International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

M.3160

Amendment 2

(09/2016)

SERIES M: TELECOMMUNICATION MANAGEMENT, INCLUDING TMN AND NETWORK MAINTENANCE

Telecommunications management network

Generic, protocol-neutral management information model

Amendment 2: New Appendix II on positioning of Recommendation ITU-T M.3160 to Recommendation ITU-T M.1401

Recommendation ITU-T M.3160 (2008) – Amendment 2

International Telecommunication Union

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TELECOMMUNICATION MANAGEMENT, INCLUDING TMN AND NETWORK MAINTENANCE

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Recommendation ITU-T M.3160

Generic, protocol-neutral management information model

Amendment 2

New Appendix II on positioning of Recommendation ITU-T M.3160 to Recommendation ITU-T M.1401

Summary

This amendment adds new Appendix II on positioning of Recommendation ITU-T M.3160 to Recommendation ITU-T M.1401 with respect to modelling approach.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T M.3160	2008-11-13	2	11.1002/1000/9551
1.1	ITU-T M.3160 (2008) Amd. 1	2016-03-15	2	11.1002/1000/12782
1.2	ITU-T M.3160 (2008) Amd. 2	2016-09-23	2	11.1002/1000/13075

* To access the Recommendation, type the URL http://handle.itu.int/ in the address field of your web browser, followed by the Recommendation's unique ID. For example, http://handle.itu.int/11.1002/1000/11830-en.

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.

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

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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New Appendix II on positioning of Recommendation ITU-T M.3160 to Recommendation ITU-T M.1401

1 Scope

This amendment adds a new appendix describing the relationship, similarities and differences between Recommendation ITU-T M.3160 and [ITU-T M.1401], including

– The roles of the two Recommendations

– Mapping between the two Recommendations

– Instantiation of entities in the two Recommendations

2 Additions

2.1 Appendix II

Add the following new appendix:

Appendix II

Positioning Recommendation ITU-T M.3160 to Recommendation ITU-T M.1401

(This appendix does not form an integral part of this Recommendation.)

II.1 Roles of the Recommendations

Information from [ITU-T M.1401] is included in Recommendation ITU-T M.3160.

[ITU-T M.1401] is the only ITU-T Recommendation for registration of interconnections between countries. [ITU-T M.1401] is a formalization of [ITU-T M.1400]. [ITU-T M.1400] and [ITU-T M.1401] are extended to cover interconnections between national operators.

Recommendation ITU-T M.3160 is mainly used within each operator. Recommendation ITU-T M.3160 was originally developed for digital cross-connect and automatic management, while [ITU-T M.1400] is used for the physical connections and the end-to-end connections. From this follows that Recommendation ITU-T M.3160 is used at interfaces to network element managers. [ITU-T M.1400] is used in the network inventories of a network operator. Hence, [ITU-T M.1400] is typically used to register the entire transport network of the operator. The technical report on telecommunication network registration extends [ITU-T M.1401] to cover the access network, as well. Additionally, the physical network, i.e., outside plant, is covered.

The ITU-T M.1400 series of Recommendations were originally developed for manual management of telecommunication networks. The ITU-T M.1400 series of Recommendations are still the only Recommendations for management of telecommunication networks end-to-end, across several network domains that each may apply Recommendation ITU-T M.3160. This may imply that

operators have to implement mappings between these Recommendations. No Recommendation on the mapping is provided, as of yet.

[ITU-T M.1401] is extended with local identifiers. These identifiers may be used to map to ITU-T M.3160 identifiers. They may also map to ATIS identifiers, which are used by some operators, and between some operators, if bilaterally agreed. Some operators use different identifiers on their separate portion of the trail, and may use the Local identifier for this mapping. Additionally, the Local identifiers may map to product instance identifiers in business support systems (BSS); see [ITU-T M.1402]. However, [ITU-T M.1400] is the common language between network operators, and is used by everyone.

Recommendation ITU-T M.3160 is using a conceptual approach for its technology independent specifications. The ITU-T M.1400 series of Recommendations are specifying the syntax and grammar of the data as they should appear at the human computer interfaces. Also, the ITU-T M.1400 series of Recommendations are specifying how to construct identifiers of network entities.

Recommendation ITU-T M.3160 uses UML to specify information to appear at data communication interfaces to network management systems. The specifications are mapped into implementation of software. Hence, they specify entities, attributes, relations and roles, and constraints on, behaviour of, and notifications of these, and include traceability. Most terms are globally unique, i.e., appear in a flat name space. No term is meant to be used as is at the human computer interface of end users. The specifications are about classes, and are not meant to be instantiated in this form.

The ITU-T M.1401-M.1405 series define normalized syntax trees of data across all human computer interfaces. The leaf nodes contain permissible values at the interfaces. The non-leaf nodes contain the headings to appear at the interfaces. The specifications contain no term that does not appear at the human computer interfaces. The structure of the syntax tree defines the permissible word orders.

The specifications contain entities at several levels, attribute groups at several levels, attributes, values and roles. The specifications do not contain relations, but may contain conditions and instructions. However, the presentation form of headings and values is the focus of the specifications. The syntax tree is using local identifiers, i.e., relative distinguished names (RDNs), both of classes and instance values. Also, significant duplicates are frequently used. This use is very different from UML specifications. In the ITU-T M.1400 series of Recommendations, classes are copied into instances. Hence, the data instances look exactly like their classes, and when seen in isolation, they cannot be distinguished.

UML uses super-classes to define reusable specifications. The ITU-T M.1400 series is not using super-classes, as the series define the data as they actually will appear to the users. ITU-T M.3160 specifications are spread over many graphs and tables. The ITU-T M.1400 series specifications contain only one graph and one structured list per Recommendation. Hence, the ITU-T M.1400 series of Recommendations are very compact.

The different approaches and usages of ITU-T M.3160 and the ITU-T M.1400 series of Recommendations needs to be understood both by users and developers.

II.2 Mappings between Recommendations

The entity classes in ITU-T M.3160 Figure 2 part 2 and Figure 12 are imported from [ITU-T M.1401].

The definition of classes in ITU-T M.3160 and [ITU-T M.1401] are not identical. As an example, ITU-T M.1401 trail is not identical to Recommendation ITU-T M.3160 trail. See clause II.3. Also, equipment item in [ITU-T M.1401] is not identical to equipment in ITU-T M.3160. Relations, attributes and notations in the two Recommendations are not the same.

In [ITU-T M.1401], a trail may contain trail sections in series. The trail section notion allows for stating the routing of the trail on different kinds of resources, such as trails, trail multiplex connections, physical link connections, port items and positions. Also, a trail section can correspond

to a resource within another operator's network, and which is not registered by the current operator, and do not comply with the name space and naming conventions of this operator. Recommendation ITU-T M.3160 does not have trail sections.

In [ITU-T M.1401], a trail may contain trail multiplex connections in parallel. This is used to state multiplexing. In [ITU-T M.3160], logical links and link connections are used to state the same.

There are more differences than the examples shown above.

II.3 Instantiations according to Recommendations

An ITU-T M.3160 trail is defined within the scope of a network element manager, managing a network domain.

An ITU-T M.1401 trail may go from customer to customer, outside the scope of ITU-T M.3160. Therefore, the two trails may not be identical. The ITU-T M.3160 Trail may correspond to a trail section of the ITU-T M.1401 trail. The ITU-T M.1401 trail may contain other trail sections for the routing outside the network element manager.

The ITU-T M.3160 and ITU-T M.1401 Trails are defined within the scope of operation support systems (OSS). The definitions do not apply within the scope of business support systems (BSS). [ITU-T M.1402] is defined for BSS.

An ITU-T M.1401 trail may correspond to a product instance in BSS. The product instance is an instance of a product class, being contained in a catalogue.

The product instance corresponding to the ITU-T M.1401 Trail is contained in a contract. The contract may contain other product instances, e.g., for termination at the customer premises, customer equipment and customer services.

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