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SERIES Q: SWITCHING AND SIGNALLING

Specifications of Signalling System No. 7 – Signalling
System No. 7 management

**Network element information model for MTP
accounting**

ITU-T Recommendation Q.751.3

(Previously CCITT Recommendation)

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

ITU-T RECOMMENDATION Q.751.3

NETWORK ELEMENT INFORMATION MODEL FOR MTP ACCOUNTING

Summary

Measurements for MTP Accounting have been defined in Recommendation Q.752. The network element information model – based on Recommendations X.742 and Q.751.1 – for these measurements is contained in this Recommendation.

Source

ITU-T Recommendation Q.751.3 was prepared by ITU-T Study Group 11 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 12th of September 1997.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 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.

INTELLECTUAL PROPERTY RIGHTS

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As of the date of approval of this Recommendation, the 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.

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Recommendation Q.751.3

NETWORK ELEMENT INFORMATION MODEL FOR MTP ACCOUNTING

(Geneva, 1997)

1 Scope

This Recommendation contains the network element information model which is necessary to manage network elements for accounting of MTP traffic according to 7.1/Q.752, 7.2/Q.752 and Table 15/Q.752. The model is based on the model defined in Recommendations Q.751.1 and X.742.

2 Intellectual property rights

No patent information from a patent holder concerning the content of this Recommendation was received by the ITU-T.

3 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; all 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.

- ITU-T Recommendation A.3 (1996), *Elaboration and presentation of texts and development of terminology and other means of expression for Recommendations of the ITU Telecommunication Standardization Sector*.
- ITU-T Recommendation I.751 (1996), *Asynchronous transfer mode management of the network element view*.
- CCITT Recommendation M.3100 (1992), *Generic network information model*.
- ITU-T Recommendation Q.750 (1993), *Overview of Signalling System No. 7 management*.
- ITU-T Recommendation Q.751.1 (1995), *Network element information model for the Message Transfer Part*.
- ITU-T Recommendation Q.752 (1997), *Monitoring and measurements for Signalling System No. 7 networks*.
- CCITT Recommendation X.208 (1988), *Specification of Abstract Syntax Notation One (ASN.1)*.
- ITU-T Recommendation X.680 (1994), *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation*.
- CCITT Recommendation X.711 (1991), *Common management information protocol specification for CCITT applications*.
- CCITT Recommendation X.720 (1992), *Information technology – Open Systems Interconnection – Structure of management information: Management information model*.

- CCITT Recommendation X.721 (1992), *Information technology – Open Systems Interconnection – Structure of management information: Definition of management information.*
- CCITT Recommendation X.722 (1992), *Information technology – Open Systems Interconnection – Structure of management information: Guidelines for the definition of managed objects.*
- ITU-T Recommendation X.722/Amd.1 (1995), *Set by create and component registration.*
- ITU-T Recommendation X.723 (1993), *Information technology – Open Systems Interconnection – Structure of management information: Generic management information.*
- CCITT Recommendation X.731 (1992), *Information technology – Open Systems Interconnection – Systems management: State management function.*
- CCITT Recommendation X.733 (1992), *Information technology – Open Systems Interconnection – Systems management: Alarm reporting function.*
- ITU-T Recommendation X.742 (1995), *Information technology – Open Systems Interconnection – Systems management: Usage metering function for accounting purposes.*

4 Terms and definitions

For the purpose of this Recommendation, the following definitions apply:

This Recommendation makes use of the following terms defined in Recommendation M.3010:

- a) performance management;
- b) configuration management;
- c) fault management;
- d) Telecommunications Management Network (TMN).

This Recommendation makes use of the following term defined in Recommendation X.700:

- object instance.

This Recommendation makes use of the following terms defined in Recommendation X.701:

- a) managed object class;
- b) management information;
- c) notification.

This Recommendation makes use of the following term defined in Recommendation X.710:

- attribute.

This Recommendation makes use of the following terms defined in Recommendation X.720:

- a) inheritance;
- b) name binding;
- c) package;
- d) parameter;
- e) action;
- f) actual class;
- g) attribute group;
- h) behaviour;

- i) conditional package;
- j) instantiation;
- k) superclass.

This Recommendation makes use of the following terms defined in CCITT Rec. X.701 | ISO/IEC 10040:

- a) managed object class;
- b) notification.

5 Abbreviations

Abbreviations regarding the MTP are listed in Table 1/Q.704. Additionally, for the purpose of this Recommendation, the following definitions apply:

ASN.1	Abstract Syntax Notation One
ERD	Entity Relationship Diagram
GDMO	Guidelines for the Definition of Managed Objects
max	Maximum
MO	Managed Object
MOC	Managed Object Class
MSU	Message Signal Unit
MTP	Message Transfer Part
NE	Network Element
OMAP	Operations, Maintenance and Administration Part
TMN	Telecommunications Management Network

6 Conventions

Recommendation A.3 (Elaboration and presentation of texts for Recommendations of the ITU-T) is used.

The Guidelines for the Definition of Managed Objects (GDMO), defined in Recommendation X.722, are used. In case of differences between the formal part (clause 8) and the informal parts of this Recommendation, the formal part is to be regarded as leading.

In case there are inconsistencies between the informal description, the formal definitions or conformance statements proformas, the formal definitions shall prevail.

Throughout this Recommendation the wording "The managed object class x ..." refers to a particular managed object class while the wording "An x ..." refers to an instance of the managed object class "x".

Modelling of redundancy is avoided (e.g. relationships between managed objects are described in one MOC only, information which is obtainable via referenced instances of other information models are not repeated here). However, for some implementations, it may be useful or necessary to add some additional information to some managed object classes. For all protocol timers that are modelled in this Recommendation, it is implementation dependent what value they take when they are not managed.

7 Informal description of managed object classes

This clause gives informal descriptions of the object model for SS7 accounting.

A table overview is given showing the re-use of Recommendation Q.751.1.

Diagrams are presented for inheritance, containment and pointer relationships.

Table overviews of the content (possible operations, packages, attributes, notifications and actions) of the object class definitions are given. No explanation of the detailed meanings of these items are given here, but can be found in the behaviour descriptions of the formal definitions. The reason for this is to avoid redundancies and reduce the effort for editing and translating considerably. Additionally a short introduction how to read the formal part is given in Appendix I.

A table overview is given showing the context specific errors possible in the management of these object classes.

7.1 Re-use of Recommendation Q.751.1

The following Table 1 gives an overview of all the Q.751.1 object classes which are referenced by object classes of this information model.

Table 1/Q.751.3 – Re-use of Recommendation Q.751.1

Referenced object class	Q.751.1
managedSwitchingElement	Q.751.1
mtpSignPoint	Q.751.1
signRouteSetNePart	Q.751.1
signLinkSetTp	Q.751.1

7.2 Relation notification/LogRecord/File

The modelling of the accounting results as content of notifications does not result in an obligation to transport this (eventually large amount of) data to the TMN operation system via the Q3 interface. Another possibility to transfer the data from the network element is to write the notifications via an event forwarding discriminator into a log, to convert this log into a file and then transfer this file via usual file transfer mechanisms like FTAM, etc.

7.3 Diagrams

7.3.1 Inheritance diagram

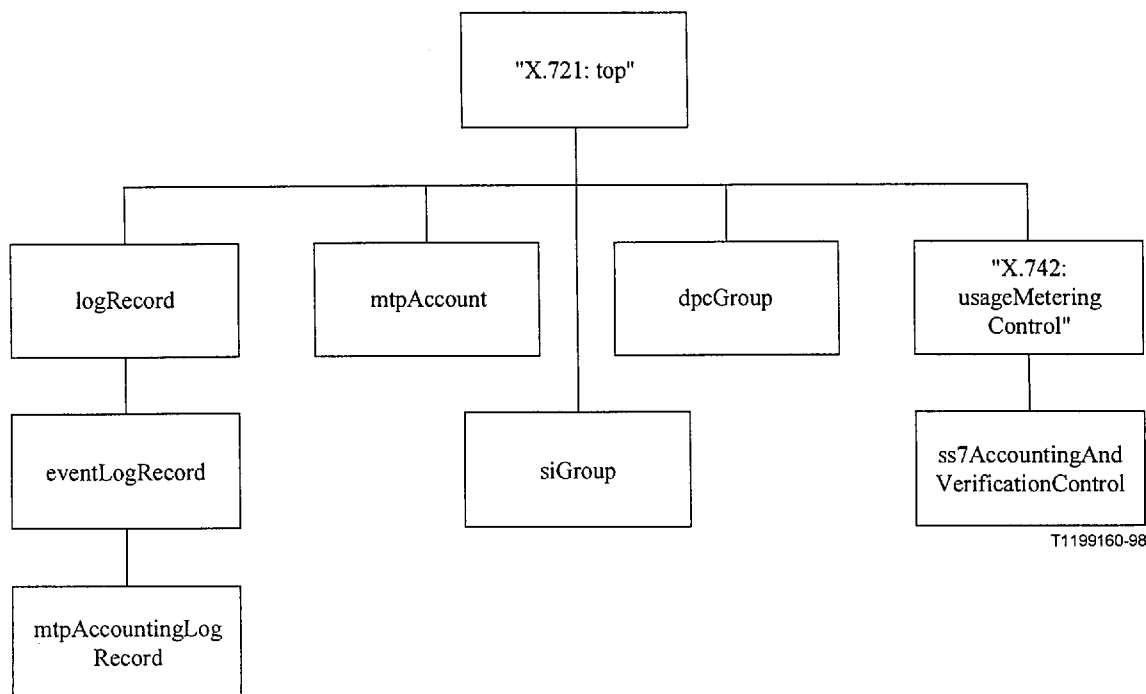


Figure 1/Q.751.3 – Inheritance diagram