cisco Live!

ALL IN

#CiscoLiveAPJC

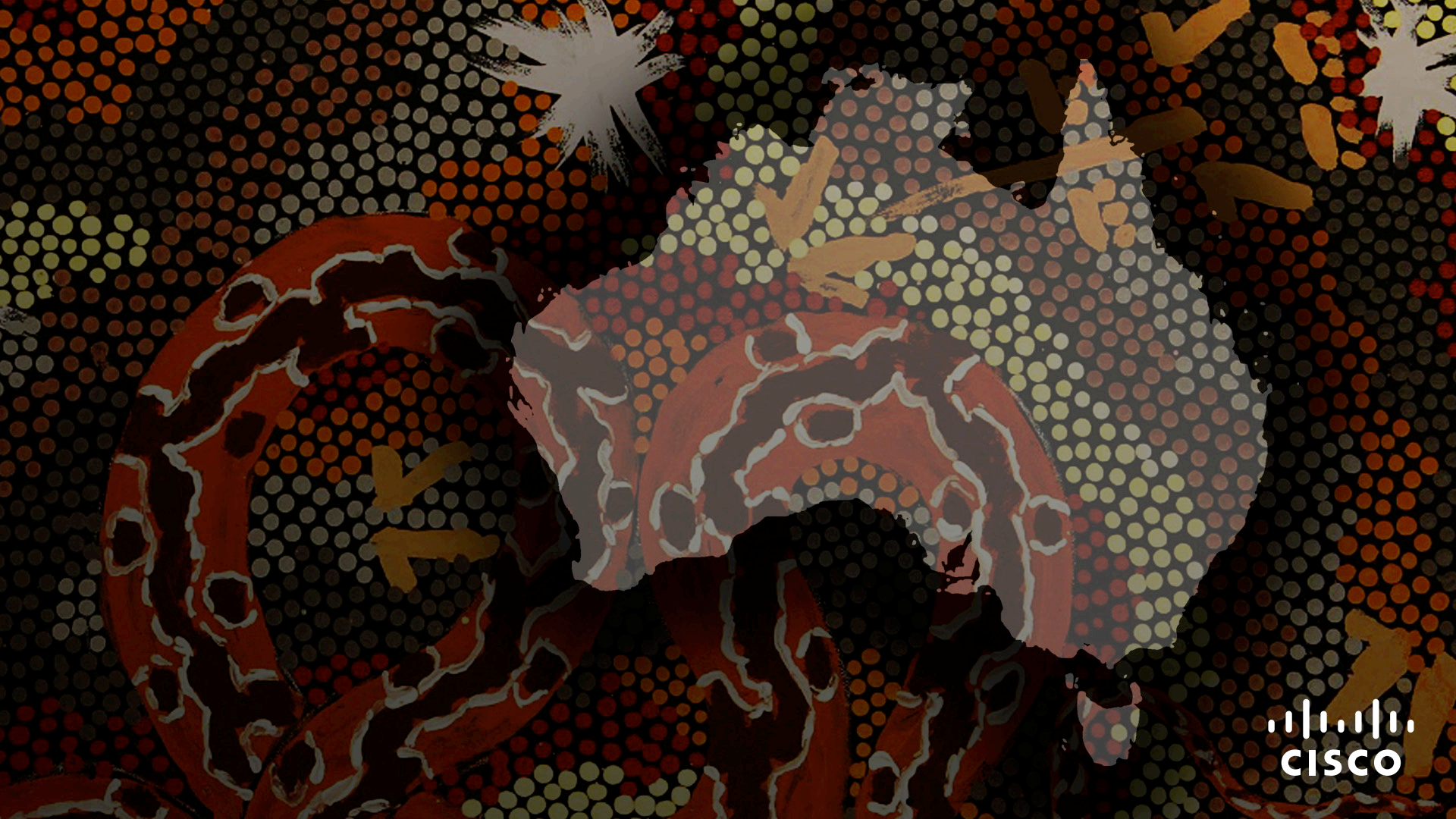
The bridge to possible

Learn how to put out your IOT sensor fire

with the Cisco Spaces Firehose Streaming API

Leigh Jewell
Technical Solutions Architect

DEVNET-2043


CISCO

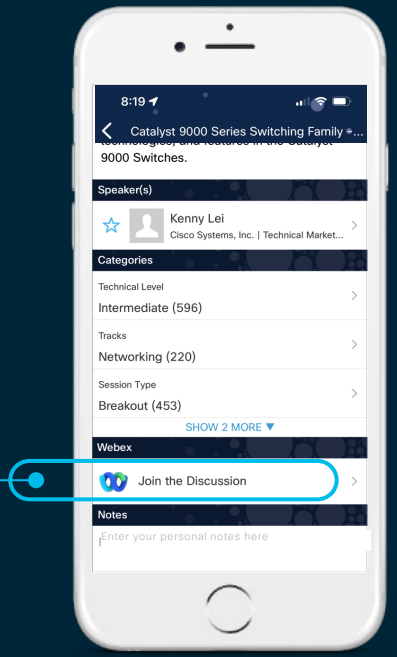
Cisco Webex App

Questions?

Use Cisco Webex App to chat
with the speaker after the session

How

1. Find this session in the Cisco Live Mobile App
2. Click “Join the Discussion”
3. Install the Webex App or go directly to the Webex space
4. Enter messages/questions in the Webex space



https://ciscolive.ciscoevents.com/ciscolivebot/#BRKXXX-xxxx

Webex spaces will be moderated
by the speaker until Thursday 22 December, 2022.

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Agenda

- Introduction
- Create Spaces App
- Activate App
- Connect to App with Python
- Look at the data

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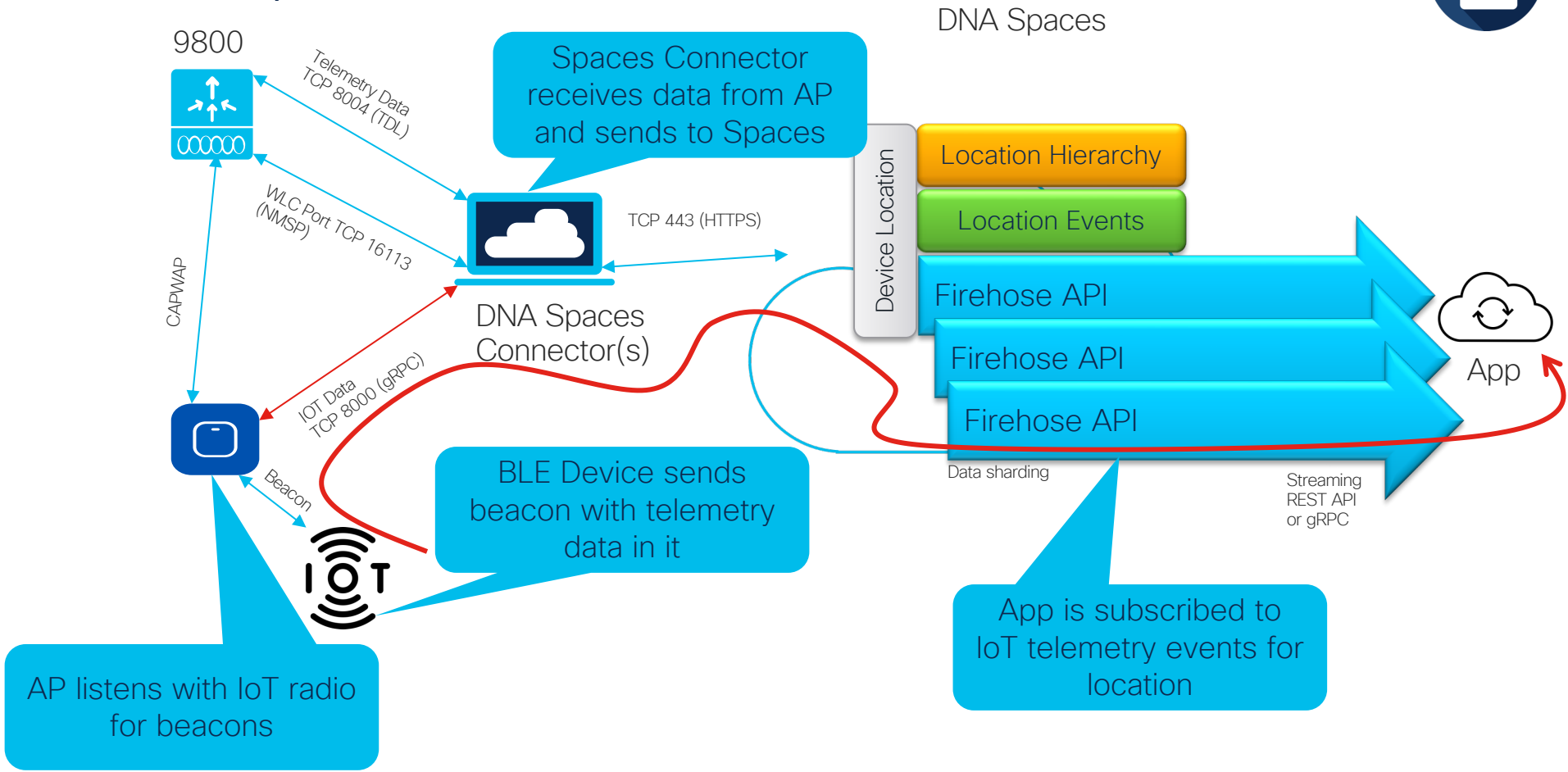
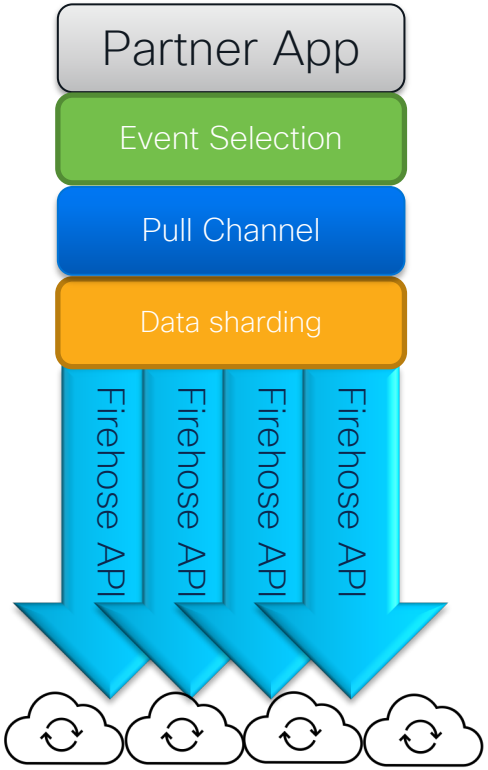
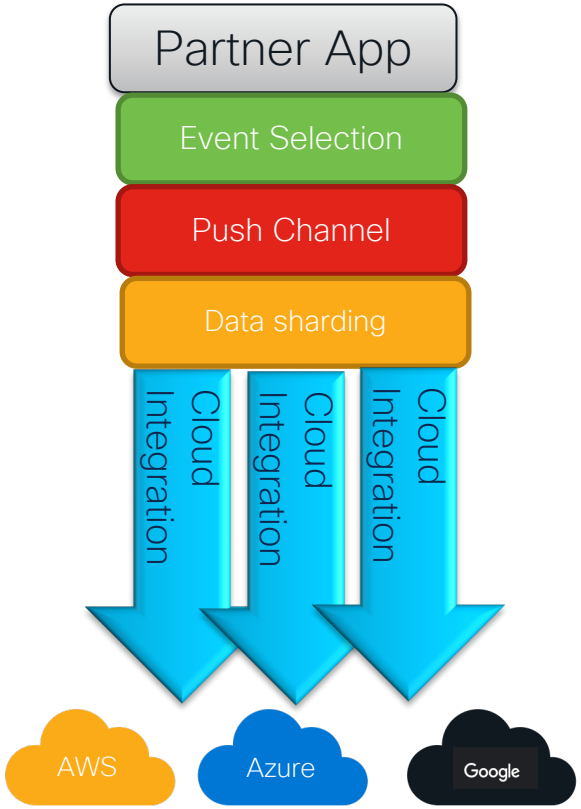
Cisco Spaces Architecture



Cisco Spaces Firehose Architecture



Private App Work loads
Redundancy & scalability



Cloud to cloud communication

Today's Lab

- **Step1**: Create an app in Cisco Spaces Partner Portal
- **Step2**: Select events for you app
- **Step3**: Activate your app to retrieve your token
- **Step5**: Run python script to print out the IOT data
- Step6: Run trace on Firehose to debug
- Step7: Delete your app

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Login to Spaces Partner Portal

Step1: Clone Repo

- Download https://github.com/leigh-jewell/devnet2043.git
  - Provides you with png file for your Firehose App
  - Python example for app activation
  - Python example script for HTTP GET
  - Python example script for gRPC Firehose connection

```
git clone https://github.com/leigh-jewell/devnet2043.git
cd devnet2043
```


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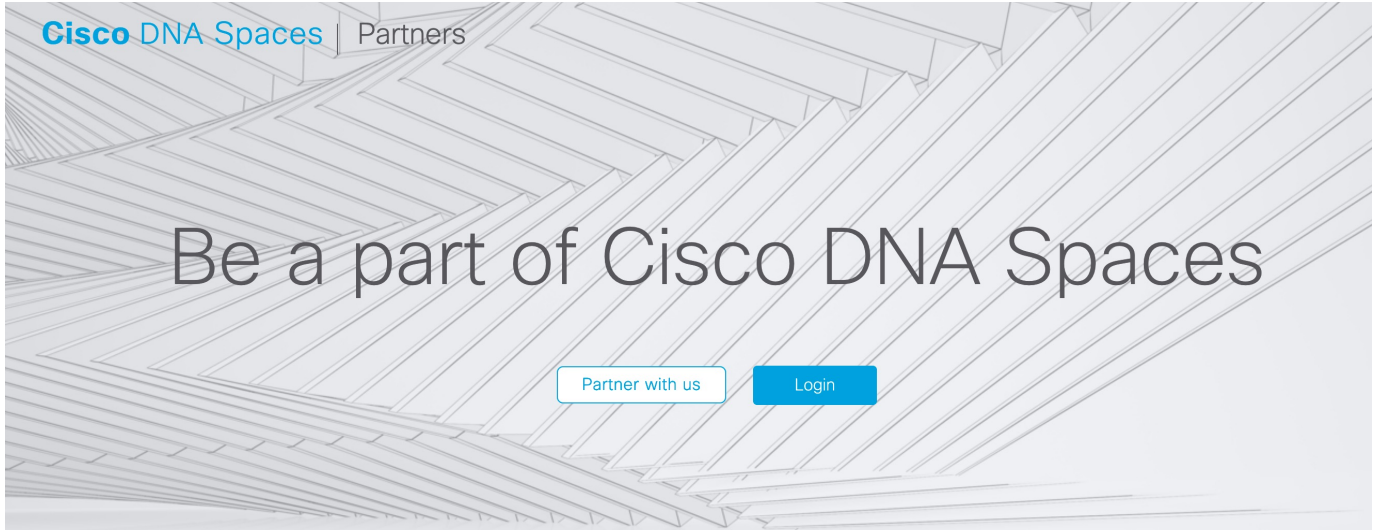
Step2: Login Cisco Spaces Partner Portal

When you login the first time a partner account will be created:

https://partners.dnaspaces.io/partner/

email: devnet2043@gmail.com



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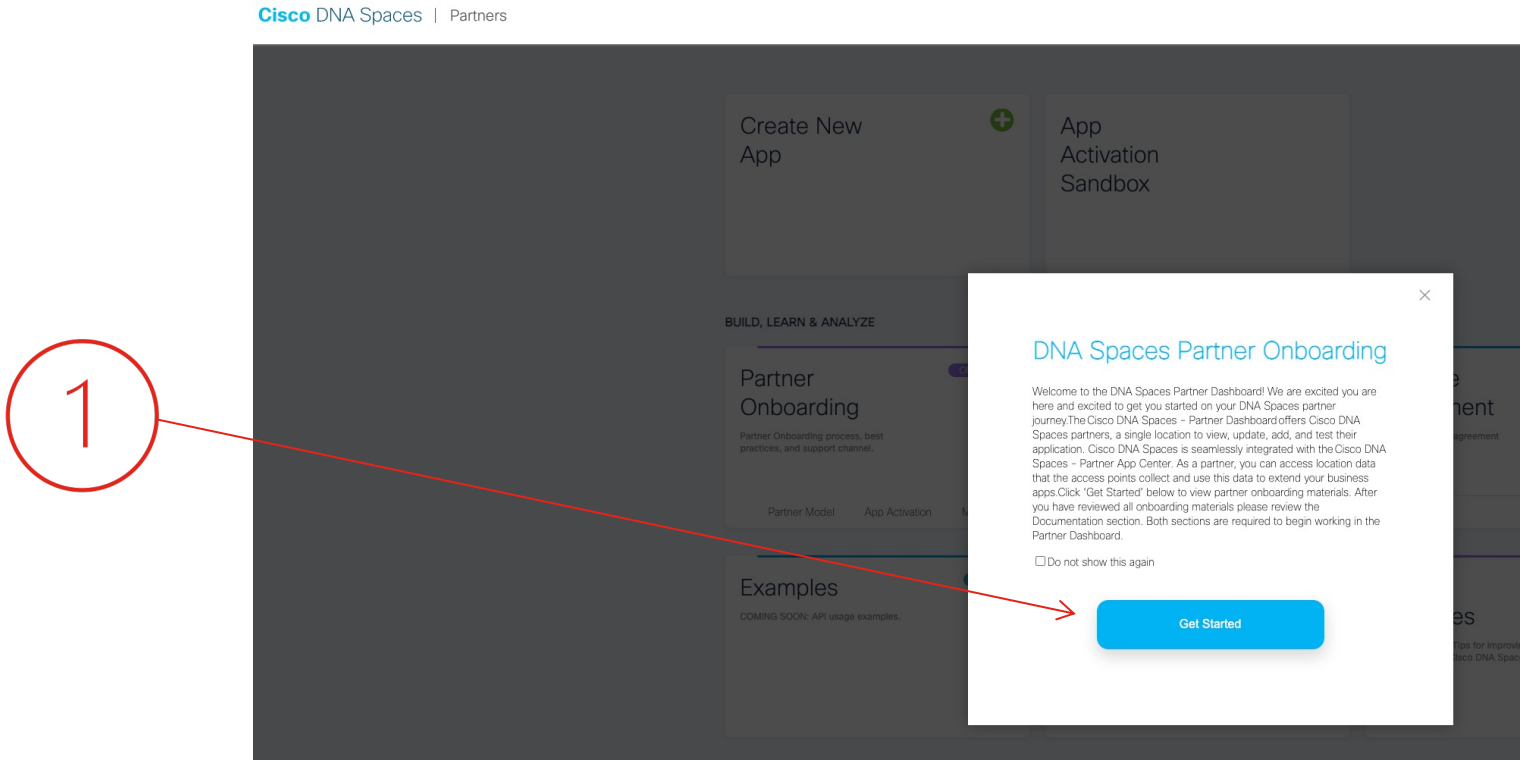
Step3: Accept the Terms and Conditions



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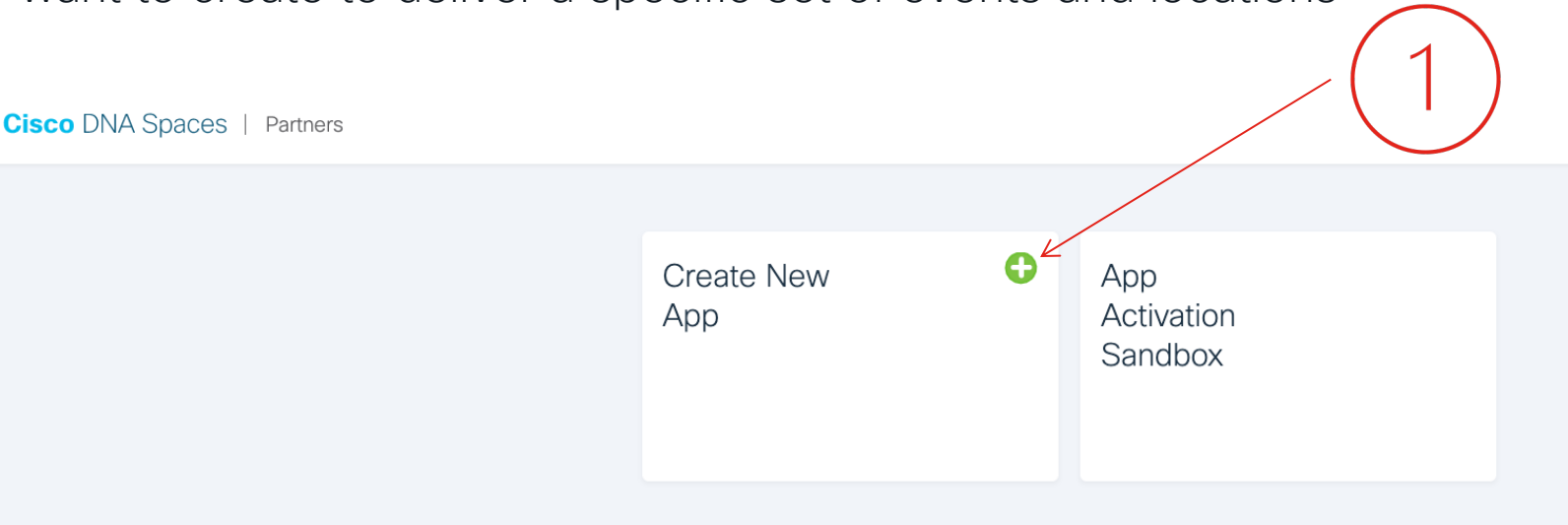
Step4: Create a New App

Spaces Applications are created for each Spaces Firehose stream we want to create to deliver a specific set of events and locations



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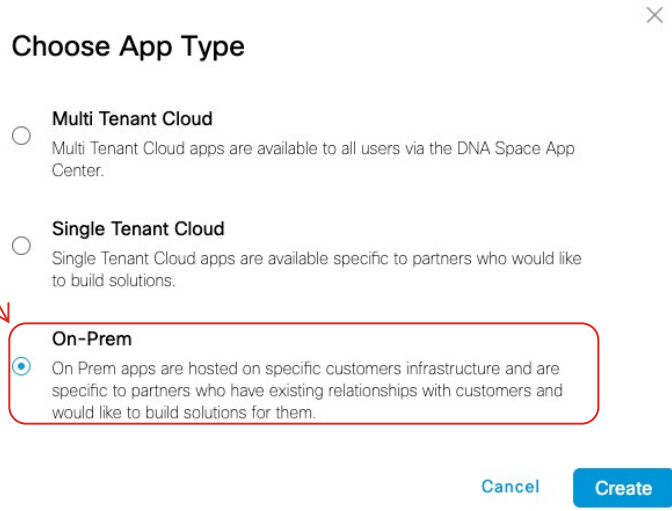
Step5: Choose On-Prem application

We will be using On-Prem app to receive the data from our account.

1

2



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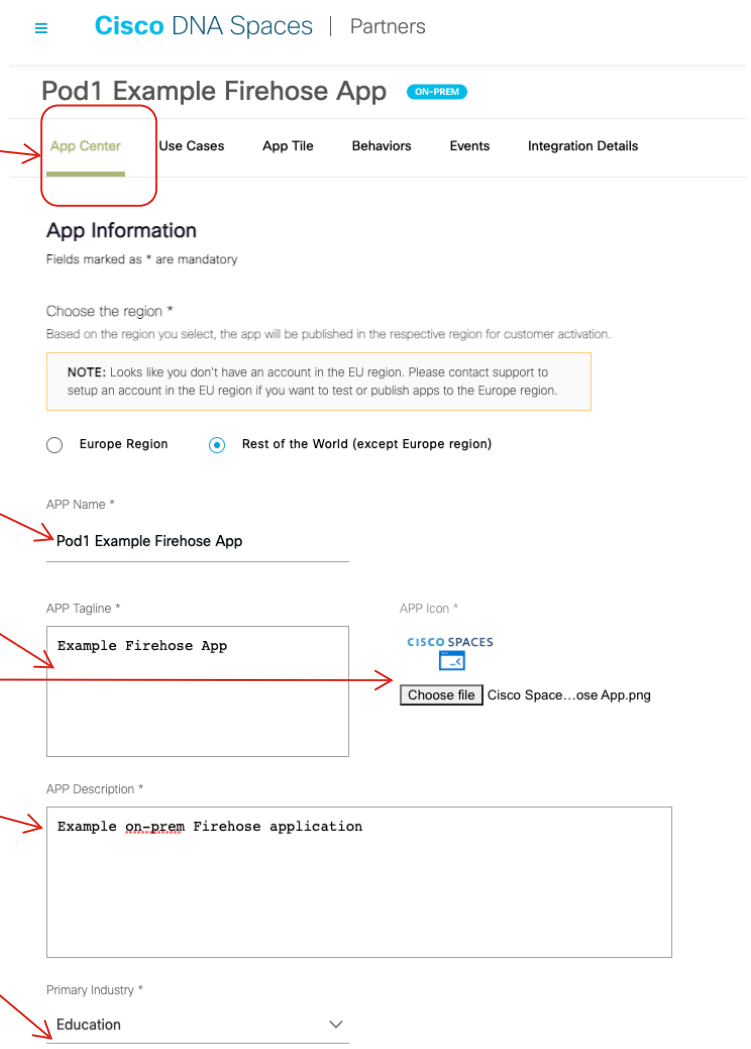
Step6: App information

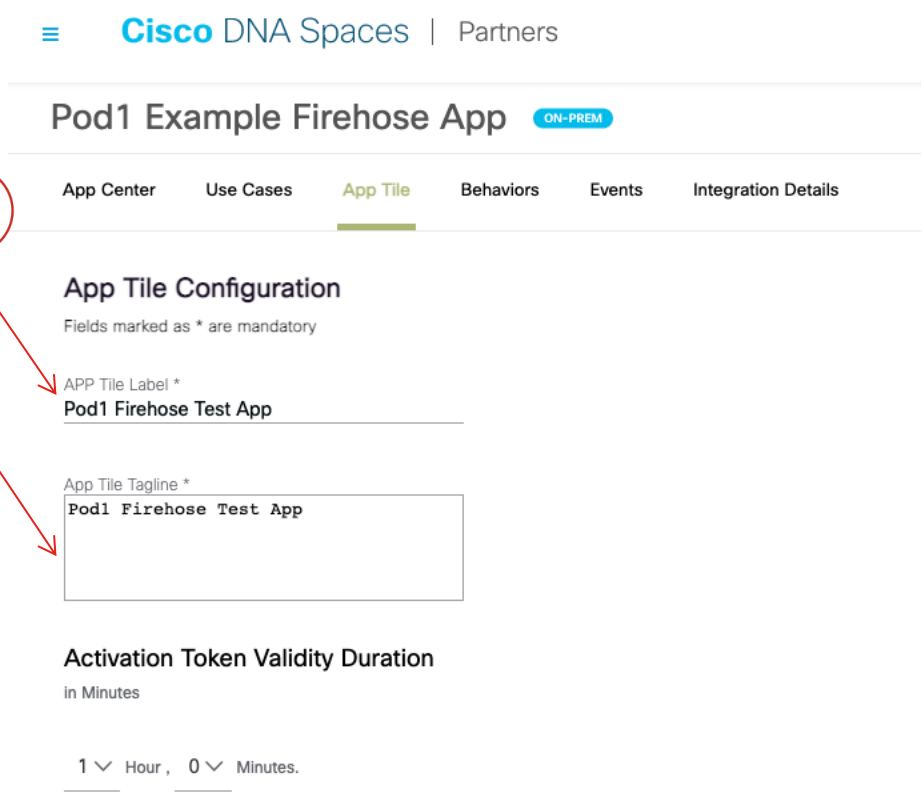
Provide the following:

Field	Value
APP NAME	Podx Example Firehose App
APP Tagline	Example Firehose App
APP Icon	Select file ‘Cisco Spaces Firehose App.png’ from cloned git rep Step1b
APP Description	Example on-prem Firehose application
Primary Industry	Education



Step7: App Tile Label

Field	Value
APP Tile Label	Podx Example Firehose App
APP Tile Tagline	Example Firehose App



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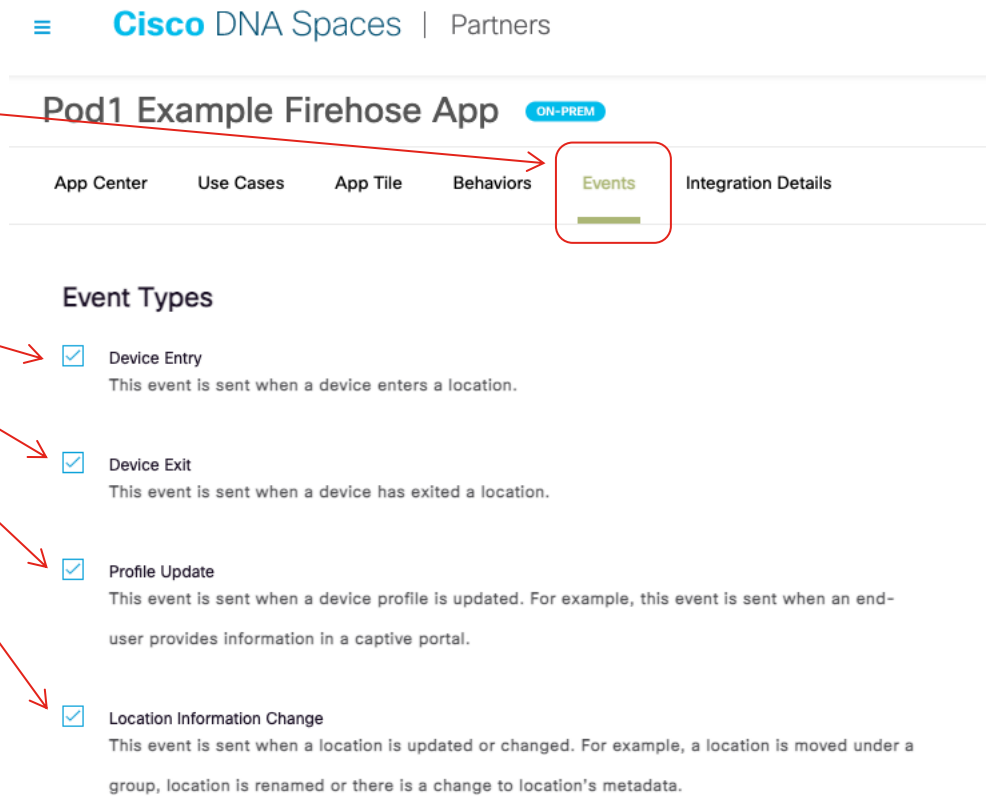
Step8a: Remove Default Events

Uncheck default events:

- ☒ Device Entry
- ☒ Device Exit
- ☒ Profile Update
- ☒ Location Information Change



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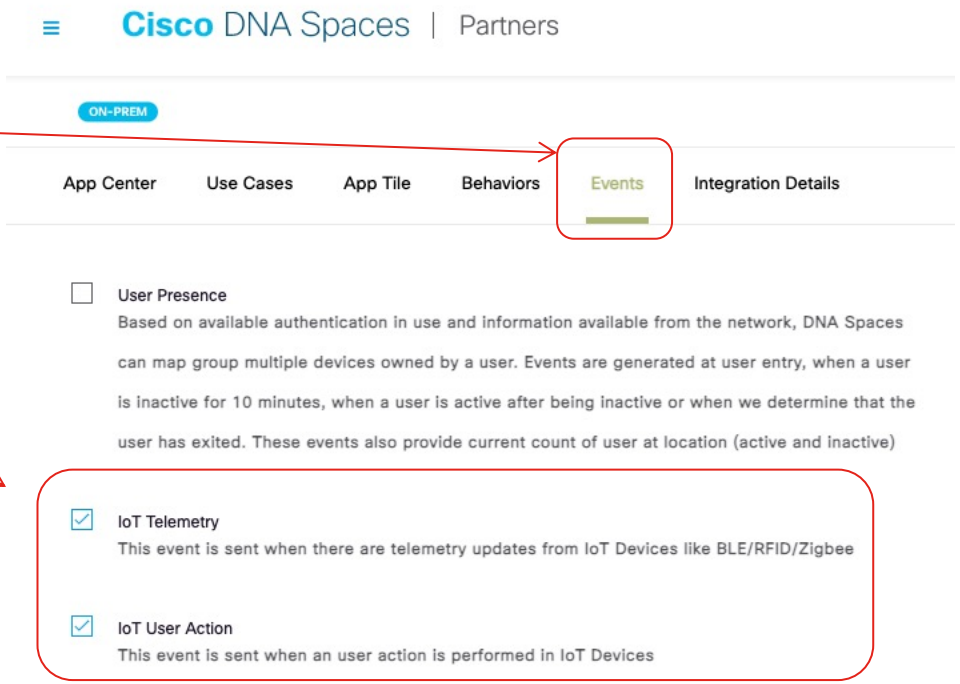
Step8b: Add Events

Enable the IOT events:

- ☑ IoT Telemetry
- ☑ IoT User Action



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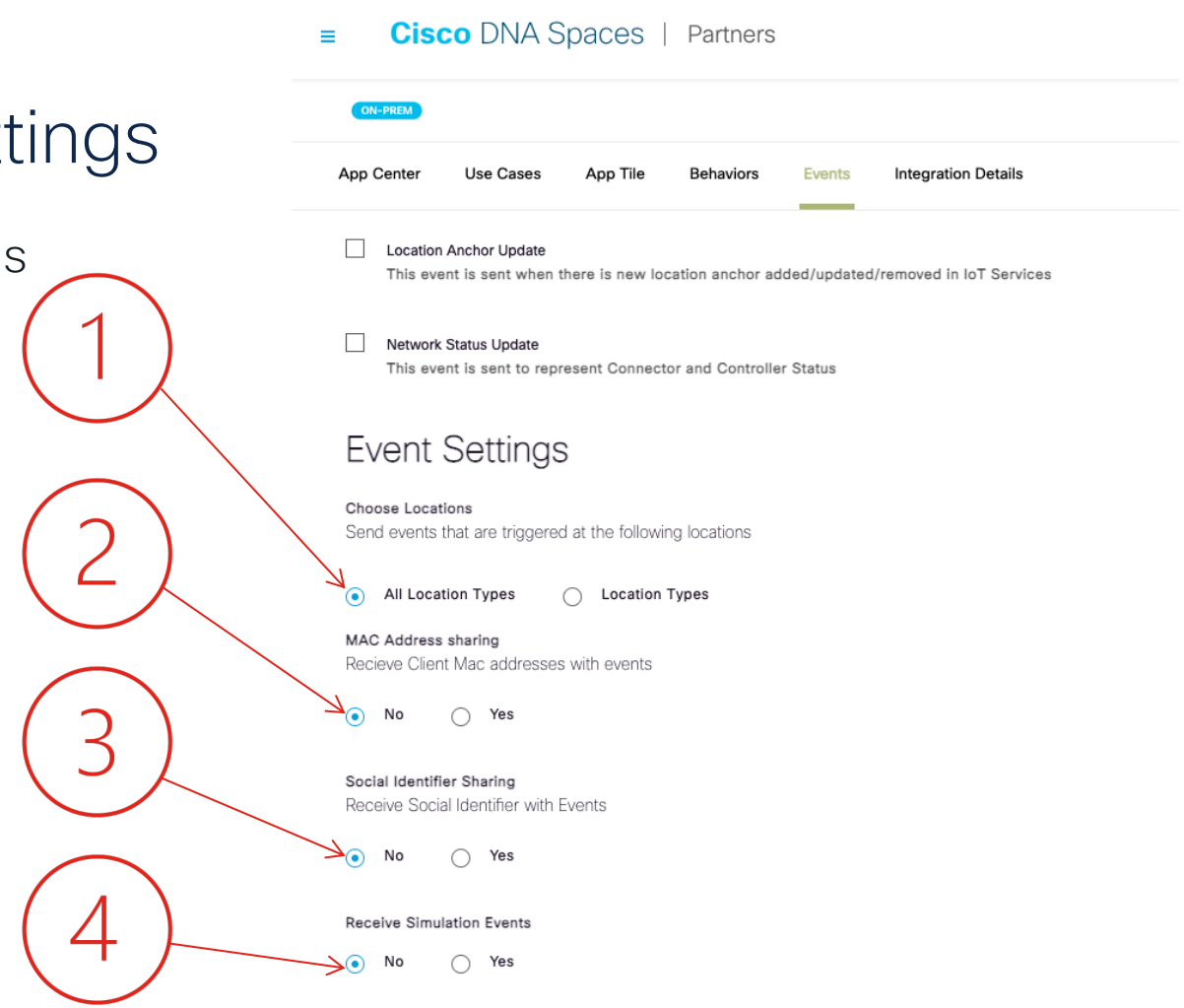
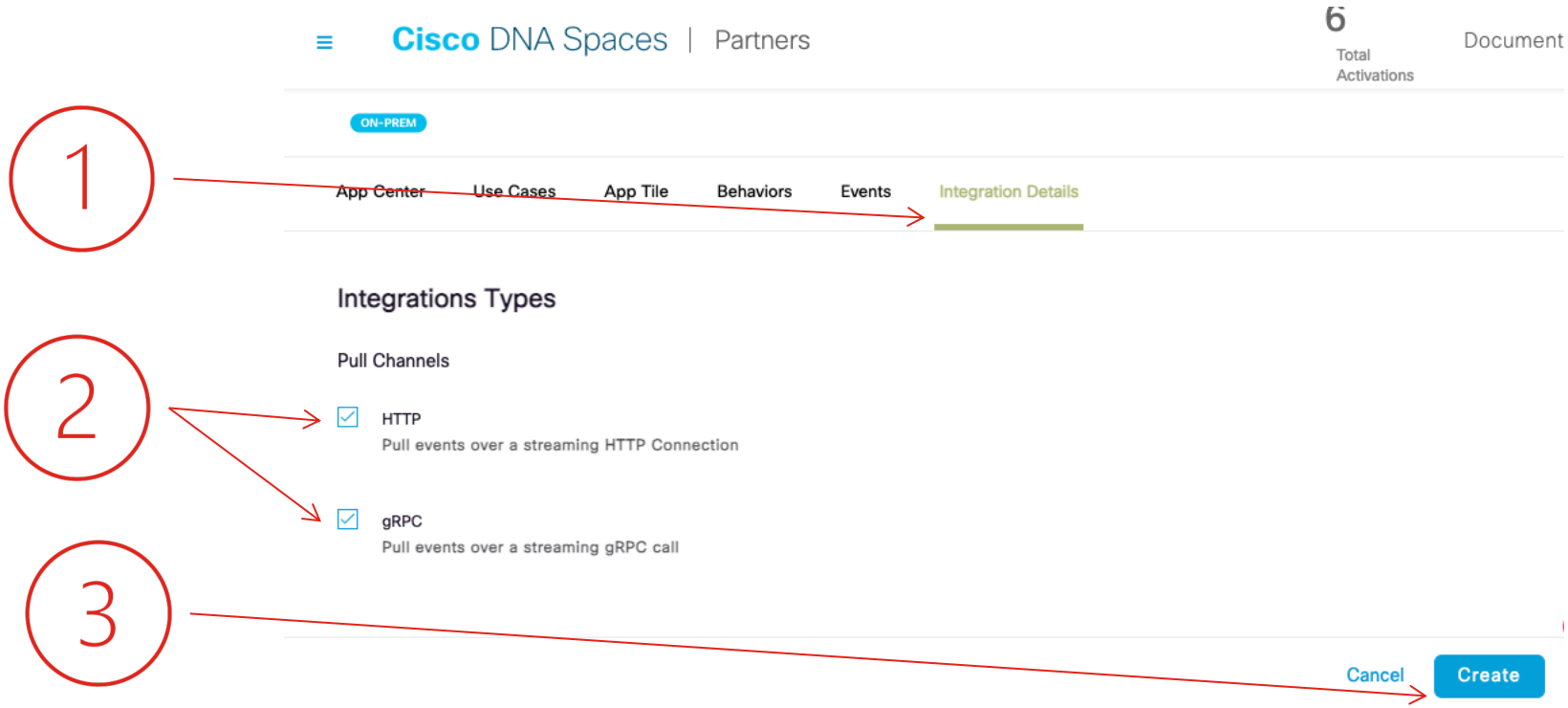
Step9: Events settings

Scroll down – Event Settings



Step10: Integration Details & Create



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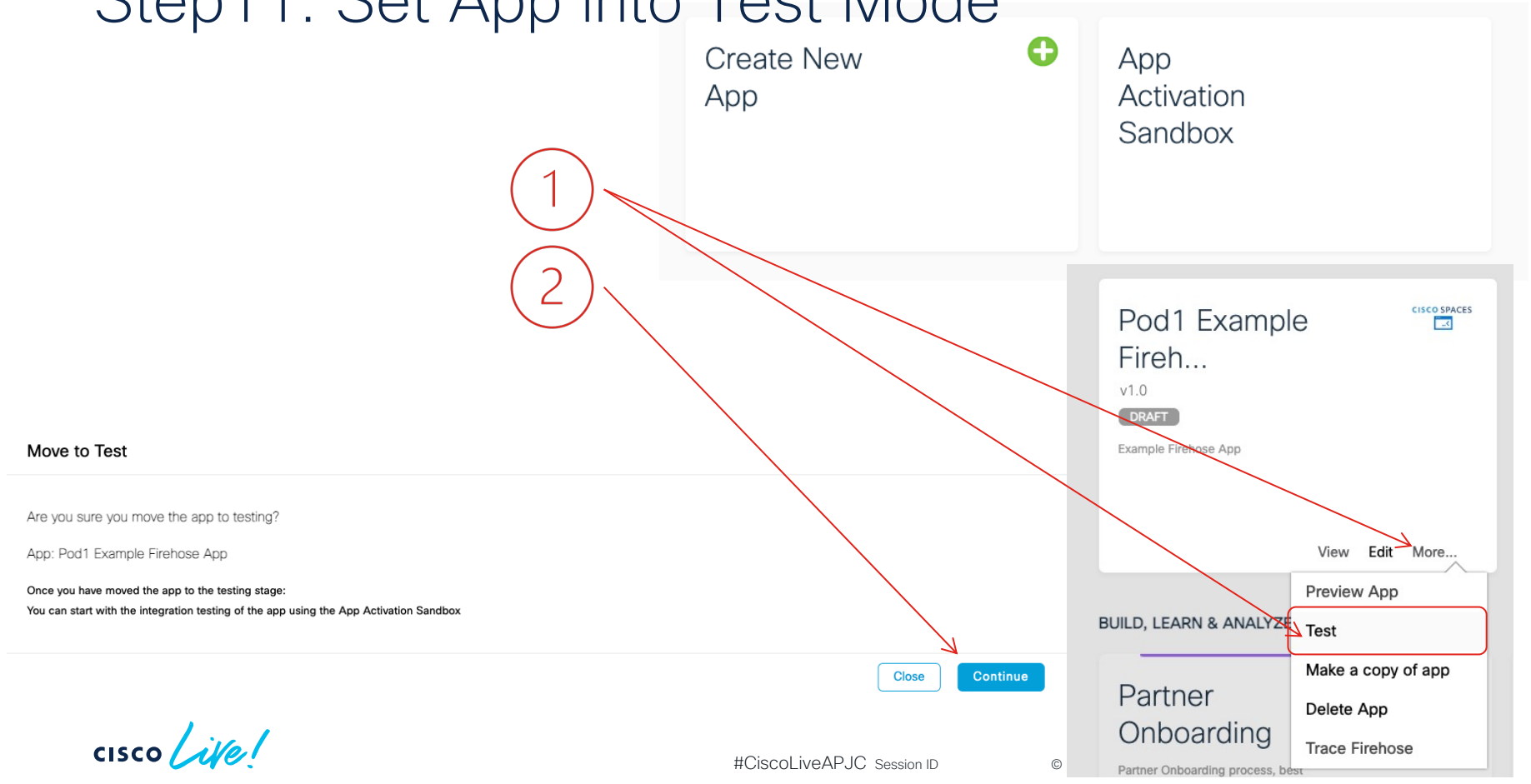
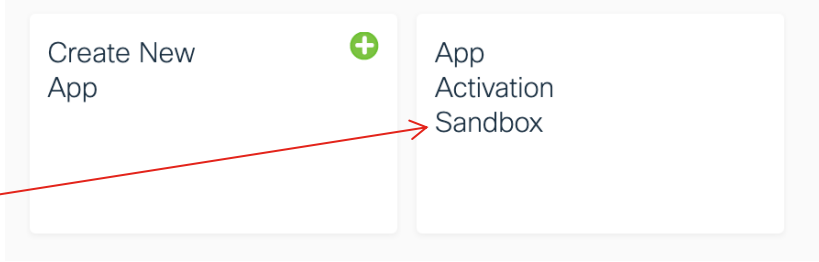
Step11: Set App into Test Mode



Step12: App Activation Sandbox

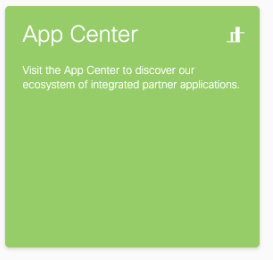
Select “App Activation Sandbox”

1



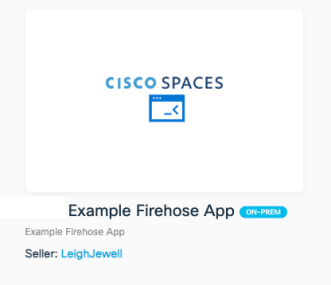
Select “App Center”

2



Select your firehose App you created

3



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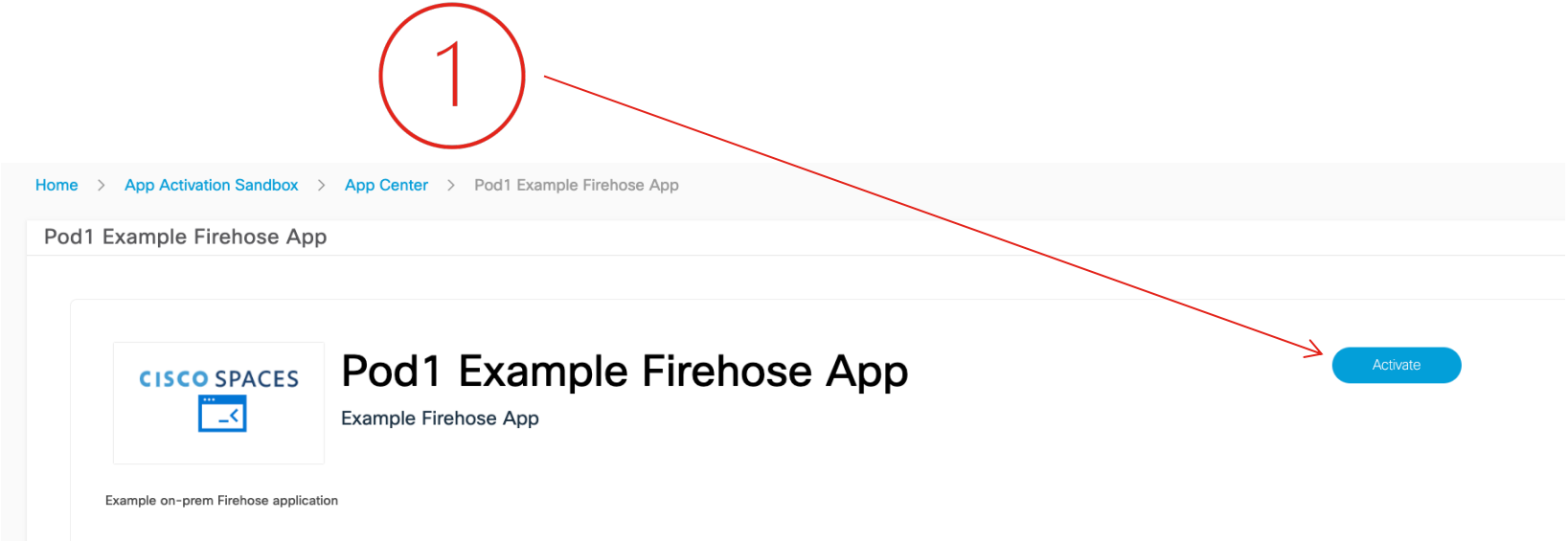
Step13: Activate Your Example Firehose App



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Step14: Agree and continue

Activate Pod1 Example Firehose App

1 Sign Up & Onboarding 2 Permissions 3 Choose Locations 4 Choose Groups

Before activating the app Pod1 Example Firehose App we need to determine your relationship with LeighJewell

- (●) I have an existing account with the LeighJewell and have the credentials to sign in to their systems.
- ( ) I don't have an account with LeighJewell and would like to sign up for an account.

You might be asked to sign into the partners dashboard as part of this activation flow.

CISCO SPACES

Developer

Cancel Continue

1

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Step15: Accept Permissions

Activate Pod1 Example Firehose App

Sign Up & Onboarding | 2 Permissions | 3 Choose Locations | 4 Choose Groups

As an essential function of Cisco DNA Spaces, Cisco collects usage data for Customer, including device information and other categories of customer inputted information that may include device behavior and personally identifiable information (collectively, Customer Data). By clicking the 'Grant Permission' button below, you consent to the release of Customer Data you identify on the App Center dashboard to your designated application provider through the App Center portal, and confirm that between you and Cisco, the Cisco Terms of Service that you executed to participate in App Center will govern the transmission, use and storage of the Customer Data received by the designated application provider.

IoT Devices Data

This app requires passive BLE telemetry. This includes events like temperature, presence, occupancy, humidity, motion, location, illuminance, and battery.
This app requires active BLE telemetry. This includes events like a button press.

Cancel | Grant Permission

1

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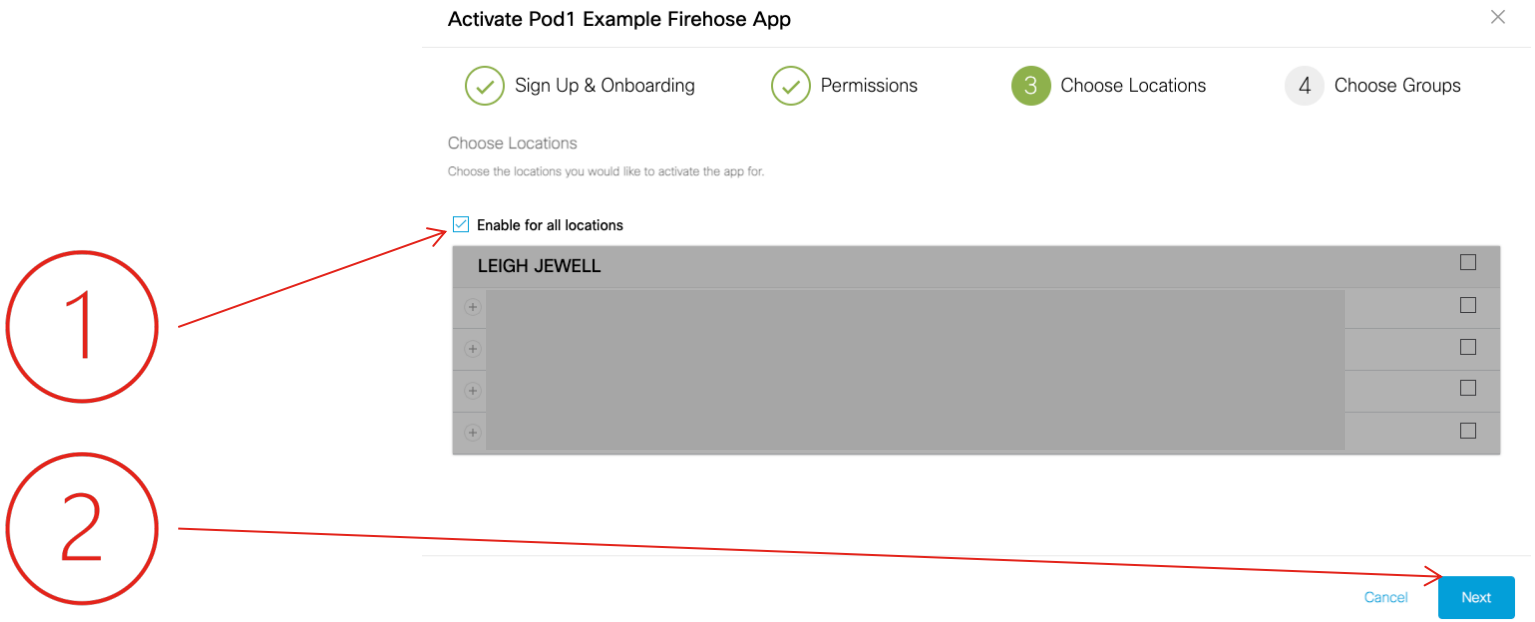
Step16: Enable for all Locations



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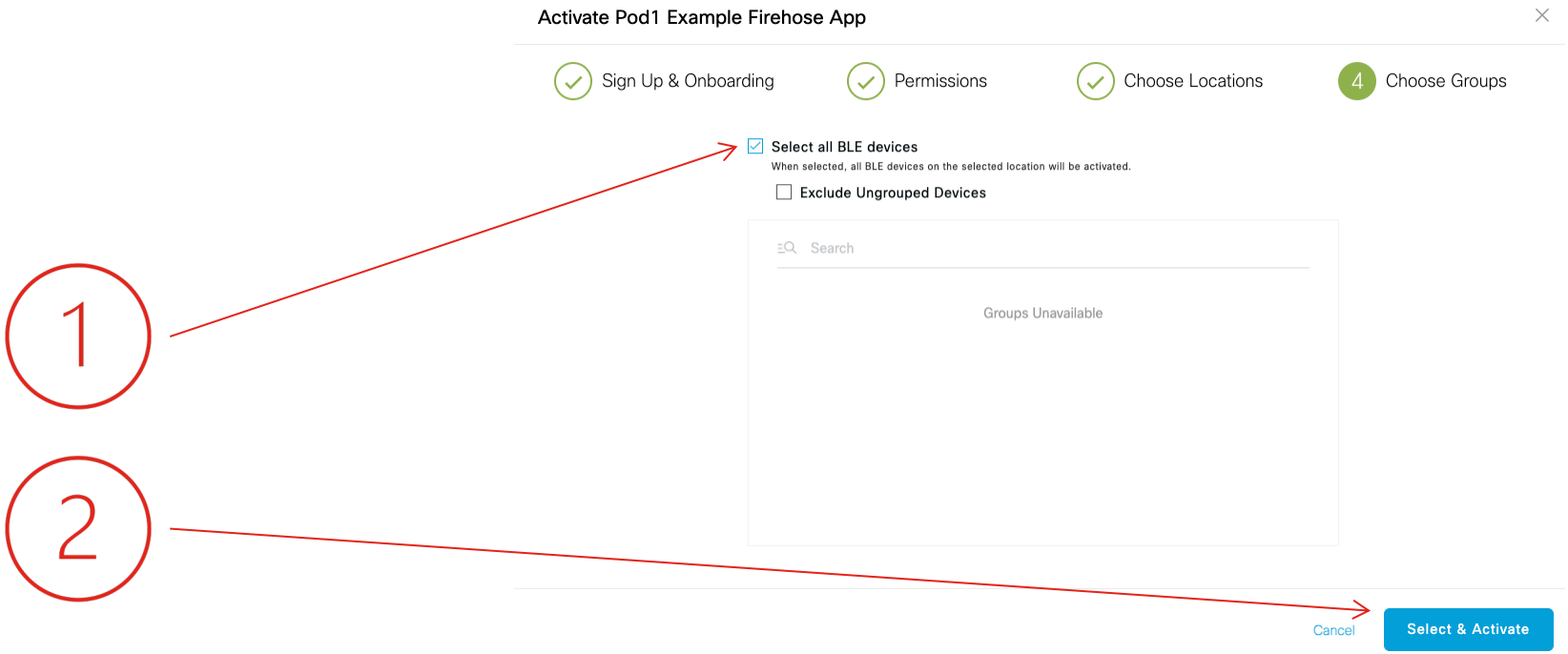
Step17: Enable all BLE Devices



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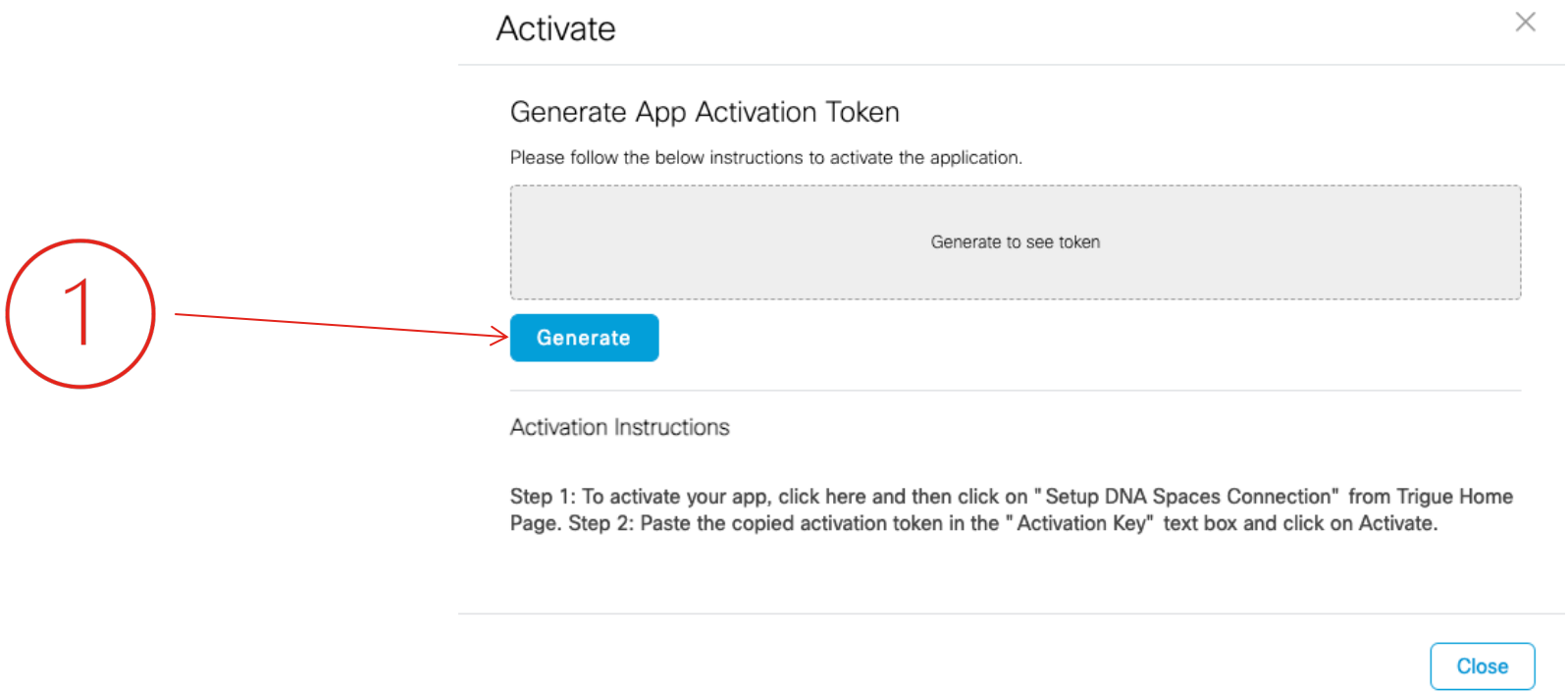
Step18: Generate App Activation Token



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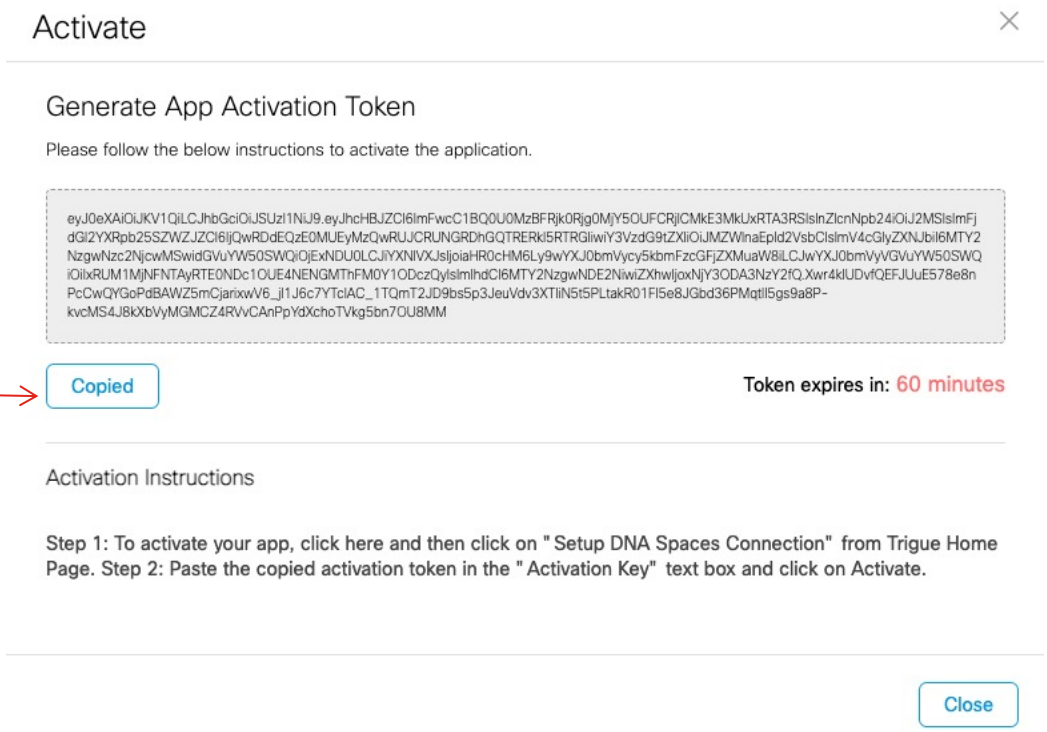
Step19: Copy Token Key

1



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Activation Explanation

Explanation: Decode

Copy the token
Using the JWT decode page:
https://jwt.io/
Decode the key
Copy the keys:
appId
activationRefId

Decoded

EDIT THE PAYLOAD AND SECRET

HEADER: ALGORITHM & TOKEN TYPE


```
{
  "typ": "JWT",
  "alg": "RS256"
}
```


PAYLOAD: DATA


```
{
  "appId": "app-
                                        ",
  "version": "v1",
  "activationRefId":
"DEC                                ",
  "customer":
  "expiresIn":
  "tenantId":
  "baseUrl": "https://partners.dnaspaces.io",
  "partnerTenantId":



}
```


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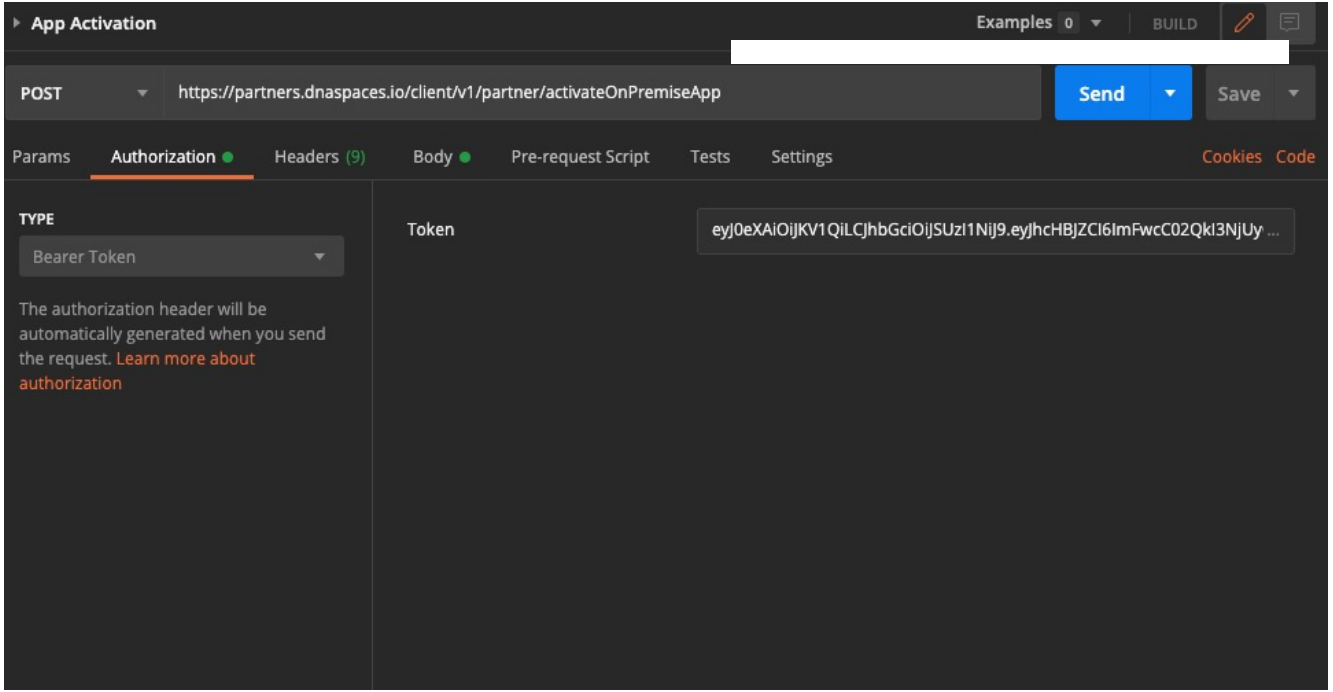
Explanation: Use PostMan

Create POST request
Authorization
Bearer Token
Paste the JWT token



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Explanation: Body of Post request

Create JSON in body with appld and actvation Refld

POST https://partners.dnaspaces.io/client/v1/partner/activateOnPremiseApp Send Save

Params Authorization Headers (9) Body Pre-request Script Tests Settings Cookies Cod

none form-data x-www-form-urlencoded raw binary GraphQL JSON Beautify

```
1 {
2     "appId": "app-[redacted]",
3     "activationRefId": "DEC[redacted]",
4     "instanceName": "1"
5 }
```


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Explanation: Post the data and copy key

If successful you will get a status of True
APIKEY will be provided

Body | Cookies (1) | Headers (12) | Test Results | Status: 200 OK | Time: 1118 ms | Size: 593 B | Save Response

Pretty | Raw | Preview | Visualize | JSON


```
{
    "status": true,
    "message": "Successfully activated the on premise application.",
    "data": {
        "apiKey": "[redacted]"
    }
}
```


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Step20: Activate App

Directory from downloaded zip file.

Python3

```
cd devnet2043-master
python3 cisco_spaces_activate_app.py
```

Paste token key from previous step

```
DNA Spaces on-prem app activation.
Activation key:<Paste Key from previous step>
API Token for activation:<Copy the API Key Generated>
```

Copy API token generated.

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Step20: Activate App (Example)

```
(base) ljewell@LJEWELL-M-D5M0 Downloads % cd devnet2043-master
(base) ljewell@LJEWELL-M-D5M0 devnet2043-master % python3 cisco_spaces_activate_app.py
DNA Spaces on-prem app activation.
Activation
key:eyJ0eXAiOiJKV1QiLCJhbGciOiJSUzI1NiJ9.eyJhcHBJZCI6ImFwcC1BQ0U0MzBFRjk0Rjg0MjY5OUFCRjlCMkE3
MkUxRTA3RSIsInZlcnNpb24iOiJ2MSIsImFjdGl2YXRpb25SZWZJZCI6IjQwRDdEQzE0MUEyMzQwRUJCRUNGRDhGQTRER
kI5RTRGIiwiY3VzdG9tZXIiOiJMZWlnaEpld2VsbCIsImV4cGlyZXNJbiI6MTY2NzgwNzc2NjcwMSwidGVuYW50SWQiOj
ExNDU0LCJiYXNlVXJsIjoiaHR0cHM6Ly9wYXJ0bmVycy5kbmFzcGFjZXMuaW8iLCJwYXJ0bmVyVGVuYW50SWQiOiIxRUM
1MjNFNTAyRTE0NDc1OUE4NENGMThFM0Y1ODczQyIsImlhdCI6MTY2NzgwNDE2NiwiZXhwIjoxNjY3ODA3NzY2fQ.Xwr4k
IUDvfQEFJUuE578e8nPcCwQYGoPdBAWZ5mCjarixwV6_jl1J6c7YTcIAC_1TQmT2JD9bs5p3JeuVdv3XTIiN5t5PLtakR
01FI5e8JGbd36PMqtlI5gs9a8P-kvcMS4J8kXbVyMGMCZ4RVvCAnPpYdXchoTVkg5bn7OU8MM
Successfully activated the on premise application.
Got API key AC550242B98F42878FCDF60E71DADBC8
API Token for activation:AC550242B98F42878FCDF60E71DADB
```


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Step21: Check Activation was successful

1

Create New App

App Activation Sandbox

EXTEND

Take Advantage of Our Partner Ecosystem

DNA Spaces has a rich ecosystem of device and App partners to enhance your solutions

NOTE: If you have configured any 'Europe' region apps, please visit Partner Dashboard EU Setup in order to activate them

2

ON-PREM

CISCO SPACES

Pod1 Example Firehose App

Example Firehose App

App Center

Visit the App Center to discover our ecosystem of integrated partner applications.

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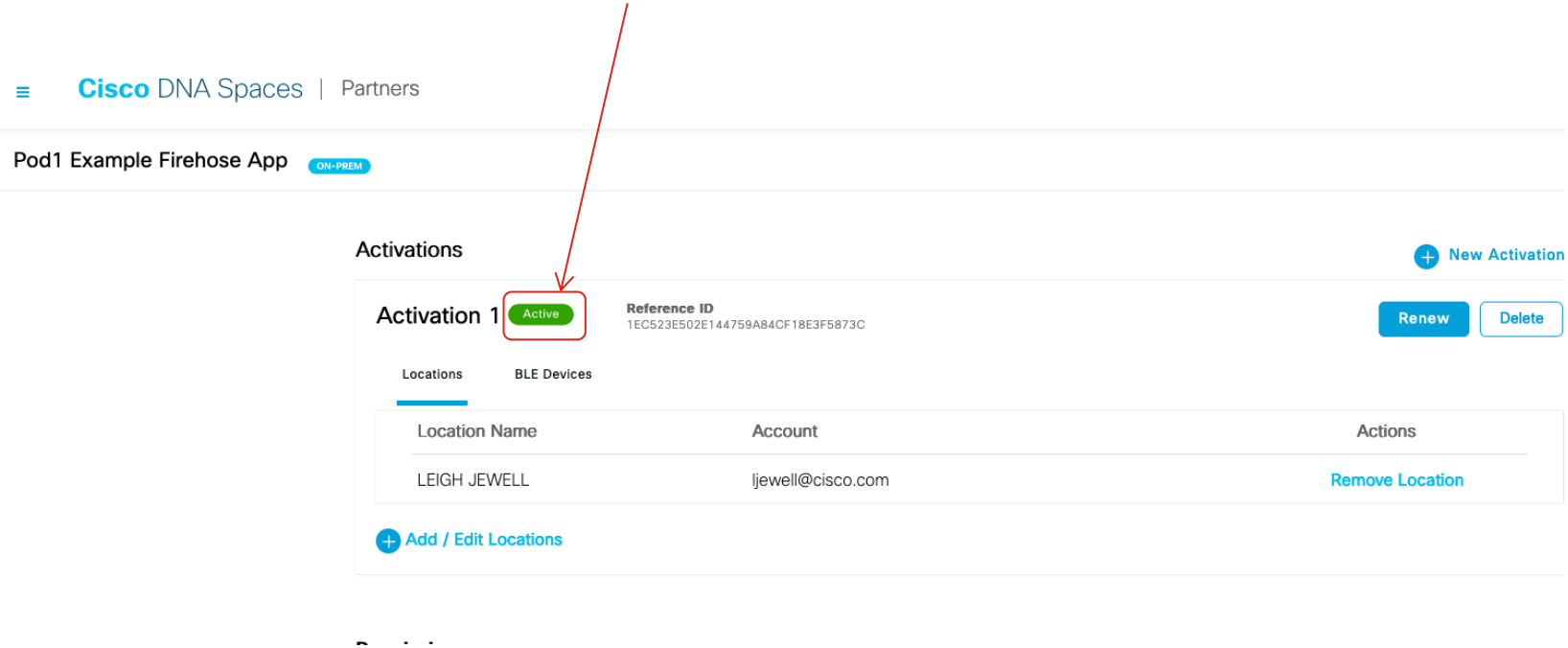
Step22: Check Activation was successful

Check activation is ‘Active’



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Example Python Explained

```python
import json
import requests
from os import environ

if 'TOKEN' in environ:
    token = environ['TOKEN']
    print(f"Got token {token}")
    headers = {'X-API-Key': token}
    r = requests.get('https://partners.dnaspaces.io/api/partners/v1/firehose/events', stream=True, headers=headers)
    if r.status_code == 200:
        print(f"Got status code {r.status_code}")
        for line in r.iter_lines():
            data = json.loads(line)
            print(data)
    else:
        print("Unable to connect to partners.dnaspaces.io. Status code", r.status_code)
else:
    print("Please set environment variable TOKEN before running.")
```


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Step23: Test API Key

API key from activation step

```
cd devnet2043-master
export TOKEN=AC550242B98F42878FCDF60E71DADB
python3 cisco_spaces_firehose_rest_api.py

Got token AC550242B98F42878FCDF60E71DADBC8
Got status code 200
{'recordUid': 'event-8065cb40', 'recordTimestamp':
1667806124250, 'spacesTenantId': '',
'spacesTenantName': '', 'partnerTenantId': '',
'eventType': 'KEEP_ALIVE'}
```

Data from firehose

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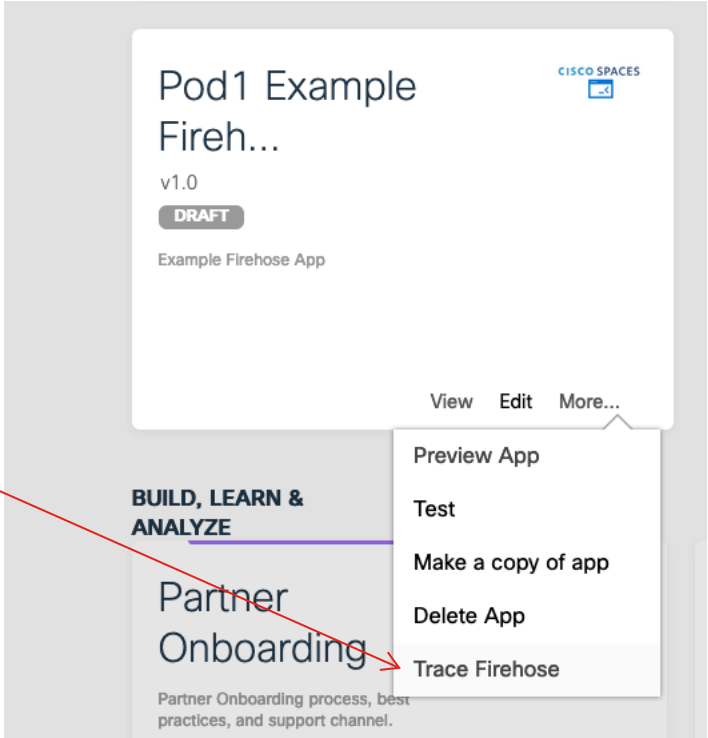
Step25: Test Firehose Trace

1



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Step16: Stream Data

1

2

3

≡ **Cisco** DNA Spaces | Partners

Home > Firehose Trace

Trace Firehose

Pod1 Example Firehose App

ON-PREM App ID: app-ACE430EF94F842699ABF9B2A72E1E07E

Customer

LeighJewell

Activation

Activation 1

Download Historical Data
Download one hour data from last 24 hours

Download Realtime Data
Realtime Data will stream below.

Stream Data

Viewing last 15 records of 15 records streamed

{" xPos" :91.2," yPos" :58.6," latitude" :0.0," longitude" :0.0," confidenceFactor" :128.0," mapId" :" ," locationId" :" location-54dc97f0"," lastLocatedTime" :1667808218000}," location" :
{" locationId" :" location-54dc97f0"," name" :" Level22"," inferredLocationTypes" :[" FLOOR"]," parent" :{" locationId" :" location-ede046fb"," name" :" North Sydney"," inferredLocationTypes" :
[" NETWORK"," BUILDING"]," parent" :{" locationId" :" location-2e7feae"," name" :" NSW"," inferredLocationTypes" :[" CAMPUS"]," parent" :{" locationId" :" location-db739c83"," name" :" LEIGH
JEWELL"," inferredLocationTypes" :[" ROOT"]," sourceLocationId" :" " }," sourceLocationId" :" b96f4a95-c314-43f9-868e-97fc2726a31b" }," sourceLocationId" :" ce54569b-9bb8-4486-
aa11-cd627e835517" }," sourceLocationId" :" a7a3fb10-1ff9-4c88-b8ab-893722b276d0"," floorNumber" :1}," deviceRtcTime" :-1," iBeacon" :
{" beaconMacAddress" :" 00:42:68:c6:47:af"," uuid" :" 76e044c42f0911eda2612042ac120002"," major" :0," minor" :0," advertizedTxPower" :-
65}," rawHeader" :0," rawPayload" :" AgEGGv9MAAVdubExC8JEe2IYQJCrBiAAgAAAAC/"," sequenceNum" :0," maxDetectedRssi" :-88}}

{" recordUuid" :" event-33189162"," recordTimestamp" :1667808232745," spacesTenantId" :" spaces-tenant-
4979a6"," spacesTenantName" :" LeighJewell"," partnerTenantId" :" 1EC523E502E144759A84CF18E3F5873C"," eventType" :" IOT_TELEMETRY"," iotTelemetry" :{" deviceInfo" :
{" deviceType" :" IOT_BLE_DEVICE"," deviceId" :" 57:51:84:ba:4f:fe"," deviceMacAddress" :" 57:51:84:ba:4f:fe"," group" :
[]," deviceName" :" "," firmwareVersion" :" "," rawDeviceId" :" "," manufacturer" :" "," companyId" :" 4c00"," serviceUuid" :" "," label" :" "},," detectedPosition" :
{" xPos" :95.7," yPos" :66.0," latitude" :0.0," longitude" :0.0," confidenceFactor" :56.0," mapId" :" "," locationId" :" location-54dc97f0"," lastLocatedTime" :1667808228000}," location" :
{" locationId" :" location-54dc97f0"," name" :" Level22"," inferredLocationTypes" :[" FLOOR"]," parent" :{" locationId" :" location-ede046fb"," name" :" North Sydney"," inferredLocationTypes" :
[" NETWORK"," BUILDING"]," parent" :{" locationId" :" location-2e7feae"," name" :" NSW"," inferredLocationTypes" :[" CAMPUS"]," parent" :{" locationId" :" location-db739c83"," name" :" LEIGH
JEWELL"," inferredLocationTypes" :[" ROOT"]," sourceLocationId" :" " }," sourceLocationId" :" b96f4a95-c314-43f9-868e-97fc2726a31b" }," sourceLocationId" :" ce54569b-9bb8-4486-
aa11-cd627e835517" }," sourceLocationId" :" a7a3fb10-1ff9-4c88-b8ab-893722b276d0"," floorNumber" :1}," deviceRtcTime" :-
1," rawHeader" :0," rawPayload" :" Hv9MAAcZARVgIviPAQAE1OtxZ7Q3JSN7P3hR91wqQg==" ," sequenceNum" :0," maxDetectedRssi" :-81}}

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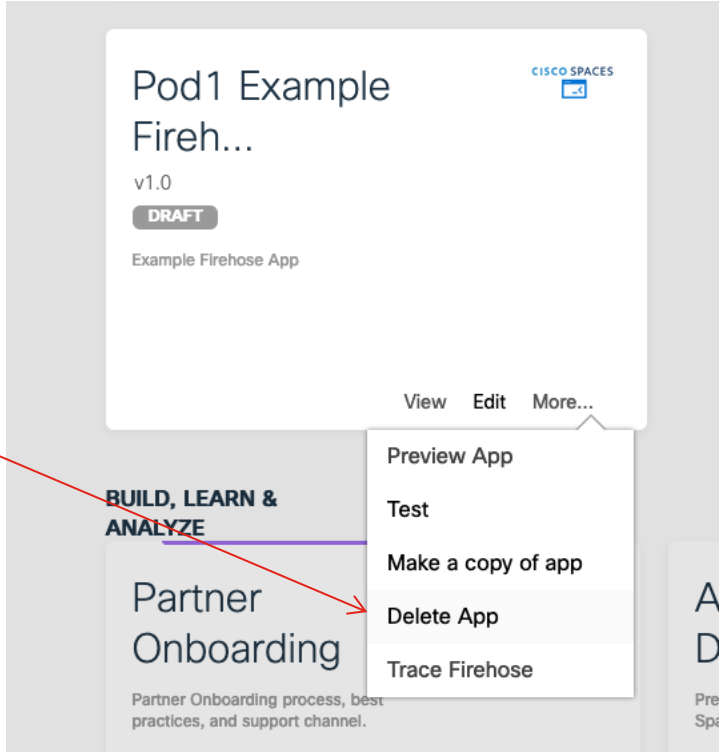
Step17: Delete App

1



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