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Telekomunikacijsko upravljavno omrežje (TMN) - Upravljavni vmesniki, pridruženi referenčni toki VB5.1

Telecommunications Management Network (TMN); Management interfaces associated with the VB5.1 reference point;

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Telecommunications Management Network (TMN).

National transposition dates	
Date of adoption of this EN:	6 November 1998
Date of latest announcement of this EN (doa):	28 February 1999
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1 Scope

The present document specifies the management interfaces (Q3 interfaces and X interfaces) associated with the VB5.1 reference point [1], [2] and EN 301 217-1 [18] for the support of configuration, fault & performance management functions, including a management interface for co-ordinated management between the access networks and the service node (the X interface). Fault and performance management together include both passive monitoring of reports and active fault isolation.

The Q3 interface [5] is the TMN interface between network elements or Q-adapters which interface to OSs without mediation and between OSs and mediation devices. The X-interface [5] is the TMN interface between OSs.

Existing protocols are used where possible, and the focus of the work is on defining the object model. The definition of the functionality of TMN Operations Systems is outside the scope of the present document.

Q.2931 is supported at the UNI, and the ATM Forum UNI is supported for compatibility with the established base of ATM equipment.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, subsequent revisions do apply.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] ETR 257: "V interfaces at the digital Service Node (SN); Identification of the applicability of existing protocol specifications for a VB5 reference point in an access arrangement with Access Networks (ANs)".

[2] EN 301 005-1: "V interfaces at the digital Service Node (SN); Interfaces at VB5.1 reference point for the support of broadband or combined narrowband and broadband Access Networks (ANs); Part 1: Interface specification".

[3] ITU-T Recommendation G.851.01 (1996): "Management of the transport network – Application of the RM-ODP framework".

[4] ITU-T Recommendation G.902: "Framework Recommendation on functional access networks - Architecture and functions, access types, management and service node aspects."

[5] ITU-T Recommendation M.3010: "Principles for a Telecommunications Management Network".

[6] ITU-T Recommendation M.3100(7/95): "Generic Network Information Model".

[7] ITU-T Recommendation Q.82bcm (Draft new): "Broadband configuration management."

[8] ITU-T Recommendation X.721 | ISO/IEC 10165-2 (1992): "Information technology - Open systems interconnection - Structure of management information: Definition of management information".

[9] ITU-T Recommendation X.731 | ISO/IEC 10164-2 (1992): "Information technology - Open systems interconnection - Systems management: State management function".

[10] ITU-T Recommendation I.751: "Asynchronous Transfer Mode (ATM) Management of the Network Element View".

[11] ITU-T Recommendation X.721 | ISO/IEC 10165-2 (1992): "Information technology - Open systems interconnection - Structure of management information: Definition of management information".

[12] ITU-T Recommendation Q.2931: "Digital Subscriber Signalling System No. 2 – User-Network Interface (UNI) layer 3 specification for basic call/connection control".

[13] EN 301 064-1: "Telecommunications Management Network (TMN); Information models and protocols for the management and control of the Asynchronous Transfer Mode (ATM) switching network element; Part 1: Q3 interface specification".

[14] ITU-T Recommendation Q.811: "Lower layer protocol profiles for the Q3 and X interfaces".

[15] ITU-T Recommendation Q.812: "Upper layer protocol profiles for the Q3 and X interfaces".

[16] ITU-T Recommendation G.773: "Protocol suites for Q-interfaces for management of transmission systems".

[17] ITU-T Recommendation G.784: "Synchronous digital hierarchy (SDH) management".

[18] EN 301 217-1: "V interfaces at the digital Service Node (SN); Interfaces at the VB5.2 reference point for the support of broadband or combined narrowband and broadband Access Networks; Part 1: Interface specification".

3 Definitions, abbreviations, and conventions

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ITU-T Recommendation G.902 [4], EN 301 005-1 [2], ITU-T Recommendation I.751 [10] and the following apply.

resources: the management of user port functions and service port functions providing UNI and SNI functionality, respectively, are considered in the present document based on the framework defined in ITU-T Recommendation G.902 [4]. Transmission specific resources lie outside its scope.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply.

AAL	ATM Adaptation Layer
AIS	Alarm Indication Signal
AN	Access Network
ASN.1	Abstract Syntax Notation one
ATM	Asynchronous Transfer Mode
B-BCC	Broadband Bearer Connection Control
CTP	Connection Termination Point
ERD	Entity Relationship Diagram
GDMO	Guidelines for the Definition of Managed Objects
LSP	Logical Service Port
LUP	Logical User Port
MCF	Message Communication Function
MIB	Management Information Base
MOC	Managed Object Class
NNI	Network Network Interface
OAM	Operations, Administration, and Maintenance
OLT	Optical Line Terminal
ONU	Optical Network Unit
OS	Operation System

PON	Passive Optical Network
PSP	Physical Service Port
PUP	Physical User Port
RDI	Remote Defect Indication
RDN	Relative Distinguished Name
RTMC	Real Time Management Co-ordination
SDH	Synchronous Digital Hierarchy
SN	Service Node
SNI	Service Node Interface
TMN	Telecommunications Management Network
TTP	Trail Termination Point
UNI	User-Network Interface
VC	Virtual Channel
VDSL	Very high speed Digital Subscriber Line
VP	Virtual Path
VPC	Virtual Path Connection
VPCI	Virtual Path Connection Identifier

3.3 Conventions

Objects and their characteristics and associated ASN.1 defined here are given names with capitals used to indicate the start of the next word and acronyms are treated as if they were words.

Throughout the present document, all new attributes are named according to the following guidelines:

- The name of an attribute ends in the string "Ptr" if and only the attribute value is intended to identify a single object.
- The name of an attribute ends in the string "PtrList" if and only the attribute value is intended to identify one or more objects.
- The name of an attribute is composed of the name of an object class followed by the string "Ptr" if and only the attribute value is intended to identify a specific object class.
- If an attribute is intended to identify different object classes, a descriptive name is given to that attribute and a description is provided in the attribute behaviour.
- The name of an attribute ends in the string "Id" if and only the attribute value is intended to identify the name of an object, in which case this attribute should be the first one listed, should use ASN.1 NameType and should not be used to convey other information.
- The name of an attribute is composed of the name of an object class followed by the string "Id" if and only the attribute value is intended to identify the name of the object class holding that attribute.

4 General Overview

The following information model diagrams have been drawn for the purpose of clarifying the relations between the different object classes of the model:

1) Entity Relationship Models showing the relations of the different managed objects.
2) Inheritance Hierarchy showing how managed objects are derived from each other (i.e. the different paths of inherited characteristics of the different managed objects).

These different types of diagrams are only for clarification. The formal specification in terms of GDMO templates and ASN.1 type definitions are the relevant information for the implementation of the present document.

4.1 Entity-Relationship Models

The following conventions are used in the diagrams:

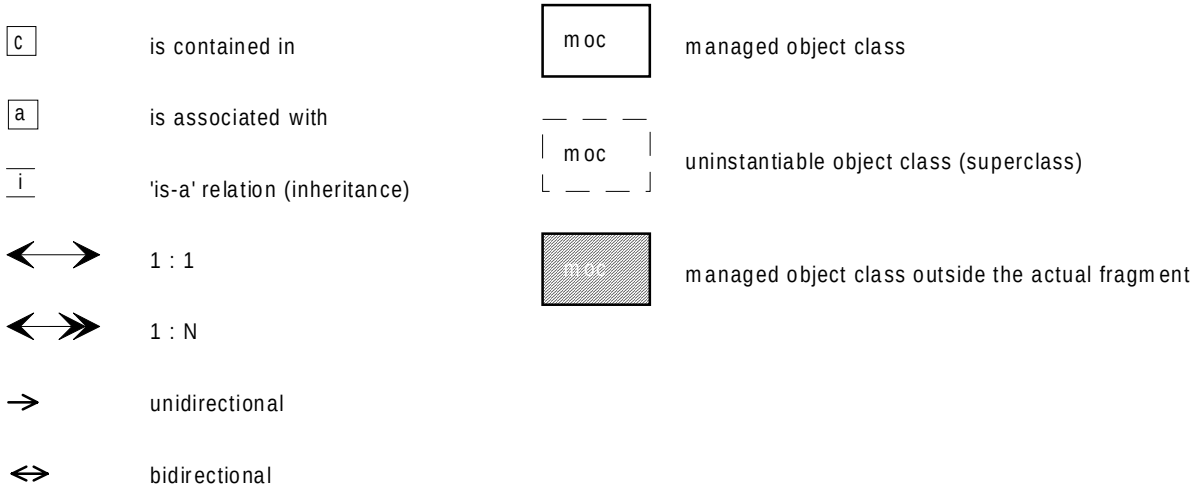


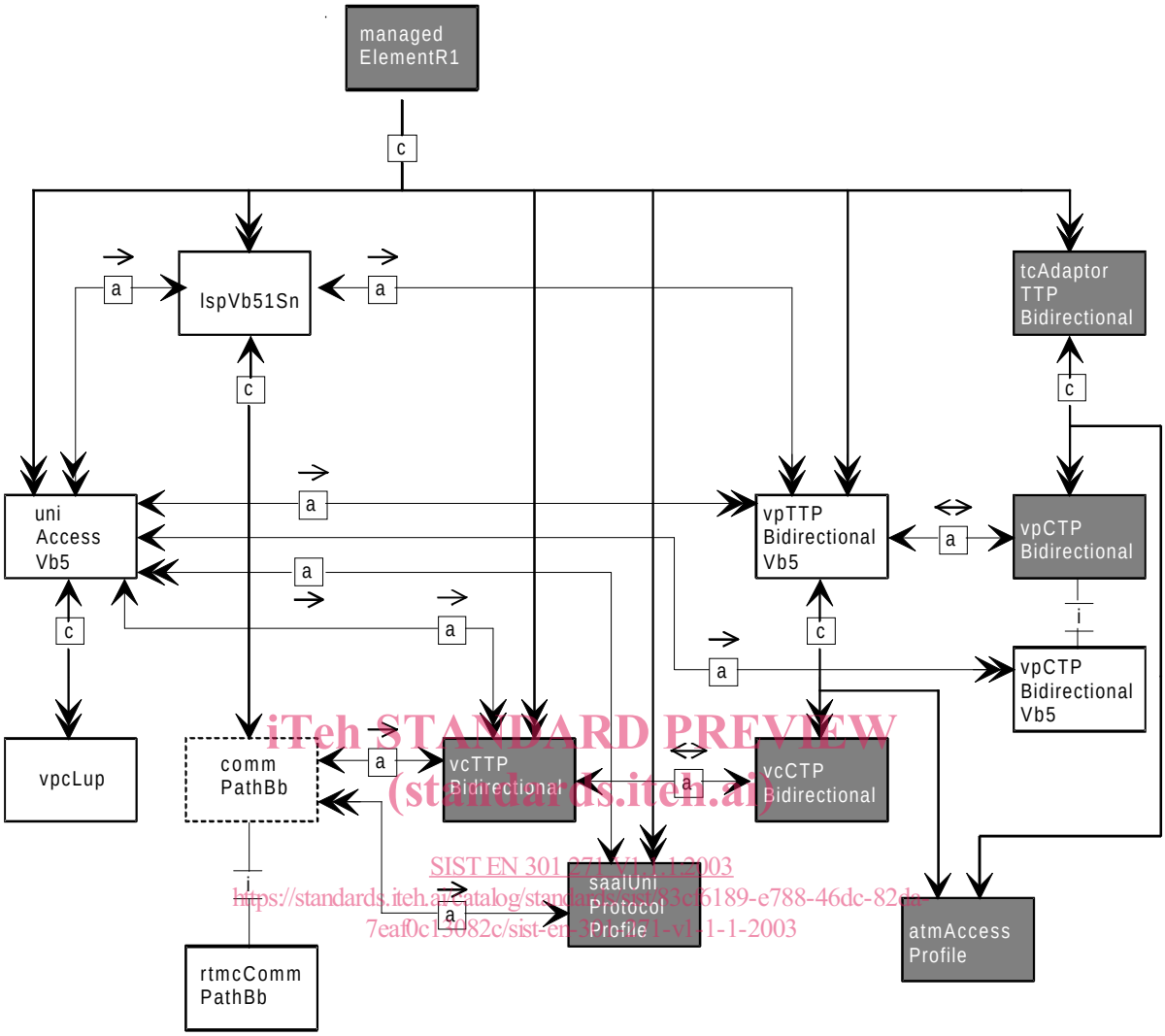
Figure 1: Conventions used in diagrams for Entity Relationship Models

Where the directionality of containment is not clear it can be identified by implications since the root class is unique.

ATM switching network elements are represented by instances of the class atmSwitch and this contains, either directly or indirectly, all other managed objects which represent parts of the ATM switch.

Names which end in "**" indicate sets of classes.

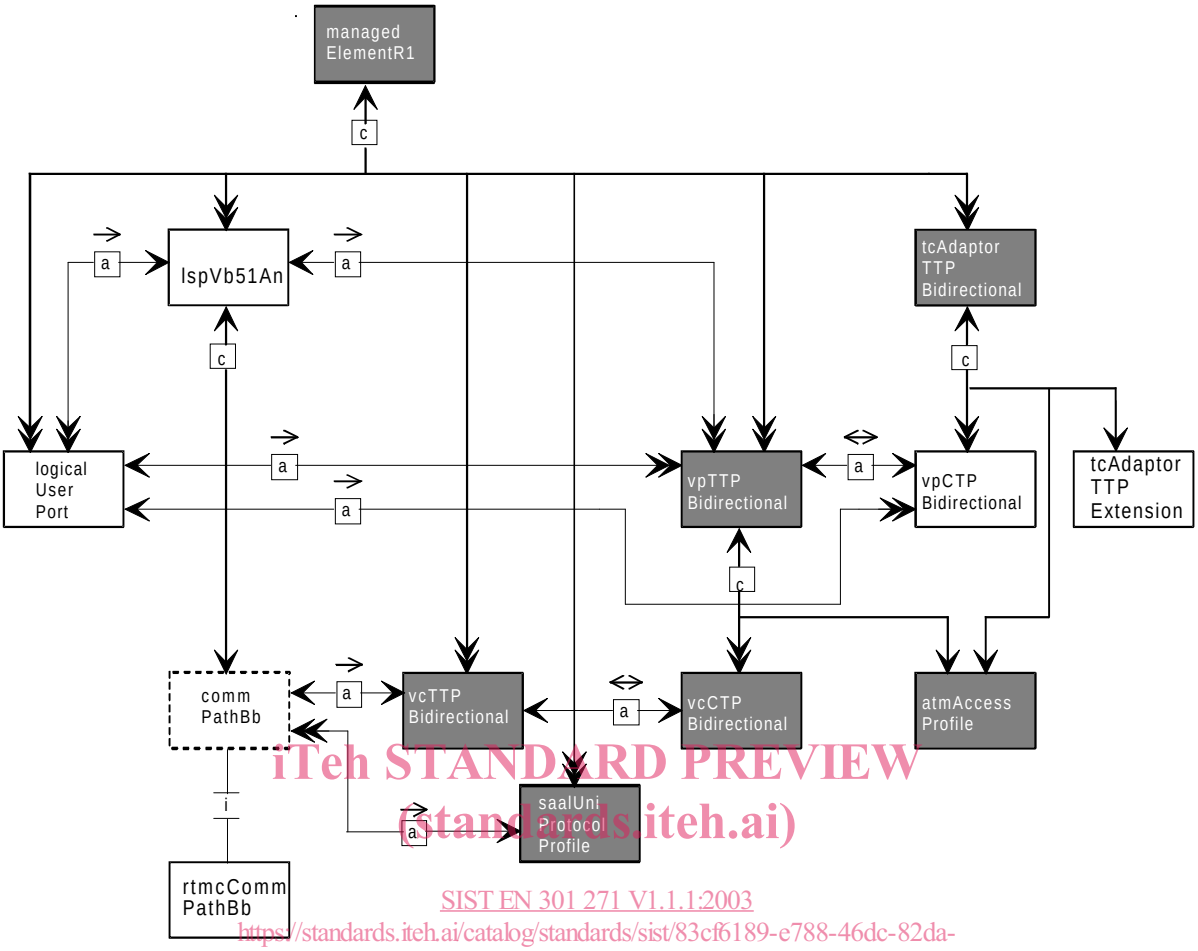
4.1.1 Entity relationship diagram for the service node



NOTE: Not all object classes of the SN are shown in the ERD. E.g. object classes uni, interNNI, intraNNI are reused unchanged from ITU-T Recommendation I.751.

Figure 2: Entity relationship diagram: service node

4.1.2 Entity relationship diagram for the access network



NOTE: Not all object classes of the AN are shown in the ERD. E.g. object classes uni, interNNI, intraNNI are reused unchanged from ITU-T Recommendation I.751.

Figure 3: Entity relationship diagram: access network

4.1.3 Entity relationship diagram for circuit emulation

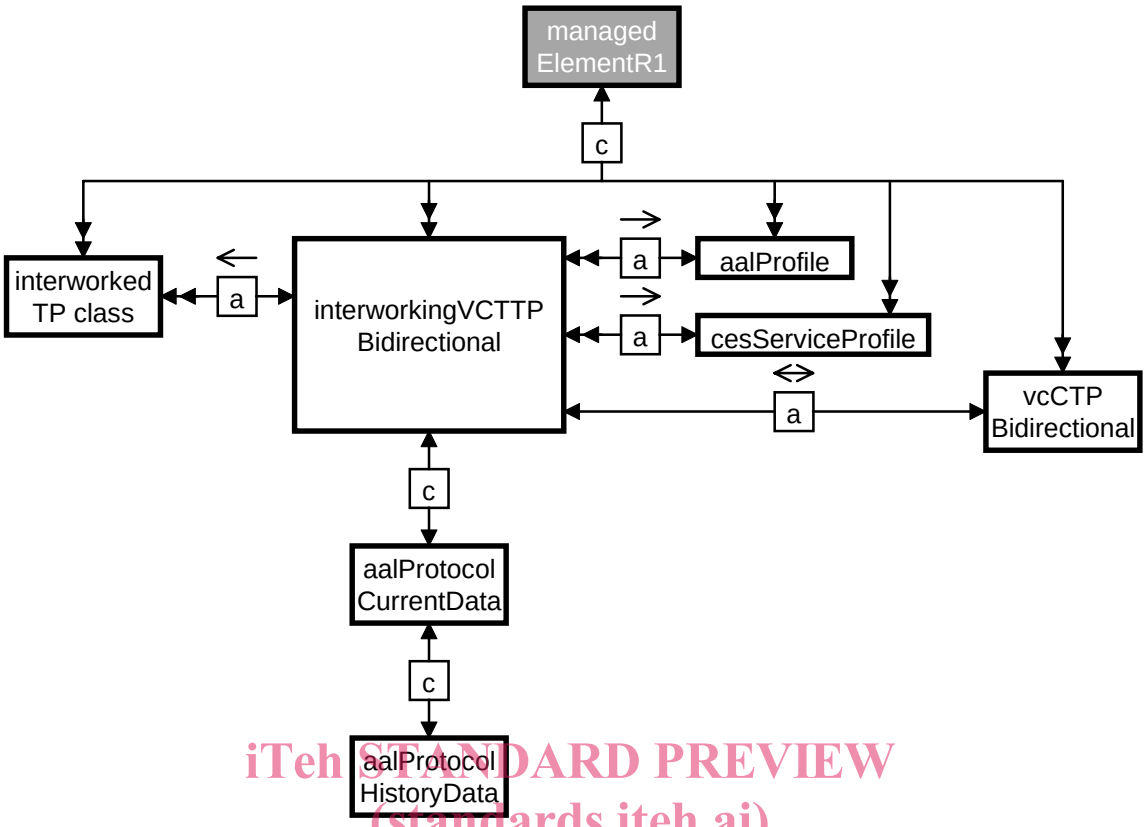


Figure 4: Entity relationship diagram: circuit emulation