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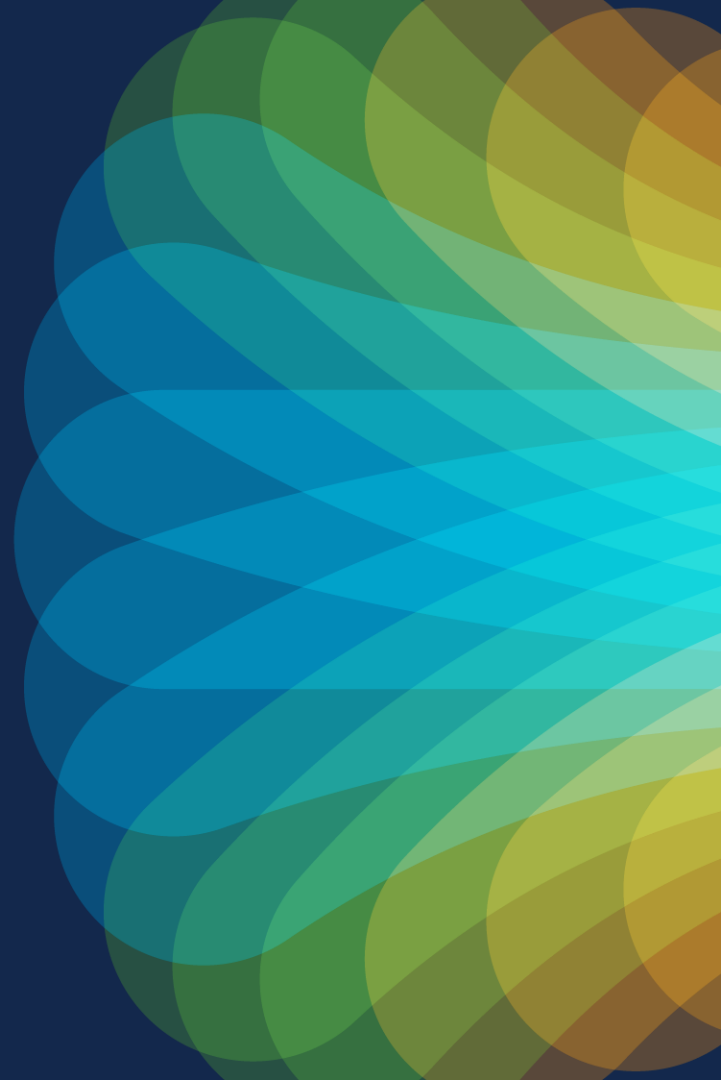
# Planning and Designing Successful Cloud Calling Deployments with Webex Calling

Johannes Krohn, Principal Technical Marketing Engineer

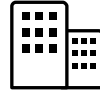
# Agenda

- Introduction
- Solution Overview
- PSTN Options
- Regions
- Location Considerations
- Dialing / Call Routing
- Call Control Integration / Coexistence
- Webex Calling Provisioning APIs
- Closing

# Solution Overview



# Webex Calling



Enterprise-grade calling features



Easy-to-use and secure



Centralized management and administration



Hybrid deployment & Flexible migration



Mobile First & AI led innovation

# Webex Calling - Architecture



- Global cloud calling platform
- Centralized administrative experience from the cloud
- Public Cloud Multi-tenant platforms
- Flexibility to provision users to best address cloud calling business needs
- Flexible PSTN options
- OTT and Private network connectivity options to fit enterprise of various sizes
- Webex App for a unified end-user experience

# A complete enterprise feature set

## Highlights of supported calling features

### Inbound call management

Auto attendant

Call queue analytics

Call routing and queuing

Call waiting –  
Up to 4 calls

Hunt group

Inbound caller ID

Music on hold

Receptionist client

Request call back

Skills based routing

Sequential ring

### Make and receive calls

Call forwarding, hold,  
transfer

Call redial

Directory search  
(Enterprise and Personal)

Distinctive ring

Do not disturb

Outbound caller  
ID blocking

Privacy

Selective call rejection

Speed Dial 100

Three flexible PSTN  
options

Availability in 120+  
countries

### Call history and voicemail

Call history

Call logs w/click to dial

Convenience call  
recording

Visual voicemail

Voicemail transcription

### Video, analog, fax, other devices

ATA support

Cloud-based fax

DECT devices

Video (point to point)

### Multi call / line experience

Alternate numbers

Busy lamp monitoring

Conferencing  
(site based)

Exec / assistant roles

Multi call window

Multi line selection in  
App

Multiple lines on Cisco  
Phones

N-Way voice and video  
calling (6)

Shared lines

Three-way calling  
(variable length)

Virtual extensions

### Agent / supervisor

Call queue analytics

Call transfer –  
attended/blind

Directed call pickup

Monitor, coach, barge,  
takeover

Skills based routing

### Mobility

Business texting

Hot desking & hoteling

Remote office

Simultaneous ring

Webex Go

### Administration

Analytics and  
troubleshooting

Business continuity  
(CFNR)

Call history reporting  
and API

E911

Single point of admin  
for Webex Suite

### Integrations and partners

MS Teams integration

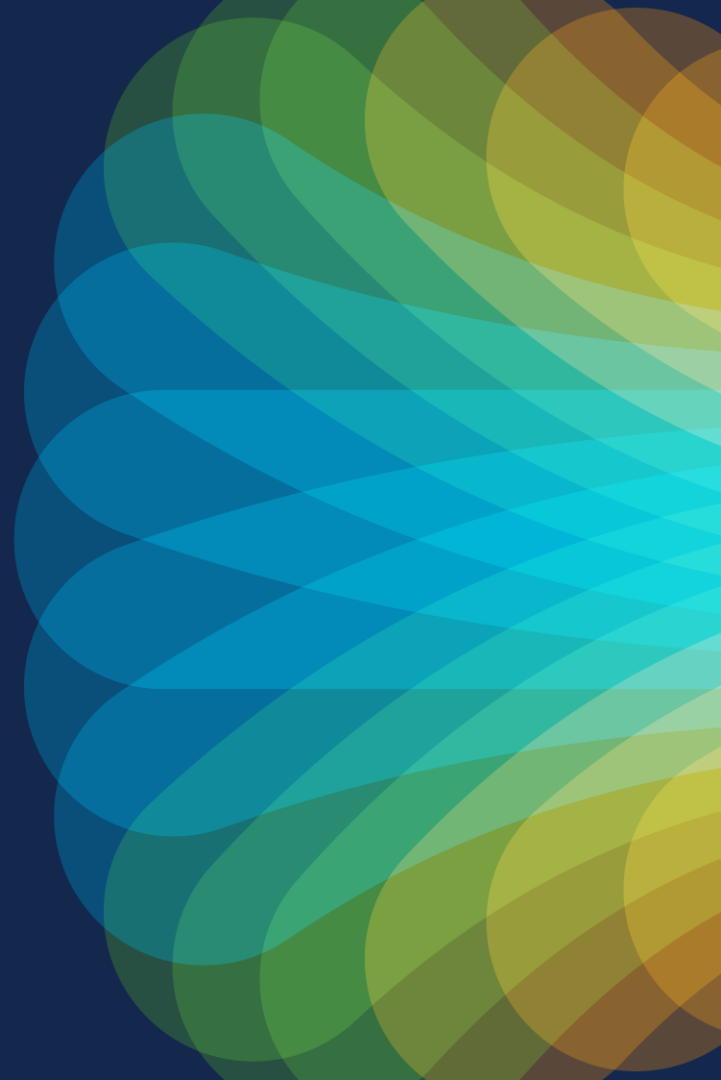
Google Chrome  
integration

Recording, attendant,  
fax partners

Security and safety  
partners

20+ Certified Calling  
Providers

# PSTN Options





# PSTN Options for Webex Calling

## Premises PSTN

Available in 110+ countries

Continue using your existing provider

Support remote branch offices

Manage phone numbers Control Hub

## Cisco Calling Plans (Cisco PSTN)

Available in the U.S., Canada, Europe, Australia\* and New Zealand\*

Single offer through Cisco and our partners

Fully integrated and managed from Control Hub

## Cloud Connect for Webex Calling

Available in over 65 countries

Select from multiple world-class Cisco-certified providers

Choose providers on a site-by-site basis

Manage numbers in Control Hub



<https://blog.webex.com/cloud-calling/webex-calling-pstn-options/>

# Premises PSTN and PBX interconnect

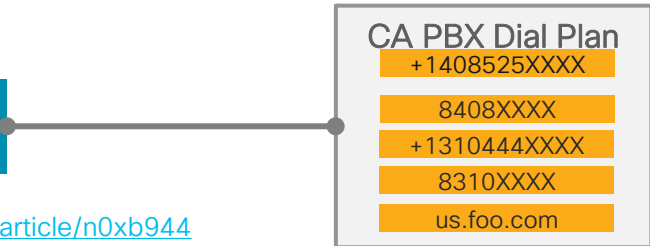
## Trunks

Represents a single SIP trunk to an on-premises device. Device can be registering (CUBE) or certificate based (CUBE + 3<sup>rd</sup> party) trunk

Must be assigned to a location. If used for PSTN the country dial plan is based on location address.

Can be included in one or more route groups or can be directly associated to a dial plan.

PSTN (SIP, ISDN, ...) decoupled



## Route groups

Logical grouping of trunks (max. 10) for scale and redundancy of connections to the premises

Does not “live” in a location

## Dial Plans

Dial plans allow you to route calls to on-premises destinations by use of trunks or route groups.

Specifies the routing choice (trunk or route group) for calls that match any of its dial patterns.

Dial pattern represents on-premises extensions; ESN/on-net numbers, +E.164 patterns, SIP URI domains.

<https://help.webex.com/en-us/article/n0xb944>

# Registering vs. Cert Based Trunk

Concurrent Calls	# of users serviced	Preferred Trunk Type	Connectivity
~2000 – 6500	65000	Certificate based	Interconnect
250 – 2000	20000	Certificate based	OTT
<= 250	2500	Registering trunk	OTT

## Connectivity specs

- OTT: max latency 100 ms, max jitter 10 ms, max packet loss 0.2 %
- Interconnect: max latency 30 ms, max jitter 5 ms, 0 packet loss

## Certificate based trunk requirements

- Public IPv4, domain, SRV
- Trusted certificate
- Inbound connections through firewall

<https://help.webex.com/en-us/article/n0xb944>

# Webex Calling PSTN: Cloud Connect for Webex Calling



- PSTN access through peering with a selection of Cloud Connected partners integrated into the Webex® Calling cloud
- Partner helps enterprise procure and provision PSTN
- Fully integrated option (number ordering from within Control Hub) available in the US
- Available to service providers who serve customers with locations outside of their PSTN footprint

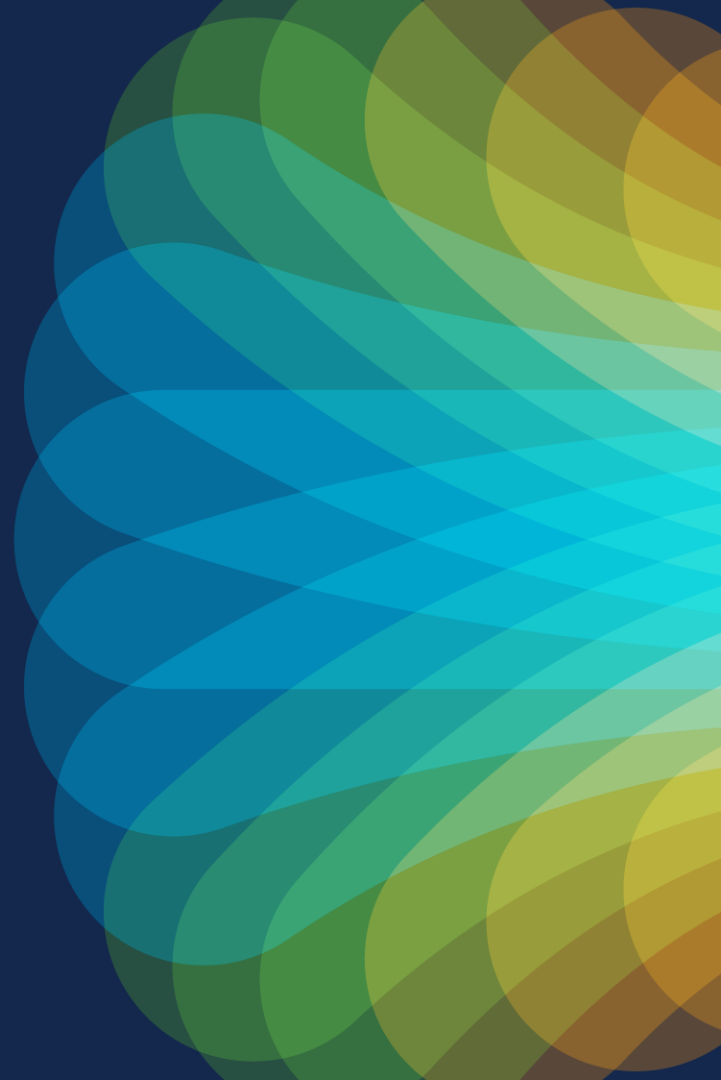
<https://community.cisco.com/t5/collaboration-knowledge-base/cloud-connect-for-webex-calling-global-availability/ta-p/3916211>

# PSTN Options - Comparison

Cloud PSTN (Cisco PSTN / Cloud Connect for Webex Calling)	Premises PSTN (Trunk, Local Gateway)
No invest in on-premises GW	re-use of existing PSTN
no maintenance for on-premises GW	interconnect with PBX
No PSTN media hair-pinning*	PSTN interconnect in markets not supported by Cloud PSTN options
Number orders potentially in-band (Cisco PSTN, fully integrated CCPP)	Number orders out of band

\*calls from Webex Calling endpoint to PSTN via Local Gateway anchored on Webex Calling access; ICE media path optimization possible if ICE negotiation w/ Local Gateway host candidate succeeds

# Regions



# Production Org & Data Residency

- Use Production Org for any migration

[Get Started with Cisco Webex Control Hub](#)

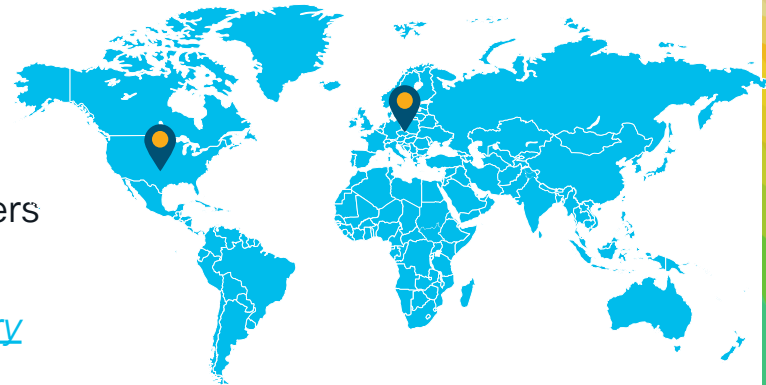
- Select the “best” Webex GEO for Data Residency during provisioning

- Org data, user identities, encryption keys, and user-generated content is stored in the Webex “geo-based” data centers

[Data residency in Webex App](#)

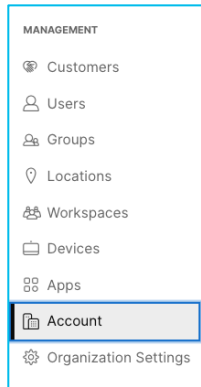
- Geos: North America/”Rest of World” or Europe
  - EU datacenters (Frankfort/Amsterdam) – EU customers
  - UK datacenters (London/Amsterdam) – still available

[Find the Data Residency Region That Maps to a Country](#)



# Content Storage & Data Location

- Verify Webex Org's Data Locations (*on Account page Info tab*)



Data Type	Covered Data	Data Location
> Meetings	Recordings, transcripts, files, meeting titles, attendee names and emails, and user profiles in Webex site administration portal	United States
Messaging	Messages, files, avatars, spaces, and organization metadata	United States
Common application data	All Webex identity platform data, such as full user profiles, user groups, and other organization settings	United States

Three blue arrows point from the 'United States' data location column to the right side of the slide.



# Webex Calling Region Selection


- Country of first calling location (HQ) **defines the regional platform** of the “Home” calling region
  - All signaling traffic is routed to the “Home” region
  - All calling data is stored in the “Home” region
  - Selected during Partner provisioning of a new org or when adding the first calling location to an existing org
- Country/Region **selection criteria**:
  - Where majority of the users reside (lowest delay in signaling traffic)
  - To comply with any data residency requirements
- Regional platform **cannot** be changed the after initial creation

The screenshot shows a configuration window with a progress bar at the top containing three steps: 'Set up Location' (selected), 'Review', and 'Done'. The main heading is 'Set up your headquarter's location'. Below the heading is a paragraph of instructions: 'The country or region with the majority of your users is your headquarter's 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 headquarter's address any time in Control Hub.' There are two radio button options: 'Choose from existing locations' (selected) and 'Add new'. Under the selected option is a dropdown menu with the text 'Select a Location' and a downward arrow.

# Webex Calling Region Selection

- Verifying “Home” Region
- Check Registrar domain of:
  - Dummy trunk
  - Existing trunk

### Add Trunk



HQ-Trunk1 Successfully Created.

Visit [Route Group](#) page to add trunk(s) to a route group.  
Visit [Locations](#) page to configure PSTN connection to individual locations.  
Visit [Dial Plans](#) page to use this trunk as the routing choice for a dial plan.

**Trunk Info**

Status	Line/Port
● OFFLINE	HQ-Trunk18501_LGU@17591320.us10.bcld.webex.com
Trunk Group OTG/DTG	Authentication Information
hq-trunk13666_lgu	Record the username and password below. If you lose this information, you need to retrieve the username and reset the password.
Outbound Proxy Address	Username: <input type="text"/>
dfw09.slpcconnect-us.bcld.webex.com	Password: <input type="password"/>
Registrar Domain	
17591320.us10.bcld.webex.com	

## Calling

Numbers Locations Virtual Lines **New** Call Routing Managed Gateways Features PSTN Service Settings Client Settings

Trunk Route Group Dial Plans Verify Call Routing Zone Trusted Network Edge

### Trunk

SIP trunks provide connectivity to a customer-owned PSTN service and to an on-premises IP PBX deployment. These were previously accessed via the Local Gateway configuration page.

Name	Location	Trunk Type	In Use
HQ-Trunk1	HQ	Registration based	No

### HQ-Trunk1

Trunk > Details

Status  
● Offline

Trunk Type  
Registration based

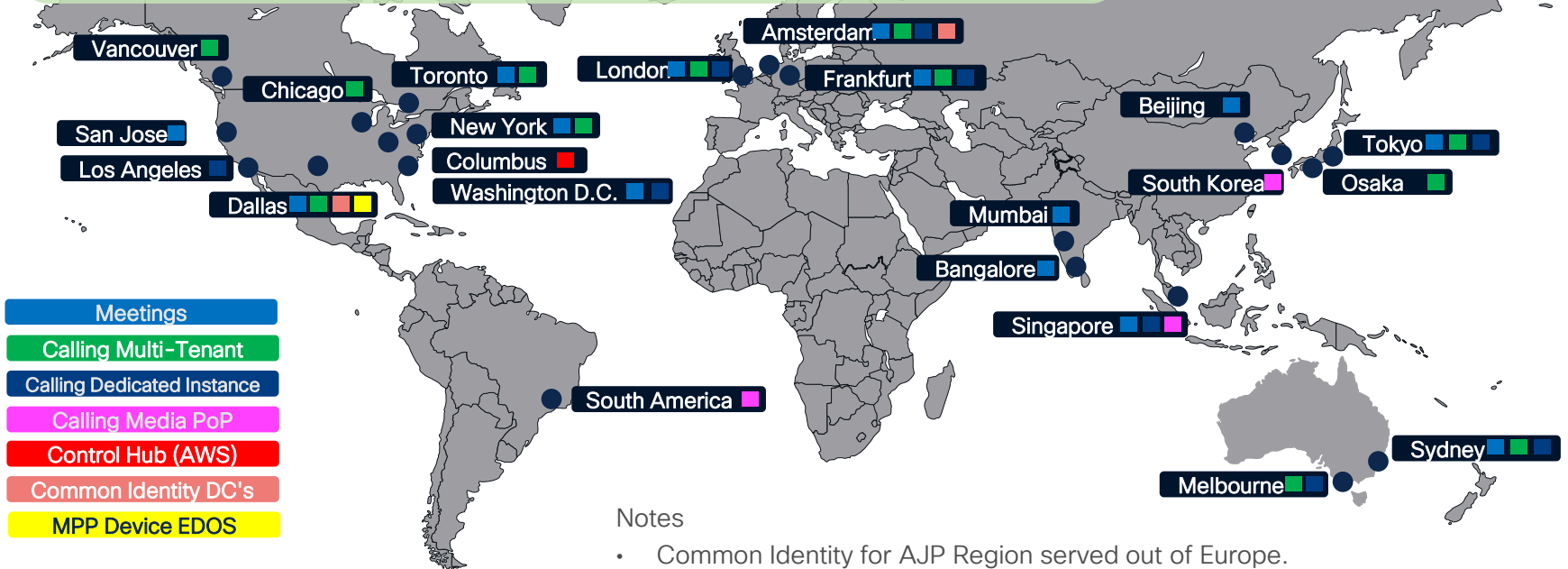
Device  
Cisco CUBE Local Gateway

Registrar Domain  
17591320.us10.bcld.webex.com

Trunk Group OTG/DTG  
hq-trunk13666\_lgu

# Webex Global Data Center Footprint

Global platform offers services to multinational customers from a single region  
 Global backbone purposely designed for audio and video transport Low loss 100+ Gigabit interconnectivity with multiple redundant paths



## Notes

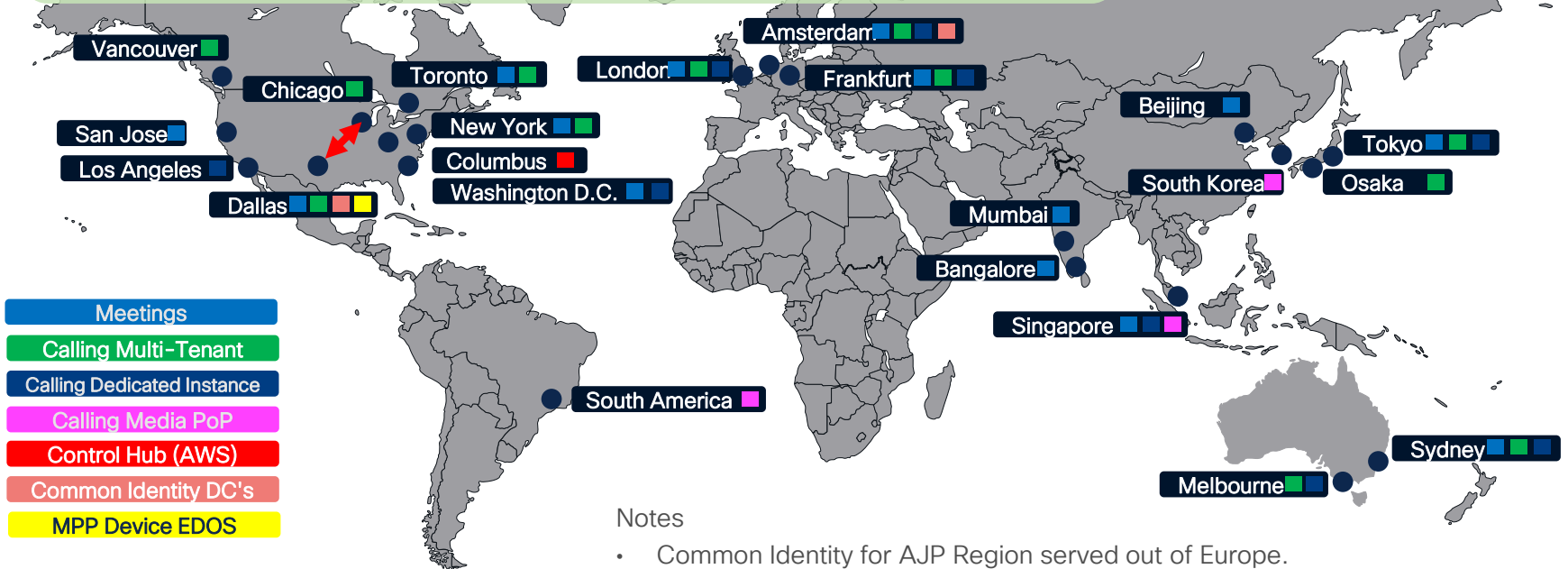
- Common Identity for AJP Region served out of Europe.
- Cities with multiple services may have these services across multiple DC's

Learn more: [Global availability overview](#)



# Webex Global Data Center Footprint (US)

Global platform offers services to multinational customers from a single region  
 Global backbone purposely designed for audio and video transport Low loss 100+ Gigabit interconnectivity with multiple redundant paths



## Notes

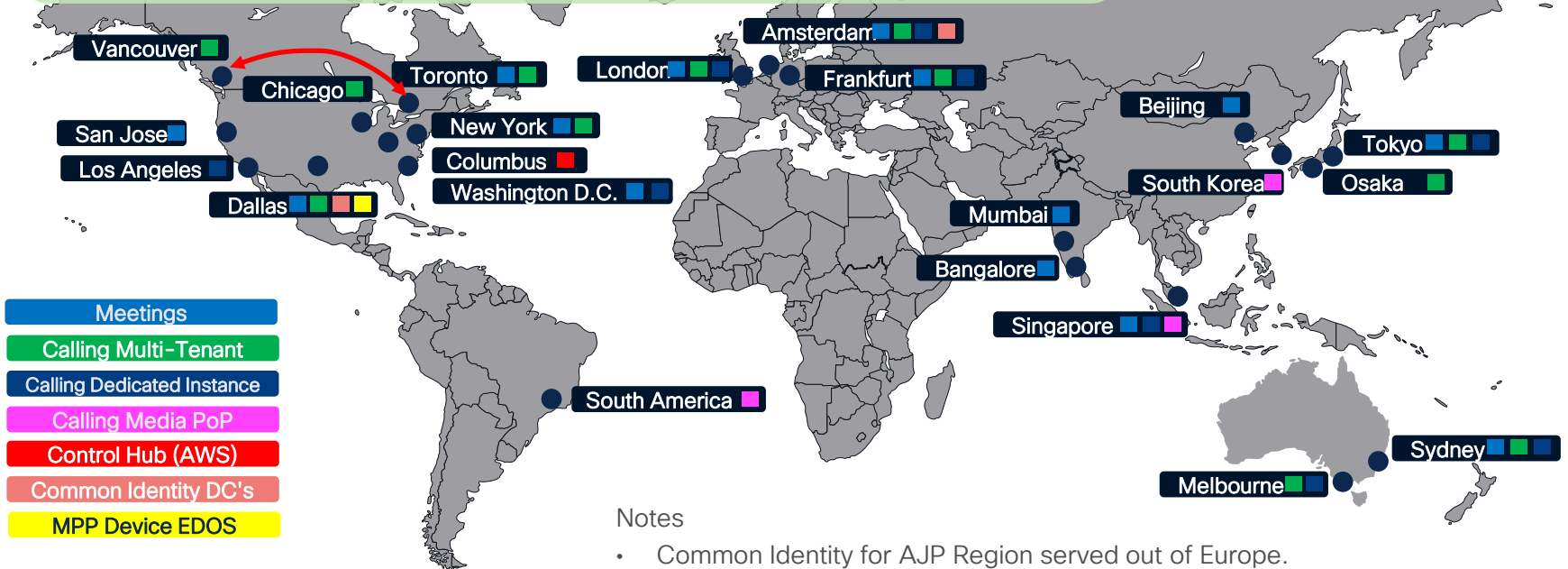
- Common Identity for AJP Region served out of Europe.
- Cities with multiple services may have these services across multiple DC's

Learn more: [Global availability overview](#)



# Webex Global Data Center Footprint (CA)

Global platform offers services to multinational customers from a single region  
 Global backbone purposely designed for audio and video transport Low loss 100+ Gigabit interconnectivity with multiple redundant paths



## Notes

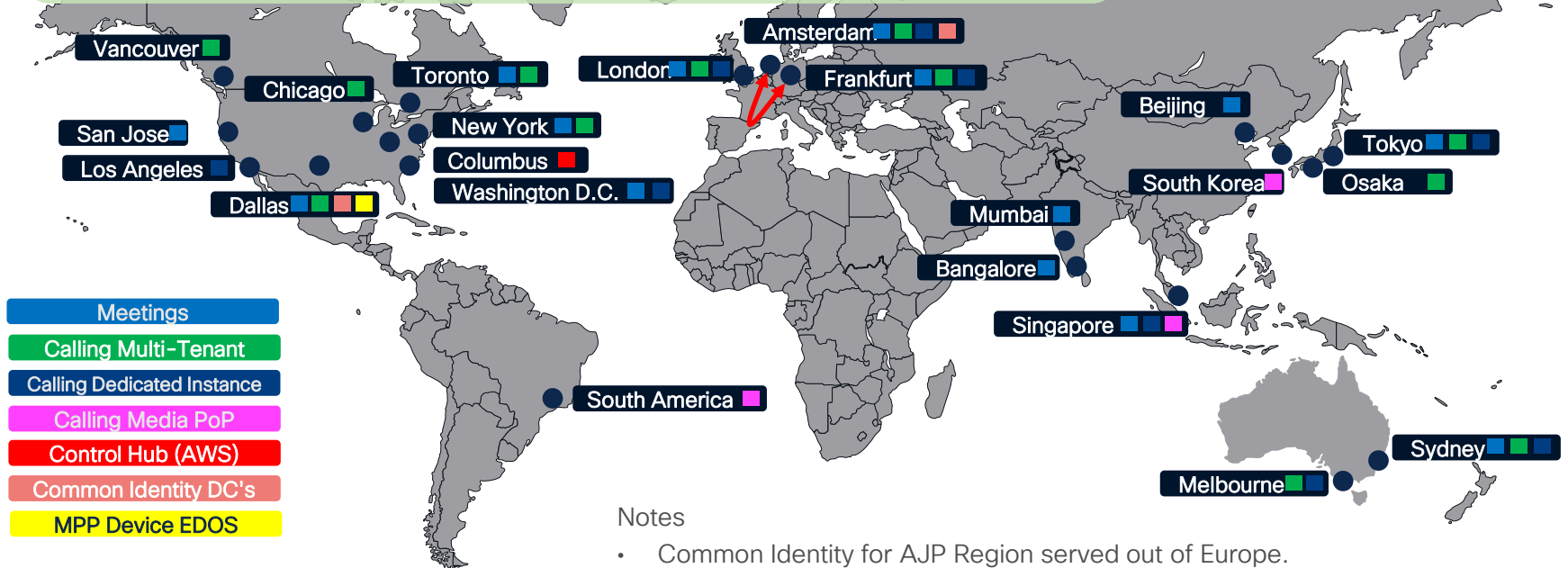
- Common Identity for AJP Region served out of Europe.
- Cities with multiple services may have these services across multiple DC's

Learn more: [Global availability overview](#)



# Webex Global Data Center Footprint (EUN)

Global platform offers services to multinational customers from a single region  
Global backbone purposely designed for audio and video transport Low loss 100+ Gigabit interconnectivity with multiple redundant paths



## Notes

- Common Identity for AJP Region served out of Europe.
- Cities with multiple services may have these services across multiple DC's

Learn more: [Global availability overview](#)



# Webex Global Data Center Footprint (EU)

Global platform offers services to multinational customers from a single region  
 Global backbone purposely designed for audio and video transport Low loss 100+ Gigabit interconnectivity with multiple redundant paths



- Meetings
- Calling Multi-Tenant
- Calling Dedicated Instance
- Calling Media PoP
- Control Hub (AWS)
- Common Identity DC's
- MPP Device EDOS

## Notes

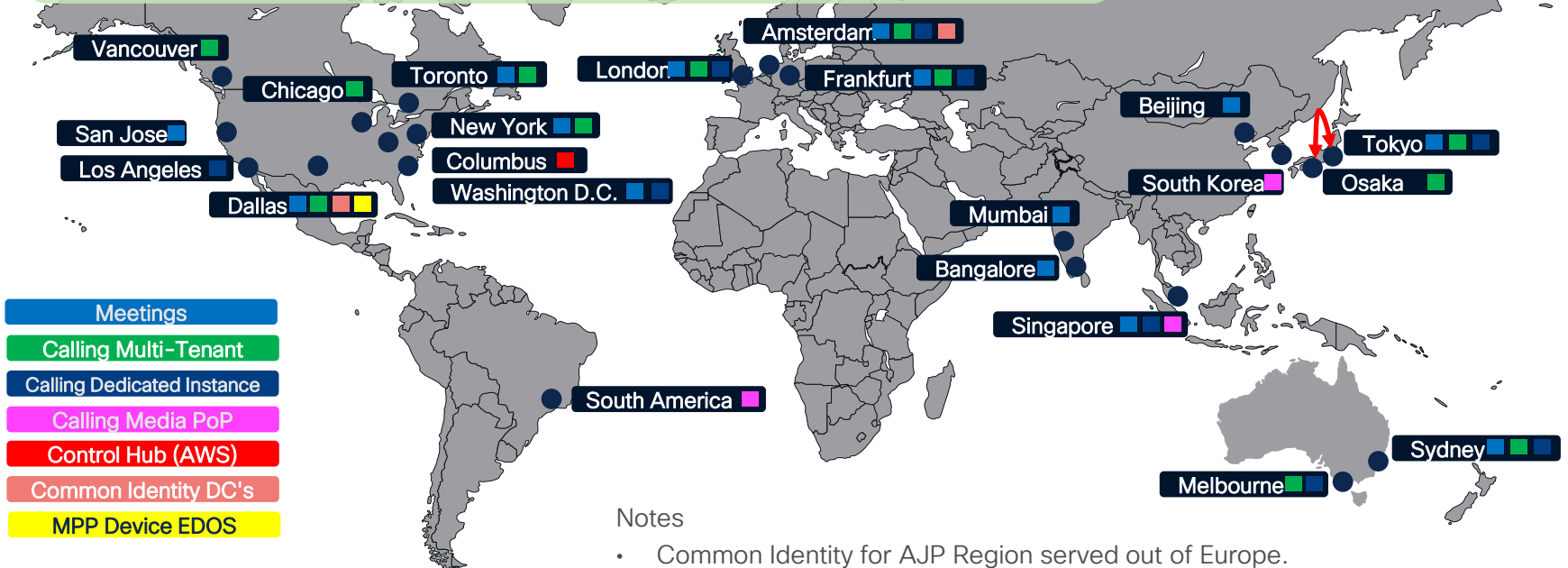
- Common Identity for AJP Region served out of Europe.
- Cities with multiple services may have these services across multiple DC's

Learn more: [Global availability overview](#)



# Webex Global Data Center Footprint (APAC)

Global platform offers services to multinational customers from a single region  
 Global backbone purposely designed for audio and video transport Low loss 100+ Gigabit interconnectivity with multiple redundant paths



## Notes

- Common Identity for AJP Region served out of Europe.
- Cities with multiple services may have these services across multiple DC's

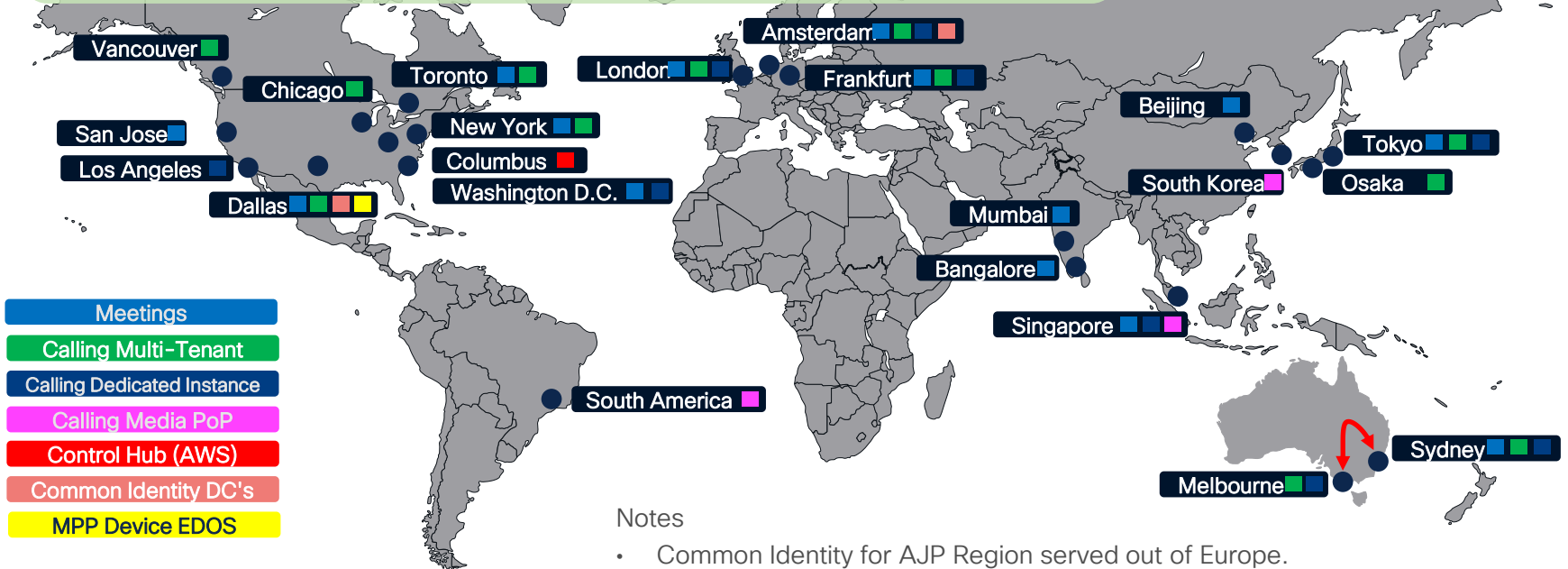
Learn more: [Global availability overview](#)





# Webex Global Data Center Footprint (AU)

Global platform offers services to multinational customers from a single region  
 Global backbone purposely designed for audio and video transport Low loss 100+ Gigabit interconnectivity with multiple redundant paths



## Notes

- Common Identity for AJP Region served out of Europe.
- Cities with multiple services may have these services across multiple DC's

Learn more: [Global availability overview](#)



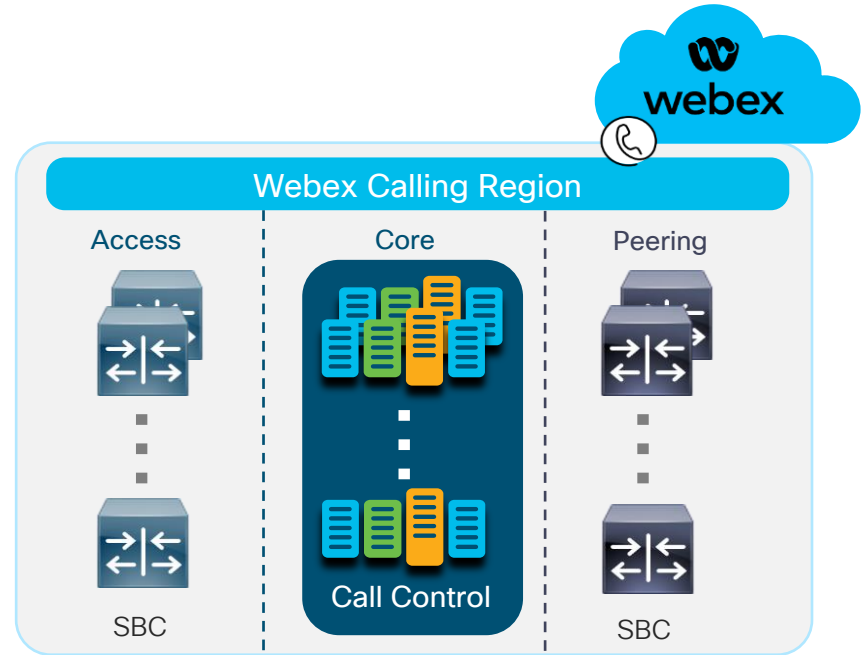
# Webex Calling regional scaling

Core call control scales horizontally

- Leveraging micro services to quickly deploy/expand

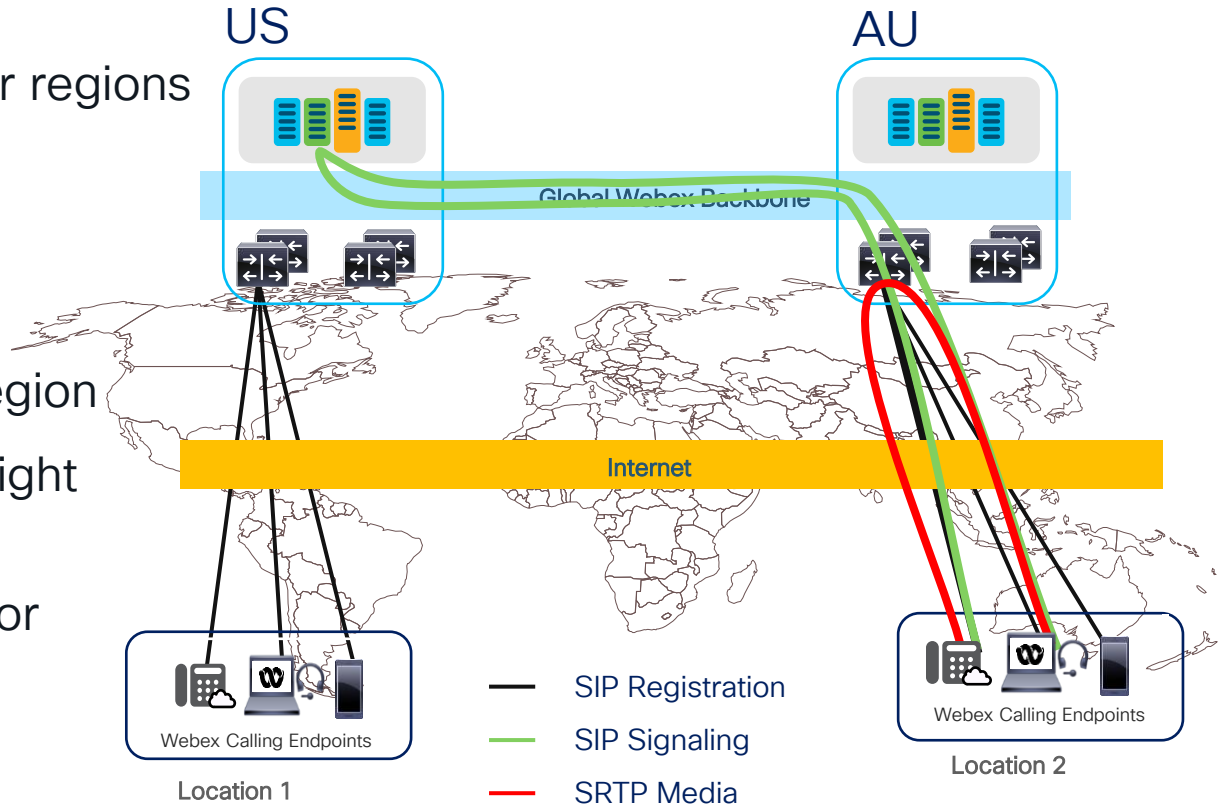
SBC Resources are separated from Access and Peering

- Access for Endpoints and Local Gateways
- Peering for CCPP integration to PSTN
- Access and Peer SBCs scale horizontally



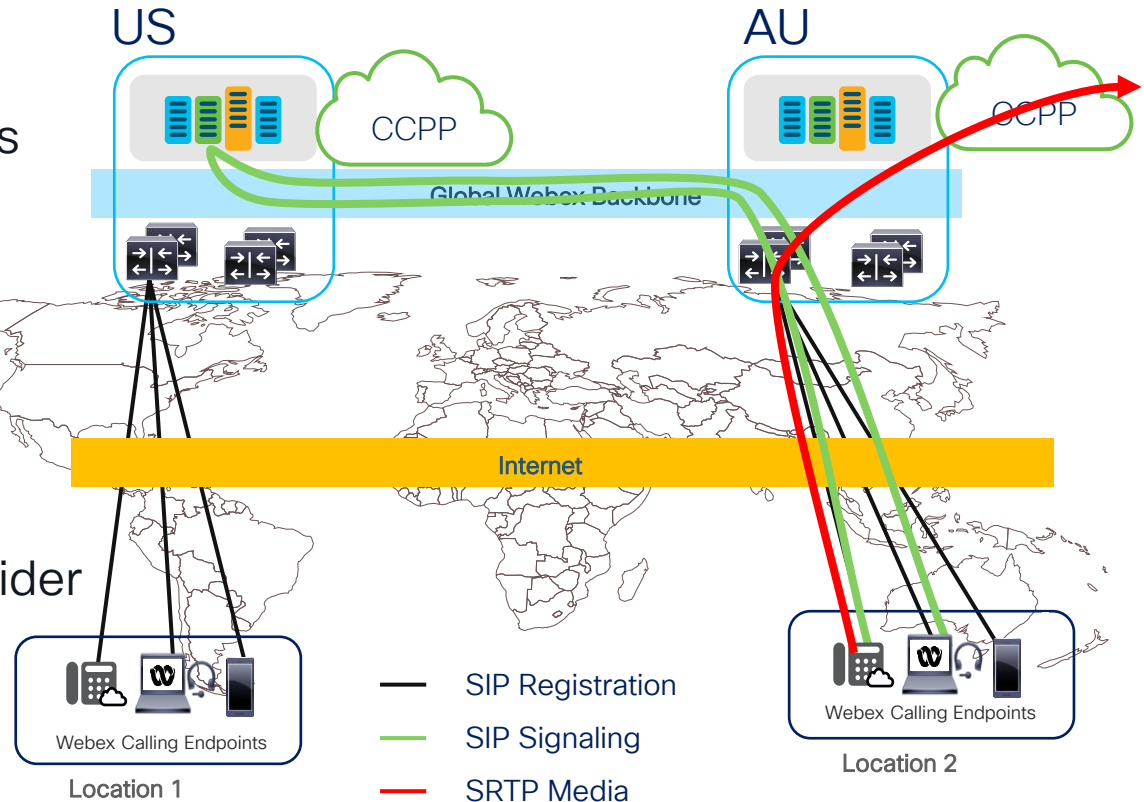
# Multi-region customer: Regional media

- Access SBCs in other regions can be used
- In-region registration
- In-region media
- Signaling still inter-region
- Cut-through delay might still occur
- Media RTT not a factor



# Multi-region customer: Regional media for Cloud Connected PSTN

- Locations in home region can use all PSTN providers available in home region
- New: locations in remote region can use PSTN providers available in remote region
- PSTN media traffic stays within region if PSTN provider in remote region is used



# Example Media POP: Singapore

- Two full Webex Calling deployments in APJC
  - JP: Osaka, Tokyo
  - AU: Sydney Melbourne
- Challenge: APAC region too large to keep RTT within acceptable bounds
- Media POP in Singapore
  - Access: endpoint and Local Gateway registration, failover to JP (Osaka, Tokyo)
  - Peering: trunks to Cloud Connected PSTN providers
  - Media services (VM, conferencing)
  - Call Recording: local media server, call recording leg to JP (Osaka, Tokyo)



# Service restrictions in India

The Webex Calling partner is responsible for the regulatory compliance of its customers

Cisco would not require a license from India regulators to provide service from Webex Calling APJC data centers.

1. Logical partitions enabled for on-net calling (to adhere to India toll-bypass regulations)
2. For International OSP's, a copy of CDRs and system logs must be available at the International OSP premise based in India. Additional DoT guidelines for OSPs: [LINK](#)

All logical partitioning letters can be requested via these URLs:

- Non-Service Provider: [LINK](#)
- Service Provider: [LINK](#)



# Service restrictions in China

The Webex Calling partner is responsible for the regulatory compliance of its customers

The following analysis applies if Cisco® sold direct to a customer. The same analysis could be applied by partners.

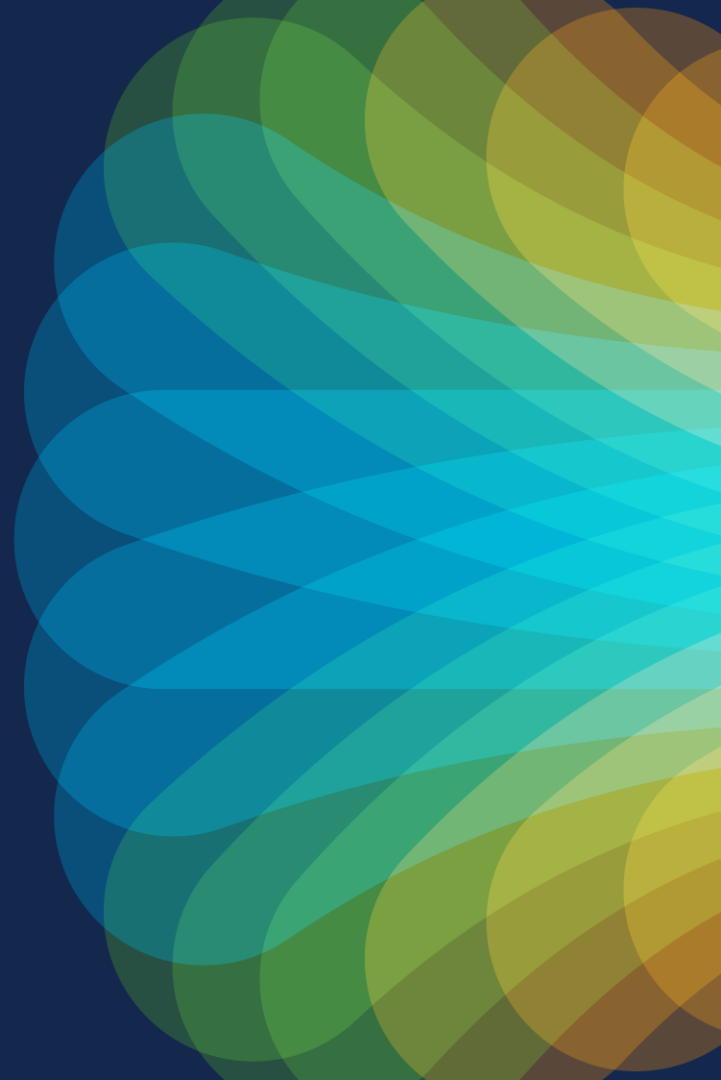
Cisco would not require a license from Chinese regulators provided that:

1. Sale is to multinational customers headquartered outside of China for use in branch offices in China.
2. Sales or marketing is not targeted at customers based in China, rather, we sell and market to multinationals who use the service globally.
3. Data transmission capacity is not provided (PSTN, leased circuits, etc.) in connection with the offer
4. Does not operate from a data center or other infrastructure located in China.

Our Chinese counsel confirms that the regulator would conclude this does NOT constitute providing a Telecom Service if the criteria listed above is met.

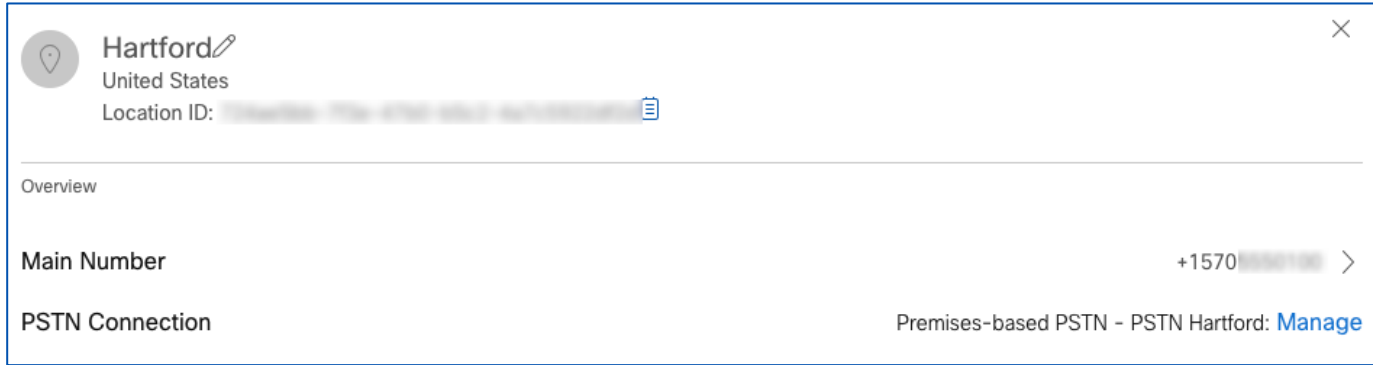





# Location Considerations






# PSTN Integration



Hartford   
United States  
Location ID:  

---

Overview

Main Number +1570  >

PSTN Connection Premises-based PSTN - PSTN Hartford: [Manage](#)

- PSTN defined at the location level
- One PSTN choice per location (Cisco PSTN, CCPP, Premises PSTN)
- All PSTN calls originating from location use same PSTN
- Location main number is required for any calls to/from location.

# Emergency Calling

Two options to handle emergency calls:

- ~~Enhanced emergency (E911) service~~
  - ~~Dynamic; support roaming devices → Nomadic E911 service~~
  - ~~Only available in US/CAN~~
  - ~~Uses RedSky: <https://www.redskye911.com/e911-for-cisco-webex>~~
  - ~~<https://help.webex.com/en-us/article/av6oo3/Enhanced-Emergency-Calling-for-Webex-Calling>~~
- Emergency Callback Number (ECBN) based
  - Static configuration of ECBN per location (per user override)
  - <https://help.webex.com/en-us/article/nzqvtyq/Emergency-Callback-Number-in-Control-Hub>

# Emergency Callback Number

- Set at location level
  - Can be main number
  - ... or any other assigned (and active) number in that location
- User level override
- Recommendations:
  - for users with phone number use that as ECBN
  - For users w/o phone numbers multiple ECBNs can exist within (large) locations
  - ECBNs must be live answering points (be careful with IVRs, queues, AAs, ...)

### Emergency Callback Number (ECBN)

Choose which phone number will be the default ECBN for a user without a phone number.

Use location main number: +1570555 [REDACTED] (Hartford)

Use assigned number from this location

+1575555 [REDACTED] (Anita Hunt) ▼

### Lester Ray

Active • jlester@csiro.com • Location: Hartford

Profile General Meetings **Calling** Messaging Hybrid Services

< Calling

Emergency callback number

User's phone number: +1570 [REDACTED]

Location default ECBN: +1570 [REDACTED]

Assigned number from user's location

+1570555 [REDACTED] (Tomothy St... ▼)

# Feature / Location Dependencies

Calling features are configured at the location level ... and many features still work across locations

- **Numbers/extensions** – All numbers are accessible between locations. If an extension overlap exists, site codes can be used to allow extension dialing between locations.
- **Auto Attendants** – Assigned to a location, search scopes can be defined per Location or globally
- **Hunt Groups / Call Queues** – Assigned to a location, agents can be assigned from any location
- **Single Number Reach** – Assigned to a location, user access can be defined per Location or globally.
- **Paging Group** – Assigned to a location, paging targets and originators can be assigned from any location.
- **Receptionist Client** – Assign via user, searched filter available based on location.
- **Virtual Extension** – Can be defined per Location or globally.
- **Voicemail Group** – Assigned to a location and uses location voicemail settings. Any number within the customer can forward to the voicemail if required.

# Features with Cross Location Limitations

## Call Park

- **Call Park Extensions** – Call Park is used for a network hold and allows a user to park a call against an available user's extension or to a Call Park Extension
  - Call Park Extensions are configured within a specific location
  - Any user from any location can unpark the parked call (provided the extension is accessible)
  - Location level parameters for recall (parking user, hunt group, user/hunt), timers and ring pattern
- **Call Park Group** – The Call Park Group service allows a defined group of users to automatically park calls against other available members of a call park group
  - The members of this group can only be from the same Location and can be in a single group
  - Any user within the ORG can answer the parked call
  - Location level parameters for timers and ring pattern for parked calls
  - Call Park Group defines the recall options (parking user, hunt group, user/hunt)

# Features with Cross Location Limitations

## Call Pickup

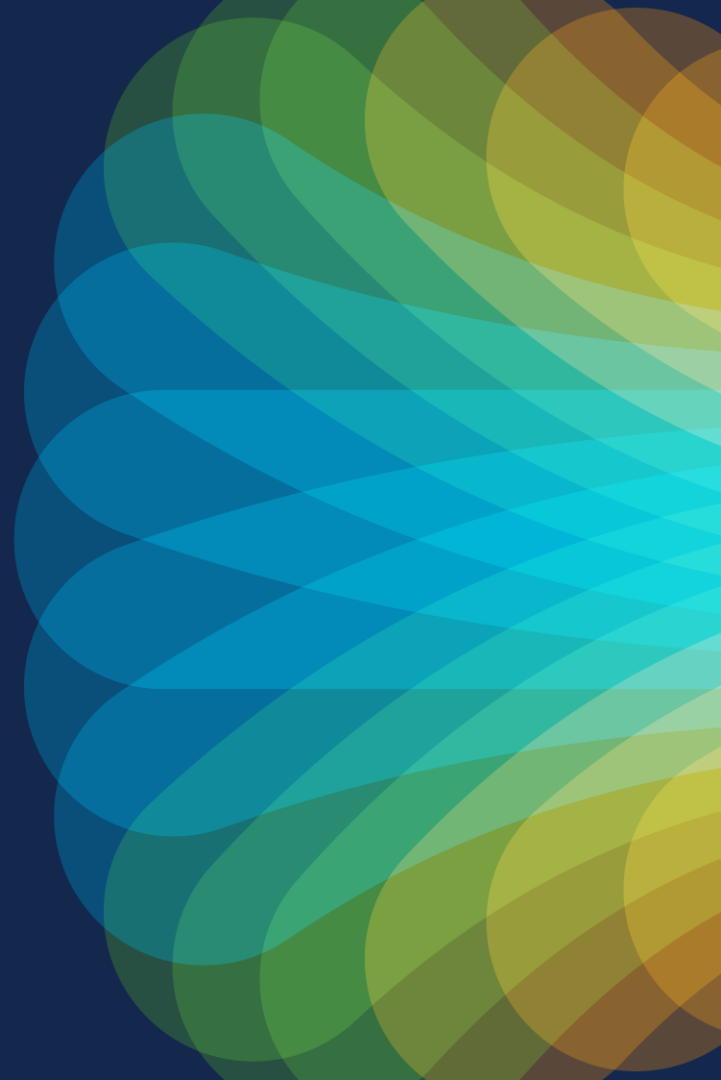
- **Call Pickup** – Users that are added to a call pickup can answer calls when another member of the call pickup is busy.
  - A user can only be assigned to one call pickup. A location may have multiple call pickups
  - A call pickup can only have users from the same location
  - Call Pickup requires FAC for use in Webex Calling; default Pickup softkey uses Directed Call Pickup
  - Directed call Pickup works across all locations



# Per Location Scale

- Users & workspaces – 30k combined
- Numbers – No hard limits, recommended: less or equal 3 times the number of users
- Trunks – 100
- Auto Attendants – 1000
- Virtual Extension – 1000
- Hunt Group – 1000
- Call Queue – 1000
- Authorization Codes – 1000
- Call Park Extensions – 100
- Call Pickup Groups – 1000

# Dialing / Call Routing





# Webex Calling Dialing Habits

- Extension dialing: 2-6 digits (default 4)
  - Inter- and intra-site; inter-site requires unique extensions
- ESN (Location routing prefix + user extension) using an optional location code: up to 7 digits
- +E.164
  - Telephone numbers defined in the Webex Calling system. Always resolvable by +E164 dialing
- PSTN
  - PSTN destinations defined by pre-loaded Country Dial Plans
  - Optional outside steering digit (outside access code, OAC) to avoid overlaps between PSTN and enterprise dialing habits

**Dial plans by country**

Outbound calling regulates behavior for calls placed to various destination types. Select your continent and then country to find your outbound and emergency dial plans. In the Dial Plan table for some countries, the period denotes flexibility in number lengths within certain dial plans. For example, in the case of the dial plan entry '086xxxxx', the period signifies that the number sequence can vary in length, accommodating more than just a fixed set of digits.

Africa Asia Australia North America **Europe** Central America

South America

Albania

Austria

Belgium

Bosnia and Herzegovina

Bulgaria

Croatia

Cyprus

Czech Republic

Denmark

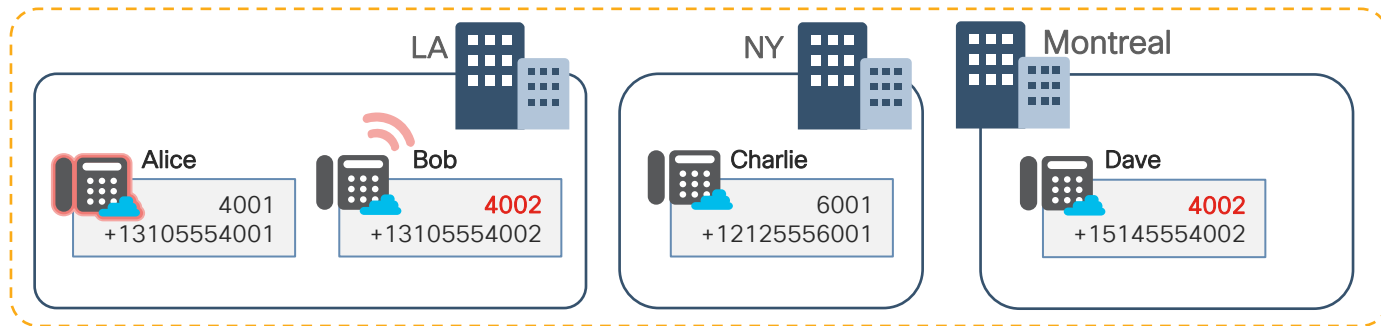
Estonia

<https://help.webex.com/en-us/article/757iyo/Dial-plans-by-country>

# Understanding location codes

- What if extension ranges of sites overlap?
  - No extension dialing between sites
  - Alice can call Bob and Charlie using extension dialing
  - Alice cannot call Dave using extension dialing
  - What if Charlie dials 4002?

## Widgets, Inc.

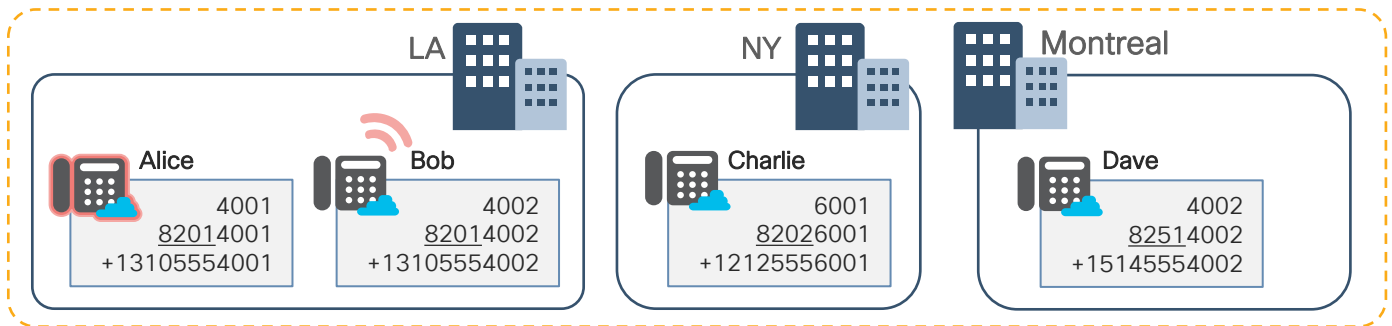


# Understanding location codes

- Solution: add location codes
  - Need to be unique!
  - Inter-site dialing using location code + extension
  - Location code + extension is unique
- Alice can call Dave (and the other users) using inter-site dialing

Location	Location Code
LA	8201
NY	8202
Montreal	8251

## Widgets, Inc.



# Enterprise Best Practices

- Goal: optimize dial plan handling in phones to minimize timeouts
  1. Outbound dialing digit (for example 9)
    - Per location
  2. Internal steering digit for inter-site (for example 8)
    - Different from PSTN
  3. Uniform location code length (for example 4)
    - Location code includes leading internal steering digit!
  4. Uniform extension length (for example 4)
- Uniform inter-site dialing: steering digit – location id – extension
  - Example: 8-496-9764

# Enterprise Best Practices

- Goal: optimize dial plan handling in phones to minimize timeouts
  - 1. **Outbound dialing digit (for example 9)**
    - **Per location**
  - 2. Internal steering digit for inter-site (for example 8)
    - Different from PSTN
  - 3. Uniform location code length (for example 4)
    - Location code includes leading internal steering
  - 4. Uniform extension length (for example 4)
- Uniform inter-site dialing: steering digit – location code – extension
  - Example: 8-496-9764

**Edit External Dialing for Dallas**

**Outbound Dialing**

**Outbound Dial Digit**

Specify the number which users must dial before placing an external call.  
8 is set as the internal dialing steering digit and cannot be used as the outbound digit.

9

1  
2  
3  
4  
5  
6  
7  
9

**Dialing Preview**

Format for external dialing

9 - (external number)

Cancel Save

# Enterprise Best Practices

- Goal: optimize dial plan handling in phones to minimize timeouts
  1. Outbound dialing digit (for example 9)
    - Per location
  2. Internal steering digit for inter-site (for example 8)
    - Different from PSTN
  3. Uniform location code length (for example 4)
    - Location code includes leading internal steering digit!
  4. Uniform extension length (for example 4)
- Uniform inter-site dialing: steering digit – location i
  - Example: 8-496-9764

### Edit Internal Dialing

**Routing Prefix**  
The format of the digits used for all location routing prefixes.

**Location Routing Prefix Length**  
Choose the number of digits to be used to connect with users at other locations.

4

**Set Steering Digit in Routing Prefix**  
Choose the number which will be set as the first digit of every routing prefix.

8

**Extension**  
The format of the digits used for extensions within locations.

**Internal Extension Length**  
Choose the number of digits for an internal call.

4

**Dialing Preview**  
Format for internal dialing digits

8XXX - XXXX

Routing Prefix    Extension

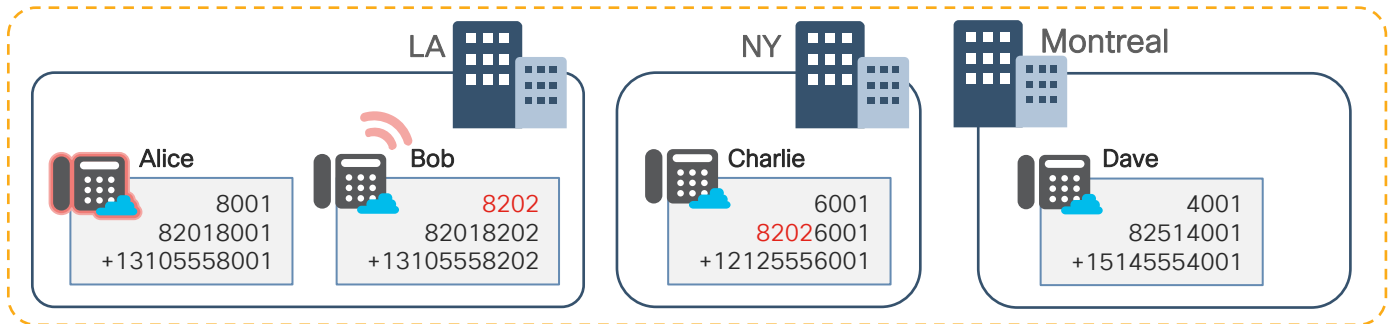
Cancel    Save

# Conflicts

- To avoid timeouts conflicts need to be avoided between:
  - First digit of extensions
  - Internal steering digit
  - Outbound dial digit
- Example: steering digit 8, 4D extensions, 4D location code
- What if Alice lifts the handset and starts to dial 8, 2, 0, 2? Bob, Charlie?

Location	Location Code
LA	8201
NY	8202
Montreal	8251

## Widgets, Inc.



# Webex Calling Call Routing

- Three phases
  - Source classification
    - Type of call: user, premises, external
  - Destination selection
    - Where to send the call to: user, premises, PSTN, ...
  - Screening and routing
    - Is this call allowed?



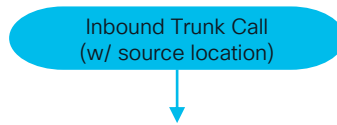
# Source Classification

Call from	Classified as
Room devices, MPP, Webex app	User
Cloud PSTN (Cisco Calling Plan or Cloud Connect for Webex Calling)	External (PSTN)
Trunk (Local GW)	Premises or External*
Webex Calling Dedicated instance	User or External*

\*based on calling party number (or diversion header if present) and configuration settings

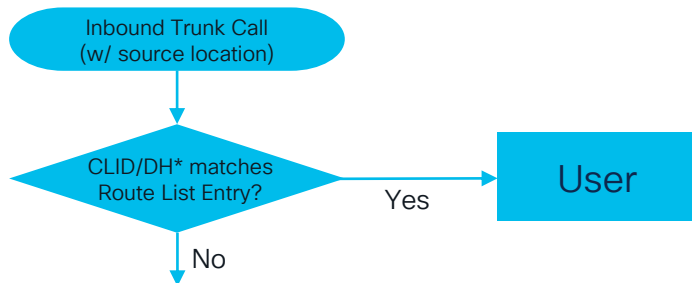
# Source Classification

Calls from Local Gateway or Webex Calling DI



# Source Classification

Calls from Local Gateway or Webex Calling DI



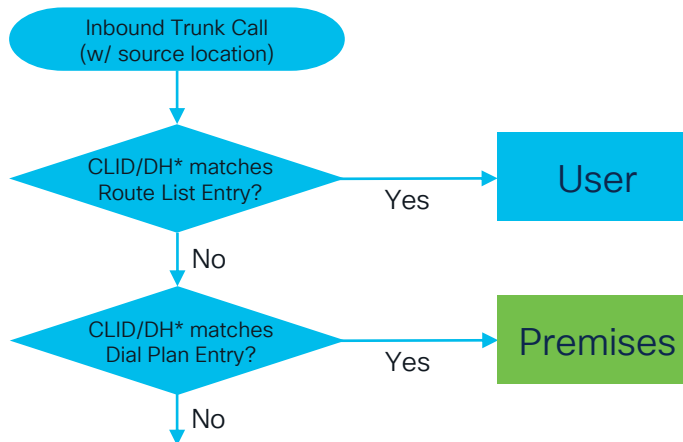
Number in Diversion header used if present, if not number in From header is used

```
INVITE sip:89943702@peering3.us.sipconnect.bcld.webex.com:5062 SIP/2.0
Via: SIP/2.0/TLS 64.102.250.137:5061;branch=z9hG4bK8BF831C1E
From: <sip:+19194766200@64.102.250.137>;tag=FD340CF9-200D
To: <sip:89943702@peering3.us.sipconnect.bcld.webex.com>
Call-ID: 2EB7BD48-EF7111ED-B8429147-F554AD62@64.102.250.137
Supported: timer,resource-priority,replaces
Min-SE: 1800
User-Agent: Cisco-SIPGateway/IOS-17.10.1a
Allow: INVITE, OPTIONS, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY, INFO, REGISTER
CSeq: 101 INVITE
Contact: <sip:+19194766200@svs-rtp-dmz-cube9a.cube.ecatslab.com:5061;transport=tls>
Diversion: <sip:89915678@svs-rtp-dmz-cube9a.cube.ecatslab.com>
Expires: 180
Max-Forwards: 68
... snip ...
```

\* CLID = Calling Party ID  
DH = SIP Diversion Header

# Source Classification

Calls from Local Gateway or Webex Calling DI



# Source Classification

Calls from Local Gateway or Webex Calling DI

## Org-wide unknown number handling

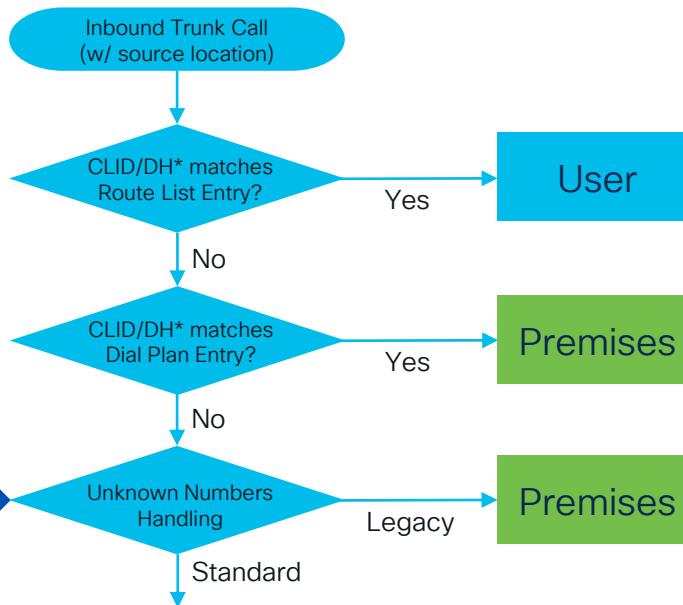
Standard behavior

This is the default and recommended option to achieve the best level of interoperability with an on-premises PBX.

[Show Details](#) ▾

Legacy behavior (not recommended)

This option provides backwards compatibility for the legacy Local Gateway behavior and is not recommended when Dial Plans are configured for the organization.



\* CLID = Calling Party ID  
DH = SIP Diversion Header

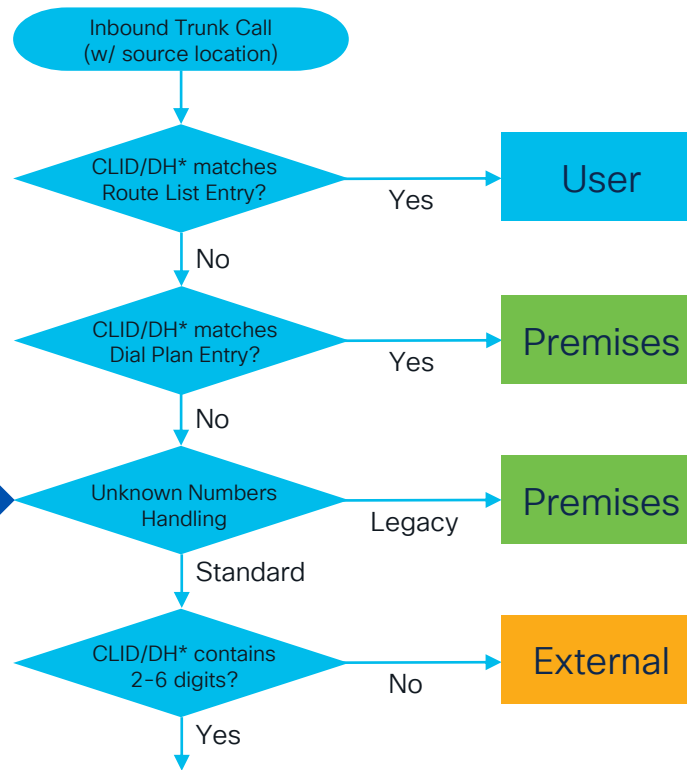
# Source Classification

Calls from Local Gateway or Webex Calling DI

## Org-wide unknown number handling

Standard behavior  
This is the default and recommended option to achieve the best level of interoperability with an on-premises PBX.  
[Show Details](#) ▾

Legacy behavior (not recommended)  
This option provides backwards compatibility for the legacy Local Gateway behavior and is not recommended when Dial Plans are configured for the organization.



\* CLID = Calling Party ID  
DH = SIP Diversion Header

# Source Classification

Calls from Local Gateway or Webex Calling DI

## Org-wide unknown number handling

Standard behavior

This is the default and recommended option to achieve the best level of interoperability with an on-premises PBX.

[Show Details](#) ▾

Legacy behavior (not recommended)

This option provides backwards compatibility for the legacy Local Gateway behavior and is not recommended when Dial Plans are configured for the organization.

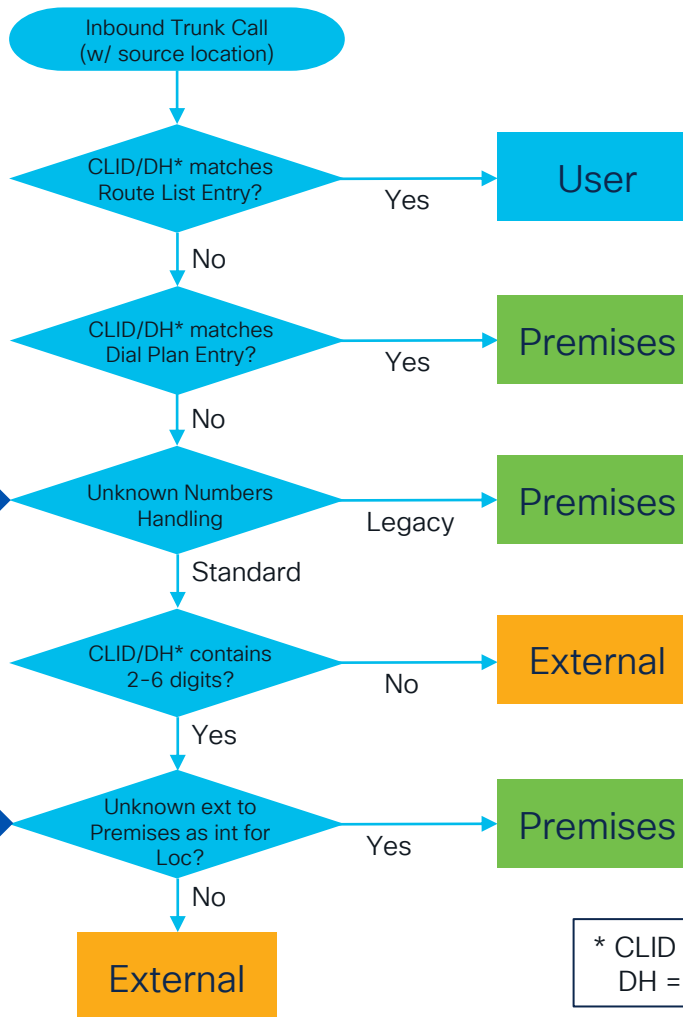
## Trunk Location Configuration

Calls to On-Premises Extensions

If some users in this location are registered to a PBX, enable this setting to route unknown extensions (digits that match with the extension length) to the PBX.

Enable routing unknown extensions to the Premises as internal calls

VNT Alpha RG ▾



\* CLID = Calling Party ID  
DH = SIP Diversion Header

# Source Classification

Calls from Local Gateway or Webex Calling DI

With "legacy behavior" incoming calls will never be classified as "External"! Breaks features that rely on call types.

## Org-wide unknown number handling

Standard behavior

This is the default and recommended option to achieve the best level of interoperability with an on-premises PBX.

[Show Details](#) ▾

Legacy behavior (not recommended)

This option provides backwards compatibility for the legacy Local Gateway behavior and is not recommended when Dial Plans are configured for the organization.

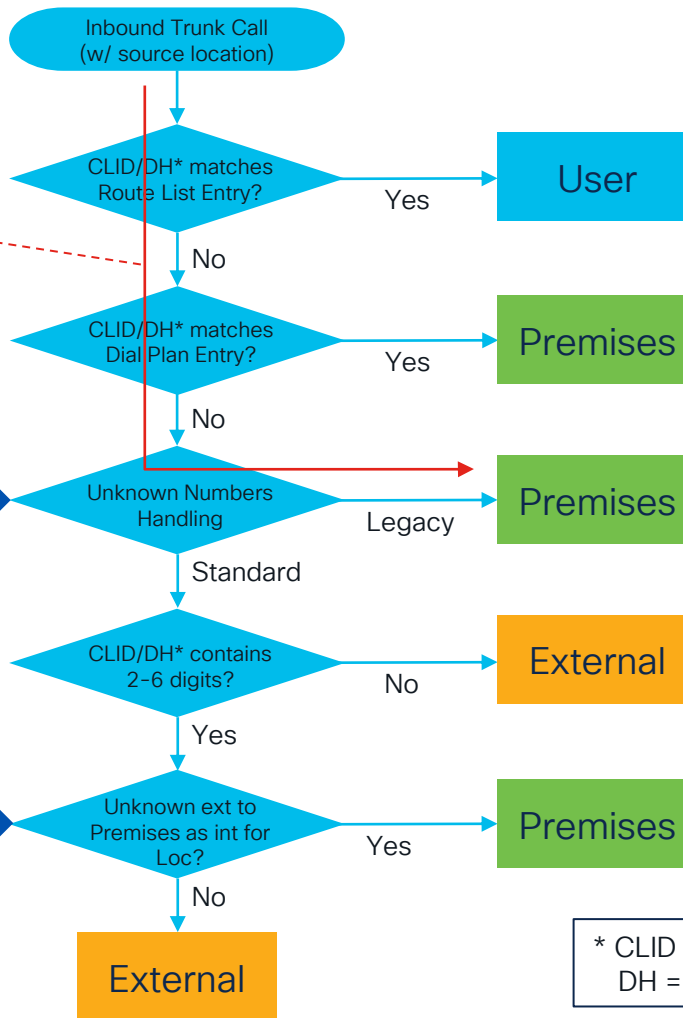
## Trunk Location Configuration

Calls to On-Premises Extensions

If some users in this location are registered to a PBX, enable this setting to route unknown extensions (digits that match with the extension length) to the PBX.

Enable routing unknown extensions to the Premises as internal calls

VNT Alpha RG ▾



\* CLID = Calling Party ID  
DH = SIP Diversion Header



# Source Classification

Calls from Local Gateway or Webex Calling DI

With “legacy behavior” incoming calls will never be classified as “External”! Breaks features that rely on call types.

## Org-wide unknown number handling

### Standard behavior

This is the default and recommended option to achieve the interoperability with an on-premises PBX.

[Show Details](#)

### Legacy behavior (not recommended)

This option provides backwards compatibility for the legacy Gateway behavior and is not recommended when Dial Plans configured for the organization.

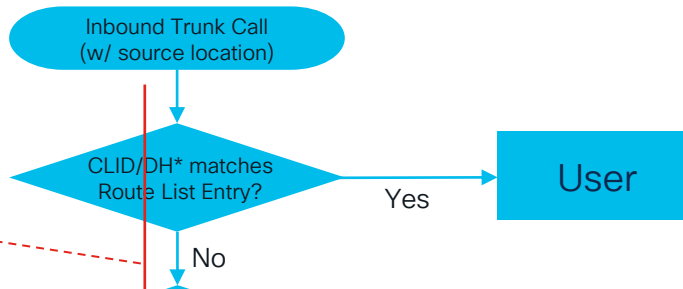
## Trunk Location Configuration

### Calls to On-Premises Extensions

If some users in this location are registered to a PBX, enable this setting for unknown extensions (digits that match with the extension length) to be routed to the PBX.

Enable routing unknown extensions to the Premises as internal calls

VNT Alpha RG



**Andre Parker**  
Active - Member of Hartford

Summary Profile General Meetings **Calling** Messaging Hybrid Services Devices Vidcast

< Calling

Incoming call permissions

Manage this user's receiving call types (such as collect calls). The default settings are based on your organization's calling permissions.

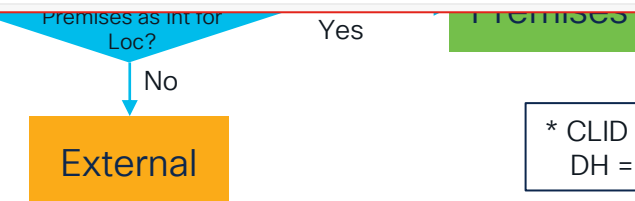
Default settings  
The default settings will allow for all incoming calls.

Custom settings  
Manually define this user's incoming call permissions.

Internal calls: Allow

Collect calls: Allow

External calls: Allow for transferred



\* CLID = Calling Party ID  
DH = SIP Diversion Header

Incoming Call

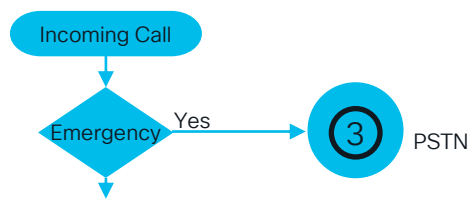


# Routing overview

## 2) Destination selection

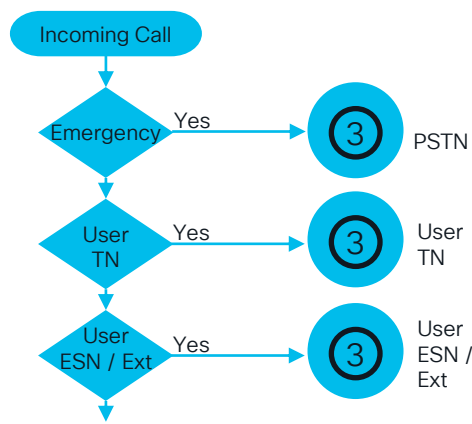
# Routing overview

## 2) Destination selection



# Routing overview

## 2) Destination selection



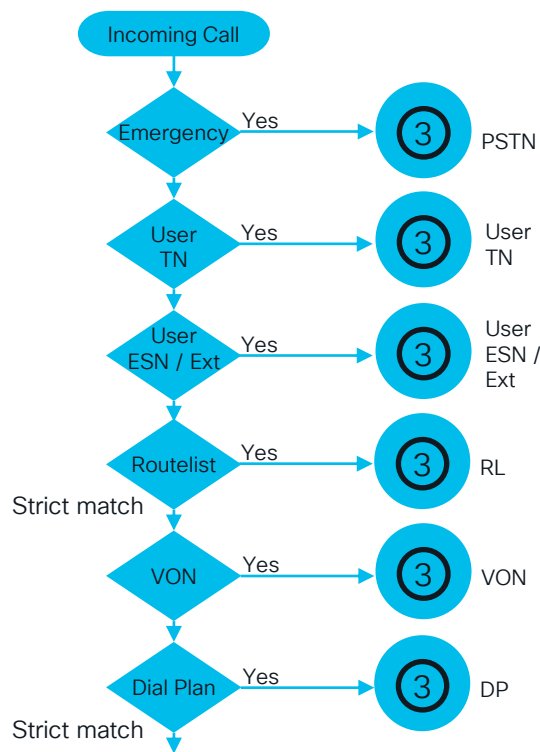
Test dialed number against +E.164, extension, and enterprise numbers of users within customer.

Exact match: “9011496100123” <> “+496100123”

Differentiation between a TN (+E.164) and ESN / Extension

# Routing overview

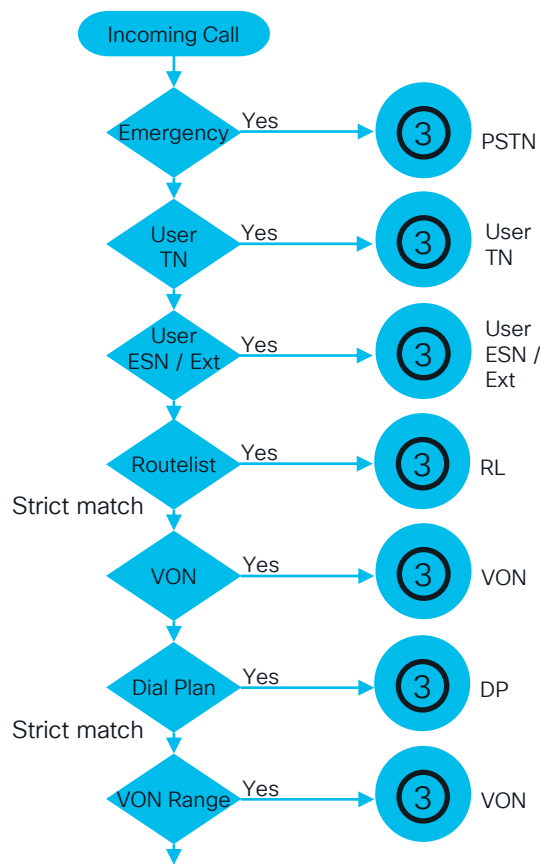
## 2) Destination selection



Strict match: “914085550123” does not match “+1408555!”

# Routing overview

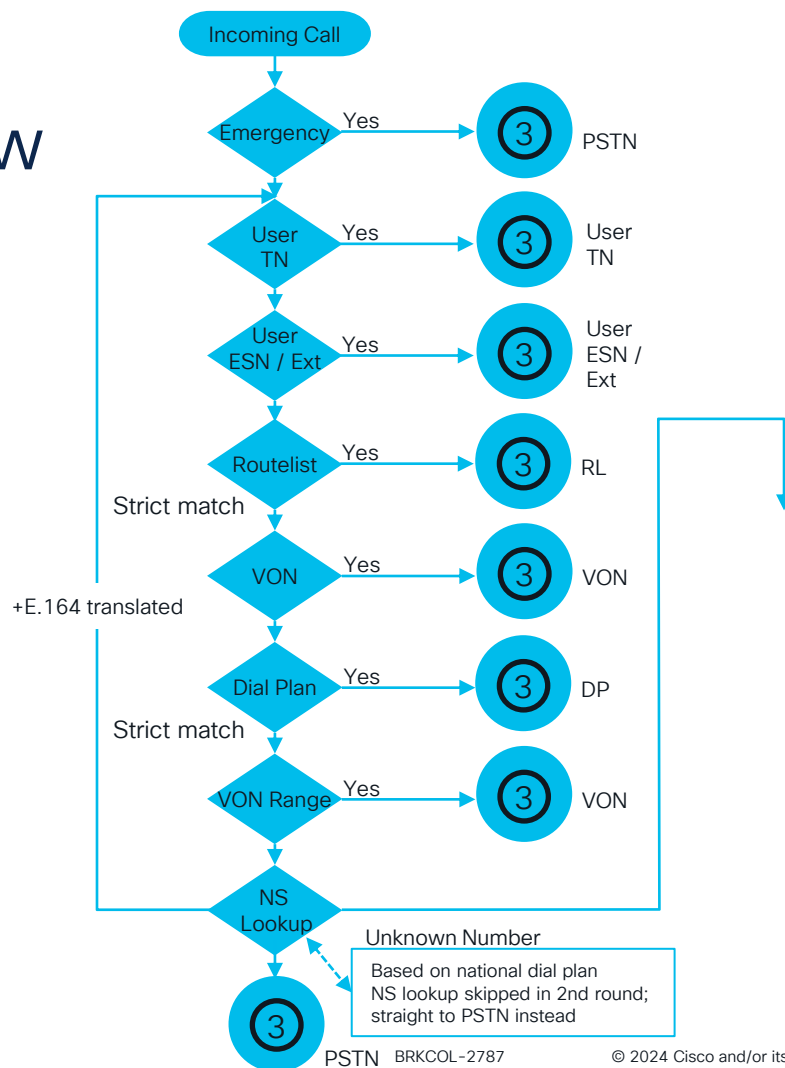
## 2) Destination selection



VON ranges treated the same as VON, but only match after enterprise dial plans

# Routing overview

## 2) Destination selection



Dialed number might be translated to +E.164 based on national numbering plan.

For example:

9011496100123 → +496100123

If number is translated, then go back to check for +E.164 matches



# Country Calling Plans

<https://help.webex.com/en-us/article/757iyo/Dial-plans-by-country>

- NS Lookup uses calling plan for the country of the Location
- Call Type tagging used for call restrictions (covered later)

Netherlands

Outbound calling plan

Table 185. Netherlands outbound calling plan

Country code	Digit map	Call type	Description
31	18xx	Chargeable Directory Assistance	Directory Assistance
31	116xxx	Chargeable Directory Assistance	European Harmonized Services
31	00xxxxx.	International	International Destinations
31	xxxxxx	Local	Local Calls
31	xxxxxxx	Local	Local Calls
31	084xxxxxxx	Premium Services I	Personal Assistant Services



# Routing overview

## 2) Destination selection

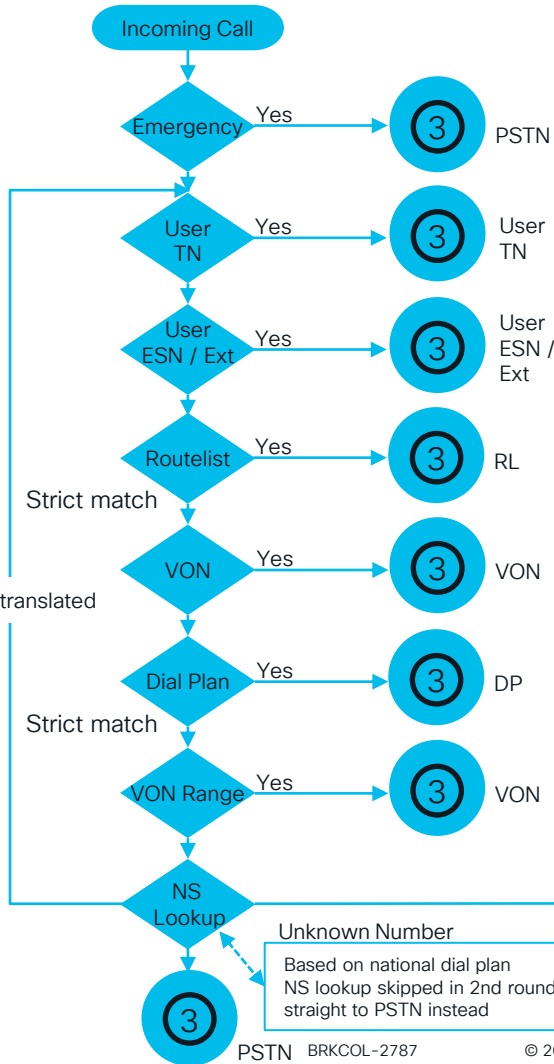
**Calls to On-Premises Extensions**

If some users in this location are registered to a PBX, enable this setting to route unknown extensions (digits that match with the extension length) to the PBX.

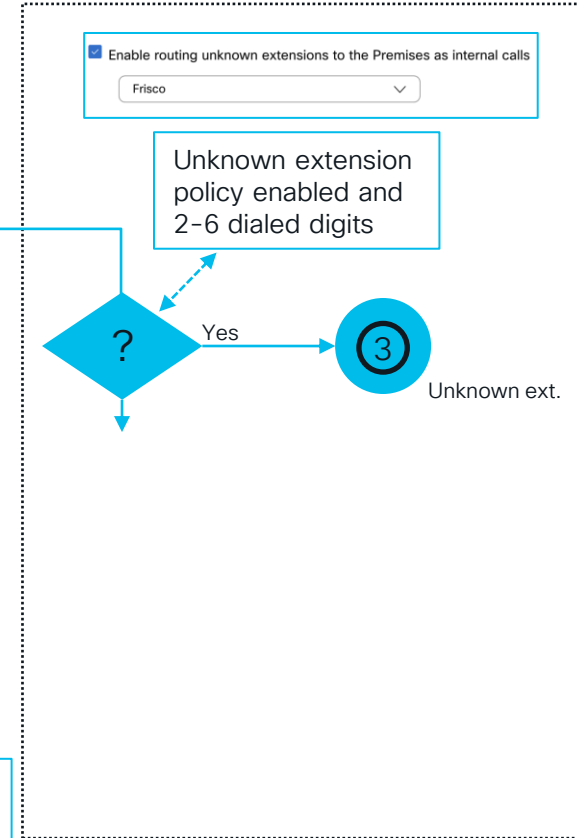
Enable routing unknown extensions to the Premises as internal calls

ABI LGW

+E.164 translated

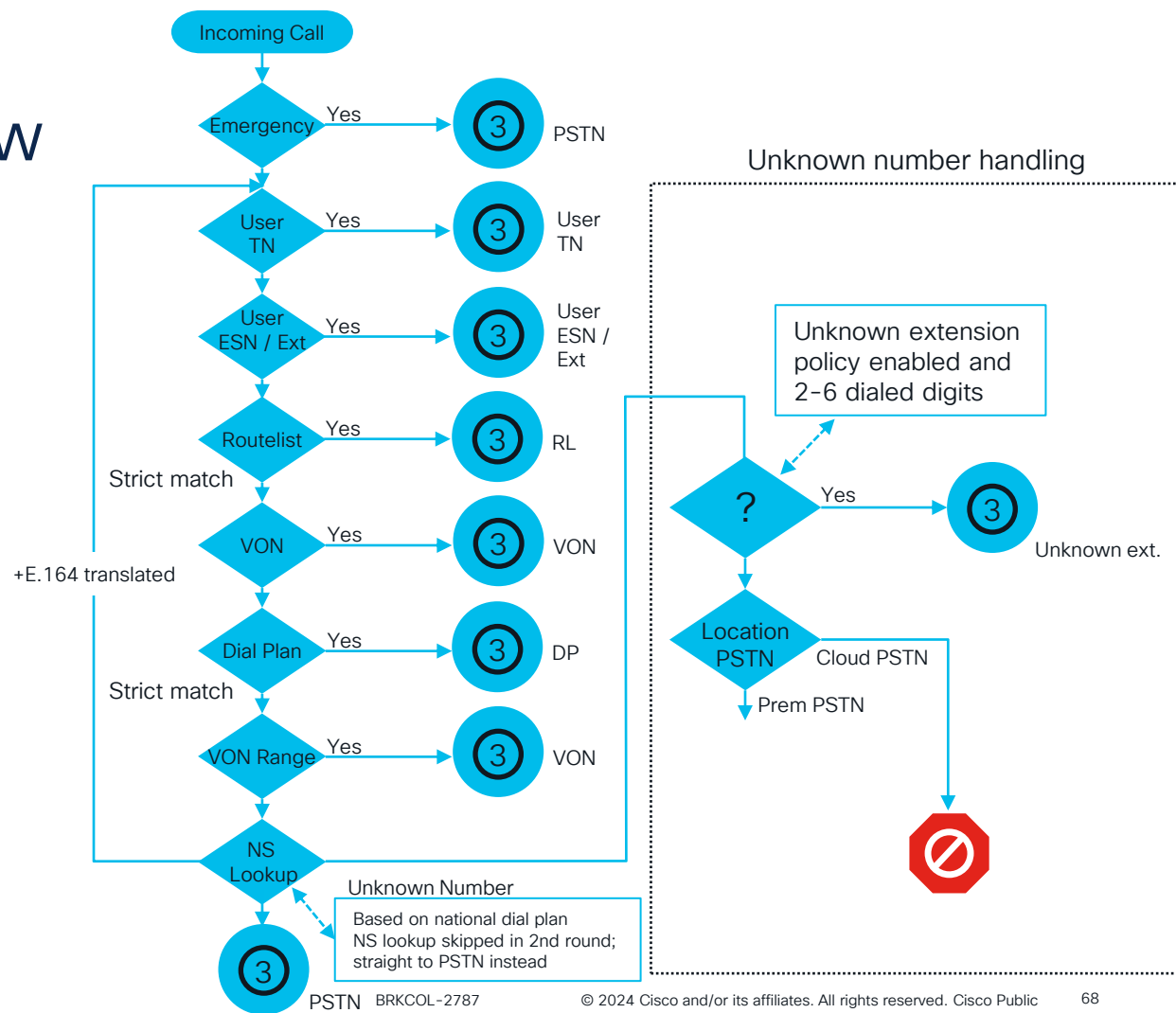


### Unknown number handling



# Routing overview

## 2) Destination selection



# Routing overview

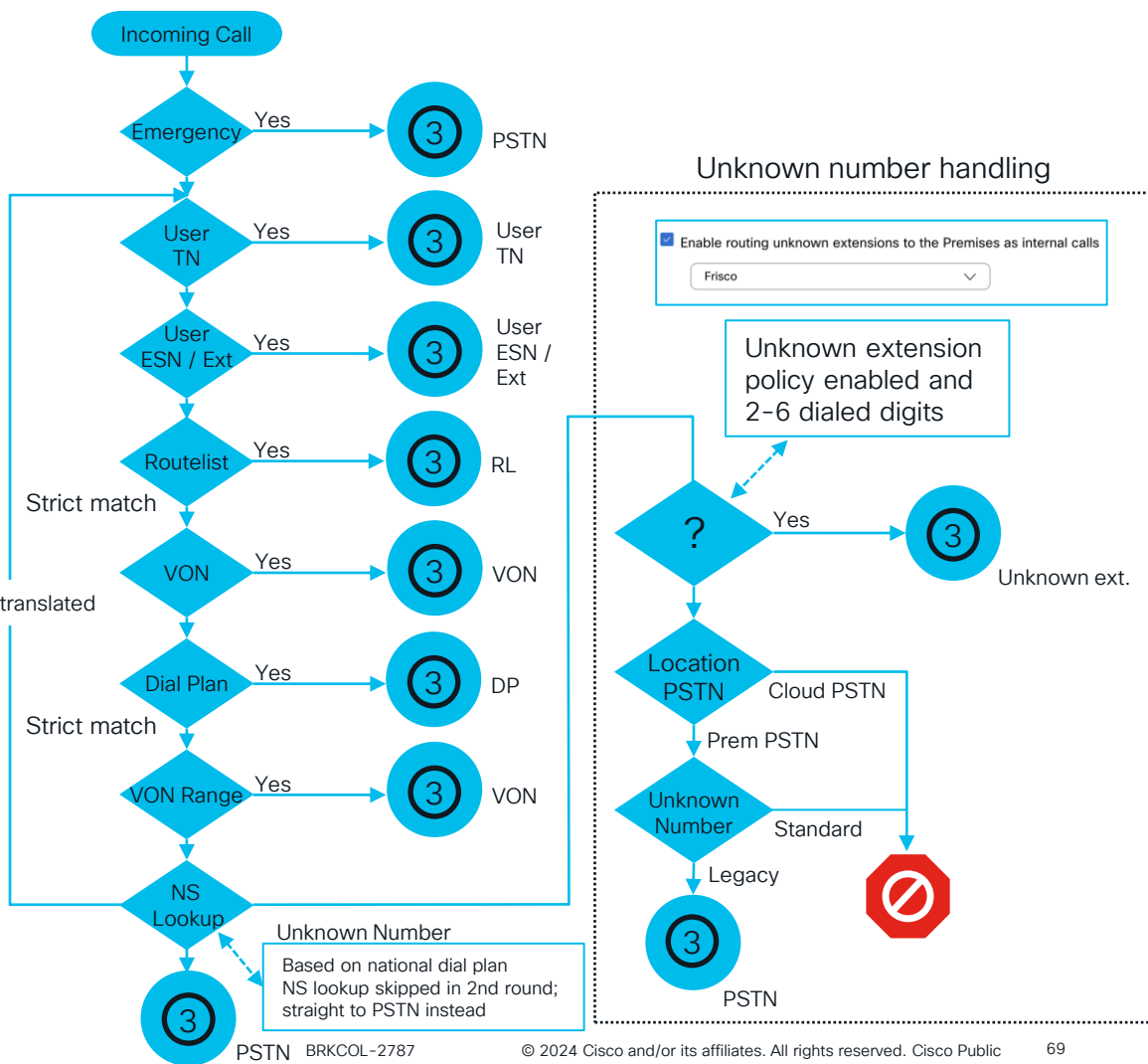
## 2) Destination selection

Call Routing between Webex Calling and premises

Unknown Numbers Handling  
Choose a configuration that determines the call routing behavior for unknown numbers in Webex Calling.

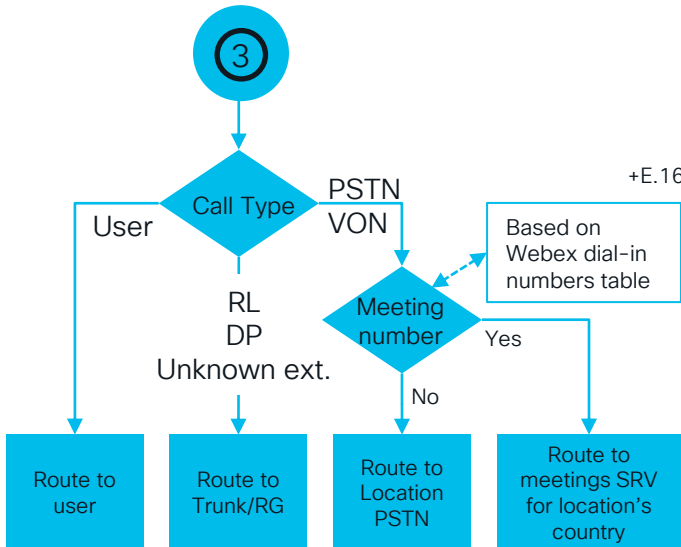
- Standard behavior  
This is the default and recommended option to achieve the best level of interoperability with an on-premises PBX.  
[Show Details](#)
- Legacy behavior (not recommended)  
This option provides backwards compatibility for the legacy Local Gateway behavior and is not recommended when Dial Plans are configured for the organization.  
[Show Details](#)

+E.164 translated

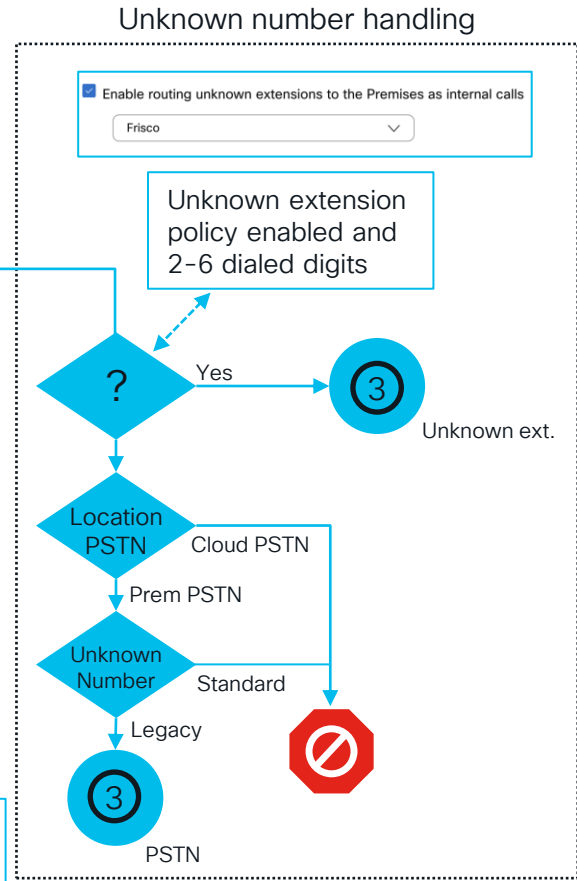
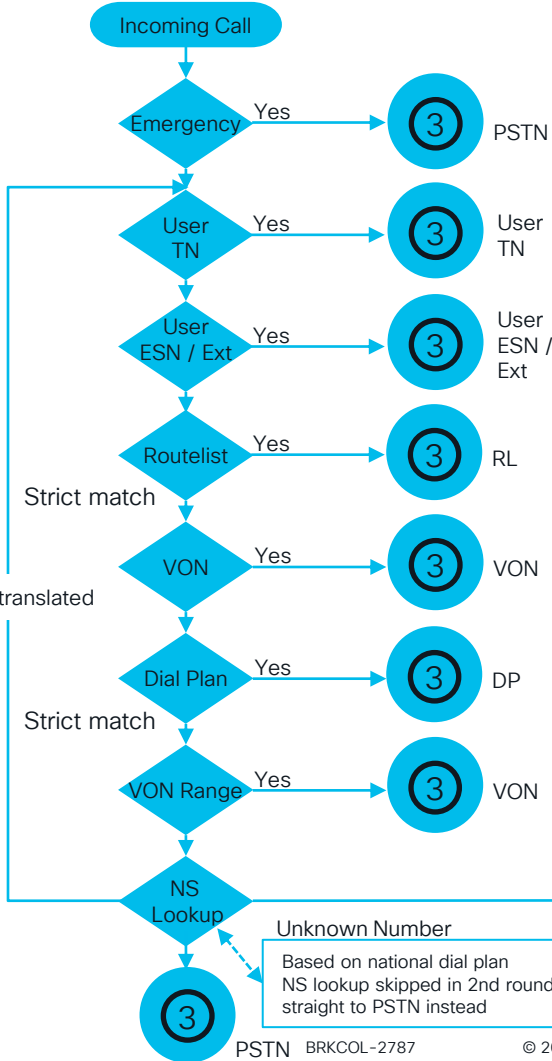


# Routing overview
















- 2) Destination selection
- 3) Block or allow based on calling permissions and route



+E.164 translated



# Screening and Routing

From \ To	User (TN)	User (ESN/Ext)	Trunk (RL)	Trunk (DP or unknown ext)	PSTN / VON
User					
Premises					
External					

# Screening and Routing

From \ To	User (TN)	User (ESN/Ext)	Trunk (RL)	Trunk (DP or unknown ext)	PSTN / VON
User	✓	✓	✓	✓	✓
Premises	✓	✓	✓	✓	✗
External	✓	✗	✓	✗	✗

- Calls from Webex Calling users (including DI users) can be routed anywhere

# Screening and Routing

From \ To	User (TN)	User (ESN/Ext)	Trunk (RL)	Trunk (DP or unknown ext)	PSTN / VON
User	✓	✓	✓	✓	✓
Premises	✓	✓	✓	✓	✗
External	✓	✗	✓	✗	✗

- Calls from On-Premises Users can be routed anywhere except for the PSTN

# Screening and Routing

From \ To	User (TN)	User (ESN/Ext)	Trunk (RL)	Trunk (DP or unknown ext)	PSTN / VON
User	✓	✓	✓	✓	✓
Premises	✓	✓	✓	✓	✗
External	✓	✗	✓	✗	✗

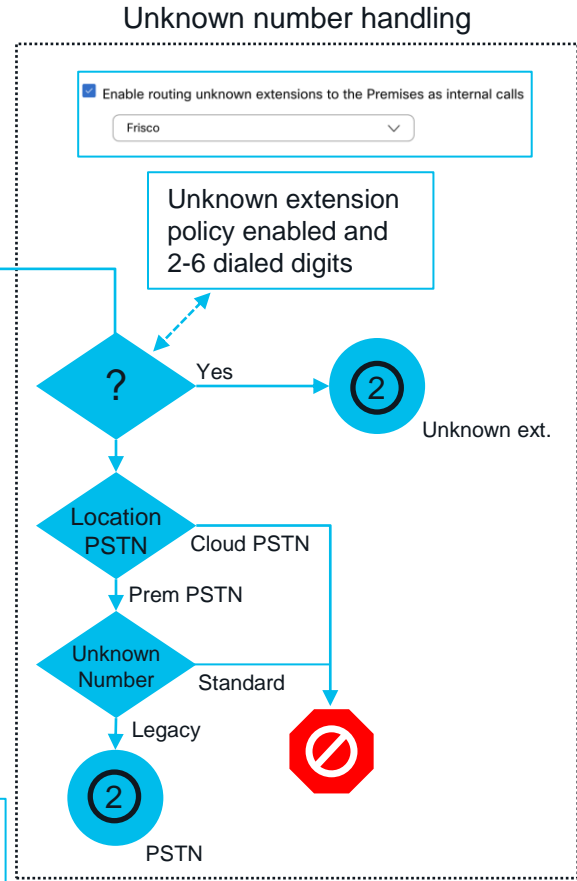
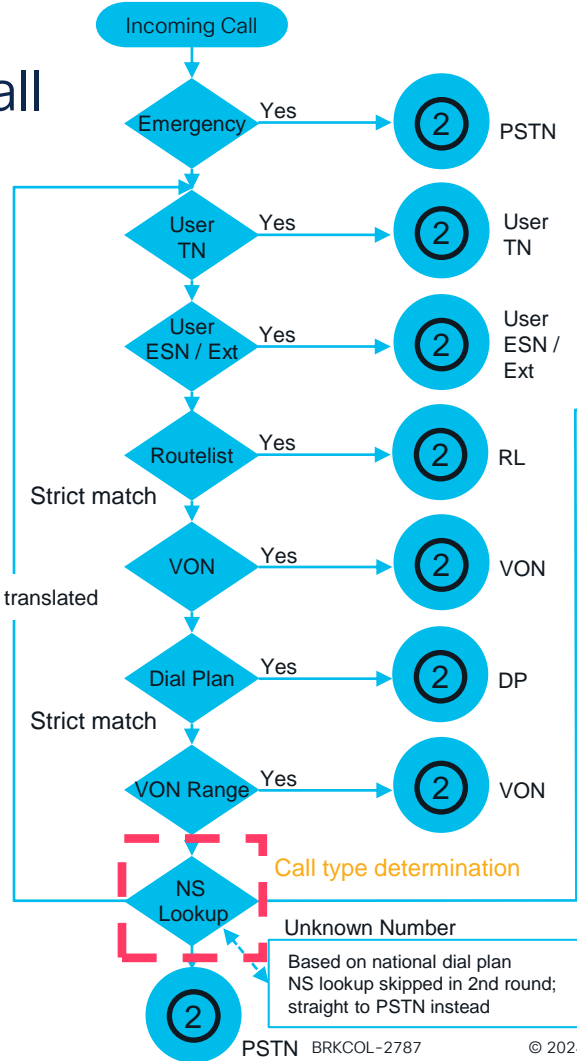
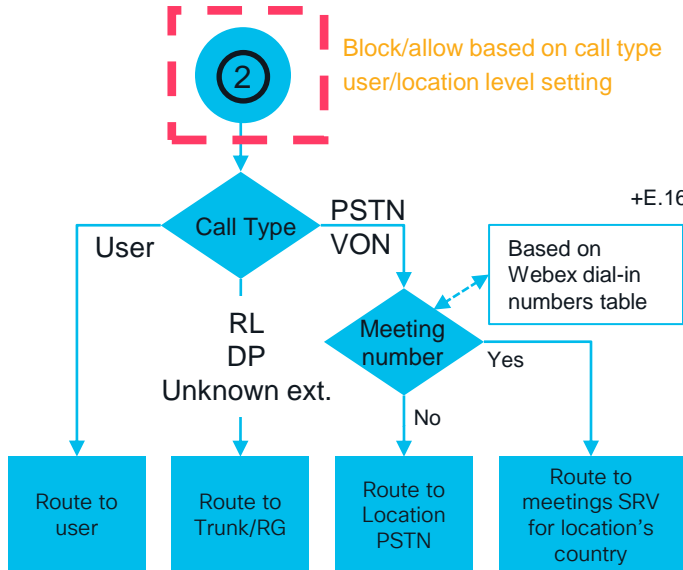
- Calls from PSTN can only route to User TN's (including DI users). Calls from PSTN cannot call ESN / Extension.



# Outgoing Call Permissions

# Routing and Outgoing Call Permissions

- 2) Destination selection
- 3) Block or allow based on calling permissions and route



# Country Calling Plans

- NS Lookup uses calling plan for the country of the location of the calling user
- Call Type tagging used for call restrictions

Netherlands

Outbound calling plan

Table 185. Netherlands outbound calling plan

Country code	Digit map	Call type	Description
31	18xx	Chargeable Directory Assistance	Directory Assistance
31	116xxx	Chargeable Directory Assistance	European Harmonized Services
31	00xxxxx.	International	International Destinations
31	xxxxxx	Local	Local Calls
31	xxxxxxx	Local	Local Calls
31	084xxxxxxx	Premium Services I	Personal Assistant Services

<https://help.webex.com/en-us/article/757iyo/Dial-plans-by-country>

# Outgoing Call Permissions

Outgoing call permissions

Manage this location's permission settings, authorization codes, or auto-transfer numbers. Different countries and long distance calls require calling plans with specific prefixes. See [calling plans by country](#) for more information.

Call type	Permission	Allow transfers / forwards
Internal	Allow	<input checked="" type="checkbox"/>
Toll-free	Allow	<input checked="" type="checkbox"/>
National	Allow	<input checked="" type="checkbox"/>
International	Allow	<input checked="" type="checkbox"/>
Operator Assistance	Allow	<input checked="" type="checkbox"/>
Chargeable Directory Assistance	Allow	<input checked="" type="checkbox"/>
Special Services I	Block	<input checked="" type="checkbox"/>
Special Services II	Require authorization code	<input checked="" type="checkbox"/>
Premium Services I	Auto-Transfer to 4711	<input checked="" type="checkbox"/>
Premium Services II	Auto-Transfer to 4712	<input checked="" type="checkbox"/>
	Auto-Transfer to 4713	<input checked="" type="checkbox"/>

## Location configuration

- User level override

## Permissions by call type:

- Allow
- Block
- Requires authorization code
- Transfer to auto transfer number

Authorization codes

Authorization codes can be used to override permissions. Add or delete this location's authorization codes. You may add up to 100 authorization codes.

Description	Code
No authorization codes have been set.	

Auto-transfer numbers

When calling a specific call type, this location will be automatically transferred to another number. The person assigned the Auto Transfer Number can then approve the call and send it through or reject the call type. You can add up to 3 numbers.

Transfer Number 1	Transfer Number 2	Transfer Number 3
4711	4712	4713

## Set of authorization codes

- Mechanism to track certain calls for accounting purposes
- Authorization codes logged in CDRs

## Up to three auto-transfer numbers

- Call gets transferred to destination and transferee can then decide further call treatment

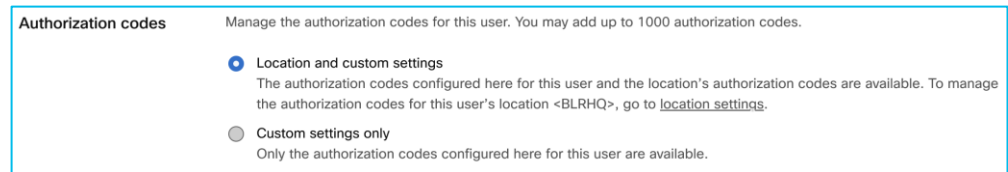
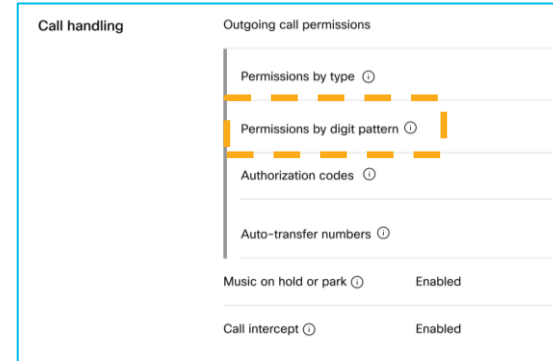
<https://help.webex.com/en-us/article/nt2lz3d/Outgoing-calling-permissions-for-Webex-Calling-locations>  
<https://help.webex.com/en-us/article/q94e8c/Configure-calling-permissions-in-Control-Hub>

# Outgoing Call Permissions - Gaps

- Policy (block, allow, auth. code, transfer) can only be applied to pre-defined set of call classifications
- Examples for use cases that cannot be addressed:
  - Disallow international calls to specific countries. (e.g., Embargoed countries)
  - Disallow calls to specific numbers or range of numbers (user/location level)
  - Restrict locations/users to internal calls except for few approved external numbers
  - Block calls to certain specific range of premium numbers within a country (e.g., 09003 and 09005)
  - Authorization/Account Code: A mechanism to track calls to certain numbers (more granular) for billing and accounting purpose

# Outgoing Call Permissions – Enhanced\*

- Separate configuration menus for
  - Permissions by type
  - **Permissions by digit pattern (New)**
  - Authorization codes
  - Auto-transfer numbers
- ... for locations, users, workspaces, virtual lines
- Authorization codes, auto-transfer numbers, patterns at user/workspace/virtual line level can be combined w/ location level authorization codes
- "Location and custom settings" vs "Custom settings only"



# Outgoing Call Permissions – Enhanced\*

- Up to 1000 authorization codes at each level (location/user/workspace/virtual line)
- Provisioning APIs
  - permissions by type (user, workspaces) – location API already exists
  - authorization codes (user, workspaces) – location API already exists
  - auto-transfer numbers (user, workspaces) – location API already exists
  - APIs for virtual lines tracked as separate initiative
- Bulk management (CSV)
  - Location authorization codes
  - User Calling Data: columns for category controls, up to 20 authorization codes
- Proper handling of call type “internal”
- “Verify Call Routing” tool
  - Full support for new outgoing call permissions
  - Output of call intercept result: level, permission (block, transfer to, transfer to number)
  - Now shows final routing destination

# Outgoing Call Permissions – By Pattern\*

- Policy (allow, block, auth. code, auto-transfer number) per pattern
- Up to 500 patterns per location/user/workspace/virtual line
- Provisioning APIs for locations, users, workspaces (virtual line APIs tracked as separate initiative)
- Bulk management for locations, users (workspaces and virtual lines don't have bulk management; separate initiative)
- Permissions by pattern take precedence over permissions by type
- Note: call types other than “internal” always block for user in Cisco Calling Plan location w/o OCP regardless of any pattern
- For external destinations pattern match is tried twice: before/after translation according to national numbering plan
  - +E.164 patterns can be used to apply policy regardless of how the destination was dialed
  - Non +E.164 patterns can be used to apply different handling depending on how the number was dialed
- As outgoing call permissions are applied for all routing tree outcomes, policy can be applied to all call types (... other than emergency)

Permissions by digit pattern

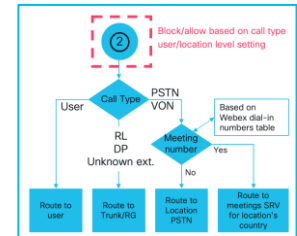
Manage the permissions by digit pattern for this user.

Location and custom settings  
The digit patterns configured here for this user are applied first. If no matches found then the location's digit patterns are applied. To manage the digit patterns for this user's location <BLRHQ>, go to [location settings](#).

Custom settings only  
Only the digit patterns configured here for this user are applied.

Q Search

Name	Pattern	Permission	Allow transfers / forwards
Digit Pattern 1	469XXXXXX	Allow	<input checked="" type="checkbox"/>
Digit Pattern 2	+71	Block	<input checked="" type="checkbox"/>
Digit Pattern 3	510[3-6]XX	Block	<input checked="" type="checkbox"/>





# Outgoing Call Permissions – By Pattern\*

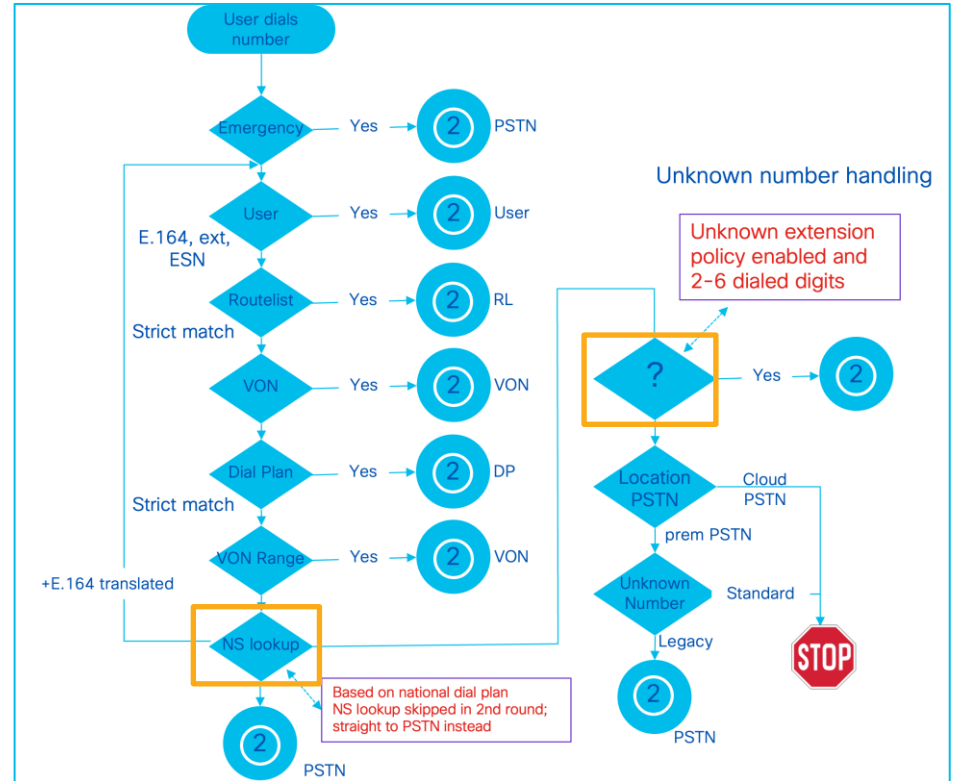
- Granular control over outgoing call permissions
- Examples:
  - Only allow international calls to certain countries/destinations
  - Block calls to certain countries/destinations
  - .. Per location/user/workspace/virtual line
- Caveat
  - No grouping other than at the location level
  - Sharing permissions for a larger number of users requires bulk provisioning or API use

# Overlaps



# Unknown Extension vs National Dial Plan Overlap

- Unknown extension policy only checked AFTER national number plan lookup
- National numbering plan trumps in case of overlap with unknown extensions



# Unknown Extension vs National Numbering Plan

- Example: Germany has X{5-12} in the national dial plan for local destinations\*
- Unknown 5/6D extensions get routed to the PSTN instead of getting blocked or routed according to unknown extension policy
- .. Even if an outside dial digit is configured for the location
- Reason: permissive national numbering plan lookup makes dialing of outside dial digit optional .. by default

49	xxxxx	Local	Local
49	xxxxxxx	Local	Local
49	xxxxxxxx	Local	Local
49	xxxxxxxxx	Local	Local
49	xxxxxxxxxx	Local	Local
49	xxxxxxxxxxx	Local	Local
49	xxxxxxxxxxxx	Local	Local
49	xxxxxxxxxxxxx	Local	Local
49	xxxxxxxxxxxxxx	Local	Local
49	xxxxxxxxxxxxxxx	Local	Local

Dial plans by country

<https://help.webex.com/en-us/article/757iyo/Dial-plans-by-country>

\*other affected countries include: South Korea, UK, Ireland, Netherlands

# Enforce Outside Dial Digit

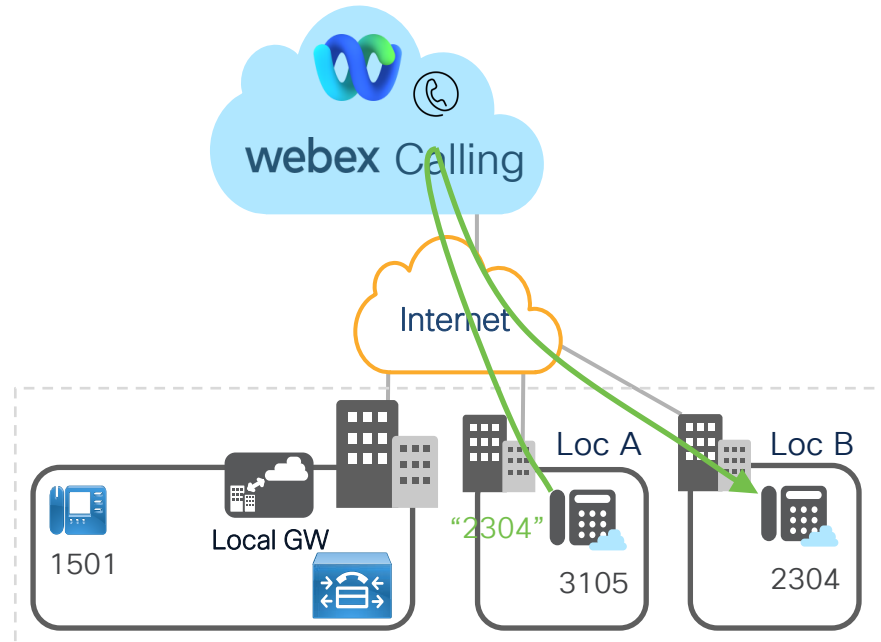
- Enforcing the outside dial digit removes the overlap between on-net dialing habits (including extensions) and PSTN destinations
- Configured per location
- ... like the outside dial digit
- Caution: not only affects direct dialing but any PSTN destinations ... for example CFwds to PSTN
- Best practice: **always** enforce outside dial digit

The screenshot shows the 'Locations' page for 'Frisco' (Location ID: 98487821-933e-4476-8776-39a8779a0838). The 'Calling' tab is selected. Under 'Outbound Dial Digit', a dropdown menu shows '9'. Below it, a note states: 'To make calls outside the organization users will dial the following Outbound digit-Phone number 9-XXXX XXX XXXX'. At the bottom, there is a toggle for 'Enable Outbound Dial Digit Enforcement' which is turned on. A blue arrow points to this toggle. A modal dialog box is overlaid on the right, titled 'Enforce dialing the outbound dial digit?' with the text: 'Are you sure you want to enable enforcing dialing the outbound dial digit? Once enabled, any external destination numbers such as those used for call forwarding will no longer work if an outbound dial digit is not included.' The dialog has 'Cancel' and 'Enable' buttons.

<https://help.webex.com/en-us/article/pxtu15/Configure-your-Webex-Calling-dial-plan>

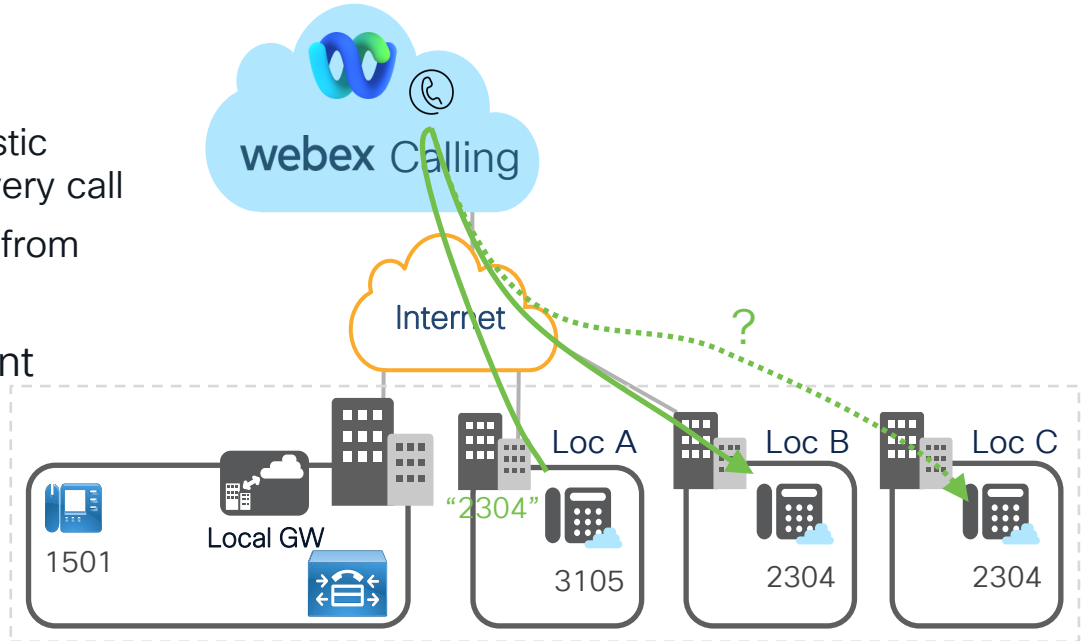
# Extension Dialing Between Locations

- User A in location A can call inter-location to user B in location B by dialing “2304”



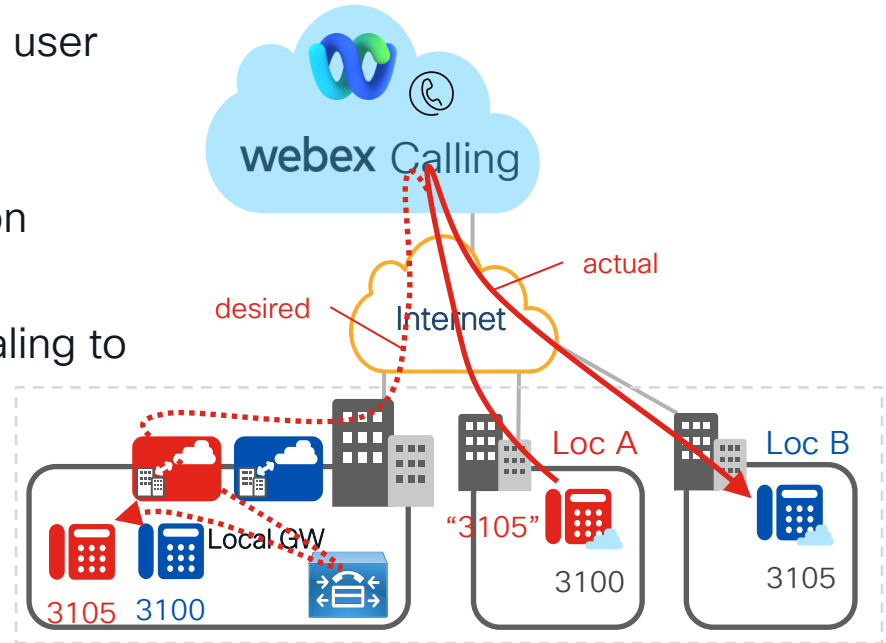
# Challenge: Overlap on Webex Calling

- User A in location A dials “2304”, an extension that exists in multiple locations
- The call is routed to one of the extensions, Location B or C
  - Deterministic: in contrast to stochastic the same destination will ring for every call
  - Hard to predict: preference hidden from admin/customer
- This behavior leads to inconsistent user experience



# Challenge: Inter-Location Overlap between Unified CM and Webex Calling

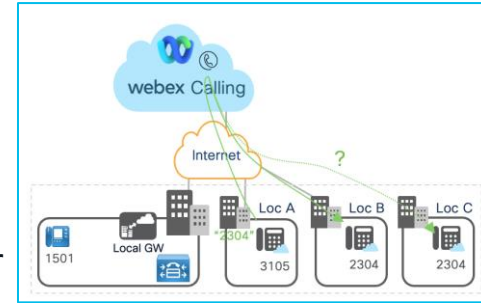
- Locations with users on UCM and Webex Calling
- User 3100 in location A tries to call UCM user 3105
- Unknown extension policy on location A not triggered b/c there is an inter-location match for 3105 (in location B)
- Impossible to use unknown extension dialing to reach users on Unified CM if the same extension also exists in Webex Calling





# Inter-Location Extension Dialing Policy

- Inter-location extension dialing can lead to unexpected results
  - Overlapping extension ranges in multiple locations
  - Unknown extension dialing overlap with extensions in other locations
- Extension dialing policy between locations now is configurable
- Default: enabled
- Also affects:
  - Unknown extension handling



**Internal Dialing**  
Define extensions and how to make internal calls.

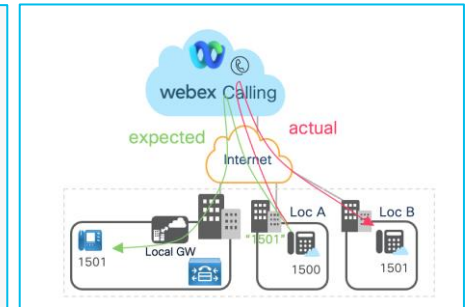
Location Routing Prefix Length  
Choose the number of digits to be used to connect with users at other locations.  
4

Set Steering Digit in Routing Prefix  
Choose the number which will be set as the first digit of every routing prefix.  
8

Internal Extension Length  
Choose the number of digits for an internal call.  
4

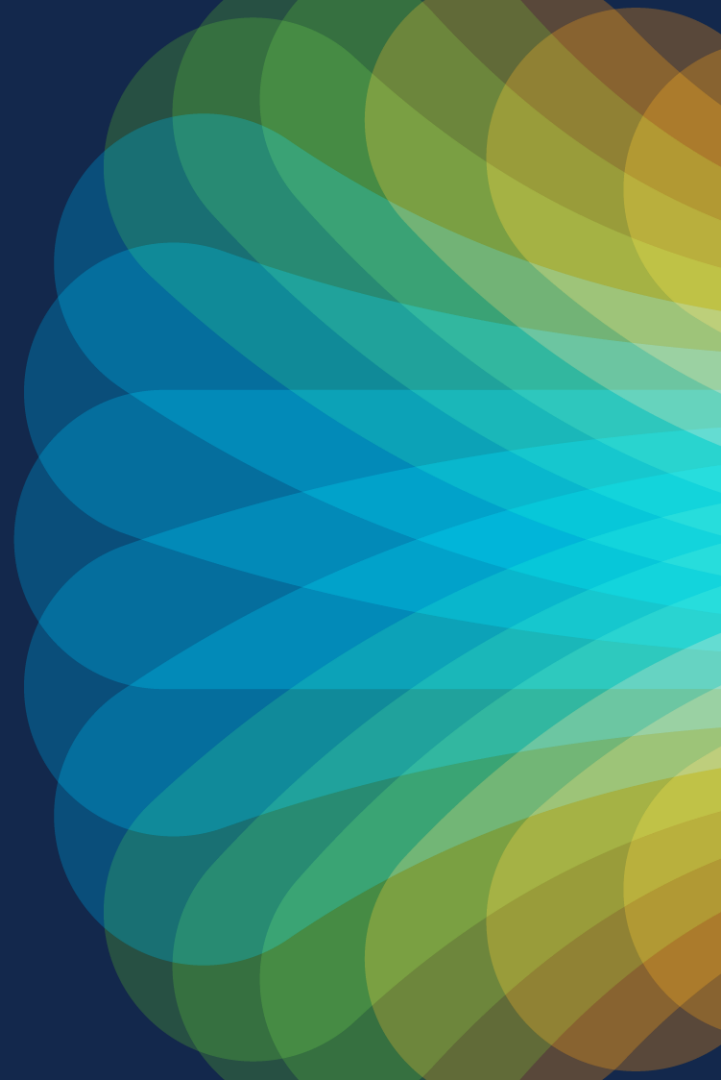
Edit

Allow extension dialing between locations  
This option allows calling between locations within the organization by dialing an extension number. If the option is disabled, caller must dial ESN (Enterprise Significant Number) to reach users in other locations. This should be disabled when there are duplicate extensions in the organization.

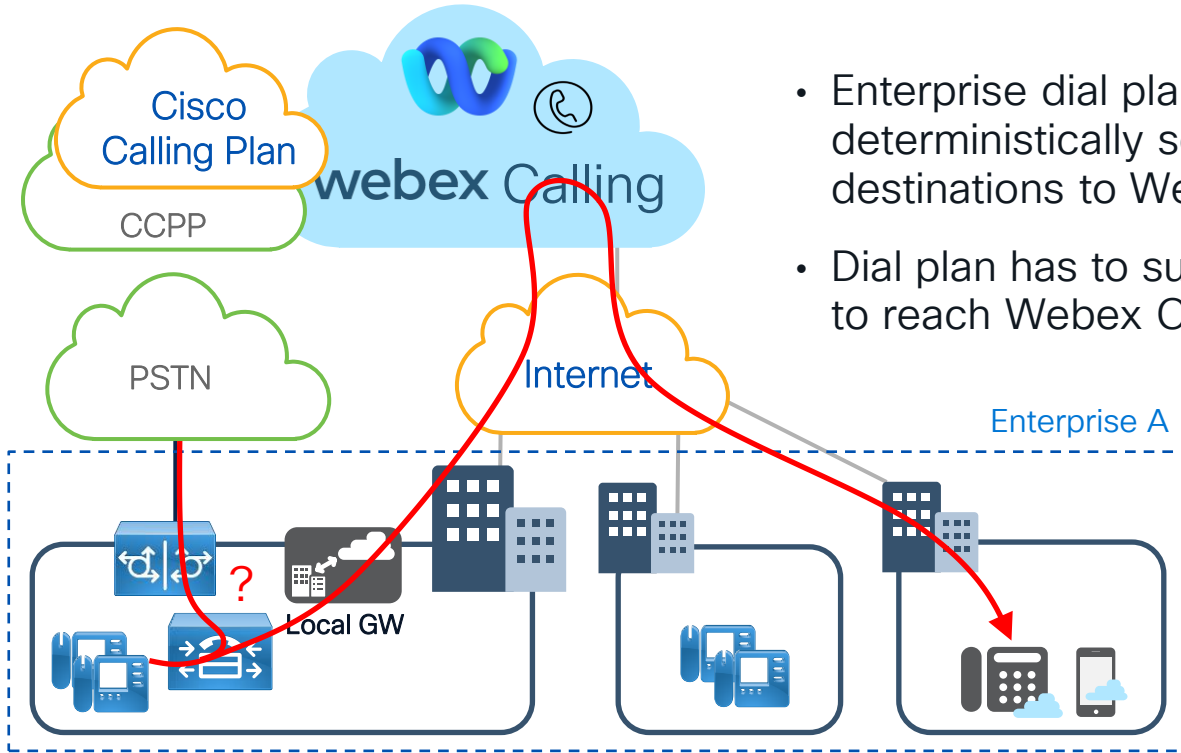


<https://help.webex.com/en-us/article/pxtu15/Configure-your-Webex-Calling-dial-plan>

# Interworking Unified CM / Webex Calling



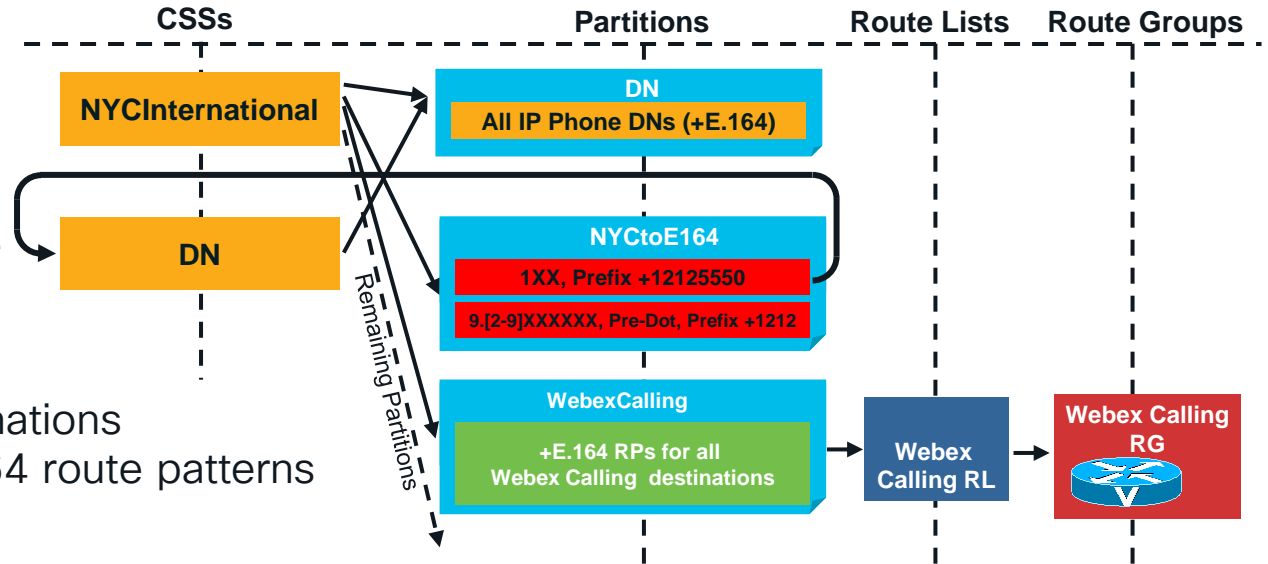
# Local Gateway Dial Plan Integration



- Enterprise dial plan on Unified CM needs to deterministically send Webex Calling destinations to Webex Calling via Local Gateway
- Dial plan has to support “typical” dialing habits to reach Webex Calling destinations
- Webex Calling destinations need to be regularly updated during transition period as users move to Webex Calling

# LGW Dial Plan Integration

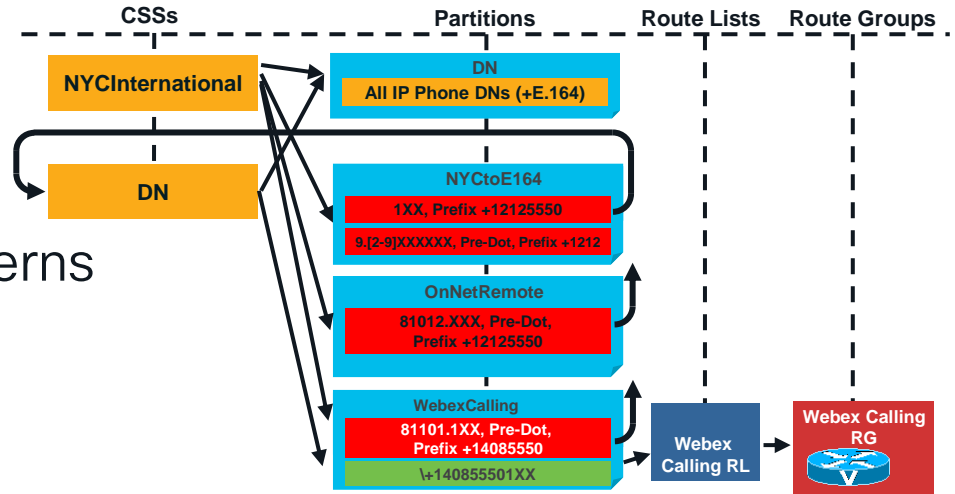
- With a single Egress LGW selection not site specific → no LRG based LGW selection required\*
- Multiple LGWs in multiple locations: RL and LRG
- Can use multiple LGWs for scale and redundancy
- Webex Calling destinations provisioned as +E.164 route patterns



\*For extension dialing w/ non-unique extensions site specific trunks are required so that Webex Calling can establish proper dialling context. LRG can be used for site specific egress trunk selection

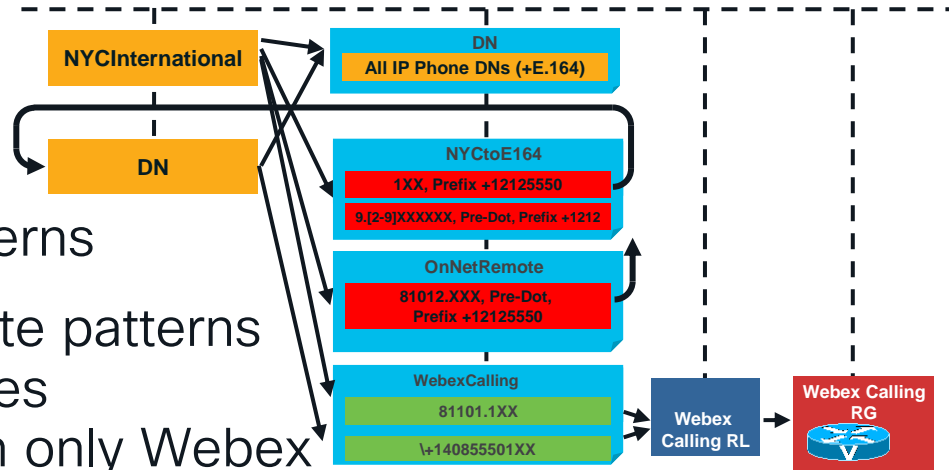
# UCM to WxC – ESN Outbound Route Patterns

- Any dialing habit can be transformed to +E.164 using dialing normalization translations
- Dialing normalization for Webex Calling ESN ranges to +E.164 in same partition as Webex Calling route patterns



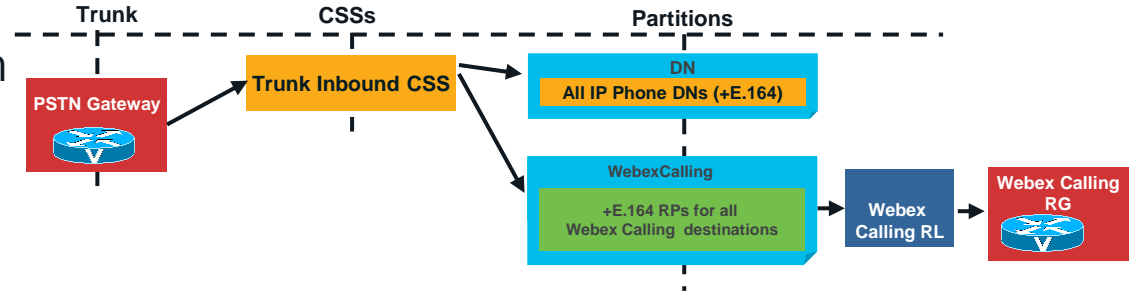
# UCM to WxC – ESN Outbound Route Patterns

- Any dialing habit can be transformed to +E.164 using dialing normalization translations
- Dialing normalization for Webex Calling ESN ranges to +E.164 in same partition as Webex Calling route patterns
- Better solution: use ESN route patterns for Webex Calling ESN ranges  
→ also works with extension only Webex Calling destinations



# UCM to WxC – PSTN Routing to Webex Calling

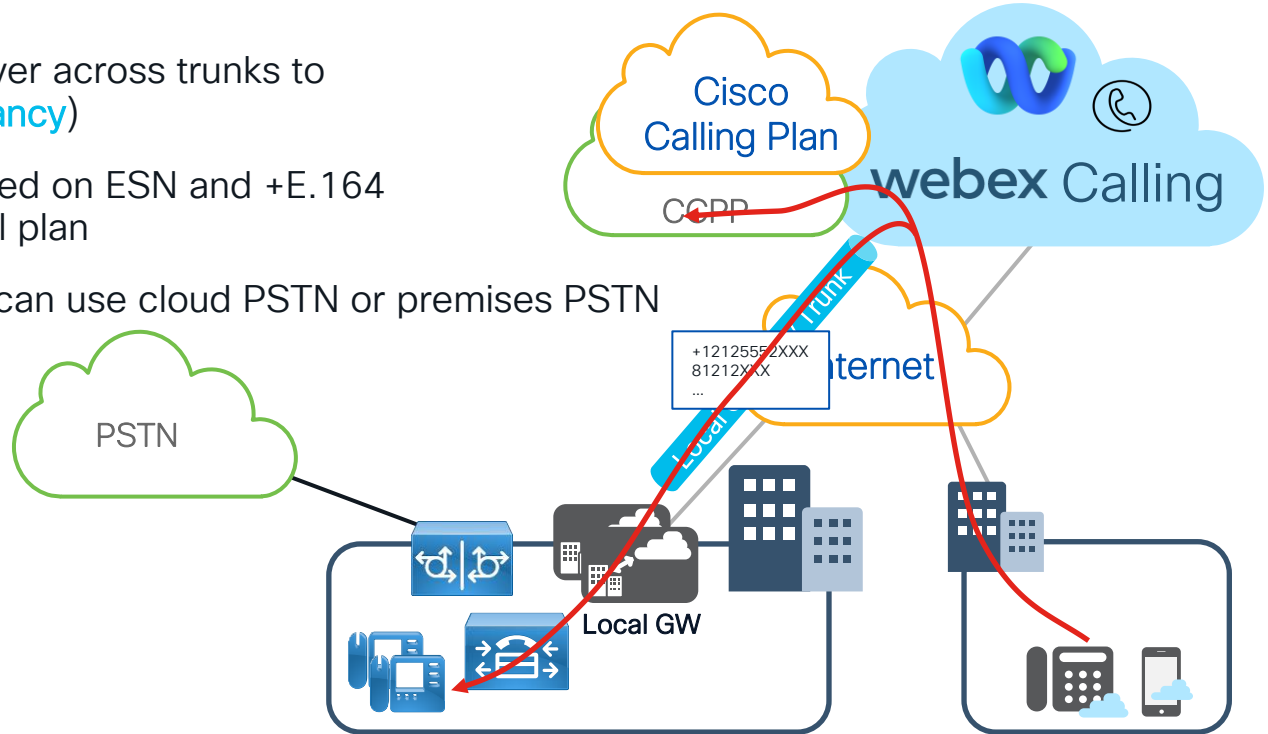
- PSTN Dial Plan can utilize the same Route Patterns for +E.164 dialing as UCM users.
- Called party globalization to +E.164 required if no +E.164 received from PSTN
- Multiple ways to do on UCM:
  - Incoming Called Party Transformation Patterns (preferred)
  - Translation Pattern
  - Route Patterns



# Routing from Webex Calling to Unified CM

## Enterprise Dial Plans

- Load balancing and failover across trunks to premises (**scale, redundancy**)
- Deterministic routing based on ESN and +E.164 patterns in enterprise dial plan
- Webex Calling locations can use cloud PSTN or premises PSTN





# Caller ID Normalization

- Tool: Calling Party Transformation Patterns
- Can be done either
  - inbound on Trunk from Webex Calling
  - Outbound on Unified CM registered device
- Best practice: globalize on ingress, localize on egress
- ... but customer might have implemented other dial plans
- Unified CM caller ID is always based on RPID or From (in this priority)
- On dual identity trunks from Webex Calling profiles on CUBE or SIP normalization scripts (Lua) on Unified CM can be used to (selectively) copy From: to PAI

The screenshot shows the 'Calling Party Transformation Pattern Configuration' window. It includes a 'Save' button at the top left. The 'Status' section shows 'Status: Ready'. The 'Pattern Definition' section contains the following fields: 'Pattern\*' with the value '\+12135554XXX', 'Partition' with 'CnPtlocalizeFromWxC', 'Description' with 'Localize Caller ID inbound from WxC', 'Numbering Plan' with '< None >', and 'Route Filter' with '< None >'. There are checkboxes for 'Urgent Priority' (checked) and 'MLPP Preemption Disabled' (unchecked). The 'Calling Party Transformations' section includes a checkbox for 'Use Calling Party's External Phone Number Mask' (unchecked), 'Discard Digits' with '< None >', 'Calling Party Transformation Mask' with '83134XXX', and 'Prefix Digits' with an empty field.

Reference:

[https://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/cucm/srmd/collab12/collab12/dialplan.html](https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cucm/srmd/collab12/collab12/dialplan.html)  
<https://www.cisco.com/c/en/us/td/docs/solutions/CVD/Collaboration/enterprise/12x/120/collbcvd/control.html>

# Interworking Limitations

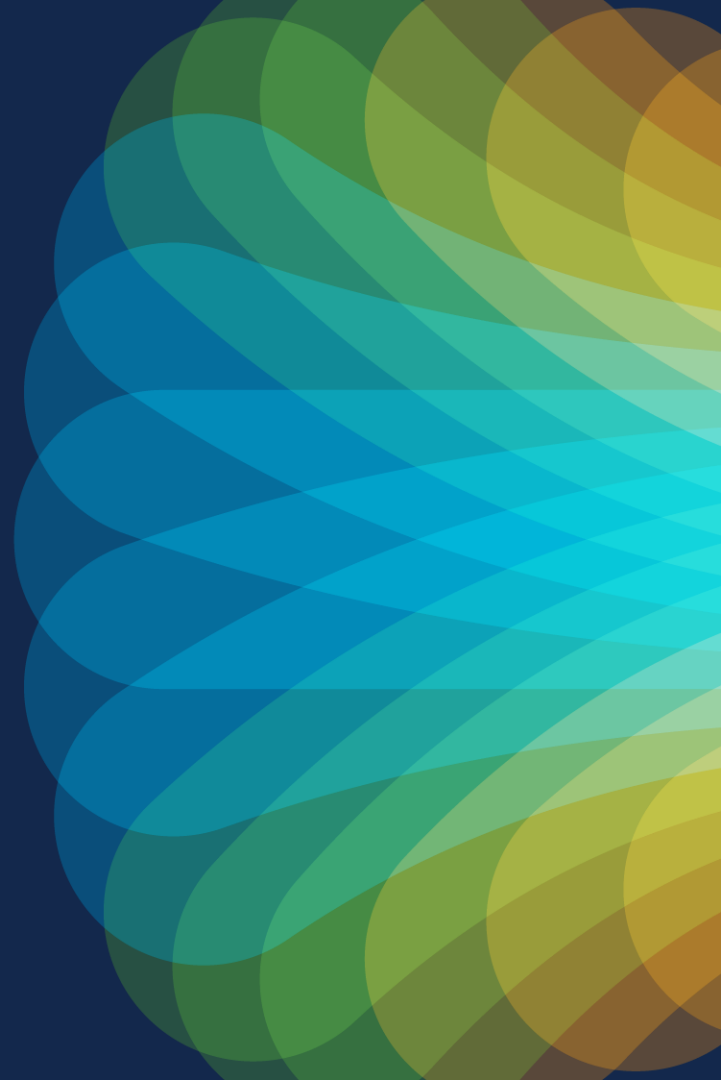
- Local Gateway (registering) concurrent session limitations
- Integration between Webex Calling and Unified CM is pure call routing integration
  - No concept of sharing call state nor user (line) presence
- Impact on any feature relying on call state or presence:
  - Call pick-up (notifications)
  - Hunt: no way to determine state of line
  - BLF
  - ..
- Keep users of these features together on a single call control instance

# Cisco UCM and Webex Calling coexistence

- Proper dial plan design (see Enterprise PA\* for details) enables seamless transition of DNs from UCM to Webex Calling
  - All dialing habits are possible: ESN, DN and +E.164
- Detailed information in
  - “Transitioning from Cisco UCM to Webex Calling Deployment Guide”  
[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/dam/en/us/td/docs/solutions/PA/mcp/DEPLOYMENT_CALLING_Unified_CM_to_Webex_Calling.pdf)
  - “Cisco Preferred Architecture for Webex Calling Overview”  
<https://www.cisco.com/c/dam/en/us/td/docs/solutions/CVD/Collaboration/hybrid/AltDesigns/PA-WbxCall.pdf>

\*<https://www.cisco.com/c/en/us/td/docs/solutions/CVD/Collaboration/enterprise/12x/120/collbcvd.html>

# Webex Calling Provisioning APIs



# Webex Calling APIs Overview

## PROVISIONING

## CALL CONTROL

## ANALYTICS & REPORTING

### Customer Journey

Setup, Onboard, Manage

Call, Meet, Collaborate

Achieve Customer Success

- Manage users, phone #s, locations, & services
- Assign licenses
- Create and manage location features

- Place, answer, hang up calls
- Stop / start / pause recording
- Transmit DTMF digits
- List active calls / get history

- Detailed call records
- Onboarding, usage, & quality reporting
- Automated reporting setup

- Installation, activation, & onboarding
- Ongoing services management & care
- Self-service via partner portal

- Custom enterprise calling integrations
- Cloud business platform integration
- Custom app development

- User training & adoption services
- Business process design & optimization
- Vertical solutions design & oversight

### Representative Tasks

### Sample Solutions

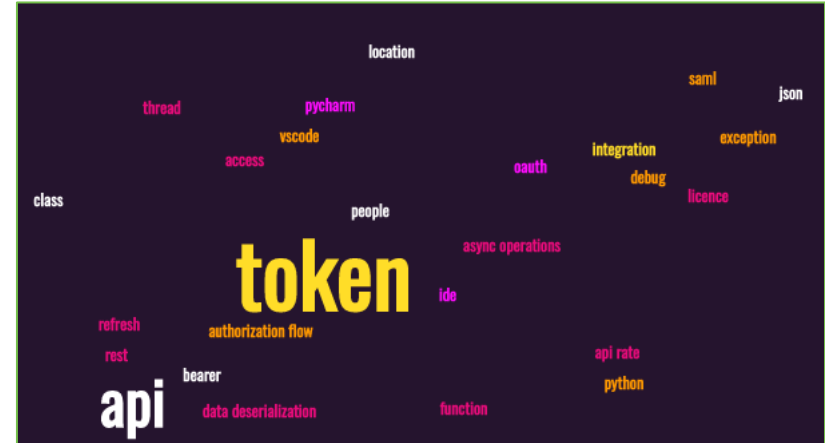
# Comprehensive Set of Provisioning APIs

- Locations, People
- Organisation Settings
  - announcement language, auto attendants, call parks, call park extensions, call pickups, call queues, call recording settings, hunt groups, location intercept, location internal dialing, location incoming/outgoing permissions, paging groups, phone numbers, schedules, voicemail settings, voice portal, MoH, voicemail groups, dial plans, trunks, route groups, route lists
- Person Settings
  - calling behaviour, barge settings, call forwarding, call intercept, recording, caller id, DND, voicemail, schedules, monitoring, phone numbers, privacy, executive assistant, PTT, hoteling, incoming/outgoing permissions, call queue caller id
- Voice Messaging

Reference: <https://developer.webex.com>

# Using Webex APIs

- Documentation at: <https://developer.webex.com/>
- But: Steep learning curve
- A lot of concepts to master
- SDKs help to abstract from the “dirty details”



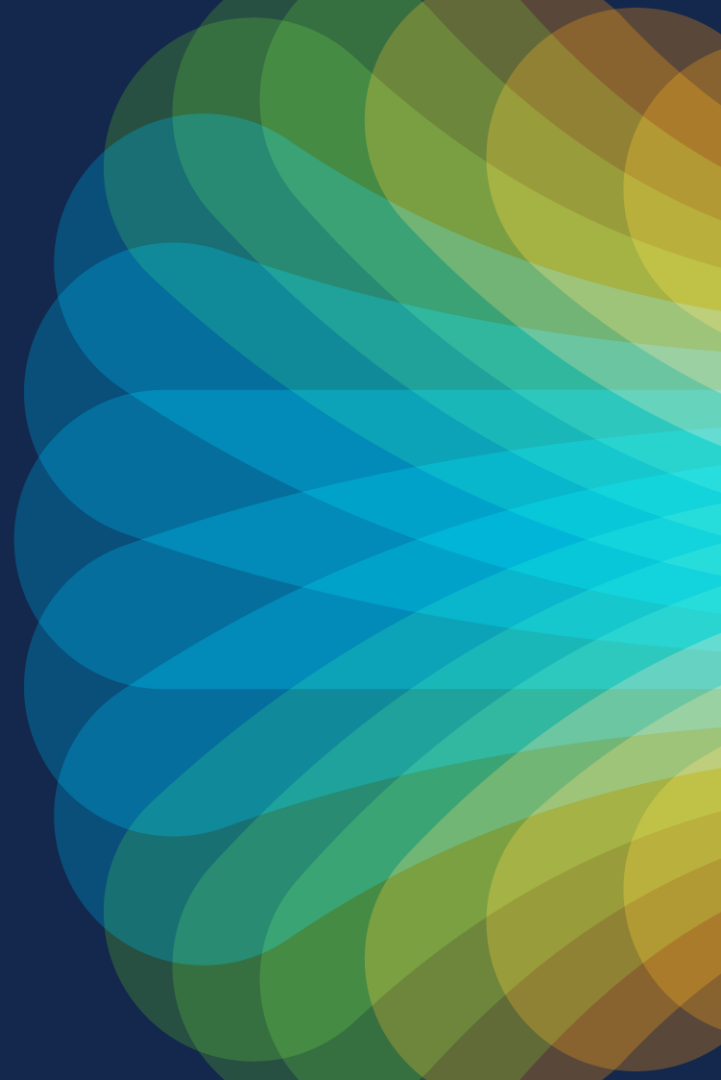
More details: “BRKCOL-3015: Agile Management of Webex Calling”, Thu 8am

# Webex Calling Provisioning Methods

	Control Hub	CSV	API
Ease of Use	+++	++	+
Speed	+	+++	+++
Customization		+	+++



# Closing



# Recap / Q & A

- Webex Calling PSTN options
- Regional footprint, design considerations
- Location considerations
- Dialing / Call Routing
  - Classification, routing, permissions
  - Overlaps
- Interworking between Unified CM and Webex Calling
- Provisioning APIs

# Calling Sessions

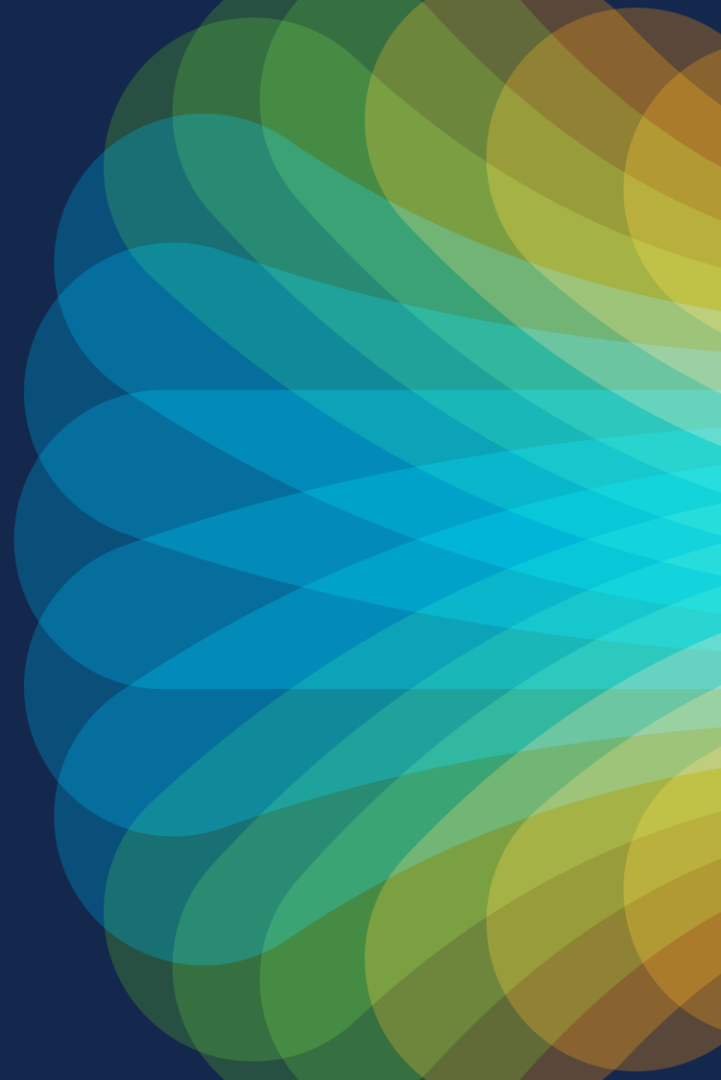
Feb 6, 8:00	BRKCOL-2065 - Webex Calling - How do I begin?
Feb 6, 13:45	BRKCOL-2314 - CUBE v14 Updates
Feb 6, 14:45	BRKCOL-2062 - Best Practices for a Successful Migration from Jabber to the Webex App
Feb 6, 15:15	BRKCOL-2067 - Calling Interoperability with Microsoft Teams
Feb 6, 16:45	BRKCOL-2481 - Successful Migrations from Unified CM to Webex Calling
Feb 6, 17:00	BRKCOL-2068 - Cisco IP Phones, headsets, and webcams: The product updates that we all need to know
Feb 7, 10:30	BRKCOL-2787 - Planning and Designing Successful Cloud Calling Deployments with Webex Calling
Feb 7, 14:30	BRKCOL-2312 - High Capacity Premises-based PSTN Option for Webex Calling
Feb 8, 10:30	BRKCOL-2993 - Enabling Site Survivability for Webex Calling
Feb 8, 12:00	BRKCOL-2812 - Troubleshooting Webex Calling Premises-based PSTN
Feb 8, 17:00	BRKCOL-3015 - Agile Management of Webex Calling - There's an API for that



The bridge to possible

# Thank you

CISCO *Live!*



The Cisco Live! logo features the word "CISCO" in a bold, black, sans-serif font, followed by "Live!" in a black, cursive script font. The background of the entire image is a vibrant, multi-colored abstract pattern of overlapping, wavy bands in shades of red, orange, yellow, green, and blue, creating a sense of motion and energy.

CISCO *Live!*

Let's go