EdgeFire™

Administrator's Guide

2020-10-12

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http://docs.trendmicro.com/en-us/home.aspx

This documentation introduces the main features of the product and/or provides installation instructions for a production environment. Read through the documentation before installing or using the product.

Detailed information about how to use specific features within the product may be available at the Trend Micro Online Help Center and/or the Trend Micro Knowledge Base.

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About EdgeFire

Introduction

EdgeFire™, a next generation firewall, is a highly integrated industrial multiport secure router with firewall, NAT, and IPS functions. It is designed for Ethernet-based security applications on factory networks, and it provides an electronic security perimeter for the protection of critical cyber assets including pump-and-treat systems in water stations, DCS systems in oil and gas applications, and PLC/SCADA systems in factory automation. Users can access its web-based console that provides a graphical user interface for device configuration and security policy settings. The whole management process is designed to comply with the manufacturing SOPs of the industry.

IT and OT traditionally are operated separately, each with its own network, transportation team, goals, and needs. In addition, each industrial environment is equipped with tools and devices that were not designed to connect to a corporate network, thus making provisioning timely security updates or patches difficult. Therefore, the need for security products that provide proper security protection and visibility is on the rise.

Trend Micro provides a wide range of security products that cover both your IT and OT layers. These easy-to-build solutions provide an active and immediate protection to Industrial Control System (ICS) environments with the following features:

- Certified industrial-grade hardware with size, power consumption, and durability tailored for OT environments, as well as the ability to tolerate a wide range of temperature variations
- Threat detection and interception, with safeguards against the spread of worms
- Protection against Advanced Persistent Threats (APTs) and Denial of Service (DoS) attacks that target vulnerable legacy devices
- Virtual patch protection against OT device exploits

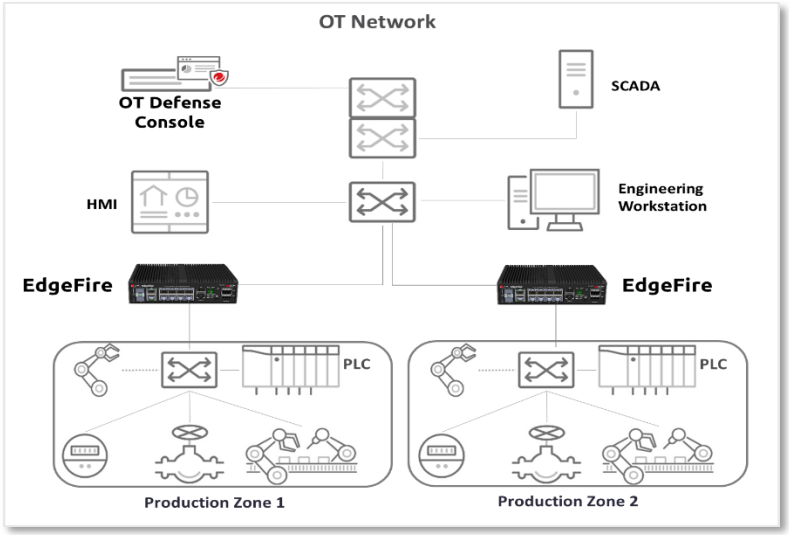


Figure 1. Trend Micro security solutions for OT networks

Main Functions

EdgeFire(tm) is a security device which can be managed by the OT Defense Console. The main functions of the product are as follows:

Extensive Support for Industrial Protocols

EdgeFire supports the identification of a wide range of industrial control protocols, including Modbus and other protocols used by well-known international companies such Siemens, Mitsubishi, Schneider Electric, ABB, Rockwell, Omron, and Emerson. In addition to allowing OT and IT security system administrators to work together, this feature also allows the flexibility to deploy defense measures in appropriate network segments and seamlessly connects them to existing factory networks.

Policy Enforcement for Mission-Critical Machines

EdgeFire's core technology TXODI allows administrators to maintain a policy enforcement database. By analyzing Layer 3 to Layer 7 network traffic between mission-critical production machines, policy enforcement executes filtering of control commands within the protocols and blocks traffic that is not defined in the policy rules. This feature can help prevent unexpected operational traffic, block unknown network attacks, and block other activity that matches a defined policy.

Improve Shadow OT Visibility by Integrating IT and OT Networks

EdgeFire comes equipped to make your IT and OT networks as integrated and coordinated with each other as possible, and to grant visibility of your shadow OT environment.

Intrusion Prevention and Intrusion Detection

IPS/IDS provides a powerful, up-to-date first line of defense against known threats. Vulnerability filtering rules provide effective protection against all exploits at the network level. Manufacturing personnel manage patching and updating, providing pre-emptive protection against critical production failures, and additional protection for old or terminated software.

Switch Between Two Flexible Modes, 'Monitor' & 'Prevention'

EdgeFire flexibly switches between 'Monitor' and 'Prevention' modes. 'Monitor' mode will log traffic without interfering, while 'Prevention' mode will filter traffic based on policies you create. These modes work together to preserve your productivity while maximizing security.

Top Threat Intelligence and Analytics

EdgeFire provides advanced protection against unknown threats with its up-to-date threat information. With the help of the Zero Day Initiative (ZDI) vulnerability reward program, EdgeFire offers your systems exclusive protection from undisclosed and zero-day threats.

Centralized Management

Trend Micro's OT Defense Console (ODC) provides a graphical user interface for policy management in compliance with manufacturing SOP. It centrally monitors operations information, edits network protection policies, and sets patterns for attack behaviors.

All protections are deployed throughout the entire information technology (IT) and operational technology (OT) infrastructure. These include:

- A centralized policy deployment and reporting system
- Full visibility into assets, operations, and security threats
- IPS and policy enforcement configuration can be assigned per device group, allowing all devices in the same device group to share the same policy configuration
- Management permissions for device groups can be assigned per user account

Flexible Segmentation and Isolation

EdgeFire is the ideal solution for segmenting a network into easily managed security zones. It segments networks and isolates connectivity both to and between facilities as well as production zones. EdgeFire comes equipped to make your IT and OT networks as integrated and coordinated with each other as possible, and to grant visibility of your shadow OT environment.

Getting Started

This chapter describes the EdgeFire™ and how to get started with configuring the initial settings.

Note: For an overview of the physical hardware and characteristics or a condensed version of help with initial setup of the device, please refer to the EdgeFire Quick Setup Guide

Getting Started: Task List

The Getting Started Task List provides a high-level overview of all procedures required to get EdgeFire™ up and running as quickly as possible. Each step links to more detailed instructions later in the document.

Procedure

1. Open the management console.
   For more information, see *Opening the Management Console on page 11*.
2. Change the administrator password.
   For more information, see *Changing the Administrator's Password on page 12*.
3. Ensure that the link speed modes of the network ports are correct for your environment.
   For more information, see *Configuring the Ports on page 18*.
4. Change the default web management console IP address.
   The default web management console IP address is **192.168.127.254**. The IP address is bound to **LAN1** network interface. To change the default IP address, see *Configuring LAN Network Interface on page 20*.
5. Configure the network interfaces.
   For more information, see *The Network on page 20*.
6. Configure the system time.
   For more information, see *Configuring System Time on page 86*.
7. (Optional) Configure the Syslog settings.
   For more information, see *Configuring Syslog Settings on page 83*.
8. Configure Object Profiles.
   For more information, see *The Object Profiles on page 39*.
9. Configure security policies.
   For more information, see *The Security on page 66*.
10. Configure the device name and device location information.
    For more information, see *Configuring Device Name and Device Location Information on page 82*.
11. (Optional) Configure access control list from management clients.
    For more information, see *Configuring Control List Access for Management Clients on page 82*.
12. (Optional) Configure management protocols and ports.
    For more information, see *Configuring Management Protocols and Ports on page 82*.
13. (Optional) Update the DPI (Deep Packet Inspection) pattern for the device.
    For more information, see *Manually Updating the Pattern on page 74*.
14. (Optional) Enabling Management by ODC.
    For more information, see *Enabling Management by ODC on page 83*.

15. (Optional) Configuring password policy.
    For more information, see *Configuring Password Policy Settings on page 81*.

Opening the Management Console

EdgeFire™ provides a built-in management web console that you can use to configure and manage the product. View the management console using a web browser.

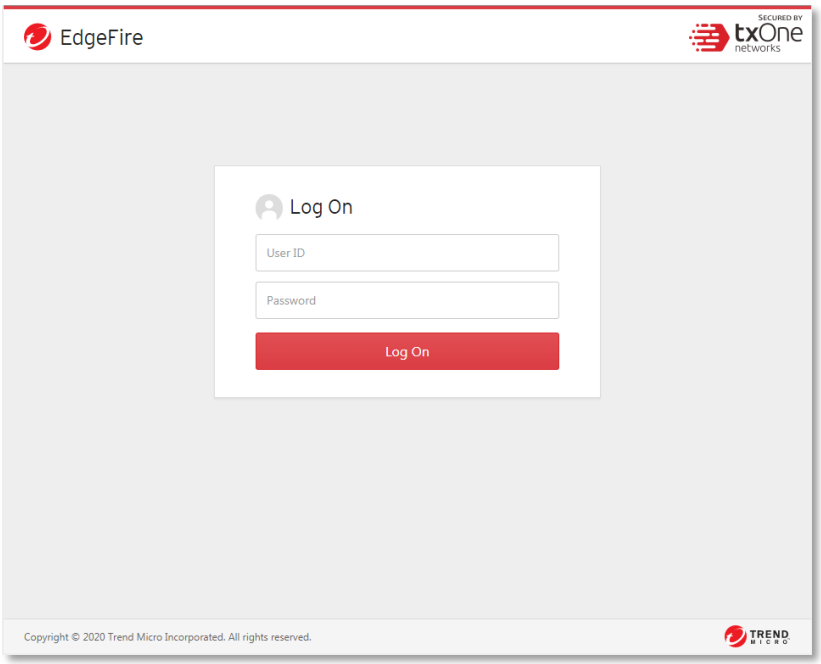
Note: View the management console using Google Chrome version 63 or later; Firefox version 53 or later; Safari version 10.1 or later; or Edge version 15 or later.

Procedure

1. In a web browser, type enter the address of the EdgeFire™ in the following format:
   `https://192.168.127.254`

   The logon screen will appear.

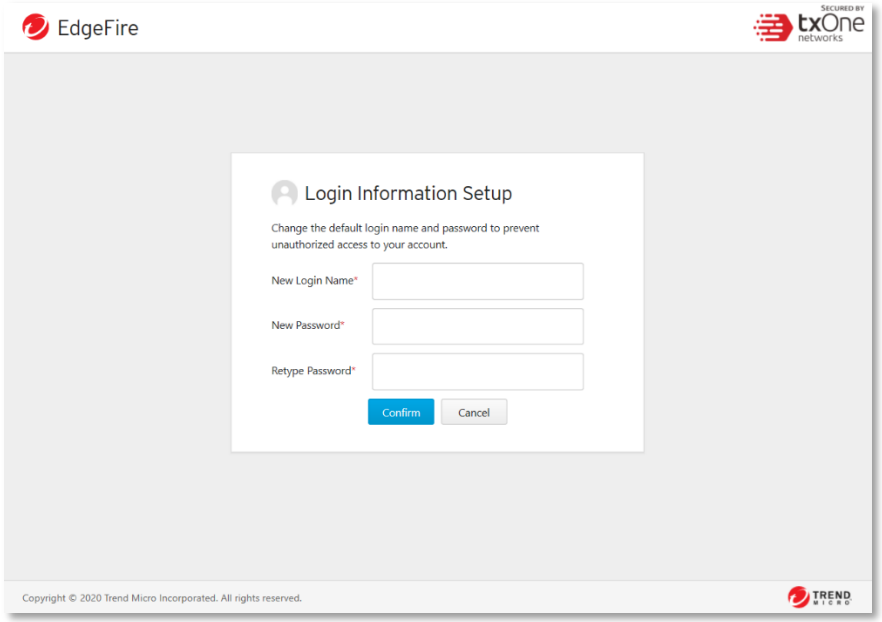
Note: The default IP address of EdgeFire™ is **192.168.127.254** with subnet **255.255.255.0**. Before connecting a PC/Laptop to EdgeFire™, the PC's IP address should be set to an IP address that is able to access the default IP address. After that, connect the PC and EdgeFire™ using an Ethernet cable.



2. Input the logon credentials (user name and password).

   Use the default administrator logon credentials when logging on for the first time:

   - User name: `admin`
   - Password: `txone`
3. Click Log On.
4. When logging in for the first time or after a factory reset, you will be prompted to change the default user ID and password. The default user ID and password cannot be used.



5. Login with newly changed user ID/password credentials.

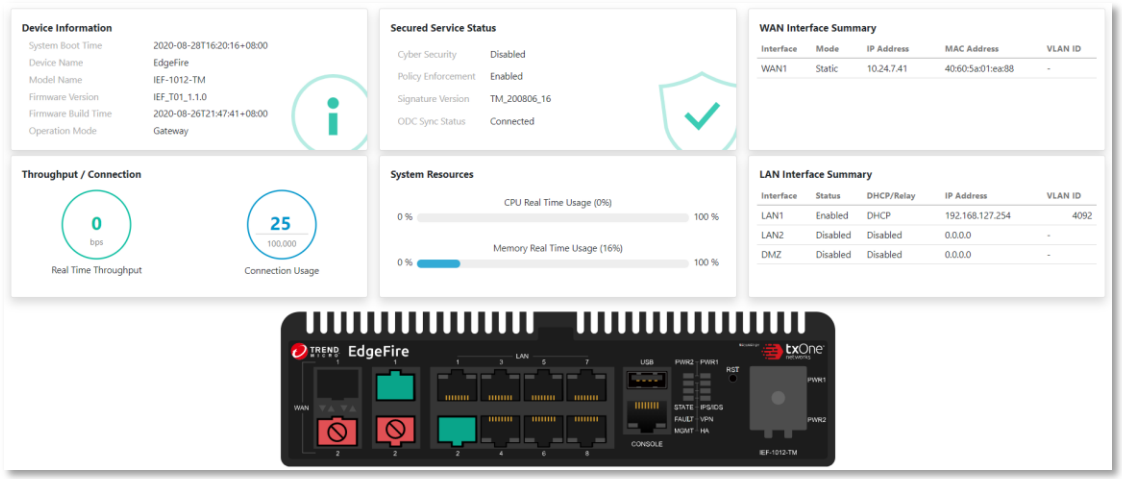
Changing the Administrator's Password

Refer to chapter "The Administration Tab", under sub-topic Account Management > Changing Your Password.

The System Tab

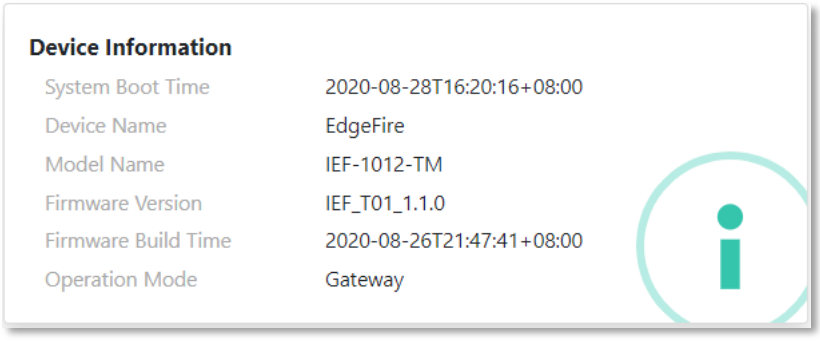
Monitor the following on the [System] tab:

- Device information
- Status of secured services
- System resource usage
- WAN interface information
- LAN interface information
- Throughput/connection information for this device



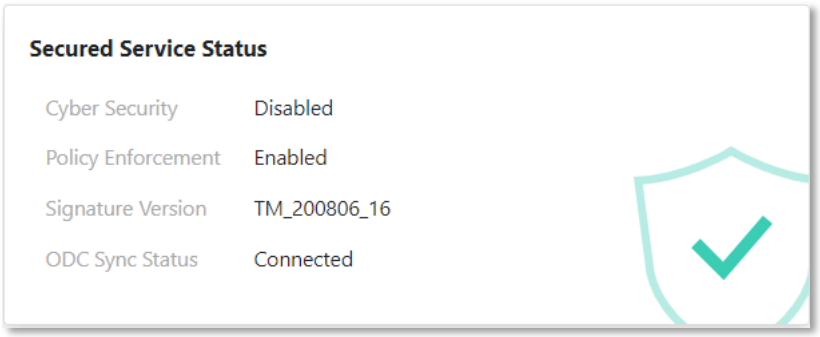
Device Information

This widget shows the system boot time, device name, model, firmware version, and firmware build date / time.



Secured Service Status

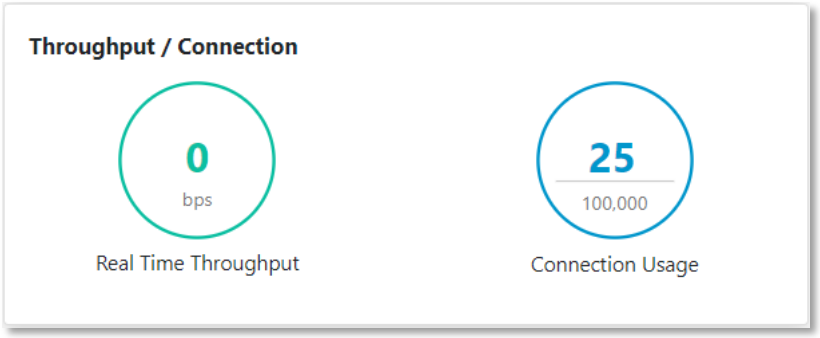
This widget shows the statuses (enabled/disabled) of the security services the device provides, as well as the signature version used and sync status with ODC.



System Resources

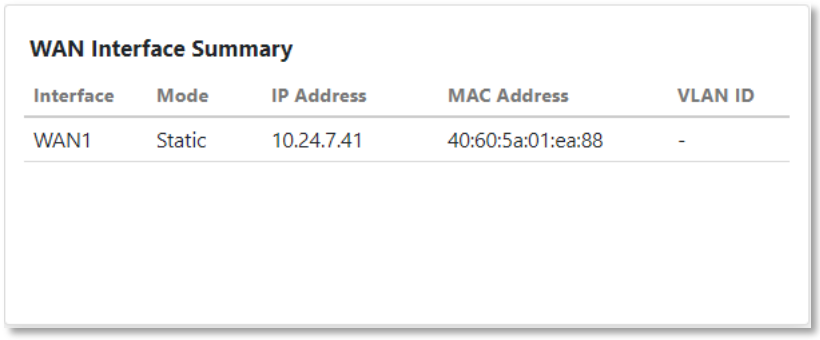
This widget shows the following:

- CPU Utilization - Real time CPU utilization % (according to refresh time settings).
- Memory Utilization - Real time memory utilization % (according to refresh time settings).



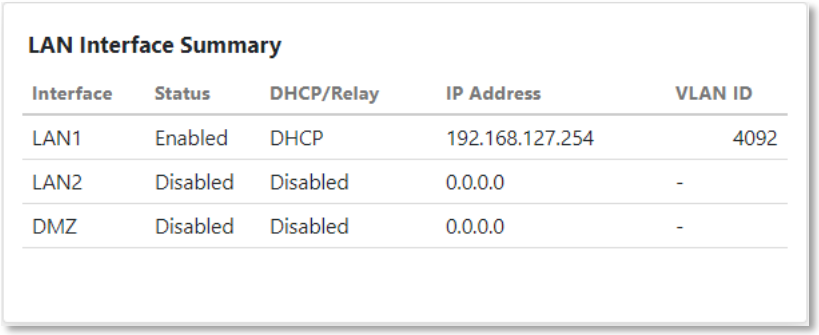
WAN Interface Summary

This widget shows a summary of information for the WAN interface.



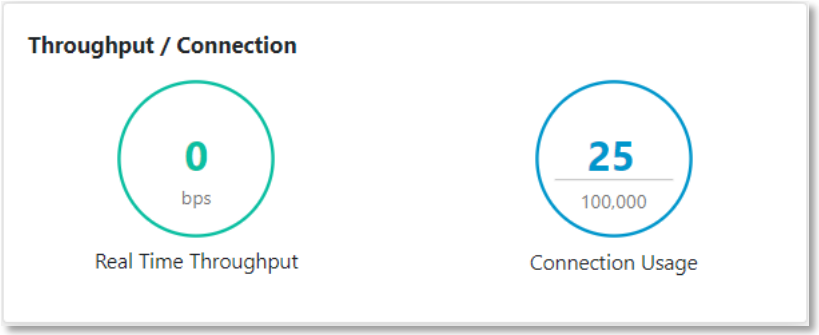
LAN Interface Summary

This widget shows a summary of information for the LAN, LAN2 interfaces.



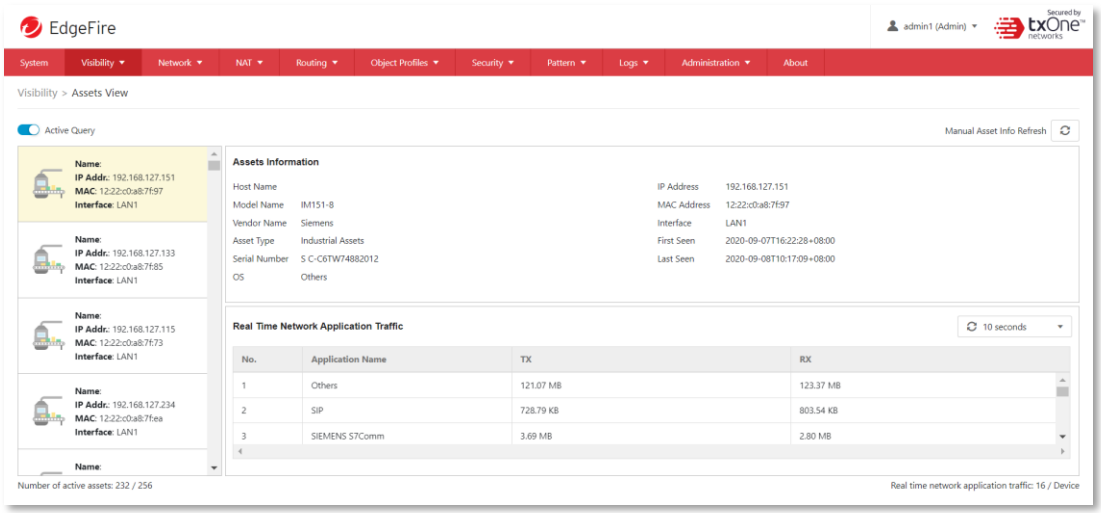
Throughput / Connection

This widget shows the throughput/connection (real time throughput and connection usage) of the device.



The Visibility Tab

The [Visibility] tab gives you an overview of asset visibility for your managed assets. The tab provides you with timely and accurate information on the assets that are managed by EdgeFire™.



The assets, listed on the tab, are automatically detected by the EdgeFire™ device.

Note: The term **asset** in this chapter refers to the devices or hosts that are protected by the EdgeFire.

Active Query

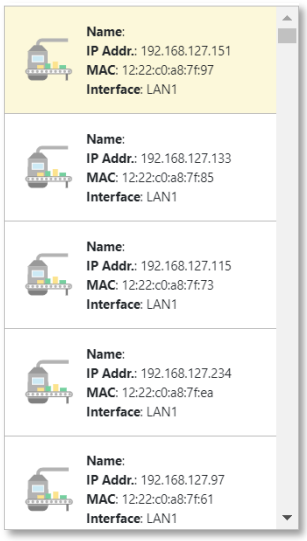
Active query can detect inactive or dormant assets or passive assets in the network.

Note: In firmware 1.1, Active query supports 4 protocols (Modbus, CIP, OMRON FINS and SMB)

Viewing Asset Information

Procedure

1. Go to [Visibility] > [Assets View].
2. Click an asset icon to view its detailed information.



The [Assets Information] pane shows the following information for the asset:

Field	Description
Vendor Name	The vendor name of the asset.
Model Name	The model name of the asset.
Asset Type	The asset type of the asset.
Host Name	The name of the asset.
Serial Number	The serial number of the asset.
OS	The operating system of the asset.
MAC Address	The MAC address of the asset.
IP Address	The IP address of the asset.
First Seen	The date and time the asset was first seen.
Last Seen	The date and time the asset was last seen.

Viewing Real Time Network Application Traffic

Procedure

1. Go to [Visibility] > [Assets View].
2. Click an asset icon and view its detailed information.
3. The [Real Time Network Application Traffic] pane shows a list of network traffic statistics for the asset

Field	Description
No.	Ordinal number of the application traffic.
Application Name	The application type of the traffic.
TX	The amount of traffic transmitted for this traffic.
RX	The amount of traffic received for this traffic.

Note: Click the [Manual asset info refresh] to refresh the information displayed.

Note: Specify the refresh time under the [Refresh Time] dropdown menu.

The Network Tab

This chapter describes how to configure the physical ports and network interfaces for your EdgeFire device.

Port Settings

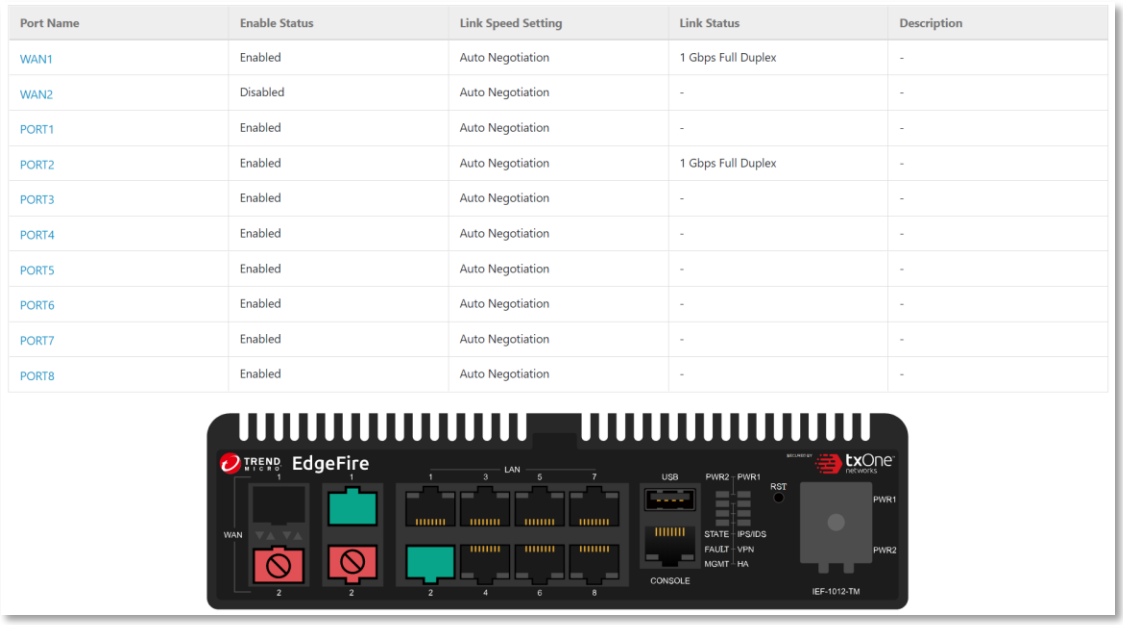
The [Port Settings] option allows you to enable/disable the ports and select the desired link speed for the ports.

Note: The term **Port** in this document refers to the physical port to which the network cable is connected.

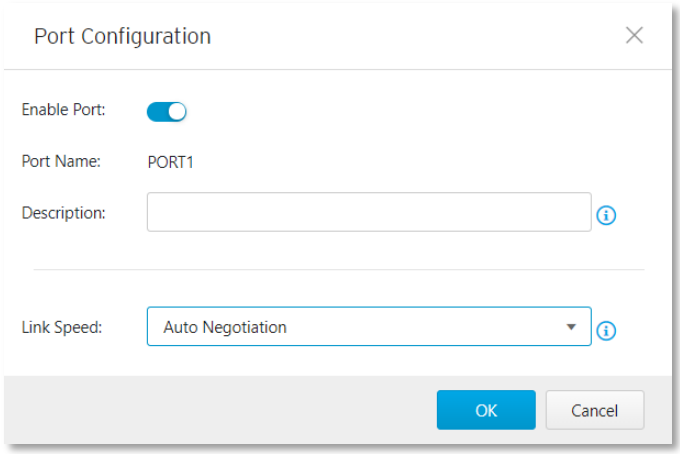
Configuring the Ports

Procedure

1. Go to [Network] > [Port Settings].



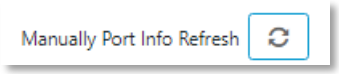
2. Click a port in the [Port Name] column to configure the port:
   a. Use the toggle to enable or disable the port.
   b. Under the [Link Speed] drop down menu, select the speed and negotiation method of the port.



Note: The pane picture on the tab shows a graphical depiction of the ports that are connected on the device.

Note: Dual WAN is currently not supported. The WAN2 is disabled.

3. (Optional) Click the [Manual Port Refresh] button to refresh the information displayed.



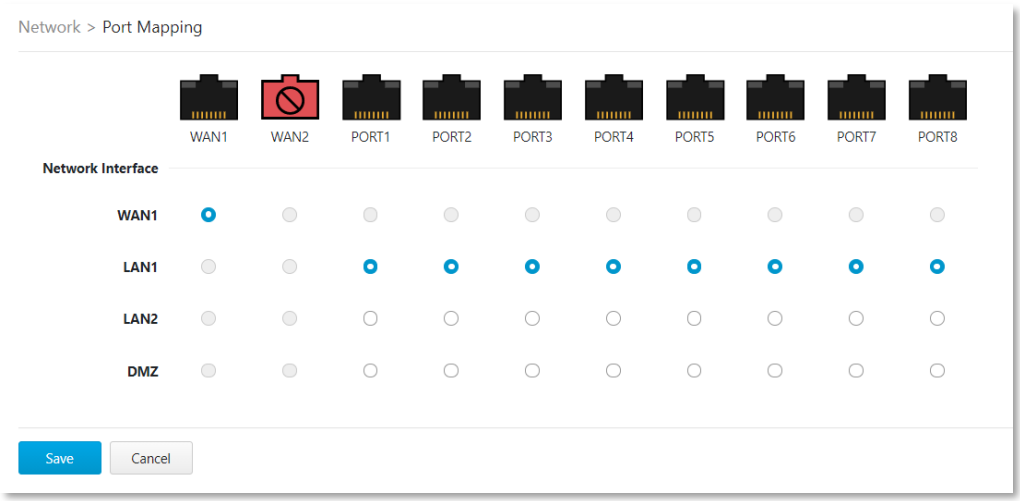
Port Mapping

Use the [Port Mapping] tab to view the mappings between the ports and the interfaces.

Viewing the Port Mapping

Procedure

1. Go to [Network] > [Port Mapping].
2. The Port Mapping tab will appear. This tab shows mapping between the physical ports and the interfaces (WAN interface or LAN interface).



Network Interface

Use the [Network Interface] tab to configure the following:

- Network settings of the network interfaces of the device
- DHCP settings on the LAN network interface, including:
  - Disabling DHCP service
  - Enabling DHCP service
  - Configuring DHCP Relay
- Connection type for the WAN network interface, including:
  - Static IP address settings
  - DHCP client

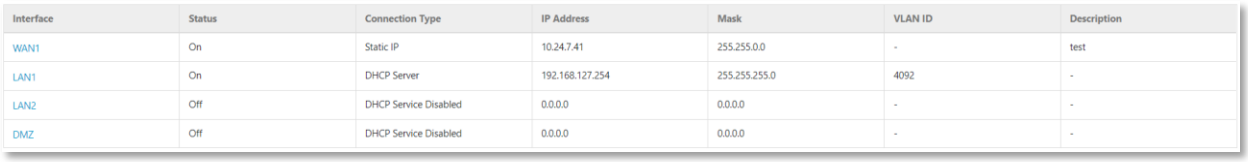
Note: The term **Network Interface** or **Interface** in this document refers to the logical interface that maps to one or more physical ports.

Note: The default web management console IP address is **192.168.127.254**. The IP address is bound to **LAN1** network interface. To change the default IP address, see *Configuring LAN Network Interface on page 20*.

Configuring LAN Network Interface

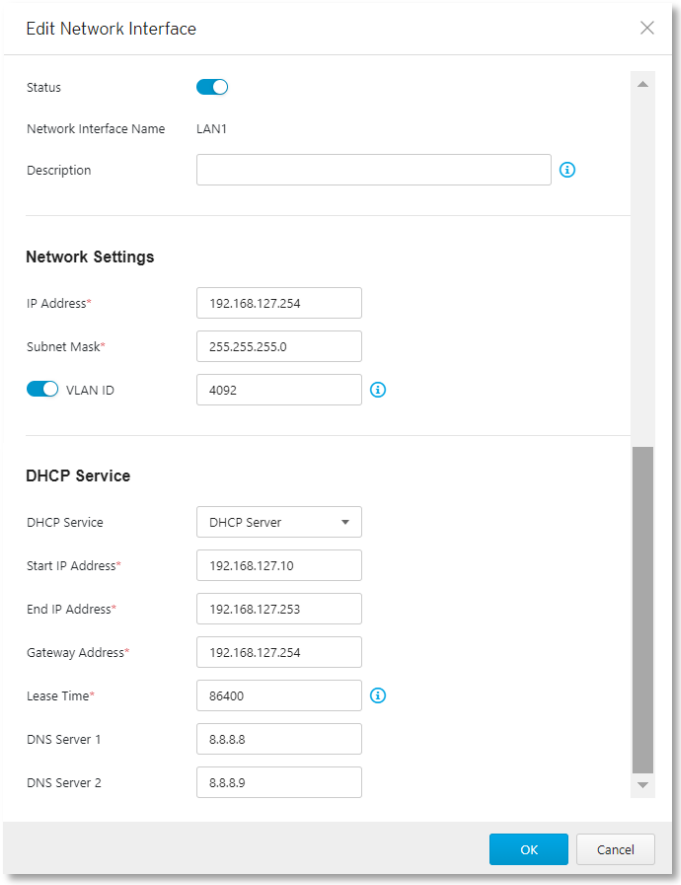
Procedure

1. Go to [Network] > [Network Interface].
   The [Network Interface] tab will appear.



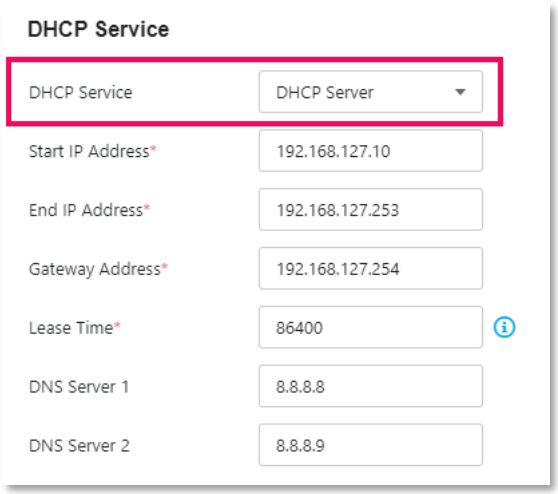
Interface	Status	Connection Type	IP Address	Mask	VLAN ID	Description
WAN1	On	Static IP	10.24.7.41	255.255.0.0	-	test
LAN1	On	DHCP Server	192.168.127.254	255.255.255.0	4092	-
LAN2	Off	DHCP Service Disabled	0.0.0.0	0.0.0.0	-	-
DMZ	Off	DHCP Service Disabled	0.0.0.0	0.0.0.0	-	-

2. Click an LAN interface.
   The [Edit Network Interface] tab will appear.



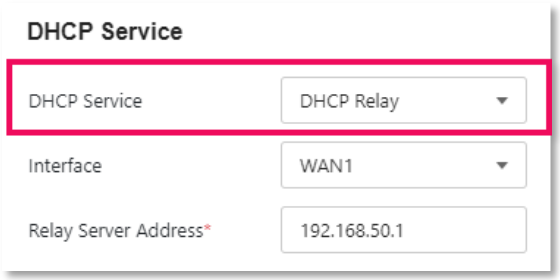
3. Use the toggle to enable or disable the network interface.
4. Input a descriptive name for the network interface.
5. In the [Network Setting] section, configure the network settings for the interface:
   a. Input an IP address.
   b. Input a subnet mask.
   c. (Optional) Use the toggle to enable or disable VLAN ID. If VNLAN ID is enabled, input the VLAN ID.
6. In the [DHCP] section, configure the DHCP settings for the interface. Possible choices are:
   a. **Disabled**. No DHCP service will be provided at this interface.
   b. **DHCP Server**. This interface will provide DHCP service to the devices that connect to the interface. Once this is selected, you need to provide the following information:

- Start IP address of the DHCP service
- End IP address of the DHCP service
- Gateway IP address that will be assigned to the clients
- Lease time - The amount of time in seconds that a client device can use the IP address settings assigned by the DHCP server
- DNS server IP addresses that will be assigned to the clients



c. **DHCP Relay**. This interface will relay the traffic from the clients to a relayed server for DHCP service. Once this is selected, you need to provide the following information:

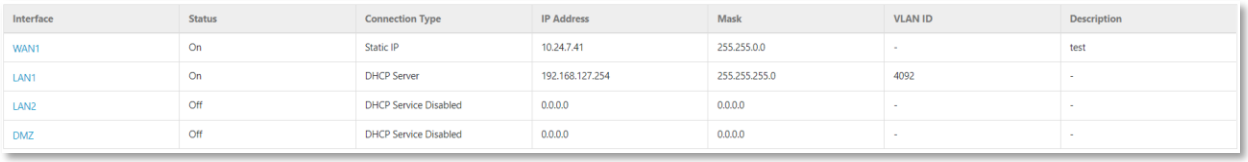
- Relay Server Address: The IP address of the server that will provide DHCP service



Configuring DMZ Network Interface

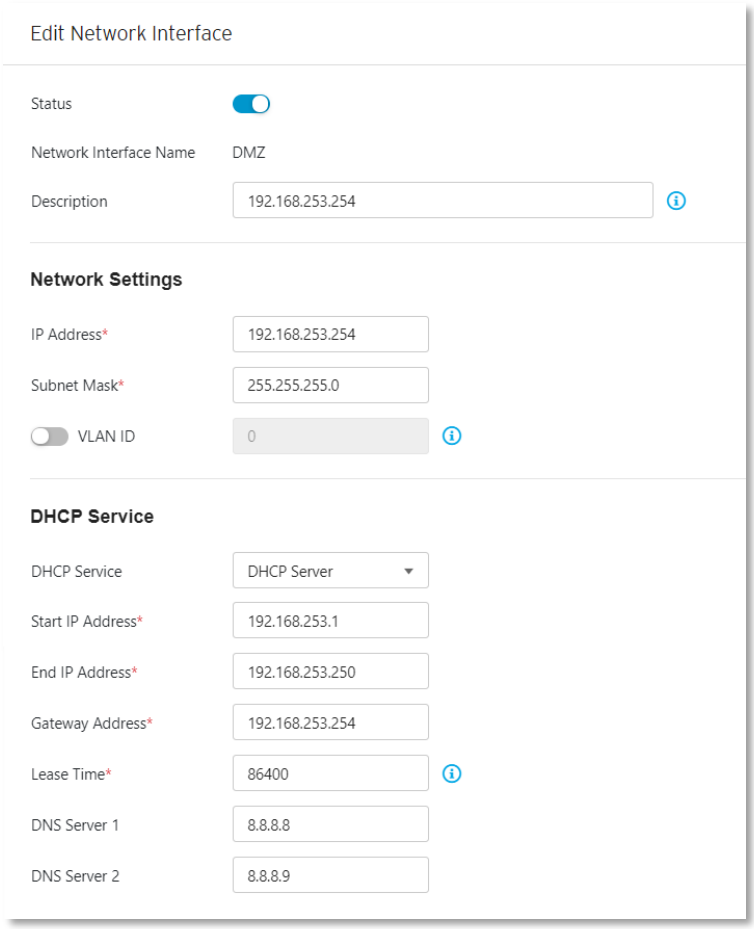
Procedure

1. Go to [Network] > [Network Interface].
   The [Network Interface] tab will appear.



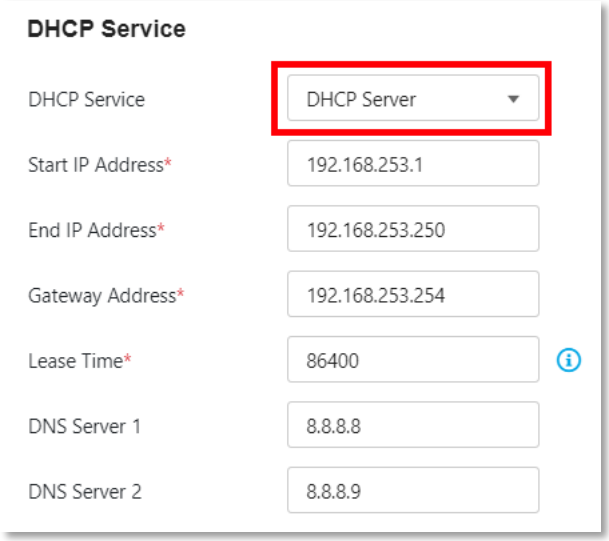
Interface	Status	Connection Type	IP Address	Mask	VLAN ID	Description
WAN1	On	Static IP	10.24.7.41	255.255.0.0	-	test
LAN1	On	DHCP Server	192.168.127.254	255.255.255.0	4092	-
LAN2	Off	DHCP Service Disabled	0.0.0.0	0.0.0.0	-	-
DMZ	Off	DHCP Service Disabled	0.0.0.0	0.0.0.0	-	-

2. Click an DMZ interface.
   The [Edit Network Interface] tab will appear.

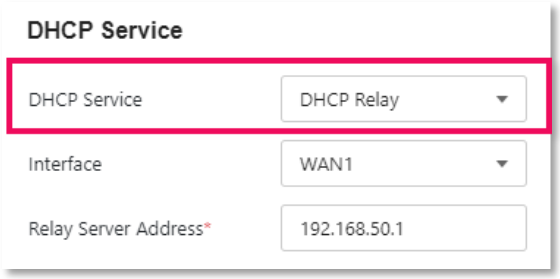


3. Use the toggle to enable or disable the network interface.
4. Input a descriptive name for the network interface.
5. In the [Network Setting] section, configure the network settings for the interface:
   a. Input an IP address.
   b. Input a subnet mask.
   c. (Optional) Use the toggle to enable or disable VLAN ID. If VNLAN ID is enabled, input the VLAN ID.
6. In the [DHCP] section, configure the DHCP settings for the interface. Possible choices are:
   a. **Disabled**. No DHCP service will be provided at this interface.

b. **DHCP Server**. This interface will provide DHCP service to the devices that connect to the interface. Once this is selected, you need to provide the following information:
   - Start IP address of the DHCP service
   - End IP address of the DHCP service
   - Gateway IP address that will be assigned to the clients
   - Lease time - The amount of time in seconds that a client device can use the IP address settings assigned by the DHCP server
   - DNS server IP addresses that will be assigned to the clients



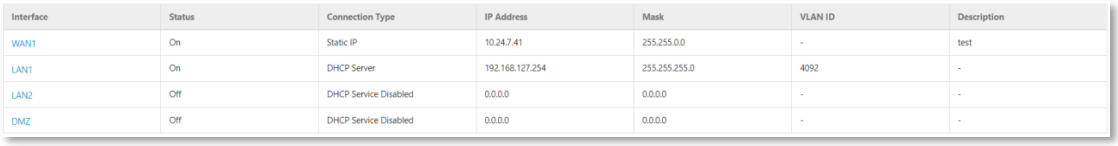
c. **DHCP Relay**. This interface will relay the traffic from the clients to a relayed server for DHCP service. Once this is selected, you need to provide the following information:
   - Relay Server Address: The IP address of the server that will provide DHCP service



Configuring WAN Network Interface

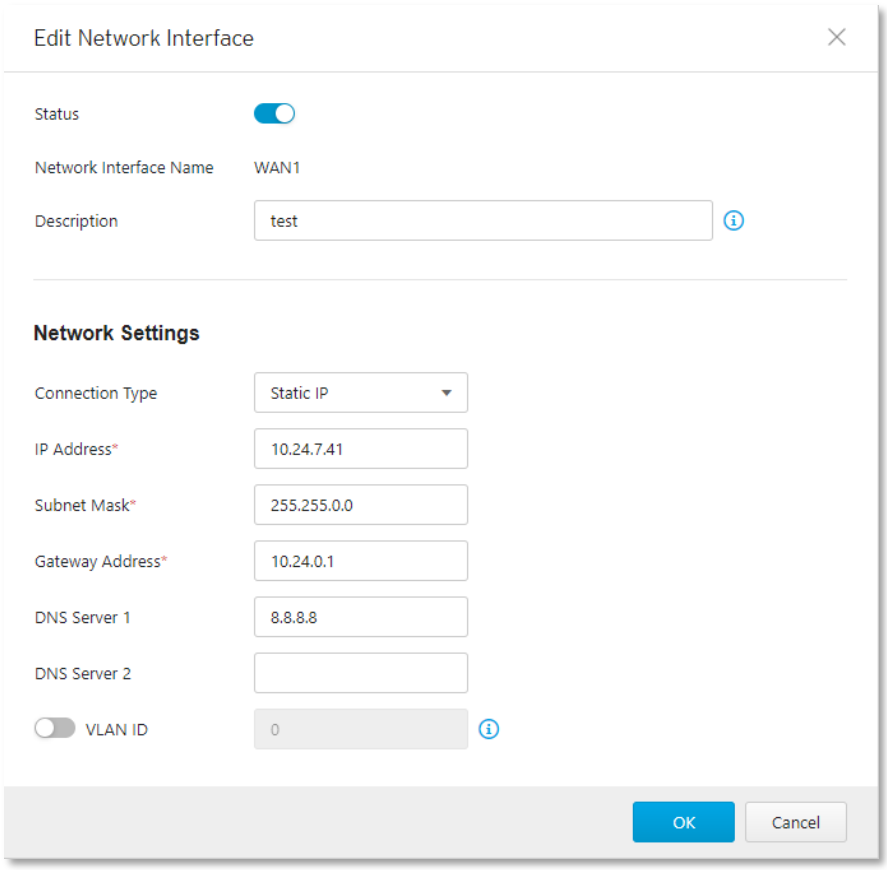
Procedure

1. Go to [Network] > [Network Interface].
   The [Network Interface] tab will appear.



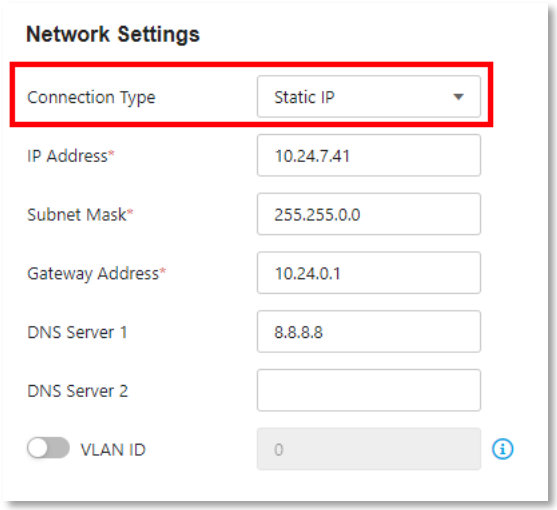
Interface	Status	Connection Type	IP Address	Mask	VLAN ID	Description
WAN1	On	Static IP	10.24.7.41	255.255.0.0	-	test
LAN1	On	DHCP Server	192.168.127.254	255.255.255.0	4092	-
LAN2	Off	DHCP Service Disabled	0.0.0.0	0.0.0.0	-	-
DMZ	Off	DHCP Service Disabled	0.0.0.0	0.0.0.0	-	-

2. Click a WAN interface.
   The [Edit Network Interface] tab will appear.



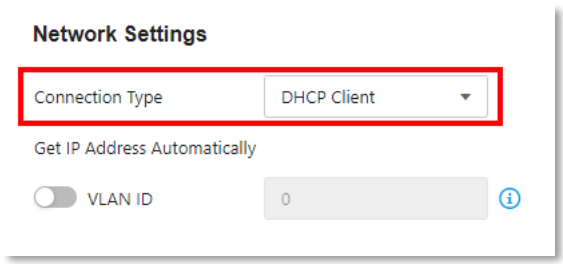
3. Use the toggle to enable or disable the network interface.
4. Input a descriptive name for the network interface.
5. In the [Network Settings] section, choose a [Connection Type] for the interface. Possible choices are:
   a. **Static IP**: This device will use a static IP address for this interface. Once selected, you need to provide the following information:

- IP Address: IP address of the interface
- Subnet Mask: Subnet mask of the interface
- Gateway Address: Gateway IP address of the interface
- DNS server: DNS server IP address of the interface
- (Optional) Use the toggle to enable VLAN ID. Once enabled, input the VLAN ID for the interface.



b. **DHCP Client**: The interface will function as a DHCP client to get an IP address from a DHCP server. Once selected, you need to provide the following information:

- (Optional) Use the toggle to enable VLAN ID. Once enabled, input the VLAN ID for the interface.



Operation Mode

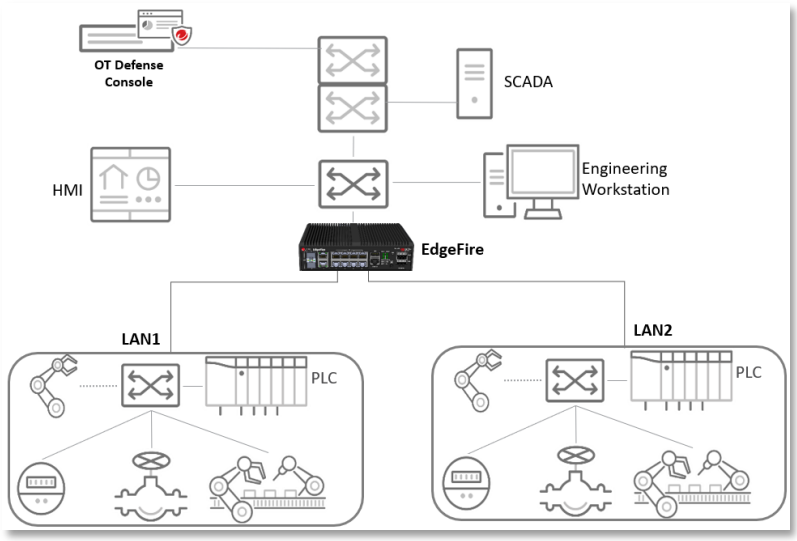
EdgeFire™ offers two operation modes:

- **Gateway Mode**
- **Bridge Mode**

The following sections describe these two modes in detail.

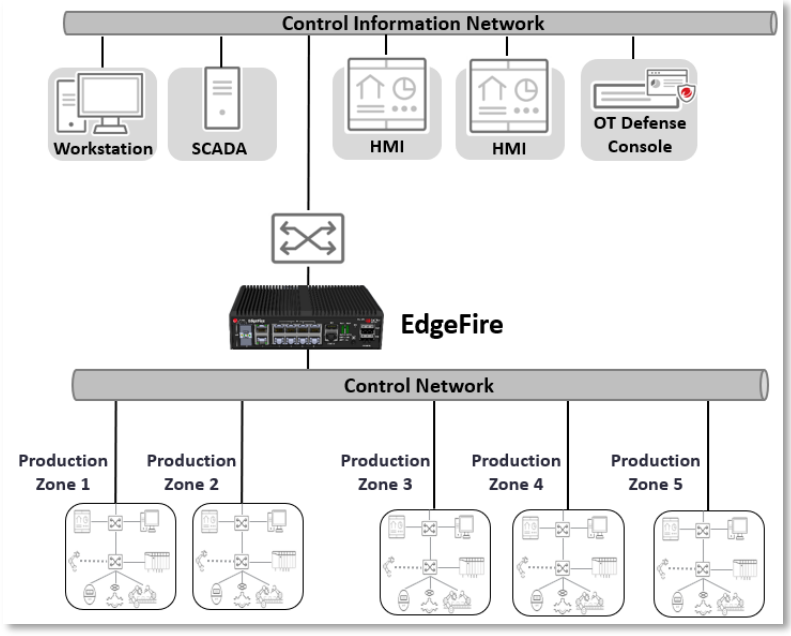
Gateway Mode

EdgeFire operates as a gateway with NAT feature between multiple different network segments, actively analyzing, filtering, and taking actions on all traffic that passes through it.



Bridge Mode

EdgeFire sits in the direct communication path between source and destination, actively analyzing, filtering, and taking actions on all traffic that passes through it.



Use the [Operation Mode] tab to configure or view the following:

- Gateway mode and bridge mode of the device
- Network settings of bridge mode of the device (When the device is in Gateway mode)
  - IP Address
  - Subnet Mask
  - Gateway Address
  - DNS
  - VLAN ID
  - STP (Spanning Tree Protocol)

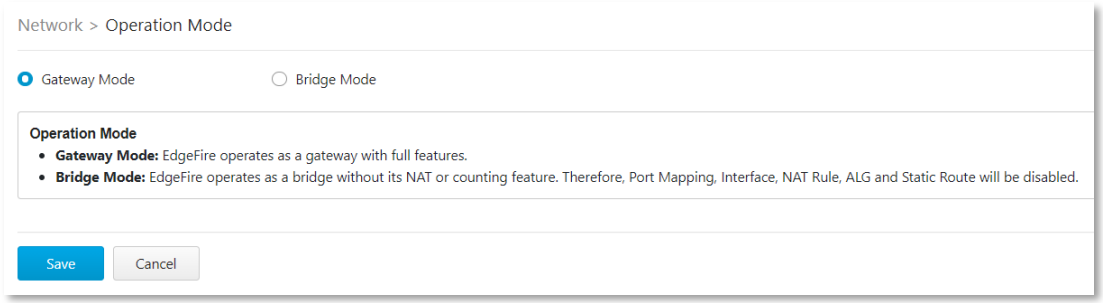
- LAN1 Network settings of gateway mode of the device
  (When the device is in Bridge mode, it is for viewing only)
  - IP Address
  - Subnet Mask

- LAN1 DHCP service settings of gateway mode of the device
  (When the device is in Bridge mode, it is for viewing only)
  - DHCP Service
  - Start IP Address
  - End IP Address
  - Gateway Address
  - Lease Time

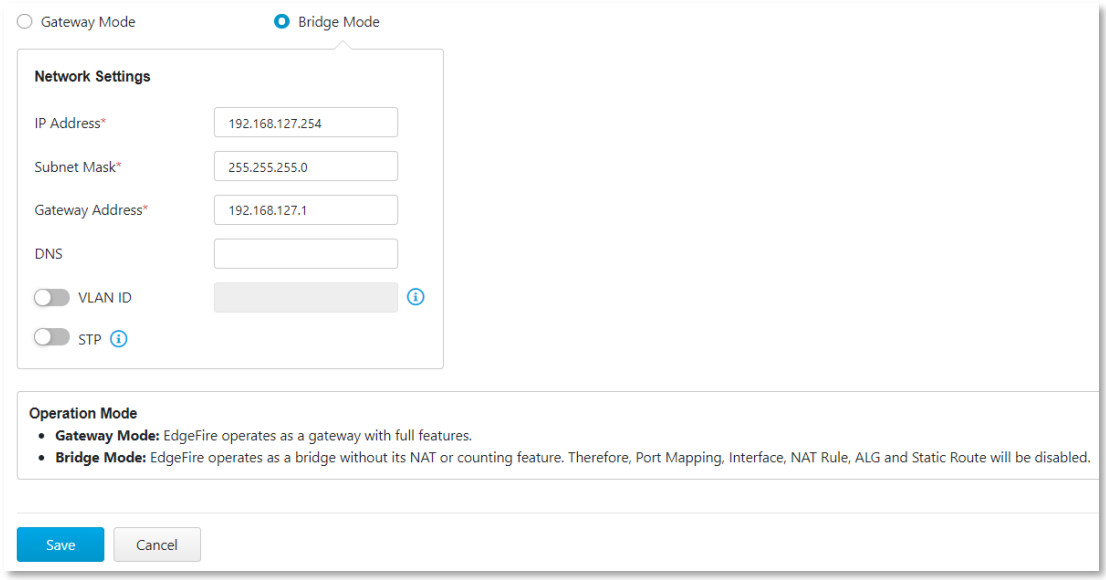
Switch from Gateway Mode to Bridge Mode

Procedure

1. Go to [Network] > [Operation Mode].
   The [Operation Mode] tab will appear.



2. Click the radio button [Bridge Mode].
   The [Network Settings] section for bridge mode will appear.



3. In the [Network Settings] section, configure the network settings for bridge mode:
   a. Input an IP address.
   b. Input a subnet mask.
   c. Input a gateway address.
   d. Input a DNS address.
   e. (Optional) Use the toggle to enable or disable VLAN ID. If VNLAN ID is enabled, input the VLAN ID.
   f. (Optional) Use the toggle to enable or disable STP (Spanning Tree Protocol).
   g. Click [Save] to save the settings.

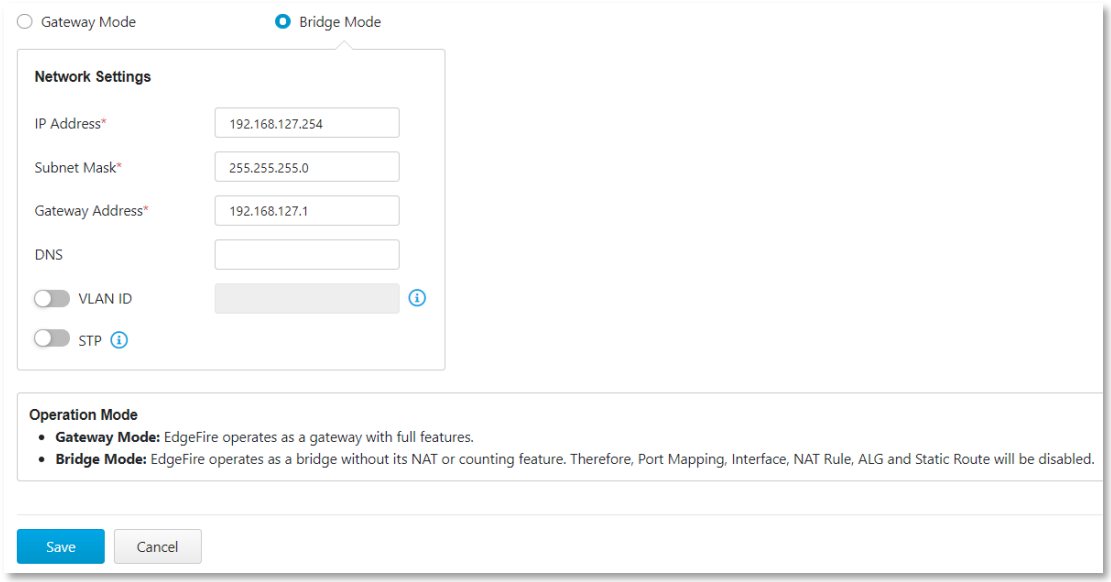
4. Click [Save] to save the settings.

Note:	When EdgeFire is switched from gateway mode to Bridge mode, the features of Port Mapping, Network Interface, NAT Rules, ALG, and Static Route will not operate and not be configurable.
Note:	The configuration of the policy enforcement rule is not compatible between Gateway mode and Bridge mode. Therefore, the policy enforcement rule needs to be reconfigured after switching from Gateway mode to Bridge mode.

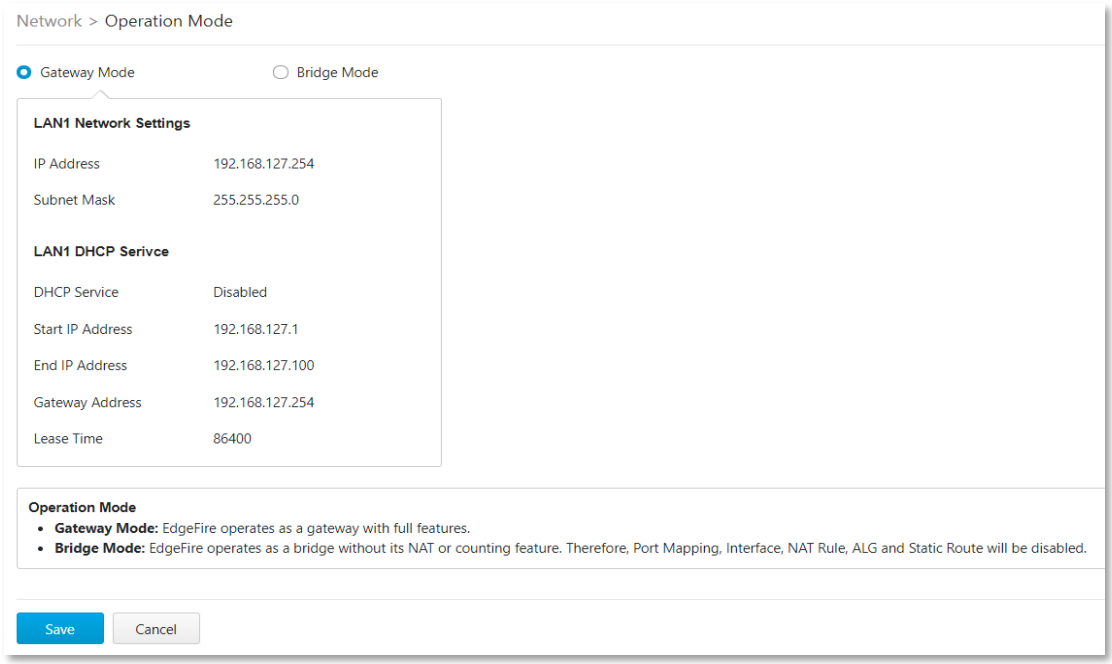
Switch from Bridge Mode to Gateway Mode

Procedure

1. Go to [Network] > [Operation Mode].
   The [Operation Mode] tab will appear.



2. Click the radio button [Gateway Mode].
   The [Network Settings] tab for bridge mode will appear.



3. Click [Save] to save the settings.

Note: In bridge mode, the LAN1 network settings / LAN1 DHCP Service for Gateway mode is for viewing only.

Note: The configuration of the policy enforcement rule is not compatible between Gateway mode and Bridge mode. Therefore, the policy enforcement rule needs to be reconfigured after switching from Bridge mode to Gateway mode.

The NAT Tab

Use the NAT (Network Address Translation) tab to view and configure NAT rules, and enable or disable application layer gateways.

NAT Rule

Use the NAT tab to configure the following:

- 1 to 1 network address translation for incoming traffic on the specific interface
- Multiple 1 to 1 network address translation for incoming traffic on the specific interface
- Port forwarding address translation for incoming traffic on the specific interface

The following table describes the tasks you can perform on the [NAT Rule] tab.

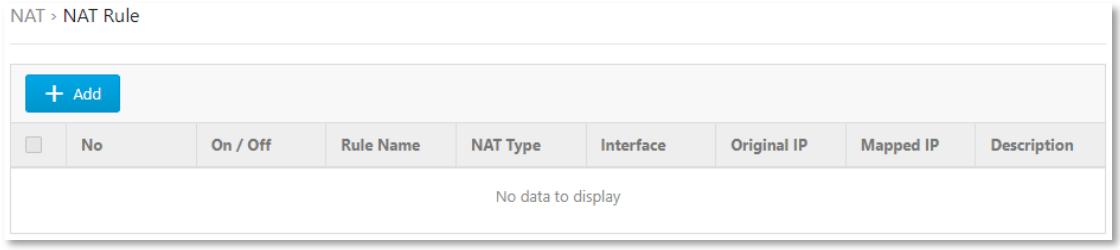
Task	Description
Add an NAT rule	Click [Add] to create a new NAT rule.
Edit an NAT rule	Click on an NAT rule name to edit the rule settings.
Delete an NAT rule	Select one or more NAT rules and click [Delete].
Copy an NAT rule	Select one NAT rule and click [Copy].

Configuring a 1 to 1 NAT Rule

A 1 to 1 NAT rule allows you to map a destination IP address in incoming traffic to another IP address located in the specific network.

Procedure

1. Go to [NAT] > [NAT Rule].
   The [NAT] tab will appear.



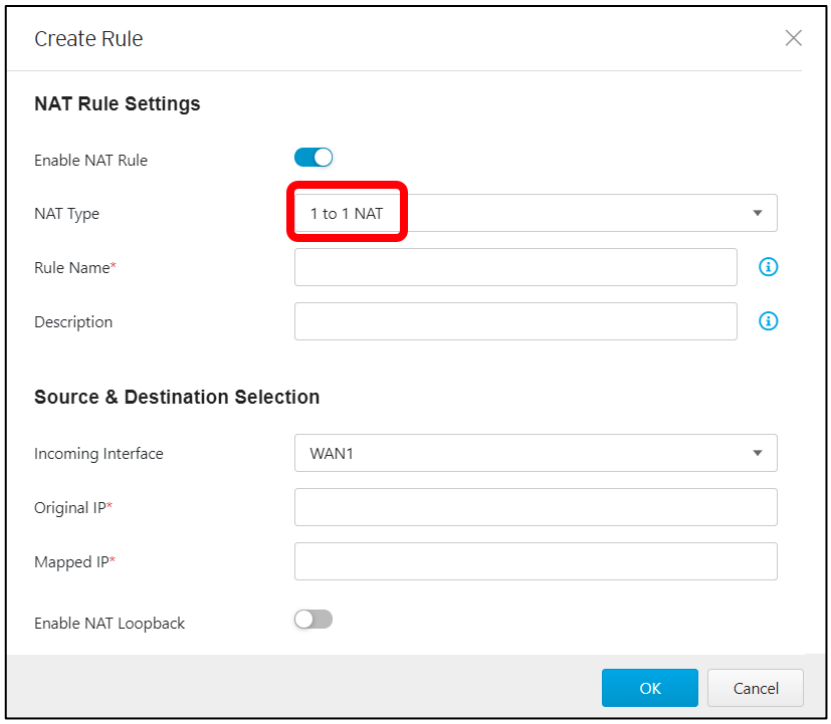
2. Do one of the following:
   - Click [Add] to create an NAT rule.
   - Click an NAT rule name to edit its settings.
3. Configuring an NAT rule:
   a. Use the toggle to enable or disable the rule.
   b. Under the [NAT Type] drop down menu, select [1 to 1 NAT].
   c. Input a descriptive name for the rule.
   d. Input a description for the rule.

e. Under the [Incoming Interface] drop-down menu, select the interface that will process the incoming traffic for this rule.

f. In the [Original IP] field, input the destination IP address that will be translated. When the device receives an incoming packet going through the interface specified in the [Incoming Interface], the destination IP address in the packet that matches this [Original IP] field will be mapped another IP address.

g. In the [Mapped IP] field, input the IP address you will map to. This IP address is usually a private IP address in your local network.

h. (Optional) Use the toggle to enable NAT loopback.



4. Click [OK] to accept the rule.
5. Click [Save] to save the settings.

Note: Starting from firmware 1.1, [Network Interface] now can support WAN1, LAN1, LAN2 and DMZ interface when [NAT Type] is selected to "1 to 1 NAT".

Configuring a Multiple 1 to 1 NAT Rule

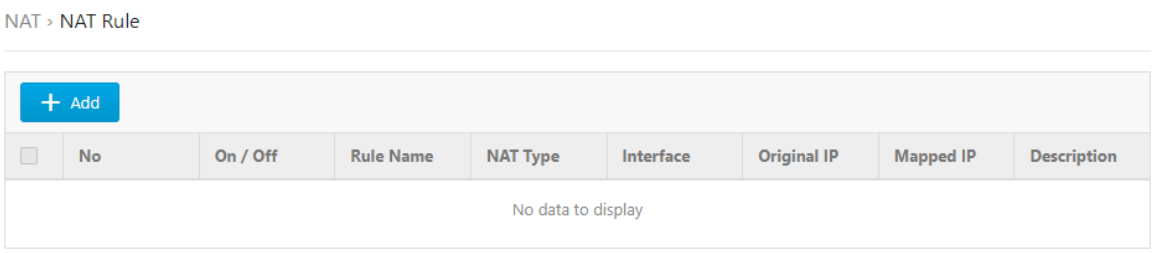
A multiple 1 to 1 NAT rule allows you to map destination IP addresses in incoming traffic to different IP addresses located in the specific network. The following table shows an example.

Original Destination IP Addresses	... Are Mapped to These Destination IP Addresses
172.1.1.5	192.168.100.5
172.1.1.20	192.168.100.20
172.1.1.50	192.168.100.50
172.1.1.69	192.168.100.69

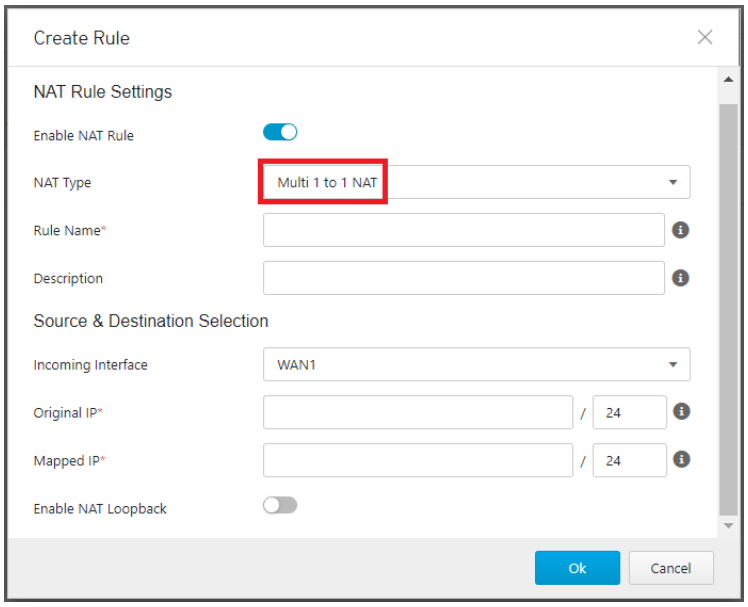
Procedure

1. Go to [NAT] > [NAT Rule].

The [NAT] tab will appear.



2. Do one of the following:
   - Click [Add] to create an NAT rule.
   - Click an NAT rule name to edit its settings.
3. Configuring the NAT rule:
   a. Use the toggle to enable or disable the rule.
   b. Under the [NAT Type] drop-down menu, select [Multi 1 to 1 NAT].
   c. Input a descriptive name for the rule.
   d. Input a description for the rule.
   e. Under the [Incoming Interface] drop-down menu, select the interface that will process the incoming traffic for this rule.
   f. In the [Original IP] fields, input using the CIDR (Classless Inter-Domain Routing) format to present the IP addresses that will be translated; for example, 172.1.1.0 / 24. When the device receives an incoming packet going through the interface specified in the [Incoming Interface], the destination IP address in the packet that matches this [Original IP] field will be mapped to another IP address. These IP addresses are usually the ones assigned by an ISP (Internet Service Provider).
   g. In the [Mapped IP] field, input using the CIDR (Classless Inter-Domain Routing) format to present the IP addresses that will be mapped to; for example, 192.168.100.0 / 24
   h. (Optional) Use the toggle to enable NAT loopback.



4. Click [OK] to accept the rule.
5. Click [Save] to save the settings.

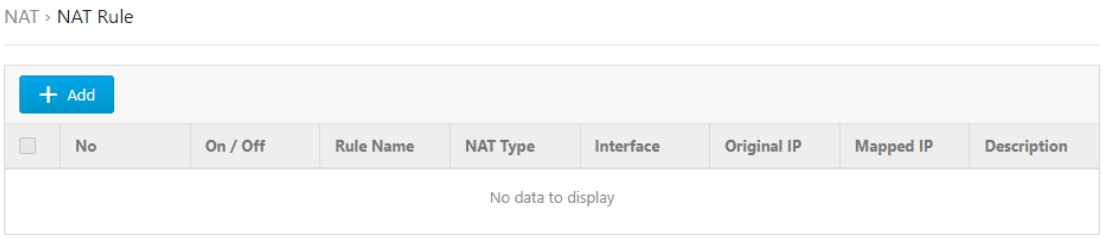
Note: Starting from firmware 1.1, [Network Interface] now can support WAN1, LAN1, LAN2 and DMZ interface when [NAT Type] is selected to "Multi 1 to 1 NAT".

Configuring Port Forwarding

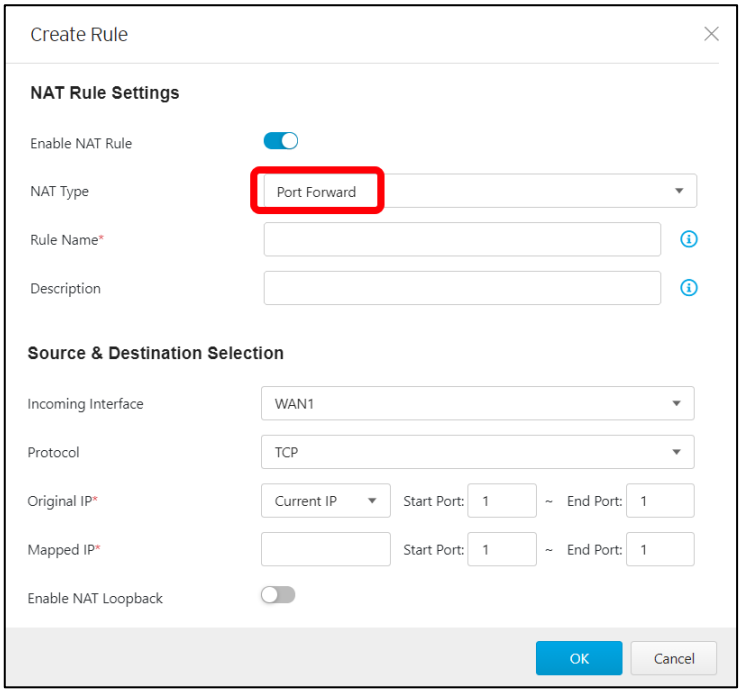
A port forwarding rule allows you to map a host IP address in incoming traffic to another IP address located in your local network.

Procedure

1. Go to [NAT] > [NAT Rule].
   The [NAT] tab will appear.



2. Do one of the following:
   - Click [Add] to create an NAT rule.
   - Click an NAT rule name to edit its settings.
3. Configuring an NAT rule:
   a. Use the toggle to enable or disable the rule.
   b. Under the [NAT Type] drop down menu, select [Port Forward].
   c. Input a descriptive name for the rule.
   d. Input a description for the rule.
   e. Under the [Incoming Interface] drop-down menu, select the interface that will process the incoming traffic for this rule.
   f. Under the [Protocol] drop-down menu, select the protocol that will process the incoming traffic for this rule.
   g. In the [Original IP] field, input the start port and the end port that will be translated. When the device receives an incoming packet going through the interface specified in the [Incoming Interface], the destination IP address in the packet that matches this [Original IP] field will be mapped another IP and port address.
   h. In the [Mapped IP] field, input the IP address and port range you will map to. This IP address is usually a private IP address in your local network.
   i. (Optional) Use the toggle to enable NAT loopback.



4. Click [OK] to accept the rule.
5. Click [Save] to save the settings.

ALG

An ALG or Application Layer Gateway allows client applications to communicate with server applications when the server ports are dynamically opened to client applications. These ports are usually dynamically assigned in the application protocol. An ALG understands application protocols, recognizes application specific commands, and helps open the ports dynamically on the device for communication. Without ALG, client applications like FTP would not be able to transfer files when the FTP client is in an NAT network.

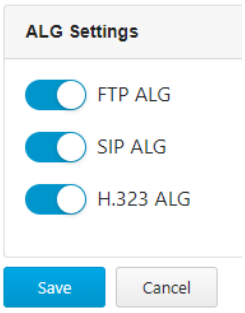
Use the ALG (Application Layer Gateway) tab to configure the following:

- FTP ALG
- SIP ALG
- H.323 ALG

Configuring ALG Settings

Procedure

1. Go to [NAT] > [ALG].
   The [ALG Settings] tab will appear.
2. Use the toggle to enable or disable FTP, SIP and H.323 ALG.
3. Click [Save].


ALG Settings
FTP ALG
SIP ALG
H.323 ALG
Save
Cancel

The Routing Tab

Use the [Routing] tab to view and configure static routes on the device.

Static Route

Static routes are generally used when no appropriate dynamic route is present, or when you want the traffic to follow the static route you specify as opposed to following the dynamic route that is automatically learned and generated by the device.

Use the [Static Route] tab to view a list of current static routes on the device and configure their settings.

The following table describes the tasks you can perform on the [Static Route] tab.

Task	Description
Add a static route	Click [Add] to create a new static route.
Edit a static route	Click a static route name to edit the rule settings.
Delete a static route	Select one or more static routes and click [Delete].
Copy a static route	Select one static route and click [Copy].

Configuring a Static Route

Procedure

1. Go to [Routing] > [Static Route].
2. Do one of the following:
   - Click [Add] to create a static route.
   - Click a static route name to edit settings.
3. Configuring the static route:
   a. Use the toggle to enable or disable the route.
   b. Input a descriptive name for the rule.
   c. Input a description for the rule.
   d. Configure the destination:
      - In the [Destination Address] field, input IP address.
      - In the [Subnet Mask] field, input the subnet mask.

Tip: If the destination is a single IP address, then input 255.255.255.255 in the [Subnet Mask] field. If the destination is a subnet of IP addresses, then input, for example, 255.255.255.0, in the [Subnet Mask] to present the destination IP address range.

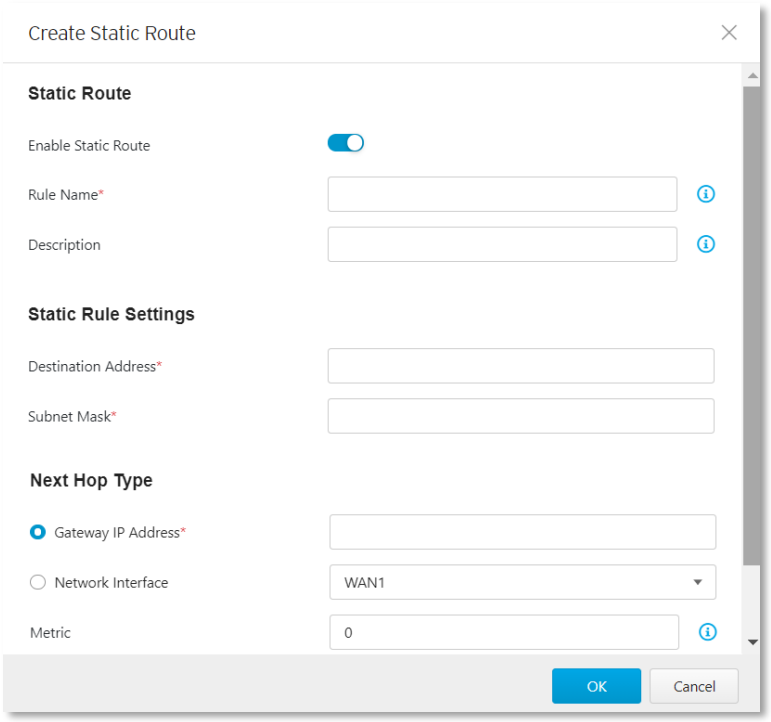
   e. Configure the next hop:
      - If the next hop is a gateway, then under [Next Hop Type], select [Gateway IP Address] and input the IP address. The gateway needs to be on the same network as the interface.
      - If the next hop is a network interface on the device, then under [Next Hop Type], select [Network Interface], and select a network interface from the drop-down

menu. [Note] For this firmware of the device, the available network interface to be selected is fixed to [WAN 1].

Tip: For more information about network interface, see *Network Interface on page 18*.

f. Input the metric value:

- In the [Metric] field, input a metric value for this static route. The device determines which static route to use based on the metric value, with the lower number representing higher priority.



g. Click [OK] to accept the settings.

h. Click [Save] to save the rule.

The Object Profiles Tab

Object profiles simplify policy management by storing configurations that can be used by EdgeFire™.

You can configure the following types of object profiles in this device:

- **IP Object Profile**: Contains the IP addresses that you can apply to a policy rule.
- **Service Object Profile**: Contains the service definitions that you can apply to a policy rule. TCP port range, UDP port range, ICMP, and custom protocol number are defined here.
- **Protocol Filter Profile**: Contains more sophisticated and advanced protocol settings that you can apply to a policy rule. Details of ICS (Industrial Control System) protocols are defined here.

The following table describes the tasks you can perform when you view a list of the profiles:

Task	Description
Add a profile	Click [Add] to create a new profile.
Edit a profile	Click a profile name to edit the settings.
Delete a profile	Select one or more profiles and click [Delete].
Copy a profile	Select one profile and click [Copy].

Configuring IP Object Profile

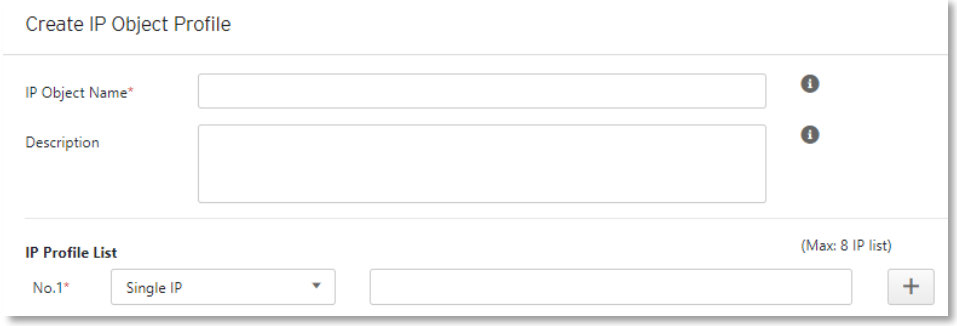
You can configure the IP address in an IP object profile, which can be used by other policy rules.

The types of IP address you can assign are:

- Single IP addresses
- IP ranges
- IP subnets

Procedure

1. Go to [Object Profile] > [IP Object Profile].
2. Do one of the following:
   - Click [Add] to create a profile.
   - Click a profile name to edit settings.



3. Type a descriptive name for the IP Object Name field.

4. Type a description.
5. Under the [IP Object List], specify an IP address, an IP range, or an IP subnet.
6. If you want to add another entry, click the + button.
7. Click [OK].

Configuring Service Object Profile

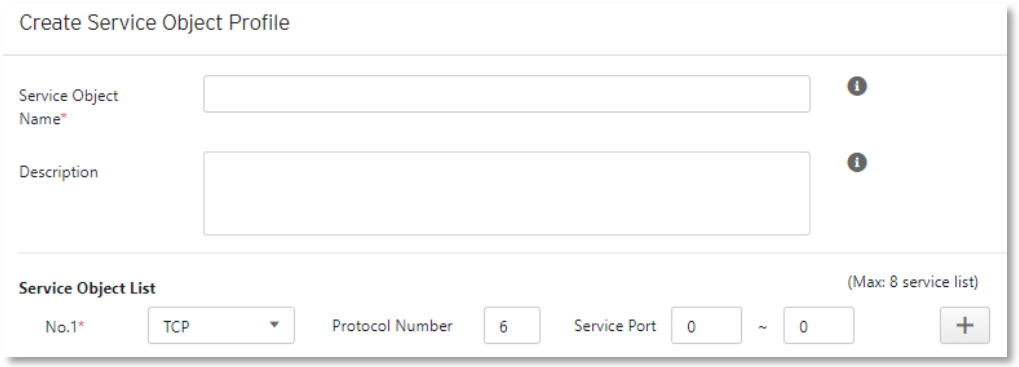
In a service object profile, you can define the following:

- TCP protocol port range
- UDP protocol port range
- ICMP protocol type and code
- Custom protocol with specified protocol number

Note: The term 'protocol number' refers to the protocol number defined in the internet protocol suite.

Procedure

1. Go to [Object Profile] > [Service Object Profile].
2. Do one of the following:
   - Click [Add] to create a profile.
   - Click a profile name to edit settings.



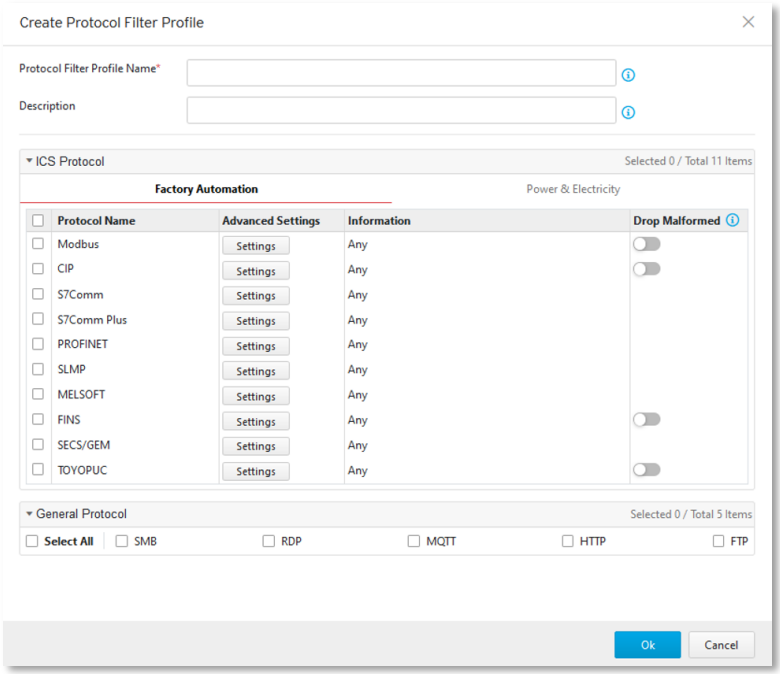
3. Type a descriptive name for the Service Object Profile.
4. Type a description.
5. Provide one of the following definitions:
   - TCP protocol and its port range
   - UDP protocol and its port range
   - ICMP protocol and its type and code
   - Custom protocol with specified protocol number
6. If you want to add another entry, click the + button.
7. Click [OK].

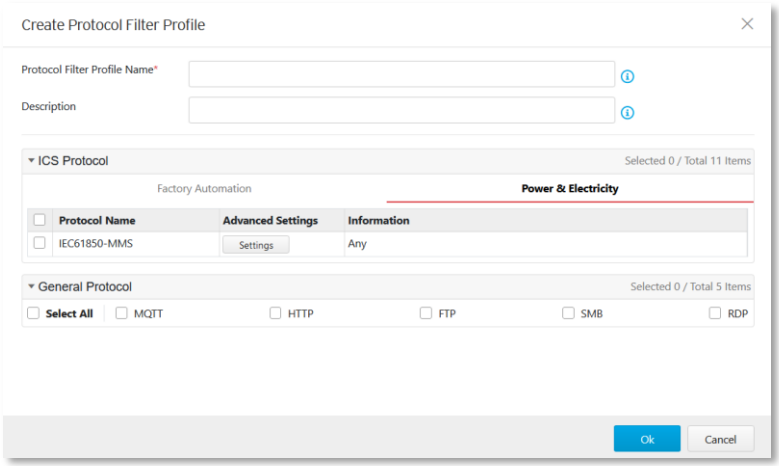
Configuring Protocol Filter Profile

A protocol filter profile contains more sophisticated and advanced protocol settings that you can apply to a policy rule.

The following can be configured in a protocol filter profile:

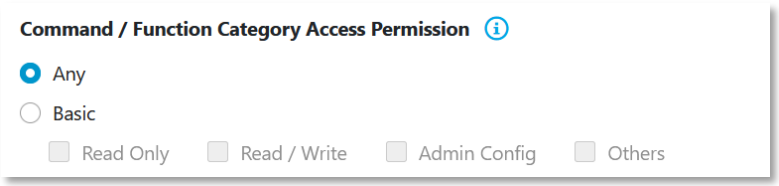
- Details of ICS protocols, including:
  - Modbus
  - CIP
  - S7COMM
  - S7COMM PLUS
  - PROFINET
  - SLMP
  - MELSOFT
  - FINS
  - SECS/GEM
  - TOYOPUC
  - IEC61850-MMS
- General Protocol, including:
  - HTTP
  - FTP
  - SMB
  - RDP
  - MQTT





Specifying Commands Allowed in an ICS Protocol

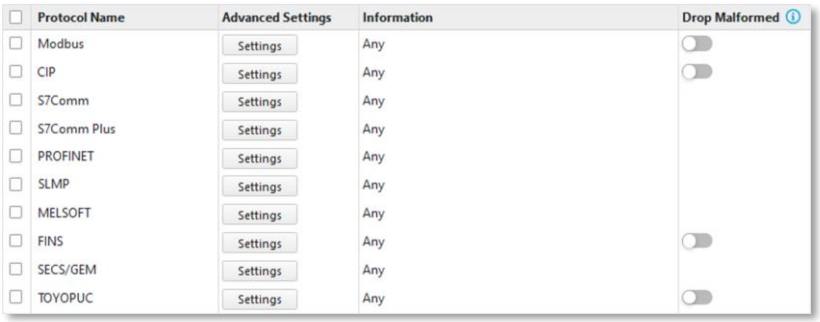
When configuring an ICS protocol, you can specify which commands will be included in the protocol profile, as the following picture shows.



Applying the Drop Malformed Option to an ICS Protocol

When configuring an ICS protocol, you can specify which OT protocols will be applied with the option [Drop Malformed] in the protocol profile, as the following picture shows.

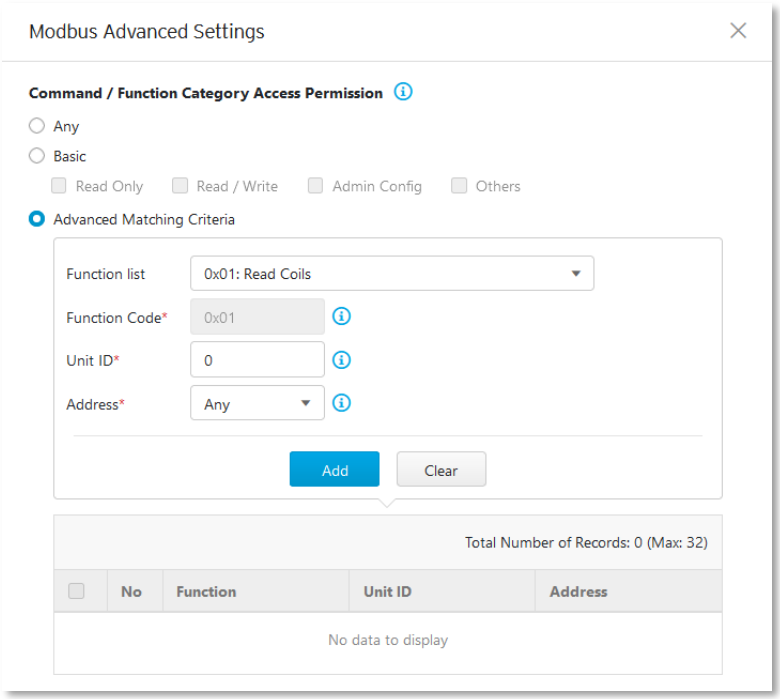
When the option [Drop Malformed] is enabled, EdgeFire will strictly check the packet format of the specified ICS protocol. If the packet format is incorrect, EdgeFire will drop the packets of the ICS protocol.



Note: In firmware 1.1, Drop Malformed supports 4 protocols (Modbus, CIP, OMRON FINS and TOYOPUC)

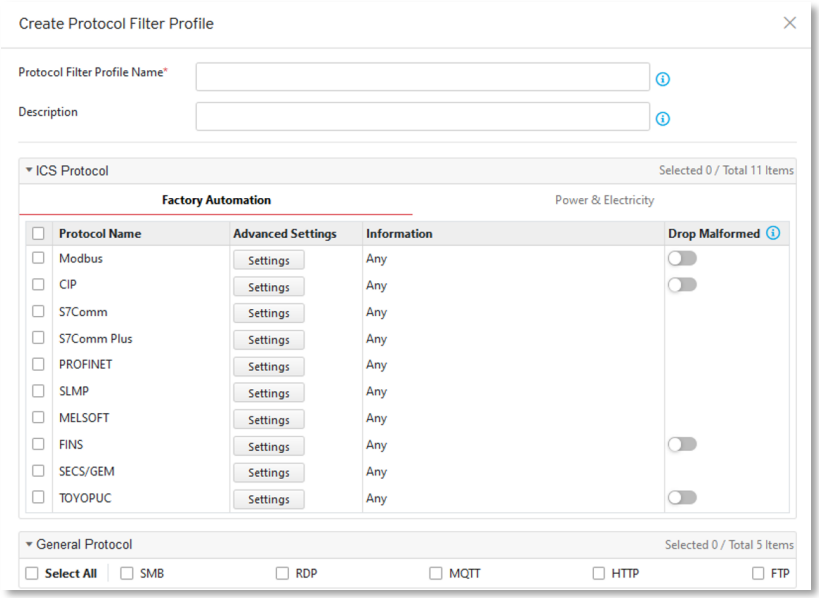
Advanced Settings for Modbus Protocol

The device features more detailed configurations for the Modbus ICS protocol. Through the [Advanced Settings] pane, you can further specify the function code/function, unit ID, and address/addresses range against which the function will operate.



Procedure

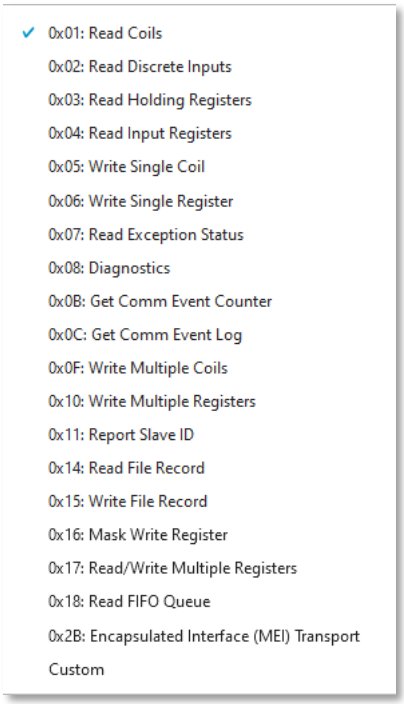
1. Go to [Object Profile] > [Protocol Filter Profile].
2. Click [Add] to add a protocol filter profile.
   The [Create Protocol Filter Profile] screen will appear.



3. Type a profile name for the protocol filter.
4. Type a description.

5. In the [ICS Protocol] pane, select the protocols you want to include in the protocol filter.

- Click [Settings] next to a protocol, and select one of the following:
  - **Any** - Specify all available commands or function access in this protocol.
  - **Basic** - Multiple selections of the following:
    - **Read Only**: Read commands sent from HMI (Human-Machine Interface) / EWS (Engineering Work Station) / SCADA (Supervisory Control and Data Acquisition) to PLC (Programmable Logic Controller).
    - **Read / Write**: Read and write commands sent from HMI/EWS/SCADA to PLC.
    - **Admin Config**: Firmware update commands sent from EWS to PLC, Project update (i.e., PLC code download) commands sent from EWS to PLC, and administration configuration relevant commands sent from EWS to PLC.
    - **Others**: Private commands, un-documented commands, or particular protocols provided by an ICS vendor.
- If you have selected [Modbus], you can optionally configure advanced settings for this protocol:
  - Click [Settings] next to [Modbus], and select [Advanced Matching Criteria].
  - At the [Function list] drop down menu, select a function of this protocol.

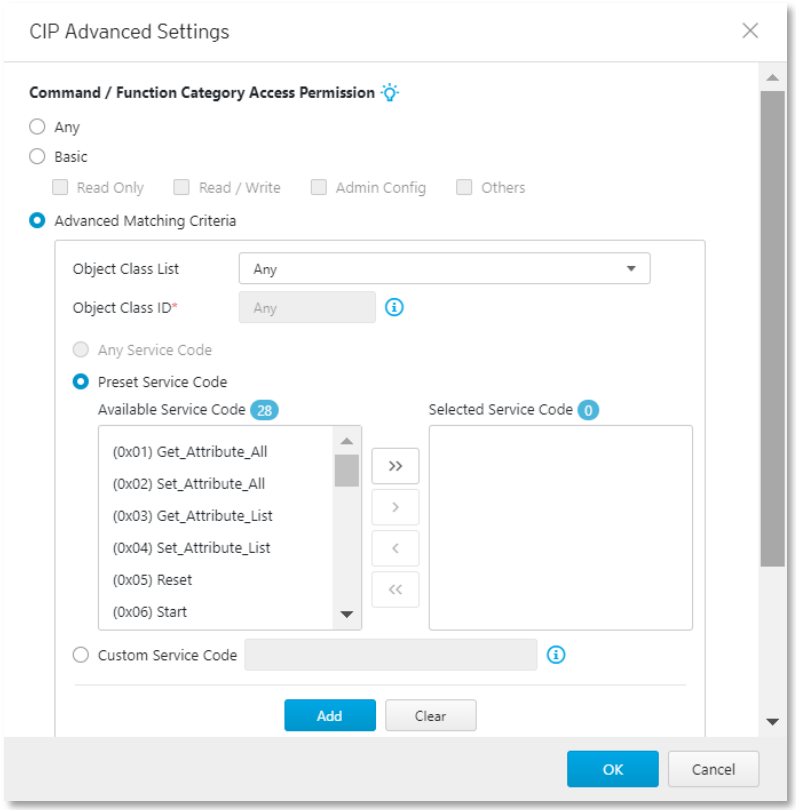


  - If you want to specify a function code by yourself, then select [Custom] and input a function code in the [Function Code] field.
  - Type a unit ID in the [Unit ID] field.
  - Type the address or range of addresses against which the function will operate.
  - Click [Add].
  - Repeat the above steps if you want to add more protocol definition entries.
  - Click [OK].

6. In the [General Protocol] pane, select the protocols you want to include in the protocol filter.
7. Click [OK].

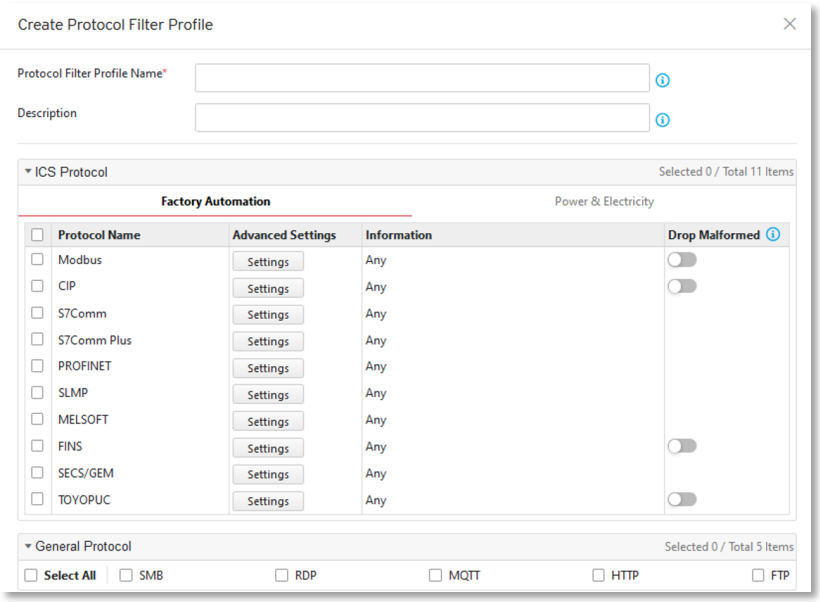
Advanced Settings for CIP Protocol

The device features more detailed configurations for the CIP ICS protocol. Through the [Advanced Settings] pane, you can further specify the Object Class ID, and Service Code against which the function will operate.



Procedure

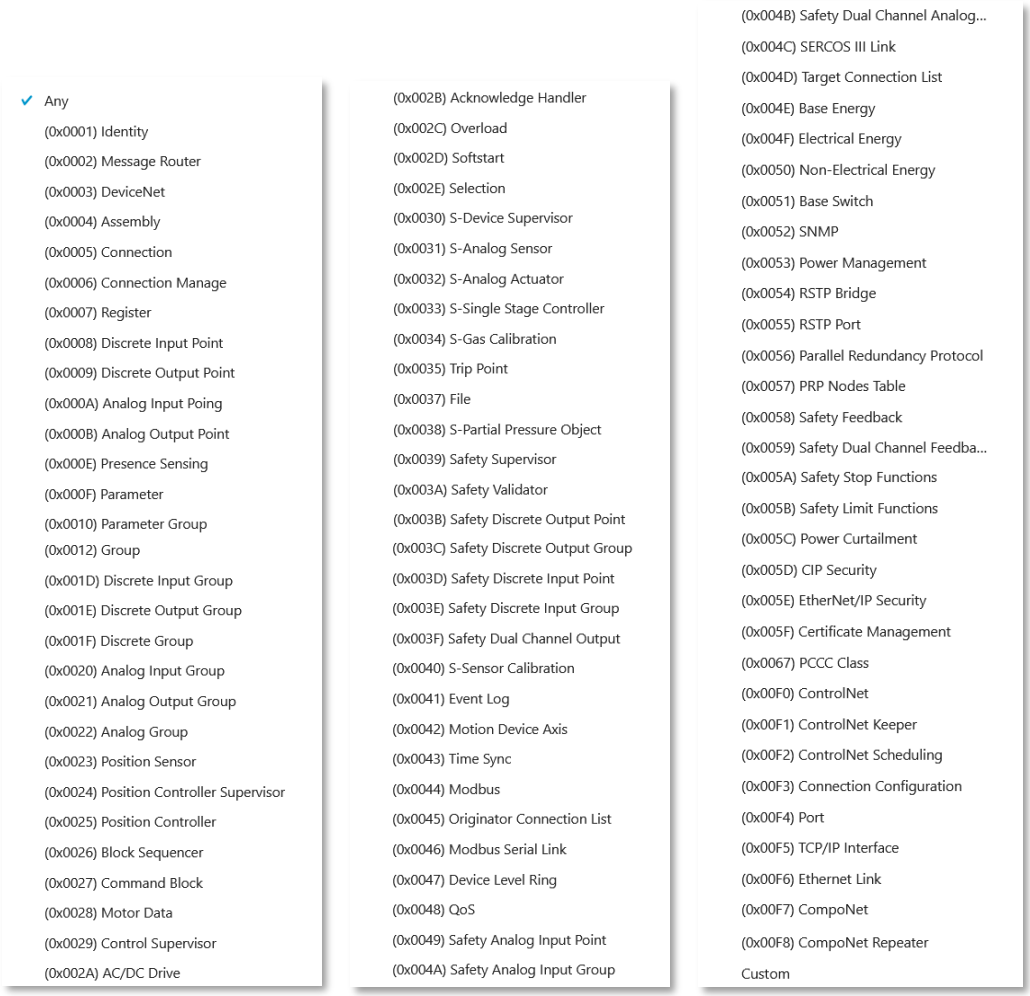
1. Go to [Object Profile] > [Protocol Filter Profile].
2. Click [Add] to add a protocol filter profile.
   The [Create Protocol Filter Profile] screen will appear.



3. Type a profile name for the protocol filter.
4. Type a description.
5. In the [ICS Protocol] pane, select the protocols you want to include in the protocol filter.

- Click [Settings] next to a protocol, and select one of the following:
  - **Any** - Specify all available commands or function access in this protocol.
  - **Basic** - Multiple selections of the following:
    - **Read Only**: Read commands sent from HMI (Human-Machine Interface) / EWS (Engineering Work Station) / SCADA (Supervisory Control and Data Acquisition) to PLC (Programmable Logic Controller).
    - **Read / Write**: Read and write commands sent from HMI/EWS/SCADA to PLC.
    - **Admin Config**: Firmware update commands sent from EWS to PLC, Project update (i.e., PLC code download) commands sent from EWS to PLC, and administration configuration relevant commands sent from EWS to PLC.
    - **Others**: Private commands, un-documented commands, or particular protocols provided by an ICS vendor.
- If you have selected [CIP], you can optionally configure advanced settings for this protocol:

- Click [Settings] next to [CIP], and select [Advanced Matching Criteria].
- At the [Object Class List] drop down menu, select a function of this protocol.

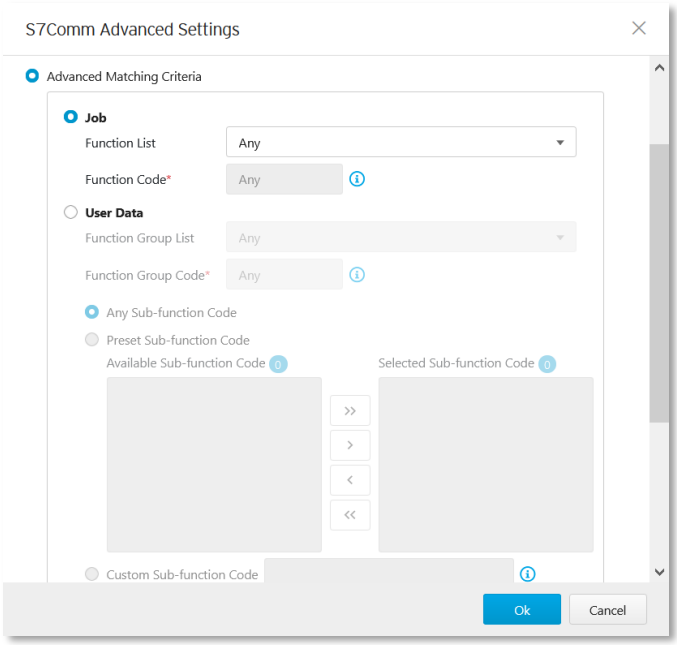


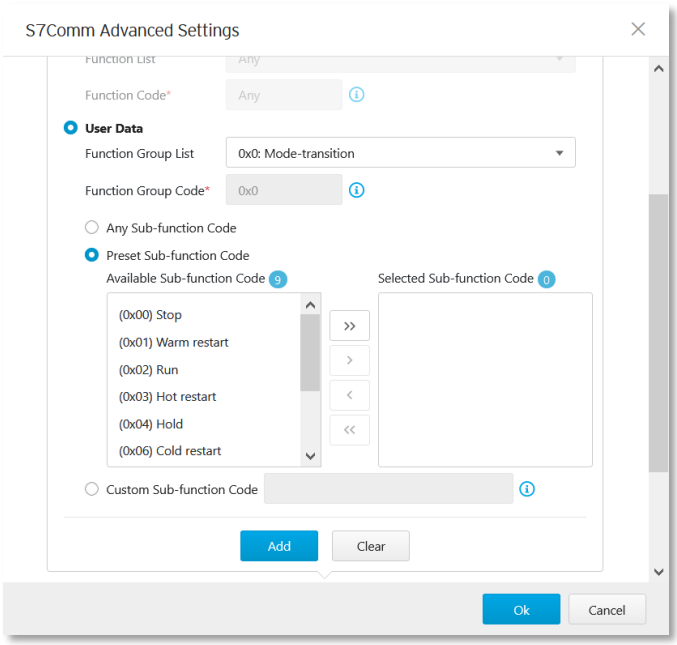
- If you want to all the service codes within the function you specified to be applied, then select [Any Service Code]
- If you want to specify one service code or multiple service codes, then select [Preset Service Code] and move the service code(s) from the [Available Service Code] field to the [Selected Service Code] field.
- If you want to specify a service code by yourself, then select [Custom Service Code] and input a service code in the [Custom Service Code] field.
- Click [Add].
- Repeat the above steps if you want to add more protocol definition entries.
- Click [OK].

6. In the [General Protocol] pane, select the protocols you want to include in the protocol filter.
7. Click [OK].

Advanced Settings for S7Comm

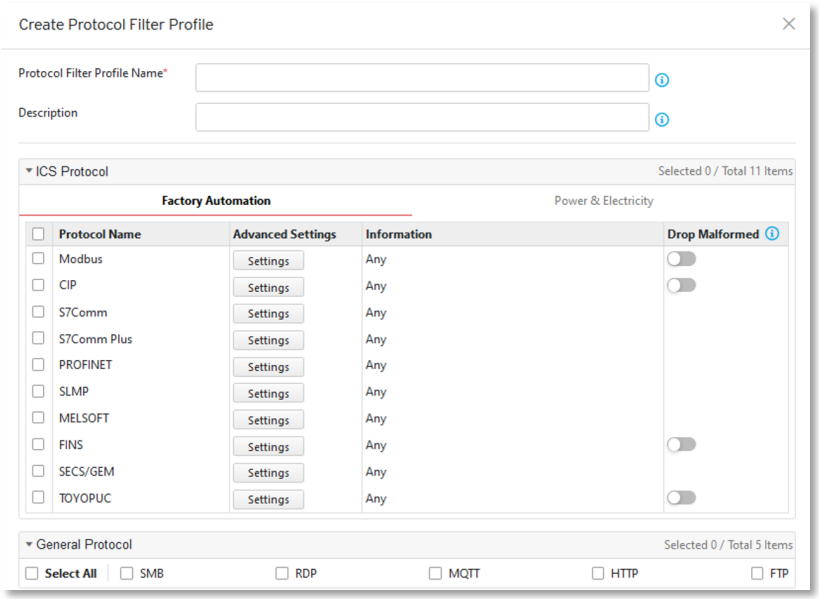
The device features more detailed configurations for the S7Comm ICS protocol. Through the [Advanced Settings] pane, you can further specify the function code, function group code, and sub-function code against which the function will operate.





Procedure

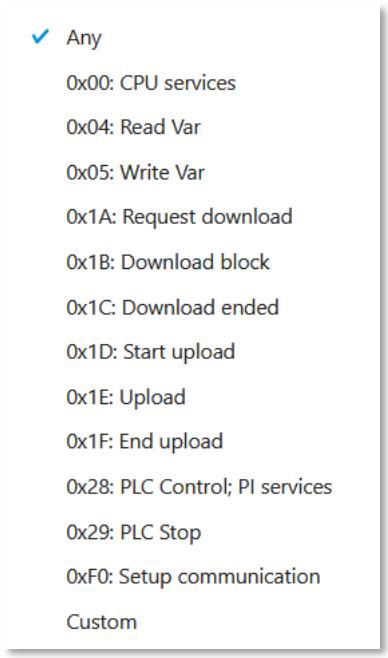
1. Go to [Object Profile] > [Protocol Filter Profile].
2. Click [Add] to add a protocol filter profile.
   The [Create Protocol Filter Profile] screen will appear.



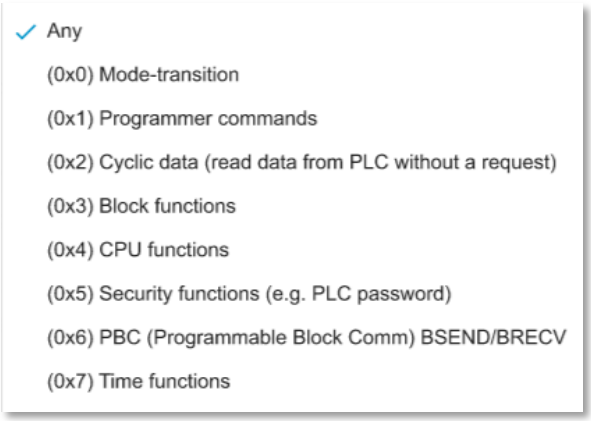
3. Type a profile name for the protocol filter.
4. Type a description.
5. In the [ICS Protocol] pane, select the protocols you want to include in the protocol filter.

- Click [Settings] next to a protocol, and select one of the following:
  - **Any** - Specify all available commands or function access in this protocol.
  - **Basic** - Multiple selections of the following:
    - **Read Only**: Read commands sent from HMI (Human-Machine Interface) / EWS (Engineering Work Station) / SCADA (Supervisory Control and Data Acquisition) to PLC (Programmable Logic Controller).
    - **Read / Write**: Read and write commands sent from HMI/EWS/SCADA to PLC.
    - **Admin Config**: Firmware update commands sent from EWS to PLC, Project update (i.e., PLC code download) commands sent from EWS to PLC, and administration configuration relevant commands sent from EWS to PLC.
    - **Others**: Private commands, un-documented commands, or particular protocols provided by an ICS vendor.
- If you have selected [S7Comm], you can optionally configure advanced settings for this protocol:

- Click [Settings] next to [S7Comm], and select [Advanced Matching Criteria].
- If you want to specify one function code from the category [Job], then select the category [Job] and select a function at the [Function list] drop down menu.



- If you want to specify one function group code from the category [Userdata], then select the category [Userdata] and select a function group code at the [Function Group Code] drop down menu.



  - If you want to all the sub-function codes within the function group code you specified to be applied, then select [Any Sub-function Code]
  - If you want to specify one sub-function code or multiple sub-function codes, then select [Preset Sub-function Code] and move the sub-function

code(s) from the [Available Sub-function Code] to the [Selected Sub-function Code] field.

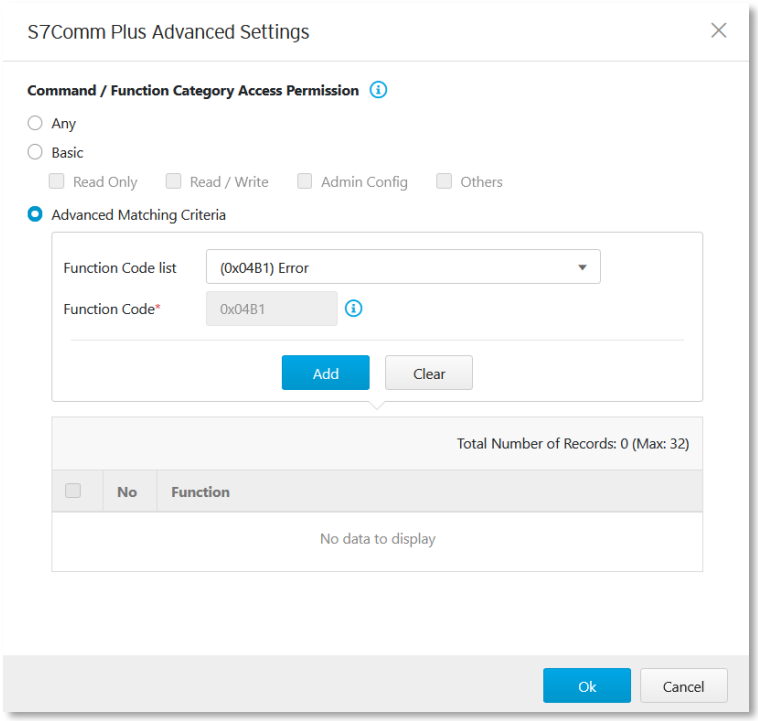
- If you want to specify a service code by yourself, then select [Custom Sub-function Code] and input a sub-function code in the [Custom Sub-function Code] field.

- Click [Add].
- Repeat the above steps if you want to add more protocol definition entries.
- Click [OK].

6. In the [General Protocol] pane, select the protocols you want to include in the protocol filter.
7. Click [OK].

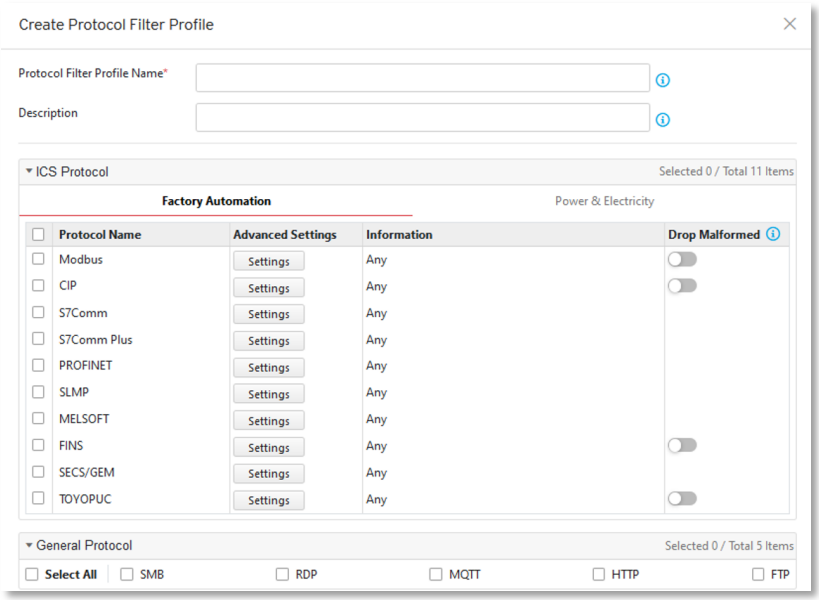
Advanced Settings for S7Comm Plus

The device features more detailed configurations for the S7Comm Plus ICS protocol. Through the [Advanced Settings] pane, you can further specify the function code against which the function will operate.



Procedure

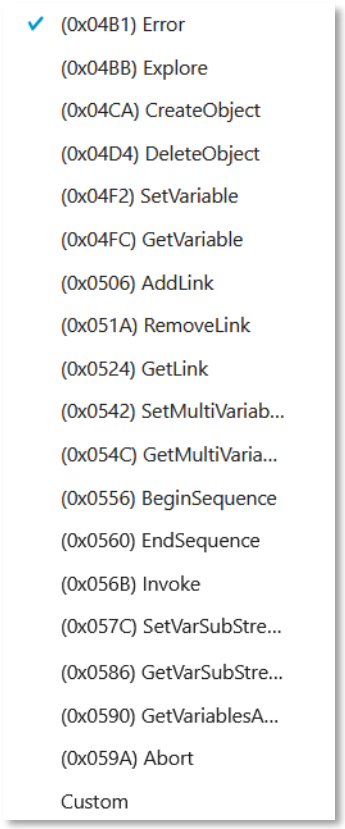
1. Go to [Object Profile] > [Protocol Filter Profile].
2. Click [Add] to add a protocol filter profile.
   The [Create Protocol Filter Profile] screen will appear.



3. Type a profile name for the protocol filter.
4. Type a description.
5. In the [ICS Protocol] pane, select the protocols you want to include in the protocol filter.

- Click [Settings] next to a protocol, and select one of the following:
  - **Any** - Specify all available commands or function access in this protocol.
  - **Basic** - Multiple selections of the following:
    - **Read Only**: Read commands sent from HMI (Human-Machine Interface) / EWS (Engineering Work Station) / SCADA (Supervisory Control and Data Acquisition) to PLC (Programmable Logic Controller).
    - **Read / Write**: Read and write commands sent from HMI/EWS/SCADA to PLC.
    - **Admin Config**: Firmware update commands sent from EWS to PLC, Project update (i.e., PLC code download) commands sent from EWS to PLC, and administration configuration relevant commands sent from EWS to PLC.
    - **Others**: Private commands, un-documented commands, or particular protocols provided by an ICS vendor.
- If you have selected [S7Comm Plus], you can optionally configure advanced settings for this protocol:

- Click [Settings] next to [S7Comm Plus], and select [Advanced Matching Criteria].
- At the [Function list] drop down menu, select a function of this protocol.

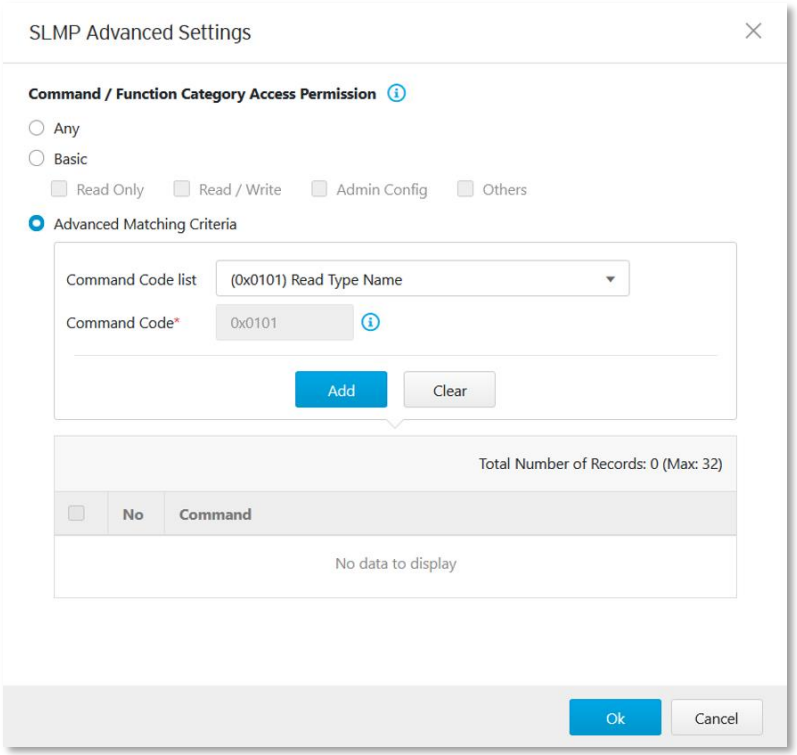


- Click [Add].
- Repeat the above steps if you want to add more protocol definition entries.
- Click [OK].

6. In the [General Protocol] pane, select the protocols you want to include in the protocol filter.
7. Click [OK].

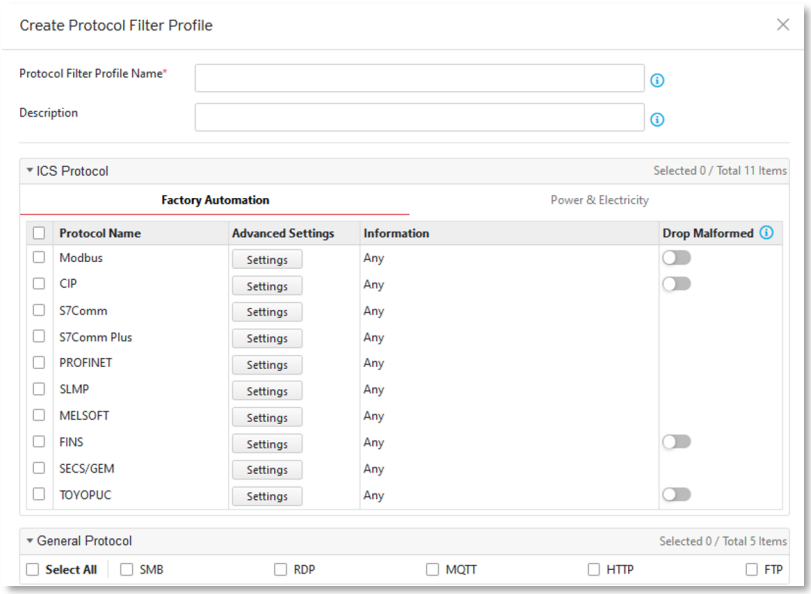
Advanced Settings for SLMP

The device features more detailed configurations for the SLMP ICS protocol. Through the [Advanced Settings] pane, you can further specify the command code against which the function will operate.



Procedure

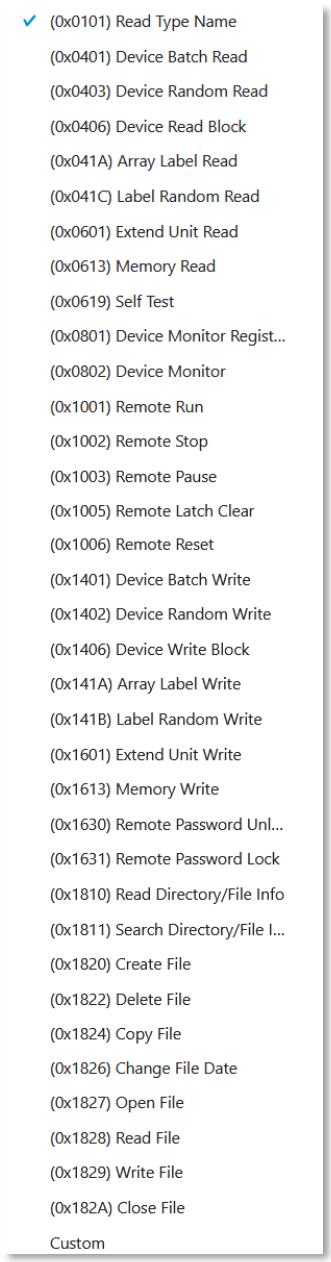
1. Go to [Object Profile] > [Protocol Filter Profile].
2. Click [Add] to add a protocol filter profile.
   The [Create Protocol Filter Profile] screen will appear.



3. Type a profile name for the protocol filter.
4. Type a description.
5. In the [ICS Protocol] pane, select the protocols you want to include in the protocol filter.

- Click [Settings] next to a protocol, and select one of the following:
  - **Any** - Specify all available commands or function access in this protocol.
  - **Basic** - Multiple selections of the following:
    - **Read Only**: Read commands sent from HMI (Human-Machine Interface) / EWS (Engineering Work Station) / SCADA (Supervisory Control and Data Acquisition) to PLC (Programmable Logic Controller).
    - **Read / Write**: Read and write commands sent from HMI/EWS/SCADA to PLC.
    - **Admin Config**: Firmware update commands sent from EWS to PLC, Project update (i.e., PLC code download) commands sent from EWS to PLC, and administration configuration relevant commands sent from EWS to PLC.
    - **Others**: Private commands, un-documented commands, or particular protocols provided by an ICS vendor.
- If you have selected [SLMP], you can optionally configure advanced settings for this protocol:

- Click [Settings] next to [SLMP], and select [Advanced Matching Criteria].
- At the [Command Code List] drop down menu, select a function of this protocol.

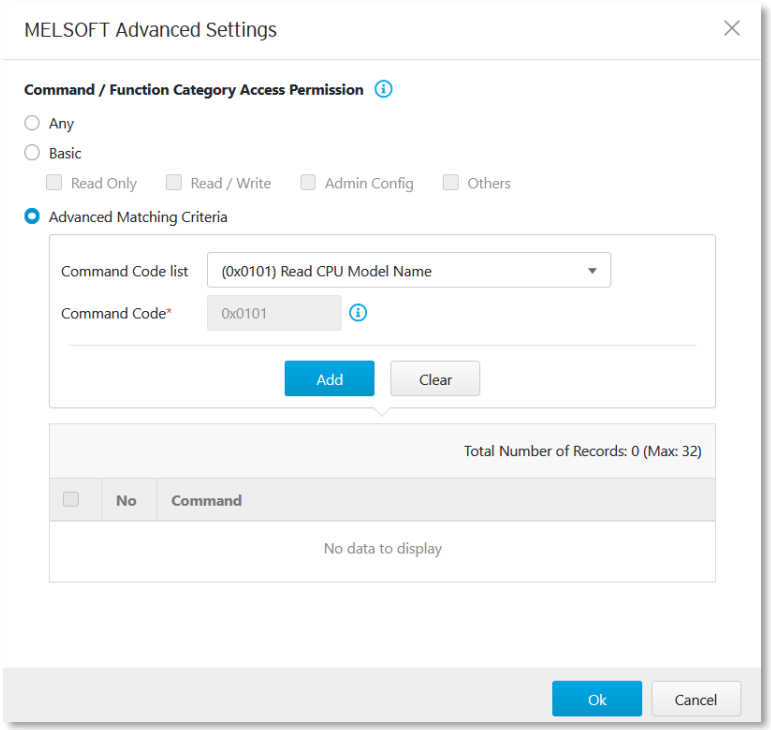


- Click [Add].
- Repeat the above steps if you want to add more protocol definition entries.
- Click [OK].

6. In the [General Protocol] pane, select the protocols you want to include in the protocol filter.
7. Click [OK].

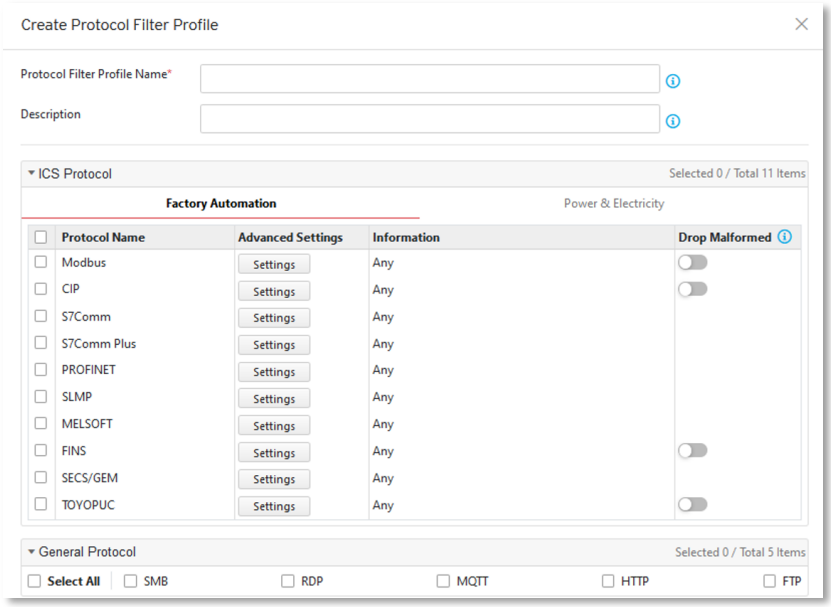
Advanced Settings for MELSOFT

The device features more detailed configurations for the MELSOFT ICS protocol. Through the [Advanced Settings] pane, you can further specify the command code against which the function will operate.



Procedure

1. Go to [Object Profile] > [Protocol Filter Profile].
2. Click [Add] to add a protocol filter profile.
   The [Create Protocol Filter Profile] screen will appear.



3. Type a profile name for the protocol filter.
4. Type a description.
5. In the [ICS Protocol] pane, select the protocols you want to include in the protocol filter.

- Click [Settings] next to a protocol, and select one of the following:
    - **Any** - Specify all available commands or function access in this protocol.
    - **Basic** - Multiple selections of the following:
        - **Read Only**: Read commands sent from HMI (Human-Machine Interface) / EWS (Engineering Work Station) / SCADA (Supervisory Control and Data Acquisition) to PLC (Programmable Logic Controller).
        - **Read / Write**: Read and write commands sent from HMI/EWS/SCADA to PLC.
        - **Admin Config**: Firmware update commands sent from EWS to PLC, Project update (i.e., PLC code download) commands sent from EWS to PLC, and administration configuration relevant commands sent from EWS to PLC.
        - **Others**: Private commands, un-documented commands, or particular protocols provided by an ICS vendor.
- If you have selected [MELSOFT], you can optionally configure advanced settings for this protocol:

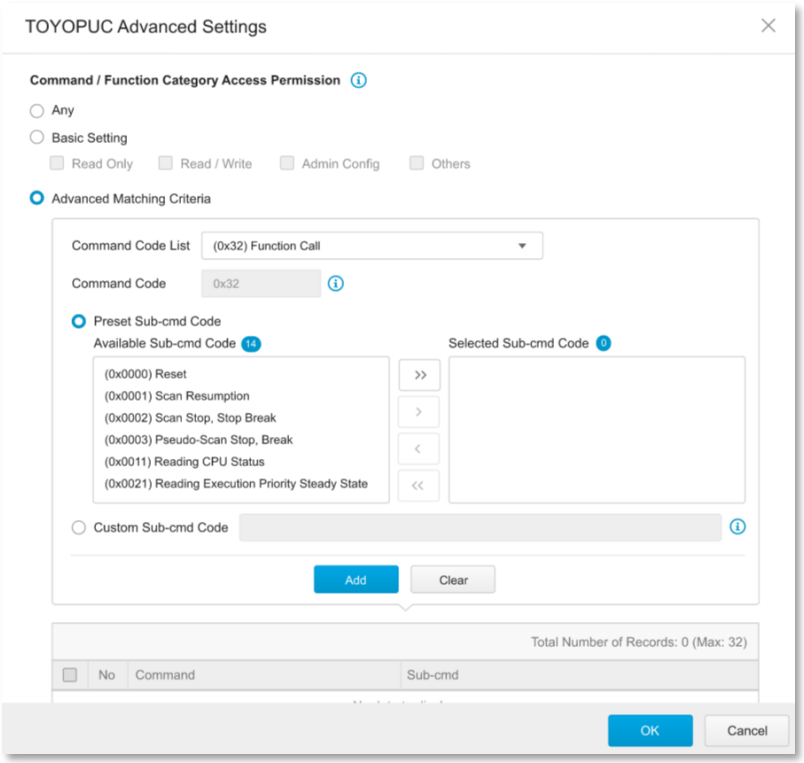
- Click [Settings] next to [MELSOFT], and select [Advanced Matching Criteria].
- At the [Command Code List] drop down menu, select a function of this protocol.

- Click [Add].
- Repeat the above steps if you want to add more protocol definition entries.
- Click [OK].

6. In the [General Protocol] pane, select the protocols you want to include in the protocol filter.
7. Click [OK].

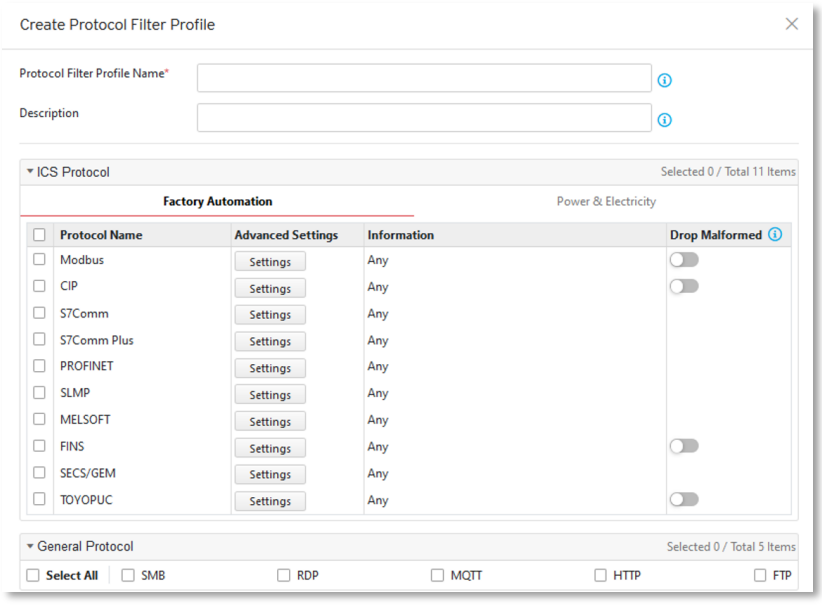
Advanced Settings for TOYOPUC

The device features more detailed configurations for the TOYOPUC ICS protocol. Through the [Advanced Settings] pane, you can further specify the command code, preset sub-command code and custom sub-command code against which the function will operate.



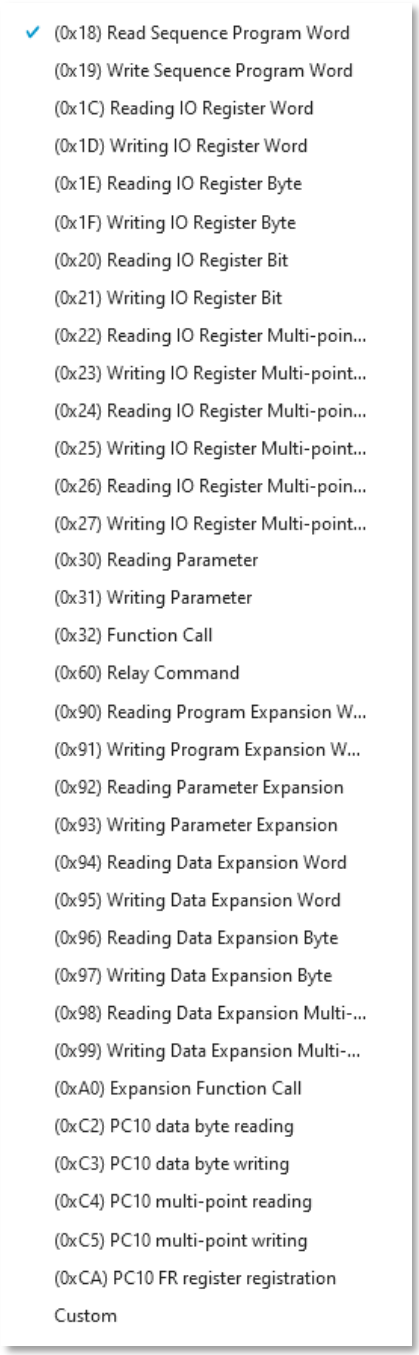
Procedure

1. Go to [Object Profile] > [Protocol Filter Profile].
2. Click [Add] to add a protocol filter profile.
   The [Create Protocol Filter Profile] screen will appear.



3. Type a profile name for the protocol filter.
4. Type a description.
5. In the [ICS Protocol] pane, select the protocols you want to include in the protocol filter.

- Click [Settings] next to a protocol, and select one of the following:
    - **Any** - Specify all available commands or function access in this protocol.
    - **Basic** - Multiple selections of the following:
        - **Read Only**: Read commands sent from HMI (Human-Machine Interface) / EWS (Engineering Work Station) / SCADA (Supervisory Control and Data Acquisition) to PLC (Programmable Logic Controller).
        - **Read / Write**: Read and write commands sent from HMI/EWS/SCADA to PLC.
        - **Admin Config**: Firmware update commands sent from EWS to PLC, Project update (i.e., PLC code download) commands sent from EWS to PLC, and administration configuration relevant commands sent from EWS to PLC.
        - **Others**: Private commands, un-documented commands, or particular protocols provided by an ICS vendor.
- If you have selected [TOYOPUC], you can optionally configure advanced settings for this protocol:
    - Click [Settings] next to [TOYOPUC], and select [Advanced Matching Criteria].
    - At the [Command Code List] drop down menu, select a function of this protocol.



- If you want to specify one sub-command code or multiple sub-command codes, then select [Preset Sub-cmd Code] and move the sub-function code(s) from the [Available Sub-cmd Code] field to the [Selected Sub-cmd Code] field.
- If you want to specify a sub-command code by yourself, then select [Custom Sub-cmd Code] and input a sub-command code in the [Custom Sub-cmd Code] field.
- Click [Add].
- Repeat the above steps if you want to add more protocol definition entries.
- Click [OK].

Note: Not all the command codes support the feature of [Preset Sub-cmd code] and [Custom Sub-cmd]. Only the command code "(0x32) Function Call" and "(0xA0) Expansion Function Call" support them.

6. In the [General Protocol] pane, select the protocols you want to include in the protocol filter.
7. Click [OK].

Configuring IPS Profile

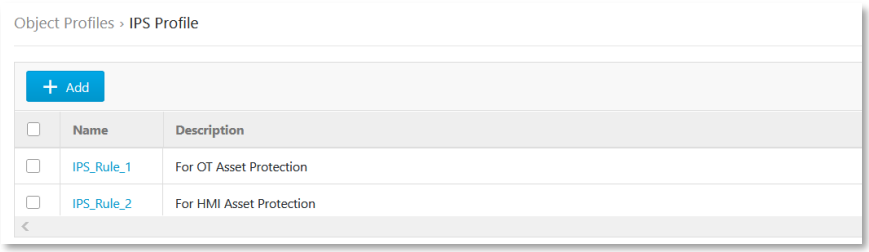
An IPS profile contains more sophisticated pattern rules that you can do granular control and apply to a policy rule.

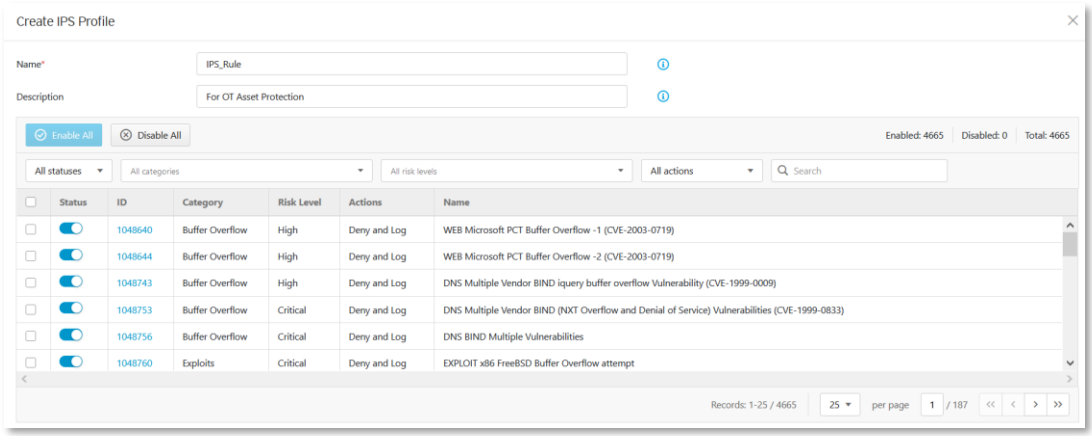
The following can be configured in an IPS profile:

- Details of IPS protocol category, including:
  - File Vulnerabilities
  - Buffer Overflow
  - Exploits
  - Malware Traffic
  - Reconnaissance
  - Web Threats
  - ICS Threats
  - Others

- Details of IPS protocol risk level category, including:
  - Information
  - Medium
  - High
  - Critical

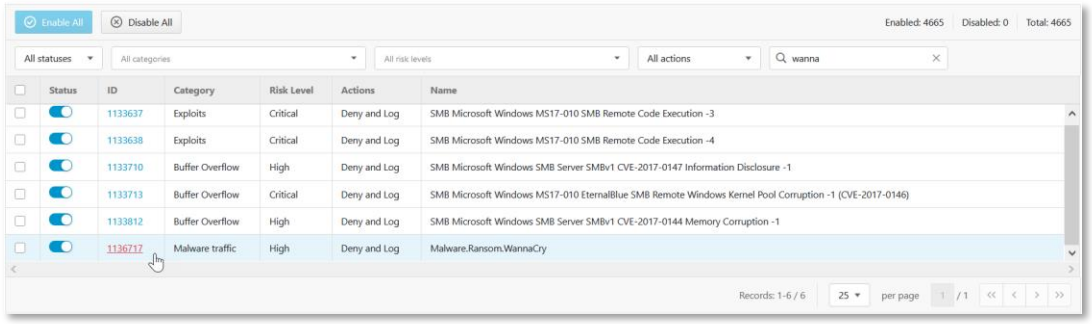
- Details of default action list for IPS patterns, including:
  - All Actions
  - Accept and Log
  - Deny and Log

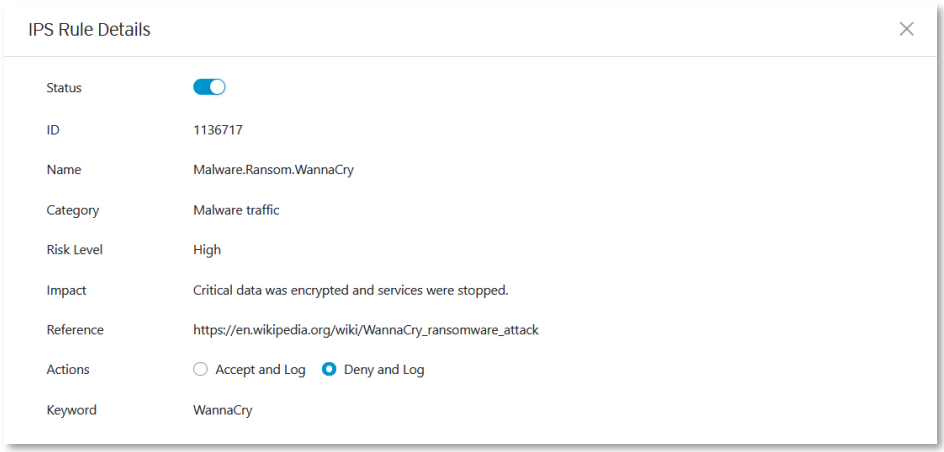




Configuring a Pattern Rule for Granular Control

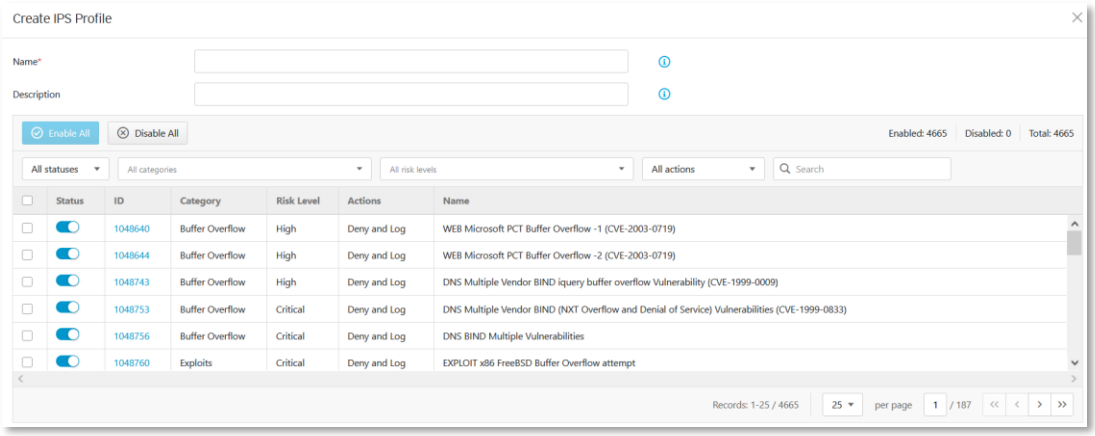
When configuring an IPS pattern rule protocol, you can specify which action should be taken and add it in the IPS profile, as the following picture shows.





Procedure

1. Go to [Object Profile] > [IPS Profile].
2. Click [Add] to add a IPS profile.
   The [Create Protocol Filter Profile] screen will appear.



3. Type a profile name for the IPS profile.
4. Type a description.
5. Select a pattern rule you want to configure by clicking on the rule ID.
6. IPS rule details will show up. Select one of the following:
   - **Status** - Specify the pattern rule to be enabled or disabled.
   - **Actions** - Multiple selections of the following:
     - **Accept and Log**: When the attack is detected by EdgeFire, the attack will be bypassed and logged for monitoring.
     - **Deny and Log**: When the attack is detected by EdgeFire, the attack will be blocked and logged for monitoring.

Field	Description
Status	The operational status of the pattern rule
ID	The pattern rule ID
Name	The pattern name for the cyber attack
Category	The threat category for the cyber attack
Risk Level	The suggested security level for the cyber attack
Impact	The damage that will cause to the target network device if the cyber attack succeeds.
Reference	The vulnerability ID of the cyber attacks (e.g. CVE-2017-0147)
Actions	The preset action for the cyber attacks.
keyword	The word(s) for searching the pattern rules

7. If you already configure the pattern rule, press [Save].

The Security Tab

This chapter describes the following configurations:

- **Cyber security configuration**, which allows you to define both intrusion prevention and denial of service attack prevention settings.
- **Policy enforcement configuration**, which allows you to define a custom protocol that matches to an industrial protocol, and then white-list or black-list these protocols in your network environment.

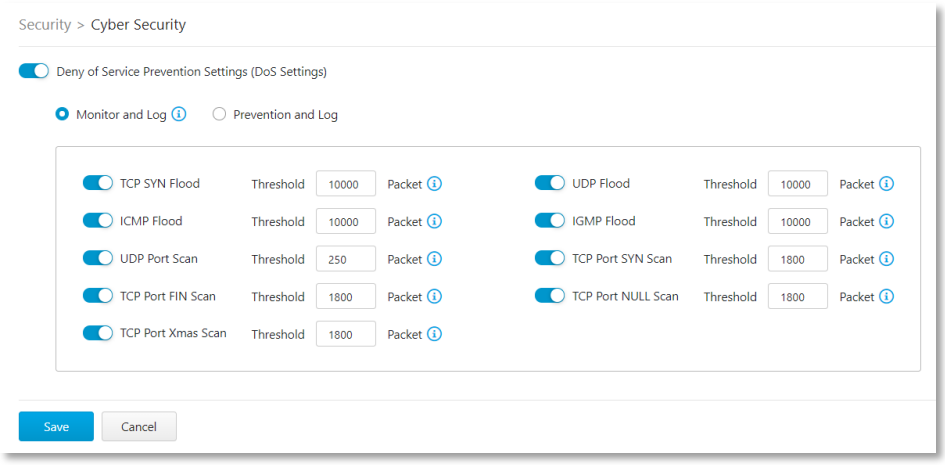
Cyber Security

This device features cyber security, which denial of service attack prevention. The signature rules of intrusion prevention are called the 'Trend Micro DPI (Deep Packet Inspection) Pattern'. This pattern is provided by Trend Micro and can be regularly updated through ODC as well as through manual import on web management UI of the device.

Configuring Cyber Security – Denial of Service Prevention

Procedure

1. Go to [Security] > [Cyber Security]



2. At the [Cyber Security] tab you will see the [Denial of Service Prevention] pane.
3. Use the toggle to enable or disable the denial of service prevention feature.
4. Select an action ([Monitor and Log] or [Prevent and Log]) for the feature.
5. You can optionally configure the thresholds of the denial of service rules.

Note: Flood/Scan Attack Protection rules utilize the detection period and threshold mechanisms to detect an attack. During a detection period (typically every 5 seconds), if the number of anomalous packets reaches the specified threshold, an attack detection occurs. If the rule action is 'block', the security node blocks subsequent anomalous packets until the end of the detection period. After the detection period, the security node allows anomalous packets until the threshold is reached again.

6. Click [Save].

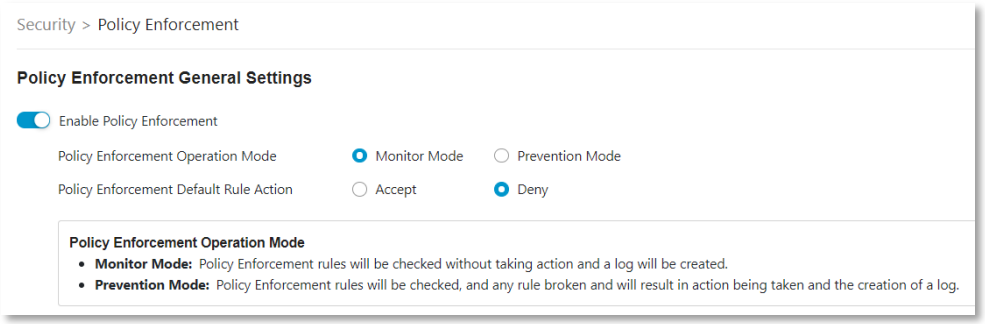
Policy Enforcement

Policy enforcement allows you to define a custom protocol that matches to an industrial protocol, and then white-list or black-list such protocols in your network environment.

Configuring Policy Enforcement

Procedure

1. Go to [Security] > [Policy Enforcement]



2. At the [Policy Enforcement] tab you will see the [Policy Enforcement General Settings] pane
3. Use the toggle to enable or disable the policy enforcement feature.
4. Select a mode ([Monitor Mode], or [Prevention Mode]) for the policy enforcement.
5. Under the [Policy Enforcement Default Rule Action] drop down menu, select a default action when no pattern is matched.

The following table summarizes the settings:

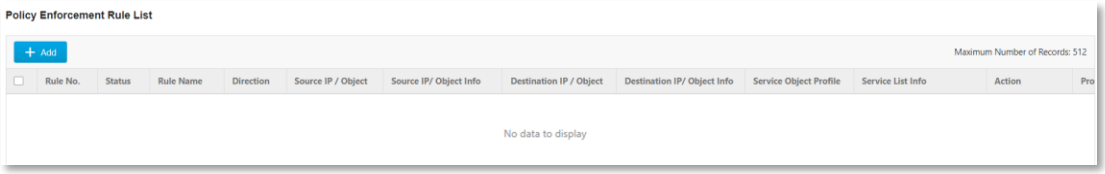
Mode (Policy Enforcement)	Action Performed
Monitor Mode	▪ Detects and monitors protocol access to OT assets, but does not block network attacks. ▪ Generates logs.
Prevention Mode	▪ Blocks abnormal protocol access to OT assets. ▪ Generates logs.

Adding Policy Enforcement Rules (In Gateway Mode)

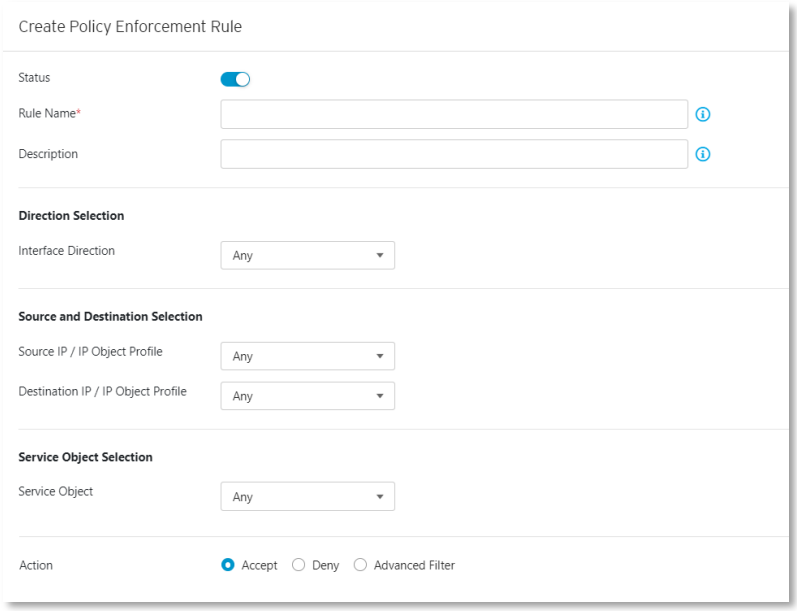
Procedure

1. Configure the required object or objects.
   - IP object profiles
     For more information, see *Configuring IP Object Profile*.
   - Service object profiles
     For more information, see *Configuring Service Object Profile*.
   - Protocol filter profiles
     For more information, see *Configuring Protocol Filter Profile*.
   - IPS profiles
     For more information, see *Configuring Protocol Filter* Profile.

2. Go to [Security] > [Policy Enforcement]
3. Under the [Policy Enforcement] tab you will see the following pane.



4. Click the [Add] button to add a new policy rule.
5. Use the toggle to enable or disable the policy rule.



6. Input a descriptive name for the rule.
7. Input a description for the rule.
8. Under the [Interface Direction] drop-down menu, select one of the following for the network traffic direction:
   - Any
   - WAN to LAN
   - LAN to WAN
   - WAN to DMZ
   - DMZ to WAN
   - LAN to DMZ
   - DMZ to LAN
   - LAN to LAN

Note: The network interface in the drop-down menu does not specify which exact network interface, but two or more network interfaces of a kind from the broad view. For example, if you select [WAN to LAN], then the policy enforcement rule will be effective on the traffic from WAN1 interface to LAN1 interface or WAN1 interface to LAN2 interface. If you select [LAN to LAN], then the policy enforcement rule will be effective on the traffic from LAN1 interface to LAN2 interface or LAN2 interface to LAN1 interface.

Note: If you select [Any], then the policy enforcement rule will be effective on the traffic from all network interfaces.

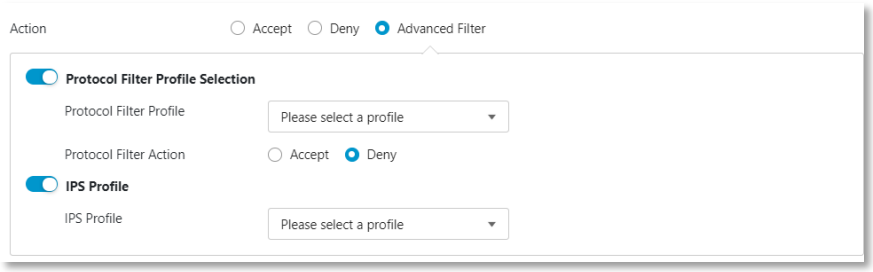
9. Under the [Source IP / IP Object Profile] drop-down menu, select one of the following for the source IP address(es):
   - Any
   - Single IP
   - IP Range
   - IP Subnet
   - IP Object

Note: If you select [IP Object], then you need to select the IP object from an IP object profiles that have been created beforehand.

10. Under the [Destination IP / IP Object Profile] drop-down menu, select either one of the following for the destination IP address(es):
    - Any
    - Single IP
    - IP Range
    - IP Subnet
    - IP Object
11. Under the [Service Object] drop-down menu, select one of the following for the layer 4 criteria:
    - TCP
      You can further specify the port range for this protocol.
    - UDP
      You can further specify the port range for this protocol.
    - ICMP
      You can further specify the type and code for this protocol.
    - Custom
      You can further specify the protocol number for this protocol. The term protocol number refers to the one defined in the internet protocol suite.
    - Service Object

Note: You need to select the service object from service object profiles that have been created beforehand.

10. Under the [Action] drop-down menu, select one of the following:
    - **Accept**: Select this option to allow network traffic that matches this rule.
    - **Deny**: Select this option to block network traffic that matches this rule.
    - **Advanced Filter**: The node will further take actions based on the protocol filter or the IPS profile:
      - Under the [Protocol Filter Profile] drop-down menu, select a protocol filter profile you have defined beforehand.
      - Under the [Protocol Filter Action] drop-down menu, select whether to allow or deny network traffic that matches the protocol filter.



12. Click [OK] to save the configurations.

Note: The policy enforcement rule in gateway mode is effective on the level of network interface only, not on the level of network physical port. The policy enforcement rule cannot inspect the traffic between the physical ports under the same network interface.

The following table lists the common tasks that are used to manage the policy enforcement rules.

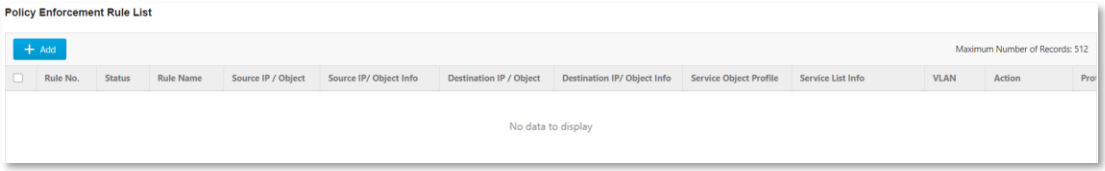
Task	Action
To delete a policy enforcement rule	Click the check box in front of the policy enforcement rule and click the [Delete] button.
To duplicate a policy enforcement rule	Click the check box in front of the policy enforcement rule and click the [Copy] button.
To edit a policy enforcement rule	Click the name of the rule, and an [Edit Policy Rule] window will appear.
To change the priority of a policy enforcement rule	Click the check box in front of the policy enforcement rule, click the [Change Priority] button, and specify a new priority for this rule.

Note: When more than one policy enforcement rule is matched, the device takes the action of the rule with the highest priority, and ignores the rest of the rules. The rules are listed on the table under the UI tab by priority, starting with the highest priority rule at the top.

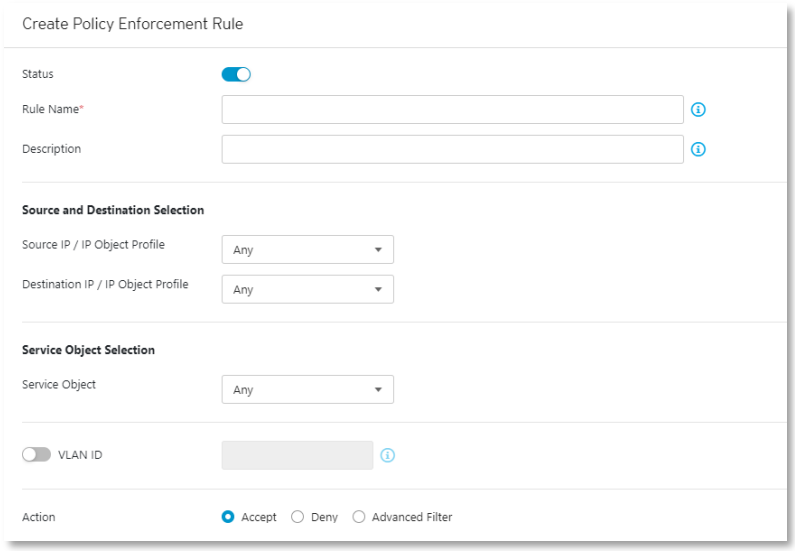
Adding Policy Enforcement Rules (In Bridge Mode)

Procedure

1. Configure the required object or objects.
   - IP object profiles
     For more information, see *Configuring IP Object Profile*.
   - Service object profiles
     For more information, see *Configuring Service Object Profile*.
   - Protocol filter profiles
     For more information, see *Configuring Protocol Filter Profile*.
   - IPS profiles
     For more information, see *Configuring Protocol Filter* Profile.
2. Go to [Security] > [Policy Enforcement]
3. Under the [Policy Enforcement] tab you will see the following pane.



4. Click the [Add] button to add a new policy rule.
5. Use the toggle to enable or disable the policy rule.



6. Input a descriptive name for the rule.
7. Input a description for the rule.
8. Under the [Source IP / IP Object Profile] drop-down menu, select one of the following for the source IP address(es):
   - Any
   - Single IP
   - IP Range
   - IP Subnet
   - IP Object

Note: If you select [IP Object], then you need to select the IP object from an IP object profiles that have been created beforehand.

9. Under the [Destination IP / IP Object Profile] drop-down menu, select either one of the following for the destination IP address(es):
   - Any
   - Single IP
   - IP Range
   - IP Subnet
   - IP Object
10. Under the [Service Object] drop-down menu, select one of the following for the layer 4 criteria:
    - TCP
      You can further specify the port range for this protocol.
    - UDP
      You can further specify the port range for this protocol.

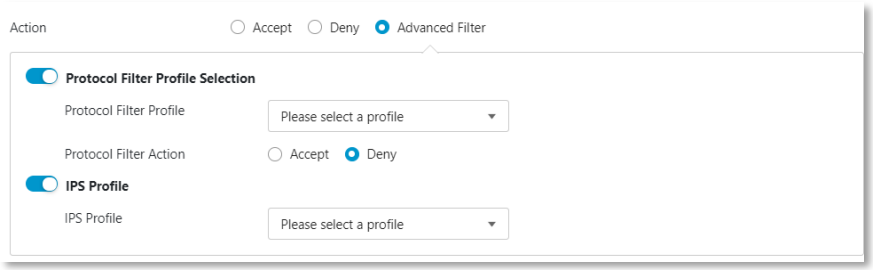
- ICMP
  You can further specify the type and code for this protocol.
- Custom
  You can further specify the protocol number for this protocol. The term protocol number refers to the one defined in the internet protocol suite.
- Service Object

Note: You need to select the service object from service object profiles that have been created beforehand.

11. Use the toggle to enable or disable the VLAN ID, then input one or multiple VLAN ID.

Note: You can input up to 5 VLAN IDs in one policy enforcement rule.

12. Under the [Action] drop-down menu, select one of the following:
    - **Accept**: Select this option to allow network traffic that matches this rule.
    - **Deny**: Select this option to block network traffic that matches this rule.
    - **Advanced Filter**: The node will further take actions based on the protocol filter or the IPS profile:
      - Under the [Protocol Filter Profile] drop-down menu, select a protocol filter profile you have defined beforehand.
      - Under the [Protocol Filter Action], select whether to allow or deny network traffic that matches the protocol filter.



13. Click [Save] to save the configurations.

Managing Policy Enforcement Rules

The following table lists the common tasks that are used to manage the policy enforcement rules.

Task	Action
To delete a policy enforcement rule	Click the check box in front of the policy enforcement rule and click the [Delete] button.
To duplicate a policy enforcement rule	Click the check box in front of the policy enforcement rule and click the [Copy] button.
To edit a policy enforcement rule	Click the name of the rule, and an [Edit Policy Rule] window will appear.
To change the priority of a policy enforcement rule	Click the check box in front of the policy enforcement rule, click the [Change Priority] button, and specify a new priority for this rule.

Note: When more than one policy enforcement rule is matched, the device takes the action of the rule with the highest priority, and ignores the rest of the rules. The rules are listed

on the table under the UI tab by priority, starting with the highest priority rule at the top.

The Pattern Tab

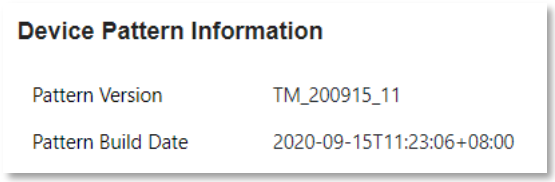
This chapter describes how to view the pattern information and how to import a DPI (Deep Packet Inspection) pattern to the EdgeFire™ device.

The DPI pattern, prepared by Trend Micro, contains signatures to enable the intrusion prevention features on the device. The intrusion prevention features detect and prevent behaviors related to network intrusion attempts or targeted attacks at the network level.

Viewing Device Pattern Information

Procedure

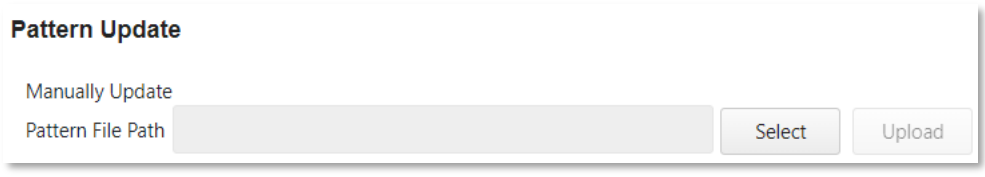
1. Go to [Pattern] > [Pattern Update]
2. Under the [Pattern Update] tab you will see the following pane.
3. The [Device Pattern Information] pane shows the [Current Pattern Version] and [Pattern Build Date]



Manually Updating the Pattern

Procedure

1. Go to [Pattern] > [Pattern Update]
2. Under the [Pattern Update] tab you will see the following pane.
3. Click [File Selection] or [Upload].
4. Manually select the pattern to be deployed to the device.



5. Click [OK].

The Log Tab

This chapter describes the system event logs and security detection logs you can view on the management console.

Note: For a listing of all possible log messages and types, please refer to the document "EdgeIPS / EdgeFire / ODC - Log Description"

You can view the following logs on EdgeFire™:

- **Cyber security logs**
- **Policy enforcement logs**
- **Protocol filter logs**
- **Asset detection logs**
- **System logs**
- **Audit logs**

Viewing Cyber Security Logs

The cyber security logs cover logs detected by both the intrusion prevention and denial of service prevention features.

Procedure

1. Go to [Logs] > [Cyber Security Logs].

   The following table describes the log table.

Field	Description
Time	The time the log entry was created.
Event ID	The ID of the matched signature.
Security Category	The category of the matched signature.
Security Severity	The severity level assigned to the matched signature.
Security Rule Name	The name of the matched signature.
Direction	The direction flow of the connection.
Interface	The network interface which receives the connection.
Attacker	The IP address of host device which initiates the cyber attack
Source MAC Address	The source MAC address of the connection.
Source IP Address	The source IP address of the connection.
Source Port	The source port of the connection.
Destination MAC Address	The destination MAC address of the connection.
Destination IP Address	The destination IP address of the connection.
Destination Port	The destination port of the connection.
VLAN ID	The VLAN ID of the connection.
Ethernet Type	The Ethernet type of the connection.
IP Protocol Name	The IP protocol name of the connection.
Action	The action performed based on the policy settings.
Count	The number of detected network packets within the detection period after the detection threshold is reached.

Viewing Policy Enforcement Logs

The policy enforcement logs cover logs created by the [Policy Enforcement] feature without [Protocol Filter] being enabled, i.e., the [Action] of the policy enforcement rule is either to allow or to deny. The protocol filter is not used in the policy rule.

Procedure

1. Go to [Logs] > [Policy Enforcement Logs].

   The following table describes the log table.

Field	Description
Time	The time the log entry was created.
Rule Name	The name of the policy enforcement rule that was used to generate the log.
Direction	The direction flow of the connection.
Interface	The network interface which receives the connection.
Source MAC Address	The source MAC address of the connection.
Source IP Address	The source IP address of the connection.
Source Port	The source port, if protocol is selected TCP/UDP. The ICMP type, if protocol is selected ICMP.
Destination MAC Address	The destination MAC address of the connection.
Destination IP Address	The destination IP address of the connection.
Destination Port	The destination port, if protocol is selected TCP/UDP. The ICMP code, if protocol is selected ICMP.
VLAN ID	The VLAN ID of the connection.
IP Protocol Name	The IP protocol name of the connection.
Action	The action performed based on the policy settings.

Viewing Protocol Filter Logs

The protocol filter logs cover logs detected by the [Protocol Filter] feature. 'Protocol filter' is the advanced configuration when you configure the [Policy Enforcement] settings.

Procedure

1. Go to [Logs] > [Protocol Filter Logs].

   The following table describes the log table.

Field	Description
Time	The time the log entry was created.
Rule Name	The name of the policy enforcement rule that was used to generate the log.
Profile Name	The name of the protocol filter profile that was used to generate the log.
Direction	The direction flow of the connection.
Interface	The network interface which receives the connection
Source MAC Address	The source MAC address of the connection.
Source IP Address	The source IP address of the connection.
Source Port	The source port, if protocol is selected TCP/UDP. The ICMP type, if protocol is selected ICMP.
Destination MAC address	The destination MAC address of the connection.
Destination IP Address	The destination IP address of the connection.
Destination Port	The destination port, if protocol is selected TCP/UDP. The ICMP code, if protocol is selected ICMP.

Field	Description
VLAN ID	The VLAN ID of the connection.
Ethernet Type	The Ethernet type of the connection.
IP Protocol Name	The IP protocol name of the connection.
L7 Protocol Name	The layer 7 protocol name of the connection. The term layer 7 refers to the one defined in the OSI (Open Systems Interconnection) model.
Cmd / Fun No.	The command or the function number that triggered the log.
Extra Information	Extra information provided with the log.
Action	The action performed based on the policy settings.
Count	The number of detected network packets.

Viewing Asset Detection Logs

The asset detection logs cover the system status changes of the managed assets.

Procedure

1. Go to [Logs] > [Assets Detection Logs].
   The following table describes the log table.

Field	Description
Time	The time the log entry was created.
Event Type	The log event description.
Interface	The network interface which receives the asset information.
Asset MAC Address	The MAC address of the asset.
Asset IP Address	The source IP address of the asset.

Viewing System Logs

You can view details about system events on the device.

Procedure

1. Go to [Logs] > [System Logs].
   The following table describes the log table.

Field	Description
Time	The time the log entry was created.
Severity	The severity level of the logs.
Message	The log event description.

Viewing Audit Logs

You can view details about user access, configuration changes, and other events that occurred when using the device.

Procedure

1. Go to [Logs] > [Audit Logs].
   The following table describes the log table.

Field	Description
Time	The time the log entry was created.

Field	Description
User ID	The user account used to execute the task.
Client IP	The IP address of the host used to access the management console.
Severity	The severity level of the logs.
Message	The log event description.

Note: To view the audit logs, please log in with the default "audit" account.

The Administration Tab

This chapter describes the available administrative settings for EdgeFire device.

Account Management

Note: Log onto the management console using the default administrator account ("admin") to access the Accounts tab.

This system uses role-based administration to grant and control access to the management console. Use this feature to assign specific management console privileges to the accounts and present them with only the tools and permissions necessary to perform specific tasks. Each account is assigned a specific role. A role defines the level of access to the management console. Users log on to the management console using custom user accounts.

The following table outlines the tasks available on the [Account Management] tab.

Task	Description
Add Account	Click Add to create a new user account. For more information, see *Adding a User Account on page 80*.
Delete Existing Accounts	Select preexisting user accounts and click Delete.
Edit Existing Accounts	Click the name of a preexisting user account to view or modify the current account settings.

User Roles

The following table describes the permissions matrix for user roles.

		User Roles			
Sub-Tab	**Action**	**Admin**	**Operator**	**Visitor**	**Auditor**
System	View	Yes	Yes	Yes	Yes
	All operations	Yes	Yes	Yes	Yes
Visibility	View	Yes	Yes	Yes	No
	All operations	Yes	Yes	Yes	No
Device	View	Yes	Yes	No	No
	All operations	Yes	No	No	No
Object Profiles	View	Yes	Yes	No	No
	All operations	Yes	Yes	No	No
Security	View	Yes	Yes	No	No
	All operations	Yes	Yes	No	No
Pattern	View	Yes	Yes	No	No
	All operations	Yes	Yes	No	No
Logs (not including audit logs)	View	Yes	Yes	Yes	No
Audit Log	View	No	No	No	Yes
Administration	View	Yes	No	No	No

	All operations	Yes	No	No	No

Built-in User Accounts

The following table lists the built-in user accounts in the device.

Built-in Account ID	User Role	Default Password
admin	Admin	txone
auditor	Auditor	txone

Note: The built-in user accounts cannot be deleted from the device.

Note: Ensure that the passwords of the built-in accounts are changed when you first set up the device.

Adding a User Account

When you log on using the administrator account ("admin"), you can create new user accounts to access the system.

Procedure

1. Go to [Administration] > [Account Management].
8. Click [Add].
   The Add User Account window appears.
9. Configure the account settings.

Field	Description
ID	Type the user ID to log on to the management console.
Name	Type the name of the user for this account.
Password	Type the account password.
Confirm password	Type the account password again to confirm.
Role	Select a user role for this account. For more information, see *User Roles on page 79*.

10. Click [Save].

Changing Your Password

Procedure

1. On the management console banner, click your account name.
2. Click [Change Password].
   The Change Password window will appear.
3. Specify the password settings.
   - Old password
   - New password
   - Confirm password
4. Click [Save].

Configuring Password Policy Settings

EdgeFire™ provides the following password policy settings to enhance web console access security:

- Password complexity settings

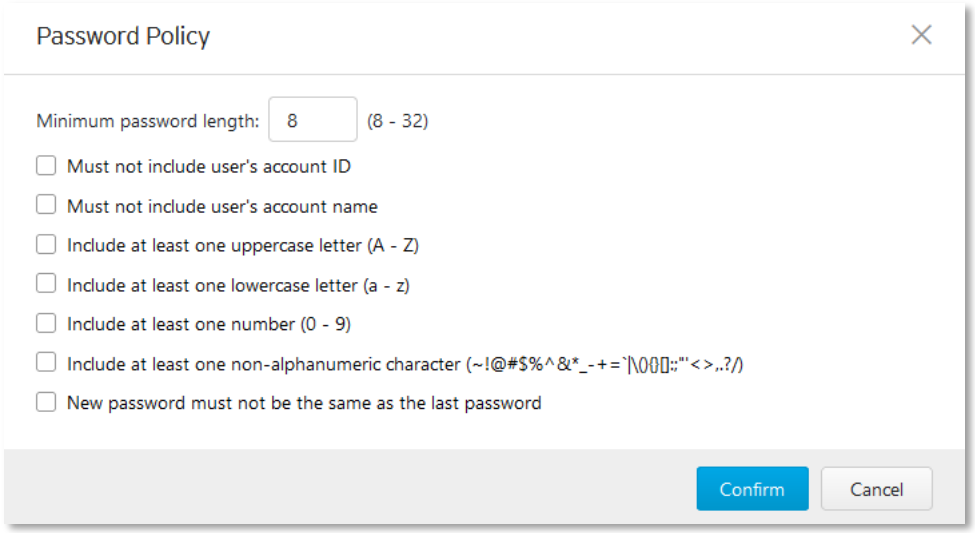
  Specify password complexity settings to enforce strong passwords. For example, you can specify users to create strong passwords that must contain a combination of both uppercase and lowercase letters, numbers, and symbols, and are at least eight characters in length.

Note: When strong passwords are required and a user submits a new password, and the password policy determines whether the password meets your company's established requirements. Strict password policies may sometimes increase costs to an organization when users select passwords that are too difficult to remember. Users call the help desk when they forget their passwords, or keep passwords in easily accessible locations and increase their vulnerability to threats. When establishing a password policy, balance your need for strong security against the need to make the policy easy for users to follow.

Procedure

1. Go to [Administration] > [Account Management].
2. Click the [Password Policy] tab.

   The [Password Policy] window will appear.



3. Select one or more options that meet your required password policy.
4. Click Save.

System Management

Use the [System Management] tab to do the following:

- Configure the host name and location information of the device.
- Configure the IP addresses that are allowed to manage the device.
- Choose the protocols and ports that can be used to manage the device.

Configuring Device Name and Device Location Information

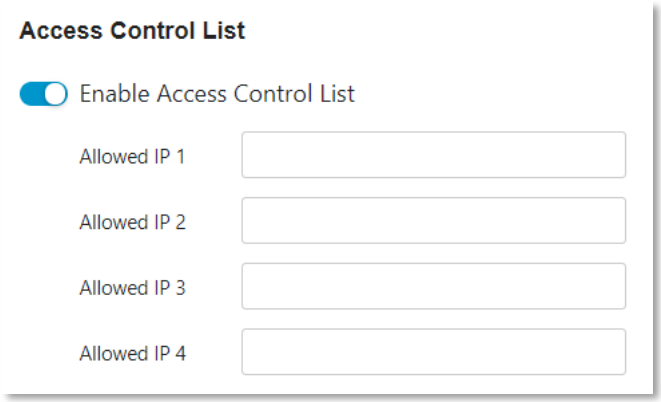
Procedure

1. Go to [Administration] > [System Management].
2. In the [System Settings] pane, provide the host name and location information for the device.

Configuring Control List Access for Management Clients

Procedure

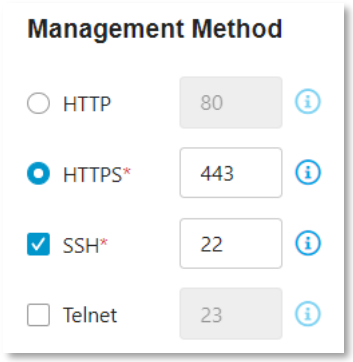
1. Go to [Administration] > [System Management].
2. In the [Access Control List] pane, use the toggle to enable or disable access control from the management clients.
3. Provide the IP addresses that are allowed to manage the device.



Configuring Management Protocols and Ports

Procedure

1. Go to [Administration] > [System Management].
2. In the [Management Method] pane:
   - Select the protocols that are allowed to be used.
   - Input the port numbers for the protocols.



Note: The HTTP and HTTPS protocols are used for connecting to the web management console. The SSH and Telnet protocols are used for connecting to the CLI commands.

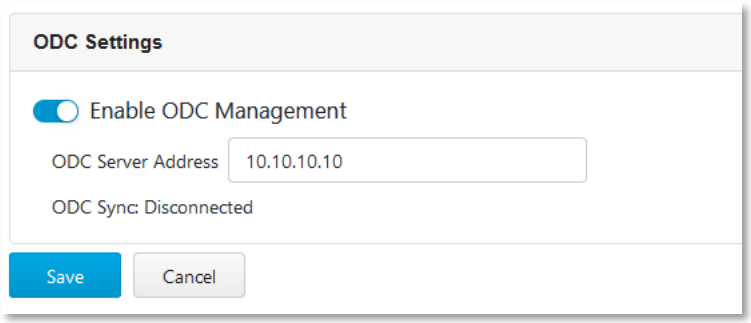
The Sync Settings Tab

EdgeFire™ can be managed by Trend Micro ODC (Operational Technology Defense Console). Use this tab to register the EdgeFire™ to a Trend Micro ODC.

Enabling Management by ODC

Procedure

1. Go to [Administration] > [Sync Settings].
2. In the [ODC Settings] pane:
   - Use the toggle to enable management by ODC.
   - Input the IP address of the ODC server.



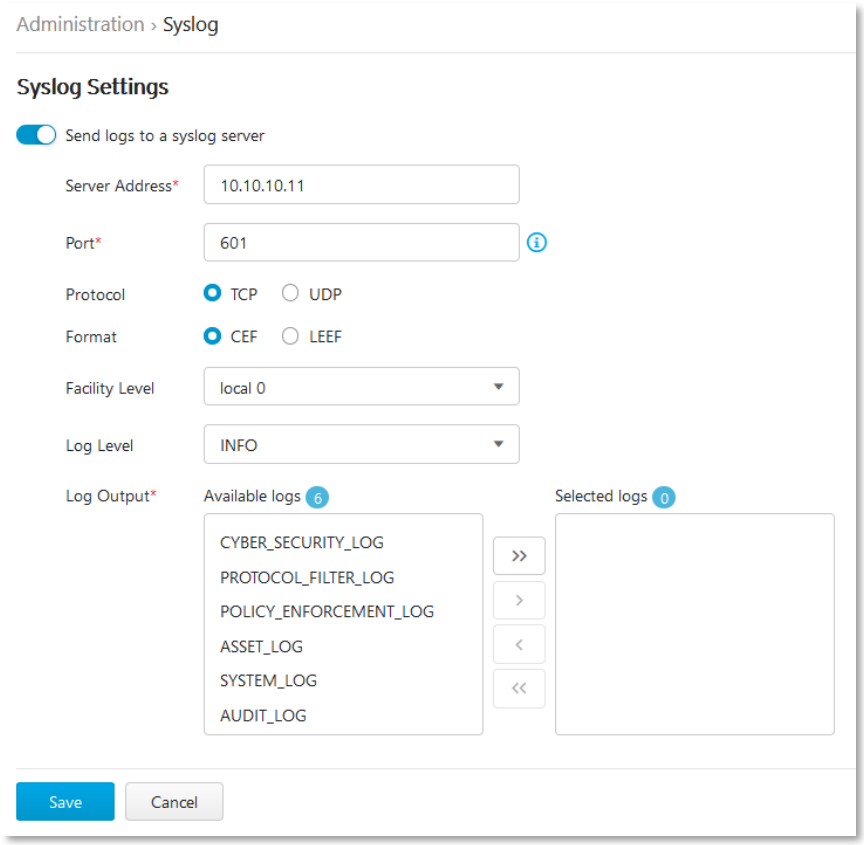
Configuring Syslog Settings

The system maintains Syslog events that provide summaries of security and system events. Common Event Format (CEF) syslog messages are used in EdgeFire.

Configure the Syslog settings to enable the system to send the Syslog to a Syslog server.

Procedure

1. Go to [Administration] > [Syslog].



2. Select [Send logs to a syslog server] to set the system to send logs to a syslog server.
3. Configure the following settings.

Field	Description
Server address	Type the IP address of the syslog server.
Port	Type the port number.
Protocol	Select the protocol for the communication.
Facility level	Select a facility level to determine the source and priority of the logs.
Severity level	Select a syslog severity level. The ODC system only sends logs with the selected severity level or higher to the syslog servers. For more information, see *Syslog Severity Level Mapping Table on page 85*.

4. Select the types of logs to send.
5. Click [Save].

Syslog Severity Levels

The syslog severity level specifies the type of messages to be sent to the syslog server.

Level	Severity	Description
0	Emergency	▪ Complete system failure Take immediate action.
1	Critical	▪ Primary system failure Take immediate action.
2	Alert	▪ Urgent failure Take immediate action.
3	Error	▪ Non-urgent failure Resolve issues quickly.
4	Warning	▪ Error pending Take action to avoid errors.
5	Notice	▪ Unusual events Immediate action is not required.
6	Informational	▪ Normal operational messages useful for reporting, measuring throughput, and other purposes No action is required.
7	Debug	▪ Useful information when debugging the application. **Note:** Setting the debug level can generate a large amount of syslog traffic in a busy network. Use with caution.

Syslog Severity Level Mapping Table

The following table summarizes the logs of Policy Enforcement/Protocol Filter/Cyber Security and their equivalent Syslog severity levels.

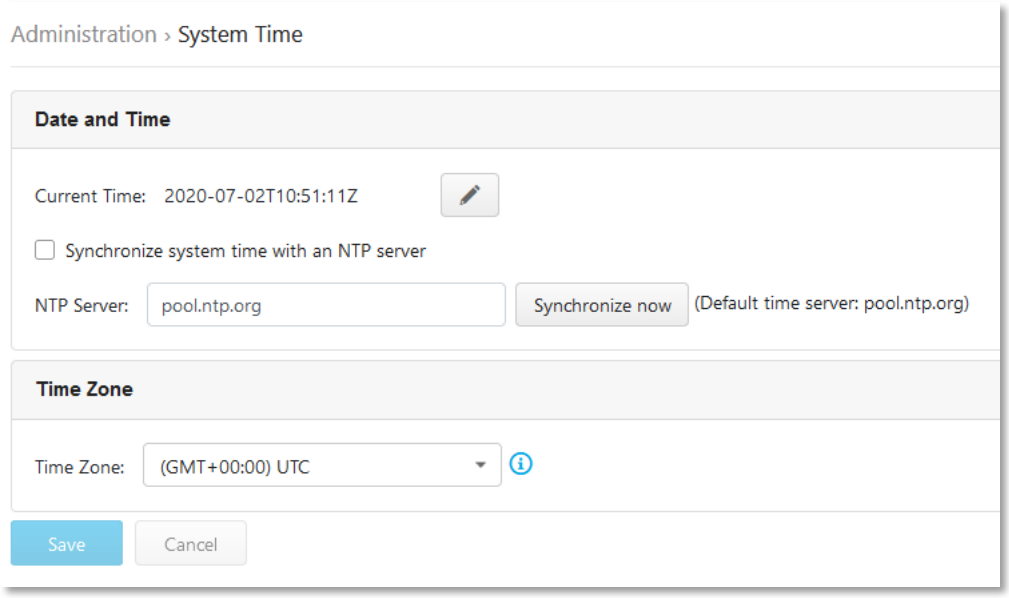
Policy Enforcement / Protocol Filter Action	Cyber Security Severity Level	Syslog Severity Level
		0 - Emergency
	Critical	1 - Alert
	High	2 - Critical
		3 - Error
Deny	Medium	4 - Warning
		5 - Notice
Allow		6 - Information
		7 - Debug

Configuring System Time

Network Time Protocol (NTP) synchronizes computer system clocks across the Internet. Configure NTP settings to synchronize the system clock with an NTP server, or manually set the system time.

Procedure

1. Go to [Administration] > [System Time].



2. Under System Time Settings, select one of the following:
   - Synchronize system time with an NTP server
     a. Specify the domain name or IP address of the NTP server.
     b. Click [Synchronize Now].
   - Set system time manually
     a. Click the calendar to select the date and time.
     b. Set the hour, minute, and second.
     c. Click [Apply].
3. From the Time Zone drop-down list, select the time zone.
4. Click [Save].

The Back Up / Restore Tab

Export settings from the management console to back up the configuration of your EdgeFire. If a system failure occurs, you can restore the settings by importing the configuration file that you previously backed up.

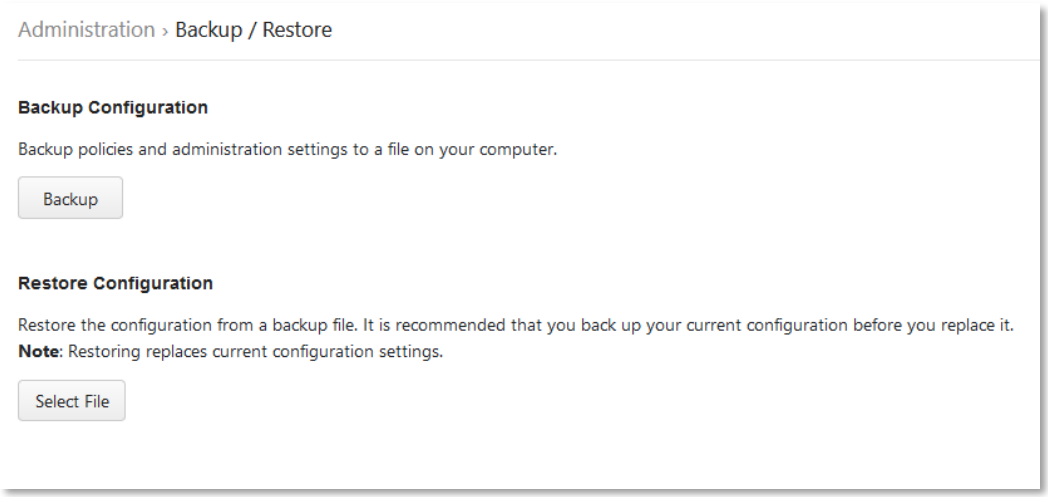
We recommend the following:

- Backing up the current configuration before each import operation.
- Performing the operation when the EdgeFire is idle. Importing and exporting configuration settings affects the performance of EdgeFire .

Backing Up a Configuration

Procedure

1. Go to [Administration] > [Back Up / Restore].
   The [Back Up / Restore] tab will appear.



2. Click the [Back Up] button.
   A configuration backup file will automatically be saved in your computer.

Restoring a Configuration

Follow the steps to restore the configurations of the EdgeFire.

Procedure

1. Go to [Administration] > [Back Up / Restore].
2. Under the [Restore Configuration] section, click the [Select File] button, and proceed to import the file.

All services will restart. It can take some time to restart services after applying imported settings and rules.

The Firmware Management Tab

Use the [Firmware Management] tab to:

- View the firmware information of the device
- Upgrade the firmware of the device
- Boot into standby partition and firmware

Viewing Device Firmware Information

Procedure

1. Go to [Administration] > [Firmware Management].
2. The [Firmware Management] pane lists the two partitions available. It shows the [Partition #], [Partition Name], [Partition Status], [Firmware Version] and [Firmware Build Date].

Note: All Edge Series devices can have up to two firmwares installed. Each firmware is installed in its own separate partition. At any given point in time, one partition will have the status [Running], which indicates the currently running and active firmware. The other partition will have the status [Standby] which indicates an alternative or standby partition.

No	Partition Name	Partition Status	Firmware Version	Firmware Build Time	Actions
1	boot1	Running	IEF_T01_1.1.1	2020-09-10T20:11:03+08:00	
2	boot2	Standby	IEF_T01_1.1.0	2020-08-26T21:47:41+08:00	

Updating Firmware

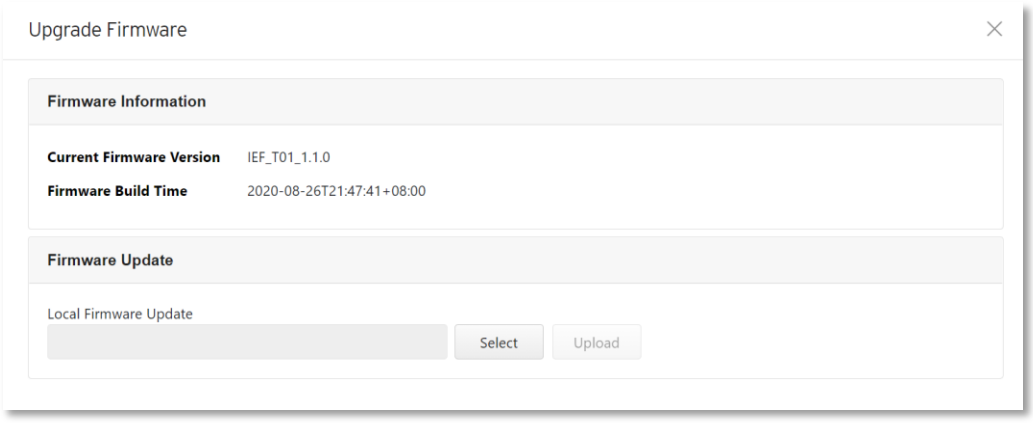
Procedure

1. Go to [Administration] > [Firmware Management].

Note: During a firmware upgrade, firmware will always be installed to the [Standby] partition. As such, the firmware upgrade button is only available in the [Standby] partition row.

No	Partition Name	Partition Status	Firmware Version	Firmware Build Time	Actions
1	boot1	Running	IEF_T01_1.1.1	2020-09-10T20:11:03+08:00	
2	boot2	Standby	IEF_T01_1.1.0	2020-08-26T21:47:41+08:00	

2. Click on the Upgrade Firmware button to install it to the [Standby] partition.
3. In the [Update Firmware] pane provide the location of the firmware and click [Upload] to install the firmware to the [Standby Partition].



4. After successfully installing required firmware to [Standby] partition, click on the [Reboot and Apply Firmware] button as shown in the next section.

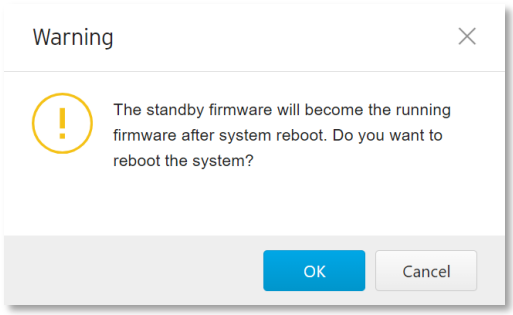
Note: Various versions of the firmware can be downloaded at the Trend Micro Download Center at https://www.trendmicro.com/en_us/business/products/downloads.html

Rebooting and Applying Firmware

To boot into an upgraded firmware or to revert to a previous firmware, a user may need to boot into the [Standby] partition and load the firmware from it.

Procedure

1. Go to [Administration] > [Firmware Management].
2. Click on the [Reboot and Apply Firmware] button that is available in the [Standby] partition row



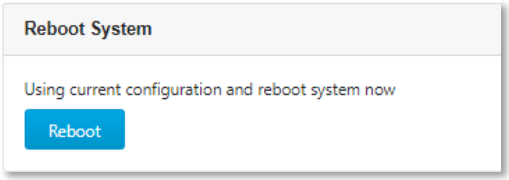
3. Click [OK] to proceed with rebooting into the [Standby] partition and making it the [Running] partition.

Reboot System

Use the [Reboot System] tab to reboot the system.

Procedure

1. Go to [Administration] > [Reboot System]
2. In the [Reboot System] pane, click [Reboot] to reboot the system.



Supported USB Devices

This chapter describes the use of supported USB devices with the EdgeFire™ device for extended or support functionality.

To ensure optimal operation, only the below list of USB devices is currently supported. This list may be updated from time to time. Please visit Trendmicro's support page for a more updated list.

#	Model	Device Type
1	MOXA Backup Configurator (ABC-02 Series) Model: ABC-02-USB-T	USB Disk Drive

Pattern Loading Function

A DPI pattern file may be easily and quickly loaded via a USB disk device. This functionality allows for a floor operator to update the pattern file on the physical floor of the ICS environment without the need of a client computer to log into the device.

Note: Given that this feature allows anyone with a supported USB disk device to update the pattern file, the physical security of the EdgeFire disk device must be considered carefully.

Note: Only supported USB devices may be used for this feature.

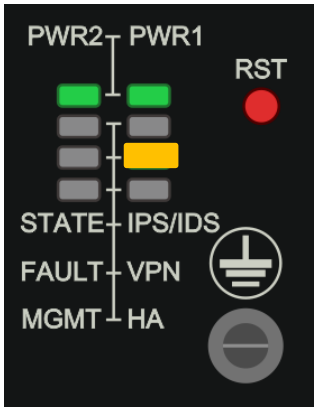
Procedure

1. Save the pattern file in a USB device under the path "**/TXone/pattern/**". Assuming a pattern file has the name pattern.acf, its file path on the USB device would be "**/TXone/pattern/pattern.acf**".

Note: Saving pattern files under other paths or incorrect folder names will cause for the file to not be detected during the pattern load process. Folder names are case-insensitive.

Note: If multiple pattern files exist in the folder, the newest will be selected in subsequent steps.

2. Plug the supported USB disk device into the EdgeFire's USB port.
3. Upon successful detection of the USB disk device, the "IPS/IDS" LED will turn to steady amber. The system log can also be checked to confirm that a supported USB device was inserted and detected.

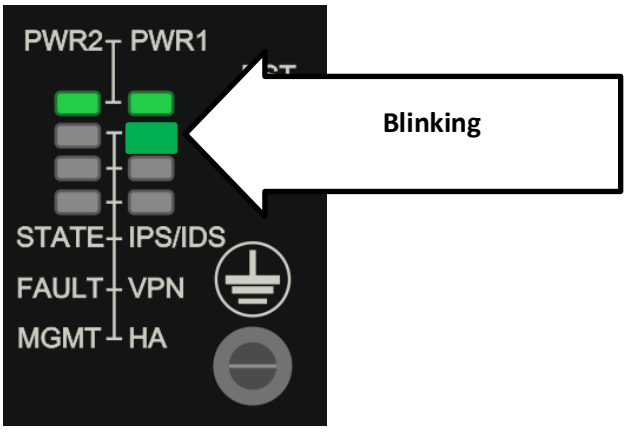


Note: If an unsupported USB device is plugged in, it will simply be ignored and no further action will be taken.

4. The functionality of the reset button will also change to support this function until the USB device is unplugged. The reset button will at this time not serve as the reboot/factory reset button. It will instead serve as a button to cycle through a set of possible actions that may be taken when USB device is plugged in.
5. The user can use the reset button to cycle through a set of possible actions. By default, no action is selected. The user must press the reset button at least once to make a selection. The LEDs will indicate which action is currently selected.

Action	LED	COLOUR/STATE
Default – No action selected, USB plugged in	IPS/IDS LED	Amber – Steady
Load/Restore Pattern from USB Disk Device	IPS/IDS LED	Green – Blinking (1/sec)

6. From the default state, press the reset button once to select "Load/Restore Pattern from USB Disk Device". The IPS/IDS LED will turn green and start blinking.



7. After ensuring the correct action is selected, the action must be confirmed by holding down the reset button for more than 3 seconds.

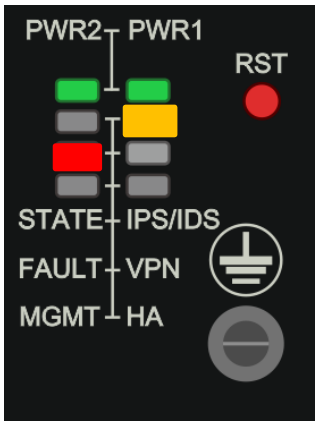
Note:	The action must be confirmed within 10 seconds. If the action is not confirmed within 10 seconds, the LEDs will return to their default state (no action selected) and an action must be selected once again if desired.

8. While an action is being attempted, if there is a USB disk data transfer, the following LEDs will indicate it as shown here and then return to their previous state after data transfer is complete.

Data Transfer Indication	LED	COLOUR/STATE
	IPS/IDS LED	Amber/Green – Blinking (Once every 0.5 sec)

9. If an error occurs when an action is being attempted, the following LEDS will show it like so:

Error Indication (an error occurred while the action was being processed)	LED	COLOUR/STATE
	Fault LED	Red – Steady



Note:	The error can only be cleared if: (1) The reset button is pressed again (LEDs return to default state with no action selected) or (2) The USB disk is unplugged

Note:	Relevant system logs can be checked to verify whether an action was completed successfully or failed. If the action is successful, LEDs will be restored to their default state when the USB disk device was first plugged in and no action selected.
Note:	USB disk device may be unplugged, after which the LEDs will return to their state prior to the USB disk device being plugged in, and a log will be available in System logs.

Terms and Acronyms

The following table lists the terms and acronyms used in this document.

Term/Acronym	Definition
ALG	Application Layer Gateway
CEF	Comment Event Format
CIDR	Classless Inter-Domain Routing
DPI	Deep Packet Inspection
EWS	Engineering Workstation
HMI	Human-Machine Interface
ICS	Industrial Control System
IT	Information Technology
NAT	Network Address Translation
ODC	Operational Technology Defense Console
OT	Operational Technology
OT Defense Console	Operational Technology Defense Console
PLC	Programmable Logic Controller
SCADA	Supervisory Control And Data Acquisition