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ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE
Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE
Internet: secretariat@etsi.fr - http://www.etsi.org

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

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Foreword

This final draft European Telecommunication Standard (ETS) has been produced by the Terrestrial Trunked Radio (TETRA) Project of the European Telecommunications Standards Institute (ETSI), and is now submitted for the Voting phase of the ETSI standards approval procedure.

This ETS is a multi-part standard and will consist of the following parts:

Part 1: "General network design";

Part 2: "Air Interface (AI)";

Part 3: "Inter-working";

Part 4: "Gateways basic operations";

Part 5: "Terminal equipment interface";

Part 6: "Line connected stations";

Part 7: "Security";

Part 8: "Network management services";

Part 9: "General Supplementary Services Design";

Part 10: "Supplementary services stage 1";

Part 11: "Supplementary services stage 2";

Part 12: "Supplementary services stage 3";

Part 13: "SDL Model of the Air Interface";

Part 14: "Protocol Implementation Conformance Statement (PICS) proforma specification".

Proposed transposition dates	
Date of latest announcement of this ETS (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	6 months after doa

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1 Scope

This ETS specifies Packet mode Data Network (PDN) gateways for TETRA Switching and Management Infrastructures (SwMI).

The circuit mode data services and Internet Protocol (IP) issues are outside the scope of this ETS.

The information exchange about address mapping between the TETRA air interface address and any external data network address due to migration between TETRA SwMIs is outside the scope of this gateway standard.

The gateway functions are defined as required by the used upper network layer protocol and are outside the scope of this standard.

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] ETS 300 392-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 1: General network design".

[2] ETS 300 392-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".

[3] ITU-T Recommendation X.35 (1993): "Interface between a PSPDN and a Private PSDN which is based on X.25 procedures and enhancements to define a gateway function that is provided in the PSPDN".

[4] ITU-T Recommendation X.75 (1993): "Packet-switched signalling system between public networks providing data transmission services".

[5] ITU-T Recommendation X.31 (1995): "Support of packet mode terminal equipment by an ISDN".

3 Definitions and abbreviations

3.1 Definitions

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

TETRA user: a user within TETRA addressing domain and utilizes a data network gateway.

3.2 Abbreviations

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

CLNP	ConnectionLess Network Protocol
CONP	Connection Oriented Network Protocol
CONS	Connection Oriented Network Service
GTSI	Group TETRA Subscriber Identity
IP	Internet Protocol
ITSI	Individual TETRA Subscriber Identity
NSAP	Network Service Access Point
PDN	Packet mode Data Network
SCLNS	Specific ConnectionLess Network Service
SwMI	Switching and Management Infrastructure

4 General on data network gateways

TETRA air interface standard ETS 300 392-1 [1] and ETS 300 392-2 [2] can support multiple packet mode data communication standards such as:

- Connection Oriented Network Protocol (CONP);
- ConnectionLess Network Protocol (CLNP);
- Specific ConnectionLess Network Service (SCLNS).

This ETS considers the X.25 packet data gateway and related issues. As a part of data transmission path a TETRA SwMI could behave seen from the external network as a data terminal or as a data network node. In both cases a TETRA user equipment identification Individual TETRA Subscriber Identity (ITSI) or Group TETRA Subscriber Identity (GTSI) is associated with an X.25 address known by the external network, see ETS 300 392-1 [1], clause 7, Network Service Access Point (NSAP) addressing. This association or binding may be static or dynamic.

5 Data network gateways

5.1 X.25 and X.75 gateway

A TETRA SwMI shall be connected to a X.25 network as a X.25 network node.

ITU-T Recommendation X.35 [3] should be used as a guide in design of interface to PDNs.

The SwMI shall act as a data node on the X.25 network and the protocol defined in ITU-T Recommendation X.75 [4] shall be used for interworking purposes.

5.2 Specific ConnectionLess Network Service (SCLNS)

The SCLNS as defined in ETS 300 392-2 [2], clause 26 as such is a sub-network access protocol and requires an upper network layer provided by other network layer protocols. A full version of this service is bound to the TETRA domain although some of the facilities may be mapped against other network protocols in the gateway e.g. time stamping, see ETS 300 392-2 [2], subclause 27.2.1.

6 Address mapping

The TETRA networks use addresses as defined in ETS 300 392-1 [1], clause 7. TETRA air interface addressing and external data networks addressing are inherently different although TETRA address construction is the same as used in other land mobile systems and e.g. country code values may be same. For that reason an address mapping is required between TETRA and external networks. The address mapping inside TETRA network should follow ther same principles as defined in ITU-T Recommendation X.31 [5] for the X.25 service. In effect the TETRA air interface address should be a sub-network address limited to the TETRA domain.

Annex A (informative): Bibliography

- ISO 8208: "X.25 packet level protocol for Data Terminal Equipment".
- ISO 8348: "Information processing systems - Data communications-Network service definition".
- ISO 8473: "Protocol for providing the connectionless mode network service".
- ISO 8878: "Use of X.25 to provide the OSI connection mode network".
- CCITT Recommendation X.21 (1992): "Interface between data terminal equipment and data circuit-terminating equipment for synchronous operation on public data networks".
- CCITT Recommendation X.21 bis (1988): "Use on public data networks of Data Terminal Equipment (DTE) which is designed for interfacing to synchronous V-Series modems".
- ITU-T Recommendation X.25 (1993): "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".
- ITU-T Recommendation X.28 (1993): "DTE/DCE interface for a start-stop mode data terminal equipment accessing the packet assembly/disassembly facility (PAD) in a public data network situated in the same country".
- ITU-T Recommendation X.29 (1993): "Procedures for the exchange of control information and user data between a packet assembly/disassembly (PAD) facility and a packet mode DTE or another PAD".
- ITU-T Recommendation X.30/I.461 (1993): "Support of X.21, X.21 bis and X.20 bis based Data Terminal Equipments (DTEs) by an Integrated Services Digital Network (ISDN)".
- ITU-T Recommendation X.32 (1993): "Interface between DTE and DCE for terminals operating in the packet mode and accessing a packet switched public data network through a public switched telephone network or an integrated services digital network or a circuit switched public data network".
- ITU-T Recommendation X.300 (1993): "General Principles for Interworking between Public Networks and between Public Networks and other Networks for the Provision of Data Transmission Services".
- ITU-T Recommendation X.301 (1996): "Description of the general arrangements for call control within a subnetwork and between subnetworks for the provision of data transmission services".
- ITU-T Recommendation X.325 (1993): "General Arrangements for Interworking between Packet Switched Public Data Networks (PSPDNs) and Integrated Services Digital Networks (ISDNs) for the Provision of Data Transmission Services".

History

Document history			
November 1998	Public Enquiry	PE 9911:	1998-11-13 to 1999-03-12
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