Configure WSA to Upload Log Files to CTA System

Last updated: November 14, 2018

Conventions

This document uses the following conventions:

Convention	Indication
bold font	Commands and keywords and user-entered text appear in **bold** font.
italic font	Document titles, new or emphasized terms, and arguments for which you supply values are in *italic* font.
[ ]	Elements in square brackets are optional.
{x | y | z }	Required alternative keywords are grouped in braces and separated by vertical bars.
[x | y | z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
courier font	Terminal sessions and information the system displays appear in courier font.
< >	Nonprinting characters such as passwords are in angle brackets.
[ ]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.

Note: Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

Caution: Means *reader be careful.* In this situation, you might perform an action that could result in equipment damage or loss of data.

Warning: IMPORTANT SAFETY INSTRUCTIONS

Means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device.

SAVE THESE INSTRUCTIONS

Regulatory: Provided for additional information and to comply with regulatory and customer requirements.

Introduction

This document describes how to configure a Cisco Web Security Appliance (WSA) to upload its log files to the Cisco Cognitive Threat Analytics (CTA) system. Once the log files are uploaded to the system, CTA analyzes the data and reports its findings to the CTA portal. This integration can reduce the time it takes to discover the spread of attacks and helps spot symptoms of infection using both trust modeling and algorithms that detect behavioral anomalies. It also uses machine learning to adapt over time.

Prerequisites

There are four ways to access the CTA portal:

- AMP for Endpoints Console (demo)
- Stealthwatch Management Console (demo)
- Directly through the standalone CTA portal
- **Threats** tab in Cisco ScanCenter

Requirements

Have your CTA account enabled in Cisco Cloud Web Security, AMP for Endpoints, Stealthwatch, or as a standalone account. You can then navigate to the CTA portal directly through your AMP for Endpoints Console or Stealthwatch Management Console, or by using Cisco ScanCenter, the administration portal for Cisco Cloud Web Security.

In the CTA portal, you must first create a device account for your WSA:

1. Click the global settings menu icon in the upper-right corner.
2. Click **Device Accounts.**
3. Select the **Automatic** upload method.

Once the device account is created, copy this information from the **Add Device Account** page to paste into your WSA configuration:

- SCP host: `etr.cloudsec.sco.cisco.com`
- Device username generated for your proxy device, case sensitive, different per proxy device

For your WSA, you need:

- Hostname or IP address of your WSA
- Admin user password of your WSA (default password: `ironport`)
- WSA must be connected directly to the Internet without any additional proxy upstream
- Must be network connectivity between the WSA management interface and SCP host `etr.cloudsec.sco.cisco.com` using port `22`: firewall rules may need adjustment to allow this connection

Note: For more information specific to Cisco ScanCenter, see Proxy Device Uploads.

Caution: The information in this document was created from devices in a lab environment. If your network is live, understand the potential impact of any configuration command.

Note: When creating subscription logs on the WSA for CTA, the proxy process will restart and the authentication cache will be cleared. Therefore, we recommend you make the changes during a scheduled maintenance window.

Components Used

All WSA hardware and virtual platforms are supported.

The information in this document was tested on these software versions:

- WSA AsyncOS 11.5
- WSA AsyncOS 11.0
- WSA AsyncOS 8.5.1 GD
- WSA AsyncOS 8.0.8
- WSA AsyncOS 7.7.5

Configure

Configure the Proxy

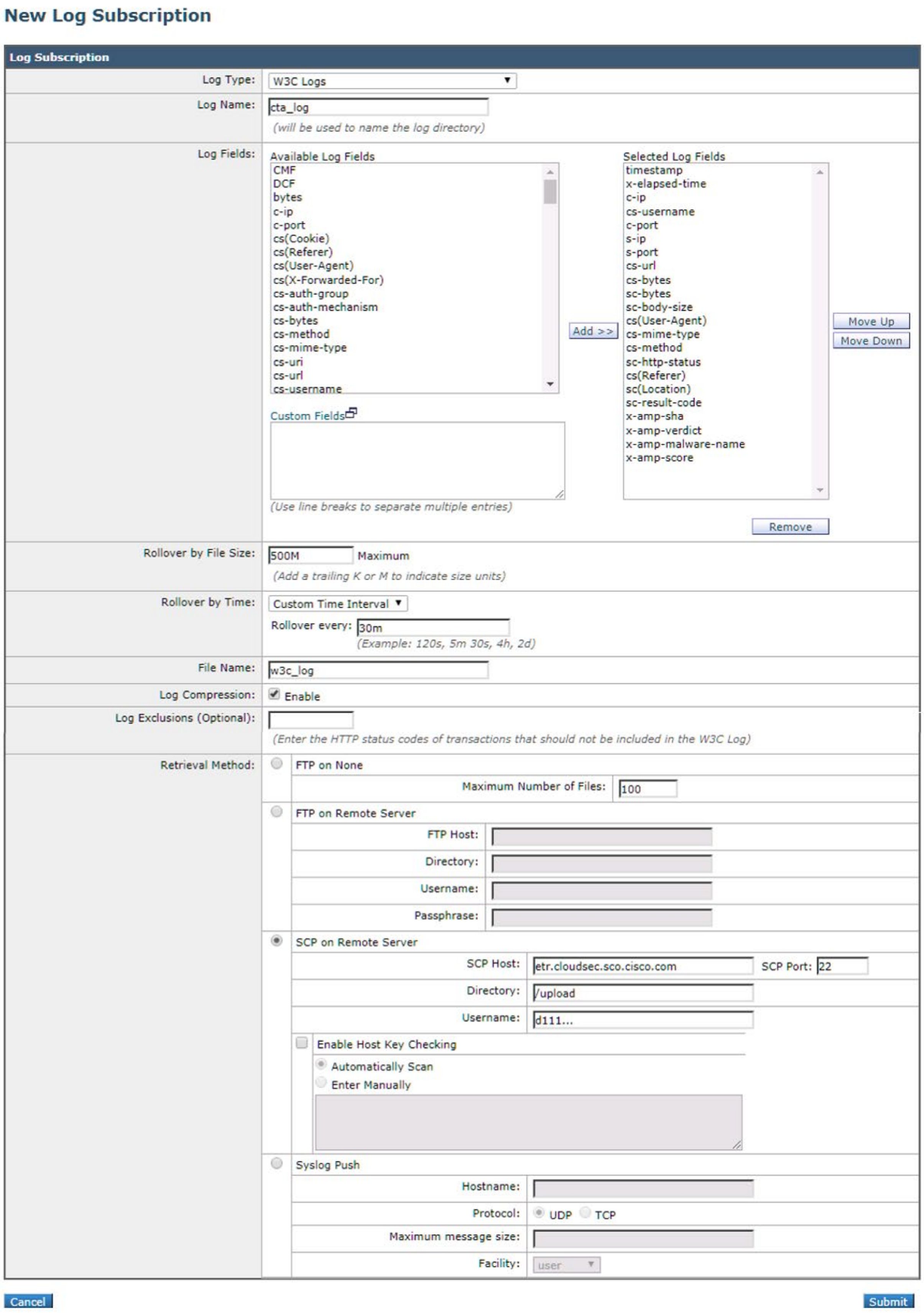
1. Point your web browser to your WSA: http://wsa_*hostname*:8080/
2. If needed, accept the insecure HTTPS certificate to proceed.
3. Sign in as admin.
4. Navigate to **System Administration** > **Log Subscriptions**.
5. Click **Add Log Subscription**.
6. In the **Log Type** pull-down, select **W3C Logs**.
7. In the **Log Name** field, enter a descriptive name for the log directory such as `cta_log`.
   Caution: Do not use any spaces or special characters in the name or the log upload will not work.

8. If your WSA is running software older than AsyncOS 11.0:
   a. In the **Selected Log Fields** box, select all the pre-selected log fields and click **Remove**.
   b. In the **Available Log Fields** box, select the following items. If not available, in the **Custom Fields** box, enter the following items, using line breaks to separate them:

   ```
   timestamp
   x-elapsed-time
   c-ip
   cs-username
   c-port
   s-ip
   s-port
   cs-url
   cs-bytes
   sc-bytes
   sc-body-size
   cs(User-Agent)
   cs-mime-type
   cs-method
   sc-http-status
   cs(Referer)
   sc(Location)
   sc-result-code
   x-amp-sha
   x-amp-verdict
   x-amp-malware-name
   x-amp-score
   ```

   Note: On WSA AsyncOS 7.7.5, AMP is not supported, so do not add the four “`x-amp`” fields.

   c. Once all the items are selected or entered, click **Add >>** to add them to the **Selected Log Fields** box.
   d. In the **File Name** field, enter `w3c_log`.
   e. Enable compression by checking **Log Compression**.
   f. For **Retrieval Method**, select **SCP on Remote Server**.
   g. In the **SCP Host** field, enter the SCP host provided by the CTA portal in the Device Accounts section, e.g. `etr.cloudsec.sco.cisco.com`
   h. In the **SCP Port** field, enter `22`.
   i. In the **Directory** field, enter `/upload`.
   j. In the **Username** field, enter the username generated for your device by the CTA portal. The device username is case sensitive and different for each proxy device.



New Log Subscription

Log Subscription

Log Type: W3C Logs ▼

Log Name: cta_log
(will be used to name the log directory)

Log Fields:

Available Log Fields
CMF
DCF
bytes
c-ip
c-port
cs(Cookie)
cs(Referer)
cs(User-Agent)
cs(X-Forwarded-For)
cs-auth-group
cs-auth-mechanism
cs-bytes
cs-method
cs-mime-type
cs-uri
cs-url
cs-username

Add >>

Selected Log Fields
timestamp
x-elapsed-time
c-ip
cs-username
c-port
s-ip
s-port
cs-url
cs-bytes
sc-bytes
sc-body-size
cs(User-Agent)
cs-mime-type
cs-method
sc-http-status
cs(Referer)
sc(Location)
sc-result-code
x-amp-sha
x-amp-verdict
x-amp-malware-name
x-amp-score

Move Up
Move Down

Custom Fields
(Use line breaks to separate multiple entries)

Remove

Rollover by File Size: 500M Maximum
(Add a trailing K or M to indicate size units)

Rollover by Time: Custom Time Interval ▼
Rollover every: 30m
(Example: 120s, 5m 30s, 4h, 2d)

File Name: w3c_log

Log Compression: ☑ Enable

Log Exclusions (Optional):
(Enter the HTTP status codes of transactions that should not be included in the W3C Log)

Retrieval Method:

○ FTP on None
Maximum Number of Files: 100

○ FTP on Remote Server
FTP Host:
Directory:
Username:
Passphrase:

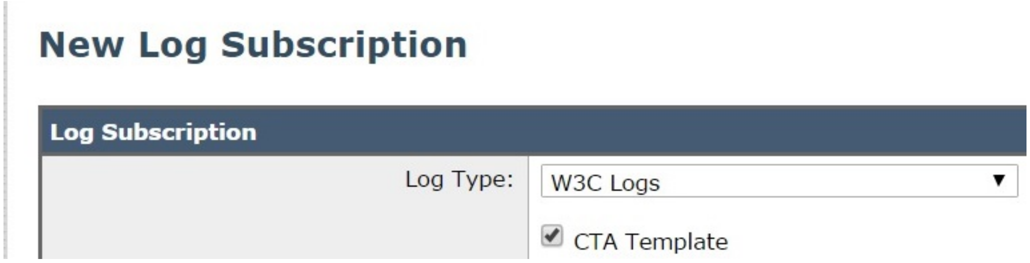
● SCP on Remote Server
SCP Host: etr.cloudsec.sco.cisco.com SCP Port: 22
Directory: /upload
Username: d111...
□ Enable Host Key Checking
● Automatically Scan
○ Enter Manually

○ Syslog Push
Hostname:
Protocol: ● UDP ○ TCP
Maximum message size:
Facility: user ▼

Cancel Submit

   k. Proceed to Step 11.

9. If your WSA is running AsyncOS 11.0:
   a. Select the **CTA Template** check box to automatically configure most of the remaining settings:



New Log Subscription

Log Subscription

Log Type: W3C Logs ▼

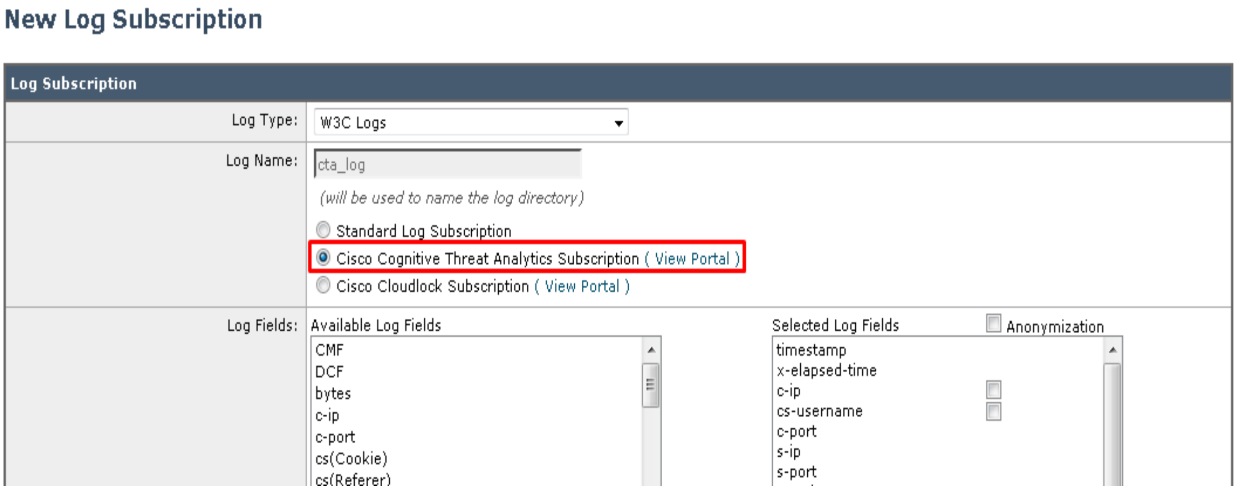
☑ CTA Template

   b. Ensure that the following fields appear in the **Selected Log Fields** box:

```
timestamp
x-elapsed-time
c-ip
cs-username
c-port
s-ip
s-port
cs-url
cs-bytes
sc-bytes
sc-body-size
cs(User-Agent)
cs-mime-type
cs-method
sc-http-status
cs(Referer)
sc(Location)
sc-result-code
x-amp-sha
x-amp-verdict
x-amp-malware-name
x-amp-score
```

   c. For **Retrieval Method**, in the **Username** field, enter the username generated for your device by the CTA portal. The device username is case sensitive and different for each proxy device.
   d. Proceed to Step 11.

10. If your WSA is running AsyncOS 11.5:
    a. Select the **Cisco Cognitive Threat Analytics Subscription** radio button to automatically configure most of the remaining settings:



New Log Subscription

Log Subscription

Log Type: W3C Logs

Log Name: cta_log

(will be used to name the log directory)

○ Standard Log Subscription
● Cisco Cognitive Threat Analytics Subscription (View Portal)
○ Cisco Cloudlock Subscription (View Portal)

Log Fields:

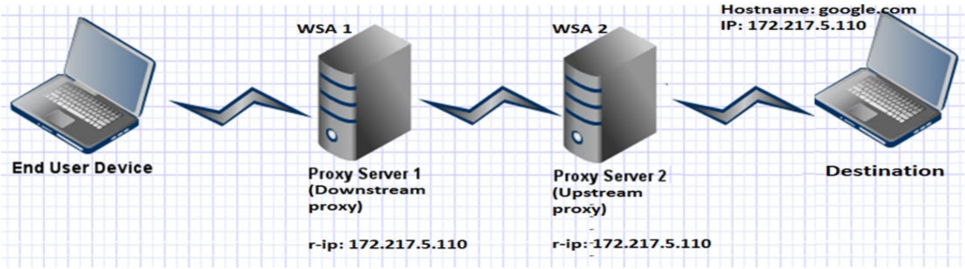
Available Log Fields: CMF, DCF, bytes, c-ip, c-port, cs(Cookie), cs(Referer)

Selected Log Fields □ Anonymization: timestamp, x-elapsed-time, c-ip □, cs-username □, c-port, s-ip, s-port

b. Ensure that the following fields appear in the **Selected Log Fields** box:

```
timestamp
x-elapsed-time
c-ip
cs-username
c-port
s-ip
s-port
cs-url
cs-bytes
sc-bytes
sc-body-size
cs(User-Agent)
cs-mime-type
cs-method
sc-http-status
cs(Referer)
sc(Location)
sc-result-code
x-amp-sha
x-amp-verdict
x-amp-malware-name
x-amp-score
x-wbrs-score
x-wbrs-threat-type
x-wbrs-threat-reason
x-acltag
cs-auth-group
r-ip
```

Note: When multiple proxy servers are chained between a client and server, it's called proxy chaining. The `r-ip` is a field selected by default in the CTA log and holds the IP address of the destination server irrespective of any proxy present upstream. For example:



c. For **Retrieval Method**, enter the username generated for your device by the CTA portal. The device username is case sensitive and unique for each proxy device.

d. You have the option to anonymize certain fields in the CTA log so that client information is encrypted and not disclosed to external servers where the logs are pushed.

   i. Select the check box next to `c-ip, cs-username, or cs-auth-group` if you want to anonymize these fields individually.

   ii. Alternatively, select the **Anonymization** check box to anonymize all these fields simultaneously.

   iii. Enter a passphrase for anonymization (that you will need again for deanonymization).

   Note: For more information, see **Customizing W3C Access Logs** in the User Guide for AsyncOS 11.5 for Cisco Web Security Appliances.

e. The destination log server receives encrypted text for the anonymized log fields and not the actual text. To view the actual text, deanonymize the log fields. Select **Security Services** > **Cisco Cognitive Threat Analytics** and click **Deanonymize**.

f. Alternatively:

   i. Select **System Administration** > **Log Subscriptions**.

   ii. Click **Deanonymization** in the **Denonymization** column corresponding to the log for which you want to deanonymize the anonymized fields.

   iii. Select either **Method** of entering the encrypted text:

      - **Paste encrypted text** in the **Anonymized Text** field. You can enter up to 500 comma-separated values.
      - **Upload File** containing the encrypted text. The file must be in CSV format and can contain up to 1000 values. The system supports space, new line, tab, and semi colon as the field separator.

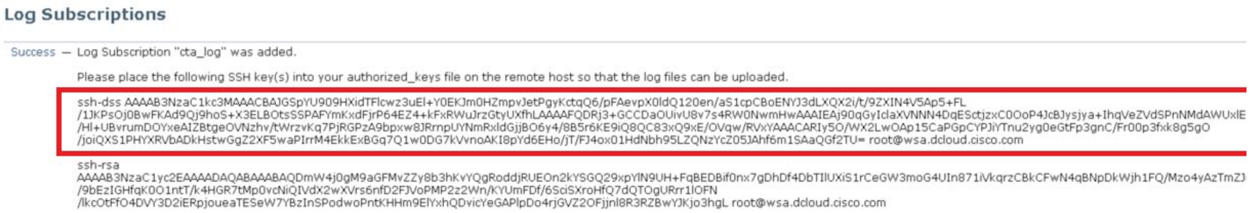
   iv. Click **Deanonymize** and the Deanonymization Result table shows the actual log field values.

   Note: For more information on how to deanonymize encrypted text from CTA in the WSA, see **Deanonymizing W3C Log Fields** in the User Guide for AsyncOS 11.5 for Cisco Web Security Appliances.

11. Select the **Automatically Scan** radio button.
12. In the **Rollover by File Size** field, enter `500M`.
13. In the **Rollover by Time** pull-down, select **Custom Time Interval**.
14. In the **Rollover every** field, enter for example `55m`.

Number of Users Behind Proxy	Recommended Upload Period
Unknown or less than 2000	55 minutes
2000 to 4000	30 minutes
4000 to 6000	20 minutes
More than 6000	10 minutes

15. Click **Submit**.
16. The WSA Management Console displays two public SSH keys using DSS and RSA algorithms. You can use either one. This document shows the use of the DSS algorithm. Copy and paste the whole key, including **ssh-dss** at the beginning, into the device account in the CTA portal. Successful authentication between your proxy device and CTA system allows log files from your proxy device to be uploaded to the CTA system for analysis.



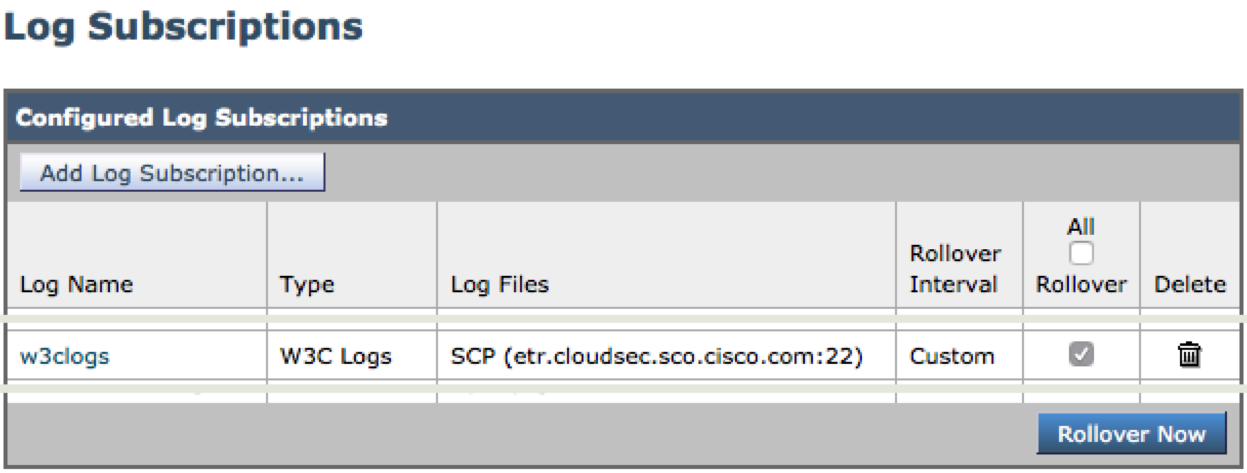
Log Subscriptions

Success — Log Subscription "cta_log" was added.

Please place the following SSH key(s) into your authorized_keys file on the remote host so that the log files can be uploaded.

```
ssh-dss AAAAB3NzaC1kc3MAAACBAJGSpYU909HXidTFlcwz3uEl+Y0EKJm0HZmpvJetPgyKctqQ6/pFAevpX0ldQ120en/aS1cpCBoENYJ3dLXQX2i/t/9ZXIN4V5Ap5+FL
/1JKPsOj0BwFKAd9Qj9hoS+X3ELBOtsSSPAFYmKxdFjrP64EZ4++kFxRWuJrzGtyUXfhLAAAAFQDRj3+GCCDaOUivU8v7s4RW0NwmHwAAAIEAj90qGyIclaXVNNN4DqESctjzxC0OoP4JcBJysjya+IhqVeZVdSPnNMdAWUxlE
/Hl+UBvrumDOYxeAIZBtgeOVNzhv/tWrzvKq7PjRGPzA9bpxw8JRrnpUYNmRxldGjjBO6y4/8B5r6KE9iQ8QC83xQ9xE/OVqw/RVxYAAACARIy5O/WX2LwOAp15CaPGpCYPJiYTnu2yg0eGtFp3gnC/Fr00p3fxk8g5gO
/joiQXS1PHYXRVbADkHstwGgZ2XF5waPIrrM4EkkExBGq7Q1w0DG7kVvnoAKI8pYd6EHo/jT/FJ4ox01HdNbh95LZQNzYcZ05JAhf6m1SAaQGf2TU= root@wsa.dcloud.cisco.com
ssh-rsa
AAAAB3NzaC1yc2EAAAADAQABAAABAQDmW4j0gM9aGFMvZZy8b3hKvYQgRoddjRUEOn2kYSGQ29xpYlN9UH+FqBEDBif0nx7gDhDf4DbTIlUXiS1rCeGW3moG4UIn871iVkqrzCBkCFwN4qBNpDkWjh1FQ/Mzo4yAzTmZJ
/9bEzIGHfqK0O1ntT/k4HGR7tMp0vcNiQIVdX2wXVrs6nfD2FJVoPMP2z2Wn/KYUmFDf/6SciSXroHfQ7dQTOgURrr1lOFN
/lkcOtFfO4DVY3D2iERpjoueaTESeW7YBzInSPodwoPntKHHm9ElYxhQDvicYeGAPlpDo4rjGVZ2OFjjnl8R3RZBwYJKjo3hgL root@wsa.dcloud.cisco.com
```

17. Click **Commit Changes**.
    Caution: In order to process these changes, the proxy process will restart after you commit changes. This will cause a brief interruption in service. Additionally, the authentication cache will be cleared, which might require some users to authenticate again. We recommended you configure the WSA during an off-hour maintenance window to avoid impacting users during production hours.
18. To test your connection, force the WSA to attempt an immediate upload:
    a. Navigate to the **Log Subscriptions** page.
    b. For the subscription you want to test, select the **Rollover** check box.
    c. Click **Rollover Now**.



Log Subscriptions

Configured Log Subscriptions

Log Name	Type	Log Files	Rollover Interval	All ☐ Rollover	Delete
w3clogs	W3C Logs	SCP (etr.cloudsec.sco.cisco.com:22)	Custom	☑	🗑

19. To check the status of the file upload in the CTA portal:
    a. Navigate to and reload the **Device Accounts** page.
    b. Expand the handle next to the device name.

   c. Click **Activity Log** and confirm that there are no error messages.
   d. Verify that each file upload has a timestamp indicating when the activity started and completed, a time to upload that's not too long, and an appropriate file size.
   e. After the configured **Rollover by Time** has passed, check the status again to verify that log file uploads are working without being forced.

Connect to Active Directory to Resolve Usernames

Setting up an Active Directory is not required for creating a log subscription, and you may already have it configured, but this helps in identifying affected devices. In order to see user names on the CTA system, the WSA needs to be able to authenticate all users. This can be accomplished by using the Transparent User Identification feature. For additional information, see Chapter 5 "Acquire End-User Credentials" in the Cisco Web Security Appliances User Guide.

1. Navigate to **Network** > **Authentication**.
2. Add a Realm connecting to your Active Directory:
   a. **Active Directory Server** is the name of your domain, not the hostname.
   b. **Active Directory Domain** is the name of your domain in capitalized letters.
   c. After clicking **Join Domain**, enter the credentials of a user with domain administrator rights; the WSA will create its own user in the Active Directory.
   d. Check **Enable Transparent User Identification using Active Directory** agent. There must be a Cisco Active Directory agent running and able to connect to Active Directory. Enter its server hostname and shared secret.
3. Navigate to **Web Security Manager** > **Identities**.
4. Edit **Global Identity Policy**. Set **Identification and Authentication to Identify Users Transparently** and pick the realm created in the previous step.
5. In **Network Authentication Global Authentication Settings** click on **Edit Global Settings** and set the **Action if Authentication Service Unavailable** to **Block all traffic if authentication fails**. This will prevent the addition of "*" in the **userid access** log field, which is added for non-authenticated users.

Using SMA to Configure Multiple WSAs

The Cisco Content Security Management Appliance (SMA) centralizes management functions across multiple WSAs. However, the SMA does not help when setting up log uploading. Since configuration settings vary between WSAs, and the SMA does not support W3C logs, each WSA must be configured individually.

Deployment Scenarios

Single WSA, Explicit or Transparent Mode, Single Routing Table

- Ensure you can reach the CTA server on port 22.
- Control the interface to be used for the logs by the routing table.

Single WSA, Explicit Mode, Separate Routing Tables for DATA and MGMT Traffic

- Ensure you can reach the CTA server on port 22 over the MGMT interface.
- SCP traffic is considered MGMT traffic and is sent out the MGMT port. Ensure the MGMT port can reach the CTA server on port 22.

Upstream and Downstream Proxy

Typical configuration:

- Downstream proxy responsibilities: authentication, URL filtering
- Upstream proxy responsibilities: anti-malware scanning
- Client → Downstream → Upstream → Internet
- Separate routing tables for data and management (MGMT) traffic

In this scenario, the downstream proxy has username and client IP address, but not the destination IP address, which is a required field. Destination IP address is always known to the upstream proxy, but username is only seen by the downstream proxy.

In this case, activate the XFF (X-Forwarded-For) header on the downstream proxy and evaluate it on the upstream proxy. This way the upstream proxy knowns the client IP address. Configure the upstream proxy to send log files to the CTA server via the MGMT interface.

Troubleshooting

Check Connectivity

Follow these steps to check connectivity:

1. Log in to the CLI of the WSA.
2. Enter the **logconfig** command.
3. Enter the **hostkeyconfig** command.
4. Enter the **scan** command.
5. Enter the CTA server hostname: `etr.cloudsec.sco.cisco.com`
6. Choose **All** when asked for the SSH protocol type.
7. Enter **Y** when asked whether the CTA host key should be added.

No RSA host key is known for etr.cloudsec.sco.cisco.com

If your telemetry data did not upload, check the WSA log. If you received this message:

"No RSA host key is known for etr.cloudsec.sco.cisco.com and you have requested strict checking. Host key verification failed. Lost connection."

Follow these steps to resolve:

1. Log in to the CLI of the WSA.
2. Enter the **logconfig** command.
3. Enter the **hostkeyconfig** command.
4. Delete the host key.
5. Press the Enter key to return to the main CLI.

6. Enter the **commit** command.
7. Repeat the configuration steps to add a log subscription. Ensure you select the **Enable Host Key Checking** check box, and select the **Automatically Scan** radio button.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see *What's New in Cisco Product Documentation* at: http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html.

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