ETSI TS 188 002-3 V2.0.0 (2008-03)

Technical Specification

Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Network and Service Management; Subscription Management; Part 3: Functional Architecture

ETSI

Reference

DTS/TISPAN-08015-3-NGN-R2

Keywords

administration, management, service, subscriber

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - 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

Important notice

Individual copies of the present document can be downloaded from:
http://www.etsi.org

The present document may be made available in more than one electronic version or in print. In any case of existing or
perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF).
In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive
within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status.
Information on the current status of this and other ETSI documents is available at
http://portal.etsi.org/tb/status/status.asp

If you find errors in the present document, please send your comment to one of the following services:
http://portal.etsi.org/chaircor/ETSI_support.asp

Copyright Notification

ETSI

Contents

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (http://webapp.etsi.org/IPR/home.asp).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

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 3 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".

Introduction

The focus of the present document is the definition of the Subscription Management (SuM) Functional Architecture that has the objective to offer service providers and operators means for a simple, flexible and efficient subscription data repartition in the TISPAN NGN network entities.

1   Scope

The purpose of the SuM Functional Architecture is the design of the NGN OSS Service Interfaces (NOSIs) needed for the management of a specific Subscriber, User, Service Profile and User Services within TISPAN NGN. The SuM Functional Architecture shall deliver the necessary NOSIs for the Resource Provisioning and Service Activation processes.

The NOSIs related to Service Configuration & Activation shall be network technology agnostic without any knowledge of the NGN functional entities that are involved. The NOSIs related to Resource Provisioning are responsible of NGN functional entities (including CPE and AS) management and shall hide the complexity of the different NGN functional entities to the NOSIs related to Service Configuration & Activation.

The specification of the NOSIs comprises the list of operations they are offering and the associated subscription and user data that are specified in the SuM Information model. The set of NGN FEs expose one or more NOSIs for the management of Subscription Management data.

The present document is part of specifications related to subscription management that comprises:

- TS 188 002-1 [2]: SuM Requirements.

- TS 188 002-2 [3]: SuM Information Model.

- TS 188 002-3 (the present document): SuM Functional Architecture.

The present document is developed according to the specifications of TISPAN R1, including the NGN OSS Architecture specifications described in TS 188 001 [1]. The SuM Functional Architecture meets the requirements of TS 188 002-1 [2].

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.

- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:

    - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;

    - for informative references.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

For online referenced documents, information sufficient to identify and locate the source shall be provided. Preferably, the primary source of the referenced document should be cited, in order to ensure traceability. Furthermore, the reference should, as far as possible, remain valid for the expected life of the document. The reference shall include the method of access to the referenced document and the full network address, with the same punctuation and use of upper case and lower case letters.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

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 188 001: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); NGN management; OSS Architecture Release 1".

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

[3]   ETSI TS 188 002-2: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Subscription Management; Part 2: Information Model".

[4]   ETSI TS 122 240: "Universal Mobile Telecommunications System (UMTS); Service requirements for 3GPP Generic User Profile (GUP); Stage 1 (3GPP TS 22.240 Release 6)".

[5]   ETSI TS 123 240: "Universal Mobile Telecommunications System (UMTS); 3GPP Generic User Profile (GUP) requirements; Architecture (Stage 2) (3GPP TS 23.240 Release 6)".

[6]   ETSI TR 123 941: "Universal Mobile Telecommunications System (UMTS); 3GPP Generic User Profile (GUP); Stage 2; Data Description Method (DDM) (3GPP TR 23.941 Release 6)".

[7]   ETSI TS 129 240: "Universal Mobile Telecommunications System (UMTS); 3GPP Generic User Profile (GUP); Stage 3; Network (3GPP TS 29.240 Release 6)".

[8]   ETSI TS 132 171: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Subscription Management (SuM) Network Resource Model (NRM) Integration Reference Point (IRP): Requirements (3GPP TS 32.171)".

[9]   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)".

[10]   ETSI TS 132 175: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Subscription Management (SuM) Network Resource Model (NRM) Integration Reference Point (IRP): eXtensible Markup Language (XML) definition (3GPP TS 32.175)".

2.2   Informative references

[11]   ETSI TS 132 101: "Universal Mobile Telecommunications System (UMTS); Telecommunication management; Principles and high level requirements (3GPP TS 32.101)".

[12]   ETSI TS 132 150: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Integration Reference Point (IRP) Concept and definitions (3GPP TS 32.150)".

[13]   ETSI TS 132 311: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Generic Integration Reference Point (IRP) management; Requirements (3GPP TS 32.311)".

[14]   ETSI TS 132 312: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Generic Integration Reference Point (IRP) management; Information Service (IS) (3GPP TS 32.312)".

[15]   ETSI TS 132 317: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Generic Integration Reference Point (IRP) management; SOAP Solution Set (SS) (3GPP TS 32.317)".

[16]   ETSI TS 132 301: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Requirements (3GPP TS 32.301)".

[17]   ETSI TS 132 302: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Information Service (IS) (3GPP TS 32.302)".

[18]   ETSI TS 132 307: "Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Notification Integration Reference Point (IRP): Simple Object Access Protocol (SOAP) Solution Set (SS) (3GPP TS 32.307)".

[19]   ETSI TS 132 661: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Kernel CM; Requirements (3GPP TS 32.661)".

[20]   ETSI TS 132 662: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Kernel CM; Information service (IS) (3GPP TS 32.662)".

[21]   ETSI TS 132 665: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Kernel CM Integration Reference Point (IRP): eXtensible Markup Language (XML) definitions (3GPP TS 32.665)".

[22]   ETSI TS 132 667: "Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Kernel CM Integration Reference Point (IRP): Simple Object Access Protocol (SOAP) Solution Set (SS) (3GPP TS 32.667)".

[23]   ETSI TS 132 601: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Basic CM Integration Reference Point (IRP); Requirements (3GPP TS 32.601)".

[24]   ETSI TS 132 602: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Basic CM Integration Reference Point (IRP): Information Service (IS) (3GPP TS 32.602)".

[25]   ETSI TS 132 607: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Basic CM Integration Reference Point (IRP): SOAP Solution Set (SS) (3GPP TS 32.607)".

[26]   ETSI TS 132 621: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP); Requirements (3GPP TS 32.621)".

[27]   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)".

[28]   ETSI TS 132 625: "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP): Bulk CM eXtensible Markup Language (XML) file format definition (3GPP TS 32.625)".

[29]   W3C Recommendation: "XML Path Language (XPath)" Version 1.0, 16 November 1999.

3   Abbreviations

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

AS   Application Server
CLF   Connectivity session Location and repository Function
GUP   Generic User Profile
IOC   Information Object Class
IRP   Integration Reference Point
IS   Information Service
NASS   Network Attachment SubSystem
NGN FE   NGN Functional Entity
NOSI   NGN OSS Service Interface
OSS   Operation Support Systems
PDBF   Profile Data Base Function
RAF   Repository Access Function
RP   Resource Provisioning
SCA   Service Configuration & Activation
SOAP   Simple Object Access Protocol
SS   Solution Set
SuM   Subscription Management
TOM   Telecommunication Operation Map
UPSF   User Profile Server Function
WSDL   Web Services Description Language
XML   eXtensible Markup Language

4   SuM Functional Architecture

4.1   Overview

Subscription Management is paramount for the NGN service delivery within TISPAN NGN. It aims to define an end-to-end information model and a functional architecture that allows service providers to provision their NGN functional entities with all the mandatory/optional information specific to a subscriber and its users. Subscription Management can be summarized as the framework that offer service providers means for efficient management of all the data related to a specific subscription. The purposes of specifying a SuM Information Model is to capture all the information needed for the management of a specific subscription. The purpose of the SuM Functional Architecture is the design of the NGN OSS Service Interfaces (NOSIs) needed for the management of subscribers and their users, with respect to the requirements defined in [2], and to the NGN OSS Architecture [1].

Subscription Management aligns with subset of the eTOM fulfilment process, in particular the Customer Relationship Management process, the Service Management & Operations process, and the Resource management and operation process. As depicted in figure 1, the current target of the SuM FA is the specification of:

- The NOSIs for the realization of the Service Configuration & Activation (SCA NOSIs).

- The NOSIs for the realization of the Resource Provisioning (RP NOSIs).

- The NOSIs exposed for the management of data stored within NGN FEs (NGN FE NOSIs).
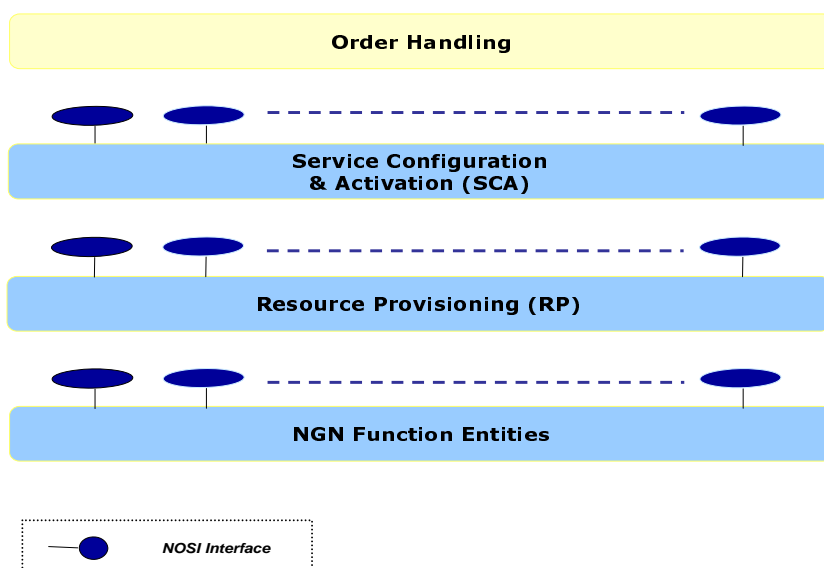
| Order Handling |

| Service Configuration & Activation (SCA) |

| Resource Provisioning (RP) |

| NGN Function Entities |

● NOSI Interface

Figure 1: Subscription Management NOSI

Following concepts are introduced:

- **SCA Service (SCA):** Service which exposes at least one SCA NOSI.

- **RP Service (RP):** Service which exposes at least one RP NOSI.

- **NGN FE Service (NGN FE MA):** Service which exposes at least one NGN FE NOSI.

The following figure depicts the Subscription Management Functional Architecture based on the precedent concepts and TISPAN NGN OSS Architecture.

NGN OSS Basic Framework Services

SCA Service — SCA Service — SCA Service

Common Communication Vehicle

FE Service — FE Service — FE Service

RP Service — RP Service — RP Service

● NOSI exposed for the management of data stored in NGN FE

● RP NOSI

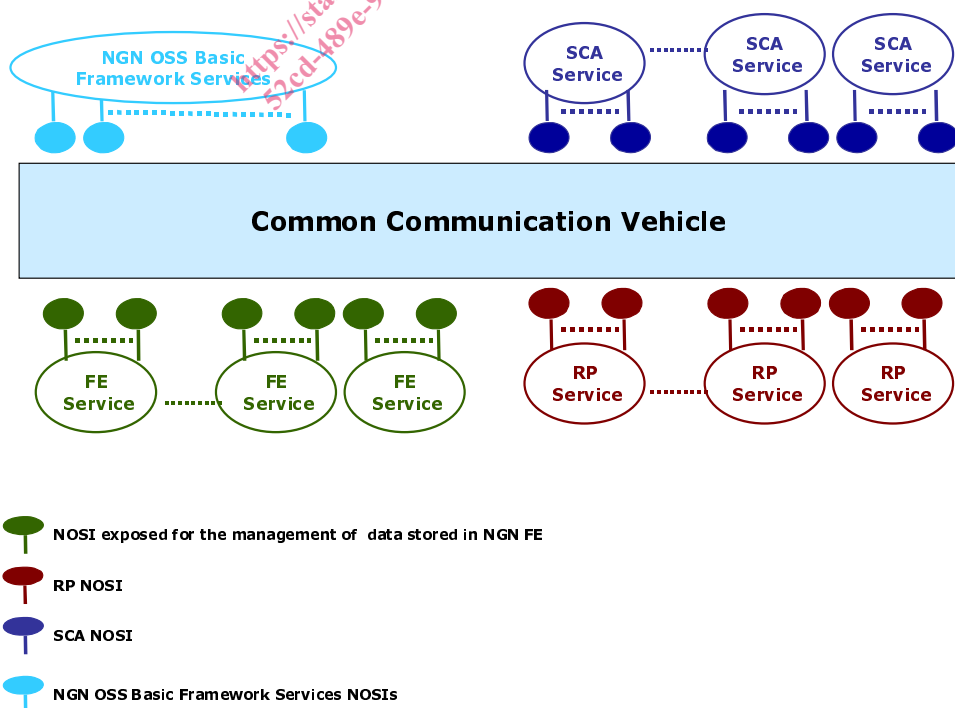● SCA NOSI

● NGN OSS Basic Framework Services NOSIs

Figure 2: Subscription Management NOSIs

The NGN OSS basic framework services NOSIs are the NOSIs in charge of aspects such as distribution, transparency, registration, etc., as described in NGN OSS Architecture. The NGN OSS basic framework services NOSIs are out of the scope of the Subscription Management standards.

4.2 Service Configuration and Activation

For the specification of the SCA NOSIs, it is necessary to list all the required capabilities that need to be supported or offered by the NOSIs with respect to SuM requirements, eTOM and to the use cases defined in [2]. There is no assumption on the relations between the required capabilities and the NOSIs that support them.

The SCA NOSIs shall expose the following capabilities:

- **Manage Subscription by the service provider:** consist in all the CRUD operations needed for the management of a specific subscription.

- **Manage Subscription by the subscriber:** consist in all the CRUD operation allowed by the service provider for its subscribers (example: subscribe to new services, etc.).

- **Manage Users:** consist in all the CRUD capabilities needed for the management of a user of a specific subscriber. (example: create new user, assign services to a user, etc.).

- **Manage User Services:** consist in all the capabilities needed for the customization of services by users (example: configure a phone number for the call forwarding service, etc.).

In addition to the above capabilities, the SCA NOSI shall expose the subscribe/notify capabilities that allows notifications when subscription information change (example: when a phone number for the call forwarding service is configured by a user, the service provider may be informed for legal interception purposes).

The precedent capabilities of the SCA NOSIs represent the fact that theses NOSIs are responsible of the management of Subscriber, Subscription and Users.

4.3 Resource Provisioning

This clause consists in a description of all the capabilities required for SuM within the Resource Provisioning process group with respect to the Subscription Management Requirements and to eTOM.

For the specification of the RP NOSIs, it is necessary to list all the required capabilities that need to be supported or offered by the NOSIs with respect to eTOM and to the use cases defined in [2].

The RP NOSIs shall expose the following capabilities:

- **Manage NGN Subscription Management Data:** consist in all the CRUD capabilities related to the management of Subscription Management information (services, network access, credentials, etc.) for subscription, users, and user services.

The precedent capabilities represent the fact that the RP NOSIs allow the management of the information part of the Subscriber, Subscription and Users which are the Services, Credentials, Network Access, etc.

4.4 NGN Functional entities

This clause consists in a description of all the capabilities required for SuM within the NGN Functional entities with respect to the Subscription Management Requirements and to eTOM.

The TISPAN NGN Functional entities concerned by the present SuM NGN FEs NOSI specification are:

- The UPSF.

- The PDBF, NACF and the CLF in the NASS subsystem.

- User data repositories of Application servers offering NGN services.

NOTE: The CPE case is for further study.