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| 3GPP TS 24.391 V18.0.0 (2024-04) | |
| Technical Specification | |
| 3rd Generation Partnership Project;  Technical Specification Group Core Network and Terminals;  Unstructured Supplementary Service Data (USSD) using IP Multimedia (IM) Core Network (CN) subsystem (IMS) Management Object (MO)  (Release 18) | |
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# 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.

# 1 Scope

The present document defines the unstructured supplementary service data (USSD) using IP Multimedia (IM) Core Network (CN) subsystem (IMS) management object (MO). The MO is compatible with OMA device management protocol specifications, version 1.2 and upwards, and is defined using the OMA DM device description framework as described in the enabler release definition OMA-ERELD\_DM-V1\_2 [2].

The USSD using IMS (USSI) MO consists of relevant configuration parameters that can be managed for the UE's USSI capabilities specified in 3GPP TS 24.390 [3].

# 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] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] OMA-ERELD-DM-V1\_2-20070209-A: "Enabler Release Definition for OMA Device Management, Version 1.2".

[3] 3GPP TS 24.390: "Unstructured Supplementary Service Data (USSD) using IP Multimedia (IM) Core Network (CN) subsystem IMS; Stage 3".

[4] 3GPP TS 23.221: "Architectural requirements".

[5] 3GPP TS 24.090: "Unstructured Supplementary Service Data (USSD); Stage 3".

[6] 3GPP TS 23.003: "Numbering, addressing and identification".

# 3 Definitions, symbols and abbreviations

## 3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

## 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

CN Core Network

DDF Device Description Framework

DM Device Management

EHPLMN Equivalent Home Public Land Mobile Network

HPLMN Home Public Land Mobile Network

IM IP Multimedia

IMS IP Multimedia core network Subsystem

IP Internet Protocol

MO Management Object

OMA Open Mobile Alliance

SIP Session Initiation Protocol

SNPN Stand-alone Non-Public Network

UE User Equipment

USSD Unstructured Supplementary Service Data

USSI USSD using IMS

# 4 USSI MO

The USSI MO is used to manage settings of the UE for USSI. The USSI MO covers configuration parameters for a UE that supports the USSI capabilities specified in 3GPP TS 24.390 [3].

The MO identifier is: urn:oma:mo:ext-3gpp-ussi:1.0.

Protocol compatibility: This MO is compatible with OMA DM 1.2.



Figure 4.1: USSI MO

# 5 MO configuration parameters

## 5.1 General

This clause describes the configuration parameters for the USSI MO.

## 5.2 Node: /*<X>*

This interior node acts as a placeholder for one or more accounts for a fixed node.

- Occurrence: OneOrMore

- Format: node

- Access Types: Get

- Values: N/A

The interior node is mandatory if the UE supports USSI capabilities specified in 3GPP TS 24.390 [3]. Support for a UE is defined by the UE role as specified in 3GPP TS 24.390 [3].

NOTE: One node is normally used. More nodes are only used in case the terminal supports multiple UICCs.

## 5.3 /*<X>*/Name

The Name leaf is a name for the USSI settings.

- Occurrence: ZeroOrOne

- Format: chr

- Access Types: Get

- Values: <User displayable name>

## 5.4 /*<X>*/USSD\_using\_CS\_domain\_only

The USSD\_using\_CS\_domain\_only leaf indicates HPLMN operator preference for invocation of originating USSD requests using the mechanism specified in 3GPP TS 24.090 [5]. This equates to "USSD requests are to be invoked via the CS domain" as described in 3GPP TS 23.221 [4].

NOTE: In absence of this configuration parameter, originating USSD request are invoked in domain used for originating voice sessions as described in 3GPP TS 23.221 [4].

- Occurrence: ZeroOrOne

- Format: null

- Access Types: Get, Replace

- Values: null

## 5.4A /*<X>*/3GPP\_PS\_data\_off

The interior node contains configuration parameters for 3GPP PS data off.

- Occurrence: ZeroOrOne

- Format: node

- Access Types: Get, Replace

- Values: N/A

## 5.4B /*<X>*/3GPP\_PS\_data\_off/USSI\_exempt

The leaf indicates whether the USSI is a 3GPP PS data off exempt service.

- Occurrence: One

- Format: bool

- Access Types: Get, Replace

- Values: 0, 1

0 - Indicates that the USSI is not a 3GPP PS data off exempt service.

1 - Indicates that the USSI is a 3GPP PS data off exempt service.

NOTE: This MO is used when the UE is in the HPLMN or the EHPLMN, or the UE is in the VPLMN and the USSI\_roaming\_exempt node is not configured.

## 5.4C /*<X>*/3GPP\_PS\_data\_off/USSI\_roaming\_exempt

The leaf indicates whether the USSI is a 3GPP PS data off exempt service when the UE is in the VPLMN.

- Occurrence: ZeroOrOne

- Format: bool

- Access Types: Get, Replace

- Values: 0, 1

0 - Indicates that the USSI is not a 3GPP PS data off roaming exempt service.

1 - Indicates that the USSI is a 3GPP PS data off roaming exempt service.

## 5.4D /*<X>*/SNPN\_Configuration

This interior node contains configuration parameters regarding a UE operating in SNPN access operation mode.

- Occurrence: ZeroOrOne

- Format: node

- Access Types: Get, Replace

- Values: N/A

## 5.4E /*<X>*/SNPN\_Configuration/<X>

This interior node acts as a placeholder for a list of:

a) SNPN identity; and

b) configuration parameters.

NOTE: For each of the elements in the list, a) must be present and at least one parameter of b) needs to appear.

A configuration parameter in an /<X>/SNPN\_Configuration/<X> node other than the SNPN\_identifier, is applicable when the UE selects an entry of "list of subscriber data":

a) with the SNPN identity of the subscribed SNPN which is the same as the SNPN identity in the SNPN\_identifier leaf.

- Occurrence: OneOrMore

- Format: node

- Access Types: Get, Replace

- Values: N/A

## 5.4F /*<X>*/SNPN\_Configuration/<X>/SNPN\_identifier

This leaf indicates the SNPN identity of the subscribed SNPN for which the list of configuration parameters are applicable.

- Occurrence: One

- Format: chr

- Access Types: Get, Replace

- Values: <PLMN><NID>

The PLMN and NID are in the format defined by 3GPP TS 23.003 [6], with each digit of the MCC and MNC of the PLMN and each digit of the assignment mode and NID value of the NID encoded as an ASCII character.

## 5.4G /*<X>*/SNPN\_Configuration/<X>/3GPP\_PS\_data\_off

The interior node contains configuration parameters for 3GPP PS data off.

- Occurrence: ZeroOrOne

- Format: node

- Access Types: Get, Replace

- Values: N/A

## 5.4H /*<X>*/SNPN\_Configuration/<X>/3GPP\_PS\_data\_off/ USSI\_exempt

The leaf indicates whether the USSI is a 3GPP PS data off exempt service.

- Occurrence: One

- Format: bool

- Access Types: Get, Replace

- Values: 0, 1

0 - Indicates that the USSI is not a 3GPP PS data off exempt service.

1 - Indicates that the USSI is a 3GPP PS data off exempt service.

NOTE: This MO is used when the UE is in the subscribed SNPN, or the UE is in the non-subscribed SNPN and the USSI\_non-subscribed\_exempt node is not configured.

## 5.4I /*<X>*/SNPN\_Configuration/<X>/3GPP\_PS\_data\_off/ USSI\_non-subscribed\_exempt

The leaf indicates whether the USSI is a 3GPP PS data off exempt service when the UE is in the non-subscribed SNPN.

- Occurrence: ZeroOrOne

- Format: bool

- Access Types: Get, Replace

- Values: 0, 1

0 - Indicates that the USSI is not a 3GPP PS data off non-subscribed exempt service.

1 - Indicates that the USSI is a 3GPP PS data off non-subscribed exempt service.

## 5.5 /*<X>*/Ext

The Ext is an interior node for where the vendor specific information about the USSI management is being placed (vendor meaning application vendor, device vendor etc.). Usually the vendor extension is identified by vendor specific name under the ext node. The tree structure under the vendor identified is not defined and can therefore include one or more un-standardized sub-trees.

- Occurrence: ZeroOrOne

- Format: node

- Access Types: Get

- Values: N/A

Annex A (informative):  
USSI MO DDF

This DDF is the standardized minimal set. A vendor can define its own DDF for the complete device. This DDF can include more features than this minimal standardized version.

<?xml version="1.0" encoding="UTF-8"?>

<!DOCTYPE MgmtTree PUBLIC "-//OMA//DTD-DM-DDF 1.2//EN"

"http://www.openmobilealliance.org/tech/DTD/DM\_DDF-V1\_2.dtd">

<MgmtTree>

<VerDTD>1.2</VerDTD>

<Man>--The device manufacturer--</Man>

<Mod>--The device model--</Mod>

<Node>

<NodeName/>

<DFProperties>

<AccessType>

<Get/>

</AccessType>

<Description>USSI configuration parameters</Description>

<DFFormat>

<node/>

</DFFormat>

<Occurrence>

<OneOrMore/>

</Occurrence>

<Scope>

<Permanent/>

</Scope>

<DFTitle>The Unstructured Supplementary Service Data (USSD) using IP Multimedia (IM) Core Network (CN) subsystem (IMS) Management Object (MO).</DFTitle>

<DFType>

<DDFName>urn:oma:mo:ext-3gpp-ussi:1.0</DDFName>

</DFType>

</DFProperties>

<Node>

<NodeName>Name</NodeName>

<DFProperties>

<AccessType>

<Get/>

</AccessType>

<DFFormat>

<chr/>

</DFFormat>

<Occurrence>

<ZeroOrOne/>

</Occurrence>

<Scope>

<Dynamic/>

</Scope>

<DFTitle>The name for the USSI setting.</DFTitle>

<DFType>

<MIME>text/plain</MIME>

</DFType>

</DFProperties>

</Node>

<Node>

<NodeName>USSD\_using\_CS\_domain\_only</NodeName>

<DFProperties>

<AccessType>

<Get/>

<Replace/>

</AccessType>

<DFFormat>

<null/>

</DFFormat>

<Occurrence>

<ZeroOrOne/>

</Occurrence>

<Scope>

<Dynamic/>

</Scope>

<DFTitle>The HPLMN operator preference for invocation of originating USSD requests.</DFTitle>

<DFType>

<MIME>text/plain</MIME>

</DFType>

</DFProperties>

</Node>

<Node>

<NodeName>3GPP\_PS\_data\_off</NodeName>

<DFProperties>

<AccessType>

<Get/>

<Replace/>

</AccessType>

<DFFormat>

<node/>

</DFFormat>

<Occurrence>

<ZeroOrOne/>

</Occurrence>

<Scope>

<Dynamic/>

</Scope>

<DFTitle>Configuration parameters for 3GPP PS data off.</DFTitle>

<DFType>

<DDFName/>

</DFType>

</DFProperties>

<Node>

<NodeName>USSI\_exempt</NodeName>

<DFProperties>

<AccessType>

<Get/>

<Replace/>

</AccessType>

<DFFormat>

<bool/>

</DFFormat>

<Occurrence>

<One/>

</Occurrence>

<Scope>

<Dynamic/>

</Scope>

<DFTitle>Whether the USSI is a 3GPP PS data off exempt service.</DFTitle>

<DFType>

<MIME>text/plain</MIME>

</DFType>

</DFProperties>

</Node>

<Node>

<NodeName>USSI\_roaming\_exempt</NodeName>

<DFProperties>

<AccessType>

<Get/>

<Replace/>

</AccessType>

<DFFormat>

<bool/>

</DFFormat>

<Occurrence>

<ZeroOrOne/>

</Occurrence>

<Scope>

<Dynamic/>

</Scope>

<DFTitle>Whether the USSI is a 3GPP PS data off roaming exempt service.</DFTitle>

<DFType>

<MIME>text/plain</MIME>

</DFType>

</DFProperties>

</Node>

</Node>

<Node>

<NodeName>SNPN\_Configuration</NodeName>

<!-- The SNPN\_Configuration node starts here. -->

<DFProperties>

<AccessType>

<Get/>

<Replace/>

</AccessType>

<DFFormat>

<node/>

</DFFormat>

<Occurrence>

<ZeroOrOne/>

</Occurrence>

<Scope>

<Permanent/>

</Scope>

<DFTitle>SNPN configuration parameters</DFTitle>

<DFType>

<DDFName/>

</DFType>

</DFProperties>

<Node>

<NodeName/>

<DFProperties>

<AccessType>

<Get/>

</AccessType>

<DFFormat>

<node/>

</DFFormat>

<Occurrence>

<OneOrMore/>

</Occurrence>

<Scope>

<Dynamic/>

</Scope>

<DFTitle>Configuration parameters for an SNPN.</DFTitle>

<DFType>

<DDFName/>

</DFType>

</DFProperties>

<Node>

<NodeName>SNPN\_identifier</NodeName>

<DFProperties>

<AccessType>

<Get/>

<Replace/>

</AccessType>

<DFFormat>

<chr/>

</DFFormat>

<Occurrence>

<One/>

</Occurrence>

<Scope>

<Permanent/>

</Scope>

<DFTitle>The SNPN identifier.</DFTitle>

<DFType>

<MIME>text/plain</MIME>

</DFType>

</DFProperties>

</Node>

<Node>

<NodeName>3GPP\_PS\_data\_off</NodeName>

<DFProperties>

<AccessType>

<Get/>

<Replace/>

</AccessType>

<DFFormat>

<node/>

</DFFormat>

<Occurrence>

<ZeroOrOne/>

</Occurrence>

<Scope>

<Dynamic/>

</Scope>

<DFTitle>Configuration parameters for 3GPP PS data off.</DFTitle>

<DFType>

<DDFName/>

</DFType>

</DFProperties>

<Node>

<NodeName>USSI\_exempt</NodeName>

<DFProperties>

<AccessType>

<Get/>

<Replace/>

</AccessType>

<DFFormat>

<bool/>

</DFFormat>

<Occurrence>

<One/>

</Occurrence>

<Scope>

<Dynamic/>

</Scope>

<DFTitle>Whether the USSI is a 3GPP PS data off exempt service.</DFTitle>

<DFType>

<MIME>text/plain</MIME>

</DFType>

</DFProperties>

</Node>

<Node>

<NodeName>USSI\_non-subscibed\_exempt</NodeName>

<DFProperties>

<AccessType>

<Get/>

<Replace/>

</AccessType>

<DFFormat>

<bool/>

</DFFormat>

<Occurrence>

<ZeroOrOne/>

</Occurrence>

<Scope>

<Dynamic/>

</Scope>

<DFTitle>Whether the USSI is a 3GPP PS data off non-subscribed exempt service.</DFTitle>

<DFType>

<MIME>text/plain</MIME>

</DFType>

</DFProperties>

</Node>

</Node>

</Node>

</Node>

<Node>

<NodeName>Ext</NodeName>

<!-- The Extension node starts here. -->

<DFProperties>

<AccessType>

<Get/>

</AccessType>

<DFFormat>

<node/>

</DFFormat>

<Occurrence>

<ZeroOrOne/>

</Occurrence>

<Scope>

<Dynamic/>

</Scope>

<DFTitle>A collection of all Extension objects.</DFTitle>

<DFType>

<DDFName/>

</DFType>

</DFProperties>

</Node>

</Node>

</MgmtTree>

Annex B (informative):  
Change history

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Change history** | | | | | | | |
| **Date** | **TSG #** | **TSG Doc.** | **CR** | **Rev** | **Subject/Comment** | **Old** | **New** |
| 2014-05 |  |  |  |  | Version 0.1.0: based on C1-141702, C1-141703, C1-141704 |  | 0.1.0 |
| 2014-06 | CT-64 | CP-140281 |  |  | Version 1.0.0 created for presentation for information and approval | 0.1.0 | 1.0.0 |
| 2014-06 | CT-64 | CP-140455 |  |  |  | 1.0.0 | 2.0.0 |
| 2014-06 | Post CT-64 |  |  |  | Version 12.0.0 created after approval at CT-64 | 2.0.0 | 12.0.0 |
| 2014-09 | CT-65 | CP-140668 | 0001 |  | Fixing access types not aligned in clause 5 and annex A | 12.0.0 | 12.1.0 |
| 2014-12 | CT-66 | CP-140853 | 0002 |  | Resolving editor's note on registration of MOID with OMA | 12.1.0 | 12.2.0 |
| 2015-12 | CT-70 |  |  |  | Upgrade to Rel-13 | 12.2.0 | 13.0.0 |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Change history** | | | | | | | |
| **Date** | **Meeting** | **TDoc** | **CR** | **Rev** | **Cat** | **Subject/Comment** | **New version** |
| 2017-03 | CT-75 | CP-170130 | 0003 |  | B | USSI configuration for 3GPP PS Data Off | 14.0.0 |
| 2018-06 | CT-80 | CP-181074 | 0004 | 2 | B | USSI configuration for 3GPP PS Data Off2 | 15.0.0 |
| 2018-12 | CT-82 | CP-183077 | 0005 |  | F | Addition of the object identifier in the DDF of the 3GPP Management Object | 16.0.0 |
| 2022-03 | CT-95e | CP-220237 | 0006 | 1 | B | SNPN configuration for USSI | 17.0.0 |
| 2024-04 | - | - | - | - | - | Update to Rel-18 version (MCC) | **18.0.0** |