Encrypted Mobility Tunnel

Information about Encrypted Mobility Tunnel

A secure link in which data is encrypted using CAPWAP DTLS protocol can be established between two controllers. This secured link is called Encrypted Mobility Tunnel.

If encrypted mobility tunnel is in enabled state, the data traffic is encrypted and the controller uses UDP port 16667, instead of EoIP, to send the data traffic.

In Release 8.5.164.0, when encryption is enabled on a controller, by default both control and data traffic is encrypted. However, based on your network requirements you can disable or enable data traffic encryption on the controller.

To ensure that controllers with expired MIC certificates are able to join the encrypted mobility tunnel enabled network, an existing CLI is used to disable the MIC certificate date validation.

Note This command disables the date validation check during Cisco AP join and encrypted mobility tunnel creation. When the **config ap cert-expiry-ignore** CLI is enabled, the lifetime check is disabled.

Restrictions for Encrypted Mobility Tunnel

- This feature is supported on Cisco 3504, 5520, and 8540 controllers only.

Note The Cisco 5508 and 8510 Wireless Controllers do not support tunnel encryption protocols. They support IRCM with unencrypted mobility tunnels only.

- Native IPv6 is not supported.
- Mobility Multicast for an encrypted tunnel is not supported.
- The Encrypted Mobility Tunnel feature should be enabled on all the mobility peers in the network to have the tunnel created. The default state is set to disabled.

- If the packets passing through the controller after L3 roaming are greater than the MTU size of the controller in secure mobility, along with secure mobility, data encryption functionality must be enabled for the fragmented packets to be forwarded through a secure mobility tunnel.
- In AireOS controller, L3 override is not supported in guest VLAN. Hence, the client does not trigger DHCP Discovery on the new VLAN automatically.
- Only MIC certificate is supported to create the tunnel.
- When using Cisco 3504 controller as an anchor, we recommend reducing the client load by 30% of the controller's maximum load capability.

Guidelines and Restrictions for Release 8.5.164.0 IRCM Deployment

- This Inter-Release Controller Mobility (IRCM) release software is supported on Cisco 3504, 5508, 5520, 8510, and 8540 controllers only.

Note The Cisco 5508 and 8510 Wireless Controllers do not support tunnel encryption protocols. They support IRCM with unencrypted mobility tunnels only.

- Deploy this release only in a mixed platform environment in which the AireOS controller needs to interact with the Cisco Catalyst 9800 Wireless controller.
- If your network uses the new moblity architecture, before upgrading to Release 8.5.164.0, revert to old architecture as this release does not support New Mobility architecture.
- Native IPv6 is not supported.
- Mobility Multicast infrastructure for an encrypted tunnel is not supported.
- In AireOS controller, L3 override is not supported in guest VLAN. Hence, the client does not trigger DHCP Discovery on the new VLAN automatically.

Note In Cisco 9800 controllers, the Master mode is set to enabled state by default and it is not possible to change this configuration. Therefore, the discovery response of the controllers will always be with Master mode in enabled state even though the Master mode configuration is not exposed to be sent in the discovery response.

Configuring Global Encrypted Mobility Tunnel (GUI)

Procedure

Step 1 Choose **Controller** > **Mobility Management** > **Mobility Configuration** to open the **Global Configuration** page.

Step 2 Check the **Mobility Encryption** check box to enable mobility encryption on the network.

Step 3 Save the configuration.

Cisco WLC reboots to reflect the change in mobility encryption state.

Configuring Global Encrypted Mobility Tunnel (CLI)

Procedure

Step 1 [Optional] Disable the MIC certificate validation check by entering this command:

config ap cert-expiry-ignore mic {**enable | disable** }

Note You must use this command only when there are mobility peers with expired MIC certificates in the network.

Step 2 Configure encrypted mobility tunnel by entering this command:

config mobility encryption {enable | disable}

Note The WLC reboots after the feature is enabled or disabled.

Step 3 View the status of the encrypted mobility tunnel by entering this command:

lines

show mobility summary

Note DTLS Mode status is not displayed in the output when encrypted mobility tunnel feature is disabled.

Information similar to the following is displayed:

```
(Cisco Controller) >show mobility summary

Mobility Protocol Port..... 16666
Default Mobility Domain..... TestSpartan8500Dev1Group
Multicast Mode ..... Disabled
DTLS Mode ..... Enabled
Mobility Domain ID for 802.11r..... 0x209c
Mobility Keepalive Interval..... 10
Mobility Keepalive Count..... 3
Mobility Group Members Configured..... 1
Mobility Control Message DSCP Value..... 0

Controllers configured in the Mobility Group
 MAC Address        IP Address    Group Name               Multicast IP
    Status
 f4:cf:e2:0a:ea:00  8.1.4.2      Test8500Dev1Group        0.0.0.0
       Up
```

Inter-Release Controller Mobility

Perform the following procedure to configure the Inter-Release Controller Mobility (IRCM) feature on the controller running the Cisco 8.5.164.0 release.

Configuring Mobility Groups for Inter-Release Controller Mobility (IRCM) (GUI)

Procedure

Step 1 Choose **Controller** > **Mobility Management** > **Mobility Groups** to open the **Static Mobility Group Members** page.

Note If you want to delete any of the remote controllers from the mobility group, hover your cursor over the blue drop-down arrow for the desired controller and choose **Remove**.

Step 2 Click **New** to open the **Mobility Group Member** > **New** page.

Step 3 Add a controller to the mobility group as follows:

a. In the **Member IP Address** text box, enter the management interface IPv4 address of the controller to be added.

Note IPv6 address is not supported.

b. In the **Member MAC Address** text box, enter the MAC address of the controller to be added.

c. In the **Group Name** text box, enter the name of the mobility group.

Note The mobility group name is case sensitive.

d. From the **Secure Mobility** drop-down list, choose **Enabled**.

e. From the **Data Tunnel Encryption** drop-down list, choose **Enabled**.

f. From the **High Cipher** drop-down list, choose **Enabled**.

You must enable **High Cipher** only if you require DTLS v1.2 encryption. The default value is **Disabled**. In disabled state, DTLS v1.0 encryption is enabled.

g. In the **Hash** text box, enter the virtual controller's hash key of the peer mobility controller.

You must configure the hash only if the peer mobility controller is a virtual controller.

h. Click **Apply** to commit your changes. The new controller is added to the list of mobility group members on the **Static Mobility Group Members** page.

Configuring Mobility Groups for Inter-Release Controller Mobility (IRCM) (CLI)

Procedure

Step 1 Add a peer controller in the mobility group by entering this command:

config mobility group member add *peer-mac-addr peer-ip-addr group-name* **encrypt** {**enable** | **disable**}

Step 2 (Optional) Configure the peer controller data traffic encryption by entering this command:

config mobility group member data-dtls *peer-mac-addr* {**enable** | **disable**}

Default value is Enabled.

Step 3 (Optional) Configure high cipher encryption to enable DTLS 1.2 protocol by entering this command:

config mobility group member add *member-switch-mac-addr member-switch-ip-addr grp-name* **encrypt enable high-cipher-option enable**

Default value is Disabled.

Step 4 Configure the SSC hash of the Cisco Catalyst 9800 Series Wireless Controllers by entering this command:

config mobility group member hash *peer-ip-addr 40-digit-ssc-hash-key*

Note SSC hash is needed on for peers that do not use a MIC certificate. For example: Cisco Catalyst 9800-CL Wireless Controllers.

Step 5 View the peer to peer mobility encryption status by entering this command:

show mobility summary encryption

Step 6 To see the hash key of mobility group members in the same domain, enter this command:

show mobility group member hash

Step 7 View mobility DTLS connection status by entering this command:

show mobility dtls connections

Step 8 View mobility statistics by entering this command:

show mobility statistics