MISA: Management of Integrated SDH and ATM Networks

The aim of the MISA project is to realise, optimise and validate the integrated end-to-end management of hybrid SDH (Synchronous Digital Hierarchy) and ATM (Asynchronous Transfer Mode) networks in an Open Network Provision (ONP) environment. The project’s management system allows the provisioning of mixed SDH/ATM connections across multiple administrative domains.

Users can access the information via a Graphic User Interface launched from internet browser. The system supports fault and configuration management of ATM/SDH networks, providing for inter-domain and intra-domain routing and scheduling for the multi-domain broadband connections in the integrated ATM/SDH networks. It integrates the management of SDH and ATM technologies at network management level.

The MISA management system design and implementation conform to TMN international standards and the versions running on the IBM and HP TMN platforms are fully interoperable. The GBCM Service and Security Management Package supported by the MISA external Xuser interface is completely interoperable with the ACTS PROSPECT and the ACTS TRUMPET systems.

The trial had two phases:

**Phase 1: Xuser GBCM Service**

In this phase only one domain, namely Berlin, was involved. A potential MISA customer (Value Added Service Provider or end-user) could request a subscription to the MISA Global Broadband Connectivity Management (GBCM) service. This would be handled by an Xuser GUI agent in Antwerp. The Xuser Java GUI interacts with GMD’s Berlin Xuser agent.

The MISA customer is actually the PROSPECT VASP who requests the ATM Path Provisioning Service (APPS) i.e. an ATM connection with another user located within the same domain. The reserve request is initiated by Prospect VASP via a GUI in Antwerp, passing through the CORBA/TMN gateway, and is received by the Berlin Xuser agent.

Since the connection request involves 2 users belonging to a single domain, it is forwarded to the Qatm agent also located in Berlin, setting up the VPCs in the appropriate ATM switches. After the VPCs are reserved and activated, a video conference running on IP over ATM is demonstrated. One end is on a laptop located in Antwerp (pure IP) and the other end is in Berlin on a workstation.
with an ATM adapter (Classical IP over ATM). The video grabbed by the camera in Berlin is forwarded to the Antwerp demo site.

When a cable is pulled out of the switch during an active connection, a loss-of-service alarm is generated and forwarded from the ATM switch to the Qatm agent in Berlin to the Xuser agent in Berlin and is finally received by the Prospect VASP. The alarms are visualised in the GUIs in Antwerp.

**Phase 2: Multi-Domain MISA-OS Operation**

This involved a subscription service between two users in different domains. The process is similar to that in phase 1 except that the MISA customer requires a connection with a user located in a foreign domain.

As in phase 1 the ATM connection request is initiated through the Xuser Java GUI running in Antwerp. Two MISA OSs participate in this scenario - the Berlin distributed MISA OS running in HP platforms and the Zurich MISA OS running in the IBM TMN platform. The Xuser agent in Berlin receives the reservation request. After analysing it and recognising that it is a multi-domain one, it forwards it to the Xcoop Manager running in Barcelona to notify the remote domain. The Zurich Xcoop agent receives the reservation request and, assuming that it will be successful, it forwards the request to the involved Qsdh and Qatm sim-agents in Athens. In parallel the Xuser agent in Berlin forwards the request to the local Qatm agent in Berlin. This manages a reservation request spanning 2 domains, 2 different technologies and 3 subnetworks ATM (Berlin), SDH (Athens) and ATM(Athens). The GUI in Antwerp monitors the connections: GMD Xuser GUI, Xcoop GUI using Java multiNetMgr, Qatm/Qsdh GUIs using MultiNet and also Hyper Manager to view all the connections in one GUI.

Alarm reporting involves the reception of a state change notification from one of the Access Points involved in an active connection. The alarm is displayed on the relevant GUIs as a change of the colour of the Access Point and connection from green to red.

MISA has worked closely with other ACTS management trials, notably PROSPECT and TRUMPET

- The PROSPECT VPN Manager gets the GBCM Service provided by the MISA GBCM Service Provider (Berlin) via the MISA Xuser interface
- The TRUMPET VASP gets the GBCM Service provided by the MISA GBCM Service Provider (Berlin) via the MISA secured Xuser interface
- The MISA GBCM Service Provider (Berlin) with Xuser interface uses an integrated version of SMP developed by TRUMPET for Xuser security purpose

The trials have demonstrated and validated:

- The integration of SDH and ATM management at network management level
- Global Broadband Connectivity Management Service - for the provision and management of multi-domain and multi-technology broadband connections
- Fully portable Java based GUI supporting the Global Broadband Connectivity Management Service which can be launched from a WWW browser
- A new management service - the Global Broadband Connectivity Management Service - for the provision and management of multi-domain and multi-technology broadband connections
- The integrated management of SDH and ATM technologies at network management level

This trial attracted the interest of many participants at the IS&N’98 conference, especially industrial ones. In particular, players from Israel have expressed an interest in being involved in a follow-up of MISA.

More information about MISA can be obtained from http://www.misa.ch/