

Decodes and analyzes Data, Fax, Mobile Fax, Mobile Data, and VoIP transmissions

Decodes and analyzes over PSTN, A-Interface and IP networks.

Mixed Fax-over-IP using T.38/G.711

Offline analysis of TDM & IP captured files

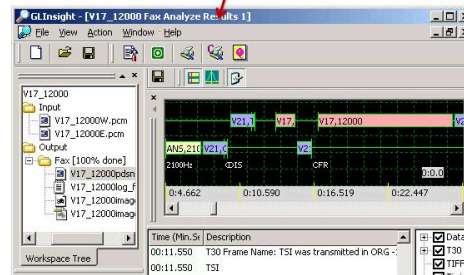
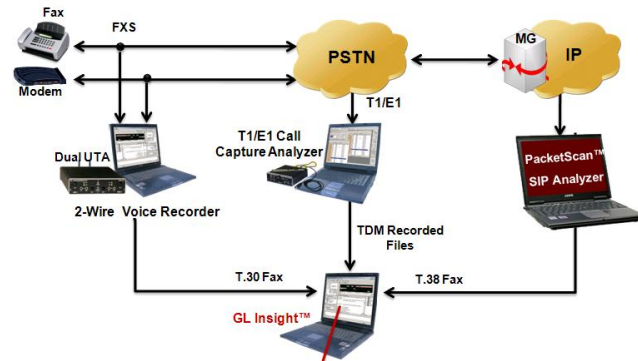
Fax/Modem-over-PSTN Cross Analysis

Mixed Modem over IP (Using G.711)

Device-independent communications analysis

Real-time analysis (future)

GLInsight™



Overview

GL Insight™ enables decoding and analysis of pre-recorded modem and fax transmissions. The transmission signals can be recorded from PSTN or IP media. It is a unique system used by developers of modem and fax technology often in interoperability labs. GL Insight™ can be used during the development and deployment phases of the products that support fax and modem transmission.

GL Insight™ receives the recorded modem or fax transmissions in one of the two ways: As raw signal files (PCM files) - in either mono or stereo format or as IP capture files - created by capturing devices or by software. GLInsight™ demodulates the raw transmissions and presents the decoded data in an easy to understand format. It produces extensive log files with all relevant debugging information for easy event tracing which in turn provides insight to potential sources of problems. The raw files required for fax and modem analysis in the case of PSTN (2-wire or TDM) can be obtained using several hardware platforms: GL's USB T1 E1 with Call Capture Analysis (CCA) or GL's Dual UTA for 2-wire. Similarly for fax and modem analysis over IP, the captured files can be obtained using GL's PacketScan™ VoIP analyzer.

For more information on DCME Analyzer, refer to <http://www.gl.com/glinsight.html>.

Main Features

- Enables demodulation and analysis of Data (Modem), Fax, Mobile Fax, Mobile Data, and VoIP transmissions over TDM and IP networks
- Device-independent communications analysis
- Supports Windows® XP, and Windows® 7 (32 and 64 bit) operating systems
- Offline analysis of TDM & IP captured files
- Mixed Fax-over-IP using T.38/G.711 and Fax-over-PSTN Cross Analysis
- Mixed Modem over IP (Using G.711) and Modem over PSTN Cross Analysis
- Time synchronization performed on PSTN and IP signals
- Cross analysis of two networks
- Provides bottom-up deep diagnosis of calls to solve interoperability issues
- Diagnoses physical and network layer problems
- Non-intrusive IP/TDM network diagnosis of high packet loss rate, high jitter, echo path, and echo canceller performance, to indicate possible locations of problems



GL Communications Inc.

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Technical Specifications

Fax over IP - Analyzing using T.38

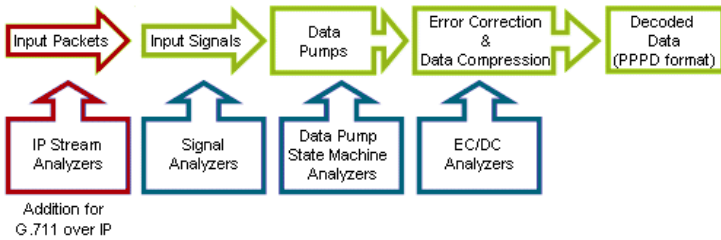
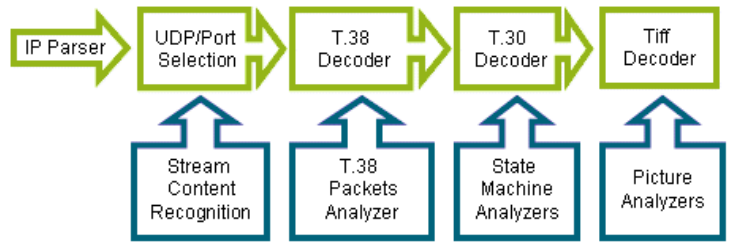
Analyzers

T.38 Stream (IP Packets)

- Packet loss and jitter analysis
- Illegal packets

T.30 Decoder

- T.4/T.6 compression
- T.4/T.6 incompatibility
- Improper state flow analysis
- ECM problems
- TIFF creation



Fax over PSTN and IP - Analyzing using G.711

Analyzers

IP Stream and Signal

- Packet loss and jitter analysis
- Improper use of Voice Activity Detector
- Signal quality and discriminator

Data Pump State Machine

- Demodulation quality
- Detailed phase info exchange

T.30 Decoder

- T.4/T.6 compression
- T.4/T.6 incompatibility
- Improper state flow analysis
- ECM problems

Modem over PSTN and IP - Analyzing using G.711

IP Stream and Signal

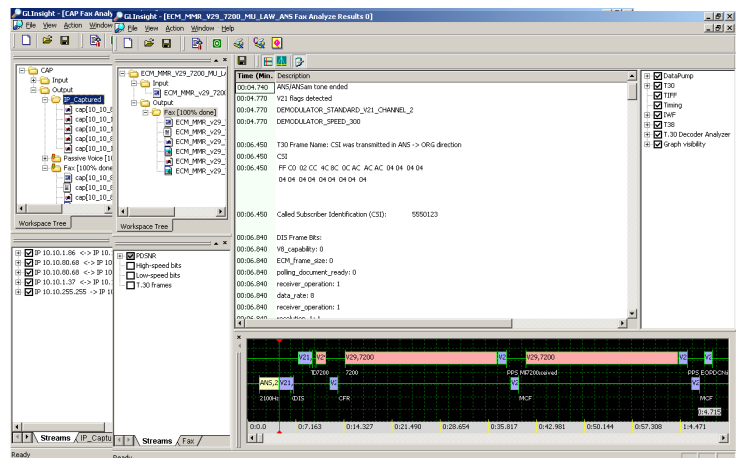
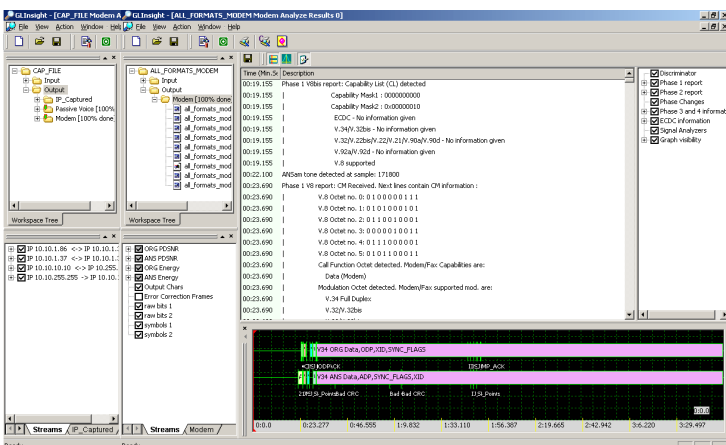
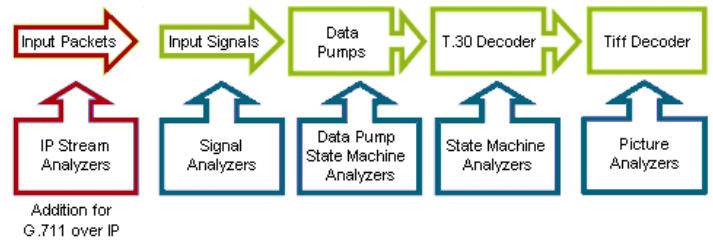
- Packet loss and jitter analysis
- Improper use of Voice Activity Detector
- Input signal stability overflow and discriminator

Data Pump State Machine

- Demodulation
- Detailed phase info exchange
- Improper state flow and timeouts

Error Correction Data Compression

- Negotiation exchange
- Improper state flow analysis



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Detailed Information

Fax-Over-PSTN Decoding & Analysis

Supported Data Pumps and Protocols

Data Pumps

V.34HD, V.17, V.33, V.29, V.27, V.21

Protocols

T.30, T4/T6, T.85

Signal Analyzers

- Discriminator information.
- Unstable signal detector.
- Signal overflow detector.
- No signal on single-sided information

Data Pump State Machine Analyzers

- Phase changes, data rates, symbol rate
- Structures interchange (MP, Info) and complete connection parameters
- PDSNR (post detection signal-to-noise ratio) improper quality drop detector
- V.8 incompatibility indication

T.30 Decoder Analyzers

- Fax Phase changes, data rates
- T.30 raw data
- T.30 frames and information
- T.4/T.6 page coding information
- CRC error detector in V.21
- Repetitive T.30 frames detector,
- T.4/T.6 bad-line statistics
- Suspicious ECM retransmission indication
- ECM failure to correct error frames indication
- Unexpected end of Fax indication
- Improper T.30 protocol flow indication

Modem over PSTN and IP - Analyzing using G.711

T.38 Packet Analyzers

- Packet loss detection
- Jitter behavior analysis
- Bad packets indication
- Packet collision detection.

T.30 Analyzers

- Fax phase changes, data rates
- T.30 raw data
- T.30 frames and information
- T.4/T.6 page coding information
- Improper T.30 protocol indication
- CRC error detector in V.21
- Repetitive T.30 frames detector
- T.4/T.6 bad-line statistics

- No-signal on single-sided indication
- Suspicious ECM retransmission indication
- ECM failure to correct error frames indication
- Unexpected end of Fax indication

Fax-Over-IP Decoding & Analysis (using G.711)

IP Analysis Information

- Packet loss detection
- Jitter behavior analysis
- SID (Silence Descriptor) detector to detect improper use of Voice Activity Detector while transferring data.

Fax Analysis Information

- Same as Fax over PSTN analysis

Error Correction Data Compression

- Negotiation exchange
- Improper state flow analysis

Modem over PSTN Decoding and Analysis

Supported Protocols

- V.92 (Quick Connect and Modem-on-Hold supported, PCM-upstream not supported), V.90, V.34, V.32bis/V.32, V.22bis/V.22, V.21, V.23, Bell 103 / Bell 212.

Supported Start-up Protocols

- V.8, V.8bis, V.8 short

Supported Error Correction & Data Compression Protocols

- V.42, V.42bis, V.44, MNP2-4, MNP5, V.14

Signal Analyzers

- Discriminator information
- Improper Automode signal flow detector
- Improper V.8 signal flow detector
- Unstable signal level detector
- Signal overflow detector

Data Pump State Machine Analyzers

- Modem phase changes, retrains, rate renegotiations, data rates, symbol rates
- Internal phase states such as S, S' detection and all the Phase 2 sub-states
- Structures interchange (MP, CP, Info) and complete connection parameters
- Data-pump improper flow detector such as inconsistency of the signal with the standard
- PDSNR (post detection signal-to-noise ratio) improper quality drop detector
- Improper phase reversal detector



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Error Correction Data Compression Analyzers

- Error-correction and data compression setup information including XID info
- Error-correction frame statistics
- Data compression negotiation
- Error-Correction improper flow detector

Modem-over-IP Decoding and Analysis

IP Analysis Information

- Packet loss detection
- Jitter behavior analysis
- SID (Silence Descriptor) detector to detect improper use of Voice Activity Detector while transferring data
- RFC2833 support

Modem Analysis Information

- Same as Modem over PSTN analysis

Cross Analysis Decoding Scheme

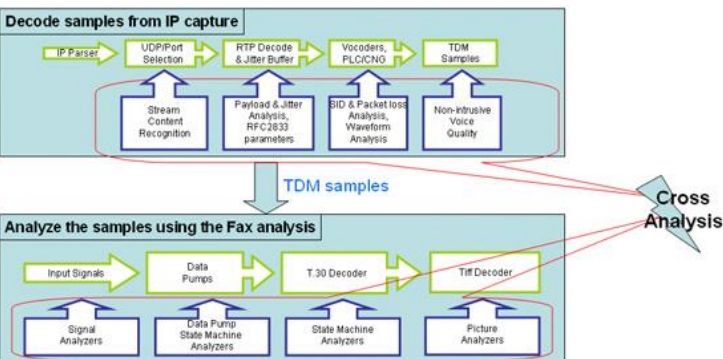
When there is information about a call from both the PSTN and IP networks, GLInsight™ can plot both results on a single time scale to facilitate easier analysis of the problems and their causes.

Identically Coded and Analyzed Info Categories

- Mixed Fax-over-IP (using T.38) and Fax-over-PSTN Cross Analysis
- Mixed Fax over IP (using G.711 pass-through) and Fax over PSTN Cross Analysis
- Mixed Modem-over-IP (using G.711) and Modem-over-PSTN Cross Analysis

Uniform Decoding & Analysis Schemes

- A time synchronization process is performed on PSTN and IP signals
- All information indicators from IP and PSTN sides are mixed on a single time scale to determine where on the timeline (IP or PSTN) problems started to occur.



Who Benefits from GLInsight™?

Equipment Developers (Gateways, RAS, Fax Servers, etc)

- Provides bottom-up deep diagnosis of the call e.g. (fax): provide info from data pump layer up to tiff picture
- Helps solve interoperability issues
- Diagnoses physical layer problems
- Diagnoses network layer problems

Service Providers (Mobile Operators, ISPs, WISPs, Carriers & Operators)

- Non-intrusive IP network diagnosis
 - High packet loss rate
 - High jitter
- Non-intrusive TDM network diagnosis
 - Echo path
 - Echo canceller performance

Buyer's guide

- [FXT001](#) – GL Insight™ - Single Fax Analysis – TDM
- [FXT002](#) – GL Insight™ - Single Fax Analysis – IP
- [MDT001](#) – GL Insight™ - Single Modem Analysis – TDM
- [MDT002](#) – GL Insight™ - Single Modem Analysis – IP

Related Software

- [XX030](#) - Call Capture and Analysis
- [XX020](#) - Record/Playback File Software
- [VQT035](#) - FXO RJ11 Hardware Tap and Audio Capture Software
- [PKS100](#) - PacketGen™ (includes PacketScan™)
- [PKV100](#) - PacketScan™ (Online and Offline)
- [DR001](#)- DCOSS Software (Call GL for Fax/Modem Traffic Generation License)
- [VQT010](#) – Vquad™ Software (Call for FXO, VoIP, Wireless, & T1E1 package)

Related Hardware

- [VQT241](#) - Dual Universal Telephony Adapter (UTA)
- [UTE001](#) - USB based Dual T1/E1 Laptop Analyzer
- [UTA001/UEA001](#) – Basic USB based Dual T1/E1 Laptop Analyzer Software
- [HTE001](#) - Universal HD T1/E1 PCI Cards
- [HUT001/HUE001](#) – Basic Universal HD T1/E1 Software

*Specifications and features subject to change without notice



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