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Network Aspects (NA); Universal Personal Telecommunication (UPT): UPT Phase 2 subscriptions, service profiles and information model



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ETSI Secretariat

Postal address F-06921 Sophia Antipolis Cedex - FRANCE

Office address

650 Route des Lucioles - Sophia Antipolis Valbonne - 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

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secretariat@etsi.fr http://www.etsi.fr

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Contents

Conte	nts	3
Intelle	ectual Property Rights	4
Forew	/ord	4
1	Scope	5
2	References	5
3	Abbreviations	5
4	UPT subscriptions and services profiles	
4.1	Definitions	5
4.1.1	UPT subscription	6
4.1.2	UPT service profile	6
4.2	Access to the service profile	
4.2.1	Involved parties	
4.2.2	Access procedure	
4.2.3	Operations on the service profile	
4.3	Structure of the service profile	7
4.3.1	Fixed information	7
4.3.1.1	Information fixed at subscription time	7
4.3.1.2	2 Information changeable by the subscriber	8
4.3.2	Variable information	9
4.3.2.1	Service related information	9
4.3.2.1	.1 Information modified by the change PIN procedure only	9
4.3.2.1		
4.3.2.2	2 Mobility related information	9
4.3.2.2	2.1 Information modified by UPT service profile management procedures only	10
4.3.2.2	2.2 Information modified by UPT personal mobility procedures only	10
4.3.3	UPT call events information	11
4.4	Table on allowed accesses	11
4.5	Interactions between items of information	12
5	UPT Information Model	13
6	Information sorted by service feature	13
Histor	ту	16

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Foreword

This ETSI Guide (EG) has been produced by ETSI Technical Committee Network Aspects (NA) and is now submitted for the ETSI standards Membership Approval Procedure.

1 Scope

The present document is related to Phase 2 Universal Personal Telecommunication (UPT) service; it describes the UPT subscriptions and the service profile, its structure, the information contained, the access possibilities on it and the operations allowed. Furthermore, it sorts the items of information by service feature.

2 References

References may be made to:

- a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or
- b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or
- c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or
- d) publications without mention of a specific version, in which case 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] ETS 300 670: "Universal Personal Telecommunication (UPT); phase 1 Intelligent Network (IN) Capability Set 1 (CS1); Application of core Intelligent Network Application Protocol (INAP)".
- [2] TCRTR-007 Edition 2 (1995): "Universal Personal Telecommunication (UPT); UPT Vocabulary".
- [3] TCRTR-036 (1995): "Universal Personal Telecommunication (UPT); Phase 2; User procedures and user states".

3 Abbreviations

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

ARAs	Access Registration Addresses
ISDN	Integrated Service Digital Network
PIN	Personal Identification Number
PUI	Personal User Identification
PSTN	Public Switched Telephone Network
SPIN	Special Personal Identification Number
UPT	Universal Personal Telecommunication

4 UPT subscriptions and services profiles

4.1 Definitions

4.1.1 UPT subscription

In order to have available the UPT service, the UPT subscriber has to subscribe to it with the service provider; the UPT subscription is independent from any other bearer or supplementary service subscription.

Furthermore, in order to make any modification to the service profile associated to the subscription, the UPT subscriber has to subscribe with the service provider the possibility of access to his own data; the kind of access restrictions for the UPT users is decided at the subscription time between the service provider and the UPT subscriber.

NOTE: A subscriber profile can be used for administrative purposes, not described in this document; see TCRTR-007 [2] for the subscriber profile definition.

4.1.2 UPT service profile

The UPT service profile is a record containing all the information related to the UPT user and the personal rules for handling his mobility, in order to make available to him the UPT service.

In fact, the key object of UPT is to increase the user mobility across any networks; focusing on this purpose, the service profile becomes an efficient way to support the user mobility: it contains a lot of information related to the user's location and to the dynamic management of the calls; it is then important to allow both a user-friendly access and operation on the service profile.

The possibility to access the service profile has great implications on the security aspects, because the access procedure should be protected from disallowed accesses or user's mistakes.

The following assumptions are required:

- the possibility of access to the service profile information has to be subscribed with the service provider;
- each user can have access only to his data, and can modify only the data allowed.

Furthermore, each UPT service provider can decide which parameters the UPT users/subscribers are allowed to modify: so the categorization provided in this recommendation can be changed by the service provider, which should have the flexibility to decide the exact way to include a given parameter into the service profile.

4.2 Access to the service profile

The information contained in the service profile may need to be modified following the user needs and his requests.

In order to modify the service profile or to make any other operation on it, it is necessary to have an access procedure, that can be different for the various parties invoking it.

4.2.1 Involved parties

The possibility to access to the service profile is available for the following categories of UPT users:

- The **service provider** has a guaranteed access to all the information without any restrictions; the UPT subscriber has to agree with him, at the subscription time, which kind of access is permitted to himself and to the eventual UPT users associated. For any modification to the access modality agreed at the subscription, the subscriber has to contact the service provider.
- The **UPT subscriber** can access only the information allowed by the service provider on subscription contract basis; furthermore, some information can only be displayed to him and not modified (e.g. the UPT number). Anyway, he can ask to modify some parameters via administration procedure with the service provider.
- NOTE: The subscriber is a local service provider matter. Consequently, it will not be seen, nor considered, in network interconnections.
- The **UPT user** can access the service profile if this possibility has been given to him by the subscriber at the subscription time; however, the UPT user may have some restrictions in the access, fixed by the service subscriber (e.g. he could not modify the restrictions on permitted callers).

4.2.2 Access procedure

The access procedure to the subscriber/user data has to be user-friendly and in the same time has to guarantee the security of communication.

The UPT service profile is accessed using the service profile management procedures described in the TCRTR-036 [3] or by off-line administrative procedures.

4.2.3 Operations on the service profile

The following operations can be performed by the subscriber/user on his service data:

- service profile modification: this operation is made using the Profile Modification procedure and allows to change the variable information;
- service profile display: this operation is made using the Profile Interrogation procedure and allows the subscriber/user to obtain information on the current status of the service profile.

Furthermore, the system has to validate the service profile after any modification made by the subscriber/user.

4.3 Structure of the service profile

4.3.1 Fixed information

This subclause describes the fixed information from the user's point of view: this one can be divided into information managed only by the service provider and information changeable by the subscriber. Information classification can depend on the service provider.

4.3.1.1 Information fixed at subscription time

This information is fixed at subscription time and can be modified only by the service provider; it could however be displayed to the UPT users and subscriber, if agreed at the subscription time.

If changes are wanted by the UPT subscriber, administrative procedures should be used with the UPT service provider for agreement on a modification to the UPT subscription.

Examples of fixed information are:

- UPT number;
- PUI;
- SPIN (special PIN for unblocking; should be used only once and changed after use);
- service provider identity;
- charging reference location;
- basic services subscribed (PSTN and ISDN);
- UPT supplementary services subscribed;
- types of authentication mechanisms subscribed to (weak and/or strong);
- services provided by the service provider (access independent services);
- authentication information (keys);

NOTE 1: Keys shall never be displayed to the user or the subscriber.

- subscribed charging services (credit limit checking);

- security options subscribed (e.g. user event control, user identity confidentiality, called party specified secure answering of incoming UPT calls, intended recipient identity presentation);
- subscribed location restrictions (e.g. whether remote registration is limited to the list of terminal accesses subscribed, forbidden Access Registration Addresses (ARAs) for incoming and outgoing calls).

In addition, a set of restrictions to be enforced when weak authentication is used is agreed between the service provider and the subscriber at subscription time. Optionally, these restrictions may also be enforced when strong authentication is used. The following information is used to describe these restrictions:

- set of terminal accesses allowed for incall registrations (areas or accesses where you can register when getting to them);
- set of terminal accesses allowed for outcall registrations (areas or accesses where you can register when getting to them);
- set of terminal accesses allowed for allcall registrations (areas or accesses where you can register when getting to them) (see note 2);
- set of terminal accesses allowed for linked registrations (areas or accesses where you can register when getting to them) (see note 2);
- set of terminal accesses allowed for remote incall registrations (areas or accesses where you can register in advance from another place; this might be a short list of ARAs) (see note 3);
- set of terminal accesses allowed for remote outcall registrations (areas or accesses where you can register in advance from another place; this might be a short list of ARAs) (see note 3);
- set of terminal accesses allowed for remote allcall registrations (areas or accesses where you can register in advance from another place; this might be a short list of ARAs) (see notes 2 and 3);
- set of terminal accesses allowed for remote linked registrations (areas or accesses where you can register in advance from another place; this might be a short list of ARAs) (see notes 2 and 3);
- set of terminal accesses allowed from which modification of the service profile is allowed. These restrictions are also applied to supplementary service activation/deactivation, Personal Identification Number (PIN) code change and Personal User Identification (PUI) deblocking procedures;
- set of terminal accesses allowed from which interrogation of the service profile is allowed;
- maximum number of outgoing follow-on calls allowed;
- maximum number of follow-on service feature requests allowed.
- maximum number of failed authentication attempts, before blocking the PUI. This is ignored when strong authentication is used.
- NOTE 2: Generally, the items considered for linked and/or allcall registrations are the intersections of the sets considered for incall and outcall registrations.
- NOTE 3: Remote registration should be allowed only if the validities of the addresses given by the user can be checked (home, originating/visited networks, etc.).

4.3.1.2 Information changeable by the subscriber

This information can be modified only by the subscriber; it can however be displayed to the UPT users if agreed by the subscriber:

- maximum credit allowed to the user (cost-related or number of local/long distance calls, within the limits specified for the subscription);
- maximum number of terminal accesses for multiple registrations (incall registrations);
- maximum number of terminal accesses for multiple registrations (outcall registrations);

- maximum number of terminal accesses for multiple registrations (allcall registrations);
- maximum number of terminal accesses for multiple registrations (linked registrations);
- allowed procedures (e.g. service profile procedures, charging options, authentication procedures) for the UPT user and further restrictions on the locations where those procedures can be performed (i.e. set of terminal accesses);
- activated location restrictions;
- restrictions on roaming, if any;
- allowed basic services;
- allowed supplementary services;
- data access parameters (read and write restrictions);
- security options allowed;
- types of authentication mechanisms allowed.

4.3.2 Variable information

The information described in the following is defined "variable" from the user's point of view; it can be changed using the service profile modification procedure or the personal mobility procedures only.

The variable information is divided into service related and mobility related information.

4.3.2.1 Service related information

The following parameters are changeable by the user or the subscriber:

4.3.2.1.1 Information modified by the change PIN procedure only

- Personal Identification Number (PIN).

4.3.2.1.2 Information modified by the profile modification procedure

- type of authentication mechanisms activated (weak and/or strong). If both weak and strong authentication mechanisms are allowed to a user, the service provider may elect to ignore this information and to impose the procedure used. This prevents the use of weak authentication when a safer method is available;
- preferred language for UPT specific announcements;
- customized announcements;
- activation status of the secure answering service feature;
- activation status for each UPT supplementary service;
- activated charging options;
- restrictions on permitted calling parties;
- security options activated.

4.3.2.2 Mobility related information

The following parameters are changeable by the user or the subscriber, using the only service profile management procedures or personal mobility procedures, depending the case.

4.3.2.2.1 Information modified by UPT service profile management procedures only

- default terminal accesses for incoming calls (one by basic service);
- default terminal accesses for outgoing calls (one by basic service);
- default duration for registration for incall registration;
- default duration (or number of calls) for registration for outcall registration;
- default duration for registration for allcall registration;
- default duration for registration for linked registration;
- information related to UPT supplementary services:
 - information related to Variable Routeing supplementary services (not both routeings in the same time):
 - routeing on calling line identity [0 to 20];
 - routeing on time dependency (a maximum of 5 time inputs per day and 28 in total);
 - destination reached by UPT Call Forwarding on Busy;
 - destination reached by UPT Call Forwarding Unconditional;
 - destination reached by UPT Call Forwarding on No Answer;
 - destination reached by UPT Call Forwarding on Not Reachable;
- activation status of the authentication for outgoing calls when registered for outgoing calls;
- activated deregistration by override (whether or not any other UPT user shall be allowed to deregister the UPT user for outgoing calls from a terminal access by override).

4.3.2.2.2 Information modified by UPT personal mobility procedures only

- duration for registration for incall registration;
- duration for registration for outcall registration;
- duration for registration for allcall registration (see note 1);
- duration for registration for linked registration (see note 1);
- linked-registered terminal address (address of the terminal access being part of a linked registration);
- necessity of UPT user identity authentication for answering incoming UPT calls;
- number of terminal accesses for multiple registration used;
- current terminal access for incoming calls (one by basic service) and duration of the registration;
- current terminal address for outgoing calls (for the Outgoing UPT Call Setup procedure);
- list of common terminal accesses for registration with abbreviated numbering (see note 2);
- list of terminal addresses to be used for paging, if required.
- NOTE 1: Generally, the items considered for linked and/or allcall registrations are the intersections of the sets considered for incall and outcall registrations.
- NOTE 2: It contains the translation between short numbers defined by the UPT user and Access Registration Addresses (ARAs).

4.3.3 UPT call events information

The following parameters are indirectly modified by the user or the subscriber when a call or a procedure occurs:

- number of outgoing follow-on calls placed;
- number of follow-on service features requested;
- number of failed authentication attempts;
- user credit.

4.4 Table on allowed accesses

This subclause provides a global view of the parameters included in the service profile and accessible by the various entities; in each table all the parameters are reported, with the indication about an access being "write-only" (W), "read-only" (R) or "read and write" (R/W) (regardless of the means of access: data can be modified directly by the UPT user or through the procedures and entities of the network. For example, "*current terminal access*" will be modified by a user registration without the UPT user explicitly asking for it). As explained in subclause 2.2.1, the service provider has an access to the information without any restriction and is not concerned by this table. However, it is bound by its contractual agreement with the subscriber and is submitted to the European laws on the protection of privacy.

Attribute	Access by		
	Subscriber	User	
Information fixed at subscription time:			
Authentication information	-	-	
Basic services subscribed	R	R	
Charging reference location	R	R	
Charging services subscribed	R	R	
List of allowed terminal accesses for registration	R	R	
List of allowed terminal accesses for remote registration	R	R	
List of allowed terminal accesses for service profile	R	R	
interrogation	_	_	
List of allowed terminal accesses for service profile	R	R	
modification	5		
Maximum number of failed authentication attempts	R	R	
Maximum number of follow-on service feature requests	R R	R R	
Maximum number of outgoing follow-on calls	R	R	
	R	R	
Security options subscribed	R	R	
Service provider identity Services provided by the service provider	R	R	
ISPIN			
Subscribed authentication mechanisms	R	R	
Subscribed location restrictions	R	R	
Supplementary services subscribed	R	R	
UPT number	R	R	
Information changeable by the subscriber only:			
Activated location restrictions	R/W	R	
Allowed procedures and associated restrictions	R/W	R	
Basic services allowed	R/W	R	
Data access parameters	R/W	R	
Maximum credit allowed to the user	R/W	R	
Maximum number of terminal accesses for multiple	R/W	R	
registration			
Restrictions on roaming	R/W	R	
Security options allowed	R/W	R	
Supplementary services allowed	R/W	R	
Types of authentication mechanisms allowed	R/W	R	
(continued)			

Table 1: Attributes of service profile

Attribute	Acces	Access by		
	Subscriber	User		
Information changeable by the user or the subscriber:				
Activated charging options	R/W	R/W		
Activated deregistration by override	R/W	R/W		
Activation status for each UPT supplementary service	R/W	R/W		
Activation status of secure answering	R/W	R/W		
Authentication for outgoing calls when registered	R/W	R/W		
Current terminal accesses for incoming calls	R/W	R/W		
Current terminal accesses for outgoing calls	R/W	R/W		
Customized announcements	R/W	R/W		
Default duration of incoming call registration	R/W	R/W		
Default duration of outgoing call registration	R/W	R/W		
Default duration of allcall registration	R/W	R/W		
Default duration of linked registration	R/W	R/W		
Default terminal accesses for inc. registration	R/W	R/W		
Default terminal accesses for out. registration	R/W	R/W		
Default terminal accesses for allcall registration	R/W	R/W		
Default terminal accesses for linked registration	R/W	R/W		
Durations of registrations	R/W	R/W		
Information related to supplementary services	R/W	R/W		
Linked-registered terminal address	R/W	R/W		
List of common terminal accesses for registration with abbreviated numbering	R/W	R/W		
List of terminal addresses to be used for paging	R/W	R/W		
Number of terminal accesses for multiple registration used	R/W	R/W		
PIN	-	W		
Preferred language for UPT announcements	R/W	R/W		
Restrictions on permitted calling parties	R/W	R/W		
Routeing table for variable default incall registration	R/W	R/W		
Security options activated	R/W	R/W		
Types of authentication mechanisms activated	R/W	R/W		
UPT user identity authentication on inc. calls	R/W	R/W		
Information modified during UPT call events:	7			
Number of failed authentication attempts	R	R		
Number of follow-on service features requested	R	R		
Number of outgoing follow-on calls placed	R	R		
User credit	R	R		

Table 1	(concluded):	Attributes of	service profile
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In UPT phase 1, the preferred language attribute is not provided within the service profile.

4.5 Interactions between items of information

Finding the routeing address: a UPT user may have several routeing addresses (in different variables as default terminal address, current terminal address). For a routeing purpose, only one of these addresses should be used. The preferential address will be taken in the following priority order:

- destination reached by UPT Call Forwarding on Unconditional;
- current terminal address for registration;
- variable routeing addresses;
- default terminal address.

Time-dependent variable routeing has priority on calling party-dependent variable routeing. The called party can be a UPT user or a non UPT user.

5 UPT Information Model

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The UPT Information Model is described in detail in the ETS 300 670 [1].

6 Information sorted by service feature

This clause presents the previous results in a different manner. It shows for each service feature which type of data is needed to perform it. Table 2 gives all the service features that should be covered for UPT Service Set 1 (except third party protection mechanisms and supplementary services) and their associated data.

Data in italic are optional ones.

Service feature	Information needed
User authentication	 Activated authentication mechanisms
	 Authentication information (keys)
	 Location restrictions
	- PIN
	 Preferred language for specific UPT
	announcements
	- PUI
	 Security options activated
	 Service provider identity
	- User identity
	- Max number of failed authentication attempts
	 Number of failed authentication attempts
Incall registration	 Allowed terminal accesses
	 Current terminal accesses
	 Default duration of the registration
	 Default terminal accesses
	- Location restrictions
	 Number of incoming calls allowed
	 UPT procedure type
	 Access Registration Address(es)
	 Activated secure answering
	- Duration of the registration
	 Indication of group registration
	 Services to which the registration applies
	- Special conditions on registration (e.g. list of
	permitted callers)
Incall deregistration	 UPT procedure type
	 Access Registration Address
	- Services to which the deregistration applies
Outgoing UPT call setup	 Allowed basic services
	 Allowed destinations
	 Called party address or short number code
	 Current terminal accesses
	 Location restrictions
	 UPT procedure type
	 Activated supplementary services
	 Activation status of secure answering
	- Authentication when registered

Table	2:	Service	features	covered	for	UPT	Service	Set '	1
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(continued)

Service feature	Information needed
UPT registered outgoing call set up	 Allowed basic services
	 Allowed destinations
	 Called party address or short number code
	 Location restrictions
	 Activated supplementary services
	 Activation status of secure answering
	- Outcall access code
	- PIN code
Incall delivery	 Allowed basic services
,	 Allowed calling parties
	 Current terminal accesses
	- UPT number
	 Activated supplementary services
	- Activation status of secure answering
	- Terminal addresses for paging
Outcall registration	- Allowed terminal accesses
Outcail registration	- Current terminal accesses
	- Default duration of the registration
	- Default terminal accesses
	- Location restrictions
	- UPT procedure type
	- Access Registration Address(es)
	- Activated deregistration by override
	- Authentication when registered
	- Duration of the registration
	- Indication of group registration
	 Number of outgoing calls allowed
	 Services to which the registration applies
Outcall deregistration	 UPT procedure type
	 Access Registration Address
	- Indication of group deregistration
	 Services to which the deregistration applies
Allcall registration	 Same as incall plus outcall registration
Allcall deregistration	 Same as incall plus outcall deregistration
Linked registration	- Same as allcall registration plus
5	- Linked-registered terminal address
Linked deregistration	- Same as allcall deregistration
Remote incall registration	- Same as incall registration
Remote outcall registration	- Same as outcall registration
Remote allcall registration	- Same as allcall registration
Remote linked registration	- Same as linked registration
Multiple terminal address registration	- Max number of terminal accesses for multiple -
Multiple terminal address registration	
	registration
	 Number of terminal accesses for multiple -
	registration used
	- Terminal addresses
	- UPT procedure type
Variable default incall registration	- Allowed terminal accesses
	- Default terminal accesses
	- Location restrictions
	- Routeing information:
	 Routeing by call originating area
	 Routeing by calling line identity
	 Time dependent routeing (by day of week, by month
	 of year, by time of day,,etc.)
	 Routeing on "no answer" condition
	 Routeing on "not reachable"
	- UPT procedure type
Outgoing call follow-on	- Max number of outgoing follow-on calls
	- Number of outgoing follow-on calls placed
	- UPT procedure type

Table 2 (continued): Service features covered for UPT Service Set 1

Service feature	Information needed
Global follow-on	- Max number of follow-on service feature requests
	- Number of follow-on service features requested
	- UPT procedure type
Service profile interrogation	- Allowed terminal accesses
	 Data access parameters
	 Data requested by the user
	 Location restrictions
	UPT procedure type
Service profile modification	 Allowed terminal accesses
	 Data access parameters
	 Data requested by the user
	 Location restrictions
	 UPT procedure type
	- Information related to UPT supplementary services
Change PIN	- New PIN
	UPT procedure type
Call pick up	 Authentication information
Intended recipient identity presentation	- PUI
	- UPT number
UPT specific indications	 Activated form of information media
	 Preferred language for specific UPT -
	announcements
UPT service assistance	- None identified
Called party specified secure answering of incoming UPT calls	- Activation status of secure answering
UPT service provider authentication	- Keys?
	- Service provider identity

Table 2 (concluded): Service features covered for UPT Service Set 1

The charging service features should be put apart from the other service features since they are used in parallel with them.

Table 3: Charging service feature

Specific service feature	Information needed
Charging	 Activated charging option Charging reference location Max user credit User credit

History

Document history						
V1.1.1	September 1997	Membership Approval Procedure	MV 9744:	1997-09-02 to 1997-10-31		