Network Management Solutions to New Generation Optical Transport Network

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• ZTE’s Network Management Solutions
Evolvement of Optical Transport Network

- High Capacity, Multi-Service, Intelligence
- MSTP/MSPP provides the capability of carrying multi services
- ASON provides the intelligence features
- Optical transport network is evolving to an operational and value added network
Hybrid Circuit and Packet Network

Layer Domain Architecture

- Switched services
- IP services
- Private line (DS1, DS3) services
- STM -N services
- I services

Physical Architecture

- ATM Sw.
- POTS Sw.
- OTN/SDH XC
- OTN XC
- OTN/SDH /ATM XC
- Mesh physical topology
- Optical rings in other domains

From ITU Recommendation M.3017
Intelligence: with Control Plane

Three Planes of ASON:  Transport, Management, Control
Optical transport network is evolving to operational service provided network, besides the basic functions of transport.

Change of the Role

- Broadband Metro Net.
- Operational core transport network
- Leased Circuit/Net.
- Traditional TDM Service
- Broadband Services
- GSM/3G
- PSTN
Multi service oriented Optical Network

- Traditional TDM services: voice, TV conference, private circuit
- Data services: VPN, 3G, Internet access
- Ethernet services: EPL, EVPL, EPLAN, EVPLAN
- Private circuit/VPN of important customers
ASON Based New Service—BoD

- BoD
  - SC
  - UNI 2.0
  - Accounting
q OVPN: VPN on optical layer for specific customers
q Customer can manage, create, monitor their own service connections
q Connection Type might be PC、SPC or SC
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Evolvement of New Generation Optical Transport Network

Network Management for New Generation Optical Transport Network

ZTE’s Network Management Solutions
The new generation of optical network management is in the layer between device management and OSS. It plays an important role for both upper and lower layer.

- Shall support OSS building and meet the requirements
- Management of multi devices, multi services, multi resources, multi domains
- Suitable for optical network service operation and management
- Analysis and display in different point for network, resources and services
- Evolvement of network management itself
Meet the Requirements of OSS

- Combine with OSS to implement service work flow
- Provide dynamic data to OSS and resource management system
- End to End management of service fulfillment, service assurance and service billing
- Adaptable to carrier’s adjustment of service work flow
A Solution to Carrier’s Integrated NM of Optical Net.
Various Views of Network
Various views of resources

- Physical resource model
- Logical resource model
- Service oriented and specific resource model

Resource display

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Layered Views of Services

4 End to end service views
4 Service views, Physical views, logical views in different layers
4 Manage resources in layer or group
Through SMS, Customer can monitor, query and manage their own circuit services and VPN anywhere, anytime.
Network Planning and Optimization

- Plan of new network
- Analysis and optimization of existed network
- Network simulation
Flexibility and extensibility

- Flexible deployment. Either integrated or distributed on different devices, functions, domains
- Easy to update functions
- Open. Flexible to integrate with other systems.

Intelligence

- Correlation analysis
- Policy management
Related Standards and Specifications

- ITU-T M.3060 Principles for the Management of Next Generation Networks
- ITU-T M.3017 Framework for the Integrated Management of HCPN (Hybrid Circuit/Packet Networks)
- ITU-T G.7718 Framework for ASON management
- ITU-T Draft G.7718.1 Protocol-neutral management information model for the control plane view
- ITU-T Draft Q.840.1 Requirements and Analysis for NMS-EMS Management Interface of Ethernet over Transport and Metro Ethernet Network
- TMF MTNM
- CCSA TC7: MSTP, ASON related specifications in series
Next Step of Optical Network Management

Present Situation

Device Oriented

Network Oriented

Service Oriented

Customer Oriented

SLA Oriented
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Network Management Solutions to Optical Transport Network

BML

OSS

SML

ZXONM
SONA

………… SMS

Resource Management

Resmaster 2000

ZXONM N100

Network Planning

NML

SDH/DWDM E300

EML

SDH/DWDM E300

NEL

SDH/DWDM E300
ZXONM N100

- An integrated NMS on NML
- Adaptive to management of large scale, multi service, high level network
- Integrated management of multi vendor’s EMS
- Provide standard CORBA interface to carrier’s NMS
• SMS: Service layer management
• Face to service lease
• Management of customer VPN
• CNM by Web
• Analysis of Service Quality
Functions of ZXONM SONA

- CNM (Customer Network Management)
  - Security management
  - Log management
  - Service management
- Customer Management
- LCS (Leased Circuit Service) management
- VPN Management
- Analysis of Service Quality
CNM

Customer can log on Web server of SONA by Internet, and monitor, query and manage their own circuit services and VPN anywhere.
LCS Management

Easily and quickly create end to end leased circuits for customers.
Integration of EMS/NMS/SMS
Global Connections Universal Solutions

Thank You