

SIGTRAN Software

SS7 Signaling over IP Networks

SIGTRAN, which provides reliable IP network transport for SS7 signaling, is a key element in the evolution of new service platforms to voice over IP (VoIP). SIGTRAN reduces costs by utilizing commodity IP network connections versus T1/E1-based SS7 networks. Using high-bandwidth IP connections solves the throughput constraints of SS7 networks.

SIGTRAN replaces the lower layers of the SS7 protocol stack—MTP 1, 2 and 3—with IP-based equivalents—IP, SCTP, and M3UA—as the transport over which the higher level protocols (SCCP, TCAP, ISUP, and TUP) run, leaving these upper level stacks unchanged. As networks evolve toward IP-only, both legacy SS7 and SIGTRAN-based systems can co-exist by using signaling gateways.

NMS's SIGTRAN implementation runs on NMS's TX Series boards and is based on proven protocol stacks that have been tested around the world. Developers can use either MTP 1-3 or SIGTRAN on the TX Series boards, while supporting the same ISUP, TCAP, or SCCP application.

This data sheet covers only NMS's SIGTRAN protocol support. For information on NMS's support of the upper layers of the SS7 protocol stack, as well as MTP 1-3, refer to the SS7 Software data sheet.

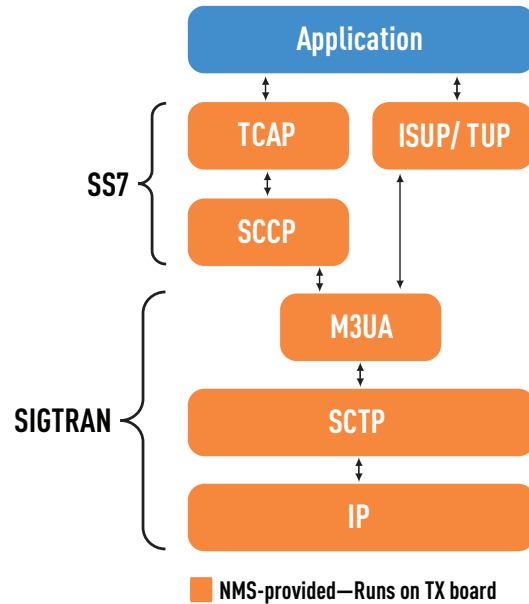


Figure 1: NMS SIGTRAN Stack Block Diagram

FEATURES

- Runs on the TX Series of signaling boards in place of the SS7 MTP transport layers
- All layers of the SS7 stack, including SIGTRAN, run on the TX Series board, freeing the host for application development
- Supports intelligent peripherals, service nodes, and other SIGTRAN interfaces
- Compatible with Natural Access™ unified development environment and CG Series media processing boards
- Supports Windows®, Linux®, and Solaris™ operating systems
- API control over M3UA and SCTP protocol stacks
- Support for node redundancy or board-level redundancy
- Automatic detection and prevention of application message overloads (congestion handling)
- Up to 256 SCTP associations; 256 streams per association

SIGTRAN Software

TECHNICAL DESCRIPTION

SIGTRAN application programming interfaces (APIs) have been added to Natural Access in order to provide support for SS7 over IP using the TX Series of boards. Specifically, APIs have been added for M3UA (MTP3 User Adaptation Layer) and SCTP (Streams Control Transmission Protocol).

A data transfer API for M3UA allows upper layers, such as ISUP, SCCP, and TUP, to send/receive messages and receive asynchronous status indications.

Management APIs allow the configuration and control of the M3UA and SCTP layers and the obtaining of status and statistics.

The NMS SIGTRAN implementation is shown in Figure 1. For information on the upper layer protocols, refer to the SS7 Software data sheet.

Configuration

NMS's SIGTRAN software supports both the high performance TX 4000 (PCI) and TX 4000C (CompactPCI) Series platforms and the TX 4000/20 and TX 4000C/20 basic performance platforms. The SIGTRAN software requires a host server and any TX board licensed for full stack operation. NMS SIGTRAN is supported by the SS7 5.0 release, or later.

A properly licensed TX board can be configured for TDM or SIGTRAN by simply downloading the desired software and configuring the board. This powerful ability allows the same SCCP, TCAP, or ISUP application to be installed in either a TDM or IP network with just a change in configuration files.

Redundancy

NMS's SIGTRAN redundancy feature provides Ethernet-level, board-level, and node-level failure protection.

In a typical redundant configuration (see Figure 2) two boards, one primary and one backup, represent a single point code. One Ethernet interface on each board is used for health management and checkpointing between the two boards. The remaining Ethernet interfaces may be used to connect to the SIGTRAN network. The two boards may reside in the same chassis or, if node-level redundancy is desired, in different chassis.

NMS's higher level SS7 layers automatically communicate status change information from the primary to the backup via checkpoint messages. This ensures that the backup is always ready to take over with no loss of information.

A standalone, single-board solution is also available if only Ethernet-level redundancy is required. In this case, all Ethernet interfaces can be connected to the SIGTRAN network and used to provide multi-homing support.

Natural Access Program Development

Natural Access is NMS's programming environment that allows developers to quickly and easily write applications. The SIGTRAN APIs are integrated with Natural Access such that applications implementing SS7 can also use the other Natural Access services provided by the NMS CG Series media processing boards for IVR, conferencing, fax or VoIP.

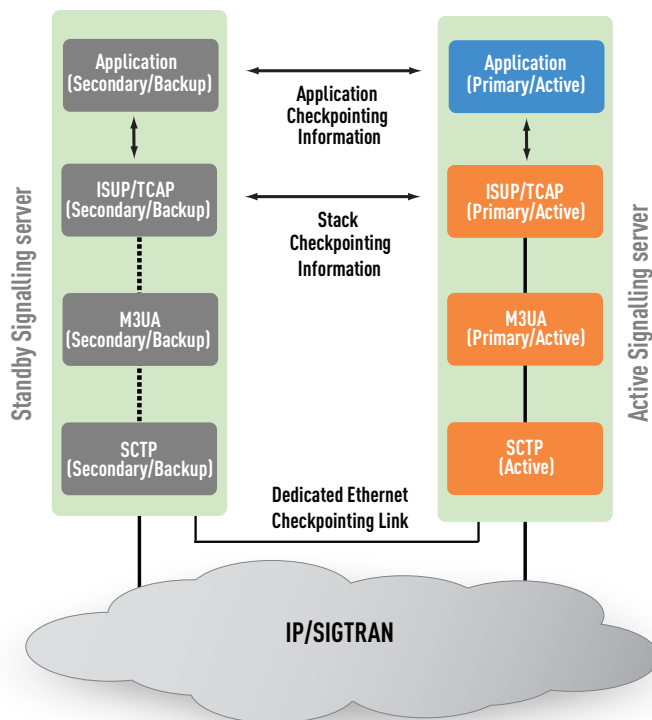


Figure 2: Redundancy with check-pointing

TECHNICAL SPECIFICATIONS

Supported Protocols

- SIGTRAN: IP, SCTP, M3UA
- SS7: ISUP, BICC, SCCP, TCAP, TUP
- SCTP/ IP
 - Up to 256 associations
 - Up to 256 streams per association concurrently
 - IP v4 only (current release)
- Redundancy optional for all protocols

Software Environment

- Natural Access 2005-1 SP5, or later
- Operating Systems
 - Windows
 - SPARC® Solaris
 - x86 Solaris
 - Red Hat® Enterprise Linux

For detailed information on supported operating systems, refer to the SS7 Software data sheet.

NMS Platforms Supported

- TX 4000, TX 4000C, TX 4000/20, and TX 4000C/20
- All boards require full stack licenses for proper operation

Programming Modules

- Data APIs for M3UA
- Management APIs for M3UA, and SCTP
- Natural Access-based Health Management API for platform redundancy

Compliance

The NMS SIGTRAN software implements the following functions and is compliant with the listed RFCs:

- RFC 2719 (SIGTRAN protocol architecture)
- RFC 4666 (M3UA)
- RFC 2960 (SCTP)
- RFC 3309 (SCTP checksum algorithm)



For the latest information on supported features and operating systems, refer to our web site at www.nmscommunications.com.

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Visit the NMS web site for a complete listing.

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