



SIGTRAN Stack: SCTP and User Adaptation

Enea Sigtran-Bricks from Enea[®] is a portable software package written in ANSI C implementing the Sigtran protocol stack.

Sigtran stands for SIGnaling TRANsport and is part of the Next Generation Network (NGN) based on the Internet Protocol (IP). Sigtran is designed for transporting signaling traffic such as SS7, ISDN, V5, and UMTS over an IP network. Sigtran is composed of the Stream Control Transmission Protocol (SCTP) and of User Adaptation layers (UA) for each signaling protocol transported over IP.

SCTP is a 'TCP next generation' or a 'super-TCP' designed to meet a wider set of requirements than TCP. SCTP is message-oriented and deterministic while TCP is byte-oriented and best effort. SCTP is not dedicated to Sigtran and should meet a wider range of usage than only signaling transport. That's why SCTP is also marketed as a standalone product SCTP-Bricks.

Enea Sigtran-Bricks provides the following layers:

- SCTP: (RFC 4960, RFC2104, RFC2581, ADDIP extension, IPv4/IPv6)
- M2UA: SS7 MTP2 user adaptation layer (RFC 3331)
- M2PA: SS7 MTP2 user peer-to-peer adaptation layer (RFC 4165)
- M3UA: SS7 MTP3 user adaptation layer (RFC 4666)
- IUA: ISDN user adaptation layer (RFC 4233)
- DUA: DPNSS/DASS 2 extensions to the IUA protocol (RFC 4129)
- V5UA: V5.2 user adaptation layer (RFC 3807)
- SUA: signaling connection part user adaptation layer (RFC 3868, Implementer's guide)

Other adaptation layers are continually being developed and added.

Enea Sigtran-Bricks is based on Enea's Netbricks architecture using an object-oriented design and a message passing mechanism for inter-entity communication. Enea Sigtran-Bricks is designed to interface the IP stack through the standard BSD Sockets interface. Interfaces to many commercial operating systems are provided, including Microsoft Windows 2000/2003/XP[®], Linux (user or kernel), Solaris[®] (32/64bits), VxWorks[®], AMX[®], Nucleus, PSOS+[®], Enea OSE[®], RTC[®], VRTX[®], and many others.

Enea Sigtran-Bricks can be combined with other Enea Signaling Stacks such

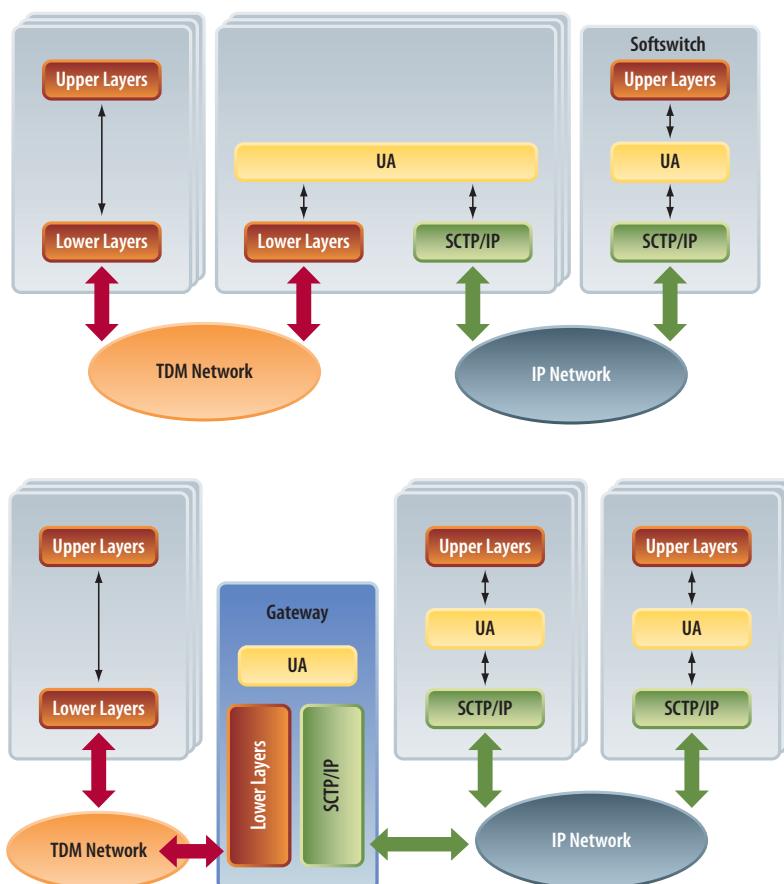
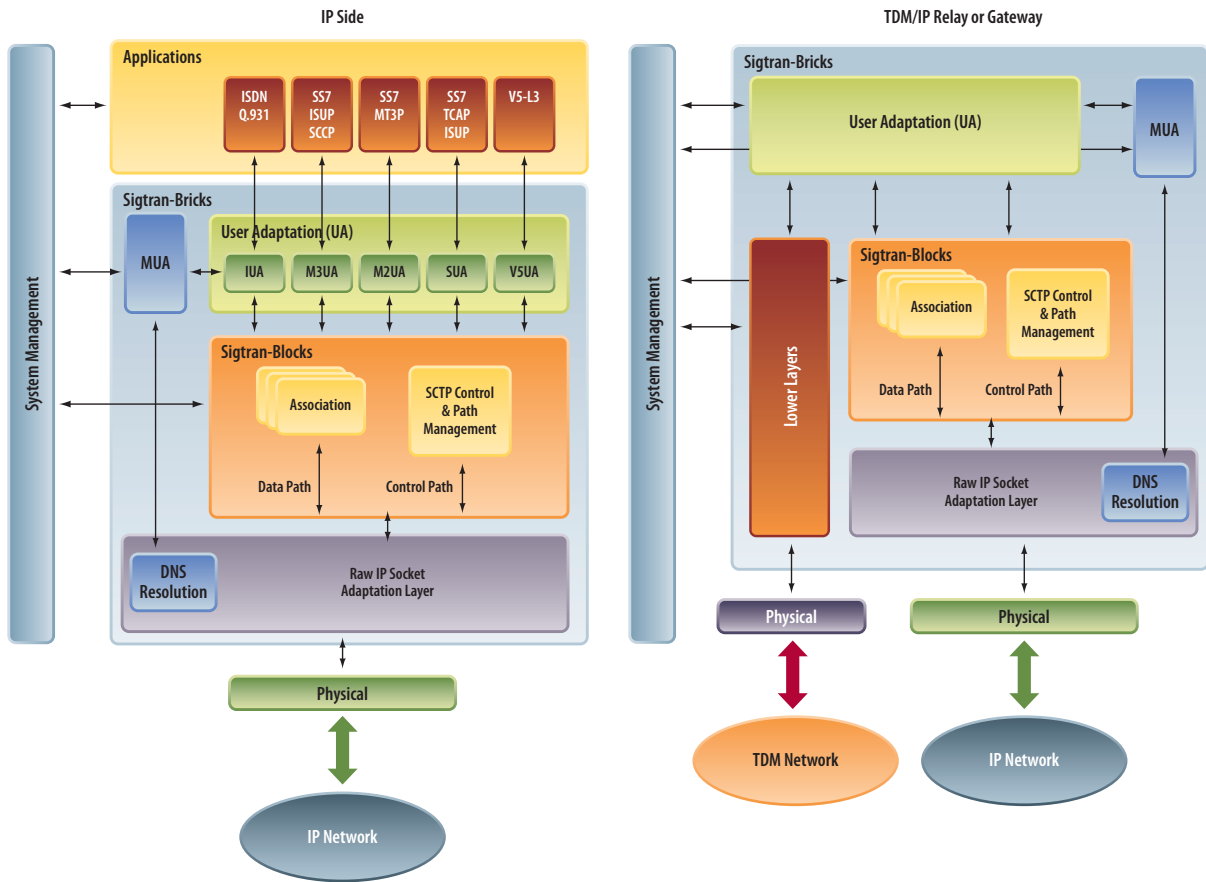


Figure 1.

ENEAS

ENEAA® SIGTRAN-BRICKS



Enea Sigtran-Bricks Software Architecture.

as Enea ATM-Bricks, Enea ISDN-Bricks, Enea MGCP-Bricks, Enea SIP-Bricks, Enea SS7-Bricks, Enea V5-Bricks. Enea Sigtran-Bricks is designed for the OEM market. Enea can also develop custom product based on Enea Sigtran-Bricks technology according to customers' specifications.

Enea Sigtran-Bricks Features

Sigtran is used for relaying signaling messages from lower layers through an IP network to upper layers centralized in a single Softswitch. (Figure 1 top) Sigtran is also used for transporting signaling through IP by replacement of the transport part of a signaling network and keeping the upper layers without any change (UMTS Core Network). (Figure 1 bottom) Enea Sigtran-Bricks includes the following protocol components:

SCTP protocol with the following features

- Finite state machine oriented
- Reliable data transfer
- Multi-stream support
- Multi-homed host support
- Network Congestion Avoidance
- User message fragmentation
- Data bundling
- Path management and Path MTU discovery
- Security cookie with Message Authentication code (MAC) using MD5/SHA-1 algorithm
- Packet Validation
- IPv4 and IPv6 support
- Message based Upper layer API
- Use of BSD Raw IP sockets

UA with options for

- IUA
- M2UA
- M3UA

- SUA
- V5UA
- M2PA
- DUA

Enea Sigtran-Bricks Software Architecture

Enea Sigtran-Bricks software integrates the following protocols

- SM: System Management entity
- IP: Internet Protocol through BSD sockets (non-blocking mode)
- SCTP: Stream Control Transmission Protocol entity
- UA: User Adaptation entity
- MUA: User Adaptation Management entity
- DNS: Directory Name Service entity

