



Cisco Umbrella WLAN

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Information About Cisco Umbrella WLAN

The Cisco Umbrella WLAN provides a cloud-delivered network security service at the Domain Name System (DNS) level, with automatic detection of both known and emergent threats.

This feature allows you to block sites that host malware, bot networks, and phishing before they actually become malicious.

Cisco Umbrella WLAN provides the following:

- Policy configuration per user group at a single point.
- Policy configuration per network, group, user, device, or IP address.

The following is the policy priority order:

1. Local policy
2. AP group
3. WLAN

- Visual security activity dashboard in real time with aggregated reports.
- Schedule and send reports through email.
- Support up to 60 content categories, with a provision to add custom allowed list and blocked list entries.

This feature does not work in the following scenarios:

- If an application or host use an IP address directly, instead of using DNS to query domain names.
- If a client is connected to a web proxy and does not send a DNS query to resolve the server address.

Registering Embedded Wireless Controller to Cisco Umbrella Account

Before you Begin

- You should have an account with Cisco Umbrella.
- You should have an API token from Cisco Umbrella.

The embedded wireless controller is registered to Cisco Umbrella server using the Umbrella parameter map. Each of the Umbrella parameter map must have an API token. The Cisco Umbrella responds with the device ID for the embedded wireless controller. The device ID has a 1:1 mapping with the Umbrella parameter map name.

Fetching API token for Embedded Wireless Controller from Cisco Umbrella Dashboard

From Cisco Umbrella dashboard, verify that your embedded wireless controller shows up under Device Name, along with their identities.

Applying the API Token on Embedded Wireless Controller

Registers the Cisco Umbrella API token on the network.

DNS Query and Response

Once the device is registered and Umbrella parameter map is configured on WLAN, the DNS queries from clients joining the WLAN are redirected to the Umbrella DNS resolver.



Note This is applicable for all domains not configured in the local domain RegEx parameter map.

The queries and responses are encrypted based on the DNSCrypt option in the Umbrella parameter map.

For more information on the Cisco Umbrella configurations, see the [Integration for ISR 4K and ISR 1100 – Security Configuration Guide](#).

Limitations and Considerations

The limitations and considerations for this feature are as follows:

- You will be able to apply the wireless Cisco Umbrella profiles to wireless entities, such as, WLAN or AP groups, if the device registration is successful.
- In case of L3 mobility, the Cisco Umbrella must be applied on the anchor embedded wireless controller always.
- When two DNS servers are configured under DHCP, two Cisco Umbrella server IPs are sent to the client from DHCP option 6. If only one DNS server is present under DHCP, only one Cisco Umbrella server IP is sent as part of DHCP option 6.

Configuring Cisco Umbrella WLAN

To configure Cisco Umbrella on the embedded wireless controller, perform the following:

- You must have the API token from the Cisco Umbrella dashboard.
- You must have the root certificate to establish HTTPS connection with the Cisco Umbrella registration server: api.opendns.com. You must import the root certificate from **digicert.com** to the embedded wireless controller using the **crypto pki trustpool import terminal** command.

Importing CA Certificate to the Trust Pool

Before you begin

The following section covers details about how to fetch the root certificate and establish HTTPS connection with the Cisco Umbrella registration server:

Procedure

	Command or Action	Purpose
Step 1	configure terminal Example: Device# <code>configure terminal</code>	Enters global configuration mode.
Step 2	Perform either of the following tasks: <ul style="list-style-type: none"> • crypto pki trustpool import url url Device(config)# <code>crypto pki trustpool import url http://www.cisco.com/security/pki/trs/ios.p7b</code> Imports the root certificate directly from the Cisco website. Note The Trustpool bundle contains the root certificate of <i>digicert.com</i> together with other CA certificates. • crypto pki trustpool import terminal Device(config)# <code>crypto pki trustpool import terminal</code> Imports the root certificate by executing the import terminal command. • Enter PEM-formatted CA certificate from the following location: See the Related Information section to download the CA certificate. 	

	Command or Action	Purpose
	<pre>-----BEGIN CERTIFICATE----- MIHjCgAqAwEgCjUjMkE9K1wA3NBjchc9MBA3BHM5CQDQ EwUEEMGALKHMKGraNcrQ5bYR6EMQJES8RzGraNcrQ1Z9MA HjDQDEd6vq2VcH69Vvgj9dE0P6QMD9jOMAMH50MD9Mj M8.NDAm3CAIBjNBAVAMR6EADQ6E6v6Q2VcH6MKAIBjNEMIEp Z2DX0IHRUyBjDg10BjZ2Dw9Q0EMIEFjNbjchc9MBA3BHM5 CjCQAAUzI6wNBNs0BZUIMN1j6R65uHEU1Bj5D3HE0TajcbjL E8Hj2wIH1QIH6A7B5157HjL655VQE9Kw6atp/r0rTCR60R0 Vf0u9qj1M65QUNwRALE/3pLhJmWkGr6Bz6G6hDhZ2LY8V muf9bj65j1hBR3QUNQJ6B55jK04HyR3Uq83Nec0G6W6Qj40 K67S9H608VZ2heocicq7QPUTT4KzQDARe4BjCAoHQDROBE EldcuppSteepQj65W0MBAL6QMBZARLDW0j7ZCj4sb65EPM4G AldEB/cQwBj6BjNBEFjAeg6Bj6ZQIKW6HjA6EjDFOUqH/B6y RjEwEABE6gRj6BjQ6yA7K6HjHAGG0HPj9j2W6RZ2jZ0 ImN5E6gRj6Bj6A0H606L2N2y6HMZGraNcrQ1Z9RZ2DX03v Y6Bj9d6H6jDEBjNBE6Bj6Ej6j6dR608j3Bj5d6j2y6j20v RGrANcrH66jW629Q6Bj3Bj6j6j6j6dR608j3Bj5d6j2y6j20v RGrANcrH66jW629Q6Bj3Bj6A6j6j6Q66E6Z6M6E6A6Z6M6B6E6 B6E6K6j6Bj6j6Q6KZ6v6Q6E6H6j6B6E6t3R659j6j6H6K6E6 35H6E7U6A6P6E6S60r6j6R63G6j6B56d6B6E6j6E6B6H6A6G6W6E6 U6K6P6V6R6j6B6Z630H6M6K6C6B6C6M6A6W6L6C6j7/6H6K62656E6 56g6666K6H66j6j6O6A6H6C6j6M6A6N6K6P6M6E6M6C6W6j6Z6j7696K6426 Y6H666w6A6p63696x6Z6H6j6Q6j6Z6K66E6Z6U6A6B6E6W6C6E6B6E6S6I6E6 SaZMkE4f97Q= -----END CERTIFICATE-----</pre> <p>Imports the root certificate by pasting the CA certificate from the digicert.com.</p>	
Step 3	<p>quit</p> <p>Example:</p> <pre>Device (config) # quit</pre>	<p>Imports the root certificate by entering the quit command.</p> <p>Note You will receive a message after the certificate has been imported.</p>

Creating a Local Domain RegEx Parameter Map

Procedure

	Command or Action	Purpose
Step 1	<p>configure terminal</p> <p>Example:</p> <pre>Device# configure terminal</pre>	Enters global configuration mode.
Step 2	<p>parameter-map type regex <i>parameter-map-name</i></p> <p>Example:</p> <pre>Device (config) # parameter-map type regex dns_wl</pre>	Creates a regex parameter map.
Step 3	<p>pattern <i>regex-pattern</i></p>	Configures the regex pattern to match.

	Command or Action	Purpose
	Example: <pre>Device(config-profile)# pattern www.google.com</pre>	Note The following patterns are supported: <ul style="list-style-type: none"> • Begins with .*. For example: . *facebook . com • Begins with .* and ends with *. For example: . *google* • Ends with *. For example: www . facebook* • No special character. For example: www . facebook . com
Step 4	end Example: <pre>Device(config-profile)# end</pre>	Returns to privileged EXEC mode.

Configuring Parameter Map Name in WLAN (GUI)

Procedure

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- Step 1** Choose **Configuration > Tags & Profiles > Policy**.
- Step 2** Click on the Policy Profile Name. The **Edit Policy Profile** window is displayed.
- Step 3** Choose the **Advanced** tab.
- Step 4** In the **Umbrella** settings, from the **Umbrella Parameter Map** drop-down list, choose the parameter map.
- Step 5** Enable or disable **Flex DHCP Option for DNS** and **DNS Traffic Redirect** toggle buttons.
- Step 6** Click **Update & Apply to Device**.
-

Configuring the Umbrella Parameter Map

Procedure

	Command or Action	Purpose
Step 1	configure terminal Example: <pre>Device# configure terminal</pre>	Enters global configuration mode.

	Command or Action	Purpose
Step 2	parameter-map type umbrella global Example: Device(config)# parameter-map type umbrella global	Creates an umbrella global parameter map.
Step 3	token token-value Example: Device(config-profile)# token 5XX	Configures an umbrella token.
Step 4	local-domain regex-parameter-map-name Example: Device(config-profile)# local-domain dns_w1	Configures local domain RegEx parameter map.
Step 5	resolver {IPv4 X.X.X.X IPv6 X:X:X:X::X} Example: Device(config-profile)# resolver IPv6 10:1:1:1::10	Configures the Anycast address. The default address is applied when there is no specific address configured.
Step 6	end Example: Device(config-profile)# end	Returns to privileged EXEC mode.

Enabling or Disabling DNScrypt (GUI)

Procedure

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- Step 1** Choose **Configuration > Security > Threat Defence > Umbrella**.
 - Step 2** Enter the **Registration Token** received from Umbrella. Alternatively, you can click on **Click here to get your Token** to get the token from Umbrella.
 - Step 3** Enter the **Whitelist Domains** that you want to exclude from filtering.
 - Step 4** Check or uncheck the **Enable DNS Packets Encryption** check box to encrypt or decrypt the DNS packets.
 - Step 5** Click **Apply**.
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Enabling or Disabling DNScrypt

Procedure

	Command or Action	Purpose
Step 1	configure terminal Example:	Enters global configuration mode.

	Command or Action	Purpose
	Device# <code>configure terminal</code>	
Step 2	parameter-map type umbrella global Example: Device(config)# <code>parameter-map type umbrella global</code>	Creates an umbrella global parameter map.
Step 3	[no] dnscrypt Example: Device(config-profile)# <code>no dnscrypt</code>	Enables or disables DNSCrypt. By default, the DNSCrypt option is enabled. Note Cisco Umbrella DNSCrypt is not supported when DNS-encrypted responses are sent in the data-DTLS encrypted tunnel (either mobility tunnel or AP CAPWAP tunnel).
Step 4	end Example: Device(config-profile)# <code>end</code>	Returns to privileged EXEC mode.

Configuring Timeout for UDP Sessions

Procedure

	Command or Action	Purpose
Step 1	configure terminal Example: Device# <code>configure terminal</code>	Enters global configuration mode.
Step 2	parameter-map type umbrella global Example: Device(config)# <code>parameter-map type umbrella global</code>	Creates an umbrella global parameter map.
Step 3	udp-timeout <i>timeout_value</i> Example: Device(config-profile)# <code>udp-timeout 2</code>	Configures timeout value for UDP sessions. The <i>timeout_value</i> ranges from 1 to 30 seconds. Note The public-key and resolver parameter-map options are automatically populated with the default values. So, you need not change them.
Step 4	end Example:	Returns to privileged EXEC mode.

	Command or Action	Purpose
	Device (config-profile) # end	

Configuring Parameter Map Name in WLAN (GUI)

Procedure

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- Step 1** Choose **Configuration > Tags & Profiles > Policy**.
 - Step 2** Click on the Policy Profile Name. The **Edit Policy Profile** window is displayed.
 - Step 3** Choose the **Advanced** tab.
 - Step 4** In the **Umbrella** settings, from the **Umbrella Parameter Map** drop-down list, choose the parameter map.
 - Step 5** Enable or disable **Flex DHCP Option for DNS** and **DNS Traffic Redirect** toggle buttons.
 - Step 6** Click **Update & Apply to Device**.
-

Configuring Parameter Map Name in WLAN

Procedure

	Command or Action	Purpose
Step 1	configure terminal Example: Device# <code>configure terminal</code>	Enters global configuration mode.
Step 2	wireless profile policy <i>profile-name</i> Example: Device (config)# <code>wireless profile policy default-policy-profile</code>	Creates policy profile for the WLAN. The <i>profile-name</i> is the profile name of the policy profile.
Step 3	umbrella-param-map <i>umbrella-name</i> Example: Device (config-wireless-policy)# <code>umbrella-param-map global</code>	Configures the Umbrella OpenDNS feature for the WLAN.
Step 4	end Example: Device (config-wireless-policy)# <code>end</code>	Returns to privileged EXEC mode. Alternatively, you can also press Ctrl-Z to exit global configuration mode.

Verifying the Cisco Umbrella Configuration

To view the Umbrella configuration details, use the following command:


```

Device# show umbrella config
Umbrella Configuration
=====
Token: 5XXXXXXXXABXXXXXXFXXXXXXXXXXXDXXXXXXXXXXXABXX
API-KEY: NONE
OrganizationID: xxxxxxxx
Local Domain Regex parameter-map name: dns_bypass
DNSEncrypt: Not enabled
Public-key: NONE
UDP Timeout: 5 seconds
Resolver address:
1. 10.1.1.1
2. 5.5.5.5
3. XXXX:120:50::50
4. XXXX:120:30::30

```

To view the Umbrella DNSEncrypt details, use the following command:

```

Device# show umbrella dnscrypt
DNSEncrypt: Enabled
    Public-key: B111:XXXX:XXXX:XXXX:3E2B:XXXX:XXXX:XXxE:XXX3:3XXX:DXXX:XXXX:BXXX:XXXB:XXXX:FXXX

    Certificate Update Status: In Progress

```

To view the Umbrella global parameter map details, use the following command:

```

Device# show parameter-map type umbrella global

```

To view the regex parameter map details, use the following command:

```

Device# show parameter-map type regex <parameter-map-name>

```

To view the Umbrella details on the AP, use the following command:

```

AP#show client.opendns summary
Server-IP role
208.67.220.220 Primary
208.67.222.222 Secondary

Server-IP role
2620:119:53::53 Primary
2620:119:35::35 Secondary

Wlan Id DHCP OpenDNS Override Force Mode
0 true false
1 false false
...

15 false false
Profile-name Profile-id
vj-1 010a29b176b34108
global 010a57bf502c85d4
vj-2 010ae385ce6c1256
AP0010.10A7.1000#

Client to profile command

AP#show client.opendns address 50:3e:aa:ce:50:17
Client-mac Profile-name
50:3E:AA:CE:50:17 vj-1
AP0010.10A7.1000#

```

