ITU-T Overview of NGN Management

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Topics

- ITU-T Study Group 4
- NGN Management Focus Group (NGNMFG)
  - Background
  - Objectives
  - NGN Management Specification Roadmap
  - Harmonization Activities
- Backup charts
NGN Management Architecture (M.3060)

Management Functional View

Management Information View

Management Physical View

Business Process View

Security Considerations

System Evolution Lifecycle

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Business Process View
(M.3050 series = TMF eTOM)

Customer

Strategy, Infrastructure & Product

Operations

Fulfillment

Assurance

Billing

Marketing & Offer Management

Customer Relationship Management

Service Development & Management

Service Management & Operations

Resource Development & Management

Resource Management & Operations

(Application, Computing and Network)

Supply Chain Development & Management

Supplier/Partner Relationship Management

Enterprise Management

Strategic & Enterprise Planning

Enterprise Risk Management

Enterprise Effectiveness Management

Knowledge & Research Management

Financial & Asset Management

Stakeholder & External Relations Management

Human Resources Management
Security of the Management Plane (M.3016 series)

- Based on ATIS/TMOC T1.276 but designed for global application
  - M.3016.0: Overview
  - M.3016.1: Requirements
  - M.3016.2: Services
  - M.3016.3: Mechanisms
  - M.3016.4: Profile proforma
- Proforma allows SDOs and forums to profile other M.3016 parts for local application
NGN Management Focus Group (NGNMFG)

- Based on a proposal from leaders of major SDOs, forums, and consortia
- Focused on the following (FCAPS) management interfaces:
  - Network Element - Management System
  - Management System – Management System

FCAPS - Fault, Configuration, Accounting, Performance, and Security Management

NGN Management FG – Objectives - 1

- General goal
  - To provide the management interface capabilities to support the ITU-T objectives for Release 1 consistent with the high level requirements and architecture in Y.2001, Y.2011, and Y.2012 (Y.NGN-FRA)
- To produce a NGN Management Specification Roadmap focused on Release 1 which identifies
  - Requirements
  - Framework, principles, and architecture
  - Interface specifications, both protocol-neutral and protocol-specific
NGN Management FG – Objectives – 2

- To collaborate with world’s major SDOs, forums, and consortia
  - Emphasizing reuse of their management specifications where relevant
- To lead and support activities to
  - Include a “big picture” Roadmap introduction
  - Analyze and trace requirements
  - Identify specification “overlaps” and stimulate their owners to harmonize them
  - Identify specification “gaps” and best organization(s) to fill the gaps and prepare a project plan to guide their production

Organizations with most active participants

- ITU-T SG 4 and SG 15 (Q14)
- ATIS TMOC
- ETSI TISPAN WG8
- TeleManagement Forum (TMF)
- Distributed Management Task Force (DMTF)
- 3GPP SA5
- 3GPP2 TSG-S WG5
- OASIS WSDM
- IETF Operations and Management Area
- IEEE 802.1
NGN Management Specification Roadmap - 1

- ITU-T SG 4
  - M.3016 series (security of the management plane)
  - M.3050 series (Enhanced Telecom Operations Map)
  - M.3060 (NGN mgt principles and architecture)
  - M.3341 (QoS/SLA management service requirements)
  - M.3350 (Emergency telecommunication service management requirements)
  - Q.838.1 (EPON mgt requirements and analysis)
  - Q.840.1 (management requirements and analysis for EOT and metro ethernet networks)
  - X.alarm-neutral (Protocol-neutral alarm reporting model)

NGN Management Specification Roadmap - 2

- ITU-T SG 15
  - G.7718, G.7718.1 (ASON control plane mgt requirements and information model)

- ETSI TISPAN WG8
  - TS 188 004 (Vision for NGN OSS)
  - TS 188 003 (NGN OSS Requirements)
  - TS 188 001 (NGN OSS architecture for R1)

- TeleManagement Forum
  - Enhanced Telecom Operations Map (eTOM; =M.3050 series)
  - Multi-technology Network Management (MTNM)
  - Technology-Neutral Architecture (TNA)
  - Shared Information and Data Model (SID)
NGN Management Specification Roadmap- 3

- **3GPP SA5**
  - 32.111 series (alarm IRP)
  - 32.200 series (subset for IMS offline and online charging and billing)
  - 32.300 common management series (notification and generic IRPs)
  - 32.600 series (interface IRPs for basic CM and kernel CM; NRM IRPs for generic and core; data definition IRPs for state management)

- **Metro Ethernet Forum**
  - MEF 7 (EMS-NMS information model for metro ethernet networks)

NGN Management Specification Roadmap- 4

- **OASIS**
  - WSDM-MUWS (Web services distributed management)
  - Reference Model for Service-Oriented Architecture

- **IETF**
  - RFC 3444 (On the difference between information models and data models)
  - RFC 3535 (Overview of the 2002 IAB network management workshop)
  - STDs 58 and 62 (Simple Network Management Protocol and associated SMI)
  - Netconf (NETCONF configuration protocol)
NGN Management Specification Roadmap- 5

- IETF (cont)
  - EPON MIB (EPON managed objects)
  - EFMCu MIB (MIB for First Mile Copper interfaces)
  - Ethernet OAM MIB for Ethernet Like interfaces
  - RFC 3621 (Power Ethernet MIB)
  - RFC 3635 (Ethernet Like Interfaces MIB)
  - RFC 3636 (Medium Attachment Unit MIB)
  - RFC 3637 (Ethernet WAN MIB)

NGN Management Specification Roadmap- 6

- IEEE
  - IEEE 802.1AB (MIB for Station and Media Access Control Connectivity Discovery)
  - IEEE 802.1AD (MIB for Virtual Bridged LANs)
  - IEEE 802.1 ag (MIB for Connectivity Fault Management)
  - IEEE 802.1D (Protocol-neutral model for Media Access Control Bridges)
  - IEEE 802.1Q (Protocol-neutral model for Virtual Bridged LANs)
NGN Management Specification Roadmap- 7

- **ATIS TMOC**
  - Usage data for packet-based services
    - 0300075 (Service-neutral architecture and protocol requirements)
    - 0300075.1 (Service-neutral protocol specifications for billing applications)
- **DMTF**
  - Common Information model (CIM)
  - Web-based enterprise management (WBEM)

Note: Some of the above specifications are not yet approved.

NGNMFG Harmonization Activity

- **Management architecture**: SG4, TISPAN, TMF
- **Alarm reporting**: TMF, 3GPP, SG4, DMTF
- **State management**: TMF, 3GPP
- **Accounting, charging, and billing**: SGs 4 and 13, ATIS TMOC, 3GPP SA5, TISPAN WGs 2 and 8
- **Ethernet management**: SG4, MEF, TMF
- **Information Models**: (many SDOs/forums)
  - 2 level focus: generic, NGN functions
- **XML-based framework and models**: (many SDOs/forums)
- **Interface specification methodology**: SG 4, 3GPP SA5, TISPAN WG8
NGN Management Focus Group - Summary

- Leadership
  - Chair: Dave Sidor (Nortel Networks)
  - Vice Chair: Leen Mak (Alcatel-Lucent)
- Participation
  - Open; individuals from founding organizations encouraged
  - Registration required: see http://www.itu.int/ITU-T/studygroups/com04/ngn-mfg/index.html
- Time schedule
  - Roadmap Version 1 submitted to SG 4: September 2005
  - Roadmap Version 2 to SG 4: May 2006
  - Roadmap Version 3 to SG 4: February 2007
  - Roadmap Version 4 to SG 4: August 2007
- Working methods
  - Decision-making via consensus
  - Virtual meetings, but f2f meetings allowed
  - Any specifications produced are candidates to be SG 4 Recommendations

Backup Charts
NGNMFG Scope:
FCAPS Management Interfaces

Business Management Layer
  \( \text{BML-SML interface} \)

Service Management Layer
  \( \text{SML-NML interface} \)

Network Management Layer
  \( \text{NML-EML interface} \)

Element Management Layer
  \( \text{EML-NEL interface} \)

Network Element Layer
  \( \text{transmission interface} \)

- Excludes transmission interfaces

NGNMFG Template for Specification Candidates

Short Name
- Title:
- Status: approved, draft (due date)
- Organization (group):
- Organization leader (group leader):
- Type: architecture (functional, physical), functional requirements, information model (protocol-neutral, protocol-specific), protocol, conformance
- Role: generic, technology-specific, NGN-specific
- Release 1 application:
- Traceability:
- Location of text: either URL or NGNMFG ID number
- Remarks:
Acronyms

- ASON - Automatic switching optical network
- BML - Business management layer
- EML - Element management layer
- eTOM - Enhanced Telecom Operations Map (tm)
- FCAPS - Fault, configuration, accounting, performance, and security management (combination of FM, CM, AM, PM, and SM)
- FRA - Functional requirements and architecture
- GERAN - GSM edge radio access network
- HMI - Human machine interface
- IMS - IP multimedia subsystem
- IRP - Integration reference point
- LLA - Logical layered architecture
- MTNM - Multi-technology network management
- NE(L) - Network element (layer)
- NRM - Network resource model
- OS(F) - Operation system (function)
- OSS - Operations support system (specialization of an OS)
- SLA - Service level agreement
- SML - Service management layer
- UTRAN - UMTS radio access network
- WS - Workstation