
PacketScan™ vs Wireshark®



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PacketScan™ vs. Wireshark®

	PacketScan™	Wireshark®
Product Type	Desktop Application: Windows x64 Web Application: Windows and Linux	Windows x64 and Linux
Primary Use Case	Real-Time Voice, Signaling & Network Monitoring	Offline Packet Analysis
Real-Time Capture Rate	Up to 1 Gbps and HD version real-time capture rate up to 5 Gbps	Limited to hundreds of Mbps on standard systems
Scalability	Enterprise-grade	Limited to small and moderate size files
Monitoring Role	Probe + Analytics	Offline Analyzer

Performance, Monitoring & Scalability

Feature	PacketScan™	Wireshark®
Simultaneous Calls	Up to 3000	~700
HD Version	Up to 30,000 calls	Not Supported
Data Rate	1G–10G Real time 5G to 400G – Wirespeed Capture and Offline up to 400 G	Limited
Continuous Capture	Yes	No
Alerting	Yes	No
Probe Mode	Yes	No
Offline Packet Analysis	Yes	Yes

Large File Processing – Terabyte Analysis

Feature	PacketScan™	Wireshark®
File Size	1 TB+	~ 5 GB
Continuous Capture	Yes (via Circular Buffer)	No
Long-Term Analysis	Yes	Limited

PacketScan™ - Large File Processing, Terabyte Analysis

PacketScan 64-bit [off-line]

File View Capture Statistics Database Call Detail Records Configure Help

0 GoTo

Device	Frame#	TIME (Relative)	Length (Bytes)	Error	Length/Protocol Type MAC	Packet Type MAC	Source IP Address IPv4	Destination IP Address IPv4	Source Address IPv6
✓ 0	0	00:00:00.000000000	294		IPv6	RTP			fe80::1852:3987:92f5:7672
✓ 5	1	00:00:00.860548451	294		IPv6	RTP			fe80::e9db:1da4:5edd:5fe3
✓ 4	2	00:00:00.860548611	294		IPv6	RTP			fe80::e9db:1da4:5edd:5fe3
✓ 5	3	00:00:00.860548707	294		IPv6	RTP			fe80::1852:3987:92f5:7672
✓ 4	4	00:00:00.860548861	294		IPv6	RTP			fe80::1852:3987:92f5:7672
✓ 5	5	00:00:00.860548957	294		IPv6	RTP			fe80::e9db:1da4:5edd:5fe3
✓ 4	6	00:00:00.860549110	294		IPv6	RTP			fe80::e9db:1da4:5edd:5fe3
✓ 5	7	00:00:00.860549206	294		IPv6	RTP			fe80::1852:3987:92f5:7672
✓ 4	8	00:00:00.860549360	294		IPv6	RTP			fe80::1852:3987:92f5:7672
✓ 5	9	00:00:00.860549456	294		IPv6	RTP			fe80::e9db:1da4:5edd:5fe3
✓ 4	10	00:00:00.860549616	294		IPv6	RTP			fe80::e9db:1da4:5edd:5fe3
✓ 5	11	00:00:00.860549712	294		IPv6	RTP			fe80::1852:3987:92f5:7672
✓ 4	12	00:00:00.860549866	294		IPv6	RTP			fe80::1852:3987:92f5:7672
✓ 5	13	00:00:00.860549962	294		IPv6	RTP			fe80::e9db:1da4:5edd:5fe3
✓ 4	14	00:00:00.860550115	294		IPv6	RTP			fe80::e9db:1da4:5edd:5fe3
✓ 5	15	00:00:00.860550211	294		IPv6	RTP			fe80::1852:3987:92f5:7672
✓ 4	16	00:00:00.860550365	294		IPv6	RTP			fe80::1852:3987:92f5:7672
✓ 5	17	00:00:00.860550461	294		IPv6	RTP			fe80::e9db:1da4:5edd:5fe3
✓ 4	18	00:00:00.860550621	294		IPv6	RTP			fe80::e9db:1da4:5edd:5fe3
✓ 5	19	00:00:00.860550717	294		IPv6	RTP			fe80::1852:3987:92f5:7672
✓ 4	20	00:00:00.860550870	294		IPv6	RTP			fe80::1852:3987:92f5:7672
✓ 5	21	00:00:00.860550966	294		IPv6	RTP			fe80::e9db:1da4:5edd:5fe3
✓ 4	22	00:00:00.860551120	294		IPv6	RTP			fe80::e9db:1da4:5edd:5fe3

Device0 Frame=0 at 00:00:00.000000000 OK Len=294 *** Right click to SHOW/HIDE layer details or copy ***

Ethernet Frame Data

```
===== MAC Layer =====
0000 Destination Address      = x1C1B0DA2779A
0006 Source Address          = x00241D78089C
000C Length/Protocol Type     = x86DD IPv6
===== IPv6 Layer =====
000E Protocol Version         = 0110.... (6)
000E Differentiated Services Codepoint = ....0000 00..... Default
000F Explicit Congestion Notification = ..00.... Not-ECT (Not ECN-Capable Transport)
000F Flow Label               = 481984 (....0111 01011010 11000000)
0012 Payload Length           = 236 (x00EC)
0014 Next Header              = 00010001 UDP
0015 Hop Limit                = 128 (x80)
0016 Source Address           = fe80::1852:3987:92f5:7672
0026 Destination Address      = fe80::e9db:1da4:5edd:5fe3
===== UDP Layer =====
0036 Source Port              = 2152 (x0868)
0038 Destination Port         = 2152 (x0868)
003A Length (Header + Data)   = 236 (x00EC)
003C Checksum                 = x1F81
===== GTPv2 Layer =====
GTP Layer Message
003E Version                  = 001.... GTP V1
003E Protocol Type            = ...1.... GTP V2
003E E                        = .....0... Not Present
```

Off-line Viewing. E:\1TB.hdl 3 537 933 049 Frames

Processing of 1 TB File

Supported Codecs

PacketScan™

- G.711 (mu-Law and A-Law), G.711 Application II (A-law and μ -law with VAD)
- G726 (40, 32, 24, 16kbps)
- GSM (13.2kbps), GSM EFR (12.2 kbit/s), GSM HR
- G729, G729B (8kbps)
- G.722, G.722.1
- ILBC_15_2 (for 20 msec), ILBC_13_33 (for 30 msec)
- SPEEX (Narrow band and Wideband)
- SMV* (Modes - 0, 1, 2 and 3)
- Video codecs include H263++ CIF 190, 350, 512 kbps, QCIF 64, 80, 128 kbps, and H264 codec offers video compression
- Other optional codec include (must be purchased with additional license)
 - AMR (Narrow band and Wideband)
 - EVRC, EVRC0 (Rates - 1/8, 1/2 and 1)
 - EVRCB, EVRCB0 (Rates - 1/8, 1/2 and 1); EVRC-C
 - Opus and EVS (Narrow Band, Wideband, Super Wideband, Full Band)

Wireshark®

- Limited codec support
- Primarily supports:
 - G.711
 - G.729
- No integrated voice quality scoring

PacketScan™ Analyzer View

PacketScan 64-bit

File View Capture Statistics Database Call Detail Records Configure Help

Device Frame# TIME (Date) Length (Bytes) Error Length/Protocol Type MAC Packet Type MAC Source IP Address IPv4 Des

✓ 2	0	2012-04-16 13:58:48.358273000	82		Internet IP(IPv4)		192.168.1.70	192.168.1.70
✓ 2	1	2012-04-16 13:58:50.200249000	82		Internet IP(IPv4)		192.168.1.142	255.255.255.255
✓ 2	2	2012-04-16 13:58:50.705427000	836		Internet IP(IPv4)	SIP	192.168.1.200	192.168.1.103
✓ 2	3	2012-04-16 13:58:50.706003000	354		Internet IP(IPv4)	SIP	192.168.1.103	192.168.1.103
✓ 2	4	2012-04-16 13:58:50.707648000	355		Internet IP(IPv4)	SIP	192.168.1.103	192.168.1.103
✓ 2	5	2012-04-16 13:58:50.707805000	820		Internet IP(IPv4)	SIP	192.168.1.103	192.168.1.103
✓ 2	6	2012-04-16 13:58:52.825730000	92		Internet IP(IPv4)		192.168.1.1	192.168.1.1
✓ 2	7	2012-04-16 13:58:54.106662000	64		Internet IP(IPv4)		192.168.1.61	224.0.0.0
✓ 2	8	2012-04-16 13:58:54.189900000	64		Internet IP(IPv4)		192.168.1.61	224.0.0.0

Device2 Frame=0 at 2012-04-16 13:58:48.358273000 OK Len=82

Ethernet Frame Data

===== MAC Layer =====

0000 Destination Address = xFFFFFFFFF

0006 Source Address = x0016760CFBD4

000C Length/Protocol Type = x0800 Internet IP(IPv4)

===== IPv4 Layer =====

000E Version = 0100 (4)

000E Internet Header Length (In 32 bit words) = 0101 (5)

000F Differentiated Services Field = 000000 (Default)

000F Differentiated Services Codepoint = 000000 (Default)

000F Explicit Congestion Notification = 00 (Not-ECT (Not ECN-Capable Transport))

IP Hdr No TCP SegmentationOffload = 0

0010 Total Length = 68 (x0044)

0012 Identification = 24272 (x5FDD0)

Hex Dump of the Frame Data

FF FF FF FF FF FF 00 16 76 0C FB D4 08 00 45 00	yyyyyy v uO E
00 44 5E D0 00 00 80 11 57 43 C0 A8 01 46 C0 A8	D^D t WCA FA
01 FF 04 01 07 9B 00 30 9A C4 55 76 51 39 55 50	y I 0AUvQ9UP
53 6A 6B 78 63 2B 7A 38 33 32 6E 59 62 41 45 75	Sjkkxc+z832nYbAEu
76 32 36 6C 42 72 44 4A 38 50 67 48 64 63 7A 76	v261BrDJ8PgHdczv
41 41	AA

SIP CSeq	SIP Call ID	SIP From	SIP Method	SIP To	Frame Count(SIP CSeq)
INVITE (0)	1620788079-5060-3@192.1...	4000@192.168.1.60	INVITE (0)	1000@192.168.1.103	2
total INVITE (0)	total 1620788079-5060-3@192.1...	total 4000@192.168.1.60	total INVITE (0)	total 1000@192.168.1.103	2
INVITE (0)	211ea0268e7e463d@dGV...	test3@192.168.10.14	INVITE (0)	test4@192.168.1.103	1
total INVITE (0)	total 211ea0268e7e463d@dGV...	total test3@192.168.10.14	total INVITE (0)	total test4@192.168.1.103	1
INVITE (0)	211ea0268e7e463d@dGV...	test4@192.168.10.45	INVITE (0)	test3@192.168.1.103	1
total INVITE (0)	total 211ea0268e7e463d@dGV...	total test4@192.168.10.45	total INVITE (0)	total test3@192.168.1.103	1
INVITE (0)	GLPG-483633760331	0001@192.168.1.200	INVITE (0)	0001@192.168.1.200	1
total INVITE (0)	total GLPG-483633760331	total 0001@192.168.1.200	total INVITE (0)	total 0001@192.168.1.200	1
ACK (1)	1620788079-5060-3@192.1...	4000@192.168.1.60	ACK (1)	1000@192.168.1.103	2
total ACK (1)	total 1620788079-5060-3@192.1...	total 4000@192.168.1.60	total ACK (1)	total 1000@192.168.1.103	2

Call ID	Call Status	Protocol	Call Originating (Number / Address)	Call Destination (Number / Address)	Call Start Date & Time	Call Duration
0	Terminated	SIP	0001@192.168.1.200	0001@192.168.1.103	45232-57359-00 00:00:00.5...	00:50:13.47
1	Completed	MEGACO	aaln/2	rtp/30000	45232-57359-00 24608:184...	00:29:13.06
2	Terminated	SIP	4000@192.168.1.60	1000@192.168.1.60	45232-57359-00 02:00:00.7...	04:32:05.19
3	Terminated	SIP	test4@192.168.10.45	test3@192.168.10.14	45232-57359-00 03:00:00.5...	00:47:15.03

C:\Program Files\GL Communications Inc\F 19 043 Frames

Summary View

Detail View

Hex Dump View

Call Detail Statistics View

CDR View

Wireshark® View

The Wireshark interface displays a packet capture file named "All 840 profiles calls.pcapng". The top section shows a list of captured packets. The second section, the packet details pane, shows the structure of the selected packet (Frame 1). The third section, the packet bytes pane, shows the raw data of the selected packet in hexadecimal and ASCII.

No.	Time	Source	Destination	Protocol	Length	Sequence Num	Info
1		192.168.12.91	192.168.12.92	SIP/SDP	769		Request: INVITE sip:0001@192.168.12.92
2	0.010758000	192.168.12.92	192.168.12.91	SIP	379		Status: 100 Trying
3	0.010026000	192.168.12.92	192.168.12.91	SIP	487		Status: 180 Ringing
4	0.136025000	192.168.12.92	192.168.12.91	SIP/SDP	738		Status: 200 OK (INVITE)
5	0.010224000	192.168.12.91	192.168.12.92	SIP	444		Request: ACK sip:0001@192.168.12.92
6	0.003594000	192.168.12.91	192.168.12.92	RTP	214		PT=ITU-T G.711 PCMU, SSRC=0x5B664D01, Seq=1781, Time=12342840...
7	0.010439000	192.168.12.92	192.168.12.91	RTP	214		PT=ITU-T G.711 PCMU, SSRC=0x5A145B01, Seq=23267, Time=2740608...
8	0.008934000	192.168.12.91	192.168.12.92	RTP	214		PT=ITU-T G.711 PCMU, SSRC=0x5B664D01, Seq=1782, Time=123428564...
9	0.011800000	192.168.12.92	192.168.12.91	RTP	214		PT=ITU-T G.711 PCMU, SSRC=0x5A145B01, Seq=23268, Time=2740608...
10	0.009166000	192.168.12.91	192.168.12.92	RTP	214		PT=ITU-T G.711 PCMU, SSRC=0x5B664D01, Seq=1783, Time=123428724...
11	0.009833000	192.168.12.92	192.168.12.91	RTP	214		PT=ITU-T G.711 PCMU, SSRC=0x5A145B01, Seq=23269, Time=2740609...
12	0.010215000	192.168.12.91	192.168.12.92	RTP	214		PT=ITU-T G.711 PCMU, SSRC=0x5B664D01, Seq=1784, Time=123428884...
13	0.009827000	192.168.12.92	192.168.12.91	RTP	214		PT=ITU-T G.711 PCMU, SSRC=0x5A145B01, Seq=23270, Time=2740609...
14	0.010220000	192.168.12.91	192.168.12.92	RTP	214		PT=ITU-T G.711 PCMU, SSRC=0x5B664D01, Seq=1785, Time=123429044...
15	0.010741000	192.168.12.92	192.168.12.91	RTP	214		PT=ITU-T G.711 PCMU, SSRC=0x5A145B01, Seq=23271, Time=2740609...
16	0.009280000	192.168.12.91	192.168.12.92	RTP	214		PT=ITU-T G.711 PCMU, SSRC=0x5B664D01, Seq=1786, Time=123429204...
17	0.010701000	192.168.12.92	192.168.12.91	RTP	214		PT=ITU-T G.711 PCMU, SSRC=0x5A145B01, Seq=23272, Time=2740609...
18	0.008151000	192.168.12.91	192.168.12.92	RTP	214		PT=ITU-T G.711 PCMU, SSRC=0x5B664D01, Seq=1787, Time=123429364...

Frame 1: Packet, 769 bytes on wire (6152 bits), 769 bytes captured (6152 bits) on
Ethernet II, Src: TPLink_d7:29:b6 (78:8c:b5:d7:29:b6), Dst: Pegatron_37:bc:79 (54:
Internet Protocol Version 4, Src: 192.168.12.91, Dst: 192.168.12.92
User Datagram Protocol, Src Port: 5060, Dst Port: 5060
Session Initiation Protocol (INVITE)

```
0000 54 be f7 37 bc 79 78 8c b5 d7 29 b6 08 00 45 00  T..7.yx...E.
0010 02 f3 e2 d0 00 00 80 11 bb 21 c0 a8 0c 5b c0 a8  .....!....[...
0020 0c 5c 13 c4 13 c4 02 df e1 9b 49 4e 56 49 54 45  \..... INVITE
0030 20 73 69 70 3a 30 30 30 31 40 31 39 32 2e 31 36  sip:000 1@192.16
0040 38 2e 31 32 2e 39 32 20 53 49 50 2f 32 2e 30 0d  8.12.92 SIP/2.0
0050 0a 56 69 61 3a 20 53 49 50 2f 32 2e 30 2f 55 44  \Via: SI P/2.0/UD
0060 50 20 31 39 32 2e 31 36 38 2e 31 32 2e 39 31 3a  P 192.16 8.12.91:
0070 35 30 36 30 3b 62 72 61 6e 63 68 3d 7a 39 68 47  5060;branch=z9hg
0080 34 62 4b 2d 32 36 37 39 2d 39 37 32 36 34 36 31  4bK-2679 -9726461
0090 2d 32 37 36 37 31 2d 38 37 31 32 0d 0a 4d 61 78  -27671-8 712 Max
00a0 2d 46 6f 72 77 61 72 64 73 3a 20 37 30 0d 0a 41  -Forward s: 70 A
00b0 6c 6c 6f 77 3a 20 49 4e 56 49 54 45 2c 42 59 45  llow: IN VITE,BYE
00c0 2c 43 41 4e 43 45 4c 2c 41 43 4b 2c 49 4e 46 4f  ,CANCEL,ACK,INFO
00d0 2c 4f 50 54 49 4f 4e 53 2c 53 55 42 53 43 52 49  ,OPTIONS,SUBSCRI
00e0 42 45 2c 4e 4f 54 49 46 59 2c 52 45 46 45 52 2c  BE,NOTIF Y,REFER
00f0 52 45 47 49 53 54 45 52 2c 55 50 44 41 54 45 0d  REGISTER ,UPDATE
0100 0a 46 72 6f 6d 3a 20 30 30 30 31 20 3c 73 69 70  \From: 0 001 <sip
0110 3a 30 30 30 31 40 31 39 32 2e 31 36 38 2e 31 32  :0001@19 2.168.12
0120 2e 39 31 3e 3b 74 61 67 3d 46 72 6f 6d 54 61 67  .91>;tag =FromTag
0130 2d 32 36 37 36 2d 39 37 32 36 34 36 31 2d 32 37  -2676-97 26461-27
0140 36 36 38 2d 38 37 31 32 0d 0a 54 6f 3a 20 30 30  668-8712 ..To: 00
0150 30 31 20 3c 73 69 70 3a 30 30 30 31 40 31 39 32  01 <sip: 0001@192
0160 2e 31 36 38 2e 31 32 2e 39 32 3e 0d 0a 43 61 6c  .168.12. 92>>Cal
```

Summary View

Detail view

Hex Dump View

T.38 Analysis - Fax over IP

- Supports capturing and decoding of Fax (T.38 data) calls over VoIP
- Decodes of selected FAX message is displayed on the right pane
- Captured fax calls by PacketScan™ can also be analyzed using GLInsight™ by saving the fax calls directly in (*.PCAP) Ethereal file format

The screenshot displays the 'Packet Data Analyzer - Summary View' interface. At the top, a menu bar includes 'File', 'View', 'Call Summary', 'Protocol Configurations', 'GUI Configurations', and 'Help'. Below the menu, a toolbar contains various icons, and a dropdown menu is set to 'SIP'. A red box highlights the 'Show Fax Calls' button. The main window is divided into several panes. The top pane shows a table of call statistics with columns: Call #, Src_L, ConversationalMos_L, ConversationalR_L, ListeningMos_L, ListeningR_L, PacketsDiscarded_L, and PacketsDiscarded(%)_L. The first row shows Call # 1, Src_L 390089559, ConversationalMos_L 4.20, ConversationalR_L 93, ListeningMos_L 4.20, ListeningR_L 93, PacketsDiscarded_L 0, and PacketsDiscarded(%)_L 0.00. Below this, a timeline view shows a list of messages with columns: TimeStamp, Src, and Dest. The messages are: 00.17.274 ... 5004 (Frm:1409)Msg:;no-signal, 00.17.274 ... 5004 (Frm:1410)Msg:;no-signal, 00.17.275 ... 5004 (Frm:1411)Msg:;no-signal, 00.27.343 ... 5004 (Frm:1418)Msg:;no-signal (highlighted in orange), 00.27.343 ... 5004 (Frm:1419)Msg:;ced, 00.30.538 ... 5004 (Frm:1420)Msg:;v21-preamble, 00.31.580 ... 5004 (Frm:1421)Msg:;NSF, 00.31.955 ... 5004 (Frm:1422)Msg:;CSI NUM:918040488401at, 00.32.648 ... 5004 (Frm:1440)Msg:;DIS DSR:ITU-T V.27 ter and V.29, 00.33.110 ... 5004 (Frm:1451)Msg:;no-signal, 00.39.617 ... 5004 (Frm:1561)Msg:;v21-preamble, 00.40.659 ... 5004 (Frm:1563)Msg:;CFR, 00.40.834 ... 5004 (Frm:1566)Msg:;no-signal, and 00.41.404 ... 5004 (Frm:2968)Msg:;v21-preamble. The right pane shows the decoded T.38 Layer information for the selected message (00.27.343 ... 5004). The decoded information includes: UDPTLPacket, seq-number, Contents, primary-ifp-packet, Length, IFPPacket, Preamble, type-of-msg, Choice Index, t30-indicator, Extensibility Marker, Contents, error-recovery, Choice Index, secondary-ifp-packets, Iteration Count, secondary-ifp-packets, primary-ifp-packet, Length, IFPPacket, Preamble, type-of-msg, Choice Index, t30-indicator, Extensibility Marker, Contents, MAC Layer, Padding octets, and FCS. A blue arrow points from the selected message in the timeline to the decoded information in the right pane, with the text 'Displays decoded information of the selected FAX message'.

Call #	Src_L	ConversationalMos_L	ConversationalR_L	ListeningMos_L	ListeningR_L	PacketsDiscarded_L	PacketsDiscarded(%)_L
1	390089559	4.20	93	4.20	93	0	0.00

TimeStamp	Src	Dest
00.17.274 ...	5004	(Frm:1409)Msg:;no-signal
00.17.274 ...	5004	(Frm:1410)Msg:;no-signal
00.17.275 ...	5004	(Frm:1411)Msg:;no-signal
00.27.343 ...	5004	(Frm:1418)Msg:;no-signal
00.27.343 ...	5004	(Frm:1419)Msg:;ced
00.30.538 ...	5004	(Frm:1420)Msg:;v21-preamble
00.31.580 ...	5004	(Frm:1421)Msg:;NSF
00.31.955 ...	5004	(Frm:1422)Msg:;CSI NUM:918040488401at
00.32.648 ...	5004	(Frm:1440)Msg:;DIS DSR:ITU-T V.27 ter and V.29
00.33.110 ...	5004	(Frm:1451)Msg:;no-signal
00.39.617 ...	5004	(Frm:1561)Msg:;v21-preamble
00.40.659 ...	5004	(Frm:1563)Msg:;CFR
00.40.834 ...	5004	(Frm:1566)Msg:;no-signal
00.41.404 ...	5004	(Frm:2968)Msg:;v21-preamble

Displays decoded information of the selected FAX message

PCM ALAW and MuLAW

PDA Packet Data Analyzer - Summary View

File View Call Summary Protocol Configurations GUI Configurations Help

Call Count: 556

Call Summary SIP Registration Summary Alert Summary

Call#	Caller	Callee	StartTime	Duration	VoiceQuality_L	VoiceQuality_R	Payload_L	Payload_R	Result	ErrorCode
13605	9874563131	9874560131	2026-02-05 03:52:46.114	00:04:37.857	Good	Good	EVRCB/8000	EVRCB/8000	Pass	0
13606	9874563132	9874560132	2026-02-05 03:52:49.211	00:04:34.793	Good	Good	EVRCB/8000	EVRCB/8000	Pass	0
13607	9874563133	9874560133	2026-02-05 03:52:54.614	00:04:29.356	Good	Good	EVRCB/8000	EVRCB/8000	Pass	0
13608	9874563134	9874560134	2026-02-05 03:53:18.313	00:04:05.657	Good	Good	EVRCB/8000	EVRCB/8000	Pass	0
13609	9874563135	9874560135	2026-02-05 03:53:19.521	00:04:04.471	Good	Good	EVRCB/8000	EVRCB/8000	Pass	0
13610	9874563001	9874560001	2026-02-05 03:56:12.210	00:01:11.791			PCMU/8000	PCMU/8000	Pass	0
13611	9874563002	9874560002	2026-02-05 03:56:15.472	00:01:09.375	Good	Good	MuLAW_2/8000	MuLAW_2/8000	Pass	0
13612	9874563003	9874560003	2026-02-05 03:56:15.472	00:01:08.551	Good	Good	PCMA/8000	PCMA/8000	Pass	0
13613	9874563004	9874560004	2026-02-05 03:56:15.900	00:01:08.130	Good	Good	ALAW_2/8000	ALAW_2/8000	Pass	0

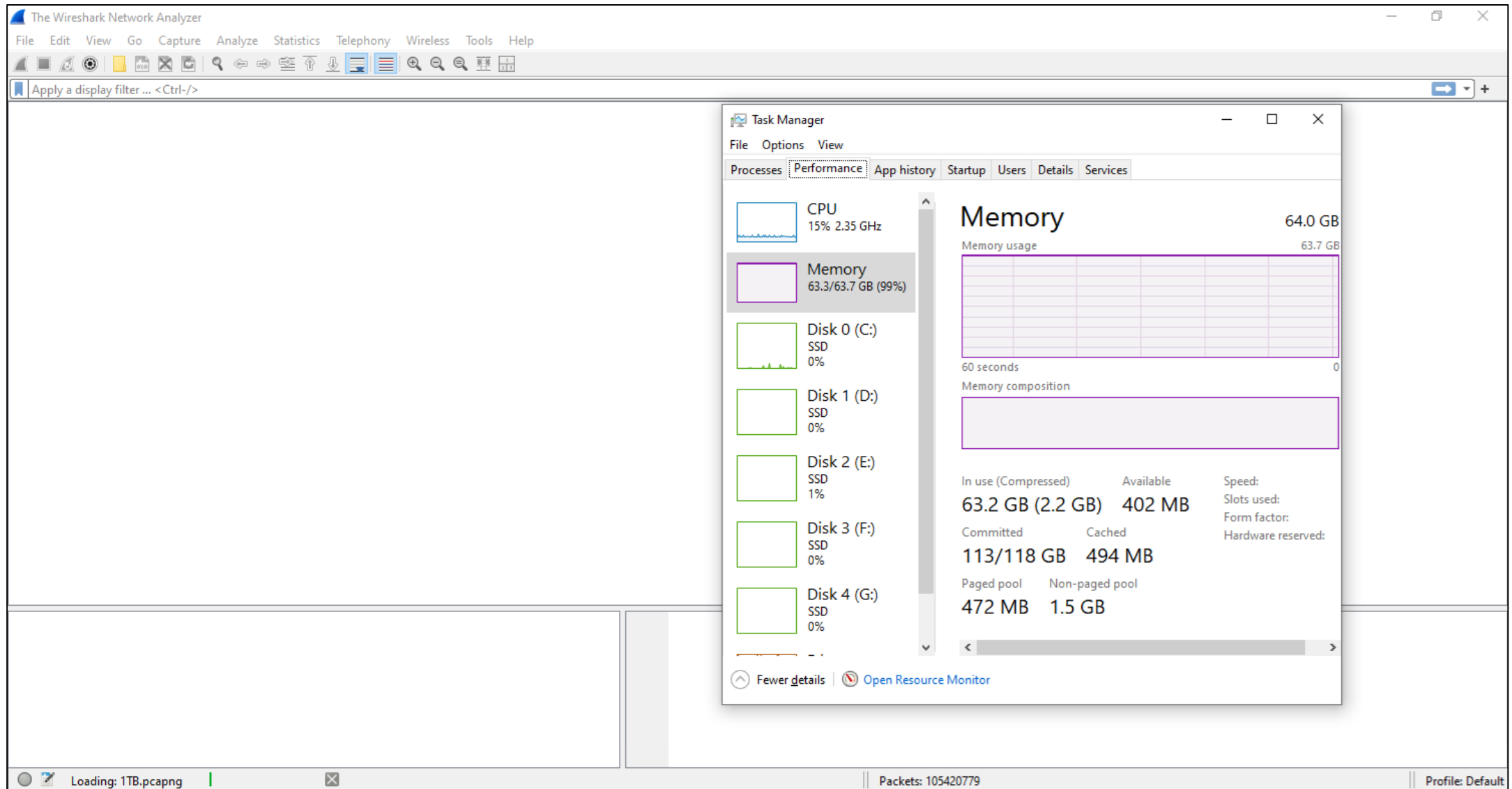
Column Width ☐ Absolute Timing ☐ Show Latest

Time	Frame#	192.168.12.209	192.168.12.216
00.00.000	2145895231	5060	5060
		INVITE	
00.00.010	2145895746	5060	5060
		SIP/2.0 100 Trying	
00.00.032	2145896580	5060	5060
		SIP/2.0 180 Ringing	
00.01.054	2145939349	5060	5060
		SIP/2.0 200 OK	
00.01.076	2145940273	5060	5060
		ACK	
00.01.084	2145940687	11050	1486
		RTP (MuLAW_2/8000)	
00.01.093	2145941012	11050	1486
		RTP (MuLAW_2/8000)	

Find ☐ Complete Stack

Calls Rate RTP Packets Graph Average Jitter Distribution E-Model T.38 Analysis Call Flow Call Summary

Wireshark® Cannot Reliably Process Very Large Capture Files



- Wireshark may crash when opening very large capture files due to high memory usage

PacketScan Web™ Analyzer

Summary View →

Detailed View →

Hex Dump View →

The screenshot displays the PacketScan Web™ Analyzer interface. At the top, there is a navigation bar with icons for Probes, PA (highlighted with a red box), PDA, Event Log, and Admin. Below the navigation bar is a toolbar with various icons for settings, file operations, and analysis. The main area is divided into three sections:

- Summary View:** A table listing captured frames. The table has columns for Device, Frame#, TIME (Date), Length (Bytes), Error, Length/Protocol Type_MAC, Packet Type_MAC, Source IP Address_IPv4, Destination IP Address_IPv4, Source Address_IPv6, and Destination Address_IPv6. The first frame (Device 2, Frame 0) is selected.
- Detailed View:** A detailed view of the selected frame (Device2 Frame=0 at 2012-04-16 13:58:48.358273000 OK Len=82). It shows the Ethernet Frame Data and the IPv4 Layer details, including the Destination Address, Source Address, Length/Protocol Type, Version, Internet Header Length, Differentiated Services Field, and Explicit Congestion Notification.
- Hex Dump View:** A hex dump of the frame data, showing the raw bytes of the frame. The hex dump is displayed in a table format with columns for the hex value, the ASCII representation, and the packet type.

At the bottom of the interface, there is a status bar showing the current status (Off-line), the path to the capture file (C:\Program Files\GL Communications Inc\), and the total number of captured frames (19043 frames).

Filtering, Triggers & Automation

PacketScan™

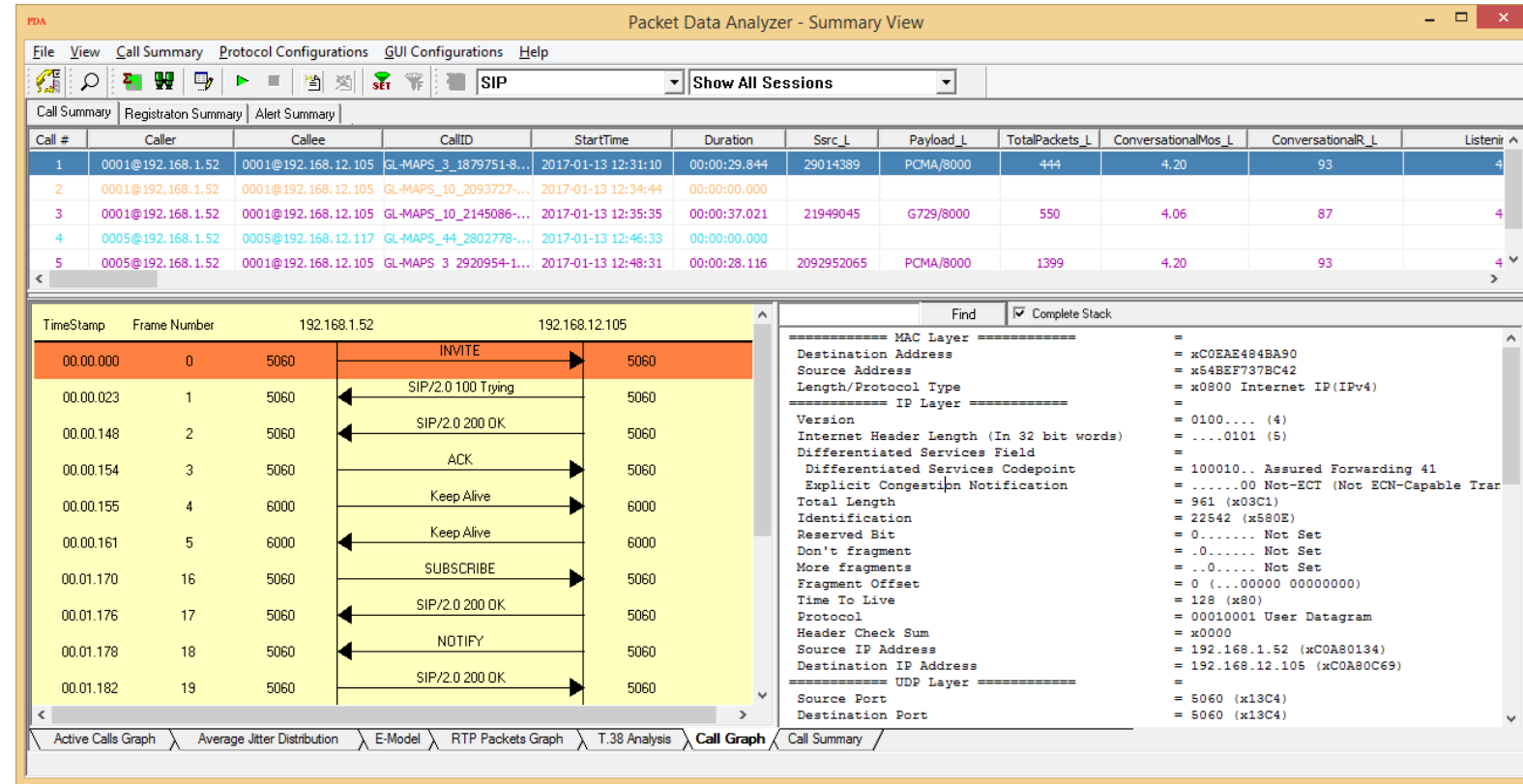
- Advanced filtering:
 - IPv4 / IPv6
 - GTP (Inner UDP/TCP/SCTP)
- Triggers & Actions:
 - Email alerts
 - Save call traces
 - Auto-record calls
 - Export CSV
- Criteria-based recording
- Whitelist management (with wildcards)

Wireshark®

- Basic filters
- Manual workflows
- Slower on large datasets
- Limited automation

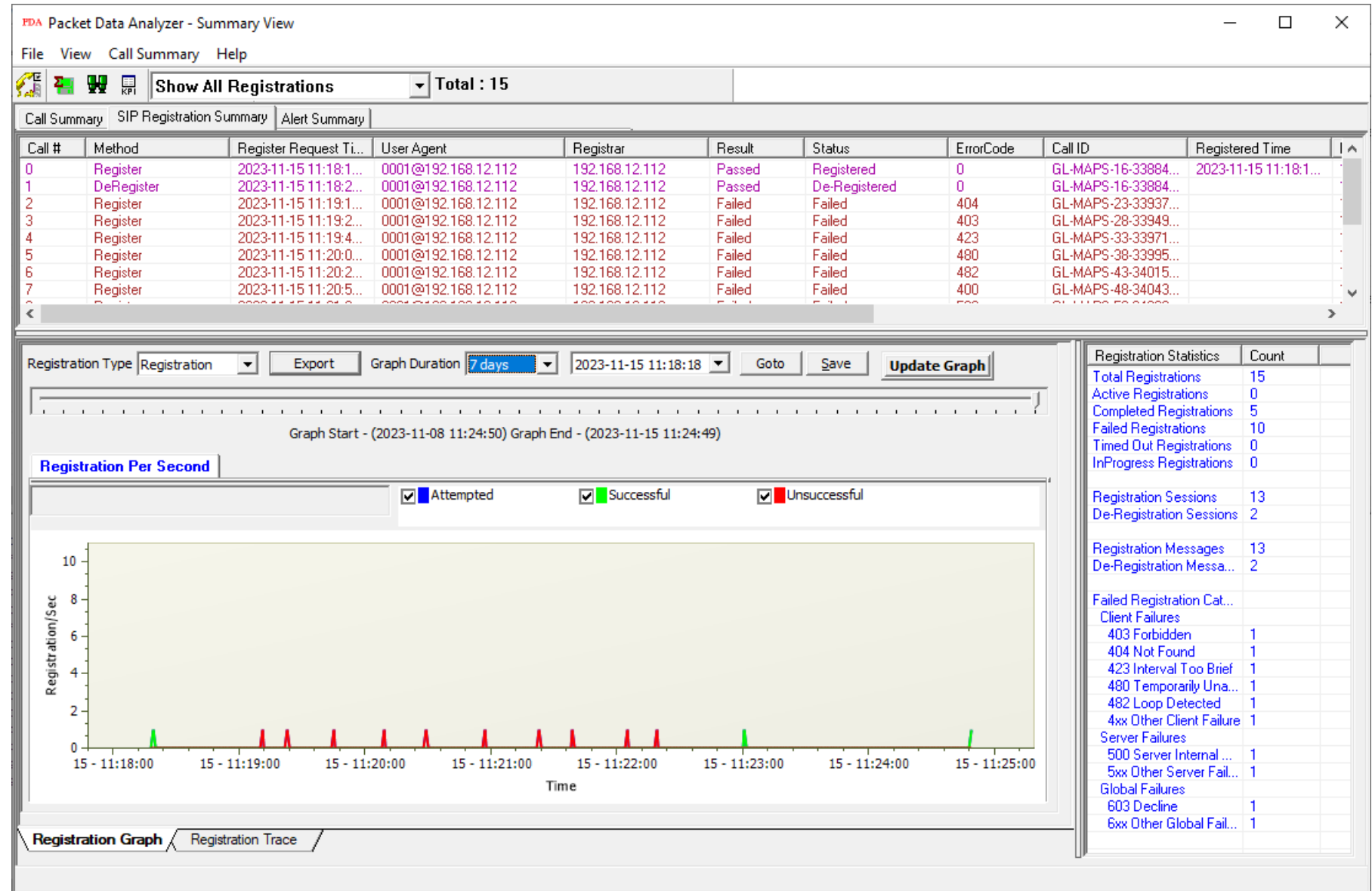
ED-137 / ED-138 Compliance

1. PacketScan provides below ED-137 aggregated statistics for all the traffic captured
 - a. Total, Active, Completed, Failed Air-to-Ground Call counts
 - b. Total, Active, Completed, Failed Ground-to-Ground Call counts
 - c. Total PTT, Squelch, PTT Mute, PTT Summation packets detected
 - d. Pilot-Pilot induced and Controller-Pilot induced SCT (Synchronous Transmissions)
2. Provides Air-to-Ground and Ground-to-Ground call graphs with below details
 - a. Show call type, call priority, and call setup time.
 - b. Shows all Radio Signal information like
 - i. PTT on/off
 - ii. Squelch on/off
 - iii. Synchronous Transmissions counts
 - iv. All RTP header extensions like SQI (Signa Quality Index), CLD (Climax Time Delay), RRC (Radio Remote Control) and DDM (Dynamic Delay Measurement)
3. Provides Air-to-Ground and Ground-to-Ground call quality statistics such as MOS, Packet Loss, Latency, Jitter
 - a. Calculates voice quality metrics for every PTT and Squelch transaction separately for Air-to-Ground calls
 - b. Calculates voice quality metrics for every 10 second (or defined interval) to provide more granular results for the call duration
4. Creates Call Detailed Records in real time as below
 - a. For Air-to-Ground calls, for every PTT and Squelch transaction a separate CDR is created
 - b. For Ground-to-Ground calls, creates an updated CDR for every defined interval until call terminates



SIP User Agent Registrations

- Displays the SIP registration information in a separate tab which includes user agent, registrar, registered time, status, and so on for each user agent
- Displays the active registration graph of the entire registration summary
- Provides the trace display of each registration



Registration Trace

Packet Data Analyzer - Summary View

File View Call Summary Help

Show All Registrations Call Count: 179100

Call Summary SIP Registration Summary Alert Summary

Call#	Method	RegisterRequestTime	UserAgent	Registrar	Result	Status	ErrorCode	CallID	RegisteredTime	Requests	Responses	Exp
0	Register	2023-11-15 18:49:0...	001013012041632	ims.mnc001.mcc00...	Passed	Registered	0	GL-MAPS-27303-29...	2023-11-15 18:49:0...	2	2	360
1	Register	2023-11-15 18:49:0...	001013012041638	ims.mnc001.mcc00...	Passed	Registered	0	GL-MAPS-27309-29...	2023-11-15 18:49:0...	2	2	360
2	Register	2023-11-15 18:49:0...	001013012041631	ims.mnc001.mcc00...	Passed	Registered	0	GL-MAPS-27293-29...	2023-11-15 18:49:0...	2	2	360
3	Register	2023-11-15 18:49:0...	001013012041633	ims.mnc001.mcc00...	Passed	Registered	0	GL-MAPS-27273-29...	2023-11-15 18:49:0...	2	2	360
4	Register	2023-11-15 18:49:0...	001013012041636	ims.mnc001.mcc00...	Passed	Registered	0	GL-MAPS-27352-29...	2023-11-15 18:49:0...	2	2	360
5	Register	2023-11-15 18:49:0...	001013012041634	ims.mnc001.mcc00...	Passed	Registered	0	GL-MAPS-27296-29...	2023-11-15 18:49:0...	2	2	360
6	Register	2023-11-15 18:49:0...	001013012041639	ims.mnc001.mcc00...	Passed	Registered	0	GL-MAPS-27278-29...	2023-11-15 18:49:0...	2	2	360
7	Register	2023-11-15 18:49:0...	001013012041637	ims.mnc001.mcc00...	Passed	Registered	0	GL-MAPS-27298-29...	2023-11-15 18:49:0...	2	2	360

Column Width Absolute Timing Show Latest

Time	Frame#	192.168.191.1	192.168.12.18
00:00:00.000	5781	5060	5060
		REGISTER	
00:00:00.134	5864	5060	5060
		SIP/2.0 401 Unauthorized	
00:00:00.145	5872	5060	5060
		REGISTER	
00:00:00.167	5942	5060	5060
		SIP/2.0 200 OK	

Find Complete Stack

===== SIP Layer =====

```
REGISTER sip:ims.mnc001.mcc001.3gppnetwork.org SIP/2.0
Via: SIP/2.0/UDP 192.168.191.1:5060;branch=z9hG4bK-27306-29450043-189206-8912
Max-Forwards: 70
Allow: INVITE, BYE, CANCEL, ACK, INFO, PRACK, COMET, OPTIONS, SUBSCRIBE, NOTIFY, REGISTER, UPDATE
From: <sip:001013012041632@ims.mnc001.mcc001.3gppnetwork.org>;tag=FromTag-27304-2945000
To: <sip:001013012041632@ims.mnc001.mcc001.3gppnetwork.org>
Call-ID: GL-MAPS-27303-29450009-189203-8912@192.168.191.1
CSeq: 1 REGISTER
Supported: path, sec-agree
Authorization: Digest username="001013012041632@ims.mnc001.mcc001.3gppnetwork.org", realm=
Expires: 30
Contact: <sip:001013012041632@192.168.191.1>;+g.3gpp.smsip
P-Preferred-Identity: 001013012041632 <sip:001013012041632@ims.mnc001.mcc001.3gppnetwork.org>
P-Access-Network-Info: 3GPP-NR-TDD; utran-cell-id-3gpp=00101000001000000001
Privacy: None
Content-Length: 0
```

Registration Graph Registration Trace

- Displays the message sequence of registered calls. Message sequence pictorially displays the messages exchanged for a particular scenario between a user agent and the registrar

PacketScan Web™ Registration Trace

The screenshot displays the PacketScan Web interface for a registration trace. The top navigation bar includes links for Probes, PA, PDA, Event Log, and Admin. Below this, a toolbar contains various icons and a dropdown menu for 'Show All Registratio...'. The main content area is divided into two tabs: 'Call Summary' and 'SIP Registration Summary'. The 'SIP Registration Summary' tab is active, showing a table of registration events.

Reg#	Method	RegisterRequestTime	UserAgent	Registrar	Result	Status	ErrorCode	CallID	RegisteredTime	Requests	Responses
1	Register	2024-10-16 17:13:18.132	0001	192.168.12.117	Passed	Registered		GL-MAPS-1-667514568-2512-5580@192.168.12.117	2024-10-16 17:13:18.257	3	3
2	Register	2024-10-16 17:13:23.805	0001	192.168.12.95	Passed	Registered		GL-MAPS-1-667520231-14548-6976@192.168.12.95	2024-10-16 17:13:23.934	3	3
3	DeRegister	2024-10-16 17:13:51.769	0001	192.168.12.117	Passed	De-Registered		GL-MAPS-1-667514568-2512-5580@192.168.12.117		2	2

Below the table, there are tabs for 'CallFlow' and 'Statistics'. The 'CallFlow' tab is active, showing a detailed view of a specific call. It includes a 'Column Width' slider, checkboxes for 'Absolute Timing' and 'Show Latest', and a 'Find' input field with a 'Find Next' button and a 'Complete Stack' checkbox.

The call flow view displays a sequence of messages between a user agent and a registrar. The messages are shown in a timeline format with columns for Time, Frame#, and the message content. The messages are as follows:

- 00:00:00.000: REGISTER (User Agent to Registrar)
- 00:00:00.001: SIP/2.0 407 Proxy Authentication... (Registrar to User Agent)
- 00:00:00.011: REGISTER (User Agent to Registrar)
- 00:00:00.013: REGISTER (Registrar to User Agent)
- 00:00:00.124: SIP/2.0 200 OK (User Agent to Registrar)
- 00:00:00.126: SIP/2.0 200 OK (Registrar to User Agent)

The detailed view of the REGISTER message (Frame 0) is shown on the right, including the SIP layer details:

```
===== SIP Layer =====
REGISTER sip:192.168.12.117 SIP/2.0
Via: SIP/2.0/UDP 192.168.12.117:5060;branch=z9hG4bK-4-667514590-2515-5580
Route: <sip:192.168.12.158:5060;lr>
Max-Forwards: 70
Allow: INVITE,BYE,CANCEL,ACK,INFO,PRACK,OPTIONS,SUBSCRIBE,NOTIFY,REFER,REGISTER,UPDATE
From: 0001 <sip:0001@192.168.12.117>;tag=FromTag-2-667514568-2513-5580
To: <sip:0001@192.168.12.117>
Call-ID: GL-MAPS-1-667514568-2512-5580@192.168.12.117
CSeq: 1 REGISTER
Expires: 3600
Contact: 0001 <sip:0001@192.168.12.117>
Content-Length: 0
```

- Displays the message sequence of registered calls. Message sequence pictorially displays the messages exchanged for a particular scenario between a user agent and the registrar

Monitoring WhiteListed Numbers

The screenshot shows the FDA Packet Data Analyzer - Summary View. The 'GUI Configurations' menu is open, and 'WhiteListed Numbers' is highlighted. A red line points from this menu item to a 'WhiteListed Numbers' dialog box. The dialog box has a checkbox labeled 'Enable WhiteList' which is currently unchecked. The background shows a table of call data with columns: Call #, SSRC, Payload, Packet Received, Conversat MOS/R..., and Lister MOS. The table contains several rows of call data, including Call#000001, Call#000002, and Call#000003.

The screenshot shows a Notepad window titled 'SipWhiteList.txt - Notepad'. The text inside the window is as follows:

```
File Edit Format View Help
##Phone Number patterns to match with
## ? ->indicates any one digit, *-> zero or many
[#NUMBER_PATTERNS]
0010
0020
0030
0040
0050
```

The status bar at the bottom indicates 'Ln 1, Col 38', '100%', 'Windows (CRLF)', and 'UTF-8'.

- Allows users to configure caller and callee numbers to identify calls of interest
- Supports wildcards in whitelist numbers for flexible number matching and automatic identification
- Calls matching the whitelist are identified and marked as whitelisted calls during analysis
- Enables voice and trace recording based on whitelisted numbers, helping focus on selected calls

NetSurveyorWeb™ – CDR Population & Analytics

PacketScan™ as a Network Probe

- Acts as distributed probe
- Captures calls and generates CallDetail Records (CDRs)
- Sends records to central database
- Integrates with:
 - NetSurveyorWeb™
 - NetSurveyorWeb™ Lite

NetSurveyorWeb™ Capabilities

- Real-time & historical analytics
- KPI & custom statistics
- Call filtering
- Large-scale data processing
- Performance trending

NetSurveyorWeb™ (Call Flow and Detail Records)

GL NetSurveyorWeb Refresh Protocol: VOIP (SIP & RTP) Type: CDR gl

Quick CDR Data Reports Alarms Users System Status

Quick CDR \ Whitelisted Calls

Date: 2021-12-01 2022-01-01 Time: 00:00:00 23:59:59 Ok

Today Yesterday Last 7 Days Last 30 Days All

Actions Query Execution Time : 2.24154 Seconds Sort Order : STARTTIME DESC

Quick Search Apply Clear Page Size: 20 Show Lat

	SI No	Calling Number	Called Number	StartTime	Duration	Call Success	Voice Quality-L	Voice Quality-R	Failure Cause	ConversationalMOS-L	ConversationalMOS-R	Pay
☐ Call Flow	1	0151@192.168.13.120	0151@192.168.13.121	2022-01-05 06:45:12.582	00:00:30.038	1	Good	Good	0	3.81	3.81	EVF
☐ Call Flow	2	0101@192.168.13.120	0101@192.168.13.121	2022-01-05 06:45:12.340	00:00:30.017	1	Good	Good	0	3.95	3.95	EVF
☐ Call Flow	3	0151@192.168.13.120	0151@192.168.13.121	2022-01-05 06:45:11.644	00:00:30.031	1	Good	Good	0	3.81	3.81	EVF
☐ Call Flow	4	0101@192.168.13.120	0101@192.168.13.121	2022-01-05 06:45:11.402	00:00:30.041	1	Good	Good	0	3.95	3.95	EVF
☐ Call Flow	5	0151@192.168.13.120	0151@192.168.13.121	2022-01-05 06:45:10.705	00:00:30.033	1	Good	Good	0	3.81	3.81	EVF
☐ Call Flow	6	0101@192.168.13.120	0101@192.168.13.121	2022-01-05 06:45:10.465	00:00:30.032	1	Good	Good	0	3.95	3.95	EVF
☐ Call Flow	7	0151@192.168.13.120	0151@192.168.13.121	2022-01-05 06:45:09.761	00:00:30.043	1	Good	Good	0	3.81	3.81	EVF
☐ Call Flow	8	0101@192.168.13.120	0101@192.168.13.121	2022-01-05 06:45:09.520	00:00:30.023	1	Good	Good	0	3.95	3.95	EVF
☐ Call Flow	9	0151@192.168.13.120	0151@192.168.13.121	2022-01-05 06:45:08.822	00:00:30.040	1	Good	Good	0	3.81	3.81	EVF
☐ Call Flow	10	0101@192.168.13.120	0101@192.168.13.121	2022-01-05 06:45:08.579	00:00:30.021	1	Good	Good	0	3.95	3.95	EVF
☐ Call Flow	11	0151@192.168.13.120	0151@192.168.13.121	2022-01-05 06:45:07.884	00:00:30.035	1	Good	Good	0	3.81	3.81	EVF

Feature Comparison Table

Feature Category	PacketScan™	Wireshark®
Codec Support	AMR, EVS, OPUS, EVRC, etc.	G.711, G.729
Voice Metrics	MOS, R-Factor, Jitter, Delay	Not Available
Probe Function	Yes	No
CDR Generation	Yes	No
NetSurveyorWeb™ Integration	Yes	No
Large File Support	TB-scale	Limited
Triggers & Alerts	Yes	No
Continuous Capture	Yes	No
Bulk Call Processing	3k–20k	~700
Fax Extraction	Yes (TIFF)	No
ED-137 Support	Full	No

Thank you