SLOVENSKI STANDARD
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Inteligentno omrežje (IN) - Aplikacijski protokol inteligentnega omrežja (INAP) - Nabor zmogljivosti 2 (CS2) - Mobilnost brezvrvičnega terminala (CTM) - Specifikacija funkcije krmiljenja storitev (SCF), stopnja 3 - SCF in funkcija klicno neodvisnih storitev (CUSF)/funkcija komutacije storitev (SSF) - Vmesnik SCF

Intelligent Network (IN); Intelligent Network Application Protocol (INAP); Capability Set 2 (CS2); Cordless Terminal Mobility (CTM); Stage 3 specifications for Service Control Function (SCF); SCF and Call Unrelated Service Function (CUSF)/Service Switching Function (SSF); SCF interface

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Signalling Protocols and Switching (SPS).

National transposition dates	
Date of adoption of this EN:	3 September 1999
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Introduction

The Cordless Terminal Mobility (CTM) service phase 1 allows subscribers of cordless terminals to be mobile within and between networks. Where radio coverage is provided and the cordless terminal has appropriate access rights the subscriber will be able to make calls from, and to receive calls at, any location within the fixed public and/or private networks.

The signalling procedures provided in the present document are supporting features required for CTM phase 1 on the SCF-SCF, SSF-SCF, and CUSF-SCF interfaces. The service to service capability extensions to the core Intelligent Network Application Part (INAP) CS2 SCF-SCF interface provided in the present document are used to support the features required for CTM phase 1.

1 Scope

The present document analyses what the Cordless Terminal Mobility (CTM) specific specifications are within the generic parameters on the Service Control Function (SCF)-SCF, Call Unrelated Service Function (CUSF)-SCF and Service Switching Function (SSF)-SCF interfaces of the ETSI core Intelligent Network Application Part (INAP). These specifications ensure internetworking between CTM networks and the establishment of a multi-vendor environment for CTM.

The generic INAP protocol contains generic parameters that can convey application specific information, such as for the CTM application. Detailed CTM specifications are described by the present document using the INAP SCF-SCF, CUSF-SCF and SSF-SCF interface capabilities. The SCF-Service Data Point (SDF) and SDF-SDF interfaces are not considered in the present document.

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, subsequent revisions do apply.
- 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 301 140-1 (V1.3): "Intelligent Network (IN); Intelligent Network Capability Set 2 (CS2); Intelligent Network Application Protocol (INAP); Part 1: Protocol specification".

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

[3] ITU-T Recommendation E.164: "The international public telecommunication numbering plan".

[4] ETS 300 175-7 (1995): "Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security features".

[5] ETS 300 009-1: "Integrated Services Digital Network (ISDN); Signalling System No.7; Signalling Connection Control Part (SCCP) (connectionless and connection-oriented class 2) to support international interconnection; Part 1: Protocol specification [ITU-T Recommendations Q.711 to Q.714 and Q.716 (1993), modified]".

[6] ITU-T Recommendation E.212: "Identification plan for land mobile stations".

[7] ITU-T Recommendation E.214: "Structure of the land mobile global title for the signalling connection control part (SCCP)".

3 Definitions and abbreviations

3.1 Definitions

For the purpose of the present document, the following terms and definitions apply:

Authentication Code (AC): AC may be held in non-volatile memory within the PP or it may be manually entered by the user when required for an authentication service. This depends on the application; see ETS 300 175-7 [4].

access rights: indication that the cordless terminal has appropriate permission to use the CTM service.

Access Rights Identity (ARI): identity which is globally unique to a service provider and which shows the access rights related to the service provider.

authentication: security mechanism allowing the verification of the provided identity.

cordless terminal mobility: ability of a cordless terminal to be mobile within and between Fixed Parts. The mobility may be continuous while the terminal is accessing and using the telecommunication services offered by the network, and it may include the capability of the networks to keep track of the cordless terminal's location throughout the entire network.

CTM identity: identity by which a user is known to the CTM service providers and networks supporting CTM, and it is used for flexibility and security purposes. The CTM identity identifies a user unambiguously. The CTM identity does not need to be known by users.

CTM number: number that uniquely and unambiguously identifies each CTM user. It is used by a calling party to reach the CTM user. The number is independent of the calling terminal, network or service used and conforms to ITU-T Recommendation E.164 [3].

DECT Paging: DECT procedure which establishes a link on DECT interface.

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

Fixed Termination (FT): logical group of functions that contains all of the Cordless Terminal (CT) Network specific processes and procedures on the fixed side of the air interface. A Fixed Radio Termination only includes elements that are defined in the relevant CT specifications. This includes radio transmission elements (layer1) together with a selection of layer 2 and layer 3 elements.

FT Address: address of the FT (i.e. an E.164 address).

Portable Part (PP): physical grouping that contains all elements between the user and air interface. Portable Part is a generic term that may describe one or several physical pieces.

Portable Termination: logical group of functions that contains all of the CT processes and procedures on the portable side of the CT air interface. A Portable radio Termination only includes elements that are defined in the relevant CT specification.

RANDom challenge: this parameter is used for authentication (see ETS 300 175-7 [4]).

RES1: see ETS 300 175-7 [4].

RES2: see ETS 300 175-7 [4].

RS: value used to establish authentication session keys, as defined in subclause 4.4.3 of ETS 300 175-7 [4].

roaming: movement of the cordless terminal without a call in progress from one location area to another location area within the same and/or between different networks supporting the CTM service.

service feature: specific aspect of a telecommunication service that can also be used in conjunction with other telecommunication services as part of a commercial offering. It is either a core part of a telecommunication service or an optional part offered as an enhancement to a telecommunication service.

service profile: record containing all the service information related to a user.

User Authentication Key (UAK): secret authentication data contained within the subscriber's registration data. It is uniquely associated with the particular subscriber (user) and the subscription. The UAK is held in non-volatile memory within the PP (or within a detachable DECT Authentication Module (DAM); see ETS 300 175-7 [4].

3.2 Abbreviations

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

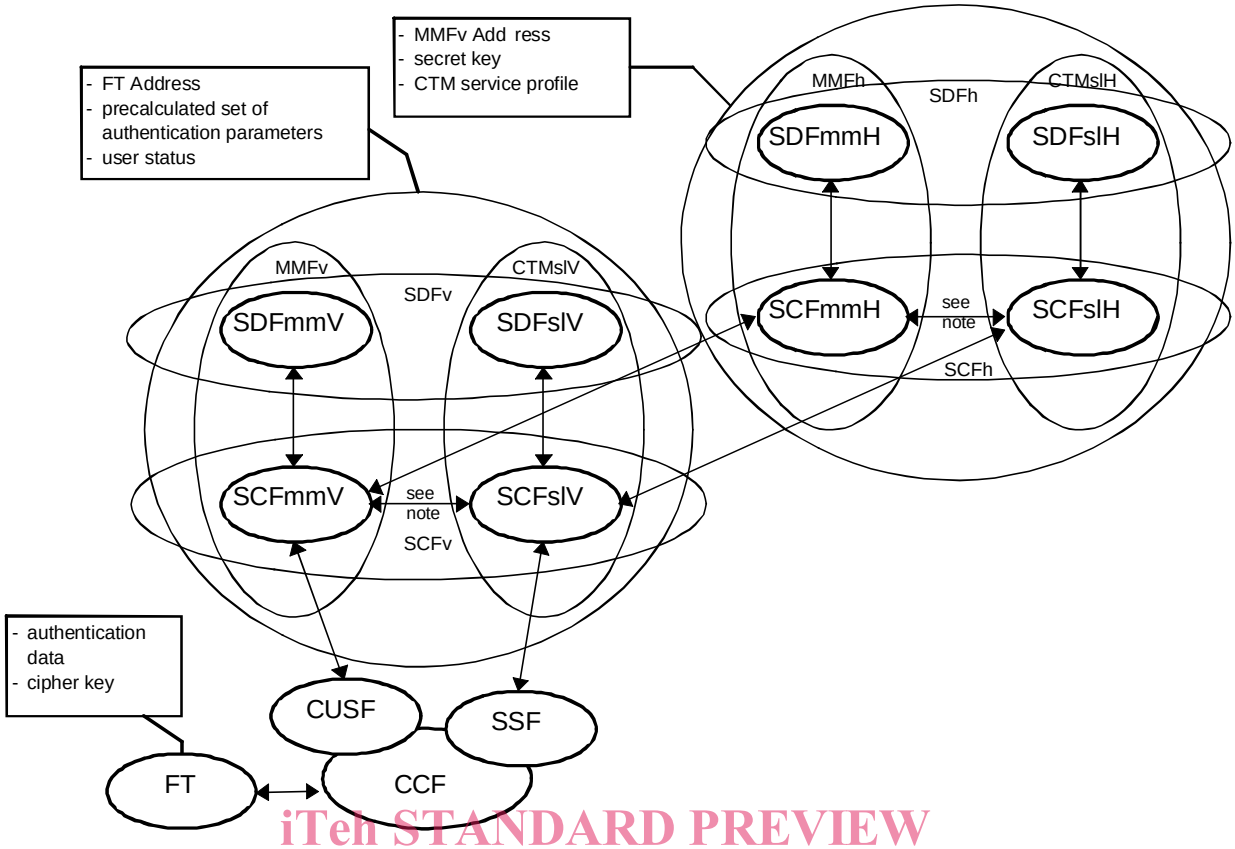
AC	Allocation Code
ACM	Address Complete Message
ALS	Application Layer Structure
ARC	Access Right Class
ARD	Access Right Details
ARI	Access Right Identity
ASE	Application Service Entity
BCSM	Basic Call State Machine
BCUSM	Basic Call Unrelated State Machine
CCAF	Call Control Agent Function
CCF	Call Control Function
CFNR	Call Forwarding on No Reply
CLIR	Calling Line Identification Restriction
CS2	IN Capability Set No 2
CTM	Cordless Terminal Mobility
CTMid	CTM identity
CUCF	Call Unrelated Control Function
CUSF	Call Unrelated Service Function
DCK	Derived Cipher Key
DECT	Digital Enhanced Cordless Telecommunication
DN	Distinguished Name
DP	Detection Point
DSS1	Digital Subscriber Signalling System 1
EN	European Norm
FE	Functional Entity
FSM	Finite State Machine
FP	Fixed Part
FT	Fixed Termination
GAP	Generic Access Profile
GFP	Generic Functional Protocol
GFT	Generic Functional Transport
GTAI	Global Title Address Indicator
IAM	Initial Address Message
IPEI	International Portable Equipment Identity
IPUI	International Portable User Identity
IN	Intelligent Network
INAP	IN Application Protocol
ISUP	ISDN User Part
LA	Location Area
LAL	Location Area Level
LCE	Link Control Entity
LE	Local Exchange
MCID	Malicious Call IDentification
MM	Mobility Management
MMF	Mobility Management Function
MSC	Message Sequence Chart
NCICS	Networked Call Independent Connection-Oriented Signalling
NFE	Network Facility Extension
OCB	Outgoing Call Barrity
PARK	Portable Access Right Key

PID	Process Instance Identifier
PLI	PARK Length Indicator
PP	Portable Part
PT	Portable Terminal
PUN	Portable User Number
PUT	Portable User Type
RAND	RANDom challenge
RES	RESponse
RFPI	Radio Fixed Part Identity
RS	a value used to establish authentication session keys
SACF	Single Association Control Function
SCCP	Signalling Connection Control Part
SCF	Service Control Function
SCFmm	SCF mobility management
SCFmmHome	SCF mobility management Home
SCFmmVisited	SCF mobility management Visited
SCFsl	SCF service logic
SCFslHome	SCF service logic Home
SCFslVisited	SCF service logic Visited
SCP	Service Control Point
SDF	Service Data Function
SDFmm	Service Data Function mobility management
SDFsl	Service Data Function service logic
SDL	Specification Description Language
SDP	Service Data Point
SLPI	Service Logic Program Instance
SMF	Service Management Function
SSF	Service Switching Function
SSI	Service to Service Information
SSP	Service Switching Point
ST	"end of address" delimiter Sending Termination
STUI	Service To User Information
TCAP	Transaction Capabilities Application Protocol
TDP	Trigger Detection Point
TMN	Telecommunications Management Network
UAK	User Authentication Key
USI	User to Service Information
UTSI	User To Service Information

4 General

In this stage 3 description it is considered to separate the mobility management from the service control function. In this respect the SCF mobility management (SCFmm) (Visited and Home) handles the Mobility Management (MM) procedures in connection with the Call Unrelated Service Function (CUSF), and the SCF service logic (SCFsl) (Visited and Home) handles the Call Control (e.g. provide roaming number) and CTM supplementary services (e.g. CTM-CLIR, CTM-MCID) in connection with the Service Switching Function (SSF).

To optimize the hierarchical distribution of location information and authentication data across 3 levels (see figure 1), it should be noted that in the figure the SCFmm to SDFsl and SCFsl and SDFmm interface are not required. For optimizing the hierarchical distribution of mobility management and Call Control information, it should be noted that for phase 1 SDFmm (Visited and Home) and SDFsl (Visited and Home) are assumed to be located in one node (SDFv and SDFh), and that SCFmm (Visited and Home) and SCFsl (Visited and Home) are assumed to be located in one node (SCFv and SCFh).



NOTE: This interface is optional for phase 1, so it is not considered in this Stage 3 Description.

Figure 1: CTM phase 1 architecture

With regard to the architecture to be considered, it is proposed to support in a first phase the topology for one single operator but it must be ensured that easy introduction of inter-networking between operators is accomplished without major impact in the network at the introduction of interworking. This principle will entail that the procedures are to be harmonized so that it can be avoided that extra procedures are required for knowing whether the ongoing procedure (e.g. location registration, call establishment, etc.) is handled as an intra- or inter-operator procedure; this should only be an addressing issue.

4A Proposed functional models for the CTM procedures

Figures 2, 3 and 4 propose the functional model for the CTM mobility management (see figure 2), outgoing CTM call (see figure 3) and incoming CTM call (see figure 4).

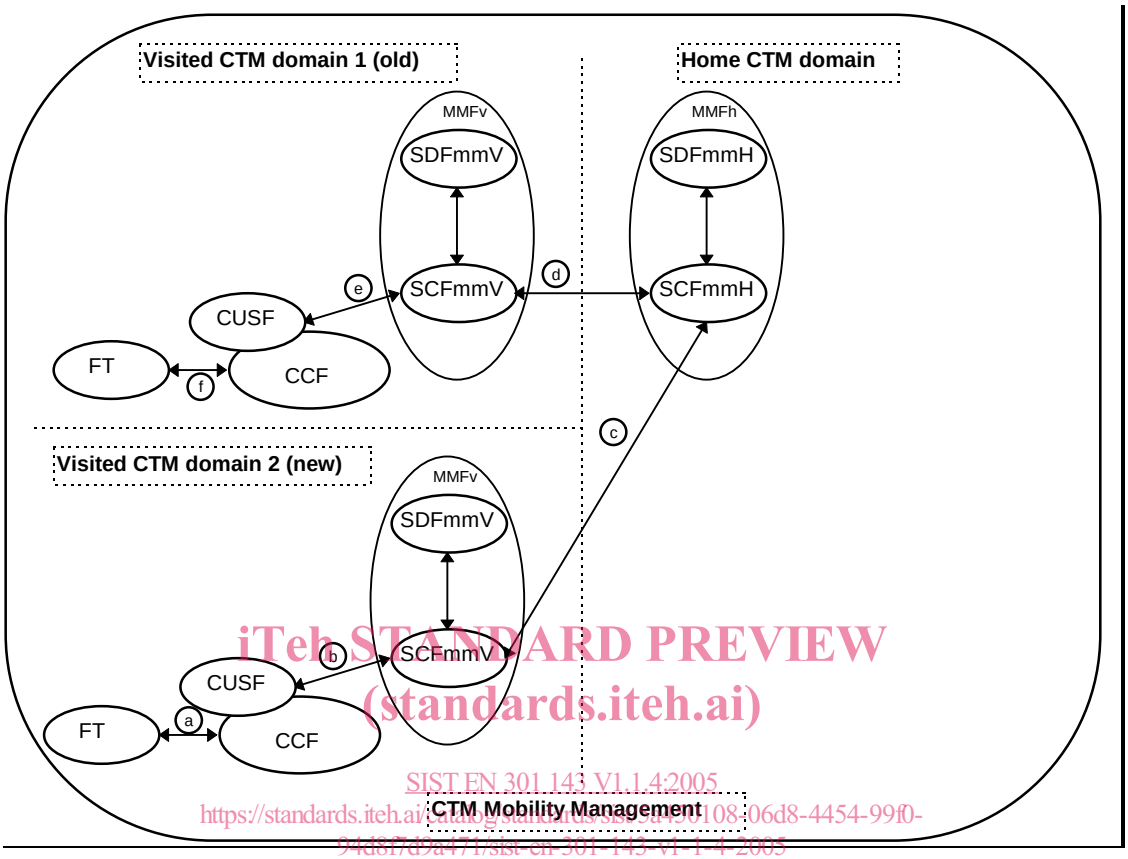


Figure 2: CTM mobility management functional domains

The following procedures are examples of the use of the indicated interfaces:

a) NCICS connection with CTM mobility management information (e.g. location registration).

b) User to Service Information (USI) mechanism containing CTM mobility management information (e.g. location registration).

c) Static triggering (e.g. subscription registration) or triggering based on International Portable User Identity (IPUI) (e.g. location update), Service to Service Information (SSI) mechanism containing CTM mobility management information.

d) Triggering of SCFmmVisited by SCFmmHome, SSI mechanism containing CTM mobility management information (e.g. location cancellation).

e) USI mechanism containing CTM mobility management information (e.g. location cancellation).

f) NCICS connection with CTM mobility management information (e.g. location cancellation).