Overview
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™ CAS, 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 or FXS ports per 1U MAPS™ CAS Server (includes 1 Octal T1 card) and multiple APSCB-48 units. More can be achieved by simply scaling the system with a 4U MAPS™ CAS Server (includes 2 Octal T1 Cards) and proportionately add more APSCB-48 units to support up to 384 analog ports. MAPS™ platforms offers automated, scripted, multi-user, multi-protocol, and high capacity Bulk Call Generation. This platform is the basis for all signaling protocols and for traffic generation – whether voice, tones, digits, fax, data, or video, depending on the network support. MAPS™ covers legacy PSTN, TDM, SONET SDH, next generation VoIP, and Wireless protocols, interfaces, and equipment. MAPS™ can support any of the following protocols in TDM networks for establishing signaling links and generate or receive traffic - CAS, FXO FXS, ISDN, SS7, PPP, GSM, INAP, CAP, and MAP. For more details, refer to https://www.gl.com/2Wire-Analog-Bulk-Call-Generator.html

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)
• Call Waiting – Detect tone, Call ID, Flash to accept call
• Call Forwarding

Main Features
• Up to 384 independent FXO or FXS ports
• Test Central Office, PBX, Gateway, Analog/Digital/VoIP Networks
• Central office simulation with two-way calling
• Call monitoring and call recording
• Multiple users and tests per system
• Multi-User, Multi-Test reporting
• Fully Automated with CLI and external control
• Full FXO and FXS Functionality via flexible scripts—Refer to Functional Specifications for complete details.
SYSTEM CONFIGURATIONS

MAPS™ APS - 24 Port (FXO and FXS)

1. MAPS™ APS Server (optional VQT Analysis)
2. APSCB-24 x1 (w/ Patch Panel)

MAPS™ APS - 48 Port (FXO and FXS)

1. MAPS™ APS Server (optional VQT Analysis)
2. APSCB-48 x1 (w/ Patch Panel)

Hardware Specifications

MAPS™ APS - 24 Port (FXO and FXS)

19" 1U Core i7 Rack PC - MAPS™ CAS
- GL’s Dual T1 for Call Control
- Automated CAS Signalling simulation over TDM
- T1 crossover cables to connect GL’s Dual T1 to APSCB-24

19" 1U Core i7 Rack PC - VQT (optional)

1x APSCB-24 Access Bank
- 24 Analog Channels using 3x 8-channel FXO Voice Service Card (Each FXO card supports 8 Analog FXO ports)
- Dual 4-Wire T1 Service Card

1x 24-port Patch Panel with 50pin Telco RJ-21 Male to 24xRJ-11 Male breakout cable

MAPS™ APS - 48 Port (FXO and FXS)

19" 1U Core i7 Rack PC - MAPS™ CAS
- GL’s Quad T1 for Call Control
- Automated CAS Signalling simulation over TDM
- T1 crossover cables to connect GL’s Quad T1 to APSCB-48

19" 1U Core i7 Rack PC - VQT

1x APSCB-48 Access Bank
- 48 Analog Channels using 6x 8-channel FXO Voice Service Card (Each FXO card supports 8 Analog FXO ports)
- 1x Quad 4-Wire T1 Service Card

1x 48-port Patch Panel with 50pin Telco RJ-21 Male to 24xRJ-11 Male breakout cable
SYSTEM CONFIGURATIONS

MAPS™ APS - 96 Port (FXO and FXS)

1. MAPS™ APS Server (optional VQT Analysis)
2. APSCB-48 x2 (w/ Patch Panel)

Hardware Specifications

19" 1U Core i7 Rack PC - MAPS™ CAS
- GL’s Quad T1 (4x T1) for Call Control
- Automated CAS Signalling simulation over TDM
- T1 cross-over cables to connect GL’s Quad T1 to APSCB-48

19" 1U Core i7 Rack PC - VQT
2x APSCB-48 Access Bank
- 96 Analog Channels using 12x 8-channel FXO Voice Service Card (Each FXO card supports 8 Analog FXO ports)
- 1x Quad 4-Wire T1 Service Card

2x 48-port Patch Panel with 50pin Telco RJ-21 Male to 24xRJ-11 Male breakout cable

MAPS™ APS - 192 Port (FXO and FXS)

1. MAPS™ APS Server (optional VQT Analysis)
2. APSCB-48 x4 (w/ Patch Panel)

Hardware Specifications

19" 1U Core i7 Rack PC - MAPS™ CAS
- GL’s Octal T1 (8x T1) for Call Control
- Automated CAS Signalling simulation over TDM
- T1 crossover cables to connect GL’s Octal T1 to APSCB-48

19" 1U Core i7 Rack PC - VQT
4x APSCB-48 Access Bank
- 192 Analog Channels using 24x 8-channel FXO Voice Service Card (Each FXO card supports 8 Analog FXO ports)
- 2x Quad 4-Wire T1 Service Card

4x 48-port Patch Panel with 50pin Telco RJ-21 Male to 24x RJ-11 Male breakout cable
SYSTEM CONFIGURATIONS

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

Hardware Specifications

19" 2U Core i7 Rack PC - VQuad™ FXO
- GL’s Dual UTA HD (12x) for Call Control
- VQuad™ for Automated CAS Signalling simulation over TDM

19" 1U Core i7 Rack PC - VQT/WebViewer™
- PESQ and/or POLQA Server License
- WebViewer™ w/Oracle

24-port Patch Panel with 50pin Telco RJ-21 Male to 24xRJ-11 Male breakout cable

VQuad™ 24-port HD FXO solution is an all-in-one 2U rack supporting both Wide Band (WB) and Narrow Band (NB) Audio. Multiple VQuad 24-Port FXO Racks can be connected together for virtually unlimited FXO ports. Similar to MAPS™ APS solutions, this solution also includes all the required functionalities of analog simulation—Refer to Functional Specifications for complete details.

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. All 24 FXO ports are independent and can be fully automated or remote controlled for a fully autonomous test solution. Access to the 24 Analog ports is via an Amphenol connector on the back of the system which can be broken out to 24 RJ11 connections. Each embedded SBC includes two Gigabit Ethernet connections, two USB connections, and a VGA monitor connection. LED lights on the front of the 2U Rack display status of each SBC along with each Dual UTA HD.

When combined with the WebViewer™ Central System all results and events can be saved directly to a Central Database and accessed using the WebViewer (direct access to the database tables is also available). Analysis is provided using GL Voice Quality Analysis (both POLQA and PESQ supported), Echo Measurement Utility (EMU), Fax Analysis, & Voice Band Analyzer (VBA) applications.
FUNCTIONAL SPECIFICATIONS

FXO Capabilities

- Support for up to 384 independent FXO ports
- Full FXO Functionality via flexible scripts
- Narrowband supported (wideband support only with 24-Port VQuad™ FXO Solution)
- Supported call scenarios
  - Caller ID
  - Two-way Calling
  - 3-way Conference Calling
  - 3-way Calling with Calling Party Number
  - VMWI – Voice Mail with MWI (message waiting indicator) & SDT (stutter dial tone)
  - Call Waiting – Detect tone, Call ID, Flash to accept call
  - Call Forwarding

FXS Capabilities

- Support Up to 384 independent FXS ports
- Central office simulation with two way calling
- 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

Reporting

- Multi-User, Multi-Test reporting
- Reports Executed, Successful, & Failed test cases
- Call Failure, Completion, and Call Drop (sustain calls) events
- Voice Quality Test MOS Scores
- Delay Measurements (OWD, PDD)
- Summarization with Failure Details sufficient to determine root cause
- PDF and CSV file formats
- Central DB of events/results/errors

Functionalities

Basic Telephony functions
- Any Country signalling
- On-hook, Off-hook, Flash hook
- Ringing, Ring back, Dial tones, Digits
- Path verification
- Call Fail – No Ring-back, Busy, Fast Busy, SiT

Traffic
- Voice, DTMF/MF Digits, Single/Dual Tones, Fax, Voice Quality

Digit Related Functions
- Send digits, Detect digits

File transfer functions
- Send file, Receive file

Tone Related Functions
- Detect busy tone
- Detect call waiting tone
- Detect dial tone
- Detect reorder tone
- Detect ring-back tone
- Detect special dial tone
- Detect test tone
- Detect tone
- Send test tone
- Send tone

Fax Related Functions
- Send fax, Receive fax

FSK Related Functions
- Detect Caller ID, Detect VMWI

VQT (Optional)
- MOS, E-Model, PESQ, POLQA Scores

CLI Capabilities

- Client-server application (TCP/IP)
- Script-based call simulation, call flow control and feature testing
- Comprehensive API
- API for Java, Python, TCL, .NET
- Connect multiple clients simultaneously
- Independent execution available for all lines
Working Principle

The MAPS™ CAS server connects to the APSCB24/48 via a Quad T1 card and digital calls are generated to the APSCB24/48 using the MAPS™ CAS CLI or GUI. The APSCB24/48 converts the digital Loop start calls to analog loop start and, thus, simulates standard analog telephones. Each digital call signifies analog off hook with DTMF dialled digits from the APSCB24/48. Both outgoing and incoming analog calls are supported. The connection to the APSCB24/48 includes a standard Amphenol connector, which can be connected to a breakout box or the patch panels that supports up to 48 2-wire interfaces. Each of the analog ports serves as an independent analog telephone, which can be individually configured and activated for various telephony tasks. The calls can be monitored and recorded for voice quality analysis.

Thus, MAPS™ APS uses a Quad T1 (4 T1s) and two sets APSCB48 and patch panels to achieve a max of 96 analog ports. More can be achieved by simply scaling the system with a 4U MAPS™ CAS Server sporting 2 Octal T1 Cards which can support up to 384 analog ports.

MAPS™ APS Functional Diagram

Buyer's Guide

Hardware
- DP005B: 19" i7 Rackmount PC - MAPS™ CAS
- DP005B: 19" i7 Rackmount PC – VQT Analysis (Optional)
- APSCB-48: 48 Port Analog Phone Simulator (APS), 115V
- APSCB-24: 24 Port Analog Phone Simulator (APS), 115V
- FTE001: QuadXpress T1 (Main Board)
- ETE001: QuadXpress T1 (Daughter Board)
- ETA008: Eight Port License for T1
- XTE00: HD Universal Dual T1/E1 Card

Software
- XX651: MAPS™ CAS Emulation (requires CB for Bulk Calls)
- XXFT0: Fax Emulation for OctalExpress T1 Analyzer
- XXFT4: 30 Port T1 Fax Licenses for OctalExpress T1 Analyzer
- XX610: Transmit and Receive Client/Server Capability
- XX620: DTMF/MF/MFC-R2 + Client / Server Answer / Place Call Capability
- VQT002: Voice Quality Testing - PESQ only

For complete list of Analog Bulk Call Generator applications, refer to [https://www.gl.com/2Wire-Analog-Bulk-Call-Generator.html](https://www.gl.com/2Wire-Analog-Bulk-Call-Generator.html) webpage.