
SS7 Analysis & NetSurveyorWeb™

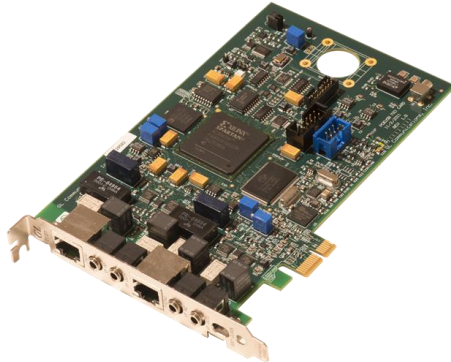


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Website: <https://www.gl.com>

Platforms



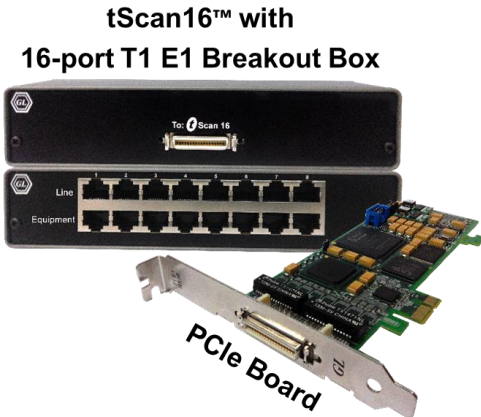
**tProbe™ - Portable USB based T1 E1 VF
FXO FXS and Serial Datacom Analyzer**



Dual T1 E1 Express (PCIe) Board



Quad / Octal T1 E1 PCIe Card

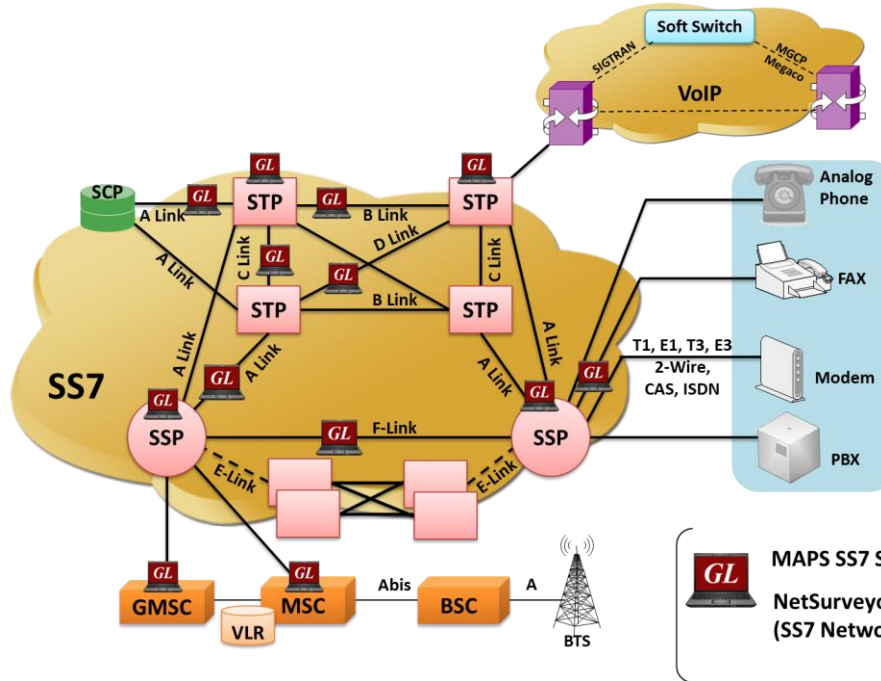


**tScan16™ with
16-port T1 E1 Breakout Box**

PCIe Board

SS7 Analyzer

- Decodes different SS7 layers like MTP2, MTP3, ISUP, TUP, SCCP, INAP (CS1, CS2), IUP, BICC, BISUP, BTUP and many application layer protocols from GSM/GPRS network like MAP, CAMEL(CAP), IS 41 etc.
- Supports the following types of SS7 analyzers:
 - Real-time SS7 Analyzer
 - Remote/Offline SS7 Analyzers



GL MAPS SS7 Sigtran Simulation Platform
NetSurveyorWeb™
(SS7 Network Monitoring System)

Key Features

- Perform real-time / offline / remote analysis
- Consolidated GUI – Summary of all decodes, detail & hex-dump views of each frame, statistics view, & call detail record views
- Supports various protocol standards for proper decode
- Capture options - Channel selection, CRC, bit reversion, bit inversion, scrambler and more
- Any protocol field can be added to the summary view, filtering, and search features providing users more flexibility to monitor required protocol fields.
- Call Detail Recording feature includes data link groups that help in defining the direction of the calls in a given network and form logical groups comprised of unidirectional (either 'Forward' or 'Backward') data links

Key Features (Contd.)

- Call trace defining important call specific parameters such as call ID, status (active or completed), duration, calling number, called number, and more are displayed
- Fine tune results with filtering and search capability based on OPC, DPC, ISUP message types, SCCP message types, CIC, and more
- Extensive statistics measurement ability
- Exports Summary View information to a comma delimited file for subsequent import into a database or spreadsheet
- Capability to export detail decodes information to an ASCII file
- Trace File Saving Options
- Remote-access capability

Different Views

The screenshot displays the SS7 Protocol Analysis 557 ITU interface with the following views:

- Summary View:** A table showing message details for device 2, including frame numbers, relative times, lengths, and various protocol fields (BSN, BIB, FSN, FIB, SLC, DPC, OPC, SCCP Me).
- Detail View:** A text-based representation of the MTP2 layer data, showing BSN, BIB, and FSN values.
- Hex dump View:** A hex dump of the frame data with corresponding ASCII characters.
- Statistics View:** A table summarizing message types and frame counts for device 2.
- Call Trace View:** A table listing call IDs, statuses, and associated numbers and times.

Summary View

Detail View

Hex dump View

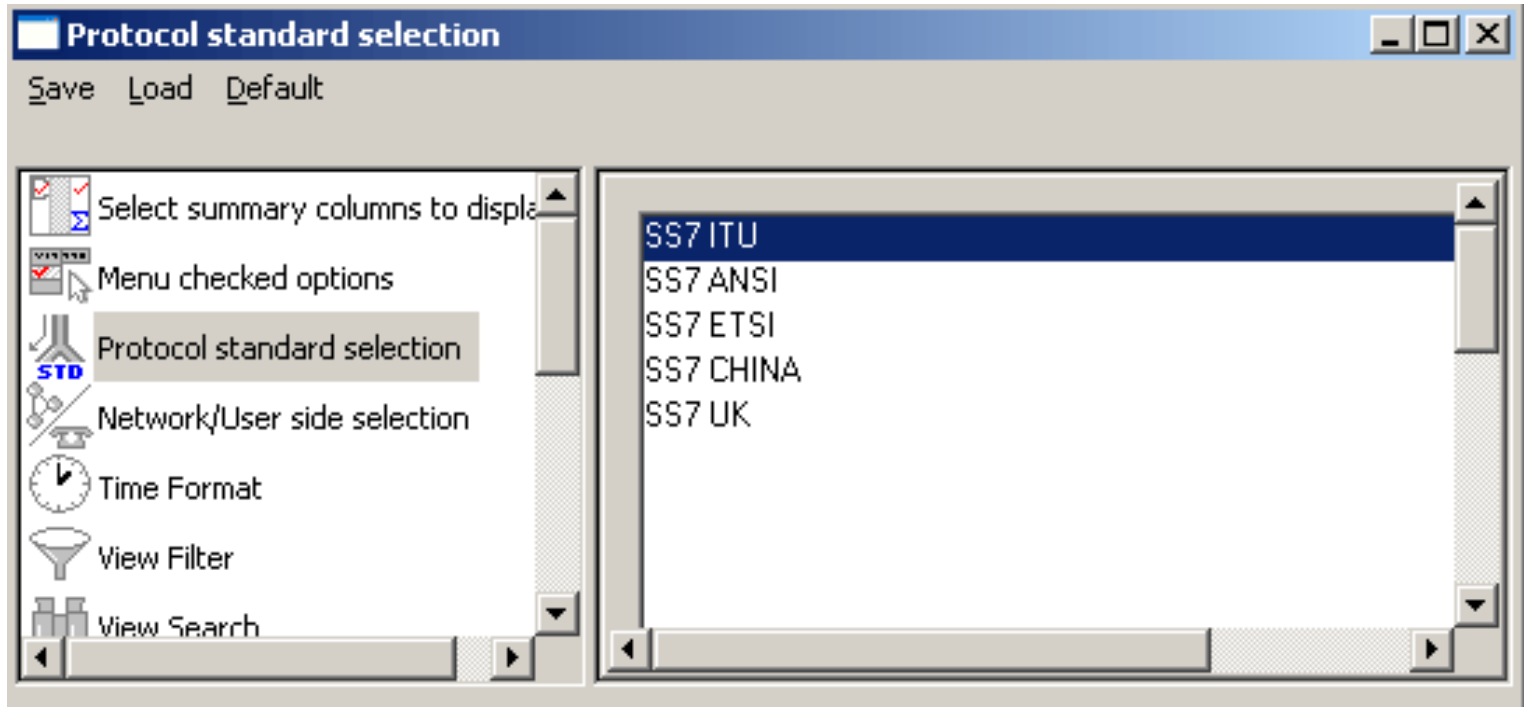
Statistics View

Call Trace View

Different Views (Contd.)

- **Summary View:** This pane displays the columns that contain Card Number, Timeslots, Frame Number, Time, Frame Error Status, DPC, OPC, Status Field, SCCP Message, CIC, ISUP Message, and more in a tabular format
- **Detail View:** This pane displays in detail about a frame to analyze and decode by selecting it in the summary view
- **Hex Dump View:** This pane displays the frame information in HEX and ASCII format
- **Statistics View:** This pane displays the statistics that are calculated based on the protocol fields
- **Call Trace View (Optional):** This pane displays the call specific information for each individual call from the captured data and display the information in an organized fashion

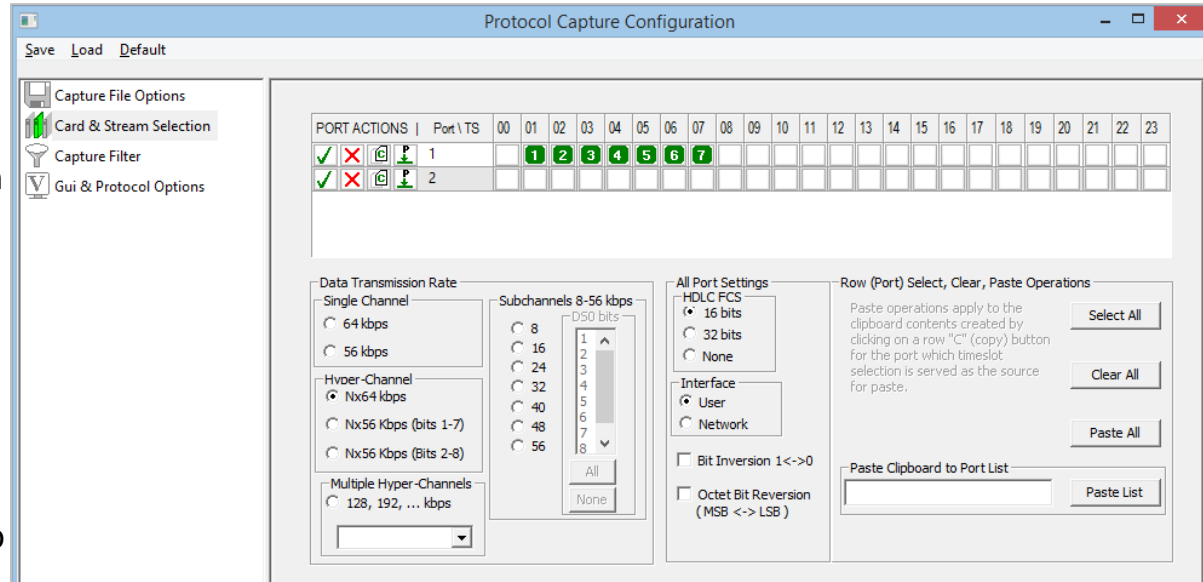
Protocol Standards



Please visit <http://www.gl.com/ss7.html> for a complete list of supported protocols & specifications for SS7

Real-time Analysis

- Streams can be captured on the selected time slots (contiguous or non-contiguous), sub-channels (fractional DS0 to DS1), Hyper-channels (n x 64 kbps, n x 56 kbps), or full bandwidth
- Frames may also be captured based on their FCS (16 bits, 32 bits, none), bit inversion, octet bit reversion, user/network side options
- Recorded trace file can then be analyzed offline
- Capability to export summary view details to comma separated values (CSV) format for subsequent import into a database or spreadsheet
- Capability to export detail decode information to an ASCII file



Real-Time Capture

SS7 Protocol Analysis SS7 ITU

File View Capture Statistics Database Call Detail Records Configure Help

0 GoTo

Len	Error	BSN	BIB	FSN	FIB	Statu...	SLC	DPC	OPC	SCCP Message Type	SSN
22		1	0	2	0		0	0.24	0.12		
14		1	0	2	0		0	0.24	0.12		
13		1	0	2	0		0	0.24	0.12		
40		1	0	2	0		0	0.24	0.12		
26		1	0	2	0		0	0.24	0.12		
40		1	0	2	0		0	0.24	0.12		
38		1	0	2	0		0	0.24	0.12		
22		1	0	2	0		0	0.24	0.12		

Card2 TimeSlots=1-6 Frame=15 at 00:00:00.037291 OK Len=22

HDLC Frame Data + FCS

```
===== MTP2 Layer =====
BSN                               = .0000001 (1)
BIB                               = 0..... (0)
FSN                               = .0000010 (2)
FIB                               = 0..... (0)
LI                                = ..000011 MSU Format
===== MTP3 Layer =====
Service Indicator                 = ....0101 ISDN User Part
Priority Code                     = ..00.... Priority Code 0
Sub-service field                 = 00..... International network
```

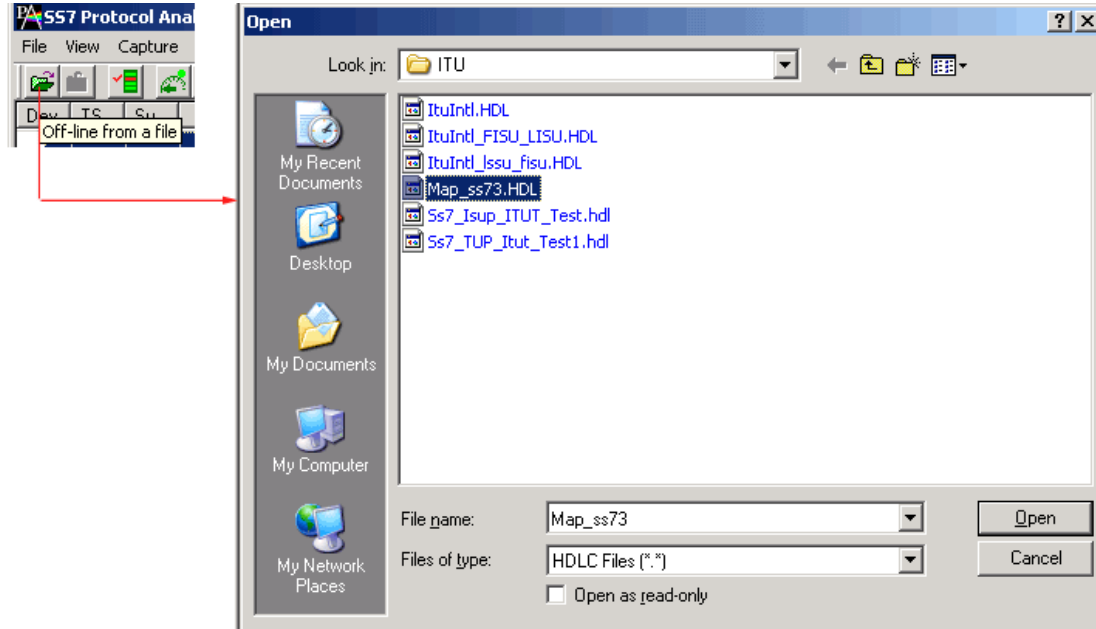
Hex Dump of the Frame Data

```
+-----+-----+-----+-----+-----+
01 02 03 05 14 80 02 00 00 0A 2F 02 07 05 02 42
11 22 33 00 1C C2                                     "3 A / B
```

Running. Utilization 19.67% C:\Temp\Hdl Captured 5731 frames

Offline Analysis

- Off-line analysis is equivalent to capturing a file in pre-defined timeslots
- Captured frames or only the filtered frames can be exported to *.HDL file for the further off-line analysis
- Trace file for offline analysis can be loaded either through analyzer GUI or through simple command-line arguments



Invoke Offline Analysis (CLI)

The screenshot displays the 'Off-line SS7 Protocol Analysis SS7 ITU' application. The main window shows a table of protocol frames with columns for Dev, TS, Su, Frame#, TIME (Relative), Len, BSN, BIB, FSN, FIB, Statu..., SLC, DPC, OPC, CIC, and ISUP Me. The table contains several rows of data, with the first row highlighted. Below the table, there is a text area showing details for 'Card2 TimeSlot=16 Frame=0 at 00:00:00.000000 OK Len=81', including HDLC Frame Data + FCS and MTP2 Layer information.

Dev	TS...	Su...	Frame#	TIME (Relative)	Len	BSN	BIB	FSN	FIB	Statu...	SLC	DPC	OPC	CIC	ISUP Me
✓ 2	16		0	00:00:00.000000	81	13	1	37	1		6	4.218.4	4.101.6		
✓ 2	16		1	00:00:00.089000	18	13	1	38	1		2	4.68.3	4.101.6	82	Release
✓ 2	16		2	00:00:00.128125	128	14	1	39	1		14	4.218.4	4.101.6		
✓ 2	16		3	00:00:00.154000	18	14	1	40	1		2	4.68.3	4.101.6	274	Release
✓ 2	16		4	00:00:00.190125	242	16	1	41	1		10	4.218.4	4.101.6		
✓ 2	16		5	00:00:00.269000	66	18	1	42	1		2	4.68.3	4.101.6	178	Initial ad
✓ 2	16		6	00:00:00.328375	128	18	1	43	1		4	4.157.2	4.101.6		
✓ 2	16		7	00:00:00.407750	100	18	1	44	1		6	4.218.4	4.101.6		

```
Card2 TimeSlot=16 Frame=0 at 00:00:00.000000 OK Len=81
HDLC Frame Data + FCS
===== MTP2 Layer =====
BSN                               = .0001101 (13)
BIB                               = 1..... (1)
FSN
FIB
LI
=====
Service
.....
Hex Dump
+-----+
8D A5 3F
00 12 04
89 01 50
A1 1D 02
73 60 66
```

A command prompt window is overlaid on the application, showing the following commands and output:

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Deepa>cd C:\Program Files\GL Communications Inc\Ss7 An
alyzer

C:\Program Files\GL Communications Inc\Ss7 Analyzer>ss7prot ss7\itu\Map_ss73.HDL

C:\Program Files\GL Communications Inc\Ss7 Analyzer>
```

Offline Analysis GUI

Off-line SS7 Protocol Analysis SS7 ITU

File View Capture Statistics Database Call Detail Records Configure Help

0 GoTo

Dev	TS...	Su...	Frame#	TIME (Relative)	Len	BSN	BIB	FSN	FIB	Statu...	SLC	DPC	OPC	CIC	ISUP Me
✓ 2	16		0	00:00:00.000000	81	13	1	37	1		6	4.218.4	4.101.6		
✓ 2	16		1	00:00:00.089000	18	13	1	38	1		2	4.68.3	4.101.6	82	Release
✓ 2	16		2	00:00:00.128125	128	14	1	39	1		14	4.218.4	4.101.6		
✓ 2	16		3	00:00:00.154000	18	14	1	40	1		2	4.68.3	4.101.6	274	Release
✓ 2	16		4	00:00:00.190125	242	16	1	41	1		10	4.218.4	4.101.6		
✓ 2	16		5	00:00:00.269000	66	18	1	42	1		2	4.68.3	4.101.6	178	Initial ad
✓ 2	16		6	00:00:00.328375	128	18	1	43	1		4	4.157.2	4.101.6		

Card2 TimeSlot=16 Frame=0 at 00:00:00.000000 OK Len=81

HDLC Frame Data + FCS

```

===== MTP2 Layer =====
BSN                               = .0001101 (13)
BIB                               = 1..... (1)
FSN                               = .0100101 (37)
FIB                               = 1..... (1)
LI                                = ..111111 MSU Format
===== MTP3 Layer =====
Service Indicator                 = ....0011 SCCP
Priority Code                      = ..00
  
```

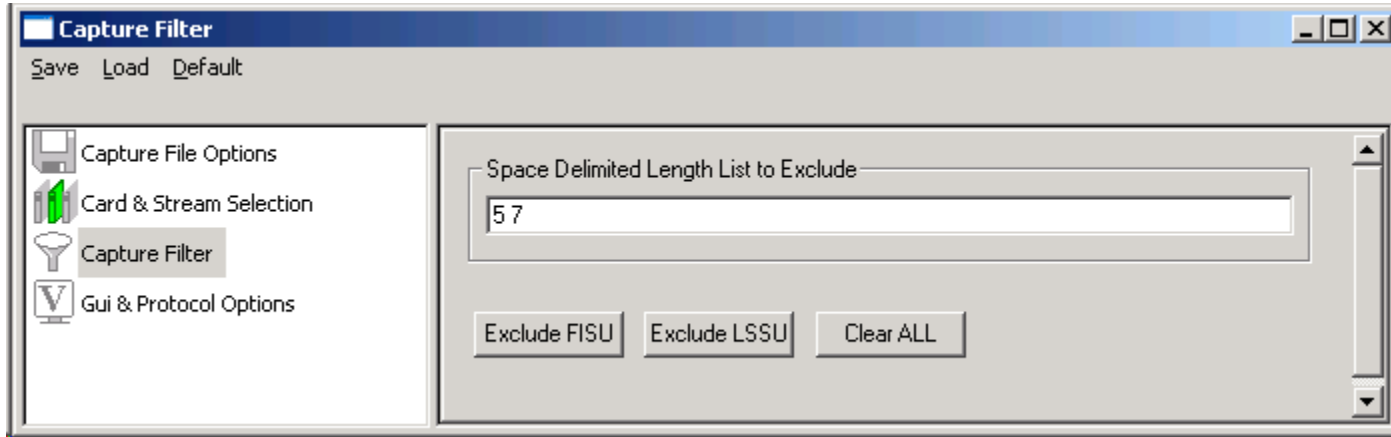
Hex Dump of the Frame Data

```

+-----+-----+-----+-----+-----+-----+-----+-----+
8D A5 3F 83 D4 A6 CB 68 09 81 03 0E 19 0B 12 06      |?|O|Eh |
00 12 04 19 89 49 72 60 66 0B 12 08 00 12 04 19      |Ir`f
89 01 50 91 41 29 62 27 48 04 0B D5 0D 00 6C 1F      |P'A)b'H 0 1
A1 1D 02 01 7B 02 01 2D 30 15 80 07 91 19 89 49      | { -0 | ' |I
72 60 66 81 01 FF 82 07 81 18 88 01 50 91 41 D4      |?|P|B|' |P'A|
  
```

Off-line Viewing ss7\itu\Map_ss73.HDL 503 Frames

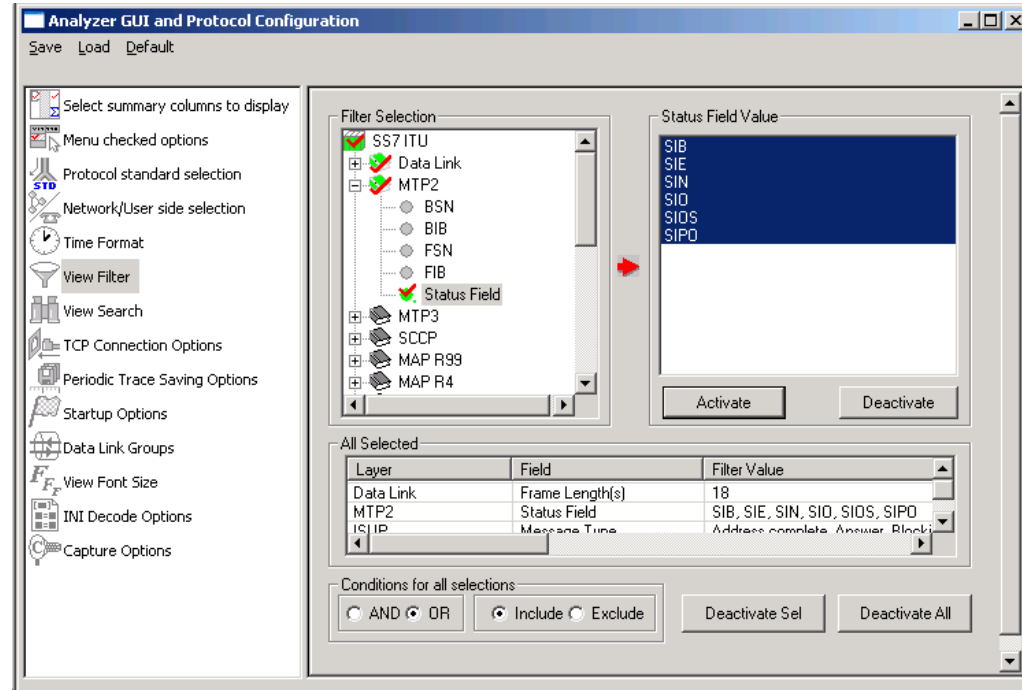
Filters - Real-time Capture Filter



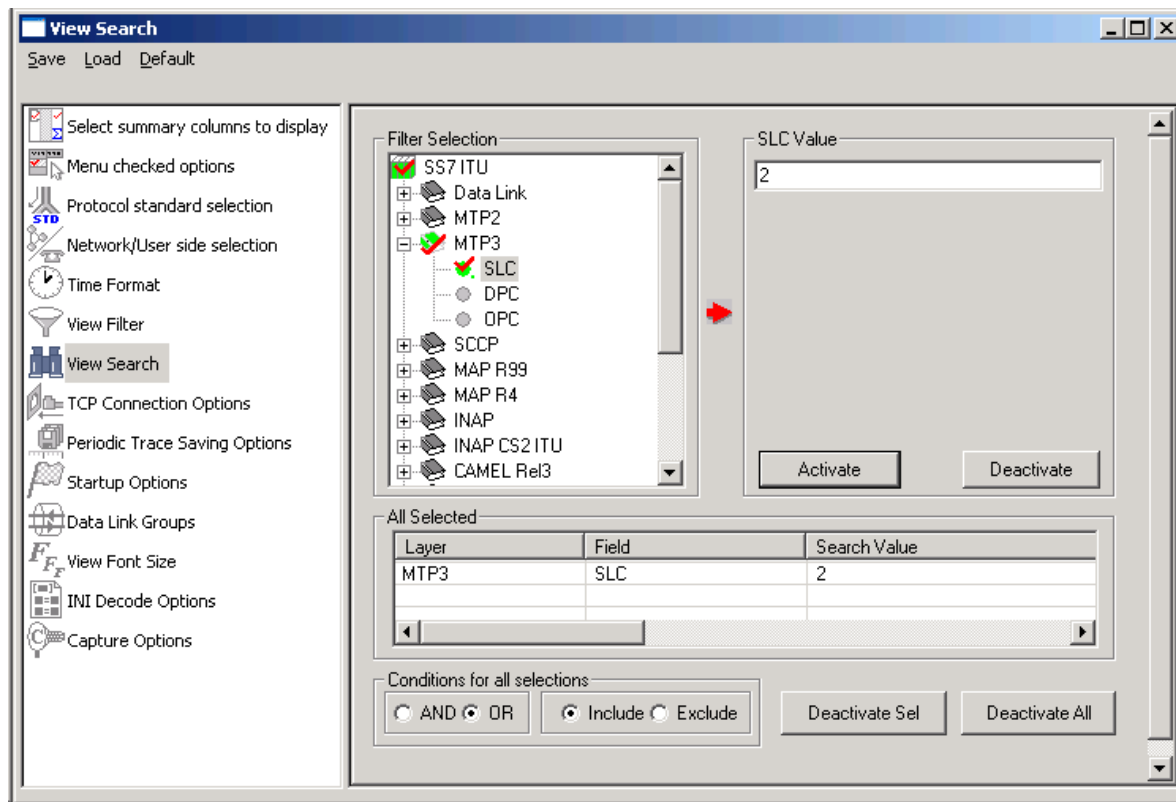
- Real-time capture filter can be set prior to capturing frames
- Real-time filter for HDLC based protocols is done by excluding LSSU (Link Status Signal Unit), FISU (Fill-in Signal Unit), or any other user-defined frame

Filters – Offline View Filter

- Isolates required frames from all frames in real-time, as well as offline
- Allows filtering according to various layers and protocol fields such as BIB, FIB, BSN, FSN, status field, DPC, OPC, SLC, SSN, ISUP message type, SCCP message type, and more



Search Options



- Search features helps users to search for a particular frame based on specific search criteria

Statistics

- Statistics is an important feature available in protocol analyzer and can be obtained for all frames both in real-time as well as offline mode
- Numerous statistics can be obtained to study the performance of the network based on protocol fields and different parameters

The screenshot shows the 'Statistics' dialog box with the following components:

- Field Names:** A tree view showing layers and their fields. 'Physical Link' is expanded, showing 'Device #' (selected), 'Error Code', 'StartTsOrTSc', and 'Time Stamp'. Other layers include MTP2, MTP3, SCCP, MAP R99, MAP R4, INAP, INAP CS2 ITU, CAMEL Rel3, CAMEL Rel6, ISUP, BISUP, BICC, and TUP.
- Device #:** A section for selecting a device. 'Use Type (single selection)' is set to 'Total'. A list shows 'Total', 'Key', and 'Field'.
- Statistic Type(s):** A section for selecting statistic types. The list includes 'Frame Count', 'Frame Percent', 'Byte Count', and 'Byte Percent'. 'Cumulative' is selected over 'Separate'.
- Range List:** An empty text box for defining a range.
- Selected Statistic Information:** A table showing the selected statistics.

Layer	Field Name	Use Type	Statistic Type
Physical ...	Device #	Total	
ISUP	Message Type	Key	Frame Count

Call Detail Records

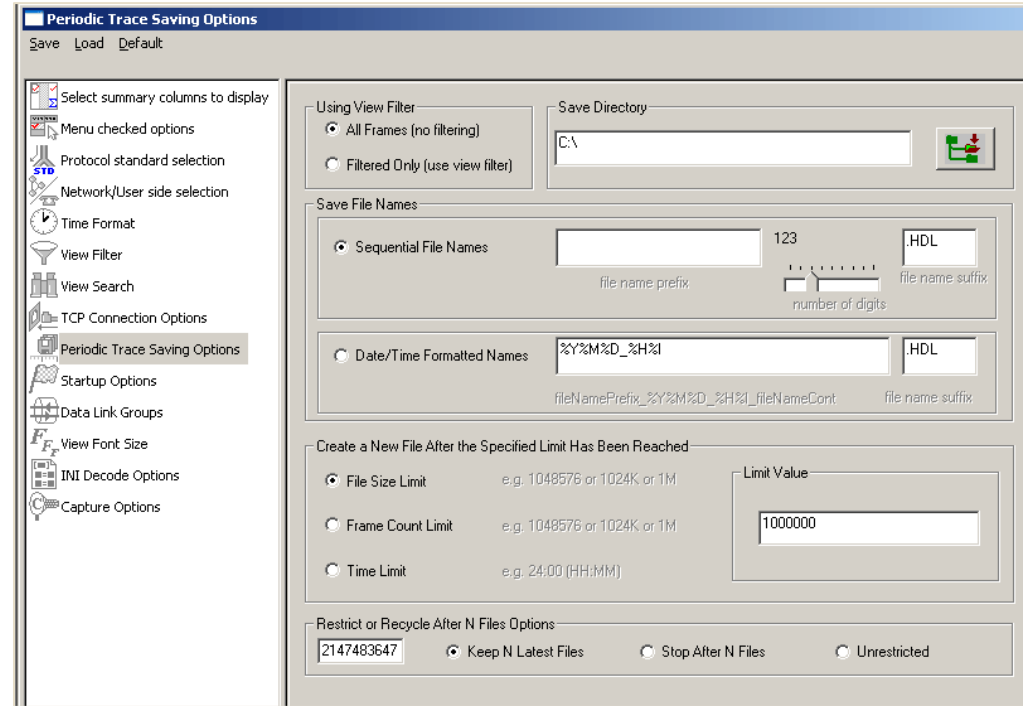
- Call trace defining important call specific parameters such as call ID, status (active or completed), duration, called number, calling number, release complete cause, OPC, DPC, etc. are displayed
- CDR Find option allows to search a particular call detail record from the captured traces

Device #	Message Type	Frame Count(Message Ty...
2	Initial address (1)	64
2	Release (12)	24
2	Release Complete (16)	24
2	Confusion (47)	12
total 2	Total	114

Call ID	Call Status	Disp	Calling Num	Called Num	Call Start Date & Time	Call Duration
0	completed	0	9841011822	0033653182010f	2002-10-10 14:56:32.636875	00:00:01.036125
1	completed	0	8052405110	09845060518f	2002-10-10 14:56:32.911000	00:00:52.078000
2	completed	0	9840100833	09894090002f	2002-10-10 14:56:33.495500	00:00:01.346750
3	active	4001	9840079100	008613916138...	2002-10-10 14:56:33.780750	00:01:05.137250
4	active	0	9841074226	09895001071f	2002-10-10 14:56:36.393875	00:01:02.524125
5	active	12002	9840177210	0060342940890f	2002-10-10 14:56:38.665875	00:01:00.252125
6	completed	0	9840183395	09894119577f	2002-10-10 14:56:39.897375	00:00:22.651625
7	active	0	9847064440	009715065794...	2002-10-10 14:56:39.906500	00:00:59.011500
8	completed	0	9841011822	0033653182079f	2002-10-10 14:56:43.312625	00:00:07.357875
9	active	0	9821456156	09822232000f	2002-10-10 14:56:44.030125	00:00:54.887875

Saving options for the trace files

- Captured trace files can be controlled by saving the trace using different conventions such as –
 - Trace files with user-defined prefixes
 - Trace file with date-time prefixes
 - Slider control to indicate the total number of files, file size, frame count, or time limit



Define Summary Columns

- Required protocol fields can be added through Define summary column option
- User can remove the protocol field which is not required

The screenshot shows a network analyzer interface with a 'Define Summary Columns' dialog box open. The dialog box has a list of protocol layers and fields on the left, with 'A bit' selected. The main window displays a table of protocol analysis results for SS7 ITU, with columns for Dev, TSkt, Frame#, TIME, Len, BSN, BIB, A bit, FSN, FIB, SLC, DPC, SCCP Message Ty, and MAP R99 Package. A red arrow points from the 'A bit' column in the table to the 'Define Summary Columns' dialog box, and another red arrow points from the 'Define Summary Columns' dialog box to the 'Output display in analyzer' window.

Defined Protocol Summary Fields for SS7 ITU

- SS7 ITU Layers/Fields
 - MTP2
 - MTP3
 - SCCP
 - MAP R99
 - 12.0 kbit/s(TCH/F9.6)
 - 12.0/9.6kbit/s(TCH F/9.6)
 - 14.5 kbit/s (TCH/F14.4)
 - 14.5 kbit/s
 - 29.0 kbit/s
 - 29.0 kbit/s
 - 32.0 kbit/s
 - 32.0 kbit/s
 - 43.5 kbit/s
 - 43.5 kbit/s
 - 6.0 kbit/s
 - 6.0/4.8kb
 - A bit
 - AS/1 algor
 - AS/2 algor
 - AS/3 algor
 - APN Value
 - Act
 - Addr.pres
 - Address
 - AlertingPa
 - Alphabet
 - Altitude
 - Asymetr
 - BearerSer
 - Bits 0..68

SS7 Protocol Analysis SS7 ITU

Dev	TSkt	Frame#	TIME	Len	BSN	BIB	A bit	FSN	FIB	SLC	DPC	DPC	SCCP Message Ty	MAP R99 Package
✓	2	16	405 00.00	81	0	1		58	1	14	4.15	4.10	UDT uridata	Begin
✓	2	16	406 00.00	101	0	1		59	1	8	4.15	4.10	UDT uridata	Begin
✓	2	16	407 00.00	259	1	1	1	58	1	0	4.15	4.10	UDT uridata	Continue
✓	2	16	408 00.00	66	1	1		61	1	12	4.68	4.10		
✓	2	16	409 00.00	133	1	1		62	1	4	4.15	4.10	UDT uridata	Begin
✓	2	16	410 00.00	193	6	1		63	1	0	4.15	4.10	UDT uridata	Begin
✓	2	16	411 00.00	103	8	1		64	1	10	4.15	4.10	UDT uridata	Begin
✓	2	16	412 00.00	208	8	1	1	65	1	0	4.15	4.10	UDT uridata	Continue

Card2 TimeSlot=16 Frame=405 at 00:00:54 413250 OK Len=81

HDLC Frame Data + FCS

----- NTP2 Layer -----

- BSN = 00000000 (0)
- BIB = 1 (1)
- FSN = 01110100 (58)
- FIB = 1 (1)
- LI = ..111111 MSU Format

----- NTP3 Layer -----

- Service Indicator = ...0011 SCCP

Hex Dump of the Frame Data

```
80 BA 3F 83 EA A4 CB E9 09 81 03 0E 19 0B 12 06  |?7|eEa |
00 12 04 19 89 54 23 72 21 0B 12 08 00 12 04 19  |IT#|
89 04 10 01 30 29 62 27 48 04 0B D9 0C 06 C 1F  | 0|b'H 0 |
A1 1D 02 01 E2 02 01 20 20 1E 80 07 91 14 84 EA  | 2 -0 8 |T
```

Selection of Summary Column

Output display in analyzer

Data Link Group

- Data link groups that help in defining the direction of the calls in a given network and form logical groups comprised of unidirectional (either 'Forward' or 'Backward') data links

Data Link Group Specification

Card	Timeslot	Subch
01	00	0
02	01	1
03	02	2
04	03	3
05	04	4
06	05	5
07	06	6
08	07	7
09	08	
10	09	
11	10	
12	11	
13	12	
14	13	
15	14	
16	15	
17	16	
18	17	
19	18	
20	19	

Data Link Group Name:

Forward Link Direction

Card	TS	Sc	Dir	Data Link Group Name
1	0	0	-->	West
2	1	1	<--	West
3	2	0	-->	West
4	3	1	<--	West
5	0	0	-->	East
6	1	1	<--	East
7	2	0	<--	East
8	3	1	-->	East

Buttons: Add, Odd Cards, Even Cards, All Cards, None, Delete Sel, Delete All, Default

Configuring INI Decode Options

- INI configuration file enables the user to enter the required custom values depending on the protocol

The screenshot shows the 'INI Decode Options' dialog box with a sidebar of configuration categories. The 'INI Decode Options' category is selected. The main area displays the path to the configuration file: 'C:\Program Files\GL Communications Inc\Usb E1 Analyzer\SS7Prot.ini'. An 'Edit INI' button is visible. A Notepad window is overlaid, showing the contents of the 'SS7Prot.ini' file, which contains various configuration sections for different protocols and their decode options.

```
[#PDU_ASSEMBLY]
PDU_ASSEMBLY_DLL_NAME_0="ProtCaptSS7ScopXudtAssembly.DLL"
PDU_ASSEMBLY_PARSE_LEN_VAL_FILTER_LIST_0="ALL LEN 32-4096"

[#MAP_VERSION]
MAP_VERSION_VALUE = 99
;MAP_VERSION_VALUE = 4

[#INAP_VERSION]
INAP_CS_VERSION_VALUE = 1
;INAP_CS_VERSION_VALUE = 2

[#CAMEL_VERSION]
CAMEL_VERSION_VALUE = 6
;CAMEL_VERSION_VALUE = 3

[#BTNR_PROTOCOL]
VALUE = 1

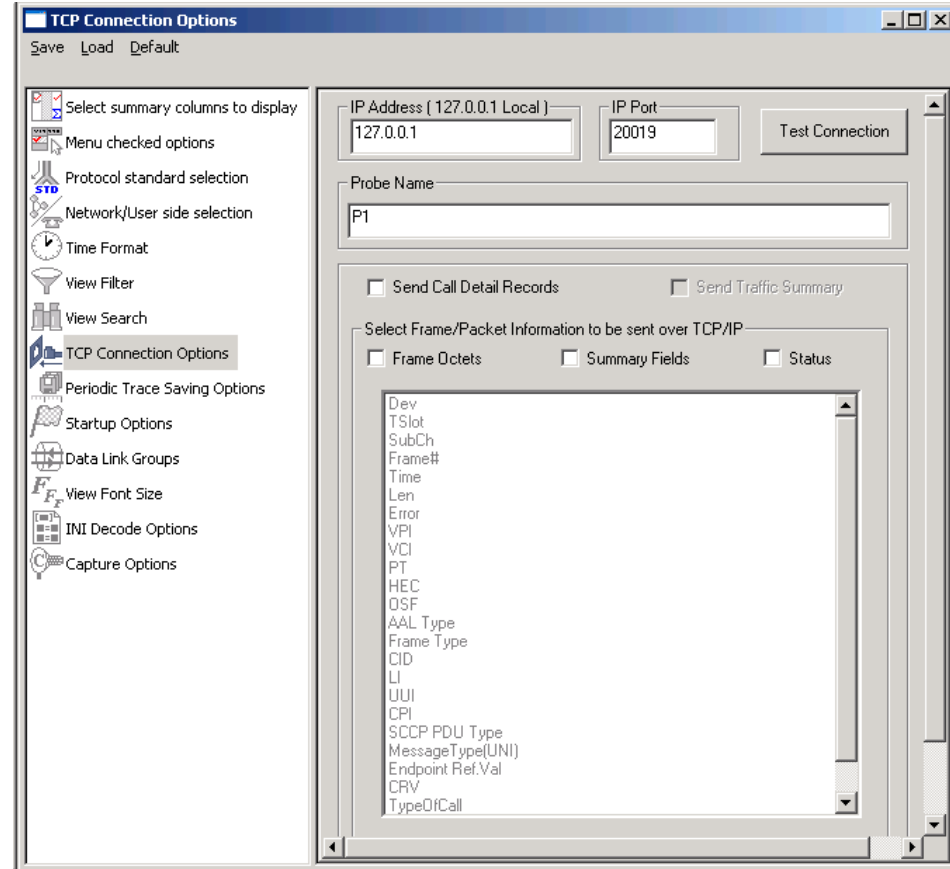
[#PROTOCOL_DECODE_ITU]
SSNINAP_MIN = 12
SSNINAP_MAX = 12
SSNCAP_MIN = 146
SSNCAP_MAX = 146
SSNMAP_MIN = 147
SSNMAP_MAX = 147

[#PROTOCOL_DECODE_ETS]
SSNINAP_MIN = 12
SSNINAP_MAX = 12

[#PROTOCOL_DECODE_ANSI]
SSNIS41_MIN = 147
SSNIS41_MAX = 147
SSNTCAP_MIN = 146
SSNTCAP_MAX = 146
```

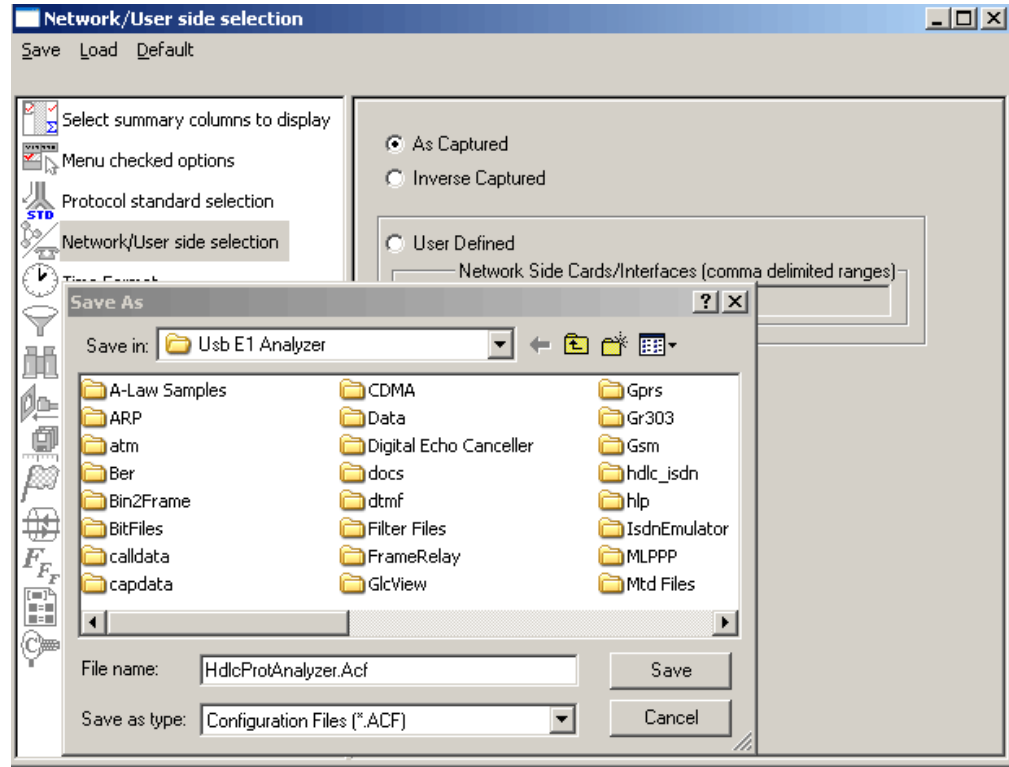
TCP Connection Options

- Used for Network Surveillance and Monitoring
- Designed to send protocol summary information and binary frame data via TCP- IP connection to a Database Loader to load data into a database

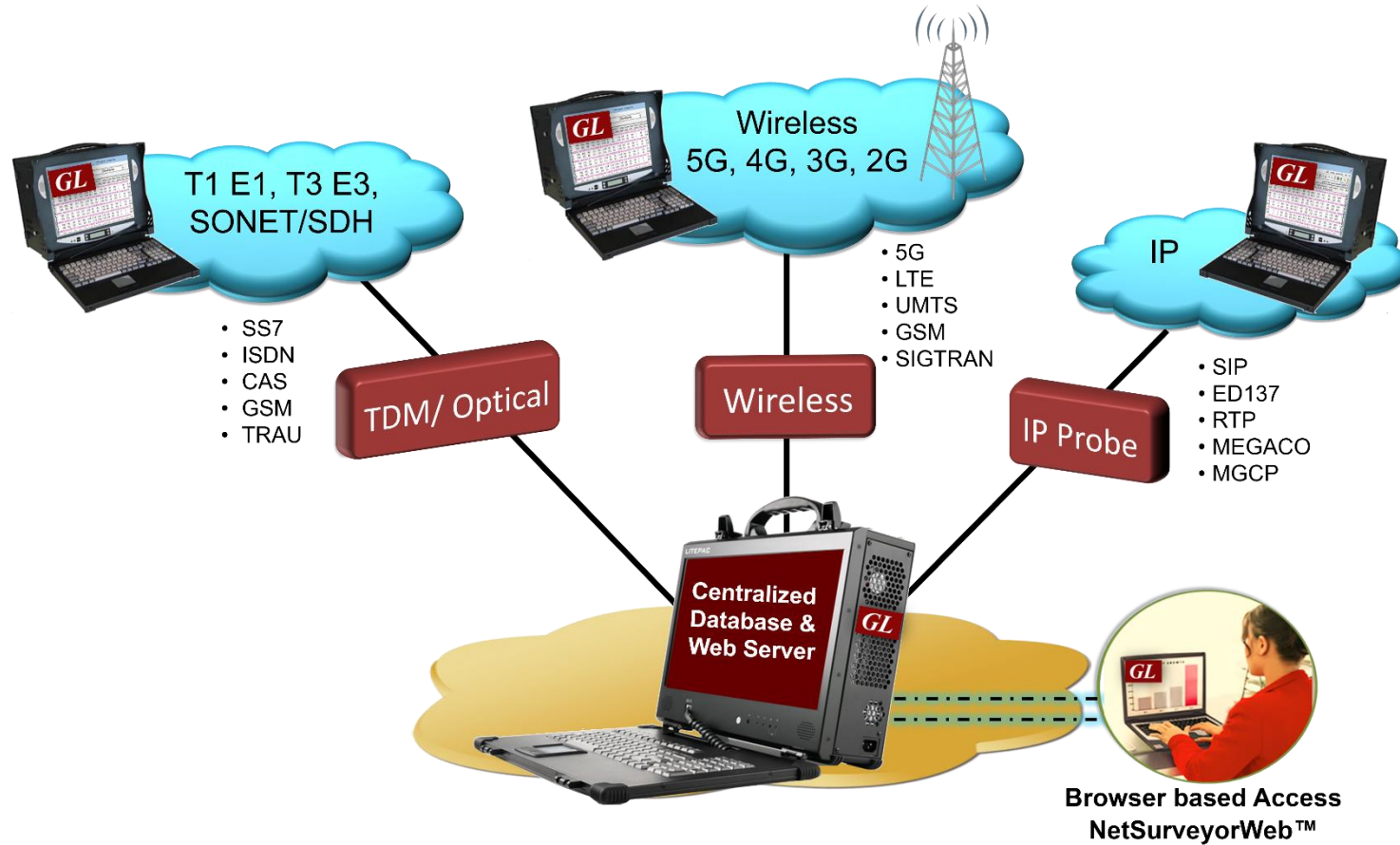


Save/Load All Configuration Settings

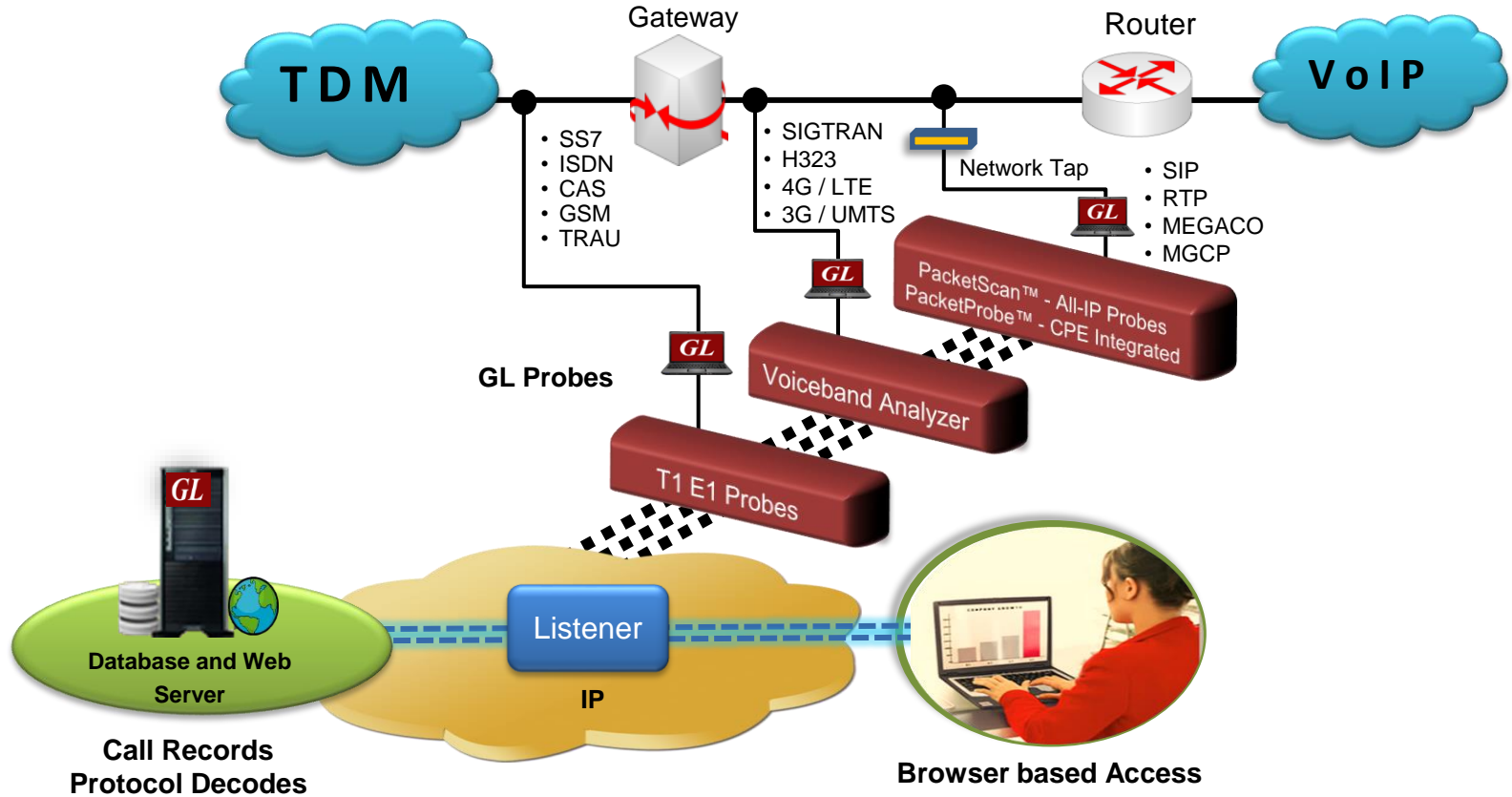
- Provides a consolidated interface for GUI and protocol settings required in the analyzer such as protocol selection, periodic saving options, etc.
- Configuration settings can be saved to a file, loaded from a configuration file, or just revert to the default values using the default option



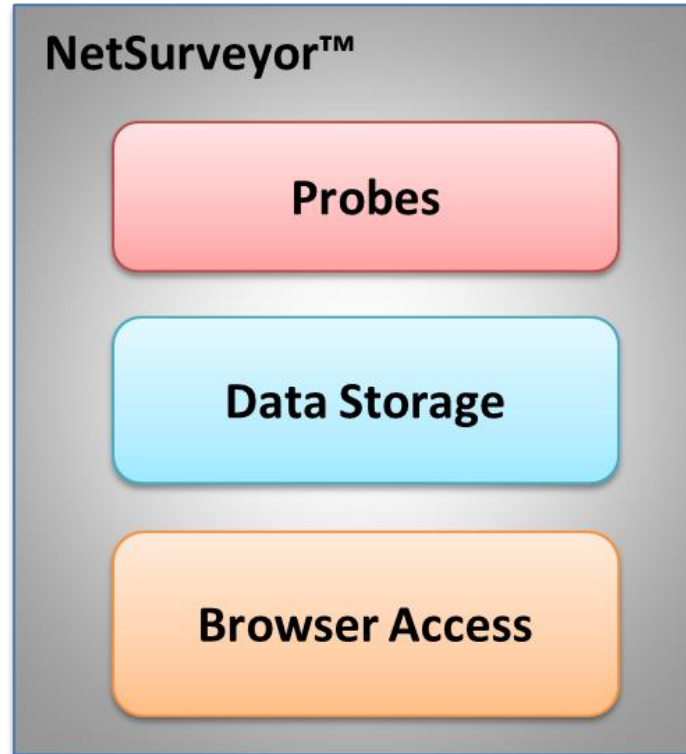
NetSurveyorWeb™ - Network Surveillance System



Network Overview

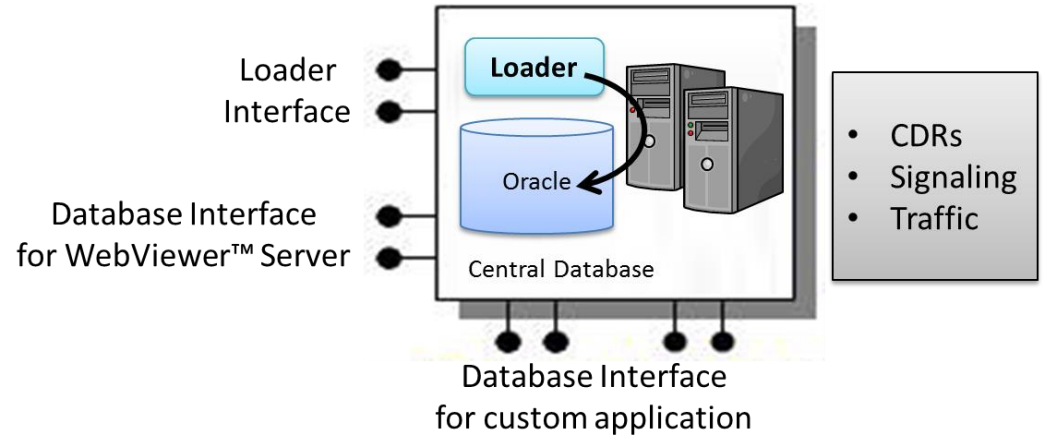


Three Tier Architecture



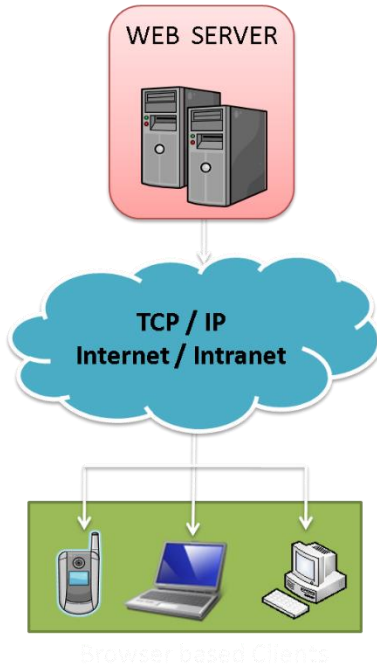
Data Storage

- A listener application is co-hosted with the database server running on the Data Layer, collecting data posted by the probes
- Supports MySQL and Oracle Database
- Stores the CDRs and Signaling Summary data



Browser Based Access

- Access captured data over the web using an application such as GL's NetSurveyorWeb™



The screenshot shows a login page with a blue header bar containing the word 'Login'. Below the header, there are two input fields: 'User Name' with the text 'gl' and 'Password' with two black dots. To the right of the password field is a blue button labeled 'Login' and a blue link labeled 'Forgot Password?'. Below these fields is a larger blue button labeled 'Login as guest'.

NetSurveyorWeb™

- Scalable and Flexible Architecture
- Multiple Probes (T1 E1/IP) non-intrusively monitor at remote locations
- Probes Feed Data to Centralized Database (Oracle, My SQL)
- Real-time and/or historical data
- Multi-user support, and user-friendly interface
- Accessible via browser-based clients (locally or remotely)
- Provides database query methods to query captured results, and gather status, statistics, and events
- Results are displayed both in tabular and graphical formats
- Provides protocol signaling, traffic, and call detail records (CDRs)
- Perform filter and/or search for specific information

Applications / Value

- Remote Protocol Analysis and Troubleshooting
- Traffic Optimization Engineering
- Call Detail Records, Statistics
- Quality of Service Measurements
- Revenue and Billing Verification
- Alarm Monitoring and Logging

The screenshot displays a network protocol analyzer interface. The top navigation bar includes 'Graph view', 'Details view', 'Debug Summary(Export as CSV)', and 'Decode Type: SS7 ITU' (selected) and 'SS7 ANSI' (selected). Below the navigation bar, a sequence diagram shows a call flow between IP addresses 5.33.205(23) and 215.5.6(23). The sequence includes: Initial Address, Address Complete, Call Progress, Answer, Release, and Release Complete. To the right, a detailed protocol dump for an SS7 ANSI message is shown. The message is identified as 'Card2 TimeSlot=23 Frame=0 at OK 10:31:20.962625 Len=65'. The dump includes the following fields and values:

- HDLC Frame Data + FCS
- MTP2 Layer: BSN = .1000000 (64), BIB = 1..... (1), FSN = .1010111 (87), FTB = 1..... (1), LI = ..111100 MSU Format
- MTP3 Layer: Service Indicator = ...0101 ISDN User Part, Priority Code = .00.... Priority Code 0, Sub-service field = 10..... National Network, DPC = 215.5.6(00000110 00000101 110), OPC = 5.33.205(11001101 00100001 00), Signalling Link Selection = 01110100 (116)
- ISUP Layer: Circuit Ident Code (CIC) = 11000110 ..000001 (454), Message Type = 00000001 Initial Address, Mandatory Fixed Parameters: Nature Of Connection Ind. Parameter =, Satellite indicator =00 No satellite circuit, Continuity check indicator =00.. Continuity check not, Echo control dev.ind(NatureofCon.Ind) = ...1.... Outgoing half echo c
- Forward Call Indicators Parameter: Incoming international call Indicator =0 Not an incoming inte, End-to-end method indicator =00.. No end-to-end method, Interworking Indicator = ...0... No interworking enco, IAM segment.ind(ForwardCallInd) = ...0.... No indication, ISDN User Part Indicators = .1..... ISDN User Part used, ISDN User Part Preferences Indicators = 00..... ISDN User Part prefe, ISDN User Part Access Indicators =0 Originating Access n, SCCP Method Indicator =00.. No Indication

NetSurveyorWeb™

Date/Time Filter

Date Range
Today

Hour Range
00:00:00
23:59:59

Custom Views / Filters

-- No Filter --

Quick View

- All
 - All
 - Default
- Forward Cdr
 - Inbox
 - SentItems
 - Commnets Setup
- Admin
 - Loader Status
 - Probe Status
 - Database Status
 - DB Maintenance
 - Alarms

CDR Data Page Config Default Date Range : 2017-08-03 To 2017-08-03 Hour Range : 00:00:00 To 23:59:59 Refresh

All > All Actions Query Execution Time : 0.17160 Seconds

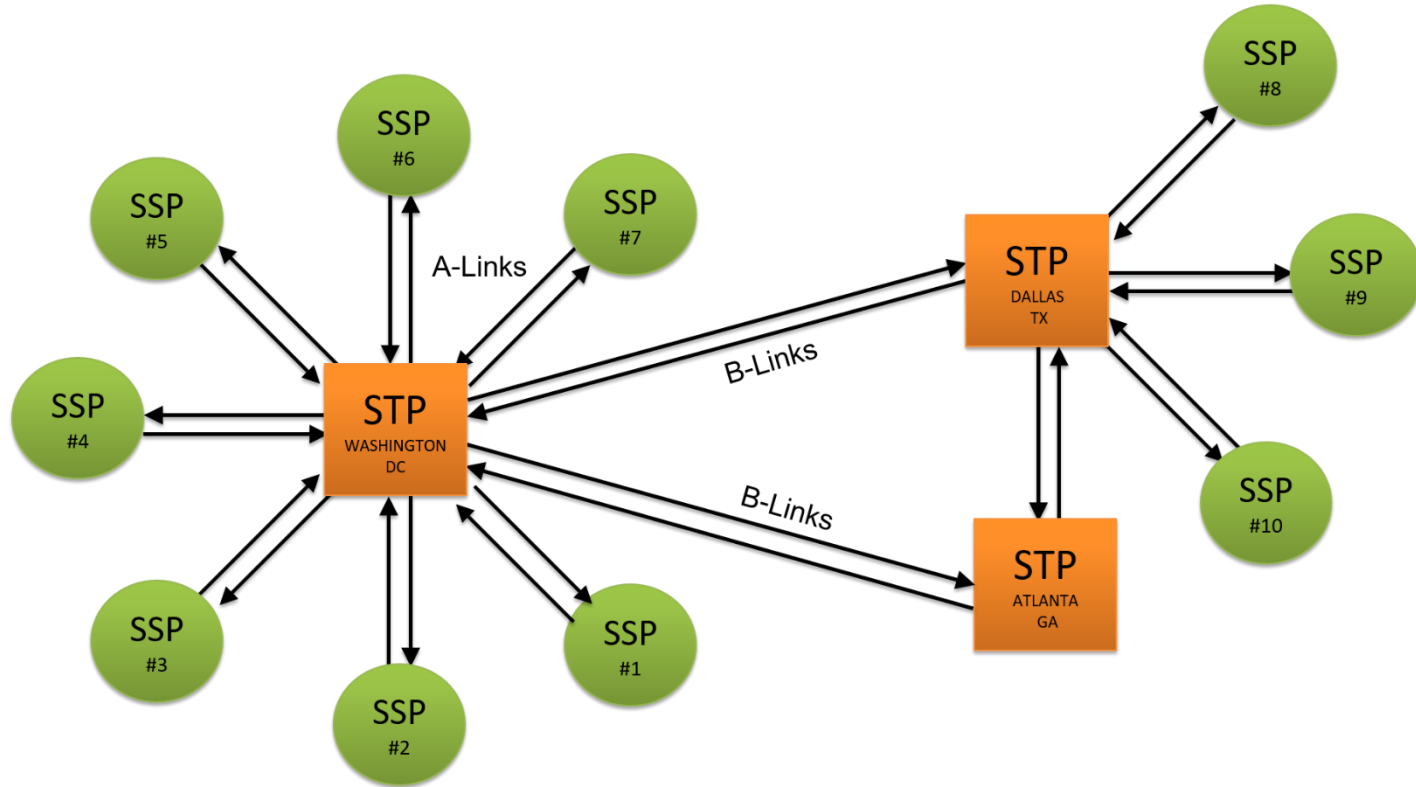
Quick Search: Call Id GO Page Size: 20 Sort Order: STARTTIME DESC

	SLNo	Call Id	Probename	Calling Number	Called Number	Starttime	Duration	Card	CIC	Disposition	Completion	Timeslot
<input type="checkbox"/>	1	635317063	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:49.635875	00:00:00.048125	1	1	3002	Requested facility not subscribed	23
<input type="checkbox"/>	2	635317062	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:49.573125	00:00:00.048125	1	1	12004	Resource unavailable. unspecified	23
<input type="checkbox"/>	3	635317061	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:49.510500	00:00:00.048125	1	1	12004	Resource unavailable. unspecified	23
<input type="checkbox"/>	4	635317060	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:49.447875	00:00:00.048125	1	1	5001	Precedence call blocked	23
<input type="checkbox"/>	5	635317059	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:49.385125	00:00:00.048125	1	1	4	x2D	23
<input type="checkbox"/>	6	635317058	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:49.322500	00:00:00.048125	1	1	4	Requested circuit/channel not available	23
<input type="checkbox"/>	7	635317057	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:49.259875	00:00:00.048125	1	1	4	Requested circuit/channel not available	23
<input type="checkbox"/>	8	635317056	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:49.197125	00:00:00.048250	1	1	10002	Access information discarded	23
<input type="checkbox"/>	9	635317055	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:49.134500	00:00:00.048125	1	1	14001	Switching equipment congestion	23
<input type="checkbox"/>	10	635317054	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:49.071875	00:00:00.048125	1	1	8003	Temporary failure	23
<input type="checkbox"/>	11	635317053	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:49.009250	00:00:00.048125	1	1	8003	Temporary failure	23
<input type="checkbox"/>	12	635317052	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:48.946500	00:00:00.048250	1	1	8002	Network out of order	23
<input type="checkbox"/>	13	635317051	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:48.883875	00:00:00.048125	1	1	8002	Network out of order	23
<input type="checkbox"/>	14	635317050	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:48.821250	00:00:00.048125	1	1	8002	Network out of order	23
<input type="checkbox"/>	15	635317049	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:48.758625	00:00:00.048125	1	1	8002	Network out of order	23
<input type="checkbox"/>	16	635317048	SS7_Probe	9987095801	8978675401	2017-08-03 01:42:48.696000	00:00:00.048125	1	1	5001	No circuit/channel available	23

Few References

- US Postal Service - TDM and Packet Monitoring Solution
 - 600 T1 lines monitored
 - Over 100 LANs monitored
- US Air Force - SS7 and ISDN Monitoring Solution
 - 52 T1 E1 ISDN and SS7 with Voiceband Traffic
- Fairpoint Communications - SS7 Monitoring Solution
 - 56 T1 SS7 - still growing
- TDM and Packet Solutions
 - Hundreds to thousands sold every year
 - Almost every major equipment manufacturer and carrier in the worlds

Complex SS7 Networks - Actual Customer Example

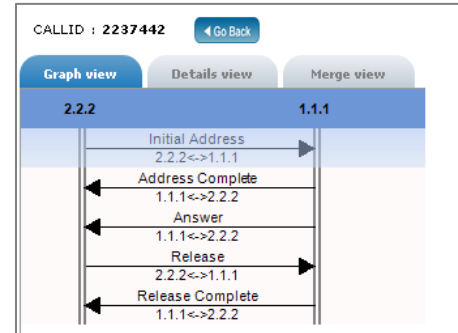
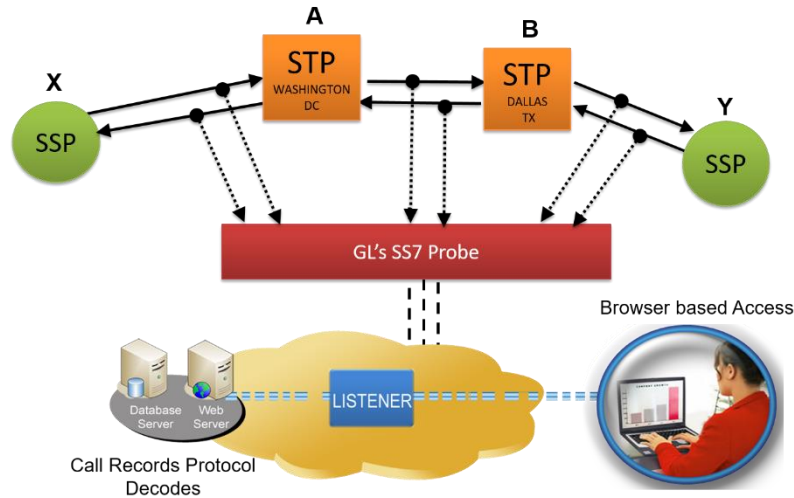


SS7 Call Flow

CALLID : 2237442 [Go Back](#)

Graph view **Details view** Merge view Decode Type : ITU ANSI [Debug Summary \(Export as CSV\)](#)

FRAMENO	Timestamp	Probename	Card	Linkname	Linkname Directional	TS1	TS2	CIC	SLS	OPC	DPC
15439877	2015-07-01 03:10:55.570857	SS7	1	1.1.1>2.2.2	2.2.2>1.1.1	0	0	21	26	2.2.2	1.1.1
15439878	2015-07-01 03:10:55.720285	SS7	1	1.1.1>2.2.2	1.1.1>2.2.2	0	0	21	26	1.1.1	2.2.2
15439879	2015-07-01 03:10:55.865857	SS7	1	1.1.1>2.2.2	1.1.1>2.2.2	0	0	21	26	1.1.1	2.2.2
15439983	2015-07-01 03:11:10.920285	SS7	1	1.1.1>2.2.2	2.2.2>1.1.1	0	0	21	26	2.2.2	1.1.1
15439984	2015-07-01 03:11:11.066142	SS7	1	1.1.1>2.2.2	1.1.1>2.2.2	0	0	21	26	1.1.1	2.2.2



Merge View

CALLID : 2237442 Go Back

Graph view Details view **Merge view** Decode Type : ITU ANSI Debug Summary (Export as CSV)

FRAMENO	Timestamp	Probename	Card	Linkname	Linkname Directional	TS1	TS2	CIC	SLS	OPC	DPC	ISUP Message Type
15439877	2015-07-01 03:10:55.570857	SS7	1	1.1.1>2.2.2	2.2.2>1.1.1	0	0	21	26	2.2.2	1.1.1	Initial Address
15439878	2015-07-01 03:10:55.720285	SS7	1	1.1.1>2.2.2	1.1.1>2.2.2	0	0	21	26	1.1.1	2.2.2	Address Complete
15439879	2015-07-01 03:10:55.865857	SS7	1	1.1.1>2.2.2	1.1.1>2.2.2	0	0	21	26	1.1.1	2.2.2	Answer
15439983	2015-07-01 03:11:10.920285	SS7	1	1.1.1>2.2.2	2.2.2>1.1.1	0	0	21	26	2.2.2	1.1.1	Release
15439984	2015-07-01 03:11:11.066142	SS7	1	1.1.1>2.2.2	1.1.1>2.2.2	0	0	21	26	1.1.1	2.2.2	Release Complete


```

sequenceDiagram
    participant 2.2.2
    participant 1.1.1
    2.2.2->>1.1.1: Initial Address
    1.1.1->>2.2.2: Address Complete
    1.1.1->>2.2.2: Answer
    2.2.2->>1.1.1: Release
    1.1.1->>2.2.2: Release Complete
    
```

```

Device1 Frame#0 at 03:10:55.570857 OK Len=46
Ethernet Frame Data
===== MTP2 Layer =====
BSN = .1010100 (84)
BIB = 1..... (1)
FSN = .0010011 (19)
FIB = 1..... (1)
LI = ..101001 MSU Format
===== MTP3 Layer =====
Service Indicator = ....0101 ISDN User Part
Priority Code = ..00.... Priority Code 0
Sub-service field = 10..... National Network
DPC = 1.1.1(00000001 00000001 00000001)
OPC = 2.2.2(00000010 00000010 00000010)
Signalling Link Selection = 00011010 (26)
===== ISUP Layer =====
Circuit Ident Code (CIC) = 00010101 ..000000 (21)
Message Type = 00000001 Initial Address
Mandatory Fixed Parameters
Nature Of Connection Ind. Parameter
Satellite indicator = .....00 No satellite circuit in the connection
Continuity check indicator = ...00.. Continuity check not required (default)
Echo control dev.ind(Natureofcon.Ind) = ...0.... Outgoing half echo control device not included
Forward Call Indicators Parameter
Incoming international call Indicator = .....0 Not an incoming international call
End-to-end method indicator = ....00. No end-to-end method available
Interworking Indicator = ...0... No interworking encountered
IAM segment.ind(ForwardCallInd) = ...0.... No indication
ISDN User Part Indicators
ISDN User Part Preferences Indicators = ..1..... ISDN User Part used all the way
ISDN User Part Access Indicators = 00..... ISDN User Part preferred all the way (default)
ISDN User Part Access Indicators = .....1 Originating Access ISDN
    
```

Customized Filters

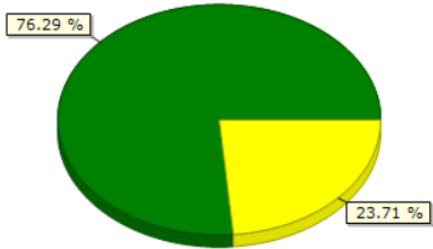
The screenshot displays a web interface for configuring filters. At the top, a 'Custom Filters' window is open, showing a profile named 'called number'. The filter is configured with the condition 'Called Number' equal to '5551234'. Below the filter configuration, there are tabs for 'Status', 'Data', 'Filters / Views', 'Reports', 'Alarms', and 'Admin'. The 'Filters / Views' tab is active, showing a 'CDR Data' table. The table has columns for 'LINKNAME(S)', 'Call Id', 'Probename', 'Called Number', and 'Starttime'. The 'Called Number' column is highlighted with a red box. The table contains several rows of call data, all with the same 'Called Number' value of '5551234'. A red arrow points from the 'Add Condition' button in the filter configuration to the 'Called Number' column in the table.

LINKNAME(S)	Call Id	Probename	Called Number	Starttime
Call Flow	591	SS1	5551234	2012-07-10 16:21:29
Call Flow	588	SS1	5551234	2012-07-10 16:21:29
Call Flow	590	SS1	5551234	2012-07-10 16:21:29
Call Flow	587	SS1	5551234	2012-07-10 16:21:29
Call Flow	586	SS1	5551234	2012-07-10 16:21:28
Call Flow	585	SS1	5551234	2012-07-10 16:21:28

- User can filter the data displayed by defining one or more Custom Filters profiles. Multiple Filter option allows users to filter the data by multiple filter profiles

SS7 Key Performance Indicators (KPI)

Call Completion (KPIs)



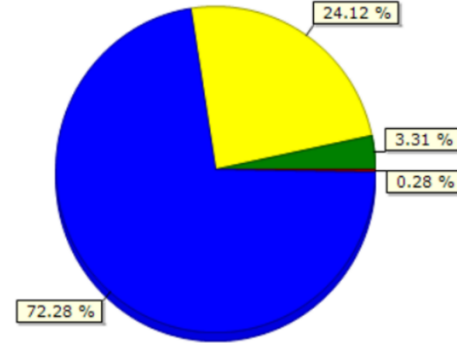
1300 ANSWERED CALLS 404 FAILED CALLS

Disposition Count (KPIs)



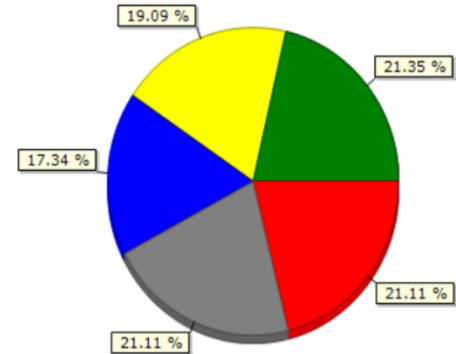
76.29 %

Billing Duration (Basic KPIs)



35 < 30 sec 255 30 sec - 2 Min
 764 2- 10 Min 3 10- 30 Min
 0 30- 60 Min 0 More than 1 hour

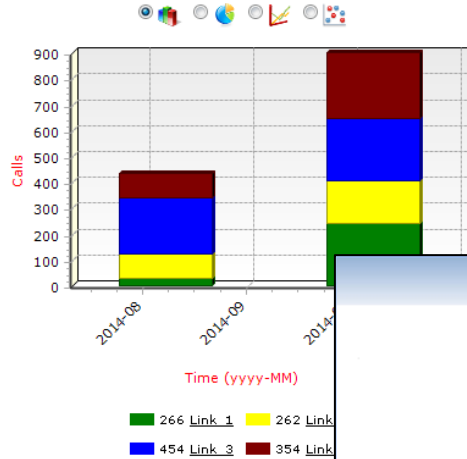
Link_MessageCounters (KPIs)



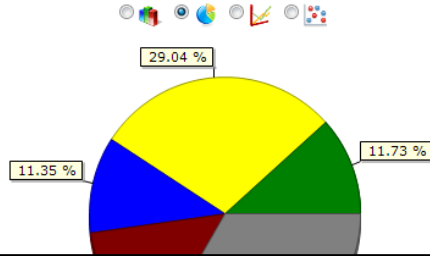
2344 Initial address 2096 Address complete
 1904 Answer 0 Connect
 2317 Release 2317 Release Complete
 0 Reset Circuit

GSM KPI

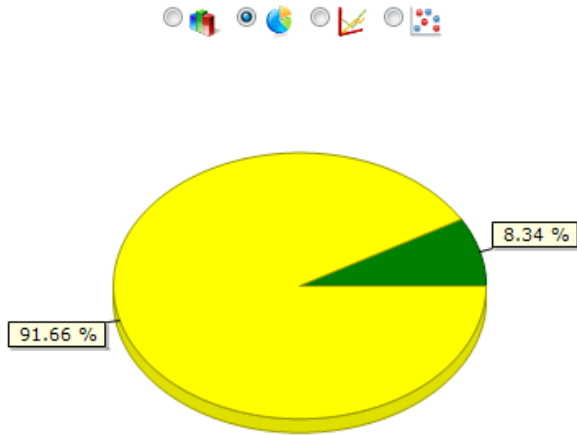
Total CDRs on different links (GSM KPIs)



Calltype counters on various links (GSM KPIs)

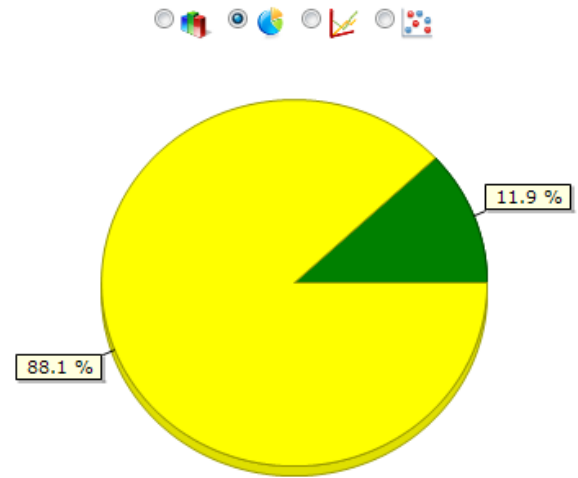


Location Update Success Rate (GSM KPIs)



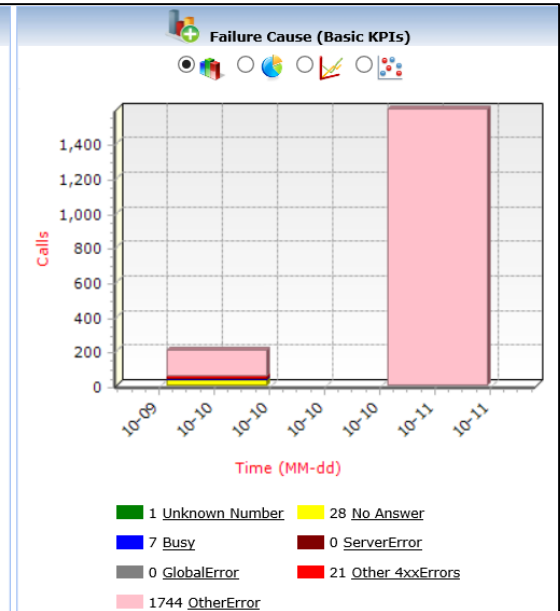
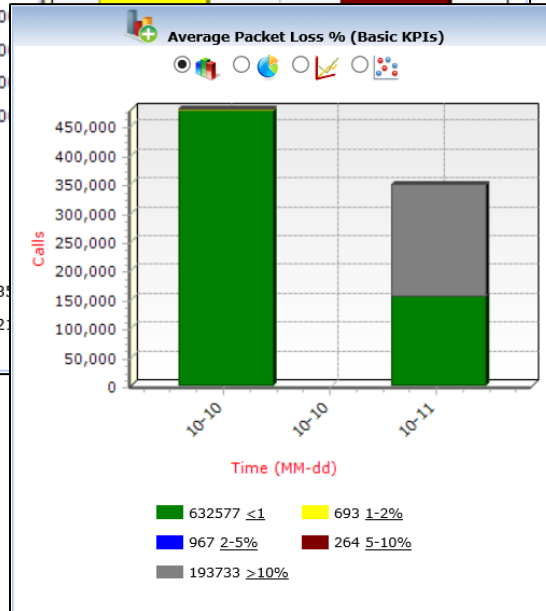
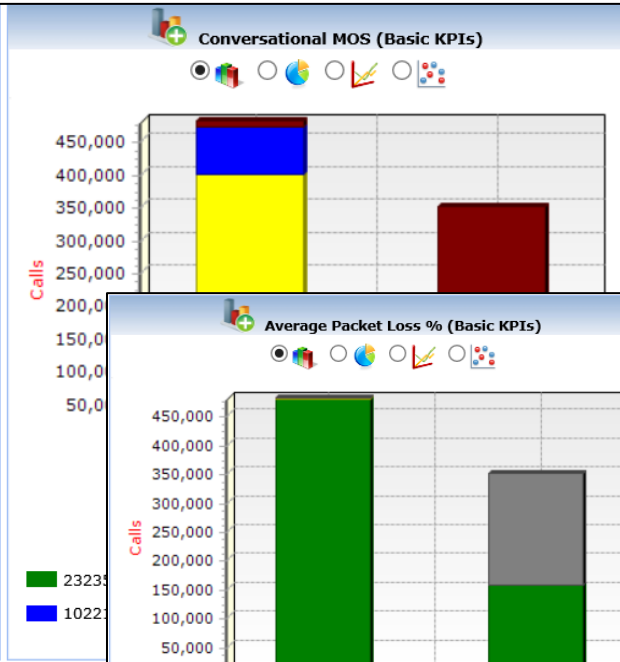
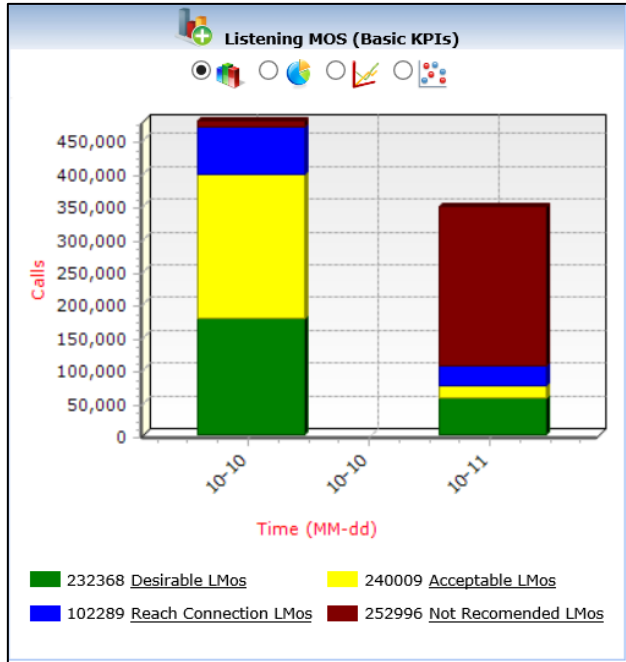
159 Location Update 1748 Non Location Update

Mobile Originated SMS (GSM KPIs)



227 Mobile Originated SMS 1680 Non Mobile Originated SMS

VoIP Key Performance Indicators (KPI)



Notifications / Alarm Alerts

Alerts

EMAIL



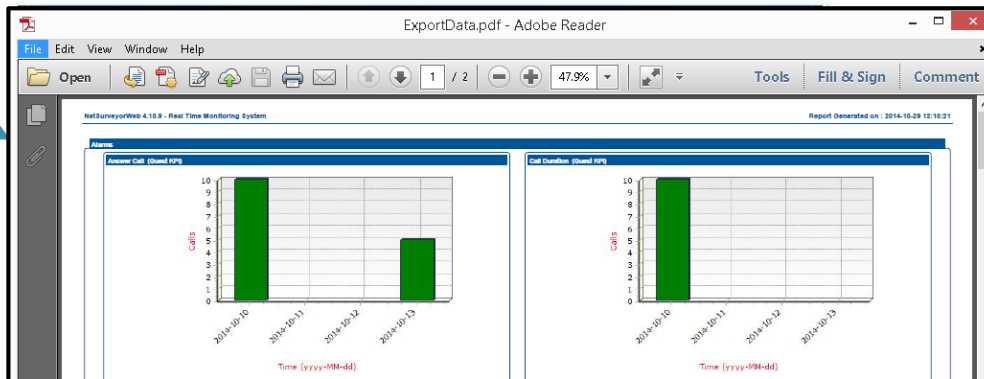
CDR View

Report View

GL Communications Inc.
Telecommunication Products and Consulting

NetSurveyorWeb 4.10.9 - Real Time Monitoring System Report Generated on : 2014-10-29 12:15:34

TRAFFICSUMID	CALLINGNUMBER	STARTTIME	DURATION	CALLID	FILENAME
15	008@192.168.1.142	2014-10-13 16:35:51.799	00:00:00.947	GLPG-10762604165937	
14	008@192.168.1.142	2014-10-13 16:20:51.799	00:00:00.947	GLPG-10762604165937	
13	008@192.168.1.142	2014-10-13 14:35:51.799	00:00:00.947	GLPG-10762604165937	
12	008@192.168.1.142	2014-10-13 14:10:51.799	00:00:00.947	GLPG-10762604165937	
11	008@192.168.1.142	2014-10-13 09:53:51.799	00:00:00.947	GLPG-10762604165937	



View Calls 156 testfilter Minor 2014-10-16 11:08:16 voip cdr alarm filter

Alert Types

- Email Alerts
- Visual Alarm
- Audible Alarm
- Set Alarm Severity
- Log to File

- Define real-time network conditions to generate alarms
- Define different actions based on the generated alarms

Alarm Configuration

The screenshot displays the 'Alarm Configuration' interface. At the top, there is a profile selection dropdown with 'p1' and buttons for 'Load Existing Profile', 'Delete', and 'Save'. A 'New Profile Name' field contains 'new alarm profile'. Below this, the 'Alarm Condition' section shows a 'Condition Name' of 'Billing Duration'. Two filters are listed: 'Billing Duration Secs' with a 'GreaterThan' operator and value '12', and 'Billing Duration Secs' with a 'LessThan' operator and value '15'. Both filters have an example value 'Ex: 40.02875'. The 'Alarm Type' section includes checkboxes for 'Visual', 'Audible', and 'Data', with 'Export' checked. 'Alarm Severity' is set to 'Minor'. The 'Email Alerts' section has a 'Send Email' checkbox checked. The 'Email To' field contains 'kpkulkarni@gl.com;syadala@gl.com', the 'Subject' is 'SS7 Alarms', and the 'Message' is 'This is SS7 alarm based on cic value'.

- Alarm Condition provides the options to set the filter conditions for the alarm
- Alarm Action provides options to set the actions to be taken when an alarm is detected such as the visual alarm type, audible alarm type, exporting data, set alarm severity, log to file, and generate email alerts

Alarm Status and Log

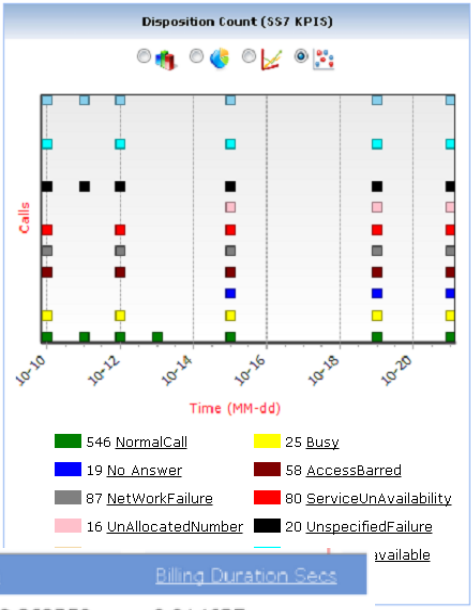
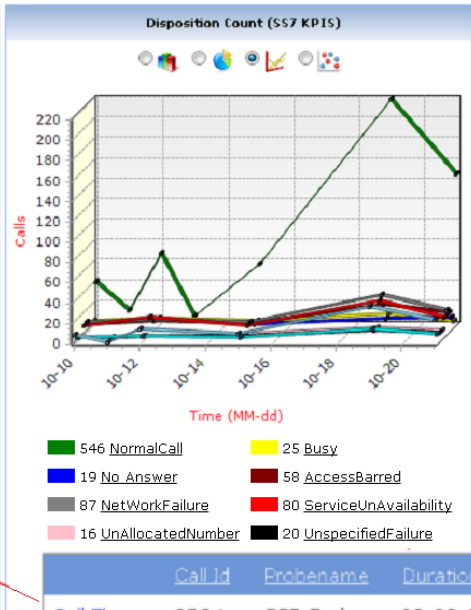
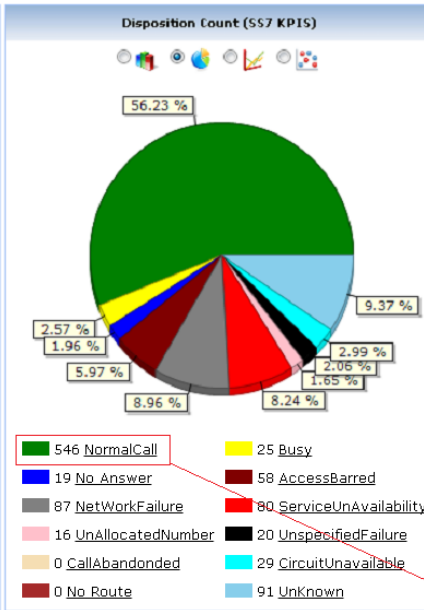
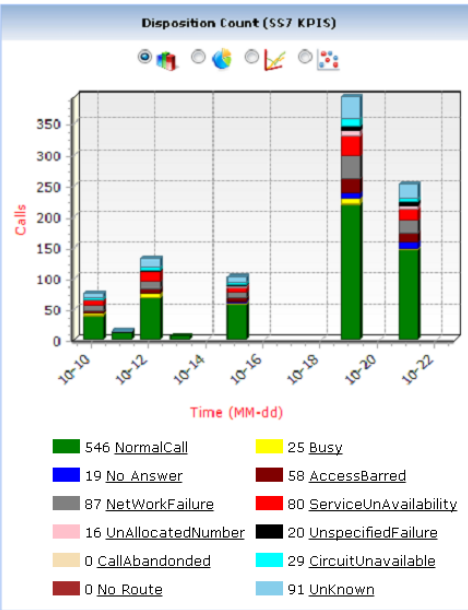
- Each alarm profile can be set against Date-Time, and Sampling Rate condition during which the selected Alarm Condition is said to be active
- For example, if the user selects 5 minutes as the sampling rate, NetSurveyorWeb™ will check for the alarm conditions every 5 minutes and triggers the actions such as a visible alert or sending an email alert as set in the alarm configuration

The screenshot displays the 'Alarm Status' and 'Alarm Log' interface. The 'Alarm Status' section includes a table with columns: Alarm Name, Alarm Type, Alarm Count, Time Filter, Action, Expected Time, and Delete. The 'Start' button is highlighted with a red box. The 'Alarm Log' section shows a table of alarm records with columns: ALARM_ID, ALARM_SEVERITY, LINE_NUMBER, MESSAGE, and TIMESTAMP.

Alarm Name	Alarm Type	Alarm Count	Time Filter	Action	Expected Time	Delete
new alarm profile	Minor	0	Now TO NoLimit ON All Days at every 1 Minute	Time Filter	Start	Delete

ALARM_ID	ALARM_SEVERITY	LINE_NUMBER	MESSAGE	TIMESTAMP
246	0	273		2012-07-02 16:10:48
246	0	272		2012-07-02 16:04:48
241	0	271		2012-07-02 15:58:51
214	0	243	This is SS7 alarm based on cic value	2012-06-29 11:35:51
214	0	242	This is SS7 alarm based on cic value	2012-06-29 11:10:51
214	0	241	This is SS7 alarm based on cic value	2012-06-29 11:07:51
214	0	224	This is SS7 alarm based on cic value	2012-06-28 17:50:40
214	0	223	This is SS7 alarm based on cic value	2012-06-28 17:18:40
214	0	222	This is SS7 alarm based on cic value	2012-06-28 17:09:40
214	0	221	This is SS7 alarm based on cic value	2012-06-28 17:07:18

Report Generation



	Call Id	Probename	Duration	Billing Duration Secs
Call Flow	8704	SS7-Probe	00:00:00.062750	0.014625
Call Flow	8703	SS7-Probe	00:00:00.062875	0.014625
Call Flow	8702	SS7-Probe	00:00:00.062750	0.014625
Call Flow	8701	SS7-Probe	00:00:00.062750	0.014625
Call Flow	8700	SS7-Probe	00:00:00.062875	0.014625
Call Flow	8699	SS7-Probe	00:61:00.048250	0.014625
Call Flow	8698	SS7-Probe	00:00:00.048250	0.014625

Probe / Loader Status

120 Secs

Probe Status

Probe Name	Probe Status	Last Data Received Timestamp	Delete		
✚ VOIP-SIP	OFFLINE	2014-10-15 12:24:59	Delete Probe		
✚ VOIP-SIP	OFFLINE	2014-10-15 08:04:52	Delete Probe		
✚ VOIP-PORTA	OFFLINE	2014-10-15 12:38:44			
▢ VOIP-PORTA	ONLINE	2014-10-15 12:50:45			
Probe Name	Probe IP Address	Probe Type	Last Online Confirmation	First Online Confirmation	Last Data Received
VOIP-PORTA	10.2.12.22	CDR	2014-10-15 12:50:47	2014-10-10 13:58:03	2014-10-15 12:50:45
✚ SS7-Probe	ONLINE		2014-10-15 12:50:44		
✚ SS7-Probe	ONLINE		2014-10-15 12:50:44		
✚ SS7_Probe6	ONLINE		2014-10-15 12:50:45		
✚ SS7_Probe6	OFFLINE		2014-10-14 14:56:31		
✚ SS7_Probe4	ONLINE		2014-10-15 12:50:45		
✚ SS7_Probe4	OFFLINE		2014-10-15 03:21:29		

LOADER STATUS : **ONLINE**

Name : **GLWEB**
Computer Name : **GLWEB**
Connection to Database : **Connected**
Log Enabled : **Yes**

Total Probes Connected : **4**
Unique Probes Connected : **2**
Summary Records Loaded : **1253355**
CDR Records Loaded : **162157**
VBA Records Loaded : **0**
Summary DB Insert errors : **0**
CDR DB Insert errors : **0**
VBA DB Insert errors : **0**
Current records per second : **76**
Average records per second : **71**
Maximum records per second : **14065**
Occurance of Overrun : **0**
Total Overruns : **0**
Total number of messages : **30**

Thank you