3GPP TS 28.753 V18.2.0 (2024-09)

Technical Specification

3rd Generation Partnership Project;

Technical Specification Group Services and System Aspects;

Telecommunication management;

Subscription Management (SuM)

Network Resource Model (NRM)

Integration Reference Point (IRP);

Solution Set (SS) definitions

(Release 18)

**

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Keywords

Subscription Management, NRM, IRP, Converged Management

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Contents

Foreword 4

Introduction 4

1 Scope 5

2 References 5

3 Definitions and abbreviations 6

3.1 Definitions 6

3.2 Abbreviations 6

4 Solution Set Definitions 6

Annex A (normative): XML Definitions 7

A.0 General 7

A.1 Architectural features 7

A.1.0 Introduction 7

A.1.1 Syntax for Distinguished Names 7

A.2 Mapping 7

A.2.1 General mapping 7

A.2.2 Information Object Class (IOC) mapping 7

A.3 Solution Set definitions 8

A.3.1 XML definition structure 8

A.3.2 Graphical Representation 8

A.3.3 XML schema "sumNrm.xsd" 9

Annex B (informative): Change history 28

# Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

x the first digit:

1 presented to TSG for information;

2 presented to TSG for approval;

3 or greater indicates TSG approved document under change control.

y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

z the third digit is incremented when editorial only changes have been incorporated in the document.

# Introduction

The present document is part of a TS-family covering the 3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; as identified below:

TS 32.140: Subscription Management (SuM) requirements.

TS 32.141: Subscription Management (SuM) architecture.

TS 28.751: Subscription Management (SuM) Network Resource Model (NRM) Integration Reference Point (IRP): Requirements.

TS 28.752: Subscription Management (SuM) Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS).

**TS 28.753: Subscription Management (SuM) Network Resource Model (NRM) Integration Reference Point (IRP): Solution Set (SS) definitions.**

Subscription Management (SuM) is a feature that permits Service Providers, Value Added Service Providers and Mobile Operators to provision services for a specific subscriber. The feature is necessary to allow Service Providers and Operators to provision, control, monitor, and bill the configuration of services that they offer to their subscribers. SuM focuses on the OAM processes to manage subscription information. The overall SuM requirements and architecture are detailed in 3GPP TS 32.140 [2] and 3GPP TS 32.141 [3].

# 1 Scope

The present document is part of an Integration Reference Point (IRP) named Subscription Management (SuM) Network Resource Model (NRM) IRP, through which an IRPAgent can communicate configuration management information to one or several IRPManagers concerning SuM resources. The SuM NRM IRP comprises a set of specifications defining Requirements, a protocol neutral Information Service and one or more Solution Set(s).

The present document specifies the Solution Sets for the SuM NRM IRP.

# 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. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] Void.

[2] 3GPP TS 32.140: "Telecommunication management; Subscription Management (SuM) requirements".

[3] 3GPP TS 32.141: "Telecommunication management; Subscription Management (SuM) architecture".

[4] 3GPP TS 28.751: "Telecommunication management; Subscription Management (SuM) Network Resource Model (NRM) Integration Reference Point (IRP); Requirements".

[5] 3GPP TS 28.752: "Telecommunication management; Subscription Management Network Resource Model (NRM) Integration Reference Point (IRP): Information Service (IS)".

[6] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".

[7] 3GPP TS 32.102: "Telecommunication management; Architecture".

[8] 3GPP TS 32.616: "Telecommunication management; Configuration Management (CM); Bulk CM Integration Reference Point (IRP): Solution Set (SS) definitions".

[9] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[10] W3C REC-xml11-20060816: "Extensible Markup Language (XML) 1.1 (Second Edition)".

[11] W3C XML Schema Definition Language (XSD) 1.1 Part 1: Structures.

[12] W3C XML Schema Definition Language (XSD) 1.1 Part 2: Datatypes.

[13] W3C REC-xml-names-20060816: "Namespaces in XML 1.1 (Second Edition)".

# 3 Definitions and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions in 3GPP TS 32.101 [6], TS 32.102 [7], TS 32.140 [2], TS 32.141 [3], TS 28.751 [4] and TS 28.752 [5] apply.

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations in 3GPP TS 32.101 [6], TS 32.102 [7], TS 32.140 [2], TS 32.141 [3], TS 28.751 [4] and TS 28.752 [5] apply.

# 4 Solution Set Definitions

This specification defines the following 3GPP SuM NRM IRP Solution Set Definitions:

- 3GPP SuM NRM IRP XML Definitions (Annex A)

CORBA Solution Set is not supported.

Annex A (normative):
XML Definitions

# A.0 General

This annex contains the XML Definitions for the SuM NRM IRP as it applies to Itf-N, in accordance with SuM NRM IRP Information Service (TS 28.752 [5]) .

The XML file formats are based on XML [10], XML Schema [11] [12] and XML Namespace [13] standards.

# A.1 Architectural features

## A.1.0 Introduction

The overall architectural feature of Subscription Management (SuM) NRM is specified in 3GPP TS 28.752 [5]. This clause specifies features that are specific to the Schema definitions.

## A.1.1 Syntax for Distinguished Names

The syntax of a Distinguished Name is defined in 3GPP TS 32.300 [9].

# A.2 Mapping

### A.2.1 General mapping

An IOC maps to an XML element of the same name as the IOC's name in the IS. An IOC attribute maps to a sub-element of the corresponding IOC's XML element, and the name of this sub-element is the same as the attribute's name in the IS.

### A.2.2 Information Object Class (IOC) mapping

The mapping is not present in the current version of this specification.

# A.3 Solution Set definitions

## A.3.1 XML definition structure

The overall description of the file format of configuration data XML files is provided by 3GPP TS 32.616 [8].

Annex A.3.3 of the present document defines the NRM-specific XML schema sumNrm.xsd for the Subscription Management IRP NRM defined in 3GPP TS 28.752 [5].

XML schema sumNrm.xsd explicitly declares NRM-specific XML element types for the related NRM.

The definition of those NRM-specific XML element types complies with the generic mapping rules defined in 3GPP TS 32.616 [8].

## A.3.2 Graphical Representation

The graphical representation is not present in the current version of this specification.

## A.3.3 XML schema "sumNrm.xsd"

<?xml version="1.1" encoding="UTF-8"?>

<!--
 3GPP TS 28.753 SuM Network Resource Model IRP
 SuM NRM-specific XML schema
 sumNrm.xsd
-->

<schema
 targetNamespace=
"http://www.3gpp.org/ftp/specs/archive/28\_series/28.753#sumNrm"
 elementFormDefault="qualified"
 xmlns="http://www.w3.org/2001/XMLSchema"
 xmlns:sn=
"http://www.3gpp.org/ftp/specs/archive/28\_series/28.753#sumNrm"
 xmlns:xn=
"http://www.3gpp.org/ftp/specs/archive/28\_series/28.623#genericNrm"
>

 <import
 namespace=
"http://www.3gpp.org/ftp/specs/archive/28\_series/28.753#genericNrm"
 />

 <!-- SuM Network Resources IRP NRM class associated XML elements -->

 <element
 name="SubscriptionFunction"
 substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass"
 >
 <complexType>
 <complexContent>
 <extension base="xn:NrmClass">
 <sequence>
 <element name="attributes" minOccurs="0">
 <complexType>
 <all>
 <element name="userLabel"/>

 <element name="vnfParametersList" type="xn:vnfParametersListType" minOccurs="0"/>

 <element name="theUser" type="xn:dnList"/>

 <element name="theSubscriberProfile" type="xn:dnList"/>
 </all>
 </complexType>
 </element>
 </sequence>
 </extension>
 </complexContent>
 </complexType>
 </element>
 <element name="SuMSubscriberProfile" substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass">
 <complexType>
 <complexContent>
 <extension base="xn:NrmClass">
 <sequence>
 <element name="attributes" minOccurs="0">
 <complexType>
 <all>
 <element name="suMSubscriberProfileInfo"/>
 <element name="theUser" type="xn:dnList"/>
 <element name="theSubscribedService" type="xn:dnList"/>
 <element name="theMobileUserData" type="xn:dnList"/>
 </all>
 </complexType>
 </element>
 </sequence>
 </extension>
 </complexContent>
 </complexType>
 </element>
<element name="MobileUserData" substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass">
 <complexType>
 <complexContent>
 <extension base="xn:NrmClass">
 <sequence>
 <element name="attributes" minOccurs="0">
 <complexType>
 <all>
 <element name="theServiceProfile" type="xn:dnList"/>
 <element name="iMSI" type="string"/>
 <element name="mSISDN" type="string"/>
 <element name="multinumberingMSISDNs" type="sn:multinumberingMSISDNList"/>
 <element name="iMEISV" type="string" minOccurs="0"/>
 </all>
 </complexType>
 </element>
 </sequence>
 </extension>
 </complexContent>
 </complexType>
 </element>

<element name="SuMUser" substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass">
 <complexType>
 <complexContent>
 <extension base="xn:NrmClass">
 <sequence>
 <element name="attributes" minOccurs="0">
 <complexType>
 <all>
 <element name="theMobileUserData" type="xn:dnList"/>
 <element name="theSubscriber" type="xn:dnList" minOccurs="0"/>
 <element name="theCredentials" type="xn:dnList"/>
 <element name="theServiceProfile" type="xn:dnList"/>
 <element name="theIdentity" type="xn:dnList" minOccurs="0"/>
 </all>
 </complexType>
 </element>
 </sequence>
 </extension>
 </complexContent>
 </complexType>
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<element name="SuMCredentials" substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass">
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 <complexContent>
 <extension base="xn:NrmClass">
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 <element name="theServiceProfile" type="xn:dnList"/>
 <element name="iMSPrivateUserIdentity" type="string"/>
 </all>
 </complexType>
 </element>
 </sequence>
 </extension>
 </complexContent>
 </complexType>
 </element>

 <element name="SuMService" type="xn:NrmClass" abstract="true" substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass"/>

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 name="CSService"
 substitutionGroup="sn:SuMService"
 >
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 <complexContent>
 <extension base="xn:NrmClass">
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 <element name="mSISDNAlertIndicator" minOccurs="0"/>
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 <element name="lSAIdentity" minOccurs="0"/>
 <element name="lSAPriority" minOccurs="0"/>
 <element name="lSAPreferentialAccessIndicator" minOccurs="0"/>
 <element name="lSAActiveModeSupportIndicator" minOccurs="0"/>
 <element name="lSAOnlyAccessIndicator" minOccurs="0"/>
 <element name="lSAActiveModeIndicator" minOccurs="0"/>
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 <element name="privacyExceptionList" minOccurs="0"/>
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 <element name="serviceTypes" minOccurs="0"/>
 <element name="mobileStationCategory" minOccurs="0"/>
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 <element name="gsmSCFaddresslistForODB"/>
 <element name="provisionOfBearerService"/>
 <element name="provisionOfTeleservice"/>
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 <element name="barringOfIncomingCalls" minOccurs="0"/>
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 <element name="vBSGroupMembershipList" minOccurs="0"/>
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 name="terminatingCAMELSubscriptionInformationTCSI"
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 <element
 name="vMSCTerminatingCAMELSubscriptionInformationVTCSI"
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 <element
 name="locationInformationSubscriberStateInformation"
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 <element
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 name="translationInformationFlagTIFCSI"
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 name="dialledServiceCAMELSubscriptionInformationDCSI"
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 <element
 name="uSSDGeneralCAMELServiceInformationUGCSI"
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 />
 <element
 name="shortMessageServiceCAMELSubscriptionInformationMOSMSCSI"
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 name="shortMessageServiceCAMELSubscriptionInformationMTSMSCSI"
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 <element name="iSTAlertTimer" minOccurs="0"/>
 <element name="cSAllocationRetentionpriority" minOccurs="0"/>
 <element name="iCSIndicator" minOccurs="0"/>
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 <element name="forwarded-toSubaddress" minOccurs="0"/>
 <element name="noReplyConditionTimer" minOccurs="0"/>
 <element name="maximumEntitledPriority" minOccurs="0"/>
 <element name="defaultPriority" minOccurs="0"/>
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 <element name="mSISDNAlertIndicator" minOccurs="0"/>
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 name="mTShortMessageServiceCAMELSubscriptionInformationMTSMSCSI"
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 name="mTSMSCSISGSNNegotiatedCAMELCapabilityHandling"
 minOccurs="0"
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 <element name="barringOfRoaming" minOccurs="0"/>
 <element name="operatorDeterminedBarringPLMNspecificData" minOccurs="0"/>
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 <element name="iCSIndicator" minOccurs="0"/>
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 <element name="staticWLANUERemoteIPAddressList" minOccurs="0"/>
 <element name="w-APNBarringTypeList" minOccurs="0"/>
 <element name="w-APNChargingDataList" minOccurs="0"/>
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 <element name="chargingCharacteristics" minOccurs="0"/>
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 <element
 name="secondaryOCSChargingFunctionName"
 minOccurs="0"
 />
 <element
 name="primaryChargingCollectionFunctionName"
 minOccurs="0"
 />
 <element
 name="secondaryChargingCollectionFunctionName"
 minOccurs="0"
 />
 <element name="w-APNIdentifierList" minOccurs="0"/>
 <element name="maxNumberAccessesList" minOccurs="0"/>
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 <element name="maxSubscribedBandwidth" minOccurs="0"/>
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 <element name="barringOfRoaming" minOccurs="0"/>
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 <element name="mOLRList" minOccurs="0"/>
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 <element name="aPNOIReplacement" minOccurs="0"/>
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 <element name="aPNConfigurationProfile" minOccurs="0"/>
 <element name="rFSP" minOccurs="0"/>
 <element name="vPLMNAddressAllowed-EPS" minOccurs="0"/>
 <element name="pDNGWIdentity" minOccurs="0"/>
 <element name="ePSPDNConnectedChargingCharacteristics" minOccurs="0"/>
 <element name="pDNGWAllocationType" minOccurs="0"/>
 <element name="aPNLevelAPNOIReplacement" minOccurs="0"/>
 <element name="closedSubscriberUserGroupInformation" minOccurs="0"/>
 <element name="listofAuthorizedvisitednetowrkidentifiers" minOccurs="0"/>
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 <element name="mIPSubscriberProfile" minOccurs="0"/>
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 name="IMSService"
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 >
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 <element name="registrationStatus"/>
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 <element name="secondaryOCSChargingFunctionName" minOccurs="0"/>

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 <extension base="sn:SuMServiceParameterType">

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 <complexType name="SuMServiceParameterType">

 <complexContent>

 <restriction base="xn:NrmClass"/>

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<element name="SuMIdentity" type="sn:SuMIdentityType" substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass" abstract="true"/>

<element name="SuMServiceParameter" type="sn:SuMServiceParameterType" substitutionGroup="xn:SubNetworkOptionallyContainedNrmClass" abstract="true"/>

</schema>

Annex B (informative):
Change history

|  |
| --- |
| **Change history** |
| **Date** | **Meeting** | **TDoc** | **CR** | **Rev** | **Cat** | **Subject/Comment** | **New version** |
| 2014-06 | SA#64 | SP-140332 | 0001 | - | F | Upgrade W3C XML Schema version from 1.0 to 1.1 | 11.1.0 |
|  |  | SP-140359 | 0002 | - | F | remove the feature support statements | 11.1.0 |
| 2014-09 | SA#65 | SP-140560 | 0003 | - | C | Update the link from Solution Set to Information Service due to the end of Release 12 | 12.0.0 |
| 2015-01 |  |  |  |  |  | Update to Rel-13(MCC) | 13.0.0 |
| 2016-06 | SA#72 | SP-160407 | 0004 | - | F | Update the link from IRP Solution Set to IRP Information Service | 13.1.0 |
| 2017-03 | SA#75 | - | - | - |  | Promotion to Release 14 without technical change | 14.0.0 |
| 2017-06 | SA#76 | SP-170502 | 0005 | - | F | Update the link from IRP Solution Set to IRP Information Service | 14.1.0 |
| 2017-06 | SA#76 | SP-170510 | 0006 | 1 | B | Update the XML Schema definitions to align with IS to support Configuration Management for mobile networks that include virtualized network functions | 14.1.0 |
| 2018-06 | - | - | - | - | - | Update to Rel-15 version (MCC) | **15.0.0** |
| 2020-07 | - | - | - | - | - | Update to Rel-16 version (MCC) | **16.0.0** |
| 2022-03 | - | - | - | - | - | Update to Rel-17 version (MCC) | **17.0.0** |
| 2024-04 | - | - | - | - | - | Update to Rel-18 version (MCC) | **18.0.0** |
| 2024-06 | SA#104 | SP-240810 | 0007 | - | F | Rel-18 CR 28.753 Remove SS-IS version link | **18.1.0** |
| 2024-09 | SA#105 | SP-241165 | 0009 | 1 | A | Rel-18 CR TS 28.753 Correction of XML references | **18.2.0** |