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Telekomunikacijsko upravljavno omrežje (TMN) - Vmesnik Q3 dostopovnega omrežja (AN) za upravljanje okvar in delovanja vmesnikov V5 in pridruženih uporabniških priključkov - 1. del: Specifikacija vmesnika Q3

Telecommunications Management Network (TMN); Q3 interface at the Access Network (AN) for fault and performance management of V5 interfaces and associated user ports; Part 1: Q3 interface specification

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ETSI

Postal address

F-06921 Sophia Antipolis Cedex - FRANCE

Office address

650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Internet

secretariat@etsi.fr
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Contents

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Foreword

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

The present document is part 1 of a multi-part EN covering the Access Network (AN), as identified below:

Part 1: "Q3 interface specification";

Part 2: "Managed Objects Conformance Statement (MOCS) proforma" (for further study).

National transposition dates	
Date of adoption of this EN:	15 October 1999
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Introduction

V5 interfaces, as described in EN 300 324-1 [4] and EN 300 347-1 [5], operate between a Local Exchange (LE) and an Access Network (AN) to support various narrowband Integrated Services Digital Network (ISDN) and Public Switched Telephone Network (PSTN) services. These interfaces and their associated user ports need to be managed by the Operations Systems (OSs) within the Telecommunications Management Network (TMN). This management is performed by means of Q3 interfaces.

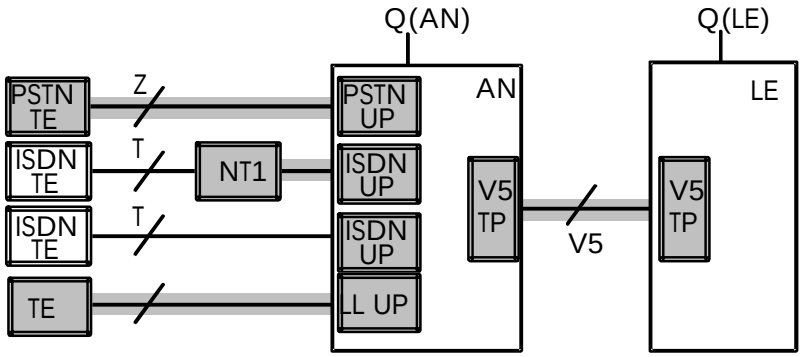
The companion standard on configuration management EN 300 376-1 [6] defines how the Q3 interface of an AN handles the configuration information for V5 interfaces and their associated user ports. The present document specifies the extension to include fault and performance management.

Fault management of V5 interfaces and associated user ports is part of a management activity which is performed by the operator in order to detect failure conditions and to bring the customer access back to its normal state of operation whenever a deviation occurs.

Performance management of V5 interfaces and associated user ports is part of a management activity which is employed in order to maintain the quality of service levels agreed with the customers. The activities undertaken in performance management are monitoring, analysis and problem alerting, diagnosis, optimization and control.

A customer access is considered as being that part of the local network which extends from the network termination equipment up to and including the exchange termination.

Here, only these parts of the activities are covered which are related directly to a V5 interface between a LE and an AN or to that part of the customer access which extends from the AN to the network termination equipment. An ISDN access extends to but does not include the T reference point. An analogue access extends to and may include the Customer Premise Equipment (CPE) (see figure 1).



NOTE: Shaded areas are subject to V5 fault and performance management. User ports represent the different configurations for Line Circuit (LC), Line Termination (LT), Exchange Termination (ET) and Network Termination (NT) as indicated in EN 300 324-1 [4] and EN 300 347-1 [5]. For leased lines (semi-permanent lines), the present document only covers aspects which are common to PSTN and ISDN.

Figure 1: Scope of V5 fault and performance management

The present document details only those functions and management information model components for which V5 specific descriptions are required. However, the use of other components which may be applicable from other specifications is not precluded. In this case, combined applications incorporating both V5 specific and more generic aspects would result. For example, if log control is to be provided in conjunction with the V5 specific alarm reporting function (see annex A), then other specifications (e.g. ITU-T Recommendation X.735 [35]) are available to define this.

The management information model described in the present document complements that for configuration; both information models will normally share the same physical interface.

1 Scope

The present document specifies the Q3 interface between an Access Network (AN) and the Telecommunications Management Network (TMN) for the support of fault and performance management functions for V5 interfaces, as described in EN 300 324-1 [4] and EN 300 347-1 [5], and their associated user ports. The management of transmission, media and services which are not related to V5 interfaces is outside the scope of the present document.

The present document includes the testing of the lines and line circuits at the user ports associated with the V5 interface, and the logging of faults and related functions. Messages on the V5 interface associated with errors or other faults which are handled by local management (e.g. the non-deferred link blocking request) or which involve implementation specific issues (e.g. faults which may result in the connection incomplete information element being used in the Bearer Channel Connection (BCC) protocol) are outside the scope of the present document.

The location of the Q3 interface to which the present document refers is specified in EN 300 376-1 [6].

The present document does not constrain the logical or physical size of the AN or its geographical dispersion.

Existing protocols are used where possible, and the focus of the present document is on defining the object models. The definition of Operations System (OS) functionality is outside the scope of the present document.

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, the latest version applies.
- 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] ETS 300 233 (1994): "Integrated Services Digital Network (ISDN); Access digital section for ISDN primary rate".

[2] Void.

[3] ETS 300 297 (1995): "Integrated Services Digital Network (ISDN); Access digital section for ISDN basic access".

[4] EN 300 324-1 (1999): "V interfaces at the digital Local Exchange (LE); V5.1 interface for the support of Access Network (AN); Part 1: V5.1 interface specification".

[5] EN 300 347-1 (1999): "V interfaces at the digital Local Exchange (LE); V5.2 interface for the support of Access Network (AN); Part 1: V5.2 interface specification".

[6] EN 300 376-1 (1999): "Telecommunications Management Network (TMN); Q3 interface at the Access Network (AN) for configuration management of V5 interfaces and associated user ports; Part 1: Q3 interface specification".

[7] EN 300 377-1 (1999): "Telecommunications Management Network (TMN); Q3 interface at the Local Exchange (LE) for configuration management of V5 interfaces and associated customer profiles; Part 1: Q3 interface specification".

[8] EN 300 379-1 (1999): "Telecommunications Management Network (TMN); Q3 interface at the Local Exchange (LE) for fault and performance management of V5 interfaces and associated customer profiles; Part 1: Q3 interface specification".

[9] ETR 080 (1997): "Transmission and Multiplexing (TM); Integrated Services Digital Network (ISDN) basic rate access; Digital transmission system on metallic local lines".

[10] CEPT Recommendation T/S 54-08 E (1987): "ISDN subscriber access and installation maintenance".

[11] ITU-T Recommendation G.821 (1996): "Error performance of an international digital connection operating at a bit rate below the primary rate and forming part of an integrated services digital network".

[12] ITU-T Recommendation G.826 (1996): "Error performance parameters and objectives for international, constant bit rate digital paths at or above the primary rate".

[13] ITU-T Recommendation M.3010 (1996): "Principles for a Telecommunications management network".

[14] ITU-T Recommendation M.3100 (1995): "Generic network information model".

[15] ITU-T Recommendation Q.543 (1993): "Digital exchange performance design objectives".

[16] ITU-T Recommendation Q.821 (1993): "Stage 2 and stage 3 description for the Q3 interface; Alarm surveillance".

[17] ITU-T Recommendation Q.822 (1994): "Stage 1, stage 2 and stage 3 description for the Q3 interface; Performance management".

[18] CCITT Recommendation X.208 (1988): "Specification of Abstract Syntax Notation One (ASN.1)".

[19] Void.

[20] Void.

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

[22] ITU-T Recommendation X.730 (1992) | ISO/IEC 10164-1 (1993): "Information technology; Open systems interconnection; Systems management: Object management function".

[23] ITU-T Recommendation X.731 (1992) | ISO/IEC 10164-2 (1993): "Information technology; Open systems interconnection; Systems management: State management function".

[24] ITU-T Recommendation X.732 (1992) | ISO/IEC 10164-3 (1993): "Information technology; Open systems interconnection; Systems management: Attributes for representing relationships".

[25] ITU-T Recommendation X.737 (1995) | ISO/IEC 10164-14: "Information technology; Open systems interconnection; Systems management: Confidence and diagnostic test categories".

[26] ITU-T Recommendation X.738 (1993) | ISO/IEC 10164-13: "Information technology; Open systems interconnection; Systems management: Summarization function".

[27] ITU-T Recommendation X.739 (1993) | ISO/IEC 10164-11 (1994): "Information technology; Open systems interconnection; Systems management: Metric objects and attributes".

[28] ITU-T Recommendation X.745 (1993) | ISO/IEC 10164-12 (1994): "Information technology; Open systems interconnection; Systems management: Test management function".

[29] ITU-T Recommendation X.746 (1995) | ISO/IEC 10164-15: "Information technology; Open systems interconnection; Systems management: Scheduling function".

[30] ITU-T Recommendation M.3603 (1992): "Application of maintenance principles to ISDN basic rate access".

[31] ITU-T Recommendation M.3604 (1992): "Application of maintenance principles to ISDN primary rate access".

[32] ITU-T Recommendation Q.831 (1997): "Fault and performance management of V5 interface environments and associated customer profiles".

[33] ITU-T Recommendation Q.835 (1999): "Line and line circuit test management of ISDN and analogue customer accesses".

[34] ITU-T Recommendation Q.824.5 (1997): "Stage 2 and stage 3 description for the Q3 interface; Customer administration: Configuration management of V5 interface environments and associated customer profiles".

[35] ITU-T Recommendation X.735 (1992) | ISO/IEC 10164-6 (1993): "Information technology; Open systems interconnection; Systems management: Log control functions".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

Access Network (AN): see EN 300 324-1 [4].

activation-deactivation of the line: see subclause C.3.5.

bearer channel: see EN 300 324-1 [4].

Bearer Channel Connection (BCC): see EN 300 347-1 [5].

cable pair identification tone: see subclause C.3.5.

capacitance measurement: see subclause C.3.5.

codec testing: see subclause C.3.5.

Communication Channel (C-Channel): see EN 300 324-1 [4].

communication path: see EN 300 324-1 [4].

control protocol: see EN 300 324-1 [4].

dial pulse test: see subclause C.3.5.

dial tone test: see subclause C.3.5.

digit reception: see subclause C.3.5.

dry loop: see subclause C.3.5.

Digital Tone Multi-Frequency (DTMF) dialling test: see subclause C.3.5.

envelope function address: see EN 300 324-1 [4].

feeding current: see subclause C.3.5.

feeding voltage: see subclause C.3.5.

foreign voltage: see subclause C.3.5.

insulation resistance measurement: see subclause C.3.5.

layer 3 address: see EN 300 324-1 [4].

leased lines: see EN 300 324-1 [4].

line testing: see subclause C.3.5.

line circuit testing: see subclause C.3.5.

Local Exchange (LE): see EN 300 324-1 [4].

loop detection and ring trip detection: see subclause C.3.5.

loop resistance measurement: see subclause C.3.5.

loop back 1 (line termination loop back): see subclause C.3.5.

loop back 2, 2_1 and 1A (NT1 loop backs): see subclause C.3.5.

monitoring of the line: see subclause C.3.5.

monitoring of the line with mark tone: see subclause C.3.5.

Operations System (OS): see ITU-T Recommendation M.3010 [13].

power feed: see subclause C.3.5.

private meter pulses: see subclause C.3.5.

protection protocol: see EN 300 347-1 [5].

register recall button test: see subclause C.3.5.

subscriber private metering: see subclause C.3.5.

V5 interface: see EN 300 324-1 [4].

V5 interface messages: term refers to all Function Elements (FEs) and other V5 protocol messages as defined in EN 300 324-1 [4] and EN 300 347-1 [5] which are communicated via the V5 interface.

V5 time slot: see EN 300 324-1 [4].

3.2 Abbreviations

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

AIS	Alarm Indication Signal
AN	Access Network
ASN.1	Abstract Syntax Notation One (see CCITT Recommendation X.208 [18])
BA	Basic Access
BCC	Bearer Channel Connection
C-channel	Communication channel
CMIP	Common Management Information Protocol
CPE	Customer Premise Equipment
DTMF	Digital Tone Multi-Frequency
DS	access Digital Section
ET	Exchange Termination
FE	Function Element
FSM	Finite State Machine
ID	Identity, identifier
ISDN	Integrated Services Digital Network
LC	Line Circuit
LE	Local Exchange
LFA	Loss of Frame Alignment
LOS	Loss Of Signal
LT	Line Termination
MORT	Managed Object Referring to Test