Syslog Analysis

AudioCodes Academy

https://www.audiocodes.com/services-support/audiocodes-academy

Lesson objectives

After completing this lesson you will be able to:

- Interpret information collected using the ACsyslog tool

What is Syslog?

- Syslog is a standard for collecting **log messages** within an IP network.
- A Syslog server can be used to **remotely record** log information.
  - Sent to a central server using UDP port 514
  - Ensure this port is open in your firewall if central server is outside the local network
- Syslog information that is sent by the gateway is a collection of error, warning, and system messages that can record almost every internal operation of the gateway.
  - Syslog protocol defined in the IETF RFC 3164

Collecting Data

- When reporting a problem to AudioCodes support, the following information should be provided:
  - **Network setup** (such as network diagram, call direction)
  - **Board.ini file** (renamed appropriately for your site)
  - **Unfiltered Syslog trace** (ACsyslog best tool to use with AudioCodes products)
  - **Unfiltered WireShark files**
  - **Advanced Debug Recordings (per AudioCodes request):**
    - Examples:
      - PSTN signaling problems
      - Problems related to voice quality, modem, fax, DTMF detection

Collecting INI file – Web interface

To save the .ini file:

1. Open the 'Configuration File' page (Management tab > Software Update menu > Configuration File).
2. To save the ini file to a folder on your PC:
   a. Click the **Save INI File** button; the 'File Download' dialog box appears.
   b. Click the **Save** button, navigate to the folder in which you want to save the ini file on your PC, and then click **Save**; the device copies the ini file to the selected folder.

Syslog Servers

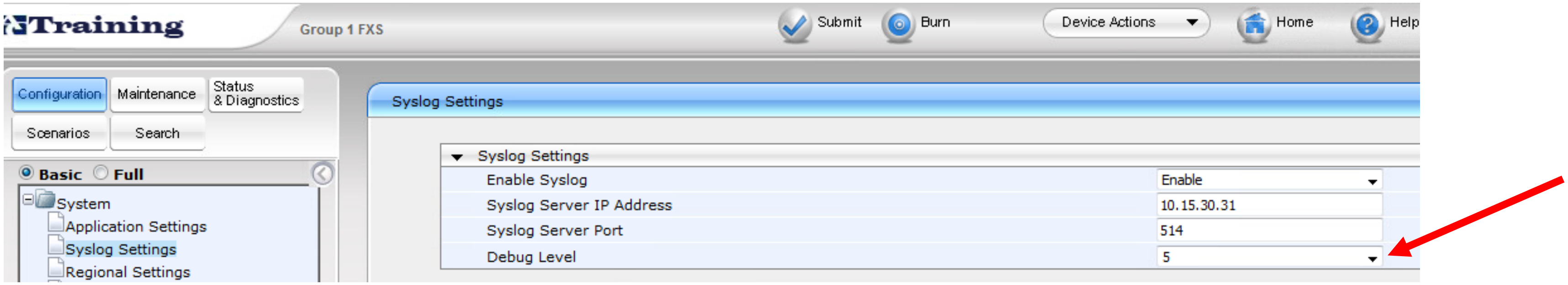
You can use the supplied proprietary Syslog server ACSyslog or any other third-party Syslog server for receiving Syslog messages.

- A typical Syslog server application enables filtering of messages according to:
  - Priority
  - IP sender address
  - Time
  - Date

Log Verbosity Levels – MediaPack 11X, 124

- 0 = Disabled (default)
- 1 = Flow
- 5 = Flow, device interface, stack interface, session manager and expanded device interface
- 7 = automatically changes between level 5, level 1 and level 0, depending on the device CPU consumption

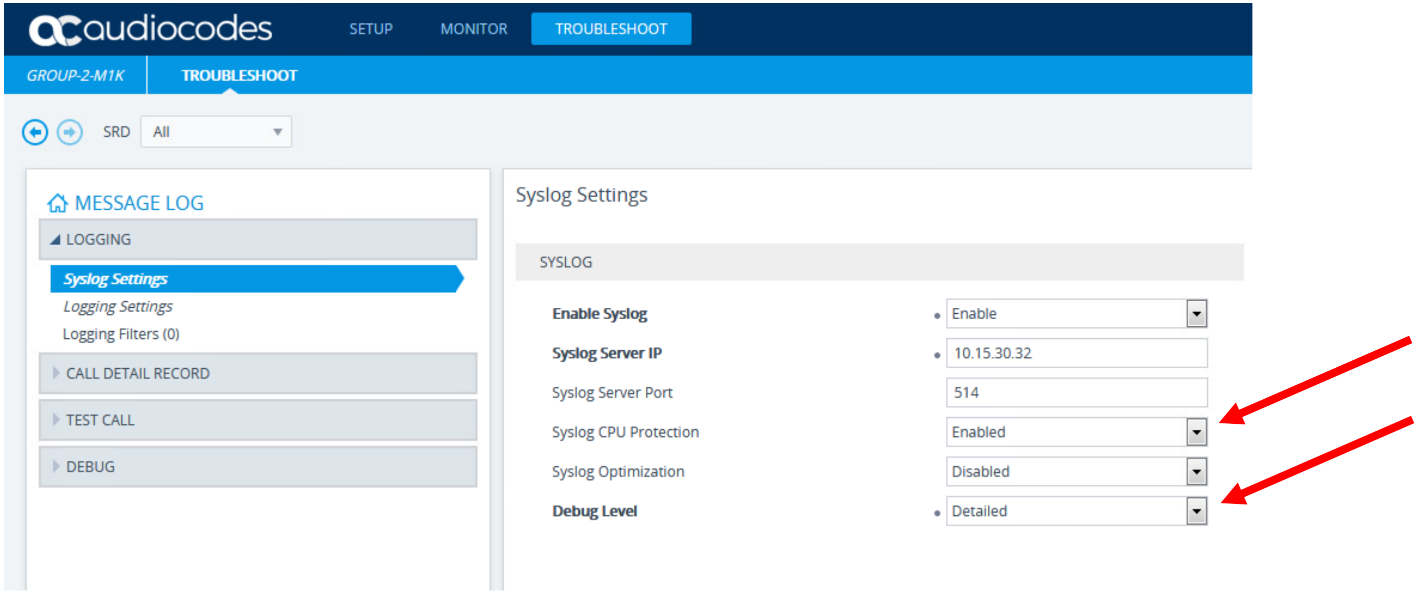
Note: AudioCodes support REQUIRES level 5 logs be captured for support requests



Log Verbosity Levels – Mediants/MP-1288 Pre 7.2.250

- NoDebug = Disabled (default)
- Basic = Flow
- Detailed = Flow, device interface, stack interface, session manager and expanded device interface
- Syslog CPU Protection - Enabled = automatically changes between level 5, level 1 and level 0, depending on the device CPU consumption

Note: AudioCodes support REQUIRES Detailed logs be captured for support requests

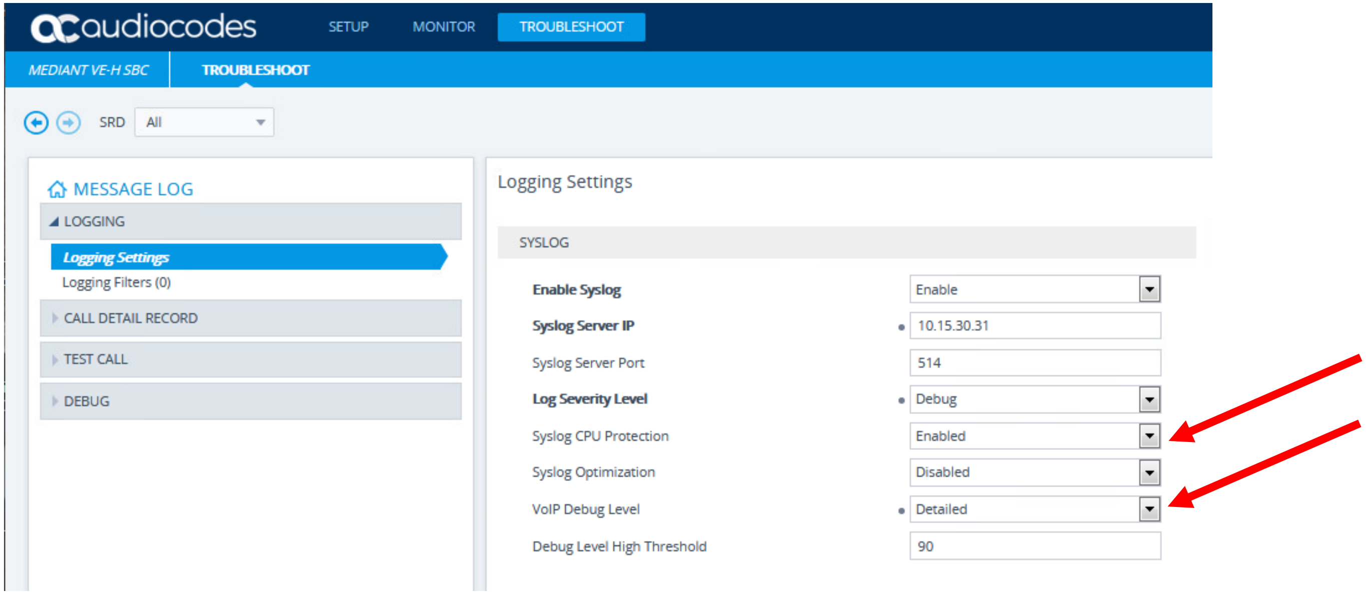


Log Verbosity Levels – Mediants/MP-1288

VoIP Debug Level replaces Debug Level for Syslogs

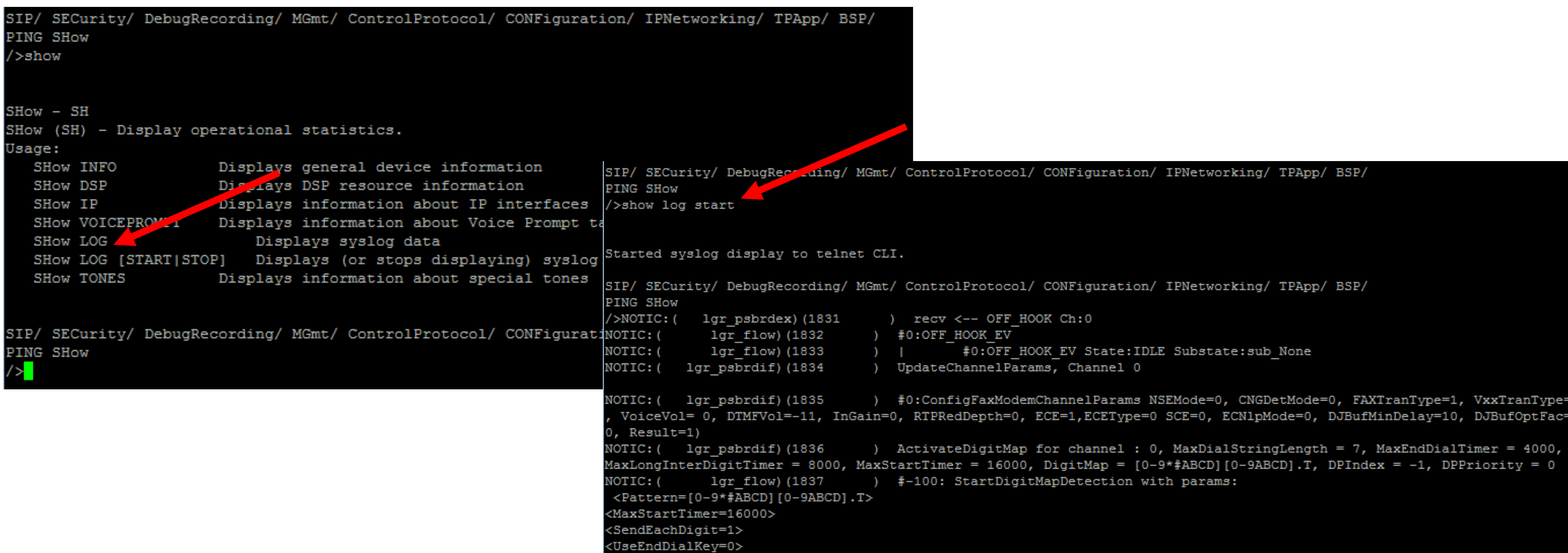
- NoDebug = Disabled (default)
- Basic = Flow
- Detailed = Flow, device interface, stack interface, session manager and expanded device interface
- Syslog CPU Protection - Enabled = automatically changes between level 5, level 1 and level 0, depending on the device CPU consumption

Note: AudioCodes support REQUIRES Detailed logs be captured for support requests



Online Syslogs via RS-232 and Telnet via CMD SHELL

- Once syslog is enabled, the logs are visible in both the console and telnet sessions
- Enable SSH or telnet on the gateway and log in using Putty or similar tool
- The commands to start and stop collecting logs are:
  - show log start
  - show log stop
- Log the session to a text file to capture the full trace on your local PC



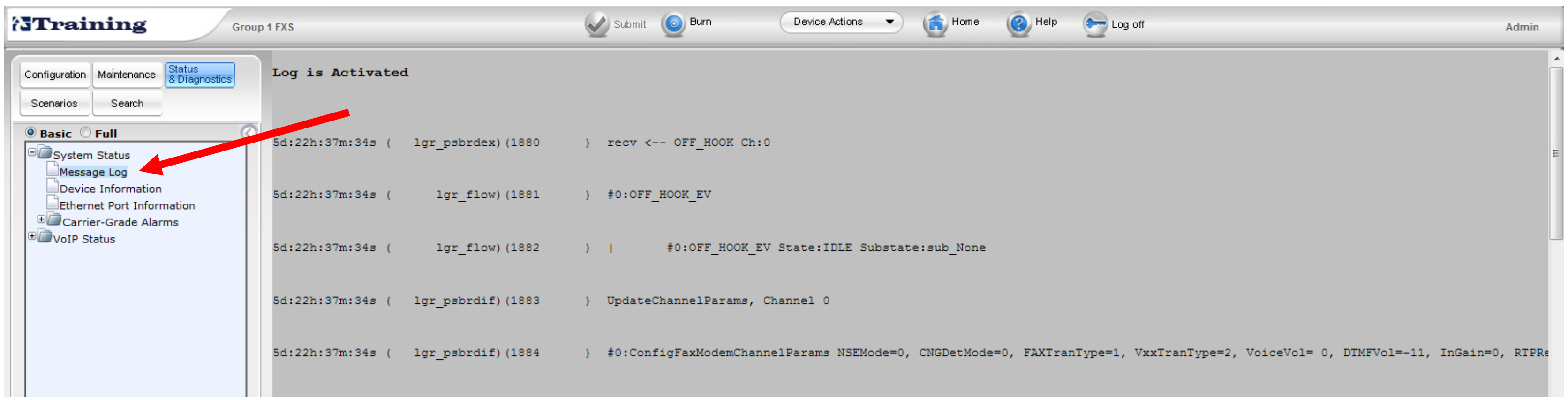
Online Syslogs via RS-232 and Telnet via CLI

- Once syslog is enabled, the logs are visible in both the console and telnet sessions
- Enable SSH or telnet on the gateway and log in using Putty or similar tool
- The commands to start collecting logs is:
  - debug log
  - debug log full
- Log the session to a text file to capture the full trace on your local PC

```
Group 1 FXS# debug log full
Logging started

Group 1 FXS# Jul 12 17:30:40  Restart Request Trunk 0 [Time:12-07@17:30:39.968]
Jul 12 17:30:40  Bch:-1 [Time:12-07@17:30:39.968]
Jul 12 17:30:40  LOCAL_RESTART_CONFIRM_EV on trunk:0 BChannel:-1 [Time:12-07@17:30:39.977]
Jul 12 17:30:41  RAISE-ALARM:acBoardEthernetLinkAlarm: Ethernet link alarm. LAN port number 1 is down.; Severity:minor;
Source:Board#1/EthernetLink#1; Unique ID:3; Additional Info1:GigabitEthernet 0/1;  [Time:12-07@17:30:40.459]
Jul 12 17:30:41  RAISE-ALARM:acBoardEthernetLinkAlarm: Ethernet link alarm. LAN port number 3 is down.; Severity:minor;
Source:Board#1/EthernetLink#3; Unique ID:4; Additional Info1:GigabitEthernet 0/3;  [Time:12-07@17:30:40.459]
Jul 12 17:30:41  RAISE-ALARM:acBoardEthernetLinkAlarm: Ethernet link alarm. LAN port number 4 is down.; Severity:minor;
Source:Board#1/EthernetLink#4; Unique ID:5;  [Time:12-07@17:30:40.460]
Jul 12 17:30:41  RAISE-ALARM:acBoardEthernetLinkAlarm: Ethernet link alarm. LAN port number 5 is down.; Severity:minor;
Source:Board#1/EthernetLink#5; Unique ID:6;  [Time:12-07@17:30:40.460]
Jul 12 17:30:41  RAISE-ALARM:acBoardEthernetLinkAlarm: Ethernet link alarm. LAN port number 6 is down.; Severity:minor;
Source:Board#1/EthernetLink#6; Unique ID:7;  [Time:12-07@17:30:40.461]
Jul 12 17:30:42  TRUNK_RESTART_COMPLETE on trunk:0 BChannel:-1 Operation:3 [Time:12-07@17:30:41.977]
Jul 12 17:30:42  Trunk:0 Notify channels for in service. [Time:12-07@17:30:41.977]
Jul 12 17:48:11  recv <-- OFF_HOOK Ch:0 [Time:12-07@17:48:11.023]
Jul 12 17:48:11  #0:OFF_HOOK_EV [Time:12-07@17:48:11.024]
Jul 12 17:48:11  #0:OFF_HOOK_EV State:IDLE Substate:sub_None [Time:12-07@17:48:11.024]
Jul 12 17:48:11  UpdateChannelParams, Channel 0
                 [Time:12-07@17:48:11.025]
Jul 12 17:48:11  #0:ConfigFaxModemChannelParams NSEMode=0, CNGDetMode=0, FAXTranType=1, VxxTranType=2, VoiceVol= 0, DTMF
```

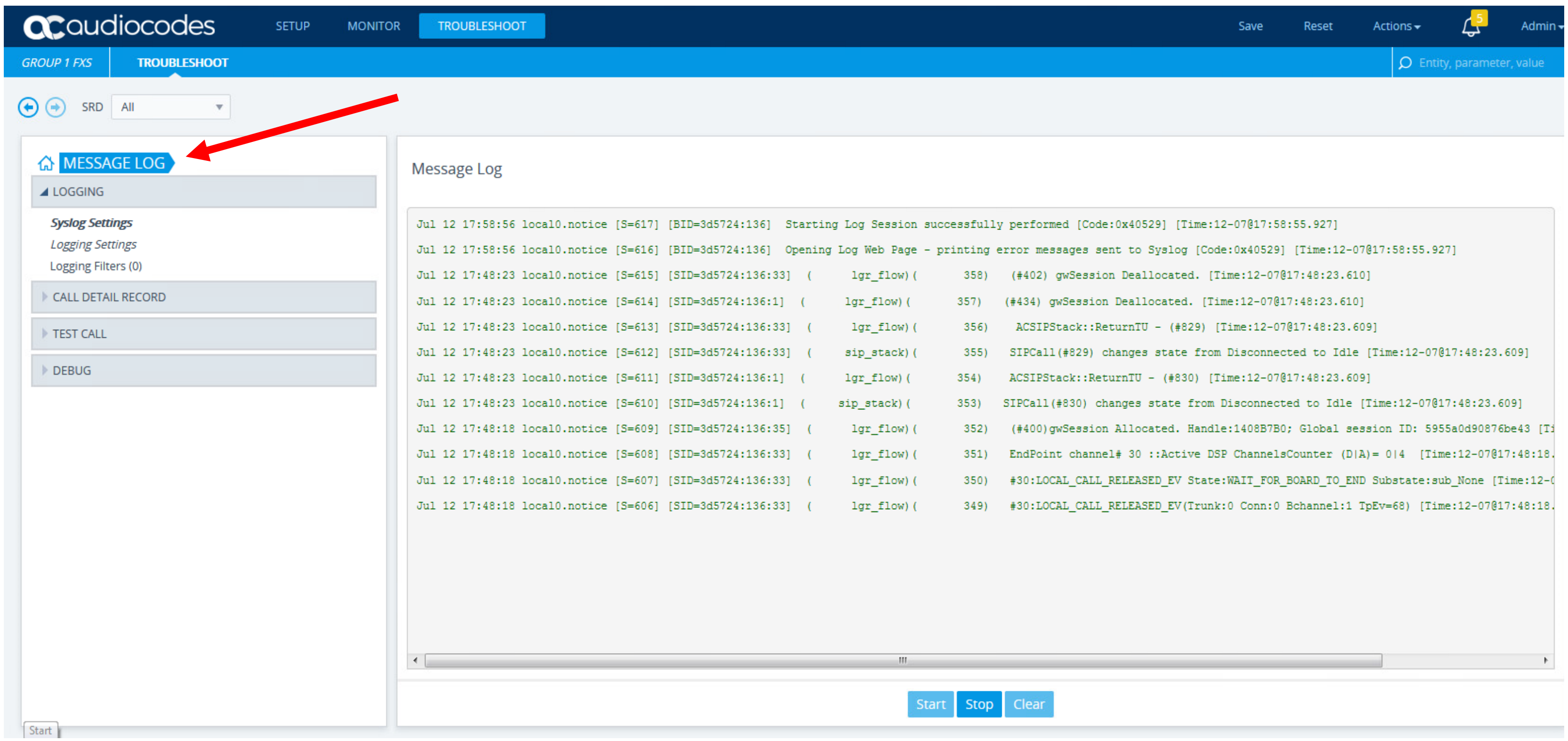
Online Syslogs via Web Browser Message Log MP 11X MP 124

- Once syslog is enabled, the logs are visible in both the console and telnet sessions
- Access **Status & Diagnostics** -> **System Status** -> **Message Log**
  - **Logs temporarily stored in PC/Macs RAM**



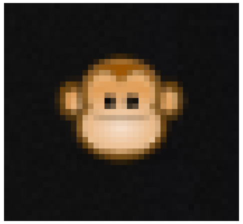
Online Syslogs via Web Browser Message Log Mediants MP-1288

- Once syslog is enabled, the logs are visible in both the console and telnet sessions
- Access **Troubleshoot -> Troubleshoot -> MESSAGE LOG**
  - **Logs temporarily stored in PC/Macs RAM**
  - **Start/Stop/Clear used to prevent syslogs from eating all of the PC/Macs RAM**



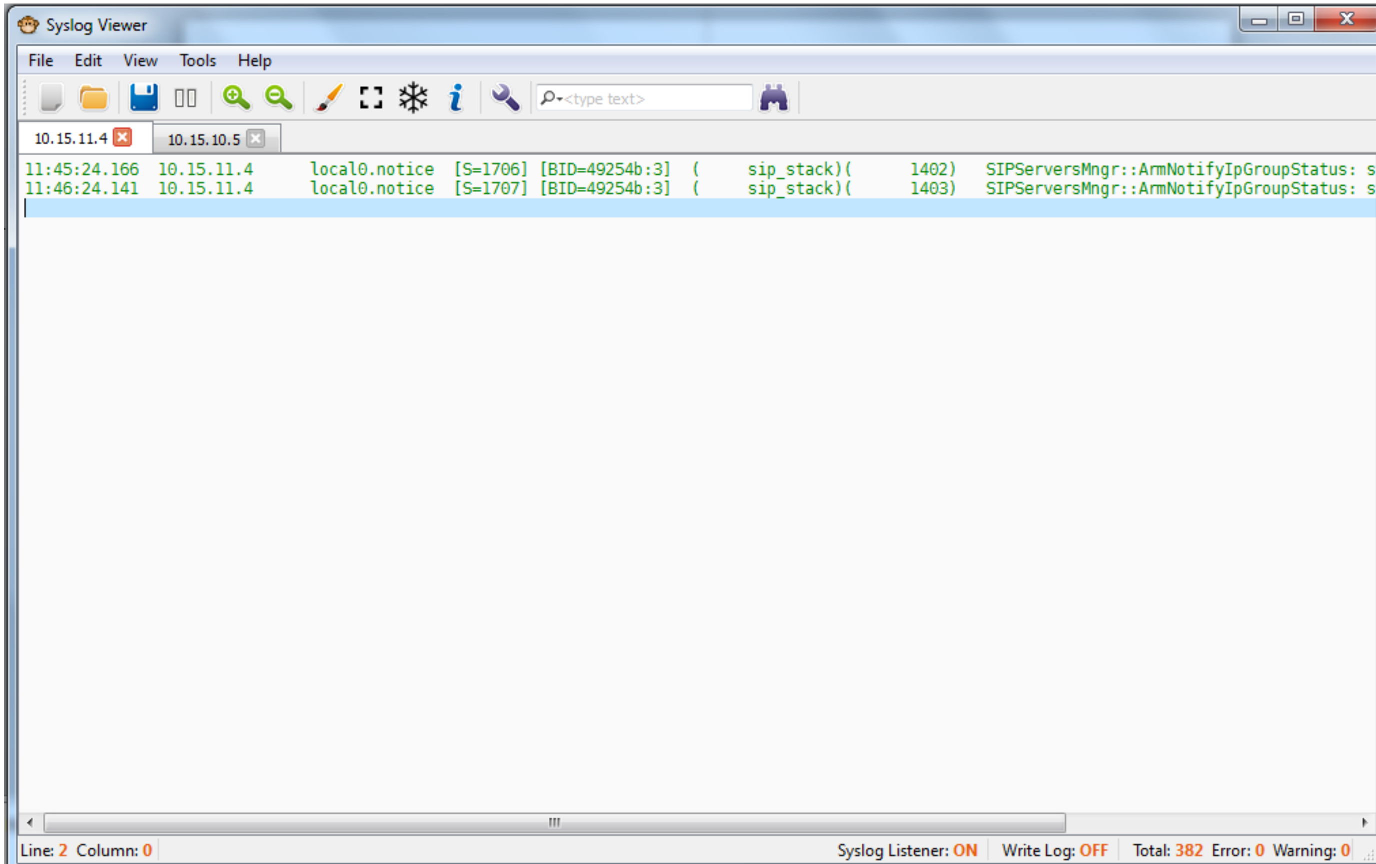
ACSyslog

- ACSyslog is a free utility to capture AudioCodes Syslogs
- Installation required
- Requests updates when started each time
- Use on as many workstations as you want
- Contains many options and configuration parameters making it a robust tool for capturing debug logs

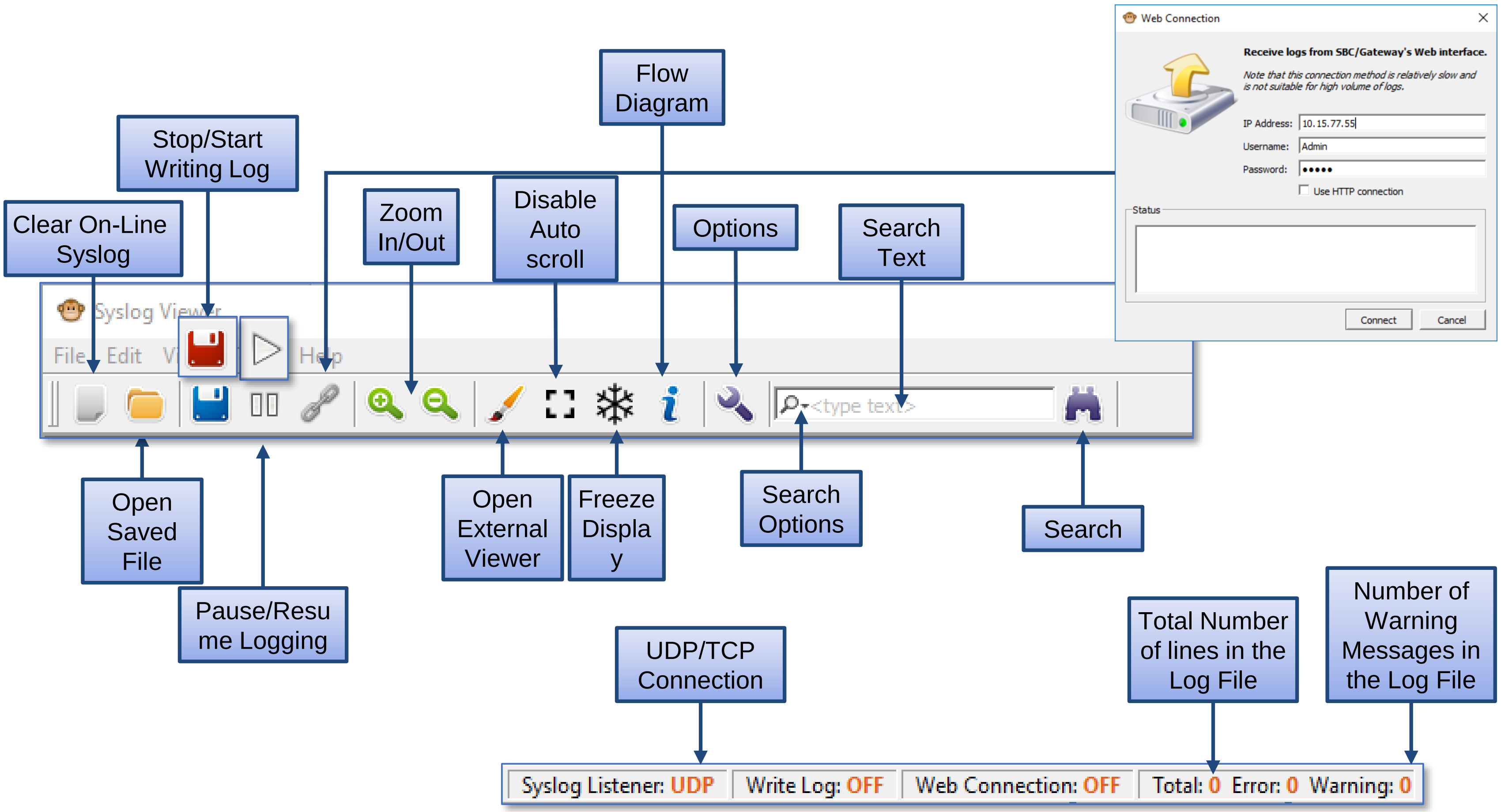


AudioCodes Syslog Viewer

- A newer Syslog application provided with the student utilities kit

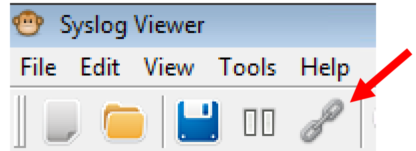


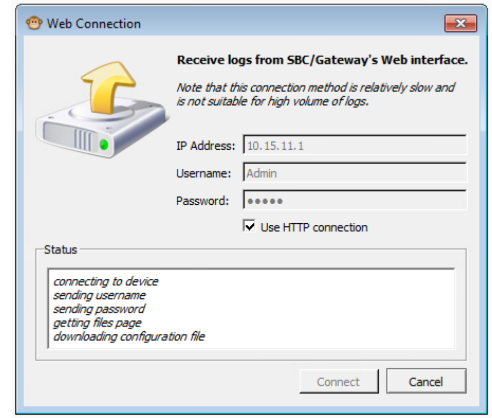
AudioCodes Syslog Viewer

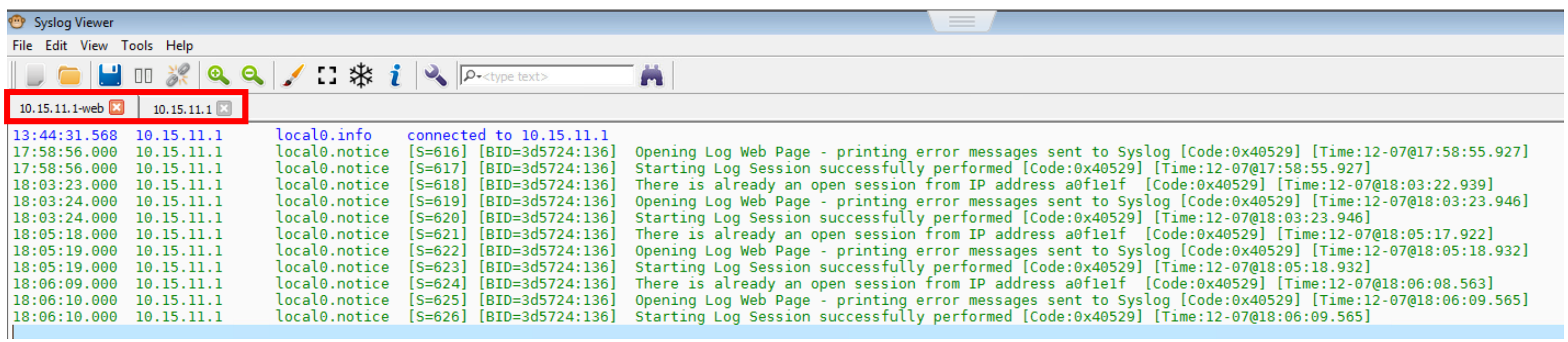


AudioCodes Syslog Viewer – connect from PC to GW/SBC using Web Connection

- Connecting from ACSyslog to PC
  - Click **Connect to** link
  - Input IP address, Username and Password of SBC/GW
  - Logs recorded by Web Connection appear with **–web** in the display tab (Only 1 web connection can be monitored)
  - ACSyslog connected to Specific SBC/GW shown in lower right corner

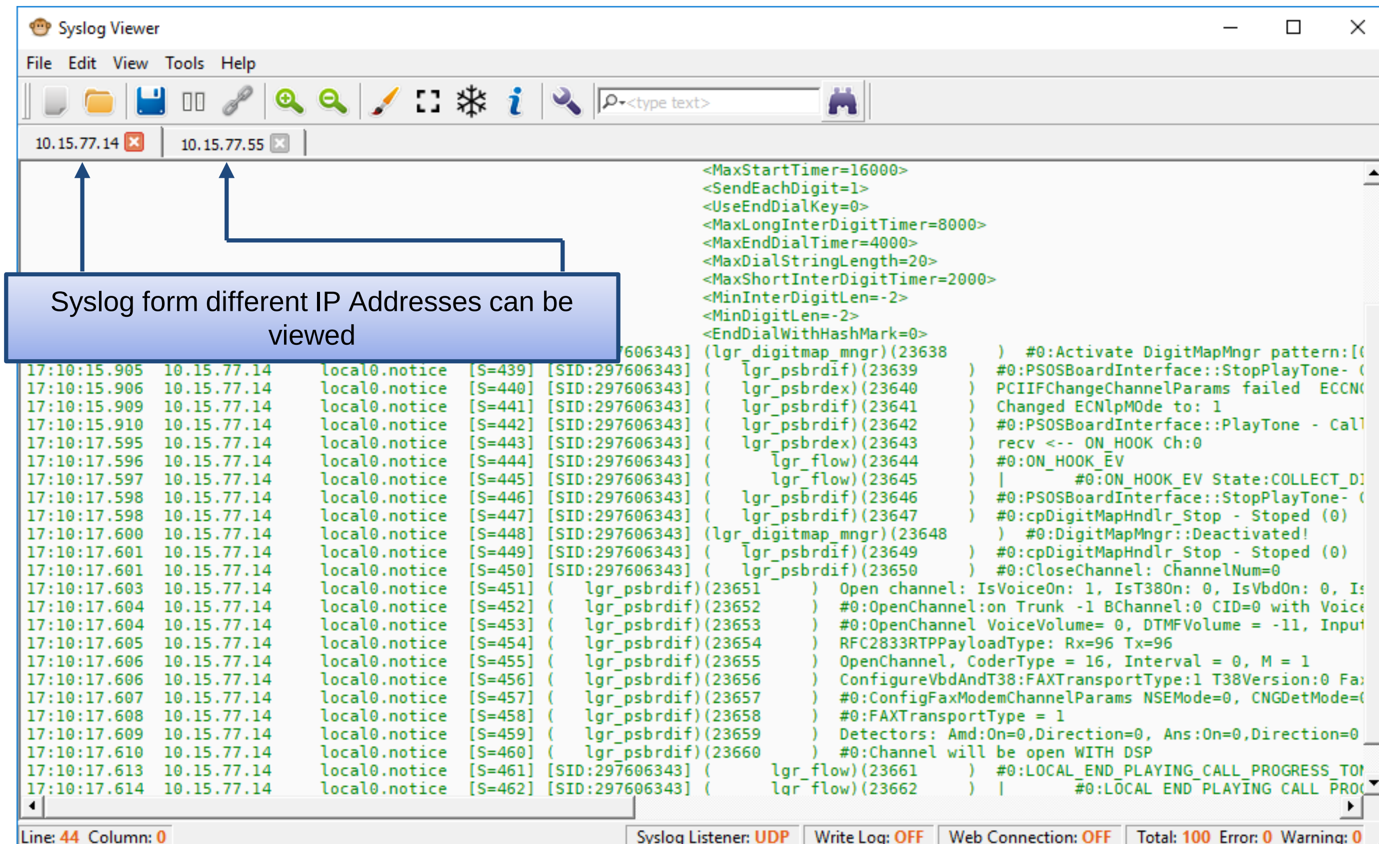






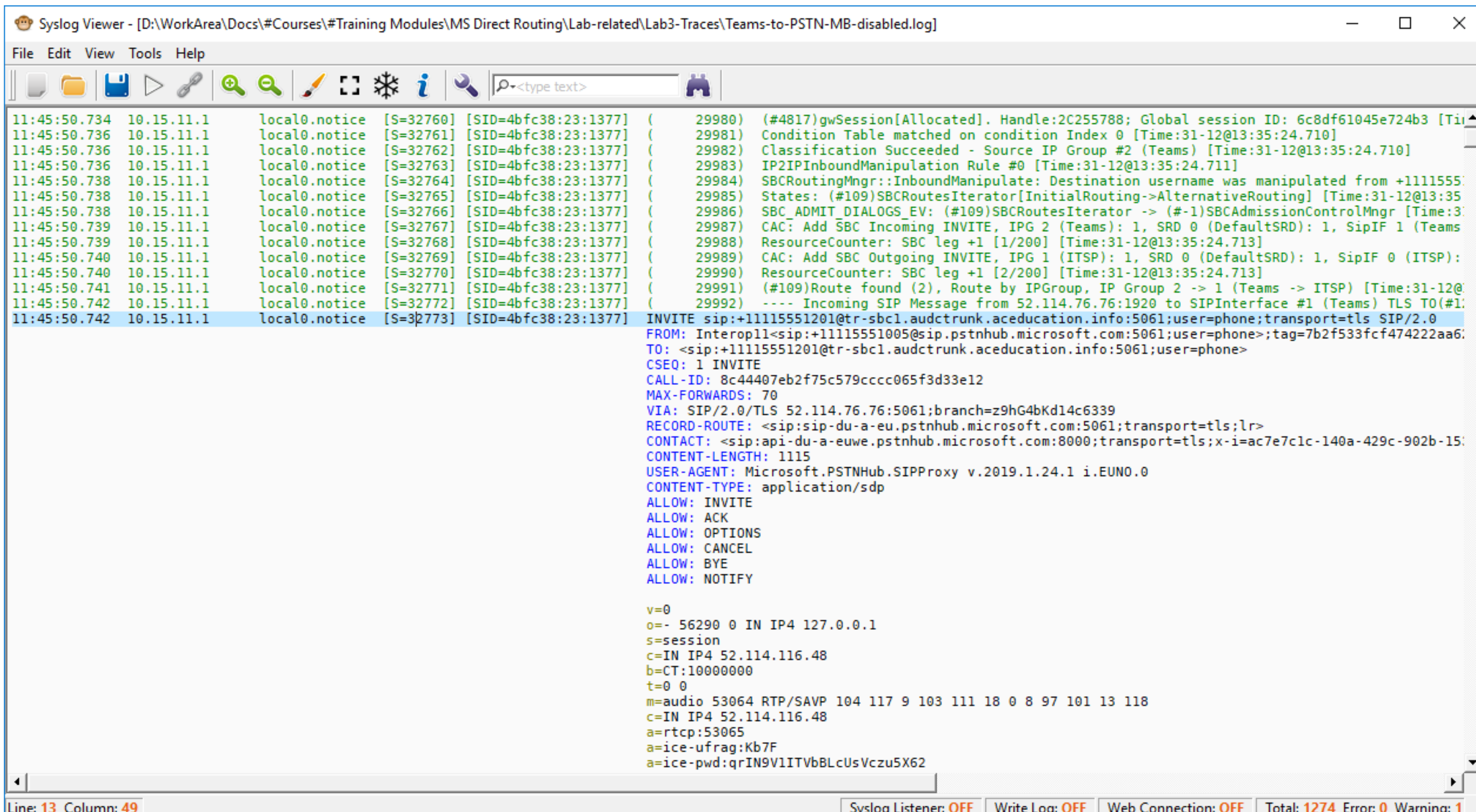
AudioCodes Syslog Viewer

- Syslog can be enabled simultaneously in several devices, reporting to the same Syslog Server



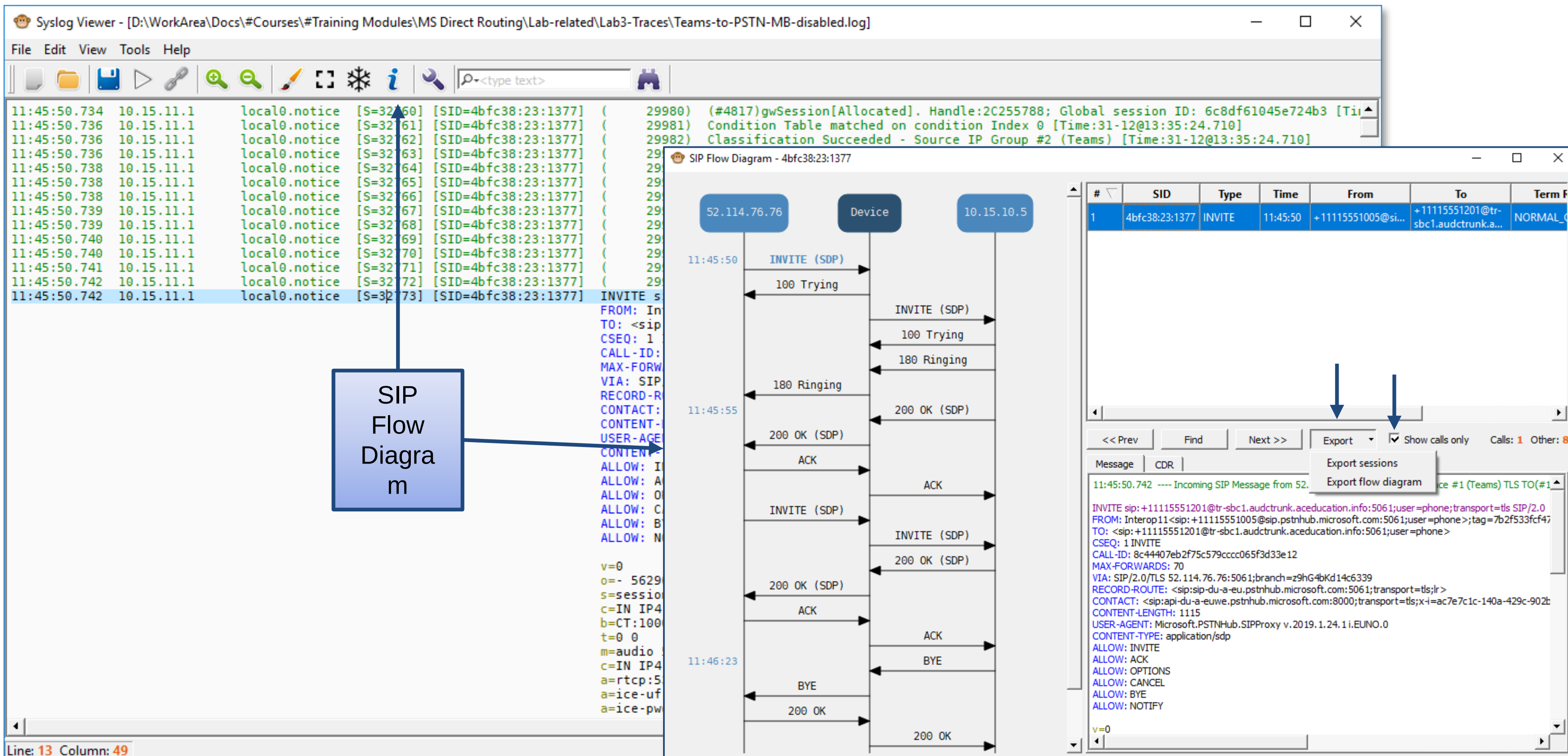
AudioCodes Syslog Viewer

- SIP/SDP messages are properly arranged to be easily identified for analysis



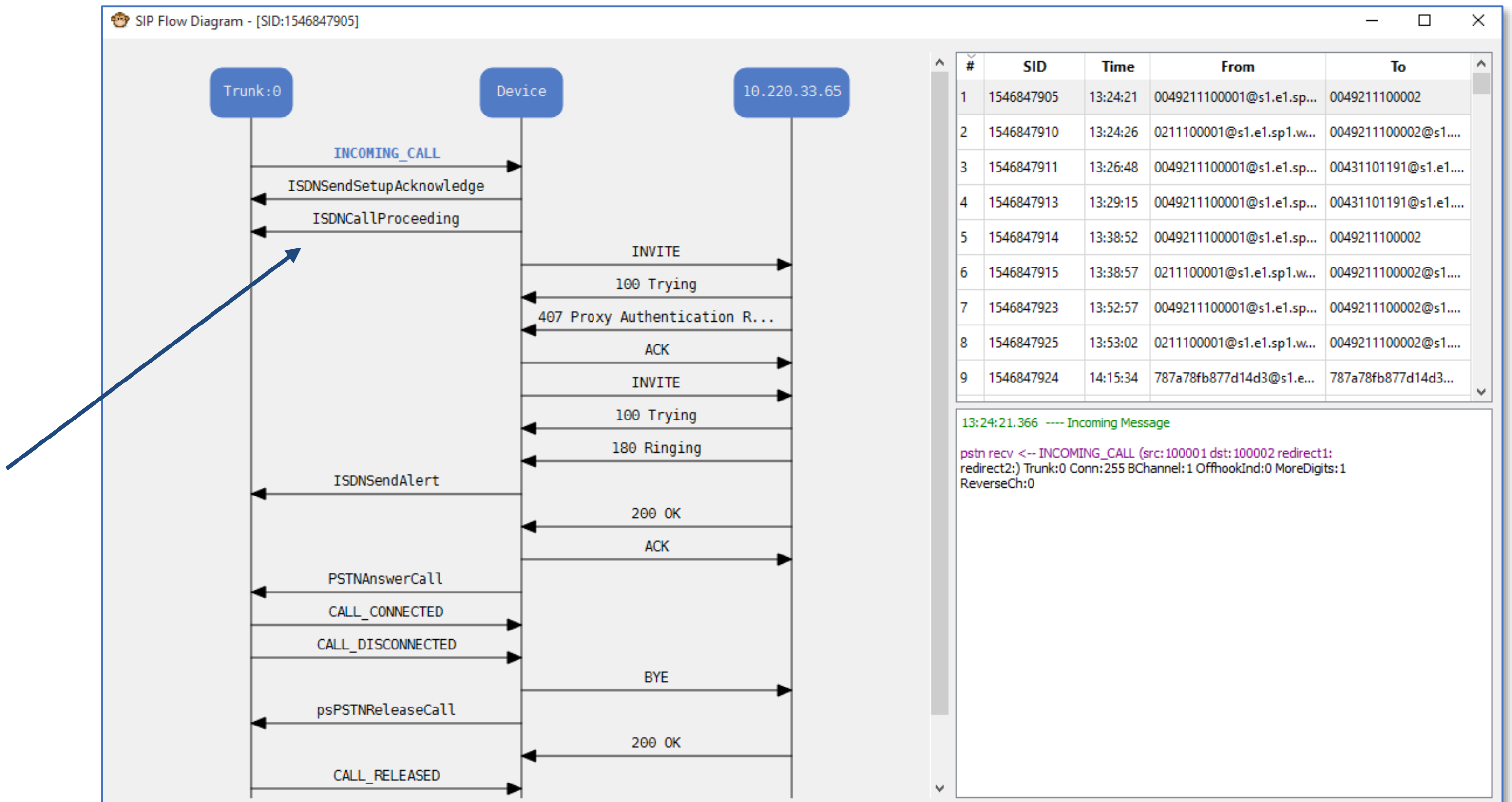
AudioCodes Syslog Viewer

- The SIP/SDP flow diagram can be viewed and exported



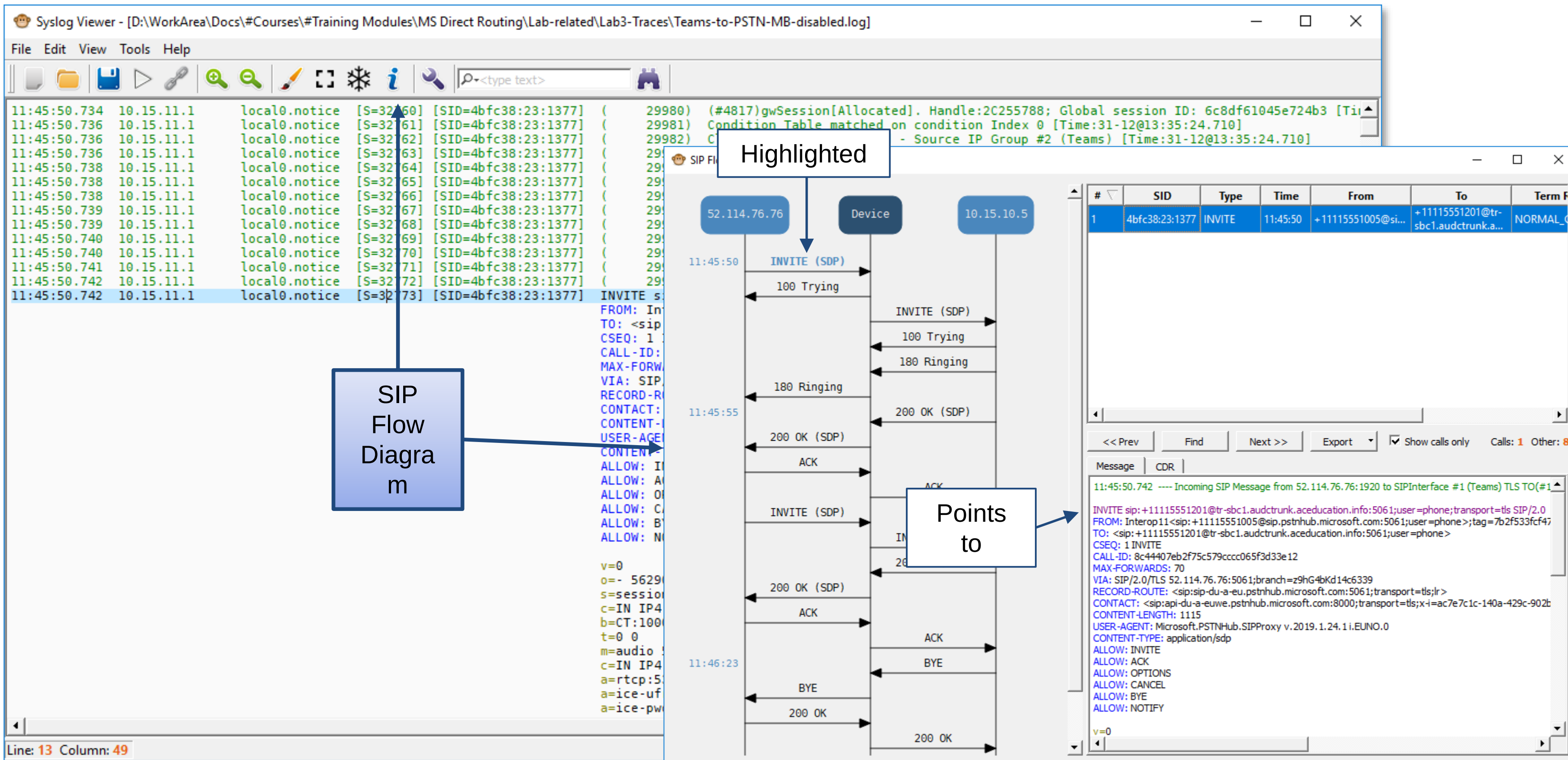
AudioCodes Syslog Viewer

- The SIP/SDP <-> ISDN flow diagram can be viewed



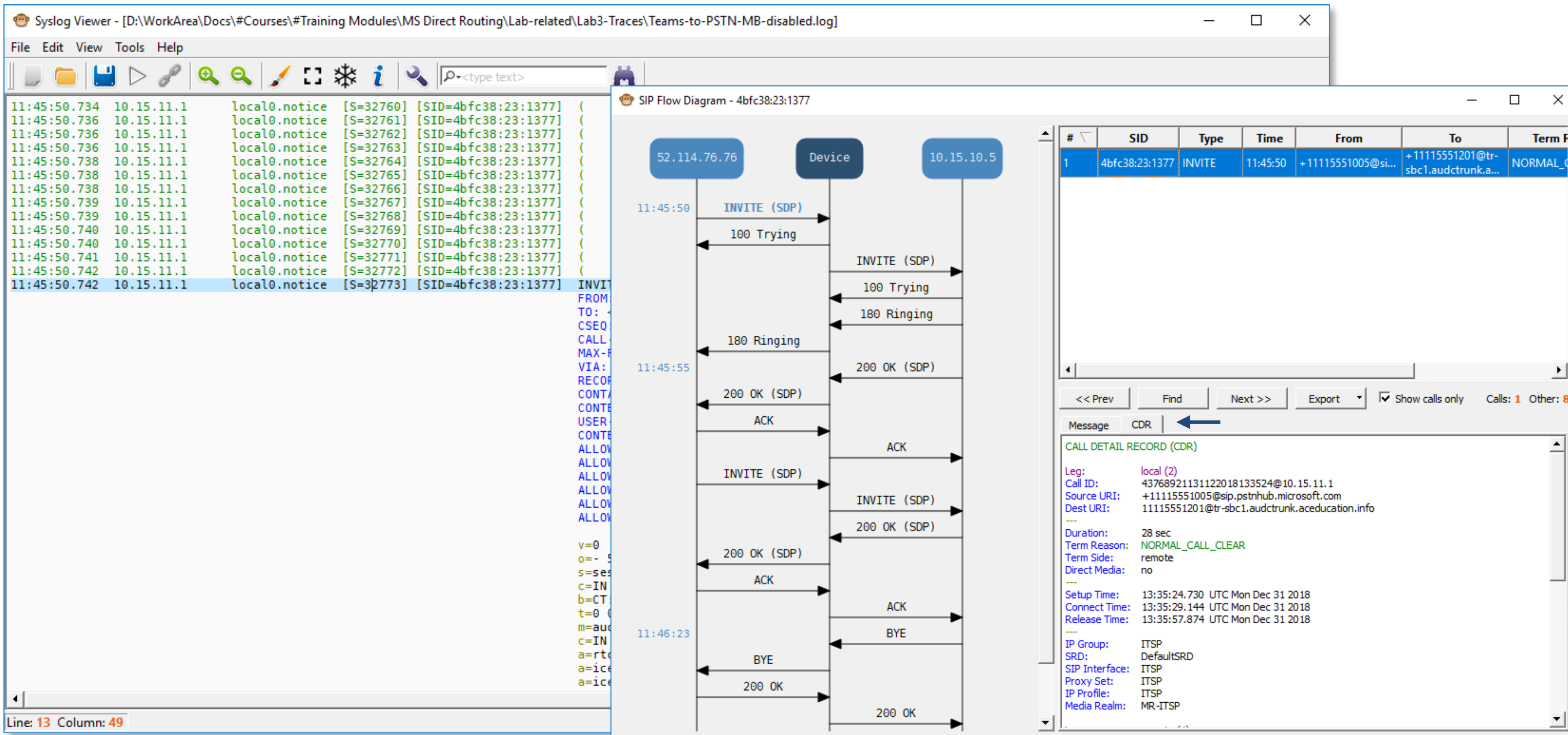
AudioCodes Syslog Viewer

- Each arrow on the SIP/SDP flow diagram points to the right place in the trace



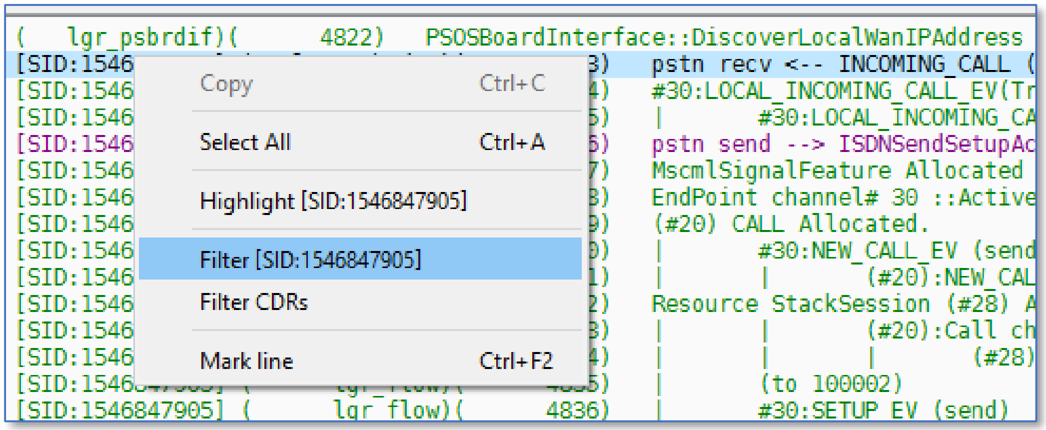
AudioCodes Syslog Viewer

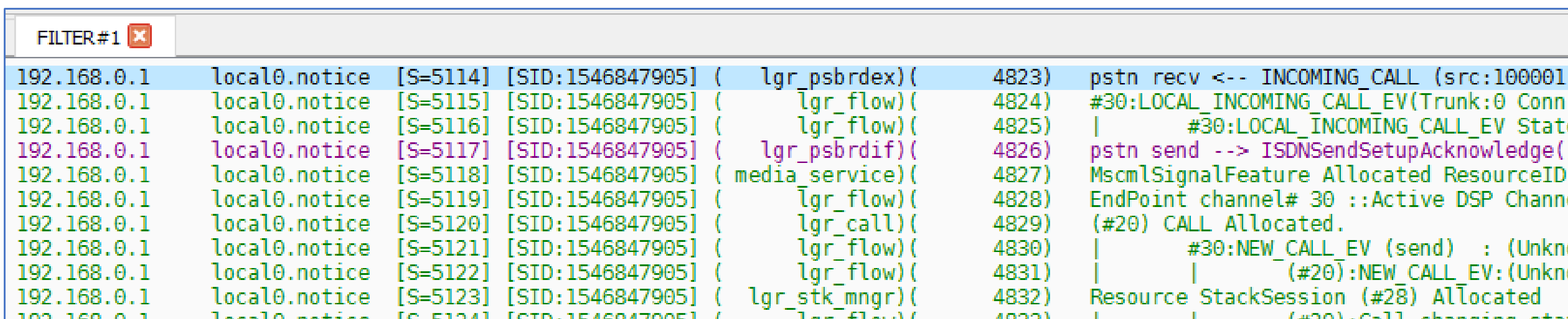
- CDR info



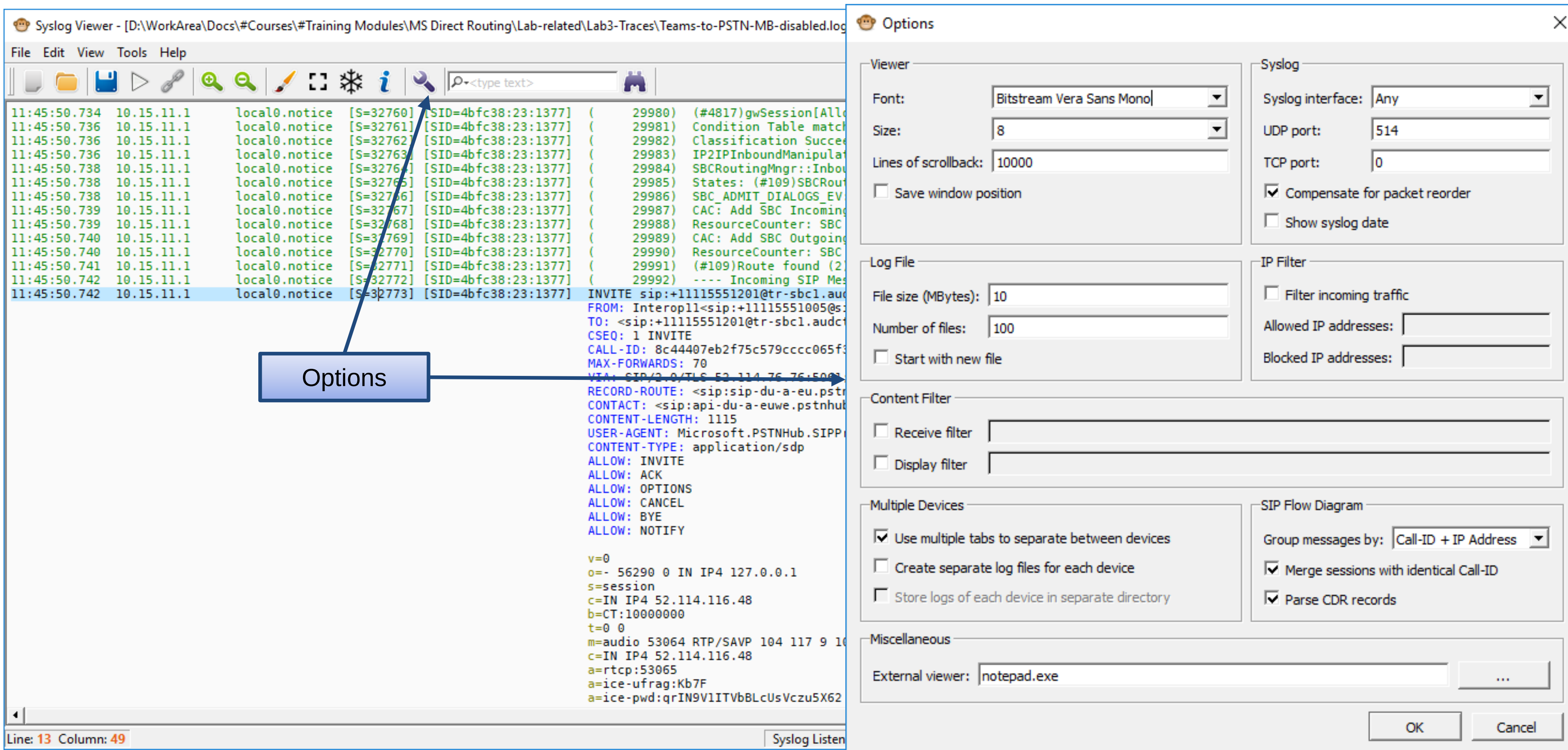
AudioCodes Syslog Viewer

- Extracting Single Call





AudioCodes Syslog Viewer



Syslog – Indentation for legacy MPs (6.6)

Three Objects:

Endpoint------------------Call---------------- Session

Leftmost – Physical Endpoint

First Tab – Board Endpoint (EP)

Second Tab - Call

Third tab - Session

Rightmost - IP

```
(      lgr_call)(7835      )  (#3) CALL Allocated.
(      lgr_flow)(7836      )  |       #0:NEW_CALL_EV (send)   : (Unknown)
(      lgr_flow)(7837      )  |       |       #3:NEW_CALL_EV:(Unknown)
(  lgr_stk_mngr)(7838      )  Resource StackSession <#3> Allocated
(      lgr_flow)(7839      )  |       |       #3:Call changing states from:IdleState to:NewCallState_Tel2IP
(      lgr_flow)(7840      )  |       |       |       (#3)SIPStackSession <- (#0)ENDPOINT: NEW_CALL_EV (Unknown)
(      lgr_call)(7841      )  |       |       #3GetNextUI:GlobalUI=67801172, mACAddrLsb=4119367
(      lgr_call)(7842      )  |       |       #3GetNextUI:GlobalUI=67801173
(      lgr_flow)(7843      )  |       (to 1101)
(      lgr_flow)(7844      )  |       #0:SETUP_EV (send)   : (Unknown)
(      lgr_flow)(7845      )  |       |       #3:SETUP (TO:1101, FROM:1103):(Unknown)
(      lgr_call)(7846      )  new call from EndPoint
(      lgr_flow)(7847      )  |       |       #3:Call changing states from:NewCallState_Tel2IP to:InitiatedState_Tel2IP
(      lgr_flow)(7848      )  |       |       |       (#3)SIPStackSession <- (#0)ENDPOINT: SETUP_EV (Unknown)
(      lgr_call)(7849      )  Call::GetStartIndex() return -1
```

The Objects for legacy MPs (6.6)

- EndPoint
  - The logical representation of a channel. Channels may come in various types (analog, digital, conference, bct)
  - The main functionality of EndPoint is to map global application events into the specific channel logic
- Call
  - The connecting entity between EndPoint and Session
  - The call establishes synchronization between the two legs
- StackSession
  - The entity which maps application events into the specific Stack (SIP) logic
  - The StackSession basically represents the connection point to the IP leg

```
(       lgr_call)(7835       )  (#3) CALL Allocated.
(       lgr_flow)(7836       )  |       #0:NEW_CALL_EV (send)   : (Unknown)
(       lgr_flow)(7837       )  |       |       #3:NEW_CALL_EV:(Unknown)
(   lgr_stk_mngr)(7838       )  Resource StackSession <#3> Allocated
(       lgr_flow)(7839       )  |       |       #3:Call changing states from:IdleState to:NewCallState_Tel2IP
(       lgr_flow)(7840       )  |       |       |       (#3)SIPStackSession <- (#0)ENDPOINT: NEW_CALL_EV (Unknown)
(       lgr_call)(7841       )  |       |       #3GetNextUI:GlobalUI=67801172, mACAddrLsb=4119367
(       lgr_call)(7842       )  |       |       #3GetNextUI:GlobalUI=67801173
(       lgr_flow)(7843       )  |       (to 1101)
(       lgr_flow)(7844       )  |       #0:SETUP_EV (send)   : (Unknown)
(       lgr_flow)(7845       )  |       |       #3:SETUP (TO:1101, FROM:1103):(Unknown)
(       lgr_call)(7846       )  new call from EndPoint
(       lgr_flow)(7847       )  |       |       #3:Call changing states from:NewCallState_Tel2IP to:InitiatedState_Tel2IP
(       lgr_flow)(7848       )  |       |       |       (#3)SIPStackSession <- (#0)ENDPOINT: SETUP_EV (Unknown)
(       lgr_call)(7849       )  Call::GetStartIndex() return -1
```

Notes on Log Objects for legacy MPs (6.6)

- Log tabs are denoted by pipe sign (“|”)
- Each object is prefixed with a pound sign (“#”)
- Board/EP objects are tied to a specific numbering scheme based on the hardware type
  - MP-11x
    - #0 represents physical FXO/FXS port 1
  - Mediant 2000, 3000, 5000
    - #0 represents physical B-channel 1 on trunk 1
  - Mediant 1000
    - Physical Analog ports begin at #0 (range 0-23)

```
(    lgr_psbrdex)(          69)    recv <-- OFF_HOOK Ch:0
(        lgr_flow)(          70)    #0:OFF_HOOK_EV [Time:09
```

    - Physical Digital ports begin at #30 (range 30-125)

```
(    lgr_psbrdex)(      5724)    pstn recv <-- CALL_PROCEEDING Trunk:0 Conn:0 BChannel:6  callhndl:0 Loc:-1 Des:-1 Cmt:67
(        lgr_flow)(      5725)    #35:LOCAL_CALL_PROCEEDING_EV(Trunk:0 Conn:0 Bchannel:6 TpEv=73) [Time:11-07@10:09:48.699]
```

- Call/Session objects are not directly related to any specific port or component in the gateway, but do increment logically

What do all the tabs mean? (for legacy MPs (6.6))

- Call is established by allocating a resource from each object pool on the gateway
  - For IP → Tel calls the rightmost object is created first
  - For Tel → IP calls the leftmost object is created first
- Each object layer invokes an object from the ‘next’ logical layer
  - Board/EP object -→ Call Object -→ Session Object → IP
- Transition from one object to another represents a passing of messages, states, and information from one side of the gateway to the other (PSTN → IP / IP → PSTN)

GWApp Events

- Mechanism by which the different parts of the application interact
- Some parts of the application interact internally with events which are mapped into the application main events before passed to other parts of the application
  - For example: SIP_ACK_EV is a SIP stack internal event which is mapped to the application CONNECT_ACK_EV
- Not all events can be handled by all of the application modules, so if the event will not be processed by a module which can handle it, you will encounter the vague “Unhandled Event…”
  - “Unhandled events” are not necessarily errors, but simply events that are not handled by that particular application module

Syslog fields at a Glance

Local PC time

Source Gateway IP Address

Log counter increments by ‘1’ with each syslog that is generated. Resets when gateway is reset

```
11:31:29.404  10.15.11.2  local0.notice  [S=20655] [SID:310129587] (      lgr_call)(7856      )  <Call #3> Coder g711Ulaw64k20 : 20
11:31:29.405  10.15.11.2  local0.notice  [S=20656] [SID:310129587] ( lgr_profiling)(7857      )  <Call 3> Profiled<Tel=0,Ip=0>: JBMinDel=10 JBOptF=10 IPDS=46 SigIPDF=40 RTPRI
11:31:29.406  10.15.11.2  local0.notice  [S=20657] [SID:310129587] (     sip_stack)(7858      )  new AcSIPCallAPI created - #3
11:31:29.407  10.15.11.2  local0.notice  [S=20658] [SID:310129587] (     sip_stack)(7859      )  New SIPMessage created - #15
11:31:29.408  10.15.11.2  local0.notice  [S=20659] [SID:310129587] (      lgr_flow)(7860      )  EndPoint::MediaResourceList::AllocateMediaIpPortsByMediaRealmID Perform NEW a
11:31:29.409  10.15.11.2  local0.notice  [S=20660] [SID:310129587] (      lgr_flow)(7861      )  gwGroup::GetSIPGatewayName GroupName of group 1 is not defined. Use the defa
11:31:29.411  10.15.11.2  local0.notice  [S=20661] [SID:310129587] (     sip_stack)(7862      )  SDPBodyMedia::New - id = 16
11:31:29.414  10.15.11.2  local0.notice  [S=20662] [SID:310129587] (      lgr_flow)(7863      )  |        | new AcSIPCall created - #25
11:31:29.416  10.15.11.2  local0.notice  [S=20663] [SID:310129587] (     sip_stack)(7864      )  SDPBody::New - id = 4
11:31:29.416  10.15.11.2  local0.notice  [S=20664] [SID:310129587] (     sip_stack)(7865      )  SIPSDPSession#3 - Changing state from SIP_MEDIA_IDLE to SIP_MEDIA_OFFERING
11:31:29.416  10.15.11.2  local0.notice  [S=20665] [SID:310129587] (     sip_stack)(7866      )  SDPBodyMedia::New - id = 14
11:31:29.418  10.15.11.2  local0.notice  [S=20666] [SID:310129587] (      lgr_flow)(7867      )  |        |(SIPTU#25)SETUP_REQ State:Idle()
11:31:29.419  10.15.11.2  local0.notice  [S=20667] [SID:310129587] (     sip_stack)(7868      )  SIPCall(#25) changes state from Idle to Inviting
11:31:29.421  10.15.11.2  local0.notice  [S=20668] [SID:310129587] (     sip_stack)(7869      )  SIPSessionTimer<TU#25>::FillSTRequestData - Session-Timer mode: SUPPORTED
11:31:29.426  10.15.11.2  local0.notice  [S=20669] [SID:310129587] (      lgr_flow)(7870      )  ---- Outgoing SIP Message to 10.15.11.1:5060 from SIPInterface #0 UdpTranspo
11:31:29.426  10.15.11.2  local0.notice  [S=20670] [SID:310129587] INVITE sip:1101@10.15.11.1;user=phone SIP/2.0
Via: SIP/2.0/UDP 10.15.11.2:5060;branch=z9hG4bKac409948661
Max-Forwards: 70
From: <sip:1103@10.15.11.2>;tag=1c409937071
To: <sip:1101@10.15.11.1;user=phone>
Call-ID: 409936493272015203450@10.15.11.2
CSeq: 1 INVITE
Contact: <sip:1103@10.15.11.2:5060>
Supported: em,timer,replaces,path,resource-priority,sdp-anat
Allow: REGISTER,OPTIONS,INVITE,ACK,CANCEL,BYE,NOTIFY,PRACK,REFER,INFO,SUBSCRIBE,UPDATE
User-Agent: Group 1 FXS/v.6.60A.336.004
Content-Type: application/sdp
Content-Length: 248

v=0
o=AudiocodesGW 409918919 409918917 IN IP4 10.15.11.2
s=Phone-Call
c=IN IP4 10.15.11.2
t=0 0
m=audio 6010 RTP/AVP 8 0 96
a=ptime:20
a=sendrecv
```

Object identifier

Tab

Source of log on gateway.

Type of log: NOTICE, ERROR, INFORMATION, or WARNING

Unique SIP call session and device identifier

Scan for “markers”

- Information used to quickly identify what is happening in logs
  - SIP messaging
  - DTMF / Digit related events
  - Endpoint allocation
  - Routing and Manipulation Actions
  - Sending and Receiving of PSTN messages

SIP Messages

- Direction of call flow, calling and called party numbers, Display names and vital network information (coders, payload types, ports)
- Two call flow direction markers:

  ---- Incoming SIP Message from 192.168.40.100:5060 ---

  ---- Outgoing SIP Message to 192.168.40.100:5060 ---

    - ***Incoming*** messages are SIP messages received by the gateway from the SIP network
    - ***Outgoing*** messages are SIP messages SENT by the gateway to the SIP network
- Links below highlight the different components of SIP messages that are useful in troubleshooting:
    - Incoming INVITE indicates an IP to Tel call
    - Outgoing INVITE indicates a Tel to IP call

Components to SIP Messages

Indicates direction of the message (incoming or outgoing) and the IP address of the entity the gateway is talking to for this dialog.

In this case it is an outgoing INVITE to a SIP network, therefore the call was originated as a Tel→IP call on the gateway

```
11:31:29.426  10.15.11.2  local0.notice  [S=20669] [SID:310129587] (      lgr_flow)(7870      )  ---- Outgoing SIP Message to 10.15.11.1:5060 from SIPInterface #0 UdpTransportObject[#0] ----
11:31:29.426  10.15.11.2  local0.notice  [S=20670] [SID:310129587] INVITE sip:1101@10.15.11.1;user=phone SIP/2.0
                                                                   Via: SIP/2.0/UDP 10.15.11.2:5060;branch=z9hG4bKac409948661
                                                                   Max-Forwards: 70
                                                                   From: <sip:1103@10.15.11.2>;tag=1c409937071
                                                                   To: <sip:1101@10.15.11.1;user=phone>
                                                                   Call-ID: 40993649327201520345O@10.15.11.2
                                                                   CSeq: 1 INVITE
                                                                   Contact: <sip:1103@10.15.11.2:5060>
                                                                   Supported: em,timer,replaces,path,resource-priority,sdp-anat
                                                                   Allow: REGISTER,OPTIONS,INVITE,ACK,CANCEL,BYE,NOTIFY,PRACK,REFER,INFO,SUBSCRIBE,UPDATE
                                                                   User-Agent: Group 1 FXS/v.6.60A.336.004
                                                                   Content-Type: application/sdp
                                                                   Content-Length: 248

                                                                   v=0
                                                                   o=AudiocodesGW 409918919 409918917 IN IP4 10.15.11.2
                                                                   s=Phone-Call
                                                                   c=IN IP4 10.15.11.2
                                                                   t=0 0
                                                                   m=audio 6010 RTP/AVP 8 0 96
                                                                   a=ptime:20
                                                                   a=sendrecv
                                                                   a=rtpmap:8 PCMA/8000
                                                                   a=rtpmap:0 PCMU/8000
                                                                   a=rtpmap:96 telephone-event/8000
                                                                   a=fmtp:96 0-15
11:31:29.427  10.15.11.2  local0.notice  [S=20671] [SID:310129587] (     sip_stack)(7872      )
                                                                   UdpRtxMngr::Transmit 1 INVITE Rtx Left: 6 Dest: 10.15.11.1:5060 CallID: (409936493272015203450@10.15.11.2)
```

The gateway will always prepare to retransmit last message in UDP operations. If there is to be a retransmit, the message will retransmit, decrementing the 'Rtx Left' counter before resending the message.

Digit and Dialing Events

- ‘Digit’ in the log indicates an event on the TEL side
- ‘recv <-- DIGIT’ indicates a DTMF digit has been received on the TEL side
- ‘send --> DIGIT’ indicates the gateway is sending a DTMF digit to the TEL side

```
(    lgr_psbrdif)(7807       )  #0:PSOSBoardInterface::PlayTone - Called Tone=DIAL_TONE Direction=PLAY_TONE_2_TEL
(    lgr_psbrdex)(7808       )  recv <-- DIGIT(1) Ch:0 OnTime:0 InterTime:83334034 Direction:0 System:1
(       lgr_flow)(7809       )  #0:DIGIT_EV
(       lgr_flow)(7810       )  |       #0:DIGIT_EV State:COLLECT_DIGITS Substate:sub_None
(    lgr_psbrdif)(7811       )  #0:PSOSBoardInterface::StopPlayTone- Called
(    lgr_psbrdex)(7812       )  recv <-- DIGIT(1) Ch:0 OnTime:100 InterTime:83334034 Direction:0 System:1
(       lgr_flow)(7813       )  #0:DIGIT_EV
(       lgr_flow)(7814       )  |       #0:DIGIT_EV State:COLLECT_DIGITS Substate:sub_COLLECT_REST_OF_DIGITS_SUB_STATE
(    lgr_psbrdex)(7815       )  recv <-- DIGIT(1) Ch:0 OnTime:0 InterTime:100 Direction:0 System:1
(       lgr_flow)(7816       )  #0:DIGIT_EV
(       lgr_flow)(7817       )  |       #0:DIGIT_EV State:COLLECT_DIGITS Substate:sub_COLLECT_REST_OF_DIGITS_SUB_STATE
(    lgr_psbrdex)(7818       )  recv <-- DIGIT(1) Ch:0 OnTime:100 InterTime:100 Direction:0 System:1
(       lgr_flow)(7819       )  #0:DIGIT_EV
(       lgr_flow)(7820       )  |       #0:DIGIT_EV State:COLLECT_DIGITS Substate:sub_COLLECT_REST_OF_DIGITS_SUB_STATE
(    lgr_psbrdex)(7821       )  recv <-- DIGIT(0) Ch:0 OnTime:0 InterTime:100 Direction:0 System:1
(       lgr_flow)(7822       )  #0:DIGIT_EV
(       lgr_flow)(7823       )  |       #0:DIGIT_EV State:COLLECT_DIGITS Substate:sub_COLLECT_REST_OF_DIGITS_SUB_STATE
(    lgr_psbrdex)(7824       )  recv <-- DIGIT(0) Ch:0 OnTime:100 InterTime:100 Direction:0 System:1
(       lgr_flow)(7825       )  #0:DIGIT_EV
```

- ‘OnTime’ indicates how long DTMF was generated/detected
  - OnTime:0 – Start of DTMF digit was detected
  - OnTime:100 – DTMF digit was released – time in milliseconds

Routing Tel → IP

- **Tel2IP** is the keyword used to indicate Table Tel to IP Routing was used to find the routing destination
- **FindIPDestination** is the keyword for Tel to IP call routing decisions
  - rmRc:0 (OK) indicates route matching table entry was found
  - rmRc:5 (FAIL) indicates route matching table entry was not found

```
[SID:310129587] (      lgr_call)(7846      )  new call from EndPoint
[SID:310129587] (      lgr_flow)(7847      )  |        |        #3:Call changing states from:NewCallState_Tel2IP to:InitiatedState_Tel2IP
[SID:310129587] (      lgr_flow)(7848      )  |        |        |        (#3)SIPStackSession <- (#0)ENDPOINT: SETUP_EV (Unknown)
[SID:310129587] (      lgr_call)(7849      )  Call::GetStartIndex() return -1
[SID:310129587] (     lgr_stack)(7850      )  FindIpDestination: rmRc:0 (OK) SrcIpGroup:-1 IpconnHndl:-1 DstPrefix:1101 DstIp:10.15.11.1
[SID:310129587] (     lgr_stack)(7851      )  RoutingInstance (#3) RTRouting: trying to find a route according to Routing Table
[SID:310129587] (   lgr_stk_ses)(7852      )  DecideRoutingSetup DestIpGroupId:0
[SID:310129587] (   lgr_stk_ses)(7853      )  <SESSION #3> UpdateAfterDecidingRouting: IpProfileId (0), ChargeCode (255), NewIndex (0), CostGroup (-1)
```

```
[SID:1544990850] (     lgr_stack)(1989      )  FindIpDestination: rmRc:5 (FAIL) SrcIpGroup:-1 IpconnHndl:-1 DstPrefix:1111101 DstIp:
[SID:1544990850] (     lgr_stack)(1990      )  ?? [WARNING] RoutingInstance::DecideRouting: phone:1111101  No relevant entry in routing table
```

Routing IP → Tel

- **IP2Tel** is the keyword used to indicate Table IP to Trunk/Hunt Group Routing was used to find the routing destination
- **GetEndPointPhoneNum** is a good keyword to use to search for IP to Trunk/Hunt Group routing decisions
- **GetTrunkGroupId** determines if a route was located in the IP to Trunk/Hunt Group table

```
[SID:310129595] (      lgr_flow)(8352      )  |         |         #8:Call changing states from:IdleState to:NewCallState IP2Tel
[SID:310129595] (      lgr_flow)(8353      )  ServicesMngr::GetEndPoint PhoneNum = 1103
[SID:310129595] (   lgr_psbrdif)(8354      )  GetTrunkGroupId- TrunkGroup:1 Trunk:-1 found DstNum:1103 DstPfx:* SrcNum:1101 SrcPfx:* SrcIp:a0f0b01
[SID:310129595] (      lgr_call)(8355      )  Call::SetCoderListForCall #8 Found 2 Common Coders For Call
[SID:310129595] (      lgr_call)(8356      )  <Call #8> Coder g711Alaw64k20 : 20
[SID:310129595] (      lgr_call)(8357      )  <Call #8> Coder g711Ulaw64k20 : 20
```

- For <u>Digital</u> trunks, if the gateway finds a match in the routing and trunk groups tables AND there are resources available (**Current trunks status)** for the trunks associated with the trunk group, the call is passed along

```
[SID=3d5724:135:128]  (      lgr_flow)(      8698)  (#129):Call changing states from:IdleState to:NewCallState IP2Tel [Time:11-07@17:17:23.565]
[SID=3d5724:135:128]  (      lgr_flow)(      8699)  ServicesMngr::GetEndPoint PhoneNum = 9764000 [Time:11-07@17:17:23.565]
[SID=3d5724:135:128]  ( lgr_gw_engine)(      8700)  GetTrunkGroupId- TrunkGroup:2 Trunk:-1 found DstNum:9764000 DstPfx:* SrcNum:1111103 SrcPfx:* SrcIp:168758018 Sr
[SID=3d5724:135:128]  (   lgr_psbrdif)(      8701)  Current trunks status: 1 [Time:11-07@17:17:23.566]
[SID=3d5724:135:128]  (      lgr_call)(      8702)  Call::SetProfiledCallParams (#129) Found 1 Common Coders For Call [Time:11-07@17:17:23.566]
[SID=3d5724:135:128]  (      lgr_call)(      8703)  Call (#129) Coder g72920 : 20 [Time:11-07@17:17:23.566]
```

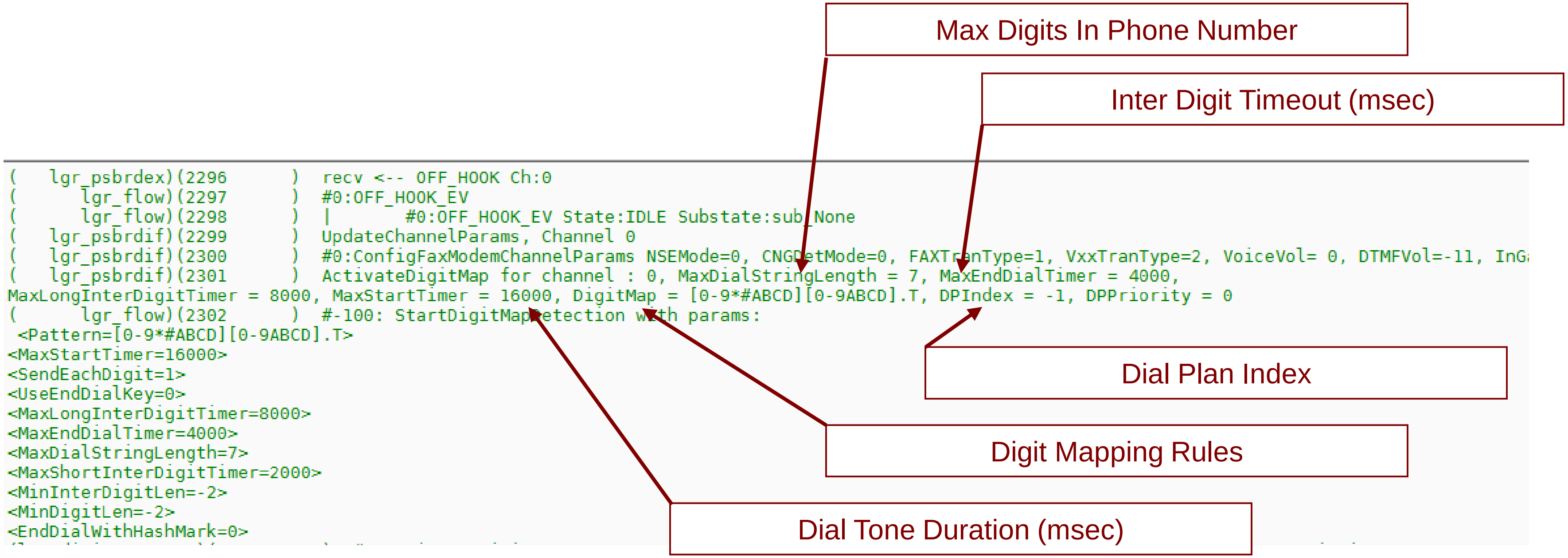
  - Current trunks status: 1 – Trunk is available
  - Current trunks status: 0 – Trunk is unavailable

PSTN Messaging Markers

- 'pstn recv ←' indicates an incoming message from the PSTN network to the gateway.
- 'pstn send →' indicates that the gateway is either sending a new call or related message out to the PSTN network
  - In the example below the message is for a new outgoing call.

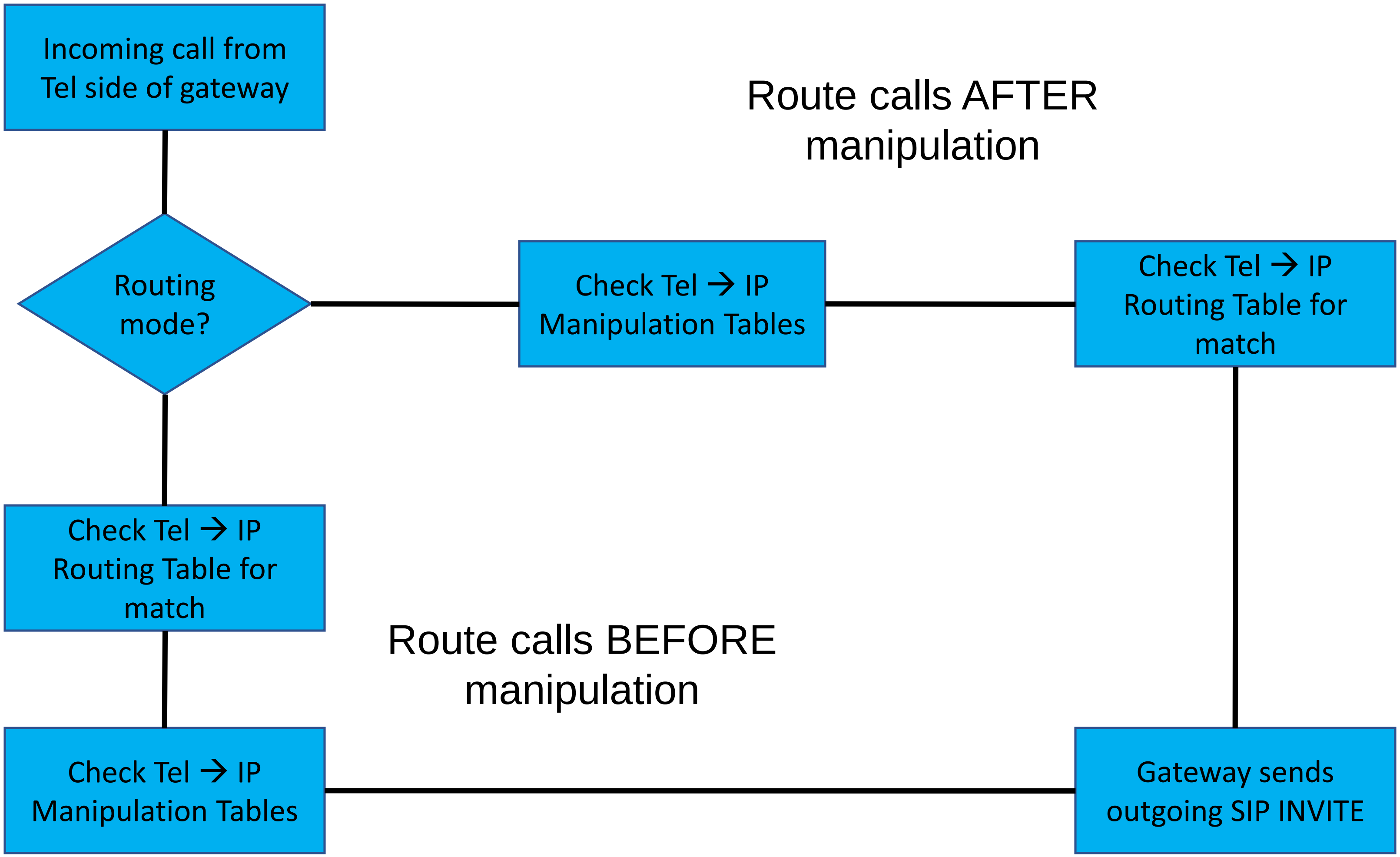
```
[SID=3d5724:135:120]  (   lgr_psbrdif)(      8389)   pstn send --> PlaceCall: Trunk:0 BChannel:14 ConnID:0 SrcPN=1111103 SrcSN= DstPN=9764000 DstSN= SrcNT=0 SrcNP=0 SrcPres=0 SrcScrn=0
[SID=3d5724:135:120]  (   lgr_psbrdex)(      8390)   pstn recv <-- CALL_PROCEEDING Trunk:0 Conn:0 BChannel:14  callhndl:0 Loc:-1 Des:-1 Cmt:67 [Time:11-07@16:57:08.190]
[SID=3d5724:135:120]  (     lgr_flow)(      8391)   #43:LOCAL_CALL_PROCEEDING_EV(Trunk:0 Conn:0 BChannel:14 TpEv=73) [Time:11-07@16:57:08.190]
[SID=3d5724:135:120]  (     lgr_flow)(      8392)   #43:LOCAL_CALL_PROCEEDING_EV State:WAIT_FOR_BOARD_ANSWER Substate:sub_None [Time:11-07@16:57:08.190]
[SID=3d5724:135:120]  (     lgr_flow)(      8393)   #43:PROGRESS_INDICATOR_EV State:WAIT_FOR_BOARD_ANSWER (send)  : (17969047154720152l3852@10.15.11.2) [Time:11-07@16:57:08.191]
[SID=3d5724:135:120]  (     lgr_flow)(      8394)   (#133):PROGRESS_INDICATOR_EV(PI=-1)(PC=-1):(179690471547201521385 2@10.15.11.2) [Time:11-07@16:57:08.191]
[SID=3d5724:135:120]  (     lgr_flow)(      8395)   #43:PROCEEDING_EV State:WAIT_FOR_BOARD_ANSWER (send)  : (17969047154720152l3852@10.15.11.2) [Time:11-07@16:57:08.191]
[SID=3d5724:135:120]  (     lgr_flow)(      8396)   (#133):PROCEEDING_EV:(17969047154720152l3852@10.15.11.2) [Time:11-07@16:57:08.191]
[SID=3d5724:135:120]  (     lgr_flow)(      8397)   (#17)SIPStackSession <- (#0)ISDNEndPoint: PROCEEDING_EV (17969047154720152l3852@10.15.11.2) [Time:11-07@16:57:08.191]
[SID=3d5724:135:124]  (   lgr_psbrdex)(      8564)   pstn recv <-- CALL_DISCONNECTED Trunk:0 Conn:0 RetCause:104 NetCause:102 [Time:11-07@17:01:24.052]
```

Example Gateway Parameter Usage displayed in Syslog




```
(    lgr_psbrdex)(2296      )  recv <-- OFF_HOOK Ch:0
(       lgr_flow)(2297      )  #0:OFF_HOOK_EV
(       lgr_flow)(2298      )  |       #0:OFF_HOOK_EV State:IDLE Substate:sub_None
(    lgr_psbrdif)(2299      )  UpdateChannelParams, Channel 0
(    lgr_psbrdif)(2300      )  #0:ConfigFaxModemChannelParams NSEMode=0, CNGDetMode=0, FAXTranType=1, VxxTranType=2, VoiceVol= 0, DTMFVol=-11, InG
(    lgr_psbrdif)(2301      )  ActivateDigitMap for channel : 0, MaxDialStringLength = 7, MaxEndDialTimer = 4000,
MaxLongInterDigitTimer = 8000, MaxStartTimer = 16000, DigitMap = [0-9*#ABCD][0-9ABCD].T, DPIndex = -1, DPPriority = 0
(       lgr_flow)(2302      )  #-100: StartDigitMapDetection with params:
 <Pattern=[0-9*#ABCD][0-9ABCD].T>
<MaxStartTimer=16000>
<SendEachDigit=1>
<UseEndDialKey=0>
<MaxLongInterDigitTimer=8000>
<MaxEndDialTimer=4000>
<MaxDialStringLength=7>
<MaxShortInterDigitTimer=2000>
<MinInterDigitLen=-2>
<MinDigitLen=-2>
<EndDialWithHashMark=0>
```

Tel → IP Routing Table Flowchart



Example Gateway Table Usage displayed in Syslog

Destination Number Tel to IP Manipulation Table

IP to Trunk/Hunt Group Table

Coder Group Table

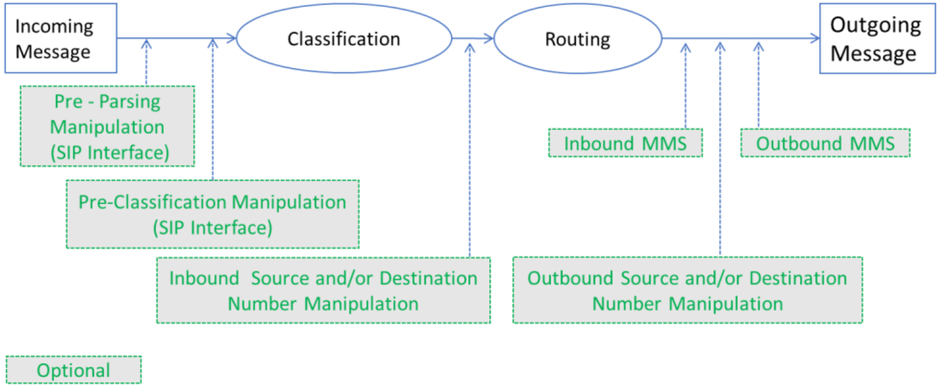
IP & Tel Profile Tables

Media Realm Table

```
(       lgr_flow)(2335      )  |       #0:DIALED_STRING_EV State:COLLECT_DIGITS Substate:sub_COLLECT_REST_OF_DIGITS_SUB
(lgr_digitmap_mngr)(2336    )  DigitMapMngr::HandleDialStringEv Match = 1, MatchNum = 0 STR = 1101
(       lgr_call)(2337      )  (#7) CALL Allocated.
(       lgr_flow)(2338      )  |       #0:NEW_CALL_EV (send)  : (Unknown)
(       lgr_flow)(2339      )  |       |       #7:NEW_CALL_EV:(Unknown)
(   lgr_stk_mngr)(2340      )  Resource StackSession <#7> Allocated
(       lgr_flow)(2341      )  |       |       #7:Call changing states from:IdleState to:NewCallState_Tel2IP
(       lgr_flow)(2342      )  |       |       |       (#7)SIPStackSession <- (#0)ENDPOINT: NEW_CALL_EV (Unknown)
(       lgr_call)(2343      )  |       |       #7GetNextUI:GlobalUI=1770634048, mACAddrLsb=4119367
                                                                  1770634049
                                                                  n)
(       lgr_flow)(2347      )  |       |       #7:SETUP (TO:1101, FROM:1111103):(Unknown)
(       lgr_call)(2348      )  new call from EndPoint
(       lgr_flow)(2349      )  NumberMapMngr::HandlePhoneNumberMapping Manipulation on Tel to IP - Destination Number
(        lgr_num)(2350      )  PhoneNumber::AddPrefix - Number change from 1101 to 1111101
(       lgr_flow)(2351      )  |       |       #7:Call changing states from:NewCallState_Tel2IP to:InitiatedState_Tel2IP
(       lgr_flow)(2352      )  |       |       |       (#7)SIPStackSession <- (#0)ENDPOINT: SETUP_EV (Unknown)
(       lgr_call)(2353      )  Call::GetStartIndex() return -1
(      lgr_stack)(2354      )  FindIpDestination: rmRc:0 (OK) SrcIpGroup:-1 IpconnHndl:-1 DstPrefix:1101 DstIp:10.15.11.1
(      lgr_stack)(2355      )  RoutingInstance (#7) RTRouting: trying to find a route according to Routing Table
(    lgr_stk_ses)(2356      )  DecideRoutingSetup DestIpGroupId:0
(    lgr_stk_ses)(2357      )  &lt;SESSION #7&gt; UpdateAfterDecidingRouting: IpProfileId (0), ChargeCode (255), NewIndex (0), CostGroup (-1)
(       lgr_call)(2358      )  Call::SetCoderListForCall #7 Found 1 Common Coders For Call
(       lgr_call)(2359      )  &lt;Call #7&gt; Coder g72920 : 20
( lgr_profiling)(2360      )  &lt;Call 7&gt; Profiled&lt;Tel=0,Ip=0&gt;: JBMinDel=10 JBOptF=10 IPDS=46 SigIPDF=40 RTPRD=0 ECE=1 InG=
(      sip_stack)(2361      )  new AcSIPCallAPI created - #9
(      sip_stack)(2362      )  New SIPMessage created - #23
(       lgr_flow)(2363      )  EndPoint::MediaResourceList::AllocateMediaIpPortsByMediaRealmID Perform NEW allocation of Media ports for RealmIndex(0) port(6020) current allocations
(       lgr_flow)(2364      )  gwGroup::GetSIPGatewayName GroupName of group 1 is not defined. Use the default.
(      sip_stack)(2365      )  SDPBodyMedia::New - id = 29
(       lgr_flow)(2366      )  |       | new AcSIPCall created - #15
(      sip_stack)(2367      )  SDPBody::New - id = 4
(      sip_stack)(2368      )  SIPSDPSession#7 - Changing state from SIP_MEDIA_IDLE to SIP_MEDIA_OFFERING
                                                                  ()
                                                                  Inviting
(      sip_stack)(2372      )  SIPSessionTimer&lt;TU#15&gt;::FillSTRequestData - Session-Timer mode: SUPPORTED
(       lgr_flow)(2373      )  ---- Outgoing SIP Message to 10.15.11.1:5060 from SIPInterface #0 UdpTransportObject[#0] ----
INVITE sip:1111101@10.15.11.1;user=phone SIP/2.0
```

Session Border Controller (SBC) logs

- Session Border Controller uses CMR Process to handle Call flow across legs on the SBC



  - C = Classify
  - M = Manipulate
  - R = Route
- This call flow is demonstrated in the SBC Syslogs

SBC CMR Process Identified

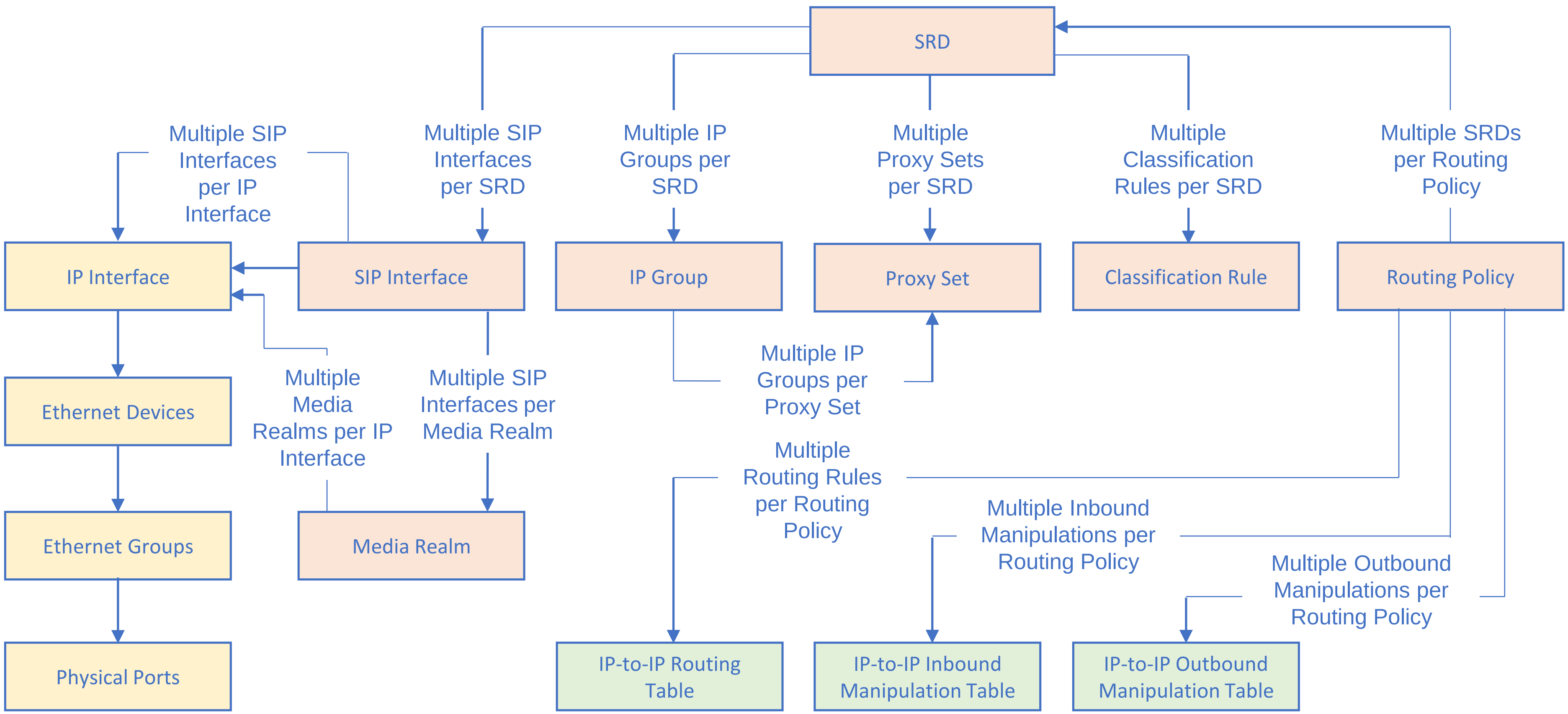
Classify

Manipulate

Route

```
(N      1213)  (#6104)gwSession[Allocated]. Handle:2C25D3B8; Global session ID: 73fde6a67d8db318 [Time:01-08@19:26:10.213]
(N      1214)  Condition Table matched on condition Index 0 [Time:01-08@19:26:10.214]
(N      1215)  Classification Succeeded - Source IP Group #2 (Teams) [Time:01-08@19:26:10.214]
(N      1216)  IP2IPInboundManipulation Rule #0 [Time:01-08@19:26:10.215]
(N      1217)  SBCRoutingMngr::InboundManipulate: Destination username was manipulated from +11115551101 to 11115551101 [Time:01-08@19:26:10.215]
(N      1218)  States: (#133)SBCRoutesIterator[InitialRouting->AlternativeRouting] [Time:01-08@19:26:10.215]
(N      1219)  SBC_ADMIT_DIALOGS_EV: (#133)SBCRoutesIterator -> (#-1)SBCAdmissionControlMngr [Time:01-08@19:26:10.216]
(N      1220)  CAC: Add SBC Incoming INVITE, IPG 2 (Teams): 1, SRD 0 (DefaultSRD): 1, SipIF 2 (Teams): 1 [Time:01-08@19:26:10.216]
(N      1221)  ResourceCounter: SBC leg +1 [1/200] [Time:01-08@19:26:10.216]
(N      1222)  CAC: Add SBC Outgoing INVITE, IPG 3 (ITSP-1): 1, SRD 0 (DefaultSRD): 1, SipIF 1 (ITSP): 1 [Time:01-08@19:26:10.216]
(N      1223)  ResourceCounter: SBC leg +1 [2/200] [Time:01-08@19:26:10.216]
(N      1224)  (#133)Route found (2), Route by IPGroup, IP Group 2 -> 3 (Teams -> ITSP-1) [Time:01-08@19:26:10.217]
```

Entities and Tables Relations



SBC CMR Process Identified – Deep Dive

4 Step Classification Process
1. Address of Record
2. Classify by Proxy Set
3. Classification Table – can use Message Condition Table
4. Allow Unclassified Calls

Message Condition Table

Inbound Number Manipulation

Classification Table

```
(N      1213)  (#6104)gwSession[Allocated]. Handle:2C25D3B8; Global session ID: 73fde6a67d8db318 [Time:01-08@19:26:10.213]
(N      1214)  Condition Table matched on condition Index 0 [Time:01-08@19:26:10.214]
(N      1215)  Classification Succeeded - Source IP Group #2 (Teams) [Time:01-08@19:26:10.214]
(N      1216)  IP2IPInboundManipulation Rule #0 [Time:01-08@19:26:10.215]
(N      1217)  SBCRoutingMngr::InboundManipulate: Destination username was manipulated from +11115551101 to 11115551101 [Time:01-08@19:26:10.215]
(N      1218)  States: (#133)SBCRoutesIterator[InitialRouting->AlternativeRouting] [Time:01-08@19:26:10.215]
(N      1219)  SBC_ADMIT_DIALOGS_EV: (#133)SBCRoutesIterator -> (#-1)SBCAdmissionControlMngr [Time:01-08@19:26:10.216]
               CAC: Add SBC Incoming INVITE, IPG 2 (Teams): 1, SRD 0 (DefaultSRD): 1, SipIF 2 (Teams): 1 [Time:01-
               ResourceCounter: SBC leg +1 [1/200] [Time:01-08@19:26:10.216]
               CAC: Add SBC Outgoing INVITE, IPG 3 (ITSP-1): 1, SRD 0 (DefaultSRD): 1, SipIF 1 (ITSP): 1 [Time:01-
               ResourceCounter: SBC leg +1 [2/200] [Time:01-08@19:26:10.216]
               (#133)Route found (2), Route by IPGroup, IP Group 2 -> 3 (Teams -> ITSP-1) [Time:01-08@19:26:10.217
```

Incoming Leg

Outgoing Leg

IP to IP Routing table – Checking **Alternative Route Options** Column – Route Row, Alternative Route Ignore Inputs, etc

IP to IP Routing Table entry used to route call – Index number from table displayed

SBC Legs allocated vs Total SBC Sessions x2

(Logical Crossconnect)

Indicates status of IP Group, SRD, SIP Interface

0 – Not Connected

1 - Connected

SBC CAPACITY

	Local	Actual
SBC Sessions	100	100
Far End Users (FEU)	100	600

SBC CMR Process Identified – Deep Dive

Incoming IP Profile

```
(N     1225)  ---- Incoming SIP Message from 52.114.7.24:3073 to SIPInterface #2 (Teams) TLS TO(#1381) SocketID(29) ---- [Time:01-08@19:26:10.217]
.
.
.
(N     1226)  States: (#4989)AcSIPCall[Allocated] [Time:01-08@19:26:10.218]
(N     1227)  SBCNewCallData: (#4249)AcSBCCallAPI -> (#4249)SIPSBCCallLeg [Time:01-08@19:26:10.218]
(N     1228)  NEW_CALL_EV: (#4249)SIPSBCCallLeg -> (#370)SBCCall[Idle->NewCall] [Time:01-08@19:26:10.218]
(N     1229)  (#370)SBCCall: Profiled<Tel=-1,Ip=2 (Teams)>: MSBeh=1 R2833B=1 RmtUpdSup=0 RmtRvtSup=1 RmtDOS=0 RmtRB=3 RmtPRSP=1 RmtHF=3 RmtRepB=1 Ico=1 [Time:01-08@19:26:10.218]
(N     1230)  NEW_CALL_EV: (#370)SBCCall -> (#4248)SBCEndPoint[Idle->NewCall]
-> (#2209)SBCController[Idle->NewCall]
-> (#4249)SBCEndPoint[Idle->NewCall]
-> (#349)CallPlacement
-> (#369)SBCCall[Idle->NewCall] [Time:01-08@19:26:10.219]
(N     1231)  (#369)SBCCall: Profiled<Tel=-1,Ip=1 (ITSP)>: MSBeh=2 RmtRB=3 RmtRepB=1 [Time:01-08@19:26:10.220]
(N     1232)  NEW_CALL_EV: (#369)SBCCall -> (#4248)SIPSBCCallLeg [Time:01-08@19:26:10.221]
(N     1233)  ReliableTransportObject(#1381)::ShouldConnectionBePersistent - Opening persistent connection with proxy: 52.114.7.24:5061(SI=2) [Time:01-08@19:26:10.221]
(N     1234)  InviteServerTransaction(#968)::SetResponseAddr - Setting ReceivedFromIP as response IP due to configuration [Time:01-08@19:26:10.221]
(N     1235)  AcSIPCall(#4989): Handling INVITE in state Idle [Time:01-08@19:26:10.221]
(N     1236)  AcSIPCall(#4989)::UpdateRemoteLocation - Setting ReceivedFrom address as transport object's key 52.114.7.24:5061 [Time:01-08@19:26:10.222]
(N     1237)  AcTransactionUser::CheckRemoteAddressChange - Remote is behind the NAT [Time:01-08@19:26:10.222]
(N     1238)  States: (#4989)AcSIPCall[Idle->Invited] [Time:01-08@19:26:10.223]
(N     1239)  SBCSetupData: (#4249)AcSBCCallAPI -> (#4249)SIPSBCCallLeg [Time:01-08@19:26:10.228]
(N     1240)  States: (#4249)SBCOfferAnswerMngr[Idle->Offered] [Time:01-08@19:26:10.230]
(N     1241)  (#210)RTS[Allocated] (#199)ChannelResource belongs to call #370 [Time:01-08@19:26:10.230]
(N     1242)  AllocateAddress: Allocated address port 7000 IntIPv4 1 IntIPv6 -1 extension 1 [Time:01-08@19:26:10.230]
(N     1243)  (#199)ChannelResource::AllocateMediaIpPorts RealmIndex(2) port(7000) Allocated. [Time:01-08@19:26:10.230]
(N     1244)  AcSIPCall(#4989): Handling TRYING_REQ in state Invited [Time:01-08@19:26:10.231]
(N     1245)  ---- Outgoing SIP Message to 52.114.7.24:3073 from SIPInterface #2 (Teams) TLS TO(#1381) SocketID(29) ---- [Time:01-08@19:26:10.231]
```

Outgoing IP Profile

Received IP from Leg 1

SIP Interface Table Index number

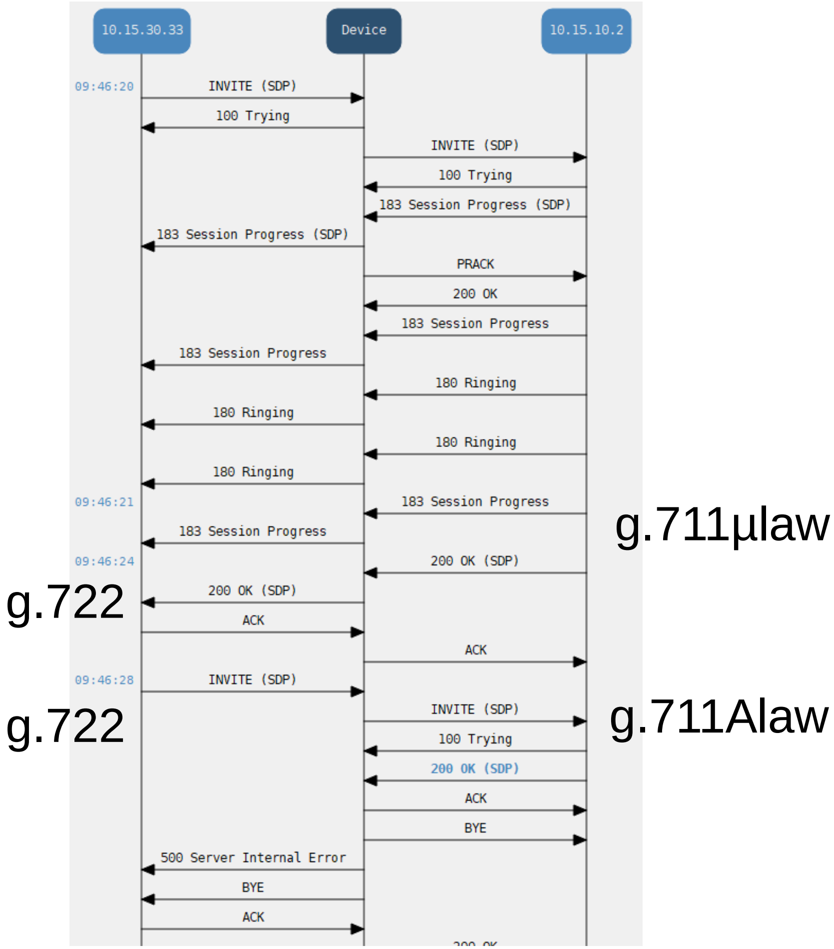
Checking for NAT on Leg 1 – Parameter **SIP NAT DETECTION**

Allocating RTP/UDP Port for **SIP Response** to Invite on Leg 1 – allocated from Media Realm

NOTE: The NAT Detection mechanism checks whether the endpoint is located behind NAT by comparing the source IP address of the incoming UDP/TCP packet (in which the SIP message is received) with the IP address in the SIP Contact header. If the packet's source IP address is a public address and the Contact header's IP address is a local address, the device considers the endpoint as located behind NAT.

Error Analysis

- Scenario: Music on Hold Call to Skype for Business from IP-PBX fails with Media Mismatch
- Original Invite to SBC from IP-PBX advertises
  - m=audio 6080 RTP/AVP 9 8 0 101
- Invite Traverses SBC to Skype advertises
  - m=audio 6310 RTP/AVP 9 0 101
- 200 OK from Skype advertises
  - m=audio 53656 RTP/AVP 0 101
- 200 OK to IP-PBX advertises
  - m=audio 6570 RTP/AVP 9 101
- Call established
- Re-Invite from IP-PBX to SBC advertises
  - m=audio 6080 RTP/AVP 9 8 0 101
  - a=sendonly
- Re-Invite from SBC to Skype advertises
  - m=audio 6310 RTP/AVP 9 8 0 13 101
  - a=inactive
- 200 OK from Skype advertises
  - m=audio 53656 RTP/AVP 8 13 101
  - a=inactive
- SBC sends Skype a BYE and IP-PBX a 500 Internal Server Error

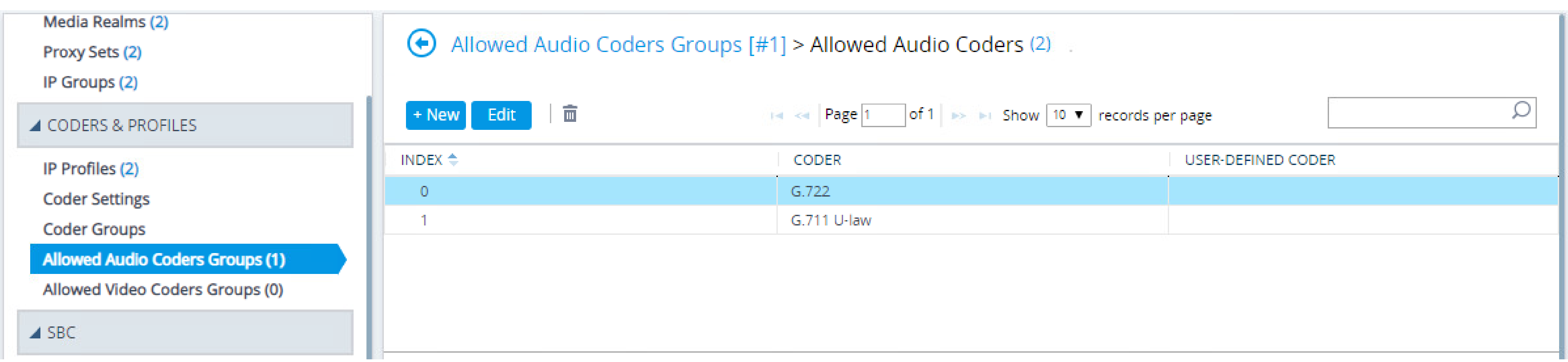



```
(    454530) SBCSDPFeatureMngr::CheckMediaOfferMatch - match wasn't found for media#0 ImageMatchFound=False GeneralMatchFound=False [Time:07-08@08:45:33.896]
(    454531) SBCSDPFeatureMngr::HandleIncomingAnswer - for media#0CheckMediaOfferMatch failed [Time:07-08@08:45:33.896]
(    454532)?? [WARNING] SBCSDPSession(#1378)::HandleAnswerSDPFromIP - Match was not found. Changing state to last stable state [Time:07-08@08:45:33.896]
```

Error Analysis

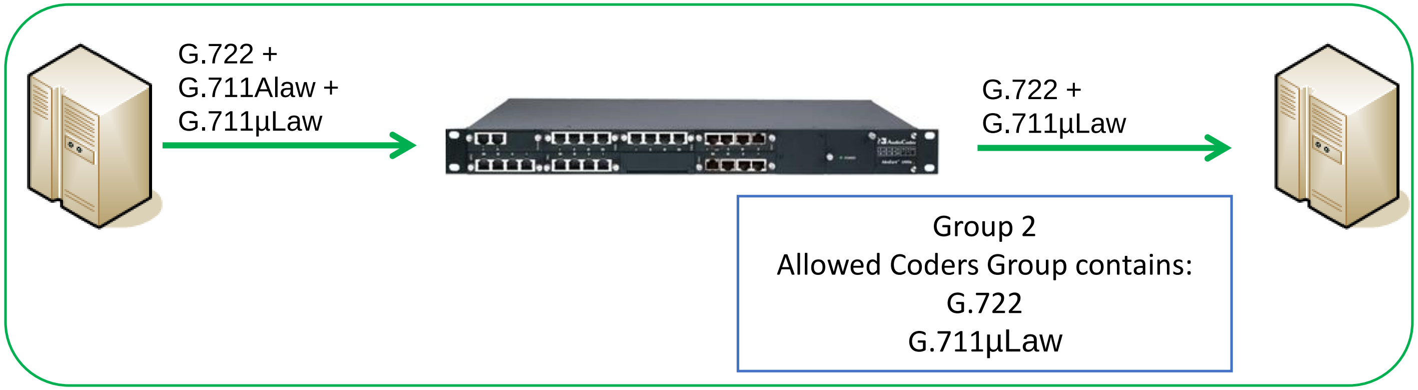
- Skype tried to renegotiate the media at G.711Alaw instead of using what had been negotiated as G.711µLaw because a message manipulation was added that modified the SDP
- It was found that the Allowed Coder Group table was removing the payload type 8 (g.711Alaw) from the incoming Invite from the IP-PBX, this caused the call to fail
  - (#220)SBCCall: Profiled<Tel=-1,Ip=0 (ITSP)>: ExtCGrp=1 **AllCGrp=1** MSBeh=2 R2833B=1 AltDM=2 MltDTMF=1 AssrtID=1 2833PT=101 [Time:07-08@08:45:25.815]

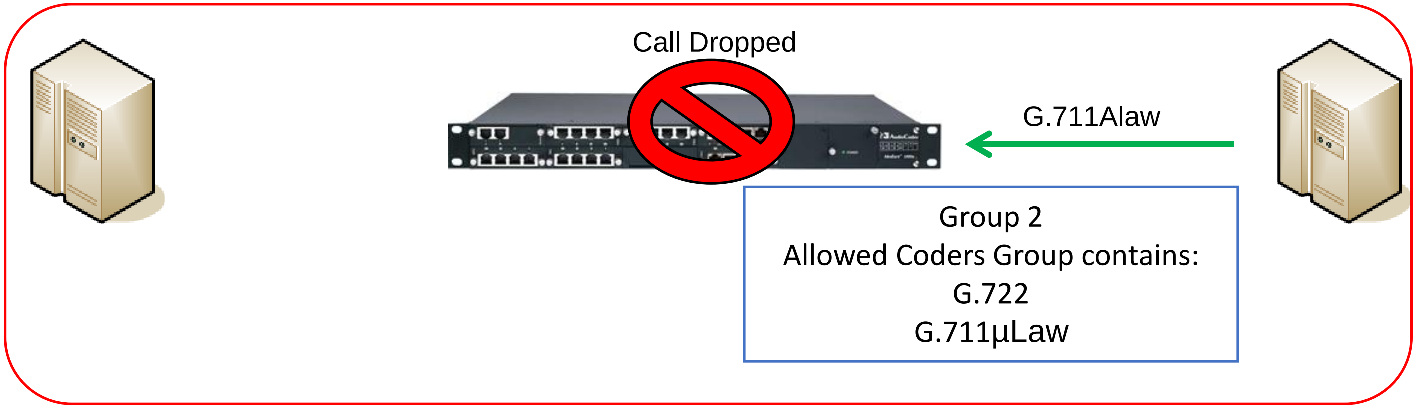
```
09:46:28.530 ---- Outgoing SIP Message to 10.15.10.2:5068 from SIPInterface #0 (SIPInterface_1) TCP TO(#3111) SocketID(89) ---- [Time:07-08@08:45:33.897]

BYE sip:FE.TR.local:5068;transport=Tcp;maddr=10.15.10.2 SIP/2.0
Via: SIP/2.0/TCP 10.15.13.10:5068;alias;branch=z9hG4bKac1475632245
Max-Forwards: 70
From: <sip:3333555310 1@gw3.tr.local>;tag=1c349183516
To: <sip:+33335553005@tr.local>;tag=4729fd70ed;epid=2F236C839B
Call-ID: 87797660578201984525@10.15.13.10
CSeq: 4 BYE
User-Agent: Mediant VE-H SBC/v.7.20A.250.003
Reason: SIP ;cause=488 ;text="488 Not Acceptable Here"
Content-Length: 0
```



Allowed Coders – Incoming Offered

- At least one incoming coder must be in the Allowed Coders Group
  - Either for a request and/or a response
  - Typically the Allowed Coder Group would remove the Codec not on the list, but a message manipulation was used that modified the SDP





[Analyze the log!]

Other Syslog Applications

Examples of Syslog servers available as shareware:

- Kiwi Enterprises: **http://www.kiwisyslog.com/**
- The US CMS Server: http://uscms.fnal.gov/hanlon/uscms_server/
- Netal SL4NT Syslog Daemon: **http://www.netal.com**

- For additional information, refer to **www.Syslog.org**
  - a site dedicated to helping to understand and implement logging and analysis systems