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Technical Specification

Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Network and Service Management; Subscription Management; Part 2: Information Model

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

The present document is part 2 of a multi-part deliverable covering the Network and Service Management; Subscription Management, as identified below:

Part 1: "Requirements";

Part 2: "Information Model";

Part 3: "Functional Architecture".

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Introduction

The focus of the present document is on the definition of SuM Information Model.

1 Scope

The purpose of the present document is the definition of the SuM Information model which is paramount for the NGN service delivery within TISPAN NGN.

The present document contains the specification of an information model covering all the mandatory/optional information related to subscription management that shall be provisioned on the NGN Network.

The information model described in the present document is developed according to the specifications of TISPAN R1.

The purposes of the document are:

- To capture the Subscription Management Information Model needs as expressed in [1].
- To satisfy the needs of the NGN OSS Service Interfaces (NOSI) defined in the Subscription Management Functional Architecture and to support their implementation in Solution Set interfaces.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
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2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

[1] ETSI TS 188 002-1: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Subscription Management; Part 1: Requirements".

[2] ETSI ES 282 001: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); NGN Functional Architecture Release 1".

[3] ETSI ES 282 007: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia Subsystem (IMS) Functional Architecture".

[4] ETSI ES 282 004: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Functional Architecture; Network Attachment Sub-System (NASS)".

[5] ETSI ES 283 034: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Network Attachment Sub-System (NASS); e4 interface based on the diameter protocol".

[6] ETSI TS 123 008: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Organization of subscriber data (3GPP TS 23.008 Release 7)".

[7] 3GPP TS 32.172: "3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; Subscription Management (SuM) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS) (Release 8)".

[8] ETSI TS 132 622: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP): Network Resource Model (NRM) (3GPP TS 32.622 Release 7)".

[9] ETSI TS 132 300: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Name convention for Managed Objects (3GPP TS 32.300 Release 7)".

2.2 Informative references

[10] ETSI TS 123 218: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); IP Multimedia (IM) session handling; IM call model; Stage 2 (3GPP TS 23.218 Release 7)".

[11] ETSI TS 129 228: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); IP Multimedia (IM) Subsystem Cx and Dx Interfaces; Signalling flows and message contents (3GPP TS 29.228 Release 7)".

[12] ETSI TS 129 328: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); IP Multimedia Subsystem (IMS) Sh interface; Signalling flows and message contents (3GPP TS 29.328 Release 7)".

[13] ETSI TS 129 240: "Universal Mobile Telecommunications System (UMTS); 3GPP Generic User Profile (GUP); Stage 3; Network (3GPP TS 29.240 Release 7)".

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3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 188 002-1 [1] and the following apply:

IMS Service Profile: collection of service and user related data as defined in TS 129 228

NASS User ID: identity of the attached user at the network access

NOTE Correspond to the Subscriber ID used in NASS specification [4].

Sub-Profile: set of user network profile information

NOTE Each user network profile may be divided into sub-profiles.

Subscribed Network Access: collection of data related to a network access subscribed by the subscriber

Subscribed NGN Service: collection of data related to a NGN service subscribed by the subscriber

Subscriber: entity (associated with one or more users) that is engaged in a Subscription with a service provider

NOTE The subscriber is allowed to subscribe and unsubscribe services, to register a user or a list of users authorized to use these services, and also to set the limits relative to the use that associated users make of these services.

Subscription: commercial relationship between the subscriber and the service provider

User: entity that consumes the services subscribed by the subscriber

User NGN Network Access Profile: user profile in a specific network access

User NGN Service Profile: collection of service and user related data

3.2 Abbreviations

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

AMF	Access Management Function
AS	Application Server
CLF	Connectivity session Location and repository Function
CNGCF	CNG Configuration Function
CNG	Customer Network Gateway
GPRS	General Packet Radio Service
IMS	IP Multimedia Subsystem
IOC	Information Object Class
NACF	Network Access Configuration Function
NASS	Network Attachment SubSystem
NGN	Next Generation Network
P-CSCF	Proxy Call Session Control Function
PDBF	Profile Data Base Function
S-CSCF	Serving Call Session Control Function
SuM	Subscription Management
TBD	To Be Defined in next release
UAAF	User Access Authorization Function
UE	User Equipment
UPSF	User Profile Server Function

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4 High Level Model

4.1 Overview

In this clause, a general contextualization of Subscription Management within TISPAN is given. This clause is organized with an initial textual description, followed by a general diagram which aims to depict the "SuM High Level Model".

The goal of SuM within the current TISPAN release is to provision the NGN functional entities with all information related to a specific subscriber in order to allow its users to use their services.

The objective of the high level model is the identification of candidate entity groupings that need to be modelled, possible relations between those groupings and the associated candidate attributes.

The High Level Model does not specify any information model, but is used as the basis for the design of the SuM Information Model.

A Subscriber is an entity that is engaged in a subscription with a Service Provider. One or more Users can be associated to a subscriber, who is allowed to subscribe and unsubscribe services, to register a user or a list of users authorized to use these services, and also to set the limits relative to the use that associated users make of these services.

An NGN Subscriber subscribes to NGN Services (e.g. VoIP, VoD, etc) and directly or indirectly to a set of Network Accesses (xDSL, etc.) This subscription covers two different aspects:

- Subscription to the NGN Services.
- Subscription to Network Accesses.

A relationship between NGN services and network accesses is established, in that it is possible to "enjoy" specific NGN services over specific network accesses.

The NGN Subscriber is engaged in a Subscription with a Service Provider. The NGN Subscriber may also be engaged in a subscription with a Network Access Provider.

The entity which uses the NGN subscribed services/accesses is the User. The subscriber is responsible of the assignment of services/accesses and rights to its users.

Each user may be associated to multiple subscribers, and one subscriber may be associated to multiple users.

All the parameters related to the services and/or network accesses subscribed by the subscriber are included in a profile related to the subscriber. All the parameters related to the services and network accesses assigned to the user are stored in a profile related to the user. There is a relation between services assigned to the user and which network accesses on which these services can be used by the user.

In order to use the NGN services, the user must proceed as follows:

1) **Authenticate at Transport Layer:** This transport layer may be the one provided by the Service Provider or may be another network access (in case of nomadism or roaming). In order to use the transport layer, the user must provide credentials in order to allow the authentication and authorization procedures with the NASS (network attachment subsystem). Network attachment through NASS is based on implicit or explicit user identity and authentication credentials stored in the NASS (see ES 282 004 [4]). On one network access, the user may use same credentials independently of the services he wants to launch.

2) **Authenticate at Service Layer:** allow the service provider to identify and authenticate the user at a service level. Within this phase, the user is authenticated by the service provider thanks to authentication procedures and to the credentials provided by the user.

3) **Authenticate at Application Layer (Optional)**: this optional step enables the application provider to identify and authenticate the user for enabling his access to specific applications. Within this phase, the user is authenticated by the applications provider thanks to authentication procedures and to the credentials provided by the user.

4) **Usage of the Service/Application:** Once the user is authenticated and authorized at service/application level, he can use all the services/applications assigned to him by its subscriber.

The relationship between the users, its access credentials and service/application credentials is the following:

1) For each network access and for each user, credentials are associated.

2) For each user, multiple service/applications credentials are associated.

According to this description, a general contextualization of the TISPAN Subscription Management can be derived in a "high level model", depicted by the following diagram.

For readability purposes, the following legend is proposed.

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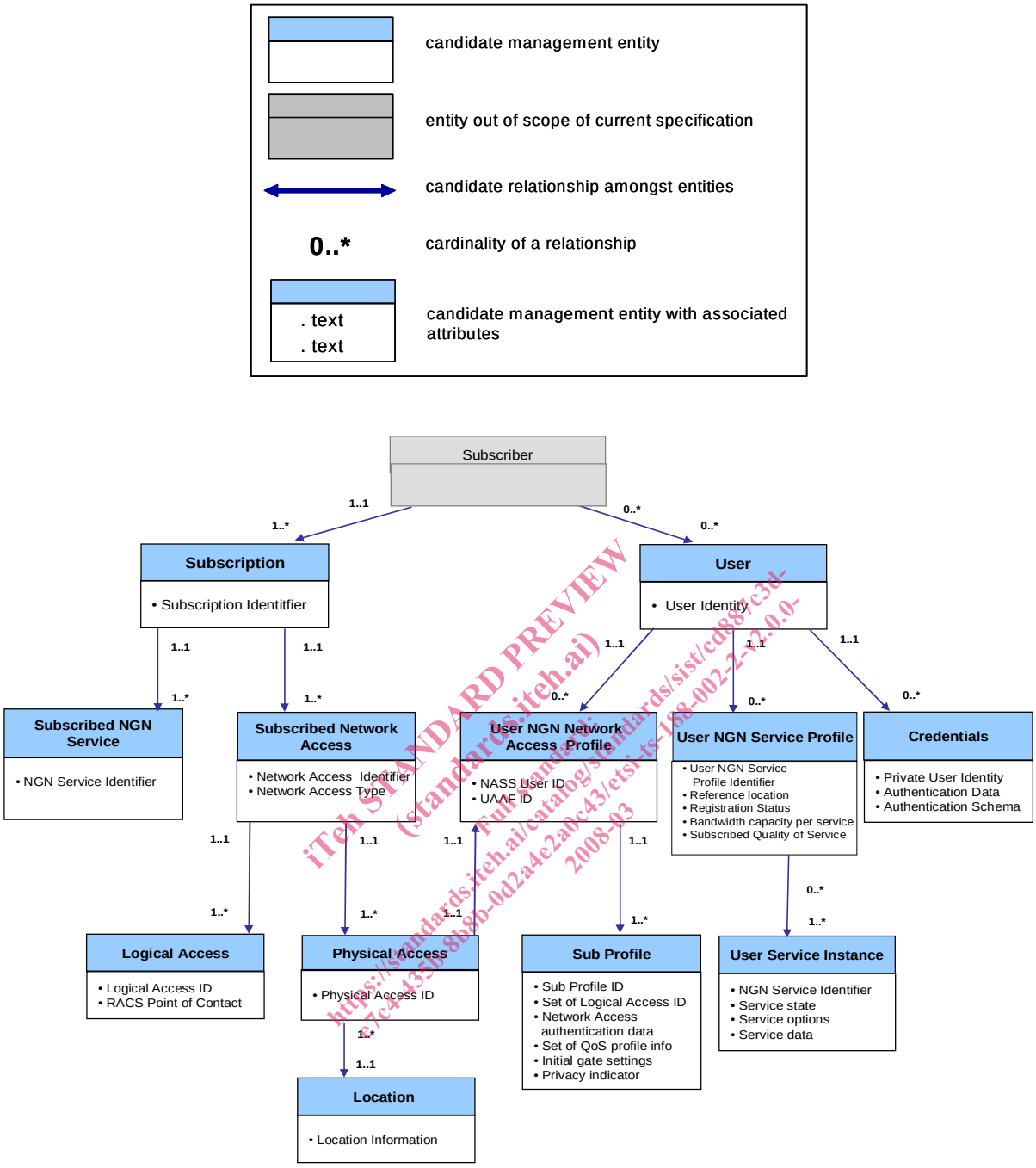

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Figure1: TISPAN SuM High Level Model

As depicted in the precedent figure, a user may have one or several User NGN Service Profiles, which are a collection of a service and user related data. A User NGN Service Profile can be either an IMS Service profile or of any other type of Service Profile. Other type of Service Profile can cover Services offered by Applications Servers and Services offered by other TISPAN NGN Subsystems such as IPTV Subsystem.

The candidate management entity "User NGN Service Profile" contains the attributes that are common for any type of Service Profiles. For any type of service profile including IMS Service Profile, the associated candidate management entity inherits from the User NGN Service Profile candidate management entity as shown in figure 2. For the IMS Service Profile candidate management entity, the associated attributes are depicted in the figure 2.

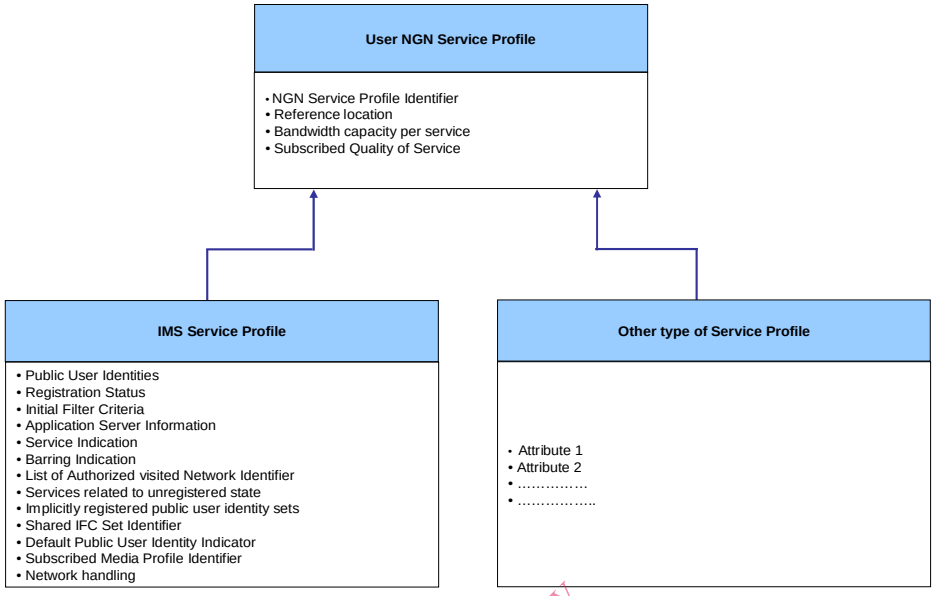

Figure 2: User NGN Service Profile Inheritance

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4.2 Subscriber

The subscriber concept used in the present document is the same as the one defined in [2]. This concept which is defined for both fixed and mobile network accesses is not handled (stored or modified) in the TISPAN NGN network nodes. The subscriber is not in the scope of the present document, and is mentioned for clearness and consistency purposes of the model.

4.3 User

A user is described by its characteristics/attributes, possibly including various identifiers. A user must be immutable and, therefore, independent of any information that may change during the lifecycle of the user. In particular, it must not depend on any service, any device, network access, credential, etc. A user may be associated with zero or more devices, network accesses, credentials, contracts, etc. In addition, the change of/in devices, network accesses, credentials, contracts, etc. must not lead to a change of identities. A user is defined to be long lasting. Life cycle of a user identity is independent of several aspects:

- A user is not strictly bound to a particular contract subscription.
- A user is independent from any device.
- A user is independent from any network access.

A user is identified by a unique user identity described in the table below.

Attribute	Definition
User Identity	The User identity is the unique identifier of a user. The user identity is used only to refer to the user. It shall not be used for other purposes (it shall not identify access resources, accounts, credentials…). The user identity shall not be seen by the user.