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Digitalne izboljšane brezvrvične telekomunikacije (DECT) - Skupni vmesnik (CI) - 1. del: Pregled

Digital Enhanced Cordless Telecommunications (DECT) - Common Interface (CI) - Part 1: Overview

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Foreword

This draft European Standard (EN) has been produced by ETSI Technical Committee Digital Enhanced Cordless Telecommunications (DECT), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI standards EN Approval Procedure.

The present document is part 1 of a multi-part deliverable covering the Common Interface (CI) for the Digital Enhanced Cordless Telecommunications (DECT), as identified below:

Part 1: "Overview";

Part 2: "Physical Layer (PHL)";

Part 3: "Medium Access Control (MAC) layer";

Part 4: "Data Link Control (DLC) layer";

Part 5: "Network (NWK) layer";

Part 6: "Identities and addressing";

Part 7: "Security features";

Part 8: "Speech and audio coding and transmission".

The following aspects of the present document are subject to controlled distribution:

a) DECT identities, as defined in ETSI EN 300 175-6 [6];

b) some DECT cryptographic algorithms.

The cryptographic algorithms subjected to controlled distribution specify the details of the DECT Standard Authentication Algorithm (DSAA) and the DECT Standard Cipher (DSC). The cryptographic algorithms DECT Standard Authentication Algorithm #2 (DSAA2) and DECT Standard Cipher #2 (DSC2) are not subjected to controlled distribution.

These aspects are distributed on an individual basis. Further information and details of the current distribution procedures can be obtained from the ETSI Secretariat at the address on the second page of the present document.

Further details of the DECT system may be found in ETSI TR 101 178 [i.4], ETSI ETR 043 [i.5] and ETSI TR 102 185 [i.6].

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
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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).

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1 Scope

The present document gives an introduction and overview of the complete Digital Enhanced Cordless Telecommunications (DECT) Common Interface (CI).

The present document contains an abstract of the other parts of the DECT standard together with a general description of:

- the objectives of the present document;
- the DECT Common Interface;
- the protocol architecture of DECT.

The present document also provides an extensive vocabulary; in particular it contains the common definitions of all the technical terms used in different parts of the present document.

The present document includes New Generation DECT, a further development of the DECT standard introducing wideband speech, improved data services, new slot types and other technical enhancements.

The present document includes DECT Evolution.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are necessary for the application of the present document.

[1] Void.

[2] ETSI EN 300 175-2: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer (PHL)".

[3] ETSI EN 300 175-3: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer".

[4] ETSI EN 300 175-4: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer".

[5] ETSI EN 300 175-5: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer".

[6] ETSI EN 300 175-6: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 6: Identities and addressing".

[7] ETSI EN 300 175-7: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".

[8] ETSI EN 300 175-8: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech and audio coding and transmission".

[9] ETSI EN 300 176 (all parts): "Digital Enhanced Cordless Telecommunications (DECT); Test specification".

[10] Recommendation ITU-R M.1457-15: "Detailed specifications of the terrestrial radio interfaces of International Mobile Telecommunications-2000 (IMT-2000)".

[11] ETSI EN 301 649: "Digital Enhanced Cordless Telecommunications (DECT); DECT Packet Radio Service (DPRS)".

[12] ETSI TS 102 497: "Digital Enhanced Cordless Telecommunications (DECT); DECT in the 1 920 MHz to 1 930 MHz Unlicensed Personal Communications Services (UPCS) frequency band; Specific requirements".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI EN 300 403-1: "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 [ITU-T Recommendation Q.931 (1993), modified]".

[i.2] Recommendation ITU-R SM.1046-2: "Definition of spectrum use and efficiency of a radio system".

[i.3] Recommendation ITU-R M.816-1: "Framework for services supported on International Mobile Telecommunications-2000 (IMT-2000)".

[i.4] ETSI TR 101 178: "Digital Enhanced Cordless Telecommunications (DECT); A High Level Guide to the DECT Standardization".

[i.5] ETSI ETR 043: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Services and facilities requirements specification".

[i.6] ETSI TR 102 185: "Digital Enhanced Cordless Telecommunications (DECT); Data Services Profile (DSP); Profile overview".

[i.7] ETSI ETR 310: "Digital Enhanced Cordless Telecommunications (DECT); Traffic capacity and spectrum requirements for multi-system and multi-service DECT applications co-existing in a common frequency band".

[i.8] ETSI TS 102 265: "Digital Enhanced Cordless Telecommunications (DECT); DECT access to IP networks".

[i.9] Recommendation ITU-T P.311: "Transmission characteristics for wideband (150-7000 Hz) digital handset telephones".

[i.10] ETSI TR 102 570: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Overview and Requirements".

[i.11] ETSI TS 102 527-1: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 1: Wideband Speech".

[i.12] ETSI TS 102 527-2: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 2: Support of transparent IP packet data".

[i.13] ETSI TS 102 527-3: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 3: Extended wideband speech services".

[i.14] ETSI TS 102 527-4: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 4: Light Data Services; Software Update Over The Air (SUOTA), content downloading and HTTP based applications".

[i.15] ETSI TS 102 527-5: "Digital Enhanced Cordless Telecommunications (DECT); New Generation DECT; Part 5: Additional feature set nr. 1 for extended wideband speech services".

[i.16] Recommendation ITU-T V.42: "Error-correcting procedures for DCEs using asynchronous-to-synchronous conversion".

[i.17] Recommendation ITU-T V.24: "List of definitions for interchange circuits between Data Terminal Equipment (DTE) and data circuit-terminating equipment (DCE)".

[i.18] ETSI TS 102 939-1: "Digital Enhanced Cordless Telecommunications (DECT); Ultra Low Energy (ULE); Machine to Machine Communications; Part 1: Home Automation Network (phase 1)".

[i.19] ETSI TS 102 939-2: "Digital Enhanced Cordless Telecommunications (DECT); Ultra Low Energy (ULE); Machine to Machine Communications; Part 2: Home Automation Network (phase 2)".

[i.20] IEEE 802.11-2012™: "IEEE Standard for Information technology--Telecommunications and information exchange between systems Local and metropolitan area networks--Specific requirements Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications".

[i.21] Recommendation ITU-T G.722 (2012): "7 kHz audio-coding within 64 kbit/s".

[i.22] Recommendation ITU-T G.729.1 (2006): "G.729-based Embedded Variable bit-rate coder: An 8-32 kbit/s scalable wideband coder bitstream interoperable with G.729".

[i.23] ISO/IEC 14496-3:2009: "Information technology -- Coding of audio-visual objects -- Part 3: Audio" (ISO/IEC JTC1/SC29/WG11 (MPEG)).

[i.24] IETF RFC 3261: "SIP: Session Initiation Protocol".

[i.25] Recommendation ITU-T H.323: "Packet-based multimedia communications systems".

[i.26] ETSI TS 103 634: "Digital Enhanced Cordless Telecommunications (DECT); Low Complexity Communication Codec plus (LC3plus)".

[i.27] ETSI TS 103 636-1: "DECT-2020 New Radio (NR); Part 1 : Overview; Release 1".

3 Definition of terms, symbols and abbreviations

3.1 Terms

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

Access Rights Class (ARC): type of access to a DECT network, such as public, residential or private

Access Rights Details (ARD): unique number within one ARC

Access Rights Identity (ARI): globally unique identity that shows the access rights related to a service provider

NOTE: PARI = Primary ARI;
SARI = Secondary ARI;
TARI = Tertiary ARI.

algorithm: mathematical process or function that transforms an input into an output

algorithm identifier: designator to show which algorithm is in use, so that the correct one may be chosen

antenna diversity: diversity implies that the Radio Fixed Part (RFP) for each bearer independently can select different antenna properties such as gain, polarization, coverage patterns and other features that may affect the practical coverage

NOTE: A typical example is space diversity, provided by two vertically polarized antennas separated by 10 cm to 20 cm.

asymmetric algorithm: See public key algorithm.

attach: process whereby a Portable Part (PP) within the coverage area of a Fixed Part (FP) to which it has access rights, notifies the FP that it is operative

authentication: corroboration that an entity is the one that is claimed

authentication of Fixed radio Termination (FT): process whereby the identity of an FT is verified to a DECT PT

authentication of Portable radio Termination (PT): process whereby a DECT PT is positively verified to be a legitimate user of a particular FP

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

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

bearer: See Medium Access Control (MAC) bearer or bearer service.

bearer handover: internal handover process provided by the MAC layer, whereby one MAC connection can modify its underlying bearers while maintaining the service provided to the Data Link Control (DLC) layer

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

broadcast: simplex point-to-multipoint mode of transmission

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

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

cell: domain served by a single antenna(e) system (including a leaky feeder) of one FP

Central Control Fixed Part (CCFP): physical grouping that contains the central elements of a FP

centrex: implementation of a private telecommunication network exchange that is not located on the premises of the private network operator

Cipher Block Chaining Message Authentication Code (CBC-MAC): cryptographic technique for constructing a message authentication code from a block cipher

Cipher Key (CK): value that is used to determine the transformation of plaintext to ciphertext in a cryptographic algorithm

Cipher Key (CK) generation: process for generating cryptographic keys

ciphertext: output of a cryptographic algorithm

channel: See physical channel.

cluster: logical grouping of one or more cells between which bearer handover is possible

confidentiality: rendering information secret as ciphertext unless the capability is possessed to recover the plaintext from ciphertext

connection: See MAC connection.

connection handover: internal handover process provided by the DLC layer, whereby one set of DLC entities (C-plane and U-plane) can re-route data from one MAC connection to a second new MAC connection, while maintaining the service provided to the NWK layer

Connection Less mode (C/L): transmission mode that transfers one packet (one self-contained unit) of data from one source point to one (or more) destination points in a single phase

Connection Oriented mode (C/O): transmission mode that transfers data from one source point to one or more destination points using a protocol based on three phases:

- "Set-up";
- "Data transfer"; and
- "Release".

Cordless Radio Fixed Part (CRFP): Wireless Relay Station (WRS) that provides independent bearer control to a PT and FT for relayed connections

Counter with CBC-MAC (CCM): authenticated encryption algorithm designed to provide both authentication and confidentiality

countermeasure: device, instrument or procedure used to counteract or defend against a threat

coverage area: area over which reliable communication can be established and maintained

cryptography: secret writing

Data Encryption Standard (DES): United States Federal data encryption standard

Data Link Control (DLC): layer 2b of the DECT protocol stack

decipherment: rendering of ciphertext into plaintext

DECT NetWork (DNW): network that uses the DECT air interface to interconnect a local network to one or more portable applications

DECT Standard Authentication Algorithm (DSAA): algorithm used for authentication in DECT

DECT Standard Authentication Algorithm #2 (DSAA2): algorithm used for authentication in DECT

DECT Standard Cipher (DSC): algorithm used for data encryption in DECT

DECT Standard Cipher #2 (DSC2): algorithm used for data encryption in DECT

Default Cipher Key (DefCK): Derived Cipher Key (DCK) that is stored in both FP and PP to be used later by MAC to immediately encrypt with connection establishment

Derived Cipher Key (DCK): Cipher Key (CK) that is established as part of the procedure used to authenticate the PT

distributed communication: ability of a DECT terminal to provide means for or assist direct communication between any two terminals, members of a "closed" local DECT network

DLC broadband data link: link that can be associated with a logical MAC connection comprising a number of MAC (physical) connections

DLC broadcast: simplex "connectionless" mode of transmission from the DLC broadcast entity of one FT to the DLC broadcast entities in one or more PT

DLC data link (DLC link): association between two DLC layer entities

DLC frame: format used to structure all messages that are exchanged between DLC layer peer entities

double duplex bearer: use of two duplex bearers (see duplex bearer) which refer to the same MAC connection, sharing their simplex bearers (see simplex bearer) for the information flow

double-simplex bearer: use of two simplex bearers operating in the same direction on two physical channels

double slot: one 12^{th} of a TDMA frame which is used to support one high capacity physical channel

down-link: transmission in the direction FT to PT