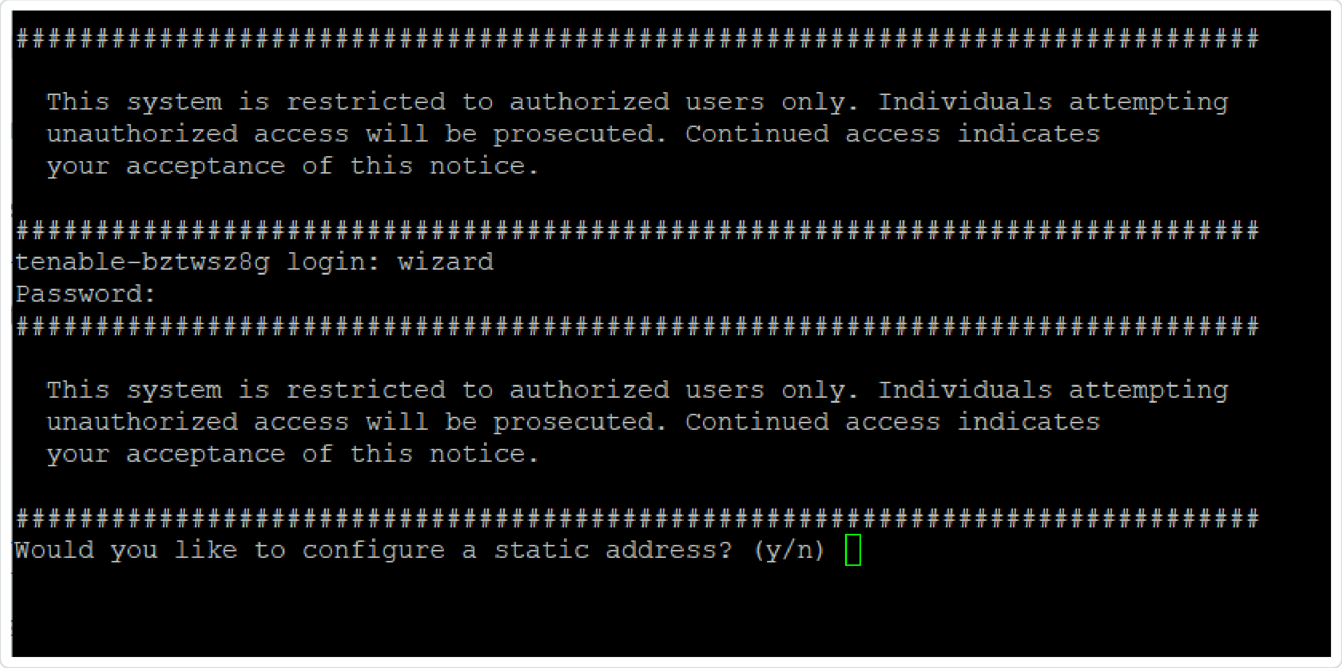
> **Note**: If you do not complete the setup wizard in ~30 minutes, restart the appliance.

Initial Configuration via CLI (Optional)

To configure Tenable Core using CLI:

1. Connect to the OT Security appliance using the serial console as described in Clean Install Tenable Core + OT Security.
2. Log in with username `wizard` and password `admin`.

   The **Network Manager** terminal interface appears.

   ```
   ##############################################################################

     This system is restricted to authorized users only. Individuals attempting
     unauthorized access will be prosecuted. Continued access indicates
     your acceptance of this notice.

   ##############################################################################
   tenable-bztwsz8g login: wizard
   Password:
   ##############################################################################

     This system is restricted to authorized users only. Individuals attempting
     unauthorized access will be prosecuted. Continued access indicates
     your acceptance of this notice.

   ##############################################################################
   Would you like to configure a static address? (y/n)
   ```

3. (Optional) To configure the management IP address, type **y**.
4. Press **Enter**.

   The **Edit Connection** window appears.

5. Navigate using the arrow keys and configure your required IP address, Default-Gateway, DNS Servers, and so on. You can change this configuration later.

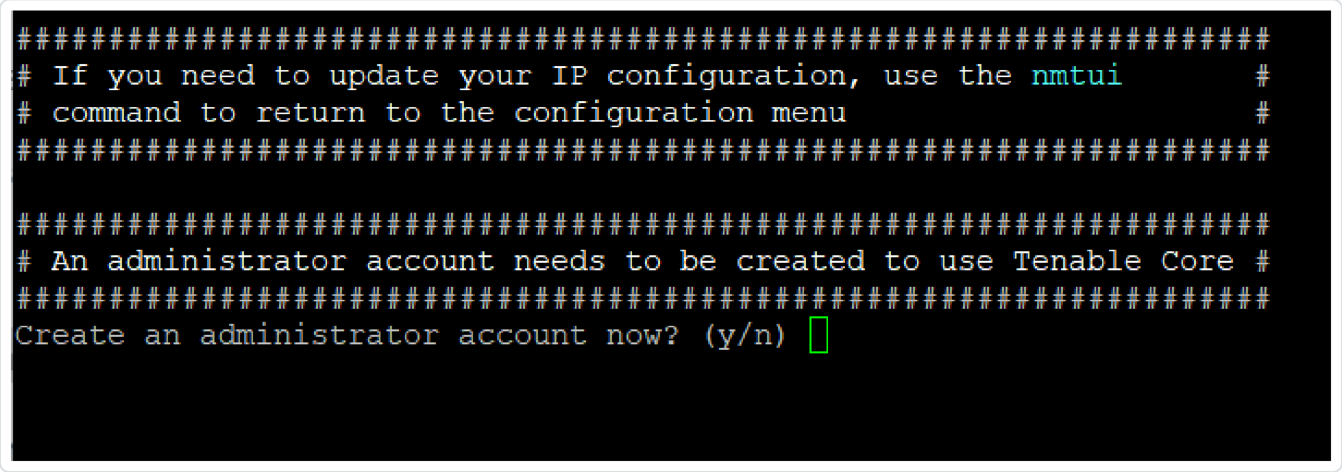
6. Using the down-arrow, navigate to the bottom of the screen and select **<OK>**.

   The **Network Manager** window appears.

7. Select **<Quit>**.

   > **Note**: By default `nic0` or System Port 1 is preconfigured with an IP address of 192.168.1.5/24. You can use this IP address to finish configuring the system using the Tenable Core interface (port 8000) from any IP network reachable PC.

8. Type **y** and follow the prompts to create an administrator account. Use this account only to log in to Tenable Core (terminal console, SSH, and the Tenable Core user interface). Use separate accounts for the OT Security application.



```
####################################################################
# If you need to update your IP configuration, use the nmtui       #
# command to return to the configuration menu                      #
####################################################################

####################################################################
# An administrator account needs to be created to use Tenable Core #
####################################################################
Create an administrator account now? (y/n)
```

9. After you create the account, use it to log in into the terminal via the console or using a network connection: via SSH or the Tenable Core interface (https://<mgmt-IP>:8000).

Initial Configuration via Tenable Core User Interface

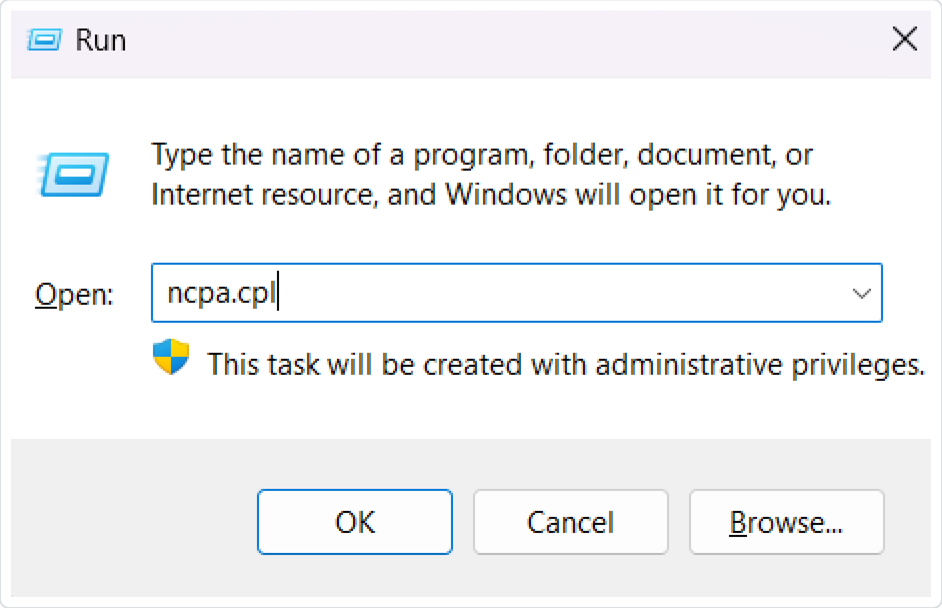
To complete the initial configuration via the Tenable Core user interface (available on https://<mgmt-IP>:8000) you need a working network connection to the appliance.

If you have not configured the management IP address, you can use either a directly connected PC or an appropriately configured network to reach the Tenable Core user interface on either of the following:

- **Port 1** — default management interface, pre-configured with IP address 192.168.1.5/24
- **Port 4** — engineering interface, pre-configured with IP address 192.168.3.3/24. If not changed later, this can be used for recovery procedures.

To connect to Tenable Core directly via your PC or laptop:

1. Connect an Ethernet cable between your PC and one of the pre-configured ports on the OT Security appliance.
2. On Windows, use **win+R** to open **Run** and type `ncpa.cpl` to open **Network Connections**.

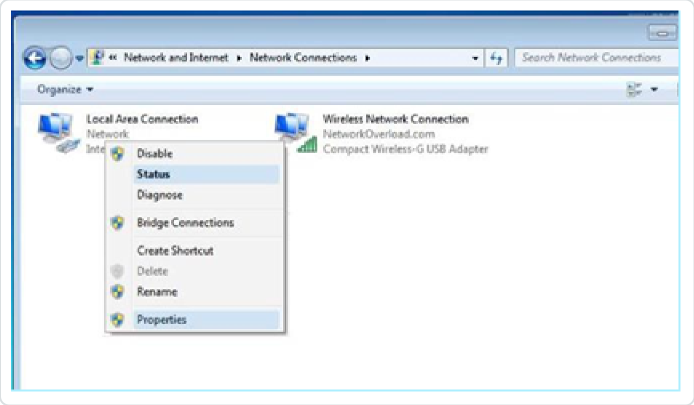


Run

Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

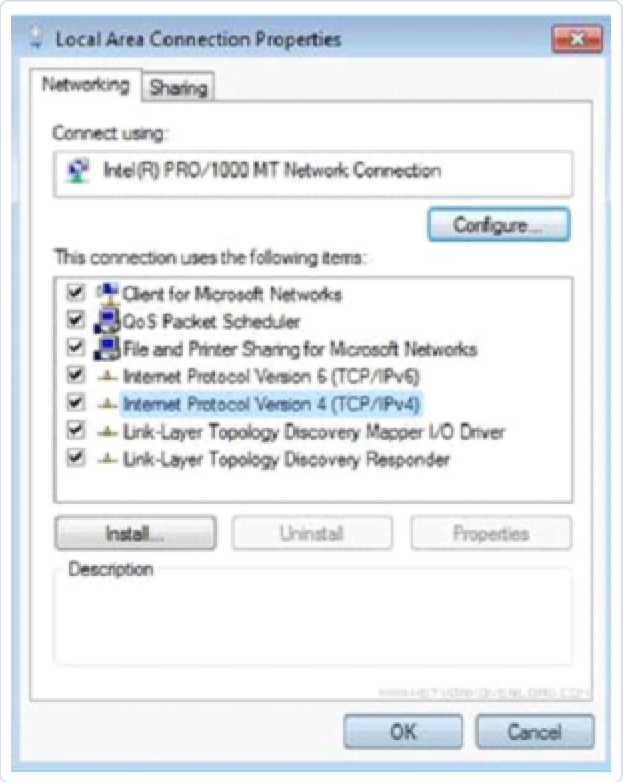
Open: ncpa.cpl

This task will be created with administrative privileges.



3. Right-click on your network connection (named **Local Area Connection**) and select **Properties**.

   The **Local Area Connection Properties** window appears.



Local Area Connection Properties

Connect using:

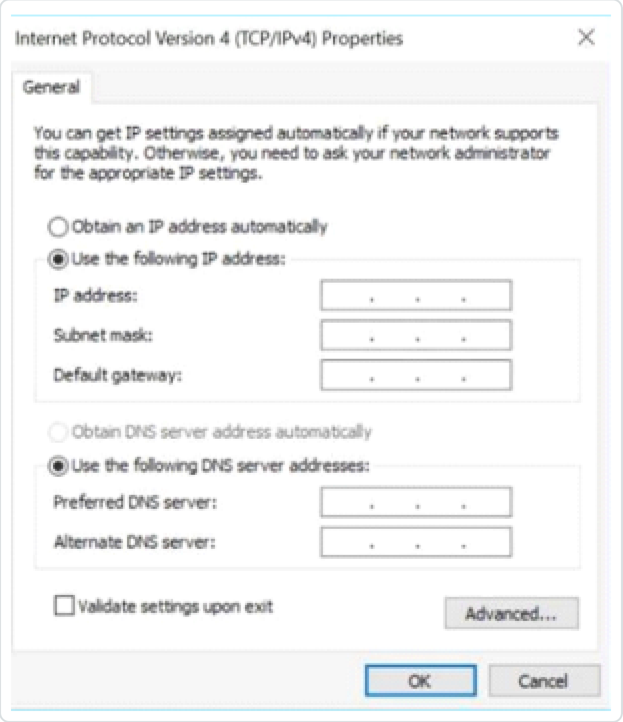
Intel(R) PRO/1000 MT Network Connection

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

4. 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

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

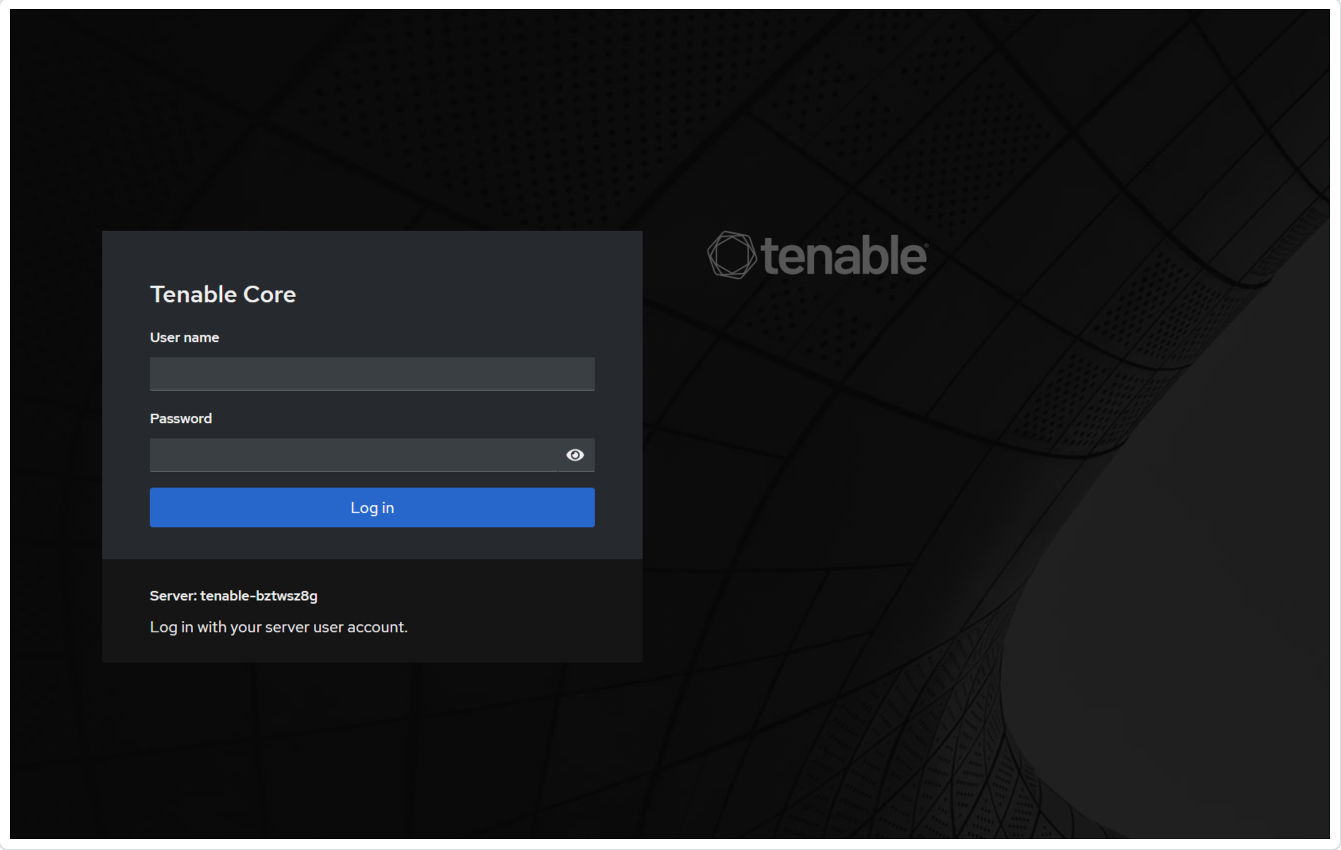
5. Select **Use the following IP address**.

6. In the **IP address** box, type an appropriate IP address for the interface you are connecting to. For example, 192.168.1.10 for the default address of Port 1 / nic0 or 192.168.3.10 for the default address of .

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

8. Click **OK**.

9. From your Chrome browser, navigate to https://<mgmt-ip>:8000.



Tenable Core

User name

Password

Server: tenable-bztwsz8g

Log in with your server user account.

10. If you have not yet configured the administrator user account, the system prompts you to do so now, then re-login with your newly created user. For more information, see Create an initial Administrator Account.

    After creating the administrator account, Tenable recommends that you configure the management IP address. If you intend to use the **split-port** configuration, make sure the interfaces can reach the appropriate networks. For more information, see Network Considerations.

Note: To configure or change the management IP address, log in to Tenable Core and enable administrative access and edit the network configuration.

What to do next

Install OT Security on Tenable Core

Install OT Security on Tenable Core

Tenable-provided hardware appliances come with the OT Security application pre-installed. When deploying OT Security on custom hardware or virtually, it is required to initiate the installation process manually.

Note:Before initiating the OT Security application installation, assign roles for each interface. Make sure that you configure the interfaces in Tenable Core and prepared the network infrastructure to allow proper connectivity. For more information, see Network Considerations and Connect OT Security to Network.

Before you begin

- Make sure you have Administrative access.
- Make sure that you have SSH or Cockpit access on Tenable Core virtual and physical appliances.

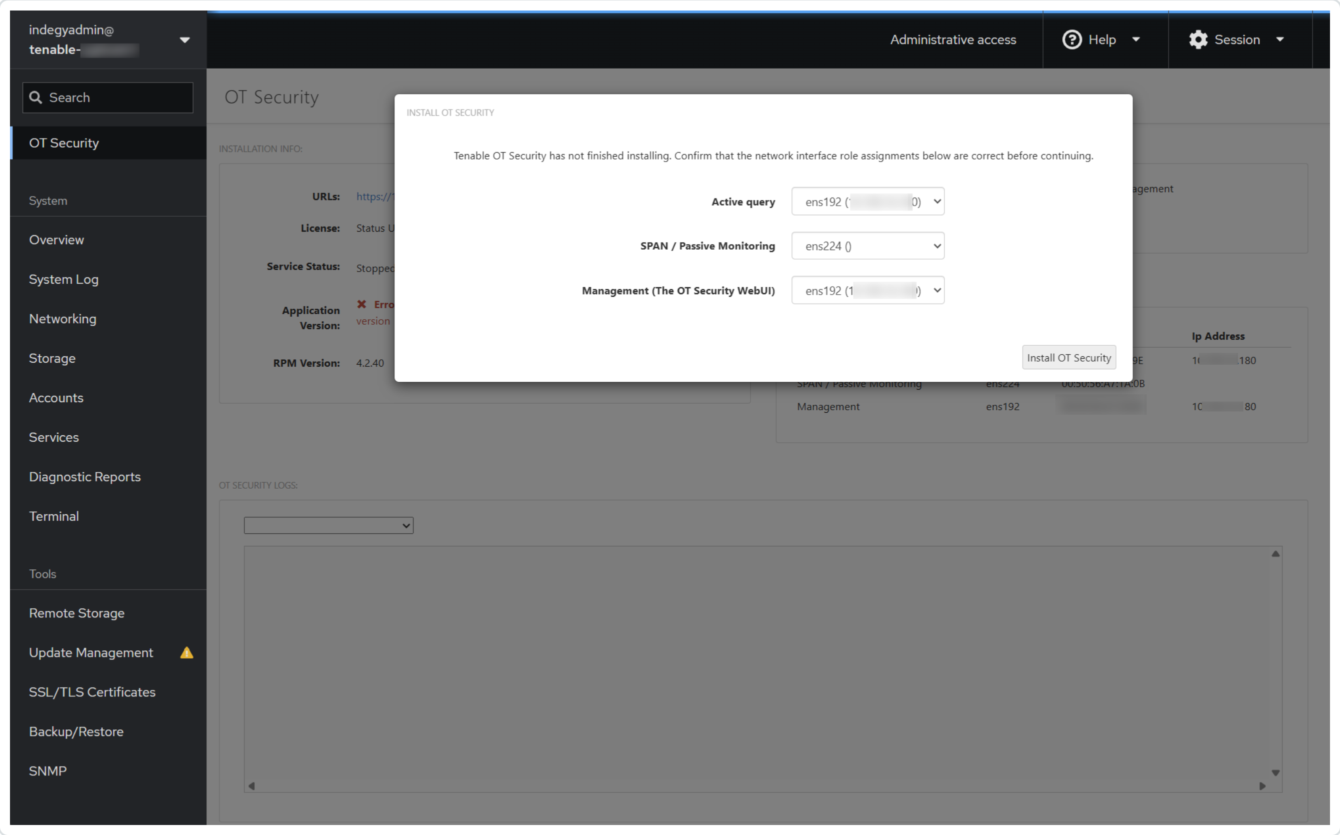
  Note: Administrator accounts can become inaccessible if you do not periodically sign in and update your password. If an administrative account gets locked due to password expiration, you can unlock the account using the remote unlock utility. This utility allows an ICP to remotely unlock its connected sensors and an OT Security Enterprise Manager (EM) to remotely unlock its connected ICPs in the event of an account lockout. For more information about using the utility, see the Knowledge Base article, Leveraging the Remote Unlock Feature in Tenable Core.

To install OT Security in Tenable Core:

1. Log in to Tenable Core from your Chrome browser: `https://<mgmt-ip>:8000`.
2. Navigate to **OT Security**.

   The OT Security page appears.

   Note: On virtual machines and non-Tenable hardware, you are prompted to install OT Security.



INSTALL OT SECURITY

Tenable OT Security has not finished installing. Confirm that the network interface role assignments below are correct before continuing.

Active query ens192 ([redacted]0)

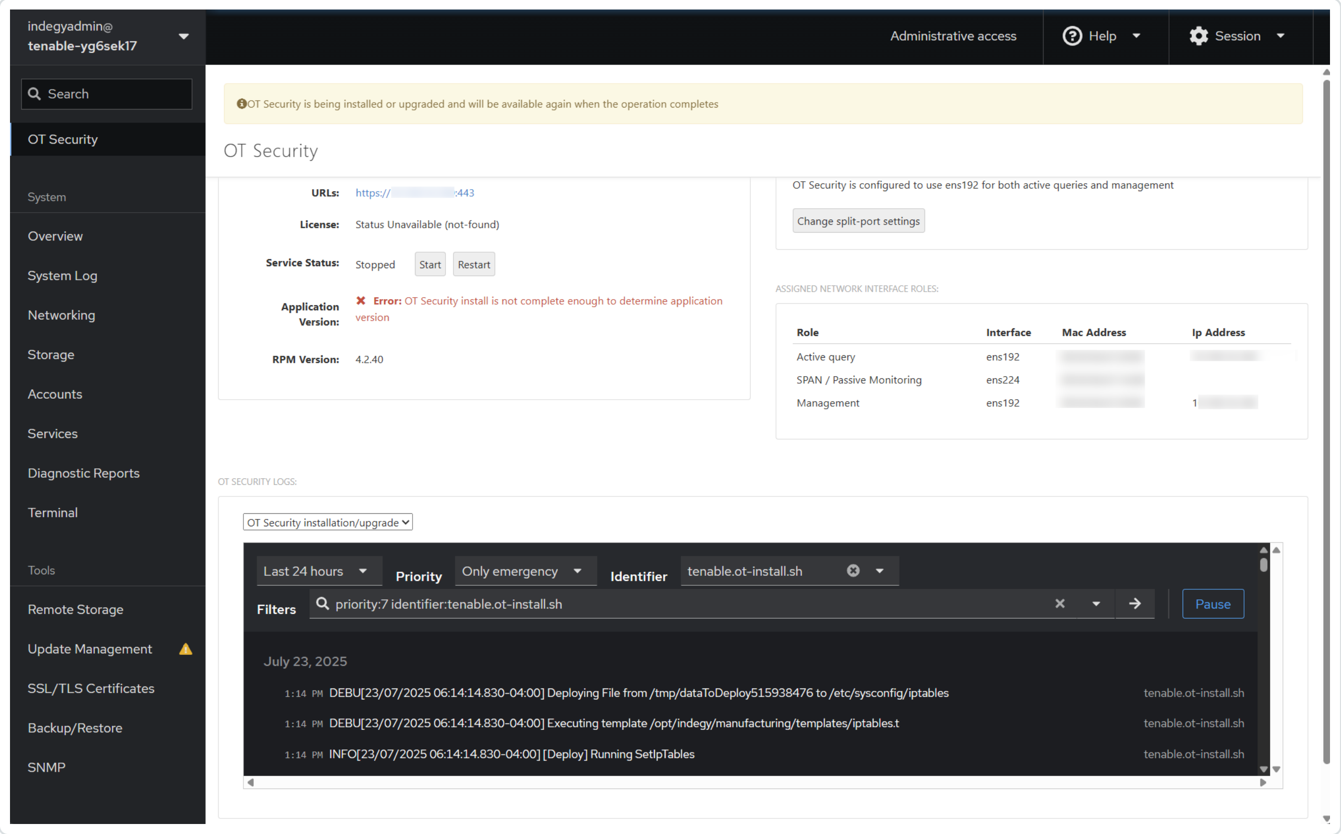
SPAN / Passive Monitoring ens224 ()

Management (The OT Security WebUI) ens192 (1[redacted])

Install OT Security

3. Click **Install Tenable OT Security**.

   Tenable Core initiates the installation and displays a yellow banner with the message: `OT Security is being installed or upgraded and will be available again when the operation completes`.



OT Security is being installed or upgraded and will be available again when the operation completes

OT Security

URLs: https://[redacted]:443

License: Status Unavailable (not-found)

Service Status: Stopped

Application Version: ✖ **Error:** OT Security install is not complete enough to determine application version

RPM Version: 4.2.40

OT Security is configured to use ens192 for both active queries and management

ASSIGNED NETWORK INTERFACE ROLES:

Role	Interface	Mac Address	Ip Address
Active query	ens192	[redacted]	[redacted]
SPAN / Passive Monitoring	ens224	[redacted]	
Management	ens192	[redacted]	1[redacted]

OT SECURITY LOGS:

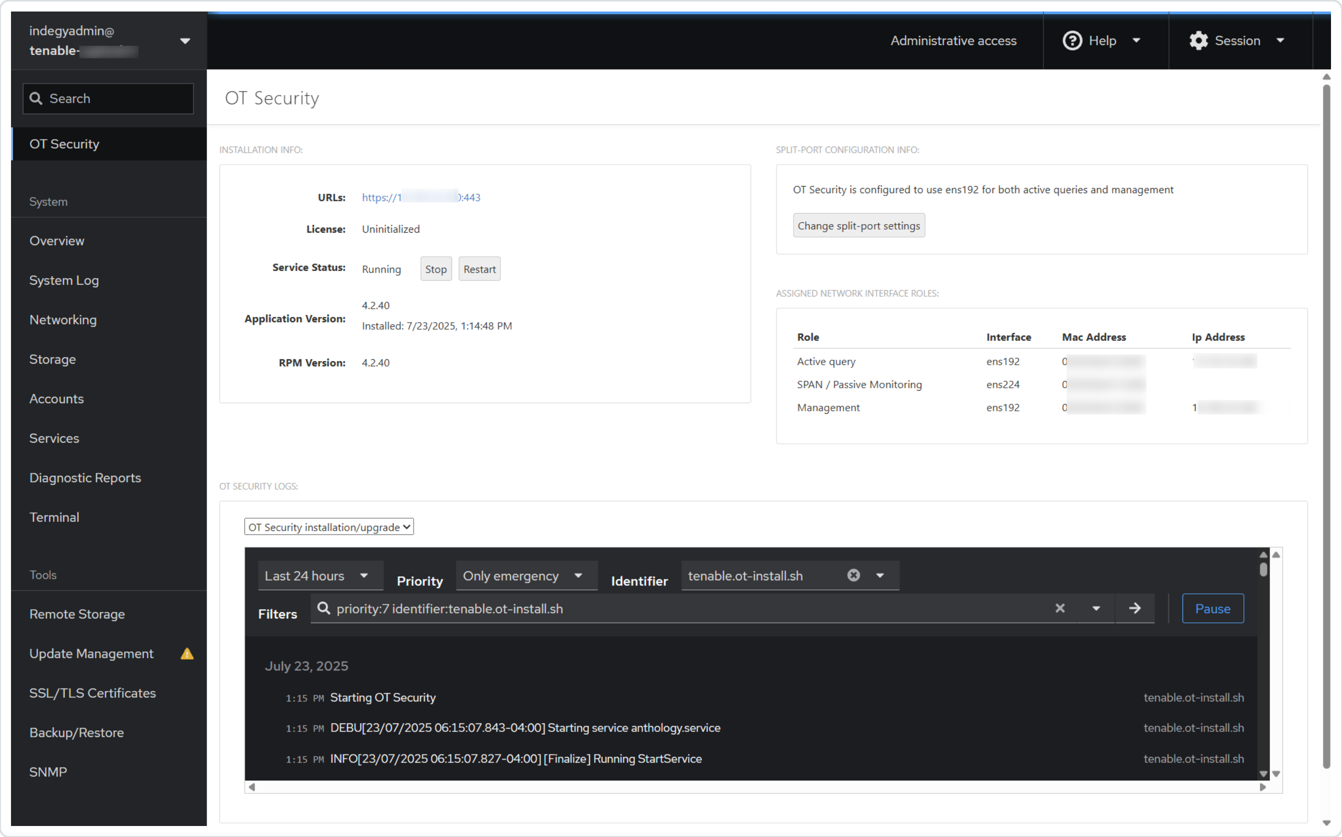
OT Security installation/upgrade

Last 24 hours | Priority: Only emergency | Identifier: tenable.ot-install.sh

Filters: priority:7 identifier:tenable.ot-install.sh

```
July 23, 2025

1:14 PM DEBU[23/07/2025 06:14:14.830-04:00] Deploying File from /tmp/dataToDeploy515938476 to /etc/sysconfig/iptables    tenable.ot-install.sh
1:14 PM DEBU[23/07/2025 06:14:14.830-04:00] Executing template /opt/indegy/manufacturing/templates/iptables.t    tenable.ot-install.sh
1:14 PM INFO[23/07/2025 06:14:14.830-04:00] [Deploy] Running SetIpTables    tenable.ot-install.sh
```

When the installation is complete, the yellow banner disappears and the **License** status changes from **Unavailable** to **Uninitialized** .



OT Security

INSTALLATION INFO:

URLs:	https://1[redacted]:443
License:	Uninitialized
Service Status:	Running Stop Restart
Application Version:	4.2.40 Installed: 7/23/2025, 1:14:48 PM
RPM Version:	4.2.40

SPLIT-PORT CONFIGURATION INFO:

OT Security is configured to use ens192 for both active queries and management

Change split-port settings

ASSIGNED NETWORK INTERFACE ROLES:

Role	Interface	Mac Address	Ip Address
Active query	ens192	0[redacted]	[redacted]
SPAN / Passive Monitoring	ens224	0[redacted]	
Management	ens192	0[redacted]	1[redacted]

OT SECURITY LOGS:

OT Security installation/upgrade

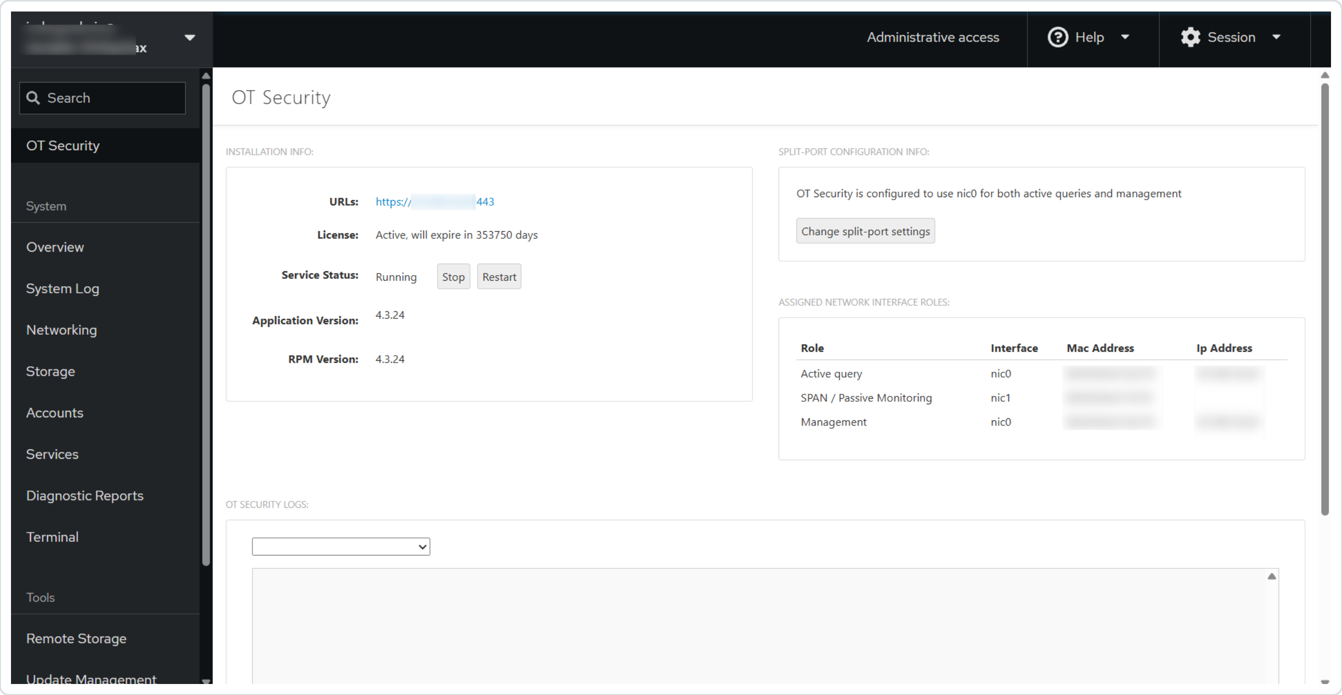
Last 24 hours Priority Only emergency Identifier tenable.ot-install.sh

Filters priority:7 identifier:tenable.ot-install.sh Pause

```
July 23, 2025
  1:15 PM Starting OT Security                                                                         tenable.ot-install.sh
  1:15 PM DEBU[23/07/2025 06:15:07.843-04:00] Starting service anthology.service                       tenable.ot-install.sh
  1:15 PM INFO[23/07/2025 06:15:07.827-04:00] [Finalize] Running StartService                          tenable.ot-install.sh
```

4. (Optional) Select the interface roles.

> **Note**: You can choose to retain the default configuration. The default interfaces configuration includes **Port 1**: Management + Active Query and **Port 2**: Passive Monitoring.



OT Security

INSTALLATION INFO:

URLs: https://[redacted]443

License: Active, will expire in 353750 days

Service Status: Running

Application Version: 4.3.24

RPM Version: 4.3.24

SPLIT-PORT CONFIGURATION INFO:

OT Security is configured to use nic0 for both active queries and management

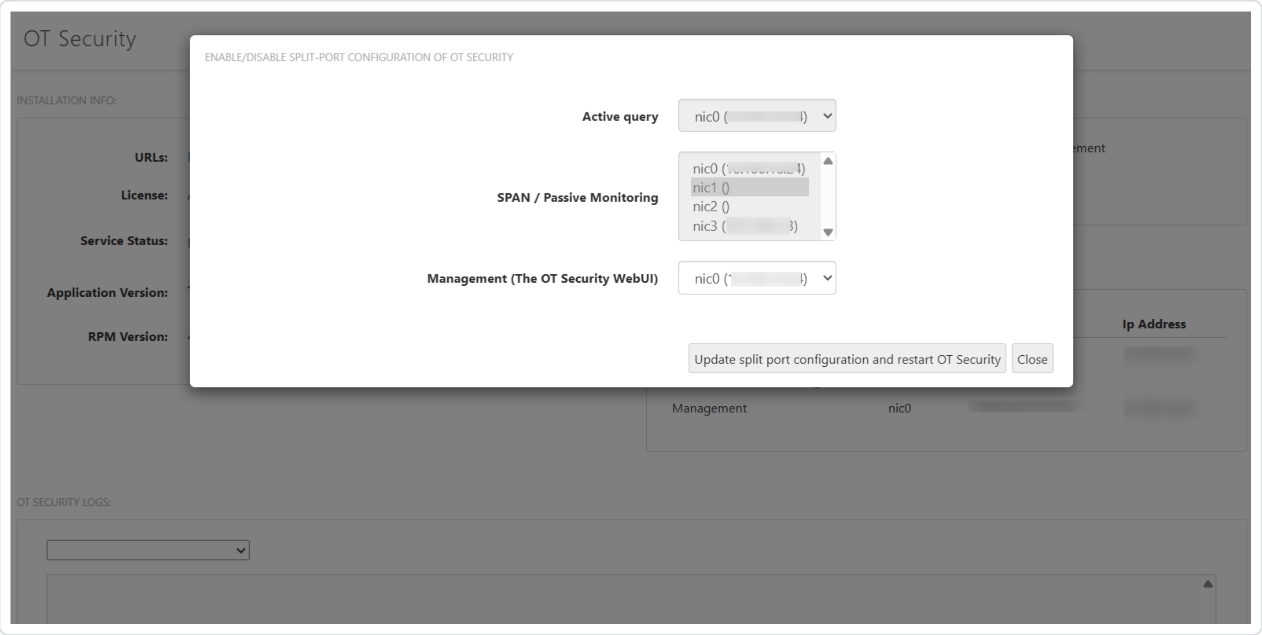
ASSIGNED NETWORK INTERFACE ROLES:

Role	Interface	Mac Address	Ip Address
Active query	nic0	[redacted]	[redacted]
SPAN / Passive Monitoring	nic1	[redacted]	
Management	nic0	[redacted]	[redacted]

OT SECURITY LOGS:

a. In the **Split Port Configuration Info** section, click **Change split-port settings**.

The **Enable/Disable Split Configuration of OT Security** window appears.



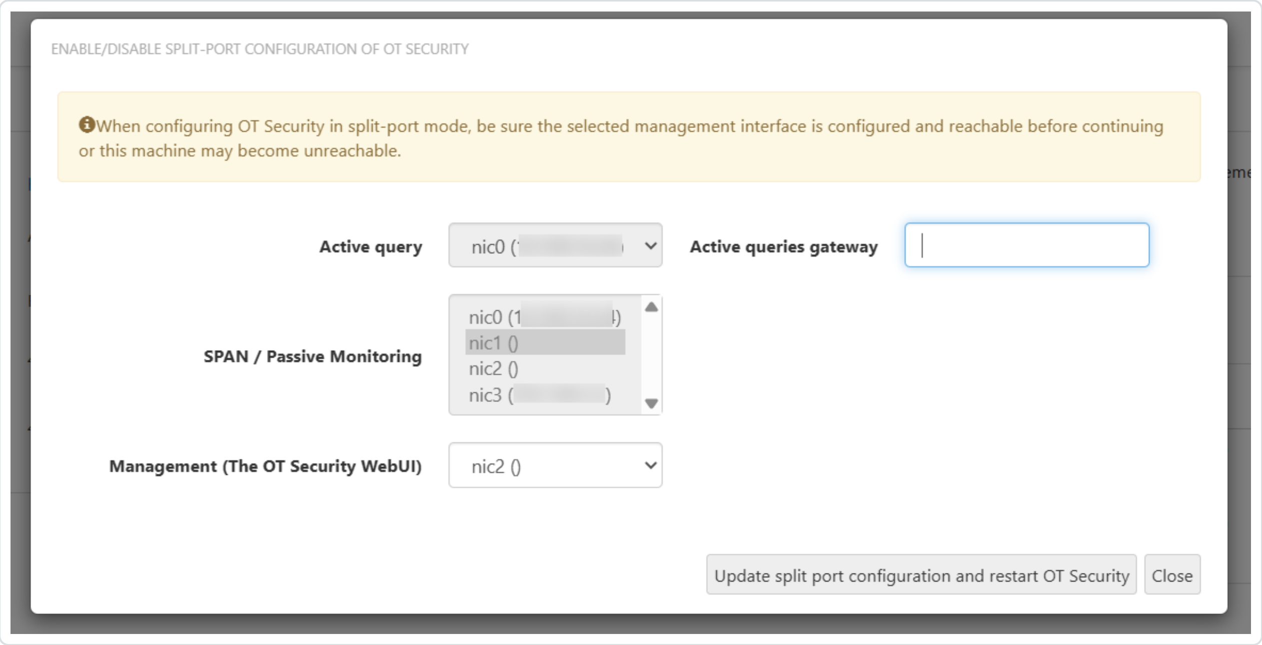
ENABLE/DISABLE SPLIT-PORT CONFIGURATION OF OT SECURITY

Active query nic0 ([redacted])

SPAN / Passive Monitoring nic0 ([redacted]) nic1 () nic2 () nic3 ([redacted])

Management (The OT Security WebUI) nic0 ([redacted])

b. In the **Management (The OT Security Web UI)** box, move the management port to another interface, for example, Port 3.



ENABLE/DISABLE SPLIT-PORT CONFIGURATION OF OT SECURITY

When configuring OT Security in split-port mode, be sure the selected management interface is configured and reachable before continuing or this machine may become unreachable.

Active query: nic0 ([redacted]

Active queries gateway:

SPAN / Passive Monitoring: nic0 (1[redacted]) nic1 () nic2 () nic3 ([redacted])

Management (The OT Security WebUI): nic2 ()

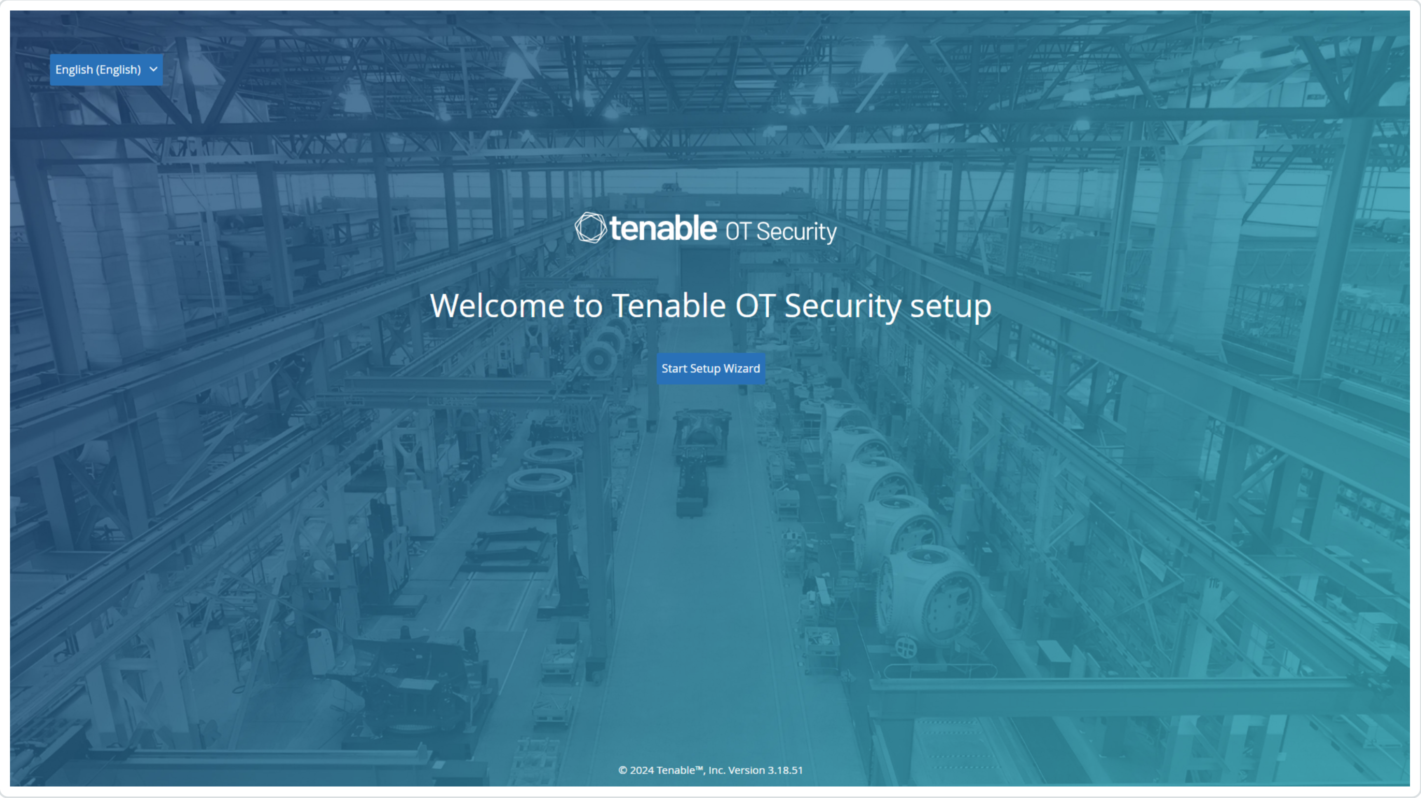
c. (Optional) In the **Active queries gateway** box, provide the gateway IP address.

d. Click **Update split-port configuration and restart OT Security**.

Tenable Core initiates a restart or installation as required.

Caution: Do not install other updates or restart at this stage. The installation process may take some time to complete. Do not disrupt the installation process.

When the installation is complete, you can click the link in the **URLs** box to log in to the OT Security user interface.



Welcome to Tenable OT Security setup

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What to do next

[Configure OT Security Settings using Setup Wizard](#)

Configure OT Security Settings using Setup Wizard

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

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

To access the setup wizard, you must first log into the OT Security management console. For information about how to log into the management console, see Log into the OT Security Management Console

Configure the following using the setup wizard:

1. User Info
2. Device
3. Connect and Configure Management and Active Query Port Separation

> **Note**: After you complete the setup wizard, OT Security prompts you to restart the system.

Log into the OT Security Management Console

To log into the OT Security management console:

1. Do one of the following:

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

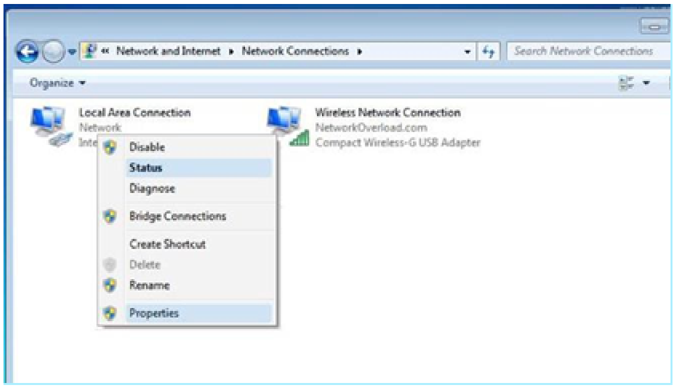
   - Connect the Management Console workstation to the network switch.

   > **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**.

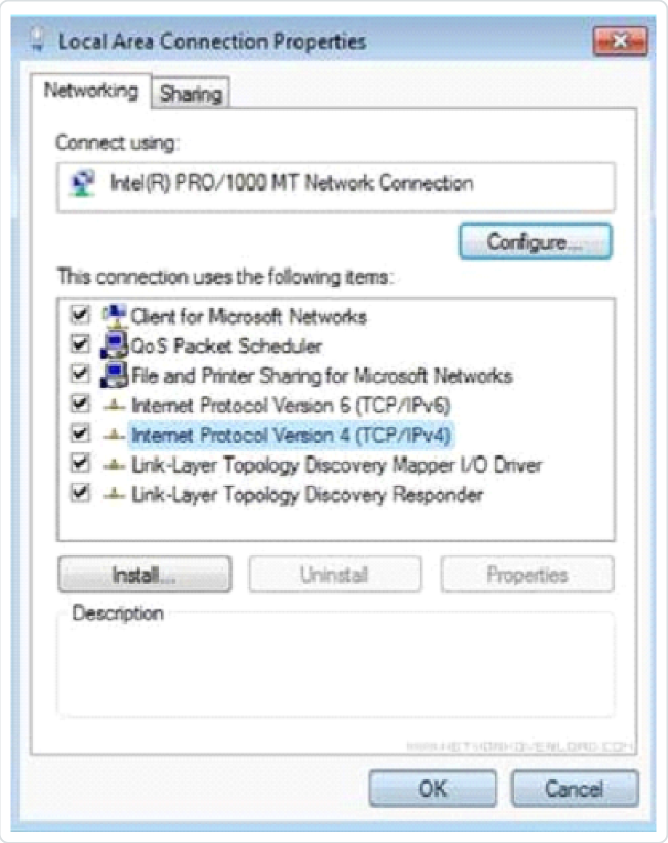
   The **Network Connections** screen appears.



   > **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

Connect using:

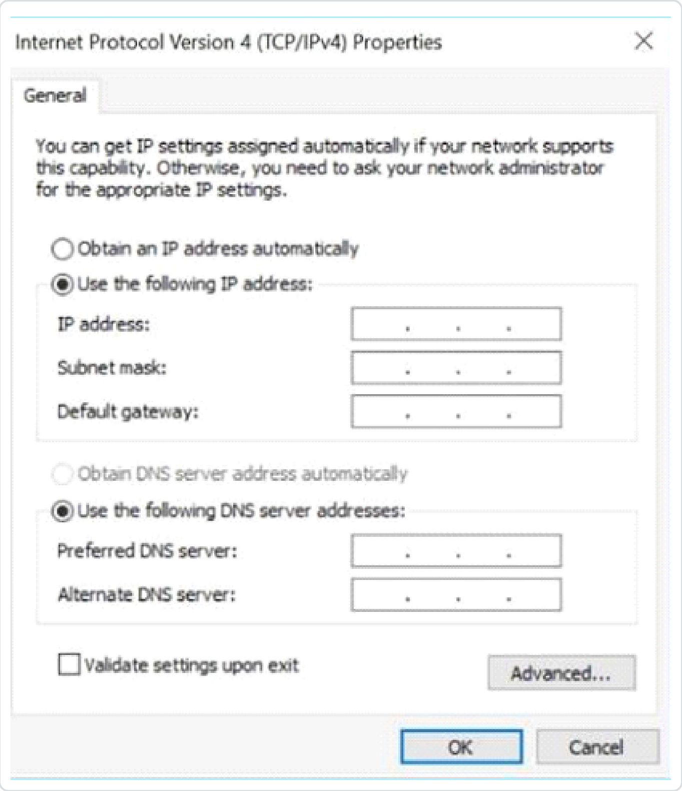
Intel(R) PRO/1000 MT Network Connection

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.

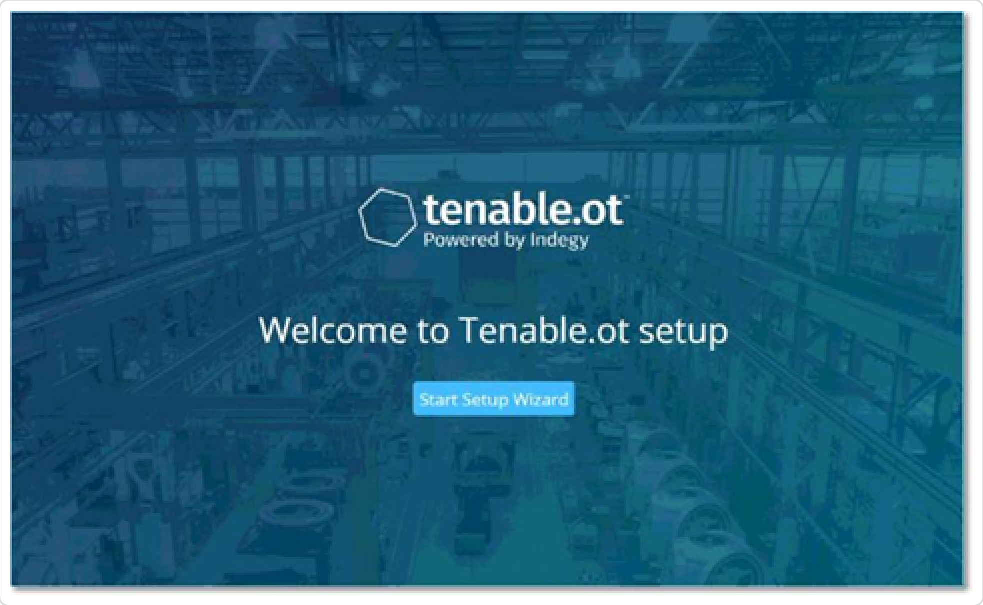
f. In the **Subnet mask** box, type 255.255.255.0.

g. Click **OK**.

OT Security applies the new settings.

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

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



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

i. Click **Start Setup Wizard**.

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

What to do next

User Info

User Info

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

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

User Info

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 password.

6. Click **Next**.

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

What to do next

Configure the Device

Device

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

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

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

What to do next

Connect and Configure Management and Active Query Port Separation

This is an optional step. If you selected the Split-Port option (to separate the Active Queries interface role from the Management role), you can now connect the secondary interface of the OT Security appliance to its appropriate network switch interface, provided you have not done so in Tenable Core.

For more information see Management and Active Query Roles Separation (Split-Port).

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.

OT Security License Activation

Objective: Unlock system features with license activation.

Tenable calculates licenses based on the number of unique IPs in the system. Each IP address requires a separate license. For example, Tenable bases licensing on the number of unique IPs, even if multiple devices share the same IP address, or if several devices connected to the same backplane share the same three IPs. Therefore, you need three licenses, regardless of the number of devices.

After you install the OT Security Appliance, you can activate your license.

Note: To update or reinitialize your OT Security license, contact your Tenable Account Manager. Once your Tenable account manager updates your license, you can update or reinitialize your license.

For information about deploying and licensing Tenable OT Security for Tenable One, see the Tenable One Deployment Guide.

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 Account Management 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 Account Management portal for creating new sites to manage your assets.

For more information about the Account Management portal, see the Account Management Portal documentation.

To activate your OT Security license:

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

   The **Account** page appears with the options that you have permissions to view.

2. In the left navigation bar, select **Products**.

   The **My Products** page appears listing all of your Tenable products.

3. Click the Tenable OT Security license.

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

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

5. Generate the 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 (**Activation Code**) that you copied from the Account Management 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 Account Management Portal to add your sites.

6. In step **3 Enter activation code**, click the **Self-service** link to open the Tenable Account Management portal.

   > **Note**: To activate your evaluation period, click the **Click here** link.

7. In the Tenable OT Security product page in the Account Management portal, click the **Sites** tab.

   The **Sites** tab appears.

8. To create a site, click **Manage Sites** > **Create Site**.

   The **Create New Site** window appears.

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

   b. In the **Size** box, type the number of IP addresses you want to assign to this site.

      > **Tip**: To adjust the number of IP addresses assigned to the license, use the slider located under the **Size** 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.

   f. Click **Confirm**.

9. 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.

10. In the **Activation Code** box, paste the one-time generated code that you copied from the **Tenable OT Security Account Management** page. See step 8e.

11. Click **Activate**.

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

12. Click **Enable**.

    OT Security is now enabled and ready to use.

13. Navigate back to the Tenable Account Management portal and in the one-time generated activation code dialog box, click the **I confirm I have saved the activation license** checkbox.

14. Click **Confirm**.

    The newly added site appears in the **Sites** tab for OT Security.

Update your license

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

Before you Begin

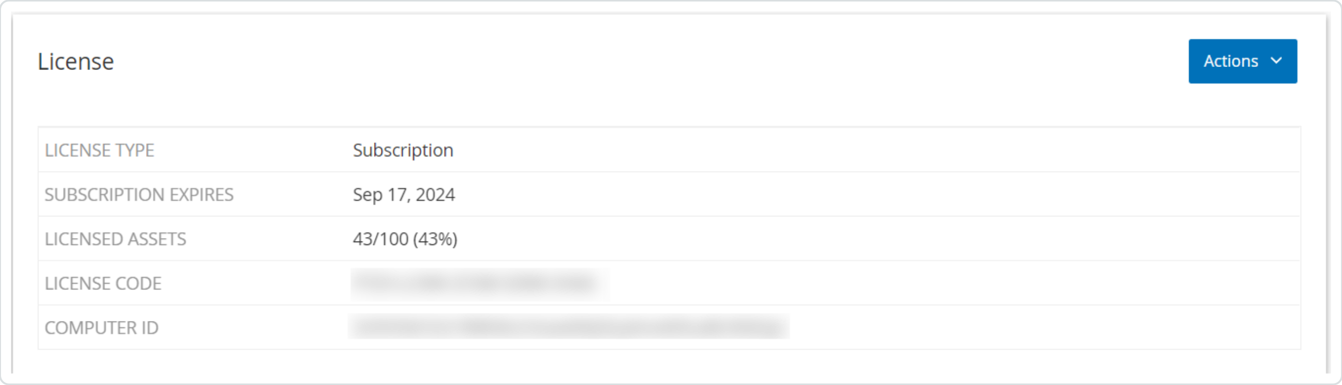
- Your Tenable Account Manager must have already updated your license information in their system before you can update the new license.

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

To update your license:

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

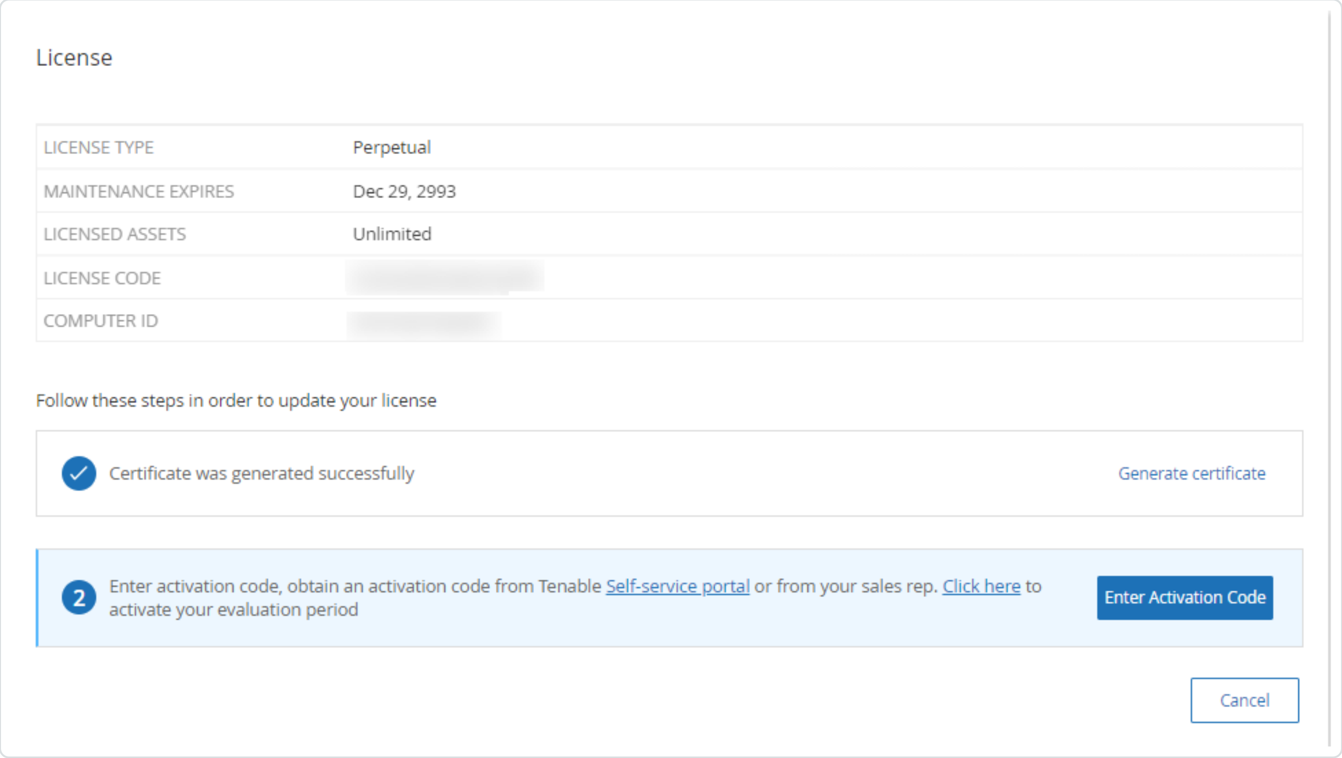
   The **License** window appears.


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	Perpetual
MAINTENANCE EXPIRES	Dec 29, 2993
LICENSED ASSETS	Unlimited
LICENSE CODE	[redacted]
COMPUTER ID	[redacted]

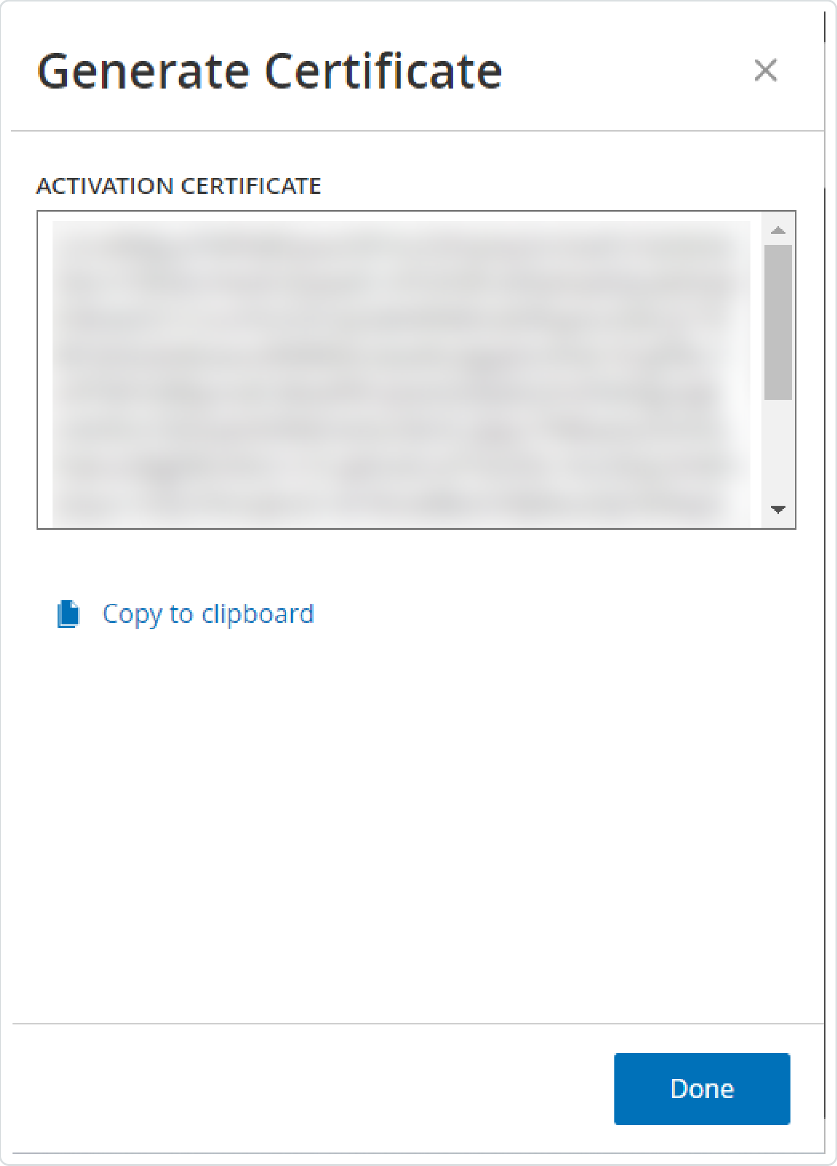
Follow these steps in order to update your license

✓ Certificate was generated successfully

2 Enter activation code, obtain an activation code from Tenable Self-service portal or from your sales rep. Click here to activate your evaluation period

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 Account Management portal:

   a. In the [Tenable Account Management](#) portal, navigate to the **Tenable OT Security** Details 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.

c. Adjust the details as needed.

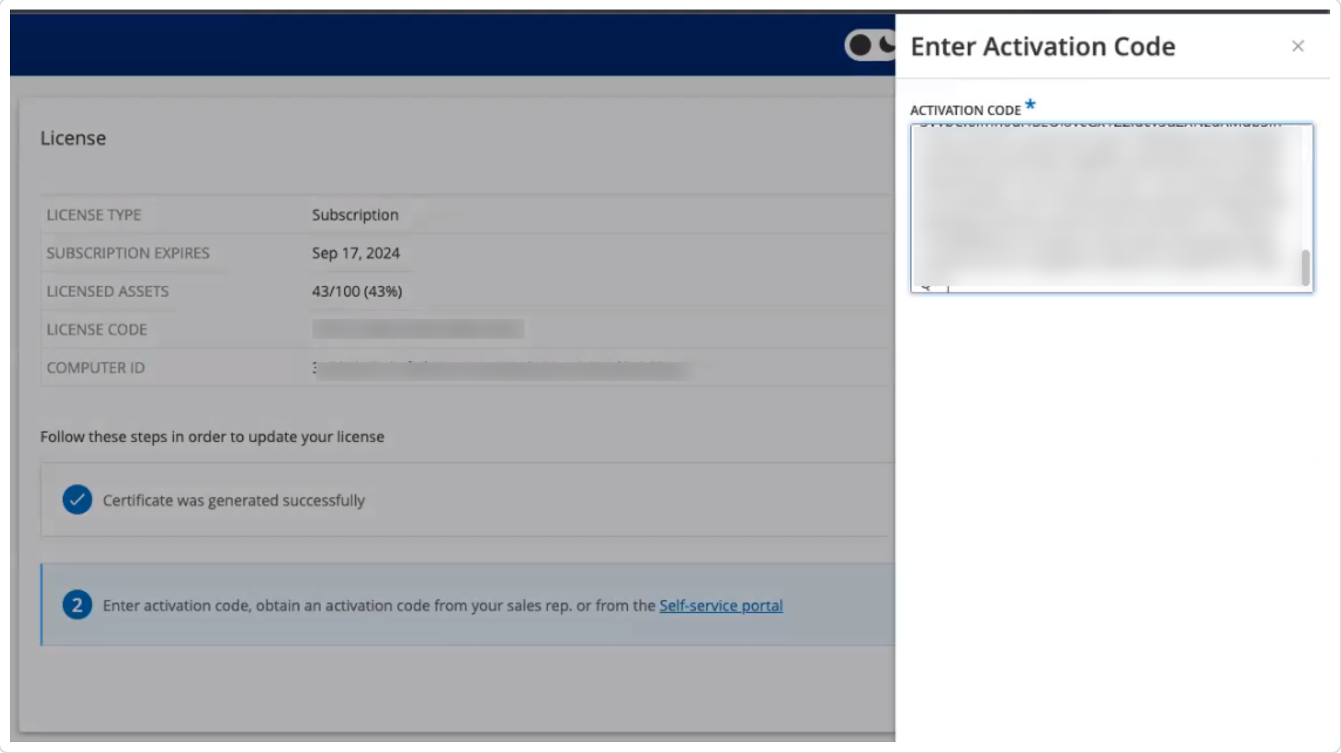
d. In the **Activation Certificate** box, paste the certificate that you copied from the **Generate Certificate** window in OT Security.

e. Click **Update**.

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 Account Management** page.



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

Enter Activation Code ×

ACTIVATION CODE *

[redacted]

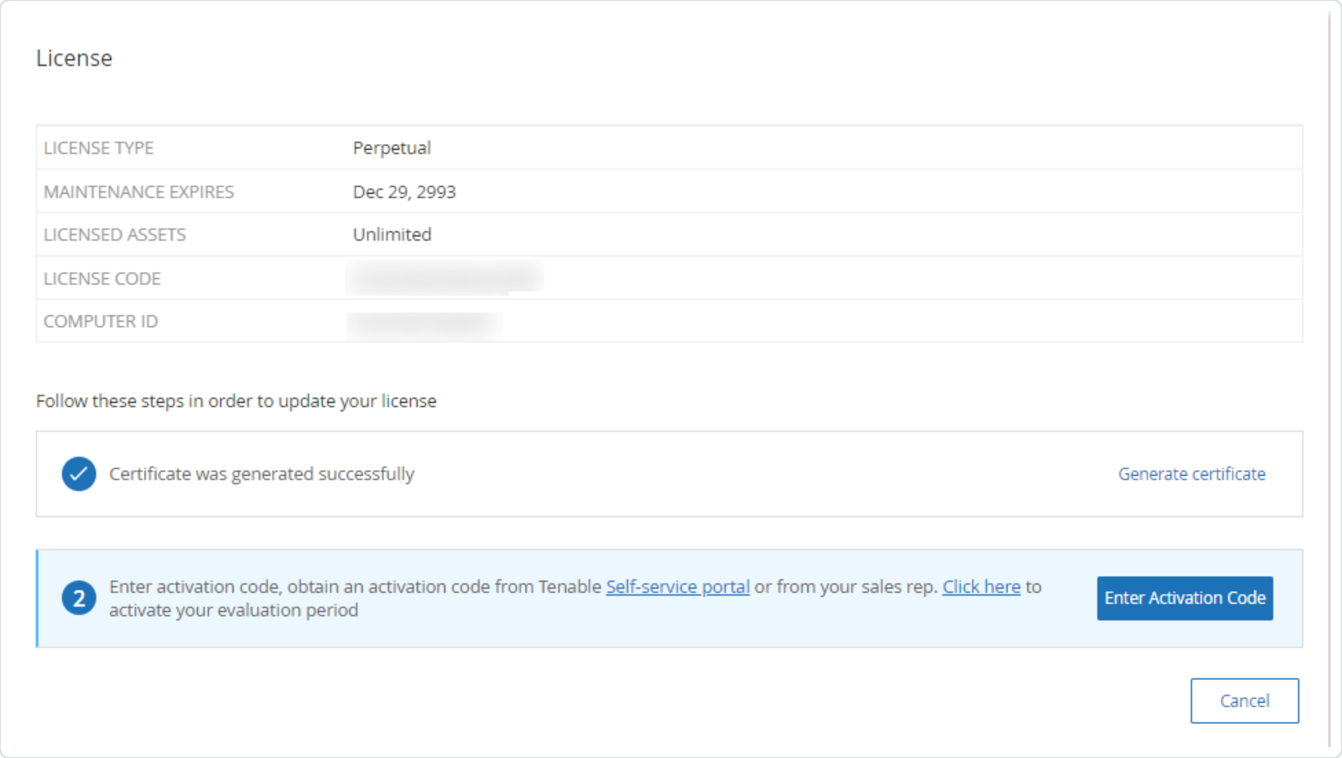
9. Click **Activate**.

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

Update your license in offline mode

1. Perform steps 1 to 4 as described in the Update your license section.

2. In the **(2) Enter activation code** box, click the Self-service portal link.



License

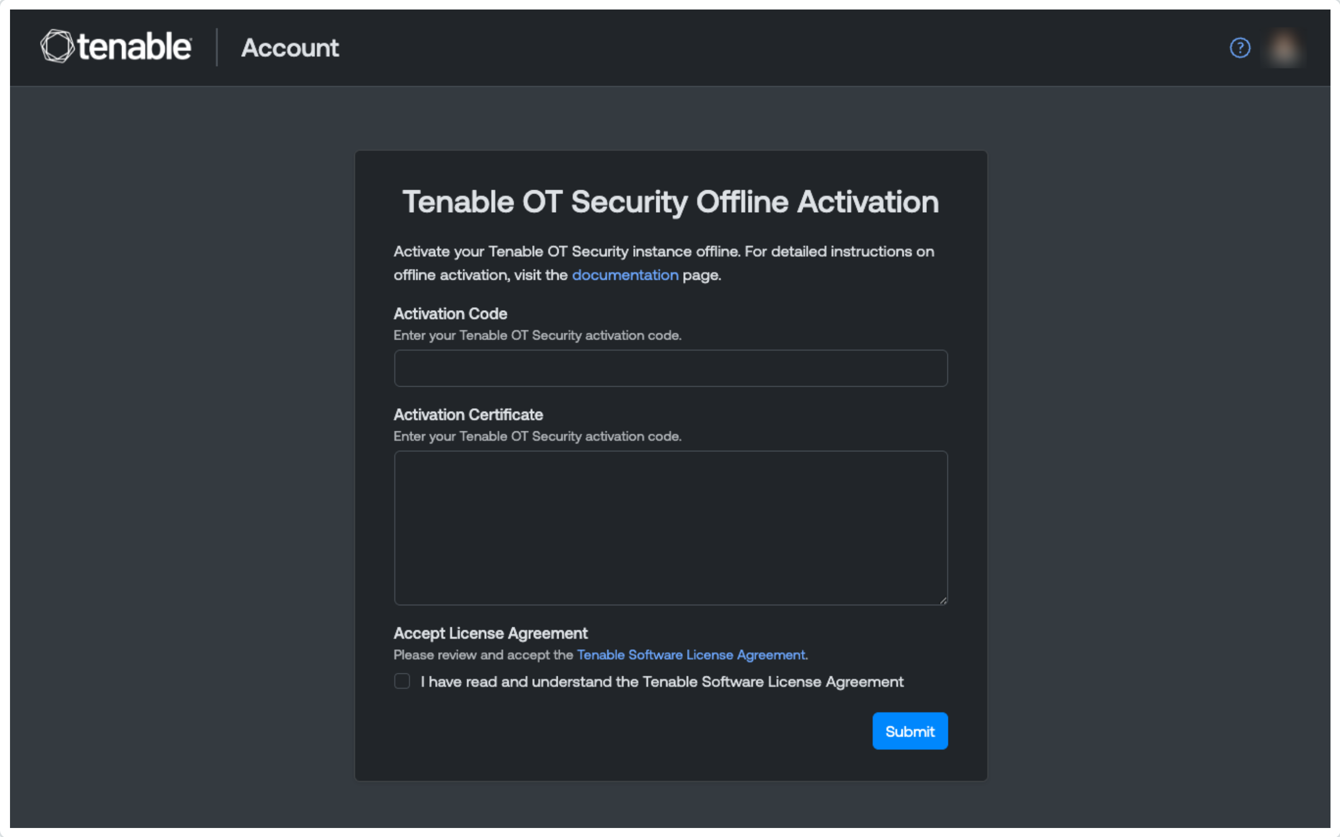
LICENSE TYPE	Perpetual
MAINTENANCE EXPIRES	Dec 29, 2993
LICENSED ASSETS	Unlimited
LICENSE CODE	[redacted]
COMPUTER ID	[redacted]

Follow these steps in order to update your license

✓ Certificate was generated successfully

2 Enter activation code, obtain an activation code from Tenable Self-service portal or from your sales rep. Click here to activate your evaluation period

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



Tenable OT Security Offline Activation

Activate your Tenable OT Security instance offline. For detailed instructions on offline activation, visit the documentation page.

Activation Code
Enter your Tenable OT Security activation code.

Activation Certificate
Enter your Tenable OT Security activation code.

Accept License Agreement
Please review and accept the Tenable Software License Agreement.

□ I have read and understand the Tenable Software License Agreement

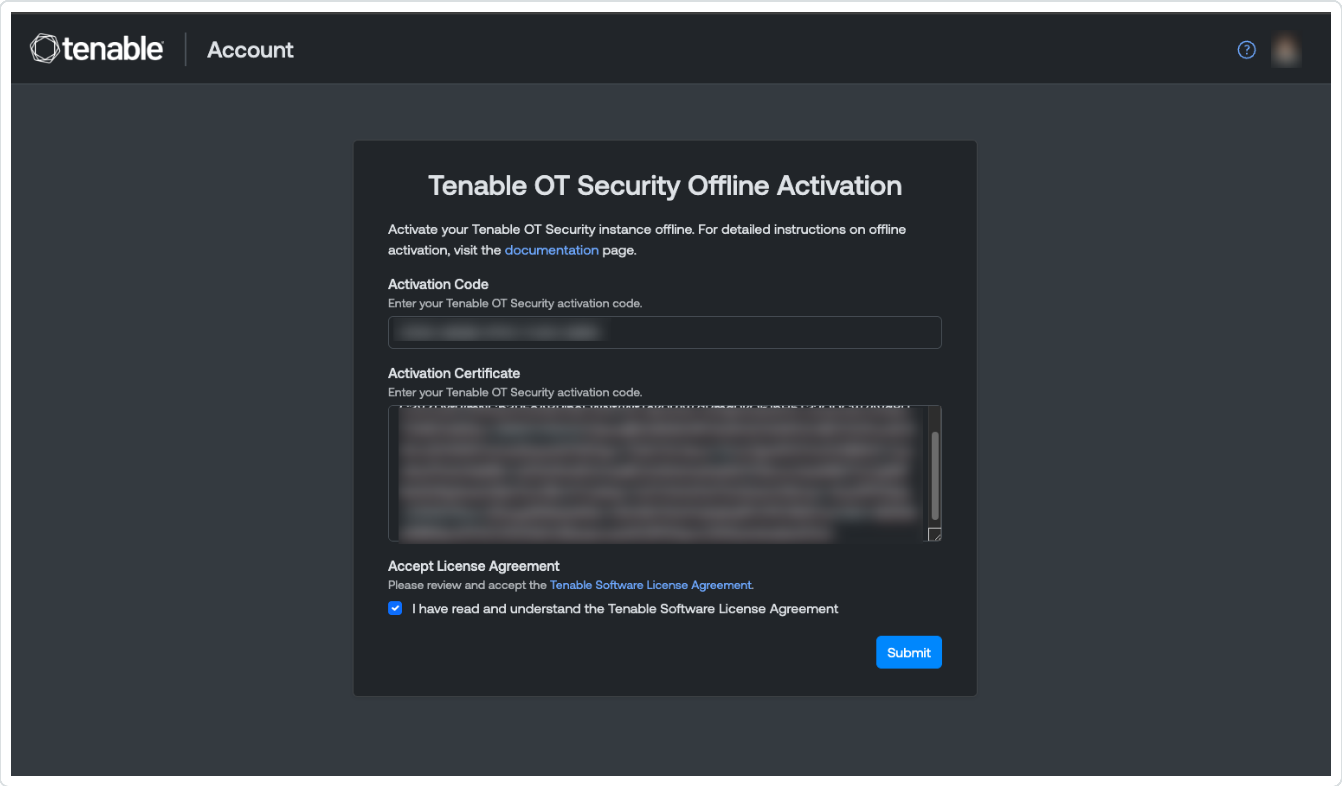
> **Note**: You can access the Activate OT Security Offline screen from an Internet-connected device using the following URL: https://account.tenable.com/offline-activation/ot-security.

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

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

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



Tenable OT Security Offline Activation

Activate your Tenable OT Security instance offline. For detailed instructions on offline activation, visit the documentation page.

Activation Code

Enter your Tenable OT Security activation code.

[redacted]

Activation Certificate

Enter your Tenable OT Security activation code.

[redacted]

Accept License Agreement

Please review and accept the Tenable Software License Agreement.

☑ I have read and understand the Tenable Software License Agreement

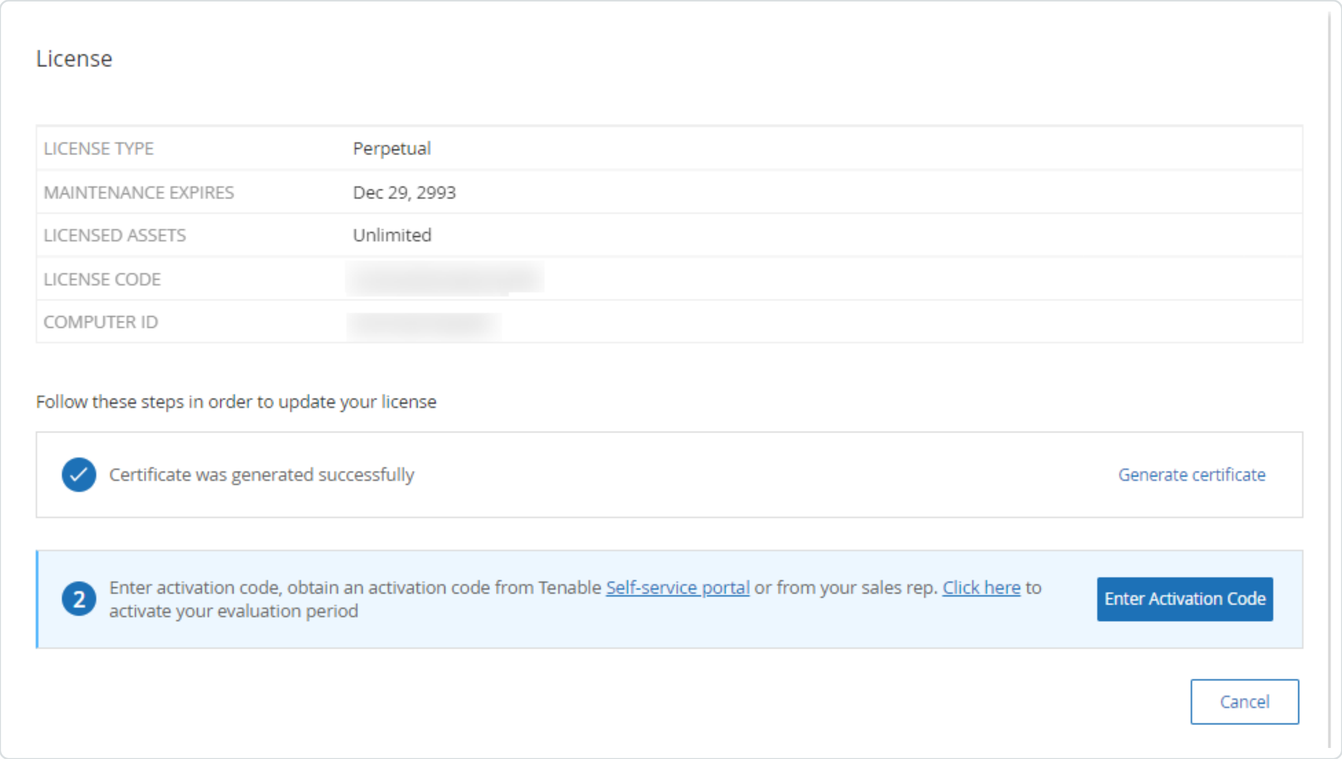
Note: To view the license agreement, click the **Tenable Software License Agreement** link.

6. Click **Submit**.

   OT Security generates the activation code.

7. To copy the activation code, click the ⧉ button.

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



License

LICENSE TYPE	Perpetual
MAINTENANCE EXPIRES	Dec 29, 2993
LICENSED ASSETS	Unlimited
LICENSE CODE	[redacted]
COMPUTER ID	[redacted]

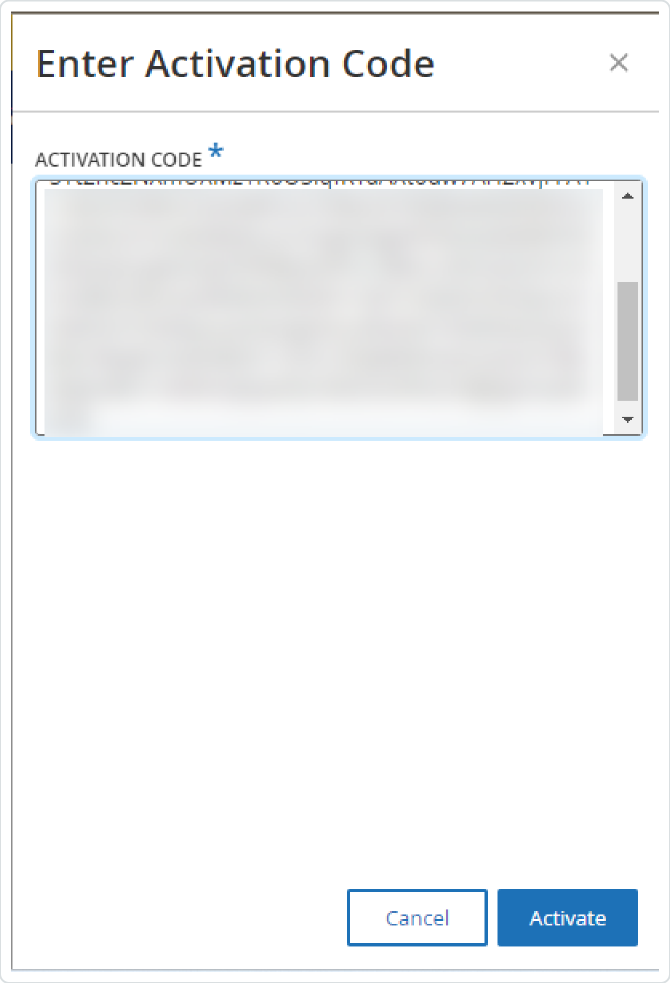
Follow these steps in order to update your license

✓ Certificate was generated successfully

2 Enter activation code, obtain an activation code from Tenable Self-service portal or from your sales rep. Click here to activate your evaluation period

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

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



Enter Activation Code

ACTIVATION CODE *

[redacted]

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

Reinitialize your license

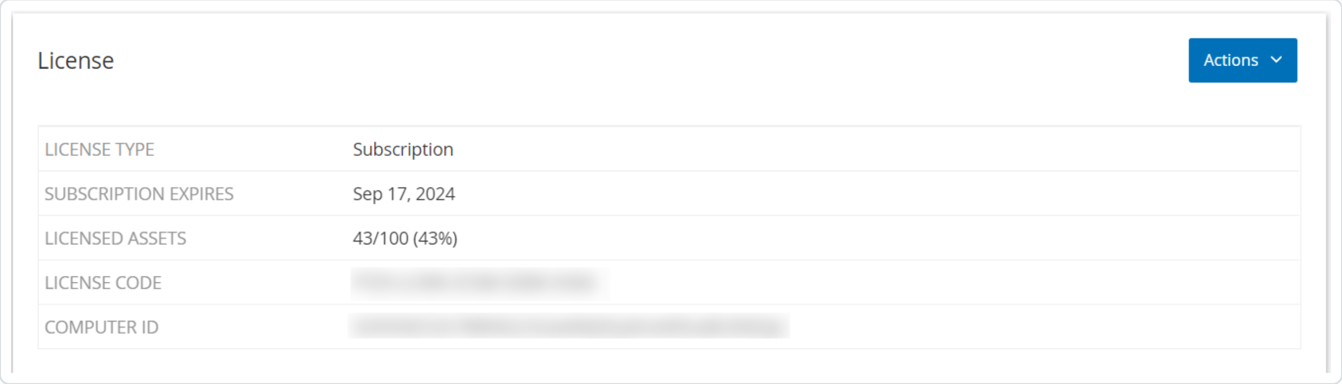
Reinitializing your license removes your current license from the system and activates a new license, similar to the license activation during your system startup. If you need to reinitialize your license (that is, if you receive a new license), use the following procedure.

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 you cannot connect the OT Security device to the Internet, you can register the license from any PC.

To reinitialize your license:

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



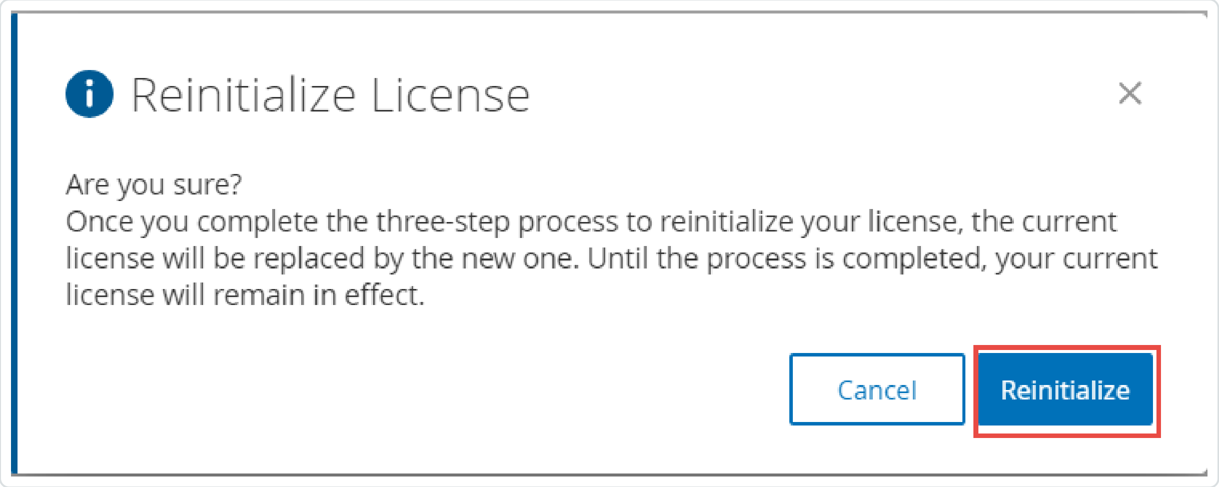
License

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.

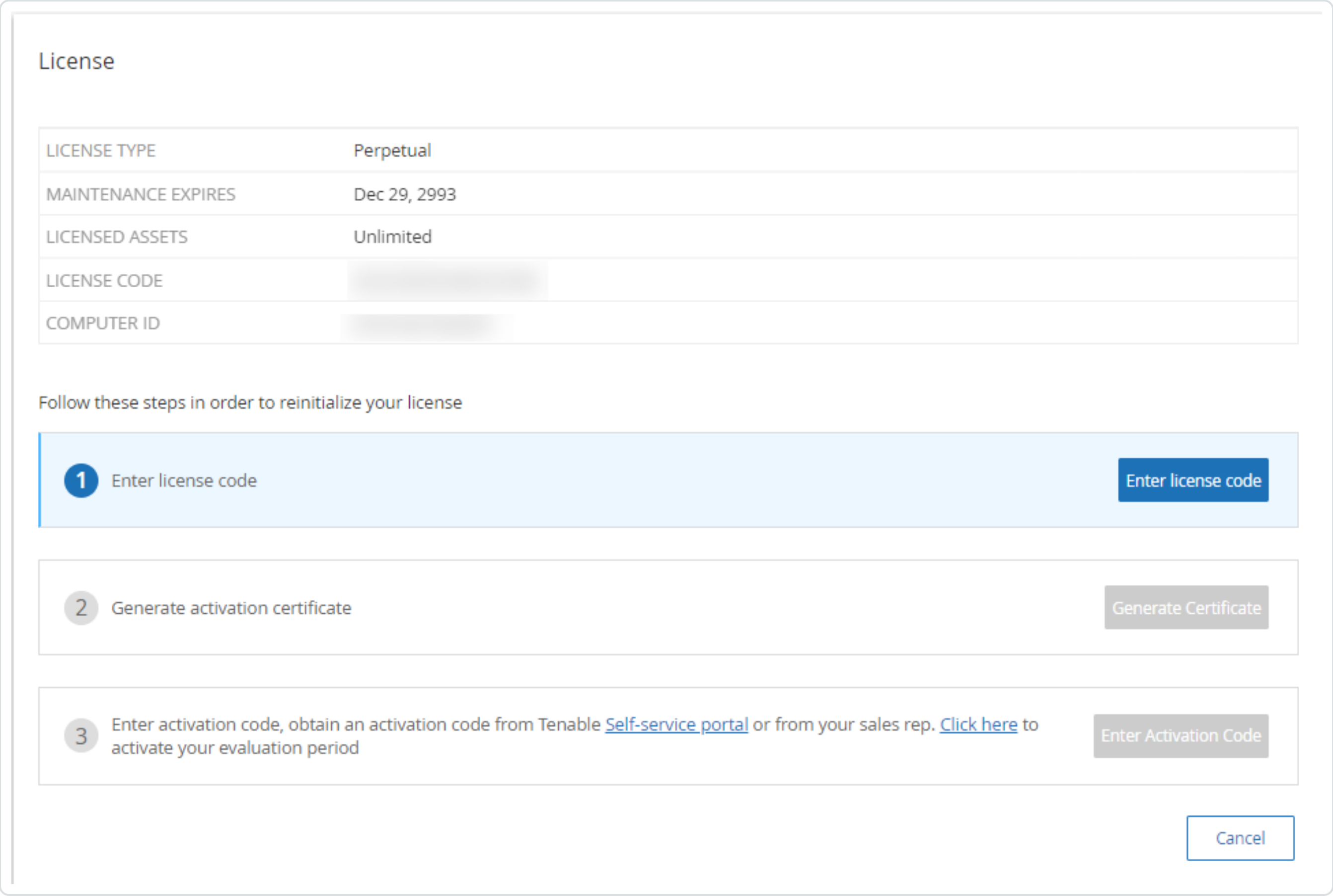
3. Click **Reinitialize**.



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	Perpetual
MAINTENANCE EXPIRES	Dec 29, 2993
LICENSED ASSETS	Unlimited
LICENSE CODE	[redacted]
COMPUTER ID	[redacted]

Follow these steps in order to reinitialize your license

1 Enter license code

2 Generate activation certificate

3 Enter activation code, obtain an activation code from Tenable Self-service portal or from your sales rep. Click here to activate your evaluation period

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.

What to do next

Enable the OT Security System

Launch OT Security

Objective: Start the system and begin using it for your OT Security needs.

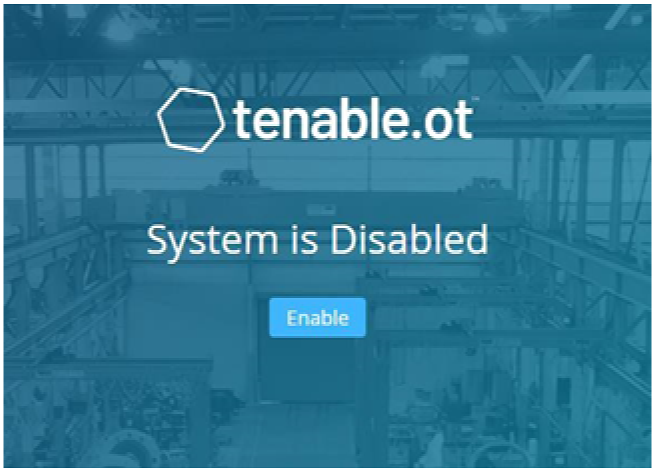
After you configure Tenable Core + OT Security, enable the system to start using OT Security.

1. Enable the OT Security System — Enable the OT Security system after you activate your license.

2. Use OT Security — Configure your monitored networks, port separation, users, groups, authentication servers, and so on to start using OT Security.

Enable the OT Security System

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



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.

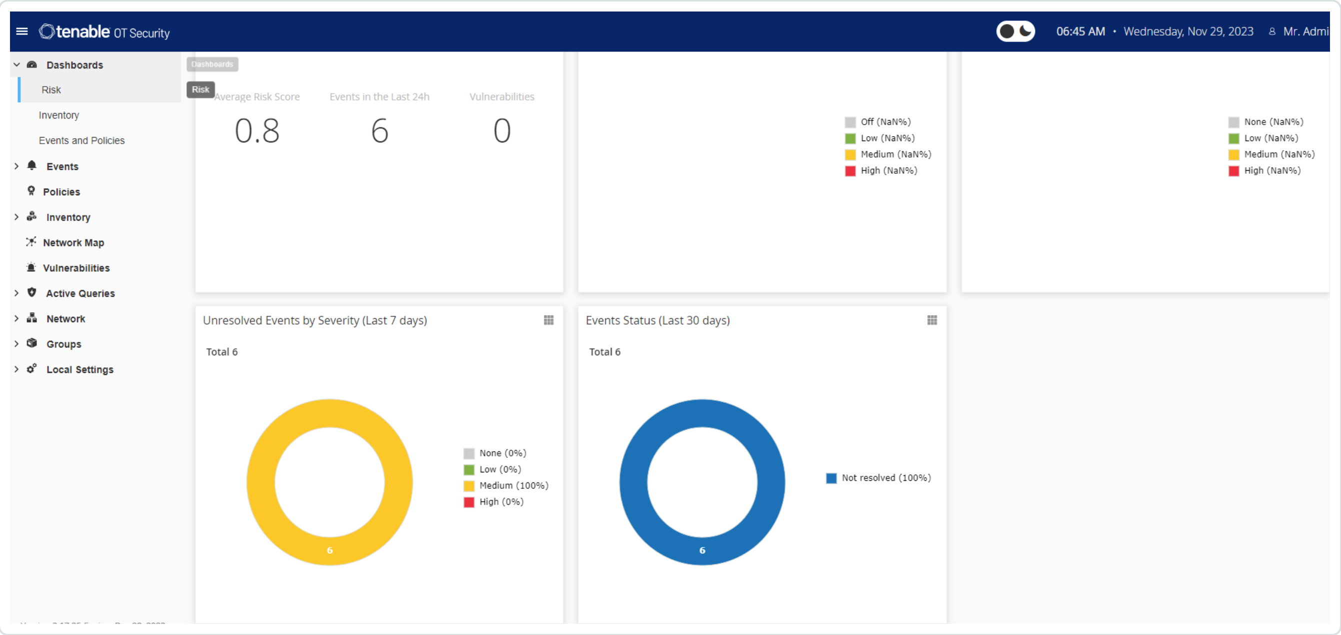
> **Note**: These are ongoing processes that continue over time, so it may take some time for the user interface to display fully updated results.

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.



> **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.

Start Using OT Security

After installation, you can configure and use OT Security.

Configure Monitored Networks

Configure the network segments for OT Security to monitor and ensure to include all areas pertinent to your network. See Monitored Networks.

> **Note**: Remove unnecessary monitored networks. You can hide any assets you added from those network. For more information, see Hide Assets.

Review and Configure Ports

If you have not yet done so, you can choose to Separate the Management and Active Query Ports.

Configure Users, Groups, and Authentication Servers

Set your Local Users and User Groups. You can configure External Authentication Servers or utilize SAML for easier SSO login.

Add Network Services

Add your DNS and NTP servers. You can also configure Syslog and Email Servers to retrieve all critical events.

Enable Active Queries

Active Queries represent one of the primary benefits of OT Security. They allow you to access your assets directly to obtain the most accurate and near real-time details and visibility. For more information, see Active Queries.

Active Asset Discovery — Proactively probe and discover silent assets or those that passive monitoring traffic do not cover.

Create Nessus Scans

Configure Nessus Scans for IT devices in your OT Security network. Tenable Nessus scans are secure and only impact discovered IT assets. For more information, see Configure Nessus Plugin Scans.

Set Backups

Configure periodic system backups and choose to save them locally or export to a remote storage. For more information, see Application Data Backup and Restore.

Get Updates

Make sure to check feed and system updates. If your system is offline, make sure to do a manual update periodically. For more information, see Updates.

Optimize

When OT Security is up and running, look at the generated events and optimize your policies according to your environment requirements.

Integrate

Integrate OT Security with other Tenable products or third-party services. For more information, Integrations.

Install OT Security Sensor

> **Note**: This section describes the procedure for configuring a sensor version 3.14 and later.

Installation of OT Security sensor involves pairing sensors with the Industrial Core Platform (ICP). To pair sensors with the OT Security 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 the Tenable Core + Tenable OT Security User Guide.
- A valid certificate in the ICP console (see Certificate).

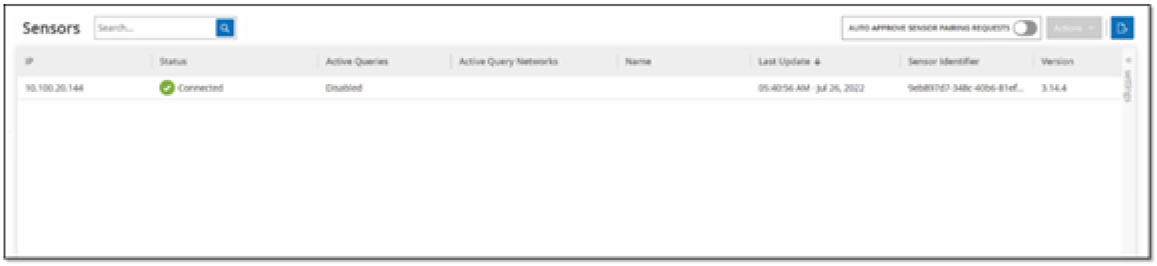
> **Note**: Tenable recommends a dedicated ICP user with administrator role for the process of pairing sensors, to prevent disruptions in connectivity (see Adding Local Users). You can add a new administrator user to pair multiple sensors.

> **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.

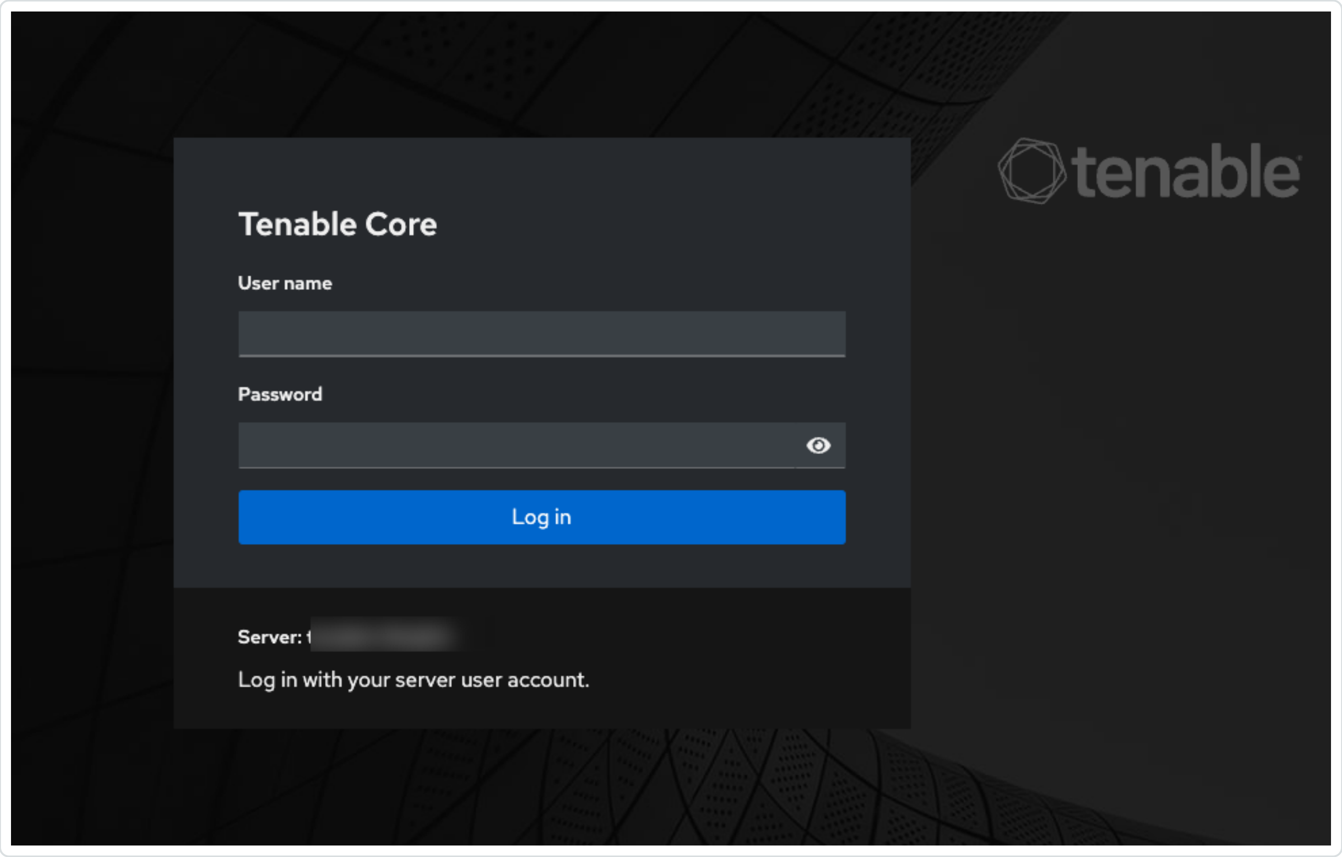
IP	Status	Active Queries	Active Query Networks	Name	Last Update ↓	Sensor Identifier	Version
10.100.20.144	Connected	Disabled			05:40:56 AM · Jul 26, 2022	9eb897d7-348c-40b6-81ef...	3.14.4

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**.



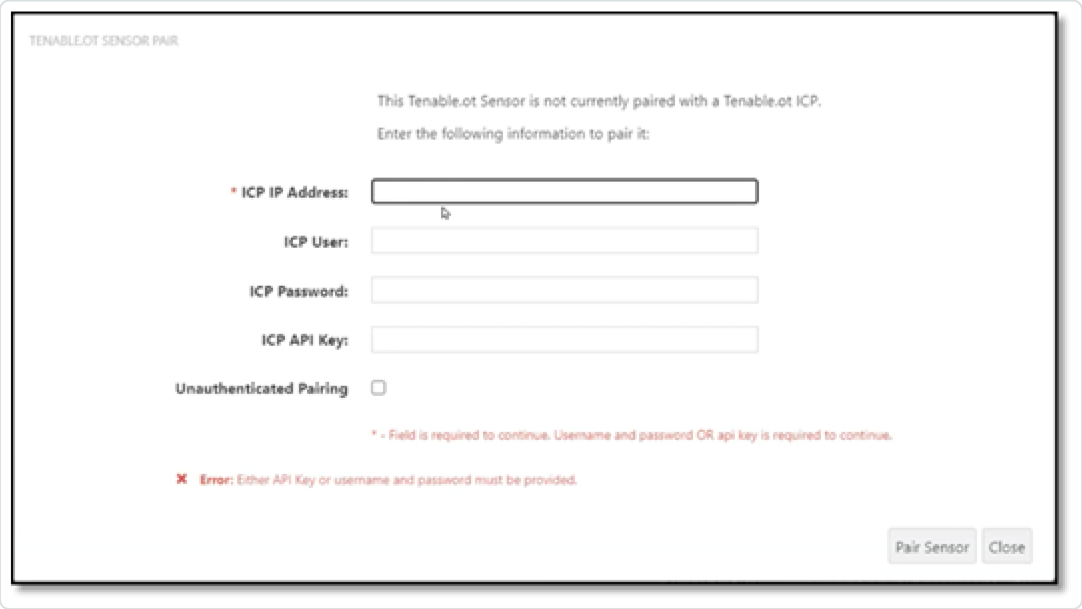
Server: [redacted]

Log in with your server user account.

> **Important**: 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.

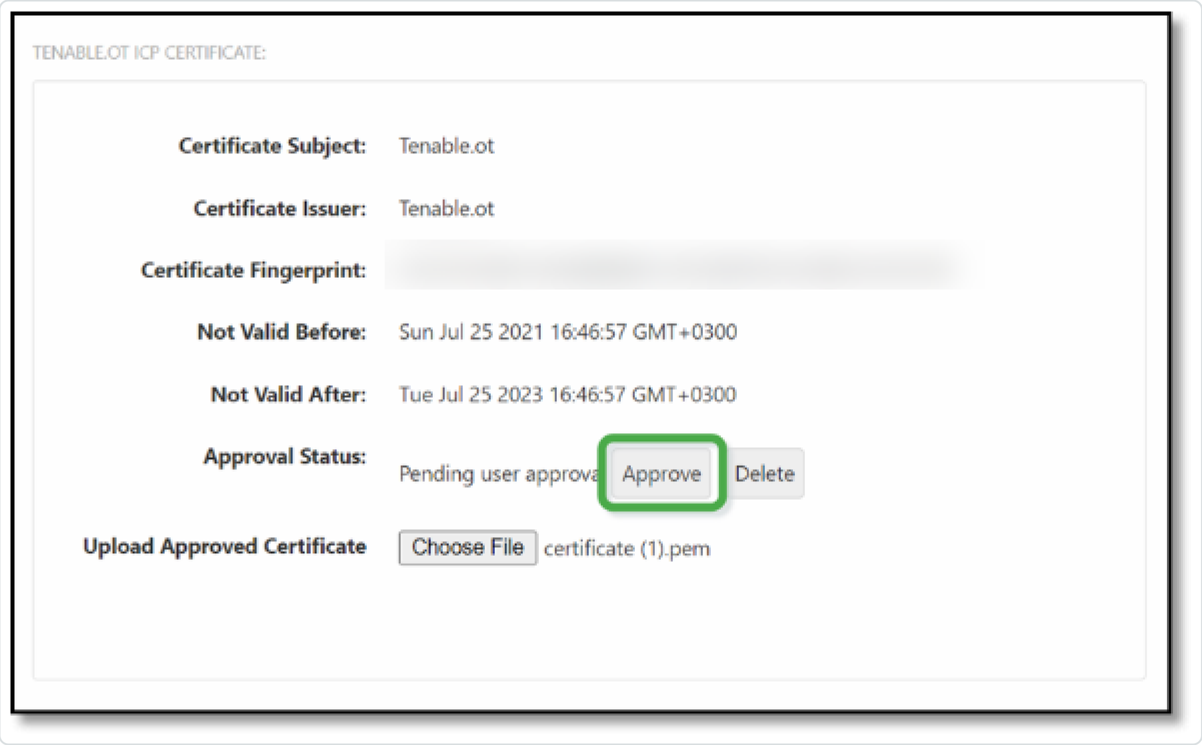
> **Note**: Tenable recommends that you create a dedicated ICP user for pairing sensors in order to ensure connectivity during the pairing process (see Adding Local Users).

> **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: [redacted]

    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**.

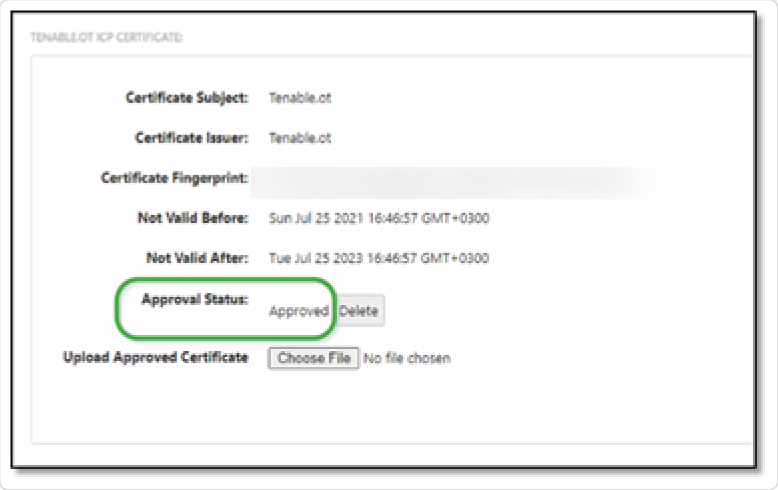
    If you prefer to upload a certificate manually:

    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: [redacted]

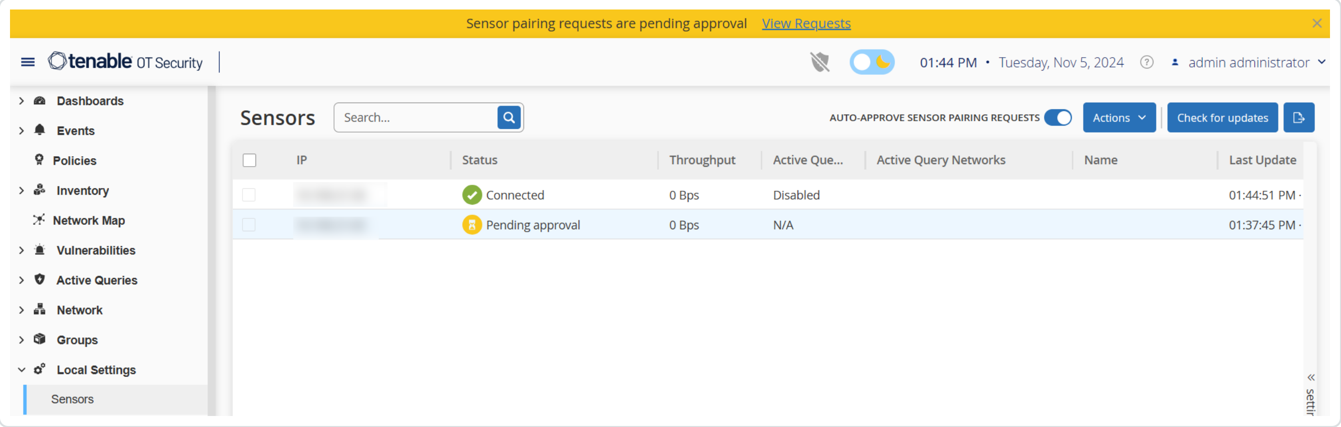
Not Valid Before: Sun Jul 25 2021 16:46:57 GMT+0300

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

Approval Status: Approved

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

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

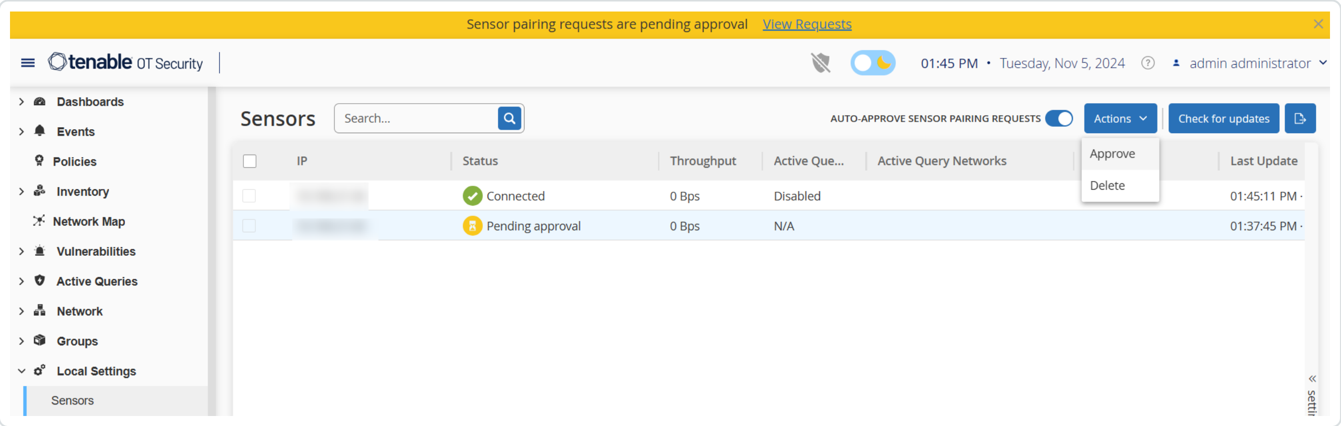


Sensor pairing requests are pending approval View Requests

Sensors

IP	Status	Throughput	Active Que...	Active Query Networks	Name	Last Update
[redacted]	Connected	0 Bps	Disabled			01:44:51 PM ·
[redacted]	Pending approval	0 Bps	N/A			01:37:45 PM ·

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

Sensors

□	IP	Status	Throughput	Active Que...	Active Query Networks	Last Update
□	[redacted]	Connected	0 Bps	Disabled		01:45:11 PM ·
□	[redacted]	Pending approval	0 Bps	N/A		01:37:45 PM ·

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.

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

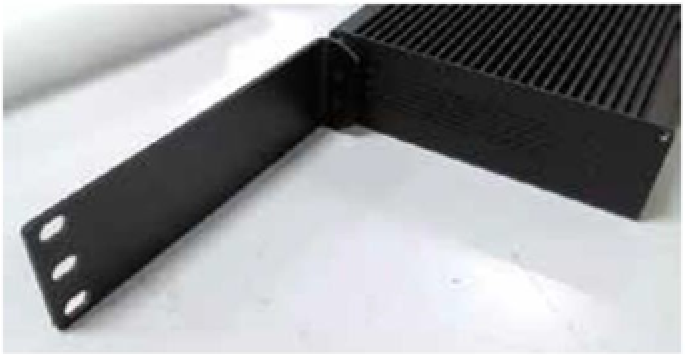
Set up a Rack Mount Sensor

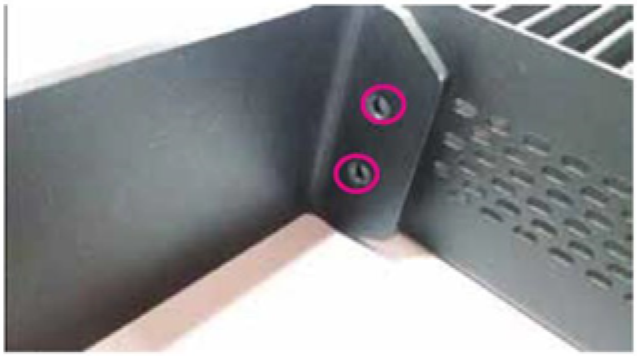
You can either mount the sensor on a standard 19-inch rack or place it on top of a flat surface (such as a desktop).

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).

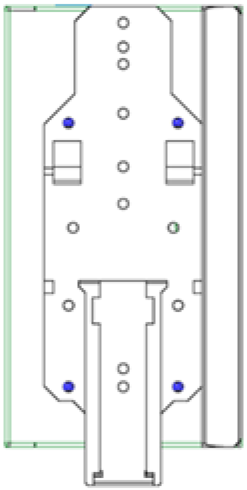
Set up a Configurable Sensor

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

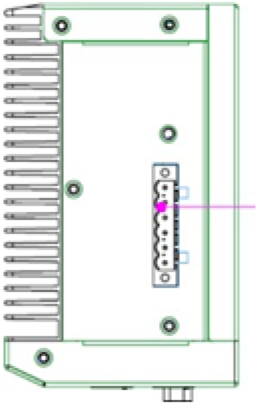
To mount the OT Security Configurable Sensor on a standard DIN rail:

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)

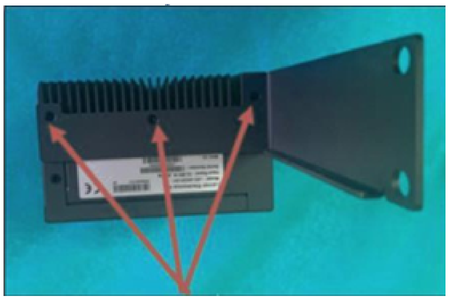
A Configurable Sensor can be attached to a mounting rack, using the "mounting ears" that are provided.

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).



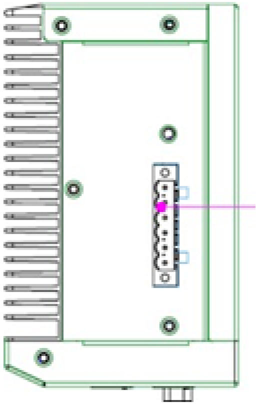
2. Insert the server unit into an available 1U slot in the rack.

> **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

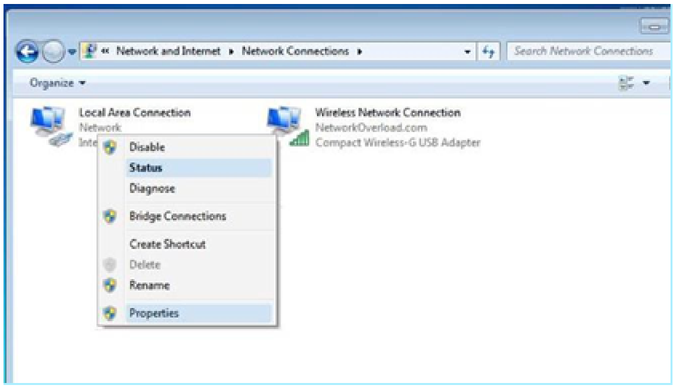
To log in to the Management Console.

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**.

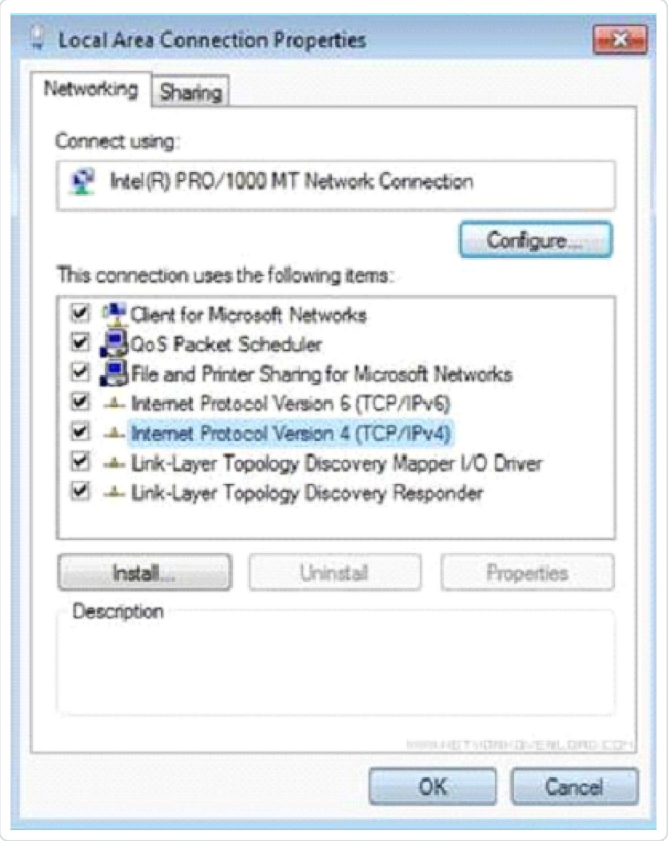
   > **Note**: Navigation may vary slightly for different versions of Windows.

   The **Network Connections** window appears.



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

The **Local Area Connections** window appears.



Local Area Connection Properties

Connect using:

Intel(R) PRO/1000 MT Network Connection

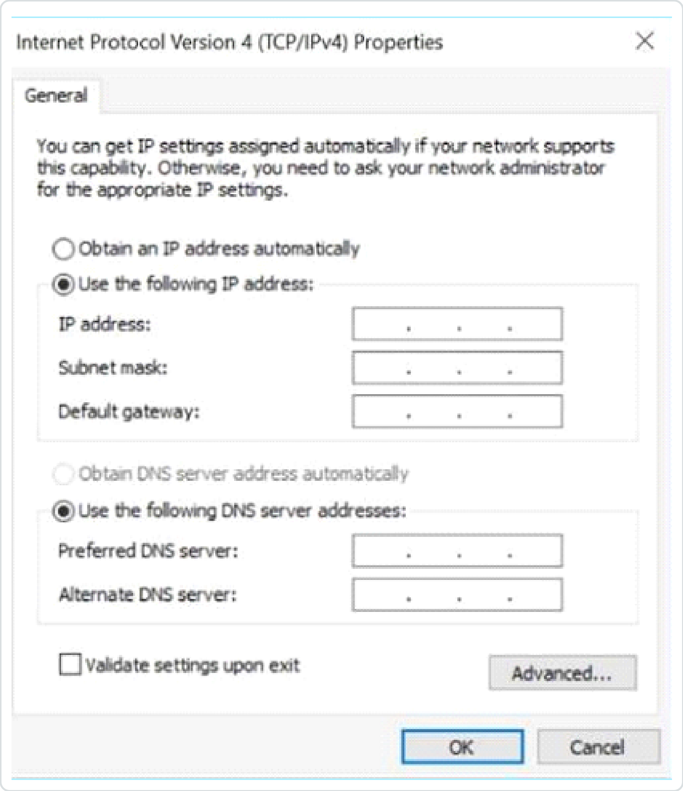
This connection uses the following items:

- ☑ 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

Description

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

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



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.

Restore Backup Using CLI

You can restore your OT Security using CLI or via the Tenable Core interface. For more information about restoring backup via Tenable Core user interface, see Restore a Backup in the Tenable Core + Tenable OT Security User Guide. To restore using CLI, perform the following steps.

> **Note**: You can only restore backups taken using the Tenable Core backup utility. Older backups from OT Security before version 3.18 are not compatible. If you are trying to restore from a backup captured in an older version of OT Security, before version 3.18, contact support for the necessary instructions and commands.

Before you Begin

- Make sure you have the backup `.tar` files to restore.

  > **Note**: You can download the OT Security backup files from the **Backup/Restore** page in Tenable Core. For more information, see Restore a Backup in the Tenable Core + Tenable OT Security User Guide.
  > Example of an OT Security backup file: `tenable-ot-tenable-s2cc78kg-2024-03-21T135648.tar`.

To restore your OT Security backup using CLI:

1. Do one of the following to access the ICP system:

   - Log in to Tenable Core and access the terminal.

   - Log in using SSH.

2. In the terminal, run the following command:

   ```
   sudo systemctl start tenablecore.restorelocal@$(systemd-escape /home/admin/my-tc-ot-backup.tar)
   ```

Where:

- `/home/admin/my-tc-ot-backup.tar` is the location of the backup files.

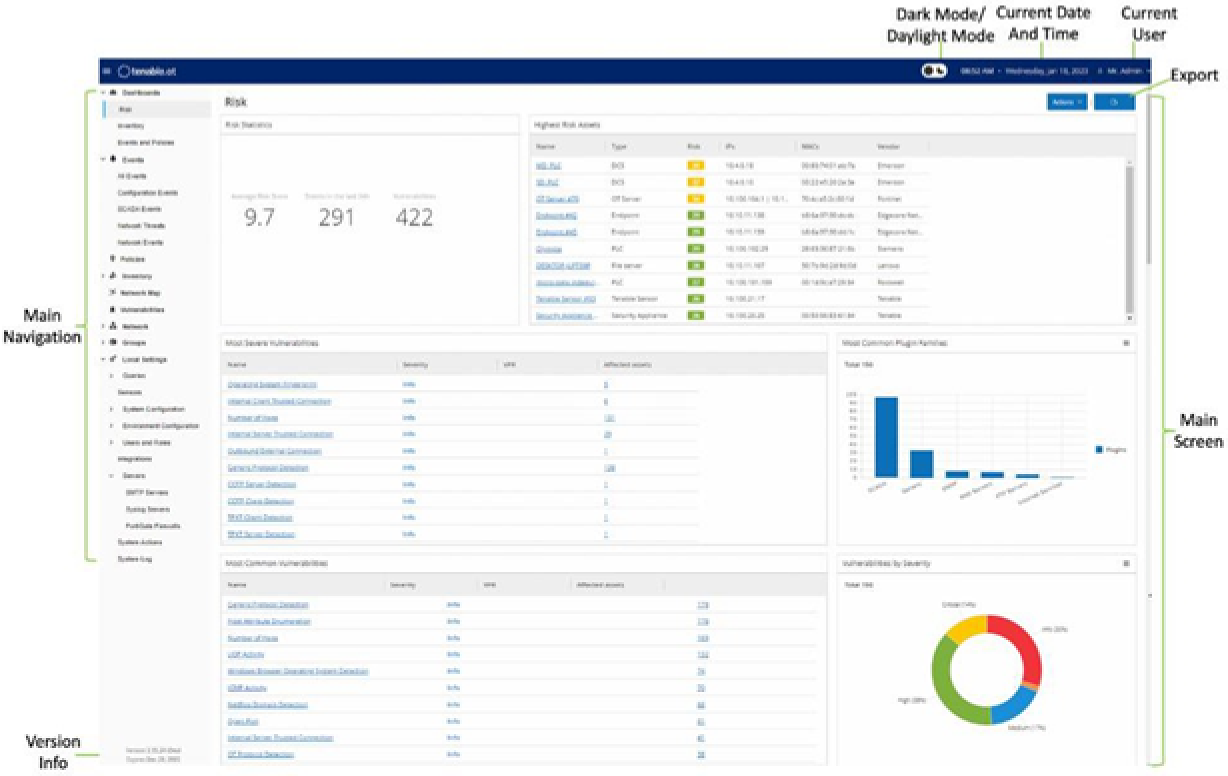
> **Note**: The process takes a long time to complete since it restores the backup before the command finishes. You can view the restoration progress from **Backup/Restore** > **Backup/Restore Logs** > **Restore** logs in the Tenable Core user interface or by running the following command:
>
> ```
> journalctl -xf tenablecore.restorelocal@$(systemd-escape /home/admin/my-tc-ot-backup.tar)
> ```
>
> Where: `/home/admin/my-tc-ot-backup.tar` is the location of the backup files.

OT Security gets restored and you can start accessing the application. To verify that OT Security is running, use your browser to log in to the OT Security user interface via port 443 (HTTPS).

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.

Active Queries	Indicates whether **Active Queries** is enabled or disabled.
Dark Mode/Daylight Mode	Changes the display color scheme to Dark mode or Daylight mode.
Current Date and Time	Shows the current date and time as registered in the system.
Resource Center	OT Security resource center.
Current User Name	Shows the name of the user who is currently logged into the system. Click the down arrow for menu options: **About** (shows software info) and **Logout**. After activating OT Security, you can view your Tenable customer ID in the **About** view. This customer ID is required when contacting Technical Support or Customer Success teams.
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.
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.

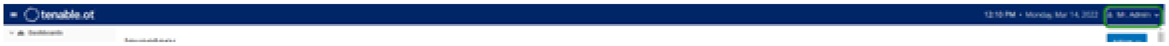
2. To restore the daylight mode setting, click the ☀● (Daylight Mode) toggle.

Check Current Software Version

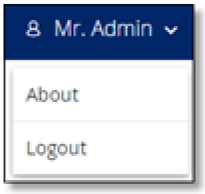
You can check the version of your software using the user profile icon in the upper-right corner of the header bar.

To view the current software version:

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

   OT Security displays the user menu.

2. Click **About**.

   OT Security displays the current software version.

Navigate OT Security

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

- **Dashboards** — Shows widgets containing graphs and tables that give a general 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. The **All Events** page has 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 of their related events. The **All Assets** includes 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. See Network Map.
- **Vulnerabilities** — Shows all network threats detected by OT Security, including CVEs, vulnerable protocols, vulnerable open ports and more, along with recommended remediation steps. See Vulnerabilities.
- **Active Queries** — Allows you to configure and enable active queries. See Managing Active Queries.
- **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 the network 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.
- **Groups** — View, create and edit groups 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**.

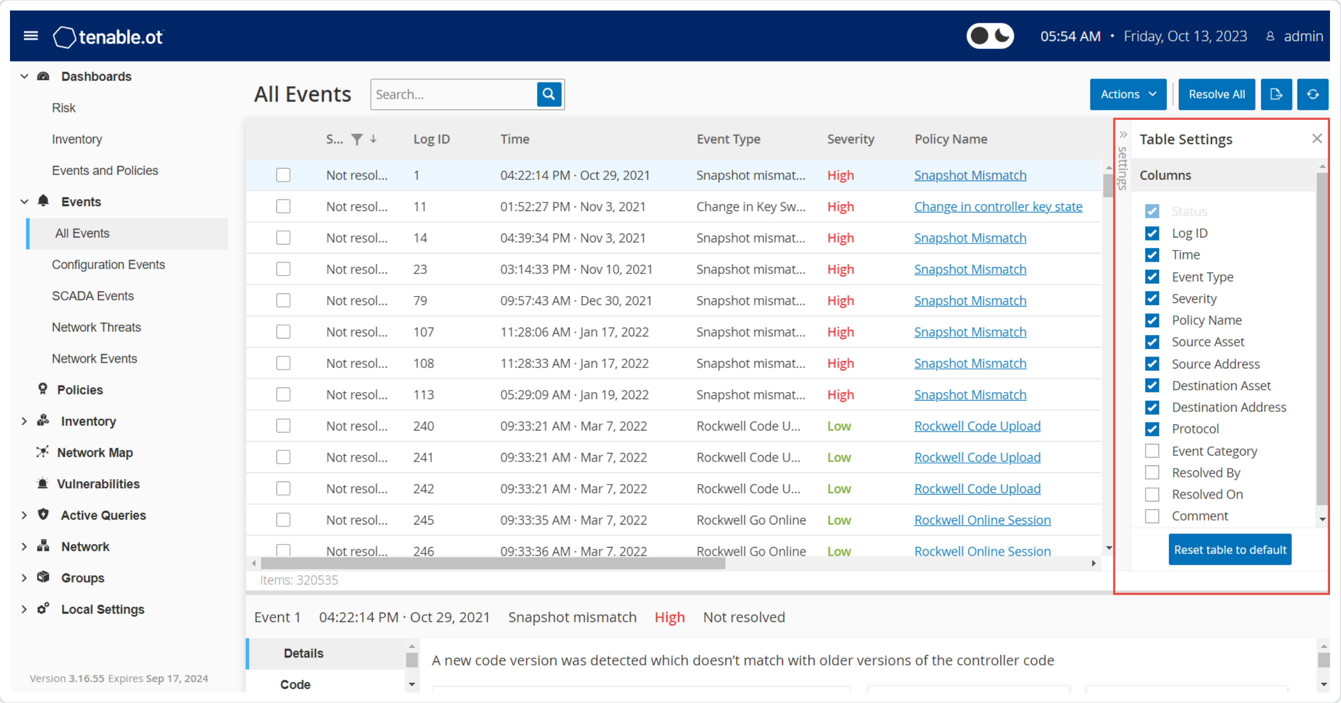
Customize the Column Display

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

Details

Code

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

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

3. Clear the checkbox 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.

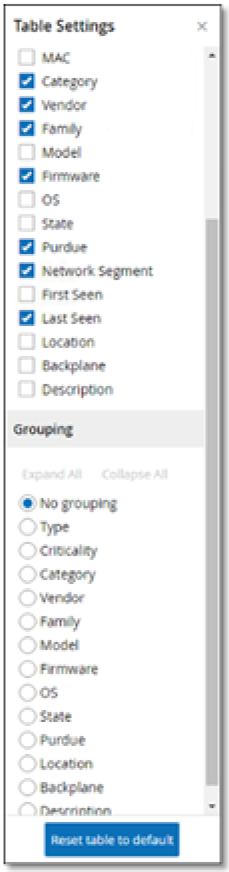


Table Settings ×

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

Grouping

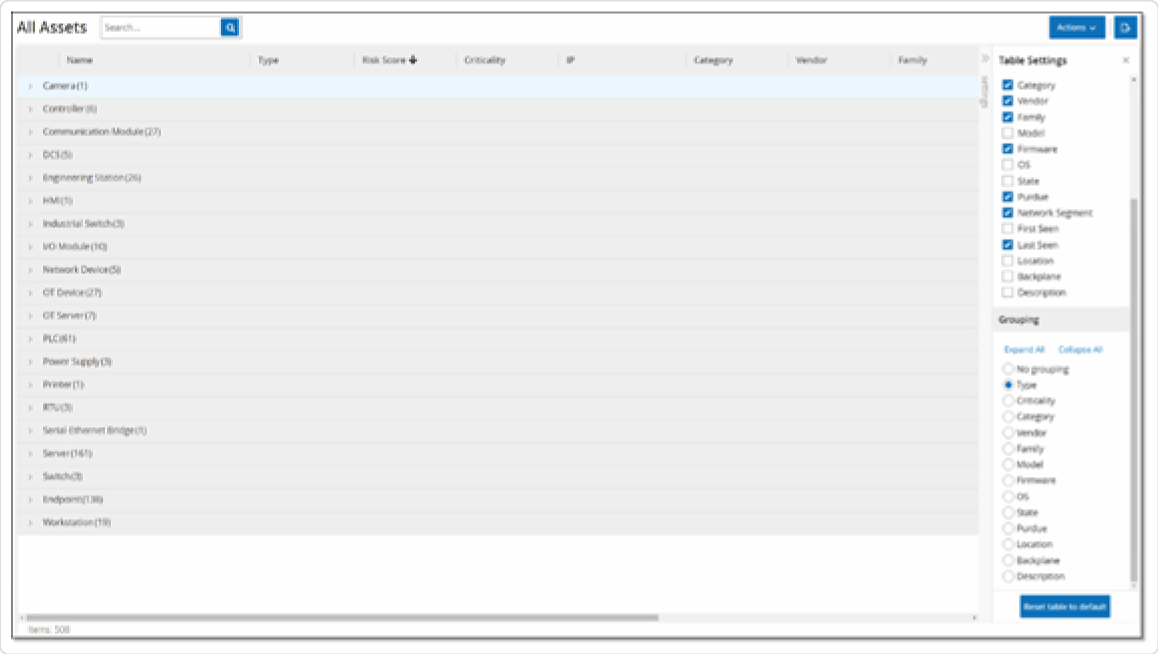
Expand All Collapse All

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

Reset table to default

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

   OT Security displays the grouped categories.



All Assets

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(138)							
Workstation(19)							

Items: 508

Table Settings

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

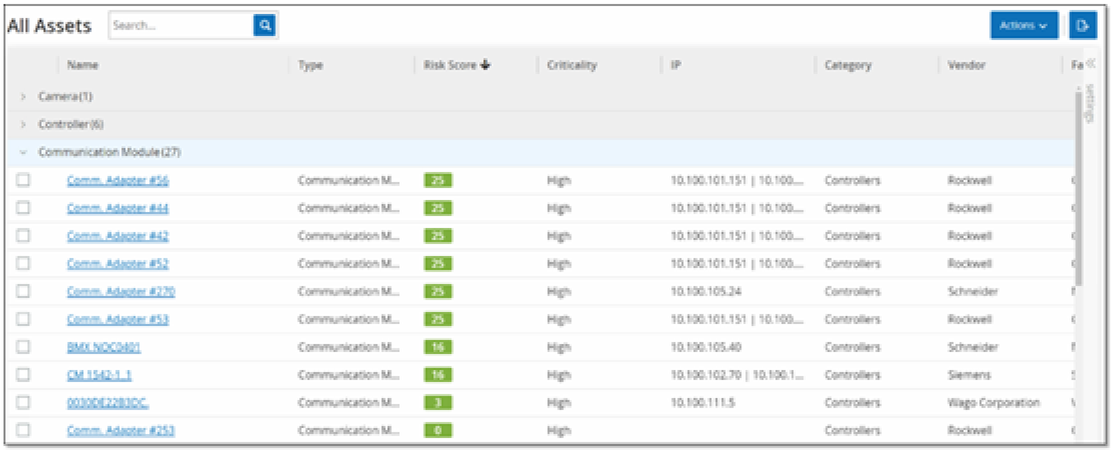
Grouping

Expand All Collapse All

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

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

	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
□	00300E22B3DC	Communication M...	3	High	10.100.111.5	Controllers	Wago Corporation
□	Comm. Adapter #253	Communication M...	0	High		Controllers	Rockwell

Sort Columns

Note: This procedure is applicable for all versions.

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 again to reverse the display order (that is, A→ Z, Z→ A).

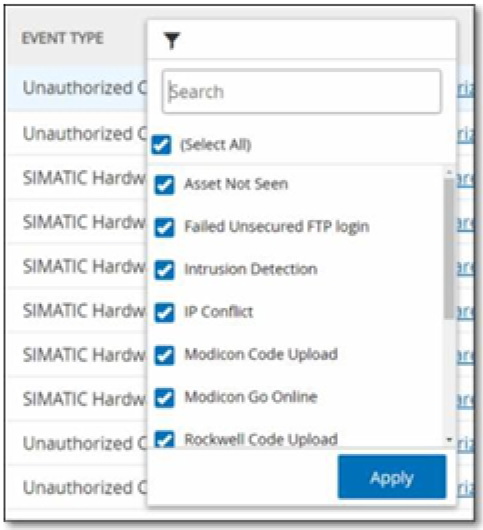
Filter Columns

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.



3. Select the elements to display and clear the checkboxes for those to hide.

   > **Note**: You can start by clearing the **Select All** checkbox 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 filtered by that parameter.

To remove the filters:

1. Click filter ▼ button.
2. Click **Select All** checkbox to clear all selections.
3. Click again on the **Select All** checkbox 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** button.

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 page for which you want to export data.
2. In the header bar, click **Export** .

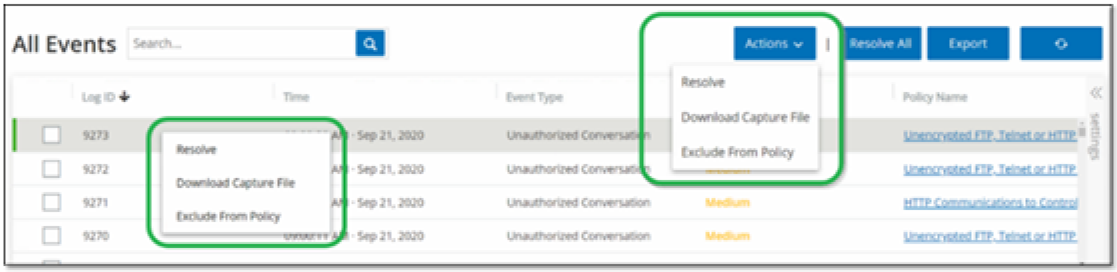
   OT Security downloads a CSV format of the data.

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:

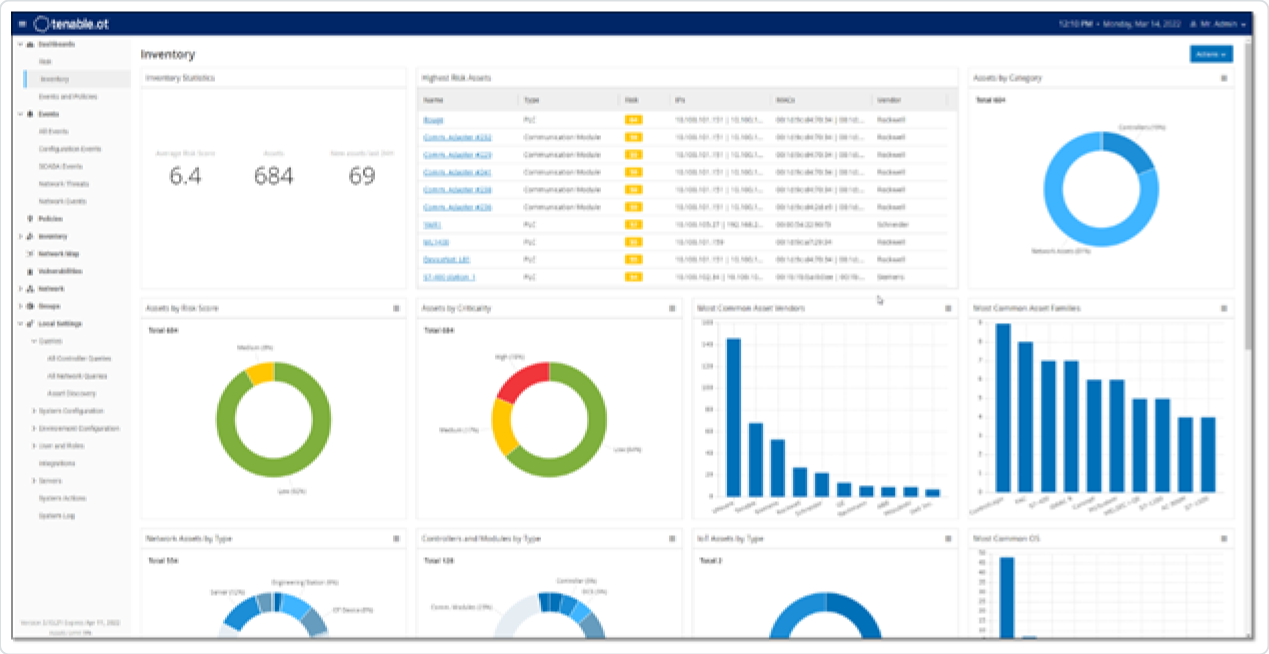
- Select an element, then click **Actions** in the header bar.
- Right-click the element, then select **Actions**.



	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

OT Security provides three dashboards **Risk**, **Inventory**, and **Events and Policies** to give an at-a-glance view of your network's inventory and security posture.



To select a dashboard:

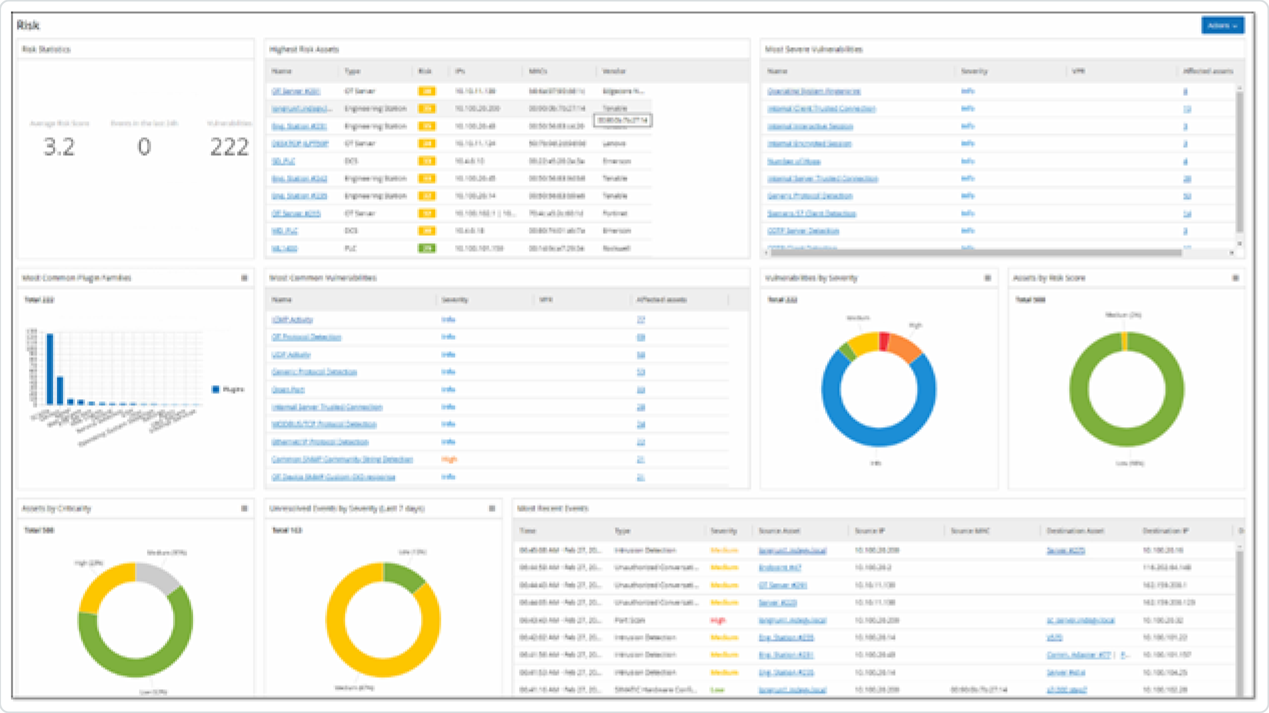
- In the main navigation menu, click **Dashboards**.

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.

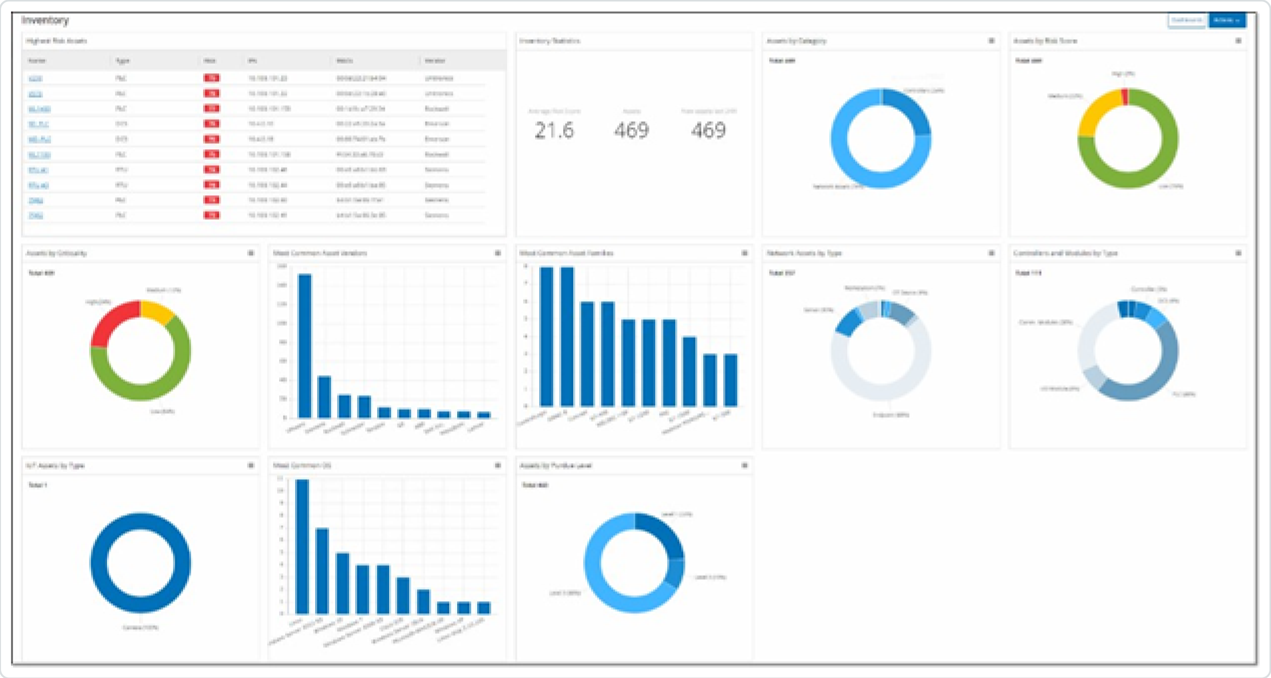

Risk
Risk Statistics
3.2
0
222
Highest Risk Assets
Most Severe Vulnerabilities
Most Common Plugin Families
Most Common Vulnerabilities
Vulnerabilities by Severity
Assets by Risk Score
Assets by Criticality
Unresolved Events by Severity (Last 7 days)
Most Recent Events

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.

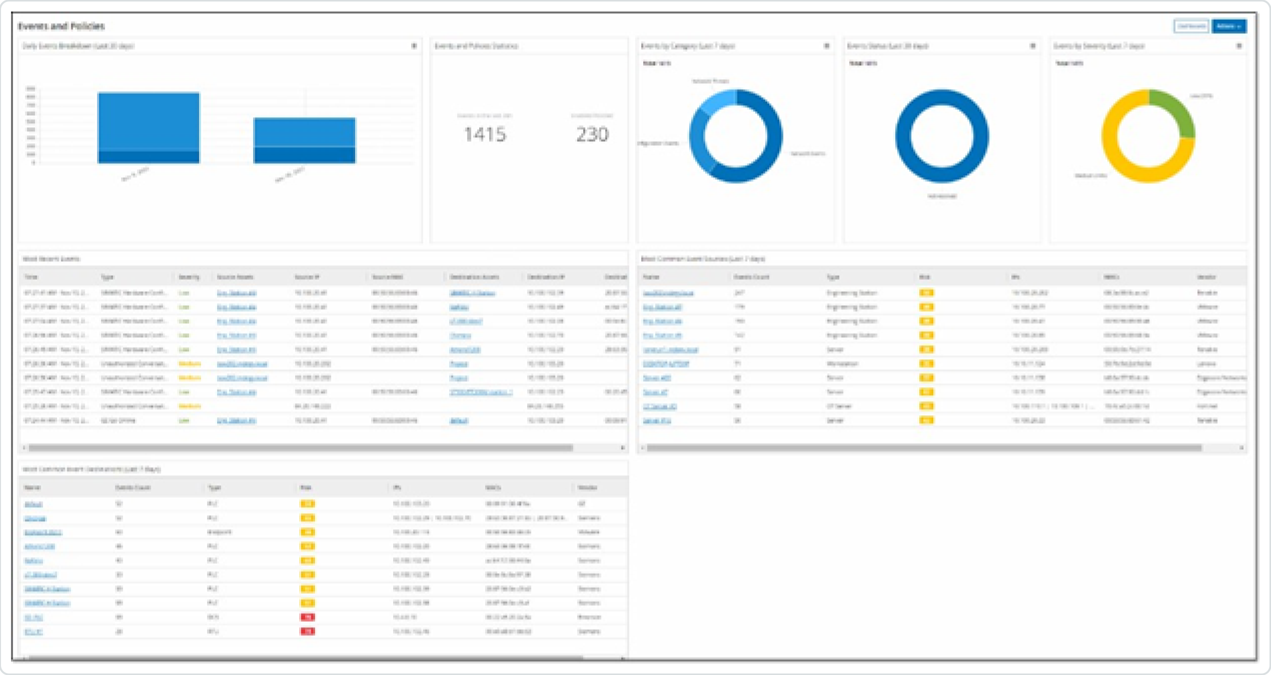


The **Inventory** dashboard shows widgets such as: Highest Risk Assets, Inventory Statistics, Assets by Risk, Controllers, and Modules by Type, Assets by Purdue Level and so on.

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.



Events and Policies

1415

230

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.

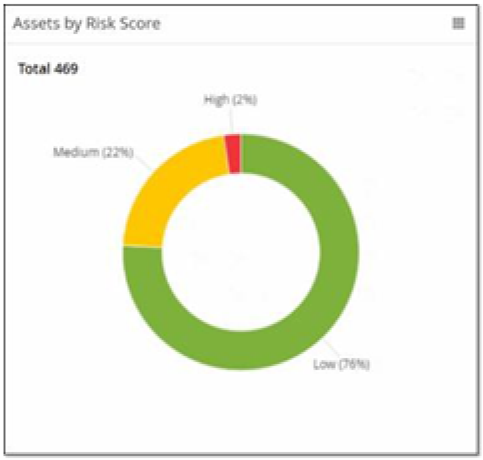
Interacting with Dashboards

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 the table/graph symbol to toggle between modes.

> **Note**: You can only apply filters in table mode.

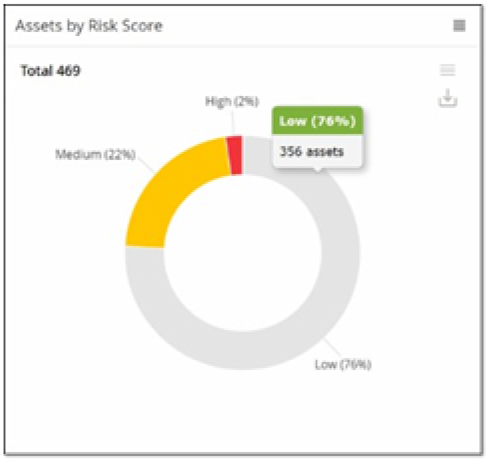
Graph mode

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.



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

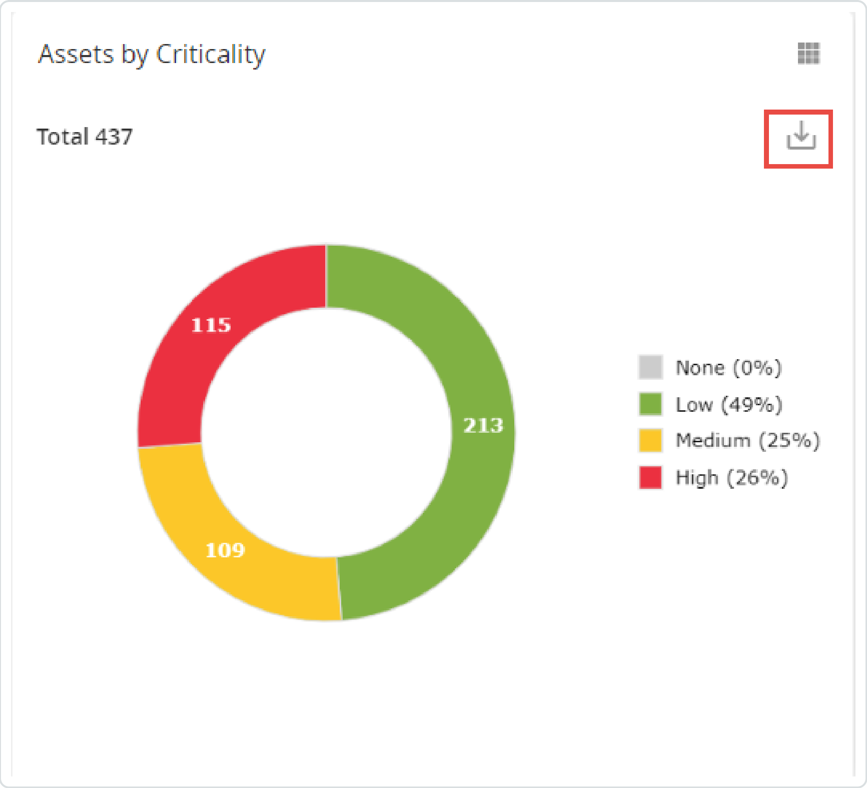
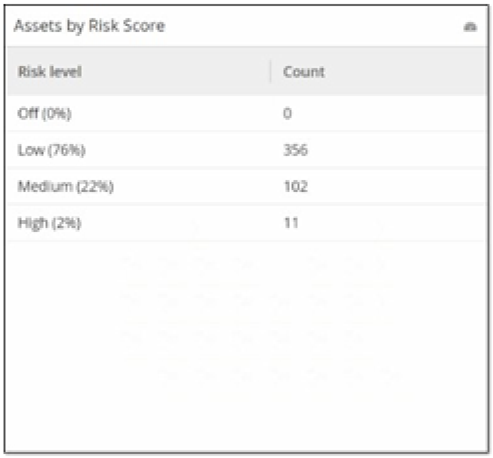


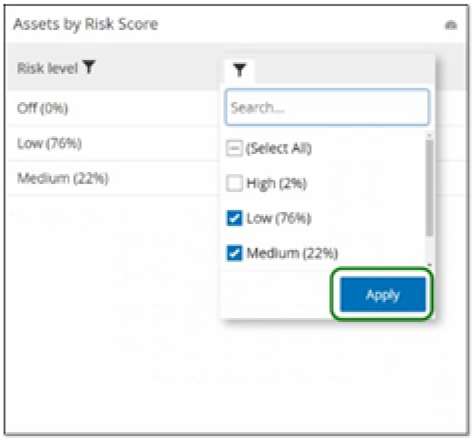
Table mode



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 that you apply in the table mode do not apply to the graph if you switch to graph mode.

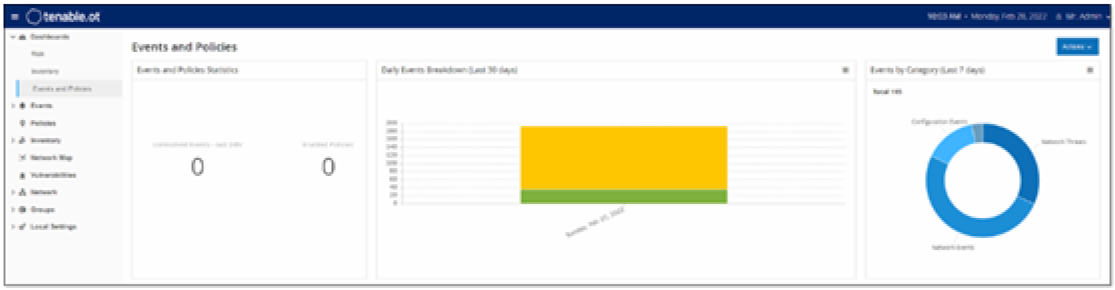


Changing the Default Dashboard

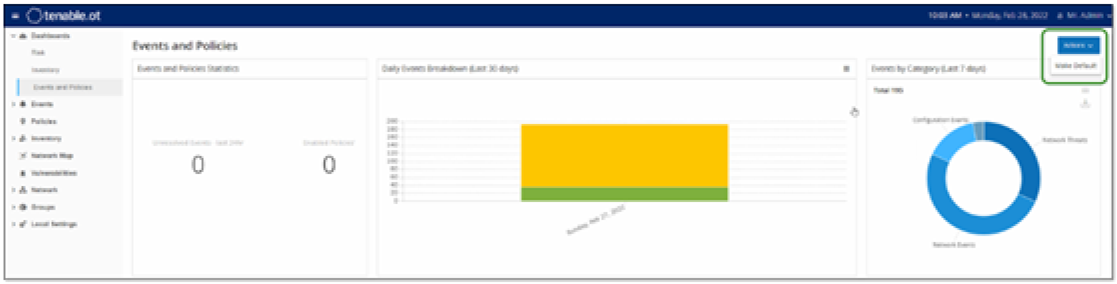
The Risk dashboard is the initial default view of the Management Console. You can designate a different dashboard to be shown as the default view.

To change the default dashboard view:

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


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

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


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

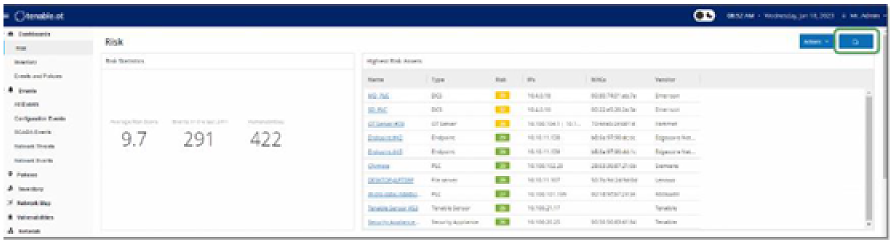
OT Security updates the default dashboard and shows it the next time you access the Management Console

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).

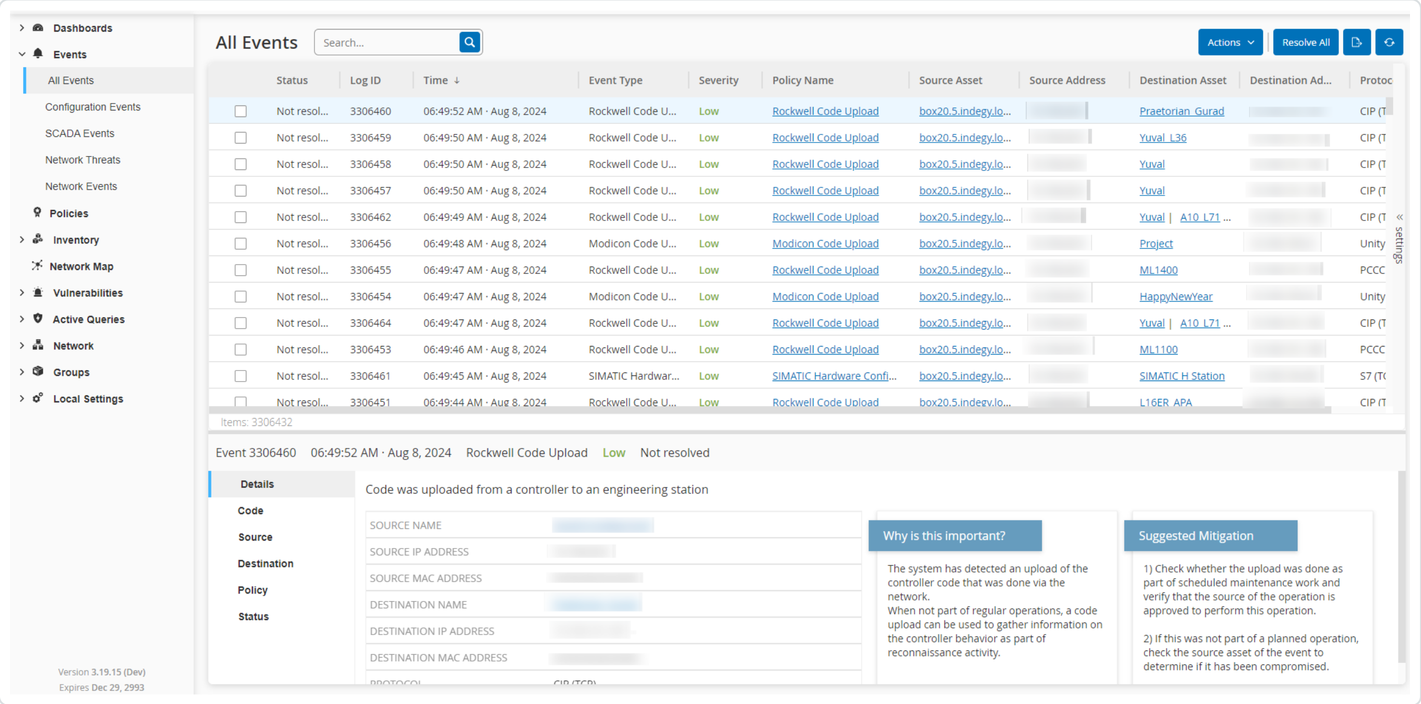
2. After the file download completes, navigate to the downloaded file to view or share it.

Events

Events are notifications generated in the system to call attention to potentially harmful activity in the network. Policies that you set up in the OT Security system generate events in one of the following categories: Configuration Events, SCADA Events, Network Threats, or Network Events. OT Security assigns a severity level to each policy, indicating the severity of the event.

When you activate a policy, 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



All Events

	Status	Log ID	Time ↓	Event Type	Severity	Policy Name	Source Asset	Source Address	Destination Asset	Destination Ad...	Protoc
□	Not resol...	3306460	06:49:52 AM · Aug 8, 2024	Rockwell Code U...	Low	Rockwell Code Upload	box20.5.indegy.lo...	[redacted]	Praetorian_Gurad	[redacted]	CIP (T
□	Not resol...	3306459	06:49:50 AM · Aug 8, 2024	Rockwell Code U...	Low	Rockwell Code Upload	box20.5.indegy.lo...	[redacted]	Yuval_L36	[redacted]	CIP (T
□	Not resol...	3306458	06:49:50 AM · Aug 8, 2024	Rockwell Code U...	Low	Rockwell Code Upload	box20.5.indegy.lo...	[redacted]	Yuval	[redacted]	CIP (T
□	Not resol...	3306457	06:49:50 AM · Aug 8, 2024	Rockwell Code U...	Low	Rockwell Code Upload	box20.5.indegy.lo...	[redacted]	Yuval	[redacted]	CIP (T
□	Not resol...	3306462	06:49:49 AM · Aug 8, 2024	Rockwell Code U...	Low	Rockwell Code Upload	box20.5.indegy.lo...	[redacted]	Yuval | A10_L71 ...	[redacted]	CIP (T
□	Not resol...	3306456	06:49:48 AM · Aug 8, 2024	Modicon Code U...	Low	Modicon Code Upload	box20.5.indegy.lo...	[redacted]	Project	[redacted]	Unity
□	Not resol...	3306455	06:49:47 AM · Aug 8, 2024	Rockwell Code U...	Low	Rockwell Code Upload	box20.5.indegy.lo...	[redacted]	ML1400	[redacted]	PCCC
□	Not resol...	3306454	06:49:47 AM · Aug 8, 2024	Modicon Code U...	Low	Modicon Code Upload	box20.5.indegy.lo...	[redacted]	HappyNewYear	[redacted]	Unity
□	Not resol...	3306464	06:49:47 AM · Aug 8, 2024	Rockwell Code U...	Low	Rockwell Code Upload	box20.5.indegy.lo...	[redacted]	Yuval | A10_L71 ...	[redacted]	CIP (T
□	Not resol...	3306453	06:49:46 AM · Aug 8, 2024	Rockwell Code U...	Low	Rockwell Code Upload	box20.5.indegy.lo...	[redacted]	ML1100	[redacted]	PCCC
□	Not resol...	3306461	06:49:45 AM · Aug 8, 2024	SIMATIC Hardwar...	Low	SIMATIC Hardware Confi...	box20.5.indegy.lo...	[redacted]	SIMATIC H Station	[redacted]	S7 (T(
□	Not resol...	3306451	06:49:44 AM · Aug 8, 2024	Rockwell Code U...	Low	Rockwell Code Upload	box20.5.indegy.lo...	[redacted]	L16ER_APA	[redacted]	CIP (T

Items: 3306432

Event 3306460 06:49:52 AM · Aug 8, 2024 Rockwell Code Upload Low Not resolved

Code was uploaded from a controller to an engineering station

SOURCE NAME	[redacted]
SOURCE IP ADDRESS	[redacted]
SOURCE MAC ADDRESS	[redacted]
DESTINATION NAME	[redacted]
DESTINATION IP ADDRESS	[redacted]
DESTINATION MAC ADDRESS	[redacted]
PROTOCOL	CIP (TCP)

Why is this important?

The system has detected an upload of the controller code that was done via the network.
When not part of regular operations, a code upload can be used to gather information on the controller behavior as part of reconnaissance activity.

Suggested Mitigation

1) Check whether the upload was done as part of scheduled maintenance work and verify that the source of the operation is approved to perform this operation.

2) If this was not part of a planned operation, check the source asset of the event to determine if it has been compromised.

All events that occurred in the system appear on the **All Events** page. Specific subsets of the events appear on separate windows for each of the these event categories: **Configuration Events**, **SCADA Events**, **Network Threats**, and **Network Events**.

For each of the Events pages (Configuration Events, SCADA Events, Network Threats, and Network Events), you can customize the display settings by selecting the columns to display and the position of each column. You can group the events based on Event type, Severity, Policy Name, and so on. You can also sort, filter, and search the event lists. For more information about the customization features, seeCustomize Tables.

You can use the **Actions** button in the header bar to perform the following actions:

- Resolve – Mark this event as Resolved.
- Download PCAP – Download the PCAP file for this event.
- Exclude – Create a Policy Exclusion for this event.

The bottom section of the page shows 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 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.

Viewing Event Details

The bottom of the **Events** page 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.)

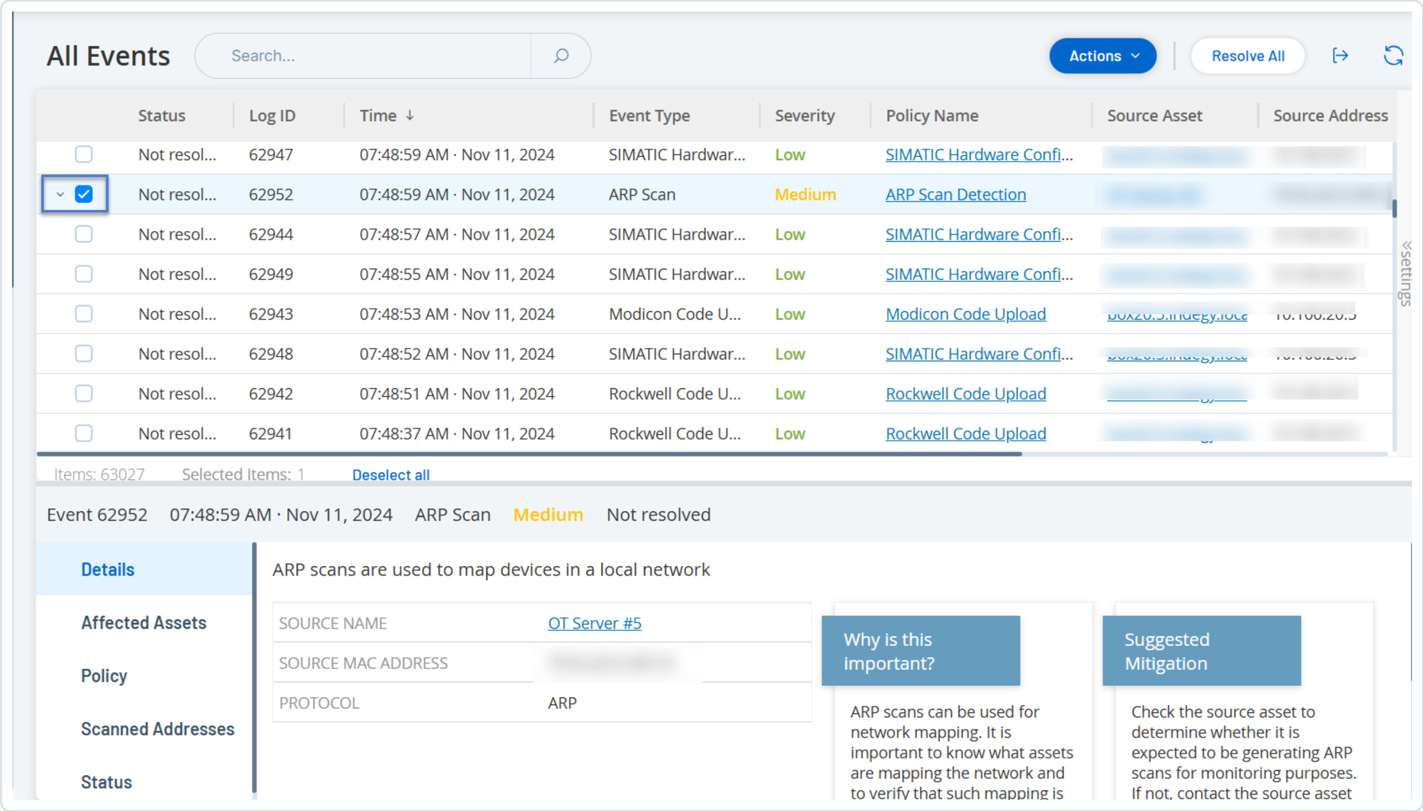
- **Header** – shows an overview of essential info about the Event.
- **Details** – gives a brief description of the Event as well as an explanation of why this information is important and suggested steps that should be taken to mitigate the potential harm caused by the Event. In addition, it shows 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

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.



	Status	Log ID	Time ↓	Event Type	Severity	Policy Name	Source Asset	Source Address
□	Not resol...	62947	07:48:59 AM · Nov 11, 2024	SIMATIC Hardwar...	Low	SIMATIC Hardware Confi...	[redacted]	[redacted]
☑	Not resol...	62952	07:48:59 AM · Nov 11, 2024	ARP Scan	Medium	ARP Scan Detection	[redacted]	[redacted]
□	Not resol...	62944	07:48:57 AM · Nov 11, 2024	SIMATIC Hardwar...	Low	SIMATIC Hardware Confi...	[redacted]	[redacted]
□	Not resol...	62949	07:48:55 AM · Nov 11, 2024	SIMATIC Hardwar...	Low	SIMATIC Hardware Confi...	[redacted]	[redacted]
□	Not resol...	62943	07:48:53 AM · Nov 11, 2024	Modicon Code U...	Low	Modicon Code Upload	[redacted]	[redacted]
□	Not resol...	62948	07:48:52 AM · Nov 11, 2024	SIMATIC Hardwar...	Low	SIMATIC Hardware Confi...	[redacted]	[redacted]
□	Not resol...	62942	07:48:51 AM · Nov 11, 2024	Rockwell Code U...	Low	Rockwell Code Upload	[redacted]	[redacted]
□	Not resol...	62941	07:48:37 AM · Nov 11, 2024	Rockwell Code U...	Low	Rockwell Code Upload	[redacted]	[redacted]

Items: 63027 Selected Items: 1 Deselect all

Event 62952 07:48:59 AM · Nov 11, 2024 ARP Scan Medium Not resolved

ARP scans are used to map devices in a local network

SOURCE NAME	OT Server #5
SOURCE MAC ADDRESS	[redacted]
PROTOCOL	ARP

Why is this important?

ARP scans can be used for network mapping. It is important to know what assets are mapping the network and to verify that such mapping is

Suggested Mitigation

Check the source asset to determine whether it is expected to be generating ARP scans for monitoring purposes. If not, contact the source asset

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**.

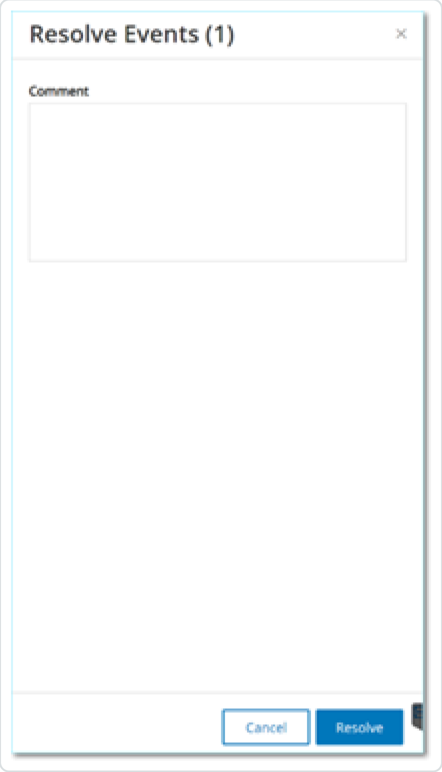
2. In the header bar, click **Actions**.

   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.



Resolve Events (1)

Comment

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**.

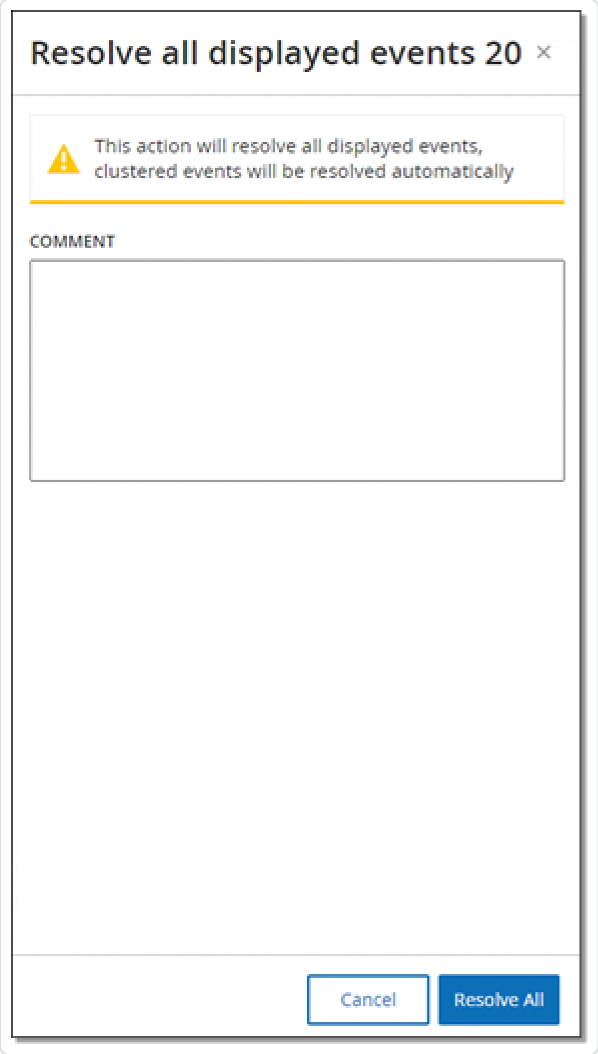
Resolve All Events

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

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:

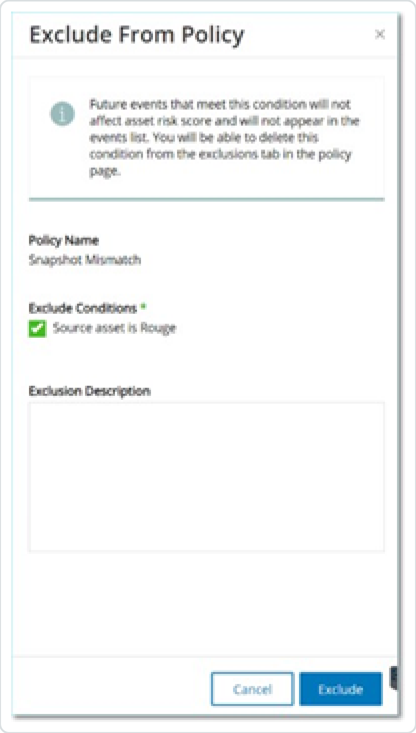
1. In the relevant **Events** page, (Configuration Events, SCADA Events, Network Threats, or Network Events), select the event for which you want to create an exclusion.
2. In the header bar, click **Actions** or right-click the event).

   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.

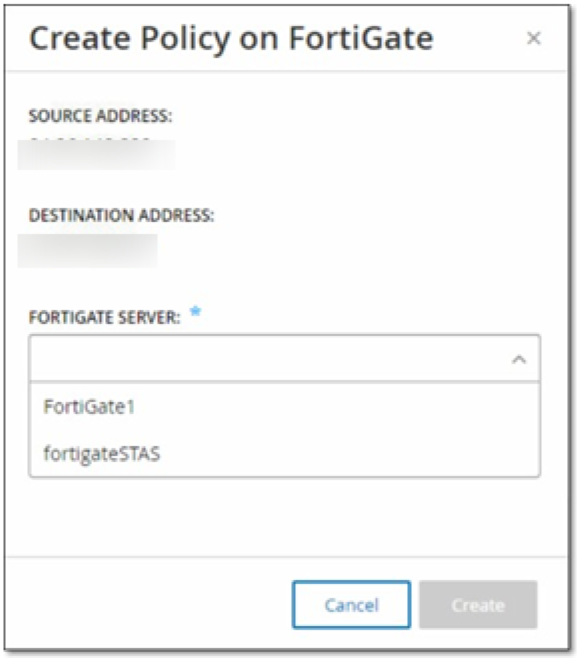
To suggest a FortiGate policy:

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:

[redacted]

DESTINATION ADDRESS:

[redacted]

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.

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,	The controller changed from one operational state to another. For example, running, stopped, test, and so on.

	Schedule	
Change in firmware version	Affected Asset, Schedule	A change to the firmware running on the controller.
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.
Rediscovered Asset	Inactive for, Affected Assets, Schedule	Detects an asset that comes online or begins communicating again after being offline for a period of time.

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 (authenticated)	Source, Destination, Schedule	An RDP (Remote Desktop Connection) was made in 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	Source,	OT Security considers Telnet as an unsecure

Telnet login	Destination, Schedule	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,	Detects SYN scans (network reconnaissance activity) that

	Destination Asset, Schedule	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

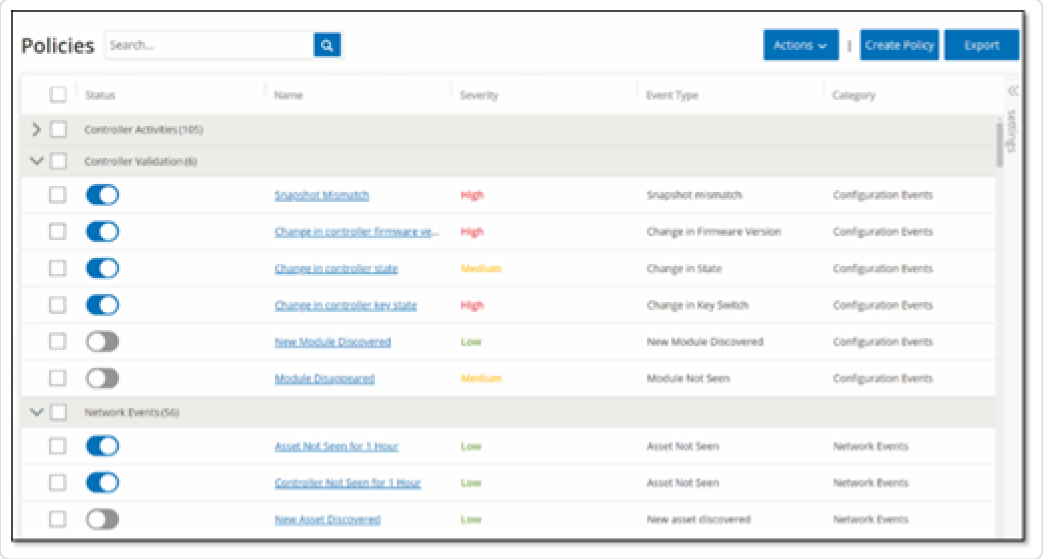
You can enable or disable any configured policy in your system (both pre-configured and user-defined). You can turn on/off individual policies or you can select multiple policies to turn on/off in a bulk process.

> **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.

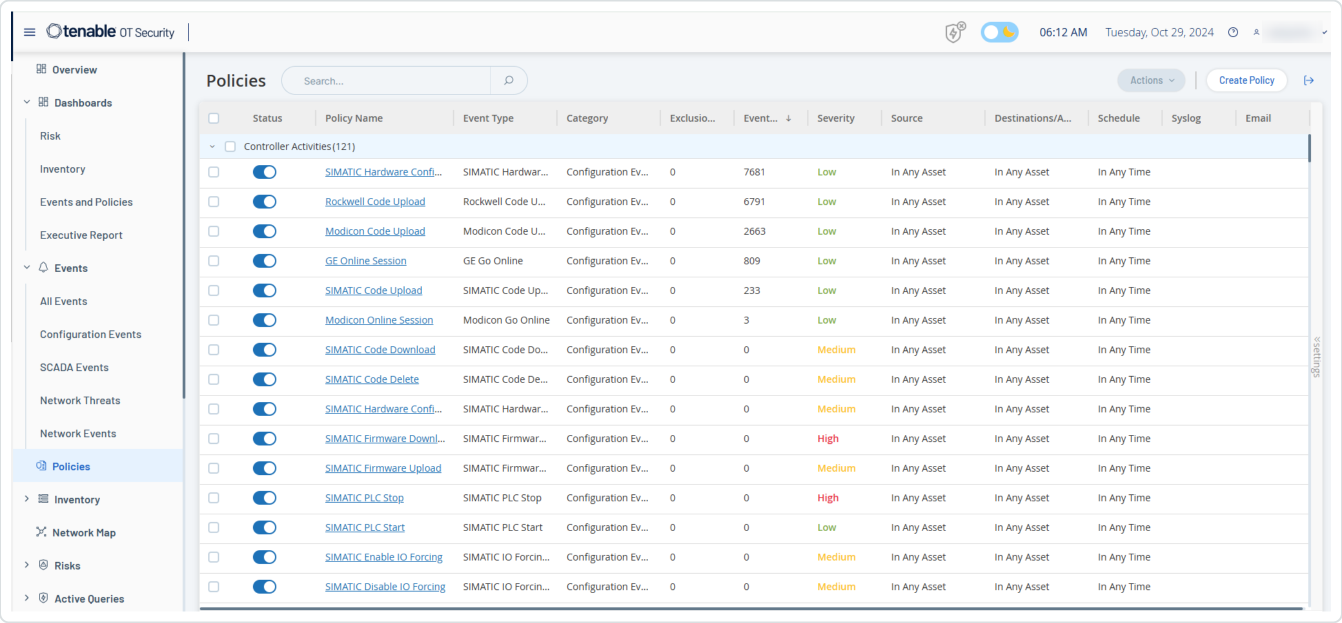
To enable or disable a policy:

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



Controller Activities(121)

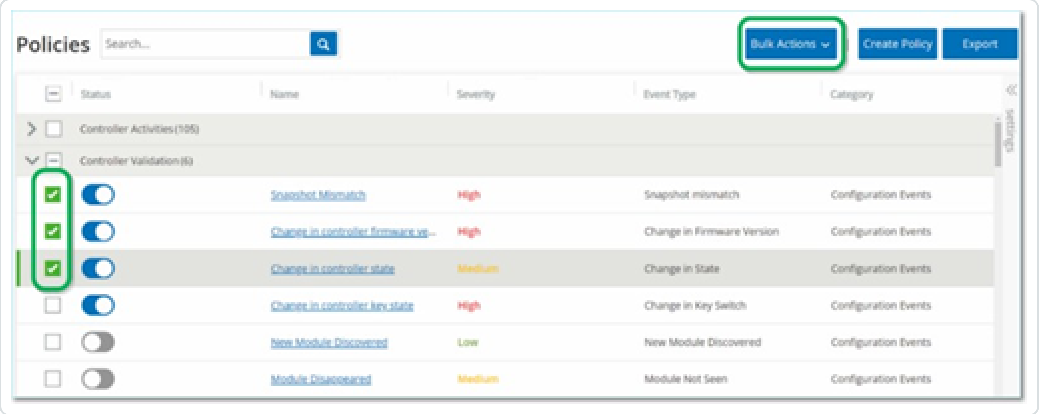
	Status	Policy Name	Event Type	Category	Exclusio...	Event... ↓	Severity	Source	Destinations/A...	Schedule	Syslog	Email
□	●	SIMATIC Hardware Confi...	SIMATIC Hardwar...	Configuration Ev...	0	7681	Low	In Any Asset	In Any Asset	In Any Time		
□	●	Rockwell Code Upload	Rockwell Code U...	Configuration Ev...	0	6791	Low	In Any Asset	In Any Asset	In Any Time		
□	●	Modicon Code Upload	Modicon Code U...	Configuration Ev...	0	2663	Low	In Any Asset	In Any Asset	In Any Time		
□	●	GE Online Session	GE Go Online	Configuration Ev...	0	809	Low	In Any Asset	In Any Asset	In Any Time		
□	●	SIMATIC Code Upload	SIMATIC Code Up...	Configuration Ev...	0	233	Low	In Any Asset	In Any Asset	In Any Time		
□	●	Modicon Online Session	Modicon Go Online	Configuration Ev...	0	3	Low	In Any Asset	In Any Asset	In Any Time		
□	●	SIMATIC Code Download	SIMATIC Code Do...	Configuration Ev...	0	0	Medium	In Any Asset	In Any Asset	In Any Time		
□	●	SIMATIC Code Delete	SIMATIC Code De...	Configuration Ev...	0	0	Medium	In Any Asset	In Any Asset	In Any Time		
□	●	SIMATIC Hardware Confi...	SIMATIC Hardwar...	Configuration Ev...	0	0	Medium	In Any Asset	In Any Asset	In Any Time		
□	●	SIMATIC Firmware Downl...	SIMATIC Firmwar...	Configuration Ev...	0	0	High	In Any Asset	In Any Asset	In Any Time		
□	●	SIMATIC Firmware Upload	SIMATIC Firmwar...	Configuration Ev...	0	0	Medium	In Any Asset	In Any Asset	In Any Time		
□	●	SIMATIC PLC Stop	SIMATIC PLC Stop	Configuration Ev...	0	0	High	In Any Asset	In Any Asset	In Any Time		
□	●	SIMATIC PLC Start	SIMATIC PLC Start	Configuration Ev...	0	0	Low	In Any Asset	In Any Asset	In Any Time		
□	●	SIMATIC Enable IO Forcing	SIMATIC IO Forcin...	Configuration Ev...	0	0	Medium	In Any Asset	In Any Asset	In Any Time		
□	●	SIMATIC Disable IO Forcing	SIMATIC IO Forcin...	Configuration Ev...	0	0	Medium	In Any Asset	In Any Asset	In Any Time		

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

To enable or disable multiple policies:

1. Go to **Policies**.

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



Controller Activities (105)

Controller Validation (6)

	Status	Name	Severity	Event Type	Category
☑	●	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 checkbox next for each of the policies you want to enable or disable. Use one of the following selection methods:

- **Select individual Policies** — Click the checkbox next to specific policies.
- **Select Policy Types** — Click the checkbox next to a policy type heading.
- **Select all Policies** — Click the checkbox 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/ Affected Asset	A policy condition. The destination Asset Group/Network Segment (that is 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.

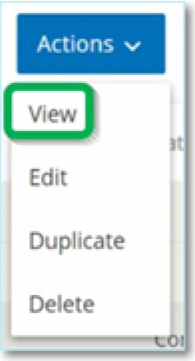
View Policy Details

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.

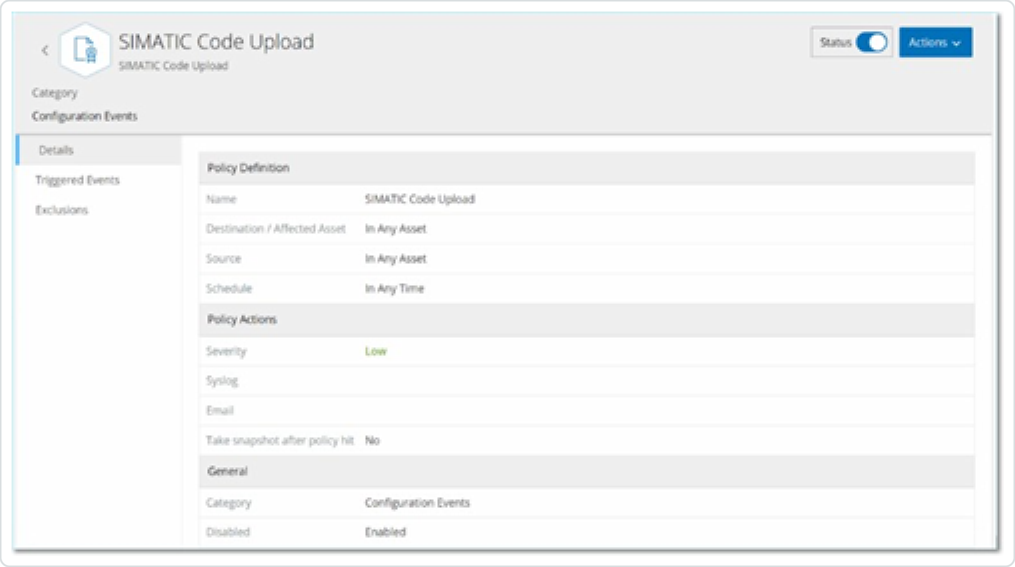
To open the **Policy Details** screen for a particular policy:

1. On the **Policies** page, select the desired policy.

2. From the **Actions** drop-down box, select **View**.



The Policy Details page 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.

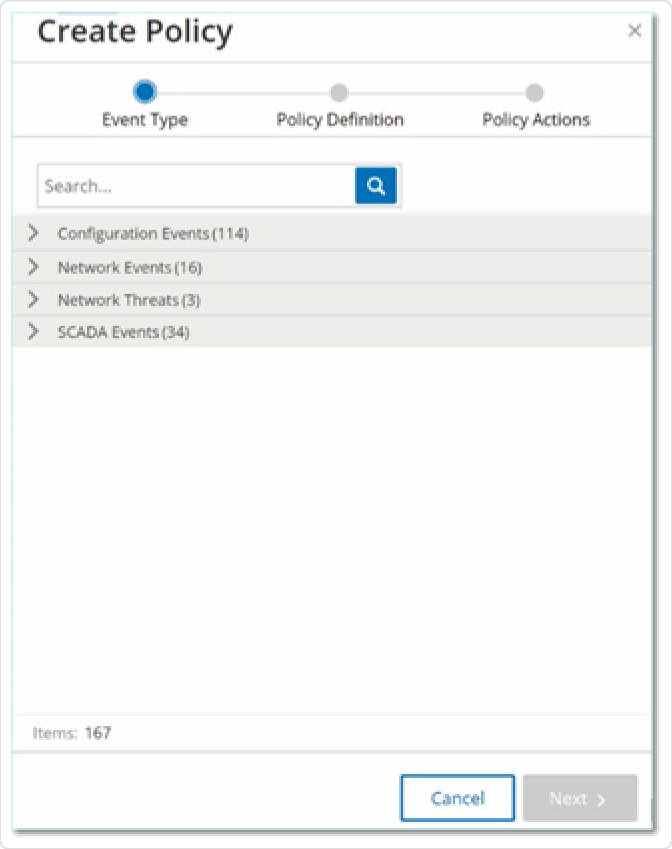
If you would like to create a new Policy with similar parameters to an existing Policy, you can Duplicate the original Policy and make the necessary changes, see section Create Policies.

> **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.

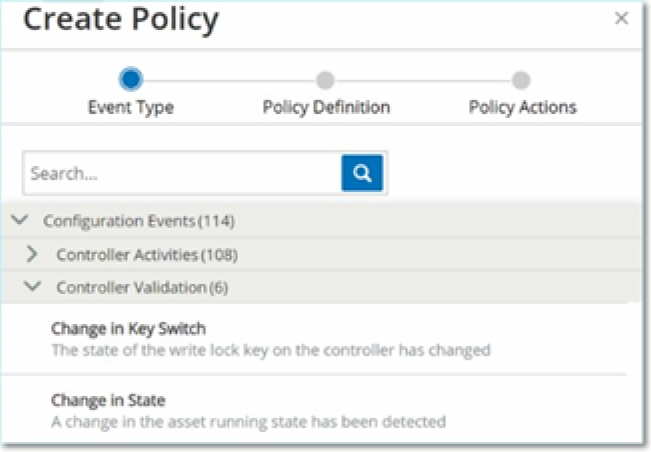


Configuration Events (114)
Network Events (16)
Network Threats (3)
SCADA Events (34)

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.

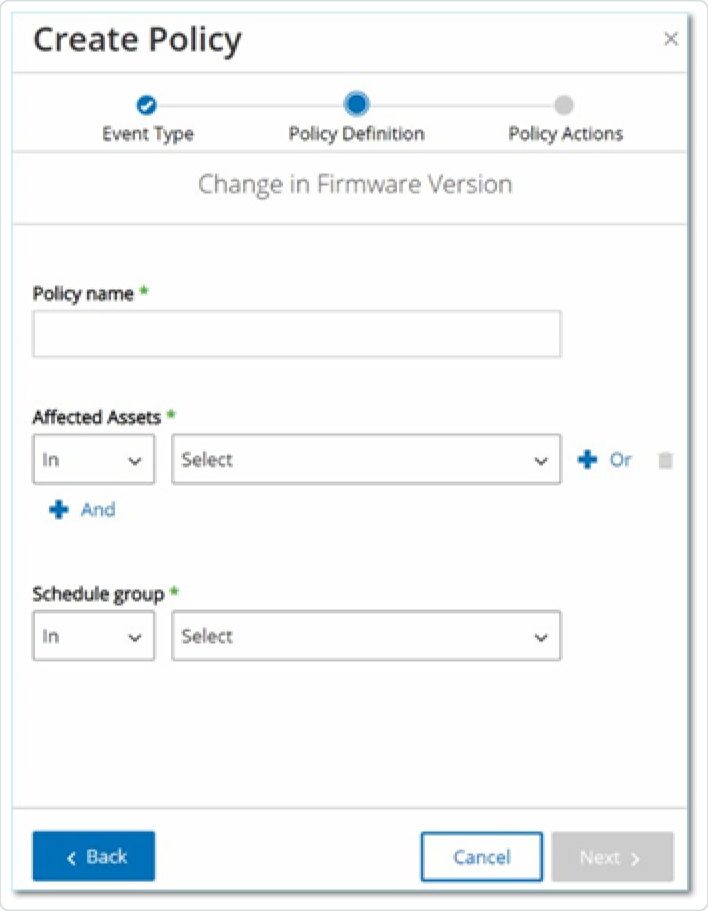


Configuration Events (114)
Controller Activities (108)
Controller Validation (6)

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.



Create Policy

Change in Firmware Version

Policy name *

Affected Assets *

In | Select

Schedule group *

In | Select

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.

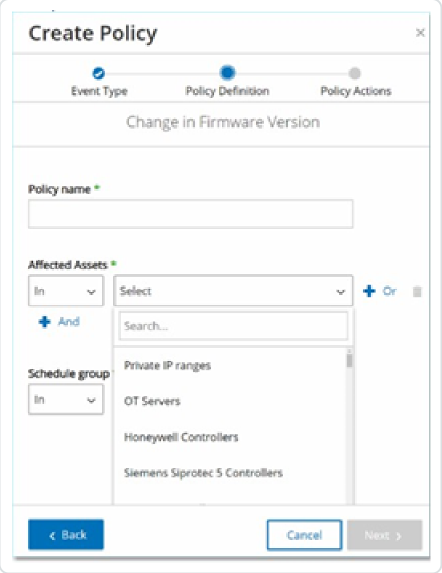
6. For each parameter:

   > **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.

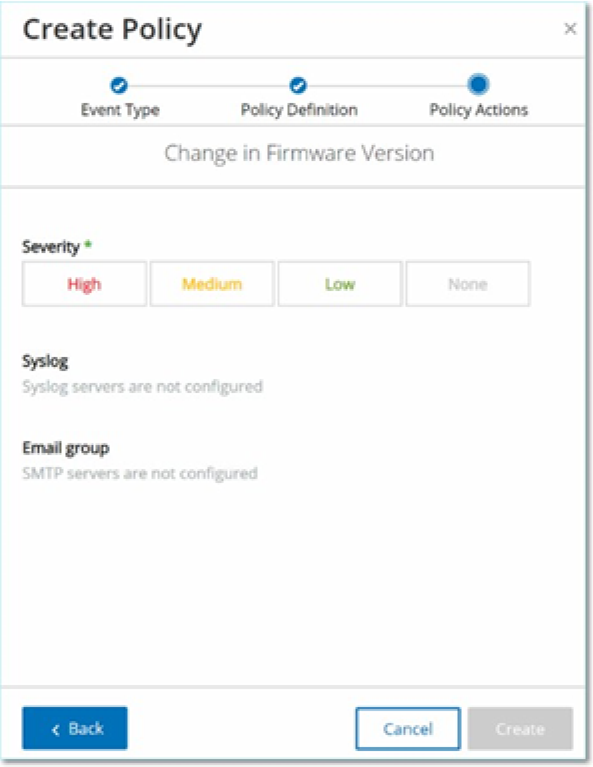
> **Note**: If the precise grouping to which you would like to apply the Policy does not exist, then you can create a new Group according to your needs, see Groups.

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

Syslog servers are not configured

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.)

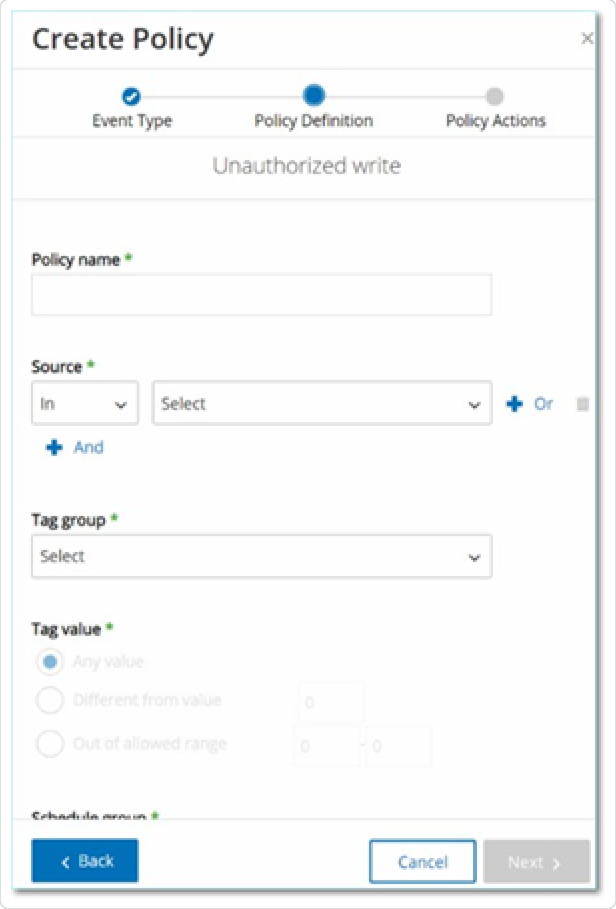
12. Click **Create**. The new Policy is created and automatically activated. The Policy is shown in the list on the Policies screen.

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

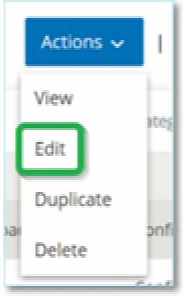
You can edit the configuration of both predefined and user-defined policies. For most policies, you can adjust both the **Policy Definition** parameters (policy conditions) and the **Policy Action** parameters. For **Intrusion Detection Policies**, you can only adjust the **Policy Action** parameters.

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

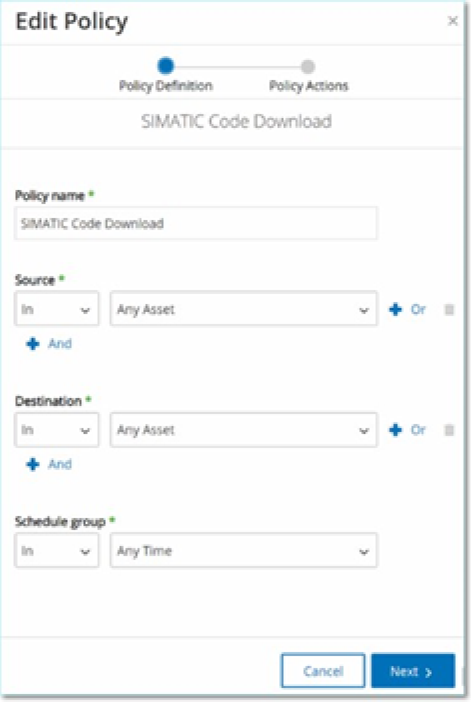
To edit a policy:

1. On the **Policies** window, select the checkbox 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

Policy Definition   Policy Actions

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.

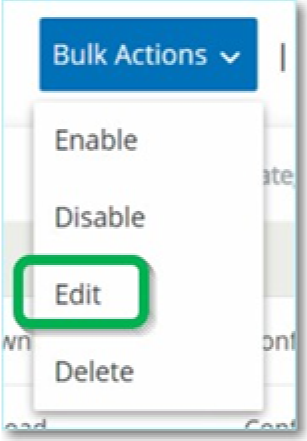
7. Click **Save**.

   OT Security saves the policy with the new configuration.

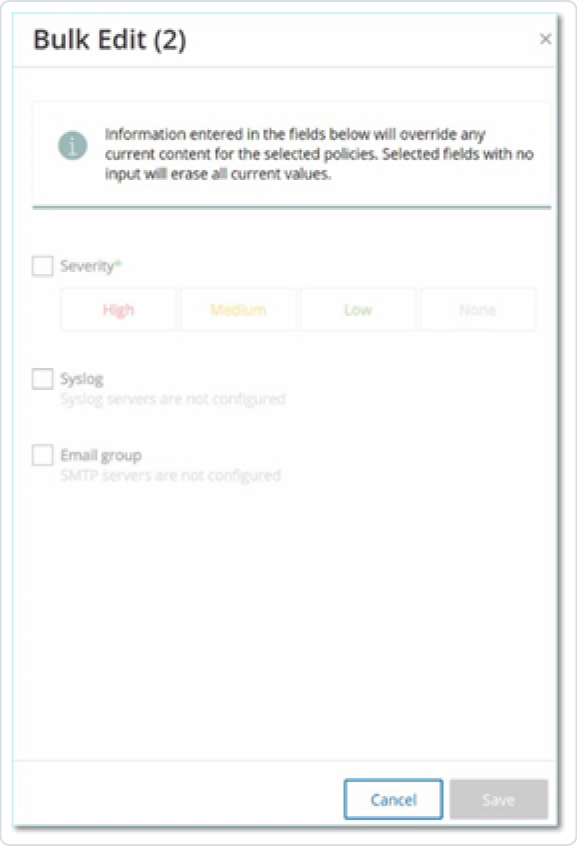
To edit multiple policies (bulk process):

1. On the **Policies** window, select the checkbox 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.



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.

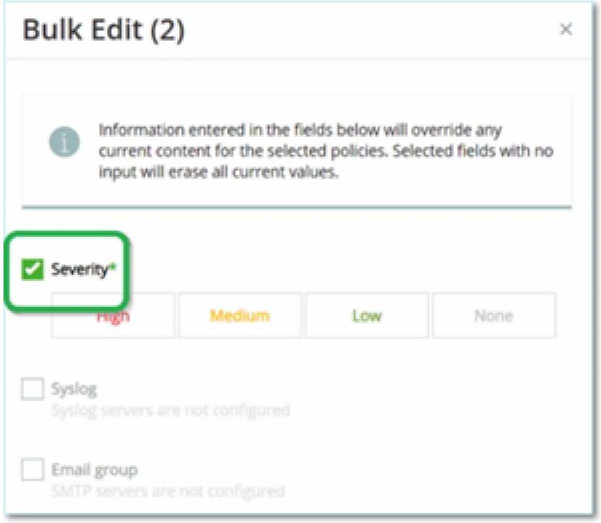
□ Severity*

High | Medium | Low | None

□ Syslog
Syslog servers are not configured

□ Email group
SMTP servers are not configured

4. Select the checkbox 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*

High | Medium | Low | None

□ 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 checkbox next to a parameter but do not enter a selection, then the current values for that parameter are erased.

6. Click **Save**.

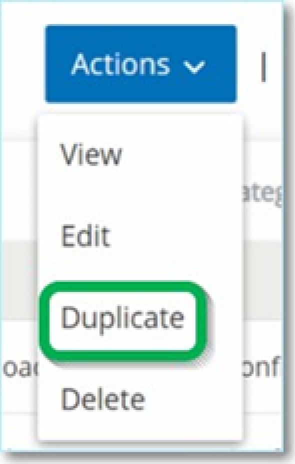
   OT Security saves the policies with the new configuration.

Duplicate Policies

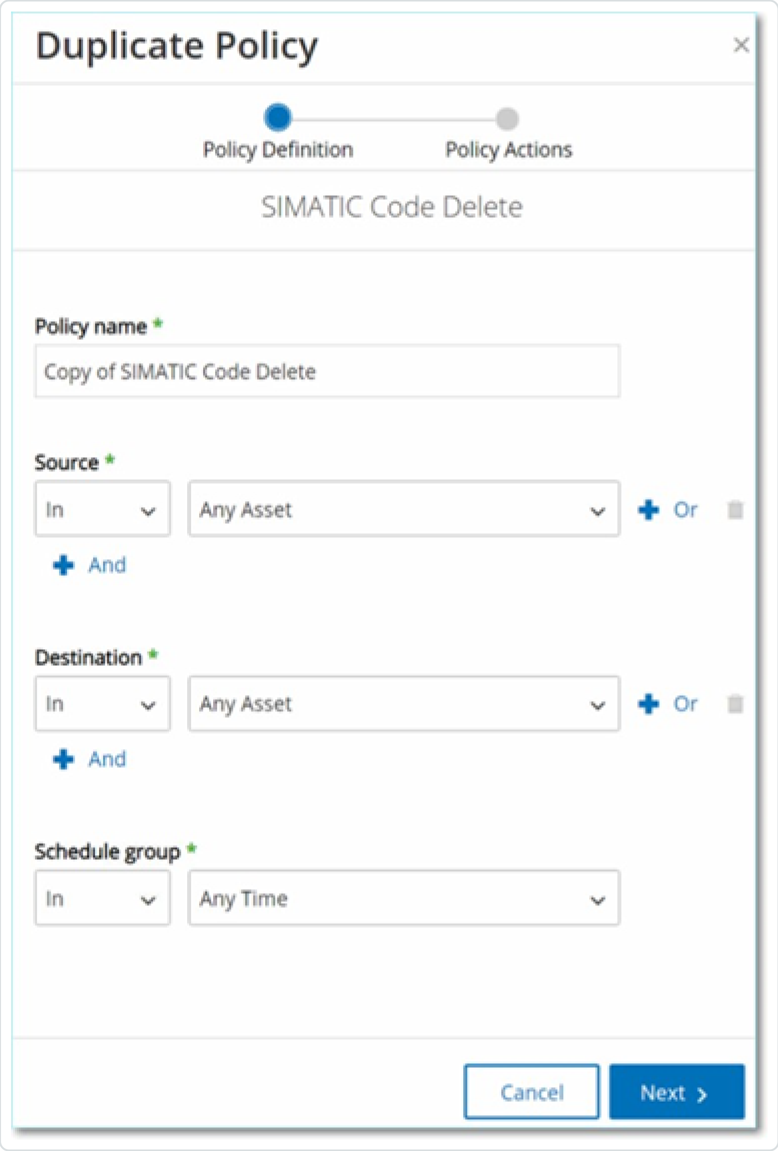
You can create a new policy that is similar to an existing policy by duplicating the original policy and making the required adjustments. You can duplicate both predefined and user-defined policies (except for **Intrusion Detection Policies**).

To duplicate a policy:

1. On the **Policies** window, select the checkbox 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>*".



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

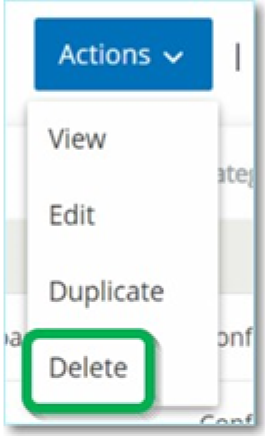
You can delete a policy from the system. You can delete both predefined and user-defined policies (except for **Intrusion Detection Policies**, which can't be deleted).

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 checkbox next to the required policy.
2. In the **Actions** drop-down box, select **Delete**.

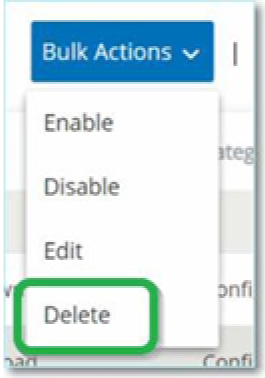
   

   A confirmation window appears.
3. Click **Delete**.

   OT Security deletes the policy from the system.

To delete multiple policies (bulk action):

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



A confirmation window appears.

3. Click **Delete**.

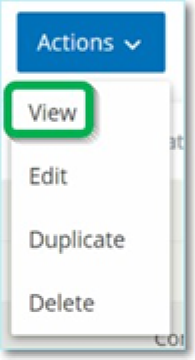
   OT Security deletes the policies from the system.

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.

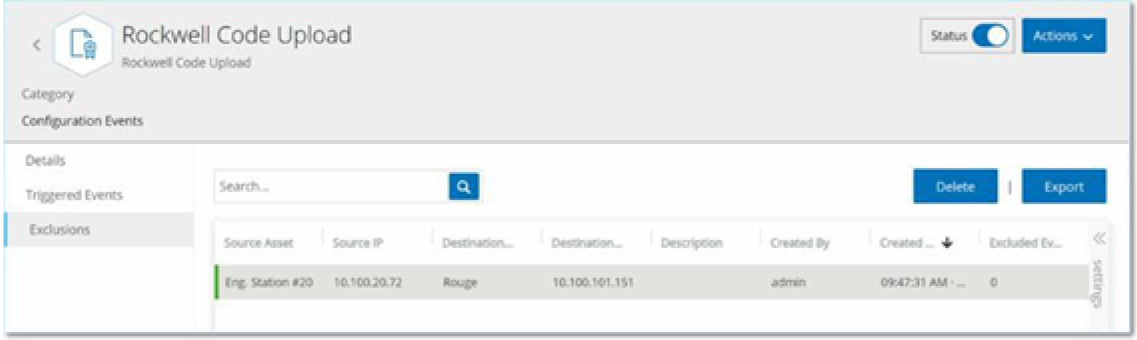
To delete a Policy Exclusion:

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.



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.

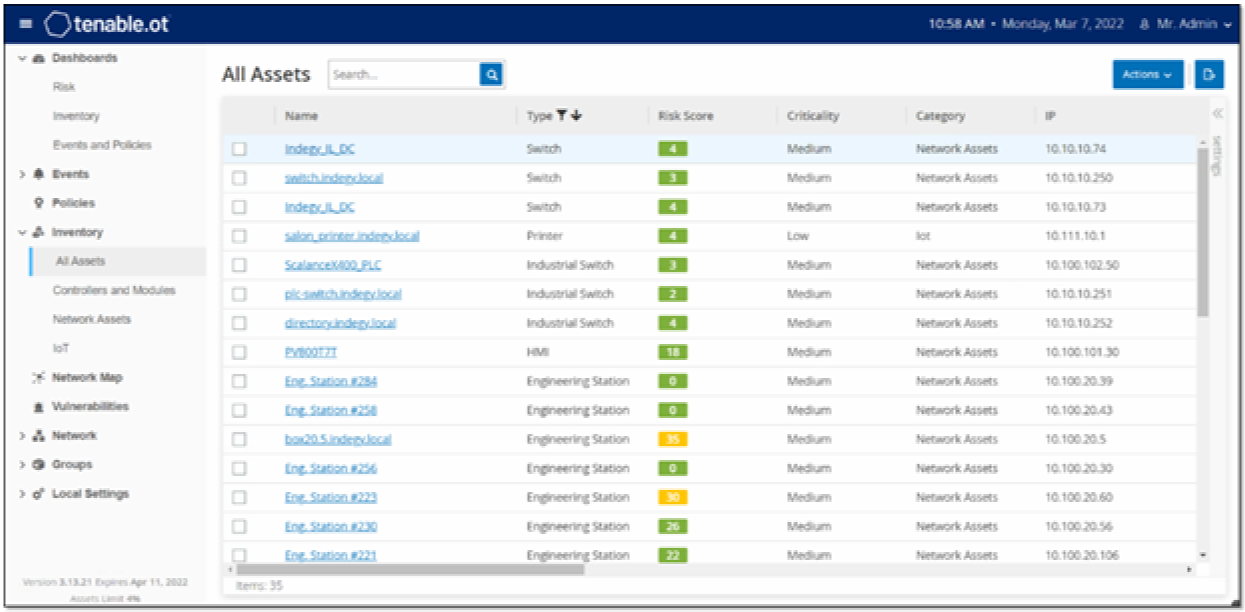
6. In the confirmation window, click **Delete**.

   OT Security deletes the exclusion from the system.

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

All the assets in the network appear on the **Inventory** pages. The Inventory page includes details about the asset that enables comprehensive asset management as well as monitoring of the status of each asset and its related events. OT Security collects this data using the Network Detection and Active Query capabilities. The **All** page 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 pages (**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 assets list as well as perform a search. For information about how to customize tables, see Management Console User Interface Elements.

The following table describes parameters on the **Inventory** pages.

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

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 Edit Asset Details.
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 Edit Asset Details.
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		FieldDevice

		industrial protocols to send information to ICS systems.		
				PowerMeter
				RemoteI/O
				Relay
				Inverter
				IndustrialSensor
				Drive
				Actuator
OT Devices	Medium / 2	This category includes all types of OT devices.		OTDevice
				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
				TenableSensor
				Domain Controller
				IoT
IoTs	Low / 3	This category includes various type of interrelated devices.		Camera
				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.

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**.

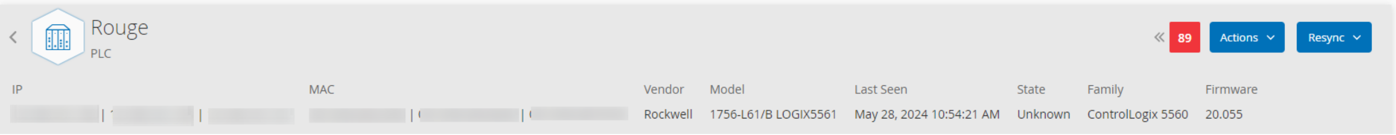
    - On the **Inventory** page, click **Actions** > **View**.

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 fixed and active 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

The Header Pane shows an overview of the current state of the asset.

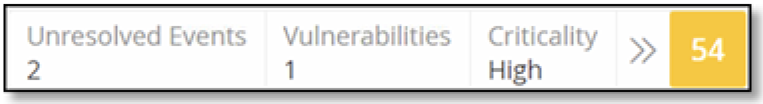


IP	MAC	Vendor	Model	Last Seen	State	Family	Firmware
[redacted]	[redacted]	Rockwell	1756-L61/B LOGIX5561	May 28, 2024 10:54:21 AM	Unknown	ControlLogix 5560	20.055

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	»	54
2	1	High		

- **Actions** menu – Allows you to edit the asset details or run a Tenable Nessus scan.
- **Resync** – Click to manually run one or more of the queries that are available for this asset. See Perform Resync.

Details

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.
OT Security displays only the sections relevant to the specified asset. The following list includes all possible section categories for various asset types: Overview, General, Project, Memory, Ethernet, Profinet, OS, System, Hardware, Devices & Drives, USB Devices, Installed Software, IEC-61850, and Interface Status.

> **Note**: OT Security displays only those details that it extracts from the asset. Not all sections may appear for all the assets. For example, **General**, **Nessus Scan Information**.

The following table shows the details in the **Overview** section:

Section	Description
Name	The asset name obtained either through passive monitoring or active query, or automatically generated using asset type and a unique identifier.

Description	The description of the asset from the user.
Purdue Level	The Purdue Model level assigned to the asset.
State	The current operational status of the asset. The field is relevant for specific asset types, typically controllers.
Direct IP	The IP address present on or configured for that specific asset or module.
Direct Mac	The Mac address physically present on or configured for that specific asset or module.
Additional IPs	IP addresses associated with other modules sharing a backplane or similar infrastructure with the asset used to access the asset indirectly. For example, a PLC (controller module) may lack its own network interface and is accessed via an IP address configured on a communication module installed in a different slot. Note that the asset may have connections other than a backplane.
Additional Macs	Mac addresses associated with other modules sharing a backplane or similar infrastructure used to access the asset indirectly.
Family	The device family or product line to which the asset belongs.
Vendor	The manufacturer or supplier of the asset.
Model Name	The specific model number of the asset.
Last Seen	The date and time when OT Security most recently detected the asset. OT Security may update this field when replaying a PCAP (traffic capture file) or performing a similar analysis.
First Seen	The date and time when the asset was initially detected, which may be the same as or earlier than the **Last Seen** value.
Last Update	The date and time or the most recent update of any of the asset's details. **Note**: Any manual change to the asset information, such as updating the description updates this value, whether or not the asset is currently active or recently detected.

Sources	The sources (such as sensors, PCAPs, local interfaces) identified or are associated with the asset.
Network Segments	The network segments assigned or associated with the asset.
Criticality	The importance of the asset assessed as High, Medium, or Low.
Risk Score	Reflects the potential impact of risk associated with the asset. The score is influenced by factors such as criticality, vulnerabilities, unresolved events (and their duration), related assets (for example, via backplane), and other relevant considerations.

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

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.

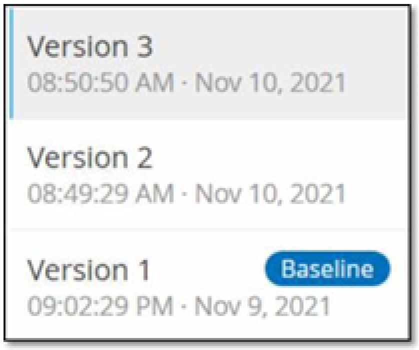
A snapshot can be triggered in the following ways:

- **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



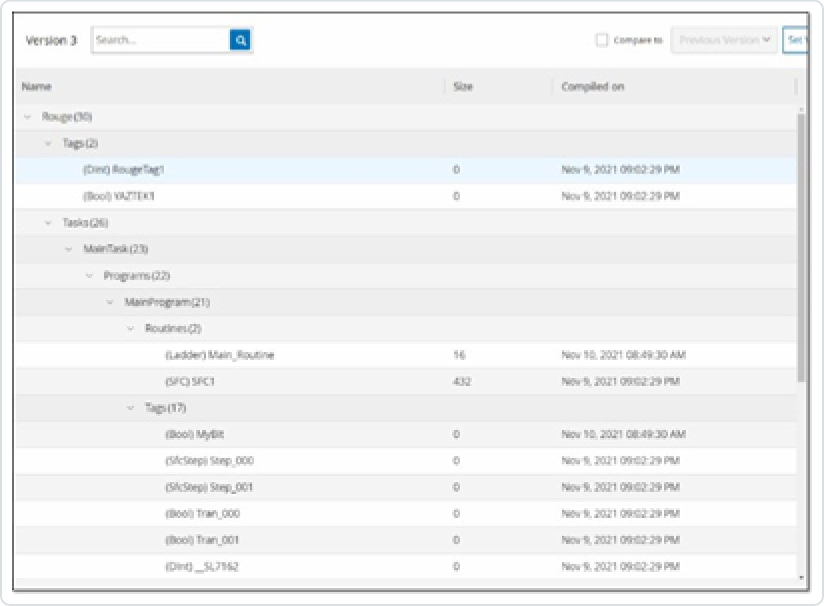
Version 3
08:50:50 AM · Nov 10, 2021

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.

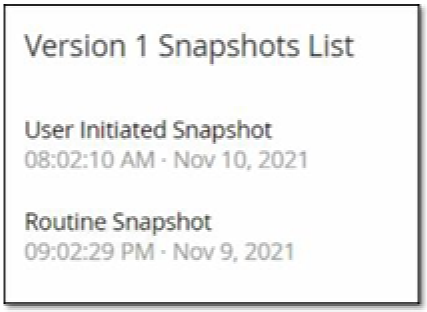
Snapshot Details Pane



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 Compare 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.

Compare 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.

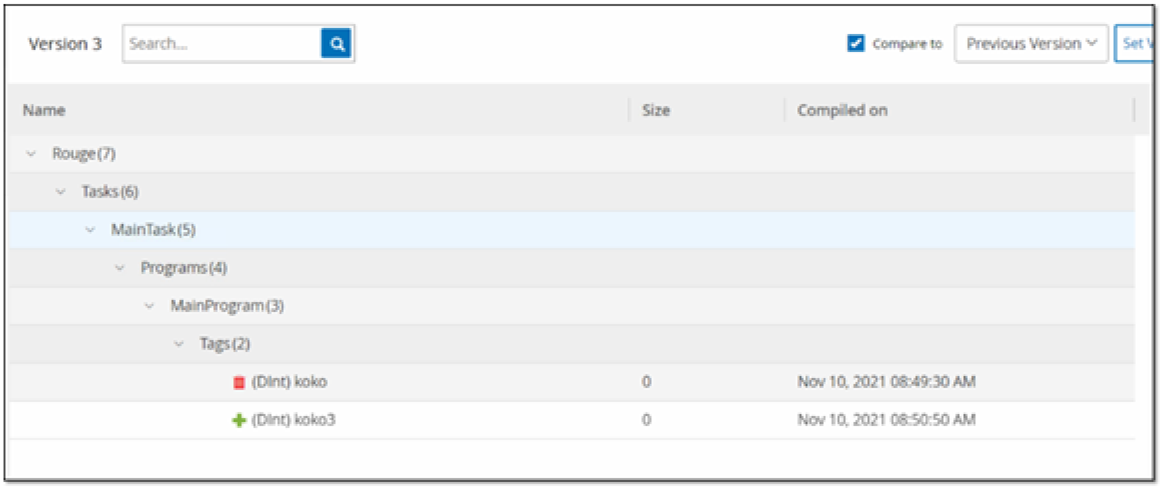
To compare a snapshot version to the previous version:

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.



☑ Compare to Previous Version

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.

Create 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

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 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.

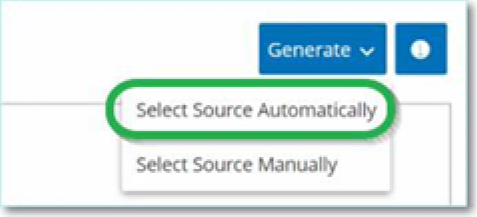
Generate Attack Vectors

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:

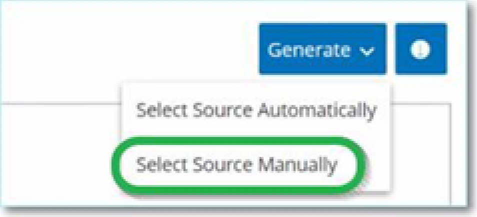
1. Navigate to the **Asset Details** page for the desired target asset and click on the **Attack Vector** tab.
2. Click **Generate** and then click **Select Source Automatically** from the drop-down list.

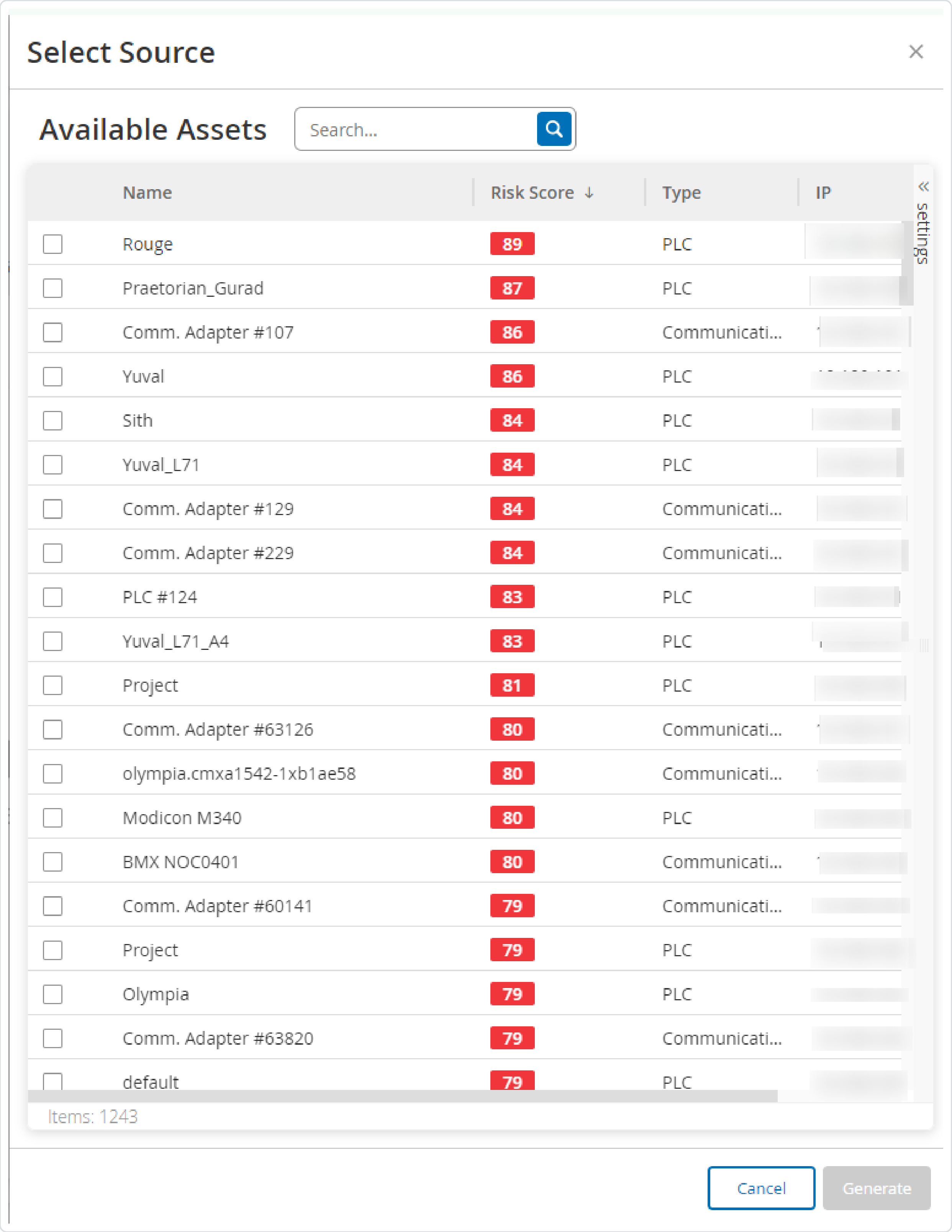
   The Attack Vector is generated automatically and is displayed in the **Attack Vector** tab.

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 drop-down list.

   The **Select Source** window appears.



Available Assets

	Name	Risk Score ↓	Type	IP
□	Rouge	89	PLC	[redacted]
□	Praetorian_Gurad	87	PLC	[redacted]
□	Comm. Adapter #107	86	Communicati...	[redacted]
□	Yuval	86	PLC	[redacted]
□	Sith	84	PLC	[redacted]
□	Yuval_L71	84	PLC	[redacted]
□	Comm. Adapter #129	84	Communicati...	[redacted]
□	Comm. Adapter #229	84	Communicati...	[redacted]
□	PLC #124	83	PLC	[redacted]
□	Yuval_L71_A4	83	PLC	[redacted]
□	Project	81	PLC	[redacted]
□	Comm. Adapter #63126	80	Communicati...	[redacted]
□	olympia.cmxa1542-1xb1ae58	80	Communicati...	[redacted]
□	Modicon M340	80	PLC	[redacted]
□	BMX NOC0401	80	Communicati...	[redacted]
□	Comm. Adapter #60141	79	Communicati...	[redacted]
□	Project	79	PLC	[redacted]
□	Olympia	79	PLC	[redacted]
□	Comm. Adapter #63820	79	Communicati...	[redacted]
□	default	79	PLC	[redacted]

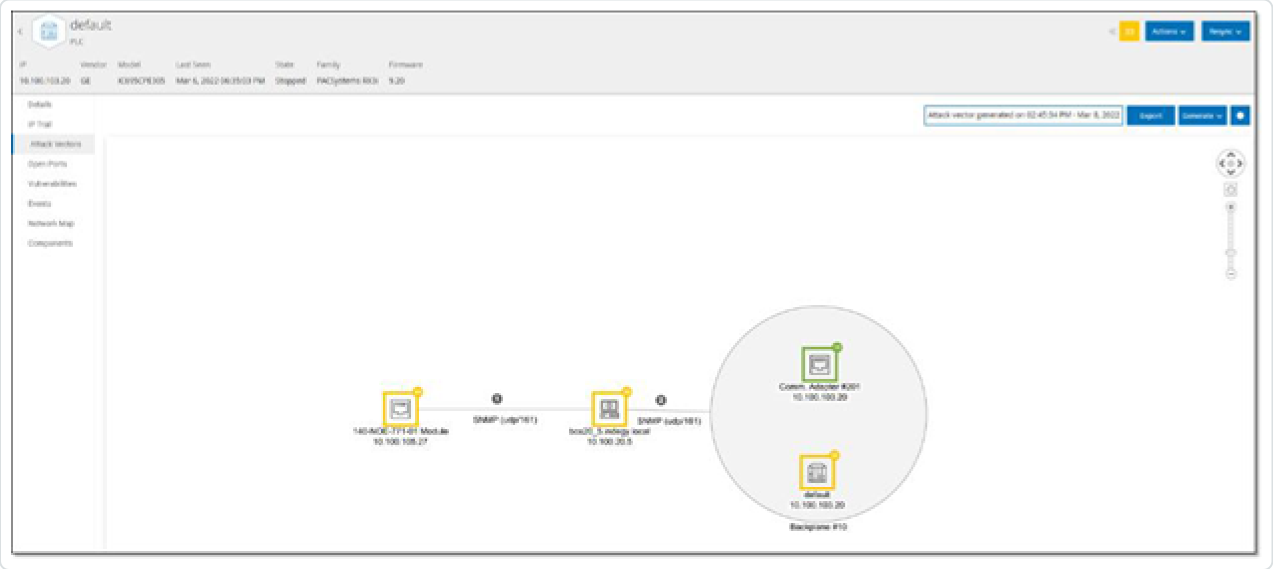
Items: 1243

> **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 required source asset.
4. Click **Generate**.

   The Attack Vector is generated and is displayed in the **Attack Vector** tab.

Viewing Attack Vectors



default
PLC

IP	Vendor	Model	Last Seen	State	Family	Firmware
10.100.103.20	GE	IC695CPE305	Mar 6, 2022 04:35:03 PM	Stopped	PACSystems RX3i	9.20

Attack vector generated on 02:45:54 PM · Mar 8, 2022

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

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 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 is 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**.

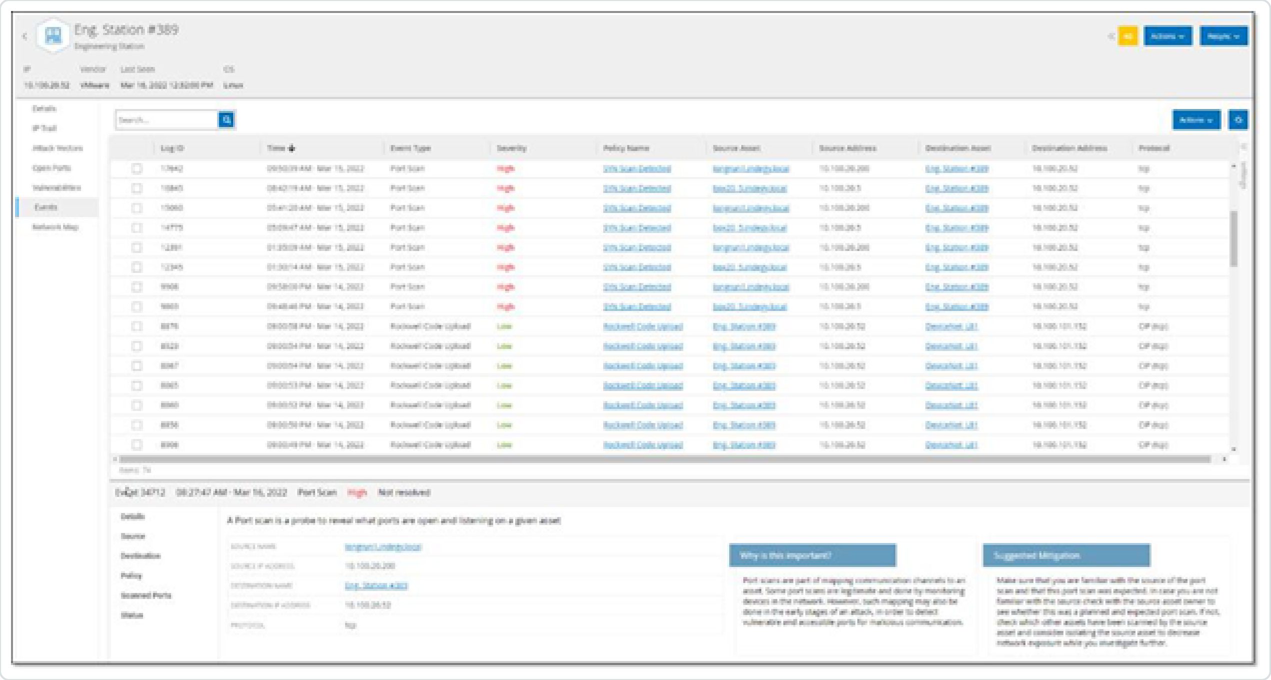
   A new browser tab opens showing the asset portal of that asset.

Vulnerabilities

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. The vulnerabilities are listed in two categories: **Active** and **Fixed**. 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 **Vulnerabilities** page, except that this page lists only vulnerabilities relevant to the specified asset. For an explanation of the vulnerabilities information, see Vulnerabilities.

Events

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.



A Port scan is a probe to reveal what ports are open and listening on a given asset

The bottom portion of the page 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 Capture File** – Download the PCAP file for this Event.
- **Exclude from Policy** – 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

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.

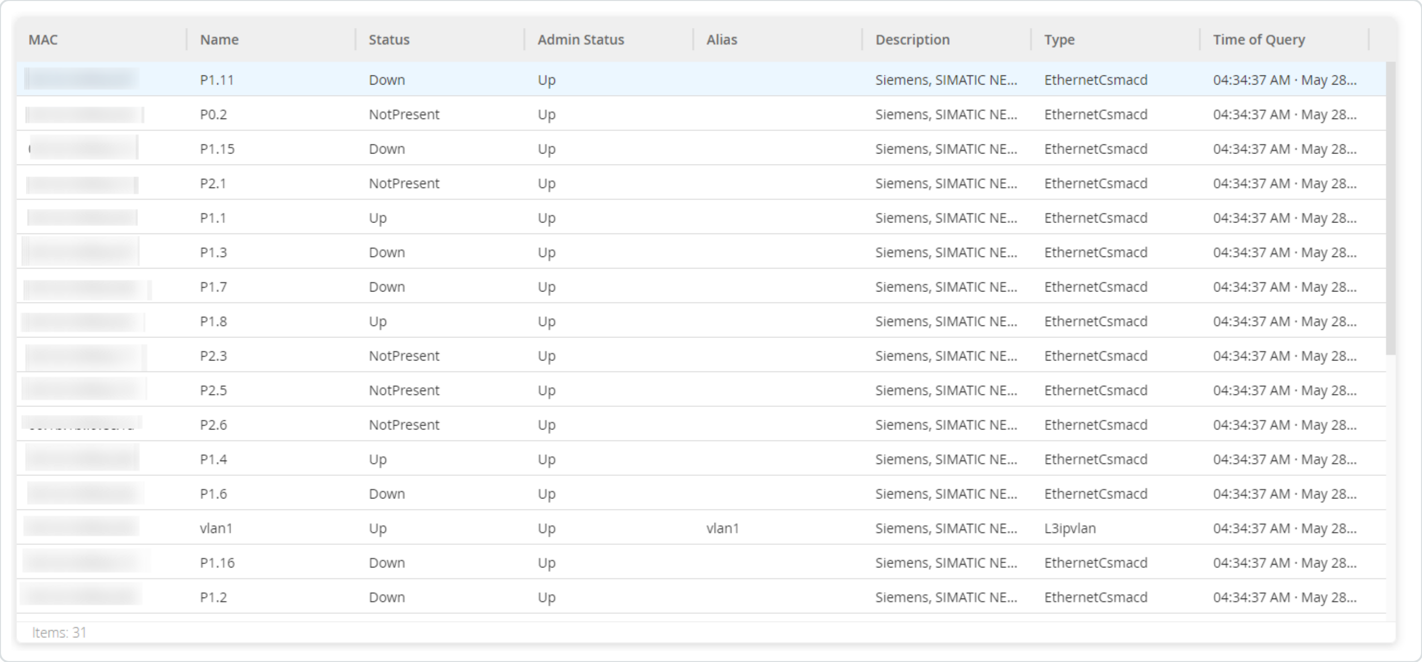
The information shown in this tab is similar to the information shown on the **Network Map** screen, but it is limited to connections involving this specific asset. Also, this screen shows connections to individual assets and not to groups of assets as shown in the main Network Map screen. For an explanation 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

The **Device Ports** tab is available for network switches and includes details about the ports on the network switch. OT Security collects this data using SNMP queries to the switch. The details that appear for each port include the MAC address, Name, connection Status (up or down), Alias, and Description.



MAC	Name	Status	Admin Status	Alias	Description	Type	Time of Query
[redacted]	P1.11	Down	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	P0.2	NotPresent	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	P1.15	Down	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	P2.1	NotPresent	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	P1.1	Up	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	P1.3	Down	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	P1.7	Down	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	P1.8	Up	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	P2.3	NotPresent	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	P2.5	NotPresent	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	P2.6	NotPresent	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	P1.4	Up	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	P1.6	Down	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	vlan1	Up	Up	vlan1	Siemens, SIMATIC NE...	L3ipvlan	04:34:37 AM · May 28...
[redacted]	P1.16	Down	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...
[redacted]	P1.2	Down	Up		Siemens, SIMATIC NE...	EthernetCsmacd	04:34:37 AM · May 28...

Items: 31

Note: Activate this feature in your account for the tab to be visible. To activate this feature, contact Tenable Support.

Edit Asset Details

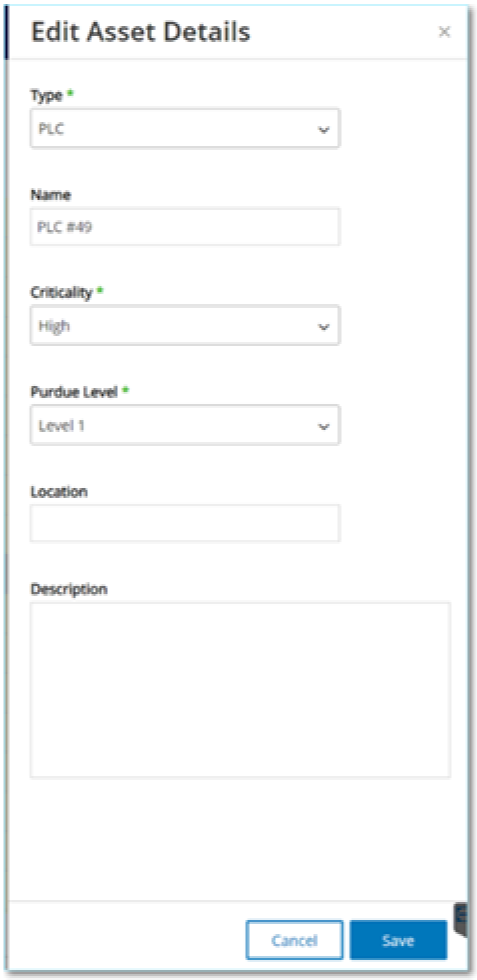
OT Security automatically identifies the Asset Type and Name based on its internal data and based on its activity in the network. If the system couldn't gather this information or if you feel that the automatic identification is not accurate, you can edit these parameters either directly through the 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.

Edit 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 required asset.
3. In the header bar, click 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** box, select the asset type from the drop-down list.

6. In the **Name** box, type a name by which the asset will be identified in the OT Security UI.

7. In the **Criticality** box, type the level of criticality of this asset to the system.

8. In the **Purdue Level** box, enter the Purdue level based on the asset type.

9. In the **Backplane** box (for Controllers), type the name of the backplane on which the asset is installed.

10. In the **Location** box, type 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** box , type a description of the asset. This is an optional field. The data is shown on the Asset Details page for this asset.

12. Click **Save**.

OT Security saves the edited details.

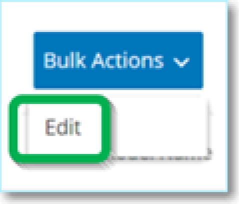
To edit multiple assets (bulk process):

1. Under **Inventory**, click **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 drop-down 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 want 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 must edit each asset manually.

5. Set each of the parameters as required.

   > **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 is erased.

6. Click **Save**.

   OT Security saves the assets with the new configuration.

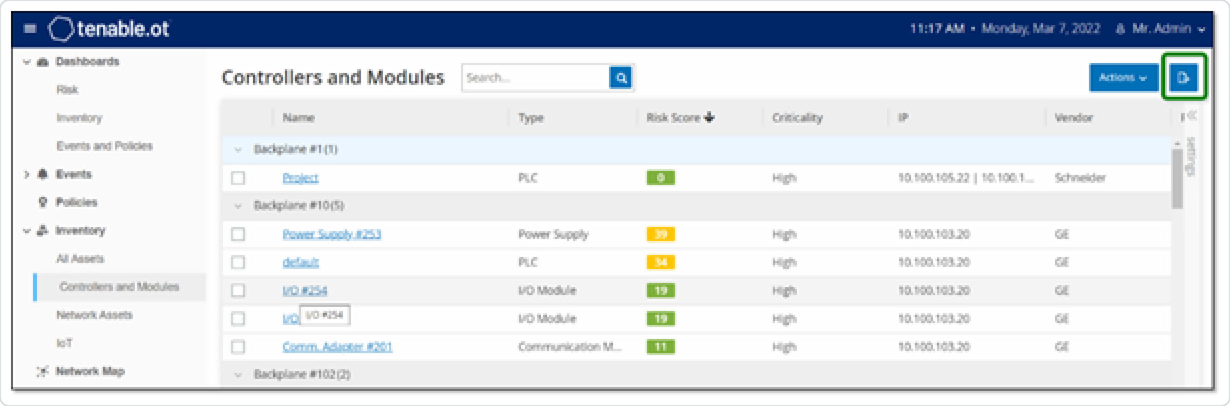
Edit Asset Details by Uploading a CSV

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 **All Assets**, **Controllers and Modules**, or **Network Assets**.

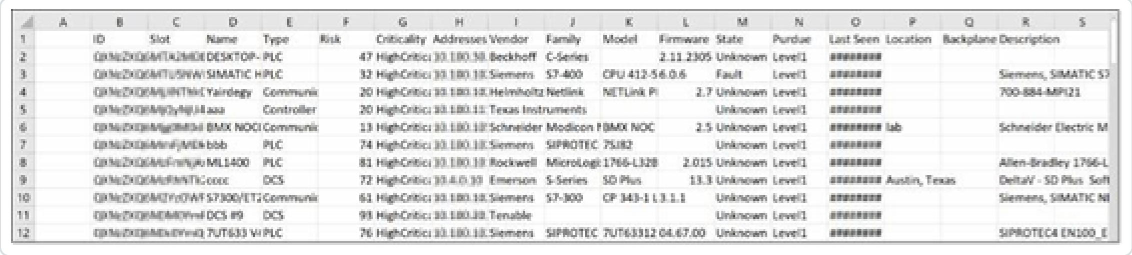
2. Click the **Export** button.



	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	54	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	10.100.30.	Beckhoff	C-Series		2.11.2305	Unknown	Level1	########				
3		[illegible]		SIMATIC H	PLC	32	HighCritic	10.100.10.	Siemens	S7-400	CPU 412-5	4.0.6	Fault	Level1	########			Siemens, SIMATIC S7	
4		[illegible]		Yairdegy	Communic	20	HighCritic	10.100.10.	Helmholtz	Netlink	NETLink Pl	2.7	Unknown	Level1	########			700-884-MPI21	
5		[illegible]		aaa	Controller	20	HighCritic	10.100.11	Texas Instruments				Unknown	Level1	########				
6		[illegible]		BMX NOC	Communic	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	Communic	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 V4	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.)

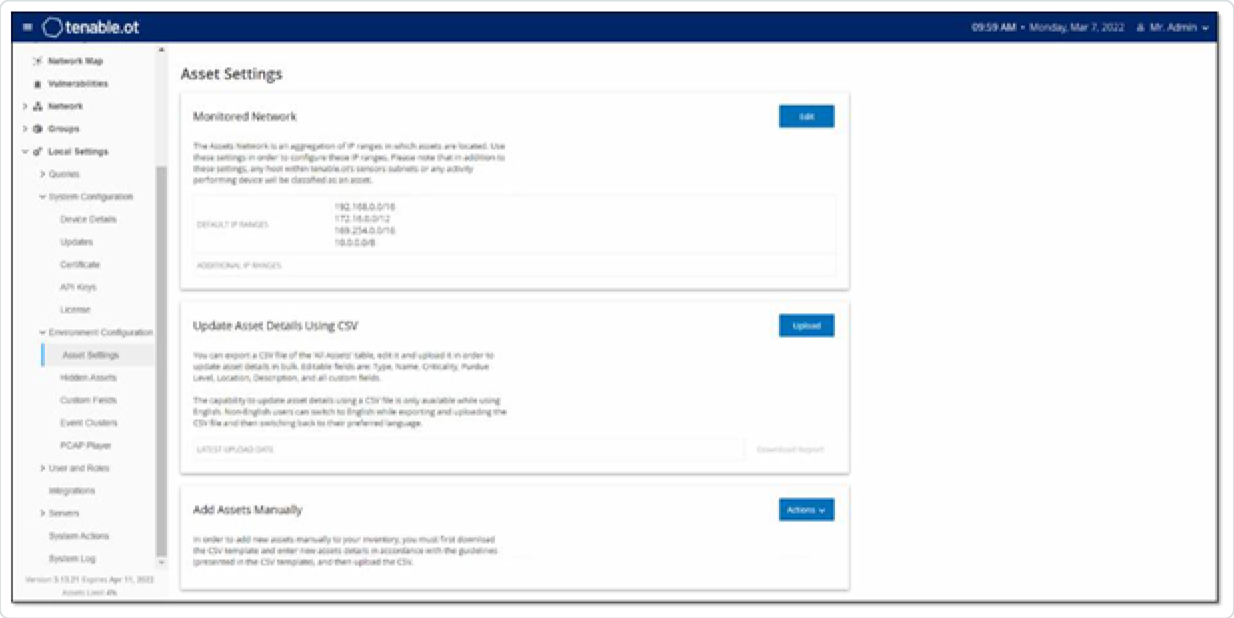
> **Note**: You must enter valid data for parameters that require specific options (for example Type, Criticality, Purdue Level). Otherwise, the corresponding asset will fail to update.

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** page appears.



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

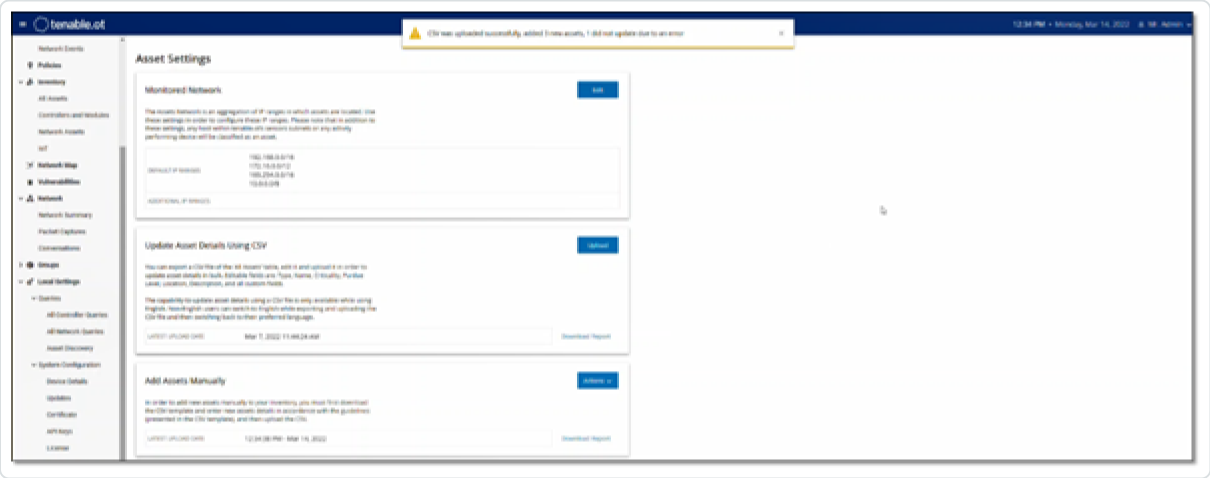
Add Assets Manually

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 appears indicating number of updated rows.



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 12:34:38 PM · Mar 14, 2022

The **Latest Upload Date** box in the Update asset details using CSV section is updated.

9. To see more information about the results of the upload, in the **Update asset details using CSV** section, click **Download Report**.

   OT Security downloads a csv file that lists the updated asset IDs and also lists the failed ones.

Hide 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.

You can restore a hidden asset from the **Local Settings** > **Environment Configuration** > **Hidden Assets** page.

To hide one or several assets:

1. Under **Inventory**, click **Controllers** or **Network Assets**.
2. Select the checkbox next to one or more assets that you want to remove.
3. In the Header bar, click **Actions**.

   A menu appears.
4. Select **Hide Asset**.

   The **Hidden Assets** page appears.
5. (Optional) In the **Comments** box, add text comments about the assets.

   > **Note**: The comments appear in the list of removed assets on the **Local Settings** > **Environment Configuration** > **Hidden Assets** page.
6. Click **Hide**.

   OT Security hides the assets on the **Inventory** and **Groups** pages.

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 uses the WMI and SNMP credentials, if they are available. This action is only available for relevant PC-based machines. You can access the scan results from the Vulnerabilities page. 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.

The Nessus scan in OT Security uses the same policy settings as a basic network scan in Tenable Nessus, Tenable Security Center, and Tenable Vulnerability Management. The only difference is the performance options in OT Security. The following are the performance options for the Nessus scan in OT Security. These options also apply to the Nessus scan you launch from the **Active Queries Management** page.

- 5 simultaneous hosts (max)
- 2 simultaneous checks per hosts (max)
- 15 second network read timeout

> **Note**: Tenable Nessus is an invasive tool which works best in IT environments. Tenable recommends that you do not use it on OT devices, as it may interfere with their normal operation.

To run a Tenable Nessus Scan on specific assets:

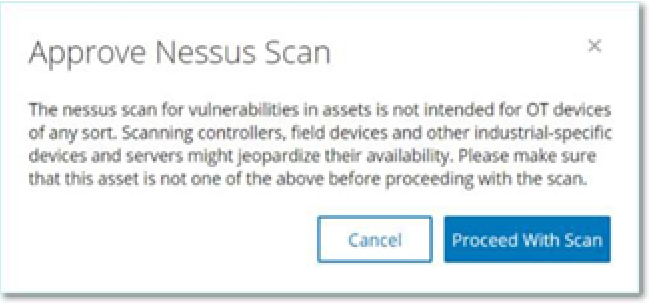
1. Go to **Inventory** > **Network Assets**.

   The **Network Assets** page appears.

2. Select the checkbox next to the asset or assets you want to scan.

3. In the upper-right corner, click **Actions** > **Nessus Scan**.

   The **Approve Nessus Scan** dialog box appears.



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.

4. Click **Proceed with Scan**.

   OT Security runs the Nessus Scan.

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.

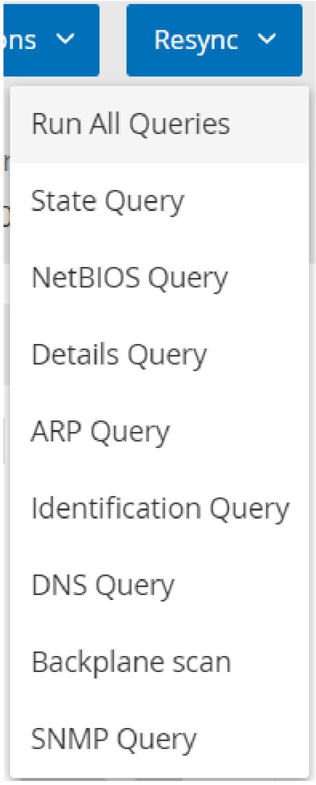
The **Resync** button may be disabled under specific conditions. Possible reasons include:

- 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:

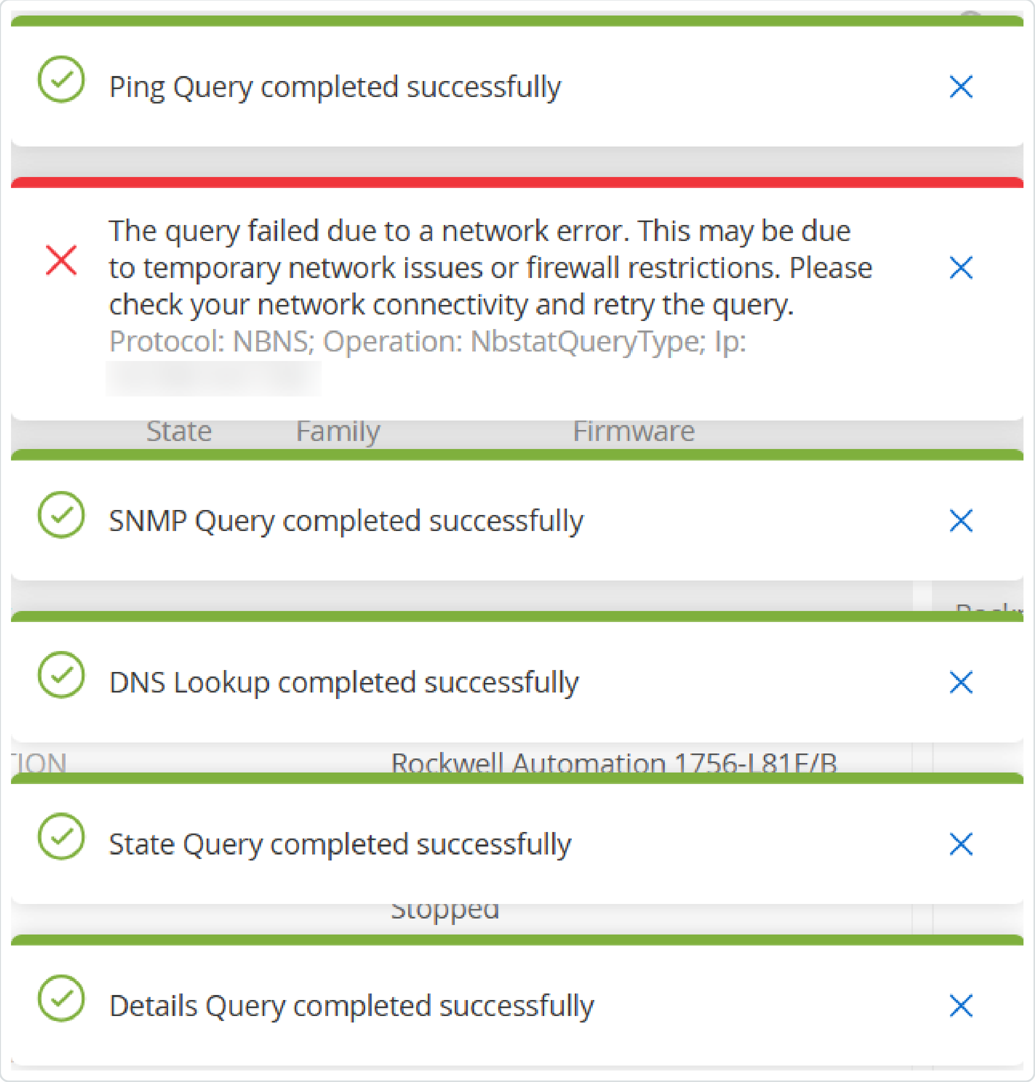
1. On the **Asset Details** page for the required asset, in the upper-right corner, click **Resync**.

   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.



✓ Ping Query completed successfully ✕

✕ The query failed due to a network error. This may be due to temporary network issues or firewall restrictions. Please check your network connectivity and retry the query. ✕
Protocol: NBNS; Operation: NbstatQueryType; Ip: [redacted]

✓ SNMP Query completed successfully ✕

✓ DNS Lookup completed successfully ✕

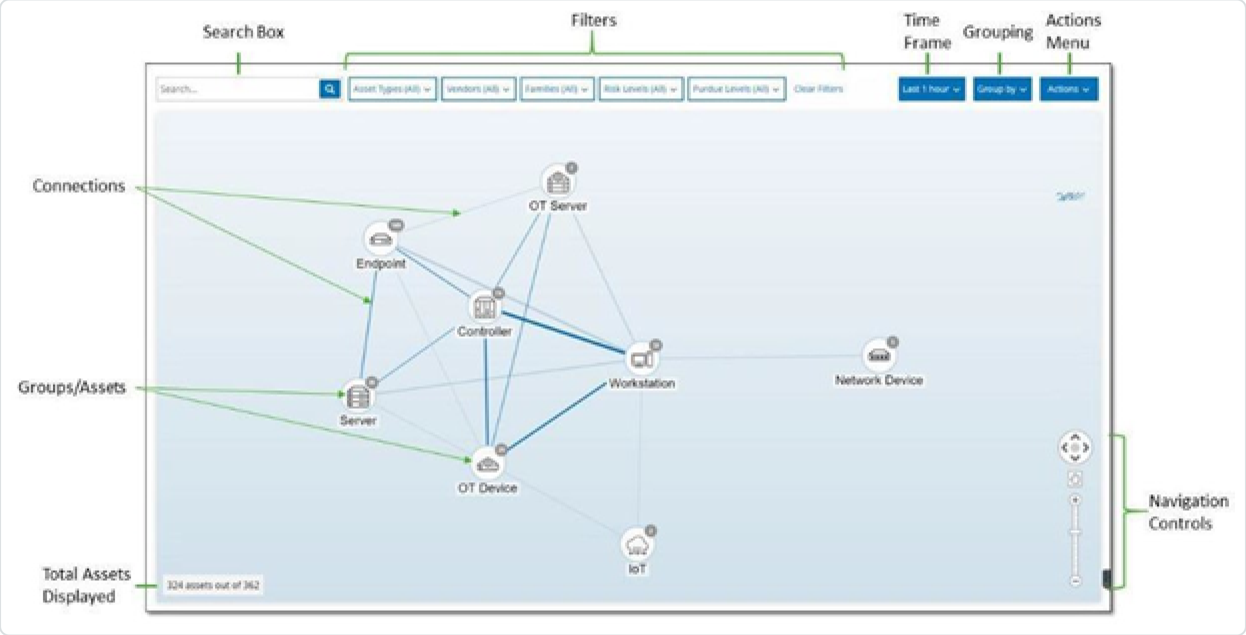
✓ State Query completed successfully ✕

✓ Details Query completed successfully ✕

For each completed query, OT Security updates the system data for that asset based on the new data.

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.

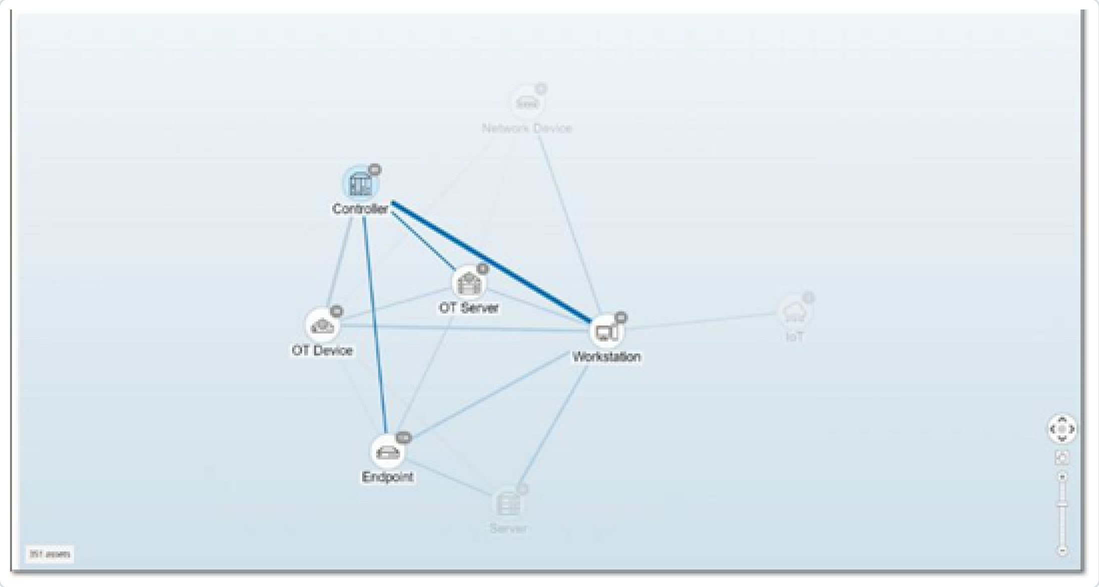
When the map displays groups by **Asset Type** (default), the drill-down hierarchy is as follows: **Asset Type** > **Vendor** > **Family** > **Individual Asset**.

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:

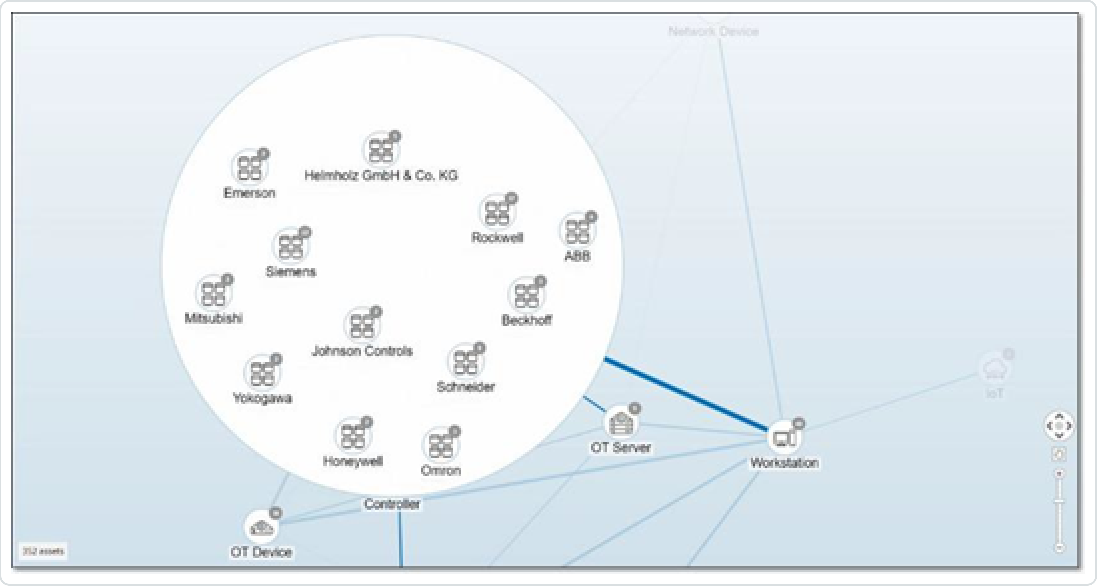
To drill down to an Asset Type Group:

1. By default, the **Network Map** screen opens with the assets grouped by Asset type.

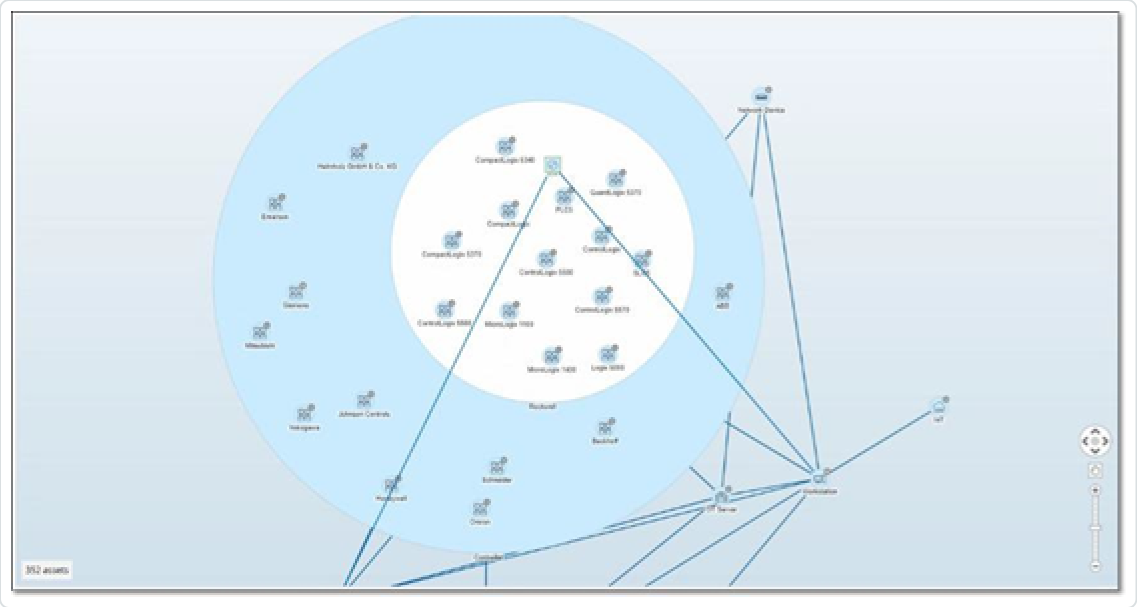


2. Double-click on the group icon that you want to drill down into (for example, Controller).

   The group expands to display the Vendor groups within that group.

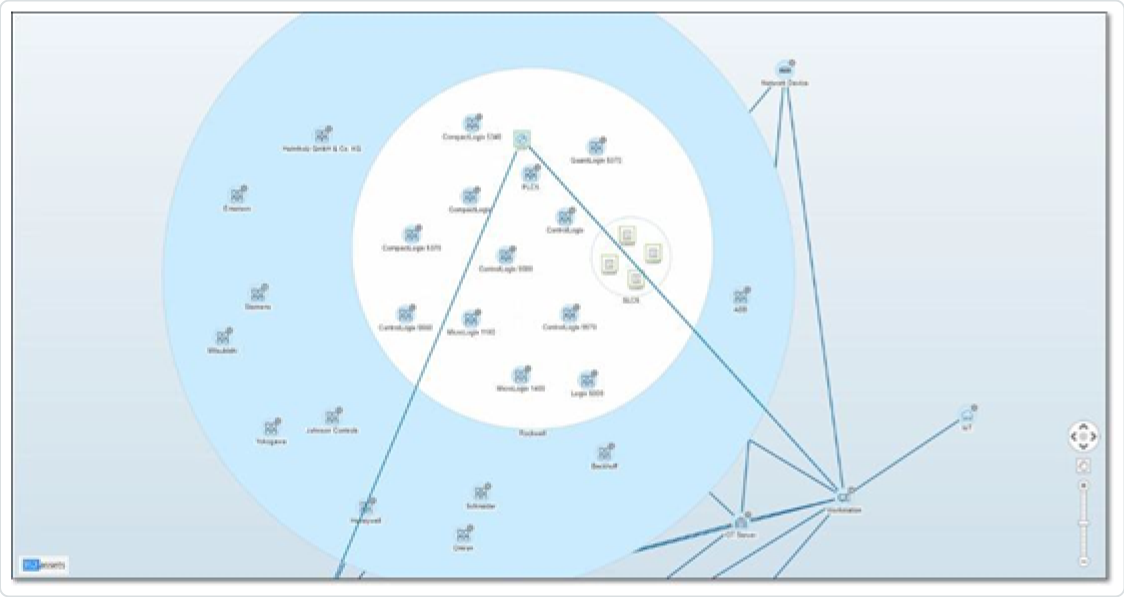


3. To drill down further, click a Vendor group (for example, Rockwell).



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.

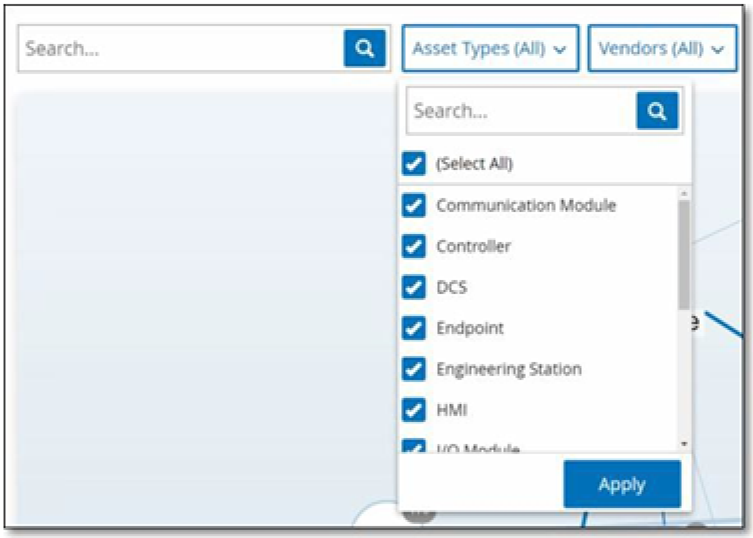
To remove all grouping:

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.

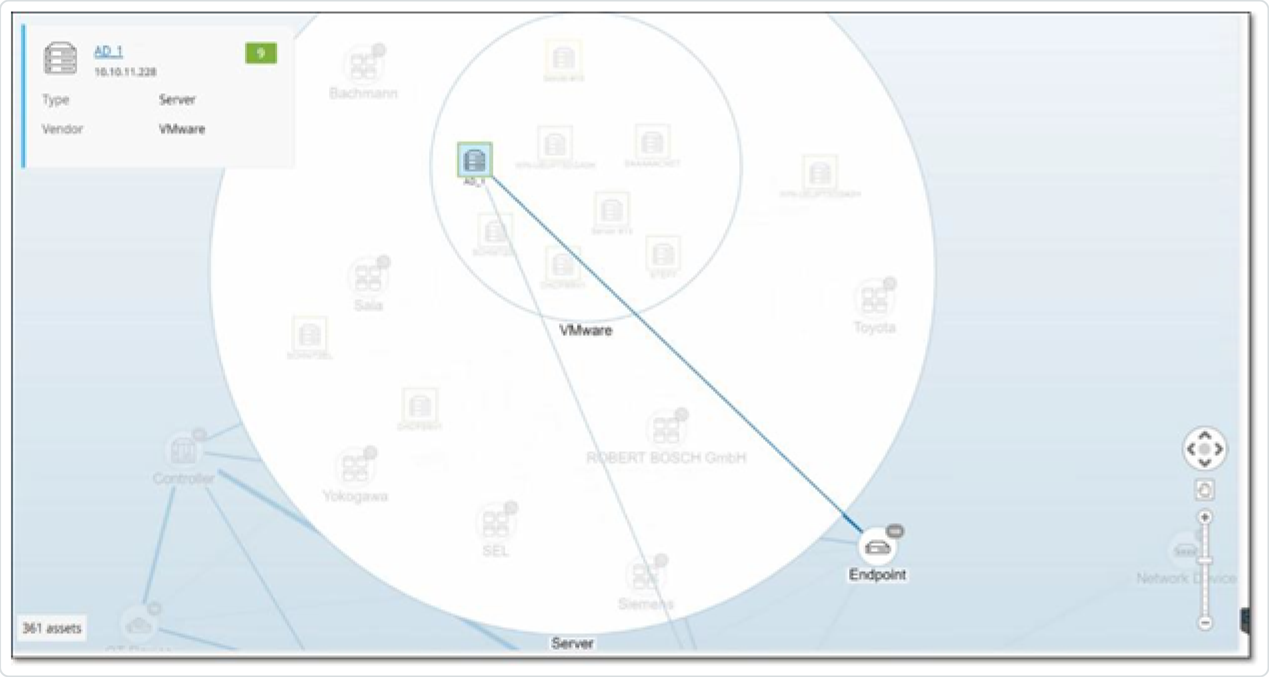
   > **Note**: By default, the filter includes all elements.

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.



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.)

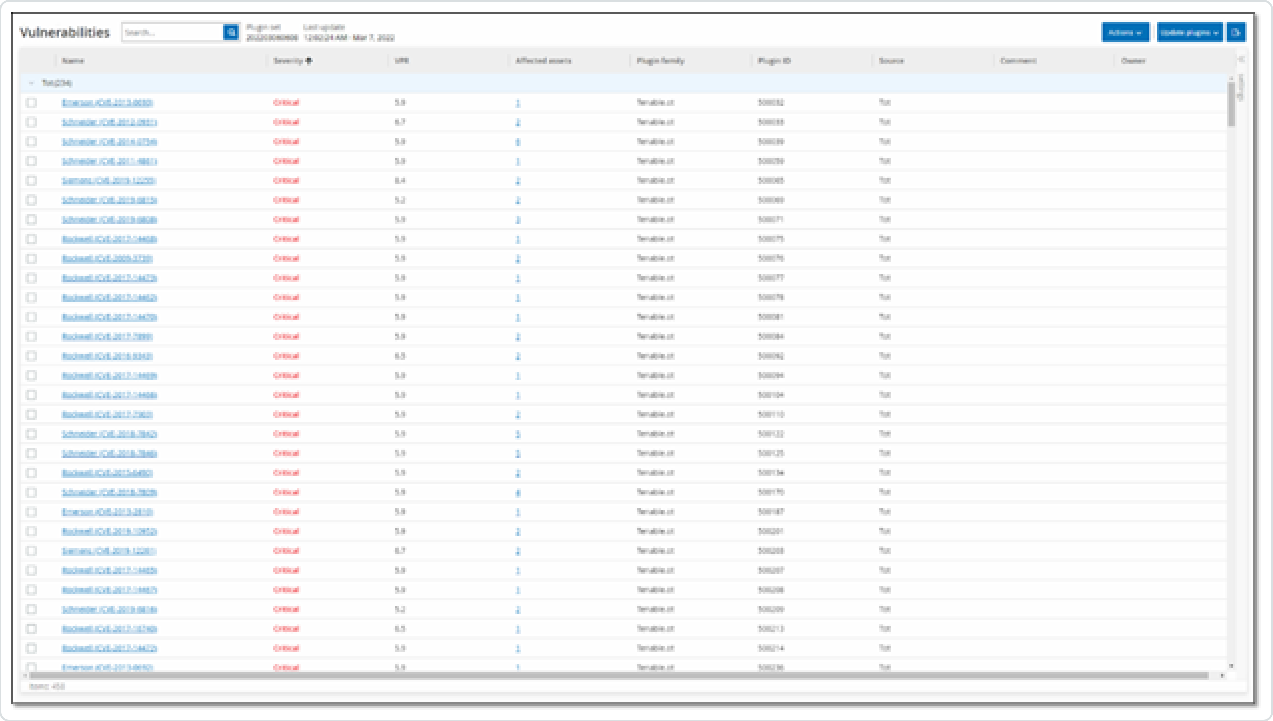
Plugins contain vulnerability information, a generic set of remediation actions, and the algorithm to test for the presence of the security issue.

For information about updating your Plugin set, see Environment Configuration .

Vulnerabilities

The **Vulnerabilities** page 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.

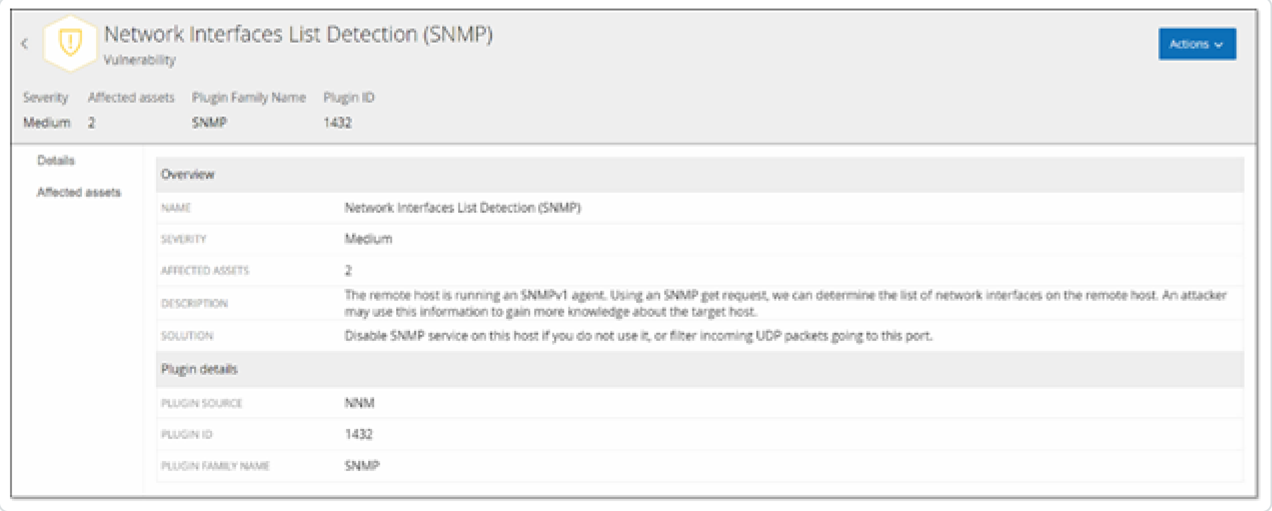
Comment	You can add free text comments about this Plugin.

Plugin Details

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.



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

The Vulnerability details window shows the following details:

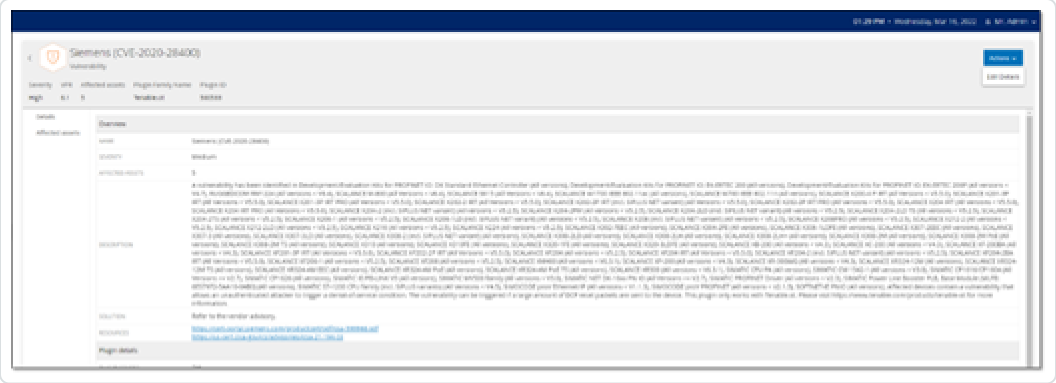
- **Header bar** — Shows basic information about the specified vulnerability. From the **Actions** menu, select **Edit Details** to edit vulnerability details. See Edit Vulnerability Details.
- **Details tab** — Shows the full description of the vulnerability and gives links to relevant resources.
- **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:

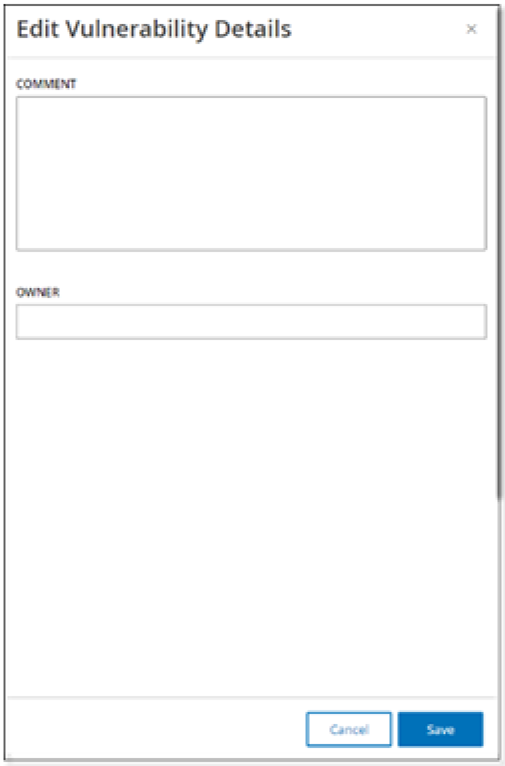
1. In the relevant **Vulnerability Details** page, in the upper-right corner, click the **Actions** menu.

   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 an 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 checkbox next to the asset, and then from the **Actions** drop-down box, select **View**.

The Asset Details page appears.

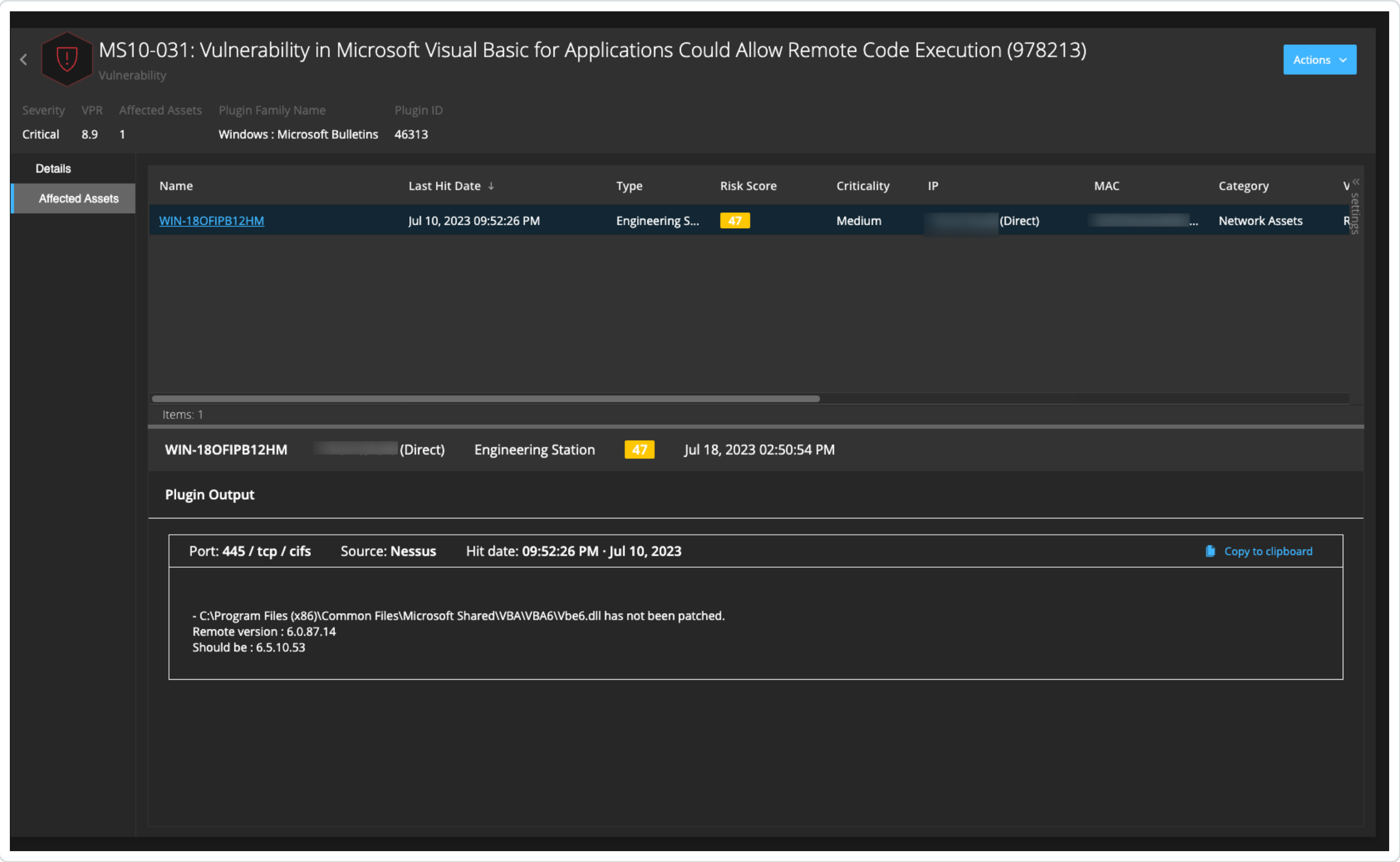
3. Click the **Vulnerabilities** tab.

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	V
WIN-18OFIPB12HM	Jul 10, 2023 09:52:26 PM	Engineering S...	47	Medium	[redacted] (Direct)	[redacted] ...	Network Assets	R

Items: 1

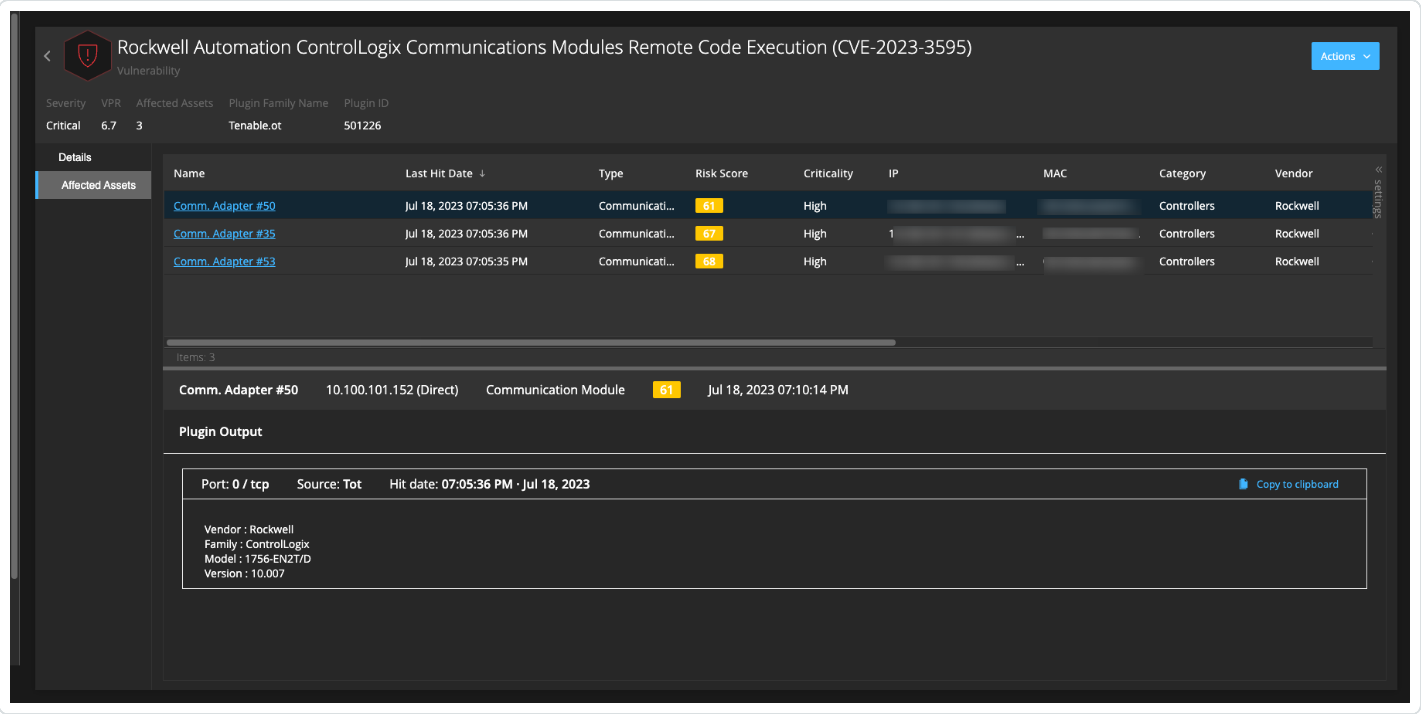
WIN-18OFIPB12HM [redacted] (Direct) Engineering Station 47 Jul 18, 2023 02:50:54 PM

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	[redacted]	[redacted]	Controllers	Rockwell
Comm. Adapter #35	Jul 18, 2023 07:05:36 PM	Communicati...	67	High	1[redacted] ...	[redacted]	Controllers	Rockwell
Comm. Adapter #53	Jul 18, 2023 07:05:35 PM	Communicati...	68	High	[redacted] ...	[redacted]	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**

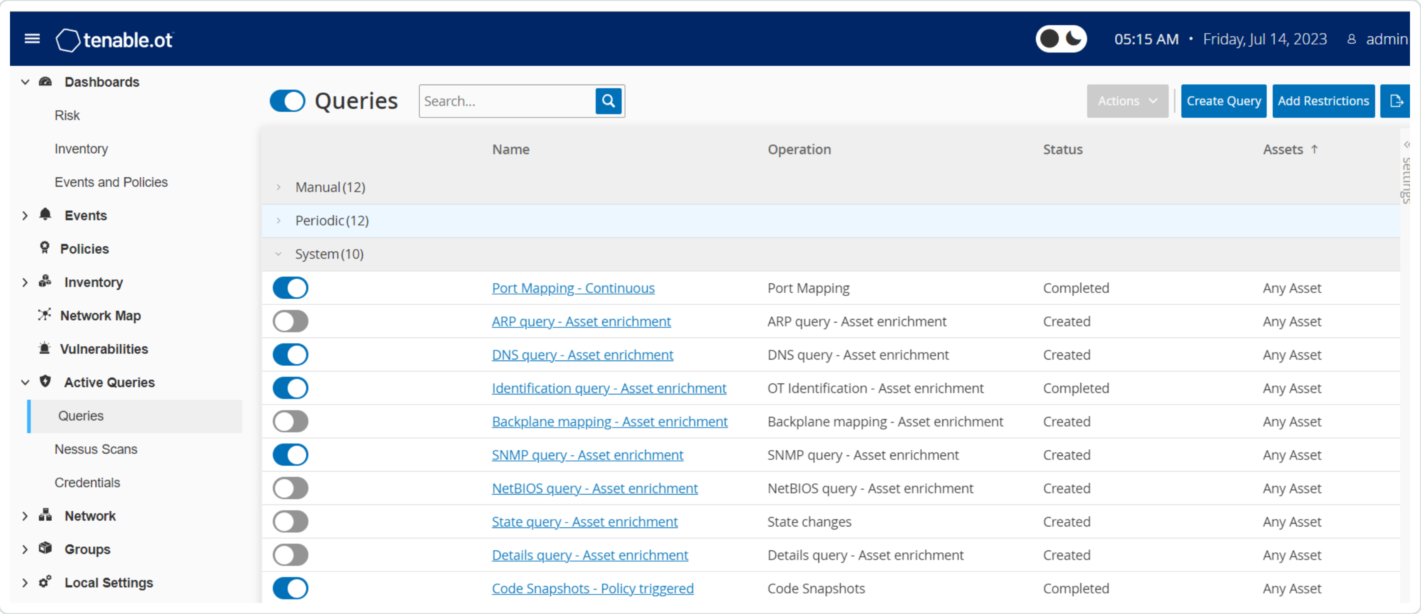
```
Vendor : Rockwell
Family : ControlLogix
Model : 1756-EN2T/D
Version : 10.007
```

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**: Disabling 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.

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**.

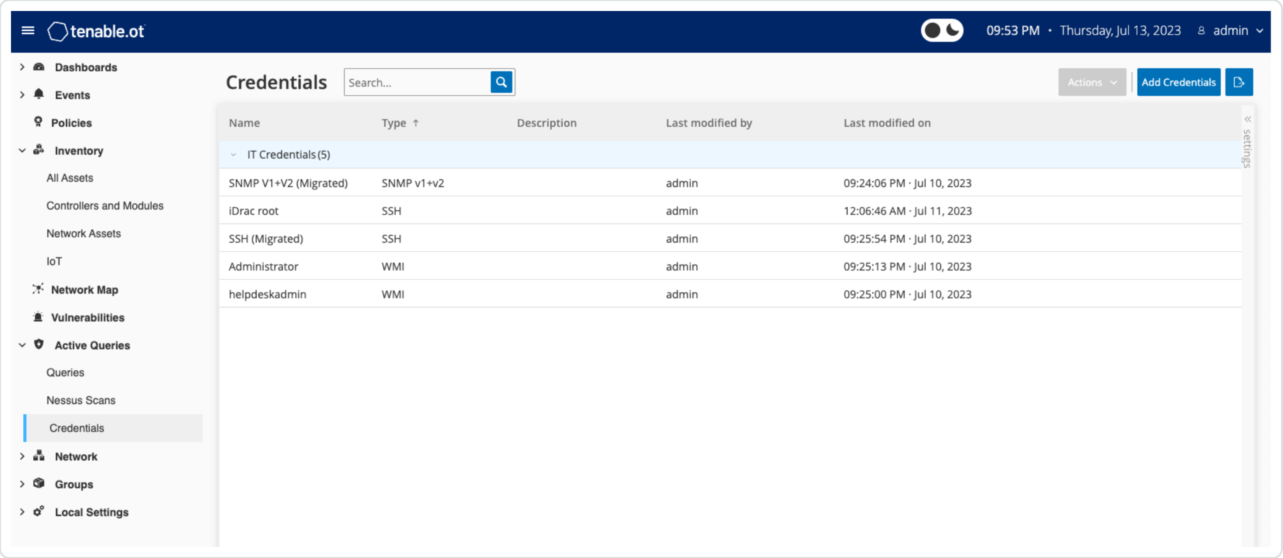
   A message asks for confirmation to run the query.

3. Click **Ok**.

   OT Security runs the selected query.

Credentials

Use the **Credentials** page to configure device credentials where required. When communicating in their native network protocols, or proprietary protocols, devices do not require credentials . However, certain devices that OT Security support may require credentials to perform asset discovery.



IT Credentials (5)

Name	Type ↑	Description	Last modified by	Last modified on
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

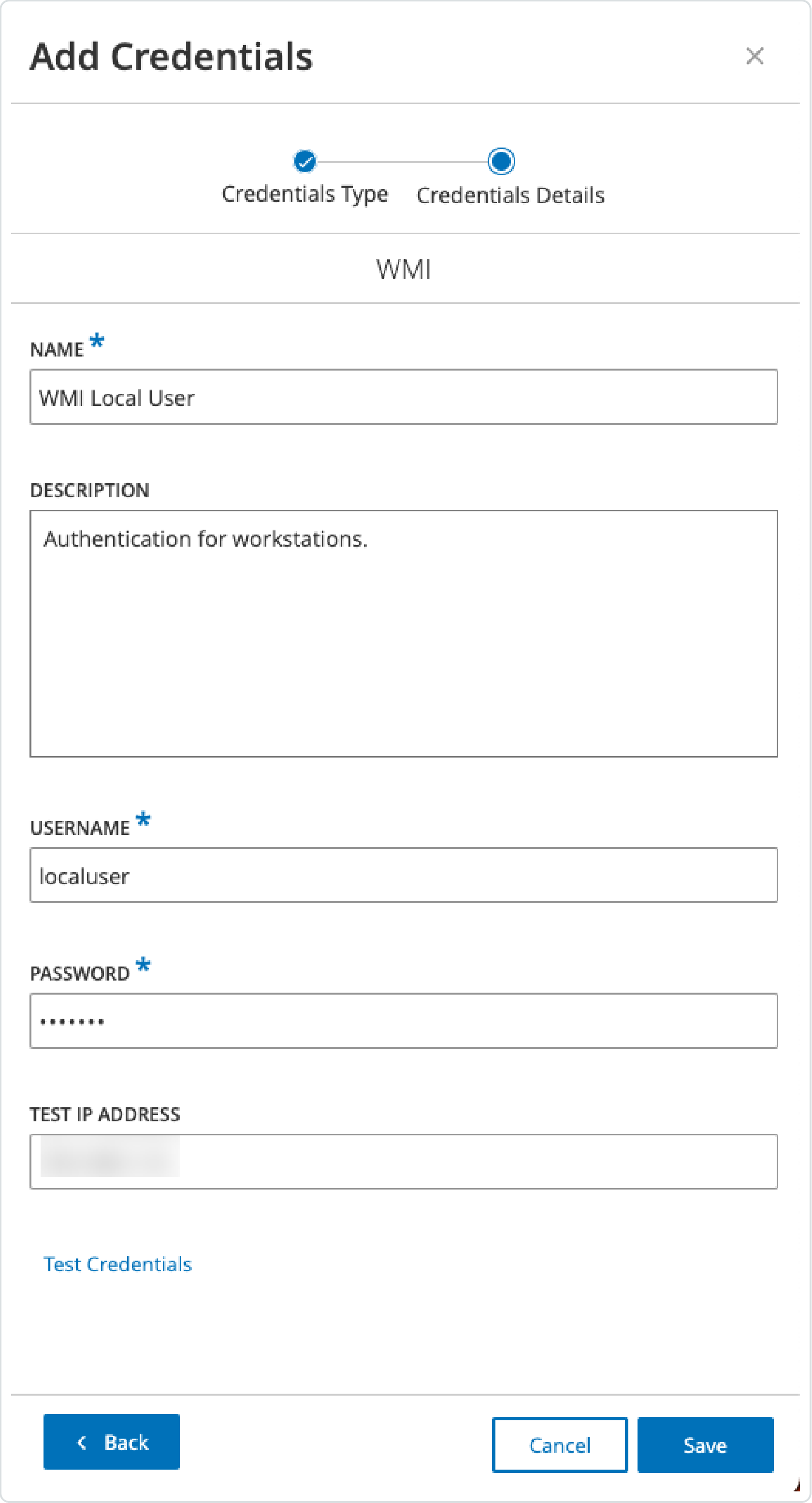
To add credentials:

1. Go to **Active Queries** > **Credentials**.

   The **Credentials** page appears.

2. In the upper-right corner, click **Add Credentials**.

   The **Add Credentials** panel appears.



Add Credentials

Credentials Type — Credentials Details

WMI

NAME *

WMI Local User

DESCRIPTION

Authentication for workstations.

USERNAME *

localuser

PASSWORD *

•••••••

TEST IP ADDRESS

[redacted]

3. In the **Credentials Type** section, click to select the device type. Options available are:

- 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 for the device.
   - **Password** — The password for the device.
   - **Test IP Address** — The IP address of the device.

6. Click **Test Credentials** to confirm if OT Security can reach the device using the credentials.

7. Click **Save**.

   OT Security saves the credentials and they appear on the **Credentials** page.

Edit Credentials

You can edit your credential details.

To edit credentials:

1. Go to **Active Queries** > **Credentials**.

   The **Credentials** page 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** page 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.

Create Nessus Plugin Scans

The 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, OT Security scans only confirmed network assets in the given range (non-PLCs). OT Security excludes assets of the type **Endpoint** from the scan.

The Nessus scan in OT Security uses the same policy settings as a basic network scan in Tenable Nessus, Tenable Security Center, and Tenable Vulnerability Management. The only difference is the performance options in OT Security. The following are the performance options for the Nessus scan in OT Security. These options also apply to the Nessus Basic scan you launch from the **Inventory** > **All Assets** page.

- 5 simultaneous hosts (max)
- 2 simultaneous checks per hosts (max)
- 15 second network read timeout

> **Note**: Tenable Nessus is an invasive tool which works best in IT environments. Tenable does not recommend Tenable Nessus for use on OT devices, as it may interfere with their normal operation.

To run a basic Nessus scan on any one asset, see Perform Asset-Specific Tenable Nessus Scan.

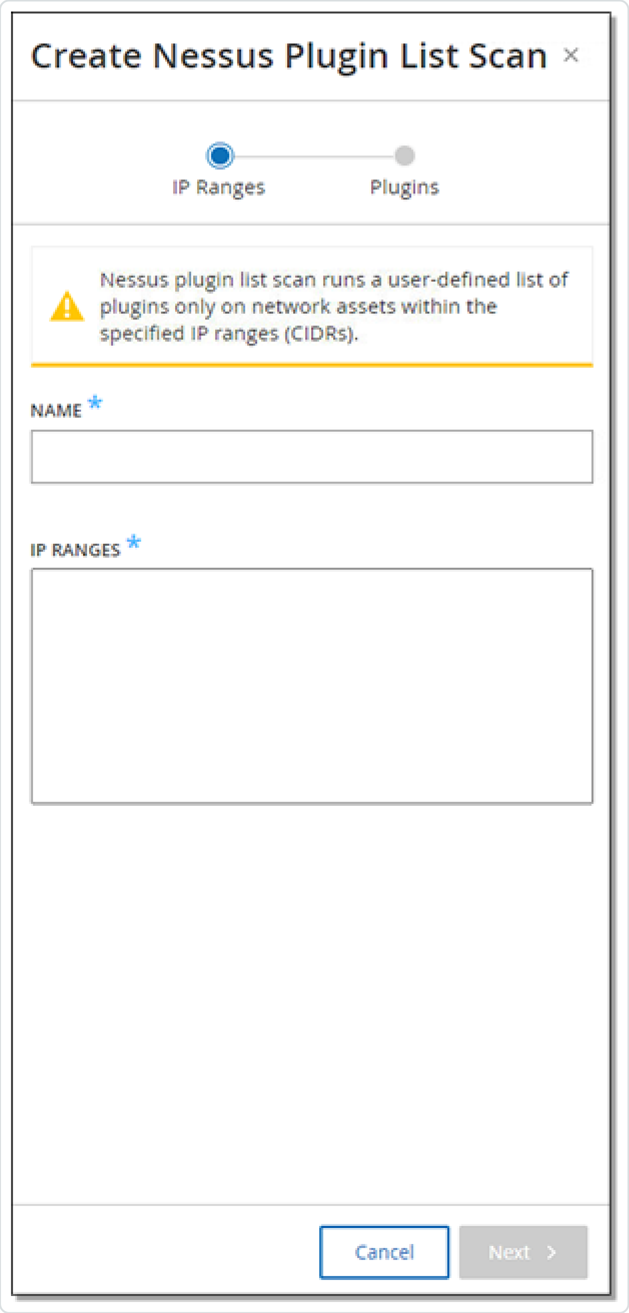
> **Note**: You can run the basic scan on assets of type **Endpoint**.

Create a Nessus Plugin Scan

To create a Nessus Plugin Scan:

1. Go to **Active Queries** > **Nessus Scans**.
2. In the upper-right corner, 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 *

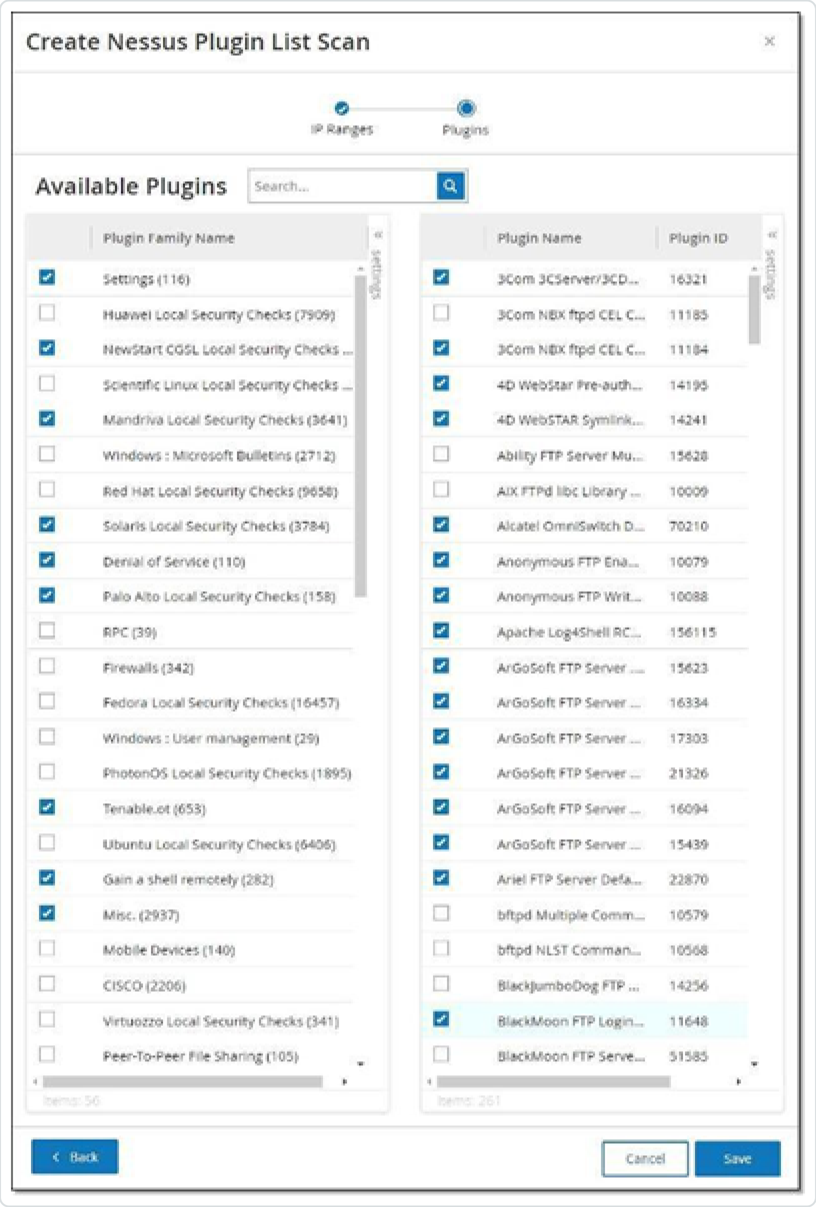
IP RANGES *

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.



Create Nessus Plugin List Scan

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)

Items: 56

	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

Items: 261

> **Note**: OT Security lists only those plugins that are specific to the device. Your license must be up to date to receive new Plugins. To update your license, see Update the License.

6. In the **Plugin Family Name** column, select the required Plugin Families to include them in the scan. In the right column, clear the checkboxes for individual plugins as needed.

> **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 on the **Nessus Scans** page.

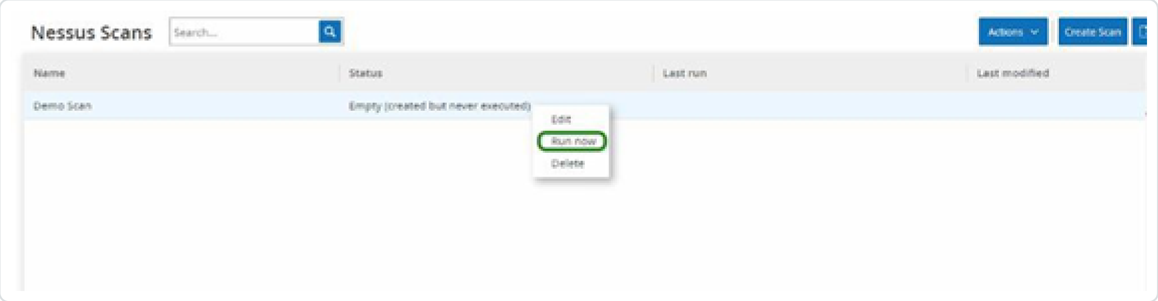
> **Note**: To edit or delete an existing Tenable Nessus scan, right-click the scan, then select **Edit** or **Delete**.

Run a Nessus Plugin Scan

To run a Nessus Plugin Scan:

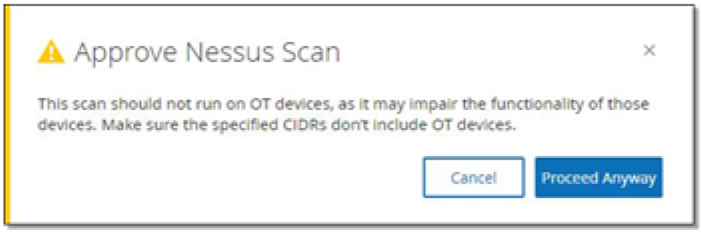
1. On the **Nessus Scans** page, do one of the following:

   - Right-click the scan, then select **Run now**.
   - Select the scan you want to run, then 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 OT Security saves the scan.

3. To run the scan, right-click the scan row again and select **Run now**.

   The **Approve Nessus Scan** dialog appears again.

4. Click **Proceed Anyway**.

   OT Security now runs the scan. You can pause/resume, stop, or kill scans depending on their current status.

Network

OT Security monitors all activity in your network and shows the data on the following pages:

- **Network Summary**— Shows an overview of the network activity.
- **Packet Captures** — Shows a listing of the PCAP files captured by the system. See Packet Captures.
- **Conversations** — Shows a list of all conversations detected in the network, with details about the time they occurred, involved assets, and so on. See Conversations

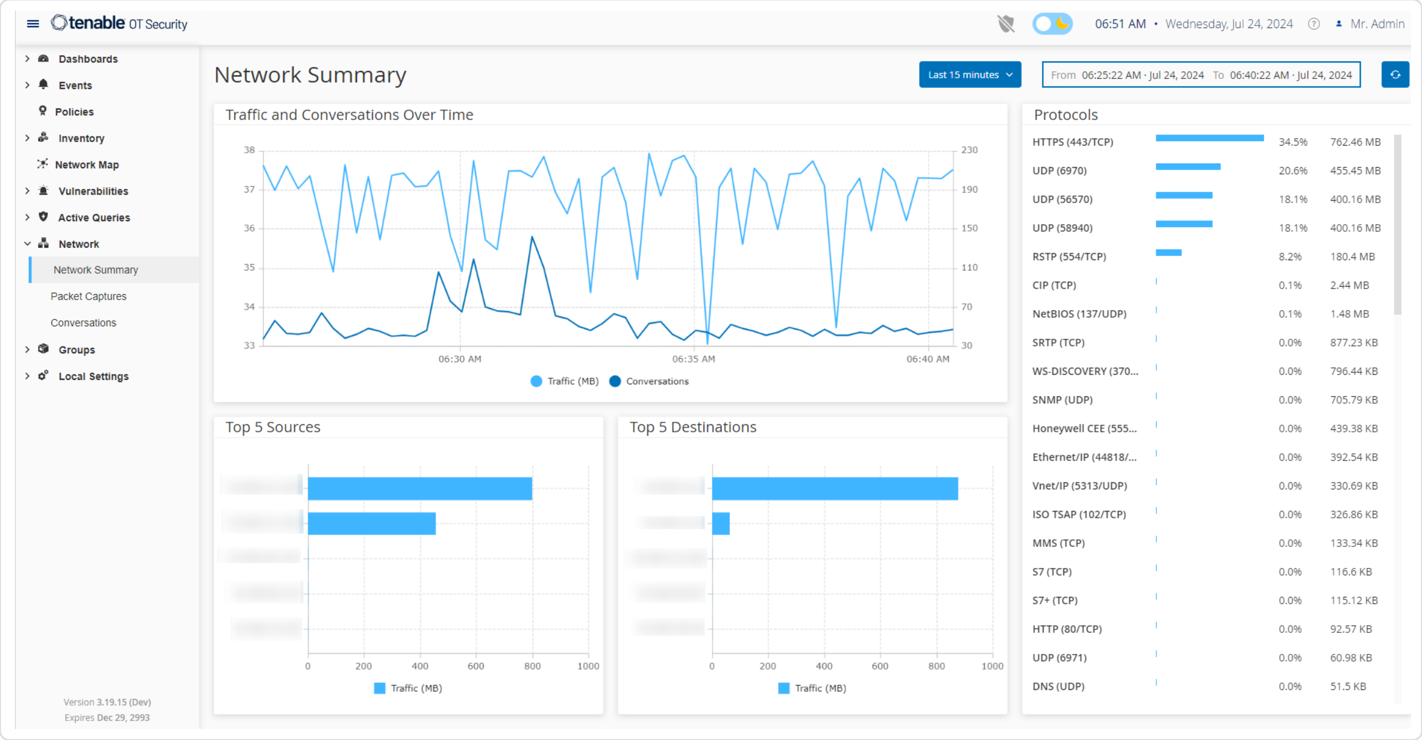
To access the **Network** page:

1. In the left navigation pane, select **Network**.

   The **Network Summary** page appears.

Network Summary

The **Network Summary** page shows visual graphs that summarize the network activity. You can view the data for a specific timeframe.

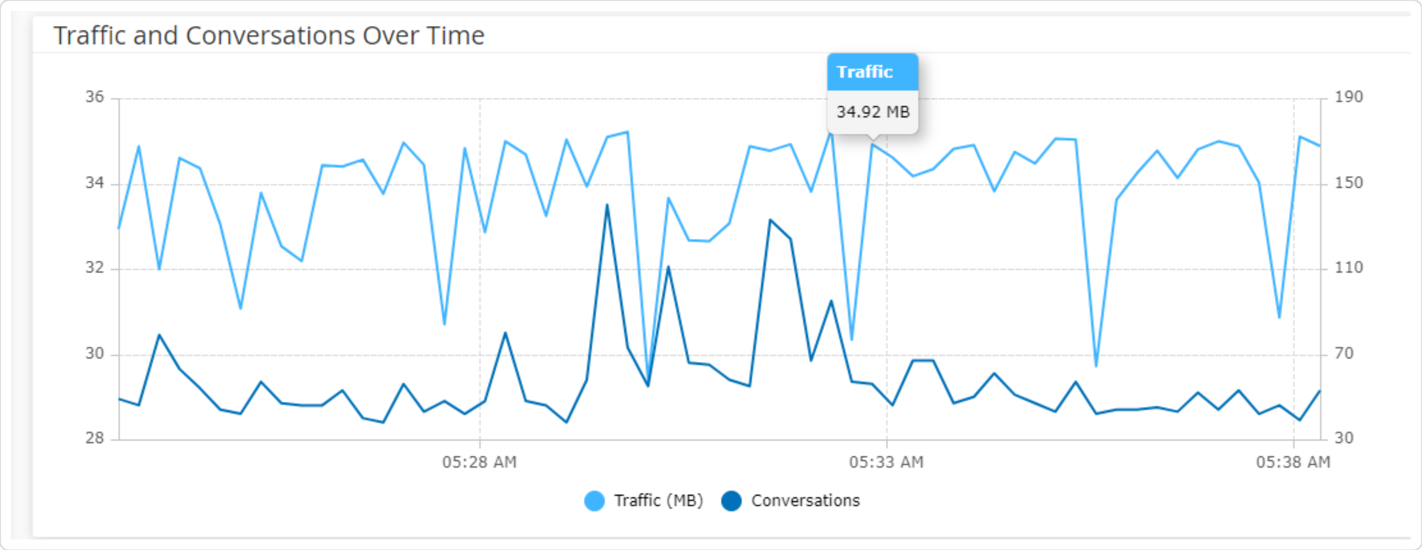


HTTPS (443/TCP)	34.5%	762.46 MB
UDP (6970)	20.6%	455.45 MB
UDP (56570)	18.1%	400.16 MB
UDP (58940)	18.1%	400.16 MB
RSTP (554/TCP)	8.2%	180.4 MB
CIP (TCP)	0.1%	2.44 MB
NetBIOS (137/UDP)	0.1%	1.48 MB
SRTP (TCP)	0.0%	877.23 KB
WS-DISCOVERY (370...	0.0%	796.44 KB
SNMP (UDP)	0.0%	705.79 KB
Honeywell CEE (555...	0.0%	439.38 KB
Ethernet/IP (44818/...	0.0%	392.54 KB
Vnet/IP (5313/UDP)	0.0%	330.69 KB
ISO TSAP (102/TCP)	0.0%	326.86 KB
MMS (TCP)	0.0%	133.34 KB
S7 (TCP)	0.0%	116.6 KB
S7+ (TCP)	0.0%	115.12 KB
HTTP (80/TCP)	0.0%	92.57 KB
UDP (6971)	0.0%	60.98 KB
DNS (UDP)	0.0%	51.5 KB

Interact with the following widgets to view additional details.

Traffic and Conversations over Time

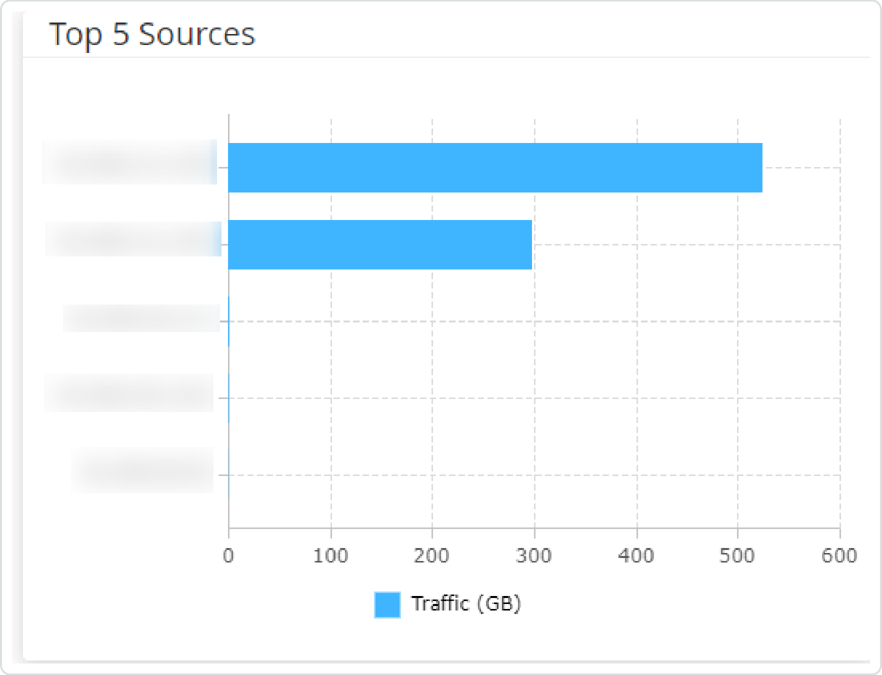
A line graph displays the volume of traffic (measured in KB/MB/GB) and the number of conversations in the network over time. The legend key appears at the top of the graph. Hover over a point on the graph to display specific data about the traffic and conversations during that time segment.



> **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.

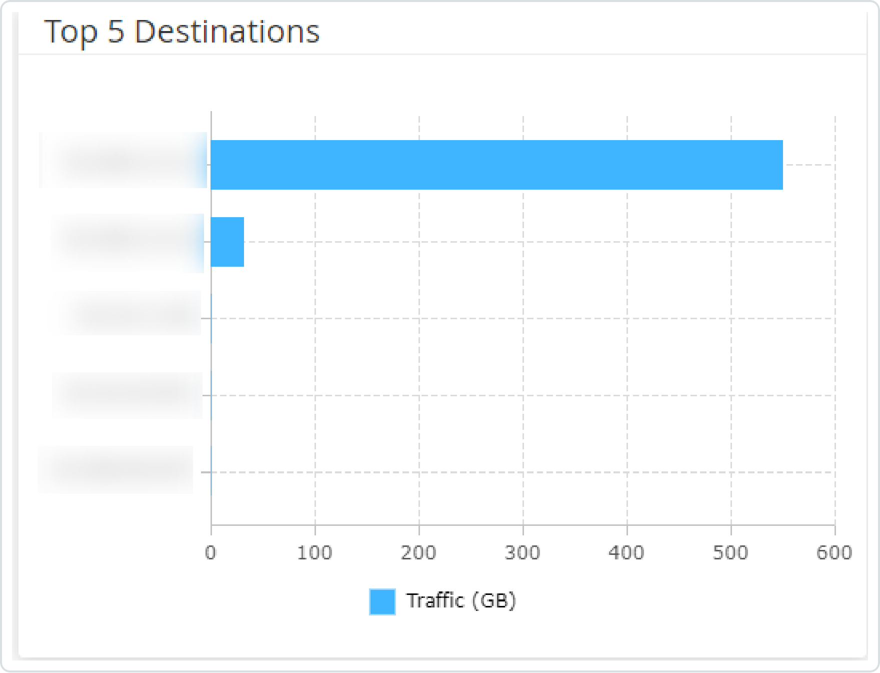
Top 5 Sources

The Top 5 Sources widget shows the number of conversations and the volume of traffic for each of the top five assets that sent communications through the network during a specific timeframe. You can identify the source assets by their IP addresses. Hover over a bar graph to see the number of conversations and volume of traffic coming from that asset.



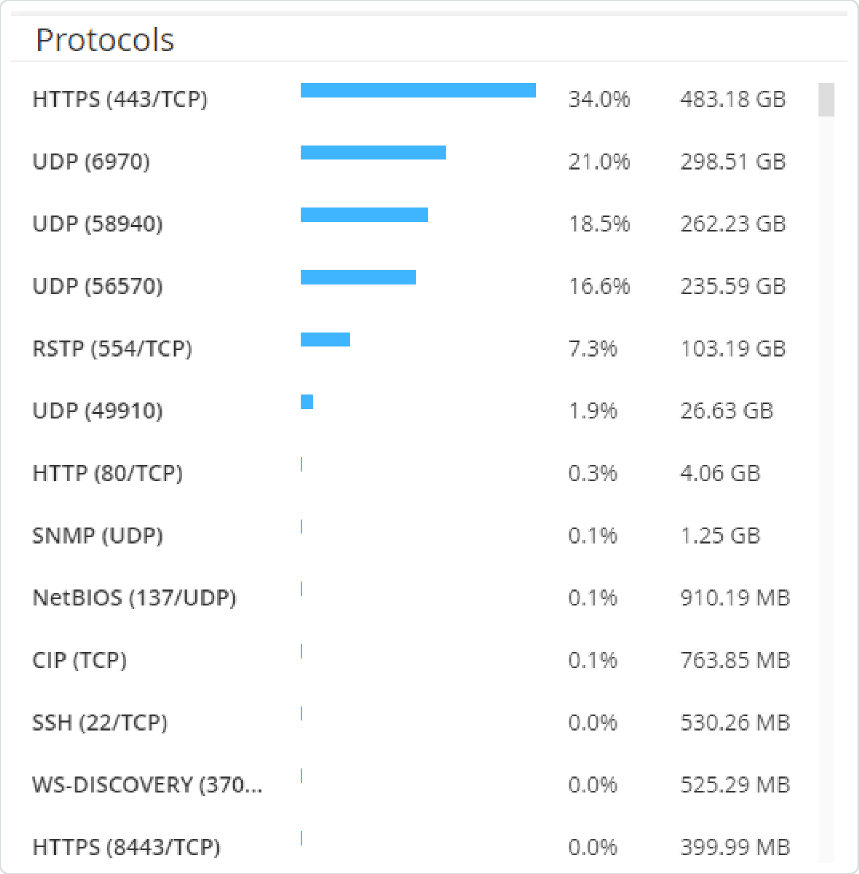
Top 5 Destinations

The Top 5 Destinations widget shows the number of conversations and amount of traffic for each of the top five assets that received communications through the network during the specific timeframe. You can identify the destination assets by their IP addresses. Hover over a bar graph to see the number of conversations and volume of traffic that the asset received.



Protocols

The **Protocols** widget shows data about the usage of various protocols for communication within the network during a specific timeframe.



Protocols

HTTPS (443/TCP)	34.0%	483.18 GB
UDP (6970)	21.0%	298.51 GB
UDP (58940)	18.5%	262.23 GB
UDP (56570)	16.6%	235.59 GB
RSTP (554/TCP)	7.3%	103.19 GB
UDP (49910)	1.9%	26.63 GB
HTTP (80/TCP)	0.3%	4.06 GB
SNMP (UDP)	0.1%	1.25 GB
NetBIOS (137/UDP)	0.1%	910.19 MB
CIP (TCP)	0.1%	763.85 MB
SSH (22/TCP)	0.0%	530.26 MB
WS-DISCOVERY (370...	0.0%	525.29 MB
HTTPS (8443/TCP)	0.0%	399.99 MB

The protocols rank from the most used (top) to least used (bottom). Each protocol shows the following information:

- A bar graph with 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.

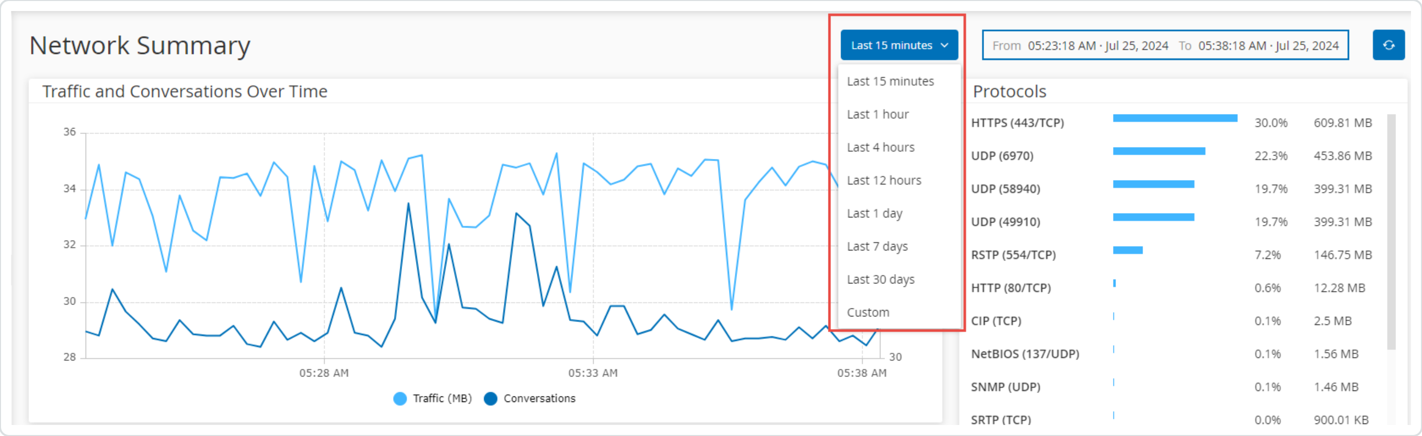
Set the Timeframe

The **Network Summary** page displays data that represent network activity during a specific 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 also shows the Start and End time of the timeframe.

To set the timeframe:

In the header bar, click the timeframe drop-down. The default is **Last 15 Minutes**.

The drop-down box lists the available options.



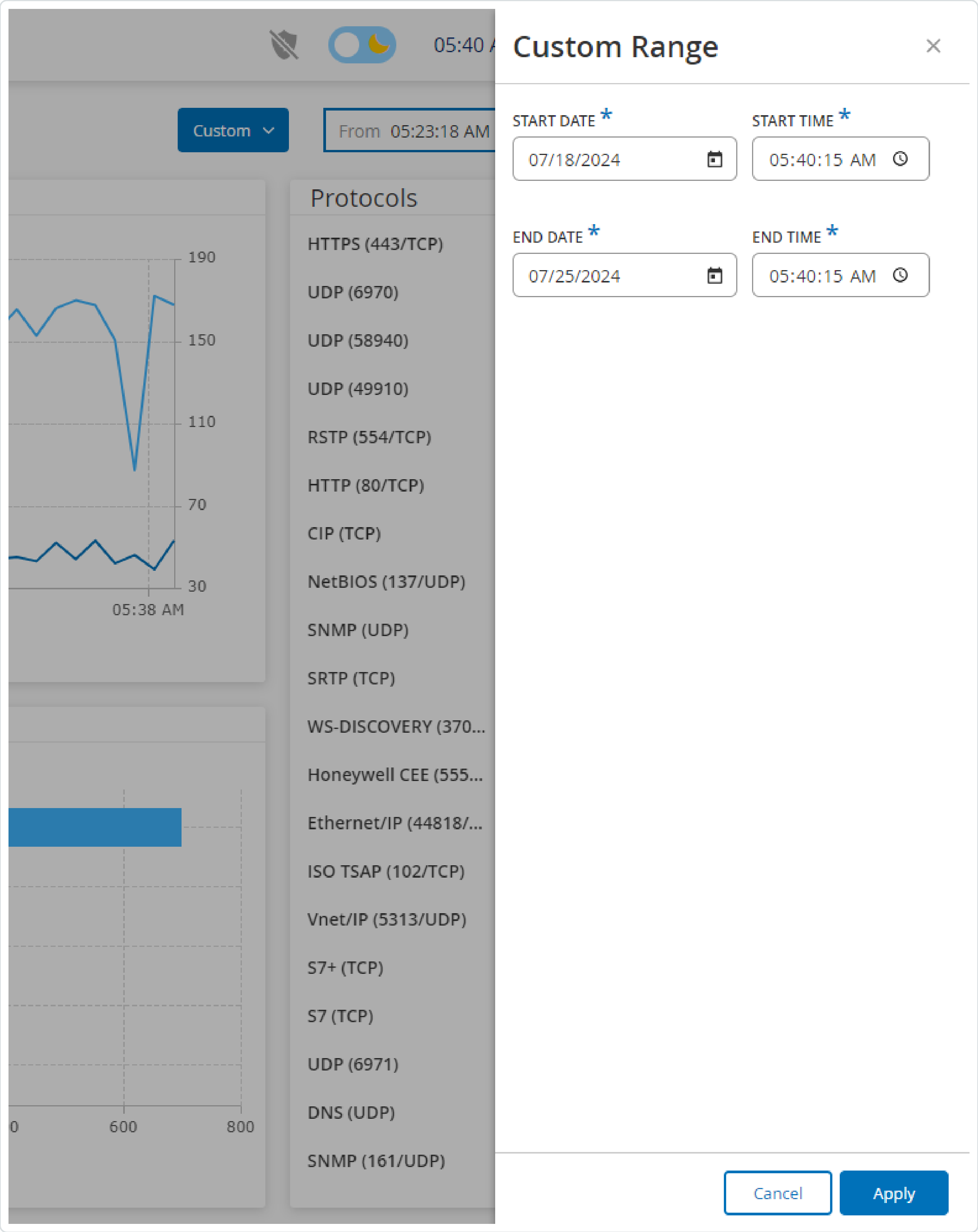
From 05:23:18 AM · Jul 25, 2024 To 05:38:18 AM · Jul 25, 2024

HTTPS (443/TCP)	30.0%	609.81 MB
UDP (6970)	22.3%	453.86 MB
UDP (58940)	19.7%	399.31 MB
UDP (49910)	19.7%	399.31 MB
RSTP (554/TCP)	7.2%	146.75 MB
HTTP (80/TCP)	0.6%	12.28 MB
CIP (TCP)	0.1%	2.5 MB
NetBIOS (137/UDP)	0.1%	1.56 MB
SNMP (UDP)	0.1%	1.46 MB
SRTP (TCP)	0.0%	900.01 KB

Select a time range using one of the following methods:

- Select a preset time range by clicking the required 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:
- Click **Custom**.

  The **Custom Range** window appears.



Custom Range

START DATE * 07/18/2024

START TIME * 05:40:15 AM

END DATE * 07/25/2024

END TIME * 05:40:15 AM

- Provide the **Start Date**, **Start Time**, **End Date**, and **End Time**.

- Click **Apply**.

  After you set the timeframe, the header bar shows the start and end date/time next to the timeframe selection. OT Security refreshes the page to show data within the chosen timeframe.

Packet Captures

OT Security stores files containing network packet captures of activities in the network. The data is stored as PCAP (packet capture) files, which can be analyzed using Network Protocol Analysis tools, such as Wireshark. 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** page displays all the PCAP files in the system. The **Completed** section lists all completed files that are available for download. The **Ongoing** section shows details about the packet capture that is currently in progress.

The header bar shows the oldest captured file that is still available. It also includes an option to download files and to manually close the current Packet Capture.

In packet captures table, you can show or hide columns, sort, and filter the lists as well as search for keywords. For more information about customizing tables, see Customize Tables.

> **Note**: You can also download the PCAP file for an individual event from the **Events** page, 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: **Completed** or **Ongoing**.

Sensor	The OT Security Sensor that captured the packet. For packets captured directly by the OT Security appliance, the value appears 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 providing 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.

   A drop-down menu appears.

   1. To set the filter:

      a. From the drop-down menu, select the required filter: **Anytime (default)**, **Started before**, or **Started after**.

      b. If you select **Started before** or **Started after**, a window appears with the **Date** and **Time** boxes allowing you to choose the date and time.

      c. Click **Apply**.

3. To filter by End time, hover over **End** time and click the ▽ icon.

   A drop-down menu appears.

   1. To set the filter:

      a. Select required filter: **Anytime (default)**, **Ended before**, or **Ended after**.

      b. If you select **Ended before** or **Ended after**, a window appears with the **Date** and **Time** boxes allowing you to choose the date and time.

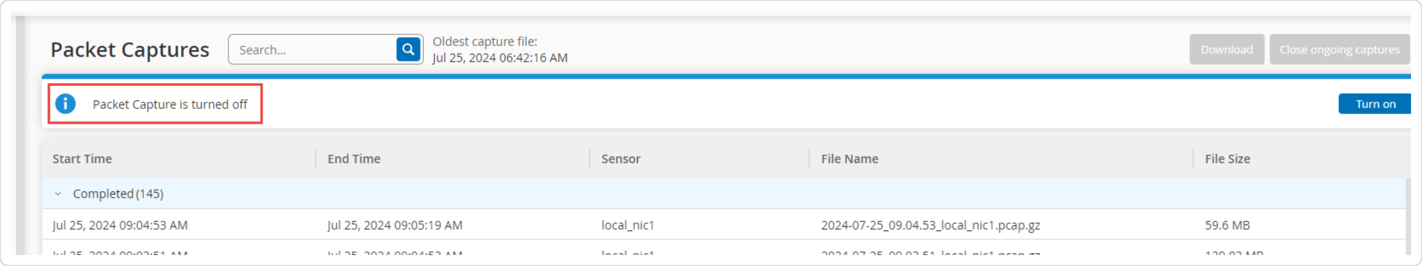
      c. Click **Apply**.

OT Security applies the filter and displays only the files generated within the specified timeframe.

Activate or Deactivate Packet Captures

You can activate or deactivate the Packet Capture feature from the **Local Settings** > **System Configuration** > **Device** .

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:
Jul 25, 2024 06:42:16 AM

Packet Capture is turned off

Start Time	End Time	Sensor	File Name	File Size
Completed (145)				
Jul 25, 2024 09:04:53 AM	Jul 25, 2024 09:05:19 AM	local_nic1	2024-07-25_09.04.53_local_nic1.pcap.gz	59.6 MB

Important: You can activate but not deactivate the Packet Capture feature from **Network** > **Packet Capture**.

To activate Packet Capture:

1. Go to **Network**> **Packet Captures**.

2. In the **Header** bar, click **Turn on**.

   OT Security starts Packet Capture.

Download Files

You can download any of the **Completed** PCAP files to your local machine. You can then analyze using Network Protocol Analysis tools such as Wireshark.

File captures that are still ongoing are not yet available for download. You can manually close an ongoing capture to close the current file and begin capturing information on a new file.

To download a completed file:

1. Go to **Network**> **Packet Captures**.

2. Select the required file from the Packet Capture lists.

3. In the **Header** bar, click **Download**.

   OT Security downloads the PCAP file in a zip format 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 captures**.

   OT Security stops the current capture and the file becomes available for download. OT Security automatically starts a new Packet Capture.

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** page shows a list of the current and past conversations, including detailed information about the conversations.

You can do the following actions from the **Conversations** page:

- **Search** — Use the **Search** box to search for specific conversations by providing identifying information.

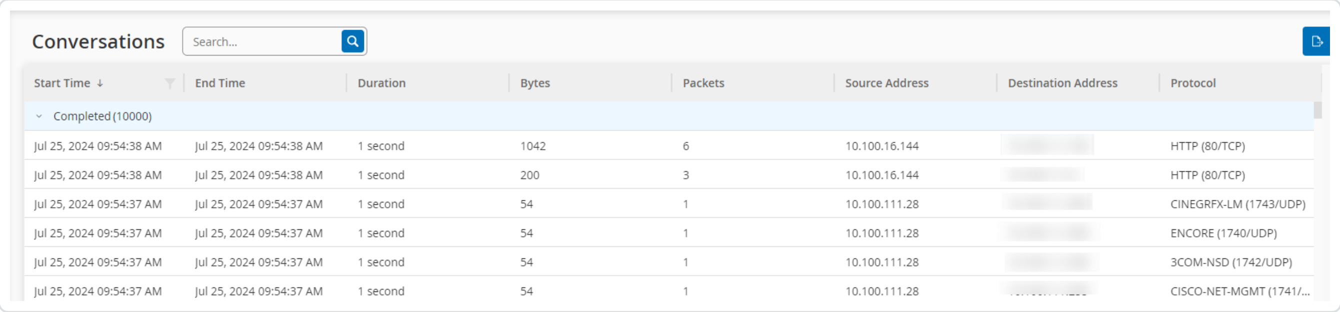
- **Export** — Use the Export button to export all data from the **Conversations** tab onto your local machine as a `.csv` file.

  > **Note**: The Conversations table shows the last 10,000 network conversations.

To access the **Conversations** page:

1. Go to **Network** > **Conversations**.

   The **Conversations** page appears.



Conversations

Start Time ↓	End Time	Duration	Bytes	Packets	Source Address	Destination Address	Protocol
Completed (10000)							
Jul 25, 2024 09:54:38 AM	Jul 25, 2024 09:54:38 AM	1 second	1042	6	10.100.16.144	[redacted]	HTTP (80/TCP)
Jul 25, 2024 09:54:38 AM	Jul 25, 2024 09:54:38 AM	1 second	200	3	10.100.16.144	[redacted]	HTTP (80/TCP)
Jul 25, 2024 09:54:37 AM	Jul 25, 2024 09:54:37 AM	1 second	54	1	10.100.111.28	[redacted]	CINEGRFX-LM (1743/UDP)
Jul 25, 2024 09:54:37 AM	Jul 25, 2024 09:54:37 AM	1 second	54	1	10.100.111.28	[redacted]	ENCORE (1740/UDP)
Jul 25, 2024 09:54:37 AM	Jul 25, 2024 09:54:37 AM	1 second	54	1	10.100.111.28	[redacted]	3COM-NSD (1742/UDP)
Jul 25, 2024 09:54:37 AM	Jul 25, 2024 09:54:37 AM	1 second	54	1	10.100.111.28	[redacted]	CISCO-NET-MGMT (1741/...

The Conversations page includes 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 duration of the conversation.
Packets	The number of data packets sent during the conversation.
Source Address	The IP address of the asset that sent the data.
Destination Address	The IP of the asset that received the data.
Protocol	The protocol used for the communication.

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.

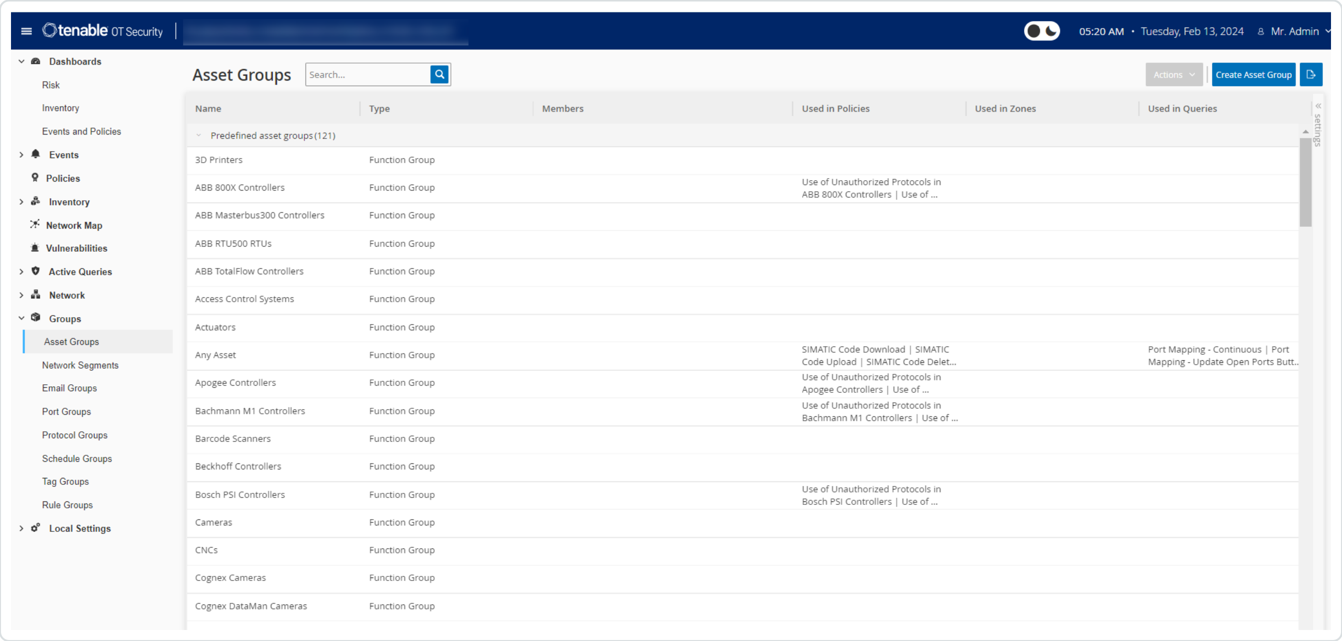
> **Note**: You can only set Policy parameters using Groups. If you want a Policy to apply to an individual entity you must configure a Group that includes only that entity.

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 & Tags** — 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.

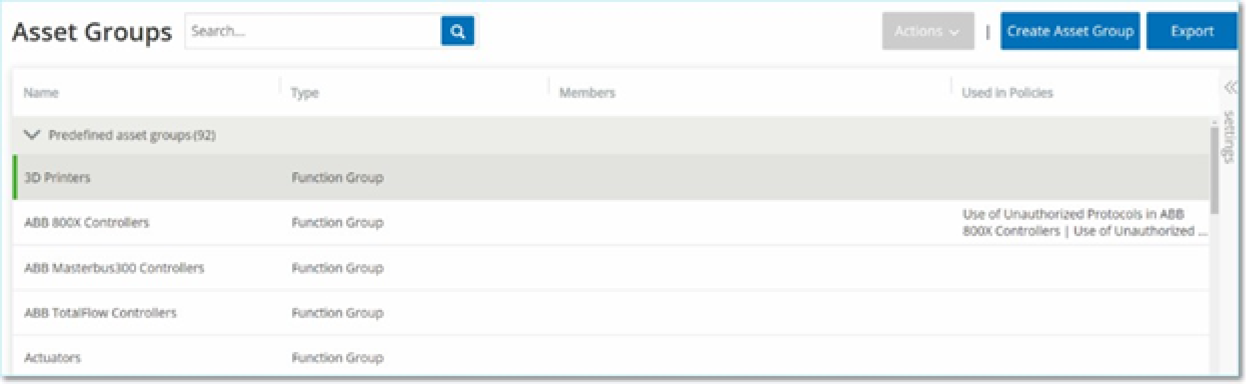
- **Email Groups** — Groups of emails that are notified when a Policy event occurs. Used for all Policy types.
- **Port Groups** — Groups of Ports used by assets in the network. Used for Policies that identify open ports.
- **Protocol Groups** — Groups of Protocols by which conversations are conducted 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.
- **Controller 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:

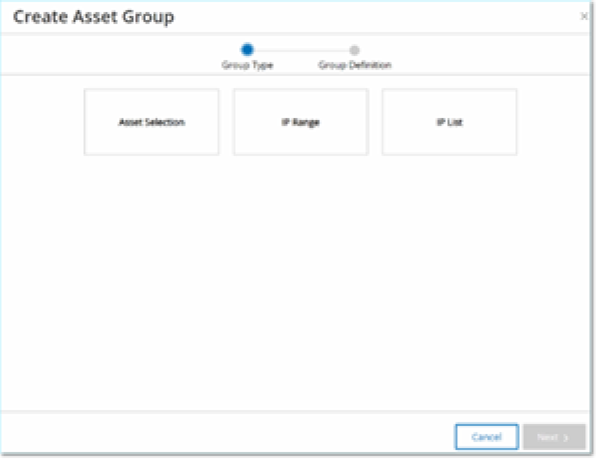
- **Asset Selection** — Specify the specific assets included in the Group.
- **IP List** — Specify the IP addresses of the Assets included in the Group.
- **IP Range** — Specify the range of IP addresses of the Assets that are included in the Group.

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

To create an asset selection type asset group:

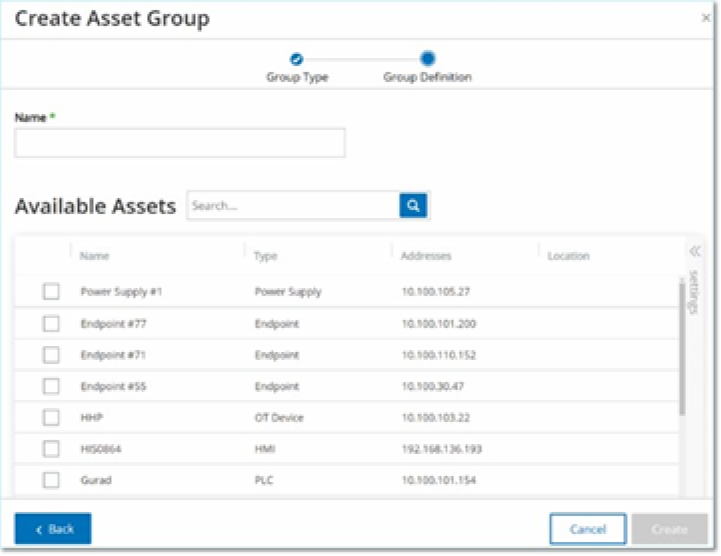
1. Go to **Groups** > **Asset Groups**.
2. Click **Create Asset Group**.

   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 checkbox next to each asset you want to include in the group.

7. Click **Create**.

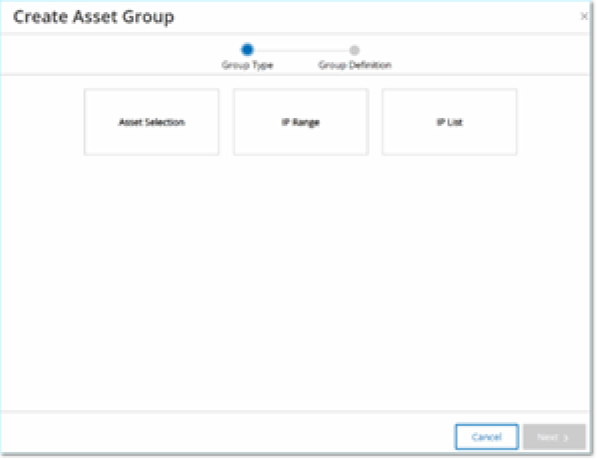
   OT Security creates the new asset group and displays it on the **Asset Groups** screen. You can now use this group when configuring policies.

To create an IP range type asset group:

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

2. Click **Create Asset Group**.

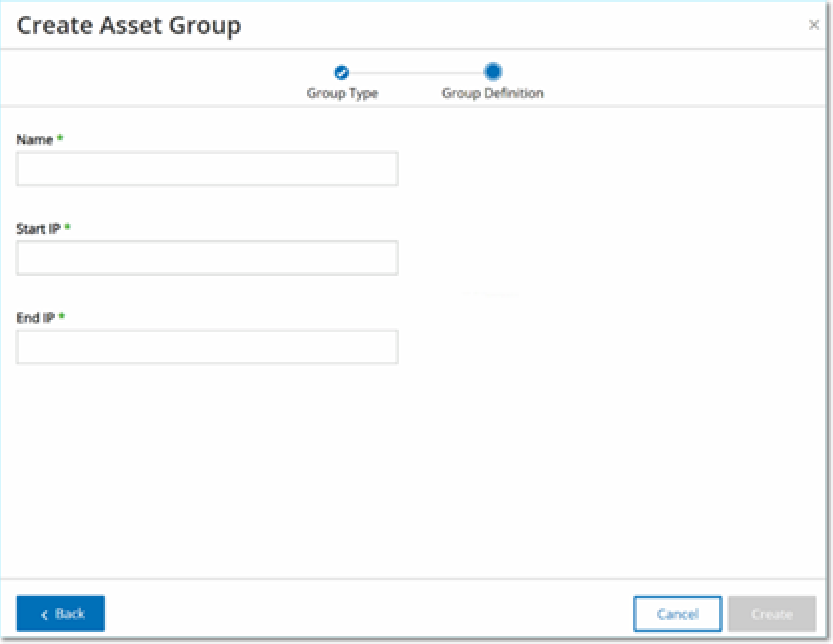
   The **Create Asset Group** panel appears.



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**.

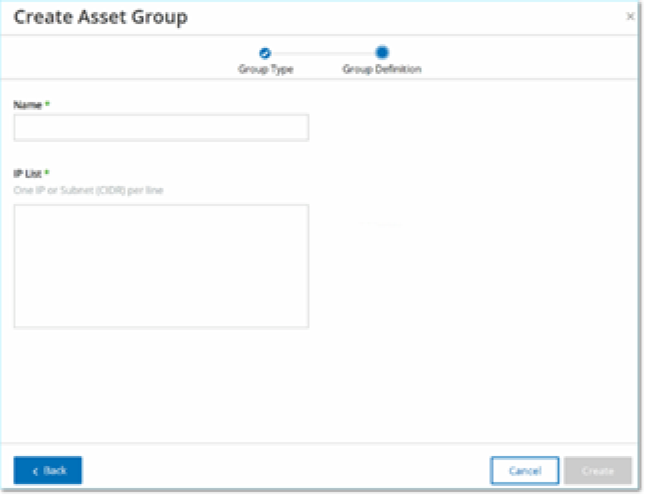
   OT Security creates the new Asset Group displays it on the **Asset Groups** screen. You can now use this group when configuring policies.

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**.

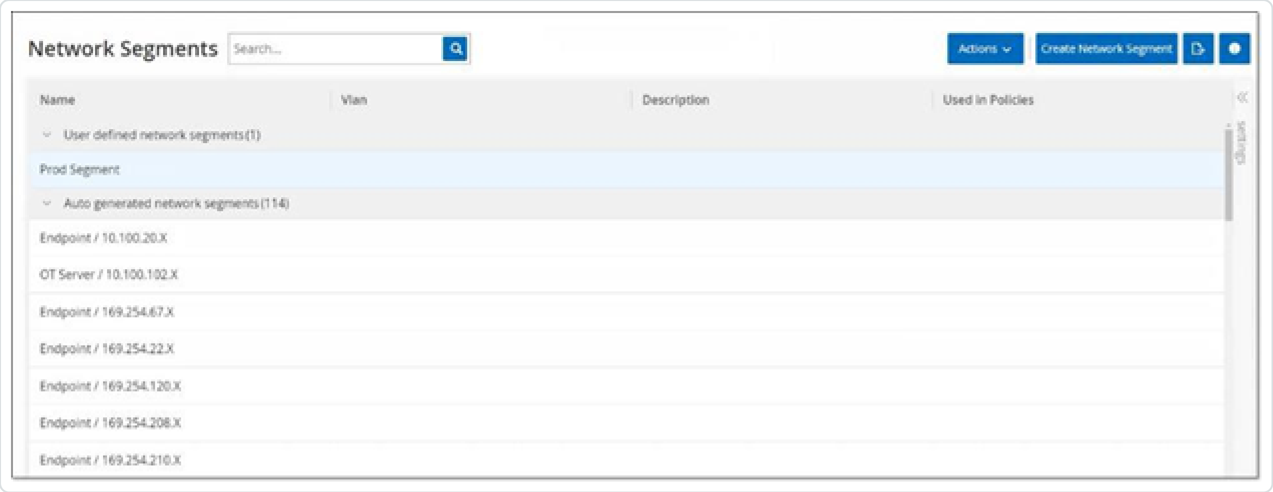
   OT Security creates the new Asset Group and displays it on the **Asset Groups** screen. You can now use this group when configuring policies.

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.

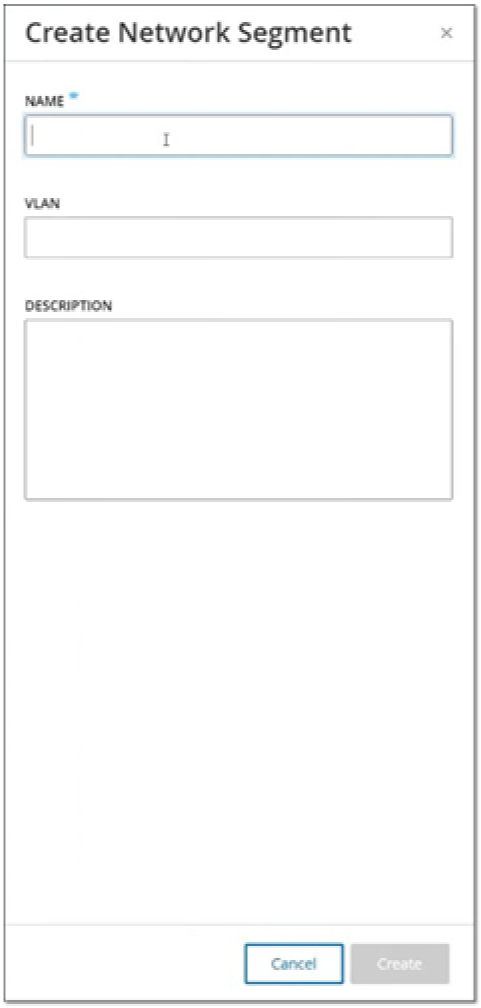
Create Network Segments

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.

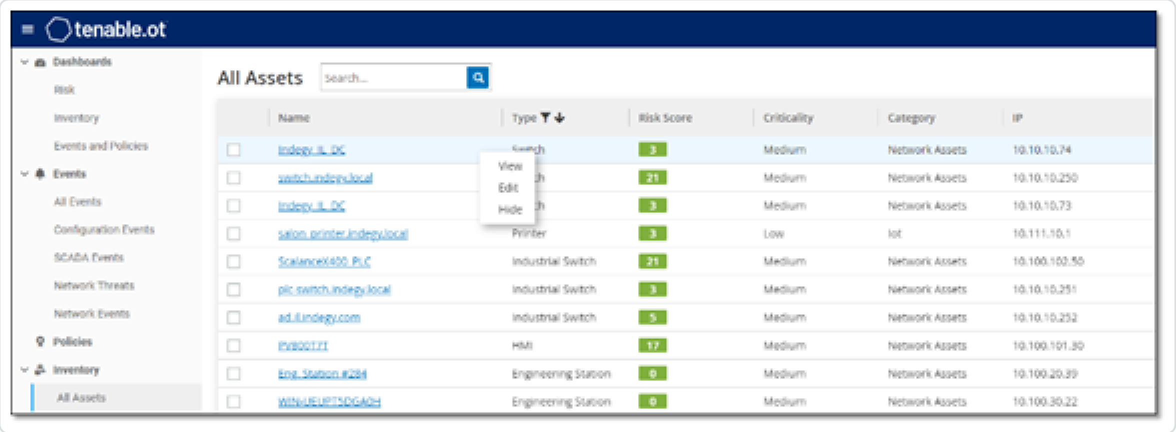
7. To assign the assets to the newly created Network Segment:

   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**.

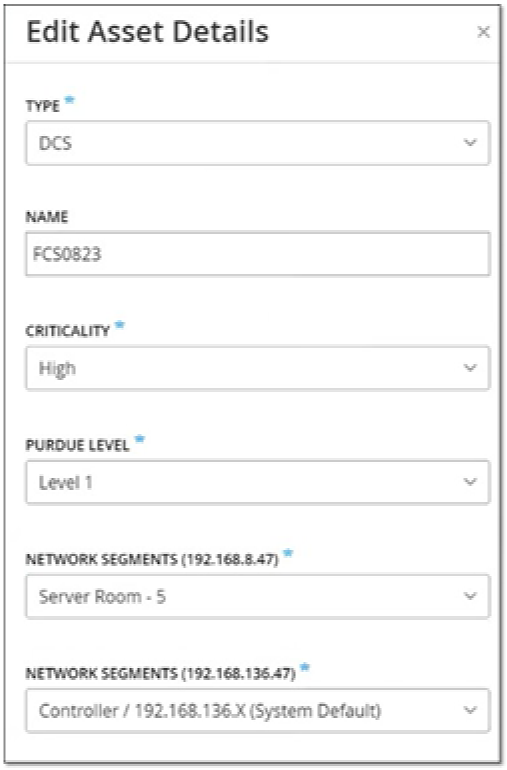


All Assets

	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
□	PV800T71	HMI	17	Medium	Network Assets	10.100.101.30
□	Eng. Station #284	Engineering Station	0	Medium	Network Assets	10.100.20.39
□	WIN-UEUPT5DGAOH	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.



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)

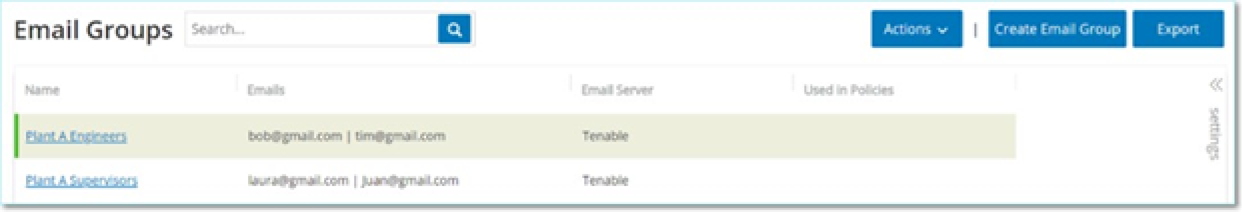
> **Note**: Some assets have more than one associated IP address, and you can select the required Network Segment for each one.

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

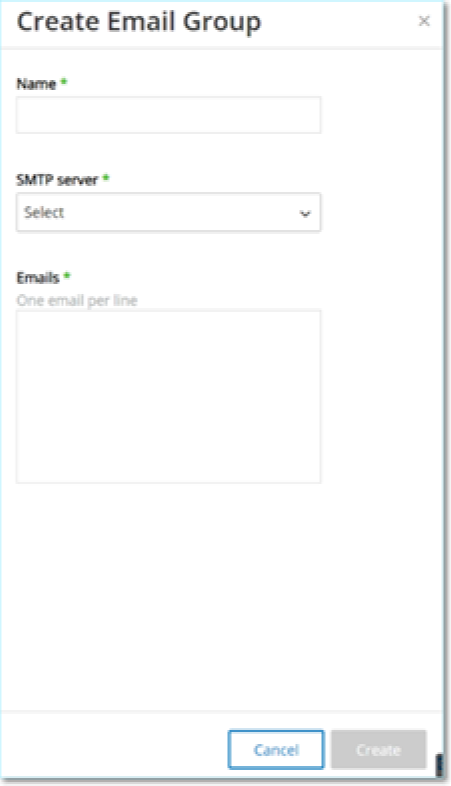
You can create Email Groups to be used in the configuration of Policies. By grouping related emails, you set Policy Event notifications to be sent to all relevant personnel.

> **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.



Create Email Group

Name *

SMTP server *

Select

Emails *

One email per line

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.

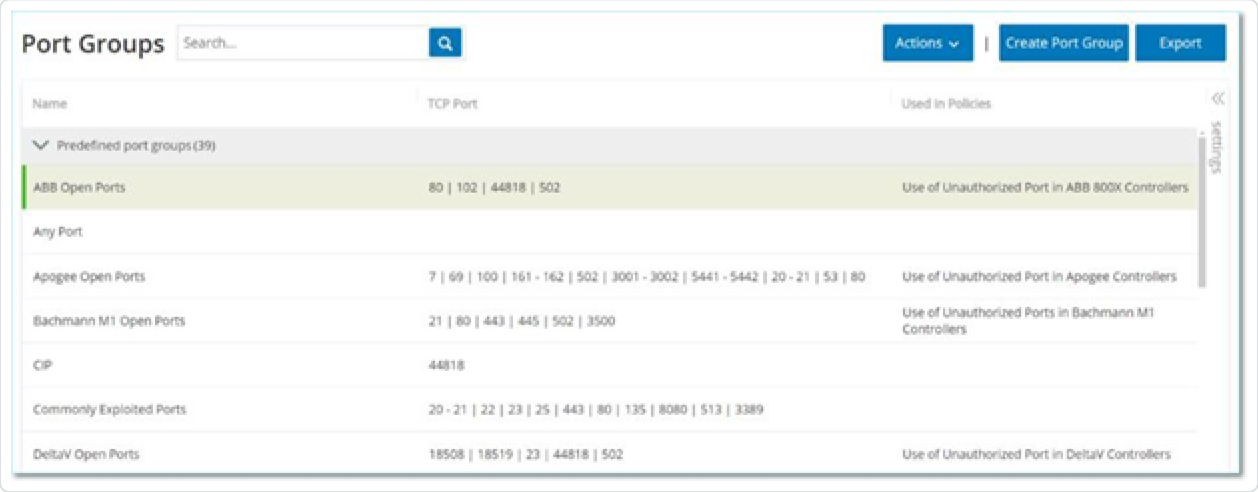
Port Groups

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.

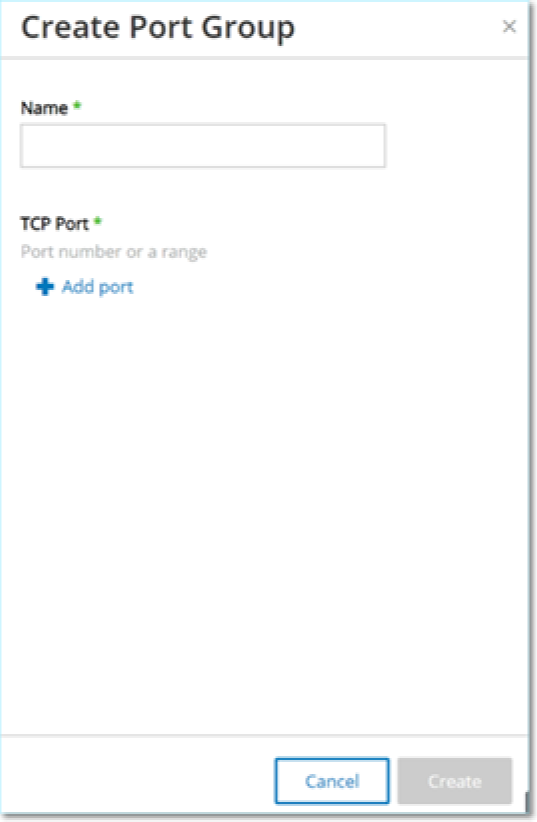
Create Port Groups

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.

   Create Port Group

   Name *

   TCP Port *

   Port number or a range

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.

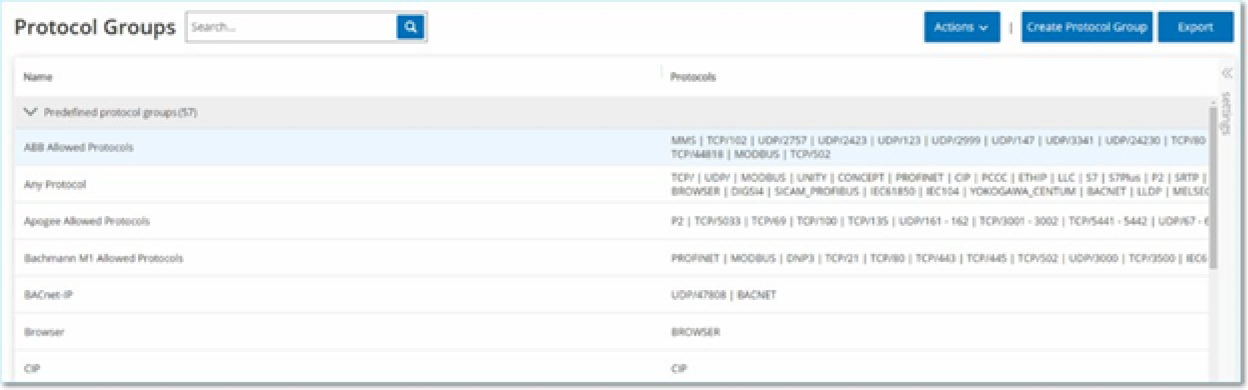
Protocol Groups

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.

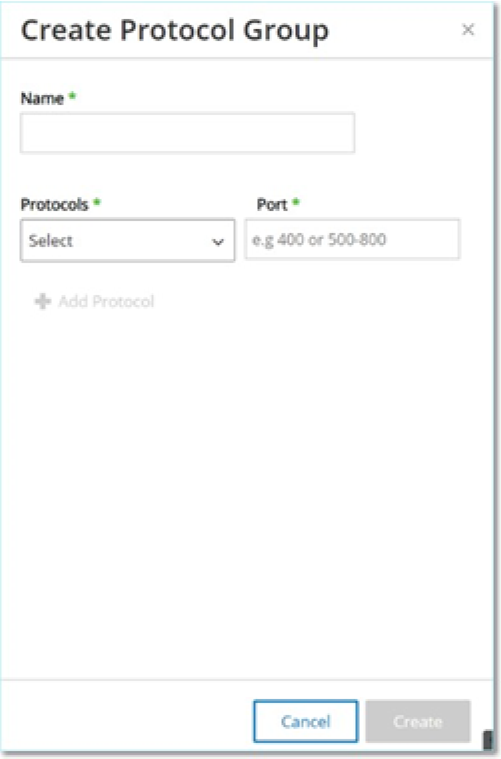
Create Protocol Groups

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.



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.

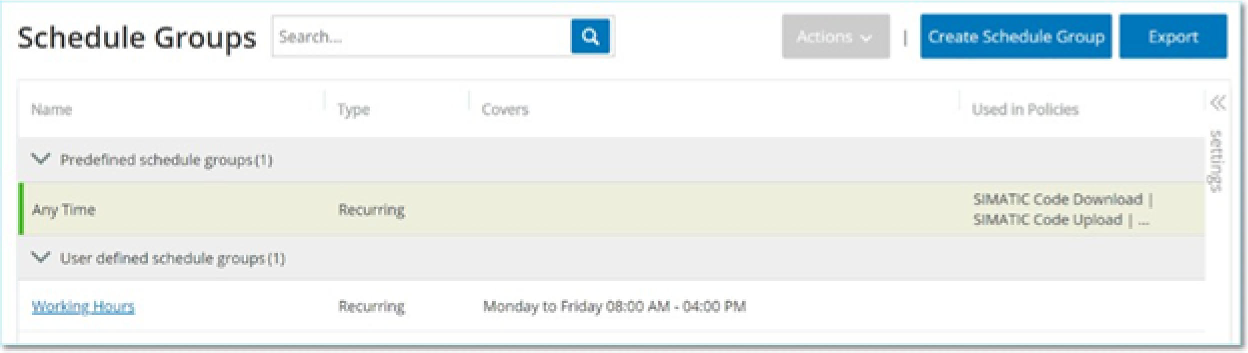
7. Click **Create**.

   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.

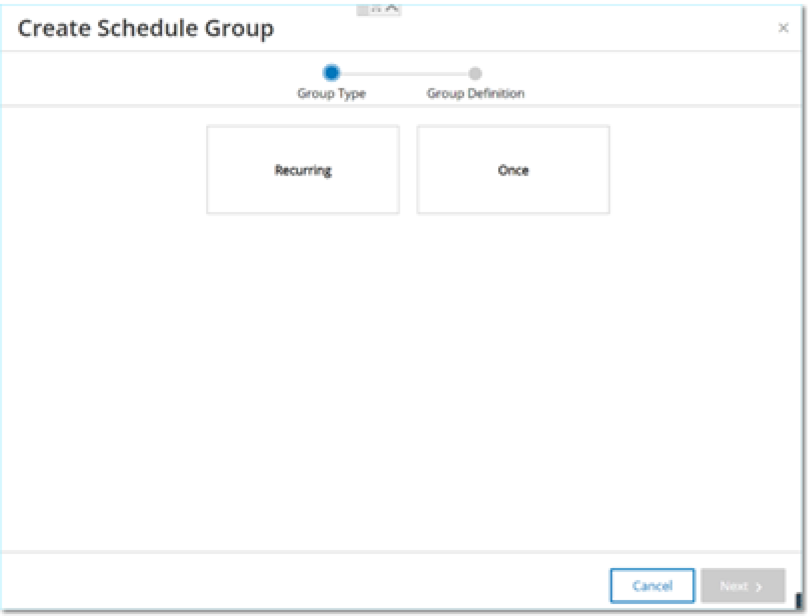
To create a Recurring Type Schedule Group:

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

   The **Schedule Groups** page appears.

2. Click **Create Schedule Group**.

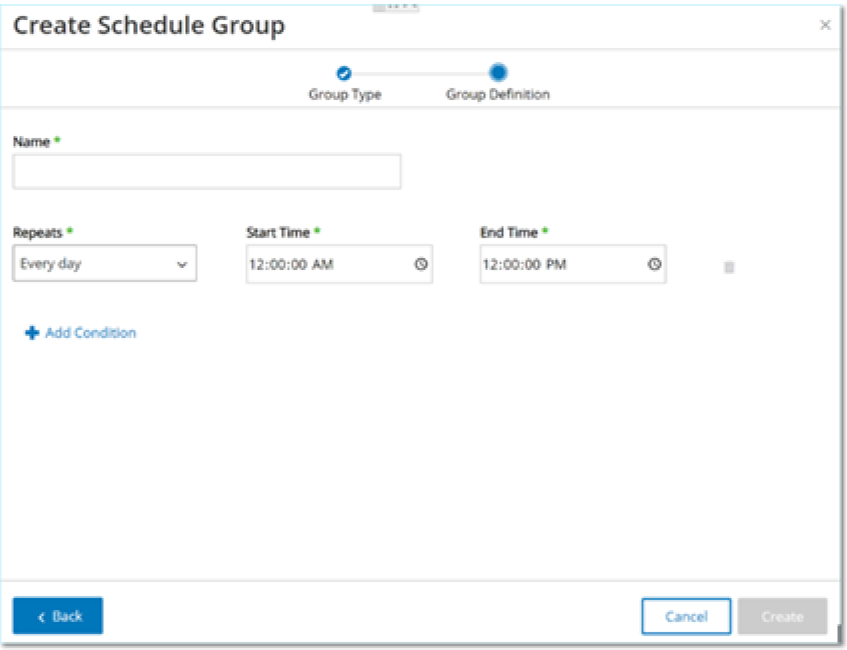
   The **Create Schedule Groups** panel appears.



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**.

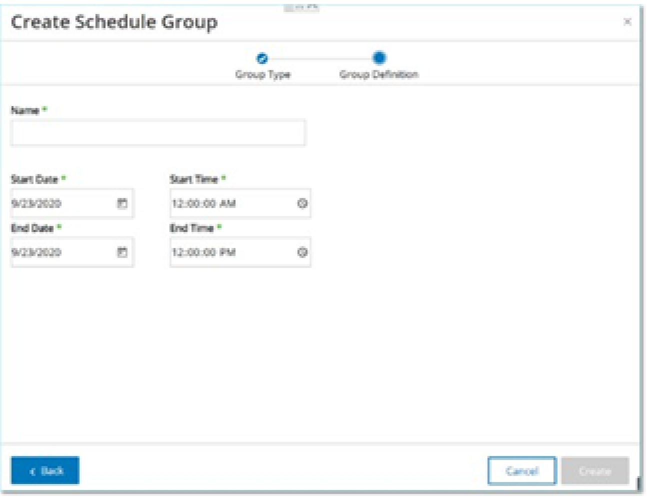
2. Click **Create Schedule Group**.

   The **Create Schedule Group** wizard appears.

3. Select **Time Range**.

4. Click **Next**.

   The parameters for defining a time range schedule group appear.



Name *

Start Date * 9/23/2020

Start Time * 12:00:00 AM

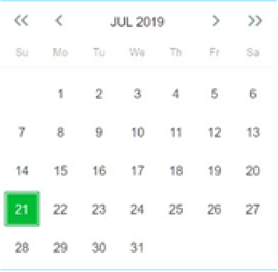
End Date * 9/23/2020

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.



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.

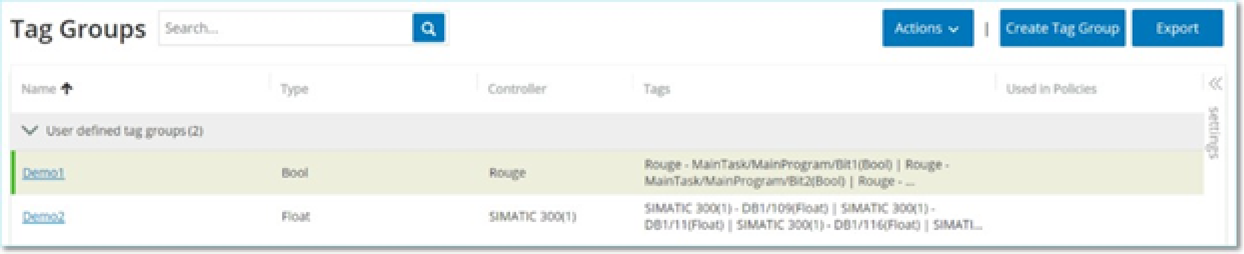
12. Click **Create**.

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. Controller 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 Controller 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 **Controller Tag Groups** page shows all tag groups currently configured in the system.

The Controller 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 Controller Tag Groups

You can create custom Controller 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.

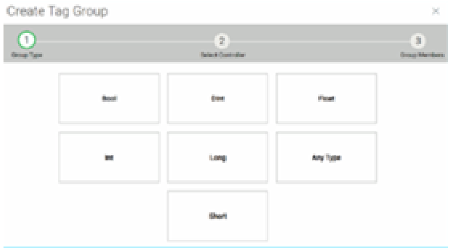
You can also create Groups that include Tags of different types by selecting the **Any Type** option. In this case, Policies that are applied to this Group can only detect changes to **Any Value** for the specified Tags but cannot be set to detect specific values.

You can edit, duplicate, or delete Controller Tag Groups.

To create a new tag group:

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

   The **Create Controller Tag Group** panel appears.

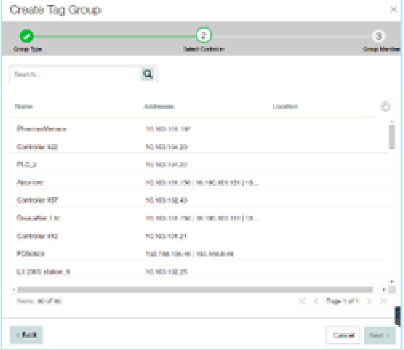
   

3. Select a Tag type.

   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

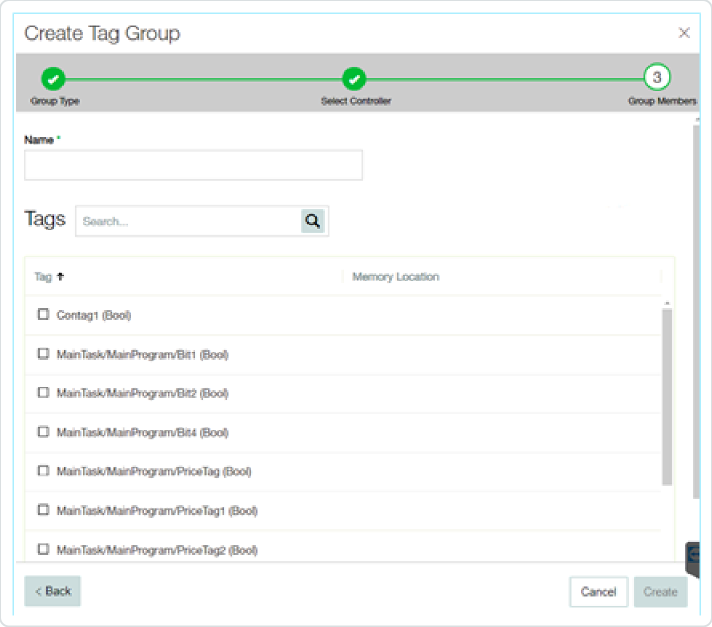
Name	Addresses	Location
PhoenixVersace	10.103.101.197	
Controller 420	10.103.104.20	
PLC_2	10.103.104.22	
Absolute	10.103.101.150 | 10.100.101.131 | 10...	
Controller 157	10.103.102.43	
DeviceNet 1.10	10.103.101.150 | 10.100.101.131 | 10...	
Controller 412	10.103.101.21	
PC50623	192.168.106.46 | 192.168.8.46	
LI 2005 station_4	10.103.102.25	

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

Tag ↑	Memory Location
☐ 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**.

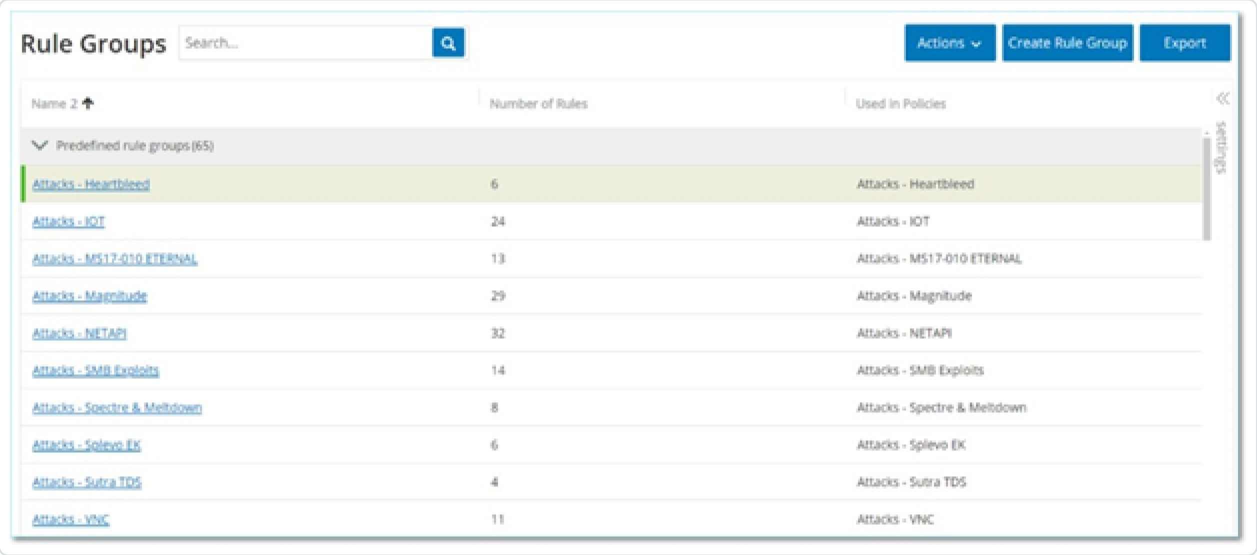
OT Security creates the new Tag Group and shows in the list of Controller Tag Groups. You can now use this Group when configuring SCADA Event Policies.

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.

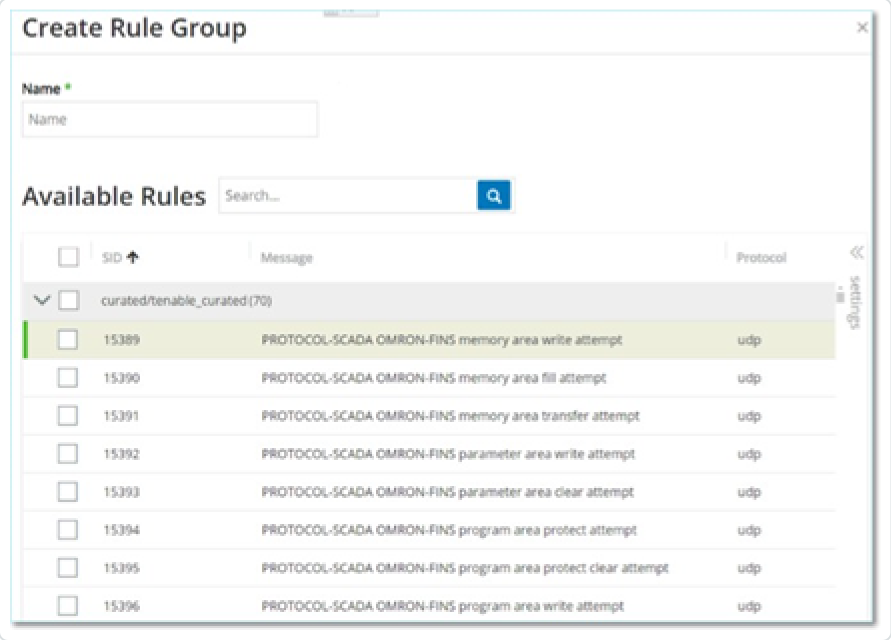
Number of Rules	The number of rules (SIDs) that comprise this Rule Group.
Used in Policies	Shows the Policy ID of each Policy that uses this Rule Group in its configuration. **Note**: To view additional details about the Policies in which this Group is used, click **Actions** > **View** > **Used in Policies** 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.



□	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

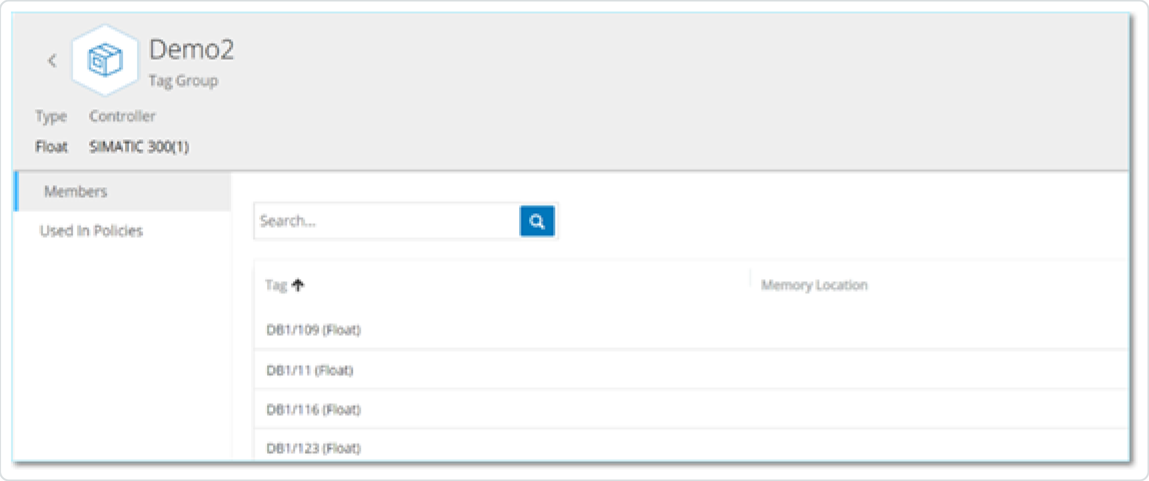
- **Duplicate** — Create a new Group with a similar configuration to the specified Group. See Duplicate a Group

- **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.

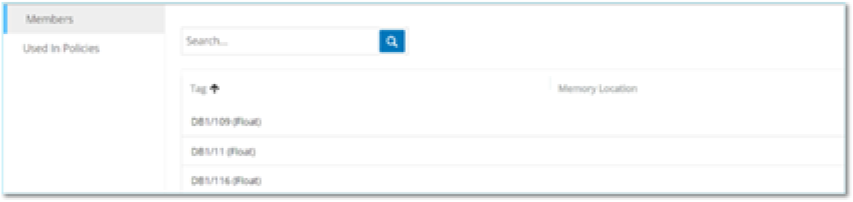


Type	Controller
Float	SIMATIC 300(1)

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.



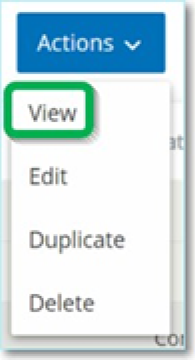
Tag	Memory Location
DB1/109 (Float)	
DB1/11 (Float)	
DB1/116 (Float)	

- **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.

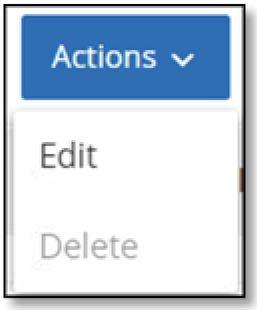
Edit a Group

You can edit the details of an existing Group.

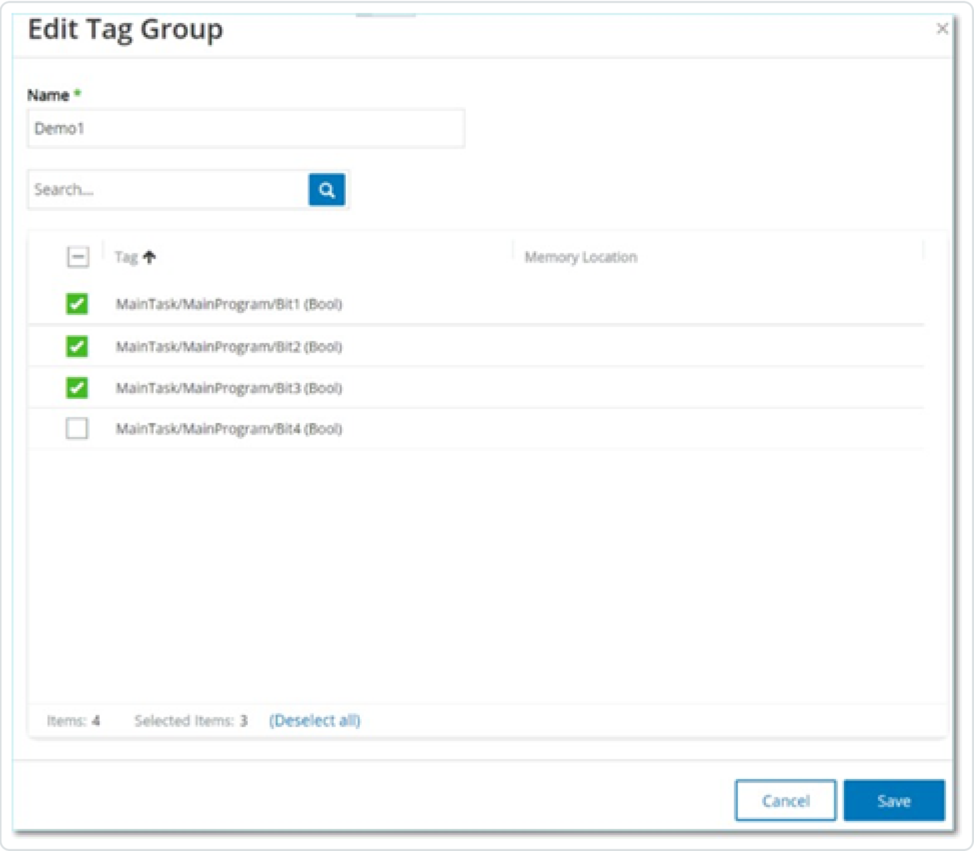
To edit details of a Group:

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.

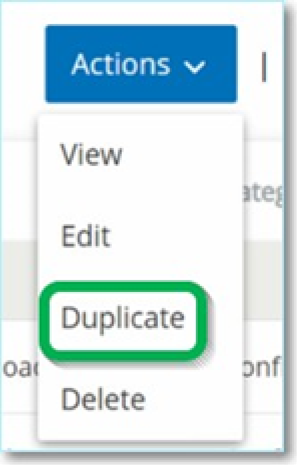
2. Select the existing Group on which you want to base the new Group.

3. Do one of the following:

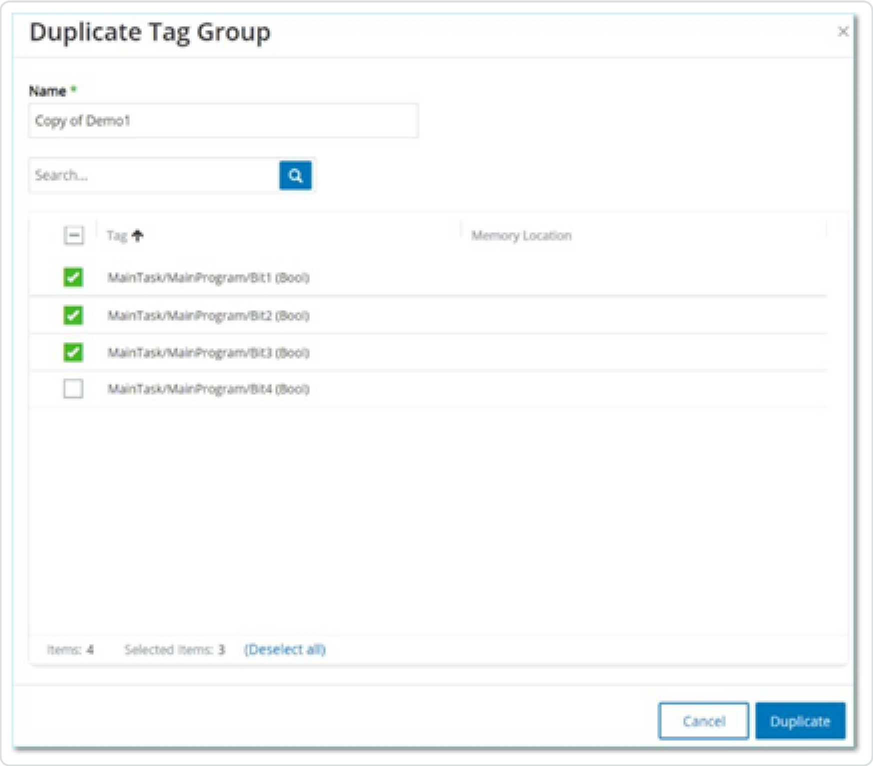
- Click **Actions**.
- Right-click the required group.

  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

Search...

⊟	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.

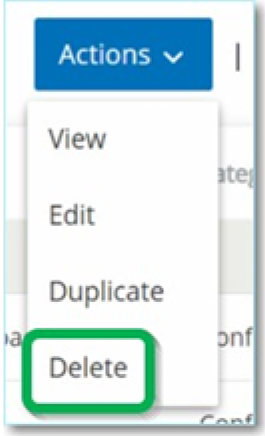
3. Do one of the following:

   - Click **Actions**.

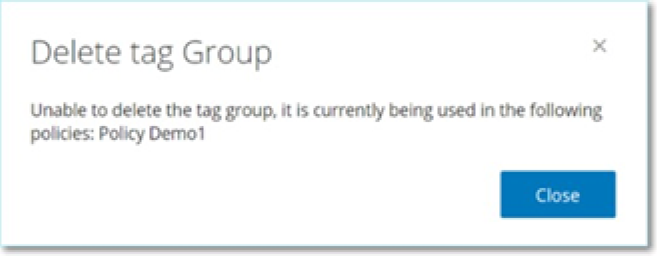
   - Right-click the required group.

     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.

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 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. See Generate API Keys.

- **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. See Monitored Networks.
  - **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. See Add Assets Manually.

> **Note**: The maximum number of IP ranges that can be sent to the Tenable 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 User Management.
  - **User Groups** — An administrator user can view, edit, add, and delete user groups. See User Management.

  - **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 User Management.

- **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** – Starting in 3.18, you can take a backup and restore your OT Security using the **Backup/Restore** page in Tenable Core. For more information, see Application Data Backup and Restore. To restore using CLI, see Restore Backup Using CLI.

  - **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.

    > **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

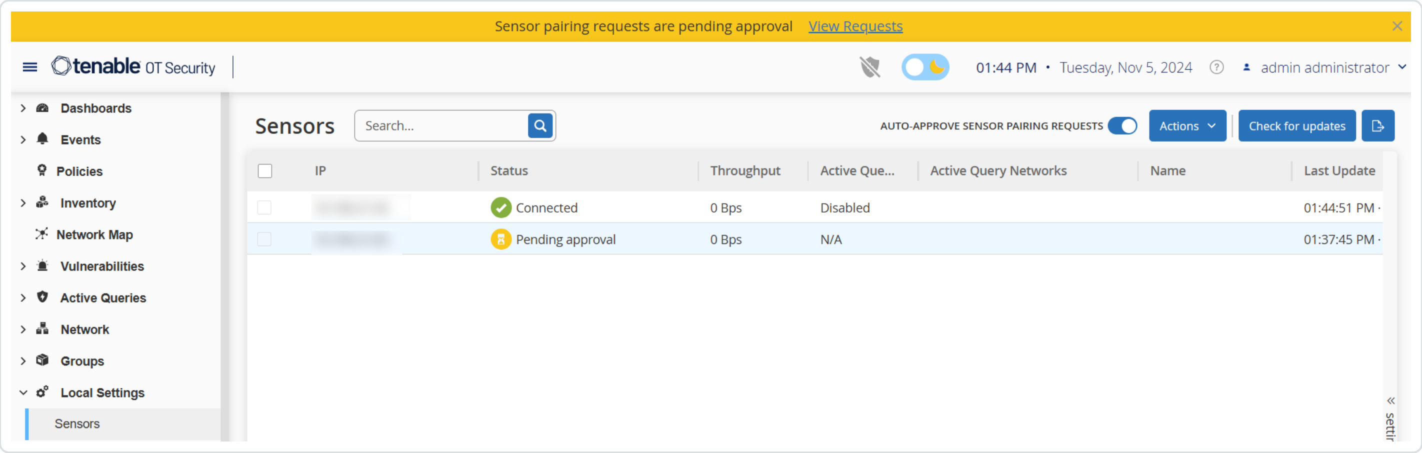
After sensors are paired using the Tenable Core user interface, you can approve new pairings, view, and manage sensors using the **Edit**, **Pause**, and **Delete** functions in the **Actions** menu. You can also choose to enable automatic approval for sensor pairing requests using the **Auto Approve 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

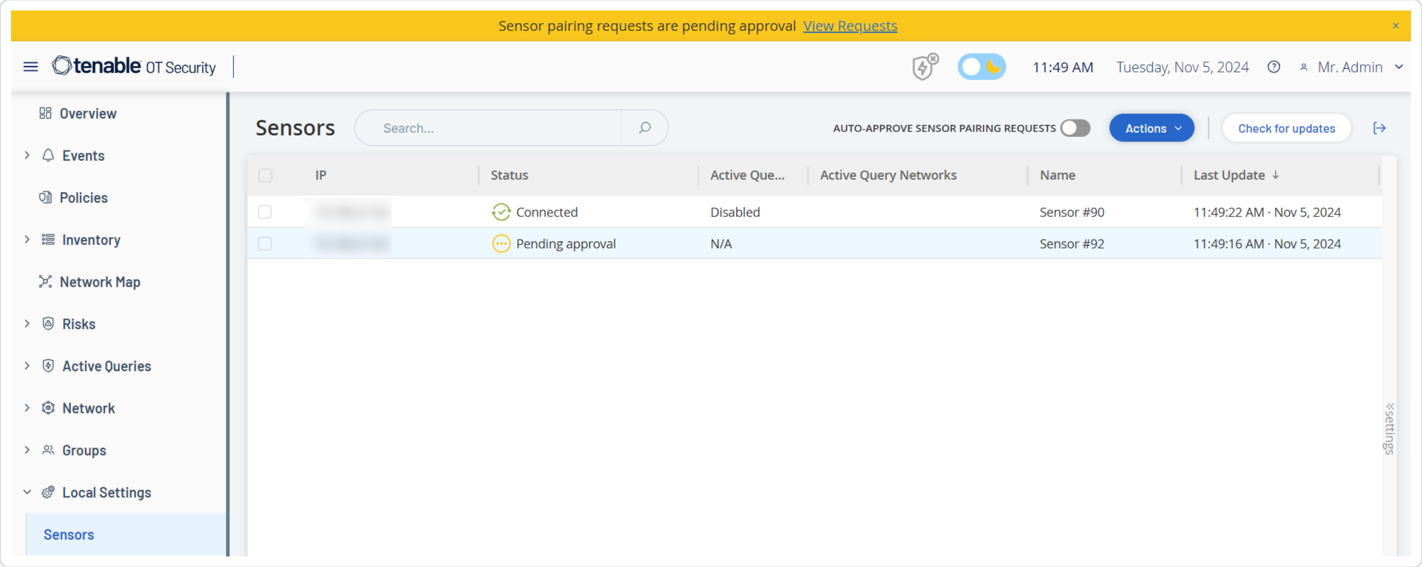
The Sensors table shows a list of all Sensors version 2.214 and later in the system. For information about how to customize tables, see Management Console User Interface Elements.



Sensor pairing requests are pending approval View Requests

Sensors

☐	IP	Status	Throughput	Active Que...	Active Query Networks	Name	Last Update
☐	[redacted]	✓ Connected	0 Bps	Disabled			01:44:51 PM ·
☐	[redacted]	Pending approval	0 Bps	N/A			01:37:45 PM ·



Sensor pairing requests are pending approval View Requests

Sensors

☐	IP	Status	Active Que...	Active Query Networks	Name	Last Update ↓
☐	[redacted]	✓ Connected	Disabled		Sensor #90	11:49:22 AM · Nov 5, 2024
☐	[redacted]	Pending approval	N/A		Sensor #92	11:49:16 AM · Nov 5, 2024

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**. **Important**: Once paired, all sensors show the status as **Paused**. • To change the status for authenticated sensors: In OT Security, right-click the sensors and activate them by changing the status from **Paused** to **Connected**. • To change the status for unauthenticated sensors:

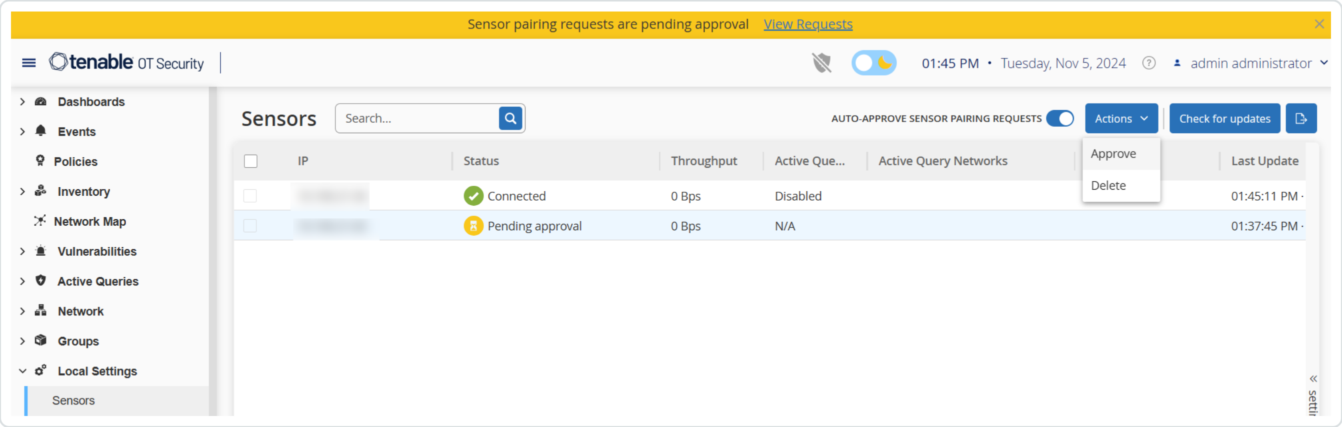
	In Tenable Core + OT Security Sensor, navigate to the **OT Security Sensor** > **Pairing Info** section, then click **Resume Data Transfer** to change the **Connection Status**.
Active Queries	The capacity of the sensor to send Active Queries: **Enabled**, **Disabled**, or **N/A**.
Active Query Networks	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 Requests** 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**.



Sensor pairing requests are pending approval View Requests

Sensors

IP	Status	Throughput	Active Que...	Active Query Networks	Last Update
[redacted]	Connected	0 Bps	Disabled		01:45:11 PM ·
[redacted]	Pending approval	0 Bps	N/A		01:37:45 PM ·

> **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:

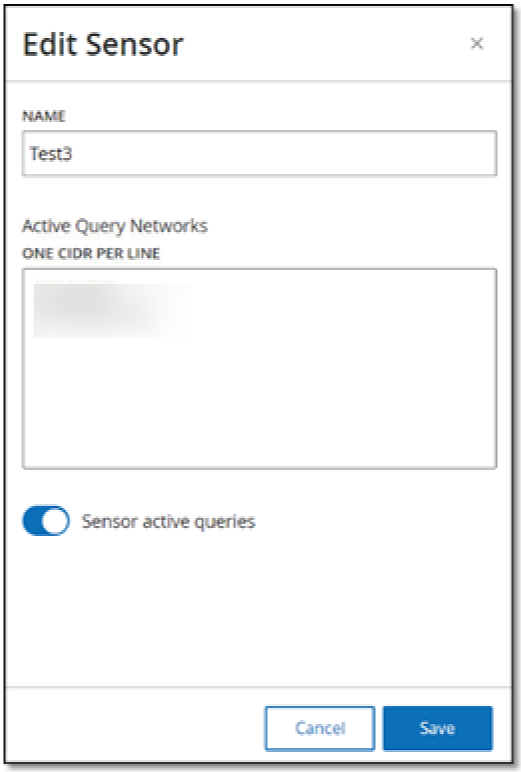
1. Go to **Local Settings** > **Sensors**.

   The **Sensors** page appears.

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

[redacted]

Sensor active queries

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.

> **Note**: OT Security uses the offline ISO for the centralized updates. To centrally update all authenticated sensors attached to an ICP, place the ICP / Sensor offline ISO under `/srv/tenablecore/offlineiso/tenable-offline-updates.iso` on the ICP.

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.

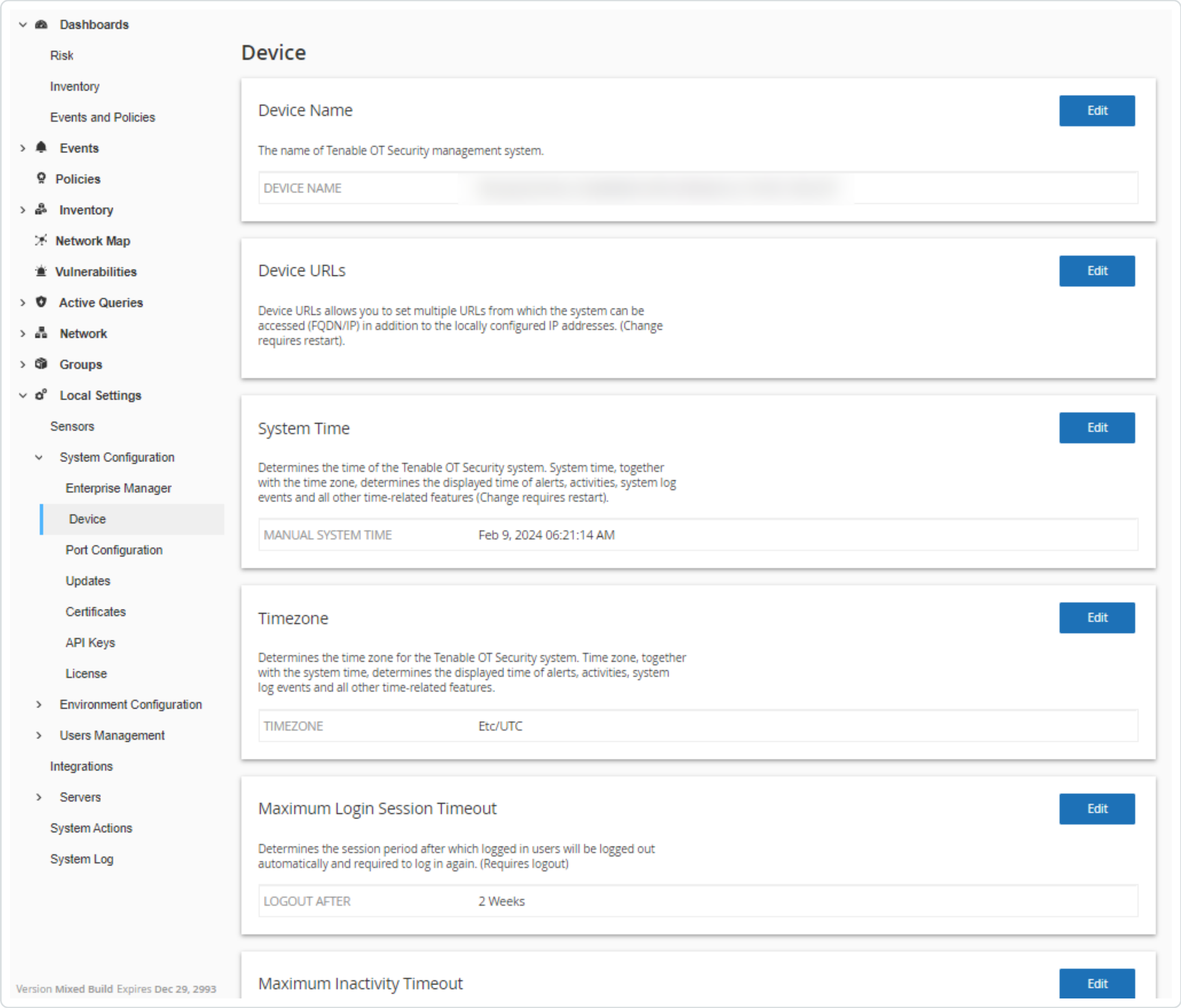
Note: During the update, the sensor may be unavailable.

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.

Classification Banner

Add a banner to OT Security to indicate the data accessible via the software.

To add a banner, click **Edit**. After adding the banner, click to enable the **Classification Banner** toggle.

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**.

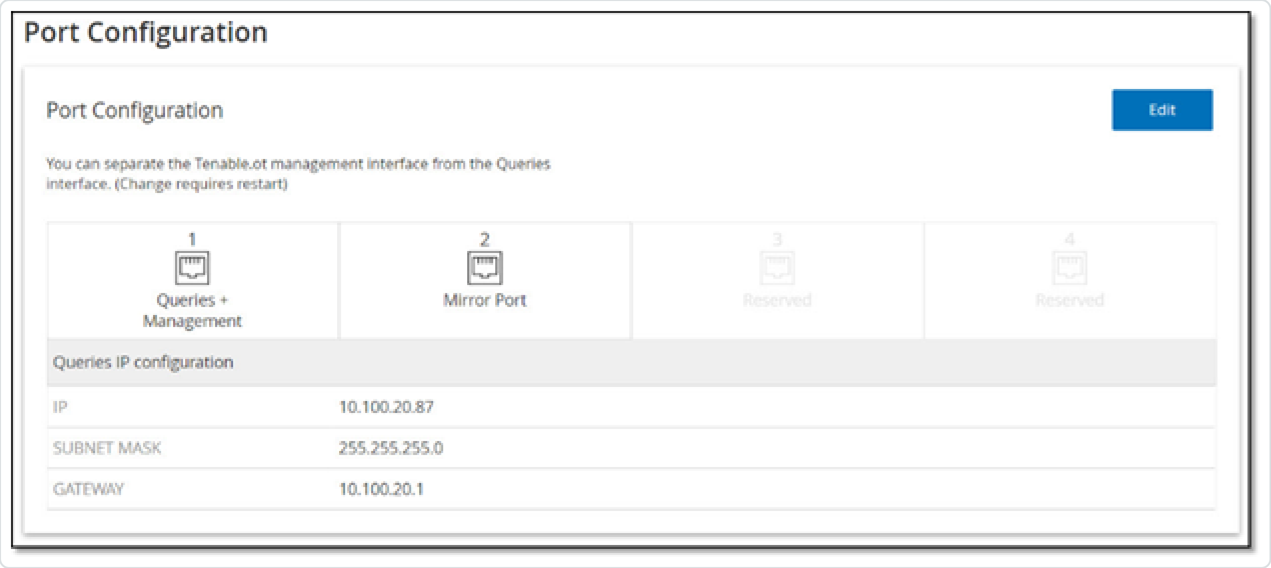
> **Note**: You can disable sharing of usage statistics at any time by clicking the toggle switch.

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 Device.



Port Configuration

Port Configuration

You can separate the Tenable.ot management interface from the Queries interface. (Change requires restart)

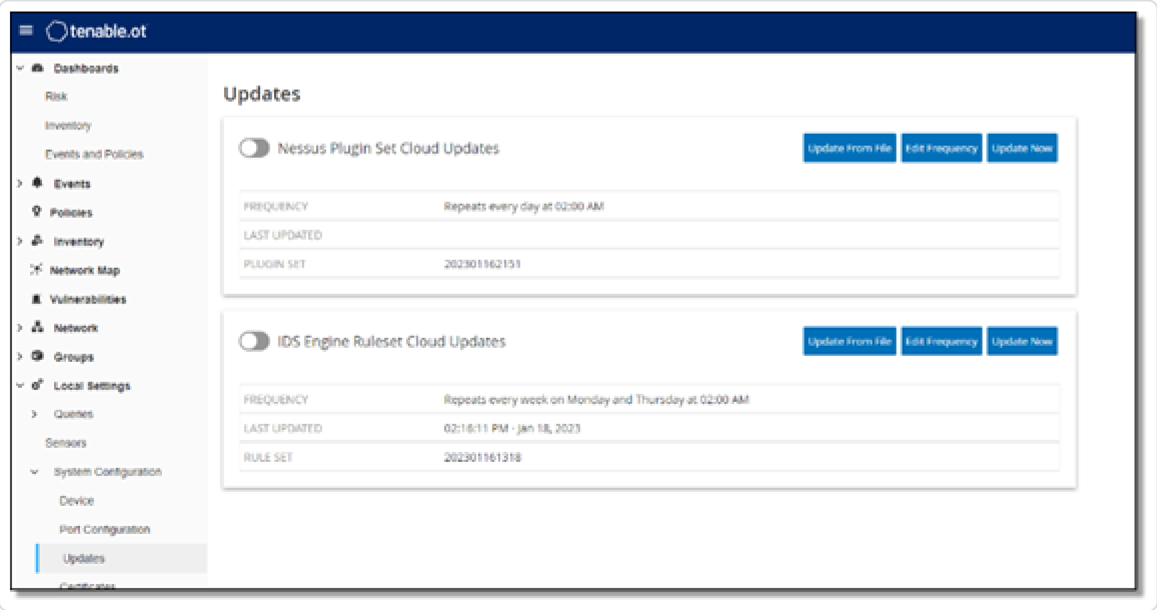
1	2	3	4
Queries + Management	Mirror Port	Reserved	Reserved

Queries IP configuration	
IP	10.100.20.87
SUBNET MASK	255.255.255.0
GATEWAY	10.100.20.1

Updates

Updating Tenable Nessus plugins and Intrusion Detection System (IDS) Engine Ruleset to the latest versions ensures that OT Security monitors your assets for the all the latest known vulnerabilities. You can perform updates through the cloud, both automatically and manually, and offline as well.

> **Note**: For information about updating Tenable Core, see Manage Updates in the Tenable Core + OT Security User Guide.



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

Note: You can also perform updates via **Vulnerabilities** > **Update plugins**.

Note: If the user license ages out, the option to download new updates are blocked, and plugins cannot be updated.

Tenable Nessus Plugin Set Updates

Set Automatic Cloud Updates of Plugins

If you have an internet connection, you can update plugins through the cloud. When you enable automatic updates, plugins update at the time and frequency that you set (Default: daily at 02:00 AM).

To enable automatic updates of plugins:

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

   The **Updates** window appears. The **Nessus Plugin Set Cloud Updates** section shows the number of your Plugin Set, the date of the last update, and the update schedule.

2. Click the **Nessus Plugin Set Cloud Updates** toggle to enable automatic updates.

Edit Frequency of Plugin Updates

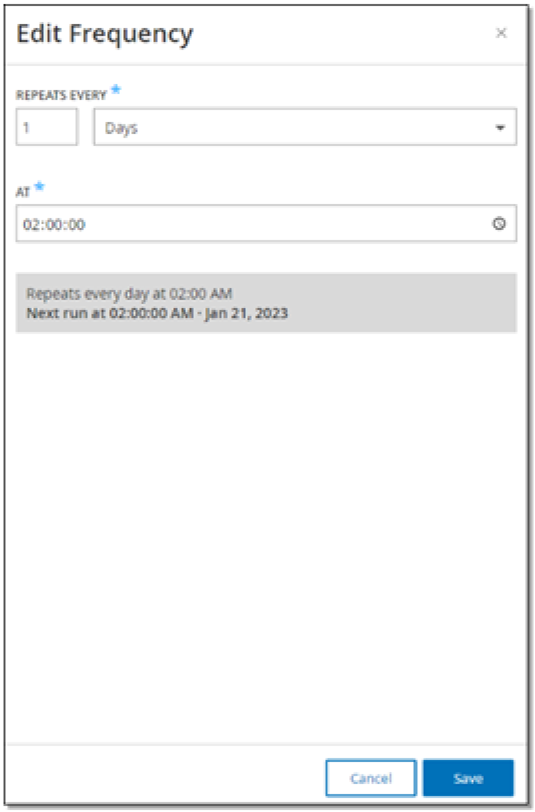
To edit the schedule of automatic updates of Plugins:

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

   The **Updates** window appears. The **Nessus Plugin Set Cloud Updates** section shows the number of your Plugin Set, the date of the last update, 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 the frequency update is successful.

Perform Manual Cloud Updates of Plugins

To update plugins manually:

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

   The **Updates** page appears The **Nessus Plugin Set Cloud Updates** section shows the number of your Plugin Set, the date of the last update, and the update schedule.

2. Click **Update Now**.

   A message appears to confirm that the update is in progress. 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

If you do not have an internet connection on your OT Security device, you can manually update the Plugins by downloading the latest Plugin set from the Tenable Community Portal and uploading the file.

To update plugins offline:

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

   The **Updates** page appears. The **Nessus Plugin Set Cloud Updates** section shows the number of your Plugin Set, the date of the last update, and the update schedule.

2. Click **Update From File**.

The **Update From File** window appears.

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

Set Automatic Cloud Updates of the IDS Engine Ruleset

If you have an internet connection, you can update the IDS Engine Ruleset through the cloud. When you enable automatic updates, the IDS Engine Ruleset can update at the time and frequency that you set (Default: Repeats every week on Monday and Thursday at 02:00 AM).

To enable automatic updates of the IDS Engine Ruleset:

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

   The **Updates** page appears. The **IDS Engine Ruleset Cloud Updates** shows the number of your Rule Set, the date of the last update, and the update schedule.

2. Click the **IDS Engine Ruleset Cloud Updates** toggle to enable automatic updates.

Edit Frequency of IDS Engine Ruleset Updates

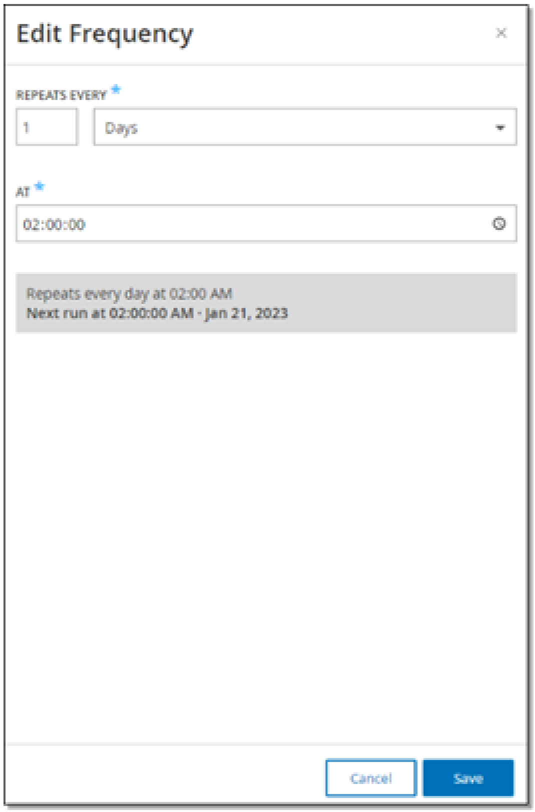
To edit the schedule of automatic updates of the IDS Engine Ruleset:

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

   The **Updates** page appears. The **IDS Engine Ruleset Cloud Updates** shows the number of your Rule Set, the date of the last update, 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 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 want to perform a weekly update on the Ruleset.

4. In the **At** section, set the time of day at which you want 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 to confirm the frequency update is successful.

Perform 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, the date of the last update and the update schedule.

2. Click **Update Now**.

   A message appears confirming that the update is in progress. When the update is complete, the **Ruleset** box displays the number of the current IDS Engine Ruleset.

Offline Updates

If you do not have an internet connection on your OT Security device, you can manually update your IDS Engine Ruleset by downloading the latest Ruleset from the Tenable Customer Portal and uploading the file.

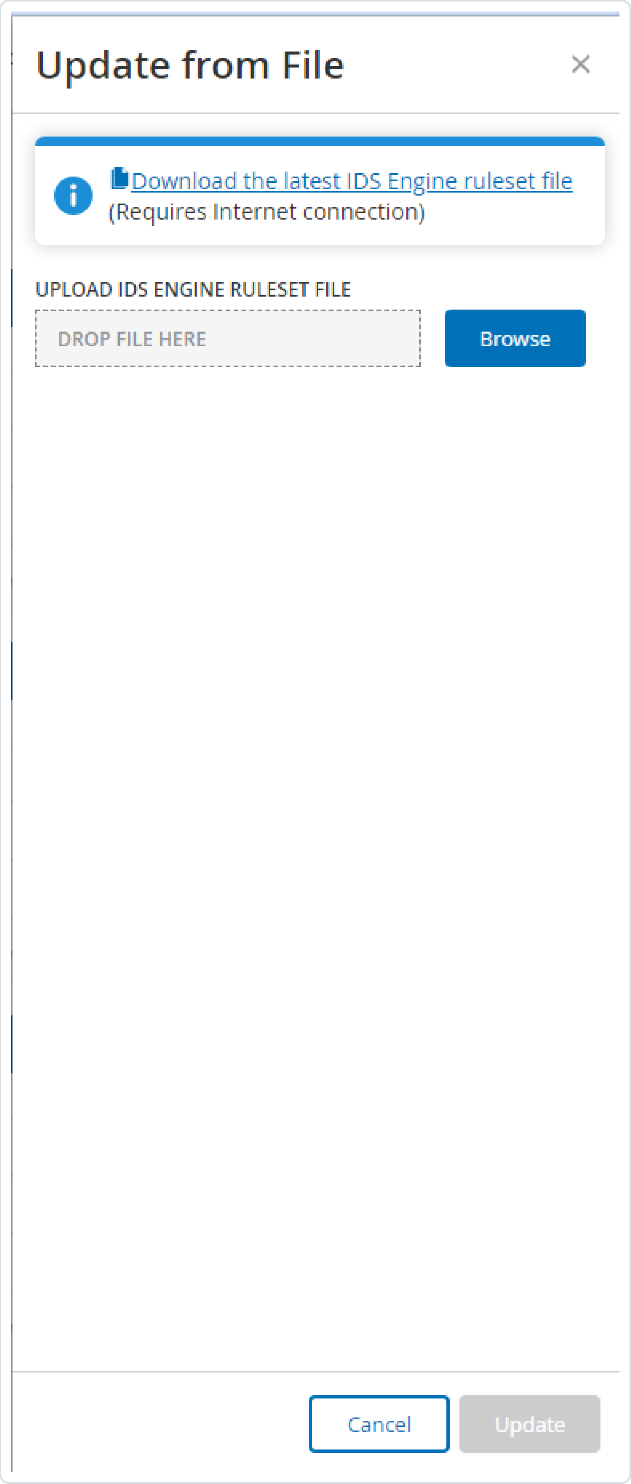
To update the IDS Engine Ruleset offline:

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

   The **Updates** window appears. The **IDS Engine Ruleset Cloud Updates** shows the number of your Rule Set, the date of the last update, 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
Browse
Cancel
Update

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 file you downloaded from the OT Security Customer portal.

5. Click **Update**.

Certificates

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.

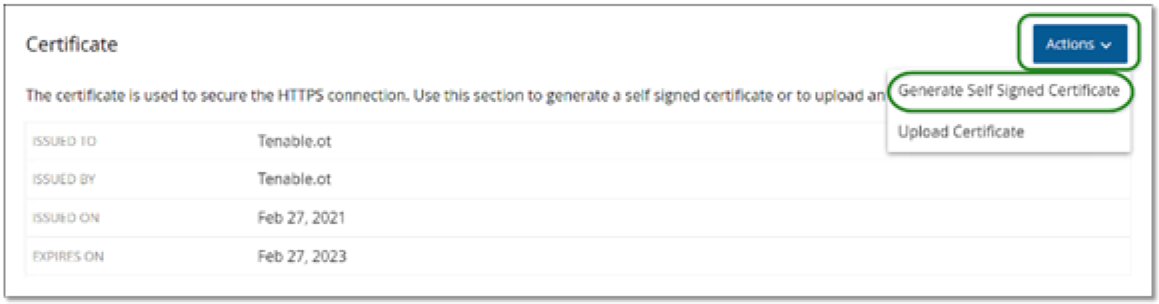
> **Note**: Generating a new certificate overrides the current certificate.

To generate a self-signed certificate:

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

   The **Certificates** window appears.

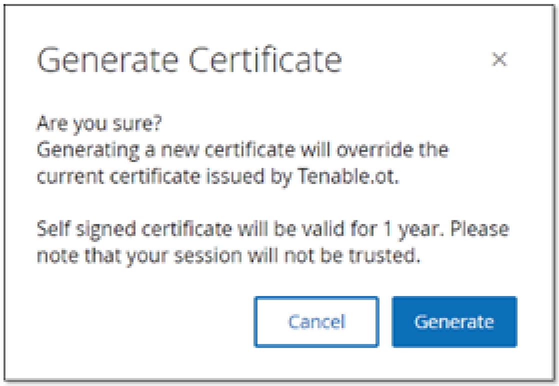
2. From the **Actions** menu, select **Generate Self-Signed Certificate**.

   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 **Certificates** page.

Upload an HTTPS Certificate

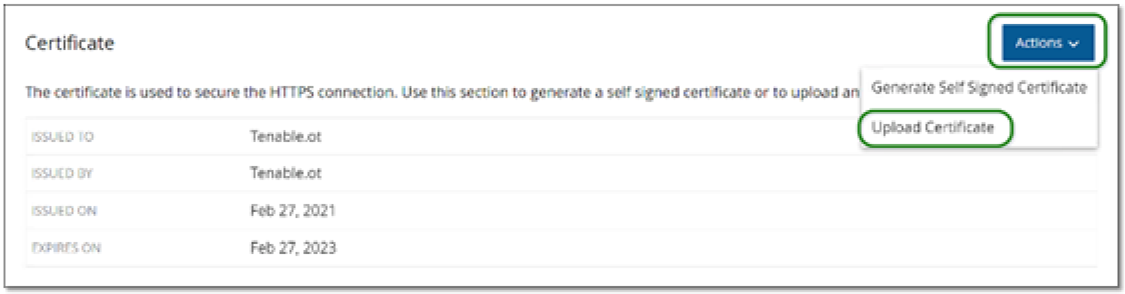
> **Note**: OT Security uses the same certificate that you upload in Tenable Core. For information about uploading certificates in Tenable Core, see Manage the Server Certificate in the Tenable Core documentation.

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**.

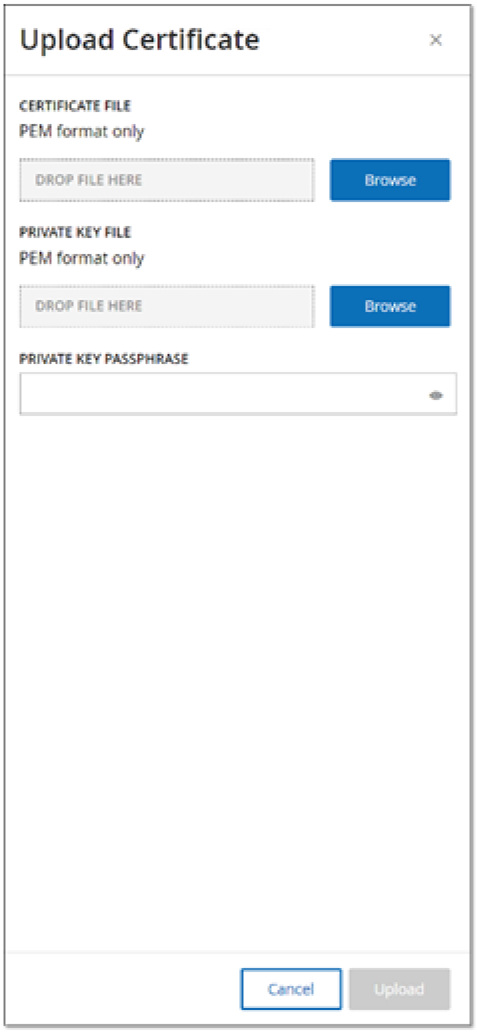
   

   Certificate

   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.



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.

Generate API Keys

Generating an API key can help integrate OT Security with other security tools and systems within your organization.

To generate API keys in OT Security:

1. Go to **Local Settings** > **System Configuration** > **API Keys**.

   The **API Keys** page appears.

2. In the upper-right corner, click **Generate Key**.

   The **Generate Key** panel appears.

3. In the **Expiration Period** box, select the number of days after which the API key can age out.

4. In the **Description** box, type a description for the API key.

5. Click **Generate**.

   The **Generate Key** panel appears with the **ID** and **API Key**.

6. Click the ⧉ button to copy the API key.

7. Click **Done**.

   The **API Keys** page appears with the newly added API key ID.

Pair ICP with Enterprise Manager

> **Note**: This flow is available for OT Security 3.18 and later.

You can pair your Industrial Core Platform (ICP) with OT Security EM and manage all your sites.

> **Note**:Once paired with EM, all updates must be done at the EM level so that the sites and their sensors receive the latest version updates.

Before you Begin

Make sure that:

- OT Security EM can connect via API to the ICP.

- Make sure TCP 443 and TCP 28305 are open for communication from ICP to OT Security EM.

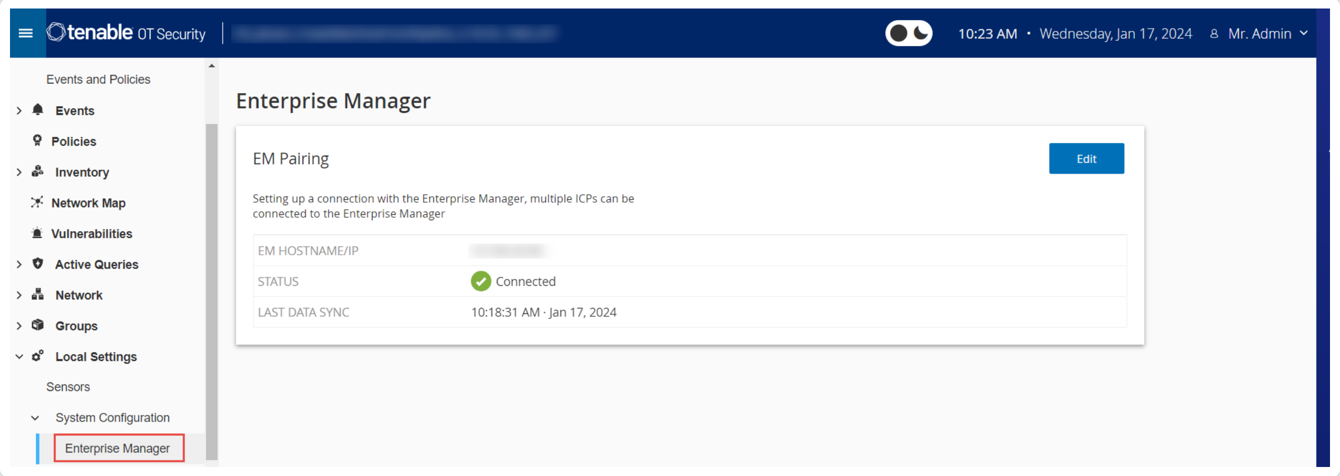
- HTTPS connections exist between ICP and OT Security EM.
- (Optional) Generate an API Key in OT Security EM.

> **Note**: This is required only when pairing using the API key option.

To pair ICP with OT Security EM:

1. In OT Security, go to **Local Settings** > **System Configuration** > **Enterprise Manager**.

   The **Enterprise Manager** page appears.

   Enterprise Manager

   EM Pairing

   Setting up a connection with the Enterprise Manager, multiple ICPs can be connected to the Enterprise Manager

EM HOSTNAME/IP	[redacted]
STATUS	✓ Connected
LAST DATA SYNC	10:18:31 AM · Jan 17, 2024

2. In the **EM Pairing** section, click **Start Pairing**.

   The **EM Pairing Configuration** panel appears.

3. Select one of the following:

   - **Pair using username and password**
   - **Pair using API secret**

If you select...	Action
Pair using username and password	1. In the **Hostname/IP** box, type the hostname or the IP address of the EM. 2. In the **Username** box, type the administrator username of the EM.

	3. In the **Password** box, type the password of the EM. 4. In the **EM Certificate Fingerprint**, paste the certificate that you copied from the EM **Certificates** page. **Tip**: You can skip this step and manually approve the certificate from the **EM Pairing** page. **Note**: You can access the **Certificates** page from **Local Settings** > **System Configuration** in OT Security EM.
Pair using API Key	1. In the **Hostname/IP** box, type the hostname or the IP address of the EM. 2. In the **API Secret** box, paste the API key that you copied from the EM. 3. In the **EM Certificate Fingerprint**, paste the certificate that you copied from the EM **Certificates** page. **Tip**: You can skip this step and manually approve the certificate from the **EM Pairing** page. **Note**: You can access the **Certificates** page from **Local Settings** > **System Configuration** in OT Security EM.

4. Click **Pair**.

   OT Security displays the **EM Pairing** page with the pairing status.

   > **Note**: The status can show as **Waiting for certificate approval** (if certificate is not provided) or **Pending EM approval** (if automatic approval of pairing requests is disabled).

5. (Optional) If the status shows **Waiting for certificate** approval:

   a. Click **Show Certificate**.

      The **Approve Certificate** panel appears.

   b. Verify if the fingerprint on the panel is the same as that on the EM **Certificates** page.

      Click **Approve**.

      OT Security approves the certificate and displays the EM pairing page with the status changed to **Pending EM approval**.

6. If the status shows **Pending EM approval**, it indicates that **Auto Approve ICP Pairing Requests** is disabled, then proceed as follows:

   > **Tip**: To approve pairing requests automatically in OT Security EM, enable the **Auto Approve ICP Pairing Requests** in the OT Security EM **ICPs** page.

   a. In OT Security EM, in the left navigation bar, select **ICPs**.

      The **ICPs** page appears.

   b. Hover over the row of the system you want to pair, do one of the following:

      - Right-click the **Status** column and select **Approve**.

      - In the upper-right corner, click **Actions** > **Approve**.

   OT Security EM approves the pairing and shows the status as **Connected**.

   > **Tip**: After the pairing is complete, OT Security EM shows the following:
   >
   > - Shows the data from the ICP on the EM **Dashboards**.
   >
   > - Newly paired ICP appears on the **ICPs** page.
   >
   > - Access to the ICP by clicking the ICP name from the **ICPs** page. The ICP instance accessed from the EM shows the **ICP** label in the header. For more information, see ICPs in the Tenable OT Security Enterprise Manager User Guide.

   In OT Security, the **Enterprise Manager** page shows the status as **Connected**. You can click **Edit** to modify the EM pairing configuration.

Disconnect ICP Pairing with Enterprise Manager

You can disconnect the ICP pairing from the EM or the ICP when the pairing is no longer needed.

To disconnect an ICP pairing from OT Security EM:

1. In OT Security EM, in the left navigation bar, select **ICPs**.

   The **ICPs** page appears.

2. Hover over the row of the ICP you want to delete, do one of the following:

   - Right-click the **Status** column and select **Delete**.
   - Click the ICP row. This highlights the row and enables the **Actions** button.

3. Click **Delete**.

OT Security EM disconnects the pairing with OT Security.

To disconnect an ICP pairing from OT Security:

1. In OT Security, go to **Local Settings** > **System Configuration** > **Enterprise Manager**.

   The **Enterprise Manager** page appears.

2. In the EM Pairing section, click **Edit**.

   The **EM Pairing** panel appears.

3. Click **No Pairing**.

4. Click **Pair**.

   OT Security disconnects the pairing with OT Security EM.

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 Activation.

Environment Configuration

Asset Settings

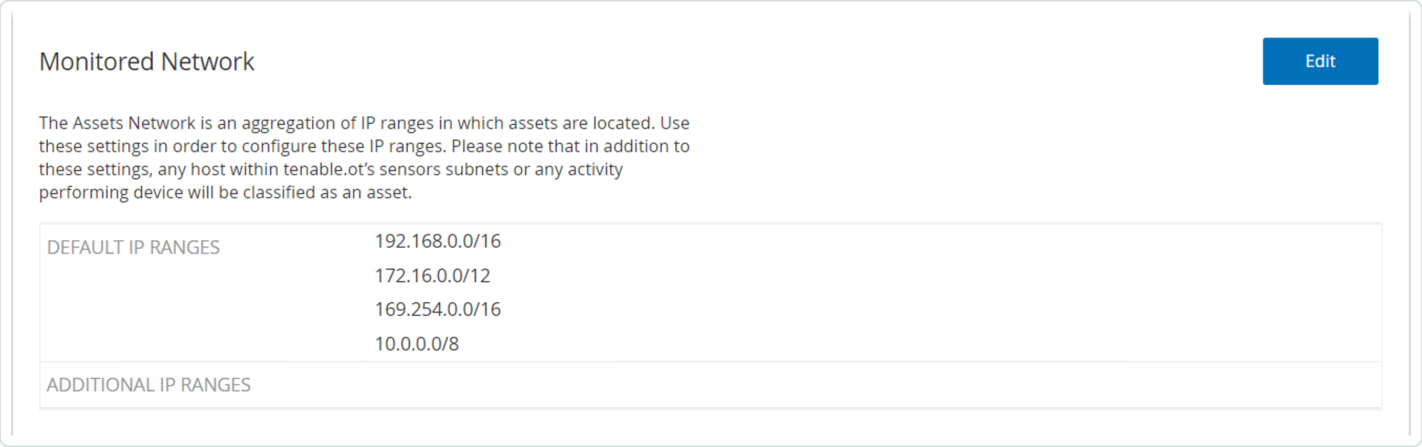
The **Asset Settings** page includes the following sections:

- Monitored Networks
- Update Assets Details Using CSV
- Add Assets Manually
- Fetch IP Address for IoT Assets

Monitored Networks

The Monitored Network configuration contains a set of IP ranges (CIDRs / subnets) that define the monitoring boundaries for OT Security. OT Security ignores assets outside of the configured ranges.

By default, OT Security configures three default public ranges: 10.0.0.0/8, 172.16.0.0/12, and 192.168.0.0/16, as well as the link-local range of 169.254.0.0/16 (APIPA).


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	

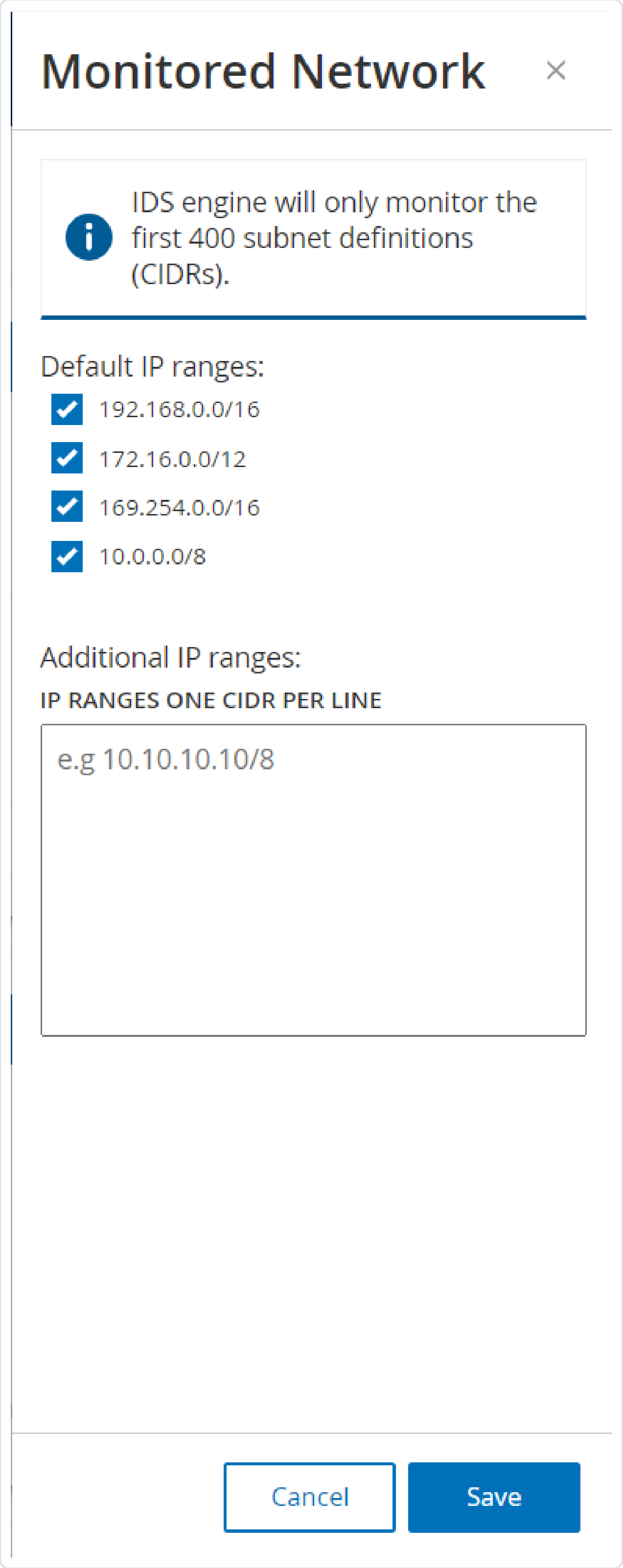
To disable any of the default ranges or add ranges appropriate for your network:

1. Go to **Local Settings** >**Environment Configuration** > **Asset Settings**.

   The **Asset Settings** window appears.

2. In the **Monitored Network** section, click **Edit**.

The **Monitored Network** panel appears.



Monitored Network

IDS engine will only monitor the first 400 subnet definitions (CIDRs).

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:

IP RANGES ONE CIDR PER LINE

e.g 10.10.10.10/8

3. Select the required **Default IP ranges** and/or add **Additional IP ranges** (one IP range per line) in the designated text box.

4. Click **Save**.

   OT Security saves the monitored network configuration.

Update Assets Details Using CSV

You can export a CSV file of the All Assets table, make edits, and then upload it. The editable fields include: **Type**, **Name**, **Criticality**, **Purdue Level**, **Location**, **Description**, and all custom fields.

You can update asset details using a CSV file only when the language is set to English. Non-English users can temporarily switch to English while exporting and uploading the CSV file, then revert to their preferred language.

To upload the asset details CSV file:

1. Go to **Environment Configuration** > **Asset Settings**.

2. Navigate to the **Update Asset Details Using CSV** section.

3. Click **Upload**.

4. Browse to the location where you have the CSV file and upload it.

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.

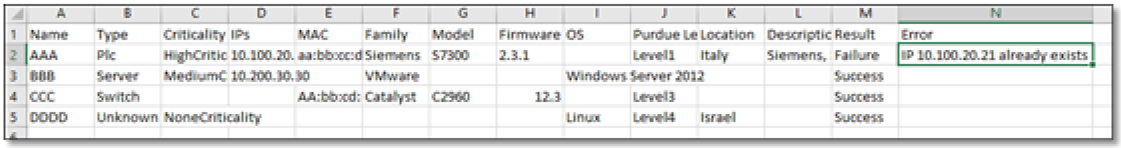
5. Save the edited file.

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	
6														

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.

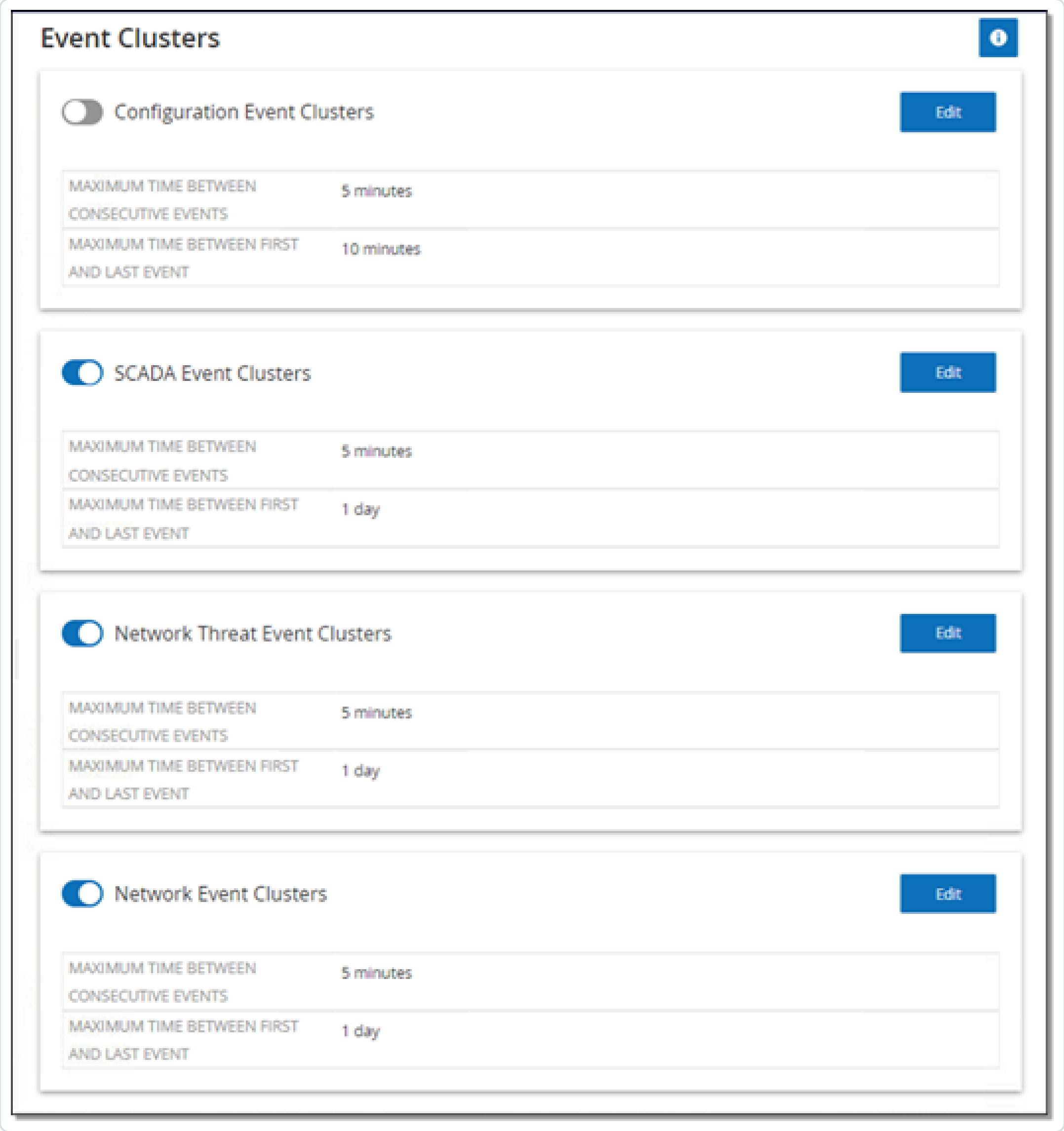
To cluster events, they must be generated within the following configured time intervals:

- **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** > **Environment Configuration** > **Event Clusters**.

   The **Event Clusters** page 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

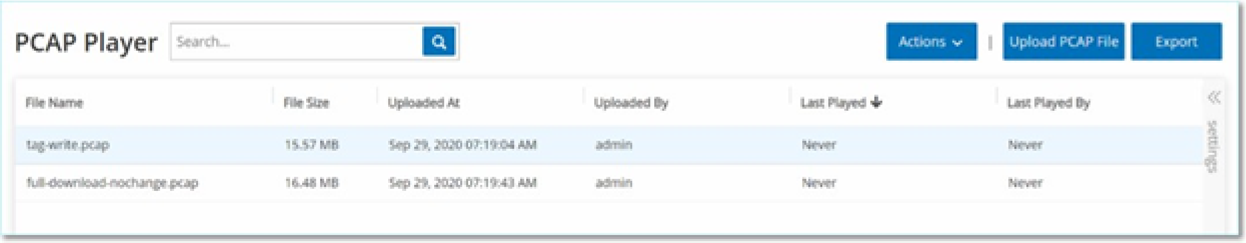
MAXIMUM TIME BETWEEN CONSECUTIVE EVENTS	5 minutes
MAXIMUM TIME BETWEEN FIRST AND LAST EVENT	1 day

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.

User Management

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

Zones

Authentication Servers

SAML

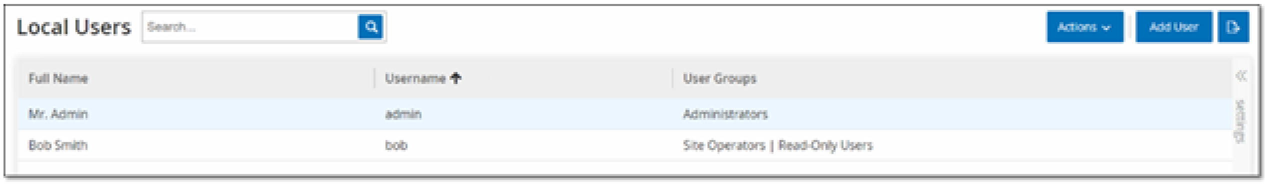
Local Users

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.

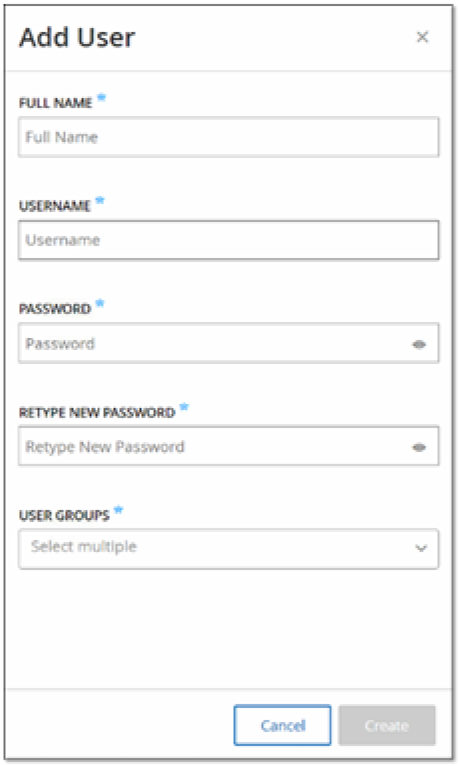
Add Local Users

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.



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:

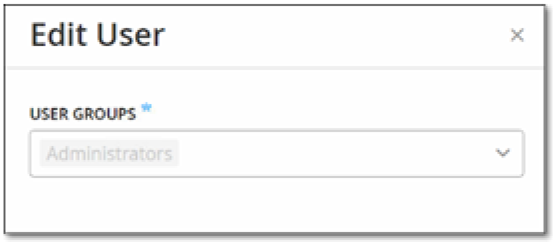
1. Go to **Local Settings** >**User Management** > **Local User**.

   The **Local Users** page 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.

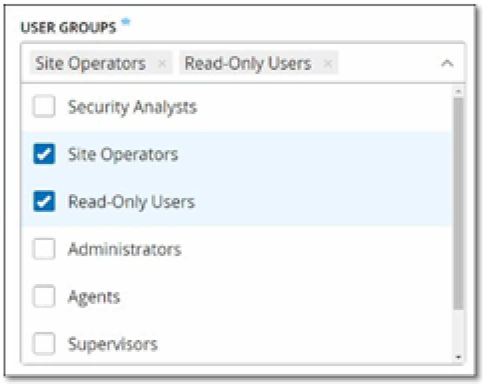


Edit User

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:

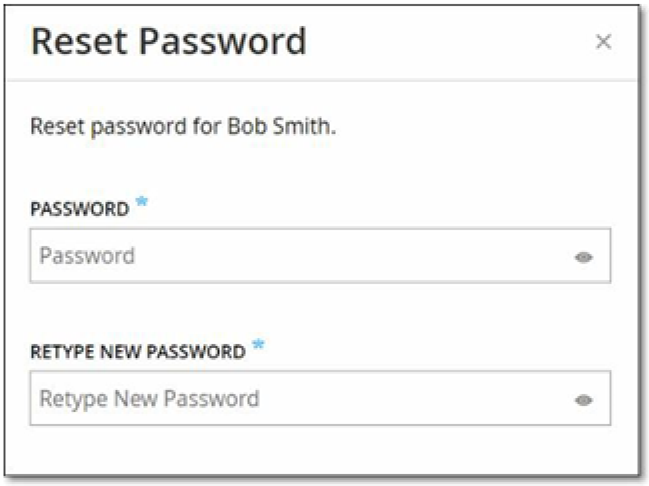
1. Go to **Local Settings** > **User Management** > **Local User**.

   The **Local Users** page 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.

   PASSWORD *

   Password

   RETYPE NEW PASSWORD *

   Retype New Password

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** page 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.

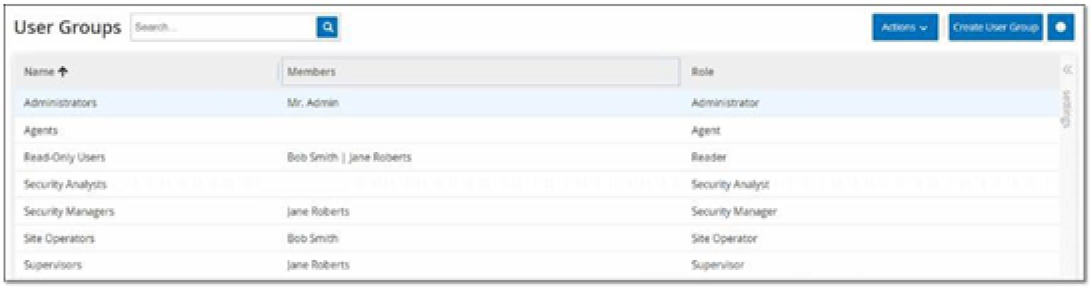
User Groups

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.

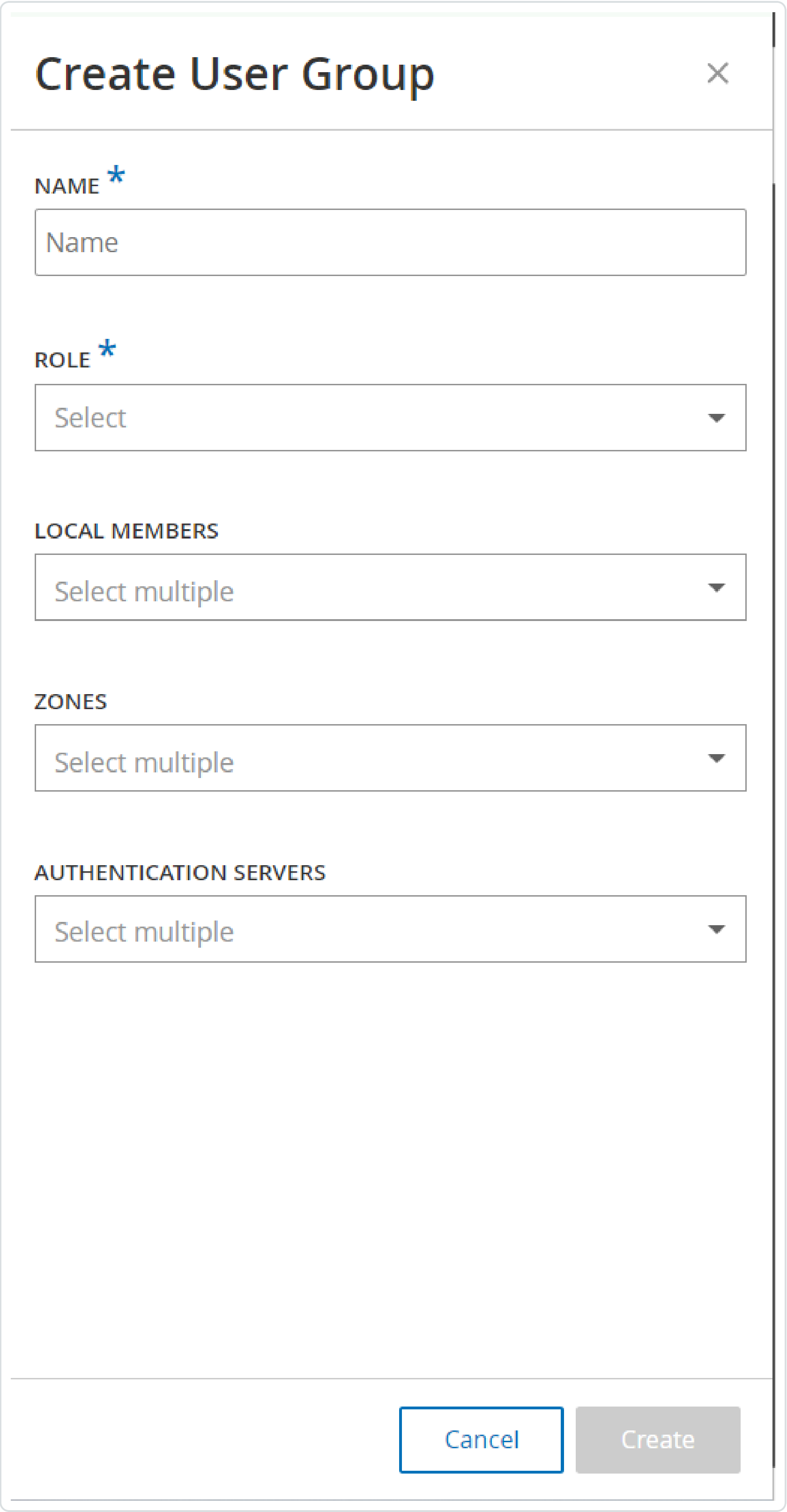
To create a user group:

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.



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 **Local Members** drop-down box, select the user accounts that you want to assign to the group.

6. In the **Zones** drop-down box, select the zones you want to assign to the user group.

7. In the **Authentication Servers** drop-down box, select the servers that you want to assign to the user group.

8. 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**.

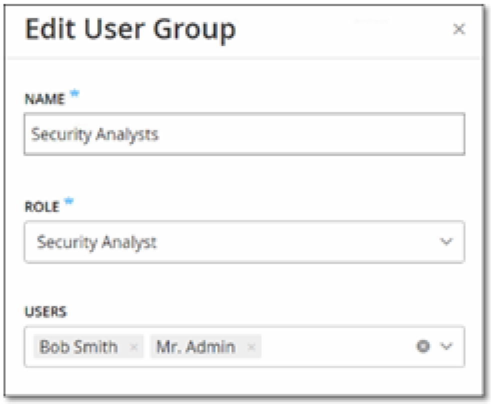
    The **User Groups** screen appears.

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. Change the **Name**, **Role**. You can also select or clear users to add or remove users to the group.



Edit User Group

NAME *

Security Analysts

ROLE *

Security Analyst

USERS

Bob Smith × Mr. Admin ×

4. Modify the parameters as needed.
5. 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)
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 Configuration – Device Details	✓	✓
System Configuration – Sensors	✓	✓

System Configuration – Port Configuration	✓	✓
System Configuration – Updates	✓	✓
System Configuration – Certificate (HTTPS)	✓	✓
System Configuration – API Keys	✓	✗
System Configuration – License	✓	✓
Environment Configuration – Asset Settings	✓	✓
Environment Configuration – Hidden Assets	✓	✓
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	✓	✓
System Actions	✓	✓ without factory reset
System log	✓	✓
Enable (on setup and after disable)	✓	✓
Delete Assets	✓	✓

Permission	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 Configuration – 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	✓ only backup and diagnostics	✓ only diagnostics	✗	✗	✗
System log	✓	✓	✓	✓	✓ no syslog
Enable (on setup and after disable)	✗	✗	✗	✗	✗
Delete Assets	✓	✗	✗	✗	✗

Zones

Zones control which assets, events, and vulnerabilities a particular user group can view. A specific user group can only view assets and associated vulnerabilities, events, and connections that fall within its zone. You can assign non-admin accounts to a specific group and zone to limit their visibility to relevant assets.

Create Zones

To create zones:

1. Go to **Local Settings** > **Users Management** > **Zones**.

   The **Zones** page appears.

2. In the upper-right corner, click **Create**.

   The **Create Zone** panel appears.

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

4. In the **Asset Groups** box, select the groups you want to assign to the zone. You can use the Search box to search for a specific asset group.

5. In the **User Groups** box, select the user groups you want to assign to the zone.

6. (Optional) In the **Description** box, type a description for the zone.

7. Click **Create**.

   OT Security creates the zone and it appears on the **Zones** page.

View Zones

1. Go to **Local Settings** > **Users Management** > **Zones**.

   The **Zones** page appears. The **Zones** page displays the zones in a table and includes the following details.

Column	Description
Name	The name of the zone.
Asset Groups	The asset groups assigned to the zone.
User Groups	The user groups assigned to the zone.
Description	A description for the zone.

Last Modified by	The user who last modified the zone.
Last Modified on	The date when the zone was last modified.

Edit a Zone

1. Go to **Local Settings** > **Users Management** > **Zones**.

   The **Zones** page appears.

2. Click the row of the zone you want to edit and do one of the following:

   - Right-click the zone, then select **Edit**.
   - In the header bar, click **Actions** > **Edit**.

   The **Edit Zone** panel appears.

3. Modify the configuration as needed.

4. Click **Save**.

   OT Security updates the zone.

Duplicate Zone

1. Go to **Local Settings** > **Users Management** > **Zones**.

   The **Zones** page appears.

2. Click the row of the zone you want to duplicate and do one of the following:

   - Right-click the zone, then select **Duplicate**.
   - In the header bar, click **Actions** > **Duplicate**.

   The **Duplicate Zone** panel appears.

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

   The default value is the original zone name with the prefix "Copy of".

4. Modify the configuration as needed.

5. Click **Duplicate**.

OT Security creates a duplicate of the zone.

Delete Zone

You can delete zones you no longer require.

> **Note**: You cannot delete a zone if there are associated user groups.

1. Go to **Local Settings** > **Users Management** > **Zones**.

   The **Zones** page appears.

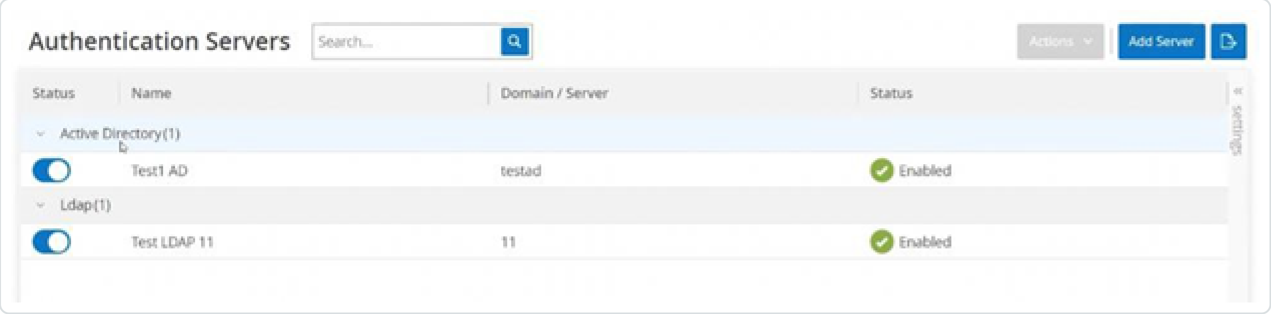
2. Click the row of the zone you want to delete and do one of the following:

   - Right-click the zone, then select **Delete**.
   - In the header bar, click **Actions** > **Delete**.

   OT Security deletes the zone.

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.

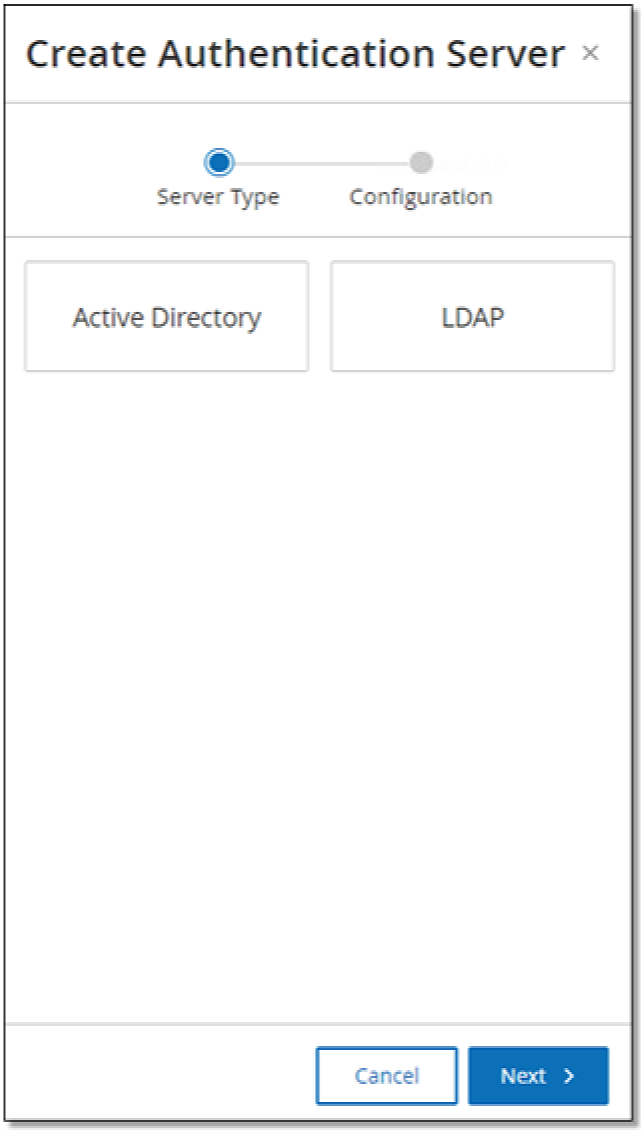
Note: The system comes with a set of pre-defined User Groups, which correspond to each of the available roles, **Administrators User Group** > **Administrator role**, **Site Operators User Group** > **Site Operator role**, and so on. For an explanation of the available roles, see Authentication Servers.

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**.

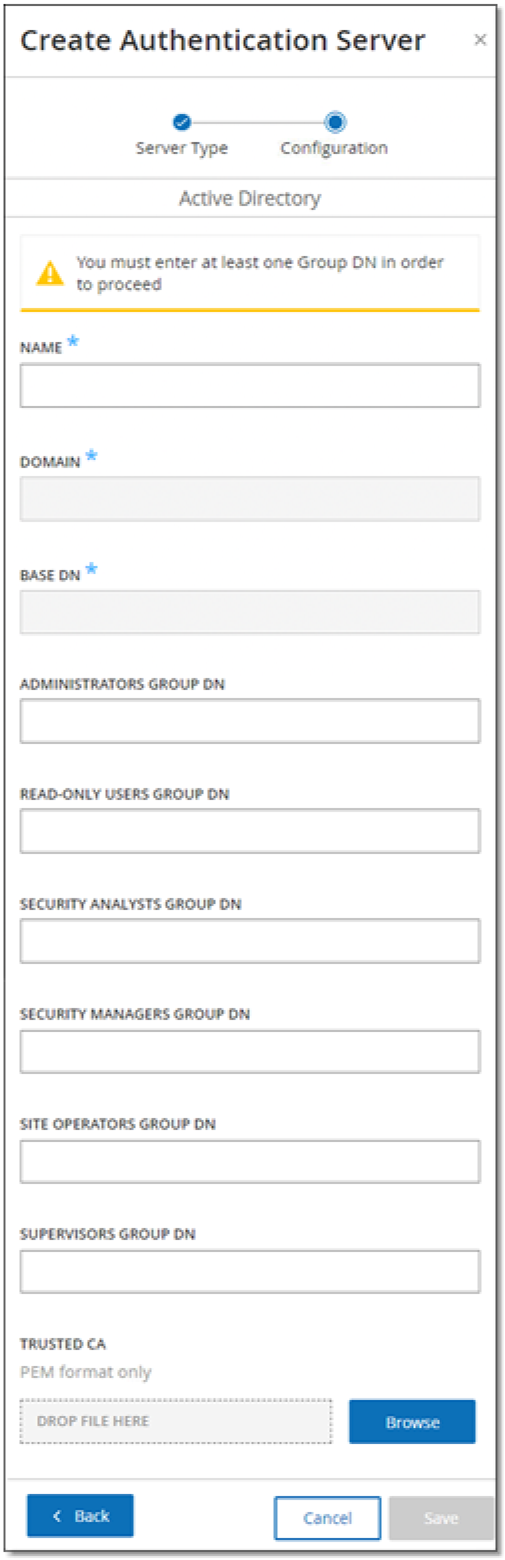
   The **Authentication Servers** window appears.
3. Click **Add server**.

   The **Create Authentication Server** panel opens with the **Server Type**.



4. Click **Active Directory**, then click **Next**.

   The **Active Directory** configuration pane appears.



Create Authentication Server

Active Directory

You must enter at least one Group DN in order to proceed

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.

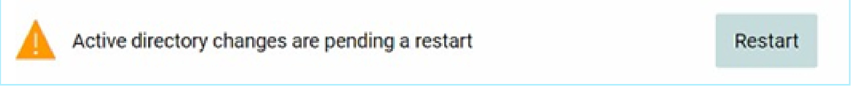
   > **Note**: These fields are optional. If a field is empty, no AD users are assigned to that User Group. You can set up an integration with no groups mapped, but in that case no users can access the system until you add at least one group map ping.

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.

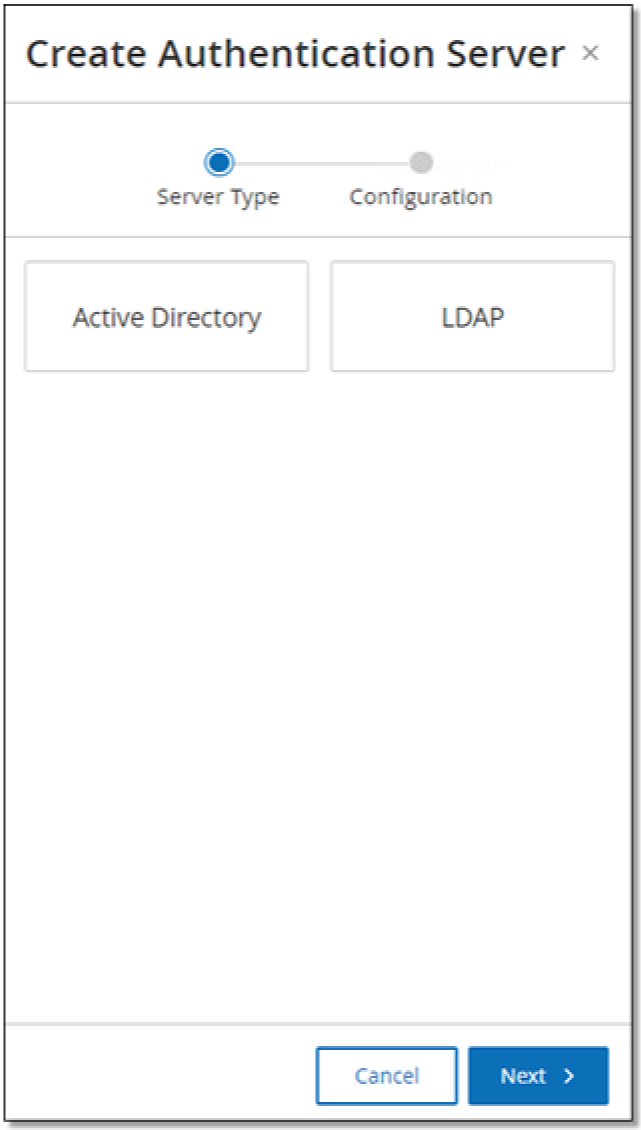
LDAP

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.

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 adsrv1.tenable.com, the user DN can be `CN=Administrator,CN=Users,DC=adsrv1,DC=tenable,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, for a server name of adsrv1.tenable.com, the User Base DN is `OU=Users,DC=adsrv1,DC=tenable,DC=com`.

10. In the **Group Base DN** box, type the Group base domain name in DN format. For example, for a server name of adsrv1.tenable.com, the Group Base DN is `OU=Groups,DC=adsrv1,DC=tenable,DC=com`.

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

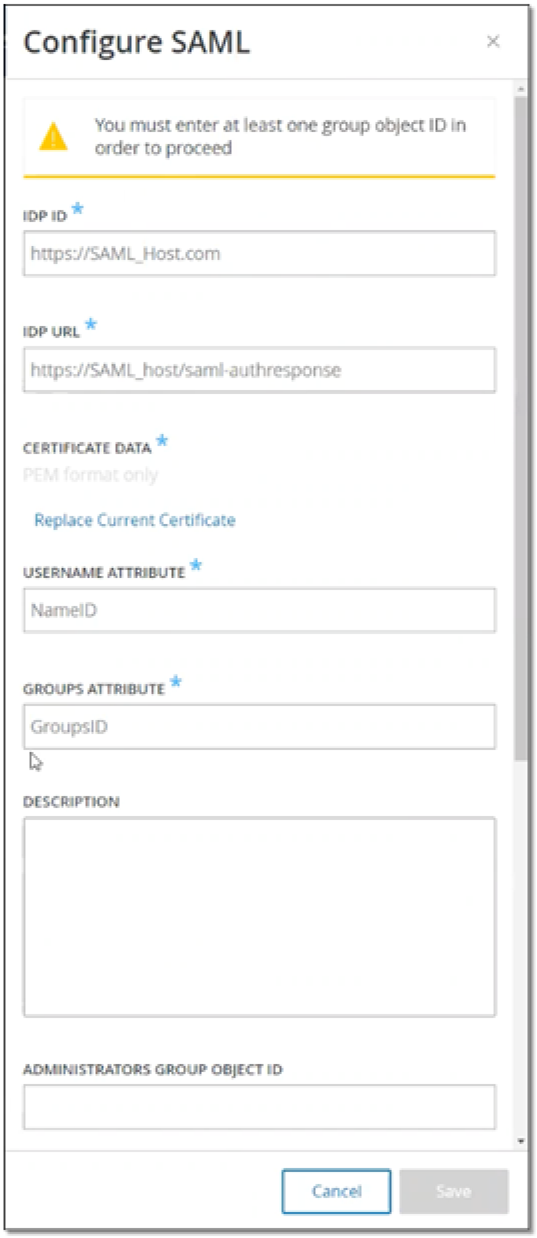
You can integrate OT Security with your organization's identity provider (for example, Microsoft Azure). This enables users to authenticate using their identity provider. The configuration involves setting up the integration by creating a OT Security application within your identity provider, entering 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 – SAML Integration for Microsoft Azure

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.

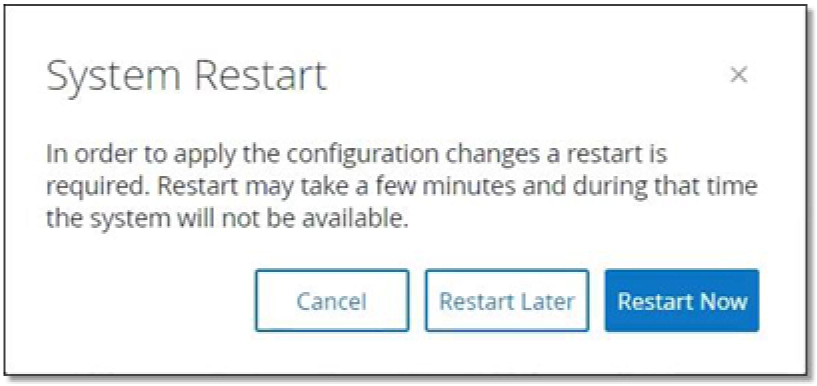
8. (Optional) In the **Description** box, type a description.

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.

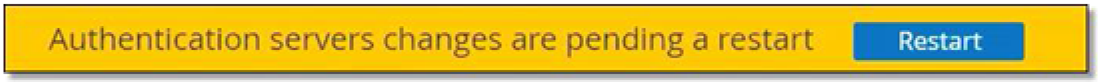
    The **System Restart** notification window appears.

    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. In the Tenable OT Security interface, navigate 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. In the Tenable OT Security interface, navigate 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.

Tenable One

To integrate with Tenable One, follow the steps in Integrate with Tenable One.

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. In the Tenable OT Security interface, navigate 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. In the Tenable OT Security interface, navigate 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.

Integrate with Tenable One

You can integrate OT Security with Tenable One to send assets and risk scores data to Tenable Vulnerability Management. To integrate with Tenable One, you must first generate a linking key in Tenable Vulnerability Management and provide it to OT Security. Tenable One gets updated periodically with any asset changes since the previous synchronization.

Before you begin

- Ensure that you have the linking key generated in Tenable Vulnerability Management. For more information, see OT Connectors in the Tenable Vulnerability Management User Guide.

  > **Note**: A linking key generated within Tenable Vulnerability Management can only be used for a single OT Security site.

To integrate with Tenable One:

1. In the Tenable OT Security interface, navigate 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, click **Tenable One**.

4. Click **Next**.

   The **Module Definition** section appears.

5. In the **Cloud Site** box, type the cloud site name.

   > **Note**: The cloud site name appears on the **Add OT Connector** window in Tenable Vulnerability Management after you generate the linking key.

6. In the **Linking Key** box, provide the linking key that you generated from Tenable Vulnerability Management.

7. Click **Save**.

   OT Security displays a message that the integration is successful. Once the integration is complete, you can view the linked site in the **Integrations** page. In Tenable One, the **Sensors** > **OT Connectors** page shows the device name configured for that site in OT Security.

   For the device name for a site, see the **Device Name** section in the **System Configuration** > **Device** page.

   > **Note**: If you change the name of your site in OT Security after it is already paired, you can manually modify the sensor name within Tenable Vulnerability Management to match the new site name. Alternatively, you can delete the integration on both OT Security and Tenable Vulnerability Management, and pair it again to automatically update the site name change.

For information about the complete procedure for deploying and licensing Tenable OT Security for Tenable One, see the Tenable One Deployment Guide.

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.

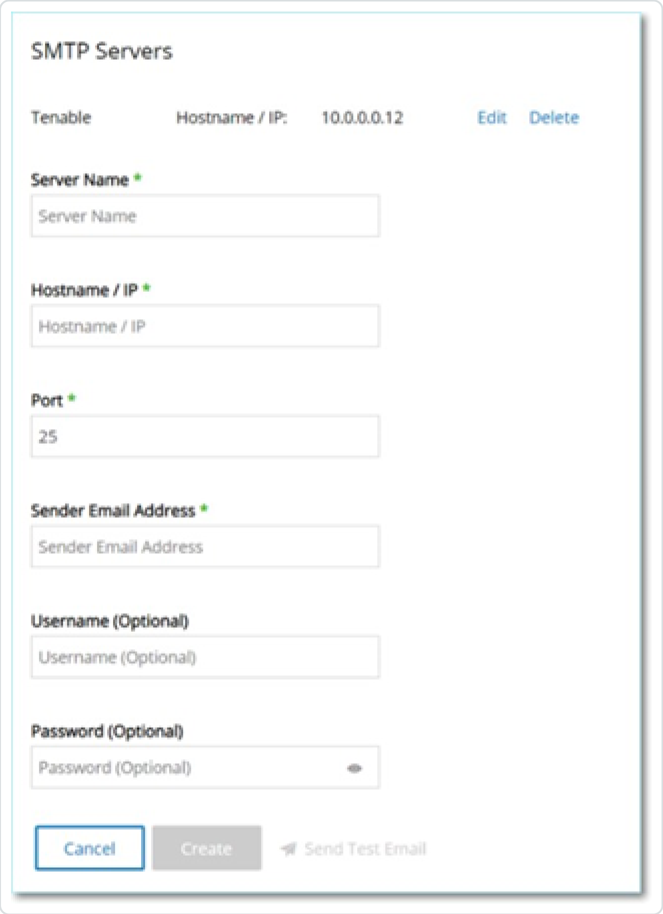
SMTP Servers

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

Port * 25

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**.

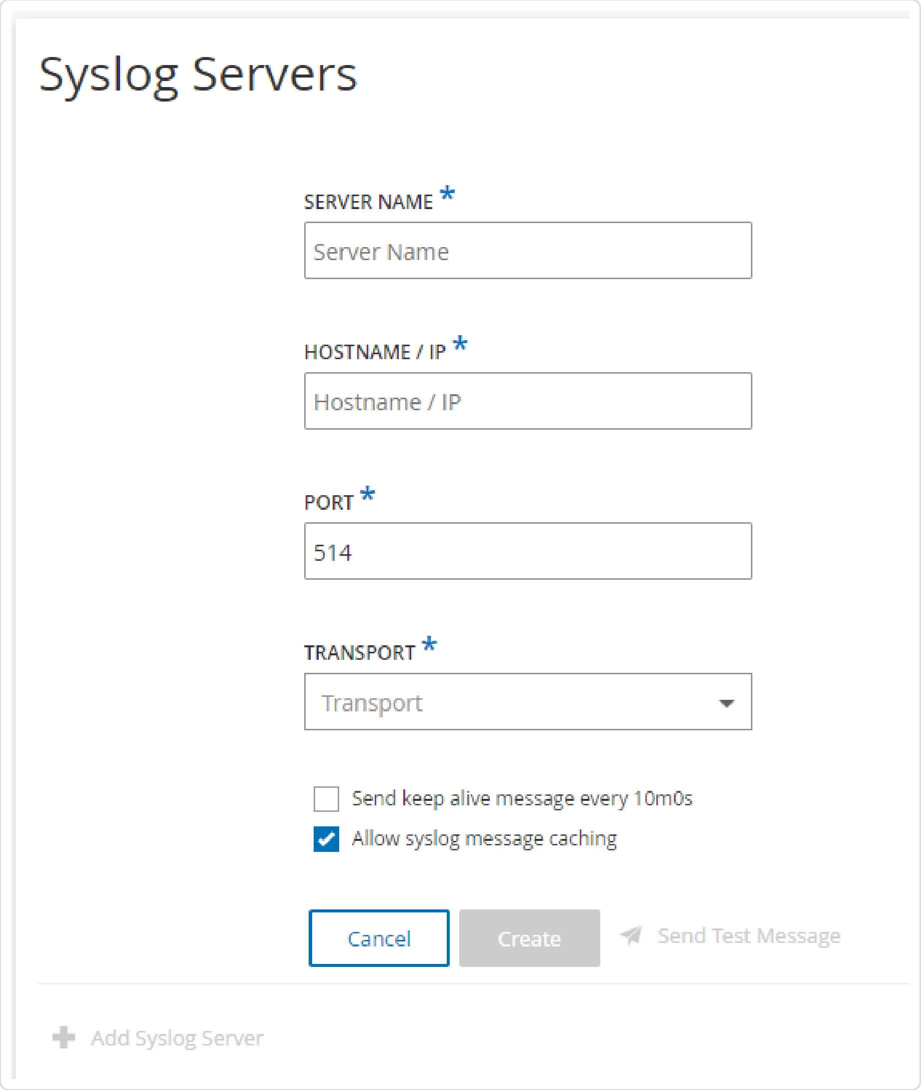
You can set up additional SMTP Servers by repeating the procedure.

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.



Syslog Servers

SERVER NAME *
Server Name

HOSTNAME / IP *
Hostname / IP

PORT *
514

TRANSPORT *
Transport

□ Send keep alive message every 10m0s
☑ Allow syslog message caching

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. (Optional) Select the **Send keep alive message every 10m0s** option to check the connection at frequent intervals.

9. (Optional) For TCP syslog, select the **Allow syslog message caching** option to cache events when the connection is disrupted and to send them once the connection is restored.

   > **Note**: UDP syslog messages do not have any state awareness and may be lost if the connection is interrupted.

10. Click **Save**.

    You can set up additional Syslog Servers by repeating the procedure.

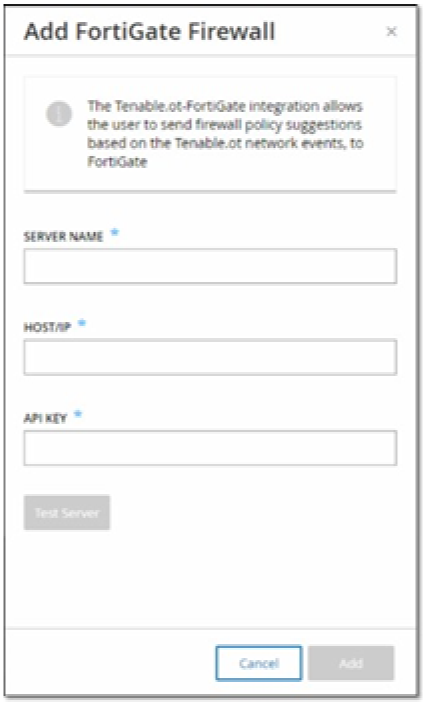
FortiGate Firewalls

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

SERVER NAME *

HOST/IP *

API KEY *

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.

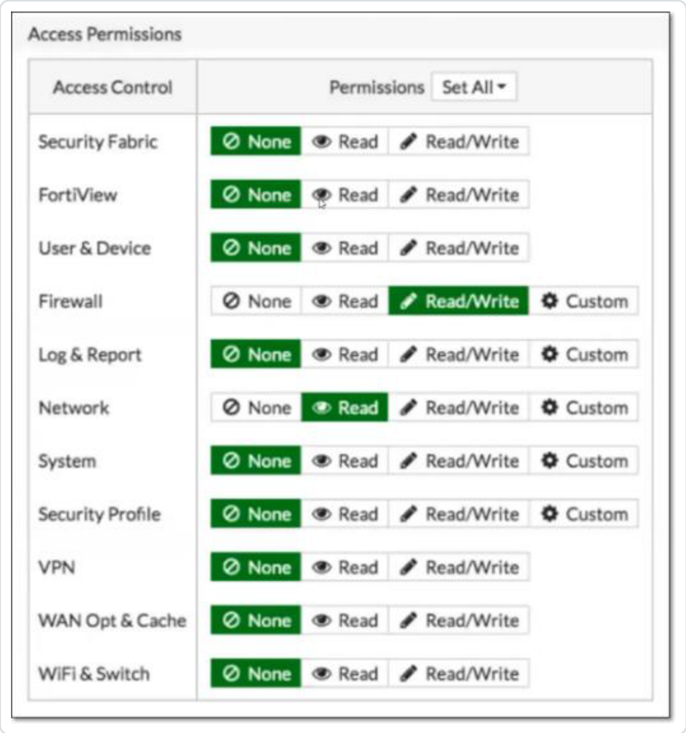
> **Note**: For instructions on generating a FortiGate API token, see: https://registry.terraform.io/providers/fortinetdev/fortios/latest/docs/guides/fgt_token.

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:

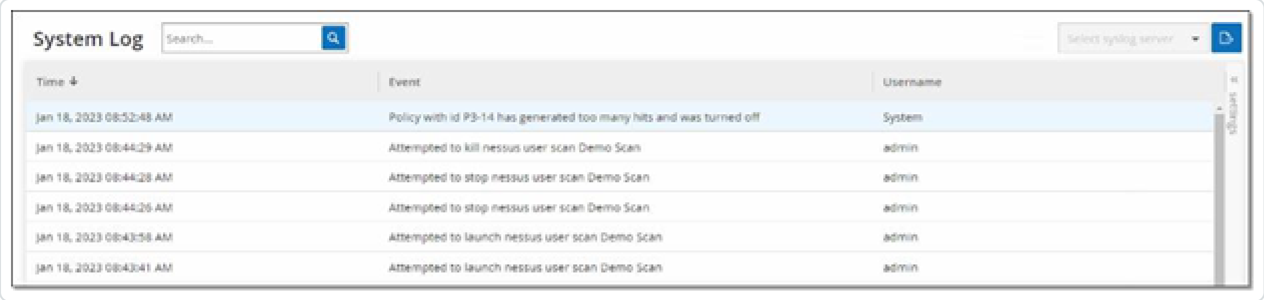


Access Permissions

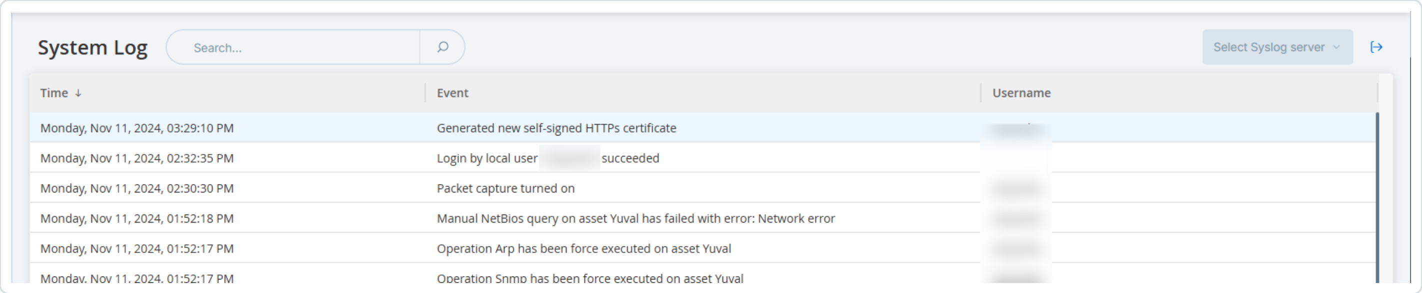
Access Control	Permissions Set All ▾
Security Fabric	[✓ None] Read Read/Write
FortiView	[✓ None] Read Read/Write
User & Device	[✓ None] Read Read/Write
Firewall	None Read [✓ Read/Write] Custom
Log & Report	[✓ None] Read Read/Write Custom
Network	None [✓ Read] Read/Write Custom
System	[✓ None] Read Read/Write 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

The **System Log** page 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. For information about how to customize tables, see [Management Console User Interface Elements](#).



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



Time ↓	Event	Username
Monday, Nov 11, 2024, 03:29:10 PM	Generated new self-signed HTTPs certificate	[redacted]
Monday, Nov 11, 2024, 02:32:35 PM	Login by local user [redacted] succeeded	
Monday, Nov 11, 2024, 02:30:30 PM	Packet capture turned on	[redacted]
Monday, Nov 11, 2024, 01:52:18 PM	Manual NetBios query on asset Yuval has failed with error: Network error	[redacted]
Monday, Nov 11, 2024, 01:52:17 PM	Operation Arp has been force executed on asset Yuval	[redacted]
Monday, Nov 11, 2024, 01:52:17 PM	Operation Snmp has been force executed on asset Yuval	[redacted]

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.

Send 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 required server.

   OT Security sends the System Log events to the specified Syslog server.

Appendix – SAML Integration for Microsoft Azure

OT Security supports integration with Azure via SAML protocol. This enables Azure users assigned to OT Security to log in to OT Security via Single Sign-on (SSO). You can use group mapping to assign roles in OT Security according to the groups to which users are assigned in Azure.

This section explains the complete flow for setting up a SSO integration for OT Security with Azure. The configuration involves setting up the integration by creating a OT Security application in Azure. You can then provide information about this newly created OT Security application and upload your identity provider's Certificate to the OT Security SAML page. The configuration is complete when you map groups from your identity provider to User Groups in OT Security.

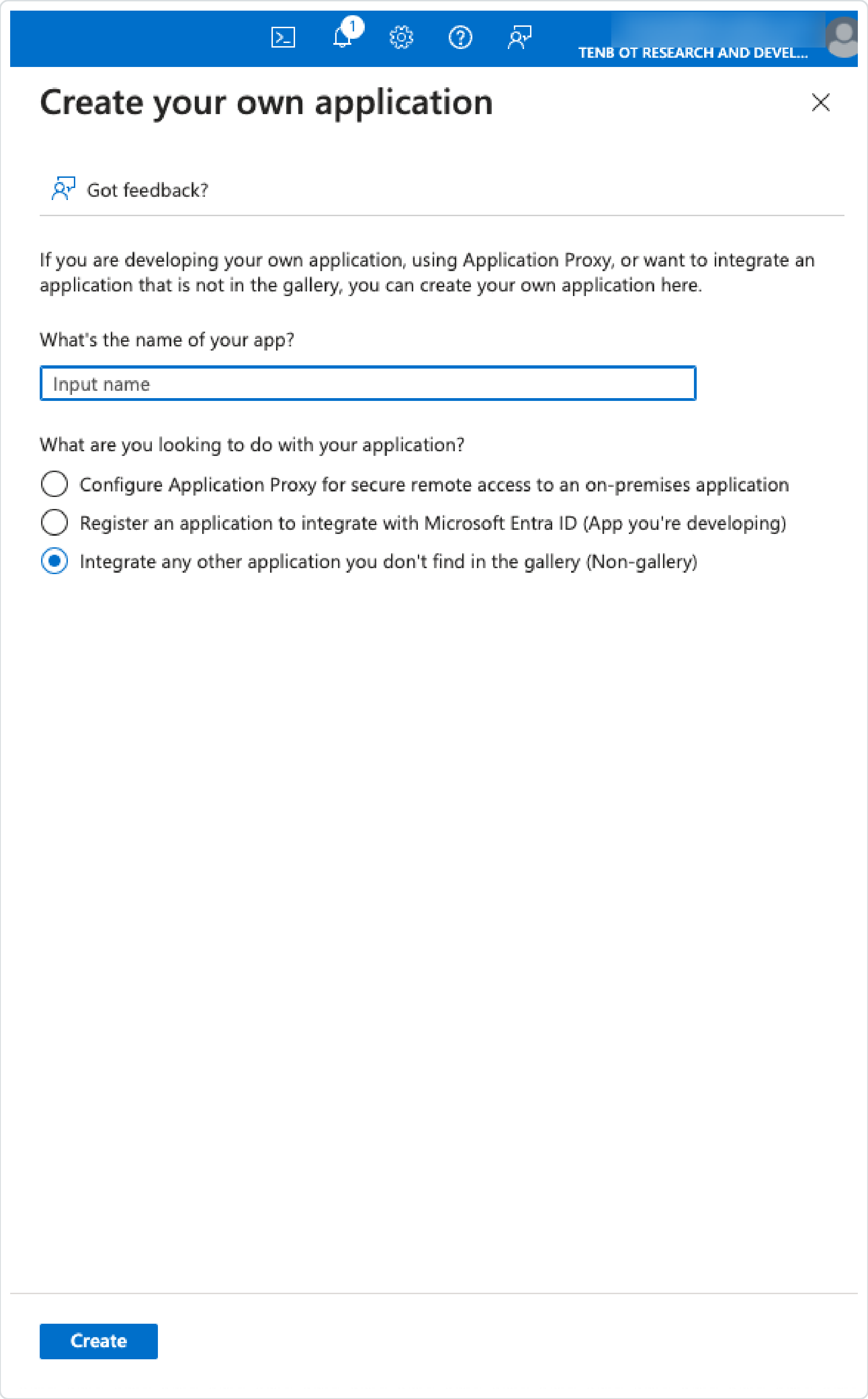
To set up the configuration, you need to be logged in as an administrator user in both Microsoft Azure and OT Security.

Step 1 - Create the Tenable Application in Azure

To create the Tenable application in Azure:

1. In Azure, go to Microsoft Entra ID > **Enterprise Applications** and click **+ New application.**

   The **Browse Microsoft Entra ID Gallery** page appears.



Create your own application

Got feedback?

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 Microsoft Entra ID (App you're developing)

● Integrate any other application you don't find in the gallery (Non-gallery)

2. Click **+ Create your own application**.

   The **Create your own application** side panel appears.

3. In the **What's the name of your app?** box, type 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), then click **Create** to add the application.

Step 2- Initial Configuration

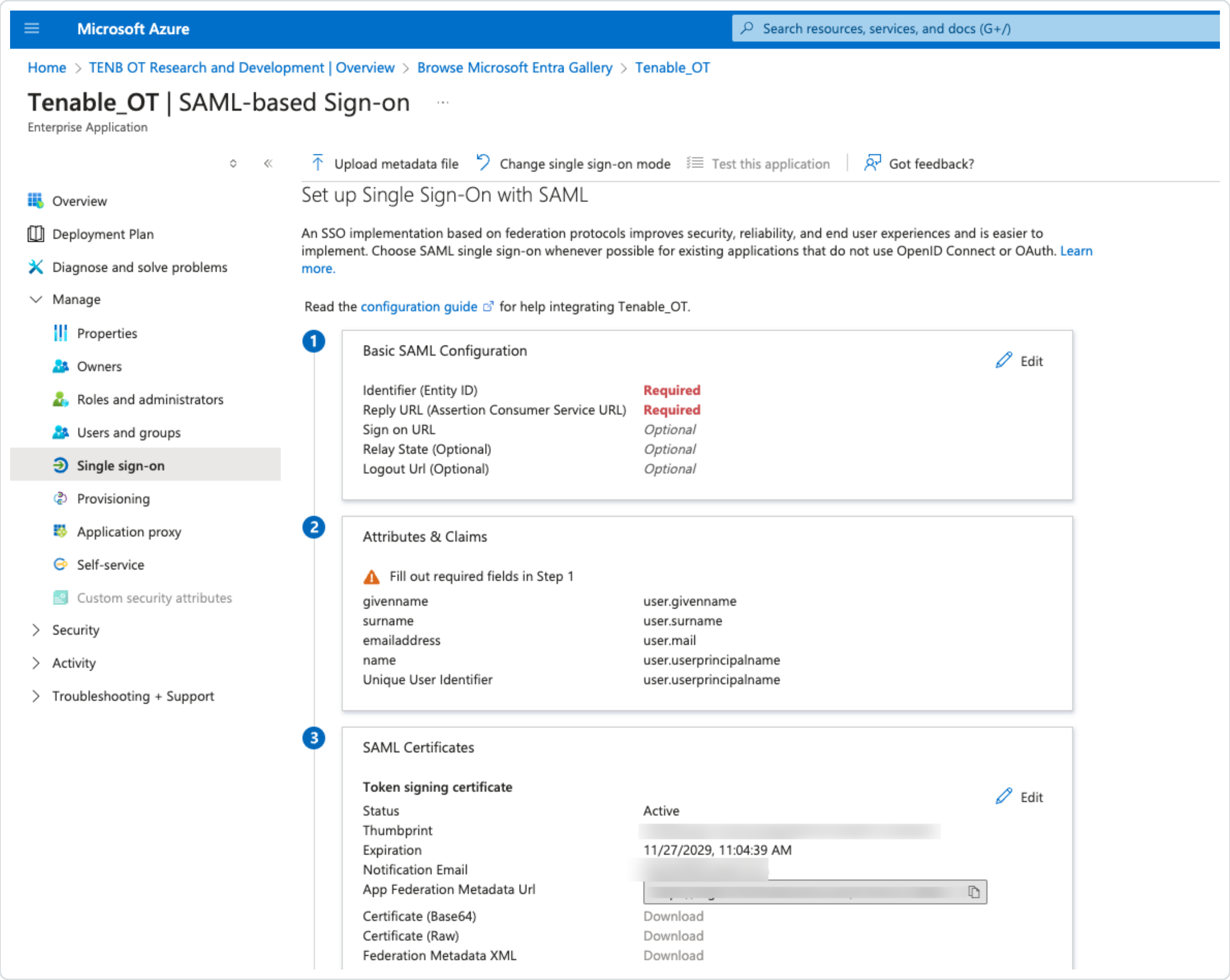
This step is the initial configuration of the OT Security application in Azure, consisting of creating temporary values for basic SAML configuration values — **Identifier** and **Reply URL** to download the required certificate.

> **Note**: Configure only parameters mentioned in this procedure. Retain the default values for the other parameters.

To perform the initial configuration:

1. In the Azure navigation menu, click **Single sign-on**, then select SAML as the single sign-on method.

   The **SAML-based Sign-on** page appears.


Microsoft Azure
Search resources, services, and docs (G+/)
Home > TENB OT Research and Development | Overview > Browse Microsoft Entra Gallery > Tenable_OT
Overview
Deployment Plan
Diagnose and solve problems
Manage
Properties
Owners
Roles and administrators
Users and groups
Single sign-on
Provisioning
Application proxy
Self-service
Custom security attributes
Security
Activity
Troubleshooting + Support
Upload metadata file
Change single sign-on mode
Test this application
Got feedback?
Edit

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

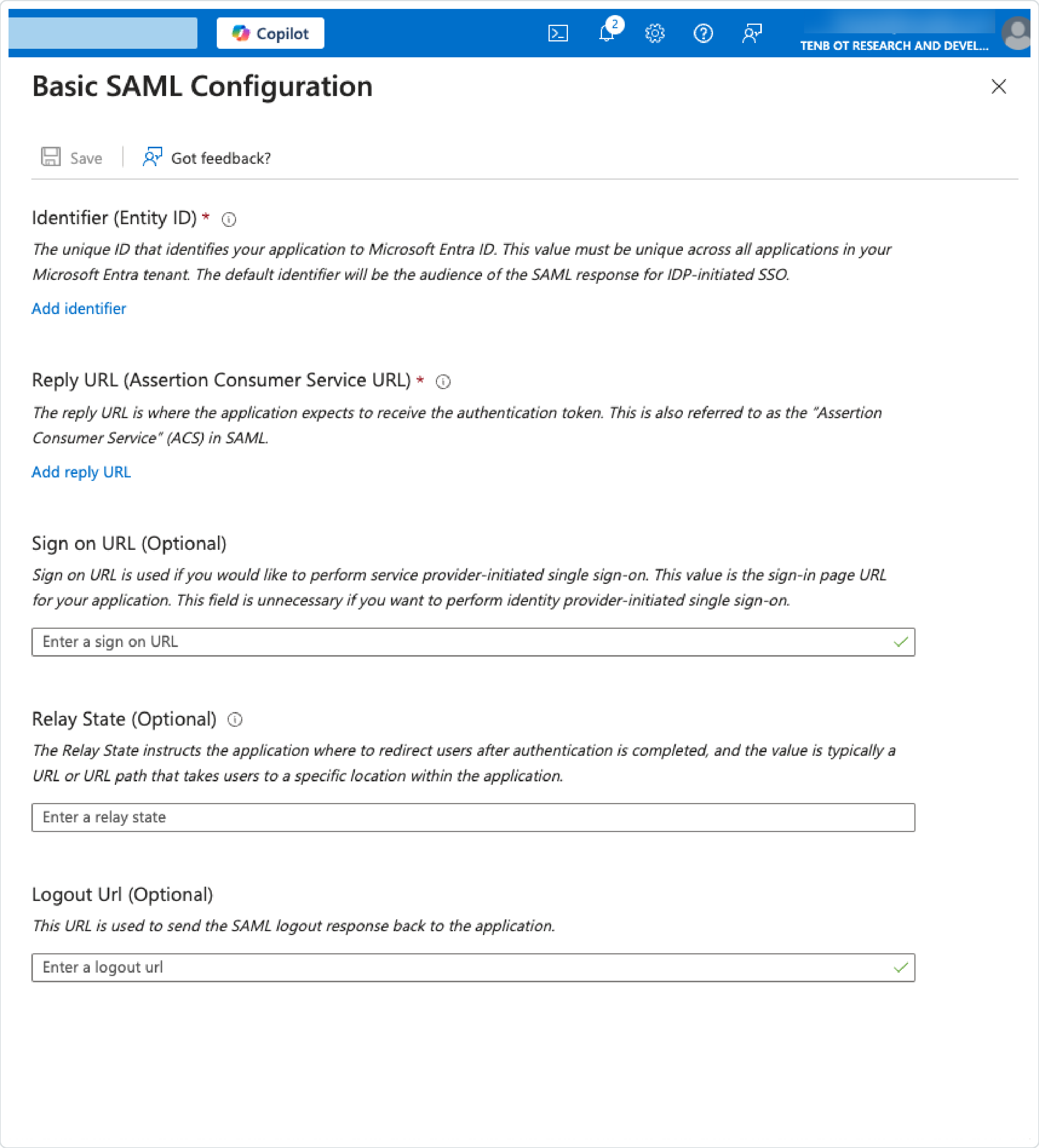
3 SAML Certificates

Token signing certificate

Status	Active
Thumbprint	[redacted]
Expiration	11/27/2029, 11:04:39 AM
Notification Email	[redacted]
App Federation Metadata Url	[redacted]
Certificate (Base64)	Download
Certificate (Raw)	Download
Federation Metadata XML	Download

2. In section 1 – **Basic SAML Configuration**, click ✎ **Edit** .

The **Basic SAML Configuration** side panel appears.



Basic SAML Configuration

Identifier (Entity ID) * ⓘ

The unique ID that identifies your application to Microsoft Entra ID. This value must be unique across all applications in your Microsoft Entra 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 ✓

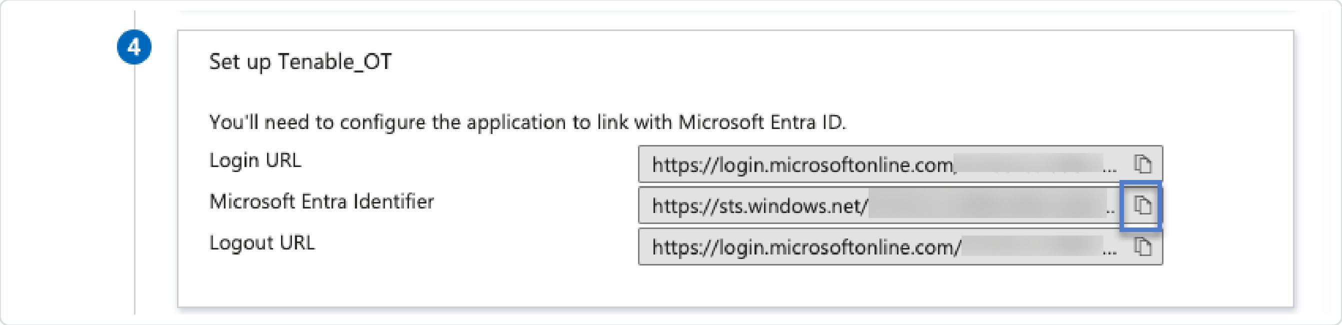
3. In the **Identifier (Entity ID)** box, type a temporary ID for the Tenable application, for example: `tenable_ot`.

4. In the **Reply URL (Assertion Consumer Service URL)** box, type a valid URL, for example: `https://OT Security`.

   > **Note**: The **Identifier** and **Reply URL** values are temporary values, which you can change 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 ⧉ button to copy the **Microsoft Entra ID Identifier**.



Set up Tenable_OT

You'll need to configure the application to link with Microsoft Entra ID.

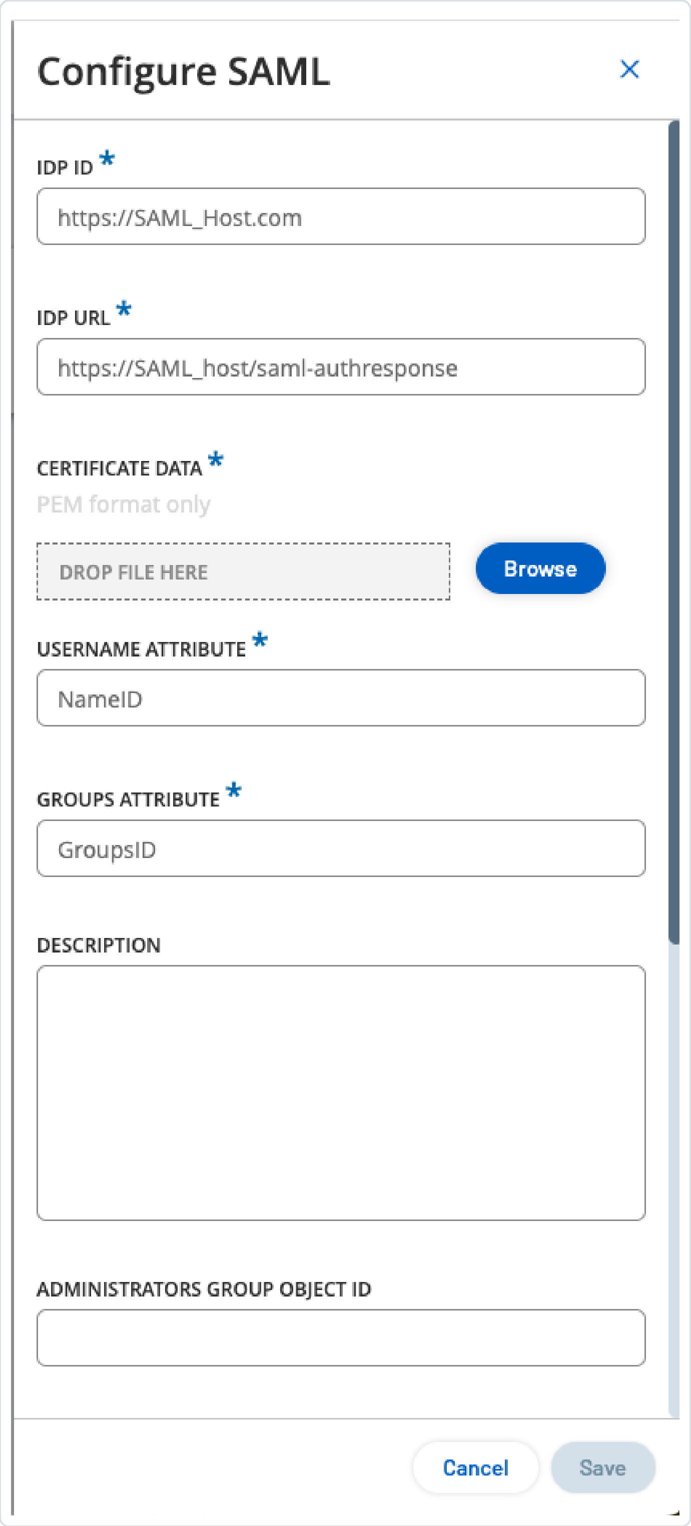
Login URL https://login.microsoftonline.com/ [redacted] ...

Microsoft Entra Identifier https://sts.windows.net/ [redacted] ..

Logout URL https://login.microsoftonline.com/ [redacted] ...

7. Switch to the OT Security console, and go to **User Management** > **SAML**.

8. Click **Configure** to display the **Configure SAML** side panel, and paste the copied value into the **IDP ID** box.



Configure SAML

IDP ID *

https://SAML_Host.com

IDP URL *

https://SAML_host/saml-authresponse

CERTIFICATE DATA *

PEM format only

DROP FILE HERE

USERNAME ATTRIBUTE *

NameID

GROUPS ATTRIBUTE *

GroupsID

DESCRIPTION

ADMINISTRATORS GROUP OBJECT ID

9. In the Microsoft Azure console, click the ⧉ button to copy the **Login URL**.

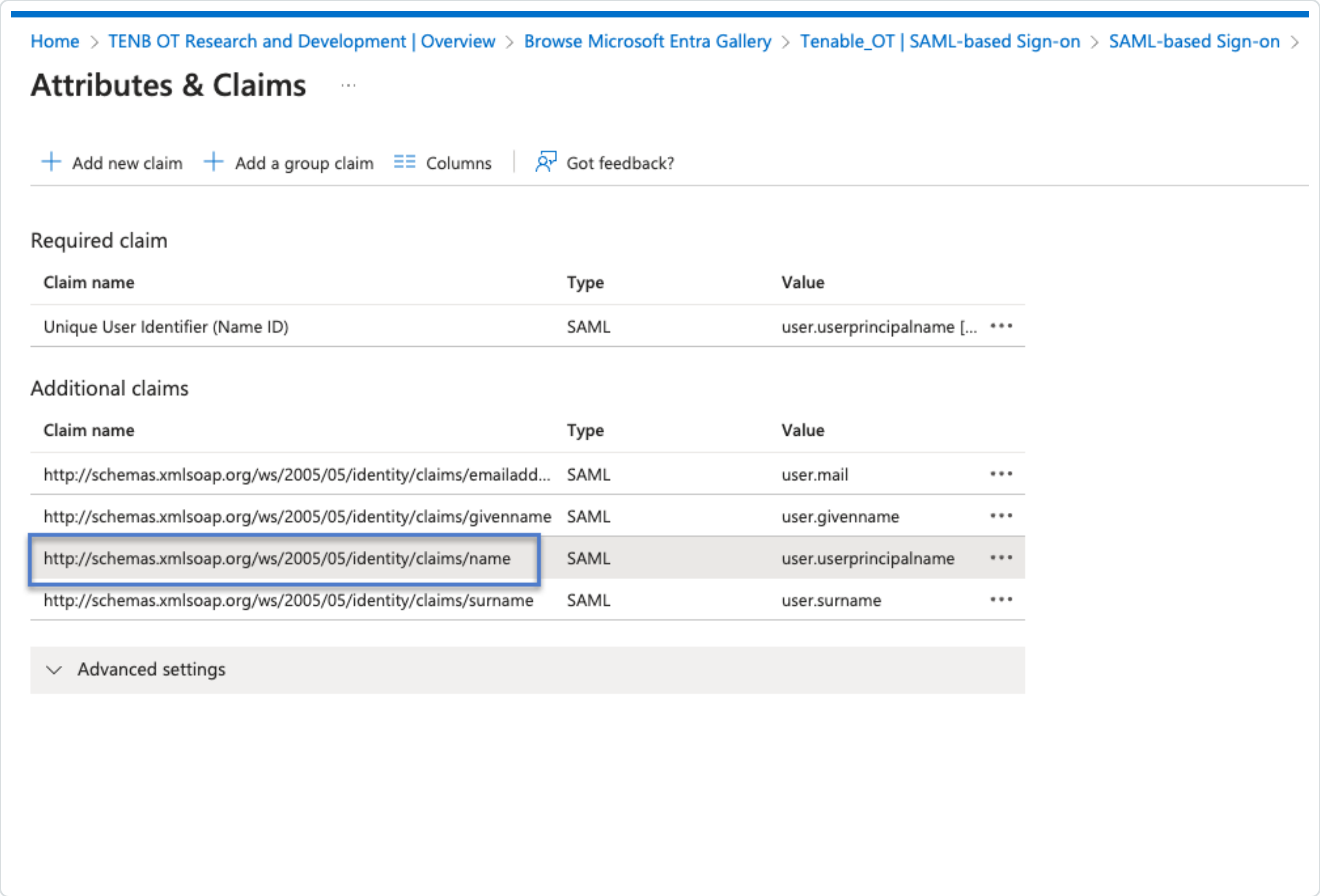
10. Return to the OT Security console and paste the copied value into the **IDP URL** box.

11. In the Azure console, in section 3 - **SAML Certificates**, for **Certificate (Base64)**, click **Download**.

12. Return to the OT Security console and in the **Certificate Data** section, **Browse** to the security certificate file and select it.

13. In the Azure console, in section 2 – **Attributes & Claims**, click ✎ **Edit**.

14. In the **Additional claims** section, select and copy the **Claim name** URL corresponding to the **Value** - **user.userprincipalname**.


Home > TENB OT Research and Development | Overview > Browse Microsoft Entra Gallery > Tenable_OT | SAML-based Sign-on > SAML-based Sign-on >
+ Add new claim
+ Add a group claim
Columns
Got feedback?

Attributes & Claims

Required claim

Claim name	Type	Value
Unique User Identifier (Name ID)	SAML	user.userprincipalname [...

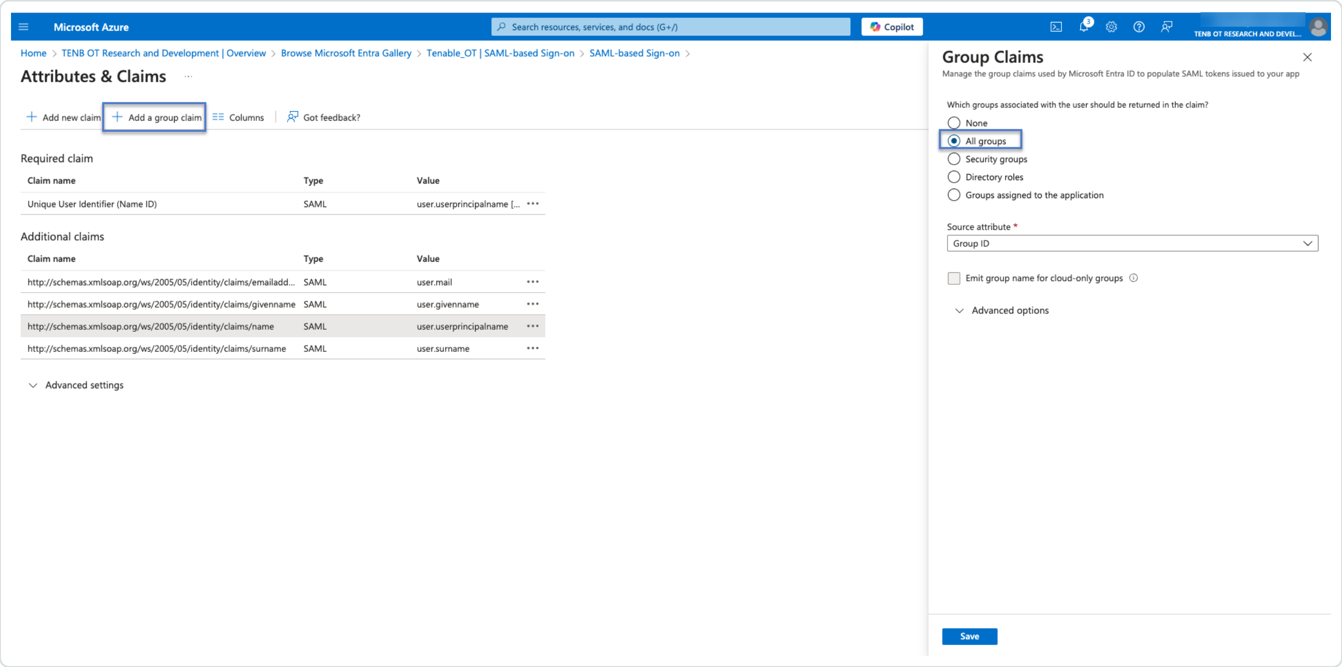
Additional claims

Claim name	Type	Value
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailadd...	SAML	user.mail
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/givenname	SAML	user.givenname
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/name	SAML	user.userprincipalname
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/surname	SAML	user.surname

15. Return to the OT Security console and paste this URL in the **Username Attribute** box.

16. In the Azure console, click **+ Add a group claim**.

    The **Group Claims** side panel appears.


Microsoft Azure
Search resources, services, and docs (G+/)
Copilot
TENB OT RESEARCH AND DEVEL...
Home > TENB OT Research and Development | Overview > Browse Microsoft Entra Gallery > Tenable_OT | SAML-based Sign-on > SAML-based Sign-on >

Attributes & Claims

+ Add new claim | + Add a group claim | Columns | Got feedback?

Required claim

Claim name	Type	Value
Unique User Identifier (Name ID)	SAML	user.userprincipalname [...

Additional claims

Claim name	Type	Value
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailadd...	SAML	user.mail
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/givenname	SAML	user.givenname
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/name	SAML	user.userprincipalname
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/surname	SAML	user.surname

Advanced settings

Group Claims

Manage the group claims used by Microsoft Entra ID 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

□ Emit group name for cloud-only groups

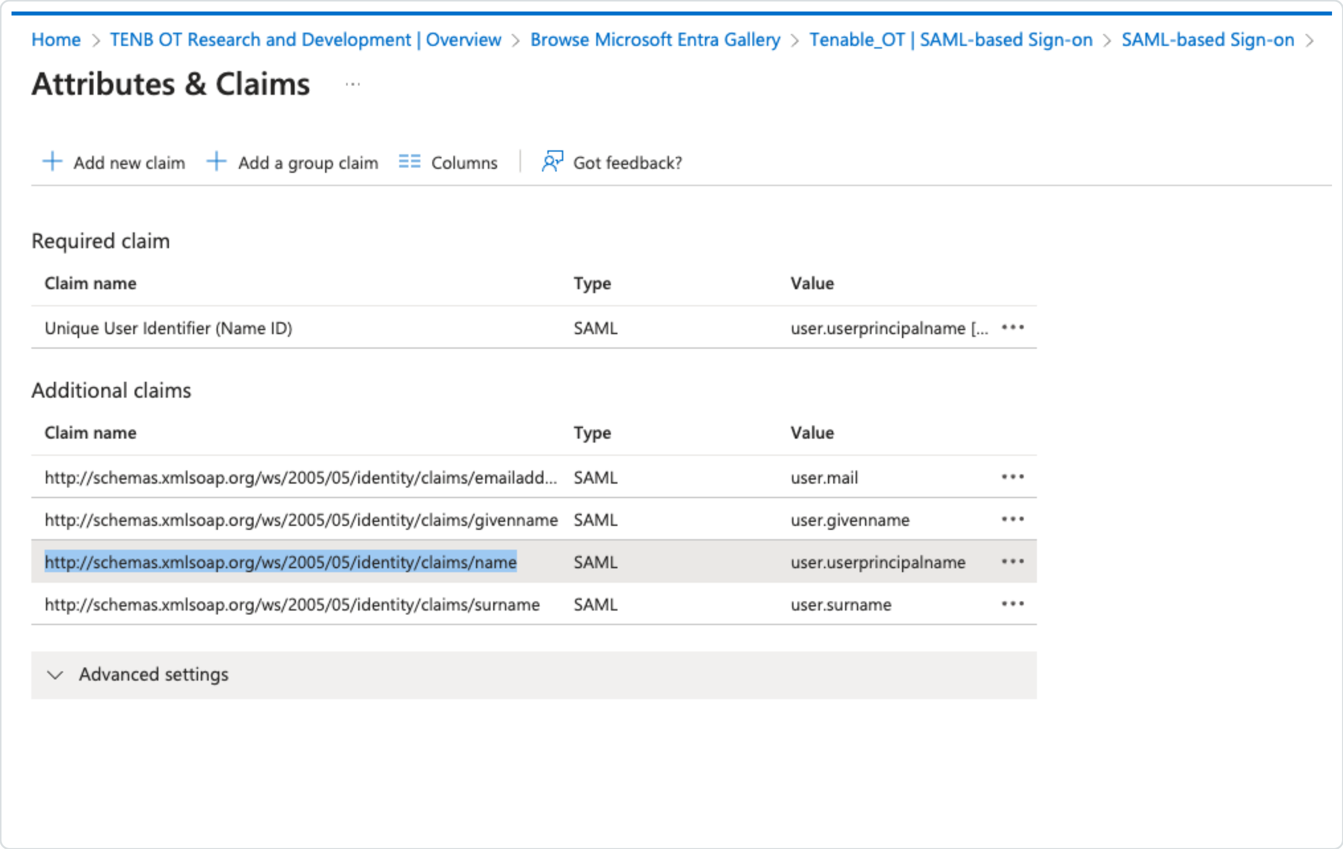
Advanced options

Save

17. In the **Which groups associated with the user should be returned in the claim?** section, select **All groups** and click **Save**.

> **Note**: If you enable the groups setting in Azure, you can select **Groups assigned to the application** instead of **All Groups**, and Azure provides only the user groups assigned to the application.

18. In the **Additional claims** section, highlight and copy the **Claim name** URL associated with the **Value**— **user.groups [All]**.


Home > TENB OT Research and Development | Overview > Browse Microsoft Entra Gallery > Tenable_OT | SAML-based Sign-on > SAML-based Sign-on >
+ Add new claim
+ Add a group claim
Columns
Got feedback?
Advanced settings

Attributes & Claims

Required claim

Claim name	Type	Value
Unique User Identifier (Name ID)	SAML	user.userprincipalname [...

Additional claims

Claim name	Type	Value
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailadd...	SAML	user.mail
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/givenname	SAML	user.givenname
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/name	SAML	user.userprincipalname
http://schemas.xmlsoap.org/ws/2005/05/identity/claims/surname	SAML	user.surname

19. Return to the OT Security console and paste the copied URL in the **Groups Attribute** box.

20. (Optional) Add a description of the SAML configuration in the **Description** box.

Step 3 - Map Azure Users to Tenable Groups

In this step, you assign Azure users 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 User Management. Each Azure user must be assigned to at least one group mapped to a OT Security User Group.

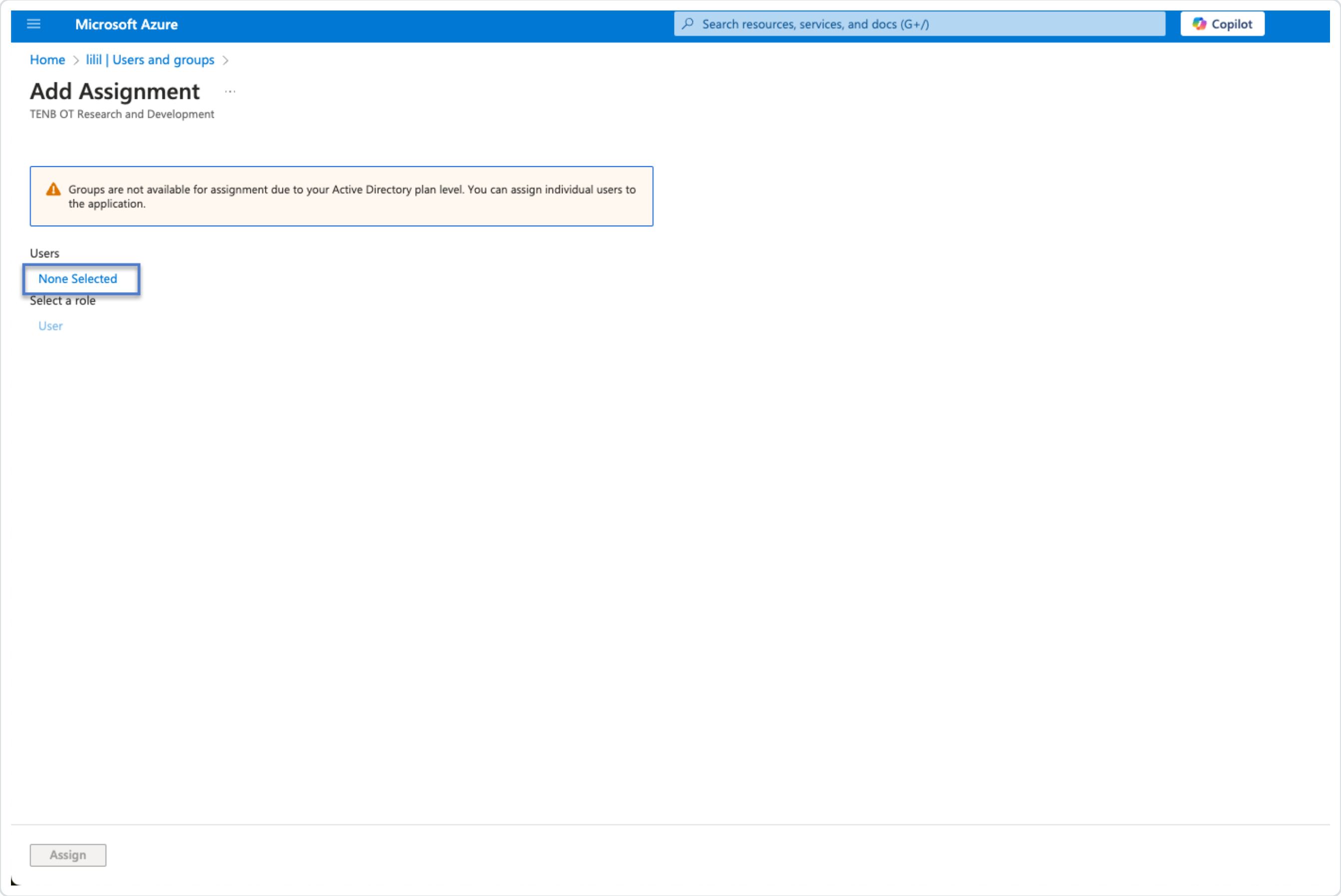
> **Note**: Administrator users logged in via SAML are considered Administrators (External) users and are not granted all the privileges of local Administrators. Users assigned to multiple User Groups are granted the highest possible permissions from among their groups.

To map Azure users to OT Security:

1. In Azure, navigate to the **Users and groups** page and click **+ Add user/group**.

2. In the **Add Assignment** page, under **Users**, click **None Selected**.

   The **Users** page appears.



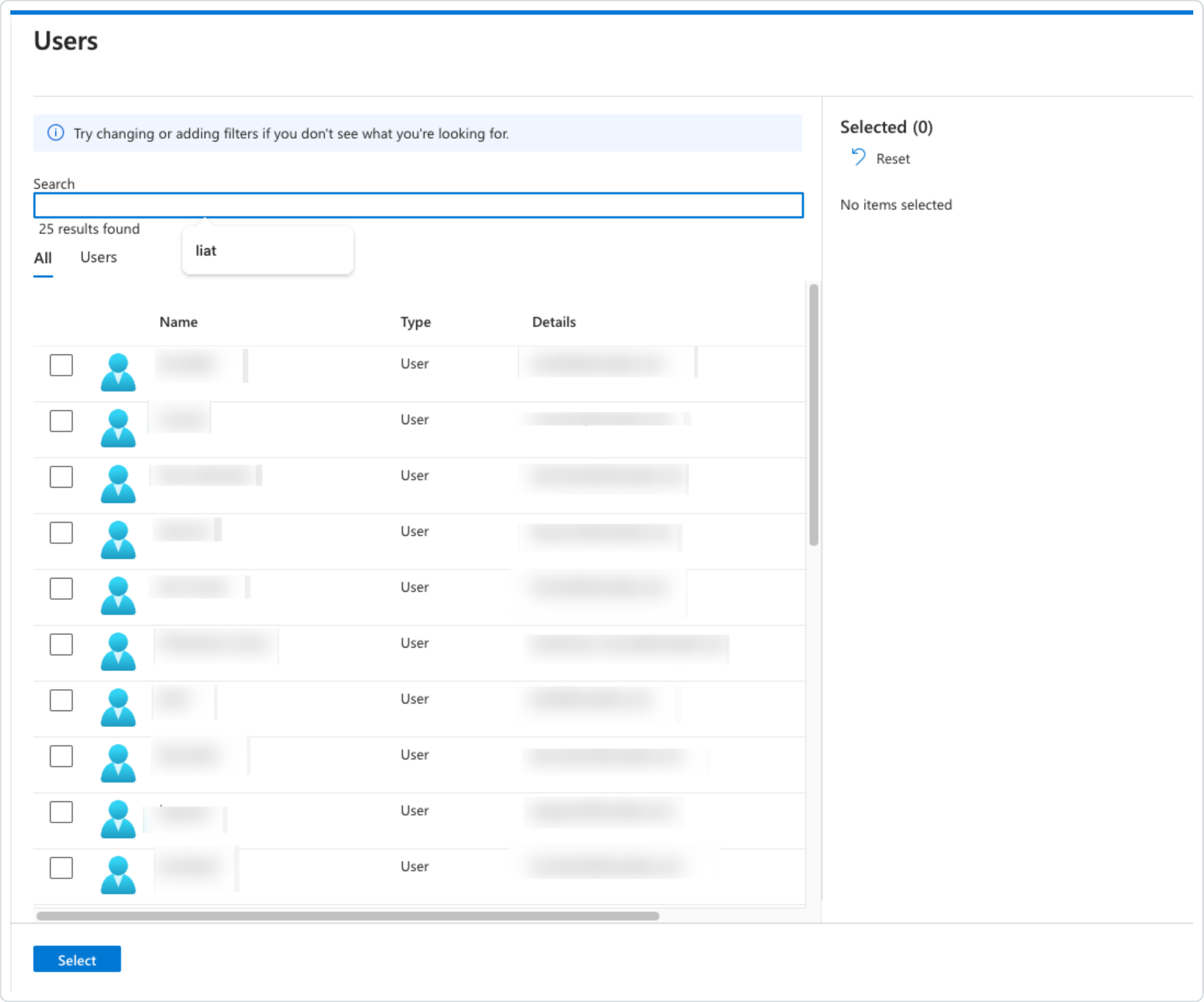
Microsoft Azure
Search resources, services, and docs (G+/)
Copilot
Home > lilil | Users and groups >
Add Assignment ...
TENB OT Research and Development

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
Assign

> **Note**: If you enable the groups setting in Azure and select **Groups assigned to the application** instead of **All Groups**, you can assign groups instead of individual users.

3. Search and select all required users, then click **Select**.



Users

ⓘ Try changing or adding filters if you don't see what you're looking for.

Search

25 results found

	Name	Type	Details
□	[redacted]	User	[redacted]
□	[redacted]	User	[redacted]
□	[redacted]	User	[redacted]
□	[redacted]	User	[redacted]
□	[redacted]	User	[redacted]
□	[redacted]	User	[redacted]
□	[redacted]	User	[redacted]
□	[redacted]	User	[redacted]
□	[redacted]	User	[redacted]
□	[redacted]	User	[redacted]

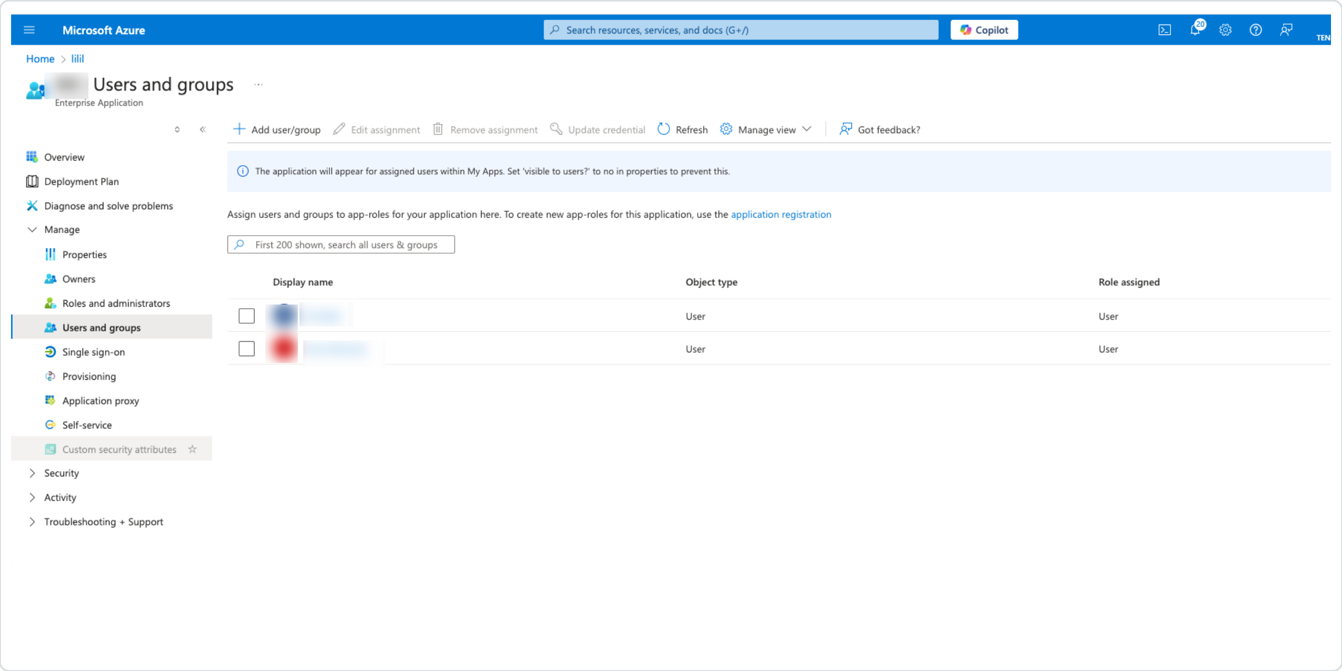
Selected (0)

No items selected

4. Click **Assign** to assign them to the application.

   The **Users and groups** page appears.

5. Click 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.

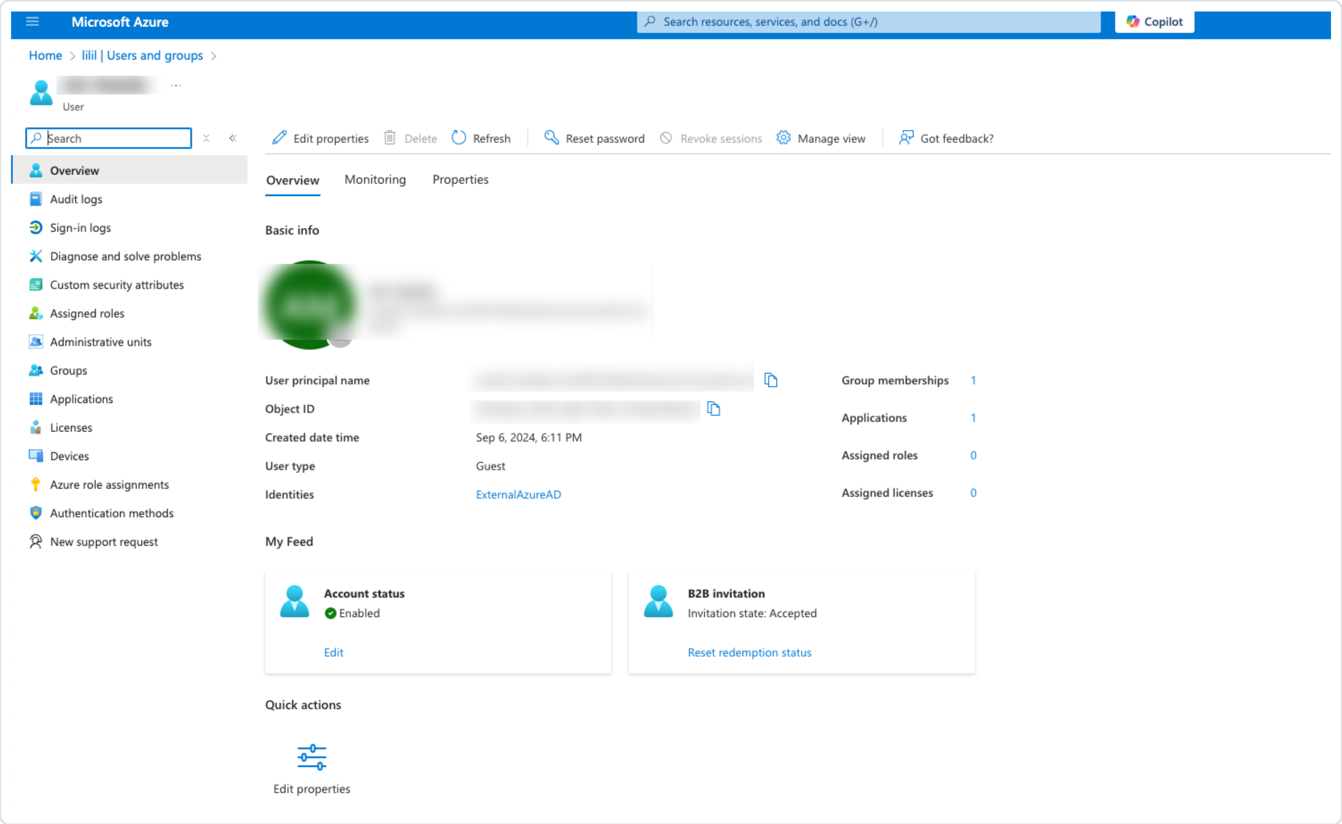
Assign users and groups to app-roles for your application here. To create new app-roles for this application, use the application registration

	Display name	Object type	Role assigned
□		User	User
□		User	User

The **Profile** page appears.

6. In the left navigation bar, select **Groups**.

   The **Groups** page appears.



[redacted]

User

Basic info

[redacted]

User principal name	[redacted]	Group memberships	1
Object ID	[redacted]	Applications	1
Created date time	Sep 6, 2024, 6:11 PM	Assigned roles	0
User type	Guest	Assigned licenses	0
Identities	ExternalAzureAD		

My Feed

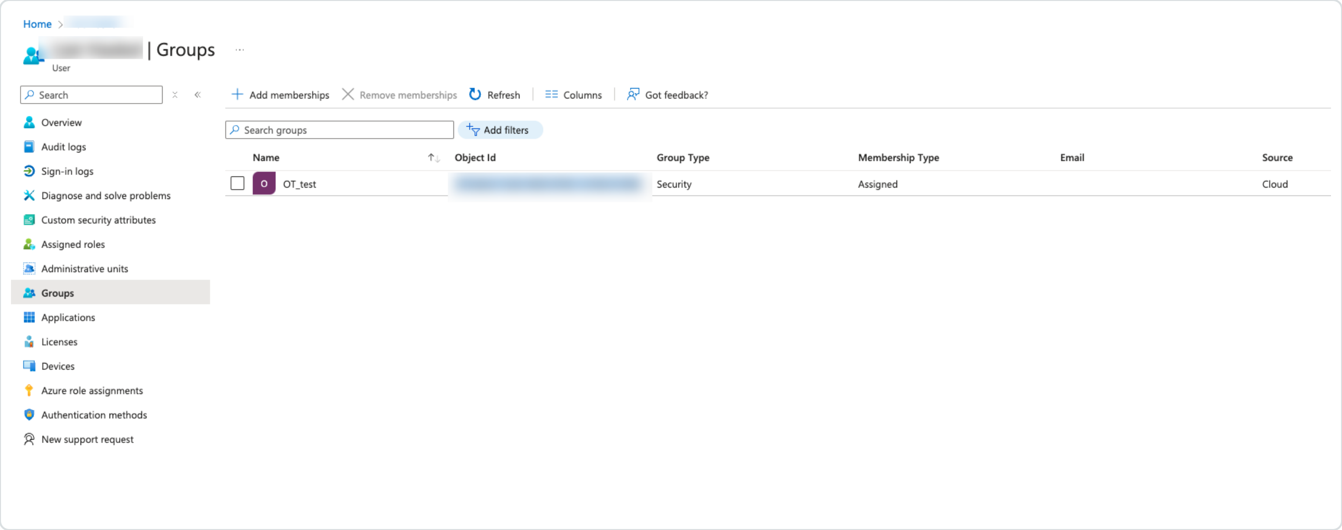
Account status
Enabled
Edit

B2B invitation
Invitation state: Accepted
Reset redemption status

Quick actions

Edit properties

7. In the **Object Id** column, select and copy the value for the group that will be mapped to Tenable.

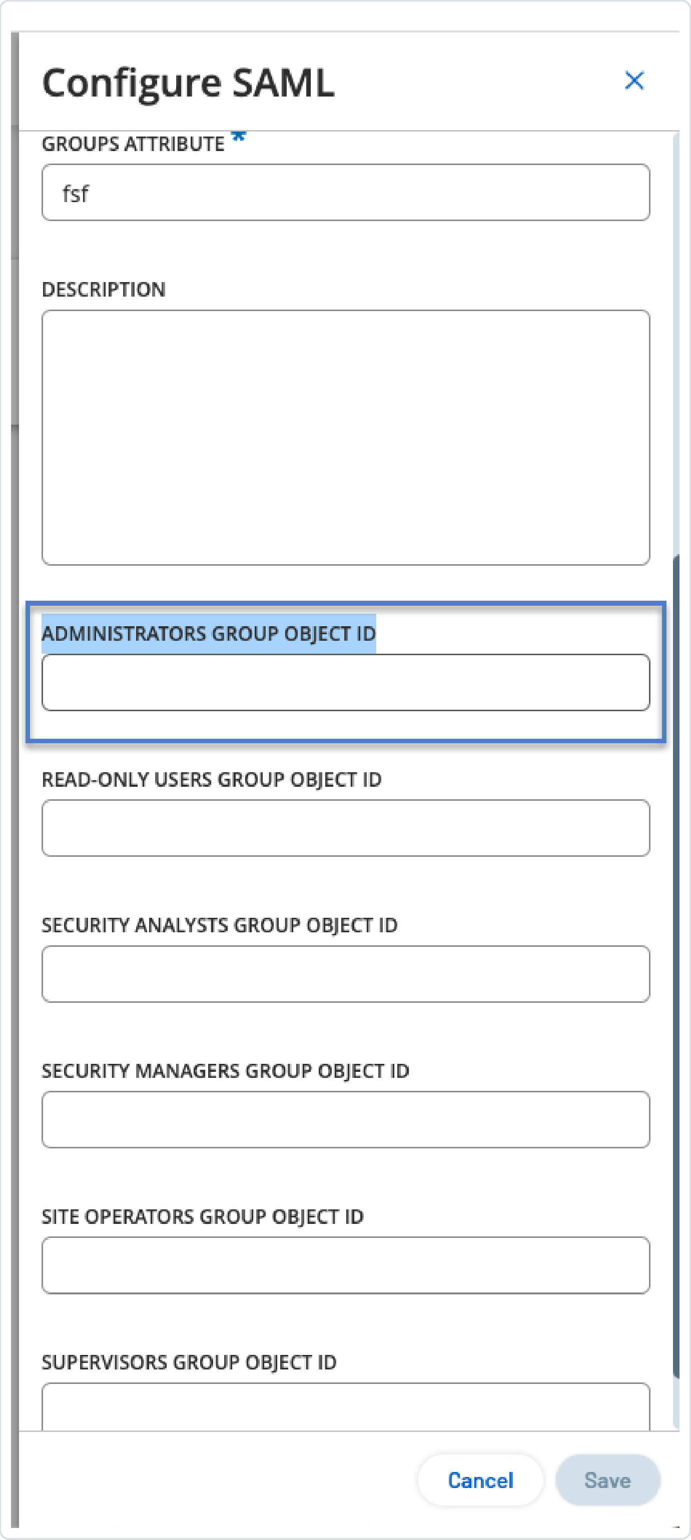


[redacted] | Groups

User

Name	Object Id	Group Type	Membership Type	Email	Source
□ O OT_test	[redacted]	Security	Assigned		Cloud

8. Return to the OT Security console and paste the copied value in the required **Group Object ID** box. For example, the **Administrators Group Object ID**.



Configure SAML

GROUPS ATTRIBUTE *

fsf

DESCRIPTION

ADMINISTRATORS GROUP OBJECT ID

READ-ONLY USERS GROUP OBJECT ID

SECURITY ANALYSTS GROUP OBJECT ID

SECURITY MANAGERS GROUP OBJECT ID

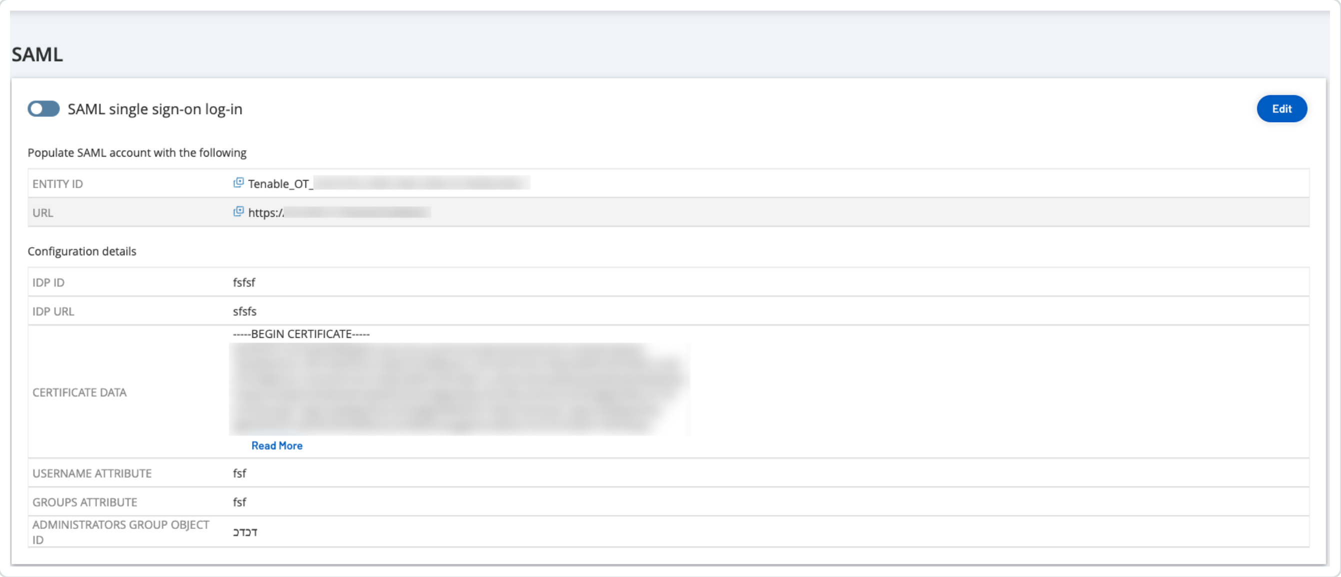
SITE OPERATORS GROUP OBJECT ID

SUPERVISORS GROUP OBJECT ID

9. Repeat steps 1-7 for each group you want to map to a distinct user group in OT Security.

10. Click **Save** to save and close the side panel.

The SAML page appears in the OT Security console with the configured information.



SAML

SAML single sign-on log-in

Edit

Populate SAML account with the following

ENTITY ID	Tenable_OT_[redacted]
URL	https:/.[redacted]

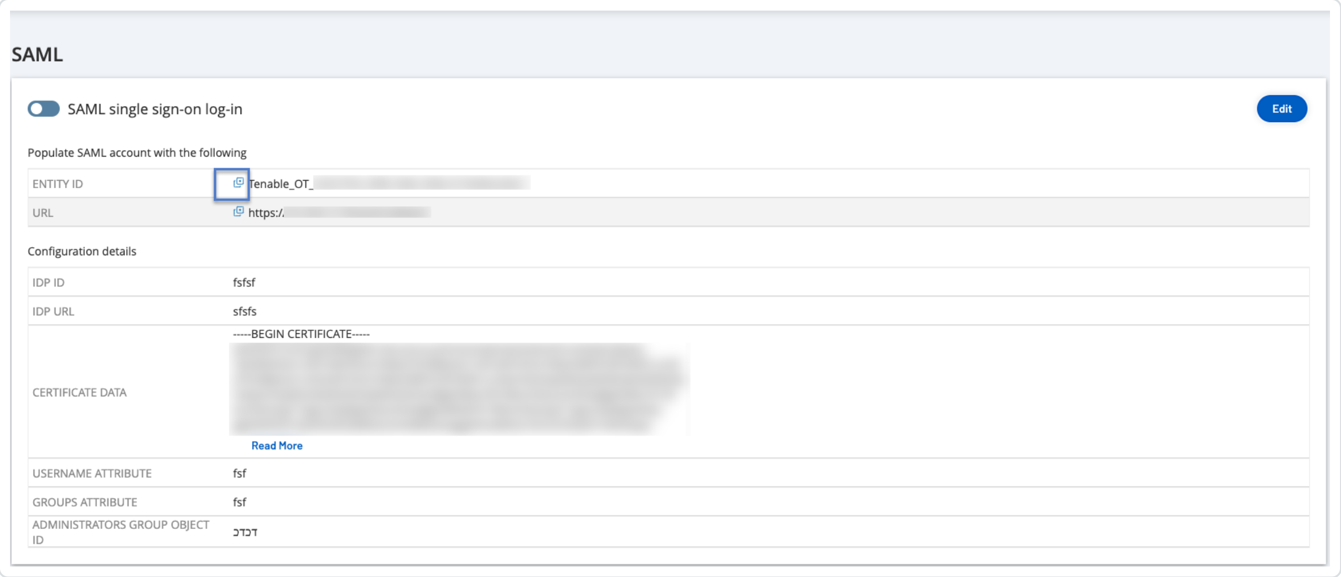
Configuration details

IDP ID	fsfsf
IDP URL	sfsfs
CERTIFICATE DATA	-----BEGIN CERTIFICATE----- [redacted] Read More
USERNAME ATTRIBUTE	fsf
GROUPS ATTRIBUTE	fsf
ADMINISTRATORS GROUP OBJECT ID	דכדכ

Step 4 - Finalizing the Configuration in Azure

To finalize the configuration in Azure:

1. In the OT Security **SAML** page, click the the ⧉ button to copy the **Entity ID**.



SAML

SAML single sign-on log-in

Edit

Populate SAML account with the following

ENTITY ID	Tenable_OT_[redacted]
URL	https:/.[redacted]

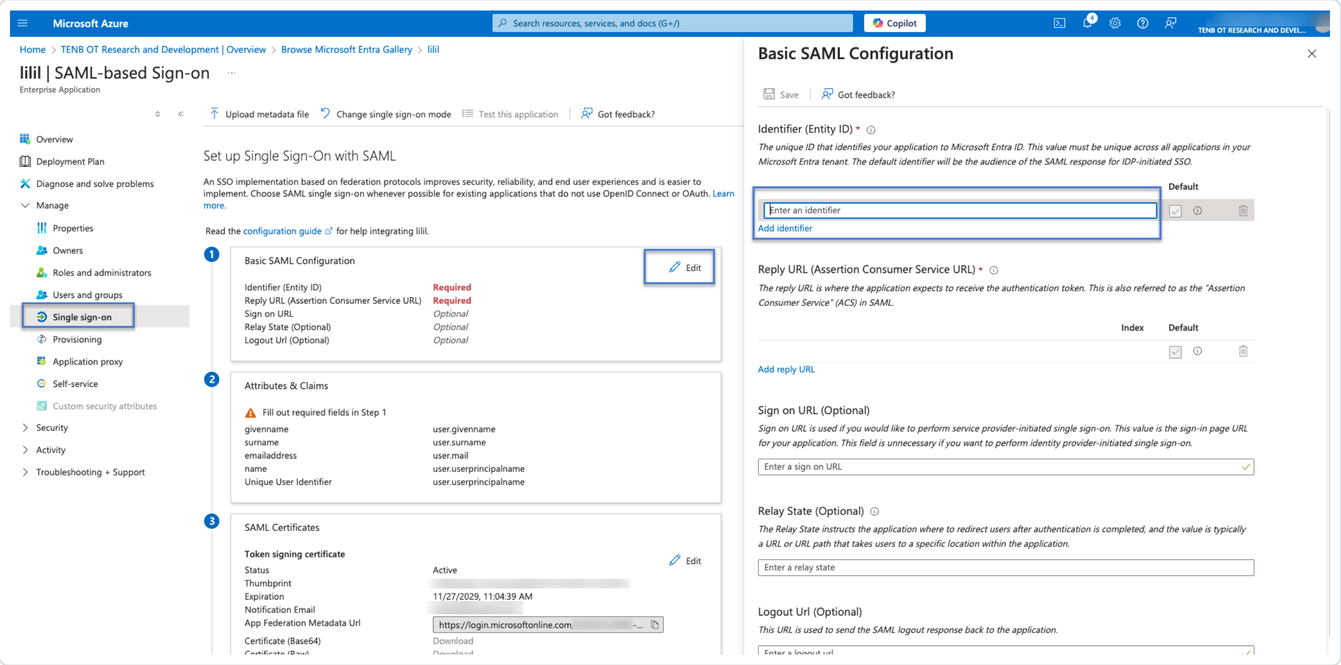
Configuration details

IDP ID	fsfsf
IDP URL	sfsfs
CERTIFICATE DATA	-----BEGIN CERTIFICATE----- [redacted] Read More
USERNAME ATTRIBUTE	fsf
GROUPS ATTRIBUTE	fsf
ADMINISTRATORS GROUP OBJECT ID	דכדכ

2. In the Azure console, click **Single sign-on** in the left navigation menu.

   The **SAML-based Sign-on** page appears.

3. In section 1 - **Basic SAML Configuration**, click **Edit** and paste the copied value in the **Identifier (Entity ID)** box, replacing the temporary value you entered earlier.



lilil | 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 lilil.

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	
Expiration	11/27/2029, 11:04:39 AM
Notification Email	
App Federation Metadata Url	https://login.microsoftonline.com -...
Certificate (Base64)	Download

Basic SAML Configuration

Identifier (Entity ID) *

The unique ID that identifies your application to Microsoft Entra ID. This value must be unique across all applications in your Microsoft Entra tenant. The default identifier will be the audience of the SAML response for IDP-initiated SSO.

Enter an identifier | Default

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.

Index | Default

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.

4. Switch to the OT Security and in the **SAML** page, click the button to copy the **URL**.

5. Switch to the Azure console and in the **Basic SAML Configuration** section, paste the copied URL in the **Reply URL (Assertion Consumer Service URL)** replacing the temporary URL you entered earlier.

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** page.

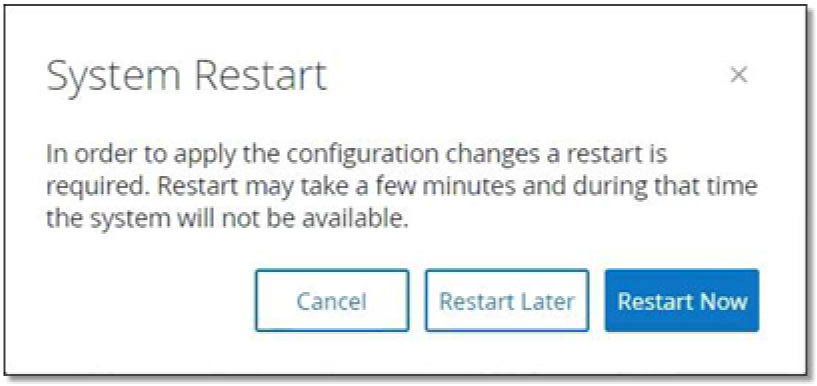
Step 5 – Activate the Integration

To activate the SAML integration, you must restart OT Security. You may restart the system immediately or choose to restart it later.

To activate the integration:

1. In the OT Security console, on the **SAML** page, click the **SAML single sign on login** toggle to enable SAML.

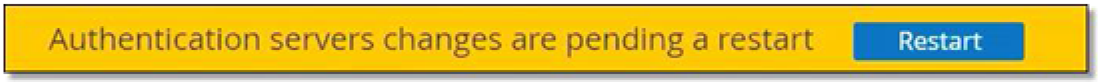
   The **System Restart** notification window appears.

   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 Later** to delay the application of the SAML configuration the next time the system is restarted. If you choose to restart later, the following banner appears until the restart is done:

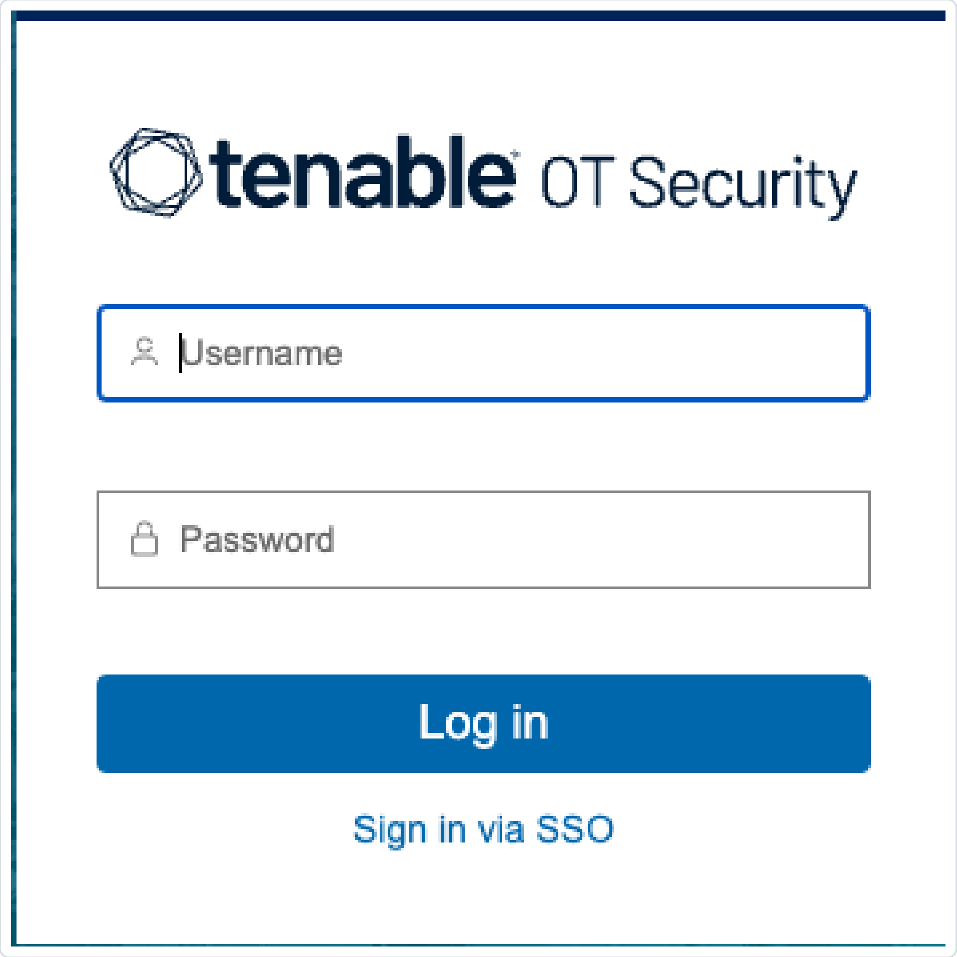
   Authentication servers changes are pending a restart

Sign in Using SSO

After the restart, the OT Security login window has a new **Sign in via SSO** link underneath the **Log in** button. Azure users 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 window, 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.

If you have more than one account, OT Security redirects you to the Microsoft **Pick an account** page, where you can select the required account for login.