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SERIES Q: SWITCHING AND SIGNALLING
Q3 interface

SDH-DLC functional requirements for the network and network element views

ITU-T Recommendation Q.837.1

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SDH-DLC functional requirements for the network and network element views

Summary

This Recommendation defines management functions that are to be supported at network level for the SDH-DLC system. These management functions are selected from ITU-T Rec. M.3400 and adapted for managing these technologies. These management functions are applicable for the interface between Network Management and Element Management systems. These functions are to form the basis in developing the requirements and analysis according to M.3020 methodology to develop the protocol neutral information model in a future Recommendation.

Source

ITU-T Recommendation Q.837.1 was approved on 13 February 2004 by ITU-T Study Group 4 (2001-2004) under the ITU-T Recommendation A.8 procedure.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

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SDH-DLC functional requirements for the network and network element views

1 Scope

This Recommendation specifies the functional requirements for the management of SDH-DLC systems at a reference point beyond an element management layer. These requirements are based on ITU-T Rec. M.3400 and defined from the perspective of an operator of a network management system using a combination of network element and network level views. The aim of these requirements is to support the integration of DLC and SDH technologies for fibre-access networks in a multi-vendor environment. The goal of these requirements is to perform the operation, maintenance and administration of these networks in an efficient manner. The management services supported by these requirements include customer administration, network provisioning, quality of service, network performance and maintenance management as defined by ITU-T Rec. M.3200. These functional requirements would be used to develop the use cases and protocol-neutral information model according to M.3020 methodology in a future Recommendation.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [1] ITU-T Recommendation M.3010 (2000), *Principles for a telecommunications management network*.
- [2] ITU-T Recommendation M.3020 (2000), *TMN interface specification methodology*.
- [3] ITU-T Recommendation M.3100 (1995), *Generic network information model* (plus amendments).
- [4] ITU-T Recommendation M.3400 (2000), *TMN management functions*.
- [5] ITU-T Recommendation G.774 (2001), *Synchronous digital hierarchy (SDH) – Management information model for the network element view*.
- [6] ITU-T Recommendation G.783 (2004), *Characteristics of synchronous digital hierarchy (SDH) equipment functional blocks*.
- [7] ITU-T Recommendation G.805 (2000), *Generic functional architecture of transport networks*.
- [8] ITU-T Recommendation G.902 (1995), *Framework Recommendation on functional access networks (AN) – Architecture and functions, access types, management and service node aspects*.
- [9] ITU-T Recommendation Q.834.1 (2001), *ATM-PON requirements and managed entities for the network element view*.
- [10] ITU-T Recommendation Q.834.2 (2001), *ATM PON requirements and managed entities for the network view*.

- [11] ITU-T Recommendation X.721 (1992) | ISO/IEC 10165-2:1992, *Information technology – Open Systems Interconnection – Structure of management information: Definition of management information*.
- [12] ITU-T Recommendation Q.831 (1997), *Fault and performance management of V5 interface environments and associated customer profiles*, plus Corrigendum 1 (2001).
- [13] ITU-T Recommendation Q.832.1 (1998), *VB5.1 management*, plus Corrigendum 1 (2001).
- [14] ITU-T Recommendation Q.816 (2001), *CORBA-based TMN services*.
- [15] ITU-T Recommendation M.3120 (2001), *CORBA generic network and network element level information model*.
- [16] ITU-T Recommendation X.780 (2001), *TMN guidelines for defining CORBA managed objects*.
- [17] TeleManagement Forum TMF513 (2002), *Multi-Technology Network Management Business Agreement*.
- [18] ETSI EN 300 371 V1.3.2 (2001-02), *Telecommunications Management Network (TMN); Plesiochronous Digital Hierarchy (PDH) information model for Network Element (NE) view*.

3 Definitions

3.1 Terms imported from other ITU-T Recommendations

This Recommendation uses the following terms:

- Element Management System (EMS) – Imported from ITU-T Rec. M.3100;
- Network Element (NE) – Imported from ITU-T Rec. M.3100;
- Operations System Function (OSF) – Imported from ITU-T Rec. M.3100;
- Network Element Layer (NEL) – Imported from ITU-T Rec. M.3100;
- Element Management Layer (EML) – Imported from ITU-T Rec. M.3100;
- Network Management Layer (NML) – Imported from ITU-T Rec. M.3100;
- Element/Network/Service Management System – Imported from ITU-T Rec. M.3100;
- Data Communications Network (DCN) – Imported from ITU-T Rec. M.3100;
- Customer – Imported from ITU-T Rec. M.3100;
- Digital Cross Connect (DXC) – Imported from ITU-T Rec. G.783;
- Network Termination (NT) – Imported from ITU-T Rec. G.960;
- Synchronous Digital Hierarchy (SDH) – Imported from ITU-T Rec. G.707/Y.1322;
- Access Network (AN) – Imported from ITU-T Rec. G.902;
- Add/Drop Multiplexer (ADM) – Imported from ITU-T Rec. G.783.

3.2 New terms

This Recommendation defines the following terms:

3.2.1 central terminal (CT): A Central Terminal (CT) provides the network-side interface of the OAN; it is connected to one or more Remote Terminals. A Central Terminal may consist of a HOM or ADM providing the network-side interface of the DLC system either integrated or separately.

3.2.2 digital loop carrier (DLC): An integrated access system containing a number of point-to-point communication links between a network side and user side supported by optical access transmission systems.

3.2.3 optical access network (OAN): The set of access links sharing the same network-side interfaces and supported by optical access transmission systems. The OAN may include a number of ODNs connected to the same OLT.

3.2.4 remote terminal (RT): The termination of the optical access network element that provides the user-side interface and connected to the ODN.

4 Abbreviations

This Recommendation uses the following abbreviations:

CT	Central Terminal
CTP	Connection Termination Point
DCN	Data Communications Network
DLC	Digital Loop Carrier
EM	Element Management
EML	Element Management Layer
EMS	Element Management System
ITU	International Telecommunication Union
ME	Managed Entity
MIB	Management Information Base
MSP	Multiplex Section Protection
NE	Network Element
NEL	Network Element Layer
NML	Network Management Layer
NMS	Network Management System
NT	Network Termination
OAM	Operations, Administration and Maintenance
OAN	Optical Access Network
PM	Performance Management
QoS	Quality of Service
RT	Remote Terminal
SDH	Synchronous Digital Hierarchy
SNI	Service Network Interface
SNC	Sub-Network Connection
SNCP	Sub-Network Connection Protection
TMN	Telecommunications Management Network
TP	Termination Point
UML	Unified Modelling Language