You make **possible**

Customizing Cisco Collaboration Devices

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API Architect, DevNet

DEVNET-2071

Barcelona | January 27-31, 2020

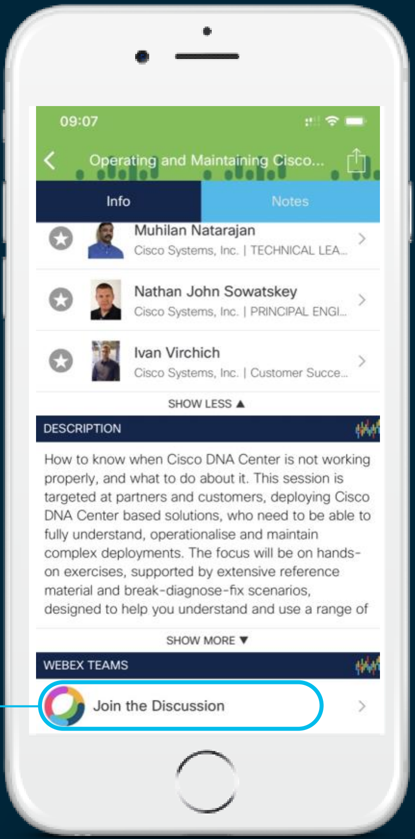
Cisco Webex Teams

Questions?

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

How

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



09:07

Operating and Maintaining Cisco...

Info | Notes

Muhilan Natarajan
Cisco Systems, Inc. | TECHNICAL LEA...

Nathan John Sowatskey
Cisco Systems, Inc. | PRINCIPAL ENGI...

Ivan Virchich
Cisco Systems, Inc. | Customer Succe...

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DESCRIPTION

How to know when Cisco DNA Center is not working properly, and what to do about it. This session is targeted at partners and customers, deploying Cisco DNA Center based solutions, who need to be able to fully understand, operationalise and maintain complex deployments. The focus will be on hands-on exercises, supported by extensive reference material and break-diagnose-fix scenarios, designed to help you understand and use a range of

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WEBEX TEAMS

Join the Discussion

/Cisco/DevNet/SteveSfartz

- API Architect at Cisco DevNet
- Working to deliver the greatest API Experience for Cisco's developer community
- Technical Lead for Cisco's API Style Guide
- Webex Teams & Devices APIs
- Contributor to DevNet Code & Automation Exchange
  - postman collections for Webex Teams & Devices APIs
  - awesome-webex, awesome-xapi
  - code samples & dev tools

webex: stsfartz@cisco.com
github: ObjectIsAdvantag
twitter: @SteveSfartz

"vision without execution is hallucination"

Agenda

- CE programmability - xAPI
- Interacting with SSH, HTTP, Websockets
- Embedding code as JavaScript Macros
- Building and deploying UI Interactions
- Latest features

https://projectworkplace.cisco.com

7 participants, video call & presentation in progress

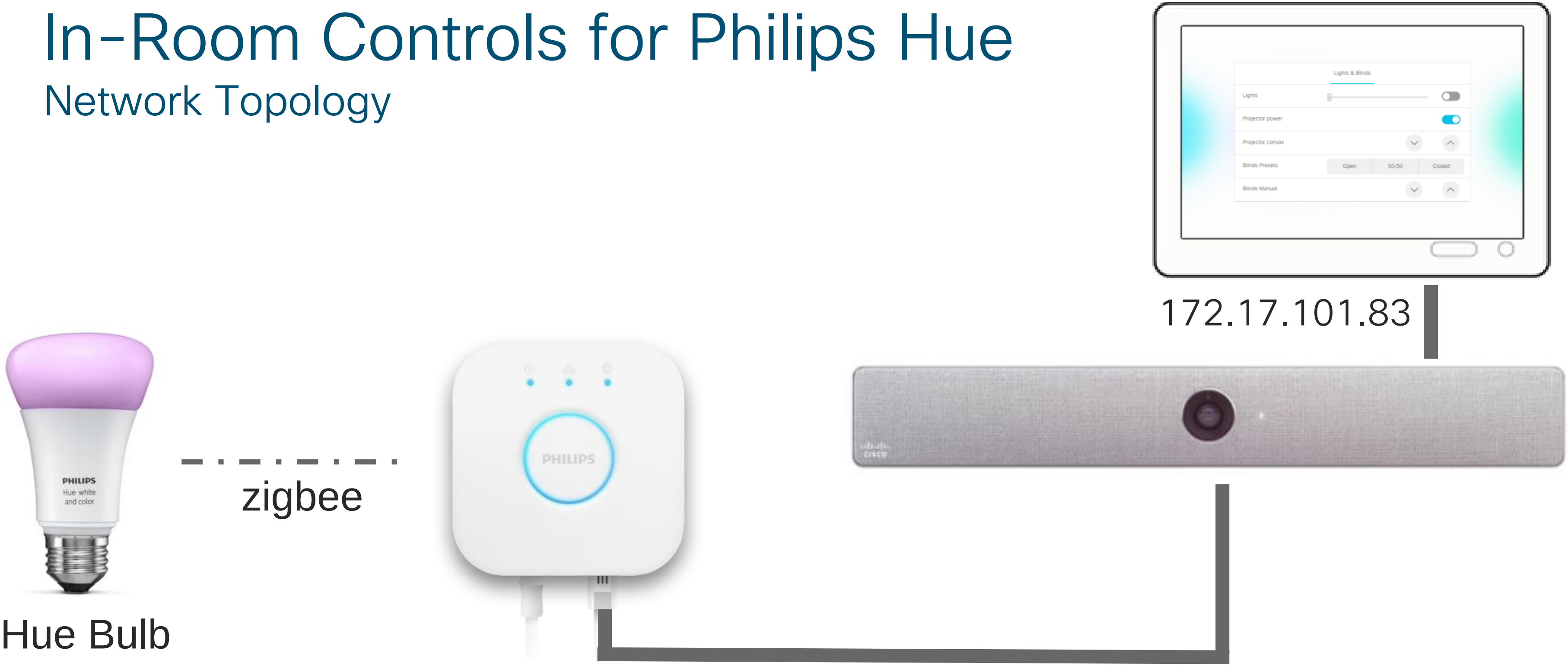
Demo [OnAir]

In-Room Controls and UI Extensions

Demo
[Enhanced Meeting Rooms]

In-Room Controls for Philips Hue

Network Topology



172.17.101.83

zigbee

Hue Bulb

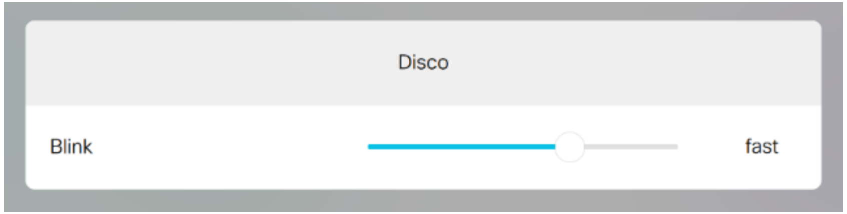
172.17.101.71

172.17.101.69

Hue Controls

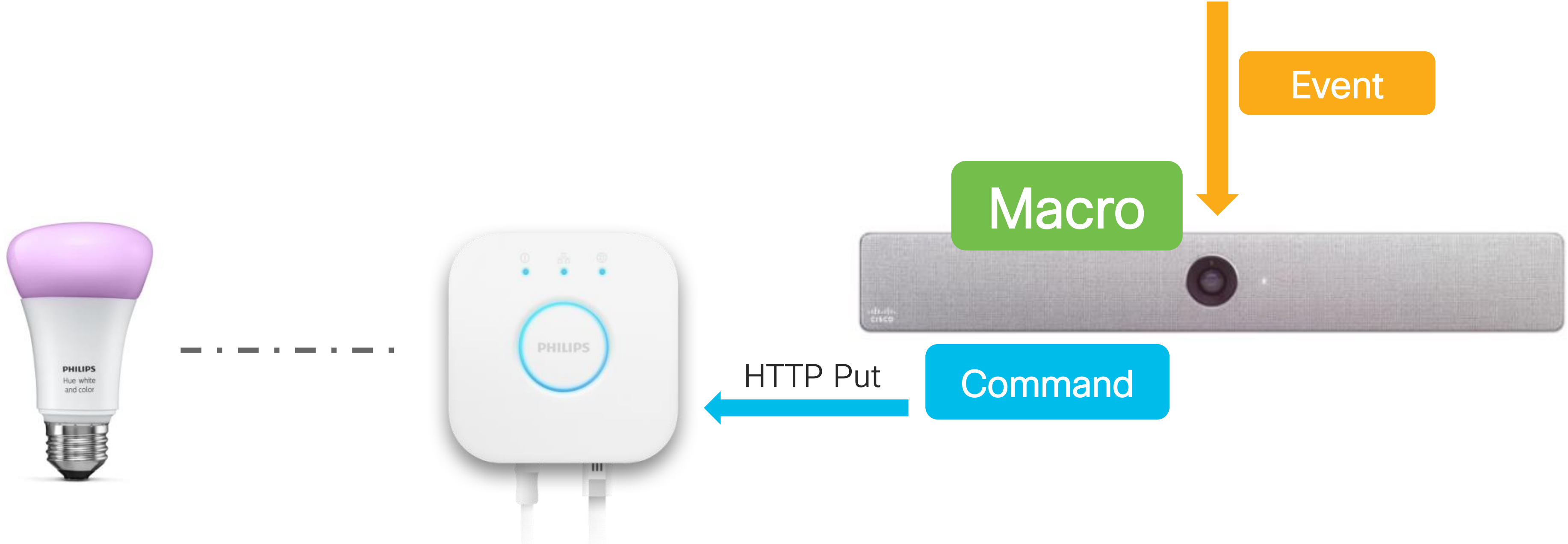
http://bit.ly/ObjectIsAdvantag-HueDisco

In-Room Control



Disco

Blink fast



Event

Macro

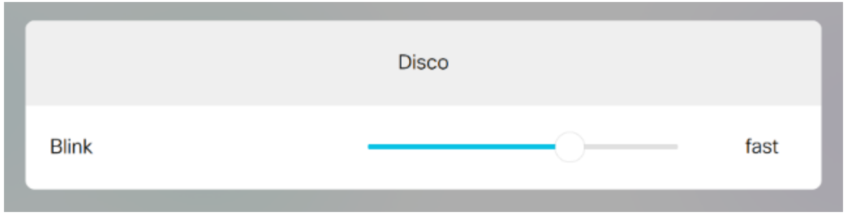
HTTP Put

Command

Hue Controls

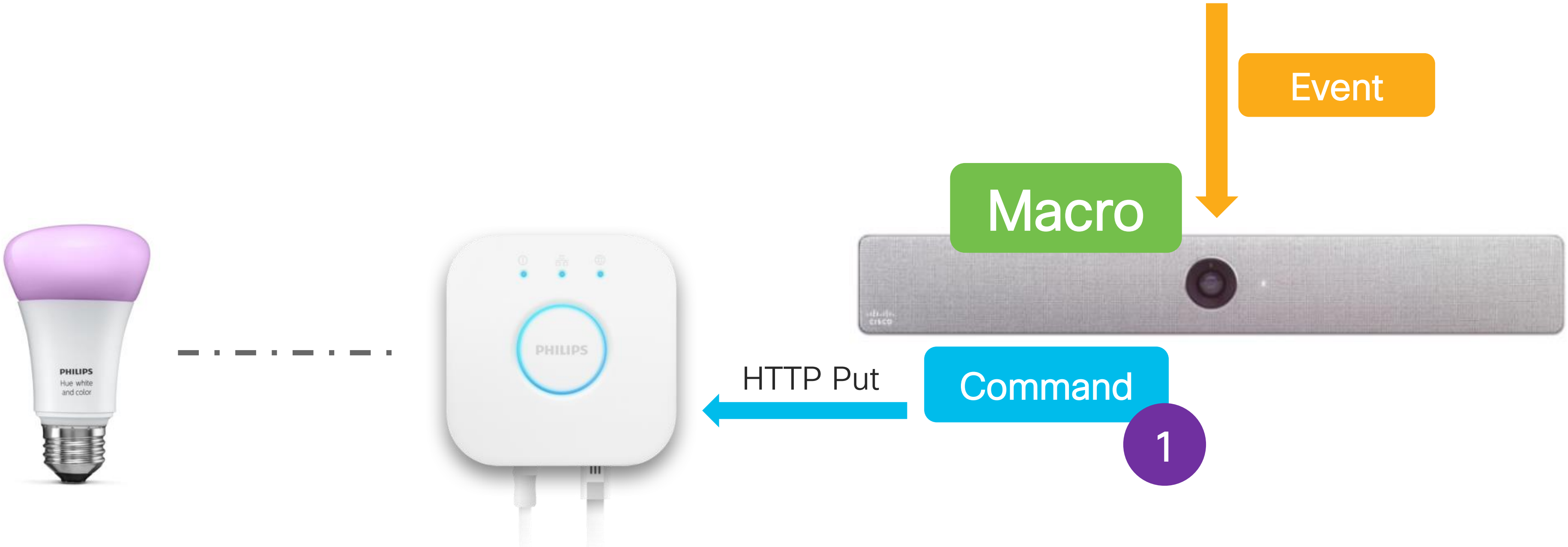
http://bit.ly/ObjectIsAdvantag-HueDisco

In-Room Control

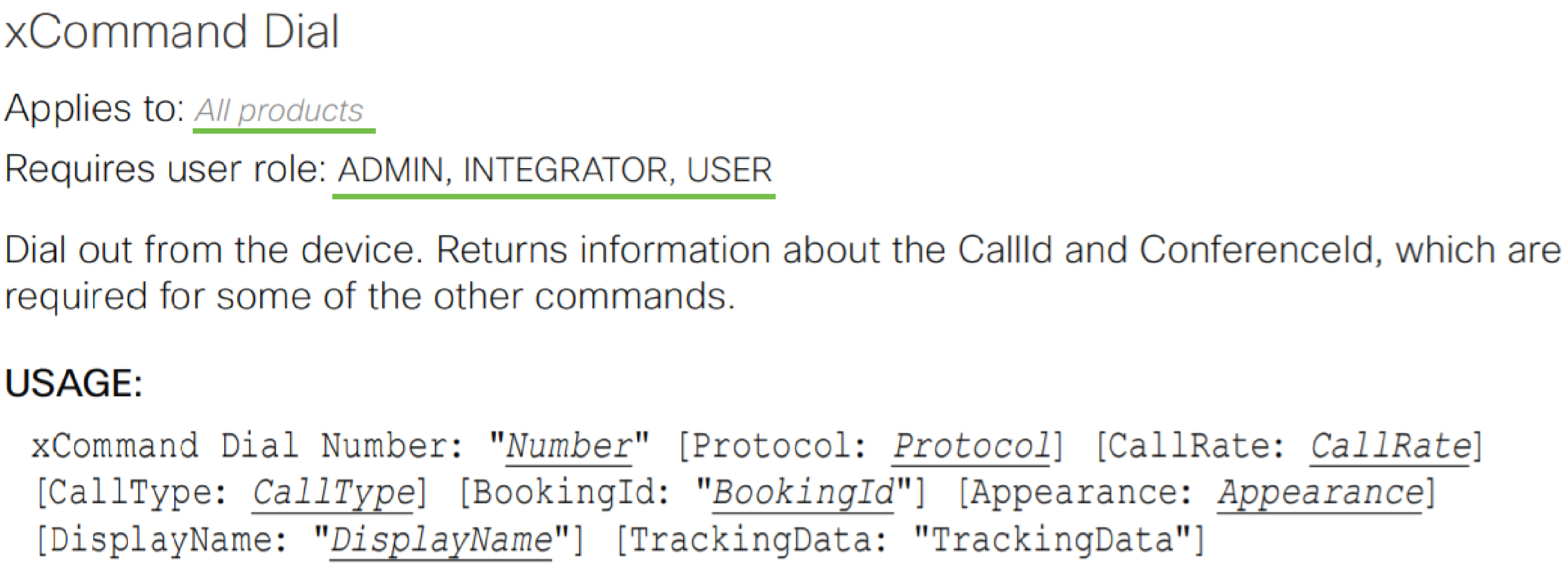


Disco

Blink fast



API Reference Guide



xCommand Dial

Applies to: *All products*

Requires user role: ADMIN, INTEGRATOR, USER

Dial out from the device. Returns information about the CallId and ConferenceId, which are required for some of the other commands.

USAGE:

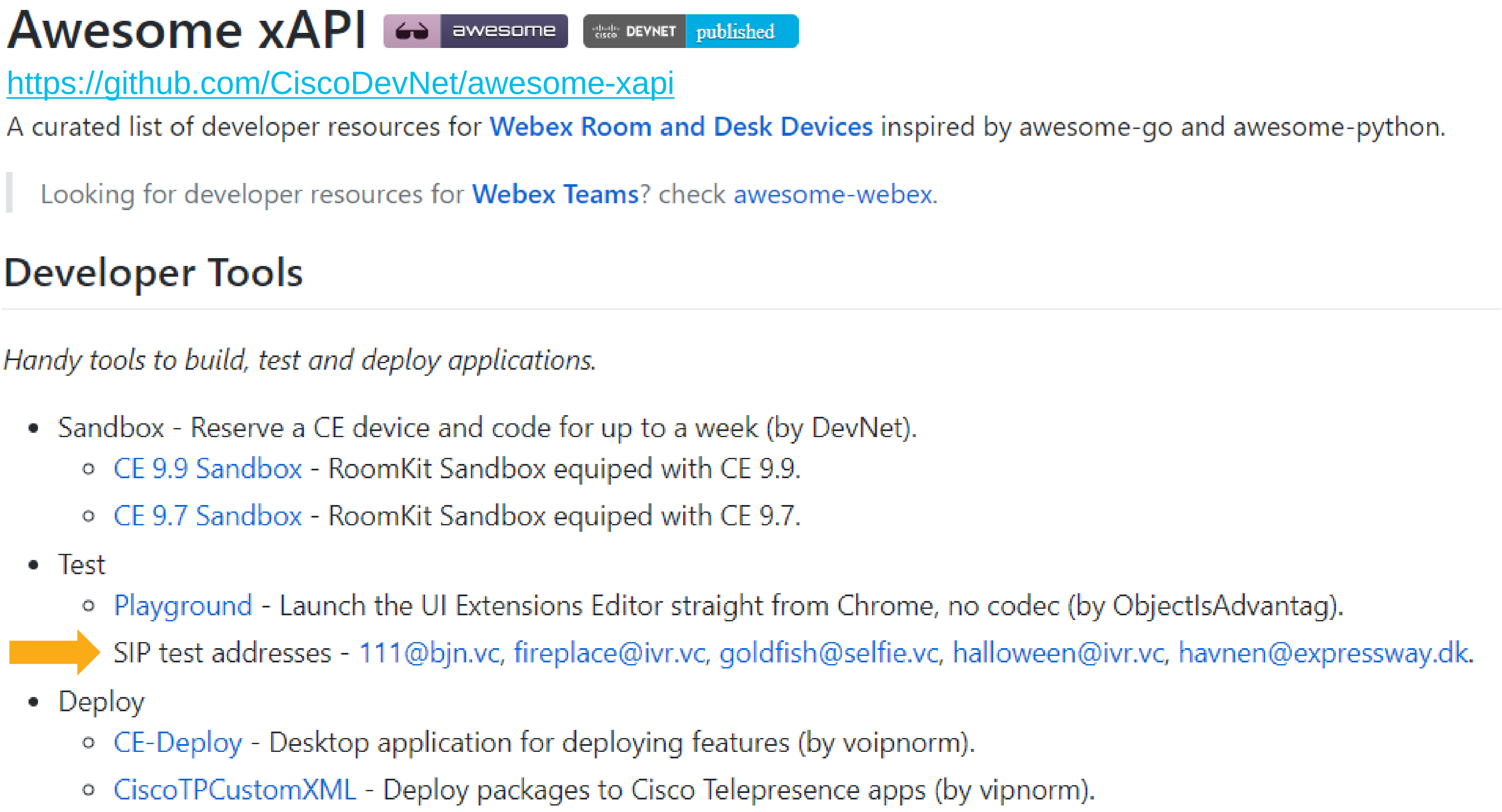
```
xCommand Dial Number: "Number" [Protocol: Protocol] [CallRate: CallRate]
[CallType: CallType] [BookingId: "BookingId"] [Appearance: Appearance]
[DisplayName: "DisplayName"] [TrackingData: "TrackingData"]
```

Dial (command)

- from t-shell

```
xcommand Dial Number: stsfartz@cisco.com
*r DialResult CallId: 2
*r DialResult ConferenceId: 1
```

/!\ Look for tests SIP addresses in ‘awesome-xapi’



Awesome xAPI

https://github.com/CiscoDevNet/awesome-xapi

A curated list of developer resources for **Webex Room and Desk Devices** inspired by awesome-go and awesome-python.

> Looking for developer resources for **Webex Teams**? check awesome-webex.

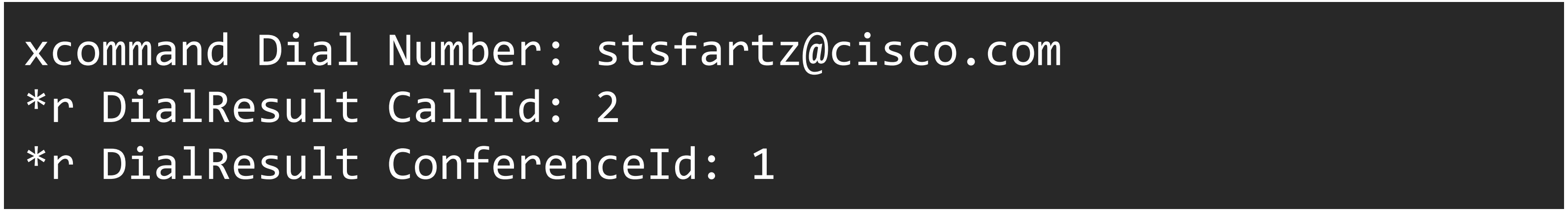
Developer Tools

Handy tools to build, test and deploy applications.

- Sandbox - Reserve a CE device and code for up to a week (by DevNet).
  - CE 9.9 Sandbox - RoomKit Sandbox equiped with CE 9.9.
  - CE 9.7 Sandbox - RoomKit Sandbox equiped with CE 9.7.
- Test
  - Playground - Launch the UI Extensions Editor straight from Chrome, no codec (by ObjectIsAdvantag).
  - SIP test addresses - 111@bjn.vc, fireplace@ivr.vc, goldfish@selfie.vc, halloween@ivr.vc, havnen@expressway.dk.
- Deploy
  - CE-Deploy - Desktop application for deploying features (by voipnorm).
  - CiscoTPCustomXML - Deploy packages to Cisco Telepresence apps (by vipnorm).

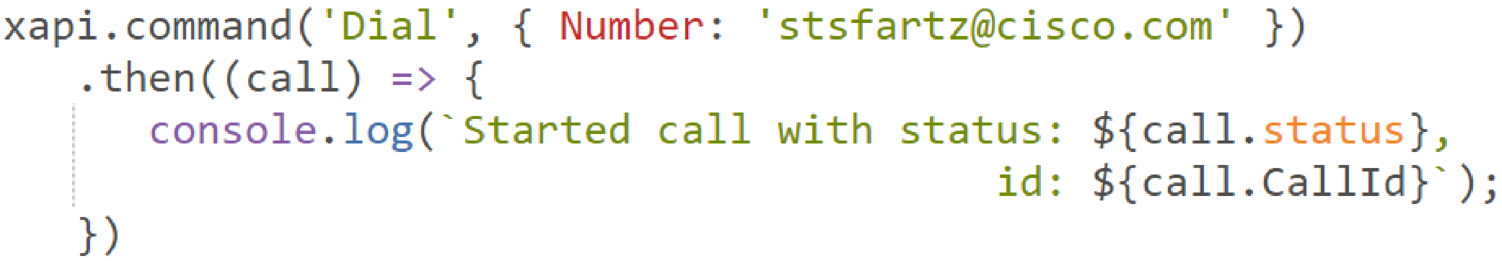
Dial (command)

- from t-shell



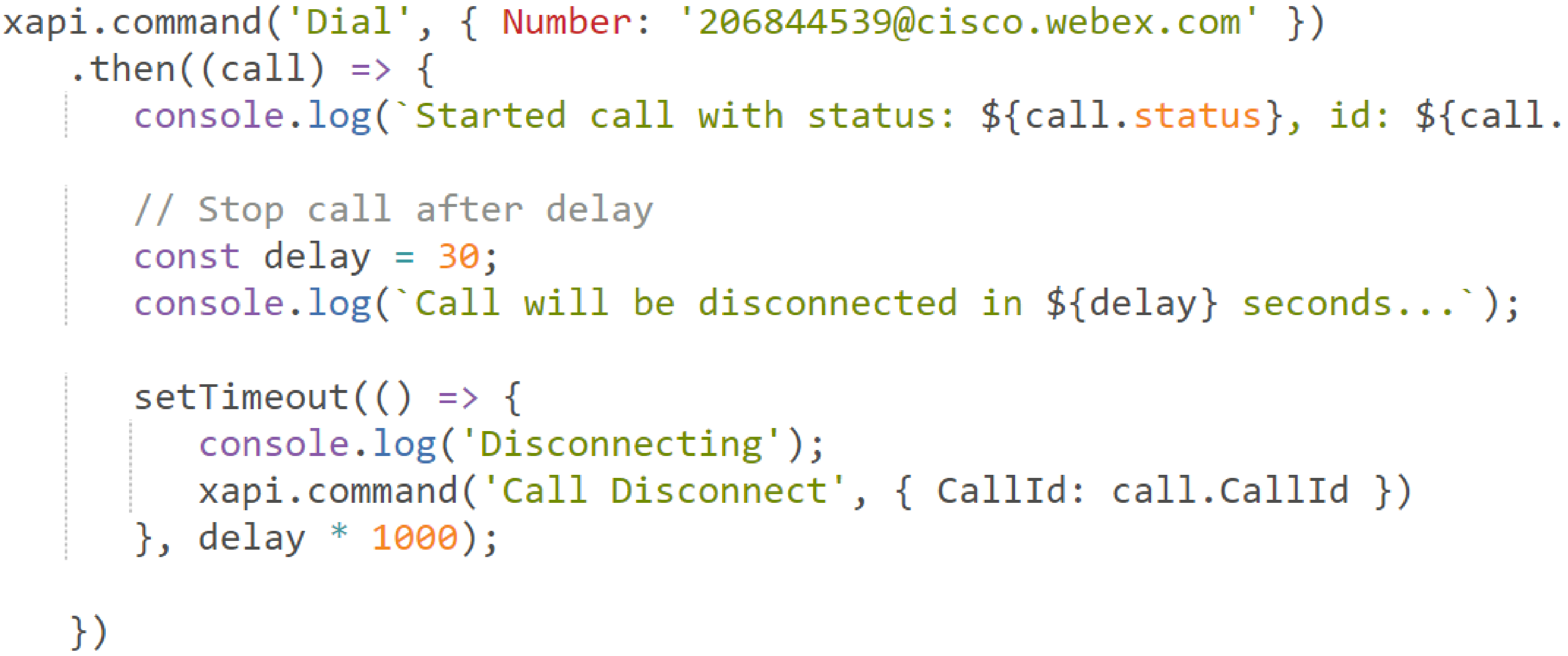
```
xcommand Dial Number: stsfartz@cisco.com
*r DialResult CallId: 2
*r DialResult ConferenceId: 1
```

- from code



```
xapi.command('Dial', { Number: 'stsfartz@cisco.com' })
   .then((call) => {
      console.log(`Started call with status: ${call.status},
                                         id: ${call.CallId}`);
   })
```

Dial (command)



```
xapi.command('Dial', { Number: '206844539@cisco.webex.com' })
   .then((call) => {
      console.log(`Started call with status: ${call.status}, id: ${call.

      // Stop call after delay
      const delay = 30;
      console.log(`Call will be disconnected in ${delay} seconds...`);

      setTimeout(() => {
         console.log('Disconnecting');
         xapi.command('Call Disconnect', { CallId: call.CallId })
      }, delay * 1000);

   })
```

Changing Color of a Philips Hue bulb

Hue bridge IP

Hue user

light number

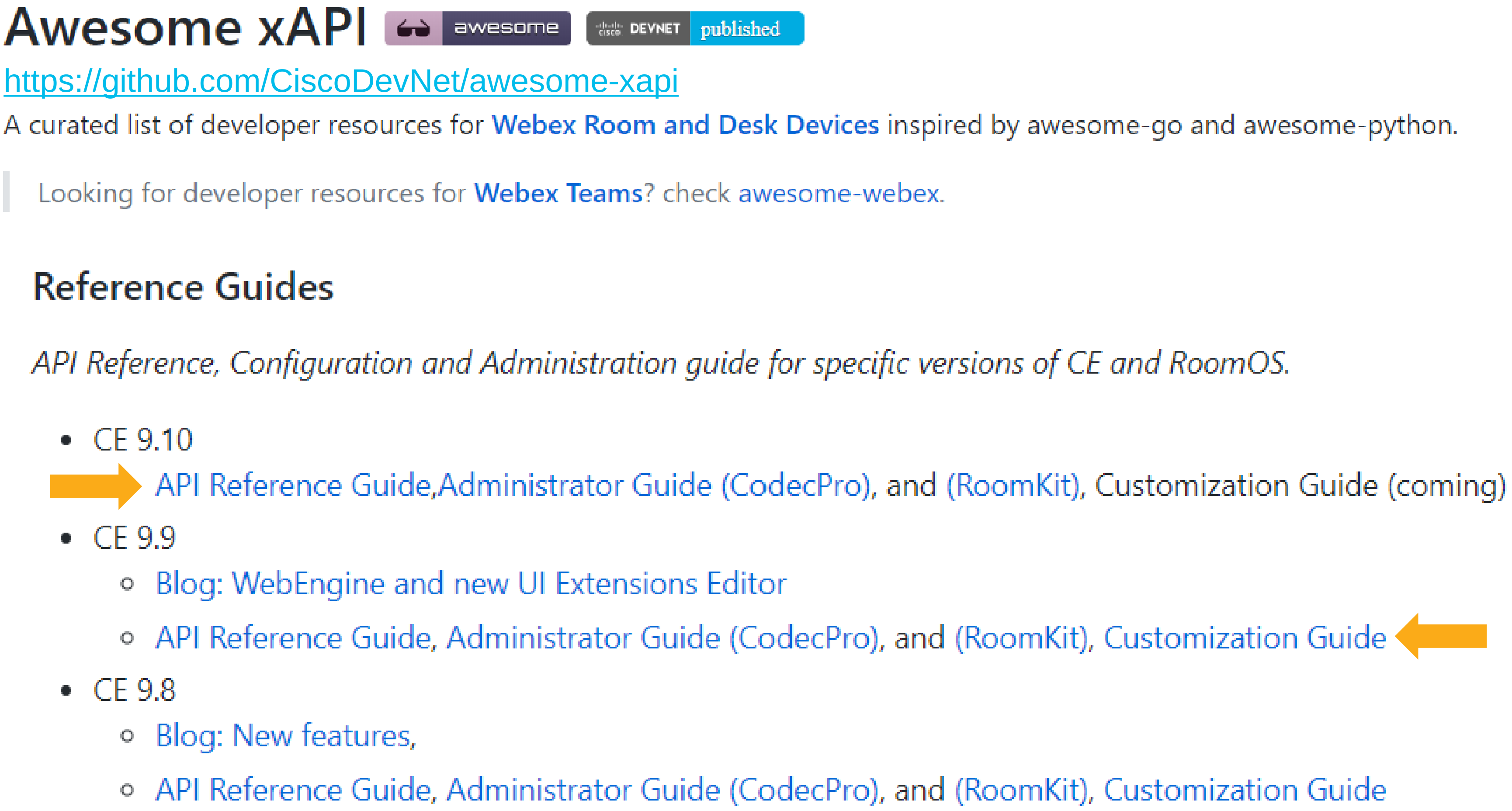
PUT http://172.17.201.69/api/SECRET/lights/4/state

{ "hue": 25500 }

color

200 OK

[{ "success": { "/lights/4/state/hue": 25500 } }]



Awesome xAPI

https://github.com/CiscoDevNet/awesome-xapi

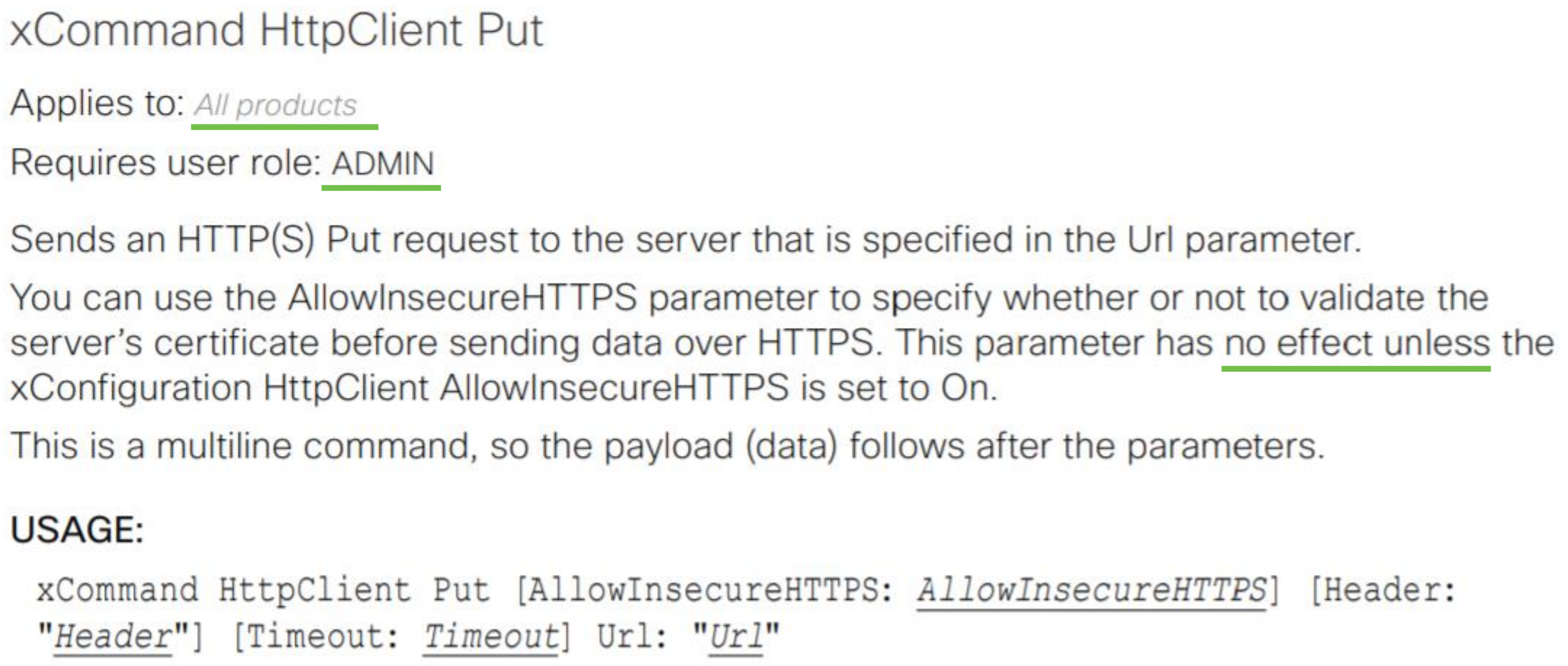
A curated list of developer resources for **Webex Room and Desk Devices** inspired by awesome-go and awesome-python.

> Looking for developer resources for **Webex Teams**? check awesome-webex.

Reference Guides

API Reference, Configuration and Administration guide for specific versions of CE and RoomOS.

- CE 9.10
  - API Reference Guide,Administrator Guide (CodecPro), and (RoomKit), Customization Guide (coming)
- CE 9.9
  - Blog: WebEngine and new UI Extensions Editor
  - API Reference Guide, Administrator Guide (CodecPro), and (RoomKit), Customization Guide
- CE 9.8
  - Blog: New features,
  - API Reference Guide, Administrator Guide (CodecPro), and (RoomKit), Customization Guide



xCommand HttpClient Put

Applies to: *All products*

Requires user role: ADMIN

Sends an HTTP(S) Put request to the server that is specified in the Url parameter.

You can use the AllowInsecureHTTPS parameter to specify whether or not to validate the server’s certificate before sending data over HTTPS. This parameter has no effect unless the xConfiguration HttpClient AllowInsecureHTTPS is set to On.

This is a multiline command, so the payload (data) follows after the parameters.

USAGE:

```
xCommand HttpClient Put [AllowInsecureHTTPS: AllowInsecureHTTPS] [Header:
"Header"] [Timeout: Timeout] Url: "Url"
```

```
xConfiguration HttpClient Mode: On
xConfiguration HttpClient AllowInsecureHTTPS: True
```

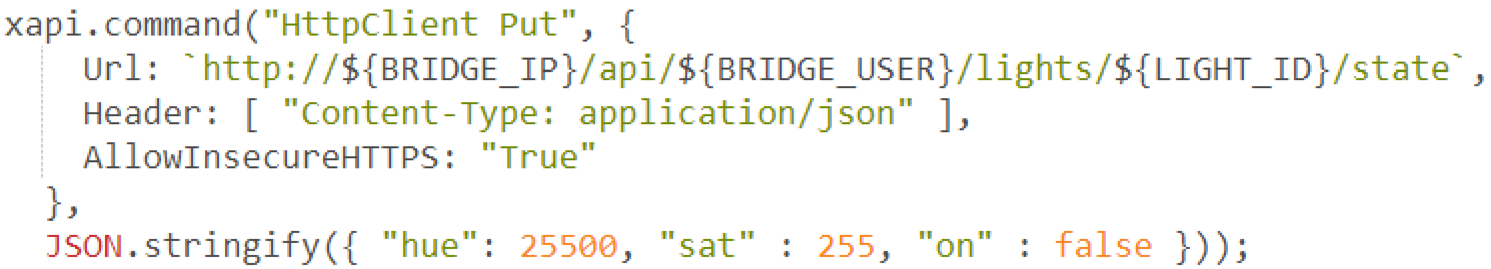
Required

HttpClient command

- from t-shell

```
xcommand HttpClient Put
   Header: "Content-Type: application/json"
   Url: " http://192.168.1.33/api/SECRET/lights/1/state"
{ "hue": 25500, "sat" : 255, "on" : true }
.
```

- from code



```
xapi.command("HttpClient Put", {
    Url: `http://${BRIDGE_IP}/api/${BRIDGE_USER}/lights/${LIGHT_ID}/state`,
    Header: [ "Content-Type: application/json" ],
    AllowInsecureHTTPS: "True"
  },
  JSON.stringify({ "hue": 25500, "sat" : 255, "on" : false }));
```

Embedded JavaScript Macros

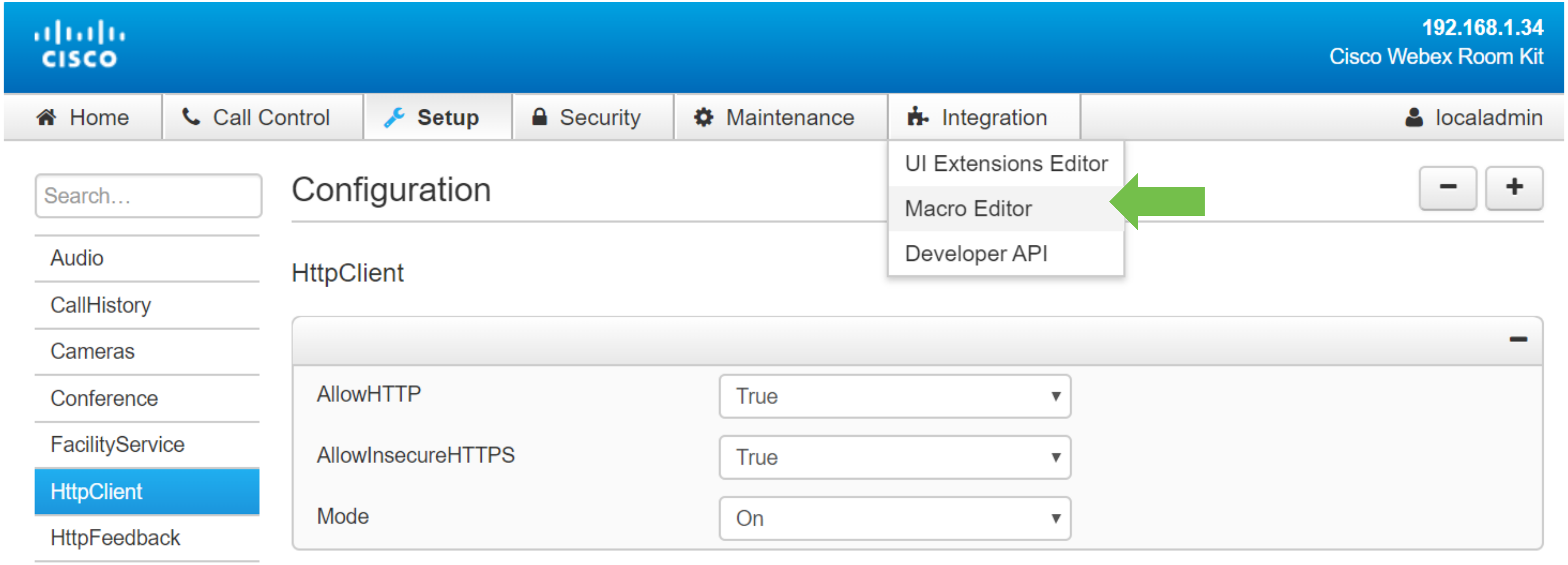
CE & RoomOS Programmability (xAPI)

Embedded custom logic in JavaScript

macros

Launch the Macro Editor

https://10.10.20.17X/web



Configuration

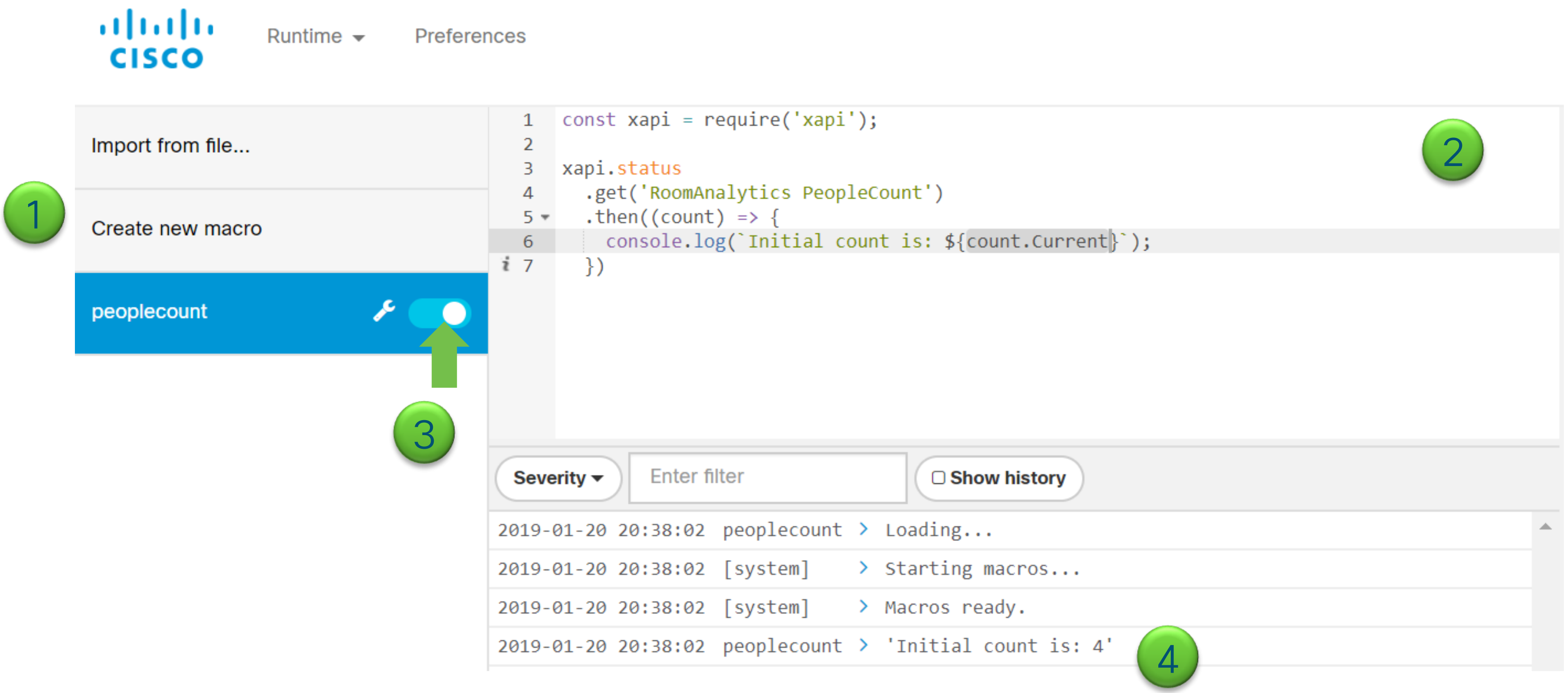
HttpClient

AllowHTTP: True

AllowInsecureHTTPS: True

Mode: On

Macro Editor

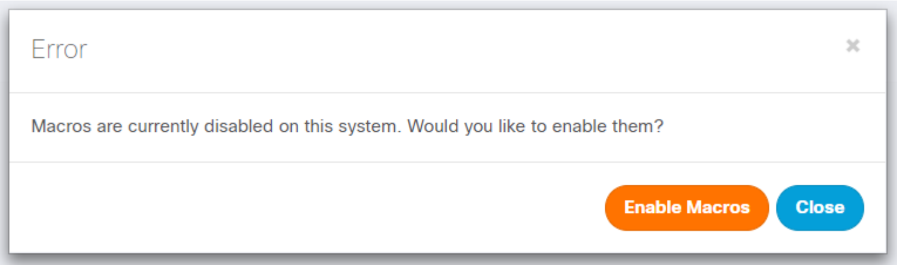


```javascript
const xapi = require('xapi');

xapi.status
  .get('RoomAnalytics PeopleCount')
  .then((count) => {
    console.log(`Initial count is: ${count.Current}`);
  })
```

```
2019-01-20 20:38:02  peoplecount  >  Loading...
2019-01-20 20:38:02  [system]     >  Starting macros...
2019-01-20 20:38:02  [system]     >  Macros ready.
2019-01-20 20:38:02  peoplecount  >  'Initial count is: 4'
```

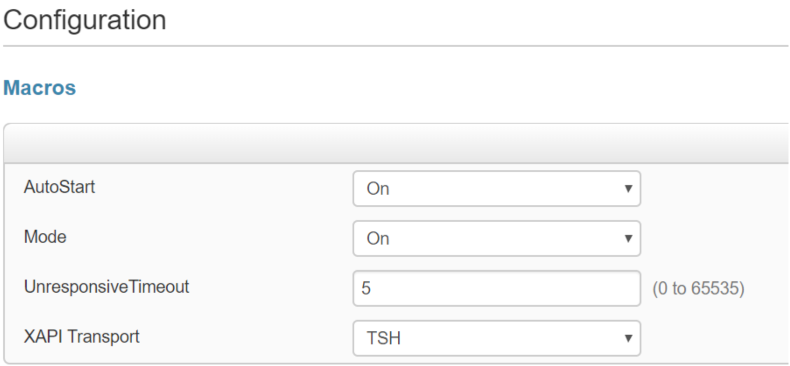
Demo
[HttpClient command]

Macro runtime



Error

Macros are currently disabled on this system. Would you like to enable them?



Configuration

Macros

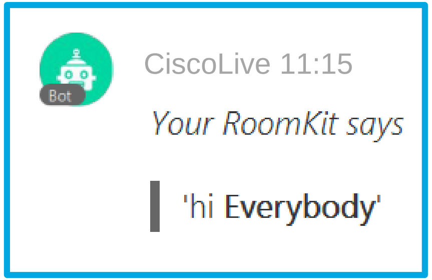
AutoStart	On	
Mode	On	
UnresponsiveTimeout	5	(0 to 65535)
XAPI Transport	TSH	

- Maximum number of macros (10 currently)
- CE & RoomOS devices (but SX10)
- Run as ‘Admin’ role by default
- Duktape JavaScript runtime (version 2.2+) with Babel
  - babel-preset-latest’ is specified to support latest ES6+ features
  - async/await is supported
- /!\ Macro tutorial accessible from the codec

Demo
[Disco Macro]

HttpClient command

ChatOps – posting to a Webex Teams space



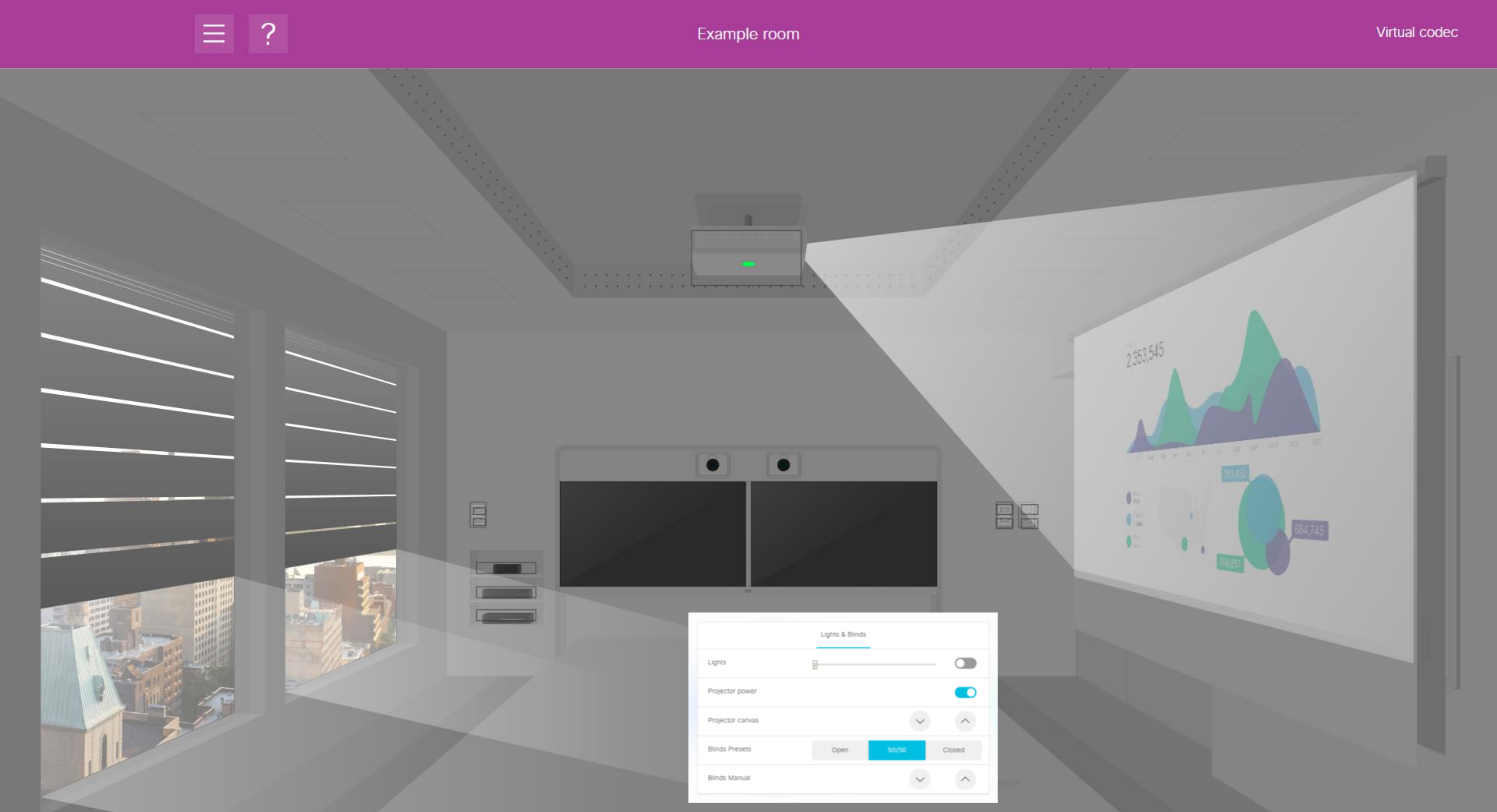
CiscoLive 11:15

Your RoomKit says

> 'hi **Everybody**'

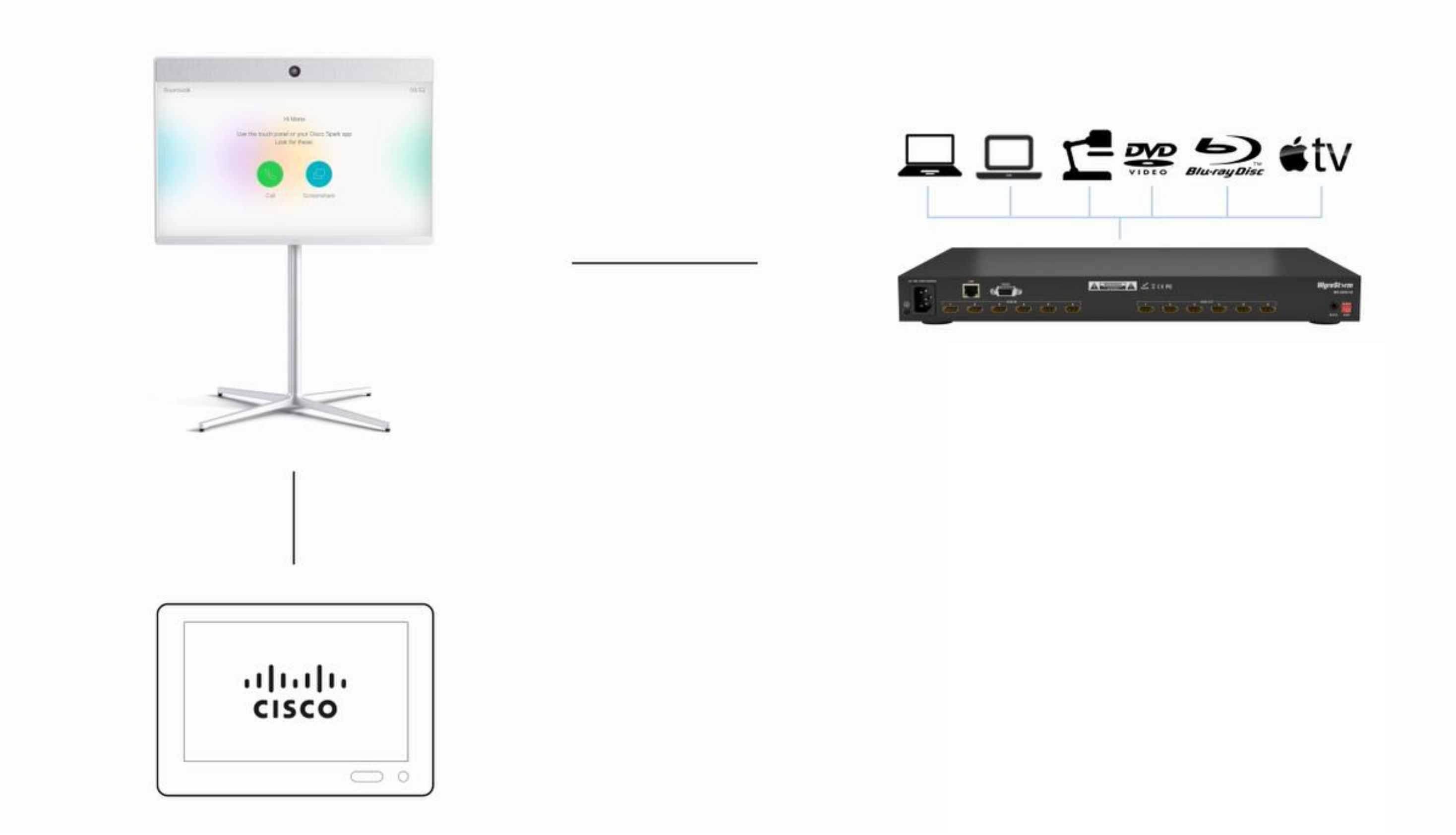
```
xapi.command("HttpClient Post", {
   Header: ["Content-Type: application/json",
            "Authorization: Bearer " + token],
   Url: "https://api.ciscospark.com/v1/messages",
   AllowInsecureHTTPS: "True"
},
   JSON.stringify({
      "markdown": "_Your RoomKit says_\n>'hi **Everybody**'",
      "roomId": roomId
   }))
   .then((result) => console.log('message pushed to Webex Teams'))
```

Creating UI Extensions



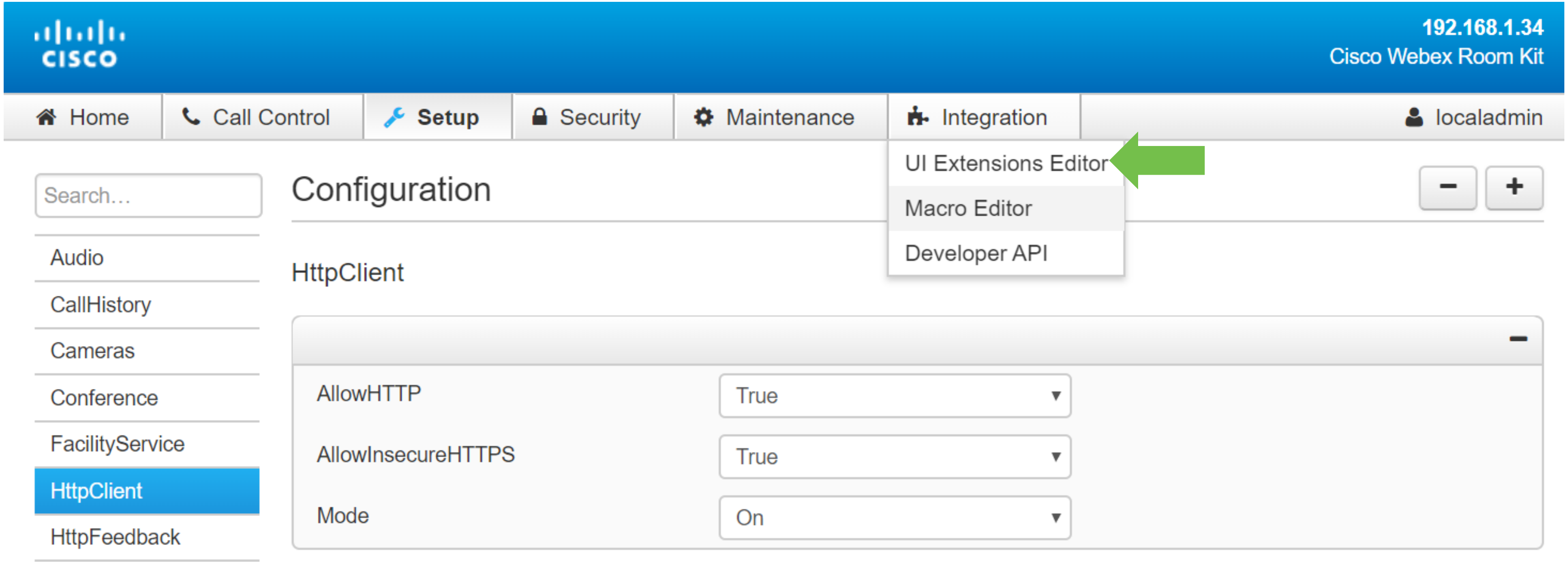
Lights & Blinds

Lights		○
Projector power		●
Projector canvas	˅	˄
Blinds Presets	Open [✓ 50/50] Closed	
Blinds Manual	˅	˄


Hi Mona
Use the touch panel or your Cisco Spark app
Call
Screenshare
DVD VIDEO
Blu-ray Disc
tv
cisco

Launch the UI Extensions Editor

https://10.10.20.17X/web

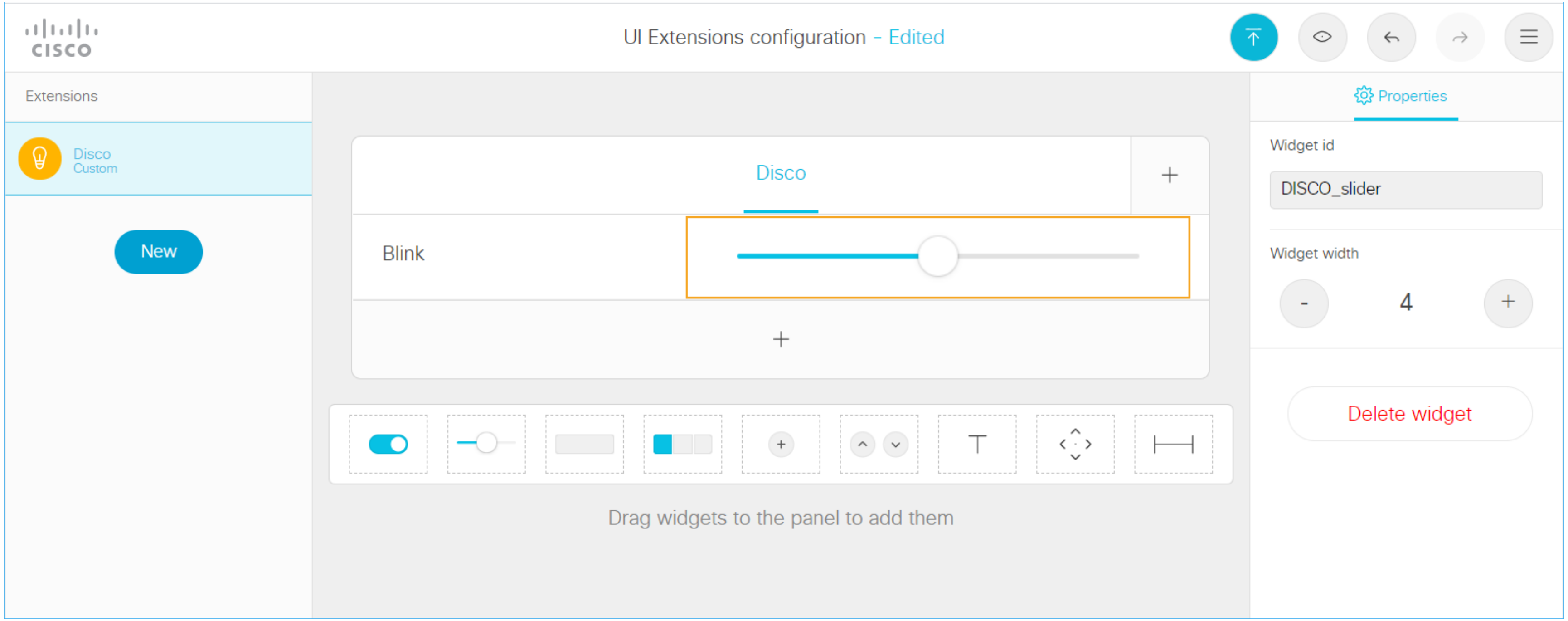


Configuration

HttpClient

AllowHTTP	True
AllowInsecureHTTPS	True
Mode	On

UI Extensions Editor



UI Extensions configuration - Edited

Extensions

Disco
Custom

New

Disco

Blink

Drag widgets to the panel to add them

Properties

Widget id

DISCO_slider

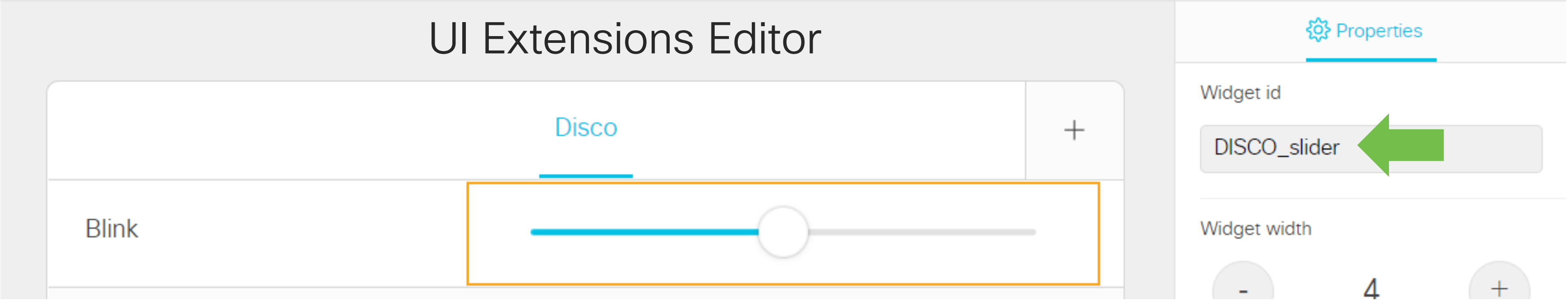
Widget width

- 4 +

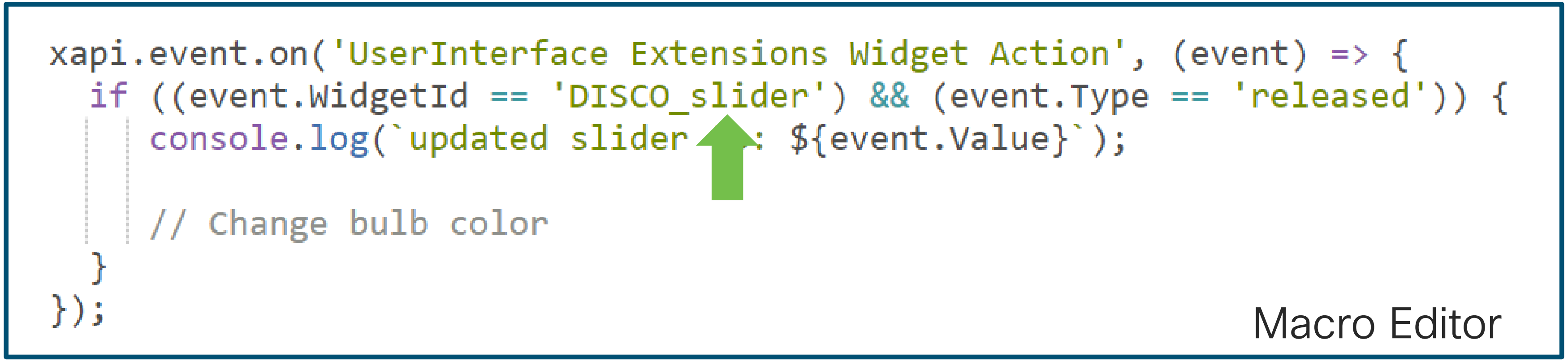
Delete widget

Demo
[UI Extensions Editor]

Listening to events



UI Extensions Editor



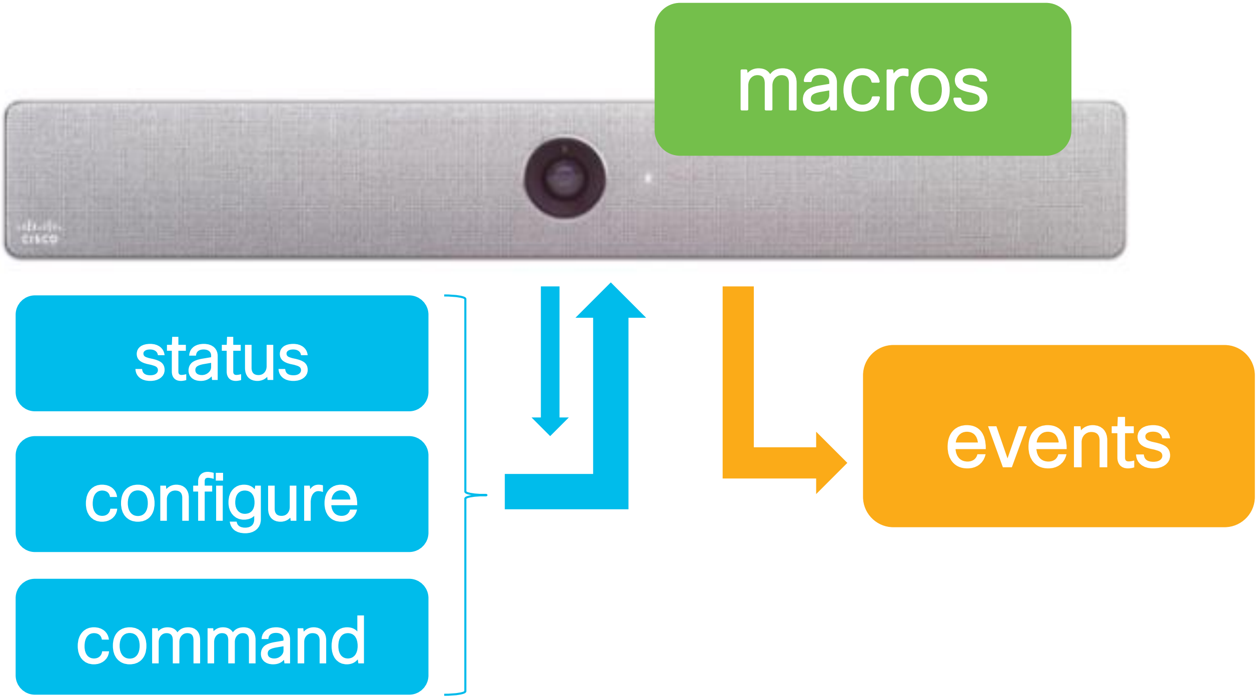
```
xapi.event.on('UserInterface Extensions Widget Action', (event) => {
  if ((event.WidgetId == 'DISCO_slider') && (event.Type == 'released')) {
    console.log(`updated slider : ${event.Value}`);

    // Change bulb color
  }
});
```

Macro Editor

Demo
[Connecting the dots]

xAPI protocols & formats

CE & RoomOS Programmability (xAPI)



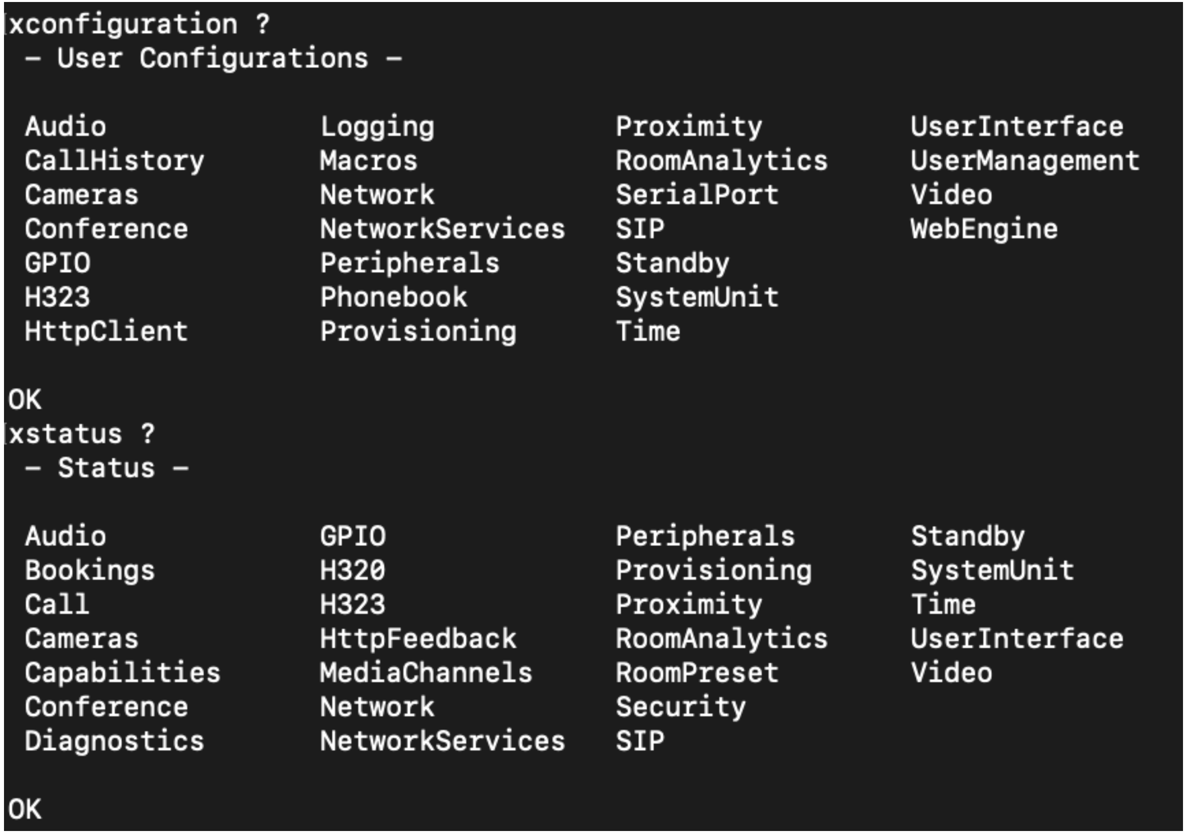
protocols

serial port
ssh
websocket
HTTP

formats

text
XML
JSON

Terminal Mode: t-shell



```
xconfiguration ?
 - User Configurations -

 Audio             Logging           Proximity         UserInterface
 CallHistory       Macros            RoomAnalytics     UserManagement
 Cameras           Network           SerialPort        Video
 Conference        NetworkServices   SIP               WebEngine
 GPIO              Peripherals       Standby
 H323              Phonebook         SystemUnit
 HttpClient        Provisioning      Time

OK
xstatus ?
 - Status -

 Audio             GPIO              Peripherals       Standby
 Bookings          H320              Provisioning      SystemUnit
 Call              H323              Proximity         Time
 Cameras           HttpFeedback      RoomAnalytics     UserInterface
 Capabilities      MediaChannels     RoomPreset        Video
 Conference        Network           Security
 Diagnostics       NetworkServices   SIP

OK
```

serial port

ssh

websocket

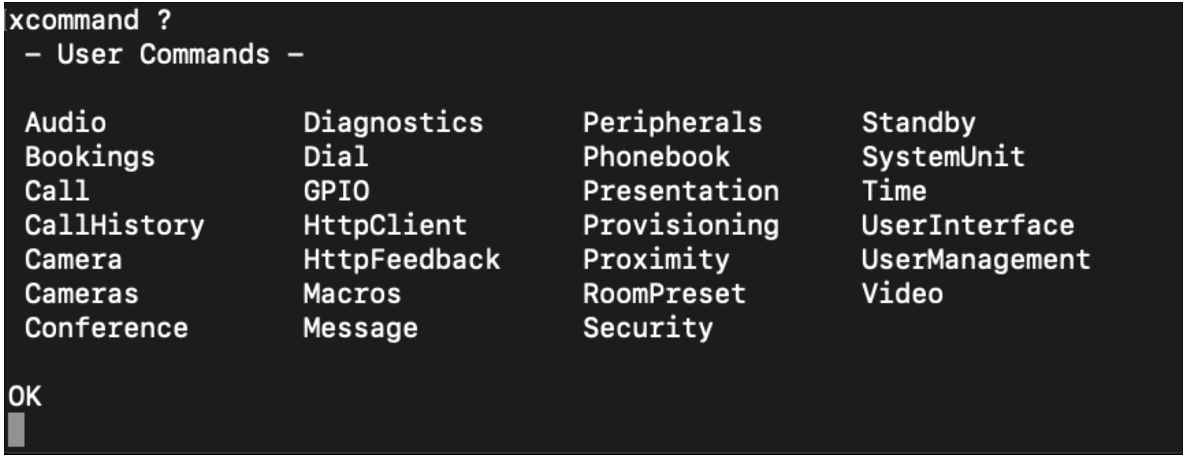
HTTP

text

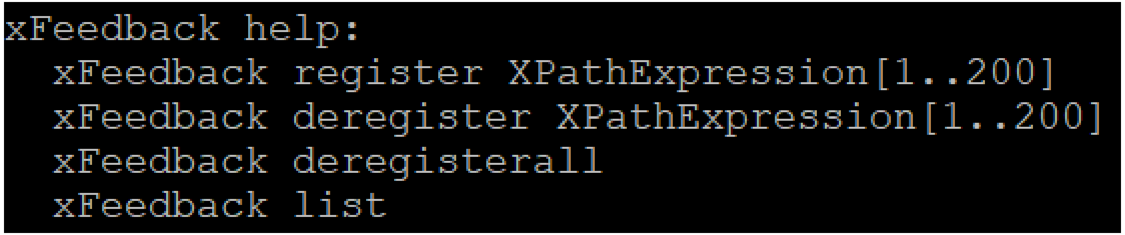
XML

JSON

Terminal Mode: t-shell



```
xcommand ?
 - User Commands -

 Audio            Diagnostics      Peripherals      Standby
 Bookings         Dial             Phonebook        SystemUnit
 Call             GPIO             Presentation     Time
 CallHistory      HttpClient       Provisioning     UserInterface
 Camera           HttpFeedback     Proximity        UserManagement
 Cameras          Macros           RoomPreset       Video
 Conference       Message          Security

OK
```



```
xFeedback help:
  xFeedback register XPathExpression[1..200]
  xFeedback deregister XPathExpression[1..200]
  xFeedback deregisterall
  xFeedback list
```

serial port
ssh
websocket
HTTP

text
XML
JSON

CE & RoomOS Programmability (xAPI)

macros

serial port

ssh

websocket*

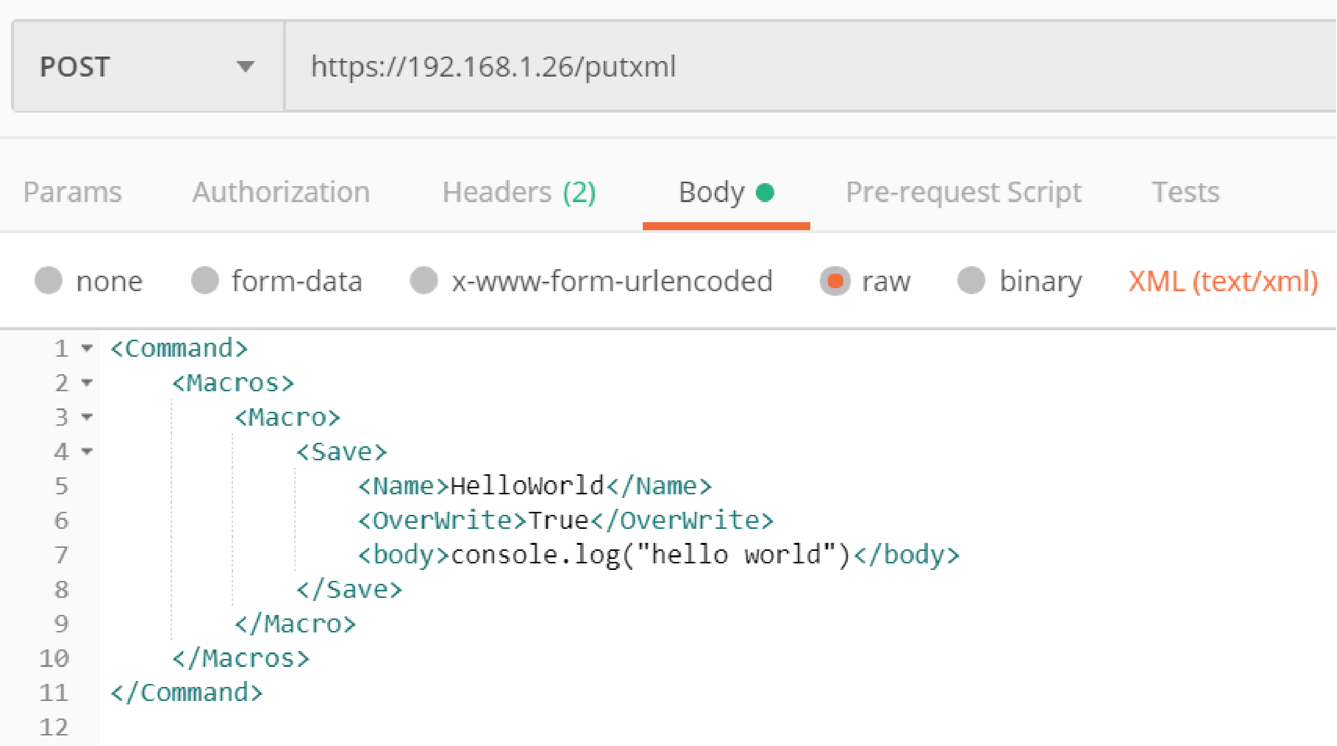
HTTP

text

XML

JSON

HTTP



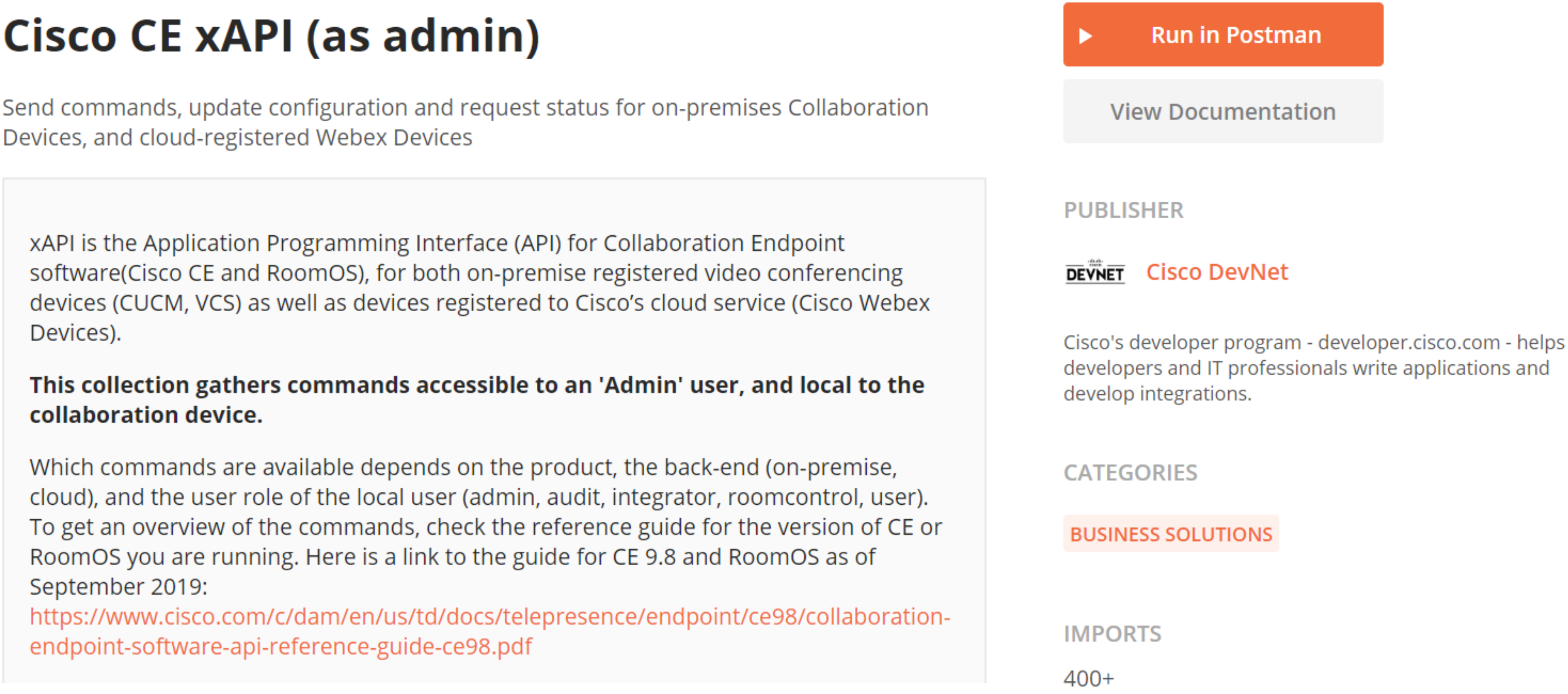
POST https://192.168.1.26/putxml

○ none ○ form-data ○ x-www-form-urlencoded ● raw ○ binary XML (text/xml)

```
<Command>
    <Macros>
        <Macro>
            <Save>
                <Name>HelloWorld</Name>
                <OverWrite>True</OverWrite>
                <body>console.log("hello world")</body>
            </Save>
        </Macro>
    </Macros>
</Command>

```

serial port
ssh
webSocket
HTTP

text
XML
JSON



Cisco CE xAPI (as admin)

Send commands, update configuration and request status for on-premises Collaboration Devices, and cloud-registered Webex Devices

xAPI is the Application Programming Interface (API) for Collaboration Endpoint software(Cisco CE and RoomOS), for both on-premise registered video conferencing devices (CUCM, VCS) as well as devices registered to Cisco's cloud service (Cisco Webex Devices).

This collection gathers commands accessible to an 'Admin' user, and local to the collaboration device.

Which commands are available depends on the product, the back-end (on-premise, cloud), and the user role of the local user (admin, audit, integrator, roomcontrol, user). To get an overview of the commands, check the reference guide for the version of CE or RoomOS you are running. Here is a link to the guide for CE 9.8 and RoomOS as of September 2019: https://www.cisco.com/c/dam/en/us/td/docs/telepresence/endpoint/ce98/collaboration-endpoint-software-api-reference-guide-ce98.pdf

PUBLISHER

DEVNET Cisco DevNet

Cisco's developer program - developer.cisco.com - helps developers and IT professionals write applications and develop integrations.

CATEGORIES

BUSINESS SOLUTIONS

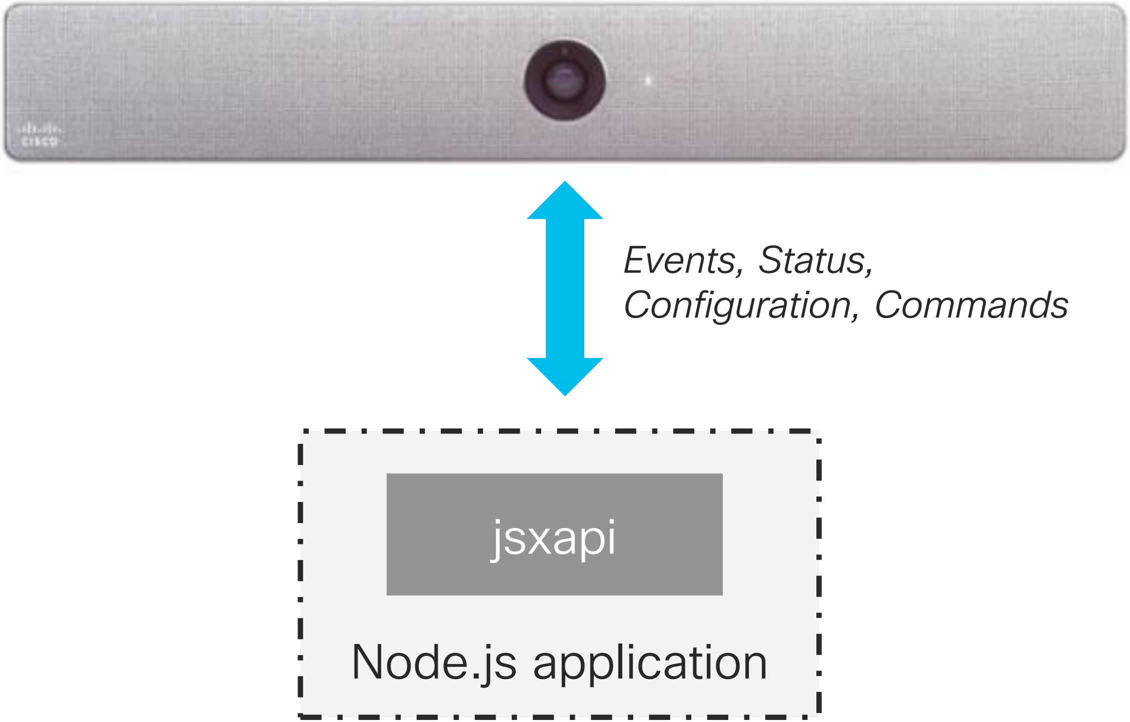
IMPORTS

400+

CHECK all collections for Cisco APIs:
https://explore.postman.com/team/ciscodevnet

CE & RoomOS Programmability (xAPI)

https://github.com/cisco-ce/jsxapi



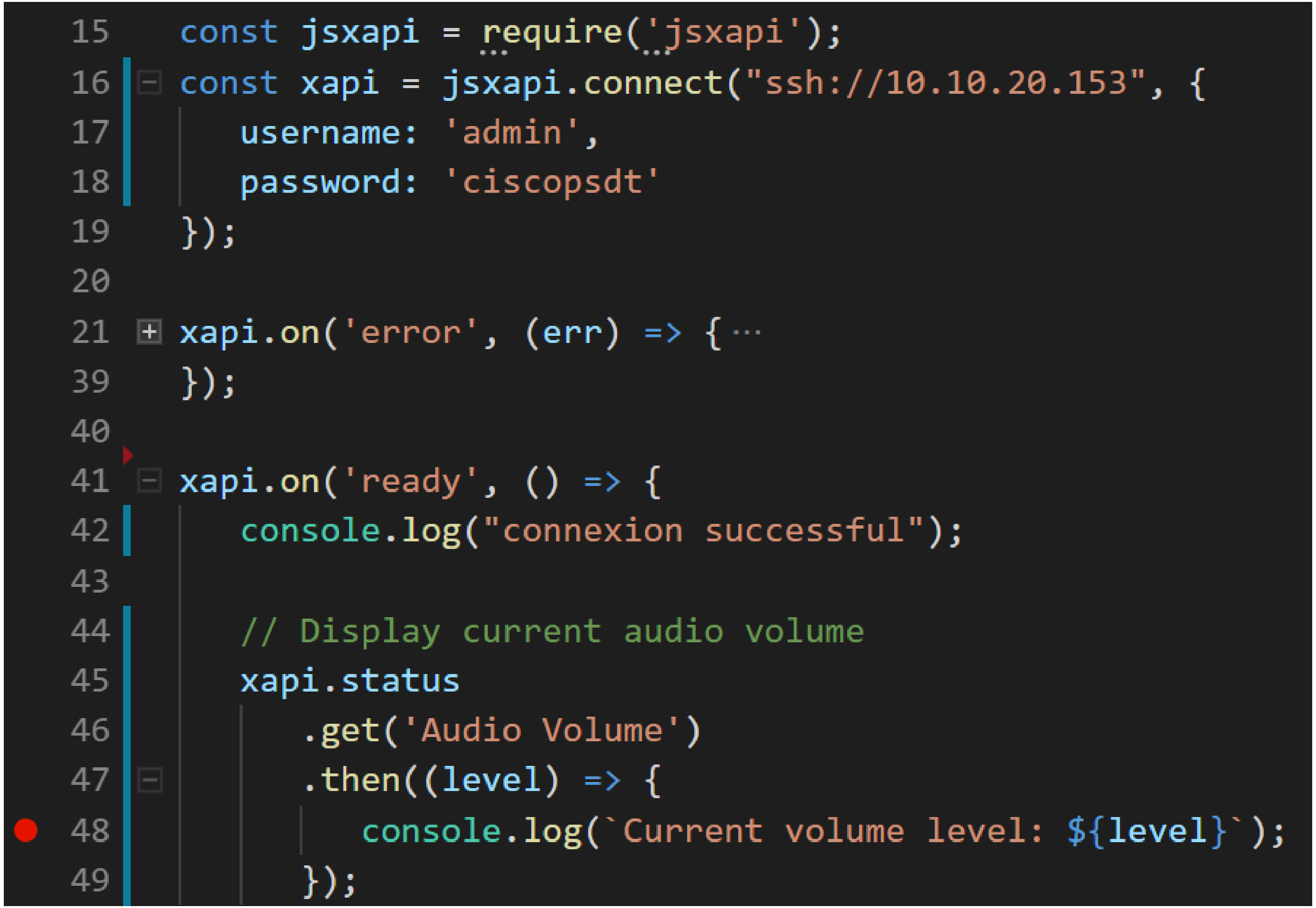
Events, Status,
Configuration, Commands

jsxapi

Node.js application

serial port
ssh
websocket
HTTP

text
XML
JSON

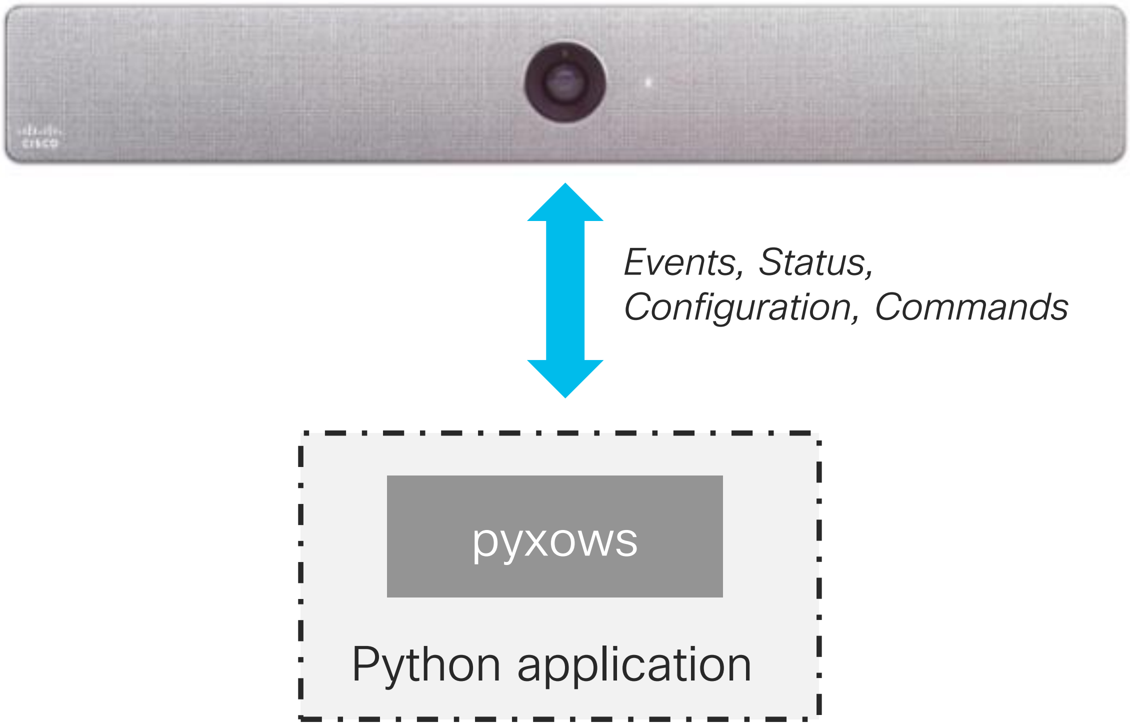


```
const jsxapi = require('jsxapi');
const xapi = jsxapi.connect("ssh://10.10.20.153", {
   username: 'admin',
   password: 'ciscopsdt'
});

xapi.on('error', (err) => { ···
});

xapi.on('ready', () => {
   console.log("connexion successful");

   // Display current audio volume
   xapi.status
      .get('Audio Volume')
      .then((level) => {
         console.log(`Current volume level: ${level}`);
      });
```

demo

CE & RoomOS Programmability (xAPI)

https://github.com/cisco-ce/pyxows



Events, Status, Configuration, Commands

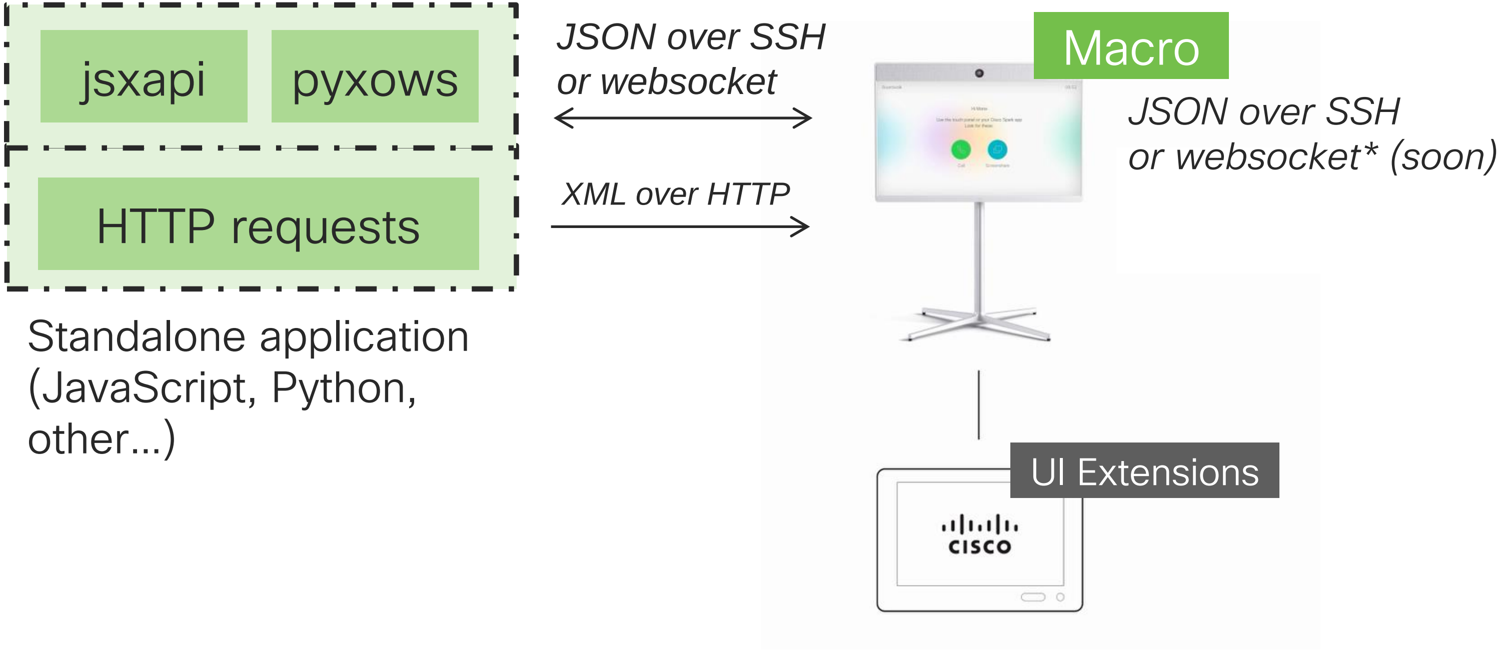
pyxows

Python application

serial port
ssh
websocket
HTTP

text
XML
JSON

Macros and/or Standalone applications



jsxapi

pyxows

HTTP requests

JSON over SSH or websocket

XML over HTTP

Macro

JSON over SSH or websocket (soon)*

UI Extensions

Standalone application (JavaScript, Python, other...)

Embedded macro or standalone app?

Macros

- Status, configuration, commands, events
- Invoke HTTP-based APIs
- Limited number of macros (currently 10)
- Stateless only (no db persistance)*
- No macro to macro communication**

<u>Use cases</u>

⇒ Custom behaviors

⇒ Interact with IoE exposing HTTP APIs

Standalone Apps

- Status, configuration, commands, events
- Interact with legacy APIs (beyong REST)
- Server-side limitations only (memory, disk)
- Stateful with data persistance

<u>Use cases</u>

⇒ Manage / Automate multiple devices

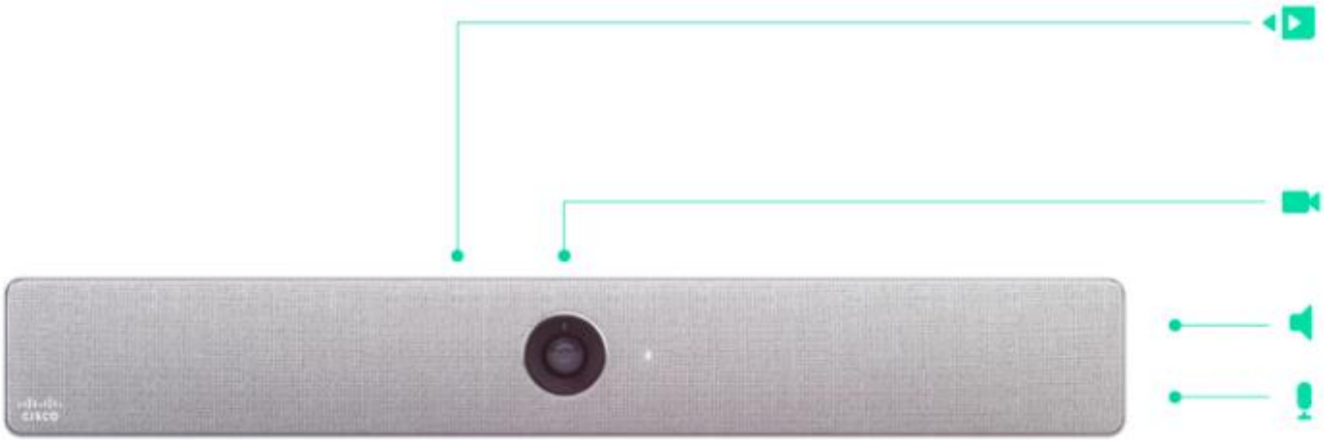
⇒ Integrate with Process or 3rd party product

Accessing your Collaboration Device’s API

on-prem devices

Webex Room Kit

https://projectworkplace.cisco.com/#/en-us/product/webexroomkit/0/0



Codec - Encode and decode
1 video in
2 video out
2 mic in
1 line out
WiFi
Bluetooth

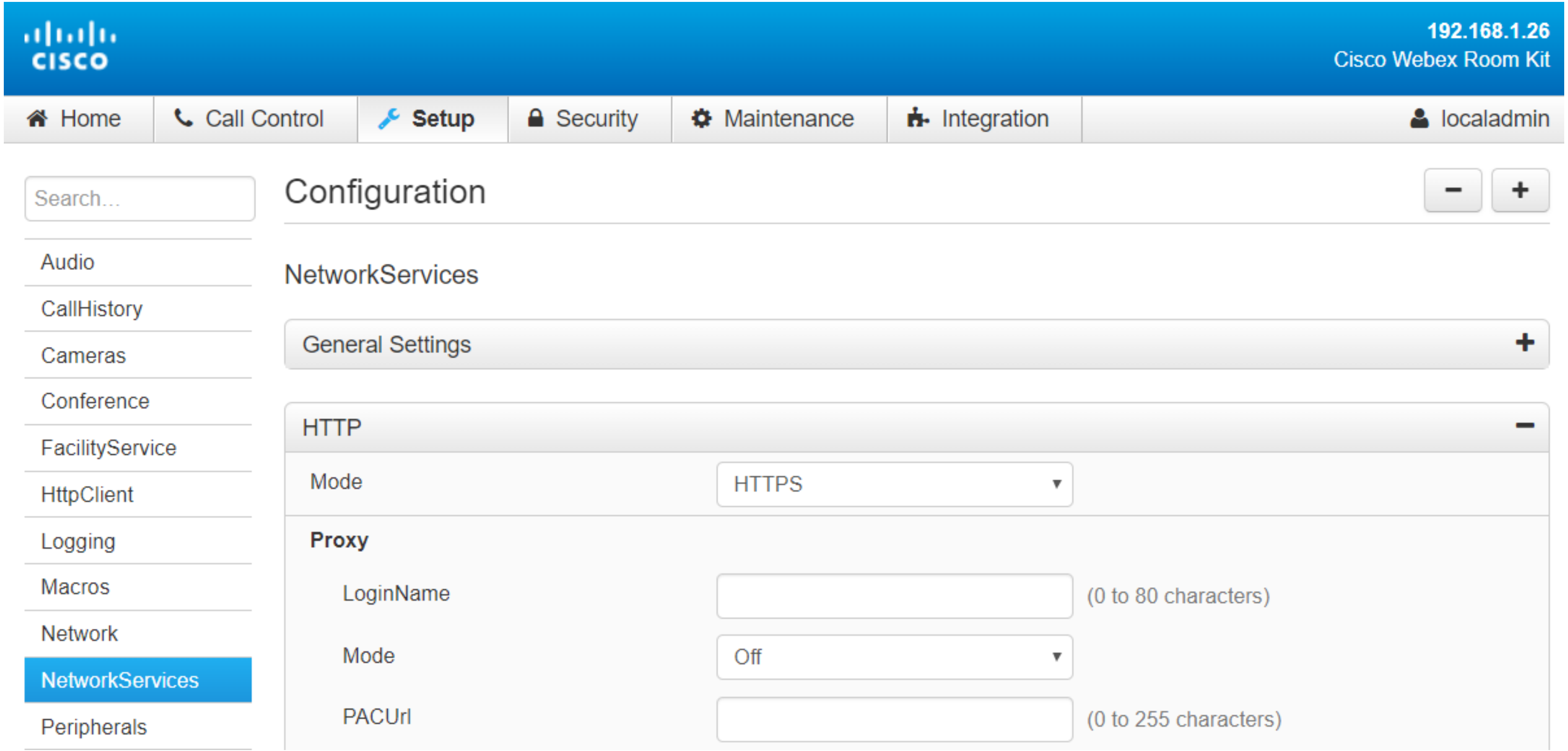
Speaker tracking camera
for rooms up to 6 meters/ 20 feet
One 83 FOV camera overview
Total 2.6 x zoom

Fulltone speakers optimized for voice

Integrated microphone

CE devices are API-native

https://<device-ip>/config/NetworkServices



Configuration

NetworkServices

General Settings

HTTP

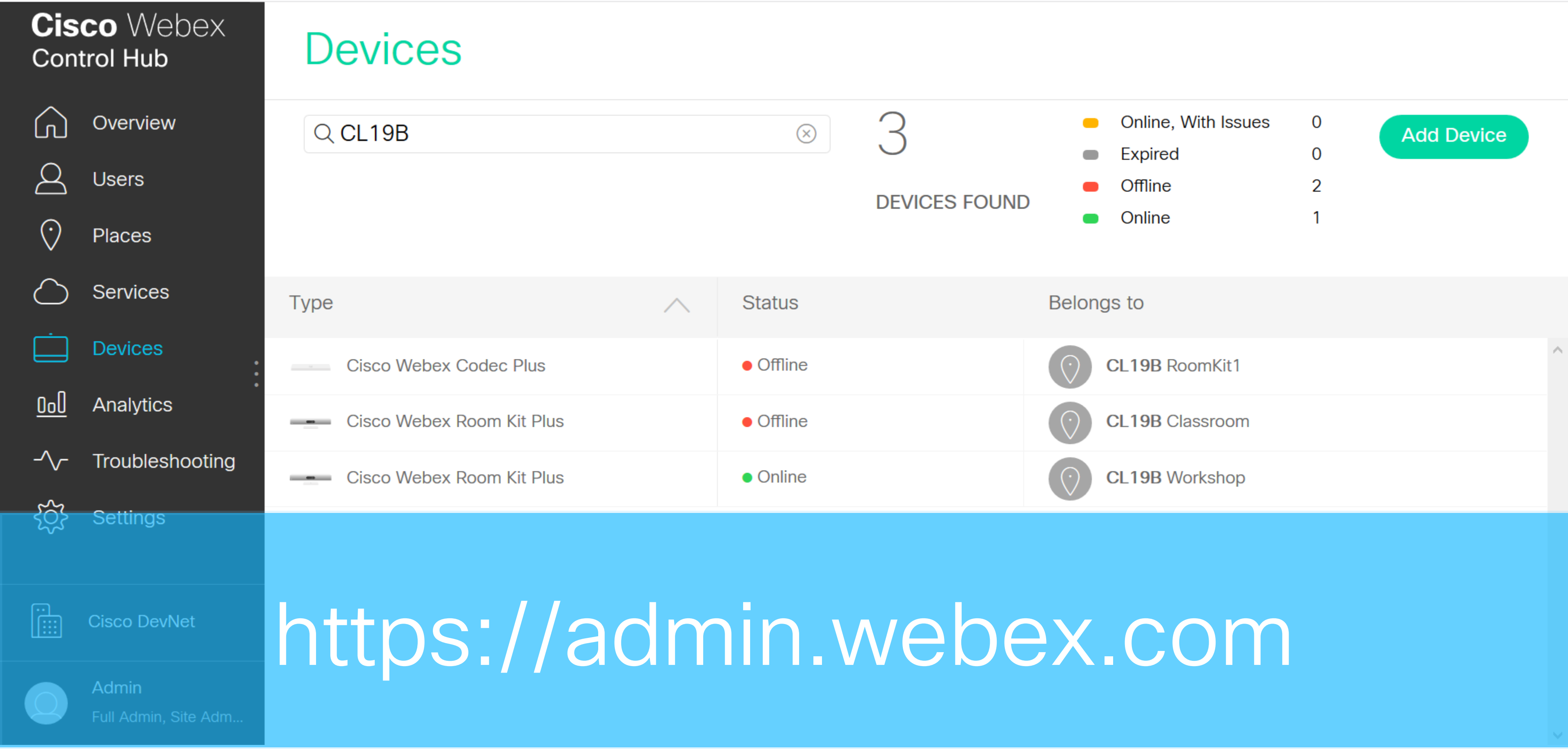
Mode: HTTPS

Proxy

LoginName: (0 to 80 characters)

Mode: Off

PACUrl: (0 to 255 characters)



Devices

CL19B

3

DEVICES FOUND

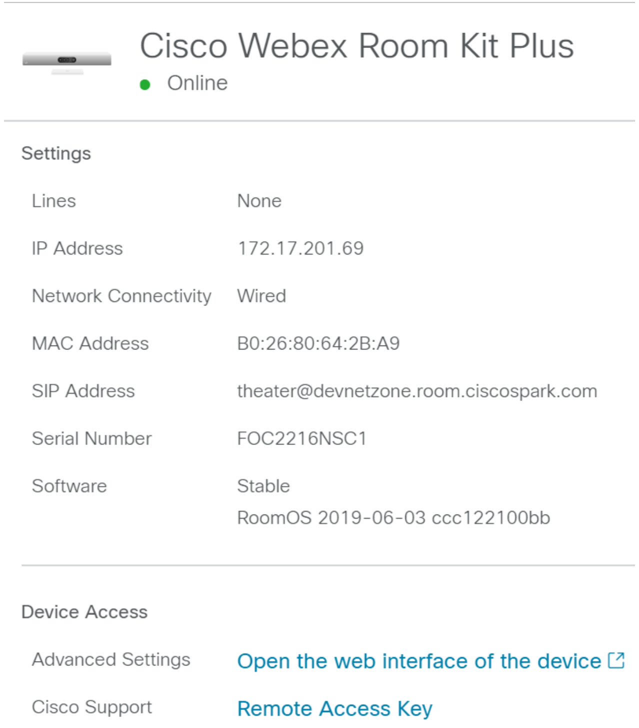
🟧	Online, With Issues	0
▨	Expired	0
🟥	Offline	2
🟩	Online	1

Type	Status	Belongs to
Cisco Webex Codec Plus	● Offline	CL19B RoomKit1
Cisco Webex Room Kit Plus	● Offline	CL19B Classroom
Cisco Webex Room Kit Plus	● Online	CL19B Workshop

https://admin.webex.com

Admin UI for cloud-registered Webex Devices

https://admin.webex.com/devices



Cisco Webex Room Kit Plus

● Online

Settings

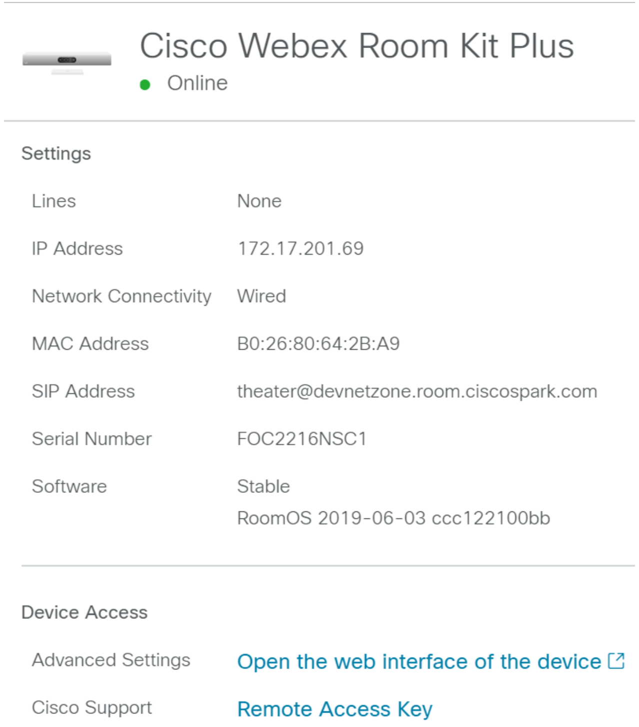
Lines	None
IP Address	172.17.201.69
Network Connectivity	Wired
MAC Address	B0:26:80:64:2B:A9
SIP Address	theater@devnetzone.room.ciscospark.com
Serial Number	FOC2216NSC1
Software	Stable RoomOS 2019-06-03 ccc122100bb

Device Access

Advanced Settings	Open the web interface of the device
Cisco Support	Remote Access Key

REQUIREMENT: local connectivity to the device

https://admin.webex.com/devices → https://<device-ip>/cloud-login



Cisco Webex Room Kit Plus

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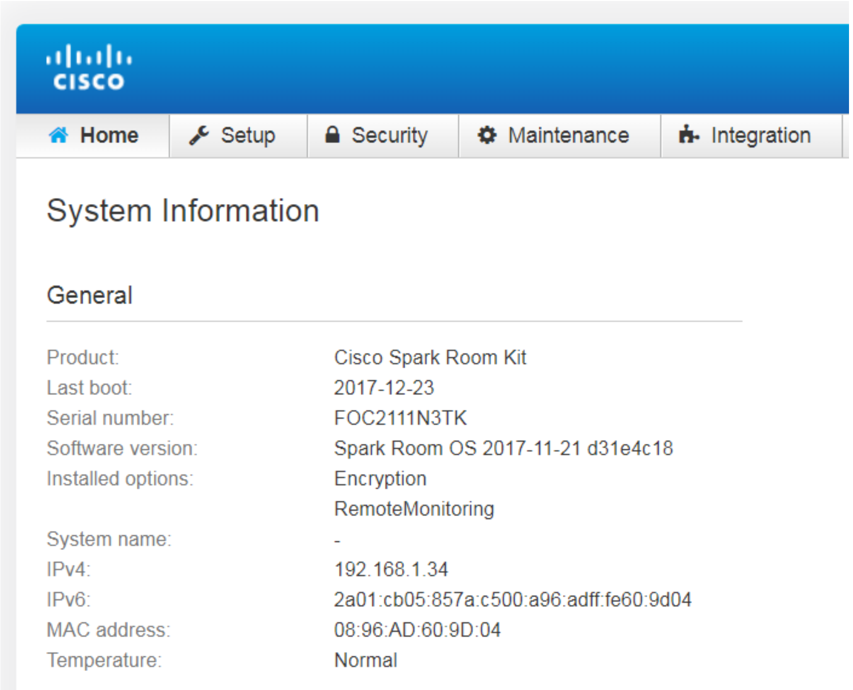


System Information

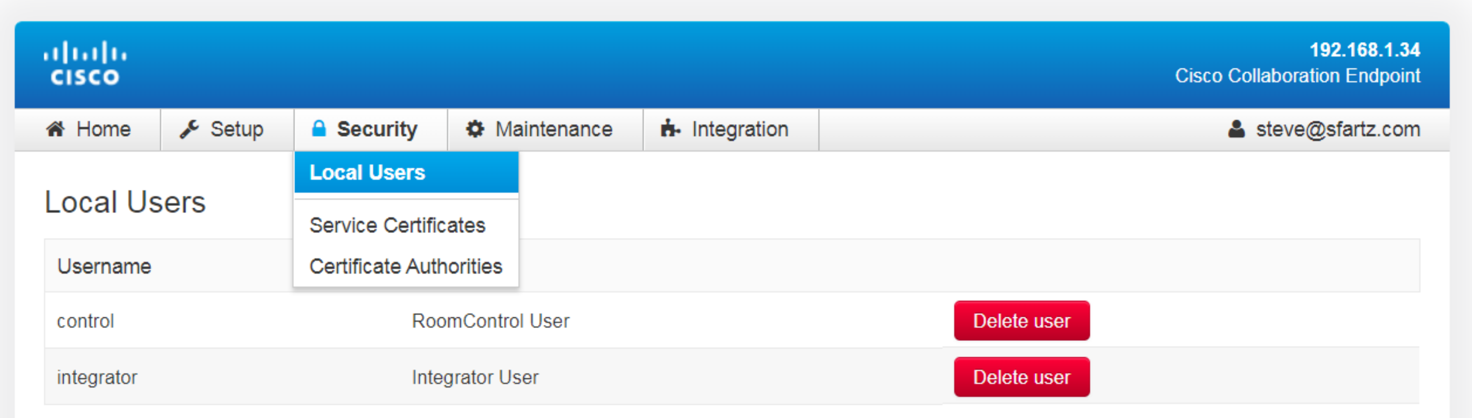
General

Product:	Cisco Spark Room Kit
Last boot:	2017-12-23
Serial number:	FOC2111N3TK
Software version:	Spark Room OS 2017-11-21 d31e4c18
Installed options:	Encryption RemoteMonitoring
System name:	-
IPv4:	192.168.1.34
IPv6:	2a01:cb05:857a:c500:a96:adff:fe60:9d04
MAC address:	08:96:AD:60:9D:04
Temperature:	Normal

Adding user roles to access your device

https://<device-ip>/web/localusers

- Create a local user: ‘Control’, ‘Integrator’ or ‘Admin’ role



Local Users

Username		
control	RoomControl User	Delete user
integrator	Integrator User	Delete user

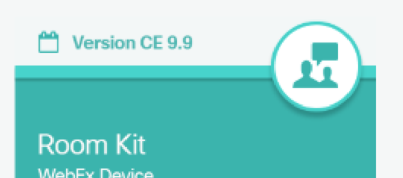
User Roles

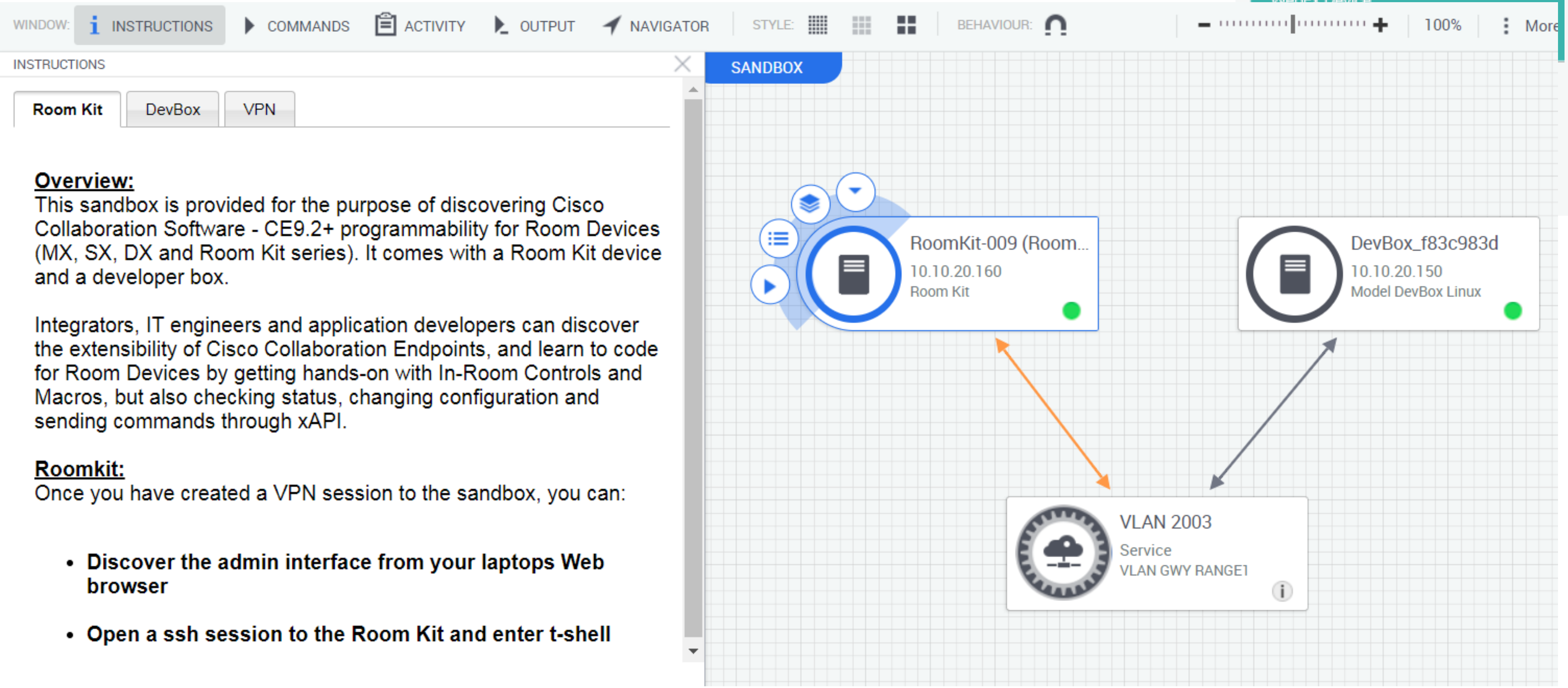
https://collaborationhelp.cisco.com/article/en-us/jkhs20

Admin	Have unrestricted access to the device's local web interface. Access the API over SSH, serial connection, or HTTP(S). Create and manage users with the *Integrator* and *RoomControl* roles.
Integrator	Access the device’s local web interface. *Integrator* has the same access as an *Admin* user, except creation of new users. Access the API over SSH, serial connection, or HTTP(S).
RoomControl	Access the In-Room Control editor and corresponding development tools on the web interface, to create touch interface extensions (in-room controls). Access the API commands that are required to create touch interface extensions.
User	Make calls and search the People lists. Modify a few settings, for example adjust the ringtone volume and set the time and date format.

https://developer.cisco.com/site/sandbox/

Experiment with a DevNet Sandbox





Overview:
This sandbox is provided for the purpose of discovering Cisco Collaboration Software - CE9.2+ programmability for Room Devices (MX, SX, DX and Room Kit series). It comes with a Room Kit device and a developer box.

Integrators, IT engineers and application developers can discover the extensibility of Cisco Collaboration Endpoints, and learn to code for Room Devices by getting hands-on with In-Room Controls and Macros, but also checking status, changing configuration and sending commands through xAPI.

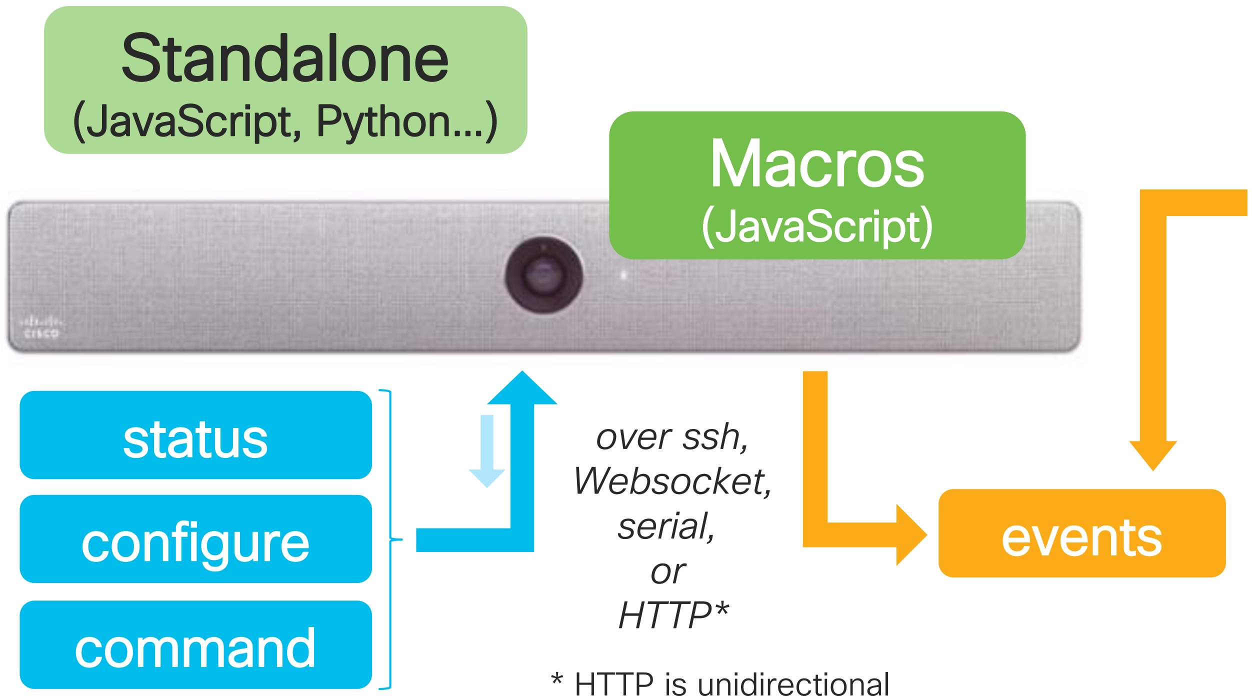
Roomkit:
Once you have created a VPN session to the sandbox, you can:

- **Discover the admin interface from your laptops Web browser**
- **Open a ssh session to the Room Kit and enter t-shell**

cisco Live!

Latest Features

CE Programmability (xAPI)



Standalone
(JavaScript, Python...)

Macros
(JavaScript)

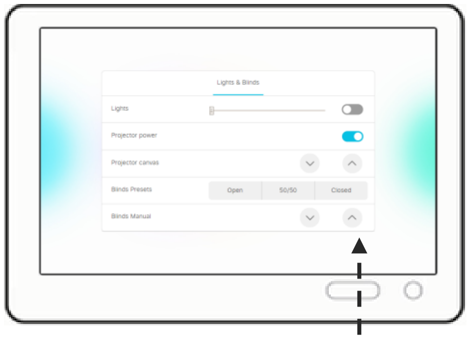
- status
- configure
- command

*over ssh, Websocket, serial, or HTTP**

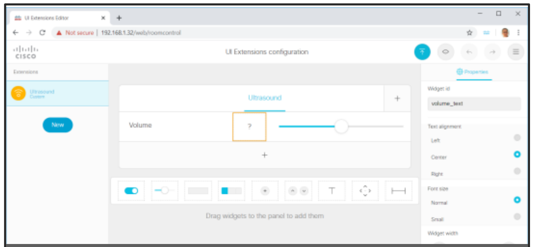
events

* HTTP is unidirectional (cannot listen to events)

Touch10 Interface



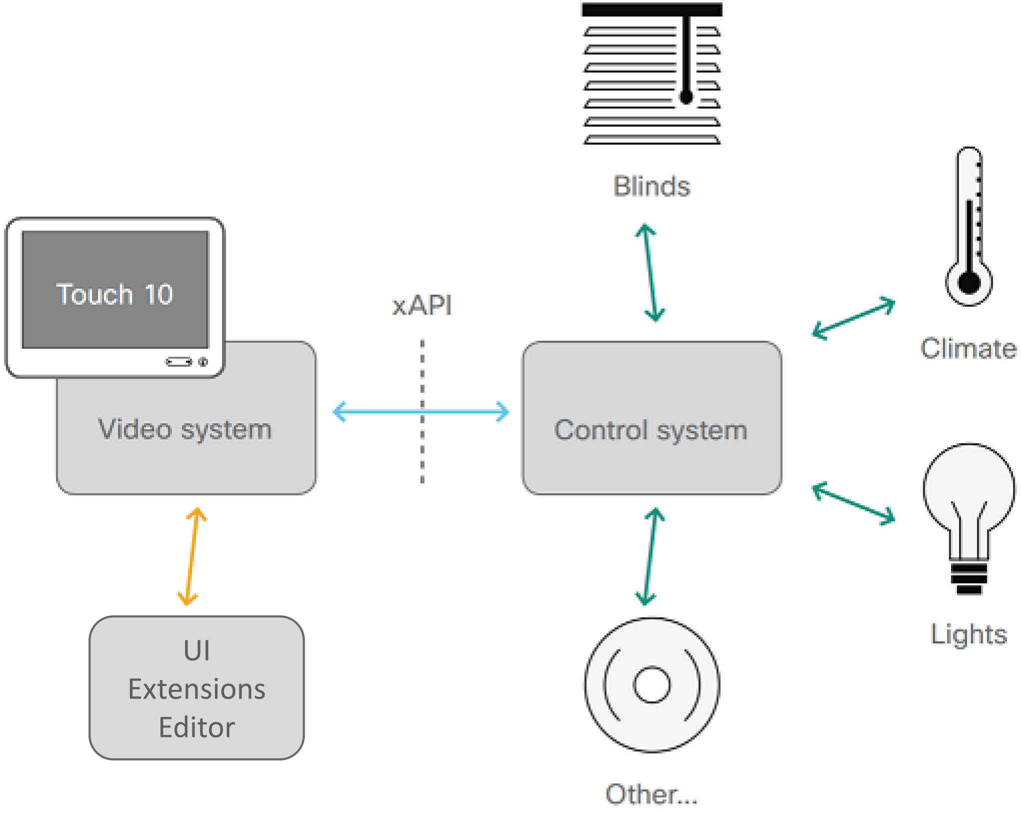
deploy



UI Extensions Editor

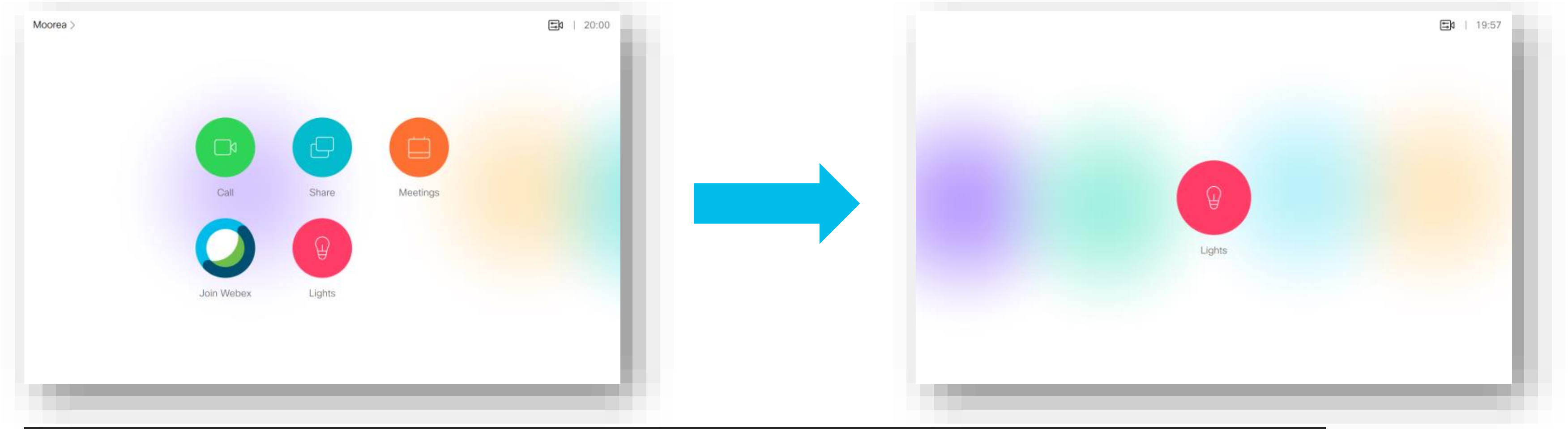
CE Programmability at a glance

- Enhance the User eXperience of your meetings
  - add UI Extensions to Room/Desk/Boards devices
  - interact with IoT devices
  - customized behaviors as macros
  - Integrate with enterprise process
- Automate your devices from code
  - initiate calls, fetch history
  - collect room analytics
  - apply branding across devices
  - deploy UI Extensions & macros



Locked down interface

- ‘Kiosk-like’ User experience, no settings menu and standard buttons
- Example: Speed dial to experts via a custom button



```
xConfiguration UserInterface Features HideAll: True
xConfiguration UserInterface SettingsMenu Visibility: Hidden
```

Cisco Collaboration Devices Programmability

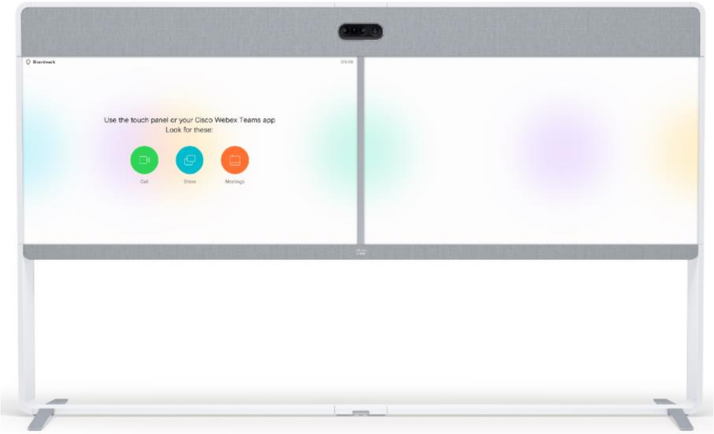
Available on all devices running CE & RoomOS

Room Kit standard, pro, mini

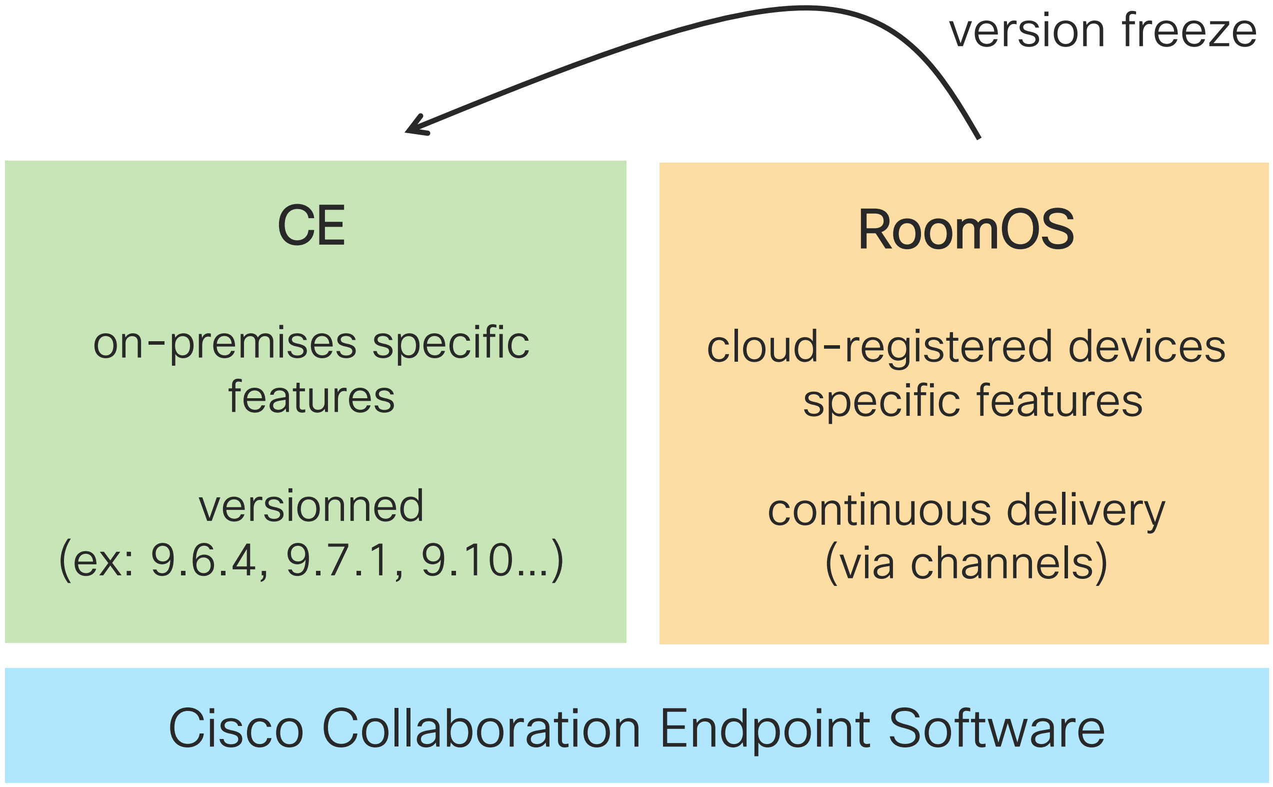
*no Macros on SX10

Complete programmability

DX, DeskPro



CE and RoomOS



version freeze

CE

on-premises specific features

versionned (ex: 9.6.4, 9.7.1, 9.10...)

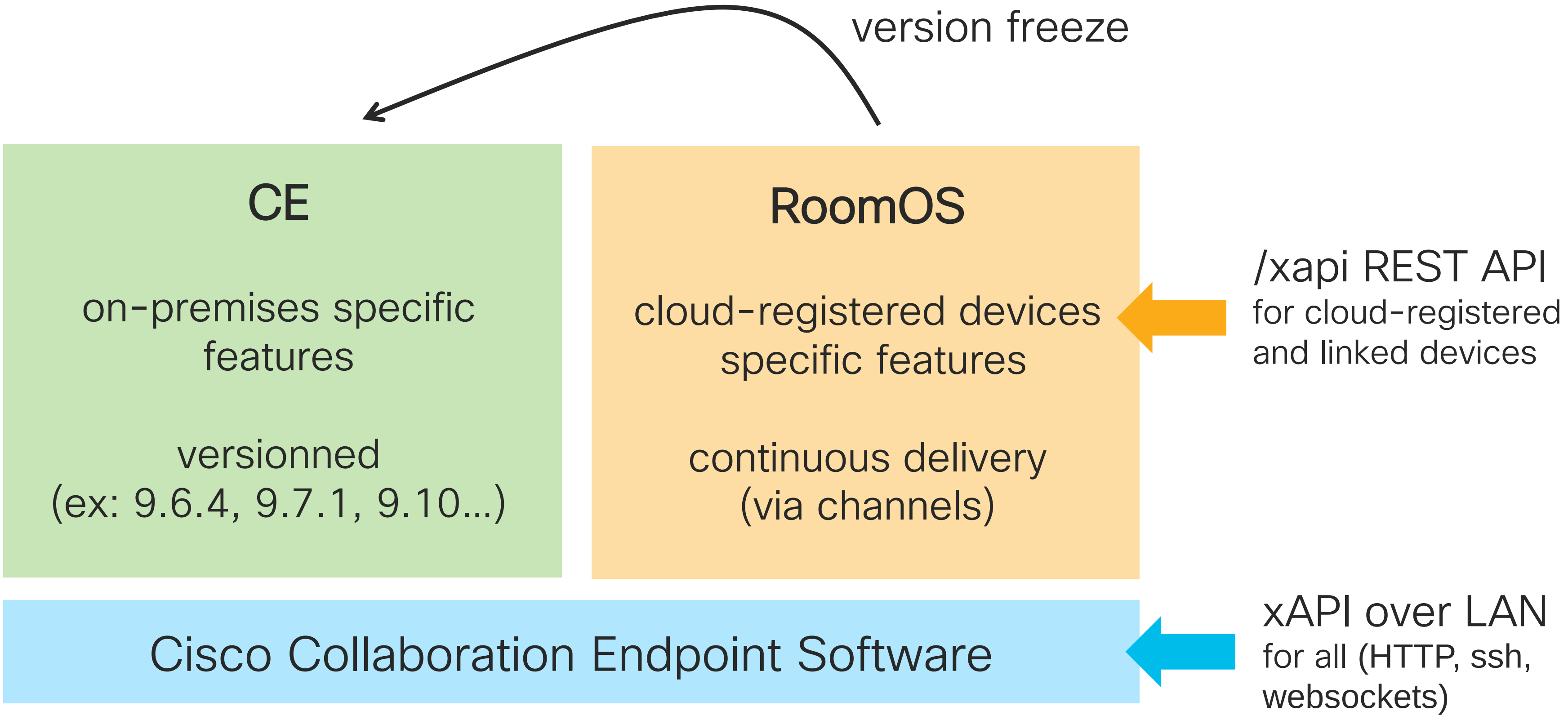
RoomOS

cloud-registered devices specific features

continuous delivery (via channels)

Cisco Collaboration Endpoint Software

CE and RoomOS



version freeze

CE

on-premises specific features

versionned (ex: 9.6.4, 9.7.1, 9.10...)

RoomOS

cloud-registered devices specific features

continuous delivery (via channels)

/xapi REST API for cloud-registered and linked devices

Cisco Collaboration Endpoint Software

xAPI over LAN for all (HTTP, ssh, websockets)

What’s new with Webex Devices APIs

- Recently added and New Features
  - CE feature-parity for Webex Boards
  - **Web Applications** for Webex Boards, Room Series and Desks Pro
  - Cloud xAPI for cloud and linked Devices
- Coming
  - REST APIs to configure Webex Devices
  - Webhook events for Webex Devices

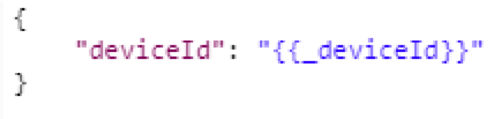
Cloud xAPI with Webex Edge for Devices

Cloud acces and control of on-prem Collaboration Devices linked via Webex Edge for Devices

POST

https://<*webex*>/v1/xapi/command/standby.activate

200 OK



```
{
    "deviceId": "{{_deviceId}}"
}
```

CE Programmability & Webex Devices APIs

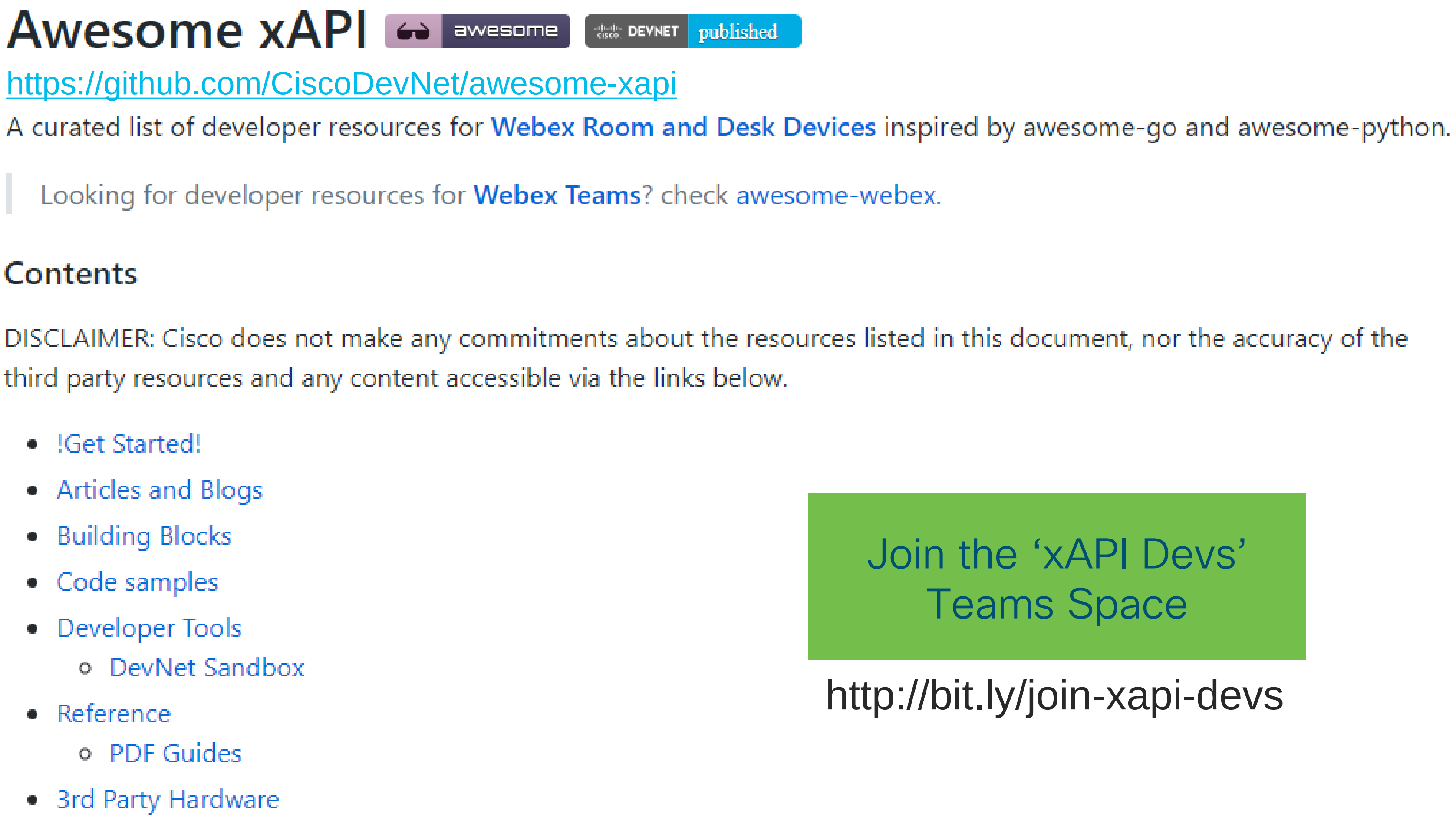
- Tuesday, 10:00 – ‘Meet DevNet’ podium - DEVNET-3010.f
  - Learn how to make Network Automation Simple with the Community
- Wednesday, 12:15 – Hall 8, C128 - BRKDEV-3244
  - Advanced coding for Cisco Video devices
- Wednesday, 15:00 – ClassRoom 3 - DEVNET-2071
  - Customizing Cisco Collaboration Devices

➡ Thursday, 10:00 – DevNet Theater - DEVNET-1462

- Webex Room Device APIs (latest and new features)

➡ Friday, 11:30 - BRKCOL-3008

- Customization and Integrations of Cisco Video Room Devices



Awesome xAPI

https://github.com/CiscoDevNet/awesome-xapi

A curated list of developer resources for **Webex Room and Desk Devices** inspired by awesome-go and awesome-python.

> Looking for developer resources for **Webex Teams**? check awesome-webex.

Contents

DISCLAIMER: Cisco does not make any commitments about the resources listed in this document, nor the accuracy of the third party resources and any content accessible via the links below.

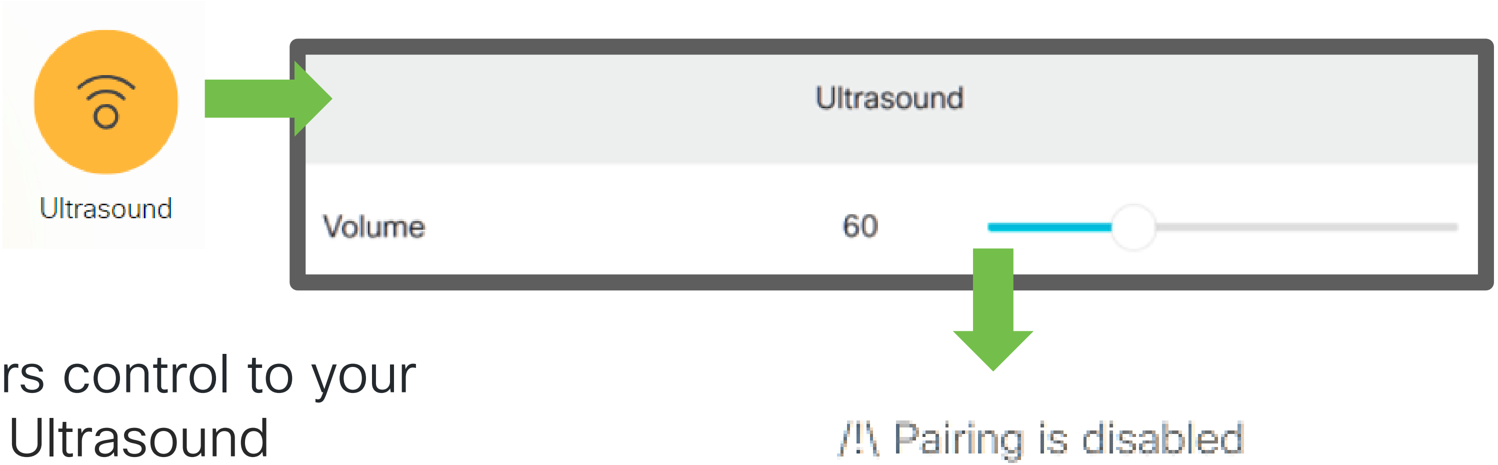
- !Get Started!
- Articles and Blogs
- Building Blocks
- Code samples
- Developer Tools
  - DevNet Sandbox
- Reference
  - PDF Guides
- 3rd Party Hardware

Join the ‘xAPI Devs’ Teams Space

http://bit.ly/join-xapi-devs

Ultrasound

https://github.com/ObjectIsAdvantag/xapi-samples/tree/master/controls/ultrasound



/!\ Pairing is disabled

Give users control to your devices’ Ultrasound MaxVolume

- In-Room Control
- Macro-compatible

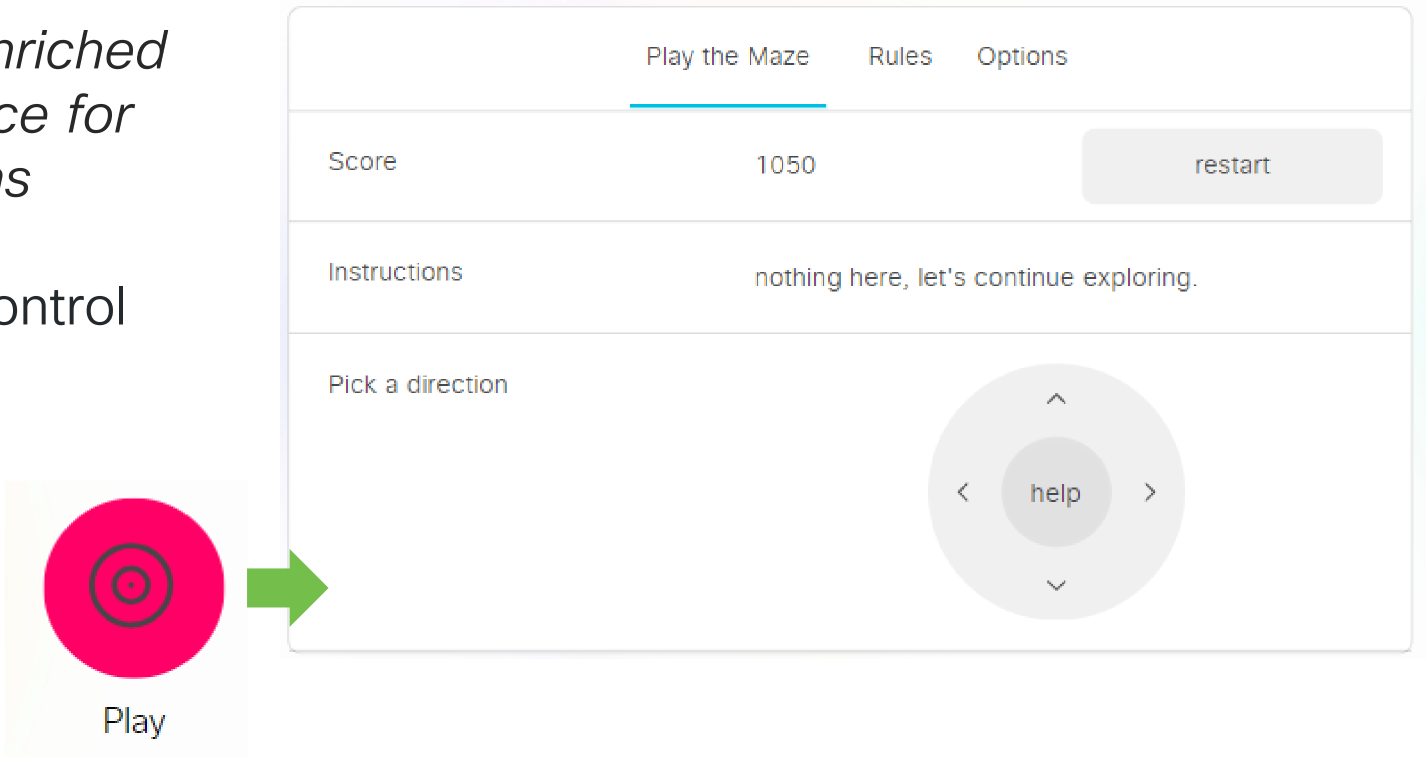
custom message pushed to your devices’ Touch10/DX interface as pairing is enabled / disabled.

Maze Game

https://github.com/ObjectIsAdvantag/xapi-samples/tree/master/controls/maze-scores

End-to-end enriched User Experience for Meeting Rooms

- In-Room Control
- macro



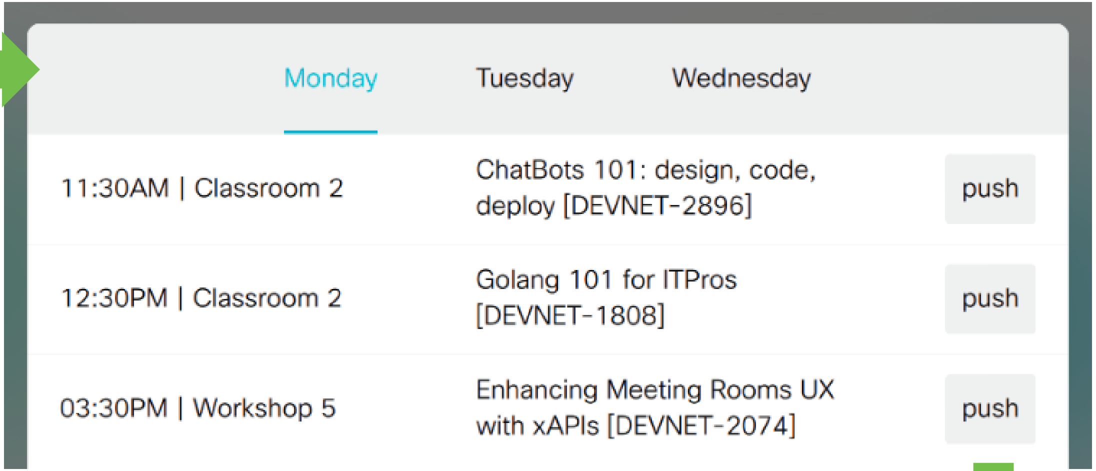
Score 1050

Instructions nothing here, let's continue exploring.

Agenda with notifications

https://github.com/ObjectIsAdvantag/xapi-samples/tree/master/controls/agenda_push

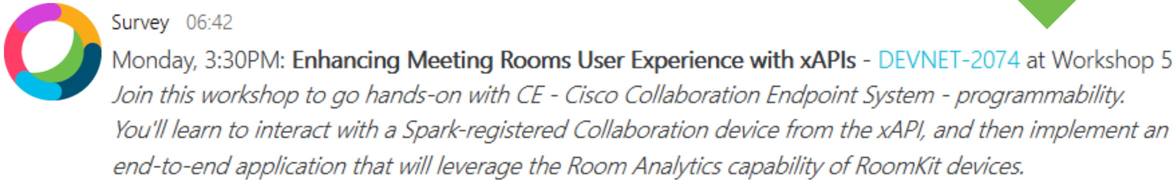
DevNetZone



Monday	Tuesday	Wednesday
11:30AM | Classroom 2	ChatBots 101: design, code, deploy [DEVNET-2896]	push
12:30PM | Classroom 2	Golang 101 for ITPros [DEVNET-1808]	push
03:30PM | Workshop 5	Enhancing Meeting Rooms UX with xAPIs [DEVNET-2074]	push

Pushes session details to a Webex Teams space

- In-Room Control
- Javascript Macro
- HttpClient command
- Webex Bot account



Survey 06:42

Monday, 3:30PM: **Enhancing Meeting Rooms User Experience with xAPIs** - DEVNET-2074 at Workshop 5

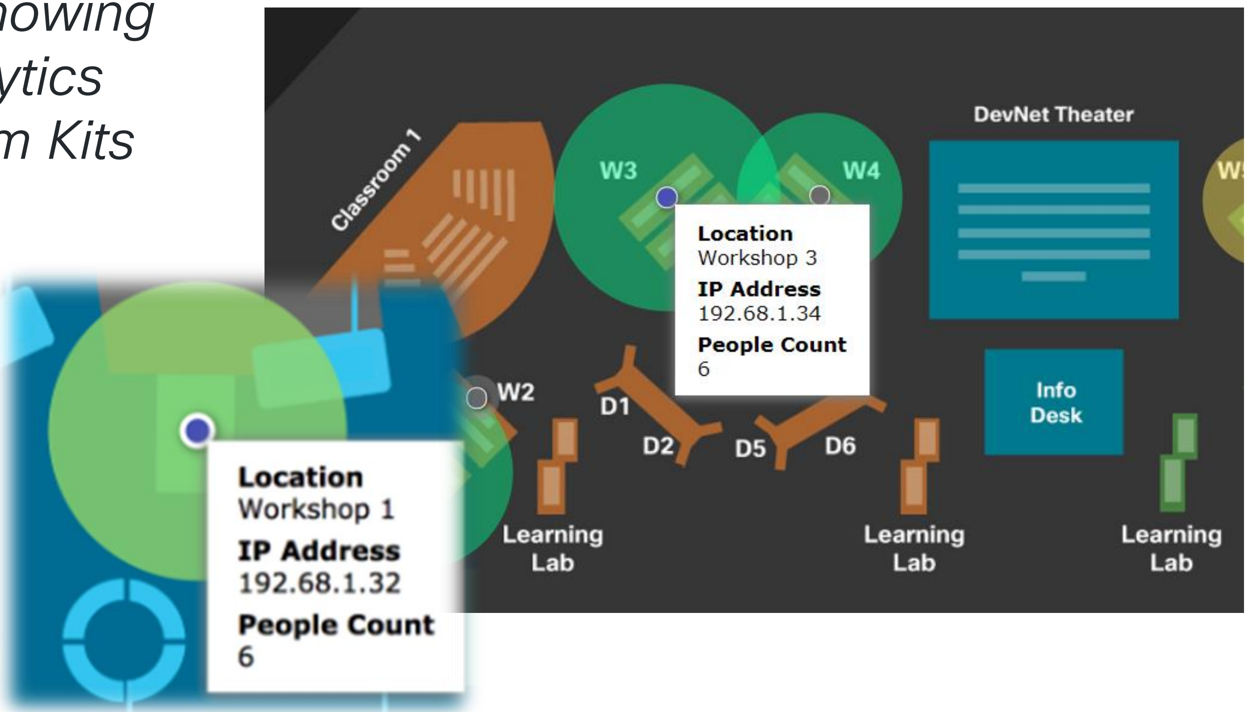
Join this workshop to go hands-on with CE - Cisco Collaboration Endpoint System - programmability. You'll learn to interact with a Spark-registered Collaboration device from the xAPI, and then implement an end-to-end application that will leverage the Room Analytics capability of RoomKit devices.

Interactive Live Map

https://github.com/ObjectIsAdvantag/roomkit-react-map

Interactive map showing PeopleCount analytics from a set of Room Kits

- React
- Node.js
- ‘jsxapi’

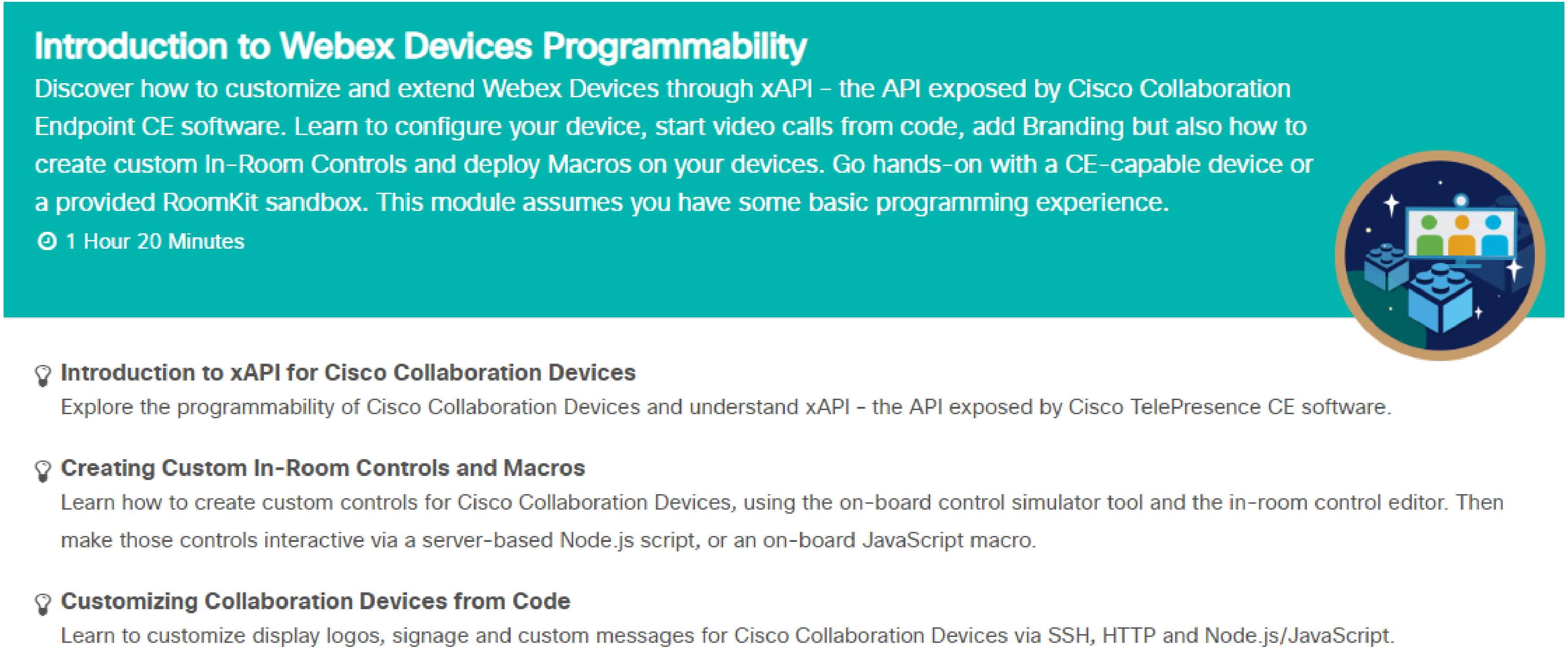


Location
Workshop 3
IP Address
192.68.1.34
People Count
6

Location
Workshop 1
IP Address
192.68.1.32
People Count
6

xAPI module at DevNet

https://developer.cisco.com/learning/modules/xapi-intro



Introduction to Webex Devices Programmability

Discover how to customize and extend Webex Devices through xAPI – the API exposed by Cisco Collaboration Endpoint CE software. Learn to configure your device, start video calls from code, add Branding but also how to create custom In-Room Controls and deploy Macros on your devices. Go hands-on with a CE-capable device or a provided RoomKit sandbox. This module assumes you have some basic programming experience.

1 Hour 20 Minutes

Introduction to xAPI for Cisco Collaboration Devices

Explore the programmability of Cisco Collaboration Devices and understand xAPI - the API exposed by Cisco TelePresence CE software.

Creating Custom In-Room Controls and Macros

Learn how to create custom controls for Cisco Collaboration Devices, using the on-board control simulator tool and the in-room control editor. Then make those controls interactive via a server-based Node.js script, or an on-board JavaScript macro.

Customizing Collaboration Devices from Code

Learn to customize display logos, signage and custom messages for Cisco Collaboration Devices via SSH, HTTP and Node.js/JavaScript.

Learn more about the new DevNet Certifications and how you can prepare now!

	Associate Level	Specialist Level	Professional Level	Expert Level
Engineering	CISCO CERTIFIED CCNA	CISCO CERTIFIED SPECIALIST	CISCO CERTIFIED CCNP	CISCO CERTIFIED CCIE
Software	CISCO CERTIFIED DEVNET Associate	CISCO CERTIFIED DEVNET SPECIALIST	CISCO CERTIFIED DEVNET Professional	CISCO CERTIFIED DEVNET Expert Future Offering

Complete your online session survey

- Please complete your session survey after each session. Your feedback is very important.
- Complete a minimum of 4 session surveys and the Overall Conference survey (starting on Thursday) to receive your Cisco Live t-shirt.
- All surveys can be taken in the Cisco Events Mobile App or by logging in to the Content Catalog on ciscolive.com/emea.

Cisco Live sessions will be available for viewing on demand after the event at ciscolive.com.

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Walk-In Labs

Meet the Engineer 1:1 meetings

Related sessions

Thank you

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