STINGA
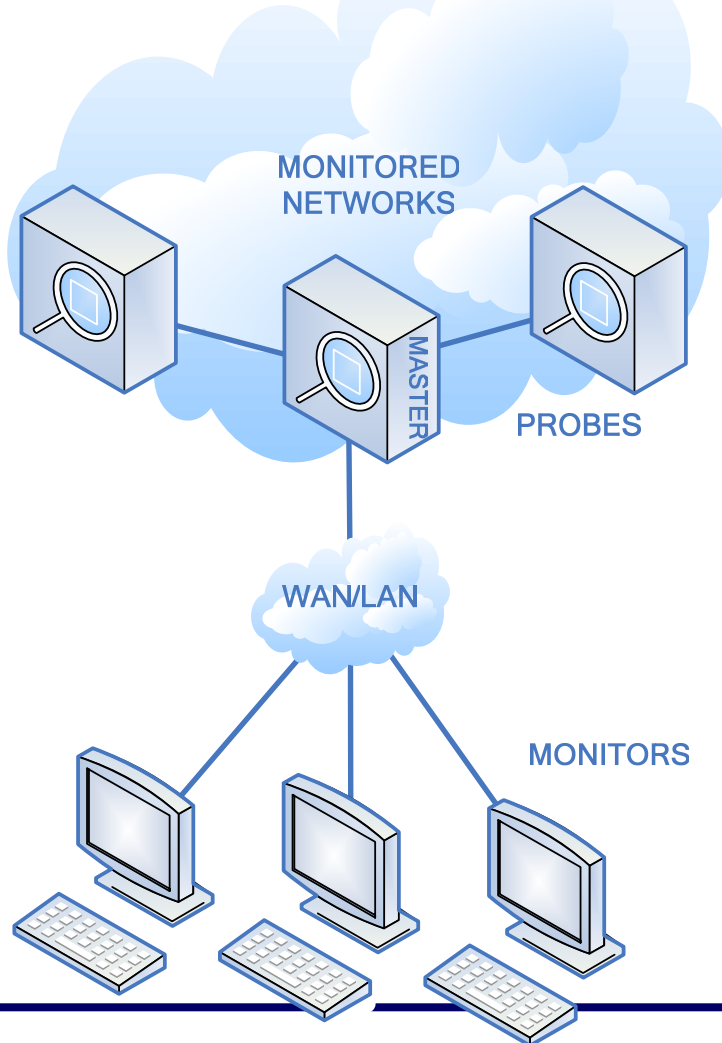## Monitoring System

Centralised Link Monitoring System
Distributed Link Monitoring Probes

SS7oIP (SIGTRAN), SS7oTDM, ISDN PRI, SIP, Abis, A, Gb, Gn, Gs, Ge, Gr, Gc, and Gf interfaces supported

Real-Time Monitoring and Analysis, CDR Generation, CDR Correlation, Historical Search, Individual Filtering, QoS Reporting, Multi-User

UTEL SYSTEMS
Your customers will notice

Odin TeleSystems Inc.
Open Telecom for Open Minds

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

- 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

FAULTFINDING & TROUBLESHOOTING

- Resolve network issues

- Protocol decoding of all user parts and protocol layers makes it possible to track and search for protocol irregularities.

- Resolve customer issues

- Use CDRs collected 24/7 as evidence in case of disagreement with customers, authorities and operators.

- Identify bottlenecks in your network

KEY FEATURES

- **Centralized 24/7 monitoring of SS7oTDM, SS7oIP, SIP, ISDN, mobile and converged networks**
- **Distributed monitoring probes**
- **Multi-user system**
- **Real-time protocol monitoring and analysis**
- **CDR generation including all protocol signalling**
- **CDR correlation**
- **Historical search**
- **Individual filtering**
- **Client/server architecture**
- **Multiple E1/T1/J1 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
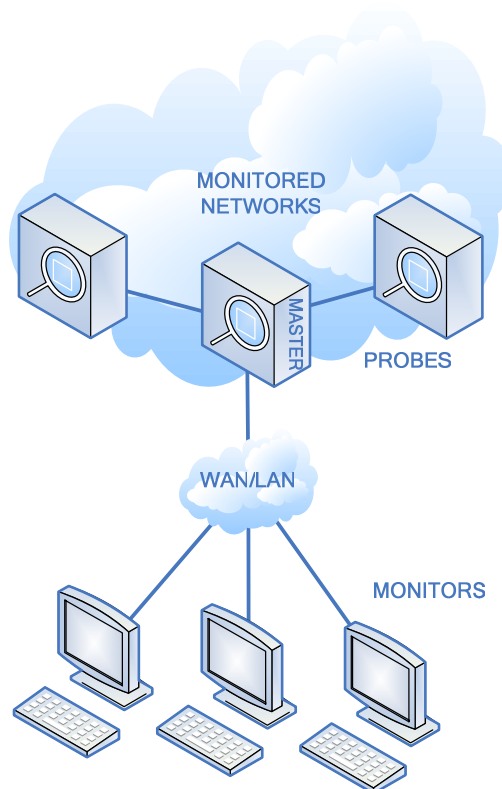
Modular system

- 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

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 passes 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.
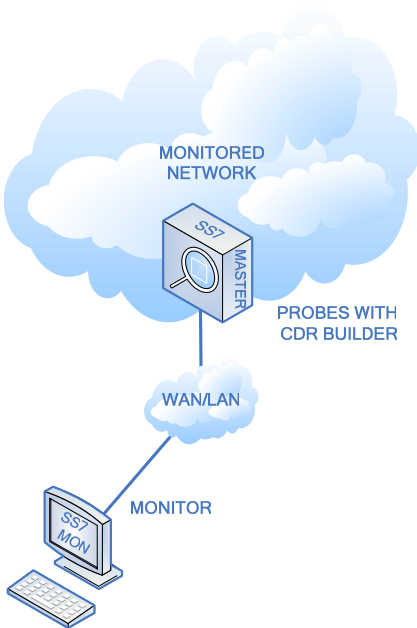
The master probe is also operating as a standard monitoring probe, in this case monitoring SS7 and SIP. CDR correlators for SS7, SIP and ISDN PRI may be installed on the master probe to provide a call trace view for the users. In this way it is very easy to understand and see what is going on in converged 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.
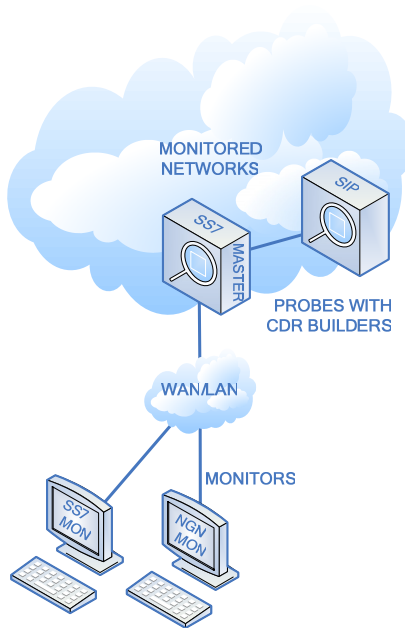
Configuration data (e.g. filter setup) is sent from the clients to the probes via the master probe. Data from the probes to the monitors are sent via the master probe. All CDRs are stored on the master probe, and can be accessed by the monitor client via a file server. All CDRs are stored on ASCII files in a tagged data format, and libraries are available for manipulation of the CDR data.
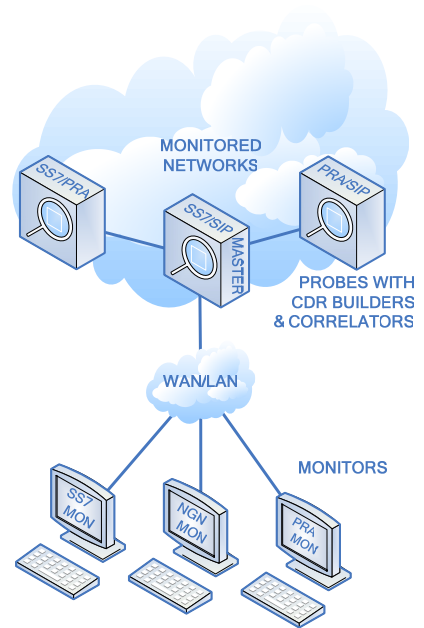

Fig. A

Fig. B

Fig. C

Basic system

Multi user Multi probe system

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.
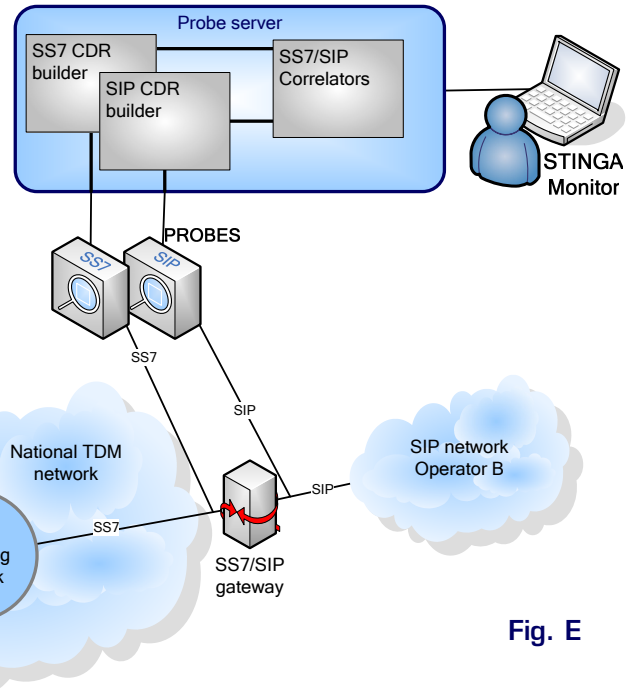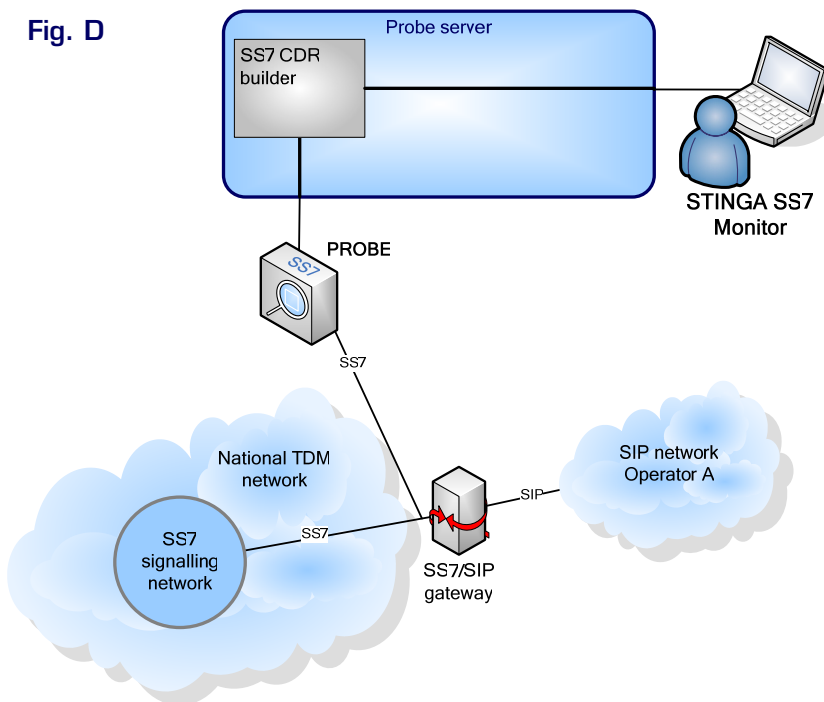

Fig. E

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.

Fig. D

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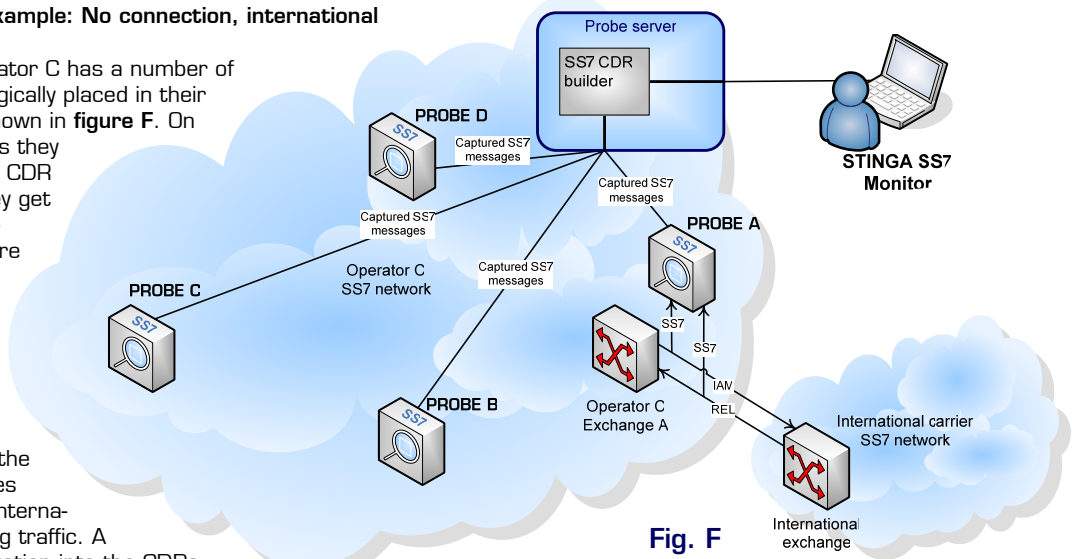
Application example: One probe reveals problems anywhere in the SS7 network

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.
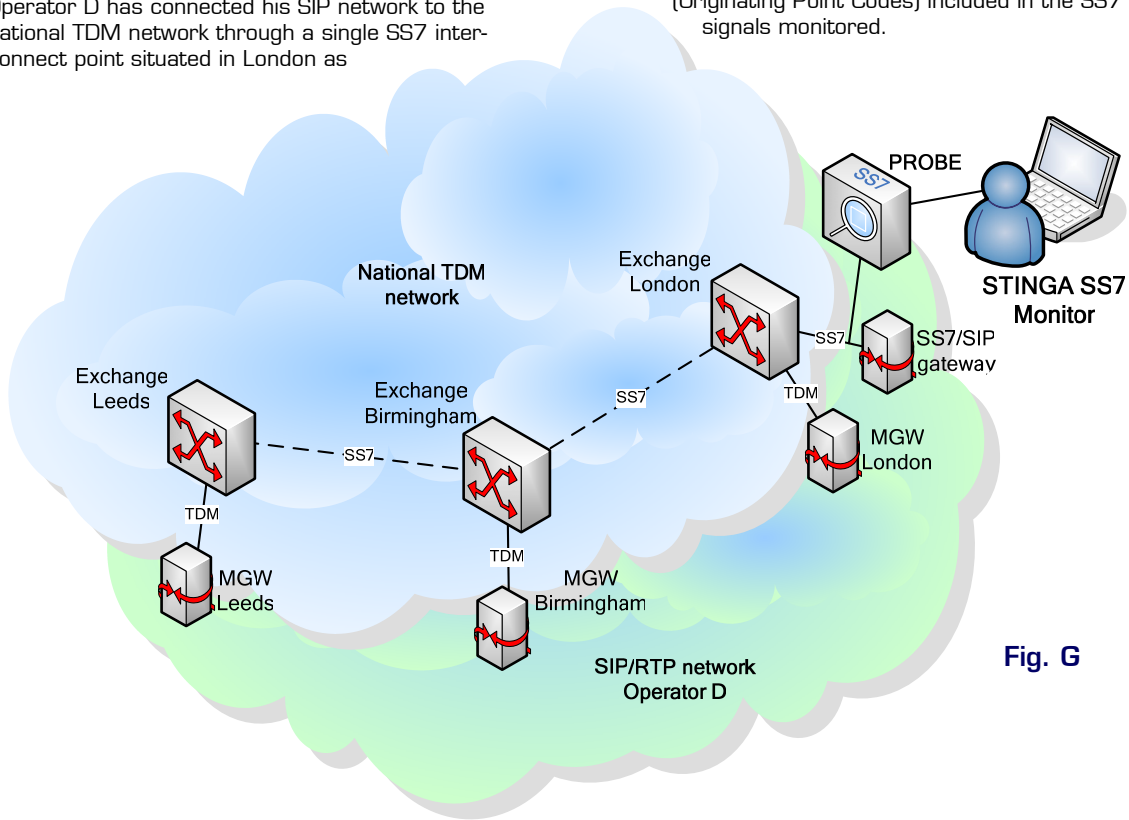

Fig. F

Fig. G

STINGA Monitoring System: Specifications

TECHNICAL SPECIFICATIONS

Hardware & Software Requirements

- One or more Linux-based probes with E1/T1/J1 interfaces and/or Ethernet interfaces
- One or more E1/T1/J1 PCI or PCI Express interface cards and/or Network Interface Cards (NICs) per probe
- One or more STINGA Real-Time Monitoring modules per probe
- One or more STINGA CDR Builders per probe
- One or more STINGA CDR Correlators per system
- One or more STINGA Search Engines per system
- One or more Windows-based client software applications (e.g. STINGA SS7 Monitor) per user

Administrative communication requirements

- IP network

STINGA Monitoring Probe - Master Probe

The Master Probe is the client access point to the monitoring system, and it collects CDRs from all other connected monitoring probes. The Master Probe is also operating as a standard monitoring probe.

Protocols Supported

Real-time monitoring: See specifications related to the STINGA Monitor clients:

- STINGA SS7 Monitor
- STINGA NGN Monitor
- STINGA MOBILE Monitor
- STINGA ISDN PRA Monitor

Protocol Interfaces Supported

- SS7oTDM (ITU, ETSI, ANSI)
- SS7oIP (SIGTRAN) (ITU, ETSI, ANSI)
- SIP
- Mobile: A-bis, A, Gb (with or without deciphering), Ge, Gn, Gs, Gr, Gc and Gf
- ISDN PRI (ITU, Euro-ISDN, North American National ISDN-2)

Monitoring System components

- STINGA Monitoring System Platform

Correlators per system

- STINGA SS7-SS7 Correlator
- STINGA SIP-SIP Correlator
- STINGA ISDN-ISDN Correlator
- STINGA SS7-ISDN Correlator
- STINGA SS7-SIP Correlator
- STINGA ISDN-SIP Correlator

Search Engines per system

- STINGA SS7 Search Engine
- STINGA SIP Search Engine
- STINGA MOBILE Search Engine
- STINGA ISDN PRI Search Engine

Client applications per user

- STINGA SS7 Monitor
- STINGA NGN Monitor
- STINGA MOBILE Monitor
- STINGA ISDN PRA Monitor

Monitoring Probe components

- STINGA Monitoring Probe Platform

Real-time monitoring modules per probe

- STINGA SS7 Real-Time Monitoring
- STINGA SIP Real-Time Monitoring
- STINGA MOBILE Real-Time Monitoring
- STINGA ISDN PRI Real-Time Monitoring

CDR builders per probe

- STINGA ISUP CDR Builder for SS7
- STINGA TCAP CDR Builder for SS7 or mobile
- STINGA SIP CDR Builder for SIP
- STINGA SCCP CDR Builder for mobile
- STINGA BSSGP CDR Builder for mobile
- STINGA GTP CDR Builder for mobile
- STINGA ISDN PRI CDR Builder for ISDN

Gb deciphering

- STINGA Gb Deciphering

Related Products

♦ UQoS INSIGHT: Report Generator for Link Monitoring Systems (LMS) like STINGA Monitoring

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