INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

M.3010

Amendment 1
(12/2003)

SERIES M: TMN AND NETWORK MAINTENANCE: INTERNATIONAL TRANSMISSION SYSTEMS, TELEPHONE CIRCUITS, TELEGRAPHY, FACSIMILE AND LEASED CIRCUITS

Telecommunications management network

Principles for a telecommunications management network

Amendment 1: TMN conformance and TMN compliance

ITU-T Recommendation M.3010 (2000) – Amendment 1

ITU-T M-SERIES RECOMMENDATIONS

TMN AND NETWORK MAINTENANCE: INTERNATIONAL TRANSMISSION SYSTEMS, TELEPHONE CIRCUITS, TELEGRAPHY, FACSIMILE AND LEASED CIRCUITS

Introduction and general principles of maintenance and maintenance organization	M.10–M.299
International transmission systems	M.300–M.559
International telephone circuits	M.560–M.759
Common channel signalling systems	M.760–M.799
International telegraph systems and phototelegraph transmission	M.800–M.899
International leased group and supergroup links	M.900–M.999
International leased circuits	M.1000–M.1099
Mobile telecommunication systems and services	M.1100–M.1199
International public telephone network	M.1200–M.1299
International data transmission systems	M.1300–M.1399
Designations and information exchange	M.1400–M.1999
International transport network	M.2000–M.2999
Telecommunications management network	**M.3000–M.3599**
Integrated services digital networks	M.3600–M.3999
Common channel signalling systems	M.4000–M.4999

For further details, please refer to the list of ITU-T Recommendations.

ITU-T Recommendation M.3010

Principles for a telecommunications management network

Amendment 1

TMN conformance and TMN compliance

Summary

This amendment contains an updated clause 13, "TMN conformance and TMN compliance".

Source

Amendment 1 to ITU-T Recommendation M.3010 (2000) was approved by ITU-T Study Group 4 (2001-2004) under the ITU-T Recommendation A.8 procedure on 14 December 2003.

Keywords

architecture, conformance and compliance, interfaces, reference model, telecommunications management network (TMN)

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.

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In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

CONTENTS

ITU-T Recommendation M.3010

Principles for a telecommunications management network

Amendment 1

TMN conformance and TMN compliance

1 Scope

This amendment contains extensions to the 2000 version of ITU-T Rec. M.3010.

2 Additions

2.1 Clause 2 (References)

Add the following references:

[21] ITU-T Recommendation X.722 (1992), *Information technology – Open Systems Interconnection – Structure of management information: Guidelines for the definition of managed objects*.

[22] ITU-T Recommendation Q.816 (2001), *CORBA-based TMN services*.

[23] ITU-T Recommendation Q.816.1 (2001), *CORBA-based TMN services: Extensions to support coarse-grained interfaces*.

[24] ITU-T Recommendation X.780 (2001), *TMN guidelines for defining CORBA managed objects*.

[25] ITU-T Recommendation X.780.1 (2001), *TMN guidelines for defining coarse-grained CORBA managed object interfaces*.

3 Changes

3.1 Clause 13 (TMN conformance and TMN compliance)

Replace the entire clause with the following:

13 TMN conformance and TMN compliance

13.1 Introduction

This clause defines TMN conformance and TMN compliance. TMN conformance, which is testable, relates to the interfaces between TMN physical blocks. TMN compliance relates to the TMN architecture, principles and functions.

13.2 TMN conformance definitions

The goal of TMN conformance is to increase the probability that different systems within a TMN will be able to interoperate, that TMNs in different service/network providers' administrations will be able to interoperate as much as the administrations agree to do, and that a customer's system and a service provider's TMN will be able to interoperate as much as the two agree to interoperate.

The definitions can, in principle, be applied to Q, X or F interfaces. However, present requirements and standards for the F interface are in the formative stage. Therefore, the definitions in this clause apply to Q and X interfaces. However, this clause enumerates TMN conformance definitions which are testable.

The TMN supports two general-purpose paradigms: the CMIP/OSI system management paradigm and the CORBA framework paradigm. TMN conformance to either of these paradigms is a condition for systems' interworking within these paradigms but is not sufficient to guarantee interoperability within the paradigm. Interfaces are not interoperable between the paradigms. It is always recommended that the purchaser/user of these systems perform some form of verification testing to determine that any two systems, claiming any type of TMN conformance, interoperate. Interoperability testing must include testing of the interface protocols, the shared/exposed information over those interfaces, and the interface functionality of the system.

Definitions associated with TMN interface conformance are provided as follows:

- TMN interface protocol conformance definition;
- levels of TMN interface information conformance.

The TMN interface specification must be documented, publicly available, and licensable at a reasonable price on a non-discriminatory basis.

13.3 TMN interface protocol conformance

An interface (Q, X) of a system is TMN interface protocol conformant if and only if all of the following are met:

1) The interface uses a communications protocol stack specified by ITU-T Recommendations for TMN. Currently, the communications protocol stack must conform to ITU-T Rec. Q.811 [12] for lower layer protocols and ITU-T Rec. Q.812 [13] for upper layer protocols. A valid and consistent selection of protocols must be chosen from the choices enumerated in ITU-T Recs Q.811 [12] and Q.812 [13]. In particular, valid selection must be made for the CMIP/OSI System management or CORBA framework paradigms.

2) For the CMIP/OSI system management paradigm, the system interface documentation specifies the International Standardized Profiles (ISPs), where they exist, enumerated in ITU-T Recs Q.811 [12] and Q.812 [13] which are supported. Conformance with ITU-T Recs Q.811 [12] and Q.812 [13] is specified with respect to specific ISPs. Management Communications profiles are selected based on types of TMN Management Services that need to be provided over the interface as per the corresponding tables in ITU-T Recs Q.811 [12] and Q.812 [13]. Standardized Implementation Conformance Statements in the form of Protocol Implementation Conformance Statements (PICS) (ITU-T Rec. X.290 [7]), and Protocol Implementation Extra Information For Testing (PIXIT) (ITU-T Rec. X.290 [7]) must be provided.

3) For the CORBA framework paradigm, the systems must support the protocol and services specified in the ITU-T Q.816-series Recommendations as appropriate.

4) The system interface documentation specifies if the interface can be used as an X interface or a Q interface.

5) The system interface can act in the appropriate role(s) for the protocol over that interface (e.g., agent and/or manager for CMIP, initiator/responder for FTAM, server and/or client for the CORBA framework). The system interface documentation specifies the roles in which the system can act.

6) If the protocol stack selected in 1) requires information modelling, then a standardized information modelling technique must be used. For the CMIP/OSI system management paradigm this information modelling shall follow ITU-T Recs X.720 [5] and X.722 [21]. In

the CORBA framework, more than one paradigm choice is provided for modelling. For the CORBA framework paradigms, the information modelling shall follow the ITU-T X.780-series Recommendations as appropriate. The framework chosen shall be specified in the model.

7) If GDMO-based information models are implemented, the system interface must meet one of the levels of TMN interface information conformance as documented in 13.4.

13.4 TMN interface information conformance

A system interface may make a claim, by level, of information conformance for each management functionality that the interface supports. It is expected that this management functionality will be by information model document.

13.4.1 Level A interface information conformance

An interface of a system is ***Level A*** interface information conformant, for this management functionality, if and only if all of the following are met:

1) The system interface is TMN interface protocol conformant i.e., meets the criteria in the definition in 13.3 for either paradigm.

2) The managed-object classes the system interface supports are defined in the applicable information models specified in ITU-T Recommendations relevant to this management functionality. The system interface documentation shall list the Recommendations that define the specified information models with the inclusion of the version number and date. For the CMIP/OSI system management paradigm, the information models shall be defined using ITU-T Recs X.720 and X.722. For the CORBA framework paradigm, the information models shall be defined using X.780 series as appropriate. For the CMIP/OSI system management paradigm, standardized Implementation Conformance Statements in the form of Managed Objects Conformance Statements (MOCS), and Management Information Conformance Statements (MICS), and Managed Relationship Conformance Statement (MRCS), if applicable, must be provided (ITU-T Rec. X.724 [4]). For the CORBA framework paradigm, implementation conformance statements proformas following the ITU-T X.781-series Recommendations must be provided.

3) If the system interface uses managed-object classes which have been subclassed from classes enumerated in 2) in this definition, for the sole purpose of providing for missing model functionality, then these managed-object classes must be defined following the strict inheritance rules as specified in ITU-T Rec. X.720 [5] for the CMIP/OSI system management paradigm or in the ITU-T X.780-series Recommendations as appropriate for the CORBA framework paradigm.

4) Any additional object classes other than those enumerated in 2) in this definition, that are needed to extend the ITU-T information model due to missing model functionality, shall have accompanying documentation which fully specifies the information models with the inclusion of the version number and date. For the CMIP/OSI system management paradigm separate standardized Implementation Conformance Statements in the form of Managed Objects Conformance Statements (MOCS), and Management Information Conformance Statements (MICS), and Managed Relationship Conformance Statement (MRCS), if applicable, must be provided (ITU-T Rec. X.724 [4]) for these object classes. For the CORBA framework paradigm, implementation conformance statements proformas following the ITU-T Rec. X.781-series Recommendations must be provided.

13.4.2 Level B interface information conformance

An interface of a system is ***Level B*** interface information conformant, for this management functionality, if and only if all of the following are met:

1) The system interface is TMN interface protocol conformant i.e., meets the criteria in the definition in 13.3 for either paradigm.

2) For the CMIP/OSI system management paradigm, the information models shall be defined using ITU-T Recs X.720 [5] and X.722 [21]. For the CORBA framework paradigm, the information models shall be defined using the ITU-T X.780-series Recommendations as appropriate. For both paradigms, if the managed-object classes the system interface supports are defined in the applicable information models specified in other *de jura* standards bodies (e.g., ETSI, T1, TTC) or *de facto* standards bodies (e.g., ATM Forum, TMF, 3GPP). The system interface documentation shall list the documents that define the specified information models with the inclusion of the version number and date. For the CMIP/OSI system management paradigm, standardized Implementation Conformance Statements in the form of Managed Objects Conformance Statements (MOCS), and Management Information Conformance Statements (MICS), and Managed Relationship Conformance Statement (MRCS), if applicable, must be provided (ITU-T Rec. X.724 [4]). For the CORBA framework paradigm, implementation conformance statements proformas following the ITU-T X.781-series Recommendations must be provided.

3) If the system interface uses managed-object classes which have been subclassed from classes enumerated in 2) in this definition, for the sole purpose of providing for missing model functionality, then these managed-object classes must be defined following the strict inheritance rules as specified in ITU-T Rec. X.720 [5] for the CMIP/OSI system management paradigm or in the ITU-T X.780-series Recommendations, as appropriate, for the CORBA framework paradigm.

4) Any additional object classes other than those enumerated in 2) in this definition, that are needed to extend the information model due to missing model functionality, shall have accompanying documentation which fully specifies the information models with the inclusion of the version number and date. In the CMIP/OSI system management paradigm, separate Standardized Implementation Conformance Statements in the form of Managed Objects Conformance Statements (MOCS), and Management Information Conformance Statements (MICS), and Managed Relationship Conformance Statement (MRCS), if applicable, must be provided (ITU-T Rec. X.724 [4]) for these object classes. For the CORBA framework paradigm, implementation conformance statements proformas following ITU-T X.781-series Recommendations must be provided.

13.4.3 Level C interface information conformance

An interface of a system is ***Level C*** interface information conformant, for this management functionality, if and only if all of the following are met:

1) The system interface is TMN interface protocol conformant i.e., meets the criteria in the definition in 13.3.

2) The managed-object classes the system interface supports are defined in a non-standard information model relevant to this management functionality. The system interface documentation shall fully document the information models with the inclusion of the version number and date. For the CMIP/OSI system management paradigm, the information models shall be defined using ITU-T Recs X.720 and X.722. For the CORBA framework paradigm, the information models shall be defined using the ITU-T X.780-series Recommendations, as appropriate. For the CMIP/OSI system management paradigm, standardized Implementation Conformance Statements in the form of Managed Objects Conformance Statements (MOCS), and Management Information

Conformance Statements (MICS), and Managed Relationship Conformance Statement (MRCS), if applicable, must be provided (ITU-T Rec. X.724 [4]). For the CORBA framework paradigm, implementation conformance statements proformas following the ITU-T X.781-series Recommendations must be provided.

3) If the system interface uses managed-object classes which have been subclassed from classes enumerated in 2) in this definition, for the sole purpose of providing for missing model functionality, then these managed-object classes must be defined following the strict inheritance rules as specified in ITU-T Rec. X.720 [5] for the CMIP/OSI system management paradigm or in ITU-T X.780-series Recommendations, as appropriate, for the CORBA framework paradigm.

13.5 TMN compliance

TMN compliance relates to the TMN architecture, principles and functions.

TMN compliance for an implementation may be claimed if the following criteria are met:

1) The implementation supports the TMN functional, informational and physical architecture.
2) The implementation's documentation should state what TMN logical layer(s) the implementation supports.
3) The implementation meets the definition of a TMN physical block (e.g., OS, NE, MD, QA).
4) The implementation's interfaces are documented and published.
5) The implementation interface documentation identifies the supported TMN Managed Areas and the associated TMN Management Services that are described in ITU-T Rec. M.3200 [10]. The system interface documentation should also identify the applicable ITU-T M.32xx Recommendations, if available.
6) If the information requested in 5) is not available, e.g., the appropriate ITU-T M.32xx Recommendation does not exist, the implementation interface documentation should itemize the TMN Management Function Sets and associated TMN Management Functions it supports (see ITU-T Rec. M.3400 [11]).

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Series A	Organization of the work of ITU-T
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Series C	General telecommunication statistics
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
Series F	Non-telephone telecommunication services
Series G	Transmission systems and media, digital systems and networks
Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Cable networks and transmission of television, sound programme and other multimedia signals
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Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
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Printed in Switzerland
Geneva, 2004