GL Communications Inc.

2-Wire Test Platforms

December 2023

- **2-Wire Emulation**
  - **MAPS™ APS and ALS (Analog Phone/Line Simulator)**
  - **tProbe™ FXO and FXS**
  - **MAPS™ CAS on T1 or E1 Card**
  - **VQuad™ DUAL UTA HD FXO**
  - **VQuad™ Probe HD FXO**
  - **24-Port VQuad™ HD Analog Phone Simulator**
- **2-Wire Traffic Analysis**
  - **CAS Protocol Analyzer**
  - **Near Real-time Voice-Band Analyzer**

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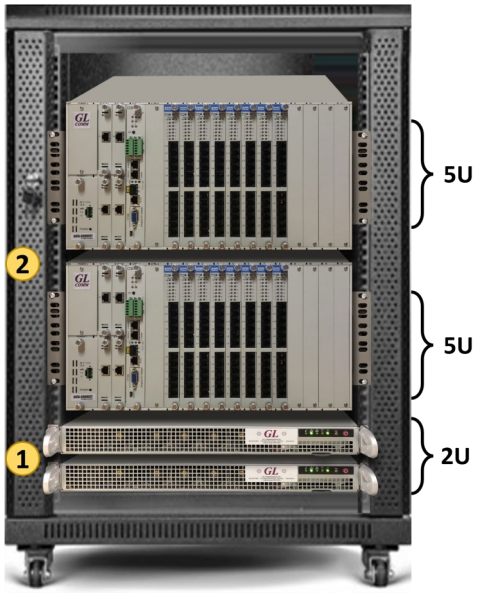
MAPS™ APS 192 Ports



1 MAPS™ APS Server (Optional VQT Analysis)

2 APSCB-96 x 2

Figure: MAPS™ APS with 192 Ports

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

1 VQuad™ System w/24 FXO HD Ports

2 VQT Central System
(WebViewer w/Oracle DB, PESQ, POLQA)

MAPS™ Analog Phone Simulator (APS)

MAPS™ APS is the high capacity Analog 2-wire Bulk Call Generator used to test a Central Office (CO), PBX, ATAs, Gateway or other telecommunications equipment, which provide local loop interfaces. It includes a compact system comprising of **MAPS™ APS**, Analog Interfaces, Patch Panels and other optional modules (Fax Emulation and VQT Analysis) in a rackmount system.

MAPS™ APS system supports up to 192 independent FXO ports per **1U MAPS™ APS Server** (includes 1x Octal T1 card) and multiple APSCB-48 units. More can be achieved by simply scaling the system with a **MAPS™ APS Server** (includes 2x Octal T1 Cards) and proportionately add more APSCB-48 units to support up to 384 analog ports.

For more details, refer to MAPS™ APS (Analog Phone C) webpage.

VQuad™ HD Analog Phone Simulator

VQuad™ 24-port HD FXO solution is an all-in-one 2U rack supporting both Wide Band (WB) and Narrow Band (NB) Audio. The 2U VQuad™ HD FXO system incorporates two embedded SBCs (Single Board Computer), each running latest VQuad™ software, along with 12 Dual UTA HD units supporting a total 24 FXO Analog ports. VQuad™ 24-Port FXO solution includes all the required functionalities of analog simulation -

- Supports 24 independent HD FXO ports per VQuad™ system (2U)
- Scalable solution for unlimited number of FXO ports
- Wide Band (WB) and Narrow Band (NB) support (for HD and SD Audio)
- Multiple Users and Tests per system
- Run tests between systems
- Fully automated and remote accessible via CLI
- Remote accessible via Central Database
- Full FXO Functionality and Analysis via flexible Scripts

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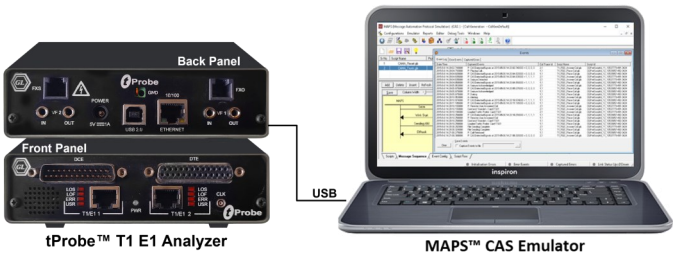

Figure: MAPS™ CAS Emulator with T1 Analyzer

2-Wire Emulation using MAPS™ CAS T1 E1 Cards (GUI and / or CLI Based)

GL's MAPS™ CAS Emulator is an advanced protocol emulator for CAS (Channel Associated Signaling) signaling emulation in telephone networks where each channel or timeslot carries speech and signaling. CAS signaling types include Loopstart, Groundstart, Feature Group D (FGD), Winkstart, MFC-R2, CAMA and others. MAPS™ CAS also supports Command Line Interface (CLI) client interfacing such as Python scripting for achieving network wide automation for testing telecom services and telecom network equipment.

GL's MAPS™ CAS Emulator requires T1 or E1 analysis hardware platforms with additional licenses for WCS with basic, DSP, Tx/Rx, and DTMF/ MF modules. T1 or E1 hardware also requires a channel bank with FXO cards for interfacing to 2-wire equipment. For details, refer to MAPS™ CAS Protocol Emulator webpage.

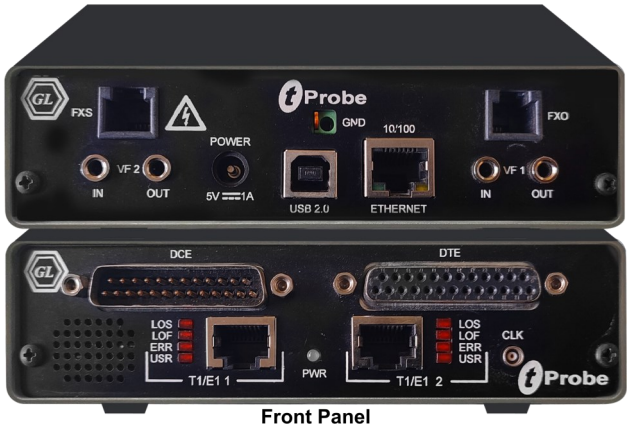

Figure: tProbe™ FXO FXS Simulator

FXO and FXS Simulation using tProbe™

GL's tProbe™ is an enhanced version of our popular USB based T1 E1 VF Analyzer / Emulator. The hardware design includes support for 10/100 Ethernet Interface, 2-Wire Daughter Board for FXO and FXS (RJ-11) connections, embedded processor flash and platform flash, Datacom interfaces, and more.

tProbe™ FXO port functions like general 2-wire-phone where users can onhook, off hook, place call, answer the call, transmit the traffics (i.e., dtmf digits, voice file), and the tProbe™ FXS port functions like a telephone port plugged on the wall that provides, ring voltage, dial tone, and battery current.

For more details, refer to MAPS™ FXO FXS webpage.

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Figure: VQuad™ Probe HD

2-Wire Interfaces using VQuad™ Probe HD

GL's VQuad™ Probe HD is an all-in-one self-contained VQuad™ with Dual UTA HD test instrument. This comprehensive hardware device incorporates all the features of the current VQuad™ with Dual UTA HD unit such as portability and remote accessibility along with the necessary PC with Windows® operating system.

For more detail, refer to VQuad™ Probe HD webpage.

Figure: Dual UTA HD

Test 2-Wire Interfaces using VQuad™ DUAL UTA HD FXO

GL provides the solution for testing analog 2-wire interfaces using GL's VQuad™ with either the Dual UTA HD or the FXO 4 -port Analog hardware. Both hardware options provide the complete automated network testing solution. This includes up to four analog 2-wire interfaces (RJ-11) and, when coupled with the GL VQT, provides the necessary voice quality measurement and analysis tools.

For more details, refer to Dual UTA HD : HD Audio and Versatile Testing Capabilities webpage.

GL's Voice Recorder Software with Dual UTA HD offers a solution for Voice/ Fax / Modem traffic capture. One can non -intrusively 'tap' into the analog 2-wire line via the RJ11 interface and capture the bi-directional voice.

For more details, refer to 2-Wire Voice/Data Capture using Dual UTA HD/ tProbe™ webpage.

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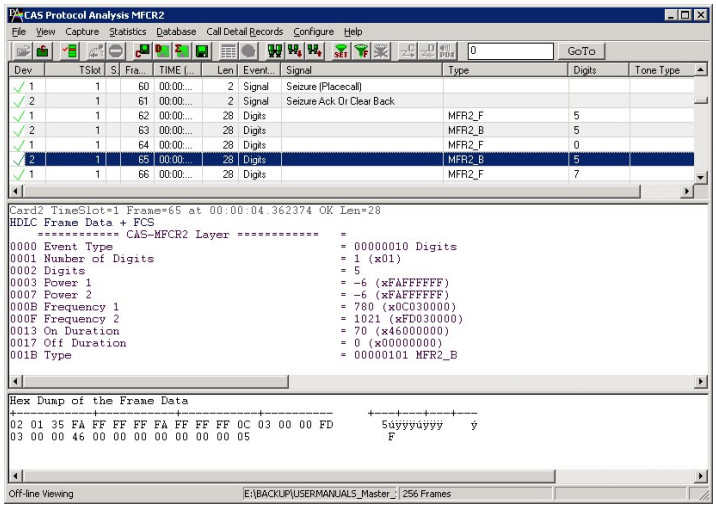

Figure: Detail View of CAS Analyzer

CAS Protocol Analyzer

Channel Associated Signaling (CAS) is a method of signaling in telephone networks where each channel or timeslot carrying speech also carries with it the signaling and addressing to set up and tear down that same channel.

GL's **CAS Protocol Analyzer** supports real-time monitoring and decoding of CAS signaling events over T1 E1 networks. Supported standards include MFCR2, R1, CAMA, and other CAS Signaling Analysis.

For more details, refer to Channel Associated Signaling Analyzer webpage.

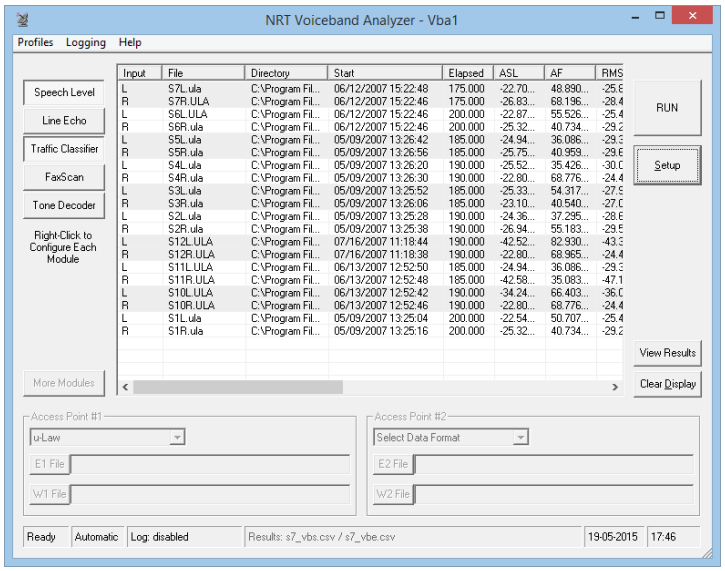

Figure: Voice Band Analyzer

2-Wire Traffic Analysis using Near Real-time Voice-Band Analyzer

The Near Real-time Voice-band Analyzer (VBA) is an analysis tool for monitoring voice band traffic over VoIP, TDM, 2-Wire and wireless networks. It can host an arbitrary number of analysis algorithms. Built-in algorithms include ITU-T P.56 Active Voice Level analysis, Line Echo (Hybrid) analysis, and licensed modules include 2-Wire Echo Analysis, Traffic Classifier and Fax analysis.

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FaxScan™ application is used to process 2-Wire and 4-Wire voice band capture files as well as Win PCAP captures to provide analysis of the T.38 packets, T.30 frames, decode a Fax TIF image, and general call-flow indicators for detail analysis.

For details, refer to Near Real-time Voice-band Analyzer webpage.

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