Cisco Security Analytics and Logging

About Security Analytics and Logging (SaaS) in Cisco Defense Orchestrator

Cisco Security Analytics and Logging (SAL) allows you to capture connection, intrusion, file, malware, security intelligence, syslog, and Netflow Secure Event Logging (NSEL) events from all of your ASA and Secure Firewall Threat Defense devices and view them in one place in Cisco Defense Orchestrator (CDO). The events are stored in the Cisco cloud and viewable from the **Event Logging** page in CDO, where you can filter and review them to gain a clear understanding of what security rules are triggering in your network.

With additional licensing, after you capture these events, you can cross-launch from CDO to a Secure Cloud Analytics portal provisioned for you. Secure Cloud Analytics is a software as a service (SaaS) solution that tracks the state of your network by performing a behavioral analysis on events and network flow data. By gathering information about your network traffic from sources including firewall events and network flow data, it creates observations about the traffic and automatically identifies roles for network entities based on their traffic patterns. Using this information combined with other sources of threat intelligence, such as Talos, Secure Cloud Analytics generates alerts, which constitute a warning that there is behavior that may be malicious in nature. Along with the alerts, Secure Cloud Analytics provides network and host visibility, and contextual information it has gathered to provide you with a better basis to research the alert and locate sources of malicious behavior.

Terminology Note: In this documentation, when Cisco Security Analytics and Logging is used with the Secure Cloud Analytics portal (a software as a service product) you will see this integration referred to as Cisco Security Analytics and Logging (SaaS) or SAL (SaaS).

Event Types in CDO

When filtering ASA and Secure Firewall Threat Defense events logged by Secure Logging Analytics (SaaS), you can choose from a list of ASA and FTD event types that CDO supports. From the CDO menu, navigate **Analytics** > **Event Logging** and click the filter icon to choose events. These event types represent groups of syslog IDs. The table that follows shows which syslog IDs are included in which event type. If you want to learn more about a specific syslog ID, you can search for it in the Cisco ASA Series Syslog Messages or the Cisco Secure Firewall Threat Defense Syslog Messages guides.

Some syslog events have the additional attribute "EventName." You can filter the events table to find events using the EventName attribute by filtering by attribute:value pairs. See EventName Attributes for Syslog Events.

Some syslog events will have the additional attributes "EventGroup" and "EventGroupDefinition". You will be able to filter the events table to find events using these additional attributes by filtering by attribute:value pairs. See EventGroup and EventGroupDefinition Attributes for Some Syslog Messages.

The NetFlow events are different from syslog events. The **NetFlow** filter searches for all NetFlow event IDs that resulted in an NSEL record. Those NetFlow event IDs are defined in the Cisco ASA NetFlow Implementation Guide.

The following table describes the event types that CDO supports and lists the syslog or NetFlow event numbers that correspond to the event types:

Filter Name	Description	Corresponding Syslog Event or Netflow Event
AAA	These are events that the system generates when failed or invalid attempts happen to authenticate, authorize, or use up resources in the network, when AAA is configured.	109001-109035 113001-113027
BotNet	These events get logged when a user attempts to access a malicious network, which might contain a malware-infected host, possibly a BotNet, or when the system detects traffic to or from a domain or an IP address in the dynamic filter block list.	338001-338310
Failover	These events get logged when the system detects errors in stateful and stateless failover configurations or errors in the secondary firewall unit when a failover occurs.	101001-101005, 102001, 103001-103007, 104001-104004, 105001-105048 210001-210022 311001-311004 709001-709007
Firewall Denied	These events get generated when the firewall system denies traffic of a network packet for various reasons, ranging from a packet drop because of the security policy to a drop because the system received a packet with the same source IP and destination IP, which could potentially mean an attack on the network. Firewall Denied events may be contained in a NetFlow and may be reported with NetFlow event IDs as well as syslog IDs.	106001, 106007, 106012, 106013, 106015, 106016, 106017, 106020, 106021, 106022, 106023, 106025, 106027

Filter Name	Description	Corresponding Syslog Event or Netflow Event
Firewall Traffic	These are events that get logged depending on the various connection attempts in the network, user identities, time stamps, terminated sessions, and so on. Firewall Traffic events may be contained in a NetFlow and may be reported with NetFlow event IDs as well as syslog IDs.	106001-106100, 108001-108007, 110002-110003 201002-201013, 209003-209005, 215001 302002-302304, 302022-302027, 303002-303005, 313001-313008, 317001-317006, 324000-324301, 337001-337009 400001-400050, 401001-401005, 406001-406003, 407001-407003, 408001-408003, 415001-415020, 416001, 418001-418002, 419001-419003, 424001-424002, 431001-431002, 450001 500001-500005, 508001-508002 607001-607003, 608001-608005, 609001-609002, 616001 703001-703003, 726001
IPsec VPN	These events are logged in an IPsec VPN-configured firewall when mismatches occur in IPsec security associations or when the system detects an error in the IPsec packets it receives.	402001-402148, 602102-602305, 702304-702307
NAT	These events are logged in a NAT-configured firewall when NAT entries are created or deleted and when all the addresses in a NAT pool are used up and exhausted.	201002-201013, 202001-202011, 305005-305012
SSL VPN	These events are logged in an SSL VPN-configurated firewall when WebVPN sessions get created or terminated, user access errors, and user activities.	716001-716060, 722001-722053, 723001-723014, 724001-724004, 725001-725015
NetFlow	These events are logged around the IP network traffic as network packets enter and exit the interfaces, timestamps, user identities, and the amount of data transferred.	0, 1, 2, 3, 5

Filter Name	Description	Corresponding Syslog Event or Netflow Event
Connection	You can generate events for connections as users generate traffic that passes through the system. Enable connection logging on access rules to generate these events. You can also enable logging on Security Intelligence policies and SSL decryption rules to generate connection events. Connection events contain data about the detected sessions. The information available for any individual connection event depends on several factors, but in general includes: • Basic connection properties: timestamp, source and destination IP address, ingress and egress zones, the device that handled the connection, and so on. • Additional connection properties discovered or inferred by the system: applications, requested URLs, or users associated with the connection, and so on. • Metadata about why the connection was logged: which configuration handled the traffic, whether the connection was allowed or blocked, details about encrypted and decrypted connections, and so on.	430002, 430003

Filter Name	Description	Corresponding Syslog Event or Netflow Event
Intrusion	The system examines the packets that traverse your network for malicious activity that could affect the availability, integrity, and confidentiality of a host and its data. When the system identifies a possible intrusion, it generates an intrusion event, which is a record of the date, time, type of exploit, and contextual information about the source of the attack and its target. Intrusion events are generated for any intrusion rule set to block or alert, regardless of the logging configuration of the invoking access control rule.	430001
File	File events represent files that the system detected, and optionally blocked, in network traffic based on your file policies. You must enable file logging on the access rule that applies the file policy to generate these events. When the system generates a file event, the system also logs the end of the associated connection regardless of the logging configuration of the invoking access control rule.	430004

Filter Name	Description	Corresponding Syslog Event or Netflow Event
Malware	The system can detect malware in network traffic as part of your overall access control configuration. AMP for Firepower can generate a malware event, containing the disposition of the resulting event, and contextual data about how, where, and when the malware was detected. You must enable file logging on the access rule that applies the file policy to generate these events. The disposition of a file can change, for example, from clean to malware or from malware to clean. If AMP for Firepower queries the AMP cloud about a file, and the cloud determines the disposition has changed within a week of the query, the system generates retrospective malware events.	430005
Security Intelligence	Security Intelligence events are a type of connection event generated by the Security Intelligence policy for each connection that is blocked or monitored by the policy. All Security Intelligence events have a populated Security Intelligence Category field. For each of these events, there is a corresponding "regular" connection event. Because the Security Intelligence policy is evaluated before many other security policies, including access control, when a connection is blocked by Security Intelligence, the resulting event does not contain the information that the system would have gathered from subsequent evaluation, for example, user identity.	430002, 430003

About Security Analytics and Logging (SAL SaaS) for the ASA

Security Analytics and Logging (SaaS) allows you to capture all syslog events and Netflow Secure Event Logging (NSEL) from your ASA and view them in one place in Cisco Defense Orchestrator (CDO).

The events are stored in the Cisco cloud and viewable from the Event Logging page in CDO where you can filter and review them to gain a clear understanding of what security rules are triggering in your network. The **Logging and Troubleshooting** package gives you these capabilities.

With the **Logging Analytics and Detection** package (formerly **Firewall Analytics and Logging** package), the system can apply Secure Cloud Analytics dynamic entity modeling to your FTD events, and use behavioral modeling analytics to generate Secure Cloud Analytics observations and alerts. If you obtain a **Total Network Analytics and Monitoring** package, the system applies dynamic entity modeling to both your FTD events and your network traffic, and generates observations and alerts. You can cross-launch from CDO to a Secure Cloud Analytics portal provisioned for you, using Cisco Single Sign-On.

How ASA Events are Displayed in the CDO Events Viewer

Syslog events and NSEL events are generated when logging is enabled on the ASA, and network traffic matches access control rule criteria. After the events are stored in the Cisco cloud, you can view them in CDO.

You can install multiple Secure Event Connectors (SECs) and send events generated by a rule, on any device, to any of the SECs as if it were a syslog server. The SEC then forwards the event to the Cisco cloud. Do not forward the same events to all of your SECs. You will be duplicating the events sent to the Cisco cloud and needlessly inflate your daily ingest rate.

How Syslog and NSEL Events are Sent from an ASA to the Cisco Cloud by way of the Secure Event Connector

With the basic **Logging and Troubleshooting** license, this is how an ASA event reaches the Cisco cloud:

1. You onboard your ASA to CDO using username and password.
2. You configure the ASA to forward syslog and NSEL events to any one of your SECs as if they were syslog servers and enable logging on the device.
3. The SEC forwards the events to the Cisco cloud where the events are stored.
4. CDO displays events from the Cisco cloud in its Events Viewer based on the filters you set.

With the **Logging Analytics and Detection** or **Total Network Analytics and Monitoring** license, the following also occur:

1. Cisco Secure Cloud Analytics applies analytics to the ASA syslog events stored in the Cisco cloud.
2. Generated observations and alerts are accessible from the Secure Cloud Analytics portal associated with your CDO portal.
3. From the CDO portal, you can cross-launch your Secure Cloud Analytics portal to review these observations and alerts.

Componets Used in the Solution

Secure Device Connector (SDC)-The SDC connects CDO to your ASAs. The login credentials for the ASA are stored on the SDC. See Secure Device Connector for more information.

Secure Event Connector (SEC)-The SEC is an application that receives events from your ASAs and forwards them to the Cisco cloud. Once in the Cisco cloud, you can view the events on CDO's Event Logging page or analyze them with Secure Cloud Analytics. Depending on your environment, the SEC is installed on a Secure Device Connector, if you have one; or on its own CDO Connector virtual machine that you maintain in your network. See Secure Event Connectors, on page 36 for more information.

Adaptive Security Appliance (ASA)-The ASA provides advanced stateful firewall and VPN concentrator functionality as well as integrated services with add-on modules. The ASA includes many advanced features, such as multiple security contexts (similar to virtualized firewalls), clustering (combining multiple firewalls into a single firewall), transparent (Layer 2) firewall or routed (Layer 3) firewall operation, advanced inspection engines, IPsec VPN, SSL VPN, and clientless SSL VPN support, and many more features.

Secure Cloud Analytics applies dynamic entity modeling to ASA events, generating detections based on this information. This provides a deeper analysis of telemetry gathered from your network, allowing you to identify trends and examine anomalous behavior in your network traffic. You would make use of this service if you have a **Logging Analytics and Detection** or **Total Network Analytics and Monitoring** license.

Licensing

To configure this solution you need the following accounts and licenses:

- **Cisco Defense Orchestrator**. You must have a CDO tenant.
- **Secure Device Connector**. There is no separate license for a Secure Device Connector.
- **Secure Event Connector**. There is no separate license for a Secure Event Connector.
- **Secure Logging Analytics (SaaS)**. See the Security Analytics and Logging License table.
- **Adaptive Security Appliance (ASA)**. Base license or higher.

Security Analytics and Logging Licensing

In order to implement Security Analytics and Logging (SaaS), you need to purchase one of these licenses:

License Name	Provided Functionality	Available License Durations	Functionality Prerequisites
Logging and Troubleshooting	• View ASA events and event detail within CDO, both as a live feed and as a historical view	• 1 year • 3 years • 5 years	• CDO • An on-premises ASA deployment running software version 9.6 or greater. • Deployment of one or more SECs to pass ASA events to the Cisco cloud.

License Name	Provided Functionality	Available License Durations	Functionality Prerequisites
Logging Analytics and Detection (formerly **Firewall Analytics and Monitoring**)	**Logging and Troubleshooting** functionality, plus: • Apply dynamic entity modeling and behavioral analytics to your events. • Open alerts in Secure Cloud Analytics based on event data, cross-launching from the CDO event viewer.	• 1 year • 3 years • 5 years	• CDO • An on-premises ASA deployment running software version 9.6 or greater • Deployment of one or more SECs to pass ASA events to the Cisco cloud. • A newly provisioned or existing Cisco Secure Cloud Analytics portal.
Total Network Analytics and Monitoring	**Logging Analytics and Detection**, plus: • Apply dynamic entity modeling and behavioral analytics to ASA events, on-premises network traffic, and cloud-based network traffic • Open alerts in Cisco Secure Cloud Analytics based on the combination of ASA event data, on-premises network traffic flow data collected by Cisco Secure Cloud Analytics sensors, and cloud-based network traffic passed to Cisco Secure Cloud Analytics, cross-launching from the CDO event viewer.	• 1 year • 3 years • 5 years	• CDO • An on-premises ASA deployment running software version 9.6 or greater • Deployment of one or more SECs to pass events to the Cisco cloud. • Deployment of at least one Cisco Secure Cloud Analytics sensor version 4.1 or greater to pass network traffic flow data to the cloud OR integrating Cisco Secure Cloud Analytics with a cloud-based deployment, to pass network traffic flow data to Cisco Secure Cloud Analytics. • A newly provisioned or existing Cisco Secure Cloud Analytics portal.

Data Plans

You need to buy a data plan that reflects the number of events the Cisco cloud receives from your on-boarded ASAs on a daily basis. This is called your "daily ingest rate." You can use the Logging Volume Estimator Tool to estimate your daily ingest rate and as that rate changes you can update your data plan.

Data plans are available in 1 GB daily volumes increments, and in 1, 3 or 5 year terms. See the Secure Logging Analytics (SaaS) Ordering Guide for information about data plans.

Note If you have a Security Analytics and Logging license and data plan, then obtain a different license at a later date, that alone does not require you to obtain a different data plan. If your network traffic throughput changes and you obtain a different data plan, that alone does not require you to obtain a different Security Analytics and Logging license.

30-day Free Trial

You can request a 30-day risk-free trial by logging in to CDO and navigating **Monitoring** > **Event Logging** tab. On completion of the 30-day trial, you can order the desired event data volume to continue the service from Cisco Commerce Workspace (CCW), by following the instructions in the Secure Logging Analytics (SaaS) ordering guide.

Next Step

Go to Implementing Secure Logging Analytics (SaaS) for ASA Devices

Implementing Secure Logging Analytics (SaaS) for ASA Devices

Before you Begin

- Review About Security Analytics and Logging (SAL SaaS) for the ASAto learn about:
  - How events are sent to the Cisco cloud
  - Applications in the solution
  - Licenses you need
  - Data plan you need
- You have contacted your managed service provider or CDO Sales representative to create a CDO tenant.
- Review Secure Device Connector. Connecting CDO to your ASA using an SDC is considered a "best practice" but it is not required.
- If you choose to deploy an SDC in your network, you can use one of these methods to install it:
  - Use Deploy a secure device connector using CDO's VM image to install an SDC using CDO's prepared VM image. This is the preferred and easiest way to deploy an SDC.
  - Use Deploy a secure device connector using your own VM image.

- You have Installing Secure Event Connectors and you can send events from any ASA to any SEC onboarded to your tenant.
- You have established two-factor authentication for users of your account.

Workflow to Implement Cisco Security Analytics and Logging (SaaS) and Send Events through the Secure Event Connector to the Cisco Cloud

1. Be sure to review "Before you Begin" above to make sure your environment is properly configured.
2. Onboard ASA Device to CDO using username and password.
3. Send ASA Syslog Events to the Cisco Cloud Using the Command Line Interface.
4. Configuring NSEL for ASA Devices by Using a CDO Macro.
5. Confirm events are visible in CDO. From the navigation bar, select **Monitoring > Event Logging**. Click the Live tab to view live events.
6. If you have a **Firewall Analytics and Monitoring** or **Total Network Analytics and Monitoring** license, continue with the next section, **Analyzing Events with Cisco Secure Cloud Analytics**.

Analyzing Events with Cisco Secure Cloud Analytics

If you have a **Firewall Analytics and Monitoring** or **Total Network Analytics and Monitoring** license, perform the following in addition to the previous steps:

1. Provision a Cisco Secure Cloud Analytics Portal, on page 57.
2. Deploy one or more Secure Cloud Analytics sensors to your internal network if you purchased a **Total Network Analytics and Monitoring** license. See Cisco Secure Cloud Analytics Sensor Deployment for Total Network Analytics and Reporting, on page 58.
3. Invite users to create Secure Cloud Analytics user accounts, tied to their Cisco Single Sign-On credentials. See Viewing Cisco Secure Cloud Analytics Alerts from CDO, on page 59.
4. Cross-launch from CDO to Secure Cloud Analytics to monitor the Secure Cloud Analytics alerts generated from FTD events. See Viewing Cisco Secure Cloud Analytics Alerts from CDO, on page 59.

Reviewing Cisco Secure Cloud Analytics Alerts by Cross-launching from CDO

With a **Firewall Analytics and Monitoring** or **Total Network Analytics and Monitoring** license, you can cross-launch from CDO to Secure Cloud Analytics to review the alerts generated by FTD events.

Review these articles for more information:

- Signing in to CDO
- Viewing Cisco Secure Cloud Analytics Alerts from CDO, on page 59
- Cisco Secure Cloud Analytics and Dynamic Entity Modeling
- Working with Alerts Based on Firewall Events

Troubleshooting Secure Event Connector Issues

Use these troubleshooting topics to gather status and logging information about

- Troubleshooting Secure Event Connector Onboarding Failures
- Event Logging Troubleshooting Log Files
- Use Health Check to Learn the State of your Secure Event Connector

Workflows

Troubleshooting Using Security and Analytics Logging Events describes using the events generated from Cisco Security Analytics and Logging to determine why a user can't access a network resource.

See also Working with Alerts Based on Firewall Events.

Send ASA Syslog Events to the Cisco Cloud using a CDO Macro

You can configure all your ASAs to send events to the Cisco cloud by creating a CDO Macro that uses all the commands described in Send ASA Syslog Events to the Cisco Cloud Using the Command Line Interface and running that macro on all your ASA in the same batch.

CDO's Macro tool allows you to assemble a list of CLI commands, turn elements of the command syntax into parameters, and then save the list of commands so that it can be used more than once. Macros can also be run on more than one device at a time.

Using proven macros promotes configuration consistencies between devices and prevents syntax errors that can occur when using the command line interface.

Before you read further, review these topics so that you understand the mechanics of using macros. This article will only describe assembling the final macro.

- CLI Macros for Managing Devices
- Create a CLI Macro
- Run a CLI Macro
- Edit a CLI Macro
- Delete a CLI Macro

Creating an ASA Security Analytics and Logging (SaaS) Macro

There are two types of formatting you'll see in the following procedure, ASA CLI commands and macro formatting. The ASA CLI commands are written to follow ASA syntax conventions. The macro conventions are described in Create a CLI Macro.

Before you begin, open Send ASA Syslog Events to the Cisco Cloud Using the Command Line Interface in a separate window and read it in parallel with this procedure so you can read the command descriptions as you create your macros.

Note If a logging config is already in place on the ASA, running the macro from CDO will *not* first clear out all of the existing logging config. Rather, the settings defined in the CDO macro will merge into whatever might already be in place.

Step 1 Open a plain text editor and create a list of commands you are going to turn into a macro, based on the instructions and options below. CDO will execute the commands in the order they are written in the macro. Some command will have values that you turn into {{parameters}} that you will fill in when it comes time to run the macro.

Step 2 **Configure the** ASA **to send messages to an SEC as if it were a syslog server.**

Use the **logging host** command to specify the SEC as the syslog server you send messages to. You can send events to any one of the SECs you have onboarded to your tenant.

The **logging host** command specifies a TCP or UDP port to send events to. SeeFinding Your Device's TCP, UDP, and NSEL Port Used for Secure Logging Analytics (SaaS) to determine what ports you should use.

logging host*interface_nameSEC_IP_address* { **tcp/port** | **udp/port** }

Turn this command into one of two different macros depending on what protocol you use to send syslog events to the SEC:

logging host {{interface_name}} {{SEC_ip_address}} tcp/{{port_number}}

logging host {{interface_name}} {{SEC_ip_address}} udp/{{port)_number}}

(Optional) If you use TCP, you can add this command to your list of commands in your macro. It does not need any parameters.

logging permit-hostdown

Step 3 **Specify which syslog messages should be sent to the syslog server.**

Use the **logging trap** command to specify which syslog messages should be sent to the syslog server:

logging trap { *severity_level* | *message_list* }

If you want to define the events sent to the SEC by severity level, turn the command into this macro:

logging trap {{severity_level}}

If you only want to send events to the SEC that are part of a message list, turn the command into this macro:

logging trap {{message_list_name}}

If you chose the **logging trap message_list** command in the previous step, you need to define the syslogs in your message list. Open Create a Custom Event List so you can read the command descriptions as you create the macro. Start with this command:

logging list*name* { **level***level* [**class***message_class*] | **message***start_id* [*-end_id*] }

And break it down into these variations:

logging list {{message_list_name}} level {{security_level}}

logging list {{message_list_name}} level {{security_level}} class {{message_class}}

logging list {{message_list_name}} message {{syslog_range_or_number}}

In the last variation, the message parameter {{syslog_range_or_number}} could be entered as a single syslog ID, 106023, or a range, 302013-302018. Use one or more of the command variations in as many lines as you like to create your message list. Keep in mind that, in a single macro, all parameters with the same name will use the same value you enter. CDO will not run a macro with empty parameters.

Important The **logging list** command has to come before the **logging trap** command in your macro. You define the list first and then the **logging trap** command can use it. See the sample macro below.

Step 4 **(Optional) Add the syslog timestamp.** Add this command if you want to add the date and time to the message that the syslog message originated on the ASA. The timestamp value is displayed in the **SyslogTimestamp** field. Add this command to your list of commands, it will not need any parameters:

logging timestamp

Note Beginning with version 9.10(1), ASA provides the option to enable timestamp as per RFC 5424 in eventing syslogs. When this option is enabled, all timestamp of syslog messages would be displaying the time as per RFC 5424 format. Following is a sample output with RFC 5424 format:

```
<166>2018-06-27T12:17:46Z asa : %ASA-6-110002: Failed to locate egress interface for protocol from
src interface :src IP/src port to dest IP/dest port
```

.

Step 5 **(Optional) Include a device ID in non-EMBLEM format syslog messages.** Open Include the Device ID in Non-EMBLEM Format Syslog Messages so you can read the command descriptions as you create the macro. This is the CLI command you will base your macro on:

logging device-id { **cluster-id** | **context-name** | **hostname** | **ipaddress** *interface_name* [**system**] | **string***text* }

And break it down into these variations:

logging device-id cluster-id

logging device-id context-name

logging device-id hostname

logging device-id ipaddress {{interface_name}} **system**

logging device-id string {{text_16_char_or_less}}

Step 6 **Enable logging**. Add this command to your macro as it is. It does not have any parameters:

logging enable

Step 7 **Do not add write memory** to the last line of the macro. Add the **show running-config logging** command instead to review the results of the logging commands you entered before committing them to the ASA's startup config.

show running-config logging

Step 8 After you are confident your configuration changes were made, you can create a separate macro for the **write memory** command or use CDO's Bulk Command Line Interface function to issue the command to all the devices you configured using your macro.

write memory

Step 9 **(Optional) Enable logging on access control rule "permit" events.** This step in the described in the Send ASA Syslog Events to the Cisco Cloud Using the Command Line Interface procedure but it is not included in this macro. It is performed in the CDO GUI instead.

Step 10 Save the macro.

Example

Here is a sample of a list of commands combined into a single macro:

```
logging host {{interface_name}} {{SEC_ip_address}} {{tcp_or_udp}}/{{port_number}}
logging permit-hostdown
logging list {{message_list_name}} level {{security_level}}
logging list {{message_list_name}} message {{syslog_range_or_number_1}}
logging list {{message_list_name}} message {{syslog_range_or_number_2}}
logging trap {{message_list_name}}
logging device-id cluster-id
logging enable
show running-config logging
```

Note There are several logging list commands to add different specific syslog IDs or ranges. The {{syslog_range_or_number_X}} parameter requires a number or some other differentiator, otherwise their values will all be the same when the macro is filled in. Also keep in mind that CDO will not run a macro if not all the parameters are given a value, so only include the commands in the macro you want to execute. We do want all the syslog IDs contained in the same list so event_list_name stays the same for in each line.

What to do next

Run the Macro

After you have created and saved the ASA Security Analytics and Logging Macro, run the macro to send ASA syslog events to the Cisco cloud.

Send ASA Syslog Events to the Cisco Cloud Using the Command Line Interface

This procedure explains how to forward ASA syslog events to a Secure Event Connector (SEC) and then enable logging. These procedures explain only what is needed to complete that workflow. For a broader discussion of all the ways you can configure logging on the ASA, see the Monitoring chapter of either ASDM1: Cisco ASA Series General Operations ASDM Configuration Guide or CLI Book 1: Cisco ASA Series General Operations CLI Configuration Guide.

Limitations on Supported ASA Commands

CDO does not yet support these syslog commands or message formats:

- EMBLEM format for syslogs
- Secure Syslogs

CDO Command Line Interface for ASA

For all the tasks in this procedure, you will be working on the CDO's command line interface for ASA. To open the command line interface page:

Step 1 From the navigation bar, click **Inventory**.

Step 2 Click the **Devices** tab.

Step 3 Click the appropriate device type tab and select the ASA for which you want to enable logging.

Step 4 In the Device Actions pane on the right, click **>_ Command Line Interface**.

Step 5 Click the **Command Line Interface** tab. You are now ready to enter the commands described below at the prompt.

After entering every command, you will click **Send**. Because CDO's CLI Interface is a direct connection to the ASA, the command is written to the device's running configuration immediately. For changes to be written to the ASA's startup configuration, you need to issue the `write memory` command in addition.

Forward ASA Syslog Events to the Secure Event Connector

To forward ASA syslog events to one of the Secure Event Connectors (SECs) you have onboarded and then enable logging, you need complete these tasks in the procedure that follows.

Step 1 Configure the ASA to send messages to the SEC as if it were a syslog server.

Step 2 Decide what severity level of all logs, or what list of syslog events, you want to send to the SEC.

Step 3 Enable logging.

Step 4 Save the changes to the ASA's startup config.

Send ASA Syslog Events to the Cisco Cloud Using CLI

Step 1 **Configure the** ASA **to send messages to the SEC as if it were a syslog server**

When sending syslog events from the ASA to the Cisco cloud, you forward them to the SEC as if it were an external syslog server, and it forwards the messages to the Cisco cloud.

To send syslog messages to the SEC, perform the following steps:

a. Configure the ASA to send messages, using TCP or UDP, to the SEC as if it were a syslog server. The SEC can use an IPv4 or IPv6 addresss. You will be sending events to either a TCP or UDP port. See Finding Your Device's TCP, UDP, and NSEL Port Used for Secure Logging Analytics (SaaS) to determine what ports you should use.

Here is an example of the **logging host** command syntax:

logging host *interface_name SEC_IP_address* [[**tcp/port**] | [**udp/port**]]

Examples:

```
 > logging host mgmt 192.168.1.5 tcp/10125
> logging host mgmt 192.168.1.5 udp/10025
> logging host mgmt 2002::1:1 tcp/10125
> logging host mgmt 2002::1:1 udp/10025
```

- The **interface_name** argument specifies the ASA interface from which messages are sent to the syslog server. It is a "best practice" to send the syslog messages to the SDC over the same ASA interface already in use for communication with the SDC.
- The **SEC_IP_address** argument should contain the IP address of the VM on which the SEC is installed.
- The **tcp/port** or **udp/port** keyword-argument pair specifies that syslog messages should be sent using either TCP protocol and relevant port, or the UDP protocol and relevant port. You can configure the ASA to send data to a syslog server using either UDP or TCP, but not both. The default protocol is UDP if you do not specify a protocol.

  If you specify TCP, the ASA will discover syslog server failures and as a security protection, new connections through the ASA are blocked. To allow new connections regardless of connectivity to a TCP syslog server, see step b. If you specify UDP, the ASA continues to allow new connections whether or not the syslog server is operational. Valid port values

  Note If you want to send ASA messages to two separate syslog servers, you can run a second logging host command with the appropriate interface, IP address, protocol and port of the other syslog server.

b. (Optional) If you send events to the SEC over TCP, and if either the SEC is down or the log queue on the ASA is full, then new connections are blocked. New connections are allowed again after the syslog server is back up and the log queue is no longer full. To allow new connections regardless of connectivity to a TCP syslog server, disable the feature to block new connections when a TCP-connected syslog server is down using this command:

logging permit-hostdown

Example:

```
 > logging permit-hostdown
```

Step 2 **Specify which syslog messages should be sent to the syslog server with the following command:**

logging trap { severity_level | message_list }

Examples:

```
> logging trap 3
> logging trap asa_syslogs_to_cloud
```

You can specify the severity level number (1 through 7) or name. For example, if you set the severity level to 3, then the ASA sends syslog messages for severity levels 3, 2, and 1.

The message_list argument is replaced with the name of a custom event list, if you have created one. When specifying a custom event list, you only send the syslog messages that are in that list to the Secure Event Connector. In the example above, asa_syslogs_to_cloud is the name of the event list.

Using a message_list could save you money by tightly defining which syslog messages are sent to the Cisco cloud.

See Create a Custom Event List to create a message_list. See Data Storage Plans for more information about data ingest and storage costs.

Step 3 **(Optional) Add the syslog timestamp**

Add the date and time that the syslog message originated on the ASA to the message using the logging timestamp command. The timestamp value is displayed in the **SyslogTimestamp** field.

Example:

```
> logging timestamp
```

Note Beginning with version 9.10(1), ASA provides the option to enable timestamp as per RFC 5424 in eventing syslogs. When this option is enabled, all timestamp of syslog messages would be displaying the time as per RFC 5424 format. Following is a sample output with RFC 5424 format:

```
<166>2018-06-27T12:17:46Z asa : %ASA-6-110002: Failed to locate egress interface for protocol from
src interface :src IP/src port to dest IP/dest port.
```

Step 4 (Optional) Include a device ID in non-EMBLEM format syslog messages

A device ID is an identifier you can insert in a syslog message that will help you easily distinguish all syslog messages sent from a particular ASA. See Include the Device ID in Non-EMBLEM Format Syslog Messages for instructions.

Step 5 (Optional) Enable logging on access control rule "permit" events

When an access control rule denies access to a resource, the event is automatically logged. If you also want to log events generated when an access control rule allows access to a resource, you need to turn on logging for the access control rule and configure a severity type. See Log Rule Activity for instructions on how to turn on logging for an individual network access control rule.

Note Enabling logging on access control rule "permit" events will use-up more of your purchased data plan as it is based on your daily ingest rate of events.

Step 6 Enable logging

At the command prompt, type logging enable. On the ASA, logging is enabled for the entire device, not for individual rules.

Example:

```
 > logging enable
```

Note At this time, CDO does not support enabling secure logging.

Step 7 Save your Changes to the Startup Config

At the command prompt, type write memory. On the ASA, logging is enabled for the entire device, not for individual rules.

Example:

```
> write memory
```

Related Infromation:

- Install a Secure Event Connector on an SDC Virtual Machine, on page 37
- Installing an SEC Using a CDO Image

Create a Custom Event List

Create a custom event list when you are sending ASA syslog events to the Cisco Cloud using one of these methods:

- Send ASA Syslog Events to the Cisco Cloud Using the Command Line Interface
- Send ASA Syslog Events to the Cisco Cloud using a CDO Macro

You can create an event list, also referred to as a message_list, based on the following three criteria:

- Event Class
- Severity
- Message ID

To create a custom event list to send to a specific logging destination (for example, a syslog server or a Secure Event Connector), perform the following steps:

Step 1 In the **Inventory** page, click the **Devices** tab.

Step 2 Click the appropriate tab and select the ASA whose syslog messages you want to include in a custom event list.

Step 3 In the **Device Actions** pane, click **>_ Command Line Interface.**

Step 4 Use this command syntax to issue the **logging list** command to the ASA:

logging list *name* { **level** *level* [**class** *message_class*] | **message** *start_id* [*-end_id*] }

The *name* argument specifies the name of the list. The **level** *level* keyword and argument pair specify the severity level. The **class** *message_class* keyword-argument pair specify a particular message class. The **message** *start_id* [*-end_id*] keyword-argument pair specify an individual syslog message number or a range of numbers.

Note Do not use the names of severity levels as the name of a syslog message list. Prohibited names include emergencies, alert, critical, error, warning, notification, informational, and debugging. Similarly, do not use the first three characters of these words at the beginning of an event list name. For example, do not use an event list name that starts with the characters "err."

- **Add syslog messages to the event list based on severity**. For example, if you set the severity level to 3, then the ASA sends syslog messages for severity levels 3, 2, and 1.

  Example:

  ```
  > logging list asa_syslogs_to_cloud level 3
  ```

- **Add syslog messages based on other criteria to the event list**:

  Enter the same command as in the previous step, specifying the name of the existing message list and the additional criterion. Enter a new command for each criterion that you want to add to the list. For example, you can specify criteria for syslog messages to be included in the list as the following:

  - Syslog message IDs that fall into the range of 302013-302018.
  - All syslog messages with the critical severity level or higher (emergency, alert, or critical).
  - All HA class syslog messages with the warning severity level or higher (emergency, alert, critical, error, or warning).

    Example:

```
> logging list asa_syslogs_to_cloud message 302013-302018
> logging list asa_syslogs_to_cloud level critical
> logging list asa_syslogs_to_cloud level warning class ha
```

Note A syslog message is logged if it satisfies any of these conditions. If a syslog message satisfies more than one of the conditions, the message is logged only once.

Step 5 **Save your Changes to the Startup Config**

At the command prompt, type **write memory**.

Example:

```
> write memory
```

Include the Device ID in Non-EMBLEM Format Syslog Messages

You can configure the ASA to include a device ID in non-EMBLEM-format syslog messages. You can specify only one type of device ID for syslog messages. This procedure is referred to by these procedures:

- Send ASA Syslog Events to the Cisco Cloud Using the Command Line Interface
- Send ASA Syslog Events to the Cisco Cloud using a CDO Macro

This device identifier will be reflected in the SensorID field of a syslog event displayed on the Event Logging page.

Step 1 Select the ASA whose syslog messages you want to assign a device-id to.

Step 2 In the Device Actions pane, click **>_ Command Line Interface.**

Step 3 Use this command syntax to issue the **logging device-id** commands to the device.

logging device-id { **cluster-id** | **context-name** | **hostname** | **ipaddress***interface_name* [**system**] | **string***text* }

Example:

```
> logging device-id hostname
> logging device-id context-name
> logging device-id string Cambridge
```

The **context-name** keyword indicates that the name of the current context should be used as the device ID (applies to multiple context mode only). If you enable the logging device ID for the admin context in multiple context mode, messages that originate in the system execution space use a device ID of **system**, and messages that originate in the admin context use the name of the admin context as the device ID.

Note In an ASA cluster, always use the primary unit IP address for the selected interface.

The **cluster-id** keyword specifies the unique name in the boot configuration of an individual ASA unit in the cluster as the device ID.

The **hostname** keyword specifies that the hostname of the ASA should be used as the device ID.

The **ipaddress** *interface_name* keyword-argument pair specifies that the interface IP address specified as *interface_name* should be used as the device ID. If you use the **ipaddress** keyword, the device ID becomes the specified ASA interface IP address, regardless of the interface from which the syslog message is sent. In the cluster environment, the **system**

keyword dictates that the device ID becomes the system IP address on the interface. This keyword provides a single, consistent device ID for all syslog messages that are sent from the device.

The **string** *text* keyword-argument pair specifies that the text string should be used as the device ID. The string can include as many as 16 characters.

You cannot use blank spaces or any of the following characters:

- & (ampersand)
- ‘ (single quote)
- " (double quote)
- < (less than)
- > (greater than)
- ? (question mark)

Step 4 **Save your Changes to the Startup Config**

At the command prompt, type **write memory**.

Example:

```
> write memory
```

NetFlow Secure Event Logging (NSEL) for ASA Devices

Basic syslog messages from the ASA lack much of the data that Secure Cloud Analytics needs to determine if events reported by the ASA indicate a threat. Netflow Secure Event Logging (NSEL) provides the Secure Cloud Analytics with that data.

"A flow is defined as a unidirectional sequence of packets with some common properties that pass through a network device. These collected flows are exported to an external device, the NetFlow collector. Network flows are highly granular; for example, flow records include details such as IP addresses, packet and byte counts, timestamps, Type of Service (ToS), application ports, input and output interfaces, etc."[1]

The Cisco ASA supports NetFlow Version 9 services. The ASA implementation of NSEL provides a stateful, IP flow tracking method that exports only those records that indicate significant events in a flow. In stateful flow tracking, tracked flows go through a series of state changes.

This documentation describes a straight forward approach to configuring NetFlow for your ASAs using a CDO macro. The Cisco ASA NetFlow Implementation Guide provides an extremely detailed discussion of configuring NetFlow on the ASA and you may find it a valuable resource to accompany this content.

What to do Next

Go to Configuring NSEL for ASA Devices by Using a CDO Macro.

Related Articles

- Configuring NSEL for ASA Devices by Using a CDO Macro
- Delete NetFlow Secure Event Logging (NSEL) Configuration from an ASA

- Determine the Name of an ASA Global Policy

1. ("Cisco Systems NetFlow Services Export Version 9." Internet Engineering Task Force, Network Working Group, Request for Comments: 3954, October 2004, B. Claise, Ed. https://www.ietf.org/rfc/rfc3954.txt)

Configuring NSEL for ASA Devices by Using a CDO Macro

ASAs report detailed connection event data using Netflow Secure Event Logging (NSEL). You can apply Secure Cloud Analytics to this connection event data, which includes bidirectional flow statistics. This procedure describes how to configure NSEL on an ASA device and send those NSEL events to a flow collector. In this case, the flow collector is a Secure Event Connector (SEC).

This procedure refers to this macro, **Configure NSEL**:

```
 flow-export destination {{interface}} {{SEC_IPv4_address}} {{SEC_NetFlow_port}}
flow-export template timeout-rate {{timeout_rate_in_mins}}
flow-export delay flow-create {{delay_flow_create_rate_in_secs}}
flow-export active refresh-interval {{refresh_interval_in_mins}}
class-map {{flow_export_class_name}}
     match {{add_this_traffic_to_class_map}}
policy-map {{global_policy_map_name}}
     class {{flow_export_class_name}}
          flow-export event-type {{event_type}} destination {{SEC_IPv4_address}}
service-policy {{global_policy_map_name}} global
logging flow-export-syslogs disable
show run flow-export
show run policy-map {{global_policy_map_name}}
show run class-map {{flow_export_class_name}}
```

Here is an example of the Configure NSEL macro with all the default values filled in, a generic name for the class-map, and the class map added to the global_policy, When you are done with these procedures, your macro will resemble this:

```
 flow-export destination {{interface}} {{SEC_IPv4_address}} {{SEC_NetFlow_port}}
flow-export template timeout-rate 60
flow-export delay flow-create 55
flow-export active refresh-interval 1
class-map flow_export_class_map
     match any
policy-map global_policy
     class flow_export_class_map
          flow-export event-type all destination {{SEC_IPv4_address}}
logging flow-export-syslogs disable
show run flow-export
show run policy-map global_policy
show run class-map flow_export_class_map
```

Before you Begin

Gather the following information:

- Read these topics if you have never worked with a CDO Macro before:
  - Command Line Interface Macros
    - Edit a CLI Macro
    - Run a CLI Macro

- IPv4 address of the SEC that will receive data from the ASA
- Interface on the asa that will send data to the SEC
- UDP port number used to forward NetFlow events. See Finding Your Device's TCP, UDP, and NSEL Port Used for Secure Logging Analytics (SaaS), on page 115.
- Determine the Name of an ASA Global Policy, on page 30

Workflow

Follow this workflow to configure NSEL for ASA devices by using a CDO macro. You need to follow each step:

1. Open the Configuring NSEL Macro , on page 24.
2. Define the Destination of NSEL Messages and the Interval at Which They Are Sent to the SEC, on page 25.
3. Create a Class-Map that Defines which NSEL Events Will Be Sent to the SEC, on page 26.
4. Define a Policy-Map for NSEL Events, on page 26.
5. Disable Redundant Syslog Messages, on page 27.
6. Review and Send the Macro, on page 28.

What to do next

Begin the workflow above by going to Open the Configuring NSEL Macro , on page 24.

Open the Configuring NSEL Macro

Before you begin

This is first part in a longer workflow, see Configuring NSEL for ASA Devices by Using a CDO Macro, on page 23 before getting started.

Step 1 On the **Inventory** page, click the **Devices** tab.

Step 2 Click the appropriate device type tab and select the ASA(s) on which you want to configure NetFlow Secure Event Logging (NSEL).

Step 3 In the **Device Actions** pane, click **Command Line Interface**.

Step 4 Click the Macro star  Macros to show the list of available macros.

Step 5 From the list of macros, select **Configuring NSEL**.

Step 6 Under the Macro box, click **View Parameters**.

What to do next

Continue to Define the Destination of NSEL Messages and the Interval at Which They Are Sent to the SEC, on page 25.

Define the Destination of NSEL Messages and the Interval at Which They Are Sent to the SEC

NSEL messages can be sent to any one of the SECs you have onboarded to your tenant. These instructions refer to this section of the macro:

flow-export destination {{interface}} {{SEC_IPv4_address}} {{SEC_NetFlow_port}}

flow-export template timeout-rate {{timeout_rate_in_mins}}

flow-export delay flow-create {{delay_flow_create_rate_in_secs}}

flow-export active refresh-interval {{refresh_interval_in_mins}}

Before you begin

This is part of a larger workflow. See Configuring NSEL for ASA Devices by Using a CDO Macro, on page 23 before getting started.

Step 1 The **flow-export destination** command defines the collector to which the NetFlow packets are sent. In this case, you are sending them to an SEC. Fill in the fields for these parameters:

- **{{interface}}**-Enter the name of the interface on the ASA from which the NetFlow events are sent.
- **{{SEC_IPv4_address}}**-Enter the IPv4 address of the SEC. The SEC functions as the flow collector.
- **{{SEC_NetFlow_port}}**-Enter the UDP port number on the SEC to which NetFlow packets are sent.

Step 2 The **flow-export template timeout-rate** command specifies the interval at which template records are sent to all configured output destinations.

- **{{timeout_rate_in_mins}}**-Enter the number of minutes before templates are resent. **We recommend using a value of 60 minutes**. The SEC does not process the templates. A large number reduces traffic to the SEC.

Step 3 The **flow-export delay flow-create** command delays the sending of flow-create events by the specified number of seconds. This value matches the recommended Active Timeout value and reduces the number of flow events exported from the ASA. At that rate, expect NSEL events to first appear in CDO at the close of a connection or within 55 seconds of the creation of the connection, whichever happens earlier. If this command is not configured, there is no delay, and the flow-create event is exported as soon as the flow is created.

- **{{delay_flow_create_rate_in_secs}}**-Enter the number of seconds delay between sending flow-create events. **We recommend using a value of 55 seconds**.

Step 4 The **flow-export active refresh-interval** command defines the frequency that status updates for long-lived flows will be sent from ASA. Valid values are from 1-60 minutes. In the Flow Update Interval field, configuring the **flow-export active refresh-interval** to be at least 5 seconds more than the **flow-export delay flow-create** interval prevents flow-update events from appearing before flow-creation events.

- **{{refresh_interval_in_mins}}-We recommend using a value of 1 minute**. Valid values are from 1-60 minutes.

What to do next

Continue to Create a Class-Map that Defines which NSEL Events Will Be Sent to the SEC, on page 26.

Create a Class-Map that Defines which NSEL Events Will Be Sent to the SEC

The following commands in the macro group all NSEL events in a class and then export that class to the Secure Event Connector (SEC). These instructions refer to this section of the macro:

class-map {{flow_export_class_name}}

match {{add_this_traffic_to_class_map}}

Before you begin

This is part of a larger workflow. See Configuring NSEL for ASA Devices by Using a CDO Macro, on page 23 before getting started.

Step 1 The **class-map** command names the class map that identifies NSEL traffic that will be exported to the SEC.

- **{{flow-export-class-name}}**-Enter a name for your class map. The name may be up to 40 characters in length. The names "class-default" and any name that begins with "_internal" or "_default" are reserved. All types of class maps use the same name space, so you cannot re-use a name already used by another type of class map.

Step 2 Identify the traffic that is going to be associated with (matched with) your class-map. Choose one of these options for the value of **{{add_this_traffic_to_class_map}}:**

- Enter **any** in the **{{add_this_traffic_to_class_map}}** field. This monitors all traffic types for NSEL traffic. **We recommend using the value "any".**
- Enter **access-list** ***name-of-access-list*** in the **{{add_this_traffic_to_class_map}}** field. This associates all the traffic associated with an access-list that you have created. See Configure Flow-Export Actions Through Modular Policy Framework in the Cisco ASA NetFlow Implementation Guide for more information.

What to do next

Continue to, Define a Policy-Map for NSEL Events, on page 26.

Define a Policy-Map for NSEL Events

The task assigns NetFlow export actions to the class you created in the previous task, and the class to a new policy map. These instructions refer to this section of the macro:

policy-map {{global_policy_map_name}}

class {{flow_export_class_name}}

flow-export event-type {{event_type}} destination {{SEC_IPv4_address}}

Before you begin

This is part of a larger workflow. See Configuring NSEL for ASA Devices by Using a CDO Macro, on page 23 before getting started.

Step 1 The **policy-map** command creates a policy-map. In the next task, you associate this policy map with the global policy.

- **{{global_policy_map_name}}**-Enter a name for the policy map. **We recommend using the name of the firewall's existing global policy if there is one**. The default name for the global policy is **global_policy**. See Determine the Name of an ASA Global Policy. If you create a new policy map and apply it globally according to Configure Flow-Export Actions Through Modular Policy Framework in Cisco ASA NetFlow Implementation Guide, the remaining inspection policies are deactivated.

Step 2 The **class** command inherits the name of the class-map you created in Create a Class-Map that Defines which NSEL Events Will Be Sent to the SEC, on page 26.

Step 3 The **flow-export event-type** {{event-type}} **destination** {{IPv4_address}} command defines which event types should be sent to flow collector, (in this case the SEC).

- **{{event-type}}**-The event_type keyword is the name of the supported event being filtered. **We recommend using the value "all"**.
- **{{SEC_IPv4_address}}**-This is the IPv4 address of the SEC. Its value is inherited from the value you entered in Define the Destination of NSEL Messages and the Interval at Which They Are Sent to the SEC, on page 25.

What to do next

Continue to, Disable Redundant Syslog Messages, on page 27.

Disable Redundant Syslog Messages

These instructions refer to this section of the macro. You do not need to modify the command.

logging flow-export-syslogs disable

Enabling NetFlow to export flow information makes the syslog messages in the following table redundant. In the interest of performance, we recommend that you disable redundant syslog messages, because the same information is exported through NetFlow.

Note When NSEL and syslog messages are both enabled, there is no guarantee of chronological ordering between the two logging types.

Syslog Message	Description	NSEL Event ID	NSEL Extended Event ID
106100	Generated whenever an access control rule (ACL) is encountered.	1-Flow was created (if the ACL allowed the flow). 3-Flow was denied (if the ACL denied the flow).	0-If the ACL allowed the flow. 1001-Flow was denied by the ingress ACL. 1002-Flow was denied by the egress ACL.
106015	A TCP flow was denied because the first packet was not a SYN packet.	3-Flow was denied.	1004-Flow was denied because the first packet was not a TCP SYN packet.

Syslog Message	Description	NSEL Event ID	NSEL Extended Event ID
106023	When a flow was denied by an ACL attached to an interface through the **access-group** command.	3-Flow was denied.	1001-Flow was denied by the ingress ACL. 1002-Flow was denied by the egress ACL.
302013, 302015, 302017, 302020	TCP, UDP, GRE, and ICMP connection creation.	1-Flow was created.	0-Ignore.
302014, 302016, 302018, 302021	TCP, UDP, GRE, and ICMP connection teardown.	2-Flow was deleted.	0-Ignore. > 2000-Flow was torn down.
313001	An ICMP packet to the device was denied.	3-Flow was denied.	1003-To-the-box flow was denied because of configuration.
313008	An ICMP v6 packet to the device was denied.	3-Flow was denied.	1003-To-the-box flow was denied because of configuration.
710003	An attempt to connect to the device interface was denied.	3-Flow was denied.	1003-To-the-box flow was denied because of configuration.

If you do not want to disable redundant syslog messages, you can edit this macro and delete only this line from it:

logging flow-export-syslogs disable

You can later enable or disable individual syslog messages by following the procedure in the Disabling and Reenabling NetFlow-related Syslog Messages.

Review and Send the Macro

Before you begin

This is part of a larger workflow. See Configuring NSEL for ASA Devices by Using a CDO Macro, on page 23, before getting started.

Step 1 After filling in the fields of the macro, click **Review** to review the commands before they are sent to the ASA.

Step 2 If you are satisfied with your responses to the commands, click **Send**.

Step 3 After you send the command, you may see the message, "Some commands may have made changes to the running config" along with two links.

- Clicking **Write to Disk** saves the changes made by this command, and any other changes in the running-configuration, to the device's startup configuration.

- Clicking **Dismiss** dismisses the message.

You have finished the workflow descried in Configuring NSEL for ASA Devices by Using a CDO Macro, on page 23.

Delete NetFlow Secure Event Logging (NSEL) Configuration from an ASA

This procedure explains how to DELETE the NetFlow Secure Event Logging (NSEL) Configuration on an ASA, which specifies the Secure Event Connector (SEC) as the NSEL flow collector. This procedure reverses the macro described in Configuring NSEL for ASA Devices by Using a CDO Macro.

This procedure refers to this macro, **DELETE NSEL**:

```
policy-map {{flow_export_policy_name}}
no class {{flow_export_class_name}}
no class-map {{flow_export_class_name}}
no flow-export destination {{interface}} {{IPv4_address}} {{NetFlow_port}}
no flow-export template timeout-rate {{timeout_rate_in_mins}}
no flow-export delay flow-create {{delay_flow_create_rate_in_secs}}
no flow-export active refresh-interval {{refresh_interval_in_mins}}
logging flow-export-syslogs enable
show run flow-export
show run policy-map {{flow_export_policy_name}}
show run class-map {{flow_export_class_name}}
```

Open the DELETE-NSEL Macro

Step 1 On the **Inventory** page, click the **Devices** tab.

Step 2 Click the appropriate device type tab and select the ASA(s) on which you want to delete the configuration of NetFlow Secure Event Logging (NSEL).

Step 3 In the **Device Actions** pane, click **Command Line Interface**.

Step 4 Click the Macros star  to show the list of available macros.

Step 5 In the list of macros, select **DELETE-NSEL**.

Step 6 Under the Macro box, click **View Parameters**.

Enter the Values in the Macro to Complete the No Commands

The ASA CLI uses the "no" form of a command to delete it. Fill in the fields in the macro to complete the "no" form of the command:

Step 1 policy-map {{flow_export_policy_name}}

- **{{flow_export_policy_name}}**-Enter the value of the policy-map name.

Step 2 no class {{flow_export_class_name}}

- **{{flow_export_class_name}}**-Enter the value of the class-map name.

Step 3 no class-map {{flow_export_class_name}}

- **{{flow_export_class_name}}**-The value of the class-map name is inherited from the step above.

Step 4 no flow-export destination {{interface}} {{IPv4_address}} {{NetFlow_port}}

- **{{interface}}**-Enter the name of the interface on the ASA from which the NetFlow events were sent.
- **{{IPv4_address}}**-Enter the IPv4 address of the SEC. The SEC functions as the flow collector.
- **{{NetFlow_port}}**-Enter the UDP port number on the SEC to which NetFlow packets were sent.

Step 5 no flow-export template timeout-rate {{timeout_rate_in_mins}}

- **{{timeout_rate_in_mins}}**-Enter the flow-export template timeout-rate.

Step 6 no flow-export delay flow-create {{delay_flow_create_rate_in_secs}}

- **{{delay_flow_create_rate_in_secs}}**-Enter the flow-export delay flow-create rate.

Step 7 no flow-export active refresh-interval {{refresh_interval_in_mins}}

- **{{refresh_interval_in_mins}}**-Enter the flow-export active refresh-interval interval.

Determine the Name of an ASA Global Policy

To determine the name of the ASA's global policy, follow this procedure:

Step 1 From the **Inventory** page, select the device for which you want to find the name of the global policy.

Step 2 In the Device Actions pane, select **>_Command Reference**.

Step 3 In the Command Line Interface window, at the prompt, type:

show running-config service-policy

In the output of the example below, global_policy is the name of the global policy.

Example:

> **show running-config service-policy**

service-policy global_policy global

Troubleshooting NSEL Data Flows

Once you have Configuring NSEL for ASA Devices by Using a CDO Macro , use these procedures to verify that NSEL events are being sent from your ASA to the Cisco Cloud and that the Cisco Cloud is receiving them.

Note that once your ASA is configured to send NSEL events to the Secure Event Connector (SEC) and then on to the Cisco Cloud, data does not flow immediately. It could take a few minutes for the first NSEL packets to arrive assuming there is NSEL-related traffic being generated on the ASA.

Note This workflow shows you a straight-forward use of the "flow-export counters" command and "capture" commands to Troubleshoot NSEL Data Flows. See "Packet Captures" CLI Book 1: Cisco ASA Series General Operations CLI Configuration Guide and "Monitoring NSEL" in the Cisco ASA NetFlow Implementation Guide for a more detailed discussion of the usage of these commands.

Perform these tasks:

- Verify that NetFlow Packets are Being Sent to the SEC
- Verify that NetFlow Packets are Being Received by the Cisco Cloud

Verify that NSEL Events are Being Sent to the SEC

Use one of two commands to verify that NSEL packets are being sent to the SEC:

- flow-export counters
- capture

Use the "flow-export counters" Command to Check for flow-export Packets Being Sent and for NSEL errors

- Make sure you have configured your ASA to send NSEL events to the SEC. See Configuring NSEL for ASA Devices by Using a CDO Macro.
- The SEC IP address is the flow collector address for NSEL events. If you have onboarded more than one SEC to your tenant, be sure you are using the correct IP address.
- Find the UDP port number used to forward NetFlow events. See Finding Your Device's TCP, UDP, and NSEL Port Used for Secure Logging Analytics (SaaS).
- Our recommended interface on the ASA from which to send NSEL events is the management interface; your interface may be different.

Use the command line interface in CDO to send these commands to the ASAs that you have configured for NSEL.

Step 1 In the navigation pane, click **Inventory**.

Step 2 Click the **Devices** tab.

Step 3 Click the appropriate device tab and select the ASA you configured to send NSEL events to the SEC.

Step 4 In the **Device Actions** pane on the right, click **Command Line Interface**.

Step 5 Reset the flow export counters by running the `clear flow-export counters` command. This resets the clear export flow counters to zero so that you can easily tell if new events are coming in.

example:

```
> clear flow-export counters
```

```
Done!
```

Step 6 Run the show flow-export counters command to see the destination of the NSEL packets, how many packets were sent and any errors:

example:

```
>show flow-export counters

destination: management 209.165.200.225 10425

Statistics:

packets sent 25000

Errors:

block allocation errors 0

invalid interface 0

template send failure 0

no route to collector 0

source port allocation 0
```

In the output above, the destination line shows the interface on the ASA from which NSEL events are sent, the IP address of the SEC, port 10425 of the SEC. It also shows packets sent of 25000.

If there are no errors and packets are being sent, skip to Verify that NetFlow Packets are Being Received by the Cisco Cloud below.

Error descriptions:

- **block allocation errors**-If you receive a block allocation error, the ASA did not allocate memory to the flow-exporter.
  - Recovery action: Call Cisco Technical Assistance Center (TAC).
- **invalid interface**-Indicates that you are trying to send NSEL events to the SEC but the interface you've defined for flow export isn't configured to do so.
  - Recovery action: Review the interface you chose when configuring NSEL. We recommend using the management interface, your interface may be different.
- **template send failure**-The template you had to define NSEL was not parsed correctly.
  - Recovery action: Contact Defense Orchestrator support.
- **no route to collector**-Indicates there is no network route from the ASA to the SEC.
  - Recovery actions:
    - Make sure that the IP address you used for the SEC when you configured NSEL is correct.
    - Make sure the SEC's status is Active and it has sent a recent heartbeat. See SDC is Unreachable.
    - Make sure the Secure Device Connector's status is Active and it has sent a recent heartbeat.

- **source port allocation**-May indicate that there is a bad port on your ASA.

Use the "capture" Command to Capture NSEL Packets Sent from the ASA to the SEC

- Make sure you have configured your ASA to send NSEL events to the SEC. See Configuring NSEL for ASA Devices by Using a CDO Macro.
- The SEC IP address is the flow collector address for NSEL events. If you have onboarded more than one SEC to your tenant be sure you are using the correct IP address.
- Find the UDP port number used to forward NetFlow events. See Finding Your Device's TCP, UDP, and NSEL Port Used for Secure Logging Analytics (SaaS)
- Our recommended interface on the ASA from which to send NSEL events is the management interface; your interface may be different.

Use the command line interface in CDO to send these commands to the ASAs that you have configured for NSEL.

Step 1 In the navigation pane, click **Inventory**.

Step 2 Click the **Devices** tab.

Step 3 Click the appropriate device type tab and select the ASA you configured to send NSEL events to the SEC.

Step 4 In the **Device Actions** pane on the right, click **Command Line Interface**.

Step 5 In the command window, run this **capture** command:

>**capture***capture_name***interface***interface_name* **match udp any host** *IP_of_SEC***eq***NetFlow_port*

Where

- *capture_name* is the name of the packet capture.
- *interface_name* is the name of the interface from which NSEL packets leave the ASA.
- *IP_of_SEC* is the IP address of the SEC VM.
- *NetFlow_port* is the port to which NSEL events are sent.

This starts the packet capture.

Step 6 Run the **show capture** command to view the captured packets:

> show capture*capture_name*

Where *capture_name* is the name of the packet capture you defined in the previous step.

Here is an example of the output showing the time of the capture, the IP address from which the packet was sent, the IP address, and the port the packet was sent to. In this example, 192.168.25.4 is the IP address of the SEC and port 10425 is the port on the SEC that receives NSEL events.

6 packets captured

```
1: 14:23:51.706308 192.168.0.169.16431 > 192.168.25.4.10425: udp 476

2: 14:23:53.923017 192.168.0.169.16431 > 192.168.25.4.10425: udp 248

3: 14:24:07.411904 192.168.0.169.16431 > 192.168.25.4.10425: udp 1436
```

```
4: 14:24:07.411920 192.168.0.169.16431 > 192.168.25.4.10425: udp 1276
5: 14:24:21.021208 192.168.0.169.16431 > 192.168.25.4.10425: udp 112
6: 14:24:27.444755 192.168.0.169.16431 > 192.168.25.4.10425: udp 196
```

Step 7 Run the **capture stop** command to manually stop the packet capture:
> capture *capture_name***stop**

Where *capture_name* is the name of the packet capture you defined in the previous step.

Verify that NetFlow Packets are Being Received by the Cisco Cloud

Before you Begin

Verify that NSEL events are being sent from the ASA.

Check for Live NSEL Events

Check for both live and historical events.

This procedure will filter for NSEL events that the Cisco Cloud has received within the last hour.

Step 1 From the CDO menu, choose **Analytics** > **Event Logging**.
Step 2 Click the **Live** tab.
Step 3 Pin-open the event filter.
Step 4 In the ASA Events section, make sure NetFlow is checked.
Step 5 In the Sensor ID field, enter the IP address of the ASA you configured to send NSEL events.
Step 6 At the bottom of the filter, make sure that "Include NetFlow Events" is checked.

Check for Historical NSEL Events

This procedure will filter for NSEL events that the Cisco Cloud has received within the time-frame you specify.

Step 1 From the CDO menu, choose **Analytics** > **Event Logging**.
Step 2 Click the **Historical** tab.
Step 3 Pin-open the event filter.
Step 4 In the ASA Events section, make sure NetFlow is checked.
Step 5 Set the Start time far enough back in time to check if CDO ever did receive NSEL events.
Step 6 In the Sensor ID field, enter the IP address of the ASA you configured to send NSEL events.
Step 7 At the bottom of the filter, make sure that "Include NetFlow Events" is checked.

Parsed ASA Syslog Events

Parsed syslog events contain more event attributes than other syslog events and let you search on any specific parsed field. The SEC forwards all ASA events you specify to the Cisco cloud but only the syslog messages in the table below are parsed. All parsed Syslogs events are shown with their EvenTypes italicised to help you identify.

For detailed explanations of syslogs see, Cisco ASA Series Syslog Messages.

Syslog ID	Syslog Category	Purpose of syslog messge
106015	Firewall	Represents out of state TCP Deny
106023	Firewall	A real IP packet was denied by the ACL. This message appears even if you do not have the **log** option enabled for an ACL.
106100	Access Lists/User Session	Packet was permitted or denied by an ACL.
113019	User Authentication	Critical AnyConnect
302013, 302015, 302017, 302020	User Session	Connection start and end syslogs for TCP, UDP, GRE, and ICMP connection creation.
302014, 302016, 302018, 302021	User Session	Connection start and end syslogs for TCP, UDP, GRE, and ICMP connection creation.
302020 - 302021	User Session	ICMP session establishment and teardown.
305006	User Session/NAT and PAT	NAT connection failure
305011-305014	User Session/NAT and PAT	NAT Build/Teardown related
313001, 313008	IP Stack	Represents denied connections to the box.
414004	System	Critical AnyConnect
609001 - 609002	Firewall	A network state container was reserved/removed for host **ip-address** connected to a zone.
710002,710004 710005	User Session	To the box connections failures
710003	User Session	Represents denied connections to the box.
746012, 746013	User Session	Critical AnyConnect

Related Information:

- Send ASA Syslog Events to the Cisco Cloud Using the Command Line Interface
- Searching for and Filtering Events in the Event Logging Page

Secure Event Connectors

The Secure Event Connector (SEC) is a component of the Security Analytics and Logging SaaS solution. It receives events from ASA , and FDM-managed devices and forwards them to the Cisco cloud. CDO displays the events on the Event Logging page so that administrators can analyze them there or by using Cisco Secure Cloud analytics.

The SEC is installed on a Secure Device Connector deployed in your network, on its own CDO Connector virtual machine deployed in your network, or on an AWS Virtual Private Cloud (VPC).

Secure Event Connector ID

You may need the ID of the SEC when working with Cisco Technical Assistance Center (TAC) or other CDO Support. That ID is found on the Secure Connectors page in CDO. To find the SEC ID:

1. From the CDO menu on the left, choose **Tools & Services** > **Secure Connectors**.
2. Click the SEC you wish to identify.
3. The SEC ID is the ID listed above the Tenant ID in the Details pane.

Related Information:

- About Security Analytics and Logging (SAL SaaS) for the ASA
- Install a Secure Event Connector on an SDC Virtual Machine, on page 37
- Install an SEC Using Your VM Image
- Install an SEC Using Your VM Image
- Install a Secure Event Connector on an AWS VPC Using a Terraform Module, on page 54
- Remove the Secure Event Connector
- Deprovisioning Cisco Security Analytics and Logging (SaaS)

Installing Secure Event Connectors

Secure Event Connectors (SECs) can be installed on a tenant with or without an SDC.

You can install one SEC on the same virtual machine as a Secure Device Connector, if you have one; or you can install the SEC on it's own CDO Connector virtual machine that you maintain in your network.

See these topics that describe the various installation cases:

- Install an SEC Using Your VM Image, on page 46
- Installing an SEC Using a CDO Image, on page 39

- Install a Secure Event Connector on an AWS VPC Using a Terraform Module, on page 54

Install a Secure Event Connector on an SDC Virtual Machine

The Secure Event Connector (SEC) receives events from ASA and FDM-managed devices and forwards them to the Cisco cloud. CDO displays the events on the Event Logging page so that administrators can analyze them there or by using Cisco Secure Cloud Analytics.

You can install one SEC on the same virtual machine as a Secure Device Connector, if you have one; or you can install the SEC on it's own CDO Connector virtual machine that you maintain in your network.

This article describes installing an SEC on the same virtual machine as an SDC. If you want to install more SECs see Installing an SEC Using a CDO Image, on page 39 or Install an SEC Using Your VM Image, on page 46.

Before you begin

- Purchase the Cisco Security and Analytics Logging, **Logging and Troubleshooting** license. Or, If you want to try Cisco Security and Analytics Logging out first, log in to CDO, and on the main navigation bar, choose **Analytics** > **Event Logging** and click **Request Trial**. You may also purchase the **Logging Analytics and Detection** and **Total Network Analytics and Monitoring** licenses to apply Secure Cloud Analytics to the events.
- Make sure your SDC has been installed. If you need to install an SDC, follow one of these procedures:
  - Deploy a secure device connector using CDO's VM image
  - Deploy a secure device connector using your own VM

Note If you installed the on-premises SDC on your own VM, there is Additional Configuration for SDCs and CDO Connectors Installed on a VM You Created required to allow events to reach it.

- Make sure the SDC is communicating with CDO:
  1. From the CDO menu, choose **Tools & Services** > **Secure Connectors**.
  2. Make sure that the SDC's last heartbeat was less than 10 minutes prior to the installation of the SEC and that the SDC's status is active.
- System Requirements - Assign additional CPUs and memory to the virtual machine running the SDC:
  - CPU: Assign an **additional** 4 CPUs to accommodate the SEC to make a total of 6 CPU.
  - Memory: Assign an **additional** 8 GB of memory for the SEC to make a total of 10 GB of memory.

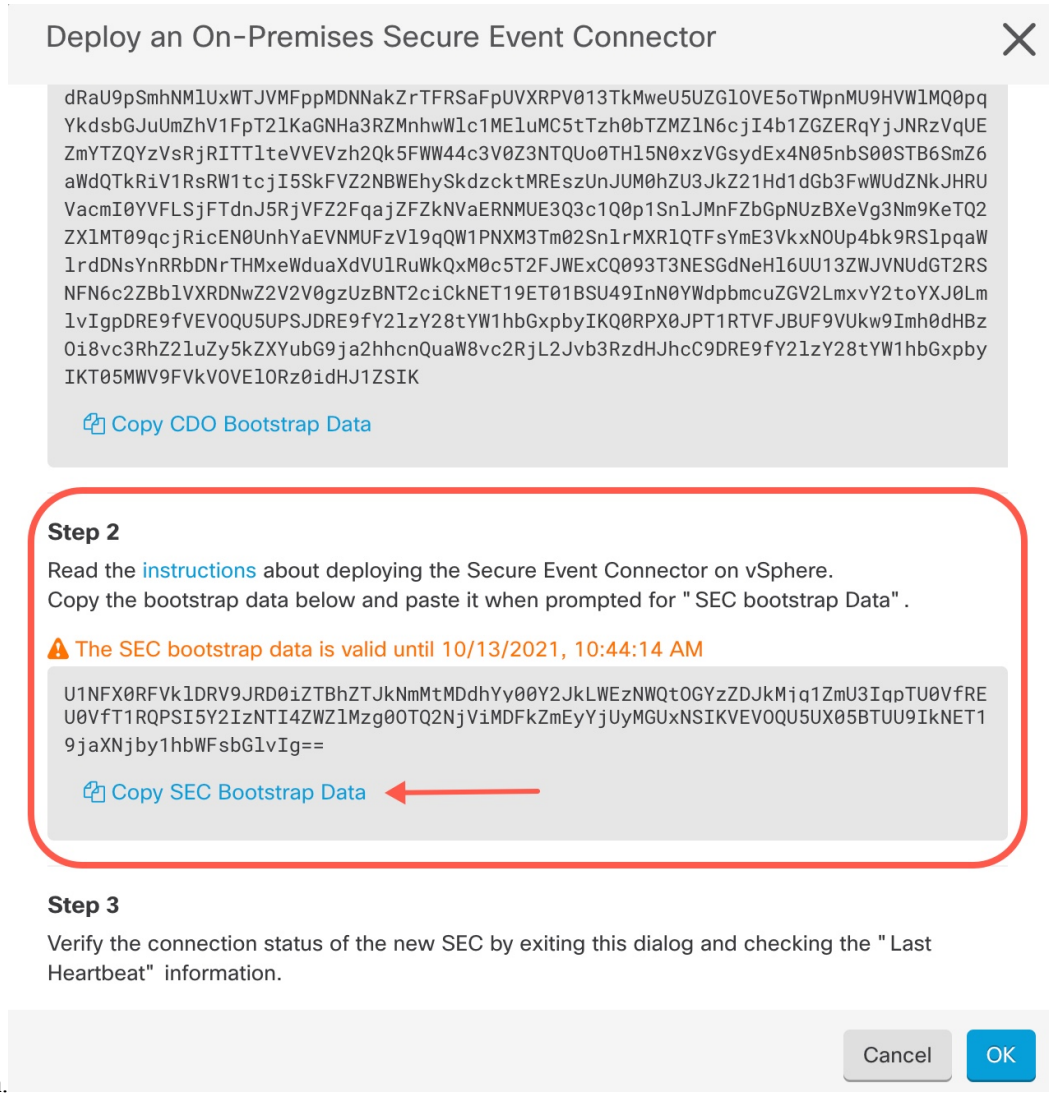
    After you have updated the CPU and memory on the VM to accommodate the SEC, power on the VM and ensure that the Secure Connectors page indicates that the SDC is in the "Active" state.

Step 1 Log in to CDO.

Step 2 From the CDO menu, choose **Tools & Services** > **Secure Connectors**.

Step 3 Click the blue plus button and click **Secure Event Connector**.

Step 4 Skip Step 1 of the wizard and go to Step 2. In step 2 of the wizard, click the link to **Copy SEC Bootstrap Data**.



Step 5 Open a terminal window and log into the SDC as the "cdo" user.

Step 6 Once logged in, switch to the "sdc" user. When prompted for a password, enter the password for the "cdo" user. Here is an example of those commands:

```
[cdo@sdc-vm ~]$ sudo su sdc
[sudo] password for cdo: <type password for cdo user>
[sdc@sdc-vm ~]$
```

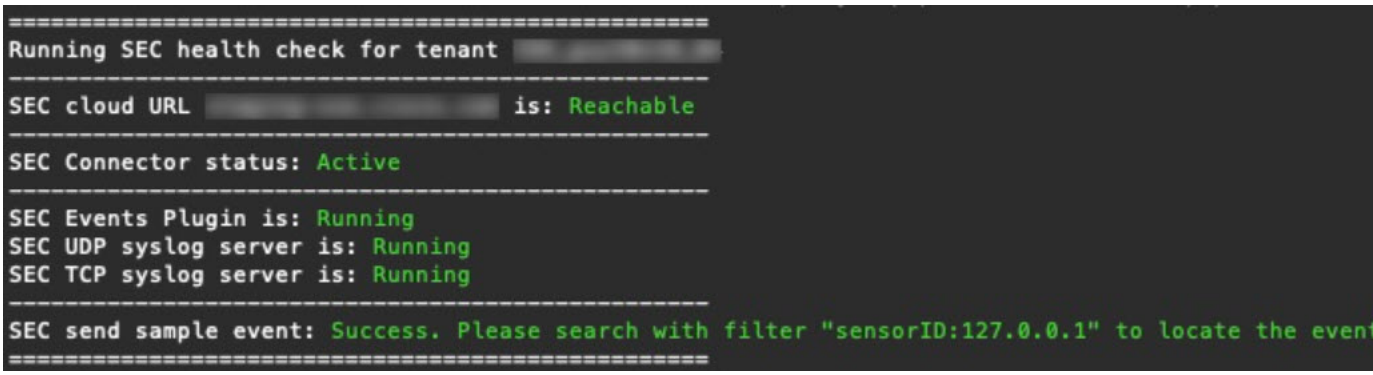
Step 7 At the prompt, run the **sec.sh setup** script:

```
[sdc@sdc-vm ~]$ /usr/local/cdo/toolkit/sec.sh setup
```

Step 8 At the end of the prompt, paste the bootstrap data you copied in step 4 and press **Enter**.

```
Please copy the bootstrap data from Setup Secure Event Connector page of CDO:
KJHYFuYTFuIGhiJKlKnJHvHfgxTewrtwE
RtyFUiyIOHKNkJbKhvhgyRStwterTyufGUihoJpojP9UOoiUY8VHHGFXREWRtygfhVjhkOuihIuyftyXtfcghvjbkhB=
```

After the SEC is onboarded, the sec.sh runs a script to check on the health of the SEC. If all the health checks are "green," the health check sends a sample event to the Event Log. The sample event shows up in the Event Log as a policy named "sec-health-check."



If you receive a message that the registration failed or that the SEC onboarding failed, go to Troubleshooting Secure Event connector Onboarding Failures.

Step 9 Determine if the VM on which the SDC and SEC are running needs additional configuration:

- If you installed your SDC on your own virtual machine, continue with Additional Configuration for SDCs and CDO Connectors Installed on a VM You Created, on page 51.
- If you installed your SDC using a CDO image, continue to "What to do Next."

What to do next

Return to Implementing Secure Logging Analytics (SaaS) for ASA Devices, on page 11 .

Related Information:

- Troubleshoot a Secure Device Connector
- Troubleshooting Secure Event Connector
- Troubleshooting SEC Onboarding Failures
- Troubleshooting Secure Event Connector Registration Failure

Installing an SEC Using a CDO Image

The Secure Event Connector (SEC) forwards events from ASA and FTD to the Cisco cloud so that you can view them in the Event Logging page and investigate them with Secure Cloud Analytics, depending on your licensing.

You can install more than one Secure Event Connector (SEC) on your tenant and direct events from your ASAs and FDM-managed devices to any of the SECs you install. Having multiple SECs allows you to have SECs installed in different locations and distribute the work of sending events to the Cisco cloud.

Installing an SEC is a two part process:

1. Install a CDO Connector, to Support a Secure Event Connector, Using a CDO VM Image, on page 40
   You need one CDO Connector for every SEC you install. The CDO Connector is different than a Secure Device Connector (SDC).
2. Install the Secure Event Connector on your CDO Connector Virtual Machine, on page 52.

Note If you want to create a CDO Connector by creating your own VM, see Additional Configuration for SDCs and CDO Connectors Installed on a VM You Created.

What to do next:

Continue with Install a CDO Connector, to Support a Secure Event Connector, Using a CDO VM Image, on page 40

Install a CDO Connector, to Support a Secure Event Connector, Using a CDO VM Image

Before you begin

- Purchase the Cisco Security and Analytics Logging, **Logging and Troubleshooting** license, you may also purchase the **Logging Analytics and Detection** and **Total Network Analytics and Monitoring** licenses to apply Secure Cloud Analytics to the events.

  If you would rather, you can request a trial version of Security Analytics and Logging by logging in to CDO, and on the main navigation bar, choose **Analytics** > **Event Logging** and click **Request Trial**.
- CDO requires strict certificate checking and does not support Web/Content Proxy inspection between the CDO Connector and the Internet. If using a proxy server, disable inspection for traffic between the CDO Connector and CDO.
- **The CDO Connector installed in this process must have full outbound access to the Internet on TCP port 443.**
- **Review** Connect to Cisco Defense Orchestrator using Secure Device Connector **to ensure proper network access for the CDO Connector.**
- CDO supports installing its CDO Connector VM OVF image using the vSphere web client or the ESXi web client.
- CDO does not support installing the CDO Connector VM OVF image using the VM vSphere desktop client.
- ESXi 5.1 hypervisor.
- System requirements for a VM intended to host only a CDO Connector and an SEC:
  - VMware ESXi host needs 4 vCPU.
  - VMware ESXi host needs a minimum of 8 GB of memory.
  - VMware ESXi requires 64GB disk space to support the virtual machine depending on your provisioning choice.

- Gather this information before you begin the installation:
  - Static IP address you want to use for your CDO Connector VM.
  - Passwords for the **root** and **cdo** users that you create during the installation process.
  - The IP address of the DNS server your organization uses.
  - The gateway IP address of the network the SDC address is on.
  - The FQDN or IP address of your time server.
- The CDO Connector virtual machine is configured to install security patches on a regular basis and in order to do this, opening port 80 outbound is required.

Step 1 Log on to the CDO tenant you are creating the CDO Connector for.

Step 2 From the CDO menu, choose **Tools & Services** > **Secure Connectors**.

Step 3 Click the blue plus button and click **Secure Event Connector**.

Step 4 In Step 1, click **Download the CDO Connector VM image**. This is a special image that you install the SEC on. Always download the CDO Connector VM to ensure that you are using the latest image.

Step 5 Extract all the files from the .zip file. They will look similar to these:

- CDO-SDC-VM-ddd50fa.ovf
- CDO-SDC-VM-ddd50fa.mf
- CDO-SDC-VM-ddd50fa-disk1.vmdk

Step 6 Log on to your VMware server as an administrator using the vSphere Web Client.

Note Do not use the VM vSphere desktop client.

Step 7 Deploy the on-premises CDO Connector virtual machine from the OVF template by following the prompts. (You will need the .ovf, .mf, and .vdk files to deploy the template.)

Step 8 When the setup is complete, power on the VM.

Step 9 Open the console for your new CDO Connector VM.

Step 10 Login as the **cdo** user. The default password is `adm123`.

Step 11 At the prompt type `sudo sdc-onboard setup`

```
[cdo@localhost ~]$ sudo sdc-onboard setup
```

Step 12 When prompted, enter the default password for the cdo user: `adm123`.

Step 13 Follow the prompts to create a new password for the **root** user.

Step 14 Follow the prompts to create a new password for the **cdo** user.

Step 15 Follow the prompts to enter your Cisco Defense Orchestrator domain information.

Step 16 Enter the static IP address you want to use for the CDO Connector VM.

Step 17 Enter the gateway IP address for the network on which the CDO Connector VM is installed.

Step 18 Enter the NTP server address or FQDN for the CDO Connector.

Step 19 When prompted, enter the information for the Docker bridge or leave it blank if it is not applicable and press <Enter>.

Step 20 Confirm your entries.

Step 21 When prompted "Would you like to setup the SDC now?" enter **n**.

Step 22 Create an SSH connection to the CDO Connector by logging in as the **cdo** user.

Step 23 At the prompt type **`sudo sdc-onboard bootstrap`**

```
[cdo@localhost ~]$ sudo sdc-onboard bootstrap
```

Step 24 When prompted, enter the cdo user's password.

Step 25 When prompted, return to CDO and copy the CDO bootstrap data, then paste it into your SSH session. To copy the CDO bootstrap data:

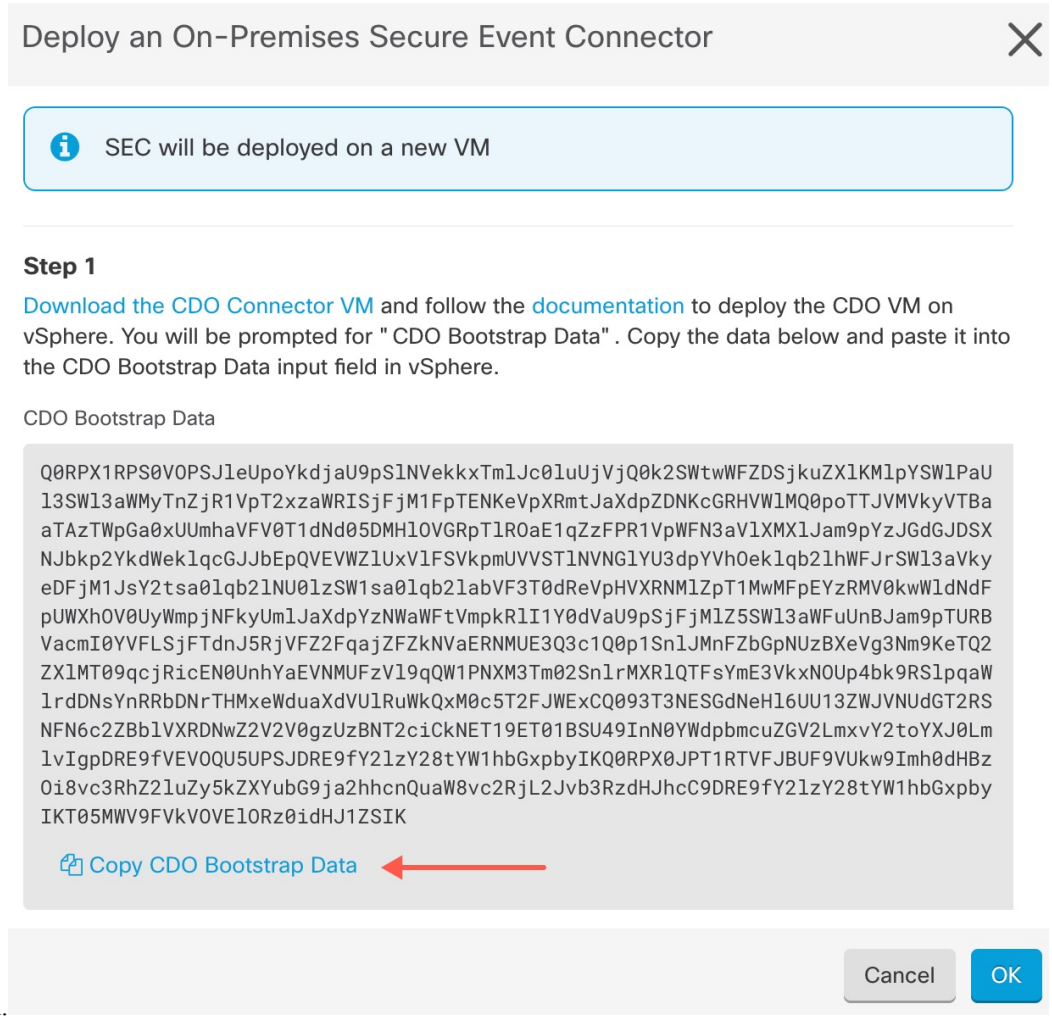
a. Log into CDO.

b. From the CDO menu, choose **Tools & Services** > **Secure Connectors**.

c. Select the Secure Event Connector which you started to onboard. The status should show, "Onboarding."

d. In the Actions pane, click **Deploy an On-Premises Secure Event Connector**.

e. Copy the CDO Bootstrap Data in step 1 of the dialog box.



Step 26 When prompted, **Would you like to update these settings?** enter **n**.

Step 27 Return to the Deploy an On-Premises Secure Event Connector dialog in CDO and click **OK**. On the Secure Connectors page, you see your Secure Event Connector is in the yellow Onboarding state.

What to do next

Continue to Install the Secure Event Connector on the CDO Connector VM, on page 43.

Install the Secure Event Connector on the CDO Connector VM

Before you begin

You should have installed CDO Connector VM as described inInstall a CDO Connector, to Support a Secure Event Connector, Using a CDO VM Image, on page 40 .

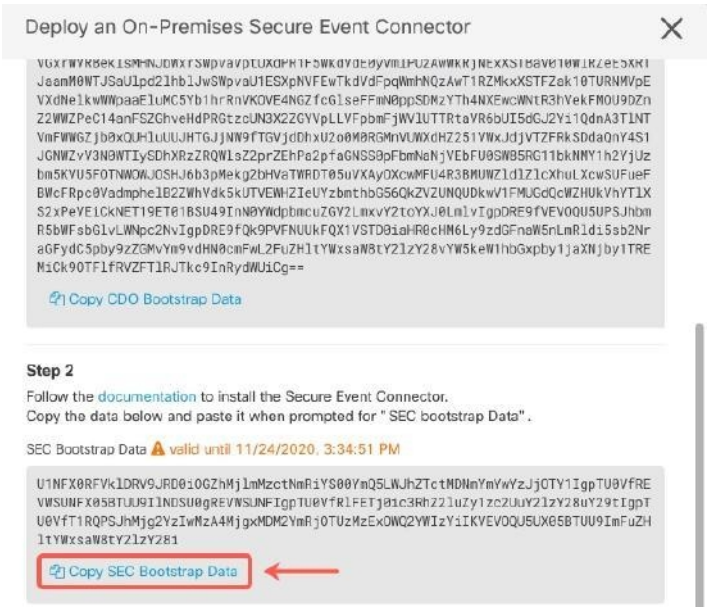
Step 1 Log in to CDO.

Step 2 From the CDO menu, choose **Tools & Services** > **Secure Connectors**.

Step 3 Select the CDO Connector that you onboarded above. In the Secure Connectors table, it will be called a Secure Event Connector and it should still be in the "Onboading" status.

Step 4 Click **Deploy an On-Premises Secure Event Connector** in the Actions pane on the right.

Step 5 In **step 2** of the wizard, click the link to **Copy SEC bootstrap data**.



Step 6 Create an SSH connection to the CDO Connector and log in as the **cdo** user.

Step 7 Once logged in, switch to the **sdc** user. When prompted for a password, enter the password for the "cdo" user. Here is an example of those commands:

```
[cdo@sdc-vm ~]$ sudo su sdc
 [sudo] password for cdo: <type password for cdo user>
[sdc@sdc-vm ~]$
```

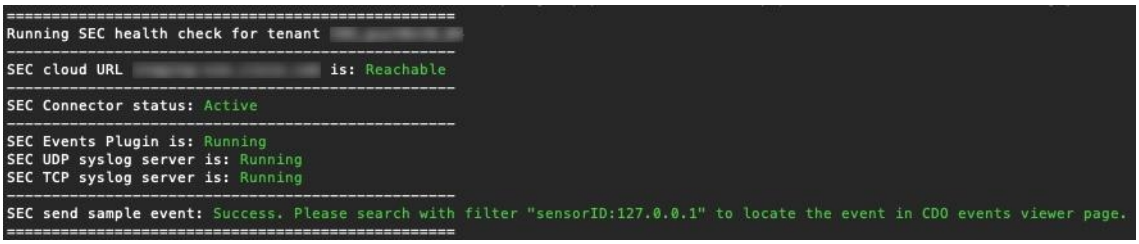
Step 8 At the prompt, run the sec.sh setup script:

```
[sdc@sdc-vm ~]$ /usr/local/cdo/toolkit/sec.sh setup
```

Step 9 At the end of the prompt, paste the bootstrap data you copied in step 4 and press **Enter**.

```
Please copy the bootstrap data from Setup Secure Event Connector page of CDO:
KJHYFuYTFuIGhiJKlKnJHvHfgxTewrtwE
 RtyFUiyIOHKNkJbKhvhgyRStwterTyufGUihoJpojP9UOoiUY8VHHGFXREWRtygfhVjhkOuihIuyftyXtfcghvjbkhB=
```

After the SEC is onboarded, the sec.sh runs a script to check on the health of the SEC. If all the health checks are "green," the health check sends a sample event to the Event Log. The sample event shows up in the Event Log as a policy named "sec-health-check."



If you receive a message that the registration failed or that the SEC onboarding failed, go to Troubleshooting SEC Onboarding Failures.

If you receive the success message return to CDO and click **Done on the Deploy an ON-Premise Secure Event Connector** dialog box.

Step 10 Continue to "**What to do next.**"

What to do next

Return to Implementing Secure Logging Analytics (SaaS) for ASA Devices, on page 11 .

Related Information:

- Troubleshoot a Secure Device Connector
- Secure Event Connector Troubleshooting
- Troubleshooting SEC Onboarding Failures

Deploy Secure Event Connector on Ubuntu Virtual Machine

Before you begin

You should have installed Secure Device Connector on your Ubuntu VM as described in Deploy Secure Device Connector and Secure Event Connector on Ubuntu Virtual Machine.

Step 1 Log on to CDO.

Step 2 Choose **Tools & Services** > **Secure Connectors**.

Step 3 On the **Services** page, select the **Secure Connectors** tab, click the  , and select **Secure Event Connector**.

Step 4 Copy the SEC bootstrap data in step 2 on the window to a notepad.

Step 5 Execute the following commands:

```
[sdc@vm]:~$sudo su sdc
```

```
sdc@vm:/home/user$ cd /usr/local/cdo/toolkit
```

When prompted, enter the SEC bootstrap data that you have copied..

```
sdc@vm:~/toolkit$ ./sec.sh setup
Please input the bootstrap data from Setup Secure Event Connector page of CDO:
Successfully on-boarded SEC
```

It may take a few minutes for the Secure Event Connector to become "Active" in CDO.

Install an SEC Using Your VM Image

The Secure Event Connector (SEC) forwards events from ASA and FTD to the Cisco cloud so that you can view them in the Event Logging page and investigate them with Secure Cloud Analytics, depending on your licensing.

You can install more than one Secure Event Connector (SEC) on your tenant and direct events from your ASAs and FDM-managed devices to any of the SECs you install. Having multiple SECs allows you to have SECs installed in different regions and distribute the work of sending events to the Cisco cloud.

Installing multiple SECs using your own VM image is a three part process. You must perform each of these steps:

1. Install a CDO Connector to Support an SEC Using Your VM Image, on page 46
2. Additional Configuration for SDCs and CDO Connectors Installed on a VM You Created, on page 51
3. Install the Secure Event Connector on your CDO Connector Virtual Machine

Note Using a CDO VM image for the CDO Connector is the easiest, most accurate, and preferred method of installing a CDO connector. If you want to use that method, see Installing an SEC Using a CDO Image, on page 39.

What to do next:

Continue to Install a CDO Connector to Support an SEC Using Your VM Image, on page 46

Install a CDO Connector to Support an SEC Using Your VM Image

The CDO Connector VM is a virtual machine on which you install an SEC. The purpose of the CDO Connector is solely to support an SEC for Cisco Security Analytics and Logging (SaaS) customers.

This is the first of three steps you need to complete in order install and configure your Secure Event Connector (SEC). After this procedure, you need to complete the following procedures:

- Additional Configuration for SDCs and CDO Connectors Installed on a VM You Created, on page 51
- Install the Secure Event Connector on your CDO Connector Virtual Machine

Before you begin

- Purchase the Cisco Security and Analytics Logging, **Logging and Troubleshooting**license, you may also purchase the **Logging Analytics and Detection** and **Total Network Analytics and Monitoring** licenses to apply Secure Cloud Analytics to the events.

  If you would rather, you can request a trial version of Security Analytics and Logging by logging in to CDO, and on the main navigation bar, choose **Analytics** > **Event Logging** and click **Request Trial**.

- CDO requires strict certificate checking and does not support a Web/Content Proxy between the CDO Connector and the Internet.
- **The CDO Connector must have full outbound access to the Internet on TCP port 443.**
- **Review** Connect to Cisco Defense Orchestrator using Secure Device Connector**to ensure proper network access for the CDO Connector.**
- VMware ESXi host installed with vCenter web client or ESXi web client.

Note We do not support installation using the vSphere desktop client.

- ESXi 5.1 hypervisor.
- Cent OS 7 guest operating system.
- System requirements for a VM to host only a CDO Connector and an SEC:
  - CPU: Assign 4 CPUs to accommodate the SEC.
  - Memory: Assign 8 GB of memory for the SEC.
  - Disk Space: 64 GB
- Users performing this procedure should be comfortable working in a Linux environment and using the **vi** visual editor for editing files.
- If you are installing your CDO Connector on a CentOS virtual machine, we recommend you install Yum security patches on a regular basis. Depending on your Yum configuration, to acquire Yum updates, you may need to open outbound access on port 80 as well as 443. You will also need to configure yum-cron or crontab to schedule the updates. Work with your security-operations team to determine if any security policies need to change to allow you to get the Yum updates.
- Gather this information before you begin the installation:
  - Static IP address you want to use for your CDO Connector.
  - Passwords for the **root** and **cdo** users that you create during the installation process.
  - The IP address of the DNS server your organization uses.
  - The gateway IP address of the network the CDO Connector address is on.
  - The FQDN or IP address of your time server.
- The CDO Connector virtual machine is configured to install security patches on a regular basis and in order to do this, opening port 80 outbound is required.
- **Before you get started**: Do not copy and paste the commands in this procedure into your terminal window, type them instead. Some commands include an "n-dash" and in the cut and paste process, these commands can be applied as an "m-dash" and that may cause the command to fail.

Step 1 From the Secure Device Connectors page, click the blue plus button and click Secure Event Connector.

Step 2 Using the link provided, copy the SEC Bootstrap Data in step 2 of the "Deploy an On-Premises Secure Event Connector" window.

Step 3 Install a CentOS 7 virtual machine (http://isoredirect.centos.org/centos/7/isos/x86_64/CentOS-7-x86_64-Minimal-1804.iso) with at least the memory, CPU, and disk space mentioned in this procedure's perquisites.

Step 4 Once installed, configure basic networking such as specifying the IP address for the CDO Connector, the subnet mask, and gateway.

Step 5 Configure a DNS (Domain Name Server) server.

Step 6 Configure a NTP (Network Time Protocol) server.

Step 7 Install an SSH server on CentOS for easy interaction with CDO Connector's CLI.

Step 8 Run a Yum update and then install the packages: **open-vm-tools**, **nettools**, and **bind-utils**

```
[root@sdc-vm ~]# yum update -y
[root@sdc-vm ~]# yum install -y open-vm-tools net-tools bind-utils
```

Step 9 Install the **AWS CLI package** (https://docs.aws.amazon.com/cli/latest/userguide/awscli-install-linux.html)

Note Do not use the `--user` flag.

Step 10 Install the **Docker CE packages** (https://docs.docker.com/install/linux/docker-ce/centos/#install-docker-ce)

Note Use the "Install using the repository" method.

Step 11 Start the Docker service and enable it to start on boot:

```
[root@sdc-vm ~]# systemctl start docker
 [root@sdc-vm ~]# systemctl enable docker
Created symlink from /etc/systemd/system/multiuser.target.wants/docker.service to
/usr/lib/systemd/system/docker.service.
```

Step 12 Create two users: **cdo** and **sdc.** The cdo user will be the one you log-into to run administrative functions (so you don't need to use the root user directly), and the sdc user will be the user to run the CDO Connector docker container.

```
[root@sdc-vm ~]# useradd cdo
 [root@sdc-vm ~]# useradd sdc -d /usr/local/cdo
```

Step 13 Configure the sdc user to use crontab:

```
[root@sdc-vm ~]# touch /etc/cron.allow
[root@sdc-vm ~]# echo "sdc" >> /etc/cron.allow
```

Step 14 Set a password for the cdo user.

```
[root@sdc-vm ~]# passwd cdo
Changing password for user cdo.
New password: <type password>
Retype new password: <type password>
passwd: all authentication tokens updated successfully.
```

Step 15 Add the cdo user to the "wheel" group to give it administrative (sudo) privileges.

```
[root@sdc-vm ~]# usermod -aG wheel cdo
 [root@sdc-vm ~]#
```

Step 16 When Docker is installed, there is a user group created. Depending on the version of CentOS/Docker, this may be called either "docker" or "dockerroot". Check the /etc/group file to see which group was created, and then add the sdc user to this group.

```
 [root@sdc-vm ~]# grep docker /etc/group
```

```
docker:x:993:
[root@sdc-vm ~]#
[root@sdc-vm ~]# usermod -aG docker sdc
[root@sdc-vm ~]#
```

Step 17 If the `/etc/docker/daemon.json` file does not exist, create it, and populate with the contents below. Once created, restart the docker daemon.

Note Make sure that the group name entered in the "group" key matches the Step 16.

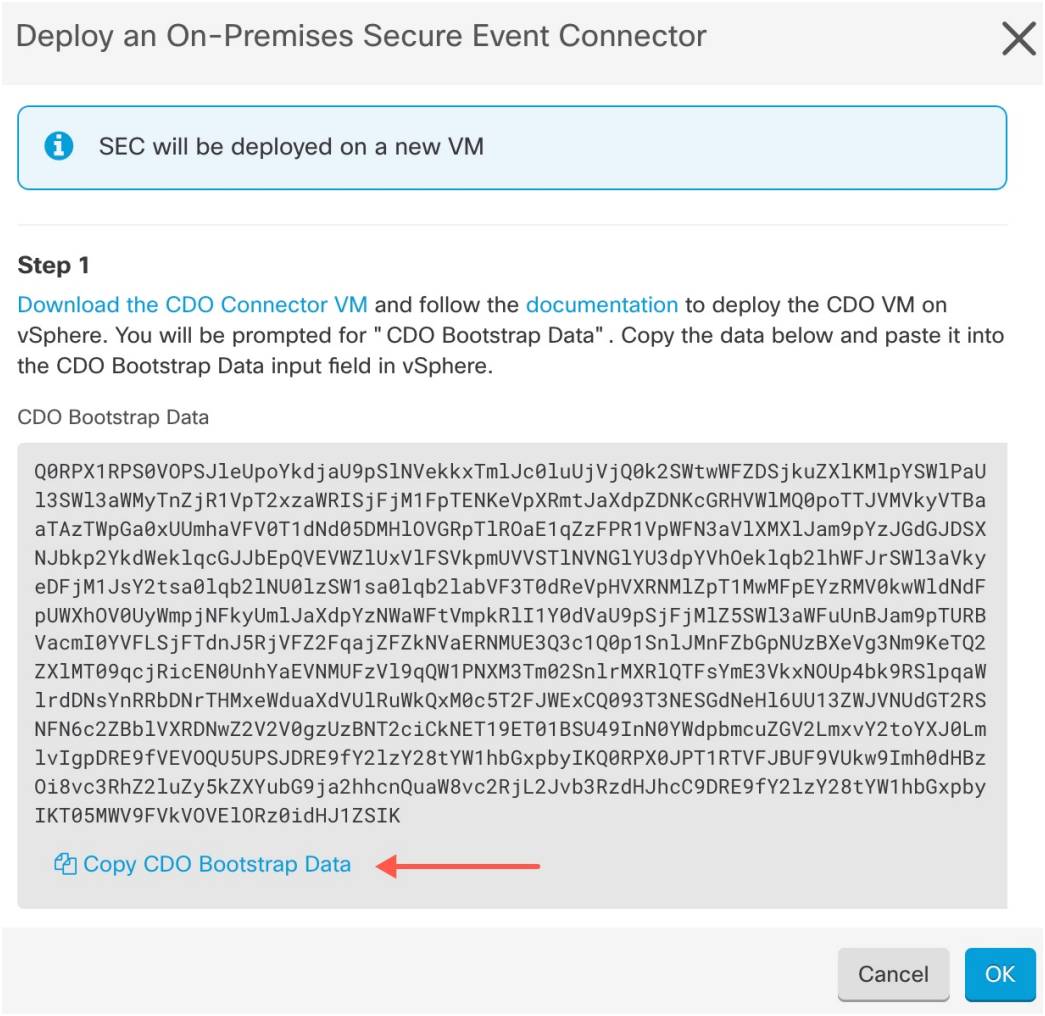
```
 [root@sdc-vm ~]# cat /etc/docker/daemon.json
{
 "live-restore": true,
 "group": "docker"
}
[root@sdc-vm ~]# systemctl restart docker
[root@sdc-vm ~]#
```

Step 18 If you are currently using a vSphere console session, switch over to SSH and log in as the **cdo** user. Once logged in, change to the **sdc** user. When prompted for a password, enter the password for the **cdo** user.

```
[cdo@sdc-vm ~]$ sudo su sdc
[sudo] password for cdo: <type password for cdo user>
[sdc@sdc-vm ~]$
```

Step 19 Change directories to **/usr/local/cdo.**

Step 20 Create a new file called **bootstrapdata** and paste the bootstrap data from Step 1 of the deployment wizrd into this file. **Save** the file. You can use **vi** or **nano** to create the file.



Step 21 The bootstrap data comes encoded in base64. Decode it and export it to a file called **extractedbootstrapdata**

```
 [sdc@sdc-vm ~]$ base64 -d /usr/local/cdo/bootstrapdata > /usr/local/cdo/extractedbootstrapdata
[sdc@sdc-vm ~]$
```

Run the cat command to view the decoded data. The command and decoded data should look similar to this:

```
[sdc@sdc-vm ~]$ cat /usr/local/cdo/extractedbootstrapdata
CDO_TOKEN="<token string>"
CDO_DOMAIN="www.defenseorchestrator.com"
CDO_TENANT="<tenant-name>"
<CDO_URL>/sdc/bootstrap/CDO_acm="https://www.defenseorchestrator.com/sdc/bootstrap/tenant-name/<tenant-name-SDC>"

ONLY_EVENTING="true"
```

Step 22 Run the following command to export the sections of the decoded bootstrap data to environment variables.

```
[sdc@sdc-vm ~]$ sed -e 's/^/export /g' extractedbootstrapdata > secenv && source secenv
[sdc@sdc-vm ~]$
```

Step 23 Download the bootstrap bundle from CDO.

```
 [sdc@sdc-vm ~]$ curl -H "Authorization: Bearer $CDO_TOKEN" "$CDO_BOOTSTRAP_URL" -o $CDO_TENANT.tar.gz

100 10314 100 10314 0 0 10656 0 --:--:-- --:--:-- --:--:-- 10654
[sdc@sdc-vm ~]$ ls -l /usr/local/cdo/*SDC
-rw-rw-r--. 1 sdc sdc 10314 Jul 23 13:48 /usr/local/cdo/CDO_<tenant_name>
```

Step 24 Extract the CDO Connector tarball, and run the bootstrap_sec_only.sh file to install the CDO Connector package.

```
 [sdc@sdc-vm ~]$ tar xzvf /usr/local/cdo/tenant-name-SDC
<snipped - extracted files>
[sdc@sdc-vm ~]$
[sdc@sdc-vm ~]$ /usr/local/cdo/bootstrap/bootstrap_sec_only.sh
[2018-07-23 13:54:02] environment properly configured
download: s3://onprem-sdc/toolkit/prod/toolkit.tar to toolkit/toolkit.tar
toolkit.sh
common.sh
es_toolkit.sh
sec.sh
healthcheck.sh
troubleshoot.sh
no crontab for sdc
-bash-4.2$ crontab -l
*/5 * * * * /usr/local/cdo/toolkit/es_toolkit.sh upgradeEventing 2>&1 >>
/usr/local/cdo/toolkit/toolkit.log
0 2 * * * sleep 30 && /usr/local/cdo/toolkit/es_toolkit.sh es_maintenance 2>&1 >>
/usr/local/cdo/toolkit/toolkit.log
You have new mail in /var/spool/mail/sdc
```

What to do next

Continue to Additional Configuration for SDCs and CDO Connectors Installed on a VM You Created, on page 51 .

Additional Configuration for SDCs and CDO Connectors Installed on a VM You Created

If you installed your CDO Connector on your own CentOS 7 virtual machine, you need to perform **one** of the following additional configuration procedures to allow events to reach the SEC.

- Disable the firewalld service on the CentOS 7 VM. This matches the configuration of the Cisco-provided SDC VM.
- Allow the firewalld service to run and add firewall rules to allow event traffic to reach the SEC, on page 52. This is a more granular approach to allowing inbound event traffic.

Before you begin:

This is the second of three steps you need to complete in order install and configure your SEC. If you have not already, complete Install a CDO Connector to Support an SEC Using Your VM Image, on page 46 before making these configuration changes.

After you complete one of the additional configuration changes described here, complete Install the Secure Event Connector on your CDO Connector Virtual Machine

Disable the firewalld service on the CentOS 7 VM

1. Log into the CLI of the SDC VM as the "cdo" user.

2. Stop the firewalld service, and then ensure that it will remain disabled upon subsequent reboots of the VM. If you are prompted, enter the password for the **cdo** user:

```
[cdo@SDC-VM ~]$ sudo systemctl stop firewalld
cdo@SDC-VM ~]$ sudo systemctl disable firewalld
```

3. Restart the Docker service to re-insert Docker-specific entries into the local firewall:

```
[cdo@SDC-VM ~]$ sudo systemctl restart docker
```

4. Continue to Install the Secure Event Connector on your CDO Connector Virtual Machine.

Allow the firewalld service to run and add firewall rules to allow event traffic to reach the SEC

1. Log into the CLI of the SDC VM as the "cdo" user.
2. Add local firewall rules to allow incoming traffic to the SEC from the TCP, UDP, or NSEL ports you configured. See Finding Your Device's TCP, UDP, and NSEL Port Used for Secure Logging Analytics (SaaS) for the ports used by your SEC. If prompted, enter the password for the **cdo** user. Here is an example of the commands. You may need to specify different port values.

```
[cdo@SDC-VM ~]$ sudo firewall-cmd --zone=public --permanent --add-port=10125/tcp
cdo@SDC-VM ~]$ sudo firewall-cmd --zone=public --permanent --add-port=10025/udp
[cdo@SDC-VM ~]$ sudo firewall-cmd --zone=public --permanent --add-port=10425/udp
```

3. Restart the firewalld service to make the new local firewall rules both active and persistent:

```
[cdo@SDC-VM ~]$ sudo systemctl restart firewalld
```

4. Continue to Install the Secure Event Connector on your CDO Connector Virtual Machine.

Install the Secure Event Connector on your CDO Connector Virtual Machine

Before you begin

This is the third of three steps you need to complete in order install and configure your Secure Event Connector (SEC). If you have not already, complete these two task before continuing with this procedure:

- Install a CDO Connector to Support an SEC Using Your VM Image, on page 46
- Additional Configuration for SDCs and CDO Connectors Installed on a VM You Created, on page 51

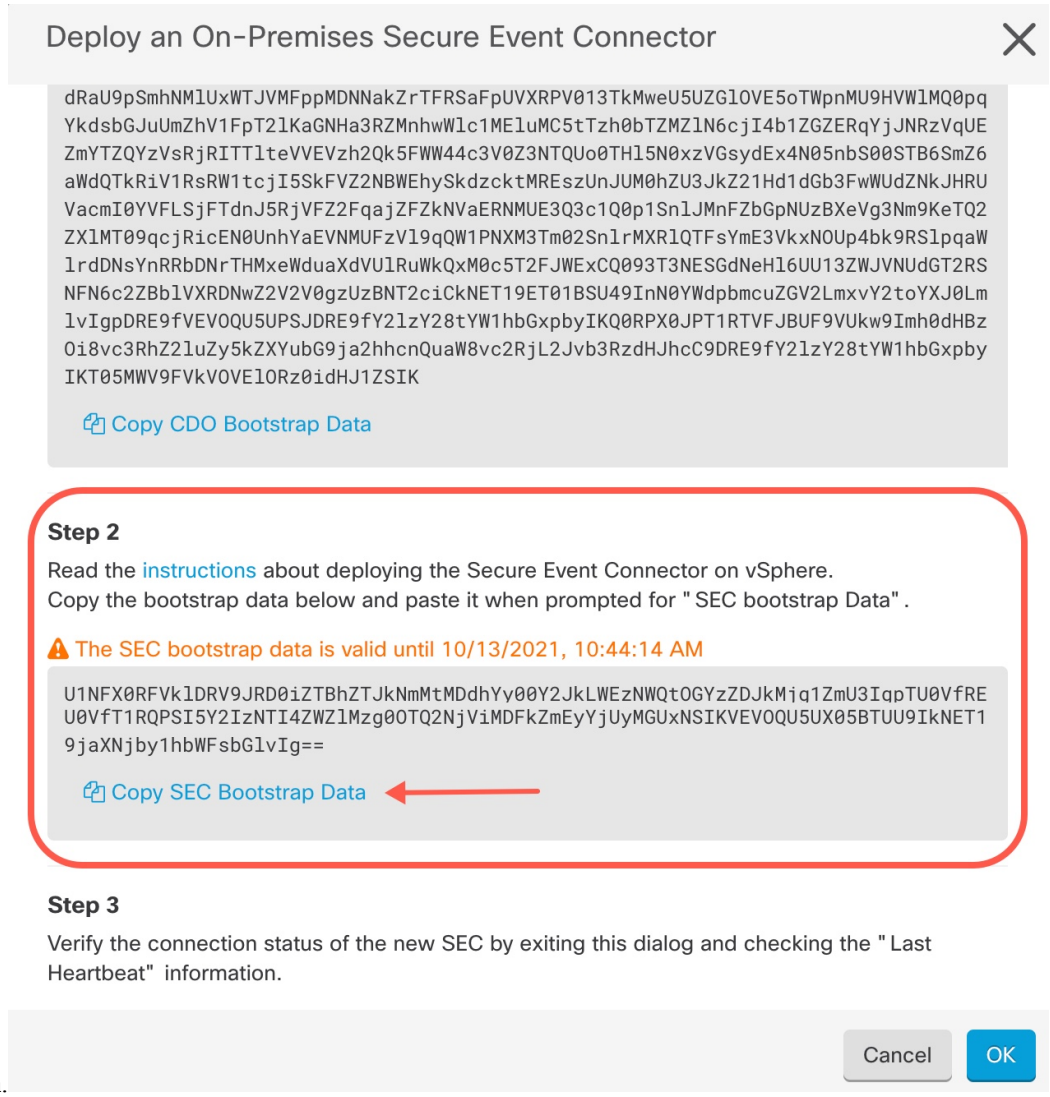
Step 1 Log in to CDO.

Step 2 From the CDO menu, choose **Tools & Services** > **Secure Connectors**.

Step 3 Select the CDO Connector that you installed using the procedure in the prerequisites above. In the Secure Connectors table, it will be called a Secure Event Connector.

Step 4 Click **Deploy an On-Premises Secure Event Connector** in the Actions pane on the right.

Step 5 In **step 2** of the wizard, click the link to **Copy SEC Bootstrap Data**.



Step 6 Connect to the Secure Connector using SSH and log in as the **cdo** user.

Step 7 Once logged in, switch to the **sdc** user. When prompted for a password, enter the password for the "cdo" user. Here is an example of those commands:

```
[cdo@sdc-vm ~]$ sudo su sdc
[sudo] password for cdo: <type password for cdo user>
[sdc@sdc-vm ~]$
```

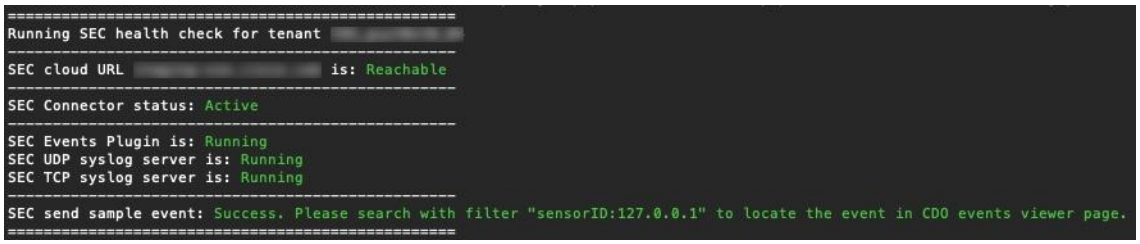
Step 8 At the prompt, run the sec.sh setup script:

```
[sdc@sdc-vm ~]$ /usr/local/cdo/toolkit/sec.sh setup
```

Step 9 At the end of the prompt, paste the bootstrap data you copied in step 4 and press **Enter**.

```
Please copy the bootstrap data from Setup Secure Event Connector page of CDO:
 KJHYFuYTFuIGhiJKlKnJHvHfgxTewrtwE
RtyFUiyIOHKNkJbKhvhgyRStwterTyufGUihoJpojP9UOoiUY8VHHGFXREWRtygfhVjhkOuihIuyftyXtfcghvjbkhB=
```

After the SEC is onboarded, the sec.sh runs a script to check on the health of the SEC. If all the health checks are "green," the health check sends a sample event to the Event Log. The sample event shows up in the Event Log as a policy named "sec-health-check."



If you receive a message that the registration failed or that the SEC onboarding failed, go to Troubleshooting Secure Event Connector Onboarding Failures.

If you receive the success message, click **Done** in the **Deploy an ON-Premise Secure Event Connector** dialog box.You have finished installing an SEC on a your VM image.

Step 10 Continue to "**What to do next**."

What to do next

Return to this procedure to continue your implementation of SAL SaaS: Implementing Secure Logging Analytics (SaaS) for ASA Devices, on page 11 .

Related Information:

- Troubleshoot a Secure Device Connector
- Troubleshooting Secure Event Connector
- Troubleshooting SEC Onboarding Failures
- Troubleshooting SEC Registration Failure

Install a Secure Event Connector on an AWS VPC Using a Terraform Module

Before you begin

- To perform this task, you must enable SAL on your CDO tenant. This section presumes that you have a SAL license. If you do not have one, purchase the Cisco Security and Analytics Logging, Logging and Troubleshooting license.
- Ensure you have a new SEC installed. To create a new SEC, see Install a Secure Event Connector on an SDC Virtual Machine, on page 37.
- When installing the SEC, make sure you take a note of the CDO bootstrap data and SEC bootstrap data.

Step 1 Go to Secure Event Connector Terraform Module on the Terraform Registry and follow the instructions to add the SEC Terraform module to your Terraform code.

Step 2 Apply the Terraform code.

Step 3 Ensure that you print the `instance_id` and `sec_fqdn` outputs, because you will need them later in the procedure.

Note To troubleshoot your SEC, you must connect to your SEC instance using the AWS Systems Manager Session Manager (SSM). See the AWS Systems Manager Session Manager documentation to know more about connecting to an instance using SSM.

Ports to connect to the SDC instance using SSH are not exposed for secuirty reasons.

Step 4 To enable sending of logs from your ASA to the SEC, obtain the certificate chain of the SEC you created and remove the leaf certificate by running the following command with the output from Step 3:

```
rm -f /tmp/cert_chain.pem && openssl s_client -showcerts -verify 5 -connect <FQDN>:10125 < /dev/null
 | awk '/BEGIN CERTIFICATE/,/END CERTIFICATE/{ if(/BEGIN CERTIFICATE/){a++};
out="/tmp/cert_chain.pem"; if(a > 1) print >>out}'
```

Step 5 Copy the contents of `/tmp/cert_chain.pem` to your clipboard.

Step 6 Take a note of the IP address of the SEC using the following command:

```
nslookup <FQDN>
```

Step 7 Log in to CDO and start adding a new trustpoint object. See Adding a Trusted CA Certificate Object for more information. Ensure you uncheck the **Enable CA flag in basic constraints extension** checkbox in **Other Options** before clicking **Add**.

Step 8 Click **Add**, copy the CLI commands generated by CDO in the **Install Certificate** page, and click **Cancel**.

Step 9 Below `enrollment terminal`, add `no ca-check` in a text clipboard.

Step 10 SSH into your ASA device or use the ASA CLI option in CDO and execute the following commands:

```
DataCenterFW-1> en
Password: *****************
DataCenterFW-1# conf t
DataCenterFW-1(config)# <paste your modified ASA CLIs here and press Enter>
DataCenterFW-1(config)# wr mem
Building configuration...
Cryptochecksum: 6634f35f 4c5137f1 ab0c5cdc 9784bdb6
```

What to do next

You can check if your SEC is receiving packets using AWS SSM:

You should now see logs similar to this:

```
time="2023-05-10T17:13:46.135018214Z" level=info msg="[ip-10-100-5-19.ec2.internal][util.go:67
 plugin.createTickers:func1] Events - Processed - 6/s, Dropped - 0/s, Queue size - 0"
```

Deprovisioning Cisco Security Analytics and Logging (SaaS)

If you allow your Cisco Security Analytics and Logging (SaaS) paid license to lapse, you have a grace period of 90 days. If you renew your paid license during this grace period, there is no interruption in your service.

Otherwise, if you allow the 90-day grace period to elapse, the system purges all of your customer data. You can no longer view ASA or FTD events from the Event Logging page, nor have dynamic entity modeling behavioral analytics applied to your ASA or FTD events and network flow data.

Remove the Secure Event Connector

Warning: This procedure deletes the Secure Event Connector from the Secure Device Connector. Doing so will prevent you from using Secure Logging Analytics (SaaS). It is not reversible. If you have any questions or concerns, contact CDO support before taking this action.

Removing the Secure Event Connector from your Secure Device Connector is a two-step process:

1. Remove an SEC from CDO.
2. Remove SEC files from the SDC.

What to do next: Continue to Remove an SEC from CDO

Remove an SEC from CDO

Before you begin

See Remove the Secure Event Connector, on page 56.

Step 1 Log in to CDO.

Step 2 From the CDO menu, choose **Tools & Services** > **Secure Connectors**.

Step 3 Select the row with the device type, **Secure Event Connector**.

Warning: Be careful. Do NOT select your Secure Device Connector.

Step 4 In the Actions pane, click **Remove**.

Step 5 Click **OK** to confirm your intent to delete the Secure Event Connector.

What to do next

Continue to Remove SEC files from the SDC, on page 56.

Remove SEC files from the SDC

This is the second part of a two part procedure to remove the Secure Event Connector from your SDC. See Remove the Secure Event Connector, on page 56 before you begin.

Step 1 Open your virtual machine hypervisor and start a console session for your SDC.

Step 2 Switch to the SDC user.

```
[cdo@tenant toolkit]$sudo su sdc
```

Step 3 At the prompt type one of these commands:

- If you are managing only your own tenant:

```
[sdc@tenant toolkit]$ /usr/local/cdo/toolkit/sec.sh remove
```

- If you manage more than one tenant, add CDO_ to the beginning of the tenant name. For example:

```
[sdc@tenant toolkit]$ /usr/local/cdo/toolkit/sec.sh remove CDO_[tenant_name]
```

Step 4 Confirm your intention to remove the SEC files.

Provision a Cisco Secure Cloud Analytics Portal

Required License: **Logging Analytics and Detection** or **Total Network Analytics and Monitoring**

If you purchase a **Logging Analytics and Detection** or **Total Network Analytics and Monitoring** license, after you deploy and configure the Secure Event Connector (SEC), you must associate a Secure Cloud Analytics portal with your CDO portal to view Secure Cloud Analytics alerts. When you purchase the license, if you have an existing Secure Cloud Analytics portal, you can provide the Secure Cloud Analytics portal name and immediately link it to your CDO portal.

Otherwise, you can request a new Secure Cloud Analytics portal from the CDO UI. The first time you access Secure Cloud Analytics alerts, the system takes you to a page to request the Secure Cloud Analytics portal. The user that requests this portal is granted administrator permission in the portal.

Step 1 From the CDO menu, choose **Analytics** > **Secure Cloud Analytics** to open the Secure Cloud Analytics UI in a new window.

Step 2 Click **Start Free Trial** to provision a Secure Cloud Analytics portal and associate it with your CDO portal.

Note After you request the portal, the provisioning may take up to several hours.

Ensure that your portal is provisioned before moving on to the next step.

1. From the CDO menu, choose **Analytics** > **Secure Cloud Analytics** to open the Secure Cloud Analytis UI in a new window.
2. You have the following options:
   - If you requested a Secure Cloud Analytics portal, and the system states it is still provisioning the portal, wait and try to access the alerts later.
   - If the Secure Cloud Analytics portal is provisioned, enter your **Username** and **Password**, then click **Sign in**.

Note The administrator user can invite other users to create accounts within the Secure Cloud Analytis portal. See Viewing Cisco Secure Cloud Analytics Alerts from CDO, on page 59 for more information.

What to do next

- If you purchased a **Logging Analytics and Detection** license, your configuration is complete. If you want to view the status of your CDO integration or sensor health from the Secure Cloud Analytics portal

UI, see Review Sensor Health and CDO Integration Status in Secure Cloud Analytics, on page 58 for more information. If you want to work with alerts in the Secure Cloud Analytics portal, see Viewing Cisco Secure Cloud Analytics Alerts from CDO, on page 59 and Working with Alerts Based on Firewall Events for more information.

- If you purchased a **Total Network Analytics and Monitoring** license, deploy one or more Secure Cloud Analytics sensors to your internal network to pass network flow data to the cloud. If you want to monitor cloud-based network flow data, configure your cloud-based deployment to pass flow data to Secure Cloud Analytics. See Cisco Secure Cloud Analytics Sensor Deployment for Total Network Analytics and Reporting, on page 58 for more information.

Review Sensor Health and CDO Integration Status in Secure Cloud Analytics

Sensor Status

Required License: **Logging Analytics and Detection** or **Total Network Analytics and Monitoring**

In the Secure Cloud Analytis web UI, you can view your CDO integration status and your configured sensors from the Sensor List page. The CDO integration is the read-only *connection-events* sensor. Stelathwatch Cloud provides an overall health of your sensors in the main menu:

- green cloud icon ( ) - connectivity established with all sensors, and CDO if configured
- yellow cloud icon ( ) - connectivity established with some sensors, or CDO if configured, and one or more sensors is not configured properly
- red cloud icon ( ) - connectivity lost with all configured sensors, and CDO if configured

Per sensor or CDO integration, a green icon signifies connectivity established, and a red icon signifies connectivity lost.

Step 1 1. In the Secure Cloud Analytis portal UI, select **Settings ( ) > Sensors**.

Step 2 Select **Sensor List**.

Cisco Secure Cloud Analytics Sensor Deployment for Total Network Analytics and Reporting

Secure Cloud Analytics Sensor Overview and Deployment

Required License: **Total Network Analytics and Monitoring**

If you obtain a **Total Network Analytics and Monitoring** license, after you provision a Secure Cloud Analytics portal, you can:

- Deploy and configure a Secure Cloud Analytics sensor within your on-premises network to pass network flow data to the cloud for analysis.
- Configure your cloud-based deployment to pass network flow log data to Secure Cloud Analytics for analysis.

Firewalls at your network perimeter gather information about traffic between your internal network and external networks, while Secure Cloud Analytics sensors gather information about traffic within your internal network.

Note FDM-managedSecure Firewall Threat Defense devices may be configured to pass NetFlow data. When you deploy a sensor, do not configure it to pass NetFlow data from any of your FDM-managedSecure Firewall Threat Defense devices which you also configured to pass event information to CDO.

See the Secure Cloud Analytics Sensor Installation Guide for sensor deployment instructions and recommendations.

See the Secure Cloud Analytics Public Cloud Monitoring Guides for cloud-based deployment configuration instructions and recommendations.

Note You can also review instructions in the Secure Cloud Analytics portal UI to configure sensors and your cloud-based deployment.

See the Secure Cloud Analytics Free Trial Guide for more information about Secure Cloud Analytics.

Next Steps

- Continue with Viewing Cisco Secure Cloud Analytics Alerts from CDO, on page 59.

Viewing Cisco Secure Cloud Analytics Alerts from CDO

Required License: **Logging Analytics and Detection** or **Total Network Analytics and Monitoring**

While you can review your firewall events on the Events logging page, you cannot review Cisco Secure Cloud Analytics alerts from the CDO portal UI. You can cross-launch from CDO to the Secure Cloud Analytics portal using the Security Analytics menu option, and view alerts generated from firewall event data (and from network flow data if you enabled **Total Network Analytics and Monitoring**). The Security Analytics menu option displays a badge with the number of Secure Cloud Analytics alerts in an open workflow status, if 1 or more are open.

If you use a Security Analytics and Logging license to generate Secure Cloud Analytics alerts, and you provisioned a new Secure Cloud Analytics portal, log into CDO, then cross-launch to Secure Cloud Analytics using Cisco Security Cloud Sign On. You can also directly access your Secure Cloud Analytics portal through its URL.

See Cisco Security Cloud Sign On for more information.

Inviting Users to Join Your Secure Cloud Analytics Portal

The initial user to request the Secure Cloud Analytics portal provision has administrator privileges in the Secure Cloud Analytics portal. That user can invite other users by email to join the portal. If these users do not have Cisco Security Cloud Sign On credentials, they can create them using the link in the invite email. Users can then use Cisco Security Cloud Sign On credentials to log in during the cross-launch from CDO to Secure Cloud Analytics.

To invite other users to your Secure Cloud Analytics portal by email:

Step 1 Log into your Secure Cloud Analytics portal as an administrator.

Step 2 Select **Settings** > **Account Management** > **User Management**.

Step 3 Enter an **Email** address.

Step 4 Click **Invite**.

Cross-Launching from CDO to Secure Cloud Analytics

To view security alerts from CDO:

Step 1 Log into the CDO portal.

Step 2 From the CDO menu, choose **Analytics** > **Secure Cloud Analytics**.

Step 3 In the Secure Cloud Analytics interface, select **Monitor** > **Alerts**.

Cisco Secure Cloud Analytics and Dynamic Entity Modeling

Required License: **Logging Analytics and Detection** or **Total Network Analytics and Monitoring**

Secure Cloud Analytics is a software as a service (SaaS) solution that monitors your on-premises and cloud-based network deployments. By gathering information about your network traffic from sources including firewall events and network flow data, it creates observations about the traffic and automatically identifies roles for network entities based on their traffic patterns. Using this information combined with other sources of threat intelligence, such as Talos, Secure Cloud Analytics generates alerts, which constitute a warning that there is behavior that may be malicious in nature. Along with the alerts, Secure Cloud Analytics provides network and host visibility, and contextual information it has gathered to provide you with a better basis to research the alert and locate sources of malicious behavior.

Dynamic Entity Modeling

Dynamic entity modeling tracks the state of your network by performing a behavioral analysis on firewall events and network flow data. In the context of Secure Cloud Analytics, an entity is something that can be tracked over time, such as a host or endpoint on your network. Dynamic entity modeling gathers information about entities based on the traffic they transmit and activities they take on your network. Secure Cloud Analytics, integrated with a **Logging Analytics and Detection** license, can draw from firewall events and other traffic information in order to determine the types of traffic the entity usually transmits. If you purchase

a **Total Network Analytics and Monitoring** license, Secure Cloud Analytics can also include NetFlow and other traffic information in modeling entity traffic. Secure Cloud Analytics updates these models over time, as the entities continue to send traffic, and potentially send different traffic, to keep an up-to-date model of each entity. From this information, Secure Cloud Analytics identifies:

- Roles for the entity, which are a descriptor of what the entity usually does. For example, if an entity sends traffic that is generally associated with email servers, Secure Cloud Analytics assigns the entity an Email Server role. The role/entity relationship can be many-to-one, as entities may perform multiple roles.
- Observations for the entity, which are facts about the entity's behavior on the network, such as a heartbeat connection with an external IP address, or a remote access session established with another entity. If you integrate with CDO, these facts can be obtained from firewall events. If you also purchase a **Total Network Analytics and Monitoring**, license, the system can also obtain facts from NetFlow, and generate observations from both firewall events and NetFlow. Observations on their own do not carry meaning beyond the fact of what they represent. A typical customer may have many thousands of observations and a few alerts.

Alerts and Analysis

Based on the combination of roles, observations, and other threat intelligence, Secure Cloud Analytics generates alerts, which are actionable items that represent possible malicious behavior as identified by the system. Note that one alert may represent multiple observations. If a firewall logs multiple connection events related to the same connection and entities, this may result in only one alert.

For example, a New Internal Device observation on its own does not constitute possible malicious behavior. However, over time, if the entity transmits traffic consistent with a Domain Controller, then the system assigns a Domain Controller role to the entity. If the entity subsequently establishes a connection to an external server that it has not established a connection with previously, using unusual ports, and transfers large amounts of data, the system would log a New Large Connection (External) observation and an Exceptional Domain Controller observation. If that external server is identified as on a Talos watchlist, then the combination of all this information would lead Secure Cloud Analytics to generate an alert for this entity's behavior, prompting you to take further action to research, and remediate malicious behavior.

When you open an alert in the Secure Cloud Analytics web portal UI, you can view the supporting observations that led the system to generate the alert. From these observations, you can also view additional context about the entities involved, including the traffic that they transmitted, and external threat intelligence if it is available. You can also see other observations and alerts that entities were involved with, and determine if this behavior is tied to other potentially malicious behavior.

Note that when you view and close alerts in Secure Cloud Analytics, you cannot allow or block traffic from the Secure Cloud Analytics UI. You must update your firewall access control rules to allow or block traffic, if you deployed your devices in active mode, or your firewall access control rules if your firewalls are deployed in passive mode.

Working with Alerts Based on Firewall Events

Required License: **Logging Analytics and Detection** or **Total Network Analytics and Monitoring**

Alerts Workflow

An alert's workflow is based around its status. When the system generates an alert, the default status is Open, and no user is assigned. When you view the Alerts summary, all open alerts are displayed by default, as these are of immediate concern.

Note: If you have a **Total Network Analytics and Monitoring** license, your alerts can be based on observations generated from NetFlow, observations generated from firewall events, or observations from both data sources.

As you review the Alerts summary, you can assign, tag, and update status on alerts as an initial triage. You can use the filters and search functionality to locate specific alerts, or display alerts of different statuses, or associated with different tags or assignees. You can set an alert's status to Snoozed, in which case it does not reappear in the list of open alerts until the snooze period elapses. You can also remove Snoozed status from an alert, to display it as an open alert again. As you review alerts, you can assign them to yourself or another user in the system. Users can search for all alerts assigned to their username.

From the Alerts summary, you can view an alert detail page. This page allows you to review additional context about the supporting observations that resulted in this alert, and additional context about the entities involved in this alert. This information can help you pinpoint the actual issue, in order to further research the issue on your network, and potentially resolve malicious behavior.

As you research within the Secure Cloud Analytics web portal UI, in CDO, and on your network, you can leave comments with the alert that describe your findings. This helps create a record for your research that you can reference in the future.

If you complete your analysis, you can update the status to Closed, and have it no longer appear by default as an open alert. You can also re-open a closed alert in the future if circumstances change.

The following presents general guidelines and suggestions for how to investigate a given alert. Because Secure Cloud Analytics provides additional context when it logs an alert, you can use this context to help guide your investigation.

These steps are meant to be neither comprehensive, nor all-inclusive. They merely offer a general framework with which to start investigating an alert.

In general, you can take the following steps when you review an alert:

1. Triage open alerts, on page 62
2. Snooze alerts for later analysis, on page 63
3. Update the alert for further investigation, on page 63
4. Review the alert and start your investigation, on page 64
5. Examine the entity and users, on page 66
6. Remediate issues using Secure Cloud Analytics, on page 66
7. Update and close the alert, on page 67

Triage open alerts

Triage the open alerts, especially if more than one have yet to be investigated:

- See Viewing Cisco Secure Cloud Analytics Alerts from CDO for more information on cross-launching from CDO to Secure Cloud Analytics, and viewing alerts.

Ask the following questions:

- Have you configured this alert type as high priority?
- Did you set a high sensitivity for the affected subnet?
- Is this unusual behavior from a new entity on your network?
- What is the entity's normal role, and how does the behavior in this alert fit that role?
- Is this an exceptional deviation from normal behavior for this entity?
- If a user is involved, is this expected behavior from the user, or exceptional?
- Is protected or sensitive data at risk of being compromised?
- How severe is the impact to your network if this behavior is allowed to continue?
- If there is communication with external entities, have these entities established connections with other entities on your network in the past?

If this is a *high* priority alert, consider quarantining the entity from the internet, or otherwise closing its connections, before continuing your investigation.

Snooze alerts for later analysis

Snooze alerts when they are of lesser priority, as compared to other alerts. For example, if your organization is repurposing an email server as an FTP server, and the system generates an Emergent Profile alert (indicating that an entity's current traffic matches a behavior profile that it did not previously match), you can snooze this alert as it is intended behavior, and revisit it at a later date. A snoozed alert does not show up with the open alerts; you must specifically filter to review these snoozed alerts.

Snooze an alert:

Step 1 Click **Close Alert**.

Step 2 In the Snooze this alert pane, select a snooze period from the drop-down.

Step 3 Click **Save**.

What to do next

When you are ready to review these alerts, you can unsnooze them. This sets the status to Open, and displays the alert alongside the other Open alerts.

Unsnooze a snoozed alert:

- From a snoozed alert, click **Unsnooze Alert**.

Update the alert for further investigation

Open the alert detail:

Step 1 Select **Monitor** > **Alerts**.

Step 2 Click an alert type name.

What to do next

Based on your initial triage and prioritization, assign the alert and tag it:

1. Select a user from the **Assignee** drop-down to assign the alert, so a user can start investigating.
2. Select one or more **Tags** from the drop-down to add tags to the alert, to better categorize your alert's for future identification, as well as to try and establish long-term patterns in your alerts.
3. Enter a **Comment on this alert**, then click **Comment** to leave comments as necessary to track your initial findings, and assist the person assigned to the alert. The alert tracks both system comments and user comments.

Review the alert and start your investigation

If you are reviewing an assigned alert, review the alert detail to understand why Secure Cloud Analytics generated an alert. Review the supporting observations to understand what these observations mean for the source entity.

Note that if the alert was generated based on firewall events, the system does not note that your firewall deployment was the source of this alert.

View all of the supporting observations for this source entity to understand its general behavior and patterns, and see if this activity may be part of a longer trend:

SUMMARY STEPS

1. From the alert detail, click the arrow icon (➔) next to an observation type to view all logged observations of that type.
2. Click the arrow icon (➔) next to **All Observations for Network** to view all logged observations for this alert's source entity.

DETAILED STEPS

Step 1 From the alert detail, click the arrow icon (➔) next to an observation type to view all logged observations of that type.

Step 2 Click the arrow icon (➔) next to **All Observations for Network** to view all logged observations for this alert's source entity.

Download the supporting observations in a comma-separated value file, if you want to perform additional analysis on these observations:

- From the alert detail, in the Supporting Observations pane, click **CSV**.

From the observations, determine if the source entity behavior is indicative of malicious behavior. If the source entity established connections with multiple external entities, determine if the external entities are somehow related, such as if they all have similar geolocation information, or their IP addresses are from the same subnet.

View additional context surrounding the source entity from a source entity IP address or hostname, including other alerts and observations it may be involved in, information about the device itself, and what type of session traffic it is transmitting:

- Select **Alerts** from the IP address or hostname drop-down to view all alerts related to the entity.
- Select **Observations** from the IP address or hostname drop-down to view all observations related to the entity.
- Select **Device** from the IP address or hostname drop-down to view information about the device.
- Select **Session Traffic** from the IP address or hostname drop-down to view session traffic related to this entity.
- Select **Copy** from the IP address or hostname drop-down to copy the IP address or hostname.

Note that the source entity in Secure Cloud Analytics is always internal to your network. Contrast this with the Initiator IP in a firewall event, which indicates the entity that initiated a connection, and may be internal or external to your network.

From the observations, examine information about other external entities. Examine the geolocation information, and determine if any of the geolocation data or Umbrella data identifies a malicious entity. View the traffic generated by these entities. Check whether Talos, AbuseIPDB, or Google have any information on these entities. Find the IP address on multiple days and see what other types of connections the external entity established with entities on your network. If necessary, locate those internal entities and determine if there is any evidence of compromise or unintended behavior.

Review the context for an external entity IP address or hostname with which the source entity established a connection:

- Select **IP Traffic** from the IP address or hostname drop-down to view recent traffic information for this entity.
- Select **Session Traffic** from the IP address or hostname drop-down to view recent session traffic information for this entity.
- Select **AbuseIPDB** from the IP address or hostname drop-down to view information about this entity on AbuseIPDB's website.
- Select **Cisco Umbrella** from the IP address or hostname drop-down to view information about this entity on Cisco Umbrella's website.
- Select **Google Search** from the IP address or hostname drop-down to search for this IP address on Google.
- Select **Talos Intelligence** from the IP address or hostname drop-down to view information about this information on Talos's website.
- Select **Add IP to watchlist** from the IP address or hostname drop-down to add this entity to the watchlist.
- Select **Find IP on multiple days** from the IP address or hostname drop-down to search for this entity's traffic from the past month.
- Select **Copy** from the IP address or hostname drop-down to copy the IP address or hostname.

Note that connected entities in Secure Cloud Analytics are always external to your network. Contrast this with the Responder IP in a firewall event, which indicates the entity that responded to a connection request, and may be internal or external to your network.

Leave comments as to your findings.

- From the alert detail, enter a **Comment on this alert**, then click **Comment**.

Examine the entity and users

After you review the alert in the Secure Cloud Analytics portal UI, you can perform an additional examination on a source entity directly, any users that may have been involved with this alert, and other related entities.

- Determine where the source entity is on your network, physically or in the cloud, and access it directly. Locate the log files for this entity. If it is a physical entity on your network, access the device to review the log information, and see if there is any information as to what caused this behavior. If it is a virtual entity, or stored in the cloud, access the logs and search for entries related to this entity. Examine the logs for further information on unauthorized logins, unapproved configuration changes, and the like.
- Examine the entity. Determine if you can identify malware or a vulnerability on the entity itself. See if there has been some malicious change, including if there are physical changes to a device, such as a USB stick that is not approved by your organization.
- Determine if a user on your network, or from outside your network, was involved. Ask the user what they were doing if possible. If the user is unavailable, determine if they were supposed to have access, and if a situation occurred that prompted this behavior, such as a terminated employee uploading files to an external server before leaving the company.

Leave comments as to your findings:

- From the alert detail, enter a **Comment on this alert**, then click **Comment**.

Remediate issues using Secure Cloud Analytics

If malicious behavior caused the alert, remediate the malicious behavior. For example:

- If a malicious entity or user attempted to log in from outside your network, update your firewall rules and firewall configuration to prevent the entity or user from accessing your network.
- If an entity attempted to access an unauthorized or malicious domain, examine the affected entity to determine if malware is the cause. If there are malicious DNS redirects, determine if other entities on your network are affected, or part of a botnet. If this is intended by a user, determine if there is a legitimate reason for this, such as testing firewall settings. Update your firewall rules and firewall configuration to prevent further access to the domain.
- If an entity is exhibiting behavior that is different from the historical entity model behavior, determine if the behavior change is intended. If it is unintended, examine whether an otherwise authorized user on your network is responsible for the change. Update your firewall rules and firewall configuration to address unintended behavior if it involves connections with entities that are external to your network.
- If you identify a vulnerability or exploit, update or patch the affected entity to remove the vulnerability, or update your firewall configuration to prevent unauthorized access. Determine if other entities on your

network may similarly be affected, and apply the same update or patch to those entities. If the vulnerability or exploit currently does not have a fix, contact the appropriate vendor to let them know.

- If you identify malware, quarantine the entity and remove the malware. Review the firewall file and malware events to determine if other entities on your network are at risk, and quarantine and update the entities to prevent this malware from spreading. Update your security intelligence with information about this malware, or the entities that caused this malware. Update your firewall access control and file and malware rules to prevent this malware from infecting your network in the future. Alert vendors as necessary.
- If malicious behavior resulted in data exfiltration, determine the nature of the data sent to an unauthorized source. Follow your organization's protocols for unauthorized data exfiltration. Update your firewall configuration to prevent future data exfiltration attempts by this source.

Update and close the alert

Add additional tags based on your findings:

Step 1 In the Secure Cloud Analytics portal UI, select **Monitor** > **Alerts**.

Step 2 Select one or more **Tags** from the drop-down.

Add final comments describing the results of your investigation, and any remediation steps taken:

- From an alert's detail, enter a **Comment on this alert**, then click **Comment**.

Close the alert, and mark it as helpful or not helpful:

1. From an alert's detail, click **Close Alert**.
2. Select **Yes** if the alert was helpful, or **No** if the alert was unhelpful. Note that this does not necessarily mean that the alert resulted from malicious behavior, just that the alert was helpful to your organization.
3. Click **Save**.

What to do next

Reopen a closed alert

If you discover additional information related to a closed alert, or want to add more comments related to that alert, you can reopen it, changing the status to Open. You can then make changes as necessary to the alert, then close it again when your additional investigation is complete.

Reopen a closed alert:

- From a closed alert's detail, click **Reopen Alert**.

Modifying Alert Priorities

Required License: **Logging Analytics and Detection** or **Total Network Analytics and Monitoring**

Alert types come with default priorities, which affect how sensitive the system is to generating alerts of this type. Alerts default to *low* or *normal* priority, based on Cisco intelligence and other factors. Based on your network environment, you may want to reprioritize alert types, to emphasize certain alerts that you are concerned with. You can configure any alert type to be *low*, *normal*, or *high* priority.

- Select **Monitor** > **Alerts**.
- Click the settings drop-down icon (), then select **Alert Types and Priorities**.
- Click the edit icon () next to an alert type and select *low*, *medium*, or *high* to change the priority.

Viewing Live Events

The Live events page shows the most recent 500 events that match the Searching for and Filtering Events in the Event Logging Page you entered. If the Live events page displays the maximum of 500 events, and more events stream in, CDO displays the newest live events, and transfers the oldest live events to the Historical events page, keeping the total number of live events at 500. That transfer takes roughly a minute to perform. If no filtering criteria is added, you will see all the latest Live 500 events generated by rules configured to log events.

The event timestamps are shown in UTC.

Changing the filtering criteria, whether live events are playing or paused, clears the events screen and restarts the collection process.

To see live events in the CDO Events viewer:

Step 1 In the navigation pane, choose **Analytics** > **Event Logging**.

Step 2 Click the **Live** tab.

What to do next

See how to play and pause events by reading .

Related Information:

- Play/Pause Live Events, on page 68
- View Historical Events, on page 69
- Customize the Events View, on page 70

Play/Pause Live Events

You can "play" or "pause" live events as they stream in. If live events are "playing," CDO displays events that match the filtering criteria specified in the Events viewer in the order they are received. If events are paused, CDO does not update the Live events page until you restart playing live events. When you restart playing events, CDO begins populating events in the Live page from the point at which you restarted playing events. It doesn't back-fill the ones you missed.

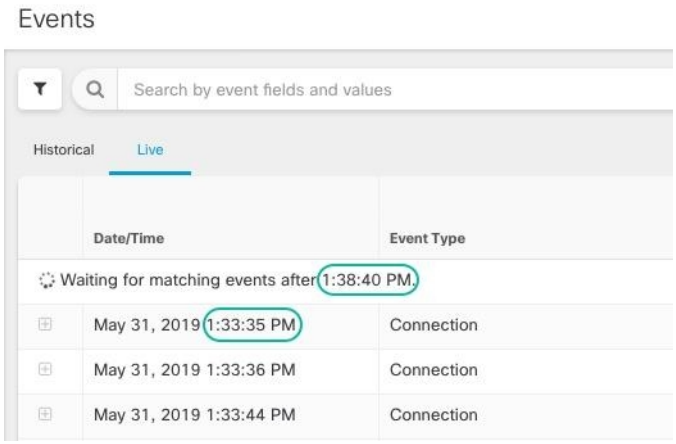
To view all the events that CDO received whether you played or paused live event streaming, click the Historical tab.

Auto-pause Live Events

After displaying events for about 5 consecutive minutes, CDO warns you that it is about to pause the stream of live events. At that time, you can click the link to continue streaming live events for another 5 minutes or allow the stream to stop. You can restart the live events stream when you are ready.

Receiving and Reporting Events

There may be a small lag between the Secure Event Connector (SEC) receiving events and CDO posting events in the Live events viewer. You can view the gap on the Live page. The time stamp of the event is the time it was received by SEC.



View Historical Events

The Live events page shows the most recent 500 events that match the Searching for and Filtering Events in the Event Logging Page you entered. Events older than the most recent 500 are transferred to the Historical events table. That transfer takes roughly a minute to perform. You can then filter all the events you have stored to find events you're looking for.

To view historical events:

Step 1 In the navigation pane, choose **Analytics** > **Event Logging**.

Step 2 Click the **Historical** tab. By default, when you open the Historical events table, the filter is set to display the events collected within the last hour.

The event attributes are largely the same as what is reported by Firepower Device Manager (FDM) or the Adaptive Security Device Manager (ASDM).

- For a complete description of Firepower Threat Defense event attributes, see Cisco FTD Syslog Messages.
- For a complete description of ASA event attributes, see Cisco ASA Series Syslog Messages.

Customize the Events View

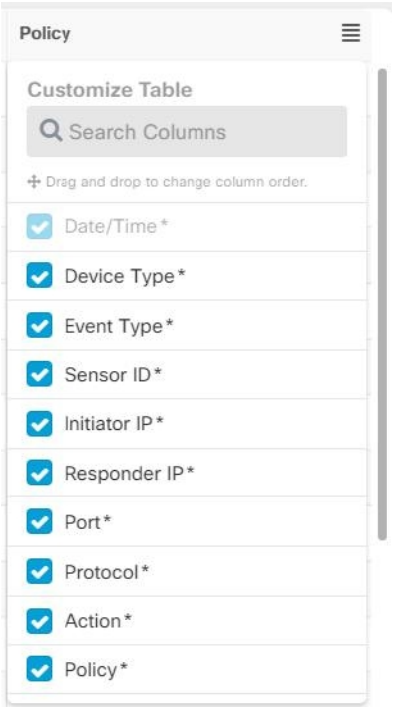
Any changes made to the Event Logging page are automatically saved for when you navigate away from this page and come back at a later time.

Note The Live and Historical events view have the same configuration. When you customize the events view, these changes are applied to both the Live and Historical view.

Show or Hide Columns

You can modify the event view for both live and historical events to only include column headers that apply to the view you want. Click the column filter icon located to the right of the columns and select or deselect the columns you want:

Figure 1: Show or Hide Columns



Columns with asterisks are provided within the event table by default, although you can remove them at any time. Use the search bar to manually search for keywords for additional columns you may want to include.

Reorder the Columns

You can reorder the columns of the Events view. Click the column filter icon located to the right of the columns to expand the list of selected columns and manually drag/dop the columns into the order you want, where the column at the top of the list in the drop-down menu is the left-most column in the Event View.

Related Information:

- Searching for and Filtering Events in the Event Logging Page
- Event Attributes in Security Analytics and Logging

Show and Hide Columns on the Event Logging Page

The Event Logging page displays ASA and FTD syslog events and ASA NetFlow Secure Event Logging (NSEL) events sent to the Cisco cloud from configured ASA and FDM-managed devices.

You can show or hide columns on the Event Logging page by using the Show/Hide widget with the table:

Step 1 From the CDO navigation bar, choose **Analytics** > **Event Logging** .

Step 2 Scroll to the far right of the table and click the **Show/Hide Columns** button ≣.

Step 3 Check the columns you want to see and uncheck the columns you want to hide.

Step 4 Mouse-over the column names in the Show/Hide Columns drop down menu and grab the grey cross to rearrange the column order.

Other users logging into the tenant will see the same columns you chose to show until columns are shown or hidden again.

This table describes the column headers:

Column Header	Description
Date/Time	The time the device generated the event. Time is displayed in the local time of your computer.
Device Type	ASA (Adaptive Security Appliance) FTD (Firepower Threat Defense)

Column Header	Description

Event Type	This composite column can have any of the following:
	• **FTD Event Types**
	  • Connection-Displays connection events from access control rules.
	  • File-Displays events reported by file policies in access control rules.
	  • Intrusion-Displays events reported by intrusion policy in access control rules.
	  • Malware-Displays events reported by malware policies in access control rules.
	• ASA **Event Types**-These event types represent groups of syslog or NetFlow events. See ASA Event Types for more information about which syslog ID or which NetFlow ID is included in which group.
	  • Parsed Events-Parsed syslog events contain more event attributes than other syslog events and CDO is able to return search results based on those attributes more quickly. Parsed events are not a filtering category; however, parsed event IDs are displayed in the Event Types column in *italics*. Event IDs that are not displayed in italics are not parsed.
	  • ASA NetFlow Event IDs: All Netflow (NSEL) events from ASA appear here.

Sensor ID	The Sensor ID is the IP address from which events are sent to the Secure Event Connector. This is typically the Management interface on the Firepower Threat Defense or the ASA.
Initiator IP	This is the IP address of the source of the network traffic. The value of the Initiator address field corresponds to the value of the InitiatorIP field in the event details. You can enter a single address, such as 10.10.10.100, or a network defined in CIDR notation such as 10.10.10.0/24.

Column Header	Description
Responder IP	This is the destination IP address of the packet. The value of the Destination address field corresponds to the value in the ResponderIP field in the event details. You can enter a single address, such as 10.10.10.100, or a network defined in CIDR notation such as 10.10.10.0/24.
Port	The port or ICMP code used by the session **responder**. The value of the destination port corresponds to the value of the **ResponderPort** in the event details.
Protocol	It represents the protocol in the events.
Action	Specifies the security action defined by the rule. The value you enter must be an exact match to what you want to find; however, the case doesn't matter. Enter different values for connection, file, intrusion, malware, syslog, and NetFlow event types: • For connection event types, the filter searches for matches in the AC_RuleAction attribute. Those values could be Allow, Block, Trust. • For file event types, the filter searches for matches in the FileAction attribute. Those values could be Allow, Block, Trust. • For intrusion event types, the filter searches for matches in the InLineResult attribute. Those values could be Allowed, Blocked, Trusted. • For malware event types, the filter searches for matches in the FileAction attribute. Those values could be Cloud Lookup Timeout. • For syslog and NetFlow events types, the filter searches for matches in the Action attribute.
Policy	The name of the policy that triggered the event. Names will be different for ASA and FDM-managed devices.

Related Information:

Searching for and Filtering Events in the Event Logging Page, on page 104

Customizable Event Filters

If you are a Secure Logging Analytics (SaaS) customer, you can create and save custom filters that you use frequently.

The elements of your filter are saved to a filter tab as you configure them. Whenever you return to the Event Logging page, these searches will be available to you. They will not be available to other CDO users of the tenant. They will not be available to you on a different tenant, if you manage more than one tenant.

Note Be aware that when you are working in a filter tab, if you modify any filter criteria, those changes are saved to your custom filter tab automatically.

Step 1 From the main menu, choose **Analytics** > **Event Logging**.

Step 2 Clear the Search field of any values.

Step 3 Above the event table, click the blue plus button to add a View tab. Filter views are labeled "View 1", "View 2", "View 3" and so on until you give them a name.

Step 4 Select a view tab.

Step 5 Open the filter bar and select the filters attributes you want in your custom filter. See Searching for and Filtering Events in the Event Logging Page, on page 104. Remember that only filter attributes are saved in the custom filter.

Step 6 Customize the columns you want to show in the event logging table. See Show and Hide Columns on the Event Logging Page, on page 71 for a discussion of showing and hiding columns.

Step 7 Double-click the filter tab with the "View X" label and rename it.

Step 8 (Optional) Now that you have created a custom filter, you can fine tune the results displayed on the Event Logging page, without changing the custom filter, by adding search criteria to the Search field. See Searching for and Filtering Events in the Event Logging Page, on page 104.

Event Attributes in Security Analytics and Logging

Event Attribute Descriptions

The event attribute descriptions used by CDO are largely the same as what is reported by Firepower Device Manager (FDM) and Adaptive Security Device Manager (ASDM).

- For a complete description of Adaptive Security Appliance (ASA) event attributes, see Cisco ASA Series Syslog Messages.

Some ASA syslog events are "parsed" and others have additional attributes which you can use when filtering the contents of the Event Logging table using attribute:value pairs. See these additional topics for other important attributes of syslog events:

- Parsed ASA Syslog Events
- EventGroup and EventGroupDefinition Attributes for Some Syslog Messages
- EventName Attributes for Syslog Events

- Time Attributes in a Syslog Event

EventGroup and EventGroupDefinition Attributes for Some Syslog Messages

Some syslog events will have the additional attributes "EventGroup" and "EventGroupDefinition". You will be able to filter the events table to find events using these additional attributes by filtering by attribute:value pairs. For example, you could filter for Application Firewall events by entering `apfw:415*` in the search field of the Event Logging table.

Syslog Message Classes and Associated Message ID Numbers

EventGroup	EventGroupDefinition	Syslog Message ID Numbers (first 3 digits)
aaa/auth	User Authentication	109, 113
acl/session	Access Lists/User Session	106
apfw	Application Firewall	415
bridge	Transparent Firewall	110, 220
ca	PKI Certification Authority	717
citrix	Citrix Client	723
clst	Clustering	747
cmgr	Card Management	323
config	Command Interface	111, 112, 208, 308
csd	Secure Desktop	724
cts	Cisco TrustSec	776
dap	Dynamic Access Policies	734
eap, eapoudp	EAP or EAPoUDP for Network Admission Control	333, 334
eigrp	EIGRP Routing	336
email	E-mail Proxy	719
ipaa/envmon	Environment Monitoring	735
ha	Failover	101, 102, 103, 104, 105, 210, 311, 709
idfw	Identity-based Firewall	746
ids	Intrusion Detection System	733
ids/ips	Intrusion Detection System / Intrusion Protection System	400
ikev2	IKEv2 Toolkit	750, 751, 752
ip	IP Stack	209, 215, 313, 317, 408

EventGroup	EventGroupDefinition	Syslog Message ID Numbers (first 3 digits)
ipaa	IP Address Assignment	735
ips	Intrusion Protection System	401, 420
ipv6	IPv6	325
l4tm	Block lists, Allow lists, grey lists	338
lic	Licensing	444
mdm-proxy	MDM Proxy	802
nac	Network Admission Control	731, 732
vpn/nap	IKE and IPsec / Network Access Point	713
np	Network Processor	319
ospf	OSPF Routing	318, 409, 503, 613
passwd	Password Encryption	742
pp	Phone Proxy	337
rip	RIP Routing	107, 312
rm	Resource Manager	321
sch	Smart Call Home	120
session	User Session	108, 201, 202, 204, 302, 303, 304, 314, 405, 406, 407, 500, 502, 607, 608, 609, 616, 620, 703, 710
session/natpat	User Session/NAT and PAT	305
snmp	SNMP	212
ssafe	ScanSafe	775
ssl/np ssl	SSL Stack/NP SSL	725
svc	SSL VPN Client	722
sys	System	199, 211, 214, 216, 306, 307, 315, 414, 604, 605, 606, 610, 612, 614, 615, 701, 711, 741
tre	Transactional Rule Engine	780
ucime	UC-IME	339
tag-switching	Service Tag Switching	779
td	Threat Detection	733
vm	VLAN Mapping	730
vpdn	PPTP and L2TP Sessions	213, 403, 603

EventGroup	EventGroupDefinition	Syslog Message ID Numbers (first 3 digits)
vpn	IKE and IPsec	316, 320, 402, 404, 501, 602, 702, 713, 714, 715
vpnc	VPN Client	611
vpnfo	VPN Failover	720
vpnlb	VPN Load Balancing	718
vxlan	VXLAN	778
webfo	WebVPN Failover	721
webvpn	WebVPN and AnyConnect Client	716
session/natpat	User Session / NAT and PAT	305

EventName Attributes for Syslog Events

Some syslog events will have the additional attribute "EventName". You will be able to filter the events table to find events using the EventName attribute by filtering by attribute:value pairs. For example, you could filter events for a "Denied IP packet" by entering **EventName:"Denied IP Packet"** in the search field of the Event Logging table.

Syslog Event ID and Event Names Tables

- AAA Syslog Event IDs and Event Names
- Botnet Syslog Event IDs and Event Names
- Failover Syslog Event IDs and Event Names
- Firewall Denied Syslog Event IDs and Event Names
- Firewall Traffic Syslog Event IDs and Event Names
- Identity Based Firewall Syslog Event IDs and Event Names
- IPSec Syslog Event IDs and Event Names
- NAT Syslog Event ID and Event Names
- SSL VPN Syslog Event IDs and Event Names

AAA Syslog Event IDs and Event Names

EventID	EventName
109001	AAA Begin
109002	AAA Failed
109003	AAA Server Failed
109005	Authentication Success

EventID	EventName
109006	Authentication Failed
109007	Authorization Success
109008	Authorization Failed
109010	AAA Pending
109011	AAA Session Started
109012	AAA Session Ended
109013	AAA
109014	AAA Failed
109016	AAA ACL not found
109017	AAA Limit Reach
109018	AAA ACL Empty
109019	AAA ACL error
109020	AAA ACL error
109021	AAA error
109022	AAA HTTP limit reached
109023	AAA auth required
109024	Authorization Failed
109025	Authorization Failed
109026	AAA error
109027	AAA Server error
109028	AAA Bypassed
109029	AAA ACL error
109030	AAA ACL error
109031	Authentication Failed
109032	AAA ACL error
109033	Authentication Failed
109034	Authentication Failed
109035	AAA Limit Reach

EventID	EventName
113001	AAA Session limit reach
113003	AAA overridden
113004	AAA Successful
113005	Authorization Rejected
113006	AAA user locked
113007	AAA User unlocked
113008	AAA successful
113009	AAA retrieved
113010	AAA Challenge received
113011	AAA retrieved
113012	Authentication Successful
113013	AAA error
113014	AAA error
113015	Authentication Rejected
113016	AAA Rejected
113017	AAA Rejected
113018	AAA ACL error
113019	AAA Disconnected
113020	AAA error
113021	AAA Logging Fail
113022	AAA Failed
113023	AAA reactivated
113024	AAA Client certification
113025	AAA Authentication fail
113026	AAA error
113027	AAA error

Botnet Syslog Event IDs and Event Names

EventID	EventName
338001	Botnet Source Block List
338002	Botnet Destination Block List
338003	Botnet Source Block List
338004	Botnet Destination Block List
338101	Botnet Source Allow List
338102	Botnet destination Allow List
338202	Botnet destination Grey
338203	Botnet Source Grey
338204	Botnet Destination Grey
338301	Botnet DNS Intercepted
338302	Botnet DNS
338303	Botnet DNS
338304	Botnet Download successful
338305	Botnet Download failed
338306	Botnet Authentication failed
338307	Botnet Decrypt failed
338308	Botnet Client
338309	Botnet Client
338310	Botnet dyn filter failed

Failover Syslog Event IDs and Event Names

EventID	EventName
101001	Failover Cable OK
101002	Failover Cable BAD
101003	Failover Cable not connected
101004	Failover Cable not connected
101005	Failover Cable reading error
102001	Failover Power failure
103001	No response from failover mate

EventID	EventName
103002	Failover mate interface OK
103003	Failover mate interface BAD
103004	Failover mate reports failure
103005	Failover mate reports self failure
103006	Failover version incompatible
103007	Failover version difference
104001	Failover role switch
104002	Failover role switch
104003	Failover unit failed
104004	Failover unit OK
106100	Permit/Denied by ACL
210001	Stateful Failover error
210002	Stateful Failover error
210003	Stateful Failover error
210005	Stateful Failover error
210006	Stateful Failover error
210007	Stateful Failover error
210008	Stateful Failover error
210010	Stateful Failover error
210020	Stateful Failover error
210021	Stateful Failover error
210022	Stateful Failover error
311001	Stateful Failover update
311002	Stateful Failover update
311003	Stateful Failover update
311004	Stateful Failover update
418001	Denied Packet to Management
709001	Failover replication error

EventID	EventName
709002	Failover replication error
709003	Failover replication start
709004	Failover replication complete
709005	Failover receive replication start
709006	Failover receive replication complete
709007	Failover replication failure
710003	Denied access to Device

Firewall Denied Syslog Event IDs and Event Names

EventID	EventName
106001	Denied by Security Policy
106002	Outbound Deny
106006	Denied by Security Policy
106007	Denied Inbound UDP
106008	Denied by Security Policy
106010	Denied by Security Policy
106011	Denied Inbound
106012	Denied due to Bad IP option
106013	Dropped Ping to PAT IP
106014	Denied Inbound ICMP
106015	Denied by Security Policy
106016	Denied IP Spoof
106017	Denied due to Land Attack
106018	Denied outbound ICMP
106020	Denied IP Packet
106021	Denied TCP
106022	Denied Spoof packet
106023	Denied IP Packet
106025	Dropped Packet failed to Detect context

EventID	EventName
106026	Dropped Packet failed to Detect context
106027	Dropped Packet failed to Detect context
106100	Permit/Denied by ACL
418001	Denied Packet to Management
710003	Denied access to Device

Firewall Traffic Syslog Event IDs and Event Names

EventID	EventName
108001	Inspect SMTP
108002	Inspect SMTP
108003	Inspect ESMTP Dropped
108004	Inspect ESMTP
108005	Inspect ESMTP
108006	Inspect ESMTP Violation
108007	Inspect ESMTP
110002	No Router found
110003	Failed to Find Next hop
209003	Fragment Limit Reach
209004	Fragment invalid Length
209005	Fragment IP discard
302003	H245 Connection Start
302004	H323 Connection start
302009	Restart TCP
302010	Connection USAGE
302012	H225 CALL SIGNAL CONN
302013	Built TCP
302014	Teardown TCP
302015	Built UDP
302016	Teardown UDP

EventID	EventName
302017	Built GRE
302018	Teardown GRE
302019	H323 Failed
302020	Built ICMP
302021	Teardown ICMP
302022	Built TCP Stub
302023	Teardown TCP Stub
302024	Built UDP Stub
302025	Teardown UDP Stub
302026	Built ICMP Stub
302027	Teardown ICMP Stub
302033	Connection H323
302034	H323 Connection Failed
302035	Built SCTP
302036	Teardown SCTP
303002	FTP file download/upload
303003	Inspect FTP Dropped
303004	Inspect FTP Dropped
303005	Inspect FTP reset
313001	ICMP Denied
313004	ICMP Drop
313005	ICMP Error Msg Drop
313008	ICMP ipv6 Denied
324000	GTP Pkt Drop
324001	GTP Pkt Error
324002	Memory Error
324003	GTP Pkt Drop
324004	GTP Version Not Supported

EventID	EventName
324005	GTP Tunnel Failed
324006	GTP Tunnel Failed
324007	GTP Tunnel Failed
337001	Phone Proxy SRTP Failed
337002	Phone Proxy SRTP Failed
337003	Phone Proxy SRTP Auth Fail
337004	Phone Proxy SRTP Auth Fail
337005	Phone Proxy SRTP no Media Session
337006	Phone Proxy TFTP Unable to Create File
337007	Phone Proxy TFTP Unable to Find File
337008	Phone Proxy Call Failed
337009	Phone Proxy Unable to Create Phone Entry
400000	IPS IP options-Bad Option List
400001	IPS IP options-Record Packet Route
400002	IPS IP options-Timestamp
400003	IPS IP options-Security
400004	IPS IP options-Loose Source Route
400005	IPS IP options-SATNET ID
400006	IPS IP options-Strict Source Route
400007	IPS IP Fragment Attack
400008	IPS IP Impossible Packet
400009	IPS IP Fragments Overlap
400010	IPS ICMP Echo Reply
400011	IPS ICMP Host Unreachable
400012	IPS ICMP Source Quench
400013	IPS ICMP Redirect
400014	IPS ICMP Echo Request
400015	IPS ICMP Time Exceeded for a Datagram

EventID	EventName
400017	IPS ICMP Timestamp Request
400018	IPS ICMP Timestamp Reply
400019	IPS ICMP Information Request
400020	IPS ICMP Information Reply
400021	IPS ICMP Address Mask Request
400022	IPS ICMP Address Mask Reply
400023	IPS Fragmented ICMP Traffic
400024	IPS Large ICMP Traffic
400025	IPS Ping of Death Attack
400026	IPS TCP NULL flags
400027	IPS TCP SYN+FIN flags
400028	IPS TCP FIN only flags
400029	IPS FTP Improper Address Specified
400030	IPS FTP Improper Port Specified
400031	IPS UDP Bomb attack
400032	IPS UDP Snork attack
400033	IPS UDP Chargen DoS attack
400034	IPS DNS HINFO Request
400035	IPS DNS Zone Transfer
400036	IPS DNS Zone Transfer from High Port
400037	IPS DNS Request for All Records
400038	IPS RPC Port Registration
400039	IPS RPC Port Unregistration
400040	IPS RPC Dump
400041	IPS Proxied RPC Request
400042	IPS YP server Portmap Request
400043	IPS YP bind Portmap Request
400044	IPS YP password Portmap Request

EventID	EventName
400045	IPS YP update Portmap Request
400046	IPS YP transfer Portmap Request
400047	IPS Mount Portmap Request
400048	IPS Remote execution Portmap Request
400049	IPS Remote execution Attempt
400050	IPS Statd Buffer Overflow
406001	Inspect FTP Dropped
406002	Inspect FTP Dropped
407001	Host Limit Reach
407002	Embryonic limit Reached
407003	Established limit Reached
415001	Inspect Http Header Field Count
415002	Inspect Http Header Field Length
415003	Inspect Http body Length
415004	Inspect Http content-type
415005	Inspect Http URL length
415006	Inspect Http URL Match
415007	Inspect Http Body Match
415008	Inspect Http Header match
415009	Inspect Http Method match
415010	Inspect transfer encode match
415011	Inspect Http Protocol Violation
415012	Inspect Http Content-type
415013	Inspect Http Malformed
415014	Inspect Http Mime-Type
415015	Inspect Http Transfer-encoding
415016	Inspect Http Unanswered
415017	Inspect Http Argument match

EventID	EventName
415018	Inspect Http Header length
415019	Inspect Http status Matched
415020	Inspect Http non-ASCII
416001	Inspect SNMP dropped
419001	Dropped packet
419002	Duplicate TCP SYN
419003	Packet modified
424001	Denied Packet
424002	Dropped Packet
431001	Dropped RTP
431002	Dropped RTCP
500001	Inspect ActiveX
500002	Inspect Java
500003	Inspect TCP Header
500004	Inspect TCP Header
500005	Inspect Connection Terminated
508001	Inspect DCERPC Dropped
508002	Inspect DCERPC Dropped
509001	Prevented No Forward Cmd
607001	Inspect SIP
607002	Inspect SIP
607003	Inspect SIP
608001	Inspect Skinny
608002	Inspect Skinny dropped
608003	Inspect Skinny dropped
608004	Inspect Skinny dropped
608005	Inspect Skinny dropped
609001	Built Local-Host

EventID	EventName
609002	Teardown Local Host
703001	H225 Unsupported Version
703002	H225 Connection
726001	Inspect Instant Message

Identity Based Firewall Syslog Event IDs and Event Names

EventID	EventName
746001	Import started
746002	Import complete
746003	Import failed
746004	Exceed user group limit
746005	AD Agent down
746006	AD Agent out of sync
746007	Netbios response failed
746008	Netbios started
746009	Netbios stopped
746010	Import user failed
746011	Exceed user limit
746012	User IP add
746013	User IP delete
746014	FQDN Obsolete
746015	FQDN resolved
746016	DNS lookup failed
746017	Import user issued
746018	Import user done
746019	Update AD Agent failed

IPSec Syslog Event IDs and Event Names

EventID	EventName
402114	Invalid SPI received
402115	Unexpected protocol received
402116	Packet doesn't match identity
402117	Non-IPSEC packet received
402118	Invalid fragment offset
402119	Anti-Replay check failure
402120	Authentication failure
402121	Packet dropped
426101	cLACP Port Bundle
426102	cLACP Port Standby
426103	cLACP Port Moved To Bundle From Standby
426104	cLACP Port Unbundled
602103	Path MTU updated
602104	Path MTU exceeded
602303	New SA created
602304	SA deleted
702305	SA expiration - Sequence rollover
702307	SA expiration - Data rollover

NAT Syslog Event ID and Event Names

EventID	EventName
201002	Max connection Exceeded for host
201003	Embryonic limit exceed
201004	UDP connection limit exceed
201005	FTP connection failed
201006	RCMD connection failed
201008	New connection Disallowed
201009	Connection Limit exceed
201010	Embryonic Connection limit exceeded
201011	Connection Limit exceeded
201012	Per-client embryonic connection limit exceeded
201013	Per-client connection limit exceeded
202001	Global NAT exhausted

EventID	EventName
202005	Embryonic connection error
202011	Connection limit exceeded
305005	No NAT group found
305006	Translation failed
305007	Connection dropped
305008	NAT allocation issue
305009	NAT Created
305010	NAT teardown
305011	PAT created
305012	PAT teardown
305013	Connection denied

SSL VPN Syslog Event IDs and Event Names

EventID	EventName
716001	WebVPN Session Started
716002	WebVPN Session Terminated
716003	WebVPN User URL access
716004	WebVPN User URL access denied
716005	WebVPN ACL error
716006	WebVPN User Disabled
716007	WebVPN Unable to Create
716008	WebVPN Debug
716009	WebVPN ACL error
716010	WebVPN User access network
716011	WebVPN User access
716012	WebVPN User Directory access
716013	WebVPN User file access
716014	WebVPN User file access
716015	WebVPN User file access
716016	WebVPN User file access
716017	WebVPN User file access
716018	WebVPN User file access
716019	WebVPN User file access

EventID	EventName
716020	WebVPN User file access
716021	WebVPN user access file denied
716022	WebVPN Unable to connect proxy
716023	WebVPN session limit reached
716024	WebVPN User access error
716025	WebVPN User access error
716026	WebVPN User access error
716027	WebVPN User access error
716028	WebVPN User access error
716029	WebVPN User access error
716030	WebVPN User access error
716031	WebVPN User access error
716032	WebVPN User access error
716033	WebVPN User access error
716034	WebVPN User access error
716035	WebVPN User access error
716036	WebVPN User login successful
716037	WebVPN User login failed
716038	WebVPN User Authentication Successful
716039	WebVPN User Authentication Rejected
716040	WebVPN User logging denied
716041	WebVPN ACL hit count
716042	WebVPN ACL hit
716043	WebVPN Port forwarding
716044	WebVPN Bad Parameter
716045	WebVPN Invalid Parameter
716046	WebVPN connection terminated
716047	WebVPN ACL usage
716048	WebVPN memory issue
716049	WebVPN Empty SVC ACL
716050	WebVPN ACL error
716051	WebVPN ACL error

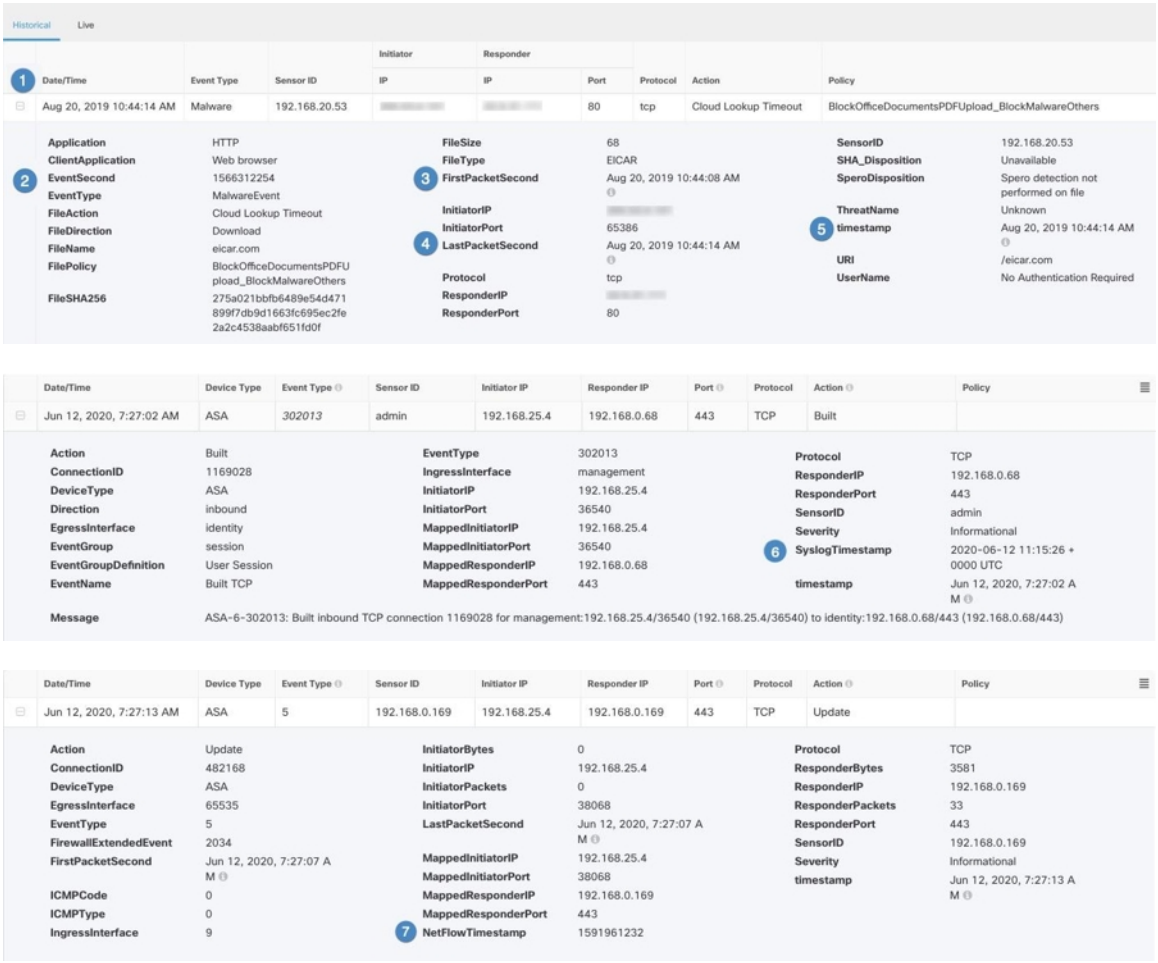
EventID	EventName
716052	WebVPN Session Terminated
716053	WebVPN SSO Server added
716054	WebVPN SSO Server deleted
716055	WebVPN Authentication Successful
716056	WebVPN Authentication Failed
716057	WebVPN Session terminated
716058	WebVPN Session lost
716059	WebVPN Session resumed
716060	WebVPN Session Terminated
722001	WebVPN SVC Connect request error
722002	WebVPN SVC Connect request error
722003	WebVPN SVC Connect request error
722004	WebVPN SVC Connect request error
722005	WebVPN SVC Connect update issue
722006	WebVPN SVC Invalid address
722007	WebVPN SVC Message
722008	WebVPN SVC Message
722009	WebVPN SVC Message
722010	WebVPN SVC Message
722011	WebVPN SVC Message
722012	WebVPN SVC Message
722013	WebVPN SVC Message
722014	WebVPN SVC Message
722015	WebVPN SVC invalid frame
722016	WebVPN SVC invalid frame
722017	WebVPN SVC invalid frame
722018	WebVPN SVC invalid frame
722019	WebVPN SVC Not Enough Data
722020	WebVPN SVC no address
722021	WebVPN Memory issue
722022	WebVPN SVC connection established
722023	WebVPN SVC connection terminated

EventID	EventName
722024	WebVPN Compression Enabled
722025	WebVPN Compression Disabled
722026	WebVPN Compression reset
722027	WebVPN Decompression reset
722028	WebVPN Connection Closed
722029	WebVPN SVC Session terminated
722030	WebVPN SVC Session terminated
722031	WebVPN SVC Session terminated
722032	WebVPN SVC connection Replacement
722033	WebVPN SVC Connection established
722034	WebVPN SVC New connection
722035	WebVPN Received Large packet
722036	WebVPN transmitting Large packet
722037	WebVPN SVC connection closed
722038	WebVPN SVC session terminated
722039	WebVPN SVC invalid ACL
722040	WebVPN SVC invalid ACL
722041	WebVPN SVC IPv6 not available
722042	WebVPN invalid protocol
722043	WebVPN DTLS disabled
722044	WebVPN unable to request address
722045	WebVPN Connection terminated
722046	WebVPN Session terminated
722047	WebVPN Tunnel terminated
722048	WebVPN Tunnel terminated
722049	WebVPN Session terminated
722050	WebVPN Session terminated
722051	WebVPN address assigned
722053	WebVPN Unknown client
723001	WebVPN Citrix connection Up
723002	WebVPN Citrix connection Down
723003	WebVPN Citrix no memory issue

EventID	EventName
723004	WebVPN Citrix bad flow control
723005	WebVPN Citrix no channel
723006	WebVPN Citrix SOCKS error
723007	WebVPN Citrix connection list broken
723008	WebVPN Citrix invalid SOCKS
723009	WebVPN Citrix invalid connection
723010	WebVPN Citrix invalid connection
723011	WebVPN citrix Bad SOCKS
723012	WebVPN Citrix Bad SOCKS
723013	WebVPN Citrix invalid connection
723014	WebVPN Citrix connected to Server
724001	WebVPN Session not allowed
724002	WebVPN Session terminated
724003	WebVPN CSD
724004	WebVPN CSD
725001	SSL handshake Started
725002	SSL Handshake completed
725003	SSL Client session resume
725004	SSL Client request Authentication
725005	SSL Server request authentication
725006	SSL Handshake failed
725007	SSL Session terminated
725008	SSL Client Cipher
725009	SSL Server Cipher
725010	SSL Cipher
725011	SSL Device choose Cipher
725012	SSL Device choose Cipher
725013	SSL Server choose cipher
725014	SSL LIB error
725015	SSL client certificate failed

Time Attributes in a Syslog Event

Understanding the purposes of the different time-stamps in the Event Logging page will help you filter and find the events that interest you.



Number	Label	Description
1	Date/Time	The time the Secure Event Connector (SEC) processed the event. This may not be the same as the time the firewall inspected that traffic. Same value as timestamp.
2	EventSecond	Equals with LastPacketSecond.

Number	Label	Description
3	FirstPacketSecond	The time at which the connection opened. The firewall inspects the packet at this time. The value of the FirstPacketSecond is calculated by subtracting the ConnectionDuration from the LastPacketSecond. For connection events logged at the beginning of the connection, the value of FirstPacketSecond, LastPacketSecond, and EventSecond will all be the same.
4	LastPacketSecond	The time at which the connection closed. For connection events logged at the end of the connection, LastPacketSecond and EventSecond will be equal.
5	timestamp	The time the Secure Event Connector (SEC) processed the event. This may not be the same as the time the firewall inspected that traffic. Same value as Date/Time.
6	Syslog TimeStamp	Represents the syslog originated time if 'logging timestamp' is used. If the syslog does not have this info, the time the SEC received the event is reflected.
7	NetflowTimeStamp	The time at which the ASA finished gathering enough flow records/events to fill a NetFlow packet to then send them off to a flow collector.

Cisco Secure Cloud Analytics and Dynamic Entity Modeling

Required License: **Logging Analytics and Detection** or **Total Network Analytics and Monitoring**

Secure Cloud Analytics is a software as a service (SaaS) solution that monitors your on-premises and cloud-based network deployments. By gathering information about your network traffic from sources including firewall events and network flow data, it creates observations about the traffic and automatically identifies roles for network entities based on their traffic patterns. Using this information combined with other sources of threat intelligence, such as Talos, Secure Cloud Analytics generates alerts, which constitute a warning that there is behavior that may be malicious in nature. Along with the alerts, Secure Cloud Analytics provides

network and host visibility, and contextual information it has gathered to provide you with a better basis to research the alert and locate sources of malicious behavior.

Dynamic Entity Modeling

Dynamic entity modeling tracks the state of your network by performing a behavioral analysis on firewall events and network flow data. In the context of Secure Cloud Analytics, an entity is something that can be tracked over time, such as a host or endpoint on your network. Dynamic entity modeling gathers information about entities based on the traffic they transmit and activities they take on your network. Secure Cloud Analytics, integrated with a **Logging Analytics and Detection** license, can draw from firewall events and other traffic information in order to determine the types of traffic the entity usually transmits. If you purchase a **Total Network Analytics and Monitoring** license, Secure Cloud Analytics can also include NetFlow and other traffic information in modeling entity traffic. Secure Cloud Analytics updates these models over time, as the entities continue to send traffic, and potentially send different traffic, to keep an up-to-date model of each entity. From this information, Secure Cloud Analytics identifies:

- Roles for the entity, which are a descriptor of what the entity usually does. For example, if an entity sends traffic that is generally associated with email servers, Secure Cloud Analytics assigns the entity an Email Server role. The role/entity relationship can be many-to-one, as entities may perform multiple roles.
- Observations for the entity, which are facts about the entity's behavior on the network, such as a heartbeat connection with an external IP address, or a remote access session established with another entity. If you integrate with CDO, these facts can be obtained from firewall events. If you also purchase a **Total Network Analytics and Monitoring**, license, the system can also obtain facts from NetFlow, and generate observations from both firewall events and NetFlow. Observations on their own do not carry meaning beyond the fact of what they represent. A typical customer may have many thousands of observations and a few alerts.

Alerts and Analysis

Based on the combination of roles, observations, and other threat intelligence, Secure Cloud Analytics generates alerts, which are actionable items that represent possible malicious behavior as identified by the system. Note that one alert may represent multiple observations. If a firewall logs multiple connection events related to the same connection and entities, this may result in only one alert.

For example, a New Internal Device observation on its own does not constitute possible malicious behavior. However, over time, if the entity transmits traffic consistent with a Domain Controller, then the system assigns a Domain Controller role to the entity. If the entity subsequently establishes a connection to an external server that it has not established a connection with previously, using unusual ports, and transfers large amounts of data, the system would log a New Large Connection (External) observation and an Exceptional Domain Controller observation. If that external server is identified as on a Talos watchlist, then the combination of all this information would lead Secure Cloud Analytics to generate an alert for this entity's behavior, prompting you to take further action to research, and remediate malicious behavior.

When you open an alert in the Secure Cloud Analytics web portal UI, you can view the supporting observations that led the system to generate the alert. From these observations, you can also view additional context about the entities involved, including the traffic that they transmitted, and external threat intelligence if it is available. You can also see other observations and alerts that entities were involved with, and determine if this behavior is tied to other potentially malicious behavior.

Note that when you view and close alerts in Secure Cloud Analytics, you cannot allow or block traffic from the Secure Cloud Analytics UI. You must update your firewall access control rules to allow or block traffic,

if you deployed your devices in active mode, or your firewall access control rules if your firewalls are deployed in passive mode.

Working with Alerts Based on Firewall Events

Required License: **Logging Analytics and Detection** or **Total Network Analytics and Monitoring**

Alerts Workflow

An alert's workflow is based around its status. When the system generates an alert, the default status is Open, and no user is assigned. When you view the Alerts summary, all open alerts are displayed by default, as these are of immediate concern.

Note: If you have a **Total Network Analytics and Monitoring** license, your alerts can be based on observations generated from NetFlow, observations generated from firewall events, or observations from both data sources.

As you review the Alerts summary, you can assign, tag, and update status on alerts as an initial triage. You can use the filters and search functionality to locate specific alerts, or display alerts of different statuses, or associated with different tags or assignees. You can set an alert's status to Snoozed, in which case it does not reappear in the list of open alerts until the snooze period elapses. You can also remove Snoozed status from an alert, to display it as an open alert again. As you review alerts, you can assign them to yourself or another user in the system. Users can search for all alerts assigned to their username.

From the Alerts summary, you can view an alert detail page. This page allows you to review additional context about the supporting observations that resulted in this alert, and additional context about the entities involved in this alert. This information can help you pinpoint the actual issue, in order to further research the issue on your network, and potentially resolve malicious behavior.

As you research within the Secure Cloud Analytics web portal UI, in CDO, and on your network, you can leave comments with the alert that describe your findings. This helps create a record for your research that you can reference in the future.

If you complete your analysis, you can update the status to Closed, and have it no longer appear by default as an open alert. You can also re-open a closed alert in the future if circumstances change.

The following presents general guidelines and suggestions for how to investigate a given alert. Because Secure Cloud Analytics provides additional context when it logs an alert, you can use this context to help guide your investigation.

These steps are meant to be neither comprehensive, nor all-inclusive. They merely offer a general framework with which to start investigating an alert.

In general, you can take the following steps when you review an alert:

1. Triage open alerts, on page 62
2. Snooze alerts for later analysis, on page 63
3. Update the alert for further investigation, on page 63
4. Review the alert and start your investigation, on page 64
5. Examine the entity and users, on page 66
6. Remediate issues using Secure Cloud Analytics, on page 66
7. Update and close the alert, on page 67

Triage open alerts

Triage the open alerts, especially if more than one have yet to be investigated:

- See Viewing Cisco Secure Cloud Analytics Alerts from CDO for more information on cross-launching from CDO to Secure Cloud Analytics, and viewing alerts.

Ask the following questions:

- Have you configured this alert type as high priority?
- Did you set a high sensitivity for the affected subnet?
- Is this unusual behavior from a new entity on your network?
- What is the entity's normal role, and how does the behavior in this alert fit that role?
- Is this an exceptional deviation from normal behavior for this entity?
- If a user is involved, is this expected behavior from the user, or exceptional?
- Is protected or sensitive data at risk of being compromised?
- How severe is the impact to your network if this behavior is allowed to continue?
- If there is communication with external entities, have these entities established connections with other entities on your network in the past?

If this is a *high* priority alert, consider quarantining the entity from the internet, or otherwise closing its connections, before continuing your investigation.

Snooze alerts for later analysis

Snooze alerts when they are of lesser priority, as compared to other alerts. For example, if your organization is repurposing an email server as an FTP server, and the system generates an Emergent Profile alert (indicating that an entity's current traffic matches a behavior profile that it did not previously match), you can snooze this alert as it is intended behavior, and revisit it at a later date. A snoozed alert does not show up with the open alerts; you must specifically filter to review these snoozed alerts.

Snooze an alert:

Step 1 Click **Close Alert**.

Step 2 In the Snooze this alert pane, select a snooze period from the drop-down.

Step 3 Click **Save**.

What to do next

When you are ready to review these alerts, you can unsnooze them. This sets the status to Open, and displays the alert alongside the other Open alerts.

Unsnooze a snoozed alert:

- From a snoozed alert, click **Unsnooze Alert**.

Update the alert for further investigation

Open the alert detail:

Step 1 Select **Monitor** > **Alerts**.

Step 2 Click an alert type name.

What to do next

Based on your initial triage and prioritization, assign the alert and tag it:

1. Select a user from the **Assignee** drop-down to assign the alert, so a user can start investigating.
2. Select one or more **Tags** from the drop-down to add tags to the alert, to better categorize your alert's for future identification, as well as to try and establish long-term patterns in your alerts.
3. Enter a **Comment on this alert**, then click **Comment** to leave comments as necessary to track your initial findings, and assist the person assigned to the alert. The alert tracks both system comments and user comments.

Review the alert and start your investigation

If you are reviewing an assigned alert, review the alert detail to understand why Secure Cloud Analytics generated an alert. Review the supporting observations to understand what these observations mean for the source entity.

Note that if the alert was generated based on firewall events, the system does not note that your firewall deployment was the source of this alert.

View all of the supporting observations for this source entity to understand its general behavior and patterns, and see if this activity may be part of a longer trend:

SUMMARY STEPS

1. From the alert detail, click the arrow icon (➔) next to an observation type to view all logged observations of that type.
2. Click the arrow icon (➔) next to **All Observations for Network** to view all logged observations for this alert's source entity.

DETAILED STEPS

Step 1 From the alert detail, click the arrow icon (➔) next to an observation type to view all logged observations of that type.

Step 2 Click the arrow icon (➔) next to **All Observations for Network** to view all logged observations for this alert's source entity.

Download the supporting observations in a comma-separated value file, if you want to perform additional analysis on these observations:

- From the alert detail, in the Supporting Observations pane, click **CSV**.

From the observations, determine if the source entity behavior is indicative of malicious behavior. If the source entity established connections with multiple external entities, determine if the external entities are somehow related, such as if they all have similar geolocation information, or their IP addresses are from the same subnet.

View additional context surrounding the source entity from a source entity IP address or hostname, including other alerts and observations it may be involved in, information about the device itself, and what type of session traffic it is transmitting:

- Select **Alerts** from the IP address or hostname drop-down to view all alerts related to the entity.
- Select **Observations** from the IP address or hostname drop-down to view all observations related to the entity.
- Select **Device** from the IP address or hostname drop-down to view information about the device.
- Select **Session Traffic** from the IP address or hostname drop-down to view session traffic related to this entity.
- Select **Copy** from the IP address or hostname drop-down to copy the IP address or hostname.

Note that the source entity in Secure Cloud Analytics is always internal to your network. Contrast this with the Initiator IP in a firewall event, which indicates the entity that initiated a connection, and may be internal or external to your network.

From the observations, examine information about other external entities. Examine the geolocation information, and determine if any of the geolocation data or Umbrella data identifies a malicious entity. View the traffic generated by these entities. Check whether Talos, AbuseIPDB, or Google have any information on these entities. Find the IP address on multiple days and see what other types of connections the external entity established with entities on your network. If necessary, locate those internal entities and determine if there is any evidence of compromise or unintended behavior.

Review the context for an external entity IP address or hostname with which the source entity established a connection:

- Select **IP Traffic** from the IP address or hostname drop-down to view recent traffic information for this entity.
- Select **Session Traffic** from the IP address or hostname drop-down to view recent session traffic information for this entity.
- Select **AbuseIPDB** from the IP address or hostname drop-down to view information about this entity on AbuseIPDB's website.
- Select **Cisco Umbrella** from the IP address or hostname drop-down to view information about this entity on Cisco Umbrella's website.
- Select **Google Search** from the IP address or hostname drop-down to search for this IP address on Google.
- Select **Talos Intelligence** from the IP address or hostname drop-down to view information about this information on Talos's website.
- Select **Add IP to watchlist** from the IP address or hostname drop-down to add this entity to the watchlist.
- Select **Find IP on multiple days** from the IP address or hostname drop-down to search for this entity's traffic from the past month.
- Select **Copy** from the IP address or hostname drop-down to copy the IP address or hostname.

Note that connected entities in Secure Cloud Analytics are always external to your network. Contrast this with the Responder IP in a firewall event, which indicates the entity that responded to a connection request, and may be internal or external to your network.

Leave comments as to your findings.

- From the alert detail, enter a **Comment on this alert**, then click **Comment**.

Examine the entity and users

After you review the alert in the Secure Cloud Analytics portal UI, you can perform an additional examination on a source entity directly, any users that may have been involved with this alert, and other related entities.

- Determine where the source entity is on your network, physically or in the cloud, and access it directly. Locate the log files for this entity. If it is a physical entity on your network, access the device to review the log information, and see if there is any information as to what caused this behavior. If it is a virtual entity, or stored in the cloud, access the logs and search for entries related to this entity. Examine the logs for further information on unauthorized logins, unapproved configuration changes, and the like.
- Examine the entity. Determine if you can identify malware or a vulnerability on the entity itself. See if there has been some malicious change, including if there are physical changes to a device, such as a USB stick that is not approved by your organization.
- Determine if a user on your network, or from outside your network, was involved. Ask the user what they were doing if possible. If the user is unavailable, determine if they were supposed to have access, and if a situation occurred that prompted this behavior, such as a terminated employee uploading files to an external server before leaving the company.

Leave comments as to your findings:

- From the alert detail, enter a **Comment on this alert**, then click **Comment**.

Update and close the alert

Add additional tags based on your findings:

Step 1 In the Secure Cloud Analytics portal UI, select **Monitor** > **Alerts**.

Step 2 Select one or more **Tags** from the drop-down.

Add final comments describing the results of your investigation, and any remediation steps taken:

- From an alert's detail, enter a **Comment on this alert**, then click **Comment**.

Close the alert, and mark it as helpful or not helpful:

1. From an alert's detail, click **Close Alert**.
2. Select **Yes** if the alert was helpful, or **No** if the alert was unhelpful. Note that this does not necessarily mean that the alert resulted from malicious behavior, just that the alert was helpful to your organization.
3. Click **Save**.

What to do next

Reopen a closed alert

If you discover additional information related to a closed alert, or want to add more comments related to that alert, you can reopen it, changing the status to Open. You can then make changes as necessary to the alert, then close it again when your additional investigation is complete.

Reopen a closed alert:

- From a closed alert's detail, click **Reopen Alert**.

Modifying Alert Priorities

Required License: **Logging Analytics and Detection** or **Total Network Analytics and Monitoring**

Alert types come with default priorities, which affect how sensitive the system is to generating alerts of this type. Alerts default to *low* or *normal* priority, based on Cisco intelligence and other factors. Based on your network environment, you may want to reprioritize alert types, to emphasize certain alerts that you are concerned with. You can configure any alert type to be *low*, *normal*, or *high* priority.

- Select **Monitor** > **Alerts**.
- Click the settings drop-down icon (), then select **Alert Types and Priorities**.
- Click the edit icon () next to an alert type and select *low*, *medium*, or *high* to change the priority.

Searching for and Filtering Events in the Event Logging Page

Searching and filtering the historical and live event tables for specific events, works the same way as it does when searching and filtering for other information in CDO. As you add filter criteria, CDO starts to limit what it displays on the Events page. You can also enter search criteria in the search field to find events with specific values. If you combine the filtering and searching mechanisms, search tries to find the value you entered from among the results displayed after filtering the events.

Following are the options to conduct a search for event logs:

- Search for Events in the Events Logging Page, on page 111
- Search Historical Events in the Background, on page 110

Filtering works the same way for Live events as it does for Historical events with the exception that live events cannot be filtered by time.

Learn about these filtering methods:

- Filter Live or Historical Events, on page 105
- Filter Only NetFlow Events, on page 106
- Filter for ASA or FDM-Managed Device Syslog Events but not ASA NetFlow Events, on page 106
- Combine Filter Elements, on page 107

Filter Live or Historical Events

This procedure explains how to use event filtering to see a subset of events in the Event Logging page. If you find yourself repeatedly using certain filter criteria, you can create a customized filter and save it. See Customizable Event Filters for more information.

Step 1 In the navigation bar, choose **Analytics** > **Event Logging**

Step 2 Click either the Historical or Live tab.

Step 3 Click the filter button . The filtering column can be pinned open by clicking the pin icon .

Step 4 Click a View tab that has no saved filter elements.

Step 5 Select the event details you want to filter by:

- **FTD Events**
  - Connection - Displays connection events from access control rules.
  - File - Displays events reported by file policies in access control rules.
  - Intrusion - Displays events reported by intrusion policy in access control rules.
  - Malware - Displays events reported by malware policies in access control rules.
- **ASA Events** - These event types represent groups of syslog or NetFlow events.

  See Event Types in CDO for more information about events.
  - Parsed Events-Parsed ASA Syslog Events contain more event attributes than other syslog events and CDO is able to return search results based on those attributes more quickly. Parsed events are not a filtering category; however, parsed event IDs are displayed in the Event Types column in *italics*. Event IDs that are not displayed in italics are not parsed.
- **Time Range**-Click the Start or End time fields to select the beginning and end of the time period you want to display. The time stamp is displayed in the local time of your computer.
- **Action**- Specifies the security action defined by the rule. The value you enter must be an exact match to what you want to find; however, the case doesn't matter. Enter different values for connection, file, intrusion, malware, syslog, and NetFlow event types:
  - For connection event types, the filter searches for matches in the AC_RuleAction attribute. Those values could be Allow, Block, Trust.
  - For file event types, the filter searches for matches in the FileAction attribute. Those values could be Allow, Block, Trust.
  - For intrusion event types, the filter searches for matches in the InLineResult attribute. Those values could be Allowed, Blocked, Trusted.
  - For malware event types, the filter searches for matches in the FileAction attribute. Those values could be Cloud Lookup Timeout.
  - For syslog and NetFlow events types, the filter searches for matches in the Action attribute.

- **Sensor ID**-The Sensor ID is the the Management IP address from which events are sent to the Secure Event Connector.

  For an FDM-managed device, the Sensor ID is typically the IP address of the device's management interface.

- **IP addresses**
  - **Initiator** -This is the IP address of the source of the network traffic. The value of the Initiator address field corresponds to the value of the InitiatorIP field in the event details. You can enter a single address, such as 10.10.10.100, or a network defined in CIDR notation such as 10.10.10.0/24.
  - **Responder**-This is the destination IP address of the packet. The value of the Destination address field corresponds to the value in the ResponderIP field in the event details. You can enter a single address, such as 10.10.10.100, or a network defined in CIDR notation such as 10.10.10.0/24.
- **Ports**
  - **Initiator**-The port or ICMP type used by the session initiator. The value of the source port corresponds to the value fo the InitiatorPort in the event details. (Add a range - starting port ending port and space in between or both initiator and responder)
  - **Reponder**-The port or ICMP code used by the session responder. The value of the destination port corresponds to the value of the ResponderPort in the event details.
- **NetFlow**-NetFlow Secure Event Logging (NSEL) for ASA Devices events are different than syslog events. The NetFlow filter searches for all NetFlow events IDs that resulted in an NSEL record. Those "NetFlow event IDs" are defined in the Cisco ASA NetFlow Implementation Guide.

Step 6 (Optional) Save your filter as a custom filter by clicking out of the View tab.

Filter Only NetFlow Events

This procedure finds only ASA NetFlow events:

Step 1 From the CDO menu bar, choose **Analytics** > **Event Logging**.

Step 2 Click the Filter icon and pin the filter open.

Step 3 Check **Netflow** ASA Event filter.

Step 4 Clear all other ASA Event filters.

Only ASA NetFlow events are displayed in the Event Logging table.

Filter for ASA or FDM-Managed Device Syslog Events but not ASA NetFlow Events

This procedure finds only syslog events:

Step 1 From the CDO menu bar, choose **Analytics** > **Event Logging**.

Step 2 Click the Filter icon and pin the filter open.

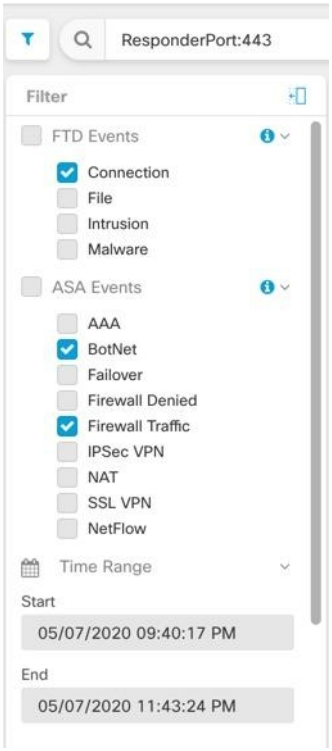
Step 3 Scroll to the bottom of the filter bar and make sure the **Include NetFlow Events** filter is **unchecked**.

Step 4 Scroll back up to the ASA Events filter tree, and make sure the **NetFlow** box is **unchecked**.

Step 5 Pick the rest of your ASA or FTD filter criteria.

Combine Filter Elements

Filtering events generally follows the standard filtering rules in CDO: The filtering categories are "AND-ed" and the values within the categories are "OR-ed." You can also combine the filter with your own search criteria. In the case of event filters; however, the device event filters are also "OR-ed." For example, if these values were chosen in the filter:

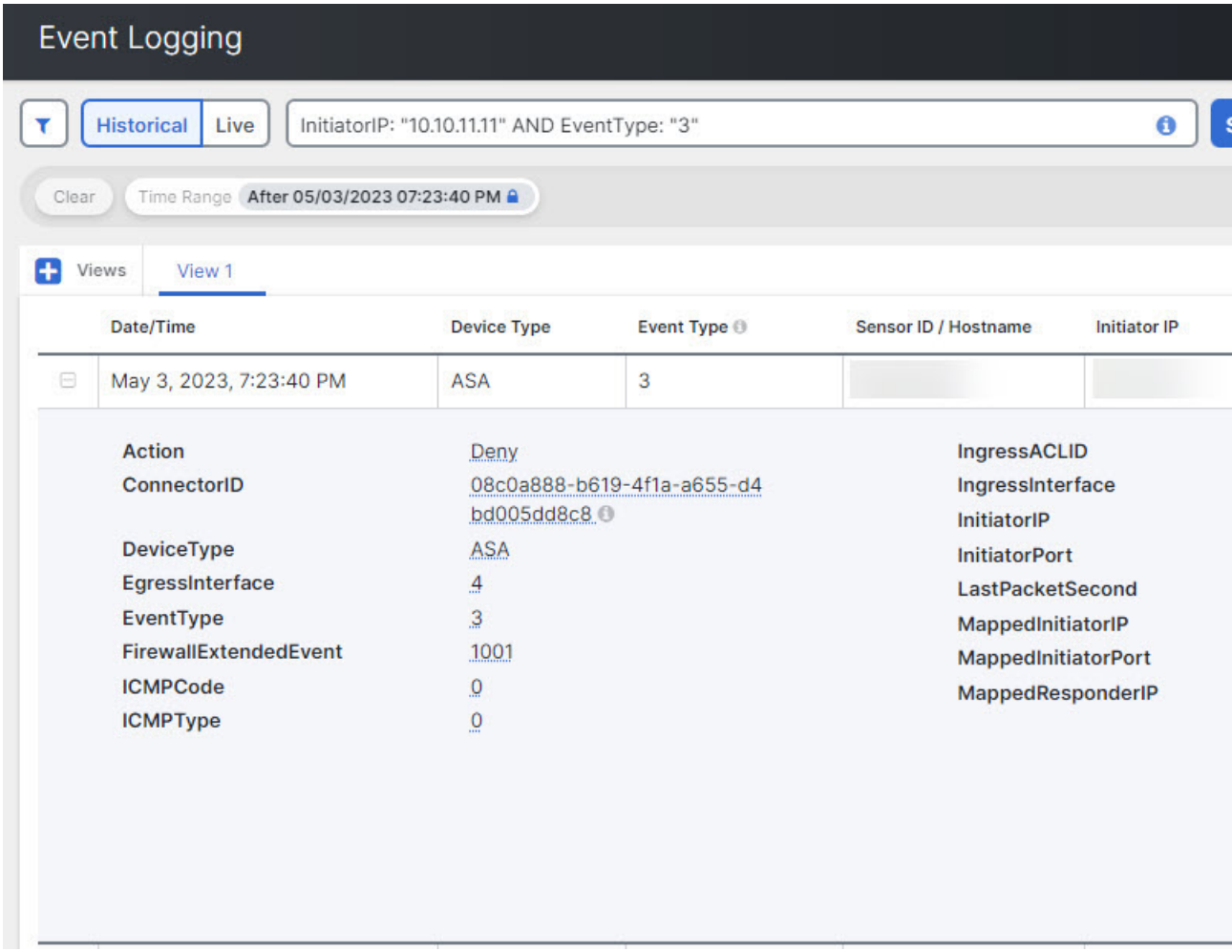


With this filter in use, CDO would display threat defense device connection events **or** ASA BotNet **or** Firewall Traffic events, **and** those events that occurred between the two times in the time range, **and** those events that also contain the ResponderPort 443. You can filter by historical events within a time range. The live events page always displays the most recent events.

Search for Specific Attribute: Value Pairs

You can search for live or historical events by entering an event attribute and a value in the search field. The easiest way to do this is to click the attribute in the Event Logging table that you want to search for, and CDO

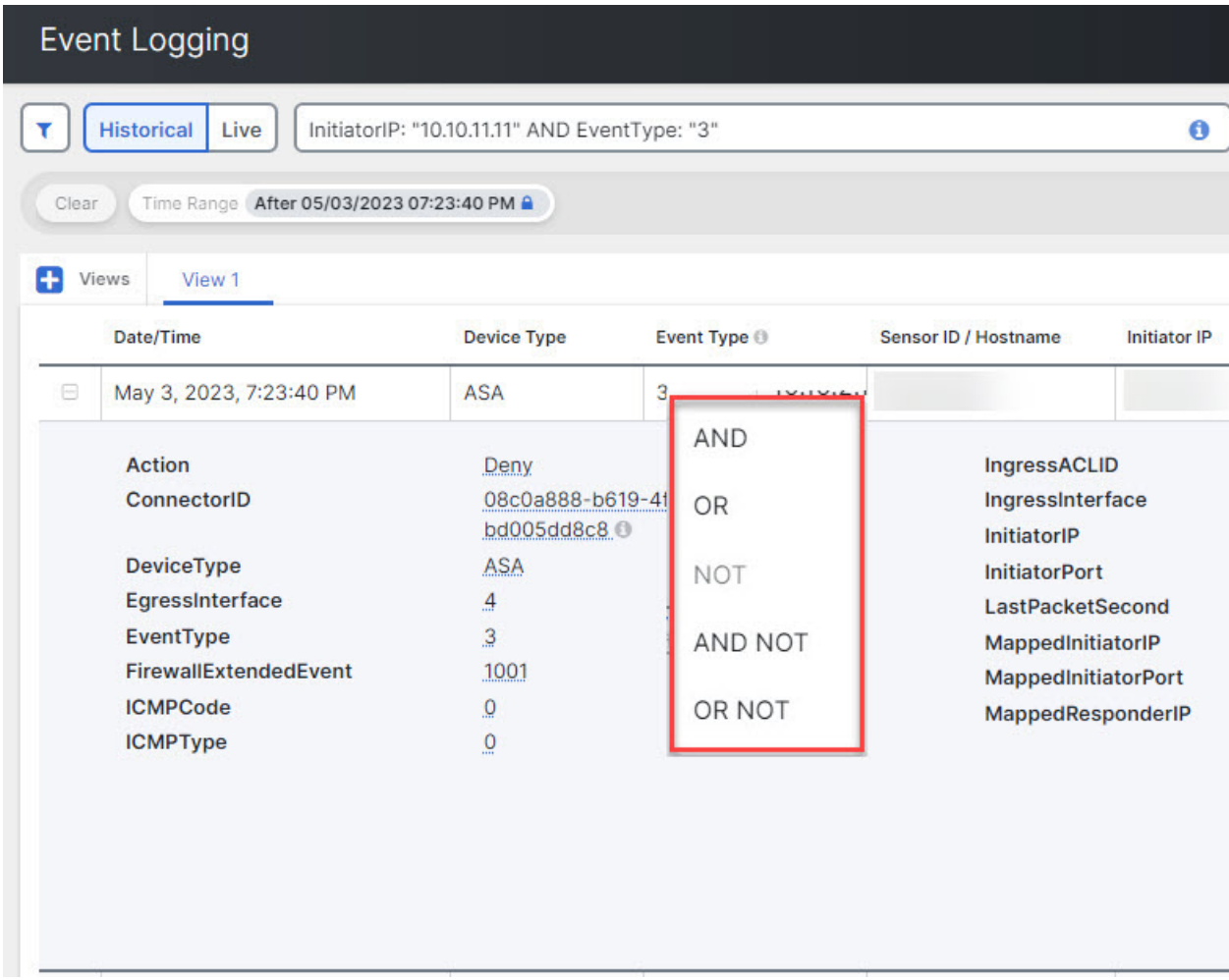
enters it in the Search field. The events you can click on will be blue when you roll over them. Here is an example:



In this example, the search started by rolling over the InitiatorIP value of 10.10.11.11 and clicking it. Initiator IP and it's value were added to the search string. Next, Event Type, 3 was rolled-over and clicked and added to the search string and an AND was added by CDO. So the result of this search will be a list of events that were initiated from 10.10.11.11 AND that are 3 event types.

Notice the magnifying glass next to the value 3 in the example above. If you roll-over the magnifying glass, you could also choose an AND, OR, AND NOT, OR NOT operator to go with the value you want to add to the search.

In the example below, "OR" is chosen. The result of this search will be a list of events that were initiated from 10.10.11.11 OR are a 106023 event type. Note that if the search field is empty and you right click a value from the table, only NOT is available as there is no other value.



As long as you rollover a value and it is highlighted blue, you can add that value to the search string.

AND, OR, NOT, AND NOT, OR NOT Filter Operators

Here are the behaviors of "AND", "OR", "NOT", "AND NOT", and "OR NOT" used in a search string:

AND

Use the AND operator in the filter string, to find events that include all attributes. The AND operator cannot begin a search string.

For example, the search string below will search for events that contain the TCP protocol AND that originated from InitiatorIP address 10.10.10.43, AND that were sent from the Initiator port 59614. One would expect that with each additional AND statement, the number of events that meet the criteria would be small and smaller.

```
Protocol: "tcp" AND InitiatorIP: "10.10.10.43" AND InitiatorPort: "59614"
```

OR

Use the OR operator in the filter string, to find events that include any of the attributes. The OR operator cannot begin a search string.

For example, the search string below will display events in the event viewer that include events that include the TCP protocol, OR that originated from InitiatorIP address 10.10.10.43, OR that were sent from the Initiator port 59614. One would expect that with each additional OR statement, the number of events that meet the criteria would be bigger and bigger.

```
Protocol: "tcp" OR InitiatorIP: "10.10.10.43" OR InitiatorPort: "59614"
```

NOT

Use this only at the beginning of a search string to exclude events with certain attribtues. For example, this search string would exclude any event with the InitiatorIP 192.168.25.3 from the results.

```
NOT InitiatorIP: "192.168.25.3"
```

AND NOT

Use the AND NOT operator in the filter string to exclude events that contain certain attributes. AND NOT cannot be used at the beginning of a search string.

For example, this filter string will display events with the InitiatorIP 192.168.25.3 but not those whose ResponderIP address is also 10.10.10.1.

```
InitiatorIP: "192.168.25.3" AND NOT ResponderIP: "10.10.10.1"
```

You can also combine NOT and AND NOT to exclude several attributes. For example this filter string, will exclude events with InitiatorIP 192.168.25.3 and events with ResponderIP 10.10.10.1

```
NOT InitiatorIP: "192.168.25.3" AND NOT ResponderIP: "10.10.10.1"
```

OR NOT

Use the OR NOT operator to include search results that exclude certain elements. The OR NOT operator cannot be used at the beginning of a search string.

For example, this search string will find events with the Protocol of TCP, OR that have the InitiatorIP of 10.10.10.43, or those NOT from InitiatorPort 59614.

```
Protocol: "tcp" OR InitiatorIP: "10.10.10.43" OR NOT InitiatorPort: "59614"
```

You could also think of it this way: Search for (Protocol: "tcp") OR (InitiatorIP: "10.10.10.43") OR (NOT InitiatorPort: "59614").

Wildcard Searches

Use an asterisk (*) to represent a wildcard in the value field of an **attribute:value** search to find results within events. For example, this filter string,

```
URL:*feedback*
```

will find strings in the URL attribute field of events that contain the string **feedback**.

Related Information:

- Show and Hide Columns on the Event Logging Page
- Event Attributes in Security Analytics and Logging

Search Historical Events in the Background

CDO provides you the ability to define a search criteria and search for event logs based on any defined search criteria. Using the background search capability, you can also perform event log searches in the background, and view the search results once the background search is completed.

Based on the subscription alert and service integrations you have configured, you are notified once the background search has been completed.

You can view, download, or delete the search results directly from the Background Search page. You can also schedule a background search to occur for a one-time event or schedule a recurring schedule. Navigate to the Notification Settings page to view or modify the subscription options.

Search for Events in the Events Logging Page

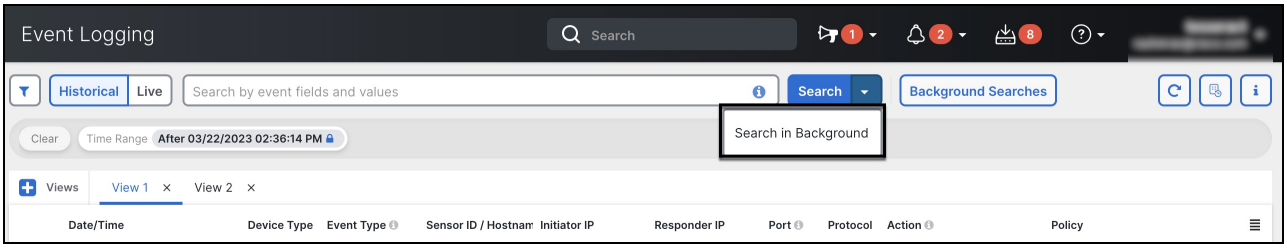
Use the search and background search capabilities to view all logged events in the Event Logging page. Note that background searches can only be performed for historical events.

Step 1 In the navigation bar, choose **Analytics** > **Event Logging**.

Step 2 Click either the **Historical** or **Live** tab.

Step 3 Navigate to the search bar, type the search expression, and enter the **Search** button to execute the search. You can narrow or expand the search with an Aboslute Time Range or Relative Time Range.

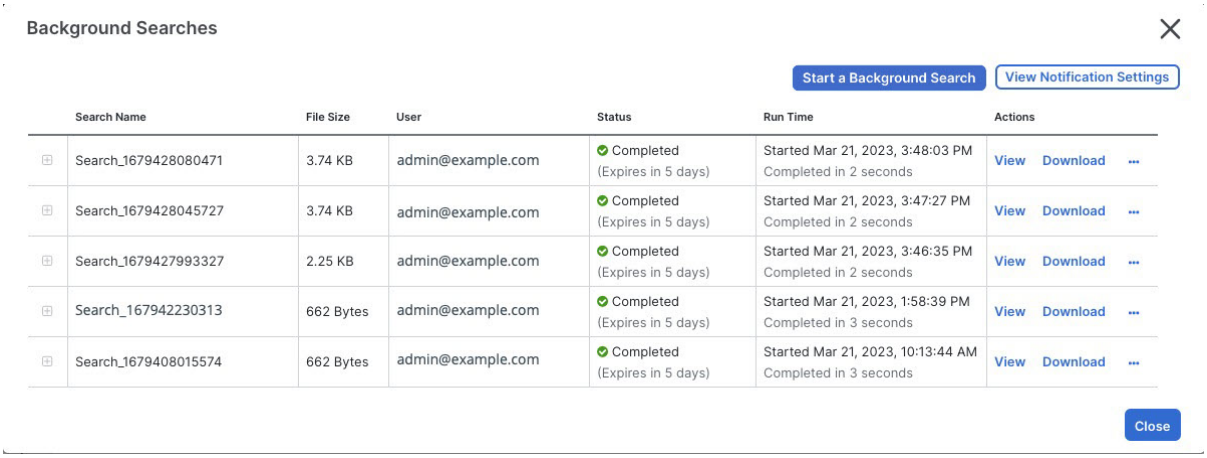
Alternatively, from the **Search** drop-down list, choose **Search in Background** to execute the search in the background while you move away from the search page. You are notified when the search results are ready.



If you click the **Search** button, the results directly appear in the Event Logging view. Upon selecting any specific search result, the search criteria appears in the search bar for an easy reference.

If you choose to execute the search in the background, the search operation is queued, and you are notified once the search is completed. You are allowed to execute multiple search queries in the background.

Step 4 Click the **Background Searches** button to view the Background Searches page.



The Background Searches page displays a list of search results. You can choose to view, download, or delete the search results. You can also navigate to the Notification Settings page to view or modify the subscription options. Select the **Start a Background Search** button to initiate a search from this page.

What to do next

You can turn any background search into a scheduled background search if you need a recurring query. See Schedule a Background Search in the Event Viewer, on page 112 for more information.

Schedule a Background Search in the Event Viewer

Schedule a recurring query in the background in the event viewer page. Searches can only be scheduled for historical events. You can modify or cancel the scheduled search at any time. You can also modify an existing query to be a recurring search.

Note You can opt to get alerts on searches that have started, completed, or have failed.

You can schedule a background search only for **historical** events. Use the following steps to create a scheduled background search:

Step 1 In the navigation bar, choose **Analytics** > **Event Logging**.

Step 2 Click the **Historical** toggle to select it. You can only schedule a background search for historical events.

Step 3 In the search bar, type the search expression you want to search for. Click the **Search** drop-down button and choose **Search in background**.

Step 4 (Optional) Rename the search.

Step 5 The **Search Now** checkbox is checked by default. When checked, the search starts upon saving; if unchecked, the background query runs only as a future search.

Step 6 Check the **Setup recurring schedule** and configure the following settings:

- **Search Logs for the Last** - How far back you want to search through.
- **Frequency** - How frequent you want the scheduled search to occur.

Step 7 Confirm the scheduled search criteria at the bottom of the window. Select **Schedule and Search Now**. Alternatively, if you did not opt for the search to start immediately, the button reads **Schedule Search**

What to do next

Results from a scheduled background search are available for review for up to 7 days before CDO automatically deletes them.

Download a Background Search

Search results and schedules qeuries are stored for seven days before CDO automatially removes them. Download a .CSV copy of the background search that was performed for histroical events.

Step 1 In the navigation pane go to **Analytics** > **Event Logging**.

Step 2 Click **Background Searches** > **Actions** > **Download**.

Step 3 Locate your search. Scheduled searches are stored under the **Queries** tab.

Step 4 Click **Download**. The .CSV file automatically downloads to your default storage location on your local drive.

Data Storage Plans

You need to buy a data storage plan that reflects the number of events the Cisco cloud receives from your on-boarded ASAs and FDM-managed devices on a daily basis. This is called your "daily ingest rate." Data plans are available in whole number amounts of GB/day and in 1, 3 or 5 year terms. The best way to determine your ingest rate is to participate in a free trial of Secure Logging Analytics (SaaS) before you buy it. This will give you a good estimate of your event volume.

Customers automatically receive 90 days of rolling data storage. That means that the most recent 90 days of events are stored in the Cisco cloud and the 91st day is deleted.

Customers can upgrade to additional event retention beyond the default 90-days, or add additional daily volume (GB/day) by a change order to an existing subscription, and will only be billed for the remainder of their subscription term on a prorated basis.

See the Secure Logging Analytics (SaaS) Ordering Guide for all the details about data plans.

Note If you have a Security Analytics and Logging license and data plan, then obtain a different Security Analytics and Logging license at a later date, you are not required obtain a different data plan. If your network traffic throughput changes and you obtain a different data plan, that alone does not require you to obtain a different Security Analytics and Logging license.

What data gets counted against my allotment?

All events sent to the Secure Event Connector accumulate in the Secure Logging Analytics (SaaS) cloud and count against your data allotment.

Filtering what you see in the Events viewer does not decrease the number of events stored in the Secure Logging Analytics (SaaS) cloud, it reduces the number of events you can see in the Events viewer.

Your events are stored in the Secure Logging Analytics (SaaS) cloud for 90 days; after that, they are purged.

We're using up our storage allotment quickly, what can we do?

Here are two approaches to address that problem:

- Request more storage. You may have underestimated what you need.
- Reduce the number of rules that log events. You can log events from SSL policy rules, security intelligence rules, access control rules, as well as intrusion policies and file and malware policies. Examine what you are logging. Do you need to log events from as many rules and policies as you think?

Extend Event Storage Duration and Increase Event Storage Capacity

Security Analytics and Logging customers receive 90 days of event storage when they purchase any of these Licensing.

- **Logging and Troubleshooting**
- **Logging Analytics and Detection**
- **Total Network Analytics and Monitoring**

You can choose to upgrade your license to have 1, 2, or 3 years worth of rolling event storage at the time you first purchase your license or at any time during the duration of your license.

At the time you first purchase your Security Analytics and Logging license, you will be asked if you want to upgrade your storage capacity. If you answer, "yes," an additional Product Identifier (PID) will be added to the list of PIDs you are purchasing.

If you decide in the middle of your license term to extend your rolling event storage or increase the amount of event cloud storage, you can:

Step 1 Log in to your account on Cisco Commerce.

Step 2 Select your Cisco Defense Orchestrator PID.

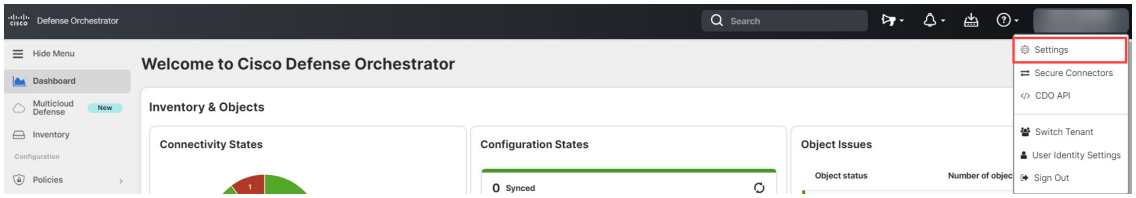
Step 3 Follow the prompts to upgrade the length or capacity of your storage capacity.

The increased cost will be pro-rated based for the term remaining on your existing license. See the Secure Logging Analytics (SaaS) Ordering Guide for detailed instructions.

View Security Analytics and Logging Data Plan Usage

To see your monthly logging limit, the amount of storage you have used, and when the usage period resets to zero, do the following:

Step 1 Click the tenant and select **Settings**.



Step 2 Click **Logging Settings**.

Step 3 You can also click **View Historical Usage** to see up to the last 12 months of storage usage.

Finding Your Device's TCP, UDP, and NSEL Port Used for Secure Logging Analytics (SaaS)

Secure Logging Analytics (SaaS) allows you to send events from your ASA or FDM-managed devices to certain UDP, TCP, or NSEL ports on the Secure Event Connector (SEC). The SEC then forwards those events to the Cisco cloud.

If these ports aren't already in use, the SEC makes them available to receive events and the Secure Logging Analytics (SaaS) documentation recommends using them when you configure the feature.

- TCP: 10125
- UDP: 10025
- NSEL: 10425

If those ports are already in use, before you configure Secure Logging Analytics (SaaS), look at your SEC device details to determine what ports it is actually using to receive events.

To find the port numbers the SEC uses:

Step 1 From the CDO menu, choose **Tools & Services** > **Secure Connectors**.

Step 2 In the Secure Connectors page, select the SEC you want to send events to.

Step 3 In the Details pane, you will see the TCP, UDP, and NetFlow (NSEL) port you should send events to.