SLOVENSKI STANDARD
SIST EN 301 361-1:2000

01-julij-2000

Digitalne izboljġane brezvrviļ ne telekomunikacije (DECT) - Digitalno omreġje z integriranimi storitvami (ISDN) - Profil specifikacije medsebojnega delovanja za protokol mobilnosti ISDN (IMIP) - 1. del: Medsebojno delovanje DECT/ISDN za podporo mobilnosti brezvrviļ nega terminala (CTM)

Digital Enhanced Cordless Telecommunications (DECT); Integrated Services Digital Network (ISDN); ISDN Mobility protocol Interworking specification Profile (IMIP); Part 1: DECT/ISDN interworking for Cordless Terminal Mobility (CTM) support

Ta slovenski standard je istoveten z: **EN 301 361-1 Version 1.1.1**

ICS:

33.070.30	Digitalne izboljġane brezvrviļ ne telekomunikacije (DECT)	Digital Enhanced Cordless Telecommunications (DECT)
33.080	Digitalno omrežje z integriranimi storitvami (ISDN)	Integrated Services Digital Network (ISDN)

SIST EN 301 361-1:2000 **en**

ETSI EN 301 361-1 V1.1.1 (1999-10)

European Standard (Telecommunications series)

Digital Enhanced Cordless Telecommunications (DECT); Integrated Services Digital Network (ISDN); ISDN Mobility protocol Interworking specification Profile (IMIP); Part 1: DECT/ISDN interworking for Cordless Terminal Mobility (CTM) support

Reference
DEN/DECT-030126 (clo90ico.PDF)

Keywords
CTM, DECT, DSS1+, interworking, ISDN, mobility

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Project Digital Enhanced Cordless Telecommunications (DECT).

The present document is part 1 of a multi-part EN covering the ISDN Mobility protocol Interworking specification Profile (IMIP), as identified below:

Part 1: "DECT/ISDN interworking for Cordless Terminal Mobility (CTM) support";

Part 2: "DECT/ISDN interworking for Global System for Mobile communications (GSM) support".

National transposition dates	
Date of adoption of this EN:	27 August 1999
Date of latest announcement of the present document (doa):	30 November 1999
Date of latest publication of new National Standard or endorsement of the present document (dop/e):	31 May 2000
Date of withdrawal of any conflicting National Standard (dow):	31 May 2000

Introduction

This two-part EN defines a profile for interworking between a DECT system and an Integrated Services Digital Network (ISDN) using the enhanced Digital Subscriber Signalling No. 1 (DSS1) protocol defined in EN 301 144-1 [8]. This ISDN protocol enables cordless terminals to have access to an ISDN infrastructure.

Part one defines the DECT/DSS1+ interworking for the CTM support.

Part two considers the DECT/DSS1+ interworking for the GSM support.

The present document specifies how DSS1+ procedures and information are mapped over the DECT air interface, and how they are provided and used by the DECT Fixed Part.

1 Scope

The present document specifies a set of technical requirements for Digital Enhanced Cordless Telecommunications (DECT) Fixed Parts (FP) supporting connection, via an ISDN interface, to a network supporting terminal mobility.

The standard covers the requirements necessary for the support of Cordless Terminal Mobility (CTM) Phase 1 (Part 1) and for the support of the DECT access to GSM via ISDN interfaces (Part 2). In both of these scenarios, the FT is connected to the network via the alpha interface, as specified in EN 301 144-1 [8].

NOTE: For CTM phase 1, the Portable Part (PP) requirements are specified in EN 300 444 [6].

The present document specifies the interworking procedures between the Digital Enhanced Cordless Telecommunications (DECT) air interface and the mobility management protocols defined for Integrated Services Digital Network (ISDN) interfaces.

The ISDN Access Profile (IAP), ETS 300 434-2 [12], specifies the requirements for the support of ISDN services. Apart from the mobility management procedures, that are covered in the present document, the IAP includes interworking specifications for the support of basic call.

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.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] EN 300 175-1: "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview".

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

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

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

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

[6] EN 300 444: "Digital Enhanced Cordless Telecommunications (DECT); Generic Access Profile (GAP)".

[7] 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]".

[8] EN 301 144-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) and Signalling System No.7 (SS7); Signalling application for the mobility management service on the alpha interface; Part 1: Protocol specification".

[9] ISO/IEC 9646-7 (1995): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 7: Implementation Conformance Statements".

[10] CCITT Recommendation X.219 (1988): "Remote operation: Model, notation and service definition".

[11] EN 301 061-1 (1.2.2): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Generic functional protocol for the support of supplementary services at the "b" service entry point for Virtual Private Network (VPN) applications; Part 1: Protocol specification".

[12] ETS 300 434-2: "Digital Enhanced Cordless Telecommunications (DECT); Integrated Services Digital Network (ISDN); DECT/ISDN interworking for end system configuration; Part 2: Access profile".

[13] CCITT Recommendation I.411 (1988): "ISDN user-network interfaces; Reference configurations".

[14] ETS 300 402-1: "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Data link layer; Part 1: General aspects [ITU-T Recommendation Q.920 (1993), modified]".

[15] ETS 300 011-1: "Integrated Services Digital Network (ISDN); Primary rate User-Network Interface (UNI); Part 1: Layer 1 specification".

[16] ETS 300 012-1: "Integrated Services Digital Network (ISDN); Basic user-network interface; Layer 1 specification and test principles; Part 1: Layer 1 specification".

[17] EN 301 175: "Cordless Terminal Mobility (CTM); Phase 1; Service description".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following definitions in addition to all terms defined in EN 300 444 [6] apply.

supplementary service: service that modifies or supplements a basic telecommunications service

teleservice: type of telecommunications service that provides the complete capability, including terminal equipment functions, for communication between users, according to protocols that are established by agreement

3.2 Symbols

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

NOTE 1: The symbols defined in this subclause are applied for procedures, features, services in the present document if not explicitly otherwise stated. The interpretation of status columns in all tables is as follows:

M	for mandatory to support (provision mandatory, process mandatory);
O	for optional to support (provision optional, process mandatory);
I	for out-of-scope (provision optional, process optional) not subject for testing;
C	for conditional to support (process mandatory);
N/A	for not-applicable (in the given context the specification makes it impossible to use this capability).

Provision mandatory, process mandatory means that the indicated feature, service or procedure shall be implemented as described in the present document, and may be subject to testing.

Provision optional, process mandatory means that the indicated feature, service or procedure may be implemented, and if implemented, the feature, service or procedure shall be implemented as described in the present document, and may be subject to testing.

NOTE 2: The used notation is based on the notation proposed in ISO/IEC 9646-7 [9].

3.3 Abbreviations

For the purposes of the present document, the following abbreviations in addition to all abbreviations defined in EN 300 444 [6] apply:

BRA	Basic Rate Access
CI	Common Interface
CLIP	Calling Line Identification Presentation
IAP	ISDN Access Profile [12]
IE	Information Element
NCIC	Network Call-Independent Connection
NCICs	Network Call-Independent Connection Oriented Signalling
NT	Network Termination
PRA	Primary Rate Access
ROSE	Remote Operation Service Element

4 Feature definitions

For the purposes of the present document, the feature definitions in the following subclauses apply.

The number given in parentheses after the name of a feature is the item number used in the tables of the present document.

4.1 Network (NWK) features

See EN 300 444 [6].

4.1.1 Application features

The application features defined in the present document concern the interworking of the corresponding network layer features. Hence no new definitions are required.

5 General requirements

5.1 Architecture

5.1.1 Reference configuration

Reference configurations describe functional groupings by using reference points, as described in ITU Recommendation I.411 [13] for ISDN. For CTM, the reference configurations are shown in the alpha interface specification [8].

An overview of standard ISDN and CTM specific reference configurations is shown in the following figure.

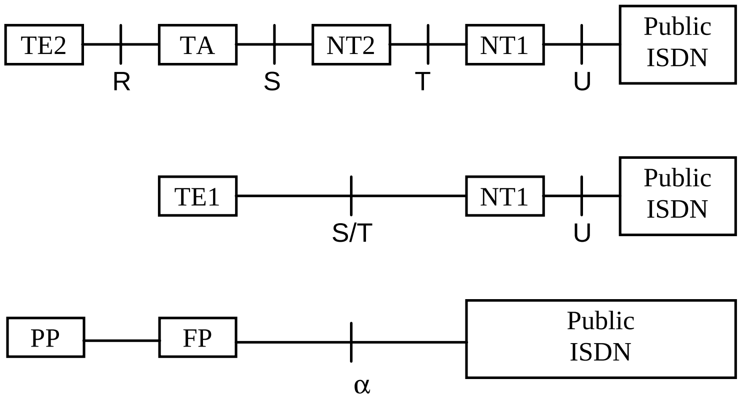

Figure 1: Standard ISDN and CTM specific reference configurations

The present document is applicable for the Fixed Parts attached to the alpha reference point. The interface protocols for the alpha interface are based upon the protocols defined for the T or the coincident S and T reference points.

5.1.2 Interfaces

This interworking profile is based on the alpha interface standard, which applies to public CTM networks.

NOTE: The beta interface standard, which applies to private CTM networks, is not considered.

The present document covers both basic rate and primary rate access (BRA, PRA). Point-to-multipoint as well as point to point configurations are applicable.

5.2 Protocol model

The following figure provides an overview of the protocol model used to describe the protocol interworking within the FT. The present document is mainly concerned with the interworking between DECT mobility management procedures (invoked by means of messages and information elements at the air interface) and the CTM mobility management procedures on the alpha interface (invoked by means of Remote Operations).

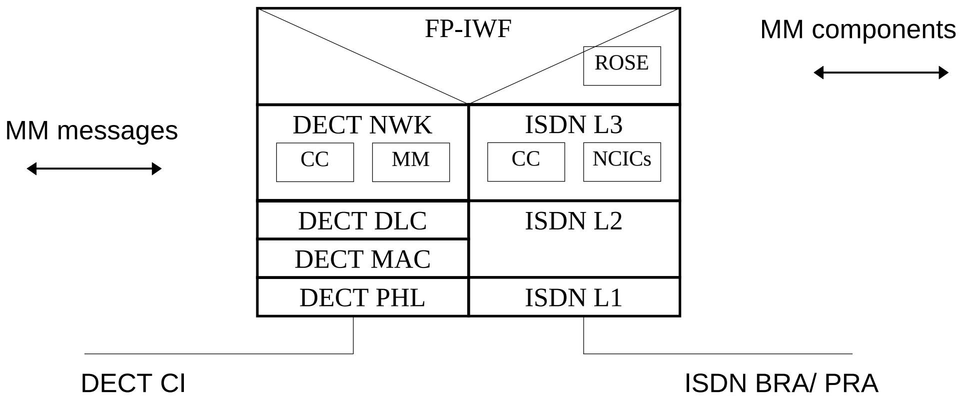

Figure 2: Protocol model

Table 1: Description of DECT and ISDN layers

Layers	DECT	ISDN
L4 to 6		EN 301 144-1 (CTM signalling application) [8] CCITT Recommendation X.219 (ROSE) [10]
L3	EN 300 175-5 (NWK) [5]	EN 300 403-1 (CC) [7] EN 301 061-1 (NCICs) [11]
L2	EN 300 175-4 (DLC) [4] EN 300 175-3 (MAC) [3]	ETS 300 402-1 [14]
L1	EN 300 175-2 [2]	ETS 300 011-1 (PRA) [15] ETS 300 012-1 (BRA) [16]

5.3 Identity usage

5.3.1 CTM identity

At the alpha interface, the CTM identity is used to uniquely identify a CTM user. At the air interface however, the DECT PP- identity is used to identify the user. The FT provides the mapping between the PP- identity and the CTM- Identity.

The present document assumes the following:

- there is a one to one relation between the CTM identity and the PP- identity (IPUI);
- there are no restrictions concerning the PP- identity to be used at the air interface.

NOTE 1: The FT need not reject a PP- initiated request containing an identity type or length that may not be supported by the CTM network.

NOTE 2: The use of non-CTM identities (e.g. residential identities) for roaming to/from the residential area is outside the scope of the present document.

5.3.2 CTM number

The CTM number is the E.164 number that is dialled to call a CTM user.

In case CLIP is subscribed to, the network may provide the CTM number within the <<calling party number>> to the called user (public ISDN → FP).

5.3.3 FP- address

The FP- address is a globally unique E.164 number and corresponds to the address of the FT via which the PT is connected to the ISDN access. The FP address is required only in case of a point to multipoint configuration.

In case of an incoming call, the FP- address is conveyed inside the <<called party number>> (public ISDN -> FP). In case of an outgoing call, the FP- address is transferred within a <<calling party number>> (FP -> public ISDN).

6 Interoperability requirements

6.1 General

In order to achieve interoperability, this clause defines the status of features and the associated interworking requirements in a similar manner as done in EN 300 444 (GAP) [6].

The interworking requirements specified in the present document concern the application layer and the network layer.

The application layer requirements are specified in the present document. The ISDN network layer requirements are fully specified in EN 301 144-1 [8]. For the DECT network layer, all FT requirements specified in EN 300 444 (GAP) [6] apply unless explicitly stated otherwise. This means that only additions/modifications to EN 300 444 (GAP) [6] are included in this clause.

6.2 DECT NWK features

All requirements specified in subclause 6.2 of EN 300 444 [6] apply with the following modifications:

Table 2: NWK features status

Feature supported					
			Status		
Item no.	Name of feature	GAP [6] Ref.	FT		
			R	B	P
N.13	Identification of portable	4.1	M	M	M
N.26	Authentication of network	4.1	M	M	M
N.9	Authentication of portable	4.1	M	M	M
N.11	Location registration	4.1	M	M	M
N.18	Subscription registration	4.1	O	O	O
N.12	Key allocation	4.1	M	M	M
N.17	Network initiated ciphering	4.1	M	M	M
NOTE 1: The above table indicates the status of feature from a CTM service perspective. Features that are required by GAP may not be required for supporting the CTM service, in which case the feature will be optional in the above table.					
NOTE 2: The CTM service should be uniform across different application areas. As a result, the status of features is the same in all environments.					

6.3 Application features

This subclause concerns the FT's application layer which mainly handles the interworking between the DECT and the alpha interface protocols.

Table 3: Application features status

Feature supported					
			Status		
Item no.	Name of feature	GAP [6] Ref.	FT		
			R	B	P
IMIP-A.1	General	4.1.1	M	M	M
IMIP-A.2	Identification of portable	4.1.1	M	M	M
IMIP-A.3	Authentication of network	4.1.1	M	M	M
IMIP-A.4	Authentication of portable	4.1.1	M	M	M
IMIP-A.5	Location registration	4.1.1	M	M	M
IMIP-A.6	Location cancellation	4.1.1	M	M	M
IMIP-A.7	Location registration suggest	4.1.1	M	M	M
IMIP-A.8	Subscription registration	4.1.1	O	O	O
IMIP-A.9	Key allocation	4.1.1	M	M	M
IMIP-A.10	Subscription deregistration	4.1.1	O	O	O
IMIP-A.11	Network initiated ciphering	4.1.1	M	M	M
IMIP-A.12	Portable initiated ciphering	4.1.1	O	O	O
IMIP-A.13	Outgoing call	4.1.1	M	M	M
IMIP-A.14	Incoming call	4.1.1	M	M	M
IMIP-A.15	Supplementary service activation	4.1.1	O	O	O
IMIP-A.16	DTMF generation	4.1.1	O	O	O

6.4 NWK feature to procedure mapping

All requirements specified in EN 300 444 [6] apply with the following modifications:

Table 4: NWK feature to procedure mapping

Feature/Procedure mapping					
			Status		
Feature	Procedure	GAP [6] Ref.	PT FT		
			R	B	P
Location registration			M	M	M
	Location update	8.29	M	M	M
Outgoing call			M	M	M
	Overlap sending	8.3	M	M	M
	Outgoing call proceeding	8.4	M	M	M
	Outgoing call confirmation	8.5	M	M	M
	Flexible U-plane connection		O	O	O
NOTE: For the listed features, only those procedures are specified for which the requirements are different as compared to EN 300 444 (GAP) [6]; for feature location registration, the requirements for the location registration procedure are as specified in EN 300 444 (GAP) [6].					

6.5 Application feature to procedure mapping

The references in the following table are to the present document.

Table 5: Application feature to procedure mapping

Feature/Procedure mapping					
			Status		
Feature	Procedure	Ref.	FT		
			R	B	P
General			M	M	M
	Connection establishment and release	7.1	M	M	M
	Generic mobility management interworking procedures	7.2 to 7.2.4	M	M	M
	Generic message mapping	8 to 8.2.2	M	M	M
	Generic information element	8.4	M	M	M
Identification of portable			O	O	O
	Identification of PP	7.2.5	M	M	M
Authentication of network			M	M	M
	Authentication of network	7.2.6	M	M	M
Authentication of portable			M	M	M
	Authentication of PT	7.2.7	M	M	M
Location registration			M	M	M
	Location registration	7.2.8	M	M	M
Location cancellation			M	M	M
	Location cancellation	7.3.1	M	M	M
Location registration suggest			M	M	M
	Location update	7.2.9	M	M	M
Subscription registration			O	O	O
	Obtaining access rights	7.2.10	M	M	M
Key allocation			M	M	M
	On air key allocation	7.2.11	M	M	M
Subscription deregistration			O	O	O
	FP terminating access rights	7.2.12	M	M	M
Network initiated ciphering			M	M	M
	Cipher switching initiated by network	7.2.13	M	M	M
Portable initiated ciphering			O	O	O
	Cipher switching initiated by PT	7.2.14	M	M	M
Outgoing call			M	M	M
	Outgoing call	7.3.2	M	M	M
	Call progress information transfer	7.3.4	O	O	O
	Call release	7.3.5	M	M	M
Incoming call			M	M	M
	Incoming call	7.3.3	M	M	M
	Call progress information transfer	7.3.4	O	O	O
	Call release	7.3.5	M	M	M
Supplementary service activation			O	O	O
	Keypad information transfer	7.3.6	M	M	M
DTMF generation			O	O	O
	Keypad information transfer	7.3.6	M	M	M
NOTE: In order to simplify the specification, a feature "General" has been introduced. This is used to specify the status of clauses specifying interworking requirements/principles that are not related to a specific feature.					