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Network Media Recording and Streaming with Cisco MediaSense

BRKUCC-2672

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Presentation Agenda

- MediaSense Overview
- Positioning MediaSense
- MediaSense Architecture
- MediaSense Operation
- Native Features
- MediaSense Integrations
- Call Recording Deep Dive
- Conclusions




MediaSense Overview

Cisco MediaSense

Network Recording & Playback

Network Streaming

Eco-System

Cisco MediaSense

MediaSense Features and Advantages

- Network focus: Record anywhere
  - Branch, Datacentre, or both
- Administrative TCO: VOS, Virtualisation
  - No additional software required
- Native High-Availability
  - Baked into the product design
  - No extra charge for HA
- Deploy the scale to fit your needs
  - Branch router module to Datacentre blades
- Concurrent pricing model
  - Cost-effective yet simple to engineer and quote
- Future proof: Open architecture supports flexible requirements
- Audio and HD video

Media Recording

- Full-time audio recording
  - Phone-based recording (Built in Bridge)
  - Unified Border Element (CUBE) SIP-SIP Gateway
- On-demand recording
  - Recording using Phone softkey (Built in Bridge)
  - JTAPI/CTI control of recording via external application
- Support for centralised and branch recording
- On-premise and remote agent recording capability for contact centres

Storage

- VMWare Virtual Machine appliance
  - Cisco UCS: B-, C-, E-series
  - Other specs-based hardware
- Support for DAS and FC SAN
  - No Support for iSCSI or NFS
- Data Encryption
  - SAN vendors can enable disk encryption
  - Partners can encrypt media upon archiving
  - SED encrypted available on the UCS-E

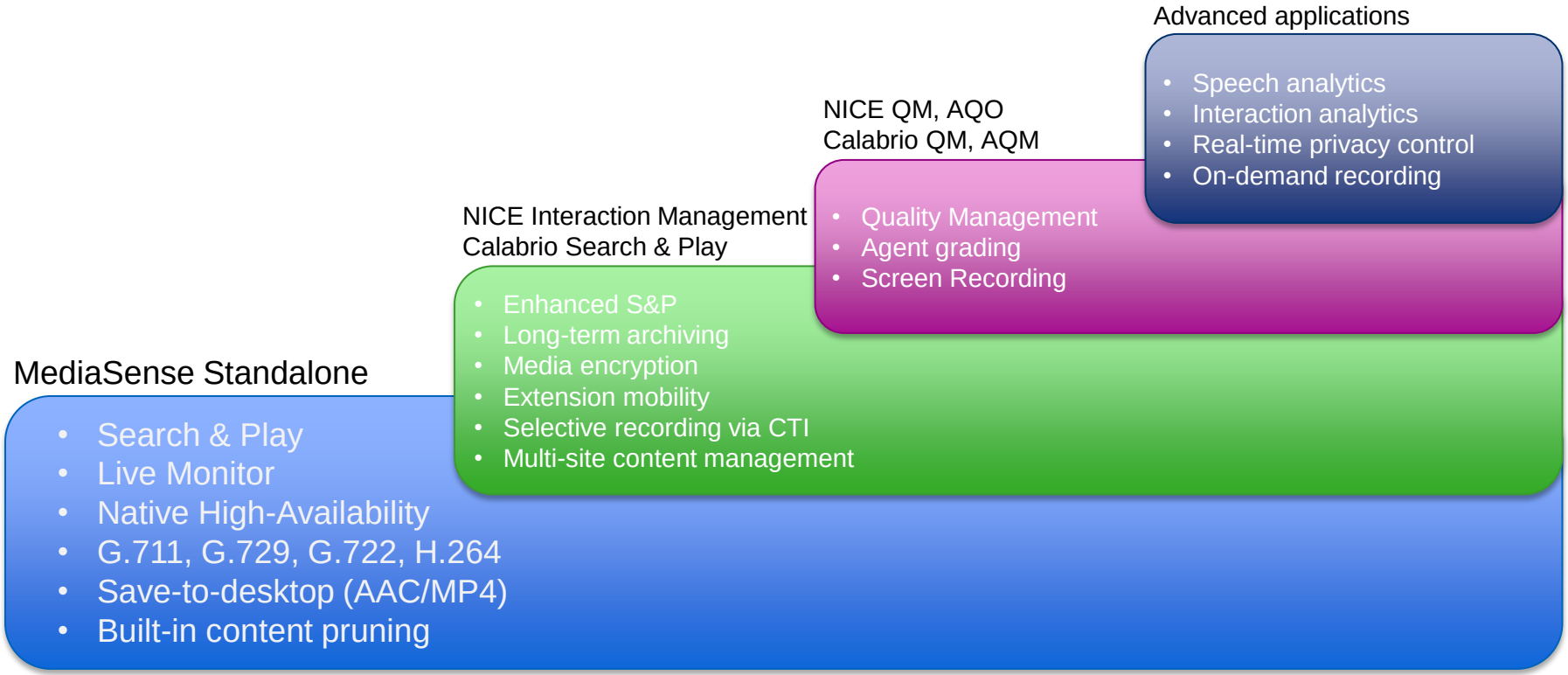
Network Streaming

- Audio Streaming
  - RTSP for playback of stored sessions
  - RTSP for real-time monitoring / listening of active sessions
- Video Streaming
  - Video On Hold for CUCM 10.0 and higher
  - Video Playback during Native Queuing.
  - Video in Queue for Remote Expert Solutions
  - Video Greetings with Unity Connection
- Download
  - Recordings can be exported to AAC/MP4 or PCM/WAV
  - Export using S&P portal or API
  - Use HTTP 1.1 chunked file download or file download




Positioning MediaSense

Building a Solution on MediaSense



MediaSense Capabilities with Partner Apps

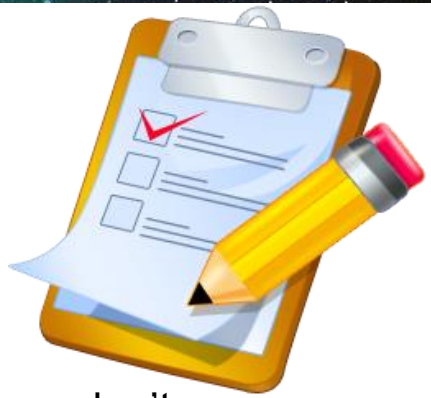
	Cisco	Cisco + calabrio	Cisco + NICE
One Site	✓	✓	✓
Multi-Site			
-Independent Sites	✓	✓	✓
-Active/Active Recording	✓	✓	X
-Active/Standby Recording	✓	✓	✓
-Active/Active Playback	X	X	C
-Branches	C	X	X
Home Agents	C	C	C
PCI compliance	C	C	C
Encryption	C	✓	C
Archival Storage	X	✓	✓
Disaster Recovery	X	X	C
SRTP	X	X	X

✓
Supported

C
Supported with Caveats

X
Not Supported

Partner Solution Considerations



- Requirements
  - Archival?
  - Analytics?
  - Transcription?
  - Screen capture?
- Multiple Datacentre
  - Some vendors can support geographically-distributed datacentres, others don't
- Branch deployments
  - Some vendors have limitations on the number of branch sites supported
- Mid-call codec change
  - Not all vendors support MediaSense recordings where segments use different codecs
- MediaSense supports a wide variety of partner applications
  - Helps build a complete solution to meet your specific needs

MediaSense Architecture

Virtual Platform

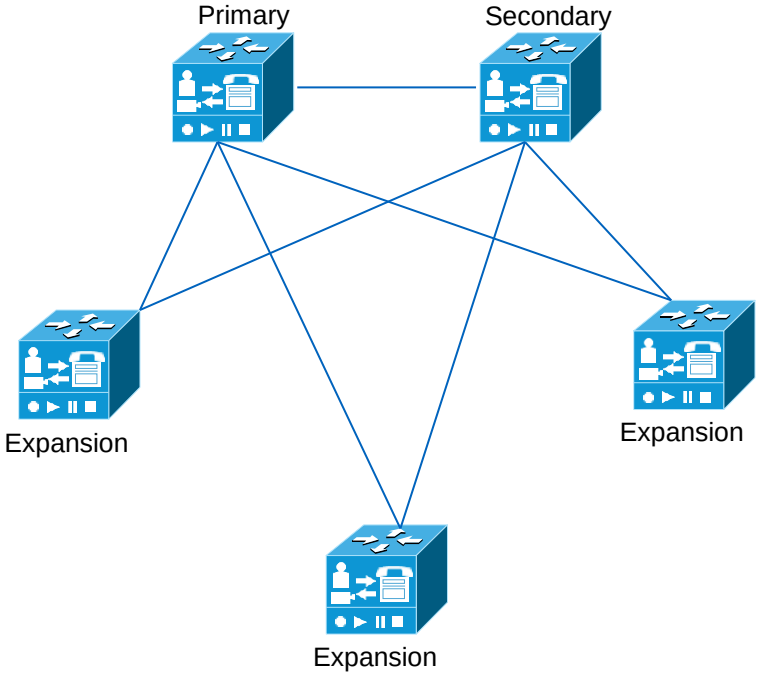
- Supports VMware 5.1 and earlier
- UCS or Spec-based Supported
- Intel 2.5GHz+ CPU
  - E7 Series only requires 2.4 or higher
- OVAs
  - 7vCPU – 16GB RAM – 880GB HDD
  - 4vCPU – 6/8GB RAM – 360GB HDD
  - 2vCPU – 6/8GB RAM – 360GB HDD
- Built on Cisco VOS
- Installs in roughly 60 minutes

MediaSense Node Capacity

OVA Size	Max Sessions	Max API Requests	Max Calls Per Second	Max Cluster Size	Max Media Storage per Node	Max 1080p Video Streams
7 vCPU	200	15 Active 10 Queued	2	5	12TB	40
4vCPU (B/C-Series)	100	10 Active 5 Queued	2	2	1.6TB	4
4vCPU (E-Series)	60	10 Active 5 Queued	2	2	800GB	2
2vCPU (B/C-Series)	20	3 Active 3 Queued	.33	2	1.6TB	2
2vCPU (E-Series)	20	3 Active 3 Queued	.33	2	800GB	2

MediaSense Clustering

- Database Replication
  - Between Primary and Secondary
  - Expansion nodes are media storage only
- Built-in load-balancing
  - Each node can REFER to another node
- Keepalives
  - Each node is aware of cluster status
- 2ms latency requirement
  - Keepalives requirement
  - No WAN separation

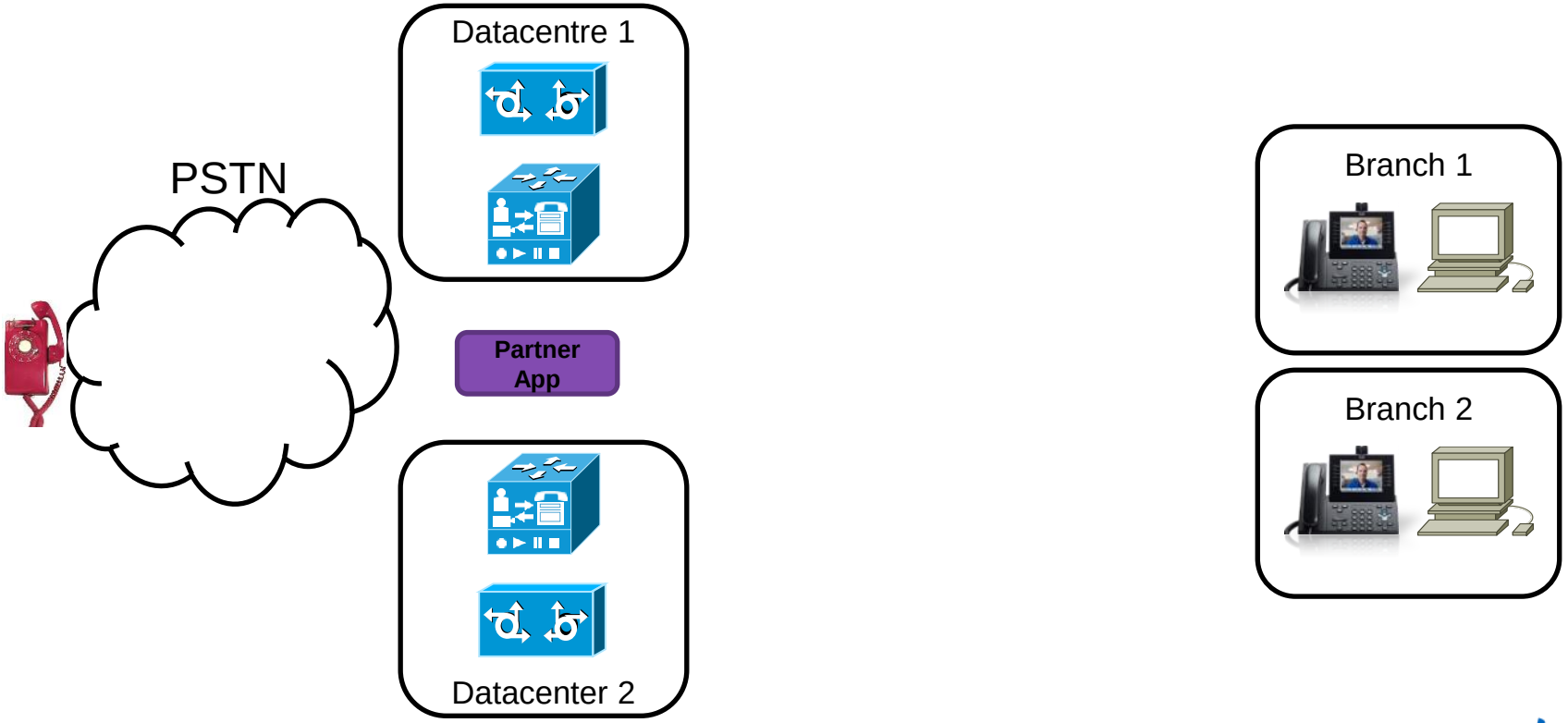


MediaSense Cluster Capacity

OVA	Max Sessions	Max API Requests	Max Calls Per Second	Max Media Storage per Cluster	Max 1080p Video Streams
7 vCPU	1000	30 Active 20 Queued	10	60TB	200
4vCPU (B/C-Series)	200	20 Active 10 Queued	4	3.2TB	4
4vCPU (E-Series)	120	20 Active 10 Queued	4	3.2TB	2
2vCPU (B/C-Series)	40	6 Active 6 Queued	.67	1.6TB	2
2vCPU (E-Series)	40	6 Active 6 Queued	.67	1.6TB	2

Multi-Datacentre Deployments

Multiple Datacentre Deployment



Features and Deployment Considerations

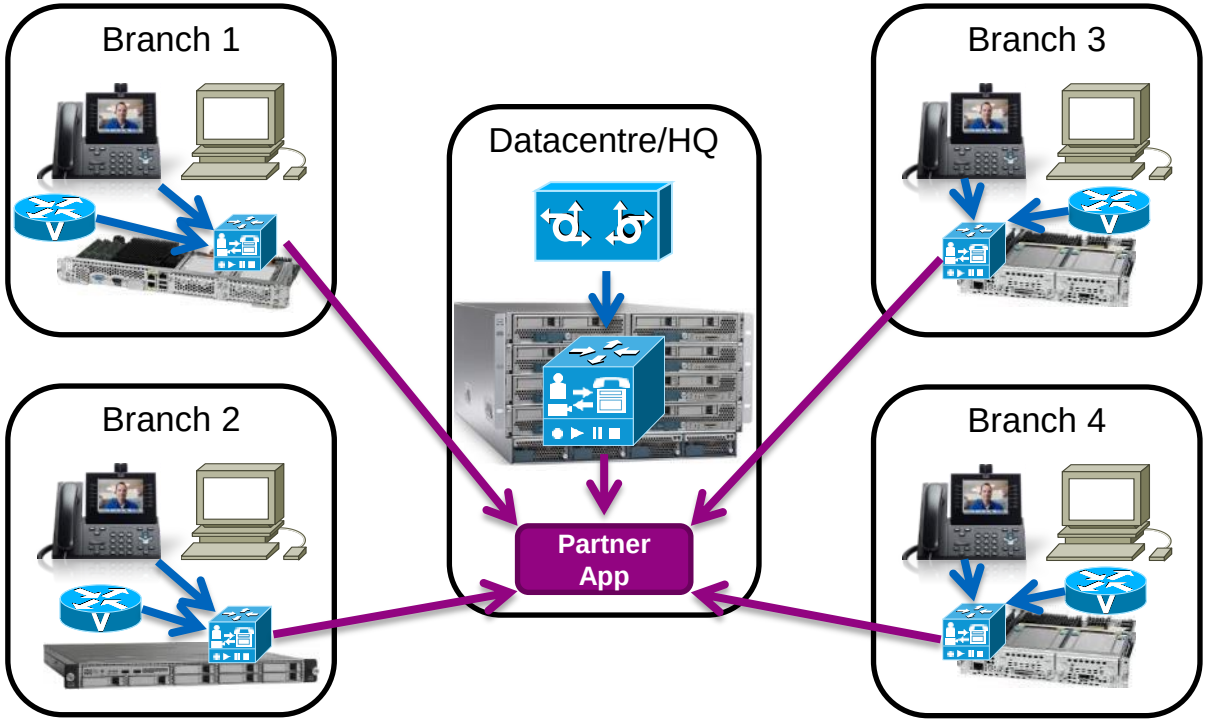
- Active/Active load balancing across sites vs. Active/Standby
  - Will each site handle calls simultaneously?
- Location of the partner app or archival solution?
  - Do the archived records need to be duplicated?
- HA management of JTAPI / CTI failover between sites
  - If a MediaSense fails what administrative action is required if any?
  - Does the partner app have HA features?
- How many datacentres?




Branch Deployments

Branch or Multi-Site Recording

- Choose your platform
  - Leverage entire UCS suite
- Centralised / Simplified
  - Management and Control
  - Data archiving
- Partner Apps
  - Quality Management
  - Media Management
- SRST recording
  - CUBE media forking



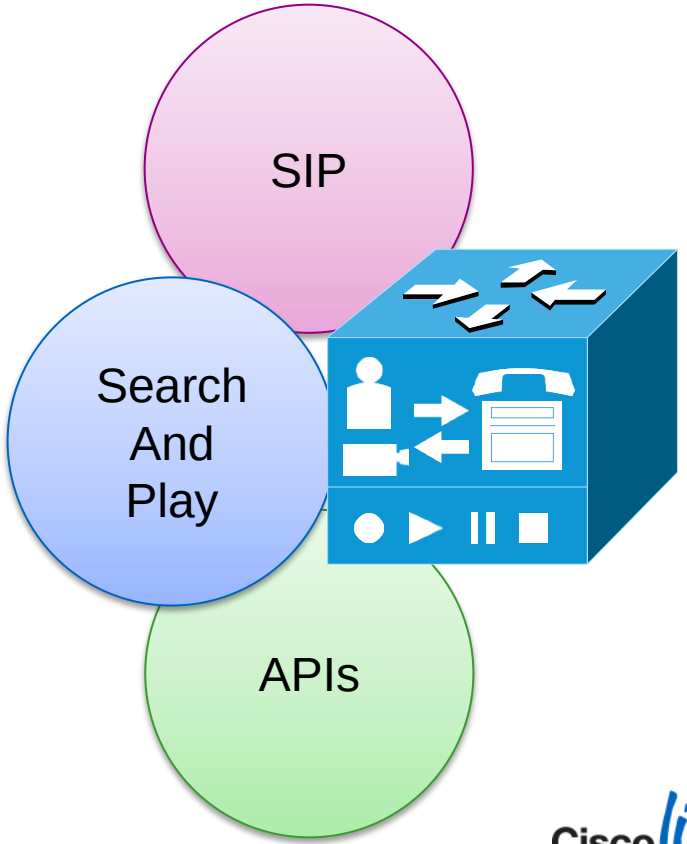
Features and Deployment Considerations

- Where to Record
  - How many Branches?
  - How many concurrent calls per branch?
- What to Record
  - Record internal calls and/or inbound/outbound?
  - Full-time recording or on-demand?
  - BiB or CUBE?
  - SRST Recording?
- What to keep
  - Retention requirements? How long? How much?
  - Centralised archiving?
  - Encryption required?

MediaSense Operation

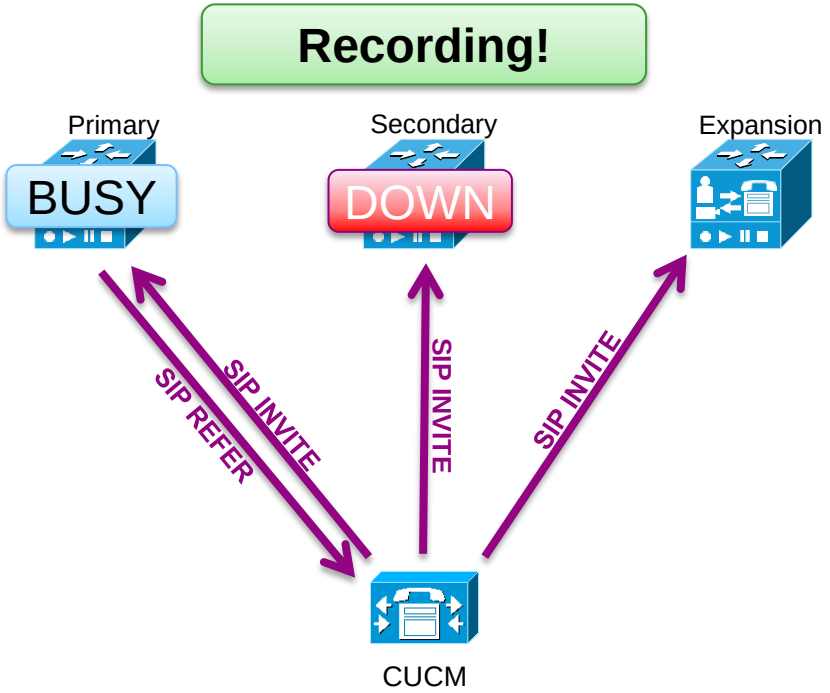
MediaSense Simplicity

- SIP Interface
  - Listens for SIP calls
  - Record and playback audio and video
- Search and Play
  - Search all recordings in a cluster
  - Playback recordings
  - Live stream actively recording sessions
- API
  - REST-like APIs
  - Get recording events
  - Pause recording (compliance)
  - Retrieve recordings for archival



MediaSense Cluster Operation

- Load and Status Aware Cluster
  - 2ms LAN latency
- Recording High Availability
  - CUCM SIP Trunk
  - CUBE Dial-Peer
  - MediaSense cluster awareness
- SIP Refer balances load
- Media location
  - Search and Play across cluster

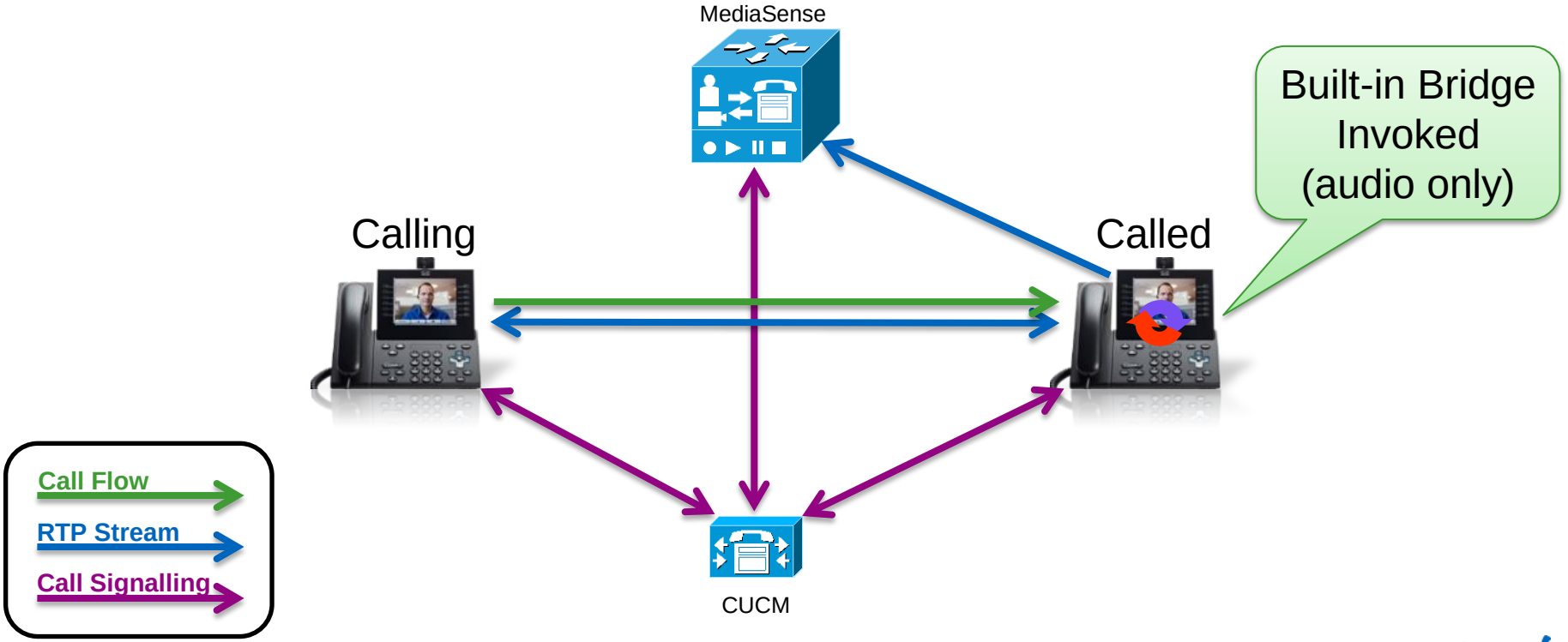


Built-in Bridge Recording

Built-In Bridge Recording

- Most Cisco IP Phone models have a BiB
  - MediaSense Documentation
- CUCM controls the phone's BiB
- Both SIP and SCCP are supported
- "Full Time" recording
  - Automatically records all calls
  - Administrator controlled
- "Selective" recording
  - Phone Softkey initiates recording
  - CUCM JTAPI can also initiate recording
  - User or application controlled

Built-in Bridge Recording






CUBE Media Forking

CUBE Media Forking

- CUBE ISR Platforms Supported
- CUCM independent
  - SIP Trunk direct from CUBE to MediaSense
- Requires both legs to be SIP
  - Inbound and Outbound leg
  - May need to make use of loopback if TDM
- Record on inbound and/or outbound dial-peer

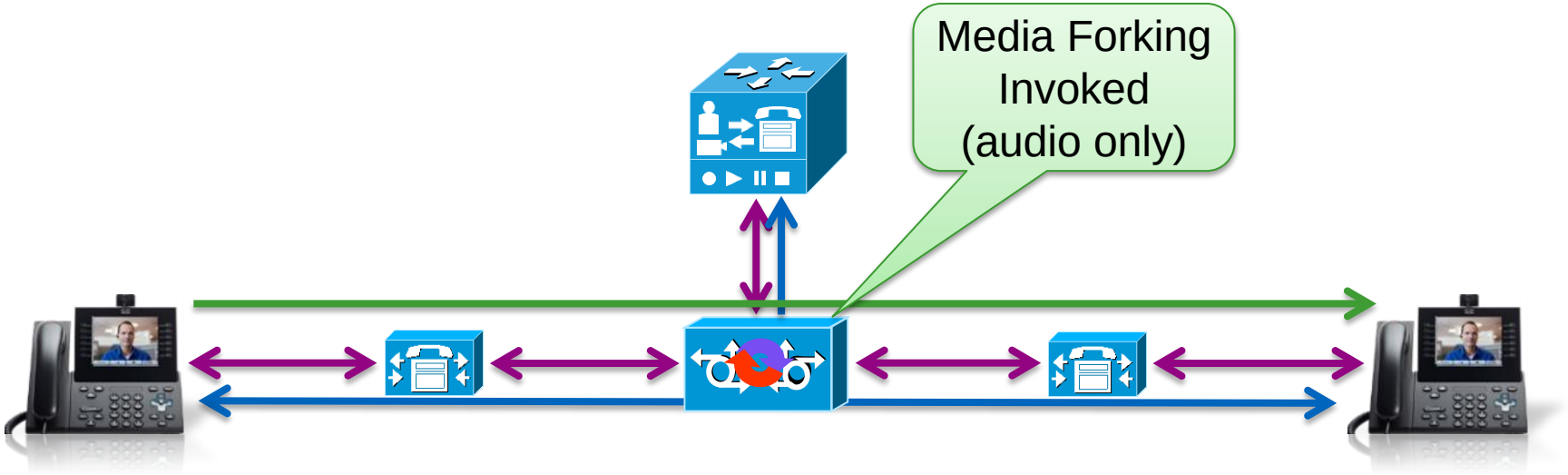
```
media class 3
 recorder parameter
  media-recording 301
!
dial-peer voice 2 voip
 description Recording Inbound Dial-Peer
 incoming called-number .T
 voice-class codec 1
 voice-class sip asserted-id pai
 media-class 3
 dtmf-relay rtp-nte
 no vad
!
dial-peer voice 301 voip
 description Recording Forking Dial-Peer
 destination-pattern 9829
 signaling forward none
 session protocol sipv2
 session target ipv4:10.99.150.42:5060
 session transport tcp
voice-class sip options-keepalive
```

Forking Definition

Enables Forking on Dial-Peer

Points to MediaSense

CUBE Media Forking



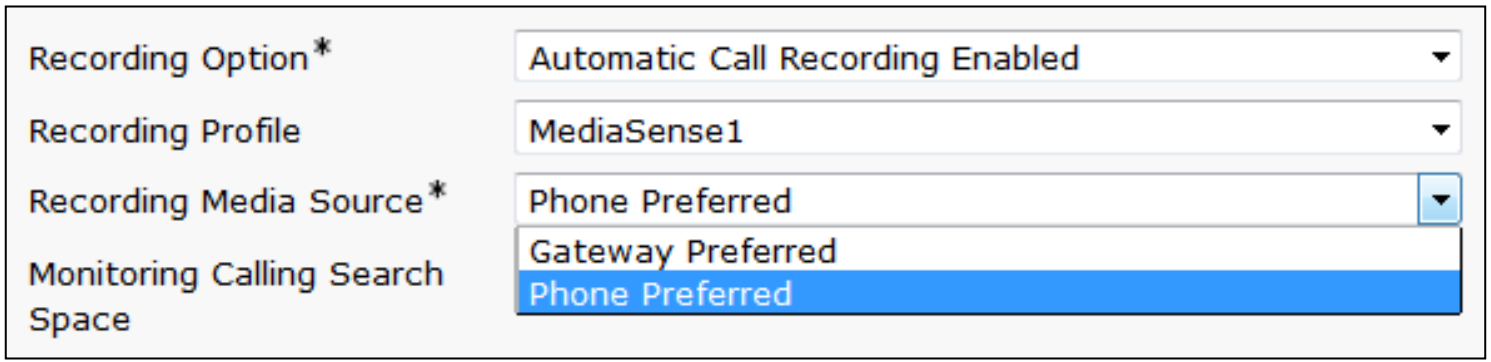
Cisco UCM Network-Based Recording

Network-Based Recording Basics

- Allows UCM routed calls to be recorded
  - Regardless of device, location, or geography
- Centralises recording policy control
- Record calls extended off-network to Mobile and Home Office phones
- UCM dynamically selects the right media source based on call flow
  - Including participants
- Enhanced SIP Header and CTI Metadata
  - Enables applications to track recorded calls in single- and multi-cluster environments
- Recording serviceability counters and alarms
  - Helps compliance officers ensure calls are recorded
  - Real-time monitoring of status and historical performance of the recording

Choosing the Preferred Recording Media Source

- Administrator specifies preference
  - Either Phone Preferred or Gateway Preferred
  - Default is Phone Preferred
- UCM automatically changes the recording media source as needed
  - Changes in call flow, participants, or media requirements



Preferred vs Selected

- If a gateway not in the call flow, phone is selected
- Gateways do not support secure media (sRTP) recording
- SRTP is on MediaSense roadmap for support

Preferred Recording Source	Media Type	Gateways in Call Flow?	Selected Recording Source
Gateway	Unsecure RTP	Yes	Gateway
		No	Phone
	Secure sRTP	Yes	Phone
		No	Phone
Phone	Unsecure RTP	Yes	Phone
		No	Phone
	Secure sRTP	Yes	Phone
		No	Phone

Fallback Source Selection

- Selected source is not available (or valid)
  - UCM automatically attempts to use an alternate source to help ensure the call is recorded
- Gateway is preferred
  - UCM attempts to use the first gateway in the call flow (ingress or egress)
  - If first gateway is not available, last gateway is selected
  - If neither gateways are available, phone is selected
- When phone is selected, Unified CM attempts to use the phone
  - If phone source is not available, UCM will attempt to use the first gateway in the call flow
  - If first gateway is not available, the last gateway is attempted

Selection Order	Gateway Selected	Phone Selected
1	First Gateway in call path	Phone
2	Last Gateway in call path	First Gateway in call path
3	Phone	Last Gateway in call path

Gateway Requirements

- Supports both Voice gateways and Unified Border Elements (CUBE)
  - Interface with UCM must be SIP
  - Not supported for H323 or MGCP based calls
  - Router platform must supports the UC Services Interface
- ISR-G2 Gateways (29XX, 39XX Series)
  - IOS release 15.3(3)M1 or later are supported
  - 15.3(3)M1 was released on CCO in Oct / 2013
- ASR-1K Gateways
  - IOS release XE 3.10.1 or later are supported
  - XE 3.10.1 was released on CCO in Oct / 2013
  - On MediaSense roadmap for support

Setting Up Gateway for Recording

The following example sets up the router for Cisco Unified Communication IOS Services. It enables the HTTP server and the XMF, providers. The configuration specifies the address and port that the application uses to communicate with the XMF provider.

```
!
uc wsapi
  message-exchange max-failures 100
  response-timeout 0
  source-address 172.156.19.38
   probing interval negative 20
   probing interval keepalive 255
   probing max-failures 3
!
  provider xmf
    remote-url 1 http://test.com:8090/xmf1
    remote-url 2 http://172.19.156.53/xmf2
  !
!
```

CLI's to enable UC Services API

CLI's to enable HTTP Server

```
!
http client connection timeout <1-60>
http client connection idle timeout <1-600>
!
ip http server
ip http timeout-policy idle 600 life 86400 requests 86400
ip http max-connections 1000
```

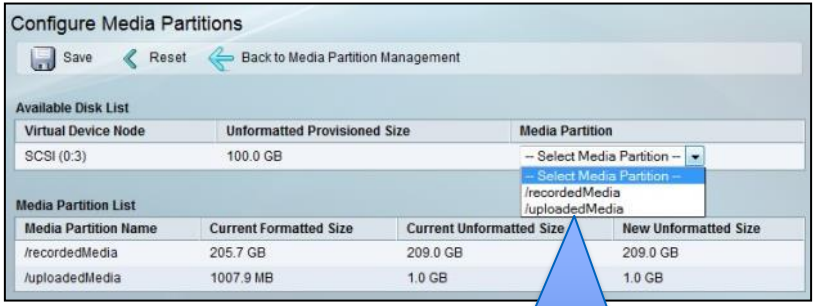
XMF applications are configured with the applications ID's, 1 (for Subscriber 1) and 2 (for Subscriber 2). Up to 32 applications can be configured.

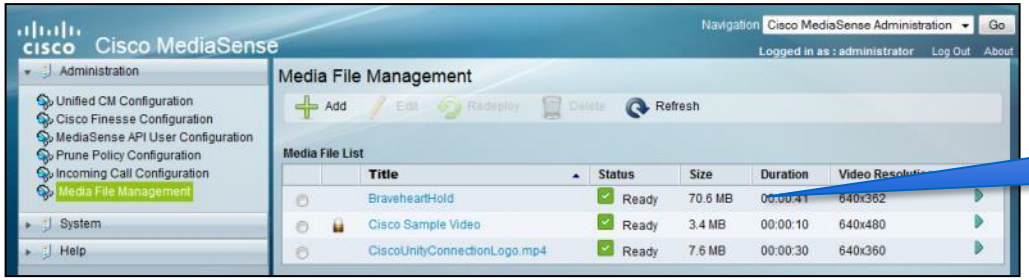



Native Features

Media Management

- After MediaSense install
  - 200GB of recording storage
  - 1GB of upload storage
  - Both can be increased
- Upload media files
  - H.264 with AAC-LC codecs
  - Video on Hold and Video Greetings Blanking file
  - Incoming Call Configurations
- Uploads are transcoded to
  - Size will reflect all forms of uploaded media



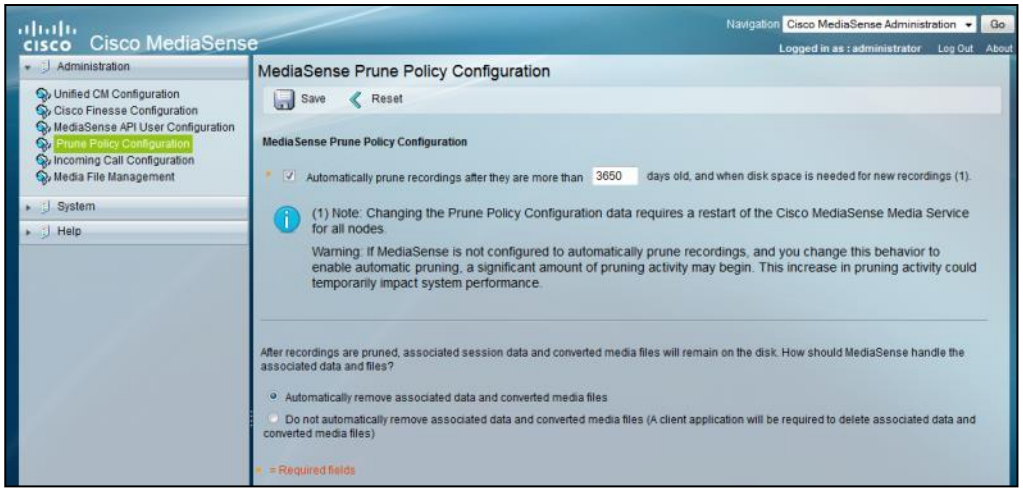


Transcoded to G7.11ulaw, G.729, G.722, and AAC

Done Live! No downtime to add storage.

Pruning Recordings

- Prune Policy determines how long to hold media
  - From 1 to 3650 days (10 years)
  - Select how to handle associated data
- In 10.0 release this will affect
  - Recordings from UCM/CUBE
  - Video Greetings
  - No affect on uploaded media
- 3rd Party Integrations
  - Delete upon upload
  - Leave recording and data in place



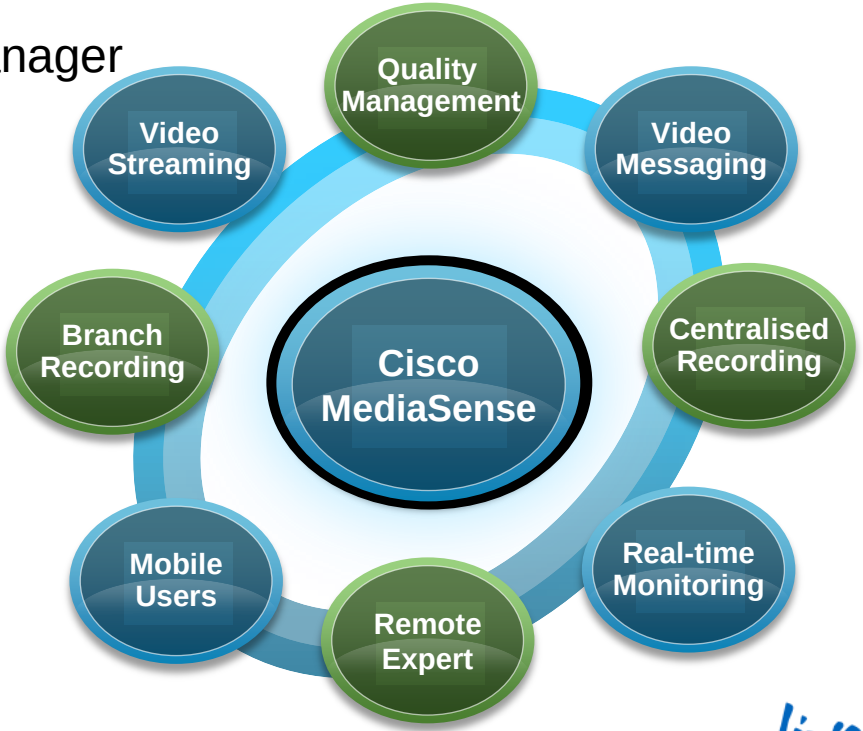
Incoming Call Configurations

- Instruct MediaSense how to handle calls
- Assign DNs or URIs to media
  - 9811@<mediasenseIP>
  - video1@<mediasenseIP>
- Select an Action
  - Play continuously (VoH)
  - Play Once (Tutorial)
  - Record (Recording Profile)
  - Reject
- No follow-up action
  - Play once or reject will end call
  - Remote side can end call

MediaSense Integrations

Cisco MediaSense

- Video Greetings with Unity Connection
- Video On Hold with Communications Manager
- Video in Queue with Remote Expert
- Supervisor Gadget for Finesse / UCCX
- Search and Play Enhancements
- Platform Updates, including UCS-E
- Media Capture, Storage, Playback
- Live Streaming / Monitoring
- Media Content Streaming Server






Video on Hold

Video on Hold

- MediaSense and UCM 10.0 add Video on Hold
- New Video on Hold server config in UCM
  - Add to MRG and MRGL just as MoH server
  - VoH just needs to be prioritised over MoH
- CUCM supports one video per MS SIP Trunk
- Video is uploaded directly to MediaSense
- Verify resolution is compatible with all devices

Video on Hold Function

CUCM



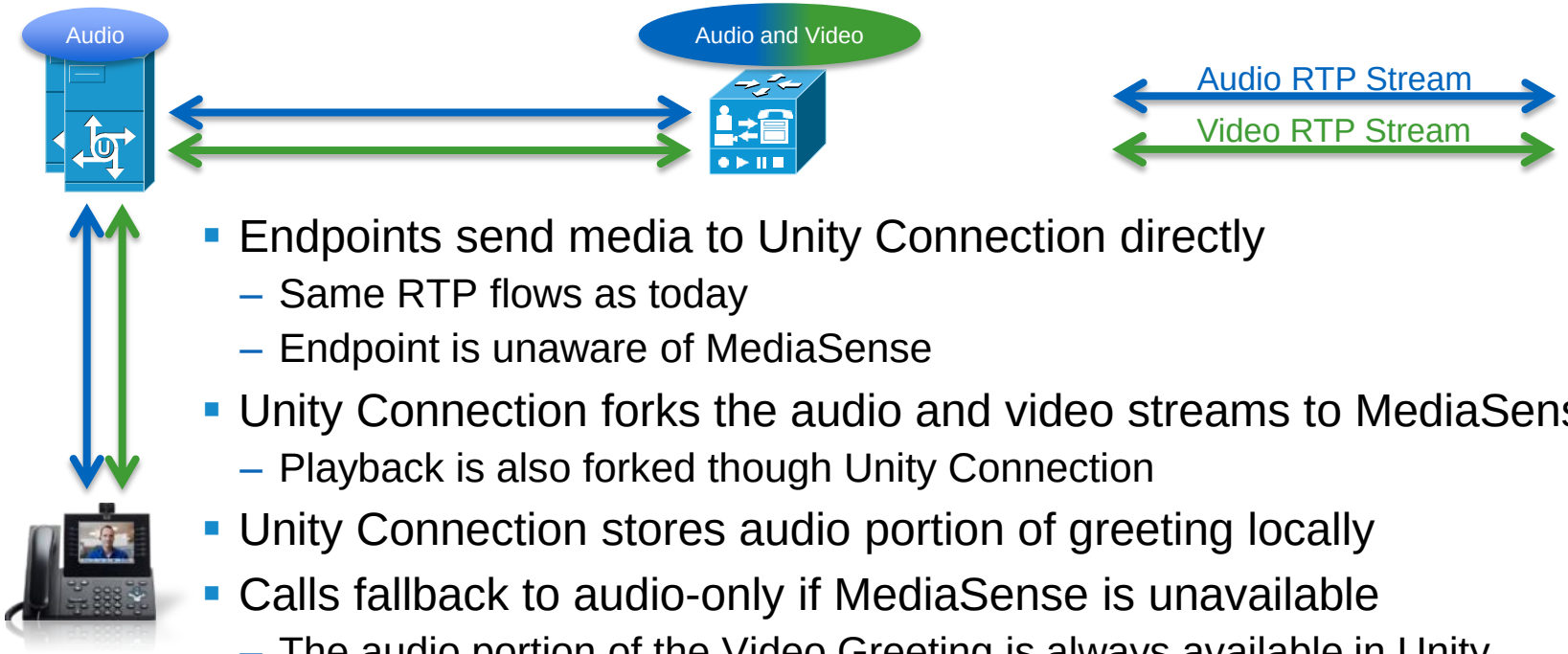

Video Greetings

Unity Connection Video Greetings

- Video Greetings is the first phase of Video Messaging in Unity Connection
- Supports UCM-integrated video IP phones and Jabber endpoints
- Leverages MediaSense for Video Recording and Playback
- MediaSense is Cisco's common media platform
  - Video on Hold
  - Live Record
  - Remote Expert
  - Compliance Recording
  - Storage and Playback

Video Greetings

Video Greetings Architecture



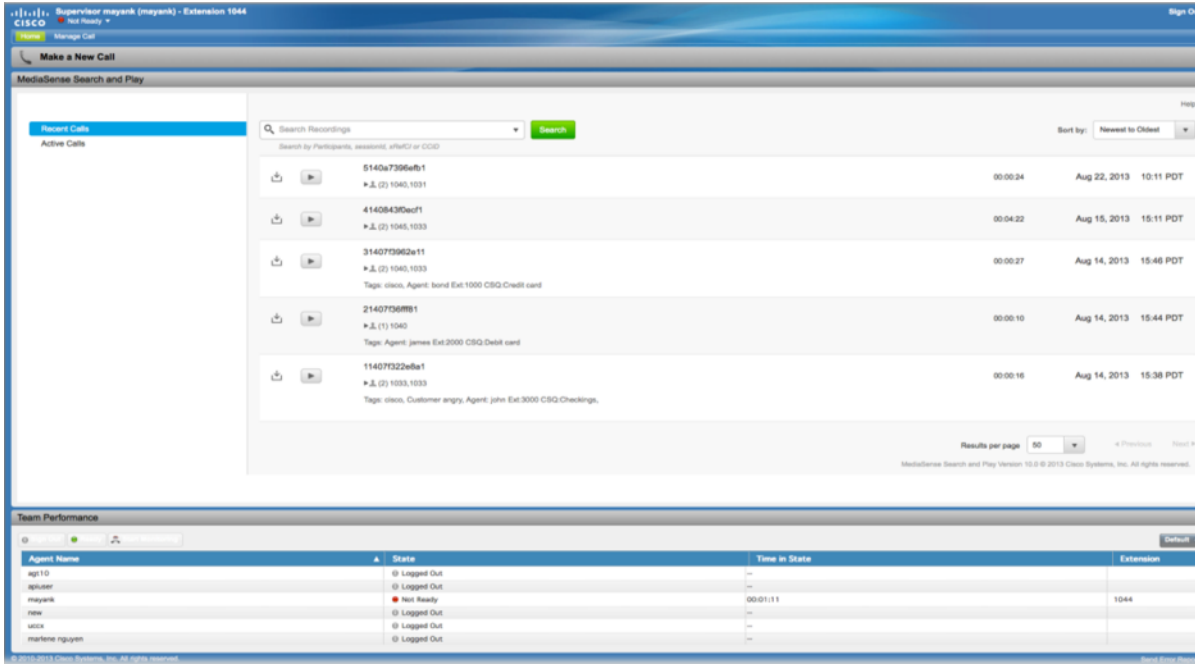
- Endpoints send media to Unity Connection directly
  - Same RTP flows as today
  - Endpoint is unaware of MediaSense
- Unity Connection forks the audio and video streams to MediaSense
  - Playback is also forked though Unity Connection
- Unity Connection stores audio portion of greeting locally
- Calls fallback to audio-only if MediaSense is unavailable
  - The audio portion of the Video Greeting is always available in Unity Connection

Video In Queue

- Play Video for callers while they wait for Video enabled Agent or Expert
- Available with Remote Expert Solution 1.9
- Video Upload via MediaSense System Admin GUI. Specifications –
- MP4 Video Format
- Video codec H.264
- Audio codec AAC-LC

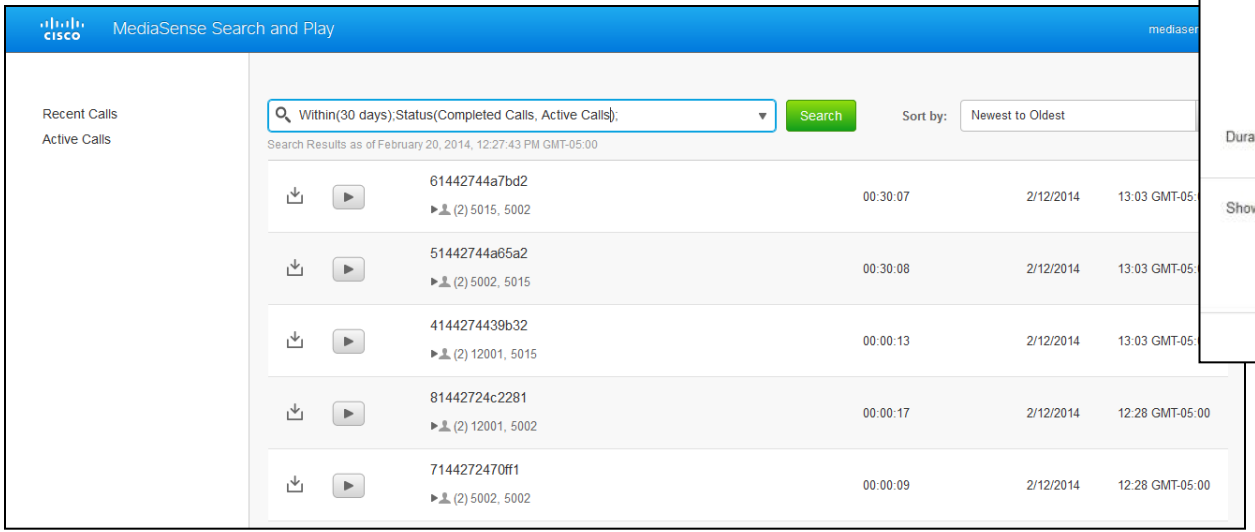
Finesse/UCCX 10.0

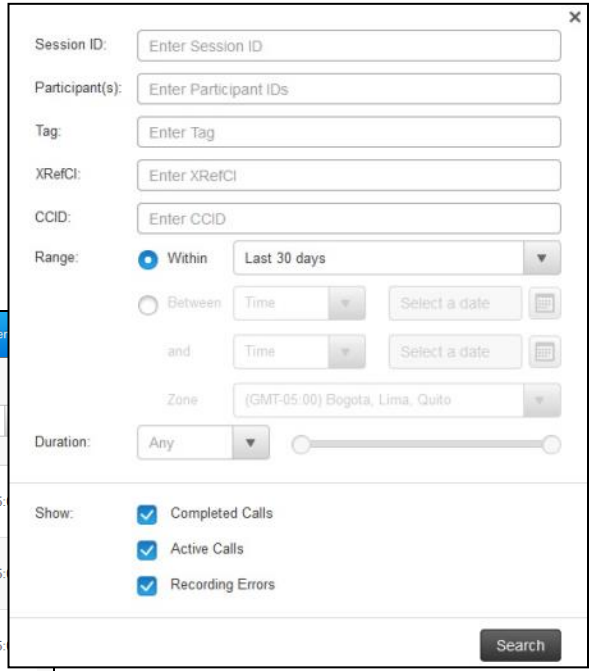
- Recording control
  - Selective
    - Finesse workflow scripting
  - On-demand:
    - Softkey on IP phone
  - Full-time
    - CUCM recording profile
    - IOS dial-peer
- Codecs
  - G.711A/μ, G.729, G.722
- Supervisor Controls via GUI
- Playback / Export to Wav
- Customisable Widget



Improved Search and Play

- Search for Recordings By Tags
- Search for Recordings using compound filters
- Unlimited Search Results
- Ability to Export Recordings to Wav or MP4





Platform Updates

- New Virtual Machine OVAs
  - Small (2 vCPU)
  - Medium (4 vCPU)
  - Large (7 vCPU)
- UCS-E server support
  - 2 and 4 vCPU OVAs
  - Different scale than B/C series
- No SRE-910 support

Call Recording Deep Dive

Typical Call Scenarios and Recording Method

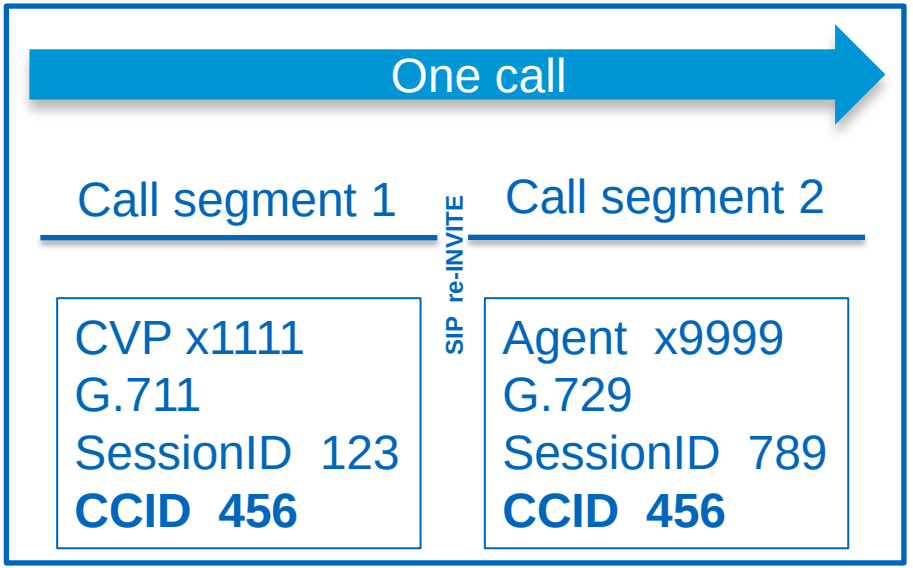
Call Type	Call Flow	UCCX / Non-CC Recording Method	UCCE Recording Method
Inbound	To Agent	CUCM IP Phone BiB CUBE Media Forking	CUCM IP Phone BiB CUBE Media Forking
Outbound	From Agent	CUCM IP Phone BiB CUBE Media Forking	CUCM IP Phone BiB
Consult	Office to Office	CUCM IP Phone BiB	CUCM IP Phone BiB

Understanding Call Correlation

- Call correlation is the process of associating all the different parts of a call
  - Correlating users/agents to phone numbers
  - Multiple sessions (hold/resume/transfer)
  - Build a single call flow for administrators/supervisors
- Different call flows affect correlation differently
- GUID and MediaSense CCID are the same
  - These are global values that should span across all sessions of a single call
- CUBE and CVP respect GUIDs that are received
  - The GUID is passed through
  - CUBE will create a GUID if none is received
- CUCM does NOT expose the GUID through JTAPI
  - Apps will not be able to correlate based on GUID through CUCM
- For UCCE, CTIOS is used by external applications to retrieve GUID

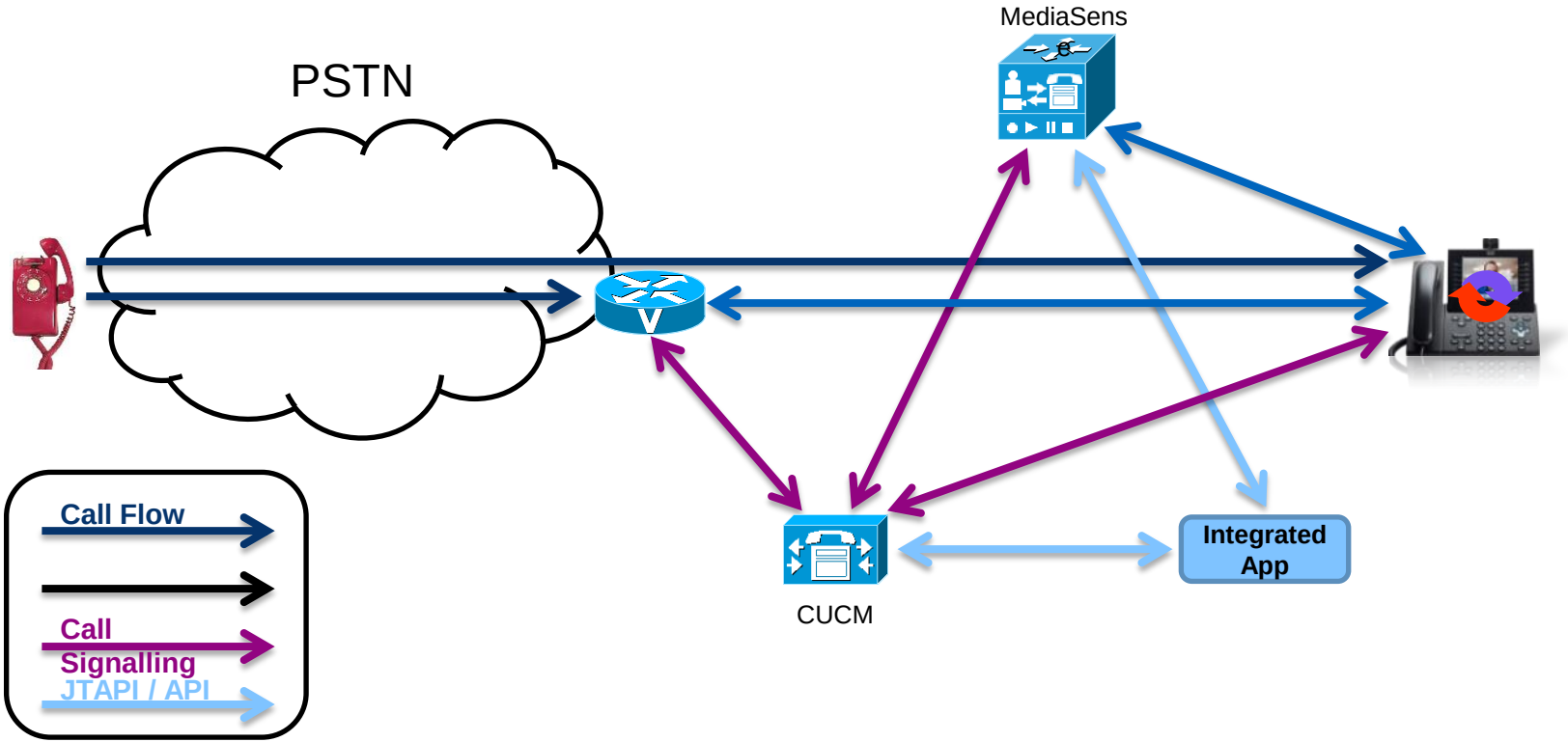
Mid-Call Codec Change

- Starts new recording session
- MediaSense stops existing recording session and starts a new one
- Calls still correlate-able
- Search and Play
  - Two successive but separate sessions
  - Different session IDs
  - Both share the same CCID/GUID
- Check with partner app
  - Not all support correlating

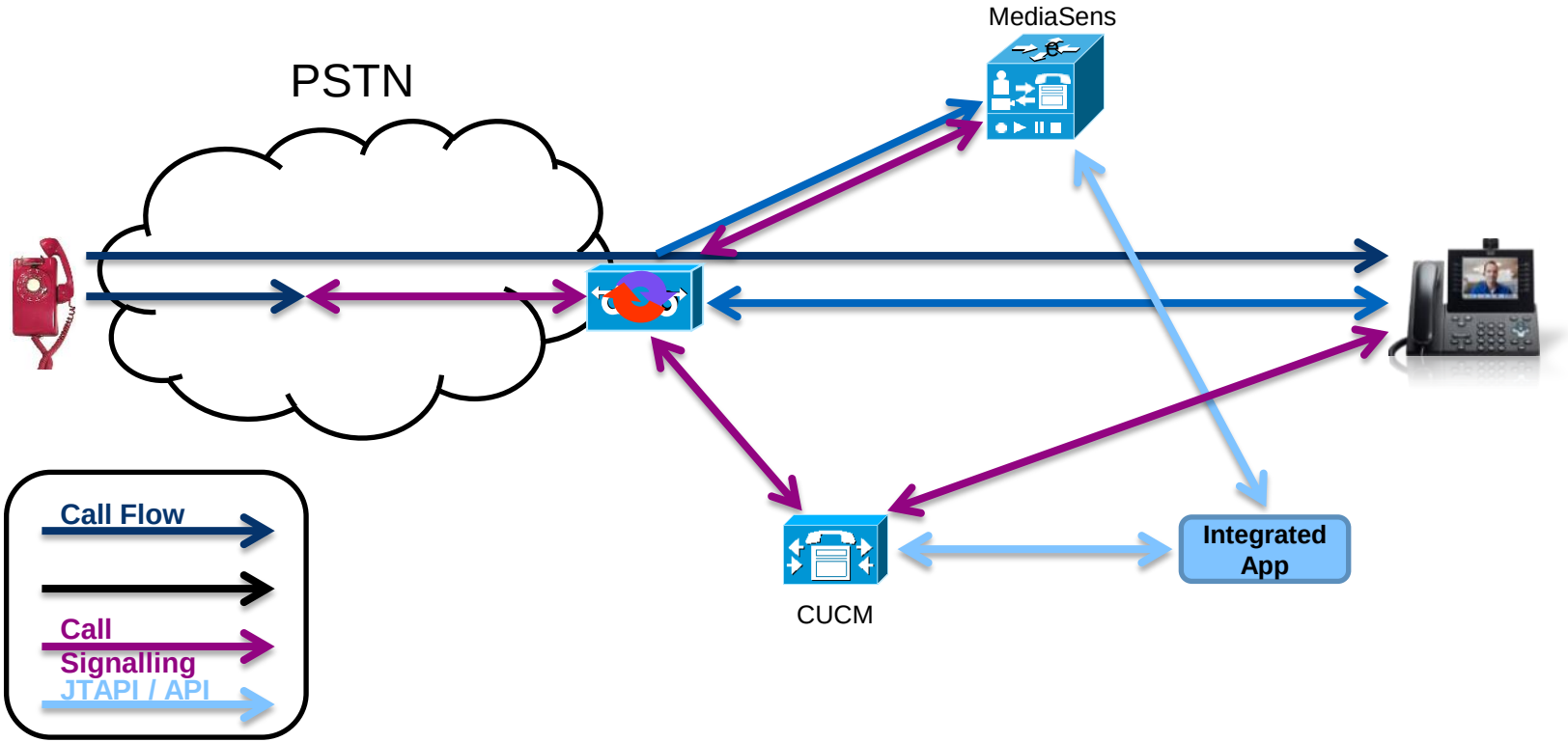


Non-CC/UCCX Inbound Calls

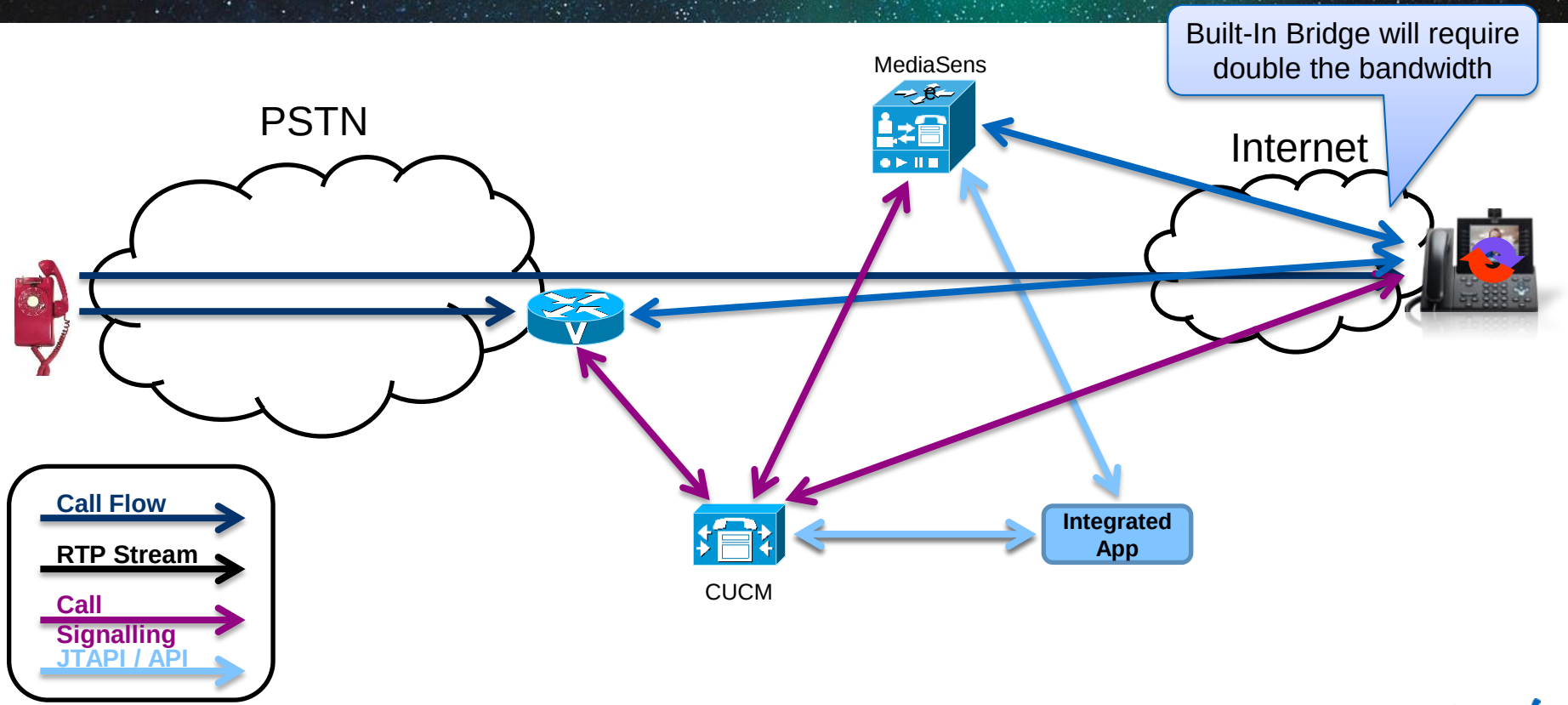
BiB - TDM PSTN to Local Phone



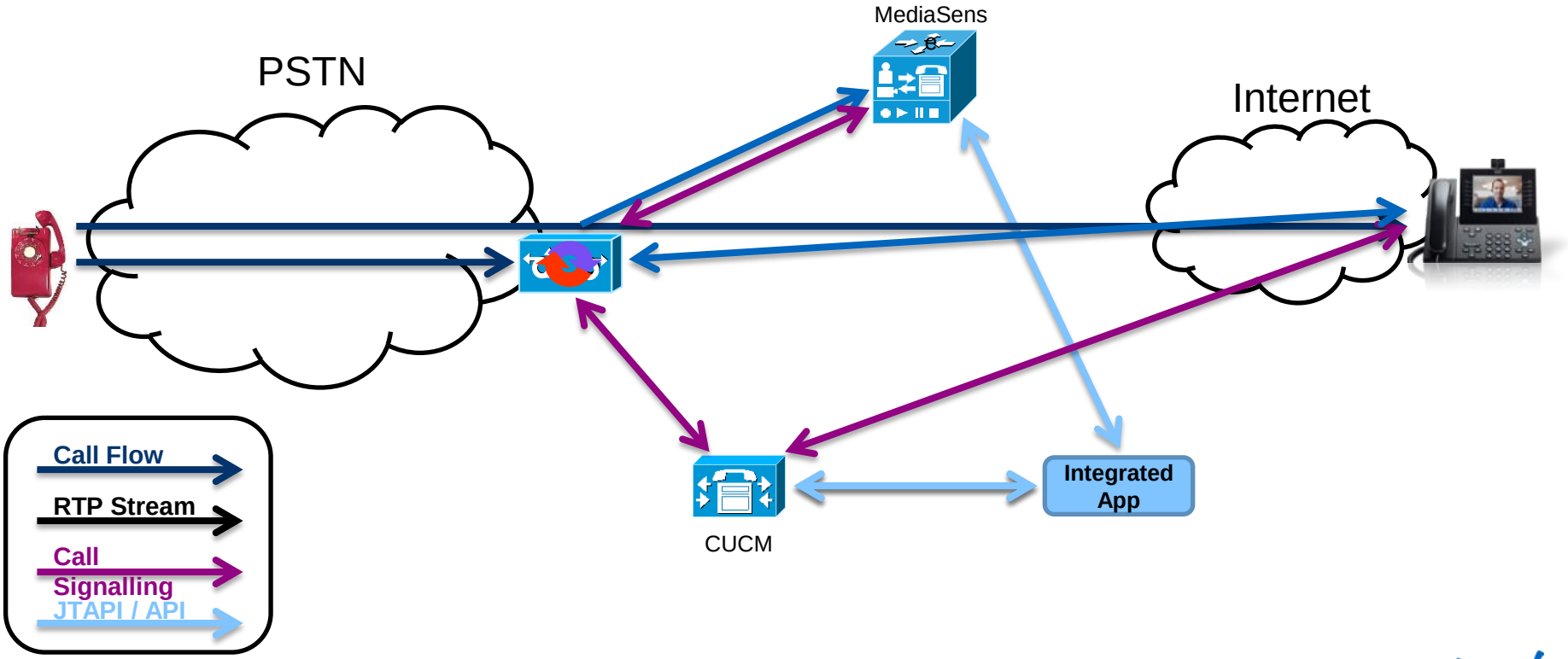
CUBE - SIP PSTN to Local Phone



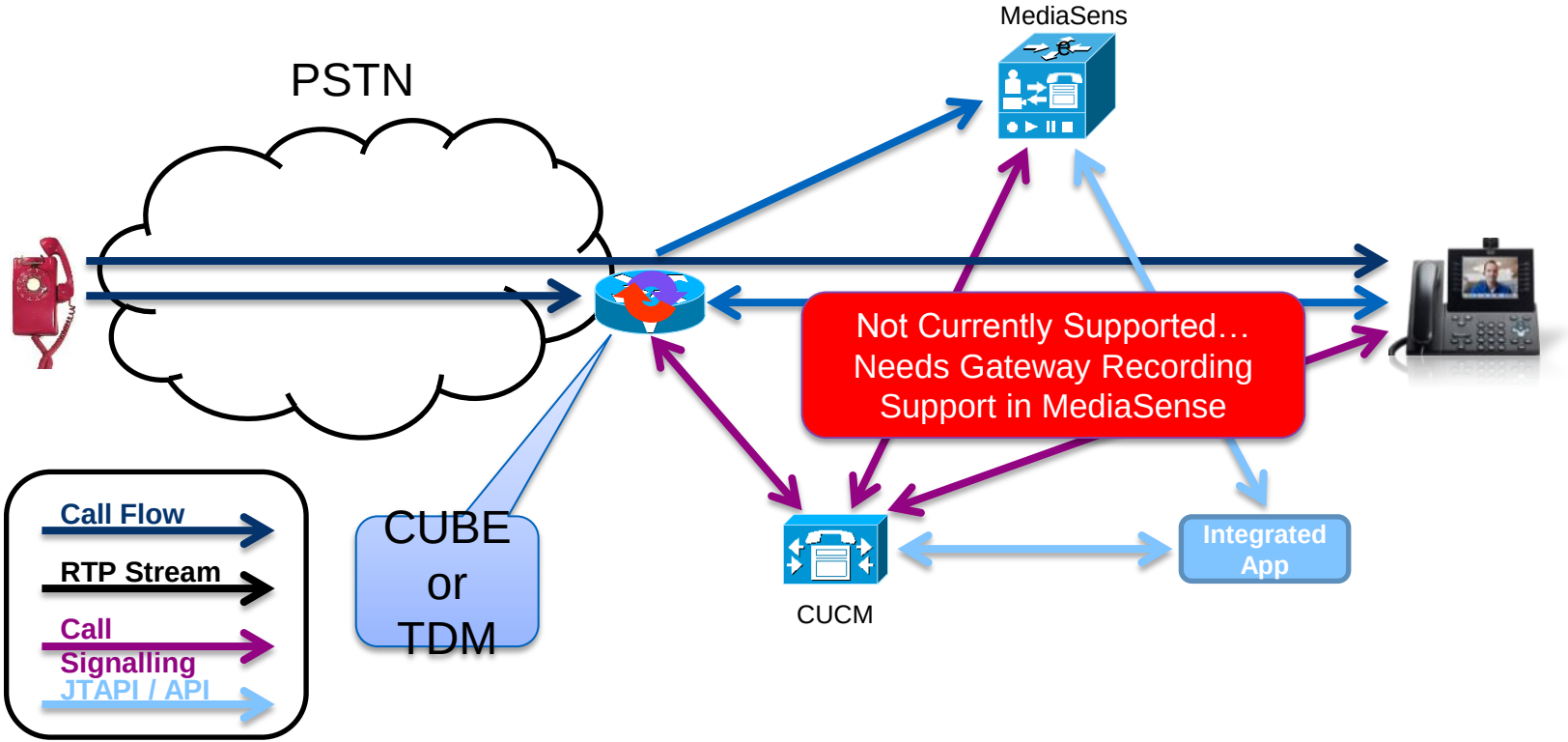
BiB - Remote Phone via IP



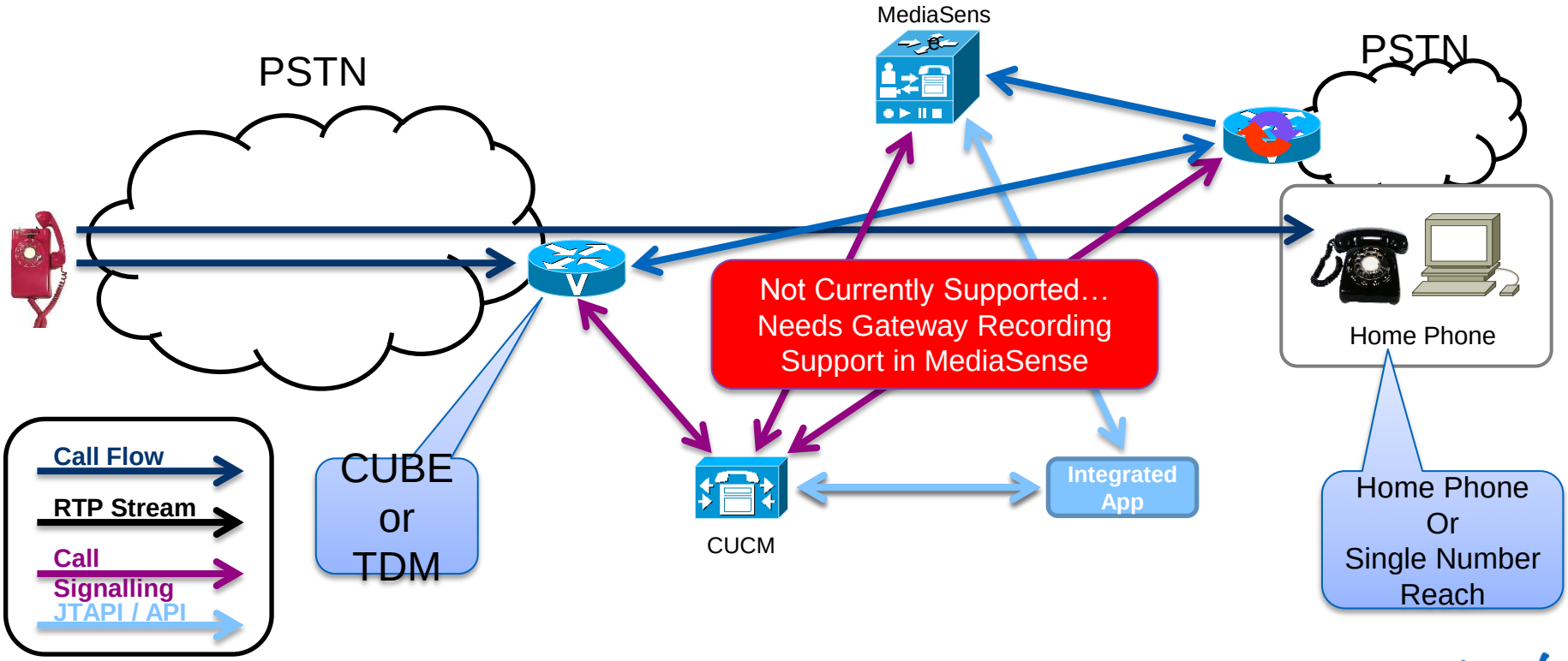
CUBE - Remote Phone via IP



Gateway Recording – Local Phone



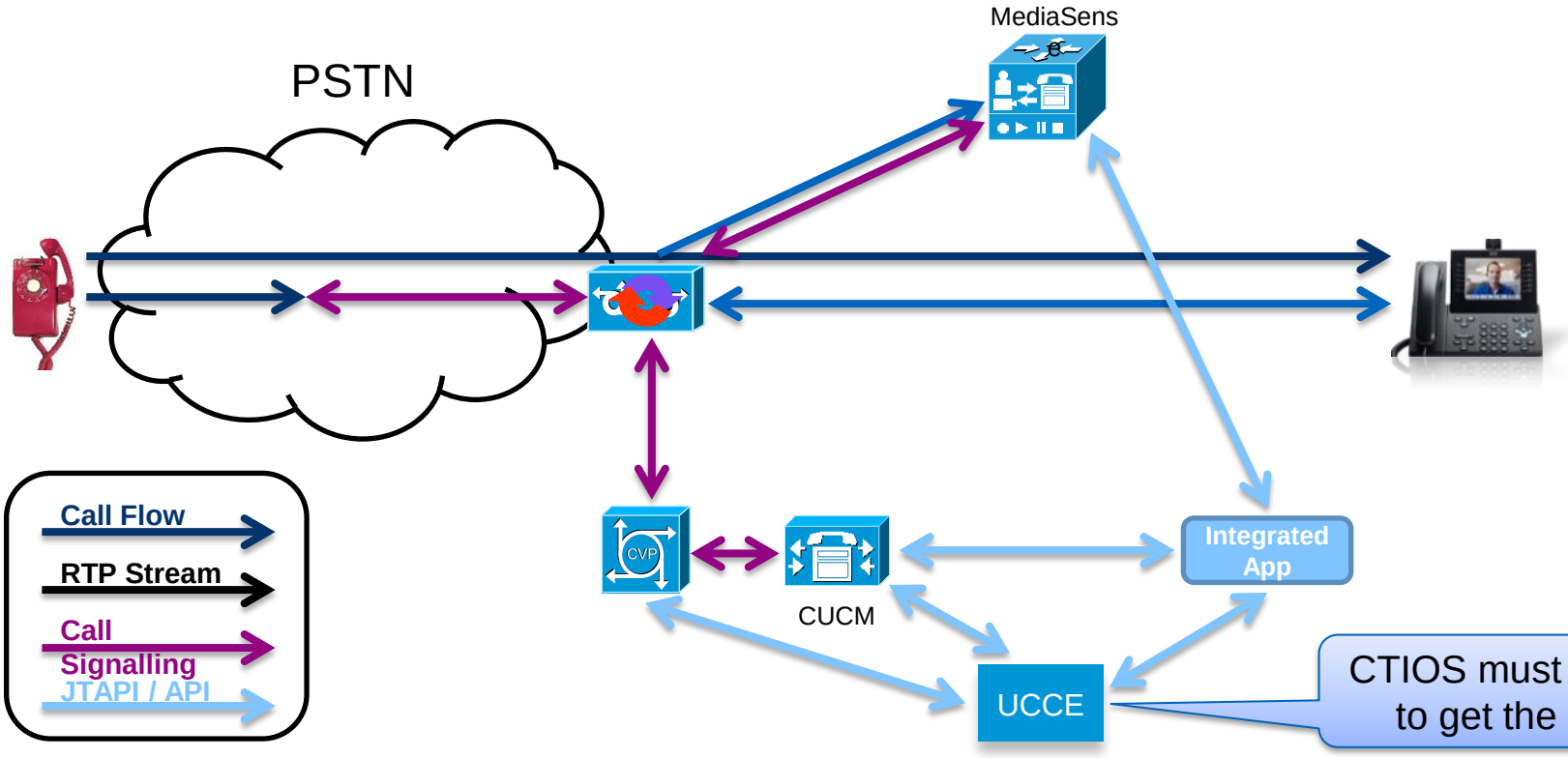
Gateway Recording – Remote Phone



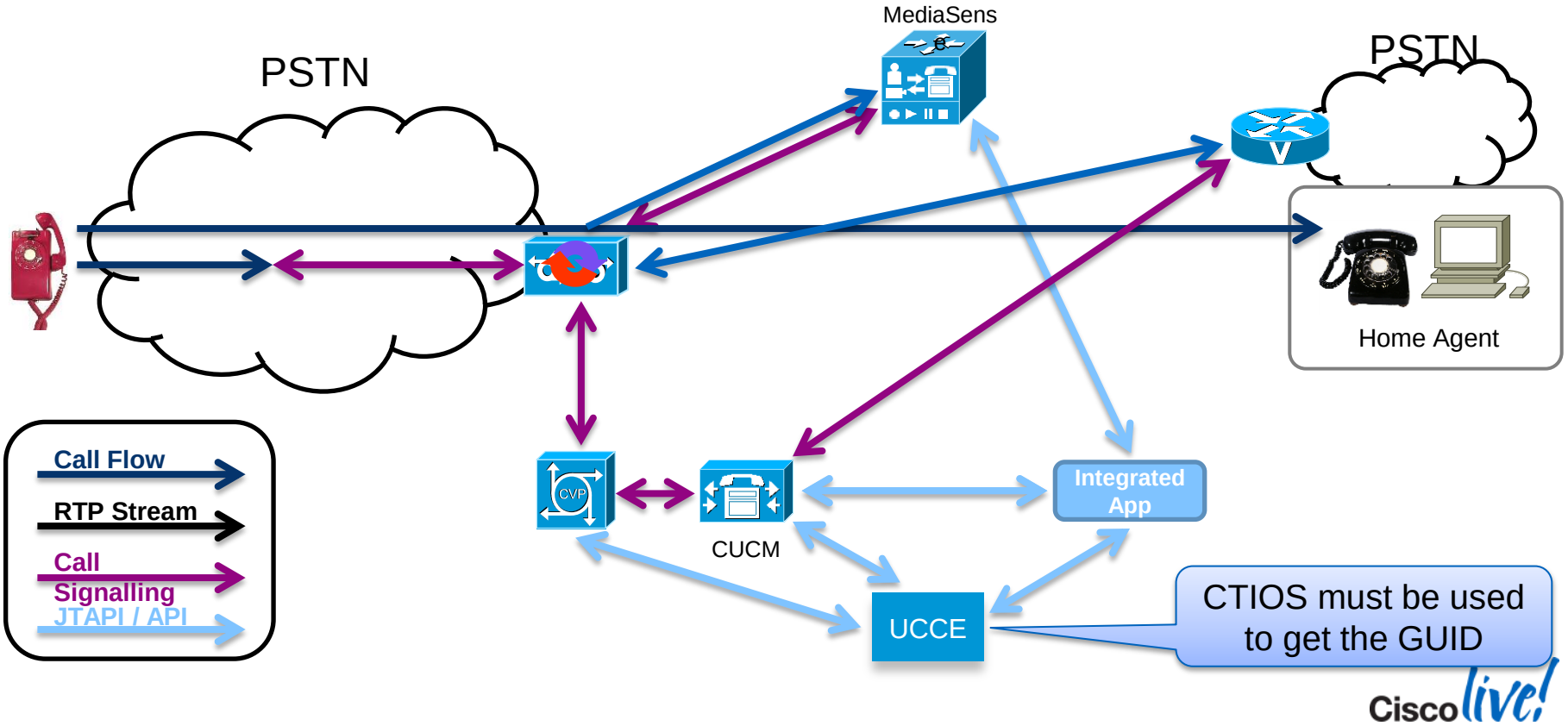



UCCE Inbound Calls

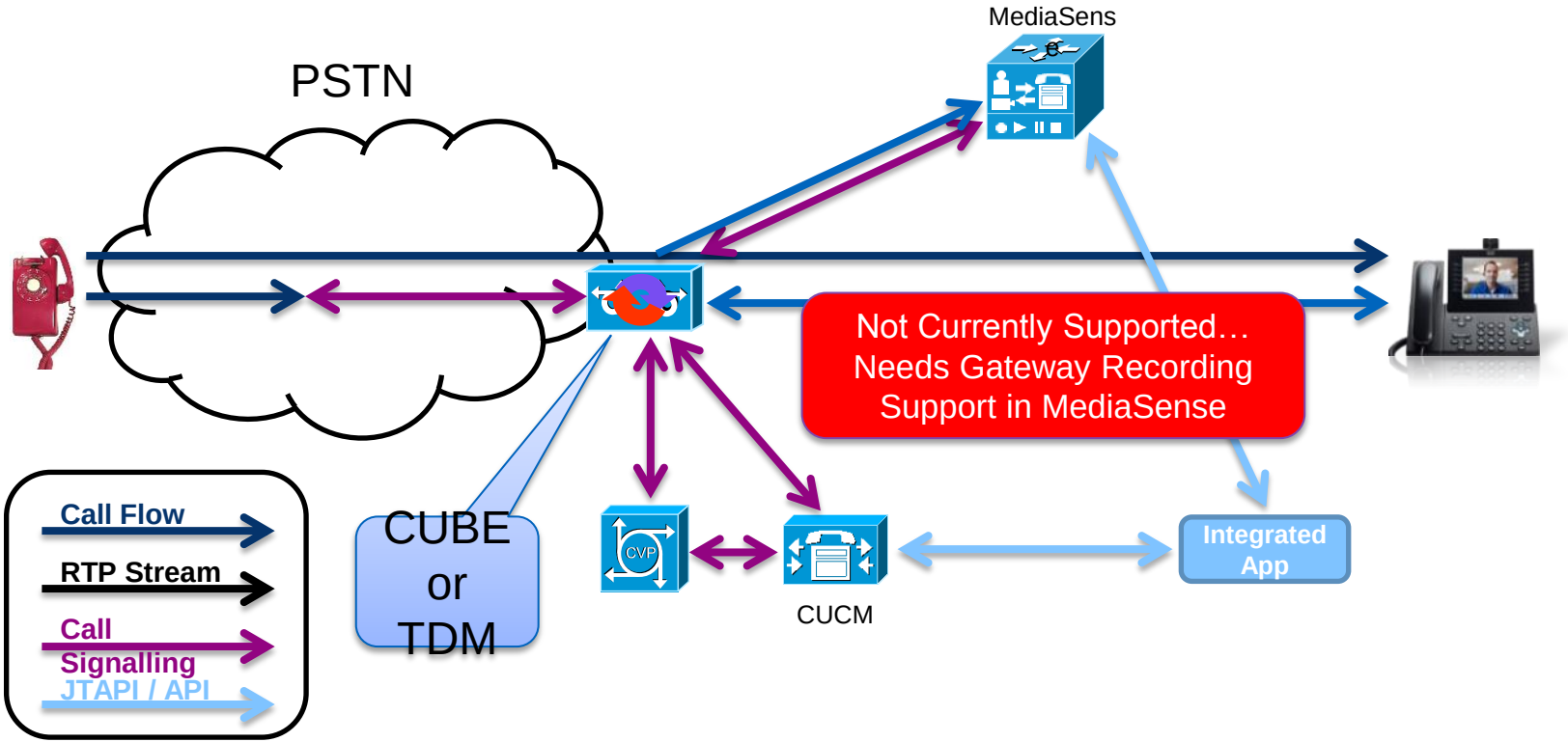
CUBE - Agent Phone



CUBE - Remote Agent via TDM



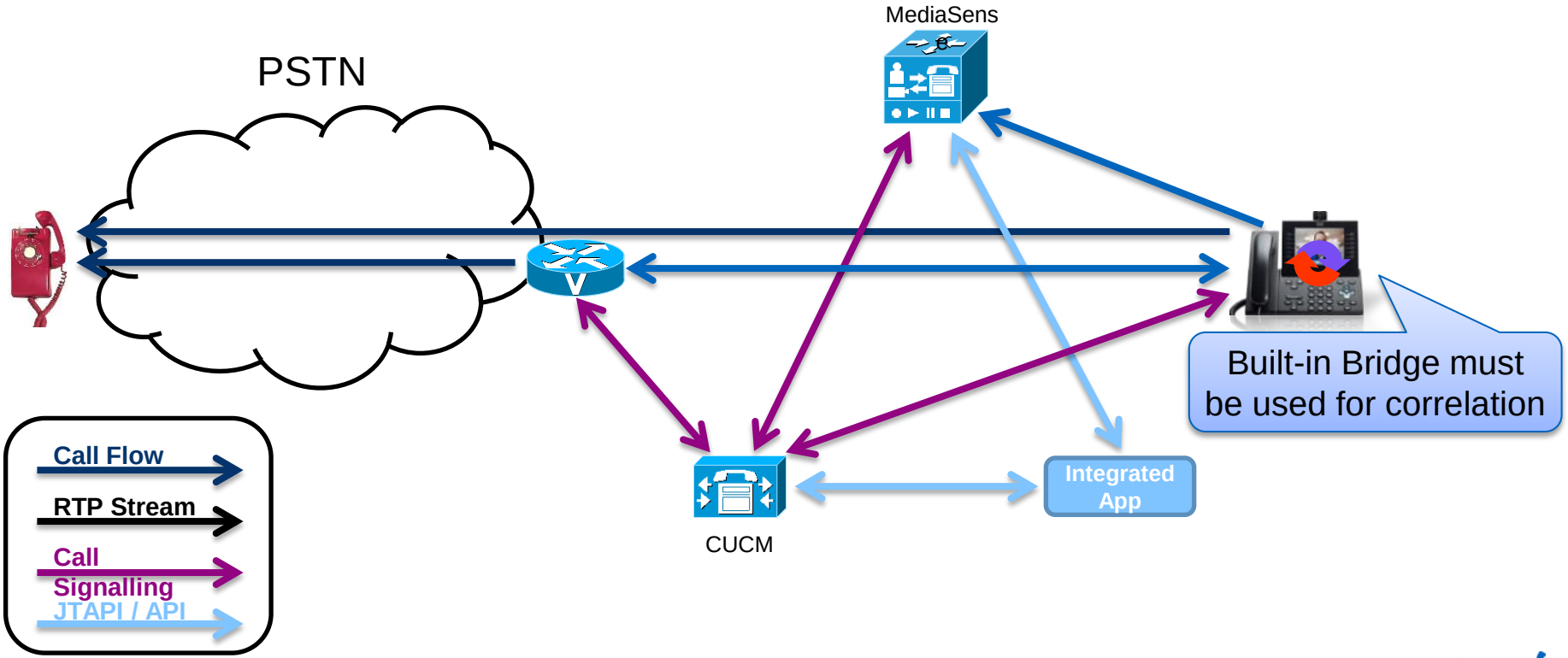
Gateway Recording – Inbound Agent Call



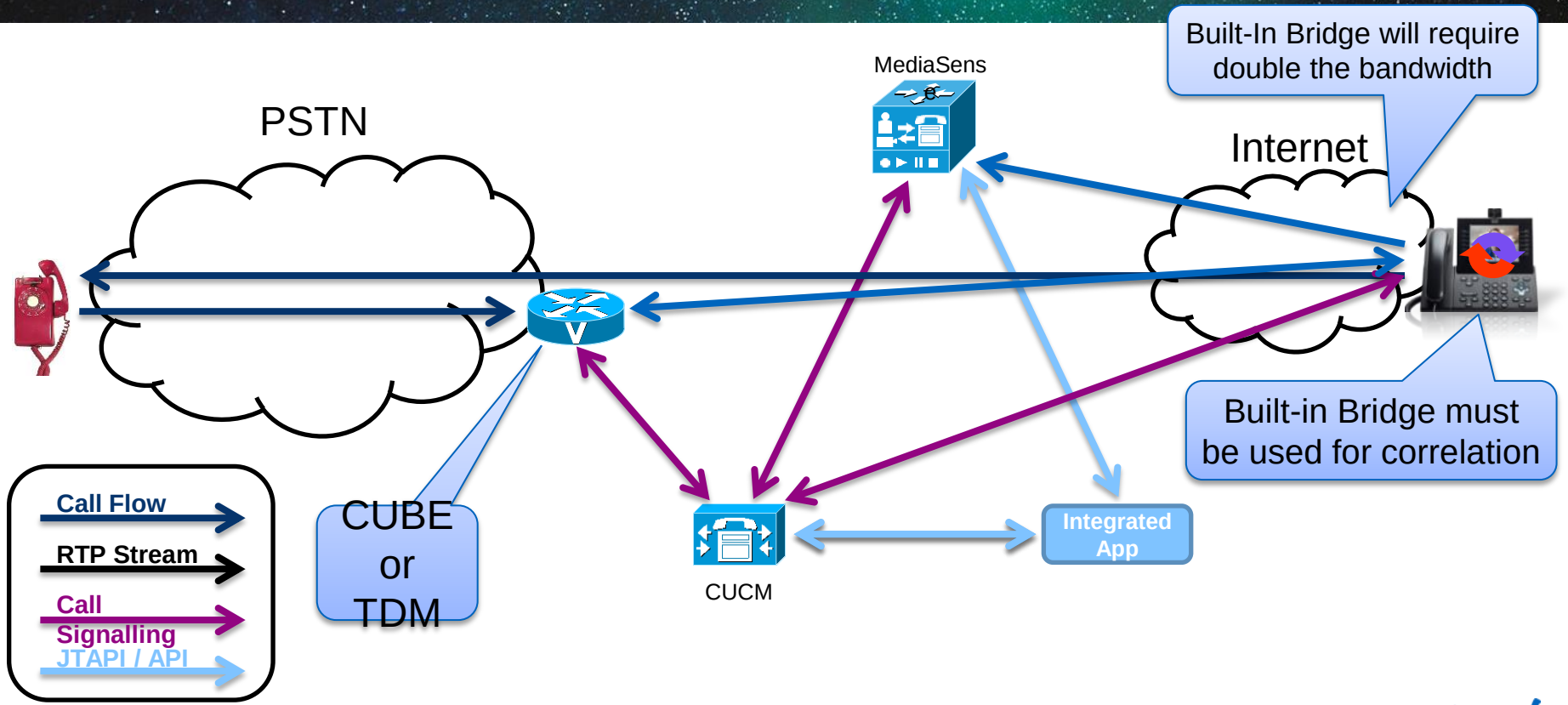



Outbound Calls

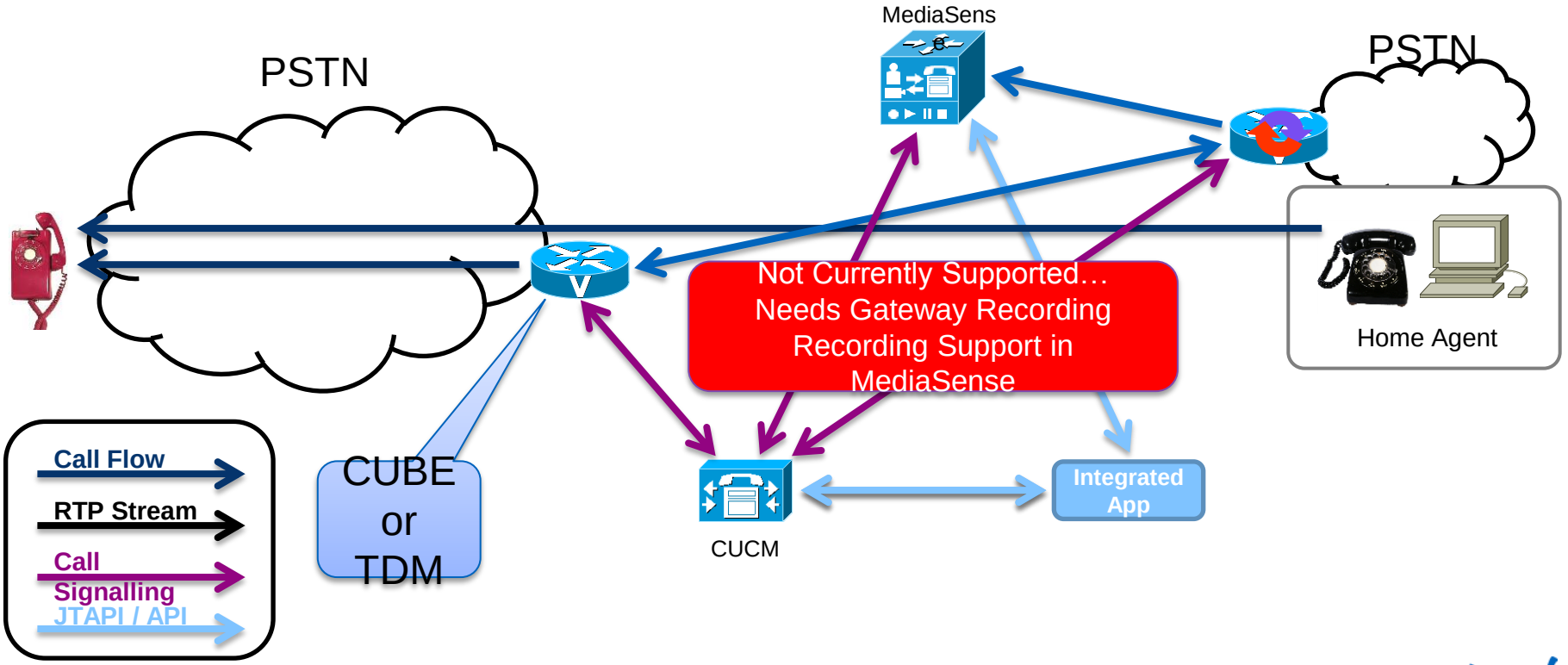
BiB - Local Phone to PSTN



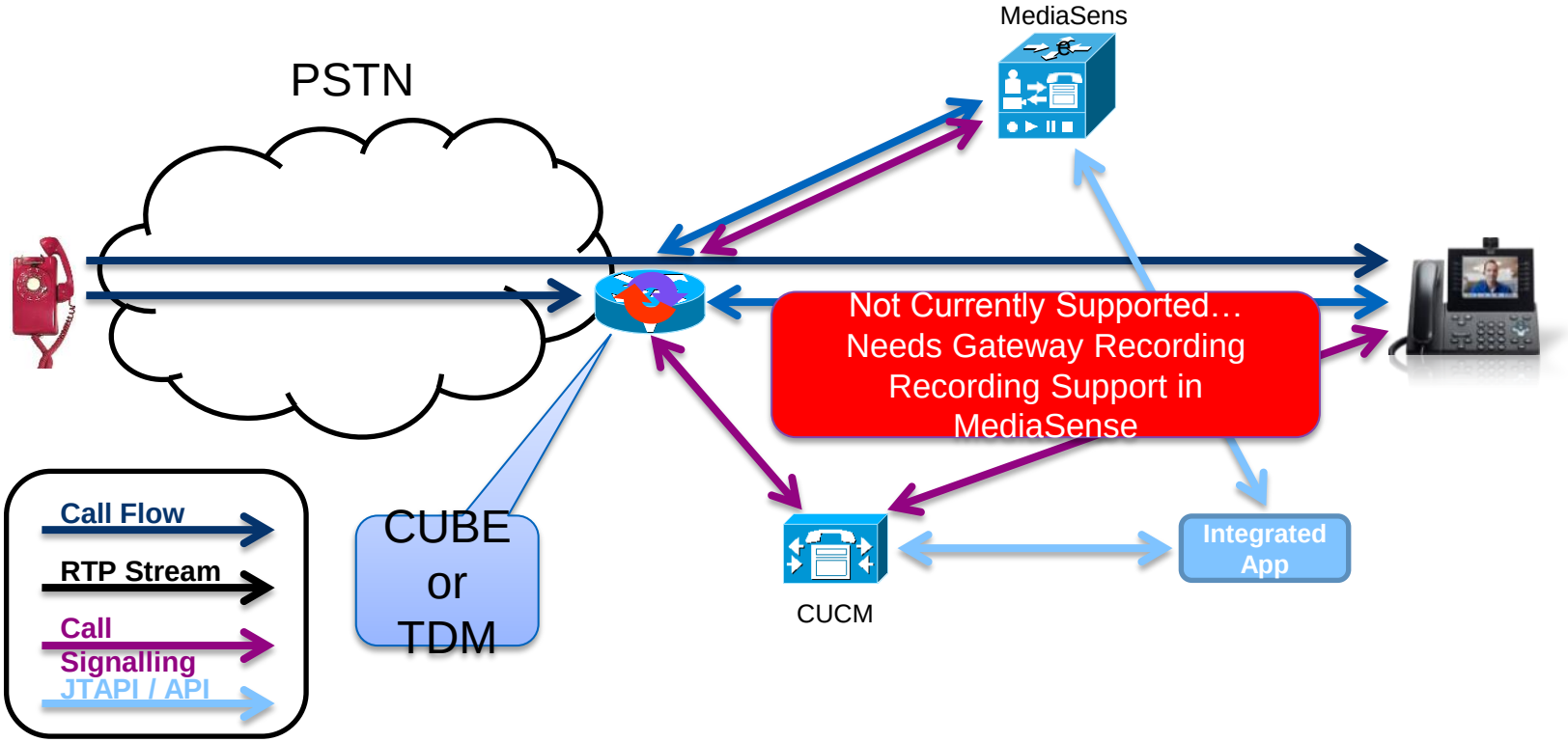
BIB - Remote Phone via IP to PSTN



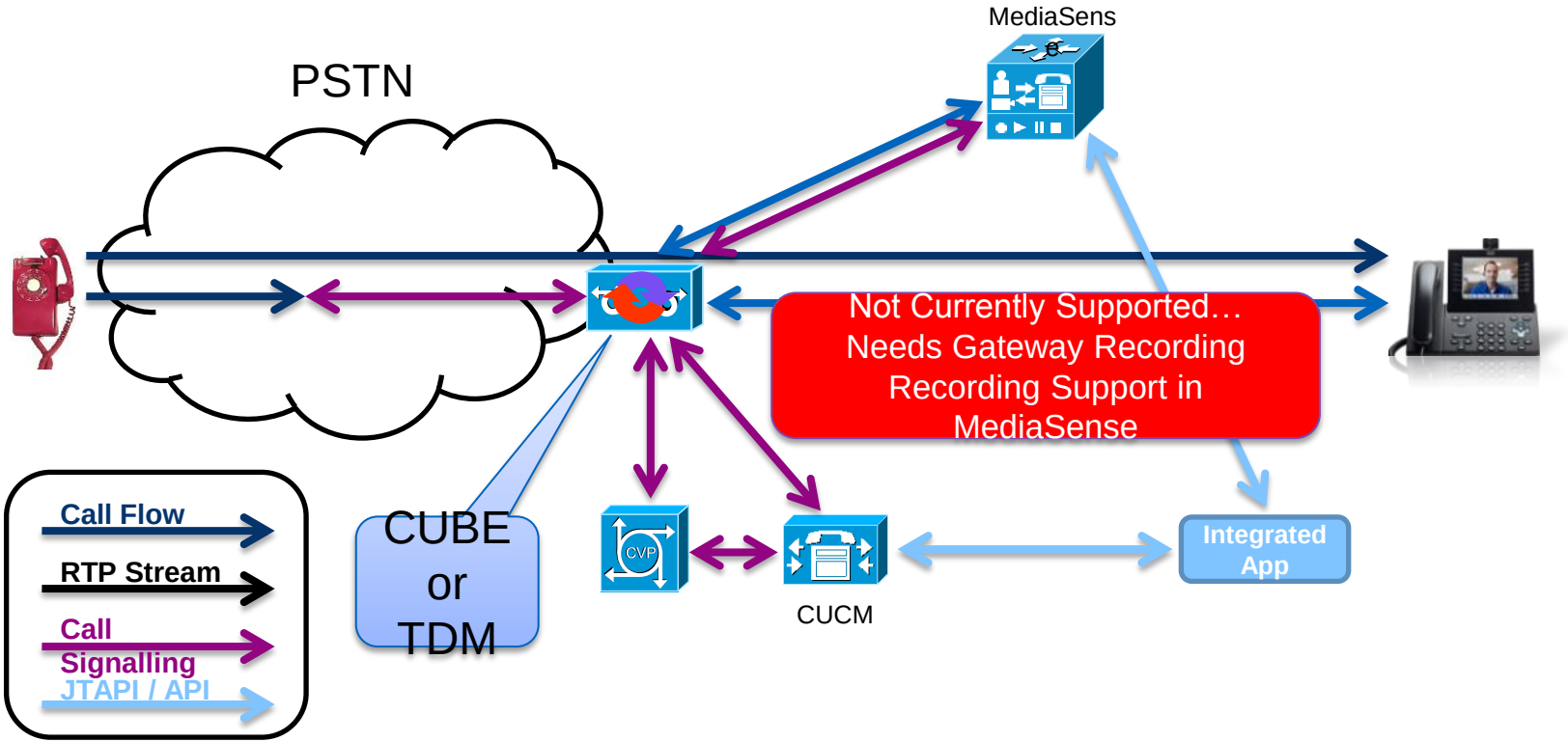
Gateway Recording –Remote via TDM to PSTN



Gateway Recording –Inbound Local



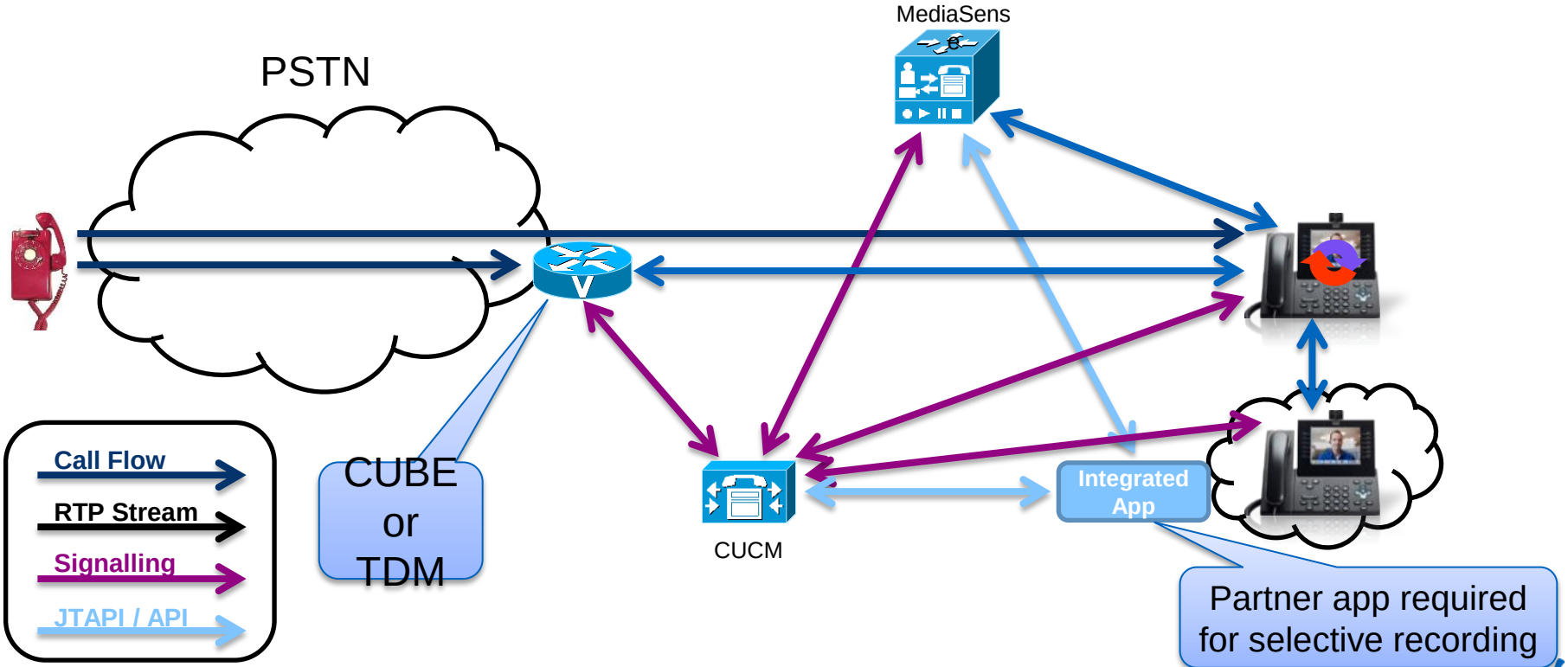
Gateway Recording – Inbound Agent Call



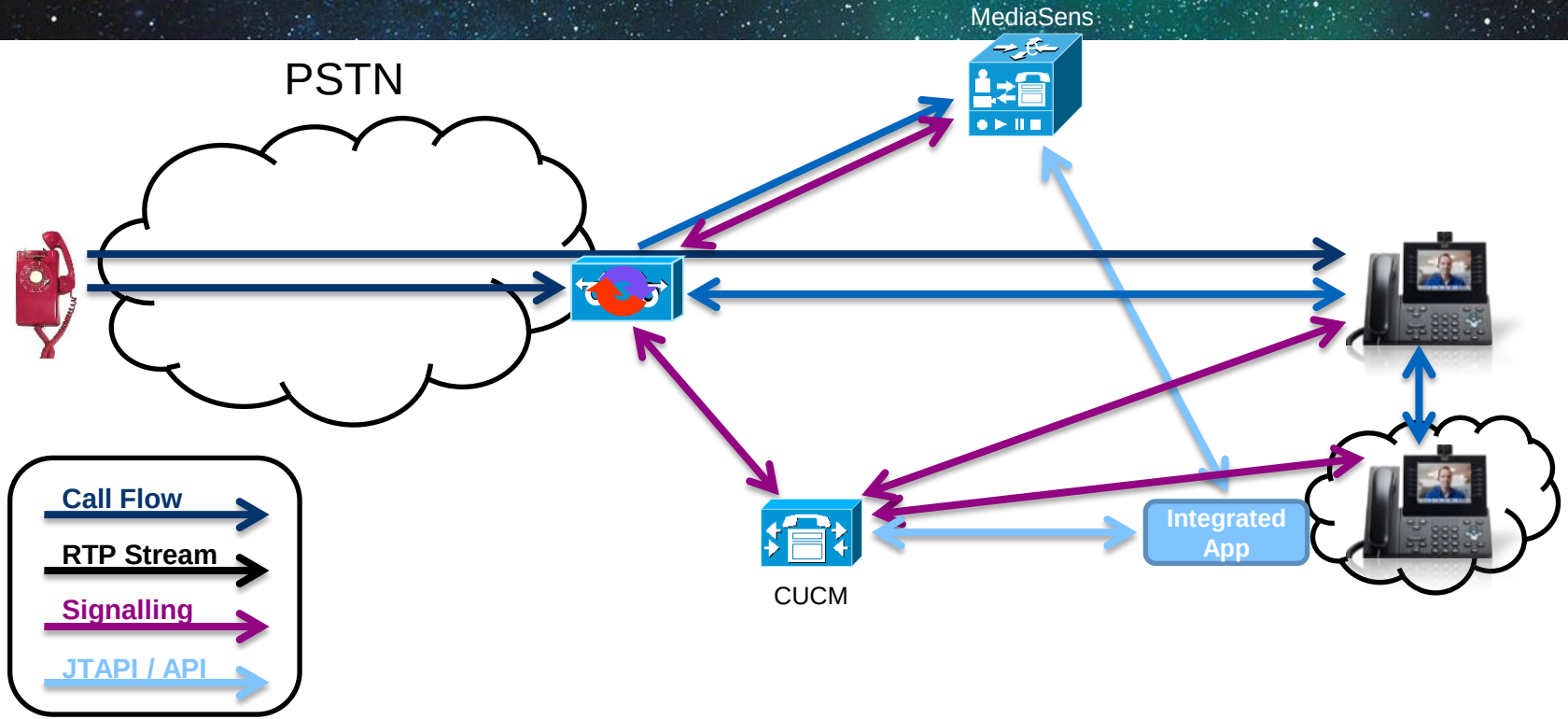



Consultation Calls

BiB - Consultation



CUBE - Consultation






Conclusions

Key Takeaways for MediaSense 10.0

- Network-based media recording, playback and streaming
- Simple configuration and operation
- API access for archival and search across clusters
- Video capabilities for Cisco Collaboration integrations and features
- Partner applications supplement current MediaSense feature set

More Information

- MediaSense 10.0 SRND
  - http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/mediasense/10/srnd/CUMS_BK_MC36D963_00_mediasense-srnd.html
- MediaSense Developer Resources
  - https://developer.cisco.com/site/collaboration/recordings/mediasense/overview/

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