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Approved BDGSEACK [Jeff Li]	Checked	Date 2018-09-05	Rev X	Reference

## MTAS Service Data Structure

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## 1 General Information

### 1.1 Revision history

REVISION	RELEASE DATE	REVISED BY	REASON FOR REVISION
A	2012-09-29	ELEEERIK	Clone from 2/190 01-CRA 119 2106 rev K Support for Closed User Group service added. Support for Call Completion on Not Logged-in service added.
B	2013-09-24	EGERGMA	Operator-user-common-data is extended to support mmtel-charging-profile element  Operator-northbound-call-control is extended to support protocol element  Incoming-communication-barring, outgoing-communication-barring, communication-diversion, and communication-distribution are extended to support mmt-serv:served-identity condition
C	2013-16-05	ERATLIM	Updated for MTAS 14B release

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D	2014-12-02	ETKVADI	<p>Updated for MTAS 15A release:</p> <ul style="list-style-type: none"> <li>- Updated for SIP Trunking (ST AS) <ul style="list-style-type: none"> <li>• operator-sip-trunking-control</li> <li>• operator-st-common-data</li> <li>• operator-st-communication-diversion</li> <li>• operator-st-communication-barring</li> <li>• operator-st-malicious-communication-identification</li> <li>• operator-st-originating-identity-presentation</li> <li>• operator-st-operator-controlled-outgoing-barring-programs</li> </ul> </li> <li>- operator-originating-calling-name-identity-presentation is extended to support mmt-op:external-query-type.</li> <li>- operator-user-call-admission-control is extended to support mmt-op:fixed-active-limit</li> <li>- Added operator-media-policy.xsd</li> <li>- Updated with answer confirmation for ad-hoc conference.</li> </ul> <p>Updated service conference to support element answer-confirmation.</p>
E	2015-04-13	ERATLIM	<p>Updated.</p> <ul style="list-style-type: none"> <li>• operator- voice-mail is extended to support mmt-op: voice-mail-retrieval-address.</li> <li>• operator-northbound-call-control is extended to support mmt-op:imsi.</li> </ul>
F	2015-06-18	ERATLIM	<p>Updated in “SIP Trunking Operator Services – st-op” is operator-st-terminating-identity-presentation and operator-st-terminating-identity-presentation-restriction added</p>
G	2015-10-30	ERATLIM	<p>Updated in chapter 3.7 service</p> <ul style="list-style-type: none"> <li>• operator-multi-device-user-call-admission-control is added</li> <li>• operator- multi-device-conference-policy is added</li> <li>• operator-communication-diversion is extended to support element mmt-op:unconditional</li> </ul>
H	2016-02-02	ERATLIM	<p>operator-user-common-data is extended to support mmt-op:feature-tag-preferences and mmt-op: feature-tags</p>

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J	2016-07-04	ERATLIM	Added new service operator-dialog-event-notifier in list in chapter 3.7 and in the Table 3.
K	2016-09-08	EDONFAR	Updates: <ul style="list-style-type: none"> <li>Added in Table 3 note 33 because element block-device-group-usage is added in service operator-dialog-event-notifier.</li> <li>Added in Table 3 note 34 because element subscription is added in service operator-user-common-data.</li> <li>Chapters 3.8 and 4.2.1 updated due to the removal of Scheduled Conference AS in virtualized MTAS.</li> </ul>
L	2017-02-21	EANSAHM	Added/Updated. <ul style="list-style-type: none"> <li>SCC AS transparent data schema description in table 1 and new chapter 3.18 Top level schema SCC.</li> <li>New chapter 3.19 Top level SCC AS transparent data structure – scc-data.</li> <li>Corrected the ShDataType_Rel6 to ShDataType_Rel10.</li> <li>In Table 3 note 35: operator-common-data is extended to support mmt-op: vtp-domain and operator-flexible-identity-presentation is extended to support mmt-op:fip-suppression.</li> <li>Corrected title for chapter 4.</li> <li>In Table 3, new service operator-unified-communication-routing.</li> <li>In Table 3, note 36: operator-common-data is extended to support mmt-op:subscriber-type and operator-user-common-data is extended to support mmt-op:ucr-served-identity.</li> </ul>
M	2017-06-07	ERAHEJT	Added in Table 3, note 37: operator-common-data is extended to support mmt-op:charging-avp-list, mmt-op: service-specific-info, mmt-op:service-specific-type and mmt-op:service-specific-data
N	2017-06-07	ERATLIM	Editorial updates.
S	2017-08-11	EJANYNG	Added multi-persona service support in Chapter 3.7 and Table 3.

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T	2017-11-06	ERATLIM	<p>In Table 3, added notes 38 and 40: operator-user-common-data is extended to support mmt-op:mobile-subscription-list, mmt-op:subscription and attributes cs-capable, default-subscription, id, impi, imsi and msisdn.</p> <p>The operator- flexible-identity-presentation is extended to support mmt-op:fip-use-default-impu-identity.</p> <p>Added note 39: operator-common-data is extended to support mmt-op:number-normalization-phone-context.</p>
U	2017-11-24	EOPSTAA	Removed mmt-op:fip-use-default-impu-identity from note 38.
V	2018-05-15	ERATLIM	<p>Added in chapter 3.7 the schema operator-communication-setup-announcement.xsd</p> <p>In Table 3, added service operator-communication-setup-announcement, notes 41 and 42:</p> <p>operator-common-data is extended to support mmt-op:subscriber-state and services operator-incoming-communication-barring and operator-outgoing-communication-barring are extended to support &lt;mmt-op:subscriber-state&gt; condition element</p> <p>operator-incoming-communication-barring and operator-outgoing-communication-barring are extended to support &lt;mmt-op:status-code&gt; and &lt;mmt-op:reason-header&gt; action elements</p>
X	2018-09-04	ERAHEJT	<p>In Table 3, added notes 43-46:</p> <p>operator-hotline is extended to support mmt-op:whitelist, attribute activated and mmt-op:hotline-number.</p> <p>operator-originating-identity-presentation-restriction is extended to support mmt-op:priority-restriction.</p> <p>operator-outgoing-communication-barring is extended to support mmt-op:b-number-type, mmt-op:b-network-type and mmt-op:localness.</p> <p>operator-communication-setup-announcement is extended to support conditions ss:rule-deactivated, cp:identity, ss:media, cp:validity, mmt-serv:valid-periods, mmt-serv:invalidity, mmt-serv:served-identity and mmt-serv:in-sip-request.</p>

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## 1.2 Purpose

This document presents the XML schemas used in MTAS to validate the MMTel user, group service data (operator and user parts) and service number data (operator part) and explain their structure.

The service data is stored as transparent data in the HSS using the Sh interface.

## 1.3 Scope

This document captures or refers to the XML schemas that define the transparent data that is carried over the Sh interface.

For details of the signaling flows and message contents of the Sh interface, refer to [4].

For details of the Diameter protocol as used on the Sh interface refer to [5].

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## 2 Schema Overview

The XML schemas presented in this document are used to validate the multimedia telephony service data in MTAS. This data is stored as transparent data on the HSS.

In order to build a complete schema to validate the service data for MTAS, different schemas must be imported or included. For further information on import and include, see reference [3].

### 2.1 Namespaces

The XML elements on this interface are defined in a number of distinct namespaces. Each namespace is identified by a globally unique string. XML supports namespace binding which maps the full namespace to a short string. The short string is used as a prefix to elements within an XML document.

Table 1 shows the namespaces supported on this interface and the preferred prefix for each, as used in this document.

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Prefix	Namespace	Purpose
cp	urn:ietf:params:xml:ns:common-policy	Common Policies for privacy preferences as defined by the IETF
grp-data	<a href="http://schemas.ericsson.com/mmtel-group/service-data">http://schemas.ericsson.com/mmtel-group/service-data</a>	Top level MMTel group transparent data structure
grp-op	<a href="http://schemas.ericsson.com/mmtel-group/operator-service-data">http://schemas.ericsson.com/mmtel-group/operator-service-data</a>	MMTel group operator services
info	urn:ietf:params:xml:ns:conference-info	A Session Initiation Protocol (SIP) Event Package for Conference State
mct	http://schemas.ericsson.com/mtas/mmtel/common-types	MTAS Common types
mmt-data	<a href="http://schemas.ericsson.com/mmtel/service-data">http://schemas.ericsson.com/mmtel/service-data</a>	Top level MMTel user transparent data structure
mmt-op	<a href="http://schemas.ericsson.com/mmtel/operator-service-data">http://schemas.ericsson.com/mmtel/operator-service-data</a>	MMTel operator services
mmt-sc-data	<a href="http://schemas.ericsson.com/mmtel/schedconf-service-data">http://schemas.ericsson.com/mmtel/schedconf-service-data</a>	Top level MMTel user scheduled conference transparent data structure
mmt-serv	<a href="http://schemas.ericsson.com/mmtel/services">http://schemas.ericsson.com/mmtel/services</a>	Ericsson defined services for inclusion in the MMTel user-data part
ocp	urn:oma:xml:xm:common-policy	Common Policies for mobile as defined by OMA
scc-data	http://schemas.ericsson.com/scc/scc-data	Top level SCC AS transparent data structure
sn-data	http://schemas.ericsson.com/mmtel-serviceno/service-data	Top level MMTel Service Number transparent data structure
sn-op	http://schemas.ericsson.com/mmtel-serviceno/operator-service-data	MMTel Service Number operator services
ss	<a href="http://uri.etsi.org/ngn/params/xml/simservs/xcap">http://uri.etsi.org/ngn/params/xml/simservs/xcap</a>	'User Part' of the MMTel document as defined by ETSI/TISPAN
st-data	<a href="http://schemas.ericsson.com/st/service-data">http://schemas.ericsson.com/st/service-data</a>	Top level ST AS transparent data structure
st-op	<a href="http://schemas.ericsson.com/st/operator-service-data">http://schemas.ericsson.com/st/operator-service-data</a>	SIP Trunking operator services
st-serv	<a href="http://schemas.ericsson.com/st/services">http://schemas.ericsson.com/st/services</a>	Ericsson defined services for inclusion in the SIP Trunking user-data part
st-ref-data	<a href="http://schemas.ericsson.com/st-ref/service-data">http://schemas.ericsson.com/st-ref/service-data</a>	SIP Trunking Referral
xs	<a href="http://www.w3.org/2001/XMLSchema">http://www.w3.org/2001/XMLSchema</a>	Standard XML definition
xsi	<a href="http://www.w3.org/2001/XMLSchema-instance">http://www.w3.org/2001/XMLSchema-instance</a>	Schema structures for direct use in XML instance documents.

Table 1 – Namespaces and Prefix mapping



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## 2.2 Namespace Relationships

There are dependency relationships between some of the namespaces where one namespace imports another and refers to types or elements in the other namespace.

The namespace dependencies for the MMTel user service data are shown in Figure 1.

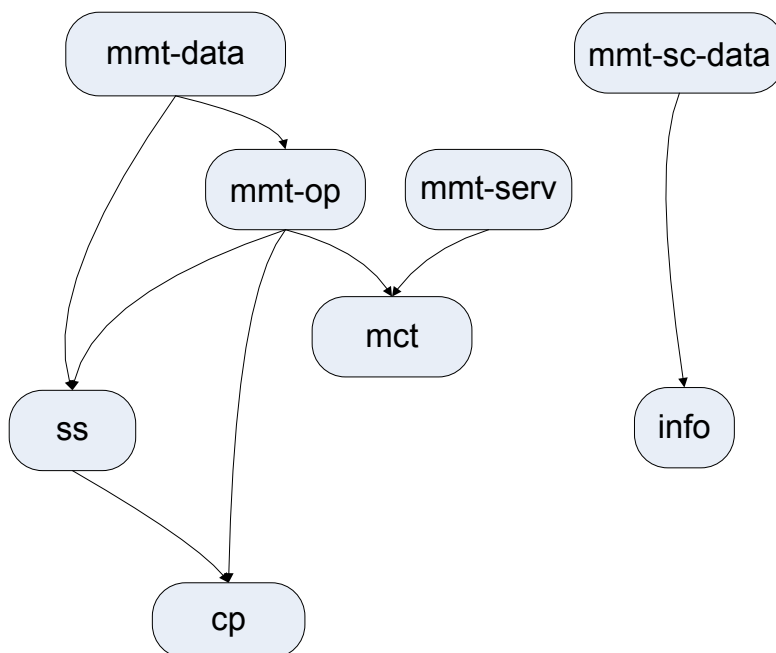


Figure 1 – Namespace dependencies – user data

The namespace dependencies for the MMTel group service data are shown in Figure 2.

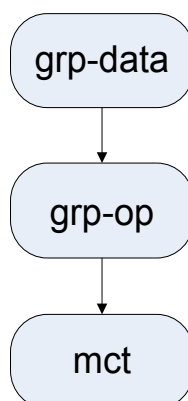


Figure 2 – Namespace dependencies – group data

The namespace dependencies for the MMTel Service number service data are shown in Figure 3.

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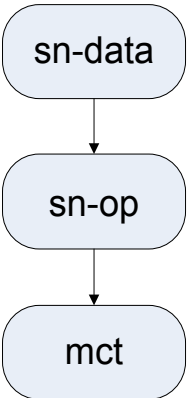


Figure 3 – Namespace dependencies – service number data

The namespace dependencies for the ST AS service data are shown in Figure 4.

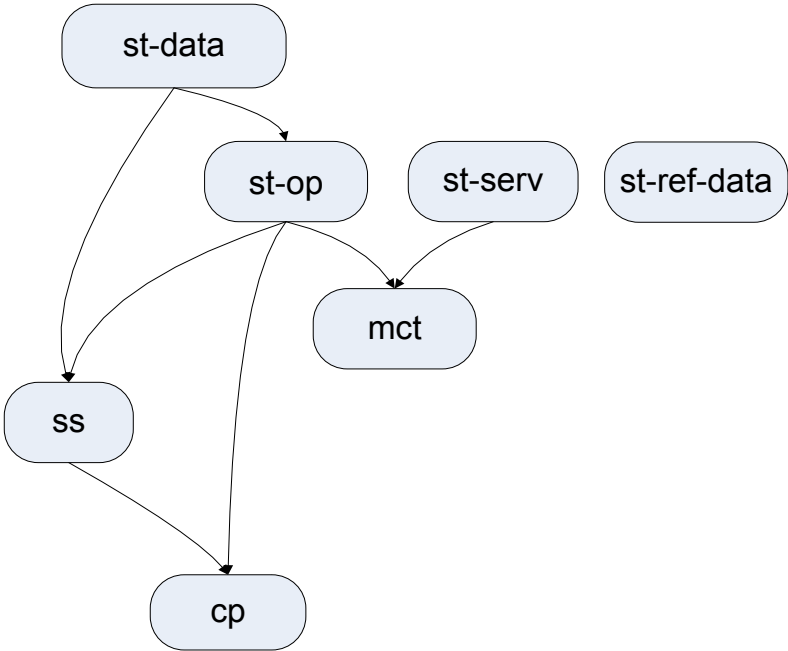


Figure 4 – Namespace dependencies – ST AS

Note that it is also possible for elements in one namespace to allow for the inclusion of elements and attributes from another namespace without an explicit dependency. The ‘ss’ and ‘cp’ namespaces both include such points of extensibility.

**3 XML Schemas**

**3.1 Sh interface schema**

Description: this schema defines the elements for the generic Sh interface itself – this is from ref [5] and included here for convenience.

Namespace: none (this uses the global namespace)

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File: ShDataType\_Rel13.xsd

### 3.2 Top level schema

Description: this single schema file covers all of the schemas for use on the Sh interface for MTAS. It includes the Sh interface schema and imports the MTAS services transparent data schema, thereby covering all relevant schemas. It can be used to validate entire Sh requests and responses including both generic and MTAS-specific parts.

Namespace: none (this uses the global namespace)

File: mtas-sh-data.xsd

Includes: ShDataType\_Rel13.xsd

Imports:

- mtas-services-transparent-data.xsd
- mmtel-group/schemas/group-services-transparent-data.xsd
- mtas-schedconf-services-transparent-data.xsd

### 3.3 Top level MMTel user transparent data structure – mmt-data

The top level for the MMTel user transparent data structure is defined in the 'mmt-data' namespace. This includes the breakdown into a section for user configurable data and for operator-only data.

Namespace: <http://schemas.ericsson.com/mmtel/service-data>

File : mtas-services-transparent-data.xsd

Imports:

- mtas-services.xsd (see ref [1])
- mtas-operator-services.xsd

### 3.4 MTAS Common Types – mct

For the MTAS common types in the 'mct' namespace see ref [2].

### 3.5 Simulation Services – ss

For the simulation services in the 'ss' namespace and for the 'cp' and 'ocp' namespaces used in conjunction with them see ref [1].

### 3.6 Ericsson-Specific MMTel User Services – mmt-serv

For the Ericsson-specific user services in the 'mmt-serv' namespace see ref [1].

### 3.7 MMTel Operator Services – mmt-op

The operator service data for the MMTel user services are defined in the 'mmt-op' namespace.

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Top level file: mtas-operator-services.xsd

Namespace: <http://schemas.ericsson.com/mmtel/operator-service-data>

Includes:

- operator-service-data.xsd<sup>1</sup>
- operator-communication-diversion.xsd
- operator-communication-barring.xsd
- operator-originating-identity-presentation.xsd
- operator-terminating-identity-presentation.xsd
- operator-supplementary-service-codes.xsd
- operator-conference.xsd
- operator-outgoing-barring-programs.xsd
- operator-controlled-outgoing-barring-programs.xsd
- operator-cdiv-no-answer-timer.xsd
- operator-voice-mail.xsd
- operator-communication-waiting.xsd
- operator-carrier-select.xsd
- operator-carrier-pre-select.xsd
- operator-calling-name-identity-presentation.xsd
- operator-dial-tone-management.xsd
- operator-malicious-communication-identification.xsd
- operator-abbreviated-dialing.xsd
- operator-priority-call.xsd
- operator-three-pty.xsd
- operator-common-data.xsd<sup>2</sup>
- operator-user-cac.xsd
- operator-cac-group-membership.xsd
- operator-call-completion.xsd
- operator-carrier-select-rn.xsd
- operator-carrier-pre-select-rn.xsd
- operator-advice-of-charge.xsd
- operator-dynamic-black-list.xsd
- operator-communication-distribution.xsd
- operator-malicious-communication-rejection.xsd
- operator-media-policy.xsd
- operator-multi-device-conference-policy.xsd
- operator-multi-device-user-call-admission-control
- operator-user-common-data.xsd
- operator-explicit-communication-transfer.xsd
- operator-calling-party-category.xsd
- operator-customized-alerting-tone.xsd
- operator-flexible-identity-presentation.xsd
- operator-session-transfer-to-own-device.xsd
- operator-call-return.xsd
- operator-hotline.xsd
- operator-originating-calling-name-identity-presentation.xsd
- operator-closed-user-group.xsd
- operator-number-portability-announcement.xsd

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- operator-distinctive-ring.xsd
- operator-dialog-event-notifier.xsd
- operator-unified-communication-routing.xsd
- operator-multi-persona.xsd
- operator-communication-setup-announcement.xsd

Note 1: this file defines the abstract type for the operator part of service data and defines common types used by more than one service.

Note 2: this file defines common data that is available to each of the other operator services.

A summary of the operator services and the release in which they were introduced is given in Table 2 and Table 3.

Note: It is the same functional contents in MTAS 4.0 and MTASv 1.0 and in MTAS 4.2 and MTASv 1.2 and so on.

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Service Name	2.0	3.0	3.1	11A	11B	12	13	14A	14B	15A
operator-abbreviated-dialing	-	-	X	X	X	X	X	X	X	X
operator-advice-of-charge	-	-	X	X	X	X	X	X	X	X
operator-call-admission-control-group-membership	-	-	X	X	X	X	X	X	X	X
operator-call-completion	-	-	X	X	X	X	X	X	X	X
operator-call-completion-monitor-opt-out	-	-	X	X	X	X	X	X	X	X
operator-call-return	-	-	-	-	-	-	X	X	X	X
operator-calling-name-identity-presentation	-	X	X	X	X	X	X	X	X	X
operator-calling-party-category	-	-	-	-	X	X	X	X	X	X
operator-carrier-pre-select	-	X	X	X	X	X	X	X	X	X
operator-carrier-pre-select-rn	-	-	X	X	X	X	X	X	X	X
operator-carrier-select	-	X	X	X	X	X	X	X	X	X
operator-carrier-select-rn	-	-	X	X	X	X	X	X	X	X
operator-closed-user-group	-	-	-	-	-	-	X	X	X	X
operator-common-data	-	-	X	X <sup>2</sup>	X <sup>10</sup>	X	X <sup>17</sup>	X	X	X
operator-communication-distribution	-	-	X	X	X <sup>9,12,13</sup>	X	X <sup>16</sup>	X <sup>20</sup>	X <sup>23</sup>	X
operator-communication-diversion	X	X	X <sup>1</sup>	X <sup>3</sup>	X <sup>8,9,12</sup>	X	X	X <sup>20</sup>	X	X <sup>27</sup>
operator-communication-diversion-no-answer-timer	-	X	X	X	X	X	X	X	X	X
operator-communication-waiting		X	X	X	X	X	X	X	X	X
operator-conference	X	X	X	X	X	X	X	X	X	X <sup>26</sup>
operator-customized-alerting-tone	-	-	-	-	-	X	X	X	X	X

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operator-dial-tone-management	-	X	X	X	X	X	X	X	X	X
operator-dynamic-black-list	-	-	X	X	X	X	X	X	X	X
operator-explicit-communication-transfer	-	-	-	-	X	X	X	X	X	X
operator-flexible-identity-presentation	-	-	-	-	-	X	X	X	X	X
operator-hotline	-	-	-	-	-	-	X	X	X	X
operator-incoming-communication-barring	X	X	X	X <sup>4</sup>	X <sup>8,9,12,14</sup>	X	X	X <sup>20</sup>	X	X <sup>27</sup>
operator-malicious-communication-identification	-	-	X	X	X	X	X	X	X <sup>22</sup>	X
operator-malicious-communication-rejection	-	-	-	X	X	X	X	X	X	X
operator-media-policy	-	-	-	-	-	-	-	-	-	X
operator-northbound-call-control	-	-	-	-	-	X	X <sup>15</sup>	X <sup>19</sup>	X	X <sup>29</sup>
operator-controlled-outgoing-barring-programs	-	X	X	X <sup>5</sup>	X	X	X	X	X	X
operator-originating-calling-name-identity-presentation	-	-	-	-	-	-	X	X	X	X <sup>24</sup>
operator-originating-identity-presentation	X	X	X	X	X	X	X	X	X	X
operator-originating-identity-presentation-restriction	X	X	X	X	X	X	X	X	X	X
operator-outgoing-barring-programs	X	X	X	X	X	X	X	X	X	X
operator-outgoing-communication-barring	X	X	X	X <sup>4</sup>	X <sup>8,9,12,14</sup>	X	X	X <sup>20</sup>	X	X <sup>27</sup>
operator-priority-call	-	-	X	X	X	X	X	X	X	X
operator-session-transfer-to-own-device	-	-	-	-	-	X	X	X	X	X
operator-supplementary-service-codes	X	X	X	X <sup>6</sup>	X	X	X	X	X	X

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operator-terminating-identity-presentation	X	X	X	X	X	X	X	X	X	X
operator-terminating-identity-presentation-restriction	X	X	X	X	X	X	X	X	X	X
operator-three-pty	-	-	X	X	X	X	X	X	X	X
operator-user-call-admission-control	-	-	X	X	X	X	X	X	X	X <sup>25</sup>
operator-user-common-data	-	-	-	X <sup>7</sup>	X <sup>11</sup>	X	X	X <sup>18</sup>	X <sup>21</sup>	X
operator-voice-mail	-	X	X	X	X	X	X	X	X	X <sup>28</sup>

Table 2 - Operator services included by MTAS releases 2.0 to 15A



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Service Name	4.0	4.1	4.3	4.4	4.6	4.7	4.8	4.9	4.11	4.12
operator-abbreviated-dialing	X	X	X	X	X	X	X	X	X	X
operator-advice-of-charge	X	X	X	X	X	X	X	X	X	X
operator-call-admission-control-group-membership	X	X	X	X	X	X	X	X	X	X
operator-call-completion	X	X	X	X	X	X	X	X	X	X
operator-call-completion-monitor-opt-out	X	X	X	X	X	X	X	X	X	X
operator-call-return	X	X	X	X	X	X	X	X	X	X
operator-calling-name-identity-presentation	X	X	X	X	X	X	X	X	X	X
operator-calling-party-category	X	X	X	X	X	X	X	X	X	X
operator-carrier-pre-select	X	X	X	X	X	X	X	X	X	X
operator-carrier-pre-select-rn	X	X	X	X	X	X	X	X	X	X
operator-carrier-select	X	X	X	X	X	X	X	X	X	X
operator-carrier-select-rn	X	X	X	X	X	X	X	X	X	X
operator-closed-user-group	X	X	X	X	X	X	X	X	X	X
operator-common-data	X	X	X	X	X <sup>35</sup>	X <sup>37</sup>	X <sup>36</sup>	X <sup>39</sup>	X <sup>41</sup>	X
operator-communication-distribution	X	X	X	X	X	X	X	X	X	X
operator-communication-diversion	X <sup>31</sup>	X	X	X	X	X	X	X	X	X
operator-communication-diversion-no-answer-timer	X	X	X	X	X	X	X	X	X	X
operator-communication-setup-announcement	-	-	-	-	-	-	-	-	X	X <sup>46</sup>
operator-communication-waiting	X	X	X	X	X	X	X	X	X	X
operator-conference	X <sup>30</sup>	X	X	X	X	X	X	X	X	X
operator-customized-alerting-tone	X	X	X	X	X	X	X	X	X	X
operator-dial-tone-management	X	X	X	X	X	X	X	X	X	X
operator-dialog-event-notifier	-	-	X	X <sup>33</sup>	X	X	X	X	X	X
operator-dynamic-black-list	X	X	X	X	X	X	X	X	X	X
operator-explicit-communication-transfer	X	X	X	X	X	X	X	X	X	X
operator-flexible-identity-presentation	X	X	X	X	X <sup>35</sup>	X	X	X	X	X
operator-hotline	X	X	X	X	X	X	X	X	X	X <sup>43</sup>
operator-incoming-communication-barring	X	X	X	X	X	X	X	X	X <sup>41,42</sup>	X

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operator-malicious-communication-identification	X	X	X	X	X	X	X	X	X	X
operator-malicious-communication-rejection	X	X	X	X	X	X	X	X	X	X
operator-media-policy	X	X	X	X	X	X	X	X	X	X
operator-multi-device-conference-policy	X	X	X	X	X	X	X	X	X	X
operator-multi-device-user-call-admission-control	X	X	X	X	X	X	X	X	X	X
operator-multi-persona	-	-	-	-	-	-	X	X	X	X
operator-northbound-call-control	X	X	X	X	X	X	X	X	X	X
operator-controlled-outgoing-barring-programs	X	X	X	X	X	X	X	X	X	X
operator-originating-calling-name-identity-presentation	X	X	X	X	X	X	X	X	X	X
operator-originating-identity-presentation	X	X	X	X	X	X	X	X	X	X
operator-originating-identity-presentation-restriction	X	X	X	X	X	X	X	X	X	X
operator-outgoing-barring-programs	X	X	X	X	X	X	X	X	X	X
operator-outgoing-communication-barring	X	X	X	X	X	X	X	X	X <sup>41,42</sup>	X <sup>45</sup>
operator-priority-call	X	X	X	X	X	X	X	X	X	X
operator-session-transfer-to-own-device	X	X	X	X	X	X	X	X	X	X
operator-supplementary-service-codes	X	X	X	X	X	X	X	X	X	X
operator-terminating-identity-presentation	X	X	X	X	X	X	X	X	X	X
operator-terminating-identity-presentation-restriction	X	X	X	X	X	X	X	X	X	X <sup>44</sup>
operator-three-pty	X	X	X	X	X	X	X	X	X	X
operator-unified-communication-routing	-	-	-	-	-	X	X	X	X	X
operator-user-call-admission-control	X	X	X	X	X	X	X	X	X	X
operator-user-common-data	X	X <sup>32</sup>	X	X <sup>34</sup>	X	X	X <sup>36</sup>	X <sup>38,40</sup>	X	X
operator-voice-mail	X	X	X	X	X	X	X	X	X	X

Table 3 - Operator services included by MTAS releases 4.0/1.4 and later

Note 1: In MTAS 3.1 the operator-communication-diversion service is extended to include the <not-reachable> element.

Note 2: In MTAS 11A operator-common-data is extended to include the <language-tag> element.

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Note 3: In MTAS 11A operator-communication-diversion is extended to include the <user-no-reply-timer> and <rule-no-reply-timer> elements.

Note 4: In MTAS 11A the incoming-communication-barring and outgoing-communication-barring services are extended to support <number-match> elements for matching partial numbers.

Note 5: In MTAS 11A FD1 operator-controlled-outgoing-barring-programs is extended to include operator-permitted-program and to allow more categories for each program.

Note 6: In MTAS 11A operator-supplementary-service-codes is extended to include the <pin-failures> element.

Note 7: user-common-data is added in MTAS 11A FD1

Note 8: In MTAS 11B operator-communication-diversion and operator-communication-barring are extended to support Do Not Disturb service and to support playing generic announcement. In operator-communication-diversion, <do-not-disturb> and <play-announcement> elements are appended in the actions part. In operator-communication-barring, the <do-not-disturb> and <play-announcement> elements are added in operator-incoming-communication-barring part, and <play-announcement> element is added in operator-outgoing-communication-barring part.

Note 9: In MTAS 11B operator-incoming-communication-barring, operator-outgoing-communication-barring, and operator-communication-diversion are extended to support the mmt-serv:valid-periods condition. Furthermore, operator-incoming-communication-barring, operator-outgoing-communication-barring, operator-communication-diversion, and operator-communication-distribution are extended to support the mmt-serv:invalidity condition. In MTAS 11B operator-outgoing-communication-barring is also extended to support the carrier condition.

Note 10: In MTAS 11B operator-common-data is extended to support rule-global-limit element.

Note 11: In MTAS 11B operator-user-common-data is extended to support holiday-list element.

Note 12: In MTAS 11B operator-communication-diversion, operator-outgoing-communication-barring, operator-incoming-communication-barring, and operator-communication-distribution is extended to support rule-limit element.

Note 13: In MTAS 11B operator-communication-distribution is extended to support FCD Divert-Primary.

Note 14: Additional MTAS 11B updates: in operator-communication-barring.xsd, the <play-segmented-announcement> element is added in both the operator-incoming- and operator-outgoing-communication-barring parts.

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Note 15: In MTAS 13, operator-northbound-call-control is extended to support Parlay X data.

Note 16: In MTAS 13A the communication-distribution service is extended to include the ss:no-reply-timer at service and rule granularity.

Futhermore new conditions were introduced: ss:anonymous, ss:busy, cp:identity, ss:media, ss:not-registered, ss:no-answer, ss:presence-status, ss:not-reachable.

Futhermore new actions were introduced: mmt-serv:flexible-distribution and mmt-serv:play-announcement.

Note 17: In MTAS 13A operator-common-data is extended to include the <display-name> element.

Note 18: In MTAS 14A operator-user-common-data is extended to support mmtel-charging-profile element.

Note 19: In MTAS 14A operator-northbound-call-control is extended to support protocol element.

Note 20: In MTAS 14A incoming-communication-barring, outgoing-communication-barring, communication-diversion, and communication-distribution are extended to support mmt-serv:served-identity condition. This is controlled by the mmt-op: served-identity element which can be used in the “conditions” part of the operator data.

Note 21: In MTAS 14B operator-user.common-data is extended to support mmt-op:in-sip-request-condition, mmt-op:in-sip-request-condition-list, mmt-op:flexcondition and mmt-op:auto-answer-avoidance-condition. The latter is controlling the extended usage of the auto-answer-avoidance attribute in mmt-serv:target in mmt-serv:user-common-data.

Note 22: In MTAS 14B operator-malicious-communication-identification is extended to support mmt-op:mcid-orig-mode.

Note 23: In MTAS 14B user-common-data is extended to support mmt-op:in-sip-request-condition, mmt-op:in-sip-request-condition-list and mmt-op:flexcondition.

Note 24: In MTAS 15A operator-originating-calling-name-identity-presentation is extended to support mmt-op:external-query-type.

Note 25: In MTAS 15A operator-user-call-admission-control is extended to support mmt-op:fixed-active-limit.

Note 26: In MTAS 15A operator-conference is extended to support mmt-op:answer-confirmation.

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Note 27: In MTAS 15A service communication-diversion is extended to support cp:ruleset and mmt-op:ruleset-for-post-evaluation elements for pre- and post-evaluation of ruleset in the operator configuration. The services incoming-communication-barring and outgoing-communication-barring are extended to support mmt-op:unconditional element.

Note 28: In MTAS 15A operator- voice-mail is extended to support mmt-op: voice-mail-retrieval-address.

Note 29: In MTAS 15A operator-northbound-call-control is extended to support mmt-op:imsi.

Note 30: In MTAS 4.0 operator-conference is extended to support mmt-op:block-dialout-invitations.

Note 31: In MTAS 4.0 operator-communication-diversion is extended to support mmt-op:unconditional.

Note 32: In MTAS 4.1 operator- user-common-data is extended to support mmt-op:feature-tag-preferences and mmt-op:feature-tags.

Note 33: In MTAS 4.4 operator- dialog-event-notifier is extended to support mmt-op: block-device-group-usage.

Note 34: In MTAS 4.4 operator-user-common-data is extended to support mmt-op:subscription.

Note 35: In MTAS 4.6 operator-common-data is extended to support mmt-op: vtp-domain and operator- flexible-identity-presentation is extended to support mmt-op:fip-suppression.

Note 36: In MTAS 4.8 operator-common-data is extended to support mmt-op:subscriber-type and operator-user-common-data is extended to support mmt-op:ucr-served-identity.

Note 37: In MTAS 4.7 operator-common-data is extended to support mmt-op:charging-avp-list, mmt-op:service-specific-info, mmt-op:service-specific-type and mmt-op:service-specific-data.

Note 38: In MTAS 4.9 operator-user-common-data is extended to support mmt-op:mobile-subscription-list and mmt-op:subscription.

Note 39: In MTAS 4.9 operator-common-data is extended to support mmt-op:number-normalization-phone-context.

Note 40: In MTAS 4.9 operator-user-common-data is extended to support mmt-op:subscription attribute default-subscription.

Note 41: In MTAS 4.11 operator-common-data is extended to support mmt-op:subscriber-state and services operator-incoming-communication-barring and operator-outgoing-communication-barring are extended to support <mmt-op:subscriber-state> condition element.

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Note 42: In MTAS 4.11 operator-incoming-communication-barring and operator-outgoing-communication-barring are extended to support <mmt-op:status-code> and <mmt-op:reason-header> action elements.

Note 43: In MTAS 4.12 operator-hotline is extended to support mmt-op:whitelist, attribute activated and mmt-op:hotline-number.

Note 44: In MTAS 4.12, operator-originating-identity-presentation-restriction is extended to support mmt-op:priority-restriction.

Note 45: In MTAS 4.12, operator-outgoing-communication-barring is extended to support mmt-op:b-number-type, mmt-op:b-network-type and mmt-op:localness.

Note 46: In MTAS 4.12, operator-communication-setup-announcement is extended to support conditions ss:rule-deactivated, cp:identity, ss:media, cp:validity, mmt-serv:valid-periods, mmt-serv:invalidity, mmt-serv:served-identity and mmt-serv:in-sip-request.

### 3.8 Top level MMTel user scheduled conference transparent data structure – mmt-sc-data

The top level for the MMTel user scheduled conference transparent data structure is defined in the 'mmt-sc-data' namespace. This includes the breakdown into a section for user configurable data and for operator-only data.

Namespace: <http://schemas.ericsson.com/mmtel/schedconf-service-data>

File: mta-schedconf-services-transparent-data.xsd

Imports:

- ccmp-schema-data/conference-info/schemas/conference-info.xsd

Service Name	2.0	3.0	3.1	11A	11B	12	13	14A	14B
scheduled-conference-service-configuration	-	-	-	-	-	X	X	X	X

Table 4 – Scheduled conference services and the release of introduction

Note: Scheduled conference service is not available in virtualized MTAS.

### 3.9 Top level MMTel group transparent data structure – grp-data

The top level for the MMTel group transparent data structure is defined in the 'grp-data' namespace.

Namespace: <http://schemas.ericsson.com/mmtel-group/service-data>

File: group-services-transparent-data.xsd

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Imports:

- group-operator-services.xsd

### 3.10

#### MMTel Group Operator Services – grp-op

The operator service data for the MMTel group services are defined in the 'grp-op' namespace.

Top level file: group-operator-services.xsd

Namespace: <http://schemas.ericsson.com/mmtel-group/operator-service-data>

Includes:

- group-operator-service-data.xsd<sup>1</sup>
- operator-group-cac.xsd

Note 1: This file defines the abstract type for the operator part of the group service data.

A summary of the operator group services and the release in which they were introduced is given in Table 5.

Service Name	2.0	3.0	3.1	11A	11B	12	13	14A	14B
group-call-admission-control	-	-	X	X	X	X	X	X	X

Table 5 - Operator group services and the release of introduction

### 3.11

#### Top level MMTel ServiceNo transparent data structure – sn-data

The top level for the MMTel service number transparent data structure is defined in the 'sn-data' namespace.

Namespace: <http://schemas.ericsson.com/mmtel-serviceno/service-data>

File: service-number-services-transparent-data.xsd

Imports:

- service-number-operator-services.xsd

### 3.12

#### MMTel ServiceNo Operator Services – sn-op

The operator service data for the MMTel service number are defined in the 'sn-op' namespace.

Top level file: service-number-operator-services.xsd

Namespace: <http://schemas.ericsson.com/mmtel-serviceno/operator-service-data>

Includes:

- service-number-operator-service-data.xsd<sup>1</sup>
- operator-service-number.xsd

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Note 1: This file defines the abstract type for the operator part of the service number data.

A summary of the operator service number and the release in which they were introduced is given in Table 6.

Service Name	2.0	3.0	3.1	11A	11B	12	13	14A	14B
service-number	-	-	-	-	-	X	X	X	X

Table 6 - Operator service number services and the release of introduction

### 3.13 Top level schema SIP Trunking

Description: this single schema file covers all of the schemas for use on the Sh interface for MTAS. It includes the Sh interface schema and imports the MTAS services transparent data schema, thereby covering all relevant schemas. It can be used to validate entire Sh requests and responses including both generic and MTAS-specific parts.

Namespace: none (this uses the global namespace)

File: mtas-st-sh-data.xsd

Includes: ShDataType\_Rel10.xsd

Imports:

- sip-trunking-services-transparent-data.xsd
- sip-trunking-referral-services-transparent-data.xsd

### 3.14 Simulation Services – ss

For the simulation services in the 'ss' namespace and for the 'cp' and 'ocp' namespaces used in conjunction with them see ref [1].

### 3.15 Ericsson-Specific SIP Trunking – st-serv

For the Ericsson-specific SIP Trunking PBXservices in the 'st-serv' namespace see ref [1].

### 3.16 SIP Trunking Operator Services – st-op

The operator service data for the SIP Trunking are defined in the 'st-op' namespace.

Top level file: sip-trunking-operator-services.xsd

Namespace: <http://schemas.ericsson.com/st/operator-service-data>

Includes:

- operator-sip-trunking-control.xsd
- operator-st-call-admission-control.xsd
- operator-st-carrier-pre-select-rn.xsd



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- operator-st-carrier-select-rn.xsd
- operator-st-common-data.xsd<sup>1</sup>
- operator-st-communication-diversion.xsd
- operator-st-communication-barring.xsd
- operator-st-malicious-communication-identification.xsd
- operator-st-operator-controlled-outgoing-barring-programs.xsd
- operator-st-originating-identity-presentation.xsd
- operator-st-terminating-identity-presentation.xsd

Note 1: this file defines common data that is available to each of the other operator services.

A summary of the operator services and the release in which they were introduced is given in Table 7.

Service Name	15A	15B
operator-sip-trunking-control	X	X
operator-st-call-admission-control	X	X
operator-st-carrier-pre-select-rn	X	X
operator-st-carrier-select-rn	X	X
operator-st-common-data	X	X
operator-st-communication-barring	X	X
operator-st-communication-diversion	X	X
operator-st-malicious-communication-identification	X	X
operator-st-operator-controlled-outgoing-barring-programs	X	X
operator-st-originating-identity-presentation	X	X
operator-st-originating-identity-presentation-restriction	X	X
operator-st-terminating-identity-presentation		X
operator-st-terminating-identity-presentation-restriction		X

Table 7 - Operator services and the release of introduction

### 3.17 SIP Trunking Referral – st-ref-data

The operator service data for the SIP Trunking Referral are defined in the 'st-ref' namespace.

Top level file: sip-trunking-referral-services-transparent-data.xsd

### 3.18 Top level schema SCC

Description: this single schema file covers all of the schemas for use on the Sh interface for MTAS. It includes the Sh interface schema and imports the SCC services transparent data schema, thereby covering all relevant schemas. It can be used to validate entire Sh requests and responses including both generic and SCC-specific parts.

Namespace: none (this uses the global namespace)

File: mtas-scc-sh-data.xsd

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Includes: ShDataType\_Rel10.xsd

Imports:

- srvcc-atcf-data.xsd

### 3.19 Top level SCC AS transparent data structure – scc-data

The top level for the SCC AS transparent data structure is defined in the 'scc-data' namespace. This includes the SRVCC ATCF data.

Namespace: <http://schemas.ericsson.com/scc/scc-data>

File: srvcc-atcf-data.xsd

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## 4 Attached files

### 4.1 XML Schema Files

#### 4.1.1 Schema Composition

The XML schemas that define this interface are a superset of XML schemas as used on the Ut interface as defined by reference [1].

This gives us a ‘russian doll’ containment. This is shown in more detail in Figure 5 below

The boxes with light-coloured lines are a schema (or a group of schemas) from one provider.

- As grouped into a dark-coloured box, they captured all the schemas needed for an interface definition
- A dark-coloured box inside another dark-coloured box is needed to complete the interface definition of the outer box.

In order to ensure a consistent definition of these schemas; a policy has been adopted of defining each schema in one place and to refer to the other documents for a complete set of schemas.

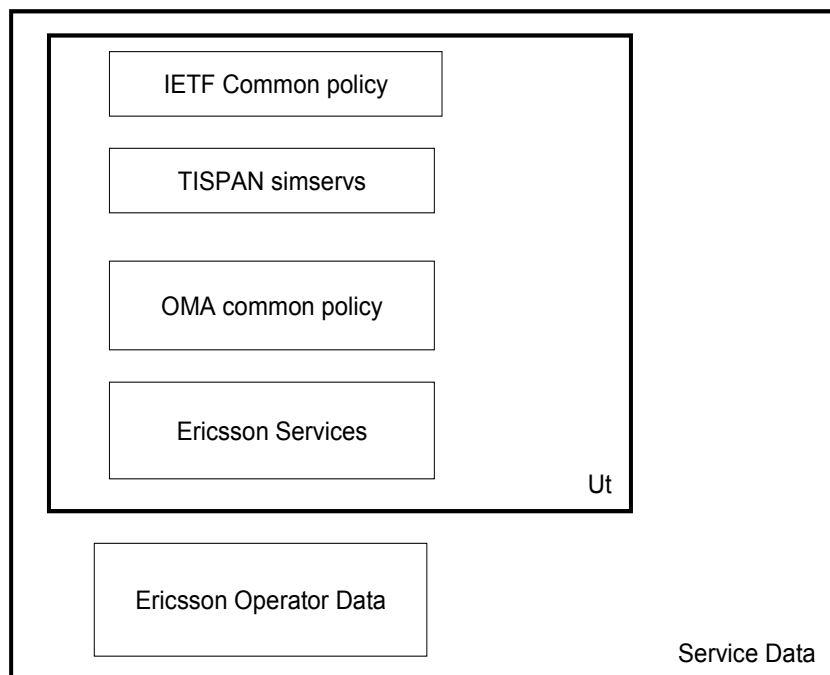


Figure 5 - Components of the Service Data interface

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### 4.1.2 Ericsson Operator Data

The schema files used on this interface are zipped and are available in ref [7].

## 4.2 Relative Path-names

### 4.2.1 Sh Schema accessing the Ut and CCMP Schemas

The Sh interface needs schema files that are defined in reference [1], [2] and [6] which are accessed through relative pathnames. In order for the zipped schemas to work out-of-the-box, the directory structure shown in Figure 6 needs to be set up.

Note: The CCMP interface is not available in virtualized MTAS.

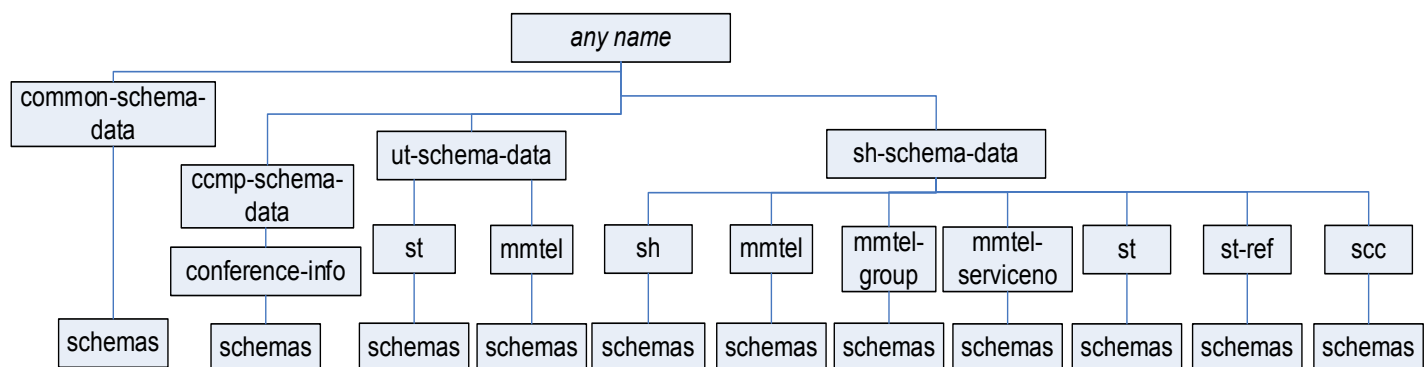


Figure 6 – Directory Structure for the Sh Schema files

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## 5 Glossary

### 5.1 Terms

<u>Term</u>	<u>Explanation</u>
Sh Interface	Interface into HSS within an IMS, as defined by 3GPP
Ut Interface	Interface between the XCAP client and XCAP server (XDMS) within an IMS, as defined by 3GPP
CCMP interface	Interface between the CCMP client and CCMP server, as defined by IETF

### 5.2 Abbreviations

3GPP	3 <sup>rd</sup> Generation Partnership Project
CCMP	Centralized Conferencing Manipulation Protocol
HSS	Home Subscriber Server
IMS	IP Multi-Media Subsystem
IP	Internet Protocol
OMA	Open Mobile Alliance
SCC AS	Service Centralization and Continuity Application Server
ST AS	Sip Trunking Application Server
TISPAN	Telecoms and Internet converged Services and Protocols for Advanced Networks
XCAP	XML Configuration Access Protocol
XDMS	XML Document Management Server
XML	Extensible Markup Language

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## 6 References

- [1] 2/190 09-AVA 901 18, MTAS Ut Schemas
- [2] 4/190 09-AVA 901 18, MTAS Common Types Schemas
- [3] <http://www.w3.org/TR/xmlschema-1/>, XML Schema Part 1: Structures Second Edition
- [4] 3GPP; IP Multimedia (IM) Subsystem Sh interface; Signalling flows and message contents (Release 6)  
3GPP TS 29.329 v6.14.0
- [5] 3GPP; Sh Interface based on the Diameter protocol; Protocol details (Release 6)  
3GPP TS 29.328 v6.14.0
- [6] 3/190 09-AVA 901 18 Uen, MTAS CCMP Schemas
- [7] 6/190 09-AVA 901 18 Uen, MTAS Service Data Schemas