

Cisco Spaces Partner Ecosystem Federal Support

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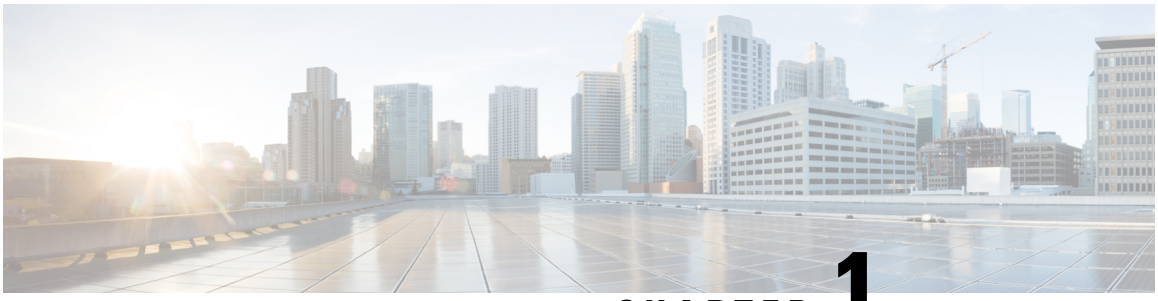
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CHAPTER 1

Overview

• Cisco Spaces partner ecosystem, on page 1

Cisco Spaces partner ecosystem

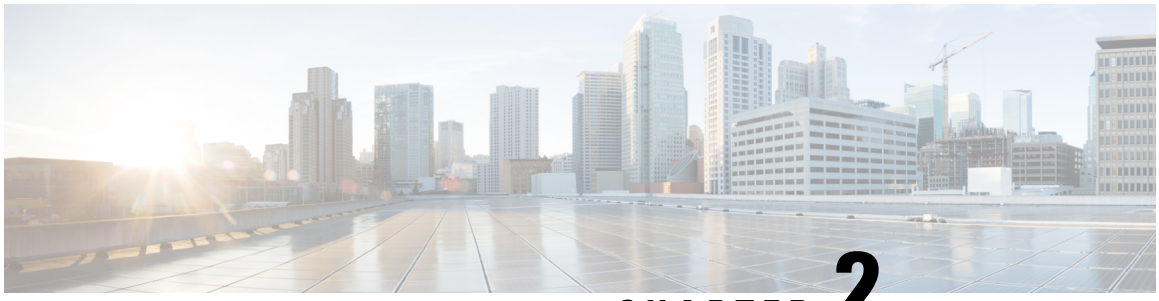
A Cisco Spaces partner integration is a collaboration feature that

- connects third-party business applications to your physical locations through Cisco Spaces
- provides partners with real-time location-based data using your existing Wi-Fi infrastructure, and
- empowers partners to deliver enhanced services, insights, and management tools for your business.

The Cisco Spaces Partner Firehose API delivers a continuous, real-time stream of data as events occur.

After processing data from Cisco Spaces, you can perform these actions to suit your business needs:

- Visualize the data
- Publish the data
- Graph the data



CHAPTER 2

Onboarding Details

- Onboarding details overview, on page 3
- App center information, on page 3
- Use cases, on page 4
- App tile, on page 4
- Event types, on page 4
- Integration types, on page 5
- Location details for activation, on page 5

Onboarding details overview

Customer onboarding information required for Cisco team configuration and activation.

- Provide all required onboarding information. After submission, the Cisco internal team validates the details, enters the information into the application, performs the required configuration, and completes onboarding and activation.

To onboard a partner app, provide the following details in this document. The Cisco internal team will create/configure the application and complete onboarding.

- App Center
- Use Cases
- App Tile
- Events
- Integration Details
- Location Details for Activation

App center information

Provide the requested information, images, and selections. The Cisco internal team will enter the information into the application.

- **App Name**

- **App Tagline**
- **App Icon**
- **App Description**
- **Primary Industry**
- **Company Logo**
- **Company Name**
- **Company Website**

Use cases

(Optional - Only if Use Cases are enabled) Provide a brief description of the intended integration use case and expected business outcome.

- Use Case Headline: Add the **Use Case Headline** title.
- Use Case Icon: Attach the **Use Case Icon** image.
- Use Case Short description: Add the **Use Case Short Description**.
- Use Case Long description: Add the **Use Case Long Description**.
- Compatibility Notes: Add the **Compatibility Notes**.
- Use Case Category: Select the **Use Case Category** from the dropdown.
- Use Case Sub-Category: Select the **Use Case Sub-Category** from the dropdown.

App tile

To ensure consistent application display settings, always provide these fields when configuring an app tile:

- App Tile Label: Enter the **App Tile Label**.
- App Tile Tagline: Enter the **App Tile Tagline**.

Event types

We recommend these when monitoring updates and changes using event types:

- Track profile updates, location changes, app activation, and device associations to achieve comprehensive oversight of user and device management.
- Review event logs for updates related to account administration, device counts, camera counts, network telemetry, Webex telemetry, and presence states to maintain accurate system records.
- Monitor space occupancy changes and device location updates to support efficient resource allocation and security.

Common event types include:

- Profile Update.
- Device Location Update.
- Device Presence.
- User Presence.
- Network Telemetry.

Integration types

Choose the pull channel that best meets your application's integration requirements:

- HTTP,
- gRPC
- WebSocket

Location details for activation

Provide the following location details required for onboarding and activation.

- To proceed with the activation, provide the exact location hierarchy details:

  Campus or site name.

  Building name or number.

  Floor number.

- The Cisco internal team will coordinate API key generation and activation activities as part of the onboarding process, if applicable.
- Confirm your endpoint domain.

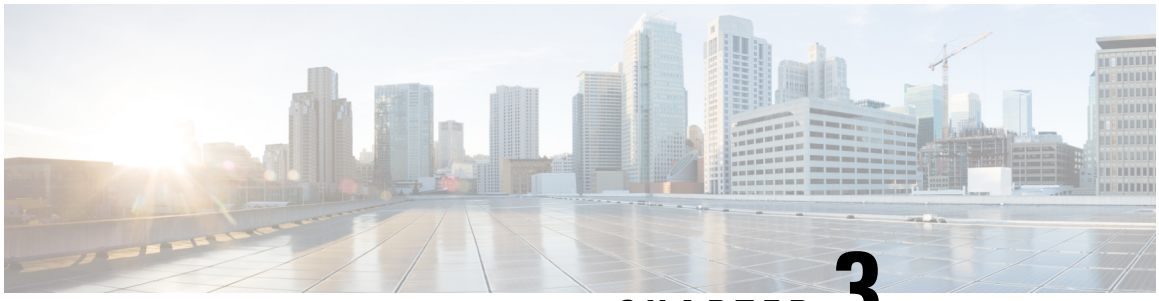
  Endpoint domain example:

  Endpoint Domain: https://partners.spaces-gov.cisco/

- Use the curl command below to preview incoming events, replacing `<ENDPOINT_DOMAIN>` and `<API_KEY>` with your values:

  Sample curl command:

  curl "https://<ENDPOINT_DOMAIN>/api/partners/v1/firehose/events" -H "X-API-Key: <API_KEY>"



CHAPTER 3

Pull Channels

- Pull channels, on page 7

Pull channels

A pull channel is a data delivery mechanism that

- enables clients to retrieve (pull) data from a source instead of passively receiving it,
- supports multiple modes for event handling (such as HTTP, event replay, and de-duplication), and
- allows configuration for scalability and event retention based on system requirements

HTTP streaming

Your application can use the HTTP pull channel to retrieve events over HTTP/2 or HTTP/1.x. Send a `GET` request to the Firehose HTTP endpoint. Cisco Spaces continuously sends newline-delimited JSON events while the connection remains active.

The OpenAPI specification for this endpoint includes the complete `EventRecord` schema and the supported event payloads. For more information, refer to HTTP Streaming in the Cisco Spaces Firehose documentation.

Code snippet:

```
GET /api/partners/v1/firehose/events
```

Ensure your application meets these integration specifications:

- Your application must support secure (HTTPS) connections to the endpoint.
- Events are encoded as JSON and separated by a newline character. For sample JSON format events, see Sample Events JSON format.
- For on-premise applications, you can request a replica of the Firehose stream for standby or secondary instances by using the replicaId query parameter (integer; default 1).

Note **replicaId** is supported only for on-premise applications.

You can request to replay events from a specific timestamp by using the from Timestamp parameter:

- Provide the timestamp as the number of milliseconds since epoch.
- If you do not specify fromTimestamp, the HTTP Pull endpoint sends only events received after the HTTP connection is established.

Event replay and de-duplication

To manage event de-duplication and ensure data continuity, follow these best practices:

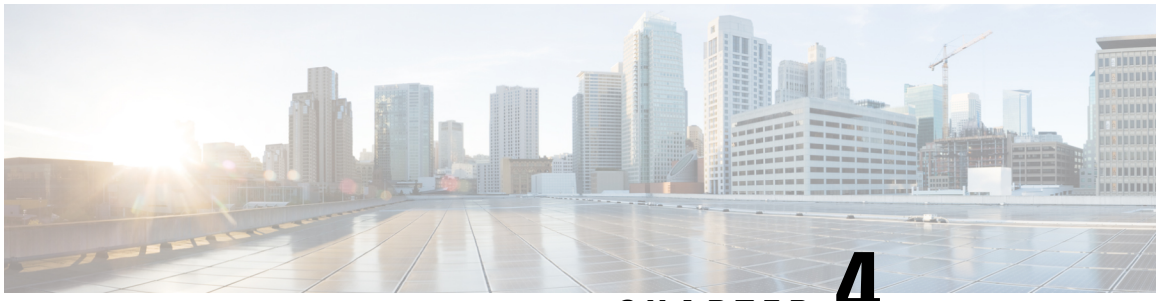
- Use the unique identifier (record UID) present in all events to de-duplicate and avoid processing duplicate events.
- During production deployments, if a restart occurs, use the EventsStreamRequest with the from Timestamp value in combination with de-duplication methods to prevent missing events or data loss.

Event retention window

Scaling with multiple receivers

Use these guidelines to scale your application and optimize throughput for the Firehose API:

- To distribute load across multiple receivers in your application, or to increase throughput for high-latency connections, you can open multiple connections to the Firehose API HTTP endpoint.
- Your application can have up to 12 receivers.
- When you use more than one connection, you must specify the partitions each connection receives by setting the **minPartition** (default one) and **maxPartition** (default 12) parameters in the GET request.



CHAPTER 4

gRPC

- gRPC, on page 9

gRPC

gRPC is a high-performance, open-source remote procedure call (RPC) framework. Your application requests events from the Firehose gRPC channel by using a server-streaming RPC call. Cisco Spaces sends a continuous sequence of Protocol Buffer binary messages over the connection.

gRPC supports code generation for several programming languages. You can use strongly typed clients without implementing serialization.

The Cisco Spaces Firehose API gRPC service definition is provided as a Protocol Buffers (`.proto`) file. Compile the file by using the Protocol Buffers compiler for your programming language. gRPC operates over HTTP/2, and events are encoded as Protocol Buffer binary messages.

For more information, refer to gRPC Streaming in the Cisco Spaces Firehose documentation.

Note The Cisco SpacesFirehose API maintains a rolling window of recent events for the partner. The width of this window is unspecified and is subject to change; providing timestamps within the preceding hour is expected to work.

Multiple receiver and partitions

These guidelines to configure multi-receiver deployments for your application:

- If your application uses multiple receivers, include the min_partition and max_partition values in the EventsStreamRequest.
- Your application can have up to 12 receivers.

For example, if you have 4 receivers within your application, you would have these:

- Receiver #1 with min_partition = 1 and max_partition = 3
- Receiver #2 with min_partition = 4 and max_partition = 6

Receiver partition assignments

Configure your receivers with these partition assignments:

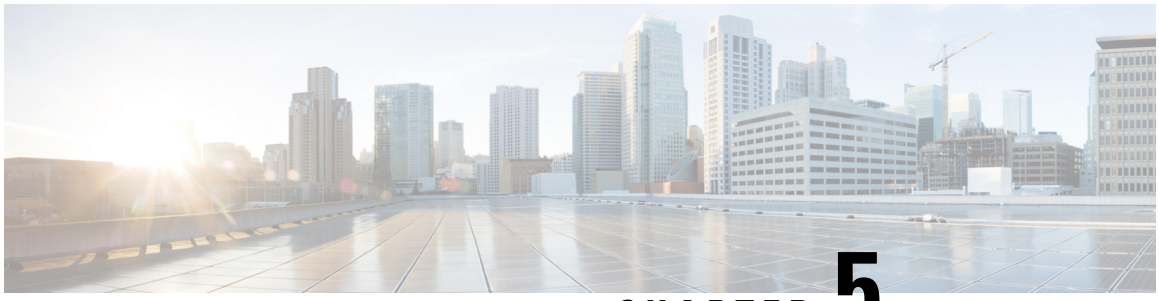
- Receiver #3 with min_partition = 7 and max_partition = 9
- Receiver #4 with min_partition = 10 and max_partition = 12

Regional endpoints

Use the following endpoint to connect to the Firehose gRPC channel in the Cisco Spaces Federal environment.

Table 1:

Region	Host	Port
US	`partners.spaces-gov.cisco`	443



CHAPTER 5

Port 443

- Port, on page 11

Port

Utilize explicit partitioning to enable these capabilities:

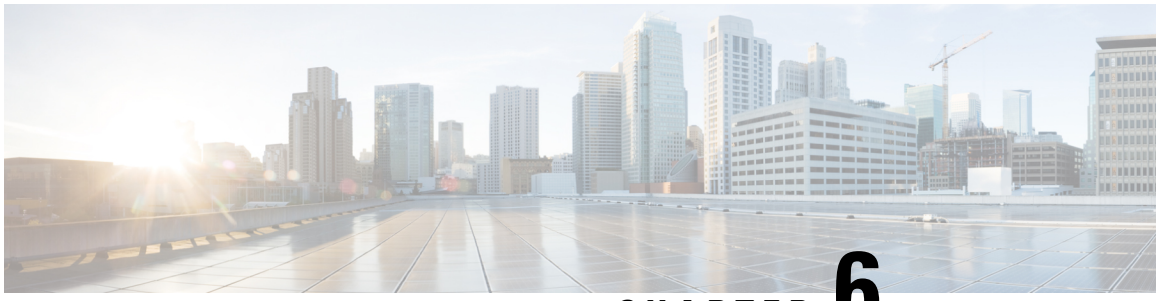
- Explicit partitioning allows your application to perform a rolling upgrade.
- Because partition assignments remain stable, the upgrade does not move load to other receivers.
- Each receiver can use the fromTimestamp replay parameter to replay events for its assigned partitions without affecting events sent to other receivers.

The Keep Alive event is sent every 15 seconds when no other event is sent.

Expected gRPC status codes

These gRPC status codes indicate the result of your request:

- Status.OK: Success
- Status.UNAUTHENTICATED: Invalid API key or unauthorized API key
- Status.PERMISSION_DENIED: gRPC channel is not enabled
- Status.RESOURCE_EXHAUSTED: Exceeded connection limit (replicaId >3 or number of connections >12)



CHAPTER 6

WebSocket

- WebSocket Streaming, on page 13

WebSocket Streaming

The Firehose streaming API is also available over WebSocket. The parameters, event format, keep-alive behavior, rate limits, and error codes described in HTTP streaming also apply to the WebSocket channel. This topic describes the WebSocket endpoint for the Cisco Spaces Federal environment.

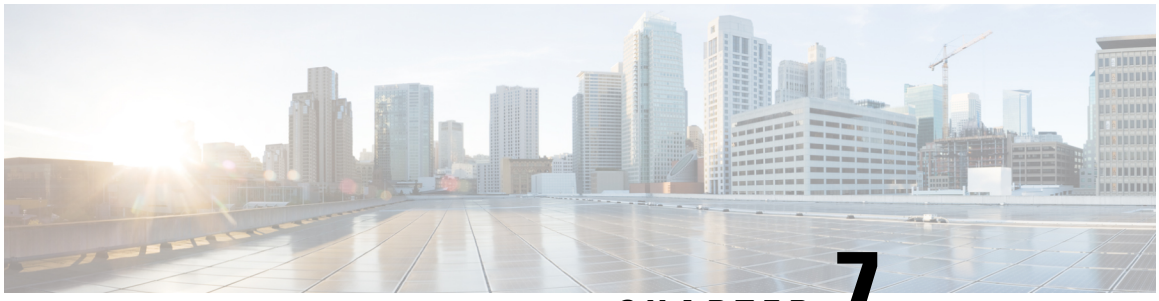
Endpoint

Connect to the these endpoint by using the WebSocket Secure protocol:

```
wss://partners.spaces-gov.cisco/api/partners/v1/firehose/events
```

For more information about the common streaming behavior, refer to HTTP streaming.

For more information about the WebSocket implementation details, refer to WebSocket Streaming in the Cisco Spaces Firehose documentation.



CHAPTER 7

Event Types

- Event types, on page 15

Event types

Most events group by technology. This section lists Wi-Fi events.

- Wi-Fi events
- IoT events
- Camera events
- Location hierarchy events
- Activation events

Wi-Fi events

These events provide updates regarding device profiles and location changes:

- Profile Update: Sent when a device profile is updated or changed. For example, when an end user provides information in a captive portal.
- Device Location Update: Sent when a device location is updated.

Leverage these location-based tracking features and requirements to support your application:

- Continuously generates an approximate device location while the device is connected to the network.
- Your app requires X,Y and/or latitude and longitude location data, and a map of the location.
- Includes Location Updates and Device Dwell data for devices connected to your network.
- Generates events when a device enters or exits a building, a floor, or a zone.

Consider these features and requirements for your location-based application:

- Continuously generates an approximate device location while the device is connected to the network.
- Your app requires X,Y and/or latitude and longitude location data, and a map of the location.
- Includes Location Updates and Device Dwell data for devices connected to your network.

- Generates events when a device enters or exits a building, a floor, or a zone.

These requirements when configuring device location and presence event settings:

- Cisco Spaces also shares information about these devices and high-level details about their location.
- You can choose to receive geo-coordinate data for the Device Location Update event.
- If you do not select the Device Location Update event, select either the Device Presence or the User Presence event in the Event Types section.
- Apps that use presence events require zone-, floor-, or site-level presence data.

The system generates these events to provide visibility into device and user activity:

- Device Presence: Tracks the lifecycle of a device at a location (site). Events occur at device entry, after 10 minutes of inactivity, when a device becomes active after inactivity, and when the device is determined to have exited. These events also provide the current count of active and inactive devices at the location.
- User Presence: Based on the authentication in use and information available from the network, Cisco Spaces can map multiple devices owned by a user. Events occur at device entry, after 10 minutes of inactivity, when a device becomes active after inactivity, and when the device is determined to have exited. These events also provide the current count of active and inactive devices at the location.
- Device Count: Sent when the number of devices at the location changes.
- Network Telemetry: Sent at periodic intervals with health and performance telemetry for the location.

IoT events

The system generates the these event types based on device and user activity:

- Device RSSI Update: Sent when a device's RSSI updates.
- IoT Telemetry: Sent when telemetry updates arrive from BLE, RFID, and Zigbee IoT devices.
- IoT User Action: Sent when users perform actions on IoT devices.
- BLE RSSI Update: Sent when a BLE device at the location pings.

Camera events

The system provides the following camera-based people counting events:

- Camera Count: Sent when the aggregated people count (computed via the Meraki Video Camera) changes at the location.
- Raw Camera Count: Sent when an individual camera count (computed via the Meraki Video Camera) changes at the location.

Location hierarchy events

The system generates these events to track updates to your location hierarchy and network structure:

- Location Information Change: Sent when a location is updated; for example, when a location is moved under a group, renamed, or its metadata changes.
- Location Anchor Update: Sent when a location anchor is added to, updated in, or removed from IoT Services.

- AP Topology Change: Sent when an AP's topology changes on the floor.

Activation events

App Activation: Sent when the Cisco internal team completes activation of the application on behalf of the customer.

Other events

These event types are generated for connection maintenance and Tele Presence reporting:

- Keep Alive: Sent when no other event has been sent for 15 seconds. Applies only to HTTP/gRPC channels to prevent your connection from timing out.
- Tele Presence: Sent when the Tele Presence system reports a people-count update.

Review the following requirements and data specifications for the Tele Presence option:

- If you select the Tele Presence option, the app requires data generated by the Tele Presence units.
- Includes the presence event and the people count event.
- Presence is provided by devices connected to the Telepresence via ultrasound.
- People count is provided by computer vision from the Telepresence video camera.
- Cisco Spaces does not receive any video or photographs. Cisco Spaces receives the final count of people recognized, and all video stays on the Tele Presence unit.

These events track updates to your account administration and network infrastructure status:

- Account Admin Change: Sent when an account admin is added, removed, or updated for the partner account.
- Network Status Update: Sent to represent the status of the connector and controller.