



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

Z.360

(05/97)

SERIES Z: PROGRAMMING LANGUAGES

Man-machine language – Specification of the man-machine interface

Graphic GDMO: A graphic notation for the Guidelines for the Definition of Managed Objects

ITU-T Recommendation Z.360

(Previously CCITT Recommendation)

ITU-T Z-SERIES RECOMMENDATIONS
PROGRAMMING LANGUAGES

Specification and Description Language (SDL)	Z.100–Z.109
Applicability of formal Description Techniques	Z.110–Z.119
Message Sequence Chart	Z.120–Z.199
CCITT High Level Language (CHILL)	Z.200–Z.299
MAN-MACHINE LANGUAGE	Z.300–Z.499
General principles	Z.300–Z.309
Basic syntax and dialogue procedures	Z.310–Z.319
Extended MML for visual display terminals	Z.320–Z.329
Specification of the man-machine interface	Z.330–Z.399
Miscellaneous	Z.400–Z.599

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

ITU-T RECOMMENDATION Z.360

GRAPHIC GDMO: A GRAPHIC NOTATION FOR THE GUIDELINES FOR THE DEFINITION OF MANAGED OBJECTS

Summary

This Recommendation prescribes a graphic notation to provide an overview of GDMO/GRM specifications.

GDMO, Guidelines for the Definition of Managed Objects, is a formalism defined in Recommendation X.722 to define managed objects in Telecommunications Management Network (TMN). Attributes for representing relationships are defined in Recommendation X.732. The GDMO formalism is extended with a general relationship notation in Recommendation X.725 (General Relationship Model). The overall object structure is defined by GDMO/GRM, while the syntax of the data is defined using Abstract Syntax Notation One (ASN.1), Recommendations X.208 or X.680. The three languages are widely used by many ITU Study Groups for the specification of managed objects for many application areas. The languages are purely alphanumeric and the alphanumeric specifications using GDMO/GRM/ASN.1 are hard to overview.

Current Recommendations using GDMO/GRM use various kinds of informal illustrations to provide overviews of different aspects of the specifications. However, they frequently use the same symbol for different notions, different symbols for the same notion, and can sometimes be misleading as to the contents of the specifications. Therefore, a standardized graphic notation was felt needed. The graphic notation shall be true to the notions of the alphanumeric notations.

This Recommendation is based on:

- an approved Requirement document, found in Appendix II;
- evaluation of some existing graphic notations, which did not meet the requirements;
- trial use on several Recommendations and other application areas.

Source

ITU-T Recommendation Z.360 was prepared by ITU-T Study Group 10 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 6th of May 1997.

Keywords

Attributes; General Relationship Model; Guidelines for the Definition of Managed Objects; Managed Object Class; Relationship Class.

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

The ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. The ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

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.

© ITU 1998

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the ITU.

CONTENTS

	<i>Page</i>
1 Introduction	1
1.1 Scope	1
1.2 Terminology	1
2 Symbols	2
3 Example usage of the graphic notation	6
4 Graphic notation for templates	8
4.1 Managed Object Class template	8
4.2 Package template	9
4.3 Name Binding template	10
4.4 Connections	11
5 References by attributes	12
6 Relationship Class template	13
7 Long labels	14
Appendix I – Graphic GDMO Instantiation	14
Appendix II – Requirements on Graphic GDMO	18
II.1 Background	18
II.2 Use of Graphic GDMO/GRM	19
II.3 Requirements on a Graphic GDMO	19
II.4 The Graphic GDMO shall minimally provide the following information	20
II.5 The labels used in Graphic GDMO shall satisfy the following requirements	20
II.6 The Graphic GDMO specifications shall provide an overview of Alphanumeric GDMO/GRM specifications	21
II.7 Graphic GDMO may provide extensions illustrating use and implications of GDMO/GRM specifications	21

Recommendation Z.360

GRAPHIC GDMO: A GRAPHIC NOTATION FOR THE GUIDELINES FOR THE DEFINITION OF MANAGED OBJECTS

(Geneva, 1997)

1 Introduction

1.1 Scope

This Recommendation provides a graphic notation for a subset of the information provided in the templates defined in Recommendation X.722, Information technology – Open Systems Interconnection – Structure of management information: Guidelines for the definition of managed objects.

The purpose of the graphic notation is to provide an overview of TMN specifications for TMN specifiers, implementors and users. The graphic notation provides an overview of what definitions exist and the relationships between these definitions.

To accomplish this overview, not all information provided in the templates has to be presented in the graphic notation. Therefore, the graphic notation covers only a subset of the information found in and required by the templates.

If inconsistencies between Alphanumeric GDMO/GRM and Graphic GDMO specifications are discovered, the alphanumeric specification is normative.

The graphic notation allows both detailed and compact depictions of specifications. The compact notation is expected to be the most useful one for ordinary users. The detailed notation is a tool for explaining the detailed relationships between the statements of the specifications and to show the relationships to the alphanumeric notation.

Typically, a graph may depict all information in one Recommendation. However, the specifier is free to include and exclude what he finds convenient, graphs can overlap, and there is no Recommendation on what shall be included in one graph or not.

A Graphic GDMO graph should be provided with a title and text indicating how this graph is delimited relative to the alphanumeric specifications to which it refers.

Clause 2 introduces the graphic notation and concludes with a made-up example (see Figure 4) using the most compact form of the notation.

Clause 3 provides a real world example from the area of Access Control.

Clauses 4 and 5 provide a more detailed explanation of the example in Clause 2, Figure 4, and expansion from the compact notation to show all the details.

Clause 6 provides an extension of the graphic notation to the Relationship Class template defined in Recommendation X.725.

Appendix I extends the graphic notation for classes with a separate, however, similar graphic notation for depicting instances.

Appendix II contains the requirements which Graphic GDMO was developed to meet.

1.2 Terminology

This Recommendation defines the following terms:

1.2.1 graphic GDMO/GRM: This is used as a full name of the graphic notation for GDMO/GRM. The short name for Graphic GDMO/GRM is Graphic GDMO.

1.2.2 graphic GDMO/GRM specifications: Specifications using Graphic GDMO/GRM. These specifications are synonymously called graphs or drawings.

1.2.3 template: A complete permissible syntax module in Alphanumeric GDMO/GRM.

1.2.4 statement: An instance of a GDMO/GRM template together with filled in application specific labels and parameters. The labels may refer to other GDMO/GRM statements or non-GDMO/GRM statements (e.g. in ASN.1).

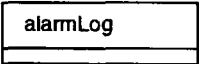
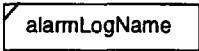
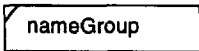
1.2.5 subtemplate: A part of a complete GDMO/GRM template.

1.2.6 substatement: A part of a complete GDMO/GRM statement.

1.2.7 symbol: An item in Graphic GDMO/GRM which corresponds to a template.

1.2.8 connective: An item in Graphic GDMO/GRM which corresponds to a reference between templates or a series of templates and references.

2 Symbols

Symbol	Statement	
	alarmLog	MANAGED OBJECT CLASS
	namePackage	PACKAGE
	alarmLogName	ATTRIBUTE
	nameGroup	ATTRIBUTE GROUP
	nameControl	BEHAVIOUR
	information of unspecified template	

T1010150-97/d01

Figure 1/Z.360 – Template statement symbols

Sub-statement symbol	Sub-statement or statement	
DF c1	DERIVED FROM	c1
BE b1	BEHAVIOUR	b1
AC ac1	ACTIONS	ac1
NO n1	NOTIFICATIONS	n1
CB namePackage	CHARACTERIZED BY	namePackage
CP propertyPackage	CONDITIONAL PACKAGE	propertyPackage
AG nameGroup	ATTRIBUTE GROUPS	nameGroup
name	ATTRIBUTES	name
RA oid1	REGISTERED AS	oid1

T1010160-97/d02

Figure 2/Z.360 – Sub-statement symbols

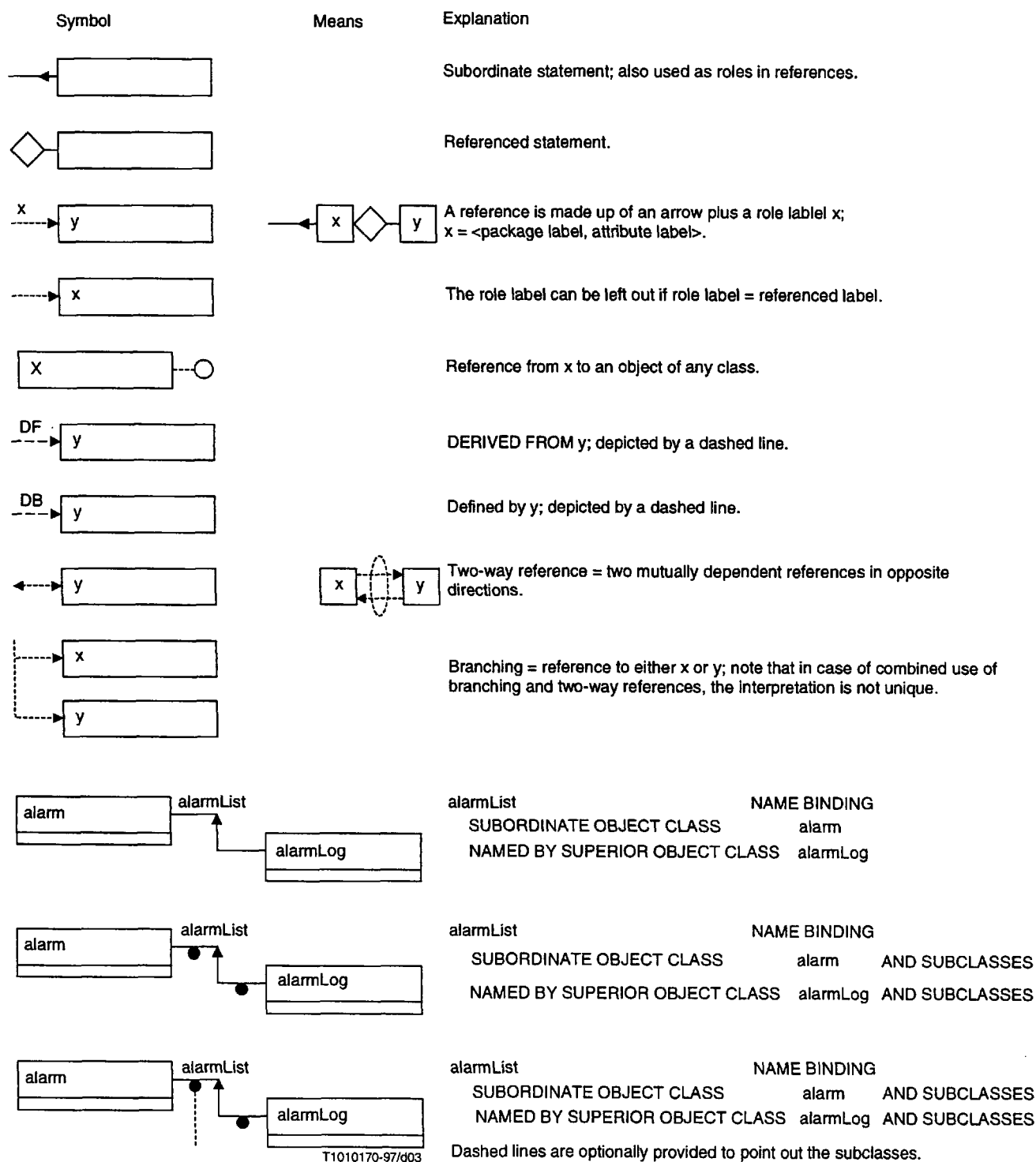


Figure 3/Z.360 – Connection symbols