



The bridge to possible

# Planning and Designing Successful Cloud Calling Deployments with Webex Calling

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# Cisco Webex App

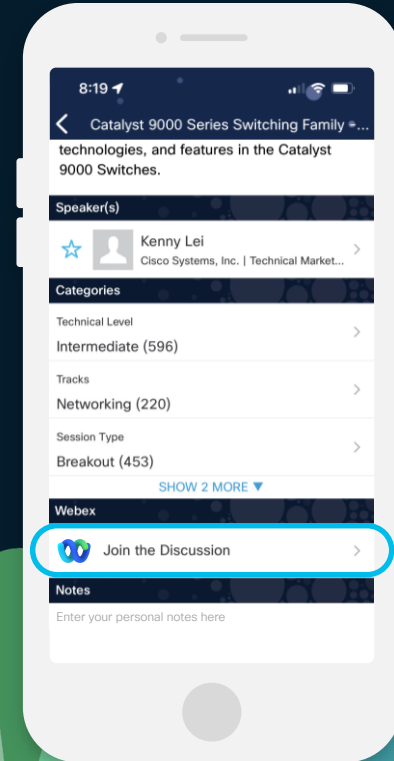
## Questions?

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

## How

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

Webex spaces will be moderated by the speaker until June 7, 2024.



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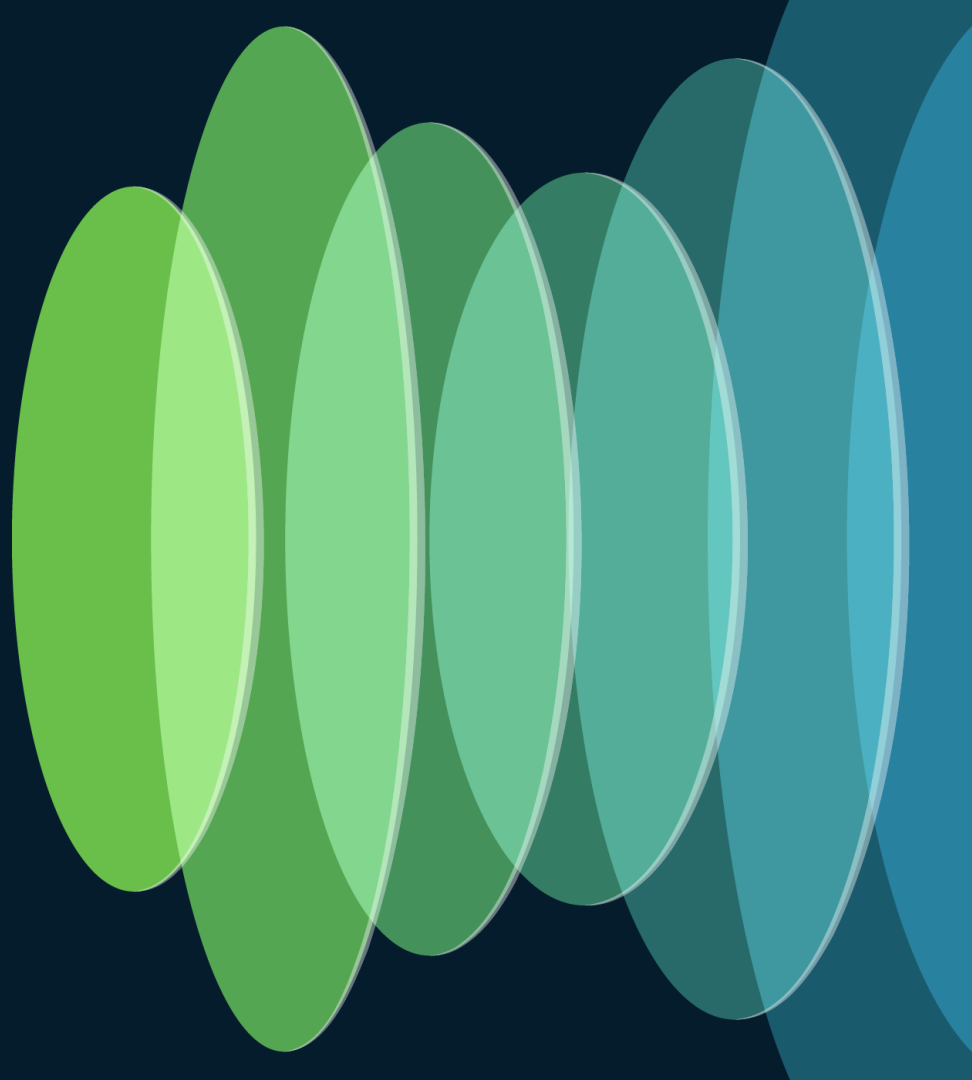


# Agenda

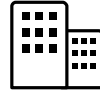
- Introduction
- Solution Overview
- PSTN Options
- Regions
- Location Considerations
- Dialing / Call Routing
- Closing



# 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

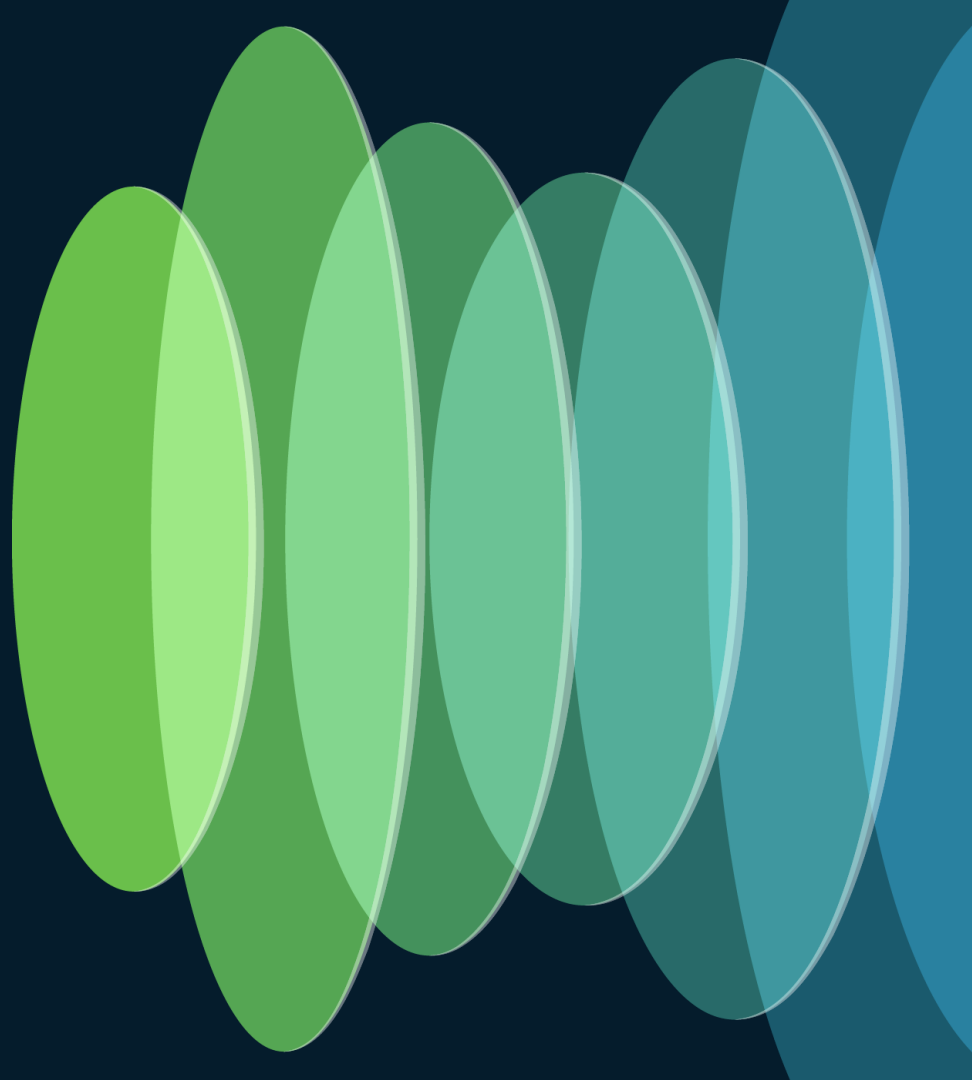
Google Chrome integration

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



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<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



Trunk

US East  
(Route Group)

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

## 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.

### CA PBX Dial Plan

+1408525XXXX

8408XXXX

+1310444XXXX

8310XXXX

us.foo.com

# 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

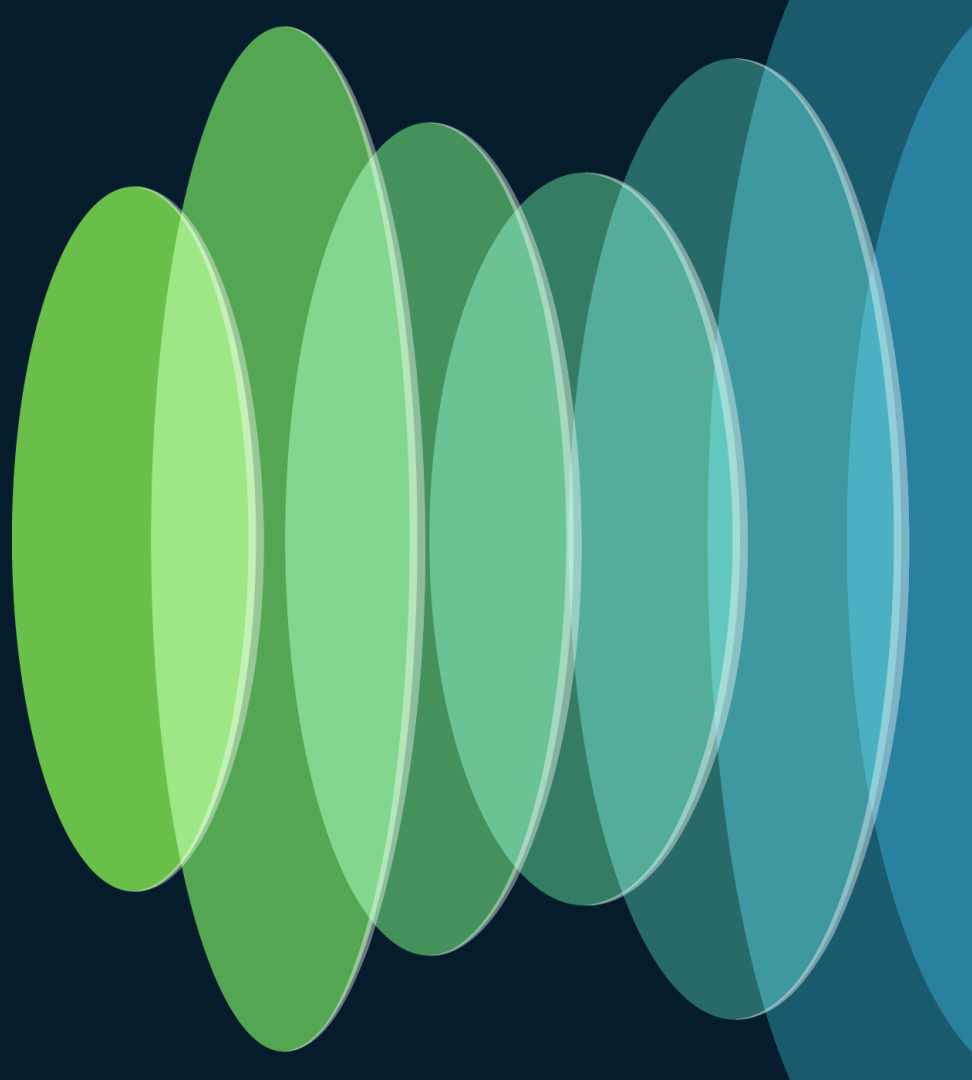
<https://community.cisco.com/t5/collaboration-knowledge-base/cloud-connect-for-webex-calling-global-availability/ta-p/3916211>

# 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

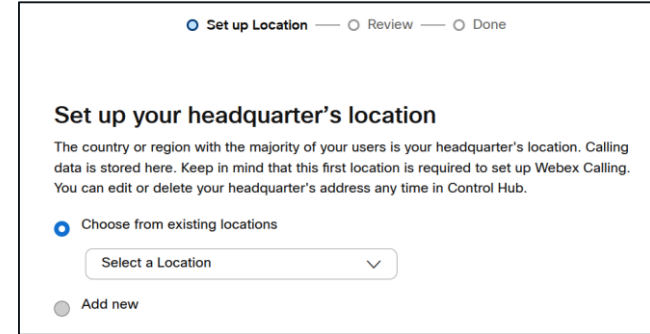
- Verify Webex Org's Data Locations (*on Account page Info tab*)

The screenshot shows the Webex Management console. On the left is a 'MANAGEMENT' sidebar with a list of items: Customers, Users, Groups, Locations, Workspaces, Devices, Apps, Account (highlighted with a blue box), and Organization Settings. The main area displays the 'Data Locations' page. It features a table with three columns: 'Data Type', 'Covered Data', and 'Data Location'. The table lists three data types: 'Meetings', 'Messaging', and 'Common application data'. All three are located in the 'United States'. Three blue arrows point from the 'United States' entries in the 'Data Location' column to a single point on the right side of the image.

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

# 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 web interface for setting up a Webex Calling location. At the top, there are three tabs: "Set up Location" (selected), "Review", and "Done". Below the tabs, the heading "Set up your headquarter's location" is displayed. A paragraph explains that the country or region with the majority of users is the headquarters location, where calling data is stored, and that this first location is required for setup. Below this, there are two options: "Choose from existing locations" (selected) and "Add new". The "Choose from existing locations" option includes a dropdown menu labeled "Select a Location" with 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

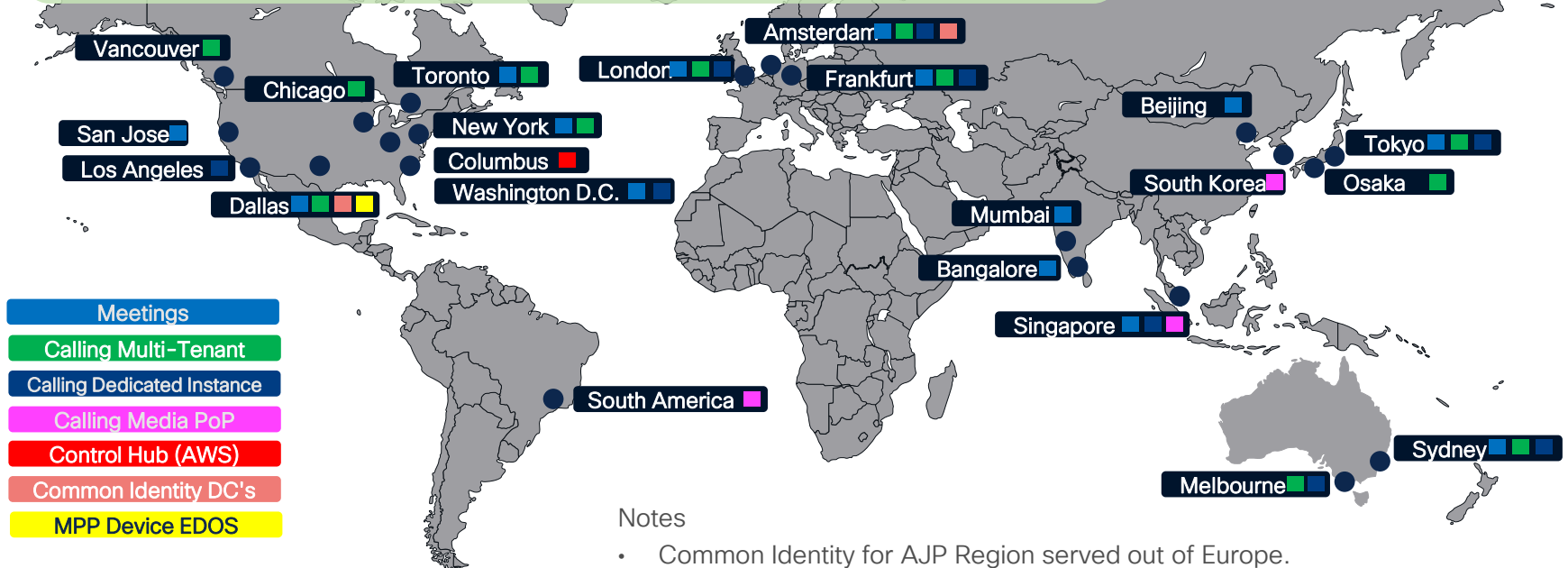
Device  
Cisco CUBE Local Gateway

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

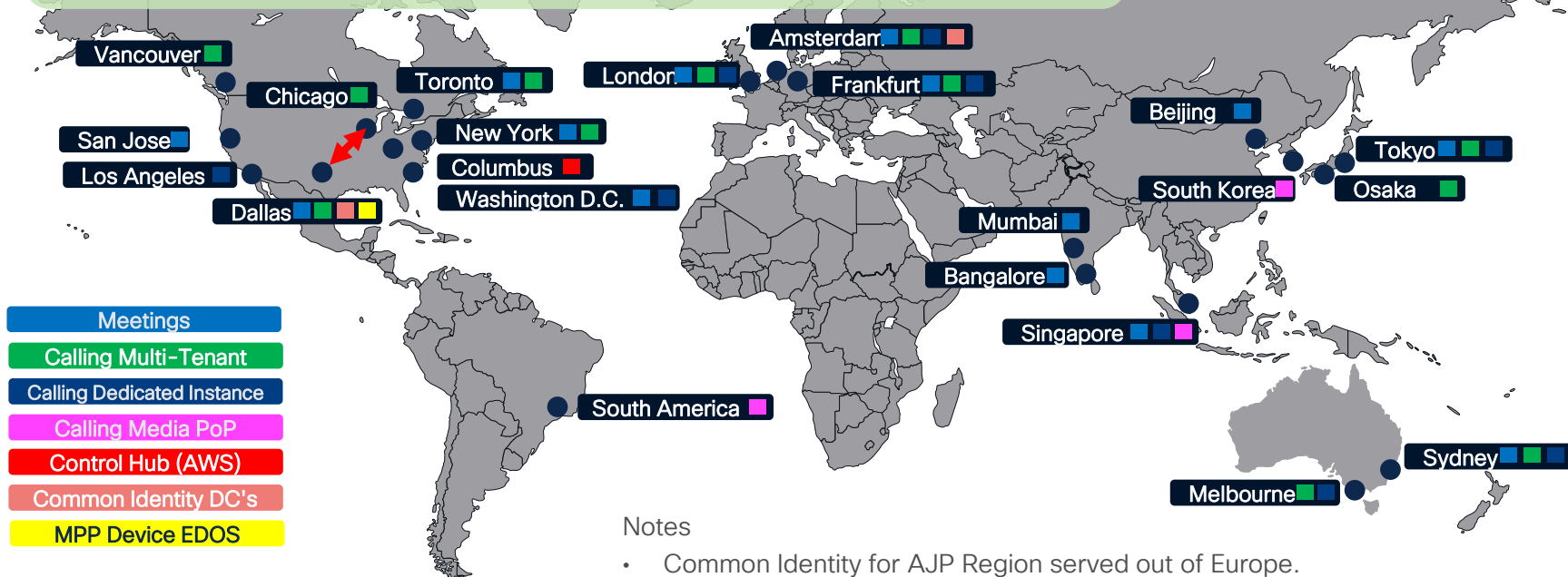
Learn more: [Global availability overview](#)

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# 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

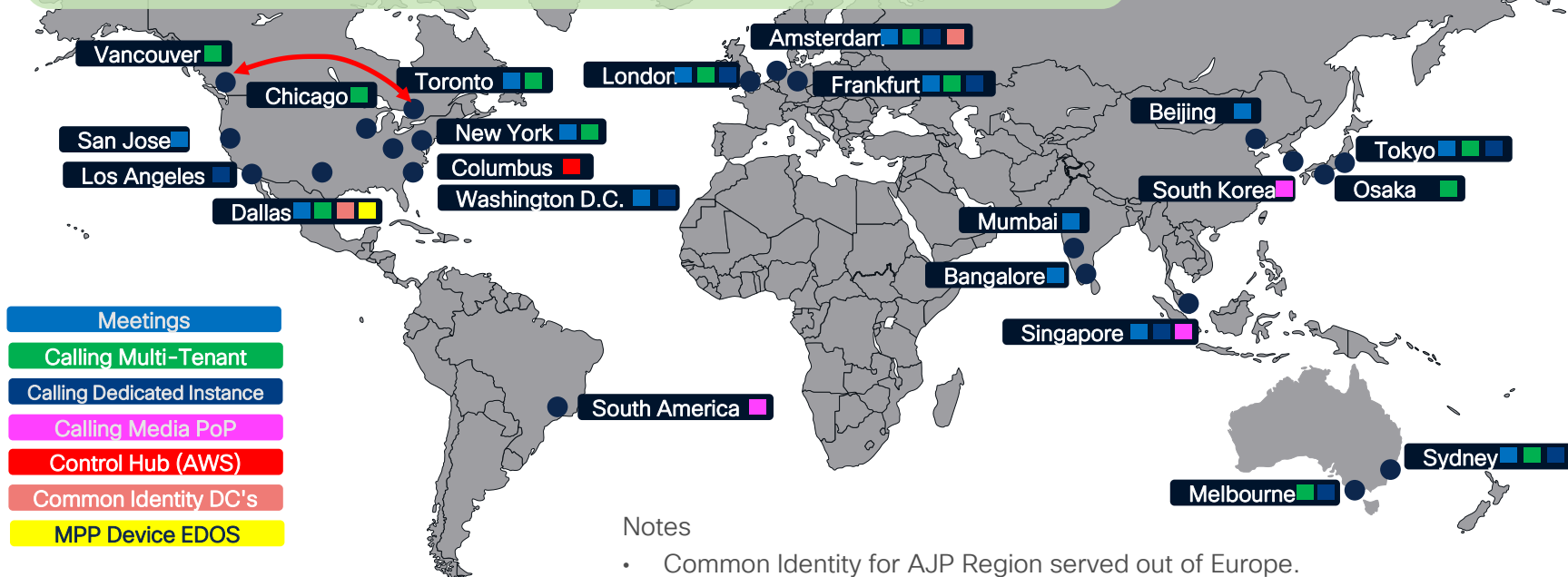
- Common Identity for AJP Region served out of Europe.
- Cities with multiple services may have these services across multiple DC's

Learn more: [Global availability overview](#)

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# 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

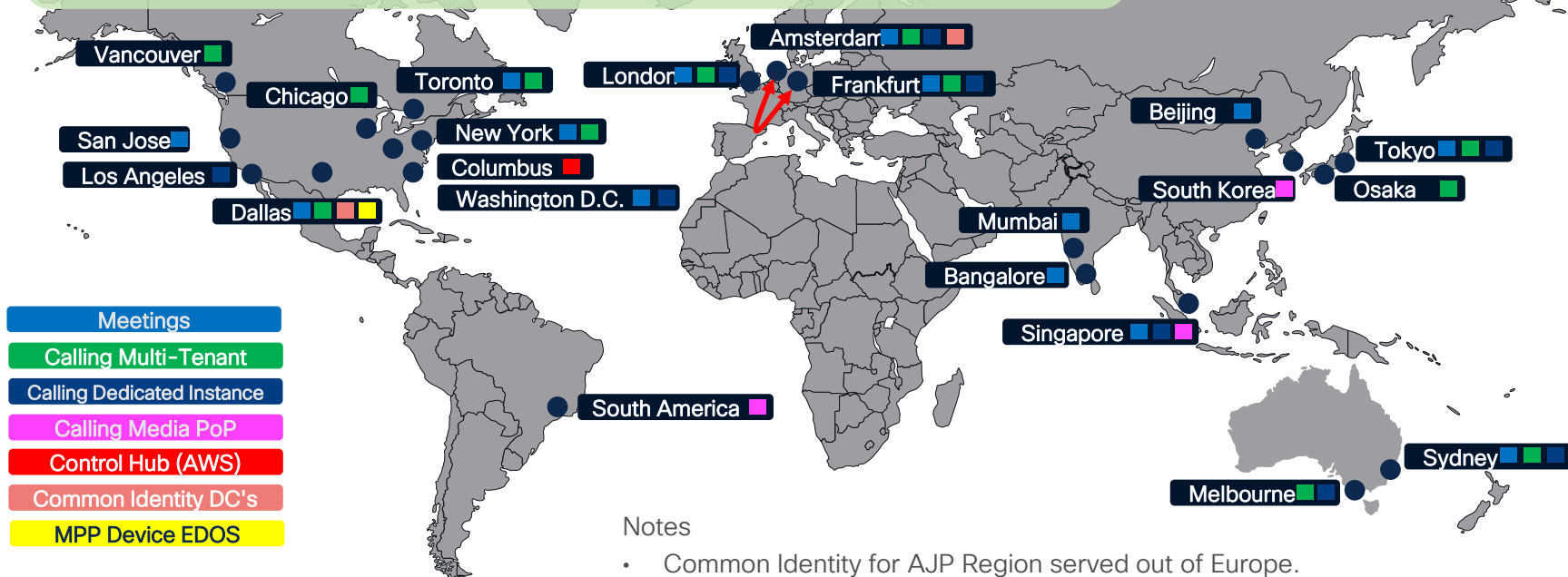
- Common Identity for AJP Region served out of Europe.
- Cities with multiple services may have these services across multiple DC's

Learn more: [Global availability overview](#)

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# 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

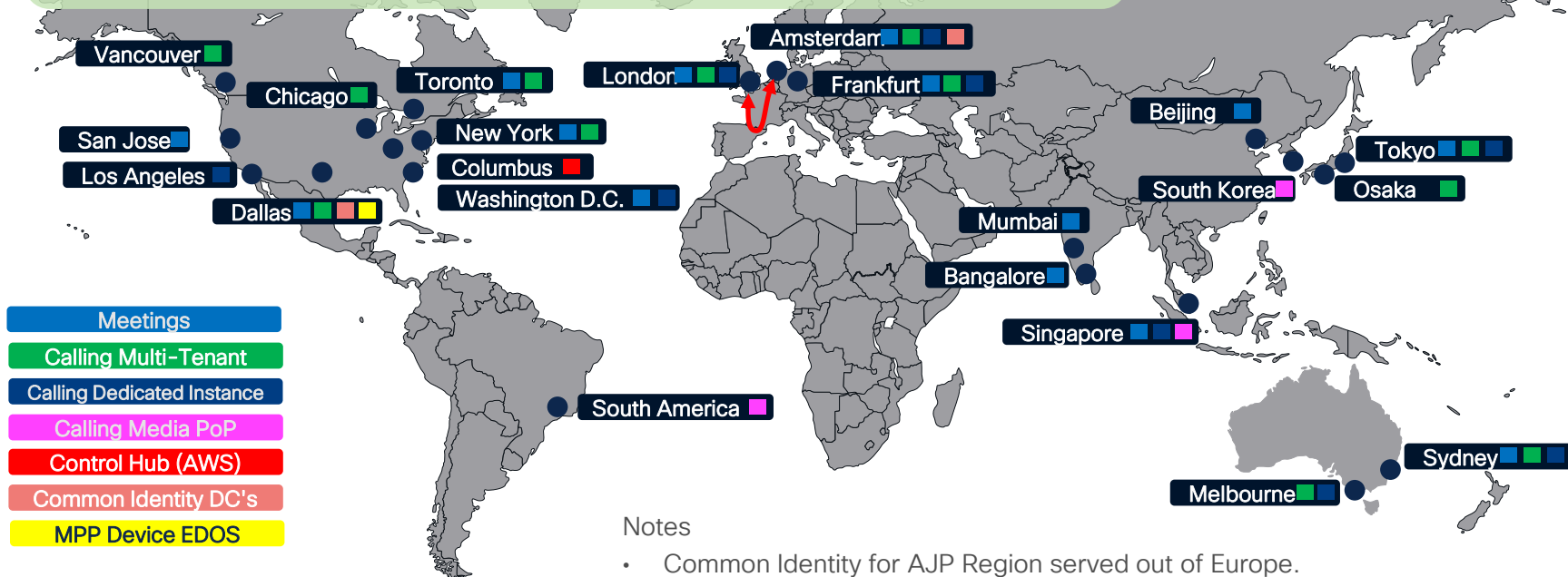
- Common Identity for AJP Region served out of Europe.
- Cities with multiple services may have these services across multiple DC's

Learn more: [Global availability overview](#)

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# 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



## Notes

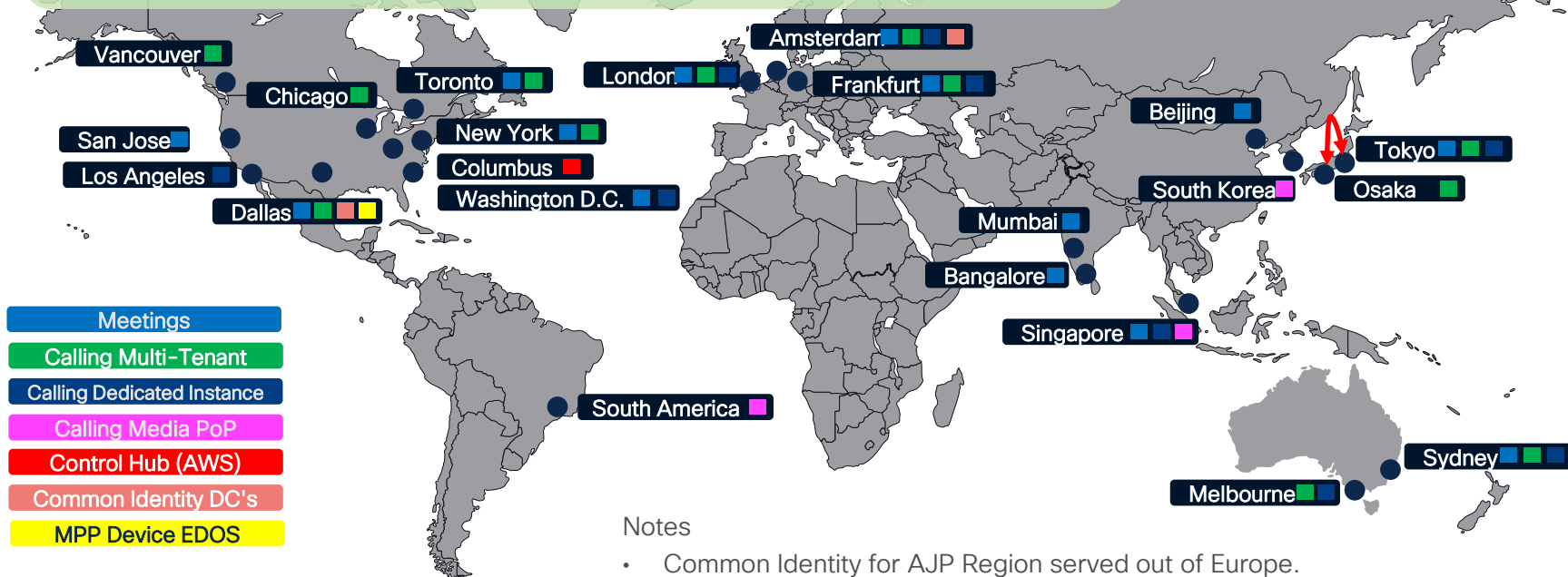
- Common Identity for AJP Region served out of Europe.
- Cities with multiple services may have these services across multiple DC's

Learn more: [Global availability overview](#)

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# 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

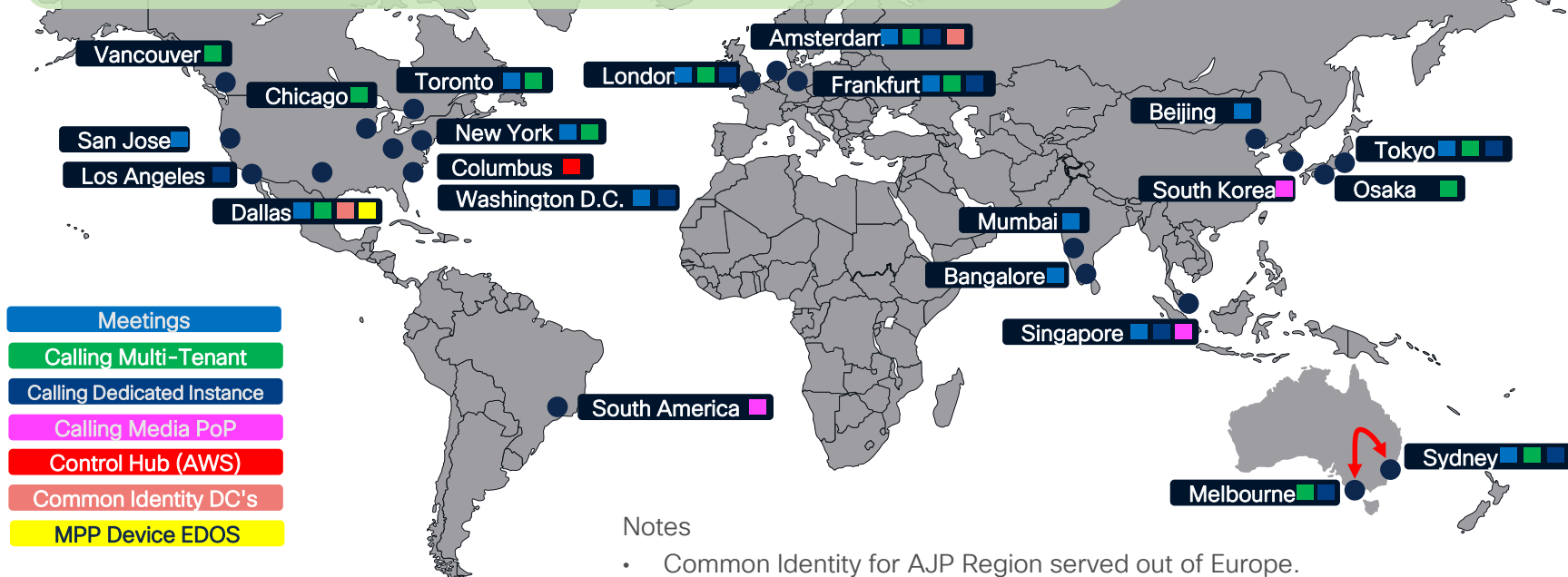
- Common Identity for AJP Region served out of Europe.
- Cities with multiple services may have these services across multiple DC's

Learn more: [Global availability overview](#)

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# 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](#)

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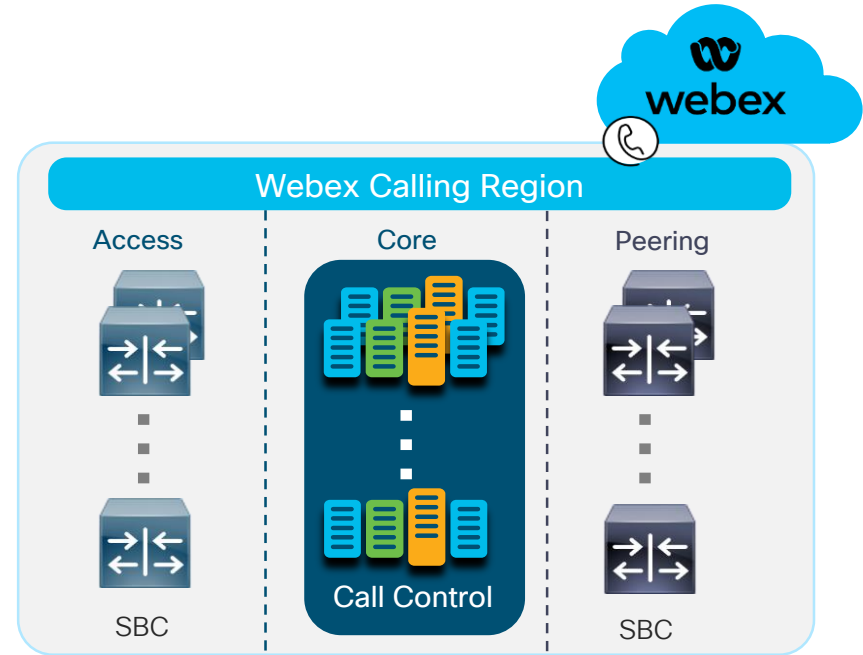
# Webex Calling regional scaling

Core call control scales horizontally

- Leveraging micro services to quickly deploy/expand

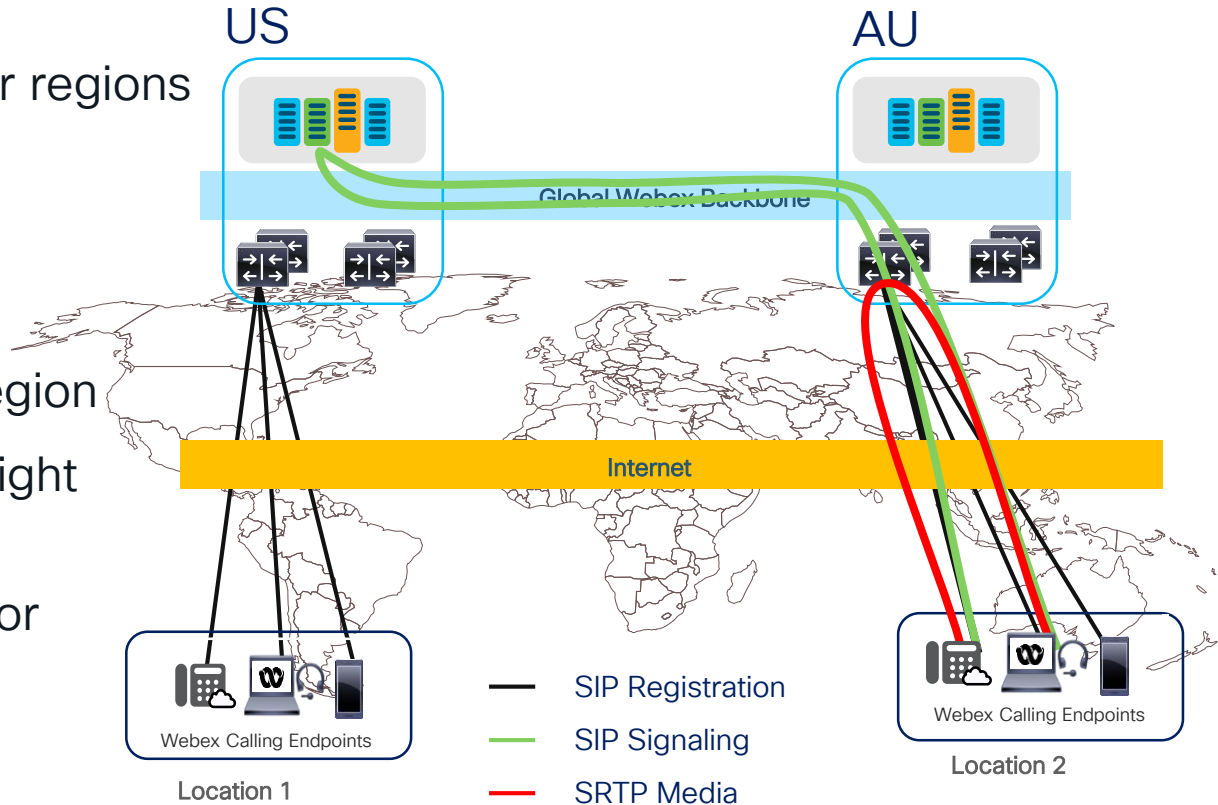
SBC Resources are separated from Access and Peering

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



# Multi-region customer: Regional media

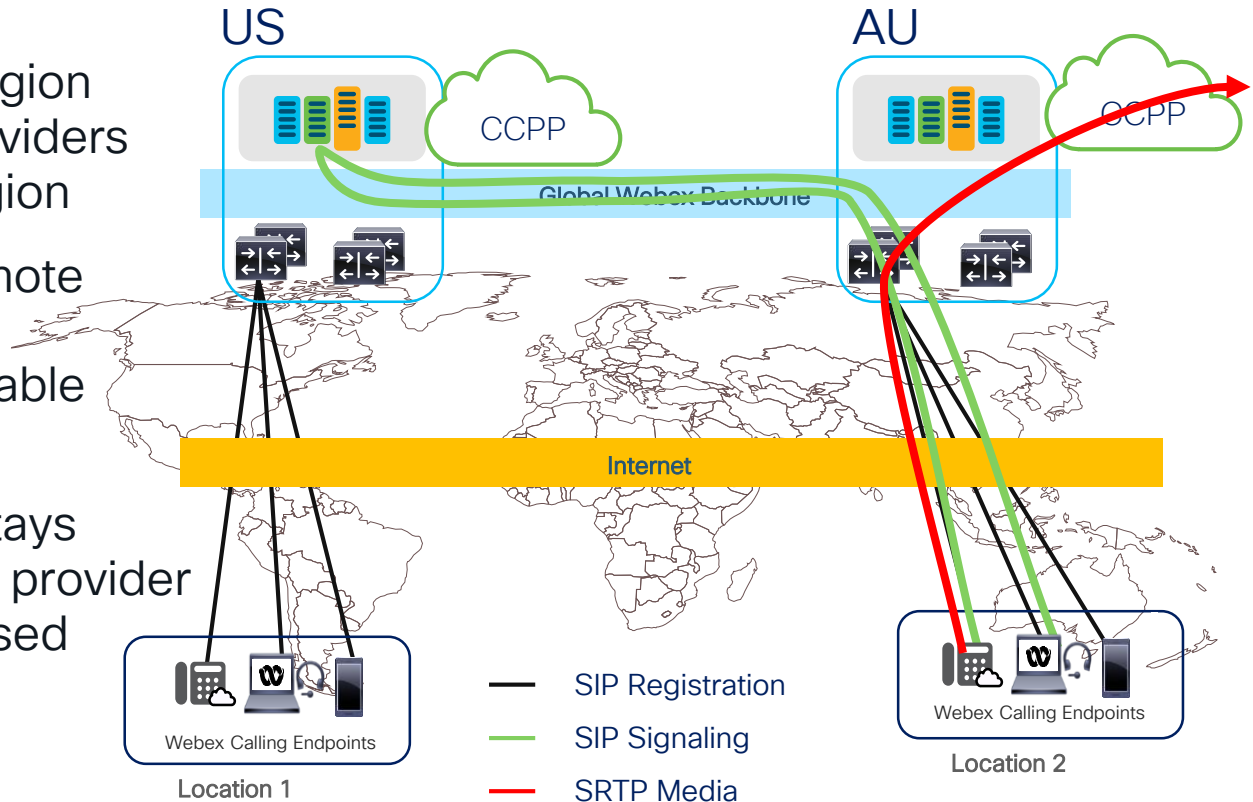
- Access SBCs in other regions can be used
- In-region registration
- In-region media
- Signaling still inter-region
- Cut-through delay might still occur
- Media RTT not a factor





# 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](#)

New: Webex Calling with Cloud Connect for Webex Calling provider in India, <https://help.webex.com/en-us/article/gvzxbu>



# 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.





# Webex Calling Datacenter Selection

Sell in countries				Webex Calling Data Centers	
Country/Region selected during Customer creation in Control Hub				Home region for Webex Calling customer	
<ul style="list-style-type: none"> <li>Australia</li> <li>Timor-Leste</li> </ul>	<ul style="list-style-type: none"> <li>New Zealand</li> <li>Vanuatu</li> </ul>	<ul style="list-style-type: none"> <li>Indonesia</li> <li>Fiji</li> </ul>	<ul style="list-style-type: none"> <li>Papua New Guinea</li> </ul>	<ul style="list-style-type: none"> <li>AU</li> </ul>	MT/DI: Sydney/Melbourne
<ul style="list-style-type: none"> <li>Canada</li> </ul>				<ul style="list-style-type: none"> <li>CA</li> </ul>	MT: Toronto/Vancouver or Dallas/Chicago DI: Dallas/San Jose
<ul style="list-style-type: none"> <li>Angola</li> <li>Austria</li> <li>Bahrain</li> <li>Belgium</li> <li>Bulgaria</li> <li>Czech Rep.</li> <li>Croatia</li> <li>Cyprus</li> <li>Denmark</li> <li>Egypt</li> <li>Estonia</li> <li>Finland</li> <li>France</li> <li>Germany</li> </ul>	<ul style="list-style-type: none"> <li>Ghana</li> <li>Greece</li> <li>Hungary</li> <li>Iceland</li> <li>Ireland</li> <li>Israel</li> <li>Italy</li> <li>Jordan</li> <li>Kenya</li> <li>Kuwait</li> <li>Latvia</li> <li>Lebanon</li> <li>Lithuania</li> <li>Luxembourg</li> </ul>	<ul style="list-style-type: none"> <li>Malta</li> <li>Mauritius</li> <li>Monaco</li> <li>Netherlands</li> <li>Nigeria</li> <li>Norway</li> <li>Oman</li> <li>Pakistan</li> <li>Poland</li> <li>Portugal</li> <li>Qatar</li> <li>Reunion &amp; Mayotte</li> <li>Romania</li> </ul>	<ul style="list-style-type: none"> <li>Saudi Arabia</li> <li>Slovakia</li> <li>Slovenia</li> <li>South Africa</li> <li>Spain</li> <li>Sweden</li> <li>Switzerland</li> <li>Turkey</li> <li>UAE</li> <li>Ukraine</li> <li>United Kingdom</li> </ul>	<ul style="list-style-type: none"> <li>EMEA</li> </ul>	(UK) MT/DI: London/Frankfurt  (EU) MT: Amsterdam/Frankfurt  (EU) DI: Amsterdam/Frankfurt
<ul style="list-style-type: none"> <li>Bangladesh</li> <li>Bhutan</li> <li>Cambodia</li> <li>Hong Kong</li> <li>India</li> </ul>	<ul style="list-style-type: none"> <li>Japan</li> <li>Laos</li> <li>Malaysia</li> <li>Mongolia</li> <li>Myanmar</li> </ul>	<ul style="list-style-type: none"> <li>Nepal</li> <li>Philippines</li> <li>Singapore</li> <li>South Korea</li> <li>Taiwan</li> </ul>	<ul style="list-style-type: none"> <li>Thailand</li> <li>Vietnam</li> </ul>	<ul style="list-style-type: none"> <li>JP</li> </ul>	MT: Tokyo/Osaka DI: Tokyo/Singapore MT Media PoP South Korea

Notes: MT=Webex Calling (Multi-tenant), DI=Dedicated Instance for Webex Calling

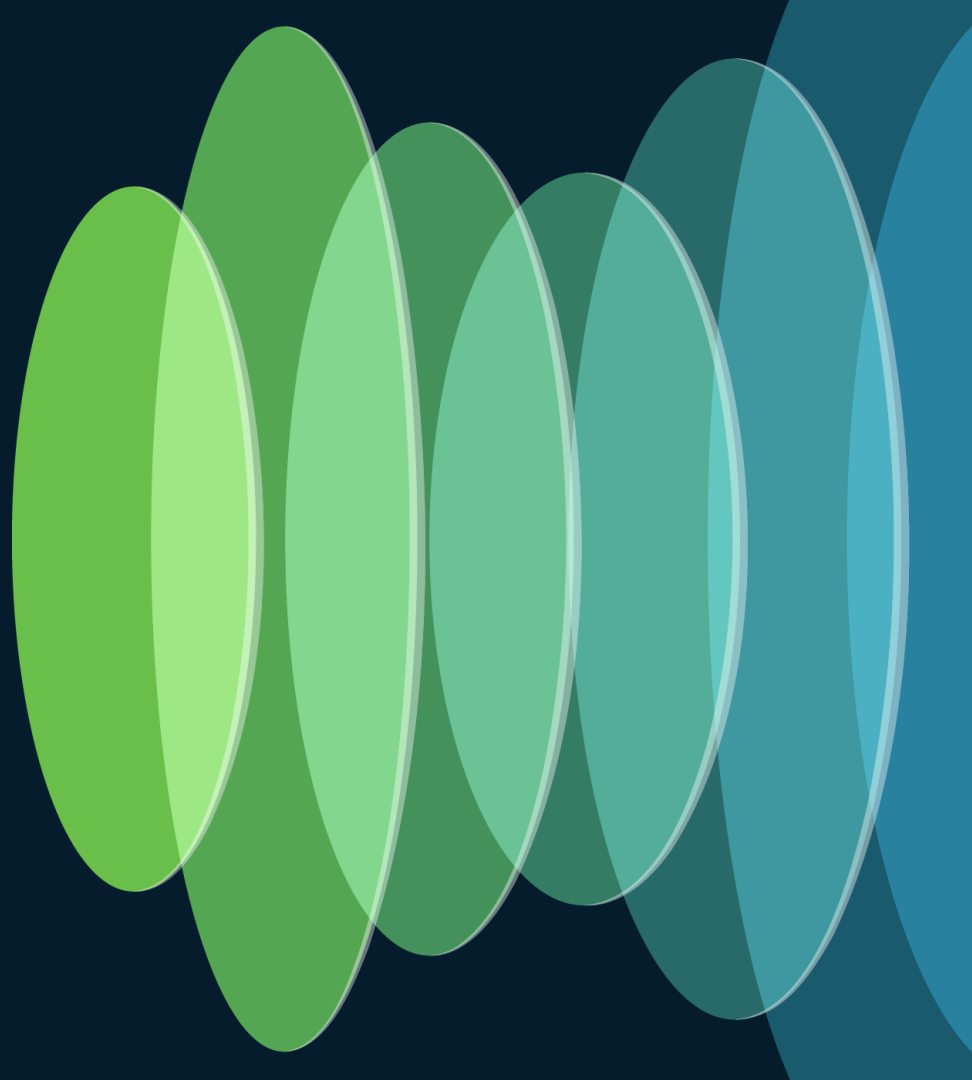
# Webex Calling Datacenter Selection

## continued

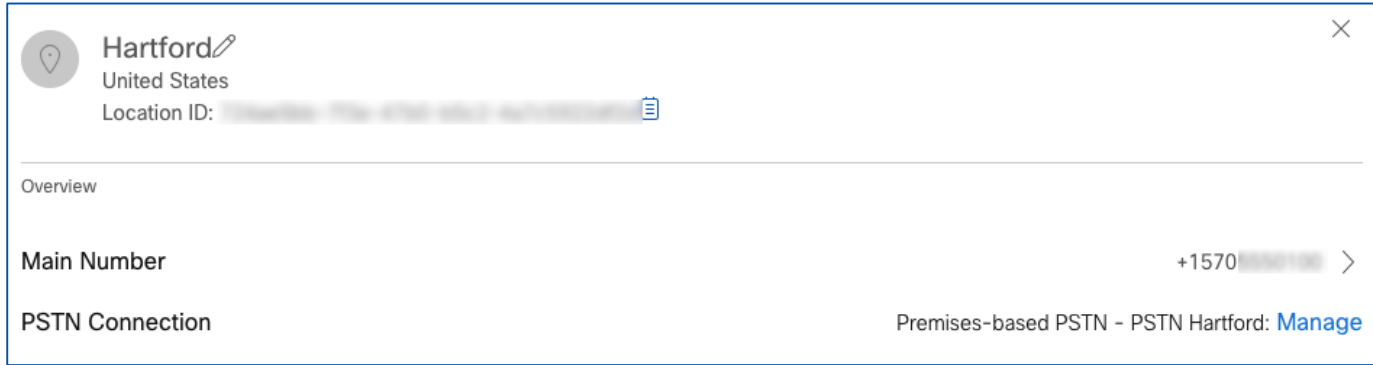
Sell in countries				Webex Calling Data Centers	
Country/Region selected during Customer creation in Control Hub				Home region for Webex Calling customer	
<ul style="list-style-type: none"> <li>American Samoa</li> <li>Anguilla</li> <li>Antigua &amp; Barbuda</li> <li>Argentina</li> <li>Bahamas</li> <li>Barbados</li> <li>Bermuda</li> <li>Bolivia</li> <li>Brazil</li> <li>British Virgin Islands</li> <li>Cayman Islands</li> <li>Chile</li> <li>Columbia</li> </ul>	<ul style="list-style-type: none"> <li>Costa Rica</li> <li>Dominica</li> <li>Dominican Republic</li> <li>Ecuador</li> <li>El Salvador</li> <li>French Guiana</li> <li>Grenada</li> <li>Guadeloupe</li> <li>Guam</li> <li>Guatemala</li> <li>Guyana</li> <li>Haiti</li> <li>Honduras</li> <li>Jamaica</li> <li>Martinique</li> </ul>	<ul style="list-style-type: none"> <li>Mexico</li> <li>Montserrat</li> <li>Nicaragua</li> <li>Northern Mariana Islands</li> <li>Panama</li> <li>Paraguay</li> <li>Peru</li> <li>Puerto Rico</li> <li>Saint Kitts &amp; Nevis</li> <li>Saint Lucia</li> <li>Saint Pierre &amp; Miquelon</li> </ul>	<ul style="list-style-type: none"> <li>Saint Vincent &amp; the Grenadines</li> <li>Sint Maarten</li> <li>Trinidad &amp; Tobago</li> <li>Turks &amp; Caicos Islands</li> <li>United States</li> <li>Uruguay</li> <li>US Virgin Islands</li> </ul>	<ul style="list-style-type: none"> <li>US</li> </ul>	<p>MT: Dallas/Chicago/New York</p> <p>DI: Dallas/San Jose</p> <p>MT: Media PoP South America</p>

Notes: MT=Webex Calling (Multi-tenant), DI=Dedicated Instance for Webex Calling

# Location Considerations



# PSTN Integration



The screenshot shows the 'Hartford' location configuration page in CUCM. At the top, there's a header with the location name 'Hartford' and a pencil icon for editing, followed by 'United States' and a 'Location ID' field with a clipboard icon. Below this is a horizontal line. Under the line, the word 'Overview' is visible. Further down, the 'Main Number' field is shown with the value '+1570' and a greater-than sign icon. At the bottom, the 'PSTN Connection' field is displayed with the text '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 device → Nomadic E911 service
  - Only available in US/CAN
  - Uses RedSky: <https://www.redsky911.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 (Hartford)

☒ Use assigned number from this location

+1570555 (Anita Hunt) ▼

**Lester Ray**

Active • jlester@csco.com • Location: Hartford

Profile General Meetings **Calling** Messaging Hybrid Services

< Calling

Emergency callback number

☐ User's phone number: +1570 (555) 1111

☐ Location default ECBN: +1570 (555) 1234

☒ Assigned number from user's location

+1570555 (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

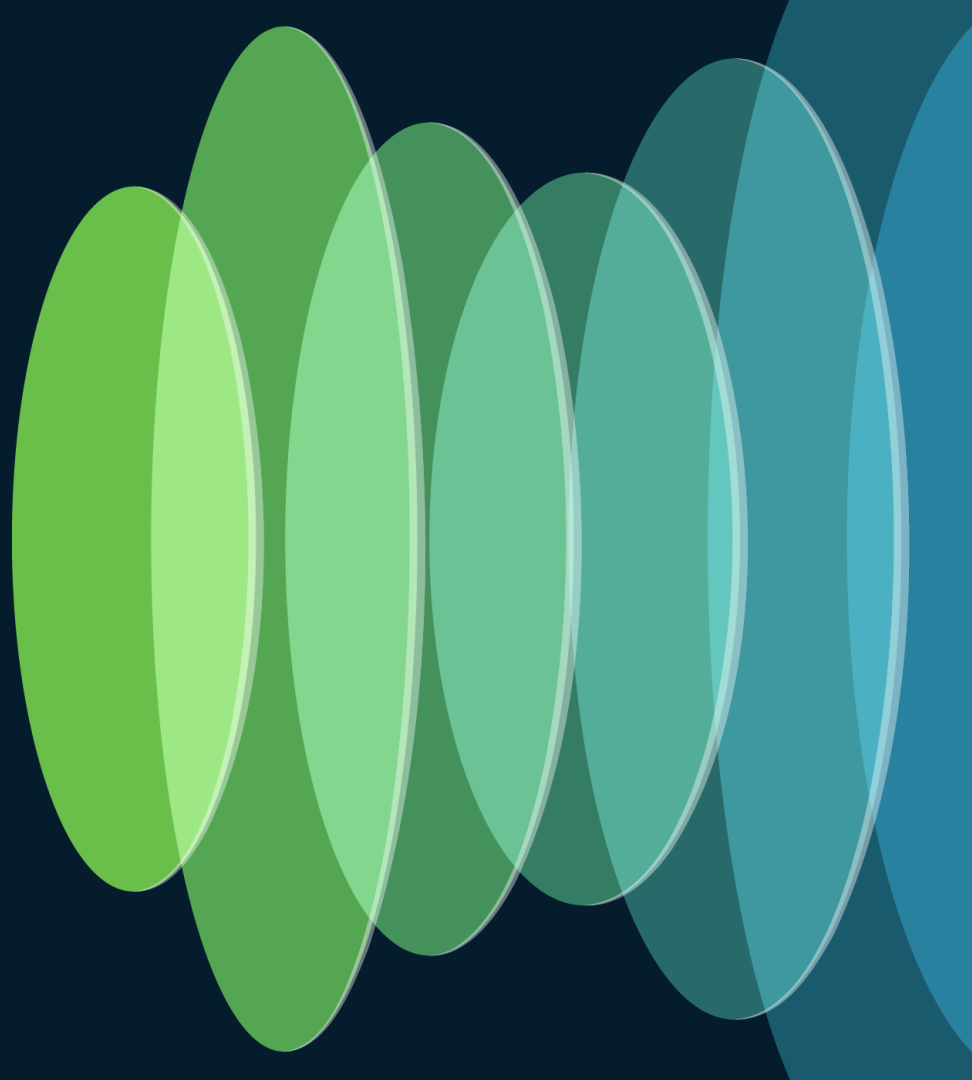
- **Call Pickup** – Users that are added to a call pickup can answer calls when another member of the call pickup is busy.
  - A user can only be assigned to one call pickup. A location may have multiple call pickups
  - A call pickup can only have users from the same location
  - Call Pickup requires 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 Extensions – 1000
- Hunt Groups – 1000
- Call Queues – 1000
- Authorization Codes – 1000
- Call Park Extensions – 100
- Call Pickup Groups – 1000

# Dialing / Call Routing



# Webex Calling Dialing Habits

- Extension dialing: 2-10 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



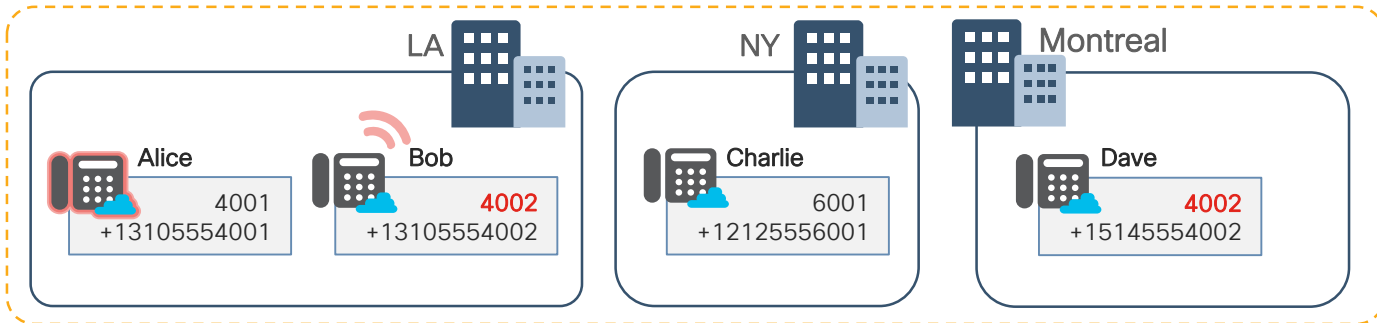
<https://help.webex.com/en-us/article/757iyo/Dial-plans-by-country>



# 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.

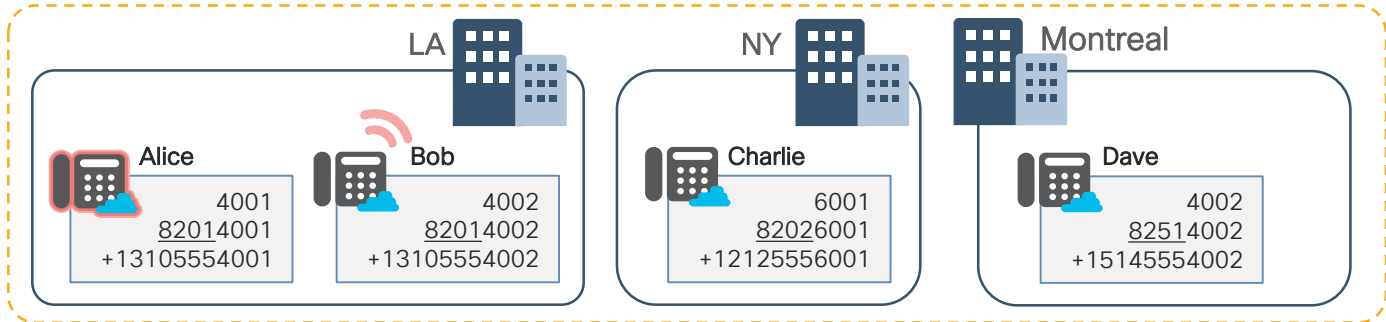


# Understanding location codes

- 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.

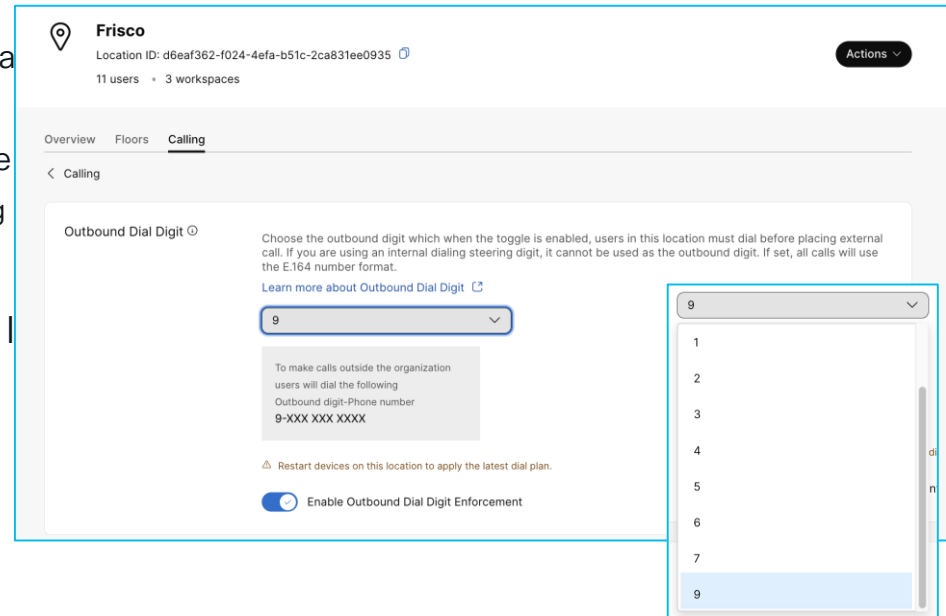


# Enterprise Best Practices

- 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 9)
    - Different from PSTN
  3. Uniform location code length (for example 9)
    - Location code includes leading internal steering
  4. Uniform extension length (for example 4)
- Uniform inter-site dialing: steering digit – 1
  - 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)
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  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

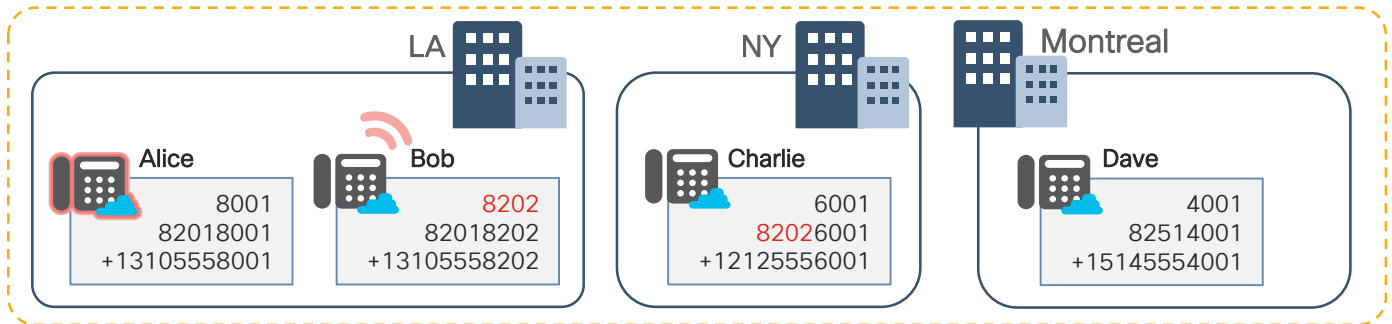
Cancel Save

# 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*

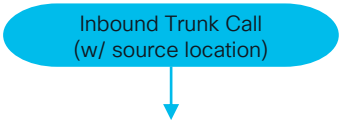
\*based on calling party number (or diversion header if present) and configuration settings



# Source Classification

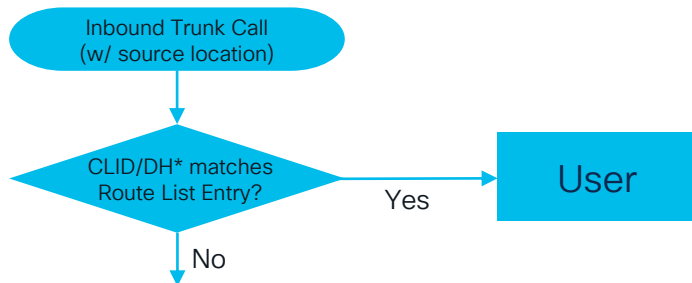
Calls from Local Gateway or Webex Calling DI

Inbound Trunk Call  
(w/ source location)



# Source Classification

Calls from Local Gateway or Webex Calling DI



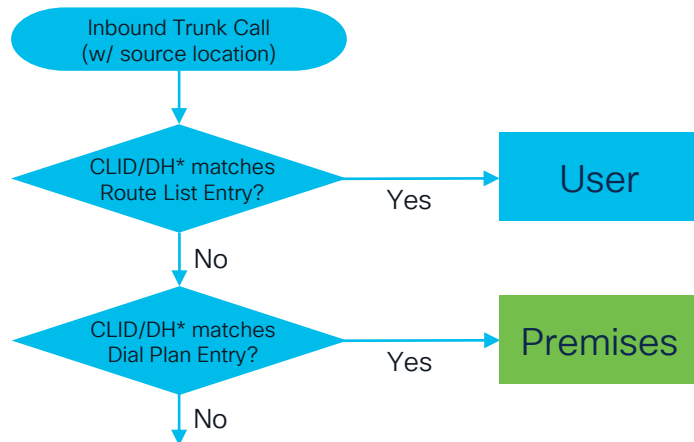
Number in Diversion header used if present, if not number in From header is used

```
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



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

# Source Classification

Calls from Local Gateway or Webex Calling DI

## Org-wide unknown number handling

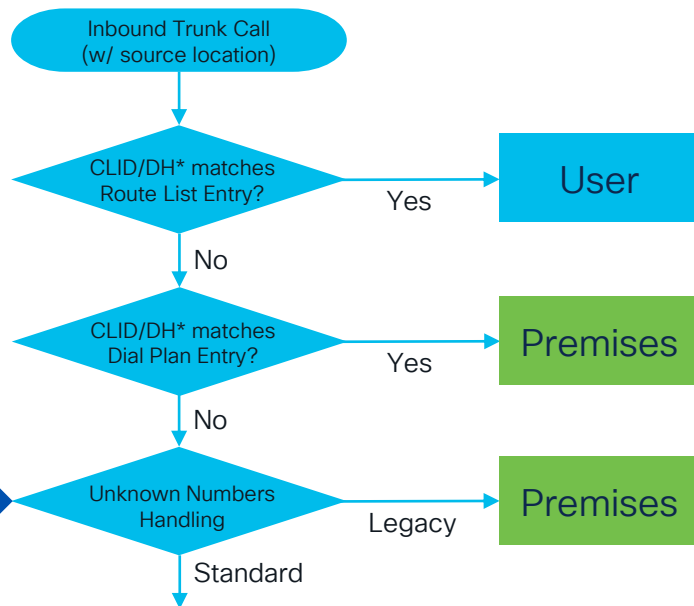
### ☒ Standard behavior

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

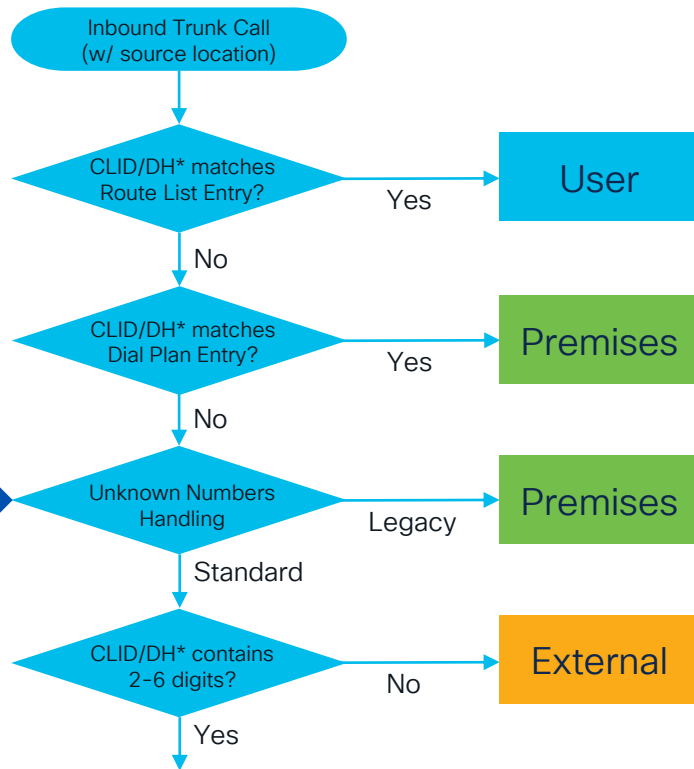
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Calls from Local Gateway or Webex Calling DI

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[Show Details](#) ▾

☐ Legacy behavior (not recommended)

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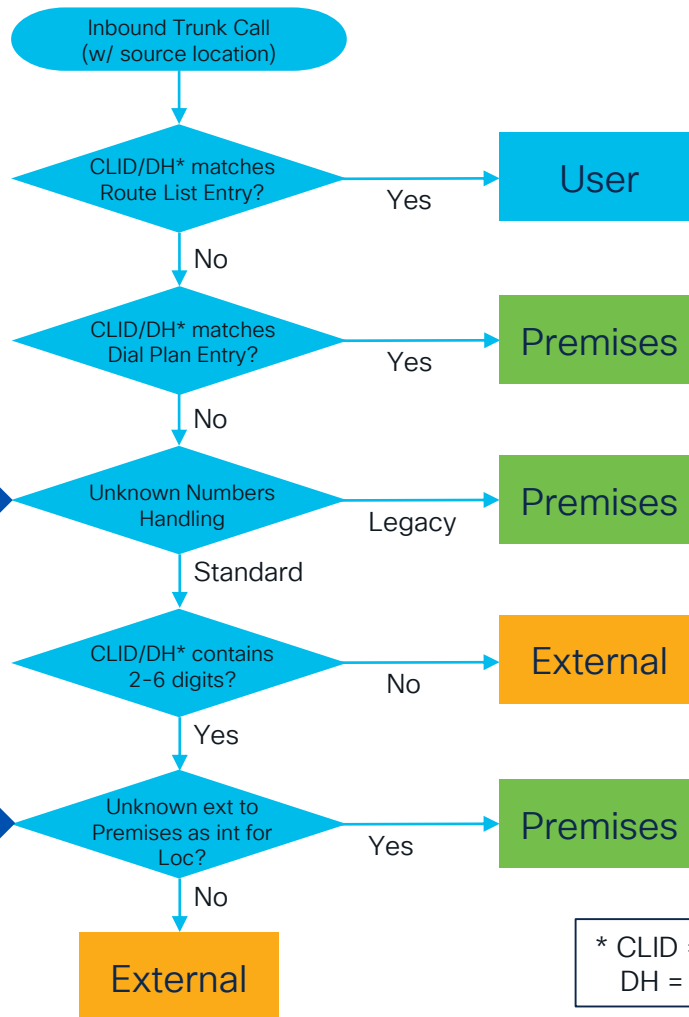
## Trunk Location Configuration

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 get classified as ”External”! Breaks features that rely on call types.

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[Show Details](#) ▾

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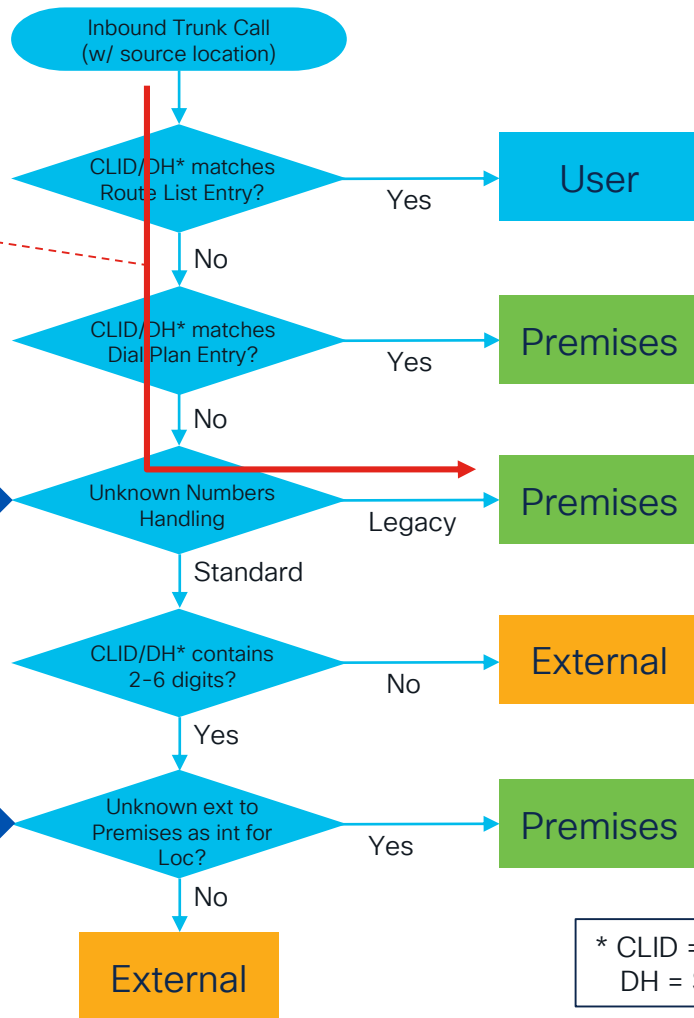
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VNT Alpha RG ▾



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Calls from Local Gateway or Webex Calling DI

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

## Org-wide unknown number handling

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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.

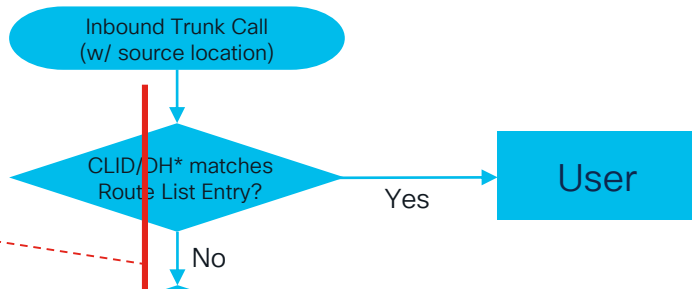
## Trunk Location Configuration

### 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

☒ 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.

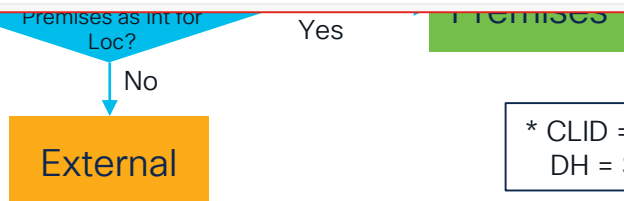
☐ Default settings  
The default settings will allow for all incoming calls.

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

Internal calls: Allow

Collect calls: Allow

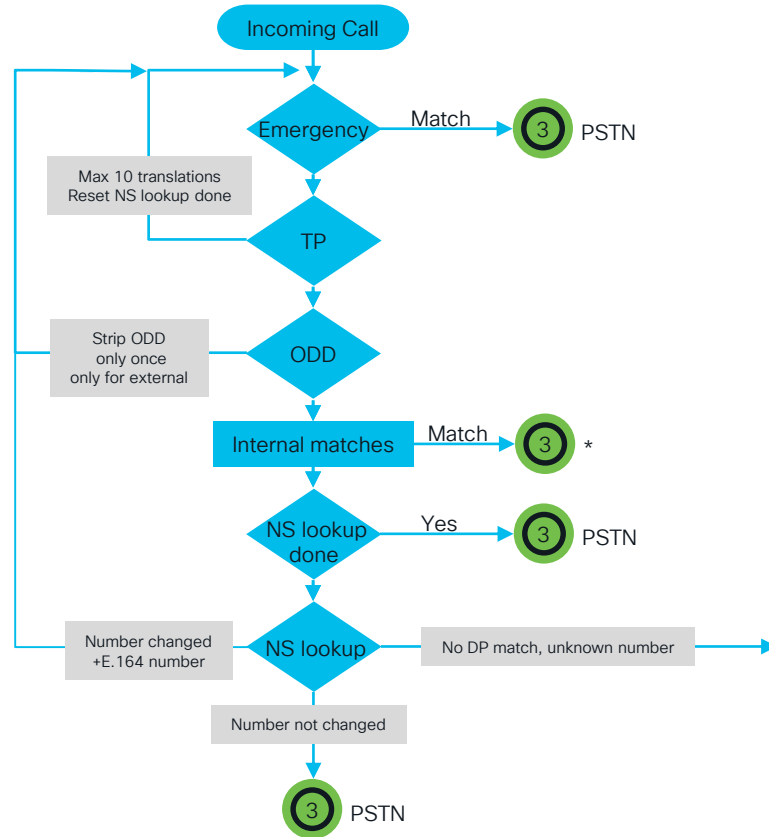
External calls: Allow for transferred



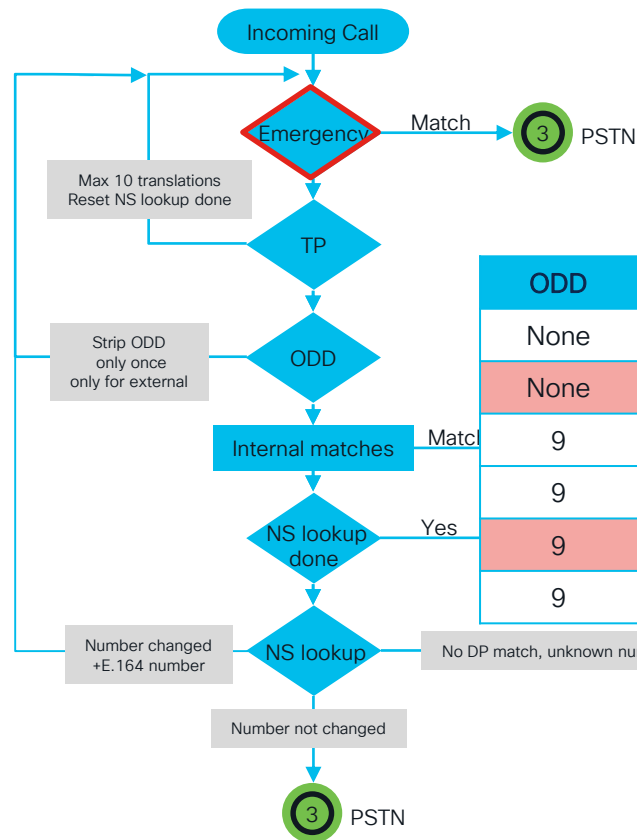
\* CLID = Calling Party ID  
DH = SIP Diversion Header



# Destination Selection



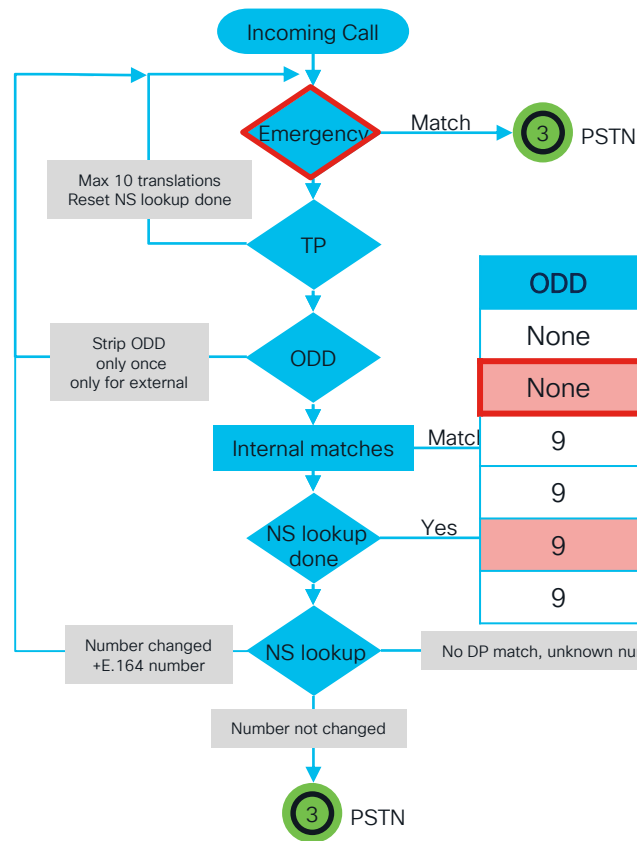
# Destination Selection



Permissive match: If dial string doesn't match emergency pattern and starts with a configured ODD then try to match with ODD removed. With ODD 9 both 911 and 9911 work.

ODD	ODD Enforced	Dial String	Result
None	N/A	911	Emergency Call
None	N/A	9911	Unknown Extension (if enabled)
9	No	911	Emergency Call
9	No	9911	Emergency Call
9	Yes	911	Emergency Call
9	Yes	9911	Emergency Call

# Destination Selection

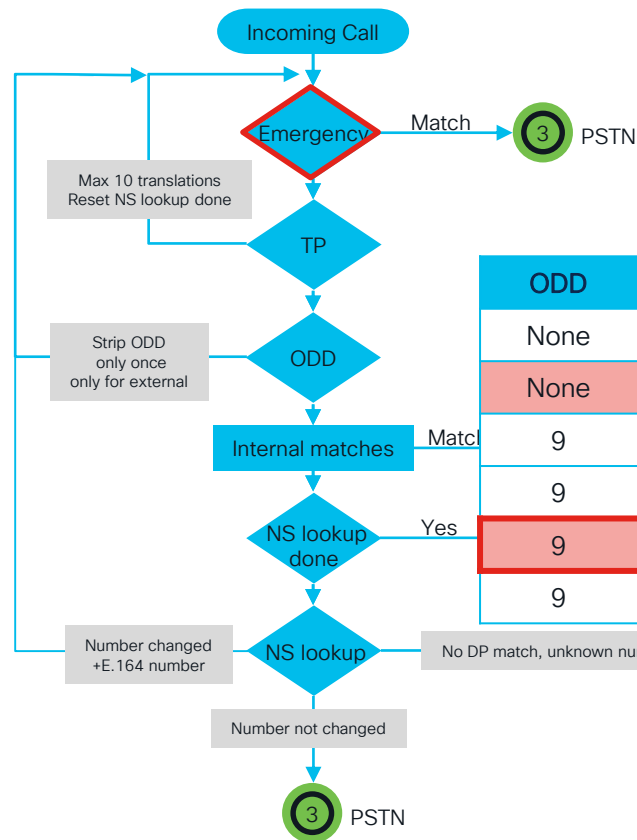


Permissive match: If dial string doesn't match emergency pattern and starts with a configured ODD then try to match with ODD removed. With ODD 9 both 911 and 9911 work.

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None	N/A	9911	Unknown Extension (if enabled)
9	No	911	Emergency Call
9	No	9911	Emergency Call
9	Yes	911	Emergency Call
9	Yes	9911	Emergency Call

911 only routed as emergency w/ ODD "9"

# Destination Selection



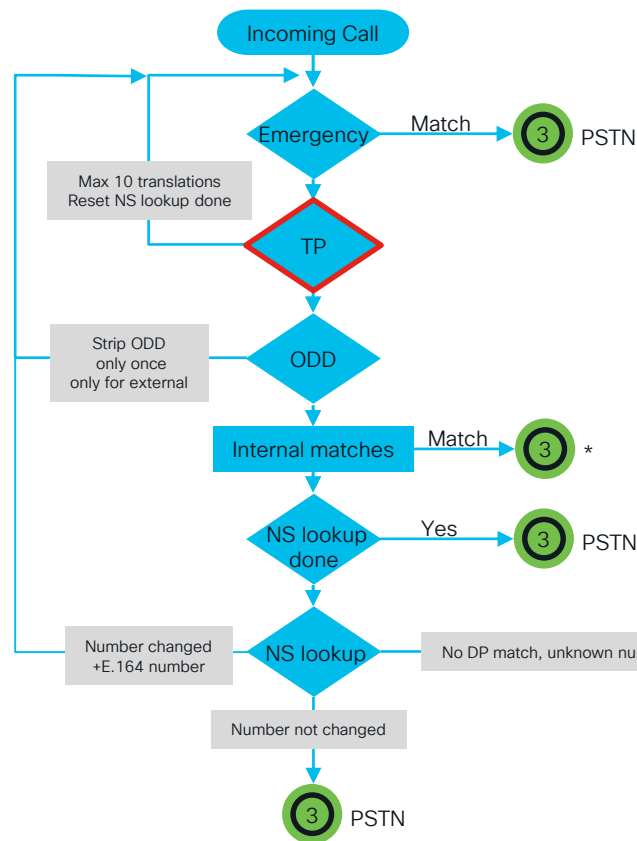
Permissive match: If dial string doesn't match emergency pattern and starts with a configured ODD then try to match with ODD removed. With ODD 9 both 911 and 9911 work.

ODD	ODD Enforced	Dial String	Result
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None	N/A	9911	Unknown Extension (if enabled)
9	No	911	Emergency Call
9	No	9911	Emergency Call
9	Yes	911	Emergency Call
9	Yes	9911	Emergency Call

9911 only routed as emergency w/ ODD "9"

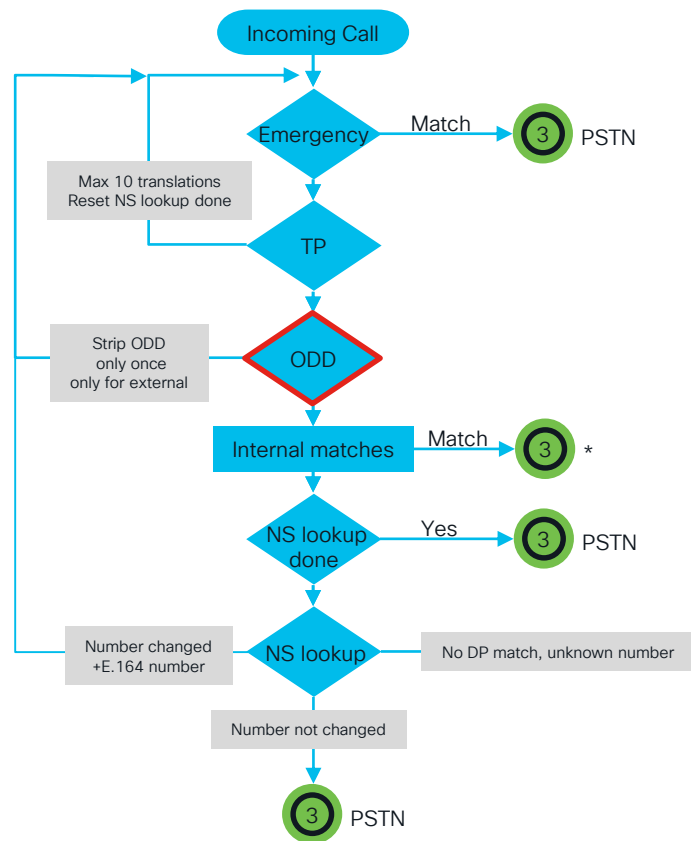
911 routed as emergency even w/ mandatory ODD "9"

# Destination Selection



- Try to match translation patterns
- Loop back if the dial string actually changes  
For example: 6432 hitting TP (6XXX → 6432) is not changing the dial string
- Max 10 translations in total per call leg
- Don't check TPs if ODD was removed earlier
- .. Unless NS lookup transformed number to +E.164 and we came back here

# Destination Selection



Outbound Dial Digit ⓘ

Choose the outbound digit which when the toggle is enabled, users in this location must dial before placing external call. If you are using an internal dialing steering digit, it cannot be used as the outbound digit. If set, all calls will use the E.164 number format.  
[Learn more about Outbound Dial Digit](#)

9 ▼

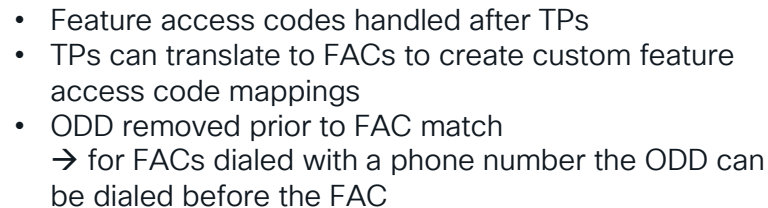
To make calls outside the organization users will dial the following  
Outbound digit-Phone number  
9-XXX XXX XXXX

⚠ Restart devices on this location to apply the latest dial plan.

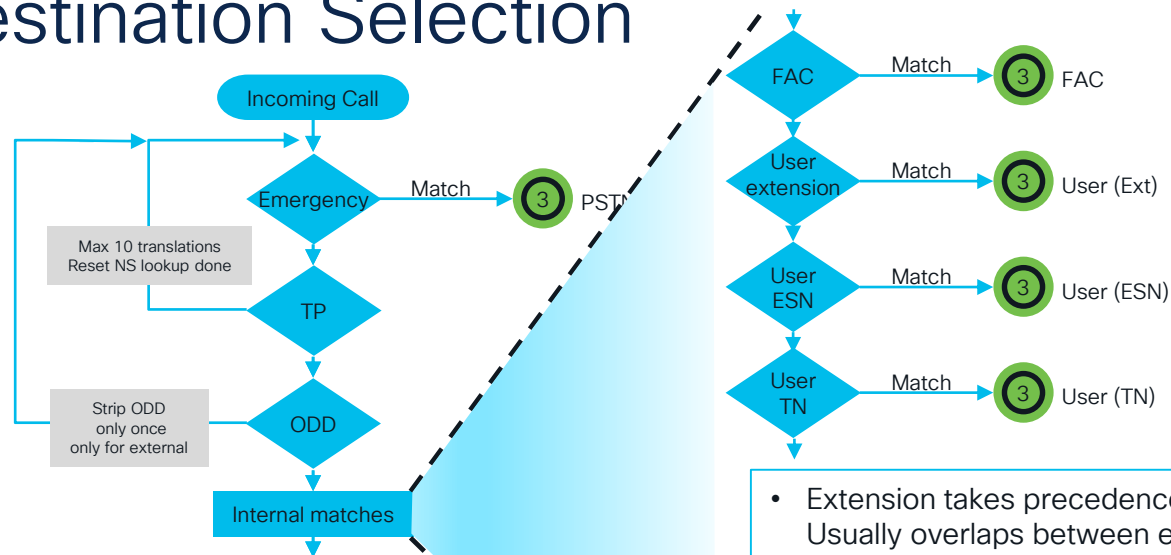
☒ Enable Outbound Dial Digit Enforcement

- If dial string starts with outside dial digit (e.g. “9”) then start lookups again w/ ODD removed
- For internal matched (like extensions) the stripped dial string will not be used
- ODD enforcement policy setting is irrelevant here
- ODD is only stripped once: be careful with TPs translating to dial strings starting with ODD
- Dial string w/ ODD removed is not used for internal matches (next step)

**CISCO** *Live!*



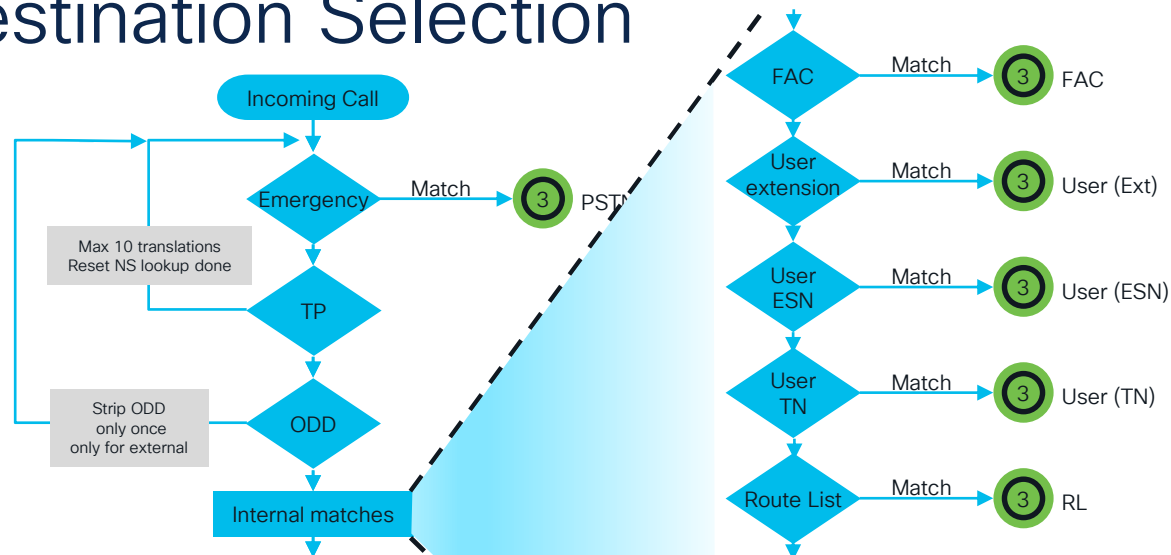
# Destination Selection



- Extension takes precedence over ESN or TN. Usually overlaps between extensions and other number types should be avoided
- Naïve globalization for TN match: If dial string is not +E.164 then remove national prefix if present and prefix with +CC
  - US, 4085551234, no national prefix, prefix +1 → +14085551234
  - US, 14085551234, remove national prefix "1", prefix +1 → +14085551234
  - DE, 061007739764, remove national prefix "0", prefix +49 → +4961007739764

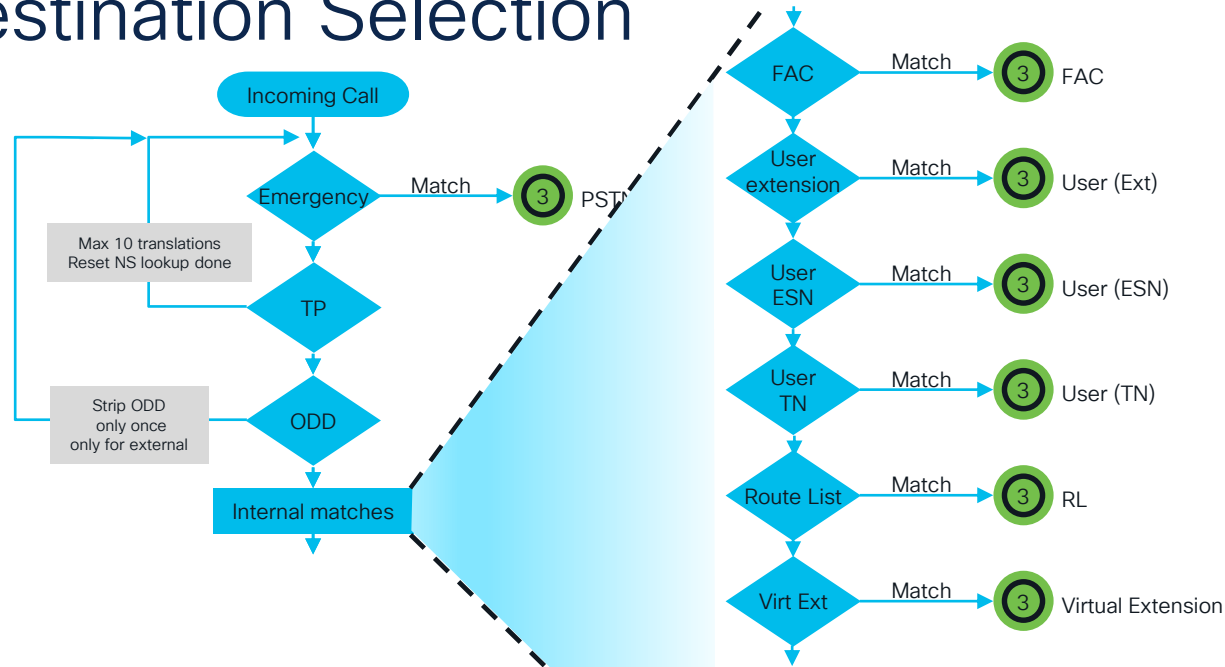


# Destination Selection



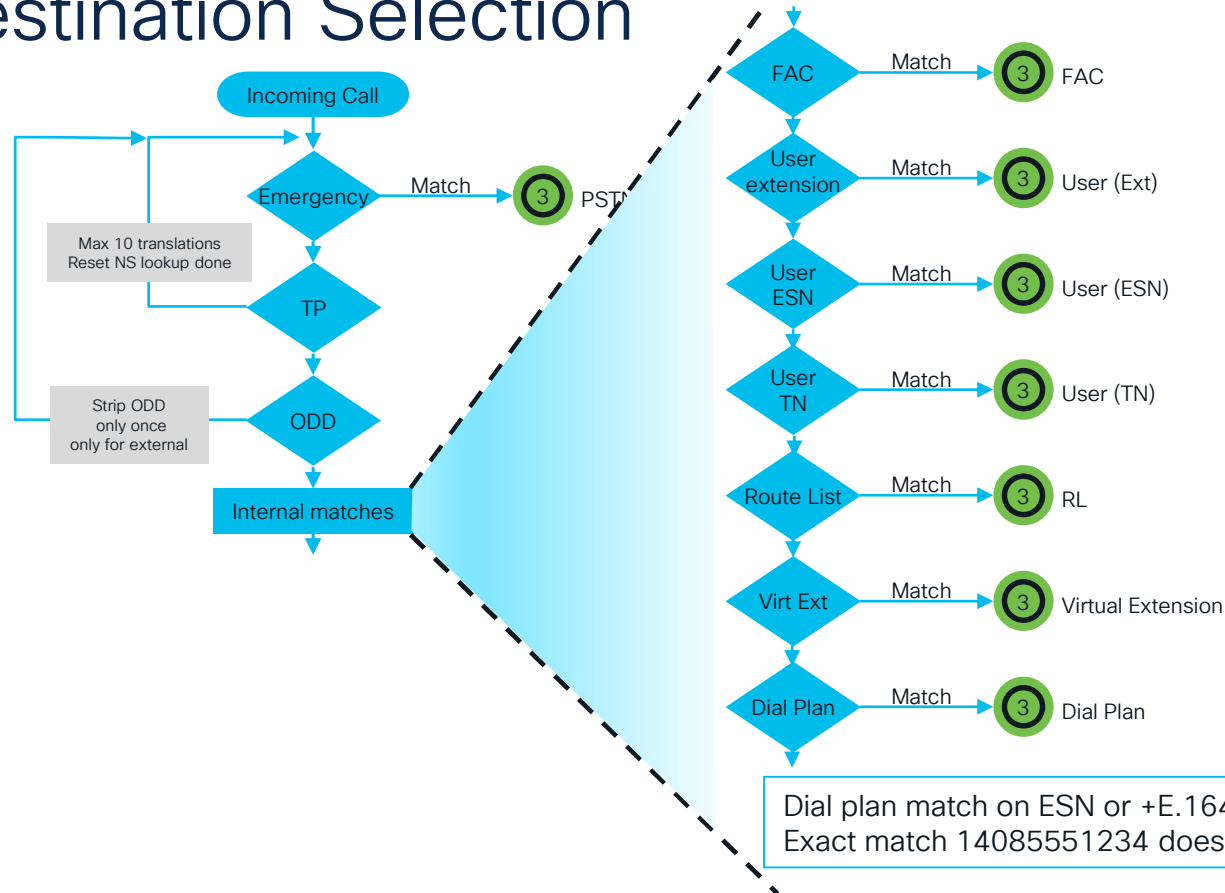
- Route list match only relevant for Webex Calling Dedicated Instance customers
- Route list has all TNs hosted on Dedicated Instance
- Exact match 14085551234 doesn't match +14085551234

# Destination Selection

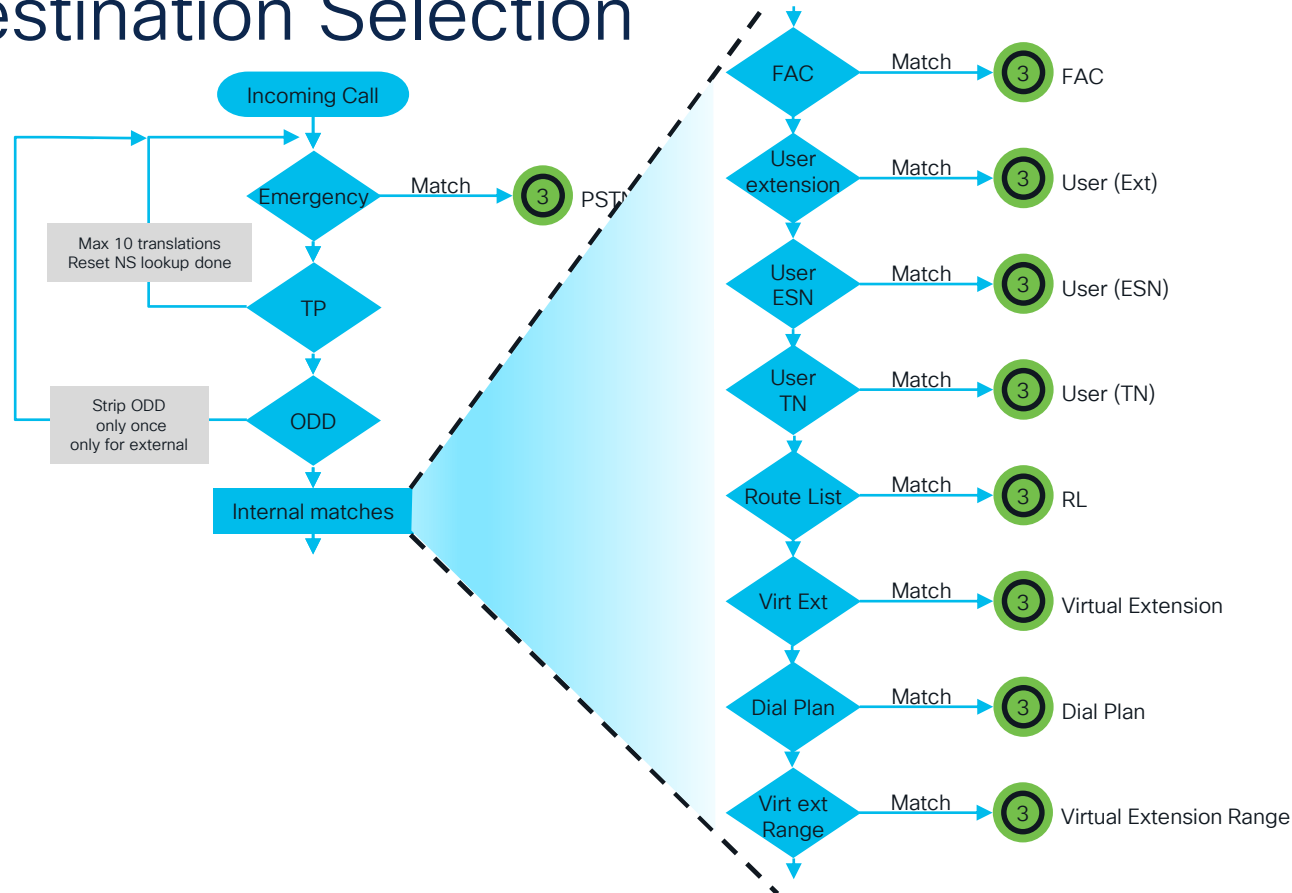


- Virtual extensions map extensions to PSTN address
- PSTN address is used as PSTN destination directly
- No further lookups

# Destination Selection

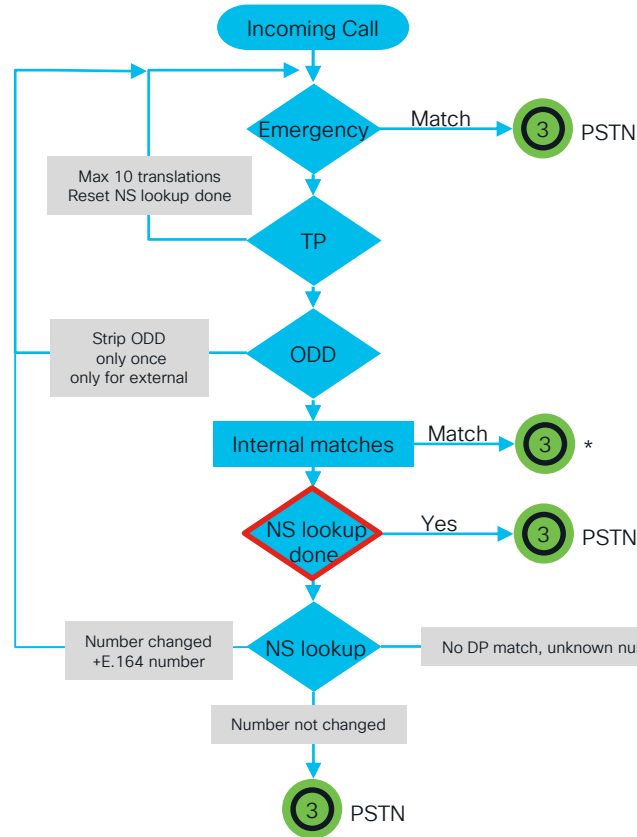


# Destination Selection



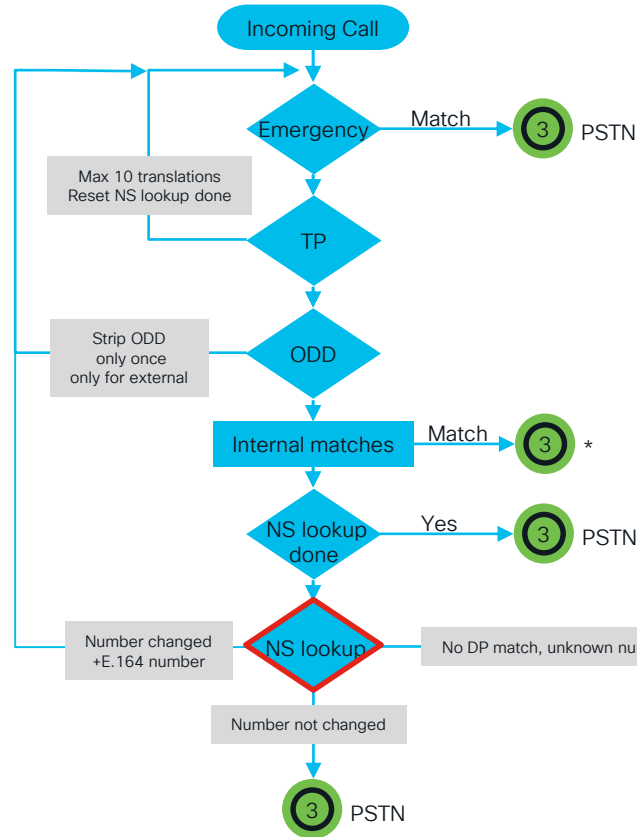
Same as Virtual Extension, but based on ranges

# Destination Selection



If NS lookup was already done  
... and no TP was applied after that then no new lookup is  
required b/c the lookup result would be the same

# Destination Selection

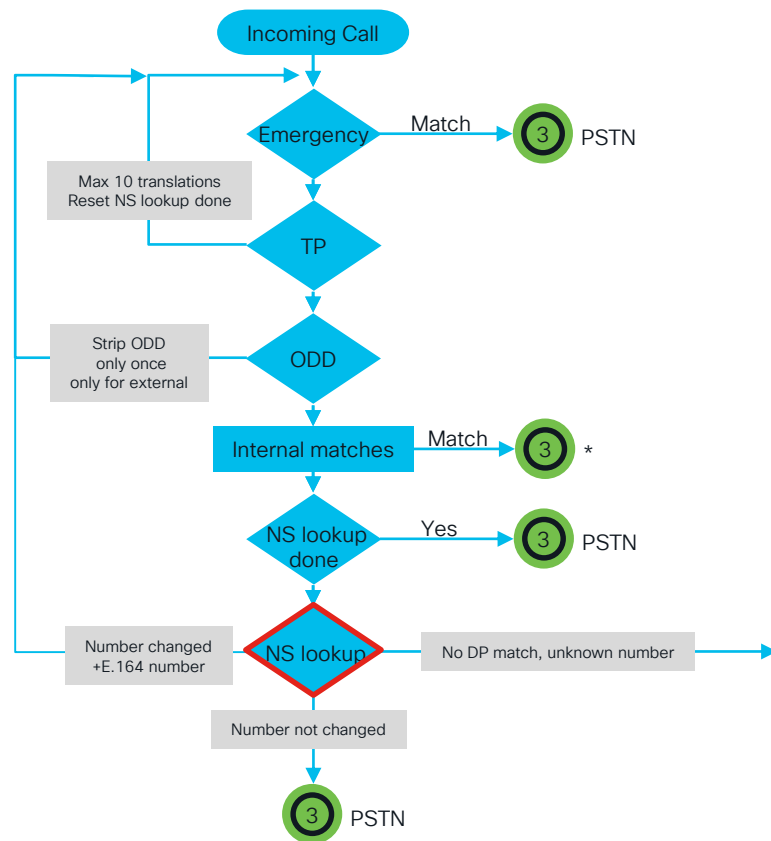


<https://help.webex.com/en-us/article/757iyo/Dial-plans-by-country>

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

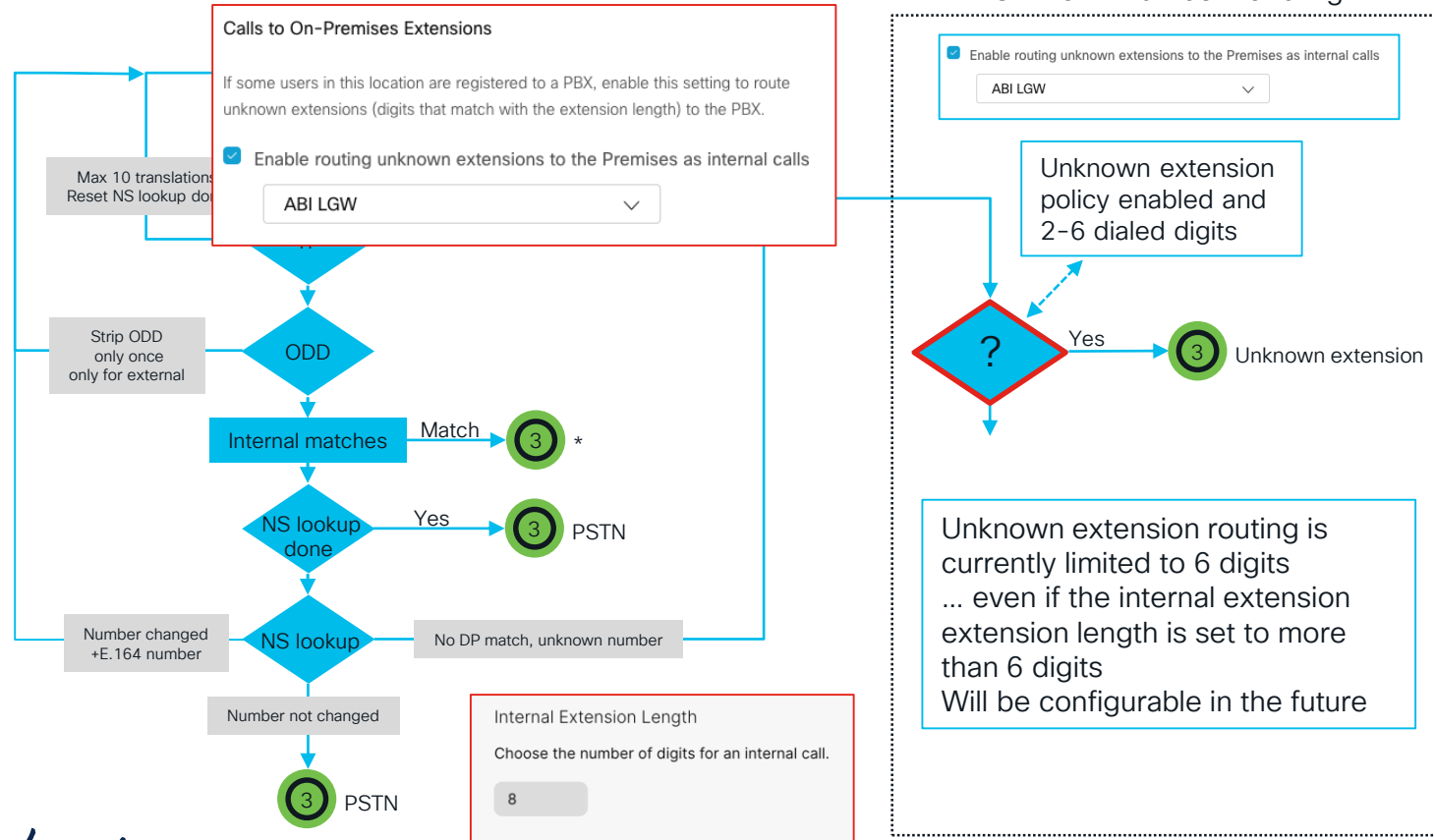
- NS lookup considers dialed ODD and ODD enforcement
- NS lookup uses national calling plan for the country of the Location
- Call Type tagging used for call restrictions (covered later)

# Destination Selection



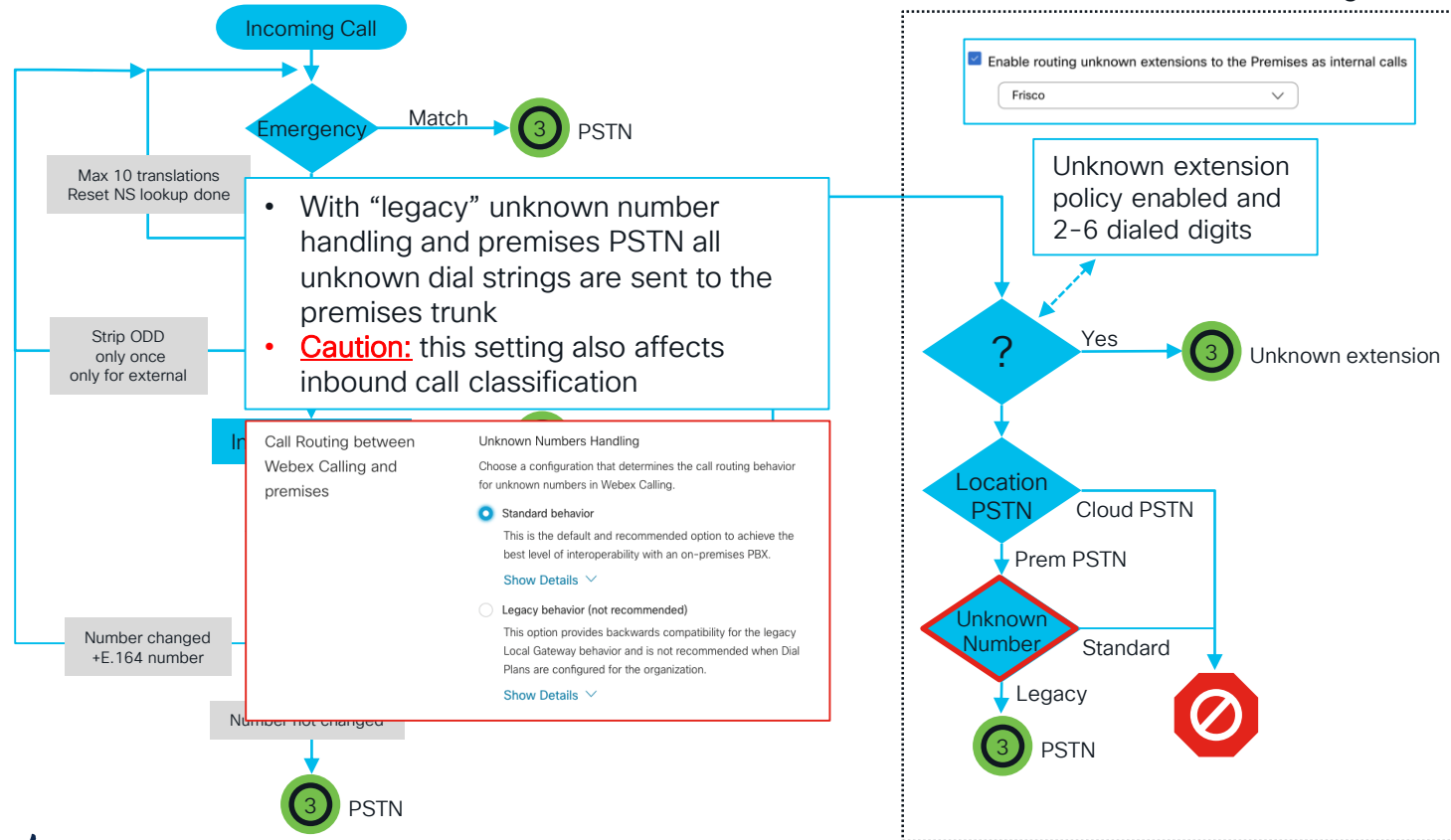
- Three possible outcomes of NS lookup:
  - Found a match, no change
  - Unknown number (no dial plan match)
  - Number changed (typically to +E.164) → loop  
Example: 9011496100123 → +496100123
- Loop enables:
  - +E.164 TN matches
  - +E.164 TP matches
  - +E.164 Route list and dial plan matches

# Destination Selection

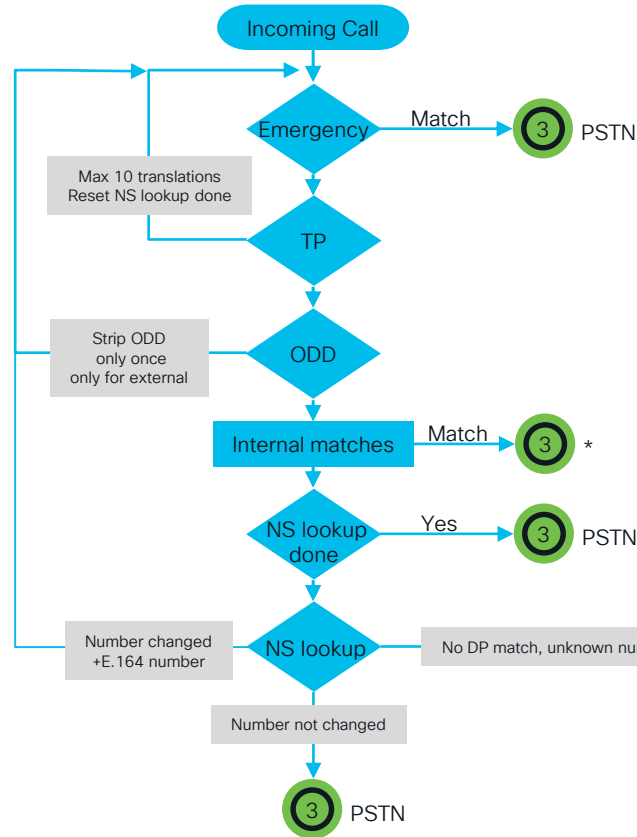




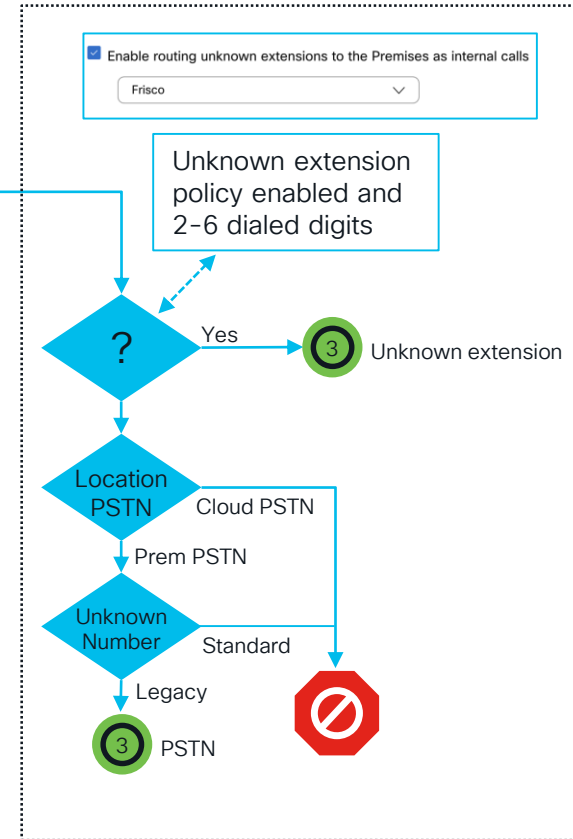
# Destination Selection



# Destination Selection

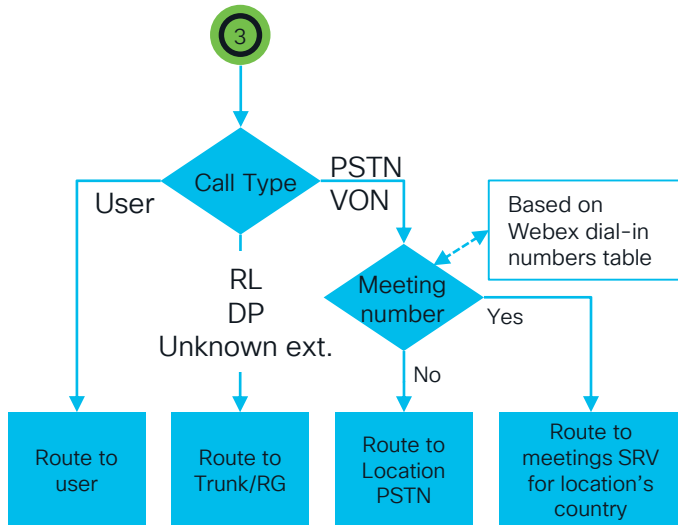


## Unknown number handling



# Screening and Routing

Block or allow based on calling permissions and route


















- Webex dial-in is checked for all PSTN destinations
- Webex Calling dial plan elements like TPs and VONs can point to Webex dial-in numbers and the calls will be optimized


## Call Routing for Webex Meetings Dial-in calls (Integrated Audio)

- ☒ Optimized On-net
  - This is the default and recommended option to achieve PSTN cost savings and optimized call routing.
- ☐ PSTN (not recommended)
  - This option disables the on-net routing optimization for Webex Meetings dial-in calls.

# 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	✓	✗	✓	✗	✗

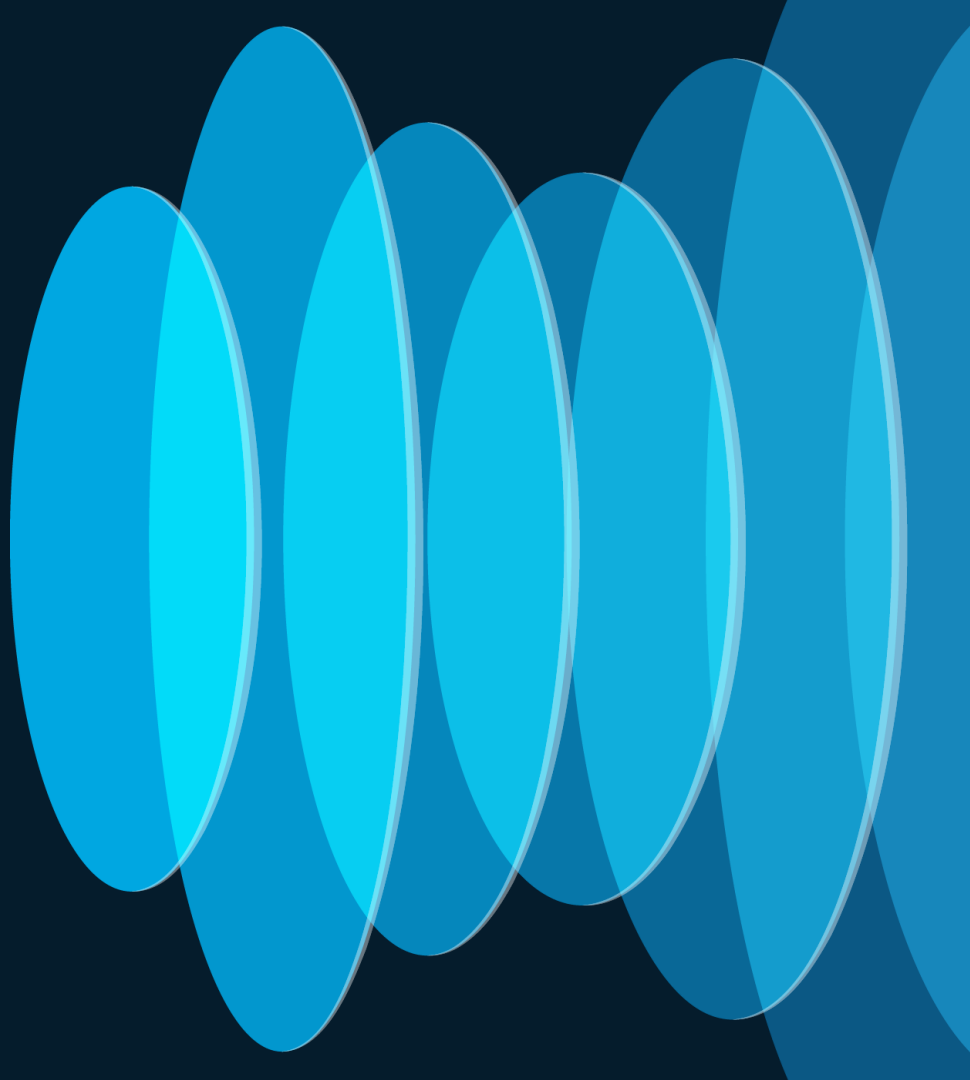
- Calls from On-Premises Users can be routed anywhere except for the PSTN

# 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.

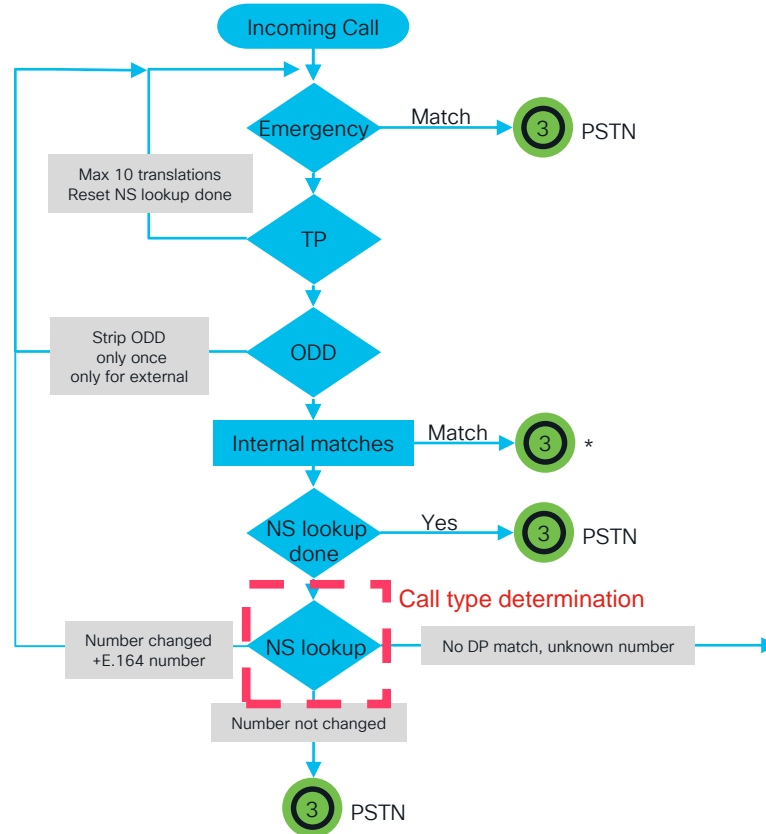
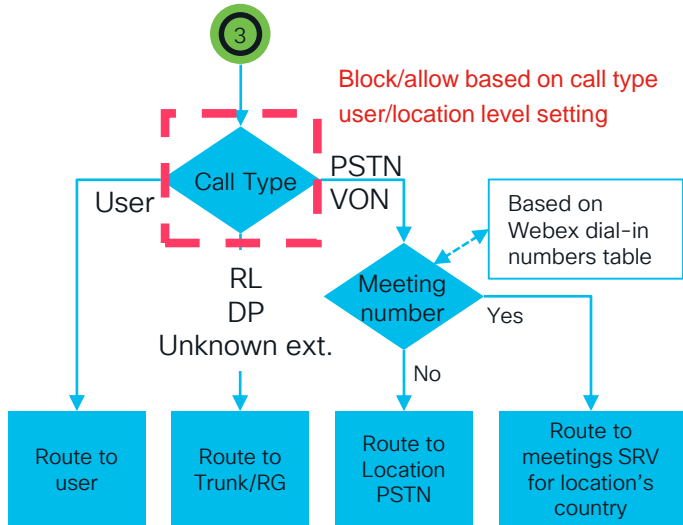
# Outgoing Call Permissions





# Screening and Routing

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.	

[Add code](#) [Delete all codes](#)

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

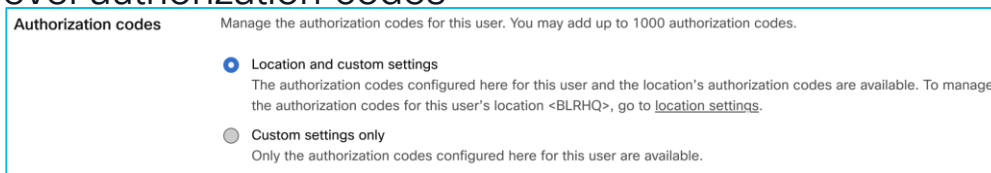
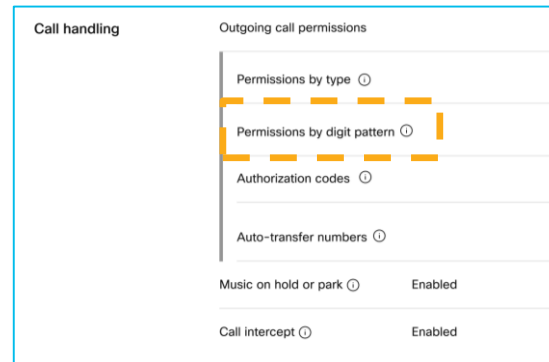
<https://help.webex.com/en-us/article/nt2lz3d/Outgoing-calling-permissions-for-Webex-Calling-locations>  
<https://help.webex.com/en-us/article/q94e8c/Configure-calling-permissions-in-Control-Hub>

# 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"
- Up to 1000 authorization codes at each level (location/user/workspace/virtual line)



# Outgoing Call Permissions – Enhanced

- Provisioning APIs
  - permissions by type (user, workspaces, virtual lines) – location API already exists
  - authorization codes (user, workspaces, virtual lines) – location API already exists
  - auto-transfer numbers (user, workspaces, virtual lines) – location API already exists
  - CRUD for patterns and permissions
  - 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) .. even internal

**Permissions by digit pattern**

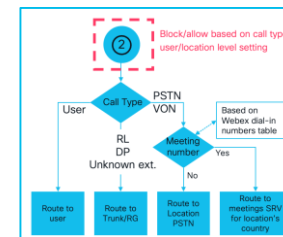
Manage the permissions by digit pattern for this user.

☐ 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



# Best Pattern Match Logic

- If multiple matches exist, the “best” match is selected
- Rules
  - Count the number of numbers matching the pattern and prefer lesser number
  - Precendence: exact match, X wildcard, ! Wildcard
  - Final tie breaker: string compare and prefer lexicographically lesser pattern

# Best Pattern Match Logic

- Expansion logic:
  - Exact digit → 1
  - Digit range → number of digits in range
  - X wildcard → 10
  - ! Wildcard → 10 for each matched digit

- Example

- Pattern 4[3-6]2X!
- Digit string 452966
- Expansions 4000

Pattern	Match	expansions
4	4	
[3-6]	5	
2	2	
X	9	
!	66	

# Best Pattern Match Logic

- Expansion logic:
  - Exact digit  $\rightarrow$  1
  - Digit range  $\rightarrow$  number of digits in range
  - X wildcard  $\rightarrow$  10
  - ! Wildcard  $\rightarrow$  10 for each matched digit

- Example

- Pattern 4[3-6]2X!
- Digit string 452966
- Expansions 4000

Pattern	Match	expansions
4	4	1
[3-6]	5	4
2	2	1
X	9	10
!	66	10 * 10
4000 (4 * 10 * 100)		

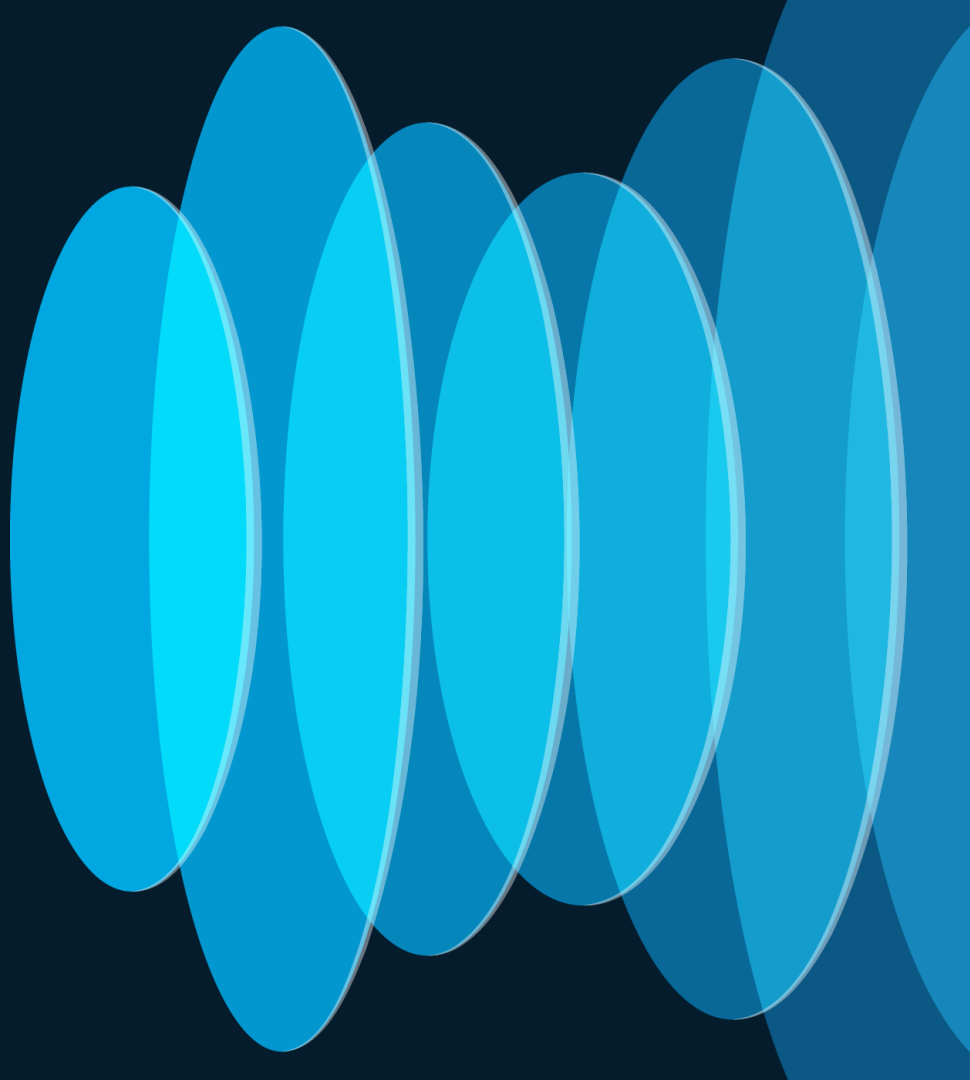
# Best Pattern Match Logic – Examples

Patterns	Matched number	Possible expansions	Pattern Used
P1: XXXX P2: 123!	1234	P1: $10*10*10*10 = 10^4$ P2: $1*1*1*10 = 10$	
P1: 123X P2: 12[0-5][0-5]	1234	P1: $1*1*1*10 = 10$ P2: $1*1*6*6 = 36$	
P1: 12[0-5][0-5] P2: [0-5][0-5]12	1212	P1: $1*1*6*6 = 36$ P2: $6*6*1*1 = 36$	
P1: 12X! P2: 12XXX!	12345678	P1: $1*1*10*10^5 = 10^6$ P2: $1*1*10^3*10^3 = 10^6$	
P1: 1[0-5]3X P2: 1[1-6]3X	1234	P1: $1*6*1*10 = 60$ P2: $1*1*6*10 = 60$	

# Best Pattern Match Logic – Examples

Patterns	Matched number	Possible expansions	Pattern Used
P1: XXXX P2: 123!	1234	P1: $10*10*10*10 = 10^4$ P2: $1*1*1*10 = 10$	P2 - num of possible expansions are less than P1
P1: 123X P2: 12[0-5][0-5]	1234	P1: $1*1*1*10 = 10$ P2: $1*1*6*6 = 36$	P1 - num of possible expansions are less than P2
P1: 12[0-5][0-5] P2: [0-5][0-5]12	1212	P1: $1*1*6*6 = 36$ P2: $6*6*1*1 = 36$	P1 - num of possible expansions are same, but P1 has exact digit match at digit position 1 while P2 has digit range
P1: 12X! P2: 12XXX!	12345678	P1: $1*1*10*10^5 = 10^6$ P2: $1*1*10^3*10^3 = 10^6$	P2 - num of possible expansions are same, but P2 has wildcard X at digit position 4 while P1 has !
P1: 1[0-5]3X P2: 1[1-6]3X	1234	P1: $1*6*1*10 = 60$ P2: $1*1*6*10 = 60$	P1 - num of possible expansions and wild card precedence is same, but P1 is lexicographically less than P2

# Translation Patterns



# Motivation

- Manipulate dial string before routing the call
- Use cases:
  - Map short codes to internal destinations
    - Like “on-net virtual extensions”
  - Add overlay dialing habits
    - “dial 88XXXX to reach users in the HQ” ... where 88XXXX is incompatible with established ESN scheme
  - Intercept and re-route certain dialing habits (more flexible than outbound calling permissions and auto-transfer numbers)
    - “dial \*88\* to reach the IT helpdesk”
  - ...

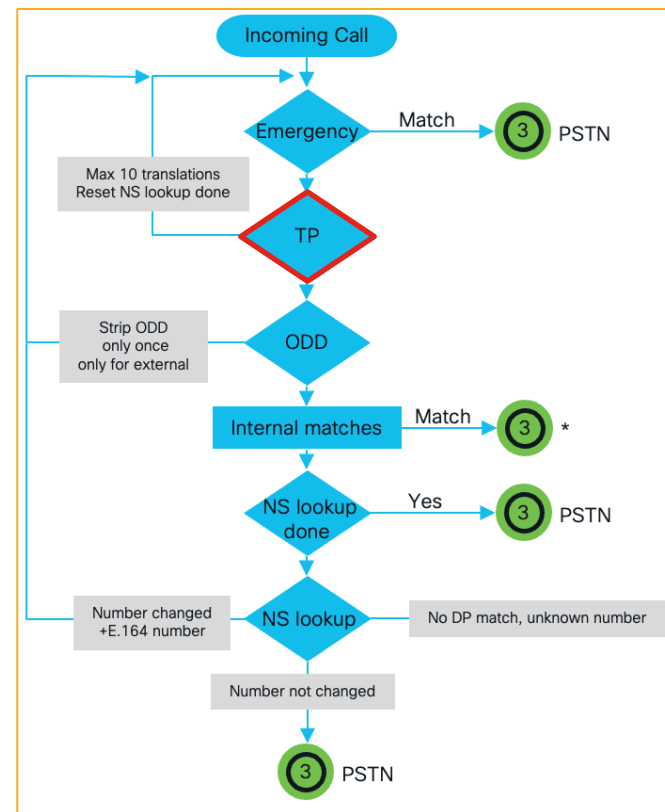
# Overview \*

- Translation patterns applies to “user” calls only
  - Calls from users
  - Inbound calls from trunks when classified as user or prem call
  - ... and all other calls originating from users and features: e.g. redirections
- Translation patterns can be defined at organization and location level
  - Location takes precedence over organization
- Support up to 500 translation patterns for each location and 1000 at organization level
- Verify call routing tool shows applied translation patterns
- Translation patterns can be used for various use cases such as:
  - Short number dialing
  - Operator dialing
  - General digit translation with wild cards
- Bulk CSV and API support for translation pattern provisioning



# Translation Pattern Matching Sequence

- Translation Pattern match:
  - After emergency calling
  - Before all other matches (internal & external)
- Up to 10 translation loops
- Translation patterns evaluated (again) after NS lookup and +E.164 transform



# Example \*

Create Translation Pattern

Create a translation pattern that can manipulate digits before routing an outgoing call.

Level

Choose at which level to create this translation pattern. Location level patterns have precedence over organization level patterns.

☒ Organization

☐ Location

Name \*

starone

Matching Pattern

\*1

Replacement Pattern

+4961007739764

Test the above pattern with sample digits

Input digits

Test pattern

Calling

Numbers

Virtual Lines

Call Routing

Managed Gateways

Features

PSTN

Service Settings

Client Settings

Trunk

Route Group

Dial Plans

Verify Call Routing

Zone

Trusted Network Edge

Translation Pattern

Verify How Calls Are Routed

Verify your call routing by choosing a cloud user or premises trunk and entering a number or URI that a user would dial. The routing result shows how a call will be translated (assuming that your on-premises configuration is correct).

Select Call Source

☒ Select from Users list

☐ Select from Trunk list

Hilda Chapman (8001-2008)

Select Call Destination

\*1

See Routing Result

Clear All

The call to +4961007739764 routes to an external number.

From

Hilda Chapman (8001-2008)  
Hartford

To (Initial routing destination)

via Premises-based PSTN  
using PSTN Hartford

CISCO Live!

#CiscoLive

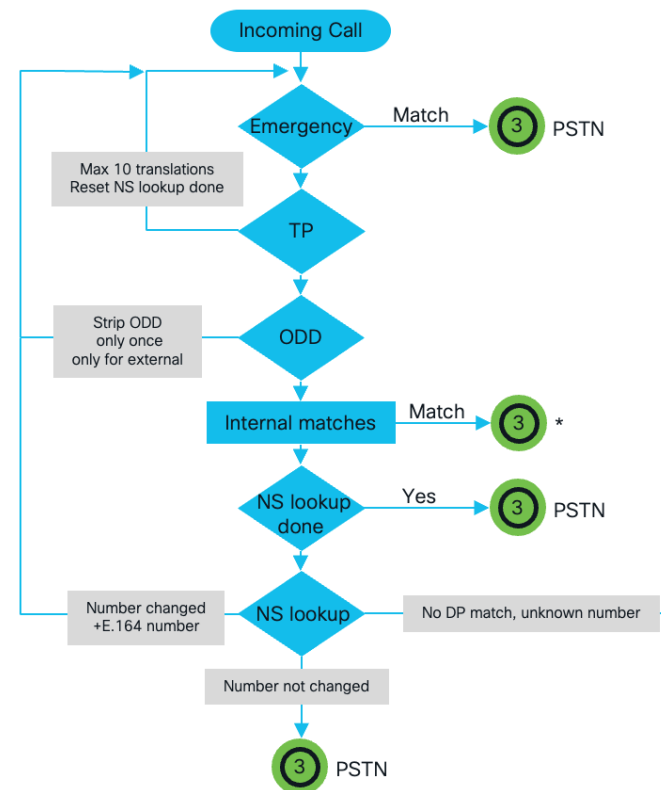
BRKCOL-2787

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102

# Best Match vs. Match in Sequence

- Webex Calling tries different matches in sequence
- Not single "best match" lookup ... like Unified CM
- Consequence: translation patterns in Webex Calling cannot be used as "catch-all"
  - 4XXX TP catches all 4XXX patterns ... and not only unassigned 4XXX extensions



# Translation Patterns Fields \*

Field	Constraints
Name	<ul style="list-style-type: none"><li>Up to 50 Unicode characters</li><li>Must be unique within its entity (location/organization)</li></ul>
Matching Pattern	<ul style="list-style-type: none"><li>Up to 50 characters</li><li>Allowed characters are 0-9, *, #, +</li><li>+ character if present, must be the first character except the group opening character '('</li><li>Allowed wildcard characters are X, x, !, [, ], -</li><li>Allowed grouping characters are (, )</li><li>Must be unique within its entity (location/organization)</li></ul>
Replacement Pattern	<ul style="list-style-type: none"><li>Up to 50 characters</li><li>Allowed characters are 0-9, *, #, +</li><li>+ character if present, must be the first character</li><li>Allowed group wildcard character \$</li></ul>

# Translation Patterns Wildcards \*

Wildcard	Definition
X/x	<ul style="list-style-type: none"><li>Matches a single digit (0-9)</li><li>Lowercase x is accepted but converted to uppercase X</li></ul>
!	<ul style="list-style-type: none"><li>Matches one or more digits (0-9)</li><li>Must be the last character except the group closing character ')'</li></ul>
[]	<ul style="list-style-type: none"><li>Matches the specified range of digits (0-9)</li><li>Open and close brackets are required</li><li>For example, [089] matches 0, 8, or 9</li></ul>
-	<ul style="list-style-type: none"><li>Identifies a consecutive set of digits within a [] range of digits</li><li>Must have a leading and trailing digit where trailing digit &gt; leading digit</li><li>For example, [02-589] matches 0, 2, 3, 4, 5, 8 or 9</li></ul>

# Translation Patterns - Groups \*

Characters	Definition
()	<ul style="list-style-type: none"><li>Identifies matching pattern groups</li><li>Open and close parenthesis are required for each group</li></ul>
\$	<ul style="list-style-type: none"><li>Identifies replacement pattern group index</li><li>group index starts at 1, groups are ordered by their start position</li><li>\$0 used for the implicit group representing the entire provided number</li></ul>

Grouping and replacement pattern group index are more flexible than using masks ... like on Unified CM

# Use case examples \*

Name	Matching Pattern	Replacement Pattern	Example
DigitExtension	(XXXX)	+91805555\$1	0123 is translated to +918055550123 (Translates 4-digit extensions)
OperatorBlr	0	+918024681357	0 is translated to +918024681357 (Translates 0 to Blr operator)
SitePrefixBlr	6222(XXXX)	+91804444\$1	62220246 is translated to +918044440246 (Translates numbers with on-net prefix (6) and Blr site code (222))
DigitRange	([3-7]XXXX)	+9180333\$1	54567 is translated to +918033354567 (Translates 5-digit extensions starting with the digit range between 3-7 inclusive)
PrefixAdd	([2-9]X[29]XXXXXXXX)	91\$1	8055554567 is translated to 918055554567 (Adds a country prefix in front of a 10-digit number with restrictions on the first and third digits)
NoTranslation	(XXXXX)	\$1	34567 is translated to 34567 (Match 5 digits but no translation)

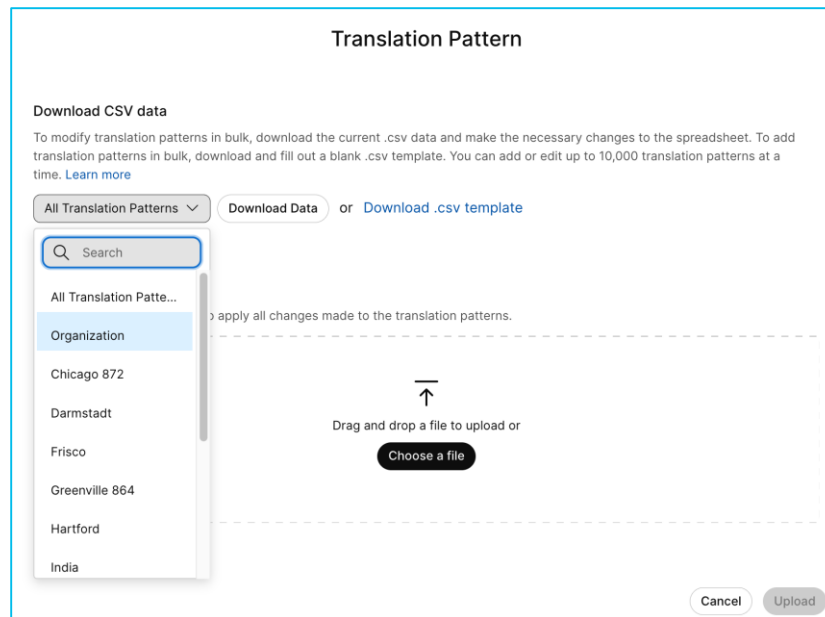
# Use case examples cont... \*

Name	Matching Pattern	Replacement Pattern	Example
ImplicitGrp	80[2-9]XXXXXXX	91\$0	8036640740 is translated to 918036640740 (Translate 10 digits starting with 80 and 3rd digit between 2 to 9)
ITHelpDeskBlr	*88*	+918054688888	*88* is translated to +918052688888 (Translation pattern for IT help desk)
VariableLen	8042!	800	80423 is translated into 800 (Match 8042 followed by 1 or more digits)
VarLenGrp	80(XXXX!)	+9180\$1	8035792468 is translated into +918035792468
MultiGrp	80(XX)333(XXX)	+9180\$1333\$2	8012333456 is translated into +918012333456

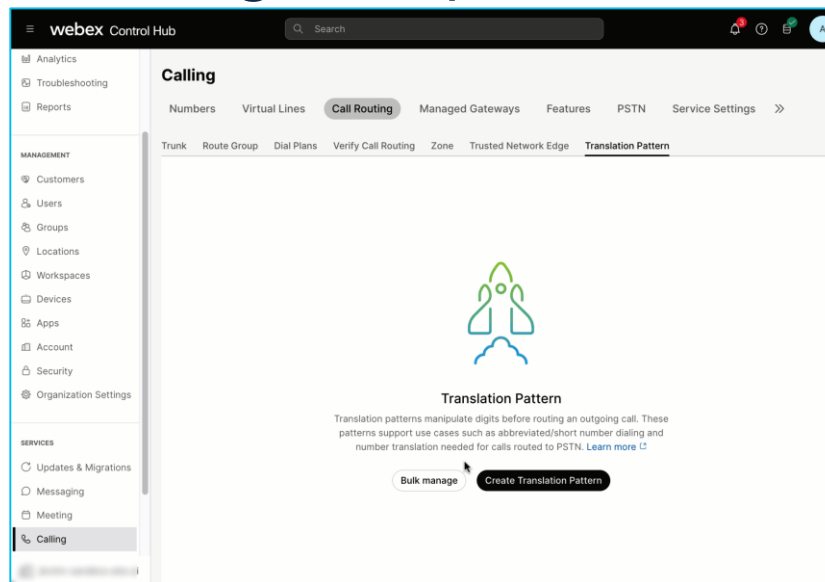


# Bulk Provisioning – Download \*

- Download
  - Template
  - All TPs
  - Organization level TPs
  - TPs of one location



# Bulk Provisioning – Import \*



A	B	C	D	E
Name	Level	Location Name	Matching Pattern	Replacement Pattern
HDOrg	Organization		*88*	80027104
HDDarmstadt	Location	Darmstadt	*88*	80028000
HDFrisco	Location	Frisco	*88*	80027110
AltODD	Location	Frisco	01(!)	9\$1

Import can contain org and location level TP's

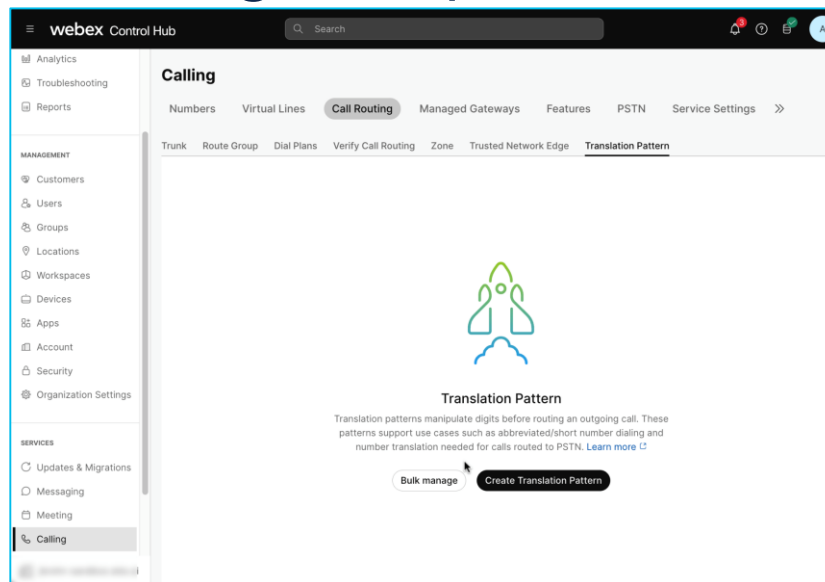
← Org level shortcode for helpdesk

← Location level overrides

← Alternate ODD for location

←

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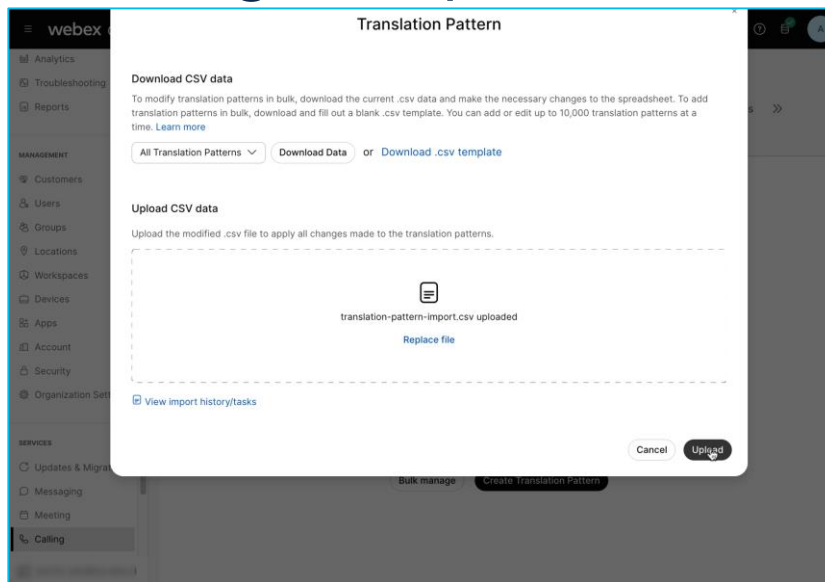
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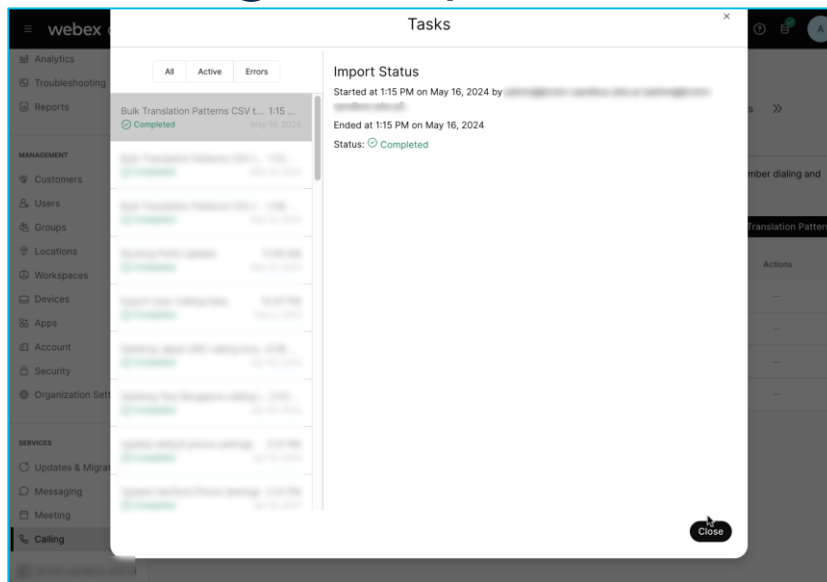
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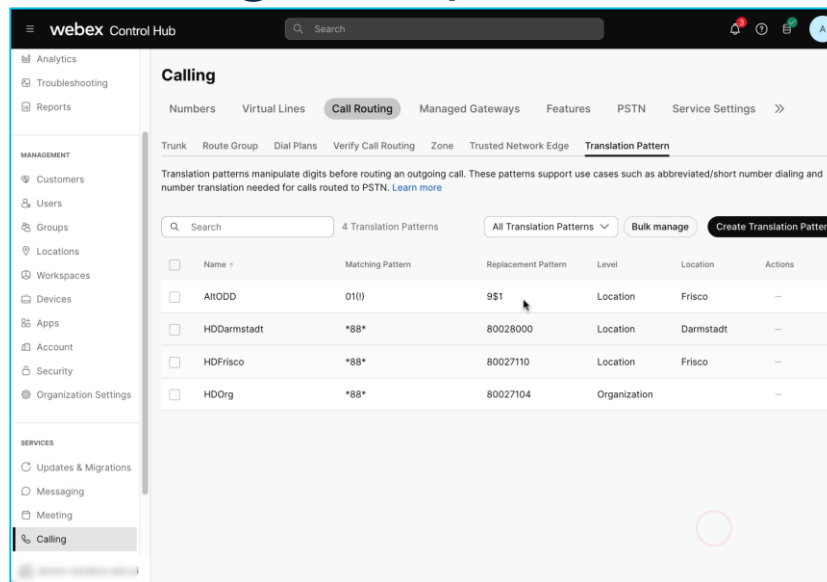
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HDDarmstadt	Location	Darmstadt	*88*	80028000
HDFrisco	Location	Frisco	*88*	80027110
AltODD	Location	Frisco	01(!)	9\$1

Import can contain org and location level TPs

← Org level shortcode for helpdesk

← Location level overrides

← Alternate ODD for location

# Verify Call Routing Tool

- Verify Call Routing Tool supports translation patterns
- Final output will have information about matched translation patterns

The screenshot shows the 'Verify Call Routing' tab in a Cisco configuration tool. The interface includes a navigation bar with tabs: Trunk, Route Group, Dial Plans, **Verify Call Routing**, Zone, Trusted Network Edge, and Translation Pattern. The main content area is titled 'Verify How Calls Are Routed' and contains instructions: 'Verify your call routing by choosing a cloud user or premises trunk and entering a number or URI that a user would dial. The routing result shows how a call will be translated (assuming that your on-premises configuration is correct).' Below this, there are two sections: 'Select Call Source' with radio buttons for 'Select from Users list' (selected) and 'Select from Trunk list', and a dropdown menu showing 'Johannes Krohn ...'. The 'Select Call Destination' section has a text input field containing '\*88\*' and a clear button. At the bottom of the form are two buttons: 'See Routing Result' (highlighted with a blue glow) and 'Clear All'. Below the buttons, a message states: 'The call to 80028000 routes to a call queue.' The final output is presented in a table-like format with 'From' and 'To (Initial routing destination)' columns. The 'From' column shows 'Johannes Krohn (+49615013539301)' and 'Darmstadt'. The 'To' column shows 'DC escalations (9725550102)' and 'Frisco'. An arrow points from the 'From' column to the 'To' column.

From	To (Initial routing destination)
Johannes Krohn (+49615013539301)	DC escalations (9725550102)
Darmstadt	Frisco

# API Support\*

- API support for CRUD and list()
- list() has comprehensive filtering options

Method	Description	
<b>POST</b>	<a href="https://webexapis.com/v1/telephony/config/callRouting/translationPatterns">https://webexapis.com/v1/telephony/config/callRouting/translationPatterns</a>	Create a Translation Pattern
<b>GET</b>	<a href="https://webexapis.com/v1/telephony/config/callRouting/translationPatterns">https://webexapis.com/v1/telephony/config/callRouting/translationPatterns</a>	Retrieve a list of Translation Patterns
<b>GET</b>	<a href="https://webexapis.com/v1/telephony/config/callRouting/translationPatterns/{translationId}">https://webexapis.com/v1/telephony/config/callRouting/translationPatterns/{translationId}</a>	Retrieve the details of a Translation Pattern
<b>PUT</b>	<a href="https://webexapis.com/v1/telephony/config/callRouting/translationPatterns/{translationId}">https://webexapis.com/v1/telephony/config/callRouting/translationPatterns/{translationId}</a>	Modify a Translation Pattern
<b>DELETE</b>	<a href="https://webexapis.com/v1/telephony/config/callRouting/translationPatterns/{translationId}">https://webexapis.com/v1/telephony/config/callRouting/translationPatterns/{translationId}</a>	Delete a Translation Pattern

```

limitToLocationId
string
    When a location ID is passed, then return only the corresponding
    location level translation patterns.

limitToOrgLevelEnabled
string
    When set to be true, then return only the organization-level
    translation patterns.

max
number
    Limit the number of objects returned to this maximum count.

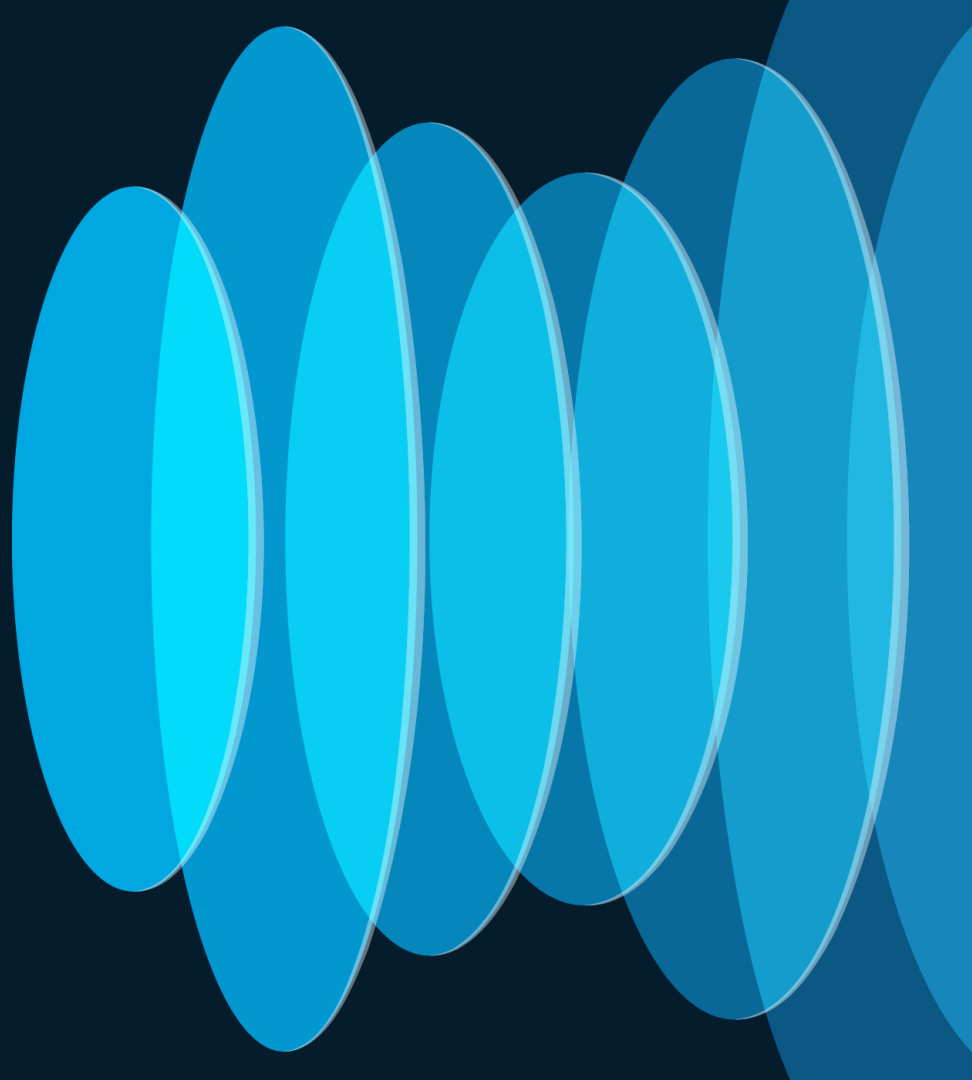
start
number
    Start at the zero-based offset in the list of matching objects.

name
string
    Only return translation patterns with the matching name.

matchingPattern
string
    Only return translation patterns with the matching
    matchingPattern.
  
```

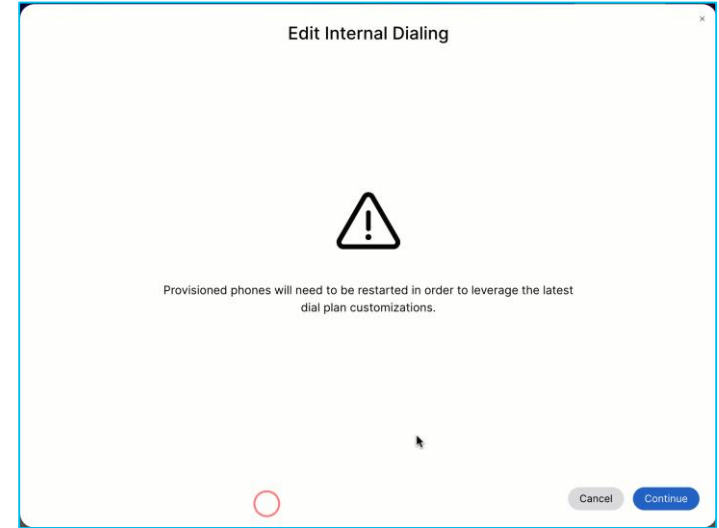


# 7-10D Extensions



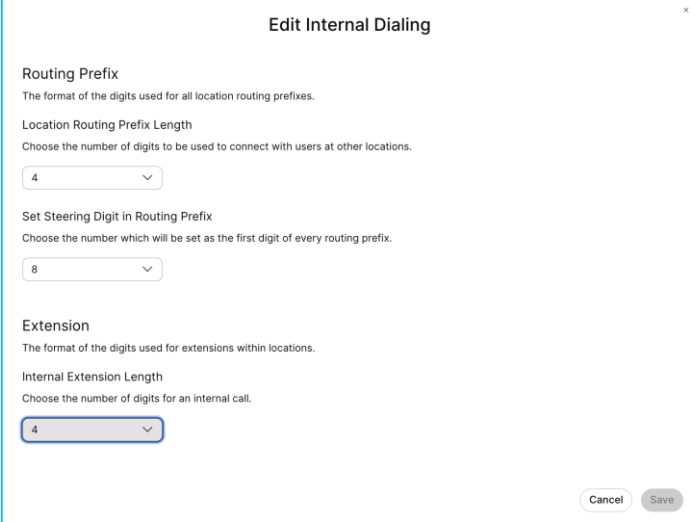
# 7-10D Extensions

- Webex Calling used to support 2-6 digit extensions
- Multiple requests to support longer extensions
  - Use ESNs as extensions; no site prefix, location independent numbering
  - Migration from existing Unified CM deployments w/ 10D extensions
- Extension length can now be configured between 2 and 10 digits



# 7-10D Extensions

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  - Migration from existing Unified CM deployments w/ 10D extensio
- Extension length can now be configured between 2 and 10 digits



The screenshot shows the 'Edit Internal Dialing' configuration window. It contains three sections: 'Routing Prefix' with a description and a 'Location Routing Prefix Length' dropdown set to 4; 'Set Steering Digit in Routing Prefix' with a description and a dropdown set to 8; and 'Extension' with a description and an 'Internal Extension Length' dropdown set to 4. 'Cancel' and 'Save' buttons are at the bottom right.

**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

Cancel Save

# 7-10D Extensions

- Webex Calling used to support 2-6 digit extensions
- Multiple requests to support longer extensions
  - Use ESNs as extensions; no site prefix, location independent numbering
  - Migration from existing Unified CM deployments w/ 10D extensions
- Extension length can now be configured between 2 and 10 digits

The screenshot shows the 'Edit Internal Dialing' configuration window. It contains two main sections: 'Routing Prefix' and 'Location Routing Prefix Length'. The 'Routing Prefix' section has a text input field with the value '4' and a description: 'The format of the digits used for all location routing prefixes.' The 'Location Routing Prefix Length' section has a dropdown menu with the value '10' selected and a description: 'Choose the number of digits to be used to connect with users at other locations.' The dropdown menu is open, showing options from 3 to 10. The 'Cancel' and 'Save' buttons are at the bottom right.

**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.

3  
4  
5  
6  
7  
8  
9  
10  
4

ng Prefix  
It be set as the first digit of every routing prefix.

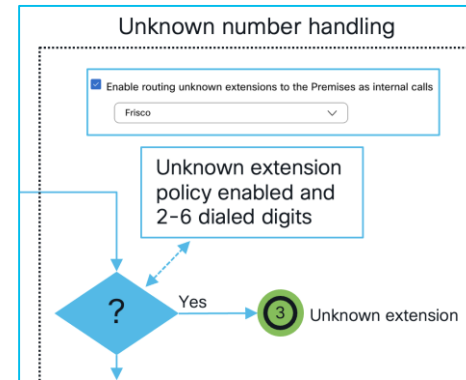
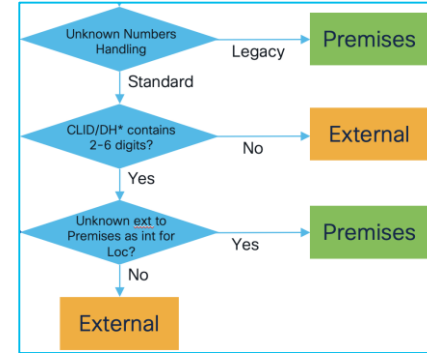
for extensions within locations.

for an internal call.

Cancel Save

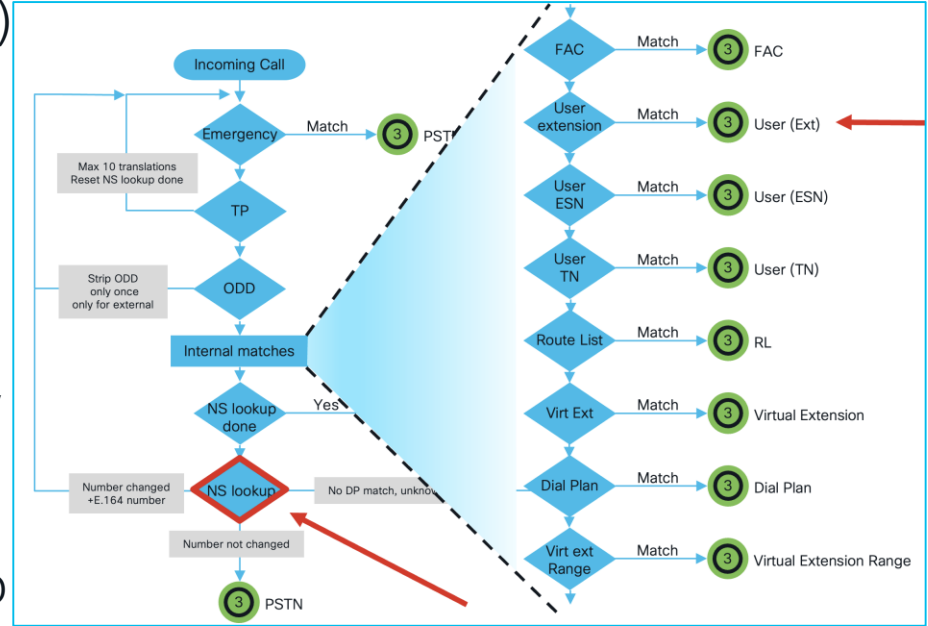
# 7-10D Extension Handling

- Unknown extension policy (for now) unchanged
  - Still checks for 2-6 digits
  - Incoming calls: external vs premises
  - Outgoing calls: block or send as unknown extension

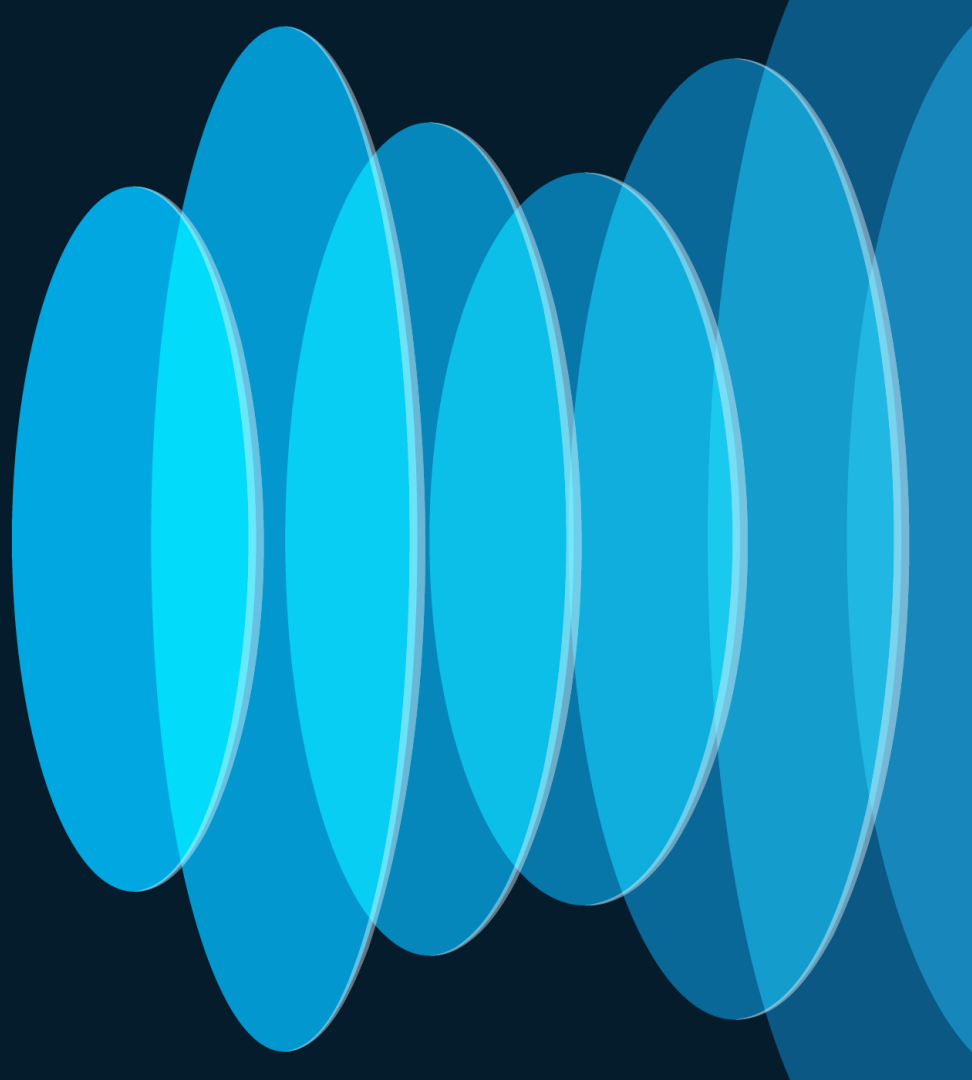


# Extension Handling

- Unknown extension policy (for now) unchanged
  - Still checks for 2-6 digits
  - Incoming calls: external vs premises
  - Outgoing calls: block or send as extension
- 10D extensions have higher priority than ESNs and +1-10D TNs
  - Extensions matched before ESN
  - NS lookup required to normalized 10D to +1-10D

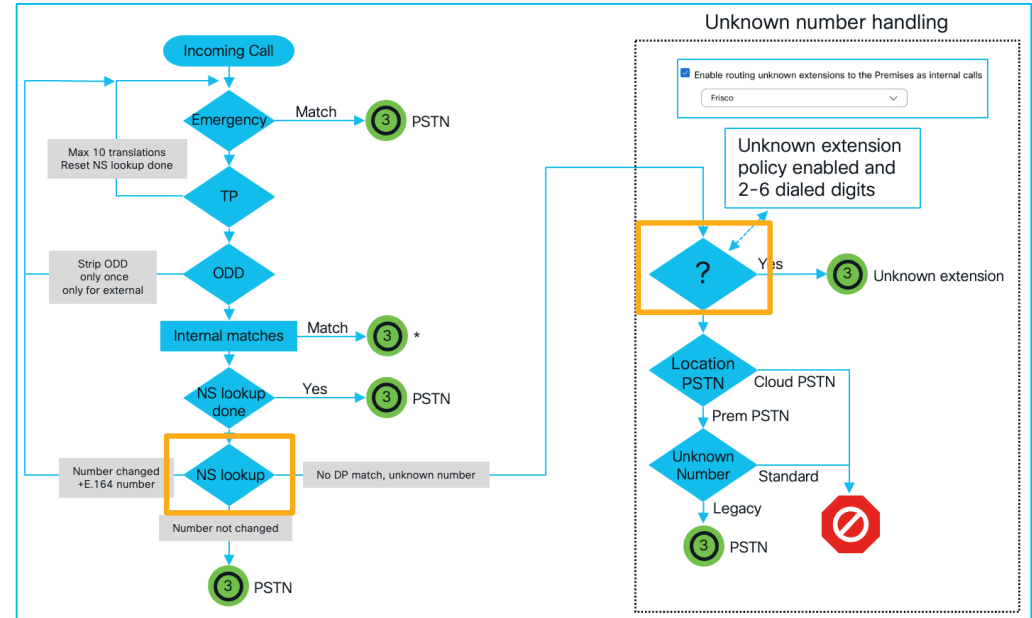


# Overlaps



# 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	xxxxxx	Local	Local
49	xxxxxxx	Local	Local
49	xxxxxxx	Local	Local
49	xxxxxxxx	Local	Local
49	xxxxxxxx	Local	Local
49	xxxxxxxx	Local	Local
49	xxxxxxxx	Local	Local
49	xxxxxxxx	Local	Local
49	xxxxxxxx	Local	Local
49	xxxxxxxx	Local	Local

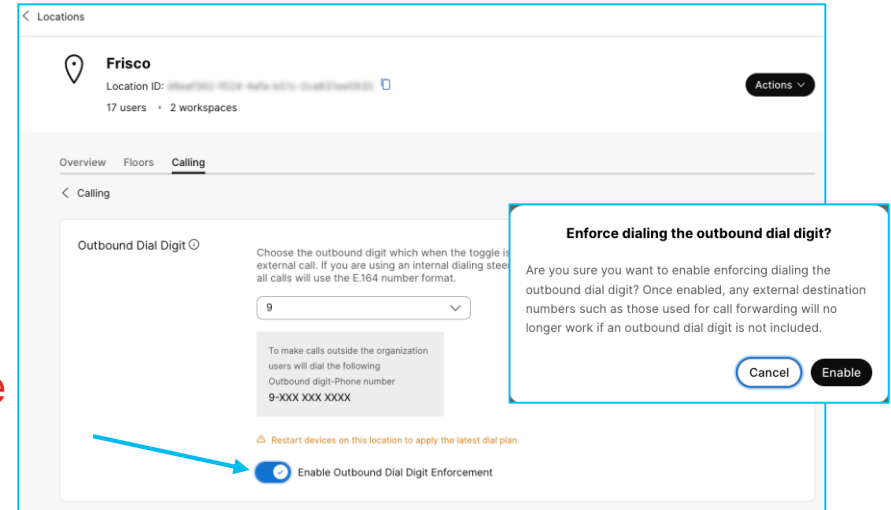
Dial plans by country

<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

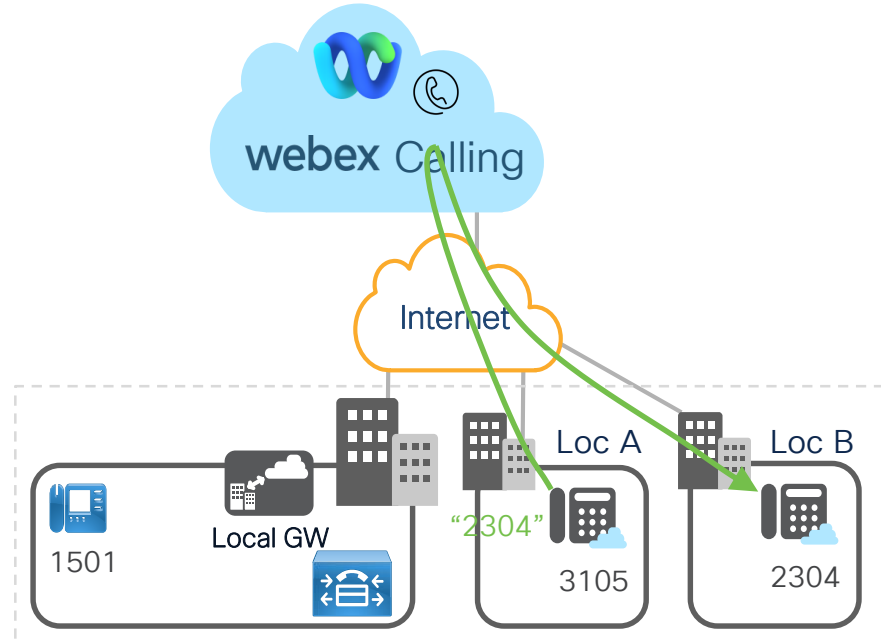
- Enforcing the outside dial digit removes the overlap between on-net dialing habits (including extensions) and PSTN destinations
- Configured per location
- ... like the outside dial digit
- Caution: not only affects direct dialing but any PSTN destinations ... for example CFwds to PSTN
- Best practice: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



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

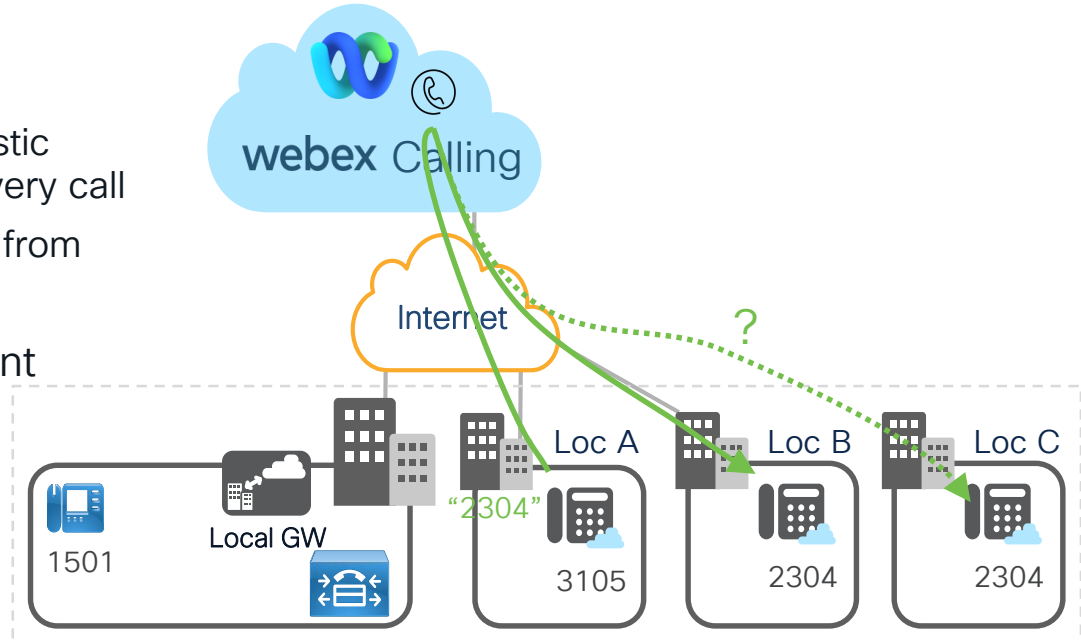
# Extension Dialing Between Locations

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



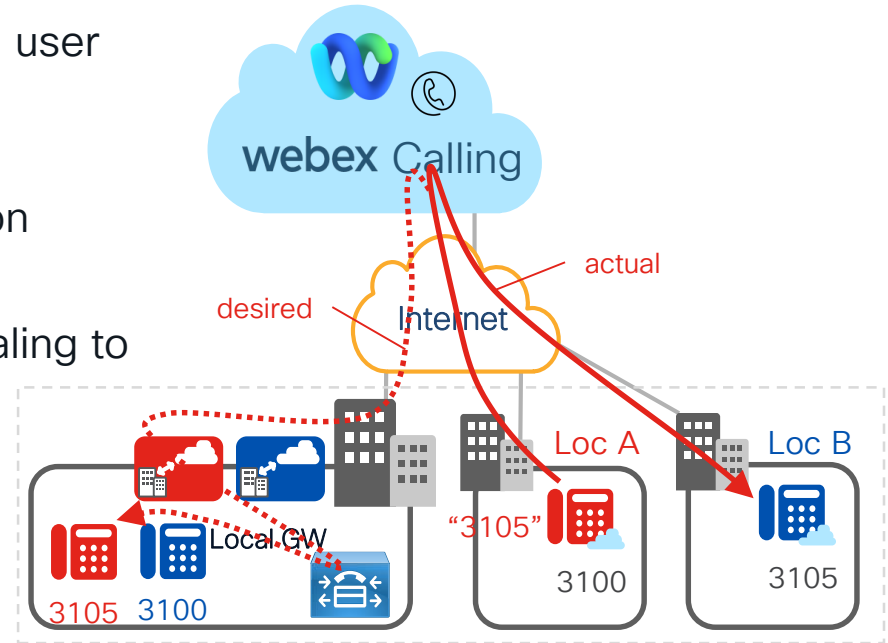
# Challenge: Overlap on Webex Calling

- 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



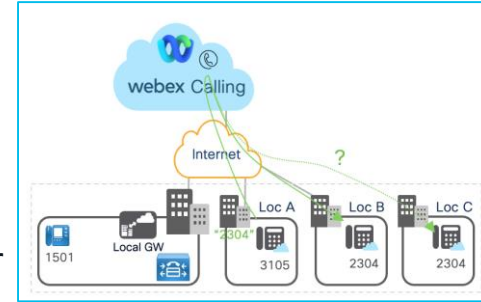
# Challenge: Inter-Location Overlap between Unified CM and Webex Calling

- 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.

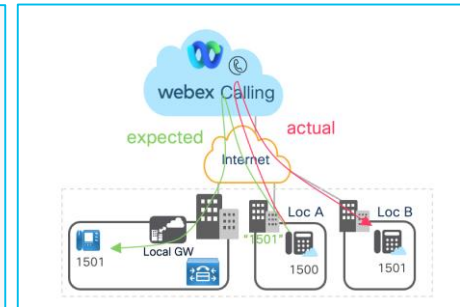
**Location Routing Prefix Length**  
Choose the number of digits to be used to connect with users at other locations.  
4

**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

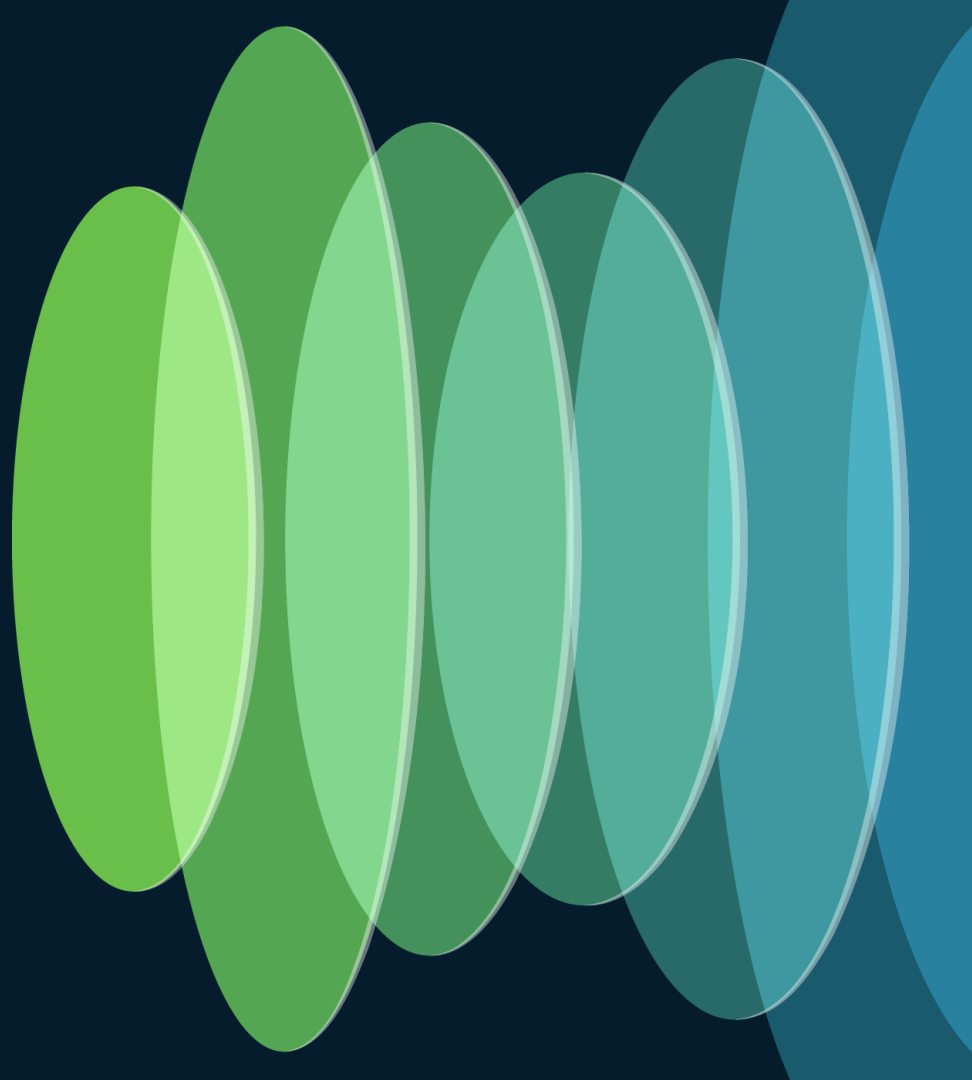
**Edit**

**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.  
☒

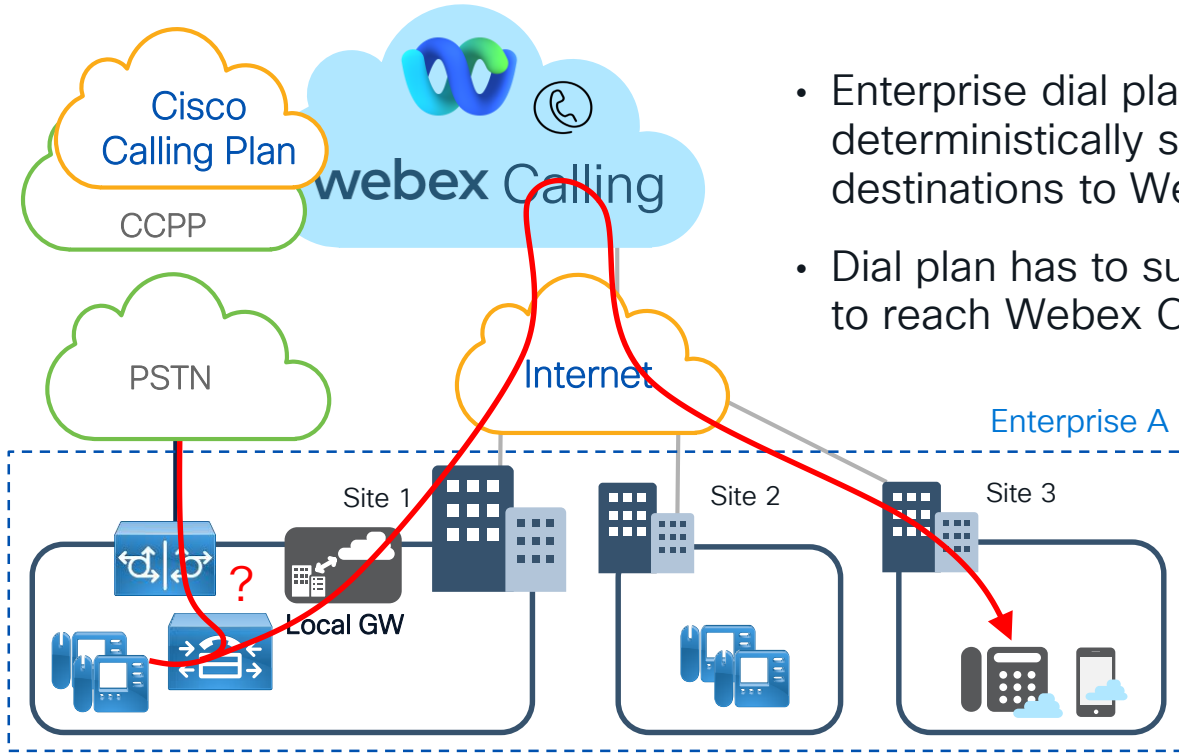


<https://help.webex.com/en-us/article/pxtu15/Configure-your-Webex-Calling-dial-plan>

# Interworking Unified CM / Webex Calling



# Local Gateway Dial Plan Integration

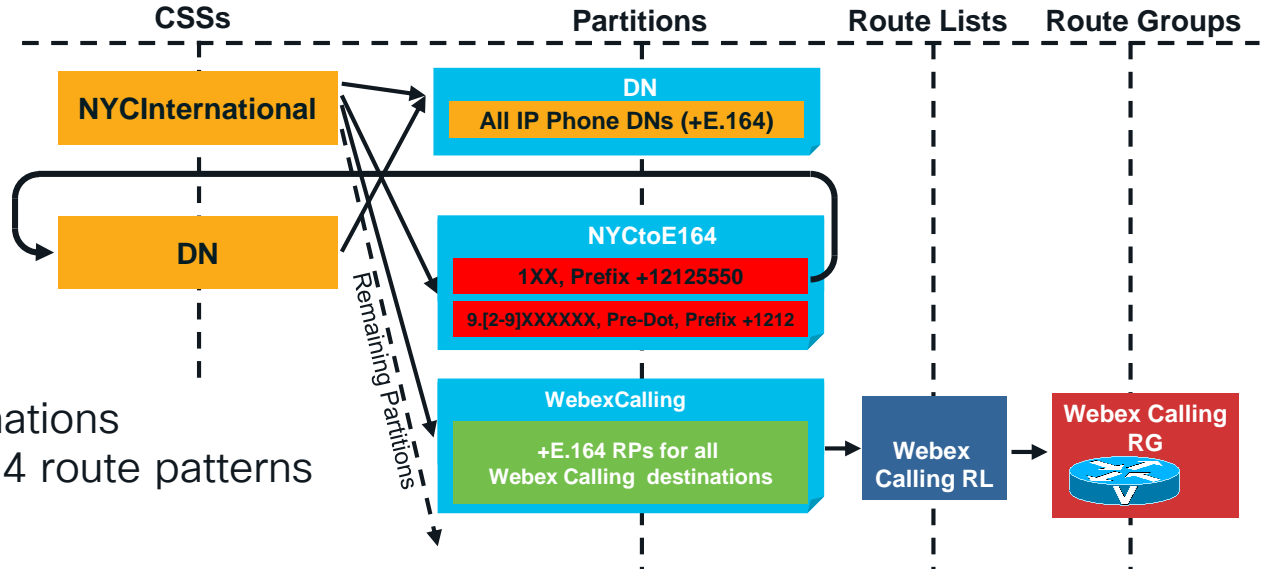


- Enterprise dial plan on Unified CM needs to deterministically send Webex Calling destinations to Webex Calling via Local Gateway
- Dial plan has to support “typical” dialing habits to reach Webex Calling destinations
- Webex Calling destinations need to be regularly updated during transition period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



# LGW Dial Plan Integration

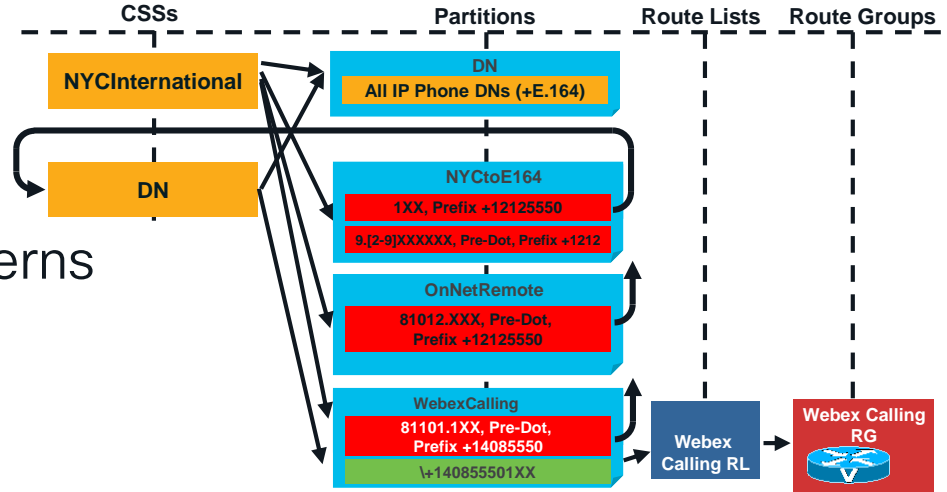
- With a single Egress LGW selection not site specific → no LRG based LGW selection required\*
- Multiple LGWs in multiple locations: RL and LRG
- Can use multiple LGWs for scale and redundancy
- Webex Calling destinations provisioned as +E.164 route patterns



\*For extension dialling 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

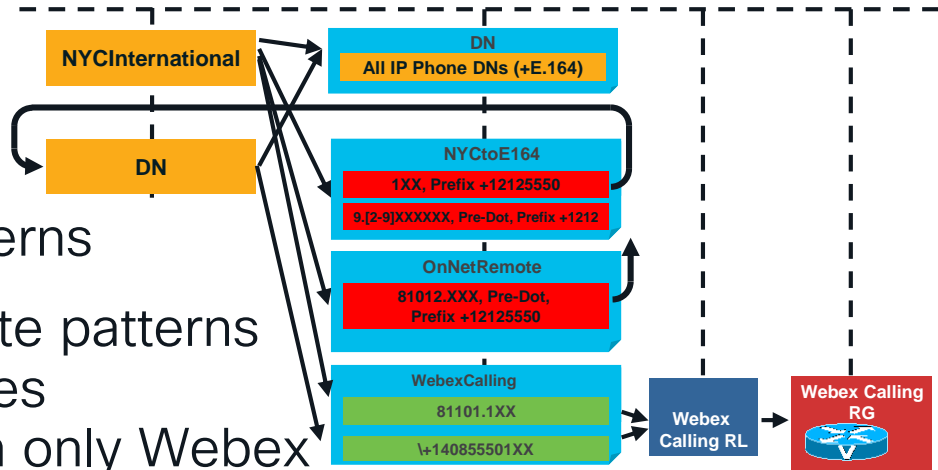
# UCM to WxC – ESN Outbound Route Patterns

- 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



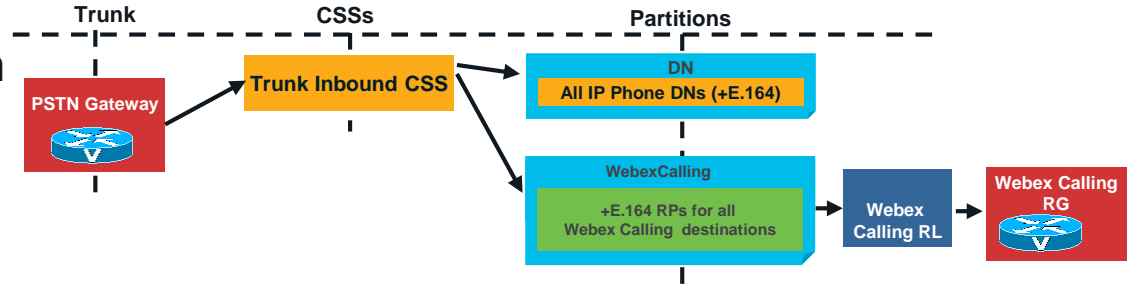
# UCM to WxC – ESN Outbound Route Patterns

- 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



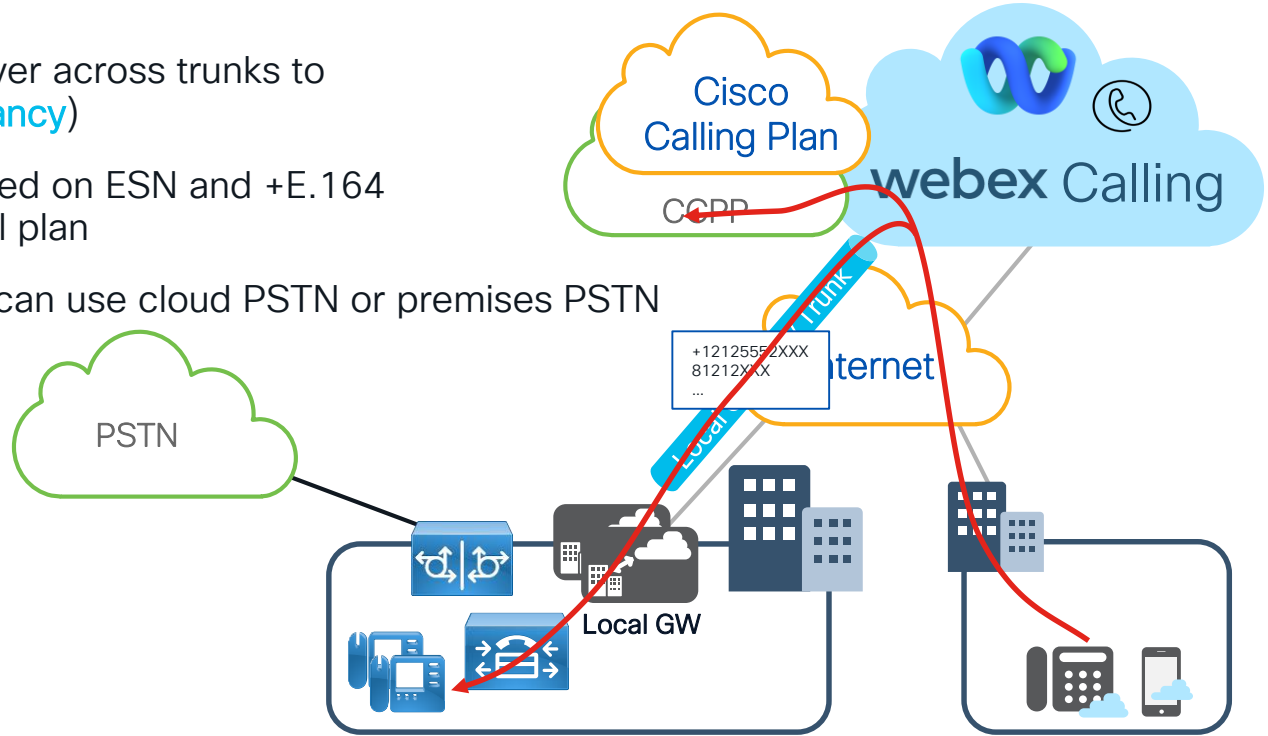
# UCM to WxC – PSTN Routing to Webex Calling

- 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

- 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 PAI, 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 has a 'Save' button at the top. Below is a 'Status' section showing 'Status: Ready'. The 'Pattern Definition' section includes fields for 'Pattern\*' (set to \+12135554XXX), 'Partition' (set to CnPtLocalizeFromWxC), 'Description' (set to Localize Caller ID inbound from WxC), 'Numbering Plan' (set to < None >), and 'Route Filter' (set to < 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), a 'Discard Digits' field (set to < None >), a 'Calling Party Transformation Mask' (set to 83134XXX), and a 'Prefix Digits' field.

Reference:

[https://www.cisco.com/c/en/us/td/docs/voice\\_ip\\_comm/cucm/srnd/collab12/collab12/dialplan.html](https://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cucm/srnd/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

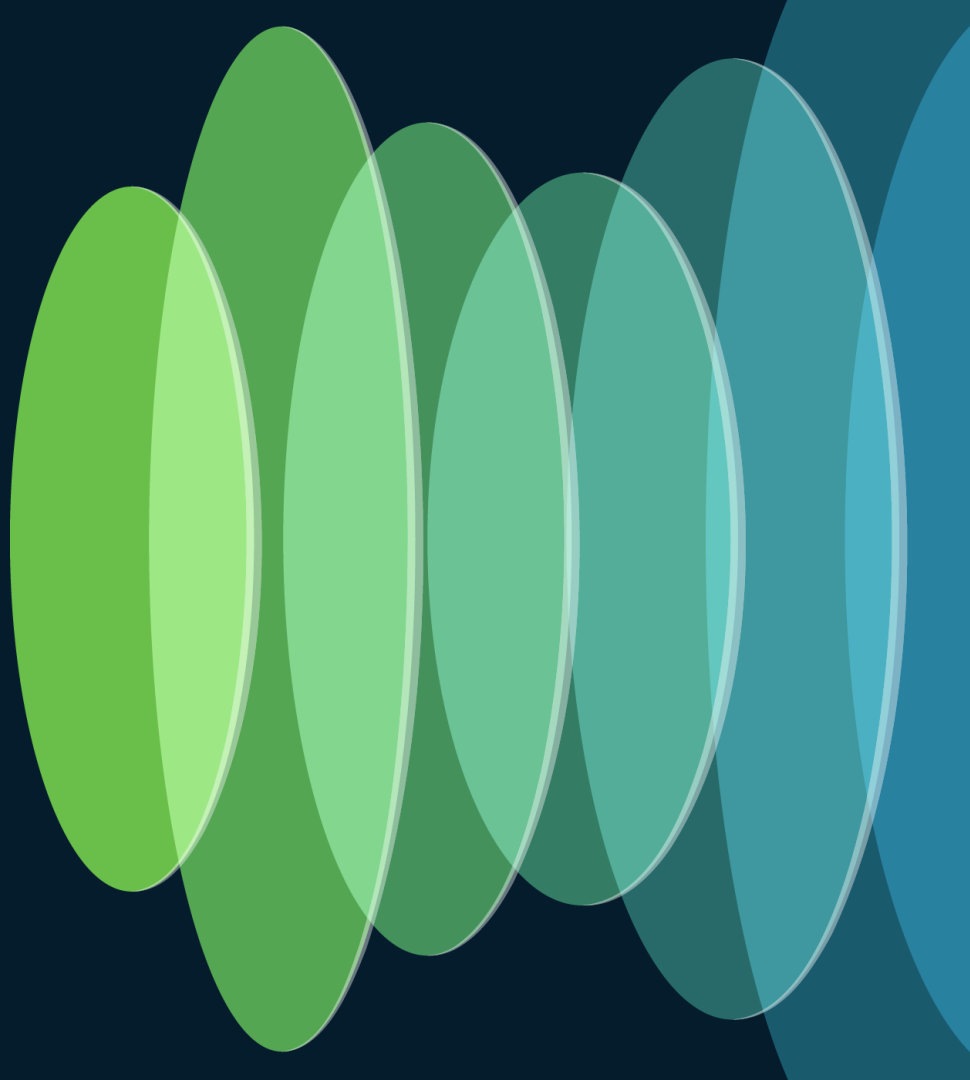
# Cisco UCM and Webex Calling coexistence

- 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

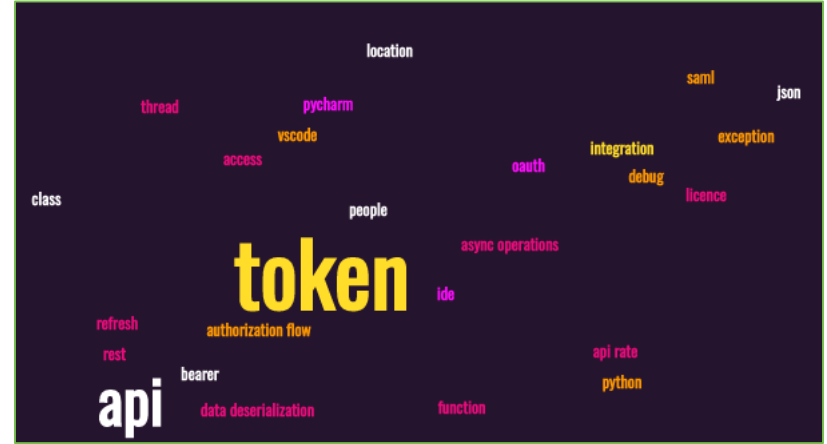
# Comprehensive Set of Provisioning APIs

- 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

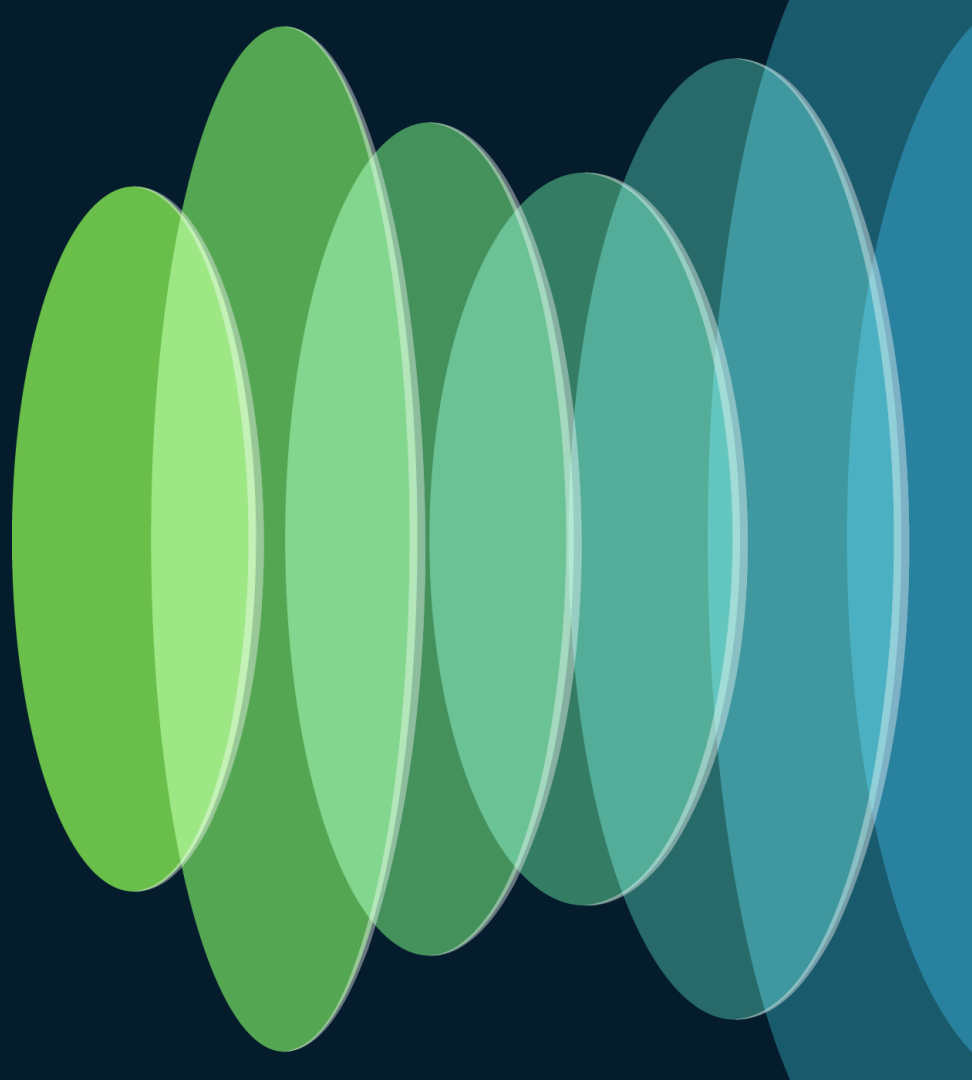
- Documentation at: <https://developer.webex.com/>
- But: Steep learning curve
- A lot of concepts to master
- SDKs help to abstract from the “dirty details”



# 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
  - Outgoing Calling Permissions
  - Translation Patterns
  - 7-10D extensions
  - Overlaps

# Calling Sessions

June 3, 8:00 AM	BRKCOL-2065: Webex Calling - How do I begin?
June 3, 9:30 AM	BRKCOL-2062: Best Practices for a Successful Migration from Jabber to the Webex App
June 3, 1:00 PM	BRKCOL-2487: Successful Migrations from Unified CM to Webex Calling
June 3, 3:00 PM	BRKCOL-2076: Upgrade to Cisco Unified Communications Manager Release 15 with Confidence !
June 4, 10:30 AM	BRKCOL-2064: Migrating IP phones from Unified Communications Manager (on-premises) to Webex Calling (cloud) by a TAC Engineer
June 4, 10:30 AM	BRKCOL-2787: Planning and Designing Successful Cloud Calling Deployments with Webex Calling
June 4, 3:00 PM	IBOCOL-1120: Webex Calling: What Do You Want to Know?
June 5, 10:30 AM	BRKCOL-1005: Understanding the Webex Customer Experience Basic & Essential Solutions, Configurations and Supervisor/Agent Experience
June 5, 10:30 AM	BRKCOL-2068: Cisco IP Phones, Headsets, and Webcams: The Product Updates that we all Need to Know
June 5, 10:30 AM	IBOCOL-2010: Cloud Connected UC: The Bridge to Migrate Your On-Premises Solution to Webex Calling
June 5, 2:30 PM	BRKCOL-2812: Troubleshooting Webex Calling Premises-based PSTN
June 6, 8:30 AM	BRKCOL-2067: Calling Interoperability with Microsoft Teams
June 6, 9:30 AM	IBOCOL-2420: Calling Migrations: an Interactive Session to Share Experiences, Ideas, Solutions, and Best Practices
June 6, 10:30 AM	BRKCOL-2314: CUBE v14 Updates
June 6, 11:00 AM	BRKCOL-2390: Cisco Video Endpoints Update
June 6, 1:00 PM	BRKCOL-3009: Troubleshooting UCM Calling in Webex App Like a TAC Engineer



# Cisco Webex App

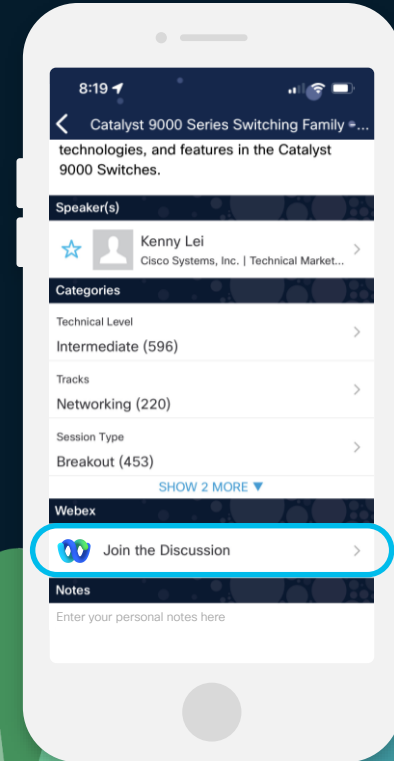
## Questions?

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

## How

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

Webex spaces will be moderated by the speaker until June 7, 2024.



# Continue your education

- Visit the Cisco Showcase for related demos
- Book your one-on-one Meet the Engineer meeting
- Attend the interactive education with DevNet, Capture the Flag, and Walk-in Labs
- Visit the On-Demand Library for more sessions at [www.CiscoLive.com/on-demand](https://www.CiscoLive.com/on-demand)

Contact me at: [jkrohn@cisco.com](mailto:jkrohn@cisco.com)



The bridge to possible

# Thank you

CISCO *Live!*

#CiscoLive