

基于CUCM网络的移动代理记录

目录

[简介](#)

[先决条件](#)

[要求](#)

[使用的组件](#)

[背景信息](#)

[移动座席的工作方式](#)

[移动Agent下录音的工作原理](#)

[使用CUSP的UCCE部署（代理服务器）](#)

[配置](#)

[为记录器创建SIP中继设备](#)

[创建呼叫记录配置文件](#)

[为每个CUBE调配虚拟SIP中继](#)

[为录制器调配路由模式](#)

[调配录制呼叫通知音选项](#)

[调配CUBE XMF提供程序](#)

[为呼叫信息报头调配CUBE SIP配置文件](#)

[故障排除](#)

[日志分析](#)

[来自客户语音门户\(CVP\)的传入邀请](#)

[来电的数字分析](#)

[呼叫标识符\(CI\)关联，用于呼叫no和本地CTI端口\(LCP\)](#)

[已选择LCP](#)

[180振铃已发送到CVP](#)

[RCP将呼叫扩展到被叫号码](#)

[RCP呼叫代理的Digit分析](#)

[RCP和座席的呼叫标识符\(CI\)关联](#)

[邀请已发送给座席：](#)

[RCP进入保持状态，LCP和主叫方已连接](#)

[主叫方和LCP的媒体连接请求](#)

[媒体终端点\(MTP\)分配给LCP和主叫方](#)

[在LCP端口上启用录制](#)

[录制信令启动](#)

[内建桥\(Bib\)的数字分析](#)

[此处，SIPBIB创建SIPBIBCDPC记录流程](#)

[LCP和主叫方200 OK](#)

[录制详细信息](#)

[记录号码的数字分析](#)

[呼叫扩展到路由列表](#)

[邀请发送到近端设备的录制服务器](#)

[从录制服务器收到200 OK](#)

[从CUCM发送的确认\(ACK\)](#)

[CUCM将远端设备的邀请发送到录制服务器](#)

[从录制服务器200 OK](#)

[从CUCM发送的ACK](#)

[座席最终呼叫该号码](#)

[CUCM发送SDL HTTP请求](#)

[SDL HTTP LCP录制请求](#)

[相关信息](#)

简介

本文档介绍基于网络的录制(NBR)的不同场景及其故障排除。

先决条件

要求

Cisco 建议您了解以下主题：

- 思科统一通信管理器(CUCM)10.0(1)版或更高版本
- 基于电话的录制架构
- 基于网络的记录架构

使用的组件

本文档中的信息基于以下软件和硬件版本：

- 思科Call Manager版本10.5
- 客户语音门户(CVP)版本10.5
- 思科统一联络中心快捷版(UCCE)10.5(2)
- 网关3925E 15.3(3)M

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您使用的是真实网络，请确保您已经了解所有命令的潜在影响。

背景信息

从CUCM版本10.0(1)开始，基于网络的录制可用，允许您使用网关记录呼叫。

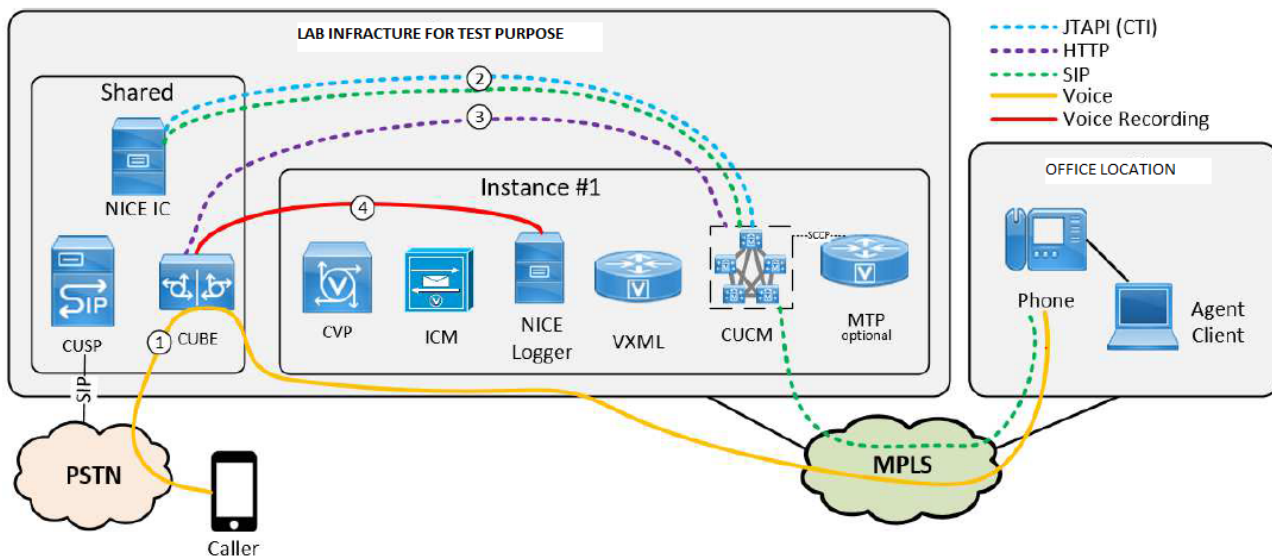
该功能允许记录呼叫，无论设备、位置或地理位置如何，例如将离网呼叫扩展到移动和家庭办公室电话。它根据呼叫流和呼叫参与者自动选择正确的媒体源。

必须了解：

- SIP签名从CUCM到CUBE，从CUCM到录制服务器。
- 记录服务器和CUBE之间没有直接SIP信令。
- CUBE负责将RTP流分组到录制服务器。

- CUCM上记录的终端无需支持内置网桥(BiB)。

CUCM使用HTTP向CUBE上的思科统一通信(UC)服务API发起呼叫记录请求。思科统一通信(UC)服务API为IOS网关中的不同服务提供统一的Web服务接口。其中一项服务是扩展媒体分流(XMF)提供商，它允许应用监控呼叫并触发实时传输协议(RTP)和安全RTP呼叫的媒体分流。



移动座席的工作方式

1. 通信管理器Express(CME)上的呼叫方A拨打B，指向网关(GW)。GW拨号对等点指向客户语音门户(CVP)。
2. CVP向智能联系管理器(ICM)发送路由请求，ICM返回移动代理标签，即本地CTI端口 (LCP端口) 拨号号码(DN)。
3. CVP向CUCM发送邀请。当LCP端口振铃时，JTAPI网关(JGW)指示CUCM从远程CTI端口 (RCP)DN呼叫代理电话。
4. 座席应答后，座席支路将连接到通话等待音乐(MoH)。
5. JGW指示CUCM应答在LCP端口上振铃的进站呼叫。
6. 一旦LCP支路连接，JGW将指示CUCM检索代理支路。
7. JGW将实时传输协议(RTP)IP地址/端口详细信息从客户支路传递到座席支路，反之亦然。
8. CUCM将两条腿桥接，并在座席和客户之间建立RTP路径。

移动Agent下录音的工作原理

- 对于移动代理，可以在LCP端口或RCP端口上启用录制。
- 在LCP或RCP上连接呼叫并启用录制后，CUCM会向录制服务器发送2个邀请，用于近端和远端设备。

- 一旦为近端设备完成信令，并将远端设备SDL HTTP请求发送到网关以指示其开始录制。

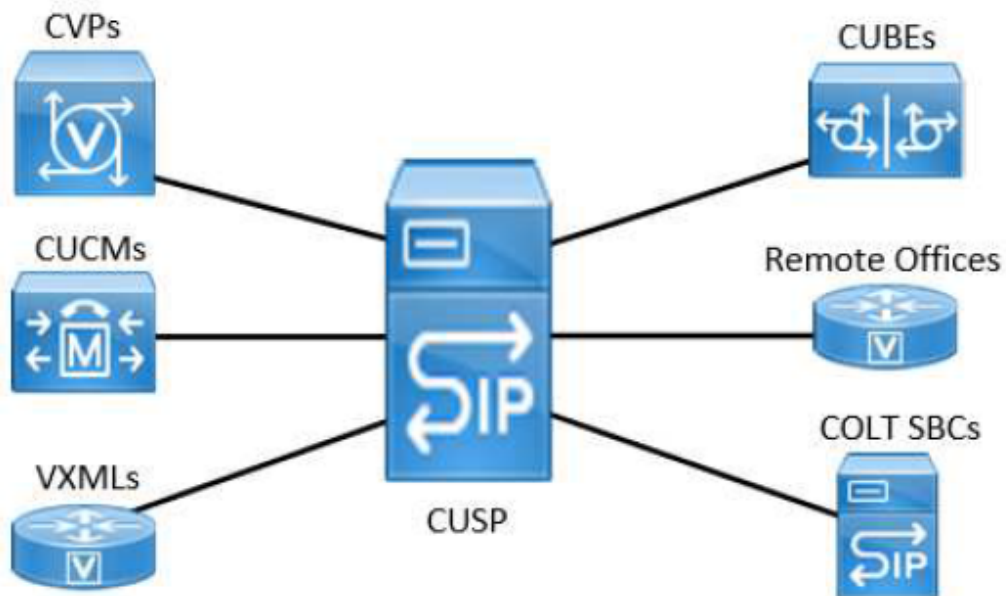
注意：有时，CUCM没有带网关或带CVP的直接SIP中继

注意：例如，CUCM可以有一个SIP中继，该中继带有控制所有流量的代理服务器(CUSP)

注意：如果在CTI端口上启用录音，并且呼叫在该端口上登录，则录音将起作用。

注意：对于移动代理，CTI端口确实会促进信令，然后会退出RTP流。它是RTP在其间流动的终端。但LCP和RCP端口从不超出信令。他们的词在通话结束前不会被毁。这是LCP或RCP端口上成功录制的原因，即使RTP不流经它们

使用CUSP的UCCE部署（代理服务器）



使用CVP和CUSP部署的UCCE采用所谓的综合模型，CUCM和CUBE之间没有SIP中继。CUBE和CUCM之间的所有通信都通过单个SIP中继到CUSP。

CUCM需要一种方法来知道呼叫将从哪个CUBE发出，以便知道将录制请求发送到何处。这可以通过将请求发送回用于呼叫的传入SIP中继的目标IP来实现。但是，如果CUCM将API请求发回CUSP，则不会发生任何情况。要在使用CUSP的环境中解决此限制，需要实施以下CUCM配置：

- 创建指向每个CUBE的虚拟SIP中继。此中继不用于路由任何呼叫！
- 使用Call-Info报头将CUSP SIP中继上的传入呼叫重新分类到正确的虚拟CUBE中继。

Trunk Specific Configuration
 Reroute Incoming Request to new Trunk based on*

注意：此设置不影响任何呼叫处理决策 — 所有呼叫处理和呼叫服务类别决策都将按照呼叫仍

在CUSP SIP中继上的方式执行，并且不会向新匹配中继的目标发送SIP消息。

注意：传入INVITE中的x-cisco-origIP值必须与虚拟中继的目标IP地址匹配。

注意：要为x-cisco-origIP报头设置正确值，必须在源CUBE上正确设置。可以通过在CUBE上添加报头，也可以通过在CVP上添加报头来设置值。UCCE Direct代理脚本已在呼叫信息报头上使用。因此，在直接座席脚本的呼叫信息报头之后，将添加第二个具有所需x-cisco-origIP的呼叫信息报头。测试表明，当x-cisco-origIP包含在SIP INVITE的第二个Call-Info报头中时，CUCM仍将执行所需的重新分类。

配置

使用CUSP部署UCCE的关键配置点：

为记录器创建SIP中继设备

要将记录器设置为SIP中继设备，Unified CM管理员从设备页面创建SIP中继设备，并在目标地址字段中输入记录器的设备名称和IP地址。

创建呼叫记录配置文件

要调配座席的线路显示以进行呼叫记录，应创建一个或多个呼叫记录配置文件。然后，选择记录配置文件用于线路外观。要创建录制配置文件，Unified CM管理员将打开“设备设置”页并选择呼叫录制配置文件。在“录制目标地址”字段中，管理员输入录制器的DN或URL。在“记录呼叫搜索空间”字段中，管理员输入为记录器配置的SIP中继的分区。

为每个CUBE调配虚拟SIP中继

对于需要将呼叫分流到录制服务器的每个网关，必须在CUCM上配置专用的虚拟中继。请记住，此中继不用于任何实际SIP信令，也不影响任何呼叫决策。要配置的重要事项包括：

- 此中继连接到启用录制的网关。
- 目的IP必须与CUBE配置为在其XMF配置中侦听的IP相同

为录制器调配路由模式

要为记录器设置路由模式，管理员会打开路由模式配置页面，并根据记录器DN输入路由模式。管理员为记录器选择SIP中继设备，然后保存路由模式。如果记录器地址被指定为SIP URL，且URL的RHS不属于Unified CM集群，则应配置SIP路由模式。模式字段应为记录器的域或IP地址（记录器URL的RHS部分），而SIP中继字段应为记录器的SIP中继。

调配录制呼叫通知音选项

要为录制通知音调配集群范围的服务参数，管理员将打开Unified CM管理的“服务参数”页，并找到播放录制通知音到观察目标的条目。管理员输入“是”或“否”。然后管理员找到“播放录制通知音”到“观察到的已连接目标”的条目。管理员输入“是”或“否”。

Recording Tone*	Disabled
Recording Tone Local Volume*	100
Recording Tone Remote Volume*	50
Recording Tone Duration	

Recording Tone Local Volume: * This can be used to configure the loudness setting of the recording tone that the local party hears. This loudness setting applies regardless of the actual device used for hearing (handset, speakerphone, headset). The loudness setting should be in the range of 0% to 100%, with 0% being no tone and 100% being at the same level as the current volume setting. The default value is 100%.
This is a required field.
Default: 100
Minimum: 0
Maximum: 100

Recording Tone Remote Volume: * This can be used to configure the loudness setting of the recording tone that the remote party hears. The loudness setting should be in the range of 0% to 100%, with 0% being less than -66dBm and 100% being -4dBm. The default value is -10dBm or 50%.
This is a required field.
Default: 100
Minimum: 0
Maximum: 100

US: Tone=Enabled; Local Volume = 0 ; Remote Volume= 1

Softphone (SIP&SCCP, requires CUCM 11.5)

Recording Tone Local Volume*	100
Recording Tone Remote Volume*	100

Service Parameter

Clusterwide Parameters (Feature - Call Recording)	
Play Recording Notification Tone To Observed Target *	False
Play Recording Notification Tone To Observed Connected Parties *	False
Clusterwide Parameters (Feature - Monitoring)	
Play Monitoring Notification Tone To Observed Target *	False
Play Monitoring Notification Tone To Observed Connected Parties *	False

Clusterwide Parameters (Feature - Call Recording)

Play Recording Notification Tone To Observed Target: * This parameter specifies whether to enable the Recording Tone will be played to the Observed Target. Valid values specify False (no tones) or True (tone is played). The system uses this parameter during the initiation of Recording Feature to determine whether the tone will be played. Changes in this parameter will not affect currently registered devices. To get changes of this parameter to currently registered devices, the devices have to be restarted.

This is a required field.

Default: False

Play Recording Notification Tone To Observed Connected Parties: * This parameter specifies whether to enable the Recording Tone will be played to the Observed Connected Parties. Valid values specify False (no tones) or True (tone is played). The system uses this parameter during the initiation of Recording Feature to determine whether the tone will be played. Changes in this parameter will not affect currently registered devices. To get changes of this parameter to currently registered devices, the devices have to be restarted.

This is a required field.

Default: False

调配CUBE XMF提供程序

以下配置启用HTTP通信和XMF提供程序配置：

CUBE001:

```
ip http server
no ip http secure-server
ip http max-connections 1000
ip http timeout-policy idle 600 life 86400 requests 86400
ip http client source-interface Port-channel20.307
uc wsapi
message-exchange max-failures 2
源地址10.106.230.20
探测间隔保活5
探测最大故障数5
!
提供商xmf
remote-url 1 http://10.106.97.140:8090/ucm\_xmf
remote-url 2 http://10.106.97.141:8090/ucm\_xmf
remote-url 3 http://10.106.97.143:8090/ucm\_xmf
remote-url 4 http://10.106.97.144:8090/ucm\_xmf
```

CUBE002:

```
ip http server
no ip http secure-server
ip http max-connections 1000
ip http timeout-policy idle 600 life 86400 requests 86400
ip http client source-interface Port-channel20.307
```


uc wsapi
 message-exchange max-failures 2
 源地址10.106.230.20
 探测间隔保活5
 探测最大故障数5
 !
 提供商xmf
 remote-url 1 http://10.106.97.140:8090/ucm_xmf
 remote-url 2 http://10.106.97.141:8090/ucm_xmf
 remote-url 3 http://10.106.97.143:8090/ucm_xmf
 remote-url 4 http://10.106.97.144:8090/ucm_xmf

Parameter	Description
ip http client source-interface	set to match the uc wsapi source address
ip http max-connections 1000	please set accordingly with the expected calls
source-address x.x.x.x	This is the IP Address to which the CUCM sends the http XMF messages. This IP Address must match the destination IP in the CUCM SIP Trunk configuration for the "dummy" CUBE.
probing interval keepalive 5	note that any other message sent by the gateway will be treated as a keepalive
probing interval negative 5	default value, shown for completeness
Remote-url	call processing servers, max 32 entries

为呼叫信息报头调配CUBE SIP配置文件

要使x-cisco-origIP报头保护具有正确值，必须在源CUBE上正确设置它。可以通过多种方式实现设置值，也无需在CUBE上完成，例如，也可以在CVP上设置该值。这是一个SIP配置文件示例，它静态设置从CUBE到CUSP的传出INVITE中的x-cisco-origIP值。

```

—
voice class sip-profiles 666
request INVITE sip-header Call-Info add "Call-Info:<sip:10.106.242.27>;PURPOSE=x-cisco-origIP"
—

```

如果UCCE系统已依赖于Call-Info报头，则第二个Call-Info报头具有所需的xcisco-origIP。测试表明，当x-cisco-origIP包含在SIP INVITE的第二个Call-Info报头中时，CUCM仍将执行所需的重新分类。相同的测试表明，如果首先放置新的呼叫信息报头，其他系统将停止工作。该配置文件需要应用于指向CUSP的出站拨号对等体。

有关详细配置，请参阅以下链接：

故障排除

日志分析

来自客户语音门户(CVP)的传入邀请

```
01382866.006 |12:52:49.858 |AppInfo |SIPtcp - wait_SdlReadRsp: Incoming SIP TCP message from 10.106.97.135 on port 53696 index 65 with 1695 bytes:
```


[105066,NET]

INVITE sip:9876@eu91.voip.test SIP/2.0

Via: SIP/2.0/TCP 10.106.97.135:5060;branch=z9hG4bKc7z5eWQrKkRtP5FKnbAb6w~~780271

Via: SIP/2.0/TCP 10.106.97.136:5062;branch=z9hG4bKhYyfmvtY8.fm7CSyQd9K4Q~~48611

Max-Forwards: 63

Record-Route: <sip:rr\$n=cvp@10.106.97.135:5060;transport=tcp;lr>

To: <sip:9876@CVP001.eu91.lab.test;transport=tcp>

From: +1234567890 <sip:+1234567890@10.106.97.136:5062>;tag=dsf816dd0c

Contact: <sip:+1234567890@10.106.97.136:5062;transport=tcp>

Expires: 60

Diversion: <sip:+123459876@10.106.97.137>;reason=unconditional;screen=yes;privacy=off

Call-ID: 694646BC1D2311E7A8D2826ACB31D85A-149182876973312598@10.106.97.136

CSeq: 1 INVITE

Content-Length: 250

User-Agent: CVP 10.5 (1) ES-18 Build-36

Date: Mon, 10 Apr 2017 12:52:38 GMT

Min-SE: 1800

Cisco-Guid: 1766213308-0488837607-2832368234-3409041498

Allow: INVITE, OPTIONS, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY, INFO, REGISTER

Allow-Events: telephone-event

P-Asserted-Identity: <sip:+1234567890@10.106.97.138>

Session-Expires: 1800

Content-Disposition: session;handling=required

History-Info: <sip:\u95>

History-Info: <sip:\u95>

Call-Info: <sip:10.106.97.138>;purpose=x-cisco-origIP

Cisco-Gucid: 694646BC1D2311E7A8D2826ACB31D85A

Supported: timer

Supported: resource-priority

Supported: replaces

Supported: sdp-anat

Content-Type: application/sdp

App-Info: <10.106.97.136:8000:8443>

v=0

o=CiscoSystemsSIP-GW-UserAgent 2790 2026 IN IP4 10.106.97.138

s=SIP Call

c=IN IP4 10.106.242.1

t=0 0

m=audio 16552 RTP/AVP 8 101

c=IN IP4 10.106.242.1

a=rtpmap:8 PCMA/8000

a=rtpmap:101 telephone-event/8000

a=fmtp:101 0-15

a=ptime:20

来电的数字分析

```
01382890.009 |12:52:49.861 |AppInfo ||PretransformCallingPartyNumber=+1234567890
|CallingPartyNumber=+1234567890
|DialingPartition=SYS-DN-PlainE164-PT
|DialingPattern=9876
|FullyQualifiedCalledPartyNumber=9876
|DialingPatternRegularExpression=(9876)
|DialingWhere=
```

呼叫标识符(CI)关联，用于呼叫no和本地CTI端口(LCP)

01382897.001 |12:52:49.862 |AppInfo |LBMIF: CI: 43358624 ASSOC 43358625
01382897.002 |12:52:49.862 |AppInfo |LBMIF: CI: 43358625 ASSOC' 43358624

已选择LCP

01382902.001 |12:52:49.862 |AppInfo |LineCdpc(135): -dispatchToAllDevices-, sigName=CcSetupReq,
device=LCP_47483708
01382905.002 |12:52:49.862 |AppInfo |StationCdpc(59): StationCtiCdpc-CtiEnableReq CH=0|0
DevName=LCP_47483708 DN=442086180755 Lock=0 FID=0 Side=0
LineFilter=111111101101111111111010011111111110111011101111111 for DN=442086180755

180振铃已发送到CVP

01382949.001 |12:52:49.865 |AppInfo |SIPtcp - wait_SdlSPISignal: Outgoing SIP TCP message to
10.106.97.135 on port 53696 index 65
[105068,NET]
SIP/2.0 180 Ringing
Via: SIP/2.0/TCP 10.106.97.135:5060;branch=z9hG4bKc7z5eWQrKkRtP5FKnbAb6w~~780271,SIP/2.0/TCP
10.106.97.136:5062;branch=z9hG4bKhYyfmvtY8.fm7CSyQd9K4Q~~48611
From: +1234567890 <sip:+1234567890@10.106.97.136:5062>;tag=dsf816dd0c
To: <sip:9876@CVP001.eu91.lab.test;transport=tcp>;tag=46359~8c66ebf6-153f-456b-a6e8-
0bf5f687ce1f-43358624
Date: Mon, 10 Apr 2017 12:52:49 GMT
Call-ID: 694646BC1D2311E7A8D2826ACB31D85A-149182876973312598@10.106.97.136
CSeq: 1 INVITE
Allow: INVITE, OPTIONS, INFO, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY
Allow-Events: presence
Record-Route: <sip:rr\$n=cvp@10.106.97.135:5060;transport=tcp;lr>
Server: Cisco-CUCM10.5
Supported: X-cisco-srtp-fallback
Supported: Geolocation
P-Asserted-Identity: <sip:9876@10.107.28.14>
Remote-Party-ID: <sip:9876@10.107.28.14>;party=called;screen=yes;privacy=off
Contact: <sip:9876@10.107.28.14:5060;transport=tcp>
Content-Length: 0

RCP将呼叫扩展到被叫号码

LCP和主叫号码振铃和远程CTI端口(RCP)将呼叫扩展到被叫号码 (即座席)。

01382957.000 |12:52:49.882 |SdlSig |CtiEnableReq |null0
|StationCdpc(2,100,64,60) |StationD(2,100,63,245)
|2,200,13,85.12075^10.241.240.197^RCP_47483708 |[R:N-H:0,N:4,L:0,V:0,Z:0,D:0] mDataCount=1
LH=2|431 mbMore=T bConsultWithoutMedia=F mediaTerm=2
01382957.001 |12:52:49.882 |AppInfo |StationCdpc(2,100,64,60): StationCtiCdpc::StationCtiCdpc
01382957.002 |12:52:49.882 |AppInfo |StationCdpc(60): StationCtiCdpc-CtiEnableReq CH=0|0
DevName=RCP_47483708 DN=442086180755 Lock=0 FID=0 Side=0
LineFilter=111111101101111111111010011111111110111011101111111 for DN=442086180755
01382958.000 |12:52:49.882 |SdlSig |StationOutputSetRinger
|restart0 |StationD(2,100,63,245)
|StationD(2,100,63,245) |2,200,13,85.12075^10.241.240.197^RCP_47483708 |[R:N-
H:0,N:3,L:0,V:0,Z:0,D:0] Mode=RingOff Duration=Normal Line=0 CI=0
01382958.001 |12:52:49.882 |AppInfo |StationD: (0000245) SetRinger ringMode=1(RingOff).

RCP呼叫代理的Digit分析

01383005.013 |12:52:49.885 |AppInfo ||PretransformCallingPartyNumber=9876
|CallingPartyNumber=9876
|DialingPartition=TE-PSTNInternational-PT
|DialingPattern=+.[1-9]!
|FullyQualifiedCalledPartyNumber=+1122334455
|DialingPatternRegularExpression=(+)([1-9][0-9]+)

RCP和座席的呼叫标识符(CI)关联

01383012.001 |12:52:49.885 |AppInfo |LBMIF: CI: 43358626 ASSOC 43358627
01383012.002 |12:52:49.885 |AppInfo |LBMIF: CI: 43358627 ASSOC' 43358626

邀请已发送给座席：

01383048.001 |12:52:49.888 |AppInfo |SIPTcp - wait_SdlSPISignal: Outgoing SIP TCP message to
10.241.242.99 on port 5060 index 55
[105069,NET]
INVITE sip:1122334455@10.106.22.199:5060 SIP/2.0
Via: SIP/2.0/TCP 10.107.28.14:5060;branch=z9hG4bK6b0870d07a53
From: <sip:9876@10.107.28.14>;tag=46360~8c66ebf6-153f-456b-a6e8-0bf5f687ce1f-43358627
To: <sip:1122334455@10.106.22.199>
Date: Mon, 10 Apr 2017 12:52:49 GMT
Call-ID: 98b4ac00-8eb18021-67f3-c2e4110a@10.107.28.14
Supported: timer,resource-priority,replaces
Min-SE: 1800
User-Agent: Cisco-CUCM10.5
Allow: INVITE, OPTIONS, INFO, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY
CSeq: 101 INVITE
Expires: 180
Allow-Events: presence, kpml
Supported: X-cisco-srtp-fallback,X-cisco-original-called
Call-Info: <sip:10.107.28.14:5060>;method="NOTIFY";Event=telephone-event;Duration=500"
Call-Info: <urn:x-cisco-remotec:callinfo>;x-cisco-video-traffic-class=VIDEO_UNSPECIFIED
Cisco-Guid: 2561977344-0000065536-0000000138-3269726474
Session-Expires: 1800
P-Asserted-Identity: <sip:9876@10.107.28.14>
Remote-Party-ID: <sip:9876@10.107.28.14>;party=calling;screen=yes;privacy=off
Contact: <sip:9876@10.107.28.14:5060;transport=tcp>;DeviceName="RCP_47483708"
Max-Forwards: 70
Content-Length: 0

01383182.002 |12:53:00.624 |AppInfo |SIPTcp - wait_SdlReadRsp: Incoming SIP TCP message from
10.106.22.199 on port 5060 index 55 with 1204 bytes:
[105079,NET]
SIP/2.0 200 OK
Via: SIP/2.0/TCP 10.107.28.14:5060;branch=z9hG4bK6b0870d07a53
Record-Route: <sip:rr\$n=cube-pool-int@10.106.22.199:5060;transport=tcp;lr>
To: <sip:1122334455@10.106.22.199>;tag=AD1038-15B8
From: <sip:9876@10.107.28.14>;tag=46360~8c66ebf6-153f-456b-a6e8-0bf5f687ce1f-43358627
Contact: <sip:1122334455@10.106.97.138:5060;transport=tcp>
Require: timer
Remote-Party-ID: <sip:+1122334455@10.106.97.138>;party=called;screen=no;privacy=off
Call-ID: 98b4ac00-8eb18021-67f3-c2e4110a@10.107.28.14
CSeq: 101 INVITE
Content-Length: 250
Date: Mon, 10 Apr 2017 12:52:49 GMT
Allow: INVITE, OPTIONS, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY, INFO,

REGISTER
Allow-Events: telephone-event
Supported: replaces
Supported: sdp-anat
Supported: timer
Server: Cisco-SIPGateway/IOS-15.4.3.M5
Session-Expires: 1800;refresher=uac
Content-Type: application/sdp
Content-Disposition: session;handling=required

v=0
o=CiscoSystemsSIP-GW-UserAgent 6311 9012 IN IP4 10.106.97.138
s=SIP Call
c=IN IP4 10.106.242.1
t=0 0
m=audio 16554 RTP/AVP 8 101
c=IN IP4 10.106.242.1
a=rtpmap:8 PCMA/8000
a=rtpmap:101 telephone-event/8000
a=fmtp:101 0-15
a=ptime:20

RCP进入保持状态，LCP和主叫方已连接

01383470.004 |12:53:00.650 |AppInfo |StationD: (0000388) INFO- sendSignalNow,
sigName=StationOffHook, cdpc=59
01383471.000 |12:53:00.651 |SdlSig-O |CtiLineCallAnswerRes |NA RemoteSignal
|UnknownProcessName(2,200,25,1) |StationD(2,100,63,388)
|2,200,13,85.12078^10.241.240.197^LCP_47483708 |[R:N-H:0,N:3,L:1,V:0,Z:0,D:0]
AsyncResponse=29664 mResult=0x0
01383472.000 |12:53:00.651 |SdlSig |StationOutputSetRinger |restart0 |StationD(2,100,63,388)
|StationD(2,100,63,388) |2,200,13,85.12078^10.241.240.197^LCP_47483708 |[R:N-
H:0,N:2,L:1,V:0,Z:0,D:0] Mode=RingOff Duration=Normal Line=0 CI=0
01383472.001 |12:53:00.651 |AppInfo |StationD: (0000388) SetRinger ringMode=1(RingOff).

主叫方和LCP的媒体连接请求

01383497.001 |12:53:00.651 |AppInfo |ARBTRY-ConnectionManager-
wait_MediaConnectRequest(43358624,43358625)
01383497.002 |12:53:00.651 |AppInfo |ARBTRY-ConnectionManager- storeMediaInfo(CI=43358624): ADD
NEW ENTRY, size=3
01383497.003 |12:53:00.651 |AppInfo |ARBTRY-ConnectionManager- storeMediaInfo(CI=43358625): ADD
NEW ENTRY, size=4

媒体终端点(MTP)分配给LCP和主叫方

01383508.002 |12:53:00.652 |AppInfo |MediaResourceCdpc(185)::waiting_MrmAllocateMtpResourceReq
- CI=43358630 Count=1 TryPassThru=1

在LCP端口上启用录制

01383607.002 |12:53:00.655 |AppInfo | StationCdpc: startRecordingIfNeeded - Device LCP_47483708,
startedByCti=0, RecordingType=1. Cannot start -- not in active state yet. haveCodec=1,
inactiveStat=0

01383614.016 |12:53:00.655 |AppInfo | StationCdpc: startRecordingIfNeeded - Device LCP_47483708,
locking codec, codecType=2

01383614.017 |12:53:00.655 |AppInfo | StationCdpc: star_MediaExchangeAgenaQueryCapability -

Device LCP_47483708, codec locked due to recording, codecType=2
01383614.018 |12:53:00.655 |AppInfo | StationCdp: startRecordingIfNeeded - Device LCP_47483708,
startedByCti=0, RecordingType=1. haveCodec=1, inActiveStat=1
01383614.019 |12:53:00.655 |AppInfo |StatiopnCdp::StartRecordingIfNeeded DeviceName
=LCP_47483708 RecordinngMethod =1
01383614.020 |12:53:00.655 |AppInfo | StationCdp: startRecordingIfNeeded - Device LCP_47483708.
FinalToneDir=3, initial=3, svc:ToObserved=0, svc:toConnected=0 recorderDestination=123456789

录制信令启动

01383640.003 |12:53:00.657 |AppInfo |RecordManager::- await_SsDataInd
lParties=(43358624,43358625)
01383641.000 |12:53:00.657 |SdlSig |SsDataInd |await_recordingFeatureData
|Recording(2,100,100,77) |RecordManager(2,100,101,1)
|2,200,13,85.12078^10.241.240.197^LCP_47483708 |[R:N-H:0,N:0,L:1,V:0,Z:0,D:0] SsType=33554461
SsKey=0 SsNode=2 SsParty=43358625 DevId=(0,0,0) BCC=9 OtherParty=43358624 NodeOtherParty=2
clearType = 0 CSS=587b40f7-bead-433d-9ddf-a99ca36b0753 CNumInfo = 0 CNameInfo = 0 ssDevType=4
ssOtherDevType=8 FDataType=16opId=-2147483643ssType=0 SsKey=0invokeId=0resultExp=Fbpda=F ssCause
= 0 ssUserState = 2 ssOtherUserState = 2 PL=5 PLDmn=0 networkDomain= delayAPTTimer=F
geolocInfo={geolocPkid=, filterPkid=, geolocVal=, devType=4} cfwdTimerAction=0
matchInterceptPartition= matchInterceptPattern=
01383641.001 |12:53:00.657 |AppInfo |Recording::- (0000077) -
await_recordingFeatureData_SsDataInd: mRecordingMethod=[1]
01383641.002 |12:53:00.657 |AppInfo |Recording::- (0000077) -
await_recordingFeatureData_SsDataInd: Trigger started. mRecordingMethod=[1]

01383645.001 |12:53:00.657 |AppInfo |Recording::- (0000077) -processGWPreferred
01383645.002 |12:53:00.657 |AppInfo |Recording::- (0000077) -getRecordingAnchorMode:
PeerBib=[1];peerCMDevType=[8];qSigAduSupported=[0]
01383645.003 |12:53:00.657 |AppInfo |Recording::- (0000077) -processGWPreferred: GW Recording -
sideABibEnabled=[1]

内建桥(Bib)的数字分析

1383671.008 |12:53:00.658 |AppInfo ||PretransformCallingPartyNumber=
|CallingPartyNumber=
|DialingPartition=
|DialingPattern=b0026901001
|FullyQualifiedCalledPartyNumber=b0026901001
|DialingPatternRegularExpression=(b0026901001)

此处，SIPBIB创建SIPBIBCDPC记录流程

01383681.000 |12:53:00.658 |SdlSig |CcSetupReq |restart0 |SIPvBIB(2,100,69,1)
|Cdcc(2,100,219,295)
01383681.001 |12:53:00.658 |AppInfo |SIPvBIB::restart0_CcSetupReq: primCallCi=43358624
primCallBranch=0.
01383682.000 |12:53:00.658 |SdlSig |CcSetupReq |restart0 |SIPvBIBCDpc(2,100,68,55)
|SIPvBIB(2,100,69,1) |2,200,13,85.12078^10.241.240.197^LCP_47483708 |[R:N-
H:0,N:0,L:1,V:0,Z:0,D:0] CI=43358633 CI.branch=0 sBPL.plid=65 sBPL.l=0 sBPL.pl=5 sBPL.msd=0
01383682.001 |12:53:00.658 |AppInfo |CcSetupReq onBehalfOf=Recording refCI=43358624, CI=43358633

LCP和主叫方200 OK

01383761.001 |12:53:00.668 |AppInfo |SIPTcp - wait_SdlSPISignal: Outgoing SIP TCP message to
10.106.97.135 on port 53696 index 65
[105082,NET]
SIP/2.0 200 OK

Via: SIP/2.0/TCP 10.106.97.135:5060;branch=z9hG4bKc7z5eWQrKkRtP5FKnbAb6w~~780271,SIP/2.0/TCP 10.106.97.136:5062;branch=z9hG4bKhYyfmvtY8.fM7CSyQd9K4Q~~48611
From: +1234567890 <sip:+1234567890@10.106.97.136:5062>;tag=dsf816dd0c
To: <sip:9876@CVP001.eu91.lab.test;transport=tcp>;tag=46359~8c66ebf6-153f-456b-a6e8-0bf5f687ce1f-43358624
Date: Mon, 10 Apr 2017 12:52:49 GMT
Call-ID: 694646BC1D2311E7A8D2826ACB31D85A-149182876973312598@10.106.97.136
CSeq: 1 INVITE
Allow: INVITE, OPTIONS, INFO, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY
Allow-Events: presence, kpml
Record-Route: <sip:rr\$n=cvp@10.106.97.135:5060;transport=tcp;lr>
Supported: replaces
Server: Cisco-CUCM10.5
Supported: X-cisco-srtp-fallback
Supported: Geolocation
Session-Expires: 1800;refresher=uas
Require: timer
P-Asserted-Identity: <sip:9876@10.107.28.14>
Remote-Party-ID: <sip:9876@10.107.28.14>;party=called;screen=yes;privacy=off
Contact: <sip:9876@10.107.28.14:5060;transport=tcp>;DeviceName="LCP_47483708"
Content-Type: application/sdp
Content-Length: 246

v=0
o=CiscoSystemsCCM-SIP 46359 1 IN IP4 10.107.28.14
s=SIP Call
c=IN IP4 10.17.229.27
b=TIAS:64000
b=CT:64
b=AS:64
t=0 0
m=audio 23304 RTP/AVP 8 101
a=ptime:20
a=rtpmap:8 PCMA/8000
a=rtpmap:101 telephone-event/8000
a=fmtp:101 0-15

录制详细信息

此处是首选网关录制：

```
01383780.001 |12:53:00.669 |AppInfo |Recording::- (000077) -  
setMetaDataWithLocalPhoneOrGWForking:  
forkingPos=[2];forkingGuid=[694646BC1D2311E7A8D2826ACB31D85A];resDevNum=[+1234567890]  
01383780.002 |12:53:00.669 |AppInfo |Recording::- (000077) -buildOtherParm: OtherParm=[x-  
nearend;x-refci=43358625;x-nearendclusterid=eu91;x-nearenddevice=LCP_47483708;x-  
nearendaddr=9876;x-farendrefci=43358624;x-farendclusterid=eu91;x-farenddevice=EU91BCUBE002-  
Trk;x-farendaddr=+1234567890;x-farendguid=694646BC1D2311E7A8D2826ACB31D85A].
```

记录号码的数字分析

```
01383793.012 |12:53:00.669 |AppInfo |Digit analysis: analysis results  
01383793.013 |12:53:00.669 |AppInfo ||PretransformCallingPartyNumber=b0026901001  
|CallingPartyNumber=b0026901001  
|DialingPartition=SYS-NiceRecording-PT  
|DialingPattern=123456789  
|FullyQualifiedCalledPartyNumber=123456789  
|DialingPatternRegularExpression=(123456789)
```

呼叫扩展到路由列表

01383807.001 |12:53:00.670 |AppInfo |RouteListControl::idle_CcSetupReq -
RouteList(NICERecording-01-RL), numberSetup=0 numberMember=1 vmEnabled=0

邀请发送到近端设备的录制服务器

01383831.001 |12:53:00.671 |AppInfo |SIPtcp - wait_SdlSPISignal: Outgoing SIP TCP message to
10.17.230.4 on port 5060 index 1
[105083,NET]
INVITE sip:123456789@10.17.230.4:5060 SIP/2.0
Via: SIP/2.0/TCP 10.107.28.14:5060;branch=z9hG4bK6b0d30bfa6ec
From: <sip:+1234567890@10.107.28.14;x-nearend;x-refci=43358625;x-nearendclusterid=eu91;x-
nearenddevice=LCP_47483708;x-nearendaddr=9876;x-farendrefci=43358624;x-farendclusterid=eu91;x-
farenddevice=EU91BCUBE002-Trk;x-farendaddr=+1234567890;x-
farendguid=694646BC1D2311E7A8D2826ACB31D85A>;tag=46365~8c66ebf6-153f-456b-a6e8-0bf5f687ce1f-
43358634
To: <sip:123456789@10.17.230.4>
Date: Mon, 10 Apr 2017 12:53:00 GMT
Call-ID: 9f432380-8eb1802c-67f6-c2e4110a@10.107.28.14
Supported: timer,resource-priority,replaces
Min-SE: 1800
User-Agent: Cisco-CUCM10.5
Allow: INVITE, OPTIONS, INFO, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY
CSeq: 101 INVITE
Expires: 180
Allow-Events: presence
Supported: X-cisco-srtp-fallback
Supported: Geolocation
Cisco-Guid: 2671977344-0000065536-0000000139-3269726474
Session-Expires: 1800
P-Asserted-Identity: <sip:+1234567890@10.107.28.14>
Remote-Party-ID: <sip:+1234567890@10.107.28.14>;party=calling;screen=yes;privacy=off
Contact: <sip:+1234567890@10.107.28.14:5060;transport=tcp>;isFocus
Max-Forwards: 70
Content-Length: 0

从录制服务器收到200 OK

SIP/2.0 200 OK
From: <sip:+1234567890@10.107.28.14;x-nearend;x-refci=43358625;x-nearendclusterid=eu91;x-
nearenddevice=LCP_47483708;x-nearendaddr=9876;x-farendrefci=43358624;x-farendclusterid=eu91;x-
farenddevice=EU91BCUBE002-Trk;x-farendaddr=+1234567890;x-
farendguid=694646BC1D2311E7A8D2826ACB31D85A>;tag=46365~8c66ebf6-153f-456b-a6e8-0bf5f687ce1f-
43358634
To: <sip:123456789@10.17.230.4>;tag=e1fb60-0-13c4-5506-90037-9c2acf-90037
Call-ID: 9f432380-8eb1802c-67f6-c2e4110a@10.107.28.14
CSeq: 101 INVITE
Via: SIP/2.0/TCP 10.107.28.14:5060;branch=z9hG4bK6b0d30bfa6ec
Supported: timer
Contact: <sip:123456789@10.17.230.4:5060;transport=TCP>
Session-Expires: 1800;refresher=uas
Content-Type: application/sdp
Content-Length: 119

v=0
o=VRSP 0 0 IN IP4 127.0.0.1
s=NICE VRSP
c=IN IP4 127.0.0.1

t=0 0
m=audio 1000 RTP/AVP 0 4 8 9 18
a=recvonly

01383896.001 |12:53:00.673 |AppInfo |Recording::- (0000077) -
setMetaDataWithLocalPhoneOrGWForking:
forkingPos=[2];forkingGuid=[694646BC1D2311E7A8D2826ACB31D85A];resDevNum=[+1234567890]
01383896.002 |12:53:00.673 |AppInfo |Recording::- (0000077) -buildOtherParm: OtherParm=[x-
farend;x-refci=43358625;x-nearendclusterid=eu91;x-nearenddevice=LCP_47483708;x-
nearendaddr=9876;x-farendrefci=43358624;x-farendclusterid=eu91;x-farenddevice=EU91BCUBE002-
Trk;x-farendaddr=+1234567890;x-farendguid=694646BC1D2311E7A8D2826ACB31D85A].

从CUCM发送的确认(ACK)

01384017.001 |12:53:00.678 |AppInfo |SIPTcp - wait_SdlSPISignal: Outgoing SIP TCP message to
10.17.230.4 on port 5060 index 1
[105086,NET]
ACK sip:123456789@10.17.230.4:5060;transport=TCP SIP/2.0
Via: SIP/2.0/TCP 10.107.28.14:5060;branch=z9hG4bK6b0e716815d6
From: <sip:+1234567890@10.107.28.14;x-nearend;x-refci=43358625;x-nearendclusterid=eu91;x-
nearenddevice=LCP_47483708;x-nearendaddr=9876;x-farendrefci=43358624;x-farendclusterid=eu91;x-
farenddevice=EU91BCUBE002-Trk;x-farendaddr=+1234567890;x-
farendguid=694646BC1D2311E7A8D2826ACB31D85A>;tag=46365~8c66ebf6-153f-456b-a6e8-0bf5f687ce1f-
43358634
To: <sip:123456789@10.17.230.4>;tag=ea1fb60-0-13c4-5506-90037-9c2acf-90037
Date: Mon, 10 Apr 2017 12:53:00 GMT
Call-ID: 9f432380-8eb1802c-67f6-c2e4110a@10.107.28.14
User-Agent: Cisco-CUCM10.5
Max-Forwards: 70
CSeq: 101 ACK
Allow-Events: presence
Content-Type: application/sdp
Content-Length: 232

v=0
o=CiscoSystemsCCM-SIP 46365 1 IN IP4 10.107.28.14
s=SIP Call
c=IN IP4 10.106.242.1
b=TIAS:0
b=AS:0
t=0 0
m=audio 7000 RTP/AVP 8 101
a=rtpmap:8 PCMA/8000
a=sendonly
a=rtpmap:101 telephone-event/8000
a=fmtp:101 0-15

CUCM将远端设备的邀请发送到录制服务器

01384043.001 |12:53:00.679 |AppInfo |SIPTcp - wait_SdlSPISignal: Outgoing SIP TCP message to
10.17.230.4 on port 5060 index 1
[105087,NET]
INVITE sip:123456789@10.17.230.4:5060 SIP/2.0
Via: SIP/2.0/TCP 10.107.28.14:5060;branch=z9hG4bK6b0f5120dbe5
From: <sip:+1234567890@10.107.28.14;x-farend;x-refci=43358625;x-nearendclusterid=eu91;x-
nearenddevice=LCP_47483708;x-nearendaddr=9876;x-farendrefci=43358624;x-farendclusterid=eu91;x-
farenddevice=EU91BCUBE002-Trk;x-farendaddr=+1234567890;x-
farendguid=694646BC1D2311E7A8D2826ACB31D85A>;tag=46366~8c66ebf6-153f-456b-a6e8-0bf5f687ce1f-
43358637
To: <sip:123456789@10.17.230.4>

Date: Mon, 10 Apr 2017 12:53:00 GMT
Call-ID: 9f432380-8eb1802c-67f7-c2e4110a@10.107.28.14
Supported: timer,resource-priority,replaces
Min-SE: 1800
User-Agent: Cisco-CUCM10.5
Allow: INVITE, OPTIONS, INFO, BYE, CANCEL, ACK, PRACK, UPDATE, REFER, SUBSCRIBE, NOTIFY
CSeq: 101 INVITE
Expires: 180
Allow-Events: presence
Supported: X-cisco-srtp-fallback
Supported: Geolocation
Cisco-Guid: 2671977344-0000065536-0000000140-3269726474
Session-Expires: 1800
P-Asserted-Identity: <sip:+1234567890@10.107.28.14>
Remote-Party-ID: <sip:+1234567890@10.107.28.14>;party=calling;screen=yes;privacy=off
Contact: <sip:+1234567890@10.107.28.14:5060;transport=tcp>;isFocus
Max-Forwards: 70
Content-Length: 0

从录制服务器200 OK

SIP/2.0 200 OK
From: <sip:+1234567890@10.107.28.14;x-farend;x-refci=43358625;x-nearendclusterid=eu91;x-nearenddevice=LCP_47483708;x-nearendaddr=9876;x-farendrefci=43358624;x-farendclusterid=eu91;x-farenddevice=EU91BCUBE002-Trk;x-farendaddr=+1234567890;x-farendguid=694646BC1D2311E7A8D2826ACB31D85A>;tag=46366~8c66ebf6-153f-456b-a6e8-0bf5f687ce1f-43358637
To: <sip:123456789@10.17.230.4>;tag=ealf830-0-13c4-5506-90037-22ea55b6-90037
Call-ID: 9f432380-8eb1802c-67f7-c2e4110a@10.107.28.14
CSeq: 101 INVITE
Via: SIP/2.0/TCP 10.107.28.14:5060;branch=z9hG4bK6b0f5120dbe5
Supported: timer
Contact: <sip:123456789@10.17.230.4:5060;transport=TCP>
Session-Expires: 1800;refresher=uas
Content-Type: application/sdp
Content-Length: 119

v=0
o=VRSP 0 0 IN IP4 10.10.1.10
s=NICE VRSP
c=IN IP4 127.0.0.1
t=0 0
m=audio 1000 RTP/AVP 0 4 8 9 18
a=recvonly

从CUCM发送的ACK

01384207.001 |12:53:00.882 |AppInfo |SIPtcp - wait_SdlSPISignal: Outgoing SIP TCP message to 10.17.230.4 on port 5060 index 1
[105091,NET]
ACK sip:123456789@10.17.230.4:5060;transport=TCP SIP/2.0
Via: SIP/2.0/TCP 10.107.28.14:5060;branch=z9hG4bK6b1013a924b6
From: <sip:+1234567890@10.107.28.14;x-farend;x-refci=43358625;x-nearendclusterid=eu91;x-nearenddevice=LCP_47483708;x-nearendaddr=9876;x-farendrefci=43358624;x-farendclusterid=eu91;x-farenddevice=EU91BCUBE002-Trk;x-farendaddr=+1234567890;x-farendguid=694646BC1D2311E7A8D2826ACB31D85A>;tag=46366~8c66ebf6-153f-456b-a6e8-0bf5f687ce1f-43358637
To: <sip:123456789@10.17.230.4>;tag=ealf830-0-13c4-5506-90037-22ea55b6-90037
Date: Mon, 10 Apr 2017 12:53:00 GMT
Call-ID: 9f432380-8eb1802c-67f7-c2e4110a@10.107.28.14
User-Agent: Cisco-CUCM10.5

Max-Forwards: 70
CSeq: 101 ACK
Allow-Events: presence
Content-Type: application/sdp
Content-Length: 232

v=0
o=CiscoSystemsCCM-SIP 46366 1 IN IP4 10.107.28.14
s=SIP Call
c=IN IP4 10.106.242.1
b=TIAS:0
b=AS:0
t=0 0
m=audio 7000 RTP/AVP 8 101
a=rtpmap:8 PCMA/8000
a=sendonly
a=rtpmap:101 telephone-event/8000
a=fmtp:101 0-15

座席最终呼叫该号码

RCP端口侦听MOH，然后稍后断开与MOH的连接，并连接回代理，最后将代理连接到主叫号码。

```
01384484.001 |12:53:04.609 |AppInfo |ARBTRY-ConnectionManager-  
wait_MediaConnectRequest(43358626,43358627)  
01384484.002 |12:53:04.609 |AppInfo |ARBTRY-ConnectionManager- storeMediaInfo(CI=43358626):  
EXISTING ENTRY DISCOVERED, size=9  
01384484.003 |12:53:04.609 |AppInfo |ARBTRY-ConnectionManager- storeMediaInfo(CI=43358627):  
EXISTING ENTRY DISCOVERED, size=9
```

CUCM发送SDL HTTP请求

仅在近端和远端设备Invite达到200 OK后，CUCM才会发送SDL Http请求以启动录制

SDL HTTP LCP录制请求

```
01384808.000 |12:53:04.672 |SdlSig |SdlHTTPReq |wait |SdlHTTPService(2,100,6,1)  
|CayugaInterface(2,100,34,1) |2,100,14,283.3^10.17.230.4^* |[T:N-H:0,N:0,L:0,V:0,Z:0,D:0]  
method: 3 url: http://10.106.97.138:8090/cisco_xmf data: <?xml version="1.0" encoding="UTF-8"?>  
<soapenv:Envelope xmlns:soapenv="http://www.w3.org/2003/05/soap-envelope">  
<soapenv:Body>  
<RequestXmfConnectionMediaForking xmlns="http://www.cisco.com/schema/cisco_xmf/v1_0">  
<msgHeader>  
<transactionID>Cisco:UCM:CayugaIf:1:69</transactionID>  
<registrationID>C094:XMF:Unified CM 10.5.2.12901-1:1</registrationID>  
</msgHeader>  
<callID>42</callID>  
<connID>554</connID>  
<action>  
<enableMediaForking>  
<nearEndAddr>  
<ipv4>10.17.230.5</ipv4>  
<port>42095</port>  
</nearEndAddr>  
<farEndAddr>  
<ipv4>10.17.230.5</ipv4>  
<port>42094</port>
```

```
</farEndAddr>
<preserve>true</preserve>
</enableMediaForking>
</action>
</RequestXmfConnectionMediaForking>
</soapenv:Body>
</soapenv:Envelope>
```

```
01384843.001 |12:53:04.674 |AppInfo |Recording::- (0000077) - Media Setup Complete:
mRecordingCallInfo
01384843.002 |12:53:04.674 |AppInfo |RCD_RecordingCallInfo::print: resourceInfo
01384843.003 |12:53:04.674 |AppInfo |RCD_ResourceInfo::print: nodeId=2
01384843.004 |12:53:04.674 |AppInfo |RCD_ResourceInfo::print: bNum
01384843.005 |12:53:04.674 |AppInfo |RCD_Utility::printCcPtyNum: CcPtyNum contains only
Directory Number (b0026901001)
01384843.006 |12:53:04.674 |AppInfo |RCD_RecordingCallInfo::print: recordedPartyInfo
01384843.007 |12:53:04.674 |AppInfo |RCD_RecordedPartyInfo::print: ssAe
01384843.008 |12:53:04.674 |AppInfo |RCD_Utility::printSsAe: ss=43358625, nodeId=2
01384843.009 |12:53:04.674 |AppInfo |RCD_RecordedPartyInfo::print: partyNum
01384843.010 |12:53:04.674 |AppInfo |RCD_Utility::printCcPtyNum: CcPtyNum contains only
Directory Number (+1234567890)
01384843.011 |12:53:04.674 |AppInfo |RCD_RecordedPartyInfo::print: deviceName = LCP_47483708

01384843.023 |12:53:04.674 |AppInfo |RCD_Utility::printCcPtyNum: CcPtyNum contains only
Directory Number (123456789)
01384843.024 |12:53:04.674 |AppInfo |RCD_RecorderPartyInfo::print: partition = 812fe5de-3a9b-
4d67-9fdd-023582e18388, deviceName = NICERecording-01
```

相关信息

- http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cust_contact/contact_center/mediasense/10/srnd/CUMS_BK_MC36D963_00_mediasense-srnd/CUMS_BK_MC36D963_00_mediasense-srnd_chapter_0111.html
- <http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/voice/cube/configuration/cube-book/voice-cube-uc-gateway-services.html>
- <http://www.cisco.com/c/en/us/td/docs/ios-xml/ios/voice/cube/configuration/cube-book/voice-network-based.html>
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