Fax Emulation and Analysis using VQuad™ and Webviewer™

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Dual UTA HD

- Cell Phones:
  - Bluetooth®
  - Mobile audio interface for Smartphones (iPhone, Android) – includes Audio Headset Jack
  - Wired Headset Smartphone ACC connectivity
- Mobile Radios with Push-to-Talk functionality
- RJ-11 POTS lines
- Handset Phones (POTS, Digital, VoIP):
- 2-wire Analog (WB, NB - FXO) supporting next generation gateways
- Dual UTA HD 4-wire analog interfaces supporting Tx/Rx Headset including HATS, Cell Phone Headset, and any Handset Phone (RJ22 connection)

VQuad™ Probe HD

A Self-Contained Unit with VQuad™, Dual UTA HD, and PC

Following PC interfaces are embedded in the VQuad™ Probe HD along with the Dual UTA HD interfaces:

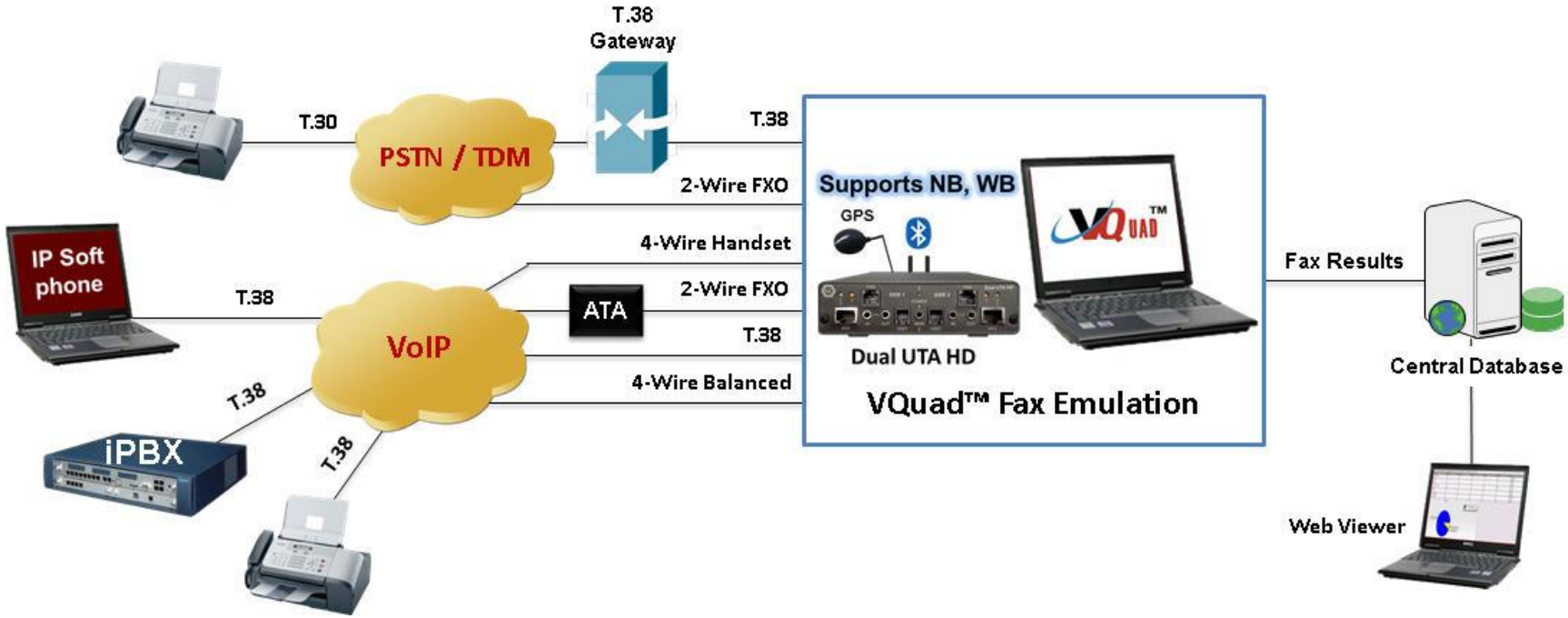
- 4 USB ports (can be used as Keyboard/Mouse ports as well as connecting a second Dual UTA HD or T1 E1 Analyzer)
  - 2x USB 2.0 on front
  - USB 3.0 and 2.0 on Back
- 2.5G Ethernet ports
- Two HDMI ports
- Two USB Type C ports
- In-built mSATA solid-state hard drive (256GB)
- In-built standard 8G memory
- Intel NUC Core i3 or optional i7 equivalent
- Windows® 11 64-bit Pro Operating System

mTOP™ Rack System

GL's VQuad™ mTOP™ solution includes high density Rackmount and **portable Probe** variants. mTOP™ Probe is all-in-one self-contained VQuad™ with Dual UTA HD test instrument along with PC interface designed for conveniently testing independent telephony devices in your lab.

Fax Emulation using VQuad™

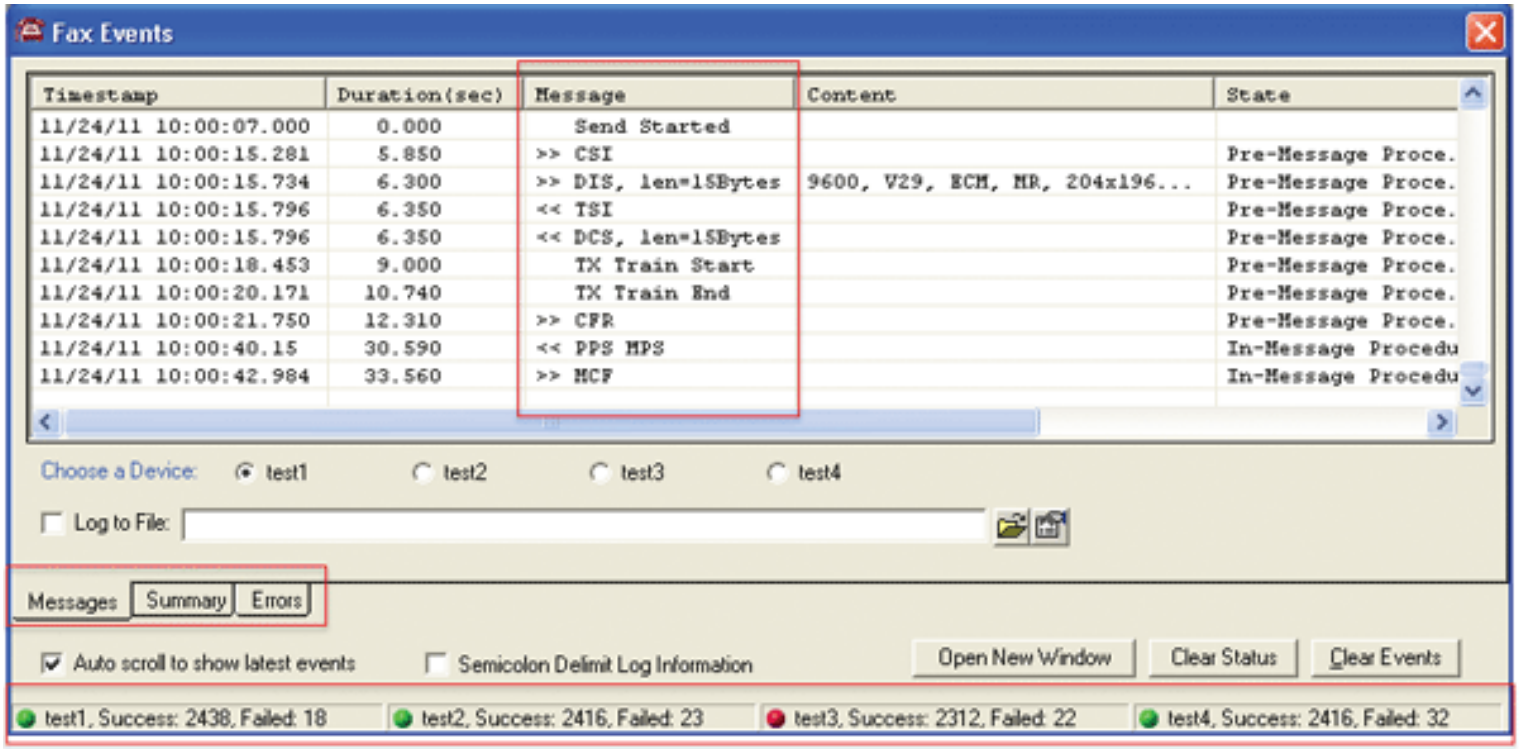
- Fax Emulation supporting up to 4 independent and simultaneous sessions with speeds up to 33600 bps (V.34).Supports both Tx and Rx fax emulation using VQuad™ with Dual UTA HD analog interfaces (2-wire FXO, 4-wire balanced, 4-wire Handset, PTT)
- VQuad™ Fax events include messages, summary, and errors log
- Ability to auto save fax (both East and West directions) to PCM file for enhanced analysis using GL Insight™ and GL Fax Demodulator/Decoder
- VQuad™ scripting supports both fax send and receive session configuration
- Support for querying Fax events/results/errors over web interface



VQuad™ Fax Events

- VQuad™ Fax Emulation includes three event screens, Fax Messages, Fax Summary and Fax Errors
- The Fax Messages is shown in chronological order for simple understanding of the fax process
- Multiple Fax Message screens can be displayed simultaneously thus showing full duplex fax sessions
- The Fax status as shown on the Fax Event screen displays Total Successful and Total Failed faxes for each VQuad™ device ID

FAX Events - Messages Log



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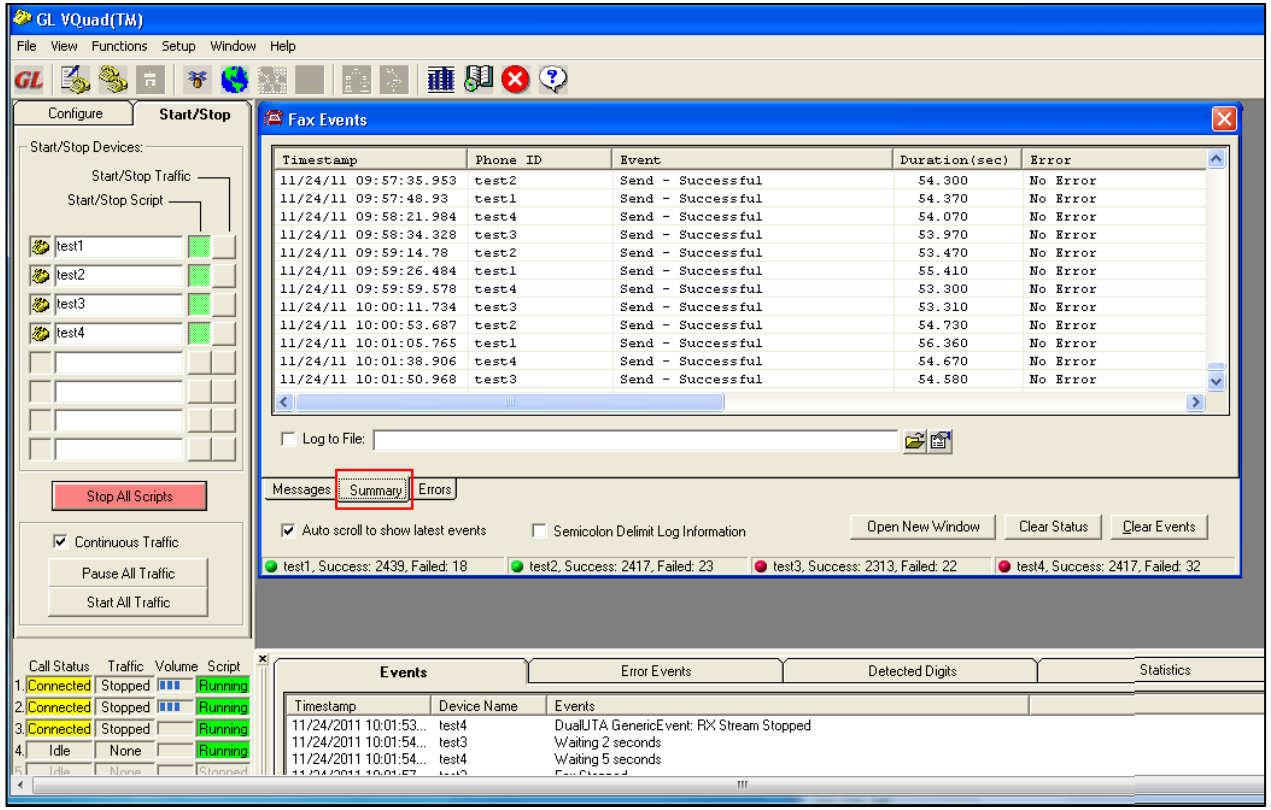
VQuad™ Fax Events – Summary Log

- The Fax Summary includes one event per fax (Fax Send and Fax Receive) which shows initial settings and final settings upon fax completion (i.e., Fax Speed, Line Sent, Bad Lines, Pages Received)
- The Fax Summary also provides insight whether the Fax was successful, or the Fax failed in which case an Error will be generated

Summary Log



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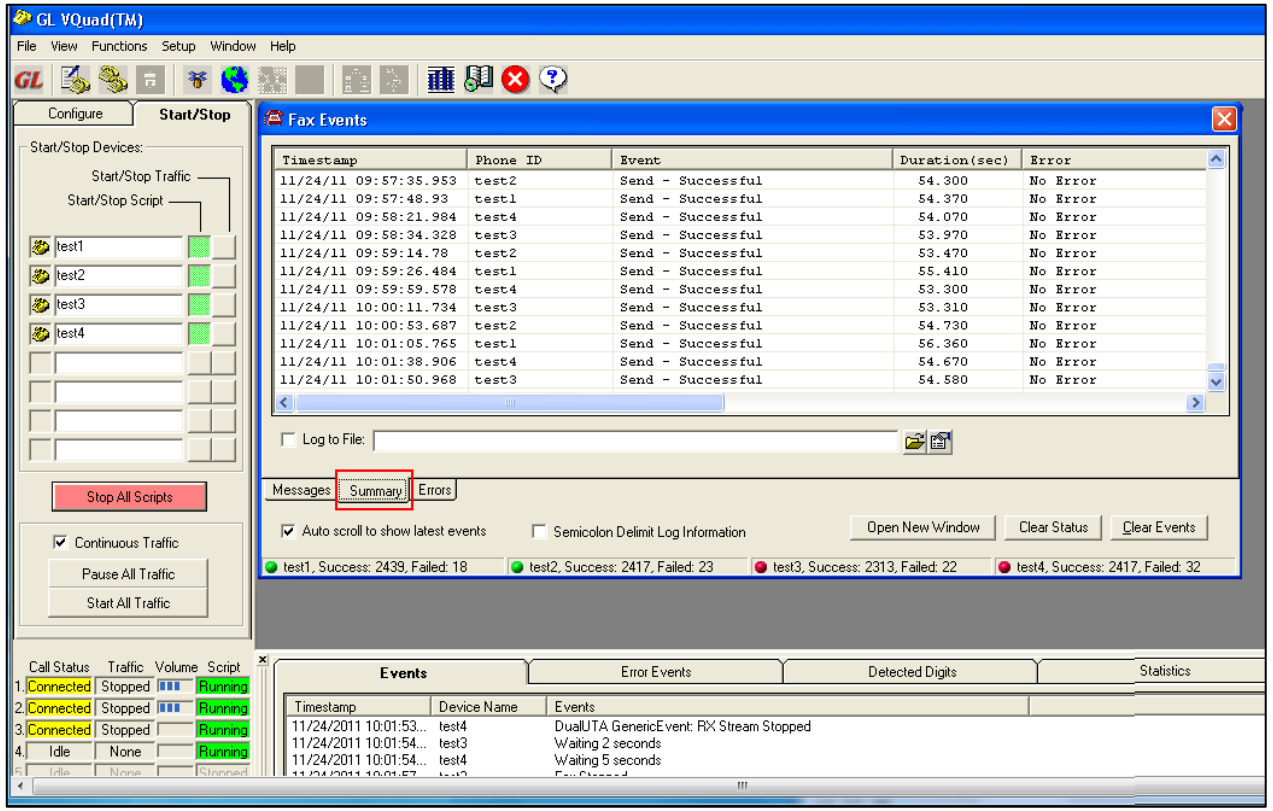
VQuad™ Fax Events – Error Log

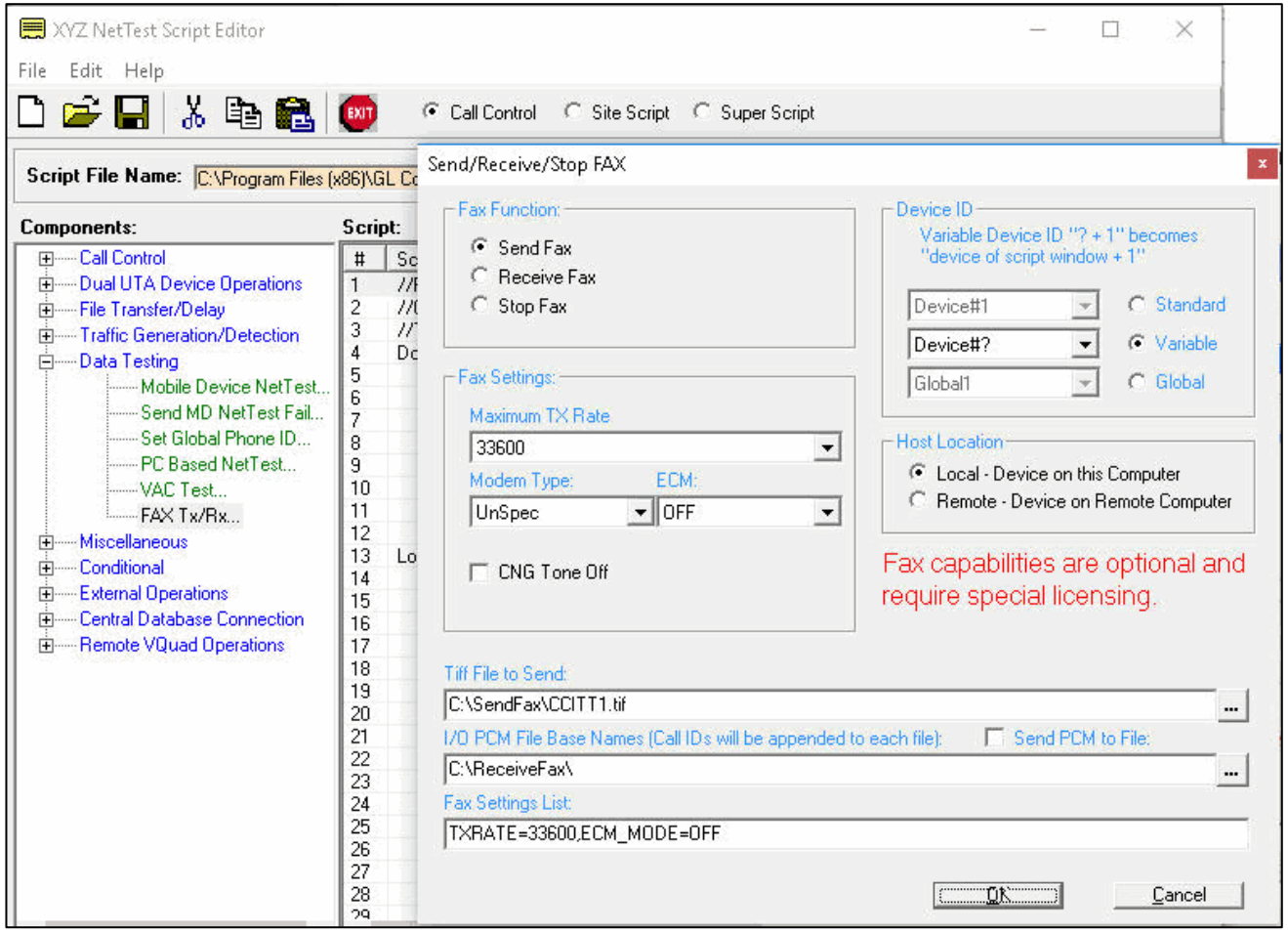
- The Fax Error screen provides all Fax Errors associated with the Fax Send/Receive. Additional information is provided for each Fax error to understand the cause of the error. All event screens can be saved to text file in real-time

Error Log



Fax Tx/Rx Configuration

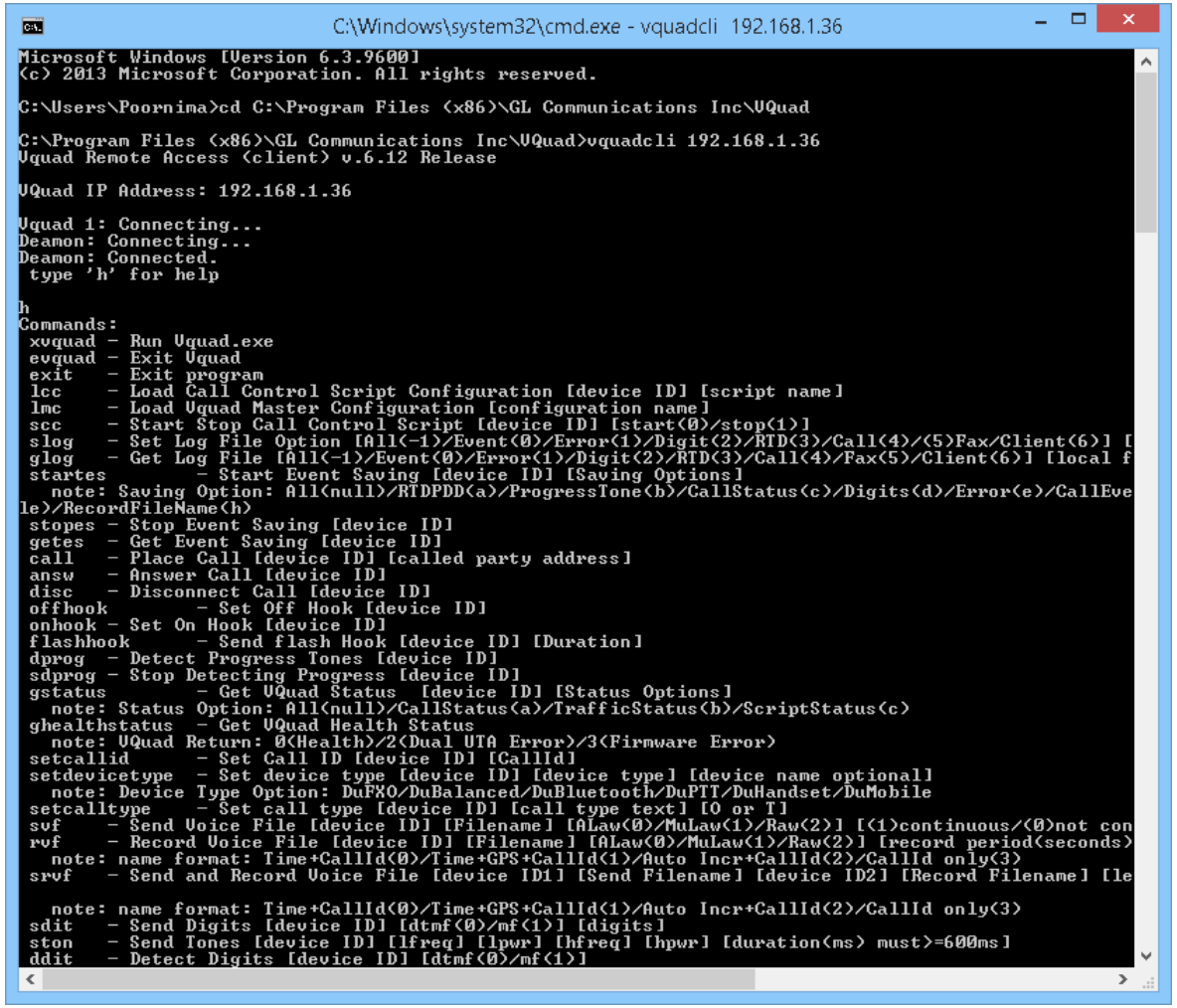
- VQuad™ scripting provides the ability to send and receive a fax session along with specifying necessary fax configuration settings
- The settings include Max Transmit Rate and Min Receive Rate which can effectively restrict available fax sessions
- The other configuration settings include:
  - ECM (Error Correction mode) on / off option to automatically detect and correct errors
  - RX Image Coding (receive fax only) options - MH (Modified Huffman), MR (Modified read), MMR (Modified READ)
  - Auto saved fax (both east and west) to PCM file can be analyzed using GL Insight and GL Fax Extractor



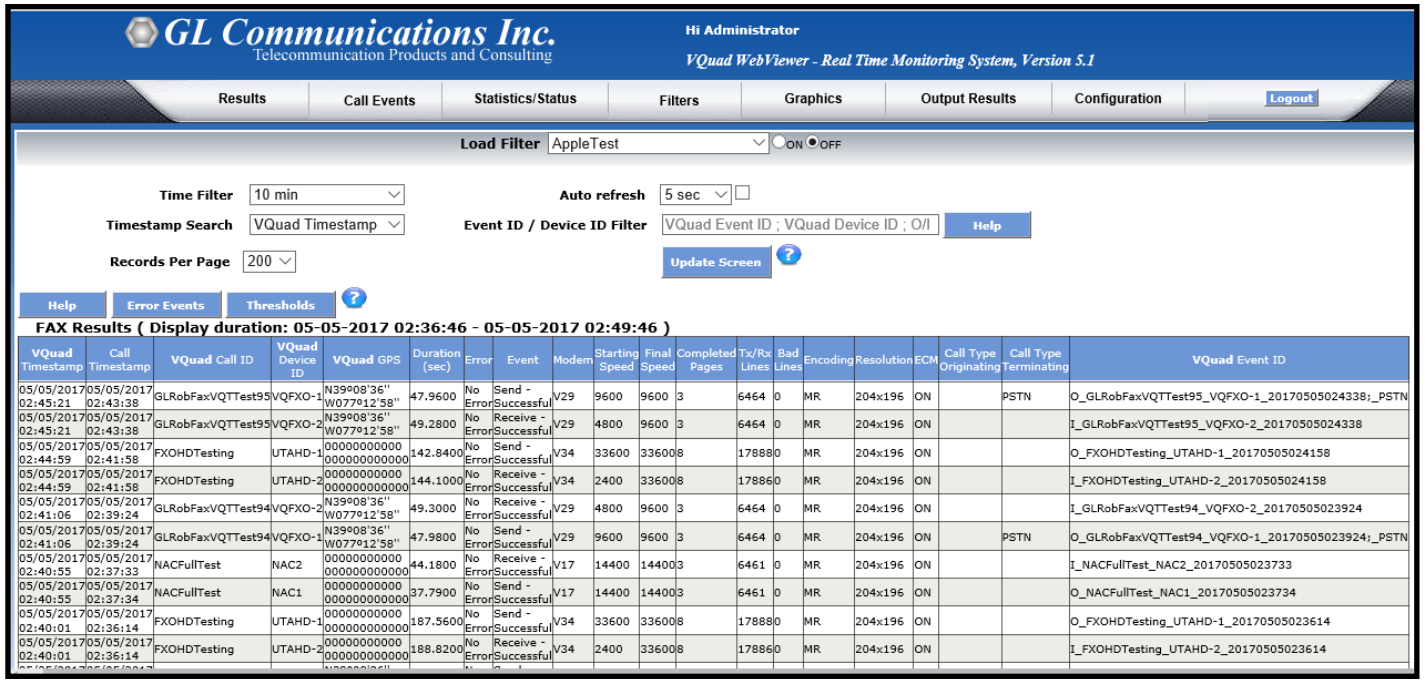
VQuad™ Remote Control

VQuad™ CLI (Windows)

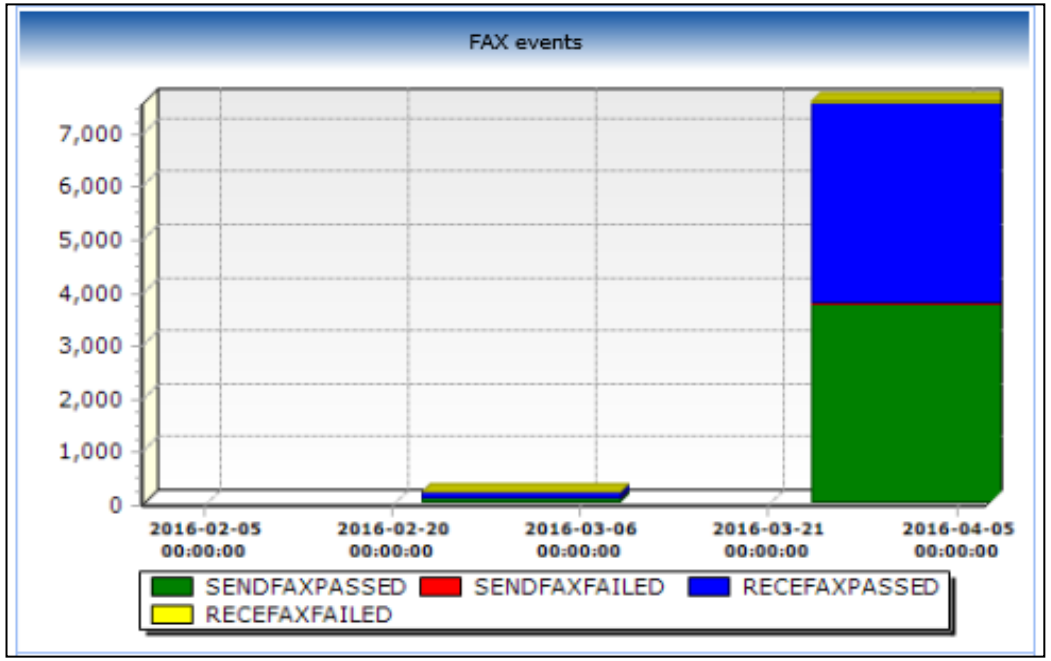
- VQuad™ CLI and API is enhanced to support fax simulation (both Windows® and Linux)
- The VQuad™ Remote Access (Client) allows VQuad™ operations to be remotely controlled by one (or several) VQuad™ clients over a LAN, WAN, or Internet



Remote Client WebViewer™



VQuad Timestamp	Call Timestamp	VQuad Call ID	VQuad Device ID	VQuad GPS	Duration (sec)	Error	Event	Modem	Starting Speed	Final Speed	Completed Pages	Tx/Rx Lines	Bad Lines	Encoding	Resolution	ECM	Call Type Originating	Call Type Terminating	VQuad Event ID
05/05/2017 02:45:21	05/05/2017 02:43:38	GLRobFaxVQTTest95	VQFXO-1	N39°08'36'' W077°12'58''	47.9600	No Error	Send - Successful	V29	9600	9600	3	6464	0	MR	204x196	ON		PSTN	O_GLRobFaxVQTTest95_VQFXO-1_20170505024338;_PSTN
05/05/2017 02:45:21	05/05/2017 02:43:38	GLRobFaxVQTTest95	VQFXO-2	N39°08'36'' W077°12'58''	49.2800	No Error	Receive - Successful	V29	4800	9600	3	6464	0	MR	204x196	ON			I_GLRobFaxVQTTest95_VQFXO-2_20170505024338
05/05/2017 02:44:59	05/05/2017 02:41:58	FXOHDTesting	UTAHD-1	00000000000 000000000000	142.8400	No Error	Send - Successful	V34	33600	33600	8	17888	0	MR	204x196	ON			O_FXOHDTesting_UTAHD-1_20170505024158
05/05/2017 02:44:59	05/05/2017 02:41:58	FXOHDTesting	UTAHD-2	00000000000 000000000000	144.1000	No Error	Receive - Successful	V34	2400	33600	8	17886	0	MR	204x196	ON			I_FXOHDTesting_UTAHD-2_20170505024158
05/05/2017 02:41:06	05/05/2017 02:39:24	GLRobFaxVQTTest94	VQFXO-2	N39°08'36'' W077°12'58''	49.3000	No Error	Receive - Successful	V29	4800	9600	3	6464	0	MR	204x196	ON			I_GLRobFaxVQTTest94_VQFXO-2_20170505023924
05/05/2017 02:41:06	05/05/2017 02:39:24	GLRobFaxVQTTest94	VQFXO-1	N39°08'36'' W077°12'58''	47.9800	No Error	Send - Successful	V29	9600	9600	3	6464	0	MR	204x196	ON		PSTN	O_GLRobFaxVQTTest94_VQFXO-1_20170505023924;_PSTN
05/05/2017 02:40:55	05/05/2017 02:37:33	NACFullTest	NAC2	00000000000 000000000000	44.1800	No Error	Receive - Successful	V17	14400	14400	3	6461	0	MR	204x196	ON			I_NACFullTest_NAC2_20170505023733
05/05/2017 02:40:55	05/05/2017 02:37:34	NACFullTest	NAC1	00000000000 000000000000	37.7900	No Error	Send - Successful	V17	14400	14400	3	6461	0	MR	204x196	ON			O_NACFullTest_NAC1_20170505023734
05/05/2017 02:40:01	05/05/2017 02:36:14	FXOHDTesting	UTAHD-1	00000000000 000000000000	187.5600	No Error	Send - Successful	V34	33600	33600	8	17888	0	MR	204x196	ON			O_FXOHDTesting_UTAHD-1_20170505023614
05/05/2017 02:40:01	05/05/2017 02:36:14	FXOHDTesting	UTAHD-2	00000000000 000000000000	188.8200	No Error	Receive - Successful	V34	2400	33600	8	17886	0	MR	204x196	ON			I_FXOHDTesting_UTAHD-2_20170505023614



- The VQuad™ Fax emulation summary and error results can be sent to the WebViewer™ Central database. These events can be queried using the WebViewer™ web-based browser
- From the WebViewer™, one can filter the results based on specific Error, Starting or Ending speed, Completed pages, Tx/Rx Lines including Bad Lines, Resolution and ECM settings

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Thank you