
MAPS™ APS and ALS

Analog Phone/Line Simulator

 ***GL Communications Inc.***

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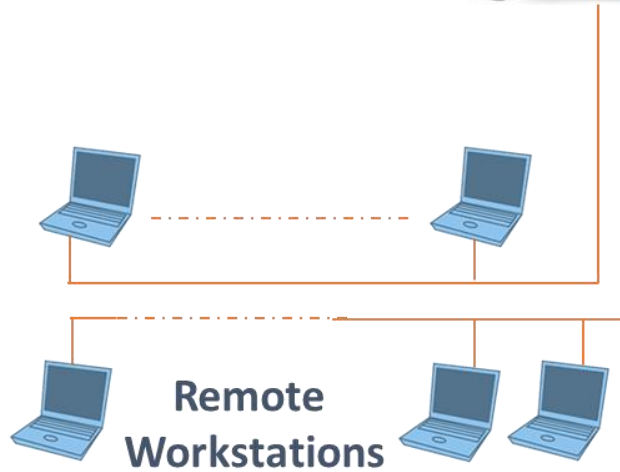
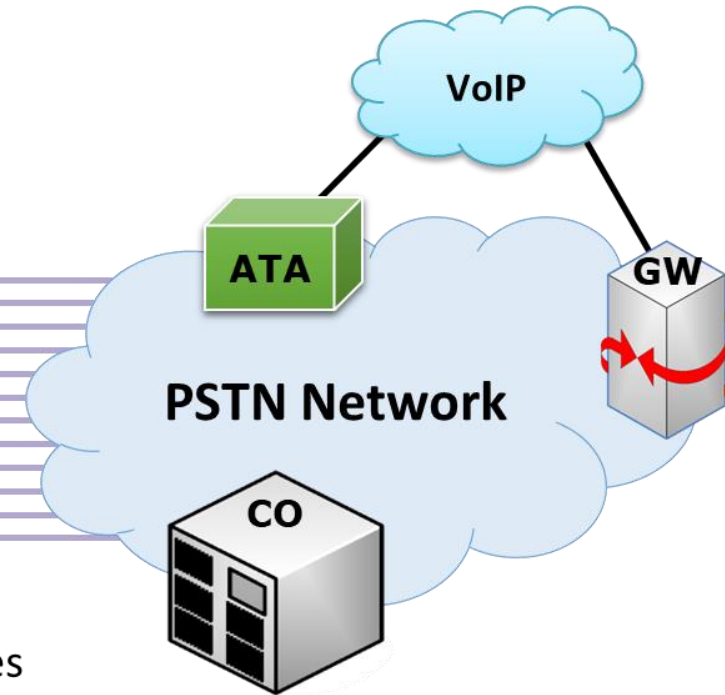
MAPS™ Analog Phone Simulator

MAPS™ APS-24, 48, 96, or 192 Port

GL solution simulates these endpoint devices



RJ-11



- Bulk call generator in minutes
- FXO and FXS Capabilities
- Plug and play
- Assessment of Voice Quality, Fax Quality
- Tones and Digits Detection
- Scalable from hundreds to thousands of calls
- Remoting, Automation, Scripting, Reporting

Main Features

- Up to 192 independent FXO ports per system
- Test Central Office, PBX, Gateway, Analog, Digital, and VoIP networks
- Manual and Automated Bulk Analog call generation
- Call monitoring and call recording
- Concurrent users and tests per system
- API support (Python, Java) for integration with automation frameworks
- Supports E&M (Type I, II, III, IV, V) signaling – immediate start, wink start, delay start
- Full FXO and FXS Functionality via flexible scripts
- Scalable to support up to 1000s of calls
- Supports Supplementary Service Testing and Interactive Voice Response (IVR) using Speech Transcription Server
- Voiceband Measurement Tests using VF Ports
- Provides high-density connection to any 2-wire analog interface for fully automated custom testing

Functional Specifications

FXO Capabilities

- Up to 96 independent FXO ports per 1U MAPS™ APS (More can be achieved by scaling)
- Supports Loop Start and Ground Start signaling
- Full FXO Functionality via flexible scripts
- Supported call scenarios
 - Caller ID
 - Two-way Calling
 - Three-way Conference Calling
 - Three-way Calling with Calling Party Number ID
 - VMWI – Voice Mail with MWI (message waiting indicator), SDT (stutter dial tone) and SIT (special information tone)
 - Call Waiting – Detect tone, Call ID, Flash to accept call
 - Call Forwarding

FXS Capabilities

- Up to 96 independent FXS ports per 1U MAPS™ APS (more can be achieved by scaling, requires FXS voice cards)
- Central office simulation with two-way calling
- Supports Loop Start and Ground Start signaling
- User-programmable call progress tone generation for different countries/regions:
 - Dial tone
 - Ringback tone
 - Busy tone
 - Reorder tone
 - Howler tone (extended off-hook signal)
 - Ring generation with programmable ring cadence

Functional Specifications (Contd.)

Reporting

- Multi-User, Multi-Test, Multi-Reporting
- Executed test cases
- Successful test cases
- Call Failure events
- Call Completion events
- Call Drop (sustain calls) events
- Voice Quality Test MOS Scores
- Delay Measurements (OWD, PDD)
- Pass/Fail Status
- Summarization
- Failure Details Sufficient to determine Root Cause
- PDF and CSV file formats
- Central Database of events/results/errors

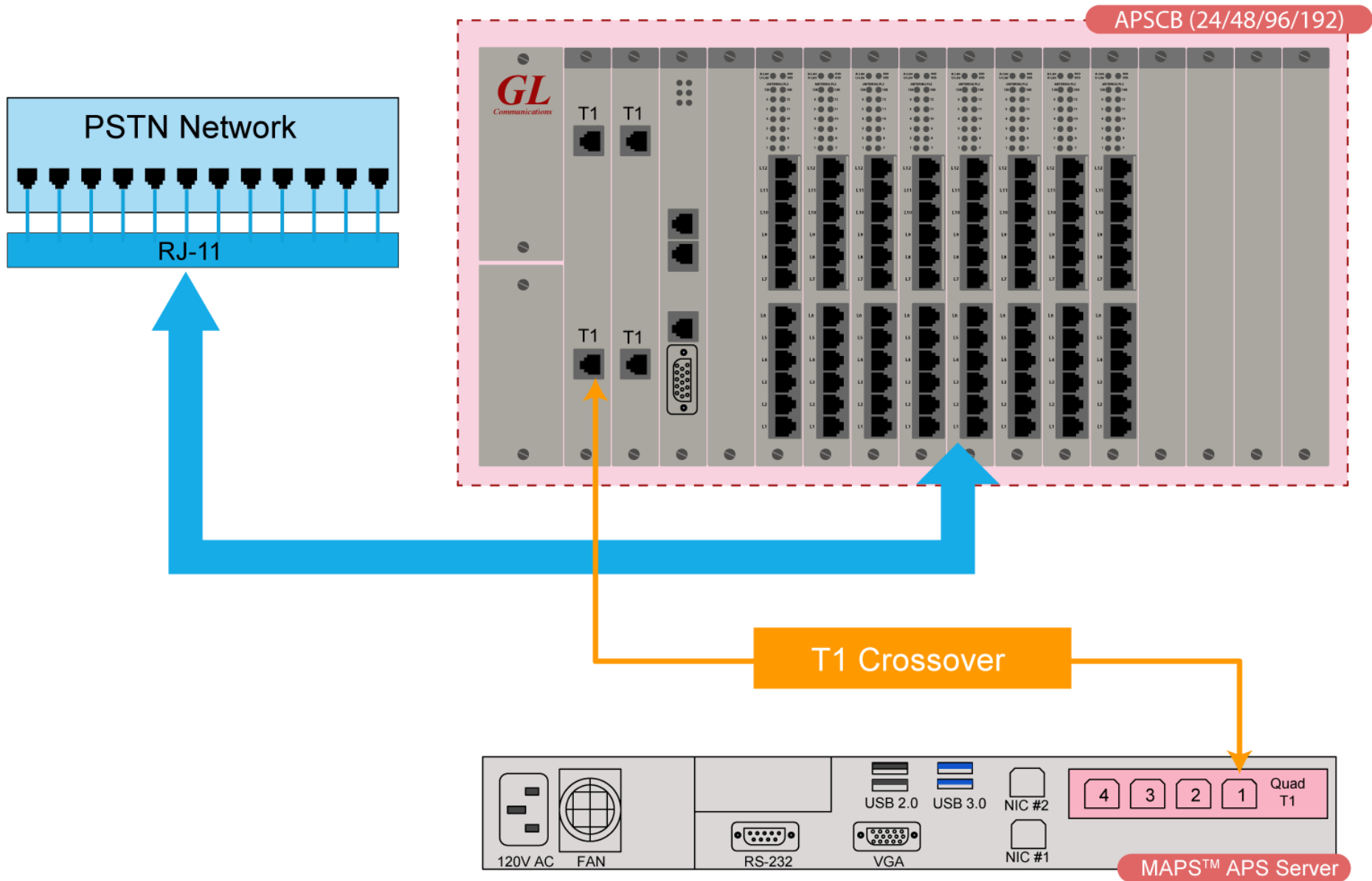
Traffic Functionalities

- Basic Telephony functions - On-hook, Off-hook, Detect ringing signal, Dial, Hook flash
- Digit related functions - Send and Detect digits
- File transfer functions - Send and Receive file
- Tone related functions - Detect busy tone, call waiting tone, dial tone, reorder tone, ring-back tone, special dial tone, Send and Detect test tone, tones
- Fax related Functions - Send and Receive fax
- FSK related functions - Detect Caller ID, Detect VMWI
- VQT (Optional) - MOS, E-Model, PESQ, POLQA Scores

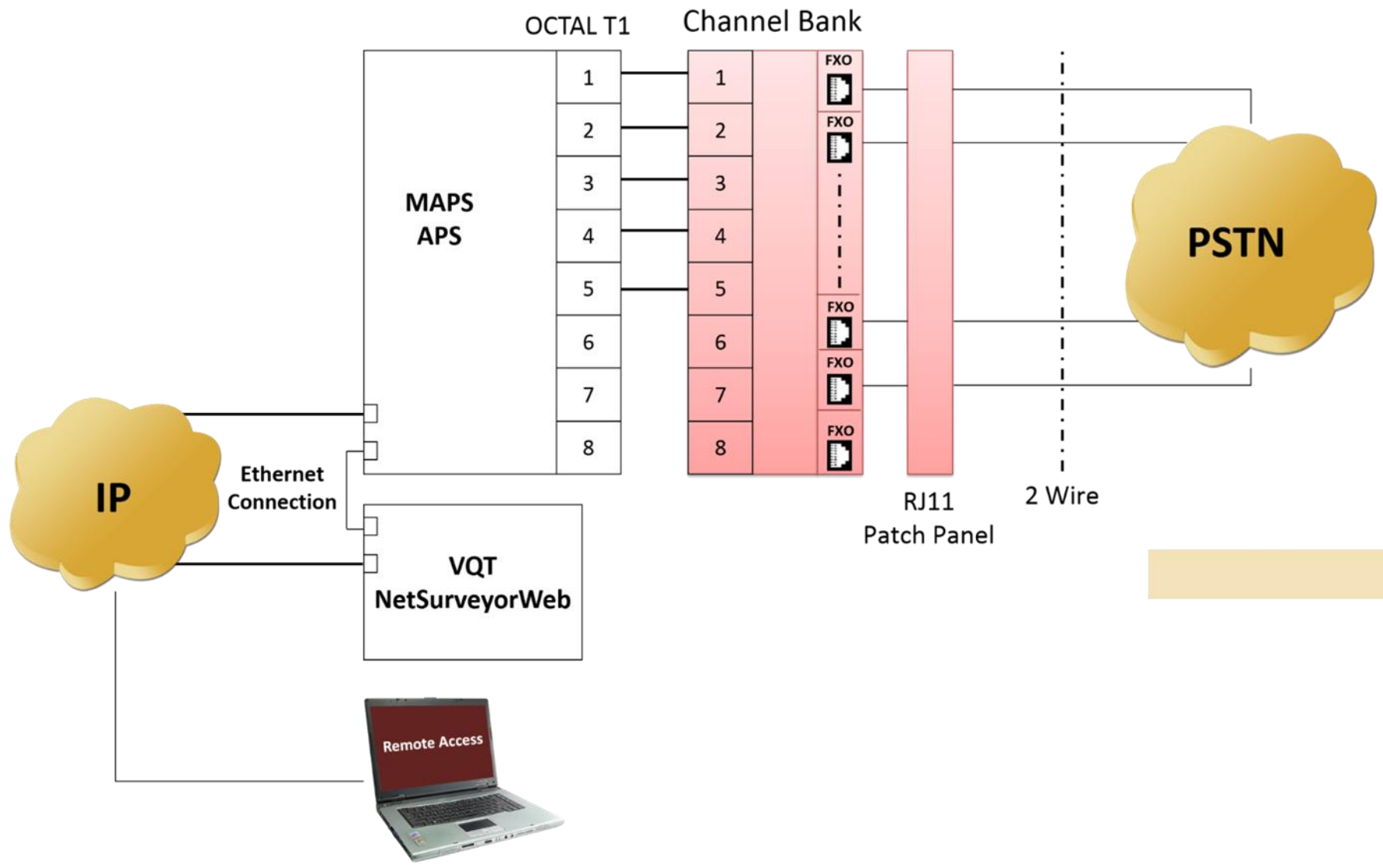
Command Line Interface (CLI) Capabilities

- TCP/IP based Client Server application
- Script-based call simulation and control
- Comprehensive API for call flow control and feature testing
- Support for Python and Java clients
- Allows multiple clients to be connected simultaneously
- Reserve/release analog lines through API
- Independent execution available for all lines

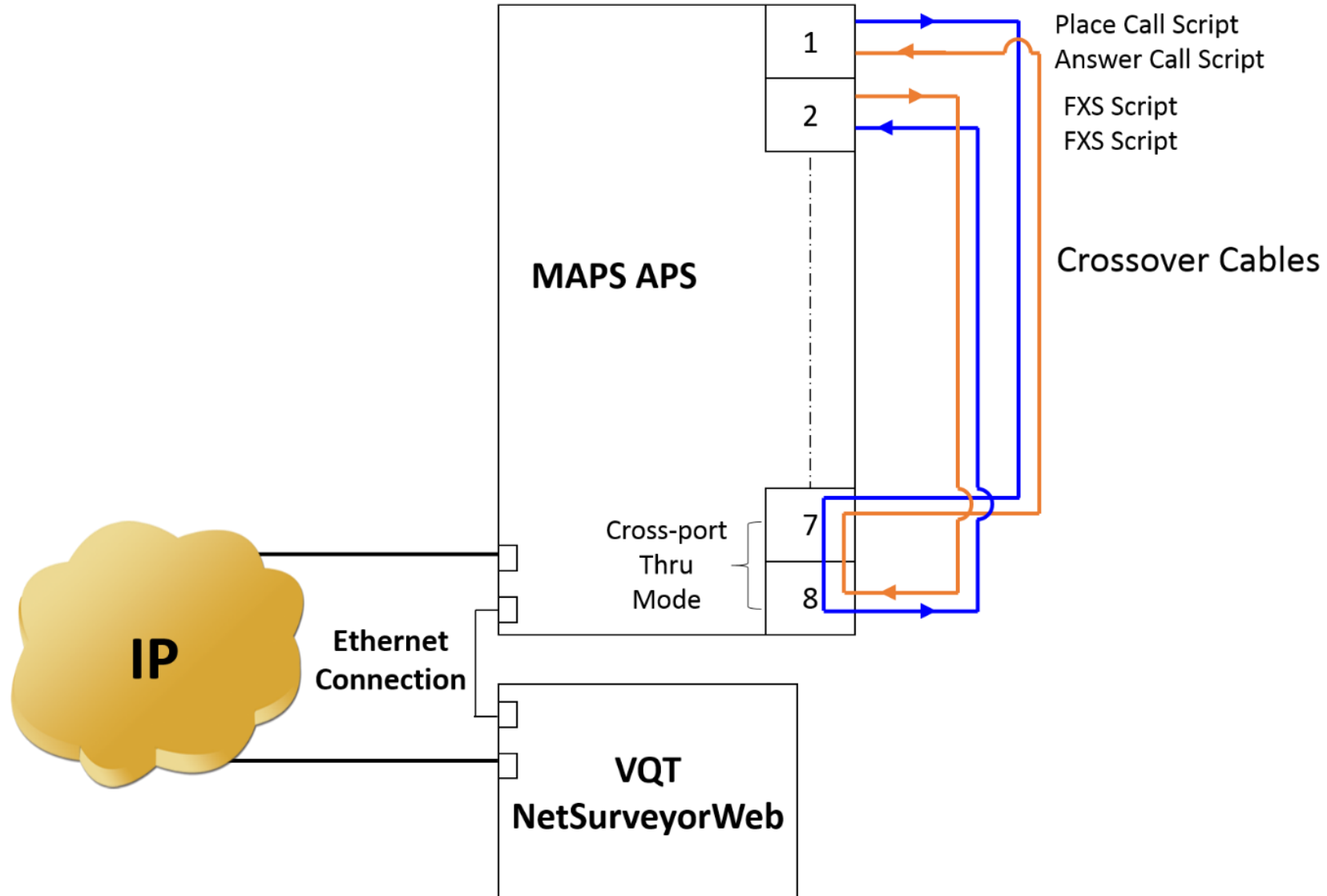
Working Principle



Test Configuration 1

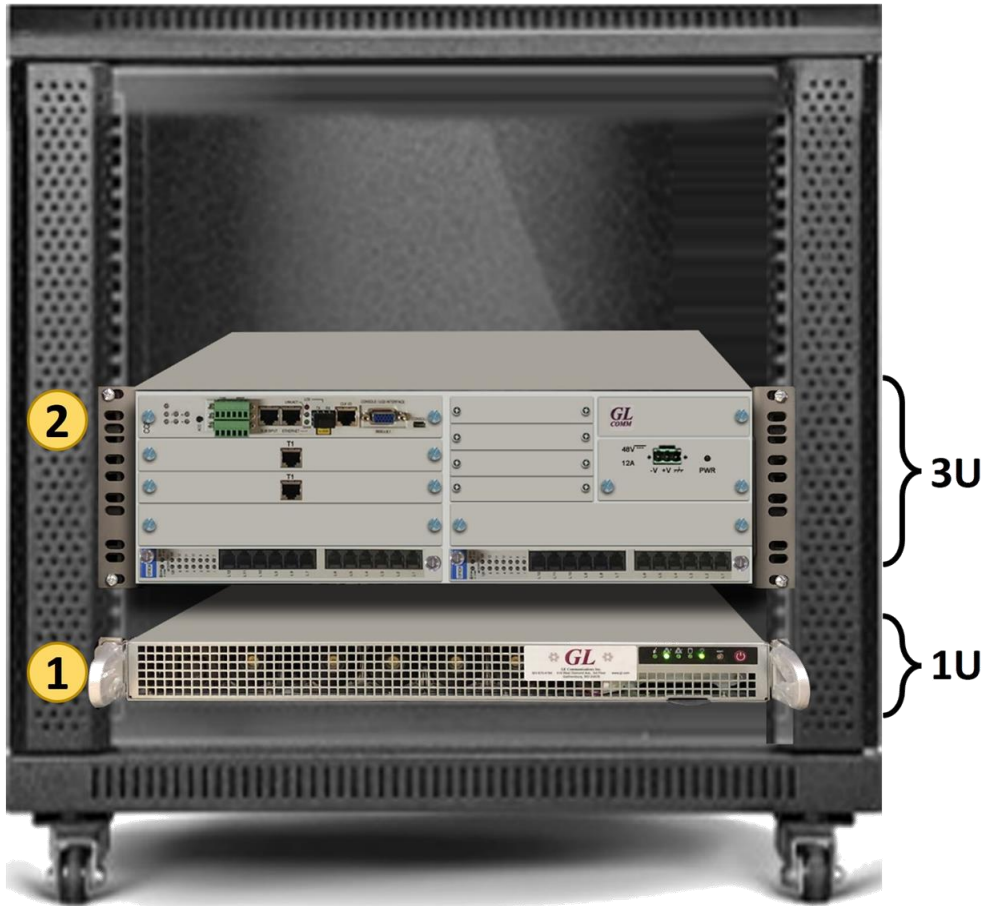


Test Configuration 2

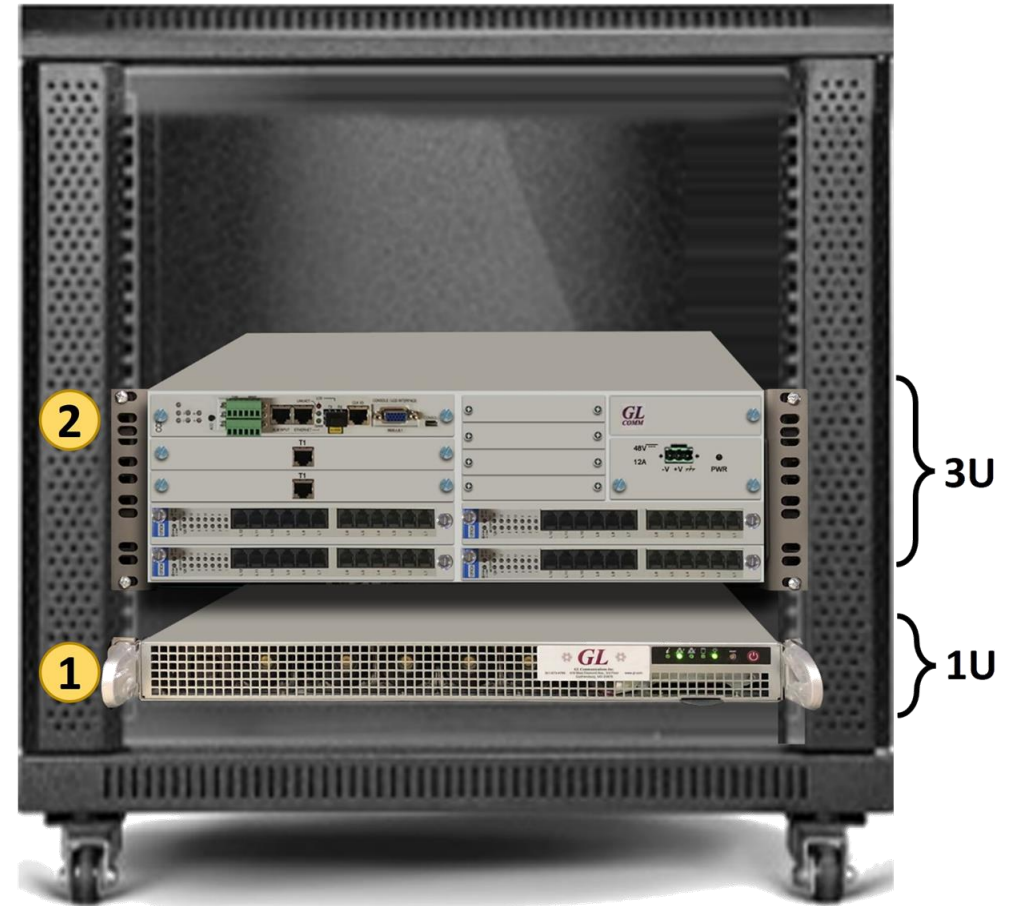


MAPS™ APS Ports

MAPS™ APS 24 Ports



MAPS™ APS 48 Ports



1 MAPS™ APS Server (Optional VQT Analysis)

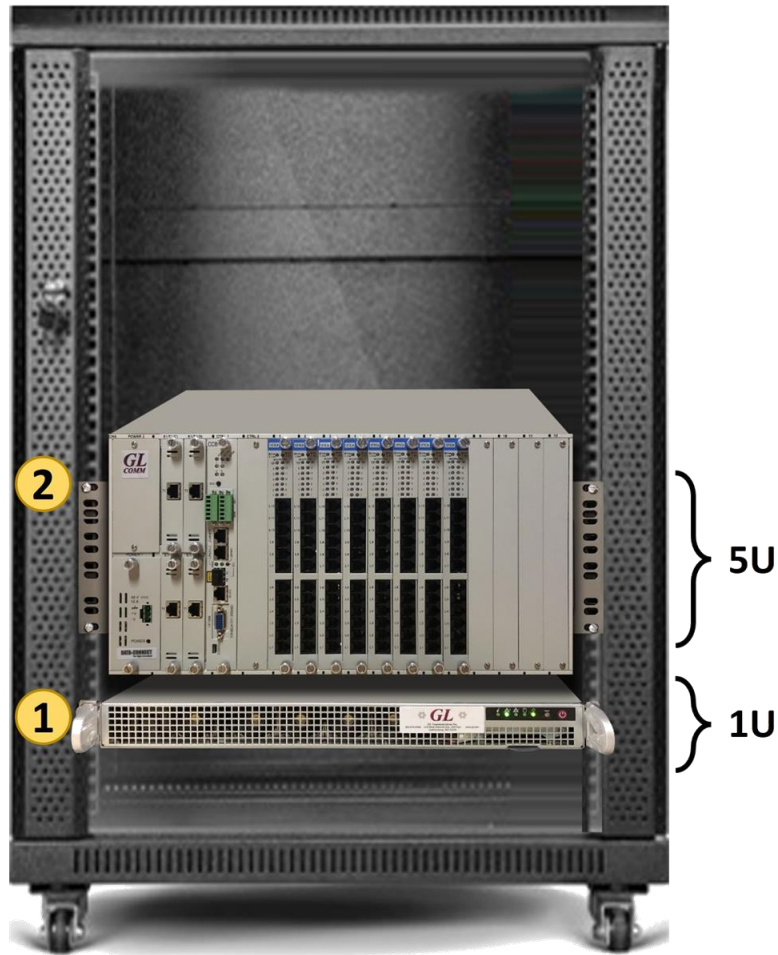
2 APSCB-24 x 1

1 MAPS™ APS Server (Optional VQT Analysis)

2 APSCB-48 x 1

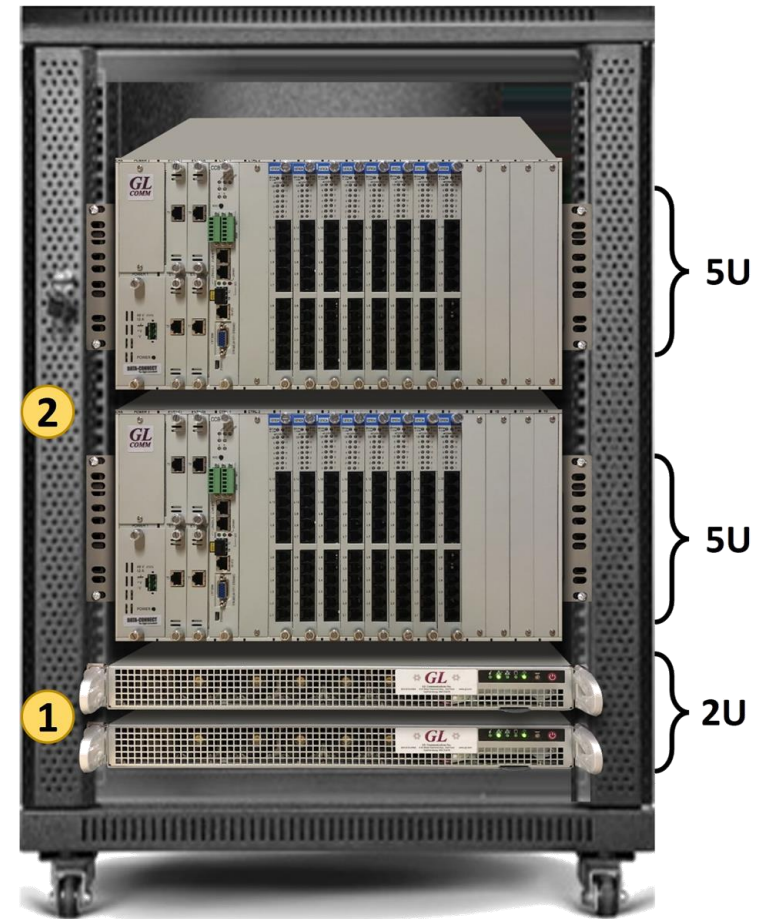
MAPS™ APS Ports (Contd.)

MAPS™ APS 96 Ports



- 1 MAPS™ APS Server (Optional VQT Analysis)
- 2 APSCB-96 x 1

MAPS™ APS 192 Ports



- 1 MAPS™ APS Server (Optional VQT Analysis)
- 2 APSCB-96 x 2

24-Port VQuad™ HD Analog Phone Emulator

VQuad™ HD 24-Port (WB FXO)
(Supports NB, WB)

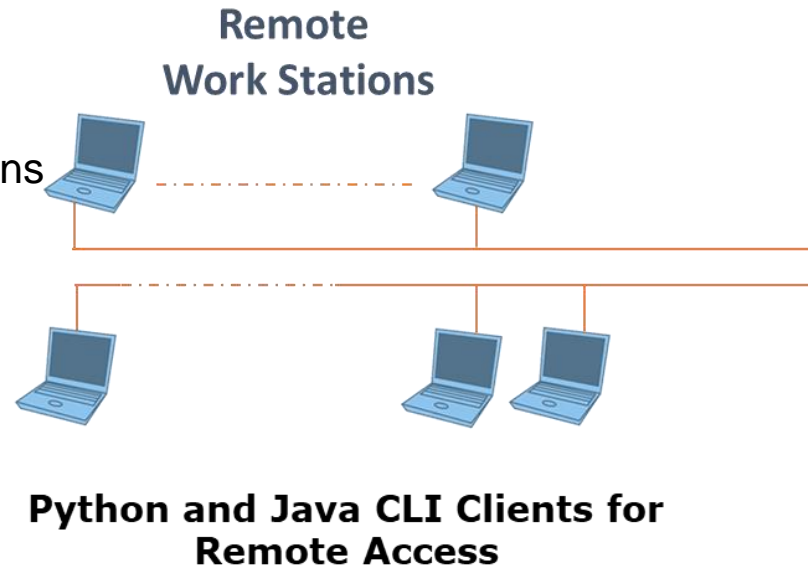


- 1 VQuad™ System w/24 FXO HD Ports
- 2 VQD Central System
(WebViewer w/Oracle DB, PESQ, POLQA)

| Features | High-Density WB Solution VQuad™ 24 Port HD |
|----------------------|--|
| Space Considerations | 2U multi-VQuad™ system with total 12 Dual UTA HD units |
| Ports | 24 Analog FXO ports accessed via 50 Pin Amphenol connector |
| FXO Audio | NB and WB (HD) Audio Supported |
| Operation | Fully Independent FXO Ports with full control between VQuad™ systems |
| Bulk Call | Fully Supported via VQuad™ Scripting |
| Remote Control | Fully Supported via CLI, API or WebViewer™ |
| Traffic | Voice, Digits, Tones, Fax |
| Voice Quality | POLQA (including NB and WB), and PESQ |

CLI APIs

- Available in Python and Java
- Basic telephony functions
 - On-hook
 - Off-hook
 - Detect ringing signal
 - Dial
 - Flash
- Detect related functions
 - Send digits
 - Detect digits
- File transfer functions
 - Send file
 - Receive file
- Fax related functions
 - Send fax
 - Receive fax
- Tone related functions
 - Detect busy tone
 - Detect call waiting tone
 - Detect dial tone
 - Detect reorder tone
 - Detect special dial tone
 - Detect test tone
 - Send tone
 - Send test tone
- FSK related functions
 - Detect caller ID
 - Detect VMWI



MAPS™ APS-24, 48, 96, or 192 Port



MAPS™ Features

Testbed Configuration

MAPS (Message Automation Protocol Simulation) FXO (APS) - [Testbed Setup - TestBedDefault]

Configurations Emulator Reports Editor Debug Tools Windows Help

Config Value

- Configurations
 - GL Server Configuration
 - Interface** T1
 - WCS Listener Port 17080
 - Server IP Address 127.0.0.1
 - Port Configuration
 - T1E1 Port Configura... 1
 - T1E1 Port Config...
 - Port Number 1
 - Start Timeslot 0
 - End Timeslot 23
 - Signaling Bits
 - Ringing 0 0 0 0
 - Offhook 1 1 1 1
 - Onhook 0 1 0 1
 - Database Connection P...
 - Enable Connect To ... Enable
 - Database IP Address 192.168.12.12
 - Database Port 20019
 - Database Probe Name APS_248
 - End User Configurations APS_Profiles.xml

_Interface

Select Option

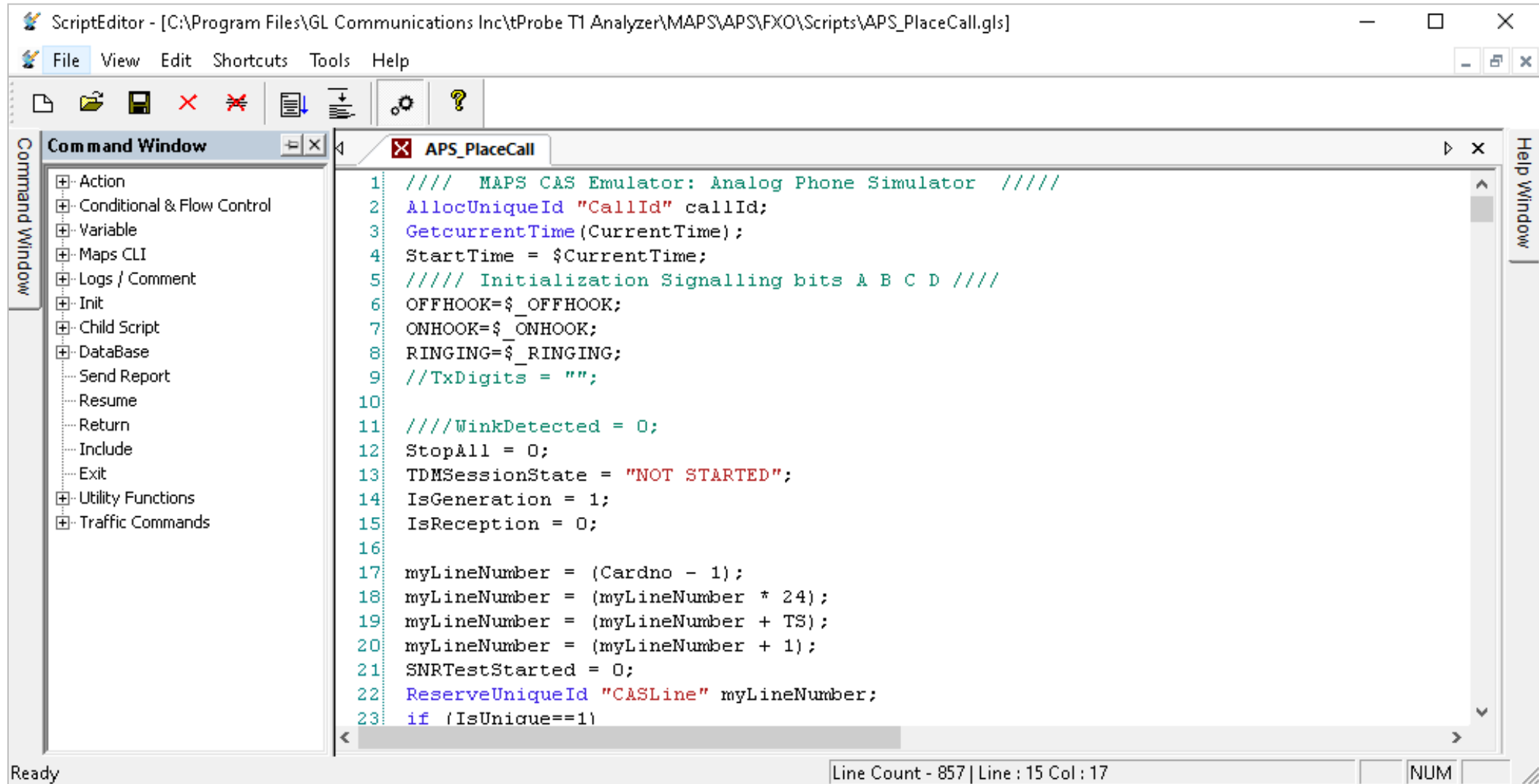
T1

Stop Edit

Profile Configuration

| # | Profiles (Edit-F2) | Config | Value | Enable |
|----|--------------------|--------------------------------------|-------------------------------|-------------------------------------|
| 1 | Line001 | Line001 | | <input checked="" type="checkbox"/> |
| 2 | Line002 | Card Number | 1 | |
| 3 | Line003 | Timeslot | 0 | |
| 4 | Line004 | Region | United States | |
| 5 | Line005 | Signaling Type | Loop Start | |
| 6 | Line006 | Local Ring Detection Parameters | | |
| 7 | Line007 | Perform Call Setup | True | |
| 8 | Line008 | Caller ID Detector | Disable | |
| 9 | Line009 | Line Label | Line001 | |
| 10 | Line010 | Calling Number | 001 | |
| 11 | Line011 | Called Number | 126 | |
| 12 | Line012 | Path Verification | None | |
| 13 | Line013 | Private Line Automatic Ringdown | No | |
| 14 | Line014 | Traffic Type | Voiceband Measurement | |
| 15 | Line015 | Traffic Options | | |
| 16 | Line016 | Record Call | Disable | |
| 17 | Line017 | Digit Parameters | | |
| 18 | Line018 | Digit type | DTMF | |
| 19 | Line019 | Digits | 1234567890 | |
| 20 | Line020 | Power 1 in dBm | -13.00 | |
| 21 | Line021 | Power 2 in dBm | -13.00 | |
| 22 | Line022 | Digit duration in ms | 80 | |
| 23 | Line023 | Inter digit duration in ms | 80 | |
| 24 | Line024 | Inter digit detection timeout in ms | 2000 | |
| 25 | Line025 | Total digits detection timeout in ms | 10000 | |
| 26 | Line026 | User Defined Tone Parameters | | |
| 27 | Line027 | Frequency 1 in Hz | 1004 | |
| 28 | Line028 | Frequency 2 in Hz | 0 | |
| 29 | Line029 | Power in dBm | -10.00 | |
| 30 | Line030 | Duration in ms | 3000 | |
| 31 | Line031 | User Defined File Parameters | | |
| 32 | Line032 | Transmit Parameters | | |
| 33 | Line033 | Voice file to transmit | mu-law samples\vijay.pcm | |
| 34 | Line034 | Transmission mode | Entire file | |
| 35 | Line035 | Transmit duration in ms | 20000 | |
| 36 | Line036 | Receive Parameters | | |
| 37 | Line037 | Reception mode | Duration in ms | |
| 38 | Line038 | Receive duration in ms | 30000 | |
| 39 | Line039 | Fax Parameters | | |
| 40 | Line040 | Codec type | u-law | |
| | | Minimum data rate | 2400 | |
| | | Maximum data rate | 12000 | |
| | | Error correction mode | Enable | |
| | | Transmit fax file | winclientserver\xfaxsimula... | |
| | | Receive fax location | winclientserver\xfaxsimula... | |
| | | IVR Parameters | | |
| | | IVR Record Directory | C:\RecordedFiles\ | |
| | | Traffic Type After IVR Completion | Terminate Call | |
| | | DTMF Response Parameters | | |
| | | Digit Duration in ms | 100 | |
| | | Inter Digit Duration in ms | 100 | |
| | | Power Level in dB | -13.0 | |
| | | Digit Band | inband | |

Script Editor



The screenshot shows the Script Editor application window. The title bar reads "ScriptEditor - [C:\Program Files\GL Communications Inc\Probe T1 Analyzer\MAPS\APS\FXO\Scripts\APS_PlaceCall.gls]". The menu bar includes "File", "View", "Edit", "Shortcuts", "Tools", and "Help". The toolbar contains icons for file operations and editing. On the left, a "Command Window" pane lists various command categories such as Action, Conditional & Flow Control, Variable, Maps CLI, Logs / Comment, Init, Child Script, DataBase, Send Report, Resume, Return, Include, Exit, Utility Functions, and Traffic Commands. The main editor area displays a script for "APS_PlaceCall" with the following code:

```
1  //// MAPS CAS Emulator: Analog Phone Simulator  ////
2  AllocUniqueId "CallId" callId;
3  GetcurrentTime (currentTime);
4  StartTime = $currentTime;
5  //// Initialization Signalling bits A B C D ////
6  OFFHOOK=$_OFFHOOK;
7  ONHOOK=$_ONHOOK;
8  RINGING=$_RINGING;
9  //TxDigits = "";
10
11  ////WinkDetected = 0;
12  StopAll = 0;
13  TDMSessionState = "NOT STARTED";
14  IsGeneration = 1;
15  IsReception = 0;
16
17  myLineNumber = (Cardno - 1);
18  myLineNumber = (myLineNumber * 24);
19  myLineNumber = (myLineNumber + TS);
20  myLineNumber = (myLineNumber + 1);
21  SNRTestStarted = 0;
22  ReserveUniqueId "CASLine" myLineNumber;
23  if (IsUnicue==1)
```

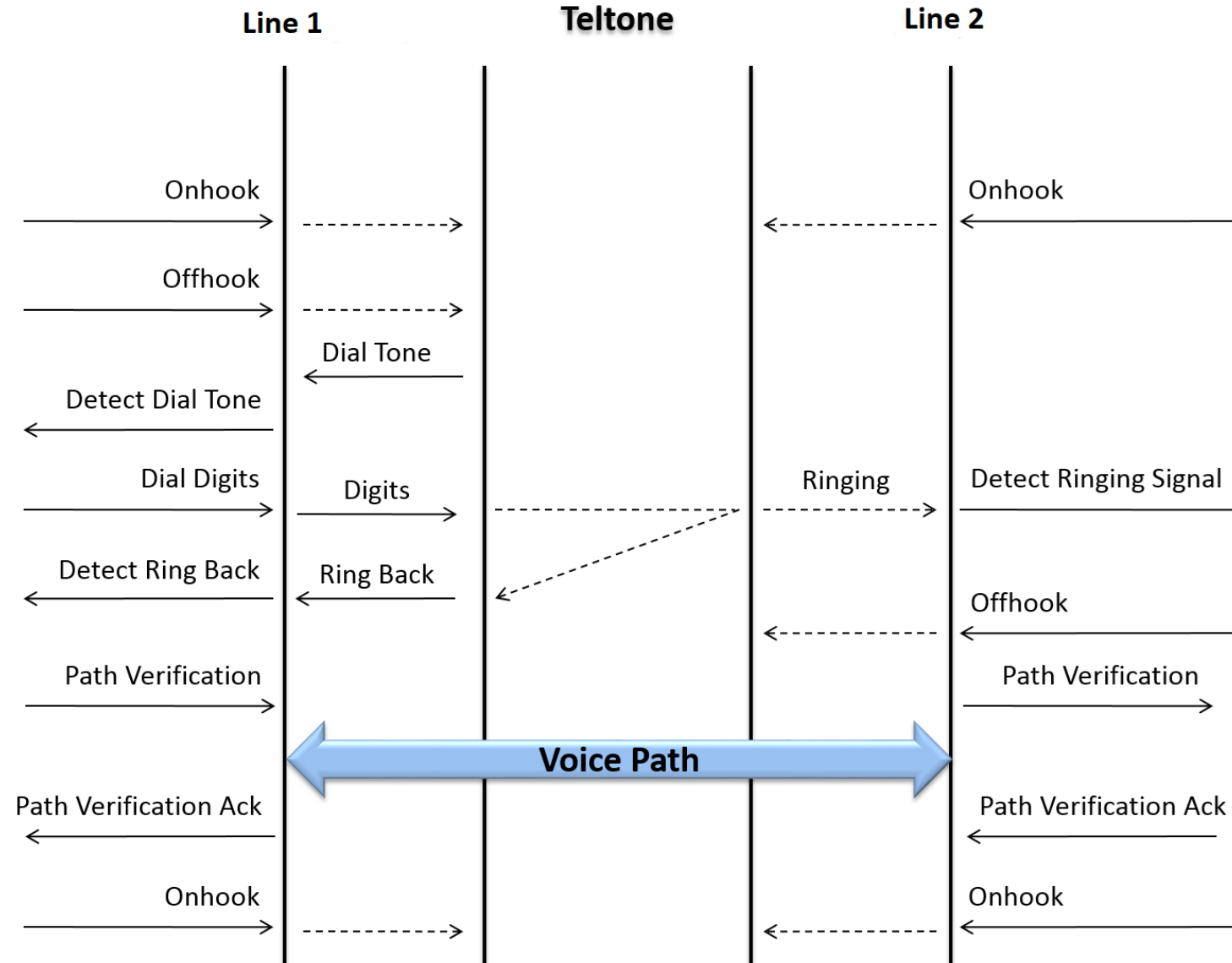
The status bar at the bottom indicates "Ready" on the left and "Line Count - 857 | Line : 15 Col : 17" on the right, along with a "NUM" button.

Message Editor

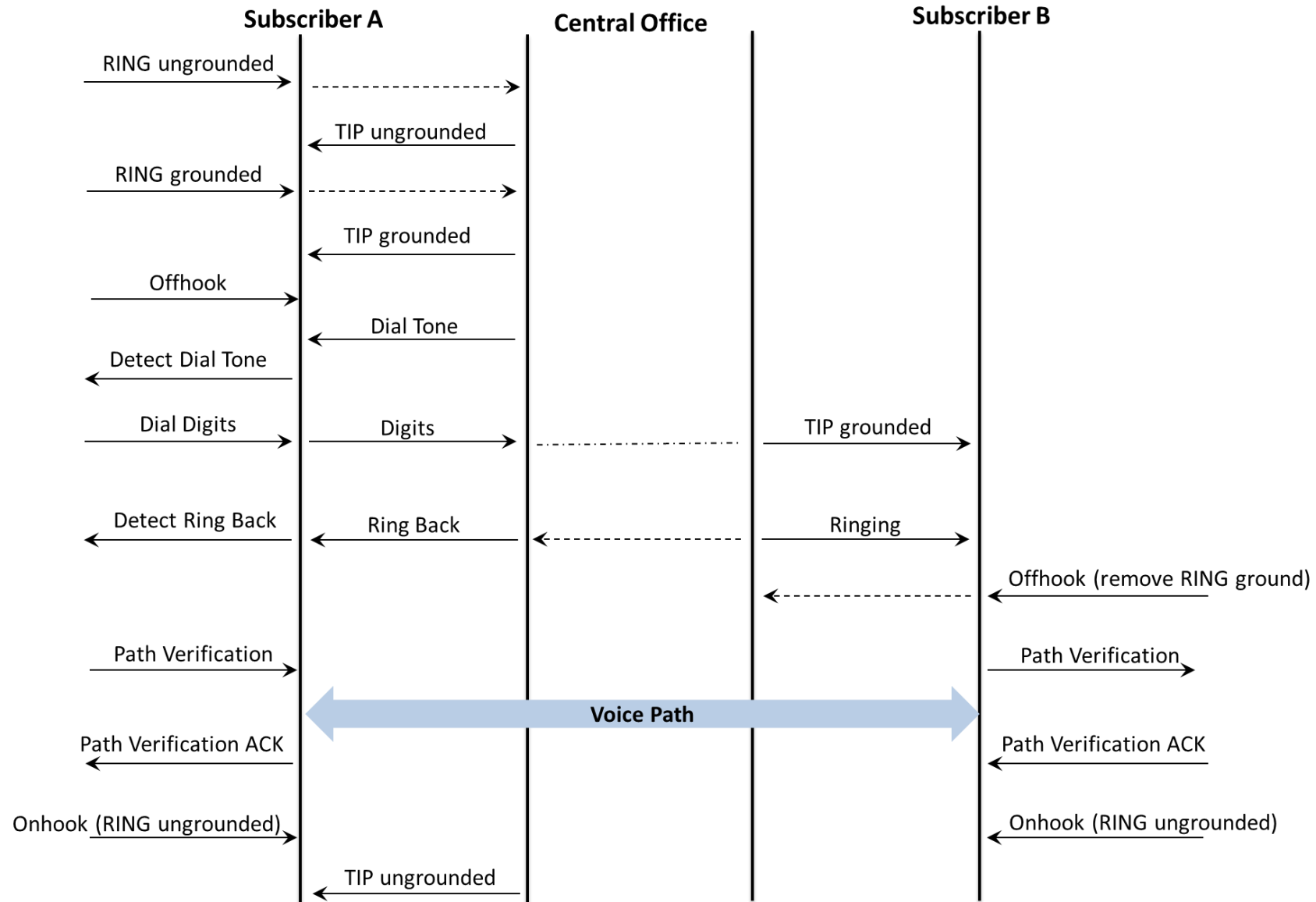
The screenshot shows the 'Message Editor - CreateSessionRequest' window. The interface includes a menu bar (File, View, Direction, Tools, Help) and a toolbar with icons for opening, saving, help, and cancel. The main area is divided into two panes. The left pane shows a tree view of the eGTP message structure, with 'Message Type' selected. The right pane displays a list of message types, with 'Create Session Request = 32' selected. Below these panes is a large text area showing the hexadecimal and textual representation of the message fields.

```
=====  
0000 Version = 010..... GTP-C  
0000 Piggybacking (P) = ...0.... No piggybacked message  
0000 TEID = ....1... TEID Present  
0001 Message Type = 00100000 Create Session Request  
0002 Message Length = 210 (x00D2)  
0004 Tunnel Endpoint Identifier = 1 (x00000001)  
0008 Sequence Number = 1 (x000001)  
      IMSI =  
000C Information Element Id = 00000001 International Mobile Subscriber Identity (IMSI)  
000D Length = 5 (x0005)  
000F Instance = ....0000 (0)  
      IMSI = 9480010087  
      MSISDN =  
0015 Information Element Id = 01001100 MSISDN  
0016 Length = 5 (x0005)  
0018 Instance = ....0000 (0)  
      MSISDN = 9480010087  
      User Location Info (ULI) =  
001E Information Element Id = 01010110 User Location Info (ULI)  
001F Length = 6 (x0006)  
0021 Instance = ....0000 (0)  
0022 CGI = .....0 Not Present
```

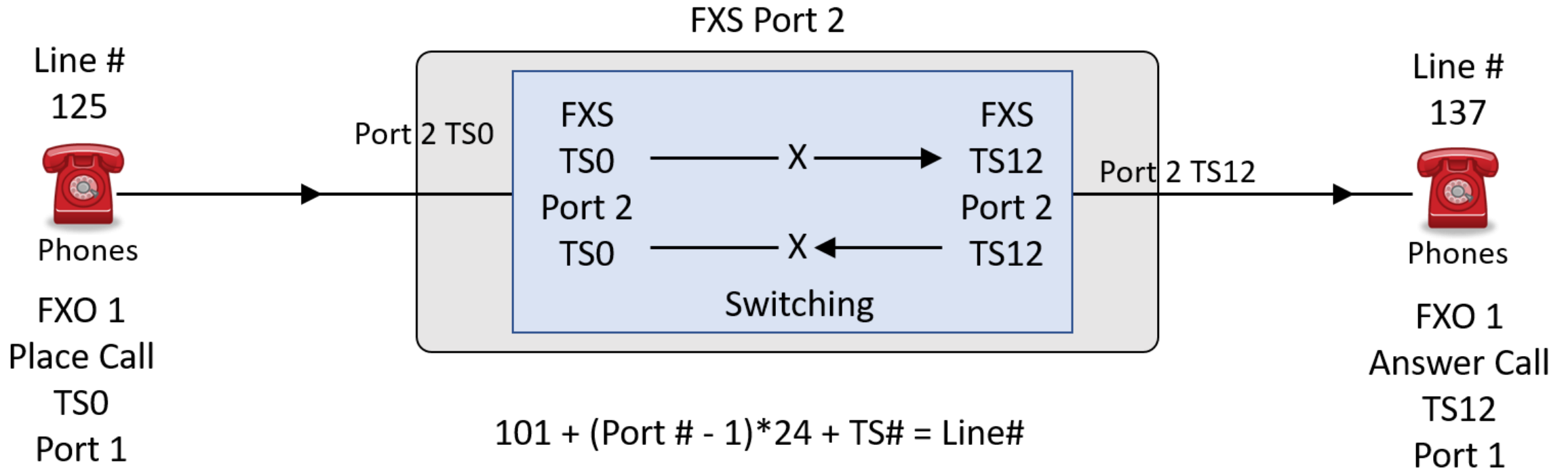
Basic Call Emulation using Teltone Switch



Call Flow Scenario – Ground Start signaling



FXS Time Slot Switching



| | | |
|---|----|-------|
| 1 | 0 | = 101 |
| 4 | 23 | = 196 |
| 1 | 23 | = 124 |
| 5 | 23 | = 220 |

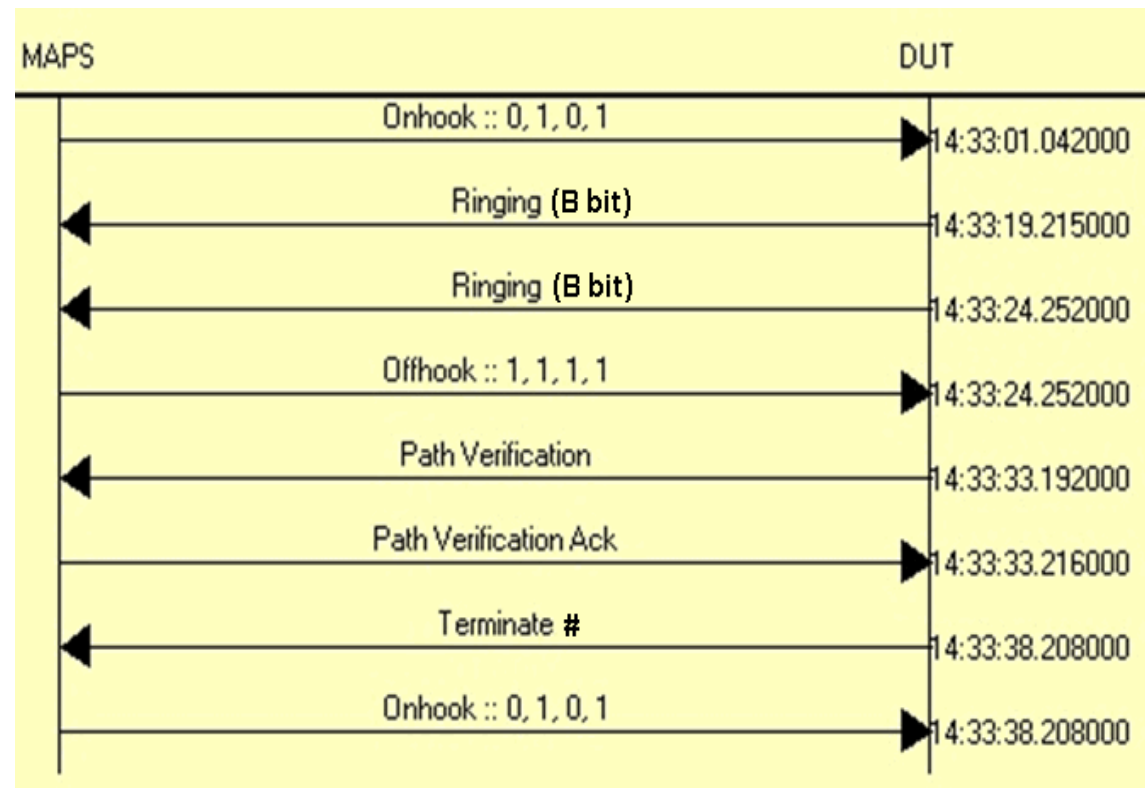
Timeslots

| Port# | Timeslot | Line# | Port# | Timeslot | Line# | Port# | Timeslot | Line# |
|-------|----------|-------|-------|----------|-------|-------|----------|-------|
| 1 | 0 | 101 | 2 | 8 | 133 | 3 | 16 | 165 |
| 1 | 1 | 102 | 2 | 9 | 134 | 3 | 17 | 166 |
| 1 | 2 | 103 | 2 | 10 | 135 | 3 | 18 | 167 |
| 1 | 3 | 104 | 2 | 11 | 136 | 3 | 19 | 168 |
| 1 | 4 | 105 | 2 | 12 | 137 | 3 | 20 | 169 |
| 1 | 5 | 106 | 2 | 13 | 138 | 3 | 21 | 170 |
| 1 | 6 | 107 | 2 | 14 | 139 | 3 | 22 | 171 |
| 1 | 7 | 108 | 2 | 15 | 140 | 3 | 23 | 172 |
| 1 | 8 | 109 | 2 | 16 | 141 | 4 | 0 | 173 |
| 1 | 9 | 110 | 2 | 17 | 142 | 4 | 1 | 174 |
| 1 | 10 | 111 | 2 | 18 | 143 | 4 | 2 | 175 |
| 1 | 11 | 112 | 2 | 19 | 144 | 4 | 3 | 176 |
| 1 | 12 | 113 | 2 | 20 | 145 | 4 | 4 | 177 |
| 1 | 13 | 114 | 2 | 21 | 146 | 4 | 5 | 178 |
| 1 | 14 | 115 | 2 | 22 | 147 | 4 | 6 | 179 |
| 1 | 15 | 116 | 2 | 23 | 148 | 4 | 7 | 180 |
| 1 | 16 | 117 | 3 | 0 | 149 | 4 | 8 | 181 |
| 1 | 17 | 118 | 3 | 1 | 150 | 4 | 9 | 182 |
| 1 | 18 | 119 | 3 | 2 | 151 | 4 | 10 | 183 |
| 1 | 19 | 120 | 3 | 3 | 152 | 4 | 11 | 184 |
| 1 | 20 | 121 | 3 | 4 | 153 | 4 | 12 | 185 |
| 1 | 21 | 122 | 3 | 5 | 154 | 4 | 13 | 186 |
| 1 | 22 | 123 | 3 | 6 | 155 | 4 | 14 | 187 |
| 1 | 23 | 124 | 3 | 7 | 156 | 4 | 15 | 188 |
| 2 | 0 | 125 | 3 | 8 | 157 | 4 | 16 | 189 |
| 2 | 1 | 126 | 3 | 9 | 158 | 4 | 17 | 190 |
| 2 | 2 | 127 | 3 | 10 | 159 | 4 | 18 | 191 |
| 2 | 3 | 128 | 3 | 11 | 160 | 4 | 19 | 192 |
| 2 | 4 | 129 | 3 | 12 | 161 | 4 | 20 | 193 |
| 2 | 5 | 130 | 3 | 13 | 162 | 4 | 21 | 194 |
| 2 | 6 | 131 | 3 | 14 | 163 | 4 | 22 | 195 |
| 2 | 7 | 132 | 3 | 15 | 164 | 4 | 23 | 196 |

Signaling with Path Verification (PV)

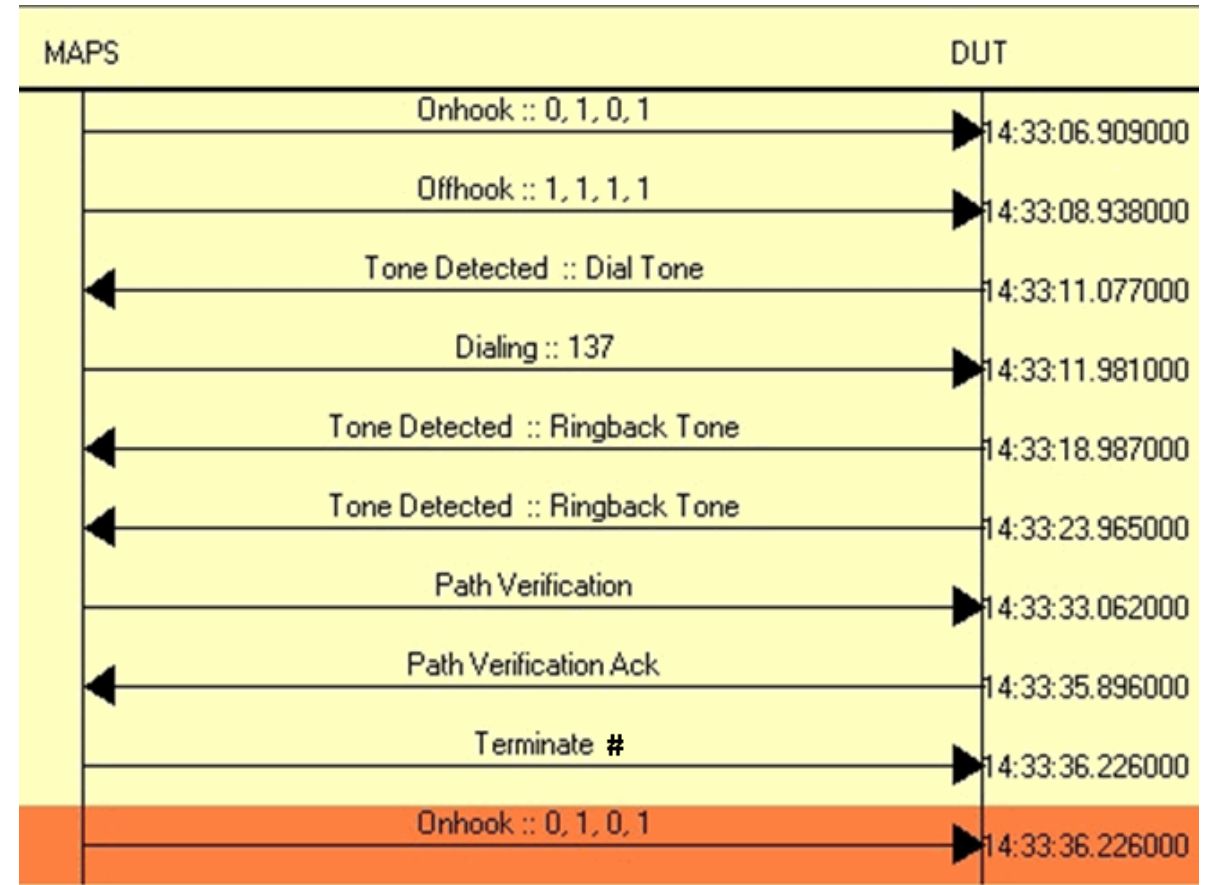
Answer Call Ladder Diagram

- Initially both sides are Onhook
- An incoming call is detected by “B” bit following the cadence of the “ringing” voltage, which is 1 second ON, and 4 seconds OFF
- When the call is answered on the second ring, an Off-Hook is sent
- The “ringing” ceases, and signaling returns to 0,1,0,1 idle sequence
- A 1 second path verification noise burst at -10 dBm is received
- After a 1 second delay this is acknowledged by a 1.5 sec noise burst at -10 dBm also
- A DTMF digit of “#” is received to indicate that call is terminated

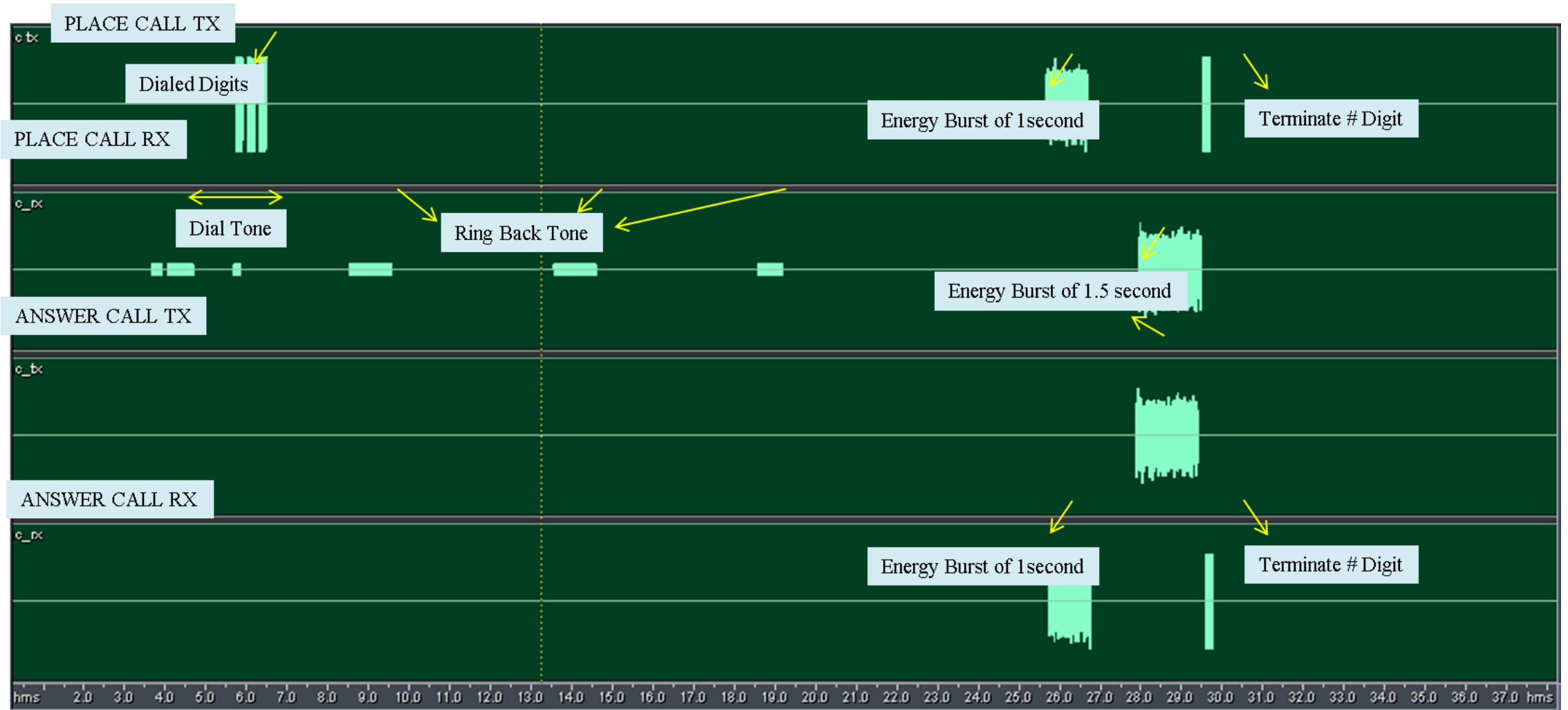


Place Call Ladder Diagram

- Initially both sides are Onhook
- An outgoing call is initiated sending Offhook (1,1,1,1) and waits for dial tone
- When the dial tone is detected, the Place call side dials the digits, and waits for ring back tone
- Once the ring back tone stops and the ceases, the call goes to connected state (call answered), following which the path verification is initiated
- A 1 second path verification noise burst at -10 dBm is sent from the Place Call side
- After a 1 second delay this is acknowledged by a 1.5 sec noise burst at -10 dBm from the Answer call side
- A DTMF digit of “#” is sent to indicate that call will be terminated



Signaling and Path Verification Call Captures



Call Generation FXO APS

Configurations Emulator Reports Editor Debug Tools Windows Help

| Sr No | Script Name | Profile | Call Info | Script Execution | Status | Events | Events Profile | Result | Total Iterations | Completed Iterations |
|-------|--------------------|---------|---------------|------------------|-------------------|--------------------|----------------|--------|------------------|----------------------|
| 1 | APS_PlaceCall.gls | Line001 | Line001.1,1,0 | Stop | Transmitting Tone | OutboundRelease... | | Pass | 1 | 0 |
| 2 | APS_AnswerCall.gls | Line002 | Line002,2,1,1 | Stop | Transmitting Tone | InboundReleaseCall | | Pass | 1 | 0 |

Save Column Width Show Latest

MAPS

DUT

Onhook :: 0, 1, 0, 1 → 12:10:08.977000

Offhook :: 1, 1, 1, 1 → 12:10:10.998000

Tone Detected :: Dial Tone ← 12:10:16.591000

Dialing :: 126 → 12:10:16.602000

Tone Detected :: Ringback Tone ← 12:10:24.424000

Tone Detected :: Ringback Tone ← 12:10:30.419000

Tone Detected :: Ringback Tone ← 12:10:34.922000

Path Verification → 12:10:42.457000

Path Verification Ack ← 12:10:48.458000

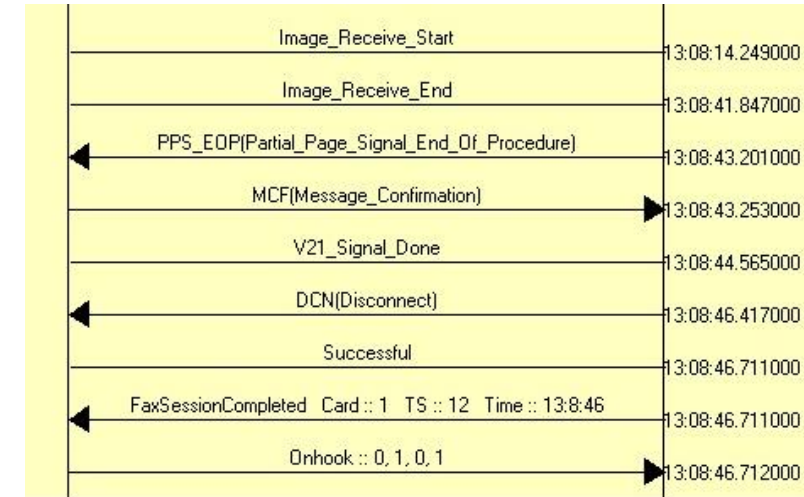
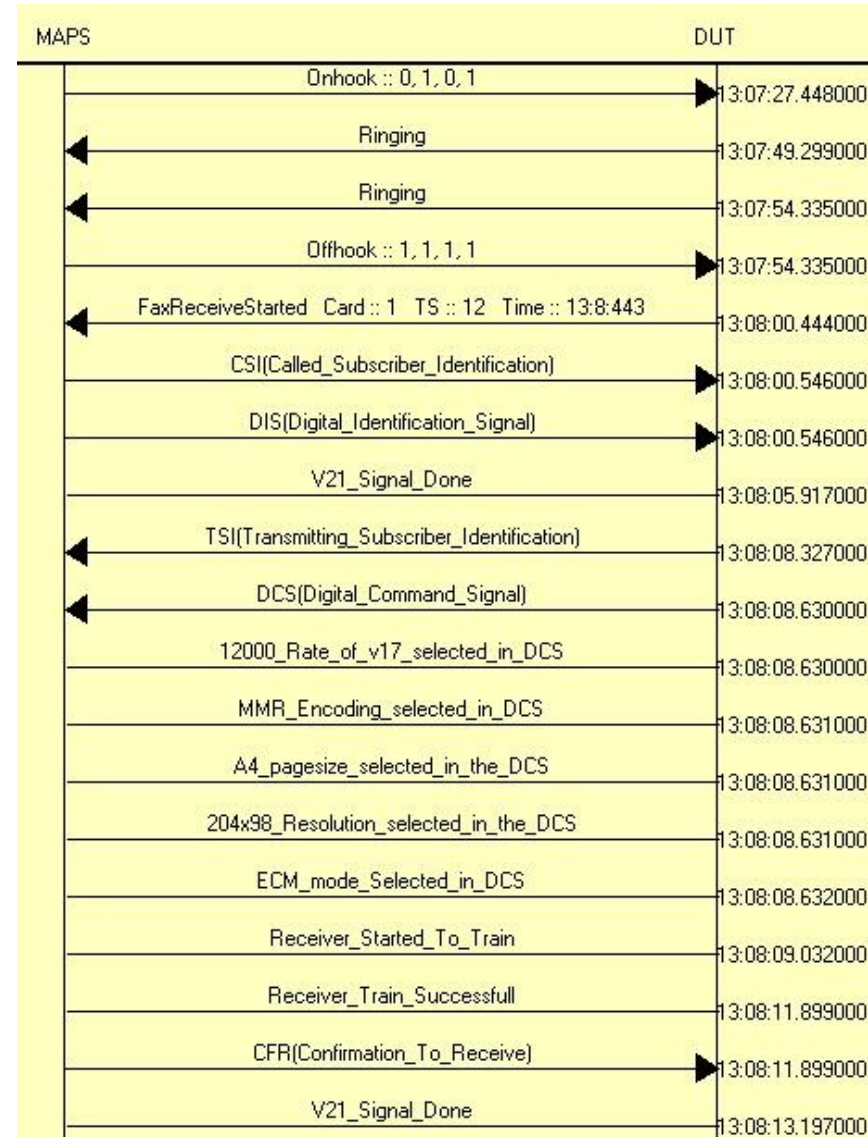
SendTone :: 1004, 0 → 12:10:49.495000

Find

Signaling with FAX

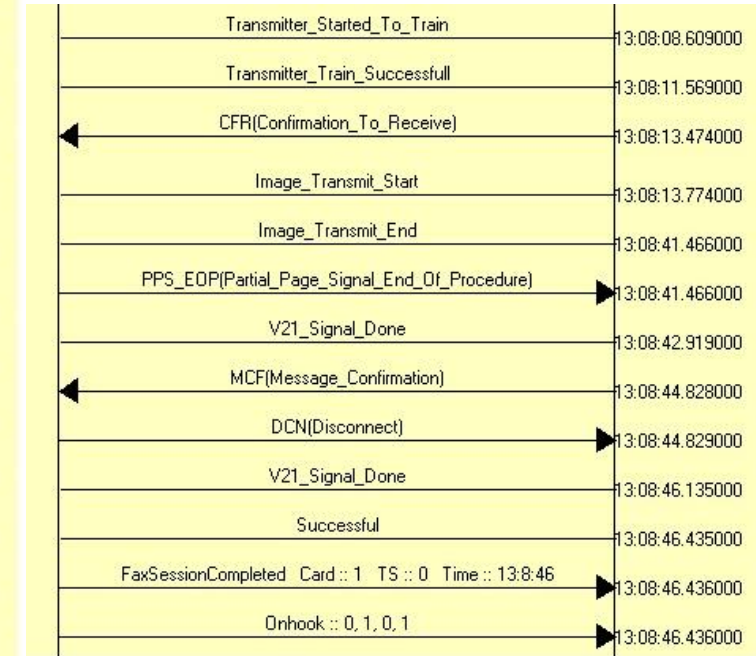
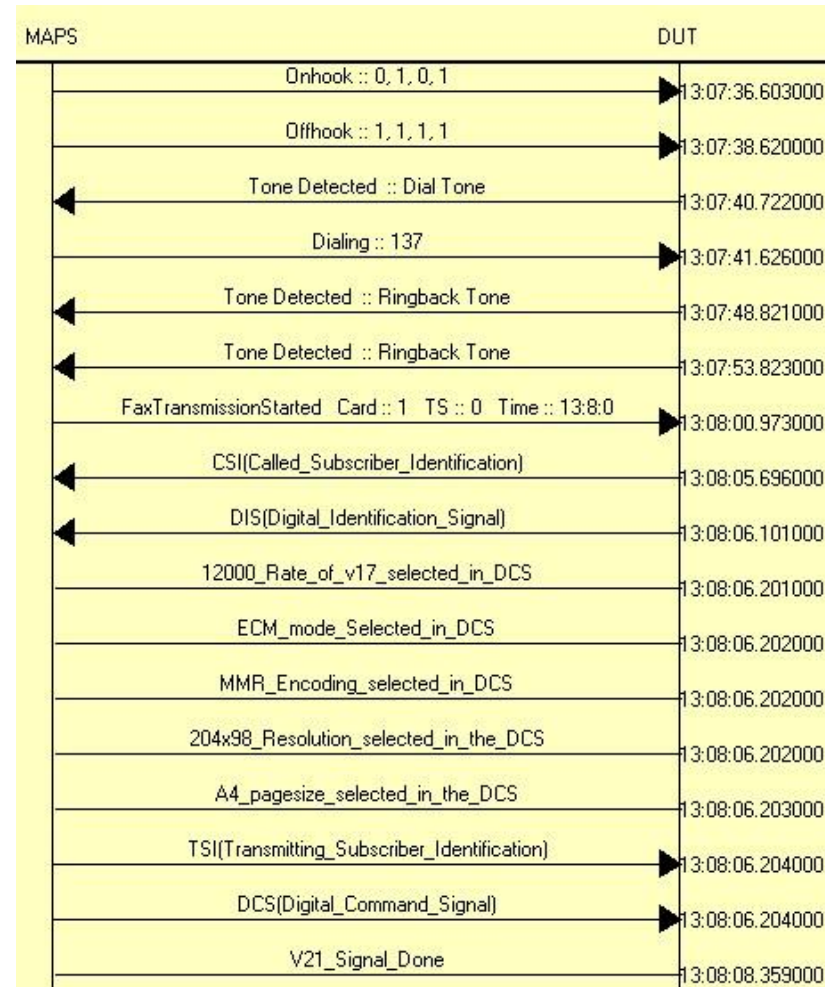
Ladder Diagram of Answer Call for FAX

- All signaling states follow the same procedures as in Place Call and Answer call sides
- Once the call flow reaches connected state, the fax receive action starts from the Answer call side
- All fax signaling parameters are negotiated, and on successful negotiation, the TIFF image is received and acknowledged

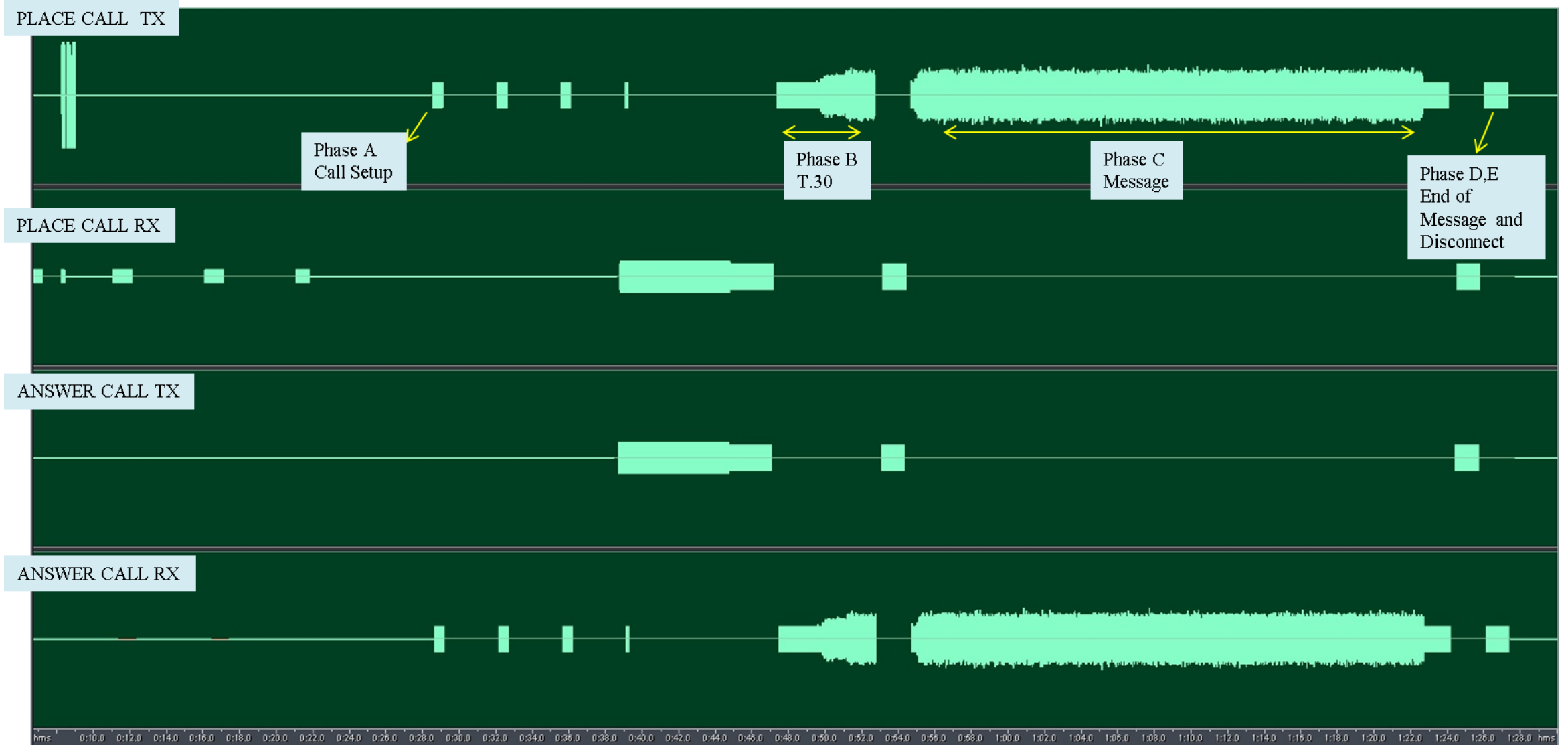


Ladder Diagram of Place Call for FAX

- All signaling states follow the same procedures as in Place Call and Answer call sides
- Once the call flow reaches connected state, the fax transmit action starts from the Place call side
- All fax signaling parameters are negotiated, and on successful negotiation, the TIFF image is transmitted and fax status from remote side is acknowledged



FAX Call Captures



Call Generation Sending and Receiving Fax

MAPS (Message Automation Protocol Simulation) FXO (APS) - [Call Generation - CallGenDefault]

Configurations Emulator Reports Editor Debug Tools Windows Help

| Sr No | Script Name | Profile | Call Info | Script Execution | Status | Events | Events Profile | Result | Total Iterations |
|-------|--------------------|---------|---------------|------------------|--------------------|---------------------|----------------|--------|------------------|
| 1 | APS_PlaceCall.gls | Line001 | Line001,1,1,0 | Stop | ImageTransmitStart | OutboundReleaseCall | | Pass | 1 |
| 2 | APS_AnswerCall.gls | Line002 | Line002,2,1,1 | Stop | ImageReceiveStart | InboundReleaseCall | | Pass | 1 |

Column Width Show Latest

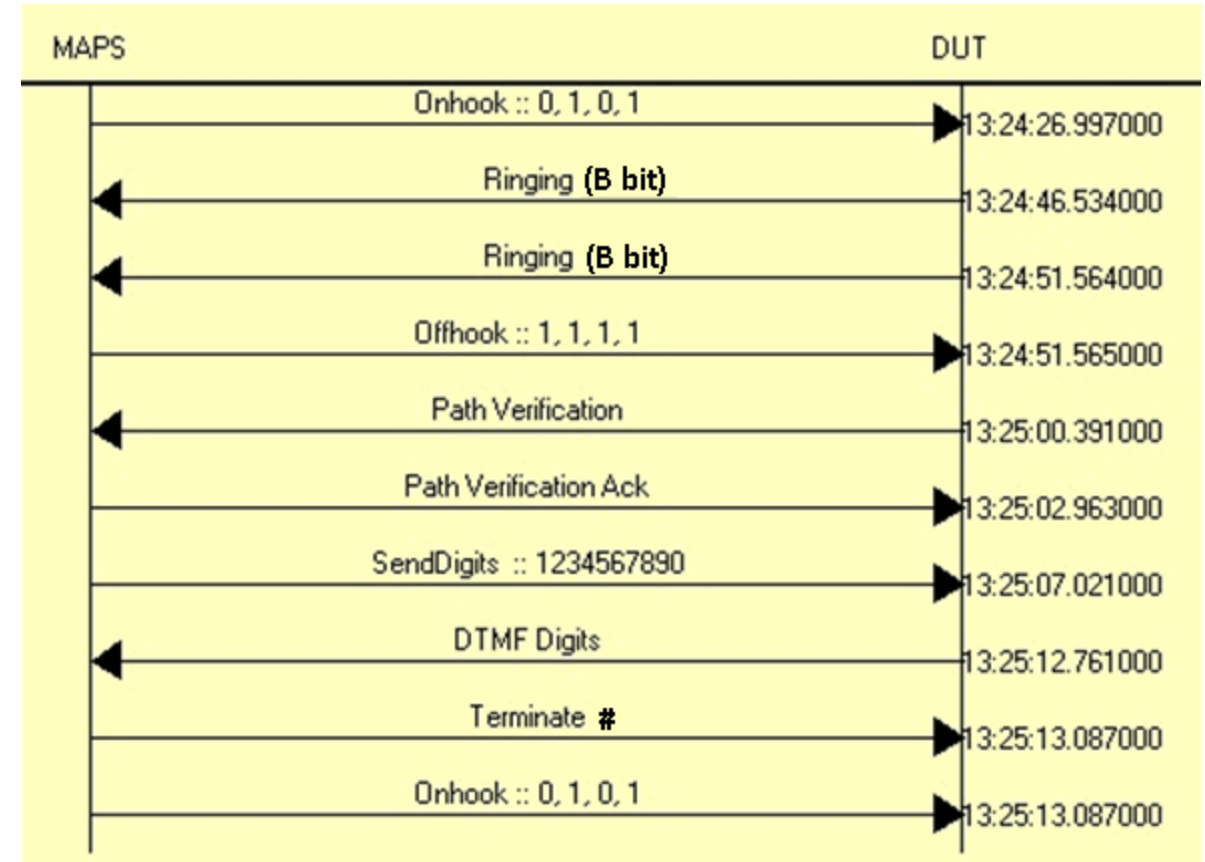
| Event | Time |
|--|-----------------|
| Offhook :: 1, 1, 1, 1 | 13:27:23.311000 |
| FaxReceiveStarted Card:: 1 TS:: 1 Time:: 13:27:409 | 13:27:40.411000 |
| CSI(CalledSubscriberIdentification) | 13:27:40.462000 |
| DIS(DigitalIdentificationSignal) | 13:27:40.462000 |
| TSI(TransmittingSubscriberIdentification) | 13:27:47.853000 |
| DCS(DigitalCommandSignal) | 13:27:48.107000 |
| 12000Rateofv17selectedinDCS | 13:27:48.210000 |
| MMREncodingsselectedinDCS | 13:27:48.212000 |
| A4pagesizesselectedintheDCS | 13:27:48.213000 |
| 204x98ResolutionselectedintheDCS | 13:27:48.214000 |
| ECMmodeSelectedinDCS | 13:27:48.215000 |
| ReceiverStartedToTrain | 13:27:48.616000 |
| ReceiverTrainSuccessfull | 13:27:51.369000 |
| CFR(ConfirmationToReceive) | 13:27:51.369000 |
| ImageReceiveStart | 13:27:53.358000 |

Find

Signaling with Digits

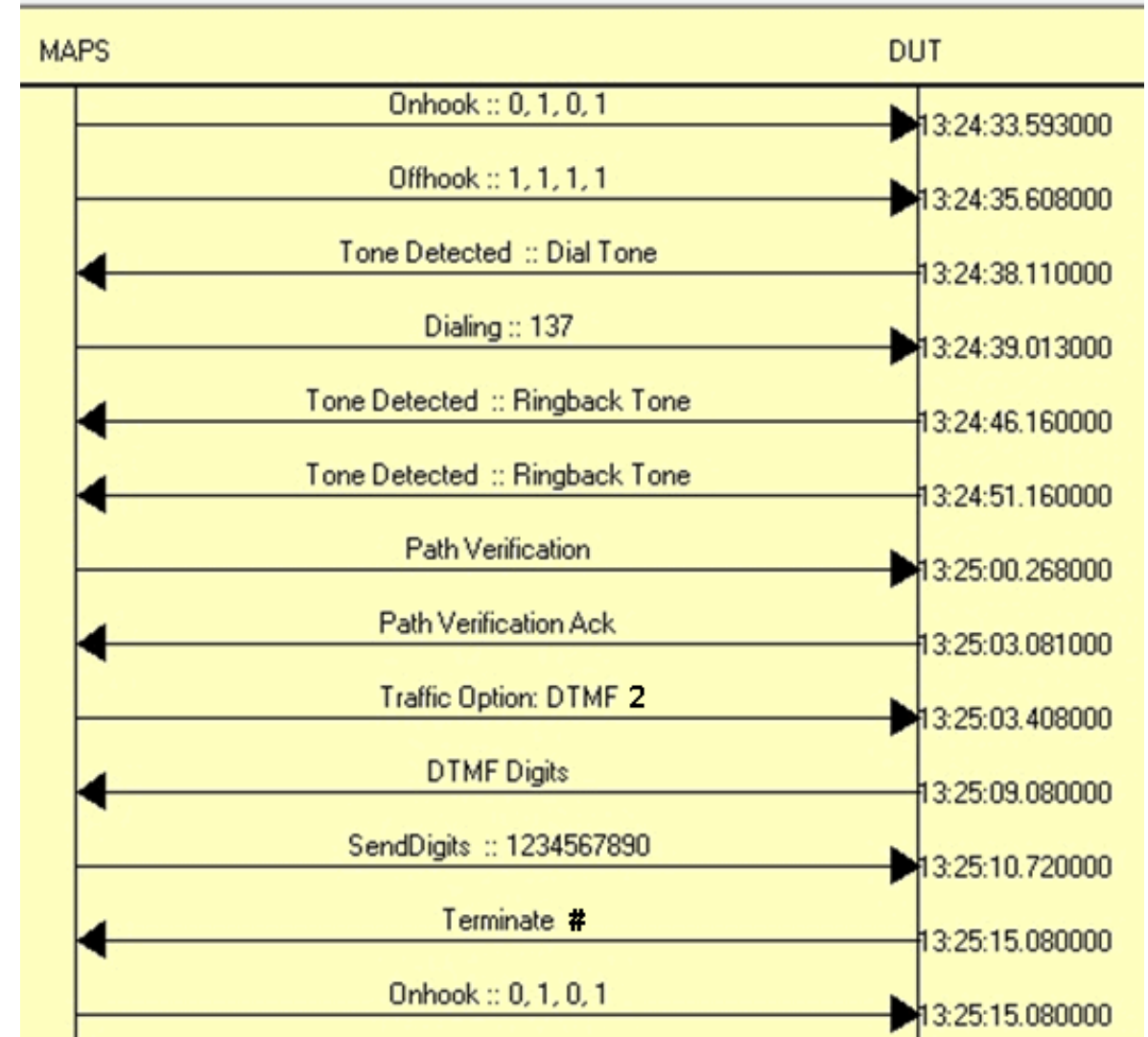
Ladder Diagram of Answer Call for Digit

- All signaling states follow the same procedures as in Place Call and Answer call sides
- Once the call flow reaches connected state and after path verification procedure, the digits detect action starts from the Answer call side
- The Answer call side waits for digit transmission indication (digit 2) from the place call side. Once this is received, the answer call sends DTMF digits
- The Answer Call side terminates the call by sending the # DTMF digit, and subsequently sending On Hook

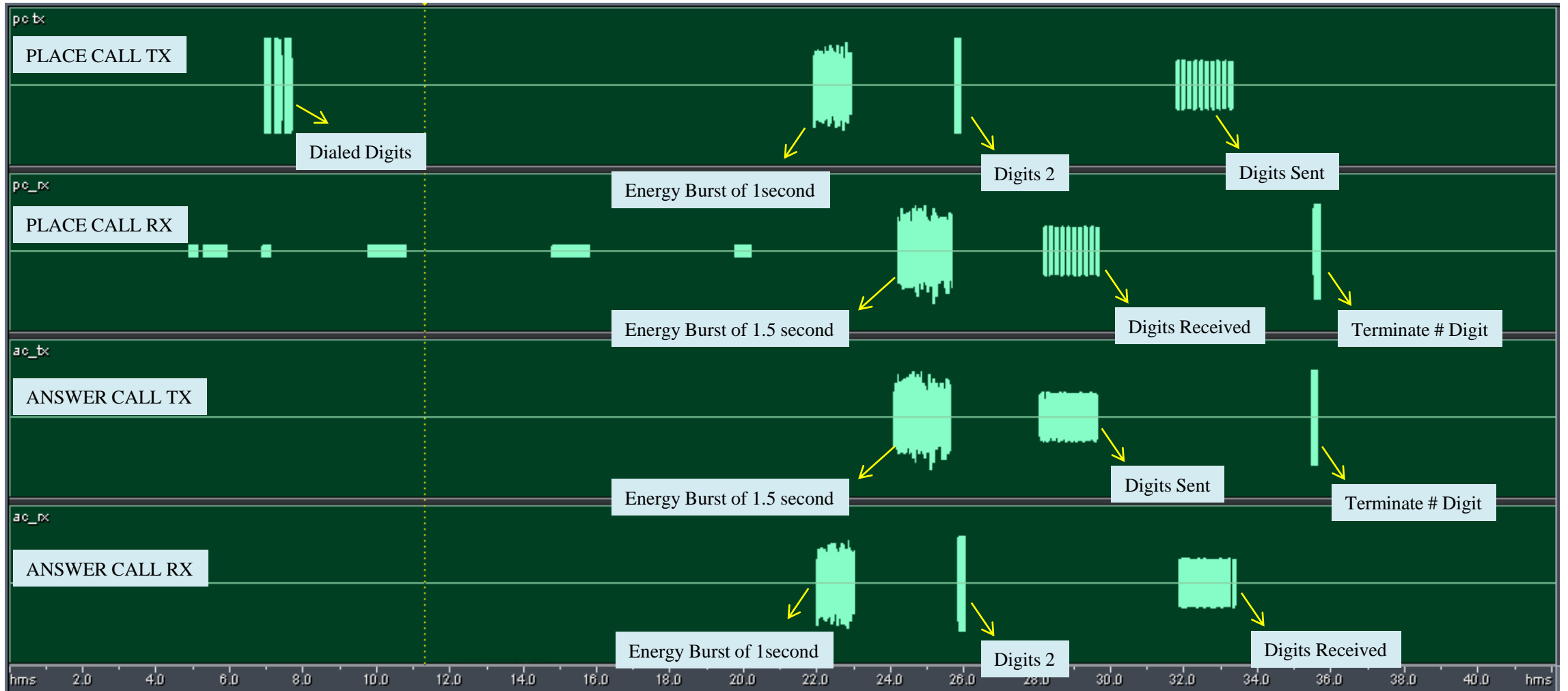


Ladder Diagram of Place Call for Digit

- All signaling states follow the same procedures as in Place Call side
- Once the call flow reaches connected state and after path verification procedure, a digit '2' is transmitted to indicate the start of transmission process
- The Place call side then receives the DTMF digits from the Answer call side
- A DTMF digit of “#” is received to indicate that call will be terminated



Digit Capture



Call Generation of Sending Digits

Call Generation - CallGenDefault

| Sr No | Script Name | Profile | Call Info | Script Execution | Status | Events | Events Profile | Result | Total Iterations |
|-------|--------------------|---------|---------------|------------------|---------------|--------|----------------|--------|------------------|
| 1 | APS_PlaceCall.gls | Line001 | Line001,1,1,0 | Start | CALL_RELEASED | None | | Pass | 1 |
| 2 | APS_AnswerCall.gls | Line002 | Line002,2,1,1 | Start | CALL_RELEASED | None | | Pass | 1 |

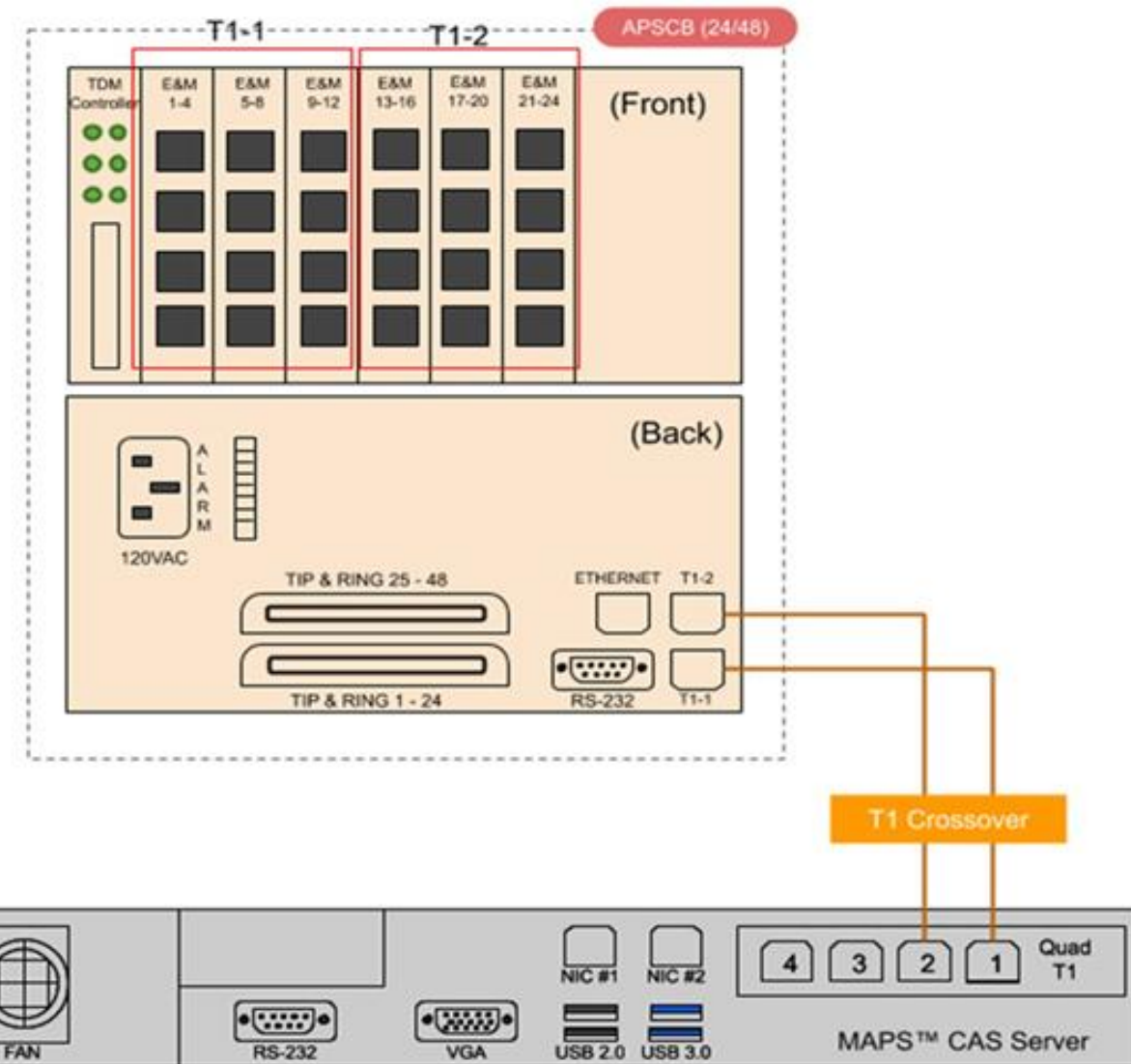
Column Width
 Show Latest

| MAPS | DUT |
|--------------------------------|-----------------|
| Onhook :: 0, 1, 0, 1 | 13:38:46.704000 |
| Offhook :: 1, 1, 1, 1 | 13:38:48.709000 |
| Tone Detected :: Dial Tone | 13:38:54.451000 |
| Dialing :: 126 | 13:38:54.461000 |
| Tone Detected :: Ringback Tone | 13:39:06.446000 |
| Tone Detected :: Ringback Tone | 13:39:12.448000 |
| Path Verification | 13:39:20.463000 |
| Path Verification Ack | 13:39:22.466000 |
| SendDigits :: 1234567890 | 13:39:25.489000 |
| ReceiveDigits :: 1234567890 | 13:39:32.812000 |
| SendDigits :: Terminate | 13:39:35.830000 |
| Onhook :: 0, 1, 0, 1 | 13:39:35.845000 |
| Onhook :: 0, 1, 0, 1 | 13:39:36.351000 |

Find

MAPS™ E&M

- A channel bank is required to provide analog 4-wire E&M interfaces
- Without a channel bank, MAPS APS will perform the signaling required to emulate E&M signaling



MAPS™ E&M (Contd.)

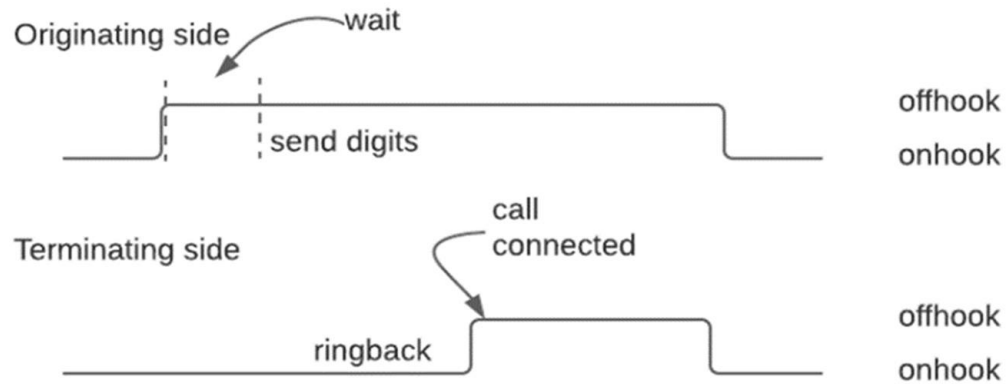
- Each E&M service card provides four female RJ-45 connectors
- Each T1 supports 3 E&M service cards for a total of 12 E&M interfaces
- The pin-out for the RJ-45 connector is below. E&M Signaling Types I, II, III, IV, and V are supported by the E&M service card

| Normal Mode (Terminating/Channel Equipment) | | Tandem Mode (Originating/Switching Equipment) | |
|--|---------------------|--|---------------------|
| Pin | Name | Pin | Name |
| 1 | SG (Signal Ground) | 1 | SG (Signal Battery) |
| 2 | E | 2 | M |
| 3 | R1 | 3 | R1 |
| 4 | R | 4 | R |
| 5 | T | 5 | T |
| 6 | T1 | 6 | T1 |
| 7 | M | 7 | E |
| 8 | SB (Signal Battery) | 8 | SG (Signal Battery) |

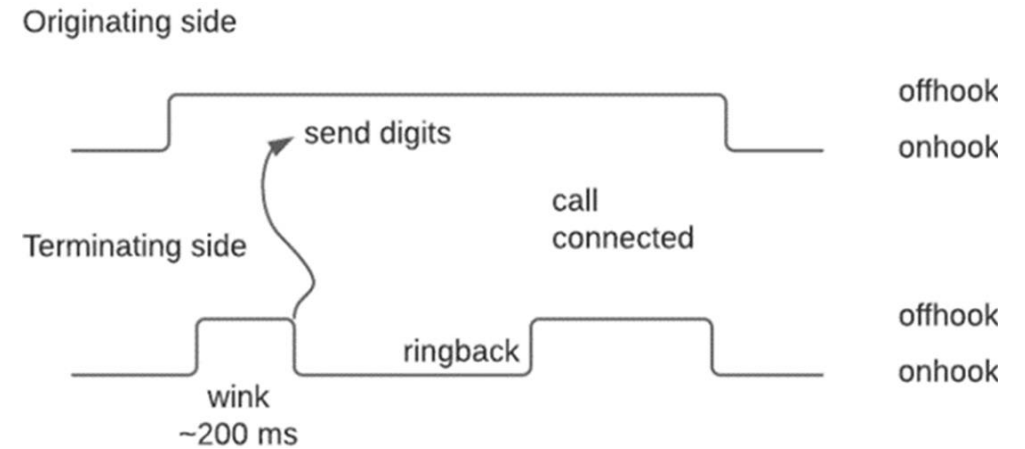
Dial Supervision Signaling

- Three types of start dial supervision signaling are supported and can be selected via the E&M Profiles in MAPS APS

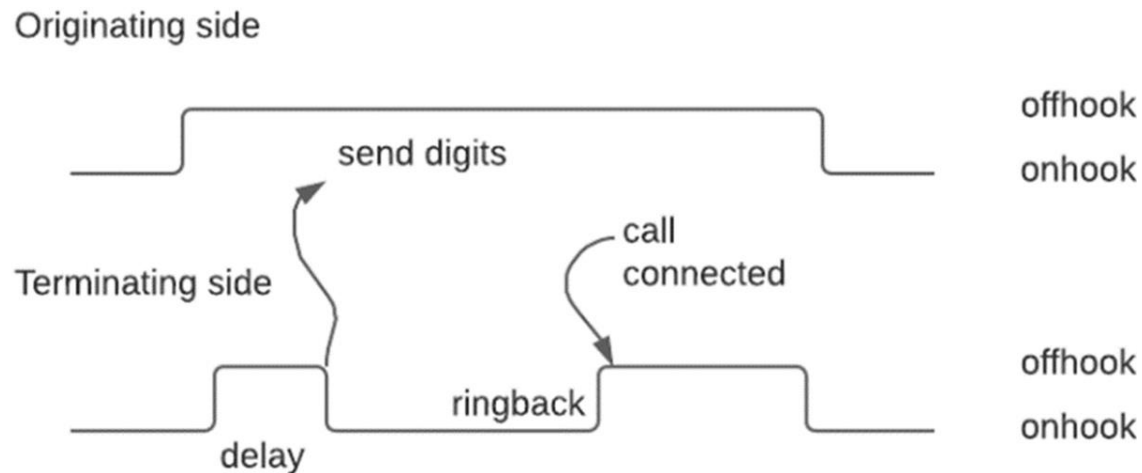
Immediate Start Signaling



Wink Start Signaling



Delay Dial Signaling



Call Generation E&M

Call Generation - Default

| Sr No | Script Name | Profile | Call Info | Script Execution | Status | Events | Events Profile | Result | Total Iteratio... | Completed Iterations |
|-------|---------------------|---------|----------------|------------------|----------------|--------------------|----------------|--------|-------------------|----------------------|
| 1 | E&M_Originating.gls | Line001 | Line001,1,1,0 | Stop | Call Connected | OutboundRelease... | | Pass | 1 | 0 |
| 2 | E&M_Terminating.gls | Line013 | Line013,25,2,0 | Stop | Call Connected | InboundReleaseCall | | Pass | 1 | 0 |

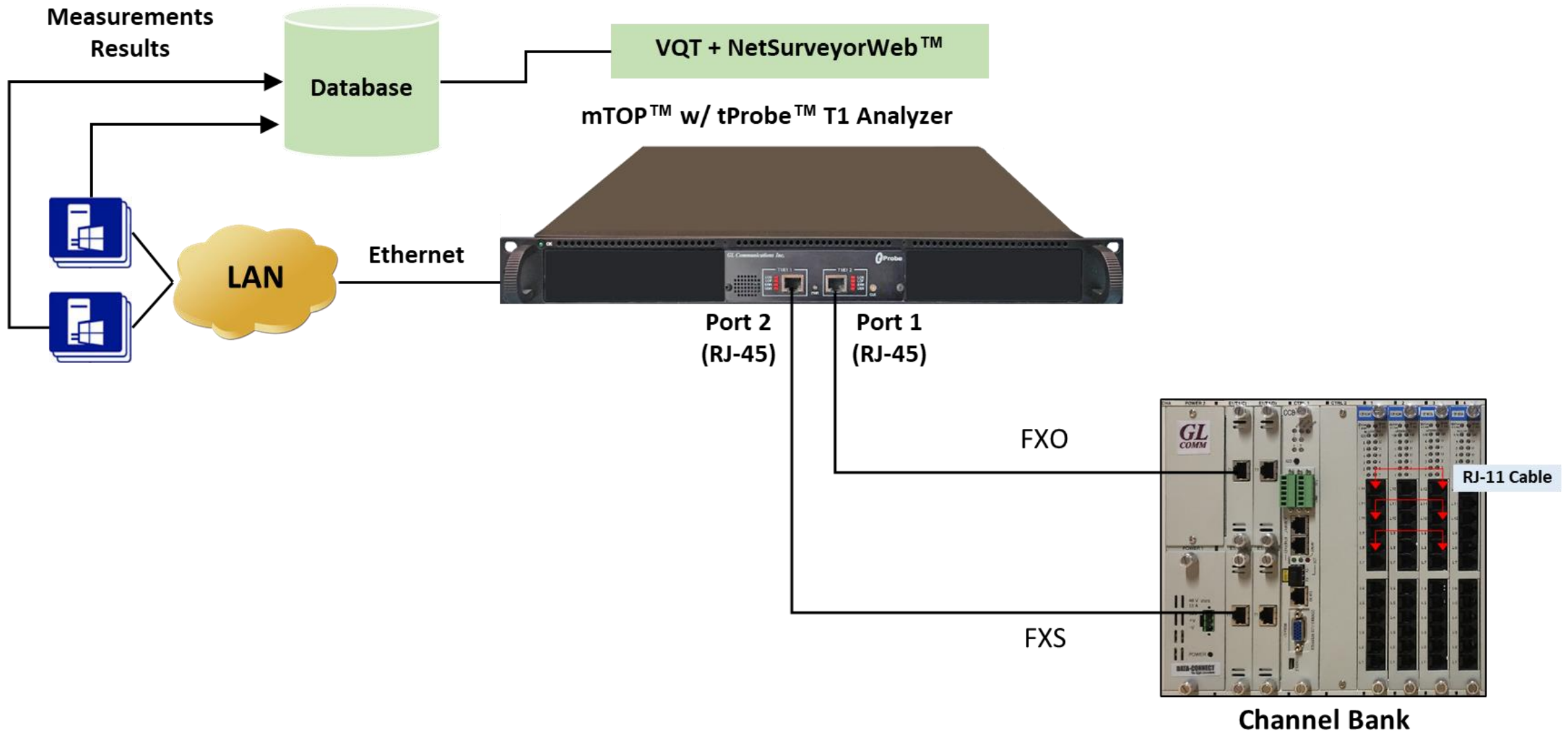
Column Width
 Show Latest

MAPS

DUT

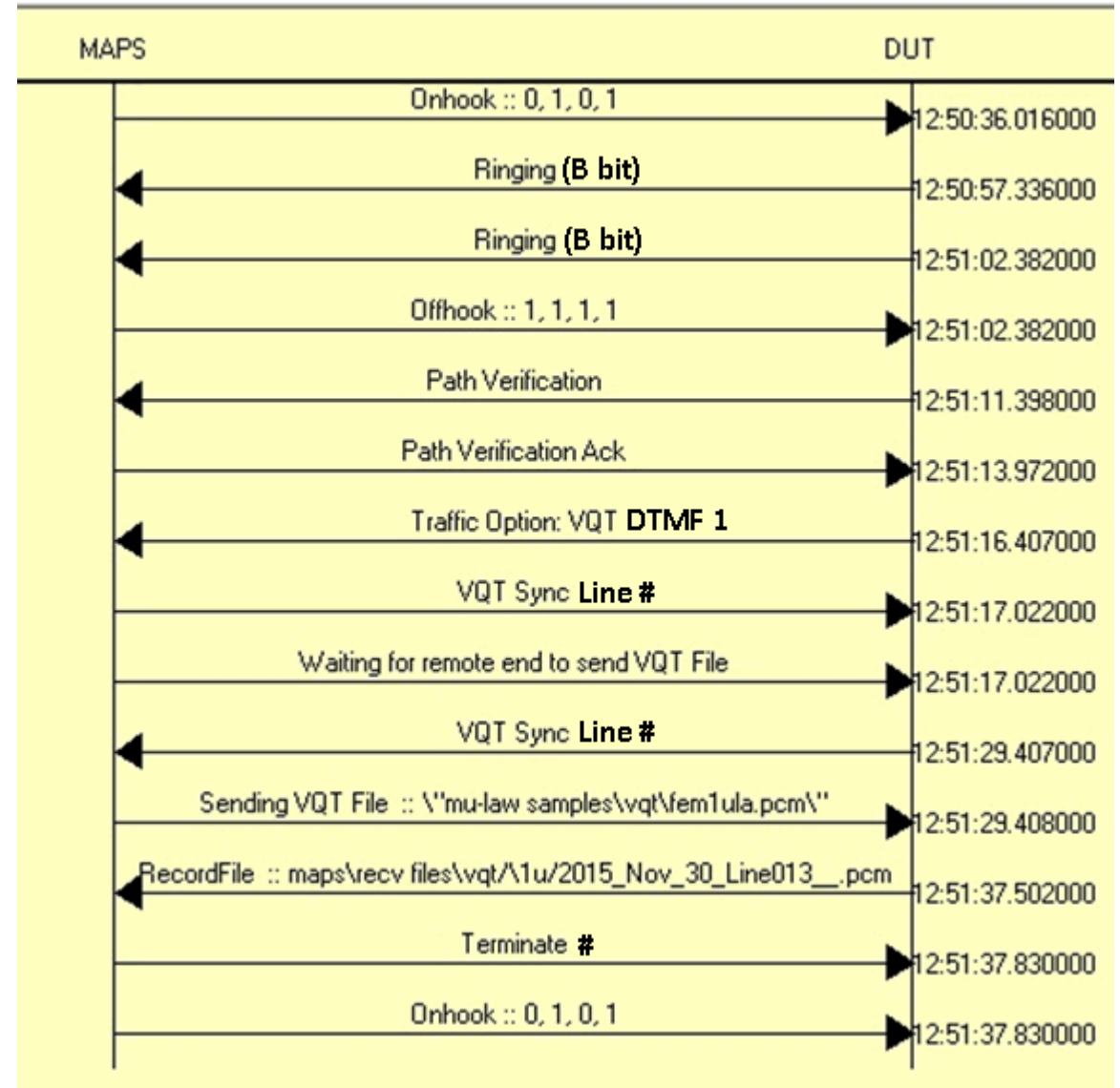
- Onhook :: 0, 0, 0, 0 → 16:22:29.232000
- ← Onhook :: 0, 0, 0, 0 16:22:29.304000
- Offhook :: 1, 1, 1, 1 → 16:22:29.304000
- Dialing :: 102 → 16:22:29.512000
- ← Tone Detected :: Ringback Tone 16:22:36.229000
- ← Tone Detected :: Ringback Tone 16:22:42.274000
- ← Offhook :: 1, 1, 1, 1 16:22:47.123000

Analyzing results with NetSurveyorWeb™



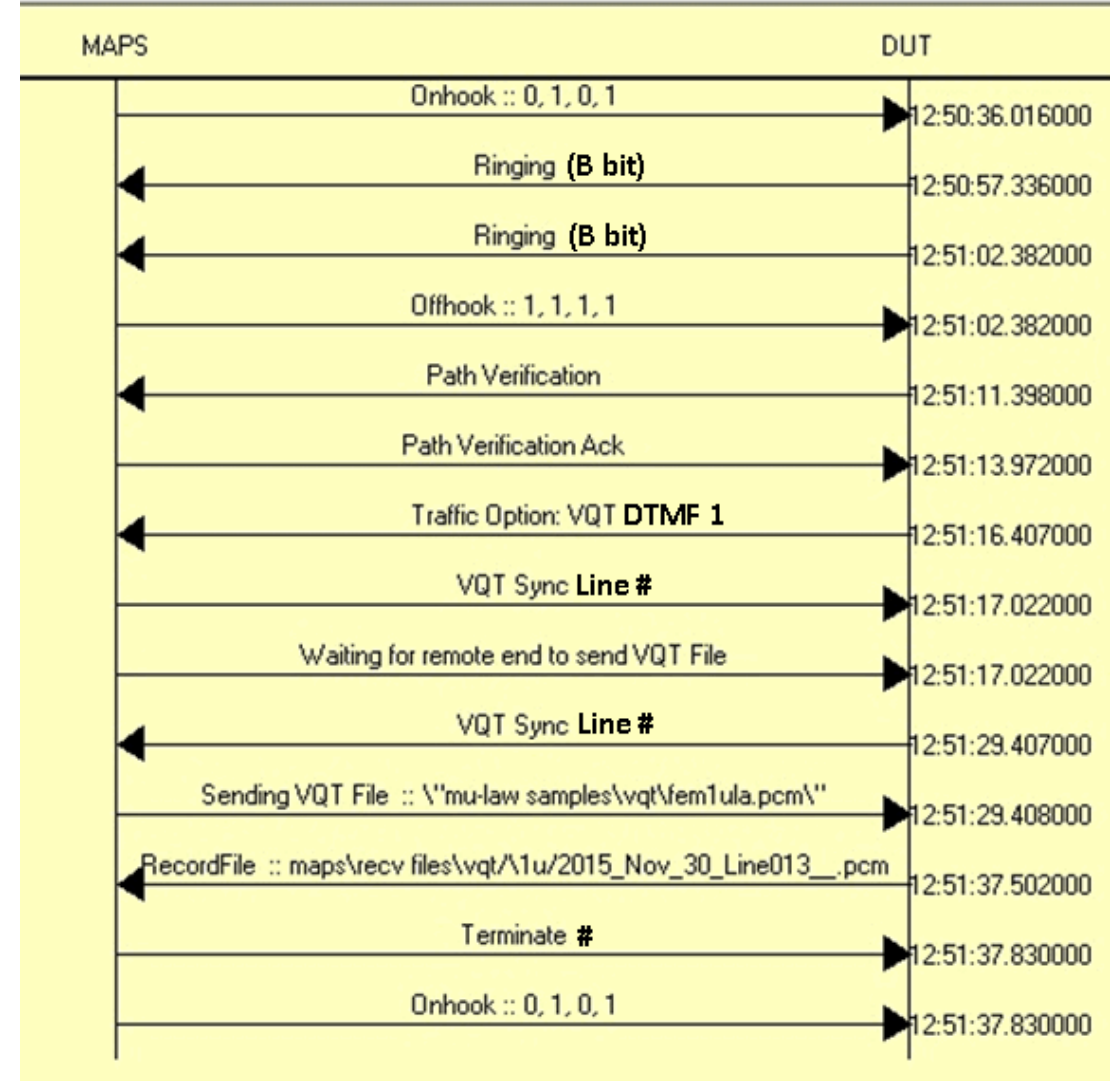
Answer Call Ladder Diagram

- Initially both sides are On-Hook
- An incoming call is detected by “B” bit following the cadence of the “ringing” voltage, which is 1 second ON, and 4 seconds OFF
- When the call is answered on the second ring, an Off-Hook is sent
- The “ringing” ceases, and signaling returns to 0,1,0,1 idle sequence
- A 1 second path verification noise burst at -10 dBm is received
- After a 1 second delay this is acknowledged by a 1.5 sec noise burst at -10 dBm also
- A DTMF digit of “1” is received to indicate that VQT will proceed



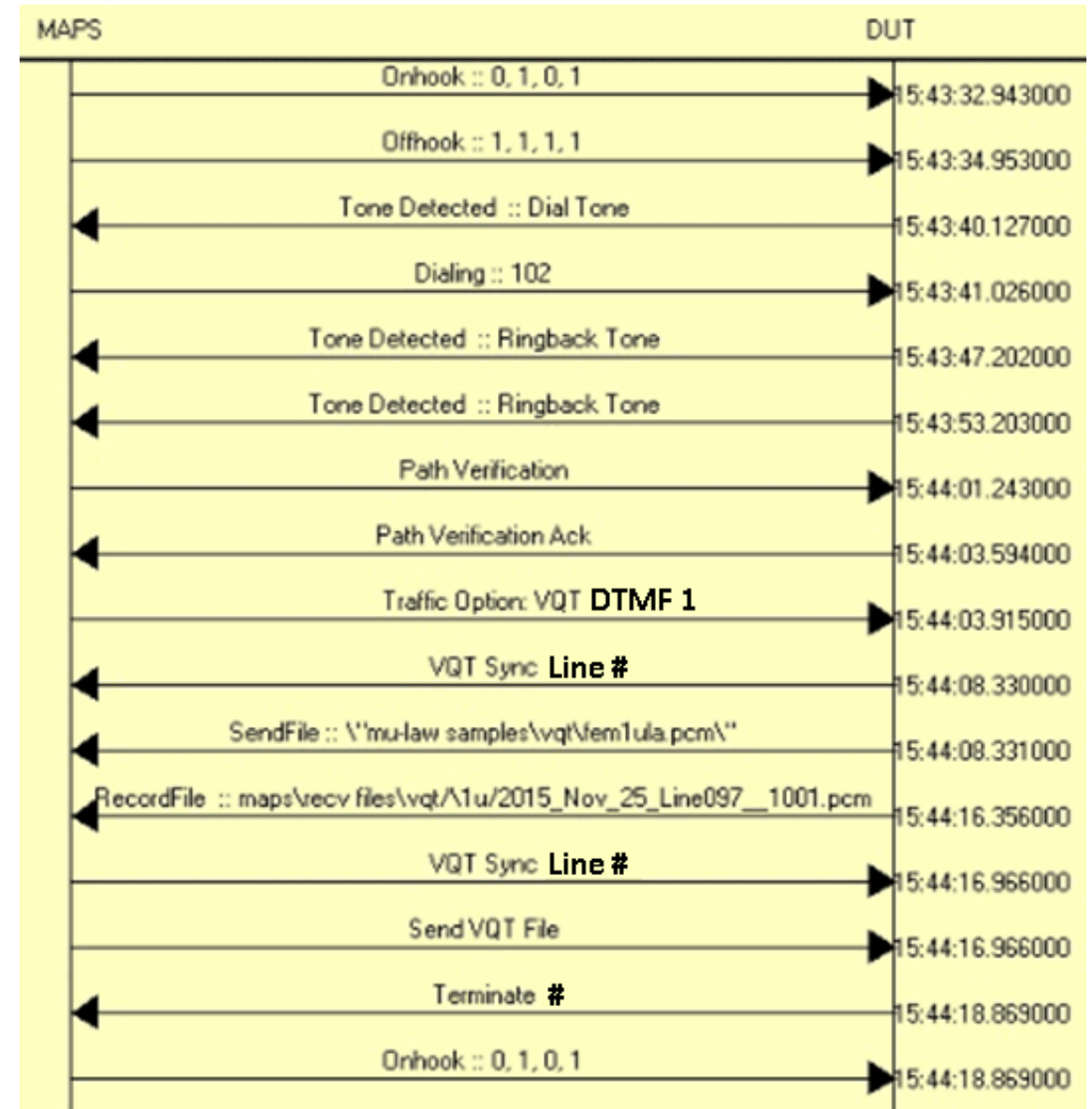
Answer Call Ladder Diagram (Contd.)

- The Answer Call side returns the line number in DTMF form (for achieving VQT Sync)
- The Place Call side controls the sending of an 8 second VQT file from the answer side line number and simultaneously records at the Place Call side
- The process is reversed – the PlaceCall side sends the line number and the Answer side controls the sending of an 8 second VQT file from the place call line number, and simultaneously records at the Answer Call side
- The Answer Call side terminates the call by sending the # DTMF digit, and subsequently sending On Hook



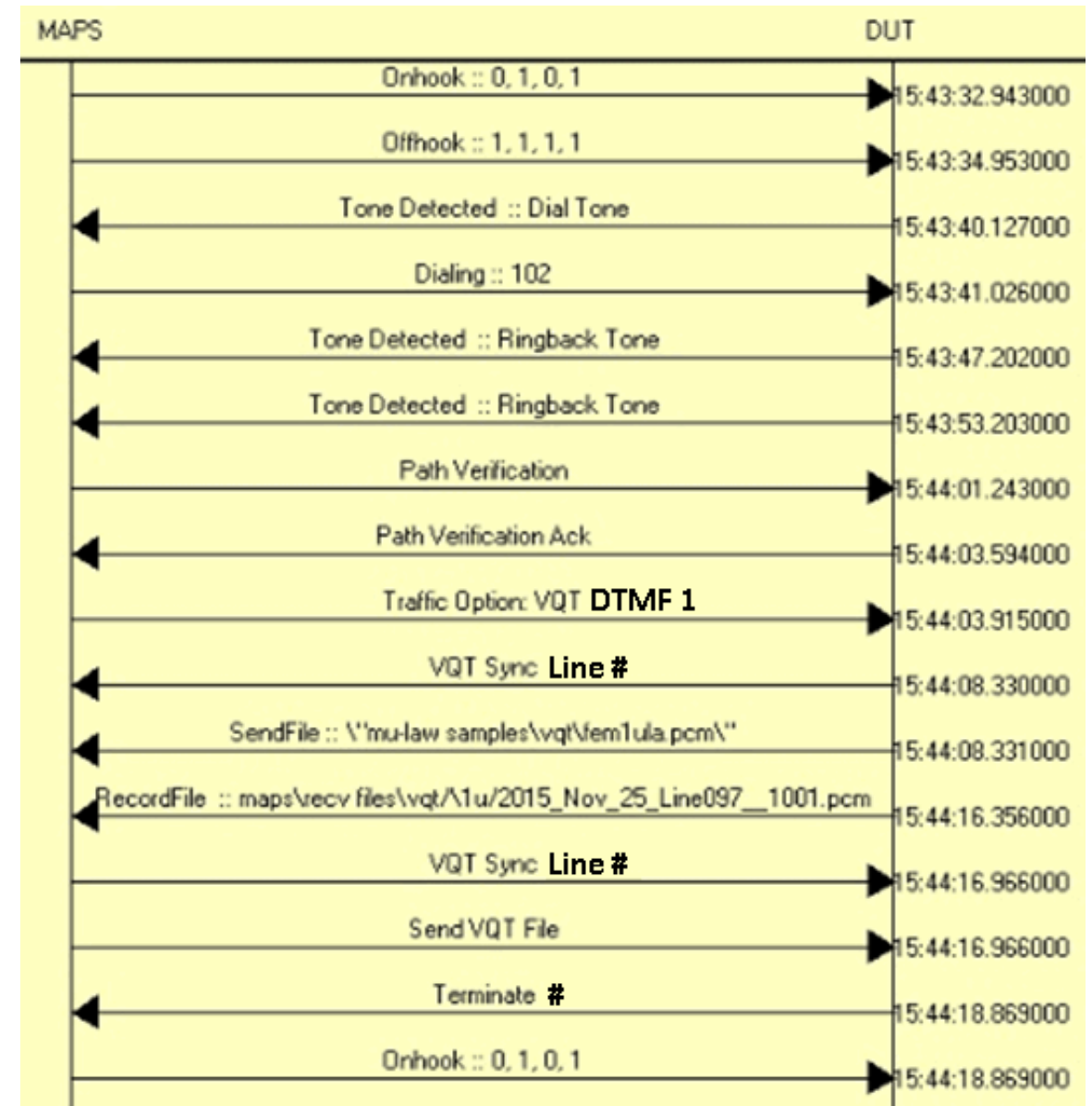
Place Call Ladder Diagram

- Initially both sides are On-Hook
- An outgoing call is initiated sending offhook (1,1,1,1) and waits for dial tone. When the dial tone is detected, the Place call side dials the digits, and waits for ring back tone
- Once the ring back tone ceases, the call goes to connected state (call answered), following which the path verification is initiated.
- A 1 second path verification noise burst at -10 dBm is sent from the Place Call side.
- After a 1 second delay this is acknowledged by a 1.5 sec noise burst at -10 dBm from the Answer call side
- A DTMF digit of “1” is sent to indicate that VQT will proceed

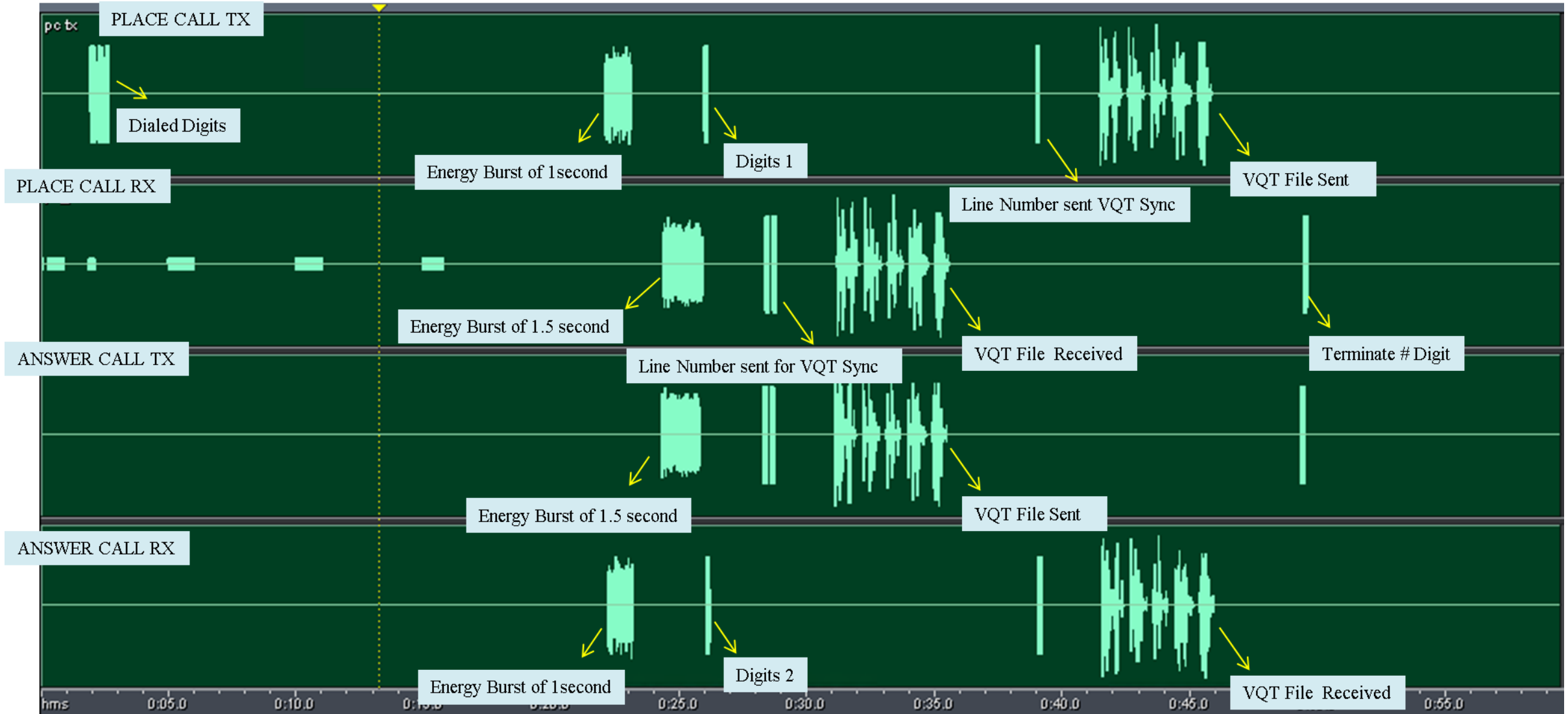


Place Call Ladder Diagram (Contd.)

- The answer call side will send the line number in VQT sync. With this line number, the place call controls sending of an 8 second VQT file from the answer call line number, and simultaneously records at the Place Call side
- On completion of record file, the VQT sync is sent indicating the Place Call line number. Now the answer call will control sending of VQT file from place call line number and simultaneously records at answer call side
- A DTMF digit of “#” is received at the Place call side and call is terminated



Path Verification and VQT Call Captures



Call Generation Loop Start Signaling

MAPS (Message Automation Protocol Simulation) FXO (APS) - [Call Generation - CallGenDefault]

Configurations Emulator Reports Editor Debug Tools Windows Help

| Sr No | Script Name | Profile | Call Info | Script Execution | Status | Events | Events Profile | Result | Total Iterations | Comple |
|-------|--------------------|---------|---------------|------------------|---------------------------------|---------------------|----------------|--------|------------------|--------|
| 1 | APS_PlaceCall.gls | Line001 | Line001,1,1,0 | Stop | 1004 Hz Net Loss in Progress... | OutboundReleaseCall | | Pass | 5 | |
| 2 | APS_AnswerCall.gls | Line002 | Line002,2,1,1 | Stop | 1004 Hz Net Loss in Progress... | InboundReleaseCall | | Pass | 5 | |

Add Delete Insert Refresh Start Start All Stop Stop All Abort Abort All

1004 Hz Net Loss 3-Tone Slope SCNN IMD Group Delay Phase Jitter Impulse Noise S/NR VQT

Save Column Width Show Latest

MAPS DUT

- Onhook :: 0, 1, 0, 1 → 15:41:11.345000
- Offhook :: 1, 1, 1, 1 → 15:41:13.355000
- Tone Detected :: Dial Tone → 15:41:19.082000
- Dialing :: 126 → 15:41:19.086000
- Tone Detected :: Ringback Tone → 15:41:31.078000
- Tone Detected :: Ringback Tone → 15:41:37.077000
- SendDigits :: 1004 Hz Net Loss Sync → 15:41:46.115000
- ReceiveDigits :: 1004 Hz Net Loss Sync Ack → 15:41:49.414000
- 1004 Hz Test Tone :: 1004 Hz @ Level :: -13dBm → 15:41:49.414000

Message Sequence Event Config Script Flow 1004 Hz Net Loss Report

MAPS (Message Automation Protocol Simulation) VF (APS) - [Call Generation - CallGenDefault]

Configurations Emulator Reports Editor Debug Tools Windows Help

| Sr No | Script Name | Profile | Call Info | Script Execution | Status | Events | Events Profile | Result | Total Iterations | Comp |
|-------|-----------------|-----------|-----------|------------------|-------------------|--------------------|----------------|--------|------------------|------|
| 1 | SendSide.gls | EastPort1 | 1,1 | Stop | Transmitting Tone | OutboundRelease... | | Pass | 1 | |
| 2 | ReceiveSide.gls | WestPort2 | 2,1 | Stop | Transmitting Tone | InboundReleaseCall | | Pass | 1 | |

Add Delete Insert Refresh Start Start All Stop Stop All Abort Abort All

1004 Hz Net Loss 3-Tone Slope CNN IMD Group Delay Phase Jitter Impulse Noise S/NR VQT

| Date/Time | Circuit Selected | Freq (Hz) | Power (dBm) | 404Hz Gain Slope | 2804Hz Gain Slope | VG3(6) Criteria | VG3(6) TestResult |
|--------------------|------------------|-----------|-------------|------------------|-------------------|---------------------------|-------------------|
| 2020-5-27 18:51:27 | VG6 | 405 | -13.28 | | | Pass Power -13.5 to -10.5 | Pass |
| 2020-5-27 18:51:35 | VG6 | 1005 | -12.99 | 0.29 | | Pass Power -13.5 to -10.5 | Pass |
| 2020-5-27 18:51:42 | VG6 | 2806 | -12.87 | | -0.12 | Pass Power -13.5 to -10.5 | Pass |

3-Tone Slope Test Report Signal/C-Notch Noise Test Report Intermodulation Distortion Test Report Impulse Noise Test Report S/NR/Net Loss vs Level Test Report VQT Test Report

Initialisation Errors Error Events Captured Errors Link Status Up=0 Down=0

Call Generation Ground Start Signaling

GL MAPS (Message Automation Protocol Simulation) FXO (APS) - [Call Generation - CallGenDefault]

Configurations Emulator Reports Editor Debug Tools Windows Help

| Sr No | Script Name | Profile | Call Info | Script Execution | Status | Events | Events Profile | Result | Total Iterations | Completed Iteration |
|-------|--------------------|---------|---------------|------------------|----------------------------------|---------------------|----------------|--------|------------------|---------------------|
| 1 | APS_PlaceCall.gls | Line001 | Line001,1,1,0 | Stop | Select Voiceband Measurement ... | OutboundReleaseCall | | Pass | 1 | 0 |
| 2 | APS_AnswerCall.gls | Line002 | Line002,2,1,1 | Stop | Ready for Voiceband Measurement | InboundReleaseCall | | Pass | 1 | 0 |

Column Width Show Latest

| MAPS | DUT |
|--|-----------------|
| Onhook (RING ungrounded) :: 0, 1, 0, 1 | 11:28:48.915000 |
| TIP ungrounded :: 1, 1, 1, 1 | 11:28:48.984000 |
| RING grounded :: 0, 0, 0, 0 | 11:28:48.984000 |
| TIP grounded :: 0, 1, 0, 1 | 11:28:49.064000 |
| Offhook :: 1, 1, 1, 1 | 11:28:49.064000 |
| Tone Detected :: Dial Tone | 11:28:54.774000 |
| Dialing :: 126 | 11:28:54.779000 |
| Tone Detected :: Ringback Tone | 11:29:06.750000 |
| Tone Detected :: Ringback Tone | 11:29:12.737000 |
| Tone Detected :: Ringback Tone | 11:29:19.725000 |
| Path Verification | 11:29:27.789000 |
| Path Verification Ack | 11:29:29.787000 |

Find

```

State :: Call Connected
Signaling Bits :: 1, 1, 1, 1
Receiving On Card :: 1 Timeslot :: 0
    
```


NetSurveyorWeb™ for MAPS™ APS

GL NetSurveyorWeb Refresh Protocol **APS** Type **CDR** gl

Quick CDR Data Reports Alarms Users System Status at 2020-09-21 16:01:45

Quick CDR \ All Calls

Date: 2020-09-21 2020-09-21 Time: 00:00:00 23:59:59 Ok

Today Yesterday Last 7 Days Last 30 Days All

Actions Query Execution Time : 0.26561 Seconds

Quick Search: GO Page Size: 20 Sort Order : STARTTIME DESC

| SI | Call Id | Probename | Call Type | Calling Number | Called Number | Starttime | Duration | Port | Timeslot | CallResult | PostDialDelay | Path Verification | Path Verification Result | VO |
|--------------------------|---------|-----------|-----------|----------------|---------------|---------------------|-----------------|------|----------|------------|---------------|-------------------|--------------------------|----|
| <input type="checkbox"/> | 3033 | APS_248 | Incoming | 138 | 138 | 2020-09-21 14:41:53 | 00:00:00.000002 | 1 | 1 | Pass | 0 | Off | NA | Of |
| <input type="checkbox"/> | 6 | 3032 | APS_248 | Outgoing | 126 | 2020-09-21 14:41:15 | 00:00:30.000740 | 1 | 0 | Pass | 0 | Off | NA | Or |
| <input type="checkbox"/> | 7 | 3031 | APS_248 | Incoming | 138 | 2020-09-21 14:31:52 | 00:00:00.000001 | 1 | 1 | Pass | 0 | Off | NA | Or |
| <input type="checkbox"/> | 8 | 3030 | APS_248 | Outgoing | 126 | 2020-09-21 14:31:29 | 00:00:30.000741 | 1 | 0 | Pass | 0 | Off | NA | Or |
| <input type="checkbox"/> | 9 | 3029 | APS_248 | Outgoing | 126 | 2020-09-21 14:31:08 | 00:00:00.000000 | 1 | 0 | Fail | 0 | | NA | Of |
| <input type="checkbox"/> | 10 | 3028 | APS_248 | Incoming | 138 | 2020-09-21 14:22:24 | 00:01:03.000001 | 1 | 1 | Pass | 0 | Off | NA | Of |
| <input type="checkbox"/> | 11 | 3027 | APS_248 | Outgoing | 126 | 2020-09-21 14:22:00 | 00:00:55.000562 | 1 | 0 | Pass | 0 | Off | NA | Of |
| <input type="checkbox"/> | 12 | 3026 | APS_248 | Incoming | 138 | 2020-09-21 14:20:50 | 00:01:03.000000 | 1 | 1 | Pass | 0 | Off | NA | Of |
| <input type="checkbox"/> | 13 | 3025 | APS_248 | Outgoing | 126 | 2020-09-21 14:20:27 | 00:00:55.000500 | 1 | 0 | Pass | 0 | Off | NA | Of |
| <input type="checkbox"/> | 14 | 3024 | APS_248 | Incoming | 138 | 2020-09-21 14:19:17 | 00:01:03.000000 | 1 | 1 | Pass | 0 | Off | NA | Of |
| <input type="checkbox"/> | 15 | 3023 | APS_248 | Outgoing | 126 | 2020-09-21 14:18:54 | 00:00:55.000519 | 1 | 0 | Pass | 0 | Off | NA | Of |
| <input type="checkbox"/> | 16 | 3022 | APS_248 | Incoming | 138 | 2020-09-21 14:17:44 | 00:01:02.000502 | 1 | 1 | Pass | 0 | Off | NA | Of |
| <input type="checkbox"/> | 17 | 3021 | APS_248 | Outgoing | 126 | 2020-09-21 14:17:21 | 00:00:55.000259 | 1 | 0 | Pass | 0 | Off | NA | Of |
| <input type="checkbox"/> | 18 | 3020 | APS_248 | Incoming | 138 | 2020-09-21 14:16:11 | 00:01:02.000519 | 1 | 1 | Pass | 0 | Off | NA | Of |

Report Generation

GL NetSurveyorWeb

Refresh Protocol APS Type CDR

System Status at 2020-09-21 16:07:59

Quick CDR

- All Calls
- Failed Calls
- Failed Traffic Calls
- VQT Calls
- VQT Poor Quality Calls
- FAX Calls
- Digit Detection
- Failed Digit Detection
- Excellent Rating

Voiceband Measurement

- CNN Test
- SNR Test
- 3-Tone Slope Test
- VQT POLQA Test**

Custom CDR

Data Reports Alarms Users

Voiceband Measurement \ VQT POLQA Test

Date: 2020-09-21 2020-09-21 Time: 00:00:00 23:59:59 Ok

Today Yesterday Last 7 Days Last 30 Days All

Actions Query Execution Time : 0.10937 Seconds

- Export
 - Export as CSV
 - Export as PDF
 - Export All as CSV
- Others
 - Forward Call(s)
 - Delete Call(s)

GO Page Size: 20 Sort Order: STARTTIME DESC

| Type | Calling Number | Called Number | Duration | Line Label | Port | Timeslot | Caller VQT POLQA | Callee VQT POLQA | Caller Degr |
|---------|----------------|------------------|----------|------------|------|-----------------------------|------------------|------------------|-------------|
| ringing | 138 | 00:00:00.000000 | Line002 | 1 | 1 | NA - See Caller Side Report | 4.50 | NA - See C | |
| going | 126 | 00:00:-30.-00744 | Line001 | 1 | 0 | 4.50 | 4.50 | 2020-Sep- | |
| ringing | 138 | 00:00:00.-000002 | Line002 | 1 | 1 | NA - See Caller Side Report | 4.50 | NA - See C | |
| going | 126 | 00:00:-30.-00740 | Line001 | 1 | 0 | 4.50 | 4.50 | 2020-Sep- | |
| ringing | 138 | 00:00:00.-000001 | Line002 | 1 | 1 | NA - See Caller Side Report | 3.44 | NA - See C | |
| going | 126 | 00:00:-30.-00741 | Line001 | 1 | 0 | 3.44 | 3.44 | 2020-Sep- | |

Report Generation (Contd.)

GL NetSurveyorWeb

Refresh Protocol APS Type CDR

System Status at 2020-09-21 16:07:59

Quick CDR

- All Calls
- Failed Calls
- Failed Traffic Calls
- VQT Calls
- VQT Poor Quality Calls
- FAX Calls
- Digit Detection
- Failed Digit Detection
- Excellent Rating

Voiceband Measurement

- CNN Test
- SNR Test
- 3-Tone Slope Test
- VQT POLQA Test**
- Custom CDR

Data Reports Alarms Users

Voiceband Measurement \ VQT POLQA Test

Date: 2020-09-21 2020-09-21 Time: 00:00:00 23:59:59 Ok

Today Yesterday Last 7 Days Last 30 Days All

Actions Query Execution Time : 0.10937 Seconds

- Export
 - Export as CSV
 - Export as PDF
 - Export All as CSV
- Others
 - Forward Call(s)
 - Delete Call(s)

GO Page Size: 20 Sort Order: STARTTIME DESC

| Type | Calling Number | Called Number | Duration | Line Label | Port | Timeslot | Caller VQT POLQA | Callee VQT POLQA | Caller Degr |
|---------|----------------|---------------|------------------|------------|------|----------|-----------------------------|------------------|-------------|
| ringing | | 138 | 00:00:00.000000 | Line002 | 1 | 1 | NA - See Caller Side Report | 4.50 | NA - See C |
| going | | 126 | 00:00:-30.-00744 | Line001 | 1 | 0 | 4.50 | 4.50 | 2020-Sep- |
| ringing | | 138 | 00:00:00.-00002 | Line002 | 1 | 1 | NA - See Caller Side Report | 4.50 | NA - See C |
| going | | 126 | 00:00:-30.-00740 | Line001 | 1 | 0 | 4.50 | 4.50 | 2020-Sep- |
| ringing | | 138 | 00:00:00.-00001 | Line002 | 1 | 1 | NA - See Caller Side Report | 3.44 | NA - See C |
| going | | 126 | 00:00:-30.-00741 | Line001 | 1 | 0 | 3.44 | 3.44 | 2020-Sep- |

Voice Band Measurements for VG3 and VG6

Voiceband measurement on 4-wire and VF ports includes below tests:

- Signal-to-Noise Ratio and Level
- Three Tone Slope (Gain Slope)
- C Notched Noise (CNN) Test
- Attenuation Distortion
- 1004 Hz Net Loss
- Intermodulation Distortion (IMD)
- Impulse Noise
- Voice Quality Test

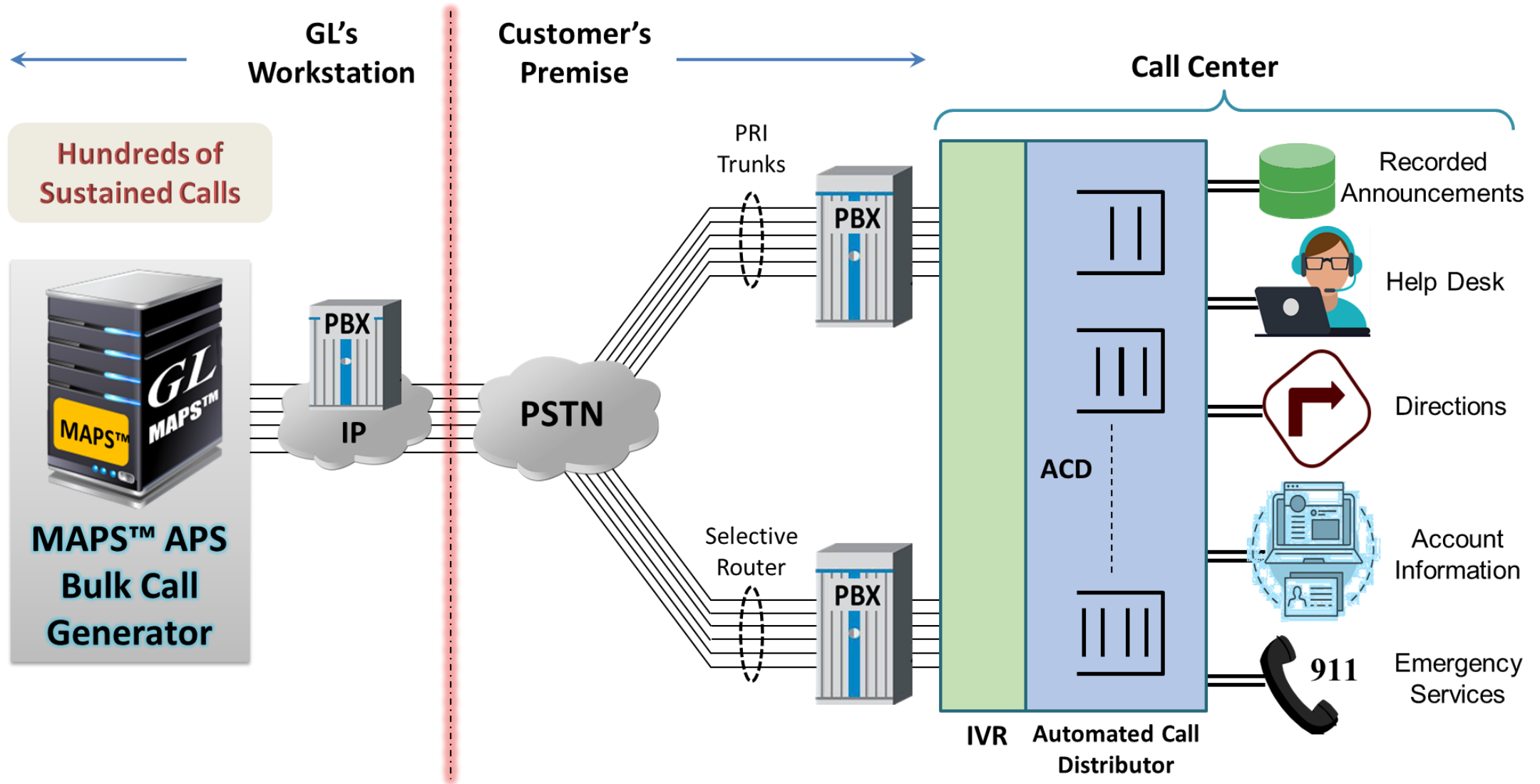
Bulk Call Generation

The screenshot displays the 'Call Generation' application window. At the top, there is a toolbar with icons for file operations and execution. Below the toolbar is a table with the following columns: Sr No, Script Name, Profile, Call Info, Script Execution, Status, Events, and E. The table contains 10 rows of data, with the first two columns of each row highlighted in blue. The 'Script Execution' column for all rows is highlighted in yellow and contains the word 'Start'. The 'Events' column for all rows is highlighted in grey and contains the word 'None'. Below the table is a control panel with buttons for 'Add', 'Delete', 'Insert', 'Refresh', 'Start', 'Start All', 'Stop', 'Stop All', 'Abort', and 'Abort All'. Below the control panel is a checkbox labeled 'View Executing Line' which is currently unchecked. Below the checkbox is a text area titled 'Script Contents' containing the following code:

```
//// MAPS CAS Emulator: Analog Phone Simulator ////  
ReportEvent (CASScript = "Started");  
  
// Message Sequence Initialization //  
ScriptId = "APS";  
Protocol = "APS";  
ConnectionId = 1;  
  
///// Initialization Signalling bits A B C D ////  
OFFHOOK=$ OFFHOOK:  
<
```

At the bottom of the window, there is a tabbed interface with four tabs: 'Scripts', 'Message Sequence', 'Event Config', and 'Script Flow'. The 'Scripts' tab is currently selected.

MAPS™ APS Speech to Text IVR



IVR Call Emulation

GL MAPS (Message Automation Protocol Simulation) FXO (APS) - [Call Generation - Default]

Configurations Emulator Reports Editor Debug Tools Windows Help

| Sr No | Script Name | Profile | Call Info | Script Execution | Status | Events | Events Profile | Result | Total Ite |
|-------|--------------------|---------|---------------|------------------|---------------|--------------------|----------------|--------|-----------|
| 1 | APS_PlaceCall.gls | Line001 | Line001,1,1,0 | Stop | File Recorded | OutboundRelease... | | Pass | |
| 2 | APS_AnswerCall.gls | Line002 | Line002,2,1,1 | Start | CALL_RELEASED | None | | Pass | |

Add Delete Insert Refresh Start Start All Stop Stop All Abort Abort All Impulse Noise IMD 1004 Hz Tone CNN S/N VQT Group Delay

Save Column Width Show Latest

MAPS DUT

| | |
|--|------------|
| Onhook :: 0, 1, 0, 1 | 16:06:05.6 |
| Offhook :: 1, 1, 1, 1 | 16:03:05.4 |
| Tone Detected :: Dial Tone | 16:03:12.2 |
| Dialing :: 3016704784 | 16:03:13.7 |
| Tone Detected :: Ringback Tone | 16:03:20.2 |
| Stage 1: Welcome to GL communication | 16:03:36.4 |
| Stage 1: If you know your parties extension you can doubt it at anytime | 16:03:40.2 |
| Stage 1: For sales press 1 | 16:03:41.8 |
| Stage 1: For Technical Support Press 2 | 16:03:44.1 |
| Stage 1: For a directory by last name press 3 | 16:03:48.1 |
| SendDigits :: 3 | 16:03:48.1 |
| Stage 2: Welcome to the directory | 16:03:56.5 |
| Stage 2: Please enter the first | 16:03:59.7 |
| Stage 2: Three letters of your party's last name | 16:04:00.9 |
| Stage 2: Using your touch tone keypad use the Seven key for Q and the nine key for Z | 16:04:08.8 |
| SendDigits :: 926 | 16:04:08.8 |
| Onhook :: 0, 1, 0, 1 | 16:04:10.2 |

Find

State :: Idle

Signaling Bits :: 0, 1, 0, 1

Transmitting On Card :: 1 Timeslot :: 0

Message Sequence Event Config Script Flow C-MSG Test Report SNR and Level Test Report VQT Test Report 3-Tone Slope Test Report Attenuation C

Initialisation Errors Error Events Captured Errors Link Status Up=0 Down=0

IVR Result Logs

APS IVR Detailed Result Log

Maps_IVR_DetailedLog_2020-04-27_17-08-28_Line001.pdf - Adobe Acrobat Reader DC

File Edit View Window Help

Home Tools Maps_IVR_Detailed... x Sign In

1 / 1 52.2% Share

GL Communications Inc Date: 27/04/2020

MAPS IVR Test Start Time: 17-08:28

| Time | Type | Event | Certainty | Stage | Received Prompt | Expected Prompt | Similarity |
|----------------------------|----------|---|-----------|-------|--|--|------------|
| 2020-04-27 17:08:34.042000 | Rx | Welcome to GL communications | 0.8894 | 1 | | | |
| 2020-04-27 17:08:34.042000 | Analysis | | | 1 | Welcome to GL communications | Welcome to GL Communications If you know your party's extension you can dial it at any time For sales press one for technical support press 2 for a directory by last name press 3 | 15.819208 |
| 2020-04-27 17:08:40.162000 | Rx | If you know your parties extension you can download at anytime? | 0.9453 | 1 | | | |
| 2020-04-27 17:08:40.162000 | Analysis | | | 1 | Welcome to GL communications If you know your parties extension you can download at anytime? | Welcome to GL Communications If you know your party's extension you can dial it at any time For sales press one for technical support press 2 for a directory by last name press 3 | 45.762711 |
| 2020-04-27 17:08:40.282000 | Rx | For sales press 1 | 0.8893 | 1 | | | |
| 2020-04-27 17:08:40.282000 | Analysis | | | 1 | Welcome to GL communications If you know | Welcome to GL Communications If you know | 54.802261 |
| 2020-04-27 17:08:42.203000 | Rx | For Technical Support Press 2 | | | | | |
| 2020-04-27 17:08:42.203000 | Analysis | | | | | | |

APS IVR Main Result Log

MAPS_APS_IVR_Result_2020-04-27_17-08-28.pdf - Adobe Acrobat Reader DC

File Edit View Window Help

Home Tools MAPS_APS_IVR_Re... x Sign In

1 / 1 52.2% Share

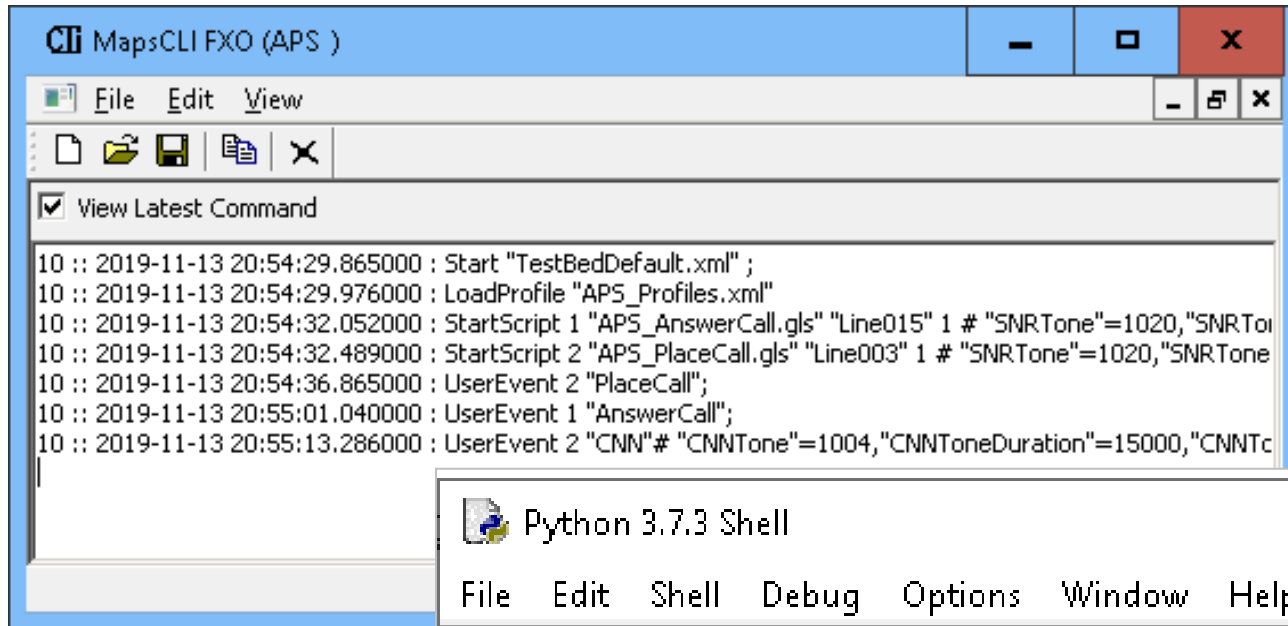
GL Communications Inc Date: 27/04/2020

MAPS APS IVR Test Start Time: 17-08:21

| SLNo | Time | Profile | Destination TN | IVR File | Call Result | IVR Result | Detailed Report |
|------|----------------------------|---------|----------------|---------------------------------|-------------|------------|---|
| 1 | 2020-04-27 17:09:13.763000 | Line001 | 126 | maps\aps\ivr\ivr_prompt_g l.csv | Pass | 0 | MAPS\APS\FXO\IVR\Log_DetailedLog\Maps_IVR_DetailedLog_2020-04-27_17-08-28_Line001.pdf |

CLI Support

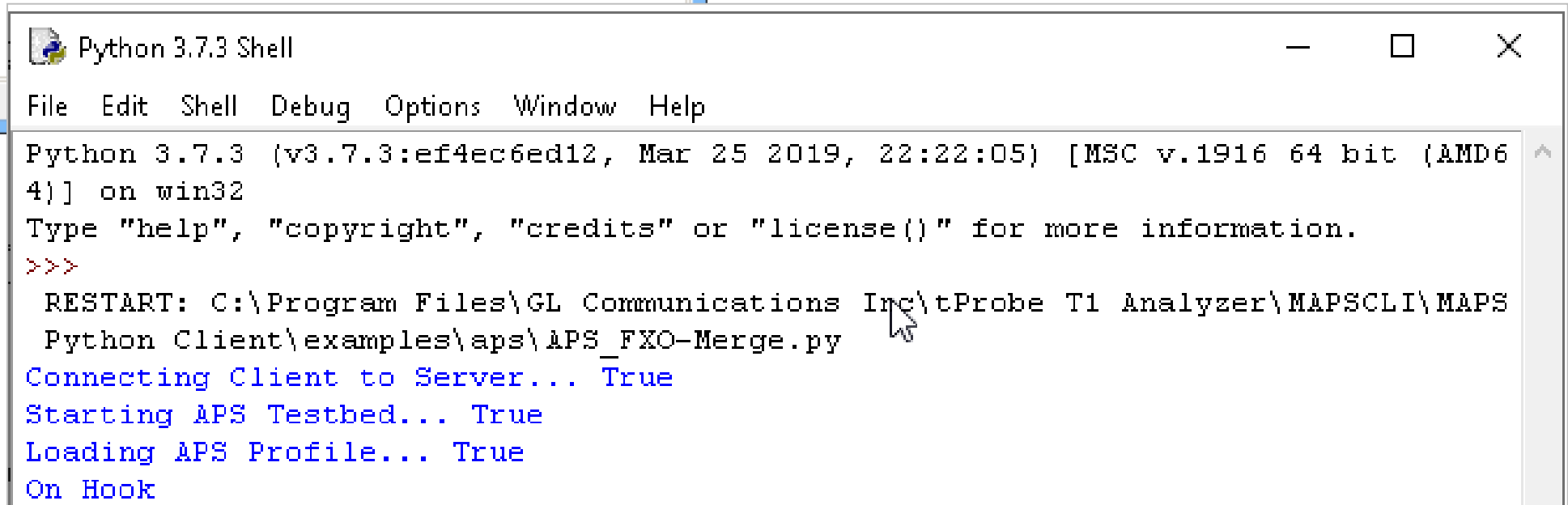
MAPS CLI Server



The screenshot shows a window titled "CLI MapsCLI FXO (APS)". It has a menu bar with "File", "Edit", and "View". Below the menu bar is a toolbar with icons for file operations. A checkbox labeled "View Latest Command" is checked. The main area displays a log of events:

```
10 :: 2019-11-13 20:54:29.865000 : Start "TestBedDefault.xml" ;
10 :: 2019-11-13 20:54:29.976000 : LoadProfile "APS_Profiles.xml"
10 :: 2019-11-13 20:54:32.052000 : StartScript 1 "APS_AnswerCall.gls" "Line015" 1 # "SNRTone"=1020,"SNRTone
10 :: 2019-11-13 20:54:32.489000 : StartScript 2 "APS_PlaceCall.gls" "Line003" 1 # "SNRTone"=1020,"SNRTone
10 :: 2019-11-13 20:54:36.865000 : UserEvent 2 "PlaceCall";
10 :: 2019-11-13 20:55:01.040000 : UserEvent 1 "AnswerCall";
10 :: 2019-11-13 20:55:13.286000 : UserEvent 2 "CNN"# "CNNTone"=1004,"CNNToneDuration"=15000,"CNNTc
```

Sample Python CLI Script



The screenshot shows a "Python 3.7.3 Shell" window. The menu bar includes "File", "Edit", "Shell", "Debug", "Options", "Window", and "Help". The terminal output is as follows:

```
Python 3.7.3 (v3.7.3:ef4ec6ed12, Mar 25 2019, 22:22:05) [MSC v.1916 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
RESTART: C:\Program Files\GL Communications Inc\tProbe T1 Analyzer\MAPSCLI\MAPS
Python Client\examples\aps\APS_FXO-Merge.py
Connecting Client to Server... True
Starting APS Testbed... True
Loading APS Profile... True
On Hook
```

Thank you