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Introduction

Cisco Cognitive Analytics quickly detects suspicious web traffic and/or Stealthwatch flow records and responds to attempts to establish a presence in your environment and to attacks that are already under way. Stealthwatch sends flow records to the Cognitive Analytics cloud for analysis once it is enabled on the Stealthwatch System. By default, Cognitive Analytics processes Stealthwatch flow records for inside/outside host group traffic and DNS requests. You can specify additional host groups to monitor inside traffic. Cognitive Analytics also detects malicious patterns in encrypted traffic using Encrypted Traffic Analytics (ETA).

Cognitive Analytics works with Stealthwatch to analyze flow records and Network Address Translations (NAT). While no additional licenses are required to send Stealthwatch flow records to Cognitive Analytics, internet boundary NAT data is required to send web traffic data from Stealthwatch to Cognitive Analytics. Refer to Related Resources at the end of this document for links to more information about these products.

Cognitive Analytics has migrated to Amazon Web Services (AWS) Cloud, which results in new URLs and IP addresses. Refer to the following field notices for more information:

Field Notice – May 2018
Field Notice – October 2018

Stealthwatch Support

- The Stealthwatch Management Console and Flow Collector can be configured to connect to the Internet via a proxy server. Refer to Proxy Configuration for more information.
- Cognitive Analytics is only available for the default domain or site within Stealthwatch; multiple domains or sites is not supported.
- Cognitive Analytics is not supported on the Flow Collector sFlow.

ETA Support

Cognitive Analytics can only detect ETA information if you have an ETA enabled switch and router. For more information about Stealthwatch and ETA, refer to the Encrypted Traffic Analytics white paper and the Encrypted Traffic Analytics deployment guides.
Data

Two categories of data are sent to the Cognitive Analytics data center in London over SCP and HTTPS and the AWS data center in Dublin:

- Stealthwatch flow records, if any of the following conditions are met:
  - Records for inside/outside host group traffic
  - Records for specific internal host group traffic (Inside Hosts)
  - Records for DNS requests, if the server port is 53
  - Records for Encrypted Traffic Analytics, if you have an ETA enabled switch and router
- Web log data, if you have Stealthwatch Proxy Log

Stealthwatch Flow Records

The Stealthwatch flow records include:

- IP address of host end-point
- TCP or UDP port
- mac address
- protocol data*
- number of bytes and packets sourced per period
- FIN packet count
- flow identifier
- service ID
- Palo Alto application ID
- username
- MPLS label
- round trip time
- start time
- port range
- group IDs
- SYN packet count
- TrustSec security group tag id and name
- well-known service port
- application ID
- flow sensor application ID
- VLAN ID
- retransmit count
- list of exporters
- Flow Collector IP Address
- last active time
- autonomous system number
- VM ID
- RST packet count
- number of total bytes and packets since flow started
- protocol
- packet shaper application ID
- NBAR application ID
- connection count
- server response time
- flow sequence number
- SVRD metric

* The protocol data field contains miscellaneous data, such as URLs, SSL certificates, and special characters for header data.
ETA Flow Records

ETA flow records are only sent if you have an ETA enabled switch and router. For more information about Stealthwatch and ETA, refer to the Encrypted Traffic Analytics white paper and the Encrypted Traffic Analytics deployment guides.

The ETA flow records include:

- initial data packet (IDP) *
- TLS session ID
- sequence of packet lengths and times (SPLT)
- selected cipher suite
- transport layer security (TLS) version

* The Initial Data Packet (IDP) contains mostly protocol related data and headers, such as Server Name Indication (SNI), protocol versions, offered and selected cypher suite and HTTP header fields (in case of unencrypted HTTP traffic). For protocols other than HTTPS/HTTP, it contains the protocol headers for the first 1500 bytes of the client/server communication (usually encrypted on the protocol level without the possibility of decryption without the rest of the data).

Web Log Data

One of the purposes of web log data is to provide a translation between an internal non-routable IP and external routable public IP via NAT.

Refer to the Stealthwatch Proxy Log Configuration Guide for the proxy log configurations Stealthwatch supports.

The web log data includes:

- timestamp
- server IP address
- client TCP ports
- bytes transferred from Client to Server
- HTTP referrer header
- user-agent string
- elapsed time
- client username (optional)
- server TCP ports
- bytes transferred from server to client
- HTTP response status code
- response Mime Type or Content Type
- client IP address
- server name
- requested URL/URI
- HTTP request method
- HTTP location header
- action taken by the web security proxy

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Configuring the Stealthwatch Management Console

Dashboard Component

To configure the Cognitive Analytics component on the Stealthwatch Management Console, complete the following steps:

1. All appliances must have a synchronized clock using a NTP server to connect to Cognitive Analytics.

2. On a pair of duel SMCs, the secondary SMC will not connect to Cognitive Analytics after configuration. This does not interfere with the Flow Collector receiving data and the primary SMC connects to Cognitive and displays the widgets properly. If the primary SMC fails, the secondary SMC will connect to Cognitive Analytics and display the widgets. When the original primary SMC comes up, both SMCs will successfully connect to Cognitive.

At least one SMC needs internet access. If it also needs proxy configuration, refer to Proxy Configuration for more information.

1. Configure your network firewall to allow communication from the Stealthwatch Management Console to the following IP address and port 443:

   - **AWS Elastic IPs**
     - 34.242.41.248
     - 34.242.94.137
     - 34.251.54.105
   - **Cisco Streamline IPs**
     - 146.112.59.0/24
     - 208.69.38.0/24

   If public DNS is not allowed, you will need to configure the resolution locally on the Stealthwatch Management Console.

2. Log in to Stealthwatch Management Console.

3. Click on the Global Settings icon, and then click Central Management.
4. Click on the ellipsis under the Actions column for your SMC. Click **Edit Appliance Configuration**.

5. Click **General**.

6. Under External Services, select the **Enable Cognitive Analytics** check box to enable the Cognitive Analytics component on the Security Insight Dashboard and the Host Report.

7. (Optional) Select the **Automatic Updates** check box to enable Cognitive Analytics to send updates automatically from the cloud.

   The automatic updates will mostly cover security fixes and small enhancements for the Cognitive Analytics cloud. These updates will also be available through the normal Stealthwatch release process. You can disable this option any time to stop the automatic updates from the cloud. If you enable automatic updates on the Stealthwatch Management Console, you need to enable it on the Flow Collector(s).

8. Click **Apply Settings**.

   It will take a few minutes for the service to update and show the Cognitive Analytics component on the Security Insight Dashboard and the Host Report.

9. (Optional) To upload internet proxy, go to **Network Services**. Scroll down to the Internet Proxy section and select the **Enable** checkbox. Fill out the form, then click **Apply Settings**.

### Inside Hosts

By default, Cognitive Analytics processes Stealthwatch flow records for inside/outside host group traffic and DNS requests. By configuring an internal host group to send Stealthwatch flow records, the user adds additional data to be sent to the cloud for analysis. Adding specific host groups to Cognitive Analytics monitoring is used for company internal servers (e.g. mail servers, file servers, web servers, authentication servers etc.) – adding traffic from the end users to those servers can improve the visibility of the exposure of data that can be potentially misused by malware running on the affected devices. Please don’t check all the host groups for sending the data but only check the host groups representing internal servers.

To allow Cognitive Analytics to monitor Inside Host traffic, complete the following steps:

1. Log in to the SMC client interface.
2. Right click on the applicable Inside Host Group and click **Configuration > Host Group Properties**.
This feature enables monitoring traffic for all host groups under the selected parent host group. We recommend only enabling this option on child host groups to avoid potential performance issues.

3. Select the **Send Flow to Cognitive Analytics** check box.
4. Click OK.
Configuring the Flow Collector

To configure the Cognitive Analytics component on the Flow Collector NetFlow, complete the following steps:

1. **All appliances must have a synchronized clock using a NTP server to connect to Cognitive Analytics.**

2. **You will need to configure the Cognitive Analytics Data Uploader on each Flow Collector to get accurate results.**

3. **After configuration, allow two days for the Cognitive Analytics engine to learn how your network behaves.**

   1. Configure your network firewall to allow communication from the Flow Collector(s) to the following IP address and port 443:

   | AWS Elastic IPs       | 34.242.41.248 | 34.242.94.137 | 34.251.154.105 |
   |                       | 34.251.210.21 | 34.255.162.33 | 54.194.49.205  |
   | Cisco Streamline IPs  | 146.112.59.0/24 |                |                |
   |                       | 208.69.38.0/24 |                |                |

   - If public DNS is not allowed, you will need to configure the resolution locally on the Flow Collector(s).

2. Log in to Stealthwatch Management Console.
3. Click on the **Global Settings** icon, and then click **Central Management**.
4. Click on the ellipsis under the Actions column for your Flow Collector. Click **Edit Appliance Configuration**.
5. Click **General**.
6. Under External Services, select the **Enable Cognitive Analytics** check box to enable sending data from your Flow Collector to the Cognitive Analytics engine.
7. (Optional) Select the **Automatic Updates** check box to enable Cognitive Analytics to send updates automatically from the cloud.

The automatic updates will mostly cover security fixes and small enhancements for the Cognitive Analytics cloud. These updates will also be available through the normal Stealthwatch release process. You can disable this option any time to stop the automatic updates from the cloud. If you enable automatic updates on the Flow Collectors, you need to enable it on the Stealthwatch Management Console.

8. Click **Apply Settings**.

**Proxy Configuration**

To achieve this, configure the Stealthwatch Management Console and Flow Collector to connect to the Internet via a proxy server. Cognitive Analytics supports HTTP/HTTPS proxies with SSL inspection disabled. Stealthwatch does not support SOCKS proxy.

For more information on how to set up web proxy, refer to the **Configuring the Stealthwatch Management Console** section of this document. For more information about configuring proxy logs, refer to the **Stealthwatch Proxy Log Configuration Guide**.

Refer to the diagram below for setup configuration:

- This configuration requires the proxy to be in transparent mode for WSA. Refer to **Configure WSA to Upload Log Files to CTA System** for more information.
You will get the best results from Cognitive using a proxy when:

- A Flow Collector collects flows before the proxy
- Proxy logs are sent directly to the cloud

You will get the best results from Stealthwatch Enterprise using a proxy when:

- Proxy logs are sent directly to the Flow Collector
- You enable ETA

For more information on connecting the proxy directly to the cloud, refer to:

- Configure Blue Coat ProxySG to Upload Log Files to CTA System
- Configure McAfee Web Gateway to Upload Log Files to CTA System
- Configure WSA to Upload Log Files to CTA System
Verification

Docker Services

To verify that the Cognitive Analytics Docker Services are configured properly, complete the following steps:

1. Check that Cognitive Analytics is enabled on your SMC and Flow Collector(s).
2. Check that the Cognitive Analytics component has appeared on the Security Insight Dashboard and Host Report.
3. From the navigation menu, click Dashboard > Cognitive Threat Analytics. The Cognitive Analytics Dashboard page will open. Click Device Accounts from the menu in the upper-right corner of the page. Check that the account for each configured Flow Collector is uploading data and has a ready status.

ETA Integration

Cognitive Analytics implements malware detection capability within the Encrypted Traffic Analytics (ETA) solution. To verify the ETA solution is set up correctly, CTA can generate ETA test incidents using specific test site domains. To generate these test incidents, browse to one of the following test sites using a host where the HTTPS session is passing through an ETA enabled switch and router:

- Malware: https://examplemalwaredomain.com
- Botnet: https://examplebotnetdomain.com
- Phishing: https://internetbadguys.com

The detection may initially show up as a risk rating of 5. The risk rating can increase with additional bad or repetitive behavior, such as going to multiple of the above URLs or repeatedly visiting the same URL.

- TOR detection: Download and install the TOR browser: https://www.torproject.org/projects/torbrowser.html.en and visit a few websites.
- The TOR detection will display as "TOR relay" or "Possibly Unwanted Application" with a risk rating of 4.
Known Issues

This section summarizes issues (bugs) that are known to exist in this release. Where possible, workarounds are included. The defect number is provided for reference.

<table>
<thead>
<tr>
<th>Defect Number</th>
<th>Description</th>
<th>Workaround</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHOPIN-25314</td>
<td>If a Stealthwatch user has their privileges lifted or demoted (ex. Read Only to Read/Write or vice versa), it will take up to 30 minutes to propagate the change to the Cognitive Analytics system.</td>
<td>None currently available.</td>
</tr>
<tr>
<td>SWD-13834</td>
<td>After performing a configuration restore, Cognitive Analytics is disabled.</td>
<td>To overcome this, manually enable Cognitive after the backup restore process.</td>
</tr>
<tr>
<td>NA</td>
<td>If a user log ins to multiple Stealthwatch systems, they can't log in to the second system within Cognitive Analytics.</td>
<td>To overcome this:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Wait 30 minutes for the first login to expire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Log out of Cognitive Analytics on the first system</td>
</tr>
<tr>
<td>NA</td>
<td>External Services, e.g. Cognitive Analytics, do not work when FIPS Encryption Libraries is enabled.</td>
<td>In previous releases, enabling both External Services and FIPS Encryption Libraries was not supported, but it did not interfere with External Services functionality. For v7.1 and later, if you wish to enable Cognitive Analytics or another External Service, you must disable FIPS.</td>
</tr>
</tbody>
</table>
Related Resources

- For more information about Cognitive Analytics, go to their website at https://cognitive.cisco.com or their product documentation at http://www.cisco.com/c/en/us/td/docs/security/web_security/scancenter/administrator/guide/b_ScanCenter_Administrator_Guide/b_ScanCenter_Administrator_Guide_chapter_011110.html


Contacting Support

If you need technical support, please do one of the following:

- Contact your local Cisco Partner
- Contact Cisco Stealthwatch Support
  - To open a case by email: tac@cisco.com
  - For phone support: 1-800-553-2447 (U.S.)
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