FDL Analysis and Emulation

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	3 ANSI CI Performance Report (ANSI T x00000001-000
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🖌 2 2 0:00:00.209400 13 x3801 x	ANSI CI Performance Report [ANSI T x0000001-000
	ANSI CI Performance Report (ANSI T x00000001-000
	AMEL CL Destances Description CT 00000001.000
	32 Off-fille FDL Protocol Analysis 6.704
	A File View Capture Statistics Database Configure Help
✓ 2 7 0:00:00.709400 13 x3801 x ✓ 2 8 0:00:00.809400 13 x3801 x	
	A Dev TSlot SubCh Frame# TIME (Relative) Len Error Control Current Status Fbit Current Status Lbit Current Status Ubit EK A
	FDL
	2 0 1 00:00:00.211400 37 ×08
Card2 Frame=0 at 0:00:00.009400 OK Len=13	2 0 2 00:00:00.420400 8 x08 U or L = 1 PLB in Actuated St DS1 in Available Signal State
LAPD Information	√ 2 0 3 00:00:00.620800 225 x08
SAPI = 14 Command/Response = 0 (Resp from Customer Installation	✓ 2 0 4 00.00.00.866000 8 x08 U or L = 1 PLB in Actuated St DS1 in Unavailable Signal State
Command/Response = 0 (Resp from Customer Installation TEI =	7 2 0 5 00:00:01 071/00 213 v08
Control = x03	Card2 TimeSlot=0 Frame=0 at 00:00:00:00:00000 OK Len=75 *** Right click to SHOW/HII
Message-oriented	HDLC France Data + FCS
Performance Report Message	FDL Layer
Data for the second T - 0	LAPP Information = 0000 Address = x81
G1 CRC error event (==1) = 0 (No)	0000 Address - x01 0001 Control = x08
G2 CRC error event (15] = 0 (No)	Message-oriented =
G3 CRC error event (510] = 0 (No)	Unknown Information = x2508415567C200010002000300040005330000000000000000000000
G4 CRC error event (10100]= 0 (No)	
G5 CRC error event(100319]= 0 (No)	<
G6 CRC error event (>= 320) = 0 (No)	Hex Dump of the Frame Data
()	
Off-line Viewing C:\Program Files\Gl Communications Ir 60 F	an 00 05 33 00 00 00 00 00 00 00 00 00 00 00 00
	00 00 00 00 00 00 00 00 00 00 00 00 00
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	UorL = 1 (1) 89
	btal U or L = 1 (1) 89
	C:\Program Files (x86)\GL Communication 224 Frames

Overview

The **Facility Data Link Analyzer (FDL)** is available as a real-time (XX021) as well as offline analyzer (OLV021) application. It can perform FDL decode and analysis on T1 channels in real-time and off-line The FDLA requires T1 E1 analyzer to be set in ESF mode.

Both real-time and off-line analysis present information in two layers:

- Raw HDLC Frame data as a hexadecimal and ASCII octet dump
- FDL message information

The real-time mode of operation is used to capture stream of HDLC frames and the embedded bit-patterned ESF data link messages on the selected cards. Captured information can be saved to disk for later off-line analysis.

HDLC frames are parsed according to Q.921; FDL messages are decoded based on the AT&T TR54016, ANSI T1.403, T1.408, I.431, G.963 and G.704. Multiple instances of FDL analyzer can run simultaneously capturing data from several T1 lines.

Captured Frames can later be used for traffic simulation using the FDL playback application. The captured bytes can be saved into a file and raw hex bytes being received can be viewed.

For more details, visit FDL Software for Emulation and Analysis webpage.

Main Features

- Supports Windows® 8.1 and above Operating System with user-friendly GUI
- Real-time as well as off-line analysis
- Summary view displays LAPD information
- Detail view displays decodes of a user selected frame from the Summary View
- Hex dump view displays the frame information in HEX and ASCII format
- Raw HDLC frame data as a hexadecimal and ASCII octet dump
- Capability to export detail decode information to an ASCII

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Summary and Detail Views

FDL Analyzer user interface has two panes: the summary view at the top and the detail view at the bottom. The splitter separating the summary and the detail views allows dividing screen according to user preferences. The summary view columns can be resized and reordered using drag and drop mouse operation. The detail view displays frame summary information, LAPB or LAPD address and control, message details, and hexadecimal dump of all.

FDL FDL	Analy	sis							
<u>File V</u> i	iew <u>O</u>	ptions							
	6 <i>«</i>							0	GoTo
Dev	М	Time	Length	Error	Address	Ctrl	From	Туре	Informati 🔺
✓ 2	0	0:00:02.65	13		x3801	x03 A	Cl	Performance Report (ANSI T	x000000
✓ 2	1	0:00:02.88	13		x3801	x03 A	CI	Performance Report (ANSI T	x000000
✓ 2	2	0:00:03.10	13		x3801	x03 A	CI	Performance Report (ANSI T	x00000C
✓ 2	3	0:00:03.33	13		x3801	x03 A	CI	Performance Report (ANSI T	x00000C
✓ 2	4	0:00:03.56	13		x3801	x03 A	CI	Performance Report (ANSI T	x00000C
✓ 2	5	0:00:03.78	13		x3801	x03 A	CI	Performance Report (ANSI T	x00000C
✓ 2	6	0:00:04.01	13		x3801	x03 A	CI	Performance Report (ANSI T	x00000C
✓ 2	7	0:00:04.23	13		x3801	x03 A	CI	Performance Report (ANSI T	x00000C
✓ 2 () 2	8	0:00:04.46	13		x3801	x03 A	CI	Performance Report (ANSI T	x000000
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			00:02.	00000	O OK LEI	1-13			-
LAPD Information SAPI = 14									
	_	/Pernonse	= 0	(2	er fro	Custo	mer	Installation)	
Command/Response = 0 (Resp from Customer Installation) TEI =									
$\begin{array}{ccc} 1E1 & - \\ Control & = x03 \end{array}$									
		qe-oriente	ed						
Performance Report Message									
Data for the second $T = 0$									
G1 CRC error event $(==1) = 0$ (No)									
$G2 \ CRC \ error \ event \ (15] = 0 \ (No)$									
G3 CRC error event (510] = 0 (No)									
	G4 (CRC error	event	(10	100]= 0	(No)			•
•									
Running	. Utilizal	tion 1.278%		C:\Tem	p.Fdl	Ca	aptured	60 frames	
				, .					

Figure: Summary and Detail View

Facility Data Link Real-time and Off-line Analysis

The real-time analysis is used to capture data on one or multiple T1 lines. The captured data is always stored in a temporary file. Before capturing is started, the capturing options and timeslots must be specified. These settings are saved in the Windows registry and can be reused between FDLA sessions. The off-line mode of operation can be used to analyze a trace saved in a file during realtime analysis.

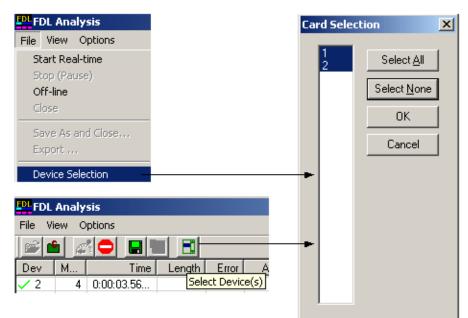


Figure: Data Link Real-time and Off-line Analysis

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FDL Playback and View Save Data

The Playback File module of the FDL analyzer allows the user to transmit data directly into the FDL bit stream. The user may transmit valid HDLC frames (properly formed HDLC frame file required), or the user may transmit raw data from a file of raw (hex) bytes (codeword strings, etc.). When transmitting HDLC frames, the number of flags between frames may be selected. The View and Save Data module allows the user to view, the raw hex bytes being received from the FDL bit stream, the Framing bit stream, or the CRC bit stream during real time analysis and to save the received bytes into a file.

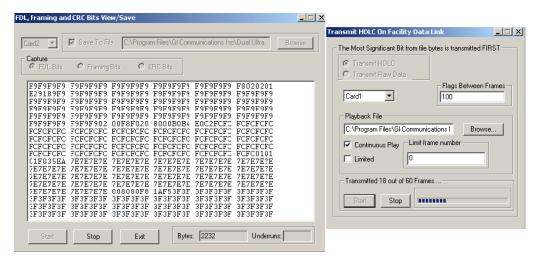


Figure: FDL Playback and View Save Data

FDL Analysis In VB Client (Optional Software)

The FDL utility allows the transmission and reception of FDL messages. FDL messages include the performance report (PRM), the performance report with supplementary performance report (SPRM), the network performance report (NPRM) and the code words. These messages are defined in the ANSI T1.403 specification. The FDL utility window has transmission interface, message definition, PRM monitoring, event list.

🕆 Facility Data Link Tx/Rx 🛛 🗶						
File Clear Records Option	ns Conf	guration Help Exit				
🕲 🖵 🗀 🖉 Por	t #2					
- Transmit a Codeword or P	RM	Tx Limits		Recieved FDL		
One Shot		Tx Limits # Messages C Time (sec)		Monitor Statistics	Reset	
Iwo Shot Stop	10	# Messages () Time (sec)	Transmit	PRM CRC 55,<- Syr Errd Fran	NPRM - SAPI # 16	
Performance Report Mes:	sages —			Frm Sync Bit		
PBM PBM + SPBM	NPBM	Codewords Raw Data / AS0	C Tx ● Bx	Line Code VI		
				Slip Event	Performance Alert	
	Г '		<u>T'-3</u>	🕗 Loopback Ar	st 📀 Frame Format Cnv	
NE Svr Erd Frming: 0	-	0 🔽 0 💌	0 💌	- NPRM-[device/sa	api #]1 _ NPRM-[device/sapi #]1	
NE CRC Errors: 0	-	0 • 0 •	0 💌	NE-SEF	NE-SEF	
FE Svr Erd Frming: >=1	-	>=1 💌 >=1 💌	>=1 💌	O NE-CRC	O NE-CRC FE-SEE	
FE CRC Errors: 0	•	0 • 0 •	0 -	FE-CRC	O FE-CRC	
Performance Alert: off	-	off 💌 off 💌	off 💌	Performance A Frame Format		
Frm Fmt Conv Flag: off	-	off 💌 off 💌	off 💌			
Reserved 1: 0	-			NPRM-(device/sa	NE-SEF	
Reserved 2: 0				NE-CRC	O NE-CRC	
Modulo 4 Cntr: 10	-					
1.1				Performance A		
Clear All Errors						
Time	Rx/Tx	Action	Transmitted Hex		Comment 🔺	
8/6/2004 2:54:53 PM	Rx	Received PRM	38 01 03 00 00 00 01 00 02 00 03 F6			
8/6/2004 2:54:56 PM	Rx	Received PRM	38 01 03 00 00 00 01 00 02 00 03 F6			
		Received NPRM - SAPI	42 01 03 00 00 00 01	00 02 00 03 B4		
8/6/2004 2:55:06 PM Rx Received Codeword			0E		Line loopback activate	
8/6/2004 2:55:18 PM	Rx	Unknown Message - SA	00 00 00 73 61 73 61		000sasaa-o	
8/6/2004 2:55:38 PM	Rx	Unknown Message - SA	00 00 00 74 78 20 6F		000tx^of^raw^dataD0	
8/6/2004 2:55:52 PM	8/6/2004 2:55:52 PM Rx Received PRM		38 01 03 00 00 00 01	00 02 00 03 F6	•	
•						

Figure: FDL Playback and View Save Data

Bin2Frm.exe andFrm2Bin.exe Utilities

Bin2Frm.exe utility converts binary input files to HDLC framed output files (.hdl file). It accepts single or multiple binary files as input and assembles them to have a single output HDLC file. Frm2Bin.exe utility accepts a HDLC file input and converts it to a binary file output.



Buyer's Guide

Item No	Product Description
<u>XX021</u>	FDL Software for ESF (T1 only)
<u>OLV021</u>	FDL Offline Analysis (T1 only)
Item No	Related Software
<u>XX660</u>	w/ FDL Option and VB Client to Control FDL
Item No	Related Hardware
<u>PTE001</u>	tProbe™ Dual T1 E1 Laptop Analyzer with Basic Analyzer Software
FTE001	QuadXpress T1E1 Main Board (Quad Port- requires additional licenses)
<u>ETE001</u>	OctalXpress T1E1 Main Board plus Daughter Board (Octal Port- requires additional licenses)
<u>XTE001</u>	Dual T1 E1 Express (PCIe) Boards (requires additional licenses)

For more details, visit FDL Software for Emulation and Analysis webpage.



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