ETSI TS 129 007 V16.0.0 (2020-08)

**Digital cellular telecommunications system (Phase 2+) (GSM);
Universal Mobile Telecommunications System (UMTS);
General requirements on interworking between
the Public Land Mobile Network (PLMN)
and the Integrated Services Digital Network (ISDN)
or Public Switched Telephone Network (PSTN)
(3GPP TS 29.007 version 16.0.0 Release 16)**

A GLOBAL INITIATIVE

GLOBAL SYSTEM FOR
MOBILE COMMUNICATIONS

Reference
RTS/TSGC-0329007vg00

Keywords
GSM,UMTS

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - 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

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (https://ipr.etsi.org/).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

Legal Notice

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities. These shall be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between 3GPP and ETSI identities can be found under http://webapp.etsi.org/key/queryform.asp.

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Contents

Foreword

This Technical Specification (TS) has been produced by the 3rd Generation Partnership Project (3GPP).

The present document identifies the Mobile-services Switching Centre/Interworking functions (MSC/IWFs) and requirements to support interworking between:

i) PLMN and PSTN;

ii) PLMN and ISDN;

within the 3GPP system.

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

1 Scope

The present document identifies the Mobile-services Switching Centre/Interworking Functions (MSC/IWFs) and requirements to support interworking between:

a) PLMN and PSTN;

b) PLMN and ISDN;

for circuit switched services in the PLMN. It is not possible to treat ISDN and PSTN as one type of network, even when both ISDN and PSTN subscribers are served by the same exchange because of the limitations of the PSTN subscribers access i.e. analogue connection without D-channel signalling.

Within the present document, the requirements for voice and non-voice (data) calls are considered separately.

From R99 onwards the following services are no longer required by a PLMN:

- the dual Bearer Services "alternate speech/data" (BS 61) and "speech followed by data" (BS 81);
- the dedicated services for PAD (BS 4x) and Packet access (BS 5x);
- the single asynchronous and synchronous Bearer Services (BS 21..26, BS 31..34).

From Rel-4 onwards the following services are no longer required by a PLMN:

- the synchronous Bearer Service non-transparent (BS 30 NT);
- the Basic Packet access;
- Non-transparent facsimile (TS 61/62 NT) for the A/Gb mode and GERAN Iu mode.

If a PLMN still provides these services it shall fulfil the specification of former releases.

The present document is valid for a PLMN in A/Gb mode as well as in Iu mode. If text applies only for one of these systems it is explicitly mentioned by using the terms "A/Gb mode" and "Iu mode". If text applies to both of the systems, but a distinction between the ISDN/PSTN and the PLMN is necessary, the term "PLMN" is used.

NOTE: The Gb interface does not play any role in the scope of the present document although the term "A/Gb mode" is used.

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. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] ITU-T Recommendation G.711 (11/88): "Pulse Code Modulation (PCM) of voice frequencies".

[2] ITU-T Recommendation I.460 (02/99): "Multiplexing, rate adaption and support of existing interfaces".

[3] ITU-T Recommendation I.464 (02/99): "Multiplexing, rate adaption and support of existing interfaces for restricted 64 kbit/s transfer capability".

[4] ITU-T Recommendation Q.922 (1992): "DSS 1 Data link layer: ISDN data link layer specification for frame mode bearer services".

[5] ITU-T Recommendation Q.931 (05/98): "DSS 1 - ISDN user network interface layer 3 specification for basic call control".

[6] ITU-T Recommendation V.22 (11/88): "1200 bits per second duplex modem standardized for use in the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[7] ITU-T Recommendation V.24: "List of definitions for interchange circuits between data terminal equipment (DTE) and data circuit-terminating equipment (DCE)".

[8] ITU-T Recommendation V.25 (10/96): "Automatic answering equipment and general procedures for automatic calling equipment on the general switched telephone network including procedures for disabling of echo control devices for both manually and automatically established calls".

[9] ITU-T Recommendation V.32 (03/93): "A family of 2-wire, duplex modems operating at data signalling rates of up to 9600 bit/s for use on the general switched telephone network and on leased telephone-type circuits".

[10] ITU-T Recommendation V.32bis (02/91): "A duplex modem operating at data signalling rates of up to 14 400 bit/s for use on the general switched telephone network and on leased point-to-point 2-wire telephone-type circuits".

[11] ITU-T Recommendation V.34 (02/98): "A modem operating at data signalling rates of up to 33 600 bit/s for use on the general switched telephone network and on leased point-to-point 2-wire telephone-type circuits".

[12] ITU-T Recommendation V.42 (03/02): "Error-correcting procedures for DCEs using asynchronous-to-synchronous conversion".

[13] ITU-T Recommendation V.42bis (01/90): "Data compression procedures for Data Circuit Terminating Equipment (DCE) using error correction procedures".

[14] ITU-T Recommendation V.90 (09/98): "A digital modem and analogue modem pair for use on the Public Switched Telephone Network (PSTN) at data signalling rates of up to 56 000 bit/s downstream and up to 33 600 bit/s upstream".

[15] ITU-T Recommendation V.110: "Support by an ISDN of data terminal equipments with V-Series type interfaces".

[16] ITU-T Recommendation V.120 (10/96): "Support by an ISDN of data terminal equipment with V-Series type interfaces with provision for statistical multiplexing".

[17] ETSI ETR 018 (11/95): "Integrated Services Digital Network (ISDN); Application of the Bearer Capability (BC), High Layer Compatibility (HLC) and Low Layer Compatibility (LLC) information elements by terminals supporting ISDN services".

[18] ETSI ETS 300 102-1 Edition 1 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3; Specifications for basic call control".

[19] ETSI EN 300 403-1 V1.2.2 (1998-04): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification".

[20] 3GPP TS 41.103: "GSM Release 5 specifications".

[21] 3GPP TR 21.905: "Vocabulary for 3GPP specifications"

[22] 3GPP TS 22.001: "Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN)".

[23] 3GPP TS 22.003: "Circuit teleservices supported by a Public Land Mobile Network (PLMN)".

[24] 3GPP TS 43.010: "GSM Public Land Mobile Network (PLMN) connection types ".

[25] 3GPP TS 43.045: "Technical realization of facsimile group 3 service - transparent".

[26] 3GPP TS 43.050: "Transmission planning aspects of the speech service in the GSM Public Land Mobile Network (PLMN) system".

[27] 3GPP TS 44.021: "Rate adaption on the Mobile Station - Base Station System (MS - BSS) interface".

[28] 3GPP TS 48.020: "Rate adaption on the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".

[29] 3GPP TS 48.060: "Inband control of remote transcoders and rate adaptors for full rate traffic channels".

[30] 3GPP TS 09.02 : "Mobile Application Part (MAP) specification GSM Phase 1".

[31] 3GPP TS 49.003: "Signalling requirements on interworking between the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) and the Public Land Mobile Network (PLMN)".

[32] 3GPP TS 21.103: "3rd Generation mobile system Release 5 specifications ".

[33] 3GPP TS 22.002: "Circuit Bearer Services (BS) supported by a Public Land Mobile Network (PLMN)".

[34] 3GPP TS 22.004: "General on supplementary services".

[35] 3GPP TS 23.003: "Numbering, addressing and identification".

[36] 3GPP TS 23.008: "Organization of subscriber data".

[37] 3GPP TS 23.011: "Technical realization of supplementary services".

[38] 3GPP TS 23.146: "Technical realization of facsimile group 3 non-transparent".

[39] Void.

[40] 3GPP TS 24.008: "Mobile radio interface layer 3 specification; Core network protocols; Stage 3".

[41] 3GPP TS 24.022: "Radio Link Protocol (RLP) for circuit switched bearer and teleservices ".

[42] 3GPP TS 25.415: "UTRAN Iu interface user plane protocols".

[43] 3GPP TS 27.001: "General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".

[44] 3GPP TS 27.002: "Terminal Adaptation Functions (TAF) for services using Asynchronous bearer capabilities".

[45] 3GPP TS 27.003: "Terminal Adaptation Functions (TAF) for services using Synchronous bearer capabilities".

[46] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[47] 3GPP TS 24.002: "GSM - UMTS Public Land Mobile Network (PLMN) access reference configuration "

[48] ISO/IEC 3309 (1993): "Information technology - Telecommunications and information exchange between systems - High-level Data Link Control (HDLC) procedures - Frame structure".

[49] IETF RFC 1662: "PPP in HDLC-like framing".

[50] Mobile Internet Access Forum: "PIAFS Specification Ver. 1.1, 2.1".

[51] ITU-T Recommendation V.8: "Procedures for starting sessions of data transmission over the public switched telephone network".

[52] 3GPP TS 26.111: "Codec for circuit switched multimedia telephony service; Modifications to H.324".

[53] Void

[54] ITU-T Recommendation H.223 (03/96): "Multiplexing protocol for low bit rate multimedia communication".

[55] ITU-T Recommendation H.223 (Annex A) (02/98): "Multiplexing protocol for low bit rate multimedia communication over low error-prone channels".

[56] ITU-T Recommendation H.223 (Annex B) (02/98): "Multiplexing protocol for low bit rate multimedia communication over moderate error-prone channels".

[57] ITU-T Recommendation H.223 (Annex C) (02/98): "Multiplexing protocol for low bit rate multimedia communication over highly error-prone channels".

[58] ITU-T Recommendation H.324: "Terminal for low bit-rate multimedia communication".

[59] ITU-T Recommendation H.221: "Frame structure for a 64 to 1920 kbit/s channel in audiovisual teleservices".

[60] ITU-T Recommendation H.242: "System for establishing communication between audiovisual terminals using digital channels up to 2 Mbit/s".

[61] ITU-T Recommendation H.245: "Control protocol for multimedia communication".

[62] ITU-T Recommendation V.8 bis: "Procedures for the identification and selection of common modes of operation between data circuit-terminating equipments (DCEs) and between data terminal equipments (DTEs) over the public switched telephone network and on leased point-to-point telephone-type circuits".

[63] ITU-T Recommendation V.21 (11/88): "300 bits per second duplex modem standardized for use in the general switched telephone network".

[64] ITU-T Recommendation V.22bis (1988): "2400 bits per second duplex modem using the frequency division technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[65] ITU-T Recommendation V.23 (11/88): "600/1200-baud modem standardized for use in the general switched telephone network".

[66] ITU-T Recommendation V.26 (11/88): "2400 bits per second modem standardized for use on 4-wire leased telephone-type circuits".

[67] ITU-T Recommendation V.26 bis (11/88): "2400/1200 bits per second modem standardized for use in the general switched telephone network".

[68] ITU-T Recommendation V.26 ter (11/88): "2400 bits per second duplex modem using the echo cancellation technique standardized for use on the general switched telephone network and on point-to-point 2-wire leased telephone-type circuits".

[69] ITU-T Recommendation V.27 (11/88): "4800 bits per second modem with manual equalizer standardized for use on leased telephone-type circuits".

[70] ITU-T Recommendation V.27 bis (11/88): "4800/2400 bits per second modem with automatic equalizer standardized for use on leased telephone-type circuits".

[71] ITU-T Recommendation V.29 (11/88): "9 600 bits per second modem standardized for use on point-to-point 4-wire leased telephone-type circuits".

[72] ITU-T Recommendation Q.921 (09/97): "ISDN user-network interface - Data link layer specification".

[73] ITU-T Recommendation X.21 (09/92): "Interface between Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) for synchronous operation on public data networks".