New Features of Unified Communications System 8.0

Agenda

- Extension Mobility Cross Cluster (EMCC)
- Service Advertisment Framework (SAF) – Call Control Discovery (CCD)
- SAF-CCD Demo
- New Phones Experience
- New Phones Demo
- Q&A

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Agenda

- EMCC Overview
- EMCC Registration
- EMCC Call Processing
- EMCC Call Admission Control
- EMCC Security
- EMCC Design Considerations

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EMCC Overview

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Overview – Extension Mobility

- Extension Mobility was first offered in CallManager 3.1 release
- EM has been limited to intra-cluster users/devices
- Customers want a seamless experience, no matter where they log in:

  User wants the same set of features and services - all lines, speed dials, message button, MWI and features.

  Administrator wants security, CAC, local gateway access, local media resources and serviceability.

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Overview – Extension Mobility Cross Cluster Challenges

Extension Mobility Cross Cluster must support …

- EM Login/Logout across clusters
- Cross-cluster Security By Default (more later)
- IP phones with non-secure security profiles
- PSTN access suitable for the visiting phone (Local calls must route to local gateways in visiting cluster)
- RSVP agent-based CAC using RSVP agents in the visiting cluster
- Dynamic CTI control of a visiting phone

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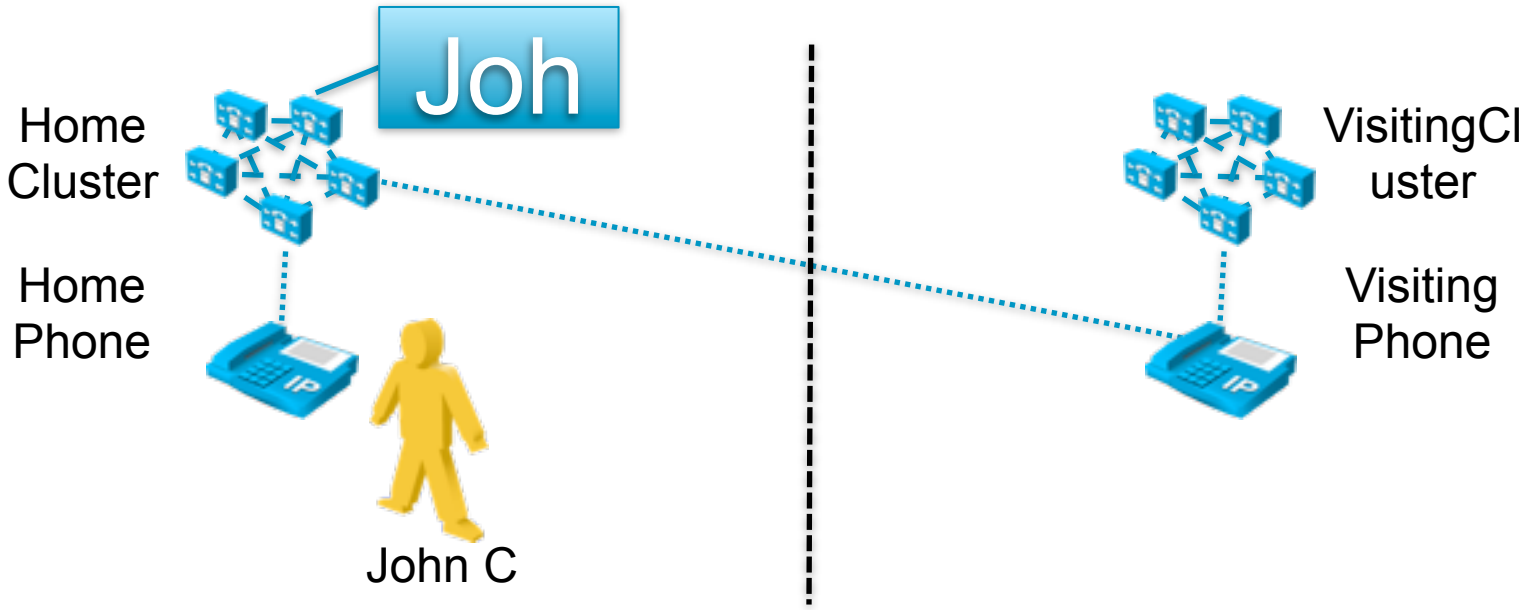
Overview – Extension Mobility Cross Cluster Concepts

- New Terminology: “Visiting” & “Home” Clusters (from USER’s perspective!)



- Visiting Phone registers with Home Cluster

Home Cluster dialing habits are maintained!

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EMCC Overview

Good News - Features Work!

- Shared line, hunt lists, transfer/conference/hold/call forward, cellular mobility, barge/cBarge, iDivert, applications, speed dials, services, address book, device labels, line appearance management, MWI, voice mail, do-not-disturb, monitoring, recording, callback busy/NR, MLPP…

  Note: Functionality works … but keep in mind these features may now be occurring across a WAN – not all will be tested with added delay.

- Features supported in future releases
  - Media resources local to the visiting phone (Other than RSVP Agents)
  - Secure phones, sRTP support

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EMCC Registration

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EMCC Login Process Summary

- Users from a “Home” Cluster (HC) login to a phone at a “Visiting” Cluster (VC)
- Login procedure brings the device information into the HC database
- HC database builds a temporary phone device with user’s device profile
- HC TFTP server builds the phone configuration file
- After login, VC directs the phone to HC TFTP server
- Phone downloads its TFTP configuration from HC TFTP server and then cross-registers with HC CUCM

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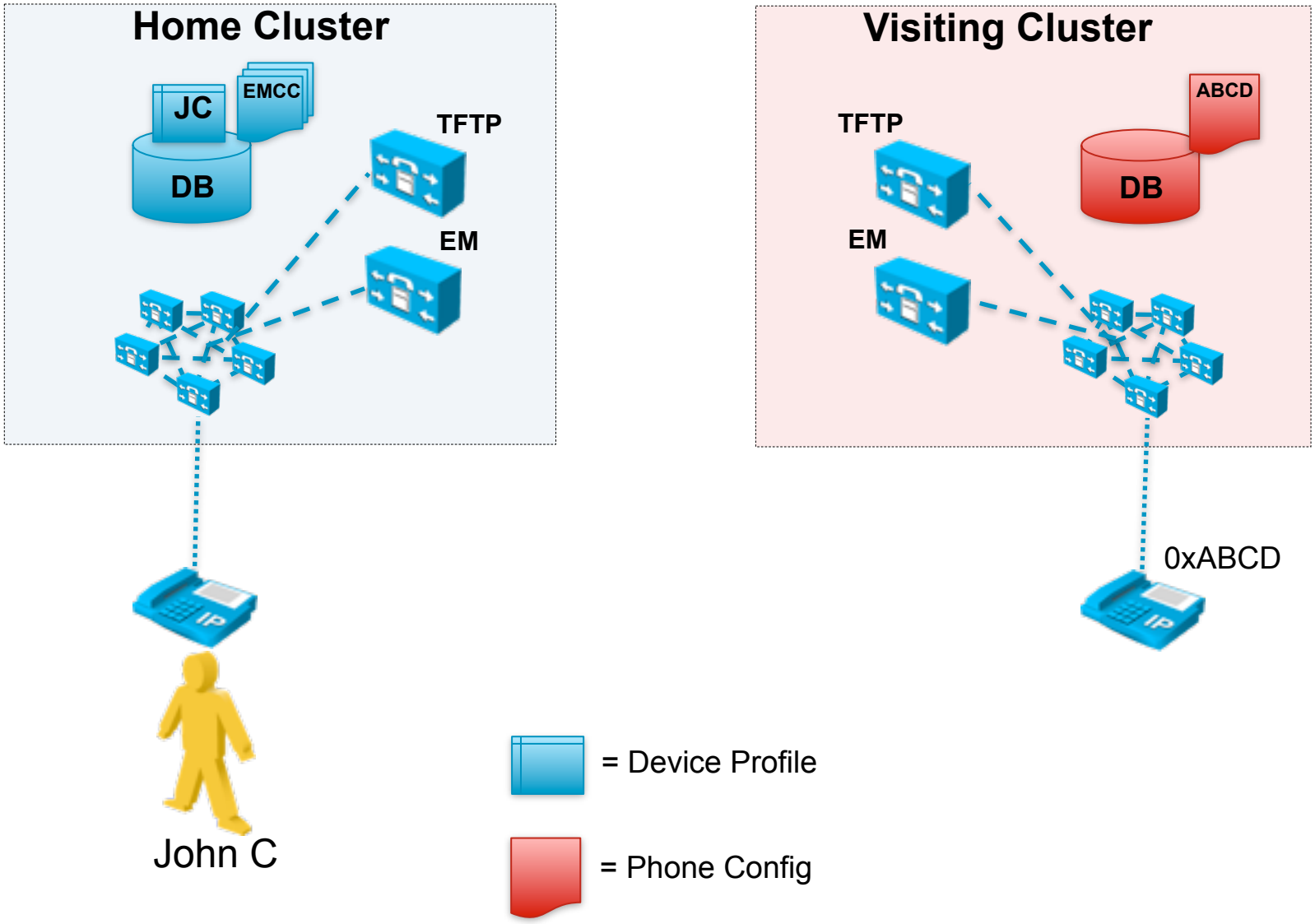
EMCC Login (1 of 4)
The “Before” picture …



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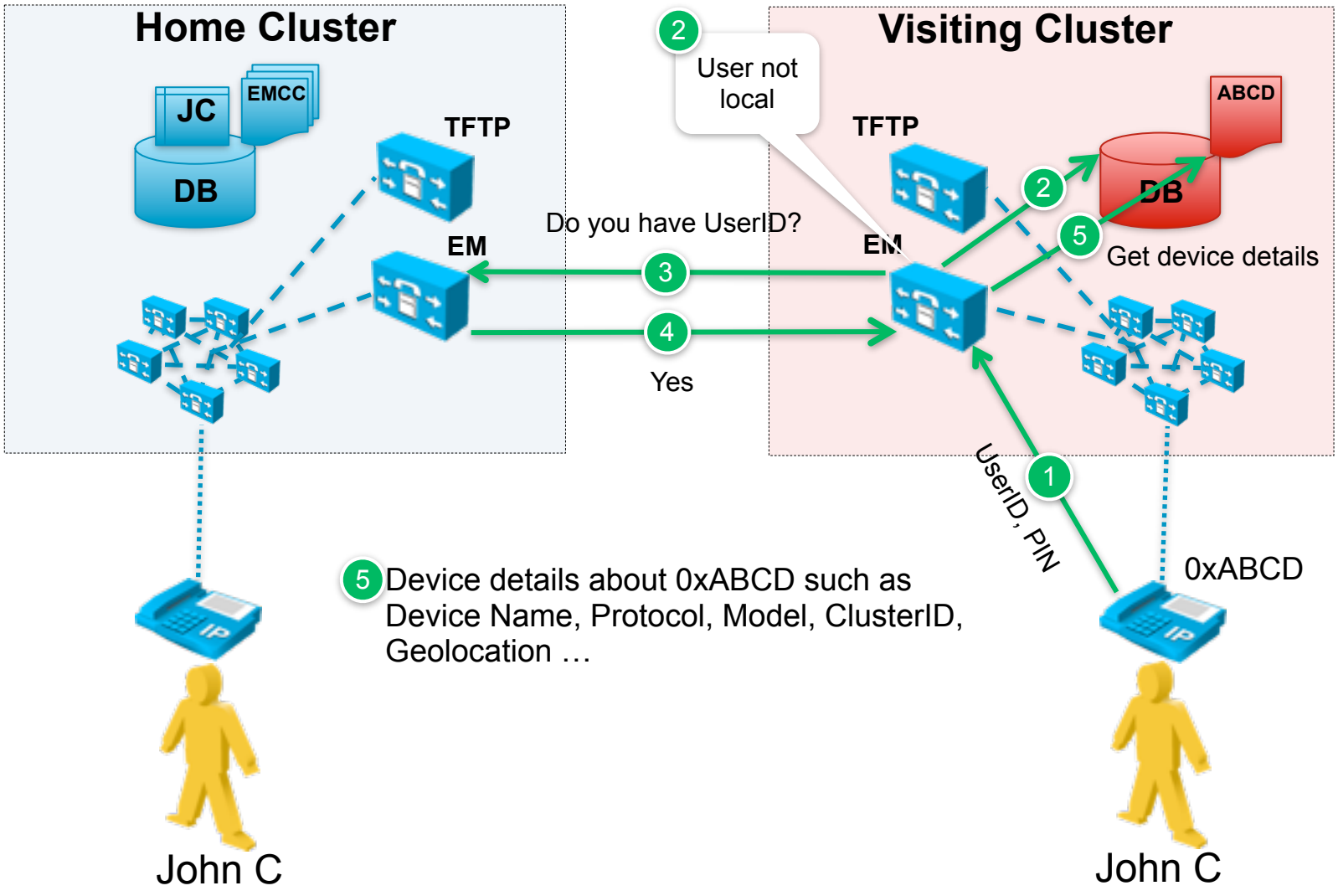
EMCC Login (2 of 4)
Find User's Home Cluster …



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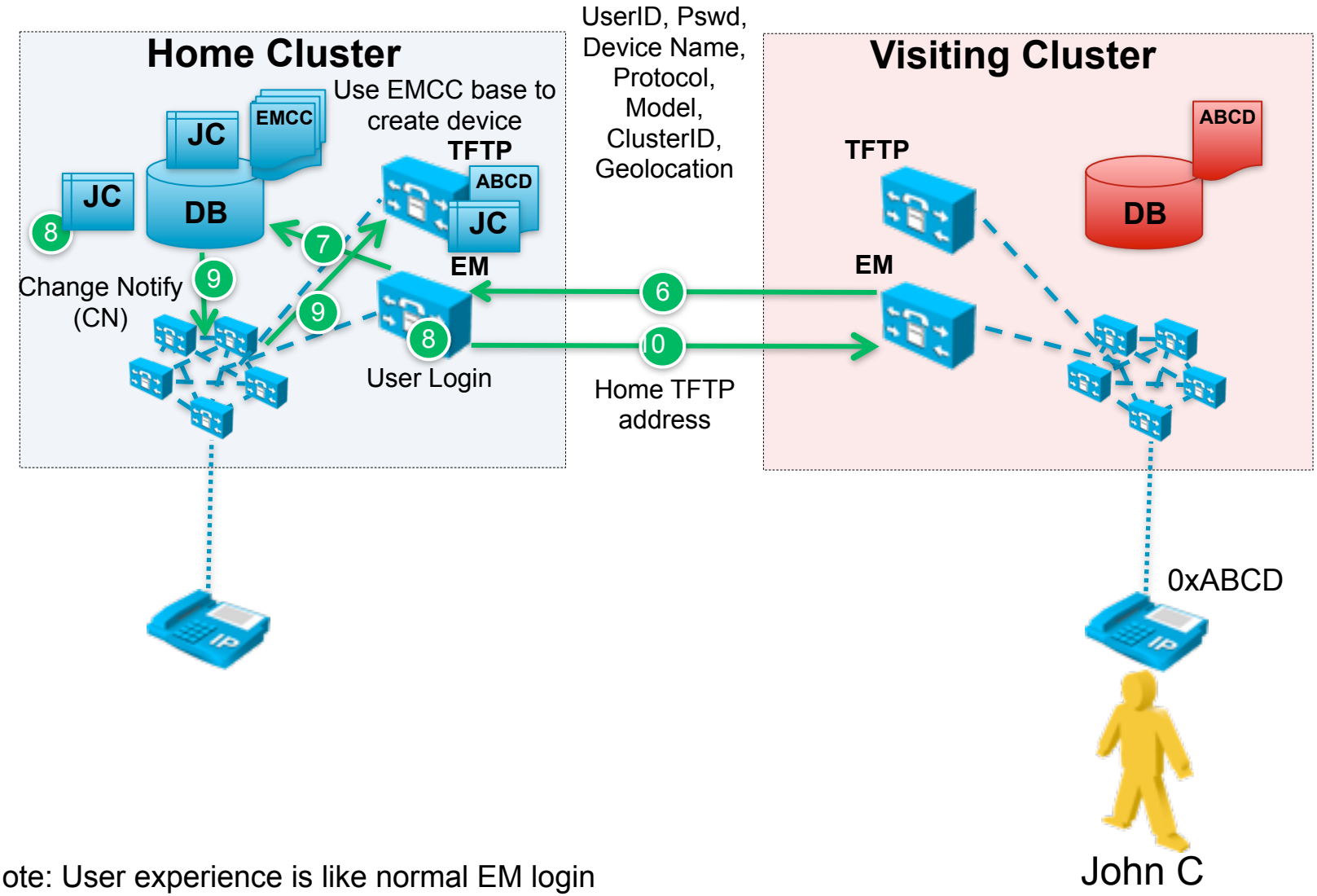
EMCC Login (3 of 4)
Home Cluster Preparation …



Note: User experience is like normal EM login during this process.

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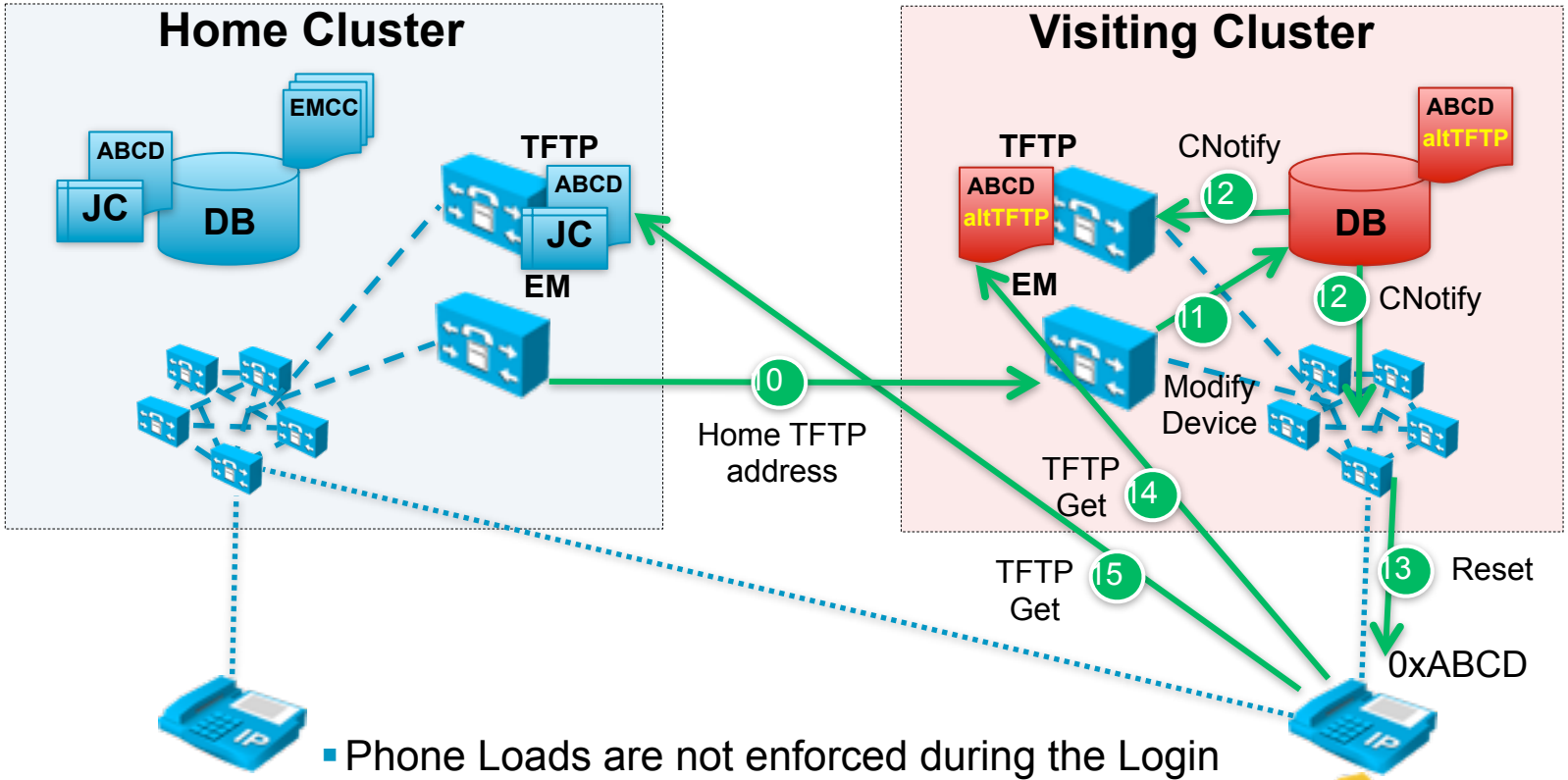
EMCC Login (4 of 4)
Visiting Cluster Preparation



- Phone Loads are not enforced during the Login process. Removed from Home Cluster config.
- Step 16: If HC locale is different, phone will download new locale from Visiting TFTP server. If not available, maintains VC locale.
- DLUs are NOT consumed in the Home Cluster for the visiting phone.

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EMCC Registration
Where Do Device Attributes Come From?

- Bulk Administration => EMCC => EMCC Template
  - Common Device Configuration
  - Common Phone Profile

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EMCC
Call Processing

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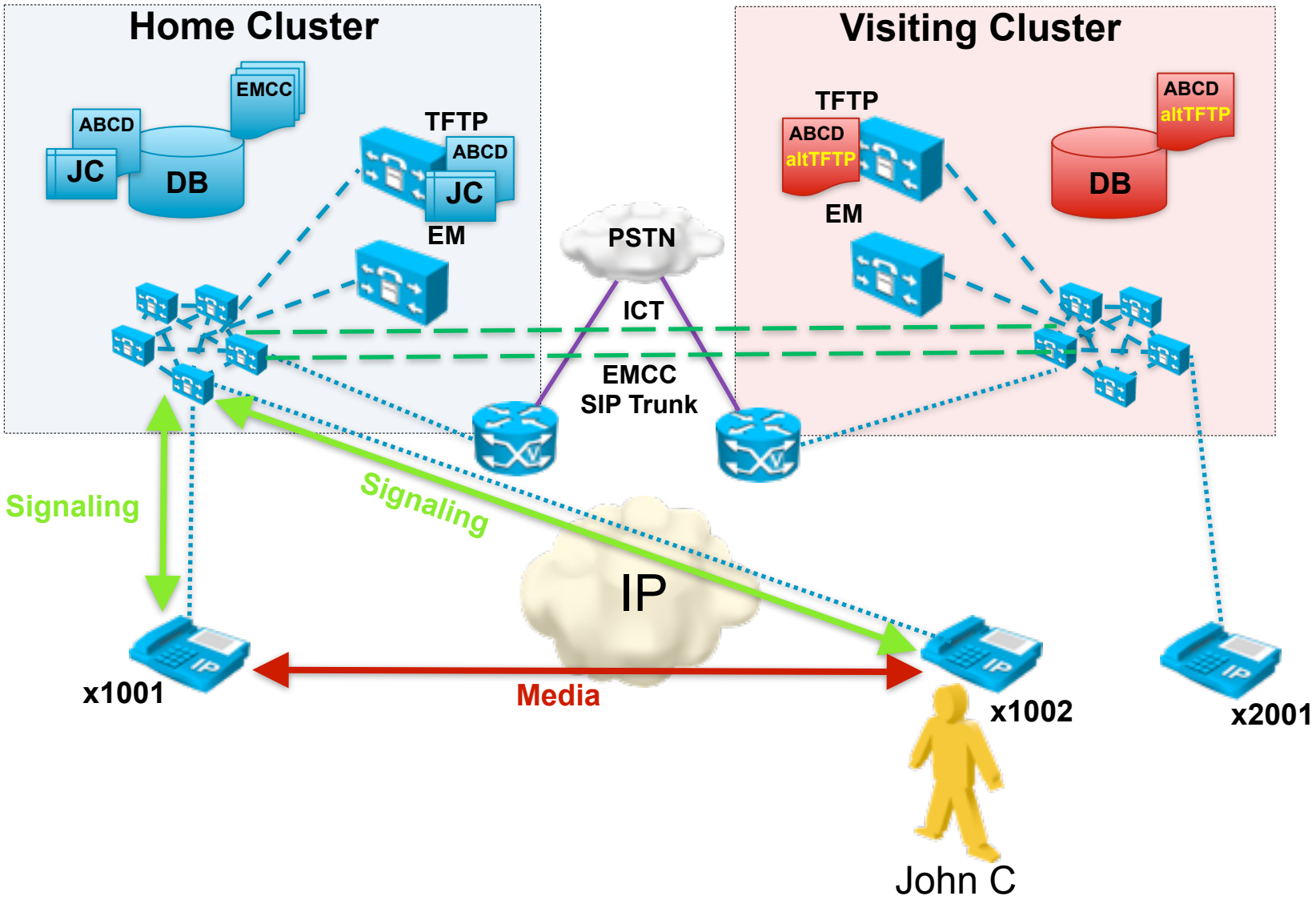
EMCC Call Flows
Phone to HC Phone



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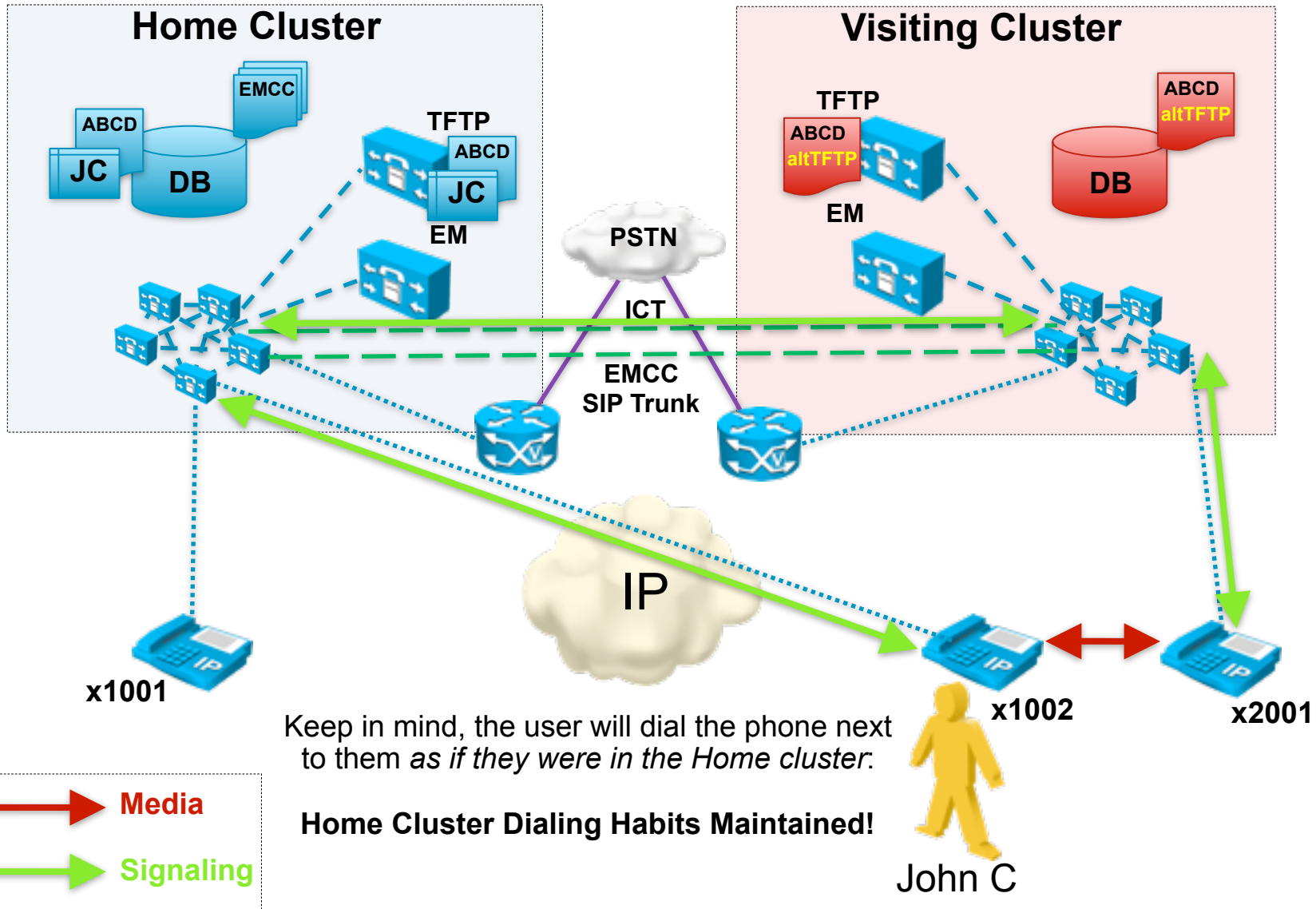
EMCC Call Flows
Phone to VC Phone



Keep in mind, the user will dial the phone next to them *as if they were in the Home cluster*:

Home Cluster Dialing Habits Maintained!

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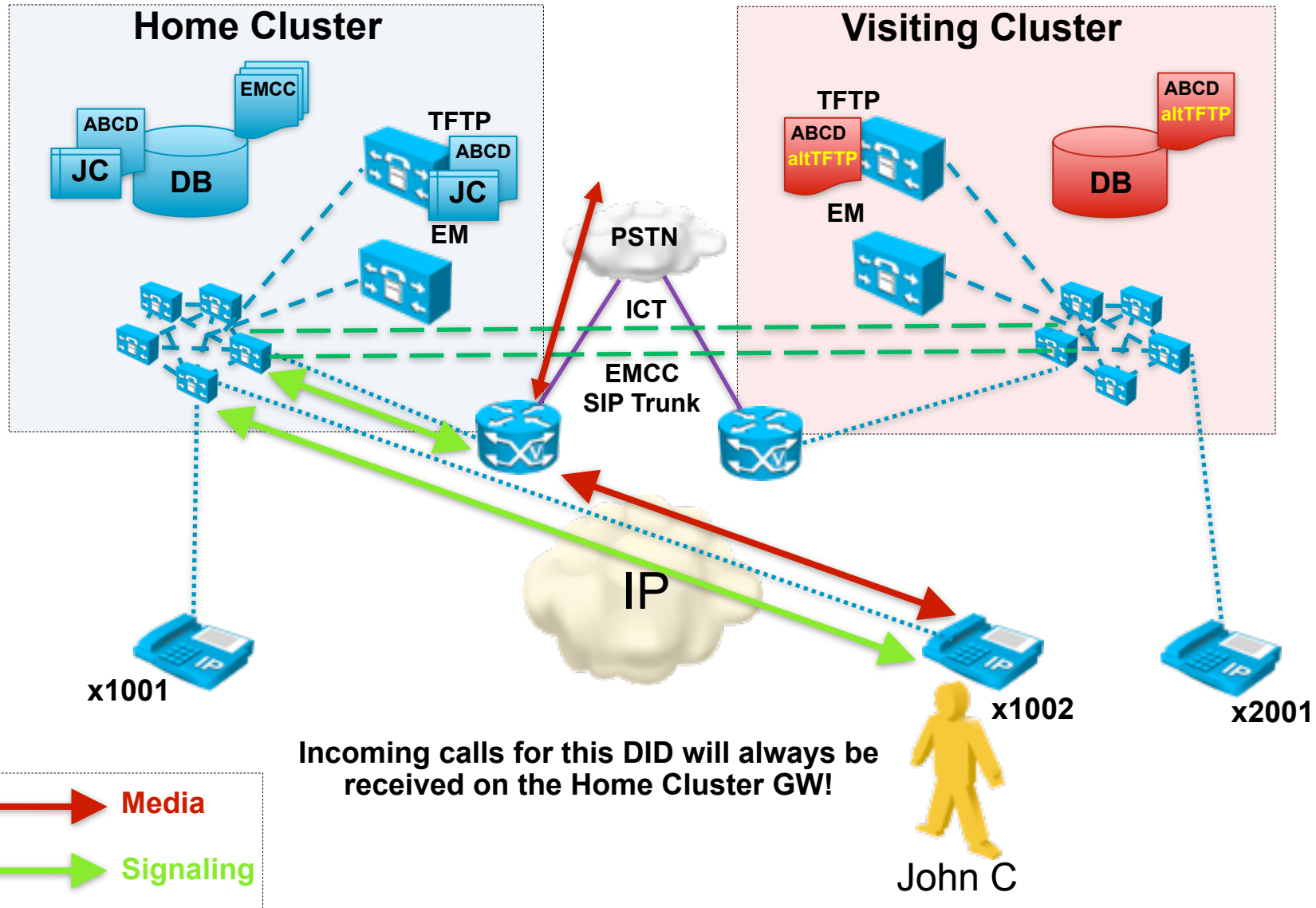
EMCC Call Flows
Phone to PSTN – NO Local Route Group



Incoming calls for this DID will always be received on the Home Cluster GW!

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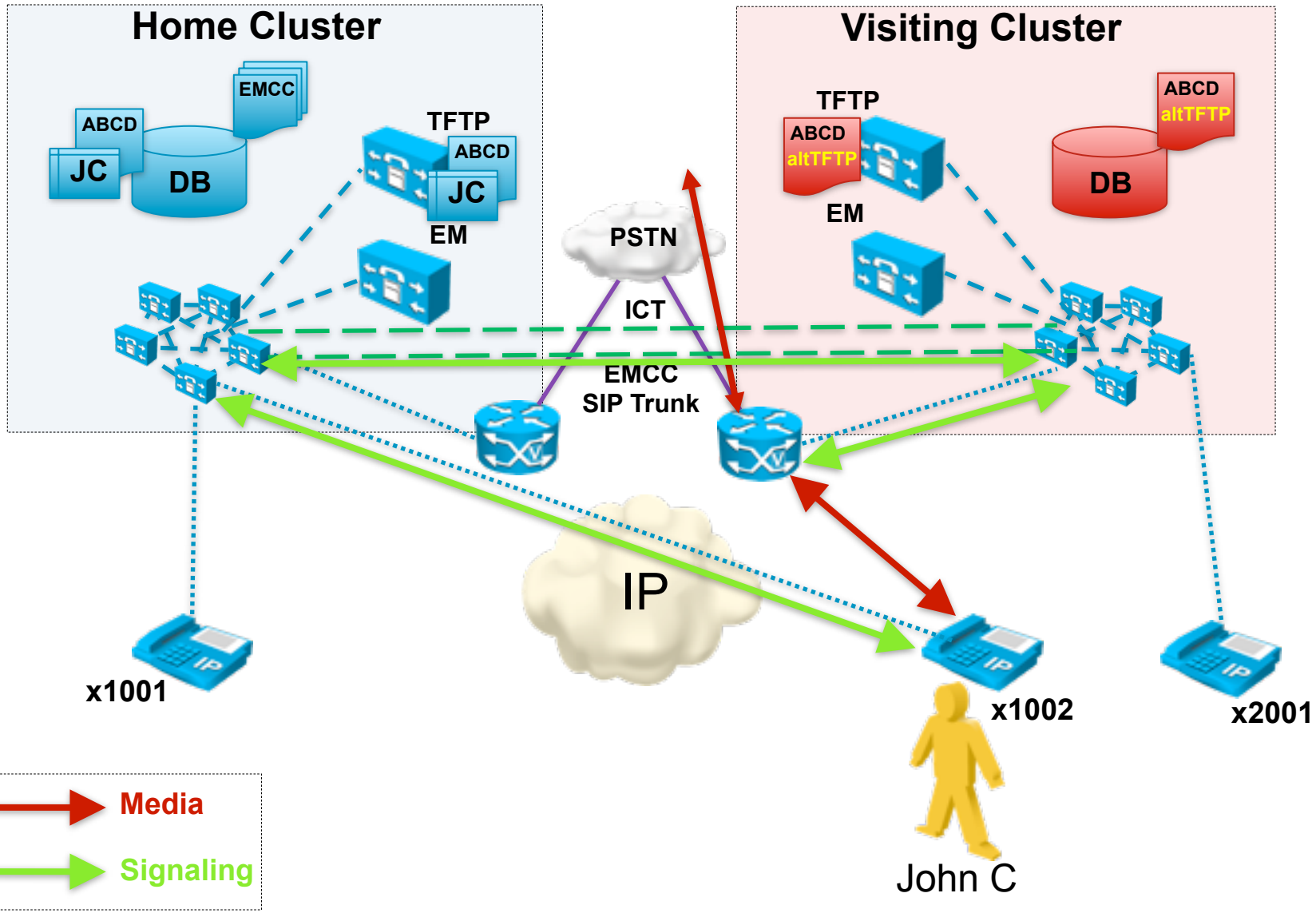
EMCC Call Flows
Phone to PSTN – WITH Local Route Group



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EMCC Call Flows
EMCC SIP Trunk for PSTN Access

Other Considerations:

- Home cluster may or may not use LRG. If no LRG, then call follows the configured Route List => Route Group => Gateway path.
- If Yes LRG, Visiting cluster receives call and looks up the *original Visiting phone configuration* in the database to determine its LRG setting (via its Device Pool) to find the appropriate gateway for the call.

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EMCC
Call Admission Control

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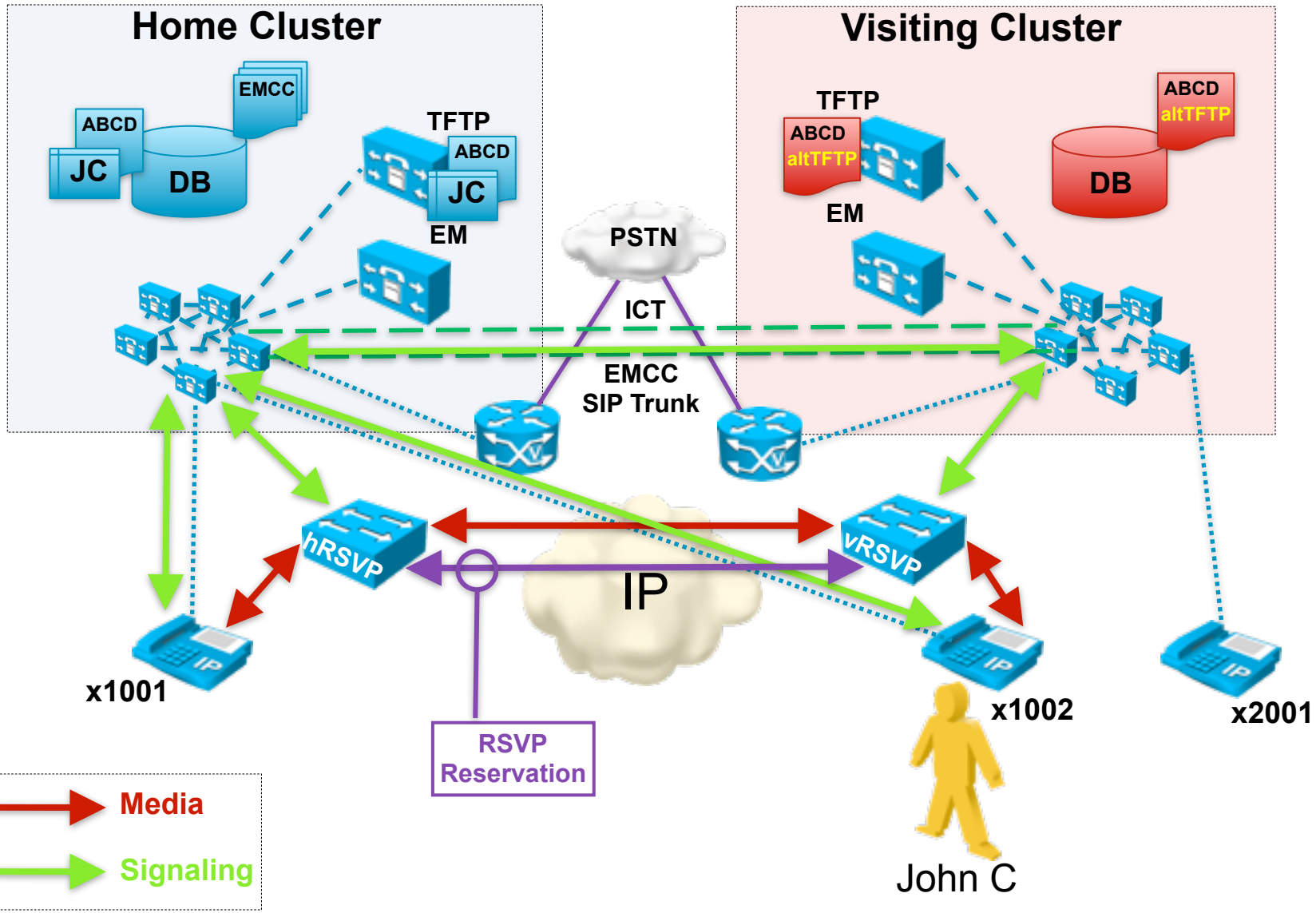
EMCC Call Flows
Phone to HC Phone with RSVP



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Configure RSVP for EMCC phones

- Configure a Location in the HC, and assign to the EMCC roaming device pool.
- Set RSVP policy for Location pairs in the HC that include this Location associated with the EMCC roaming device pool.
- HC and VC, must have RSVP Agent media resources configured. Visiting phone must have them in its MRGL.
- When allocating RSVP agent, HC CUCM will recognize the RSVP agent is for EMCC phone and redirect the request to VC over RSVP SIP Trunk
- *Note: When allocating all other media resources, HC Unified CM will allocate them based on the MRGL configured in HC EMCC roaming device pool.*
- *Note: Remember, Region settings (Audio/Video bandwidth) come from EMCC Feature Configuration:*

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EMCC Security

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HTTPS: Phone Services and Phones

- Phone Services that support HTTPS
  1. **Extension Mobility (EM)**
  2. **Extension Mobility Cross Cluster (EMCC)**
  3. Manager Assistant (IPMA)
  4. IP Phone Services (CCMCIP)
  5. Personal Directory (CCMPD)
  6. **Change Credentials**
- Supported phones: 7906, 7911, 7931, 7941, 7961, 7970, 7942, 7945, 7962, 7965, 7975
- If the device does not support HTTPS, non-secure version of URL used

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Security By Default (SBD) & Trust Verification Service (TVS)

- Automatic phone security features
  - Signing of phone configuration files
  - Phone configuration file encryption
  - HTTPS with Tomcat and other Web services (Midlets)
- Trust Verification Service (TVS) runs on each CUCM server and authenticates certificates on behalf of the phone (ITL File)
- Instead of downloading all the trusted certificates, phones need only to trust TVS (TVS will validate HC certs for Visiting phone)

- *For more details, UC 8.0 System Security Feature Update (Monday) or see Brad Ramsley's CUCM 8.0 Security Update, 2009-11-02:* http://vsearch.cisco.com/?auid=17161

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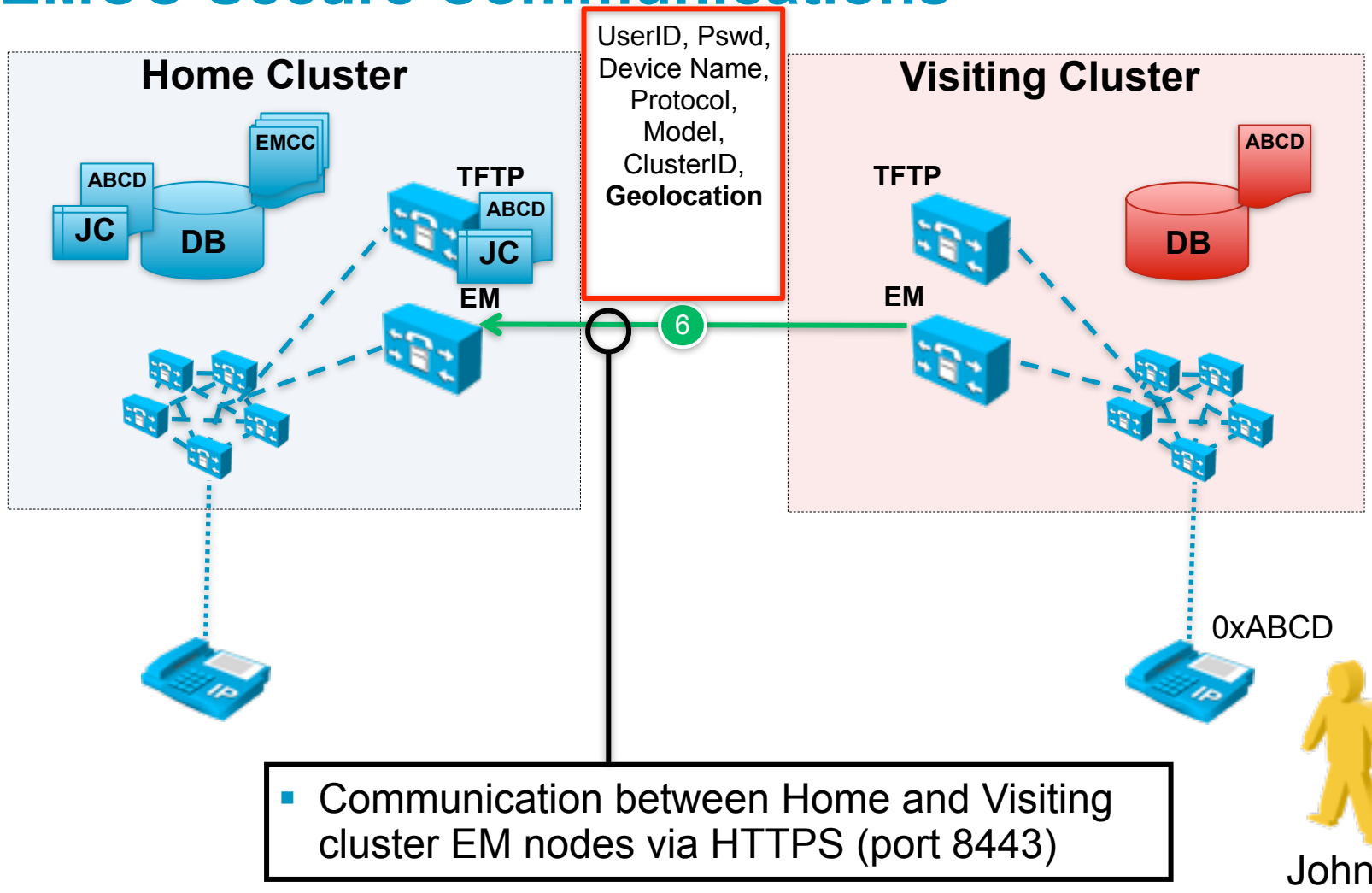
EMCC Secure Communications



- Communication between Home and Visiting cluster EM nodes via HTTPS (port 8443)

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EMCC Security
Change Credential phone service

- Allow user to change PIN from the phone
- Invoked via 2 methods:
  1) "User must change at next login" setting
  2) Configure as a separate service
     Set Secure-Service URL – https://server:8443/changecredential/ChangeCredentialServlet?device=#DEVICENAME#
- No additional configuration needed to use for EM

  If EM service configured for HTTP, uses HTTP (yes, PIN change can be seen)
  If EM service configured for HTTPS, uses HTTPS

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EMCC Security
Change Credential At EM Login

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EMCC

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EMCC Design Considerations

- Control total number of EMCC logins via BAT – number of devices inserted.
- Users must be unique across all clusters. If DirSync pulling in common users for multiple clusters, must apply some type of filtering .
- If H323/SIP gateways are only setup for G711, but EMCC phones coming across now as G729 – must add multiple codec capability to dial-peers (or use transcoders).
- *Calling* number for Emergency Calls leaving Visiting gateways may potentially have a Home cluster DID.
- Calls sent across the EMCC SIP Trunk will have gone through digit manipulation. Called number may require manipulation to match Visiting cluster route patterns.
- EMCC Performance testing is underway …

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Other Supported Features in EMCC

- Consider the delays between the clusters in combination with the features you plan to use. Not all applications/features have been tested with delays – User Experience may vary.
- CTI control of vPhone
  - In CUCM 7.x and earlier, CTI control is based on static assignment of devices to a user
  - In CUCM 8.x and later, CTI device assignment can be dynamic. Device Profile login triggers CTI to control device
- EMCC Supports Non-Secure clusters and Mixed Mode clusters.
  - *Note: All participating EMCC clusters must be of the same mode.*
  - Only NON-SECURE phones supported in this release.
- Firmware version is not sent in xml config from home cluster
  - Prevents phones from having to download new firmware images
- HC Locales supported if VC has locale files in TFTP server.

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Key Takeaways

The Key Takeaways of this presentation are:

- Understand the basic operation of EMCC
- Understand EMCC-related configuration
- Know limitations and supported features
- Able to describe EMCC call flows
- Understand EMCC Emergency calling

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Additional Resources

- **You can find additional information about the topics and products covered in this session at the following links:**
  - **CUCM Features and Services Guide for Release 8.0(1)**
  - **CUCM 8.0(1) Release Notes**
  - **8.x UC SRND – CM Applications chapter (released April 2010)**

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SAF - CCD

- Introduction
- Call Control Discovery (CCD)
  - Scope and Objectives
  - Features and Functionality
  - Configuration Examples
- Service Advertisement Framework (SAF)
  - The SAF Network
  - The SAF Client-Network Interface
- Conclusions

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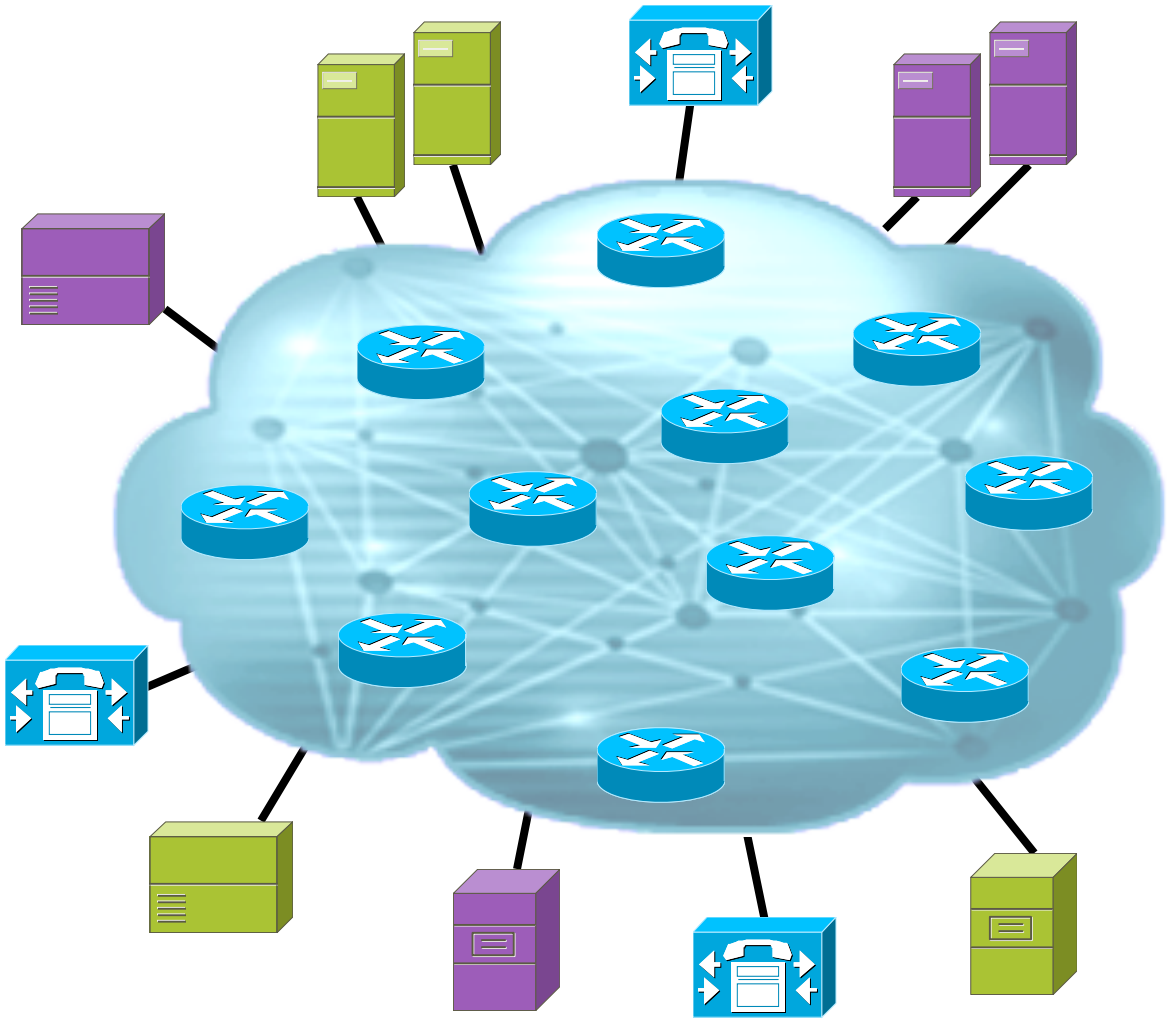
Introduction
Problem Statement and Goals



- Advanced network services and applications are often deployed as overlays
- Can the network leverage dynamic properties of routing to help these services communicate?
- Goals:

  Provide a network foundation for service awareness

  Enable applications

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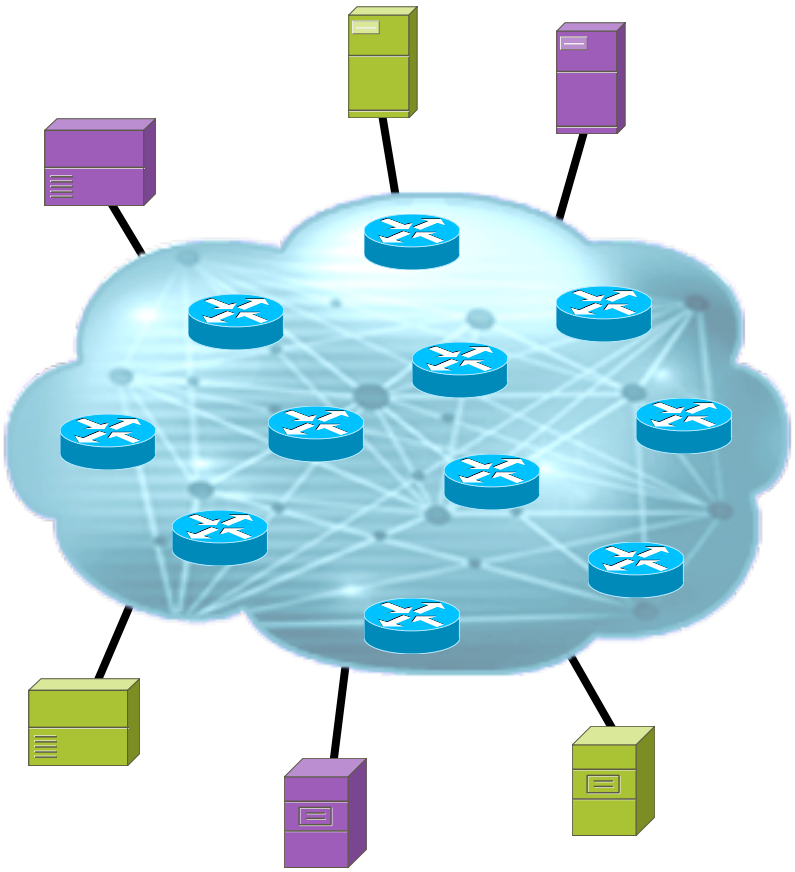
Introduction

The Service Advertisement Framework (SAF) Vision



- A network-based, scalable, bandwidth-efficient, real-time approach to service advertisement and discovery
- Is based on EIGRP technology, but is independent of IP routing protocol *(works with OSPF, BGP,...)*
- Supports "dark nets" (non-SAF nodes) for phased roll-outs and heterogeneous deployments
- Will allow administrators to control scope of each service through domains, filtering, VRF's, ...

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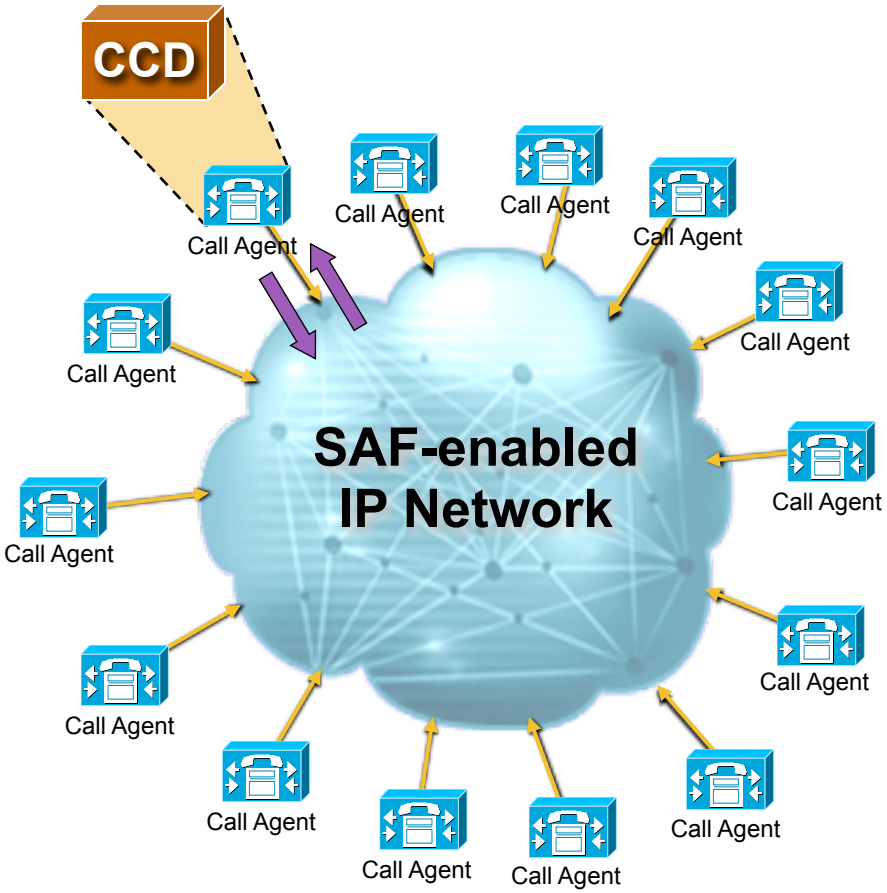
Introduction
Call Control Discovery (CCD): a SAF Service



- Call agents 'discover' each other through the SAF network by:
  - Advertising their reachability information along with the DN ranges they own
  - Requesting to learn about other call agents in the network
- Call agents dynamically route calls to remote destinations based on received advertisements

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Introduction
SAF Terms and Definitions

SAF Client: any application wishing to advertise a service to the network or request a service from the network or both

SAF Forwarder: router feature – provides relationship between client and framework, stores service information and propagates it to other forwarders

Service: any information that a SAF client wishes to advertise and "consume" (e.g., dial plans for CCD)

SAF Advertisement: carries service information, consists of SAF Header and Service Data

Non-SAF Node: any router that does not run the SAF protocols

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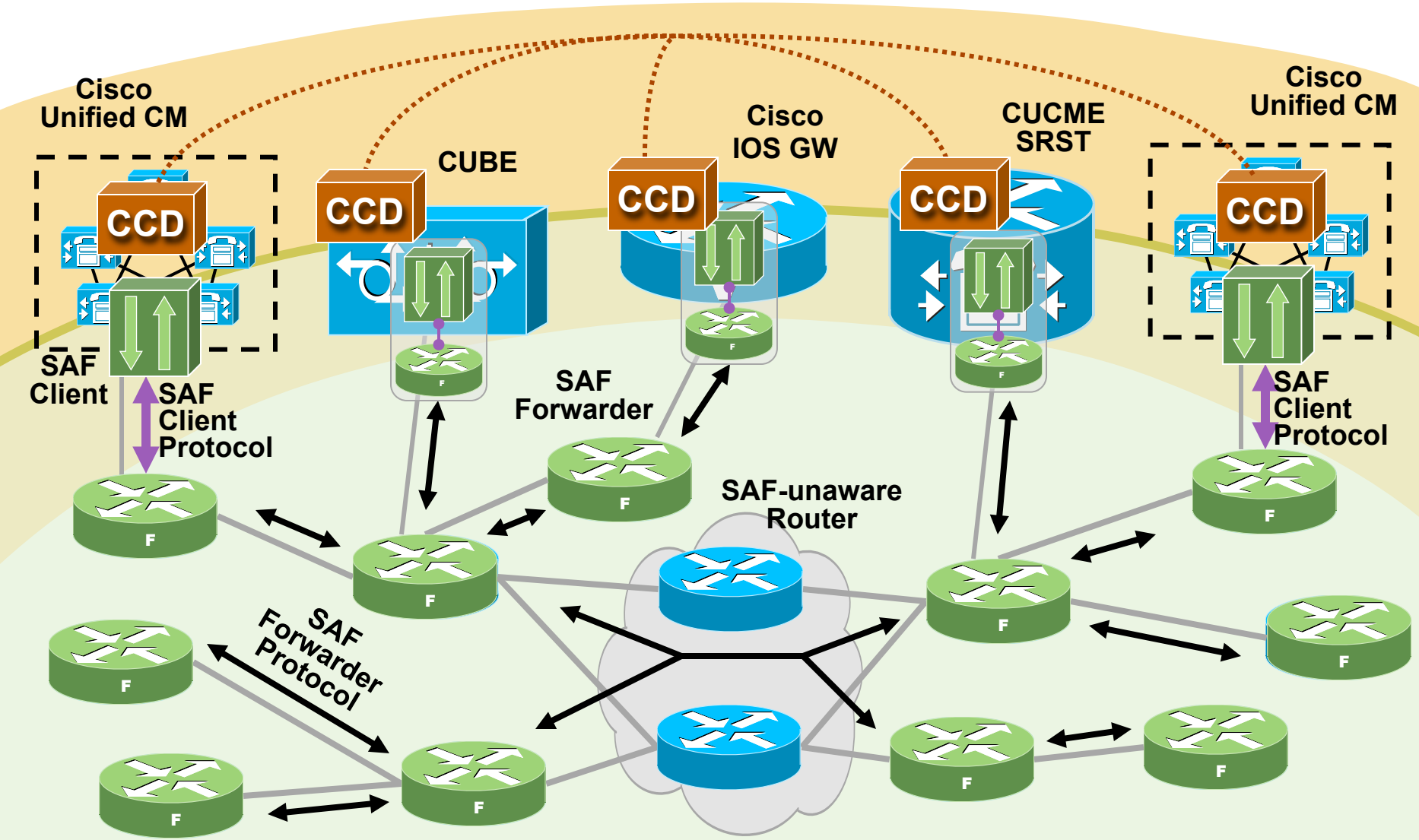
Introduction
SAF Architecture



Call Control Discovery (CCD)

Scope and Objectives

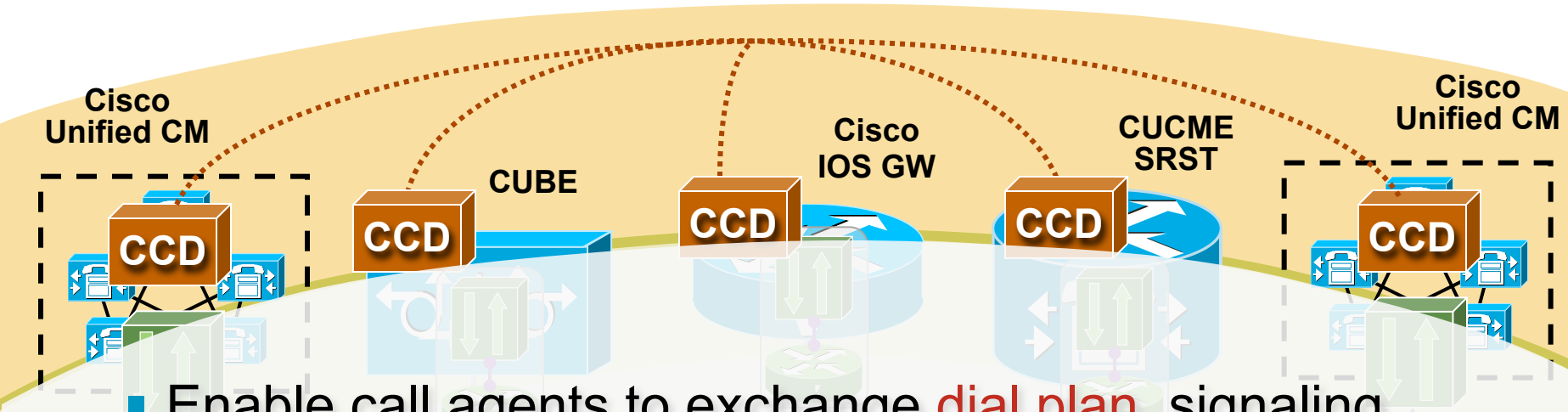
Features and Functionality

Configuration Examples (Unified CM and IOS)

Integration with “Static Routing”

Call Control Discovery (CCD)

Scope and Objectives



- Enable call agents to exchange dial plan, signaling protocol and reachability information through SAF
- Extend call control logic to incorporate dynamic routing based on information learned through SAF
- Focus on Enterprise-owned Directory Numbers (DN's), rather than PSTN egress points
- Include information on DID 'rules' in advertisements to simplify PSTN failover

Call Control Discovery (CCD)

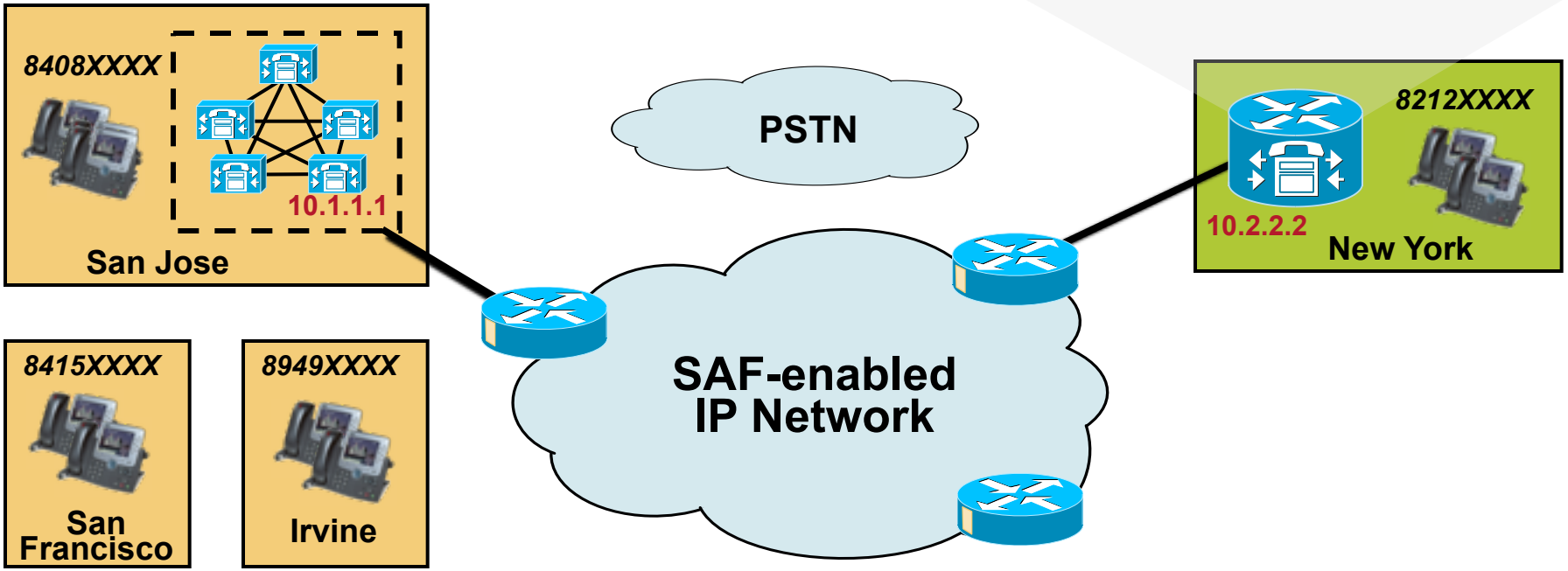
Advertising DN Ranges

Service Advertisement

IP address: 10.1.1.1
Protocol: SIP
DN Patterns:
8408XXXX *[4:+1408555]*,
8415XXXX *[4:+1415777]*,
8949XXXX *[4:+1949222]*

New York CME Routing Table

DN Pattern	"to DID" rule	IP address	Protocol
8408XXXX	4:+1408555	10.1.1.1	SIP
8415XXXX	4:+1415777	10.1.1.1	SIP
8949XXXX	4:+1949222	10.1.1.1	SIP



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Call Control Discovery (CCD)

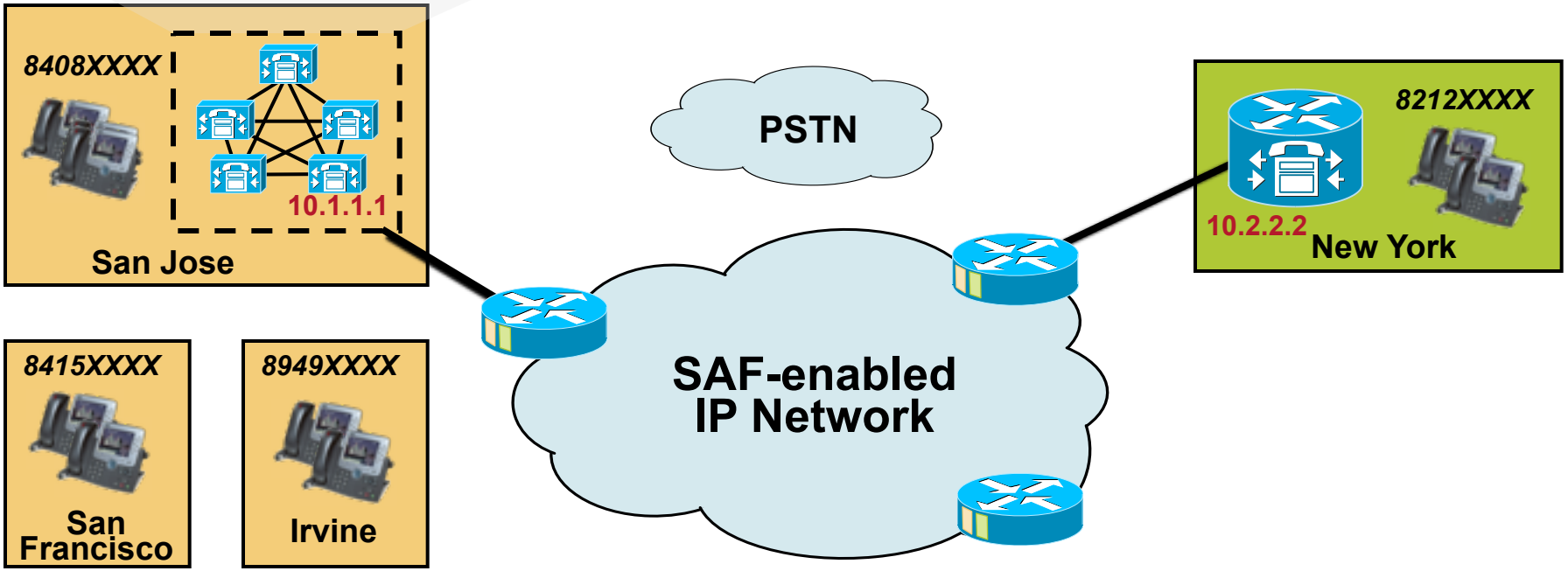
Learning DN Ranges

San Jose CUCM Routing Table

DN Pattern	"to DID" rule	IP address	Protocol
8212XXXX	4:+1212444	10.2.2.2	SIP

Service Advertisement

IP address: 10.2.2.2
Protocol: SIP
DN Patterns:
8212XXXX *[4:+1212444]*



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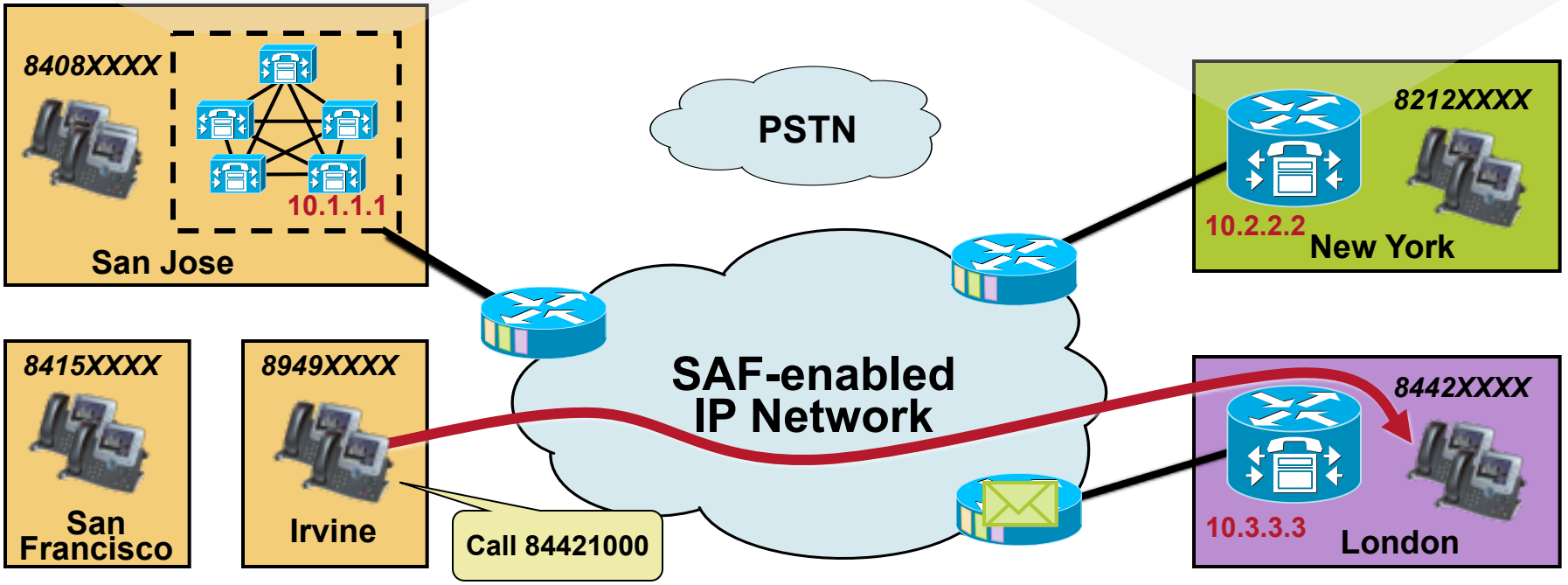
Call Control Discovery (CCD)
Dynamic Routing

San Jose CUCM Routing Table

DN Pattern	"to DID" rule	IP address	Protocol
8212XXXX	4:+1212444	10.2.2.2	SIP
8442XXXX	**4:+442077111**	**10.3.3.3**	**H.323**

New York CME Routing Table

DN Pattern	"to DID" rule	IP address	Protocol
8408XXXX	4:+1408555	10.1.1.1	SIP
8415XXXX	4:+1415777	10.1.1.1	SIP
8949XXXX	4:+1949222	10.1.1.1	SIP
8442XXXX	**4:+442077111**	**10.3.3.3**	**H.323**



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Call Control Discovery (CCD)

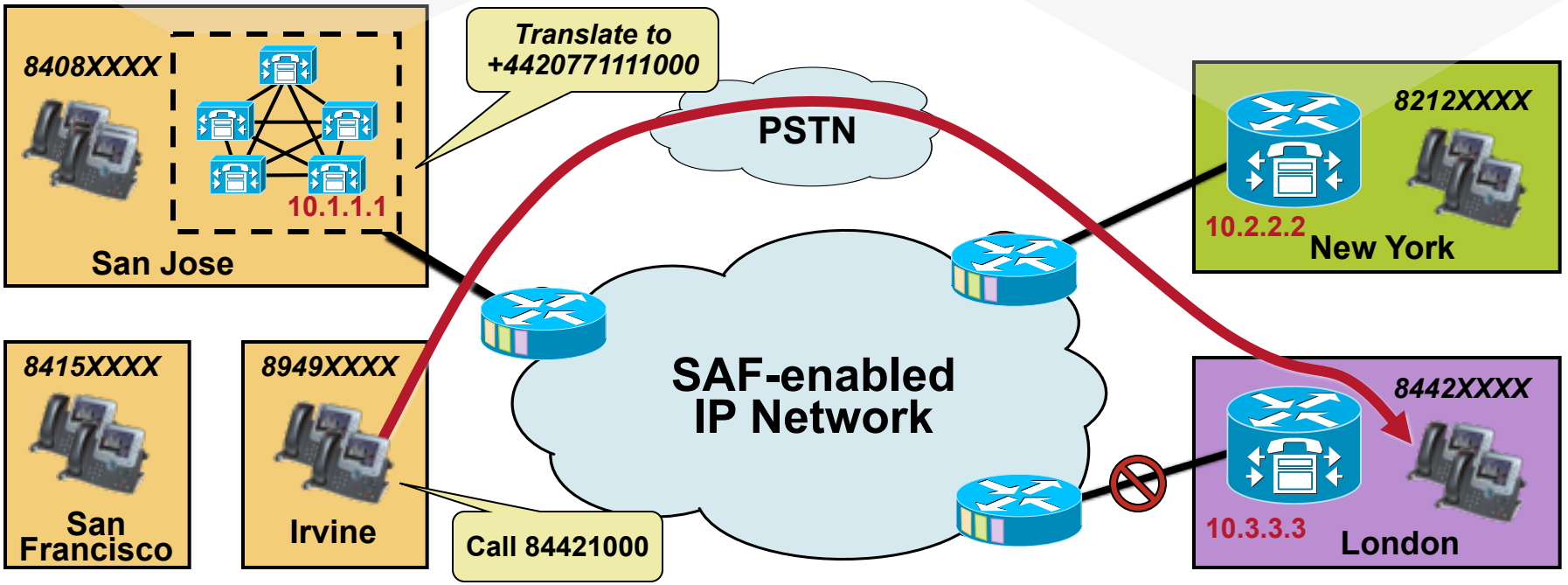
Automatic PSTN Failover

San Jose CUCM Routing Table

DN Pattern	"to DID" rule	IP address	Protocol
8212XXXX	4:+1212444	10.2.2.2	SIP
~~8442XXXX~~	**4:+442077111**	**10.3.3.3**	**H.323**

New York CME Routing Table

DN Pattern	"to DID" rule	IP address	Protocol
8408XXXX	4:+1408555	10.1.1.1	SIP
8415XXXX	4:+1415777	10.1.1.1	SIP
8949XXXX	4:+1949222	10.1.1.1	SIP
~~8442XXXX~~	**4:+442077111**	**10.3.3.3**	**H.323**



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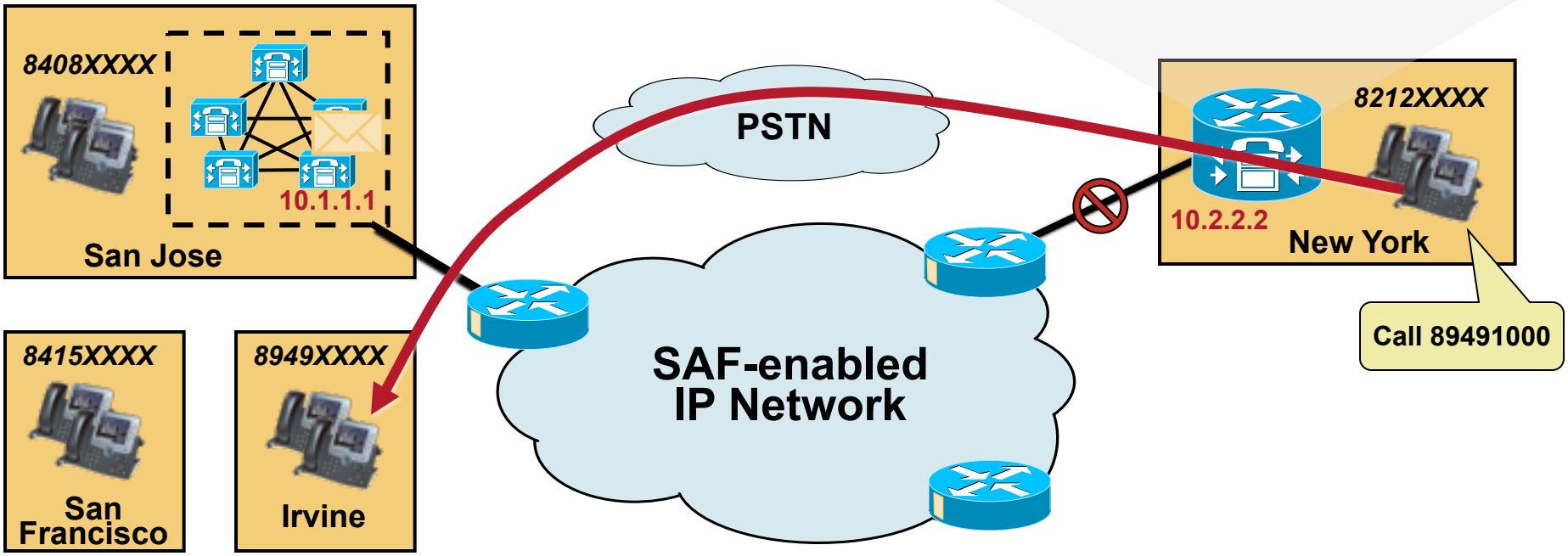
Call Control Discovery (CCD)

Automatic Rerouting for SRST

- SRST subscribes to CCD service but does not publish any patterns
- During WAN failures, SRST uses learned patterns to transparently re-route calls over the PSTN

New York SRST Routing Table

DN Pattern	"to DID" rule	IP address	Protocol
8408XXXX	4:+1408555	10.1.1.1	SIP
8415XXXX	4:+1415777	10.1.1.1	SIP
8949XXXX	4:+1949222	10.1.1.1	SIP



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Call Control Discovery (CCD)

3rd Party IP PBX Integration

San Jose CUCM Routing Table

DN Pattern	"to DID" rule	IP address	Protocol
8442XXXX	4:+442077111	10.3.3.3	H.323
8312XXXX	**4:+1312888**	**10.4.4.4**	**SIP**

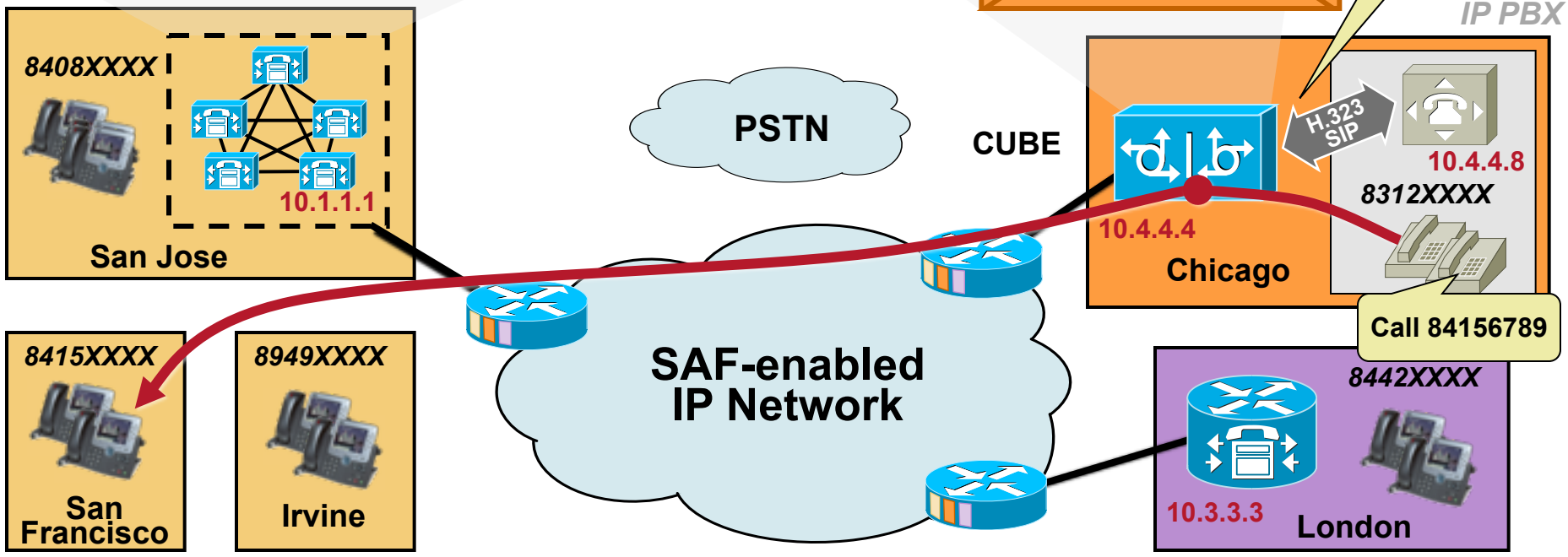
DN Pattern	"to DID" rule	IP address	Protocol
8408XXXX	4:+1408555	10.1.1.1	SIP
8415XXXX	4:+1415777	10.1.1.1	SIP
8949XXXX	4:+1949222	10.1.1.1	SIP
8442XXXX	4:+442077111	10.3.3.3	H.323

Chicago CUBE Routing Table

IP address: 10.4.4.4
Protocol: SIP
DN Patterns:
8312XXXX *[4:+1312888]*

Static dial peer for destination 8312XXXX

3rd Party IP PBX



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Call Control Discovery (CCD)

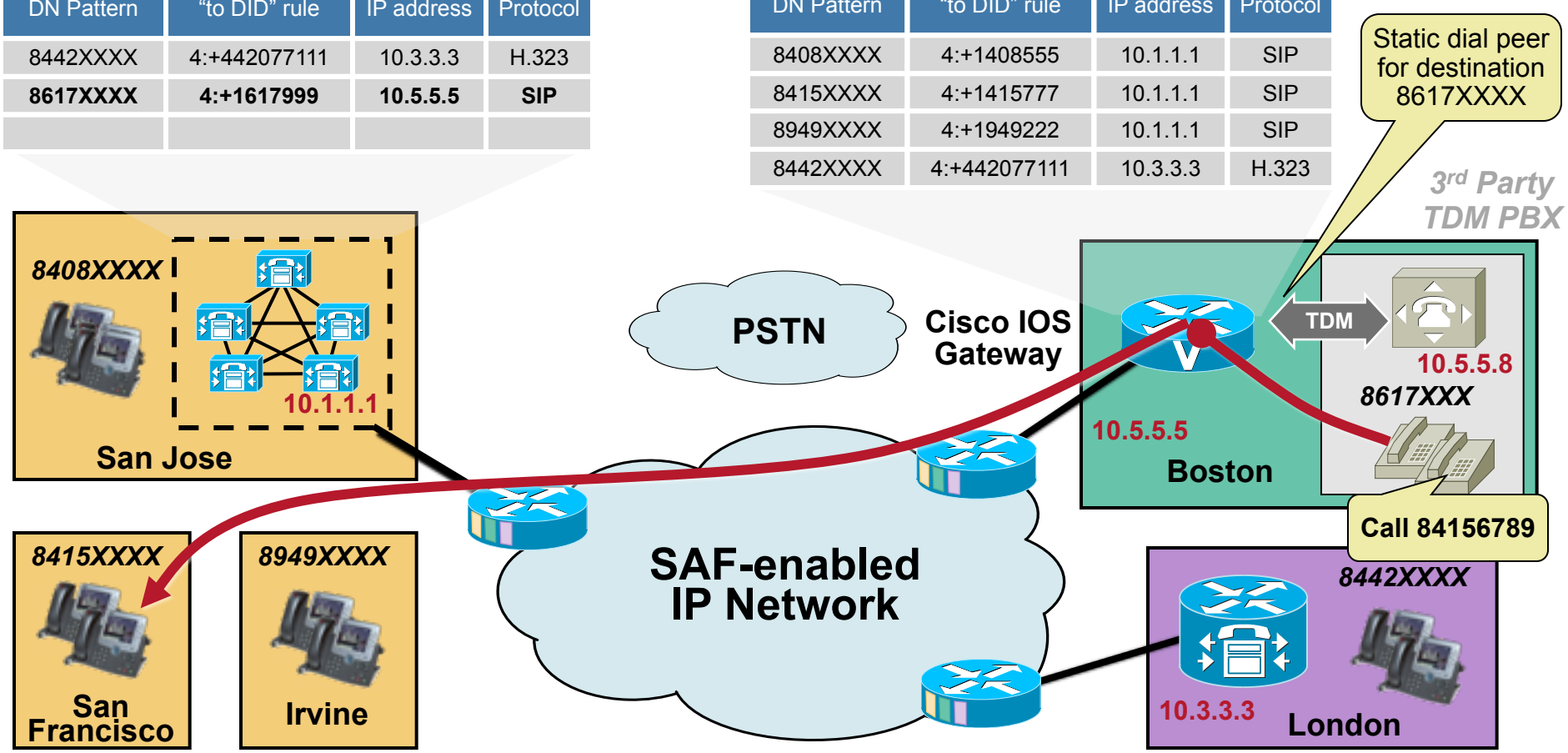
3rd Party TDM PBX Integration

San Jose CUCM Routing Table

DN Pattern	"to DID" rule	IP address	Protocol
8442XXXX	4:+442077111	10.3.3.3	H.323
8617XXXX	**4:+1617999**	**10.5.5.5**	**SIP**

Boston Gateway Routing Table

DN Pattern	"to DID" rule	IP address	Protocol
8408XXXX	4:+1408555	10.1.1.1	SIP
8415XXXX	4:+1415777	10.1.1.1	SIP
8949XXXX	4:+1949222	10.1.1.1	SIP
8442XXXX	4:+442077111	10.3.3.3	H.323



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Call Control Discovery (CCD)

Cisco Unified CM Support Details

- Starting with release 8.0(1), ability to advertise and/or subscribe to the CCD service
- Learned DN patterns dynamically inserted in a specified partition
- Transparent PSTN failover when destination is unreachable
- Scalability:
  - Up to **2,000** advertised DN patterns per cluster
  - Up to **20,000** learned DN patterns per cluster
- DN patterns must be unique *(if duplicates, warning can be issued)*
- Ability to purge and block unwanted patterns *(e.g., from rogue or mis-configured call agents)*
- Extensive troubleshooting support through RTMT and traces

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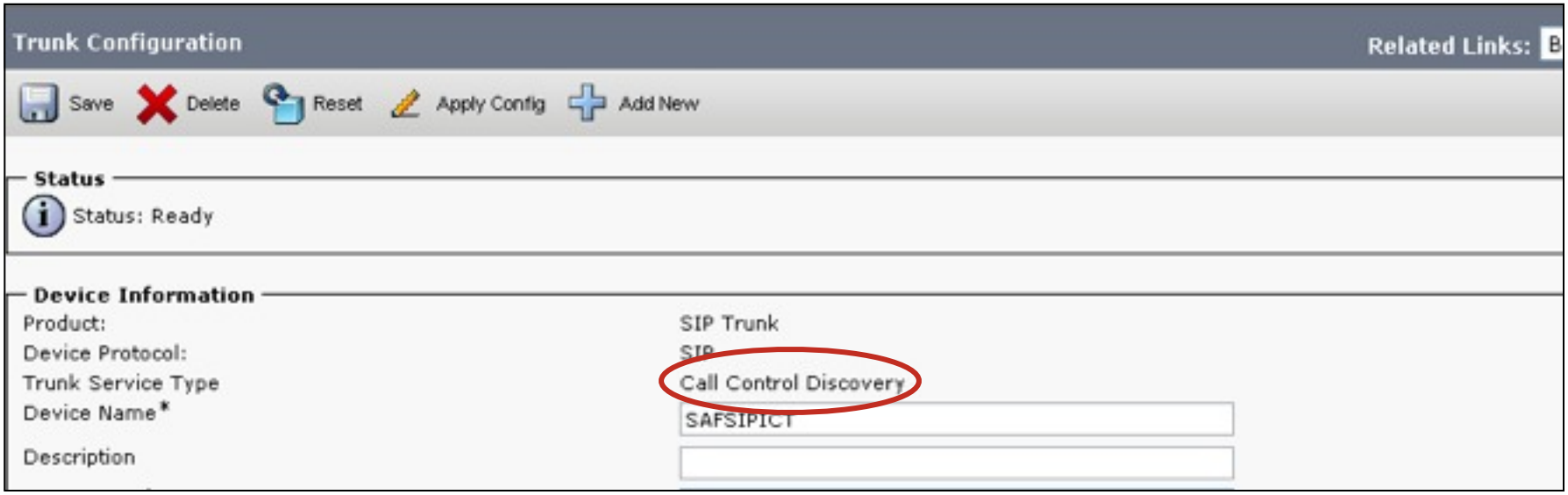
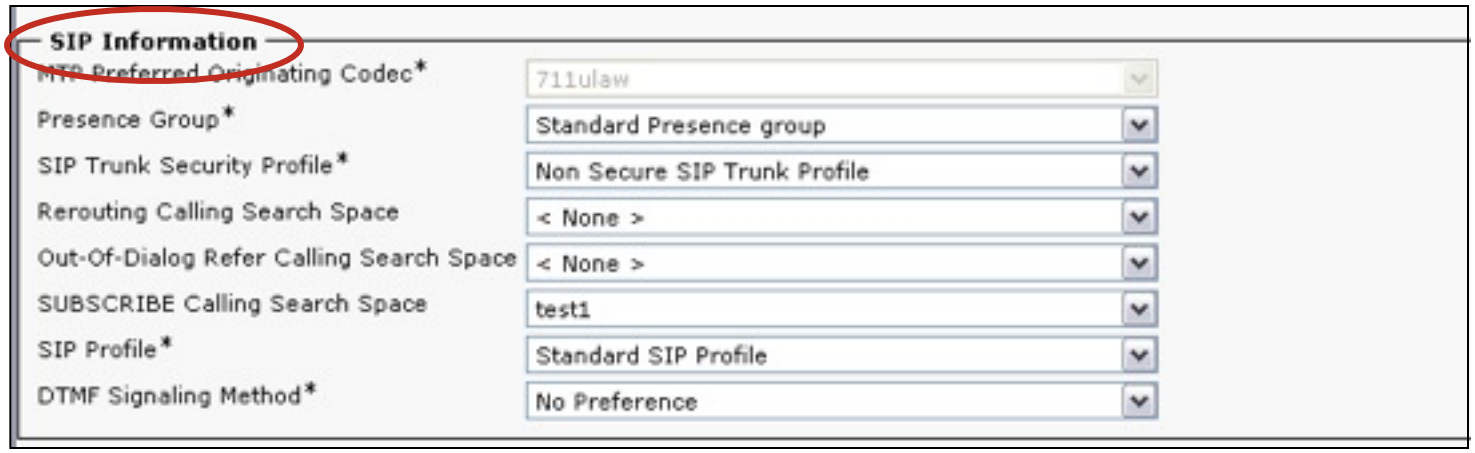
Call Control Discovery (CCD)

Unified CM Configuration – SIP Trunk





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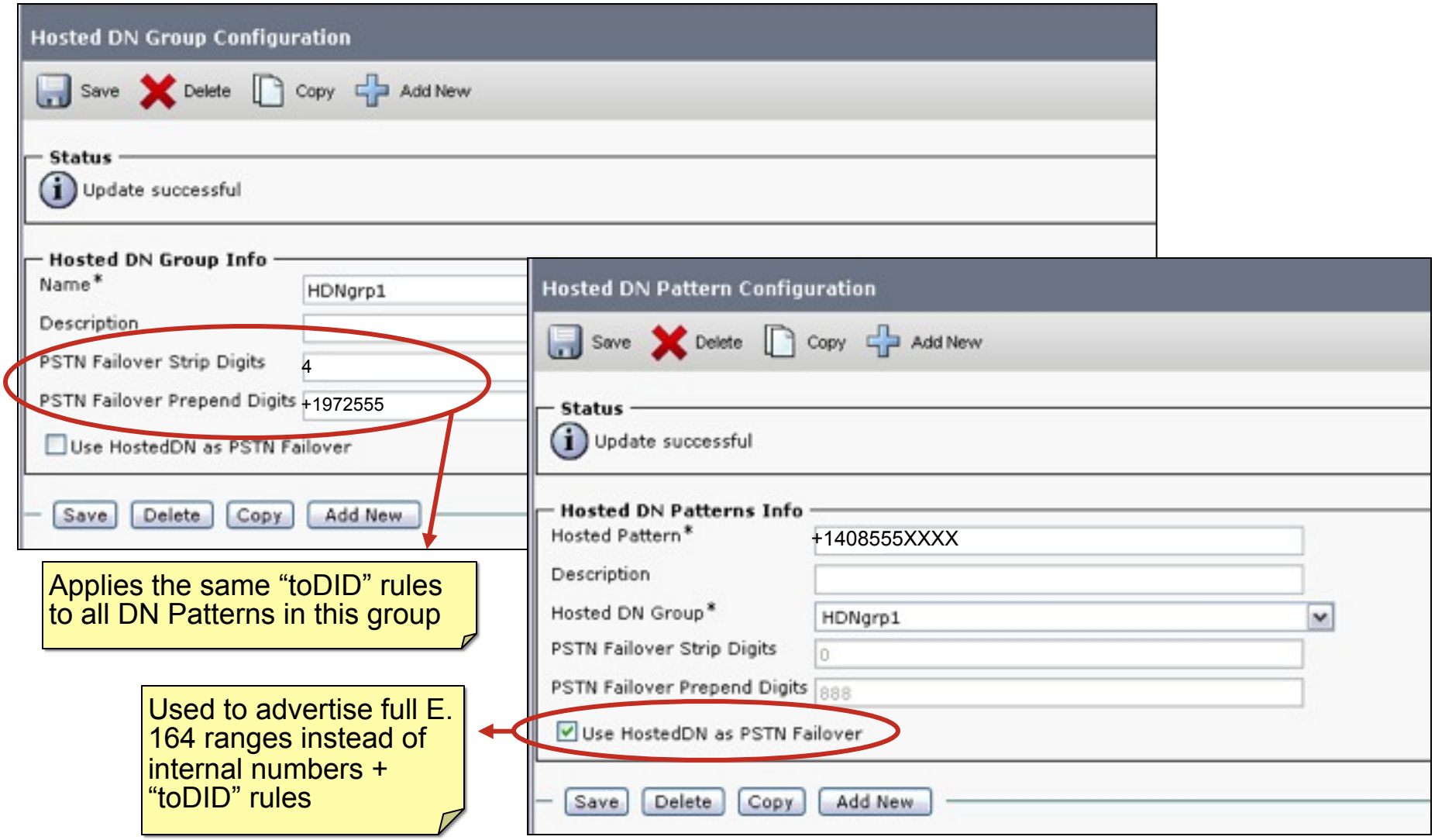
Call Control Discovery (CCD)

Unified CM Configuration – Hosted DN's



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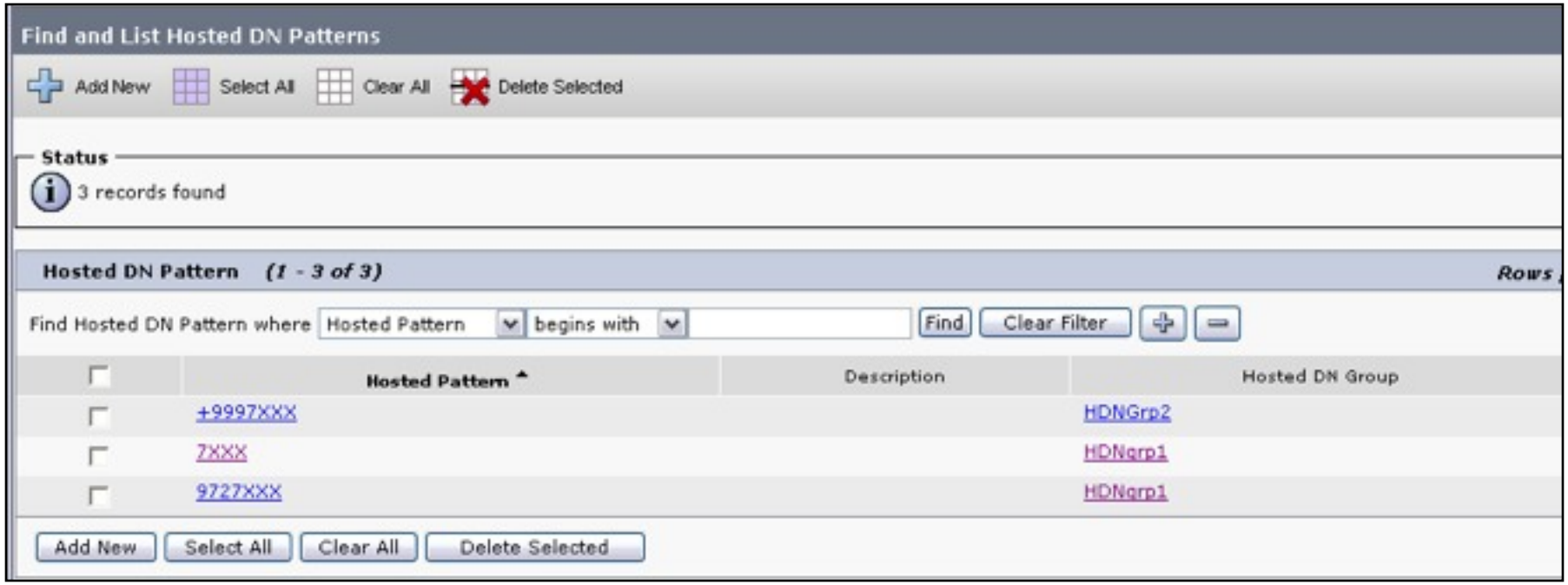
Call Control Discovery (CCD)

Unified CM Configuration – Hosted DN's (2)



- Hosted DN patterns to be advertised are configured by the administrator
- Allows flexibility in designing on-net dial plan and choosing which DN ranges to advertise to other call agents

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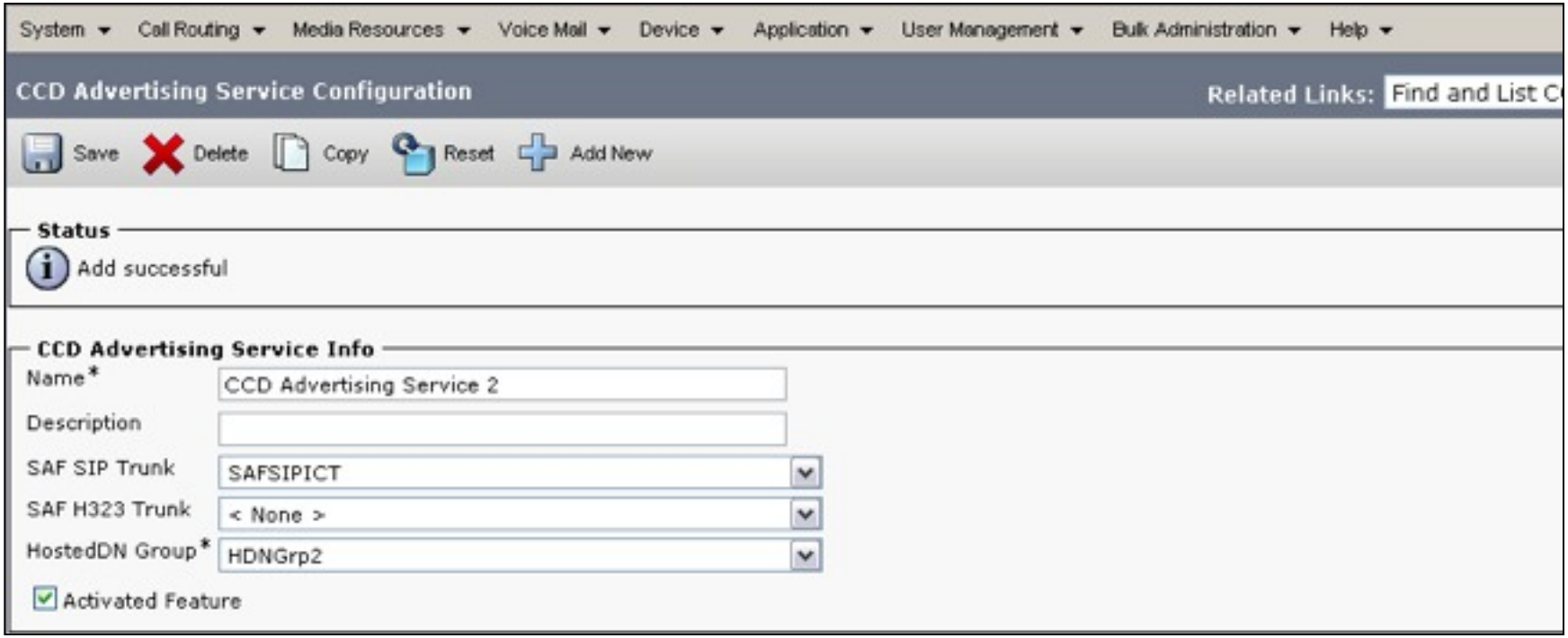
Call Control Discovery (CCD)

Unified CM Configuration – Advertising Service



- Each HostedDN Group can be associated with only one CCD Advertising Service
- SAF Trunks can be re-used by different CCD Advertising Services and CCD Requesting Services
- The SAF trunks' Unified CM groups determine on which nodes this service runs and which IP addresses are advertised through SAF

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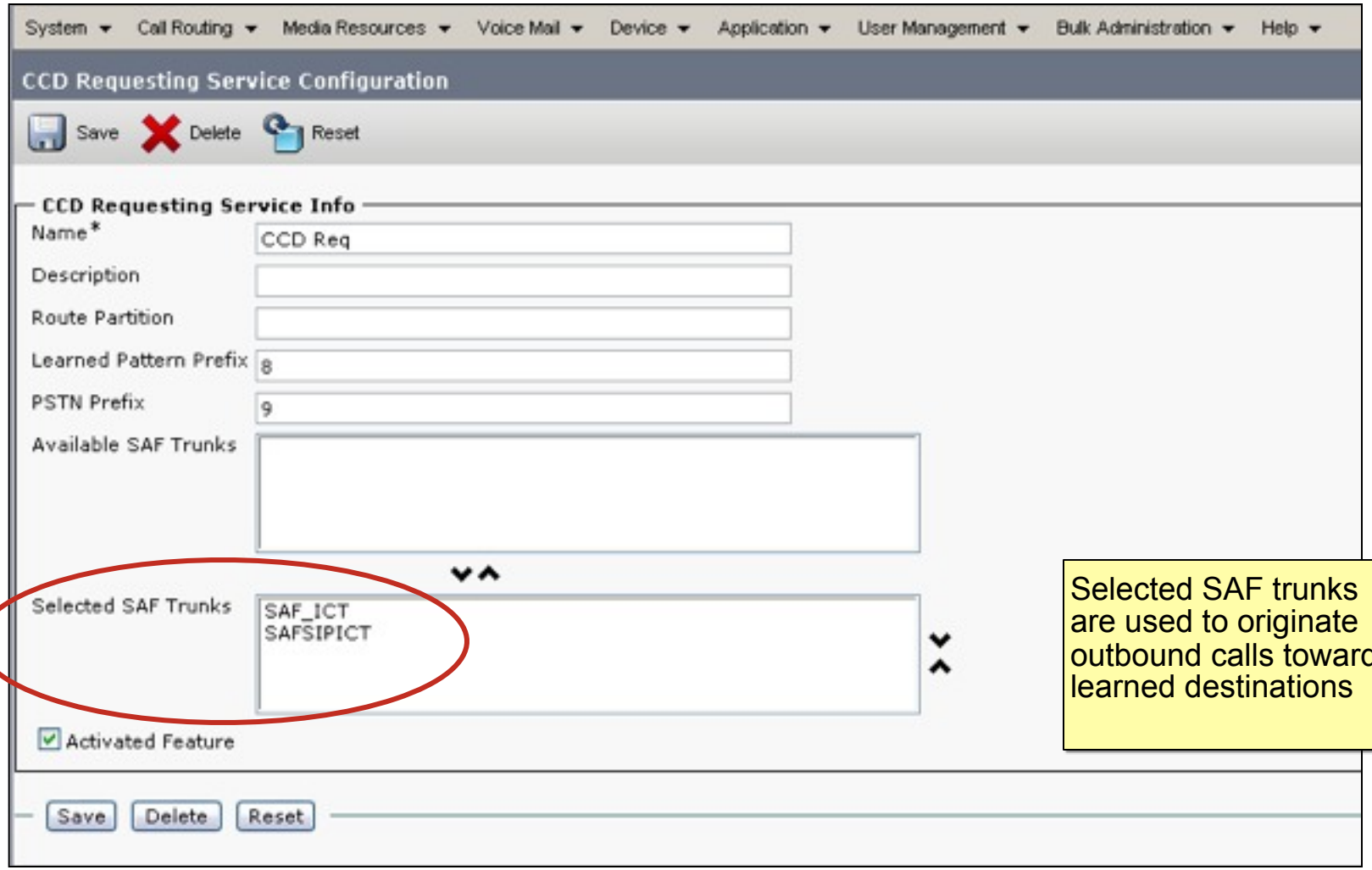
Call Control Discovery (CCD)

Unified CM Configuration – Requesting Service



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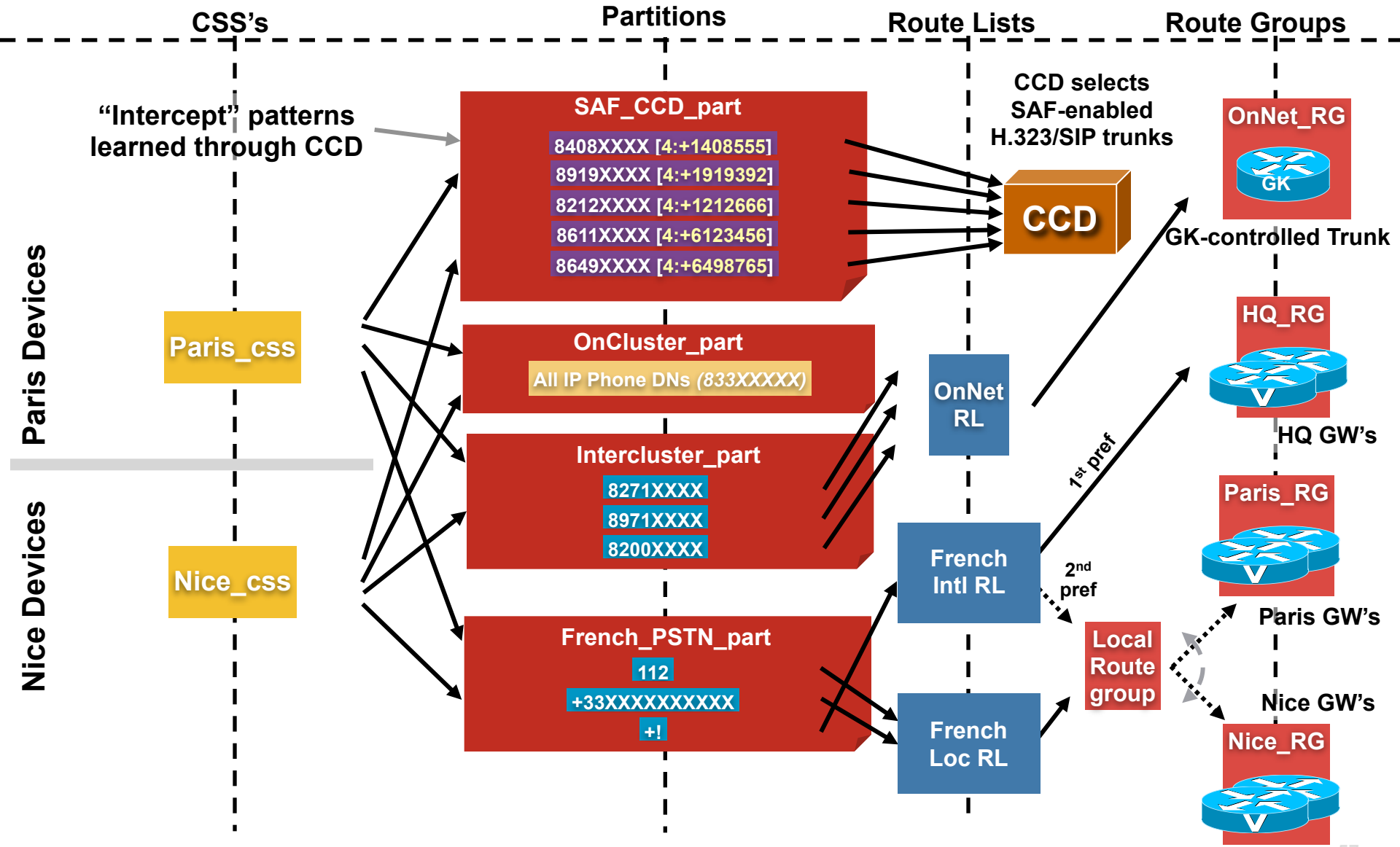
Call Control Discovery (CCD)

Integration with "Static Routing"



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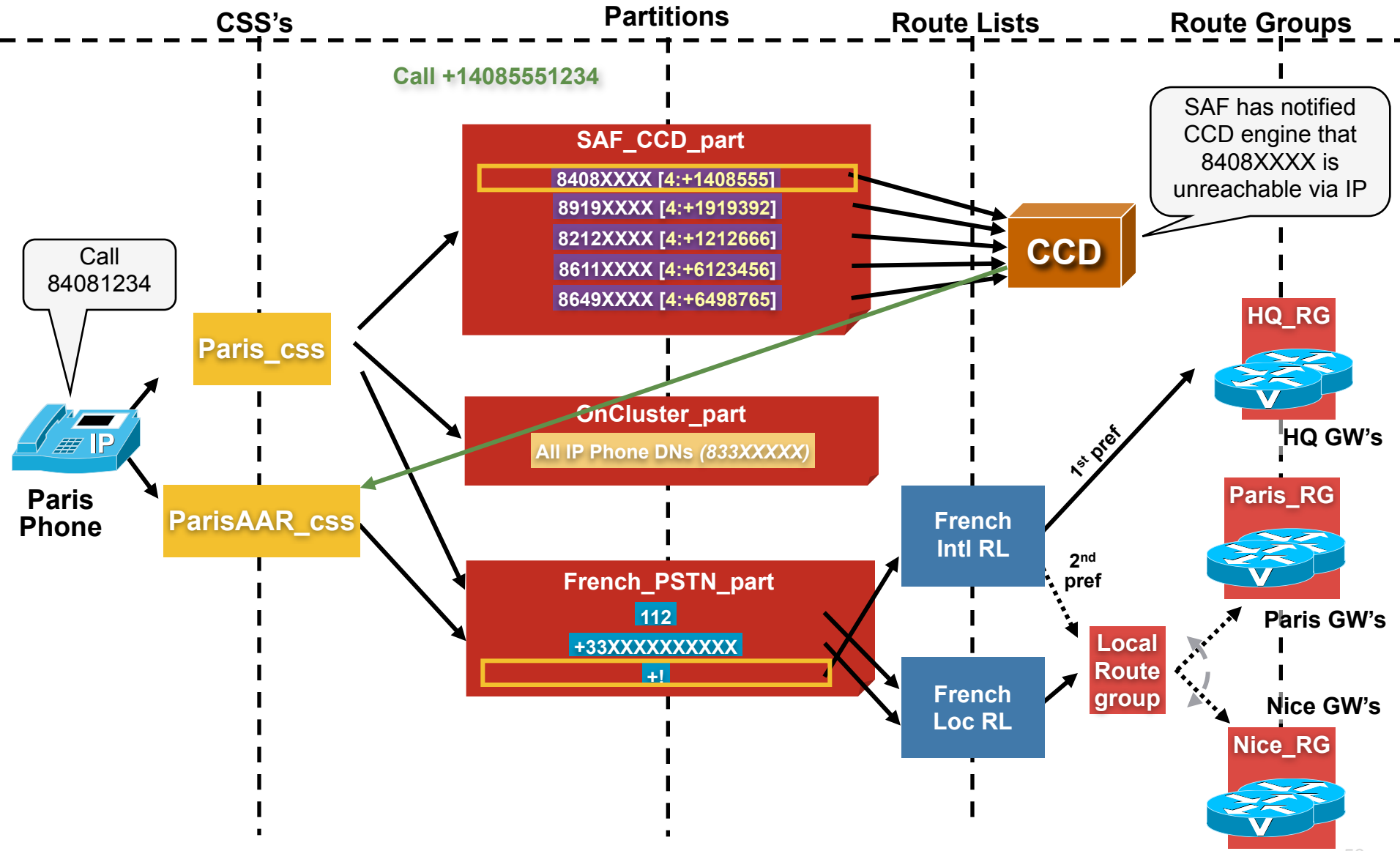
Call Control Discovery (CCD)

Integration with "Static Routing" – PSTN Failover



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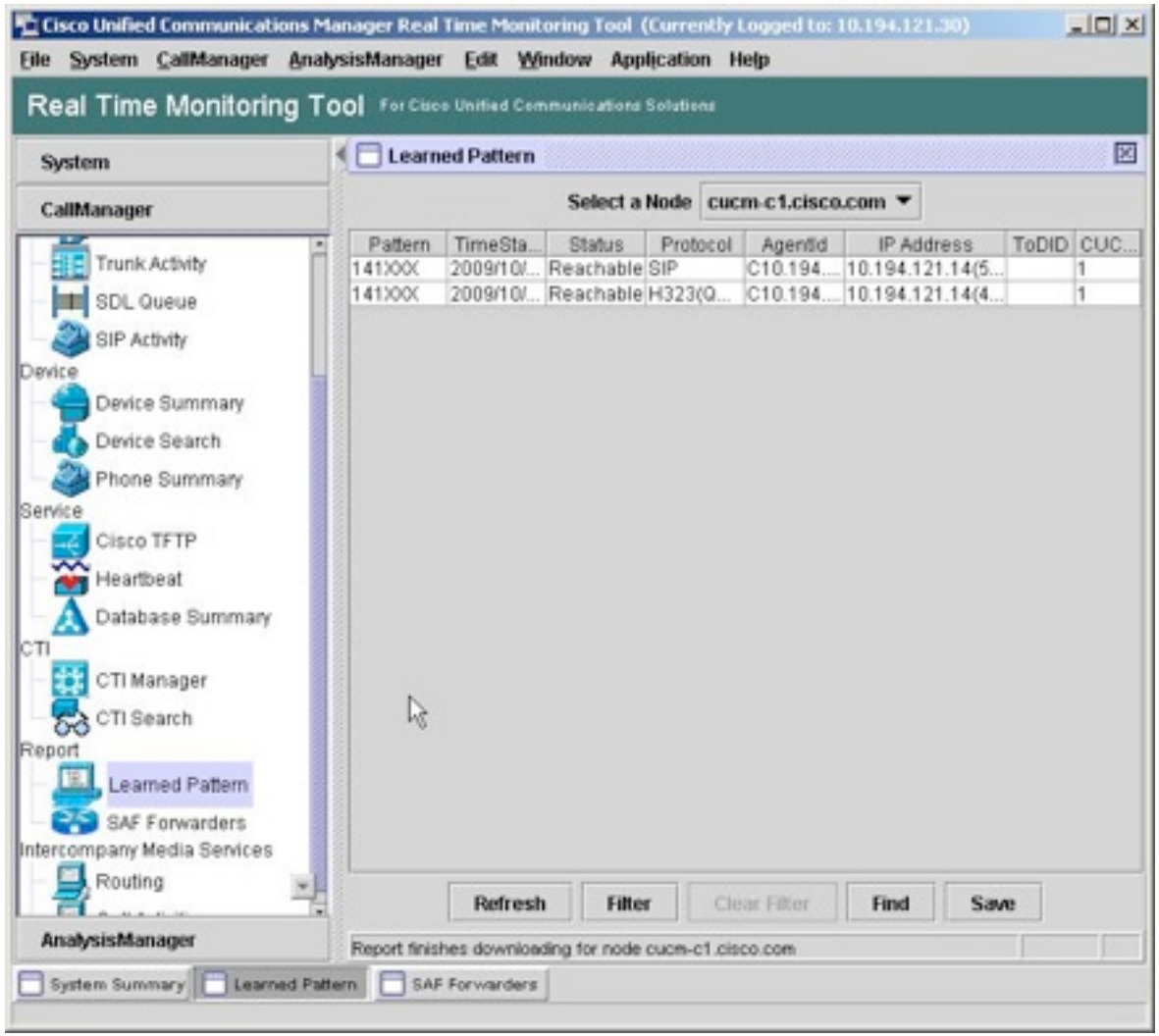
Call Control Discovery (CCD)

Monitoring and Troubleshooting for Unified CM

- RTMT is used to monitor learned routes and configured SAF Forwarders
- SAF/CCD tracing is included as part of the Unified CM SDI and SDL traces



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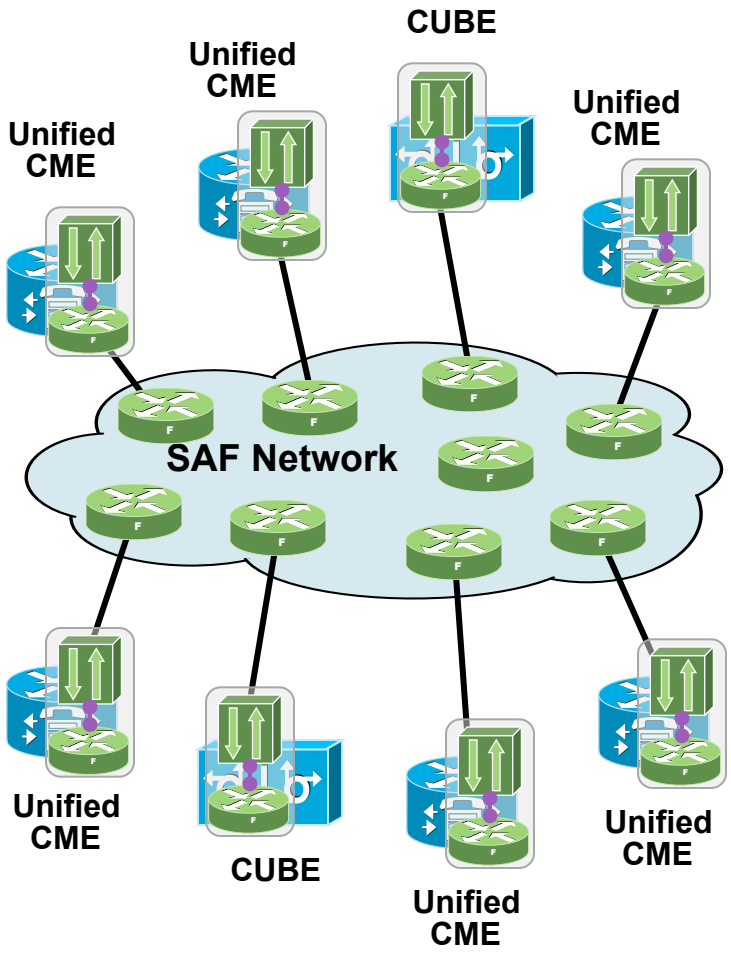
Call Control Discovery (CCD)

Unified CME, SRST, CUBE, Gateway Support Details

- Starting with Cisco IOS 15.0(1)M, Unified CME, CUBE and IOS Gateways can advertise and/or subscribe to the CCD service
- Listen-only mode for SRST
- Transparent PSTN failover when destination is unreachable
- Scalability:
  - Up to **125** advertised DN patterns per CME/CUBE
  - Up to **6,000** learned DN patterns per CME/CUBE/SRST *(platform-dependant)*



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Call Control Discovery (CCD)

Unified CME or CUBE Configuration Example

```
router eigrp SAF-fwdr
  service-family ipv4 autonomous-system 1
    sf-interface Ethernet0/0
    topology base

voice service saf
  profile trunk-route 1
    session protocol int Eth0/0 sip transport tcp port 5060

  profile dn-block 1
    pattern 1 extension 5xxx
    pattern 2 global 1408555xxx

  profile dn-block 2 alias 14085258 strip 4
    pattern 3 extension 8123xxx

  profile callcontrol 2
    dn-service
      dn-block 1
      dn-block 2
      trunk-route 1
      site-code 8333
    exit dn-service
  exit-profile

  channel 1 vrouter SAF-fwdr asystem 1
    publish callcontrol 2
    subscribe callcontrol wildcarded

dial-peer voice 100 voip
  destination-pattern .T
  session target saf
```

Co-resident SAF Forwarder

Trunk route: signaling IP address, port, protocol

DN blocks: patterns to be advertised and “to DID” transformation rules

CCD instance: integrates DN blocks and trunk route

SAF client: publish and/or subscribe to services

Enable call agent to look up routes learned through SAF

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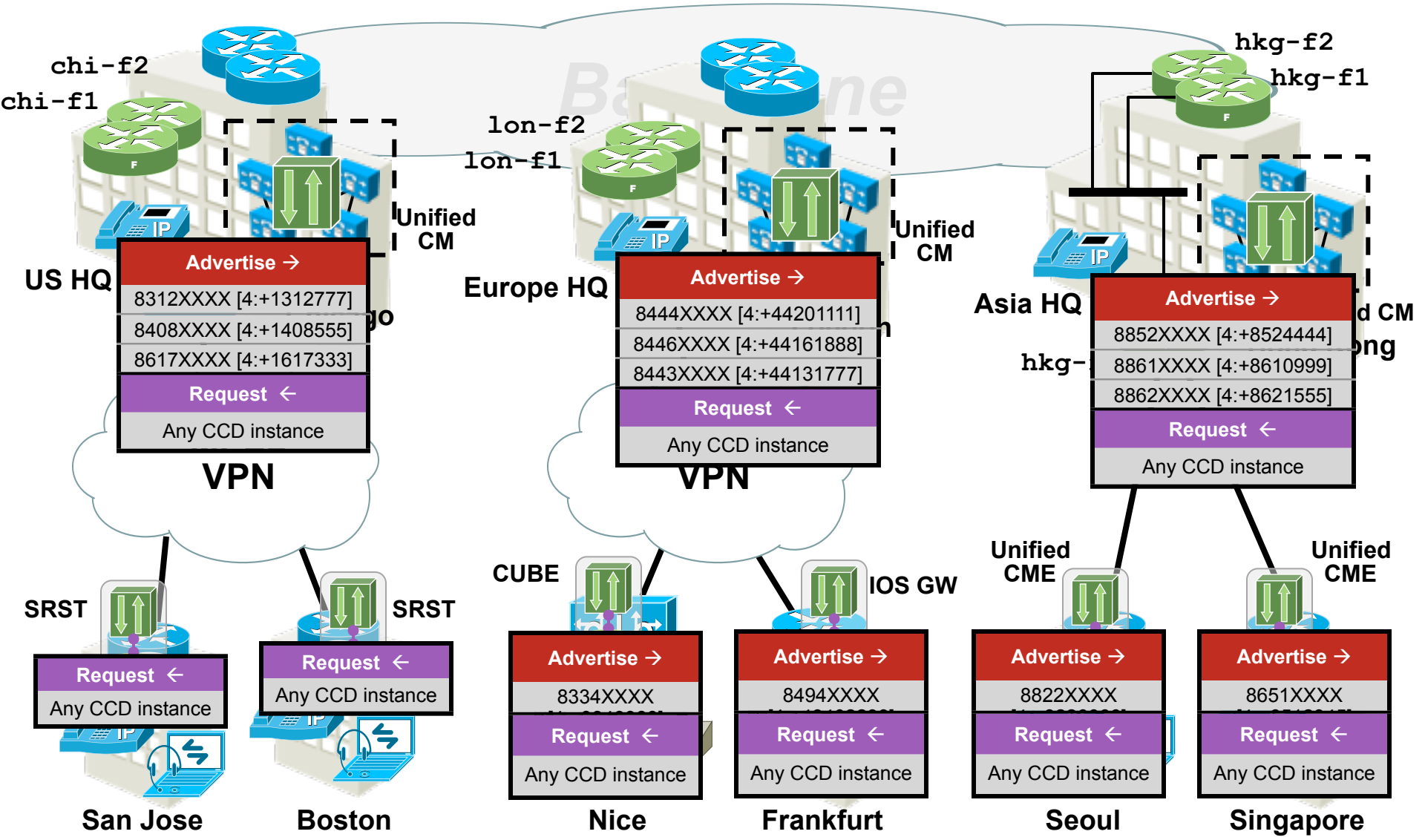
Call Control Discovery (CCD)

Case Study



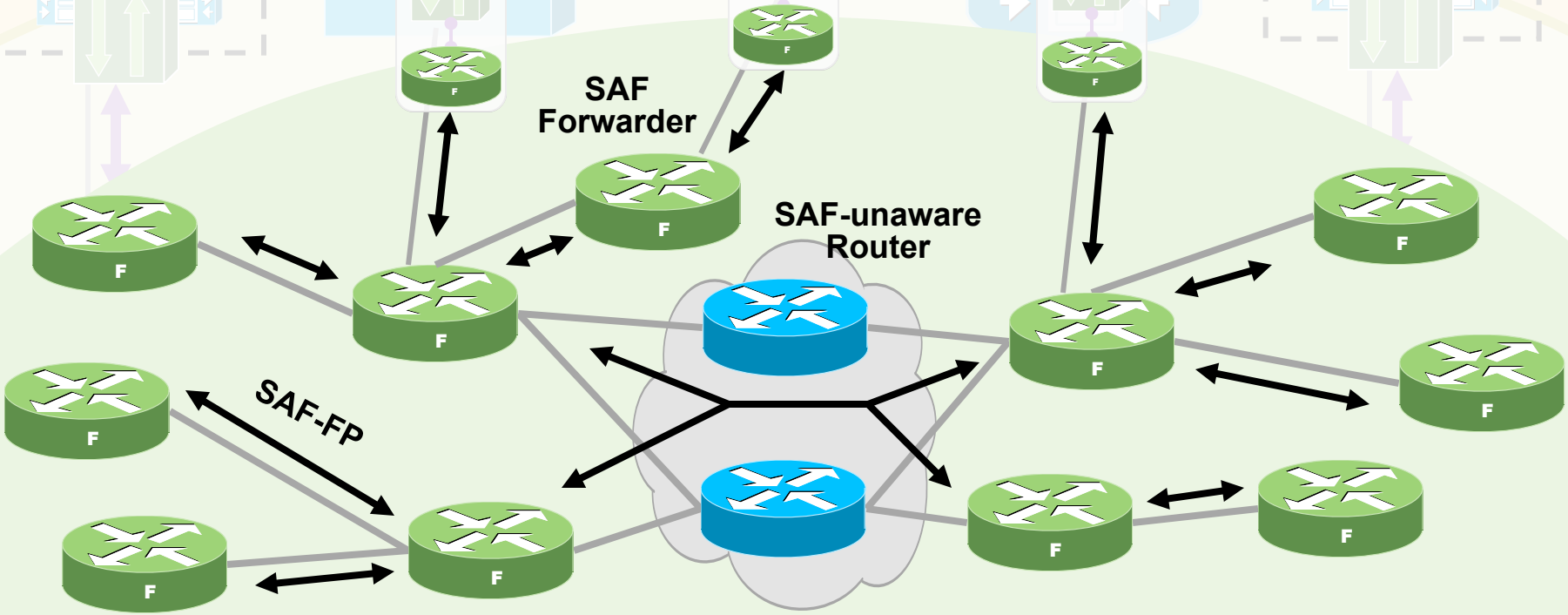
Service Advertisement Framework (SAF)

The SAF Network

The SAF Client-Network Interface

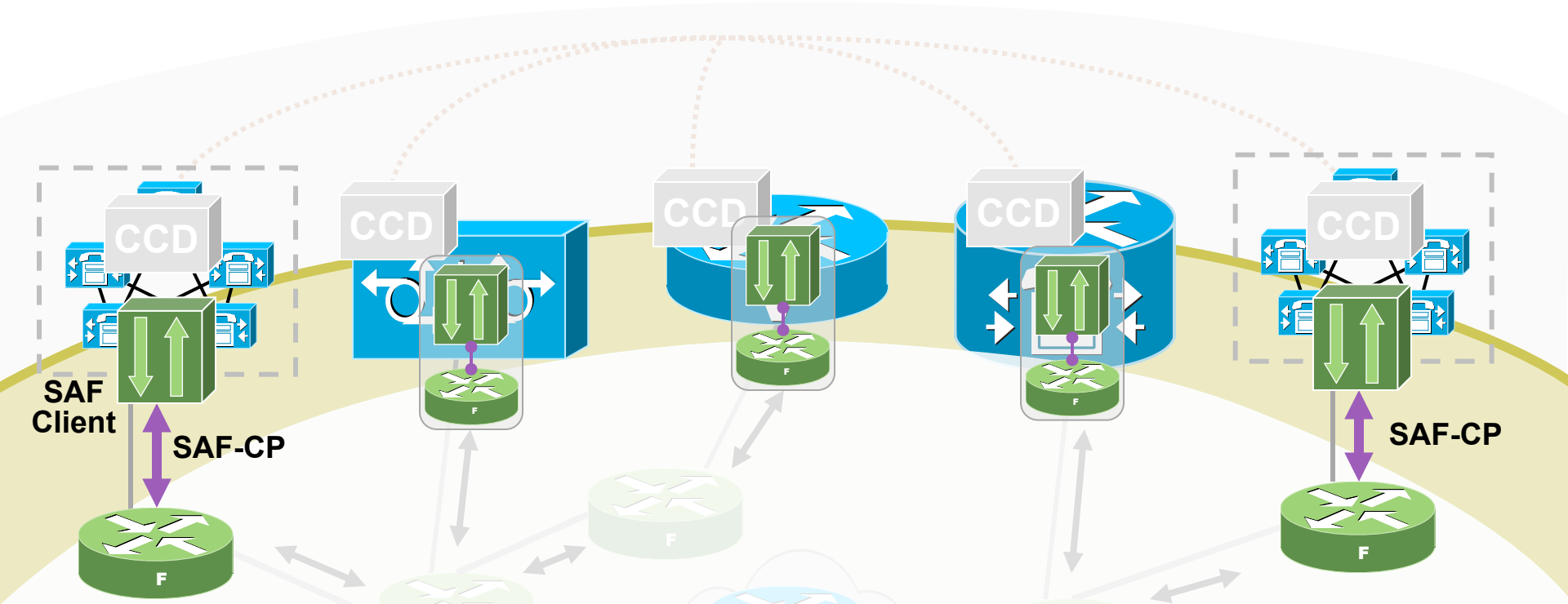
The SAF Network
Agenda

- What is a SAF Advertisement
- How services are discovered and routed
- How to deploy SAF on an Enterprise network



The SAF Client-Network Interface

Agenda

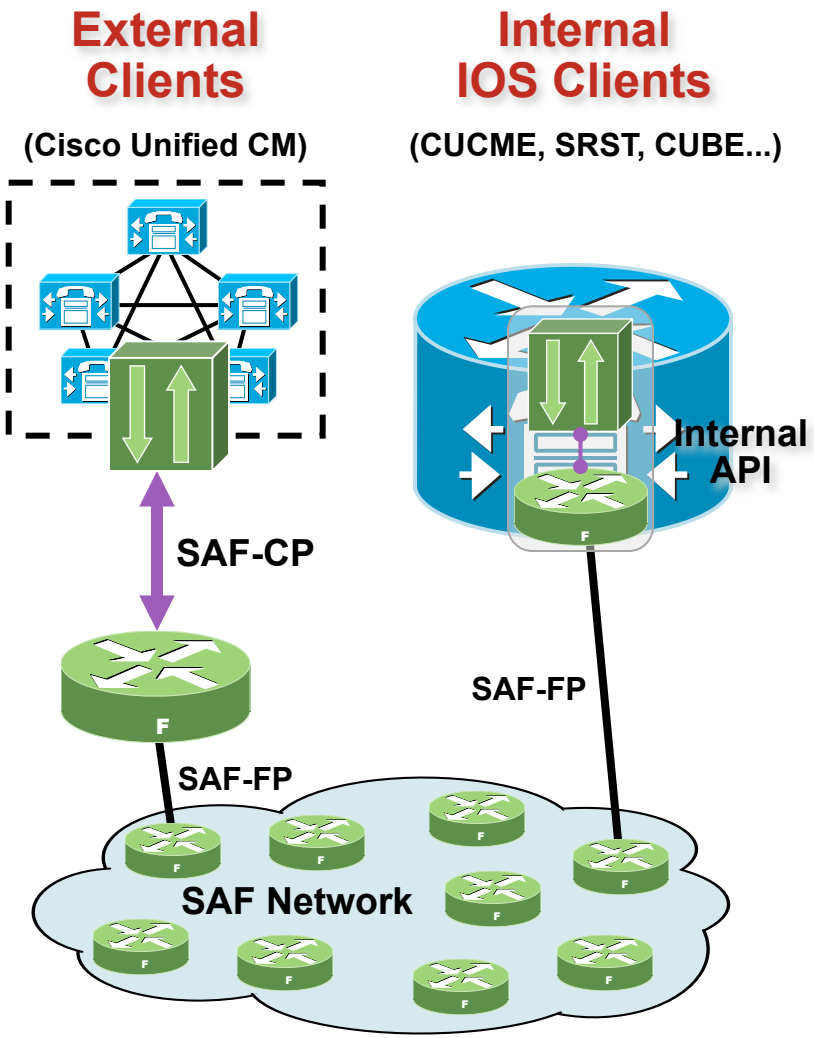


- How SAF clients connect to the SAF network
- How SAF clients publish services
- How SAF clients request services

The SAF Client-Network Interface

SAF Client Types

- SAF clients perform three functions:
  - **Register** to the network
  - **Publish** services
  - **Subscribe** to services
- External clients communicate to a SAF forwarder via the SAF Client Protocol (SAF-CP)
- Internal Cisco IOS clients communicate to a co-located SAF forwarder via internal API



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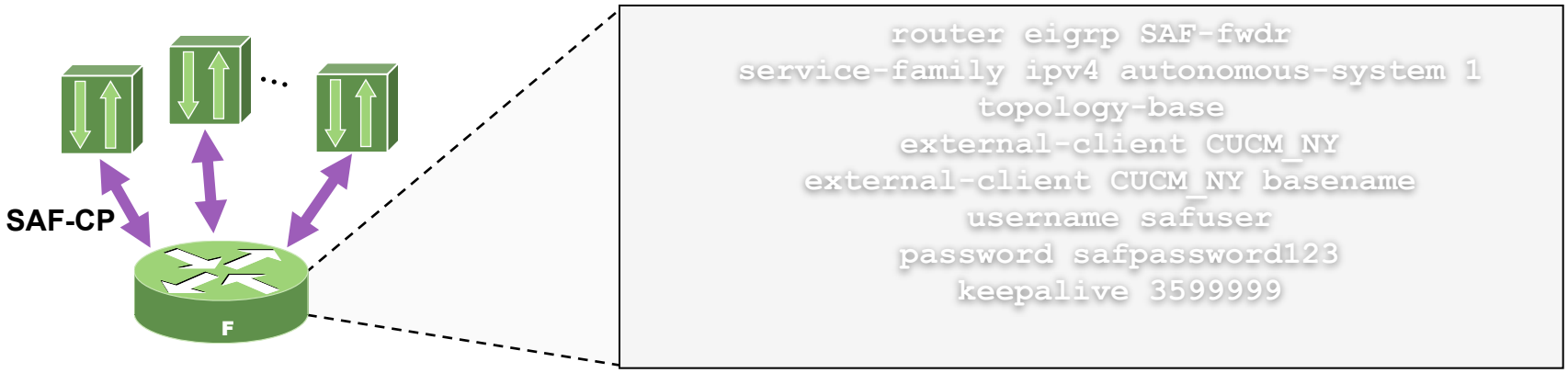
The SAF Client-Network Interface

Connecting External Clients to a Forwarder



- Configure credentials for client authentication
- Multiple clients can share same credentials with ‘basename’ keyword *(e.g., nodes of the same Unified CM cluster)*
- Up to 50 clients can connect to the same forwarder in the current release

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The SAF Client-Network Interface

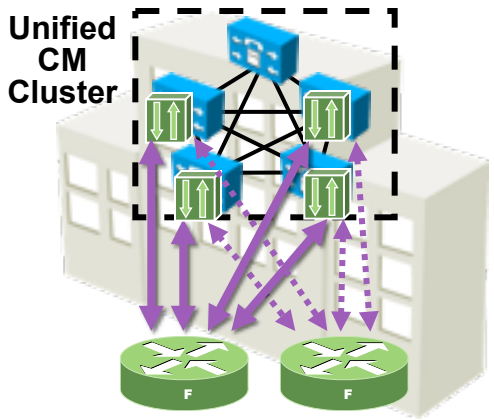
Cisco Unified CM as a SAF client

- Supports SAF client authentication
- Process runs on every subscriber node in the cluster
- Two configuration modes:

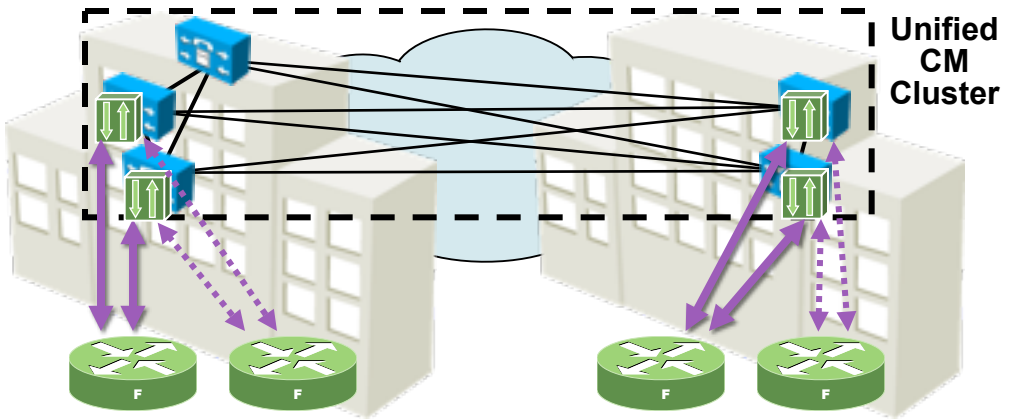
  Basic – all nodes use same primary/secondary SAF forwarders

  Advanced – multiple sets of forwarders (for CoW deployments)

Single-site Cluster



Clustering over the WAN



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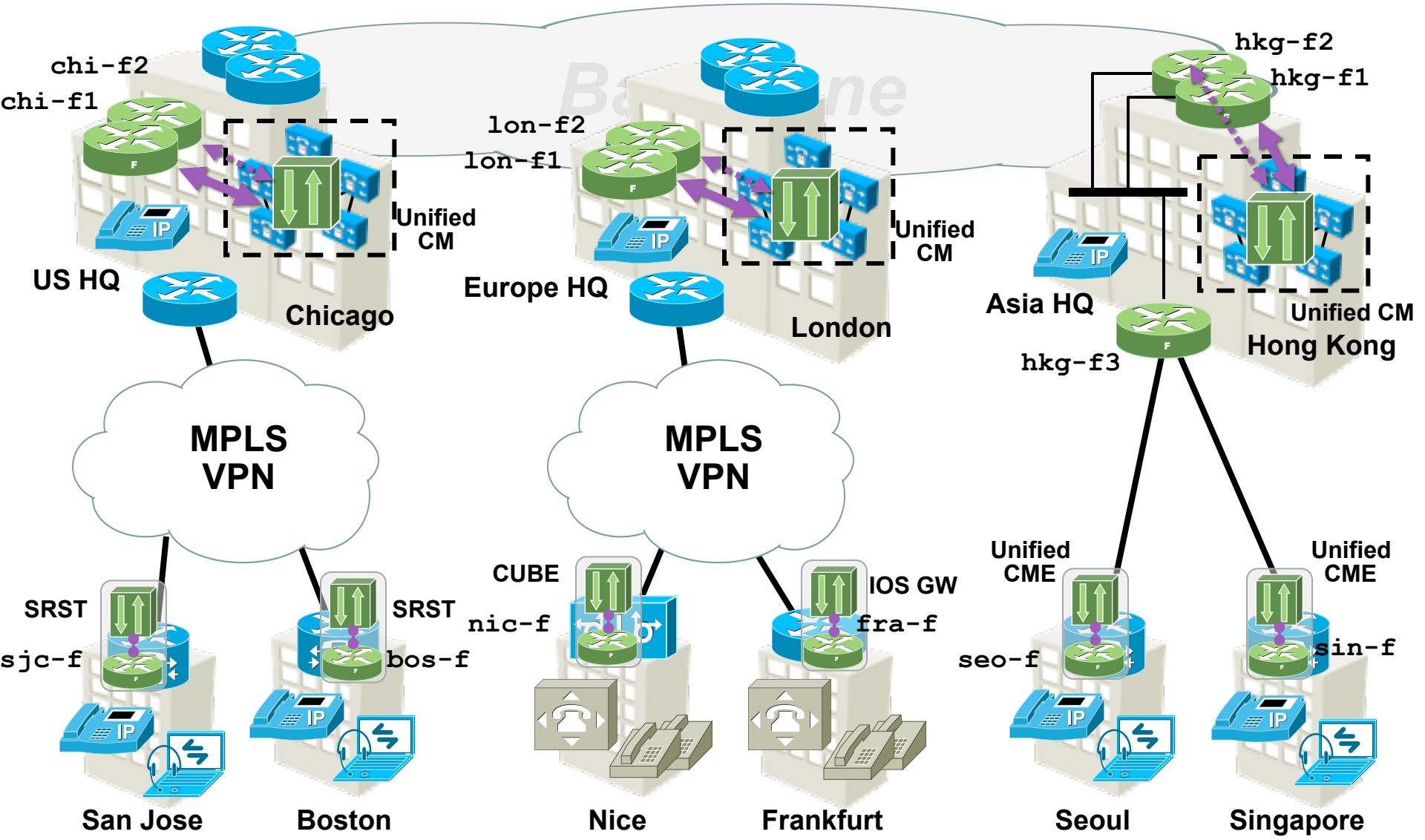
The SAF Client-Network Interface

Case Study



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Conclusions
Recap of Key Concepts

- SAF is a generic framework for service discovery
- Three main components:
  - The **network** – propagate service advertisements
  - The **client-network interface** – publish and subscribe to services
  - The **services** – e.g., Call Control Discovery
- Key differentiating aspects:
  - Scalability, bandwidth efficiency, fast convergence
  - “In the network” vs. overlay solution
  - “Service routing” independent of IP routing
  - Push-based model allows use for real-time applications
  - Modular approach to maximize re-use

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Conclusions
Benefits of Call Control Discovery

- **Reduce deployment time, realize quicker ROI**
  - Dial plan configuration complexity reduced from N^2 to N
  - Allows optimal dial plan to be implemented quickly *(i.e., on-net numbering plan with automatic PSTN failover)*
- **Reduce ongoing operational costs**
  - Complexity of adding/removing/changing a site drastically reduced
  - No need to purchase, maintain and configure dedicated gatekeepers
  - Reduced reliance on static back-up configuration
- **Improve business continuity**
  - Increased availability even during partial network failure thanks to dynamic awareness
  - Implementable and maintainable mechanism for automatic PSTN rerouting
  - Fast rerouting during failures

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Cisco Unified IP Phone Portfolio At-A-Glance…

9900 Series

Advanced Collaborative Media Endpoints

- Interactive video, HD voice, large color displays
- Wide array of endpoint applications
- USB connectivity, Wi-Fi and Gigabit Ethernet
- Energy-friendly

8900 Series

Advanced Professional Media Endpoints

- HD voice, large color displays
- Wide array of endpoint applications
- USB connectivity
- Energy-friendly

7900 Series

Advanced Business Endpoints

- Desktop, Conference Room and Wireless endpoints
- HD voice, Gigabit Ethernet
- Wide array of endpoint applications
- Energy-friendly

6900 Series

Business Voice Endpoints

- Traditional telephony-like User Experience
- Flexible communications: Full-duplex speakerphone
- Selected basic endpoint applications (XML)
- Energy-friendly

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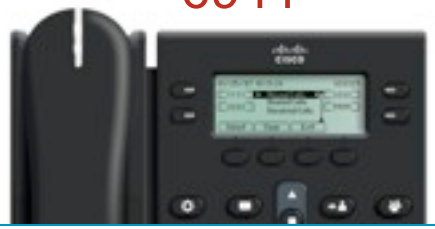
6900 Phone Models

6921

- Line keys are not labeled via LCD
- 7940G like features

6941



- Line keys can be labeled via LCD
- 7960G like features

6961

- Line keys are paper labeled
- Similar to 7931

- Supports SCCP. SIP Support in 2H CY2010
- SRST 8.0 with 15.0(1)XA. No SRST 7.1 support
- Targeted markets - SMB markets with low end PBX features

Cisco Unified IP Phone 8900 & 9900 Series

Overview

	8961	9951	9971
802.3at POE	Y	Y	Y
GigE Switchport	Y	Y	Y
USB	Y	Y	Y
Bluetooth		Y	Y
Wi-Fi			Y
SDIO			Y
Video Streaming	Y	Y	Y
2-way Video		Y	Y
Display Size	5” QVGA	5” VGA	5.6” VGA Touchscreen
Lines	Multi	Multi	Multi
Key Module	1 Color VGA	2 Color VGA	3 Color VGA

- XML, Java Midlet, Browser (Future) app environments

Standard (6oz/170g)

Slimline (5oz/140g)

Reference: 7975G Handset = 7.4oz/210g

- Requires CUCM 7.1 (3) or higher
- SRST 7.1 with 12.4 (24)T but as TNP SIP Phone
- SRST 8.1 has full support

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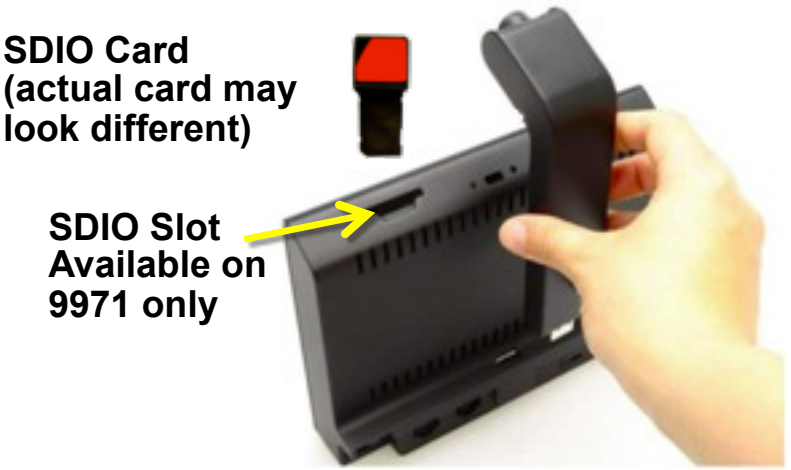
Camera (Delivered with CUCM 8.0)

A "Hosted" USB Camera Module accessory that attaches to a Cisco Unified IP Phone 9971 or 9951. It provides support for encoding of video signals from camera and allows phones to communicate via two-way video conferencing.

- H.264 encode
- VGA video resolution @ 24fps encode; CIF/SIF @30fps encode
- 2 M-pixel auto-focus sensor SOC
- Not designed as PC Web Cam
- Orderable March 24, 2010

SDIO – 9971 Only

- Simulates running phone sessions, video and applications on the phone
- Useful for demos and customer briefings



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Key Expansion Model (KEM)

Intuitive UE on a Reduced Footprint

- **18 physical keys + "shift/page" keys = 36 key functions per KEM**
- **Built-in footstand and wall-mountable config**

Two Configurations:

- **Traditional - spine connection to base phone**
- **Tethered – cable connection to base phone**

Phone Model	KEMs Supported
9971	3 KEMs with 108 lines
9951	2 KEMs with 72 lines
8961	1 KEM with 36 lines

One KEM can be powered up if you use AT PoE.
A KEM cannot be powered up

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Understanding the New User Experience

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Cisco Unified IP Phone 8900/9900 Button Differences

Buttons Ergonomically Arranged

Applications button

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Fixed Keys Added For Rich User Experience
Cisco Unified IP Phone 8900/9900 Button Differences

Most commonly used call features on fixed hard buttons (hold, transfer, and conference) for a rich user experience

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Cisco Unified IP Phone 8900/9900 Button Differences

- Programmable Feature Buttons
- Phone lines, speed dials, and calling features

All Calls

Use for multiple lines

- Session Buttons
- Represents a call session
- Press button to answer ringing or held calls

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Cisco Unified IP Phone 8900/9900

Cisco Unified IP Phone 8900/9900

Simplified when Compared with the 7900 Experience

- Access this screen by pushing the Applications Button
- Access call history, preferences, accessories, and Administrator settings
- New future applications and services are accessible here

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Cisco Unified IP Phone 8900/9900

- Toggle between missed calls and all calls
- This screen is invoked when missed calls are viewed
- This screen can also be invoked by pressing Application button

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Cisco Unified IP Phone 8900/9900

- By default user can modify wallpaper, ringtone, and brightness
- End users see toast pop ups based upon various events

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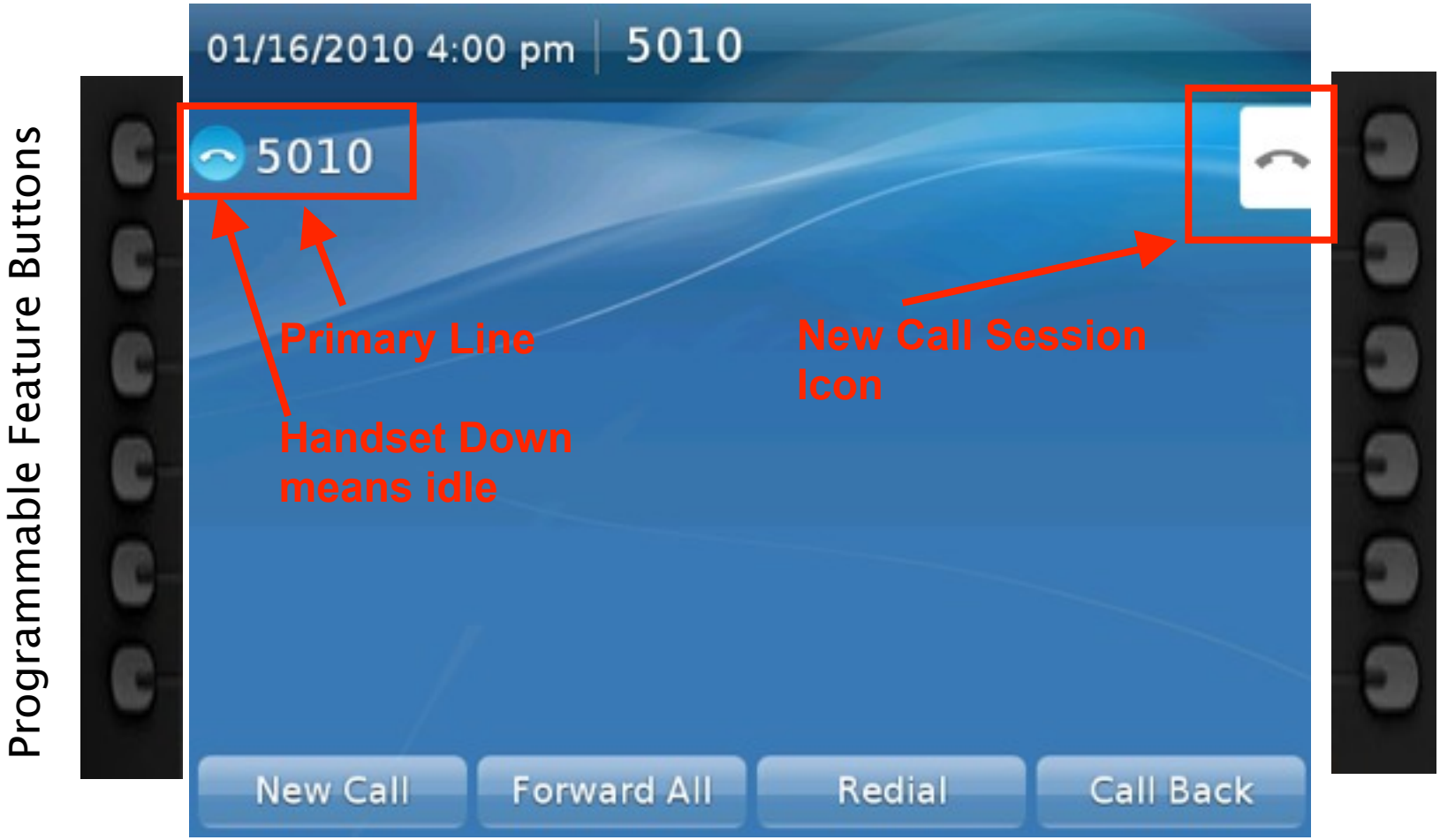
Cisco Unified IP Phone 8900/9900

Basic Operations: One Line – Completely Idle



- This is the "default" behavior if you do the bare minimum
- You can push top right session button to start call – NOT top left
- Of course, you can push speaker button or push "New Call" softkey

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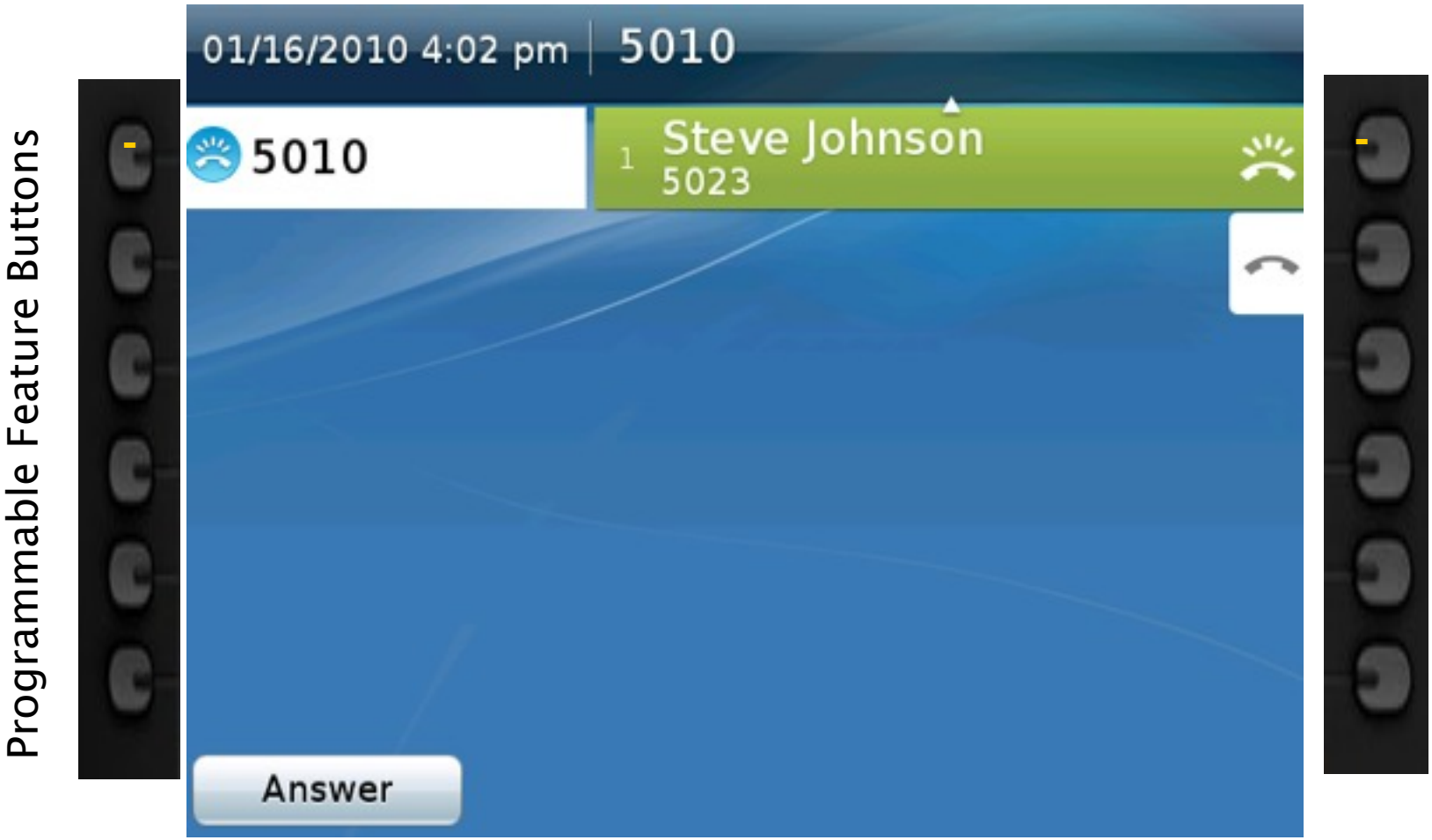
Cisco Unified IP Phone 8900/9900

Basic Operations – One Incoming Call



- Phone icons change to alerting for incoming call
- Top left LED solid amber indicating call in coming in
- Top right flashing amber indicating you can push this button to answer

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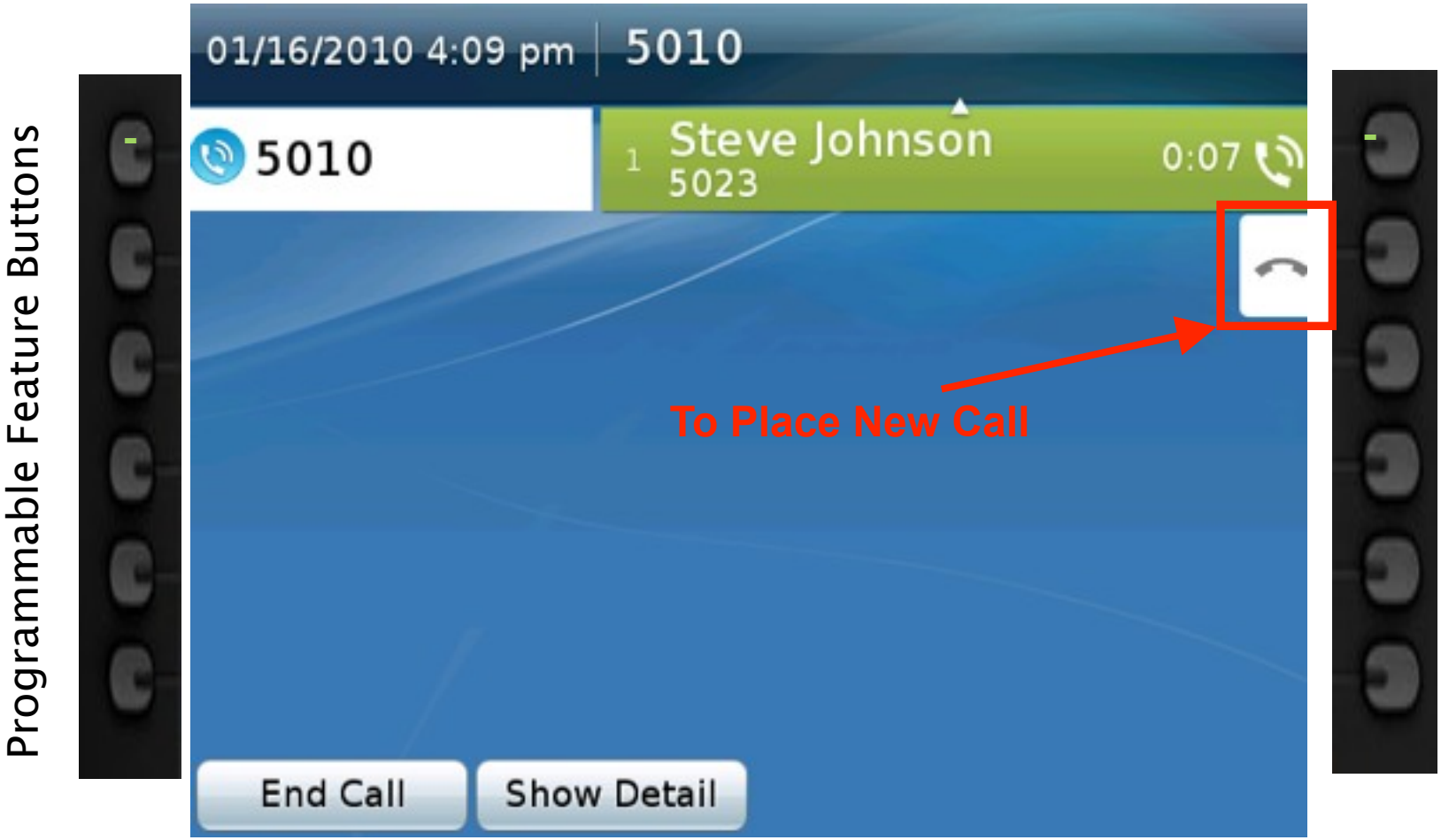
Cisco Unified IP Phone 8900/9900

Basic Operations – One Answered Call



- Phone icons change to active when in a call
- Both LEDs solid green
- End call using “End Call” softkey, hang up handset, or push release

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Cisco Unified IP Phone 8900/9900

Basic Operations: Multiple Calls on Hold

- You can initiate new calls by pushing the new call session icon on right
- Calls go immediately on hold when you push the session key
- Calls stack based upon history and in descending order

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Cisco Unified IP Phone 8900/9900

Basic Operation: One Line – Max Calls

Multiple Call/Call Waiting Settings on Device SEP00254592E79F

Note:The range to select the Max Number of calls is: 1-200

Maximum Number of Calls* 4

Busy Trigger* 2 (Less than or equal to Max. Calls)

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Cisco Unified IP Phone 8900/9900

Basic Operations: Navigate Multiple Stacked Calls

Simply select session button of caller to instantly move between calls and/ or use navigation button to select

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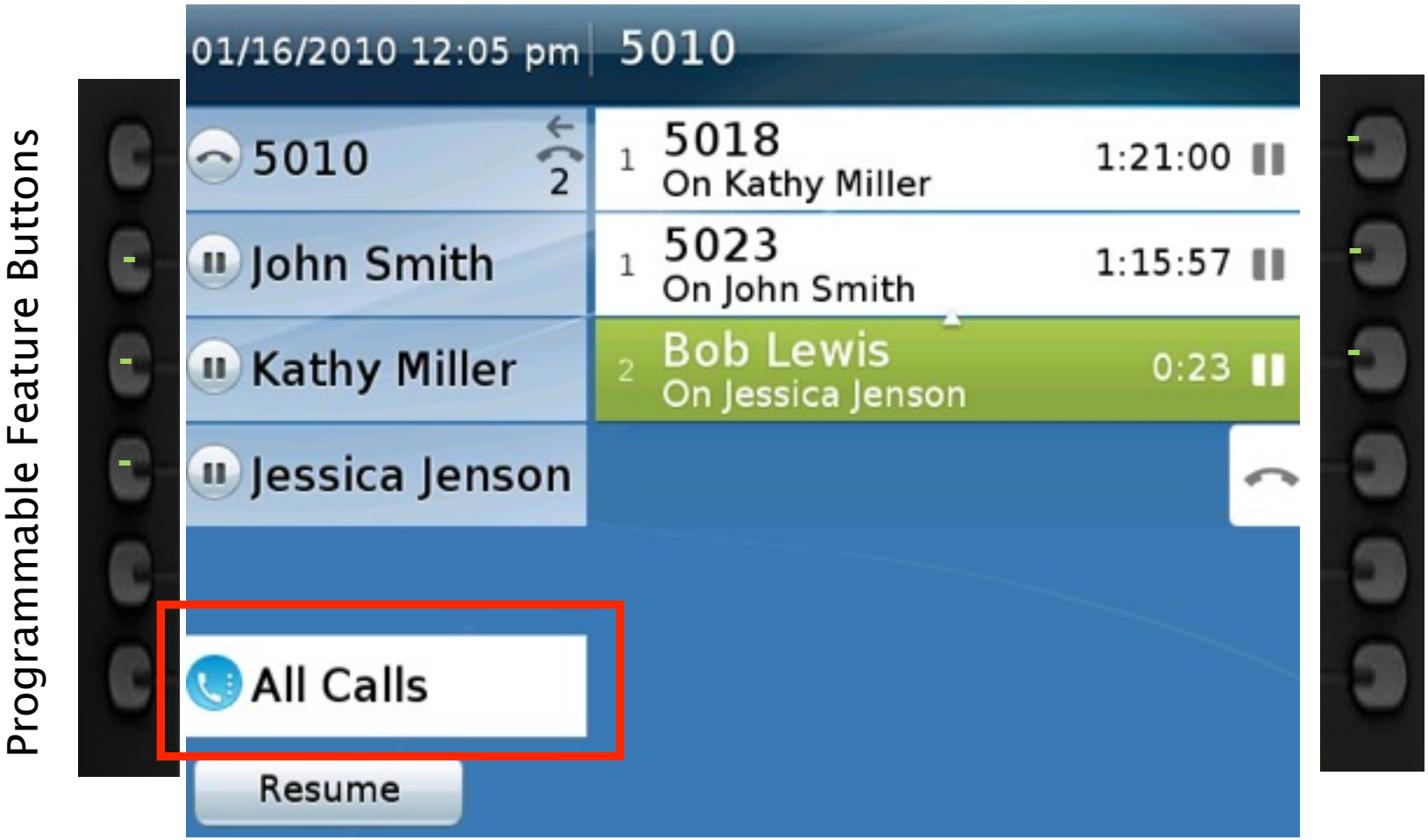
Cisco Unified IP Phone 8900/9900

Best Practice: Use "All Calls" For Multiple Lines



"All Calls" HIGHLY RECOMMENDED. Selecting "All Calls" provides full visibility and accessibility to all calls

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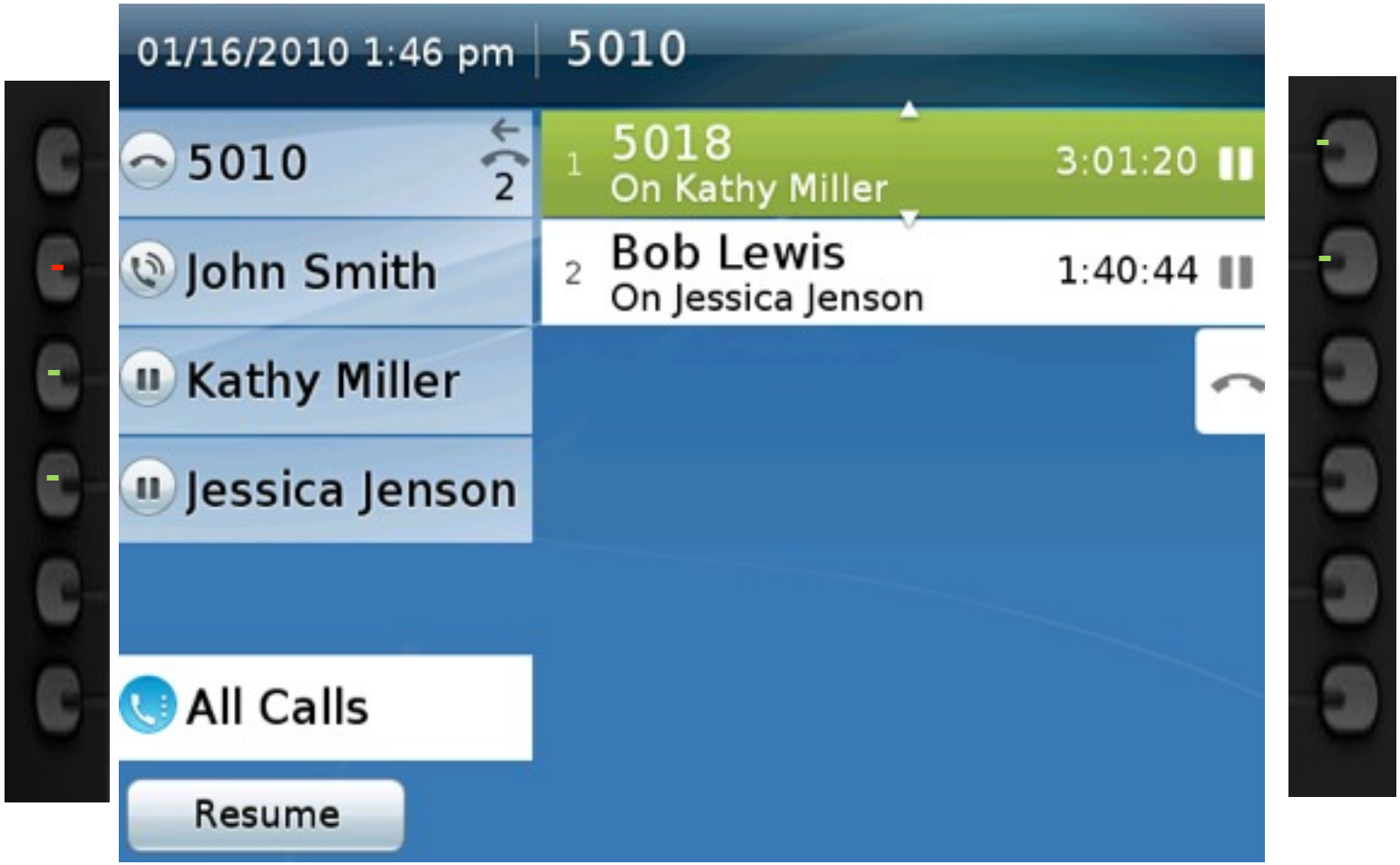
Cisco Unified IP Phone 8900/9900



- John is on the phone as indicated by his phone icon
- We have calls on hold for Kathy and Jessica

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Cisco Unified IP Phone 8900/9900

- Dan calls in on John's line but John is on the phone
- Dan's call is answered and asked if he wants to hold

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Cisco Unified IP Phone 8900/9900

- Dan is now on hold
- Dan's call is stacked on John's 8900/9900 just like ours
- John will pick up Dan's call when ready

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Cisco Unified IP Phone 8900/9900

Scenario 2: Call Comes from Bob to Line 5010 for Jessica

- Bob wants to speak with Jessica but Jessica is in a call
- Bob is on hold and Jessica asks for call to be transferred

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Scenario: Unified IP Phone 8900/9900

- Push session button for Bob, then push Transfer key
- You can push the Swap button to toggle back and forth

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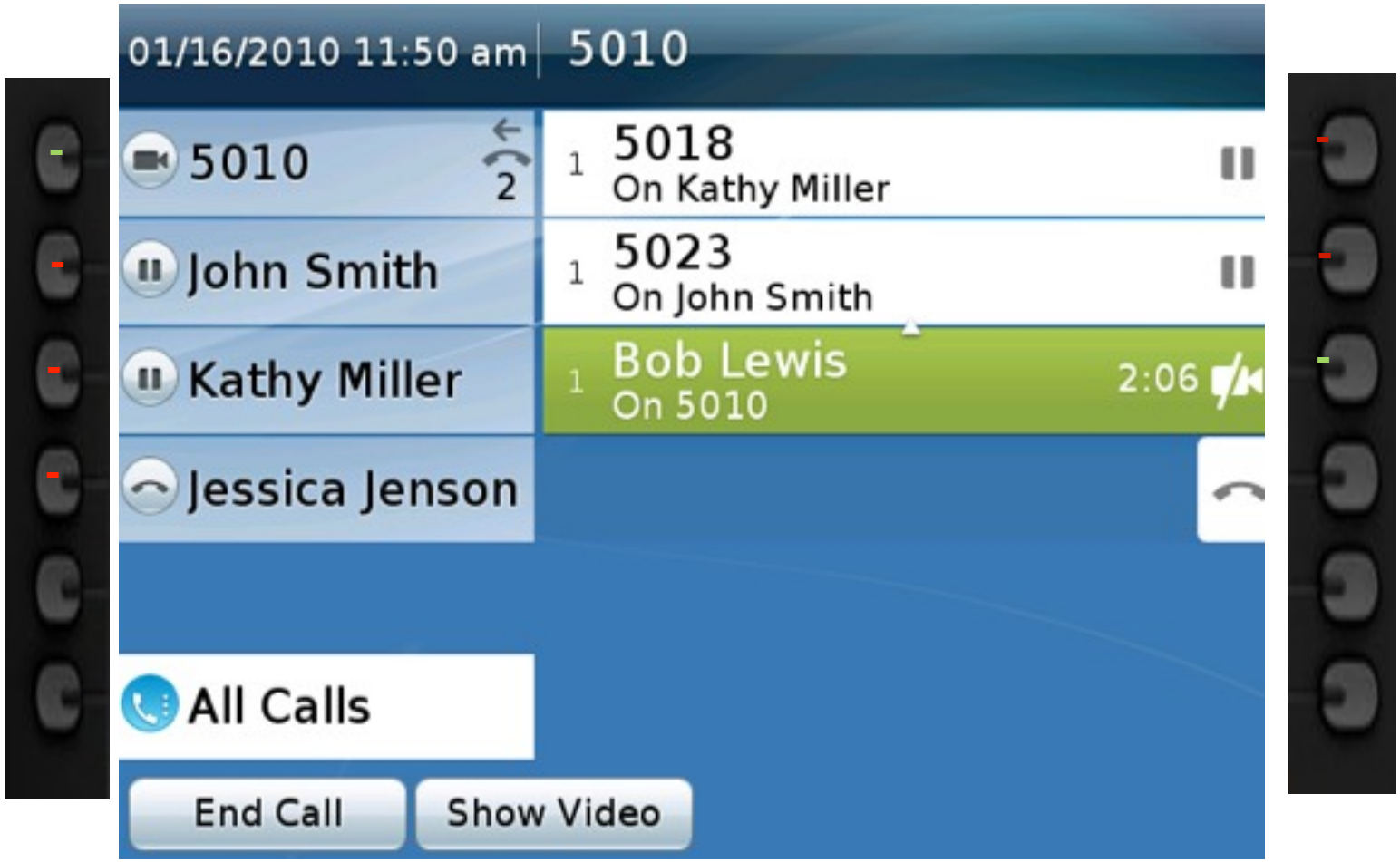
Scenario 3: Bob Calls For Conference

Cisco Unified IP Phone 8900/9900



- A conference is needed with Bob and Jessica
- While on the line with Bob, press the Conference key

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Cisco Unified IP Phone 8900/9900

Scenario 3: Call Comes in from Bob and Button Good

- Press conference button and dial Jessica
- Press conference button again just like with the 7900 series
- Use swap button to consult back and forth

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User Experience

Cisco Unified IP Phone 6900 Button Differences

Maximum number of calls = 2, Busy trigger =1.

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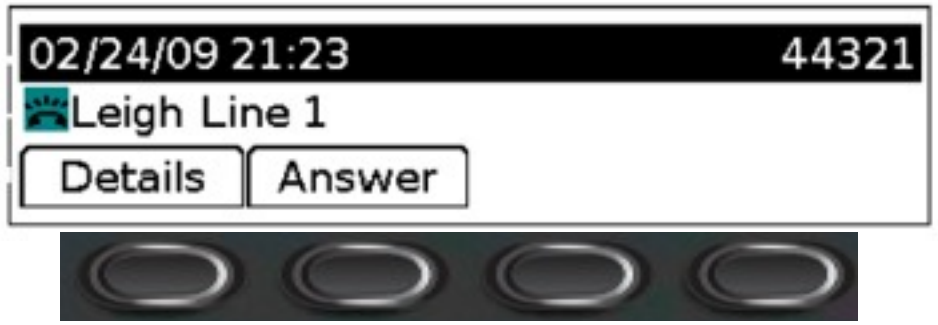
Cisco Unified IP Phone 6900 Display

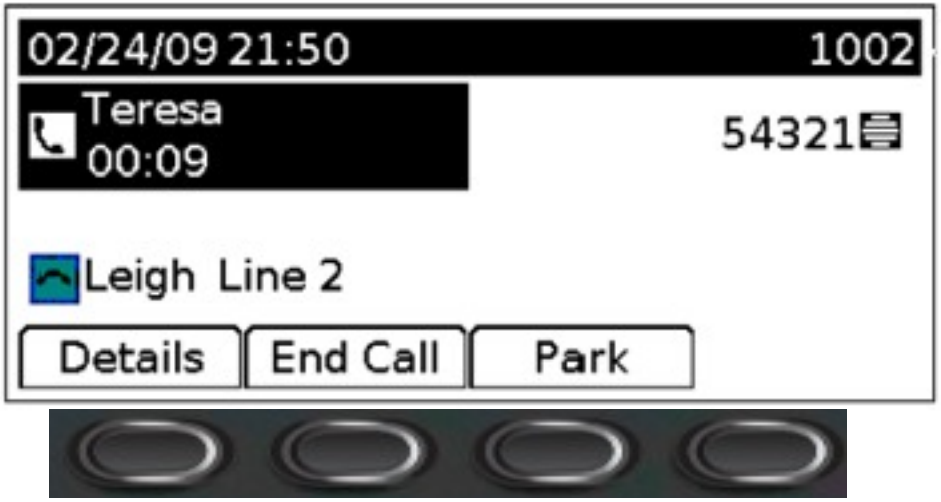
6921 and 6961 has smaller display showing only one line or other status information

6921/6961 Display



6941 has bigger display that can show multiple lines

6941 Display



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Configuration

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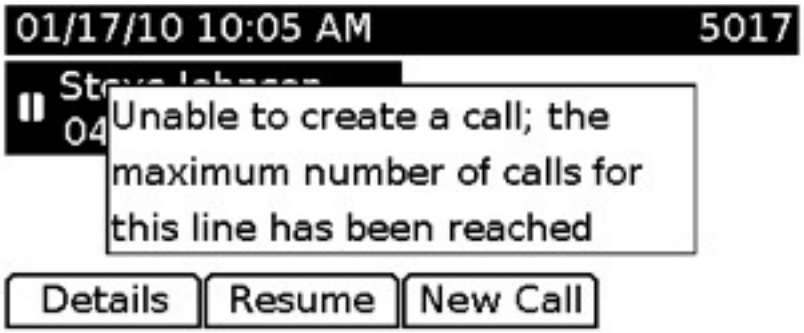
Best Practice Configuration for 6900

- Scenario 1: Kathy received a 6921/41 to replace her 7960. The 6921/41 is configured with one line. She is on a speaker phone call with Steve. She puts Steve on hold and presses the speakerphone button again to initiate a new call. She gets error:



- Solution: The IT Administrator needs to configure an additional line on

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Best Practice Configuration for 6900 Rollover Recommended

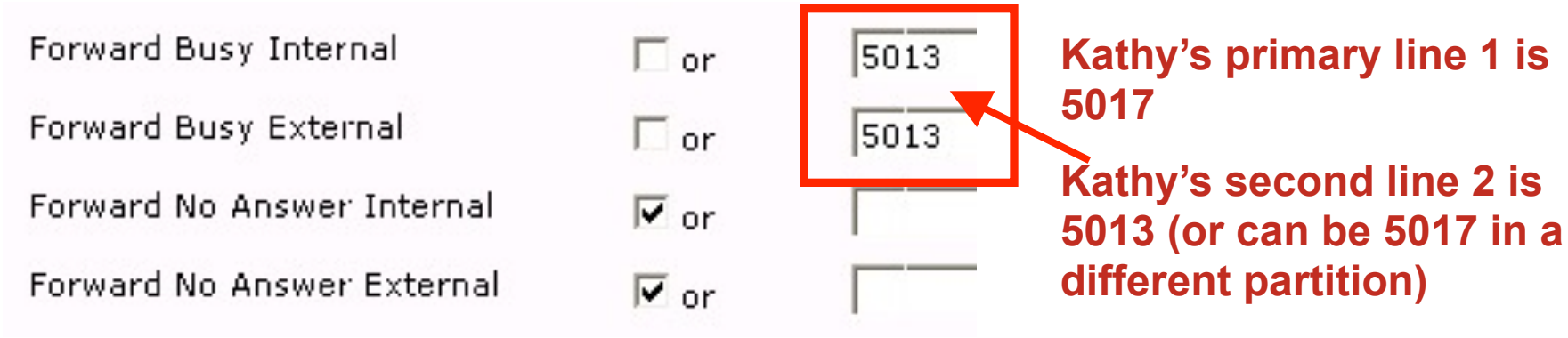
- Scenario 2: Kathy is on call with Steve. Kathy has only one line. Tom calls Kathy. Tom gets Busy or voicemail without Kathy being aware.

Multiple Call/Call Waiting Settings on Device SEP0026CBA7CFDD

Maximum Number of Calls and Busy Triggers per Line are:

Maximum Number of Calls	2
Busy Trigger	1

- Solution: IT Admin needs to have busy calls rollover to second line on Kathy's phone. Kathy's will hear call waiting beep and Tom's call will rollover to line 2.



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Best Practice Configuration for 6900
Shared Lines Scenarios

- Scenario 3: Kathy is on call with Steve. Kathy has a shared line to 7900/8900/9900. Tom calls Kathy. Kathy does not see inbound call but 7900/8900/990 shared line rings.
- Rollover when busy on 2nd Ring will not work because 7900 rings

  1st Phone Call to Kathy – Both Phones Ring – Call is answered by Kathy

  2nd Phone Call to Kathy- Only 7900/8900/9900 Rings – Call is answered on shared line

  3rd Phone Call to Kathy – Neither Phone Rings - Call Forwards to VoiceMail or does rollover to Kathy's second line. Second line no answer forwards to VoiceMail.

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Cisco Unified IP Phone 8900/9900
Sample configuration Model Differences

- No LCD Video Capabilities for 8900 (except future video streaming)
- CUVA for 8900 = Target 2HCY2010
- CUVA for 6900 = Target 2HCY2010

Back USB 9951/9971

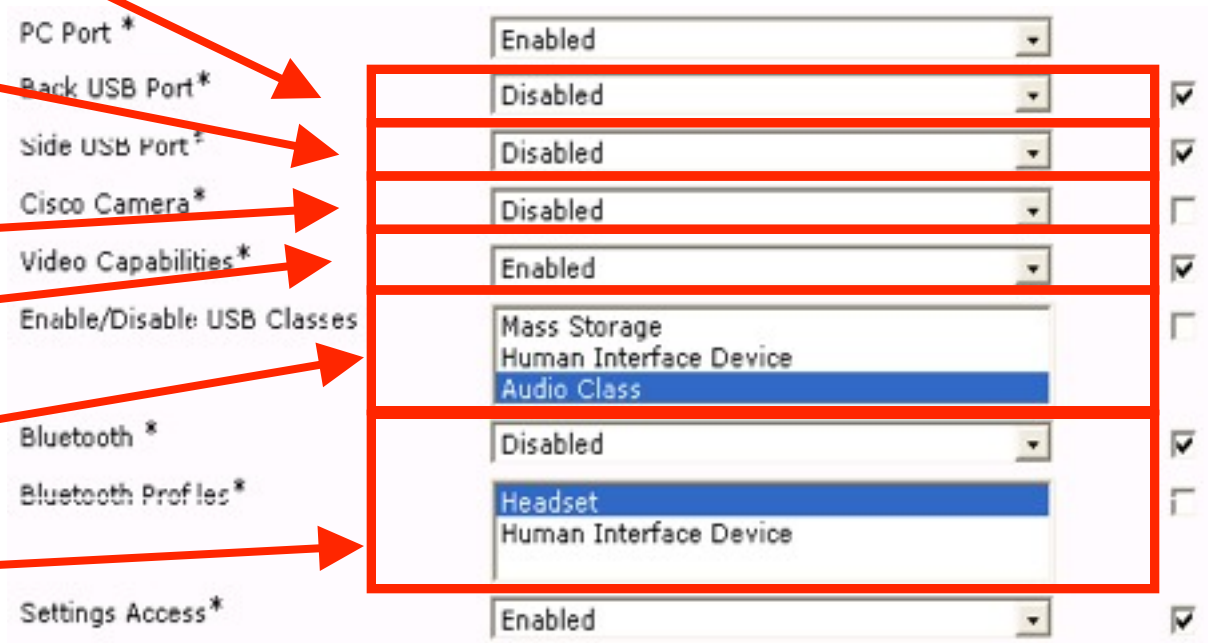
Side USB 8961/9951/9971

Camera 9951/9971

LCD Video 9951/9971

USB Classes 8961/9951/9971

Bluetooth 9951/9971



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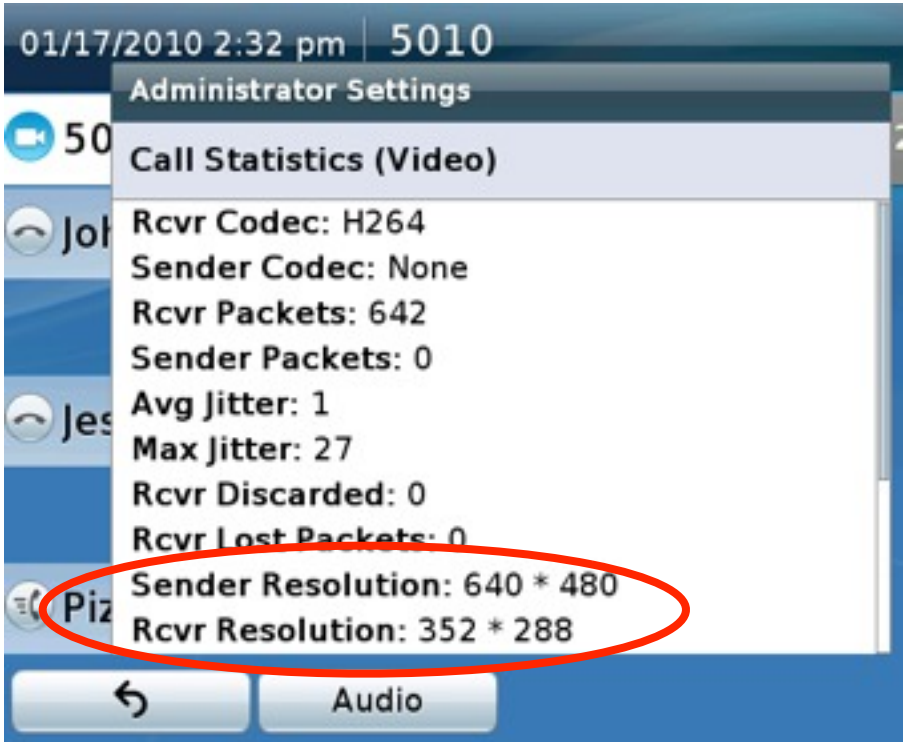
Cisco Unified IP Phone 9951 & 9971
Configuring Video (Point-to-Point)

- Point-to-Point video supported on 9951/9971 LCDs – even one-way
- Same methods used today for 7985g, CIPC/CUVA, etc.
- Call Statistics are built into 9951/9971: we are sending 640x480 below
- Make sure “video capability” is enabled on CUCM for 9951/9971

Point-to-Point

Video Statistics Built into Phone



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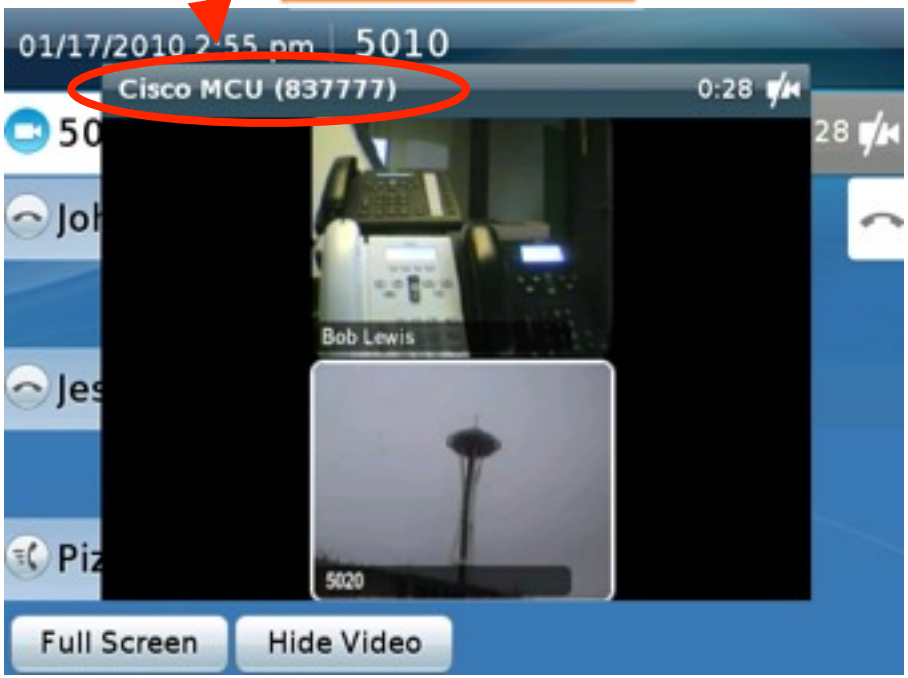
Cisco Unified IP Phone 9951 & 9971
Configuring Video Conferencing

- Using Conference Button is always preferred for CUCM directly attached endpoints. Must have CUVC MCU SCCP + Conf Bridge/MRG on CUCM.
- Use can run H.323 trunk from CUCM to Gatekeeper and dial digits. This is preferred for conferencing in 3rd party endpoints
- You can do both Conference & H.323 on the same CUVC at the same time

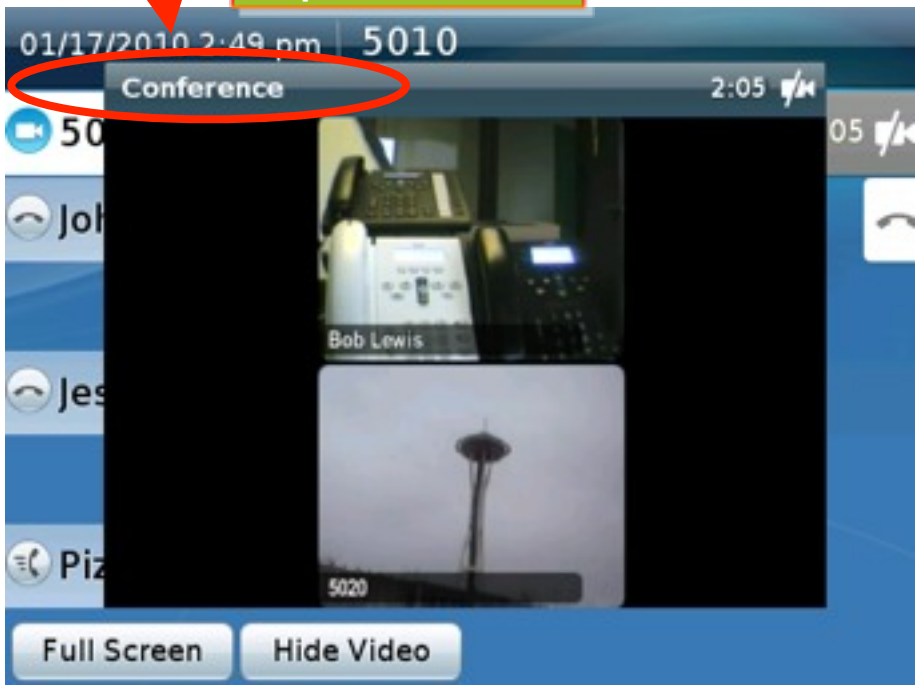
Dial Direct into MCU Bridge

Requires MCU



Use Conference Button on Phone

Requires CUVC



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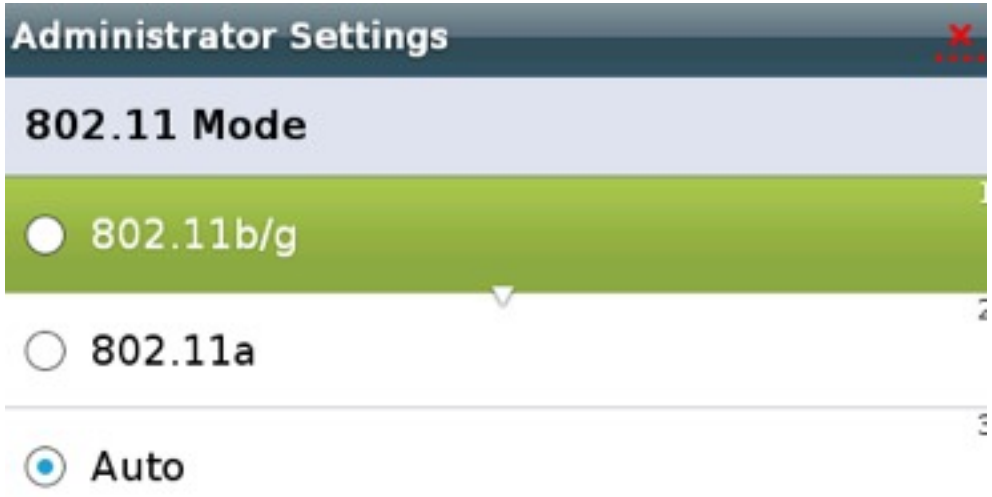
Cisco Unified IP Phone 9971
Configuring 9971 Wireless

- Users cannot connect a PC to the PC port of phone for network access
- Disconnect network port on the back of the phone for wireless to work
- Phone will switch to wired connection if network port is connected
- Phone must be powered by an external power source (No PoE). Given that, the WLAN could be a “backup” if the LAN fails – approximately 30 seconds to switch
- There are known issues of interference between 2.4 GHz wireless and Bluetooth Coexistence of Bluetooth and 802.11b/g is possible, but call capacity might be reduced. Multicast Music on hold in coexistence mode not supported
- Firmware downloads might be slower than expected
- Emergency Responder tracks Wireless Phones by IP address
- Wireless Access Density Needs to be Considered



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