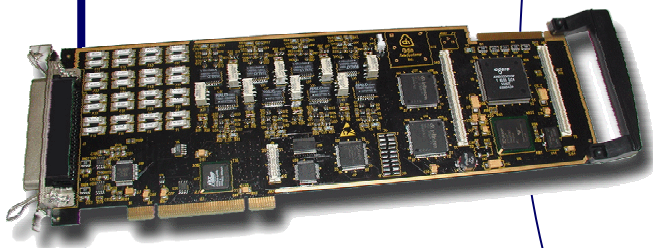


STINGA SS7

MONITOR & SIMULATOR

EXTREMELY COST-EFFICIENT
WORLD CLASS SUPPORT
VERY EASY TO USE
VERY PORTABLE



GAIN CUSTOMERS AND MONEY
BY IMPROVING YOUR NETWORKS AND PROJECTS

WHETHER YOU'RE INTO MOBILE, VOIP, PSTN, OR ISDN BUSINESS,
GET ON TOP OF YOUR PROBLEMS NOW!



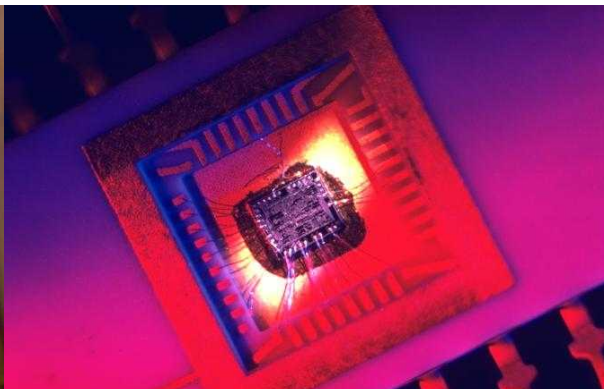
Your customers will notice



Odin TeleSystems Inc.

Open Telecom for Open Minds

STINGA SS7 APPLICATION AREAS

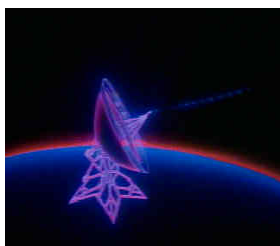


IMPROVED BUSINESS WITH LOW COST SOLUTIONS

- ◆ Helps you to satisfy your customers by improving Quality of Services in your network
- ◆ Helps you to get the most out of your existing investments in your network
- ◆ Generate reports for your telecommunication authorities
- ◆ Get your development and test projects finished on schedule
- ◆ Helps you to reduce Time To Market (TTM)
- ◆ Resolve your network problems before your customers even notice
- ◆ No 1st or 2nd line support anymore, you have 3rd line support directly by world class specialists
- ◆ Tailor made solutions in just a few days
- ◆ Training available by highly experienced and skilled protocol and signalling specialists

NETWORK MANAGEMENT

- ◆ Know the capabilities of your network
- ◆ Easily generate reports for your executives
- ◆ Resolve network issues easily
- ◆ Tune up your network for better performance
- ◆ Quality of Service & Network Performance analysis: From CDRs (call detail records) generated by the protocol analyser, it is easy to generate different statistics reports presenting QoS and NP parameters.



DEVELOPMENT & IMPLEMENTATION

- ◆ Supports prototyping
- ◆ Reduce the risks in your project by verifying your design on an early stage
- ◆ Generate traffic and test before your system is developed
- ◆ Verify your product's capabilities in an early stage

TESTING

- ◆ Supports both **black box and white box testing**
- ◆ Use it for component, function, integration, system, acceptance and conformance testing
- ◆ Free conformance test suits included with the system
- ◆ Easy to develop new test suits based on existing ones
- ◆ **ISUP Interconnect Testing:** Comprehensive conformance test suite included free of charge with the SS7 Simulator.
- ◆ **Regression Testing:** To build test suites is a breeze and enables the user to perform automated regression testing in a cost-efficient way.
- ◆ **Mobile Testing:** Full support for CAMEL, INAP, MAP and SMS enables the SS7 Simulator to be used for mobile testing against BSCs and MSC/VCRs.
- ◆ **IN Testing:** Easily build your own test suites with IN messages.
- ◆ **Load Testing:** The SS7 Simulator is able to generate about 200 calls per second per E1/T1/J1 line interface (dependent of the size of the messages to be sent).

FAULTFINDING & TROUBLESHOOTING

- ◆ Comprehensive protocol decoding of all user parts and protocol layers makes it possible to track and search for protocol irregularities. Recorded irregular messages may be regenerated with the protocol simulator. This is a very convenient way of reproducing errors in the network.

BILLING VERIFICATION

- ◆ Generating reports with "Billing Minutes" makes it possible to compare with reports from the Billing system.
- ◆ A specific customer or a specific operator can be reported.

STINGA SS7 PROTOCOL ANALYSIS & SIMULATION

KEY FEATURES

- ◆ SS7 protocol simulation over TDM and IP
- ◆ SS7 protocol analysis/monitoring over TDM
- ◆ PCMCIA and PCI based solutions
- ◆ Monitoring up to eight bi-directional E1/T1/J1 interfaces
- ◆ Multiple SS7 links per E1/T1/J1 interface
- ◆ Simulating up to eight SS7 links
- ◆ Audio and DTMF support
- ◆ Top-down QoS and Networks Performance analysis
- ◆ Conformance Test Suite framework included

OVERVIEW

Components

The cost-efficient STINGA SS7 test instruments from Utel Systems comprises the following components:

- ◆ One or more hardware cards (PCMCIA or PCI) with E1/T1/J1 line interfaces
- ◆ One or more software modules:
 - SS7 Monitor for protocol analysis
 - SS7 Simulator for protocol simulation
 - A Conformance Test Suite framework based on ITU-T Q.78x series recommendations are included with the SS7 Simulator product

SSP, STP and SCP simulation

The SS7 Simulator can be used to simulate against SSPs, STPs and SCPs.

Highly Portable

"All-in-one" concept: PCMCIA based instrument with many applications in one notebook. With these hardware and software components, highly portable protocol simulators and analysers, desktop protocol simulators and analysers, and rack-based monitoring probes are supported.

Cost-efficient Windows-based Test Instruments

All software and hardware components are running on standard notebook and desktop PCs with Windows, providing cost efficient IT service, fast learning curve, easy and cheap access to replacement units.

Same User Interfaces for all Products Reduce Costs

All test instruments from Utel Systems are based on the same windows user interface framework. The user do not have to focus on how to use different applications, meaning full focus on different protocols and network technologies in use. Same decoding format for monitor and simulator results in time efficient testing.

Simultaneously Protocol Simulation & Analysis

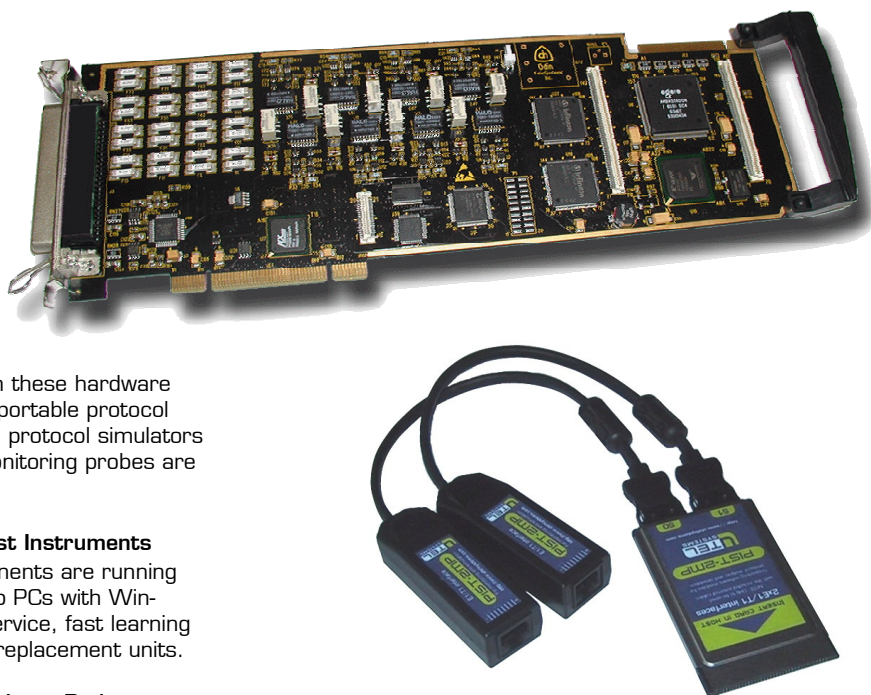
Different protocol simulators and analysers can easily be used together on the same PC simultaneously. It is possible to simulate on one side of a test object (i.e. a switch) and monitor on the "other" side. By installing two PCMCIA cards in one notebook, it is possible to use both cards to monitor two E1/T1/J1 interfaces or to use one card for protocol monitoring and the other for protocol simulation. A combination of SS7, SIP & SIGTRAN, BICC, V5 and ISDN PRA test instruments are supported.

Remote control for reduced costs

This feature enables efficient use of centralized expert competence and reduced travelling and training costs. The SS7 instrument can be controlled remotely over LAN/WAN (like a dial-up connection). E.g. it is possible to control two separate remote test instruments from one local PC using two B-channels on one ISDN Basic Access.

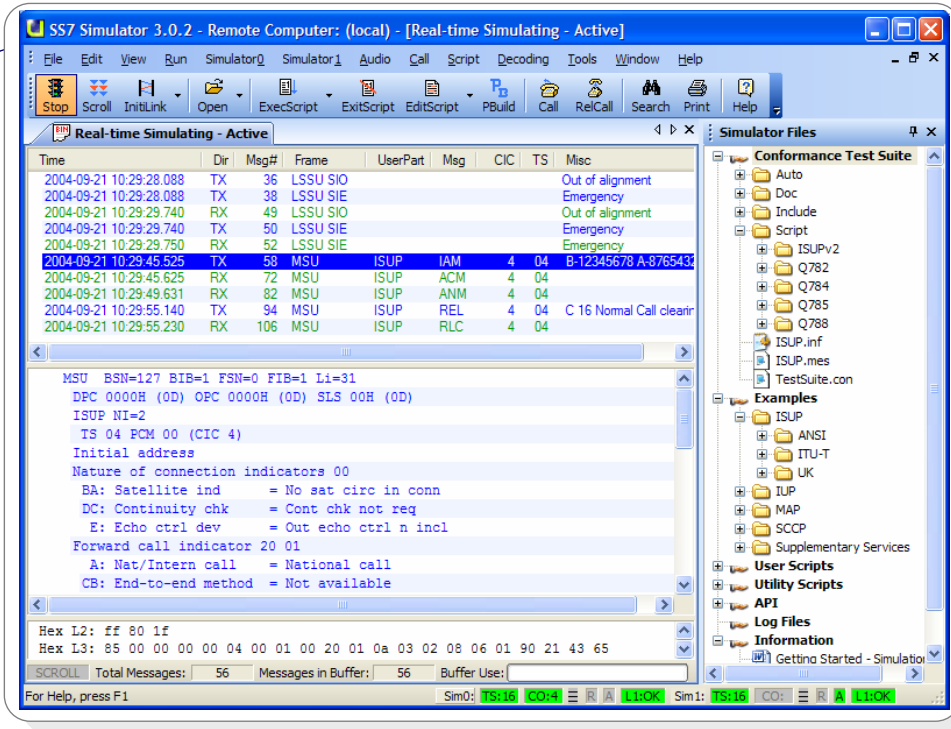
Open script format

Content and order of any message of information element can be changed. The simulator can therefore simulate any regular or irregular/incorrect protocol implementation and be adapted to new protocol elements.



The PCMCIA and PCI cards are supporting both SS7, BICC, V5 and ISDN PRA software modules for protocol analysis and simulation.

STINGA SS7 SIMULATOR - PROTOCOL SIMULATION



Easy to use Windows-based user interfaces.

Integration with Microsoft Word, Microsoft Excel and Adobe Acrobat Reader is supported.

Script files, parameter files, messages files and log files are easily accessed from the Simulator Files pane.

SS7 SIMULATOR - PROTOCOL SIMULATION

The SS7 protocol simulator is designed to be used by both skilled and unskilled users: From easy and quick testing by point-and-click to more advanced and flexible script-based testing.

Simulator Processes

The SS7 Simulator product has up to eight simulator processes that can simulate the same or different user parts. These simulators can be connected to the same or to different E1/T1/J1s, and to the same or different timeslots. E.g. one of the simulators can simulate ISUP on one E1, and the other simulator can simulate SCCP on another E1 simultaneously. All the simulator processes can be configured as Terminal (slave timing) and Net (master timing).

Automatic MTP2 and SMH

Layer 2 mechanisms are handled automatically. Point codes can be specified manually, or they are automatically picked up from the first incoming message. SLTM/SLTA handshaking is also automatically handled.

Call & Release Call guides

Call setup and termination are easily done from dialogs which guides the user through the generation of outgoing calls and termination of calls. These guides are combined with a Parameter Builder.

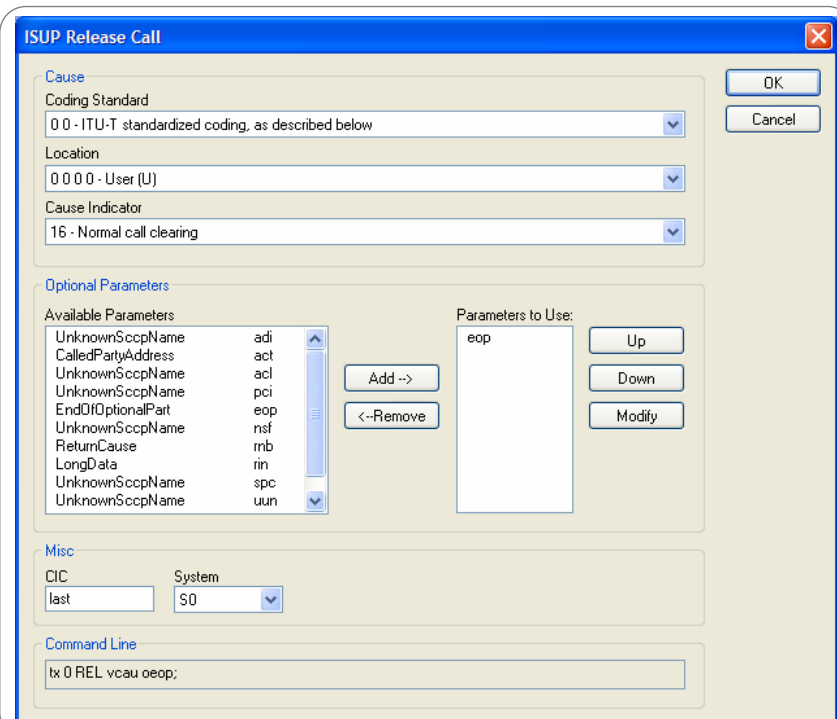
Protocols and User Parts

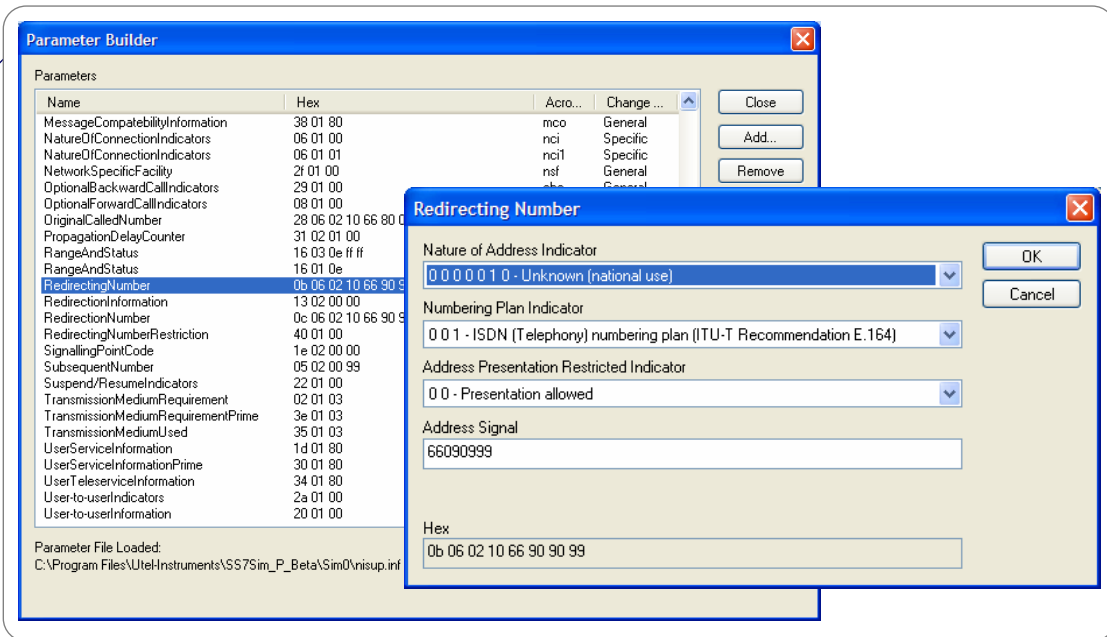
Simulation of different protocols

and user parts like MTP, ISUP, TUP/IUP, SCCP, TCAP, MAP, SMS, IN, MWI and CCBS are supported.

Audio and DTMF Generator/Detector

The DTMF Generator makes it possible to send single DTMF tones and to specify a series of digits to be sent as DTMF tones. When DTMF tones are sent/received, message are printed in the one-line decoding window. Received DTMF tones and audio is played in the PC-speakers for the PCMCIA solutions, and in the connected handset for the PCI solutions. This function is available both through the user interface and scripts.





Parameter Builder

A parameter builder simplifies the parameter building. The value of a parameter in a protocol like ISUP, SCCP, TCAP and CAMEL may be modified by dialogs reflecting the specification. For advanced or out of spec modifications, the user is able to make modifications on hex/bit level. The parameter builder supports protocols such as ISUP/SCCP (including national variants), TCAP and CAMEL.

Call Generation

In call generation mode, one simulator process is only sending messages while the other simulator process is only responding to incoming messages. The Call Generator is able to send about 200 calls per second per interface (dependent of the size of the messages to be sent). Sending with "shared flags" is also supported.

Script Language

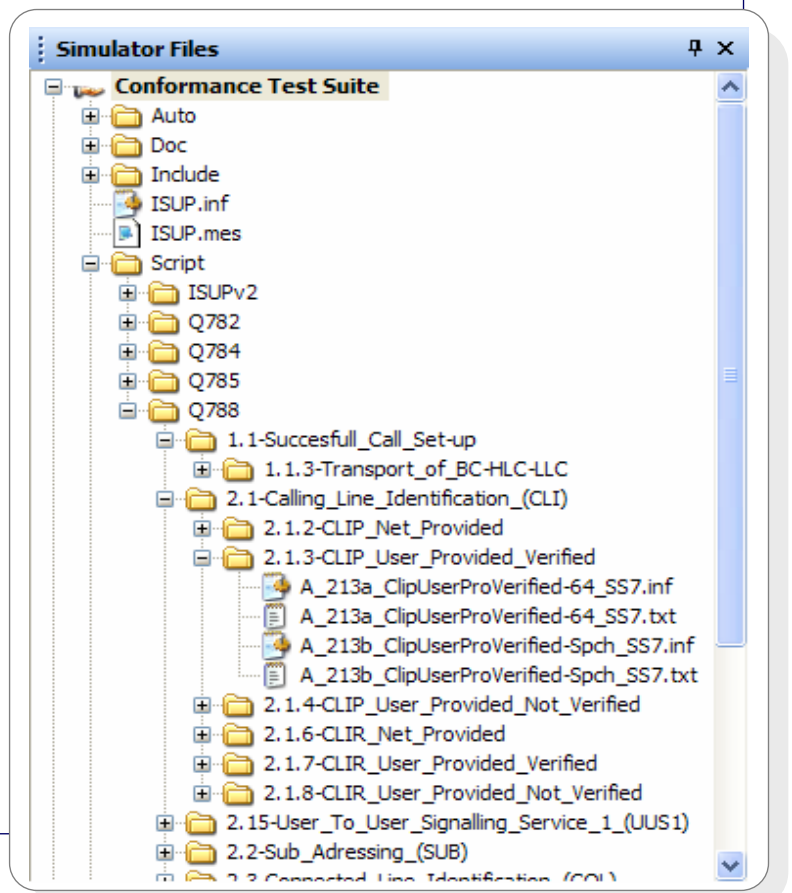
A powerful and flexible script language makes it possible to set up a required/desired (protocol/terminal) state, both normal and error states. There are no restrictions on neither format nor content of the messages transmitted/received. Arbitrary manipulation (down to bit level) of messages, parameters and message sequence on the different protocols are allowed. The test scripts may be started manually or they can be automatically triggered by incoming messages. DTMF scripting is supported including branching dependent on the received DTMF string. This is a very comprehensive feature for testing DTMF dependent services.

Remote Control

The simulator application is constructed to be remotely controlled over a IP connection (like a dial-up connection). The graphical user interface is installed on a local PC, while the simulator "agent" is running on a remote PC connected to the test object through the hardware.

Conformance Test Suite Framework

Repeated use of the simulator to perform similar tests is significantly alleviated if a library structure of test scripts is built. Examples of situations where this is recommended are interconnect testing between network operators as well as functional testing, regression testing and conformance testing of terminal equipment and/or network elements. A library of test scripts is available as a framework for the user for building a dedicated test environment. The library is based on the ITU-T Q.782 (MTP Level 3), Q.784 (Basic Call), Q.785 (Supplementary Services) and Q.788 recommendations.



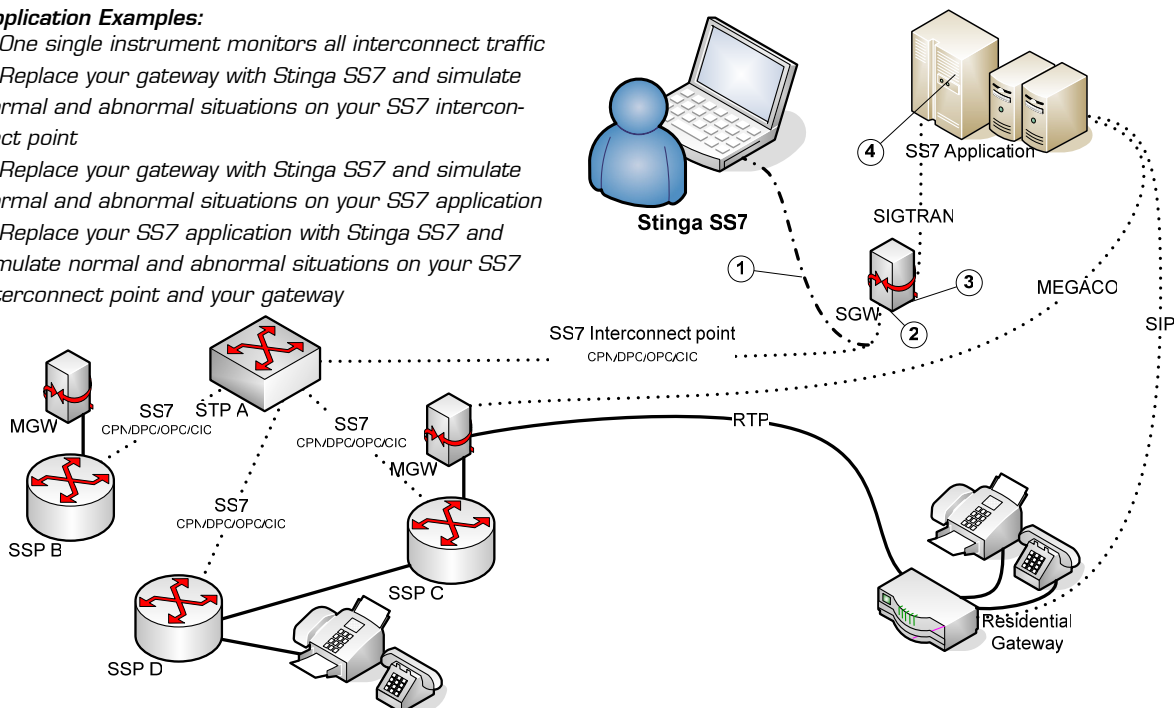
STINGA SS7 SIMULATOR - PROTOCOL SIMULATION

SS7oM3UA Features

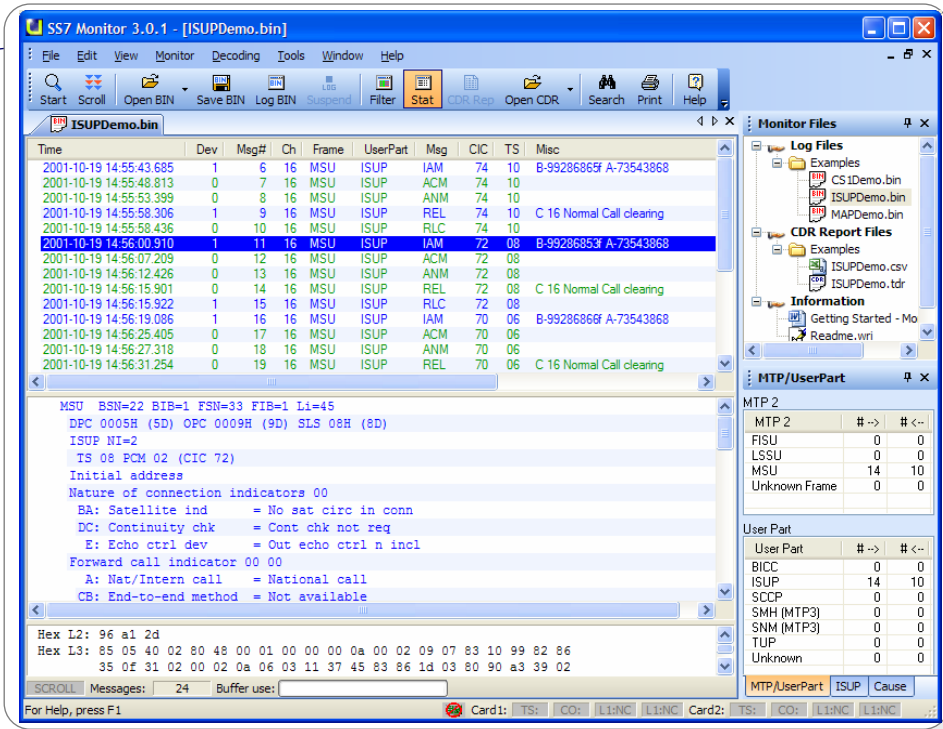
- ◆ SS7 simulation over IP (M3UA/SCTP)
- ◆ Simulating an SGP handling several ASPs
- ◆ Simulating one or more ASPs
- ◆ Multiple routing keys
- ◆ Scriptable handling of M3UA endpoints
- ◆ Scriptable handling of SCTP associations
- ◆ Multiple SCTP associations
- ◆ Multiple SCTP streams
- ◆ Multihoming
- ◆ CRC-32c and Adler-32 checksum support
- ◆ Script-based testing
- ◆ Script and Parameter Builder
- ◆ Automatic answering incoming messages

Application Examples:

- 1 One single instrument monitors all interconnect traffic
- 2 Replace your gateway with Stinga SS7 and simulate normal and abnormal situations on your SS7 interconnect point
- 3 Replace your gateway with Stinga SS7 and simulate normal and abnormal situations on your SS7 application
- 4 Replace your SS7 application with Stinga SS7 and simulate normal and abnormal situations on your SS7 interconnect point and your gateway



STINGA SS7 MONITOR - PROTOCOL ANALYSIS



Easy to use Windows-based user interfaces.

Integration with Microsoft Word, Microsoft Excel and Adobe Acrobat Reader is supported.

Log files and CDR Report files are easily accessed from the Monitor Files pane.

Real-time statistics are displayed in the different statistics panes.

SS7 MONITOR - PROTOCOL ANALYSIS

Real-Time Monitoring

It is possible to monitor two E1/T1/J1 interfaces with one notebook, and up to eight E1/T1/J1 interfaces with the PCI based desktop/rack solutions. Up to five timeslots can be monitored simultaneously for each line interface. More E1/T1/J1 interfaces can be monitored with the notebook solution by using a 3rd-party E1/T1/J1 concentrator.

Real-Time Decoding

Comprehensive real-time decoding of MTP, ISUP, TUP, SCCP, TCAP, INAP, MAP, CAMEL, CCBS and MWI is provided. Customer configured one-line decoding, detailed decoding and hex information are displayed. Physical link status is displayed with indicators in the status bar and layer 1 alarms are printed in the one-line decoding window.

Filter Mechanisms

Different filter mechanisms, from general filters to advanced user specified filters, are supported. The general filters covers User Part, Point Code, SCCP Subsystem number, CRC, PCR, FISU and LSSU filtering. A Call Trace filter where it is possible to specify a number of Calling/Called Party/IMSI numbers is also available. Specific ISUP and TUP messages can be filtered by the Message filter. A CIC filter where it is possible to specify a range of CICs are also included in the Message filter. Finally there is a filter mechanism where the user can specify advanced pass/stop filters. These filters can filter on a specific byte string in a specific message in a specific user part. The advanced filters can also be combined with the scheduler.

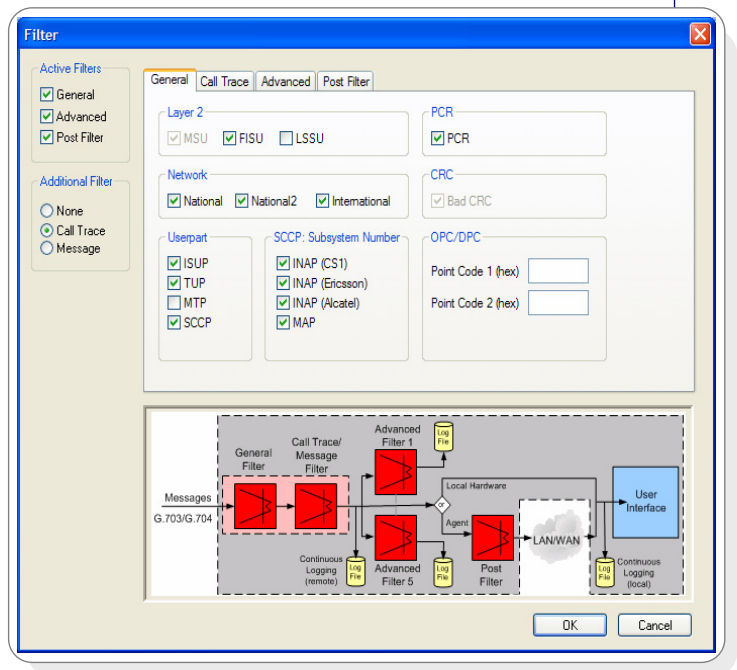
General filters like User Part, Point Codes, SCCP Subsystem Number, CRC, PCR, FISU and LSSU are available in the SS7 Monitor. Call Trace and Message filters are also included in addition to an advanced user specified filter mechanism.

Scheduler

The time to start/stop monitoring can be scheduled from within the monitor application. Each schedule can be connected to a number of pre-defined filters so that only desired messages are captured. Different messages can be stored to different files (e.g. IAMs to one file and RLC to another file).

Search

It is possible to search for information in all captured messages, and it is also possible to specify which columns in One-Line Decoding to search.



STINGA SS7 MONITOR - PROTOCOL ANALYSIS

Audio Monitoring

It is possible to listen to a specific user channel. With the PCMCIA solutions, the audio is played through the PC-speakers using the built-in sound card. With the PCI solutions, an on-board codec is used to play the audio in a connected head set.

Decode Single Message

With the Decode Single Message feature, it is possible to import protocol information on hex format to get it detailed decoded. This protocol information could be some messages captured by a 3rd-party analyser that you for example have received by e-mail.

Point Code Editor

A Point Code Editor is included to let the user add descriptions to point codes. Descriptions for a large amount of international point codes are included – descriptions for national point codes must be added by the user. Both hex and ITU formats are supported. It is possible to specify point codes for ITU, ANSI, TTC and Chinese ITU.

Call Trace View

It is also possible to present captured messages in a Call Trace view to group messages related to the same connection. In this Call Trace view, CDRs (call detail records) are generated on the basis of the captured messages. These CDRs can be saved to file for later CDR Statistics Report generation, or exported to Microsoft Excel for further analysis.

Remote Control

The monitor application is constructed to be remotely controlled over a IP connection (like a dial-up connection). The graphical user interface is installed on a local PC, while the monitor "agent" is running on a remote PC connected to the tapping point through the hardware.

In Call Trace view all messages related to the same connection/call are grouped together.

The CDRs (call detail records) generated in this Call Trace view mode can be exported to Microsoft Excel in CSV format for further analysis.

Cause	Descr	# -->	# <--
1	Unallocated number	28	0
16	Normal Call clearing	12	153
17	User busy	1	0
28	Address incomplete	8	0
31	Unspecified	344	0
34	No circuit available	10	0
41	Temporary failure	113	0
99	Parameter non-existent discard	0	63
102	Recovery on timer expiry	1	1
111	Unspecified	1	0
127	Unspecified	2	0

Real-Time and File Statistics

- ◆ MTP including user parts
 - ◆ ISUP messages and cause values
 - ◆ TCAP messages and problems
 - ◆ CAP operations and errors
 - ◆ MAP operations and errors
 - ◆ IN operations and errors
- TUP, SCCP, SMH and SNM

The statistics counters are presented separately for each monitored direction and for each view. The statistics can be saved to a file later analysis.

The screenshot shows the SS7 Monitor 3.0.1 application window. The main window displays a list of messages with columns for Time, UserPart, Msg, CIC, TS, and Misc. Below the list, a detailed view of a message is shown, including fields like DPC, ISUP NI, TS, and Initial address. The bottom of the window shows a hex dump and a statistics table for ISUP messages.

Msg	# -->	# <--
ACM	5	0
ANM	5	0
APM	0	0
BLA	0	0
BLO	0	0
CCR	0	0
CFN	0	0
CGB	0	0
CGBA	0	0
CGU	0	0
CGUA	0	0

STINGA SS7 MONITOR - PROTOCOL ANALYSIS

Top-down QoS and Network Performance Analysis

A monitored signalling sequence can be stored to file (manually or automatically) for later analysis. These files can be used to generate statistical CDR reports for QoS and Network Performance analysis. "Individual CDRs" report, "B-number" report and different "OPC/DPC" reports are available. These reports contain parameters like the ones defined by ITU-T E.422, in addition to answered calls (ASR), subscriber busy (SSB), circuit group congestion (BGC), response time (rt), wait time (wt), hold time (ht) and others. These statistical reports makes the basis for top-down network analysis. In the

sample B-number report to the right, you can see that a large percent of the calls are reported as **Call Failure (CFL)**. Something might be wrong related to these numbers series and further protocol analysis might be necessary.

This is an example of a B-number report presenting the statistics for all captured data grouped on the first three digits in the B-number. The number of digits to group on is specified by the user.

bnr	Counted	ASR	SSB	BGC	SEC	CFL	RSC	UNN	ADI	CLF	LOS	rt	wt	wna	ct	ht	D_1	D_2_1	D_2_2	D_3	
011	20	0	0	0	0	0	0	100	0	0	0	0.0	0.0	0.0	0.0	0.0	0.6	0	0	100	0
012	7	14	0	0	0	85	0	0	0	0	0	11.5	22.0	2.0	289.0	56.4	14	0	0	71	14
013	21	4	0	0	0	95	0	0	0	0	0	14.9	10.0	14.0	16.6	4	0	0	0	95	0
014	10	10	0	0	0	70	0	0	0	20	0	13.5	10.0	10.5	56.0	23.4	10	0	0	90	0
015	31	6	3	0	0	90	0	0	0	0	0	6.4	15.5	6.0	48.0	12.6	6	3	29	25	0
016	22	18	0	0	0	81	0	0	0	0	0	5.4	13.8	5.2	38.0	17.1	18	0	0	50	27
017	56	10	0	0	0	89	0	0	0	0	0	10.6	13.3	6.7	67.5	20.2	10	0	0	75	5
018	13	0	0	0	0	100	0	0	0	0	0	15.7	0.0	0.0	0.0	16.2	0	0	0	100	0
019	40	7	0	0	0	85	0	0	2	5	0	3.5	13.7	10.5	41.3	10.9	7	0	0	60	22
020	1	0	0	0	0	0	0	0	0	100	0	7.0	0.0	16.0	0.0	23.0	0	0	0	100	0
021	2	50	0	0	0	0	0	50	0	0	0	2.0	55.0	0.0	137.0	98.0	50	0	0	50	0
022	77	10	0	0	0	83	0	0	2	3	0	12.5	5.9	8.6	80.3	24.1	10	0	0	63	22
023	19	10	0	0	0	57	0	31	0	0	0	6.6	8.0	10.7	48.5	16.1	10	0	0	57	5
024	2	0	0	0	0	100	0	0	0	0	0	7.5	0.0	5.5	13.0	0.0	0	0	0	100	0
026	4	0	0	0	0	75	0	0	0	25	0	15.0	0.0	19.0	0.0	20.3	0	0	0	100	0
027	7	28	0	28	0	28	0	0	0	14	0	5.3	20.5	6.0	37.5	26.4	28	0	0	14	57
031	27	3	0	0	0	88	0	0	7	0	0	13.8	9.0	6.8	96.0	19.4	3	0	0	81	14
032	6	0	0	0	0	100	0	0	0	0	0	14.7	0.0	0.0	0.0	16.2	0	0	0	0	0
033	35	0	0	0	0	97	0	0	0	2	0	12.9	0.0	3.0	0.0	14.9	0	0	0	77	8
034	36	0	0	0	0	88	0	0	0	11	0	10.3	0.0	11.5	0.0	18.6	0	0	0	44	55
035	6	0	0	0	0	100	0	0	0	0	0	10.5	0.0	2.8	0.0	13.8	0	0	0	33	66
036	1	0	0	0	0	100	0	0	0	0	0	8.0	0.0	8.0	0.0	17.0	0	0	0	100	0
037	1	0	0	0	0	100	0	0	0	0	0	15.0	0.0	0.0	0.0	15.0	0	0	0	0	0
039	56	17	0	14	0	48	0	1	3	14	0	11.4	12.1	8.8	66.5	28.0	17	0	0	62	14
041	7	0	0	0	0	100	0	0	0	0	0	15.4	0.0	0.0	0.0	15.7	0	0	0	100	0
044	57	47	0	0	0	31	0	0	1	19	0	7.3	11.4	16.2	58.0	44.0	47	0	0	50	0
047	1	100	0	0	0	0	0	0	0	0	0	8.0	1.0	0.0	91.0	10.0	100	0	0	0	0
049	7	42	0	0	0	57	0	0	0	0	0	14.0	12.0	0.0	24.0	30.6	42	0	0	57	0
051	3	0	0	0	0	100	0	0	0	0	0	7.7	0.0	7.7	0.0	16.3	0	0	0	0	100
061	1	0	0	0	0	100	0	0	0	0	0	7.0	1.0	1.0	0.0	11.0	0	0	0	0	100
062	2	0	0	0	0	100	0	0	0	0	0	7.5	1.0	1.0	0.0	10.0	0	0	0	0	100
077	2	0	0	0	0	100	0	0	0	0	0	7.5	1.5	1.5	0.0	12.0	0	0	0	0	100
081	18	11	0	0	0	83	0	0	0	5	0	10.8	16.0	2.6	83.5	23.4	11	0	0	50	38
082	6	0	0	0	0	100	0	0	0	0	0	15.7	0.0	0.0	0.0	15.8	0	0	0	100	0

CDR Search and Filtering Engine

An advanced search and filtering engine is combined with the CDR Statistics Report feature. With this functionality, it is possible to create a filter specification where a number of filters based on a field, an operation and a value are combined with logical AND/OR operations. These filters are easily generated by selecting

fields and operations from drop-down lists. Advanced user may write the filters directly in the expression fields.

This Filter Specification sample is demonstrating how you can filter on specific fields using the different operations available. A number of filters can be combined with logical AND/OR operators.

CDR Statistics Report

Report Type: Individual CDRs | Digits: 3

Filter Specification

Expression: wt > 50 (And)

Sub Expression: [wt > 50]

Main Expression: [(bnr like "473704") AND (anr like "4422")]

STINGA SS7 PROTOCOL ANALYSIS & SIMULATION

TECHNICAL SPECIFICATIONS

Hardware & Software Requirements

- ◆ Software modules running on Windows Vista/XP/2003 Server/2000.
- ◆ PCMCIA cards (Type II) with two dongles with built-in amplifiers and RJ45 connectors – one dongle for each E1/T1/J1 line interface.
- ◆ Half or full length PCI cards with up to eight E1/T1/J1 interfaces. Special monitoring cards with sixteen receivers (no transmitters) are also available - typically used in monitoring probes for monitoring up to eight bi-directional E1/T1/J1 interfaces.

Protocols Supported

- ◆ E1/T1/J1 interfaces
 - ◆ E1/T1/J1 alarm signals and link status
 - ◆ MTP (ITU, ANSI, Japan TTC, Chinese ITU)
- ◆ Ethernet interfaces
 - ◆ Ethernet
 - ◆ IP
 - ◆ SIGTRAN (SCTP, M3UA)
- ◆ ISUP (ITU, ANSI, Japan TTC, UK)
- ◆ BICC (only STINGA SS7 Monitor)
- ◆ TUP (ITU, Chinese ITU, SSUTR2, IUP)
- ◆ SCCP (ITU, ANSI, Japan TTC, Chinese ITU)
- ◆ TCAP (ITU, ANSI)
- ◆ INAP (Core INAP, INAP CS1, INAP CS2, Alcatel Core INAP, Ericsson Core INAP, Siemens INAP CS1+/CS2 (SINAP5 & SINAP7), Alcatel INAP CS1+, Ericsson INAP CS1+, British Telecom INAP CS1+, Ericsson Light Weight INAP)
- ◆ CAP
- ◆ MAP
- ◆ SMS
- ◆ IS-41/ANSI-41, IS-826, IS-848
- ◆ GSM/EDGE and CDMA A-interface (monitor only)
- ◆ Supplementary Services
- ◆ Other protocols and national protocol variants are implemented on customer requests.

Cables

Cables included with the SS7 test instruments:

- ◆ One 1:1 twisted pair cable with RJ45 connectors for simulation (TE).
- ◆ One twisted pair crossover cable with RJ45 connectors for simulation (NT).
- ◆ One Y-cable with RJ45 connectors for monitoring.

Options

Optional products available for the SS7 instruments:

- ◆ Impedance Converter: A small external adapter for 75 Ohm dual coax (BNC or Type 1.6/5.6) termination to 120 Ohm twisted pair RJ45 termination. No AC power or batteries required.
- ◆ T-Attenuator: A small external adapter for tapping into a twisted pair signalling link for non-intrusive monitoring. RJ45 connectors. No AC power or batteries required.
- ◆ Amplifier: A external switchable 0, 20 or 30 dB amplifier with both 75 Ohm coax (Type 1.6/5.6), 120 Ohm twisted pair (RJ45) and terminal block connectors, is available for compensating for possible attenuation on the cross coupling device (tapping point). High impedance mode is also supported. Battery eliminator is included.

Related Products

- ◆ STINGA BICC Monitor & Simulator
- ◆ STINGA IRI Analyser
- ◆ STINGA ISDN PRA Monitor & Simulator
- ◆ STINGA ISDN BA Monitor & Simulator
- ◆ STINGA MOBILE Monitor
- ◆ STINGA NGN Monitor
- ◆ STINGA SCTP Simulator
- ◆ STINGA SIP Simulator
- ◆ STINGA V5 Monitor & Simulator
- ◆ E1/T1/J1 support for Wireshark (Ethereal)

Note: The **BICC** products includes all the functionality of the SS7 products, in addition to support for the BICC protocol. The SS7 test instruments can easily be upgraded to the BICC products.

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