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Digitalne izboljġane brezvrviļ ne telekomunikacije (DECT) - Globalni sistem mobilnih komunikacij (GSM) - Profil medsebojnega delovanja DECT/GSM (IWP) - Izvedba nosilne storitve

Digital Enhanced Cordless Telecommunications (DECT); Global System for Mobile communications (GSM); DECT/GSM Interworking Profile (IWP); Implementation of bearer services

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Digital Enhanced Cordless Telecommunications (DECT) Project in co-operation with the Global System for Mobile Communication (GSM) Technical Committee of the European Telecommunications Standards Institute (ETSI).

Introduction

This ETS is a part of a set of standards for the DECT/GSM Interworking Profile (IWP) concept that includes:

- general description of service requirements, functional capabilities and information flows, (ETS 300 466 [13]);
- access and mapping (protocol/procedure description for 3,1 kHz speech service), (ETS 300 370 [10]);
- GSM-MSC/DECT-FP fixed interconnection (ETS 300 499 [14]);
- GSM Phase 2 supplementary services implementation (ETS 300 703 [25]);
- implementation of bearer services (this ETS);
- short message services, point-to-point and cell broadcast (ETS 300 764 [26]);
- implementation of facsimile group 3 (ETS 300 792 [27]).

This ETS is based on Digital Enhanced Cordless Telecommunications (DECT) common interface specification ETS 300 175 [1] - [8] to enable DECT terminals to interwork in the public and private environment with DECT systems which are connected to a Global System for Mobile communications (GSM) core infrastructure.

In addition, this ETS is based on the DECT Generic Access Profile (GAP), ETS 300 444 [12], to enable the same DECT/GSM terminal to interwork with a DECT Fixed Part (FP) complying to the GAP requirements, irrespective of whether this FP provides residential, business or public access services. General attachment requirements and speech attachment requirements are based on TBR 6 [29] and TBR 10 [28].

Further details on the DECT system may be found in ETR 015 [31], ETR 043 [32], ETR 056 [33] and I-ETS 300 176 [9].

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1 Scope

This European Telecommunication Standard (ETS) is a part of the Digital Enhanced Cordless Telecommunications/Global System for Mobile communications (DECT/GSM) Interworking Profile (IWP) and specifies the Portable Part (PP) interworking requirements and Fixed Part (FP) interworking requirements/mappings necessary to ensure that the GSM bearer services can be provided over DECT, as specified in ETS 300 466 [13]. To enable DECT terminals to interwork with DECT systems which are connected to the GSM infrastructure, from the DECT side this ETS is based on the DECT/GSM interworking profile, access and mappings ETS 300 370 [10], as well as the DECT data services profile, generic data link service, service type C, Class 2, ETS 300 651 [24].

NOTE: For information, the DECT data service profile is based upon the GAP ETS 300 444 [12] and on the DECT common interface specification ETS 300 175 [1] - [8].

Interworking functions/mappings are specified for Mobile Switching Centre (MSC) attachment for the DECT FP as the FP is using the A-interface towards the GSM MSC in the respect that the FP emulates a GSM Base Station Controller (BSC) with regards to the GSM messages which are relevant to this ETS. The complete interface used between the DECT FP and the GSM Mobile Switching Centre (MSC) is specified in ETS 300 499 [14]. Attachment via other interfaces to GSM-networks is outside the scope of this ETS.

The DECT access protocols and FP and PP interworking/mappings necessary for the support of basic voice telephony service are specified in ETS 300 370 [10].

2 Normative references

This ETS incorporates, by dated or 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 300 175-1: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".

[2] ETS 300 175-2: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer".

[3] ETS 300 175-3: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".

[4] ETS 300 175-4: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".

[5] ETS 300 175-5: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".

[6] ETS 300 175-6: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".

[7] ETS 300 175-7: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".

[8] ETS 300 175-8: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech coding and transmission".

[9] I-ETS 300 176: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Approval test specification".

[10] ETS 300 370: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications / Global System for Mobile communications (DECT/GSM) inter-working profile; Access and mapping (Protocol/procedure description for 3,1 kHz speech service)".

[11] ETS 300 435: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Data Services Profile (DSP); Base standard including interworking to connectionless networks (service types A and B, Class 1)".

[12] ETS 300 444: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Generic Access Profile (GAP)".

[13] ETS 300 466: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications/Global System for Mobile Communications (DECT/GSM) interworking profile; General description of service requirements; Functional capabilities and information flows".

[14] ETS 300 499: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications / Global System for Mobile Communications (DECT/GSM) interworking profile; Mobile services Switching Centre (MSC) - Fixed Part (FP) interconnection".

[15] ETS 300 501: "European digital cellular telecommunications system (Phase 2); Bearer Services (BS) supported by a GSM Public Land Mobile Network (PLMN) (GSM 02.02)".

[16] ETS 300 557: "Digital cellular telecommunications system (Phase 2); Mobile radio interface layer 3 specification (GSM 04.08)".

[17] ETS 300 562: "European digital cellular telecommunications system (Phase 2); Rate adaption on the Mobile Station - Base Station System (MS - BSS) Interface (GSM 04.21)".

[18] ETS 300 563: "European 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 (GSM 04.22)".

[19] ETS 300 582: "European digital cellular telecommunications system (Phase 2); General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS) (GSM 07.01)".

[20] ETS 300 583: "European digital cellular telecommunications system (Phase 2); Terminal Adaptation Functions (TAF) for services using asynchronous bearer capabilities (GSM 07.02)".

[21] ETS 300 584: "European digital cellular telecommunications system (Phase 2); Terminal Adaptation Functions (TAF) for services using synchronous bearer capabilities (GSM 07.03)".

[22] ETS 300 590: "Digital cellular telecommunications system (Phase 2); Mobile-services Switching Centre - Base Station System (MSC - BSS) interface; Layer 3 specification (GSM 08.08)".

[23] ETS 300 608: "European digital cellular telecommunications system (Phase 2); Specification of the Subscriber Identity Module - Mobile Equipment (SIM - ME) interface (GSM 11.11)".

[24] ETS 300 651: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); Data Services Profile (DSP); Generic data link service; Service type C, class 2".

[25] ETS 300 703: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications / Global System for Mobile communications (DECT/GSM) Inter-Working Profile (IWP); GSM phase 2 supplementary services implementation".

[26] ETS 300 764: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications / Global System for Mobile communications (DECT/GSM) Interworking Profile (IWP); Implementation of short message service, point-to-point and cell broadcast".

[27] ETS 300 792: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications / Global System for Mobile communications (DECT/GSM); DECT/GSM interworking profile; Implementation of facsimile group 3".

[28] TBR 10: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); General terminal attachment requirements; Telephony applications".

[29] TBR 6: "Radio Equipment and Systems (RES); Digital Enhanced Cordless Telecommunications (DECT); General terminal attachment requirements".

[30] 91/263/EEC: "Council Directive of 29 April 1991 on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity" (Terminal Directive).

[31] ETR 015: "Radio Equipment and Systems; Digital European Cordless Telecommunications (DECT); Reference document".

[32] ETR 043: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); Common interface; Services and facilities requirements specification".

[33] ETR 056: "Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT); System description document".

[34] ETR 100: "European digital cellular telecommunications system (Phase 2); Abbreviations and acronyms (GSM 01.04)".

[35] ISO/IEC 9646-6: "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 6: Protocol profile test specification".

3 Definitions, abbreviations and symbols

3.1 DECT definitions

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

attach: The process whereby a PP within the coverage area of a FP to which it has access rights, notifies this FP that it is operative. The reverse process is detach, which reports the PP as inoperative.

NOTE 1: An operative PP is assumed to be ready to receive calls.

authentication: The process whereby a DECT subscriber is positively verified to be a legitimate user of a particular FP.

NOTE 2: Authentication is generally performed at call set-up, but may also be done at any other time (e.g. during a call).

bearer service: A type of telecommunication service that provides a defined capability for the transmission of signals between user-network interfaces.

NOTE 3: The DECT user-network interface corresponds to the top of the network layer (layer 3).

C-plane: The control plane of the DECT protocol stacks, which contains all of the internal DECT protocol control, but may also include some external user information.

NOTE 4: The C-plane stack always contains protocol entities up to and including the network layer.

call: All of the Network (NWK) layer processes involved in one network layer peer-to-peer association.

NOTE 5: Call may sometimes be used to refer to processes of all layers, since lower layer processes are implicitly required.

DECT Network (DNW): A network that uses the DECT air interface to interconnect a local network to one or more portable applications. The logical boundaries of the DECT network are defined to be at the top of the DECT network layer.

NOTE 6: A DECT Network (DNW) is a logical grouping that contains one or more fixed radio termination plus their associated portable radio termination. The boundaries of the DECT network are not physical boundaries.

Fixed Part (DECT Fixed Part) (FP): A physical grouping that contains all of the elements in the DECT network between the local network and the DECT air interface.

NOTE 7: A DECT FP contains the logical elements of at least one fixed radio termination, plus additional implementation specific elements.

fixed part GSM PLMN attachment (DECT fixed part attached to a GSM MSC): A definition of a functional environment where a DECT system (FP) is attached to a GSM MSC. The MSC in this case refers to a functional entity providing the required MM and CC functionality defined in this ETS in order to communicate with the FP.

Fixed radio Termination (FT): A logical group of functions that contains all of the DECT processes and procedures on the fixed side of the DECT air interface.

NOTE 8: A fixed radio termination only includes elements that are defined in ETS 300 175 [1] to [8]. This includes radio transmission elements together with a selection of layer 2 and layer 3 elements.

Generic Access Profile (GAP): A defined part of ETS 300 175 [1] to [8] that ensures inter-operability between FPs and PPs for public business and residential access services.

geographically unique identity: This term relates to FP identities, Primary Access Rights Identities (PARIs) and Radio Fixed Part Identities (RFPIs). It indicates that two systems with the same PARI, or respectively two RFPs with the same RFPI, can not be reached or listened to at the same geographical position.

Global Network (GNW): A telecommunication network capable of offering a long distance telecommunication service.

NOTE 9: The term does not include legal or regulatory aspects, nor does it indicate if the network is a public or a private network.

globally unique identity: The identity is unique within DECT (without geographical or other restrictions).

handover: The process of switching a call in progress from one physical channel to another physical channel. These processes can be internal (see internal handover) or external (see external handover).

NOTE 10: There are two physical forms of handover, intra-cell handover and inter-cell handover. Intra-cell handover is always internal. Inter-cell handover can be internal or external.

incoming call: A call received at a PP.

inter-cell handover: The switching of a call in progress from one cell to another cell.

internal handover: Handover processes that are completely internal to one Fixed radio Termination (FT). Internal handover re-connects the call at the lower layers, while maintaining the call at the NWK layer.

NOTE 11: The lower layer reconnection can either be at the Data Link Control (DLC) layer (connection handover) or at the MAC layer (bearer handover).

inter-operability: The capability of FPs and PPs, that enable a PP to obtain access to teleservices in more than one location area and/or from more than one operator (more than one service provider).

inter-operator roaming: Roaming between FP coverage areas of different operators (different service providers).

Interworking Unit (IWU): A unit that is used to interconnect sub-networks.

NOTE 12: The IWU will contain the interworking functions necessary to support the required sub-network interworking.

intra-cell handover: The switching of a call in progress from one physical channel of one cell to another physical channel of the same cell.

intra-operator roaming: Roaming between different FP coverage areas of the same operator (same service provider).

Local Network (LNW): A telecommunication network capable of offering local telecommunication services.

NOTE 13: The term does not include legal or regulatory aspects, nor does it indicate if the network is a public network or a private network.

locally unique identity: The identity is unique within one FP or location area, depending on application.

location area: The domain in which a PP may receive (and/or make) calls as a result of a single location registration.

location registration: The process whereby the position of a DECT portable termination is determined to the level of one location area, and this position is updated in one or more databases.

NOTE 14: These databases are not included within the DECT FT.