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**SERIES G: TRANSMISSION SYSTEMS AND MEDIA,
DIGITAL SYSTEMS AND NETWORKS**

**Digital transmission systems – Digital networks –
Management of transport network**

**GDMO engineering viewpoint for the generic
network level model**

ITU-T Recommendation G.855.1

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION G.855.1

GDMO ENGINEERING VIEWPOINT FOR THE
GENERIC NETWORK LEVEL MODEL**Summary**

This Recommendation contains a specification for a generic network level management information model expressed in GDMO notation. This model was developed from existing Recommendation M.3100 managed object classes, and based on the following Recommendations:

- ITU-T Recommendation G.852.1 (1996), *Enterprise viewpoint for simple subnetwork connection management.*
- ITU-T Recommendation G.852.2 (1999), *Enterprise viewpoint description of transport network resource model.*
- ITU-T Recommendation G.852.3 (1999), *Enterprise viewpoint for topology management.*
- ITU-T Recommendation G.852.6 (1999), *Enterprise viewpoint for trail management.*
- ITU-T Recommendation G.852.8 (1999), *Enterprise viewpoint for pre-provisioned adaptation management.*
- ITU-T Recommendation G.852.10 (1999), *Enterprise viewpoint for pre-provisioned link connection management.*
- ITU-T Recommendation G.852.12 (1999), *Enterprise viewpoint for pre-provisioned link management.*
- ITU-T Recommendation G.853.2 (1996), *Subnetwork connection management information viewpoint.*
- ITU-T Recommendation G.853.3 (1999), *Information viewpoint for topology management.*
- ITU-T Recommendation G.853.6 (1999), *Information viewpoint for trail management.*
- ITU-T Recommendation G.853.8 (1999), *Information viewpoint for pre-provisioned adaptation management.*
- ITU-T Recommendation G.853.10 (1999), *Information viewpoint for pre-provisioned link connection management.*
- ITU-T Recommendation G.853.12 (1999), *Information viewpoint for pre-provisioned link management.*
- ITU-T Recommendation G.854.3 (1999), *Computational viewpoint for topology management.*
- ITU-T Recommendation G.854.6 (1999), *Computational viewpoint for trail management.*
- ITU-T Recommendation G.854.8 (1999), *Computational viewpoint for pre-provisioned adaptation management.*
- ITU-T Recommendation G.854.10 (1999), *Computational viewpoint for pre-provisioned link connection management.*
- ITU-T Recommendation G.854.12 (1999), *Computational viewpoint for pre-provisioned link management.*

Source

ITU-T Recommendation G.855.1 was prepared by ITU-T Study Group 4 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 26th of March 1999.

FOREWORD

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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

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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 G.855.1**GDMO ENGINEERING VIEWPOINT FOR THE
GENERIC NETWORK LEVEL MODEL***(Geneva, 1999)***1 Scope, purpose, and field of application****1.1 Scope**

This Recommendation provides a generic information model for the network level view of transmission networks. It identifies TMN object classes that are common to managed telecommunications networks; or are of a generic type that can be used to manage a network at a technology-independent level; or are super-classes of technology-specific managed objects in a telecommunications network; or are management support objects that are required for the management of the telecommunications network.

This Recommendation addresses generically the abstractions of those aspects of telecommunication resources required to manage the network with a network level view. Recommendation G.805 on the architecture of the transport network is used as the basis in developing the transport aspects of this model.

This Recommendation does not address abstractions relevant to technology-specific areas or implementation-specific details.

1.2 Purpose**1.2.1 Interoperability**

There will be a variety of TMN conformant management systems and managed systems concerning many technology-specific areas. One purpose of this Recommendation is to provide a vehicle for management interoperability between such systems.

1.2.2 Technology-independent management

By introducing the concept of technology-independent management, it is possible to perform management of diverse networks using common communications interfaces. In this manner, an "abstract" view over a set of networks can be achieved.

1.2.3 Facilitating information model development

This Recommendation also provides a framework from which technology-specific information models may be developed using the modelling principles defined in Recommendation X.720 (1992), *Information technology – Open Systems Interconnection – Structure of Management Information: Management Information Model*.

1.3 Field of application

This Recommendation captures the generally applicable requirements of the technology-independent and technology-specific information models related to the network level view of transmission networks.

Through specialization, this Recommendation is applicable to technology-specific TMN information models. The mechanism for specialization is inheritance.

**Documents**

Document Sharing Hub

Recommendation G.855.1 (03/99)

Even though technology-specific models may be derived from this Recommendation, some of the generic managed object classes in this Recommendation are instantiable in order to provide interoperability between equipment supporting information models derived from this Recommendation and equipment that only supports the information model in this Recommendation.

1.4 Structure of this Recommendation

The definition of management information in clauses 5 to 10, describing information model is documented using the notational mechanisms defined in Recommendation X.722 (1992), *Information technology – Open Systems Interconnection – Structure of Management Information: Guidelines for the definition of managed objects*. The relationships between the managed object classes for the different fragments of the model in clause 5 are depicted using entity relationship diagrams. Clause 10 contains the syntax definitions of the information carried in the protocol. The notation used is Abstract Syntax Notation One (ASN.1) defined in Recommendation X.680 (1997), *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation*.

When referencing the definitions for the templates in this Recommendation by other documents, the prefix "Recommendation G.855.1" should be used to identify the source for the definitions.

The Management Conformance Summary is documented in Annex A using the conformance summary tables specified in Recommendation X.724.

The Managed Object Conformance Statements are documented in Annex B using the conformance tables specified in Recommendation X.724.

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; 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.

- [1] ITU-T Recommendation G.805 (1995), *Generic functional architecture of transport networks*.
- [2] ITU-T Recommendation G.851.1 (1996), *Management of the transport network – Application of the RM-ODP framework*.
- [3] ITU-T Recommendation G.851.2, *Methodology for GDMO Engineering Viewpoint*.
- [4] ITU-T Recommendation G.852.1 (1996), *Enterprise viewpoint for simple subnetwork connection management*.
- [5] ITU-T Recommendation G.852.2 (1999), *Enterprise viewpoint description of transport network resource model*.
- [6] ITU-T Recommendation G.852.3 (1999), *Enterprise viewpoint for topology management*.
- [7] ITU-T Recommendation G.852.6 (1999), *Enterprise viewpoint for trail management*.
- [8] ITU-T Recommendation G.852.8 (1999), *Enterprise viewpoint for pre-provisioned adaptation management*.
- [9] ITU-T Recommendation G.852.10 (1999), *Enterprise viewpoint for pre-provisioned link connection management*.

- [10] ITU-T Recommendation G.852.12 (1999), *Enterprise viewpoint for pre-provisioned link management.*
- [11] ITU-T Recommendation G.853.1 (1999), *Common information viewpoint.*
- [12] ITU-T Recommendation G.853.2 (1996), *Subnetwork connection management information viewpoint.*
- [13] ITU-T Recommendation G.853.3 (1999), *Information viewpoint for topology management.*
- [14] ITU-T Recommendation G.853.6 (1999), *Information viewpoint for trail management.*
- [15] ITU-T Recommendation G.853.8 (1999), *Information viewpoint for pre-provisioned adaptation management.*
- [16] ITU-T Recommendation G.853.10 (1999), *Information viewpoint for pre-provisioned link connection management.*
- [17] ITU-T Recommendation G.853.12 (1999), *Information viewpoint for pre-provisioned link management.*
- [18] ITU-T Recommendation G.854.1 (1996), *Computational interfaces for basic transport network model.*
- [19] ITU-T Recommendation G.854.3 (1999), *Computational viewpoint for topology management.*
- [20] ITU-T Recommendation G.854.6 (1999), *Computational viewpoint for trail management.*
- [21] ITU-T Recommendation G.854.8 (1999), *Computational viewpoint for pre-provisioned adaptation management.*
- [22] ITU-T Recommendation G.854.10 (1999), *Computational viewpoint for pre-provisioned link connection management.*
- [23] ITU-T Recommendation G.854.12 (1999), *Computational viewpoint for pre-provisioned link management.*
- [24] ITU-T Recommendation M.3100 (1995), *Generic network information model.*
- [25] ITU-T Recommendation X.501 (1997) | ISO/IEC 9594-2:1999, *Information technology – Open Systems Interconnection – The Directory: Models.*
- [26] ITU-T Recommendation X.680 (1997), *Information technology – Abstract Syntax Notation One (ASN.1): Specification of Basic Notation.*
- [27] ITU-T Recommendation X.711 (1997) | ISO/IEC 9596-1:1998, *Information technology – Open Systems Interconnection – Common management information protocol: Specification.*
- [28] CCITT Recommendation X.720 (1992) | ISO/IEC 10165-1:1993, *Information technology – Open Systems Interconnection – Structure of management information: Management information model.*
- [29] CCITT Recommendation X.721 (1992) | ISO/IEC 10165-2:1992, *Information technology – Structure of management information: Definition of management information.*
- [30] CCITT Recommendation X.722 (1992) | ISO/IEC 10165-4:1992, *Information technology – Open Systems Interconnection – Structure of management information: Guidelines for the definition of managed objects.*