

带有高带宽租用线路 PPP 和 LLQ 的 VoIP

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简介

本文为两个Cisco 3640路由器提供配置示例。配置使路由器与与PPP的VoIP联络在有低延迟排队(LLQ)的高带宽租用的线路。关于LLQ的更多信息，参考本文[带有服务质量控制的VoIP-over-PPP \(LLQ /IP RTP优先级、LFI, cRTP\)](#)。

注意： 当本文讨论高带宽根据VoIP和QoS时，高带宽是在768 Kbps上的任何带宽。

先决条件

要求

本文档没有任何特定的要求。

使用的组件

本文档中的信息基于以下软件和硬件版本：

- Cisco IOS软件版本12.2(19a) IP Plus或其他Cisco IOS软件版本12.2， 12.2T， 12.3或者12.3T
- 有48个闪存至少DRAM和16 Mb的两个Cisco 3640路由器
- 两个Cisco NM-2V Voice/Fax接口卡Slot网络模块加上两个VIC-2FXS接口卡
- 两serial interfaces在本例中，两serial interfaces是NM-1E2Ws， 与一个WIC-1T广域网接口卡中

的每一个。

- 附件的模拟电话对语音呼叫的局外交换站(FXS)端口

注意： NM-1E2W、NM-1E1R2W和NM-2E2W网络模块没有足够的性能电源支持WIC-2T。缺乏支持归结于硬件限制。

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。

规则

有关文档规则的详细信息，请参阅 [Cisco 技术提示规则](#)。

背景信息

如果必要的时间发送一1500字节数据包在电线上比10毫秒极大，您需要分段的信息包。本文呈现一配置，不用分段。配置是为1500字节数据包的传输延迟少于10毫秒是的1544千比特链路。

注意： 有时在哪些您把一专用，全T1信道连接，分段功能可以是多余的。但是，您仍然需要QoS机制。在这种情况下请使用LLQ。如果必要的时间发送一1500字节数据包在电线上少于10毫秒是，您不需要分段的信息包。全T1信道提供足够的带宽允许语音数据包赶快输入和留下队列问题。

注意： 如果启用在路由器的分段，有时间的排队机制100百分比的启动。如果配置LLQ，值您配置的限制优先级队列的流量。当您未启用分段时，路由器只运用QoS策略一旦拥塞。

并且，一旦比768 Kbps极大的线路速率，压缩实时传输协议(cRTP)可以是多余的。参考本文[带有服务质量控制的VoIP-over-PPP \[LLQ/IP RTP Priority, LFI, cRTP\]](#)。因为cRTP压缩IP RTP报头，使用cRTP帮助保存带宽。在本文的[配置部分](#)，cRTP的启动是多余的。T1允许足够的带宽语音数据包放出，不用压缩，在电线上，不用问题。

警告： 如果决定使用cRTP，请注意cRTP使用CPU资源。cRTP能使有语音流量一大量负担的路由器负担过度。

注意： 在此配置中，两路由器在一条租用的线路连接背对背。但是，在多数拓扑方面，有语音启动的路由器能任何地方存在。通常，语音路由器连接LAN连通性到连接对广域网的其他路由器。如果您的语音路由器不通过在一条租用的线路的PPP连接，您需要配置在连接对广域网的那些路由器的所有WAN连接配置命令;您不配置on命令语音路由器，在本文的[配置](#)显示。

注意： 此配置能为Cisco 1700，[2600](#)，[3600](#)和[3700系列路由器](#)工作。

配置

本部分提供有关如何配置本文档所述功能的信息。

注意： 要查找本文档所用命令的其他信息，请使用[命令查找工具](#)（[仅限注册用户](#)）。

网络图

本文档使用以下网络设置：

配置

本文档使用以下配置：

- [San Jose](#)
- [Raleigh](#)

San Jose

```
SanJose3640A# show run Building configuration... Current
configuration : 1425 bytes ! version 12.2 service
timestamps debug datetime msec service timestamps log
datetime msec no service password-encryption ! hostname
SanJose3640A ! logging buffered 50000 debugging ! ip
subnet-zero ! ! no ip domain-lookup ! call rsvp-sync ! !
! ! ! ! ! class-map match-all voice-signaling match
access-group 103 class-map match-all voice-traffic match
access-group 102 ! ! policy-map voice-policy class
voice-traffic priority 51 !--- These are two
uncompressed G729 VoIP calls at 24 kbps each !--- that
have voice activity detection (VAD) disablement. You
also need !--- to consider the Layer 2 (L2) overhead.
class voice-signaling bandwidth 16 !--- This assigns a
queue for voice signaling traffic that ensures 8 kbps.
!--- Note: This action is optional and has nothing to do
with good voice !--- quality. This queue assignment is a
way to secure signaling. class class-default fair-queue
!--- The class-default class classifies traffic that
does !--- not fall into one of the class definitions.
The fair-queue command !--- associates the default class
weighted fair queuing (WFQ). ! ! ! interface Ethernet1/0
ip address 10.89.251.158 255.255.255.192 half-duplex !
interface Serial1/0 bandwidth 1544 ip address
192.168.1.1 255.255.255.0 service-policy output voice-
policy encapsulation ppp load-interval 30 clockrate
2000000 ! ip classless ip route 0.0.0.0 0.0.0.0
10.89.251.129 no ip http server ! access-list 102 permit
udp any any range 16384 32767 access-list 103 permit tcp
any eq 1720 any access-list 103 permit tcp any any eq
1720 ! voice-port 3/0/0 ! voice-port 3/0/1 ! voice-port
3/1/0 ! voice-port 3/1/1 ! dial-peer cor custom ! ! !
dial-peer voice 1 voip incoming called-number .
destination-pattern 2... session target ipv4:192.168.1.2
dtmf-relay h245-alphanumeric no vad ! dial-peer voice 2
pots destination-pattern 1001 port 3/0/0 ! dial-peer
voice 3 pots destination-pattern 1002 port 3/0/1 ! !
line con 0 line aux 0 line vty 0 4 password cisco login
! end SanJose3640A# SanJose3640A# SanJose3640A# show
version Cisco Internetwork Operating System Software IOS
(tm) 3600 Software (C3640-IS-M), Version 12.2(19a),
RELEASE SOFTWARE (fc2) Copyright (c) 1986-2003 by cisco
Systems, Inc. Compiled Mon 29-Sep-03 23:45 by pwade
Image text-base: 0x60008930, data-base: 0x61134000 ROM:
System Bootstrap, Version 11.1(20)AA2, EARLY DEPLOYMENT
RELEASE SOFTWARE (fc1) SanJose3640A uptime is 5 minutes
System returned to ROM by reload System image file is
"flash:c3640-is-mz.122-19a.bin" cisco 3640 (R4700)
processor (revision 0x00) with 126976K/4096K bytes of
memory. Processor board ID 15636516 R4700 CPU at 100Mhz,
Implementation 33, Rev 1.0 Bridging software. X.25
software, Version 3.0.0. SuperLAT software (copyright
1990 by Meridian Technology Corp). 1 Ethernet/IEEE 802.3
```

```
interface(s) 1 Serial network interface(s) 2 Voice FXO
interface(s) 2 Voice FXS interface(s) DRAM configuration
is 64 bits wide with parity disabled. 125K bytes of non-
volatile configuration memory. 32768K bytes of processor
board System flash (Read/Write) 16384K bytes of
processor board PCMCIA Slot1 flash (Read/Write)
Configuration register is 0x2102 SanJose3640A#
```

Raleigh

```
Raleigh3640A# show run Building configuration... Current
configuration : 1406 bytes ! version 12.2 service
timestamps debug datetime msec service timestamps log
datetime msec no service password-encryption ! hostname
Raleigh3640A ! logging buffered 50000 debugging ! ip
subnet-zero ! ! no ip domain-lookup ! call rsvp-sync ! !
! ! ! ! ! class-map match-all voice-signaling match
access-group 103 class-map match-all voice-traffic match
access-group 102 ! ! policy-map voice-policy class
voice-traffic priority 51 !--- These are two
uncompressed G729 VoIP calls at 24 kbps each !--- that
have VAD disablement. You also need to consider !--- the
L2 overhead. class voice-signaling bandwidth 16 !---
This assigns a queue for voice signaling traffic that
ensures 8 kbps. !--- Note: This action is optional and
has nothing to do with good voice !--- quality. This
queue assignment is a way to secure signaling. class
class-default fair-queue !--- The class-default class
classifies traffic that does !--- not fall into one of
the class definitions. The fair-queue command !---
associates the default class WFQ. ! ! ! interface
Ethernet1/0 ip address 10.89.251.159 255.255.255.192
half-duplex ! interface Serial1/0 bandwidth 1544 ip
address 192.168.1.2 255.255.255.0 service-policy output
voice-policy encapsulation ppp load-interval 30 ! ip
classless ip route 0.0.0.0 0.0.0.0 10.89.251.129 no ip
http server ! access-list 102 permit udp any any range
16384 32767 access-list 103 permit tcp any eq 1720 any
access-list 103 permit tcp any any eq 1720 ! voice-port
3/0/0 ! voice-port 3/0/1 ! voice-port 3/1/0 ! voice-port
3/1/1 ! dial-peer cor custom ! ! ! dial-peer voice 1
voip incoming called-number . destination-pattern 1...
session target ipv4:192.168.1.1 dtmf-relay h245-
alphanumeric no vad ! dial-peer voice 2 pots
destination-pattern 2001 port 3/0/0 ! dial-peer voice 3
pots destination-pattern 2002 port 3/0/1 ! ! line con 0
line aux 0 line vty 0 4 password cisco login ! end
Raleigh3640A# Raleigh3640A# Raleigh3640A# show version
Cisco Internetwork Operating System Software IOS (tm)
3600 Software (C3640-IS-M), Version 12.2(19a), RELEASE
SOFTWARE (fc2) Copyright (c) 1986-2003 by cisco Systems,
Inc. Compiled Mon 29-Sep-03 23:45 by pwade Image text-
base: 0x60008930, data-base: 0x61134000 ROM: System
Bootstrap, Version 12.1(17r) [cmong 17r], RELEASE
SOFTWARE (fc1) Raleigh3640A uptime is 6 minutes System
returned to ROM by reload System image file is
"flash:c3640-is-mz.122-19a.bin" cisco 3640-A (R4700)
processor (revision 0x00) with 94208K/4096K bytes of
memory. Processor board ID 29851759 R4700 CPU at 100Mhz,
Implementation 33, Rev 1.0 Bridging software. X.25
software, Version 3.0.0. SuperLAT software (copyright
1990 by Meridian Technology Corp). 1 Ethernet/IEEE 802.3
interface(s) 1 Serial network interface(s) 2 Voice FXO
interface(s) 2 Voice FXS interface(s) DRAM configuration
is 64 bits wide with parity disabled. 123K bytes of non-
```

```
volatile configuration memory. 32768K bytes of processor
board System flash (Read/Write) 16384K bytes of
processor board PCMCIA Slot0 flash (Read/Write)
Configuration register is 0x2102 Raleigh3640A#
```

验证

在您输入这些[配置](#)到您的路由器后，请验证他们正确地运作。此处命令和各自输出展示配置的成功实施。

[命令输出解释程序工具](#) ([仅限注册用户](#)) 支持某些 **show** 命令，使用此工具可以查看对 **show** 命令输出的分析。

- **show interface serial 1/0** —允许您检查您的serial interfaces状况。
- **show call active voice brief** —在呼叫期间，允许您查看呼叫信息。
- **show call active voice** —在呼叫期间，允许您查看呼叫信息。
- **show policy-map interface** —允许您验证接口使用的QoS策略。
- **show access-list 102** —允许您由语音类的访问列表验证数据包选择。发出命令每第二次，在一些秒钟并且验证后有在数据包计数的一增加。发出**clear access-list counters 102**命令，如果需要。
- **show voice call summary** —允许您验证呼叫的状况。如果呼叫有连接，命令显示您。
- **show voice port summary** —允许您验证语音端口的状态。命令显示语音端口如挂机或摘机。
- **show voice dsp** —允许您验证数字信号处理器(DSP)的状态和每呼叫使用的编码器译码器(编码器)。

San Jose 路由器验证

在您进行验证前，请检查接口保证您有必要的连接发出呼叫。发出**show interface serial 1/0**命令检查您的serial interfaces状况。使用在本文的[配置](#)，请务必您的序列和多链路接口在UP。并且请务必您看到此：

- LCP指示PPP连接的建立。
- IPCP CDPCP —告诉您IP数据流发送通过PPP链路是可能的。
- 一对应于服务策略输出命令行界面(CLI)在serial interfaces下。策略是为优先安排在数据的语音的LLQ的配置。

```
SanJose3640A# show interface serial 1/0 Serial1/0 is up, line protocol is up Hardware is QUICC
Serial Internet address is 192.168.1.1/24 MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255 Encapsulation PPP, loopback not set Keepalive
set (10 sec) LCP Open Open: IPCP, CDPCP Last input 00:00:27, output 00:00:02, output hang never
Last clearing of "show interface" counters 00:00:05 Input queue: 0/75/0/0
(size/max/drops/flushes); Total output drops: 0 Queueing strategy: weighted fair Output queue:
0/1000/64/0 (size/max total/threshold/drops) Conversations 0/1/256 (active/max active/max total)
Reserved Conversations 1/1 (allocated/max allocated) Available Bandwidth 1091 kilobits/sec 30
second input rate 0 bits/sec, 0 packets/sec 30 second output rate 0 bits/sec, 0 packets/sec 1
packets input, 16 bytes, 0 no buffer Received 0 broadcasts, 0 runts, 0 giants, 0 throttles 0
input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 1 packets output, 16 bytes, 0
underruns 0 output errors, 0 collisions, 0 interface resets 0 output buffer failures, 0 output
buffers swapped out 0 carrier transitions DCD=up DSR=up DTR=up RTS=up CTS=up SanJose3640A#
```

此输出显示路由器之间的成功的连接。如果看不到UP，请验证在DCE接口的时钟频率。一些serial interfaces不支持高速，例如NM-8A/S。并且，请验证在两边的参数配比和，最重要，封装配比。

从**show call active voice brief**命令的输出此处显示两成功的呼叫。一呼叫是从Raleigh路由器到San

Jose路由器，并且其他是从San Jose到Raleigh。此列表解释出现黑体字的输出：

- 1001—表示San Jose是呼叫产生的路由器。
- 3/0/0 —表示这是电话呼叫段。
- 2001—表示在Raleigh侧的一个电话收到呼叫。
- IP 192.168.1.2 —表示这是IP呼叫段。
- 2002—表示Raleigh是呼叫发送的路由器。
- IP 192.168.1.2 —表示这是IP呼叫段。
- 1002—表示在San Jose侧的一个电话收到呼叫。
- 3/0/1 —表示这是电话呼叫段。

```
SanJose3640A# show call active voice brief <ID>: <start>hs.<index> +<connect> pid:<peer_id>
<dir> <addr> <state> dur hh:mm:ss tx:<packets>/<bytes> rx:<packets>/<bytes> IP <ip>:<udp>
rtt:<time>ms pl:<play>/<gap>ms lost:<lost>/<early>/<late> delay:<last>/<min>/<max>ms <codec>
MODEMPASS <method> buf:<fills>/<drains> loss <overall%> <multipkt>/<corrected> last <buf event
time>s dur:<Min>/<Max>s FR <protocol> [int dlci cid] vad:<y/n> dtmf:<y/n> seq:<y/n> <codec>
(payload size) ATM <protocol> [int vpi/vci cid] vad:<y/n> dtmf:<y/n> seq:<y/n> <codec> (payload
size) Tele <int>: tx:<tot>/<v>/<fax>ms <codec> noise:<l> acom:<l> i/o:<l>/<l> dBm Proxy
<ip>:<audio udp>,<video udp>,<tcp0>,<tcp1>,<tcp2>,<tcp3> endpt: <type>/<manf> bw: <req>/<act>
codec: <audio>/<video> tx: <audio pkts>/<audio bytes>,<video pkts>/<video bytes>,<t120
pkts>/<t120 bytes> rx: <audio pkts>/<audio bytes>,<video pkts>/<video bytes>,<t120 pkts>/<t120
bytes> Total call-legs: 4 11E8 : 115599hs.1 +318 pid:2 Answer 1001 active dur 00:00:29
tx:1545/30900 rx:1544/30880 Tele 3/0/0:20: tx:30890/30890/0ms g729r8 noise:0 acom:2 i/o:-35/-44
dBm 11E8 : 115823hs.1 +94 pid:1 Originate 2001 active dur 00:00:31 tx:1556/31120 rx:1602/32040
IP 192.168.1.2:17360 rtt:4ms pl:25590/0ms lost:0/1/0 delay:69/69/70ms g729r8 11F0 : 116855hs.1
+156 pid:1 Answer 2002 active dur 00:00:20 tx:1087/21740 rx:1009/20180 IP 192.168.1.2:16772
rtt:2ms pl:17270/0ms lost:0/0/0 delay:69/69/70ms g729r8 11F0 : 116855hs.2 +156 pid:3 Originate
1002 active dur 00:00:20 tx:1009/20180 rx:1087/21740 Tele 3/0/1 (23): tx:21740/21740/0ms g729r8
noise:0 acom:5 i/o:-40/-40 dBm Total call-legs: 4 SanJose3640A#
```

从show call active voice命令的此输出提供关于激活的呼叫的更多细节：

```
SanJose3640A# show call active voice Total call-legs: 4 GENERIC: SetupTime=115599 ms Index=1
PeerAddress=1001 PeerSubAddress= PeerId=2 PeerIfIndex=9 LogicalIfIndex=4 ConnectTime=115917
CallDuration=00:05:05 CallState=4 CallOrigin=2 ChargedUnits=0 InfoType=2 TransmitPackets=15338
TransmitBytes=306760 ReceivePackets=15337 ReceiveBytes=306740 TELE: ConnectionId=[0x38D3783F
0x14F111CC 0x801CFDB1 0x2D0CC4A5] IncomingConnectionId=[0x38D3783F 0x14F111CC 0x801CFDB1
0x2D0CC4A5] TxDuration=306740 ms VoiceTxDuration=306740 ms FaxTxDuration=0 ms
CoderTypeRate=g729r8 NoiseLevel=0 ACOMLevel=5 OutSignalLevel=-43 InSignalLevel=-36
InfoActivity=2 ERLLevel=5 SessionTarget= ImgPages=0 GENERIC: SetupTime=115823 ms Index=1
PeerAddress=2001 PeerSubAddress= PeerId=1 PeerIfIndex=8 LogicalIfIndex=0 ConnectTime=115917
CallDuration=00:05:07 CallState=4 CallOrigin=1 ChargedUnits=0 InfoType=2 TransmitPackets=15357
TransmitBytes=307140 ReceivePackets=15403 ReceiveBytes=308060 VOIP: ConnectionId[0x38D3783F
0x14F111CC 0x801CFDB1 0x2D0CC4A5] IncomingConnectionId[0x38D3783F 0x14F111CC 0x801CFDB1
0x2D0CC4A5] RemoteIPAddress=192.168.1.2 RemoteUDPPort=17360
RemoteSignallingIPAddress=192.168.1.2 RemoteSignallingPort=1720 RemoteMediaIPAddress=192.168.1.2
RemoteMediaPort=17360 RoundTripDelay=1 ms SelectedQoS=best-effort tx_DtmfRelay=h245-alphanumeric
FastConnect=TRUE Separate H245 Connection=FALSE H245 Tunneling=TRUE SessionProtocol=cisco
SessionTarget=ipv4:192.168.1.2 OnTimeRvPayout=300810 GapFillWithSilence=0 ms
GapFillWithPrediction=0 ms GapFillWithInterpolation=0 ms GapFillWithRedundancy=0 ms
HiWaterPayoutDelay=70 ms LoWaterPayoutDelay=69 ms ReceiveDelay=69 ms LostPackets=0
EarlyPackets=2 LatePackets=0 VAD = disabled CoderTypeRate=g729r8 CodecBytes=20 GENERIC:
SetupTime=116855 ms Index=1 PeerAddress=2002 PeerSubAddress= PeerId=1 PeerIfIndex=8
LogicalIfIndex=0 ConnectTime=117011 CallDuration=00:04:56 CallState=4 CallOrigin=2
ChargedUnits=0 InfoType=2 TransmitPackets=14915 TransmitBytes=298300 ReceivePackets=14837
ReceiveBytes=296740 VOIP: ConnectionId[0x6C135AD4 0x14F311CC 0x8024CE4C 0xAA60AB15]
IncomingConnectionId[0x6C135AD4 0x14F311CC 0x8024CE4C 0xAA60AB15] RemoteIPAddress=192.168.1.2
RemoteUDPPort=16772 RemoteSignallingIPAddress=192.168.1.2 RemoteSignallingPort=11004
RemoteMediaIPAddress=192.168.1.2 RemoteMediaPort=16772 RoundTripDelay=7 ms SelectedQoS=best-
effort tx_DtmfRelay=h245-alphanumeric FastConnect=TRUE Separate H245 Connection=FALSE H245
Tunneling=TRUE SessionProtocol=cisco SessionTarget= OnTimeRvPayout=295580 GapFillWithSilence=0
```



```
ms GapFillWithPrediction=0 ms GapFillWithInterpolation=0 ms GapFillWithRedundancy=0 ms
HiWaterPayoutDelay=70 ms LoWaterPayoutDelay=69 ms ReceiveDelay=69 ms LostPackets=0
EarlyPackets=0 LatePackets=0 VAD = disabled CoderTypeRate=g729r8 CodecBytes=20 GENERIC:
SetupTime=116855 ms Index=2 PeerAddress=1002 PeerSubAddress= PeerId=3 PeerIfIndex=10
LogicalIfIndex=5 ConnectTime=117011 CallDuration=00:04:59 CallState=4 CallOrigin=1
ChargedUnits=0 InfoType=2 TransmitPackets=14952 TransmitBytes=299040 ReceivePackets=15030
ReceiveBytes=300600 TELE: ConnectionId=[0x6C135AD4 0x14F311CC 0x8024CE4C 0xAA60AB15]
IncomingConnectionId=[0x6C135AD4 0x14F311CC 0x8024CE4C 0xAA60AB15] TxDuration=300600 ms
VoiceTxDuration=300600 ms FaxTxDuration=0 ms CoderTypeRate=g729r8 NoiseLevel=0 ACOMLevel=5
OutSignalLevel=-40 InSignalLevel=-41 InfoActivity=2 ERLLevel=5 SessionTarget= ImgPages=0Total
call-legs: 4 SanJose3640A#$ Other shows:
```

从show policy-map interface命令的输出包括此黑体语句：

- 3051000/—显示带宽两呼叫要求，51 kpbs。

```
SanJose3640A# show policy-map interface Serial1/0 Service-policy output: voice-policy Class-map:
voice-traffic (match-all) 99403 packets, 6401420 bytes 30 second offered rate 51000 bps, drop
rate 0 bps Match: access-group 102 Queueing Strict Priority Output Queue: Conversation 264
Bandwidth 51 (kbps) Burst 1275 (Bytes) (pkts matched/bytes matched) 407/65676 (total drops/bytes
drops) 0/0 Class-map: voice-signaling (match-all) 158 packets, 12926 bytes 30 second offered
rate 0 bps, drop rate 0 bps Match: access-group 103 Queueing Output Queue: Conversation 265
Bandwidth 16 (kbps) Max Threshold 64 (packets) (pkts matched/bytes matched) 158/12926
(depth/total drops/no-buffer drops) 0/0/0 Class-map: class-default (match-any) 75 packets, 9221
bytes 30 second offered rate 0 bps, drop rate 0 bps Match: any Queueing Flow Based Fair Queueing
Maximum Number of Hashed Queues 256 (total queued/total drops/no-buffer drops) 0/0/0
SanJose3640A#
```

从show access-lists 102命令的输出包括此黑体语句：

- 100676—显示RTP数据包的优先级发生，因为数据包到达访问列表102。

```
SanJose3640A# show access-lists 102 Extended IP access list 102 permit udp any any range 16384
32767 (100676 matches) SanJose3640A# SanJose3640A# SanJose3640A# SanJose3640A# SanJose3640A#
SanJose3640A# show access-lists 102 Extended IP access list 102 permit udp any any range 16384 32767 (100930
matches) SanJose3640A# SanJose3640A# SanJose3640A# show access-lists 102 Extended IP access list
102 permit udp any any range 16384 32767 (101076 matches) SanJose3640A# SanJose3640A#
SanJose3640A# SanJose3640A# show access-lists 102 Extended IP access list 102 permit udp any any
range 16384 32767 (101198 matches) SanJose3640A# SanJose3640A# SanJose3640A# show access-lists
102 Extended IP access list 102 permit udp any any range 16384 32767 (101304 matches)
SanJose3640A# SanJose3640A# SanJose3640A# SanJose3640A# show voice call sum PORT CODEC VAD VTSP
STATE VPM STATE =====
g729r8 n s_CONNECT FXSLS_CONNECT 3/0/1 g729r8 n s_CONNECT FXSLS_CONNECT 3/1/0 - - - FXOLS_ONHOOK
3/1/1 - - - FXOLS_ONHOOK SanJose3640A# SanJose3640A# SanJose3640A# SanJose3640A# show voice port
sum IN OUT PORT CH SIG-TYPE ADMIN OPER STATUS STATUS EC =====
===== 3/0/0 -- fxs-ls up up off-hook idle y 3/0/1 -- fxs-ls up up off-hook idle y 3/1/0 --
fxo-ls up dorm idle on-hook y 3/1/1 -- fxo-ls up dorm idle on-hook y SanJose3640A# SanJose3640A#
show voice dsp DSP DSPWARE CURR BOOT PAK TX/RX TYPE NUM CH CODEC VERSION STATE STATE RST AI
VOICEPORT TS ABORT PACK COUNT =====
===== C542 001 01 g729r8 3.4.55 busy idle 0 0 3/0/0 NA 0 62487/61902 C542 002 01
g729r8 3.4.55 busy idle 0 0 3/0/1 NA 0 44362/44194 C542 003 01 g711ulaw 3.4.55 IDLE idle 0 0
3/1/0 NA 0 541/546 C542 004 01 g711ulaw 3.4.55 IDLE idle 0 0 3/1/1 NA 0 535/532 SanJose3640A#
```

[Raleigh 路由器验证](#)

Raleigh路由器的验证程序类似于San Jose路由器的步骤。

```
Raleigh3640A# show interface serial 1/0 Serial1/0 is up, line protocol is up Hardware is QUICC
Serial Internet address is 192.168.1.2/24 MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255 Encapsulation PPP, loopback not set Keepalive
set (10 sec) LCP Open Open: IPCP, CDPCP Last input 00:00:15, output 00:00:00, output hang never
Last clearing of "show interface" counters 00:12:33 Input queue: 0/75/0/0
(size/max/drops/flushes); Total output drops: 0 Queueing strategy: weighted fair Output queue:
```

0/1000/64/0 (size/max total/threshold/drops) Conversations 0/1/256 (active/max active/max total)
Reserved Conversations 1/1 (allocated/max allocated) Available Bandwidth 1091 kilobits/sec 30
second input rate 0 bits/sec, 0 packets/sec 30 second output rate 0 bits/sec, 0 packets/sec 167
packets input, 6849 bytes, 0 no buffer Received 0 broadcasts, 0 runts, 0 giants, 0 throttles 0
input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort 169 packets output, 6907 bytes, 0
underruns 0 output errors, 0 collisions, 0 interface resets 0 output buffer failures, 0 output
buffers swapped out 11 carrier transitions DCD=up DSR=up DTR=up RTS=up CTS=up Raleigh3640A#
Raleigh3640A# Raleigh3640A# Raleigh3640A# **show call active voice** Total call-legs:
4 GENERIC: SetupTime=209451 ms Index=1 PeerAddress=1001 PeerSubAddress= PeerId=1 PeerIfIndex=8
LogicalIfIndex=0 ConnectTime=209543 CallDuration=00:08:20 CallState=4 CallOrigin=2
ChargedUnits=0 InfoType=2 TransmitPackets=25054 TransmitBytes=501080 ReceivePackets=25008
ReceiveBytes=500160 VOIP: ConnectionId[0x38D3783F 0x14F111CC 0x801CFDB1 0x2D0CC4A5]
IncomingConnectionId[0x38D3783F 0x14F111CC 0x801CFDB1 0x2D0CC4A5] RemoteIPAddress=192.168.1.1
RemoteUDPPort=17210 RemoteSignallingIPAddress=192.168.1.1 RemoteSignallingPort=11006
RemoteMediaIPAddress=192.168.1.1 RemoteMediaPort=17210 RoundTripDelay=3 ms SelectedQoS=best-
effort tx_DtmfRelay=h245-alphanumeric FastConnect=TRUE Separate H245 Connection=FALSE H245
Tunneling=TRUE SessionProtocol=cisco SessionTarget= OnTimeRvPayout=497610 GapFillWithSilence=0
ms GapFillWithPrediction=0 ms GapFillWithInterpolation=0 ms GapFillWithRedundancy=0 ms
HiWaterPayoutDelay=70 ms LoWaterPayoutDelay=69 ms ReceiveDelay=69 ms LostPackets=0
EarlyPackets=1 LatePackets=0 **VAD = disabled CoderTypeRate=g729r8** CodecBytes=20 GENERIC:
SetupTime=209451 ms Index=2 **PeerAddress=2001** PeerSubAddress= PeerId=2 PeerIfIndex=9
LogicalIfIndex=4 ConnectTime=209543 **CallDuration=00:08:21** CallState=4 CallOrigin=1
ChargedUnits=0 InfoType=2 TransmitPackets=25074 TransmitBytes=501480 ReceivePackets=25120
ReceiveBytes=502400 TELE: ConnectionId=[0x38D3783F 0x14F111CC 0x801CFDB1 0x2D0CC4A5]
IncomingConnectionId=[0x38D3783F 0x14F111CC 0x801CFDB1 0x2D0CC4A5] TxDuration=502410 ms
VoiceTxDuration=502410 ms FaxTxDuration=0 ms CoderTypeRate=g729r8 NoiseLevel=0 ACOMLevel=1
OutSignalLevel=-41 InSignalLevel=-37 InfoActivity=2 ERLLevel=1 SessionTarget= ImgPages=0
GENERIC: SetupTime=210097 ms Index=1 PeerAddress=2002 PeerSubAddress= PeerId=3 PeerIfIndex=10
LogicalIfIndex=5 ConnectTime=210638 **CallDuration=00:08:10** CallState=4 CallOrigin=2
ChargedUnits=0 InfoType=2 TransmitPackets=24606 TransmitBytes=492120 ReceivePackets=24605
ReceiveBytes=492100 TELE: ConnectionId=[0x6C135AD4 0x14F311CC 0x8024CE4C 0xAA60AB15]
IncomingConnectionId=[0x6C135AD4 0x14F311CC 0x8024CE4C 0xAA60AB15] TxDuration=492110 ms
VoiceTxDuration=492110 ms FaxTxDuration=0 ms CoderTypeRate=g729r8 NoiseLevel=0 ACOMLevel=0
OutSignalLevel=-46 InSignalLevel=-33 InfoActivity=2 ERLLevel=0 SessionTarget= ImgPages=0
GENERIC: SetupTime=210480 ms Index=1 **PeerAddress=1002** PeerSubAddress= PeerId=1 PeerIfIndex=8
LogicalIfIndex=0 ConnectTime=210638 **CallDuration=00:08:11** CallState=4 CallOrigin=1
ChargedUnits=0 InfoType=2 TransmitPackets=24587 TransmitBytes=491740 ReceivePackets=24664
ReceiveBytes=493280 VOIP: ConnectionId[0x6C135AD4 0x14F311CC 0x8024CE4C 0xAA60AB15]
IncomingConnectionId[0x6C135AD4 0x14F311CC 0x8024CE4C 0xAA60AB15] RemoteIPAddress=192.168.1.1
RemoteUDPPort=18884 RemoteSignallingIPAddress=192.168.1.1 RemoteSignallingPort=1720
RemoteMediaIPAddress=192.168.1.1 RemoteMediaPort=18884 **RoundTripDelay=4 ms** SelectedQoS=best-
effort tx_DtmfRelay=h245-alphanumeric FastConnect=TRUE Separate H245 Connection=FALSE H245
Tunneling=TRUE SessionProtocol=cisco SessionTarget=ipv4:192.168.1.1 OnTimeRvPayout=487570
GapFillWithSilence=0 ms GapFillWithPrediction=0 ms GapFillWithInterpolation=0 ms
GapFillWithRedundancy=0 ms HiWaterPayoutDelay=70 ms LoWaterPayoutDelay=69 ms ReceiveDelay=69
ms **LostPackets=0 EarlyPackets=1 LatePackets=0 VAD = disabled CoderTypeRate=g729r8**
CodecBytes=20 Total call-legs: 4 Raleigh3640A# Raleigh3640A# Raleigh3640A# **show policy interface**
Serial1/0 Service-policy output: voice-policy Class-map: voice-traffic (match-all) 113186
packets, 7289624 bytes **30 second offered rate 51000 bps, drop rate 0 bps** Match: access-group 102
Queueing Strict Priority Output Queue: Conversation 264 **Bandwidth 51 (kbps) Burst 1275 (Bytes)**
(pkts matched/bytes matched) 471/75864 (total drops/bytes drops) 0/0 Class-map: voice-signaling
(match-all) 162 packets, 13339 bytes 30 second offered rate 0 bps, drop rate 0 bps Match:
access-group 103 Queueing Output Queue: Conversation 265 Bandwidth 16 (kbps) Max Threshold 64
(packets) (pkts matched/bytes matched) 162/13339 (depth/total drops/no-buffer drops) 0/0/0
Class-map: class-default (match-any) 194 packets, 16761 bytes 30 second offered rate 0 bps, drop
rate 0 bps Match: any Queueing Flow Based Fair Queueing Maximum Number of Hashed Queues 256
(total queued/total drops/no-buffer drops) 0/0/0 Raleigh3640A# Raleigh3640A# **show access-lists**
102 Extended IP access list 102 permit udp any any range 16384 32767 (**113963 matches**)
Raleigh3640A# Raleigh3640A# Raleigh3640A# **show access-lists 102** Extended IP access list 102
permit udp any any range 16384 32767 (**114093 matches**) Raleigh3640A# Raleigh3640A# Raleigh3640A#
show access-lists 102 Extended IP access list 102 permit udp any any range 16384 32767 (**114188**
matches) Raleigh3640A# Raleigh3640A# Raleigh3640A# **show access-lists 102** Extended IP access list
102 permit udp any any range 16384 32767 (**114404 matches**) Raleigh3640A# Raleigh3640A#
Raleigh3640A# Raleigh3640A# **show voice call sum** PORT CODEC VAD VTSP STATE VPM STATE =====


```

===== == =====
3/0/0 g729r8 n S_CONNECT FXSLS_CONNECT
3/0/1 g729r8 n S_CONNECT FXSLS_CONNECT 3/1/0 - - - FXOLS_ONHOOK 3/1/1 - - - FXOLS_ONHOOK
Raleigh3640A# Raleigh3640A# show voice port sum IN OUT PORT CH SIG-TYPE ADMIN OPER STATUS STATUS
EC ===== == =====
3/0/0 -- fxs-ls up up off-hook idle y
3/0/1 -- fxs-ls up up off-hook idle y 3/1/0 -- fxo-ls up dorm idle on-hook y 3/1/1 -- fxo-ls up
dorm idle on-hook y Raleigh3640A# Raleigh3640A# Raleigh3640A# show voice dsp DSP DSP DSPWARE
CURR BOOT PAK TX/RX TYPE NUM CH CODEC VERSION STATE STATE RST AI VOICEPORT TS ABORT PACK COUNT
===== == =====
C542 001 01
g729r8 3.4.55 busy idle 0 0 3/0/0 NA 0 69615/68771 C542 002 01 g729r8 3.4.55 busy idle 0 0 3/0/1
NA 0 51511/51520 C542 003 01 g711ulaw 3.4.55 IDLE idle 0 0 3/1/0 NA 0 541/546 C542 004 01
g711ulaw 3.4.55 IDLE idle 0 0 3/1/1 NA 0 535/532 Raleigh3640A#

```

故障排除

本部分提供的信息可用于对配置进行故障排除。

故障排除命令

[命令输出解释程序工具](#) ([仅限注册用户](#)) 支持某些 **show** 命令，使用此工具可以查看对 **show** 命令输出的分析。

注意： 在发出 **debug** 命令之前，请参阅[有关 debug 命令的重要信息](#)。

- **debug voip ccapi inout** —通过呼叫控制应用编程接口(API)跟踪执行路径。
- 调试在所有虚拟语音端口模块(VPM)区域的**debug vpm**全Enable (event)。
- **show log** —显示从关闭调试的输出。

因为Raleigh和San Jose侧是非常类似的在配置和设置方面，本文显示**debug voip ccapi inout**和**debug vpm all**命令只有San Jose路由器的。

如果呼叫建立是问题，请发出调试指令该此部分列表。比较与此处信息的输出。您能使用软件，例如比较它或在比较，比较两个文本文件和查找差异之外。此处输出起一参考作用对于成功的呼叫。

首先，请确定在呼叫期间，什么在路由器发生。发出**debug voip ccapi inout**和**debug vpm all**命令。从问题的输出**show debug**命令，和出现此处，显示启动**debug vpm all**命令在San Jose路由器。您能确定启动**debug vpm all**命令，因为输出显示四个启用的调试指令，除**debug voip ccapi inout**命令以外。当您发出**debug vpm all**命令时，这四命令有自动启动。

警告： 您必须禁用这些调试指令，在您生成您需要的输出后。禁用与问题的调试指令**undebug all**命令。如果留下调试启动，您能遇到路由器性能问题。与启动的调试指令浪费CPU资源。

```

SanJose3640A# show debug voip: voip ccAPI function enter/exit debugging is on Voice Port Module
session debugging is on Voice Port Module DSP message debugging is on Voice Port Module error
debugging is on Voice Port Module signaling debugging is on Voice Port Module voaal2 debugging
is on Voice Port Module trunk conditioning is on SanJose3640A# SanJose3640A# SanJose3640A#
SanJose3640A# SanJose3640A#! Call from 1001 to 2001 SanJose3640A# SanJose3640A# SanJose3640A#
SanJose3640A# *Mar 1 00:05:07.675: htsp_dsp_message: SEND/RESP_SIG_STATUS: state=0xC
timestamp=33146 systime=30767 *Mar 1 00:05:07.679: htsp_process_event: [3/0/0, FXSLS_ONHOOK,
E_DSP_SIG_1100] fxsls_onhook_offhook htsp_setup_ind *Mar 1 00:05:07.679: [3/0/0]
get_local_station_id calling num= calling name= calling time=00/00 00:00 *Mar 1 00:05:07.679:
cc_api_call_setup_ind (vdbPtr=0x6217C270, callInfo={called=,called_
oct3=0x81,calling=,calling_oct3=0x0,calling_oct3a=0x0,calling_xlated=false,
subscriber_type_str=RegularLine,fdest=0,peer_tag=2, prog_ind=3,callingIE_present 0},
callID=0x61DAB4F4) *Mar 1 00:05:07.679: cc_api_call_setup_ind calling number is null, answer
addr dest pattern 1001 e164_ans_addr 0 e164_dest_pattern 1 *Mar 1 00:05:07.679:
cc_api_call_setup_ind valid dest pattern, copying 1001to calling number *Mar 1 00:05:07.679:
cc_api_call_setup_ind type 3 , prot 0 *Mar 1 00:05:07.683: cc_process_call_setup_ind

```

(event=0x62107860) *Mar 1 00:05:07.683: >>>>CCAPI handed cid 5 with tag 2 to app "DEFAULT" *Mar 1 00:05:07.683: sess_appl: ev(24=CC_EV_CALL_SETUP_IND), cid(5), disp(0) *Mar 1 00:05:07.683: sess_appl: ev(SSA_EV_CALL_SETUP_IND), cid(5), disp(0) *Mar 1 00:05:07.683: ssaCallSetupInd *Mar 1 00:05:07.683: ccCallSetContext (callID=0x5, context=0x620005E8) *Mar 1 00:05:07.683: ssaCallSetupInd cid(5), st(SSA_CS_MAPPING),oldst(0), ev(24)ev->e.evCallSetupInd.nCallInfo.finalDestFlag = 0 *Mar 1 00:05:07.683: ccCallSetupAck (callID=0x5) *Mar 1 00:05:07.683: ccCallReportDigits (callID=0x5, enable=0x1) *Mar 1 00:05:07.683: cc_api_call_report_digits_done (vdbPtr=0x6217C270, callID=0x5, disp=0) *Mar 1 00:05:07.683: sess_appl: ev(53=CC_EV_CALL_REPORT_DIGITS_DONE), cid(5), disp(0) *Mar 1 00:05:07.683: cid(5)st(SSA_CS_MAPPING)ev(SSA_EV_CALL_REPORT_DIGITS_DONE) oldst(SSA_CS_MAPPING)cfid(-1)csz(0)in(1)fDest(0) *Mar 1 00:05:07.683: ssaReportDigitsDone cid(5) peer list: (empty) *Mar 1 00:05:07.683: ssaReportDigitsDone callid=5 Enable succeeded *Mar 1 00:05:07.687: ccGenerateTone (callID=0x5 tone=8) *Mar 1 00:05:07.687: dsp_digit_collect_on: [3/0/0] packet_len=20 channel_id=128 packet_id= 35 min_inter_delay=240 max_inter_delay=9760 mim_make_time=10 max_make_time=100 min_brake_time=10 max_brake_time=100 *Mar 1 00:05:07.687: dsp_soutput: [3/0/0] *Mar 1 00:05:07.687: dsp_digit_collect_on: [3/0/0] packet_len=20 channel_id=128 packet_id= 35 min_inter_delay=240 max_inter_delay=9760 mim_make_time=10 max_make_time=100 min_brake_time=10 max_brake_time=100 *Mar 1 00:05:07.687: dsp_soutput: [3/0/0] *Mar 1 00:05:07.687: htsp_process_event: [3/0/0, FXSLS_WAIT_SETUP_ACK, E_HTSP_SETUP_ACK] *Mar 1 00:05:09.455: cc_api_call_digit_begin (dstVdbPtr=0x0, dstCallId=0xFFFFFFFF, srcCallId=0x5, digit=2, digit_begin_flags=0x1, rtp_timestamp=0xEB32A6E0 rtp_expiration=0x0, dest_mask=0x1) *Mar 1 00:05:09.455: sess_appl: ev(10=CC_EV_CALL_DIGIT_BEGIN), cid(5), disp(0) *Mar 1 00:05:09.455: cid(5)st(SSA_CS_MAPPING)ev(SSA_EV_DIGIT_BEGIN) oldst(SSA_CS_MAPPING)cfid(-1)csz(0)in(1)fDest(0) *Mar 1 00:05:09.455: ssaIgnore cid(5), st(SSA_CS_MAPPING),oldst(0), ev(10) *Mar 1 00:05:09.515: cc_api_call_digit_end (dstVdbPtr=0x0, dstCallId=0xFFFFFFFF, srcCallId=0x5,digit=2,duration=95,xruleCallingTag=0,xruleCalledTag=0, dest_mask=0x1), digit_tone_mode=0 *Mar 1 00:05:09.515: sess_appl: ev(9=CC_EV_CALL_DIGIT_END), cid(5), disp(0) *Mar 1 00:05:09.515: cid(5)st(SSA_CS_MAPPING)ev(SSA_EV_CALL_DIGIT) oldst(SSA_CS_MAPPING)cfid(-1)csz(0)in(1)fDest(0) *Mar 1 00:05:09.515: ssaDigit *Mar 1 00:05:09.515: ssaDigit, 0. sct->digit , sct->digit len 0, usrDigit 2, digit_tone_mode=0 *Mar 1 00:05:09.515: ssaDigit,1. callinfo.called , digit 2, callinfo.calling 1001, xrulecallingtag 0, xrulecalledtag 0 *Mar 1 00:05:09.515: ssaDigit, 7. callinfo.calling 1001, sct->digit 2, result 1 *Mar 1 00:05:09.635: cc_api_call_digit_begin (dstVdbPtr=0x0, dstCallId=0xFFFFFFFF, srcCallId=0x5, digit=0, digit_begin_flags=0x1, rtp_timestamp=0xEB32A6E0 rtp_expiration=0x0, dest_mask=0x1) *Mar 1 00:05:09.635: sess_appl: ev(10=CC_EV_CALL_DIGIT_BEGIN), cid(5), disp(0) *Mar 1 00:05:09.635: cid(5)st(SSA_CS_MAPPING)ev(SSA_EV_DIGIT_BEGIN) oldst(SSA_CS_MAPPING)cfid(-1)csz(0)in(1)fDest(0) *Mar 1 00:05:09.635: ssaIgnore cid(5), st(SSA_CS_MAPPING),oldst(0), ev(10) *Mar 1 00:05:09.695: cc_api_call_digit_end (dstVdbPtr=0x0, dstCallId=0xFFFFFFFF, srcCallId=0x5,digit=0,duration=95,xruleCallingTag=0,xruleCalledTag=0, dest_mask=0x1), digit_tone_mode=0 *Mar 1 00:05:09.695: sess_appl: ev(9=CC_EV_CALL_DIGIT_END), cid(5), disp(0) *Mar 1 00:05:09.695: cid(5)st(SSA_CS_MAPPING)ev(SSA_EV_CALL_DIGIT) oldst(SSA_CS_MAPPING)cfid(-1)csz(0)in(1)fDest(0) *Mar 1 00:05:09.695: ssaDigit *Mar 1 00:05:09.695: ssaDigit, 0. sct->digit 2, sct->digit len 1, usrDigit 0, digit_tone_mode=0 *Mar 1 00:05:09.695: ssaDigit,1. callinfo.called , digit 20, callinfo.calling 1001, xrulecallingtag 0, xrulecalledtag 0 *Mar 1 00:05:09.695: ssaDigit, 7. callinfo.calling 1001, sct->digit 20, result 1 *Mar 1 00:05:09.815: cc_api_call_digit_begin (dstVdbPtr=0x0, dstCallId=0xFFFFFFFF, srcCallId=0x5, digit=0, digit_begin_flags=0x1, rtp_timestamp=0xEB32A6E0 rtp_expiration=0x0, dest_mask=0x1) *Mar 1 00:05:09.815: sess_appl: ev(10=CC_EV_CALL_DIGIT_BEGIN), cid(5), disp(0) *Mar 1 00:05:09.815: cid(5)st(SSA_CS_MAPPING)ev(SSA_EV_DIGIT_BEGIN) oldst(SSA_CS_MAPPING)cfid(-1)csz(0)in(1)fDest(0) *Mar 1 00:05:09.815: ssaIgnore cid(5), st(SSA_CS_MAPPING),oldst(0), ev(10) *Mar 1 00:05:09.875: cc_api_call_digit_end (dstVdbPtr=0x0, dstCallId=0xFFFFFFFF, srcCallId=0x5,digit=0,duration=95,xruleCallingTag=0,xruleCalledTag=0, dest_mask=0x1), digit_tone_mode=0 *Mar 1 00:05:09.875: sess_appl: ev(9=CC_EV_CALL_DIGIT_END), cid(5), disp(0) *Mar 1 00:05:09.875: cid(5)st(SSA_CS_MAPPING)ev(SSA_EV_CALL_DIGIT) oldst(SSA_CS_MAPPING)cfid(-1)csz(0)in(1)fDest(0) *Mar 1 00:05:09.875: ssaDigit *Mar 1 00:05:09.875: ssaDigit, 0. sct->digit 20, sct->digit len 2, usrDigit 0, digit_tone_mode=0 *Mar 1 00:05:09.875: ssaDigit,1. callinfo.called , digit 200, callinfo.calling 1001, xrulecallingtag 0, xrulecalledtag 0 *Mar 1 00:05:09.875: ssaDigit, 7. callinfo.calling 1001, sct->digit 200, result 1 *Mar 1 00:05:09.995: cc_api_call_digit_begin (dstVdbPtr=0x0, dstCallId=0xFFFFFFFF, srcCallId=0x5, digit=1, digit_begin_flags=0x1, rtp_timestamp=0xEB32A6E0 rtp_expiration=0x0, dest_mask=0x1) *Mar 1 00:05:09.995: sess_appl: ev(10=CC_EV_CALL_DIGIT_BEGIN), cid(5), disp(0) *Mar 1 00:05:09.995: cid(5)st(SSA_CS_MAPPING)ev(SSA_EV_DIGIT_BEGIN) oldst(SSA_CS_MAPPING)cfid(-1)csz(0)in(1)fDest(0) *Mar 1 00:05:09.995: ssaIgnore cid(5), st(SSA_CS_MAPPING),oldst(0), ev(10) *Mar 1 00:05:10.055: cc_api_call_digit_end (dstVdbPtr=0x0, dstCallId=0xFFFFFFFF,

srcCallId=0x5,digit=1,duration=95,xruleCallingTag=0,xruleCalledTag=0, dest_mask=0x1),
digit_tone_mode=0 *Mar 1 00:05:10.055: sess_appl: ev(9=CC_EV_CALL_DIGIT_END), cid(5), disp(0)
*Mar 1 00:05:10.055: cid(5)st(SSA_CS_MAPPING)ev(SSA_EV_CALL_DIGIT) oldst(SSA_CS_MAPPING)cfid(-
1)csz(0)in(1)fDest(0) *Mar 1 00:05:10.055: ssaDigit *Mar 1 00:05:10.055: ssaDigit, 0. sct-
>digit 200, sct->digit len 3, usrDigit 1, digit_tone_mode=0 *Mar 1 00:05:10.055: ssaDigit,1.
callinfo.called , digit 2001, callinfo.calling 1001, xrulecallingtag 0, xrulecalledtag 0 *Mar 1
00:05:10.055: ssaDigit, 7. callinfo.calling 1001, sct->digit 2001, result 0 *Mar 1 00:05:10.055:
ccCallReportDigits (callID=0x5, enable=0x0) *Mar 1 00:05:10.055: cc_api_call_report_digits_done
(vdbPtr=0x6217C270, callID=0x5, disp=0) *Mar 1 00:05:10.055: ssaSetupPeer cid(5) peer list:
tag(1) called number (2001) *Mar 1 00:05:10.055: ssaSetupPeer cid(5), destPat(2001), matched(1),
prefix(), peer(622FB888), peer->encapType (2) *Mar 1 00:05:10.055: ccCallProceeding (callID=0x5,
prog_ind=0x0) *Mar 1 00:05:10.059: ccCallSetupRequest (Inbound call = 0x5, outbound peer =1,
dest=, params=0x621129C8 mode=0, *callID=0x6 2112D38, prog_ind = 3) callingIE_present 0 *Mar 1
00:05:10.059: ccCallSetupRequest numbering_type 0x81 *Mar 1 00:05:10.059: ccCallSetupRequest
encapType 2 clid_restrict_disable 1 null_orig_clg 1 clid_transparent 0 callingNumber 1001 *Mar 1
00:05:10.059: dest pattern 2..., called 2001, digit_strip 0 *Mar 1 00:05:10.059:
callingNumber=1001, calledNumber=2001, redirectNumber= display_info= calling_oct3a=0 *Mar 1
00:05:10.059: accountNumber=, finalDestFlag=0, guid=3f30.bb8e.14ef.11cc.8008.fdb1.2d0c.c4a5 *Mar
1 00:05:10.059: peer_tag=1 *Mar 1 00:05:10.059: ccIFCallSetupRequestPrivate: (vdbPtr=0x620BCAF0,
**dest=, callParams={called=2001,called_oct3=0x81, calling=1001,calling_oct3=0x0, calling_xlated=
false, subscriber_type_str=RegularLine, fdest=0, voice_peer_tag=1},mode=0x0) vdbP tr type = 1**
*Mar 1 00:05:10.059: ccIFCallSetupRequestPrivate: (vdbPtr=0x620BCAF0, dest=, callParams=
{called=2001, called_oct3 0x81, calling=1001,calling_oct3 0x0, calling_xlated=false, fdest=0,
voice_peer_tag=1}, mode=0x0, xltrc=-5) *Mar 1 00:05:10.059: ccSaveDialpeerTag (callID=0x5,
dialpeer_tag=0x1) *Mar 1 00:05:10.059: ccCallSetContext (callID=0x6, context=0x61DAD8A0) *Mar 1
00:05:10.059: sess_appl: ev(53=CC_EV_CALL_REPORT_DIGITS_DONE),cid(5), disp(0) *Mar 1
00:05:10.059: cid(5)st(SSA_CS_CALL_SETTING)ev(SSA_EV_CALL_REPORT_DIGITS_DONE)
oldst(SSA_CS_MAPPING)cfid(-1)csz(0)in(1)fDest(0) *Mar 1 00:05:10.059: -
cid2(6)st2(SSA_CS_CALL_SETTING)oldst2(SSA_CS_MAPPING) *Mar 1 00:05:10.059: ssaReportDigitsDone
cid(5) peer list: (empty) *Mar 1 00:05:10.059: ssaReportDigitsDone callid=5 Reporting disabled.
*Mar 1 00:05:10.063: dsp_digit_collect_off: [3/0/0] packet_len=8 channel_id=128 packet_id= 36
*Mar 1 00:05:10.063: dsp_soutput: [3/0/0] *Mar 1 00:05:10.063: htsp_process_event: [3/0/0,
FXSLS_OFFHOOK, E_HTSP_PROCEEDING] *Mar 1 00:05:10.095: cc_api_call_proceeding(vdbPtr=0x620BCAF0,
callID=0x6, prog_ind=0x0) *Mar 1 00:05:10.099: sess_appl: ev(21=CC_EV_CALL_PROCEEDING), cid(6),
disp(0) *Mar 1 00:05:10.099: cid(6)st(SSA_CS_CALL_SETTING)ev(SSA_EV_CALL_PROCEEDING)
oldst(SSA_CS_MAPPING)cfid(-1)csz(0)in(0)fDest(0) *Mar 1 00:05:10.099: -
cid2(5)st2(SSA_CS_CALL_SETTING)oldst2(SSA_CS_CALL_SETTING) *Mar 1 00:05:10.099: ssaCallProc *Mar
1 00:05:10.099: ccGetDialpeerTag (callID=0x5) *Mar 1 00:05:10.099: ssaIgnore cid(6),
st(SSA_CS_CALL_SETTING),oldst(1), ev(21) *Mar 1 00:05:10.103:
cc_api_call_cut_progress(vdbPtr=0x620BCAF0, callID=0x6, prog_ind=0x8, sig_ind=0x1) *Mar 1
00:05:10.103: sess_appl: ev(22=CC_EV_CALL_PROGRESS), cid(6), disp(0) *Mar 1 00:05:10.107:
cid(6)st(SSA_CS_CALL_SETTING)ev(SSA_EV_CALL_PROGRESS) oldst(SSA_CS_CALL_SETTING)cfid(-
1)csz(0)in(0)fDest(0) *Mar 1 00:05:10.107: -
cid2(5)st2(SSA_CS_CALL_SETTING)oldst2(SSA_CS_CALL_SETTING) *Mar 1 00:05:10.107: ssaCutProgress
*Mar 1 00:05:10.107: ccGetDialpeerTag (callID=0x5) *Mar 1 00:05:10.107: ccCallCutProgress
(callID=0x5, prog_ind=0x8, sig_ind=0x1) *Mar 1 00:05:10.107: **ccConferenceCreate**
(confID=0x6211310C, callID1=0x5, callID2=0x6, tag=0x0) *Mar 1 00:05:10.107: cc_api_bridge_done
(confID=0x3, srcIF=0x620BCAF0, srcCallID=0x6, dstCallID=0x5, disposition=0,
tag=0x0)htsp_alert_notify *Mar 1 00:05:10.107: cc_api_bridge_done (confID=0x3, srcIF=0x6217C270,
srcCallID=0x5, dstCallID=0x6, disposition=0, tag=0x0) *Mar 1 00:05:10.107: cc_api_caps_ind
(dstVdbPtr=0x620BCAF0, dstCallId=0x6, srcCallId=0x5, caps={codec=0x2EBFB, fax_rate=0x7F,
vad=0x3, modem=0x2 codec_bytes=0, signal_type=3}) *Mar 1 00:05:10.107: cc_api_caps_ind (Playout:
mode 1, initial 60,min 40, max 200) *Mar 1 00:05:10.111: cc_api_caps_ind (dstVdbPtr=0x6217C270,
dstCallId=0x5, srcCallId=0x6, caps={codec=0x4, fax_rate=0x2, vad=0x1, modem=0x0 codec_bytes=20,
signal_type=2}) *Mar 1 00:05:10.111: cc_api_caps_ind (Playout: mode 1, initial 60,min 40, max
200) *Mar 1 00:05:10.111: cc_api_caps_ack (dstVdbPtr=0x6217C270, dstCallId=0x5, srcCallId=0x6,
caps={codec=0x4, fax_rate=0x2, vad=0x1, modem=0x0 codec_bytes=20, signal_type=2,
seq_num_start=9062}) *Mar 1 00:05:10.111: cc_api_caps_ack (dstVdbPtr=0x620BCAF0, dstCallId=0x6,
srcCallId=0x5, caps={codec=0x4, fax_rate=0x2, vad=0x1, modem=0x0 codec_bytes=20, signal_type=2,
seq_num_start=9062}) *Mar 1 00:05:10.111: cc_api_voice_mode_event , callID=0x5 *Mar 1
00:05:10.111: Call Pointer =620005E8 *Mar 1 00:05:10.115: cc_api_caps_ind (dstVdbPtr=0x6217C270,
dstCallId=0x5, srcCallId=0x6, caps={codec=0x4, fax_rate=0x2, vad=0x1, modem=0x0 codec_bytes=20,
signal_type=2}) *Mar 1 00:05:10.115: cc_api_caps_ind (Playout: mode 1, initial 60,min 40, max
200) *Mar 1 00:05:10.115: cc_api_caps_ack (dstVdbPtr=0x6217C270, dstCallId=0x5, srcCallId=0x6,

caps={codec=0x4, fax_rate=0x2, vad=0x1, modem=0x0 codec_bytes=20, signal_type=2, seq_num_start=9062}) *Mar 1 00:05:10.123: cc_api_caps_ack (dstVdbPtr=0x620BCAF0, dstCallId=0x6, srcCallId=0x5, caps={codec=0x4, fax_rate=0x2, vad=0x1, modem=0x0 codec_bytes=20, signal_type=2, seq_num_start=9062}) *Mar 1 00:05:10.123: cc_api_voice_mode_event , callID=0x5 *Mar 1 00:05:10.123: Call Pointer =620005E8 *Mar 1 00:05:10.123: htsp_process_event: [3/0/0, FXSLS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *Mar 1 00:05:10.123: htsp_process_event: [3/0/0, FXSLS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *Mar 1 00:05:10.123: sess_appl: ev(29=CC_EV_CONF_CREATE_DONE), cid(5), disp(0) *Mar 1 00:05:10.123: cid(5)st(SSA_CS_CONFERENCING_PROGRESS)ev(SSA_EV_CONF_CREATE_DONE) oldst(SSA_CS_CALL_SETTING)cfid(3)csz(0)in(1)fDest(0) *Mar 1 00:05:10.127: - cid2(6)st2(SSA_CS_CONFERENCING_PROGRESS)oldst2(SSA_CS_CALL_SETTING) *Mar 1 00:05:10.127: ssaConfCreateDoneAlert *Mar 1 00:05:10.127: sess_appl: ev(51=CC_EV_VOICE_MODE_DONE), cid(5), disp(0) *Mar 1 00:05:10.127: cid(5)st(SSA_CS_CONFERENCED_ALERT)ev(SSA_EV_VOICE_MODE_DONE) oldst(SSA_CS_CONFERENCING_PROGRESS)cfid(3)csz(0)in(1)fDest(0) *Mar 1 00:05:10.127: - cid2(6)st2(SSA_CS_CONFERENCED_ALERT)oldst2(SSA_CS_CALL_SETTING) *Mar 1 00:05:10.127: ssaIgnore cid(5), st(SSA_CS_CONFERENCED_ALERT),oldst(4), ev(51) *Mar 1 00:05:10.127: sess_appl: ev(51=CC_EV_VOICE_MODE_DONE), cid(5), disp(2) *Mar 1 00:05:10.127: cid(5)st(SSA_CS_CONFERENCED_ALERT)ev(SSA_EV_VOICE_MODE_DONE) oldst(SSA_CS_CONFERENCED_ALERT)cfid(3)csz(0)in(1)fDest(0) *Mar 1 00:05:10.127: - cid2(6)st2(SSA_CS_CONFERENCED_ALERT)oldst2(SSA_CS_CALL_SETTING) *Mar 1 00:05:10.127: ssaIgnore cid(5), st(SSA_CS_CONFERENCED_ALERT),oldst(4), ev(51) *Mar 1 00:05:10.127: cc_process_notify_bridge_done (event=0x6210BDB8) *Mar 1 00:05:10.131: cc_api_caps_ind (dstVdbPtr=0x6217C270, dstCallId=0x5, srcCallId=0x6, caps={codec=0x4, fax_rate=0x2, vad=0x1, modem=0x0 codec_bytes=20, signal_type=2}) *Mar 1 00:05:10.131: cc_api_caps_ind (Playout: mode 1, initial 60,min 40, max 200) *Mar 1 00:05:10.131: cc_api_caps_ack (dstVdbPtr=0x6217C270, dstCallId=0x5, srcCallId=0x6, caps={codec=0x4, fax_rate=0x2, vad=0x1, modem=0x0 codec_bytes=20, signal_type=2, seq_num_start=9063}) *Mar 1 00:05:10.131: cc_api_caps_ind (dstVdbPtr=0x6217C270, dstCallId=0x5, srcCallId=0x6, caps={codec=0x4, fax_rate=0x2, vad=0x1, modem=0x0 codec_bytes=20, signal_type=2}) *Mar 1 00:05:10.131: cc_api_caps_ind (Playout: mode 1, initial 60,min 40, max 200) *Mar 1 00:05:10.131: cc_api_caps_ack (dstVdbPtr=0x6217C270, dstCallId=0x5, srcCallId=0x6, caps={codec=0x4, fax_rate=0x2, vad=0x1, modem=0x0 codec_bytes=20, signal_type=2, seq_num_start=9063}) *Mar 1 00:05:10.135: cc_api_caps_ack (dstVdbPtr=0x620BCAF0, dstCallId=0x6, srcCallId=0x5, caps={codec=0x4, fax_rate=0x2, vad=0x1, modem=0x0 codec_bytes=20, signal_type=2, seq_num_start=9063}) *Mar 1 00:05:10.135: cc_api_voice_mode_event , callID=0x5 *Mar 1 00:05:10.135: Call Pointer =620005E8 *Mar 1 00:05:10.135: **cc_api_caps_ack (dstVdbPtr=0x620BCAF0, dstCallId=0x6, srcCallId=0x5, caps={codec=0x4, fax_rate=0x2, vad=0x1, modem=0x0 codec_bytes=20, signal_type=2, seq_num_start=9063})** *Mar 1 00:05:10.135: cc_api_voice_mode_event , callID=0x5 *Mar 1 00:05:10.135: Call Pointer =620005E8 *Mar 1 00:05:10.135: htsp_process_event: [3/0/0, FXSLS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *Mar 1 00:05:10.135: htsp_process_event: [3/0/0, FXSLS_OFFHOOK, E_HTSP_VOICE_CUT_THROUGH] *Mar 1 00:05:10.135: sess_appl: ev(51=CC_EV_VOICE_MODE_DONE), cid(5), disp(0) *Mar 1 00:05:10.135: cid(5)st(SSA_CS_CONFERENCED_ALERT)ev(SSA_EV_VOICE_MODE_DONE) oldst(SSA_CS_CONFERENCED_ALERT)cfid(3)csz(0)in(1)fDest(0) *Mar 1 00:05:10.135: - cid2(6)st2(SSA_CS_CONFERENCED_ALERT)oldst2(SSA_CS_CALL_SETTING) *Mar 1 00:05:10.135: ssaIgnore cid(5), st(SSA_CS_CONFERENCED_ALERT),oldst(4), ev(51) *Mar 1 00:05:10.135: sess_appl: ev(51=CC_EV_VOICE_MODE_DONE), cid(5), disp(0) *Mar 1 00:05:10.135: cid(5)st(SSA_CS_CONFERENCED_ALERT)ev(SSA_EV_VOICE_MODE_DONE) oldst(SSA_CS_CONFERENCED_ALERT)cfid(3)csz(0)in(1)fDest(0) *Mar 1 00:05:10.139: - cid2(6)st2(SSA_CS_CONFERENCED_ALERT)oldst2(SSA_CS_CALL_SETTING) *Mar 1 00:05:10.139: ssaIgnore cid(5), st(SSA_CS_CONFERENCED_ALERT),oldst(4), ev(51) *Mar 1 00:05:18.303: cc_api_call_connected(vdbPtr=0x620BCAF0, callID=0x6), prog_ind = 2cc_api_call_connected: setting callEntry->connected to TRUE *Mar 1 00:05:18.303: sess_appl: ev(8=CC_EV_CALL_CONNECTED), cid(6), disp(0) *Mar 1 00:05:18.303: cid(6)st(SSA_CS_CONFERENCED_ALERT)ev(SSA_EV_CALL_CONNECTED) oldst(SSA_CS_CALL_SETTING)cfid(3)csz(0)in(0)fDest(0) *Mar 1 00:05:18.307: - cid2(5)st2(SSA_CS_CONFERENCED_ALERT)oldst2(SSA_CS_CONFERENCED_ALERT) *Mar 1 00:05:18.307: ssaConnectAlert *Mar 1 00:05:18.307: ccGetDialpeerTag (callID=0x5) *Mar 1 00:05:18.307: **ccCallConnect (callID=0x5), prog_ind = 2ccCallConnect: setting callEntry->connected to TRUE** *Mar 1 00:05:18.307: ssaFlushPeerTagQueue cid(5) peer list: (empty)htsp_connect: no_offhook 0 *Mar 1 00:05:18.307: htsp_process_event: [3/0/0, FXSLS_OFFHOOK, E_HTSP_CONNECT]fxsls_offhook_connect *Mar 1 00:05:18.307: [3/0/0] set signal state = 0x6 timestamp = 0 *Mar 1 00:05:18.307: dsp_set_sig_state: [3/0/0] packet_len=12 channel_id=128 packet_id=39 state=0x6 timestamp=0x0 *Mar 1 00:05:18.307: dsp_soutput: [3/0/0] SanJose3640A# SanJose3640A# SanJose3640A# SanJose3640A#! call connected SanJose3640A# SanJose3640A# SanJose3640A# SanJose3640A# SanJose3640A#! 1001 disconnecting the call SanJose3640A# SanJose3640A# SanJose3640A#

```
SanJose3640A# SanJose3640A# *Mar 1 00:05:57.019: htsp_dsp_message: SEND/RESP_SIG_STATUS:
state=0x4 timestamp=16952 systime=35702 *Mar 1 00:05:57.019: htsp_process_event: [3/0/0,
FXSLS_CONNECT, E_DSP_SIG_0100]fxspls_offhook_onhook, HF duration=500 *Mar 1 00:05:57.023:
htsp_timer - 500 msec *Mar 1 00:05:57.523: htsp_process_event: [3/0/0, FXSLS_CONNECT,
E_HTSP_EVENT_TIMER]fxspls_connect_wait_release_req *Mar 1 00:05:57.523: htsp_timer_stop *Mar 1
00:05:57.523: cc_api_call_disconnected(vdbPtr=0x6217C270, callID=0x5, cause=0x10) *Mar 1
00:05:57.523: sess_appl: ev(11=CC_EV_CALL_DISCONNECTED), cid(5), disp(0) *Mar 1 00:05:57.523:
cid(5)st(SSA_CS_ACTIVE)ev(SSA_EV_CALL_DISCONNECTED)
oldst(SSA_CS_CONFERENCED_ALERT)cfid(3)csz(0)in(1)fDest(0) *Mar 1 00:05:57.523: -
cid2(6)st2(SSA_CS_ACTIVE)oldst2(SSA_CS_CONFERENCED_ALERT) *Mar 1 00:05:57.523: ssa: Disconnected
cid(5) state(5) cause(0x10) *Mar 1 00:05:57.523: ccConferenceDestroy (confID=0x3, tag=0x0) *Mar
1 00:05:57.523: cc_api_bridge_drop_done (confID=0x3, srcIF=0x620BCAF0, srcCallID=0x6,
dstCallID=0x5, disposition=0 tag=0x0) *Mar 1 00:05:57.523: cc_api_bridge_drop_done (confID=0x3,
srcIF=0x6217C270, srcCallID=0x5, dstCallID=0x6, disposition=0 tag=0x0) *Mar 1 00:05:57.523:
sess_appl: ev(30=CC_EV_CONF_DESTROY_DONE), cid(5), disp(0) *Mar 1 00:05:57.523:
cid(5)st(SSA_CS_CONF_DESTROYING)ev(SSA_EV_CONF_DESTROY_DONE) oldst(SSA_CS_ACTIVE)cfid(-
1)csz(0)in(1)fDest(0) *Mar 1 00:05:57.527: -
cid2(6)st2(SSA_CS_CONF_DESTROYING)oldst2(SSA_CS_CONFERENCED_ALERT) *Mar 1 00:05:57.527:
ssaConfDestroyDone *Mar 1 00:05:57.527: ccCallDisconnect (callID=0x5, cause=0x10 tag=0x0) *Mar 1
00:05:57.527: ccCallDisconnect: existing_cause = 0x0, new_cause = 0x10 *Mar 1 00:05:57.527:
ccCallDisconnect (callID=0x6, cause=0x10 tag=0x0) *Mar 1 00:05:57.527: ccCallDisconnect:
existing_cause = 0x0, new_cause = 0x10htsp_release_req: cause 16, no_onhook 0 *Mar 1
00:05:57.531: htsp_process_event: [3/0/0, FXSLS_WAIT_RELEASE_REQ, E_HTSP_RELEASE_REQ]
fxspls_waitrls_req_rls *Mar 1 00:05:57.531: [3/0/0] set signal state = 0x4 timestamp = 0 *Mar 1
00:05:57.531: dsp_set_sig_state: [3/0/0] packet_len=12 channel_id=128 packet_id=39 state=0x4
timestamp=0x0 *Mar 1 00:05:57.531: dsp_soutput: [3/0/0]htsp_report_onhook_sig *Mar 1
00:05:57.531: cc_api_call_feature: (vdbPtr=0x6217C270, callID=0x5, feature_ind.type=5 *Mar 1
00:05:57.535: cc_api_call_disconnect_done(vdbPtr=0x6217C270, callID=0x5, disp=0, tag=0x0) *Mar 1
00:05:57.535: hdsprm_close_cleanup *Mar 1 00:05:57.535: sess_appl: ev(28=CC_EV_CALL_FEATURE),
cid(5), disp(0) *Mar 1 00:05:57.535: cid(5)st(SSA_CS_DISCONNECTING)ev(SSA_EV_CALL_FEATURE)
oldst(SSA_CS_CONF_DESTROYING)cfid(-1)csz(0)in(1)fDest(0) *Mar 1 00:05:57.535: -
cid2(6)st2(SSA_CS_DISCONNECTING)oldst2(SSA_CS_CONFERENCED_ALERT) *Mar 1 00:05:57.535: ssaIgnore
cid(5), st(SSA_CS_DISCONNECTING),oldst(7), ev(28) *Mar 1 00:05:57.539: sess_appl:
ev(12=CC_EV_CALL_DISCONNECT_DONE), cid(5), disp(0) *Mar 1 00:05:57.539:
cid(5)st(SSA_CS_DISCONNECTING)ev(SSA_EV_CALL_DISCONNECT_DONE) oldst(SSA_CS_DISCONNECTING)cfid(-
1)csz(0)in(1)fDest(0) *Mar 1 00:05:57.539: -
cid2(6)st2(SSA_CS_DISCONNECTING)oldst2(SSA_CS_CONFERENCED_ALERT) *Mar 1 00:05:57.539:
ssaDisconnectDone *Mar 1 00:05:57.543: cc_api_icpif: expect factor = 0 *Mar 1 00:05:57.543:
g113_calculate_impairment (delay=101,loss=0), Io=0 Iq=0 Idte=0 Idd=0 Ie=9 Itot=9 *Mar 1
00:05:57.543: cc_api_call_disconnect_done(vdbPtr=0x620BCAF0, callID=0x6, disp=0, tag=0x0) *Mar 1
00:05:57.547: sess_appl: ev(12=CC_EV_CALL_DISCONNECT_DONE), cid(6), disp(0) *Mar 1 00:05:57.547:
cid(6)st(SSA_CS_DISCONNECTING)ev(SSA_EV_CALL_DISCONNECT_DONE)
oldst(SSA_CS_CONFERENCED_ALERT)cfid(-1)csz(1)in(0)fDest(0) *Mar 1 00:05:57.547:
ssaDisconnectDone SanJose3640A# SanJose3640A#
```

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