

CISCO Live !

Webex Calling Multi-Tenant Architecture

Deep Dive

Owen Friel
Distinguished Engineer,
ofriel@cisco.com

BRKCOL-2698

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Cisco Webex App

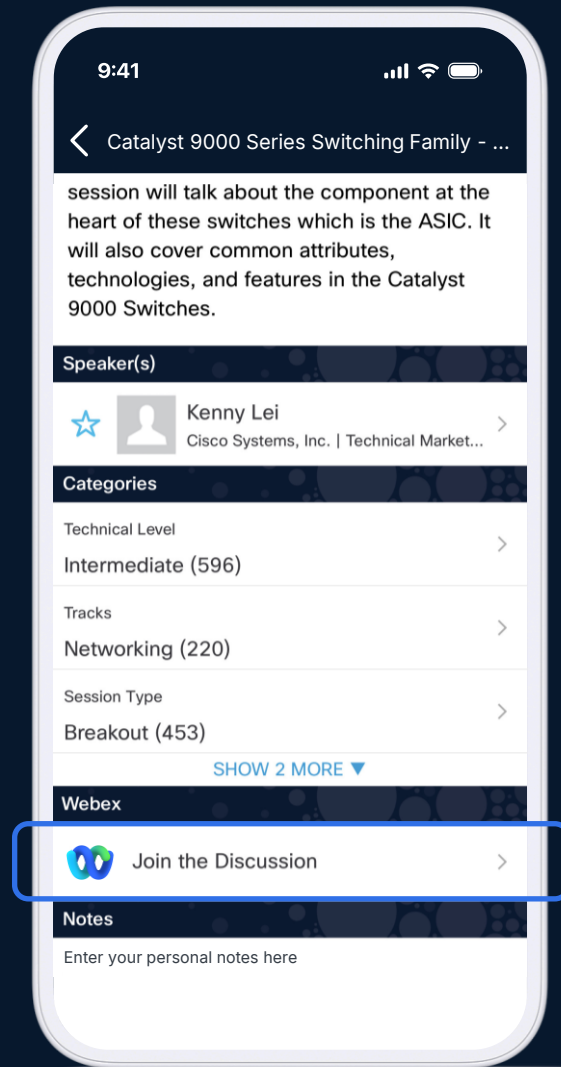
Questions?

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- 2 Click "Join the Discussion"
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Webex Calling is Secure, Reliable, and Globally Available



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Agenda

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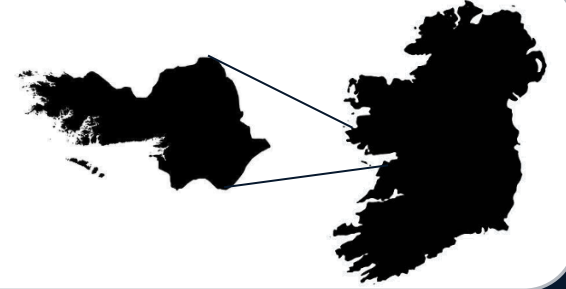
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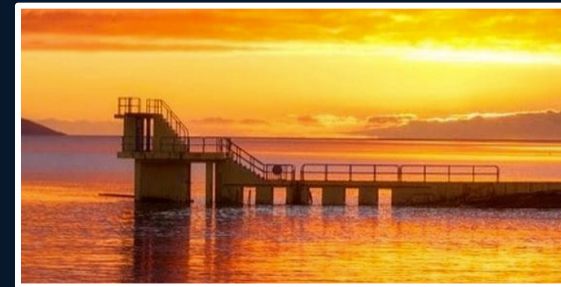
- 01 Platform Introduction
- 02 Global Topology
- 03 Data Residency
- 04 Media Handling
- 05 Hybrid Services
- 06 AI
- 07 High Availability
- 08 Security
- 09 Conclusion

About your speaker: Owen Friel



- With Cisco since 2007
 - CUCM IM&P
 - Jabber XMPP integration
 - CUCM
 - SSO solution architect for on-prem UC portfolio
 - Webex Calling Chief Architect

- Outside work I enjoy
 - Swimming in the North Atlantic (sometimes)



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These statements are based on estimates and information available to us at the time of this presentation and are not guarantees of future performance. Actual results could differ materially from our current expectations as a result of many factors, including but not limited to: the unpredictable nature of our rapidly evolving market and quarterly fluctuations in our business; the effects of competition; and any adverse changes in our indirect channel relationships. These and other risks and uncertainties associated with our business are described in the company’s annual report on Form 10-K. The forward-looking statements in this presentation are made as of the date of the initial publication of this presentation, and we disclaim any obligation to update these statements at any time in the future.

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How familiar are you with WxCalling and CUCM?

Platform Introduction

1. Platform Introduction
2. Global Topology
3. Data Residency
4. Media Handling
5. Hybrid Services
6. AI
7. High Availability
8. Security
9. Conclusion

Webex platform strategy

- Deployment flexibility
- Infrastructure agnostic Webex platform and services
- Ability to deploy key services across multiple hyperscalers and Cisco data centers globally
- Ability to dynamically burst from data center to public cloud based on peak load



Google Cloud Platform



Webex platform strategy enables rapid deployment and innovation

- Enables **rapid** delivery of new features, reliably, at cloud scale
- Enables deployment across **public and private clouds**
- Facilitates global service expansion
- Comply with regional data privacy and data **residency** requirements



Webex adopts SaaS best practices

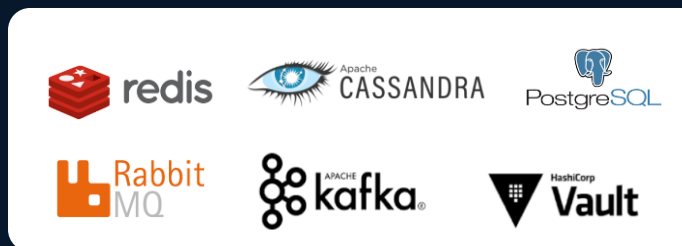
- Leverage and **lead** industry best practices for SaaS
- SaaS **cloud native** architecture
- Best-in-class **off-the-shelf** SaaS components
- State of the art metrics, analytics, monitoring and alerting infrastructure
- **Secure** by design, **secure** by default
- 24 / 7 Site Reliability Engineering + DevOps



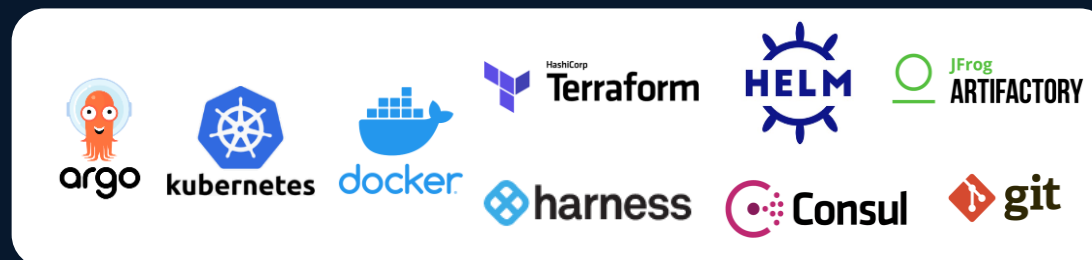
Alerting & Monitoring



Metrics & Analytics



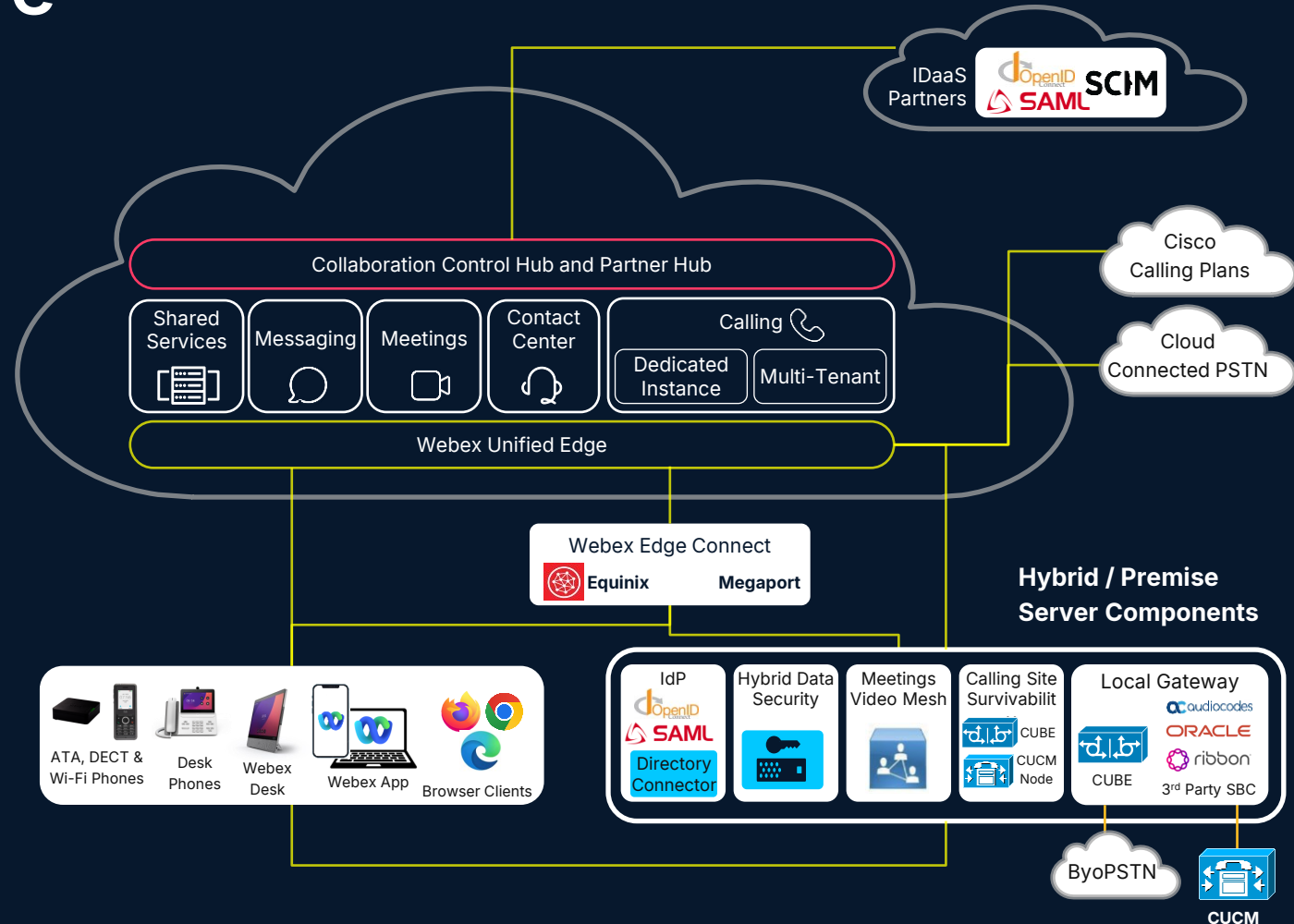
Platform Services



Pipeline & Deploy

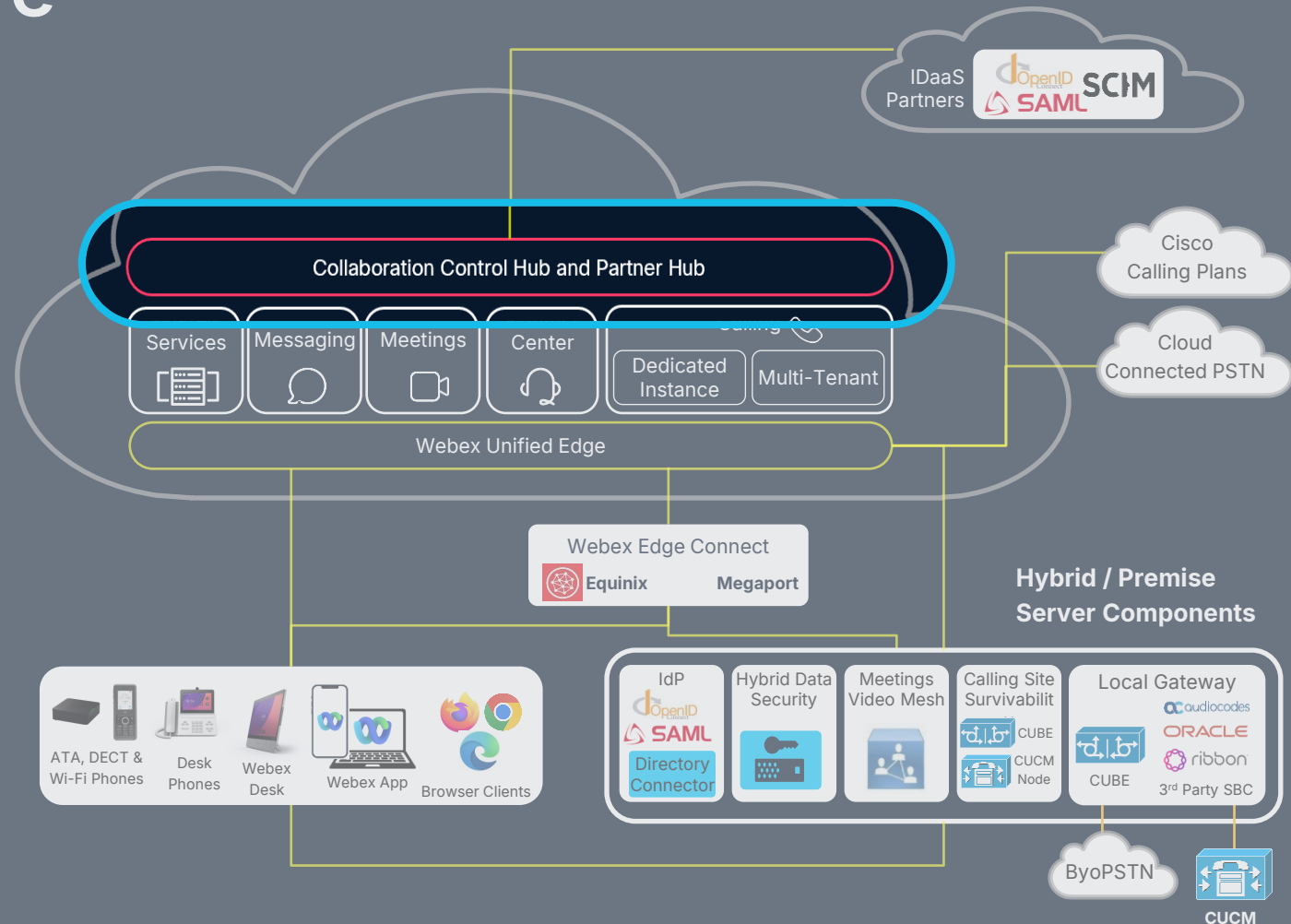
Webex architecture

- Control Hub
- SSO and IDaaS
- Shared Services
- Flexible PSTN Options
- Unified Edge
- Webex Edge Connect
- Advanced Hybrid Features
- Devices and Clients



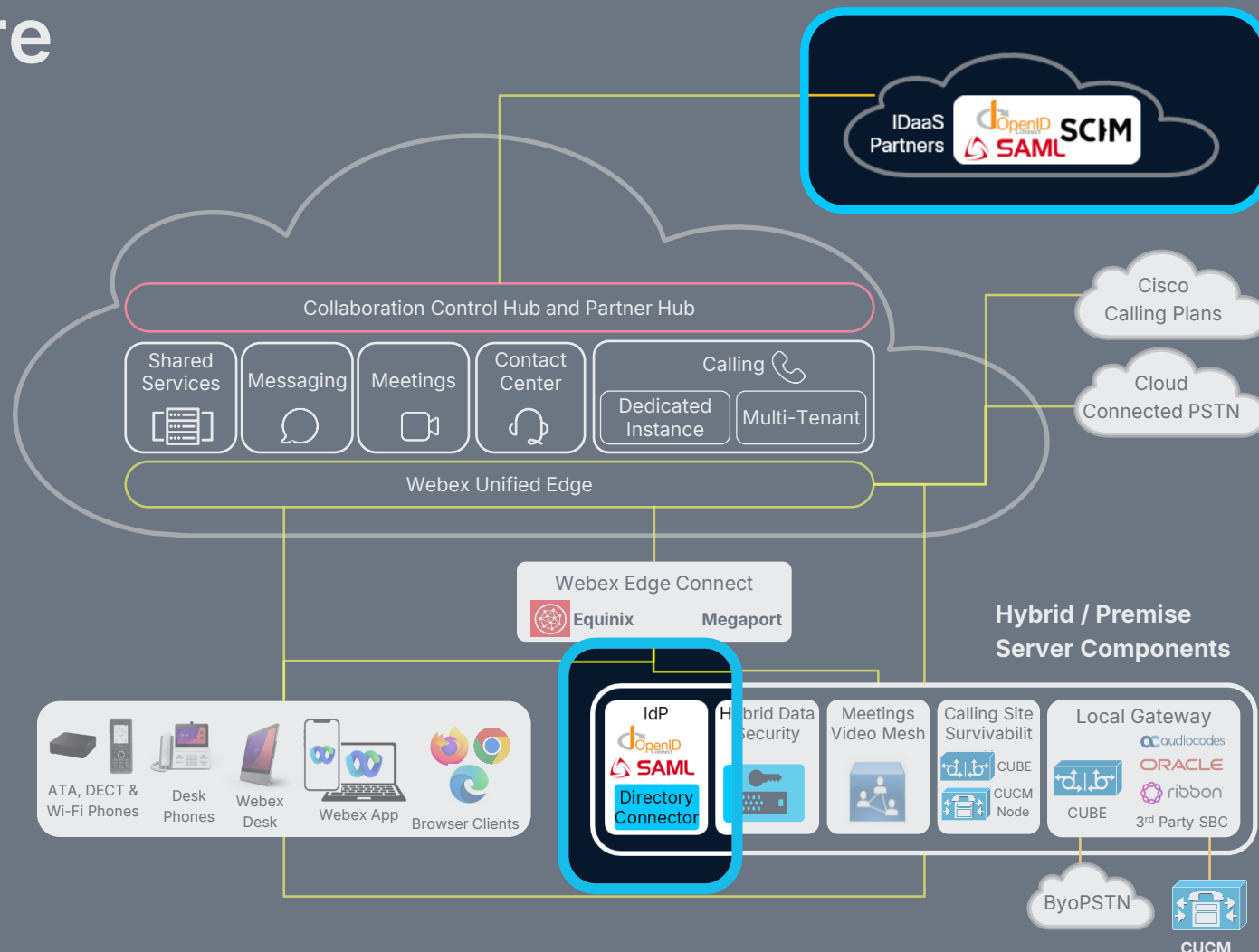
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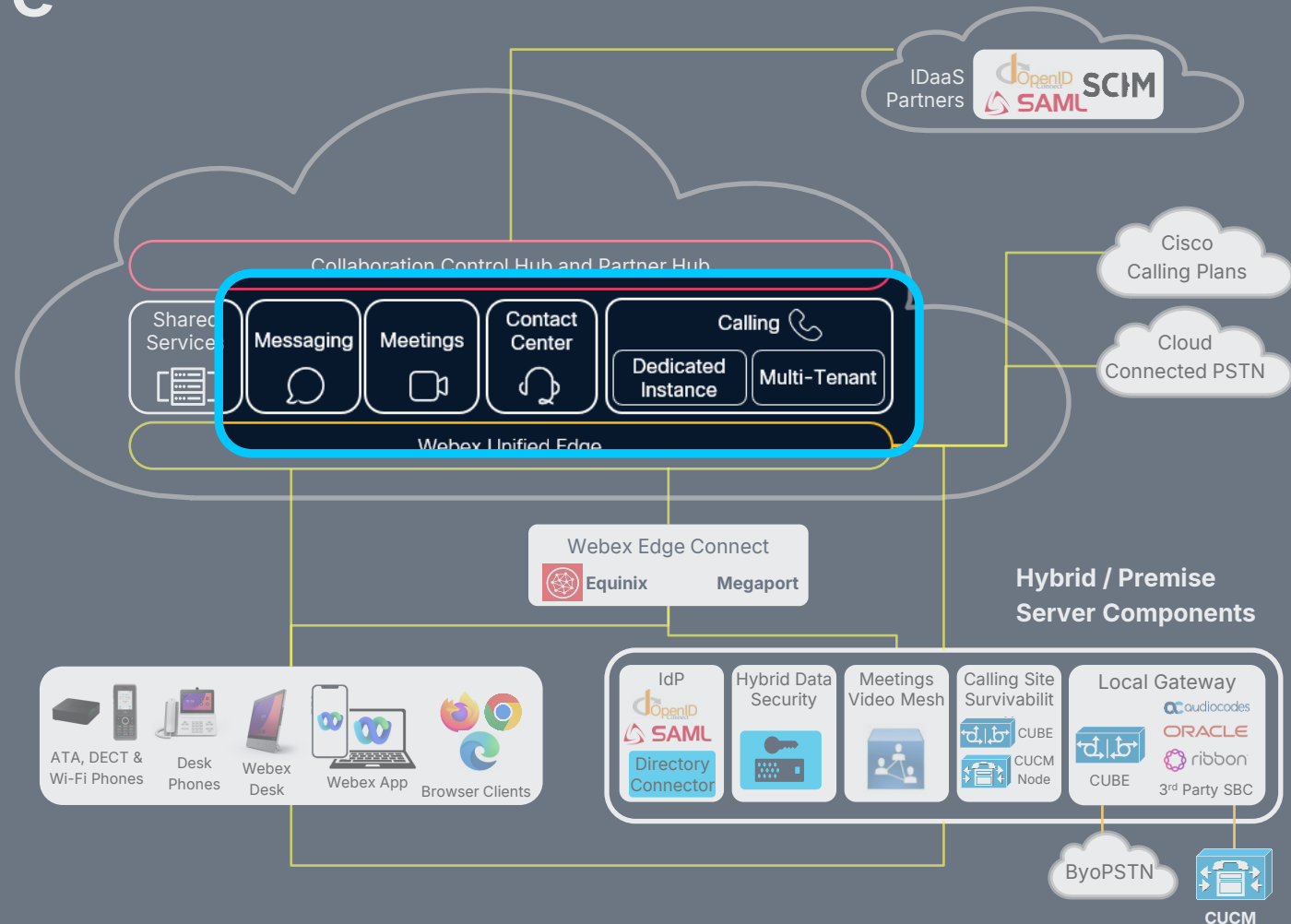
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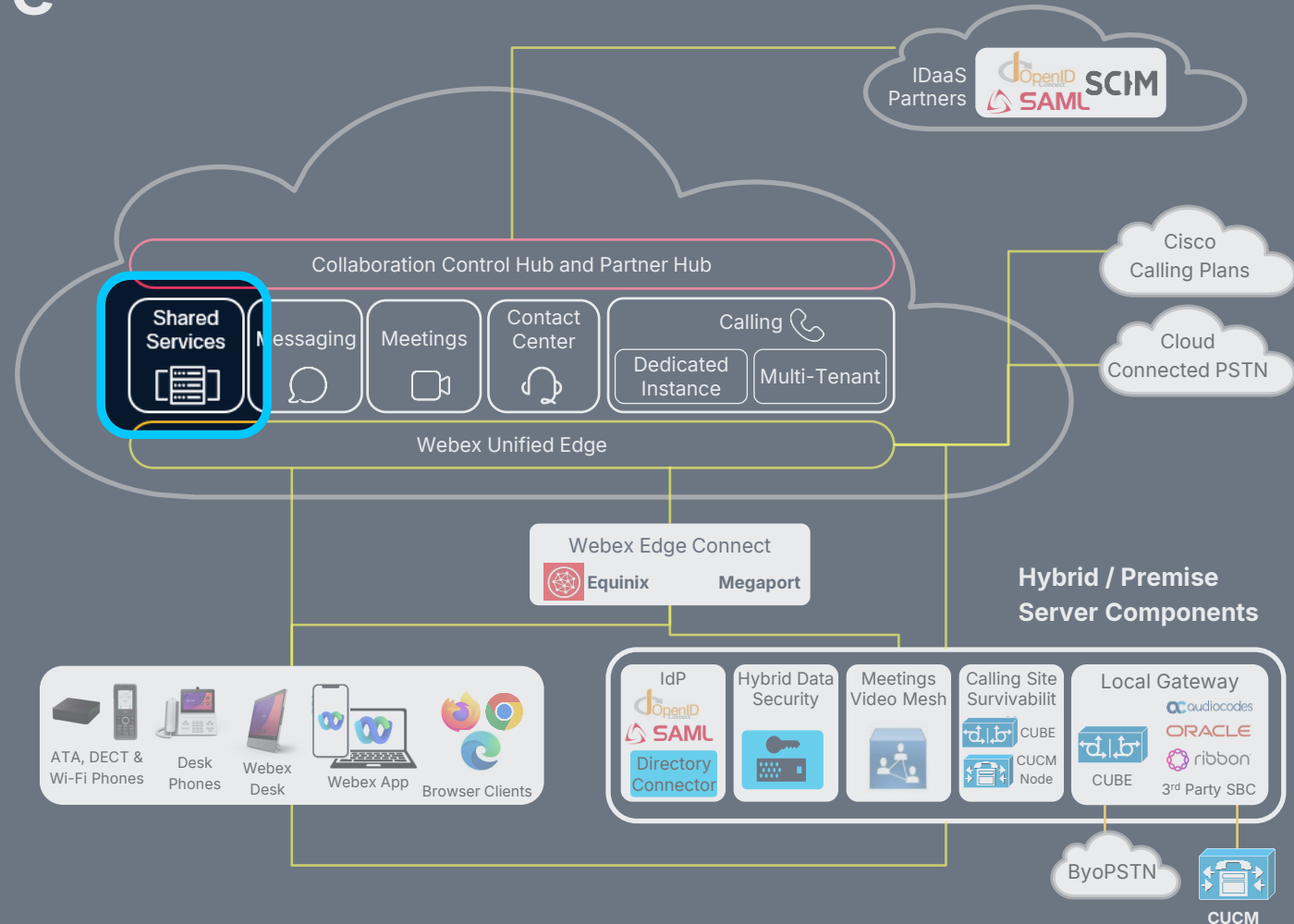
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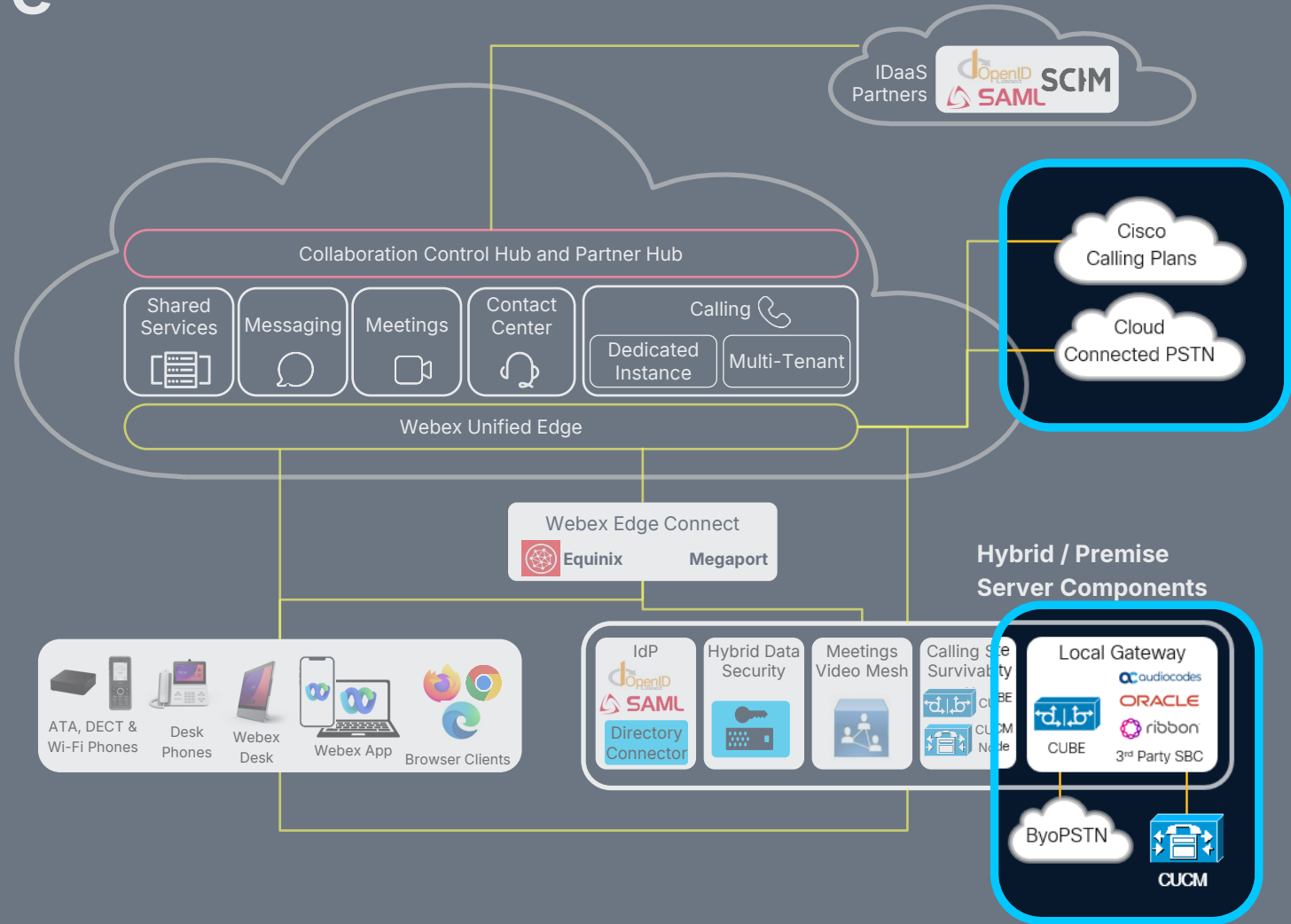
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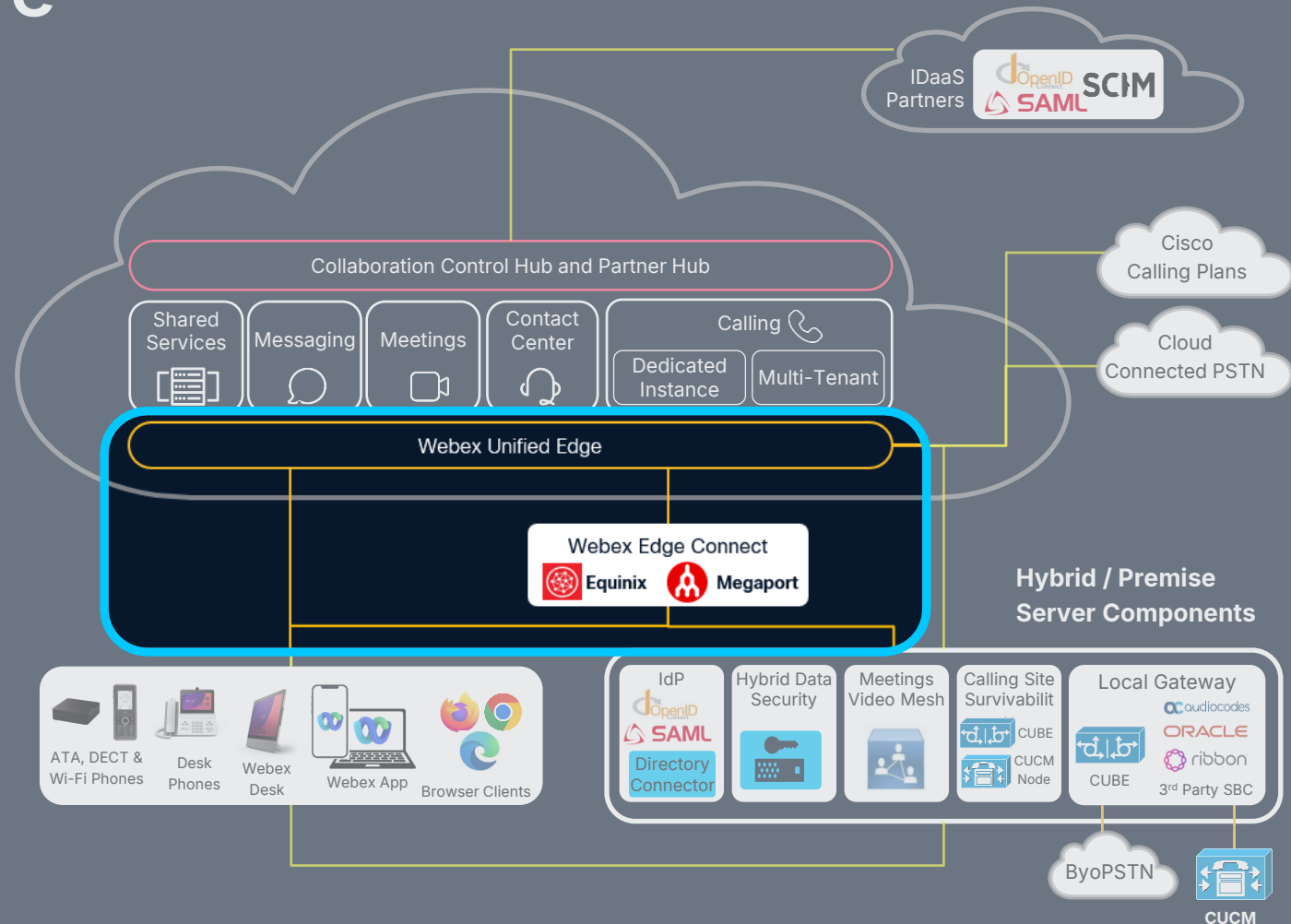
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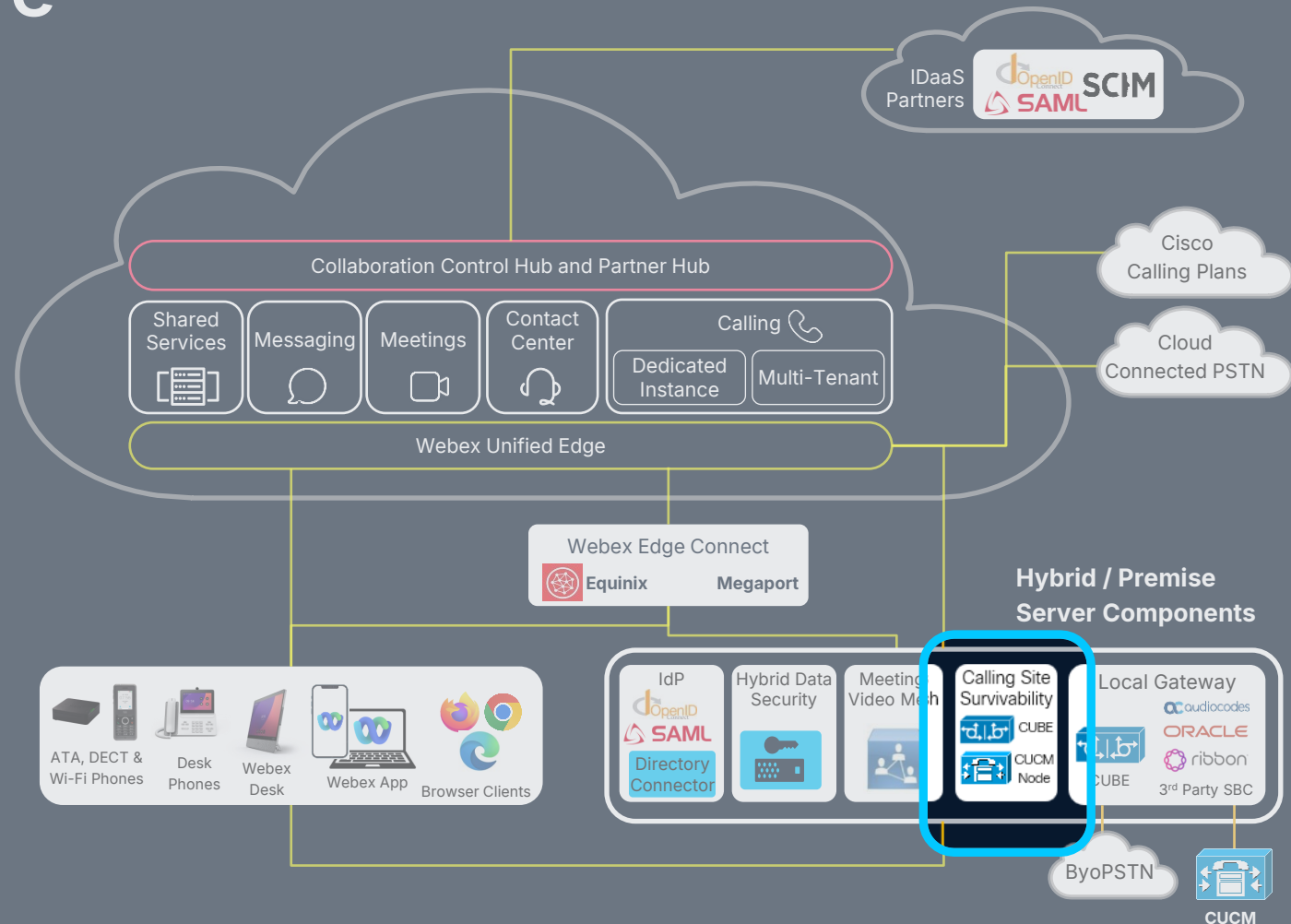
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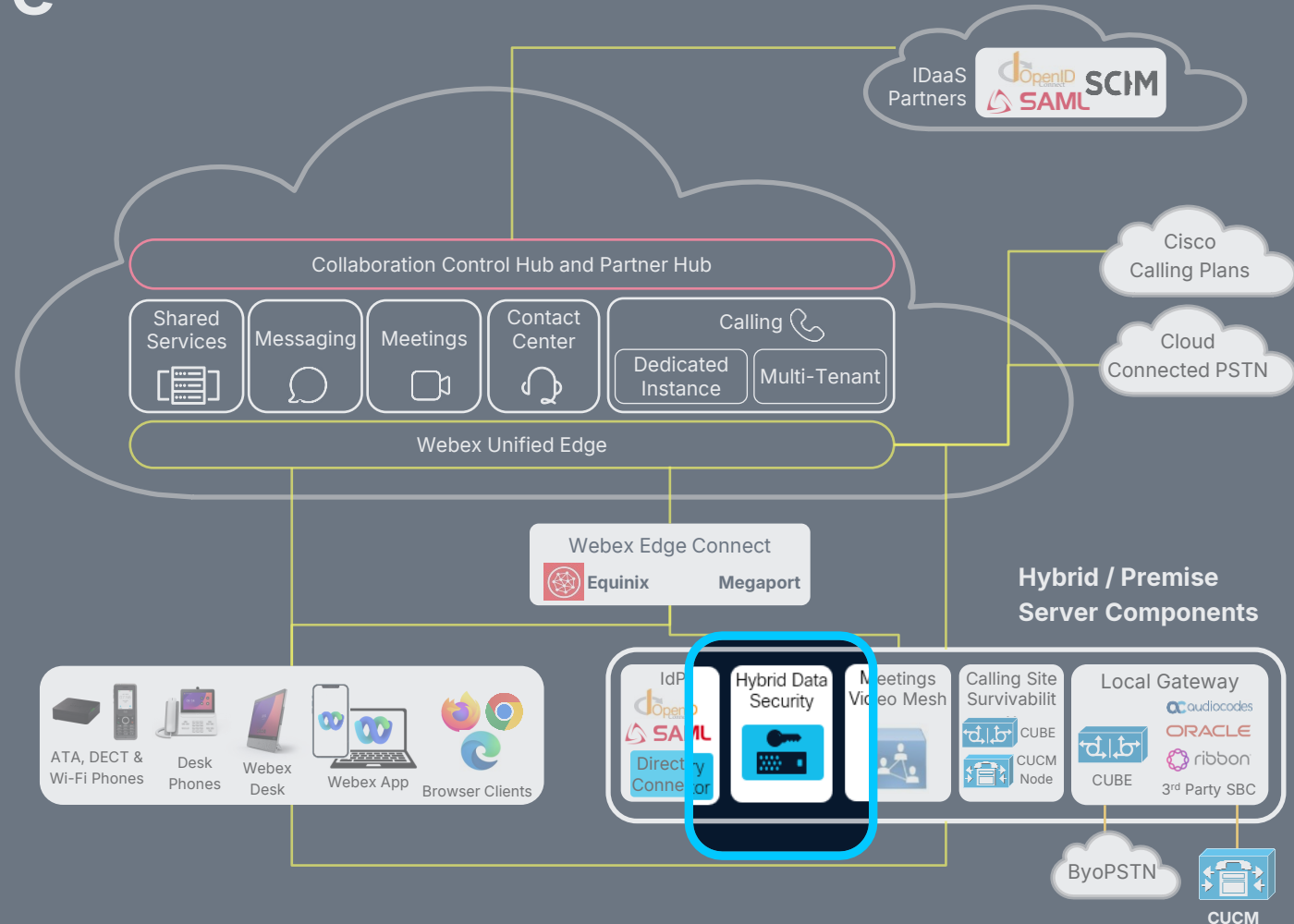
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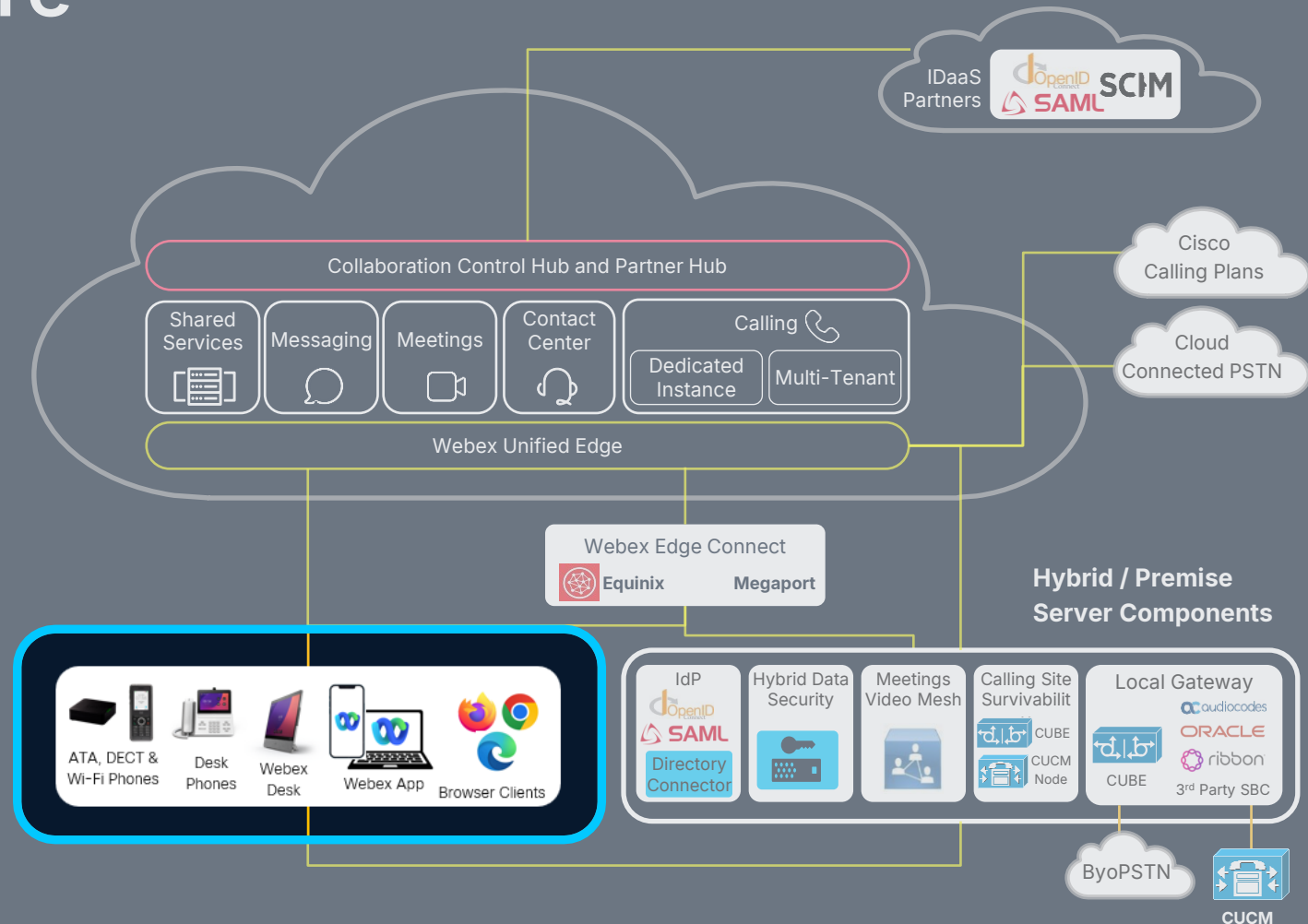
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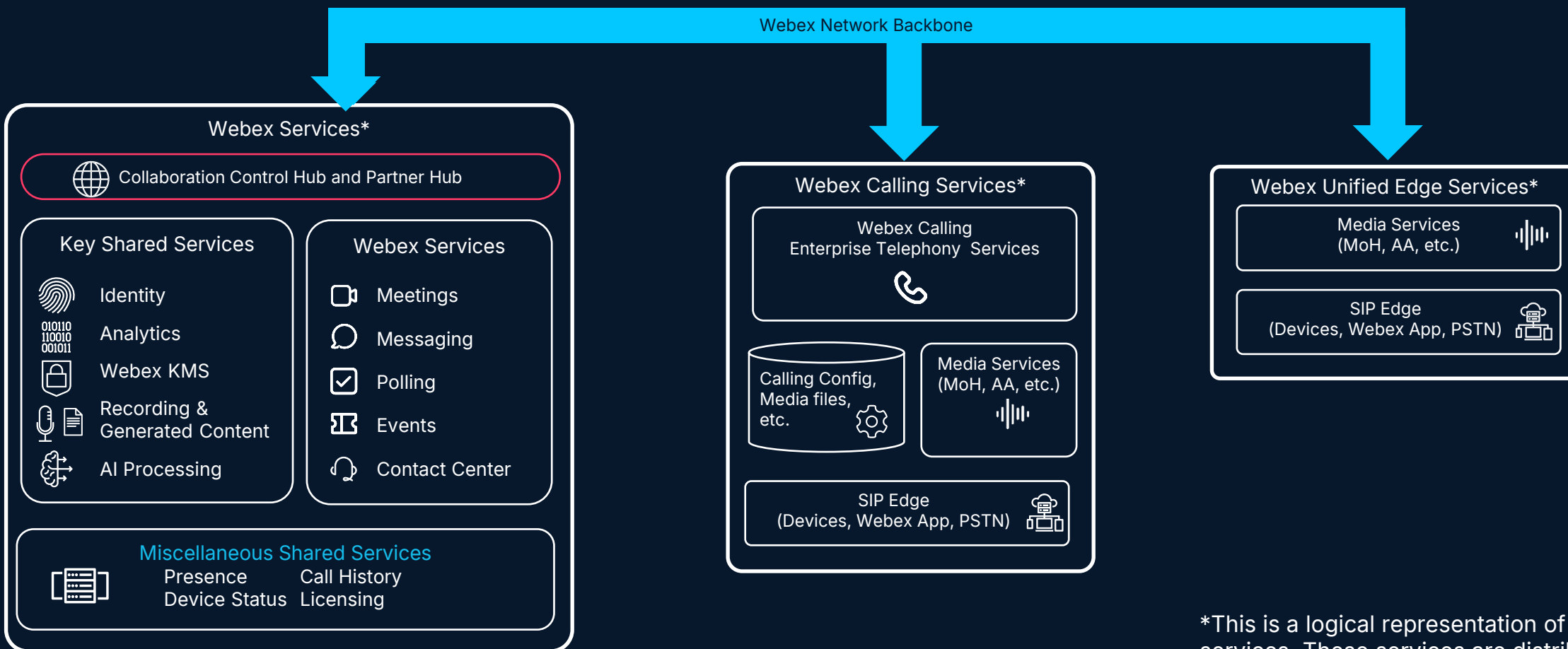


Webex architecture

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Webex Calling Multi-Tenant services



*This is a logical representation of Webex services. These services are distributed across multiple Cisco and hyperscaler DCs

Key shared services used by Webex Calling

	Webex Calling	Enterprise Telephony services
	Webex Unified Edge	SIP Client & PSTN Edge, Calling Media services
	Control Hub	Single pane of glass for managing all Webex services
	Webex KMS	Stores encryption keys for User Generated Content
	Identity	User identity storage, SSO and Authorization
	Analytics	Powers Control Hub Analytics, including Calling CDR storage
	Recording, AI Content	Voicemails, Recordings and AI Generated content storage
	AI Processing	Transcripts, summary and action items processing

Additional Information

- Relevant Session(s)
 - BRKCOL-2990: The Webex Cloud Platform: Infrastructure, Data Residency and Connectivity
 - BRKCOL-2787: Planning and Designing Successful Cloud Calling Deployments with Webex Calling
 - BRKCOL-2166: Understanding how Provision and Single Sign-On works for Collaboration
 - BRKCOL-2094: Webex Edge Connect Design and Deployment for Webex Meetings, Calling and DI
 - BRKCOL-2312: Enabling Cloud and Premise Deployments with CUBE
- References
 - <https://help.webex.com/en-us/article/WBX28754/Where-are-the-Webex-Data-Centers-and-iPOP-Locations>

Global Topology

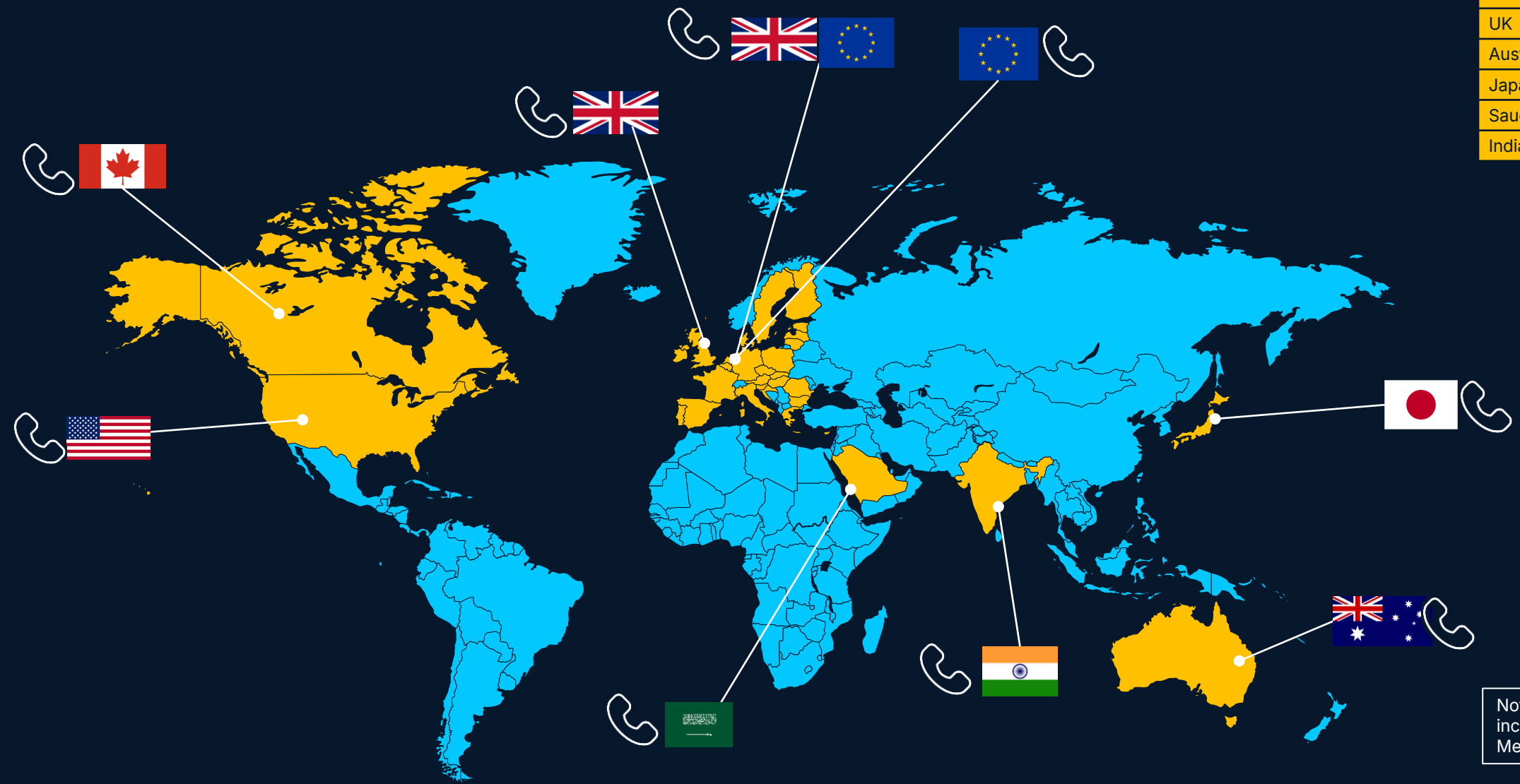
1. Platform Introduction
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Focus on “Where” and not “What Provider”

- The most relevant information for the majority of commercial customers and partners is **where** are Webex Calling services running and **where** is my data stored
- The Webex platform strategy is to build **infrastructure agnostic** services
- This section focuses on **where** (i.e. what country or geographic region) Webex Calling services are deployed
- Information on **what provider or hyperscaler** is covered in other sessions

Calling Service DCs	
US	
Canada	
UK/EU	
EU	
UK	
Australia	
Japan	
Saudi Arabia	
India	

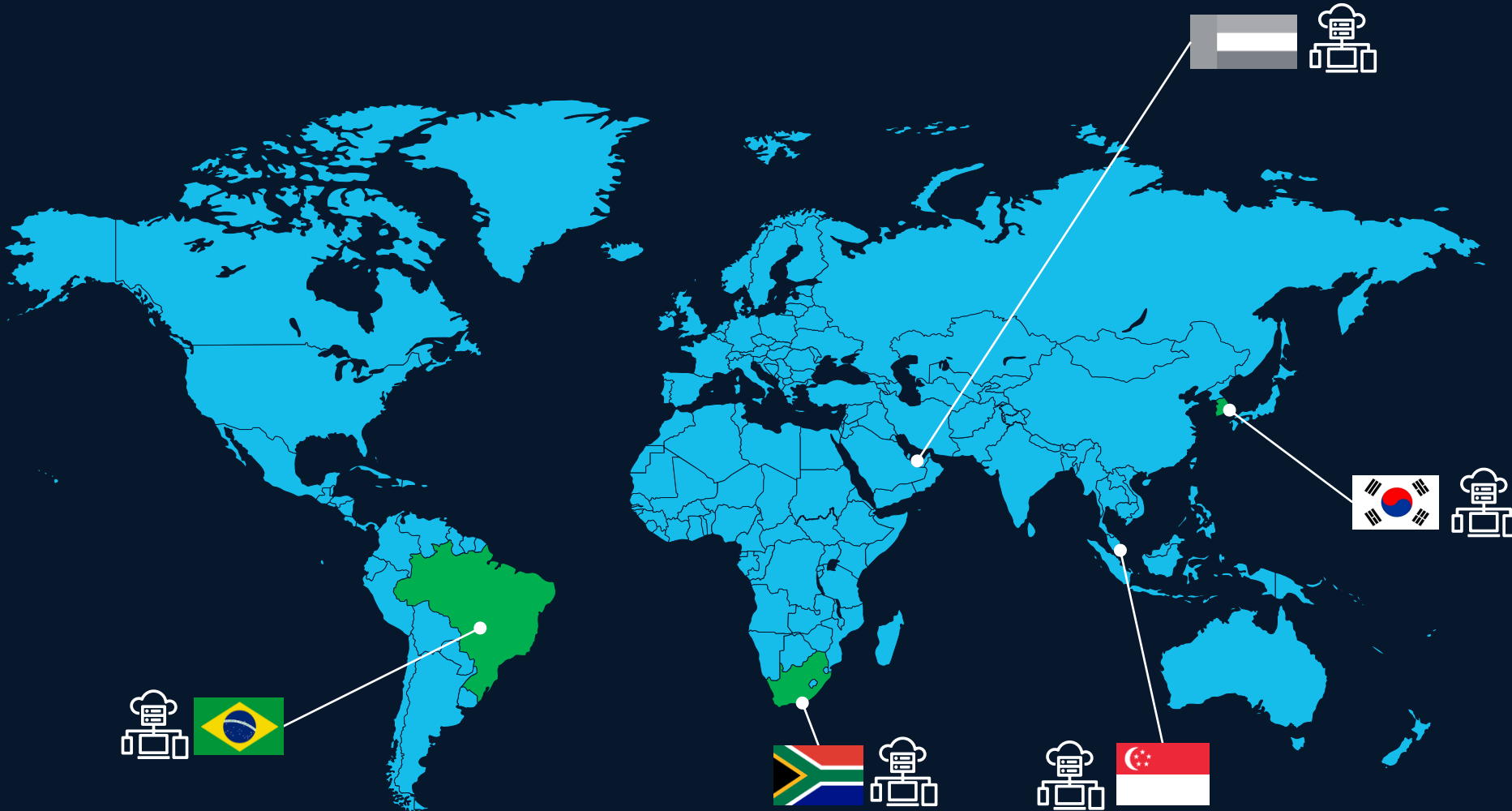
DC locations for Webex Calling services



Note: These DCs include Edge and Media Services

Webex Unified Edge	
Brazil	
South Africa	
UAE	
Singapore	
South Korea	

PoP locations for Webex Unified Edge



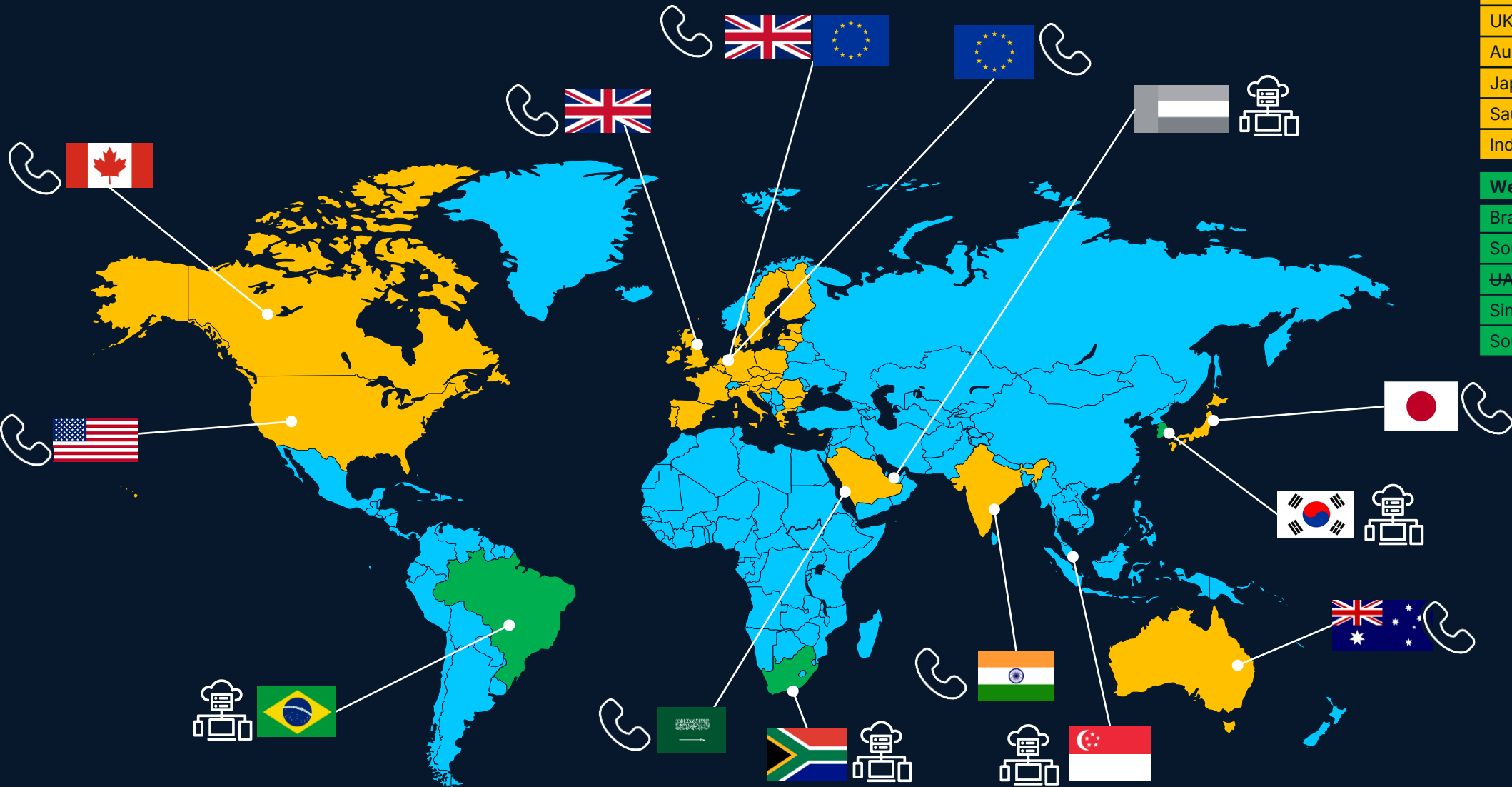
Note: Unified Edge PoPs include Media Services

Webex Calling and Unified Edge

Webex Calling 

Webex Unified Edge 

Calling Service DCs	
US	
Canada	
UK/EU	
EU	
UK	
Australia	
Japan	
Saudi Arabia	
India	
Webex Unified Edge	
Brazil	
South Africa	
UAE	
Singapore	
South Korea	

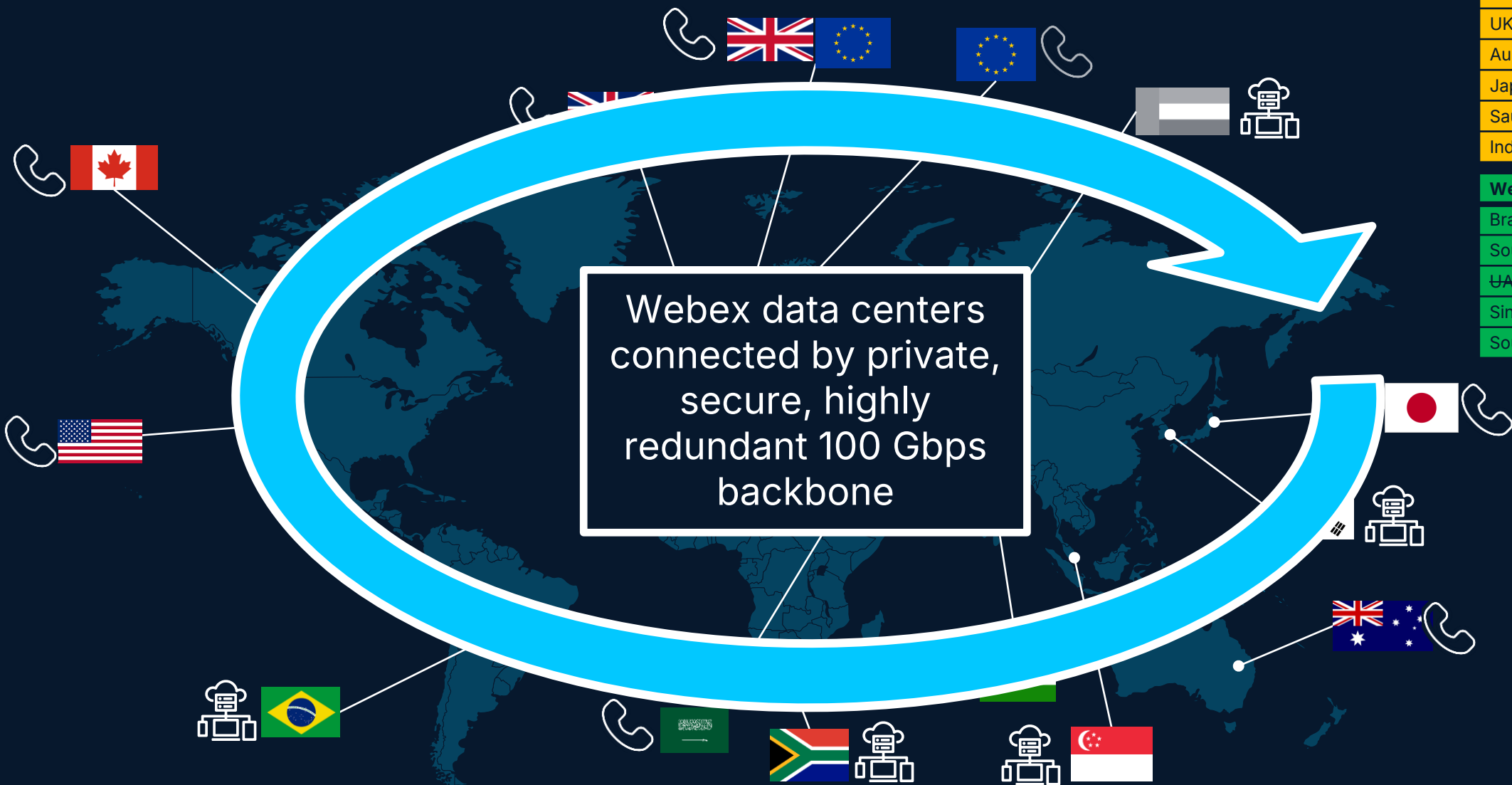


Webex Backbone

Webex Calling 

Webex Unified Edge 

Calling Service DCs	
US	
Canada	
UK/EU	
EU	
UK	
Australia	
Japan	
Saudi Arabia	
India	
Webex Unified Edge	
Brazil	
South Africa	
UAE	
Singapore	
South Korea	



Full Webex stacks available in US, EU, APAC

Full Webex stack planned in Middle East

Planned
Saudi Arabia
Expansions



	US	EU				Middle East		APAC					
Webex Calling													
Webex Unified Edge													
Control Hub													
Webex KMS													
Identity													
Analytics													
Recordings, AI Content													
AI Processing													

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- References
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 - <https://help.webex.com/en-us/article/n70gvam/Data-Center-locations-for-Webex-Calling>
 - <https://help.webex.com/en-us/article/oybc4fb/Data-residency-in-Webex>
 - <https://help.webex.com/en-us/article/nx91ljh/Dedicated-Instance-datacenter-locations>

Data Residency

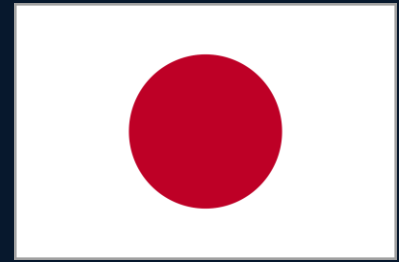
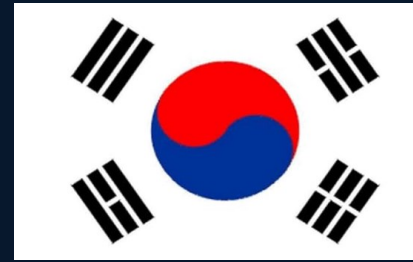
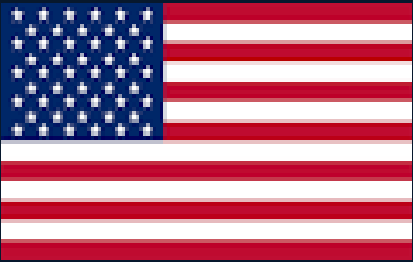
1. Platform Introduction
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Six key decisions control data residency and media anchoring

1. What is your data residency country?
2. What country is your Webex Calling headquarters in?
3. What are the addresses of your locations?
4. What is your org default data storage region?
5. What are your per-location data storage regions?
6. What are your recording settings?

Data residency example

- This is Cisco Live US so let's look at data residency for a multi-national organisation with
 - Headquarters: **United States**
 - Branch offices: **The Netherlands, South Korea and Japan**



1. What is your data residency country?

- Specified when creating an org
- Determines Identity, Analytics and Webex KMS storage
- Analytics includes
 - Webex Calling CDRs
 - Calling media quality statistics
- All US customer data is stored in US region

The screenshot shows a 'Start a new trial' form with the following fields and content:

- Customer Information**
- Organization name** ⓘ: Owen Cisco Live USA
- Administrator email**: ofrielwebex+clus@gmail.com
Administrator email that you enter will be used to determine whether there is an existing customer account.
- Business vertical**: Education
- Data residency country or region**: United States of America
Select your customer's country or region, or a supported location closest to your customer. Your customer's location determines accurate data residency (user data, encryption keys, and user-generated content). [Learn more about Data residency in Webex](#)
- ☒ I certify that this customer is in a supported location for Cisco Webex *
- Buttons**: Cancel, Next

1. What is your data residency country?

- Specified when **creating** an org
- Determines **Identity, Analytics** and **Webex KMS** storage
- Analytics includes
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Data residency country or region

United States of America

Select your customer's country or region, or a supported location closest to your customer. Your customer's location determines accurate data residency (user data, encryption keys, and user-generated content). [Learn more about Data residency in Webex](#)

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United States of America

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☒ I certify that this customer is in a supported location for Cisco Webex *

Cancel Next

1. What is your data residency country?

- Data residency region shown under **Account**
- Display of calling HQ region information is planned **Roadmap**

Account

InfoSubscriptionsNew OffersPrivacy

Organization profile

Organization name

Owen Cisco Live USA

Organization ID

d31479ea-515b-409b-92d6-a36131895a4f

Which industry is your organization in?

Education

How many Webex users do you plan to have in this organization?

51-200

Data Locations

Data Type	Covered Data	Data Location
> Meetings	Recordings, transcripts, files, meeting titles, attendee names and emails, and user profiles in Webex site administration portal	
Messaging	Messages, files, avatars, spaces, and organization metadata	United States
Common application data	All Webex identity platform data, such as full user profiles	United States
Analytics data	All monitored Webex usage data from the Analytics, Troubleshooting, and Reports pages	United States

1. What is your data residency country?

- Data residency region shown under **Account**
- Display of calling HQ region information is planned **Roadmap**

Account
Info Subscriptions New Offers Privacy

Organization profile

Organization name
Owen Cisco Live USA

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Common application data	All Webex identity platform data, such as full user profiles	United States
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2. What country is your Webex Calling headquarters in?

- Specified when setting up an org that is licensed for Webex Calling
- Determines **Webex Calling home region** data center
 - Enterprise Telephony services
 - Calling user data
 - Calling feature configuration
- Can be changed via **support** ticket
 - Not a customer self-service operation

Set up your headquarters location

The country or region with the majority of your users is your headquarters location. Calling data is stored here. Keep in mind that this first location is required to set up Webex Calling. You can edit or delete your headquarters address any time in Control Hub.

Location name *
HQ USA

Country/Region *
United States of America

Address *
111 Harbor Dr, San Diego, CA 92101, USA
Address line 2 (optional)

City/Town *
San Diego

State/Province/Region *
California

ZIP / Postal Code *
92101

Latitude: 32.7066098
Longitude: -117.1597765

Timezone *
America/Los_Angeles

Email language ⓘ
English - American English

[Edit](#)

Map Satellite
RINA Gaslamp Quarter East Village Moto Villas Condos Angove Condos
Harbor Dr First Ave Third Ave J St K St Imperial Ave
E Harbor Dr
Google Keyboard shortcuts Map Data Terms Report a map error
Drag pin to the center of the location. Dragging the pin will update the latitude/longitude and the address if a match is found.

2. What country is your Webex Calling headquarters in?

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Location name *

HQ USA

Country/Region *

United States of America

Map Satellite

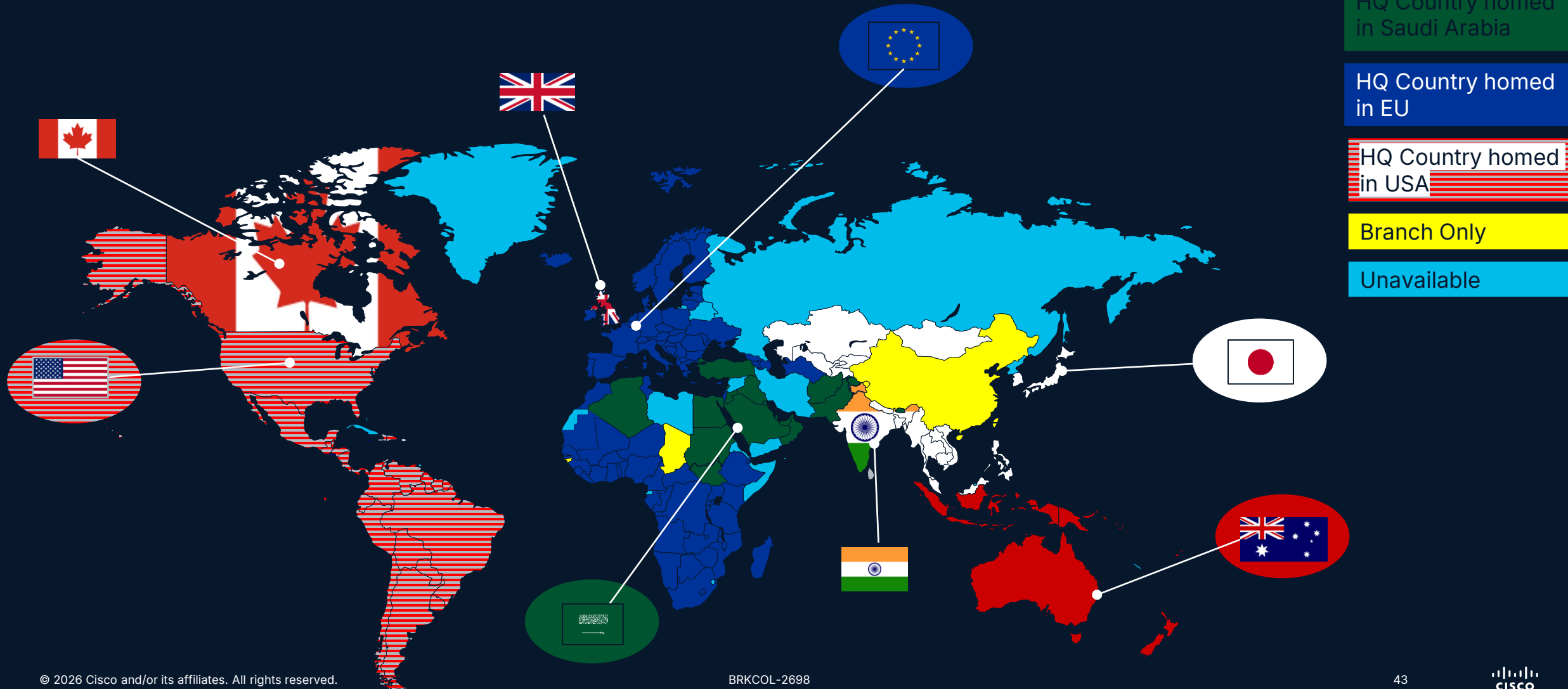
EAST VILLAGE
MOTO VILLAS CONDOS
GASLAMP QUARTER
ANGOVE CONDOS
RINA
Harbor Dr
First Ave.
Third Ave
Sixth Ave
J St
K St
Imperial Ave
13th St

Map

Satellite

EAST VILLAGE
MOTO VILLAS CONDOS
GASLAMP QUARTER
ANGOVE CONDOS
RINA
Harbor Dr
First Ave.
Third Ave
Sixth Ave
J St
K St
Imperial Ave
13th St

Webex Calling country mapping

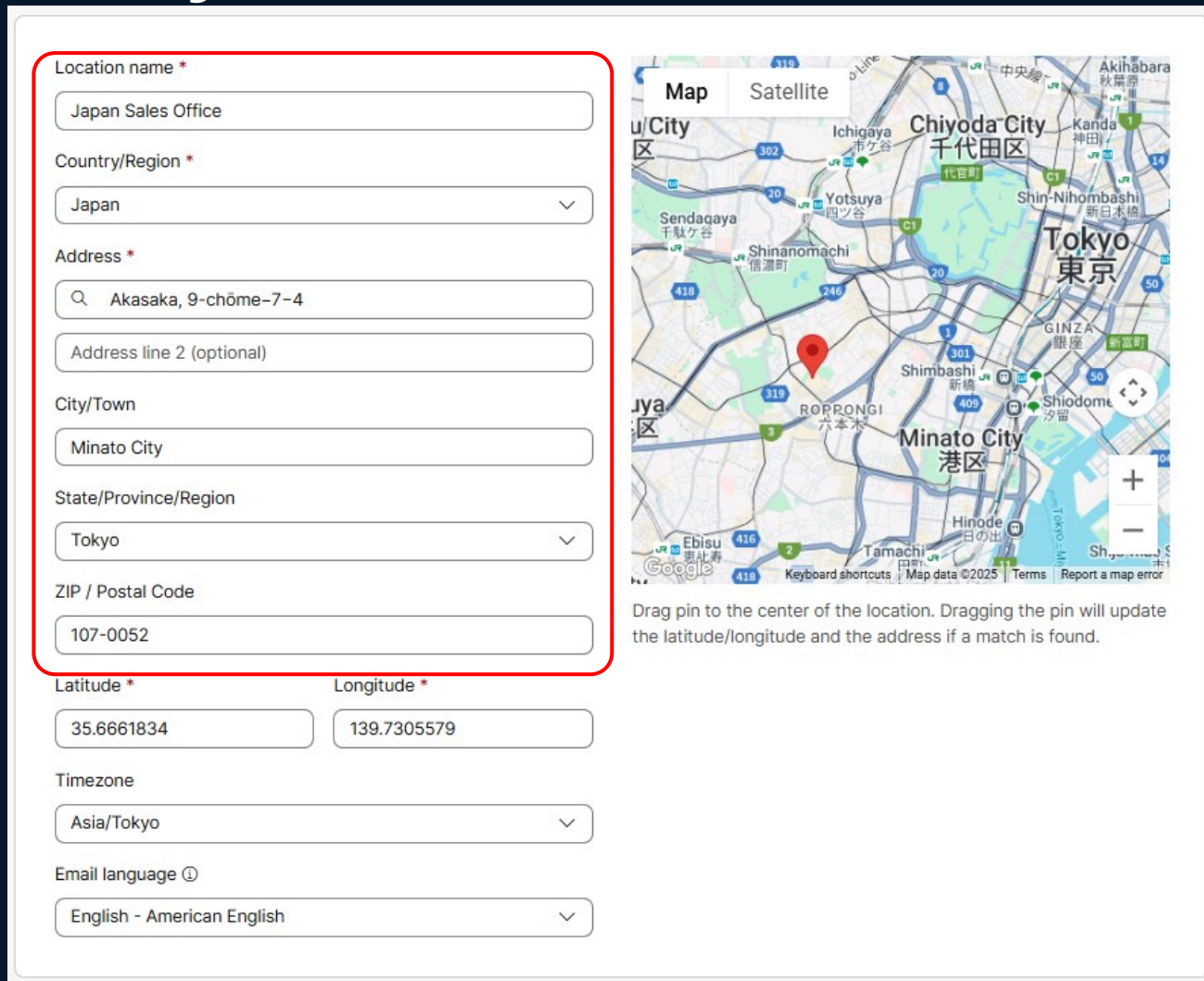


3. What are the addresses of your locations?

- Specified when creating each new location
- Determines preferred **Webex Unified Edge** access for Devices (IP Phones, Local Gateway Trunks) and Clients in the location*
- Ensures media stays **in region** for calls between users in region

* Roaming WxApp users will detect the **geographically closest** Edge PoP

Roadmap



The image shows a screenshot of a Cisco Webex location configuration form on the left and a map of Tokyo on the right. The form fields are as follows:

- Location name *: Japan Sales Office
- Country/Region *: Japan
- Address *: Akasaka, 9-chōme-7-4
- Address line 2 (optional):
- City/Town: Minato City
- State/Province/Region: Tokyo
- ZIP / Postal Code: 107-0052
- Latitude *: 35.6661834
- Longitude *: 139.7305579
- Timezone: Asia/Tokyo
- Email language ⓘ: English - American English

The map on the right shows a red pin placed in the center of the location in Tokyo. Below the map, the text reads: "Drag pin to the center of the location. Dragging the pin will update the latitude/longitude and the address if a match is found."

3. What are the addresses of your locations?

Location name *

Japan Sales Office

Country/Region *

Japan

Address *

Q Akasaka, 9-chōme-7-4

Address line 2 (optional)

City/Town

Minato City

State/Province/Region

Tokyo

ZIP / Postal Code

107-0052

Location name *

Japan Sales Office

Country/Region *

Japan

Address *

Q Akasaka, 9-chōme-7-4

Address line 2 (optional)

City/Town

Minato City

State/Province/Region

Tokyo

ZIP / Postal Code

107-0052

Latitude *

35.6661834

Longitude *

139.7305579

Timezone

Asia/Tokyo

Email language ⓘ

English - American English

Map Satellite

Chiyoda City 千代田区

Shinjuku City 新宿区

Minato City 港区

Tokyo 東京

GINZA 銀座

Shimbashi 新橋

Shiodome 汐留

Hinode 日の出

Tamachi 田町

Ebisu 恵比寿

ROPPONGI 六本木

Shinanomachi 信濃町

Yotsuya 四ツ谷

Ichigaya 市ヶ谷

Sendagaya 千駄ヶ谷

Akihabara 秋葉原

Kanda 神田

Map data ©2025 Terms Report a map error

Drag pin to the center of the location. Dragging the pin will update the latitude/longitude and the address if a match is found.

3. What are the addresses of your locations?

Locations

[What's a location?](#)

List

Map

Beta

Search by name or addr...

Filter

4 locations

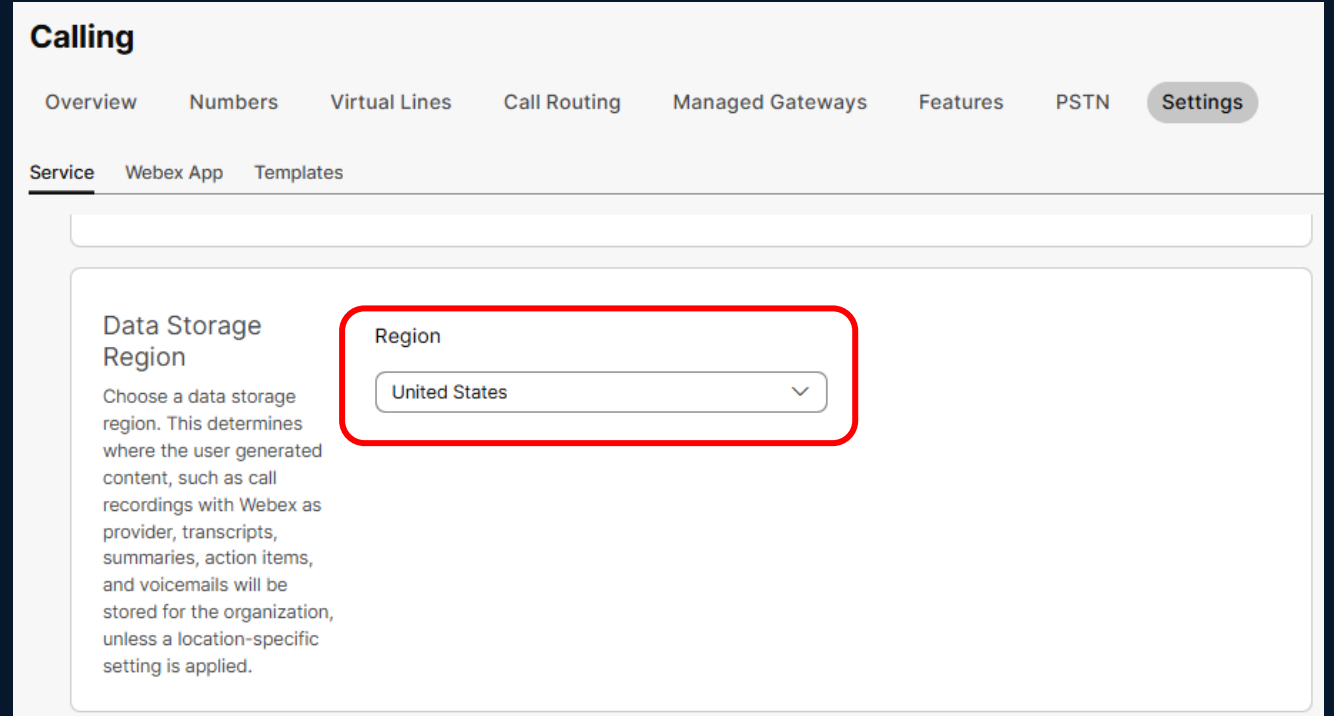
Manage locations

Location name ↑	Address	Country/Region
HQ USA	111 Harbor Dr, San Diego, CA 92101, USA	United States
Japan Sales Office	Akasaka, 9-chōme-7-4	Japan
Netherlands Sales Office	Haarlerbergweg 13, 1101 CH Amsterdam, Netherl...	Netherlands
Seoul Sales Office	517 Yeongdong-daero, Gangnam District, Seoul, ...	South Korea

- Headquarters: [United States](#)
- Branch offices: [The Netherlands](#), [South Korea](#) and [Japan](#)

4. What is your org default data storage region?

- Default **Data Storage Region** under Calling Service Settings*
- Webex Calling **voicemails, recordings, AI generated transcripts, summaries and action items** are stored in this region
- Setting can be overridden on a per-location basis



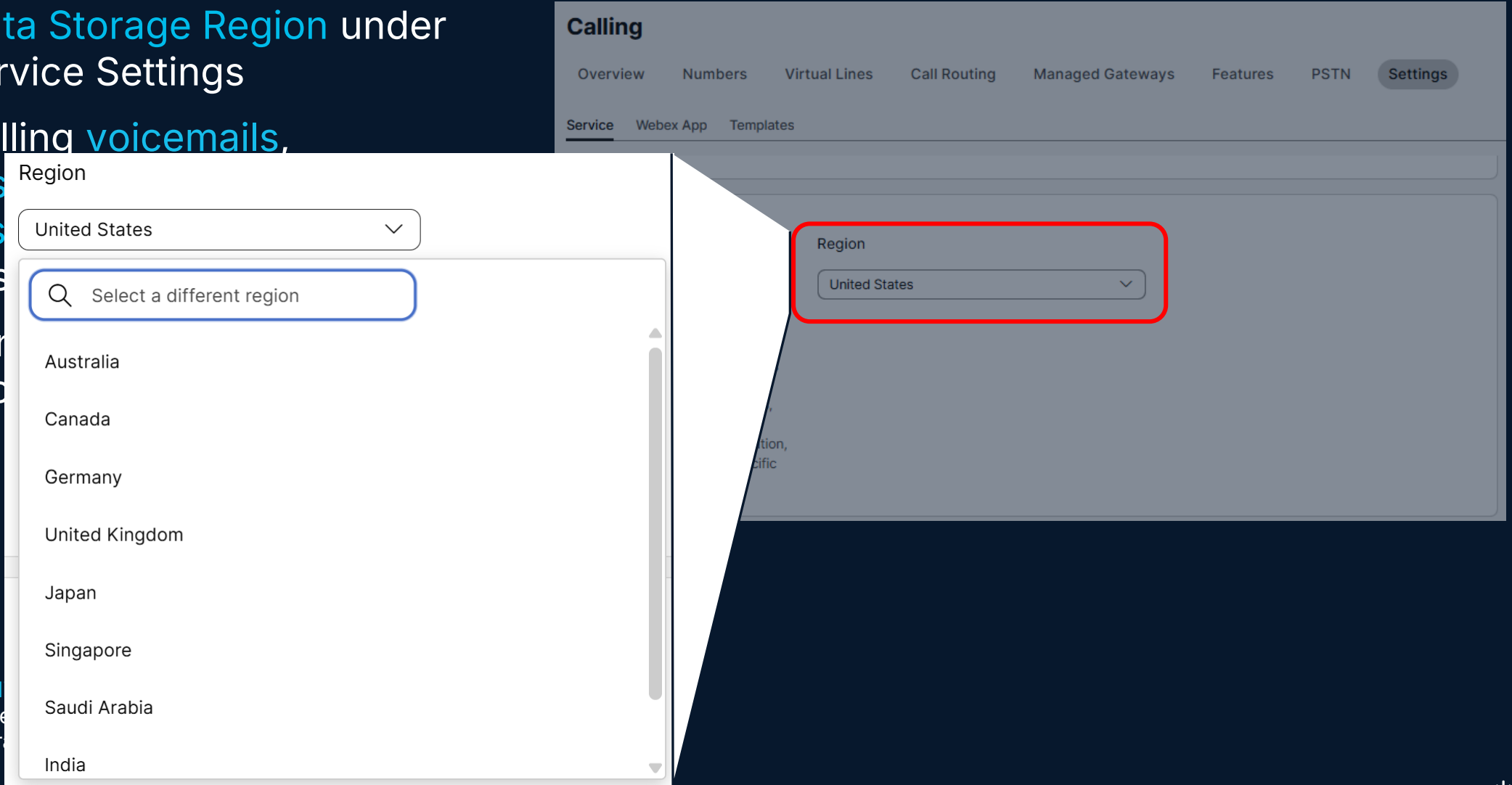
The screenshot shows the Cisco Calling configuration interface. At the top, there's a 'Calling' header with navigation tabs: Overview, Numbers, Virtual Lines, Call Routing, Managed Gateways, Features, PSTN, and Settings (which is highlighted). Below this, there's a sub-navigation bar with 'Service', 'Webex App', and 'Templates'. The main content area is titled 'Data Storage Region' and includes a description: 'Choose a data storage region. This determines where the user generated content, such as call recordings with Webex as provider, transcripts, summaries, action items, and voicemails will be stored for the organization, unless a location-specific setting is applied.' To the right of the text is a 'Region' dropdown menu with 'United States' selected. The dropdown menu is highlighted with a red rectangular border.

*If Calling HQ is in **India** or **Saudi Arabia**, then default data storage region cannot be changed from India or Saudi Arabia

4. What is your org default data storage region?

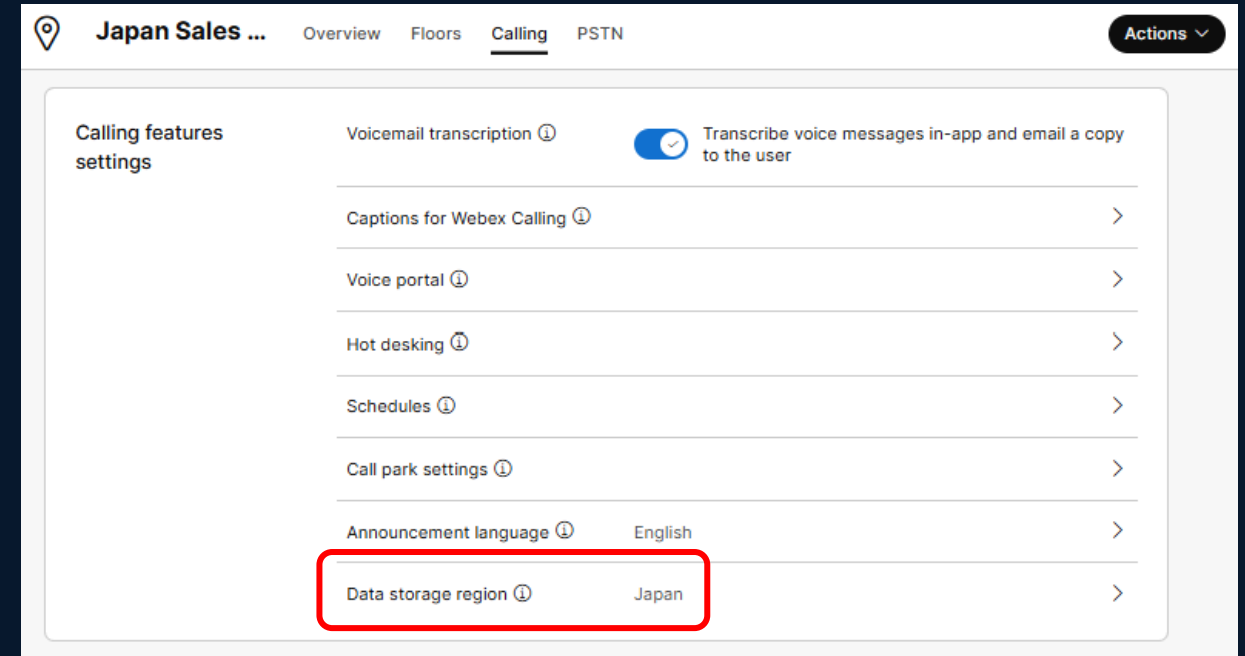
- Default **Data Storage Region** under Calling Service Settings
- Webex Calling **voicemails, recordings, transcripts, items** are stored in the default region
- Setting can be changed per-location

*If Calling HQ is in **India**, the default data storage region is **India** from India or Saudi Arabia



5. What are your per-location data storage regions?

- On a per-location basis you can override the default data storage region*
- Enables granular per-location control over voicemail, recordings, transcripts, summaries and action items storage**
- Recording transcripts, summaries and action items only available with Webex recording

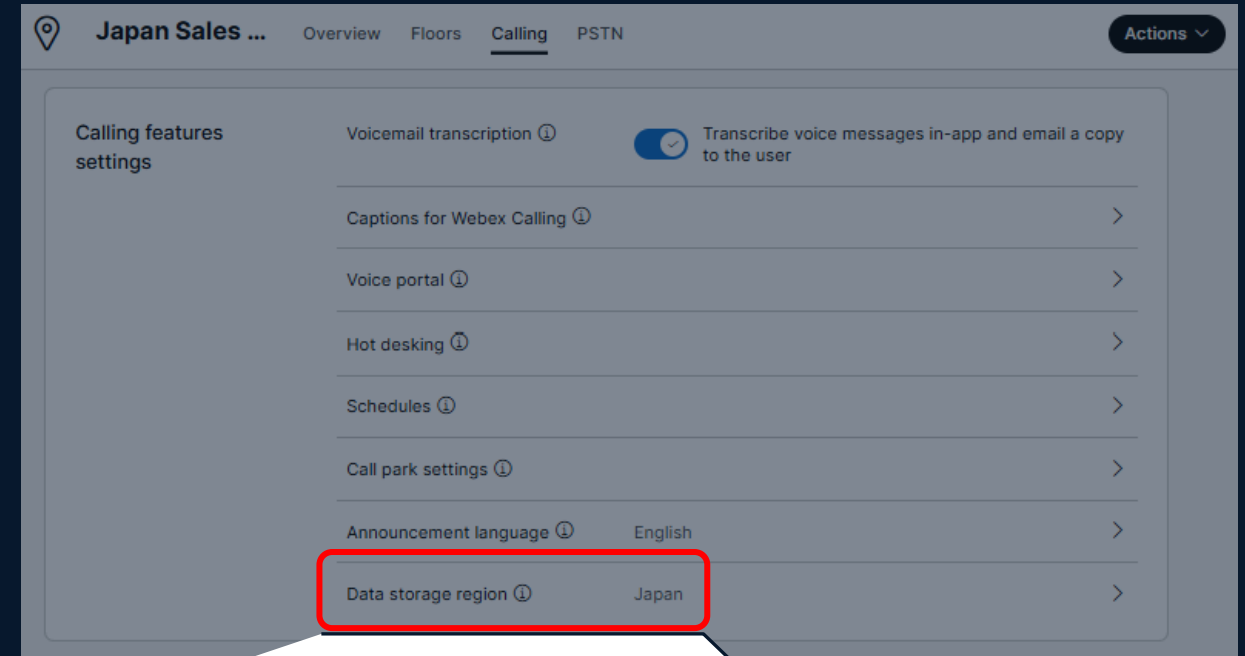


*Locations in **India**: Data storage region is India and cannot be changed

Locations in **Saudi Arabia: Data storage region may be changed but Voicemail are always stored in Saudi Arabia

5. What are your per-location data storage regions?

- On a per-location basis you can override the default data storage region*
- Enables granular per-location control over voicemail, recordings, transcripts, summaries and action items storage**
- Recording transcripts, summaries and action items only available with Webex recording



Data storage region ⓘ

Japan

*Locations in India: Data storage region is India and cannot be changed

**Locations in Saudi Arabia: Data storage region may be changed but Voicemail are always stored in Saudi Arabia

6. What are your recording settings?

- Webex Calling supports native call recording in addition to integrations with multiple 3rd party recording partners
- You specify the org default provider
- On a per-location basis you can override the default provider
- Per-location data storage region settings do not apply to 3rd party recording partners
- Transcripts, summaries and action items only available with Webex recording

Calling

Overview Numbers Virtual Lines Call Routing Managed Gateways Features PSTN **Settings**

Service Webex App Templates

Call Recording

Configure the organization's call recording provider, call recording failure behavior, and compliance announcement settings.

Call recording providers record and store calls that are recorded using Webex Calling. These call recording settings can also be selected at the Location level.

Compliance announcements will be played once during the entire duration of the external PSTN call.

[Learn more.](#)

Provider

Choose which call recording provider this organization will use.

Webex

Data storage region: United States

Call Recording Failure

If call recording fails to start or terminates during the call

Proceed with the call, no announcement

Compliance announcements

☐ Play announcement for inbound PSTN calls

☐ Play announcement for outbound PSTN calls

☐ Delay announcement 10

Emergency calls

Allow emergency call recording. Make sure a recording provider is selected.

☐ Record emergency calls

Cancel Save

Netherlands Sales Office

Location ID: c9186fad-2bb5-4efa-a8f9-c6ed7e403f30

0 users • 0 workspaces

Overview Floors **Calling** PSTN

< Calling

Call recording

Provider

Choose which call recording provider this location will use.

☐ Default provider - Webex

The defaults are based on your organization's settings.

☒ Select a different provider

Imagicile

6. What are

- Webex Calling supports recording in addition to multiple 3rd party recording partners
- You specify the org default provider
- On a per-location basis you can override

Provider

Choose which call recording provider this organization will use.

Webex

Data storage region: United States

Calling

Overview Numbers Virtual Lines Call Routing Managed Gateways Features PSTN Settings

Templates

Provider

Choose which call recording provider this organization will use.

Webex

Data storage region: United States

Call Recording Failure

If call recording fails to start or terminates during the call

Proceed with the call, no announcement

Compliance announcements

☐ Play announcement for inbound PSTN calls

☐ Play announcement for outbound PSTN calls

☐ Delay announcement

10

Emergency calls

Allow emergency call recording. Make sure a recording provider is selected.

☐ Record emergency calls

Cancel Save

Search Select provider from list

None

CallCabinet

Dubber

Eleveo

Imagicle

Webex

the region settings

Provider

Choose which call recording provider this location will use.

☐ Default provider - Webex

The defaults are based on your organization's settings.

☒ Select a different provider

Imagicle

Netherlands Sales Office

Location ID: c9186fad-2bb5-4efa-a8f9-c6ed7e403f30

0 users • 0 workspaces

Floors Calling PSTN

Provider

Choose which call recording provider this location will use.

☐ Default provider - Webex

The defaults are based on your organization's settings.

☒ Select a different provider

Imagicle

Per-location storage and recording settings example



HQ USA
Location ID: 27ab5a82-bb09-4c8c-91c1-f32458214a4b
0 users • 0 workspaces

Overview Floors **Calling** PSTN

Call recording

Provider

☒ Default provider - Webex
The defaults are based on your organization's settings.

☐ Select a different provider

Location: HQ / US
Provider: Webex
Storage: United States



Netherlands Sales Office
Location ID: c9186fad-2bb5-4efa-a8f9-c6ed7e403f30
0 users • 0 workspaces

Overview Floors **Calling** PSTN

Call recording

Provider

Choose which call recording provider this location will use.

The defaults are based on your organization's settings.

☒ Select a different provider
Imagicle

Location: The Netherlands
Provider: Imagicle



Japan Sales Office
Location ID: 5762154e-9402-4a08-9b87-8d6c7dfc3a4d
0 users • 1 workspace

Overview Floors **Calling** PSTN

Call recording

Provider

Choose which call recording provider this location will use.

☒ Default provider - Webex
The defaults are based on your organization's settings.

☐ Select a different provider

Location: Japan
Provider: Webex
Storage: Japan



Seoul Sales Office
Location ID: fda03454-3e8a-48b7-93cd-c3f2b5b8f650
1 user • 1 workspace

Overview Floors **Calling** PSTN

Call recording

Provider

Choose which call recording provider this location will use.

☒ Default provider - Webex
The defaults are based on your organization's settings.

☐ Select a different provider

Location: South Korea
Provider: Webex
Storage: Japan

Calling features settings

Voice mail transcription ☒ Transcribe voice messages in-app and email a copy to the user

Captions for Webex Calling

Voice portal

Hot desking

Schedules

Call park settings

Announcement language English

Data storage region United States

Calling features settings

Voice mail transcription ☒ Transcribe voice messages in-app and email a copy to the user

Captions for Webex Calling

Voice portal

Hot desking

Schedules

Call park settings

Announcement language English

Data storage region Organization's default - Germany

Calling features settings

Voice mail transcription ☒ Transcribe voice messages in-app and email a copy to the user

Captions for Webex Calling

Voice portal

Hot desking

Schedules

Call park settings

Announcement language English

Data storage region Japan

Calling features settings

Voice mail transcription ☒ Transcribe voice messages in-app and email a copy to the user

Captions for Webex Calling

Voice portal

Hot desking

Schedules

Call park settings

Announcement language English

Data storage region Japan

Pe...g settings example



HQ USA
Location ID: 27ab5a82-b6b
0 users • 0 workspaces

Overview Floors Calling PSTN

< Calling

Call recording

Select a different provider

Seoul Sales Office

Location ID: fda03454-3e8a-48b7-93cd-c3f2b5b8f650

1 user • 1 workspace

Actions

Overview Floors **Calling** PSTN

< Calling

Call recording

Provider

Choose which call recording provider this location will use.

☒ **Default provider - Webex**
The defaults are based on your organization's settings.

☐ Select a different provider

Webex



Seoul Sales Office

Location ID: fda03454-3e8a-48b7-93cd-c3f2b5b8f650

1 user • 1 workspace

Actions

Overview Floors **Calling** PSTN

< Calling

Call recording

Provider

Choose which call recording provider this location will use.

☒ **Default provider - Webex**
The defaults are based on your organization's settings.

☐ Select a different provider

Webex

Calling features settings

Location:
Provider:
Storage:

Calling features settings

Voicemail transcription

☒ Transcribe voice messages in-app and email a copy to the user

Captions for Webex Calling

>

Voice portal

>

Hot desking

>

Schedules

>

Call park settings

>

Announcement language

English

>

Data storage region

Japan

>

Calling features settings

Voicemail transcription

☒ Transcribe voice messages in-app and email a copy to the user

Captions for Webex Calling

>

Voice portal

>

Hot desking

>

Schedules

>

Call park settings

>

Announcement language

English

>

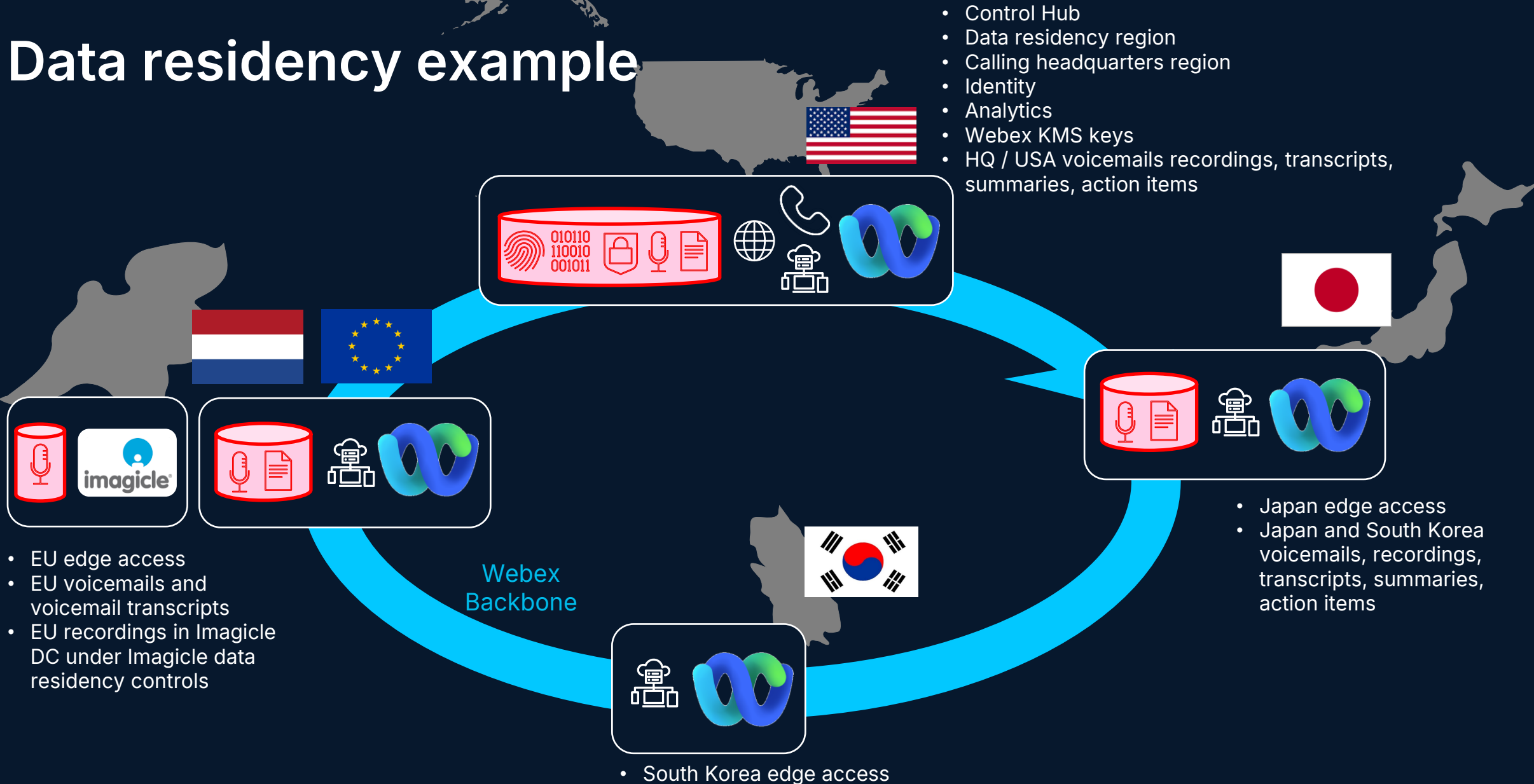
Data storage region

Japan

>

Location: South Korea
Provider: Webex
Storage: Japan

Data residency example



Additional Information

- Relevant Sessions

- BRKCOL-2787: Planning and Designing Successful Cloud Calling Deployments with Webex Calling
- BRKCOL-2990: The Webex Cloud Platform: Infrastructure, Data Residency and Connectivity

- References

- <https://help.webex.com/en-us/article/2d73oy/Migrate-your-organization%E2%80%99s-Webex-data-to-another-region-in-Control-Hub>
- https://salesconnect.cisco.com/sc/apex/scormanywhere__SCORM_Player?courseId=a1m8c00000niwdcAAA
- <https://help.webex.com/en-us/article/ajh6iy/Locations-in-Control-Hub>
- <https://help.webex.com/en-us/article/ilga4/Manage-call-recording-for-Webex-Calling>
- <https://help.webex.com/en-us/article/nyr2ribb/Configurable-data-storage-region-for-user-generated-content-in-Webex-Calling>

Media Handling

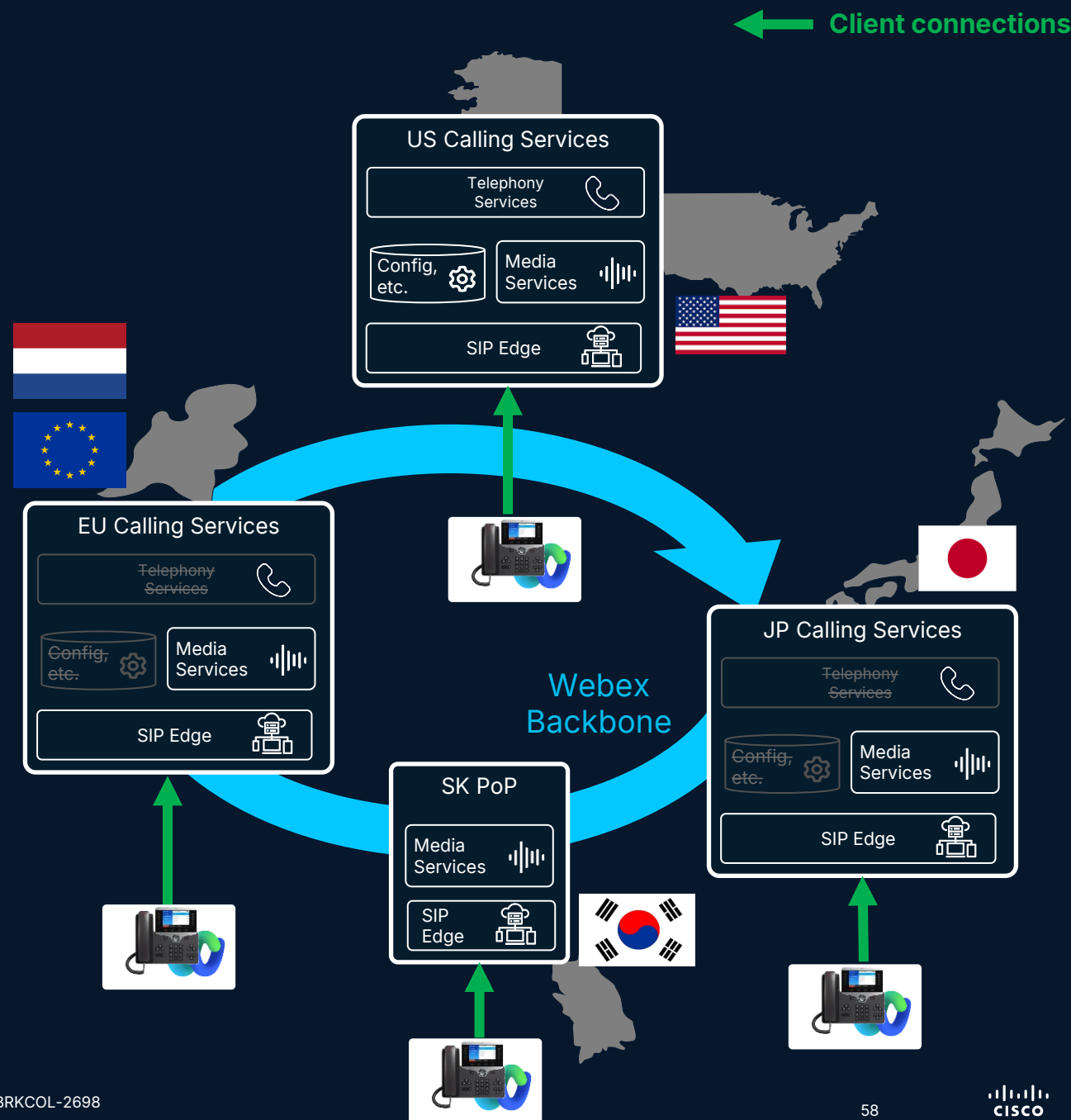
1. Platform Introduction
2. Global Topology
3. Data Residency
4. Media Handling
5. Hybrid Services
6. AI
7. High Availability
8. Security
9. Conclusion

Regional Media

- All regional DCs are connected over **Webex Backbone**
- All signalling and media flows over Webex Backbone
- **Telephony Services** are always provided from **HQ region**
- Calling **configuration** is only stored in **HQ region**
- Devices and Clients connect to their Location's preferred Edge PoP*
- Media services are provided from client's preferred Edge PoP

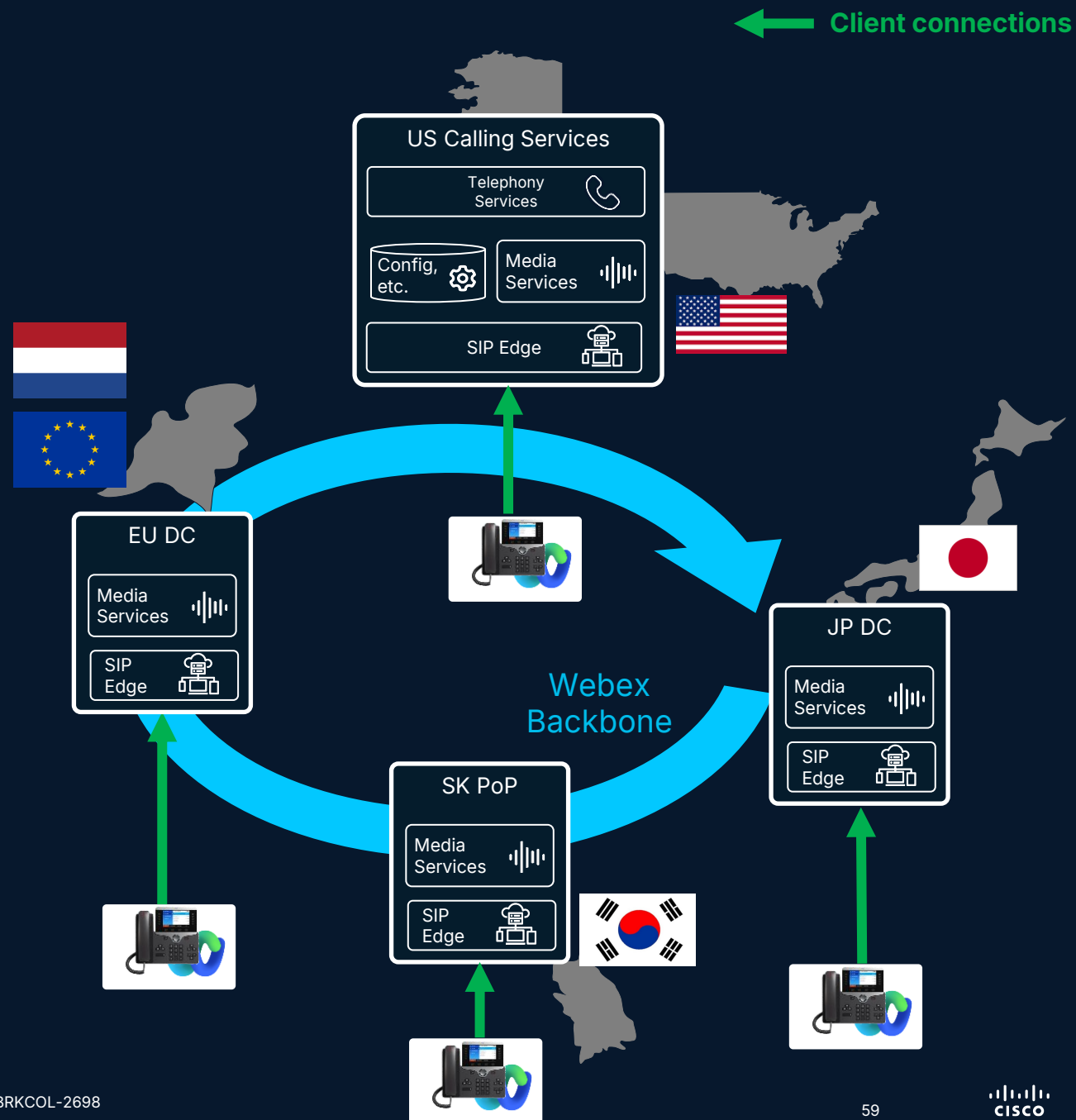
*Roaming WxApp users will detect the **geographically closest** Edge PoP

Roadmap



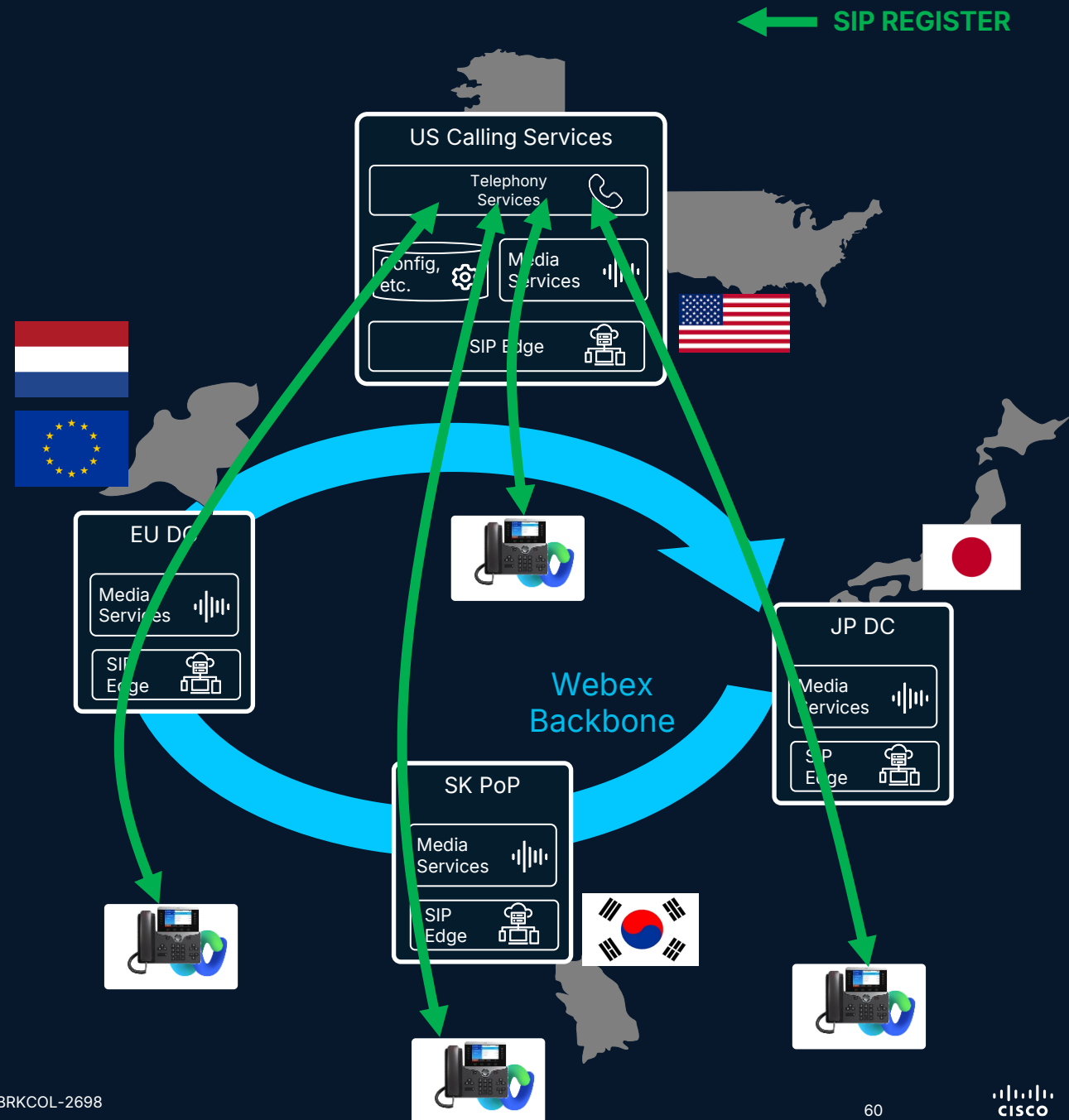
Regional Media

- Let's focus on the **executing** services
- Ignore the regional instances of Telephony Services, Config, etc. that are **unused** by our US org



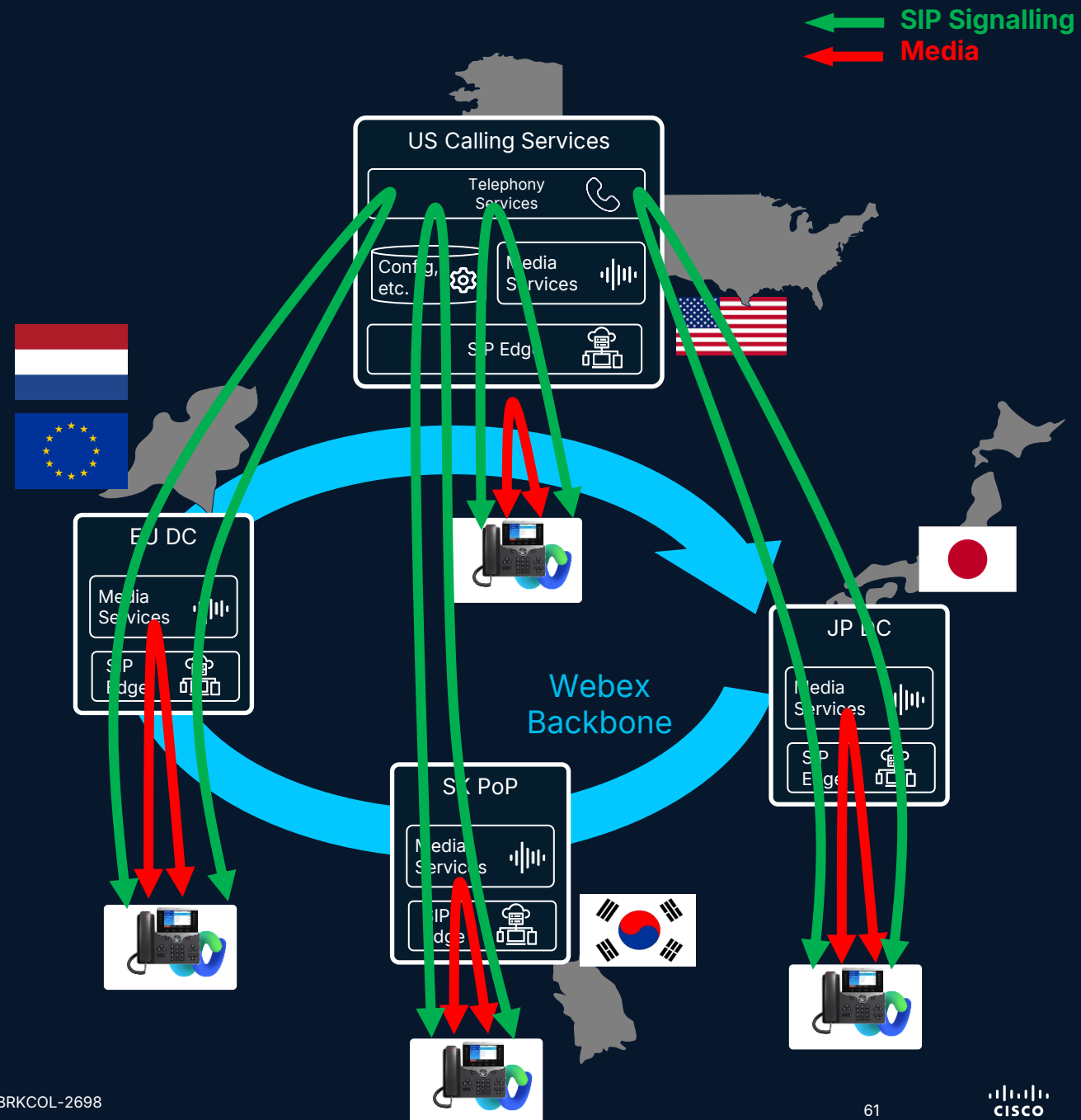
SIP registrations

- SIP registrations are always handled by **HQ region**
- All SIP messages are proxied from regional Edge PoP over Webex Backbone to **HQ Telephony Services**



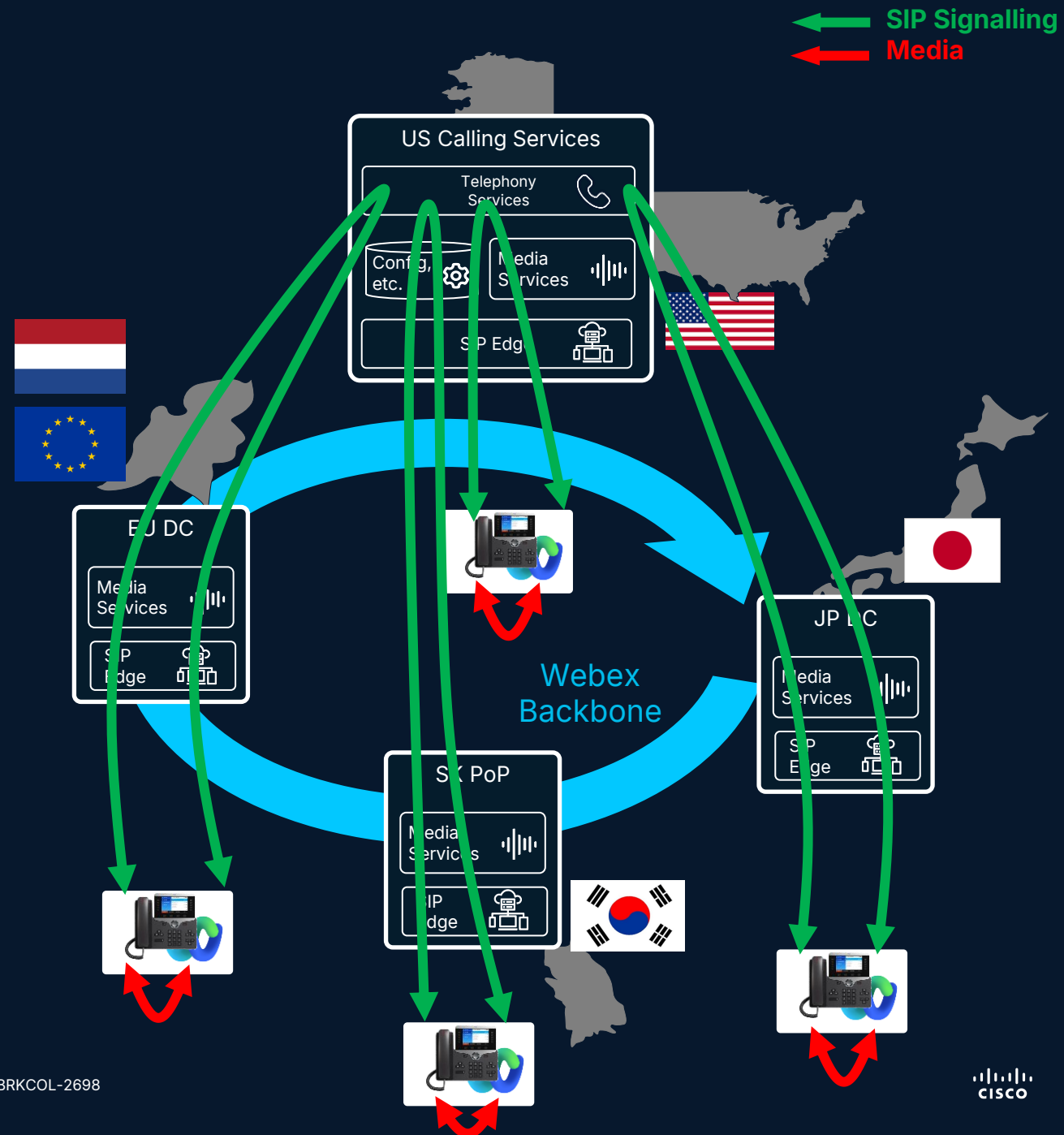
Intra-region calls

- Media stays **in-region** for **intra-region** calls
- Signalling always handled by HQ region
- In-region Media services looped in where necessary e.g.
 - Music on Hold
 - Auto Attendant



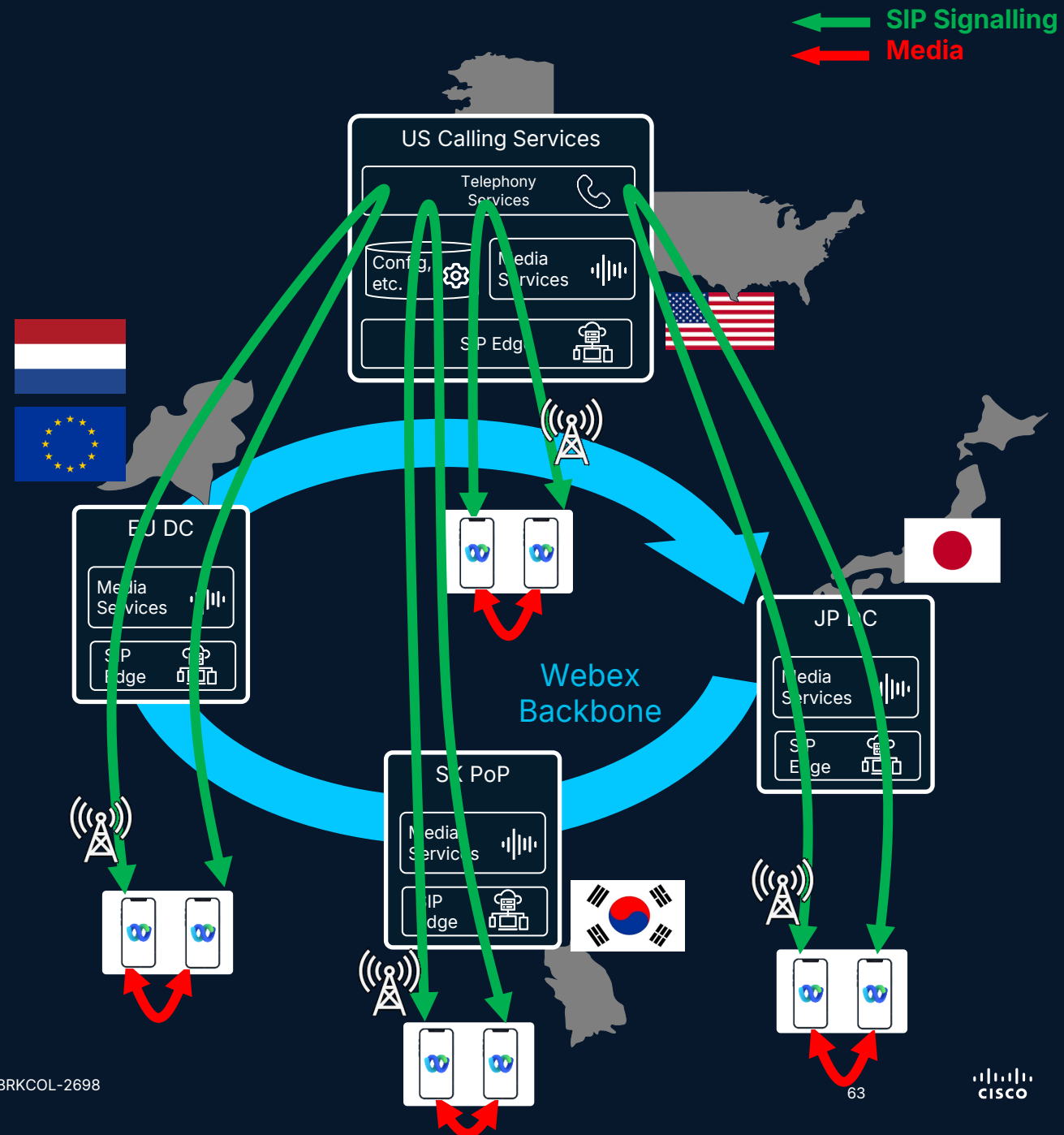
ICE

- ICE **may** of course be negotiated between clients (Webex App, Devices, LGW SBC)
- ICE only negotiated on intra-org calls



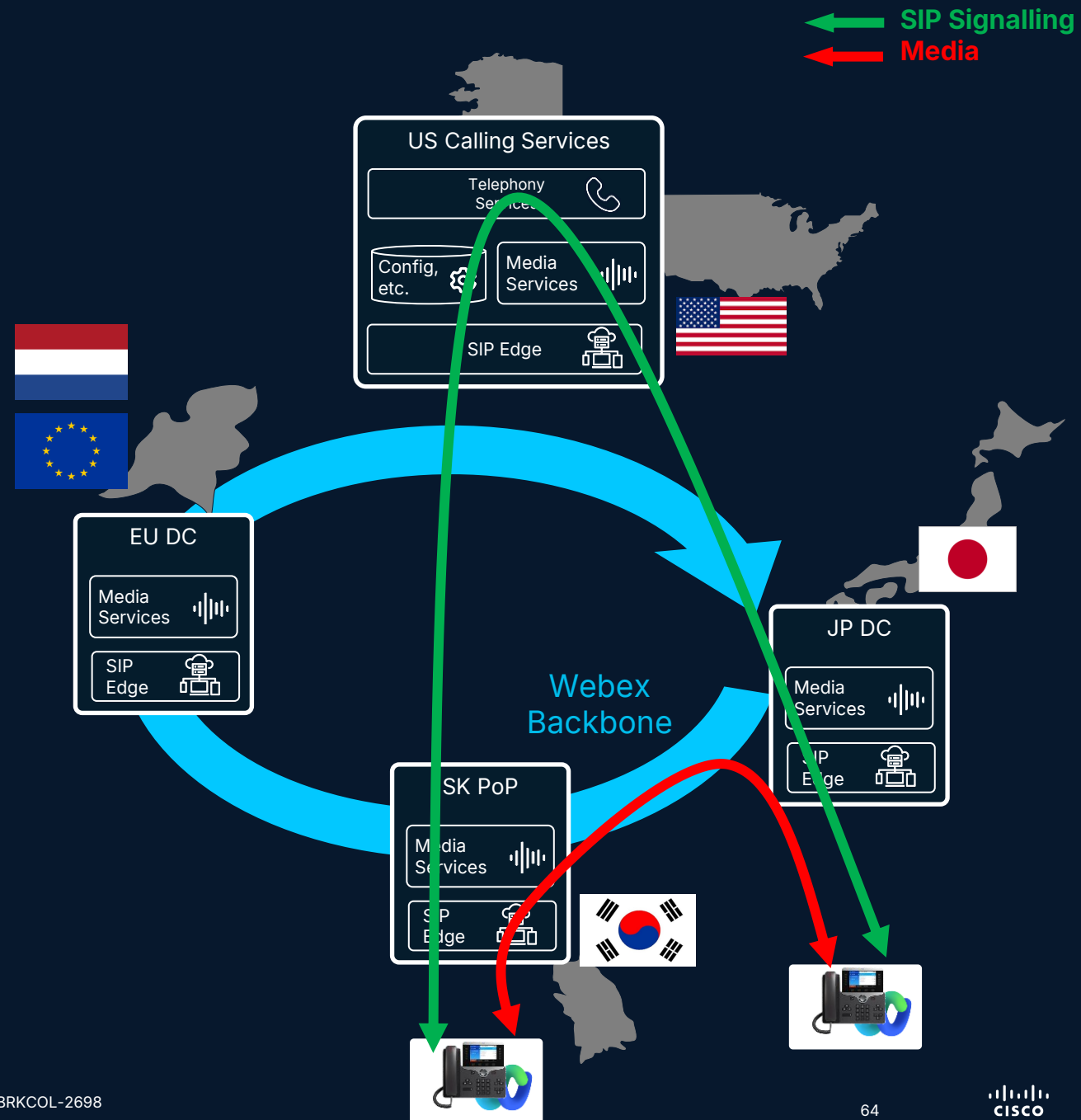
ICE and mobile / cellular

- ICE **may** even be negotiated on **mobile / cellular** networks
- ICE only negotiated on intra-org calls



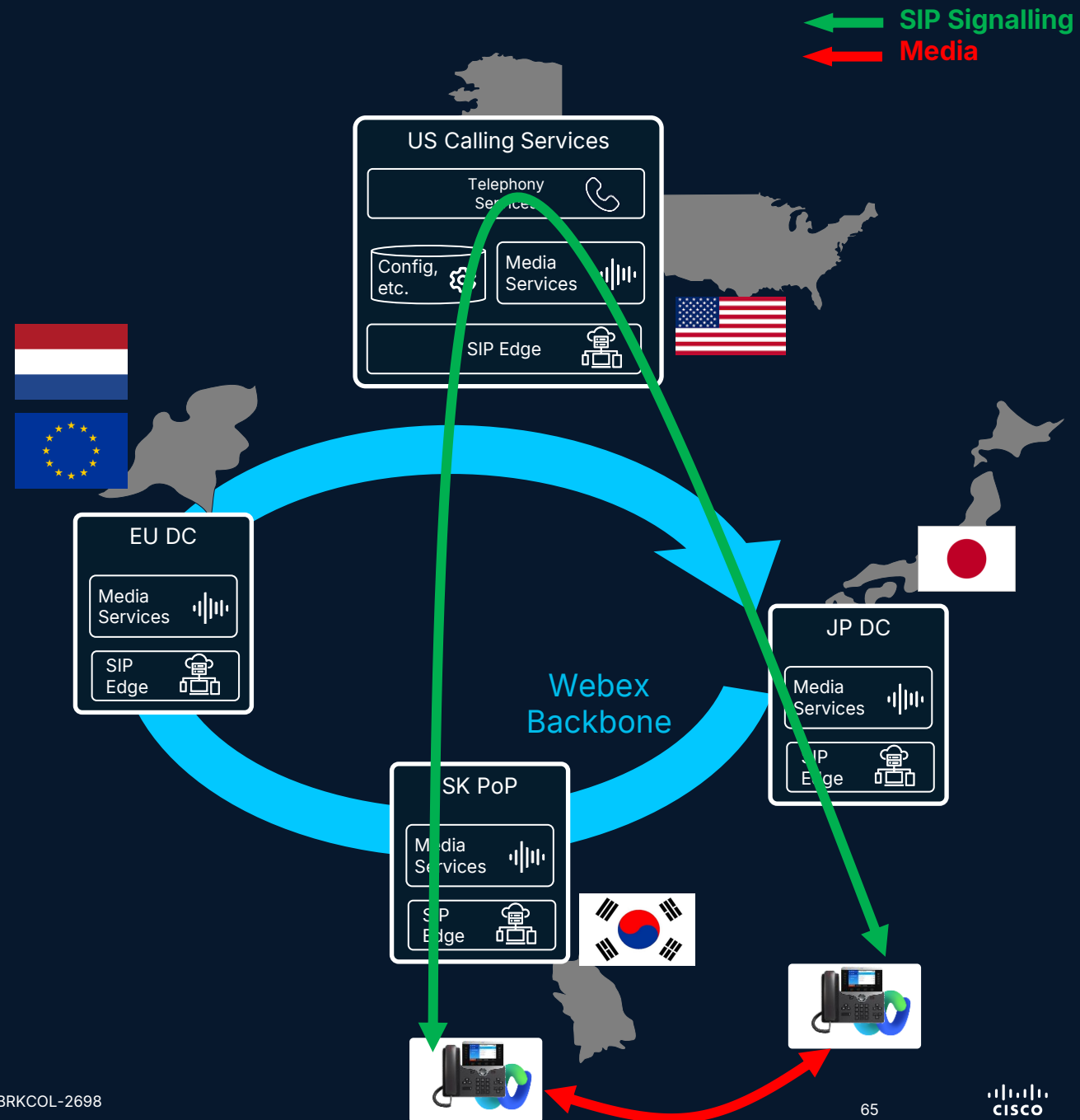
Inter-region calls

- For **inter-region** calls, media flows over **Webex Backbone** directly between regions
- Signalling always handled by HQ region
- Example: South Korea user calls Japan user



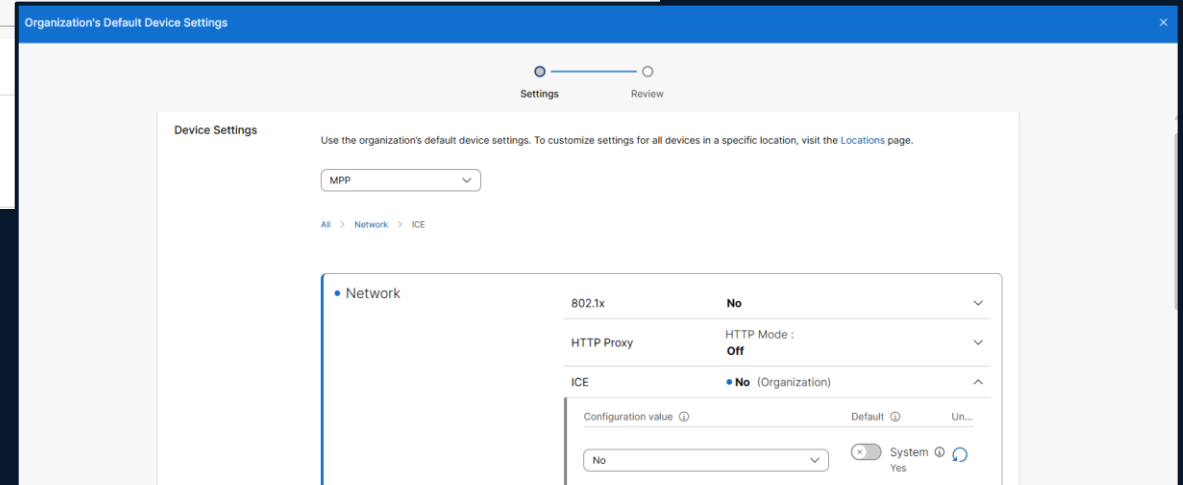
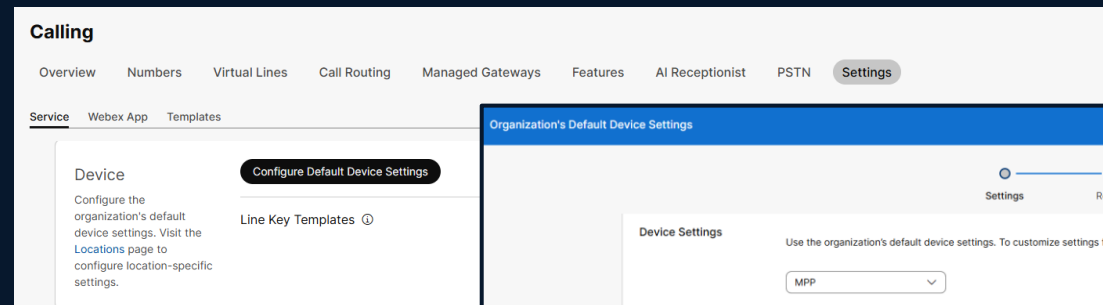
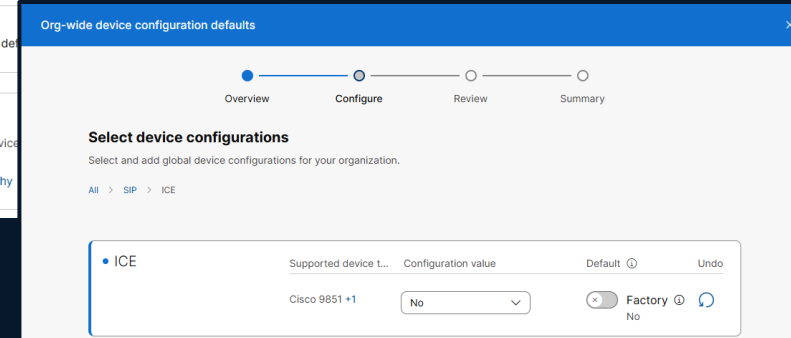
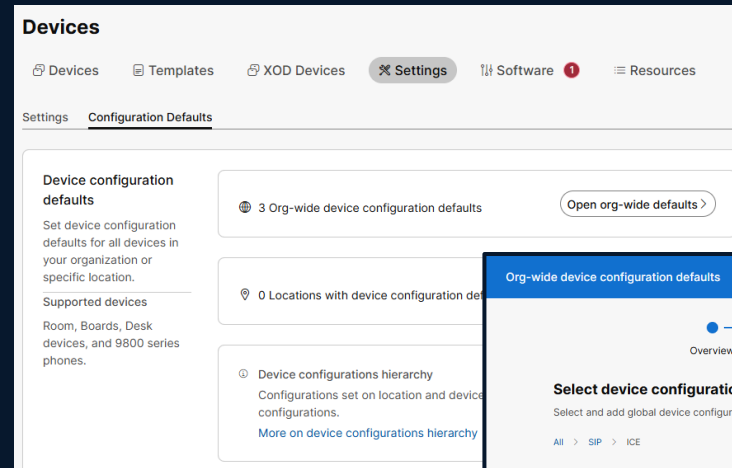
ICE and inter-region calls

- ICE **may** still be negotiated between clients if clients have direct networking connectivity on organisation's LAN / WAN



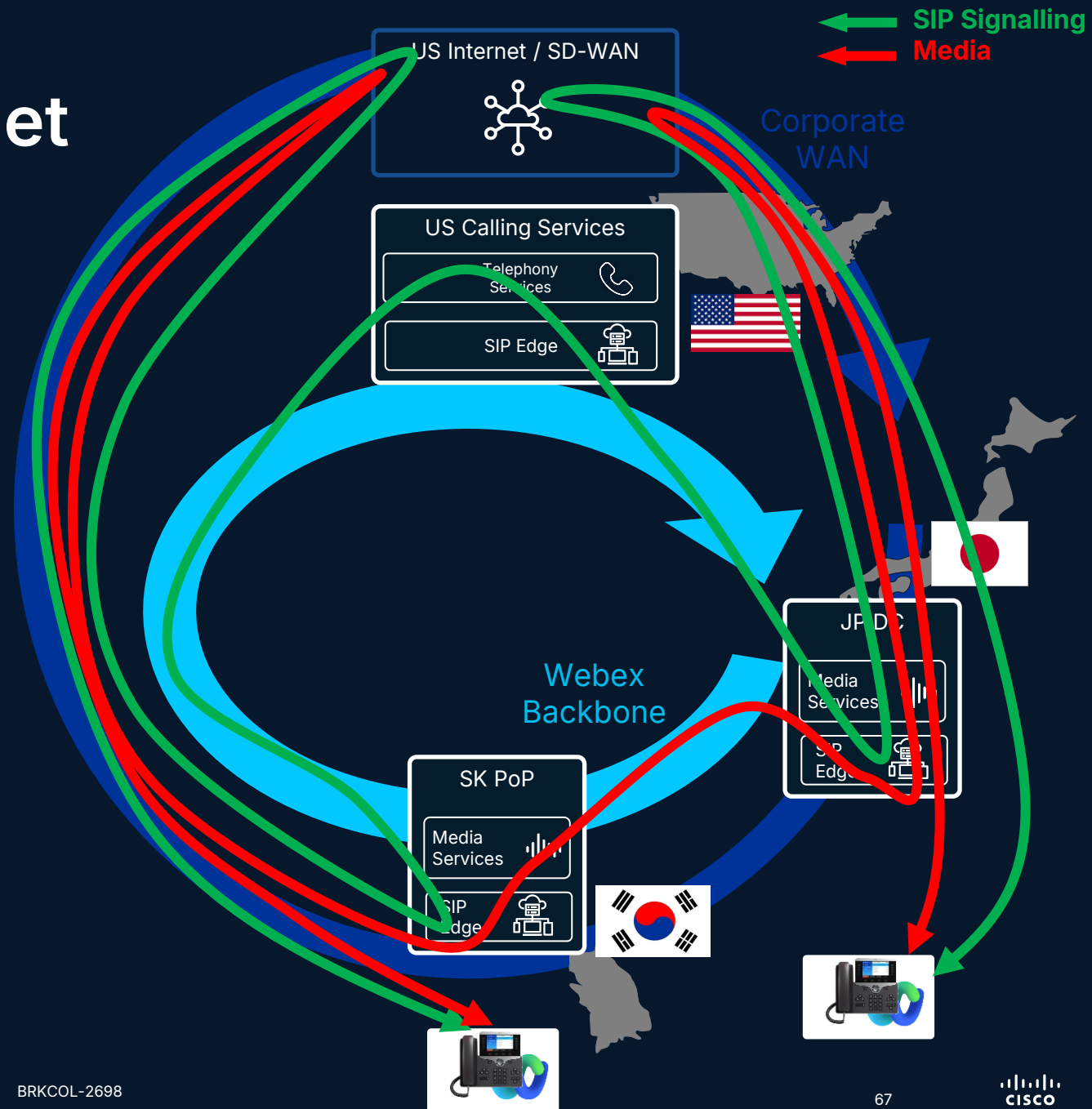
ICE configuration

- ICE **may** be disabled for IP Phones with granular controls at different levels
 - Organization
 - Location
 - Device
- 98xx and 8875 devices
 - Navigate to Devices > Settings
- All other devices
 - Navigate to Calling > Settings



Regional media and internet breakout

- Pay attention to corporate internet breakout PoPs
- Let's look at an example
 - Assume **internet access** is centralized in **US HQ region**
 - Japan users calls South Korea user
 - Signaling and media will traverse the Webex backbone once it reaches the backbone
 - But will traverse the globe to get there!
- Recommend **regional** or **decentralized** internet access



Additional Information

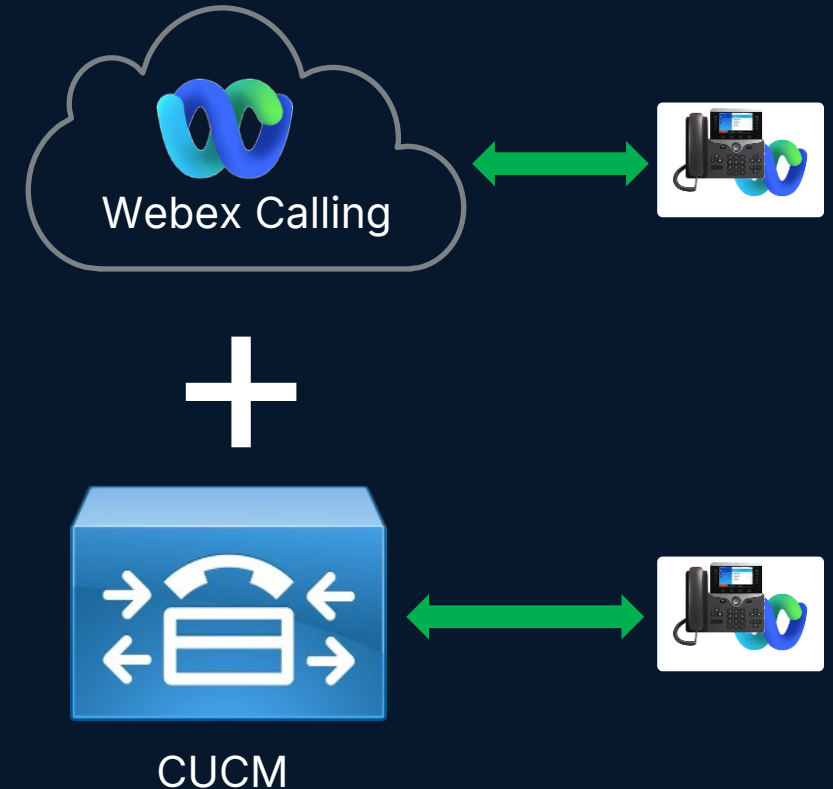
- Relevant Sessions
 - BRKCOL-2787: Planning and Designing Successful Cloud Calling Deployments with Webex Calling
 - BRKCOL-2084: Getting the best out of Webex Calling ... when migrating from Unified Communications Manager
- References
 - <https://help.webex.com/en-us/article/n4m0sy3/Regional-media-with-Webex-Calling>
 - <https://www.webex.com/products/calling-global-availability.html>
 - <https://help.webex.com/en-us/article/ilga4/Manage-call-recording-for-Webex-Calling>

Hybrid Services

1. Platform Introduction
2. Global Topology
3. Data Residency
4. Media Handling
5. Hybrid Services
6. AI
7. High Availability
8. Security
9. Conclusion

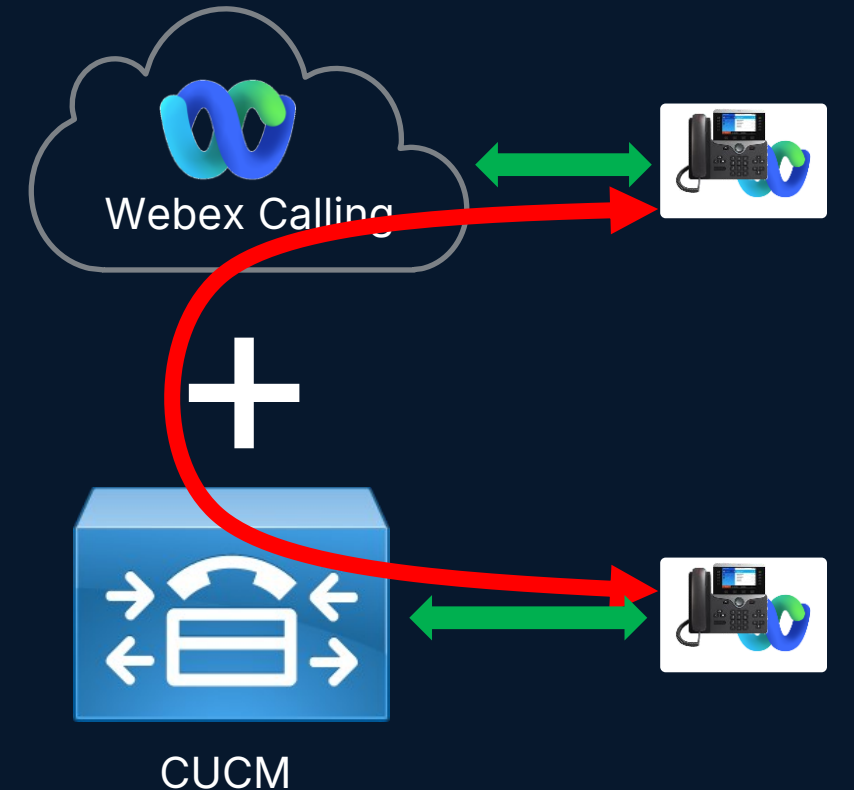
Hybrid services

- Hybrid services enable **seamless co-existence** of Webex Calling and CUCM users
- Some users / branches / sites can be on CUCM and some on Webex Calling
- Customers can **transition** from CUCM to Webex Calling cloud at their own pace
- Customers can **extend** Webex Calling services to CUCM users
 - Cloud Connected PSTN
 - Customer Assist
 - AI Receptionist



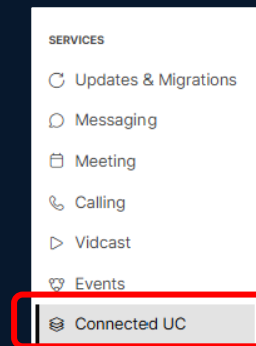
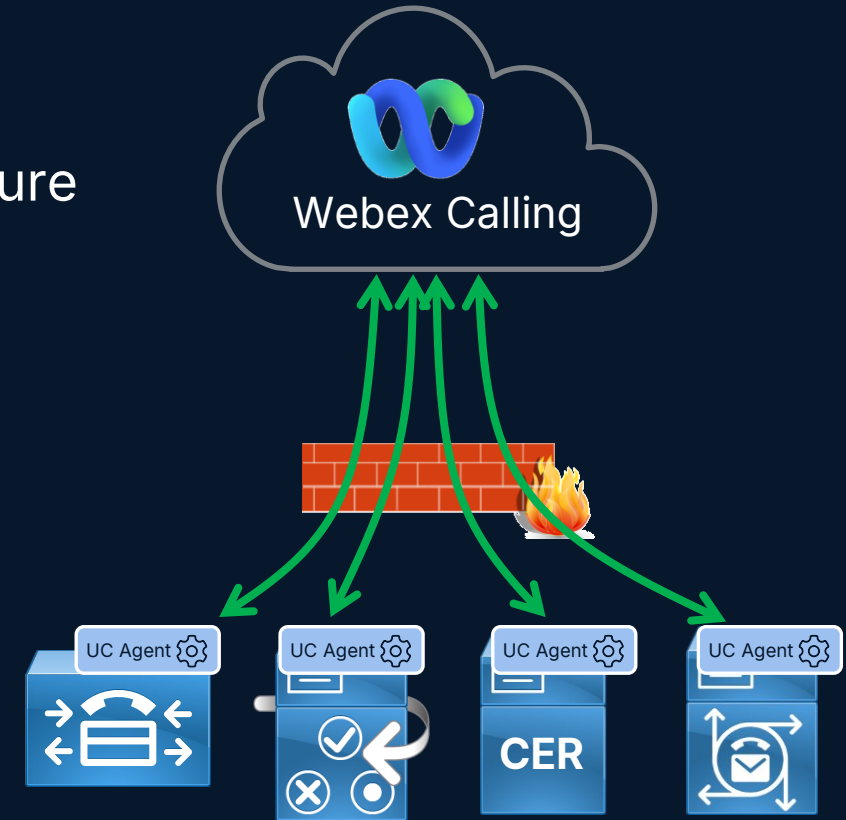
Fundamental requirements

- Users are able to **search** for and **call** each other
- It should not matter whether calling or called user is
 - Registered with CUCM or WxCalling
 - Using WxApp or IP Phone
- Users should be able to make and receive **PSTN** calls
- Users should have consistent experience for
 - **Call history**
 - **Presence** and **DND**



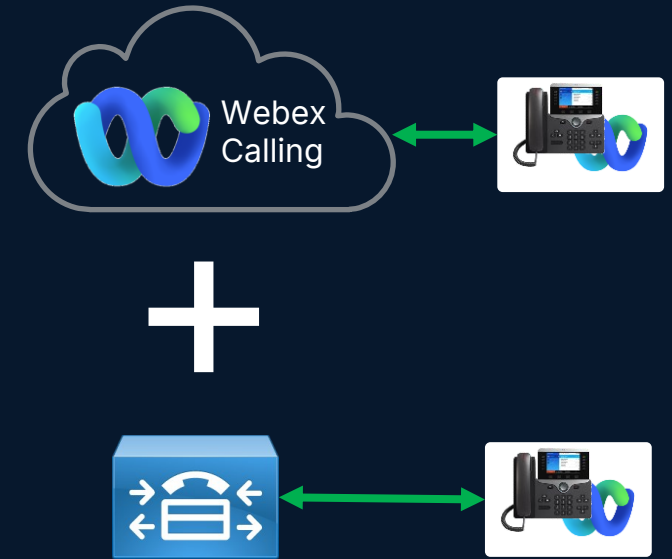
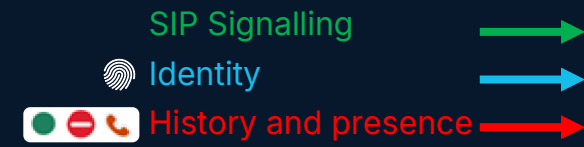
Cloud Connected UC

- Rich suite of Webex services to support UC infrastructure
- Cloud managed **agents** running on UC infrastructure
 - UC inventory available in Control Hub
- Key CCUC services for **co-existence**
 - **User and contact sync** between CUCM and Webex
 - **Unified call history** for CUCM clients
 - **Rich presence** and DND for CUCM clients
- Swiss army knife of **additional** CCUC services
 - UC analytics in Control Hub
 - Microsoft Teams integration
 - Certificate management
 - Borderless CTI
 - Etc.



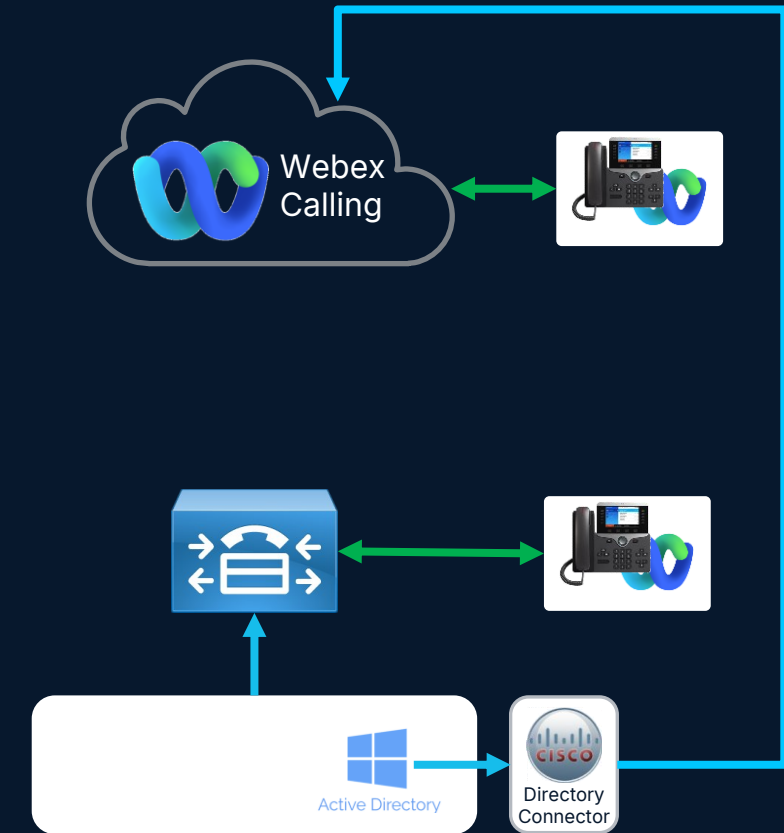
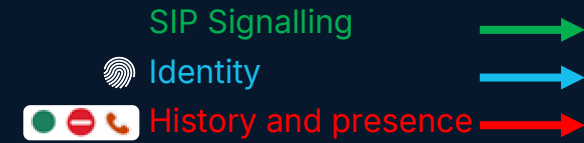
Cluster Name ^	Nodes ^	Product ^	Agent Status ^	
StandAloneCluster - cucm1.dcloud.cisco.com	4	IM&P,CUCM	Online	Details
cer1.dcloud.cisco.com	1	CER	Online	Details
StandAloneCluster - cuc1.dcloud.cisco.com	1	CUC	Online	Details

Key considerations for co-existence

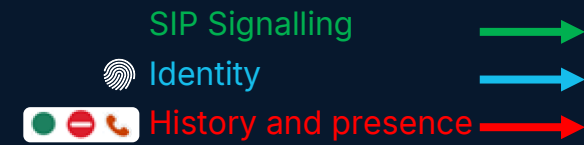


Key considerations for co-existence

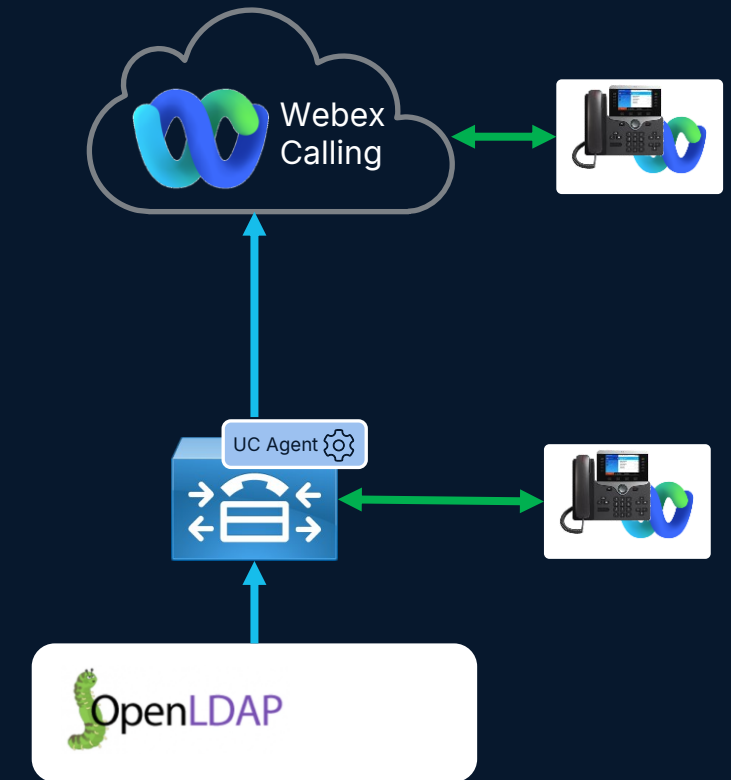
- Identity stores and sync mechanisms 
 - Microsoft AD: Directory Connector syncs identities up to Webex



Key considerations for co-existence



- Identity stores and sync mechanisms 
 - Microsoft AD: Directory Connector syncs identities up to Webex
 - OpenLDAP: CCUC syncs identities up to Webex

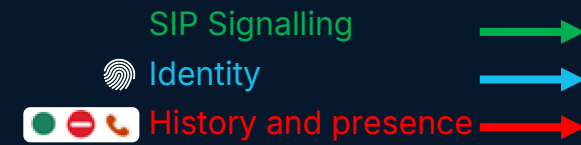


Key considerations for co-existence

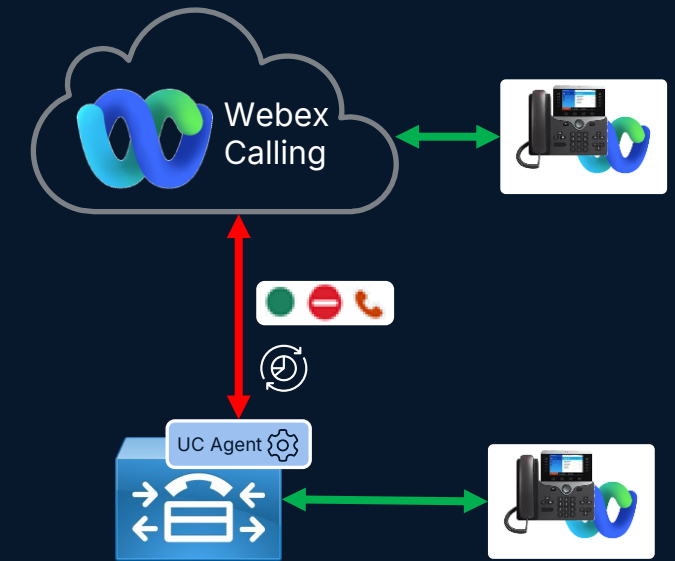
- Identity stores and sync mechanisms 
 - Microsoft AD: Directory Connector syncs identities up to Webex
 - OpenLDAP: CCUC syncs identities up to Webex
 - Cloud IdP: CCUC syncs identities down to CUCM



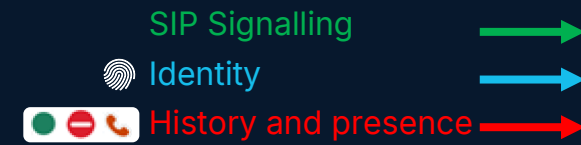
Key considerations for co-existence



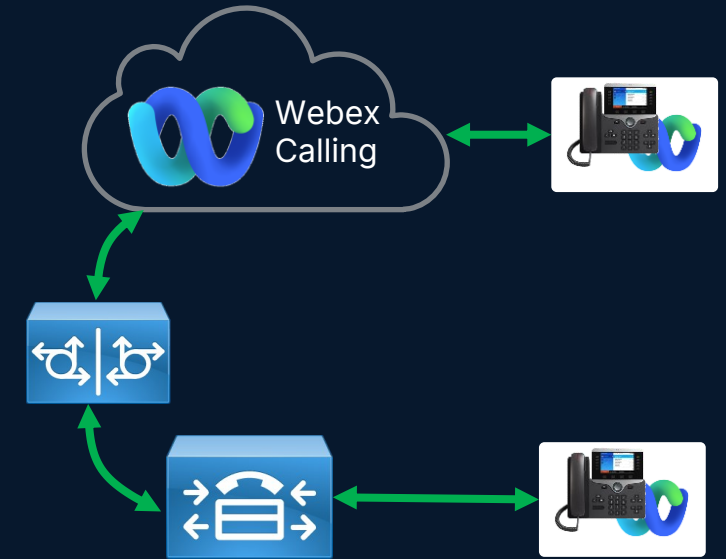
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- Call history, presence and DND sync  
 - CCUC pushes CUCM call history to Webex
 - CCUC pushes CUCM on/off-hook status to Webex
 - CCUC syncs DND state between CUCM and Webex



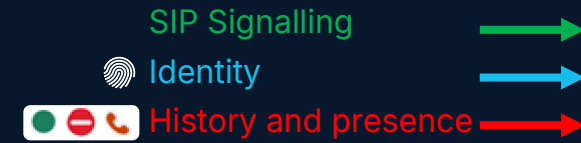
Key considerations for co-existence



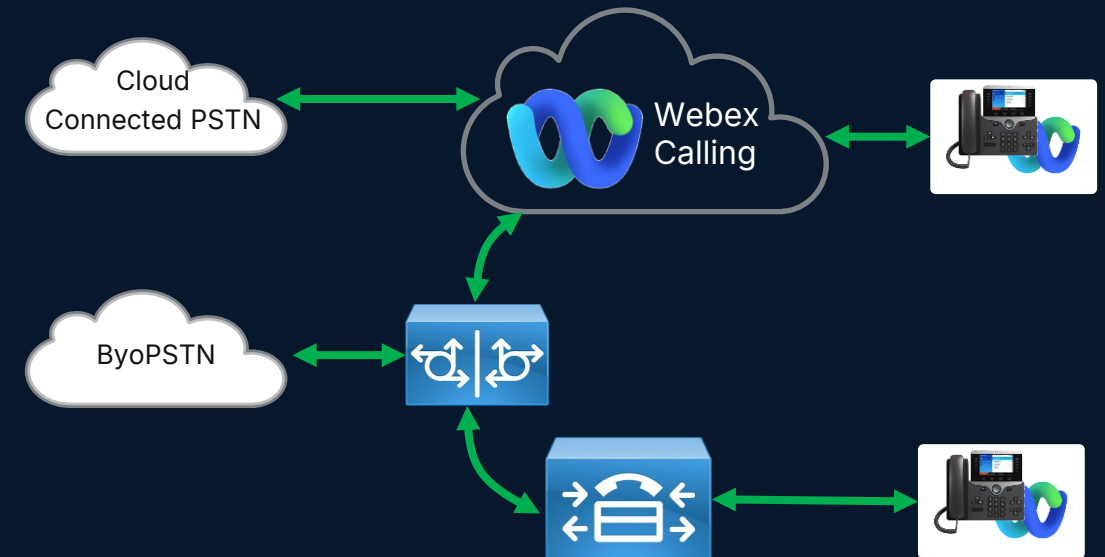
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- Call history, presence and DND sync  
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 - CCUC pushes CUCM on/off-hook status to Webex
 - CCUC syncs DND state between CUCM and Webex
- Local Gateway
 - Routes calls between CUCM and WxCalling users



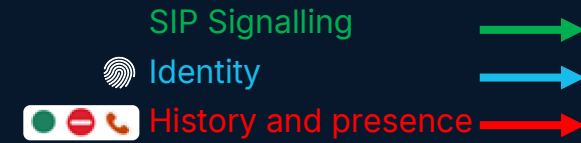
Key considerations for co-existence



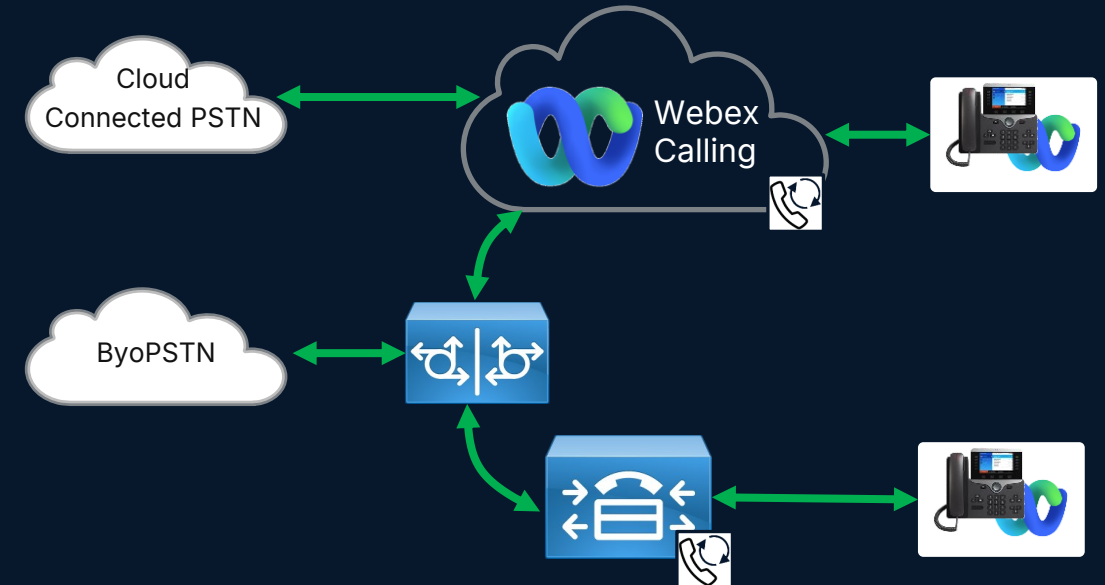
- Identity stores and sync mechanisms 
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- Call history, presence and DND sync  
 - CCUC pushes CUCM call history to Webex
 - CCUC pushes CUCM on/off-hook status to Webex
 - CCUC syncs DND state between CUCM and Webex
- Local Gateway
 - Routes calls between CUCM and WxCalling users
- PSTN
 - Cloud Connected PSTN or Local Gateway ByoPSTN



Key considerations for co-existence

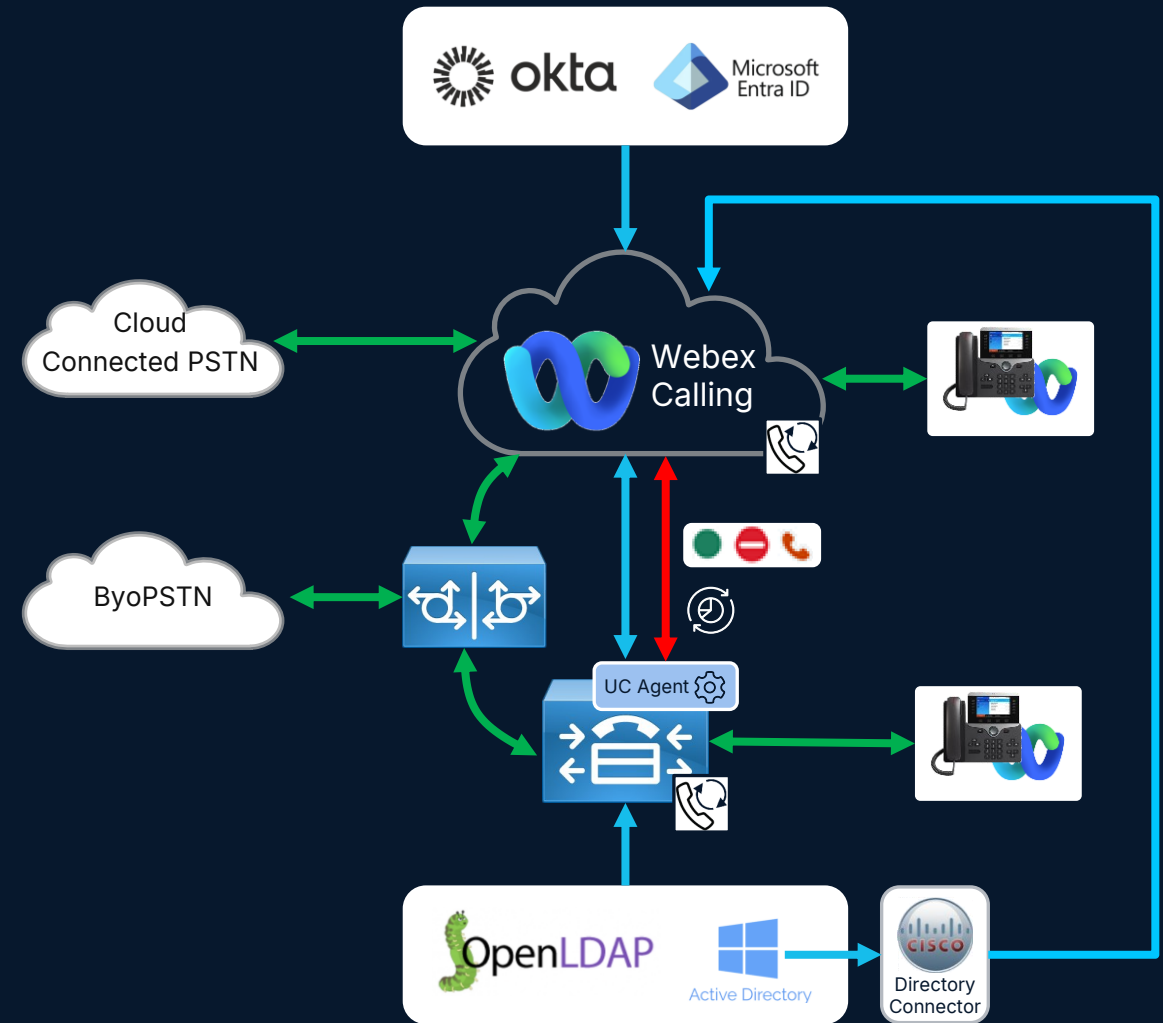


- Identity stores and sync mechanisms 
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- Call history, presence and DND sync  
 - CCUC pushes CUCM call history to Webex
 - CCUC pushes CUCM on/off-hook status to Webex
 - CCUC syncs DND state between CUCM and Webex
- Local Gateway
 - Routes calls between CUCM and WxCalling users
- PSTN
 - Cloud Connected PSTN or Local Gateway ByoPSTN
- Dial Plans 
 - Need to be aligned across CUCM and WxCalling
- Group Features
 - Some limitations when users split across CUCM and WxCalling



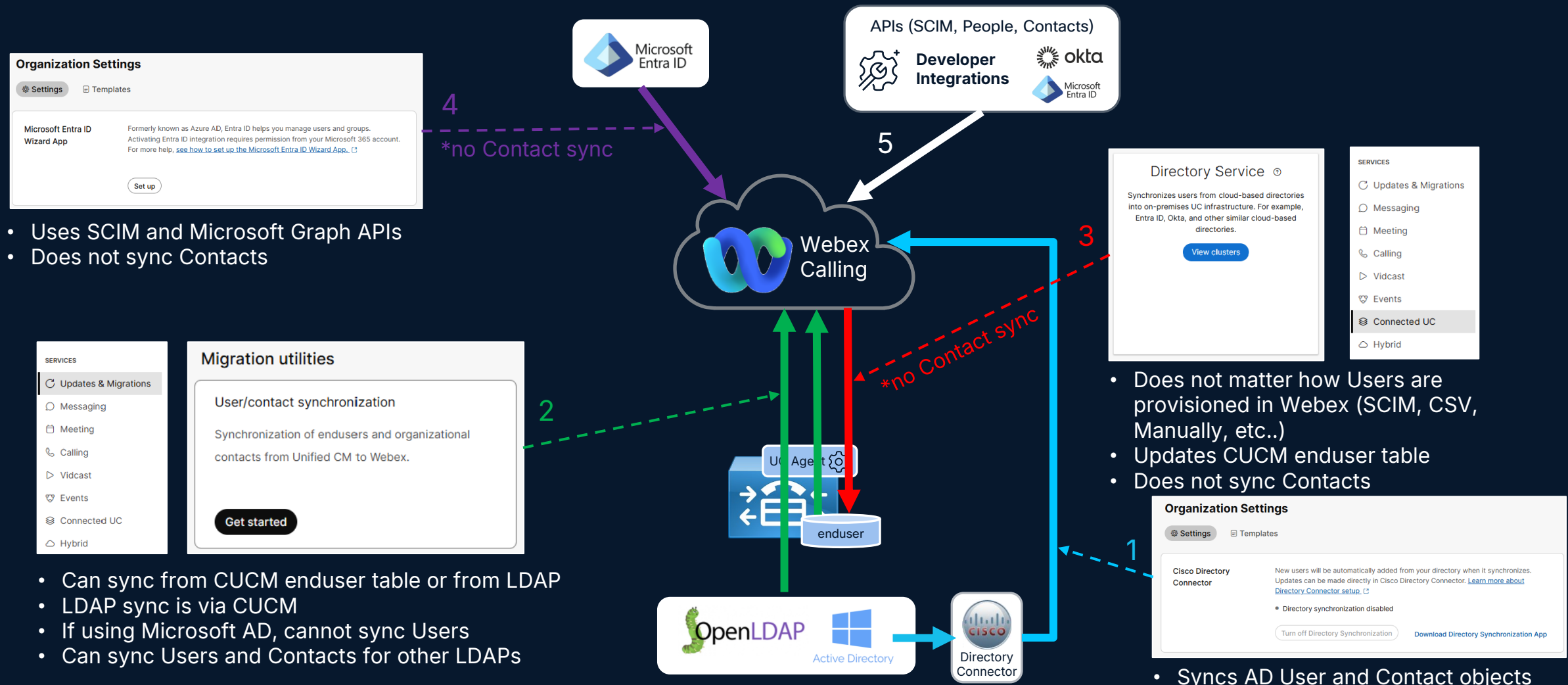
Key considerations for co-existence

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 - OpenLDAP: CCUC syncs identities up to Webex
 - Cloud IdP: CCUC syncs identities down to CUCM
- Call history, presence and DND sync  
 - CCUC pushes CUCM call history to Webex
 - CCUC pushes CUCM on/off-hook status to Webex
 - CCUC syncs DND state between CUCM and Webex
- Local Gateway
 - Routes calls between CUCM and WxCalling users
- PSTN
 - Cloud Connected PSTN or Local Gateway ByoPSTN
- Dial Plans 
 - Need to be aligned across CUCM and WxCalling
- Group Features
 - Some limitations when users split across CUCM and WxCalling



Identity stores and sync mechanisms

1. Directory Connector sync from AD to Webex
1. CCUC sync from prem to Webex
3. CCUC sync from Webex to prem
4. EntraID sync from Entra to Webex
5. API integrations



- Uses SCIM and Microsoft Graph APIs
- Does not sync Contacts

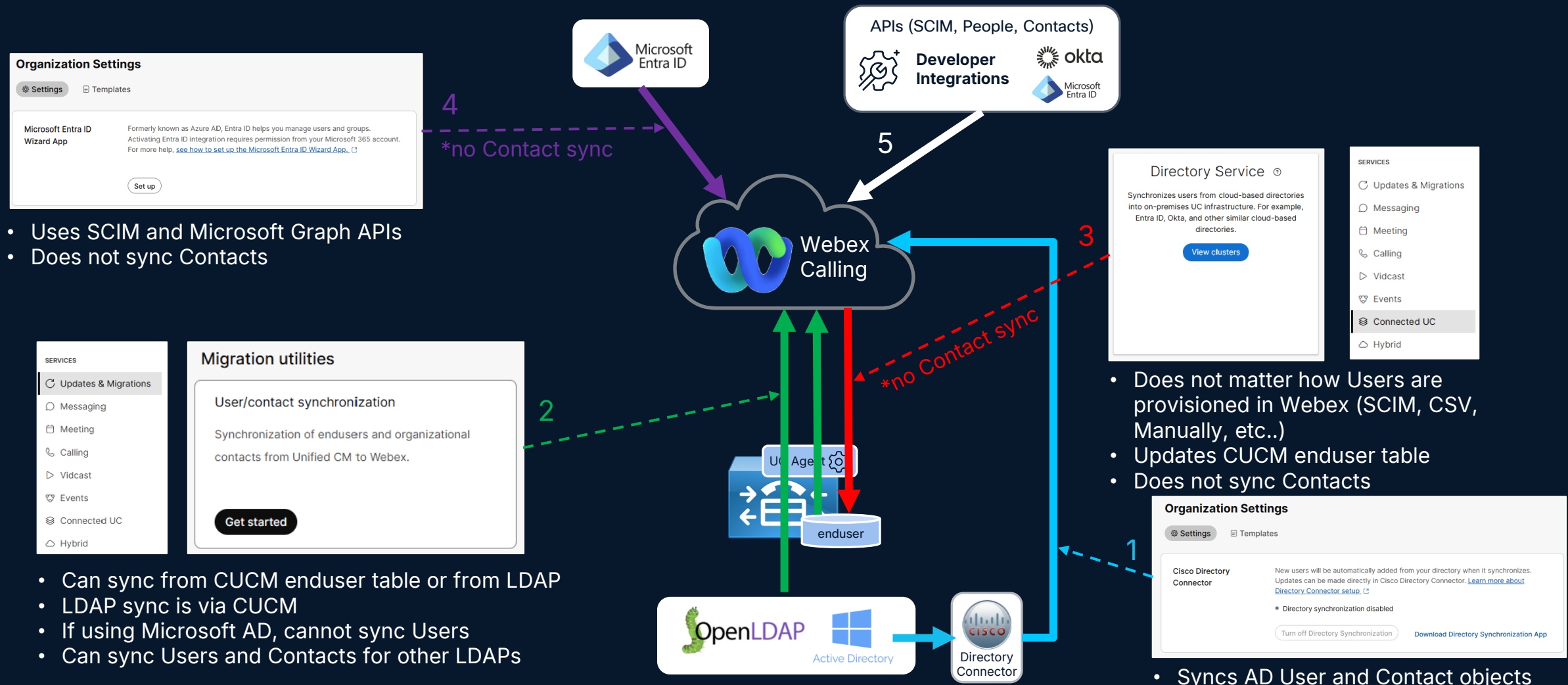
- Does not matter how Users are provisioned in Webex (SCIM, CSV, Manually, etc..)
- Updates CUCM enduser table
- Does not sync Contacts

- Can sync from CUCM enduser table or from LDAP
- LDAP sync is via CUCM
- If using Microsoft AD, cannot sync Users
- Can sync Users and Contacts for other LDAPs

- Syncs AD User and Contact objects

Identity stores and sync mechanisms

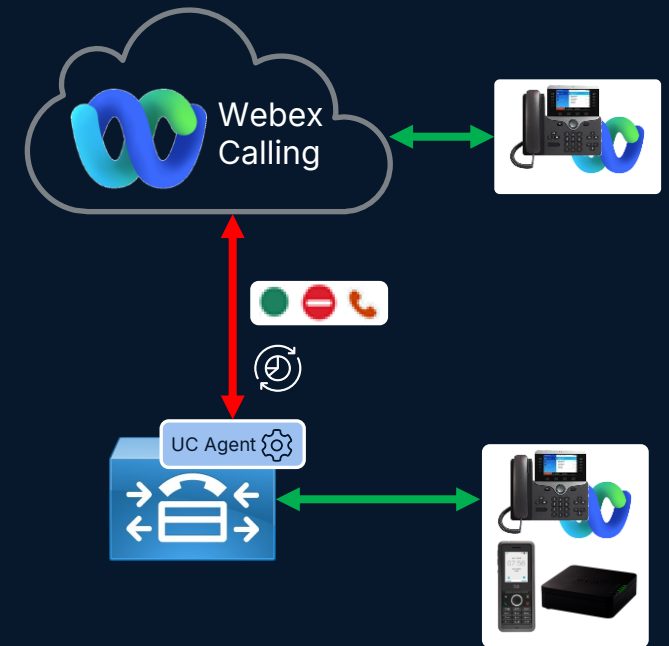
1. Directory Connector sync from AD to Webex
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Call history, presence and DND sync

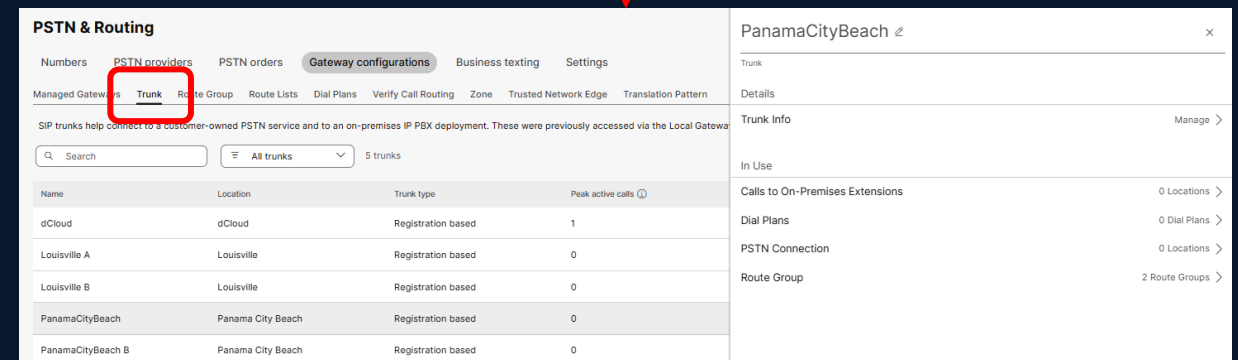
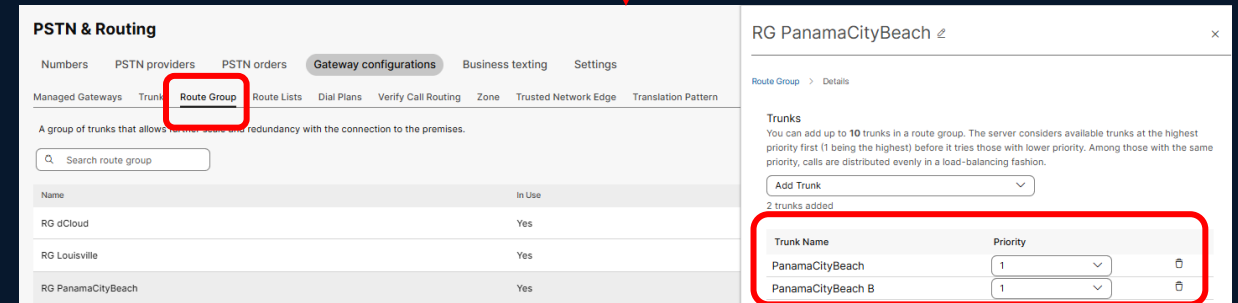
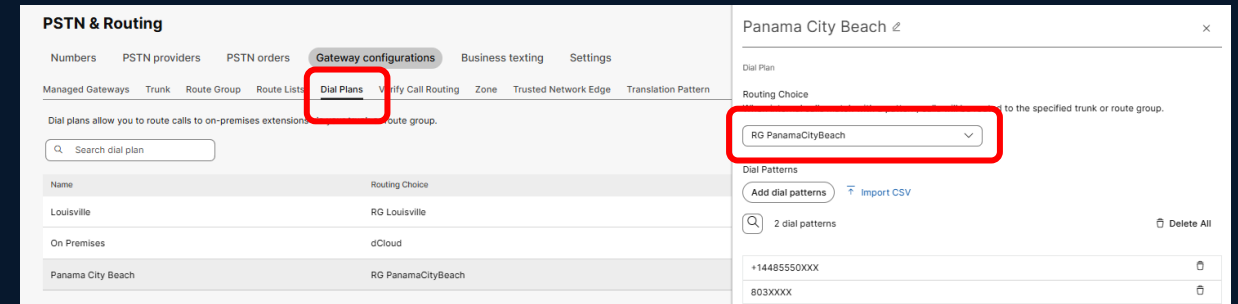
- CCUC pushes **call history** from CUCM to Webex
 - Pushes history for all calls across all CUCM registered clients and devices (IP Phone, ATA, DECT, etc.)
 - CUCM device call history is available on WxApp
- CCUC pushes **on/off-hook** status from CUCM to Webex
 - Pushes hook status across CUCM registered devices (IP Phone, ATA, DECT, etc.)
 - All WxApp users across CUCM and WxCalling see hook status of users on CUCM devices*
- CCUC syncs **DND** status between CUCM and Webex
 - Setting DND on WxApp puts CUCM phones in DND and vice-versa
 - DND status also reflected in WxApp presence

*Subject to user personal privacy preferences



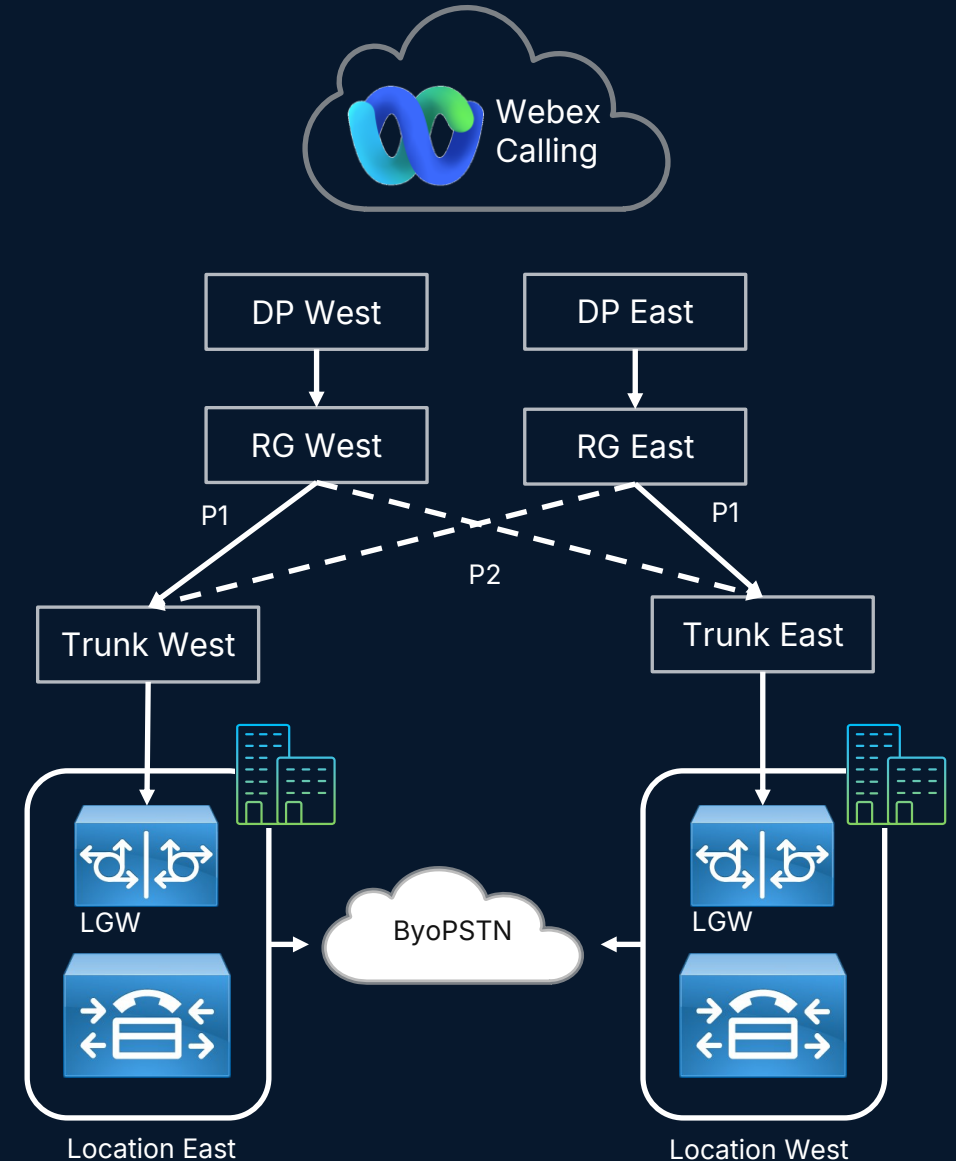
Local Gateway

- Local Gateways provide a bridge to on-prem CUCM and ByoPSTN
- Trunks
 - Represent a SIP trunk to an on-prem SBC
 - Can be SIP REGISTERing or certificate based
 - Assigned to a Location
 - Can be in multiple Route Groups
- Route Groups
 - Logical groups of up to 10 Trunks
 - Provides scale and redundancy
- Dial Plans
 - Enable call routing to a Route Group or Trunk
 - Based on pattern matching rules



Local Gateway

- Route Groups can contain **multiple trunks**
- Trunks can be
 - In multiple RGs
 - Assigned **different priorities** in different RGs
- Routing advances to next trunk based on priority order if failures occur
- Flexibility enables multiple priority ordered **redundant paths** to prem



Local Gateway platform

Concurrent calls	Trunk auth type	Link type
Up to 250	Registration	Over the top (OTT)
250 – 2000	Certificate	OTT
2000 - 6500	Certificate	Webex Edge Connect

Router platform*	Maximum sessions	Maximum calls per second
ISR 1100	500	5
ISR 4461	10,000	55
Catalyst 8200L-1N-4T	1,500	9
Catalyst 8300-2N2S-4T2X	10,000	55
CSR 1000V / Catalyst 8000V	6,000	30
ASR 1004 / 1006 / 1006-X	16,000	70

* Partial list. Refer to references for full details

Dial plans

- The most complex thing to configure and get right
- Worthy of at least a few hours on its own
- Watch the recording for yesterday's BRKCOL-2787
- Attend BRKCOL-2084 tomorrow!

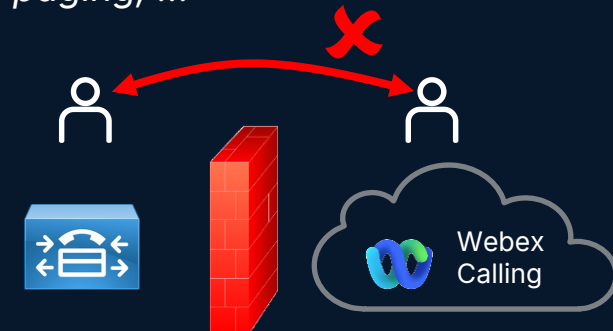
Group features

- Basic calls
- Call waiting
- Hold/resume
- Transfer
- Conference
- Forward
- Single Number Reach
- Call Recording
- Video
- Content sharing (*app-to-app*)
- Telephony presence (BLF)
- Group feature reachability (*i.e., calling into a hunt group*)



Features that work
across calling platforms

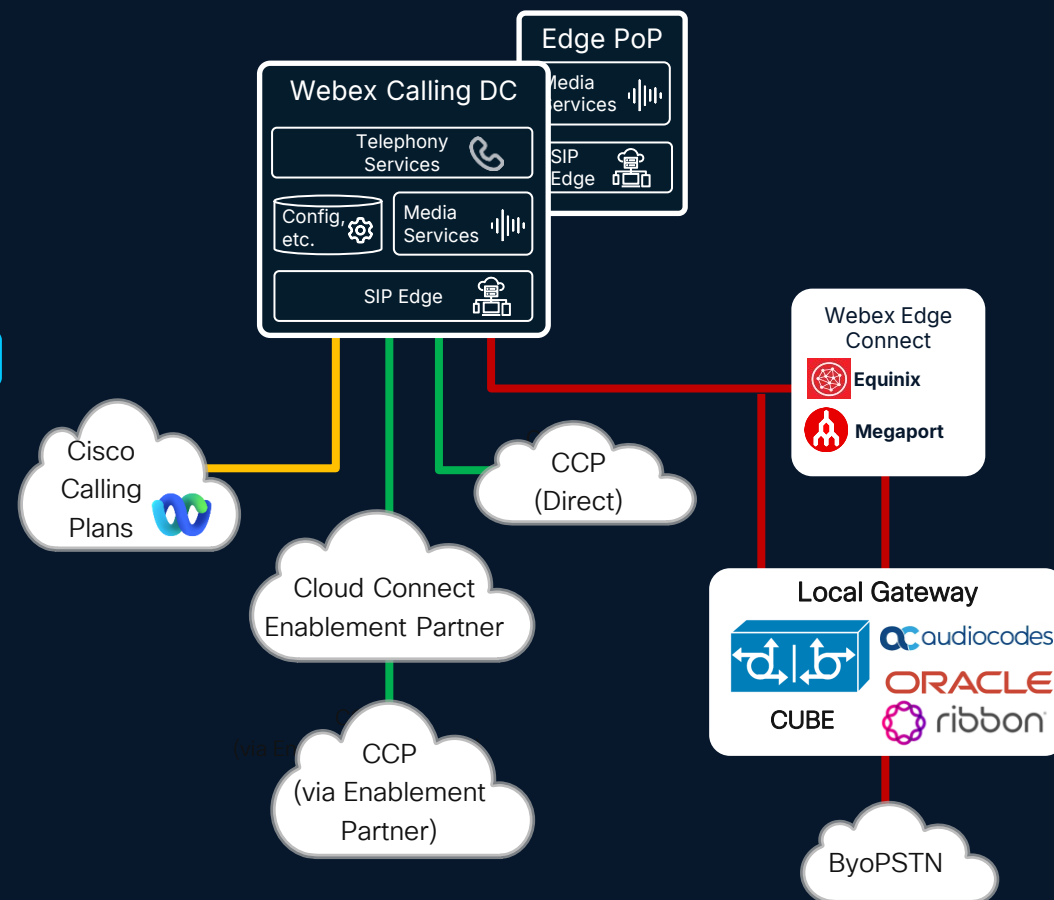
- Shared line appearance features:
Sim-ring, Call status, Whisper, Barge, Hold/resume across devices, Manager/assistant, ...
- Hot desking / Ext. Mobility
- Desk phone control
- Voicemail distribution
- Group features:
Hunt groups, Call pickup groups, Call park, BLF monitoring, Callback/call completion, Call monitoring, Intercom, PTT, Auto-attendant, Singlewire/group paging, ...



Features that require all users
be on the **same** calling platform

Three flexible PSTN options

- Cisco Calling Plans
 - Available in **19 countries** (15 EU, US, CA, AU, NZ)
 - Support for CUCM via Local Gateway planned Roadmap
- Cloud Connect
 - Over **40 partners** available in over **65 countries**
 - Partners may peer directly or via Enablement Partners
 - Available for CUCM via Local Gateway and Route Lists
- ByoPSTN via Local Gateway
 - Can peer directly or via Webex Edge Connect
 - CUBE and multiple 3rd party SBCs supported
 - Fully self-service provisioning
- Per-Location PSTN choice
 - Not all options available in all countries



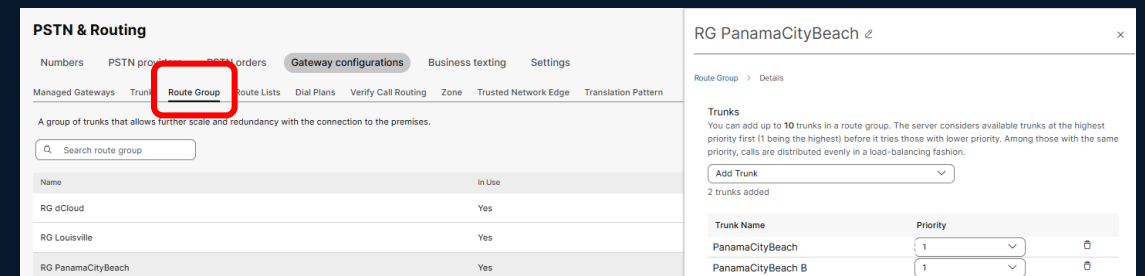
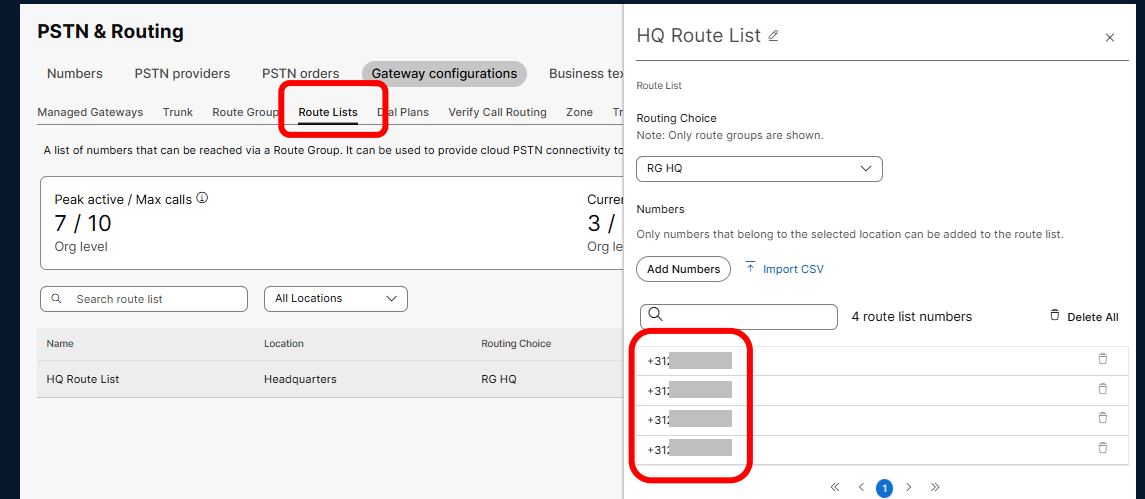
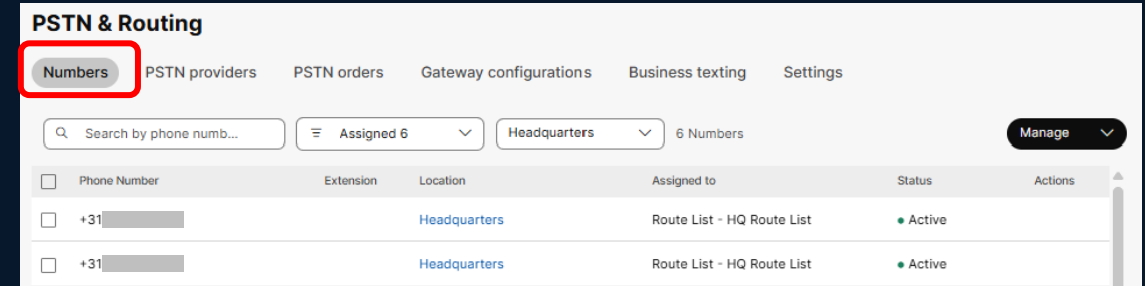
Connection Type

Choose the connection type for all phone numbers associated with Paris Sales Office.

Cisco Calling Plans	Cloud Connected PSTN	Premises-based PSTN (formerly local gateway)
Cisco-provided PSTN provides a bundled Cisco solution that simplifies your cloud calling experience with easy PSTN ordering and full support from Cisco and our Partners.	Select Cisco Cloud Connected PSTN partners that provide flexible global PSTN solutions fully integrated with Cisco's Webex Calling cloud.	Bring Your Own Carrier by interconnecting any Service Provider's PSTN with a premises-based local gateway that tightly integrates to Cisco's Webex Calling cloud.

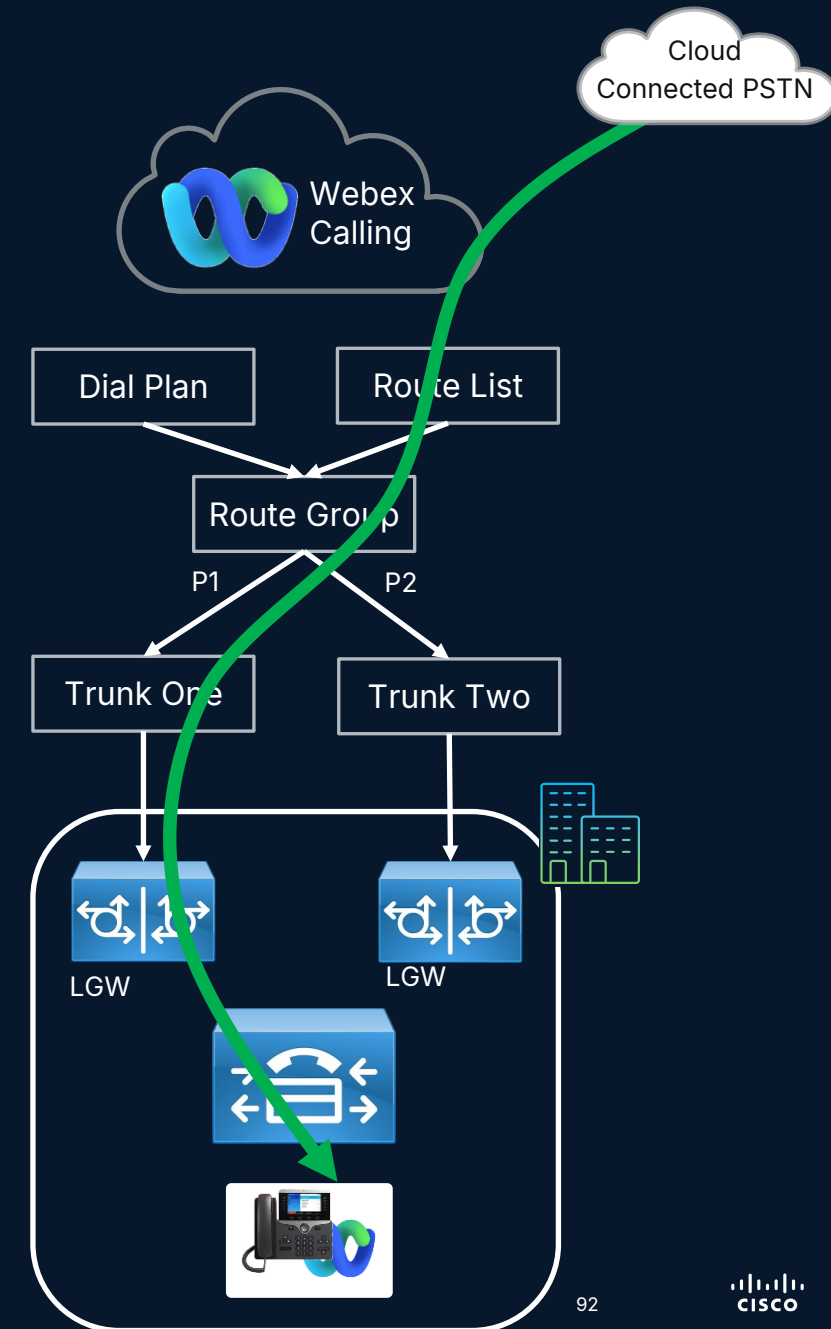
Cloud Connected PSTN for CUCM

- CCP PSTN numbers ordered and provisioned normally
- CCP numbers for CUCM users must be assigned to a [Route List](#)
- Route Lists are [licensed](#) (with a burst allowance)
- [Route Lists](#) point to [Route Groups](#) which point to [Trunks](#) to on-prem Local Gateways
- Same Route Groups and Trunks can be used for both CCP and on-net calls between CUCM and WxCalling users
- Cisco Calling Plan support coming [Roadmap](#)



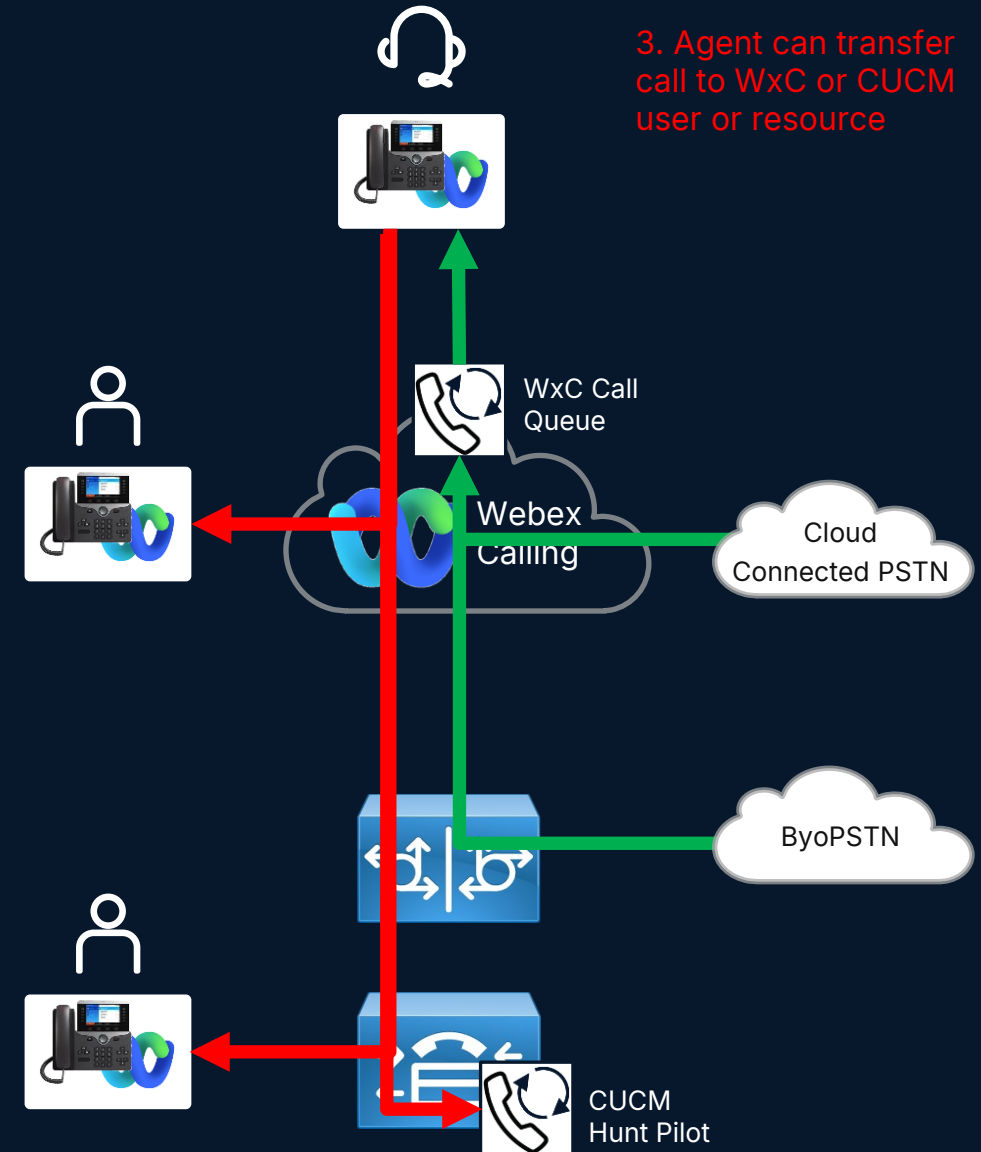
Cloud Connected PSTN for CUCM

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- CCP numbers for CUCM users must be assigned to a **Route List**
- Route Lists are **licensed** (with a burst allowance)
- **Route Lists** point to **Route Groups** which point to **Trunks** to on-prem Local Gateways
- Same Route Groups and Trunks can be used for both CCP and on-net calls between CUCM and WxCalling users
- Cisco Calling Plan support coming [Roadmap](#)



Customer Assist for CUCM

- Uses **existing** Customer Assist and **co-existence** building blocks
- Agents and users
 - Customer Assist **agents** are provisioned on **WxCalling**
 - Normal users can be provisioned on CUCM or WxCalling
 - Agents can find and see the availability of all users
 - Agents can forward calls to CUCM resources e.g. hunt pilots
- Hybrid service enablement is key to success
 - Local Gateway trunks, route groups and dial plans
 - Identity and Contact sync
 - Presence and DND sync
- Works across Cloud Connected PSTN and ByoPSTN



Hybrid services key takeaways

- The features and **flexibility** exists to enable **seamless** co-existence of CUCM and WxCalling users
- Co-existence requires careful **planning** and design
 - Cloud Connected UC
 - Identity
 - Presence and history
 - Trunks and routing
- Enables **extending** Webex services to CUCM users



Identity and CCUC

Additional Information

- Relevant Sessions
 - BRKCOL-2084: Getting the best out of Webex Calling ... when migrating from Unified Communications Manager
 - BRKCOL-2496: Webex Calling Customer Assist – What's This and What's New
 - BRKCOL-2064: Migrating Cisco IP Phones from Unified Communications Manager to Webex Calling Multi-Tenant
- References
 - <https://www.webex.com/content/dam/www/us/en/documents/pdf/webex-calling-hybrid-aag-cm-173302.pdf>
 - https://www.cisco.com/c/dam/en/us/td/docs/solutions/PA/mcp/DEPLOYMENT_CALLING_Unified_CM_to_Webex_Calling.pdf
 - <https://www.cisco.com/c/en/us/products/collateral/unified-communications/unified-border-element/data-sheet-c78-729692.html>

AI

1. Platform Introduction
2. Global Topology
3. Data Residency
4. Media Handling
5. Hybrid Services
6. AI
7. High Availability
8. Security
9. Conclusion

Webex Calling AI

- This section focuses on “Where” for AI features
 - Where media flows
 - Where AI processing takes place
 - Where generated content is stored
- “How” underlying AI algorithms work is covered in other sessions
- This section covers the following Webex Calling AI features
 - Smart Audio
 - Call recording Transcripts, Summaries and Action Items

Responsible AI Framework

- Cisco Responsible AI Framework governs development of all Webex AI features
- Ensures all AI development and features align with our AI Principles
 - Transparency, Fairness, Accountability
 - Privacy, Security, Reliability
- AI Transparency Technical Notes available on trustportal.cisco.com covering all Webex AI features

Cisco never uses customer media, data or content to train or fine tune any of our AI models

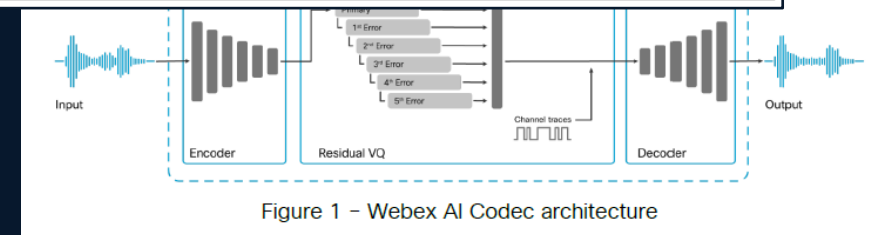
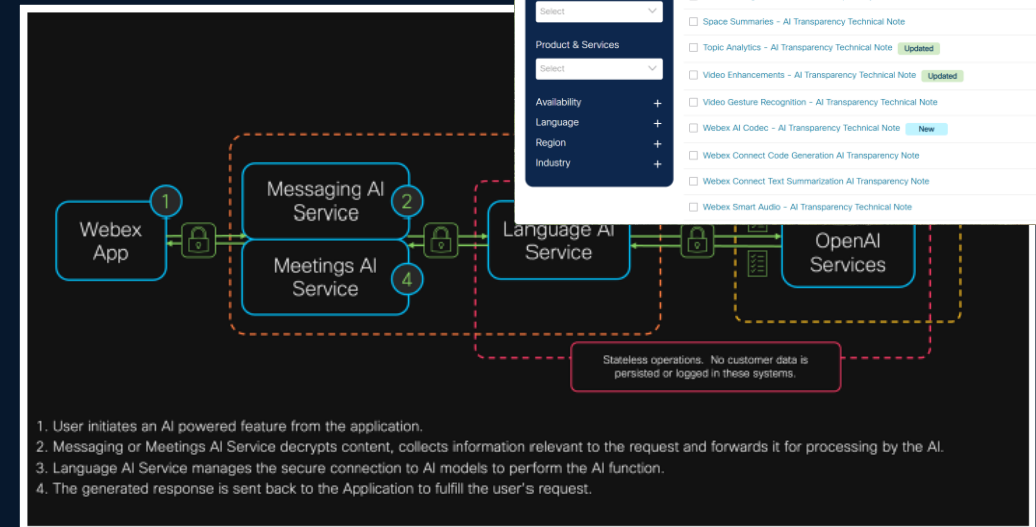
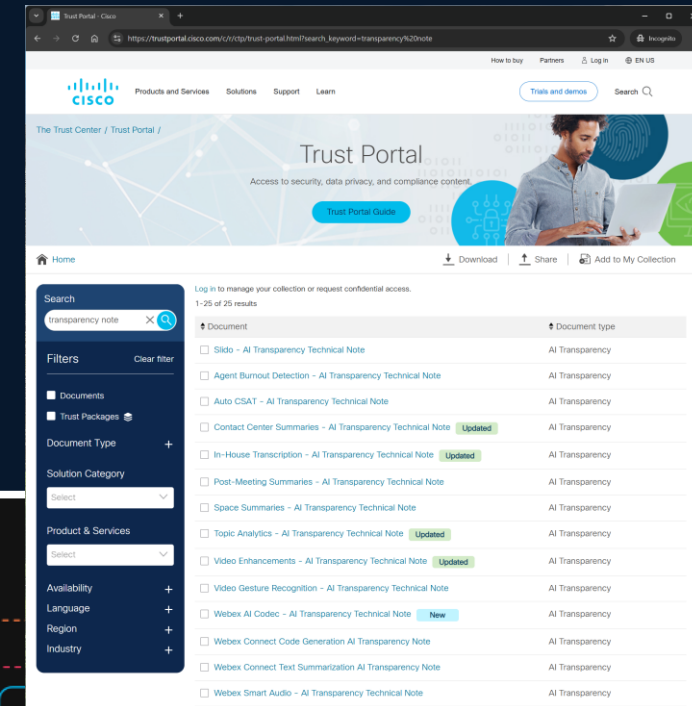


Figure 1 - Webex AI Codec architecture

Smart Audio

- Can remove both **near end** ("Microphone audio") and **far end** ("External audio") noise*
- "External audio" removes noise for **all** non-Smart Audio capable far ends
 - PSTN, ATA, DECT, 6800 IP Phones, etc.
- Available across client portfolio
 - Webex App Desktop and Mobile
 - 8800 series IP Phones*
 - 9800 series IP Phones
 - Room Systems

Smart audio

Webex uses artificial intelligence to enhance audio. [Learn more](#)

Microphone audio

Choose how you want your microphone audio to be heard during all calls and meetings.

- ☒ Noise removal
Removes all noise
- ☐ Optimize for my voice
Removes all noise and background voices
- ☐ Optimize for all voices
Removes all noise and enhances nearby voices
- ☐ Music mode
Optimizes the audio for vocal and instrumental music

External audio

Choose how you want to hear the external party's voice in one-on-one calls going over a public phone network.

- ☒ Optimize for external party's voice
Enhances low-fidelity audio to high-definition and removes all noise 
- ☐ Original
Preserves all audio, including music and noise, with no processing

* External audio / far end noise removal not available on 8800 series IP Phones

Client-side Smart Audio processing and ICE



- ICE negotiated so media flows directly between far end (e.g. CUBE) and Webex App
- Far-end does not support Smart Audio
- Webex App processes both near-end and far-end Smart Audio

Webex Call Recordings, Transcripts, Summaries and Action Items

- Transcripts, Summaries and Action Items can be generated for all **Webex** Call Recordings
- Admin has granular **per-user controls** and can individually enable
 - Call Recording
 - Transcript generation
 - Summary and Action Item generation

Call recording

Record incoming and outgoing calls and voicemails, or set recording announcements and notifications.

☒ 

☐ On Demand

☒ Always 

☐ Always with Pause/Resume

☐ Never 

☐ Record voice messaging

Recording start/stop announcement 

☒ Play recording start/stop announcement for PSTN calls

☐ Play recording start/stop announcement for internal calls

Recording Reminder Tone

☒ Repeat Tone Every

15  seconds

☒  Generate Transcript 

Allow Webex AI to analyze transcript and:

☒ Generate Summary and Action Items

☒  View and play call recordings, transcripts

For recorded calls, this user can also:

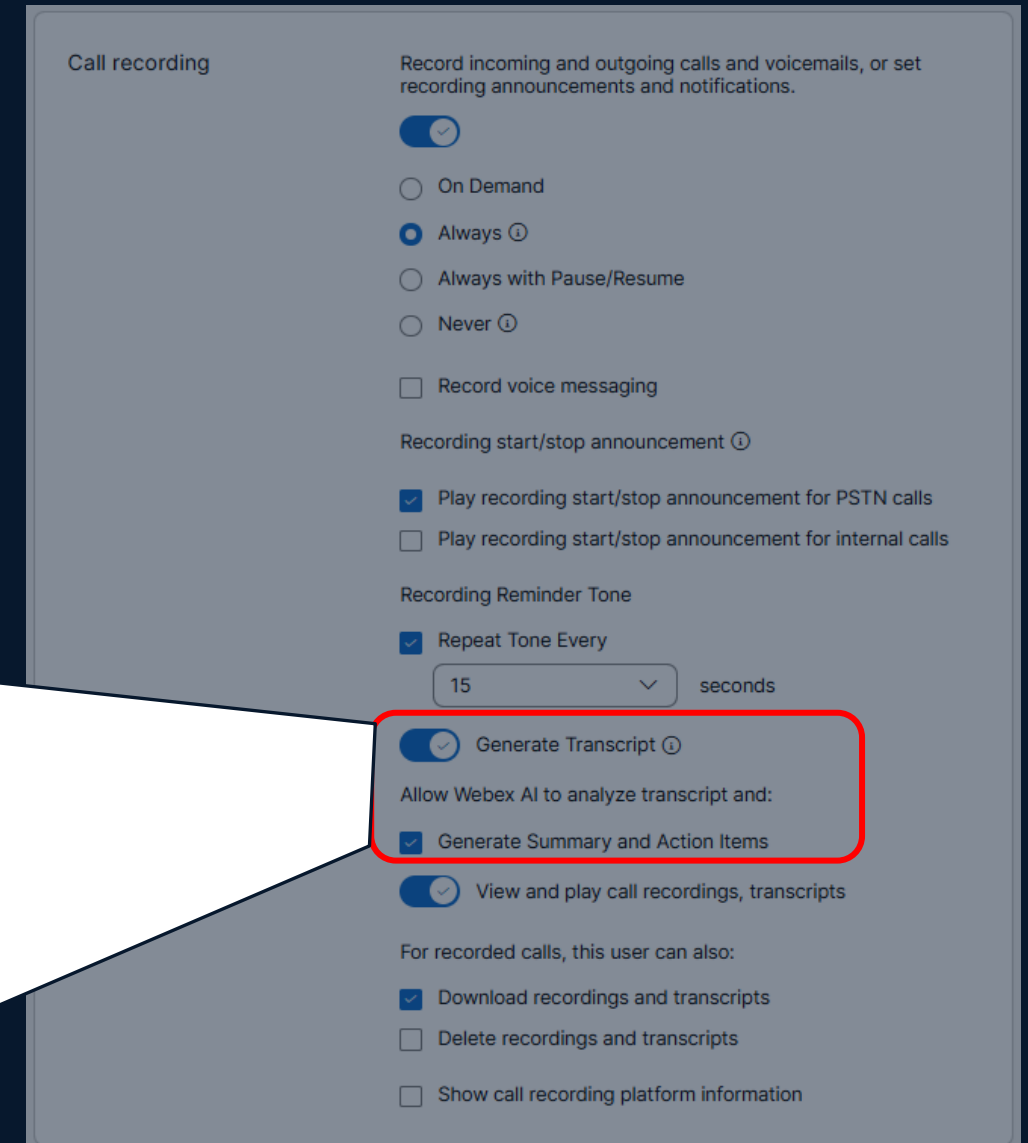
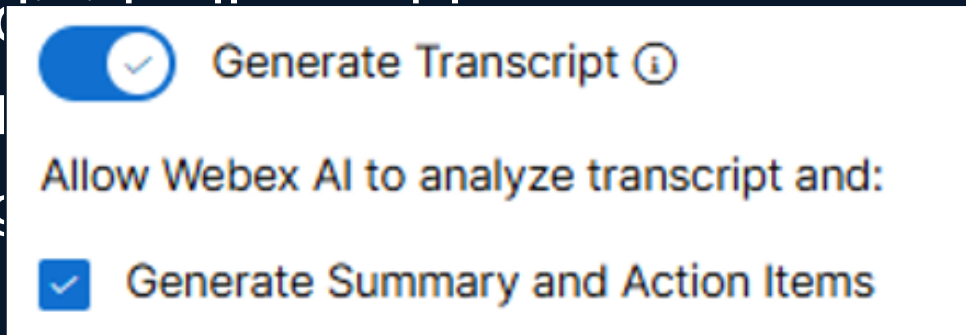
☒ Download recordings and transcripts

☐ Delete recordings and transcripts

☐ Show call recording platform information

Webex Call Recordings, Transcripts, Summaries and Action Items

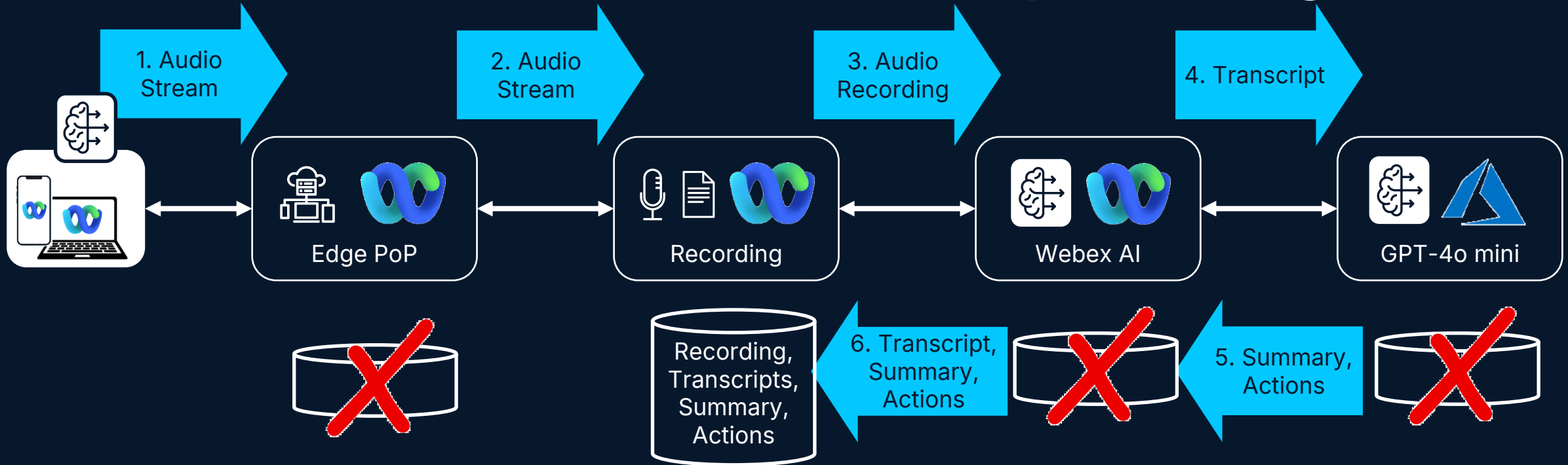
- Transcripts, Summaries and Action Items can be generated for all **Webex** Call Recordings
- Admin has granular **per-user controls** and can individually enable or disable:
 - Call Recording
 - Transcript generation
 - Summary and Action Items



Webex Call Recordings, Transcripts, Summaries and Action Items

- Webex AI processing of recordings for a location only happens when **Webex** is the recording **provider** in the location
- Transcripts generated by Webex **Speech AI** transcription model for the following languages
 - English today
 - French, German, Italian, Spanish [Roadmap](#)
 - 3rd party speech-to-text processor will be used for 11 other languages [Roadmap](#)
 - Language will be auto-detected by AI transcription engine
- Summaries and Action Items generated by Azure OpenAI GPT-4o mini LLM
- No customer data ever stored by any AI processors

Webex Call Recordings, Transcripts, Summaries and Action Items media processing

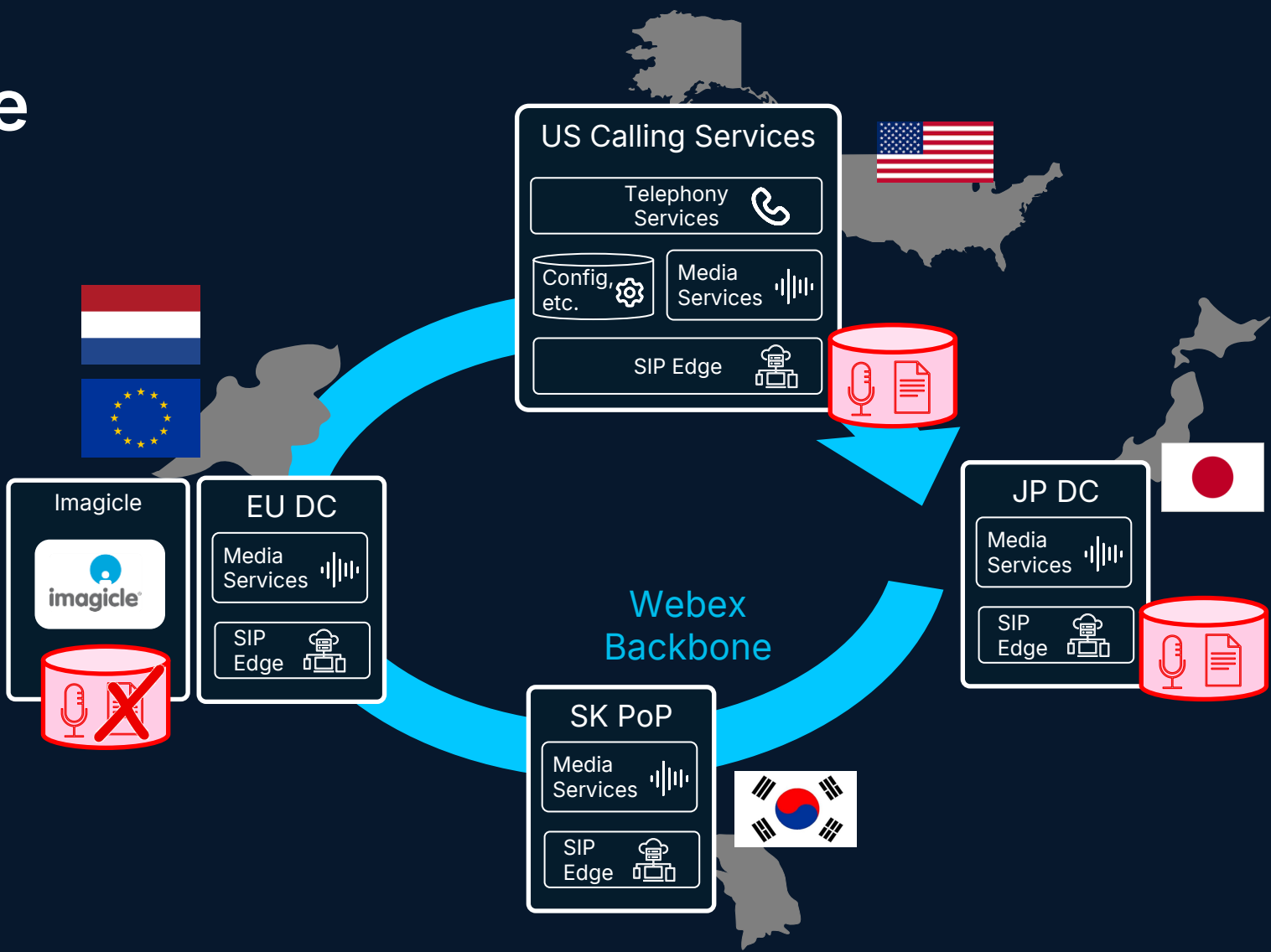


- Transcripts generated by Webex Speech AI transcription model (for supported languages)
- Transcripts processed by Webex Language AI and sent to GPT-4o mini LLM
- GPT-3.5-Turbo LLM returns summary and action items
- Recording, Transcripts, Summary, Action Items are **stored in admin-specified storage region**

Webex Recordings AI data residency example

- Let's look at our US org again
- Webex AI generated content storage locations are shown

Location	Provider	Storage
HQ US		US
EU		
Japan		Japan
South Korea		Japan



Additional Information

- Relevant Sessions
 - BRKCOL-2976: AI in Collaboration: Techniques and Architectures for Agentic Collaboration
 - BRKCOL-2043: Discover the Power of Webex Calling and Its Latest AI Innovations
- References
 - <https://trustportal.cisco.com/>
 - https://www.cisco.com/c/dam/en_us/about/doing_business/trust-center/docs/cisco-responsible-artificial-intelligence-framework.pdf
 - <https://blog.webex.com/collaboration/hybrid-work/next-level-audio-with-webex-ai-codec/>

High Availability

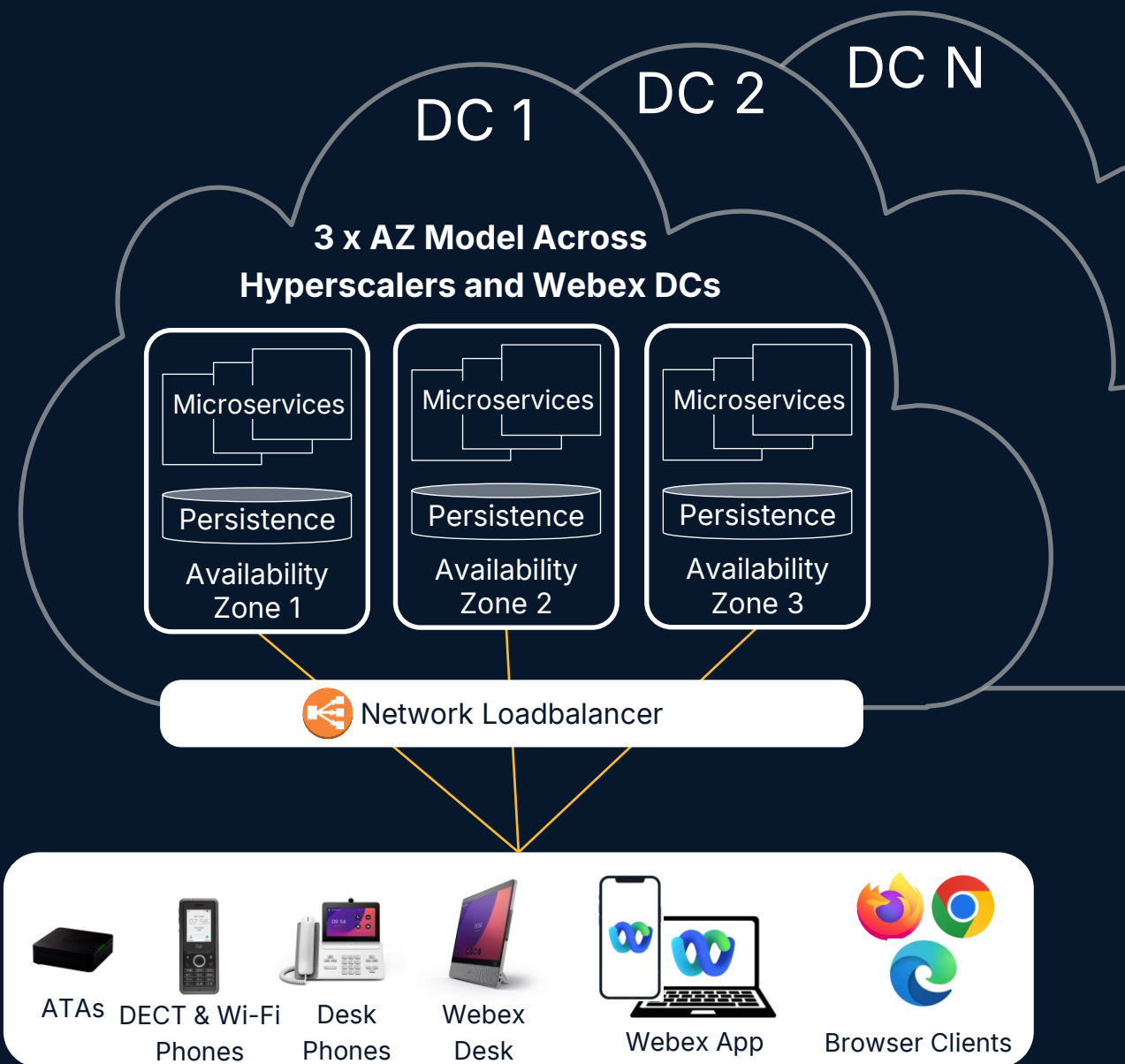
1. Platform Introduction
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Proven reliability



Webex High Availability

- Hyperscalers generally follow 3x Availability Zone redundancy model (3AZ)
- Each AZ generally maps to a different hyperscaler physical DC
- Webex physical DC platforms evolving to align with public cloud 3AZ model
- Webex microservices scale independently and horizontally
- Services follow 3AZ model as appropriate
- Devices and clients transparently and automatically failover across DCs and AZs



Webex Calling HA architecture

- Webex Calling DCs deployed in **regional HA pairs**
- Stateful telephony services deployed across DC pairs
- SIP Edge deployed in 3AZ model in regions where **AWS** is the provider
- All services scale horizontally





Edge discovery and failover

- Client (Webex App, Device, Local Gateway) is configured with edge proxy information e.g. our favourite US org

Location	Client Type	SRV
Netherlands	Trunk	eun01.sipconnect.bcld.webex.com
South Korea	WxApp	sk02.hosted.bcld.webex.com

- Client does **DNS SRV** record lookup of `_sips._tcp` against proxy domain
- Multiple records are returned in **priority** order
- Client resolves **A/AAAA** record and establishes SIP connection
- On connection failure / drop, client fails over to next record



Edge discovery and failover

- Client (Webex App, Device, Local Gateway) is configured with edge proxy information e.g. our favourite US org

Location	Client Type	SRV
Netherlands	Trunk	eun01.sipconnect.bclid.webex.com
South Korea	WxApp	sk02.hosted.bclid.webex.com

Netherlands Trunk

Trunk > Details

Status ⓘ

- Offline

TLS connection and SIP options from Local Gateway to Webex Calling have failed.
[Learn more](#)

Trunk Type

Certificate based

Device

Cisco Unified Border Element

SRV

hq-trunk.clams.lgwtrunking.com

Max concurrent calls

250

Webex Calling edge proxy address (FQDN)

peering1.eun.sipconnect.bclid.webex.com:5062
peering2.eun.sipconnect.bclid.webex.com:5062
peering3.eun.sipconnect.bclid.webex.com:5062
peering4.eun.sipconnect.bclid.webex.com:5062

Webex Calling edge proxy address (SRV)

eun01.sipconnect.bclid.webex.com

- Client does DNS
 - Multi
 - Client
 - On c
- WxApp Wireshark trace
- Connection record

Capturing from Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

dns.qry.name contains "_sip._tcp" && dns.flags.response == 0

No.	Time	Source	Destination	Protocol	Length	Info
1676	52.596902	192.168.0.34	89.101.160.5	DNS	97	Standard query 0x5b6a SRV _sip._tcp.sk02.hosted.bclid.webex.com
1677	52.637257	192.168.0.34	89.101.160.4	DNS	97	Standard query 0x5b6a SRV _sip._tcp.sk02.hosted.bclid.webex.com

Frame 167683: 97 bytes on wire (776 bits), 97 bytes captured (776 bits) on interface 0

Ethernet II, Src: Intel_a3:14:6b (4c:77:cb:a3:14:6b), Dst: SagemcomBr...

Internet Protocol Version 4, Src: 192.168.0.34, Dst: 89.101.160.5

User Datagram Protocol, Src Port: 59638, Dst Port: 53

Domain Name System (query)

Transaction ID: 0x5b6a

Flags: 0x0100 Standard query

Questions: 1

Answer RRs: 0

Authority RRs: 0

Additional RRs: 0

Queries

> _sip._tcp.sk02.hosted.bclid.webex.com: type SRV, class IN

[Response In: 167728]

wireshark_Wi-FiDLHZV2.pcapng

Packets: 248211 · Displayed: 2 (0.0%)

Profile: Default

DNS SRV discovery examples



Trunk

- 4x Records*



```
$ dig SRV _sips._tcp.eun01.sipconnect.bcld.webex.com
```

```
;; ANSWER SECTION:
```

```
_sips._tcp.eun01.sipconnect.bcld.webex.com. 157 IN SRV 5 50 5062 sse0.public.wfrawxc-p-3.prod.infra.webex.com.  
_sips._tcp.eun01.sipconnect.bcld.webex.com. 157 IN SRV 5 50 5062 sse1.public.wfrawxc-p-3.prod.infra.webex.com.  
_sips._tcp.eun01.sipconnect.bcld.webex.com. 157 IN SRV 5 50 5062 sse7.public.wamswxc-p-2.prod.infra.webex.com.  
_sips._tcp.eun01.sipconnect.bcld.webex.com. 157 IN SRV 5 50 5062 sse6.public.wamswxc-p-2.prod.infra.webex.com.
```



Webex App and Webex
Managed Devices

- 6x Records*

```
$ dig SRV _sips._tcp.sk02.hosted.bcld.webex.com
```

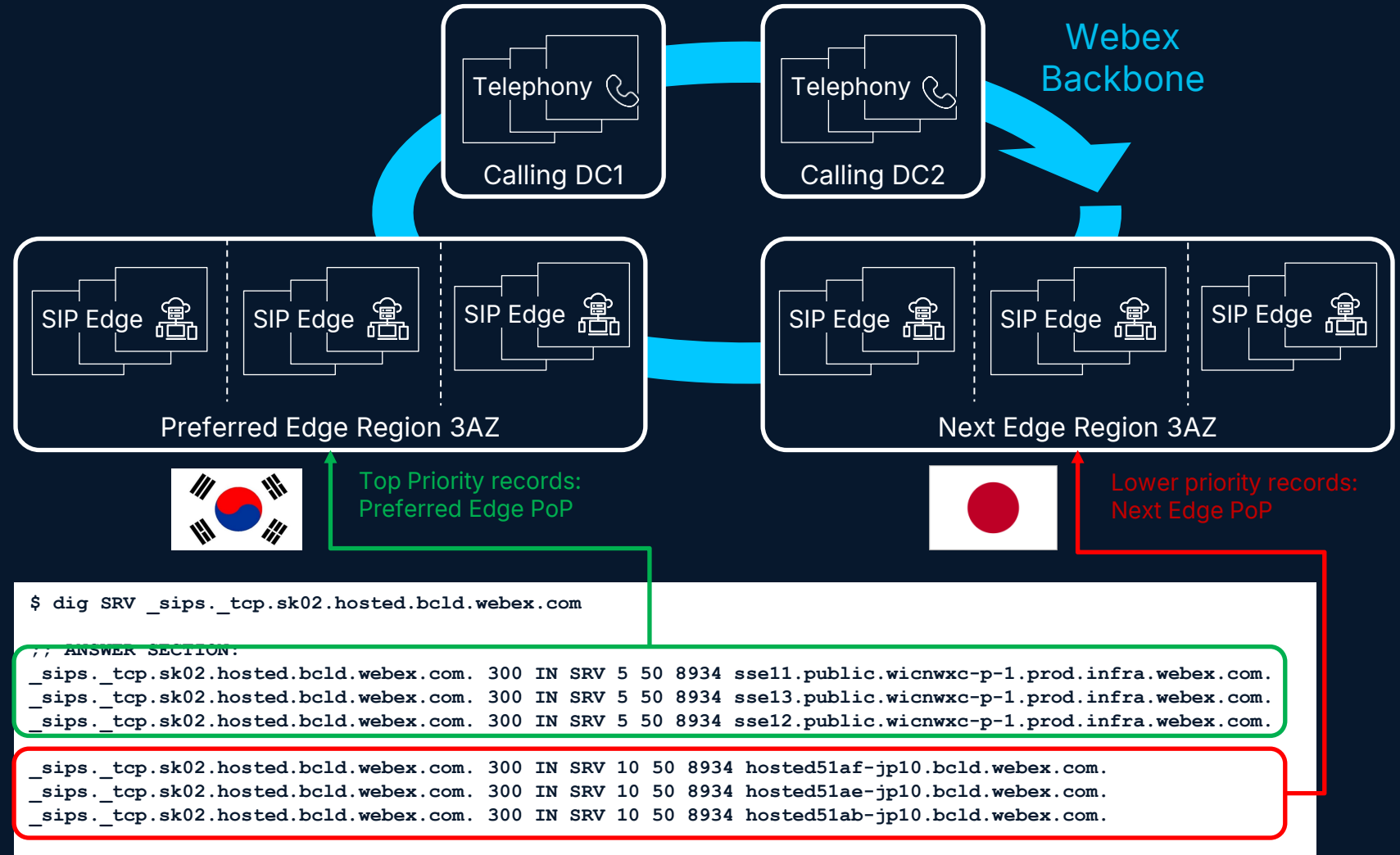
```
;; ANSWER SECTION:
```

```
_sips._tcp.sk02.hosted.bcld.webex.com. 300 IN SRV 5 50 8934 sse11.public.wicnwxc-p-1.prod.infra.webex.com.  
_sips._tcp.sk02.hosted.bcld.webex.com. 300 IN SRV 5 50 8934 sse13.public.wicnwxc-p-1.prod.infra.webex.com.  
_sips._tcp.sk02.hosted.bcld.webex.com. 300 IN SRV 5 50 8934 sse12.public.wicnwxc-p-1.prod.infra.webex.com.  
_sips._tcp.sk02.hosted.bcld.webex.com. 300 IN SRV 10 50 8934 hosted51af-jp10.bcld.webex.com.  
_sips._tcp.sk02.hosted.bcld.webex.com. 300 IN SRV 10 50 8934 hosted51ae-jp10.bcld.webex.com.  
_sips._tcp.sk02.hosted.bcld.webex.com. 300 IN SRV 10 50 8934 hosted51ab-jp10.bcld.webex.com.
```

*Different numbers of records currently returned based on 3rd party interop testing

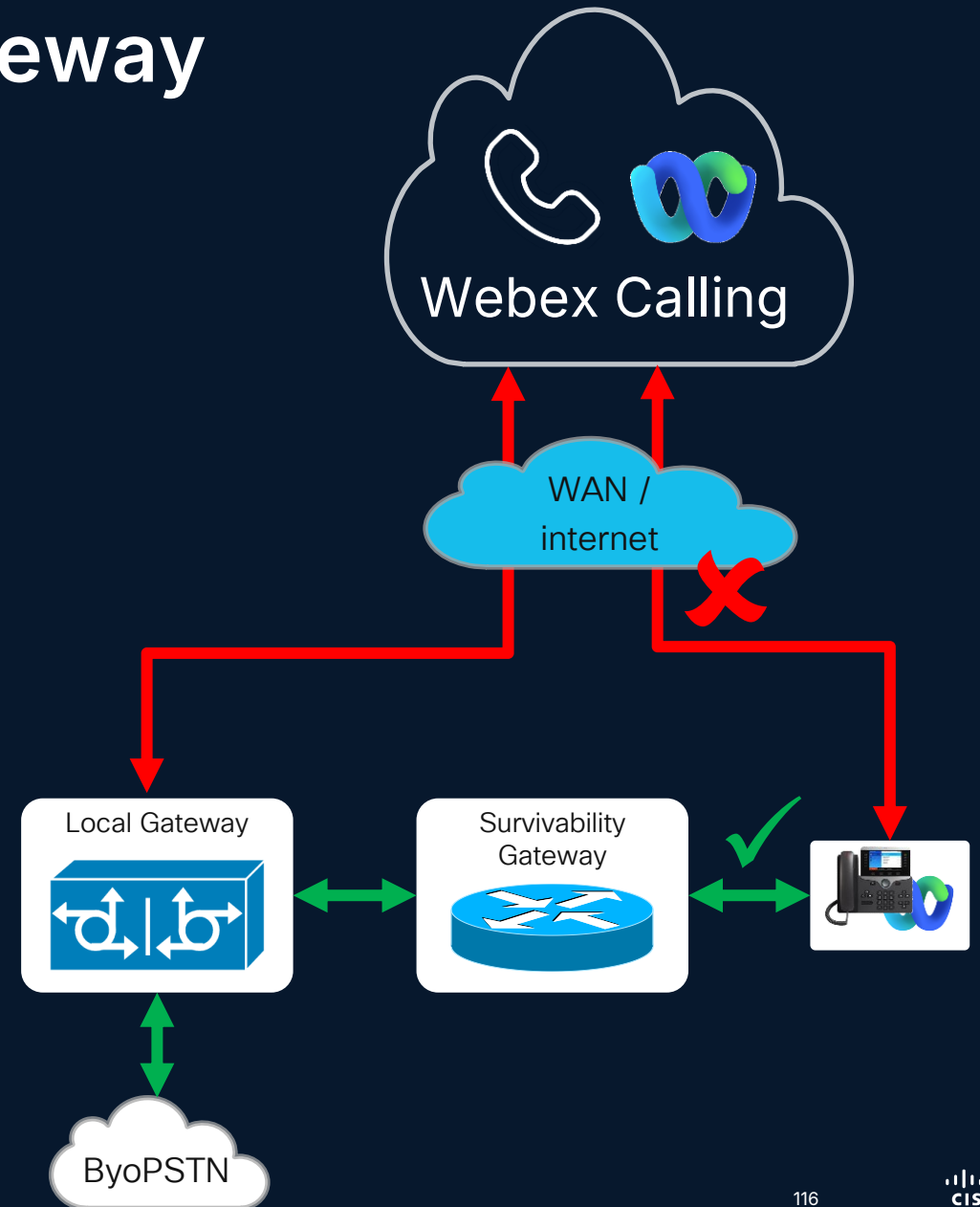
DNS SRV record mapping example

- Priority SRV records point to **preferred** Edge PoP
- Clients automatically fallback to **next available** record on failure
- Resilient to single instance failure and full Edge PoP failure
- Example: Webex App in South Korea



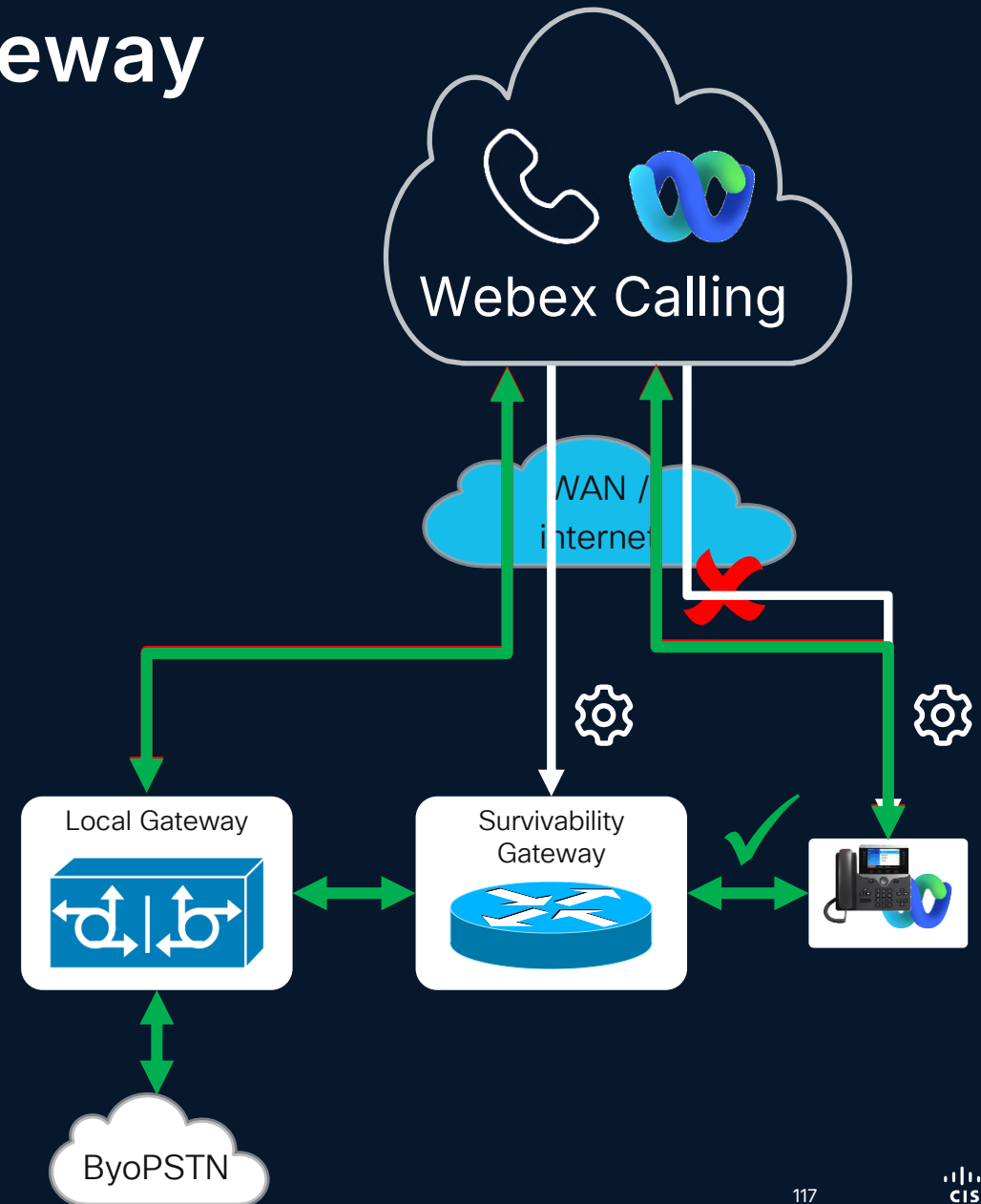
Webex Calling Survivability Gateway

- Strongly recommend all customers deploy multiple **redundant** internet / WAN connections
- Webex Calling **Survivability Gateway (SGW)** provides fallback telephony features in case of WAN down
- Runs on IOS routers
- A single SGW may provide fallback capabilities to users across multiple WxCalling Locations
- Supports **WxApp desktop** and **Cisco IP Phones** only
- Number of clients supported per SGW depends on router platform – maximum is 2500 clients on a Catalyst Edge 8300
- Clients detect loss of connection to WxCalling and fallback to local SGW
- Can co-exist with Local Gateway and ByoPSTN



Webex Calling Survivability Gateway

- During normal operation i.e. internet / WAN up
 - Clients download **Location-specific configuration** pointing to their SGW
 - WxCalling pushes Location-specific **user** identity and registration information **to the SGW**
 - Clients makes Webex Calling calls as normal
- On WAN down event
 - Client detects loss of connectivity to WxCalling
 - Client **automatically** falls back and SIP REGISTERS with SGW
- **Co-exists** with Local Gateway and ByoPSTN
 - Inbound and outbound PSTN calls possible
 - Inter-Location calling possible via PSTN breakout



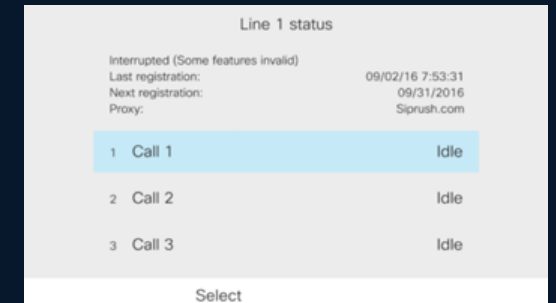
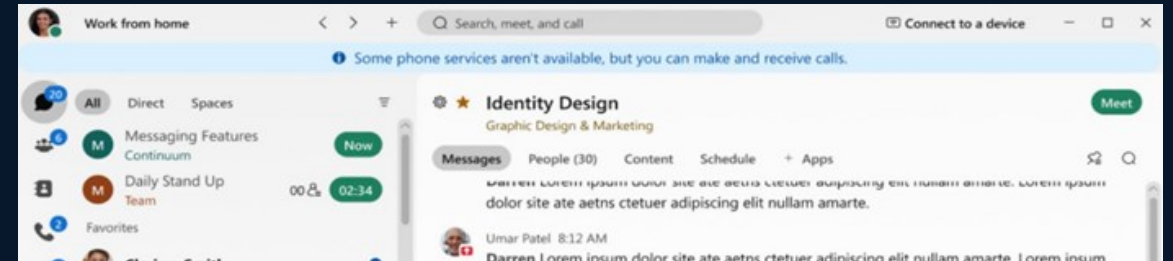
Survivability Gateway platform

Router platform*	Maximum endpoint registrations
ISR 4321	50
ISR 4461	2000
Catalyst 8200L-1N-4T	1,500
Catalyst 8300-2N2S-4T2X	2,500
Catalyst 8000V	2,000

* Partial list. Refer to references for full details

Limited features available

- Reduced capability **warnings** displayed on WxApp and IP Phones
- Webex shared services unavailable
 - Full directory and contacts search
 - Centralised call history
 - Presence
- Reduced set of telephony features available
- WxApp must be **already logged in** when WAN goes down
 - WxApp Login when WAN down on [Roadmap](#)

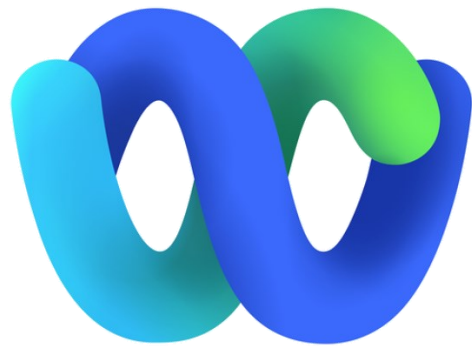


Additional Information

- Relevant Sessions
 - BRKCOL-3228: Troubleshooting Managed and Survivability Deployments in Webex Calling
 - BRKCOL-2222: Troubleshooting Webex Calling Endpoint Cloud Redundancy
 - BRKCOL-2312: CUBE Updates
- References
 - <https://help.webex.com/en-us/article/d68vi1/Site-survivability-for-Webex-Calling>

Security

1. Platform Introduction
2. Global Topology
3. Data Residency
4. Media Handling
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Secure by design
Secure by default

Legal and regulatory compliance

Independently audited



Information security and privacy

- ISO 2700X i.e ISO 27001 / 27017 / 27018 / 27701
- SOC 2 Type II and SOC 3
- Cloud Computing Compliance Controls Catalog (C5)
- HITRUST
- FedRAMP
- Cisco's Quality Management System
- ISO 9001
- CSA STAR L2
- The EU Cloud Code of Conduct
- Spain ENS
- Australia IRAP
- Japan ISMAP
- Swiss Digital Trust
- Thailand ETDA certification

Regulatory

- HIPAA
- GDPR
- FERPA
- COPPA
- PIPEDA
- PHIPA
- CCPA
- PCI DSS
- Continually assessing regulations

Cross-border transfers

- Binding Corporate Rules
- APEC cross-border privacy rules
- EU Standard Contractual Clauses

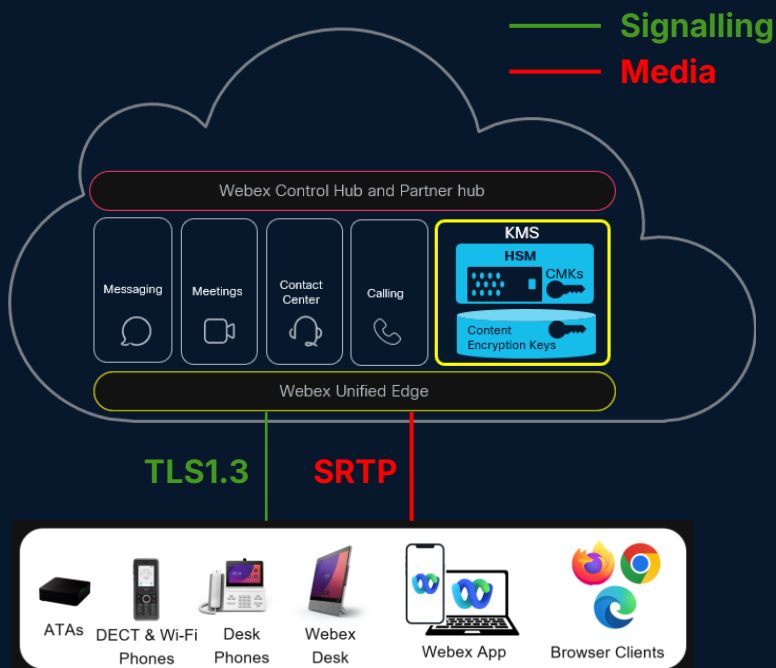


Compliance statements publicly available on <https://trustportal.cisco.com>

Clients and devices

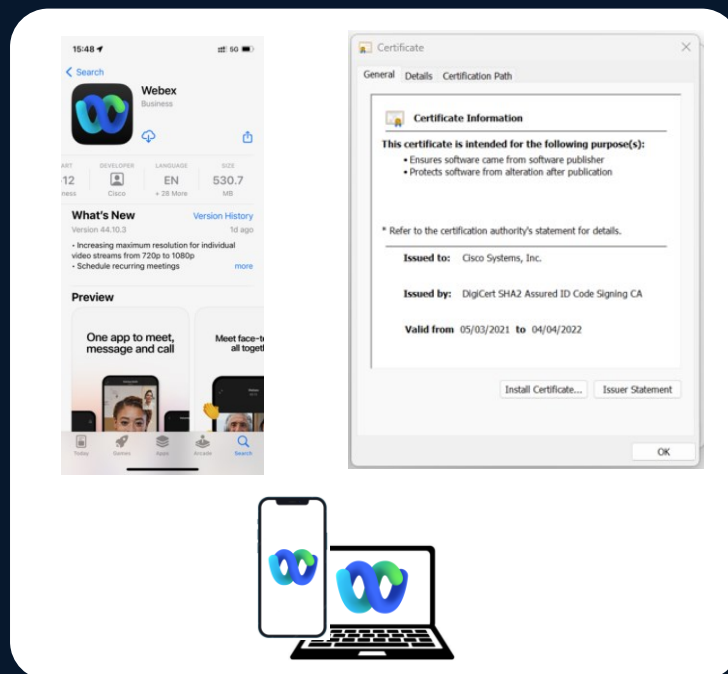
Network traffic

- All signaling (SIP and HTTP) across all clients is encrypted using TLS 1.3*
- All media is encrypted using SRTP



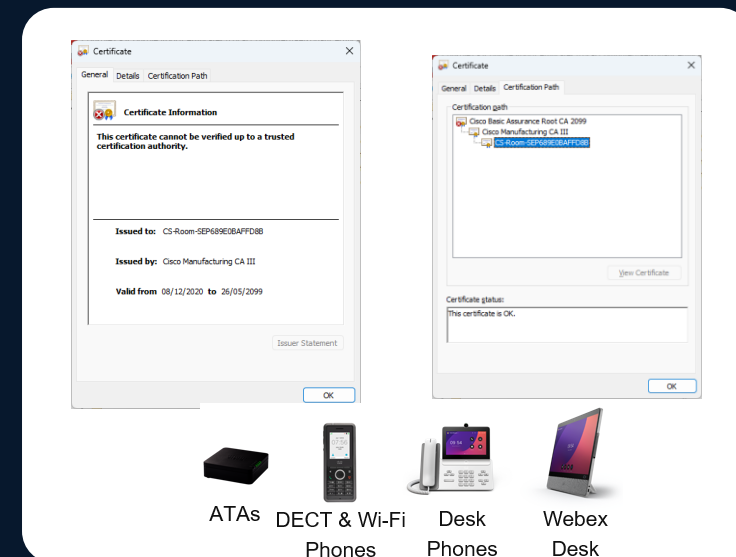
Webex App software

- All software is digitally signed across all platforms
- Gives security guarantees to installer and IT depts



Hardware devices

- Cisco endpoints have Manufacturer Installed Certificate (MIC)
- Signed by Cisco Manufacturing CA
- Only signed Cisco Firmware images can be installed on Cisco Hardware

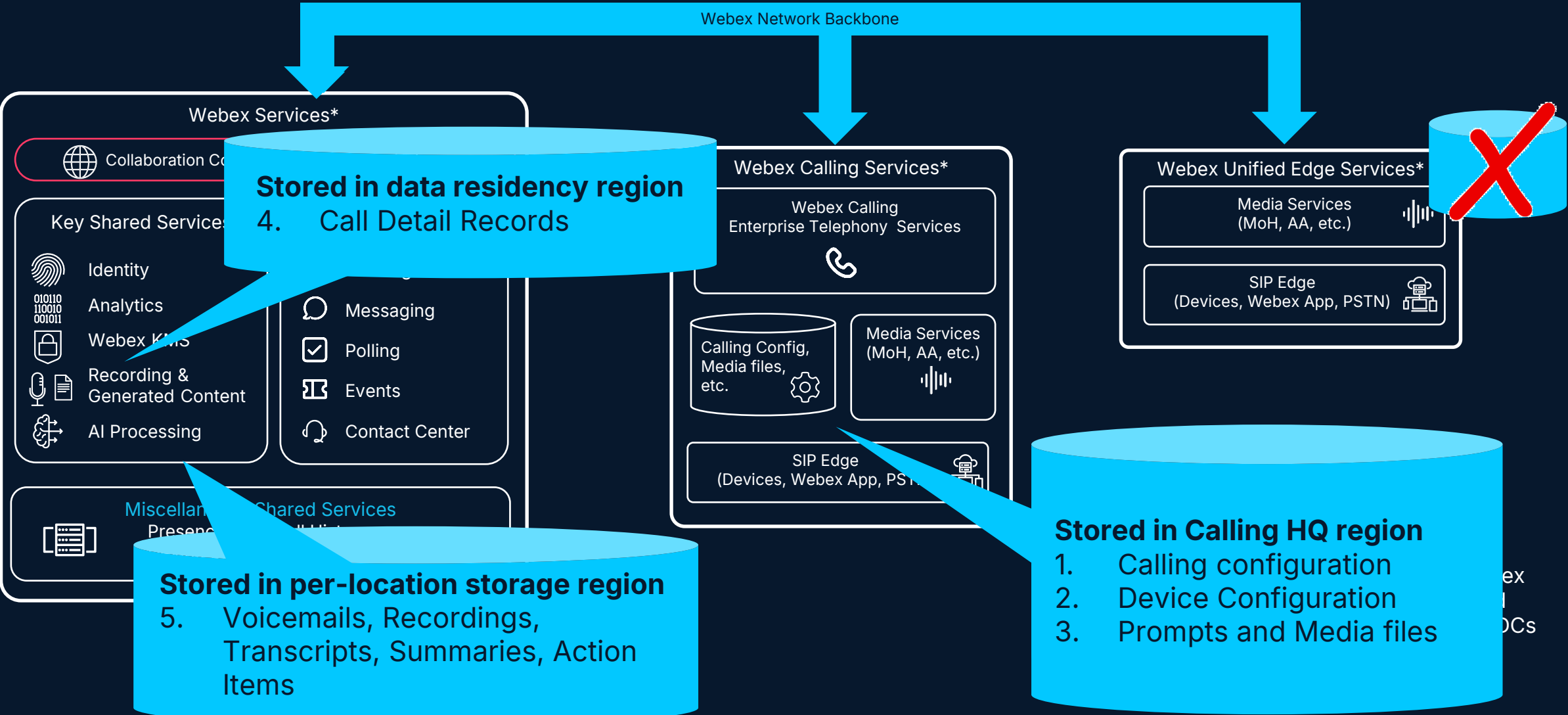


Webex Calling data at rest

- Webex Calling data is always **encrypted at rest** using AES-256 volume encryption
- Sensitive data is also encrypted at the **application layer**
- User generated content, including CDRs, is encrypted using **Webex KMS** managed keys

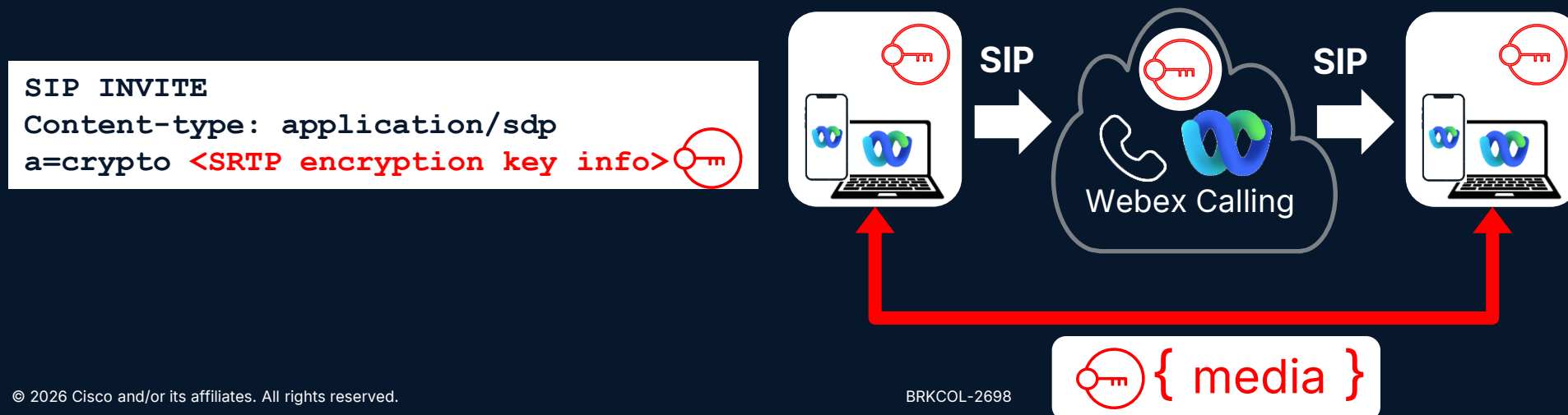
#	Data	Volume Cipher	Application Cipher	Webex KMS Encrypted
1	Calling configuration (Numbers, Dial plans, etc)	AES-256	AES-128	
2	Device configuration	AES-256	AES-128	
3	Prompts and Media Files	AES-256	NA – Volume only	
4	Call Detail Records	AES-256	AES-256	Yes
5	Voicemails, Recordings, Transcripts, Summaries, Action Items	AES-256	AES-256	Yes

Webex Calling data at rest



SRTP media encryption

- IETF RFC 3711 Secure RTP
- IETF RFC 4568 SDP Security Descriptions for Media Streams
- SRTP  encryption keys passed in SDP body in SIP signalling
- SRTP encryption keys exposed to Webex Cloud

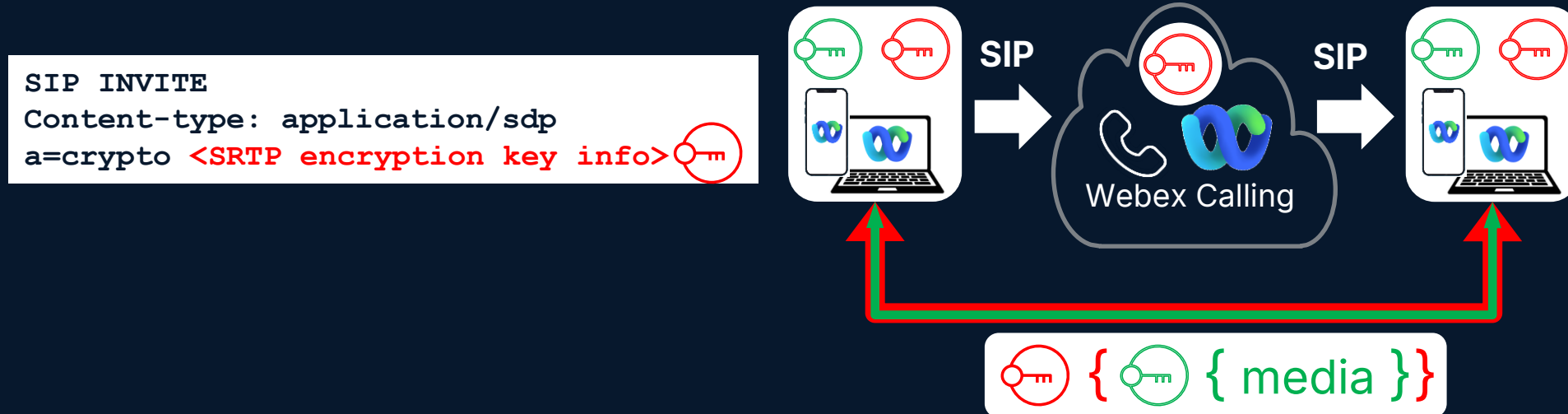


 { represents encrypted media }

Zero Trust E2EE media encryption

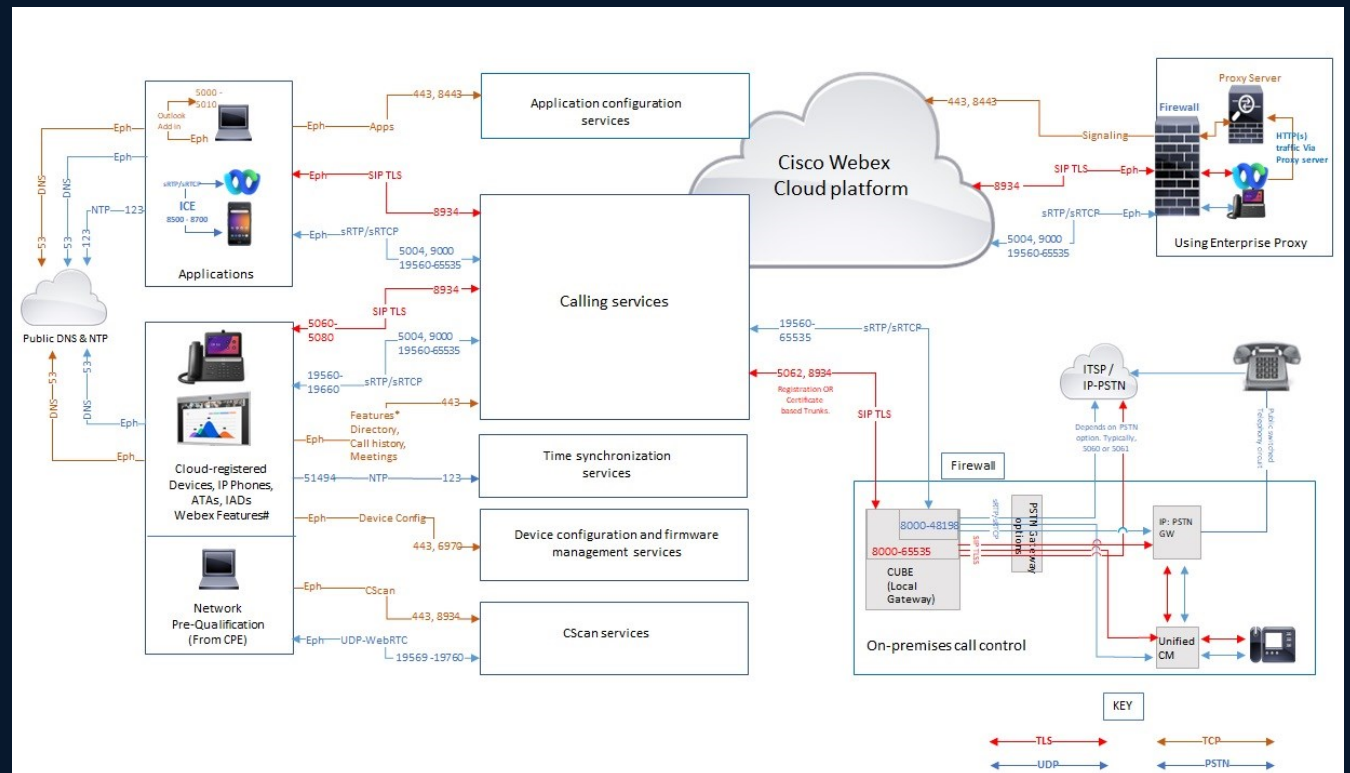
 SRTP Key
 MLS Key

- IETF RFC 9420 Message Layer Security
- IETF RFC 9605 SFrame: Lightweight Authenticated Encryption for Real-Time Media
- Clients negotiate MLS encryption keys without directly including them in signalling
- MLS  encryption **keys never exposed** to Webex Cloud
- Media packets are double encrypted by both MLS  and SRTP  keys



Network connectivity

- All domain and port information for access to Webex Calling is maintained in on-line documentation
- <https://help.webex.com/en-us/article/b2exve/Port-Reference-Information-for-Webex-Calling>
- Includes domain requirements from across all client types
 - Browser access to Control Hub
 - Webex App across all platforms
 - MPP IP Phones
 - Room Systems
 - Local Gateway



Client network access

Native IPv6
on Roadmap



Client	802.1X	IPv4 NAT	NAT64	Native IPv6	HTTP Proxy	TLS Intercept Proxy
Webex App	Yes	Yes	Yes	Roadmap	Yes	Yes
IP Phone	Yes	Yes	Yes	Roadmap	Yes	No
Room System	Yes	Yes	Yes	Roadmap	Yes	No

802.1X and HTTP Proxy details

Client	EAP Mechanisms	Notes
Webex App	Delegate to OS	Delegate to OS
IP Phone	EAP-TLS EAP-FAST	LSC cert can be manually uploaded on each device via GUI No password-based mechanism support
Room System	EAP-TLS EAP-MD5 EAP-FAST EAP-PEAP	LSC cert can be manually uploaded on each device via GUI Password can be manually entered on each device via GUI

Client	HTTP Proxy Discovery	HTTP Proxy Authentication
Webex App Windows	Manual, PAC, WPAD, GPO	None, Basic, Digest, NTLM
Webex App Mac	Manual, PAC, WPAD	None, Basic, Digest, NTLM
Webex App iOS	Manual, PAC, WPAD	None, Basic, Digest, NTLM
Webex App Android	Manual, PAC	None, Basic, Digest, NTLM
IP Phone	Manual, PAC, WPAD	None, Basic, Digest
Room System	Manual, PAC, WPAD	None, Basic, Digest

Additional Information

- Relevant Sessions
 - BRKCOL-2166: Understanding how Provision and Single Sign-On works for Collaboration
 - BRKCOL-3117: Troubleshooting Webex Authentication and Provisioning
- References
 - <https://www.cisco.com/c/en/us/products/collateral/conferencing/webex-control-hub/white-paper-c11-743446.html>
 - <https://help.webex.com/en-us/article/WBX000028782/Network-Requirements-for-Webex-Services>
 - <https://help.webex.com/en-us/article/jwkbt2/Security-requirements-for-Webex-Calling>
 - <https://help.webex.com/en-us/article/nv2hm53/Webex-Security-and-Privacy>
 - <https://help.webex.com/en-us/article/b2exve/Port-Reference-Information-for-Webex-Calling>

Conclusion

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Conclusion

What did we cover?

- Platform Introduction
- Global Topology
- Data Residency
- Media Handling
- Hybrid Services
- AI
- High Availability
- Security

If only we had more time...

- PSTN
- Call Recording
- Emergency Calling
- Media Codec Resiliency
- Webex Go
- WebRTC
- Compliance and eDiscovery
- Microsoft Teams Integration



What topics would you like to learn more about?

Webex Calling is Secure, Reliable, and Globally Available



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slido.com

#BRKCOL-2698



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Thank you



