Automated IVR and Voice Mail Testing

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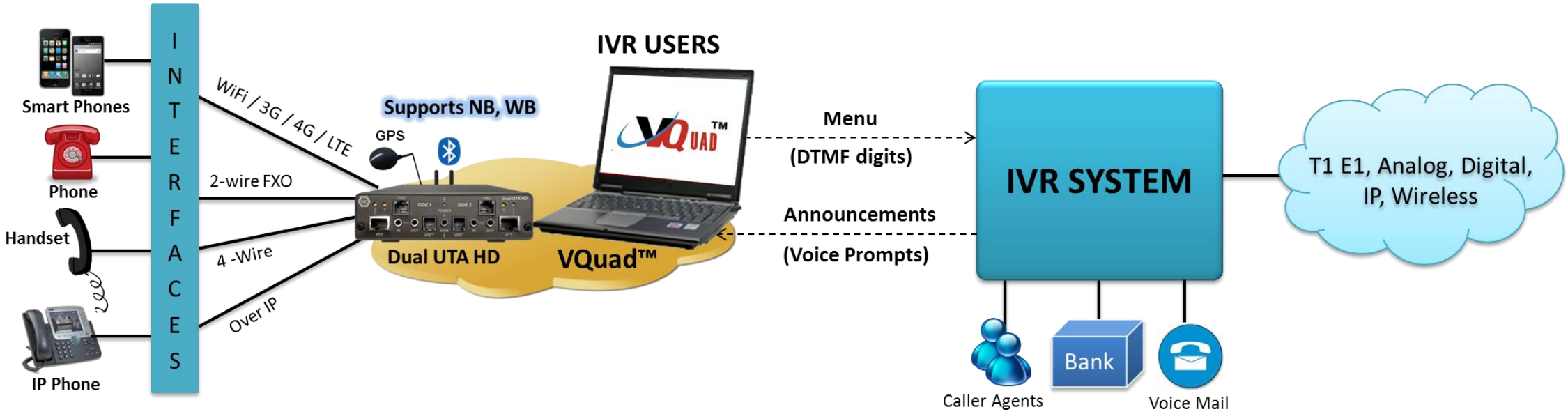
IVR and Voice Mail Systems - Overview

- IVR (Interactive Voice Response) Systems depend on DTMF digits or Voice as inputs from the user and in turn presents a menu for banking, technical support, hospitality, voicemail, and other automated applications
- Depending on the application, the branching of the menu can get complicated, and this requires accurate testing prior to deployment
- When calling an IVR system from any interface, the user is asked to send DTMF digits or speak in response to prompts
- The IVR system may have several sequences or stages and may require either single DTMF digit responses or several DTMF digit responses (i.e. the credit card number)

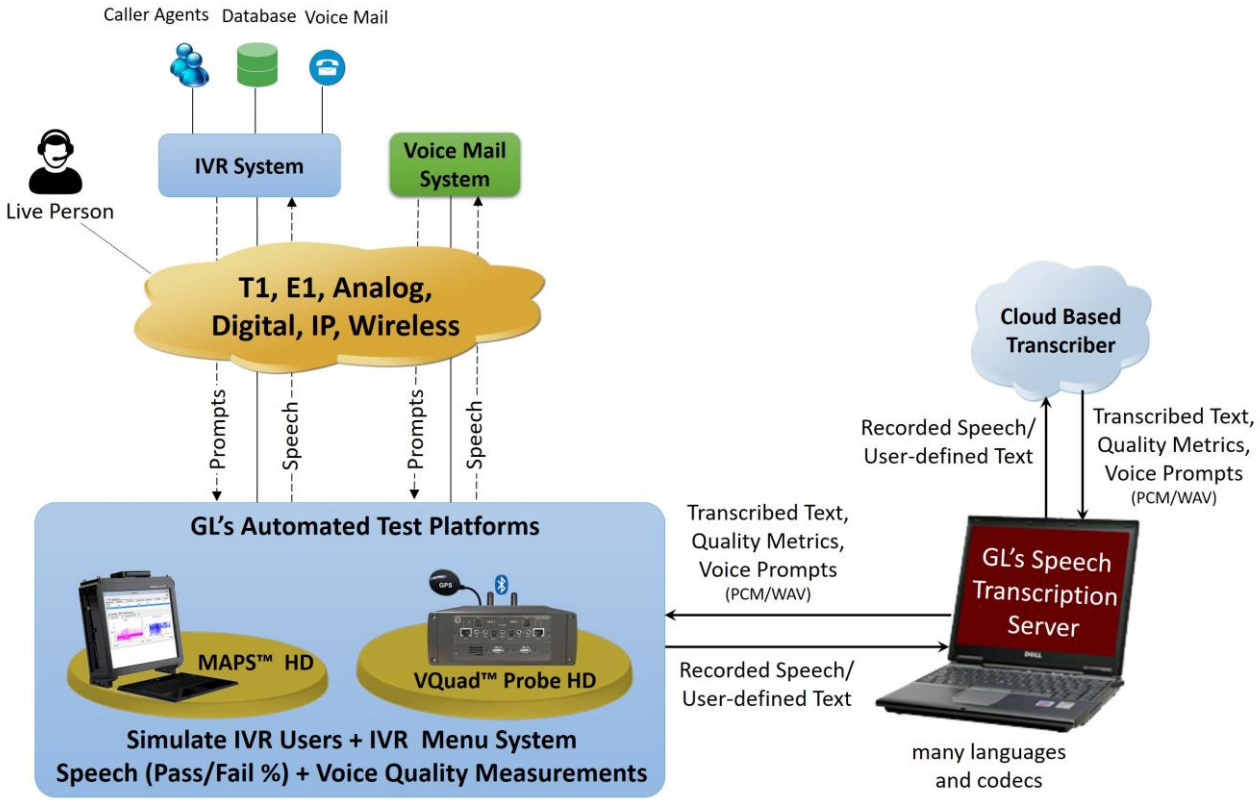
GL Solutions for testing IVR and VM Systems



- Simulate IVR Users and IVR System using VQuad or MAPS platform while interfacing to the IVR System via T1/E1, analog, digital, IP, or wireless
- Automated IVR testing process includes call setup, menu traversal, and traffic generation/detection using scripts
- Navigates all options of an Interactive Voice Response (IVR) menu
- Respond to prompts by transmitting DTMF digits or sending voice file
- Auto-generated report showing overall pass/fail and analysis at each IVR stage

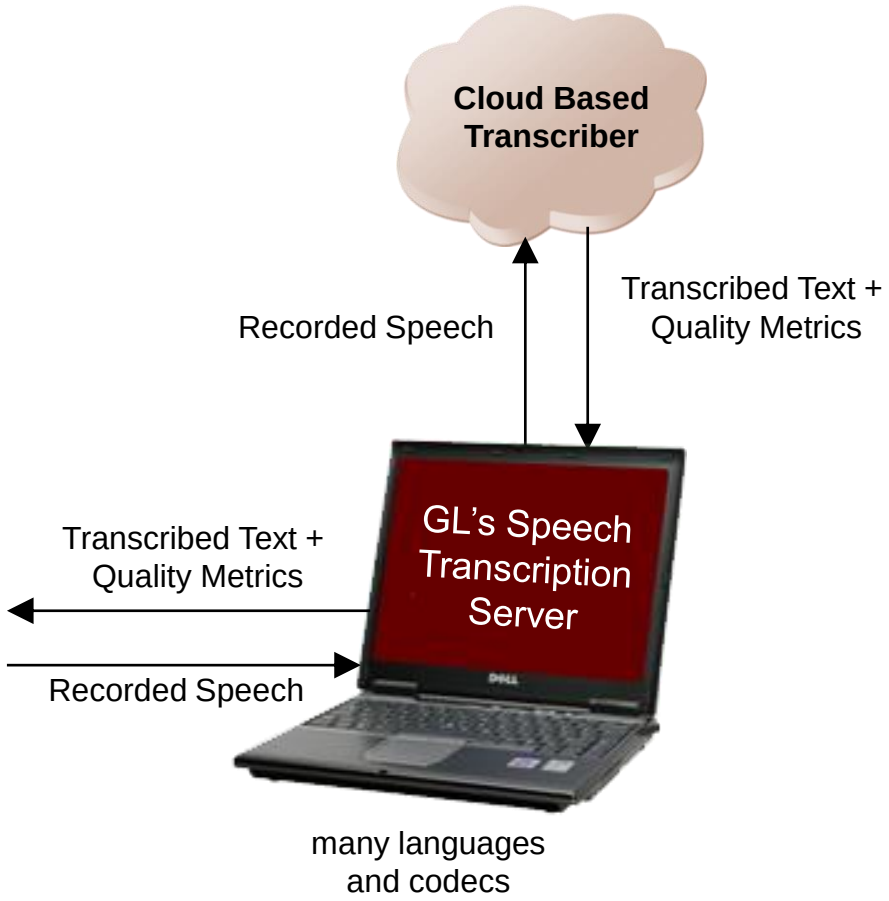
GL Solutions for testing IVR and VM Systems

- Monitor IVR System for voice and data quality
- Perform audio quality measurement (POLQA, PESQ) on narrow band and wide band HD voice
- Additional analysis is available such as Round-trip Delay
- For VoIP calls, calculate RTP voice quality metrics such as R-Factor, listening and conversational quality MOS scores, packet loss, discarded packets, out of sequence packets and duplicate packets
- Command Line Interface (CLI) support for remote testing



Speech Transcription Server for IVR Testing

- GL's Speech Transcription Server transcribes spoken language into text
- Transcription is performed on captured audio files (PCM or WAV formats)
- Cloud-based processing provides accurate translations
- Supports multiple languages such as U.S./U.K. English, French, German, Italian, Japanese and more
- Monitor single or multiple folders containing audio files for automatic transcription
- Analysis of transcribed text with quality scores
- Text to Speech synthesizer

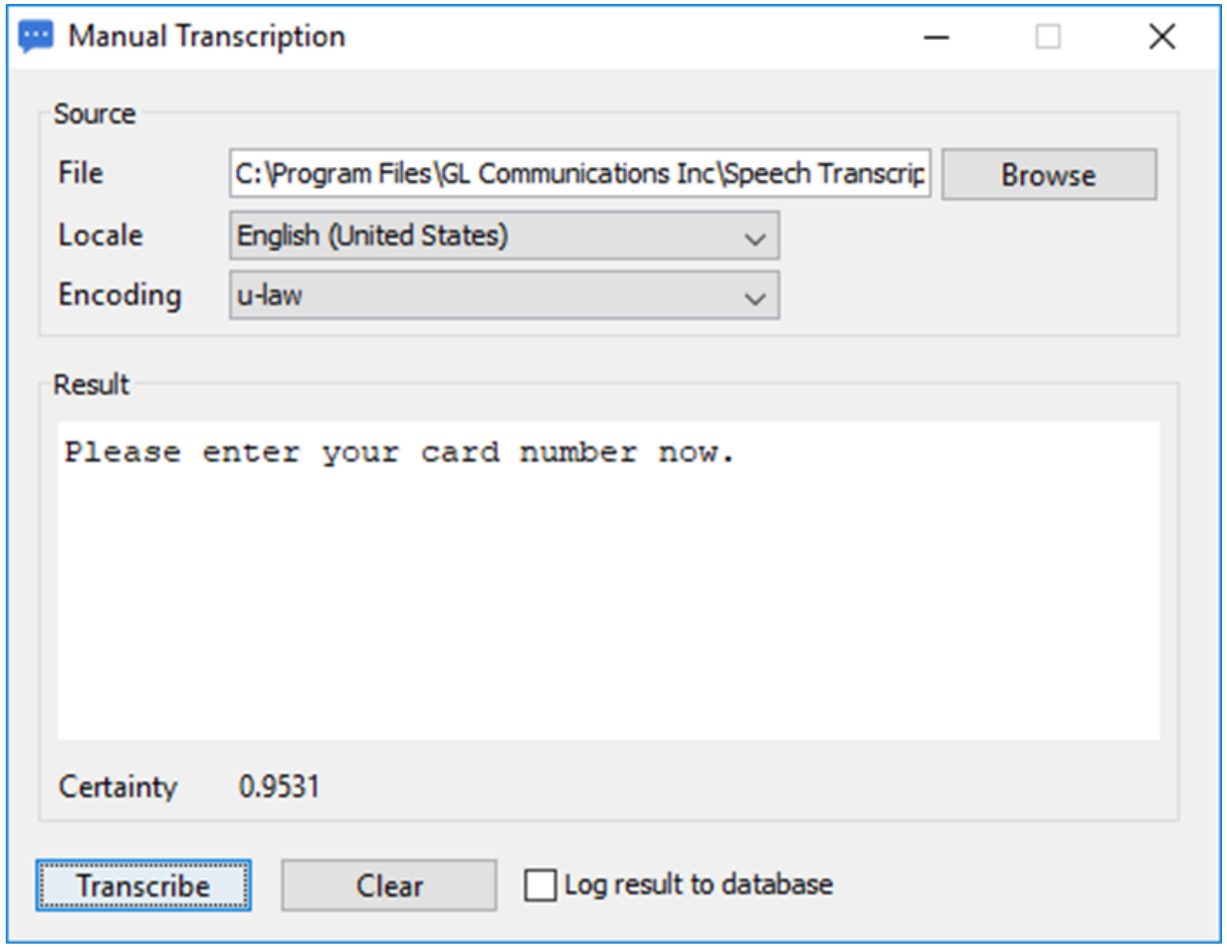


Manually Transcribe Files

Specify file

Specify language

Specify file encoding



Transcribe

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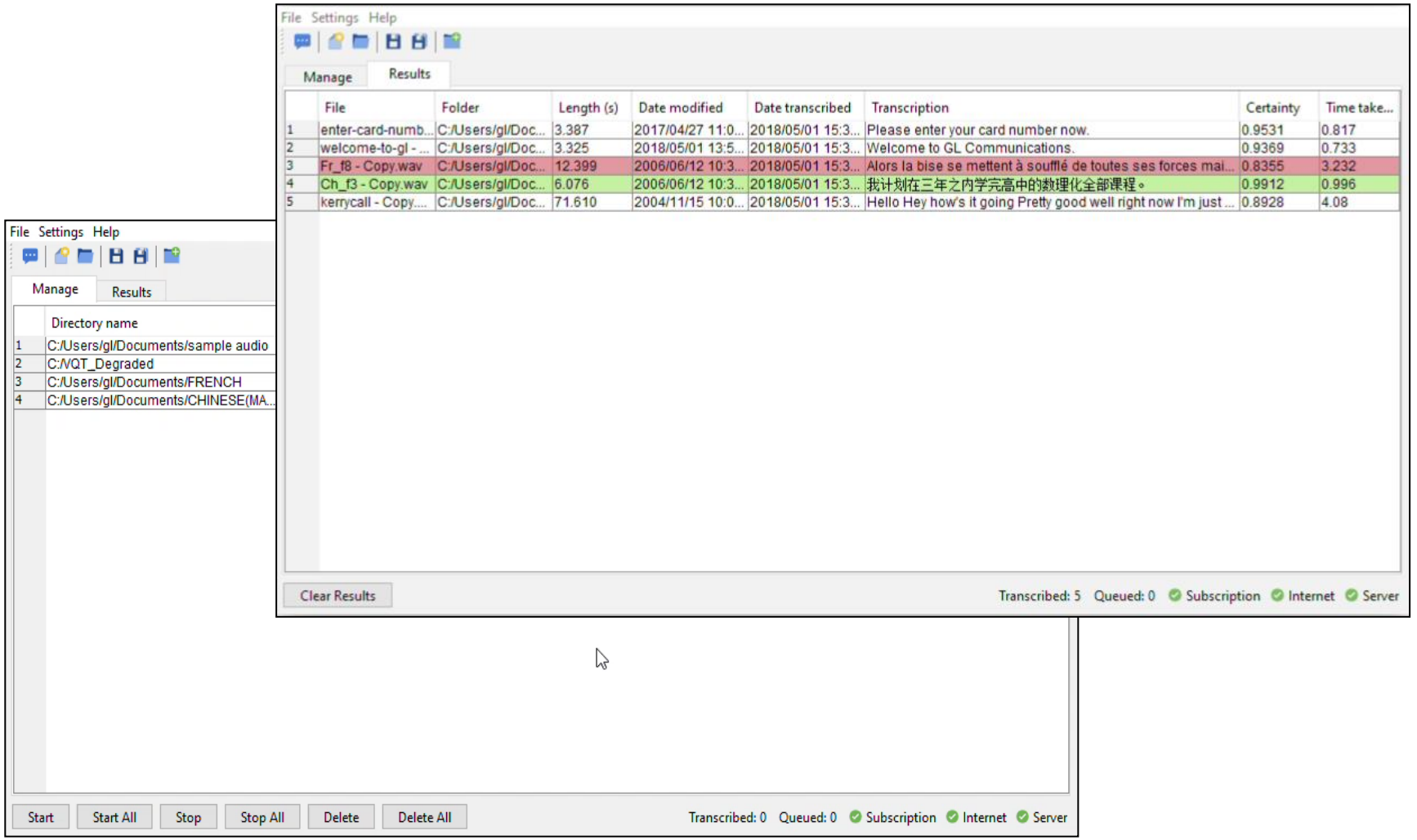
Automated Transcriber Using Directory Watcher

- Monitor single or multiple directories
- For each directory watcher, configure locale, encoding
- When running, directory watcher continuously monitors for newly created audio files
- Transcription results are populated in real time and stored in a database



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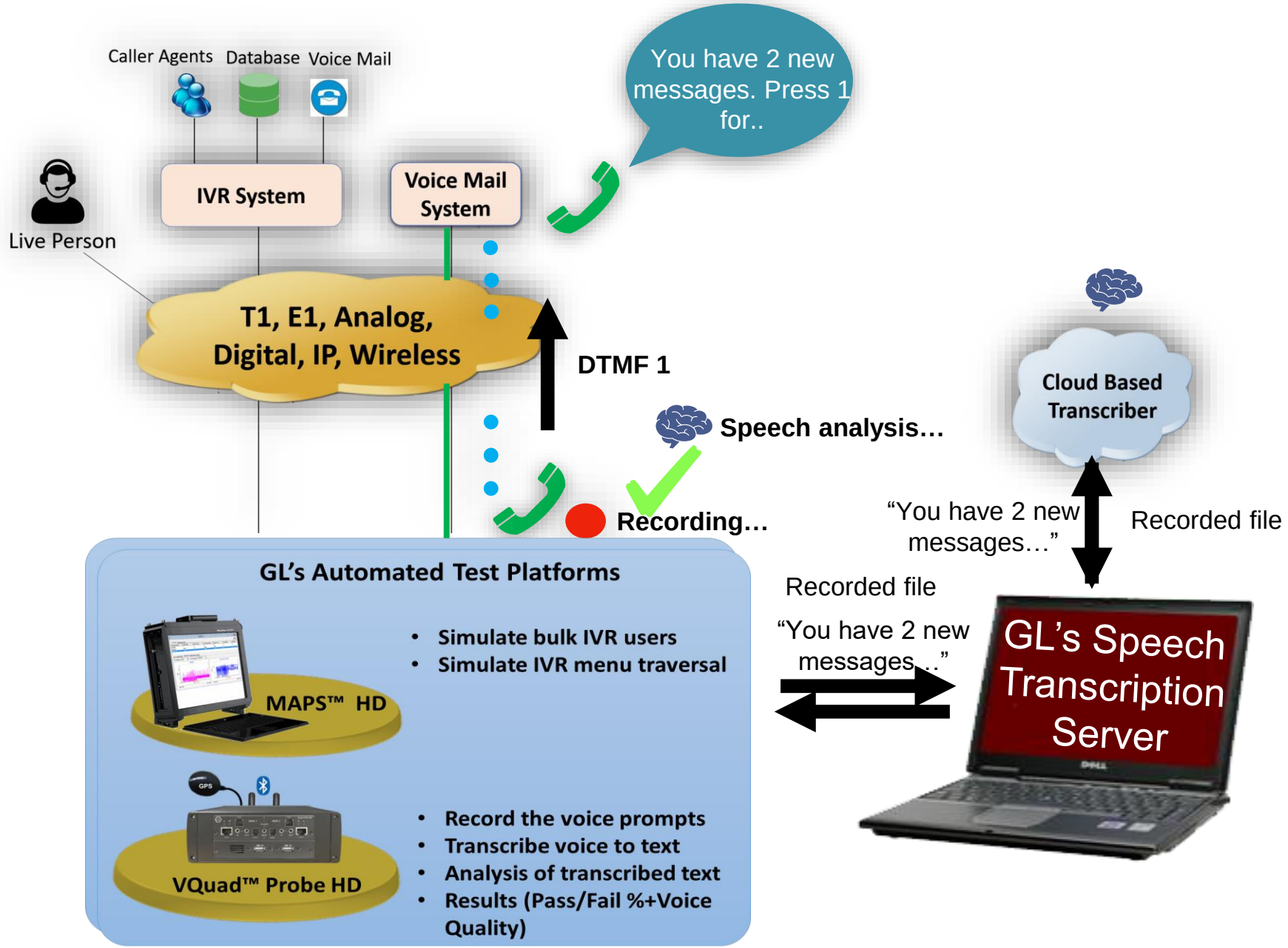
Typical Use Case



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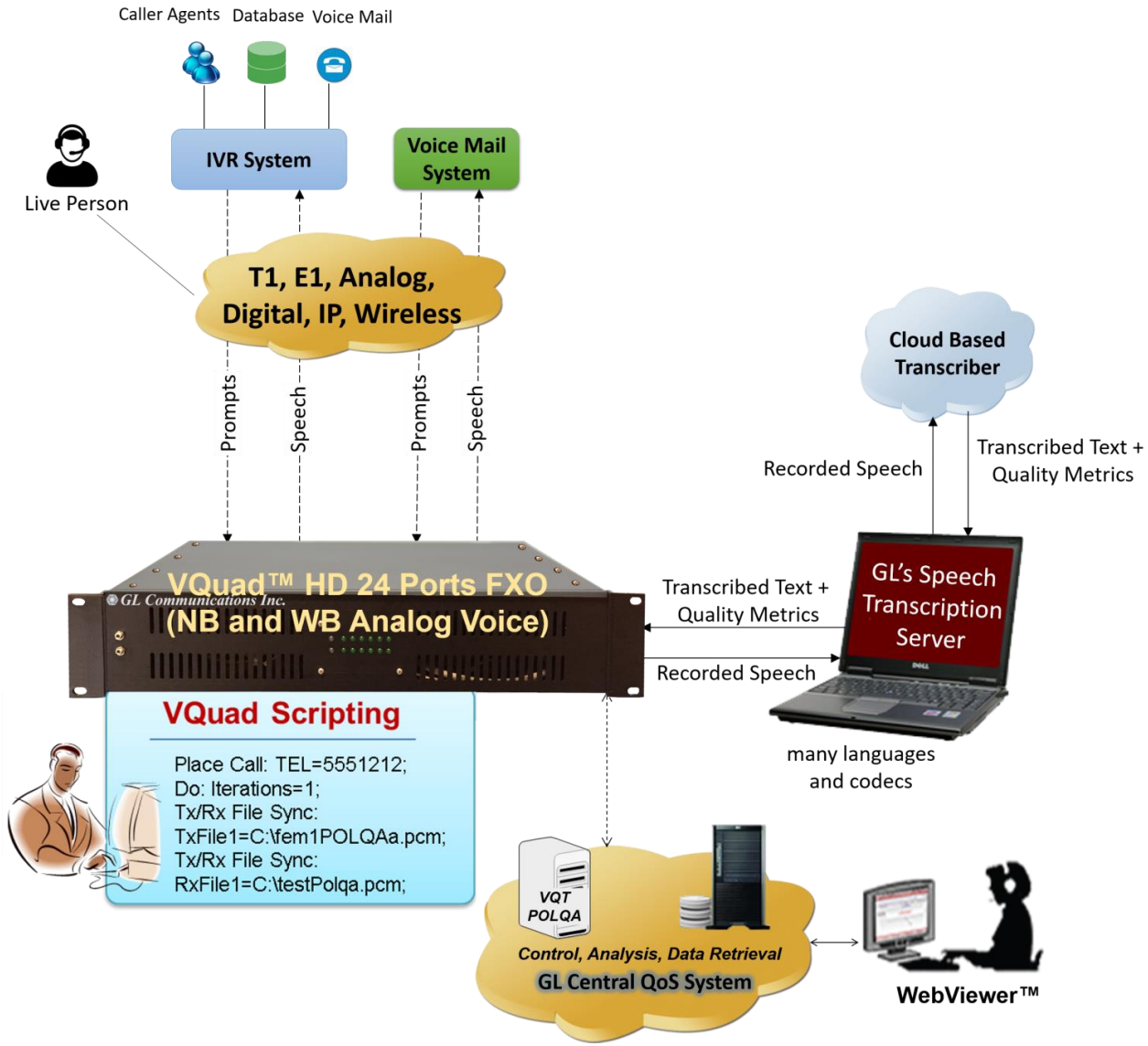
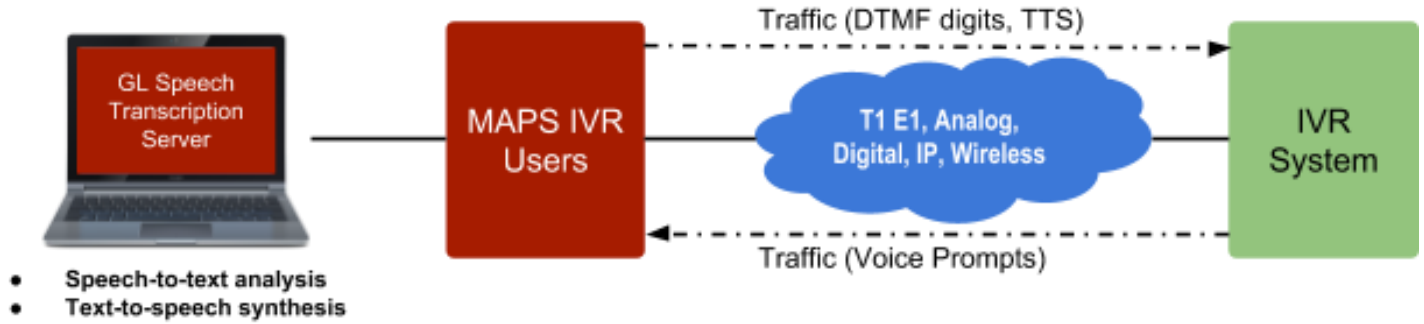
IVR Testing with VQuad™

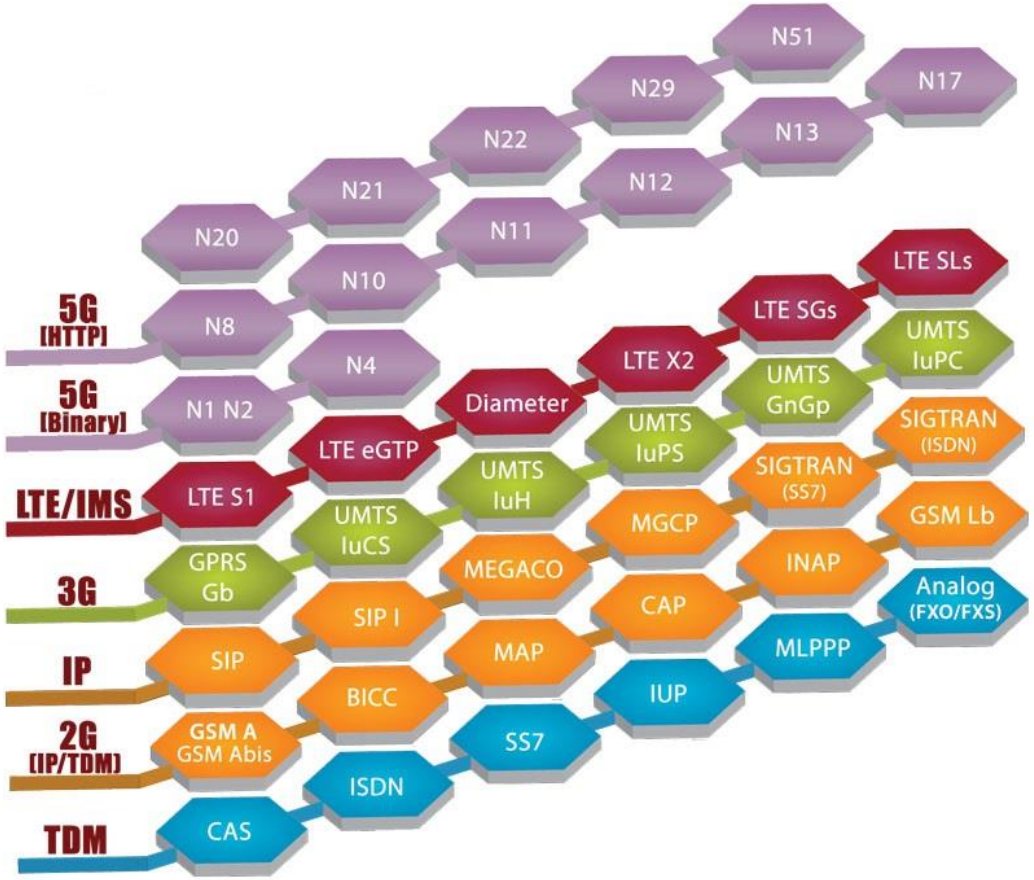
- VoIP, TDM, Analog, Wireless (Bluetooth, Wi-fi, 3G, 4G, LTE, PTT) test using Dual Universal Telephone Adapter or VQuad Probe
- Wideband support for Bluetooth, FXO, SIP
- Integrate with existing end-point interfaces, rackmount or portable
- VQuad scripting provides ability to automate IVR tests by providing the necessary inputs (generate call, send response) while also transcribing and analysing IVR prompts
- Provides additional voice quality, echo and delay test, voice band analysis capabilities



IVR Testing with MAPS™



- Message Automation and Protocol Simulation
- GL's platform for protocol simulation
- Traffic support for voice files, tones, DTMF/MF digits, and all industry standard codecs
- Make IVR test calls over T1 E1, analog, digital, IP, or wireless network
- Easily scalable for bulk testing, test multiple IVR paths in parallel



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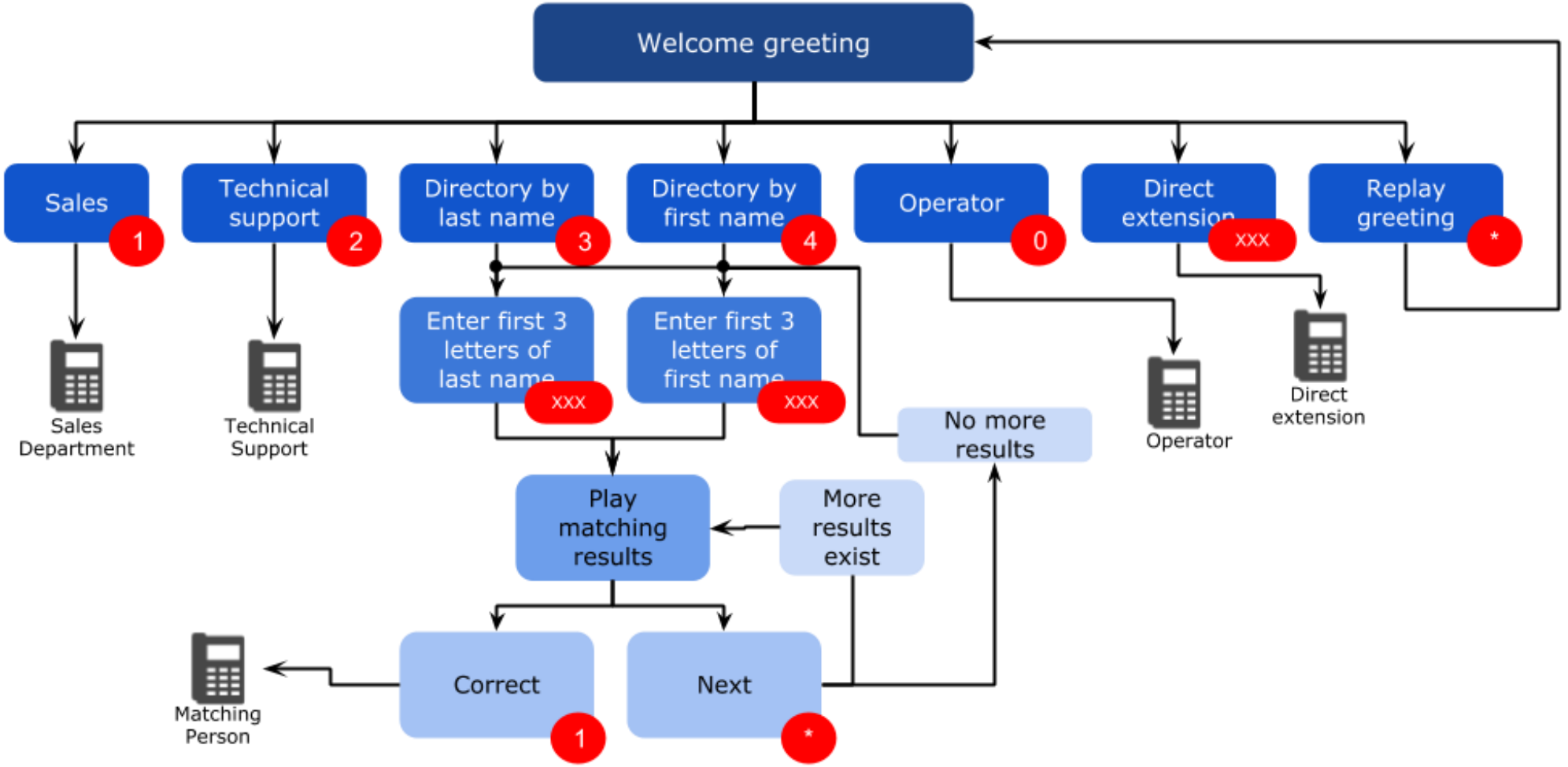
Test Reporting

- Overall Pass/Fail
- Transcribed text for each prompt
  - Similarity score when compared with expected transcript
- (VoIP call) Calculated RTP voice quality metrics such as R-Factor, listening and conversational quality MOS scores, packet loss, discarded packets, out of sequence packets and duplicate packets
- Results are passed to Central Database and accessed via WebViewer™ or NetSurveyorWeb™

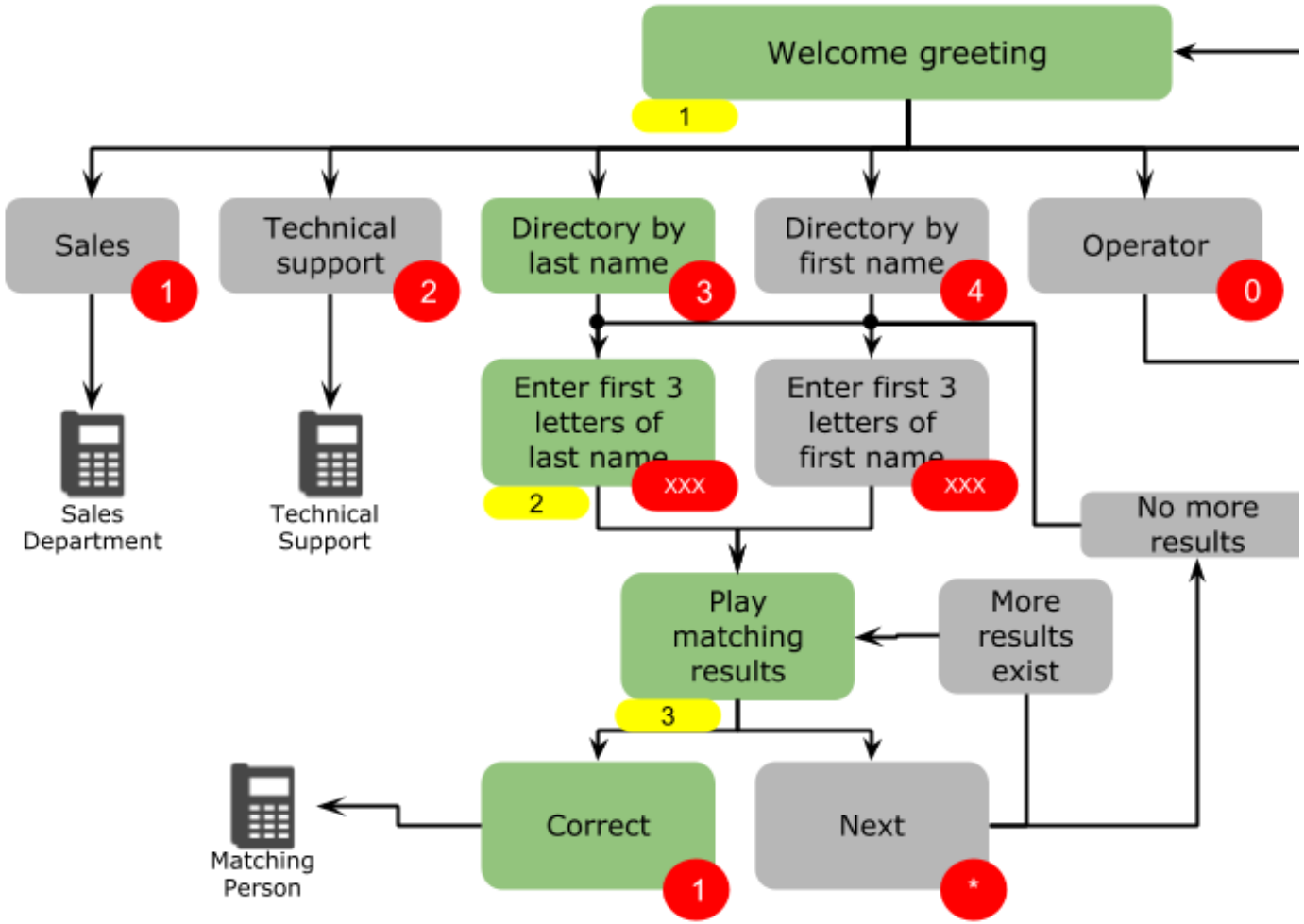
Sample IVR Traversal

- GL's main phone line, divided into IVR stages



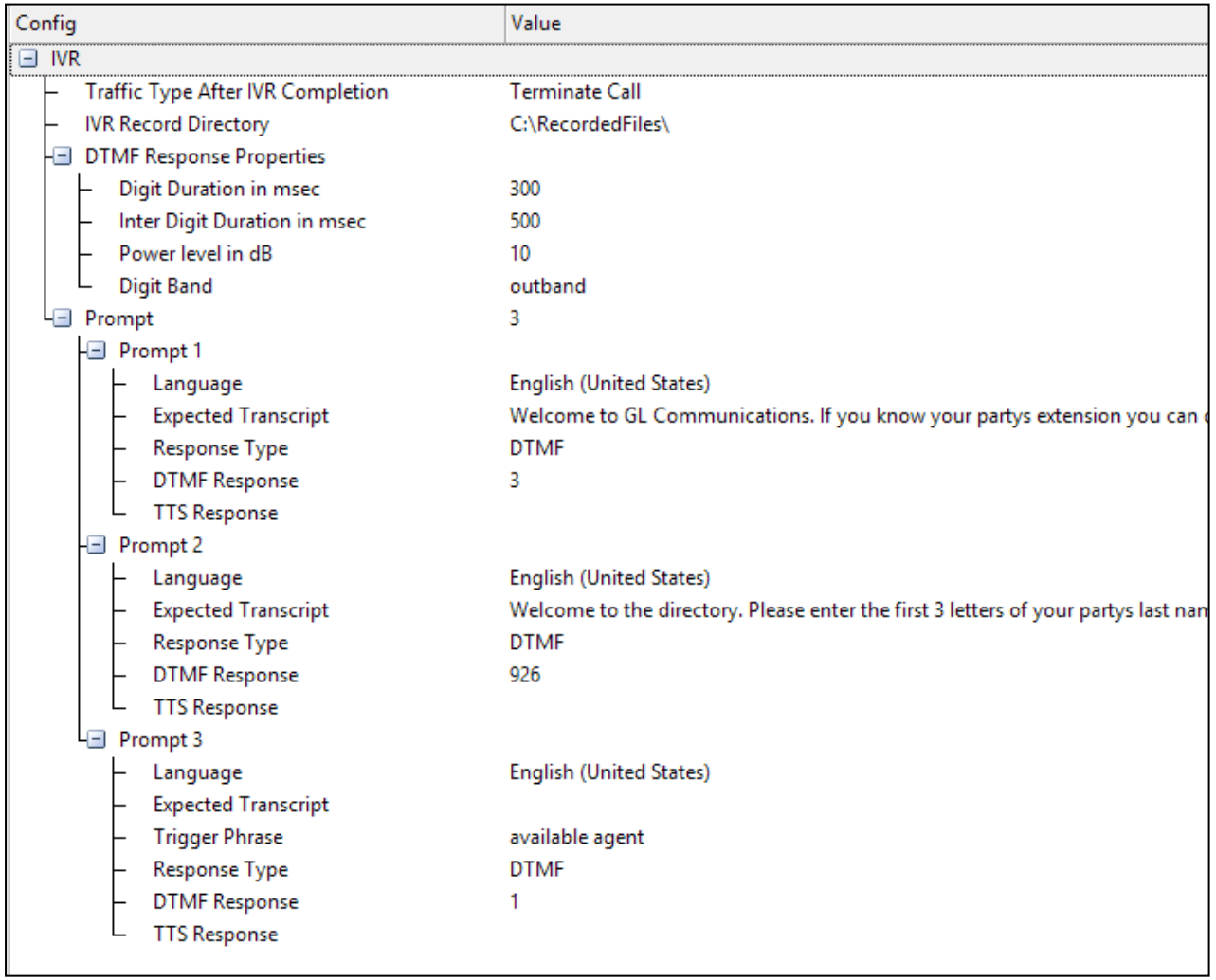
Sample IVR Traversal

- **Stage 1**: verify welcome greeting and corresponding prompts are played properly. Respond with DTMF 3 for “directory by last name”
- **Stage 2**: verify by “directory” prompt is played properly and respond with DTMF digits to search directory
- **Stage 3**: analyze the search results, and respond with DTMF 1 when matching person is announced



Sample IVR Traversal – IVR Configuration Parameters

- Each Prompt Segment is configured with:
  - Language
  - Expected transcript
  - Response type
    - DTMF
    - Voice (text to speech)
- Configurable through profiles or CSV files



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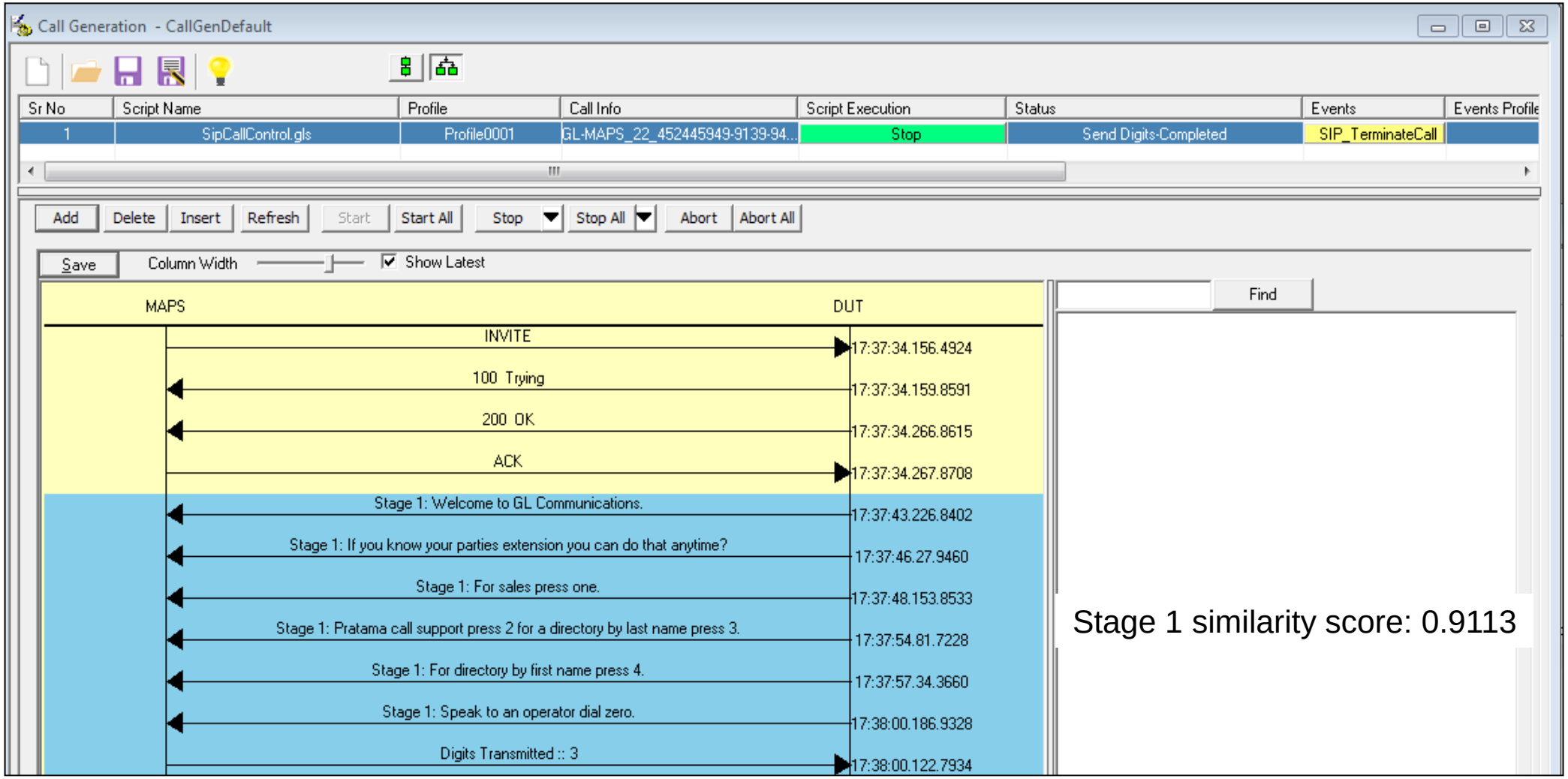
Sample IVR Traversal – Call Generation

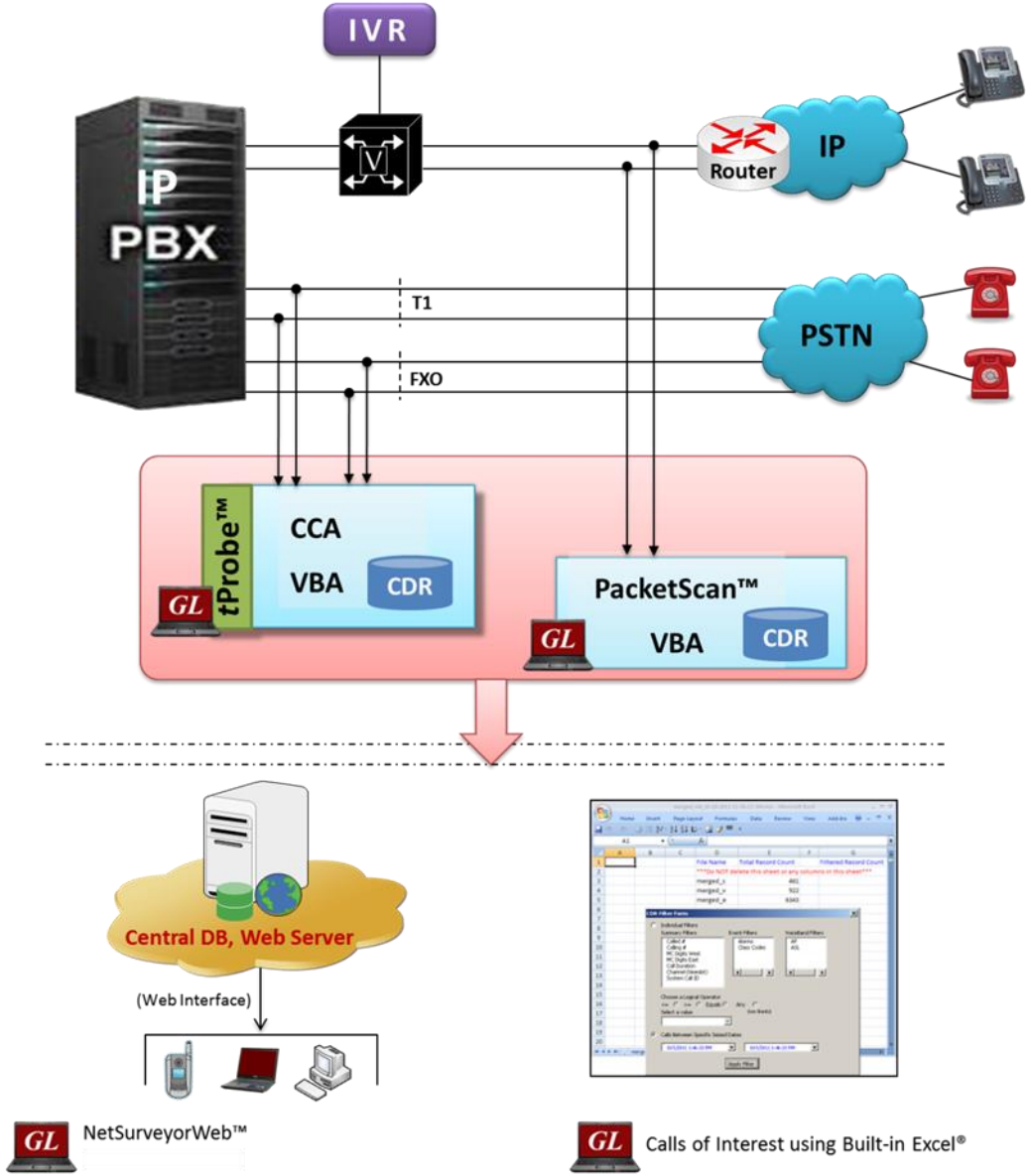


IVR Call Monitoring

GL's suite of call capture and analysis (CCA, PacketScan™, PPP Analyzer) solution can be used to capture and monitor live traffic over TDM, and Packet networks.

For each call it reports comprehensive information occurring on T1 or E1 lines and IP networks, including,

- Complete signaling information for each direction
- Detail voice band event information occurring during the call including dual tones (DTMF, MF, MFC-R2), fax tones, modem signals, and more
- Voice capture for both directions
- All alarms and errors occurring during the call
- Detailed analysis of the voice band - noise level, speech level, speech activity factor, echo measurements, and more
- Categorization of the call as voice, fax, modem, or data



Thank you