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Deploying and troubleshooting call recording infrastructure

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BRKCOL-3672

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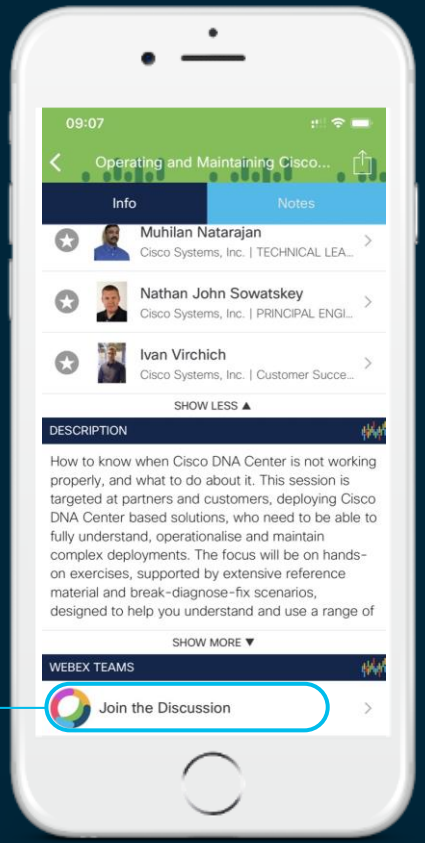


Agenda

- Introduction
- Phone-based Call Recording with BiB
- GW-based Call Recording via XMF
- Call Recording redundancy with Media-Proxy
- Conclusion

Introduction

Call recording infrastructure

What's in scope for this session

- CUCM-based, UC centric
- Voice-only recording (compliance, analytics, review)
- Secure and non-secure calls
- Recording software agnostic
- Design, deployment, troubleshooting

Call recording infrastructure

Existing solutions

- Server-based recording solutions
  - SPAN
  - Agent Desktop
- CUCM-controlled recording solutions
  - Built-In Bridge (BiB) in IP Phones
  - eXtended Media Forking (XMF) on Gateway
- Media forking with CUBE
  - Open Recording Architecture
  - SIPREC compliance
  - Media-Proxy

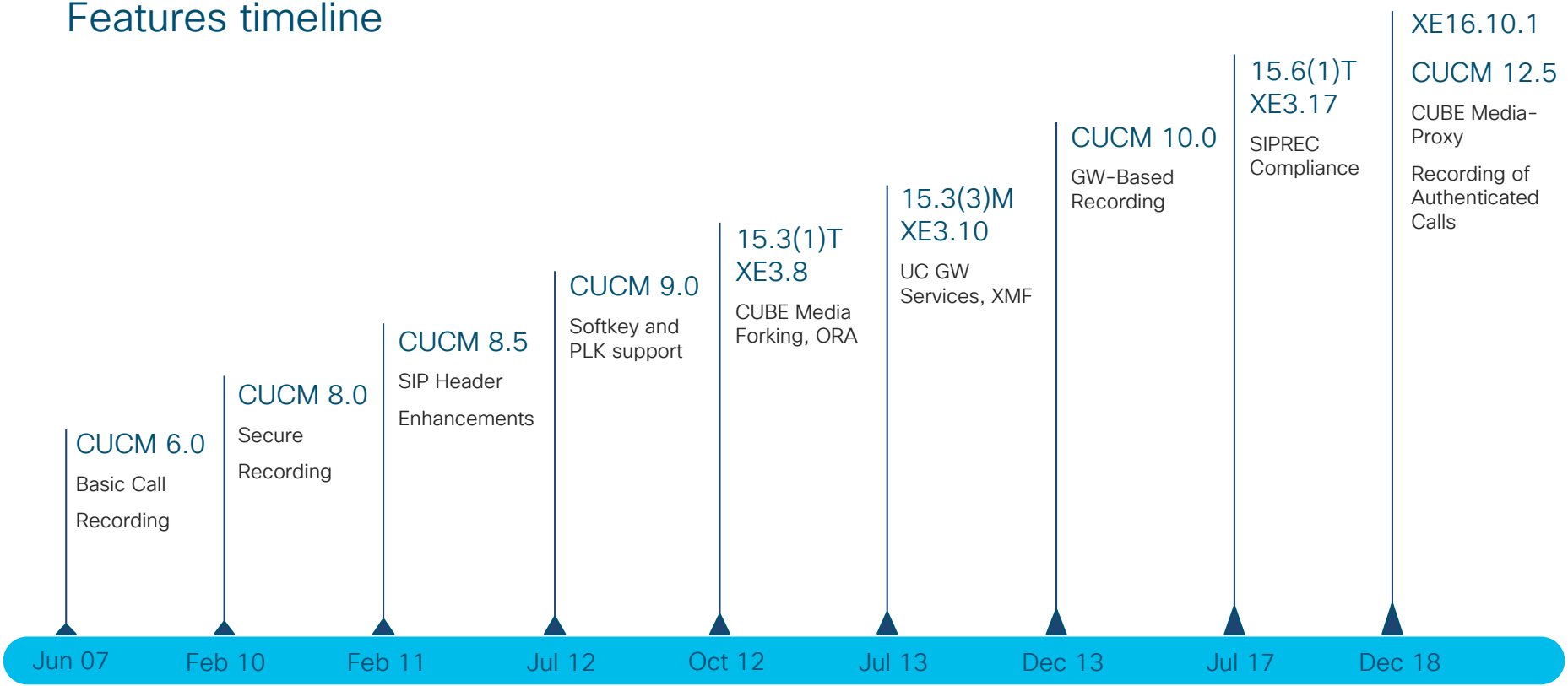
Call recording terminology

Network-based recording solutions

- Calling Party
  - Person initiating the call - customer
- Called Party
  - Person answering the call - agent
- Recorder
  - Software capturing and storing conversation media
- Built-in Bridge (BiB)
  - Media forking element within IP Phone
- XMF-enabled Gateway
  - Voice GW or CUBE with XMF-based media forking enabled
- Media-Proxy (MPS)
  - CUBE with MPS feature configured
- Recording Media Source / Anchoring point
  - IP Phone, Gateway or Media-Proxy used to copy and forward (fork) media

Call recording infrastructure

Features timeline



Call recording infrastructure

Supported devices

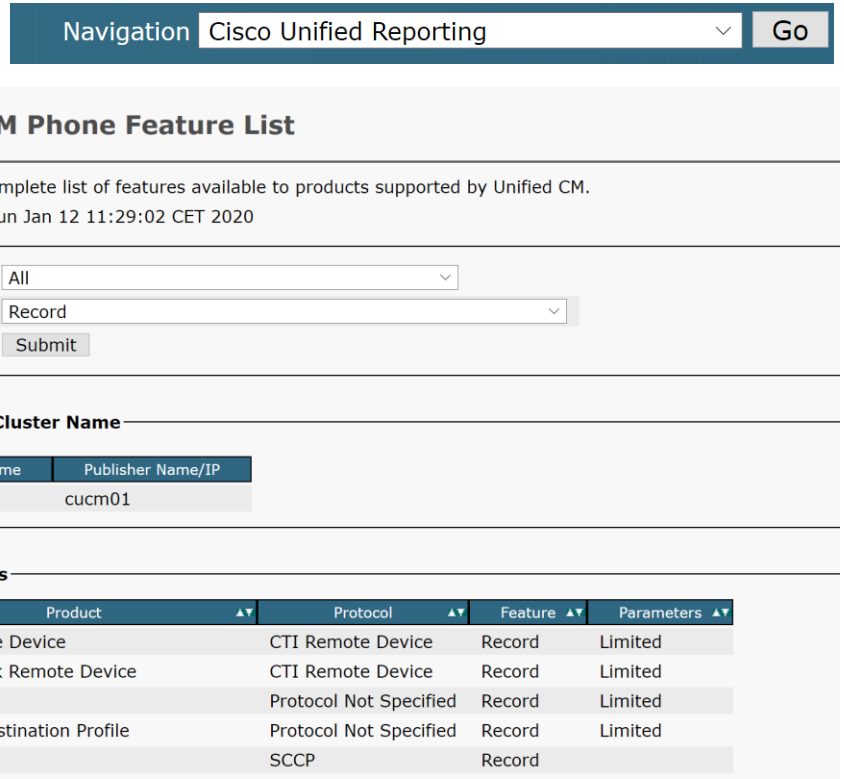
https://developer.cisco.com/site/uc-manager-sip/documents/supported/

Device/Phone Model	SCCP	SIP	Device-based (built-in-bridge) RTP- Unencrypted Media	Device-based (built-in-bridge) sRTP - Encrypted Media	Gateway-based RTP-Unencrypted Media	Automatic Recording	Silent Selective Recording	User Selective Recording (available in UCM 9.0 or later)	Remarks
Cisco 6901	NA	NA	NA	NA	NA	NA	NA	NA	Not a supported device
Cisco 7861		XX	Requires SIP firmware 10.1(1)	Requires SIP firmware 10.1(1)	Requires UCM 10.0(1) or later	Yes	Yes	Yes	
Cisco 8831		XX	Requires SIP firmware 9.3(2)	Requires SIP firmware 9.3(2)	Requires UCM 10.0(1) or later	Yes	Yes	SIP, Device-based only	
Cisco DX80		XX	Requires UCM 8.5(1) or later	Requires UCM 8.5(1) or later	NA	Yes	Yes	NA	
CTI Port	NA	NA	NA	NA	Requires UCM 10.0(1) or later	Yes	Yes	Yes	
CTI Remote Device (Extend & Connect)	NA	NA	NA	NA	Requires UCM 10.0(1) or later	Yes	Yes	Yes	
Remote Destination Profile (Single Number Reach)	NA	NA	NA	NA	Requires UCM 10.0(1) or later	Yes	Yes	Yes via DTMF	

Call recording infrastructure

Supported devices

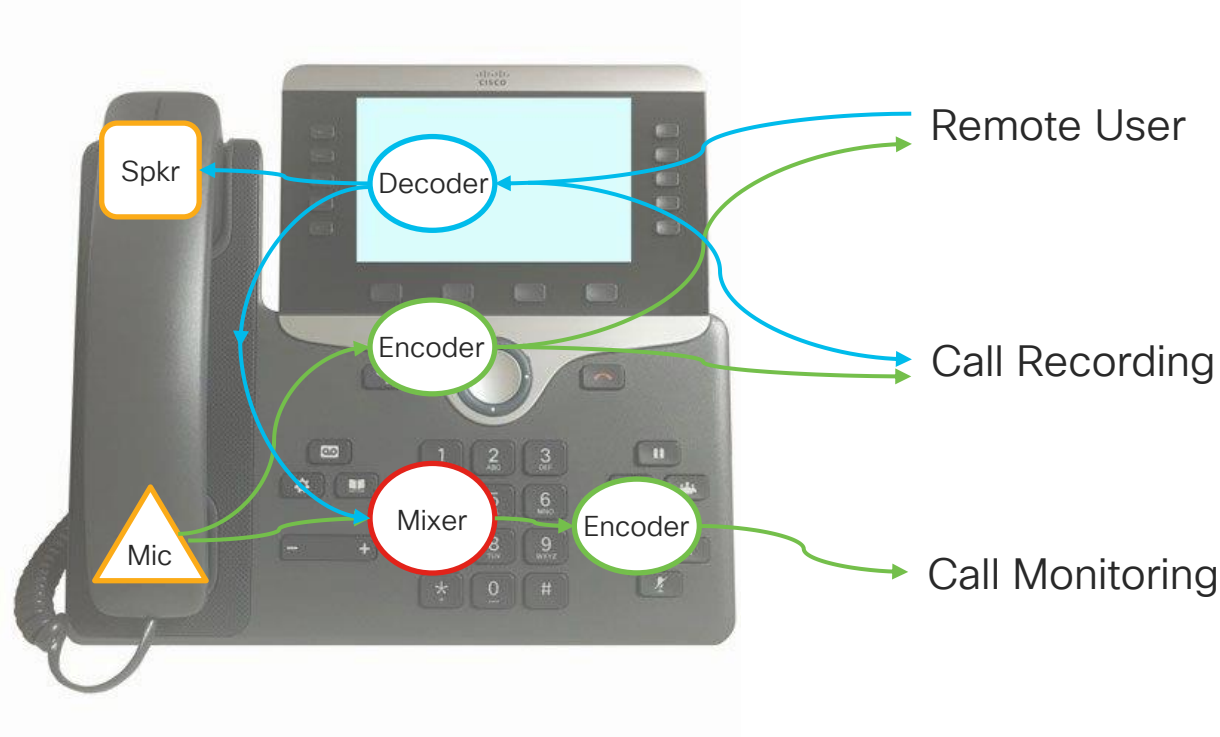
- Navigate to Cisco Unified Reporting ->
- Open System Reports ->
- Run ‘Unified CM Phone Feature List’
- Select Feature ‘Record’
- Click ‘Submit’ to get report



Phone-based Call Recording with BiB

Phone-based call recording

Built-in Bridge fundamentals



Streaming Statistics

Cisco IP Phone CP-9951 (SEPC40ACB4C5A48)

Remote Address	10.55.133.133/24576
Local Address	10.229.68.143/21762
Start Time	14:13:47
Stream Status	Active
Host Name	SEPC40ACB4C5A48
Sender Packets	58932
Sender Octets	9429120
Sender Codec	G.722
Sender Reports Sent	217
Sender Report Time Sent	14:33:23
Rcvr Lost Packets	532
Avg Jitter	
Rcvr Codec	
Rcvr Reports Sent	
Rcvr Report Time Sent	
Rcvr Packets	
Rcvr Octets	
MOS LQK	

Streaming Statistics

Stream 1
Stream 2
Stream 3
Stream 4
Stream 5

Phone-based call recording

Built-in Bridge fundamentals

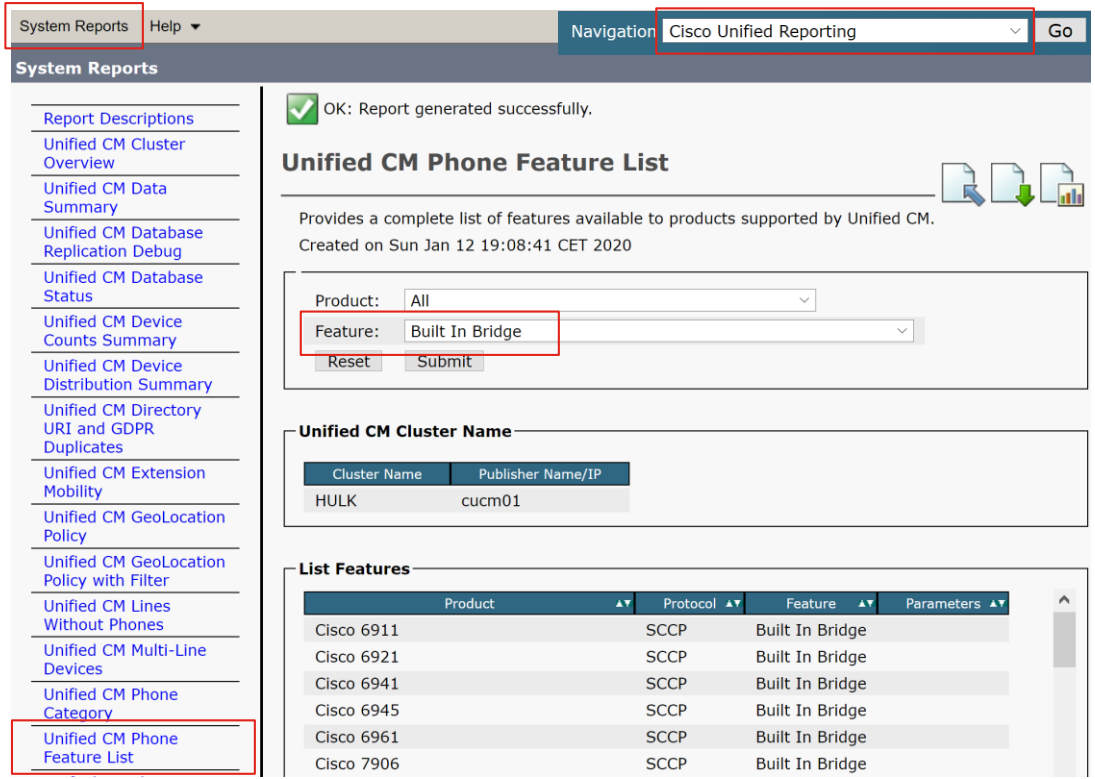
When Endpoint is registered CUCM creates BiB Device with Unique Name/DN

```
00607872.013 |14:37:40.642 |Created  | SIPBuiltInBridgeControl(1,100,86,4) |SIPStationD(1,100,76,7)          |
|NumOfCurrentInstances: 2
[...]
00607909.000 |14:37:40.644 |SdlSig |DaRegisterDn |wait  |Da(1,100,216,1)     |SIPBuiltInBridgeControl(1,100,86,4)
|1,100,14,599.6^10.229.68.143^SEPC40ACB4C5A48 |[R:N-H:0,N:30,L:2,V:0,Z:0,D:0] Partition=
Number=b0018604001 DialPlan= PropagatePattern PatternType=0 SsType=0 SsKey=0 SsNotifyType=0
DigitDiscardingInstructions=0 CallableEndPointName=b0018604001:
[...]
00607909.001 |14:37:40.644 |AppInfo  |Digit analysis: add to the localRegistrations /b0018604001 , PID: 1,86,4;
patternUsage = [0]
00607909.004 |14:37:40.644 |AppInfo  |Digit analysis: Add local pattern /b0018604001 , PID: 1,86,4
[...]
00607911.000 |14:37:40.644 |SdlSig   |DeviceStart                      |initialized
|DeviceManager(1,100,210,1)       |SIPBuiltInBridgeControl(1,100,86,4)
|1,100,14,599.6^10.229.68.143^SEPC40ACB4C5A48 |[T:N-H:0,N:0,L:0,V:0,Z:0,D:0]  Name=b0018604001
Cepn=b0018604001: Type=537 ccmType=1 ProtocolName=BIB
```

Phone-based call recording

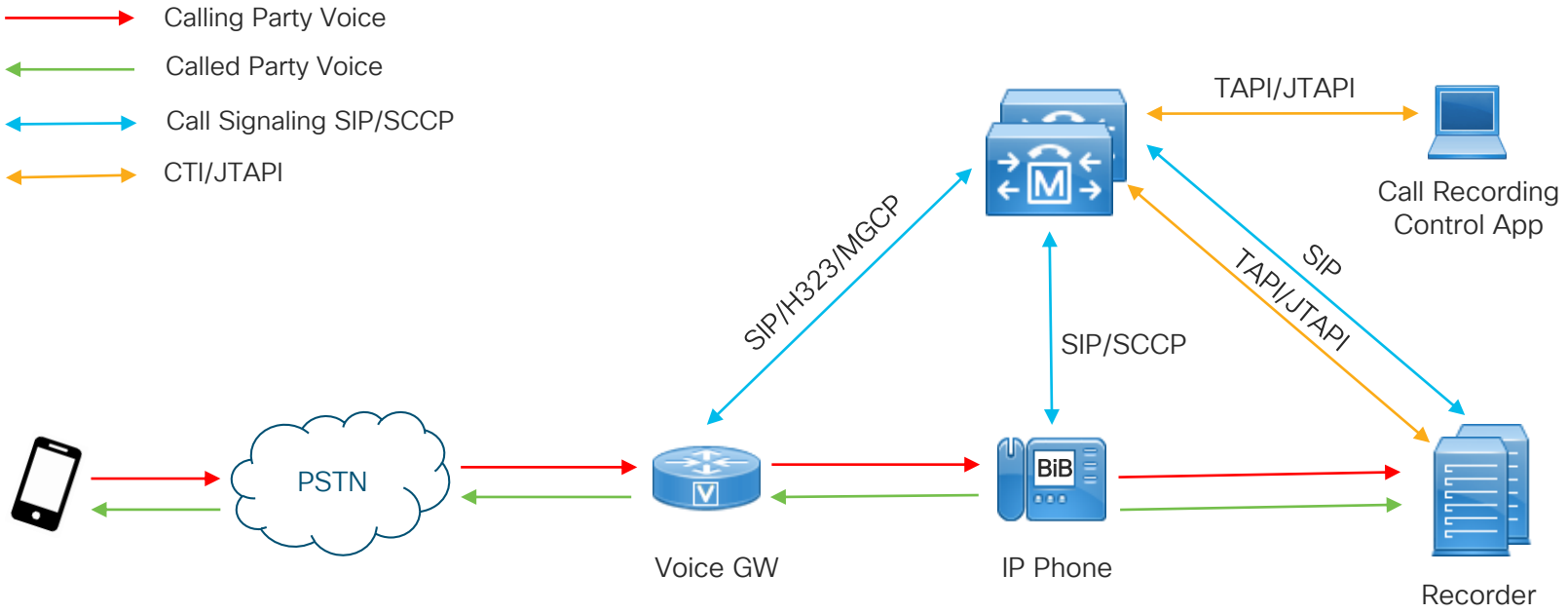
Device support for Built-in Bridge

- Cisco Unified Reporting ->
- Open System Reports ->
- Run ‘Unified CM Phone Feature List’
- Select Feature ‘Built In Bridge’
- Click ‘Submit’ to get report



Phone-based call recording

Architecture



Phone-based call recording

Call recording metadata

From: <sip:30107@10.62.150.183;
x-nearend/x-farend;
x-refci=75831761;
x-nearendclusterid=hulk;
x-nearenddevice=SEPC40ACB4C5A48;
x-nearendaddr=30107;
x-farendrefci=75831760;
x-farendclusterid=hulk;
x-farenddevice=DE-SME-1Z;
x-farendaddr=231110;
tag=6698668~5f282315-ee6f

x-nearend: call with outgoing IP Phone media
x-farend: call with incoming IP Phone media

Call IDs for incoming and outgoing call legs

Cluster IDs for incoming and outgoing call legs

Calling and Called numbers

Calling and Called Device names

Phone-based call recording

Recording modes

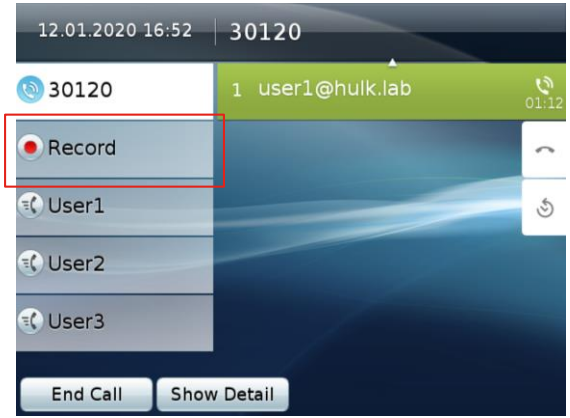
- Automatic recording

Recording Option*	Automatic Call Recording Enabled
Recording Profile	CLEUR2020 Recorder
Recording Media Source*	Phone Preferred

- Selective recording

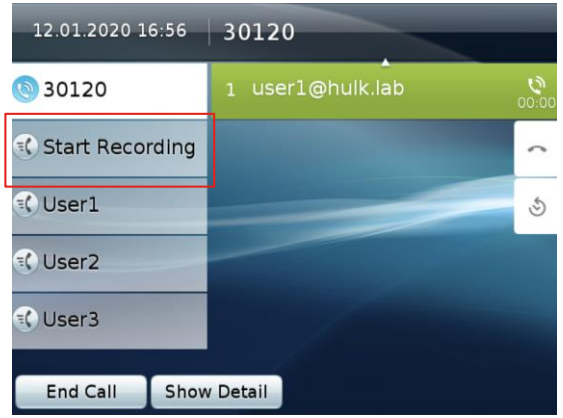
Recording Option*	Selective Call Recording Enabled
Recording Profile	CLEUR2020 Recorder
Recording Media Source*	Phone Preferred

PLK



Softkey

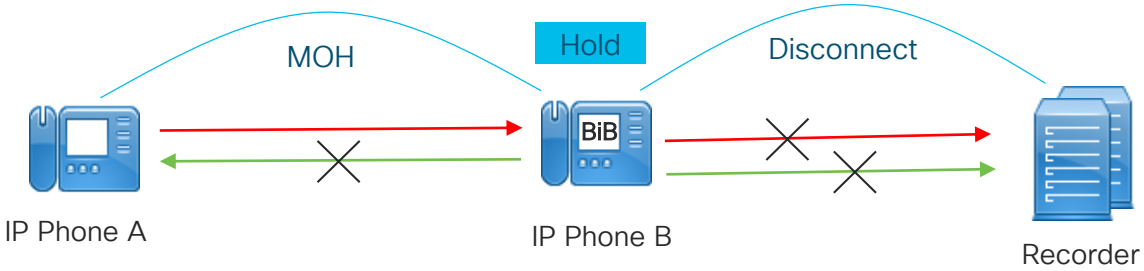
Service URL



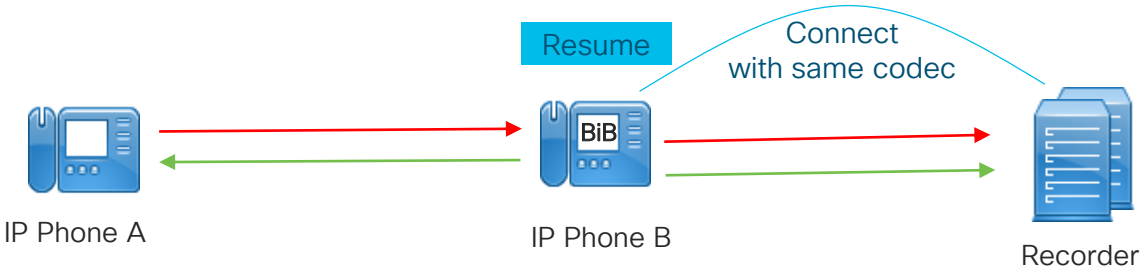
Phone-based call recording

Call modification behavior

- Media for recording calls is torn down during call modifications



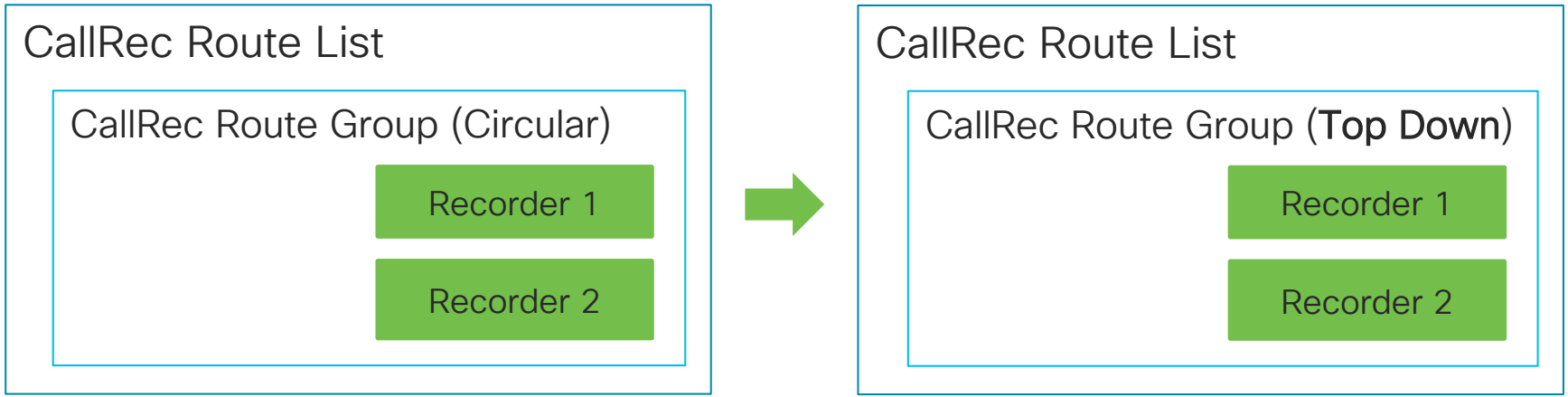
- After resume or transfer media is re-stablished with same codec



Phone-based call recording

Known issues – Unidirectional streams on the Recorder

CUCM load balancing calls in RG with Circular (default) distribution algorithm



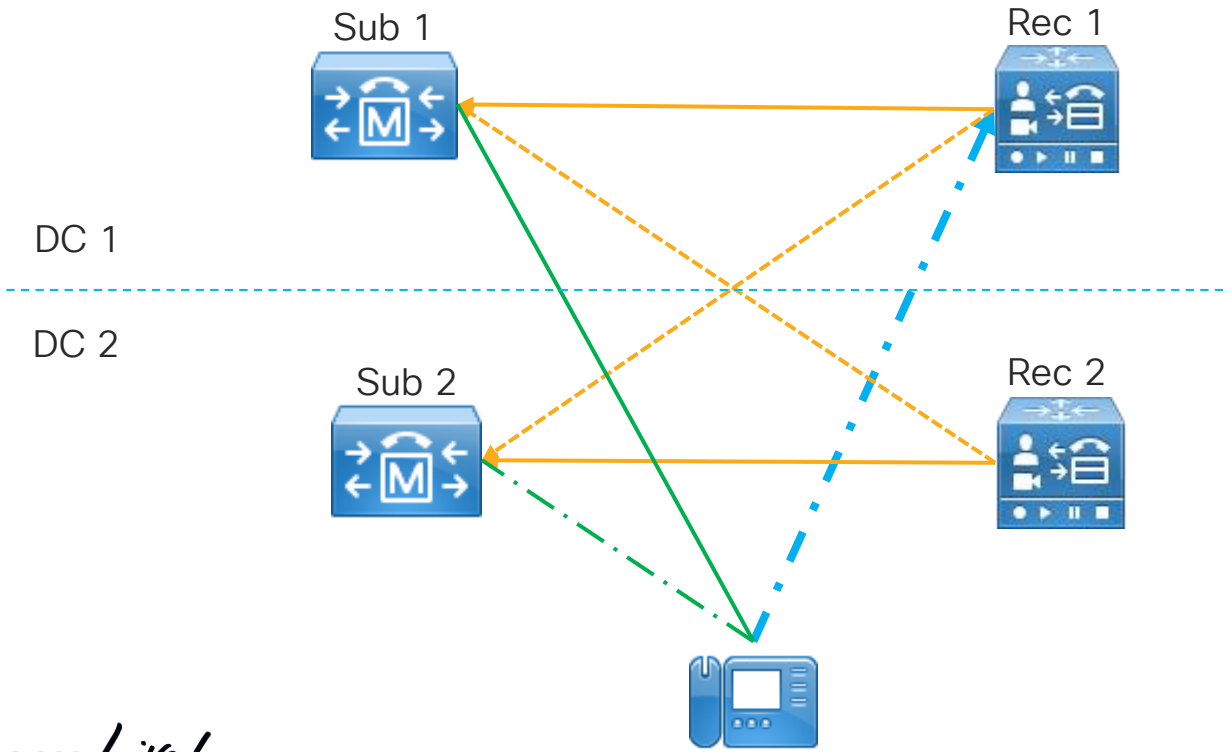
Recording Profile Information

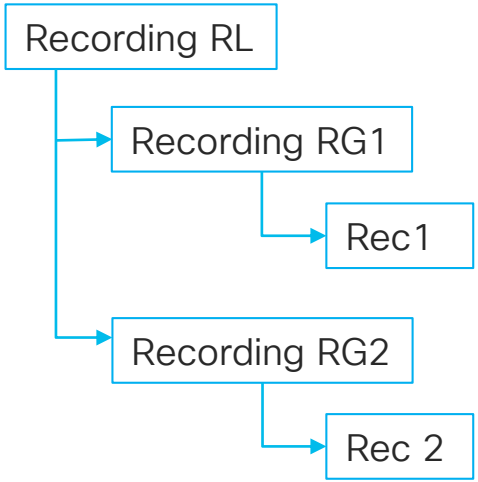
Name*	CLEUR2020 Profile 1
Recording Calling Search Space	Numbers_CSS
Recording Destination Address *	75001

Phone-based call recording

Known issues – Unidirectional streams on the Recorder

Redundancy without load balancing

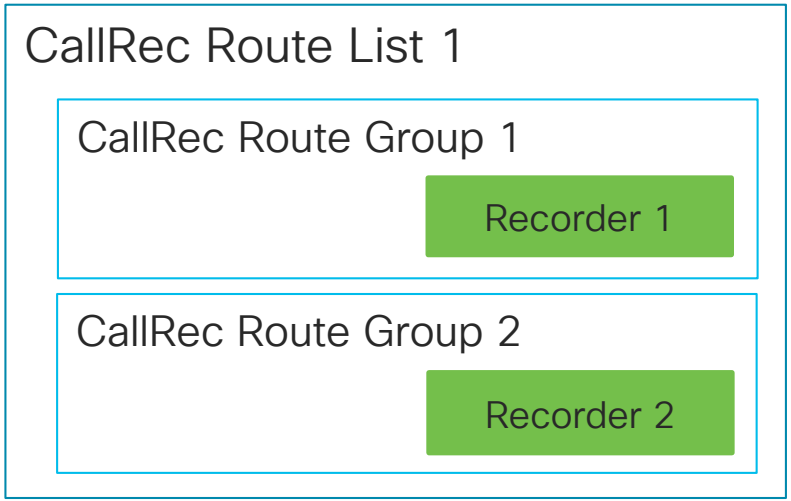


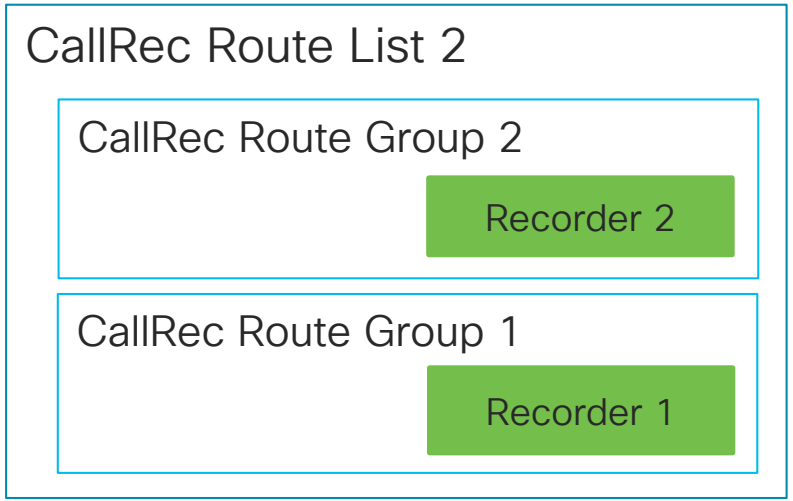


Phone-based call recording

Known issues – Unidirectional streams on the Recorder

Redundancy with load balancing





Recording Profile Information

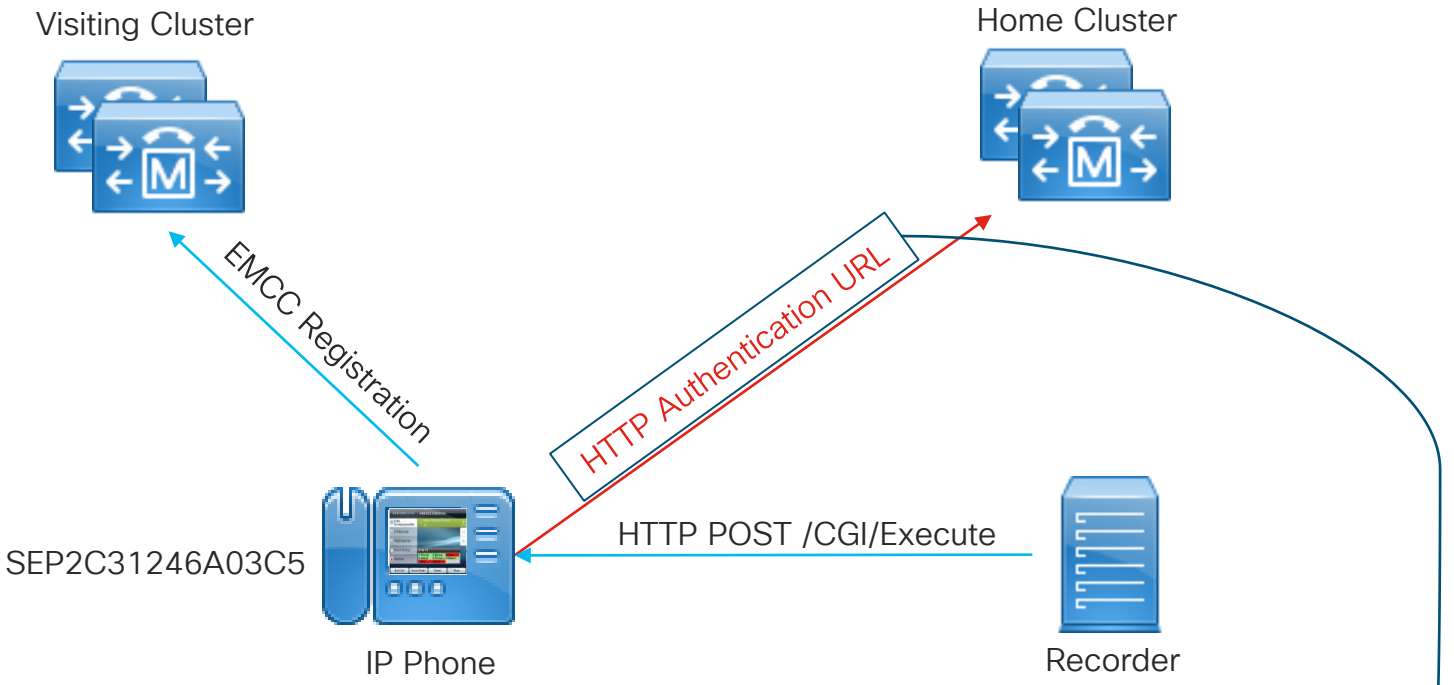
Name*	CLEUR2020 Profile 1
Recording Calling Search Space	Numbers_CSS
Recording Destination Address *	75001

Recording Profile Information

Name*	CLEUR2020 Profile 2
Recording Calling Search Space	Numbers_CSS
Recording Destination Address *	75002

Phone-based call recording

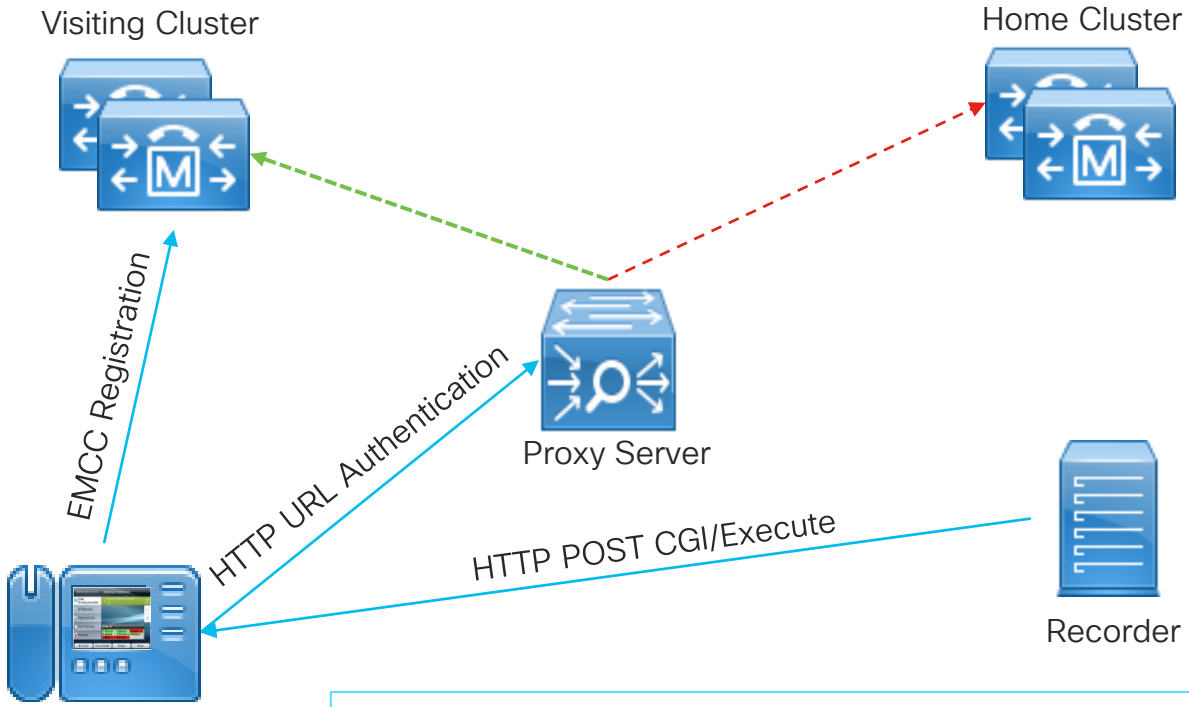
Known issues - Call Recording via Service URL in EMCC scenario



http://10.2.4.1/ccmcip/*authenticate.jsp*?UserID=rec&Password=xxx&devicename=SEP2C31246A03C5

Phone-based call recording

Known issues - Call Recording via Service URL in EMCC scenario



Enhancement request

CSCvo61550 Feature for Phone Authentication Service in EMCC scenario

Phone-based call recording

Known issues - Built-in Bridge slow memory leak

When IP Phone is registered CUCM creates BiB Device with Unique Name/Pattern

```
00607872.013 |14:37:40.642 |Created  | SIPBuiltInBridgeControl(1,100,86,4) |SIPStationD(1,100,76,7)          |
|NumOfCurrentInstances: 2
[...]
00607911.000 |14:37:40.644 |SdlSig   |DeviceStart                          |initialized
|DeviceManager(1,100,210,1)       |SIPBuiltInBridgeControl(1,100,86,4)
|1,100,14,599.6^10.229.68.143^SEPC40ACB4C5A48 |[T:N-H:0,N:0,L:0,V:0,Z:0,D:0] Name=b0018604001
Cepn=b0018604001: Type=537 ccmType=1 ProtocolName=BIB
```

After IP Phone reset BiB

```
00728112.013 |19:21:08.160 |Created  | SIPBuiltInBridgeControl(1,100,86,10) |SIPStationD(1,100,76,13)          |
|NumOfCurrentInstances: 2
[...]
00728151.000 |19:21:08.162 |SdlSig   |DeviceStart                          |initialized
|DeviceManager(1,100,210,1)       |SIPBuiltInBridgeControl(1,100,86,10)
|1,100,14,700.6^10.229.68.143^SEPC40ACB4C5A48 |[T:N-H:0,N:0,L:0,V:0,Z:0,D:0] Name=b0018610001
Cepn=b0018610001: Type=537 ccmType=1 ProtocolName=BIB
```

Phone-based call recording

Known issues - Built-in Bridge slow memory leak

Modify CallManager Service Parameter "Dialing Forest Dump Enabled" under the Clusterwide Parameters (System - General) section, and set it to True.

**##*02 - terse/verbose toggle

**##*04 - dump patterns

|Pattern=c00112101001
|Pattern=c00124901001
|Pattern=c00124902001
|Pattern=c00212101001
|Pattern=b0017201001
|Pattern=b0017202001
|Pattern=b00105701001
|Pattern=b00105701002
|Pattern=b00105701003
|Pattern=b00105701004
|Pattern=b00105701005
|Pattern=b00105701006
|Pattern=b00105701007
|Pattern=b00105701008
|Pattern=b00105701009
|Pattern=b00105701010
|Pattern=b00105701011
|Pattern=b00105701012
|Pattern=b00105701013
|Pattern=b00105701014
|Pattern=b00105701015
|Pattern=b00105701016
|Pattern=b00105701017
|Pattern=b00105701018
|Pattern=b00105701019
|Pattern=b00105701020
|Pattern=b00105701021
|Pattern=b00105701022
|Pattern=b00105701023
|Pattern=b00105701024
|Pattern=b00105701025
|Pattern=b00105701026
|Pattern=b00105701027
|Pattern=b00105701028
|Pattern=b00105701029
|Pattern=b00105701030
|Pattern=b00105701031

Phone-based call recording

Known issues – Calls InProgress spiking

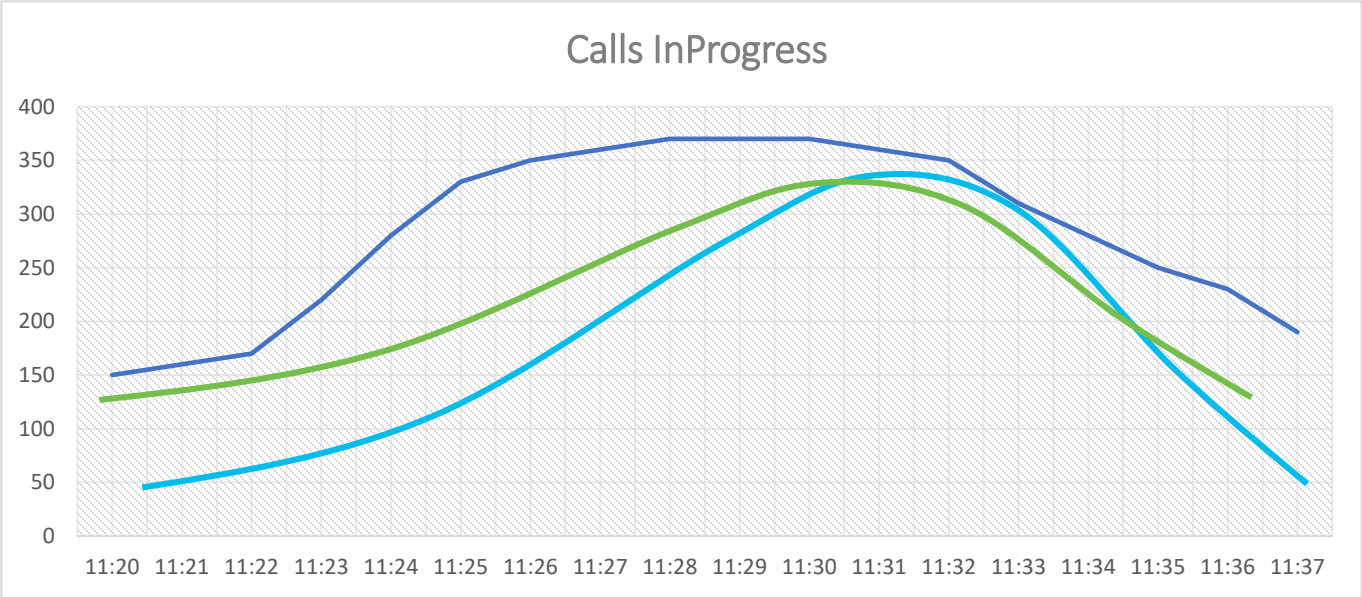
- Always keep recorded devices in sync b/w CUCM and Recorder

11:20:17 > INVITE

11:20:17 < 100 Trying

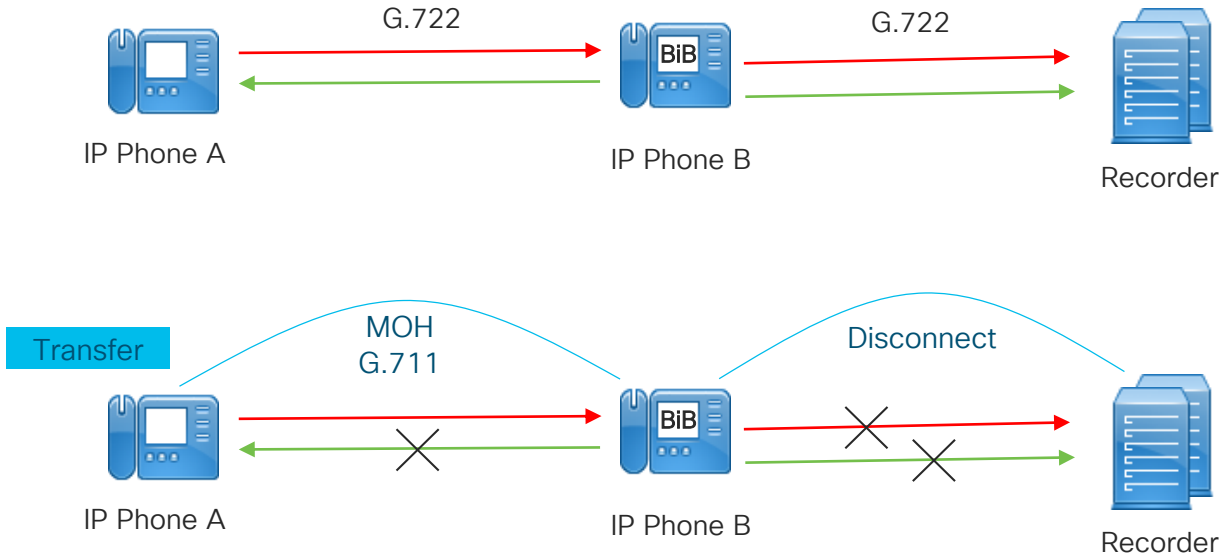
11:24:43 < 200 OK

11:24:43 > CANCEL



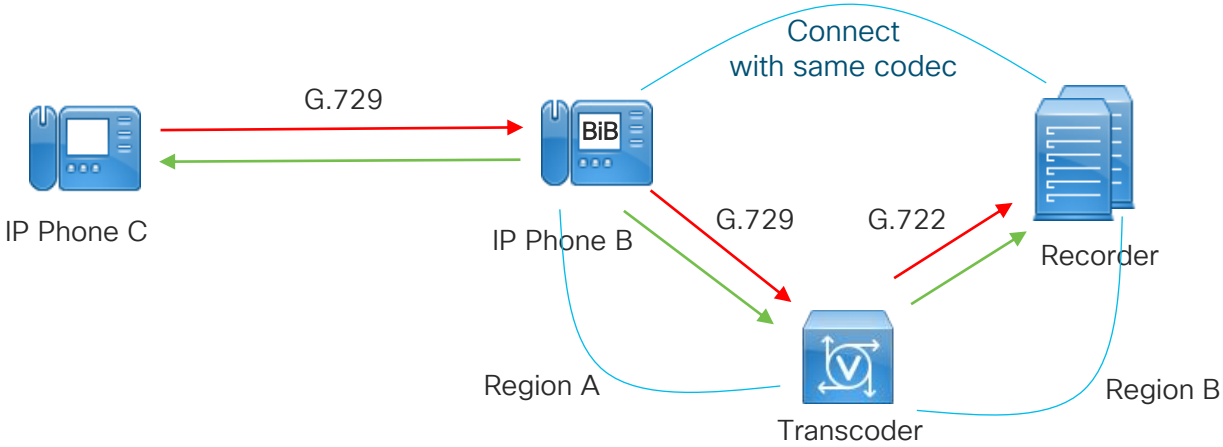
Phone-based call recording

Known issues - Transcoder engagement



Phone-based call recording

Known issues - Transcoder engagement



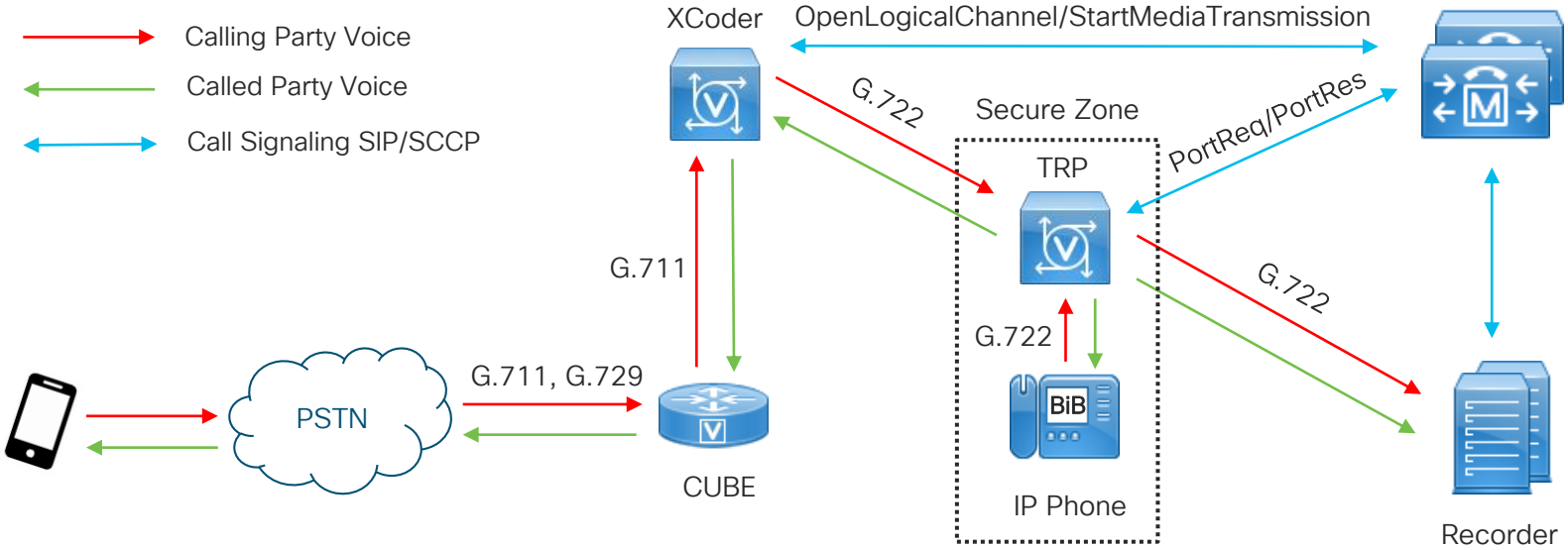
Service Parameter Configuration

Save | Set to Default | Advanced

G.711 A-law Codec Enabled *	Enabled for All Devices
G.711 mu-law Codec Enabled *	Enabled for All Devices
G.722 Codec Enabled *	Enabled for All Devices
iLBC Codec Enabled *	Enabled for All Devices Except Recording-Enabled Devic
iSAC Codec Enabled *	Enabled for All Devices Except Recording-Enabled Devic
Opus Codec Enabled *	Enabled for All Devices Except Recording-Enabled Devic

Phone-based call recording

Known issues – TRP + Transcoder = TRP Port leak

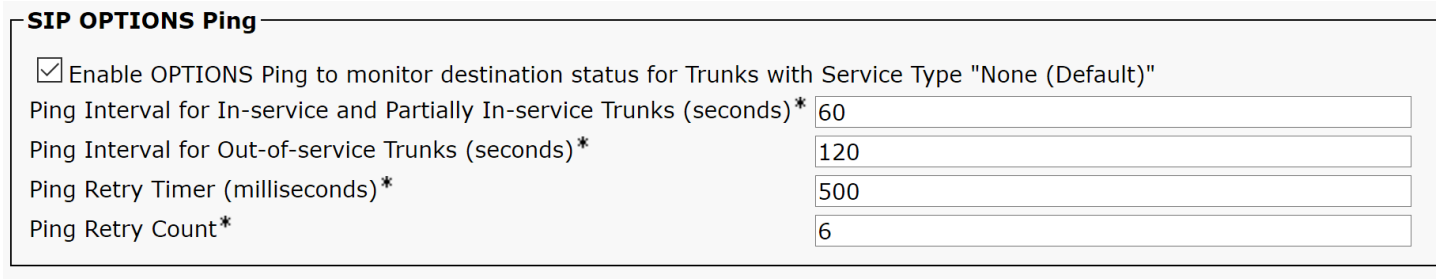


MTP-TRP# show sccp connections | include inac

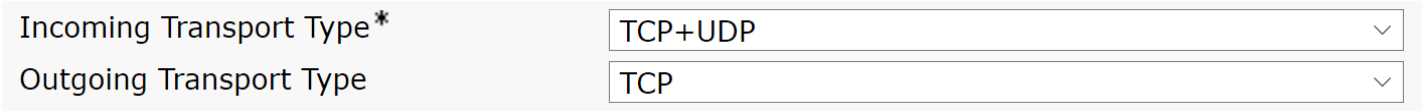
sess_id	conn_id	type	state	local_ip	local_port	remote_port	remote_ip
43927109	33604999	mtp	inactive	UNKNOWN	25330	0	UNKNOWN
43927132	33605236	mtp	inactive	UNKNOWN	25410	0	UNKNOWN
43927237	33606036	mtp	inactive	UNKNOWN	25558	0	UNKNOWN
43927246	33606090	mtp	inactive	UNKNOWN	25620	0	UNKNOWN
43927094	33604923	mtp	inactive	UNKNOWN	25332	0	UNKNOWN

Phone-based call recording
Recorder SIP Trunk best practices

- Enable OPTIONS Ping in SIP Profile



- Use Transport TCP in SIP Trunk Security Profile



- Consider Early/Delayed Offer mode

GW-based Call Recording via XMF

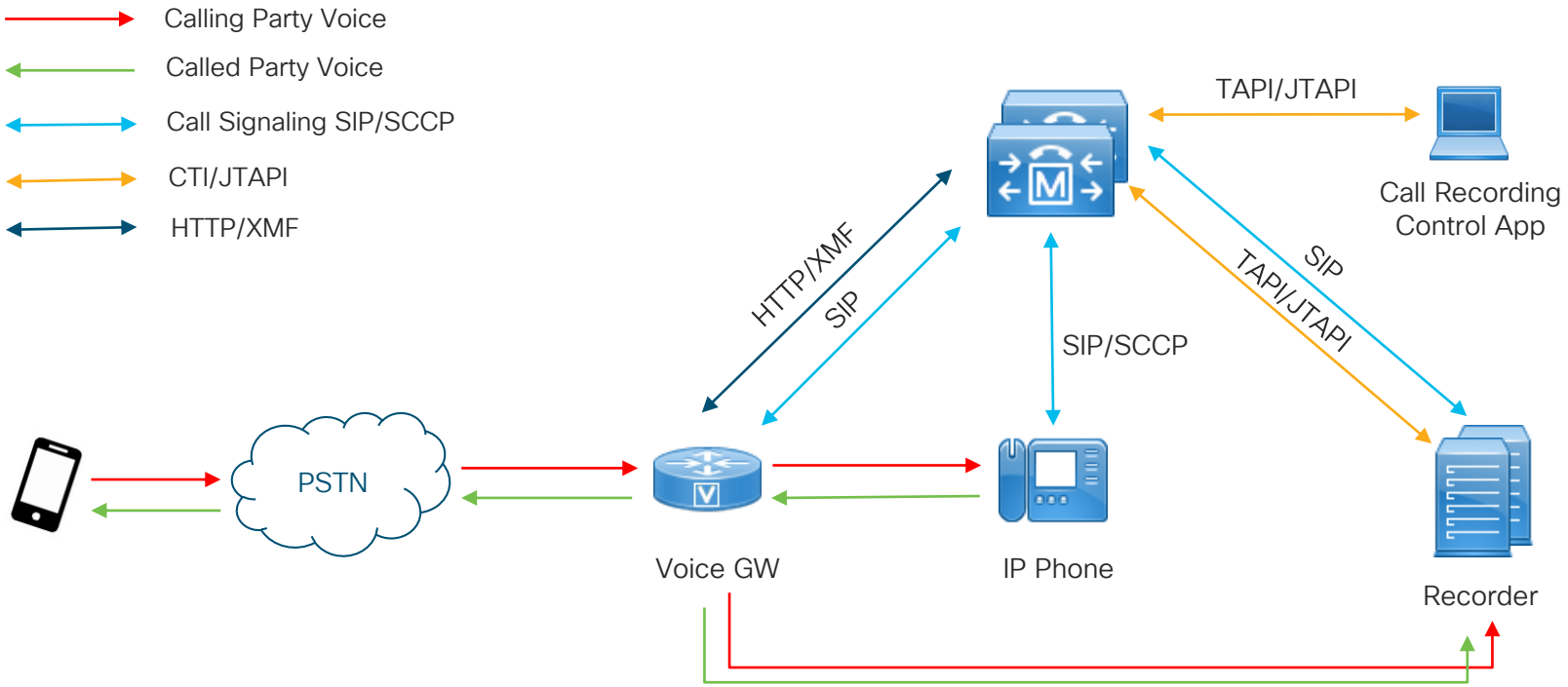
Gateway-based call recording via XMF

Use cases

- Unsupported BiB devices (Jabber for iPhone/Android)
- Unsupported BiB call flows (SNR, E&C, Mobile Agent)
- Centralized SIP trunks
- Remote site bandwidth considerations

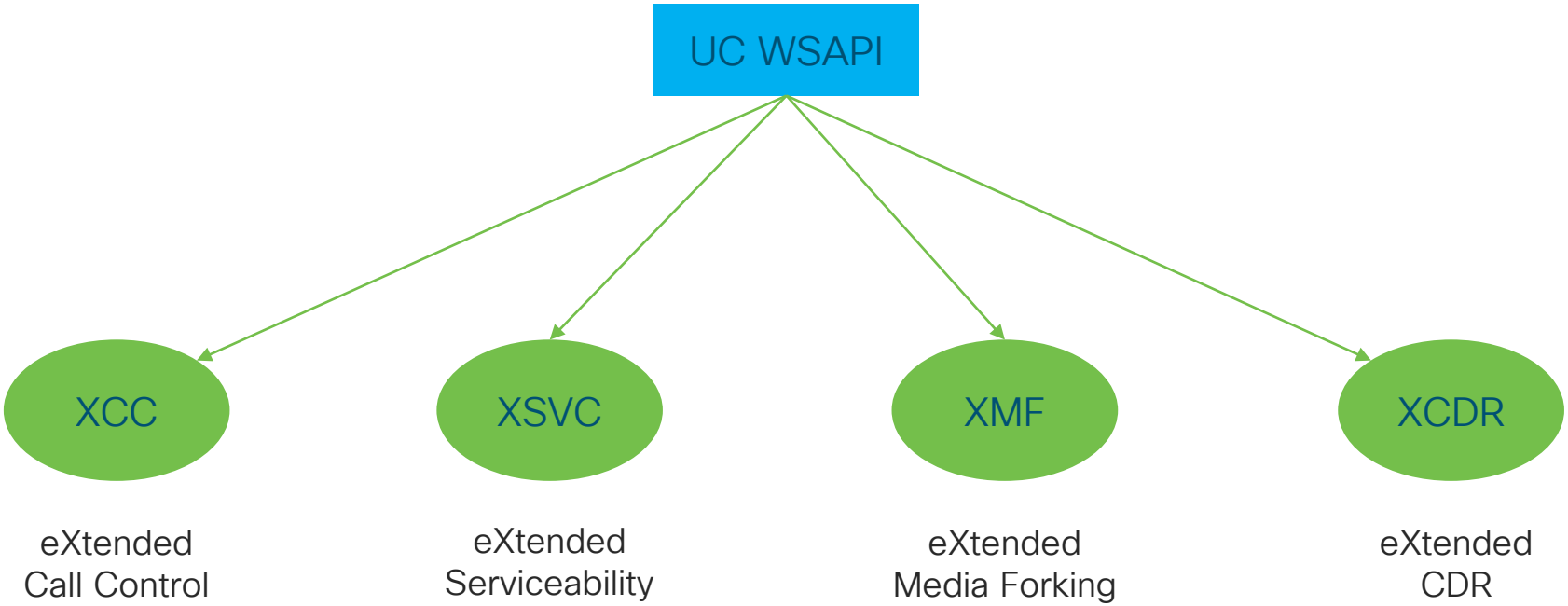
Gateway-based call recording via XMF

Architecture



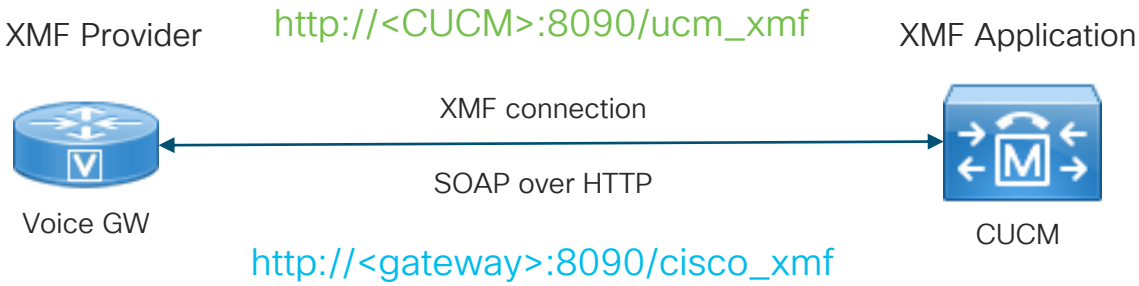
Gateway-based call recording via XMF

UC WSAPI – Unified Communications Web Services API



Gateway-based call recording via XMF

eXtended Media Forking Interface



XMF Provider

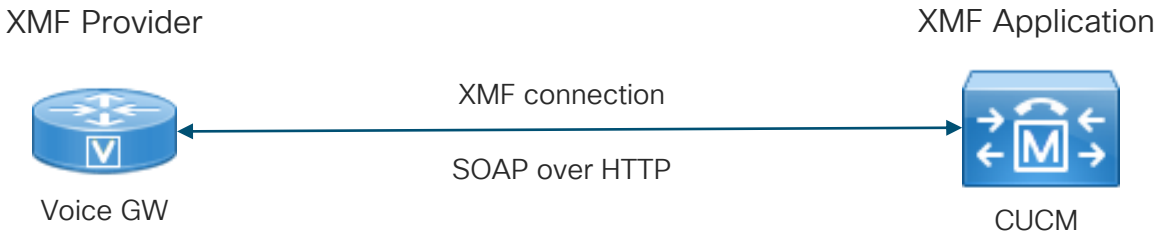
act as a server, monitor calls and deliver notifications of call states, triggers media forking

XMF Application

acts as client, registers with provider, subscribes for notifications, requests for media forking

Gateway-based call recording via XMF

eXtended Media Forking Interface



XMF Connection abstracts states of the call at the endpoint or trunk:

IDLE – This state is the initial state for all new connections

ADDRESS_COLLECT – gateway collects digits from the endpoint

CALL_DELIVERY – selecting route for call

ALERTING – remote side notified of the call

CONNECTED – call is established

DISCONNECTED – call is terminated

Gateway-based call recording via XMF

Basic XMF Provider Configuration

XMF Provider

1. Enable HTTP on IOS

```
ip http server
ip http max-connections 100
```

2. Enable the API on IOS

```
uc wsapi
    source-address [Gateway_IP_Address]
    probing interval negative 10
    probing interval keepalive 180
```

3. Enable XMF service within the API

```
provider xmf
    remote-url 1 http://<CUCM IP/FQDN>:8090/ucm_xmf ! Sub1
    remote-url 2 http://<CUCM IP/FQDN>:8090/ucm_xmf ! Sub2
```

Gateway-based call recording via XMF

Basic XMF Provider Configuration

XMF Provider

```
MS-P1-3900#sh control-plane host open-ports  | i 8090
MS-P1-3900#
```

```
MS-P1-3900(config)# uc wsapi
MS-P1-3900(config-uc-wsapi)# source-address 10.48.52.170
MS-P1-3900(config-wsapi-xmf)# provider xmf
```

```
MS-P1-3900#sh control-plane host open-ports  | i 8090
 tcp                  *:8090                  *:0          HTTP CORE   LISTEN
 tcp                  *:8090                  *:0          HTTP CORE   LISTEN
```

Gateway-based call recording via XMF

Basic XMF Provider Configuration

XMF Provider

HTTP Server settings

```
ip http server
ip http max-connection 100
ip http timeout-policy idle 600 life 86400 requests 86400
```

Enables HTTP Server

Set maximum number of connections

Define timeouts:
- Idle
- absolute time
- max number of requests

HTTP Client settings

```
http client connection persistent
http client connection idle timeout 600
```

Number of seconds until client will close the connection if it's idle

Allow multiple requests to be multiplexed over the same connection

Gateway-based call recording via XMF

Basic XMF Provider Configuration

UC WSAPI settings

```
uc wsapi
    message-exchange max-failures 1
    probing max-failures 3
    probing interval keepalive 120
    probing interval negative 10
```

Set maximum number of failed message delivery before unregistering Application

Set maximum number of failed probes before unregistering Application

How often we are sending probes if there is no reply

Set interval between probing messages

XMF Provider

Gateway-based call recording via XMF

Basic XMF Provider Configuration

XMF Provider

CUCM

Gateway

Time	Source	Destination	Protocol	Length	Info
16:17:42,322482	10.62.150.183	10.48.52.170	TCP	74	55766 → 8090 [SYN] Seq=0 Win=14600 Len=0 MSS=1460 SACK_PERM=1 TSval=1762815226 TSecr=0 WS=128
16:17:42,364807	10.48.52.170	10.62.150.183	TCP	60	8090 → 55766 [SYN, ACK] Seq=0 Ack=1 Win=4128 Len=0 MSS=1424
16:17:42,364830	10.62.150.183	10.48.52.170	TCP	54	55766 → 8090 [ACK] Seq=1 Ack=1 Win=14600 Len=0
16:17:42,365018	10.62.150.183	10.48.52.170	HTTP	806	POST /cisco_xmf HTTP/1.1 Continuation
16:17:42,406777	10.48.52.170	10.62.150.183	TCP	60	8090 → 55766 [ACK] Seq=1 Ack=753 Win=3376 Len=0
16:17:42,409560	10.48.52.170	10.62.150.183	TCP	310	8090 → 55766 [ACK] Seq=1 Ack=753 Win=3376 Len=256 [TCP segment of a reassembled PDU]
16:17:42,409570	10.62.150.183	10.48.52.170	TCP	54	55766 → 8090 [ACK] Seq=753 Ack=257 Win=15544 Len=0
16:17:42,451593	10.48.52.170	10.62.150.183	HTTP/XML	519	HTTP/1.1 200 OK
16:17:42,451611	10.62.150.183	10.48.52.170	TCP	54	55766 → 8090 [ACK] Seq=753 Ack=722 Win=16616 Len=0
16:18:01,218740	10.62.150.183	10.48.52.170	TCP	54	55766 → 8090 [FIN, ACK] Seq=753 Ack=722 Win=16616 Len=0
16:18:01,267874	10.48.52.170	10.62.150.183	TCP	60	8090 → 55766 [ACK] Seq=722 Ack=754 Win=3376 Len=0
16:18:01,267895	10.48.52.170	10.62.150.183	TCP	60	8090 → 55766 [FIN, PSH, ACK] Seq=722 Ack=754 Win=3376 Len=0
16:18:01,267905	10.62.150.183	10.48.52.170	TCP	54	55766 → 8090 [ACK] Seq=754 Ack=723 Win=16616 Len=0

In 18,5 seconds CUCM will terminate the connection

Gateway-based call recording via XMF

Basic XMF Provider Configuration

XMF Provider

Gateway

CUCM

Time	Source	Destination	Protocol	Length	Info
16:19:42,407854	10.48.52.170	10.62.150.183	TCP	60	60349 → 8090 [SYN] Seq=0 Win=4128 Len=0 MSS=1424
16:19:42,407928	10.62.150.183	10.48.52.170	TCP	58	8090 → 60349 [SYN, ACK] Seq=0 Ack=1 Win=14600 Len=0 MSS=1460
16:19:42,449950	10.48.52.170	10.62.150.183	TCP	60	60349 → 8090 [ACK] Seq=1 Ack=1 Win=4128 Len=0
16:19:42,450136	10.48.52.170	10.62.150.183	HTTP/XML	948	POST /ucm_xmf HTTP/1.1
16:19:42,450154	10.62.150.183	10.48.52.170	TCP	54	8090 → 60349 [ACK] Seq=1 Ack=895 Win=16092 Len=0
16:19:42,450433	10.62.150.183	10.48.52.170	HTTP/XML	563	HTTP/1.1 200 OK
16:19:42,691644	10.62.150.183	10.48.52.170	TCP	563	[TCP Retransmission] 8090 → 60349 [PSH, ACK] Seq=1 Ack=895 Win=16092 Len=509
16:19:42,691816	10.48.52.170	10.62.150.183	TCP	60	60349 → 8090 [ACK] Seq=895 Ack=510 Win=3619 Len=0
16:19:42,734440	10.48.52.170	10.62.150.183	TCP	60	[TCP Dup ACK 21#1] 60349 → 8090 [ACK] Seq=895 Ack=510 Win=3619 Len=0
16:20:01,343360	10.62.150.183	10.48.52.170	TCP	54	8090 → 60349 [FIN, ACK] Seq=510 Ack=895 Win=16092 Len=0
16:20:01,492435	10.48.52.170	10.62.150.183	TCP	60	60349 → 8090 [ACK] Seq=895 Ack=511 Win=3619 Len=0
16:20:01,492449	10.48.52.170	10.62.150.183	TCP	60	60349 → 8090 [FIN, PSH, ACK] Seq=895 Ack=511 Win=3619 Len=0
16:20:01,492461	10.62.150.183	10.48.52.170	TCP	54	8090 → 60349 [ACK] Seq=511 Ack=896 Win=16092 Len=0

In 18,5 seconds CUCM will terminate the connection

Gateway-based call recording via XMF

Basic XMF Application Configuration

XMF Application

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration | Go
webadmin | Search Documentation | About | Logout

System | Call Routing | Media Resources | Advanced Features | Device | Application | User Management | Bulk Administration | H

Trunk Configuration — Related Links: Back To Find/List | Go

Save | Delete | Reset | Add New

Recording Information

- None
- This trunk connects to a recording-enabled gateway
- This trunk connects to other clusters with recording-enabled gateways

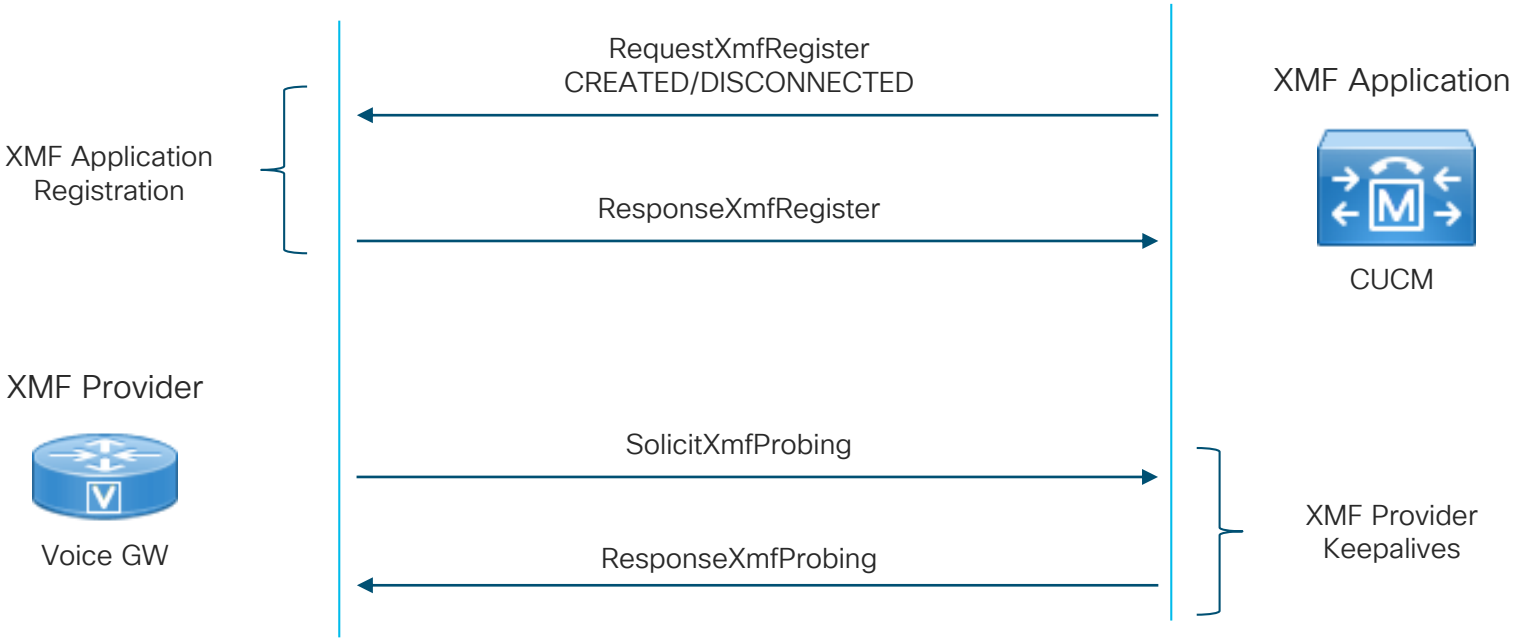
Geolocation Configuration

Geolocation: < None >
Geolocation Filter: < None >
Send Geolocation Information

Recording Option*	Automatic Call Recording Enabled
Recording Profile	CLEUR2020 Recorder
Recording Media Source*	Gateway Preferred

Gateway-based call recording via XMF

XMF Registration process



Gateway-based call recording via XMF

XMF Registration process – GW debugs

Jan 12 05:40:16.166: //WSAPI/XMF/INCOMING_MSG:: msg_type[6] RequestXmfRegister
Jan 12 05:40:16.166: transactionID Cisco:UCM:Cayugalf:3:1
connectionEventsFilter: CREATED|DISCONNECTED
mediaEventsFilter:
Jan 12 05:40:16.166: app url http://10.62.150.183:8090/ucm_xmf
Jan 12 05:40:16.166: app name Unified CM 11.5.1.14900-11
Jan 12 05:40:16.166: prov url http://10.62.150.156:8090/xmf

Jan 12 05:40:16.166: //WSAPI//OUTGOING_RESPONSE:: type 8 ResponseXmfRegister:
Jan 12 05:40:16.166: transactionID Cisco:UCM:Cayugalf:3:1
Jan 12 05:40:16.166: registrationID CCDEDF16:XMF:Unified CM 11.5.1.14900-11:1
Jan 12 05:40:16.166: providerStatus 1ws

Gateway-based call recording via XMF

XMF Registration process – CUCM traces

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv="http://www.w3.org/2003/05/soap-envelope">
  <soapenv:Body>
    <RequestXmfRegister xmlns="http://www.cisco.com/schema/cisco_xmf/v1_0">
      <applicationData>
        <name>Unified CM 11.5.1.14900-11</name>
        <url>http://10.62.150.183:8090/ucm_xmf</url>
      </applicationData>
      <connectionEventsFilter>CREATED DISCONNECTED </connectionEventsFilter>
      <mediaEventsFilter/>
      <msgHeader>
        <transactionID>Cisco:UCM:CayugaIf:2:2</transactionID>
      </msgHeader>
      <providerData>
        <url>http://10.62.150.156:8090/xmf</url>
      </providerData>
    </RequestXmfRegister>
  </soapenv:Body>
</soapenv:Envelope>
```

Gateway-based call recording via XMF

XMF Registration process – CUCM traces

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP:Envelope xmlns:SOAP="http://www.w3.org/2003/05/soap-envelope">
  <SOAP:Body>
    <ResponseXmfRegister xmlns="http://www.cisco.com/schema/cisco_xmf/v1_0">
      <msgHeader>
        <transactionID>Cisco:UCM:CayugaIf:3:1</transactionID>
        <registrationID>CCDEDF16:XMF:Unified CM 11.5.1.14900-11:1</registrationID>
      </msgHeader>
      <providerStatus>IN_SERVICE</providerStatus>
    </ResponseXmfRegister>
  </SOAP:Body>
</SOAP:Envelope>
```

Gateway-based call recording via XMF

XMF Registration process – verify registrations

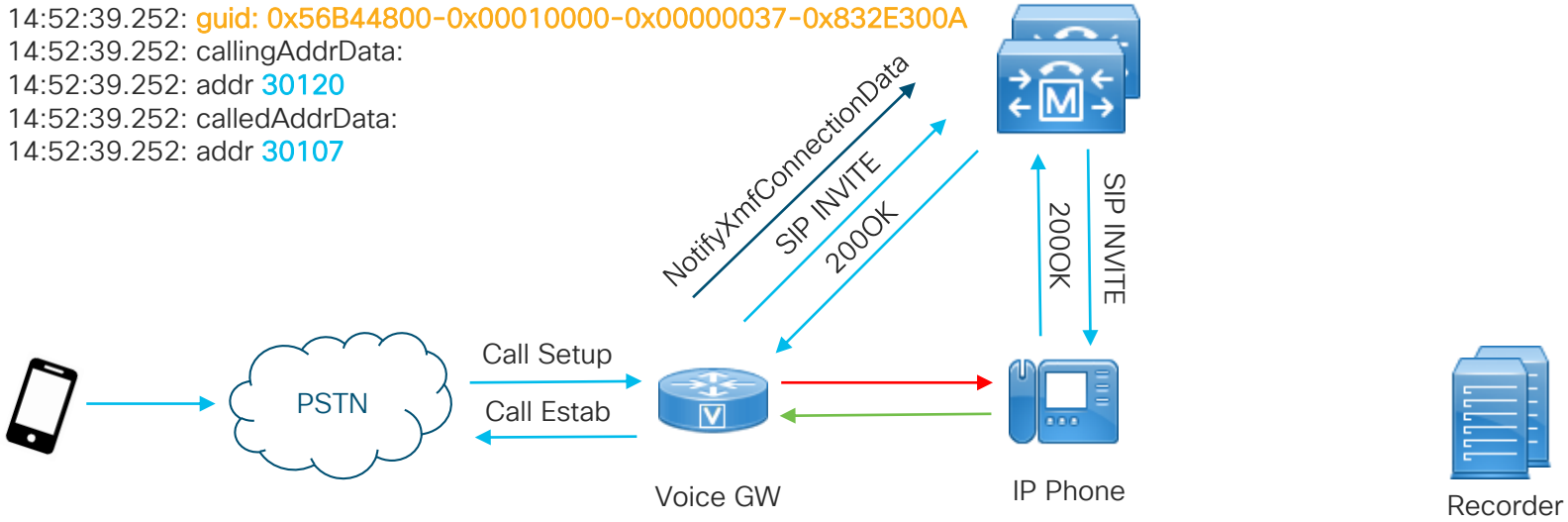
```
csr1000v#sh wsapi registration xmf
Provider XMF
=======================================================
registration index: 1
  id: CCDEDF16:XMF:Unified CM 11.5.1.14900-11:1
  appUrl:http://10.62.150.183:8090/ucm_xmf
  appName: Unified CM 11.5.1.14900-11
  provUrl: http://10.62.150.156:8090/xmf
  prober state: STEADY
  connEventsFilter: CREATED|DISCONNECTED
  mediaEventsFilter:

registration index: 2
  id: CCDEDF55:XMF:Unified CM 11.5.1.14900-11:2
  appUrl:http://10.62.150.184:8090/ucm_xmf
  appName: Unified CM 11.5.1.14900-11
  provUrl: http://10.62.150.156:8090/xmf
  prober state: STEADY
  connEventsFilter: CREATED|DISCONNECTED
  mediaEventsFilter:
```

Gateway-based call recording via XMF

Recording call walk-through

GW is sending XMF message for the First leg (Near End):

Jan 12 14:52:39.252: //WSAPI/XMF/OUTGOING_MESSAGE:: msg_type[21] NotifyXmfConnectionData
Jan 12 14:52:39.252: registrationID 22DCCD6C:XMF:Unified CM 11.5.1.14900-11:2
Jan 12 14:52:39.252: callID: 13
Jan 12 14:52:39.252: connID: 15762
Jan 12 14:52:39.252: guid: 0x56B44800-0x00010000-0x00000037-0x832E300A
Jan 12 14:52:39.252: callingAddrData:
Jan 12 14:52:39.252: addr 30120
Jan 12 14:52:39.252: calledAddrData:
Jan 12 14:52:39.252: addr 30107

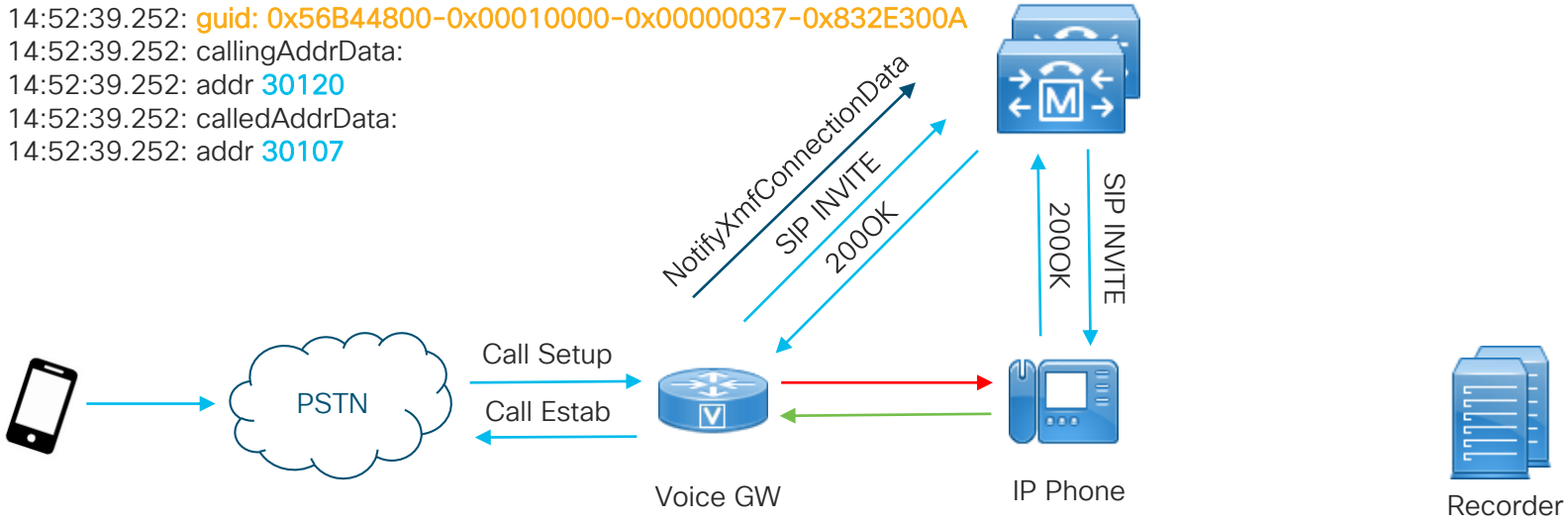


Gateway-based call recording via XMF

Recording call walk-through

GW is sending XMF message for the Second leg (Far End):

Jan 12 14:52:39.252: //WSAPI/XMF/OUTGOING_MESSAGE:: msg_type[21] NotifyXmfConnectionData
Jan 12 14:52:39.252: registrationID 22DCCD6C:XMF:Unified CM 11.5.1.14900-11:2
Jan 12 14:52:39.252: callID: 13
Jan 12 14:52:39.252: connID: 15763
Jan 12 14:52:39.252: guid: 0x56B44800-0x00010000-0x00000037-0x832E300A
Jan 12 14:52:39.252: callingAddrData:
Jan 12 14:52:39.252: addr 30120
Jan 12 14:52:39.252: calledAddrData:
Jan 12 14:52:39.252: addr 30107

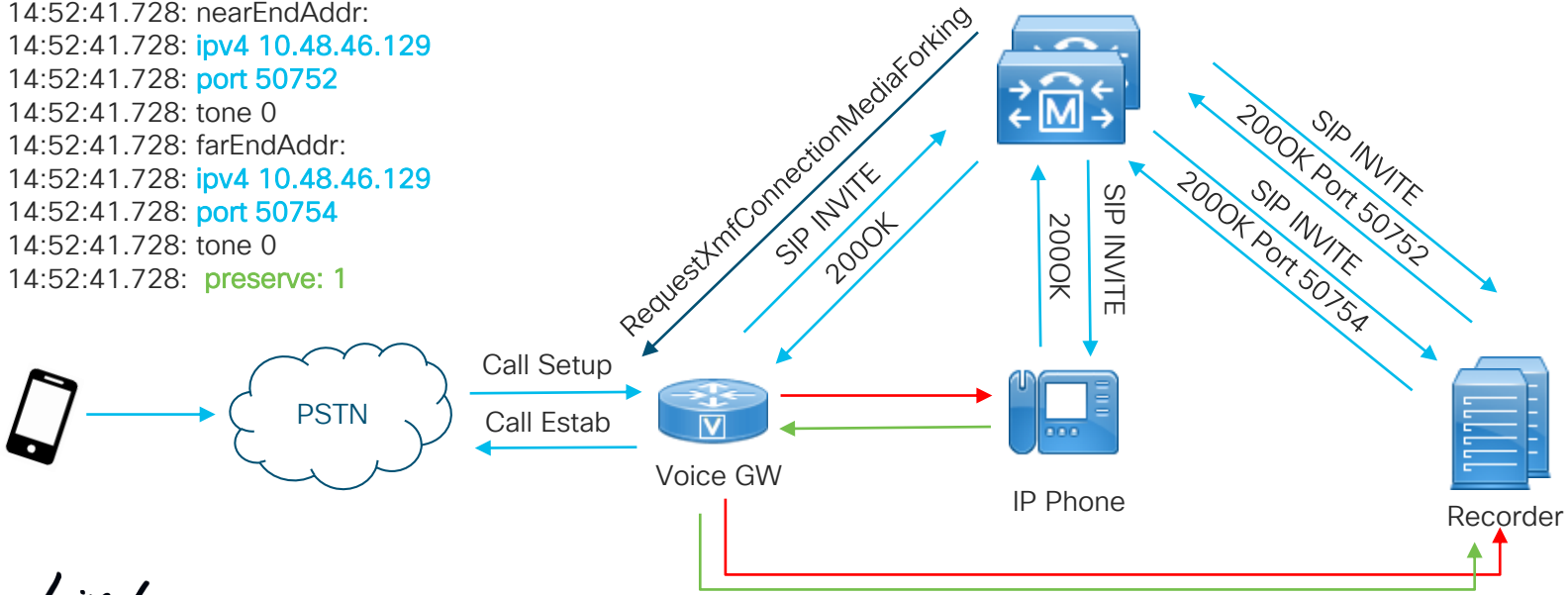


Gateway-based call recording via XMF

Recording call walk-through

CUCM is sending Media Forking request for connection:

Jan 12 14:52:41.728: //WSAPI/XMF/INCOMING_MSG:: msg_type[13] RequestXmfConnectionMediaForking
Jan 12 14:52:41.728: registrationID 22DCCD6C:XMF:Unified CM 11.5.1.14900-11:2
Jan 12 14:52:41.728: callID: 13
Jan 12 14:52:41.728: connID: 17464
Jan 12 14:52:41.728: nearEndAddr:
Jan 12 14:52:41.728: ipv4 10.48.46.129
Jan 12 14:52:41.728: port 50752
Jan 12 14:52:41.728: tone 0
Jan 12 14:52:41.728: farEndAddr:
Jan 12 14:52:41.728: ipv4 10.48.46.129
Jan 12 14:52:41.728: port 50754
Jan 12 14:52:41.728: tone 0
Jan 12 14:52:41.728: preserve: 1



Gateway-based call recording via XMF

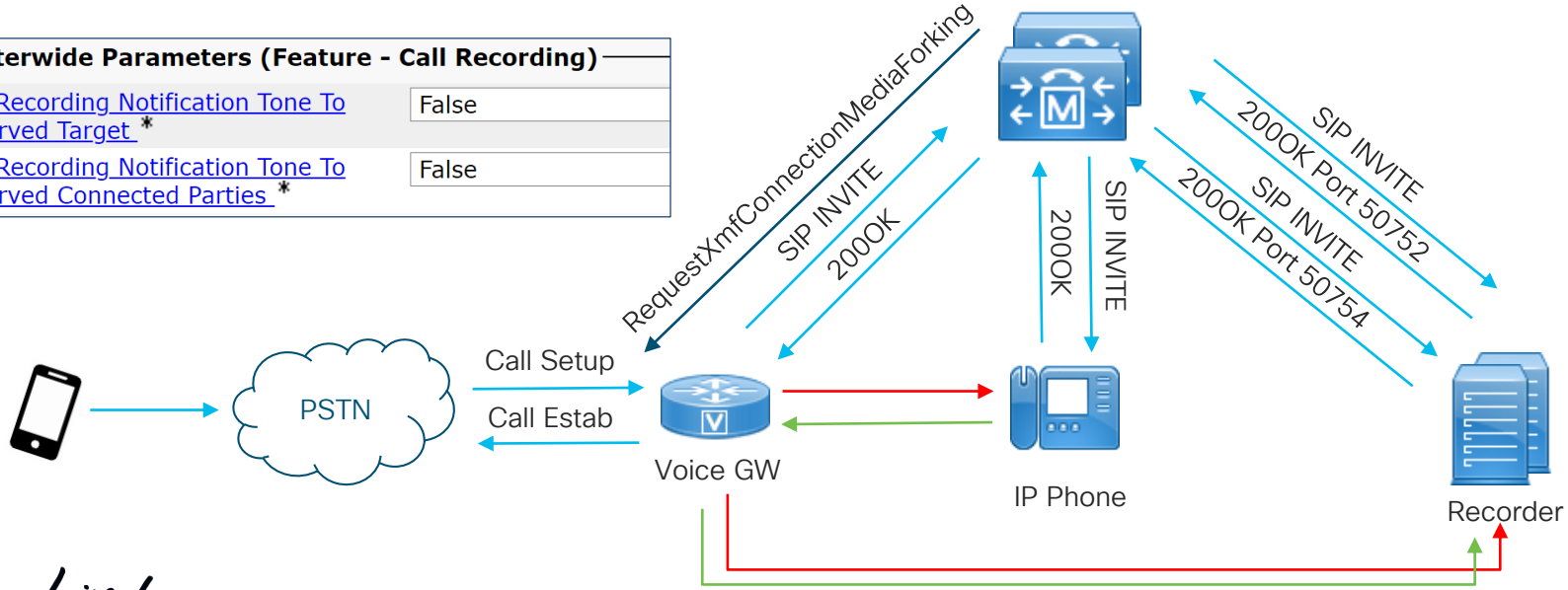
Recording call walk-through

RequestXmfConnectionMediaForking message attributes:

Jan 12 14:52:41.728: nearEndAddr:
Jan 12 14:52:41.728: tone 0
Jan 12 14:52:41.728: farEndAddr:
Jan 12 14:52:41.728: tone 0

Clusterwide Parameters (Feature - Call Recording)

Play Recording Notification Tone To Observed Target *	False
Play Recording Notification Tone To Observed Connected Parties *	False



Gateway-based call recording via XMF

XMF Call correlation

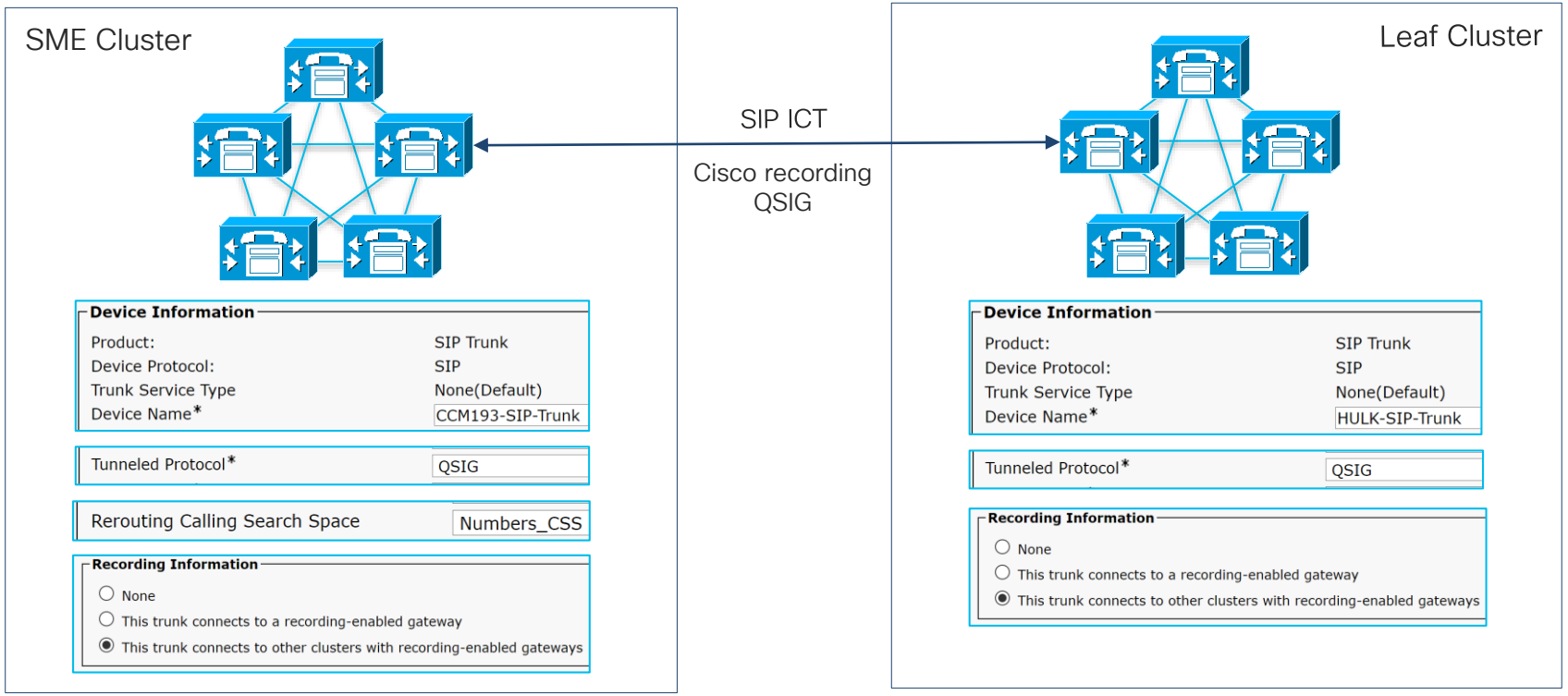
22:09:23.327 |AppInfo |CayugaInterface - processInd - Parsed
Msg{MessageType=MSG_NOTIFY_XMF_CONNECTION_DATA RegId=467428:XMF:Unified CM 11.5.1.14900-11 :19
TransId=6E4590:293 ProbeRegStatus=false CallId=18 ConnId=291 NotificationEventType = CREATED guid =
3393161472-0000065536-0000000117-2710978058 IntfType = CONN_SIP CallDirection= INCOMING}

22:09:23.416 |AppInfo |CayugaInterface - processInd - Parsed
Msg{MessageType=MSG_NOTIFY_XMF_CONNECTION_DATA RegId=467428:XMF:Unified CM 11.5.1.14900-11:19
TransId=6E4598:295 ProbeRegStatus=false CallId=18 ConnId=292 NotificationEventType = CREATED guid =
3393161472-0000065536-0000000117-2710978058 IntfType = CONN_SIP CallDirection= OUTGOING}

22:09:24.787 |AppInfo |SIPTcp - wait_SdlReadRsp: Incoming SIP TCP message from 10.48.52.170 on port 30658
index 292:
INVITE sip:730120@10.62.150.183:5061 SIP/2.0
Via: SIP/2.0/TLS 10.48.52.170:5061;branch=z9hG4bK291DB
From: <sip:1001@10.48.52.170>;tag=6E4594-1B89
To: <sip:730120@10.62.150.183>
Date: Fri, 24 Jan 2020 20:32:48 GMT
Call-ID: 84CC5B16-3E1F11EA-8181C2E2-B6CA21F4@10.48.52.170
Cisco-Guid: 3393161472-0000065536-0000000117-2710978058
Supported: 100rel,timer,resource-priority,replaces,sdp-anat,X-cisco-srtp-fallback

Gateway-based call recording via XMF

Inter-cluster recording information pass-through - configuration



Gateway-based call recording via XMF

Inter-cluster recording information pass-through – QSIG APDU

```
07787405.004 |16:32:48.010 |AppInfo  |Recording::- (0000009)
-encodeRecordingAPDU- apduType=[1].
07787405.005 |16:32:48.010 |AppInfo  |RCD_Qsig
 -- RecordingQsigInfo --
mApdutype = 1
mInvokeID = 6
mRecordingRequestor = 7
mPlayToneDirection = 3
mReqDeviceType = 0
mReqRefCI = 29601406
mfrkRefCI =0
mCtiEventType = 0
mCause = 0
mRecorderDn = 75001
mReqDeviceName =SEPD824BDBA7134
mReqClusterName = cucm193
mRecorderDevName =
mRecorderPartition =
mfrkDeviceName =
mfrkClusterID =
[...]
mLocale = 64
 -- End --
```

```
07787405.012 |16:32:48.010 |AppInfo  |CCQSIGASN -
RawByteOutput:AA068001 00820100
07787405.013 |16:32:48.013 |AppInfo  |RECORDQSIGASN -
StructuredInput:value RecordingStart ::= invoke :
 {
   invokeID 6,
   operationValue localValue : 60,
   argument
   {
     pilotNumber '3735303031'H,
     requesterDN '32393031'H,
     requestorType 7,
     toneDirection 3,
     requestorDevType 0,
     requestorDevName '5345504438323442444424137313334'H,
     requestorClusterID '6375636D313933'H,
     requestorRefCI 29601406,
     frkDevPosition 2,
     restartRecording FALSE,
     locale 64,
     transactionID 0
   }
 }
```

Gateway-based call recording via XMF

Inter-cluster recording information pass-through – missing Recording Info

07783828.000 |16:08:29.673 |SdlSig |SsCallInfoRes |await_callInfo_res |Recording(1,100,162,8) |RecordManager(1,100,161,1) |1,100,255,1.87^10.62.150.183^* |[R:N-H:0,N:0,L:0,V:0,Z:0,D:0] Type=16777246 ssKey=8 sideASsNode=1 sideASs=29601403 AHold=F sideAPSS=a19ec8ca-74d8-71c4-a002-156c3d887214 sideACMDevType=6 sideAEncodingType=0 sideAQsigEncodingType=0 sideAIsPreferAltScript=F sideAVideoCapable=F isSideAPSTN=F isSideBPSTN=F isSideBIME=F sideBNode=1 sideBSs=29601404 BHold=F sideBPSS= sideBCMDevType=4 sideBEncodingType=1 sideBQsigEncodingType=10 sideBIsPreferAltScript=T sideBVideoCapable=F cgPart= cgPat= cgTags= cgValues= pretransCgp:tn=0npi=0ti=1nd=1001pi=0si3 rnName=locale: 1 Name: UnicodeName: pi: 0 LRNumVMbox= LRNumberVMPN= LRVMPCss= LRRFR=15 LRCause=0 callState=5 [...] 5060>OrigPort=0pi=0si1 param=;+multiple-codecs-in-ans isParamSet=T' sideBCcContactHeaderInfo=' uri=ti=1User=Host=Port=0PassWord=Madder=Transport=4mDisplayName=RawUrl=<sip:aa55d7fb-8c05-f627-5254-ff7ab5a022c7@10.229.68.145:51364;transport=tcp>OrigPort=0pi=0si1 isParamSet=T' callingDeviceNodeId=1 calledDeviceNodeId=1 sideABib=0 sideBBib=0 sideARecQsigApduSupport=T sideBRecQsigApduSupport=F sideAMobilePartyNumber:pi=0si1 callingMobileDeviceName: calledMobileDeviceName: sideBMobilePartyNumber:pi=0si1 sideAGuid:E2Epcol=1E2EcallID=DF9F838000010000000000048B7963E0A sideBGuid:E2Epcol=0E2EcallID= isMultiForkingEnabled=F CAL={v=-1, m=-1, tDev=F, res=F, devType=0} CAL={v=-1, m=-1, tDev=F, res=F, devType=0}sideAnp=FsideBnp=F connBeforeANN=F External Presentation Info [pi=0si1locale: 1 Name: UnicodeName: pi: 0 mIsCallExternal=F] External Presentation Info [pi=0si1locale: 1 Name: UnicodeName: pi: 0 mIsCallExternal=F] Session-ID:8d972ce127862077450a4f236b3a3ba0;remote=df3bbb91d396525193611d227aa12486

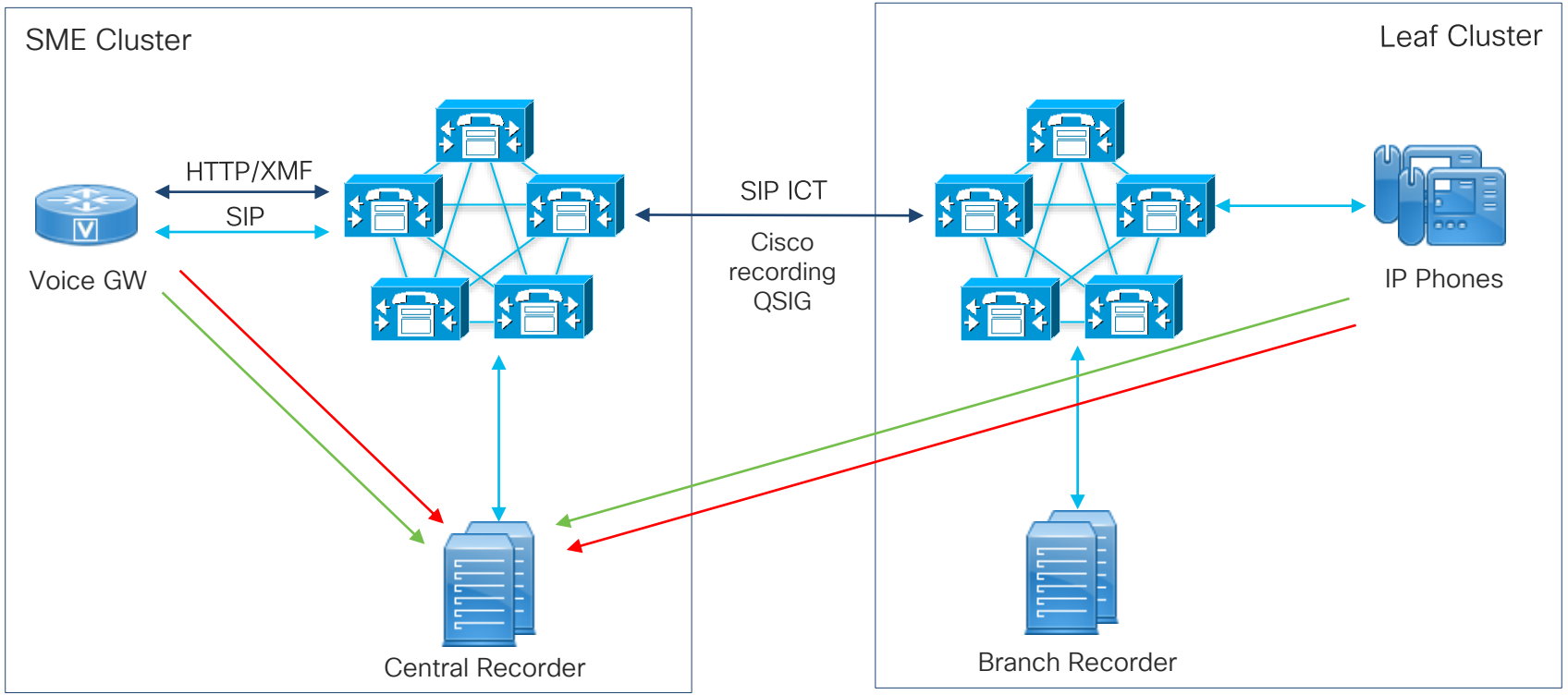
Gateway-based call recording via XMF

Inter-cluster recording information pass-through – no Rerouting CSS

```
07787452.007 |16:32:48.146 |AppInfo  |RECORDQSIGASN -
StructuredOutput:value RecordingStart ::= retError :
 {
  invokeID 6,
  errorValue localValue : 6160,
  argument
  {
   eventType 27,
   recorderDeviceName ''H,
   recorderPartition ''H,
   frkDeviceName ''H,
   frkClusterID '48554C4B'H,
   frkRefCI 0,
   frkDeviceGUID '3434413841383830303030313030303030 ...'H,
   cCcause 1114112,
   recordingFailurecause 1,
   transactionID 0
  }
 }
07787452.009 |16:32:48.146 |AppInfo  |Recording::- (0000009) -sendCTIErrorWithQsigRes: causeTag=[1]. ssCause[1114112]
07787452.011 |16:32:48.147 |AppInfo  |GenAlarm: AlarmName = RecordingCallSetupFail, subFac =
CALLMANAGERKeyParam = , severity = 3, AlarmMsg = RecordedDeviceName : SEPD824BDBA7134
```

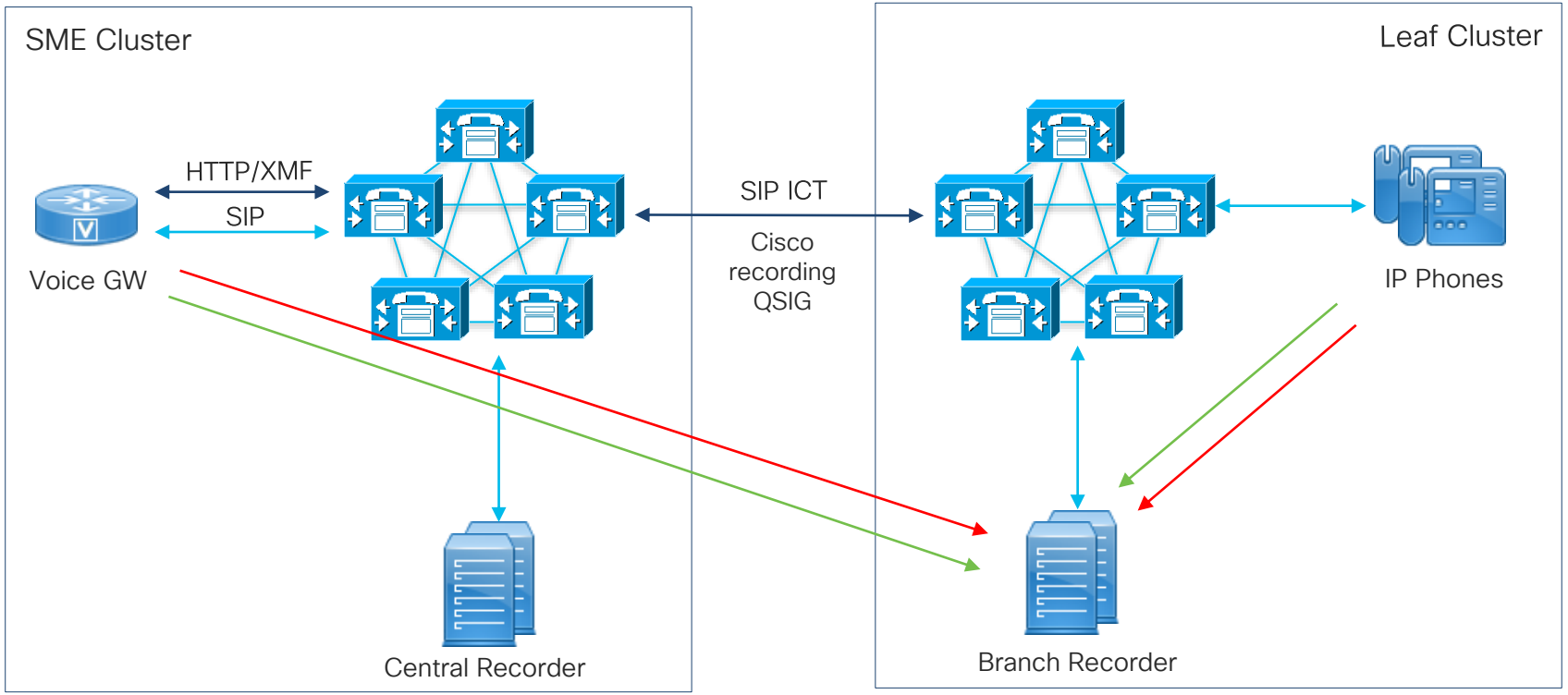
Gateway-based call recording via XMF

Deployment models – centralized call recording



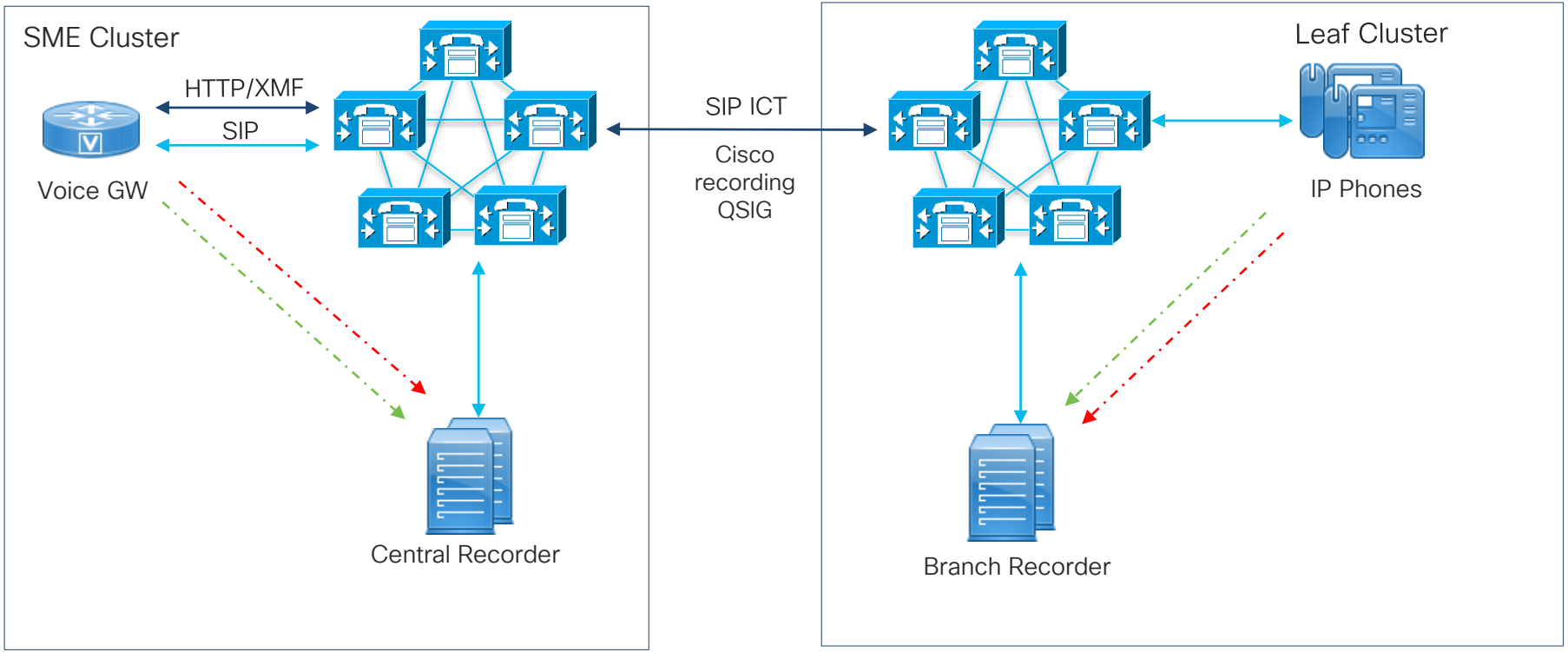
Gateway-based call recording via XMF

Deployment models – distributed call recording



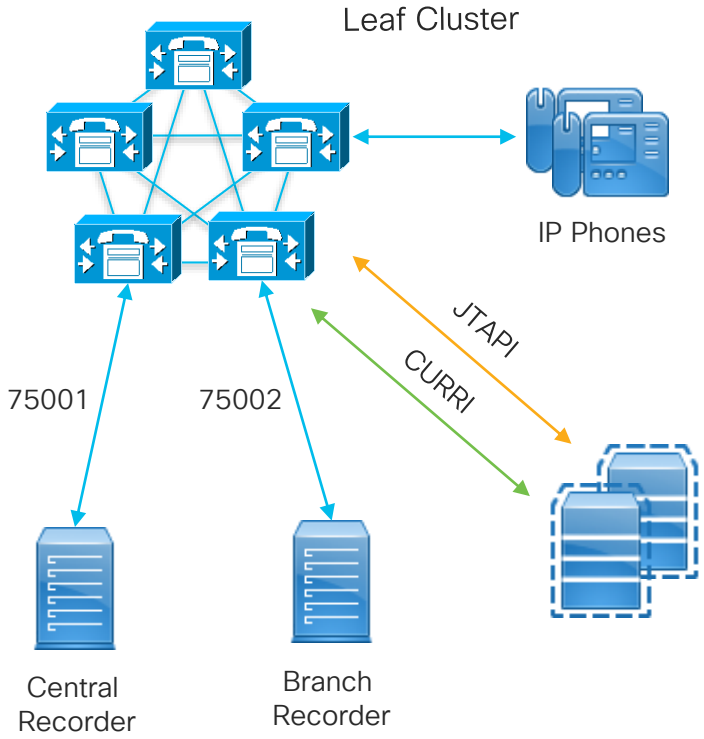
Gateway-based call recording via XMF

Deployment models – optimized call recording



Gateway-based call recording via XMF

Deployment models – optimized call recording

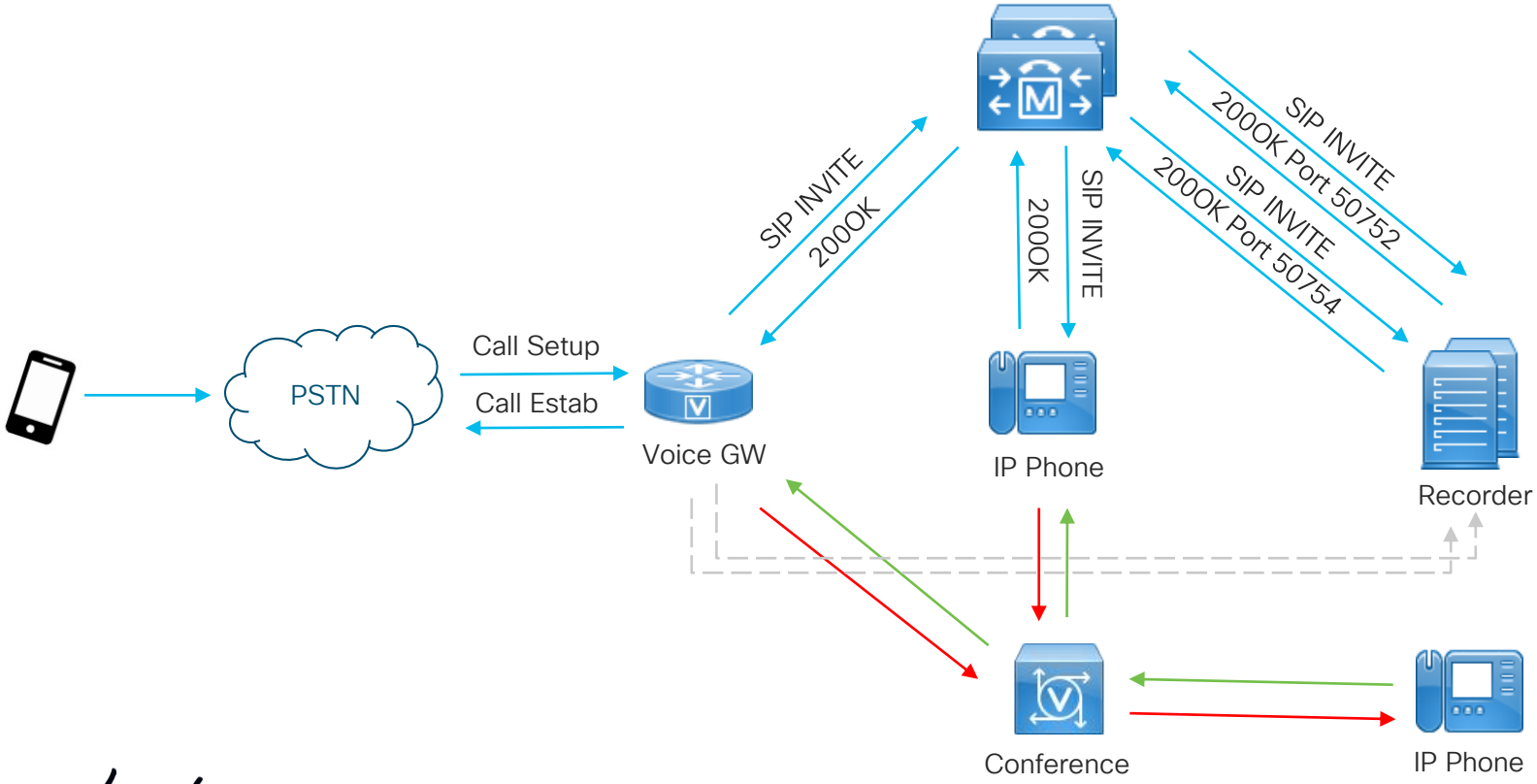



```
<Request xmlns="urn:oasis:names:tc:xacml:2.0:context:schema:os">
  <Attribute AttributeId="urn:Cisco:uc:1.0:callingnumber">
      <AttributeValue>b0018601001</AttributeValue></Attribute>
  <Attribute AttributeId="urn:Cisco:uc:1.0:callednumber">
      <AttributeValue>75001</AttributeValue></Attribute>
  <Attribute AttributeId="urn:Cisco:uc:1.0:transformedcgpn">
      <AttributeValue>b0018601001</AttributeValue></Attribute>
  <Attribute AttributeId="urn:Cisco:uc:1.0:transformedcdpn">
      <AttributeValue>75001</AttributeValue></Attribute>
  <Attribute AttributeId="urn:Cisco:uc:1.0:callingdevicename">
      <AttributeValue>SEPC40ACB4C5A48</AttributeValue></Attribute>
```

```
<Response><Result><Decision>Permit</Decision>
    <Obligations><Obligation FulfilOn="Permit" obligationId="divert.simple">
        <AttributeAssignment AttributeId="Policy:divert.simple">
            <AttributeValue>
                <cixml version="1.0”>
                    <divert><destination>75002</destination></divert>
                </cixml>
            </AttributeValue></AttributeAssignment>
</Obligation></Obligations></Result></Response>
```

Gateway-based call recording via XMF

Known limitation – no call recording after transfer to conference



Gateway-based call recording via XMF

Known limitation – secure calls are not supported by CUCM

GW Preferred method is configured

Encrypted Call is identified

22:09:28.015 |AppInfo |Recording::- (0000006) -processGWPreferred ....
22:09:28.015 |AppInfo |Recording::- (0000006) -getRecordingAnchorMode: PeerBib=[1];peerCMDevType=[8];qSigApduSupported=[0]
22:09:28.015 |AppInfo |Recording::- (0000006) -processGWPreferred: Encrypted sideB! Only its BIB allowed for Recording. Normal anchorMode=[1] ignored!
22:09:28.015 |AppInfo |Recording::- (0000006) -processGWPreferred: Peer sideA (28113320) has no GWBib [1];try agent deviceBib [3]
22:09:28.015 |AppInfo |Recording::- (0000006) -getDeviceRecordingAnchorMode: cmDevType=[4];bibEnabled=[3];qSigApduSupported=[0]

Try to fallback to Phone BIB

Gateway-based call recording via XMF

Troubleshooting GW-based recording issues

Recording mode selection in CUCM traces

00040863.007 |12:17:29.680 |AppInfo |SIPStationCdfc::getRecordingMethod recording Requester= 5, phone Supports GatewayRecording = 1, recording Method= 1

Recording Method maps to Recording Media Source

1: Gateway Preferred
2: Device Preferred
3: Device BIB Only

GatewayRecording corresponds to attribute in REGISTER message of IP Phone

0: Gateway Recording is not supported
1: Gateway Recording is supported

Gateway-based call recording via XMF

Troubleshooting GW-based recording issues

IP Phone registration with Gateway-based recording supported

```
00607862.004 |14:37:40.528 |AppInfo  |SIPTcp - wait_SdlReadRsp: Incoming SIP TCP message from 10.229.68.143
on port 49474 index 2505 with 2371 bytes:
[129636,NET]
REGISTER sip:10.62.150.183 SIP/2.0
Via: SIP/2.0/TCP 10.229.68.143:49474;branch=z9hG4bK551f1cf1
From: <sip:30120@10.62.150.183>;tag=c40acb4c5a4800047265d8ce-4de61f01
To: <sip:30120@10.62.150.183>
Call-ID: c40acb4c-5a480003-1cb8a40d-44ca6840@10.229.68.143
Max-Forwards: 70
Date: Sun, 12 Jan 2020 13:37:32 GMT
CSeq: 101 REGISTER
User-Agent: Cisco-CP9951/9.4.2
[...]
<?xml version="1.0" encoding="UTF-8"?>
<x-cisco-remotecc-request>
 [...]
  <gatewayrecording></gatewayrecording>
  <conferenceDisplayInstance></conferenceDisplayInstance>
 </optionsind>
</x-cisco-remotecc-request>
```

Gateway-based call recording via XMF

Troubleshooting GW-based recording issues

CUCM is not able to register with Gateway

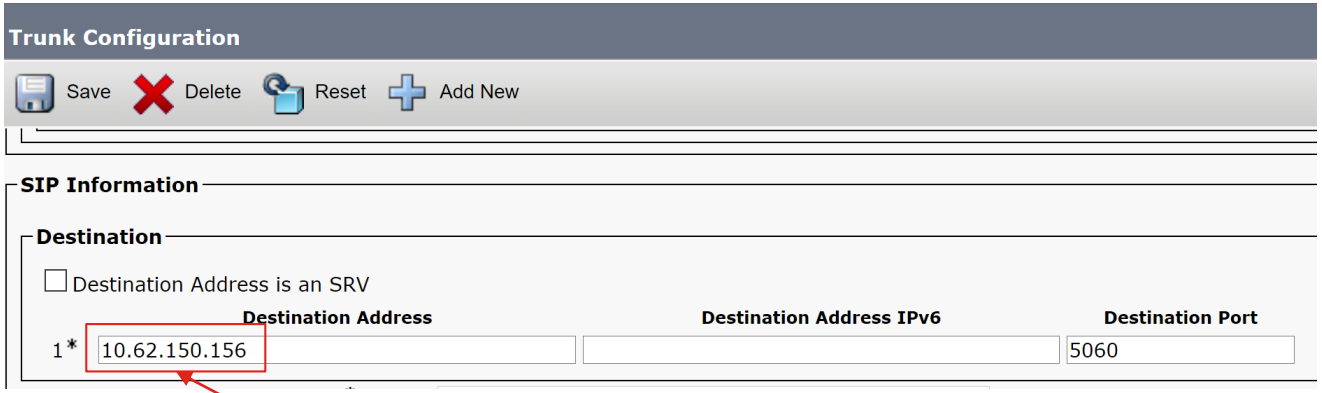
Jan 12 11:15:25.411: //WSAPI/XMF/INCOMING_MSG:: msg_type[6] RequestXmfRegister
Jan 12 11:15:25.411: transactionID Cisco:UCM:Cayugalf:4:1
connectionEventsFilter: CREATED|DISCONNECTED
mediaEventsFilter:
Jan 12 11:15:25.411: app url http://10.62.150.183:8090/ucm_xmf
Jan 12 11:15:25.411: app name Unified CM 11.5.1.14900-11
Jan 12 11:15:25.411: prov url http://10.62.150.156:8090/xmf
Jan 12 11:15:25.412: //WSAPI/XMF/registration_base_add_registration: remote url (http://10.62.150.183:8090/ucm_xmf) not configured
Jan 13 11:15:25.412: //WSAPI//OUTGOING_EXCEPTION:: registrationID[] transactionID[Cisco:UCM:Cayugalf:4:1] errorCode[ServiceException011], reason[Authentication fail] text[Application URL is not configured on the router.]

```
uc wsapi
 source-address 10.62.150.156
 !
 provider xmf
  remote-url 1 http://10.62.150.183:8090/ucm-xmf  << Wrong URL configured
```

Gateway-based call recording via XMF

Troubleshooting GW-based recording issues

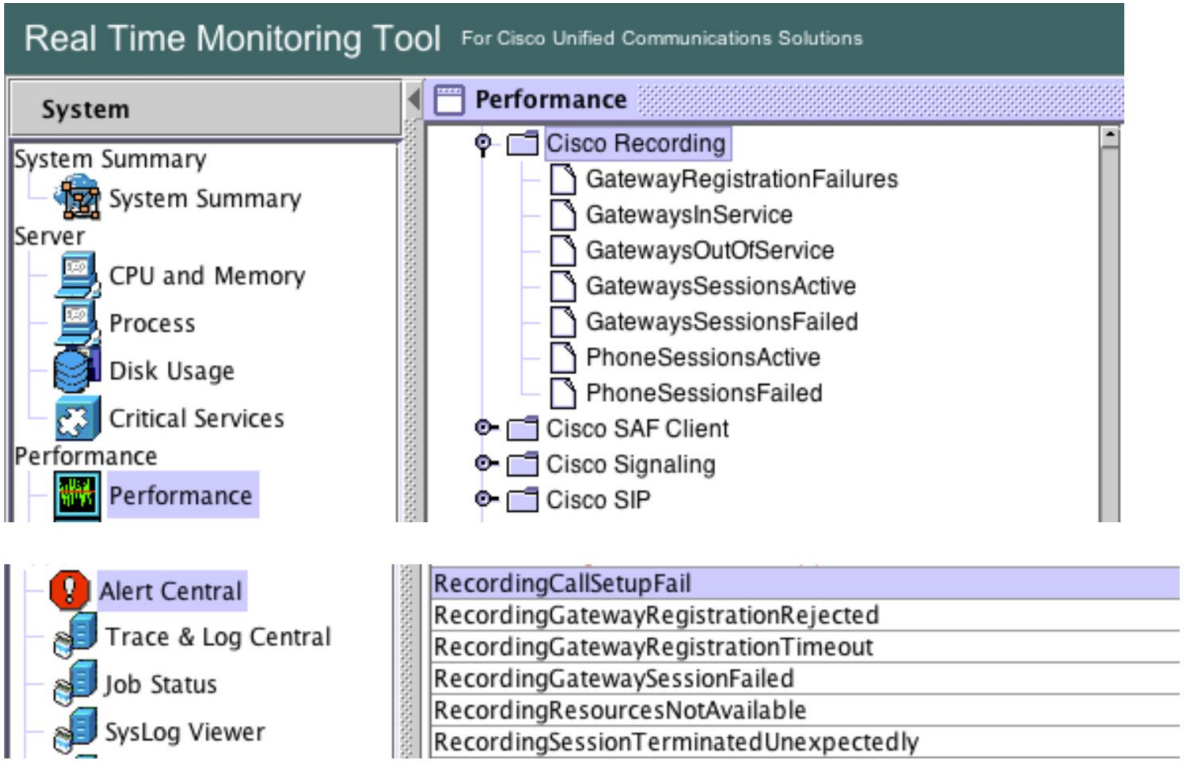
CUCM SIP Trunk destination should match WSAPI source-address on GW




```
uc wsapi
 source-address 10.62.150.156
 !
 provider xmf
  remote-url 1 http://10.62.150.183:8090/ucm_xmf
```

Gateway-based call recording via XMF

Monitoring Gateway status



Gateway-based call recording via XMF

Troubleshooting GW-based recording issues – trace collection

Information to be collected from the Gateway

```
KSM-4331-3#sh logging
Syslog logging: enabled (0 messages dropped

No Active Message Discriminator.
```

Show commands

```
show wsapi registration xmf        ! List of Registered CUCMs
show call media-forking            ! Displays the forked stream information
```

Debug commands

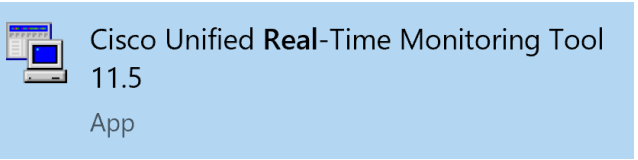
```
debug voip application                    ! App framework debug
debug voip application media forking      ! RTP forking info
debug ccsip message                       ! SIP signaling
debug wsapi xmf message                   ! XMF signaling
debug voip rtp packet                     ! RTP packet flow
```

Packet captures

Gateway-based call recording via XMF

Troubleshooting GW-based recording issues – trace collection

Information to be collected from the CUCM



Traces and logs
- Detailed Cisco CallManager traces
- Event Viewer – Application Log
- Event Viewer – System Log
- RisDC PerfMon Logs

Packet captures
- utils network capture file xmf-capture size 1500 host ip 10.62.150.156

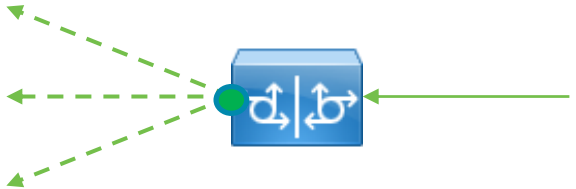
Call Recording Redundancy with Media-Proxy

Call recording redundancy with Media-Proxy

Use cases

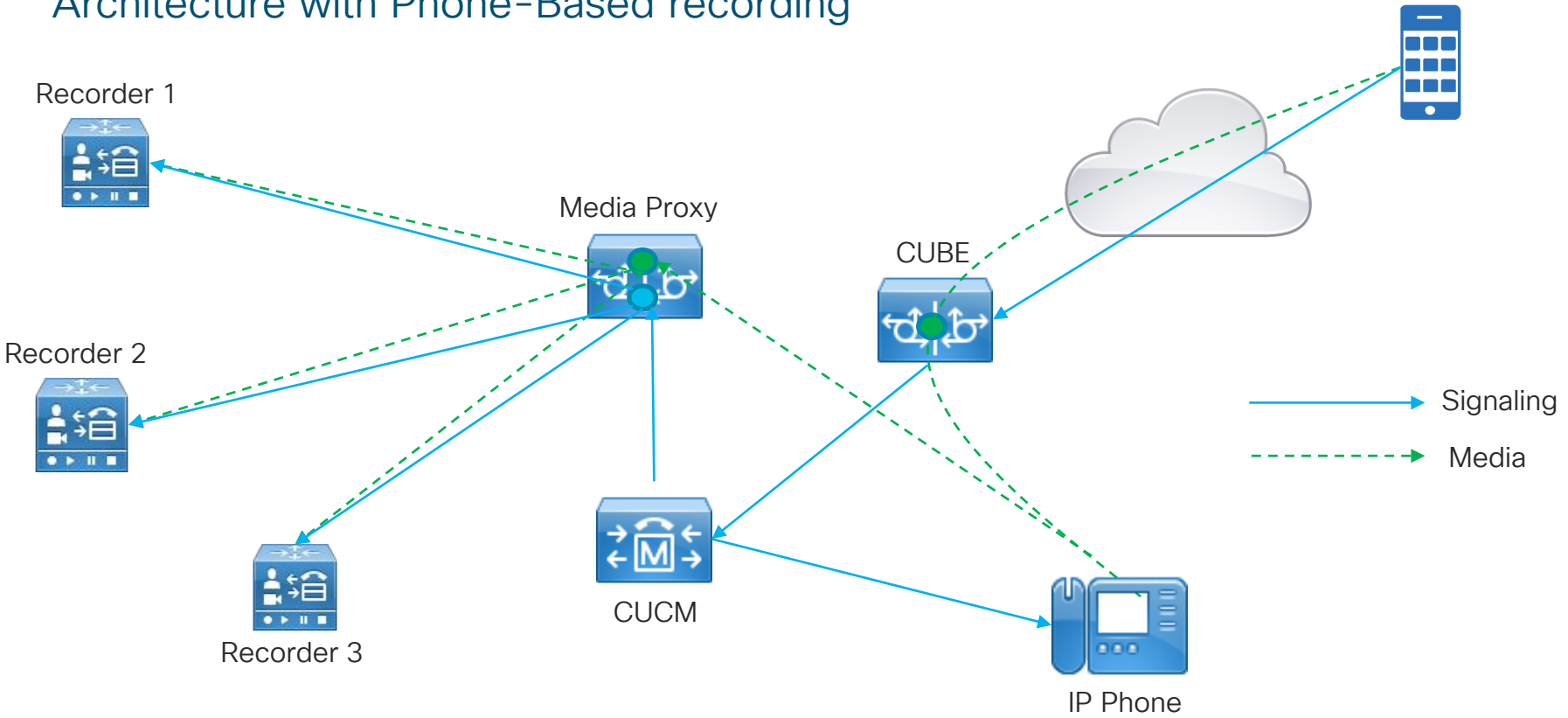
- More then one recorder support
- In-call recording redundancy
- Application real-time media processing

CUCM 12.5
IOS XE 16.10



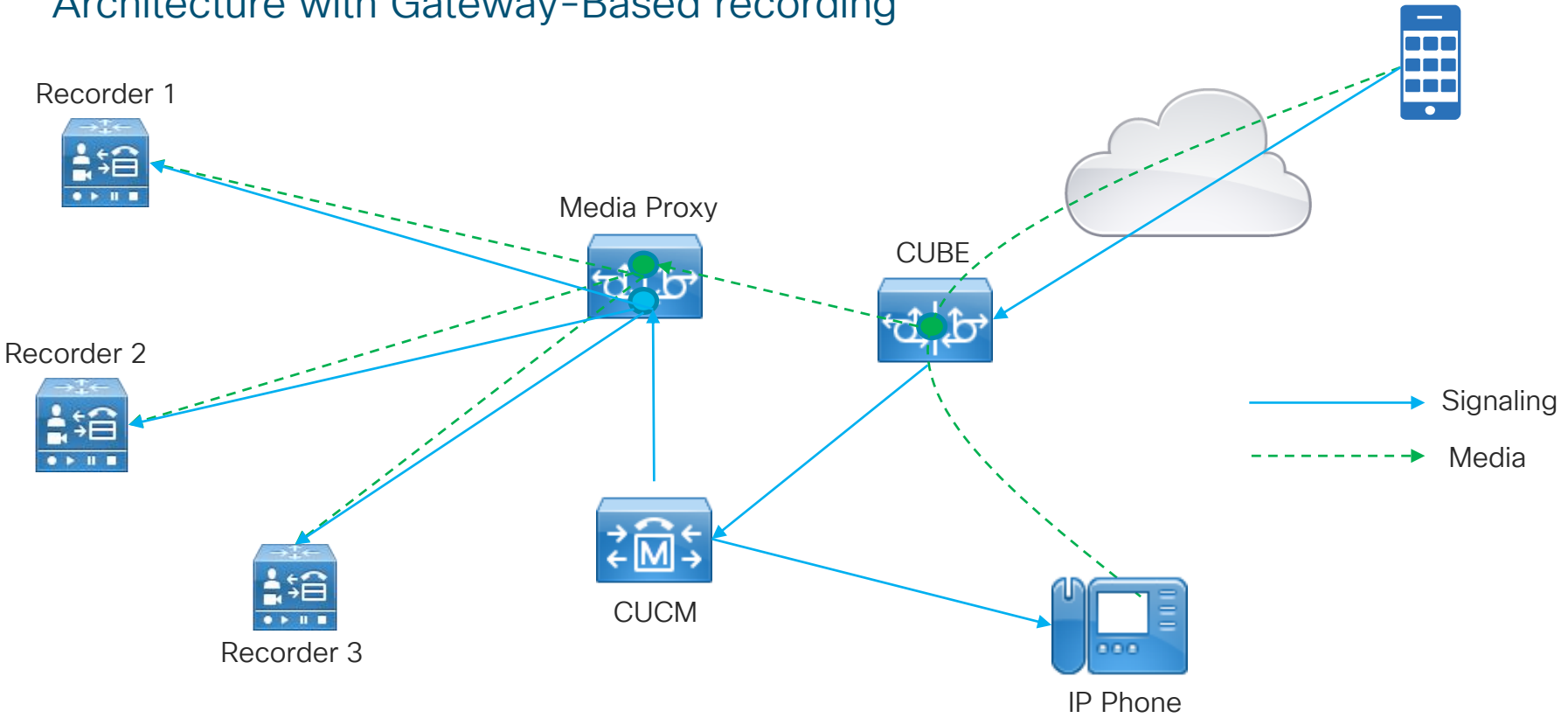
Call recording redundancy with Media-Proxy

Architecture with Phone-Based recording



Call recording redundancy with Media-Proxy

Architecture with Gateway-Based recording



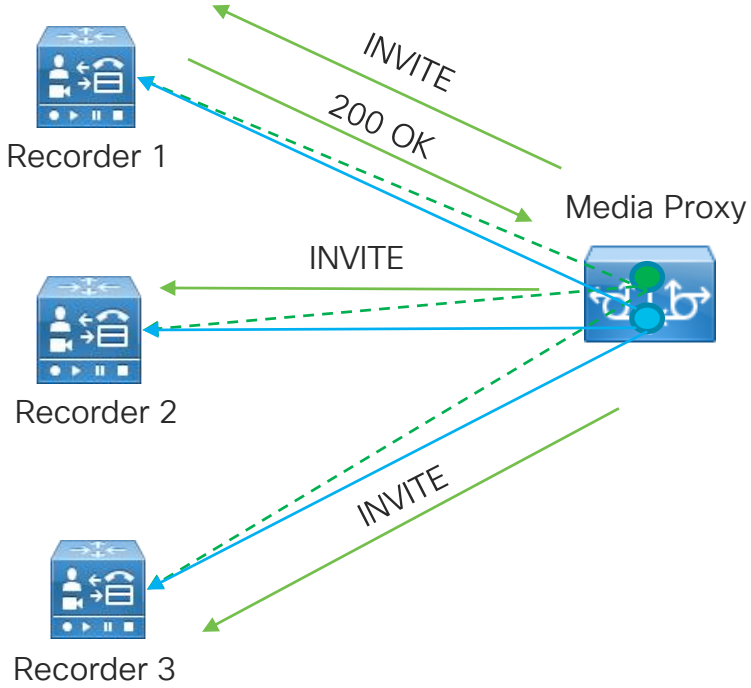
Call recording redundancy with Media-Proxy

Feature highlights

- Platforms ISR4K, ASR1K, CSR1000v
- Maximum of 5 recorders are supported
- Various call flows (internal, external, mobile)
- Supports High Availability (SSO, Box-to-Box with Redundancy Groups)
- Provides secure call forking with Phone-Based call recording
- Load-balancing of recorders with CUSP

Call recording redundancy with Media-Proxy

Mandatory recorder policy

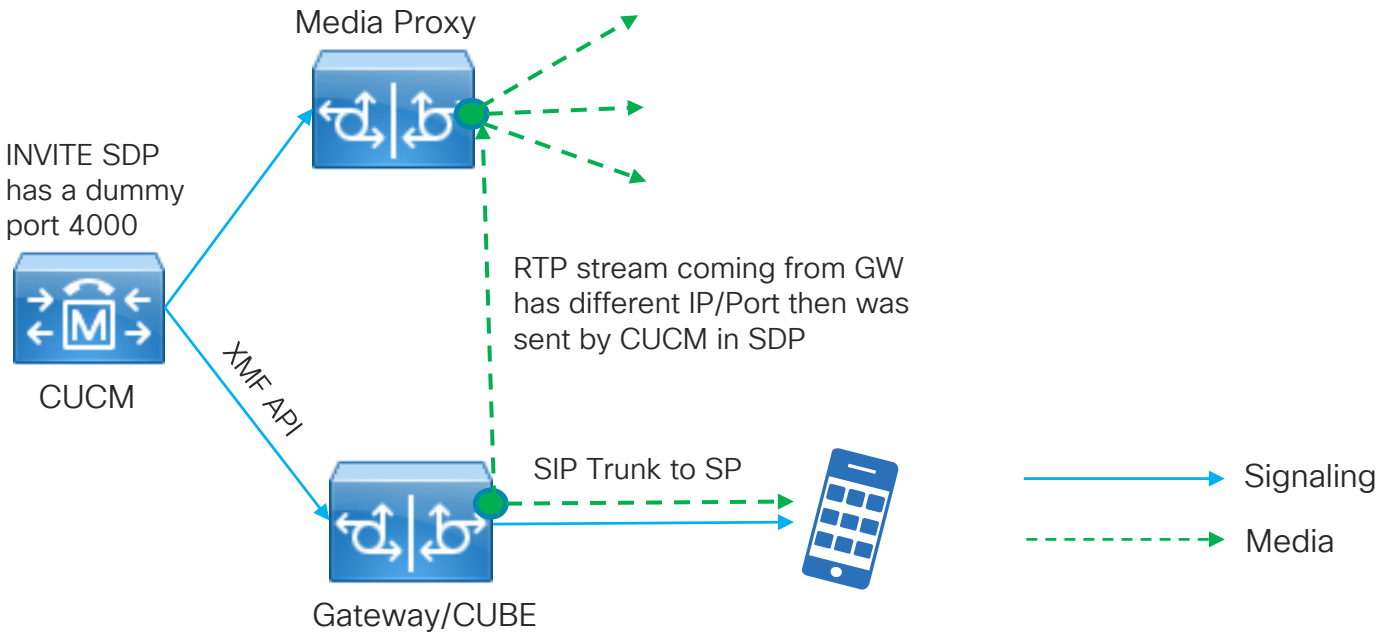



```
media profile recorder 1
  proxy policy mandatory 1
```

Call recording redundancy with Media-Proxy

Media Latching with Gateway

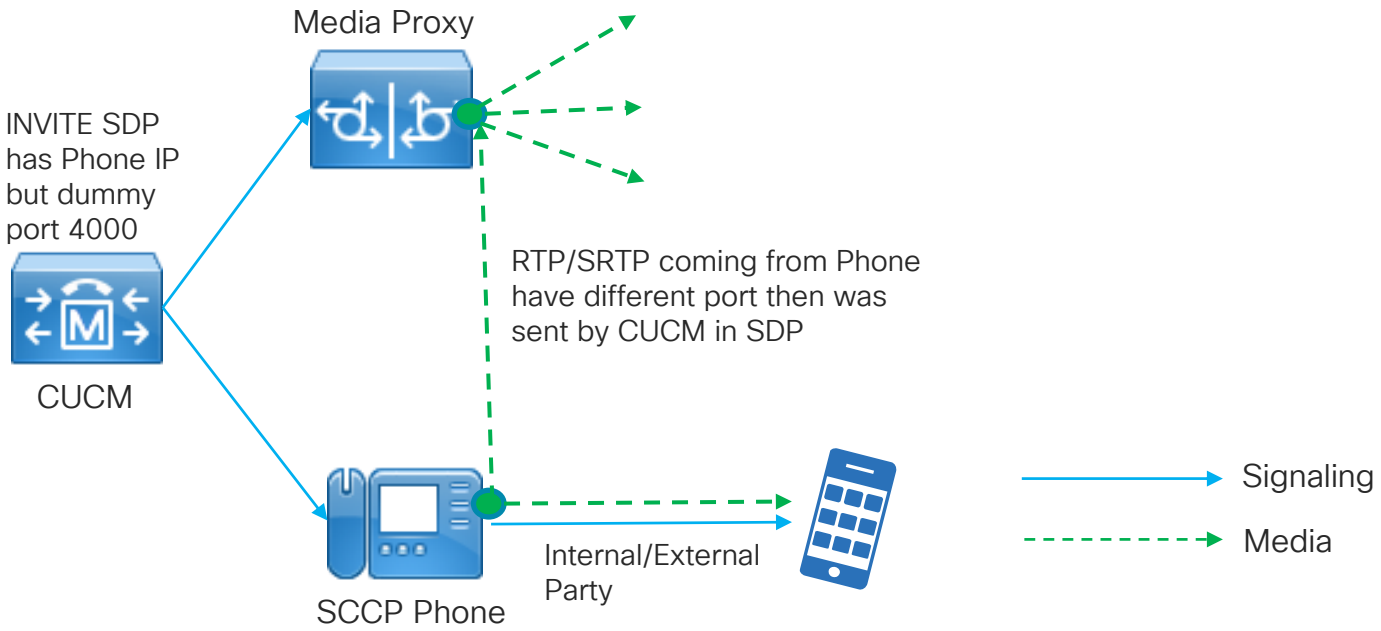
- Media coming from the Gateway is on different IP/Port then advertised in SDP



Call recording redundancy with Media-Proxy

Media Latching with IP Phone

- Media coming from the SCCP Phone is on different IP/Port then advertised in SDP



Call recording redundancy with Media-Proxy

Configuring solution elements

Gateway/CUBE

CUBE: 10.62.150.156

CUBE/Gateway Configuration

```
ip http server
ip http max-connection 100
ip http timeout-policy idle 600 life 86400 requests 86400

uc wsapi
 source-address 10.62.150.156

 provider xmf
   remote-url 1 http://10.62.150.183:8090/ucm_xmf
   remote-url 2 http://10.62.150.184:8090/ucm_xmf
```

Call recording redundancy with Media-Proxy

Configuring solution elements

Media Proxy

MPS: 10.62.154.116

Media Proxy configuration:

```
media profile recorder 1
  media-recording proxy 4 5
  proxy policy mandatory 4

media class 1
  recorder profile 1

dial-peer voice 3 voip
  incoming called-number 75001
  voice-class codec 1
  media-class 1
  dtmf-relay rtp-nte
```

Dial-peer tagging

Mandatory Recorder

Incoming dial-peer for CUCM

Call recording redundancy with Media-Proxy

Configuring solution elements

Media Proxy

MPS: 10.62.154.116

Media Proxy configuration:

```
dial-peer voice 4 voip
 destination-pattern 75001
 session protocol sipv2
 session target ipv4:10.62.150.171
 session transport tcp
 voice-class codec 1
 dtmf-relay rtp-nte
 no vad
!
dial-peer voice 5 voip
 destination-pattern 75001
 session protocol sipv2
 session target ipv4:10.62.150.172
 session transport tcp
 voice-class codec 1
 dtmf-relay rtp-nte
 no vad
```

Outgoing dial-peers to the Recorders

Call recording redundancy with Media-Proxy

Configuring solution elements

CUCM

CUCM: 10.62.150.183
CUCM: 10.62.150.184

Recording Profile with DN:

Recording Profile Information

Name*	CLEUR2020 Recorder
Recording Calling Search Space	Numbers_CSS
Recording Destination Address *	75001

Trunk to Gateway/CUBE:

Recording Information

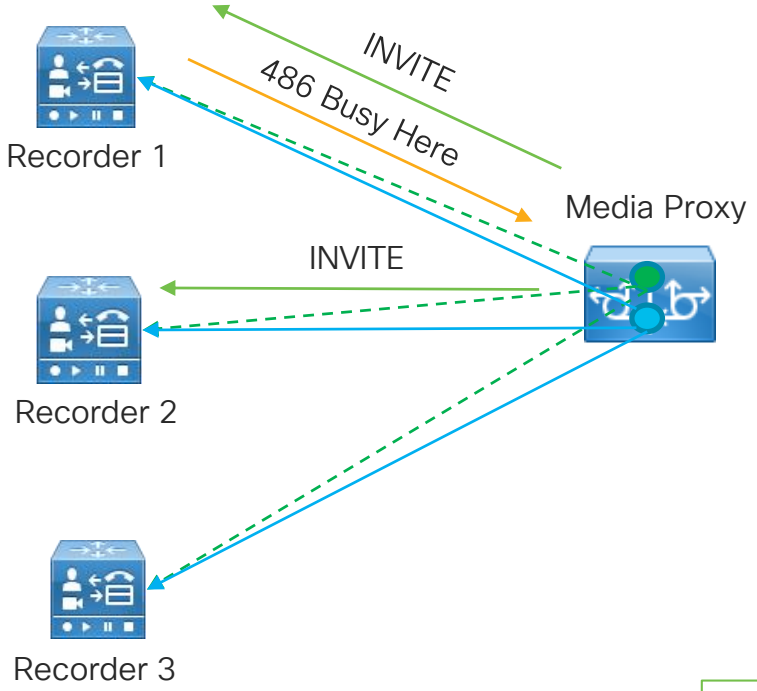
- ○ None
- ◉ This trunk connects to a recording-enabled gateway
- ○ This trunk connects to other clusters with recording-enabled gateways

Recorded Line Appearance:

Recording Option*	Automatic Call Recording Enabled
Recording Profile	CLEUR2020 Recorder
Recording Media Source*	Gateway Preferred

Call recording redundancy with Media-Proxy

Redundancy options – Recorder Hunting

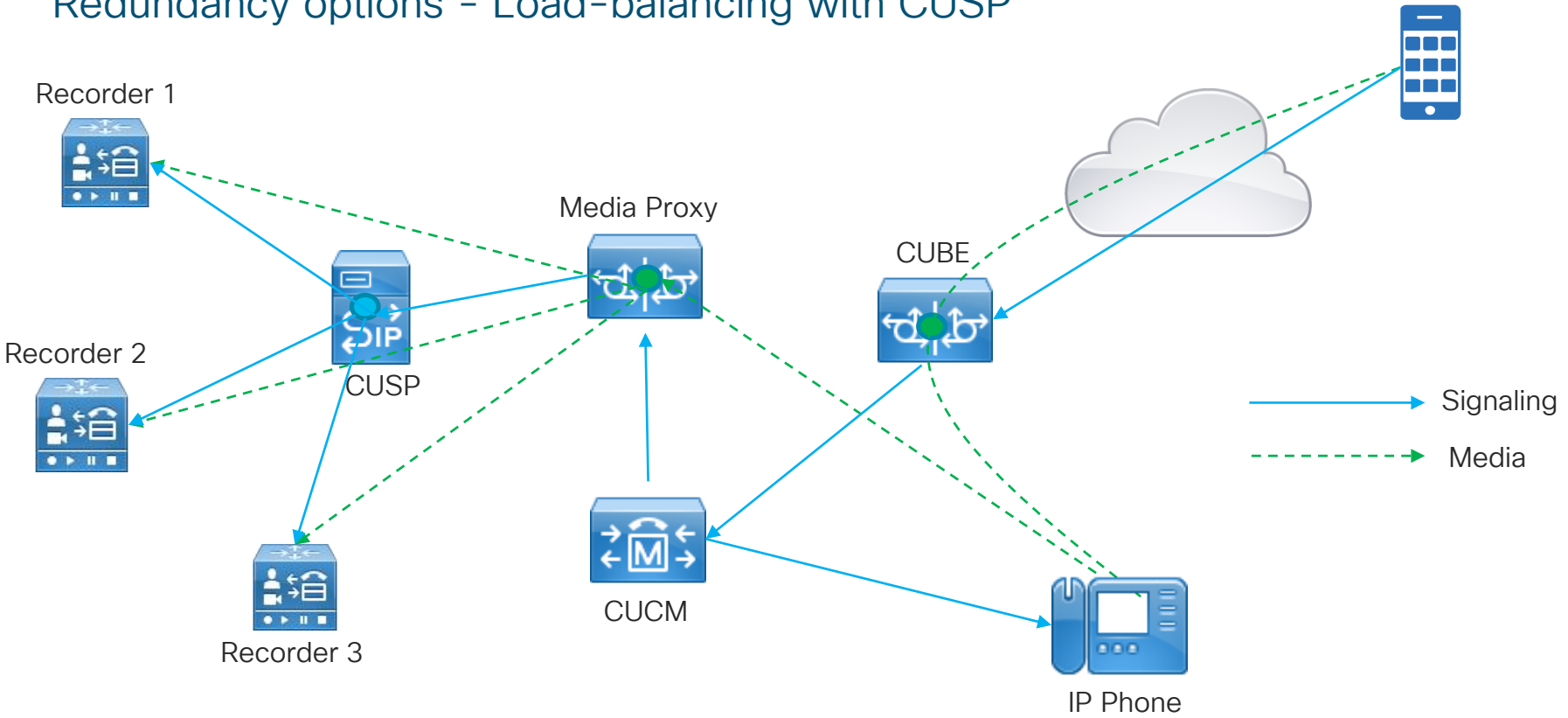



```
dial-peer voice 4 voip
 destination-pattern 75001
 session protocol sipv2
 session target ipv4:10.62.150.171
 session transport tcp
 voice-class codec 1
 dtmf-relay rtp-nte
 no vad
!
dial-peer voice 5 voip
 destination-pattern 75001
 session protocol sipv2
 session target ipv4:10.62.150.172
 session transport tcp
 voice-class codec 1
 dtmf-relay rtp-nte
 no vad
```

```
MS-P2-4351(config)# voice hunt user-busy
```

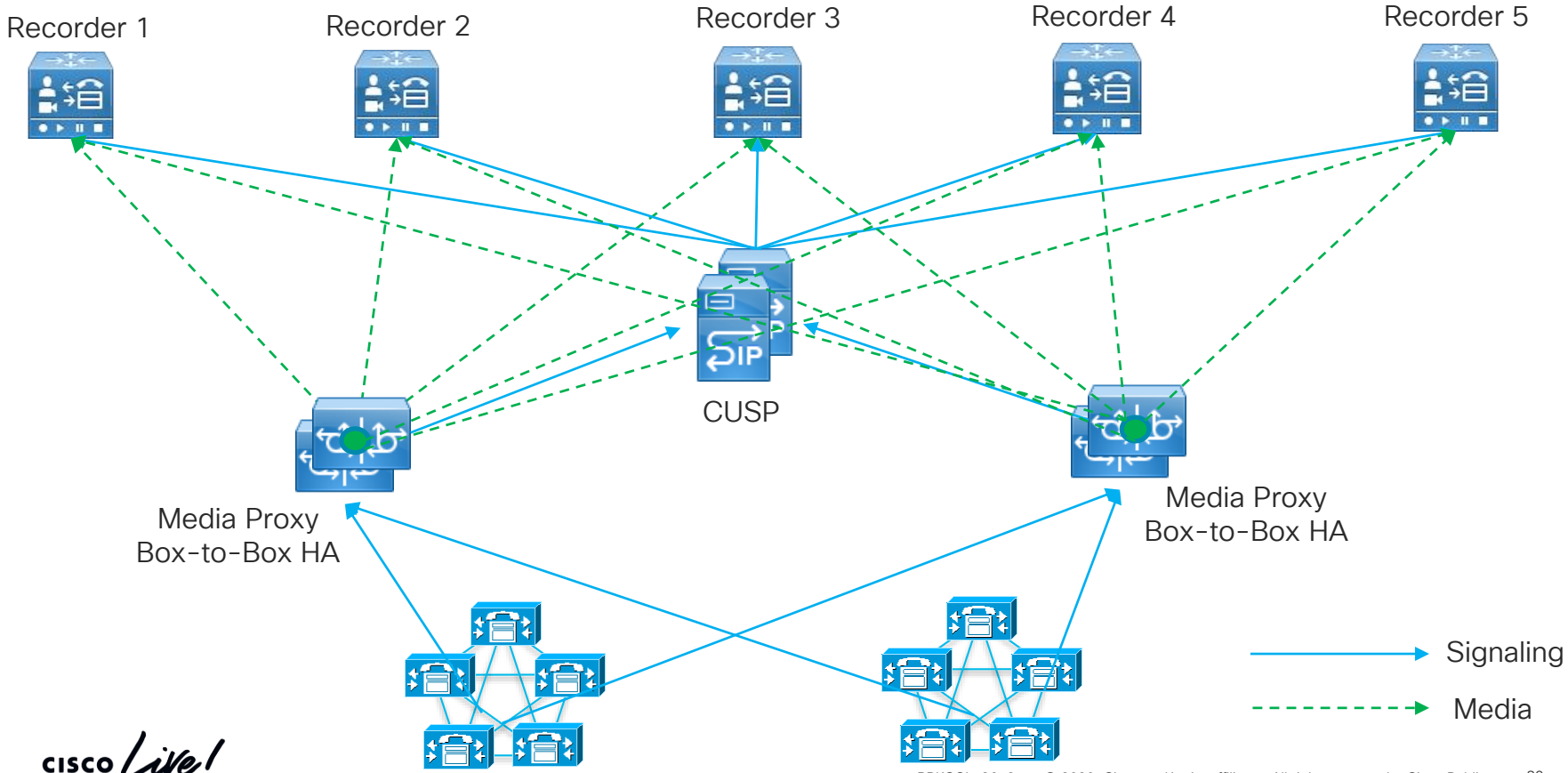
Call recording redundancy with Media-Proxy

Redundancy options - Load-balancing with CUSP



Call recording redundancy with Media-Proxy

Redundancy options- Fully redundant architecture



Call recording redundancy with Media-Proxy

Restrictions and Limitations

- Co-existence with CUBE
- SRTP <-> RTP forking
- SRTP fallback
- Mid-call signaling updates from Recorders
- Mid-call signaling block
- Video recording (only one audio m-line)
- SIP EO is required from CUCM

Call recording redundancy with Media-Proxy

Troubleshooting Media-Proxy

```
INFO sip:Username@10.62.150.47:5060;transport=tcp SIP/2.0
Via: SIP/2.0/TCP 10.62.150.91:5060;branch=z9hG4bK761A9B
From: <sip:123456@10.62.150.91>;tag=F8C3EE1-129F
To: ”Username" <sip:Username@10.62.150.47;x-nearend;x-refci=25579597;x-nearendclusterid=StandAloneCluster
Call-ID: ade62980-b8c1ede8-23e06-2f69410a@10.62.150.47
User-Agent: Cisco-SIPGateway/IOS-16.11.20180827.020621
Content-Type: application/x-cisco-proxy-recording-status+xml
Content-Length: 348

<recorderList>
   <recorder>
      <uri>sip:75001@10.62.150.71:5060</uri>
      <recorderType>Optional</recorderType>
      <status>Success</status>
   </recorder>
   <recorder>
      <uri>sip:75001@10.62.150.72:5060</uri>
      <recorderType>Optional</recorderType>
      <status>Success</status>
   </recorder>
```

Call recording redundancy with Media-Proxy

Troubleshooting Media-Proxy

```
INFO sip:Username@10.62.150.47:5060;transport=tcp SIP/2.0
Via: SIP/2.0/TCP 10.62.150.91:5060;branch=z9hG4bK761A9B
From: <sip:123456@10.62.150.91>;tag=F8C3EE1-129F
To: ”Username" <sip:Username@10.62.150.47;x-nearend;x-refci=25579597;x-nearendclusterid=StandAloneCluster
Call-ID: ade62980-b8c1ede8-23e06-2f69410a@10.62.150.47
User-Agent: Cisco-SIPGateway/IOS-16.11.20180827.020621
Content-Type: application/x-cisco-proxy-recording-status+xml
Content-Length: 348

<recorderList>
   <recorder>
      <uri>sip:75001@10.62.150.71:5060</uri>
      <recorderType>Optional</recorderType>
      <status>Success</status>
   </recorder>
   <recorder>
      <uri>sip:75001@10.62.150.72:5060</uri>
      <recorderType>Optional</recorderType>
      <status>Failure</status>
      <errormessage>503 Service Unavailable</errormessage>
   </recorder>
```

Call recording redundancy with Media-Proxy

Troubleshooting Media-Proxy

Show commands

- show voip rtp connections
- show voip recmsp session
- show voip recmsp session detail
- show voip rtp forking
- show call active voice compact
- show sip-ua calls
- show media-proxy sessions

Debug commands

- debug ccsip messages
- debug ccsip error
- debug ccsip events
- debug ccsip states
- debug voip recmsp all
- debug voip ccapi all
- debug voip fpi all

Conclusion

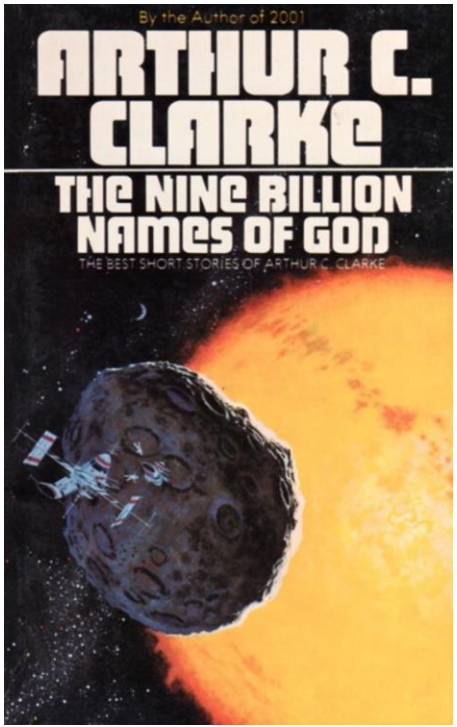
Call recording infrastructure

Callout for action

- Review your call recording architecture
- Combine all methods where possible
- Start baseline system monitoring
- Join discussion and ask questions

Call recording infrastructure

Look ahead



"Look," whispered Chuck, and George lifted his eyes to heaven. (There is always a last time for everything.)
Overhead, without any fuss, the stars were going out.

Arthur Clarke, 1953

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