

TOMORROW starts here.



Cisco *live!*

Cisco Unified Communications and Microsoft Integrations

BRKCOL-2020

Tobias Neumann

Technical Solutions Architect

Cisco Interoperability with Microsoft

Disclaimer

The Cisco products, service or features identified in this document may not yet be available or may not be available in all areas and may be subject to change without notice. Consult your local Cisco business contact for information on the products or services available in your area.

You can find additional information via Cisco's World Wide Web server at <http://www.cisco.com>. Actual performance and environmental costs of Cisco products will vary depending on individual customer configurations and conditions.

Cisco Interoperability with Microsoft

Abstract – It's about Collaboration ...

This intermediate-level session provides attendees with a detailed understanding of the **Cisco Unified Communications solution** when **integrating and interoperating** with **Microsoft**. Related technologies are treated, including call control, presence, unified communications security, TelePresence, and rich media applications. This session is for people involved with the planning and implementation of unified communications solutions and those involved in strategic decision making for selecting unified communications solutions. Attendees should have a good understanding of the Cisco Unified Communications high-level architecture and a basic understanding of the Microsoft product set.

Content: Cisco Unified Communications products and how they're related and/or interfaced with Microsoft products. Detailed explanation of migration and deployment scenarios. Things to keep in mind before you deploy.

Audience: People who are involved with the planning and implementation of unified communications solutions. Individuals involved in strategic decision making for selecting unified communications solutions.

Pre-requisites: Good understanding of Cisco Unified Communications high level architecture. Basic understanding of Microsoft product set.

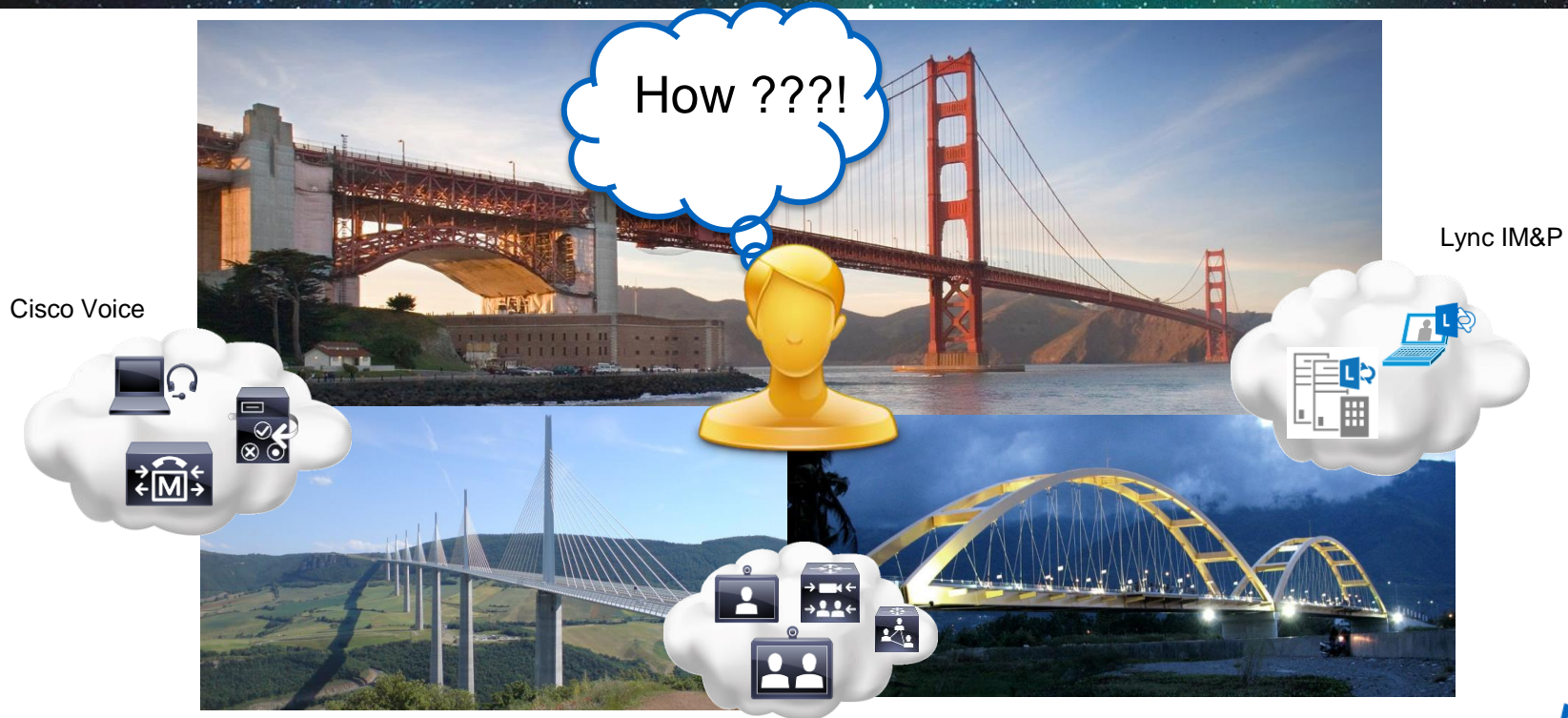
Cisco Interoperability with Microsoft

Agenda

- What customers are faced with today
- Architecture Microsoft Lync
 - Lync 2010 specifics
 - Lync 2013 specifics
- Customer Use Case
 - Audio Interoperability – Plus or “Voice” CAL required
 - Video
- Client and application level interoperability
- Question and Answers
- Closing

What Customers are Faced with Today...

Islands of collaboration

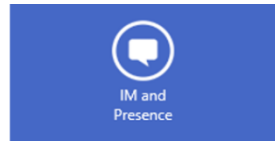




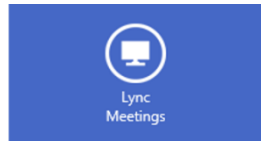
Architecture Microsoft Lync 2010/Lync 2013

Microsoft Lync

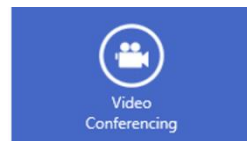
Architecture Overview



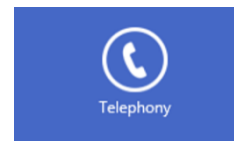
IM and
Presence



Lync
Meetings



Video
Conferencing



Telephony

Communication
Modalities



Many moving
parts



Additional 3rd
party components

Microsoft Lync

Interoperability and Specifics Lync 2010 / Lync 2013

- Audio:
 - Mediation Server (Enterprise Voice)
 - Remote Call Control (RCC)
- Instant Messaging and Presence:
 - SIP/SIMPLE Federation
 - XMPP Federation

For Microsoft Lync 2010 and Office Communication Server 2007 via a separate OCS 2007 R2 XMPP Gateway.

For Microsoft Lync 2013 via the XMPP Proxy (Edge), XMPP Gateway (Front-End)

Microsoft Lync

Video Interoperability and Specifics Lync 2010

- Point to Point video call:
 - Uses the RTVideo codec as default - CIF, VGA and HD (with Quad Core CPU) as possible resolutions
 - Single codec supported for interoperability with standard VC is H263 (Max resolution is CIF @ 15fps)
- Multipoint video call using Internal A/V MCU:
 - Support only RTVideo codec
 - Support CIF and VGA as resolutions (No HD)
 - Support only Voice Activated Switching (no Continuous Presence)
 - Utilise Microsoft CCCP as proprietary protocol to create, extend and manage the Multi Party Video Conference.

Microsoft Lync

Video Interoperability Specifics Lync 2013

- Microsoft/Polycom H.264 SVC (UCIF) and RTvideo supported, **support for H.263 discontinued**, H.264 SVC more CPU intensive
- H.264 AVC Baseline Profile support for Interop
- Up to 1080p HD multi-party and point-to-point video
- Up to 5 users continuous presence (most active participants and/or pinning) – HD Pictures for the others...
- Dynamic layouts: **Gallery View**, Speaker View, Presentation View, Compact View

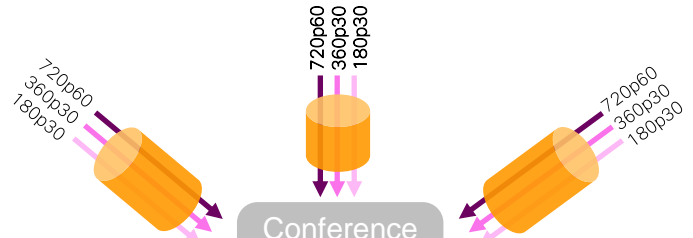
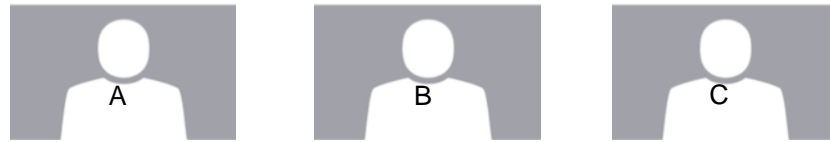


An Introduction to SVC

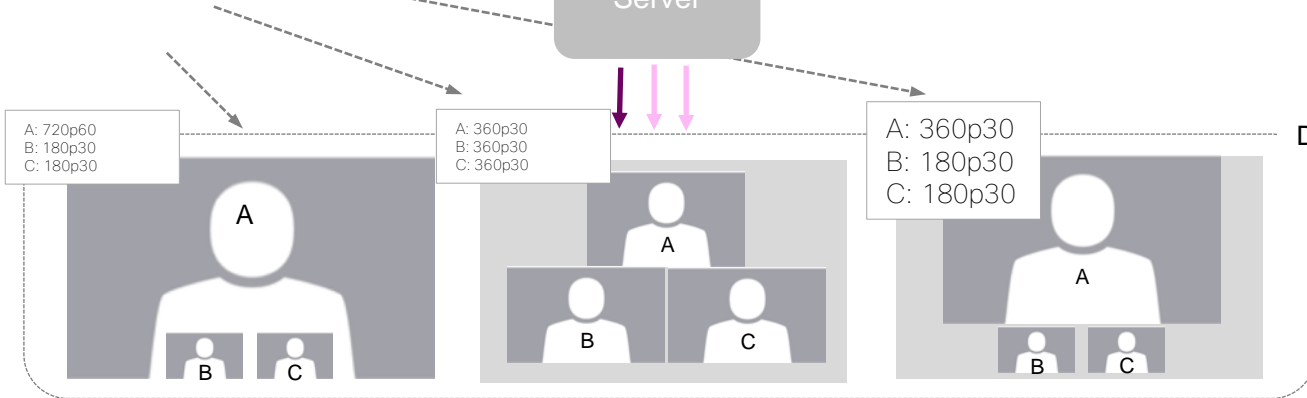
H.264 SVC Introduction

- SVC = Scalable Video Coding
 - Encodes the same source in multiple qualities, where each quality is a separate video streams.
- Reasonably loose standard today (still maturing)
 - Each vendor that has adopted SVC has implemented it differently
 - No interoperability can be assumed between SVC implementations
- H.264 SVC Modalities
 - **Temporal:** Frame rate scalability
 - **Spatial:** Resolution scalability
 - **SNR/Quality/Fidelity:** Single spatial resolution but different qualities (Bitrate)
 - **Combined:** A combination of any of the 3 modalities explained before

Local Composited Layout



The end user chooses the layout he/she desires

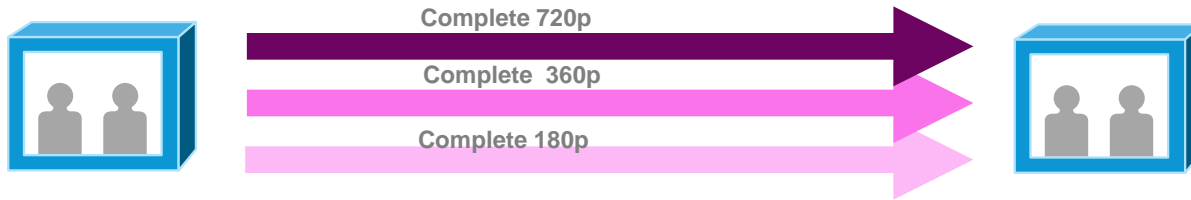


Main Benefits

- Conference server switches, not transcodes
- Layouts are independent to each user without impacting load on the conference server
- Bandwidth is used efficiently

Simulcast SVC

- Simulcast SVC is Spatial Scaling without interlayer dependencies
 - Each resolution layer is a complete H.264 AVC stream
- Example of Simulcast SVC

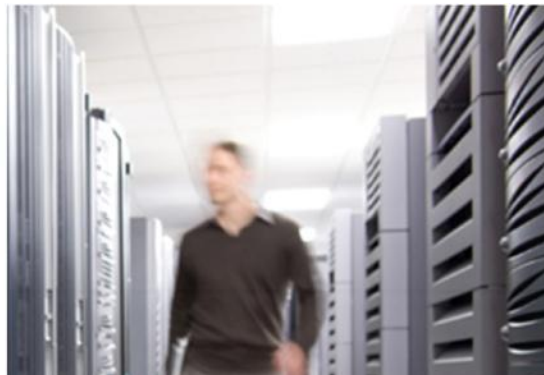


- Both Cisco & Microsoft are implementing this scenario for SVC

Driving Standards & Interoperability

Enabling Pervasive Intra-enterprise & B2B Video Collaboration





Audio vs. Video Routing, Let's make some noise...

Customer Use Case

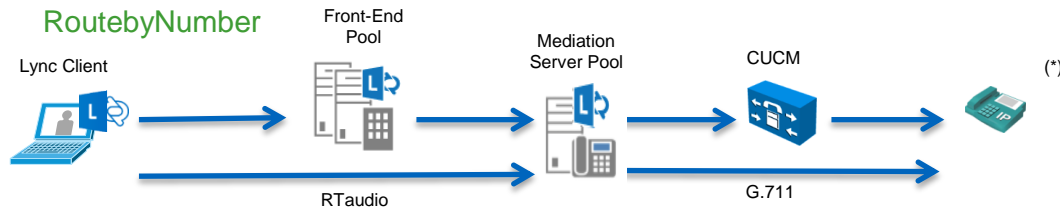
The basic routing challenge...

Microsoft Lync 2010 utilise a fundamentally different architecture for routing calls



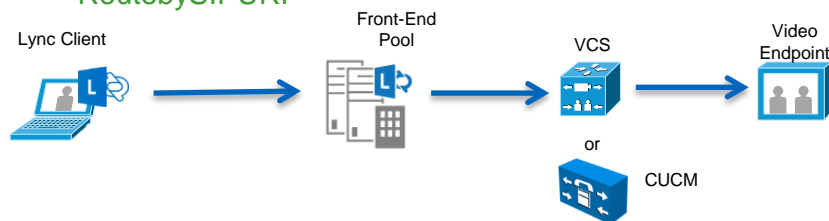
Alice

If (UserLicense == PlusCal && calltype == ENTERPRISE_VOICE) then



else /* call type is audio/video */

RoutebySIPURI

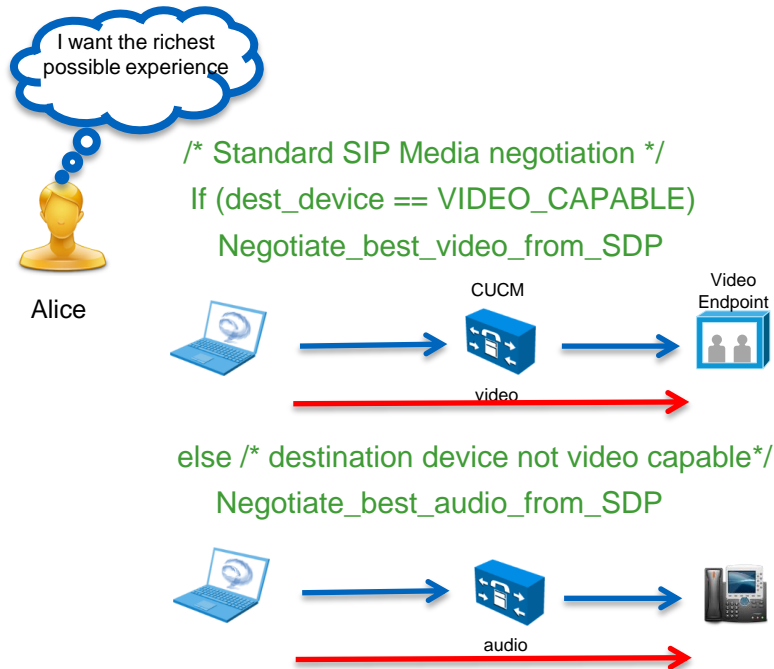


*Example shows call flow without media bypass, similar flow possible with media bypass (consider caveats).

Customer Use Case

The basic routing challenge...

Routing voice and video calls with Cisco UCM or VCS

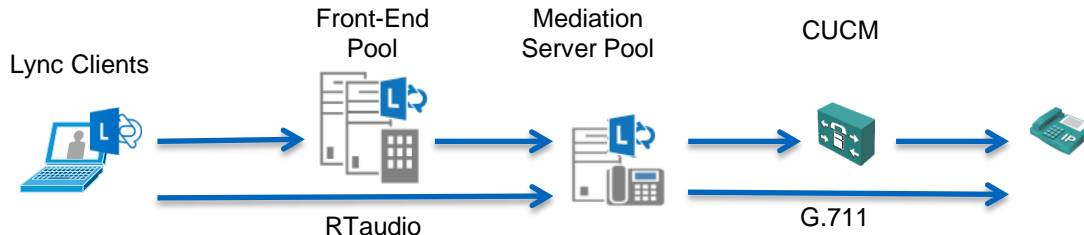


- With Lync the user has to decide whether to do an audio or video call
- No indication in Lync 2010 what capabilities the destination offers (changed in Lync 2013)
- Cisco UCM & VCS automatically establish the richest media path possible (no difference in routing by number or SIP URI).
- Different routing paths and functionalities on Lync create “interesting” interoperability scenarios...

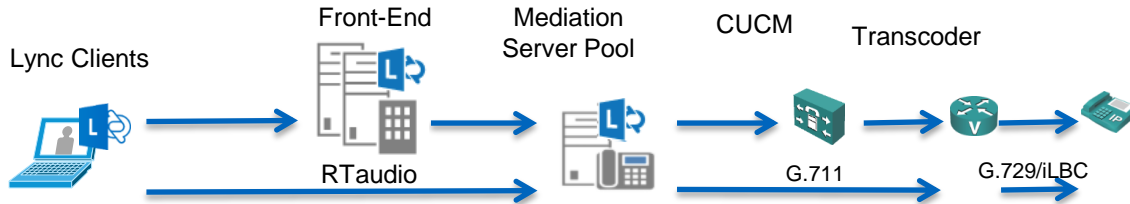
Customer Use Case

SIP Trunk / Direct SIP Options 1/2

OCS 2007 / Lync 2010 (no media bypass)



OCS 2007 / Lync 2010 (no media bypass), none G.711 on IP-PBX



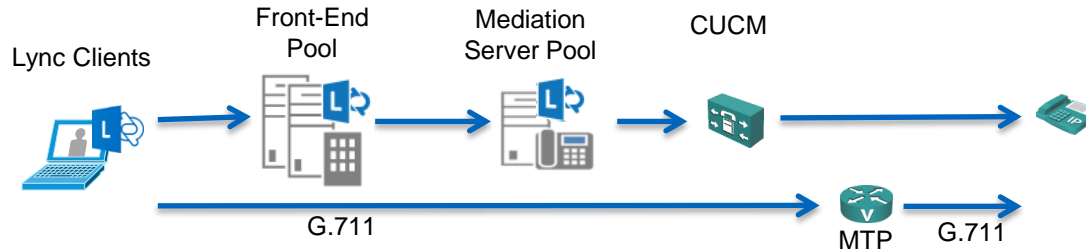
- The two call flows above show the signalling and media paths in a SIP-trunk interoperability scenario.
- Lync Mediation Server ONLY supports G.711, requires additional transcoding resource if any other codec is used in such a scenario.

With CUCM 8.x and above a MTP is not required in this configuration.

Customer Use Case

SIP Trunk / Direct SIP Options 2/2

Lync 2010/Lync 2013 (with media bypass)

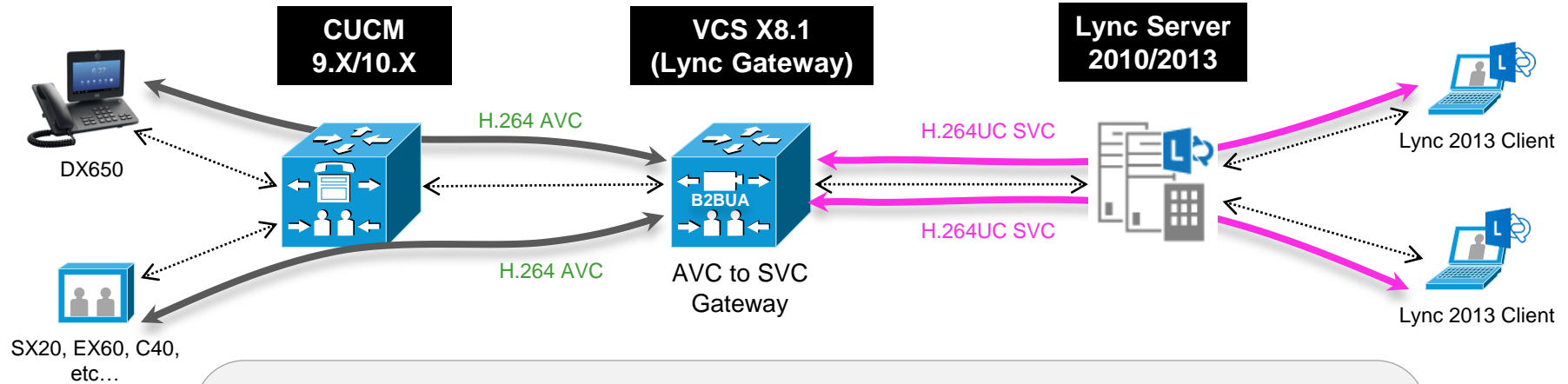


- With the introduction of Media Bypass in Lync 2010 the Lync client can initiate direct G.711 not requiring media to be transcoded in the Mediation Server.
- Signalling still has to flow via the Mediation Server.
- **Media Bypass mandatorily requires all media to come from a single IP address. Which is the reason why a MTP has to be inserted into this scenario.**



Audio & Video Interoperability

Video Interoperability through VCS X8.1



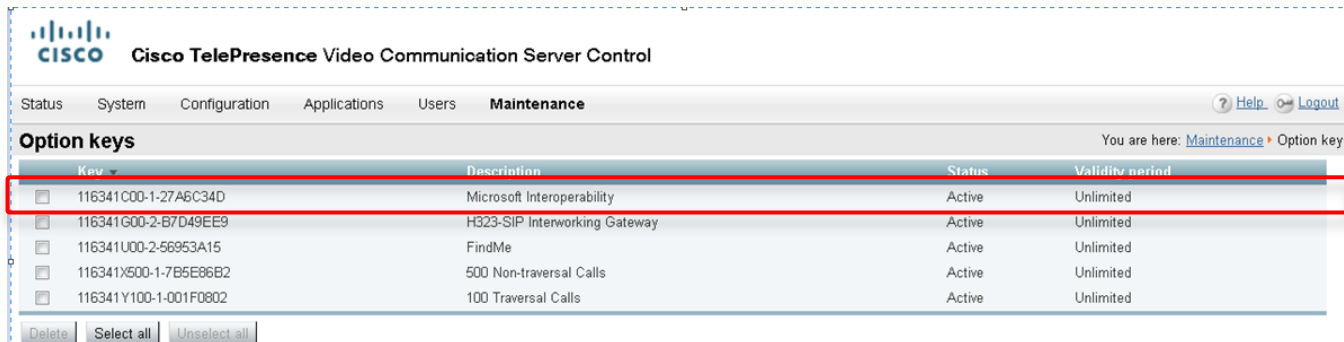
Features:

- Interworking calls between standard H.264 AVC and H.264 UC-SVC codec up to 720p@30fps
- Both CUCM and VCS supported as Call Control
- Cisco and 3rd party endpoint supported (VCS only)
- End to End Encryption
- Lync remote access through Edge
- Mixed Conferences are possible using Cisco conferencing resources only
- Desktop Sharing from Cisco Devices toward Lync is supported

Video Integration – VCS and B2BUA Service

VCS X7.x introduced the concept of **Back to Back User Agent (B2BUA)**:

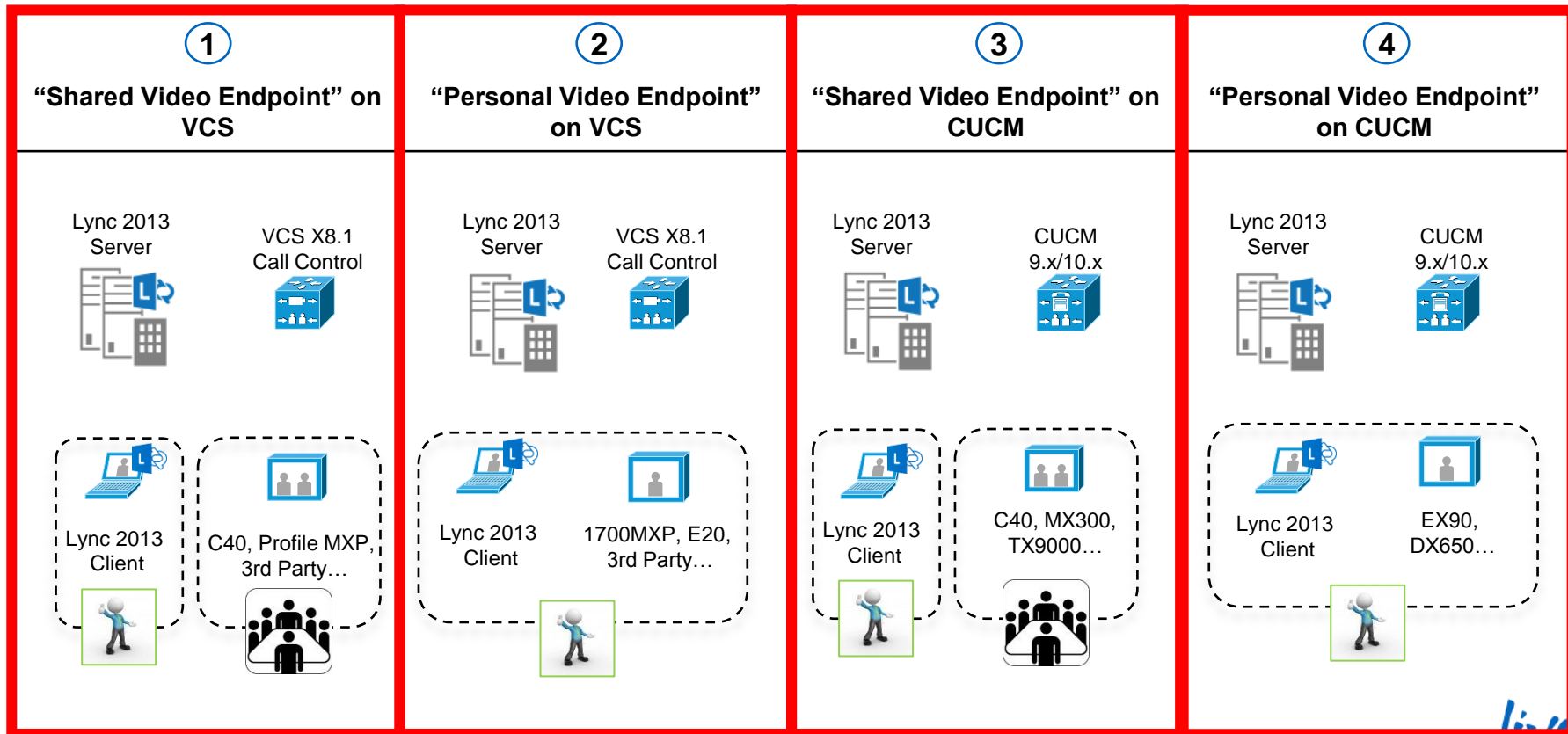
- Service running only on the “Lync Gateway” VCS
- Translate between Standard based and Lync specific SIP signalling
- Media (RTP) **always passes through VCS**, also with Lync 2013
- Legacy configuration without B2BUA has been **removed in X8.1**
- VCS requires now the **Microsoft Interoperability option key** for all types of communication with Lync



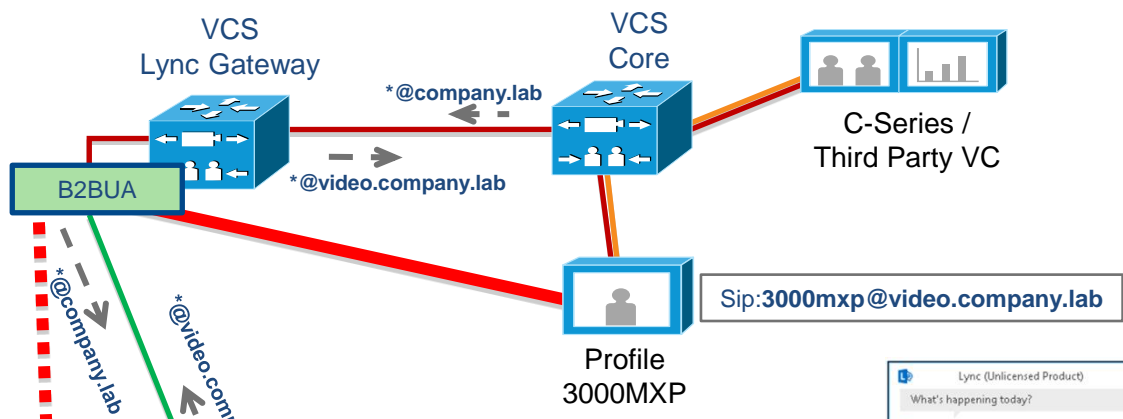
The screenshot shows the Cisco TelePresence Video Communication Server Control interface. The 'Option keys' section is active, displaying a table of configuration options. The first row, 'Microsoft Interoperability', is highlighted with a red box. Below the table are buttons for 'Delete', 'Select all', and 'Unselect all'.

Key	Description	Status	Validity period
<input type="checkbox"/> 116341C00-1-27A6C34D	Microsoft Interoperability	Active	Unlimited
<input type="checkbox"/> 116341G00-2-B7D49EE9	H323-SIP Interworking Gateway	Active	Unlimited
<input type="checkbox"/> 116341U00-2-56953A15	FindMe	Active	Unlimited
<input type="checkbox"/> 116341X500-1-7B5E86B2	500 Non-traversal Calls	Active	Unlimited
<input type="checkbox"/> 116341Y100-1-001F0802	100 Traversal Calls	Active	Unlimited

Point to Point Use Case

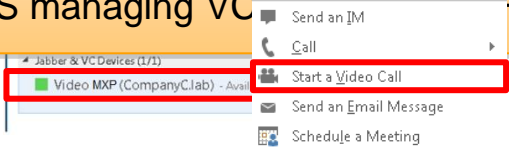


1 Shared Video Endpoint on VCS – The Solution



Why is still needed a dedicated “Lync Gateway” VCS ?

- Single point of configuration (“Gateway” concept)
- Single point to update for further enhancement / bug fixes
- Reduce load on Core VCS managing VC’s, Presence & FindMe



- SIP
- H.323
- Microsoft SIP
- Media H264 AVC
- Media H264 UC SVC

Calling VCS Video Devices from the Lync Client UI

- For each “shared” Video Room a contact can be created in AD to permit Lync users to search for and call this resource
- A specific AD attribute must be populated with the Video Device’s Sip URI

The image consists of three screenshots illustrating the configuration and use of a VCS Video Device in the Lync Client UI.

Left Screenshot: Video C60Milan Properties
This is a Windows Properties dialog box for a contact named "Video C60Milan". The "General" tab is selected. The "Display name" field is highlighted with a red box and contains the text "Video C60 (CompanyC.lab)". A red arrow points from this field to the contact list in the middle screenshot.

Middle Screenshot: Lync (Unlicensed Product) Contact List
This screenshot shows the Lync client's contact list. Under the "Jabber & VC Devices (1/1)" group, a contact named "Video C60 (CompanyC.lab) - Available" is listed. A red arrow points from this contact to the call initiation button in the right screenshot.

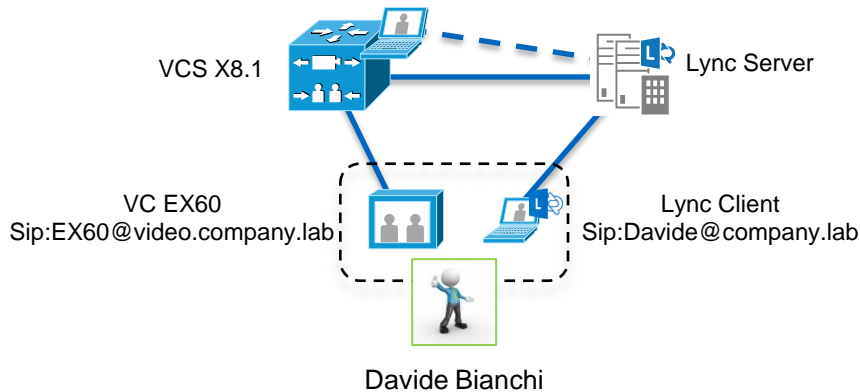
Right Screenshot: Lync (Unlicensed Product) Call Initiation
This screenshot shows the Lync client's main interface. A red box highlights the "Start a video call with c60milan@video.companyc.lab" button. A red arrow points from the "Video C60 (CompanyC.lab) - Available" contact in the middle screenshot to this button.

② Personal Video Endpoint on VCS – The Solution

Requirements for this use case:

- Single Identity – Single AD contact to identify Lync client and Video Endpoint
- Call Forking – A call to the Identity Alias should ring also the Video Endpoint on VCS
- Presence - Status of the video endpoint should be reflected into Lync User's Presence

Solution – The *“FindMe”* feature on the VCS Lync Gateway



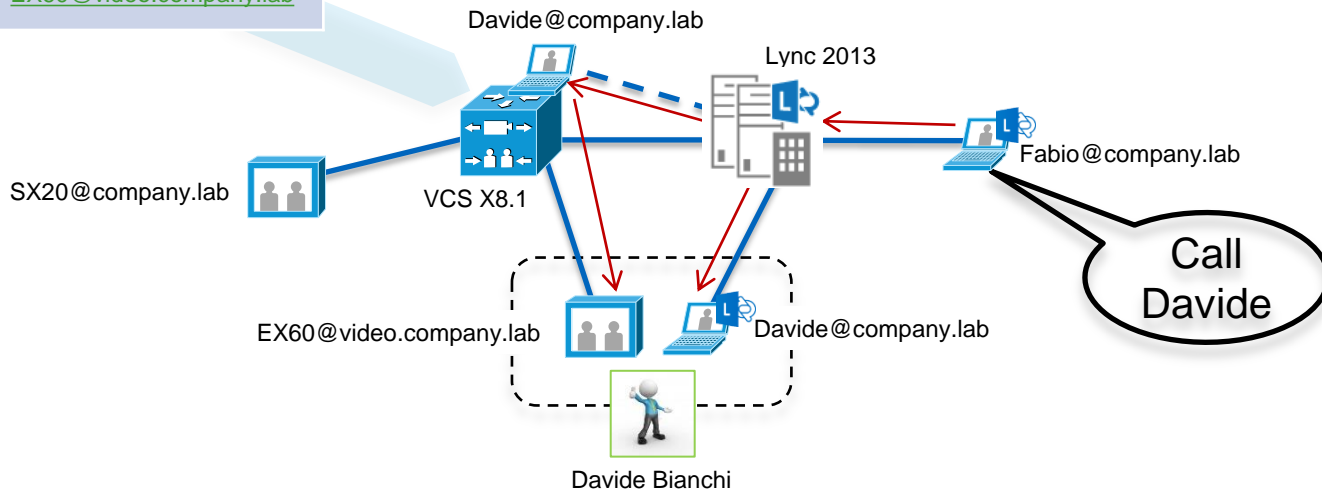
- 1 FindMe Alias: [Davide@company.lab](#)
Associated device: [EX60@video.company.lab](#)

- 2

Capabilities	
Register FindMe users as clients on Lync	Yes <input type="button" value="i"/>
Lync domain	company.lab <input type="button" value="i"/> Configure SIP domains

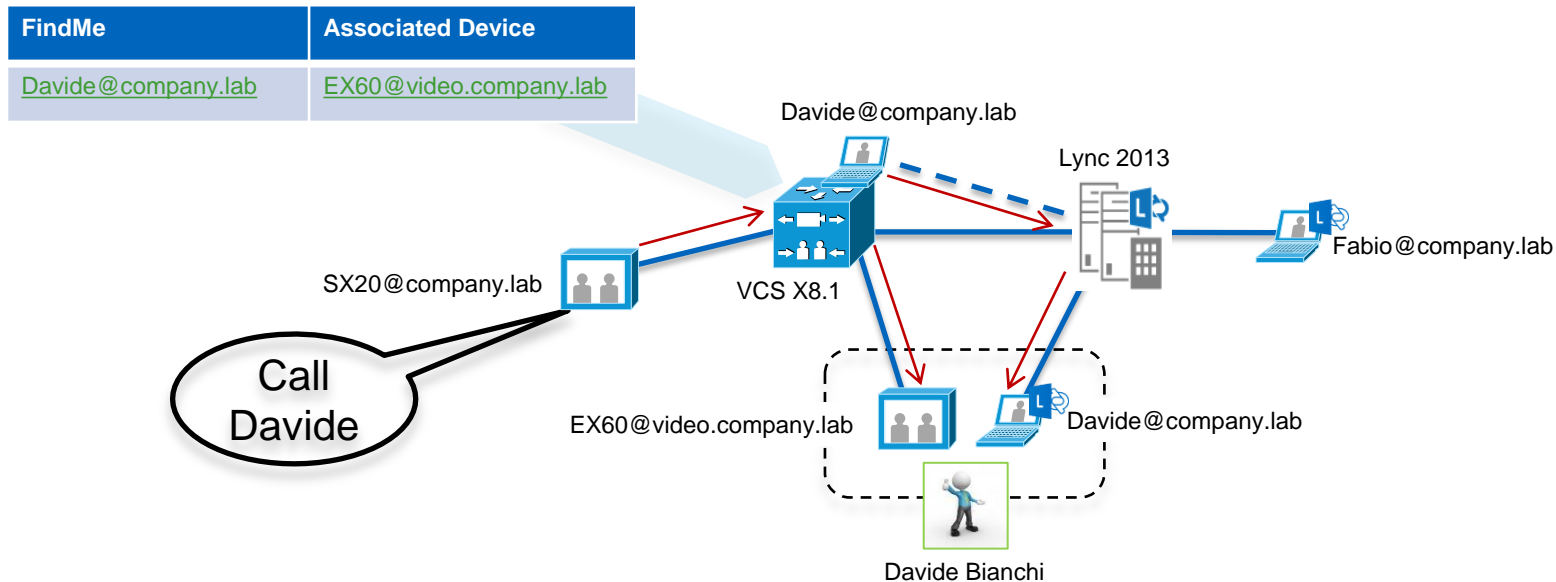
② Personal Video Endpoint on VCS - Lync to Lync call

FindMe	Associated Device
Davide@company.lab	EX60@video.company.lab



1. Fabio calls Davide on his main identity alias (Davide@company.lab)
2. The Call from Lync side is redirected to VCS using Findme virtual registration
3. Findme Forks the call to the EX60 device
4. Davide's EX60 and Lync client ring at the same time

② Personal Video Endpoint on VCS – VCS to Lync call

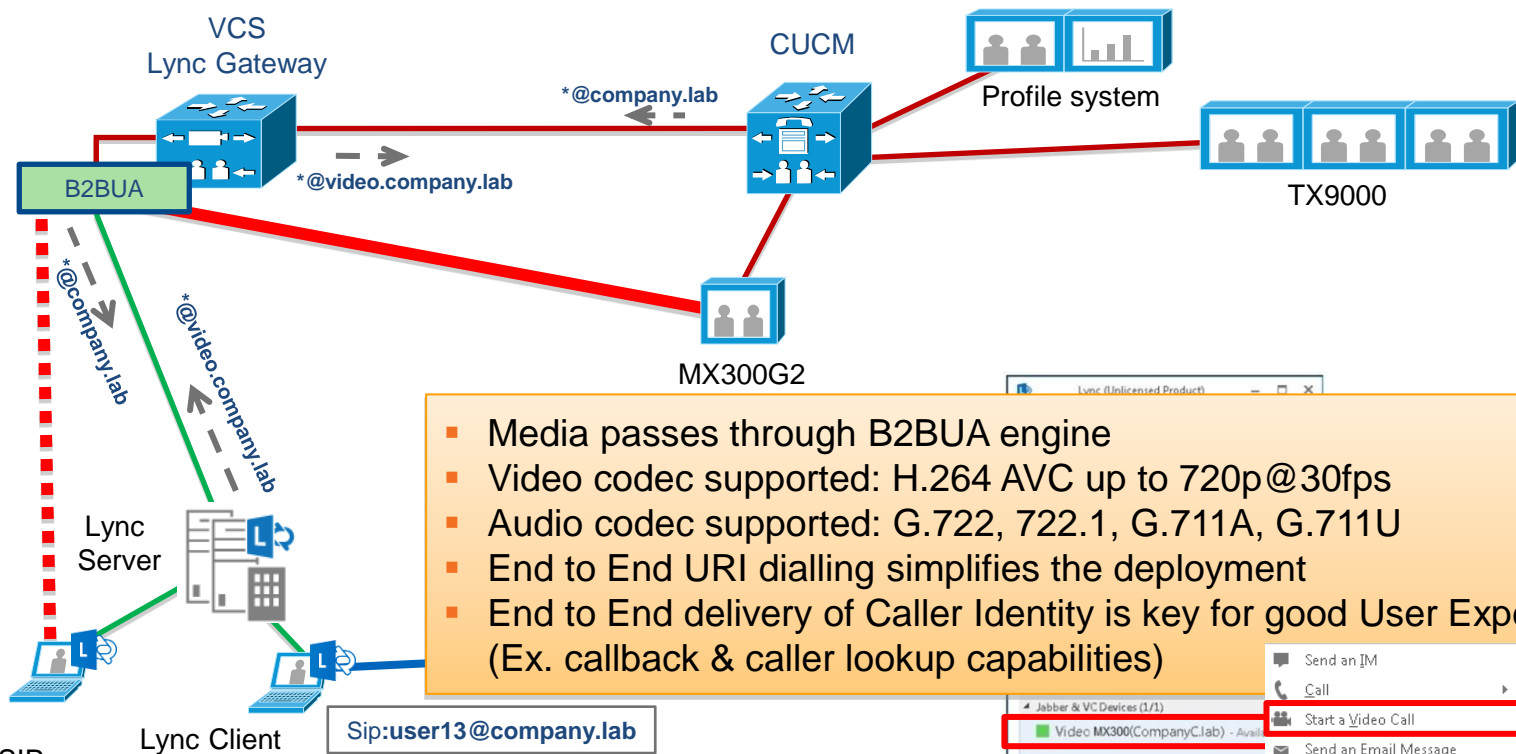


1. Fabio calls Davide on his main identity alias (Davide@company.lab)
2. Findme Forks the call to the EX60 device
3. Calls from VCS side are redirected to Lync using Findme virtual registration
4. Davide's EX60 and Lync client ring at the same time

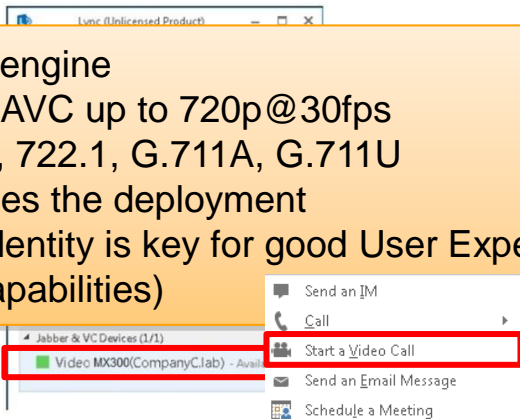
FindMe – Additional Info

- SIP Trunking alone provides **Basic Presence** (Offline/Online)
- Use of “FindMe” is mandatory to see **Enhanced Presence** in Lync (“In a call” status)
- FindMe **supports max 10K** users per cluster
- FindMe provides Call forking for Personal VC paired with Lync Client
- FindMe can also be used for Shared VC Room if Enhanced Presence is needed
- Findme **Proxies** VC’s registration into Lync acting as a “Virtual” Lync client:
 - Personal VC – Lync User already defined so no need for additional Lync license
 - Shared VC – A new Lync User must be defined and enabled so additional Lync license are needed

3 Shared Video Endpoint on CUCM – The Solution



- Media passes through B2BUA engine
- Video codec supported: H.264 AVC up to 720p@30fps
- Audio codec supported: G.722, 722.1, G.711A, G.711U
- End to End URI dialling simplifies the deployment
- End to End delivery of Caller Identity is key for good User Experience (Ex. callback & caller lookup capabilities)



- SIP
- Microsoft SIP
- Media H264 AVC
- - - Media H264 UC SVC

Assigning Alpha URIs to a CUCM Video Endpoint

- All endpoints still register with a DN (numeric address) as unique identity
- Up to 5 alpha URIs can be associated with any DN
- One alpha URI is marked as primary and is sent together with DN as caller Identity
- Some legacy endpoints might not support URI dialling
- For Additional info on Dial Plan:
 - BRKUCC-2008 (Enterprise Dial Plan Fundamentals)
 - BRKUCC-3000 (Advanced Dial Plan Design for Unified Communications Networks)

Directory Number Information

Directory Number* \+390396291034

Route Partition < None >

Description

Alerting Name Fabio Chiesa

ASCII Alerting Name Fabio Chiesa

Active

Directory URIs

Primary	URI
<input checked="" type="radio"/>	fchiesa@video.company.lab
<input type="radio"/>	
<input type="radio"/>	
<input type="radio"/>	
<input type="radio"/>	

Alpha URI automatic provisioning on CUCM

- “Directory URI” field can be defined on end-user page
- “Directory URI” field can also be synced from LDAP directory (see reference slides for more info)
- If the Primary extension of the user is set, the Directory URI value is automatically assigned to the DN as **Primary URI**
- Partition “Directory URI”; can not be changed/deleted (see reference slides for more info)

End User Configuration

Save Delete Add New

User Information

User Status	Active LDAP Synchronized User
User ID*	fchiesa
PIN
Confirm PIN
Last name*	Chiesa
Middle name	
First name	Fabio
Directory URI	fchiesa@video.company.lab
Telephone Number	+4961007739764
Mail ID	fchiesa@video.company.lab
Manager User ID	
Department	Europe

Directory Number Associations

Primary Extension	\+4961007739764 in DN
-------------------	-----------------------

Directory Number Configuration

Save Delete Copy Reset Apply Config Add New

Status

Status: Ready

Directory Number Information

Directory Number*	\+4961007739764
Route Partition	DN
Description	

Directory URIs

Primary	URI	Partition
<input checked="" type="checkbox"/>	fchiesa@video.company.lab	Directory URI

Syncing Directory URI from AD

- Enduser Directory URI field can be synced from LDAP directory
- Standard LDAP attributes
 - msRTCSIP-primaryuseraddress
 - mail
- Syncing Directory URI from LDAP also triggers automatic creation of alpha URI on DN (assuming device association)

Standard User Fields To Be Synchronized			
Cisco Unified Communications Manager User Fields	LDAP Attribute	Cisco Unified Communications Manager User Fields	LDAP Attribute
User ID	sAMAccountName	First Name	givenName
Middle Name	middleName	Last Name	sn
Manager ID	manager	Department	department
Phone Number	telephoneNumber	Mail ID	mail
Directory URI	msRTCSIP-primaryuseraddress		
	msRTCSIP-primaryuseraddress		
	mail		
	none		

Note: Custom User Field Names must be same across all synchronization agreements.

Directory URI Partition Alias



- Autogenerated directory URIs are in partition “Directory URI”
- “Directory URI” partition is predefined and can not be changed/deleted
- To be reachable this partition needs to be member of calling identity’s CSS
- An already existing partition can be defined as alias for “Directory URI” partition
→ URIs in Directory URI partition can be reached by all CSSes which have the alias partition
- Good candidate: already existing DN partition

A screenshot of the Cisco Enterprise Parameters Configuration web interface. The title bar reads "Enterprise Parameters Configuration". Below the title bar are four buttons: "Save", "Set to Default", "Reset", and "Apply Config". The main content area is titled "End User Parameters" and contains a dropdown menu labeled "Directory URI Alias Partition" with the value "DN" selected.

Enterprise Parameters Configuration

Save Set to Default Reset Apply Config

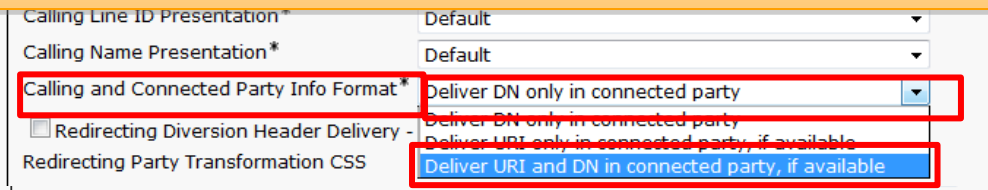
End User Parameters

Directory URI Alias Partition DN

URI Dialling & Identity Delivery from CUCM towards Lync (1/2)

- Caller identity has the format “UserID@Sip_Domain” (Ex. Alice@video.company.lab)
- Policy on CUCM-VCS trunk **definition** to specify **info sent** as caller ID
- Default: “DN only...” (send only extension number assigned to the device)
- Recommended: “Deliver URI and DN...” (send **both** Primary Directory URI & DN)

...But what about the Sip_Domain portion of the identity alias?



The screenshot shows a configuration interface for CUCM. The 'Calling and Connected Party Info Format*' dropdown menu is highlighted with a red box and set to 'Deliver DN only in connected party'. Below it, the 'Redirecting Party Transformation CSS' dropdown menu is also highlighted with a red box and set to 'Deliver URI and DN in connected party, if available'. Other visible fields include 'Calling Line ID Presentation*' (Default), 'Calling Name Presentation*' (Default), and 'Redirecting Diversion Header Delivery' (unchecked).

URI Dialling & Identity Delivery from CUCM towards Lync (2/2)

- Caller identity should have the format “UserID@Sip_Domain” (Ex. Alice@video.company.lab)
- Policy on CUCM-VCS trunk **SIP Profile** to specify **Sip_Domain** format
- Default: «not flagged» (send IP address of CUCM as “domain” – like *UserID@10.58.9.1*)
- Recommended: «flagged» (send alphanumeric string as “domain”)
- Final result is that the complete Primary Directory URI address will be sent

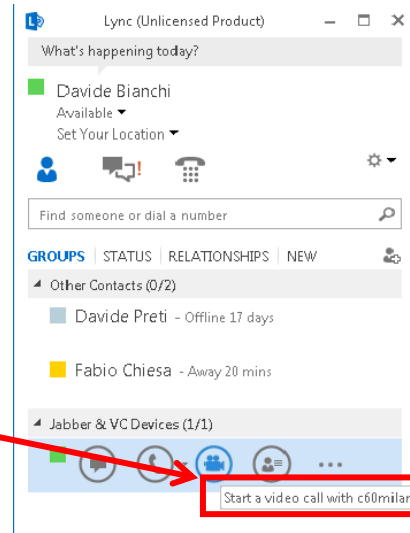
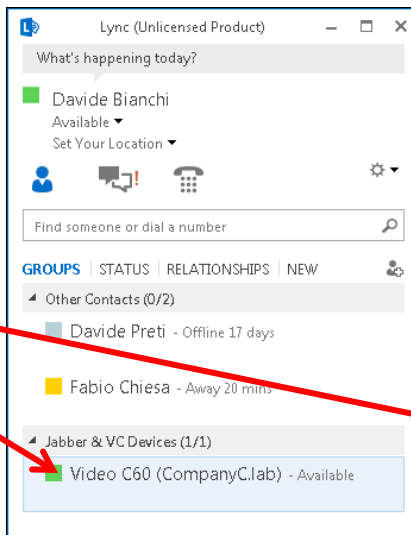
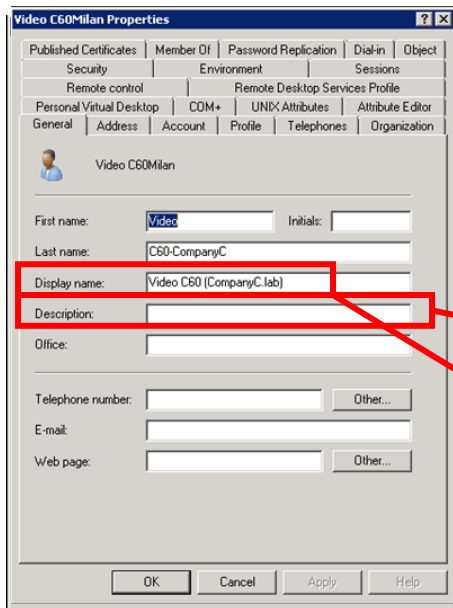
SIP Profile Information	
Name*	BFCP SIP profile
Description	
Default MTP Telephony Event Payload Type*	101
Early Offer for G.Clear Calls*	Disabled
SDP Session-level Bandwidth Modifier for Early Offer and Re-invites*	TIAS and AS
User-Agent and Server header information*	Pass Through Received Information as Contact Hea
Accept Audio Codec Preferences in Received Offer*	Default
Dial String Interpretation*	Phone number consists of characters 0-9, *, #, and
<input checked="" type="checkbox"/> Redirect by Application	
<input type="checkbox"/> Disable Early Media on 180	
<input type="checkbox"/> Outgoing T.38 INVITE include audio mline	
<input type="checkbox"/> Enable ANAT	
<input type="checkbox"/> Require SDP Inactive Exchange for Mid-Call Media Change	
<input checked="" type="checkbox"/> Use Fully Qualified Domain Name in SIP Requests	

Calling CUCM Video Devices from Lync Client UI



For Your Reference

- For each “shared” Video Room a contact can be created in AD to permit Lync users to search for and call this resource
- A specific AD attribute must be populated with the Video Device’s Sip URI



4 Personal Video Endpoint on CUCM – Today's Status

Requirements for this use case:

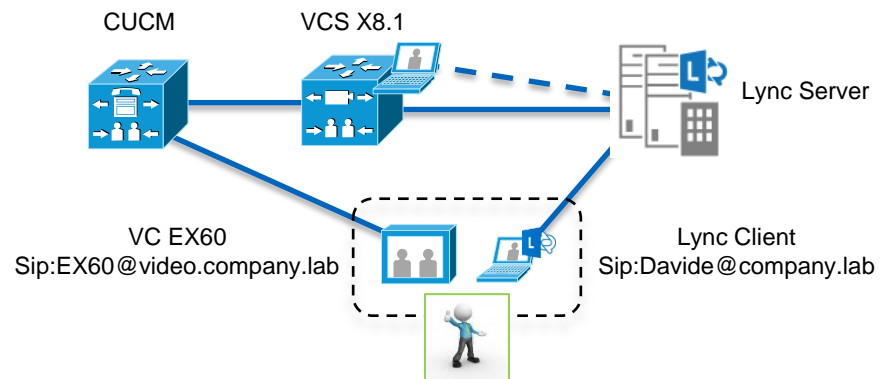
- Single Identity – Single AD contact to identify Lync client and Video Endpoint
- Call Forking – A Call to the Identity Alias should ring also the Video Endpoint on CUCM
- Presence - Status of the video endpoint should be reflected into Lync User's Presence

Best solution today – The "FindMe" feature on the VCS Lync Gateway

Caveats - Video endpoint status is not reflected into Lync User's Presence



WORK IN PROGRESS



1 FindMe Alias: [Davide@company.lab](#)
Associated device: [EX60@video.company.lab](#)

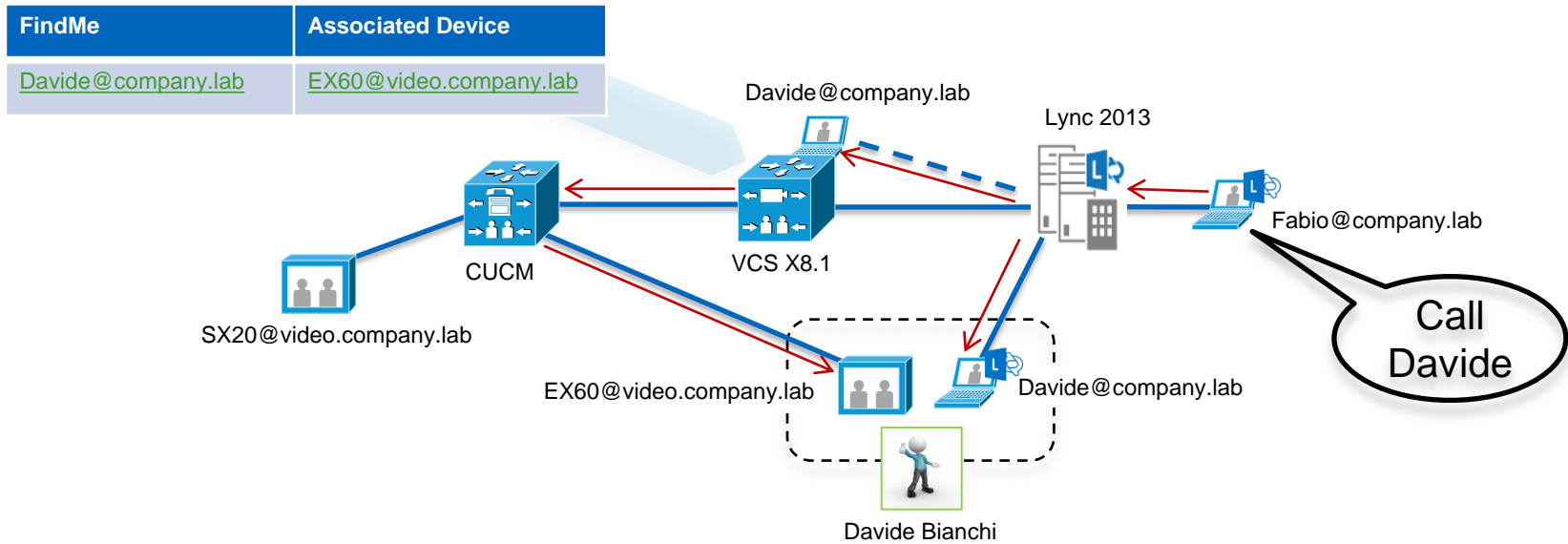
2

Capabilities

Register FindMe users as clients on Lync Yes

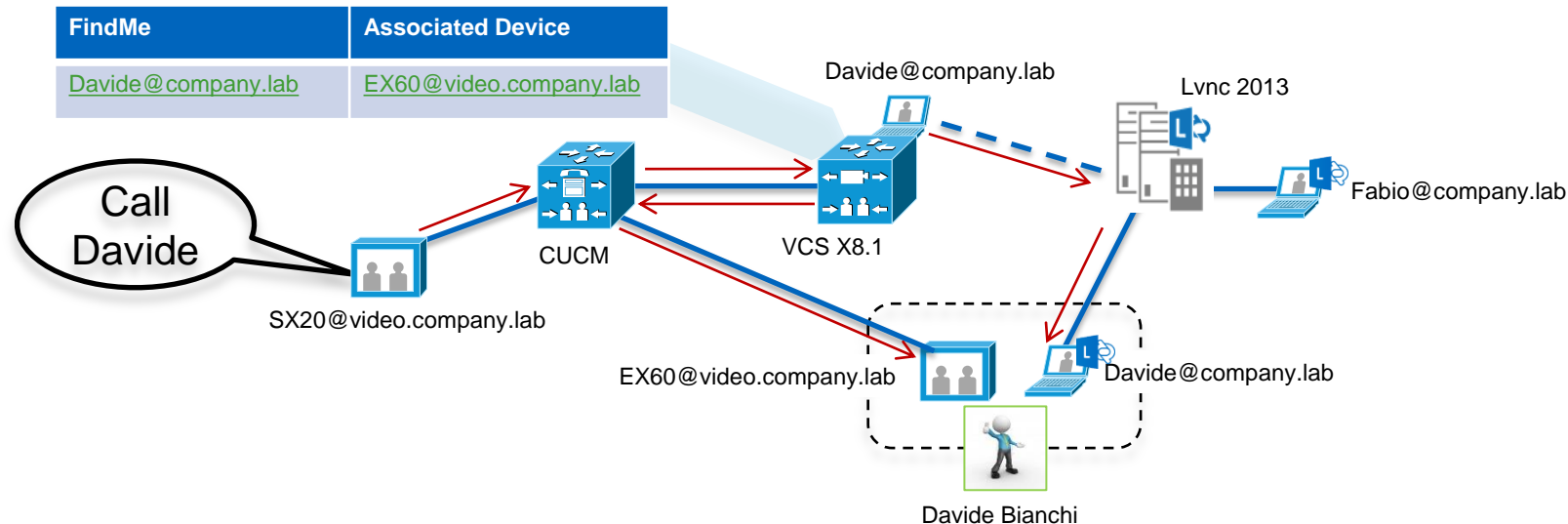
Lync domain company.lab

4 Personal Video Endpoint on CUCM - Lync to Lync Call



1. Fabio calls Davide on his main identity alias (Davide@company.lab)
2. Davide's Lync client rings
3. The Call from Lync side is redirected to VCS using Findme virtual registration
4. VCS extends the call to CUCM as defined by FindMe table and VCS routing rules
5. Davide's EX60 and Lync client ring at the same time

4 Personal Video Endpoint on CUCM – CUCM to Lync Call



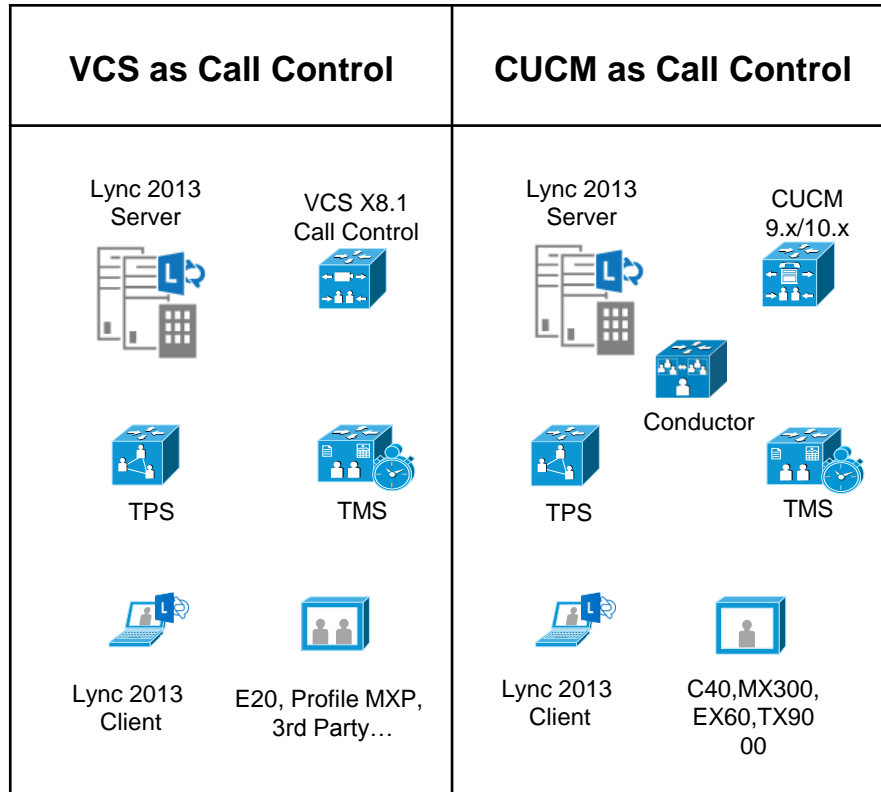
1. Fabio calls Davide on his main identity alias ([Davide@company.lab](#)) from the Shared SX20
2. Call to Davide from CUCM side is routed to VCS hitting the Findme alias
3. Call is redirected to Lync using Findme virtual registration
4. VCS extends also the call back to CUCM as defined by FindMe table and routing rules
5. Davide's EX60 and Lync client ring at the same time
6. If the call is answered on EX60 the VCS remove itself from the call path

Calling Lync User from Video Devices on CUCM

“Directory URI” field is read by VC devices registered on CUCM so it is possible to call a Lync User from an EX90 (for example) after searching him on the Directory

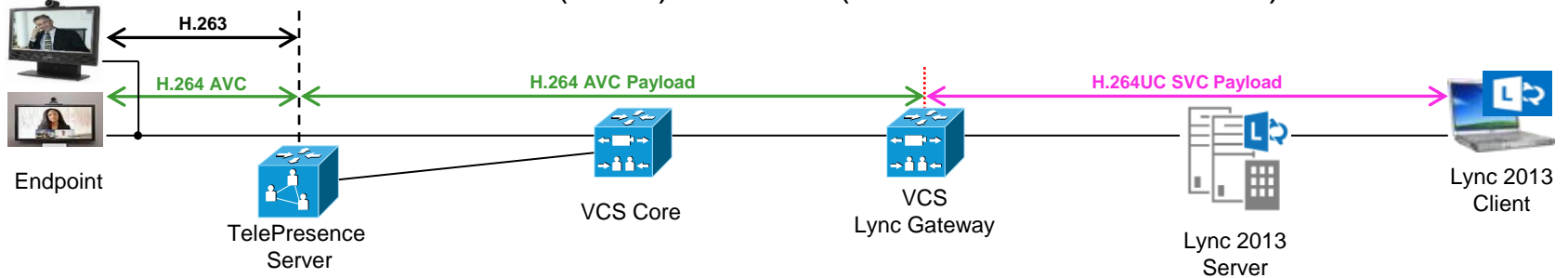
The screenshot displays the Lync interface during a call. At the top, there are controls for 'Microphone: On', a volume slider, and a mute/unmute button. Below this, the 'Main Source' window shows a video feed of a modern office interior with a long table and several chairs. The 'Presentation Source' window is currently black, with a 'Start Presentation' button at the bottom right. In the bottom left, the 'Contacts' list is visible, with a search bar containing 'd Davide Bianchi'. A search result for 'Davide Bianchi' is highlighted. A context menu is open over the contact, showing the email address 'dabianchi@companylab' highlighted, along with a green 'Call' button and options for 'Show call settings' and 'Add to favorites'. Three red boxes and numbered circles (1, 2, 3) highlight the search input, the contact name, and the email address in the context menu, respectively.

Multiparty Calls Use Case

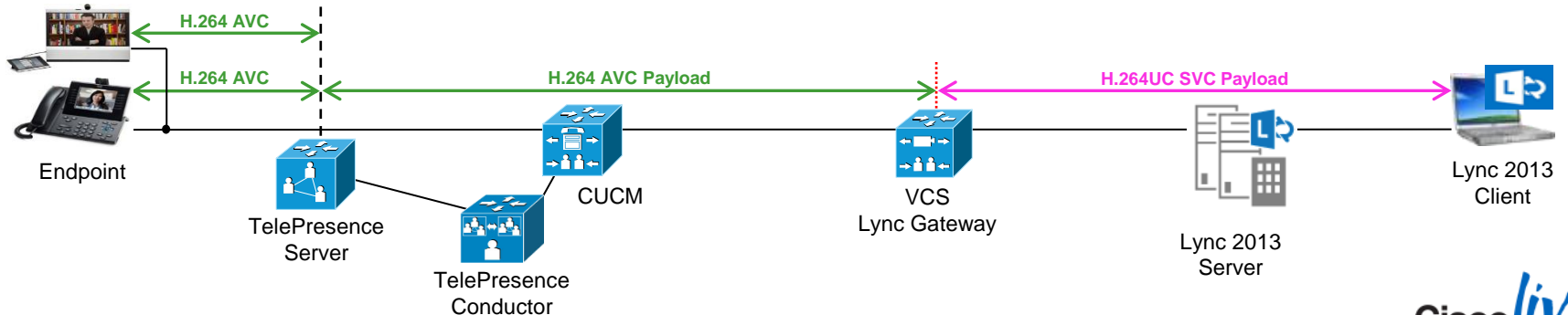


Multiparty Calls - High Level Architecture

- ✓ Call with TelePresence Server (MCU) via VCS (Scheduled/Rendezvous)



- ✓ Call with TelePresence Server (MCU) via CUCM/Conductor (Rendezvous)



Scheduled Multiparty Calls – End User Experience

- Lync users can join a Cisco TPS conference by just clicking on the hyperlink in the meeting invite (the protocol handler «sip:» is included in the associated URL)
- Users can schedule a meeting by:
 - Using the TMS Smart Scheduler web GUI
 - Using the WebEx Productivity Tools Outlook plugin
- A user without the email from TMS can just copy/type the meeting URI in its Lync client to join the meeting
- For more info on conferencing and scheduling → Designing and deploying multipoint conferencing for TelePresence video (BRKEVT-2803)

Scheduled Conference using TMS Smart Scheduler

Book Meeting

Meeting Details

Title: Lync Interop

Start: 18.12.2013 00:06

End: 18.12.2013 00:36

Telepresence Rooms

WebEx: Off

Call-in Participants: 5/10

Recurrence: Off

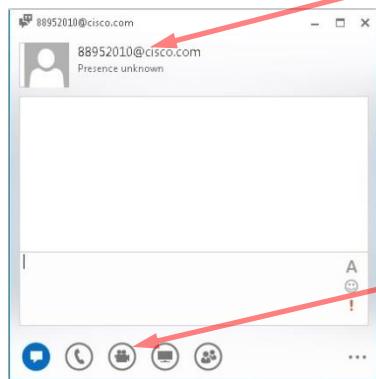
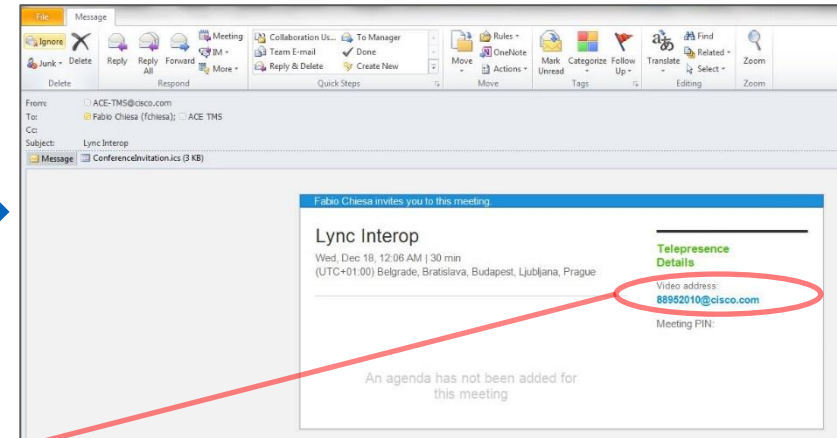
Additional Settings: On

Add Call-in Participants

Calling in on video: 5

Calling in on audio: 0

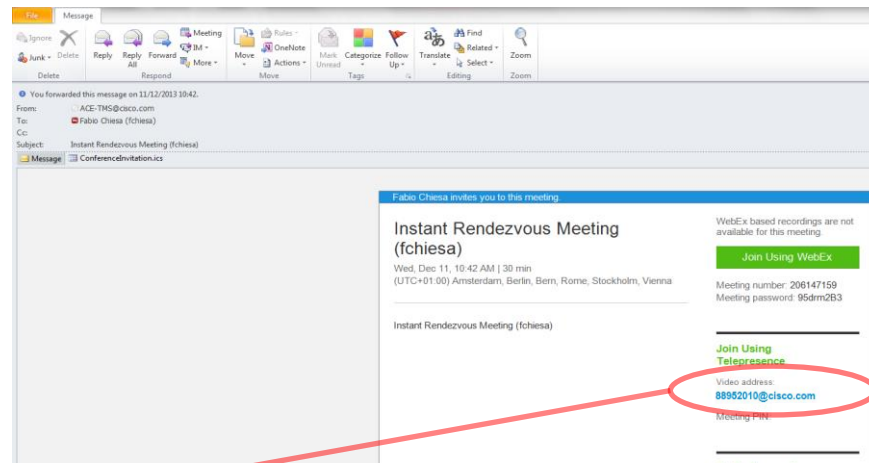
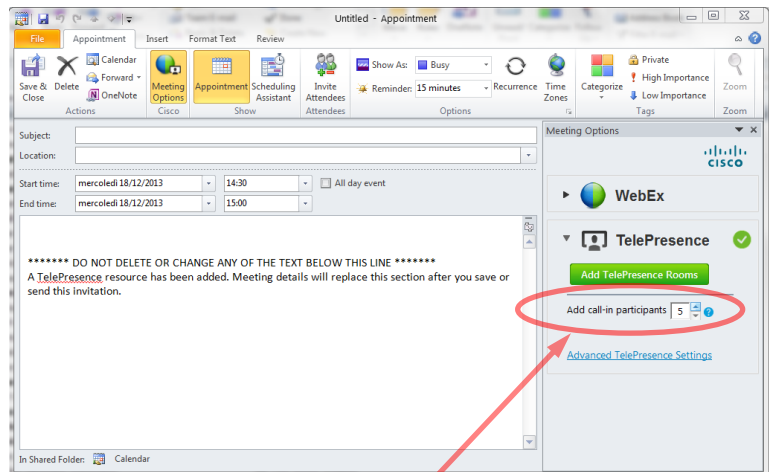
Save Cancel



Define here how many Video Devices will join (Lync is just one of them...)

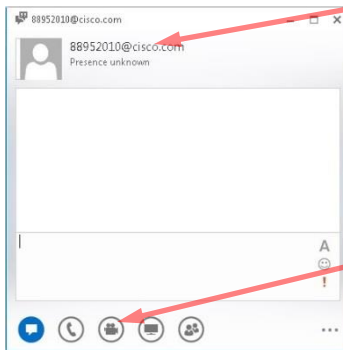
Click here to start the call

Scheduled Conference using WebEx Productivity Tool



Define here how many Video Devices will join (Lync is just one of them...)

Click here to start the call



What about Desktop Sharing ?

- Cisco supports BFCP – the Standard Protocol for DS in the video world
- MSFT uses RDP for DS between softclients
- Some kind of «Gateway» would therefore be needed today for full interoperability
- Two versions of the «*Content in Main Video*» capability can provide partial (one way) scenario:
 - Sendind DS flow instead of the Main Video stream (1700 MXP, MXP Profile, TX-Series)
 - Merging DS and Video flows inside the Main Video stream (EX, MX, C-codec, TelePresence® Server)

Desktop Sharing - User Experience on Lync side

The screenshot shows a Lync desktop sharing session. The main window displays a presentation slide titled "H.264 SVC Introduction". The slide content is as follows:

- H.264 SVC Introduction**
- SVC = Scalable Video Coding**
 - Encodes the same source in multiple qualities, where each quality is a separate video streams.
- Reasonably loose standard today (still maturing)**
 - Each vendor that has adopted SVC has implemented it differently
 - No interoperability can be assumed between SVC implementations
- H.264 SVC Modalities**
 - **Temporal:** Frame rate scalability
 - **Spatial:** Resolution scalability
 - **SNR/Quality/Fidelity:** Single spatial resolution but different qualities (Bitrate)
 - **Combined:** A combination of any of the 3 modalities explained before

The slide also features a "Cisco live!" logo in the bottom right corner. The Lync interface includes a top bar with "Video C60 (italy.lab)" and a signal strength indicator, and a bottom taskbar with various application icons and a system tray showing the time as 06:08 on 17/12/2013.

DS from a C60 TelePresence System towards Lync 2013 (Merging scenario)



Client and Application Level Interoperability

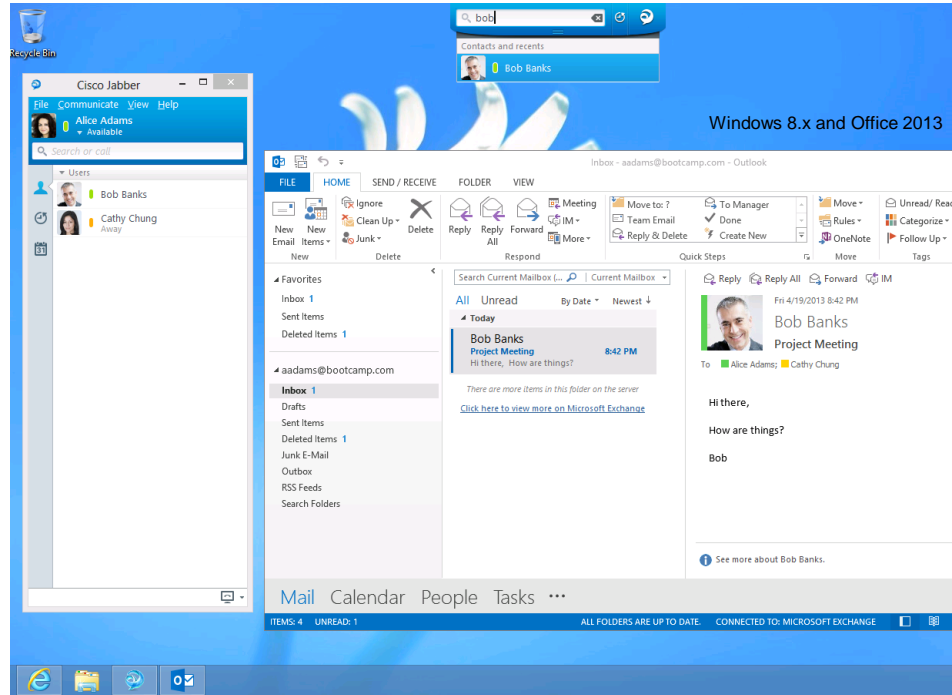
Cisco Jabber and Microsoft Windows/Office

Integration with Microsoft Windows, Microsoft Office & Microsoft Sharepoint



Cisco Jabber Collaboration Solution

Fully integrated into Microsoft Office, on-premise or Office 365^(*)



(*) Check Release Notes for supported Office 365 deployment models

Cisco Jabber and Microsoft Windows/Office

Cisco Jabber SDK, integration into Microsoft Outlook Web Access (OWA)(*)

The screenshot displays the Outlook Web App interface. At the top, there's a login form for the Microsoft Outlook Web App. It includes fields for domain/user name (john.smith) and password. A checkbox labeled "Sign in to Cisco Jabber" is checked. Below the login form, there's a status bar indicating "Connected to Microsoft Exchange".

The main interface shows an email titled "Regards from Barry" from Wang Hong. The email content includes "Hello Barry, Welcome! Regards, Wang". A video call window is overlaid on the email, showing a man in a white shirt waving. The video call window has a URL bar showing "https://jabbersdk.pstech.rs/owa/".

In the bottom right corner, there's a status bar for the user "John Smith" with a dropdown menu showing options: Available, Away, Do Not Disturb, and Offline.

(*) Currently only supported with on-premise version of Exchange 2010

WebEx Meetings Invitation from Jabber to OCS/Lync

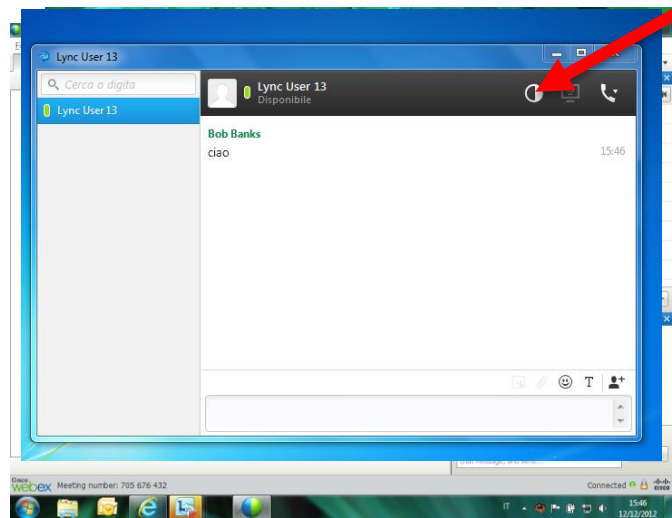
Escalation to WebEx works also in the Inter and Intra Domain Federation scenario

Jabber can escalate to WebEx and send URL via chat to Lync natively

Lync/OCS Users receive a formatted URL link ready to be clicked (see picture)

Both Users will automatically join the meeting session with the right names reported in the webex interface

Cisco WebEx Productivity Tools not needed for this scenario (optional on both side)



WebEx Meetings Invitation from OCS/Lync to Jabber

Escalation to WebEx works also in the Inter and Intra Domain Federation scenario

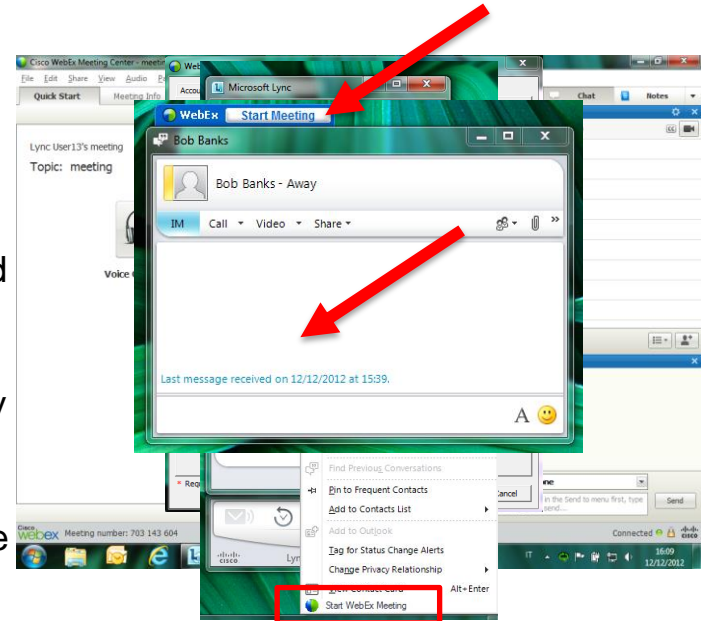
Lync can escalate to WebEx and send URL via chat to others users thanks to **Cisco WebEx Productivity Tools**

Both an overlay «WebEx toolbar» and a menu item are added to Lync interface (see pictures)

Other Users (Lync/Jabber) receive a formatted URL link ready to be clicked or copied into the Browser (see pictures)

Both Users will automatically join the meeting session with the right names reported in the WebEx interface

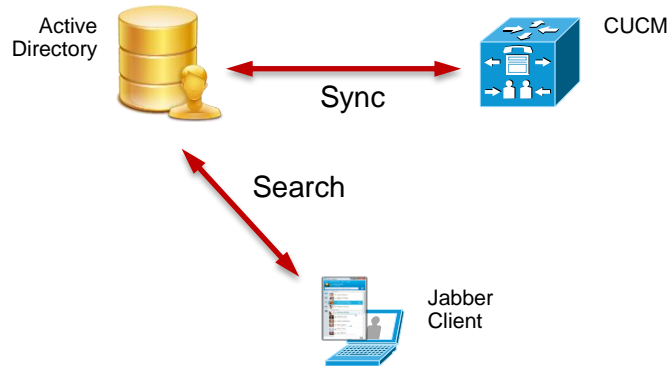
Cisco WebEx Productivity Tools are needed on Lync side for this scenario (optional on Jabber side)



Cisco Jabber and Microsoft AD/ADLDS

Searching for more than just co-workers...

Standard contact source setup



In the default configuration users will only be able to query user objects from the directory that either have a JabberID (URI/IM address) or an email address.

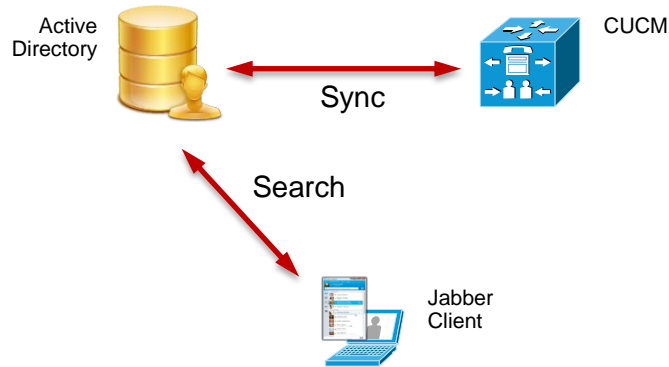
Default search query will result in query (taken from Wireshark)

```
sizeLimit: 0
timeLimit: 5
typesonly: False
  Filter: (&(&(objectCategory=person)(objectClass=user))(ANR=pizza*))
  filter: and (0)
```


Cisco Jabber and Microsoft AD/ADLDS

Searching for more than just co-workers...

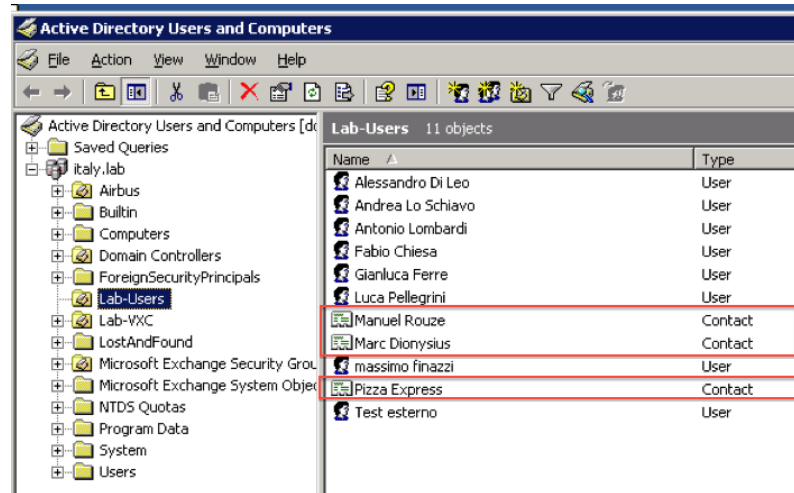
Extended contact source setup



Modified jabber-config.XML

```
jabber-config - Notepad
File Edit Format View Help
<?xml version="1.0" encoding="utf-8"?>
<config version="1.0">
  <Directory>
    <BaseFilter>(&amp;(objectCategory=person))</BaseFilter>
  </Directory>
</config>
```

This will allow users to search for user as well as for contact objects configured in the directory.



Cisco Jabber and Microsoft AD/ADLDS

Searching for more than just co-workers...

Configuring Contact Objects

Marc Dionysius Properties

General | Address | Telephones | Organization | Member Of

Marc Dionysius

First name: Initials:

Last name:

Display name:

Description:

Office:

Telephone number:

E-mail:

Web page:

By default IM address is aligned with the email address. If that isn't true an extra step is required to configure Jabber to search for a different attribute. Below is an example where msRTCSIP-PrimaryUserAddress attribute is used and the required jabber-config.xml to reflect the use of this attribute.

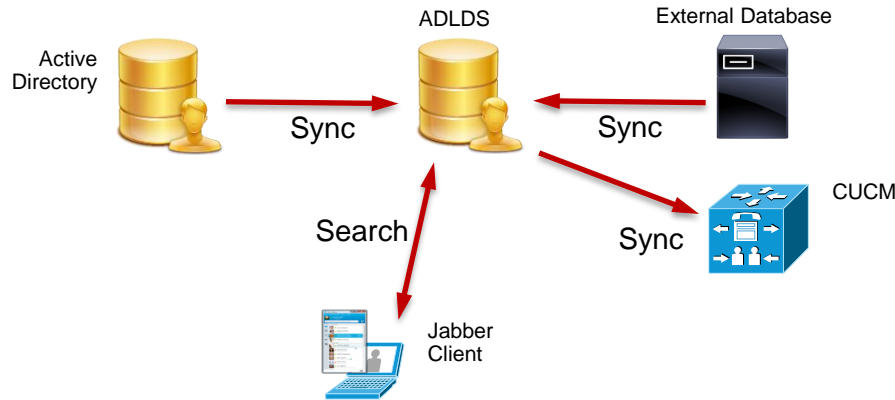
```
<IMAddresses>  
<IMAddress prefix="sip:">msRTCSIP-PrimaryUserAddress</IMAddress>  
</IMAddresses>
```

The sip: prefix definition is required when using msRTCSIP-PrimaryUserAddress as per the format of the Microsoft attribute.

Cisco Jabber and Microsoft AD/ADLDS

Searching for more than just co-workers...

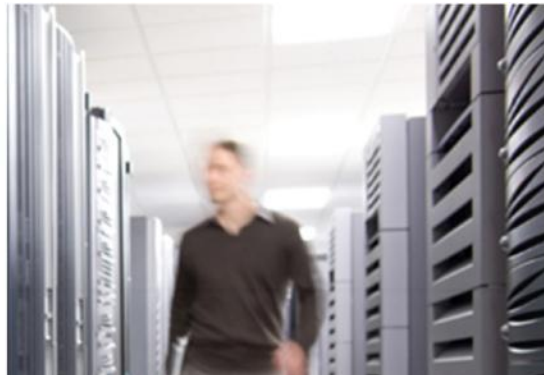
Extended contact source setup ADLDS



Allows Jabber users to search for 3rd party contacts such as business contacts to establish IM or voice/video communication.

It will also allow to resolve incoming calls not only against internal telephon numbers but also at the contacts into ADLDS from any external database.

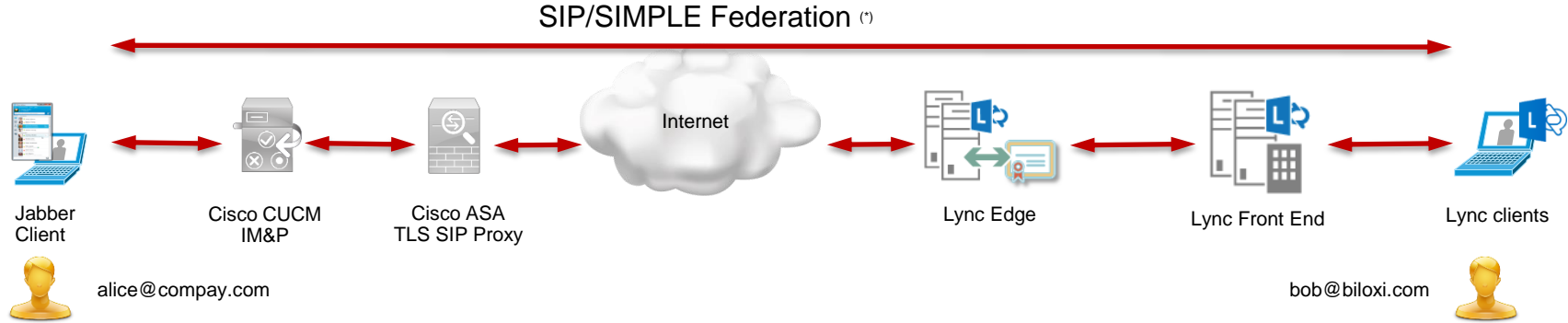
The use of ADLDS is recommended for scalability.



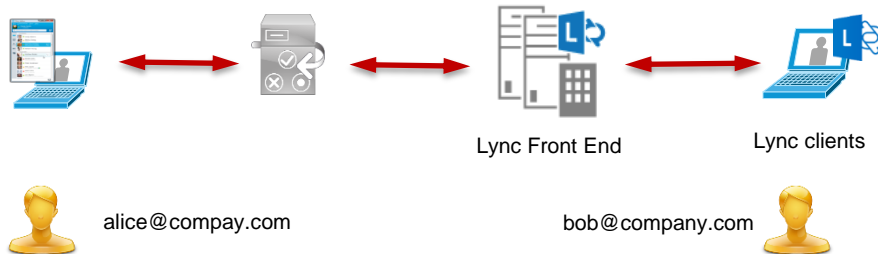
Primer on Instant Messaging and Presence Federation

Primer on IM&P Interoperability/Federation

Business to Business – External Federation



Partitioned Intra Domain Federation



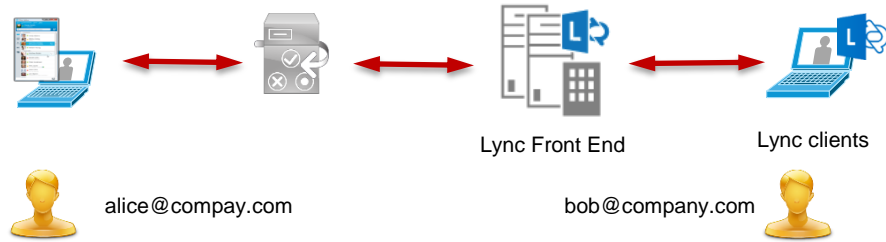
Partitioned intra domain federation allows for smooth migration or for long term interoperability scenarios.

(*) Lync does support XMPP, SIP/SIMPLE recommended

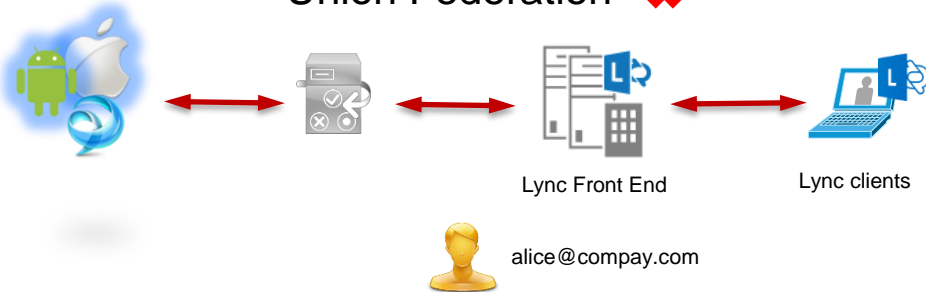
Primer on IM&P Interoperability/Federation

Internal federation scenarios

Partitioned Intra Domain Federation



Union Federation



Primer on IM&P Interoperability/Federation

For Your
Reference



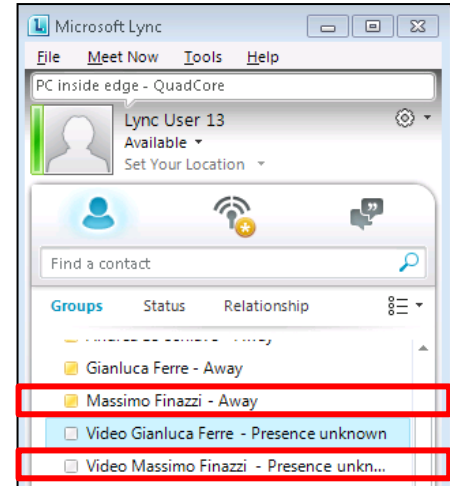
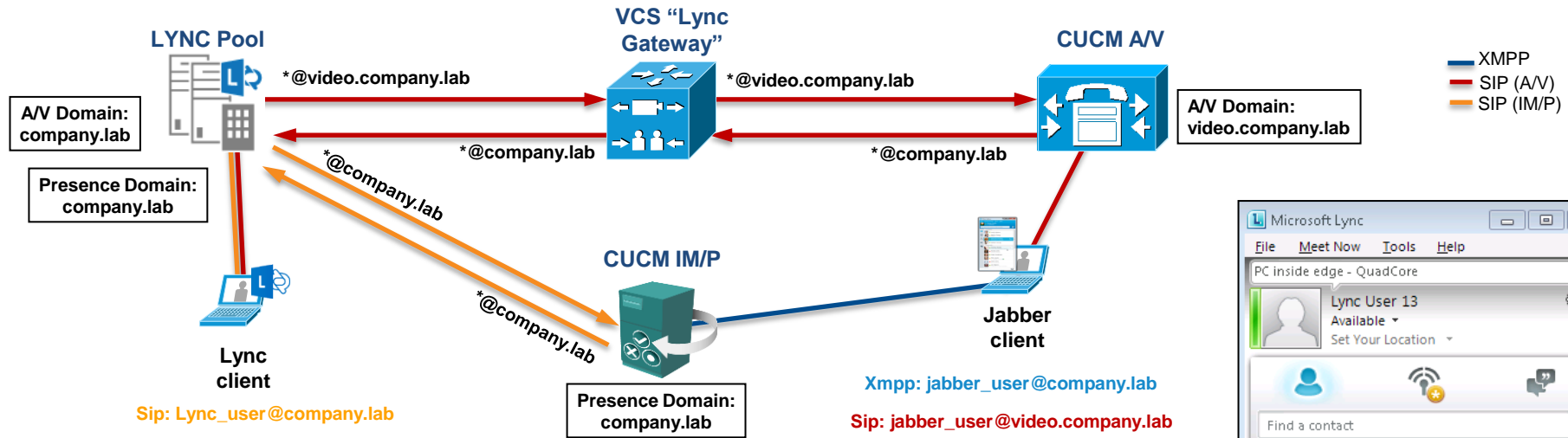
IM & Presence – Configuration Details

- Partitioned Intra-domain Federation with LCS/OCS/Lync will be based on the SIP/SIMPLE protocol (Native to both vendors).
- The integration will also support presence and basic point to point Instant Messaging between Cisco Jabber and MOC/Lync.
 - Plain Text IM format, Typing indication, Basic Emoticons, Presence Normalisation
- Group chat will not be supported between Cisco Unified Presence and Microsoft LCS/OCS & Lync
- Support for Microsoft Lync partitioned intra-domain federation is in both CUP 8.X and CUCM IM & P 9.X code trains
 - CUP 8.6.4 SU2, CUCM IM & Presence 9.1



Jabber & Lync Interop.....

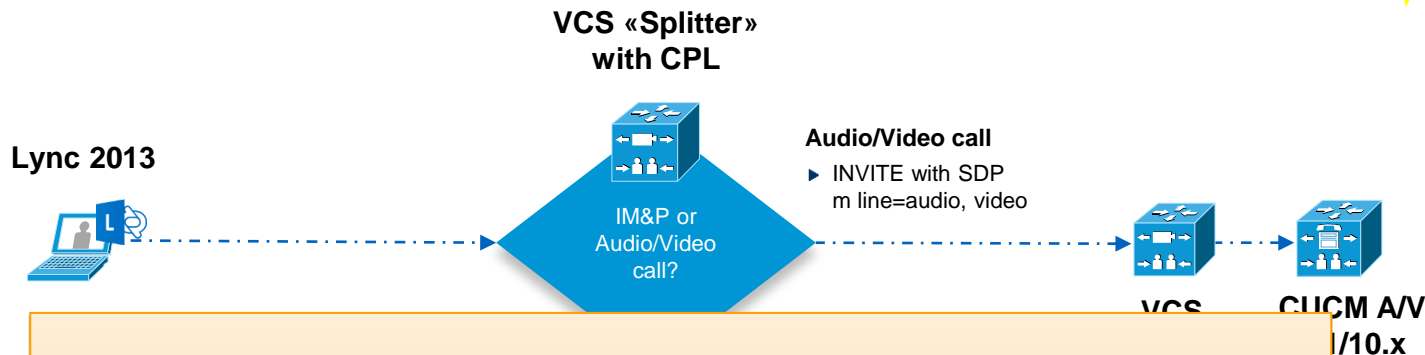
Extending Interoperability to Jabber...before VCS X8.1



- Lync cannot split Sip routes for the same «domain» between IM/P and A/V
- CUCM endpoints must be in a different Sip domain from the one «owned» by Lync
- Jabber needs therefore two different URI for Presence and «Voice/Video»
- Lync can call a Jabber users only using a different URI (`Jabber_user@video.company.lab`) so two «contacts» are needed

Introducing VCS-C with Splitter Function

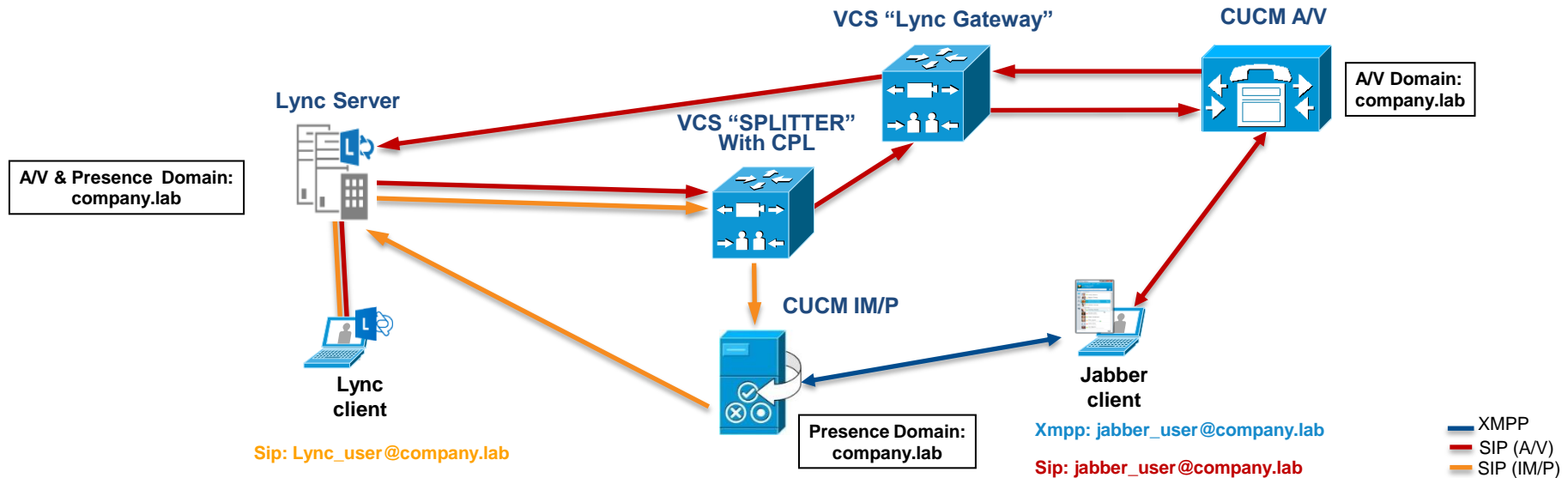
New with
VCS X8.1!



Important notes:

- This is currently a Pilot/Poc scenario only
- Scalability testing still ongoing
- Coexistence with B2BUA service under evaluation

Extending Interoperability to Jabber... post VCS X8.1



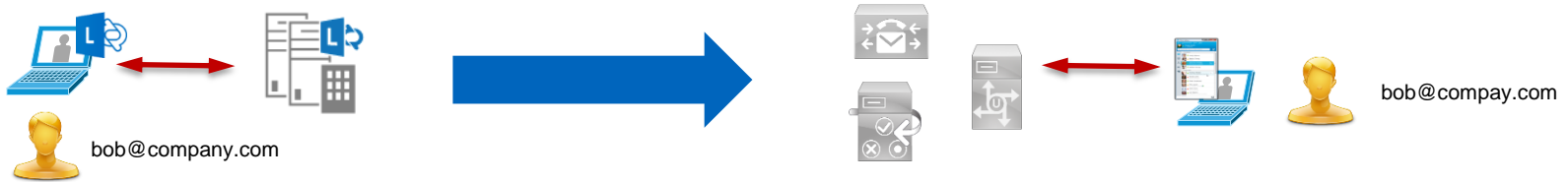
- Lync cannot split Sip routes for the same «domain» between IM/P and A/V messages
- VCS-C with a dedicated CPL will do the magic splitting the Sip traffic
- Jabber and Lync can now share the same Presence and A/V domain
- Alpha URI dialling possible in both direction (Jabber 9.6 new feature!)
- Plan routing carefully to avoid loops



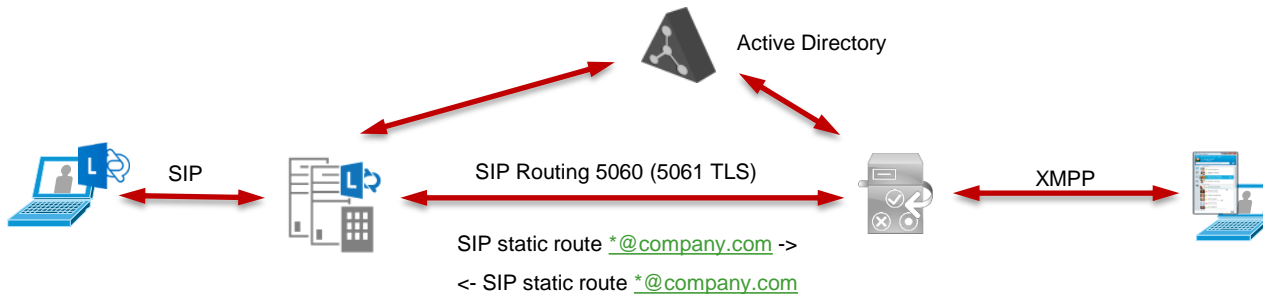
Migration Scenarios

Migration Overview

Migrate from IM/P only to Cisco Jabber Collaboration (applies to LCS, OCS & Lync)



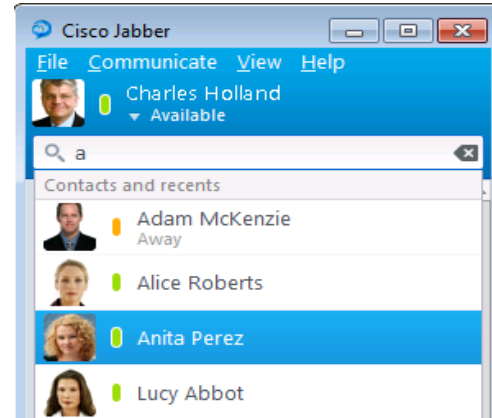
Seamless migration including transfer of buddy lists, IM/P between systems



Migration

IM & Presence – partitioned intra domain, additional topics...

- Full Contact Search available to each end-user regardless of whether they exist on Cisco or Microsoft
- The end-user is not aware what back end the buddy resides on
- **Temporary Presence subscription** not working today in both directions (during search the user's presence is “not available”...) unless user is in the buddy list
- Once added to the buddy list, users can exchange presence and instant messaging
- If needed, Jabber can search for “msRTCSIP-primaryuseraddress” attribute and use that as IM contact address (for intra and inter domain contacts)
- LDS Support for complex AD scenario





Lync IM & Presence – Migration to single Collaboration Solution

Migration - Quick Start Guide:

- Prior to any migration, set Max Contacts/Watchers to unlimited on CUP
 - This is to ensure all contact lists are successfully migrated.
- Provision Migrating users on CUP.
- Use the OCS dbimpexp.exe tool to backup migrated user's contact lists.
- Run once from any OCS Front-End Server
 - `ExportContacts.exe -s/{AD Server} -f/{Input file} -l/debug -r/NORMAL`
- Run once from any OCS Front-End Server
 - `DisableAccount.exe -s/{AD Server} -f/{Input file} -l/debug -r/NORMAL`
- Validate that the Account update has been propagated to OCS
- Run from one OCS Front-End Server in each Pool:
 - `DisableAccount.exe -s/{DB Instance} -l/debug -r/NORMAL`
- Import contacts into CUP using BAT tool
- Reset Max Contacts/Watchers limit on CUP after import
- Migrated users should now be able to log into CUP.

Migration

New functionality in CUCM 10.0

- Multiple Domains supported on single CUCM IM&P 10.x server (*)
- Enhanced URI format JabberID = email address or other fields
- Pre 10.x default URI format sAMAccountName@domain
- Post 10.x URI format can be mapped to different attributes i.e. mail address or msRTCSIP-PrimaryUserAddress for migration
- Multiple domains supported including for partitioned intra domain federation
- Security Certificates enhanced to reflect multi domain operations

(*) Please see release notes for feature support on Cisco Jabber clients

CUCM IM & P 10.0

Multi Domain Support and customer URI format

- Advanced mapping of directory attribute to be used as JabberID (i.e. email address or for migration msRTCSIP-PrimaryUserAddress)
- Supporting multiple domains on single instance of CUCM IM&P
- Please check release notes for support of individual Jabber clients

Presence -> Settings -> Advanced Configuration

Advanced Presence Settings

Status
Status: Ready

Domain and IM Address

Domain and IM Address Settings
Default Domain or IM Address Scheme cannot be changed until the following services are stopped on all nodes, Cisco F setting may be changed at a time.

Do not change Default Domain or IM Address scheme

Default Domain *

IM Address Scheme *

bootcamp.com

Directory URI

Save

Standard User Fields To Be Synchronized

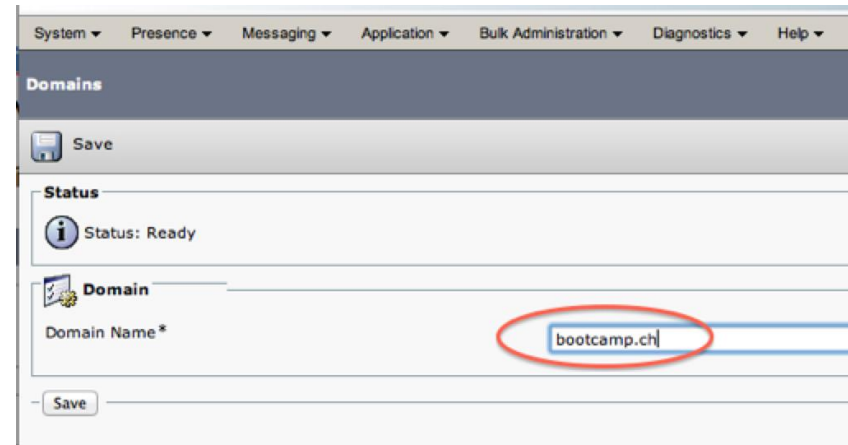
Cisco Unified Communications Manager User Fields	LDAP Attribute	Cisco Unified Communica	
User ID	sAMAccountName	First Name	
Middle Name	middleName	Last Name	sn
Manager ID	manager	Department	department
Phone Number	telephoneNumber	Mail ID	mail
Title	title	Home Number	homephone
Mobile Number	msRTCSIP-primaryuseraddress	Pager Number	pager
Directory URI	mail none		

CUCM IM & P 10.0

Multi Domain Support and customer URI format

- Advanced mapping of directory attribute to be used as JabberID (i.e. email address or for migration msRTCSIP-PrimaryUserAddress)
- Supporting multiple domains on single instance of CUCM IM&P
- Please check release notes for support of individual Jabber clients

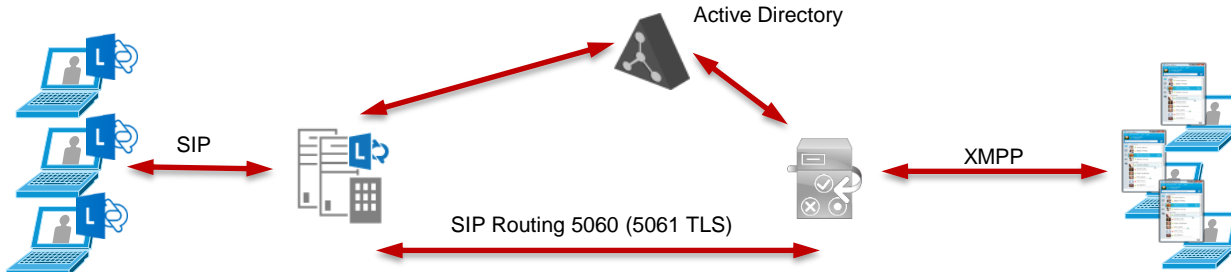
Presence -> Domains-> Select Add New



The screenshot shows the 'Domains' configuration page in the CUCM IM&P interface. The page has a navigation bar at the top with menus for System, Presence, Messaging, Application, Bulk Administration, Diagnostics, and Help. Below the navigation bar, there is a 'Domains' section with a 'Save' button. The 'Status' section shows 'Status: Ready'. The 'Domain' section has a 'Domain Name*' field with the value 'bootcamp.ch' entered. The text 'bootcamp.ch' is circled in red. There is also a 'Save' button at the bottom of the form.

Migration Overview

Migration example in multiple domain operations



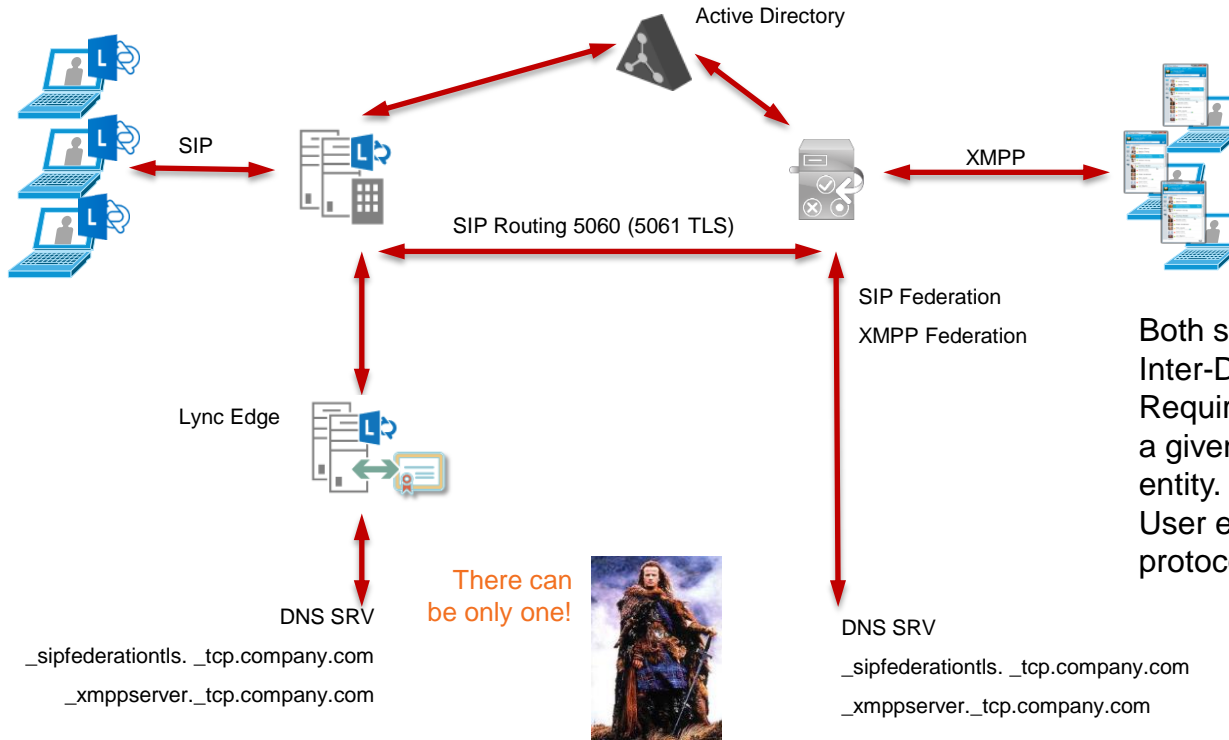
bob@company.com
cathy@company.au
alice@company.ch

SIP static route *@company.com ->
<- SIP static route *@company.com
SIP static route *@company.au ->
<- SIP static route *@company.au
SIP static route *@company.ch ->
<- SIP static route *@company.ch

Same IM URI address used by Lync and CUCM IM/P allows for staged migration.

Migration

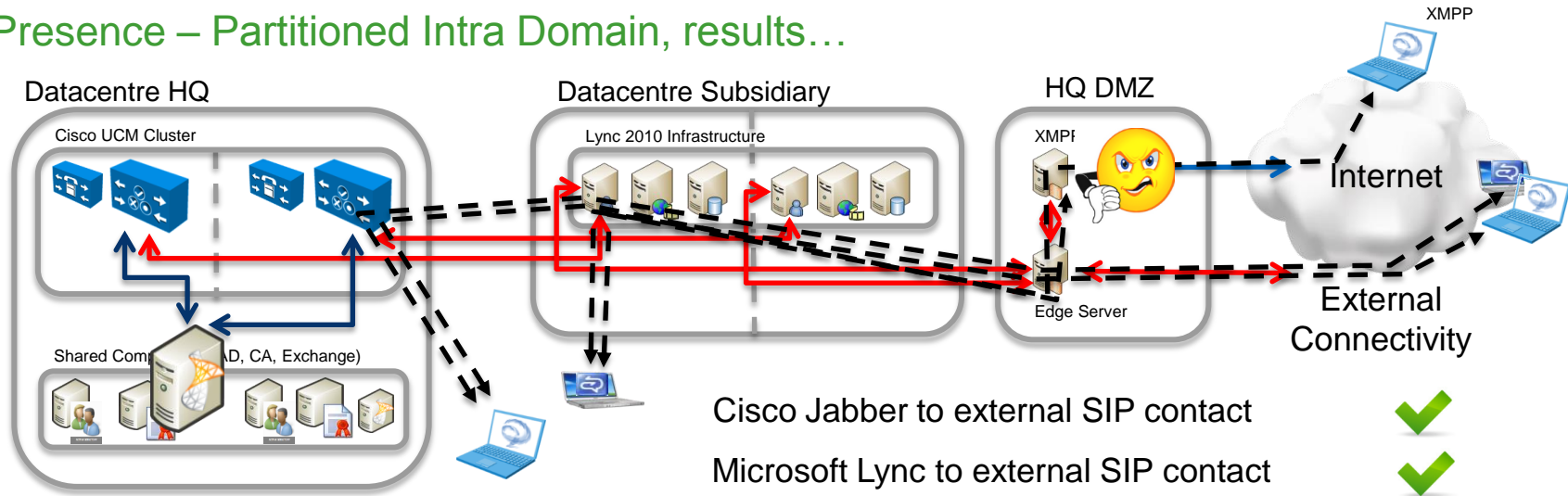
Migration external federation...



Both solutions allow for SIP and XMPP Inter-Domain Federation. Required protocol based service record for a given domain has to be owned by a single entity. User experience impact when split by protocol.

Customer Use Case

IM & Presence – Partitioned Intra Domain, results...



Cisco Presence to Exchange calendar integration

Cisco Jabber to external SIP contact



Microsoft Lync to external SIP contact



Microsoft Lync to external XMPP contact



Cisco Jabber to external XMPP contact

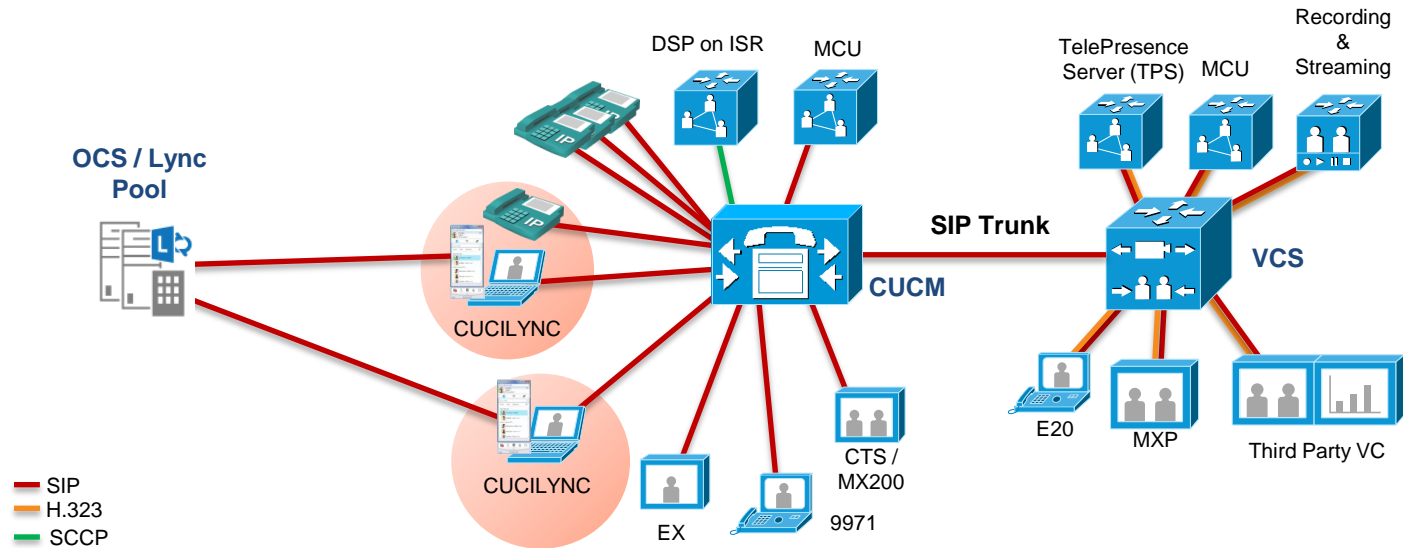


Microsoft XMPP Gateway requires “vendor specific” SIP dialect. Workaround currently under review...



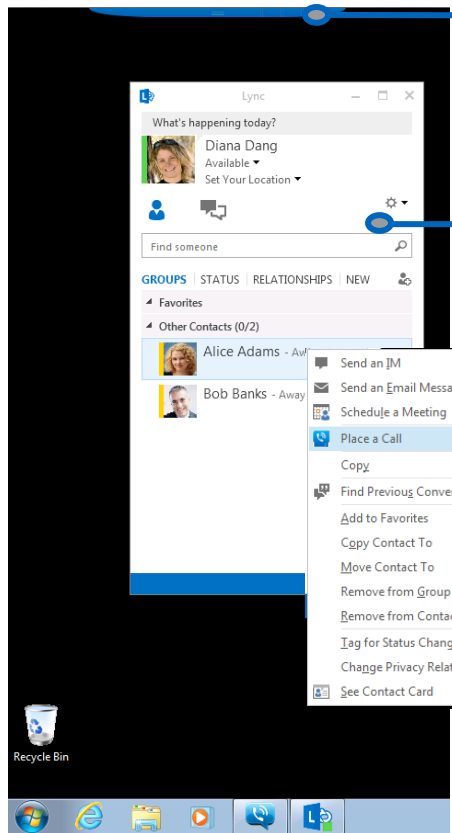
Additional Interoperability Scenarios

Lync IM & Presence – Cisco Single Call Control (Voice & Video)



- Standard based call control for Audio and Video (No Hairpinning or Transcoding)
- CuciLync client behaves like any other endpoint registered to CUCM
- Single Dial Plan (no routing between Lync & CUCM)
- User's endpoint Presence Status («in a call») reflected into Lync/Moc client

Cisco UC Integration for Lync



Cisco UC Integration

Voice mail, Communications History,
Soft phone / Desk phone control
Options & Dial pad

Microsoft Lync 2010
Microsoft Lync 2013 (shown)

Initiate Call from Context Menu

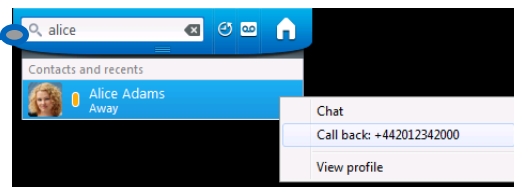
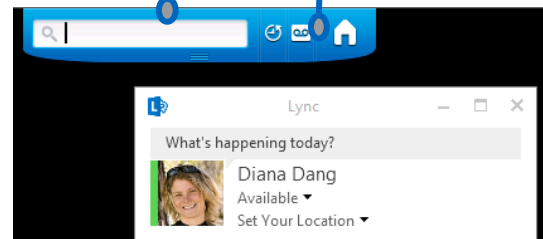
Initiate Call from Dock

Toolbar docks at the top, auto hides

Maximize Screen Real-estate

Active at all times

History, Visual Voicemail



Cisco UC Integration for Lync

For Your Reference



Features and Functionalities:

Cisco Medianet

Metadata, Media Trace, etc.

Microsoft Application Integration

Office

Web Browser

Cisco Visual Voicemail

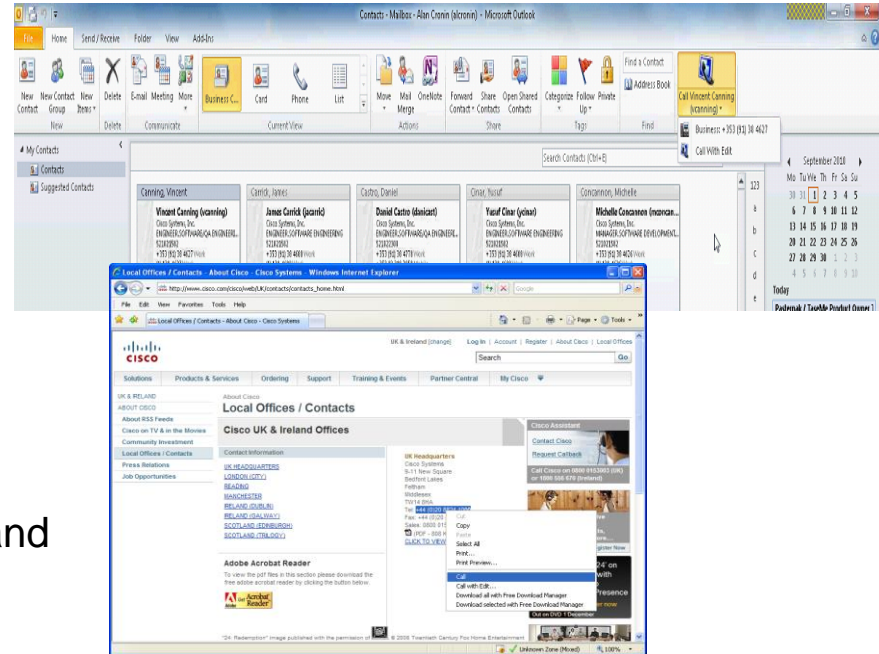
Standards based H.264 Video

Survivability (SRST)

Build in bridge (call recording)

Available for Microsoft Lync 2010 and

Lync 2013⁽¹⁾






Summary

Cisco Interoperability with Microsoft

Summary

Summary

Where to Go from Here?

- There are many ways to interoperate – choose the one that is right for your environment
- Cisco committed to support interoperability scenarios
- Look before you leap... 
Detailed evaluation recommended on how interoperability and the required features deployed apply to your environment



Q & A

Complete Your Online Session Evaluation

Give us your feedback and receive a Cisco Live 2014 Polo Shirt!

Complete your Overall Event Survey and 5 Session Evaluations.

- Directly from your mobile device on the Cisco Live Mobile App
- By visiting the Cisco Live Mobile Site www.ciscoliveaustralia.com/mobile
- Visit any Cisco Live Internet Station located throughout the venue

Polo Shirts can be collected in the World of Solutions on Friday 21 March 12:00pm - 2:00pm



Learn online with Cisco Live!

Visit us online after the conference for full access to session videos and presentations.

www.CiscoLiveAPAC.com



CISCO™