You make **possible**

Webex APIs
for Administrators

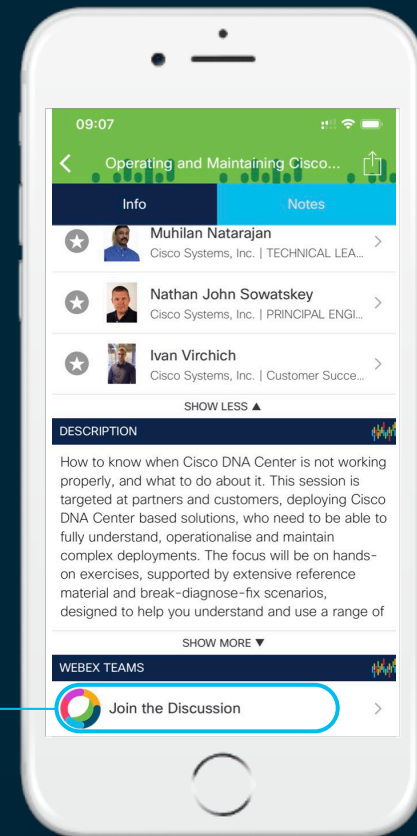Stève Sfartz, stsfartz@cisco.com
API Architect, DevNet

DEVNET-2610

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

/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

- REST API for Webex Administrators

- OAuth deep dive for Webex Administrators

- Cloud xAPI for Webex Devices

- Customizing Webex Devices

Webex
Admin APIs
Overview

Overview

Overview
Users
Places
Services
Devices
Analytics
Troubleshooting
Settings

Message

1,000

Total User Licenses

Meeting

2,000

Total User Licenses

Calling

Basic external calling and call routing features enabled for your organization.

Contact your partner or Cisco Sales for more information.

Notifications

Upgrade Unleash the full power of the Cisco Webex Control Hub with Pro Pack.

Learn More

To-do Your Organization is enabled for Cisco Care.

Setup Care Service

To-do Call is mandatory for voice-based Care services. To enable Call, contact your partner or Cisco Sales.

To-do Make sharing content on Webex devices easier by enabling Wi-Fi-based device suggestions.

Review Setting

New The user export file has been updated to include subscription IDs in the service names (for applicable services). This allows you to specify which subscription the license for each user should come from. It is recommended that you do a new export before doing a CSV user import however for backward

Care

This month

0

Expired

Room Devices

20

Total Licenses

Hybrid Services

Hybrid Services allows you to integrate your on-premises systems with the Cisco Webex Platform.

Learn More

https://admin.webex.com

Onboarding

8
Total users onboarded

5 Potential new users

0 Delayed conversions

DEVNET-2610

Cisco DevNet

Admin DevNetZo...
Full Admin, Site Adm...

7

Webex Admin Sandbox

https://developer.webex.com/docs/api/guides/admin-api/administration-sandbox

- Send an email to devsupport@webex.com

  from a Webex Trial account: this email address should not have been previously used for Webex. Your home email address or a web email service is recommended.

  Developer support will add your account to the Admin Sandbox organization

  As your new admin account is created, you will receive an email inviting you to administer the Sandbox organization. Follow the instructions to complete the activation.

- You are now an admin of the 'Sandbox' organization, along with others developers who've been granted access

Webex API for Administrators

including Partner Organizations

EFT

compliance officers

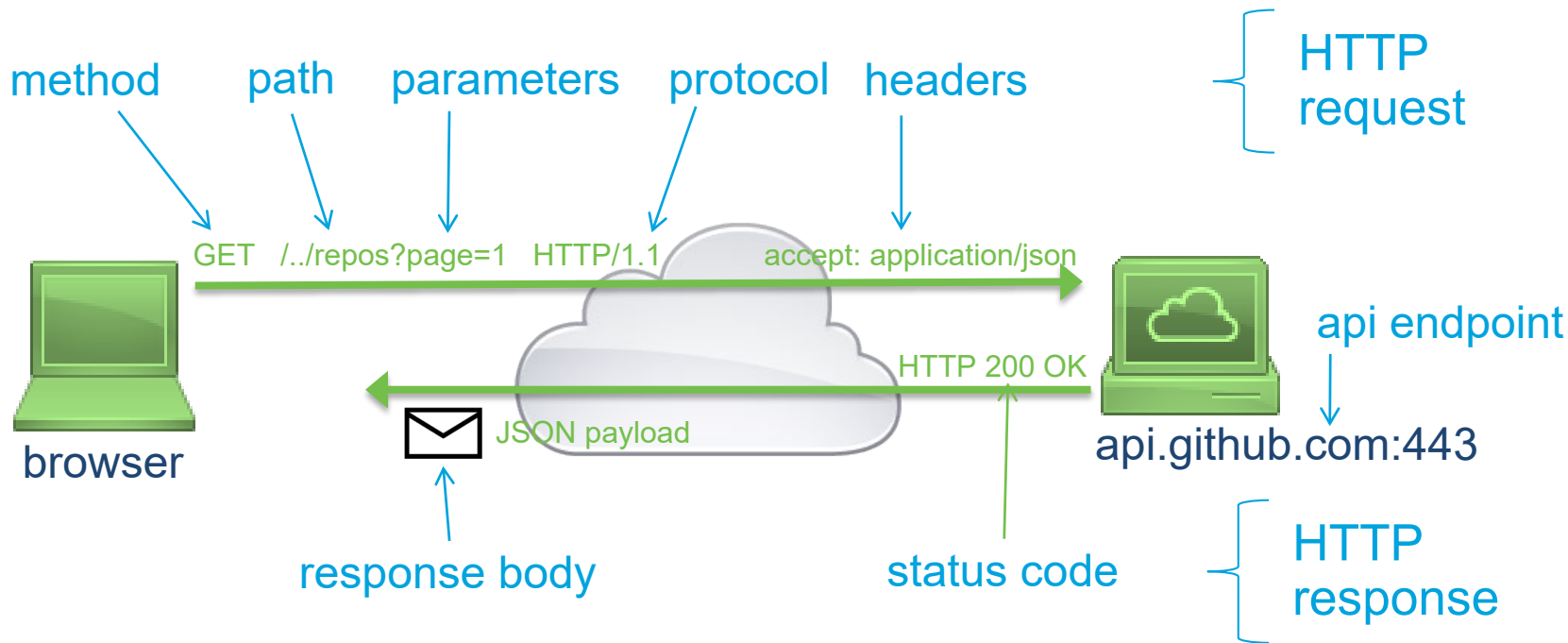| /people	/organizations	/roles	/licenses	/policies	/adminaudit/ events	/events
GET List People	**GET** List Organizations	**GET** List Roles	**GET** List Licenses	**GET** List Policies	**GET** List Events	**GET** List Events
POST Create a Person				**POST** Create a Policy		
GET Get details	**GET** Get details	**GET** Get details	**GET** Get details	**GET** Get Details		**GET** Get Event Details
PUT Update aPerson				**PUT** Update a Policy		
DELETE Delete a Person				**DELETE** Delete a Policy		

Demo
[Webex Admin REST API]

CISCO Live!

from
Webex Documentation
to
Postman

Terminology of a REST API query

URL: https://api.github.com/users/CiscoDevNet/repos?page=1&per_page=2

method   path   parameters   protocol   headers

HTTP request

GET   /../repos?page=1   HTTP/1.1   accept: application/json

HTTP 200 OK

api endpoint

api.github.com:443

browser

JSON payload

response body   status code

HTTP response

method

url

POST ▼ | https://api.ciscospark.com/v1/people | **Send** ▼ | Save ▼

Params | Authorization | Headers (8) | Body ● | Pre-request Script ● | Tests ● | Settings | Cookies Code

● none   ● form-data   ● x-www-form-urlencoded   ● raw   ● binary   ● GraphQL ^BETA   JSON ▼   Beautify

```
1 ▾ {
2 ▾   "emails": [
3         "{{_random}}@{{_domain}}"
4     ],
5     "firstName": "User",
6     "lastName": "FromPostman"
7   }
```

content-type

status code

Body | Cookies | Headers (9) | Test Results (4/4)   Status: 200 OK   Time: 6.55s   Size: 835 B   **Save Response** ▼

Pretty | Raw | Preview | Visualize ^BETA | JSON ▼ | ⇄

response body

```
1   {
2       "id": "Y2lzY29zcGFyazovL3VzL1BFT1BMRS8wNjM4ZTE0Ni1lNWNiLTQ3OWYtOWI2YS02MGU4OTU2NjViOWU",
3       "emails": [
4           "327@chatbot_land"
```

CISCO Live!

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Postman collections for Webex
API Network - postman-webex on DevNet CodeExchange

Webex Admin API

Perform administration actions such as provisioning a user and managing devices, rather than using Cisco Webex Control Hub.

The Cisco Webex API includes administration APIs that allow administrators to perform actions such as provisioning users and managing devices.

By automating administration, user management and provisioning can be centralized in an existing tool, rather than using the Webex Control Hub. For example, a partner selling multiple Collaboration tools to customers can use these APIs to enable Webex provisioning through a centralized portal.

https://developer.webex.com/admin-api.html

▶ **Run in Postman**

View Documentation

PUBLISHER

DEVNET **Cisco DevNet**

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

Webex Teams API

Create Webex Teams space and invite people, search for people, post mes space history or be notified in real-time.

Imports: 50+

Webex Teams Cards

Give new levels of interactivity to Webex Teams with Cards and Actions

Imports: 40+

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

CISCO *Live!*

Demo
[Managing Webex users with Postman]

CISCO Live!

curl – assigning Licenses to Webex users

- Pick a Person id, Licenses, update the Person with a PUT /people/<id>

`PUT` `https://api.ciscospark.com/v1/people/Y2lzY29zcGFyazovL3VzL1BFT1BMRS9mNWIzNjE4Ny1mC`

Example Request Body

```
{
    "emails" : [ "john.andersen@foo.com" ],
    "displayName" : "John Andersen",
    "firstName" : "John",
    "lastName" : "Andersen",
    "avatar" : "URL",
    "orgId" : "OTZhYmMyYWEtM2RjYy0xMWU1LWExNTItZmUzNDgxOWNkYzlh",
    "roles" : [ "RoleID1", "RoleID2" ],
    "licenses" : [
        "Y2lzY29zcGFyazovL3VzL0xJQ0VOU0UvMTIzNDU2NzgtOTBhYi1jZGVmLTEyMzQtNTY3ODkwYWJjZGVmWIt
        "Y2lzY29zcGFyazovL3VzL0xJQ0VOU0UvMDEyMzQ1NjctODkwYS1iY2RlLWYwMTItMzQ1Njc4OTBhYmNkGEt
    ]
}
```

Demo
[Code Generation]

CISCO *Live!*

All set ?

https://developer.webex.com/docs/api/v1/licenses/list-licenses

List Licenses

List all licenses for a given organization. If no `orgId` is specified, the default is the organization of the authenticated user.

GET `/v1/licenses`

Query Parameters ⌃

orgId
string
  List licenses for this organization.

Try it	Example

GET `/v1/licenses{?orgId}`

Header

Authorization   ⬤ Use personal access token

Bearer ●●●●●●●●●●●●●●●●●●●●●●●●●

This limited-duration personal access token is hidden for your security.

All set ?

https://developer.webex.com/docs/api/v1/licenses/list-licenses

List Licenses

List all licenses for a given organization. If no `orgId` is specified, the default is the organization of the authenticated user.

`GET` `/v1/licenses`

Query Parameters ⌃

orgId
string
    List licenses for this organization.

Try it | **Example**

`GET` `/v1/licenses{?orgId}` 📋

Header

Authorization 🔘 Use personal access token

Bearer ●●●●●●●●●●●●●●●●●●●●●●●● 📋

This limited-duration personal access token is hidden for your security.

Webex API
Access Tokens

Webex API Access Tokens

Testing	Thanks to your developer token, you can invoke Webex APIs **under your own identity**

Your Personal Access Token

Bearer ***************************** ⧉

This limited-duration personal access token is hidden for your security.

/!\

✓ lasts 12 hours
✓ embeds all your scopes

Admin Roles

- As an administrator, you can assign roles to individual users

- The same set of permissions applies when these users invoke the Webex Admin APIs

User > Administrator Roles

Administrator Roles

- 🔵 No administrator privileges
- ⚪ Full administrator privileges ⓘ
- ⚪ Read-only administrator privileges ⓘ
- ⚪ Partial administrator privileges
  - ☐ Support Administrator ⓘ
  - ☐ User and Device Administrator ⓘ
  - ☐ Device Administrator ⓘ

Administrator privileges....

to OAuth scopes

- ○ No administrator privileges
- ○ Full administrator privileges ⓘ
- ◉ Read-only administrator privileges ⓘ
- ○ Partial administrator privileges
    - ☐ Support Administrator ⓘ
    - ☐ User and Device Administrator ⓘ
    - ☐ Device Administrator ⓘ

Read-only view of the portal.
No changes will be
accepted.

`spark-admin:people_read`

`spark-admin:people_write`

`spark-admin:organizations_read`

`spark-admin:roles_read`

`spark-admin:licenses_read`

Webex API Access Tokens

Testing — Thanks to your developer token, you can invoke Webex APIs **under your own identity**

Integration — Request permissions (OAuth) to invoke Webex APIs **on behalf of another's user identity**

Bot Account — Your code behaves under a **machine identity**, identifiable from standard Webex users

Guest Account — For **non-Webex users** to use Webex Messaging, Calling and Meeting services

webex-integration-admin

Utility to create 'scoped' OAuth tokens for Webex Admins and Compliance Officers

👁 0 ★ 1 ⑂ 1

OWNER

ObjectIsAdvantag

CONTRIBUTOR

ObjectIsAdvantag

CATEGORIES

Collaboration

Open Source

LANGUAGES

JavaScript

LICENSE

MIT License

Scoped Tokens issuer for Webex Administrators

This code sample illustrates how to generate scoped tokens with Webex OAuth Grant flow.

This sample is configured with a pre-defined OAuth integration that includes all Webex scopes (expect spark:all), and redirects to http://localhost:8080/oauth so that Webex Administrators can quickly generate 'scoped' OAuth access tokens.

For production purpose, you would typically create your own OAuth integration from the Webex for Developers portal, and deploy your application over HTTPS.

To learn more about the implementation details of this Webex OAuth integration, check the DevNet learning lab: Run a Webex Teams Integration locally.

Demo
[scoped tokens]

OAuth Flow Summary

1. Application requests an *auth code*
   redirecting user to Webex → Login → allow access
   with a set of OAuth scopes

2. Webex returns the *auth code*
   redirecting user to the Application

3. Request an *API access token*
   from the authorization code, with the granted scopes

4. Application receives *access token*
   and *refresh token*

Your App

Webex cloud

Register Application: Create

1

https://developer.webex.com/apps.html

2 New App

Name

Description

What your app will do in 256 characters or less

3

Support Email

Where users can get support for using your app

App Icon

A URL to an image that is 512x512 or larger is required

Redirect URI(s)

One or more URIs that a user will be redirected to when completing an OAuth grant flow. Learn more

Add URI

Scopes

Scopes define the level of access that your app requires. Learn more

Register Application: Access Scope

4

Scopes define the level of access that your app requires.

This is the list of scopes and their user-facing descriptions as shown in the permission dialog.

☐ **spark:people_read** Read your users' company directory

☐ **spark:rooms_read** List the titles of rooms that your user's are in

☐ **spark:rooms_write** Manage rooms on your users' behalf

☐ **spark:memberships_read** List people in the rooms your user's are in

☐ **spark:memberships_write** Invite people to rooms on your users' behalf

☐ **spark:messages_read** Read the content of rooms that your user's are in

☐ **spark:messages_write** Post and delete messages on your users' behalf

Register Application: Registered!

⑤ **OAuth Settings**

Learn more about authentication in the
Apps & OAuth Guide

Client ID

C1e33ab18b [redacted] 7d0c46dda14f048a6k   `Copy`

Client Secret

075f8c96281 [redacted] 6d7186cfcbf0ef6   `Copy`

OAuth Authorization URL

You can use the URL below to initiate an OAuth permission request for this app. It is configured
with your redirect URI and app scopes. Be sure to update the state parameter.

https://developer.cisco.com/learning/tracks/collab-cloud

Webex Devices Programmability

'Device' Admin Role at Control Hub

- Manage Places & Devices

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	RoomOS
on-premises specific features	cloud-registered devices specific features
versionned (ex: 9.6.4, 9.7.1, 9.10...)	continuous delivery (via channels)

/xapi REST API
for cloud-registered & cloud-linked devices

Cisco Collaboration Endpoint Software
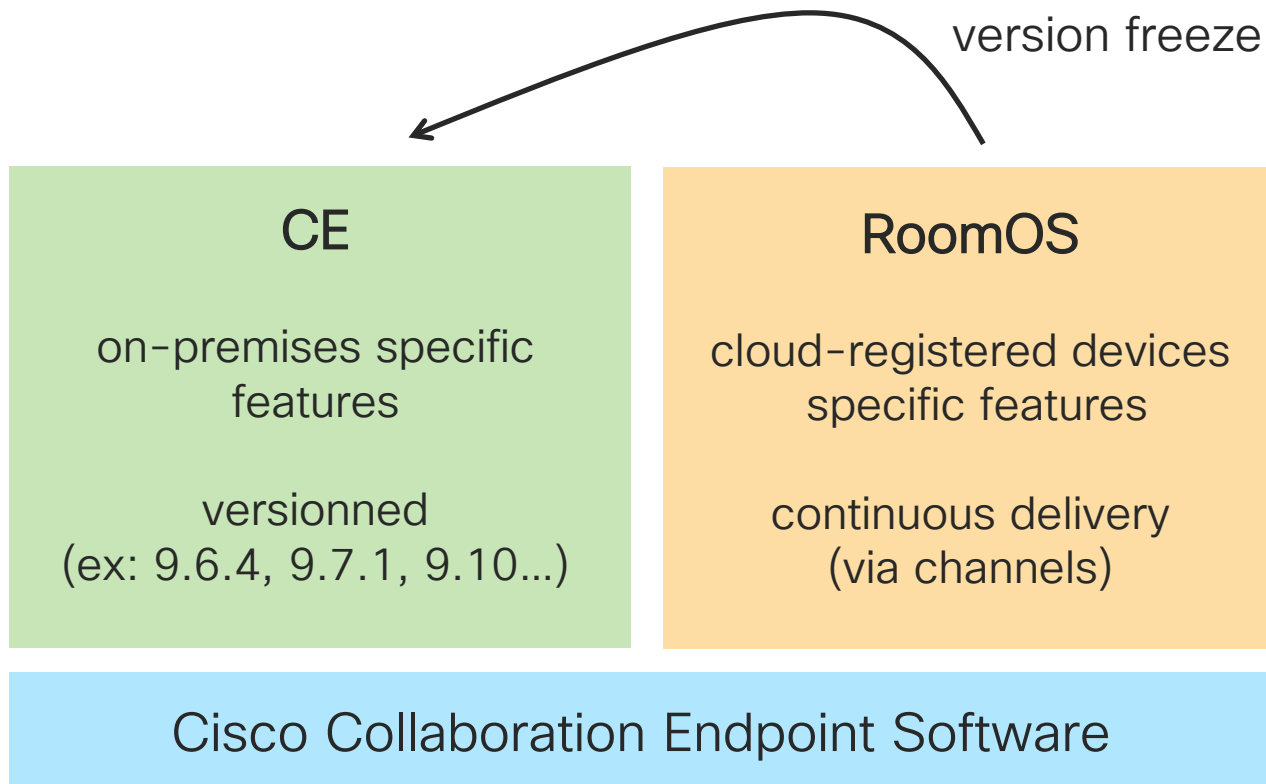
xAPI over LAN
for all devices (HTTP, ssh, websockets)
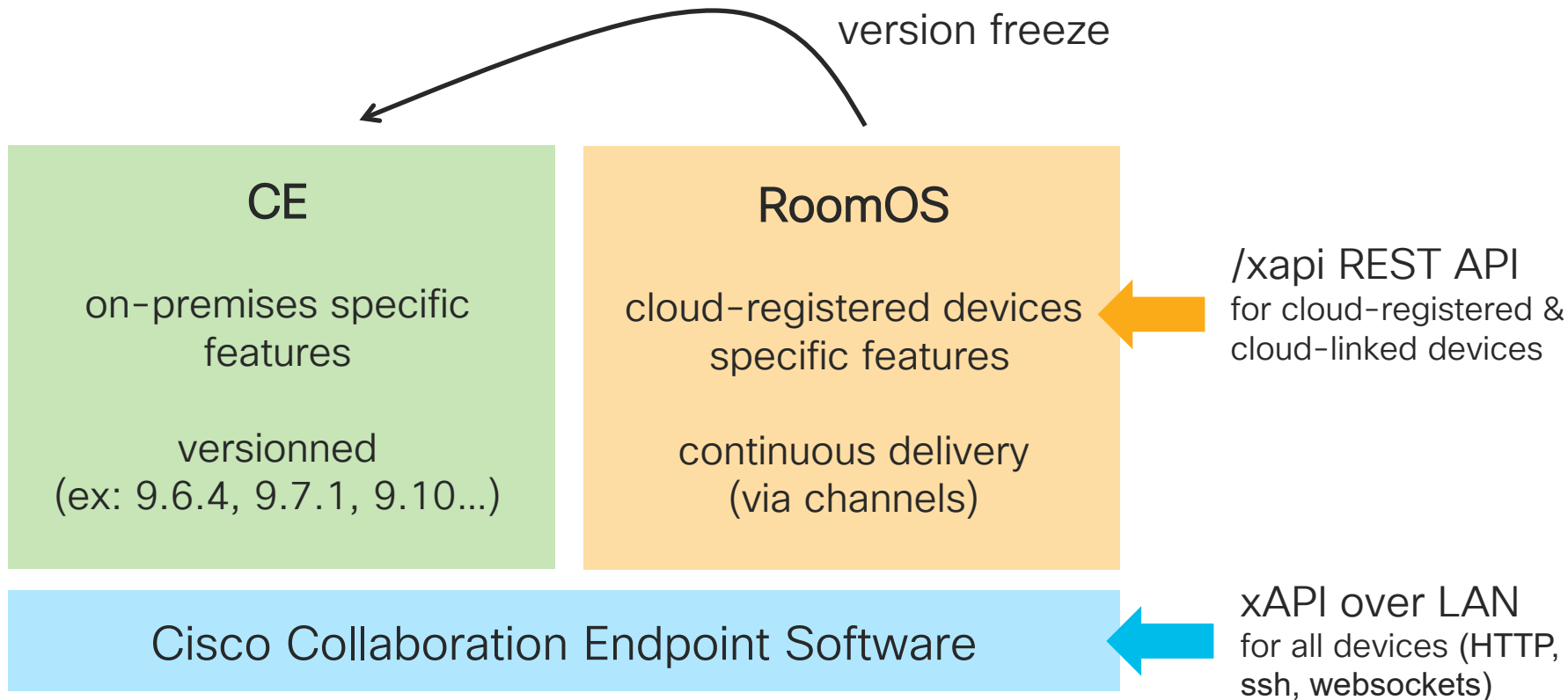
Cloud APIs for Webex Devices

/devices	/places	/xapi
GET List Devices	GET List Places	GET Query Status
POST Activation code	POST Create a Place	POST Execute Command
GET Get details	GET Get Place details	
	PUT Update a Place	
DELETE Delete a Device	DELETE Delete a Place	

Associated scopes for Webex administrators:

- spark-admin:devices_read
- spark-admin:devices_write
- spark-admin:places_read
- spark-admin:places_write

- spark:xapi_statuses
- spark:xapi_commands

Cisco Collaboration Devices Programmability

Available on all devices running CE & RoomOS
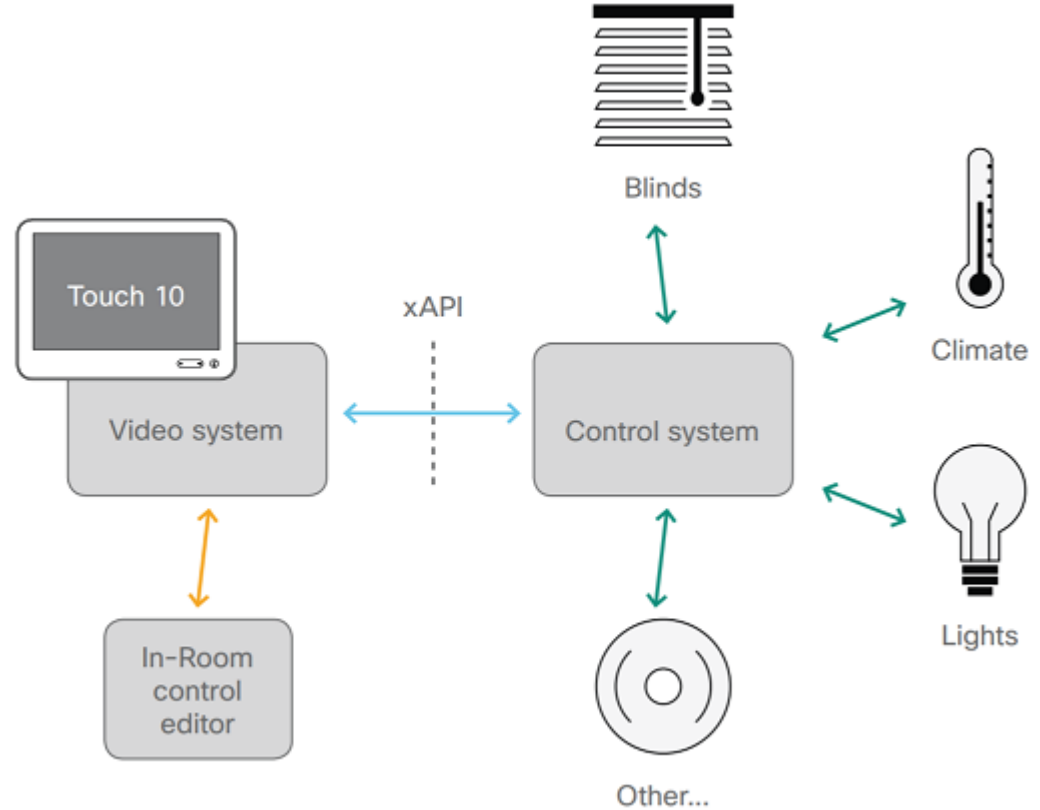
Room Kit standard, pro, mini

*no Macros on SX10

DX, Desk Pro

Complete programmability
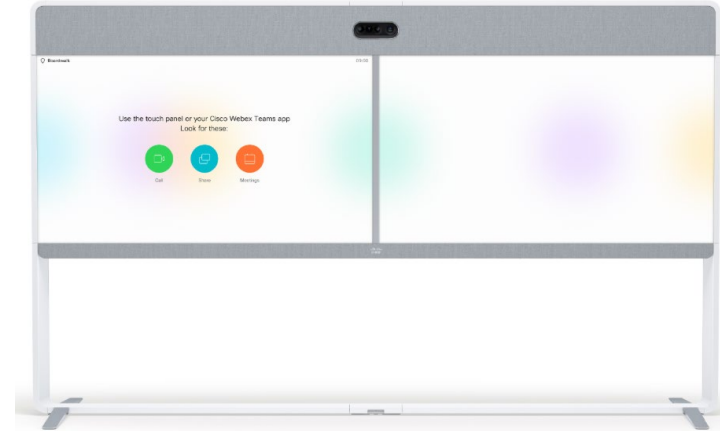
CE Programmability at a glance

- Automate your devices from code
  - initiate calls, fetch history
  - update branding
  - room analytics

- Add In-Room Controls to the Touch10 (or DX) interface
  - Enhanced user Experience for you meetings
  - Interact with IoT devices

Touch 10

Video system

In-Room control editor

xAPI

Control system

Blinds

Climate

Lights

Other...

Personalization via Postman

| POST ⌄ | http://{{endpoint}}/putxml | Params | **Send** ⌄ | Save ⌄ |

Authorization   Headers (2)   **Body ●**   Pre-request Script   Tests   Cookies   Code

○ form-data   ○ x-www-form-urlencoded   ● raw   ○ binary   XML (application/xml) ⌄

```
1 ▾ <Configuration>
2 ▾  <UserInterface>
3 ▾    <CustomMessage>
4         Welcome to the DevNet Zone
5       </CustomMessage>
6    </UserInterface>
7 </Configuration>
```

Body   Cookies (1)   Headers (6)   Test Results   Status: 200 OK   Time: 317 ms   Size: 253 B

Pretty   Raw   Preview   XML ⌄   ⇄   🗗   🔍   Save Response

```
1 <?xml version="1.0"?>
2 ▾ <Configuration>
3     <Success/>
4 </Configuration>
```

Personalization: Brand logo (awake) via Postman

Your logo

272x272

544523454353
BVHhe7d2/WuJ
MH8b...x4T0W
sNjLI4hCYII=

Example:
https://www.base64-image.de/

- Turn your image (PNG, 272px272p) to base64 bytes
- Remove heading string (such as 'data:image/png;base64')
- Forge XML PUT request in Postman


```
1  <Command>
2    <UserInterface>
3      <Branding>
4        <Upload>
           <Type>Branding</Type>
6          <body>iVBORw0KGgoAAAANSUhEUgAAARAAAAEQCAYAAAB4CisVAAAAAXNSR0IArs
                 Hhe7d2/WuJMH8bx4T0WsNjLI4hHgDZb2W4HJTZ2T2m3DZbSbWtlIxyBHIGX
                 ...AAASUVORK5CYII=</body>
7        </Upload>
8      </Branding>
9    </UserInterface>
10 </Command>
11
```
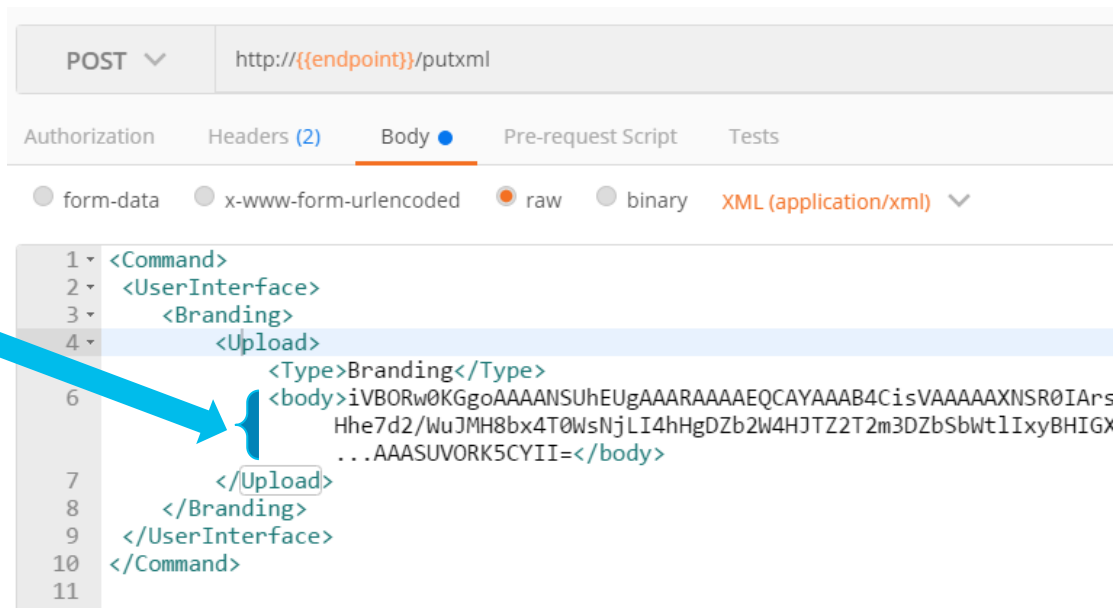
Cisco CE xAPI (as admin)

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

▶ **Run in Postman**

View Documentation

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

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CE Programmability (xAPI)

Standalone
(JavaScript, Python...)

Macros
(JavaScript)
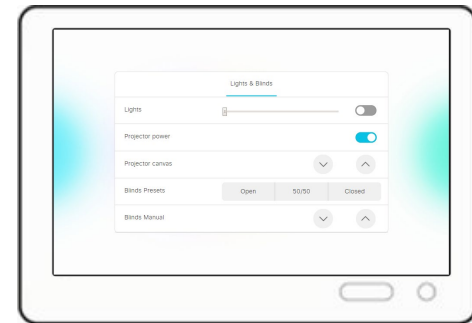
status

configure

command

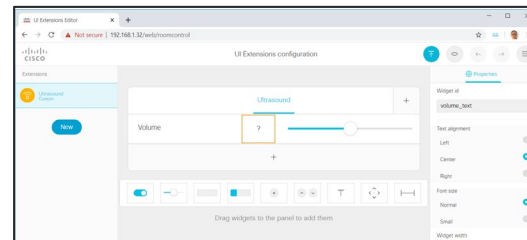*over ssh, Websocket, serial, or HTTP**
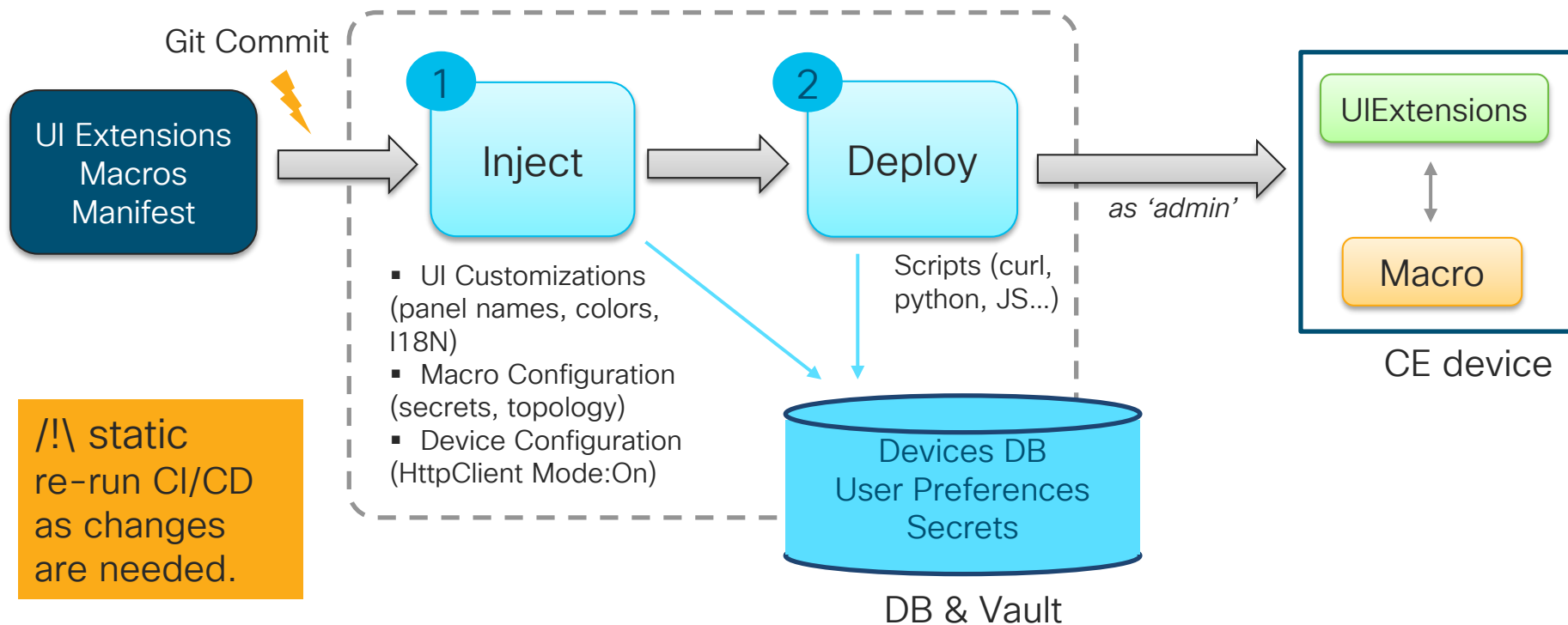
events

Touch Interfaces

deploy

UI Extensions Editor

Deployment strategies
Inject topology and secrets along the CI/CD pipeline

Git Commit

UI Extensions
Macros
Manifest

1 Inject

2 Deploy

- UI Customizations (panel names, colors, I18N)
- Macro Configuration (secrets, topology)
- Device Configuration (HttpClient Mode:On)

Scripts (curl, python, JS...)

as 'admin'

/!\ static re-run CI/CD as changes are needed.

Devices DB
User Preferences
Secrets

DB & Vault

UIExtensions

Macro

CE device

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 features)

- Friday, 11:30 – Hall 8, A103 - BRKCOL-3008
  - Customization and Integrations of Cisco Video Room Devices

xAPI module at DevNet

https://learninglabs.cisco.com/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.

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

DevNet Sandboxes

Awesome xAPI [awesome] [CISCO DEVNET | published]

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

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Awesome Webex

A curated list of Cisco Webex resources for developers, inspired by awesome-go and awesome-python.

> Currently gathers resources **only for Webex Teams APIs** (formerly Cisco Spark) as documented at Webex for Developers.
>
> Looking for developer resources for **Webex Devices APIs**? check awesome-xapi.

Contents

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Join the #webex4devs
Teams Space

developer.webex.com/support

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.

cisco Live!

Continue your education

Demos in the Cisco Showcase

Walk-In Labs

Meet the Engineer 1:1 meetings

Related sessions

Thank you

You make **possible**