Cisco Tech Club Collaboration

Jaroslav Martan, Ivan Sýkora
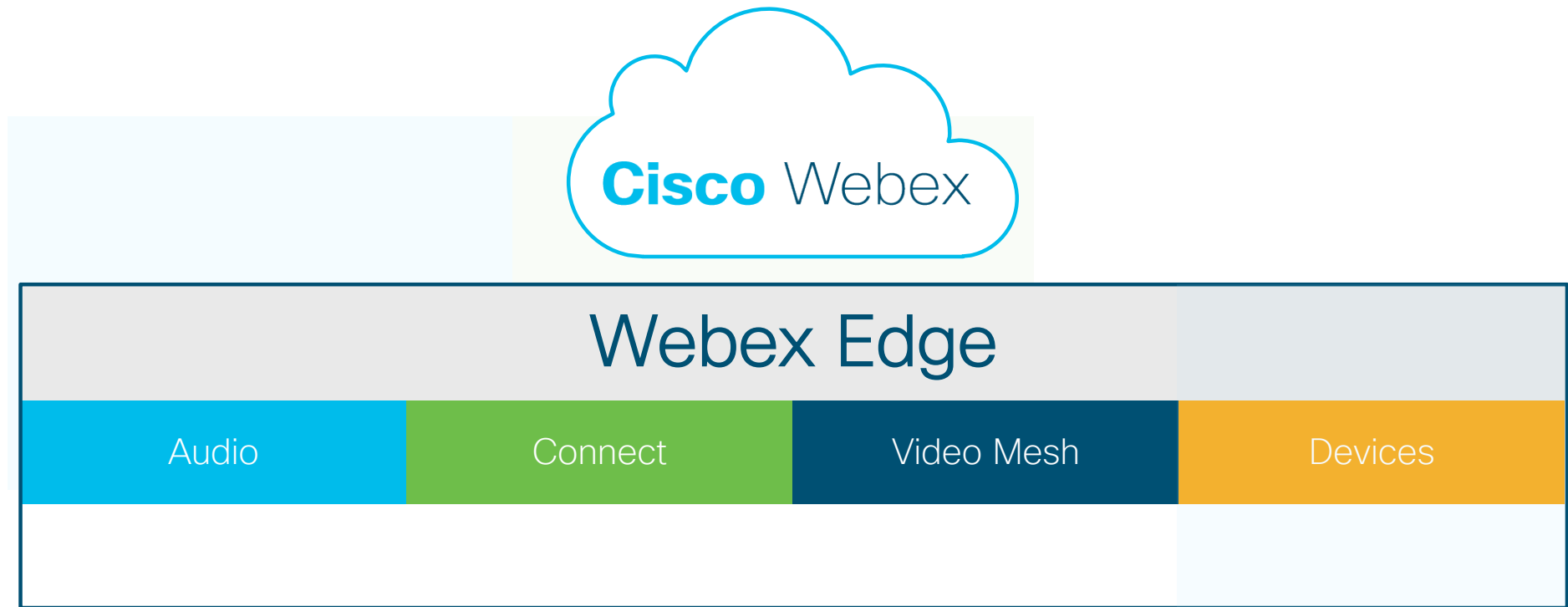
9.6.2020

Agenda

- Cisco Webex Edge – Hybrid Services for the Cloud
  - Edge Audio
  - Edge for Devices
  - Video Mesh
  - Edge Connect

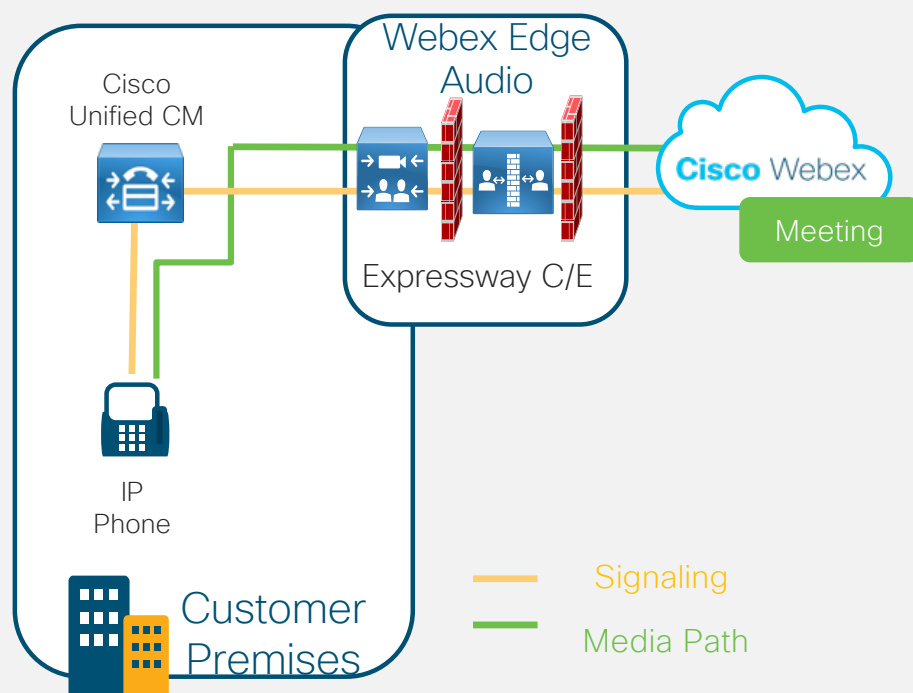- Jabber 12.9 & Integrations

Components of Webex Edge
High Level Overview

Cisco Webex

Webex Edge

Audio	Connect	Video Mesh	Devices

Edge Audio

Cisco Webex Edge Audio

## Intelligent audio routing

- •Intelligent audio routing: integrating Webex with Unified CM
  - • Creates end-to-end VoIP path for Unified CM registered devices (callback and dial-in)
  - • Uses company's own PSTN for any other device (callback savings)
  - • No SIP trunks or peering arrangements required
- •Geo-country code configurable
- •Included in Collaboration Flex Plan – no extra charge. No port charges on Expressway
- •Supports Webex Meetings, Events, Training

No user training, no change in user behavior, easy for IT
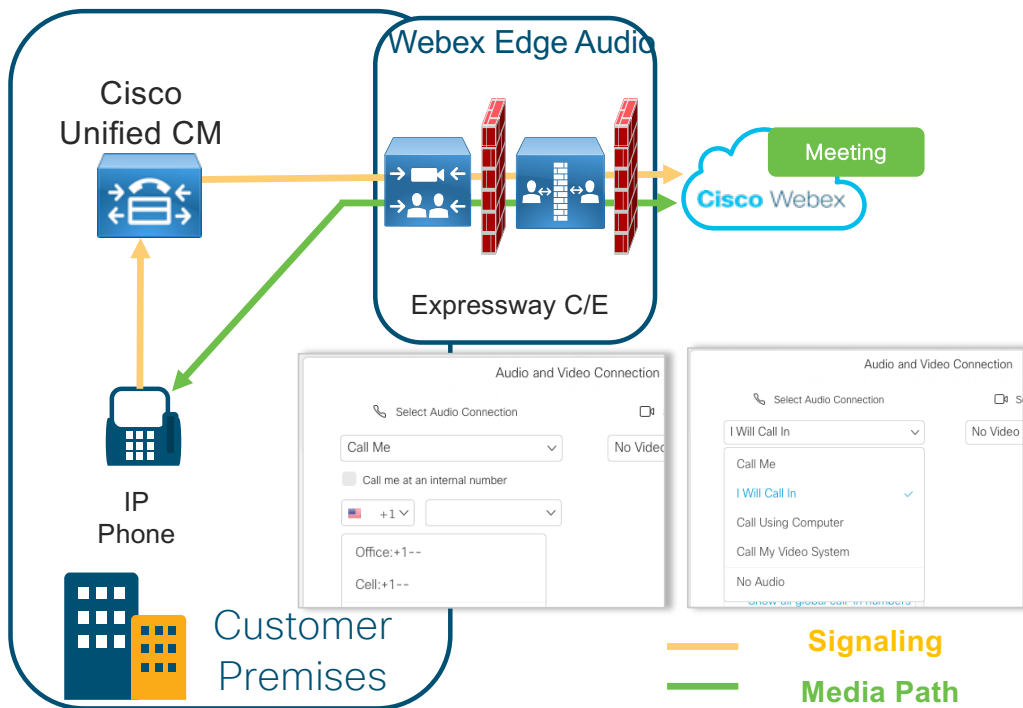
Cisco Webex PSTN Audio
High level overview
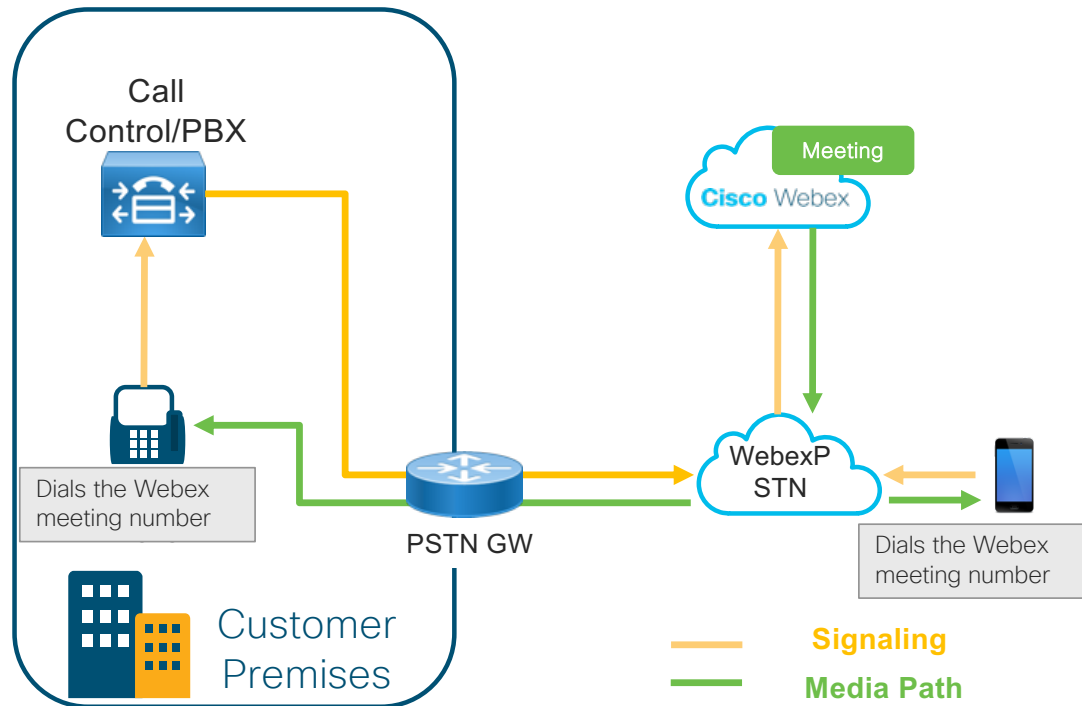
1. On-premises telephone or cell phone dials the Webex meeting number to get connected by audio into the meeting.

2. Signaling is routed via the on-premises call control device/PBX or by the cell phone network to Webex Meetings audio service.

3. Audio media (the sound) is connected via the Webex PSTN connection between the Webex meeting and the on-premises phone or cell phone.
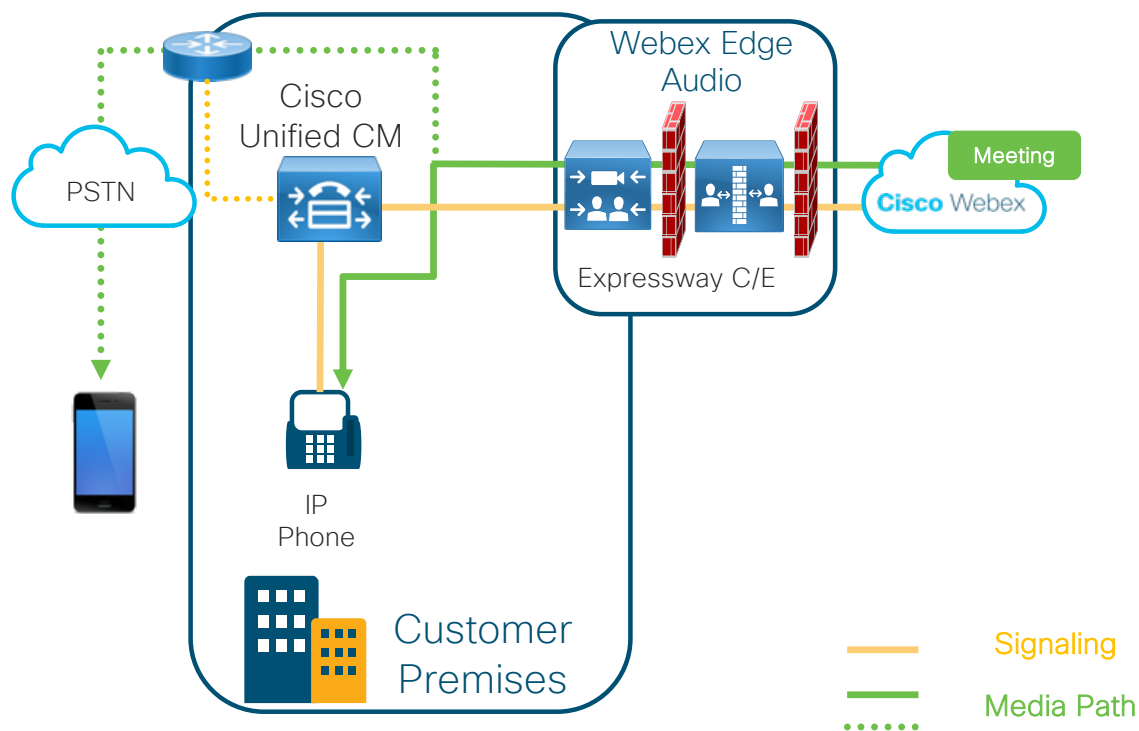
Cisco Webex Edge Audio
High level overview

Cisco Unified CM

Webex Edge Audio

Expressway C/E

Meeting

Cisco Webex

IP Phone

Customer Premises

Audio and Video Connection

Select Audio Connection

Call Me

☐ Call me at an internal number

🇺🇸 +1 ⌄

Office:+1--

Cell:+1--

No Video

Audio and Video Connection

Select Audio Connection

I Will Call In ⌄

Call Me

I Will Call In

Call Using Computer

Call My Video System

No Audio

No Video

—— **Signaling**

—— **Media Path**

1. On-premises telephone dials the Webex meeting number or gets a call back from the Webex meeting to get connected by audio into the meeting.

2. Signaling is routed via the on-premises call control device (Unified CM) through the Expressway C and E to Webex Meetings audio service.

3. Audio media (the sound) is routed from the Webex meeting to the Expressway E and C and then to the on-premises phone for callback and the reverse for call in.

Cisco Webex Edge Audio
Overview Architecture configuration – Call Back

Overview of the Webex Edge Audio Callback Set Up Steps:
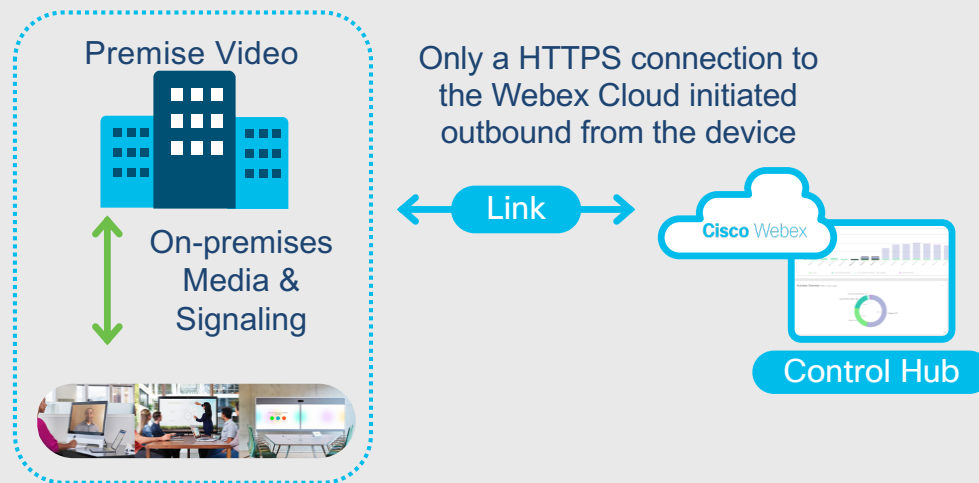
1. Apply Webex Edge Audio Callback Settings
   - Define country callback parameters in Control Hub
   - Ensure the proper SRV record configuration for Expressway - E
   - Ensure connectivity checks are successful.

2. Configure Expressway- E to accept calls and route to Expressway – C

3. Configure Expressway - C to accept calls and route them to Cisco UCM

4. Cisco UCM routes the +E.164 audio call to the IP phones or local PSTN

Edge for Devices
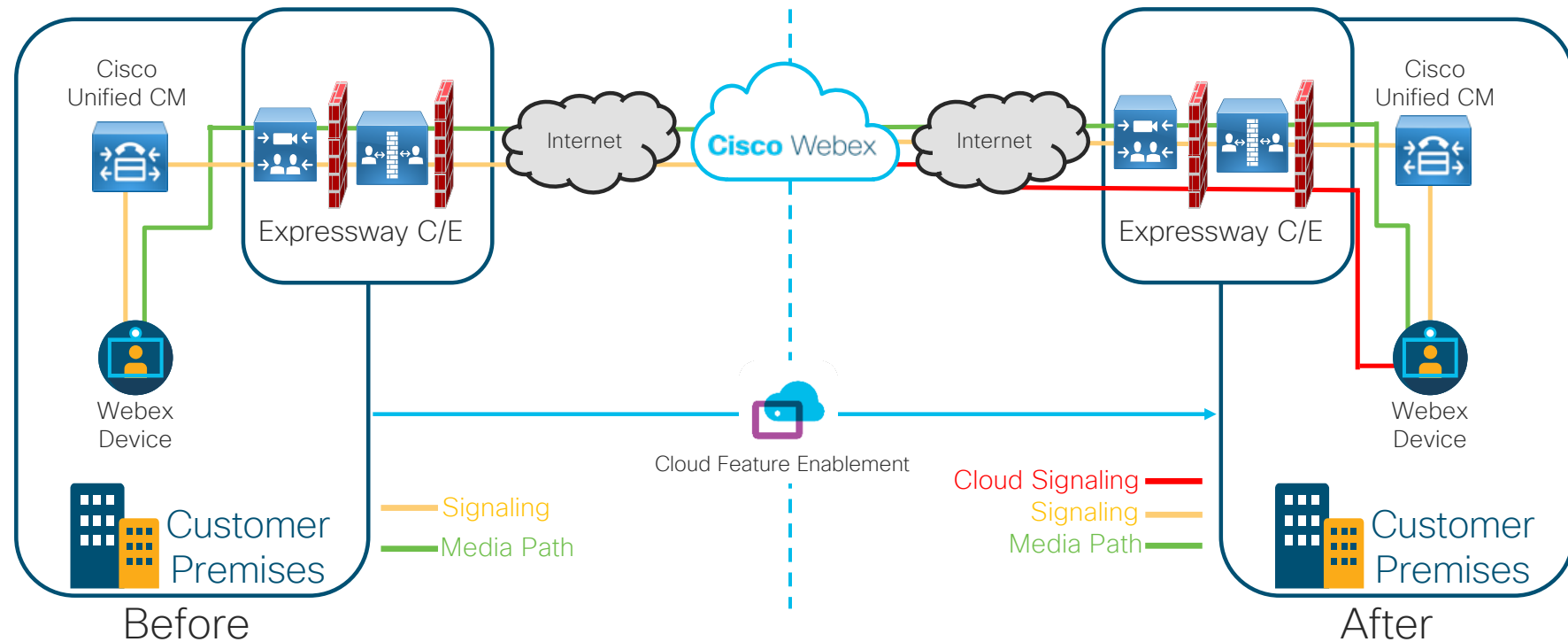
Webex Edge for on-premises Webex Devices
High Level Overview

Deliver insights and diagnostics for on-premises Webex Devices by linking them to the Webex cloud platform.

Premise Video

On-premises Media & Signaling

Only a HTTPS connection to the Webex Cloud initiated outbound from the device

Link

Cisco Webex

Control Hub

- Business-critical calling and media stays on-premises

- Hybrid deployment and customer migration at their pace

- "One-click migration" – one button to Cloud Link

- Simplified single pane of glass with insights through Control Hub

- This feature will enable more cloud services with time in phases

Cloud Feature Enablement

Cisco Unified CM

Expressway C/E

Internet

Cisco Webex

Internet

Expressway C/E

Cisco Unified CM

Webex Device

Cloud Feature Enablement

Webex Device

Customer Premises

Signaling
Media Path

Cloud Signaling
Signaling
Media Path

Customer Premises

Before

After

Cloud features for on-premises registered devices

Phase 1 Webex Control Hub supported standard services

- Historical analytics

- Online/Offline connection status

- Device Diagnostics

- Cloud xAPI access

Additional options available for configuration within Phase 1

- Hybrid Calendar services

- Webex Assistant (pro-active join meeting)

Prerequisites
For on-premises registered Webex devices with Cloud features

- Software version on Webex device is CE9.10 or later

- Latest release of VCS/Expressway

- Unified CM version 12.5SU1 or 11.5.x with latest device pack or COP file

- AXL enabled Application user (if linking Webex devices through Unified CM)

- Webex Control Hub Full Administrator or Device Administrator access

- Active Webex Control Hub instance

- Device Licenses available in Webex Control Hub

- Device Connector tool installed (as detailed earlier in this deck)

- For Expressway, you need HTTPS connectivity enabled on your Webex Devices for the Device Connector tool

Onboarding Flow
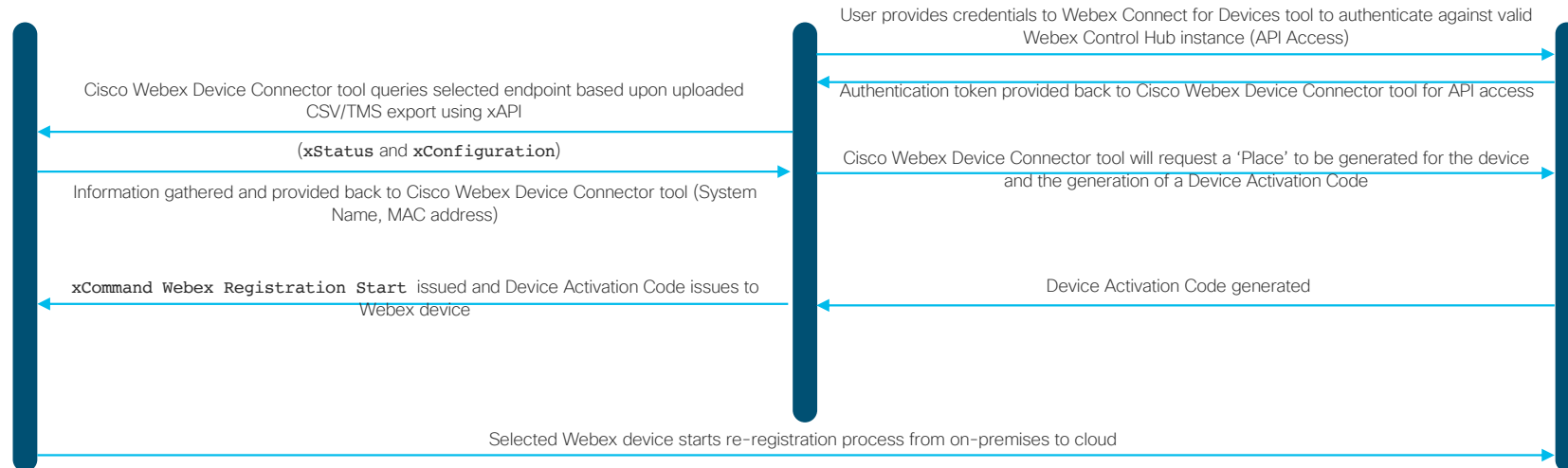## Migration from on-premises registration to cloud

On-premises
Webex device

Cisco Webex Device
Connector tool

Cisco Webex
Cloud

User provides credentials to Webex Connect for Devices tool to authenticate against valid
Webex Control Hub instance (API Access)

Cisco Webex Device Connector tool queries selected endpoint based upon uploaded
CSV/TMS export using xAPI

Authentication token provided back to Cisco Webex Device Connector tool for API access

(**xStatus** and **xConfiguration**)

Cisco Webex Device Connector tool will request a 'Place' to be generated for the device
and the generation of a Device Activation Code

Information gathered and provided back to Cisco Webex Device Connector tool (System
Name, MAC address)

xCommand Webex Registration Start issued and Device Activation Code issues to
Webex device

Device Activation Code generated

Selected Webex device starts re-registration process from on-premises to cloud

Video Mesh

Webex Edge Video Mesh
On-premises video quality and bandwidth savings

Video Mesh Node
local media kept local

Cisco Webex

Video Mesh Node
local media kept local

Cisco Webex

Cisco Webex

Cisco Webex
Video Mesh Node
local media kept local

Webex Edge Video Mesh

- Software extends cloud to the premises
  - media stays local for on-premises attendees

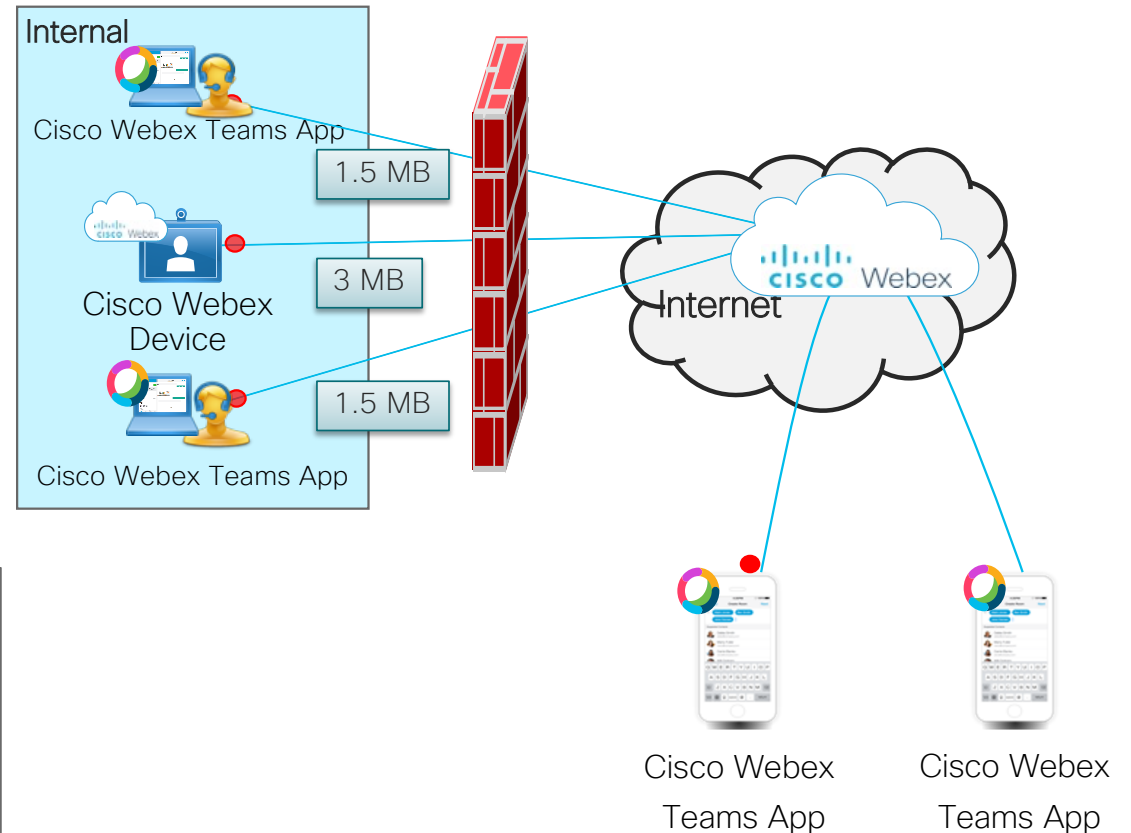- Cloud simple: managed by & registered to Webex cloud

- Automatic overflow if local capacity is full or unavailable
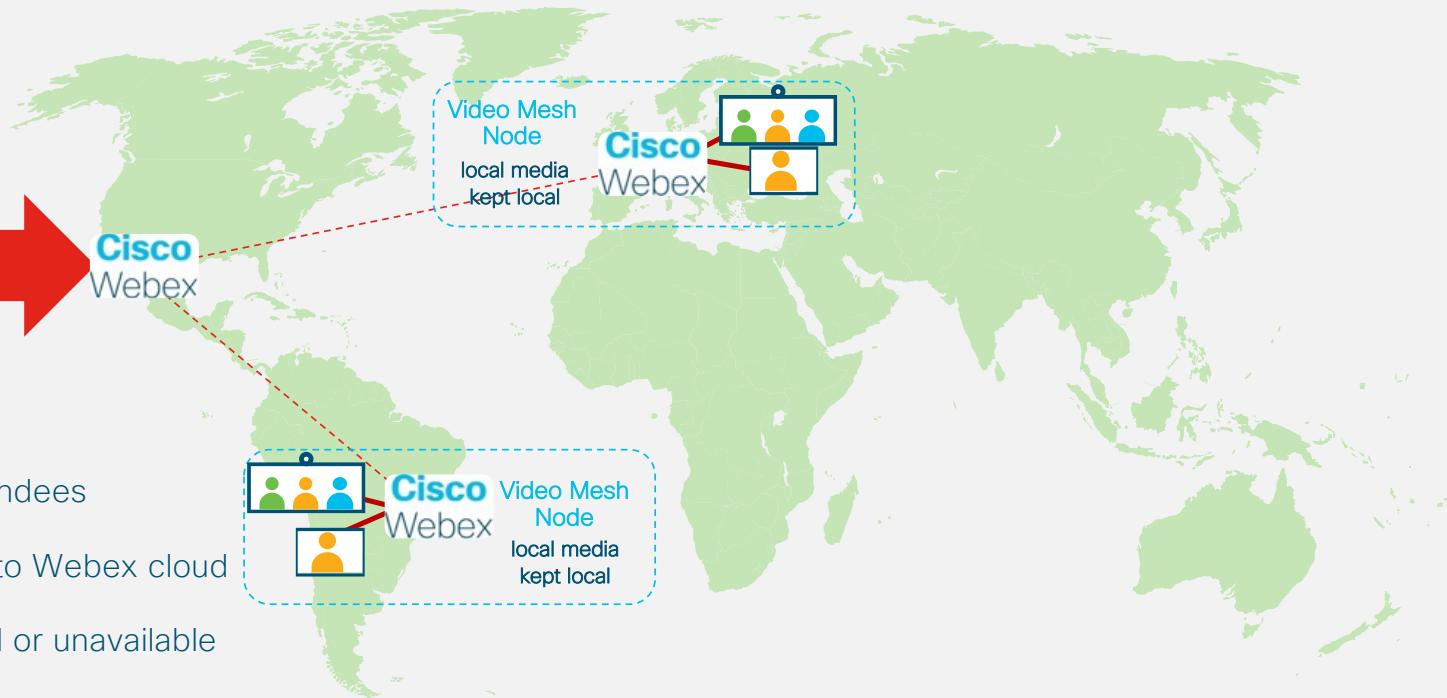
Webex Video Mesh

Problem

- 1:1 meetings use a cloud resource to meet
- Multiparty meetings use a cloud resource to meet
- Signaling and media go to and from the cloud
- Increased bandwidth requirement for the Internet with adoption of Cisco Webex Meetings
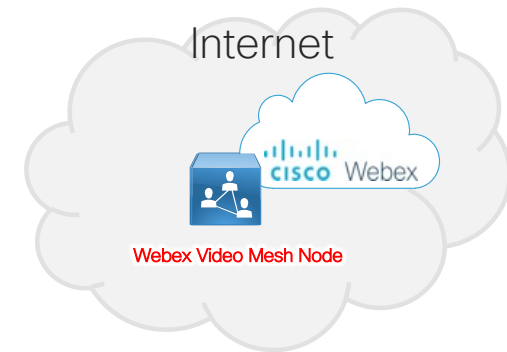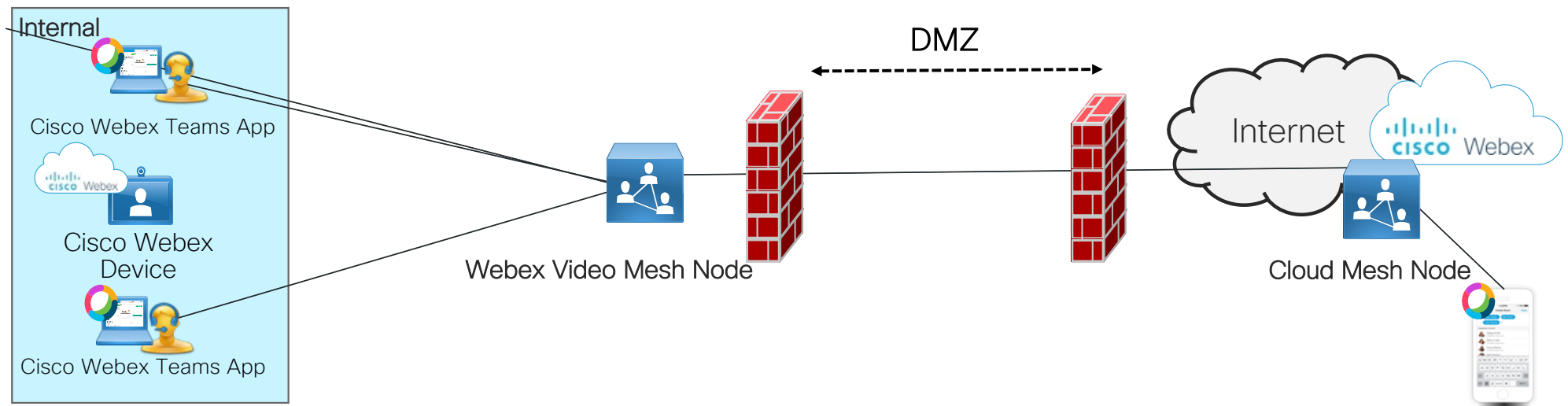
Solution

Cisco Webex Video Mesh

Internal

Cisco Webex Teams App

1.5 MB

Cisco Webex Device

3 MB

1.5 MB

Cisco Webex Teams App

Internet

CISCO Webex

Cisco Webex Teams App

Cisco Webex Teams App

Webex Video Mesh
What is it?

- A little piece of our cloud on your premises

- Cisco cloud meeting capabilities packaged in a software image for on-premises deployment

- Ability to provide local media processing on the corporate network.

- Customers can deploy Video Mesh Nodes across multiple locations, optimizing media quality within a location and bandwidth across locations

- Automatic overflow from on-premises Video Mesh Node to cloud nodes

- Automatic upgrades of Video Mesh Nodes

- Single pane of glass for management, resource monitoring and usage metrics

Internet

CISCO Webex

Webex Video Mesh Node

Corporate Network

Webex Video Mesh Node   Webex Video Mesh Node
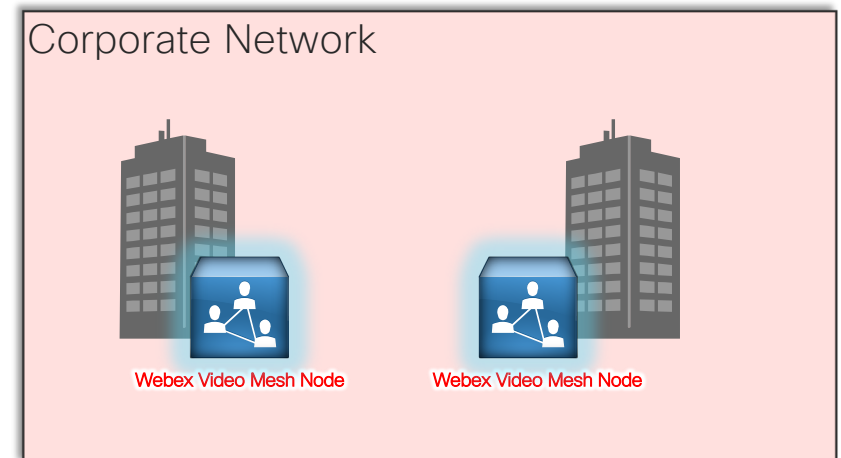
Architecture
Webex Video Mesh – Option 1

Internal

Cisco Webex Teams App

Cisco Webex Device

Cisco Webex Teams App

DMZ

Internet

CISCO Webex

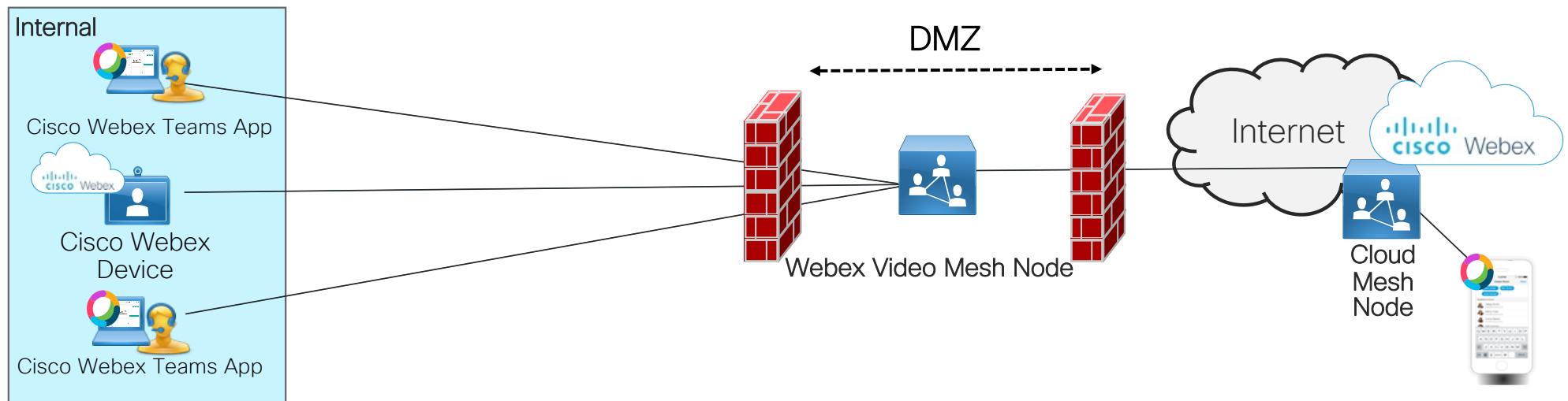Webex Video Mesh Node

Cloud Mesh Node

Internal installation considerations:

- All media for internal participants stay internal
- Placed with other collaboration infrastructure devices
- Single connection per conference to Cloud Mesh Nodes

Architecture
Webex Video Mesh – Option 2

DMZ installation considerations:

- External media does not traverse the internal network.

- All media for internal participants goes to the DMZ.

- Security policy does not allow Cisco Webex network ports to be opened outbound for media directly to the Internet from the internal network.

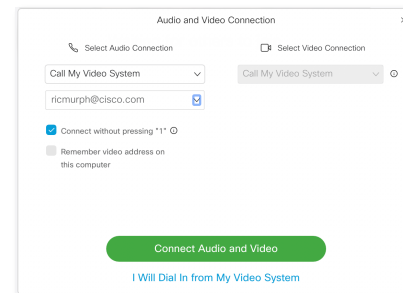# What devices and scenario can the Video Mesh node be used?

Uses the Node ✅

- Any Cisco Webex-registered device
  - SX, MX, DX, Room-series, Webex Board

- Cisco Webex Teams app
  - Desktop and Mobile

- CUCM-registered devices
  - Calling a Cisco Webex scheduled meeting or personal room.
  - SX, MX, DX, Room-series, Jabber, Jabber VDI (12.6 or higher)

Uses the Node ✅

- Cisco VCS/Exp.-registered devices
  - Calling a Cisco Webex scheduled meeting or personal room.
  - SIP or H.323 (requires Interworking)

- Cisco Webex VDI client (39.3 or higher)

- Cisco Webex *Call My Video System* to Webex-registered endpoints

What devices and scenario can the video mesh node be used?

Can __NOT__ use the Node

- Webex Teams browser client
  - teams.webex.com
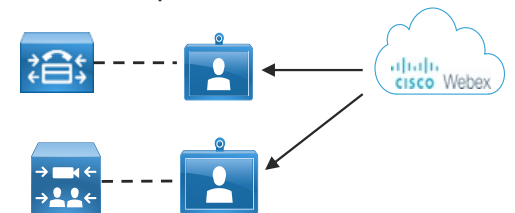

- Webex Calling-registered phones

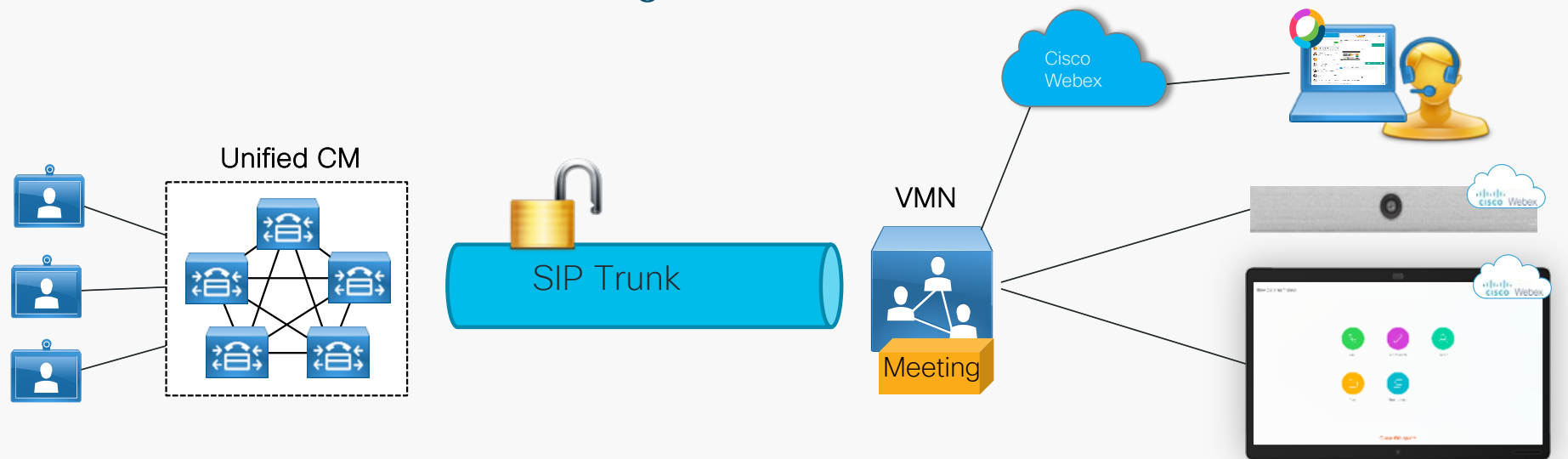*Can __NOT__ use the Node*

- Webex Meetings app

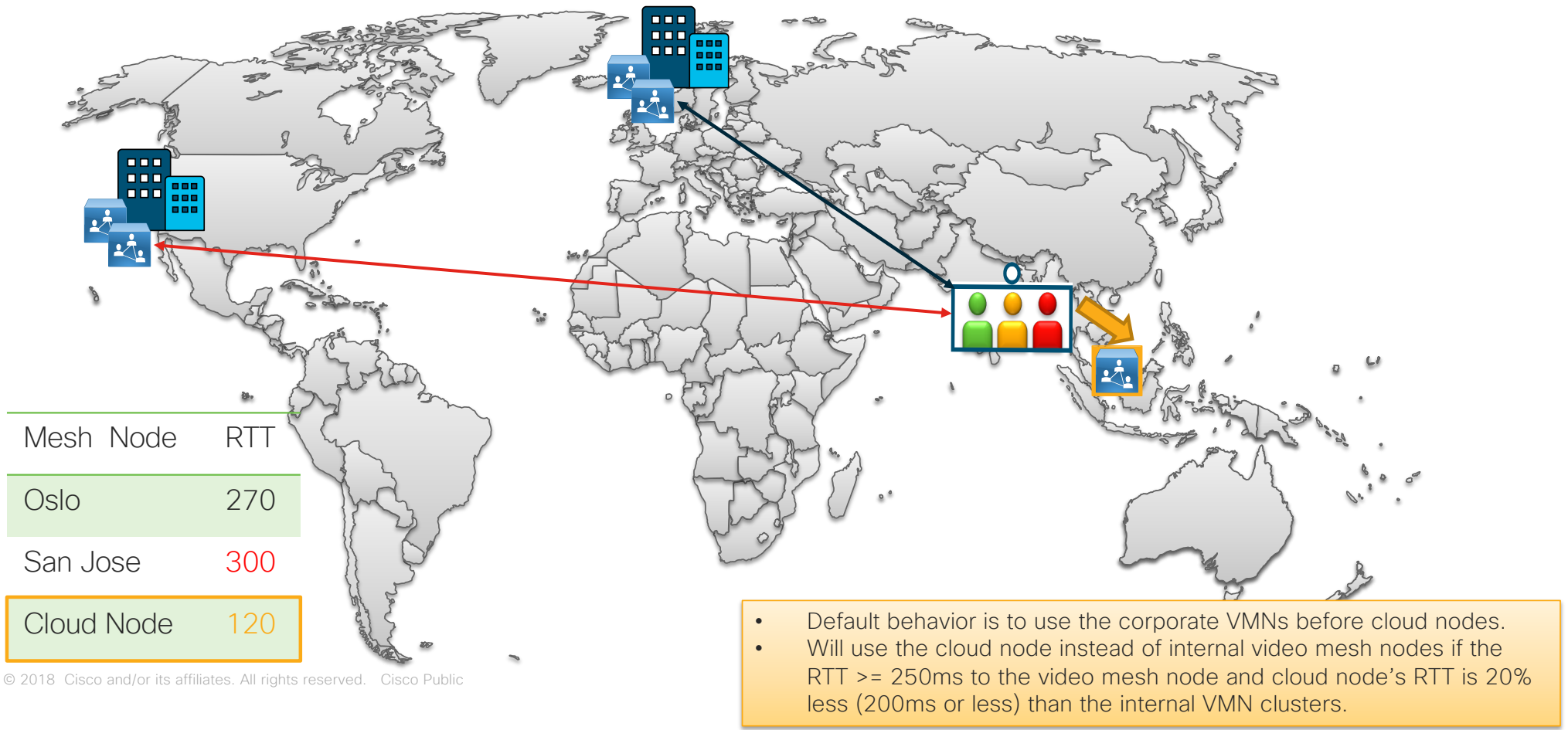- Cisco Webex *Call My Video System* to premises-registered endpoints

Call Control Connectivity
Cisco Unified Communications Manager

- Supported with Unified CM version 11.5(1) and higher. Recommended versions 12.5(1) and higher.
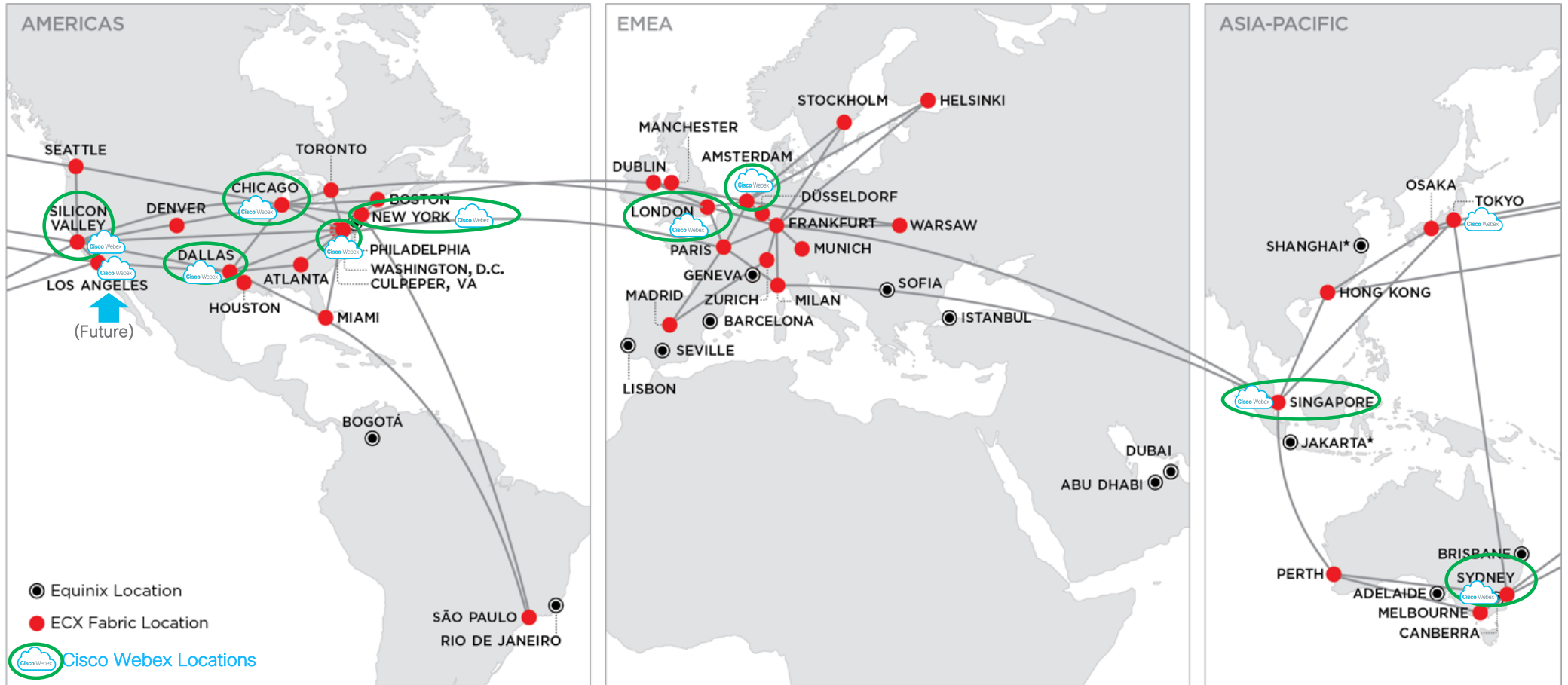
Reachability to the cloud

Mesh Node	RTT
Oslo	270
San Jose	300
Cloud Node	120

- Default behavior is to use the corporate VMNs before cloud nodes.
- Will use the cloud node instead of internal video mesh nodes if the RTT >= 250ms to the video mesh node and cloud node's RTT is 20% less (200ms or less) than the internal VMN clusters.

Edge Connect

Webex Edge Connect

Brings the power of the Webex backbone directly to your data centre
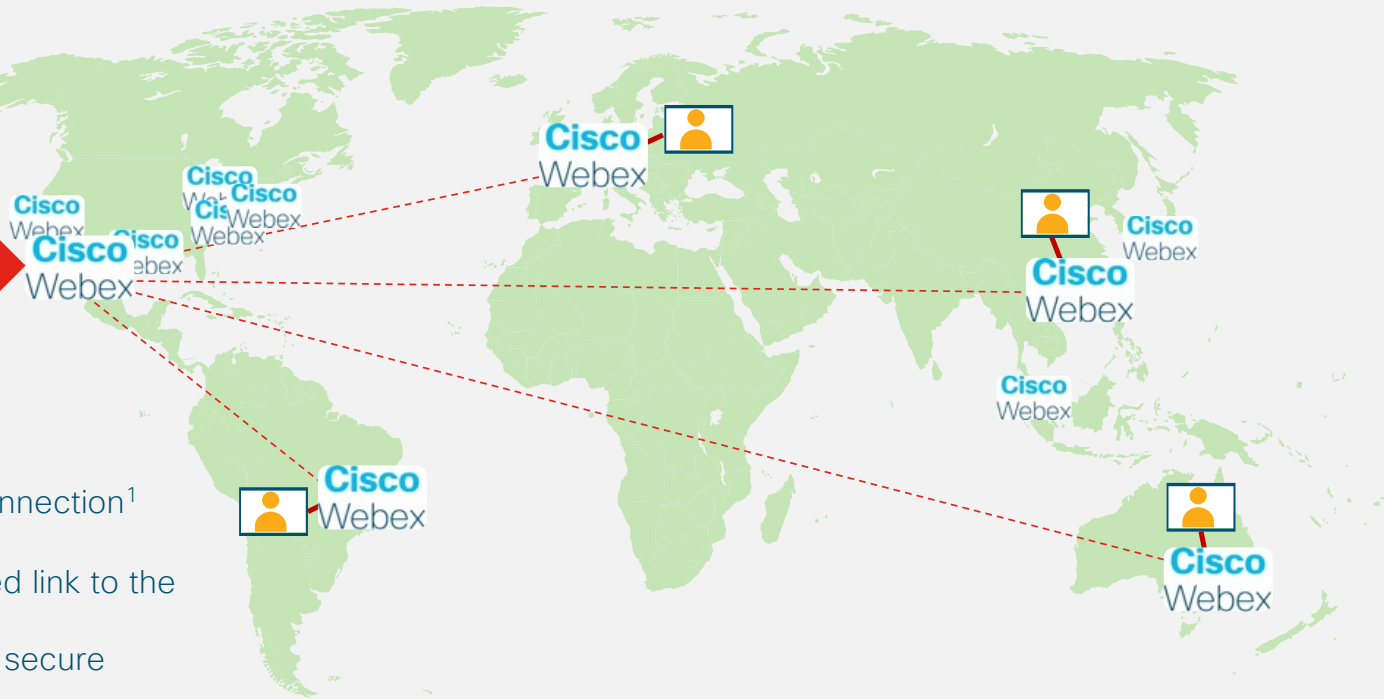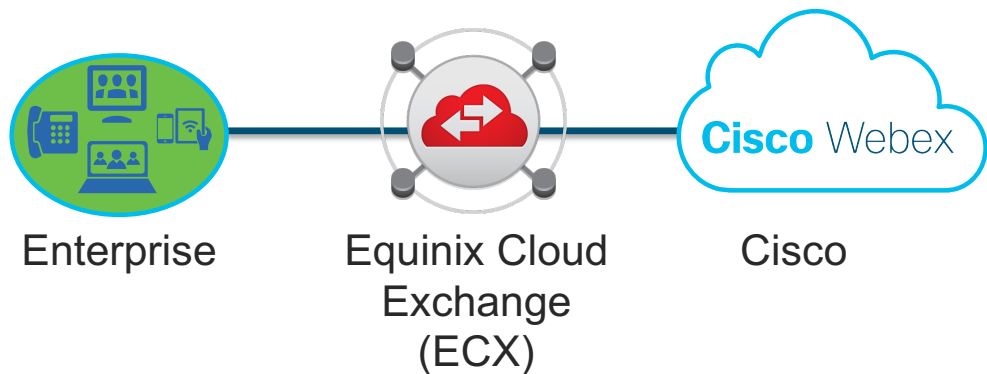

Webex Edge Connect

- A direct peering at Equinix data centers
- Bypasses the Internet by providing a direct connection[1] to the Webex data center
- All Webex media traffic traverses the dedicated link to the meeting. (VoIP, video, content sharing)
- When used with Video Mesh provides a more secure end-to-end experience

[1] *via a peering agreement with Equinix*

EQUINIX

Equinix ECX Fabric™

AMERICAS

SEATTLE
TORONTO
CHICAGO
BOSTON
NEW YORK
SILICON VALLEY
DENVER
DALLAS
PHILADELPHIA
WASHINGTON, D.C.
CULPEPER, VA
ATLANTA
LOS ANGELES
(Future)
HOUSTON
MIAMI
BOGOTÁ
SÃO PAULO
RIO DE JANEIRO

⊙ Equinix Location
● ECX Fabric Location
○ Cisco Webex Locations

EMEA

STOCKHOLM
HELSINKI
MANCHESTER
AMSTERDAM
DUBLIN
DÜSSELDORF
LONDON
FRANKFURT
WARSAW
PARIS
MUNICH
GENEVA
SOFIA
MADRID
ZURICH
MILAN
BARCELONA
ISTANBUL
SEVILLE
LISBON
DUBAI
ABU DHABI

ASIA-PACIFIC

OSAKA
TOKYO
SHANGHAI*
HONG KONG
SINGAPORE
JAKARTA*
BRISBANE
SYDNEY
PERTH
ADELAIDE
MELBOURNE
CANBERRA

Overview
Peering connection with Cisco Webex

Enterprise   Equinix Cloud Exchange (ECX)   Cisco

Cisco Webex

Benefits

- Private circuit (not over Internet)
- Deterministic network path
- Predictable and stable latency and jitter
- Guaranteed bandwidth
- Speed options: 500M, 1G, 5G,10G

Available Services

- Webex Meetings
- Webex Teams Media *
- Video Device-Enabled Webex Meetings (CMR)
- Webex Edge Audio

* Webex Teams, Board, Cloud Registered Endpoints and Video Mesh require Internet access for signaling

Webex Edge Connect Benefits

- Enhanced Meeting Quality – Your day-day core business conducted over the internet does not interfere with meetings and vice-versa. This means you can be assured of a consistent, reliable, cost effective, and secure meeting experience for all

- Added Security – Webex Edge Connect direct peering insulates your meetings from the variability of the Internet and provides protection from the public Internet and the potential threats and attacks.

Things to Remember

Webex Edge

Webex Edge		
Audio	Connect	Video Mesh

1 Webex Edge Audio provides dial in and call back functionality to Webex meetings for the audio connections to and from the customer premises.
- Uses existing Cisco Unified CM and Expressway products and the Internet.
- Uses +E.164 and extension numbering for audio communications
- Does not require Edge Connect, but is recommended to be used with Edge Audio.
- Does not require Video Mesh, functions independently from this service.

2 Webex Edge Connect provides a peering connection to Webex datacenters for meetings media.
- Provides direct link from the customer premises to a Webex datacenter.
- Can be used with Webex Edge Audio.
- Can be used with Video Mesh.
- Not required for Edge Audio or Video Mesh service to operate but recommended for Edge Audio.

Webex Edge

Webex Edge		
Audio	Connect	Video Mesh
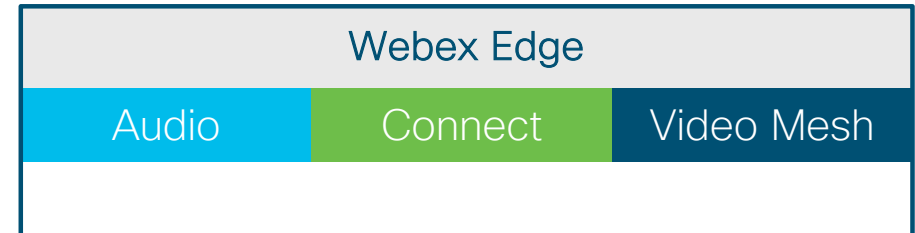
3 Webex Edge Video Mesh provides on premises meeting resources for devices and Teams app.
- Uses SIP URI dialing for video communications (main video, content and audio channels) to a Webex meeting.
- Cascades to the Webex cloud meeting to join inside and external participants or for overflow scenarios when not enough resources are available on premises for the number of users in the meeting.
- Does not require Edge Connect, but can utilize the direct peering link.
- Does not require Edge Audio, functions independently from this service.

Cisco Jabber

Jabber 12.9
Update

Jabber 12.9 Feature Summary

Application

- Force Jabber upgrade
- Accessibility improvements – Shortcut keys
- TMM – XMPP Federation

Calling & Meetings

- Contact Centre Calling Features
    - Agent greeting
    - Play ZIP tone for CUCM Auto Answer call
    - Supervisor call barge (cbarge)
    - Silent Monitoring (cbarge)
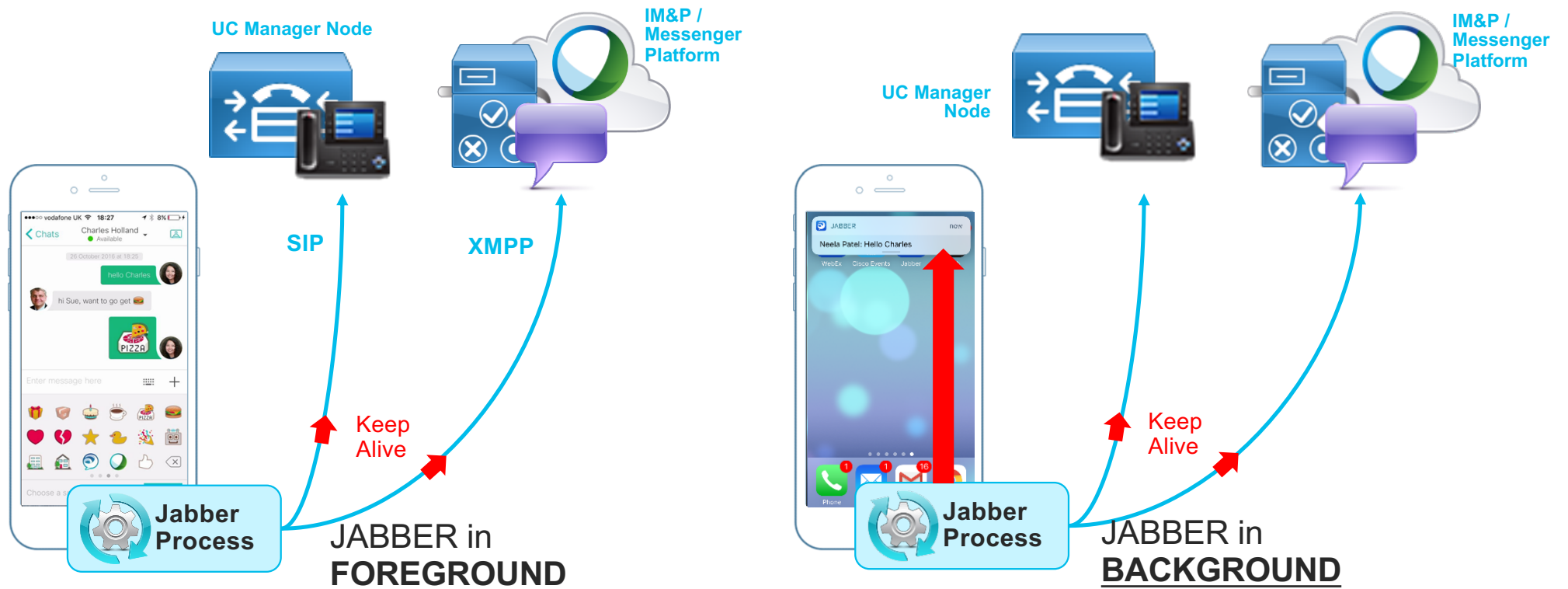- Remote diagnostics
- Auto answer on iPad

Jabber VDI

- MacBook support (Limited Availability)
- Linux: non-full screen mode
- Presence improvement
- Remove 3rd party in UCM conference
- eLux 6.7 support

System/Devices

- Cisco Headset
    - DND presence Sync
    - Firmware upgrade UX enhancement
    - Dongle firmware upgrade
- Reload custom tab once VPN is connected
- Custom Tabs - Determine Dark Mode (Programmatically)
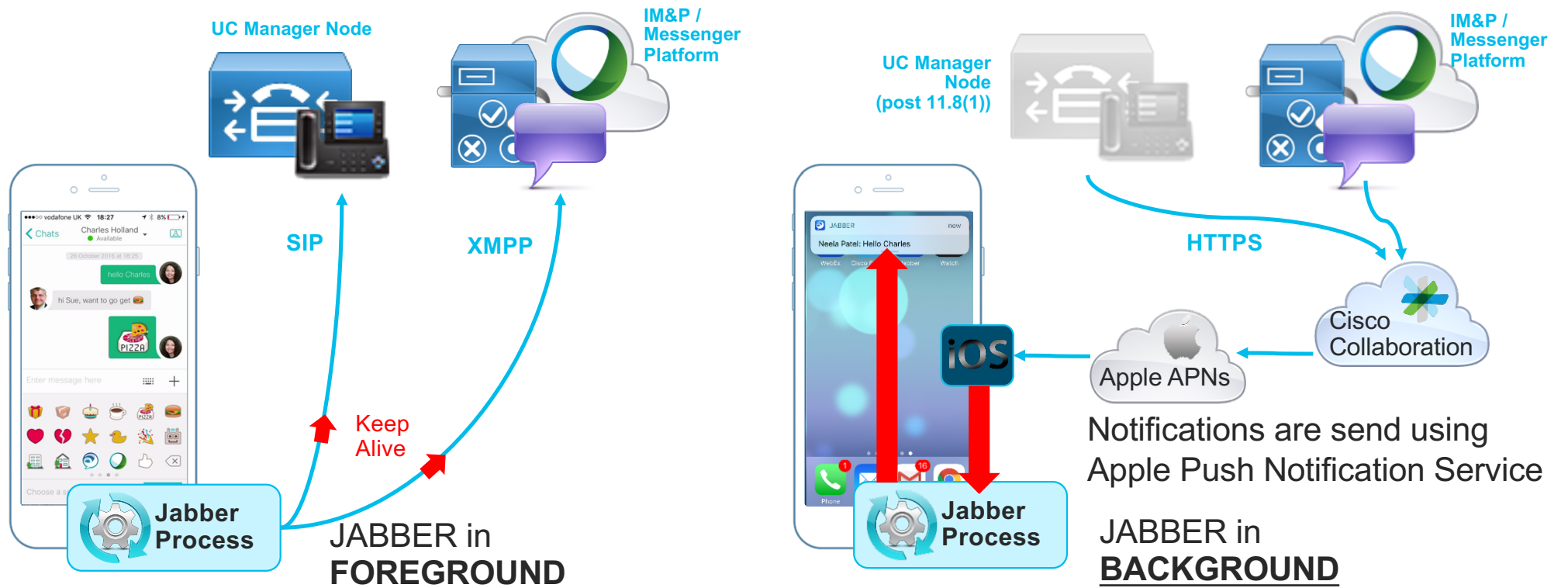- iOS 13 SDK alignment
- Android Push Notification

Jabber APNS

Jabber without APNS
Jabber 11.8 and prior versions

UC Manager Node

IM&P / Messenger Platform

SIP

XMPP

Keep Alive

Jabber Process

JABBER in **FOREGROUND**

UC Manager Node

IM&P / Messenger Platform

Keep Alive

Jabber Process

JABBER in **BACKGROUND**

Jabber with APNS
Jabber 11.8(1)MR and later

UC Manager Node

IM&P / Messenger Platform

SIP

XMPP

Keep Alive

Jabber Process

JABBER in
FOREGROUND

UC Manager Node (post 11.8(1))

IM&P / Messenger Platform

HTTPS

iOS

Apple APNs

Cisco Collaboration

Notifications are send using
Apple Push Notification Service

Jabber Process

JABBER in
BACKGROUND

Changes that affect Push Notification service

Jabber users on Apple devices have two options to receive calls and messages notifications while app is in background
- VOIP socket
- Apple Push Notification service(APNs)

August 2020: VOIP socket deprecated

- Jabber will not receive calls/messages while in background mode
- Upgrade CUCM to 11.5(1)SU4 (minimum) or 12.5(1)SU2 or higher.
- APNs must be enabled to resolve this
- Reference   for release calendar and Recommended Migration schedule

April 2021: iOS 13 APNS Changes

- There are changes in iOS13 that will affect Jabber / Webex Teams clients on Apple devices
- CUCM 11.5SU8 or 12.5SU3 implement changes to support these changes.
- Organizations already using APNs must upgrade for users to continue to receive calls/messages.
- Reference Field Notice for release calendar and Recommended Migration schedule

iOS13 SDK Apple Push Notification service
Compatibility with iOS13 SDK changes
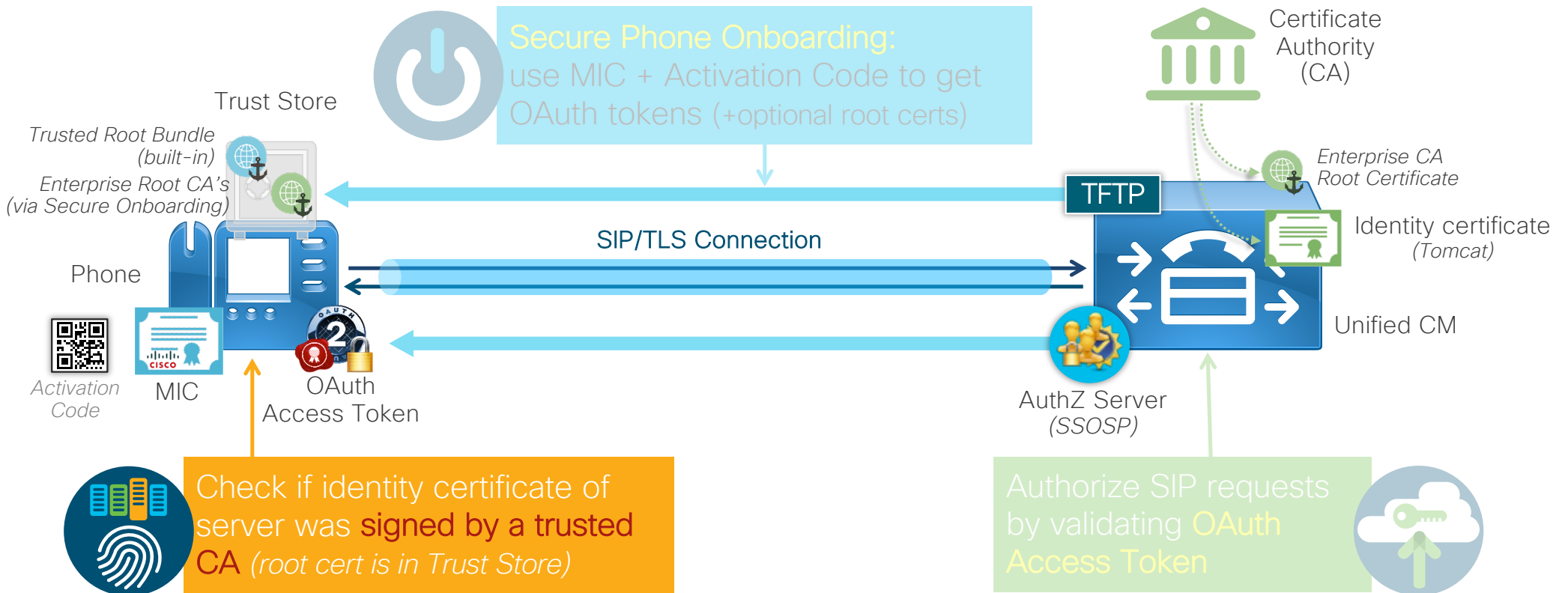
iOS 13 SDK APNS changes

- All VOIP call notifications must show the CallKit
- Call notifications are sent via high priority VoIP channel
- Message notifications are sent via message channel

User Impact without UCM Update

- Cisco Jabber client may be terminated, and Apple will stop delivering voice and messaging push notifications
- Cisco Jabber and Webex Teams client on iOS 13 will get voice call notification with CallKit which would show caller id as "Unknown Caller"

Solution

- Call notifications are sent via high priority VoIP channel
- Message notifications are sent via message channel
- Client shows the Callkit view immediately after getting notification

Benefits

- Cisco Jabber App is not terminated
- Improved User Experience: Users get caller-id on the Callkit view and can answer the call directly from the lock screen on Apple devices

New UC Security Architecture
Client Trust for Phones

Secure Phone Onboarding:
use MIC + Activation Code to get
OAuth tokens (+optional root certs)

Certificate
Authority
(CA)

Trust Store

*Trusted Root Bundle
(built-in)*
*Enterprise Root CA's
(via Secure Onboarding)*

*Enterprise CA
Root Certificate*

TFTP

Identity certificate
(Tomcat)

Phone

SIP/TLS Connection

Unified CM

*Activation
Code*

MIC

OAuth
Access Token

AuthZ Server
(SSOSP)

Check if identity certificate of
server was signed by a trusted
CA *(root cert is in Trust Store)*

Authorize SIP requests
by validating OAuth
Access Token

New UC Security Architecture
Principles

Users

Endpoints
(Phones, Soft Clients)

Enrollment:
Authorization Code Grant or
Secure Phone Onboarding
deliver OAuth token to endpoint

Infrastructure
(UCM, IM&P, Expwy, UCxn)

SIP

XMPP

HTTP

Client Trust:
Standard PKI X.509
certificate chain
validation

API Protection:
OAuth 2.0 framework
for all client-facing
API's
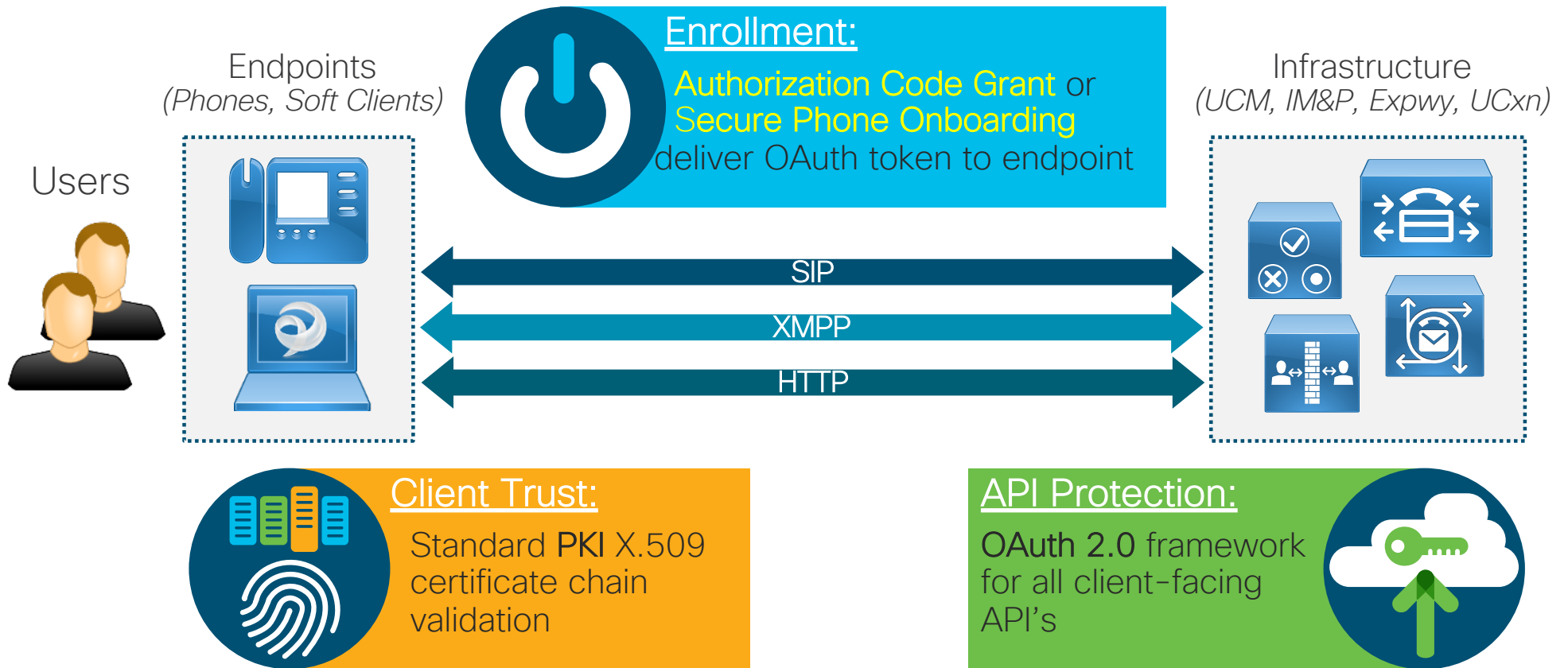
Jabber Calling
in MS Teams & Slack

Cisco Calling Integrations for Microsoft Teams

The simple way to integrate Microsoft Teams Messaging and Cisco Calling.
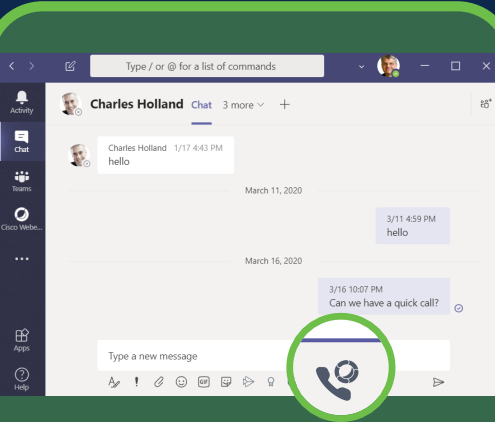
Use your existing Cisco Calling infrastructure

Click to call with your existing Cisco phones from Microsoft Teams

Flexible Work Styles – No compromise on calling features and functionality

Choice of Cisco calling platforms – On Premise, Hybrid and Cloud.

Microsoft Integration Features
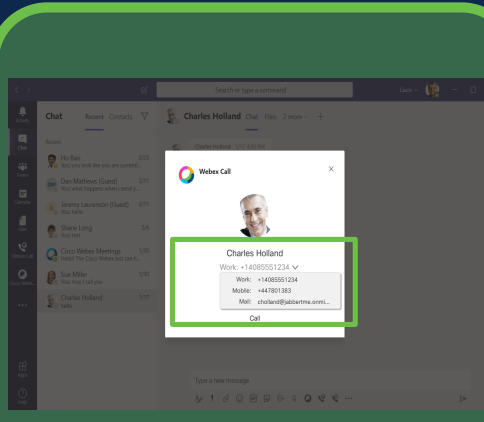
Click the Call button to start a Cisco Call in an existing chat
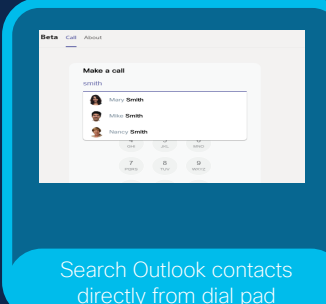
Use the dial pad enter a phone number SIP address
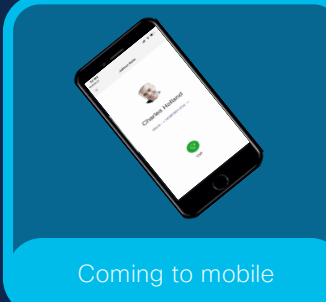
Contact details are displayed with phone numbers from Azure AD

Search Outlook contacts directly from dial pad


Coming to mobile

Available now

Coming May 2020

Additional Updates every 2 months

Client based integration

- Simple to deploy Client side integration which works with your existing Cisco Calling Apps

- Client side means <u>NO</u> changes to Infrastructure or configuration

- Works with a choice of Cisco clients

Webex Teams

Cisco Jabber

No Infrastructure changes

Microsoft 365

Webex Calling

Cisco UC Manager
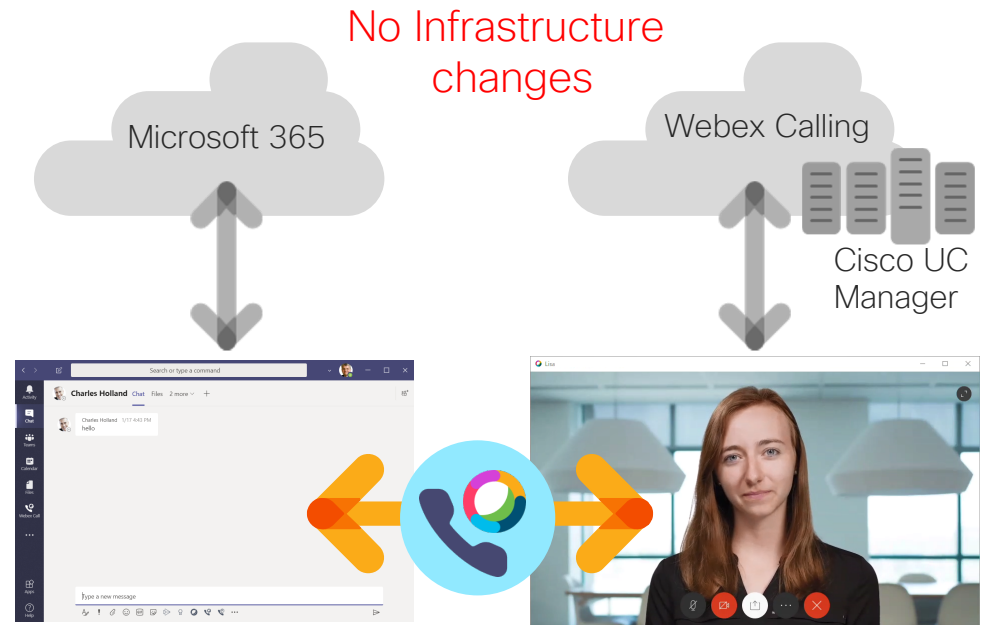
Cisco Calling App added to MS Teams Client

Cisco Calling Integrations for Slack

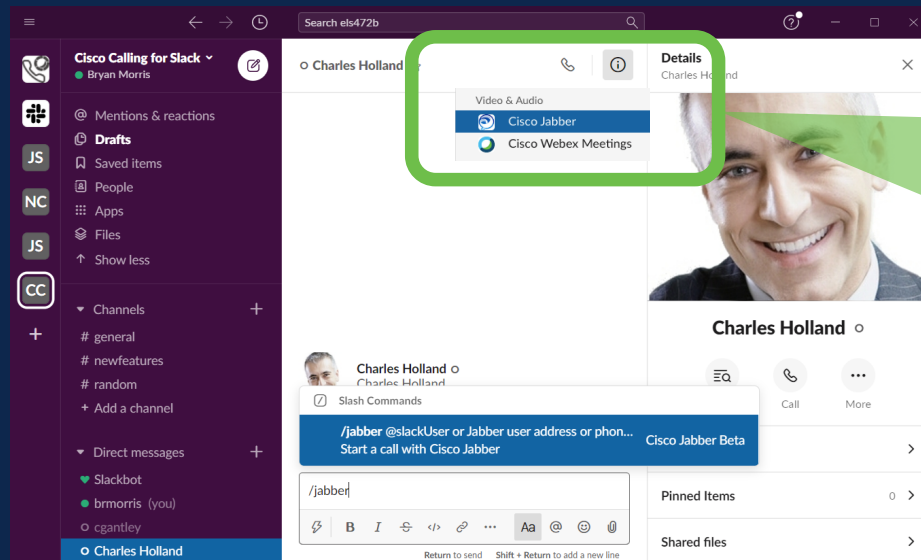## The simple way to integrate Slack Messaging and Cisco Calling
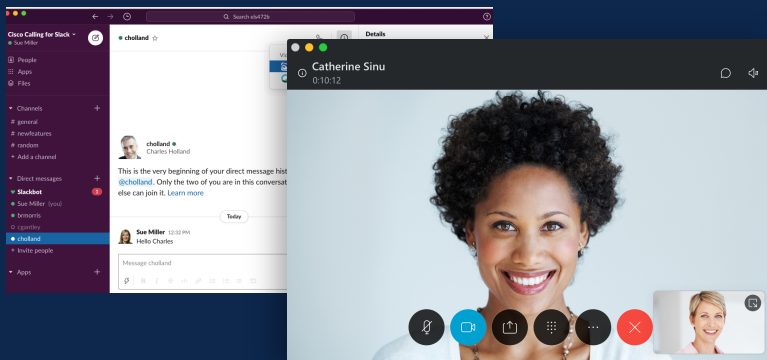
Leverages native calling user interface in Slack

Works with your existing calling platform - Voice & Video directly from Slack

Easy to Deploy calling integrations - Works with a choice of Cisco Clients: Jabber & Webex Teams

Choice of Cisco calling platforms - On Premise, Hybrid and Cloud.

Integration deck available on SalesConnect

Slack Integration Features

Integration uses native Slack UX controls.

Clicking Call button launches call to SIP address* of contact

Integration coexists with other call providers

Coming to Webex Teams end of May 2020

* Phone number calling planned