

Connection and Security Intelligence Events

The following topics describe how to use connection and security events tables.

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About Connection Events

The system can generate logs of the connections its managed devices detect. These logs are called *connection events*. Connection events include *Security Intelligence events* (connections blocked by the reputation-based Security Intelligence feature.)

Connection events generally include transactions detected by:

- Access Control policies
- SSL policies
- Prefilter policies (captured by prefilter or tunnel rules)
- DNS Block lists
- URL Block lists
- Network (IP address) Block lists

Settings in rules and policies give you granular control over which connections you log, when you log them, and where you store the data.

For detailed information, see Connection Logging.

Related Topics

About Security Intelligence

Connection vs. Security Intelligence Events

A *Security Intelligence event* is a connection event that is generated whenever a session is blocked or monitored by the reputation-based Security Intelligence feature.

However, for every Security Intelligence event, there is an identical connection event. You can view and analyze Security Intelligence events independently. The system also stores and prunes Security Intelligence events separately.

Note that the system enforces Security Intelligence before more resource-intensive evaluations. 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.



Note In this guide, information about connection events also pertains to Security Intelligence events, unless otherwise noted.

NetFlow Connections

To supplement the connection data gathered by your managed devices, you can use records broadcast by NetFlow exporters to generate connection events. This is especially useful if the NetFlow exporters are monitoring different networks than those monitored by your managed devices.

The system logs NetFlow records as unidirectional end-of-connection events in the Firepower Management Center database. The available information for these connections differs somewhat from connections detected by your access control policy; see Differences between NetFlow and Managed Device Data.

Related Topics

Netflow Data in the Firepower System

Connection Summaries (Aggregated Data for Graphs)

The Firepower System aggregates connection data collected over five-minute intervals into connection summaries, which the system uses to generate connection graphs and traffic profiles. Optionally, you can create custom workflows based on connection summary data, which you use in the same way as you use workflows based on individual connection events.

Note that there are no connection summaries specifically for Security Intelligence events, although corresponding end-of-connection events can be aggregated into connection summary data.

To be aggregated, multiple connections must:

- represent the end of connections
- have the same source and destination IP addresses, and use the same port on the responder (destination) host
- use the same protocol (TCP or UDP)
- use the same application protocol
- either be detected by the same Firepower System managed device or by the same NetFlow exporter

Each connection summary includes total traffic statistics, as well as the number of connections in the summary. Because NetFlow exporters generate unidirectional connections, a summary's connection count is incremented by two for every connection based on NetFlow data.

Note that connection summaries do not contain all of the information associated with the summaries' aggregated connections. For example, because client information is not used to aggregate connections into connection summaries, summaries do not contain client information.

Long-Running Connections

If a monitored session spans two or more five-minute intervals over which connection data is aggregated, the connection is considered a *long-running connection*. When calculating the number of connections in a connection summary, the system increments the count only for the five-minute interval in which a long-running connection was initiated.

Also, when calculating the number of packets and bytes transmitted by the initiator and responder in a long-running connection, the system does not report the number of packets and bytes that were actually transmitted during each five-minute interval. Instead, the system assumes a constant rate of transmission and calculates estimated figures based on the total number of packets and bytes transmitted, the length of the connection, and what portion of the connection occurred during each five-minute interval.

Combined Connection Summaries from External Responders

To reduce the space required to store connection data and speed up the rendering of connection graphs, the system combines connection summaries when:

- one of the hosts involved in the connection is not on your monitored network
- other than the IP address of the external host, the connections in the summaries meet the summary aggregation criteria

When viewing connection summaries in the Analysis > Connections submenu pages, and when working with connection graphs, the system displays `external` instead of an IP address for the non-monitored hosts.

As a consequence of this aggregation, if you attempt to drill down to the table view of connection data (that is, access data on individual connections) from a connection summary or graph that involves an external responder, the table view contains no information.

Connection and Security Intelligence Event Fields



Note You cannot use the connection/Security Intelligence events Search page to search for events associated with a connection.

Access Control Policy (Syslog: ACPolicy)

The access control policy that monitored the connection.

Access Control Rule (Syslog: AccessControlRuleName)

The access control rule or default action that handled the connection, as well as up to eight Monitor rules matched by that connection.

If the connection matched one Monitor rule, the Firepower Management Center displays the name of the rule that handled the connection, followed by the Monitor rule name. If the connection matched more than one Monitor rule, the number of matching Monitor rules is displayed, for example, `Default Action + 2 Monitor Rules`.

To display a pop-up window with a list of the first eight Monitor rules matched by the connection, click ***N* Monitor Rules**.

Action (Syslog: AccessControlRuleAction)

The action associated with the configuration that logged the connection.

For Security Intelligence-monitored connections, the action is that of the first non-Monitor access control rule triggered by the connection, or the default action. Similarly, because traffic matching a Monitor rule is always handled by a subsequent rule or by the default action, the action associated with a connection logged due to a Monitor rule is never Monitor. However, you can still trigger correlation policy violations on connections that match Monitor rules.

Action	Description
Allow	Connections either allowed by access control explicitly, or allowed because a user bypassed an interactive block.
Block, Block with reset	Blocked connections, including: • connections blocked by Security Intelligence • encrypted connections blocked by an SSL policy • connections where an exploit was blocked by an intrusion policy • connections where a file (including malware) was blocked by a file policy For connections where the system blocks an intrusion or file, system displays `Block`, even though you use access control Allow rules to invoke deep inspection.
Interactive Block, Interactive Block with reset	Connections logged when the system initially blocks a user's HTTP request using an Interactive Block rule. If the user clicks through the warning page that the system displays, additional connections logged for the session have an action of Allow.
Trust	Connections trusted by access control. The system logs trusted TCP connections differently depending on the device model.
Default Action	Connections handled by the access control policy's default action.
(Blank/empty)	The connection closed before enough packets had passed to match a rule. This can happen only if a facility other than access control, such as intrusion prevention, causes the connection to be logged.

Application Protocol (Syslog: ApplicationProtocol)

In the Firepower Management Center web interface, this value constrains summaries and graphs.

The application protocol, which represents communications between hosts, detected in the connection.

Application Protocol Category and Tag

Criteria that characterize the application to help you understand the application's function.

Application Risk

The risk associated with the application traffic detected in the connection: Very High, High, Medium, Low, or Very Low. Each type of application detected in the connection has an associated risk; this field displays the highest of those.

Business Relevance

The business relevance associated with the application traffic detected in the connection: Very High, High, Medium, Low, or Very Low. Each type of application detected in the connection has an associated business relevance; this field displays the lowest (least relevant) of those.

Client and Client Version (Syslog: Client, ClientVersion)

The client application and version of that client detected in the connection.

If the system cannot identify the specific client used in the connection, the field displays the word "client" appended to the application protocol name to provide a generic name, for example, FTP client.

Client Category and Tag

Criteria that characterize the application to help you understand the application's function.

Connections

The number of connections in a connection summary. For long-running connections, that is, connections that span multiple connection summary intervals, only the first connection summary interval is incremented. To view meaningful results for searches using the **Connections** criterion, use a custom workflow that has a connection summary page.

Count

The number of connections that match the information that appears in each row. Note that the **Count** field appears only after you apply a constraint that creates two or more identical rows. If you create a custom workflow and do not add the **Count** column to a drill-down page, each connection is listed individually and packets and bytes are not summed.

Destination Port/ICMP Code (Syslog: Separate fields - DstPort, ICMPCode)

In the Firepower Management Center web interface, these values constrain summaries and graphs.

The port or ICMP code used by the session responder.

Detection Type

This field shows the source of detection of a client.

Device

In the Firepower Management Center web interface, this value constrains summaries and graphs.

The managed device that detected the connection or, for connections generated from NetFlow data, the managed device that processed the data.

DNS Query (Syslog: DNSQuery)

The DNS query submitted in a connection to the name server to look up a domain name.

DNS Record Type (Syslog: DNSRecordType)

The type of the DNS resource record used to resolve a DNS query submitted in a connection.

DNS Response (Syslog: DNSResponseType)

The DNS response returned in a connection to the name server when queried.

DNS Sinkhole Name (Syslog: DNS_Sinkhole)

The name of the sinkhole server where the system redirected a connection.

DNS TTL (Syslog: DNS_TTL)

The number of seconds a DNS server caches the DNS resource record.

Domain

The domain of the managed device that detected the connection or, for connections generated from NetFlow data, the domain of the managed device that processed the data. This field is only present if you have ever configured the Firepower Management Center for multitenancy.

Endpoint Location

The IP address of the network device that used ISE to authenticate the user, as identified by ISE.

Endpoint Profile (Syslog: Endpoint Profile)

The user's endpoint device type, as identified by ISE.

Files (Syslog: FileCount)

The number of files (including malware files) detected or blocked in a connection associated with one or more file events.

In the Firepower Management Center web interface, the **View Files icon** links to a list of files. The number on the icon indicates the number of files (including malware files) detected or blocked in that connection.

First Packet or Last Packet (Syslog: See the ConnectionDuration field)

The date and time the first or last packet of the session was seen.

HTTP Referrer (Syslog: HTTPReferer)

The HTTP referrer, which represents the referrer of a requested URL for HTTP traffic detected in the connection (such as a website that provided a link to, or imported a link from, another URL).

HTTP Response Code (Syslog: HTTPResponse)

The HTTP status code sent in response to a client's HTTP request over a connection. It indicates the reason behind successful and failed HTTP request.

For more details about HTTP response codes, see RFC 2616 (HTTP), Section 10.

Ingress/Egress Interface (Syslog: IngressInterface, EgressInterface)

The ingress or egress interface associated with the connection. If your deployment includes an asymmetric routing configuration, the ingress and egress interface may not belong to the same inline pair.

Ingress/Egress Security Zone (Syslog: IngressZone, EgressZone)

The ingress or egress security zone associated with the connection.

Initiator/Responder Bytes (Syslog: InitiatorBytes, ResponderBytes)

The total number of bytes transmitted by the session initiator or received by the session responder.

Initiator/Responder Continent

When a routable IP is detected, the continent associated with the IP address for the session initiator or responder.

Initiator/Responder Country

When a routable IP is detected, the country associated with the IP address of the session initiator or responder. The system displays an icon of the country's flag, and the country's ISO 3166-1 alpha-3 country code. Hover your pointer over the flag icon to view the country's full name.

Initiator/Responder IP (Syslog: SrcIP, DstIP)

In the Firepower Management Center web interface, these values constrain summaries and graphs.

The IP address (and host name, if DNS resolution is enabled) of the session initiator or responder.

See also A Note About Initiator/Responder, Source/Destination, and Sender/Receiver Fields, on page 16.

In the Firepower Management Center web interface, the host icon identifies the IP address that caused the connection to be blocked.

Initiator/Responder Packets (Syslog: InitiatorPackets, ResponderPackets)

The total number of packets transmitted by the session initiator or received by the session responder.

Initiator User (Syslog: User)

In the Firepower Management Center web interface, this value constrains summaries and graphs.

The user logged into the session initiator. If this field is populated with **No Authentication**, the user traffic:

- matched an access control policy without an associated identity policy
- did not match any rules in the identity policy

See also A Note About Initiator/Responder, Source/Destination, and Sender/Receiver Fields, on page 16.

Intrusion Events (Syslog: IPSCount)

The number of intrusion events, if any, associated with the connection.

In the Firepower Management Center web interface, the **View Intrusion Events icon** links to a list of events.

IOC

Whether the event triggered an indication of compromise (IOC) against a host involved in the connection.

NetBIOS Domain (Syslog: NetBIOSDomain)

The NetBIOS domain used in the session.

NetFlow SNMP Input/Output

For connections generated from NetFlow data, the interface index for the interface where connection traffic entered or exited the NetFlow exporter.

NetFlow Source/Destination Autonomous System

For connections generated from NetFlow data, the border gateway protocol autonomous system number for the source or destination of traffic in the connection.

NetFlow Source/Destination Prefix

For connections generated from NetFlow data, the source or destination IP address ANDed with the source or destination prefix mask.

NetFlow Source/Destination TOS

For connections generated from NetFlow data, the setting for the type-of-service (TOS) byte when connection traffic entered or exited the NetFlow exporter.

Network Analysis Policy (Syslog: NAPPolicy)

The network analysis policy (NAP), if any, associated with the generation of the event.

Original Client IP (Syslog: originalClientSrcIP)

The original client IP address extracted from an X-Forwarded-For (XFF), True-Client-IP, or custom-defined HTTP header. To populate this field, you must enable the HTTP preprocessor **Extract Original Client IP Address** option in the network analysis policy. Also in the network analysis policy, you can specify up to six custom client IP headers, as well as set the priority order in which the system selects the value for the Original Client IP event field.

Protocol (Syslog: Protocol)

In the Firepower Management Center web interface:

- This value constrains summaries and graphs.
- This field is available only as a search field.

The transport protocol used in the connection. To search for a specific protocol, use the name or number protocol as listed in http://www.iana.org/assignments/protocol-numbers.

Reason (Syslog: AccessControlRuleReason)

The reason or reasons the connection was logged, in many situations. For a full list, see Connection Event Reasons, on page 16.

Connections with a Reason of IP Block, DNS Block, and URL Block have a threshold of 15 seconds per unique initiator-responder pair. After the system blocks one of those connections, it does not generate connection events for additional blocked connections between those two hosts for the next 15 seconds, regardless of port or protocol.

Referenced Host (Syslog: ReferencedHost)

If the protocol in the connection is HTTP or HTTPS, this field displays the host name that the respective protocol was using.

Security Context (Syslog: Context)

For connections handled by ASA FirePOWER in multiple context mode, the metadata identifying the virtual firewall group through which the traffic passed.

Security Group Tag (Syslog: Security Group)

The Security Group Tag (SGT) attribute of the packet involved in the connection. The SGT specifies the privileges of a traffic source within a trusted network. Security Group Access (a feature of both Cisco TrustSec and Cisco ISE) applies the attribute as packets enter the network.

Security Intelligence Category (Syslog: URLSICategory, DNSSICategory)

The name of the object that represents or contains the IP address that caused the connection to be blocked. The Security Intelligence category can be the name of a network object or group, a Block list, a custom Security Intelligence list or feed, or one of the categories in the Intelligence Feed.

In the Firepower Management Center web interface, DNS, Network (IP address), and URL Security Intelligence connection events are combined into a single category field. In syslog messages, those events are specific by type.

For more information about the categories in the Intelligence Feed, see Security Intelligence Categories.

Source Device

In the Firepower Management Center web interface, this value constrains summaries and graphs.

The IP address of the NetFlow exporter that broadcast the data used to generate for the connection. If the connection was detected by a managed device, this field displays `Firepower`.

Source Port/ICMP Type (Syslog: SrcPort, ICMPType)

In the Firepower Management Center web interface, these values constrain summaries and graphs.

The port or ICMP type used by the session initiator.

SSL Actual Action (Syslog: SSLActualAction)

In the Firepower Management Center web interface, this field is a search field only.

The system displays field values in the **SSL Status** field on search workflow pages.

The action the system applied to encrypted traffic in the SSL policy.

Action	Description
Block/Block with reset	Represents blocked encrypted connections.
Decrypt (Resign)	Represents an outgoing connection decrypted using a re-signed server certificate.
Decrypt (Replace Key)	Represents an outgoing connection decrypted using a self-signed server certificate with a substituted public key.
Decrypt (Known Key)	Represents an incoming connection decrypted using a known private key.
Default Action	Indicates the connection was handled by the default action.
Do not Decrypt	Represents a connection the system did not decrypt.

SSL Certificate Information (Syslog: SSLCertificate)

In the Firepower Management Center web interface, this field is a search field only.

The information stored on the public key certificate used to encrypt traffic, including:

- Subject/Issuer Common Name
- Subject/Issuer Organization
- Subject/Issuer Organization Unit
- Not Valid Before/After
- Serial Number
- Certificate Fingerprint
- Public Key Fingerprint

SSL Certificate Status (Syslog: SSLServerCertStatus)

This applies only if you configured a Certificate Status SSL rule condition. If encrypted traffic matches an SSL rule, this field displays one or more of the following server certificate status values:

- Self Signed
- Valid
- Invalid Signature
- Invalid Issuer
- Expired
- Unknown
- Not Valid Yet
- Revoked

If undecryptable traffic matches an SSL rule, this field displays `Not Checked`.

SSL Cipher Suite (Syslog: SSSLCipherSuite)

A macro value representing a cipher suite used to encrypt the connection. See www.iana.org/assignments/tls-parameters/tls-parameters.xhtml for cipher suite value designations.

SSL Encryption applied to the connection

This field is available only as a search field in the Firepower Management Center web interface.

Enter **`yes`** or **`no`** in the **SSL** search field to view TLS/SSL-encrypted or non-encrypted connections.

SSL Expected Action (Syslog: SSLExpectedAction)

In the Firepower Management Center web interface, this field is a search field only.

The action the system expected to apply to encrypted traffic, given the SSL rules in effect.

Enter any of the values listed for **SSL Actual Action**.

SSL Failure Reason (Syslog: SSLFlowStatus)

The reason the system failed to decrypt encrypted traffic:

- Unknown
- No Match
- Success
- Uncached Session
- Unknown Cipher Suite
- Unsupported Cipher Suite
- Unsupported SSL Version
- SSL Compression Used
- Session Undecryptable in Passive Mode
- Handshake Error
- Decryption Error
- Pending Server Name Category Lookup
- Pending Common Name Category Lookup
- Internal Error
- Network Parameters Unavailable
- Invalid Server Certificate Handle
- Server Certificate Fingerprint Unavailable
- Cannot Cache Subject DN
- Cannot Cache Issuer DN
- Unknown SSL Version
- External Certificate List Unavailable
- External Certificate Fingerprint Unavailable
- Internal Certificate List Invalid
- Internal Certificate List Unavailable
- Internal Certificate Unavailable
- Internal Certificate Fingerprint Unavailable
- Server Certificate Validation Unavailable
- Server Certificate Validation Failure
- Invalid Action

Field values are displayed in the **SSL Status** field on the search workflow pages.

SSL Flow Error

The error name and hexadecimal code if an error occurred during the TLS/SSL session; `Success` if no error occurred.

SSL Flow Flags

The first ten debugging level flags for an encrypted connection. On a workflow page, to view all flags, click the ellipsis (**...**).

SSL Flow Messages

The keywords below indicate encrypted traffic is associated with the specified message type exchanged between client and server during the TLS/SSL handshake. See http://tools.ietf.org/html/rfc5246 for more information.

- HELLO_REQUEST
- CLIENT_ALERT
- SERVER_ALERT
- CLIENT_HELLO
- SERVER_HELLO
- SERVER_CERTIFICATE
- SERVER_KEY_EXCHANGE
- CERTIFICATE_REQUEST
- SERVER_HELLO_DONE
- CLIENT_CERTIFICATE
- CLIENT_KEY_EXCHANGE
- CERTIFICATE_VERIFY
- CLIENT_CHANGE_CIPHER_SPEC
- CLIENT_FINISHED
- SERVER_CHANGE_CIPHER_SPEC
- SERVER_FINISHED
- NEW_SESSION_TICKET
- HANDSHAKE_OTHER
- APP_DATA_FROM_CLIENT
- APP_DATA_FROM_SERVER

SSL Policy (Syslog: SSLPolicy)

The SSL policy that handled the connection.

SSL Rule (Syslog: SSLRuleName)

The SSL rule or default action that handled the connection, as well as the first Monitor rule matched by that connection. If the connection matched a Monitor rule, the field displays the name of the rule that handled the connection, followed by the Monitor rule name.

SSLServerName (Syslog Only)

This field exists ONLY as a syslog field; it does not exist in the Firepower Management Center web interface.

Hostname of the server with which the client established an encrypted connection.

SSL Session ID (Syslog: SSLSessionID)

The hexadecimal Session ID negotiated between the client and server during the TLS/SSL handshake.

SSL Status

The action associated with the **SSL Actual Action** (SSL rule, default action, or undecryptable traffic action) that logged the encrypted connection. The **Lock icon** links to SSL certificate details. If the certificate is unavailable (for example, for connections blocked due to TLS/SSL handshake error), the lock icon is dimmed.

If the system fails to decrypt an encrypted connection, it displays the **SSL Actual Action** (undecryptable traffic action) taken, as well as the **SSL Failure Reason**. For example, if the system detects traffic encrypted with an unknown cipher suite and allows it without further inspection, this field displays `Do Not Decrypt (Unknown Cipher Suite)`.

When searching this field, enter one or more of the **SSL Actual Action** and **SSL Failure Reason** values to view encrypted traffic the system handled or failed to decrypt.

SSL Subject/Issuer Country

This field is available only in the Firepower Management Center web interface, and only as a search field.

A two-character ISO 3166-1 alpha-2 country code for the subject or issuer country associated with the encryption certificate.

SSL Ticket ID (Syslog: SSLTicketID)

A hexadecimal hash value of the session ticket information sent during the TLS/SSL handshake.

SSLURLCategory (Syslog Only)

URL categories for the URL visited in the encrypted connection.

This field exists ONLY as a syslog field; in the Firepower Management Center web interface, values in this field are included in the URL Category column.

See also **URL**.

SSL Version (Syslog: SSLVersion)

The TLS/SSL protocol version used to encrypt the connection:

- Unknown
- SSLv2.0
- SSLv3.0

- TLSv1.0
- TLSv1.1
- TLSv1.2

TCP Flags (Syslog: TCPFlags)

For connections generated from NetFlow data, the TCP flags detected in the connection.

When searching this field, enter a list of comma-separated TCP flags to view all connections that have *at least* one of those flags.

Time

The ending time of the five-minute interval that the system used to aggregate connections in a connection summary. This field is not searchable.

TLS Fingerprint Process Name

Process or client in the TLS client hello packet that was analyzed by the encrypted visibility engine.

TLS Fingerprint Process Confidence Score

The confidence value in the range 0-100% that the encrypted visibility engine has detected the right process. For example, if the process name is Firefox and if the confidence score is 80%, it means that the engine is 80% confident that the process it has detected is Firefox.

TLS Fingerprint Malware Confidence

The probability level that the process detected by the encrypted visibility engine contains malware. This field indicates the bands (Very High, High, Medium, Low, or Very Low) based on the value in the malware confidence score.

TLS Fingerprint Malware Confidence Score

The confidence value in the range 0-100% that the process detected by the encrypted visibility engine contains malware. If the malware confidence score is very high, say 90%, then the TLS Fingerprint Process Name field will display "Malware."

Total Packets

This field is available only as a search field.

The total number of packets transmitted in the connection.

Traffic (KB)

This field is available only as a search field.

The total amount of data transmitted in the connection, in kilobytes.

URL, URL Category, and URL Reputation (Syslog: URL, URLCategory and SSLURLCategory, URLReputation)

The URL requested by the monitored host during the session and its associated category and reputation, if available.

For the connection event to display URL category and reputation, you must include the applicable URL rules in an access control policy and configure the rule with URL category and URL reputation under the URL's Tab.

URL category and reputation do not appear in an event if the connection is processed before it matches a URL rule.

If the system identifies or blocks a TLS/SSL application, the requested URL is in encrypted traffic, so the system identifies the traffic based on an SSL certificate. For TLS/SSL applications, therefore, this field indicates the common name contained in the certificate.

See also **SSLURLCategory**, above.

User Agent (Syslog: UserAgent)

The user-agent string application information extracted from HTTP traffic detected in the connection.

VLAN ID

The innermost VLAN ID associated with the packet that triggered the connection.

Web Application (Syslog: WebApplication)

The web application, which represents the content or requested URL for HTTP traffic detected in the connection.

If the web application does not match the URL for the event, the traffic is probably referred traffic, such as advertisement traffic. If the system detects referred traffic, it stores the referring application (if available) and lists that application as the web application.

If the system cannot identify the specific web application in HTTP traffic, this field displays `Web Browsing`.

Web Application Category and Tag

Criteria that characterize the application to help you understand the application's function.

About Connection and Security Intelligence Event Fields

In the Firepower Management Center web interface, you can view and search connection and security intelligence events using tabular and graphical workflows under the **Analysis > Connections** submenus.



Note For each Security Intelligence event, there is an identical, separately stored connection event. All Security Intelligence events have a populated **Security Intelligence Category** field.

The information available for any individual event can vary depending on how, why, and when the system logged the connection.

Search Constraints

Fields marked with an asterisk (*****) on search pages constrain connection graphs and connection summaries. Because connection graphs are based on connection summaries, the same criteria that constrain connection summaries also constrain connection graphs. If you search connection summaries using invalid search constraints and view your results using a connection summary page in a custom workflow, the invalid constraints are labeled as not applicable (N/A) and are marked with a strikethrough.

Syslog Fields

Most fields appear both in the Firepower Management Center web interface and as syslog messages. Fields without a listed syslog equivalent are not available in syslog messages. A few fields are syslog-only, as noted, and few others are separate fields in syslog messages but are consolidated fields in the web interface or vice-versa.

A Note About Initiator/Responder, Source/Destination, and Sender/Receiver Fields

Table 1: Comparison of Terms

Fields	Event Type	Description
Initiator/Responder	Connection	Initiator/responder of the connection. The initiator of a connection is not necessarily the same as the source of an intrusion or the sender of a malware file.
Source/Destination	Intrusion	Source/destination of the attack. The source of an intrusion event can be the initiator or the responder of the connection.
Sender/Receiver (Sending..., Receiving...)	File, Malware	Sender/receiver of a file or malware. The sender of a file is not necessarily the initiator of the connection, as a file may be uploaded or downloaded.

Connection Event Reasons

The Reason field in a connection event displays the reason or reasons the connection was logged, in the following situations:

Reason	Description
DNS Block	The system denied the connection without inspection, based on the domain name and Security Intelligence data. A reason of DNS Block is paired with an action of Block, Domain not found, or Sinkhole, depending on the DNS rule action.
DNS Monitor	The system would have denied the connection based on the domain name and Security Intelligence data, but you configured the system to monitor, rather than deny, the connection.
File Block	The connection contained a file or malware file that the system prevented from being transmitted. A reason of File Block is always paired with an action of Block.
File Custom Detection	The connection contained a file on the custom detection list that the system prevented from being transmitted.
File Monitor	The system detected a particular type of file in the connection.

Reason	Description
File Resume Allow	File transmission was originally blocked by a Block Files or Block Malware file rule. After a new access control policy allowing the file was deployed, the HTTP session automatically resumed. This reason only appears in inline deployments.
File Resume Block	File transmission was originally allowed by a Detect Files or Malware Cloud Lookup file rule. After a new access control policy blocking the file was deployed, the HTTP session automatically stopped. This reason only appears in inline deployments.
Intelligent App Bypass	The Intelligent Application Bypass (IAB) mode: • If the action is Trust, IAB was in bypass mode. Matching traffic passed without further inspection. • If the action is Allow, IAB was in test mode. Matching traffic was available for further inspection.
Intrusion Block	The system blocked or would have blocked an exploit (intrusion policy violation) detected in the connection. A reason of Intrusion Block is paired with an action of Block for blocked exploits and Allow for would-have-blocked exploits.
Intrusion Monitor	The system detected, but did not block, an exploit detected in the connection. This occurs when the state of the triggered intrusion rule is set to Generate Events.
IP Block	The system denied the connection without inspection, based on the IP address and Security Intelligence data. A reason of IP Block is always paired with an action of Block.
IP Monitor	The system would have denied the connection based on the IP address and Security Intelligence data, but you configured the system to monitor, rather than deny, the connection.
SSL Block	The system blocked an encrypted connection based on the TLS/SSL inspection configuration. A reason of SSL Block is always paired with an action of Block.
URL Block	The system denied the connection without inspection, based on the URL and Security Intelligence data. A reason of URL Block is always paired with an action of Block.
URL Monitor	The system would have denied the connection based on the URL and Security Intelligence data, but you configured the system to monitor, rather than deny, the connection.
User Bypass	The system initially blocked a user's HTTP request, but the user clicked through a warning page to view the site. A reason of User Bypass is always paired with an action of Allow.

Requirements for Populating Connection Event Fields

The information available for a connection event, Security Intelligence event, or connection summary depends on several factors.

Appliance Model and License

Many features require that you enable specific licensed capabilities on target devices, and many features are only available on some models.

For example, NGIPSv devices do not support TLS/SSL inspection. They cannot inspect encrypted traffic; logged connection events do not contain information about encrypted connections.

Traffic Characteristics

The system only reports information present (and detectable) in network traffic. For example, there could be no user associated with an initiator host, or no referenced host detected in a connection where the protocol is not DNS, HTTP, or HTTPS.

Origin/Detection Method: Traffic-Based Detection vs NetFlow

With the exception of NetFlow-only fields, the information available in NetFlow records is more limited than the information generated by traffic-based detection; see Differences between NetFlow and Managed Device Data.

Evaluation Stage

Each type of traffic inspection and control occurs where it makes the most sense for maximum flexibility and performance.

For example, the system enforces Security Intelligence before more resource-intensive evaluations. 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.

Logging Method: Beginning or End of Connection

When the system detects a connection, whether you can log it at its beginning or its end (or both) depends on how you configure the system to detect and handle it.

Beginning-of-connection events do not have information that must be determined by examining traffic over the duration of the session (for example, the total amount of data transmitted or the timestamp of the last packet in the connection). Beginning-of-connection events are also not guaranteed to have information about application or URL traffic in the session, and do not contain any details about the session's encryption. Beginning-of-connection logging is usually the only option for blocked connections.

Connection Event Type: Individual vs Summary

Connection summaries do not contain all of the information associated with their aggregated connections. For example, because client information is not used to aggregate connections into connection summaries, summaries do not contain client information.

Keep in mind that connection graphs are based on connection summary data, which use only end-of-connection logs. If your system is configured to log only beginning-of-connection data, connection graphs and connection summary event views contain no data.

Other Configurations

Other configurations that affect connection logging include, but are not limited to:

- ISE-related fields are populated only if you configure ISE, in connections associated with users who authenticate via an Active Directory domain controller. Connection events do not contain ISE data for users who authenticate via LDAP, RADIUS, or RSA domain controllers.
- TLS/SSL-related fields are populated only in encrypted connections handled by an SSL policy. You can view the values of the fields using a Do Not Decrypt rule action if you do not need to decrypt the traffic.
- File information fields are populated only in connections logged by access control rules associated with file policies.
- Intrusion information fields are populated only in connections logged by access control rules either associated with intrusion policies or using the default action.
- The Reason field is populated only in specific situations, such as when a user bypasses an Interactive Block configuration.
- The Domain field is only present if you have ever configured the Firepower Management Center for multitenancy.
- An advanced setting in the access control policy controls the number of characters the system stores in the connection log for each URL requested by monitored hosts in HTTP sessions. If you use this setting to disable URL logging, the system does not display individual URLs in the connection log, although you can still view category and reputation data, if it exists.
- For the connection event to display URL category and reputation, you must include the applicable URL rules in an access control policy and configure the rule with URL category and URL reputation under the URL's Tab. URL category and reputation do not appear in an event if the connection is processed before it matches a URL rule.

Related Topics

Differences between NetFlow and Managed Device Data

Information Available in Connection Event Fields

The table in this topic indicates when the system can populate connection and Security Intelligence fields. The columns in the table represent the following event types:

- Origin: Direct—Events that represent connections detected and handled by a managed device.
- Origin: NetFlow—Events that represent connections exported by a NetFlow exporter.
- Logging: Start—Events that represent connections logged at their beginning.
- Logging: End—Events that represent connections logged at their end.

A "yes" in the table does not mean that the system must populate a connection event field, rather, that it can. The system only reports information present (and detectable) in network traffic. For example, TLS/SSL-related fields are populated only for records of encrypted connections handled by an SSL policy.

Connection Event Field	Origin: Direct	Origin: NetFlow	Logging: Start	Logging: End
Access Control Policy	yes	no	yes	yes
Access Control Rule	yes	no	yes	yes
Action	yes	no	yes	yes

Connection Event Field	Origin: Direct	Origin: NetFlow	Logging: Start	Logging: End
Application Protocol	yes	yes	if available	yes
Application Protocol Category & Tag	yes	no	if available	yes
Application Risk	yes	no	if available	yes
Business Relevance	yes	no	if available	yes
Client	yes	no	if available	yes
Client Category & Tag	yes	no	if available	yes
Client Version	yes	no	if available	yes
Connections	yes	yes	no	yes
Count	yes	yes	yes	yes
Destination Port/ICMP Type	yes	yes	yes	yes
Device	yes	yes	yes	yes
Domain	yes	yes	yes	yes
DNS Query	yes	no	yes	yes
DNS Record Type	yes	no	yes	yes
DNS Response	yes	no	yes	yes
DNS Sinkhole Name	yes	no	yes	yes
DNS TTL	yes	no	yes	yes
Egress Interface	yes	no	yes	yes
Egress Security Zone	yes	no	yes	yes
Endpoint Location	yes	no	yes	yes
Endpoint Profile	yes	no	yes	yes
Files	yes	no	no	yes
First Packet	yes	yes	yes	yes
HTTP Referrer	yes	no	no	yes
HTTP Response Code	yes	no	yes	yes
Ingress Interface	yes	no	yes	yes
Ingress Security Zone	yes	no	yes	yes

Connection Event Field	Origin: Direct	Origin: NetFlow	Logging: Start	Logging: End
Initiator Bytes	yes	yes	not useful	yes
Initiator Country	yes	no	yes	yes
Initiator IP	yes	yes	yes	yes
Initiator Packets	yes	yes	not useful	yes
Initiator User	yes	yes	yes	yes
Intrusion Events	yes	no	no	yes
Intrusion Policy	yes	no	yes	yes
IOC (Indication of Compromise)	yes	no	yes	yes
Last Packet	yes	yes	no	yes
NetBIOS Domain	yes	no	yes	yes
NetFlow Source/Destination Autonomous System	no	yes	no	yes
NetFlow Source/Destination Prefix	no	yes	no	yes
NetFlow Source/Destination TOS	no	yes	no	yes
NetFlow SNMP Input/Output	no	yes	no	yes
Network Analysis Policy	yes	no	yes	yes
Reason	yes	no	yes	yes
Referenced Host	yes	no	no	yes
Responder Bytes	yes	yes	not useful	yes
Responder Country	yes	no	yes	yes
Responder IP	yes	yes	yes	yes
Responder Packets	yes	yes	not useful	yes
Security Context (ASA only)	yes	no	yes	yes
Security Group Tag (SGT)	yes	no	yes	yes
Security Intelligence Category	yes	no	yes	yes
Source Device	yes	yes	yes	yes
Source Port/ICMP Type	yes	yes	yes	yes
SSL Certificate Status	yes	no	no	yes

Connection Event Field	Origin: Direct	Origin: NetFlow	Logging: Start	Logging: End
SSL Cipher Suite	yes	no	no	yes
SSL Flow Error	yes	no	no	yes
SSL Flow Flags	yes	no	no	yes
SSL Flow Messages	yes	no	no	yes
SSL Policy	yes	no	no	yes
SSL Rule	yes	no	no	yes
SSL Session ID	yes	no	no	yes
SSL Status	yes	no	no	yes
SSL Version	yes	no	no	yes
TCP Flags	no	yes	no	yes
Time	yes	yes	no	yes
URL	yes	no	if available	yes
URL Category	yes	no	if available	yes
URL Reputation	yes	no	if available	yes
User Agent	yes	no	no	yes
VLAN ID	yes	no	yes	yes
Web Application	yes	no	if available	yes
Web Application Category & Tag	yes	no	if available	yes

Using Connection and Security Intelligence Event Tables

You can use the Firepower Management Center to view a table of connection or Security Intelligence events. Then, you can manipulate the event view depending on the information you are looking for.

In a multidomain deployment, you can view data for the current domain and for any descendant domains. You cannot view data from higher level or sibling domains.

The page you see when you access connection graphs differs depending on the workflow you use. You can use a predefined workflow, which terminates in a table view of events. You can also create a custom workflow that displays only the information that matches your specific needs.

When you are using a connection or Security Intelligence workflow table, you can perform many common actions.

Note that when you constrain connection events on a drill-down page, the packets and bytes from identical events are summed. However, if you are using a custom workflow and did not add a **Count** column to a drill-down page, the events are listed individually and packets and bytes are not summed.

Before you begin

You must be an Admin or Security Analyst user to perform this task.

Procedure

Step 1 Choose either of the following:

- **Analysis** > **Connections** > **Events** (for connection events)
- **Analysis** > **Connections** > **Security Intelligence Events**

Note If a connection graph appears instead of a table, click **(switch workflow)** by the workflow title, and choose the predefined **Connection Events** workflow, or a custom workflow. Note that all predefined connection event workflows—including connection graphs—terminate in a table view of connections.

Step 2 You have the following choices:

- Time Range — To adjust the time range, which is useful if no events appear, see Changing the Time Window.
- Field Names — To learn more about the contents of the columns in the table, see Connection and Security Intelligence Event Fields, on page 3.

  Tip In the table view of events, several fields are hidden by default, including the Category and Tag fields for each type of application, NetFlow-related fields, TLS/SSL-related fields, and others. To show a hidden field in an event view, expand the search constraints, then click the field name under **Disabled Columns**.

- Host Profile — To view the host profile for an IP address, click **Host Profile** or, for hosts with active indications of compromise (IOC) tags, **Compromised Host** that appears next to the IP address.
- User Profile — To view user identity information, click the user icon that appears next to the **User Identity**.
- Files and Malware —To view the files, including malware, detected or blocked in a connection, click **View Files** and proceed as described in Viewing Files and Malware Detected in a Connection, on page 24.
- Intrusion Events — To view the intrusion events associated with a connection, as well as their priority and impact, click **Intrusion Events** in the **Intrusion Events** column and proceed as described in Viewing Intrusion Events Associated with a Connection, on page 25.

  Tip To quickly view intrusion, file, or malware events associated with one or more connections, check the connections using the check boxes in the table, then choose the appropriate option from the **Jump to** drop-down list. Note that because they are blocked before access control rule evaluation, there can be no files or intrusions associated with connections blocked by Security Intelligence. You can only see this information for a Security Intelligence event if you configured Security Intelligence to monitor, rather than block, connections.

- Certificate — To view details about an available certificate used to encrypt a connection, click **Enabled Lock** in the **SSL Status** column.
- Constrain — To constrain the columns that appear, click **Close** ( ) in the column heading that you want to hide. In the pop-up window that appears, click **Apply**.

  Tip To hide or show other columns, check or clear the appropriate check boxes before you click **Apply**. To add a disabled column back to the view, expand the search constraints, then click the column name under Disabled Columns.

- Delete Events — To delete some or all items in the current constrained view, check the check boxes next to items you want to delete and click **Delete** or click **Delete All**.
- Drill Down — See Using Drill-Down Pages.

  Tip To drill down using one of several Monitor rules that matched a logged connection, click an *N* **Monitor Rules** value. In the pop-up window that appears, click the Monitor rule you want to use to constrain connection events.

- Navigate This Page — See Workflow Page Traversal Tools.
- Navigate Between Pages — To navigate between pages in the current workflow, keeping the current constraints, click the appropriate page link at the top left of the workflow page.
- Navigate Between Event Views — To navigate to other event views to view associated events, click **Jump to** and choose the event view from the drop-down list.
- Sort — To sort data in a workflow, click the column title. Click the column title again to reverse the sort order.

Related Topics

Overview: Workflows
Configuring Event View Settings

Viewing Files and Malware Detected in a Connection

If you associate a file policy with one or more access control rules, the system can detect files (including malware) in matching traffic. Use the Analysis > Connections menu options to see the file events, if any, associated with the connections logged by those rules. Instead of a list of files, the Firepower Management Center displays view files ( ) in the **Files** column. The number on the view files indicates the number of files (including malware files) detected or blocked in that connection.

Not all file and malware events are associated with connections. Specifically:

- Malware events detected by AMP for Endpoints ("endpoint-based malware events") are not associated with connections. Those events are imported from your AMP for Endpoints deployment.
- Many IMAP-capable email clients use a single IMAP session, which ends only when the user exits the application. Although long-running connections are logged by the system, files downloaded in the session are not associated with the connection until the session ends.

In a multidomain deployment, you can view data for the current domain and for any descendant domains. You cannot view data from higher level or sibling domains.

Before you begin

You must be an Admin or Security Analyst user to perform this task.

Procedure

Step 1 Go to **Analysis > Connections** and choose the relevant option.

Step 2 While using a connection event table, click **View Files**.
A pop-up window appears with a list of the files detected in the connection as well as their types, and if applicable, their malware dispositions.

Step 3 You have the following choices:

- View — To view a table view of file events, click a **File's View**.
- View — To view details in a table view of malware events, click a **Malware File's View**.
- Track — To track the file's transmission through your network, click a **File's Trajectory**.
- View — To view details on all of the connection's detected file or malware events detected by AMP for Networks ("network-based malware events"), click **View File Events** or **View Malware Events**.

Viewing Intrusion Events Associated with a Connection

If you associate an intrusion policy with an access control rule or default action, the system can detect exploits in matching traffic. Use the Analysis > Connections menu options to see the intrusion events, if any, associated with logged connections, as well as their priority and impact.

In a multidomain deployment, you can view data for the current domain and for any descendant domains. You cannot view data from higher level or sibling domains.

Before you begin

You must be an Admin or Security Analyst user to perform this task.

Procedure

Step 1 Go to **Analysis > Connections** and choose the relevant option.

Step 2 While using a connection event table, click **Intrusion Events** in the **Intrusion Events** column.

Step 3 In the pop-up window that appears, you have the following options:

- Click a **Listed Event's View** to view details in the packet view.
- Click **View Intrusion Events** to view details on all of the connection's associated intrusion events.

Encrypted Connection Certificate Details

You can use options under the Analysis > Connections menu to display the public key certificate (if available) used to encrypt a connection handled by the system. The certificate contains the following information.

Table 2: Encrypted Connection Certificate Details

Attribute	Description
Subject/Issuer Common Name	The host and domain name of the certificate subject or certificate issuer.
Subject/Issuer Organization	The organization of the certificate subject or certificate issuer.
Subject/Issuer Organization Unit	The organizational unit of the certificate subject or certificate issuer.
Not Valid Before/After	The dates when the certificate is valid.
Serial Number	The serial number assigned by the issuing CA.
Certificate Fingerprint	The SHA hash value used to authenticate the certificate.
Public Key Fingerprint	The SHA hash value used to authenticate the public key contained within the certificate.

Viewing the Connection Summary Page

The Connection Summary page is visible only to users who have custom roles that are restricted by searches on connection events and who have been granted explicit menu-based access to the Connection Summary page. This page provides graphs of the activity on your monitored network organized by different criteria. For example, the Connections over Time graph displays the total number of connections on your monitored network over the interval that you choose.

You can perform almost all the same actions on connection summary graphs that you can perform on connection graphs. However, because the graphs on the Connection Summary page are based on aggregated data, you cannot examine the individual connection events on which the graphs are based. In other words, you cannot drill down to a connection data table view from a connection summary graph.

In a multidomain deployment, you can view data for the current domain and for any descendant domains. You cannot view data from higher level or sibling domains.

Procedure

Step 1 Choose **Overview** > **Summary** > **Connection Summary**.

Step 2 From the **Select Device** list, choose the device whose summary you want to view, or choose **All** to view a summary of all devices.

Step 3 To manipulate and analyze the connection graphs, proceed as described in Using Connection Event Graphs.

Tip To detach a connection graph so you can perform further analysis without affecting the default time range, click **View**.

Related Topics

User Role Escalation