

# **Configuring Network Detection and Response**

- Prerequisites for Network Detection and Response, on page 1
- Restrictions for Network Detection and Response, on page 1
- Information About Network Detection and Response, on page 2
- How to Configure Network Detection and Response, on page 2
- Verifying Network Detection and Response Configuration, on page 11
- Configuration Examples for Network Detection and Response, on page 12
- Feature History for Network Detection and Response, on page 15

## **Prerequisites for Network Detection and Response**

- All the devices in a network must have reachability to the Stealthwatch Cloud portal. Also, all the encrypted traffic must use HTTPS (TCP port 443) to reach the Stealthwatch Cloud portal.
- Applicable root certificate authorities (CAs) must be configured on a device to validate the certificates provided by the Stealthwatch Cloud portal.
- Ensure that there is sufficient bandwidth to avoid loss of data.

## **Restrictions for Network Detection and Response**

- Cisco Encrypted Traffic Analytics is not supported on the Stealthwatch Cloud portal.
- HTTPs proxy is not supported.
- Stealthwatch Cloud portal uses only the primary DNS server. An error is displayed if the primary DNS server fails.
- If DNS servers configured on the device are unable to resolve the Stealthwatch cloud monitor URLs, file uploads fail even if the Stealthwatch cloud sensor is registered to the Stealthwatch cloud portal.

## **Information About Network Detection and Response**

Cisco Secure Network Analytics (also known as the Stealthwatch Cloud) is a Network Detection and Response solution that uses enterprise telemetry to detect threats and provide accelerated threat response along with network segmentation. Cisco Secure Network Analytics also allows a network administrator to track all users logged into the network, and monitor their activities.

As part of the Network Detection and Response solution for Cisco Catalyst Switches, the enterprise telemetry used for analysis is Flexible NetFlow flows.

You must configure Stealthwatch Cloud properties on a device. You must then create a flow record and a flow exporter for the Stealthwatch Cloud portal.



Note

A flow record must have the mandatory 5-tuple fields—protocol, source address, source port, destination address, and destination port configured along with the flow start, flow end, number of packets, and number of bytes for the records to be uploaded into the Stealthwatch Cloud portal.

Configure the flow record and flow exporter to a flow monitor. All the flows that are then generated from the flow monitor are converted into custom format and uploaded into the Stealthwatch Cloud portal.

## How to Configure Network Detection and Response

The following sections provide configuration information on network detection and response.

### **Configuring a Certificate for Registration**

To configure a certificate for registration, perform this procedure.

#### **SUMMARY STEPS**

- 1. enable
- 2. configure terminal
- 3. crypto pki trustpoint name
- 4. revocation-check method1 [method2 method3]
- 5. enrollment mode
- 6. exit
- 7. crypto pki authenticate name
- 8. exit
- 9. show pki trustpoints name

#### **DETAILED STEPS**

	Command or Action	Purpose
Step 1	enable	Enables privileged EXEC mode.
	Example:	Enter your password, if prompted.

	Command or Action	Purpose
	Device> enable	
Step 2	configure terminal	Enters global configuration mode.
	Example:	
	Device# configure terminal	
Step 3	crypto pki trustpoint name	Declares the trustpoint and a given name and enters
	Example:	ca-trustpoint configuration mode.
	Device(config) # crypto pki trustpoint stealthwatch1	
Step 4	revocation-check method1 [method2 method3]	Checks the revocation status of a certificate.
	Example:	none: Certificate checking is ignored.
	<pre>Device(ca-trustpoint)# revocation-check none</pre>	
Step 5	enrollment mode	Specifies terminal as the enrollment mode of the certificate.
	Example:	
	<pre>Device(ca-trustpoint)# enrollment terminal</pre>	
Step 6	exit	Exits ca-trustpoint configuration mode and returns to global
	Example:	configuration mode.
	Device(ca-trustpoint)# <b>exit</b>	
Step 7	crypto pki authenticate name	Authenticates the trustpoint name and enters ca-trustpoint
	Example:	configuration mode.
	Device (config) # crypto pki authenticate	When prompted, copy and paste the Starfield Services Root Certificate from https://www.amazontrust.com/repository/
	Enter the base 64 encoded CA certificate. End with a blank line or the word "quit" on a line	SFC2CA-SFSRootCAG2.pem.
		The system prompts you with the following statement:
		<pre>% Do you accept this certificate? [yes/no]:</pre>
		Enter <b>yes</b> to confirm.
Step 8	exit	Returns to privileged EXEC mode.
	Example:	
	Device(config)# <b>exit</b>	
Step 9	show pki trustpoints name	(Optional) Displays information about the configured
	Example:	trustpoint.
	Device# show crypto pki trustpoints stealthwatch1	

## **Configuring a Certificate for File Upload**

To configure a certificate for file upload, perform this procedure.

#### Before you begin

Download the Baltimore CyberTrust Root certificate:

- 1. Open https://www.digicert.com/kb/digicert-root-certificates.htm in a web browser.
- 2. Under Baltimore CyberTrust Root, click Download PEM.
- 3. Choose a location and save the BaltimoreCyberTrustRoot.crt.pem file.

#### **SUMMARY STEPS**

- 1. enable
- 2. configure terminal
- 3. crypto pki trustpoint name
- 4. revocation-check method1 [method2 method3]
- 5. enrollment terminal
- 6. exit
- 7. crypto pki authenticate name
- 8. exit
- 9. show pki trustpoints name

#### **DETAILED STEPS**

	Command or Action	Purpose
Step 1	enable	Enables privileged EXEC mode.
	Example:	Enter your password, if prompted.
	Device> enable	
Step 2	configure terminal	Enters global configuration mode.
	Example:	
	Device# configure terminal	
Step 3	crypto pki trustpoint name	Declares the trustpoint and a given name and enters
	Example:	ca-trustpoint configuration mode.
	Device(config)# crypto pki trustpoint stealthwatch2	
Step 4	revocation-check method1 [method2 method3]	Checks the revocation status of a certificate.
	Example:	none: Certificate checking is ignored.
	<pre>Device(ca-trustpoint)# revocation-check none</pre>	
Step 5	enrollment terminal	Specifies <b>terminal</b> as the enrollment mode of the certificate.
	Example:	
	<pre>Device(ca-trustpoint)# enrollment terminal</pre>	
Step 6	exit	Exits ca-trustpoint configuration mode and returns to global
	Example:	configuration mode.
	Device(ca-trustpoint)# <b>exit</b>	
		I

	Command or Action	Purpose
Step 7	crypto pki authenticate name	Authenticates the trustpoint name and enters ca-trustpoint
	Example:	configuration mode.
	Device(config)# crypto pki authenticate stealthwatch2	When prompted, copy and paste the text from the BaltimoreCyberTrustRoot.crt.pem file.
	Enter the base 64 encoded CA certificate. End with a blank line or the word "quit" on a line	The system prompts you with the following statement:
	by itself	<pre>% Do you accept this certificate? [yes/no]:</pre>
		Enter <b>yes</b> to confirm.
Step 8	exit	Returns to privileged EXEC mode.
	Example:	
	Device(config)# exit	
Step 9	show pki trustpoints name	(Optional) Displays information about the configured
	Example:	trustpoint.
	Device# show crypto pki trustpoints stealthwatch2	

## **Configuring Stealthwatch Cloud on a Device**

To configure Stealthwatch Cloud on a device, perform this procedure.

#### Before you begin

To view the service key from the Stealthwatch Cloud portal, peform the following steps:

- 1. Open the Stealthwatch Cloud portal from a browser.
- 2. In the Dashboard view, click the cloud icon located on the right corner of the window, and select Sensors.
- 3. Navigate to the bottom of the window to locate the service key.

ou can monitor tra	affic in public cloud environments by fol	lowing the instructions on the relevant integrations page:	
WS Integration			
zure Integration			
•	cisco-Cat9k	Cisco-sensor101	a test-sensor
	cisco=Cat9k	Cisco-sensorioi	a test-sensor
Heartbeat	t	No Heartbeat	No Heartbeat
Last Heartbeat: Fe	b. 10, 2021, 9:54 a.m. Timestamp:	Last Heartbeat: Unknown Timestamp: Unknown	Last Heartbeat: Unknown Timestamp: Unknown
Unknown		No Data	No Data
Receiving	Data	Last Flow Record: Unknown Active Data Types: None	Last Flow Record: Unknown Active Data Types: None
	Feb. 10, 2021, 9:50 a.m. Active Data		
Types: Cisco IOS-	XE NetHow		

#### **SUMMARY STEPS**

- 1. enable
- **2**. configure terminal
- 3. stealthwatch-cloud-monitor
- 4. service-key SwC-service-key
- 5. sensor-name SwC-sensor-name
- 6. url SwC-server-url
- 7. end

#### **DETAILED STEPS**

	Command or Action	Purpose
Step 1	enable	Enables privileged EXEC mode.
	Example:	Enter your password, if prompted.
	Device> enable	
Step 2	configure terminal	Enters global configuration mode.
	Example:	
	Device# configure terminal	
Step 3	stealthwatch-cloud-monitor	Configures the Stealthwatch Cloud monitor and enters
	Example:	stealthwatch-cloud-monitor configuration mode.
	<pre>Device(config)# stealthwatch-cloud-monitor</pre>	
Step 4	service-key SwC-service-key	Configures the Stealthwatch Cloud service key.
	Example:	
	<pre>Device(config-stealthwatch-cloud-monitor)#</pre>	
	service-key xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	
Step 5	sensor-name SwC-sensor-name	(Optional) Sets a sensor name for the Stealthwatch Clou
	Example:	registration. By default, the device serial number is used as the sensor name.
	<pre>Device(config-stealthwatch-cloud-monitor)# sensor-name mysensor</pre>	
Step 6	url SwC-server-url	(Optional) Configures the URL of the Stealthwatch Cloud
	Example:	server.
	Device(config-stealthwatch-cloud-monitor)# url https://sensors.eu-2.obsrvbl.com	To avoid redirects, configure the appropriate Stealthwatch Cloud server URL. If no URL is configured, by default, the URL of the Stealthwatch Cloud server, located in the U.S, is used. Based on your location, the default URL redirects you to the nearest Stealthwatch Cloud server URL.
Step 7	end	Returns to privileged EXEC mode.
	Example:	
	<pre>Device(config-stealthwatch-cloud-monitor)# end</pre>	

### How to Integrate Flexible NetFlow with the Stealthwatch Cloud Portal

The following sections provide configuration information on how to integrate Flexible Netflow with the Stealthwatch Cloud portal.

### **Creating a Flow Record**

To create a flow record, perform this procedure.

#### **SUMMARY STEPS**

- 1. enable
- 2. configure terminal
- **3. flow record** *record-name*
- 4. description description
- 5. match ipv4 source address
- 6. match ipv4 destination address
- 7. match transport source-port
- 8. match transport destination-port
- **9**. match ipv4 protocol
- **10**. collect counter bytes long
- 11. collect counter packets long
- **12**. collect timestamp absolute first
- 13. collect timestamp absolute last
- 14. end

#### **DETAILED STEPS**

	Command or Action	Purpose
Step 1	enable	Enables privileged EXEC mode.
	Example:	Enter your password, if prompted.
	Device> enable	
Step 2	configure terminal	Enters global configuration mode.
	Example:	
	Device# configure terminal	
Step 3	flow record record-name	Creates a flow record and enters flow-record configurati
	Example:	mode.
	Device(config)# flow record SWCRec	
Step 4	description description	(Optional) Creates a description for the flow record.
	Example:	
	Device(config-flow-record)# description swc flow	,
Step 5	match ipv4 source address	Configures the IPv4 source address as a key field for the
	Example:	record.

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	Command or Action	Purpose
	<pre>Device(config-flow-record)# match ipv4 source address</pre>	
Step 6	<pre>match ipv4 destination address Example: Device(config-flow-record)# match ipv4 destination address</pre>	Configures the IPv4 destination address as a key field for the record.
Step 7	match transport source-port Example:	Configures the source port as a key field for the record.
	<pre>Device(config-flow-record)# match transport source-port</pre>	
Step 8	<pre>match transport destination-port Example: Device(config-flow-record)# match transport destination-port</pre>	Configures the destination port as a key field for the record.
Step 9	<pre>match ipv4 protocol Example: Device(config-flow-record)# match ipv4 protocol</pre>	Configures the IPv4 protocol as a key field for the record.
Step 10	<pre>collect counter bytes long Example: Device(config-flow-record)# collect counter bytes long</pre>	Configures the number of bytes seen in a flow as a nonkey field and enables collecting the total number of bytes from the flow.
Step 11	<pre>collect counter packets long Example: Device(config-flow-record)# collect counter packets long</pre>	Configures the number of packets seen in a flow as a nonkey field and enables collecting the total number of packets from the flow.
Step 12	<pre>collect timestamp absolute first Example: Device(config-flow-record)# collect timestamp absolute first</pre>	Configures the timestamp seen in a flow as a nonkey field and enables the collection of the absolute time the first packet was seen, from the flow.
Step 13	<pre>collect timestamp absolute last Example: Device(config-flow-record)# collect timestamp absolute last</pre>	Configures the timestamp seen in a flow as a nonkey field and enables the collection of the absolute time the most recent packet was seen, from the flow.
Step 14	end Example: Device(config-flow-record)# end	Returns to privileged EXEC mode.

### **Creating a Flow Exporter**

To create a flow exporter, peform this procedure.



Only one active flow exporter can be configured for Stealthwatch Cloud.

#### **SUMMARY STEPS**

- 1. enable
- **2**. configure terminal
- **3.** flow exporter name
- **4. destination** {*hostname*}
- 5. end

#### **DETAILED STEPS**

	Command or Action	Purpose
Step 1	enable	Enables privileged EXEC mode.
	Example:	Enter your password, if prompted.
	Device> enable	
Step 2	configure terminal	Enters global configuration mode.
	Example:	
	Device# configure terminal	
Step 3	flow exporter name	Creates a flow exporter and enters flow-exporter
	Example:	configuration mode.
	Device(config)# flow exporter SWCExp	
Step 4	destination {hostname}	Sets the IPv4 destination address or hostname for this
	Example:	exporter.
	Device(config-flow-exporter)# <b>destination stealthwatch-cloud</b>	
Step 5	end	Returns to privileged EXEC mode.
	Example:	
	<pre>Device(config-flow-record)# end</pre>	

### **Configuring a Flow Monitor**

To configure a flow monitor, perform this procedure.

#### **SUMMARY STEPS**

1. enable

- **2**. configure terminal
- **3.** flow monitor flow-monitor-name
- 4. cache timeout active seconds
- **5. exporter** *flow-exporter-name*
- 6. record *flow-exporter-name*
- 7. end

#### **DETAILED STEPS**

	Command or Action	Purpose
Step 1	enable	Enables privileged EXEC mode.
	Example:	Enter your password, if prompted.
	Device> enable	
Step 2	configure terminal	Enters global configuration mode.
	Example:	
	Device# configure terminal	
Step 3	flow monitor flow-monitor-name	Defines the flow monitor.
	Example:	
	Device(config)# flow monitor SWCMon	
Step 4	cache timeout active seconds	Specifies the active flow timeout in seconds.
	Example:	
	Device(config-flow-monitor)# cache timeout active 60	
Step 5	exporter flow-exporter-name	Exports the flow information to the exporter.
	Example:	
	Device(config-flow-monitor)# exporter SWCExp	
Step 6	record flow-exporter-name	Specifies the flow record with a basic IPv4 template.
	Example:	
	Device(config-flow-monitor)# record SWCRec	
Step 7	end	Returns to privileged EXEC mode.
	Example:	
	Device(config-flow-monitor)# end	

### Applying a Flow to an Interface

To apply a flow to an interface, perform this procedure.

#### **SUMMARY STEPS**

1. enable

- 2. configure terminal
- **3.** interface type number
- 4. ip flow monitor monitor-name input
- 5. ip flow monitor monitor-name output
- 6. end

#### **DETAILED STEPS**

	Command or Action	Purpose
Step 1	enable	Enables privileged EXEC mode.
	Example:	Enter your password, if prompted.
	Device> <b>enable</b>	
Step 2	configure terminal	Enters global configuration mode.
	Example:	
	Device# configure terminal	
Step 3	interface type number	Specifies an interface and enters interface configuration
	Example:	mode.
	Device(config)# interface gigabitethernet 1/0/1	
Step 4	ip flow monitor monitor-name input	Associates an IPv4 flow monitor to the interface for input
	Example:	packets.
	<pre>Device(config-if)# ip flow monitor SWCMon input</pre>	
Step 5	ip flow monitor monitor-name output	Associates an IPv4 flow monitor to the interface for output
	Example:	packets.
	Device(config-if) # ip flow monitor SWCMon output	
Step 6	end	Exits interface configuration mode and returns to privileged
	Example:	EXEC mode.
	Device(config-if)# end	

# **Verifying Network Detection and Response Configuration**

Use the following commands in privileged EXEC mode to verify Network Detection and Response configuration.

Table 1: Commands to Verify Network Detection and Response Configuration

Command	Purpose
	Displays the Stealthwatch Cloud registration status and its configured values.

Command	Purpose
show platform software fed switch switch-number swc statistics	Displays the statistical information of the Stealthwatch Cloud integration.
clear platform software fed switch switch-number swc statistics	Clears the statistical information of the Stealthwatch Cloud integration.
show platform software fed switch switch-number swc connection	Displays the connection details and events of the Stealthwatch Cloud integration.
clear platform software fed switch switch-number swc connection	Clears the connection details and events of the Stealthwatch Cloud integration.

## **Configuration Examples for Network Detection and Response**

The following sections provide configuration examples for Network Detection and Response.

### **Example: Configuring and Integrating Stealthwatch Cloud on a Device**

The following example shows how to configure and integrate Stealthwatch Cloud on a device:

```
Device> enable
Device# configure terminal
Device(config) # stealthwatch-cloud-monitor
Device(stealthwatch-cloud-monitor)# sensor-name mysensor
Device (stealthwatch-cloud-monitor) # url https://sensors.eu-2.obsrvbl.com
Device (stealthwatch-cloud-monitor) # exit
Device(config) # flow record SWCRec
Device (config-flow-record) # description for stealthwatch cloud
Device(config-flow-record) # match ipv4 source address
Device (config-flow-record) # match ipv4 destination address
Device(config-flow-record) # match ipv4 protocol
Device(config-flow-record) # match transport source-port
Device (config-flow-record) # match transport destination-port
Device (config-flow-record) # match flow cts source group-tag
Device(config-flow-record) # match flow cts destination group-tag
Device (config-flow-record) # collect counter byte long
Device (config-flow-record) # collect counter packet long
Device(config-flow-record)# collect timestamp absolute first
Device(config-flow-record)# collect timestamp absolute last
Device(config-flow-record) # exit
Device (config) # flow exporter SWCExp
Device (config-flow-exporter) # destination stealthwatch-cloud
Device(config- flow-exporter)# exit
Device (config) # flow monitor SWCMon
Device (config-flow-monitor) # cache timeout active 60
Device (config-flow-monitor) # exporter SWCExp
Device(config-flow-monitor) # record SWCRec
Device(config-flow-monitor)# exit
Device(config)# interface gigabitethernet 1/0/1
Device (config-if) # ip flow monitor SWCMon input
```

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Device(config-if)# ip flow monitor SWCMon output
Device(config-if)# end

### **Example: Verifying Stealthwatch Cloud Configuration**

The following example shows a sample output of the show stealthwatch-cloud detail command:

Device> enable			
Device# show stealthwatch-cloud detail			
Stealthwatch Cloud Parameters			
Service Key : XXXXXXXXXXXXXXXXXXXXXXXXXXX			
Sensor Name : C9200			
URL : https://sensor.eu-prod.obsrvbl.com			
Stealthwatch Cloud Sensor Info			
Sensor Status : Registered			
Last heartbeat : 2020-08-21T10:35:16			

The following is a sample output of the **show platform fed switch active swc statistics** command:

```
Device> enable
Device# show platform software fed switch active swc statistics
_____
SWC Upload Statistics:
_____
1: Last file uploaded : 202102100928 1
2: Time of upload : 02/10/21 09:29:41 UTC
 3: Current file uploading :
4: Files queued for upload :
5: Number of files queued : 0
6: Last failed upload :
7: Files failed to upload : 0
8: Files successfully uploaded : 1
_____
SWC File Creation Statistics:
_____
9: Last file created : 202102100929 1
10: Time of creation : 02/10/21 09:29:08 UTC
_____
SWC Flow Statistics:
_____
11: Number of flows in prev file: 15
12: Number of flows in curr file: 11
13: Invalid dropped flows :
                       0
14: Error dropped flows : 0
_____
SWC Flags:
-------
15: Is Registered : Registered
16: Delete debug
              : Disabled
```

Device> enable

```
17: Exporter delete debug : Disabled
18: Certificate Validation : Enabled
```

The following is a sample output of the **show platform software fed switch active swc connection** command:

```
Device# show platform software fed switch active swc connection
Stealthwatch-Cloud details
 Registration
         : 0xc000001
   #ID
   URL
             : https://sensor.ext.obsrvbl.com
   Sensor Name : C9200
   Registered : N/A
 Connection
   Status
                     : DOWN
<-- Status will be in UP state only when the flow uploads into the Stealthwatch Cloud.
   Last status update : 02/09/2021 10:10:47
   # Heartbeats
   # Lost heartbeats : 0
Total RX bytes : 7360
Total TX bytes : 869
   Upload Speed (B/s) : 127
   Download Speed (B/s) : 58
   # Open sessions : 0
   # Redirections
                     : 0
   # Timeouts
                     : 0
 HTTP Events
  GET response
GET request
                             : 4
   GET request
                             : 4
   GET Status Code 2XX
                             : 4
   PUT response
PUT request
                             : 12
                             : 12
   PUT Status Code 2XX
                            : 2
   POST response
                             : 2
   POST request
                             : 2
                             : 2
   POST Status Code 2XX
 API Events
   ТΧ
                             : 4
   OK
                             : 2
   Error
                              : 2
 Event History
Timestamp
                    #Times Event
                                            RC Context
             _____
_____
02/10/2021 09:29:41.126 2
                           SEND OK
                                             0 ID:0003
02/10/2021 09:29:39.795 2 SIGNAL DATA
                                             0 ID:0003
02/10/2021 09:29:38.279 12 PUT DATA
                                            0 ID:0003
02/10/2021 09:29:37.962 4
                          GET URL
                                             0 ID:0003
                            SEND START
02/10/2021 09:29:37.961 4
                                            0 ID:0003
02/10/2021 09:27:41.484 2
                            SEND ERR
                                             0 ID:0001
```

02/10/2021 09:27:41.484 2	MAX_ATTEMPTS	0 ID:0001
02/10/2021 09:22:53.670 4	REGISTER_OK	0 Not applicable
02/10/2021 09:22:53.670 4	SEND_ABORT_ALL	0 config change
02/10/2021 09:22:53.670 1	OPTIONS_CONFIG	0 File Extension: .csv.gz (reset)
02/10/2021 09:22:53.669 1	OPTIONS_CONFIG	0 Data Type: ios-xe-catalyst
02/10/2021 09:22:53.669 1 (res	OPTIONS_CONFIG	0 URL: https://sensor.ext.obsrvbl.com
02/10/2021 09:22:53.668 1	OPTIONS_CONFIG	0 Sensor Name: niinamdaUS (reset)
02/10/2021 09:22:53.553 1 b5tQtXJM8AGZSp6oB8PvK4H0FiW	OPTIONS_CONFIG	O Service Key:

# **Feature History for Network Detection and Response**

This table provides release and related information for the features explained in this module.

These features are available in all the releases subsequent to the one they were introduced in, unless noted otherwise.

Release	Feature	Feature Information
Cisco IOS XE Bengaluru 17.5.1	Network Detection and Response	Cisco Secure Network Analytics (also known as Stealthwatch Cloud) is a Network Detection and Response solution that provides advanced threat detection, accelerated threat response, and simplified network segmentation

Use the Cisco Feature Navigator to find information about platform and software image support. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn.