IoT Services Management

Information About IoT Services Management

Cisco Catalyst 9800 devices running the Cisco IOS-XE image Version 17.3.2 support Cisco Spaces: IoT Services along with the Network Assurance on Cisco Catalyst Center. However, IoT Services and the Intelligent Capture (iCAP) port configuration are mutually exclusive. That is, if the iCAP feature needs to be enabled on a device, then IoT Services cannot be deployed. Similarly, if IoT Services needs to be enabled on a device, then iCAP feature cannot be deployed.

The following are the gRPC connections from AP:

- One gRPC connection from AP to Cisco Catalyst Center for iCAP.

- Other gRPC connection from AP to Cisco Catalyst Center Connector for IoT Services.

Following is a table that shows the pairs of configurations that can or cannot coexist on IOS-XE image version 17.3.2.

Cisco DNA-C Configuration	Cisco Spaces Configuration	Coexistence on IOS-XE Image Version 17.3.2
network-assurance enable	**ap cisco-dna token** *token*	yes
network-assurance icap server port *port*	**ap cisco-dna token** *token*	no

Cisco Spaces: IoT Services is an end-to-end solution. Hence, you do not need to manually enable IoT services or Dot15 radio on the controller. Dot15 radio is enabled or disabled automatically through Cisco Spaces. However, you can verify if Dot15 radio is enabled from the controller.

Similarly, Cisco Spaces enables gRPC in the **default ap profile configuration** of the controller. You do not need to manually enable it. However, you can verify the same on the controller.

Cisco Spaces enables the **apphost** configuration, which is required for the **default ap profile** configuration. If **apphost** is not enabled by Cisco Spaces, then you must manually enable it. This is required in order to host IOx applications on an AP.

Enabling the Dot15 Radio

When you enable the BLE radio configuration globally, the APs that are joined to the controller enable their BLE radio, if they have the BLE radio chip in their hardware. This configuration will be applied to all the APs that will join the controller after the configuration is enabled.

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 2	**no ap dot15 shutdown** **Example:** `Device(config)# no ap dot15 shutdown`	Enables the dot15 radios for APs, globally.
Step 3	**ap dot15 shutdown** **Example:** `Device(config)# ap dot15 shutdown`	Disables the dot15 radio for all APs, globally.

Configuring the gRPC Token

Note

- The configuration is pushed automatically from Cisco Spaces. There is no need to manually enable gRPC on the **default ap profile** configuration. You can verify the same on the controller

- The NETCONF (NETCONF/YANG configuration) must be enabled on the device for the Cisco Spaces to push the required configuration to the controller. Secure Copy (**ip scp server enable**) must be enabled on the controller so that Cisco Spaces can push the gRPC certificate to the controller.

- The iCAP server port configuration should not be present in the configuration. If it exists, then run the iCAP server port 0 command.

Procedure

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

	Command or Action	Purpose
	Device# configure terminal	
Step 2	**ap cisco-dna token** {**0** | **8**} *cisco-token-number* **Example:** Device(config)# ap cisco-dna token 0 *cisco-token-number*	Configures the Cisco Spaces gRPC token. **0**: Specifies the string as an UNENCRYPTED password. **8**: Indicates the placeholder for backward compatibility.

Enabling gRPC in an AP Profile

The Manage Streams feature of Cisco Spaces pushes the gRPC configuration only to the default AP profile, currently. If you are using a different AP profile, you must manually configure gRPC.

The following procedure explains how to manually enable gRPC on an AP profile that is not the default-ap-profile. Cisco Spaces may not push gRPC on all the AP profiles. Therefore, the following commands can be used to enable gRPC for individual AP profiles.

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** Device# configure terminal	Enters global configuration mode.
Step 2	**ap profile** *ap-profile-name* **Example:** Device(config)# ap profile *ap-profile-name*	Configures the AP profile and enters the AP profile configuration mode.
Step 3	**cisco-dna grpc** **Example:** Device(config-ap-profile)# cisco-dna grpc	Enables the gRPC channel on the APs, in the AP profile.

Verifying BLE State and Mode

To verify the BLE state and mode, run the following command:

```
Device# show ap ble summary
AP Name         BLE AP State       BLE mode
--------------------------------------------------------------------
Axel-1          Up                 Advanced (IOx)
Axel-2          Up                 Advanced (IOx)
9117-1          Up                 Advanced (IOx)
3800-1          Up                 Base (Native)
1815            Up                 Base (Native)
9120-3          Up                 Advanced (IOx)
```

```
9120-1          Up              Base (Native)
9115-ax         Up              Base (Native)
9120-2          Up              Base (Native)
```

Verifying BLE Details

To verify BLE details, run the following command:

```
Device# show ap name APXXXX.BDXX.29XX ble detail
Mode report time        : 07/28/2020 09:40:57
Mode                    : Base (Native)
Radio mode              : BLE
Admin state report time : 07/28/2020 09:40:57
Admin state             : Up
Interface report time   : 07/28/2020 09:40:57
Interface               : MSM1
Interface state         : Open
Type                    : Integrated
Capability report time  : 07/14/2020 17:10:49
Capability              : BLE, Zigbee, USB,
Host data report time   : 07/28/2020 09:52:04
Host data
  Device name                 : APXXXXBDX
  Dot15 Radio MAC             : 18:04:ed:c5:0e:c8
  API version                 : 1
  FW version                  : 2.7.16
  Broadcast count             : 4389
  Uptime                      : 596050 deciseconds
  Active profile              : viBeacon
Scan Statistics report time   : 07/28/2020 09:40:57
Scan statistics
  Total scan records          : 0
Scan role report time  : 07/28/2020 09:43:19
Scan role
  Scan state                  : Disable
  Scan interval               : 0 seconds
  Scan window                 : 800 milliseconds
  Scan max value              : 8
  Scan filter                 : Enable
Broadcaster role
  Current profile type: iBeacon
  Last report time            : N/A
    UUID                      : Unknown
    Major                     : Unknown
    Minor                     : Unknown
    Transmit power            : Unknown
    Frequency                 : Unknown
    Advertised transmit power : Unknown
  Current profile type: Eddystone URL
  Last report time            : 07/28/2020 09:47:17
    URL                       : https://www.cisco.com
  Current profile type: Eddystone UID
  Last report time            : 07/28/2020 09:43:25
    Namespace                 : 04d77XXXXXXXXXXXXXX
    Instance id               : 5df5XXXXXXXX
  Current profile type: viBeacon
  Last report time            : 07/28/2020 09:52:04
    Interval                  : 450 milliseconds
    Beacon ID                 : 0
      UUID                        : 30XXXXXX-3XXX-4XXX-9XXX-d3XXXXXXXXXX
      Major                     : 36341
      Minor                     : 33196
```

```
   Transmit power            : 3 dBm
   Advertised transmit power : 60 dBm
   Enable                    : Enable
Beacon ID               : 1
   UUID                      : 57XXXXXX-cXXX-4XXX-aXXX-85XXXXXXXXXX
   Major                     : 3875
   Minor                     : 567
   Transmit power            : 2 dBm
   Advertised transmit power : 69 dBm
   Enable                    : Enable
.
.
.
```

Verifying gRPC Summary, Status, and Statistics

To verify the gRPC summary, run the following command:

```
Device# show ap grpc summary
AP Name            AP Mac            gRPC Status
--------------------------------------------------------------------------------
APXXXX.BDXX.F2XX   0cXX.bdXX.66XX    Up
```

To verify the packet statistics on the gRPC channel that also shows the transmit and receive failures, run the following command:

```
Device# show ap name APXXXX.BDXX.F2XX grpc detail
gRPC channel status : Up
Packets transmit attempts : 62
Packets transmit failures : 0
Packets receive count : 62
Packets receive failures : 0
```