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Omreǵni vidiki (NA) ï Velemestno omreǵje (MAN) ï Medsebojno povezovanje komutacijskih sistemov v omreǵju MAN (MMS) prek vmesnika za asinhroni prenosni naļ in (ATM)

Network Aspects (NA); Metropolitan Area Network (MAN); Interconnection of MAN Switching Systems (MSS) based on an Asynchronous Transfer Mode (ATM) interface

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Network Aspects (NA) Technical Committee of the European Telecommunications Standards Institute (ETSI).

The purpose of Metropolitan Area Network (MAN) interconnection is to enable users connected to different MANs using the same connectionless bearer service to communicate with each other.

MANs are based upon a shared medium access and cover a restricted geographical area. In order to cover larger areas, MAN Switching System (MSS) interconnection is needed.

MSSs can be interconnected via an Asynchronous Transfer Mode (ATM) based network composed of semi-permanent/permanent Virtual Path Connections (VPCs) and which comprises only ATM crossconnects and possibly Connectionless Servers (CLSs).

This ETS gives the functional definition of the interface between MSS and ATM-based network. The defined interface includes functionalities to support the interconnection of MSS and ATM-based network in the case in which the two networks belong to the same network operator domain and in the case in which they belong to different ones.

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1 Scope

This European Telecommunication Standard (ETS) describes the interconnection between European standard Metropolitan Area Networks (MANs) by means of an Asynchronous Transfer Mode (ATM) based network. Connectionless service is provided directly or indirectly, according to ITU-T Recommendation I.327 [9]. ATM connections are to be established through ATM crossconnects between the user and Connectionless Servers (CLSs).

Direct interconnection of MANs, based on the Dual Queue Dual Bus (DQDB) protocol is specified in ETS 300 275 [6].

This ETS is restricted to the interconnection of MAN Switching Systems (MSSs) when the MAN users use the Connectionless Broadband Data Service (CBDS) as defined in ETS 300 217 [5]. CBDS may be provided by both types of networks (MAN and ATM-based). The requirements to allow communication between users connected to a MAN and users connected to an ATM-based network, both providing CBDS, is outside the scope of this ETS.

The interconnection of MSSs via ATM connections when MAN users use other services as defined in ETS 300 211 [4] is outside the scope of this ETS.

The defined interface applies to the case in which the MSS and the ATM-based network belong to the same network operator domain and to the case in which they belong to different ones, assuming as basis ETS 300 211 [4] and CCITT Recommendation I.321 [3]. The basic data transfer functionalities at the interface are the same for the two cases. Additional specific management functionalities may be required for each case.

This ETS provides the general principles and functional requirements and specifies the corresponding interface for interconnection of MSSs.

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The specification of the interface between MSS and the ATM-based network is based on the Network Node Interface (NNI) and takes into account ITU-T Recommendations I.150 [7], I.361 [10], I.362 [11], I.363 [12], and I.327 [9], ETS 300 275 [6] and ETR 122.

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This ETS defines the reference configuration, functional blocks and their corresponding Protocol Reference Models (PRMs) related to MSS interconnection.

2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] CCITT Recommendation E.164 (1991): "Numbering plan for the ISDN era".

[2] CCITT Recommendation I.113 (1993): "Vocabulary of terms for broadband aspects of ISDN".

[3] CCITT Recommendation I.321 (1991): "B-ISDN protocol reference model and its application".

[4] ETS 300 211 (1992): "Network Aspects (NA); Metropolitan Area Network (MAN) Principles and architecture".

[5] ETS 300 217 (1992): "Network Aspects (NA); Connectionless Broadband Data Service (CBDS)".

[6] ETS 300 275 (1994): "Network Aspects (NA); Metropolitan Area Network (MAN) Interconnection of MANs".

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[7] ITU-T Recommendation I.150 (1993): "B-ISDN asynchronous transfer mode functional characteristics".

[8] ITU-T Recommendation I.311 (1993): "B-ISDN general network aspects".

[9] ITU-T Recommendation I.327 (1993): "B-ISDN functional architecture".

[10] ITU-T Recommendation I.361 (1993): "B-ISDN ATM layer specification".

[11] ITU-T Recommendation I.362 (1993): "B-ISDN ATM adaptation layer (AAL) functional description".

[12] ITU-T Recommendation I.363 (1993): "B-ISDN ATM adaptation layer specification".

[13] ITU-T Recommendation I.432 (1993): "B-ISDN user network interface - Physical layer specification".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply:

ATM crossconnect: This can be either VP cross-connect or VC cross-connect (see ITU-T Recommendation I.311 [8]).

ATM Mapping Functions (AMF) block: The AMF block contains the mapping functionality.

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ATM Transit Access Functions (ATAF) block: The ATAF block contains functions to receive and transmit information over a medium. It is based on ATM.

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ATM-based MSS Interconnection Management Functions (AMIMF) functional component: This includes the management functions relevant to the handling of the **Connectionless Network Interface** (CLNI).

Connectionless Network Interface Protocol (CLNIP): See ETR 122.

Connectionless Server (CLS): See ETR 122.

MAN Switching System (MSS): See ETS 300 211 [4].

Connectionless Network Interface (CLNI): An ATM-based interface for the interconnection of MSS and ATM-based networks belonging to the same or to different network operator domains.

MSS Management Functions (MMF) block: See ETS 300 275 [6].

reference point Ym: See ETS 300 211 [4] (note).

NOTE: The reference point Ym is not defined in CCITT or ITU-T Recommendations.

Transit Access Termination (TAT): See ETS 300 211 [4].

Transit Connection Related Function (TCRF): See ETS 300 211 [4] and ITU-T Recommendation I.327 [9].

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3.2 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

AAL 3/4	ATM Adaptation Layer type 3/4
AF	Access Facility
AM	Address look-up Module
AMF	ATM Mapping Functions
AMIMF	ATM-based MSS Interconnection Management Functions
ATAF	ATM Transit Access Function
CEQ	Customer Equipment
CLNI	Connectionless Network Interface
CLNIP	Connectionless Network Interface Protocol
CLS	Connectionless Server
CLSF	Connectionless Service Functions
FRM	Forwarding/Receiving Module
IMPDU	Initial Media access control PDU
MAN	Metropolitan Area Networks
MMF	MSS Management Functions
MSS	MAN Switching System
NNI	Network Node Interface
OAM	Operations And Maintenance
PDU	Protocol Data Unit
PI	Protocol Identifier
PRM	Protocol Reference Model
PTO	Public Telecommunication Operator
RM	Routeing Module
QoS	Quality of Service
TAT	Transit Access Termination
TCRF	Transit Connection Related Function
TL	Transmission Link
UMI	User-MAN Interface
VPC	Virtual Path Connection

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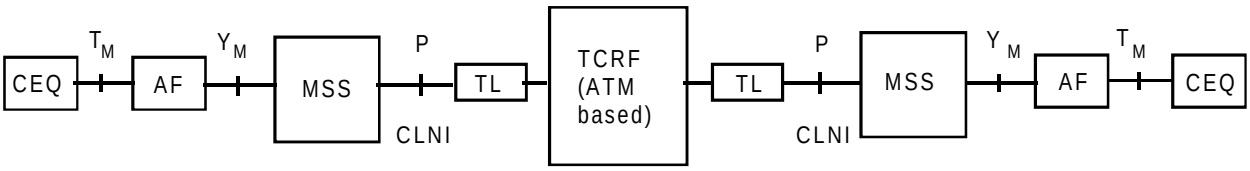
4 Vocabulary

For B-ISDN related terms and definitions, see CCITT Recommendation I.113 [2].

5 Reference configuration

The reference configuration for the interconnection of MSSs via an ATM-based network is depicted in Figure 1.



CEQ: Customer Equipment
AF: Access Facility
TL: Transmission Link

Figure 1: Reference configuration for MSS interconnection

The CLNI is located at the P reference point.

The CLNI is defined for the two cases of interconnection identified in clause 6.