ADTRAN Advanced Operational Environment

ADTRAN is focused on meeting the increasing demand for service level management and is evolving the ADTRAN suite of management offerings to an intelligent service delivery platform. Leveraging our decade of global experience working with service providers and building up from the Service Management Delivery Core, we are evolving to the ADTRAN Advanced Operational Environment (AOE). AOE is a framework which enables integrated end to end service aware network management tools such as: enhanced network planning, service activation, decision support tools, service assurance and business planning for operations. This environment facilitates reduced time to market by streamlining OSS integration of ADTRAN service activation and troubleshooting features and incorporates best in class tools to provide a complete service management solution in a multivendor environment.

AOE translates network data and management information into knowledge which is presented as actionable steps for provisioning, testing, and troubleshooting.

This simplified, user-focused interface significantly reduces the training and execution time for all supported functions. (service aware alarm reporting, provisioning, performance monitoring, prequalification, test and troubleshooting capabilities from a thin client - web accessible - interface). The
initial offering of AOE supports the ADTRAN Carrier Network equipment
and as AOE evolves, the complete set of ADTRAN networking equipment
(Carrier and Enterprise) will be managed from the same interface.

AOE abstracts away hardware management to provide a simplified, service
centric, and operations oriented interface to the user, whether the user is a human
using a web interface or a northbound OSS using a TL1 or XML gateway. AOE
manages, for example; IPTV, Voice, Internet services (Data and Video), Carrier
Ethernet, CES services and Optical Transport Infrastructure and facilitates the
operation and automation of activation, assurance, and capacity management
functions. The strongest distinction of AOE is in the logic system that takes the
information from the management core - provisioning, PM, status, diagnostics,
and more – and reduces all this data to concise operational insights and
recommendations via the ServiceCheck product.

AOE is a transformation in management philosophy. ADTRAN will continue to
roll out AOE products, like ServiceCheck, as they become available.

AOE product offerings will include:

Services
• ServiceActivator – end to end service activation
• ServiceDesigner– service profile/template manager (basic)
• ONE Services – Optical Network Edge service activation (example:
  Appendix A)
• Ethernet Access Services – service activation for EoX
• OPTI6100 Services – TDM service activation on OPTI-6100 subtended
  rings

Network Design
• LinkManager (future)– fiber wavelength assignment/management
• Optical Planning Tool (future)
• Traffic Engineering (future)

Troubleshooting: includes the following functions:
• ServiceCheck – knowledge based troubleshooting

Service Assurance
• ServiceMonitor – proactive monitoring of service BW and
  parameters, Y.1731, Ethernet OAM, SLA and QoS
• CapacityManager – trunk utilization over time
• Alarm Window – human readable alarm listing with color coded
  severity
Asset Management

- **InventoryManager** – network wide provisioning and inventory information
- **Discovery** – manual initiation for discovery for new managed objects
- **SW upgrade** – single GUI for all managed ADTRAN CN devices
- **Scheduler** – network device resync, network device heartbeat, network device software upgrade

Help

- **About AOE** – AOE version and license key status
- **AOE Client** – administrative control of client access
- **Port Status Legend** – key for port status in Network Device Manager

OSS GW

ADTRAN supports a TeleManagement Forum (TMF) 854 compliant XML Northbound interface integrated with AOE. ADTRAN inherits the core for this solution from ADTRAN existing Northbound OSS product. Similar to the existing TL1 NB interface this interface is standards-compliant and initially offers activation/deactivation for the Ethernet over Copper Application for ADTRAN TA5000 system. The new XML interface will support alarming, provisioning, inventory and PM information via a ‘golden’ (backward compatible) interface. Integration work done for the initial deployment will continue to be supported as new features are added.

Service Delivery Management Core

Service Delivery Management Core encompasses the spectrum of ADTRAN access solutions with the tools and interfaces required of a network management system. This industry-proven core utilizes an all-Java architecture to provide configuration, performance, network assurance, accounting, and security functions at the core of AOE.

Two protocol agents are available for communication with the ADTRAN devices. These agents provide traffic regulation between the Application Server and the devices for efficient data processing. The SNMP agent converts JAVA to SNMP and vice versa for SNMP applications. For optical applications where SNMP over IP is not achievable, the TL1 agent can be used to convert JAVA to TL1 and vice versa. The TL1 messaging scheme used in this application is ADTRAN proprietary.

Service Delivery Management Core Key Features

- Scalable, extensible architecture
- All Java application based on the TMN model
• Single platform for ADTRAN systems
• Fault, configuration, accounting, performance and security management functions
• Automated software downloads
• Provisioning recovery after catastrophic failure
• Automatic server failover
• Network-wide reporting tool

Service Delivery Core Components:
• Application Server
• Databases

The Application Server functions as the engine for all activities within the management core environment. It is the rule engine of the management core and coordinates the interaction between all of the various components.

The management core utilizes two databases. The internal database stores basic inventory and other pertinent management information for the Application Server. The Reports Plus database provides real-time inventory and provisioning information collected via a highly optimized, bandwidth friendly mechanism. Additionally, when provisioning changes are made either through the multi-access GUI or northbound interface, the database is immediately updated. This database is a common SQL database that supports user queries via the multi-access GUI and standard SQL queries from a third-party application. Queries for network wide information can be run without impacting system performance or day-to-day operations. If desired, the Reports database component can be offloaded to a separate server for further optimization of the management architecture.

Using a standard NetCool log probe, integration with Micromuse NetCool systems are easily facilitated. As the AOE records alarms received from the ADTRAN systems as well as events generated by the AOE, this information is immediately available for transmission to the NetCool system. Other fault management systems can be supported as well through trap forwarding or other common mechanisms.

Client access is multi-access via the internet and supports stationary and a variety of mobile devices.

APPENDIX A – ONE Services – Optical Network Edge Service Activation
Point to Point, Topology based Service Activation
Complete service provisioning on a single screen. Point and click GUI with drop down options.