

Adax SX – Signaling Extender



Simple and Reliable SS7 Transport over IP



Overview

The telecom market predicted the total demise of circuit switching and the complete replacement of TDM by IP some time ago but in fact today the situation has changed and SS7 is back in fashion: Service providers need to maximize the return on investment in their networks and are keeping TDM equipment in service, especially the end-node voice switches. In remote communities, such as Africa, India and rural Americas, the solution is much the same: Keep the TDM equipment at the edge and modernize the core with IP.

With the Adax Signaling Extender (SX) the TDM lines in the local communities remain but are turned into VoIP and SIGTRAN before they go long distances so that those long-haul SS7 links are replaced by IP. Replacing these long-distance, dedicated, TDM circuits with IP over shared-use networks provides substantial savings for the Service Providers by reducing their core network transport costs whilst preserving their investment in remote TDM endpoints switching systems. The IP transport can also improve the core network performance.

Backhaul of SS7 LSL links with M2UA

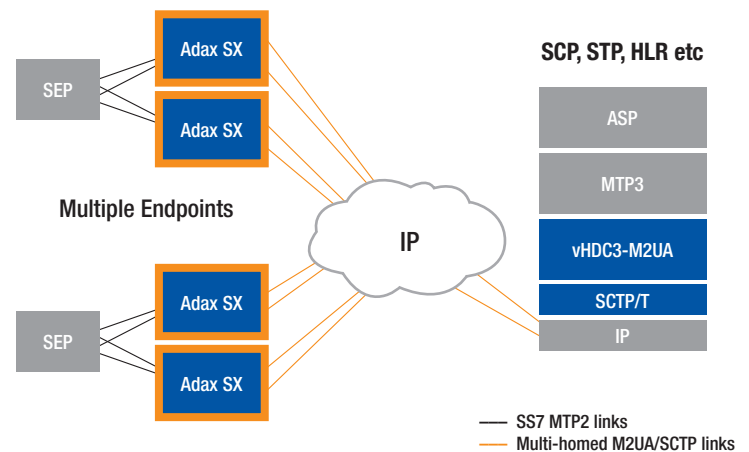
The Adax Signaling Extender (SX) routes SS7 traffic over an IP network to an IP-enabled device, or routes IP traffic over an IP network to an SS7 device. M2UA is the SIGTRAN User Adaptation layer for MTP2 and the Nodal Interworking Function (NIF) provides transparent connectivity between traditional, circuit-switched SS7 signaling end points and any IP-enabled signaling point such as an SCP, STP, HLR etc. By leveraging MTP2 to M2UA interworking, the SX provides this functionality with no additional point codes and requires no modifications to the MTP3 layer, addresses or routes on either side of the network.

The Adax SX provides a method of communication for the remote SS7 based TDM equipment to transparently operate over an underlying transport service of SCTP and IP with M2UA efficiently carrying the data and control elements of MTP2 whilst leaving the high overhead of the TDM elements behind to improve performance. This interface provides transparent connectivity between the traditional circuit-switched SS7 signaling points and the central SS7 application server or STP over an IP core. Many SS7 LSLs can be consolidated through the IP core by being multiplexed over a single SCTP association or distributed over multiple associations.

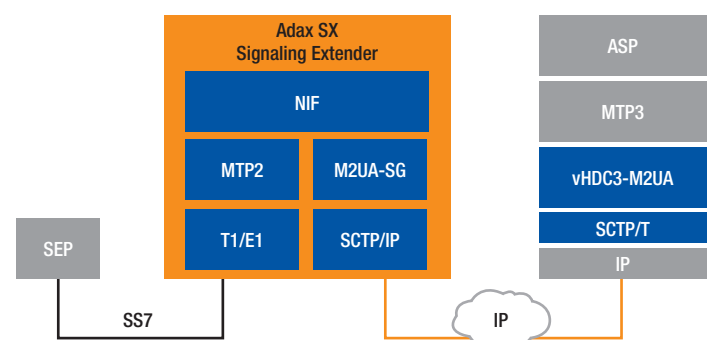
Signaling transport reliability is guaranteed by Adax SCTP's error correction features that deliver a robust, reliable, high performance transport layer to prevent message loss. The multi-homing provisioning options implement link monitoring and fail-over robustness and redundancy for quick recovery.

Adax SX Gateway Features and Benefits

- Maintain SS7 TDM connectivity at the edge
- Replace long-distance, dedicated, TDM circuits with IP over shared-use networks
- Backhaul SS7 LSLs over IP with M2UA
- Transparent to the network, no additional point-codes required
- Protect investment in Legacy TDM equipment
- Reduce network transport costs and improve performance with long-haul SS7 over IP
- Substantial cost savings with typical 18-24 month return of investment
- Many SS7 LSLs can be consolidated over single or multiple SCTP links to SCP, STP, HLR etc
- Signaling transport reliability guaranteed by Adax SCTP
- Adax SCTP error correction protects against message loss
- Simple management interface with CLI and GUI options
- Pre-integrated, low-cost, small footprint, solution with HPE DL20 1U server



Consolidation of SS7 LSLs from many SEPs with M2UA



Virtual HDC-M2UA Software Solution

The complementary Adax virtual HDC-M2UA software product specifically leverages, preserves and enhances the current investment in SS7 stacks and allows an MTP3 application server, SCP, STP, HLR etc to communicate with remote SS7 nodes using M2UA over an IP based core network. By installing the Adax HDC-M2UA software in application servers running SS7 stacks such as Aricent or Trillium and others, the existing MTP3-MTP2 convergence layer will not have to be modified. The M2UA operates like a virtual SS7 board and the existing SS7 ioctls are automatically converted to the appropriate M2UA control message. This means that the virtual SS7 board is then connected to the remote node with all the SS7-IP conversion simply happening at the application server within the HDC-M2UA software module.

Advantages:

- Easy migration of existing SS7 TDM links to M2UA IP links
- Many remote signaling end points can be consolidated into the application server
- No modifications required to existing MTP3-MTP2 convergence layer
- M2UA operates like a virtual SS7 board
- Existing SS7 ioctls are automatically converted to M2UA control messages
- No new point code required, preserving current SS7 point-code map

Adax Signaling Router (SR) Concentration Point

For those networks that have a requirement to integrate and connect with multiple remote SXs the Adax SR provides the perfect solution. Many SS7 LSLs from the signaling end points can be consolidated over IP with M2UA in to the Adax SR. The Adax SR then converts the M2UA IP links to M2PA, M3UA or back to SS7 for connection to the signaling point. As the Adax SR includes the SS7 MTP3 layer it requires its own point code.

Technical Specifications

Protocol and Standards Compliance

- SS7 MTP2: ITU-T Q.703, ETSI 300 008, 300 008-1, ANSI T1.111, TTC JT-Q.703, ITU Q.703 Annex A 1996, China SS7 YD/T 1125 – 2001
- A, B, C, D, E, F Links

SIGTRAN

- SCTP: RFC 4960 (see Adax SCTP/T datasheet for further details)
- M2UA: RFC 3331

Interfaces Available

- T1/E1/J1 ports
- Drop & Insert on all channels
- GbE ports

Management

- AdaxGWManager GUI Interface (Web/Java)
- SNMP v2 for Traps and Statistics
- Telnet/Command Line Interface, password protection
- TFTP for software upgrade

Designed to Meet

- “NEBS Ready” system option designed to meet CE, UL, TUV and FCC
- For Electrical & Safety standards compliance see separate datasheets for the Adax boards

Environmental Conditions

- Operating -5°C to 55°C
- Relative Humidity 5% to 90%
- Storage -40°C to 70°C

All specifications are subject to change without notice.

AdaxSX 0117/01

Adax is an industry leader in high performance packet processing, security and network infrastructure for Legacy to LTE networks. Modular, scalable and flexible, the Adax LTE-EPC solutions, SIGTRAN and SS7 Signaling platforms, as well as the DPI, IPsec Security, and GTP acceleration products enable customers to build the solutions they need, creating a smarter network infrastructure for all.



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