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Digital cellular telecommunications system (Phase 2+) (GSM); Interworking between a Public Land Mobile Network (PLMN) and a Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of packet switched data transmission services (GSM 09.06 version 5.0.2)

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33.080	Digitalno omrežje z integriranimi storitvami (ISDN)	Integrated Services Digital Network (ISDN)

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**Digital cellular telecommunications system (Phase 2+);
Interworking between a Public Land Mobile Network (PLMN) and
a Packet Switched Public Data Network/Integrated Services
Digital Network (PSPDN/ISDN) for the support of packet
switched data transmission services
(GSM 09.06 version 5.0.2)**

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Special Mobile Group (SMG) Technical Committee (TC) of the European Telecommunications Standards Institute (ETSI).

This ETS identifies the Interworking Functions (IWFs) and requirements for the interworking between a GSM Public Land Mobile Network (PLMN) and a Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of packet services in GSM PLMNs within the digital cellular telecommunications system (Phase 2/Phase 2+).

This ETS is a GSM technical specification version 5, which incorporates GSM Phase 2+ enhancements/features to the version 4 GSM technical specification. The ETS from which this Phase 2+ ETS has evolved, is Phase 2 GSM ETS 300 603 + Amendment 1 (GSM 09.06 version 4.5.0).

The specification from which this ETS has been derived was originally based on CEPT documentation, hence the presentation of this ETS may not be entirely in accordance with the ETSI/PNE Rules.

The contents of this ETS are subject to continuing work within TC-SMG and may change following formal TC-SMG approval. Should TC-SMG modify the contents of this ETS it will then be resubmitted for OAP by ETSI with an identifying change of release date and an increase in version number as follows:

Version 5.x.y

where:

- y the third digit is incremented when editorial only changes have been incorporated in the specification;
- x the second digit is incremented for all other types of changes, i.e. technical enhancements, corrections, updates, etc.

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1 Scope

This European Telecommunication Standard (ETS) identifies the Interworking Functions (IWF's) and requirements for the interworking between a GSM PLMN and a Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of packet services in GSM PLMNs.

In the GSM PLMN context the packet services are associated with bearer services and are described in GSM 02.02. The generally defined GSM PLMN user-network access as defined in the respective GSM specifications (see references) forms the basis for defining the particularities for the provision of packet services to the GSM PLMN subscribers. Network internal interfaces for the support of packet services in the pan-European ISDN are defined in ETSI standards, which are also taken as a basis.

User-network access and network internal interfaces are defined to provide the packet services.

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] GSM 01.04 (ETR 350): "Digital cellular telecommunications system (Phase 2+); Abbreviations and acronyms".
- [2] CCITT Recommendation X.25: "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".
- [3] CCITT Recommendation X.31: "Support of packet mode terminal equipment by an ISDN".
- [4] CCITT Recommendation X.32: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and accessing a packet switched telephone network or an integrated services digital network or a circuit switched public data network".
- [5] ETS 300 007: "Integrated Services Digital Network (ISDN); Support of packet-mode terminal equipment by an ISDN".
- [6] ETS 300 099: "Integrated Services Digital Network (ISDN); Specification of the Packet Handler access point Interface (PHI)".
- [7] ETS 300 102: "Integrated Services Digital Network (ISDN); User-network interface layer 3 Specifications for basic call control Specification Description Language (SDL) diagrams".
- [8] ETR 010: "ISDN Standards Management (ISM); The ETSI basic guide on the European integrated services digital network".
- [9] GSM 02.02 (ETS 300 904): "Digital cellular telecommunications system (Phase 2+); Bearer Services (BS) supported by a GSM Public Land Mobile Network (PLMN)".
- [10] GSM 02.03 (ETS 300 905): "Digital cellular telecommunications system (Phase 2+); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".
- [11] GSM 02.04 (ETS 300 918): "Digital cellular telecommunications system (Phase 2+); General on supplementary services".

- [12] GSM 02.86: "Digital cellular telecommunications system; Advice of charge (AoC) Supplementary Services - Stage 1".
- [13] GSM 02.88: "Digital cellular telecommunications system; Call Barring (CB) Supplementary Services - Stage 1".
- [14] GSM 03.03 (ETS 300 927): "Digital cellular telecommunications system (Phase 2+); Numbering, addressing and identification".
- [15] GSM 03.10: "Digital cellular telecommunications system (Phase 2+); GSM Public Land Mobile Network (PLMN) connection types".
- [16] GSM 03.70: "Digital cellular telecommunications system; Routing of calls to/from Public Data Networks (PDN) and the GSM Public Land Mobile Network (PLMN)".
- [17] GSM 04.02: "Digital cellular telecommunications system (Phase 2+); GSM Public Land Mobile Network (PLMN) access reference configuration".
- [18] GSM 04.08 (ETS 300 940): "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification".
- [19] GSM 04.21 (ETS 300 945): "Digital cellular telecommunications system (Phase 2+); Rate adaption on the Mobile Station - Base Station System (MS - BSS) Interface".
- [20] GSM 04.22 (ETS 300 946): "Digital cellular telecommunications system (Phase 2+); Radio Link Protocol (RLP) for data and telematic services on the Mobile Station - Base Station System (MS - BSS) interface and the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".
- [21] GSM 07.01 (ETS 300 913): "Digital cellular telecommunications system (Phase 2+); General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".
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- [22] GSM 07.03 (ETS 300 915): "Digital cellular telecommunications system (Phase 2+); Terminal Adaptation Functions (TAF) for services using synchronous bearer capabilities".
- [23] GSM 08.20: "Digital cellular telecommunications system (Phase 2+); Rate adaption on the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".
- [24] GSM 09.03: "Digital cellular telecommunications system; Signalling requirements on interworking between the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) and the Public Land Mobile Network (PLMN)".
- [25] GSM 09.07 (ETS 300 976): "Digital cellular telecommunications system (Phase 2+); General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

3 Definitions and abbreviations

Use is made of the following terms within this ETS. These terms refer to information requirements necessary to support interworking functions, some of these terms will be identifiable with their use in other specifications.

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

bearer capability information: Specific information defining the lower layer characteristics required within the network.

lower layer capability information: Information defining the lower layer characteristics of the terminal.

higher layer capability information: Information defining the higher layer characteristics of a teleservice active on the terminal.

protocol identifier: Information defining the specific protocols utilised for the support of data transfer by a terminal.

service profile: Set of values of the network default and user selectable attributes selected for a particular DTE identity.

loop detection: Detection of the situation, where a call, which has left the originating network, re-appears at the originating network.

GSM packet mode services "Use of X.31 case A": A circuit connection shall be used for accessing the packet service (according to ETS 300 099), with the significant characteristics of the connection identified by the following setting of the respective parameters of the BC-IE:

- information transfer capability = unrestricted digital information;
- transfer mode = circuit mode.

The issue of "loop detection" is of no concern in the case of X.31 Case A (ETS 300 099) because the PH inserts - irrespective of being accessed by a home or a foreign roaming subscriber - into the "calling address" of an outgoing X.25 "call request" packet the address of the B-channel port.

GSM packet mode services "Use of X.31 case B": A packet connection shall be used for accessing the packet service (according to ETS 300 099), with the significant characteristics of the connection identified by the following setting of the respective parameters of the BC-IE:

- information transfer capability = unrestricted digital information;
- transfer mode = packet mode.

service number: A service number is a special E.164 number of the HPLMN which indicates to the HPLMN that, in case of an access to a PH X.31 case B, case A/B conversion is necessary. It is translated in the HPLMN into the actual E.164 number of the PH. The service number is used by the subscriber for the access of the PH case B when the subscriber is in the HPLMN or in the VPLMN.

packet mode services via PSTN (X.32): A circuit connection shall be used for accessing the packet service with the significant characteristics of the connection identified by the following setting of the respective parameters of the Bearer Capability Information Element in access from a PLMN:

- information transfer capability = 3,1 kHz exPLMN;
- transfer mode = circuit mode.

home PLMN: That GSM PLMN where the mobile subscriber has his subscription for mobile services.

visited PLMN: That GSM PLMN on which the mobile subscriber is roamed to when leaving his home PLMN (HPLMN) and logged-in there.

basic MSisdn: The MSisdn stored in VLR for a visiting mobile subscriber.

PSPDN port: Unit providing incoming/outgoing demand access to a PSPDN (X.32).