Fax Emulation and Analysis using VQuadTM and WebviewerTM



818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878 Phone: (301) 670-4784 Fax: (301) 670-9187 Email: <u>info@gl.com</u> Website: <u>https://www.gl.com</u>

Dual UTA HD

- 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)
- RJ-11 POTS lines
- Handset Phones (POTS, Digital, VoIP)
- 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

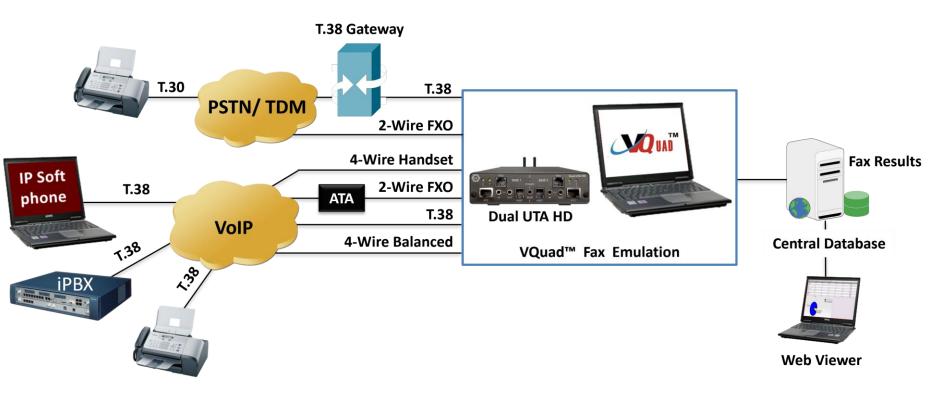


Front Panel

Fax Emulation using VQuad^{TM}

- Fax Emulation supporting up to 12 independent and simultaneous T.30 single or multiple page faxes using the Dual UTA HD hardware platform
- Configure the transmit and receive fax rate from 2,400 bps to 33,600 bps with V.34 supported.
- Interfaces supported for fax generation include 2-wire FXO and 4-wire analog
- 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

Communications



VQuad[™] Fax Events

- VQuad[™] uses TIF files for sending and receiving fax, and the fax can be single page or multi-page
- VQuad[™] Fax Emulation includes three event screens, Fax Messages, Fax Summary and Fax Errors
- Display multiple fax sessions or select a single fax session to view events only for that fax session
- The Fax status as shown on the Fax
 Event screen displays Total Successful
 and Total Failed faxes for each VQuad[™]
 device ID

fimestamp	Device Name	Duration(sec)	Message	Content	St /
.0/21/24 15:58:26.941	Sidel	10.860	>> DIS, len=15Bytes	33600, V34, ECM, MR, 204x98	Pr
.0/21/24 15:58:27.67	Sidel	10.860	<< TSI		Pr
0/21/24 15:58:27.67	Sidel	10.860	<< DCS, len=15Bytes		Pr
.0/21/24 15:58:27.804	Sidel	11.580	TX Train Start		Pr
.0/21/24 15:58:27.804	Sidel	11.580	TX Train End		Pr
.0/21/24 15:58:27.828	Side2	11.740	>> TSI		Pr
.0/21/24 15:58:27.828	Side2	11.860	>> DCS, len=15Bytes	33600, V34, MR, Letter, 204	Pr
.0/21/24 15:58:27.925	Side2	11.860	RX Train Start		Pr
.0/21/24 15:58:27.925	Side2	11.860	RX Train End		Pr
.0/21/24 15:58:27.925	Side2	11.860	<< CFR		Pr
:				-	>
Show Events: 🔄 All	-				
Log to File:				🗃 🖼	
essages Summary Errors					
essages Summary Errors					

FAX Events - Messages Log



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

GL VQuad(TM) File View Functions Setup Window	v Help					
GL 🖏 🦠 🕫 😽 🌖		ŞII 😣 😲				
Configure Start/Stop	🛱 Fax Events					
Start/Stop Devices:	Timestamp	Phone ID	Event	Duration(sec)	Error	
Start/Stop Traffic	11/24/11 09:57:35.953	test2	Send - Successful	54.300	No Error	
Start/Stop Script	11/24/11 09:57:48.93	testl	Send - Successful	54.370	No Error	
	11/24/11 09:58:21.984	test4	Send - Successful	54.070	No Error	
	11/24/11 09:58:34.328	test3	Send - Successful	53.970	No Error	
🐌 test1	11/24/11 09:59:14.78	test2	Send - Successful	53.470	No Error	
🐌 test2	11/24/11 09:59:26.484	testl	Send - Successful	55.410	No Error	
	11/24/11 09:59:59.578	test4	Send - Successful	53.300	No Error	
🐌 test3	11/24/11 10:00:11.734	test3	Send - Successful	53.310	No Error	
🤣 test4	11/24/11 10:00:53.687	test2	Send - Successful	54.730	No Error	
	11/24/11 10:01:05.765	testl	Send - Successful	56.360	No Error	
	11/24/11 10:01:38.906	test4	Send - Successful	54.670	No Error	
	11/24/11 10:01:50.968	test3	Send - Successful	54.580	No Error	~
	<					>
	Log to File:			2		
Stop All Scripts	Messages Summary Errors	ents 🥅 Semicolo	n Delimit Log Information	Open New Window	Clear StatusClea	ar Events
Pause All Traffic	test1, Success: 2439, Failed: 18	3 Succes	ss: 2417, Failed: 23 🥥 te	est3, Success: 2313, Failed: 22 🛛 🧕	test4, Success: 2417, I	Failed: 32
Fause All Tramc						
Start All Traffic						
Call Status Traffic Volume Script	× .		Error Events	Y Detroted Diety		itatistics
Connected Stopped	Events	L	Error Events	Detected Digits		taustics
Connected Stopped III Running	Timestamp Dev	ice Name Events				
	11/24/2011 10:01:53 test4		A GenericEvent: RX Stream Sto	poped	_	
Connected Stopped Running	11/24/2011 10:01:53 (esta		2 seconds	ppco		
Idle None Running	11/24/2011 10:01:54 test/		5 seconds			
Idle None Stopped	11/24/2011 10:01:57	ГСк				

Summary Log

5

Communications

VQuad[™] Fax Events – Error Log

 The Fax Error screen provides all Fax Errors associated with the Fax Fax Events

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

10/22/24 10:37:24 10/22/24 10:37:25 10/22/24 10:38:07 10/22/24 10:38:28 10/22/24 11:12:25 10/22/24 11:12:48 10/22/24 11:13:02 10/22/24 11:13:24 10/22/24 11:13:24	Side2 Side1 Side2 Side1 side4 side3 side4	16.280 16.740 8.000 29.000 8.020 30.420	Tl Timout - No fax signal de Unexpected DCN or post page DCS did not match values in DIS Third frame check error with DCS did not match values in DIS	Call Released Call Released Call Released In-Message P Call Released	V34 V34 V29 V29
10/22/24 10:38:07 10/22/24 10:38:28 10/22/24 11:12:25 10/22/24 11:12:48 10/22/24 11:13:02 10/22/24 11:13:24	Side2 Side1 side4 side3	8.000 29.000 8.020	DCS did not match values in DIS Third frame check error with	Call Released In-Message P	V29 V29
10/22/24 10:38:28 10/22/24 11:12:25 10/22/24 11:12:48 10/22/24 11:13:02 10/22/24 11:13:24	Sidel side4 side3	29.000 8.020	Third frame check error with	In-Message P	V29
10/22/24 11:12:25 10/22/24 11:12:48 10/22/24 11:13:02 10/22/24 11:13:24	side4 side3	8.020		and the second sec	
10/22/24 11:12:48 10/22/24 11:13:02 10/22/24 11:13:24	side3		DCS did not match values in DIS	Call Released	
10/22/24 11:13:02 10/22/24 11:13:24	10000000	30.420		outt nettensed	V27
10/22/24 11:13:24	side4		Third frame check error with	In-Message P	V27
		8.000	DCS did not match values in DIS	Call Released	V27
10/22/24 11:15:00	side3	30.400	Third frame check error with	In-Message P	V27
	side4	16.340	Tl Timout - No fax signal de	Call Released	V34
10/22/24 11:15:01	side3	16.820	Unexpected DCN or post page	Call Released	V34
10/22/24 11:17:26	Side2	30.840	Tl Timout - No fax signal de	Call Released	V27
10/22/24 11:17 <mark>:</mark> 28	Sidel	32.140	Unexpected DCN or post page	Call Released	V27
<					
Log to File:	Make D-E-4	I on lefermation with Co-	E Serve New Mindawa I		. 1
Auto scroll to show latest eve	ents Note, Delimit	Log Information with Ser	nicolonOpen New Window	Clear Status <u>C</u> lear E	vents



X

Fax Tx/Rx Configuration

- VQuad[™] scripting provides the ability to send and receive a fax session along with specifying necessary fax configuration settings
- User can select Tx/Rx rate or Modem type. The GL Fax solution will auto downgrade fax speed based on network
- 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

💭 XYZ NetTest Script Editor ile Edit Help			- 🗆 X
D 🚅 🔲 🐰 🖻 🛍 Script File Name: 🖸 \Program Files (Components:		Send/Receive/Stop FAX	Device ID
Colliporents: Colliporents: Call Control Dual UTA Device Operations File Transfer/Delay Traffic Generation/Detection Data Testing Mobile Device NetTest Send MD NetTest Fail Set Global Phone ID PC Based NetTest FAX Tx/Rx Miscellaneous Conditional External Operations	# Sc 1 /// 2 /// 3 // 4 Dc 5 6 7 8 9 10 11 12 13 Lo 14 15	Send Fax Receive Fax Stop Fax Fax Settings: Maximum TX Rate 33600 Modem Type: ECM: UnSpec OFF CNG Tone Off	Variable Device ID "? + 1" becomes "device of script window + 1" Device#1
E Central Database Connection E Remote VQuad Operations	16 17 18 19 20 21 22 23 24 25 26 27 28 29	Tiff File to Send: C:\SendFax\CCITT1.tif I/O PCM File Base Names (Call IDs will be appended to C:\ReceiveFax\ Fax Settings List TXRATE=33600,ECM_MODE=0FF	



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

_ _ _ C:\Windows\system32\cmd.exe - vguadcli 192.168.1.36 Microsoft Windows [Version 6.3.9600] <c> 2013 Microsoft Corporation. All rights reserved. C:\Users\Poornima>cd C:\Program Files <x86>\GL Communications Inc\VQuad C:\Program Files {x86}\GL Communications Inc\VQuad>vquadcli 192.168.1.36 Vguad Řemote Access (client) v.6.12 Release VQuad IP Address: 192.168.1.36 Vquad 1: Connecting... Deamon: Connecting... Deamon: Connected. type 'h' for help Commands: xvquad - Run Vquad.exe evquad - Exit Vquad evquad - Exit Uquad exit - Exit Uquad lcc - Load Call Control Script Configuration [device ID] [script name] lmc - Load Uquad Master Configuration [configuration name] scc - Start Stop Call Control Script [device ID] [start(0)/stop(1)] slog - Set Log File Option [All(-1)/Event(0)/Error(1)/Digit(2)/RID(3)/Call(4)/(5)Fax/Client(6)] [glog - Get Log File [All(-1)/Event(0)/Error(1)/Digit(2)/RID(3)/Call(4)/Fax(5)/Client(6)] [local f startes - Start Event Saving [device ID] [Saving Options] note: Saving Option: All(null)/RIDPDD(a)/ProgressIone(b)/CallStatus(c)/Digits(d)/Error(e)/CallEve le)/RecordFileName(h) stoppes - Stop Event Saving [device ID] stopes - Stop Event Saving [device ID] getes - Get Event Saving [device ID] call - Place Call [device ID] [called party address] - Answer Call [device ID] answ answ - Answer Gall Ldevice IDJ disc - Disconnect Gall [device ID] offhook - Set Off Hook [device ID] onhook - Set On Hook [device ID] flashhook - Send flash Hook [device ID] [Duration] dprog - Detect Progress Tones [device ID] sdprog - Stop Detecting Progress [device ID] gstatus - Get VQuad Status [device ID] [Status Options] note: Status Option: All(null)/CallStatus(a)/TrafficStatus(b)/ScriptStatus(c) dealtbatatus - Get UQuad Healtb Status ghealthstatus - Get VQuad Health Status note: UQuad Return: @(Health)/2(Dual_UTA_Error)/3(Firmware_Error) setcallid - Set Call ID [device ID] [CallId] srvf - Send and Record Voice File [device ID1] [Send Filename] [device ID2] [Record Filename] [la note: name format: Time+CallId(0)/Time+GPS+CallId(1)/Auto Incr+CallId(2)/CallId only(3) sdit - Send Digits [device ID] [dtmf(0)/mf(1)] [digits] ston - Send Tones [device ID] [lfreq] [lpwr] [hfreq] [hpwr] [duration(ms) must>=600ms] - Detect Digits [device ID] [dtmf(0)/mf(1)] < ≥



Remote Client WebViewer™

GL Communications Inc. Telecommunication Products and Consulting Hi Administrator VQuad WebViewer - Real Time Monitoring System, Version 5.1	FAX events
Results Call Events Statistics/Status Filters Graphics Output Results Configuration	
Load Filter AppleTest	7,000
Time Filter 10 min Auto refresh 5 sec Timestamp Search VQuad Timestamp Event ID / Device ID Filter VQuad Event ID; VQuad Device ID; 0/I Help	6,000
Records Per Page 200 V Update Screen	5,000
Help Error Events Thresholds 7 FAX Results (Display duration: 05-05-2017 02:36:46 - 05-05-2017 02:49:46) 1	4,000
VQuad Call VQuad Call ID VQuad Call ID VQuad GPS Duration (sec) Error Event Modem Starting Speed Final Completed Tx/Rx Bad Lines Lines Encoding Resolution ECM Call Type Call Type Call Type VQuad Event ID D D D D Error Event Modem Speed Pages Lines Encoding Resolution ECM Call Type Call Type VQuad Event ID	3,000
05/05/2017/05/05/2017 02:45:21 02:43:28 05/05/2017/05/05/2017 05/05/2017/05/05/2017 05/05/2017/05/05/2017 GLRobFaxVQTTest95/VQFXO-1_20170505024338;_PSTN 05/05/2017/05/05/2017 GLRobFaxVQTTest95/VQFXO-2_20170505024338;_PSTN 05/05/2017/05/05/2017 GLRobFaxVQTTest95/VQFXO-2_20170505024338;_PSTN	2,000
03/03/2017/05/2017/DS/	1,000
05/05/2017 05/05/2017 FXOHDTesting UTAHD-2 0000000000 144.1000 No Receive - V34 2400 3360 R 178860 MR 204x196 ON LFXOHDTesting_UTAHD-2_20170505024158 05/05/2017 05/05/2017 GLRobFaxVQTTest94 VQFXO-2 N3900'36'' 49.300 N Receive - V29 4800 9600 3 6646 0 MR 204x196 ON LGRobFaxVQTTest94_VQFXO-2_20170505023924	
03/03/2017/03/03/2017/03/05/2017 02/41.06 0 2:39:24 (BLobFaxVQTTest94/QEXO-1_007791258)" 47.9800 No Send - 29600 9600 3 6464 0 MR 204x196 0N PSTN 0_GLRobFaxVQTTest94_VQEXO-1_20170505023924; PSTN	2016-02-05 2016-02-20 2016-03-06 2016-03-21 2016-04-05
05/05/2017/05/05/2017/ 02:40:55 02:37:33 05/05/2017/05/05/2017/ 05/05/2017/05/05/2017/ 05/05/2017/05/05/2017/ NACFullTest NAC1 00000000000 0000000000000000000000000	00:00:00 00:00:00 00:00:00 00:00:00 00:00:
05/05/2017/05/05/2017 05/05/2017/05/2017/05/2017 02:40:01 02:36:14 FXOHDTesting UTAHD-1_00000000000187.5600 Error5successful V34 33600 336008 178880 MR 204x196 ON 0_FXOHDTesting_UTAHD-1_20170505023614	RECEFAXFAILED
05/05/2017 05/05/2017 FXOHDTesting UTAHD-2 0000000000 188.8200 No Receive - V34 2400 33600 NR 204x196 ON L_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



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:

- Multiple USB ports including 2 on the front panel and an Ethernet port at the back panel
- 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

Front Panel





Back Panel



mTOP[™] Rack System



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



Thank you

