配置地产移动无线电(LMR)/在IOS-XE语音网关的Hoot and Holler over IP

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Introduction

本文描述地产允许模拟装置与在组播被启用的LAN间的其他的移动无线电(LMR)或Hoot and Holler (Hootie)功能(模拟和IP)终端联络。

语音网关作为在IP网络和模拟终端之间的分界点并且实现在模拟音频和组播实时传输协议(RTP)之间的会话。

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Prerequisites

Requirements

Cisco 建议您了解以下主题：

- 数字式信号处理器(DSP)
- 模拟卡
- 功能的可适用的许可证

```
!
license boot level appxk9
license boot level uck9
! or
license boot suite FoundationSuiteK9
license boot suite AdvUCSuiteK9
```

- 组播启用LAN或广域网

  Note:本文不包括组播配置许多面在LAN或广域网的。请参见可适用的文档对在LAN或广域网设备的enable (event)组播在网络路径。

Components Used

- 4451-X
- NIM-4E/M
- IOS-XE 16.3以上。() [*建议使用的*版本注释：IOS-XE 16.7以上]

```
ISR4451# show inventory
NAME: "Chassis", DESCR: "Cisco ISR4451 Chassis"
PID: ISR4451-X/K9       , VID: V03   , SN: XXXXXXXXX

NAME: "NIM subslot 0/3", DESCR: "NIM-4E/M Voice Analog Module"
PID: NIM-4E/M           , VID: V01   , SN: XXXXXXXXX
```

Note:模拟NIM卡与ISR 4000语音Gatways utlize在NIM DSP。因而没有需要主板DSP。

背景信息

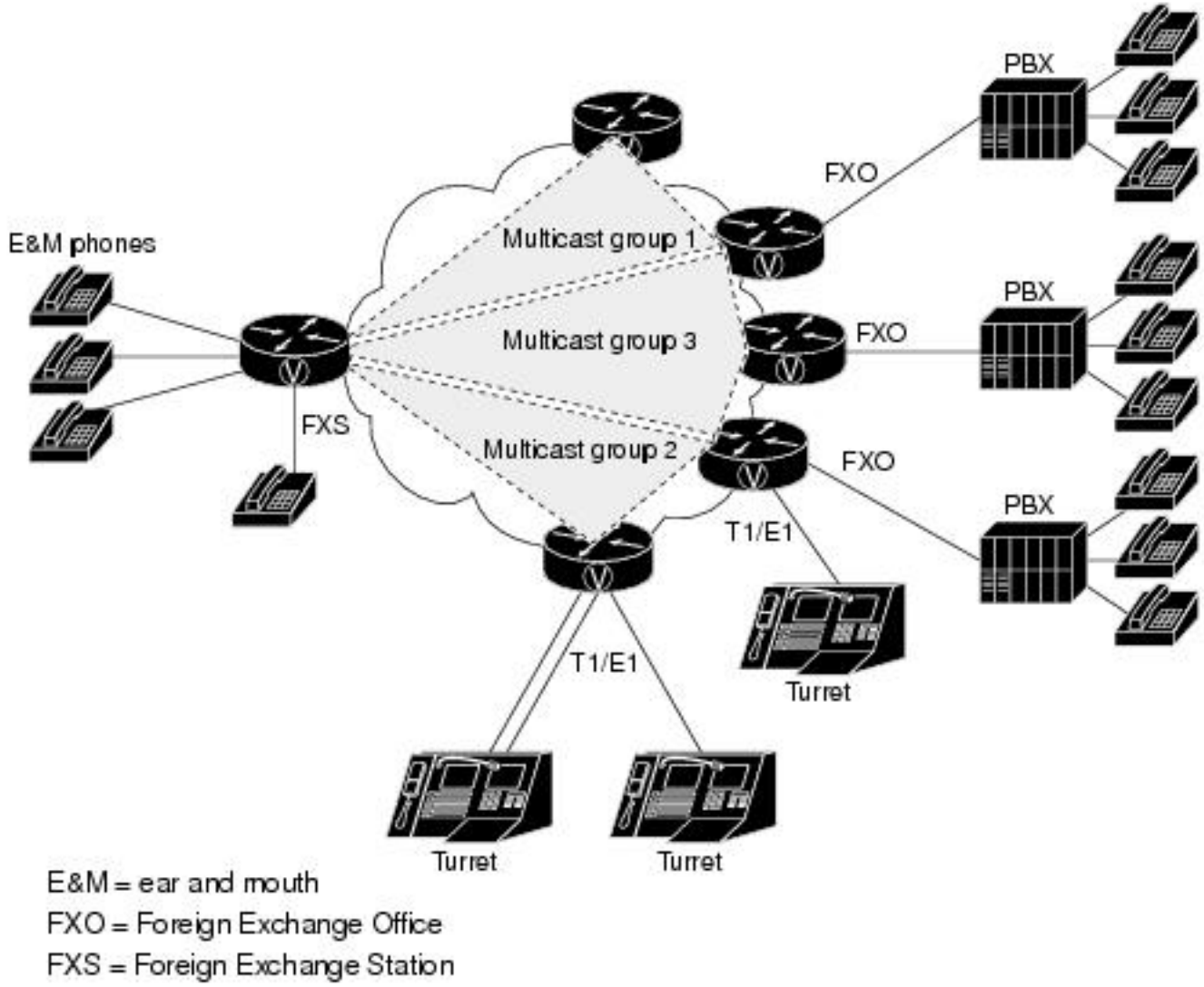
潜在的使用案件：

- 包括push-to-talk设备的无线设备和戒备
- 组播与信息有关的公告(无线电广播)
- 模拟塔楼系统

Note:这些是一些示例使用案件。应用程序对这些功能没有被限制。

LMR原始设计指南不报道Cisco语音网关的最新的生成的必需的项目。因此，本文瞄准关于IOS-XE设备描述LMR/Hootie功能例如ISR 4300和4400系列语音网关。

这是拓扑示例;



第七层信令和媒体

```
ISR4451# show inventory
NAME: "Chassis", DESCR: "Cisco ISR4451 Chassis"
PID: ISR4451-X/K9       , VID: V03   , SN: XXXXXXXXX

NAME: "NIM subslot 0/3", DESCR: "NIM-4E/M Voice Analog Module"
PID: NIM-4E/M           , VID: V01   , SN: XXXXXXXXX
```

> **提示**：请切记，因为IP骨干网用途组播，语音网关只需要能顺利地参加期望组播组。语音网关在一LMR/Hootie语音网关不知道关于其他终端亦不它与他们沟通结果本文直接地详述配置示例，调试，显示命令和排除故障。

配置

Step 1.您必须首先配置要求的IOS-XE许可证运行语音和组播功能。

```
ISR4451# show inventory
NAME: "Chassis", DESCR: "Cisco ISR4451 Chassis"
PID: ISR4451-X/K9       , VID: V03   , SN: XXXXXXXXX
```

```
NAME: "NIM subslot 0/3", DESCR: "NIM-4E/M Voice Analog Module"
PID: NIM-4E/M           , VID: V01   , SN: XXXXXXXXX
```

当设备供给动力了时请验证许可证状态匹配此show命令输出：

```
ISR4451# show license feature
Feature name             Enforcement  Evaluation  Subscription   Enabled  RightToUse
appxk9                   yes          yes         no             yes      yes
uck9                     yes          yes         no             yes      yes
```

Step 2.其次您定义了包含期望组播IP和端口的一个组播基于IP的语音拨号点;

```
ISR4451# show license feature
Feature name             Enforcement  Evaluation  Subscription   Enabled  RightToUse
appxk9                   yes          yes         no             yes      yes
uck9                     yes          yes         no             yes      yes
```

dial-peer命令语法：

CLI命令	说明
目的地模式<number>	拨号点的匹配语句。要求为了拨号点能是可用的。
session protocol multicast	提示设备此拨号点使用在Ip功能的组播。
会话目标ipv4:<a.b.c.d.>:xxxxx	这是IP和端口语音网关参加对送信/受信的组播RTP的组播组的。
编码<codec>	定义了将用于组播RTP信息包编码。 支持的编码是G711ulaw、G711alaw、
[no] vad [aggressive]	当您禁用与no vad命令时的VAD您禁用此RTP流的语音活动检测。 当使用时**积极的**vad命令， VAD噪声阈值从-78减少到-62 dbm。吵闹在-62 跌被认为沉默和没有在网络被发送。另外，未知数据包认为沉默和被丢弃。

步骤3.为了实现组播组和此语音网关之间的永久性(总是)连接模拟端口的您必须定义**永久性**的**语音类**然后适用于此语音端口。

```
ISR4451# show license feature
Feature name             Enforcement  Evaluation  Subscription   Enabled  RightToUse
appxk9                   yes          yes         no             yes      yes
uck9                     yes          yes         no             yes      yes
```

voice class permanent命令语法

CLI命令	说明	来源
信号定时oos超时{被禁用|<seconds>}	禁用信号损失检测。随意地能配置秒钟的编号。	命令句法
信号Keepalive {被禁用|<seconds>}	以秒钟指定Keepalive信令packet interval。失效不发送Keepalive。	命令句法

语音端口为E&M端口然后命令的期望连接类型然后被配置。(*在本文或其他模拟特定配置没报道的E&M是指E&M配置指南欲知更多信息。*)

步骤4. Cisco Hoot and Holler over IP提供一个不间断工作的通信网桥。终端用户不需要拨打任何电话号码与Hoot组联系的其他成员。为了模拟此功能， Cisco IOS提供一个功能呼叫连接Trunk。连接trunk提供一次永久性语音呼叫，不要求从终端用户的任何输入，因为所有位内部地是由路由器/网关拨号的。

此连接trunk附加语音端口对您在Dial Peer配置步骤配置的组播地址。

```
ISR4451# show license feature
Feature name             Enforcement  Evaluation  Subscription   Enabled  RightToUse
appxk9                   yes          yes         no             yes      yes
uck9                     yes          yes         no             yes      yes
```

模拟端口命令句法

CLI命令	说明
连接trunk <number>	指定模拟与PBX的永久中继线连接的连接。中继线连接依然是永久性在没有所有激活的呼叫时。

第5.步。一旦语音配置完成您需要定义组播配置。

```
ISR4451# show license feature
Feature name             Enforcement  Evaluation  Subscription   Enabled  RightToUse
appxk9                   yes          yes         no             yes      yes
uck9                     yes          yes         no             yes      yes
```

关于组播配置的附注：

- 服务引擎接口是PVDM的第3层接口在模拟NIM。这需要用一个独立于协议的组播(PIM)命令配置类似其他入口/出口第3层接口
- 服务引擎不要求一个IP地址
- PIM的种类配置取决于组播实施的种类在您的LAN的
- 组播路由一定是启用的，即使所有数据流在同样VLAN内
- 对于从路由器来源的组播RTP， IP必须是减1.的VIF IP。因此，因为我们配置了在VIF的192.0.2.2我们的来源必须是192.0.2.1
- 然而组播PIM RP可以是同一语音网关组播PIM RP在通过EIGRP是获知的网络的此实验室的(2.x.x.x)的另一个设备(没显示)

Verify

Use this section to confirm that your configuration works properly.

语音验证

当配置完全永久连接stoods上升。您能使用此show命令输出验证它;

```
ISR4451# show call active voice compact
 <callID>  A/O FAX T<sec> Codec       type        Peer Address       IP R<ip>:<udp>        VRF
Total call-legs: 2
       115 ANS     T24    g711ulaw    TELE        P
       116 ORG     T0     g711ulaw    VOIP        P33333      239.X.X.X:21000
```

```
ISR4451# show voip rtp connections
VoIP RTP Port Usage Information:
```

```
Max Ports Available: 19999, Ports Reserved: 101, Ports in Use: 0
Port range not configured
                                          Min   Max   Ports     Ports     Ports
Media-Address Range                       Port  Port  Available Reserved  In-use
-----------------------------------------------------------------------------
Global Media Pool                         8000  48198 19999     101       0
-----------------------------------------------------------------------------
VoIP RTP active connections :
No. CallId     dstCallId  LocalRTP RmtRTP   LocalIP                                  RemoteIP
MPSS VRF
1     116        115        15986    21000    192.0.2.1                              239.X.X.X
NO   NA
Found 1 active RTP connections

ISR4451# show voice port summary
                                          IN       OUT
PORT            CH   SIG-TYPE   ADMIN OPER STATUS   STATUS   EC
=============== == ============ ===== ==== ======== ======== ==
0/3/1           --  e&m-imd     up    up   trunked  trunked  y


ISR4451# show voice call summary
PORT           CODEC     VAD VTSP STATE            VPM STATE
============== ========= === ==================== ====================
0/3/1          g711ulaw   y  S_CONNECT            S_TRUNKED


ISR4451# show voice call status
CallID     CID  ccVdb      Port        Slot/Bay/DSP:Ch  Called #   Codec    MLPP Dial-peers
0x73       12D0 0x7F7475CF8C08 0/3/1           0/3/1:1 33333      g711ulaw  4 777
33333777/33333
1 active call found

ISR4451# show voice trunk-conditioning supervisory
FAST SCAN
0/3/1 : state : TRUNK_SC_CONN_DEFAULT_OOS, voice : off , signal : on ,master
status: lost keepalive, trunk connected
sequence oos : idle and oos
pattern :rx_idle = 0000 rx_oos = 1111
timeout timing : idle = 0, idle_off = 0, restart = 120, standby = 0, timeout = 30
supp_all = 0, supp_voice = 0, keep_alive = 5
timer: oos_ais_timer = 46, timer = 43


ISR4451# show voice trunk-conditioning signaling

0/3/1 :
hardware-state ACTIVE signal type is NorthamericanCAS
status : lost keepalive,
forced playout pattern = 0xF
idle monitoring : disabled
tx_idle = FALSE, rx_idle = FALSE, tx_oos = FALSE, lost_keepalive = TRUE
trunk_down_timer = 0, rx_ais_duration = 0, idle_timer = 0,tx_oos_timer = 0
```

为了验证IP到模拟复制首先请检查新的IOS-XE命令：

```
ISR4451# show platform hardware qfp active feature sbc hootie group
SBC Hootie structure :
-------------------------------------
```

```
  VRF                                   = 0
  IP                                    = 239.X.X.X
  Port                                  = 21000
  Protocol                              = 1
  Calls in group                        = 1

SBC Hootie group Statistics
---------------------------------------

  Total RTP packets received                  = 2873
  Total RTP octects received                  = 573520
  Total RTP packets replicated                = 2873
  Total RTP octects replicated                = 573520
  Total RTP packets dropped                   = 0
  Total RTP octects dropped                   = 0


ISR4451# show platform hardware qfp active feature sbc hootie group
SBC Hootie structure :
---------------------------------------

  VRF                                   = 0
  IP                                    = 239.X.X.X
  Port                                  = 21000
  Protocol                              = 1
  Calls in group                        = 1

SBC Hootie group Statistics
---------------------------------------

  Total RTP packets received                  = 3111
  Total RTP octects received                  = 621032
  Total RTP packets replicated                = 3111
  Total RTP octects replicated                = 621032
  Total RTP packets dropped                   = 0
  Total RTP octects dropped                   = 0
```

组播验证

验证PIM相邻：

```
ISR4451# show ip pim neighbor
PIM Neighbor Table
Mode: B - Bidir Capable, DR - Designated Router, N - Default DR Priority,
      P - Proxy Capable, S - State Refresh Capable, G - GenID Capable,
      L - DR Load-balancing Capable
Neighbor          Interface                Uptime/Expires    Ver   DR
Address                                                            Prio/Mode
Y.Y.Y.Y      GigabitEthernet0/0/1     00:20:13/00:01:41 v2    1 / DR S P G
```

验证mroute输出是正确的：

```
ISR4451# show ip mroute
[snip]

(192.0.2.1, 239.X.X.X), 00:01:08/00:02:20, flags: FT
  Incoming interface: Vif1, RPF nbr 0.0.0.0
  Outgoing interface list:
```

```
    GigabitEthernet0/0/1, Forward/Sparse, 00:01:08/00:03:19
```

验证我们有组播RP在列表：

```
ISR4451# show ip igmp member
Flags: A  - aggregate, T - tracked
       L  - Local, S - static, V - virtual, R - Reported through v3
       I - v3lite, U - Urd, M - SSM (S,G) channel
       1,2,3 - The version of IGMP, the group is in
Channel/Group-Flags:
       / - Filtering entry (Exclude mode (S,G), Include mode (G))
Reporter:
       <mac-or-ip-address> - last reporter if group is not explicitly tracked
       <n>/<m>      - <n> reporter in include mode, <m> reporter in exclude

 Channel/Group                  Reporter        Uptime   Exp.  Flags  Interface
 *,239.X.X.X                  192.0.2.2    00:01:16 01:43 2VA    Vi1
```

验证组播信息包复制：

```
RP# show ip mroute count
[snip]
Group: 239.X.X.X, Source count: 1, Packets forwarded: 2107, Packets received: 2108
  RP-tree: Forwarding: 2/0/56/0, Other: 2/0/0
  Source: 192.168.19.1/32, Forwarding: 2105/50/158/80, Other: 2106/0/1

RP# show ip mroute count
[snip]
Group: 239.X.X.X, Source count: 1, Packets forwarded: 2190, Packets received: 2191
  RP-tree: Forwarding: 2/0/56/0, Other: 2/0/0
  Source: 192.168.19.1/32, Forwarding: 2188/50/159/80, Other: 2189/0/1
```

确定Cisco CLI分析器(仅限注册用户)技术支持**显示**命令。请使用Cisco CLI分析器为了查看show命令输出分析。

Troubleshoot

本部分提供了可用于对配置进行故障排除的信息。

呼叫建立问题

如果连接没有被建立，请通过这些调试首先验证信令：

```
RP# show ip mroute count
[snip]
Group: 239.X.X.X, Source count: 1, Packets forwarded: 2107, Packets received: 2108
  RP-tree: Forwarding: 2/0/56/0, Other: 2/0/0
  Source: 192.168.19.1/32, Forwarding: 2105/50/158/80, Other: 2106/0/1

RP# show ip mroute count
[snip]
Group: 239.X.X.X, Source count: 1, Packets forwarded: 2190, Packets received: 2191
  RP-tree: Forwarding: 2/0/56/0, Other: 2/0/0
  Source: 192.168.19.1/32, Forwarding: 2188/50/159/80, Other: 2189/0/1
```

调试示例：

```
123165: Oct  XX 13:21:55.563: htsp_process_event: [0/3/1, S_DOWN, E_HTSP_IF_INSERVICE]
123166: Oct  XX 13:21:55.564: %LINK-3-UPDOWN: Interface recEive and transMit 0/3/1, changed
state to up
123167: Oct  XX 13:21:55.564: recEive and transMit 0/3/1 rx_signal_map:
 0 0 0 0
 0 0 0 0
 8 8 8 8
 8 8 8 8
123168: Oct  XX 13:21:55.564: recEive and transMit 0/3/1 tx_signal_map:
 0 0 0 0
 0 0 0 0
 C C C C
 C C C C
123169: Oct  XX 13:21:55.564: htsp_process_event: [0/3/1, S_OPEN_PEND,
E_HTSP_GO_TRUNK]em_trunk_null_init
123170: Oct  XX 13:21:55.564: flex_set_Legerity_impedance: [0/3/1] impedance = 0
123171: Oct  XX 13:21:55.704: htsp_process_event: [0/3/1, S_TRUNK_NULL,
E_HTSP_INSERVE]default_trunk_down
123172: Oct  XX 13:21:55.704: htsp_timer - 6204 msec
123173: Oct  XX 13:21:55.919: %SYS-5-CONFIG_I: Configured from console by vty3 (192.168.19.2)
123174: Oct  XX 13:22:01.908: htsp_process_event: [0/3/1, S_TRUNK_PEND, E_HTSP_EVENT_TIMER]
123175: Oct  XX 13:22:01.908: htsp_timer_stop htsp_setup_ind
123176: Oct  XX 13:22:01.908: [0/3/1] get_local_station_id calling num= calling name= calling
time=10/08 13:22  orig called=
123177: Oct  XX 13:22:01.908: htsp_timer - 2000 msec

123181: Oct  XX 13:22:01.909: //-1/80F08D0180E8/CCAPI/cc_api_call_setup_ind_common:
   Interface=0x7F7475CF8C08, Call Info(
   Calling Number=,(Calling Name=)(TON=Unknown, NPI=Unknown, Screening=Not Screened,
Presentation=Allowed),
   Called Number=33333(TON=Unknown, NPI=Unknown),
   Calling Translated=FALSE, Subscriber Type Str=RegularLine, FinalDestinationFlag=TRUE,
   Incoming Dial-peer=777, Progress Indication=ORIGINATING SIDE IS NON ISDN(3), Calling IE
Present=FALSE,
   Source Trkgrp Route Label=, Target Trkgrp Route Label=, CLID Transparent=FALSE), Call Id=-1

123203: Oct  XX 13:22:01.911: //115/80F08D0180E8/CCAPI/ccCallSetupRequest:
   Calling Number=(TON=Unknown, NPI=Unknown, Screening=Not Screened, Presentation=Allowed),
   Called Number=33333(TON=Unknown, NPI=Unknown),
   Redirect Number=, Display Info=
   Account Number=, Final Destination Flag=TRUE,
   Guid=80F08D01-CA55-11E8-80E8-8E0AC3C8E4C4, Outgoing Dial-peer=33333

123252: Oct  XX 13:22:01.914: //116/80F08D0180E8/CCAPI/cc_api_caps_ack:
   Destination Interface=0x7F7475CF8C08, Destination Call Id=115, Source Call Id=116,
   Caps(Codec=g711ulaw(0x1), Fax Rate=FAX_RATE_VOICE(0x2), Fax Version:=0, Vad=AGGRESSIVE(0x4),
   Modem=OFF(0x0), Codec Bytes=160, Signal Type=2, Seq Num Start=2165)
123253: Oct  XX 13:22:01.914: //115/80F08D0180E8/CCAPI/cc_api_caps_ack:
   Destination Interface=0x7F7471175B68, Destination Call Id=116, Source Call Id=115,
   Caps(Codec=g711ulaw(0x1), Fax Rate=FAX_RATE_VOICE(0x2), Fax Version:=0, Vad=AGGRESSIVE(0x4),
   Modem=OFF(0x0), Codec Bytes=160, Signal Type=2, Seq Num Start=2165)

123255: Oct XX 13:22:01.914: //115/80F08D0180E8/VTSP:(0/3/1):-1:1:1/vtsp_call_connect: Connected
Name
123256: Oct  XX 13:22:01.914: //115/80F08D0180E8/VTSP:(0/3/1):-1:1:1/vtsp_call_connect:
Connected Number 33333
123257: Oct  XX 13:22:01.914: //115/80F08D0180E8/VTSP:(0/3/1):-1:1:1/vtsp_call_connect:
Connected oct3a  0
123258: Oct  XX 13:22:01.914: //115/80F08D0180E8/CCAPI/ccCallConnect:
   Call Entry(Connected=TRUE, Responsed=TRUE)

123265: Oct  XX 13:22:01.916: htsp_process_event: [0/3/1, S_TRUNK_W_CUTTHRU,
```

```
E_HTSP_VOICE_CUT_THROUGH]
123266: Oct  XX 13:22:01.916: send_trunk_dsp_voice_chnl_mapping:[0/3/1], 1/0/0
123267: Oct  XX 13:22:01.916: send_trunk_dsp_sig_chnl_mapping:[0/3/1], 129/0/0
123268: Oct  XX 13:22:01.916: recEive and transMit 0/3/1 rx_signal_map:
 0 0 0 0
 0 0 0 0
 0 0 0 0
 0 0 0 8 default_trunk_up
123269: Oct  XX 13:22:01.916: recEive and transMit 0/3/1 tx_signal_map:
 0 0 0 0
 0 0 0 0
 F F F F
 F F F F default_trunk_updefault_trunk_up
123270: Oct  XX 13:22:01.916: recEive and transMit 0/3/1 rx_signal_map:
 0 0 0 0
 0 0 0 0
 0 0 0 0
 0 0 0 8 default_trunk_up
123271: Oct  XX 13:22:01.916: recEive and transMit 0/3/1 tx_signal_map:
 0 0 0 0
 0 0 0 0
 F F F F
 F F F F default_trunk_up
123272: Oct XX 13:22:01.916: %HTSP-5-UPDOWN: Trunk port(channel) [0/3/1] is up
```

如果看到此错误，归结于session protocol multicast命令不可用在拨号点。

```
123165: Oct  XX 13:21:55.563: htsp_process_event: [0/3/1, S_DOWN, E_HTSP_IF_INSERVICE]
123166: Oct  XX 13:21:55.564: %LINK-3-UPDOWN: Interface recEive and transMit 0/3/1, changed
state to up
123167: Oct  XX 13:21:55.564: recEive and transMit 0/3/1 rx_signal_map:
 0 0 0 0
 0 0 0 0
 8 8 8 8
 8 8 8 8
123168: Oct  XX 13:21:55.564: recEive and transMit 0/3/1 tx_signal_map:
 0 0 0 0
 0 0 0 0
 C C C C
 C C C C
123169: Oct  XX 13:21:55.564: htsp_process_event: [0/3/1, S_OPEN_PEND,
E_HTSP_GO_TRUNK]em_trunk_null_init
123170: Oct  XX 13:21:55.564: flex_set_Legerity_impedance: [0/3/1] impedance = 0
123171: Oct  XX 13:21:55.704: htsp_process_event: [0/3/1, S_TRUNK_NULL,
E_HTSP_INSERVE]default_trunk_down
123172: Oct  XX 13:21:55.704: htsp_timer - 6204 msec
123173: Oct  XX 13:21:55.919: %SYS-5-CONFIG_I: Configured from console by vty3 (192.168.19.2)
123174: Oct  XX 13:22:01.908: htsp_process_event: [0/3/1, S_TRUNK_PEND, E_HTSP_EVENT_TIMER]
123175: Oct  XX 13:22:01.908: htsp_timer_stop htsp_setup_ind
123176: Oct  XX 13:22:01.908: [0/3/1] get_local_station_id calling num= calling name= calling
time=10/08 13:22  orig called=
123177: Oct  XX 13:22:01.908: htsp_timer - 2000 msec

123181: Oct  XX 13:22:01.909: //-1/80F08D0180E8/CCAPI/cc_api_call_setup_ind_common:
   Interface=0x7F7475CF8C08, Call Info(
   Calling Number=,(Calling Name=)(TON=Unknown, NPI=Unknown, Screening=Not Screened,
Presentation=Allowed),
   Called Number=33333(TON=Unknown, NPI=Unknown),
   Calling Translated=FALSE, Subscriber Type Str=RegularLine, FinalDestinationFlag=TRUE,
   Incoming Dial-peer=777, Progress Indication=ORIGINATING SIDE IS NON ISDN(3), Calling IE
Present=FALSE,
```

```
   Source Trkgrp Route Label=, Target Trkgrp Route Label=, CLID Transparent=FALSE), Call Id=-1

123203: Oct  XX 13:22:01.911: //115/80F08D0180E8/CCAPI/ccCallSetupRequest:
   Calling Number=(TON=Unknown, NPI=Unknown, Screening=Not Screened, Presentation=Allowed),
   Called Number=33333(TON=Unknown, NPI=Unknown),
   Redirect Number=, Display Info=
   Account Number=, Final Destination Flag=TRUE,
   Guid=80F08D01-CA55-11E8-80E8-8E0AC3C8E4C4, Outgoing Dial-peer=33333

123252: Oct  XX 13:22:01.914: //116/80F08D0180E8/CCAPI/cc_api_caps_ack:
   Destination Interface=0x7F7475CF8C08, Destination Call Id=115, Source Call Id=116,
   Caps(Codec=g711ulaw(0x1), Fax Rate=FAX_RATE_VOICE(0x2), Fax Version:=0, Vad=AGGRESSIVE(0x4),
   Modem=OFF(0x0), Codec Bytes=160, Signal Type=2, Seq Num Start=2165)
123253: Oct  XX 13:22:01.914: //115/80F08D0180E8/CCAPI/cc_api_caps_ack:
   Destination Interface=0x7F7471175B68, Destination Call Id=116, Source Call Id=115,
   Caps(Codec=g711ulaw(0x1), Fax Rate=FAX_RATE_VOICE(0x2), Fax Version:=0, Vad=AGGRESSIVE(0x4),
   Modem=OFF(0x0), Codec Bytes=160, Signal Type=2, Seq Num Start=2165)

123255: Oct XX 13:22:01.914: //115/80F08D0180E8/VTSP:(0/3/1):-1:1:1/vtsp_call_connect: Connected
Name
123256: Oct  XX 13:22:01.914: //115/80F08D0180E8/VTSP:(0/3/1):-1:1:1/vtsp_call_connect:
Connected Number 33333
123257: Oct  XX 13:22:01.914: //115/80F08D0180E8/VTSP:(0/3/1):-1:1:1/vtsp_call_connect:
Connected oct3a  0
123258: Oct  XX 13:22:01.914: //115/80F08D0180E8/CCAPI/ccCallConnect:
   Call Entry(Connected=TRUE, Responsed=TRUE)

123265: Oct  XX 13:22:01.916: htsp_process_event: [0/3/1, S_TRUNK_W_CUTTHRU,
E_HTSP_VOICE_CUT_THROUGH]
123266: Oct  XX 13:22:01.916: send_trunk_dsp_voice_chnl_mapping:[0/3/1], 1/0/0
123267: Oct  XX 13:22:01.916: send_trunk_dsp_sig_chnl_mapping:[0/3/1], 129/0/0
123268: Oct  XX 13:22:01.916: recEive and transMit 0/3/1 rx_signal_map:
 0 0 0 0
 0 0 0 0
 0 0 0 0
 0 0 0 8 default_trunk_up
123269: Oct  XX 13:22:01.916: recEive and transMit 0/3/1 tx_signal_map:
 0 0 0 0
 0 0 0 0
 F F F F
 F F F F default_trunk_updefault_trunk_up
123270: Oct  XX 13:22:01.916: recEive and transMit 0/3/1 rx_signal_map:
 0 0 0 0
 0 0 0 0
 0 0 0 0
 0 0 0 8 default_trunk_up
123271: Oct  XX 13:22:01.916: recEive and transMit 0/3/1 tx_signal_map:
 0 0 0 0
 0 0 0 0
 F F F F
 F F F F default_trunk_up
123272: Oct XX 13:22:01.916: %HTSP-5-UPDOWN: Trunk port(channel) [0/3/1] is up
```

音频问题

如果问题在没有音频在，请验证语音网关正确地参加了组播组。请参见在本文的验证部分的命令输出一个工作的设备的基准输出的。流出的接口show ip mroute命令特定组播组的不一定**空。** 如果看到一个空流出的接口查看组播LAN的可适用的网络配置，因为这指示语音网关不可能适当地参加组播组。

示例空流出的接口：

```
Router# show ip mroute 239.X.X.X
(*, 239.X.X.X), 00:22:02/stopped, RP 10.188.0.1, flags: SJCF
  Incoming interface: GigabitEthernet0/0/1, RPF nbr X.X.X.X
  Outgoing interface list:
    Vif1, Forward/Sparse-Dense, 00:18:27/00:02:32

(A.B.C.D, 239.X.X.X), 00:20:34/00:01:23, flags: PFT
  Incoming interface: Vif1, RPF nbr 0.0.0.0
  Outgoing interface list: Null
```

如果设备正确地在组播组，但是音频问题仍然仍然存在，请使用show platform命令**硬件qfp活动功能sbc hootie组**几次验证设备是否能收到和复制信息包。每次命令运行，计数器必须增加。或者，show platform命令**硬件qfp活动统计信息丢弃**可以运行发现语音网关是否降低数据流。为了清除这些计数器运行**清楚**show platform命令**硬件qfp活动统计信息的丢弃。**

如果没有配置**Ip multicast-routing** Ipv4mcNoRoute丢弃原因增加如显示：

```
4451# show platform hardware qfp active statistics drop
-------------------------------------------------------------------------
Global Drop Stats                          Packets                 Octets
-------------------------------------------------------------------------
Ipv4mcNoRoute                                728                 145272
```

其他音频问题例如一个网关无法复制组播在模拟边收到的RTP信息包对IP边的地方，能出现由于组播配置的一个问题。当这些丢包被观察，这些问题能表明自己，当丢弃原因FIAError。当这些被观察，查看可适用的组播配置并且保证时网关能适当地参加组播组，并且**show ip mroute命令**有一个有效输出接口。请参阅本文的组播部分关于基准命令输出。

```
4451# show platform hardware qfp active statistics drop
-------------------------------------------------------------------------
Global Drop Stats                          Packets                 Octets
-------------------------------------------------------------------------
FIAError                                     724                 144800
```

如果组播路由没有允许同样地show ip mroute状态的输出。

```
ISR4451# sh ip mroute
IP Multicast Forwarding is not enabled.
[snip]
```

PCM捕获

为了验证模拟音频是否在语音端口被发送或被接受，您能采取PCM捕获。 充分的PCM文档

```
ISR4451# sh ip mroute
IP Multicast Forwarding is not enabled.
[snip]
```

信息包获取(PCAP)

为了验证是否发送组播RTP或被接受，您能采取信息包获取(PCAP)在物理接口。 充分的EPC文档。

```
ISR4451# sh ip mroute
IP Multicast Forwarding is not enabled.
[snip]
```

DSP测试语音

如果必须测试语音可以由DSP/PVDM生成在期望方向的语音网关(网络IP LAN边或本地模拟端口边)。

此语音可以处理到往IP LAN组播地址的DSP。这些命令可以用于启用/禁用。 连接一定是活跃的，并且您必须为测试指定模拟端口。

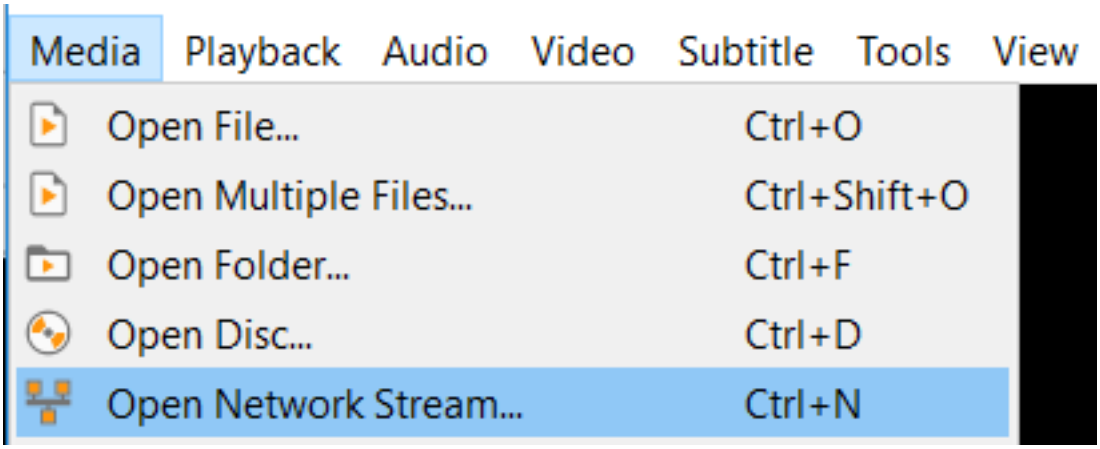
```
ISR4451# sh ip mroute
IP Multicast Forwarding is not enabled.
[snip]
```

为了生成从DSP的语音模拟端口这些命令可以用于启用/禁用。 连接一定是活跃的，并且您必须为测试指定模拟端口。

```
ISR4451# sh ip mroute
IP Multicast Forwarding is not enabled.
[snip]
```

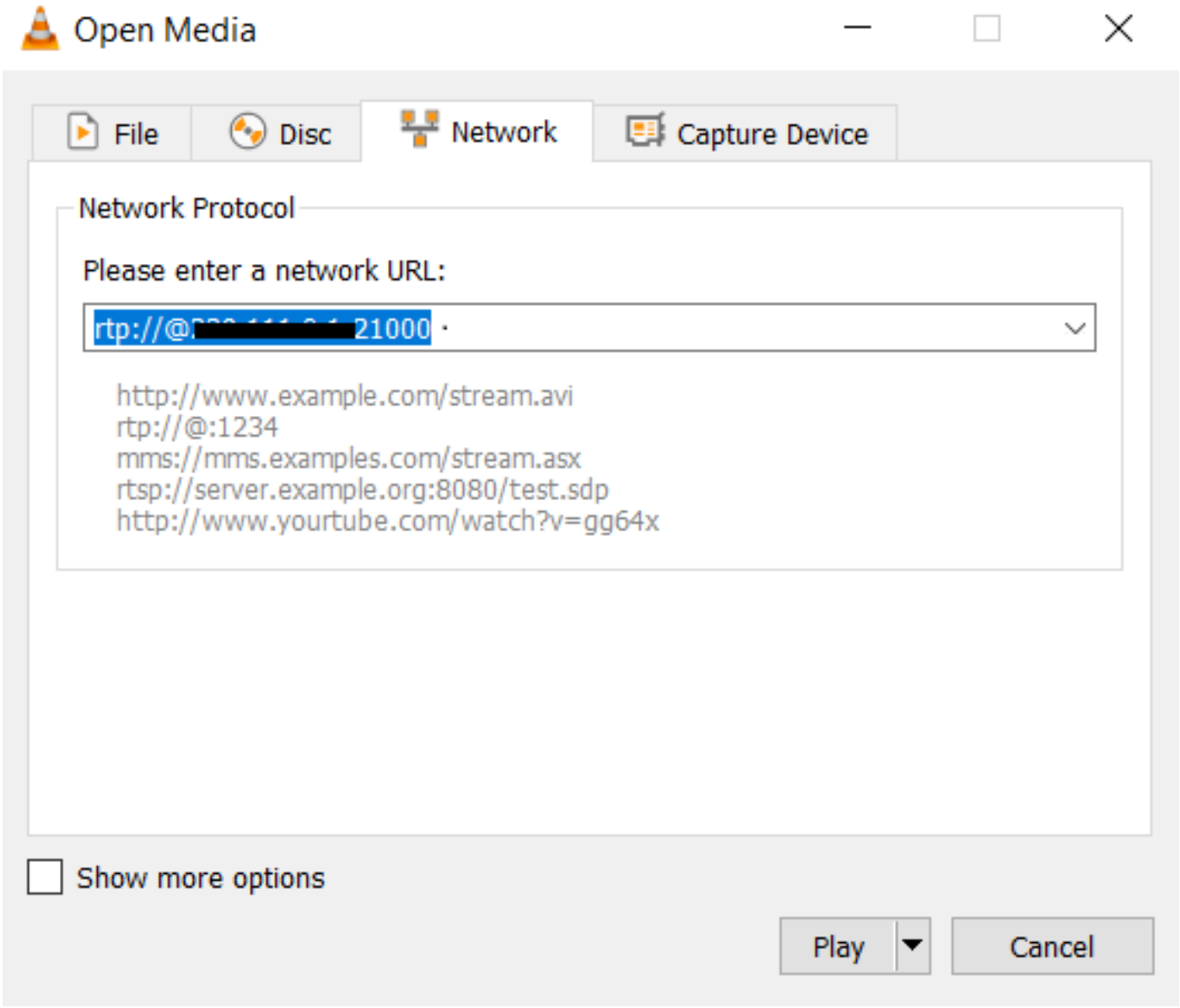
测试有VLC媒体播放器的组播接收

下载VLC媒体播放器并且连接对**媒体>Open网络流**



输入组播RTP IP地址在此格式并且击中作用

```
ISR4451# sh ip mroute
IP Multicast Forwarding is not enabled.
[snip]
```



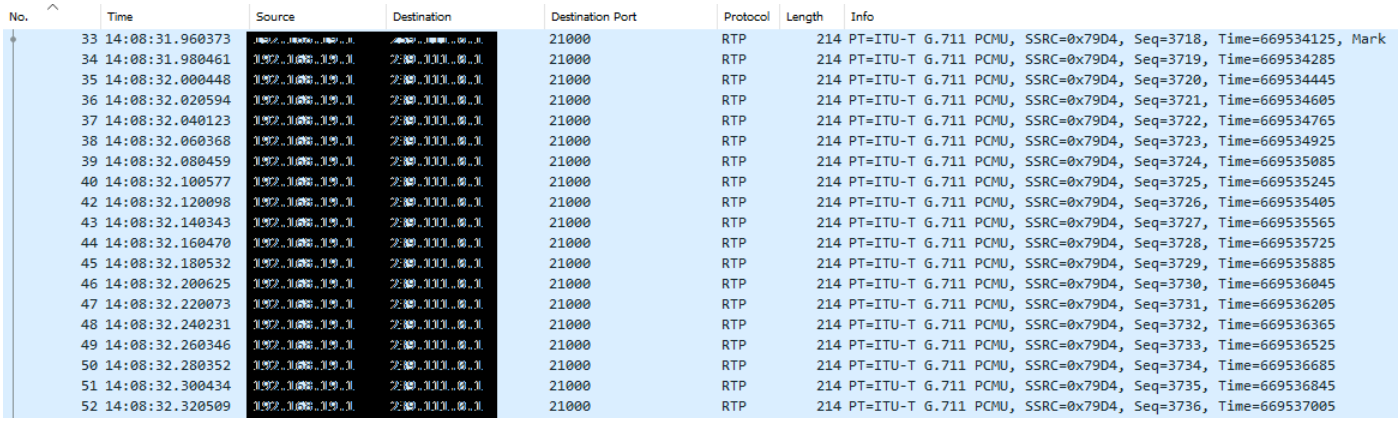
下下载和开放Wireshark。然后为信息包获取请选择希望的specifc接口。

开始一个捕获用RTP过滤器。

如果所有进展顺利您必须被加入到组播RP。(同样组播命令可以从RP运行验证PC参加了组播组)。

请通过语音命令生成语音或安排一个模拟终端讲话。

您必须当前发现在wireshark的信息包。切记，来源IP必须是减1的VIF IP，因此为我们的测试它必须是192.0.2.2 -1 = 192.0.2.1。



No.	Time	Source	Destination	Destination Port	Protocol	Length	Info
33	14:08:31.960373	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3718, Time=669534125, Mark
34	14:08:31.980461	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3719, Time=669534285
35	14:08:32.000448	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3720, Time=669534445
36	14:08:32.020594	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3721, Time=669534605
37	14:08:32.040123	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3722, Time=669534765
38	14:08:32.060368	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3723, Time=669534925
39	14:08:32.080459	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3724, Time=669535085
40	14:08:32.100577	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3725, Time=669535245
42	14:08:32.120098	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3726, Time=669535405
43	14:08:32.140343	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3727, Time=669535565
44	14:08:32.160470	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3728, Time=669535725
45	14:08:32.180532	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3729, Time=669535885
46	14:08:32.200625	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3730, Time=669536045
47	14:08:32.220073	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3731, Time=669536205
48	14:08:32.240231	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3732, Time=669536365
49	14:08:32.260346	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3733, Time=669536525
50	14:08:32.280352	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3734, Time=669536685
51	14:08:32.300434	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3735, Time=669536845
52	14:08:32.320509	[redacted]	[redacted]	21000	RTP	214	PT=ITU-T G.711 PCMU, SSRC=0x79D4, Seq=3736, Time=669537005

确定Cisco CLI分析器(仅限注册用户)技术支持**显示**命令。请使用Cisco CLI分析器为了查看show命令输出分析。

> **Note**:使用 **debug** 命令之前，请参阅有关 Debug 命令的重要信息。

相关信息

- **已知缺陷**

CSCvd18792 - ISR4K - Hoot and Holler E&M端口不可能于组播集线器共置

CSCve66876 - ISR4K -组播RP注册为信息包下降从DSP

CSCve71893 - ISR4K - Hoot and Holler组播复制问题

- **技术支持&文档- Cisco Systems**