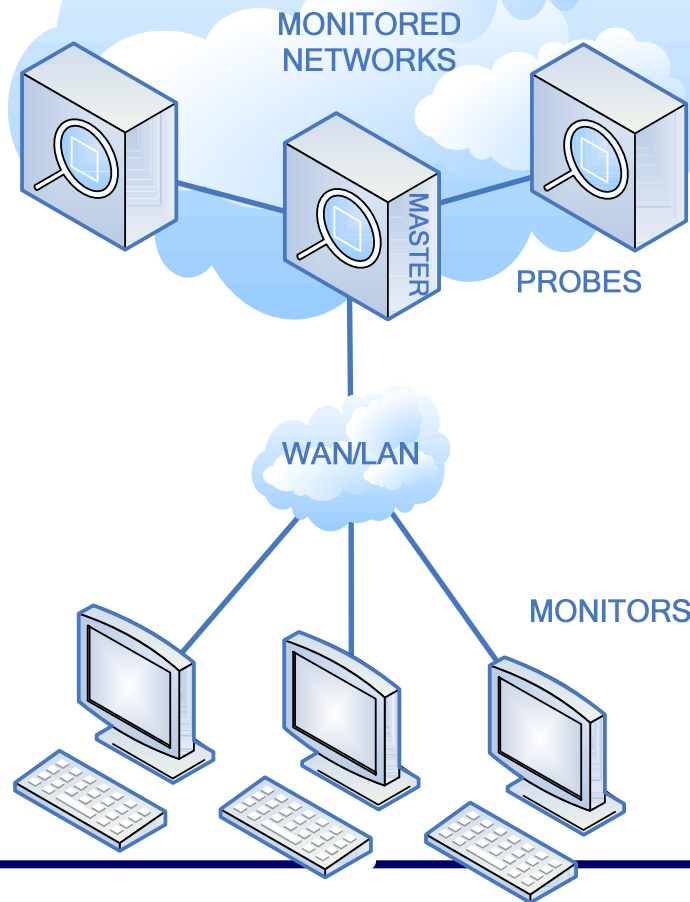


STINGA

MONITORING SYSTEM

CENTRALISED NETWORK MONITORING DISTRIBUTED MONITORING PROBES



TRADITIONAL, FIXED MOBILE, CONVERGED AND
NEXT GENERATION NETWORKS



Your customers will notice

STINGA MONITORING SYSTEM FEATURES & BENEFITS

STINGA Monitoring System is a complete solution for network monitoring. For network providers this is the perfect tool for network planning, delivering Quality of Services (QoS), and ensuring the network is delivering on its premises.

STINGA Monitoring System enables integration across TDM and Ethernet interfaces, analysis of different protocols, and correlation of data. It gives network providers a complete overview of their networks. This information are useful in terms of becoming more proactive and gain better control over own networks. Also, being a centralized solution the monitoring system makes it easier to do network planning, maintenance and administration.

Together with STINGA Report Generator it is easy to generate reports and statistics for executives, a convenient way to receive information from end-to-end points, and work as a basis for network planning.

Scalable

STINGA Monitoring System is flexible and scalable. It ranges from basic systems with one probe to more advanced systems with many distributed probes. It is therefore perfect for a growing or changing business.

Utel Systems also provide tailored solutions to better fit our customers needs and requirements.

Correlating data

Raw and detailed network data are sent from each probe to a master probe (Central Server) where all data is correlated. Correlation is an effective way to get an overview of network data across multiple networks, interfaces, and geographical locations. Making it easier for network providers to get a holistic overview, analyze network performance and do network planning.

Cost-effective

All STINGA products are easy-to-use and are based on the same Windows user interface framework. Switching between products is easy, which saves time and reduces training costs.

BENEFITS—improve your business

- ◆ Cost-efficient solutions
- ◆ Real-time monitoring, decoding, and statistics
- ◆ Easy-to-use Windows based user interface framework
- ◆ Improve Quality of Service in your network
- ◆ Provide important information about network behavior and performance
- ◆ Generate Call Detail Records (CDR) for executives. Generate different statistical reports presenting Network Performance and QoS parameters.
- ◆ Make network management and planning easier
- ◆ Identify bottlenecks in your network
- ◆ Resolve your network problems easily, before your customers even notice
- ◆ Expert support offered online by skilled telecom engineers.
- ◆ Scalable and flexible solutions

- ◆ Tailored and custom solutions in just a few days
- ◆ Training available by highly experienced and skilled protocol and signalling specialists
- ◆ Easier to track and search for protocol irregularities
- Billing and accuracy verification. Use CDRs collected 24/7 as evidence in case of disagreement with customers, authorities and operators.

KEY FEATURES

- **Centralized 24/7 network monitoring**
- **Distributed monitoring probes**
- **Multi-user system**
- **Real-time protocol monitoring and analysis**
- **xDR generation including all protocol signalling**
- **xDR correlation**
- **Historical search**
- **Individual filtering**
- **Client/server architecture**
- **Multiple TDM and Ethernet interfaces per probe**
- **Linux-based monitoring probes**
- **Windows-based monitoring clients**

OVERVIEW

Components

The cost-efficient STINGA Monitoring System from Utel Systems comprises the following components related to SS7, SIP, Mobile & ISDN monitoring:

- Linux-based monitoring probes with multiple E1/T1/J1 and/or Ethernet interfaces
- Real-time protocol monitoring modules
- CDR builders
- CDR correlators
- Search engines
- Windows-based client applications

Modular system

- Expand your system as your business grows
- No need to throw away your earlier investments when your network expands or new protocols need to be monitored

Centralized operation

- Reduced network maintenance cost
- Reduced error detection time
- Efficient use of expert personnel at central site
- Central maintenance and administration

Filtering support for real time monitoring

- Fast and easy filtering and grouping of data

STINGA MONITORING SYSTEM BUILDING A SYSTEM

BUILD AS YOUR NEEDS GROW

Figure A shows a fairly basic system with only one monitoring probe with ISUP and TCAP CDR builders, and an SS7 real-time monitoring module. The probe is connected to the SS7 network through one or more E1/T1/J1 interfaces. The client is a Windows-based STINGA SS7 Monitor connected to the probe through LAN/WAN.

THE MULTI PROBE MULTI USER SYSTEM

Figure B shows a multi probe system based on two monitoring probes - one for SIP monitoring, and one for SS7 monitoring. The SS7 probe is connected to the SS7 network through one or more E1/T1/J1 interfaces, and may be equipped with ISUP and TCAP CDR builders, and an SS7 real-time monitoring module. The SIP probe is connected to the SIP network through an Ethernet interface, and may be equipped with SIP CDR builder and/or SIP real-time monitoring module. All CDRs are passed to the master probe for storage and correlation. Real-time protocol messages are passed directly to the monitoring clients through the master probe. A STINGA SS7 Monitor and a STINGA NGN Monitor makes this system a multi-user system, presenting both real time-data and historical data from the probes to the users.

MORE ADVANCED SYSTEM

Figure C shows a more advanced system based on three monitoring probes. The probe to the left contains CDR builders and real-time monitoring modules for both SS7 and ISDN PRI. These CDR builders pass the CDRs from the probes to the master probe, which in turn are correlating the CDRs with CDRs from other probes. The probe to the right contains CDR builders and real-

time monitoring modules for ISDN PRI and SIP, and the CDRs are passed to the master probe as for the SS7/PRI probe. A STINGA SS7 Monitor, a STINGA NGN Monitor and a STINGA ISDN PRA Monitor presents both real-time data and historical data from the probes to the users.

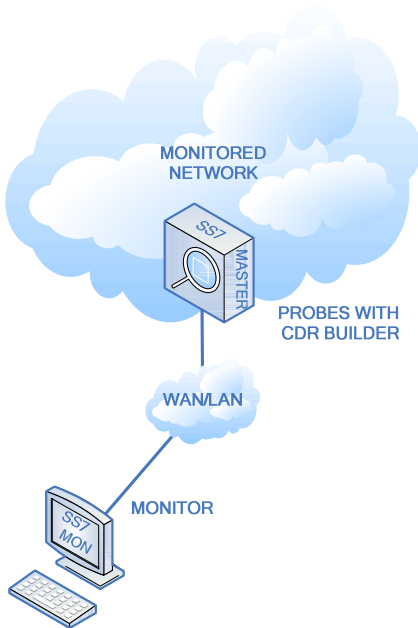
The master probe is also operating as a standard monitoring probe, in this case monitoring SS7 and SIP. CDR correlators for SS7, SIP and ISDN PRI may be installed on the master probe to provide a call trace view for the users. In this way it is very easy to understand and see what is going on in converged networks. In addition, monitoring probes for numerous mobile protocols and interfaces are available.

SYSTEM OPERATION

The STINGA Monitoring System meets the requirements for a centralized monitoring solution. It is based on a client/server architecture, where the master probe is the server. The master probe is able to manage a number of probes situated at different sites in the monitored networks. Probes can easily be stacked where a large number of E1/T1/J1 and Ethernet interfaces need to be monitored. This is an excellent basis for building a complete link monitoring system as your needs grow.

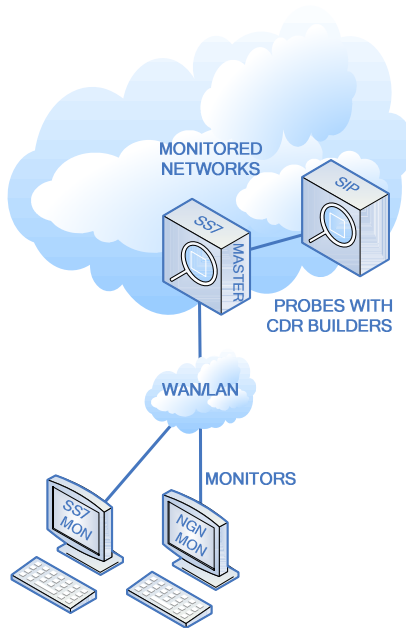
Configuration data (e.g. filter setup) is sent from the clients to the probes via the master probe. Data from the probes to the monitors are sent via the master probe. All CDRs are stored on the master probe, and can be accessed by the monitor client via a file server. All CDRs are stored on ASCII files in a tagged data format, and libraries are available for manipulation of the CDR data.

Fig. A



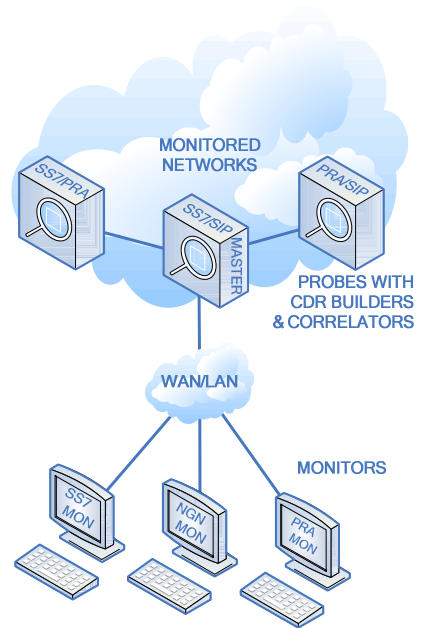
Basic system

Fig. B



Multi user Multi probe system

Fig. C



More advanced system

STINGA MONITORING SYSTEM APPLICATION AREAS

Who is STINGA Monitoring System for?

The typical network operator offering SS7, ISDN, SIP, and/or mobile services or any combinations of these will need efficient tools for monitoring the network and the interconnects.

Error tracking

Users have remote access to the monitoring probe system for analysing SS7, ISDN, SIP, and/or mobile traffic through LAN/WAN.

It is possible to do real-time monitoring of all traffic, or filtered traffic based on point codes, Called/Calling Party Numbers etc.

Application example: Billing verification

Operator A has an SS7 monitoring probe and a STINGA SS7 Monitor as shown in **figure D**. An ISUP CDR builder is installed on the probe as illustrated in the figure D. In this example there is a disagreement between operator A and the national TDM network provider when it comes to billing of a certain customer at a given point of time. Operator A fetches the actual CDR file and is able to see the SS7 signalling sent and received from the national provider on the monitor. Thus, operator A is able to prove his case against the national provider. Alternatively, operator A unveils a fault in his own network.

Fig. D

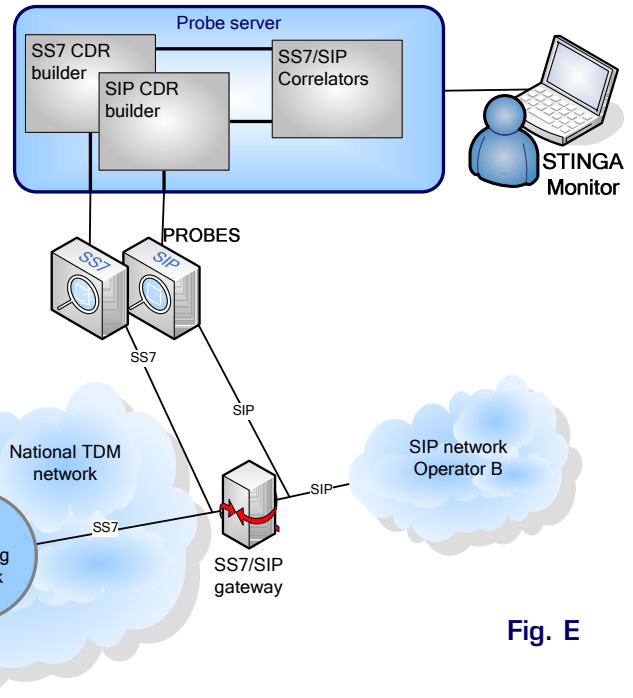
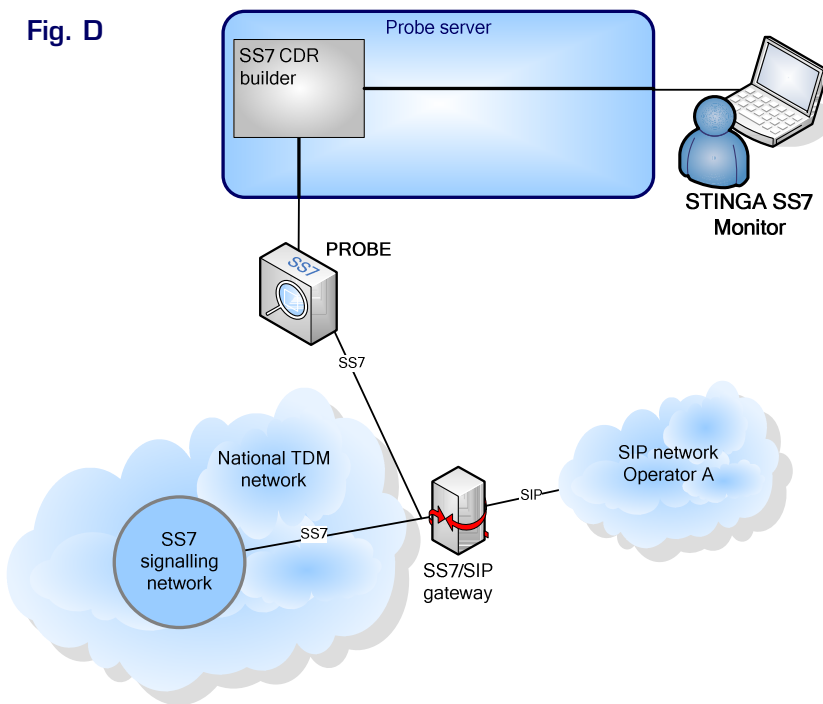


Fig. E

Application example: Customer not connected

Operator B has an monitoring probe supporting both SS7 and SIP as shown in **figure E**. An ISUP and a SIP CDR builder is installed on this probe, in addition to an SS7-SIP CDR correlator.

A customer complains to operator B because he is not able to make an outgoing call to his friend, who is connected to the national TDM network. Customer service for operator B has a STINGA SS7 Monitor and a STINGA NGN Monitor installed on their site as illustrated in the figure above. Operator B tell their customer to make a call to his friend. On their monitors they are able to see what's happening in a real-time call trace view. The call appears on the monitor as expected in form of an INVITE message and a corresponding SS7 IAM (Initial Address Message) message. However, the answer to the message is REL (Release) with cause value 'Unallocated number'. Operator B contacts the national TDM network provider and tell them to solve the problem. The national network provider defines the missing number in the numbering plan. The problem is resolved, and their customer is satisfied with the excellent service. Alternatively, operator B unveils a fault in his own SS7/SIP gateway.

STINGA MONITORING SYSTEM APPLICATION AREAS

Application example: No connection, international traffic

Network operator C has a number of probes strategically placed in their network as shown in **figure F**. On a regular basis they check all their CDR files. Then they get suspicious because there are too many abnormal release messages from probe A. This is a probe that is connected to the link that carries operator C's international signalling traffic. A closer investigation into the CDRs reveals that this happens for all calls to a certain country. The IAM messages are always returned with REL messages containing cause value 'address incomplete'. Operator C contacts their international network carrier and show them the CDRs. The international network carrier checks the routing tables and correct the fault. Operator C detected the problem in an early stage resulting in high customer satisfaction.

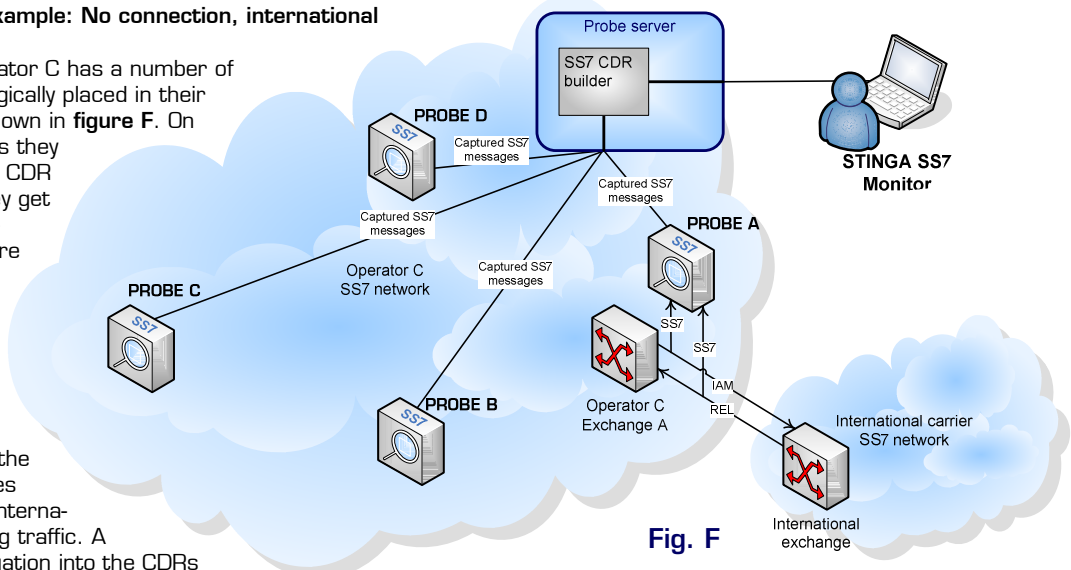


Fig. F

Application example: One probe reveals problems anywhere in the SS7 network

Operator D has connected his SIP network to the national TDM network through a single SS7 interconnect point situated in London as

shown in **figure G**. A probe has been connected to the interconnect point to monitor all the SIP calls routed to the national TDM network. The calls are routed through the operator's media gateways situated in several cities in England. In this way operator D can see if there is a problem with the media gateway in Leeds even if the SS7 signalling has to pass several exchanges on it's way. With one single probe, operator D is able to track down problems everywhere in the SS7 network based on the OPC (Originating Point Codes) included in the SS7 signals monitored.

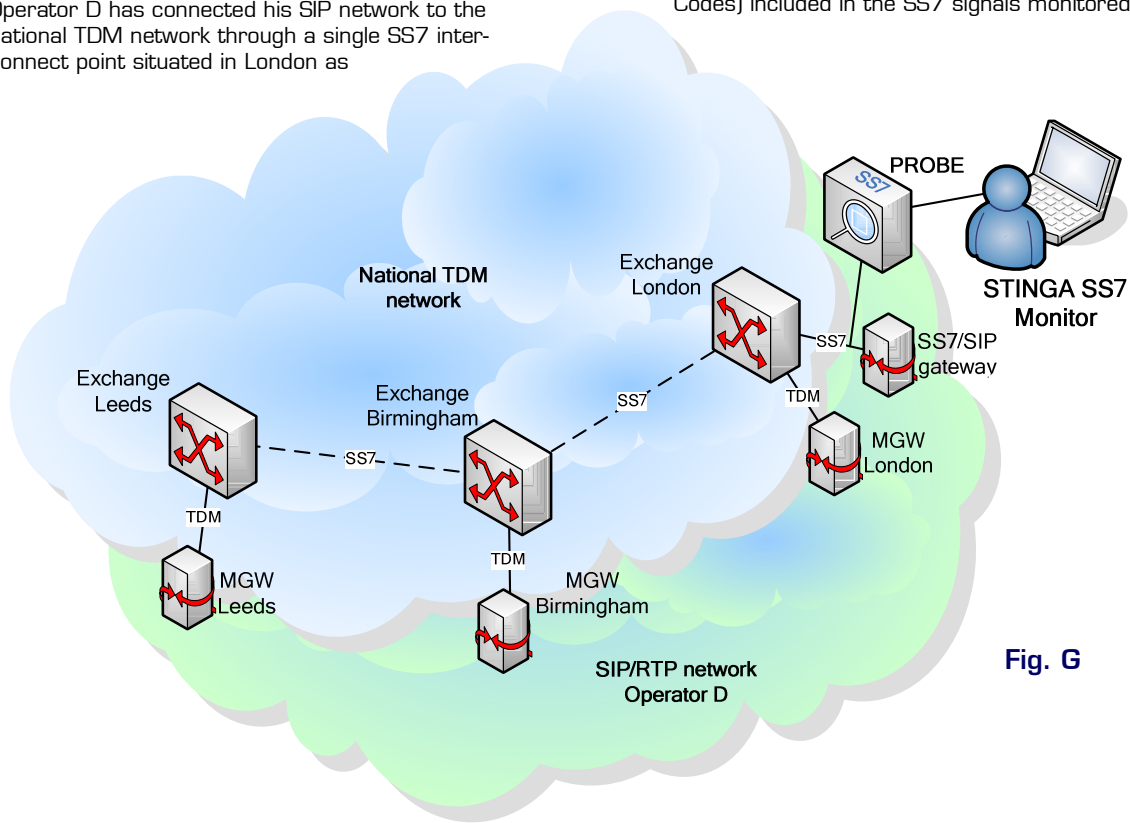


Fig. G

STINGA MONITORING SYSTEM SPECIFICATIONS

TECHNICAL SPECIFICATIONS

Hardware & Software Requirements

- Linux-based monitoring probes with SDH STM-1, TDM and/or Ethernet interfaces
- SDH STM-1, TDM and /or Ethernet PCI/PCle interface cards
- STINGA Real-Time Monitoring modules
- STINGA xDR Builders
- STINGA xDR Correlators
- STINGA Report Generator Engine
- STINGA xDR Repository
- Windows-based client applications

Administrative communication requirements

- IP network

Supported Networks

- SS7 Networks
- Next Generation Networks
- Fixed Mobile Networks
- Access Networks

Client Applications:

- STINGA Protocol Analyzer
- STINGA Report Generator
- STINGA System Manager
- STINGA Monitoring Probe Manager

Central Server Components

- STINGA Central Server Kernel
- STINGA xDR Correlator
- STINGA xDR Repository - Flat files
- STINGA xDR Repository - SQL database
- STINGA Report Generator Engine - xDR
- STINGA Report Generator Engine - KPI

Monitoring Probe Components

- STINGA Monitoring Probe Kernel

Real-time Monitoring Modules

- STINGA SS7 Real-time Monitoring
- STINGA ISDN Real-time Monitoring
- STINGA Q.SIG Real-time Monitoring
- STINGA DPNSS/DASS2 Monitoring
- STINGA V5 Real-time Monitoring
- STINGA SIP Real-time Monitoring
- STINGA SIP-T/SIP-I Real-time Monitoring
- STINGA H.323 Real-time Monitoring
- STINGA Megaco Real-time Monitoring
- STINGA DIAMETER Real-time Monitoring
- STINGA RADIUS Real-time Monitoring
- STINGA DNS/ENUM Real-time Monitoring
- STINGA GTP Real-time Monitoring
- STINGA GSM Abis Real-time Monitoring
- STINGA GSM A Real-time Monitoring
- STINGA GPRS Gb Real-time Monitoring

xDR Builders

- STINGA SS7oTDM ISUP xDR Builder
- STINGA SS7oTDM TCAP xDR Builder
- STINGA SS7oIP ISUP xDR Builder
- STINGA SS7oIP TCAP xDR Builder
- STINGA ISDN PRI xDR Builder
- STINGA Q.SIG xDR Builder
- STINGA DPNSS/DASS2 xDR Builder
- STINGA V5 xDR Builder
- STINGA SIP xCDR Builder
- STINGA SIP-T/SIP-I xDR Builder
- STINGA H.323 xDR Builder
- STINGA Megaco xDR Builder
- STINGA DIAMETER/RADIUS xDR Builder
- STINGA DNS/ENUM xDR Builder
- STINGA GTP xDR Builder
- STINGA GSM A xDR Builder
- STINGA GPRS Gb xDR Builder

Manufacturer

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Please contact us for information about your local distributor.
A distributor overview is also available at our web site.



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