# APS: M2UA

## Backhauling SS7 over IP

**adax**
*Legacy to LTE*

## Overview

The Adax M2UA software module is part of the Adax Protocol Software (APS) SIGTRAN suite that has been designed for Convergence, Wireless and Intelligent Networks. Defined by RFC 3331 M2UA is a protocol for the backhauling of SS7 MTP3 messages over an IP network and is used between a Signaling Gateway (SG) and a Media Gateway Controller (MGC) in VoIP networks.

Adax provides an M2UA product that can be used in an ASP or SGP role. The application can specify the ASP or SGP role when requesting the M2UA service. The ASP/SGP role is a per association attribute and multiple M2UA application roles are supported per product installation.

## Benefits for Adax MTP-2 Users

The Adax M2UA ASP product specifically leverages, preserves and
enhances current investment in the Adax MTP-2 integration as the user interface is practically identical to the one for the Adax MTP-2. This saves valuable application development time and resources which results in a short time to market and rapid deployment of IP-enabled devices through the re-use of the pre-integrated MTP-2 assets.

- The user API for M2UA is implemented within the standard Unix DLPI.
- The user API for M2UA is similar to, and consistent with, the Adax API for traditional SS7 signaling offerings.
- The API is common to all User Adaptation (UA) interfaces such as SUA, M3UA, IUA, M2UA, etc.

## M2UA Backhauls

M2UA provides an interface between MTP3 and SCTP that enables MTP3 applications to transparently operate over an underlying transport service of SCTP and IP instead of MTP2. This interface provides transparent connectivity between traditional circuit switched SS7 signaling points and Next Generation, IP-enabled signaling elements, such as a SoftSwitch or Media Gateway Controller.

M2UA backhaul describes the process of routing MTP3 traffic over an IP network using the MTP2 User Adaptation Layer (M2UA) to MTP3 on an SS7 device on the other side of the IP network.

M2UA backhauls are a signaling solution for companies that own IP-enabled devices that utilize Layer 3 protocols, but who do not wish to run lower-layer protocols such as MTP2/MTP1. M2UA backhauls provide a method of communication for an MTP3 layer on an SS7 device to reach Media Gateway Controllers, as well as database applications and other applications with peer MTP3 layers that run on IP-enabled devices.

## Differences between M2UA and M2PA

M2UA and M2PA are similar in that they both transport MTP3 data messages and they both present an MTP2 upper interface to MTP3. However it important that potential users of M2PA and M2UA are aware of the differences between the two protocols when deciding how to use them for SS7 signaling transport over IP.

Differences between M2PA and M2UA include:

M2PA: IPSP processes MTP3/MTP2 primitives.

M2UA: MGC transports MTP3/MTP2 primitives between the SG's MTP2 and the MGC's MTP3 (via the NIF) for processing.

M2PA: SG-IPSP connection is an SS7 link.

M2UA: SG-MGC connection is not an SS7 link. It is an extension of MTP to a remote entity.

M2PA: SG is an SS7 node with a point code.

M2UA: SG is not an SS7 node and has no point code.

M2PA: SG can have upper SS7 layers, e.g., SCCP.

M2UA: SG does not have upper SS7 layers since it has no MTP3.

M2PA: relies on MTP3 for management procedures.

M2UA: uses M2UA management procedures.

For more information about M2PA (IETF RFC 4165) please refer to the Adax APS-M2PA datasheet.

## Underlying Transport

IETF RFC 3331 recommends that M2UA use the services of the Stream Control Transmission Protocol (SCTP) as the underlying signaling transport protocol.

- The use of SCTP provides a reliable transport with the following features:

- Explicit packet-oriented delivery (not stream-oriented)

- Sequenced delivery of user messages within multiple streams

- An option for order-of-arrival delivery of individual user messages

- Optional multiplexing of user messages into SCTP datagrams,

- Network-level fault tolerance through the support of multi-homing

- Resistance to flooding and masquerade attacks,

- Data segmentation to conform to discovered path MTU size data sheet software Foundations for Converging Networks

In addition to these services specified in IETF RFC2960, Adax SCTP/T also provides a transport framework with levels of service quality and reliability equal to those expected from a Public Switched Telephony Network (PSTN).

For more information about SCTP (IETF RFC 2960) please refer to the Adax APS-SCTP/T datasheet.

## Standards

- RFC 3331 Signaling System 7 (SS7) Message Transfer Part 2 (MTP2) - User Adaptation Layer (M2UA)

## Operating System Support and Adax Protocol Controllers

M2UA is available for Linux and Solaris Operating Systems. Other OS support on request. All Adax products are available for PCI, PCIe, Low Profile PCIe (LPe), PCIe EM, PMC and AMC architectures

## Adax Software

M2UA is just one of the many products in the Adax Protocol Software (APS) SIGTRAN suite that has been designed for Convergence, Wireless and Intelligent Networks.

Other Adax SIGTRAN products include SCTP, M3UA, M2PA, and Signaling Gateways. Adax Protocol Software (APS) is designed to provide the customer with the greatest benefit to their application and from each Adax hardware product.

## API and Protection of Investment

The future of Intelligent Networks is IP and SIGTRAN combined with SS7. As most operators face increased signaling demand, M2UA coupled with SCTP can meet the required demands whilst preserving the investments in SS7 upper layer applications.

The Adax Software provides the user with a set of common APIs that enables integration of business applications and upper layers with Adax signaling infrastructure.

## Fastest Time to Market

Adax provides extremely fast time to market through simplicity of design and a modular product range. The common software interface ensures a simple migration path and provides a flexible and portable solution. The API's between products remain the same preserving the investment in the higher layer software and applications. This compatibility enables quick upgrades to next generation requirements and easy field upgrades to expand the capabilities of installed systems.

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