

vMTAS Network Impact Report from 1.5 to 1.10 MTAS

NETWORK IMPACT REPORT

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1 Introduction

This Network Impact Report (NIR) describes how the Virtual Multimedia Telephony Application Server (vMTAS) 1.10 with new and enhanced features affects the vMTAS 1.5. The NIR also describes the impact on the overall network, including all affected products and functions.

This document covers the following new and enhanced features:

New Features

- Runtime Assurance of Cloud SLA
- Support for Reboot Upgrade
- Support of Local Viewing of PM Counters and KPIs
- Rebalancing by Moving Users between MTAS Instances
- Network Level Licensing of Feature Licenses in MTAS – CLOUD
- Generation of 180 Ringing in MMTel AS at the Reception of 183 Session Progress
- Generic Ro Initiated Retarget in MMTel AS
- Multi-persona: Alternative Line Identity for Voice Calls
- Enhancements to NPLI Support in SCC AS
- Route Header not to be sent to External MRFC
- IMS Support for UC Mobility
- Network Level Licensing
- Ro Suppression based on B-Number
- DSCP Markings
- Workflows for VNF Life Cycle
- DNS Server Monitoring
- Number Translation Based on A-Subscriber Profile
- Multi Mobile Device in Single IRS Support
- TADS and Additional MMTel Session Statistics



- Add Last Redirecting Number Information in Service-Specific-Info (SSI) AVP
- Supplementary Services for Multi-Sim
- Destination-Specific Nuisance Call Handling
- SCC AS Cache 18x
- Session Setup Counters in MMTel AS
- Session Continuation Support by the UC Routing Service
- CDIV Action for Switched-Off Terminals
- Auto Healing Work Flow Feature
- Alternative Presentation Number for UK Market
- Support for FQDN as PAI in SIP SUBSCRIBE to CSCF
- SIP P-Early-Media Header Support and Early Delivery of the SDP Answer
- Support Change of Payload Type Number in a Session
- AS Interworking Filtering of SIP 181
- PC: Extension to Feature Assume Positive on Ro
- PC: Generic Test Call Announcement Service
- Robust Handling of re-INVITE Requests
- CC Recall Without Answer Captured in Charging
- Subscription-ID AVP without MSISDN and IMSI in Charging
- MTAS NPLI Query at Session Release
- Call Return service based on From Header.
- Re-Invite/ACK Race Condition Handling when Acting as UAS
- NW Level Licensing, Capacity for vMTAS
- Multi-Sim Phase-2 Single IRS Support in MTAS
- National Dialing Plan
- Increase Size of CDiv Blacklist
- Support for 2nd External MRFC FQDN
- "etc" Hardened Overlay
- SCTP Support for Diameter



Enhanced Features

- Apache Tomcat for Provisioning
- NP Announcement Based on B-Number
- ATCF Information Restoration
- CCxx Invocation Failure Announcements
- Call Return Erasure
- Provisioning VTP Domain for Wholesale and FIP Suppression over CAI3G
- CDIV Announcement after CAT Invocation
- Support of Load Balancing Traffic over Sh Interface
- CAPv2 Support Play Tone in ACH
- Additional Session Statistics Counters
- Optimize the Local Ring Back Sequence
- Call Return Interrogation Support for Date and Time
- Include an SDP Offer in the Initial INVITE to New Target
- Reason Text in History-Info Header for CDIV Time-Out
- International Outgoing Call Barring for Wi-Fi Access
- Display MDUCAC Calls as Available for Call Pull
- IMEI in MMTel AS Charging
- Destination-Based CAP Triggering
- Addition of Two Subscriber Transparent Data and CS-Retry Prefix
- Backward ICBS Parameter for FCD Primary User
- Configurable FCH Parameters for Japanese Charging Service
- Include SDP Offer in re-INVITE for Moving to an Ad-hoc Conference
- SIP URI without Phone-context for SCC AS
- SDP Offer for Initial INVITE to New Target for Account Activation
- Match Existing Session in Move Active Session to Existing Conference
- Enhancements of Offline Charging Interim ACR Handling
- Extension Number Support (Line Sharing Phase 1.0+)



- Interaction Between No Reply Timers
- Selective Validation of XDMS Document for IR.92 Feature Set
- Alignment of MTAS Call Return with PSTN
- Latest Location Info in Charging
- Reporting PLMN ID in S8HR
- MTAS Selection Between MMTel AS and SCC AS
- Reporting Ro Failure over Rf
- Selective Validation of XDMS Documents
- SSC Announcement Handling for OCB Operations
- Improved Early Dialog Handling in CDIV

For more information on the changed features, see Section 5 on page 57.



2 General Impact

This section describes the general impact owing to the introduction of the vMTAS 1.10.

2.1 Backward Compatibility

The vMTAS 1.10 is backward compatible and unless stated otherwise, legacy behavior is preserved.

2.1.1 Interoperable Network Elements

The interoperable Network Elements for vMTAS 1.10 are described in Table 1.

Table 1 Supported Versions of Network Elements

Network Element	Earliest Supported Versions
MRS	14A
CSCF	14A
HSS	14A
OSS-RC	O16A Upgrade for OSS-RC is only needed when new parameters and counters are introduced in MTAS and are to be used.
EMA	7.0 CP2
SBG	15B
ENM	vMTAS Lifecycle Management requires 17.15(-3.6.8) version of VNF-LCM; therefore use the 18A release of ENM.

2.2 Capacity and Performance

2.2.1 Subscriber Capacity

The subscriber capacity is not affected by the introduction of the vMTAS 1.10.

The number of half call establishments and releases per second determines the need of processing resources. Processing capacity is the limiting factor for the MMTel, SCC, Conf, NW, and SIP Trunking AS.



2.2.2 Network Performance and Traffic Capacity

The in-service network performance and traffic capacity is slightly affected by the introduction of the vMTAS 1.10. The network performance and traffic capacity is degrading around 1-2% compared to vMTAS 1.5 on small setups (2+2). On larger setups the degradation is even smaller.

2.2.3 License Handling

It is mandatory to use Network License Server (NeLS) product with vMTAS 1.10.

For more information, refer to *MTAS Licenses*.



3 Licenses

This section lists the new and changed license codes added in vMTAS 1.10. For a list of (v)MTAS licenses, refer to *MTAS Licenses*,

3.1 New Licenses

The new licenses are listed in Table 2.

Table 2 New Licenses

Name	Identity	Version
vMtasAdHocGroupCall	CXC 401 2144	1.0
vMtasAltSubsDataModel	CXC 401 2176	1.0
vMtasBLAdHocGroupCall	CXC 401 2175	1.0
vMtasBLBase	CXC 401 2166	1.0
vMtasBLLegacyINReuse	CXC 401 2171	1.0
vMtasBLLocationServicesSupport	CXC 401 2174	1.0
vMtasBLMultiMedia	CXC 401 2167	1.0
vMtasBLServiceExposure	CXC 401 2169	1.0
vMtasBLUCReRouting	CXC 401 2170	1.0
vMtasComStateExposure	CXC 401 2151	1.0
vMtasLegacyINReuse	CXC 401 2145	1.0
vMtasLi	CXC 401 2168	1.0
vMtasLocationServicesSupport	CXC 401 2146	1.0
vMtasMMTelVoiceBase	CXC 401 2143	1.0
vMtasMultiDevice	CXC 401 2147	1.0
vMtasMultimedia	CXC 401 2148	1.0
vMtasSccBase	CXC 401 2152	1.0
vMtasServiceExposure	CXC 401 2149	1.0
vMtasSrvcc	CXC 401 2153	1.0
vMtasVodafoneChargingVendorId	CXC 401 2177	1.0
vMtasWiFiCalling	CXC 401 2154	1.0
vMtasWiFiCallingMMTel	CXC 401 2150	1.0
vMtasMultiSIM	CXC 401 2191	1.0
vMtasSTBaseCapacity	CXC 401 2234	1.0
vMtasNWCommIwfBaseCapacity	CXC 401 2235	1.0



3.2 Changed Licenses

There are no changed licenses.

3.3 Deleted Licenses

The deleted licenses are listed in Table 3

Table 3 Deleted Licenses

Name	Identity	Version
vMtasSTBase	CXC 401 2189	-
vMtasNWCommIwfBase	CXC 401 2190	-



4 Interfaces

This section describes interface changes between the existing and new revisions of the product.

4.1 Inter-Node Interfaces

The changes to the inter-node interfaces are described in Table 4.

The description of impact is as follows:

- **No Impact** - New version can be installed without affecting other nodes.
- **Minor Impact** – There are changes, but with extra configuration the previous behavior can be kept.
- **Major Impact** – The change has made an interface backward incompatible.
- **New Interface** – The interface did not exist in the previous revision.
- **Obsolete** – The interface no longer exists.

Table 4 Inter-Node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.5
Charging Rf	Diameter	No impact	Offline charging output extended with Interim-Reason AVP in ACR[Interim].
Charging Rf	Diameter	No impact	Interim-Interval timer spread (+/-2%) is configurable using new configuration attribute. The randomization is disabled by default for new installations and enabled for existing installations during upgrade procedure.
CAT	SIP	No impact	From now on, operator can configure MTAS so it won't include Route header in the messages sent directly to CAT-s without any intermediate SIP proxy node. Refer to <i>MtasSpecializedMediaResourceRoute</i> in the <i>MTAS Parameter Description</i> for details
DNS	TCP/UDP	Minor impact	When CM attribute <code>DNS.DnsDscpValue</code> is configured, the DSCP value is shown in all DNS sockets.
DNS	DNS	No impact	When the CM attribute <code>mtasDnsMonitoringEnabled</code> is set to TRUE, MTAS monitors the availability of the DNS servers configured in the <code>DnsServerEntry</code> CM attribute, by sending out DNS A lookup queries to each DNS server. The default value is FALSE, that is, monitoring is disabled by default.
Ro	Diameter	Minor impact	New Retarget-Instruction APV introduced.
ISC	SIP	Minor impact	To keep the from URI toward the remote network unchanged, the “from-change” support is disabled after a successful SRVCC transfer regardless of the preconfigured scheme in MSC, for both SIP or Tel.
ISC	SIP	No impact	Warning header is added for 503 response, in case of license failure for Mmtel and SCC license.

Table 4 Inter-Node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.5
ISC	SIP	No impact	New attribute <code>mtasSipRemoveSupportedHeaderInErrorResponse</code> is added to enable MTAS to remove the supported header in SIP response when its value is set to "1". The SIP error responses include these SIP responses forwarded or triggered by MTAS. The error codes of these SIP error response must be greater or (equal to) 300. When the value of parameter is set to "0", the Supported headers are not removed by MTAS if there in these SIP error response as legacy. After upgrade, the default value ("0") of the CM attribute is used, that is. the legacy behavior is kept.
ISC	SIP	No impact	New CM attribute <code>mtasSipChangeRefresherRoleInReinviteAndUpdate</code> is added. This attribute defines the MTAS behaviour of changing the refresher role for reINVITE and normal UPDATE in an exception case. If this attribute is disabled, then when MTAS sends out the reINVITE or normal UPDATE, it will not change the role of refresher parameter which means that it will be same as the previous negotiated result. Enabling the attribute, an exception will occur if the previous negotiated result is the remote side as refresher. In this case, MTAS will change the refresher role to empty, that is, no refresher parameter in the reINVITE and normal UPDATE. In case that before upgrade, the <code>mtasSystemConstantSC</code> ID 84 is set to 1, then this CM attribute will be set to FALSE and the new behavior will be applied. Otherwise, the default value(TRUE) of this CM attribute will be used after the upgrade, that is, legacy behavior will be performed.
ISC	SIP	No impact	New CM attribute <code>mtasSubsDataRegEventNotifier</code> is added. This attribute defines whether MTAS sends the one-time SUBSCRIBE to SCSCF or ICSCF. The possible values are as follows: - SCSCF: MTAS sends the SUBSCRIBE to SCSCF (default). - ICSCF: MTAS sends the SUBSCRIBE to ICSCF at de-registration and to SCSCF at registration. In parallel, <code>mtasSystemConstantSC</code> ID 83 is deprecated. If MTAS is upgraded from 1.6 or 1.7 and <code>mtasSystemConstantSC</code> is set (presents) then the value of the new CM parameter must be 'ICSCF' on the new MTAS version (4.8/1.8 and above).
ISC	SIP	No impact	CM attribute <code>mtasSubsDataRegEventNotifier</code> has been modified: Before MTAS 1.8, MTAS sends the SUBSCRIBE to ICSCF at de-registration and to SCSCF at registration when <code>mtasSubsDataRegEventNotifier</code> : 1=ICSCF. From MTAS 1.8, MTAS sends the SUBSCRIBE to ICSCF in all cases (at registration, at implicit registration and at de-registration as well) when <code>mtasSubsDataRegEventNotifier</code> : 1=ICSCF.
CAI3G	CAI3G	Major impact	Traffic separation is mandatory. The <code>cai3g-vip4</code> and <code>cai3g-vip6</code> are used instead of <code>oam-vip4</code> and <code>oam-vip6</code> respectively.
CAI3G	CAI3G	No impact	Add support of new service "Multi-Persona"
Ut	XCAP	Major impact	Traffic separation is mandatory. The <code>ut-vip4</code> and <code>ut-vip6</code> are used instead of <code>oam-vip4</code> and <code>oam-vip6</code> respectively.
ISC	SIP	No impact	Removed the limitation on MTAS to support RUI fetch every second. OK to keep the CM attributes <code>mtasSipOcRegulationInterval</code> and <code>mtasSipOcValidity</code> as the default value of 1000/1500.
ISC	SIP	Minor impact	P-headers are transferred from the incoming dialog to outgoing by MTAS in REFER and SUBSCRIBE events. The ACCEPT header is transferred from the incoming dialog to outgoing in the SUBSCRIBE event.
Mr	VXML	Minor impact	The prompt tag is added to chained announcements in VXML. The apostrophe sign is removed from error handling variable in VXML.
Mr	NetAnn(SIP)	No impact	Operators can configure MTAS/vMTAS so it won't include Route header in the messages sent directly to MRFC without any intermediate SIP proxy node. Refer to <code>mtasMrControllerRoute</code> in the <i>MTAS Parameter Description</i> for details
Mr	SIP	No impact	Legacy fault has been corrected. While caller sends a CANCEL towards terminating MTAS during play of OCS initiated final announcement, the announcement will be terminated.
Ro, Rf	Diameter	Minor impact	New SSI ID 2602 added for Call Return Erasure
CAMEL	CAPv2	No impact	CAPv2 Parameter <code>ACH.releaseIfdurationExceeded.tone</code> is supported if the CM attribute <code>mtasNccCreditAnnouncementName</code> is configured.



Table 4 Inter-Node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.5
ISC.	SIP	No impact	MTAS changes the behavior of session refresh handling for early UPDATE sip message based on the new CM attribute <code>mtasSipEnableSessionRefreshForEarlyUpdate</code> . By default, the new CM attribute value is set to TRUE and the MTAS legacy behavior is used. The UPDATE in the early dialog is handled the same way as the UPDATE in a confirmed dialog when concerning session refresh. Otherwise, new behavior is applied and the UPDATE in the early dialog is not treated as a session refresh message.
ISC	SCC AS NPLI	No impact	When the CM attribute <code>mtasScCNpliOriginatingCSLocationInformation</code> is set to "CGI_VLR_MSC" the initial INVITE request sent to MMTel AS shall include the PANI header where CGI (as of today) and VLR and MSC information is included if they were available in location information from HSS. Also the Access-type in the PANI header will include the Access-type if defined in CM attribute <code>mtasScCNpliDefaultCSAccessType</code> If not defined, "3GPP-GERAN" is used as access-type. When the CM attribute <code>mtasScCNpliTerminatingCSLocationInformation</code> is set to "CGI_VLR_MSC" the initial INVITE request sent to MMTel AS shall include the PANI header where CGI (as of today) and VLR and MSC information is included if they were available in location information from HSS. Also the Access-type in the PANI header will include the Access-type as defined in CM attribute <code>mtasScCNpliDefaultCSAccessType</code> (default value is, "3GPP-GERAN")
ISC	SIP	No impact	Legacy fault has been corrected. From now on UCAC's waiting-limit can be applied on originating side by setting <code>mtasUCacApplyWaitingLimitOnSide</code> to '0'. By default waiting-limit will be applied on terminating side only (default value is '1').
ICS, Ro	SIP, DIAMETER	Minor impact	SCN Service will reject the INVITE when END_USER_SERVICE_DENIED(4010) received for the CCA-I as result multi-device charging behavior will be suppressed. SCN Service will suppress CDIV if multi-device charging is enabled and a negative response is received for the CCA-I.
Sh	Diameter	No impact	Sh request messages are sent without the Destination-Host AVP if the load balancing (realm-based routing) feature is activated.
Sh	Diameter	No impact	Add support of new service "Multi-Persona".
XCAP	HTTP	Major impact	If no valid Ut access license or service profile license is available, MTAS sends the HTTP Error 403 Forbidden.
Ut	XCAP	Major impact	When the Service Profile license is not valid or present, the response is 403 Forbidden instead of 409 Conflict. See HV64567.
Rf	SCC AS NPLI	No impact	When the CM attributes <code>mtasScCNpliTerminatingCSLocationInformation</code> is set to "CGI_VLR_MSC" the ANI AVP sent in ACR start for terminating charging session shall include VLR and MSC information if available. In addition an access-type as defined in <code>mtasScCNpliDefaultCSAccessType</code> , shall be included in the ANI AVP.
Rf	Diameter	Minor impact	New Ericsson proprietary AVP with info that the corresponding Ro signaling is suppressed. <code>Ro-Information ::= < AVP Header: 1478 193 > [Ro-Status]</code> The AVP has m-bit false and is included only when Ro suppression is triggered and enabled.
Rf/Ro	Diameter	No impact	Online and offline charging output extended with Instance-Id and User-Equipment-Info AVPs in ACR-Start, CCR-Initial, ACR-Event, and CCR-Event for normal sessions or diverted after "No response" or "Busy" subscriber. The new AVPs are default omitted.
Rf/Ro	Diameter	No impact	If <code>mtasNccReportSsiToCharging</code> is enabled, MTAS report to charging the use of CAMEL service in Supplementary-Service-Identity AVP and new values are added in the existing S-S-I AVP.



Table 4 Inter-Node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.5
Rf/Ro	Diameter	No impact	<p>Introduce 2 new CMs under charging profile to control the behavior of Calling-Party-Address AVP.</p> <ul style="list-style-type: none"> • New CM 1: <code>mtasChargingProfileUseFromHeaderAsCallingPartyAddressWhenNoPai</code> To control if the terminating MTAS should use the URI of “From header” as the Calling-Party-Address when the P-Asserted-Identity is empty in the initial INVITE. It has two possible values (disable/enable). By default, it should be enabled, which is the current MTAS behavior (use the URI of “From header”). When it is set to disabled, Calling-party-Address AVP is not sent. • New CM 2: <code>mtasChargingProfileUseUnknownAsCallingPartyAddressWhenNoPai</code> To control if MTAS should use unknown as the Calling-Party-Address when the P-Asserted-Identity is empty in the initial INVITE. It has two possible values (disable/enable). By default, it should be disabled, which is the current MTAS behavior.
ISC	SIP	No impact	A feature tag in the Accept-Contact header is added by the terminating MMTel AS if the <feature-tags> data is provisioned by the operator before the INVITE message is sent to the terminating SCC AS. The SCC AS removes the feature tag from the INVITE message when it contains a province.
ISC	SIP	No impact	A feature tag in the Accept-Contact header is added by the terminating MMTel AS if the <feature-tags> data is provisioned by the operator before the INVITE message is sent to the terminating SCC AS. The SCC AS removes the feature tag from the INVITE message when it contains the “+ps” value.
ISC	SIP	No impact	Warning header is added for 503 response, in case of license failure for Mmtel and SCC license.
Rf/Ro	Diameter	No impact	The provisioned customized charging information in <common-data><charging-avp-list><service-specific-info> is reported to offline/online charging nodes in grouped Service-Specific-Info AVP
CAI3G	CAI3G	Minor impact	The MMTel charging profile check-in provisioning is removed. It is now possible to provision a MMTel charging profile to a user that is not configured MTAS. See HV62951.
CAI3G	CAI3G	Minor impact	A new security header, Strict-Transport-Security, is included in all https responses when using CAI3G over a secure connection.
SNM	SNMPv2C/v3	No impact	When the CM attribute <code>mtasDnsMonitoringEnabled</code> is set to TRUE, MTAS raises an alarm if any of the DNS servers configured in the <code>DnsServerEntry</code> CM attribute is not available. The default value is FALSE, that is, monitoring is disabled by default.
Ro	Diameter	No impact	<p>If the reporting of last redirecting number in CCR-I for terminating online charging is enabled and a Redirecting Number was received in the incoming INVITE, the MTAS will populate additional Service-Specific-Info (SSI):</p> <p>Service-Specific-Info:</p> <p>Service-Specific-Type: 1007 (Supplementary-Service-Type)</p> <p>Service-Specific-Data: 72 (lastRedirectingNumber)</p>
CAI3G	CAI3G	No impact	Add new elements to services “User-Common-Data” and “Flexible-Identity-Presentation”.
Sh	DIAMETER	No impact	Add new elements to services “User-Common-Data” and “Flexible-Identity-Presentation”.
Ut	XCAP	No impact	Add new element to service “Flexible-Identity-Presentation”.
DNS	DNS	No impact	When the CM attribute <code>mtasDnsMonitoringEnabled</code> is set to TRUE, MTAS monitors the availability of the DNS servers configured in the <code>DnsServerEntry</code> CM attribute by sending out DNS A lookup queries to each DNS server. The default value is FALSE, that is, monitoring is disabled by default.



Table 4 Inter-Node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.5
Rf	Diameter	No impact	Support new SSID for user with no subscription: Support new SSID for Nuisance Call.
Rf/Ro	Diameter	No impact	In case of Ad-Hoc conference, when <code>mtasConfChargingSessionBehaviorOnMove</code> is set to 1 and participant moving into the conference happened, the Called-Party-Address AVP in the CCR[U] will be the same as in the CCR[I] of the 2PTY call, instead of Requested-Party-Address AVP. For more information, see HW33438
Rf	Diameter	Minor impact	With multi mobile feature ON, ACR records will have multiple instances of subscription-ID AVP to carry information of mobile-subscription.
ISC	SIP	Minor impact	With multi mobile feature ON, SCCAS will add P-Ericsson-Original-Contact header to outgoing INVITE message.
CAI3G	XCAP	No impact	New xml element <code><fip-use-default-impu-identity></code> is added into user provisioning data.
ISC	SIP	No impact	When <code>mtasTadsNotRegisteredReason</code> CM parameter is configured and INVITE is rejected with "480 Temporarily Unavailable" when breakout to CS failed because of no CSRN or MSRN retrieved from HSS (received empty reply from HSS / HLR or failure response), the INVITE reject will contain the configured Q.850 reason header.
ISC	SIP	No impact	CDIV not-registered rule is triggered if user device is turned off or otherwise not registered on the network when it is indicated by "480 Temporarily Unavailable" response and a specific Q.850 Reason header. This behavior is controlled by <code>mtasCdivNotRegisteredReason</code> / <code>vtasCdivNotRegisteredReason</code> CM parameter.
ISC	SIP	No impact	FCD not-registered rule is triggered if user device is turned off or otherwise not registered on the network when it is indicated by "480 Temporarily Unavailable" response and a specific Q.850 reason. This behavior is controlled by <code>mtasFcdNotRegisteredReason</code> / <code>vtasFcdNotRegisteredReason</code> CM parameter.
ISC	TCP	No impact	Because of TR HW30669, MTAS provides a new option of handling its own created TCP connections towards to the peer node. By configuring <code>mtasSystemConstant</code> SC 97 to 1, the new behavior will be applied, that is, MTAS can create one TCP connection towards to the same peer (same peer IP address and same destination port) per PL at maximum. The legacy behavior is MTAS can create one TCP connection towards to the same peer per vCPU for the same session case at maximum
Ut	XCAP	No impact	When CM parameter <code>mtasXdmsUtValidation</code> is set to: <ul style="list-style-type: none">0, "No Impact" (default/legacy).1, "Minor Impact" MMTel AS validates the received request together with the user document stored in HSS, but allows conflicts for Communication Diversion in the user document.
Sh	Diameter	No impact	<code>ucd-operator-configuration</code> is enhanced with mobile-subscription-list to configure the IMPI,CS CAPABLE, MSISDN, and IMSI. MTAS fetches MSISDN or IMSI values from HSS with IMPU and IMPI as key pair.
CAI3G	CAI3G	No Impact	Application constraint updated from: "Failed to meet an application constraint: Flexible Identity Presentation Failure: Activate without FIP identity/MSN FIP identity or previously stored FIP identity/MSN FIP identity is not allowed" to "Failed to meet an application constraint: Flexible Identity Presentation Failure: Activation without at least one of fip-identity, msn-fip-identity, fip-use-default-impu-identity, or fip-alternative-user-identity is not allowed".



Table 4 Inter-Node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.5
Rf	DIAMETER	No Impact	New SSID "FIP Alternative User Identity" added. Will be populated when From header of the INVITE is updated with provisioned "fip-alternative-user-identity"
Ro, Rf	DIAMETER	Minor impact	CM <code>mtasChargingProfileMultiDeviceMode</code> is introduced to replace legacy CM <code>mtasChargingProfileMultiDevice</code> in HV95839. Legacy CM will be phased out in future release. The new CM attribute defines if multi-device charging is applied or not. If applied, then specific per device information will be provided to CCF (offline charging) and/or ECF (online charging). When multi-device online charging is applied, fixed devices are handled separately from mobile devices in that CCR is sent even if "out of credit" response was received for the mobile. Possible Values: 0, 1, 2, or 3. <ul style="list-style-type: none"> 0 - Multi-device charging is disabled. This is the default behavior and corresponds to deprecated CM <code>mtasChargingProfileMultiDevice</code> value 0. 1 - Multi-device charging is active for both online and offline charging. It must not be possible to set to 1 when <code>mtasChargingProfileWaitForCca</code> is disabled. This value corresponds to deprecated CM <code>mtasChargingProfileMultiDevice</code> value 1. 2 - Multi-device charging is active for offline charging only. Specific per device information will be provided to CCF. 3 - Multi-device charging is active for online charging only. It must not be possible to set to 3 when <code>mtasChargingProfileWaitForCca</code> is disabled.
ISC	SIP	No Impact	It is possible to use FQDN identity for MTAS in From and PAI headers in SUBSCRIBE messages for Reg Event packages sent to I/S-CSCF. On MTAS 4.9/1.9 the FQDN address can be set by <code>mtasSystemConstantSC ID 4</code> . It is controlled by <code>mtasFunctionFqdn</code> CM parameter.
ISC	SIP	Minor Impact	The new CM <code>mtasSdsPaniPolicy</code> is introduced and defines the PANI Policy being used in O-SDS service for ICS MO calls. With value 0, always create a network-provided PANI based on the location information in CAP IDP and replace incoming PANI (if any). With value 1, use the network-provided PANI in the incoming INVITE if it is present and with a valid cell id. If the incoming PANI is network-provided but invalid, use its access-type and the location information in the CAP IDP to create a PANI. If no incoming network-provided PANI, create one based only on the CAP IDP.
ISC	SIP	No Impact	New option to let MTAS handle early dialog BYE in a transparent way. For a complete description of the <code>mtasSipTransparentEarlyBye</code> attribute, refer to [3]
ISC	SIP	No Impact	For early UPDATE containing dynamic codec mapping, MTAS generates dummy SDP answer in accordance with RFC 3264.
ISC	SIP	No Impact	A new CM <code>mtasMmtReInviteRetryAfterSupport</code> is introduced and it enables the feature of retrying re-INVITE request on final response 500 with Retry-After header. The feature is used when re-INVITE is sent by an MMTel service for session renegotiation after B-party answer. Another related new CM <code>mtasMmtReInviteRetryAfterTimeMax</code> is introduced and it sets the maximum value of the re-INVITE retry time. The received Retry-After value is truncated to the upper limit if exceeds. MMTel AS supports Retry-After header in final response 500 requests both in received and sent directions. The support is service dependent.
ISC	SIP	No Impact	The AS Interworking filtering of SIP 181 responses from the terminating network (<code>mtasAsIw181Filtering</code>).
Rf	DIAMETER	No Impact	New SSI AVP value added. Will be populated in the ACR Event messages on the TA service invocation when the TA service is enabled.
ISC	TCP	No Impact	Due to TR HW30669, MTAS provides a new option of handling its own created TCP connections towards to the peer node. By configuring <code>mtasSystemConstant SC 97</code> to 1, the new behavior will be applied, that is, MTAS can create one TCP connection towards to the same peer (same peer IP address and same destination port) per PL at maximum. The legacy behavior is MTAS can create one TCP connection towards to the same peer per vCPU for the same session case at maximum.



Table 4 Inter-Node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.5
Ut	XCAP	No Impact	Application constraint updated from: “Failed to meet an application constraint: Flexible Identity Presentation Failure: Activate without fip identity or previously stored fip identity is not allowed.” to: “Failed to meet an application constraint: Flexible Identity Presentation Failure: Activation without at least one of fip-identity, msn-fip-identity, fip-use-default-impu-identity or fip-alternative-user-identity is not allowed”
Ro,Rf	DIAMETER	No Impact	The new CM <code>mtasCcChargEventOnCcRecallFailure</code> is introduced to trigger an ACR(Event)/CCR(Event) for unsuccessful Communication Completion Recall. Possible Values: 0,1,2. <ul style="list-style-type: none"> 0 (DISABLED) - When this attribute is set to 0, Originating MMTel AS doesn't send charging event when CC Recall to A-party is unsuccessful. 1 (ENABLED_IN_ALERTING_PHASE)-When this attribute is set to 1, Originating MMTel AS sends charging event when CC Recall to A-party is unsuccessful in alerting phase 2(ENABLED_IN_ANY_PHASE)- When this attribute is set to 2, Originating MMTel AS sends charging event when CC Recall to A-party is unsuccessful in pre-alerting or alerting phase.
ISC	SIP	Major Impact	After TR HW28585, MTAS starts to correctly form the to-tag and from-tag in the Replaces header for the REFER SIP message, that is, to follow the rule in RFC3891, chapter 3
ISC	TCP/UDP	Major Impact	After TR HW42483, Retry-After header is removed in reply when MTAS is graceful shutting down.
ISC	TCP/UDP	Major Impact	After TR HW50409, default value of AS parameter in B line (SDP) is set to 96kbit/sec instead of 64kbit/sec.
ISC	TCP/UDP	Minor Impact	After TR HV11525, if a 491 Request Pending is received MTAS will resend the reinvite according to RFC 3261, section 14.1
Ro	DIAMETER	No Impact	The new CM <code>mtasChargingProfileSuppressRoMsisdnImsiSubscriptionId</code> AVP is introduced to suppress reporting MSISDN and IMSI in the SubscriptionId AVP in online charging (CCR event). Possible Values: TRUE, FALSE. FALSE (DISABLED) - When this attribute is set to FALSE then MSISDN and IMSI will be reported in subscriptionID AVP if value is available. TRUE (ENABLED)- When this attribute is set to TRUE then MSISDN and IMSI not will be reported in subscriptionID AVP even if value is available.
Rf	DIAMETER	No Impact	The new CM <code>mtasChargingProfileSuppressRfMsisdnImsiSubscriptionId</code> AVP is introduced to suppress reporting MSISDN and IMSI in SubscriptionId AVP in offline charging (ACR event). Possible Values: TRUE, FALSE. FALSE (DISABLED) - When this attribute is set to FALSE, then MSISDN and IMSI is reported in subscriptionID AVP if value is available. TRUE (ENABLED)- When this attribute is set to TRUE, then MSISDN and IMSI is be reported in the subscriptionID AVP even if value is available.
ISC	SIP	Minor impact	TR HW14048 impact: MTAS chooses transport protocol according to configuration of CMs <code>mtasSipDisableLargeMsgCheck</code> and <code>mtasSipProtocolMtasOrigCall</code> . The first one disables switching of protocol when large message received. The second one defines transport protocol to use, when normal message is received. For a complete description of the CM attributes, refer to MTAS Parameter Description
CAI3G	CAI3G	No Impact	TR HW21125 impact: Request will be rejected with “Failed to meet an application constraint: Communication Distribution Failure: Rule id=<rule-id>”, identity is not SIP or TEL URI in “one”, if identity is not a valid SIP or TEL URI. ⁽¹⁾

Table 4 Inter-Node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.5
Ut	XCAP	No Impact	TR HW21125 impact: Request will be rejected with “Failed to meet an application constraint: Communication Distribution Failure: Rule id=<rule-id>”, identity is not SIP or TEL URI in “one””, if identity is not a valid SIP or TEL URI.
SS7CAF Configuration	SCTP, FEIF	Minor impact	One configuration file/object for SCTP and FEIF is used for all instances (PLs). Old configuration version for ECM will be migrated to new version automatically during upgrade.
Mp	H.248	No impact	New variable types supported are int(ordinal) and month
ISC	SIP	Minor Impact	A 500 final response which includes the Retry-After header is sent by the originating MMTel AS if a re-INVITE request is received followed by ACK for the initial INVITE. This behavior is configured by the mtasSipRetryAfterSupport and mtasSipRetryAfterTime CM attributes.
Sh	Diameter	No impact	TR HW41809 impact: for CAI3G Create/Set/Get/Delete requests on MMTel document, when CM parameter mtasXdmsCai3glrsDefaultImpuUsage set to: . ‘0’, (default) MTAS/XDMS uses the received IMPU to do the provisioning towards HSS . ‘1’: MTAS/XDMS first query HSS for the IRS, then retrieves the default IMPU from the IRS and uses that IMPU to do the provisioning
Ro and Rf	Diameter	Major impact	MTAS reports Access-Network-Information and 3GPP-MS-TimeZone AVPs taken from PANI header in BYE or BYE response to Ro and Rf. When CM attribute mtasChargingProfileReportAtDisconnection is set to 1, charging termination is triggered at BYE response when session release is sent by the remote side. In this case, in ACR Stop/CCR Terminate, ANI AVP contains information retrieved from PANI Header in BYE response from the served user; in addition, SIP-Response-Timestamp AVP is reported in Timestamps (group AVP) in ACR Stop/CCR Terminate; SIP-Response-Timestamp-Fraction AVP is also reported if Rf/Ro version is 3GPP release 9 or higher. When ANI AVP is collected from PANI header in BYE or BYE response from the served user, it is reported in ACR Stop/CCR Terminate regardless of having been reported in previous charging messages or not.
Rf	Diameter	No impact	When OCS failure detected existing Ro-Information AVP may contain also Event-Time, CC-Time and Result-Code AVPs. Embedded AVPs are by default added to mtasChargingProfileOmitAcr MO therefore will be sent only when removed from the omit list. New values introduced in Ro-Status enumeration which can be sent in Ro-Information AVP when OCS failure detected.
ISC	SIP	Minor impact	Support of <pvni> XML element in Extended RegInfo, which is part of the “Extended Registration Event Notification Support” procedure. It used to fetch contact data from S-CSCF after a MTAS failover. The Extended RegInfo is an Ericsson proprietary extension to RegInfo event package specified in RFC 3860.
ISC	SIP	Minor impact	MMTel AS and SCC AS supports the P-Visited-Network-ID header format containing VPLMN ID as per GSMA IR.65 v25.0.
Ro and Rf	Diameter	Minor impact	MMTel AS reports IMS-Visited-Network-Identifier AVP to Ro and Rf. IMS-Visited-Network-Identifier AVP contains the contents of the SIP P-header “P-Visited-Network-ID”.
Rf	Diameter	Minor impact	SCC AS reports IMS-Visited-Network-Identifier AVP to Rf. IMS-Visited-Network-Id ntifier AVP contains the contents of the SIP P-header “P-Visited-Network-ID”.
Ro and Rf	Diameter	No Impact	MMTel AS reports 3GPP-MS-TimeZone AVP with Time Zone information taken from the network provided PANI header to Ro and Rf.
Rf	Diameter	No Impact	SCC AS reports 3GPP-MS-TimeZone AVP with Time Zone information taken from the network provided PANI header to Rf.



Table 4 Inter-Node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.5
ISC	SIP	No Impact	MMTel AS adds a predefined caller preference (ps_wlan) in case served user has an active Roaming condition and is currently on WiFi access. This caller preference value is used by the TADS function of SCC AS, forcing to hunt the user on WiFi access only.
Ro and Rf	Diameter	No Impact	MMTel AS reports new value INCOMING_COMMUNICATION_ALLOWED_ON_WIFI code in Supplementary-Service-Identity to Ro and Rf.
Ro	Diameter	Major impact	Supplementary-Service-Information AVP is reported in CCR-U instead of CCR-T by ICB for media barring decision when SDP offer from B is sent in final response.
Mr	SIP	Major impact	In any case, when a new resource is to be allocated on an external MRFC, the allocation fails, a second external MRFC will be contacted with the same request, based on the mtasMrfcNode MOC configuration.
Mr	SIP	Major impact	<p>The configuration of an External MRFC Node with mtasMrControllerName is deprecated. If the configuration is still needed, a new mtasMrfcNode MOC should be created in the following way:</p> <p>Create one new instance and copy the value of 'mtasMrControllerName' to its 'mtasMrfcNodeHostName' attribute and set 'mtasMrfcNodeAdministrativeState' to UNLOCKED if the Node is to be used.</p> <p>This configuration change will be done automatically in the case, when no mtasMrfcNode MOC is configured. In this case the 'mtasMrfcNodeHostName' attribute will be "DEFAULT_MRF".</p>
ISC, Ma	SIP	Major impact	<p>MMTel AS and SCC AS is starting to use the AS generic SIP port instead of using dedicated SIP ports for each session case and registration state.</p> <p>The use of the AS generic SIP port requires that the Application server trigger in HSS includes the AS name in the trigger. The AS name is added in the Route header in the 'as=' parameter.</p> <p>Example for MMTel AS:</p> <p>Route:< sip:mtas.operator.net; as=MMTelAS; lr ></p> <p>and for SCC AS:</p> <p>Route:< sip:mtas.operator.net; as=SCCAS; lr ></p> <p>To be able to determine the session case and reg state the P-Served-User header must be included in the SIP request.</p> <p>The AS generic SIP port is also handling the PSI functionality over the MA interface. In this case the AS name must not be included in the Route header.</p> <p>The currently used AS choosing algorithm, based on the configured ports, is deprecated now.</p>
ISC, Ma	SIP	No impact	If CM attribute mtasSipRetryAfterSupport is set to retryAfterSupportUasEnabled, then, on receipt of re-INVITE followed by ACK for 200 OK (INVITE or re-INVITE), MTAS responses 500 Internal Server Error including a Retry-After header, indicating the time (mtasSipRetryAfterTime second) which the resend re-INVITE should be delayed.
Sh/Dh	DIAMETER	No impact	If CM attribute mtasSipRetryAfterSupport is set to retryAfterSupportUasEnabled, then, on receipt of re-INVITE followed by ACK for 200 OK (INVITE or re-INVITE), MTAS responses 500 Internal Server Error including a Retry-After header, indicating the time (mtasSipRetryAfterTime second) which the resend re-INVITE should be delayed.
Ro/Rf	DIAMETER	No impact	vMTAS supports Multi-Homing transport for SCTP for Diameter over Ro/Rf interfaces as vMTAS reference connectivity profile 2 shall be default profile. This is changed from previous profile where TCP was used for Diameter.
CDS	DIAMETER	No impact	vMTAS supports Multi-Homing transport for SCTP for Diameter over CDS interface as vMTAS reference connectivity profile 2 shall be default profile. This is changed from previous profile where TCP was used for Diameter.

**Table 4 Inter-Node Interfaces**

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.5
CAP	SIGTRAN	No impact	vMTAS supports Multi-Homing transport for SCTP for SIGTRAN as vMTAS reference connectivity profile 2 shall be default profile. This is changed from previous profile where multi-homing for SCTP was not used.
ETSI MAP	SIGTRAN	No impact	vMTAS supports Multi-Homing transport for SCTP for SIGTRAN as vMTAS reference connectivity profile 2 shall be default profile This is changed from previous profile where multi-homing for SCTP was not used.

(1) This message already exists in the IWD “MTAS CAI3G interface”.

4.2 Operation and Maintenance

This section describes changes to attributes, alarms, events and notifications, triggers, and counters.

4.2.1 Provisioning

There are no deleted attributes.

4.2.1.1 New Attributes

The new attributes are listed in Table 5.

Table 5 New Attributes

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.5
Sh	Diameter	No impact	The following new elements are added in the Sh schema: <ul style="list-style-type: none">• <vtp-domain>• <fip-suppression>
Sh	Diameter	-	New service “Multi-Persona” introduces a new element: <operator-multi-persona>
Sh	Diameter	-	MTAS supports the parsing of the IMSPublicIdentity from the ImplicitIdentities. For example: <pre><Sh-Data> <Extension> <ImplicitIdentities> <IMSPublicIdentity>sip:+17014801382@test.com </IMSPublicIdentity> <IMSPublicIdentity>tel:+17014801382</IMSPublicIdentity> </ImplicitIdentities> </Extension> </Sh-Data></pre>
Sh	Diameter	-	New XML element under <common-data> is added: <number-normalization-phone-context> New XML element under <user-common-data> is added: <default-subscription>



Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.5
CAI3G	CAI3G	No impact	The following new elements are added in the CAI3G schema: <ul style="list-style-type: none"> • <vtp-domain> for Wholesale • <fip-suppression> for FIP
CAI3G	CAI3G	No impact	The operator can configure through CAI3G request customized charging information. New CAI3G element <common-data><charging-avp-list><service-specific-info> is used for provisioning.
CAI3G	CAI3G	-	New service "Multi-Persona" introduces the following new elements: <pre> <multi-persona> <mup-operator-configuration> <activated> </pre>
CAI3G	CAI3G	-	New service UC Routing is added: <pre> <mc:unified-communication-routing> <mc:ucr-operator-configuration> <mc:activated>true</mc:activated> <mc:originating-number>467611111</mc:originating-number> <mc:terminating-number>467622222</mc:terminating-number> </mc:ucr-operator-configuration> </mc:unified-communication-routing> </pre> <p>New XML element under <common-data> is added:</p> <pre> <mc:subscriber-type>BUSINESS</mc:subscriber-type> </pre> <p>New XML element under <user-common-data> is added:</p> <pre> <mc:ucr-served-identity>tel:+4610123456</mc:ucr-served-identity> </pre>
CAI3G	CAI3G	-	New XML element under <common-data> is added: <pre> <number-normalization-phone-context> </pre> <p>New XML element under <user-common-data> is added:</p> <pre> <default-subscription> </pre>
CAI3G	CAI3G	-	The following new elements are added into service "User-Common-Data": <pre> <mobile-subscription-list> <subscription> <id> <impi> <cs-capable> <msisdn> <imsi> </pre> <p>The following new element is added into service "Flexible-Identity-Presentation":</p> <pre> <fip-use-default-impu-identity> </pre>



Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.5
Sh	DIAMETER	-	New elements are added into service “User-Common-Data” operator part: <mobile-subscription-list> <subscription> The above new element <subscription> has the following attributes: <ul style="list-style-type: none">• <id>• <impi>• <cs-capable>• <msisdn>• <imsi> New element is added into service “Flexible-Identity-Presentation” user part: <fip-use-default-impu-identity>
Ut	XCAP	-	New element is added into service “Flexible-Identity-Presentation” user part: <fip-use-default-impu-identity>
Sh	Diameter	-	“Common-Data” introduces a new element: <number-normalization-phone-context> Service “User-Common-Data” introduces a new attribute in element subscription: default-subscription
CAI3G	XCAP	-	New xml element <fip-use-default-impu-identity> is added into provisioning data.
CAI3G	XCAP	-	MMTEL AS supports Provisioning of mobile subscription <mobile-subscription-list> carrying information such as IMPI, CS-CAPABLE and optionally MSISDN and IMSI of the multiple mobile devices.
CAI3G	CAI3G	No Impact	Service “Flexible-Identity-Presentation” introduces a new element: <fip-alternative-user-identity>
Ut	XCAP	No Impact	Service “Flexible-Identity-Presentation” introduces a new element: <fip-alternative-user-identity>
Sh	DIAMETER	No Impact	Service “Flexible-Identity-Presentation” introduces a new element: <fip-alternative-user-identity>

(1) Corresponding Sh elements are added on the Sh interface.

4.2.1.2 Changed Attributes

Table 6 Changed Attributes

Interface	Protocol	Impact	Description of Changes
CAI3G	CAI3G	No Impact	Service “Flexible-Identity-Presentation” extends the existing element: <fip-identity> to support nil operation.

4.2.2 Configuration

This section describes changed, deprecated, obsolete, and new attributes.



For more information on attributes and parameters, refer to *vMTAS Master Parameter Value List*.

4.2.2.1

Changed Attributes

The changed attributes are shown in Table 7.

Table 7 Changed Attributes

Attribute Name	Description of Change
mtasChargingProfileOmitAcr	The Interim-Reason AVP code is added to the list of allowable values
mtasFcdCallToRelatedUserTag	Attribute cardinality is changed from 1-1 to 0-1
mtasEsCbTag	Attribute cardinality is changed from 1-1 to 0-1
vtasFcdCallToRelatedUserTag	Attribute cardinality is changed from 1-1 to 0-1
vtasEsCbTag	Attribute cardinality is changed from 1-1 to 0-1
mtasMrControllerRoute	There is a third possible value, "2 - omitRouteHeader". If set, MMTel AS will not include Route header in the messages sent directly to the CAT server.
mtasNccImsiBehavior	The old value 0-IMSI_REQUIRED, 1-IMSI_NOT_REQUIRED is deprecated, the new value 2-IMSI_NOT_REQUIRED_PROVISION 3-IMSI_REQUIRED_PROVISION_IN_NCC_OR_UCD is used. If upgrade from old version, the value of the CM is automatically migrated from 0 to 2, and from 1 to 3.
mtasNumberTranslationRule	A new optional element in the syntax for Number Translation rule which can be used for B-number classification. Colon is used to separate from previous element. For toll-free classification the element shall be ":BNumType=Tollfree". For National Short Code classification the element shall be ":BNumType=NSC".
vtasMmtLocalRingBackMode	Increased range from 0-1 to 0-2 2 = NETWORK_PROVIDED_ORIG_TERM
mtasShIfDestinationHost	Dependency: mtasShIfDestinationHost attribute is ignored if mtasShIfRealmBasedRouting is activated
mtasShIfEfficiency	Description is corrected. Dependency: mtasShIfEfficiency and mtasShIfRealmBasedRouting attributes are mutually exclusive
mtasShIfEffDiscoveryMode	Description is corrected. Dependency: This attribute has an effect only if mtasShIfEfficiency is enabled
mtasShIfEffMandatoryBitSetting	Description is corrected. Dependency: This attribute has an effect only if mtasShIfEfficiency is enabled
mtasConfNotificationUserCountBehavior	Increased range from 0-1 to 0-2 2 = EXCLUDECC_ONLY_IN_USERCOUNT
vtasConfNotificationUserCountBehavior	Increased range from 0-1 to 0-2 2 = EXCLUDECC_ONLY_IN_USERCOUNT
mtasMmtLocalRingBackMode	Increased range from 0-1 to 0-2 2 = NETWORK_PROVIDED_ORIG_TERM
mtasSdsUriSchema	New ENUM value 2 sipEmbeddedTelWithoutPhoneContext
mtasSscAbDialEnforceSscSubscribe	Attribute description updated. Changed "AbDial Service" to "Abbreviated Dialing Service".



Attribute Name	Description of Change
vtasSscAbDialEnforceSscSubscribe	Attribute description updated. Changed “AbDial Service” to “Abbreviated Dialing Service”.
mtasChargingProfileInterimIntervalSpread	Default valued changed from 0 (do not apply randomization) to 1 (apply randomization) to keep backwards compatibility after upgrading from previous releases
mtasSubsDataRegEventNotifier	Description has been changed
mtasChargingReportRedirectingNumber	List of possible values is extended with value 2=ENABLED_WITH_LAST_REDIRECTING_INFO.
mtasFcdNotRegisteredBehaviour	New value 2 (TRIGGER_ON_SIP_480_RESPONSE) is added.
vtasFcdNotRegisteredBehaviour	New value 2 (TRIGGER_ON_SIP_480_RESPONSE) is added.
mtasChargingProfileFaultHandling	New value: 2=ENHANCED_ASSUME_POSITIVE
mtasCrLastCallInfoType	New Value 2=INDEPENDENT_OF_INTERROGATION_TIME_RELATIVE_DATE
vtasCrLastCallInfoType	New Value 2=INDEPENDENT_OF_INTERROGATION_TIME_RELATIVE_DATE
CarSelCallConfigurationLocalCallAction	New Value 3 –ContinueWithChosenCarrierWithCallType
mtasCbVersion	New value 2 is added but not supported in this release
vtasCbVersion	New value 2 is added but not supported in this release
mtasCrLastCallInfoType	New enum 2 = INDEPENDENT_OF_INTERROGATION_TIME_RELATIVE_DATE introduced. This will give the possibility to express “today”, “yesterday” or “month” and “day” in prompt, privacy announcements.
mtasCDivBlackList	In class MtasCDiv the cardinality of attribute mtasCDivBlackList is changed from 255 to 2048. Assuming reference IMS traffic profile and populating the mtasCDivBlackList with more than 255 entries will result in ~1-4% capacity degradation depending on HW configuration.
vtasCDivBlackList	In class VtasCDiv the cardinality of attribute vtasCDivBlackList is changed from 255 to 2048. Assuming reference IMS traffic profile and populating the mtasCDivBlackList with more than 255 entries will result in ~1-4% capacity degradation depending on HW configuration.
mtasChargingProfileOmitAcr	For maiden installation configurations Result-Code and CC-Time is to be added to this MO. For upgrade scenarios, Result-Code and CC-Time is to be added to this MO for all charging profiles, Ro-information, Ro-Status and Event-Timestamp AVP related settings are to be kept as is.
mtasCbVersion	Enum 2 = (VERSION_2) . If mtasMmtMobileBehaviour is enabled and this attribute value is set to 2, Incoming Barring on Roaming will be based on each device location for served user. VERSION_2 will also have VERSION_1 functional changes included. Fixed device distribution attempted although mobile device distribution(s) prevented due to roaming.



Attribute Name	Description of Change
vtasCbVersion	Enum 2 = (VERSION_2) . If mtasMmtMobileBehaviour is enabled and this attribute value is set to 2, Incoming Barring on Roaming will be based on each device location for served user. VERSION_2 will also have VERSION_1 functional changes included. Fixed device distribution attempted although mobile device distribution(s) prevented due to roaming.
mtasFcdVersion	New enum 2 = BUSYEVERYWHERE_ENDUSER. Busy Everywhere triggered when end users do reject
vtasFcdVersion	New enum 2 = BUSYEVERYWHERE_ENDUSER. Busy Everywhere triggered when end users do reject
MtasCommonDataAccNetwTypeAccInfo	Cardinality: 0-n This Managed Object Class (MOC) represents the Access Info based on P-Access-Network-Info (PANI) header format standardized in 3GPP TS 24.229. It is possible to configure 2 400 000 MtasCommonDataAccNetwTypeAccInfo MOCs for one MtasCommonDataAccNetwType. All alphabetic characters in primary key must be in same letter case.
mtasReBalancingTargetNodeSipUri	Cardinality changed from 1-1 to 0-1

4.2.2.2

Deleted Attributes

The deleted attributes are listed in Table 8.

Table 8 Deleted Attributes

Attribute Name
Configuration of the Arwa server connection properties MOC ArwaConfiguration is removed under ManagedElement=1, SystemFunctions=1, Lm=1.

4.2.2.3

Deprecated Attributes

The deprecated attributes are listed in Table 9.

Table 9 Deprecated Attributes

Attribute Name	Description
mtasChargingProfilePreserveChargSessAtCallPull	CM parameter not used
vtasConfCoLocated	Status of the parameter changed to deprecated
mtasOctRingBackToneAnn	Replaced by mtasMmtLocalRingbackAnnouncementName
mtasOctBusyToneAnn	Replaced by mtasMmtGenericFailureAnnouncementName
mtasOctGenericFaultAnn	Status of the parameter changed to deprecated
vtasOctRingBackToneAnn	Replaced by mtasMmtLocalRingbackAnnouncementName
vtasOctBusyToneAnn	Replaced by vtasMmtBusyAnnouncementName
vtasOctGenericFaultAnn	Replaced by vtasMmtBusyAnnouncementName



Attribute Name	Description
mtasChargingProfileMultiDevice	Replaced by <code>mtasChargingProfileMultiDeviceMode</code>
mtasMrControllerSetupTimer	Replaced by <code>mtasMrfOperationTimer</code>
mtasChargingProfileMultiDevice	Deprecated, see HV95839, <code>mtasChargingProfileMultiDeviceMode</code> is introduced instead.
mtasMrControllerSetupTimer	Deprecated, <code>mtasMrfOperationTimer</code> is used instead.
mtasSipPsiPort	Deprecated but can be used in this release.
mtasSipSccOrigPort	Deprecated but can be used in this release.
mtasSipSccOrigUnregPort	Deprecated but can be used in this release.
mtasSipSccTermPort	Deprecated but can be used in this release.
mtasSipSccTermUnregPort	Deprecated but can be used in this release.
mtasSipTrafficOriginatingIpPort	Deprecated but can be used in this release.
mtasSipTrafficOrigUnregIpPort	Deprecated but can be used in this release.
mtasSipTrafficTerminatingIpPort	Deprecated but can be used in this release.
mtasSipTrafficTermUnregIpPort	Deprecated but can be used in this release.
mtasCclnbandInvocationTimer	Deprecated but still used in the release
mtasCrFirstDigitTimeout	Deprecated but still used in the release
mtasCrInterDigitTimeout	Deprecated but still used in the release
mtasMrControllerName	From now on 'mtasMrfcNode' will be used instead of 'mtasMrControllerName' on the following way: So far <code>mtasMrControllerName</code> was used as a default MRF to contact, in the case of no UNLOCKED <code>mtasMrfcNode</code> was configured. From now on, instead of the <code>mtasMrControllerName</code> , a new <code>mtasMrfcNode</code> should be configured if needed.
mtasSipTrafficOrigIpPort	Will not be used when MMTel AS using AS generic SIP port
mtasSipTrafficOrigUnregIpPort	Will not be used when MMTel AS using AS generic SIP port
mtasSipTrafficTermIpPort	Will not be used when MMTel AS using AS generic SIP port
mtasSipTrafficTermUnregIpPort	Will not be used when MMTel AS using AS generic SIP port
mtasSipSccOrigPort	Will not be used when SCC AS using AS generic SIP port
mtasSipSccOrigUnregPort	Will not be used when SCC AS using AS generic SIP port
mtasSipSccTermPort	Will not be used when SCC AS using AS generic SIP port
mtasSipSccTermUnregPort	Will not be used when SCC AS using AS generic SIP port
mtasSipPsiPort	Will not be used when AS generic SIP port is used for the MA interface
mtasMrControllerName	Deprecated, but can be used in this release

4.2.2.4

Obsolete Attributes

The obsolete attributes are listed in Table 10.



Table 10 *Obsolete Attributes*

Attribute Name
mtasExtMrfcDtmfGrammarFileUrl
mtasMrControllerDtmfGrammarFileUrl
mtasChargingProfileReportPani

4.2.2.5

New Attributes

The new attributes are listed in Table 11.

Table 11 *New Attributes*

Attribute Name	Description
DNS.DnsDscpValue	Added and supported
mtasAslw181Filtering	Added and supported
mtasAslwSessionProgressMappingOnPreconditionEnabled	Now supported
mtasCatUntilDiversionResponse	Added and supported
mtasCbLocationInTransitMode	Added and supported
mtasCbVersion	Now supported
mtasCcChargEventOnCcRecallFailure	Now supported
mtasCclInvokeUserErrorAnnouncementName	Added and supported
mtasCdivAfterByeOfferEstablishedMediaTypesToTarget	Added and supported
mtasCdivNotRegisteredReason	Added and supported
mtasCdivRequestTimeoutReason	Added and supported
mtasChargingProfileReportFipIdInOrigChargingMessages	Now supported
mtasChargingProfileTermCcaUpdateEvaluation	Added but not supported
mtasChargingMrfUserInputErrorHandlingProfile	Added but not supported
mtasChargingProfileOrigCcaUpdateEvaluation	Added but not supported
mtasChargingProfileReleaseReason	Added but not supported
mtasChargingProfileInterimIntervalSpread	Added but not supported
mtasChargingProfileLongDurationInterimTimer	Added and supported
mtasChargingProfileMultiDeviceMode	Now supported
mtasChargingProfileReportFipIdInTermChargingMessages	Now supported
mtasChargingProfileSuppressRfMsisdnImsiSubscriptionIdAVP	Now supported
mtasChargingProfileSuppressRoMsisdnImsiSubscriptionIdAVP	Now supported
mtasChargingProfileUseFromHeaderAsCallingPartyAddressWhenNoPai	Added and supported



Attribute Name	Description
mtasChargingProfileUseUnkownAsCallingPartyAddressWhenNoPai	Added and supported
mtasChargingSubscriberCreditNotificationMrfOffer	Added and supported
mtasChargingSubscriberCreditNotificationOfferEstablishedMediaToTarget	Added and supported
mtasChargingSubscriberCreditNotificationVideoDirective	Added and supported
mtasChargingTimeZoneSource	Now supported
mtasChargingProfileReportAtDisconnection	Now supported
mtasConfImpuBasedMoveInEnabled	Added and supported
mtasConfMoveCodecOfferingMode	Added and supported
mtasConfMrfUserInputErrorHandlingProfile	Added but not supported
mtasCrEraFailureAnnName	Added and supported
mtasCrEraSuccessAnnName	Added and supported
mtasCrLastCallInfoRestricted	Added and supported
mtasCrLastCallInfoType	Added and supported
mtasCsDsaAllowSpecialChars	Added but not supported
mtasCwSend180RingingAfterPreconditionNegotiation	Added and supported
mtasChargingProfileRoSuppressionOnBNumber	Added and supported
mtasChargingProfileAssumePositiveDefaultCcfh	Now supported
MtasDns	Added but not supported
mtasDnmFixedDeviceSupportApplicableForLocalness	Added and supported
mtasDnsMonitoringEnabled	Added and supported
mtasIcbRoamingCallerPreferenceWifi	Now supported
mtasEsCbTag	Added but not supported
mtasFcdCallToRelatedUserTag	Now supported
mtasFcdNotRegisteredReason	Added and supported
mtasFcdSuppressEarlyMediaToRelatedUser	Added but not supported
mtasFcdSuppressOrigOnlineChargingToRelatedUser	Now supported
mtasFcdSuppressOnlineChargingOnRelatedUser	Added but not Supported
mtasFcdEarlyMediaSuppressionHeaderToRelatedUser	Now supported
mtasGmPemRemoval	Now supported
mtasHoldBandwidthOptimizationBehaviour	Added and supported. Post upgrade, the recommended value is 1
mtasJcBackwardIcbsBehavior	Added and supported
mtasJcFchChargeRateNoflex	Added and supported
mtasJcFchChargeRateOrdinary1	Added and supported
mtasJcFchChargeRateOrdinary2	Added and supported
mtasJcFchChargeRatePayphone1	Added and supported



Attribute Name	Description
mtasJcFchChargeRatePayphone2	Added and supported
mtasMmtAsName	Added but not supported in this release, default value MMTelAS used
mtasMmtRoamingCheckMode	Now supported
mtasMmtBusyAnnouncementName	Added and supported
mtasMmtEstablishedSessionGauge	Added but not supported
mtasMmtGenericFailureAnnouncementName	Added and supported
mtasMmtMobileBehaviour	Added and supported
mtasMmtMobileUserDetermination	Added and supported
mtasMmtMobileUserDetermination	Now supported
mtasMmtMultiMobileSupport	Added and supported
MtasMmtNoSubscription	Added and supported
mtasMmtNoSubscriptionNuisanceCall	Added and supported
mtasMmtNoSubscriptionRouteParameter	Added and supported
mtasMmtNoSubscriptionSharedPUI	Added and supported
mtasMmtNoSubscriptionSimultaneousLimit	Added and supported
mtasMmtNoSubscriptionSupported	Added and supported
mtasMmtReInviteDelayTime	Now supported
mtasMmtReInviteRetryAfterSupport	Now supported
mtasMmtReInviteRetryAfterTimeMax	Now supported
mtasMmtServedSubscriberType	Added and supported
mtasMmtTermTrunkChargingProfileRef	Added and supported
mtasMmtNpliOriginatingOnSessionRelease	Now supported
mtasMmtNpliTerminatingOnSessionRelease	Now supported
mtasMrControllerVxmlPathReplacementForPlayParameter	Added and supported
mtasMrControllerMrfcNodeRecoveryTimer	Now supported
MtasMrfUserInputErrorHandling	Added but not supported
MtasMrfUserInputErrorHandlingProfile	Added but not supported
mtasMrfcNodeOperationalState	Now supported
mtasMrfUserInputErrorHandlingProfileInterdigitTimeout	Added but not supported
mtasMrfUserInputErrorHandlingProfileMaxAttempts	Added but not supported
mtasMrfUserInputErrorHandlingProfileNoInputAnnouncement	Added but not supported
mtasMrfUserInputErrorHandlingProfileNoMatchAnnouncement	Added but not supported
mtasMrfUserInputErrorHandlingProfileTimeout	Added but not supported
mtasNccBNumberBasedTrigger	Added and supported
mtasNccBNumberList	Added and supported



Attribute Name	Description
mtasNccCreditAnnouncementName	Added and supported
mtasNccReportSsiToCharging	Added and supported
mtasOctOfferEstablishedMediaTypesToTarget	Added and supported
MtasPemlwf	Added but not used
mtasPemlwfAdministrativeState	Now supported
mtasReBalancing	Added and supported
mtasReBalancingAdministrativeState	Added and supported
mtasReBalancingState	Added and supported
mtasReBalancingTargetNodeSipUri	Added and supported
mtasReBalancingThreshold	Added and supported
mtasSccAsName	Added but not supported in this release, default value SCCAS used
mtasSccNpliOriginatingOnSessionRelease	Now supported
mtasSccNpliTerminatingOnSessionRelease	Now supported
mtasSccMobileBehaviour	Added and supported
mtasSdsCreatePvni	Now supported
mtasShIfRealmBasedRouting	Added and supported
mtasSipEnableSessionRefreshForEarlyUpdate	Added and supported
mtasSipChangeRefresherRoleInReinviteAndUpdate	Now supported
mtasSipRemoveSupportedHeaderInErrorResponse	Now supported
mtasSipTransparentEarlyBye	Added and supported
mtasSscAbDialEnforceSscSubscribe	Added and supported
mtasSscCrEraComSyntInv	Added and supported
mtasSscCdivTargetNumberDenorm	Now supported
mtasSscCellAnnEnforceSscSubscribe	Added and supported
mtasSscCrEnforceSscSubscribe	Added and supported
mtasSscHotlineEnforceSscSubscribe	Added and supported
mtasSscPriorityCallEnforceSscSubscribe	Added and supported
mtasPemlwf199SupportedIndication	Added and supported
mtasSscVmEnforceSscSubscribe	Added and supported
mtasSccNpliDefaultCSAccessType	Added and supported
mtasSccNpliOriginatingCSLocationInformation	Added and supported
mtasSccNpliTerminatingCSLocationInformation	Added and supported
mtasSscRejectInvalidServiceCodeCommand	Added and supported
MtasSpecializedMediaResourceRoute	Added and supported
mtasSrvccAlertingBuffer18x	Added and supported
mtasSrvccR12Charging	Added and supported
mtasSdsPaniPolicy	Added and supported



Attribute Name	Description
mtasStCdivPostOpRulesBehavior	Added and supported
mtasStodCallPullPolicyRoaming	Now supported
mtasSubsDataRegEventNotifier	Added and supported
MtasTa	Now supported
mtasTaAdministrativeState	Now supported
mtasTadsCsBreakoutControl	Added and supported
mtasTadsDenormalizeAllCsns	Added and supported
mtasTadsHssTadsInfoQuery	Added but not supported
mtasTadsNotRegisteredReason	Added and supported
mtasTadsOngoingSessionGauge	Added and supported
mtasTadsRegion	Added and supported
mtasTadsRegionCsnnPrefix	Added and supported
MtasTestAnnNumbers	Now supported
mtasTestAnnNumbersGa	Now supported
mtasTestAnnNumbersNum	Now supported
MtasUCRouting	Added and supported
mtasUCacApplyWaitingLimitOnSide	Added and supported
mtasUCRoutingAdministrativeState	Added and supported
mtasUCRoutingNormalizedNumberHeader	Added and supported
mtasUCRoutingOriginalDestinationNumberHeader	Added and supported
mtasUCRoutingPSUHeader	Added and supported
mtasUCRoutingSessionContinuationErrorCodes	Added and supported
mtasUCRoutingTermReceivedNumberHeader	Added and supported
mtasUCRoutingTermTrunkResponse	Added and supported
mtasXdmsUtValidation	Added and supported
mtasXdmsCai3glrsDefaultImpuUsage	Now supported
NeLSConfiguration	<p>For Network License Server (NeLS) Server configuration parameters.</p> <p>New MOC NeLSConfiguration and following attribute under ManagedElement=1, System Functions=1, Lm=1</p> <p>Host: IPv6, IPv4 or DNS name, the IP address or domain name of NeLS</p> <p>Port: The port number that is used to connect to NeLS</p> <p>RetryInterval: The number of seconds between reconnection attempts. First reconnection attempt occurs randomly between tree to five minutes. Subsequent attempts occur with the delay specified by retryInterval.</p> <p>connectionStatus: (read only) represents status of the connection toward NeLS</p>



Attribute Name	Description
vtas3ptyDisableWithAnn	Added and supported
vtasCbLocationInTransitMode	Added and supported
vtasCbVersion	Added but not supported
vtasCcChargEventOnCcRecallFailure	Now supported
vtasCclInvokeUserErrorAnnouncementName	Added and supported
vtasCdivAfterByeOfferEstablishedMediaTypesToTarget	Added and supported
vtasCdivNotRegisteredReason	Added and supported
vtasCDivRequestTimeoutReason	Added and supported
vtasConfImpuBasedMoveInEnabled	Added and supported
vtasConfMoveCodecOfferingMode	Added and supported
vtasCrEraFailureAnnName	Added and supported
vtasCrEraSuccessAnnName	Added and supported
vtasEsCbTag	Added but not supported
vtasFcdCallToRelatedUserTag	Now supported
vtasFcdNotRegisteredReason	Added and supported
vtasFcdSuppressEarlyMediaToRelatedUser	Added and supported
vtasFcdSuppressOrigOnlineChargingToRelatedUser	Now supported
vtasFcdSuppressOnlineChargingOnRelatedUser	Added but not supported
vtasFcdEarlyMediaSuppressionHeaderToRelatedUser	Now supported
vtasHoldBandwidthOptimizationBehaviour	Added and supported Post upgrade, the recommended value is 1
vtasMmtBusyAnnouncementName	Added and supported
vtasMmtGenericFailureAnnouncementName	Added and supported
vtasMmtMobileUserDetermination	Added and supported
vtasMmtRelInviteDelayTime	Added but not used
vtasMmtRelInviteRetryAfterSupport	Added but not used
vtasMmtRelInviteRetryAfterTimeMax	Added but not used
vtasMmtServedSubscriberType	Added but not supported
vtasMmtTermTrunkChargingProfileRef	Added but not supported
vtasOctOfferEstablishedMediaTypesToTarget	Added and supported
VtasPriorityCallGetsService	Now supported
vtasPriorityCallGetsServiceAdministrativeState	Now supported
vtasPriorityCallGetsServiceAnNumbers	Now supported
vtasPriorityCallGetsServiceNtNumbers	Now supported
vtasPriorityCallGetsServiceWithNoRPH	Now supported
vtasPriorityCallGetsServiceWithUnknwonGETSCallType	Now supported
vtasPriorityCallGetsServiceWps	Now supported



Attribute Name	Description
vtasSscCrEraComSyntInv	Added and supported
vtasSscCdivTargetNumberDenorm	Now supported
vtasSscAbDialEnforceSscSubscribe	Added and supported
vtasSscCellAnnEnforceSscSubscribe	Added and supported
vtasSscCrEnforceSscSubscribe	Added and supported
vtasSscHotlineEnforceSscSubscribe	Added and supported
vtasSscRejectInvalidServiceCodeCommand	Added and supported
vtasSscVmEnforceSscSubscribe	Added and supported
VtasUCRouting	Added but not supported
vtasUCRoutingAdministrativeState	Added but not supported
vtasUCRoutingDropBack	Added but not supported
vtasUCRoutingNormalizedNumberHeader	Added but not supported
vtasUCRoutingOriginalDestinationNumberHeader	Added but not supported
vtasUCRoutingPSUHeader	Added but not supported
vtasUCRoutingSessionContinuationErrorCodes	Added but not supported
vtasUCRoutingTermReceivedNumberHeader	Added, but not supported
vtasUCRoutingTermTrunkResponse	Added, but not supported
vtasMmtMobileBehaviour	Added but not supported
vtasMmtMultiMobileSupport	Added but not supported
mtasCdivPostOpRulesBehavior	Now supported
vtasCwSend180RingingAfterPreconditionNegotiation	Added and supported
vtasUCacApplyWaitingLimitOnSide	Added and supported
vtasSscPriorityCallEnforceSscSubscribe	Added and supported
mtasCcMrfUserInputErrorHandlingProfile	Added but not supported
mtasFcdMrfUserInputErrorHandlingProfile	Added but not supported
mtasCrMrfUserInputErrorHandlingProfile	Added but not supported
mtasCrCallingPartyDenorm	Now supported
mtasCrPrivacyCallSavedTodayAnnName	Now supported
mtasCrPrivacyCallSavedYesterdayAnnName	Now supported
mtasCrPrivacyCallSavedDayAndMonthAnnName	Now supported
mtasCrPromptTodayAnnName	Added but not supported
mtasCrPromptYesterdayAnnName	Now supported
mtasCrPromptDayAndMonthAnnName	Now supported
mtasCrPlayCollectFailureAnnName	Now supported
mtasCrUnavailableSavedAnnName	Now supported
mtasCrUseFromHeader	Added but not supported
vtasCcMrfUserInputErrorHandlingProfile	Added but not supported



Attribute Name	Description
vtasConfMrfUserInputErrorHandlingProfile	Added but not supported
vtasCrMrfUserInputErrorHandlingProfile	Added but not supported
vtasFcdMrfUserInputErrorHandlingProfile	Added but not supported
vtasCrCallingPartyDenorm	Added but not supported
vtasCrPrivacyCallSavedTodayAnnName	Added but not supported
vtasCrPrivacyCallSavedYesterdayAnnName	Added but not supported
vtasCrPrivacyCallSavedDayAndMonthAnnName	Added but not supported
vtasCrPromptTodayAnnName	Added but not supported
vtasCrPromptYesterdayAnnName	Added but not supported
vtasCrPromptDayAndMonthAnnName	Added but not supported
vtasCrPlayCollectFailureAnnName	Added but not supported
vtasCrUnavailableSavedAnnName	Added but not supported
vtasIcbRoamingCallerPreferenceWifi	Added but not supported
vtasMmtRoamingCheckMode	Added but not supported
vtasCrUseFromHeader	Added but not supported
VtasSscOcbBpGroups	Added but not yet supported
MtasSscOcbBpGroup	Added but not yet supported
mtasSscOcbBpGroupAnnAct	Added but not yet supported
mtasSscOcbBpGroupAnnDeact	Added but not yet supported
mtasSscOcbBpGroupAnnInt	Added but not yet supported
VtasSscOcbBpGroup	Added but not yet supported
vtasSscOcbBpGroupAnnAct	Added but not yet supported
vtasSscOcbBpGroupAnnDeact	Added but not yet supported
vtasSscOcbBpGroupAnnInt	Added but not yet supported
mtasCrCallUnavailableSavedDayAndMonthAnnName	Added but not yet supported
mtasCrCallUnavailableSavedTodayAnnName	Added but not yet supported
mtasCrCallUnavailableSavedYesterdayAnnName	Now supported
mtasSscOcbDetailedAnn	Now supported
vtasCrCallUnavailableSavedDayAndMonthAnnName	Now supported
vtasCrCallUnavailableSavedTodayAnnName	Now supported
vtasCrCallUnavailableSavedYesterdayAnnName	Now supported
vtasSscOcbDetailedAnn	Added but not yet supported
vtasSscOcbDetailedAnn	Added but not yet supported
mtasSipRetryAfterSupport	Added and supported
mtasSipRetryAfterTime	Added and supported
mtasConfVersion	Added and supported
vtasConfVersion	Added and supported



Attribute Name	Description
mtasSrvccReleaseReason	Added and supported
mtasSscRejectFailedServiceCodeCommand	Added and supported
vtasSscRejectFailedServiceCodeCommand	Added and supported
mtasSscMinLenOfNdNum	Now supported

4.2.3 Fault Management

This section describes changed, new, and removed alarms.

4.2.3.1 Changed Alarms

The changed alarms are listed in Table 12.

Table 12 Changed Alarms

Alarm	Description
MtasSip, Failed to Open Port	Two new causes are added for this alarm: <ul style="list-style-type: none"> • Cause 1: When there is no available ephemeral port at the cluster wide for outgoing TCP connections, the alarm will be raised. Description of cause 1: The outgoing connection setup and bind the eVIP address with any free ephemeral port, which shall be available at the cluster level for processors. If no ports are available in the cluster, the alarm is issued with processor-specific information. When the binding failed in a different processor, the alarm is updated accordingly. The alarm ceases when the ephemeral ports are available again at the cluster level during a new TCP outgoing connection are setup successfully. • Cause 2: SIP outgoing connections via TCP timed out. Description of cause 2: If there is no response from the peer for the SYN request sent by MTAS when attempting to set up an outgoing SIP connection to the peer, for example, CSCF, then the connection request times out. The alarm ceases when new SIP outgoing connections are set up successfully.
MtasMmt, BL Voice Base License Absent	Changed to "MtasMmt, Business Line AS Base License Absent"
MtasLicenses, BL Voice Base License Capacity Exceeded	Changed to "MtasLicenses, Business Line AS Base License Capacity Exceeded"
MtasLicenses, MMTel BL Service Exposure License Absent	Changed to "MtasLicenses, BL Service Exposure License Absent"
MtasLicenses, MMTel BL Location Services License Absent	Changed to "MtasLicenses, BL Location Services License Absent"
MtasLicenses, MMTel BL Legacy IN reuse License Absent	Changed to "MtasLicenses, BL Legacy IN reuse License Absent"
MtasLicenses, MMTel BL Multimedia License Absent	Changed to "MtasLicenses, BL Multimedia License Absent"
MtasLicenses, UC Routing License Absent	Changed to "MtasLicenses, BL UC/PBX ReRouting License Absent"
MtasLicenses, MMTel BL Conference License Capacity Exceeded	Changed to "MtasLicenses, BL Ad-hoc Group Call License Capacity Exceeded"

4.2.3.2 New Alarms

The new alarms are listed in Table 13.



Table 13 New Alarms

Alarm	Description
MMAS, CPU Load Limit Exceeded	Issued by MMAS on OAM processors (SCs) when the CPU load use on these nodes exceeds the configured threshold value.
MtasDNS, Configured DNS server unavailable	Raised if DNS monitoring is enabled and any of the DNS servers configured is not available. Severity is Major if at least one DNS server is available. Severity is Critical if none of the DNS servers are available. The alarm is cleared if all DNS servers are available or DNS monitoring is disabled.
MtasLicenses, BL Legacy IN reuse License Absent	Raised when MMTel is configured for business usage and BL Legacy IN Reuse license is absent when the <code>mtasSsfCaps2AdministrativeState</code> is unlocked.
MtasLicenses, BL Location Services Support License Absent	Raised when MMTel is configured for business usage and BL Location Services Support license is absent when the <code>mtasDnmAdministrativeState</code> is unlocked.
MtasLicenses, BL Multimedia License Absent	Raised when MMTel is configured for business usage and BL Multimedia license is absent when the <code>mtasVideoFBAdministrativeState</code> is unlocked.
MtasLicenses, BL Service Exposure License Absent	Raised when MMTel is configured for business usage and BL Service Exposure license is absent when the <code>mtasFsfAdministrativeState</code> and/or <code>mtasMmtPxAdministrativeState</code> are unlocked.
MtasLicenses, BL UC Routing License Absent	Raised when MMTel is configured for business usage and BL UC Routing license is absent when the <code>mtasUCRoutingAdministrativeState</code> is unlocked.
MtasLicenses, Communication Interworking Function NW AS Base License Absent	If Communication Interworking Function NW AS Base License absent or License Server Not reachable or License expired or License Server in LOCKED mode and <code>mtasNwAdministrativeState</code> is unlock, then this alarm will be raised.
MtasLicenses, MMTel Communication State Exposure License Absent	If MMTel Communication State Exposure license absent, then this alarm will be raised.
MtasLicenses, MMTel Legacy IN reuse License Absent	If MMTel Legacy IN-reuse license absent, then this alarm will be raised.
MtasLicenses, MMTel Location Services License Absent	If MMTel Location Services Support license absent, then this alarm will be raised.
MtasLicenses, MMTel Multi Device License Absent	If MMTel Multi Device license absent, then this alarm will be raised.
MtasLicenses, MMTel Multimedia License Absent	If MMTel Multimedia license absent, then this alarm will be raised.
MtasLicenses, MMTel Service Exposure License Absent	If MMTel Service Exposure license absent, then this alarm will be raised.
MtasLicenses, Multi Sim License Absent	Alarm raised when a valid multi-sim license is not granted.
MtasLicenses, Scc Base License Absent	If SCC AS base pack license absent, then this alarm will be raised.
MtasLicenses, SIP Trunking AS Base License Absent	If SIP Trunking AS Base License absent or License Server Not reachable or License expired or License Server in LOCKED mode and <code>mtasStAdministrativeState</code> is unlock, then this alarm will be raised.
MtasMmt, BL Voice Base License Absent	Raised when MMTel is configured for business usage and BL Voice Base license is absent when the <code>mtasMmtAdministrativeState</code> is unlocked.
MtasMmt, MMTel Voice Base License Absent	If MMTel Voice Base license absent, then this alarm will be raised.
MtasMmtNoSubscription, Number of originating calls	The alarm is raised when number of originating calls received without subscription crosses the arm threshold value of the <code>MtasMmtNoSubscriptionCallReceived</code> . A single alarm is raised per MTAS instance.
MtasScc, WiFi Calling License Absent	If WiFi Calling license absent, then this alarm will be raised.
MtasSrvcc, Single Radio Voice Call Continuity License Absent	If SRVCC license absent, then this alarm will be raised.



4.2.3.3 Deleted Alarms

The deleted alarms are listed in the table.

Table 14 Deleted Alarms

Alarm	Description
MtasAoc, AOC License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasApLdmnp, Address Policing License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasMmt, AS Controlled Forking License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasCc, Communication Completion License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasCpc, Calling Party Category License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasCps, Carrier Select/Pre-select License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasCs, Carrier Select/Pre-select License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasCpsRn, Carrier Select/Pre-select License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasCsRn, Carrier Select/Pre-select License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasCharging, Offline Charging License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasCharging, Online Charging License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasCharging, Subscriber Credit Notification License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasDtm, DTM License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasEct, Explicit Communication Transfer License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasGm, GM License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasGCac, Communication Admission Control License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.

Table 14 Deleted Alarms

Alarm	Description
MtasIdPres, Calling Name Identity Presentation License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, Conference Capacity License Exceeded	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, MMTel Capacity License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, MMTel Capacity License Exceeded	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, Mobile Services Capacity License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, Mobile Services Capacity License Exceeded	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasMmt, MMTel License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasMrfc, External MRFC License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasMrfc, Multiple Language Support License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasNa, Network Announcement License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasSnd, Short Number Dialing License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasPriorityCall, Priority Call License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, MMTel Service Profile License Invalid	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasUCac, Communication Admission Control License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasXdms, Access of User service data via Ut-interface License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasNp, Number Portability License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, MMTel Extended License Invalid	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasCat, Cat License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.



Table 14 Deleted Alarms

Alarm	Description
MtasLicenses, Flexible AVP License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasHotline, Hotline License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasIdPres, Originating Calling Name Identity Presentation License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasCr, Call Return License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, Wholesale License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasCug, Closed User Group License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasIdPres, Multi Subscriber Number License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasDr, Distinctive Ring License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasJc, Japanese Charging License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasExtPowerSystem, Fault in External Power System	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, Scc Capacity License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, Scc Capacity License Exceeded	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasScc, SCC AS without interface to HSS(IMS) License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasSds, Service Domain Selection License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasTads, Terminating Access Domain Selection License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, FCD Capacity License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, FCD Capacity License Exceeded	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasStod, Session Transfer To Own Device License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.

**Table 14 Deleted Alarms**

Alarm	Description
MtasVideoFB, CSVideoFallback License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, Parlay X Capacity License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, Parlay X Capacity License Exceeded	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasFsfs, Flexible Service Format Selection License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, ST AS Capacity License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, ST AS Capacity License Exceeded	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasDnm, Location Based Number Translation License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasCsi, IM-SSF License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, IM-SSF Capacity License Exceeded	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasRs, Redirect Server License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, NW AS Communication IWF Capacity License Exceeded	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.
MtasLicenses, NW AS Communication IWF Capacity License Absent	Due to Introduction of NELS based License Support and Concept of Base and Value Pack Licenses in vMTAS the individual Service based license absent Alarms are no longer used in vMTAS.

4.2.4 Events and Notifications

There are no changed, deleted, or new events and notifications.

4.2.5 IFC Triggers

A new terminating trigger is introduced for business users. This is needed to route the VoLTE mobile terminated calls to the MMTel-AS for business line in the UC Mobility solution.

IF (Method=INVITE AND SessionCase="Terminating" AND NOT (header="Ericsson-UCMobility-UC-Ext"))

THEN



Add the following route header:

Route: sip:mmtel.domain.net;sc=term-trunk

There are no changed, deleted, or new Initial Filter Criteria (IFC) triggers.

4.2.6 Counters

This section lists changed and new counters.

For more information on counter description, refer to *MTAS Performance Measurements*.

There are no deleted, changed, or obsolete counters.

4.2.6.1 Changed Counters

The changed counters are listed in Table 15.

Table 15 Changed Counters

Counter Name	Description of Change
MtasXdmsXcapGetNOkE	The counter key is extended with additional key containing the reject code string such as 403, 412.
MtasXdmsXcapPutNOkE	The counter key is extended with additional key containing the reject code string such as 403, 412.
MtasXdmsXMtasXdmsXcapGetNOkEcapDeleteNOkE	The counter key is extended with additional key containing the reject code string such as 403, 412.
MtasChargingTermAca	Corrected KeyTypeNames ; SipResponse to ResultCode SipReason to Reason
MtasChargingTermCca	Corrected KeyTypeNames ; SipResponse to ResultCode SipReason to Reason
MtasChargingOrigAca	Corrected KeyTypeNames ; SipResponse to ResultCode SipReason to Reason
MtasChargingOrigCca	Corrected KeyTypeNames ; SipResponse to ResultCode SipReason to Reason
MtasCdivNumberOfCdivNotOk	Corrected KeyTypeNames ; SipResponse to ResultCode SipReason to Reason

4.2.6.2 Deprecated Counters

The deprecated counters are listed in Table 16.

Table 16 Deprecated Counters

Counter Name	Description of Change
MtasFuncTcpConnections	Measurement is deprecated
MtasMmtOrigCommDurationInit	Measurement is depreciated and replaced by MtasMmtOrigCommDurationInitial



Counter Name	Description of Change
MtasFuncTcpConnections	Measurement is deprecated
MtasMmtOrigUnregCommDurationInit	Measurement is depreciated and replaced by MtasMmtOrigUnrgeCommDurationInitial
MtasMmtTermCommDurationInit	Measurement is depreciated and replaced by MtasMmtTermCommDurationInitial
MtasSip<Orig OrigUnreg Term TermUnreg>RequestIn	Deprecated
MtasSip<Orig OrigUnreg Term TermUnreg>RequestOut	Deprecated
MtasSip<Orig OrigUnreg Term TermUnreg>ResponseIn	Deprecated
MtasSip<Orig OrigUnreg Term TermUnreg>ResponseOut	Deprecated
MtasSip<Orig OrigUnreg Term TermUnreg>RequestOverloadRej	Deprecated
MtasSipScc<Orig Term TermUnreg>RequestIn	Deprecated
MtasSipScc<Orig Term TermUnreg>RequestOut	Deprecated
MtasSipScc<Orig Term TermUnreg>ResponseIn	Deprecated
MtasSipScc<Orig Term TermUnreg>ResponseOut	Deprecated
MtasSipScc<Orig Term TermUnreg>RequestOverloadRej	Deprecated
MtasSipFuncPsiOverloadRej	Deprecated
MtasMmtTermUnregCommDurationInit	Measurement is depreciated and replaced by MtasMmtTermUnregCommDurationInitial

4.2.6.3

New Counters

The new counters are listed in Table 17.

Table 17 New Counters

Counter Name	Description
MtasPriorityCallGetsServiceAttempt	Now supported
MtasPriorityCallGetsServiceOk	Now supported
MtasPriorityCallGetsServiceNok	Now supported
MtasCrInvEraOk	Added and supported
MtasCrInvEraNokI	Added and supported
MtasCrInvEraNokE	Added and supported
MtasMmtOrigCommDurationInitial	Added and supported
MtasMmtOrigUnregCommDurationInitial	Added and supported
MtasMmtTermCommDurationInitial	Added and supported



Counter Name	Description
MtasMmtTermUnregCommDurationInitial	Added and supported
MtasMmtOrigCommDurationAlert	Added and supported
MtasMmtOrigUnregCommDurationAlert	Added and supported
MtasMmtTermCommDurationAlert	Added and supported
MtasMmtTermUnregCommDurationAlert	Added and supported
MtasCsiNoCredit	Added and supported
MtasCsiCallReleasedNoCredit	Added and supported
MtasTa	Added and supported
MtasCsiBNumberTriggerInitDPOK	Added and supported
MtasSubsDataServedUsers	Added and supported
MtasSubsDataRegisteredUsers	Added and supported
MtasReBalancingMovedUsers	Added and supported
MtasReBalancingRedirections	Added and supported
MtasUCRoutingOrigOk	Added and supported
MtasUCRoutingTermOk	Added and supported
MtasUCRoutingTermNOk	Added and supported
MtasConfBusinessParticipants	Added and supported
MtasChargingSuppressedRo	Added and supported
MtasMmtInitOrigSessNOkNet	Added and supported
MtasMmtInitOrigSessNOkService	Added and supported
MtasMmtInitOrigSessNOkSupportNode	Added and supported
MtasMmtInitOrigSessNOkUser	Added and supported
MtasMmtInitOrigUnregSessNOkNet	Added and supported
MtasMmtInitOrigUnregSessNOkService	Added and supported
MtasMmtInitOrigUnregSessNOkSupportNode	Added and supported
MtasMmtInitOrigUnregSessNOkUser	Added and supported
MtasMmtInitTermSessNOkNet	Added and supported
MtasMmtInitTermSessNOkService	Added and supported
MtasMmtInitTermSessNOkSupportNode	Added and supported
MtasMmtInitTermSessNOkUser	Added and supported
MtasMmtInitTermUnregSessNOkNet	Added and supported
MtasMmtInitTermUnregSessNOkService	Added and supported
MtasMmtInitTermUnregSessNOkSupportNode	Added and supported
MtasMmtInitTermUnregSessNOkUser	Added and supported
MtasMmtNoSubscriptionCallAccepted	Added and supported
MtasMmtNoSubscriptionCallReceived	Added and supported
MtasMmtNoSubscriptionCallRejected	Added and supported



Counter Name	Description
MtasMmtNoSubscriptionNuisanceCall	Added and supported
MtasMmtNoSubscriptionOngoingSess	Added and supported
MtasTadsDurationAlertedSessCs	Added and supported
MtasTadsDurationAlertedSessPs	Added and supported
MtasTadsDurationAnsweredSessCs	Added and supported
MtasTadsDurationAnsweredSessPs	Added and supported
MtasTadsDurationInitialSessCs	Added and supported
MtasTadsDurationInitialSessPs	Added and supported
MtasTadsOngoingAlertedSessCs	Added and supported
MtasTadsOngoingAlertedSessPs	Added and supported
MtasTadsOngoingAnsweredSessCs	Added and supported
MtasTadsOngoingAnsweredSessPs	Added and supported
MtasTadsOngoingInitialSessCs	Added and supported
MtasTadsOngoingInitialSessPs	Added and supported
MtasTaInvNOkE	Now supported
MtasTaInvNOkI	Now supported
MtasTaInvOk	Now supported
MtasUCRoutingOrigRoutingFailure	Added and supported
MtasUCRoutingOrigSessionContinuation	Added and supported
MtasUCRoutingTermRoutingFailure	Added but not supported
MtasUCRoutingTermSessionContinuation	Added and supported
MtasFuncSipRequestOverloadRej	Added but not used
MtasMmtSipOrigRequestIn	Added but not used
MtasMmtSipOrigRequestOut	Added but not used
MtasMmtSipOrigResponseIn	Added but not used
MtasMmtSipOrigResponseOut	Added but not used
MtasMmtSipOrigUnregRequestIn	Added but not used
MtasMmtSipOrigUnregRequestOut	Added but not used
MtasMmtSipOrigUnregResponseIn	Added but not used
MtasMmtSipOrigUnregResponseOut	Added but not used
MtasMmtSipTermRequestIn	Added but not used
MtasMmtSipTermRequestOut	Added but not used
MtasMmtSipTermResponseIn	Added but not used
MtasMmtSipTermResponseOut	Added but not used
MtasMmtSipTermUnregRequestIn	Added but not used
MtasMmtSipTermUnregRequestOut	Added but not used
MtasMmtSipTermUnregResponseIn	Added but not used



Counter Name	Description
MtasMmtSipTermUnregResponseOut	Added but not used
MtasSccSipOrigRequestIn	Added but not used
MtasSccSipOrigRequestOut	Added but not used
MtasSccSipOrigResponseIn	Added but not used
MtasSccSipOrigResponseOut	Added but not used
MtasSccSipOrigUnregRequestIn	Added but not used
MtasSccSipOrigUnregRequestOut	Added but not used
MtasSccSipOrigUnregResponseIn	Added but not used
MtasSccSipOrigUnregResponseOut	Added but not used
MtasSccSipTermRequestIn	Added but not used
MtasSccSipTermRequestOut	Added but not used
MtasSccSipTermResponseIn	Added but not used
MtasSccSipTermResponseOut	Added but not used
MtasSccSipTermUnregRequestIn	Added but not used
MtasSccSipTermUnregRequestOut	Added but not used
MtasSccSipTermUnregResponseIn	Added but not used
MtasSccSipTermUnregResponseOut	Added but not used
MtasXdmsXcapConflict	Added but not used
MtasXdmsCai3gConflict	Added but not supported
MtasMmtSip<Orig OrigUnreg Term TermUnreg>RequestIn	Now supported
MtasMmtSip<Orig OrigUnreg Term TermUnreg>RequestOut	Now supported
MtasMmtSip<Orig OrigUnreg Term TermUnreg>ResponseIn	Now supported
MtasMmtSip<Orig OrigUnreg Term TermUnreg>ResponseOut	Now supported
MtasSccSip<Orig OrigUnreg Term TermUnreg>RequestIn	Now supported
MtasSccSip<Orig OrigUnreg Term TermUnreg>RequestOut	Now supported
MtasSccSip<Orig OrigUnreg Term TermUnreg>ResponseIn	Now supported
MtasSccSip<Orig OrigUnreg Term TermUnreg>ResponseOut	Now supported
mtasFuncSipRequestOverloadRej	Now supported



4.3 Other Interface Impacts

4.3.1 User Services

All MTAS nodes in the network must be upgraded before taking new services in operation.

The changes to existing user services are described in Table 18.

The description of impact is as follows:

- **No Impact** – New version can be installed without affecting other nodes.
- **Minor Impact** – There are changes, but with extra configuration the previous behavior can be kept.
- **Major Impact** – The change has made an interface backward incompatible.
- **New Interface** – The interface did not exist in the previous revision.
- **Obsolete** – The interface no longer exists.

Table 18 Changed Services

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.5
ISC	Number Portability	Minor Impact	Number Portability announcement can be played based on the optional B (Called) number list configuration
ISC/Camel	Northbound Call Control	Major Impact	When CAP Release Call (RC) message is received from SCP, MTAS sends SIP BYE with corrected Q.850 cause value.
ISC	Call Hold	No Impact	Bandwidth optimization feature in MMTel AS call hold service will not check the +sip.instance feature tag in contact header if mtasHoldBandwidthOptimizationBehaviour = 1 in REINVITE/UPDATE for HOLD/RESUME.
Sh	SCC AS registration	No Impact	When mtasSubsDataSccAtcfInfoInHss=1, the service data element SccData is created in HSS transparent repository data. Service Indication = SccData with registered ATCF info and IMPI for the SC UE (MSISDN). SccData is removed at de-REGISTER.
ISC	Priority Service	Minor Impact	When the CM parameter mtasPriorityCallGetsServiceAdministrativeState is UNLOCKED, overwrite "non-ets:0" value to "ets:0" in RPH header of received initial INVITE in originating MMTel AS.
ISC	Priority Service	Minor Impact	When the CM parameter mtasPriorityCallGetsServiceAdministrativeState is UNLOCKED, GETS priority service Call Pull, which is started by SSC Code, is not allowed.
ISC	Priority Service	Minor Impact	When the CM parameter mtasPriorityCallGetsServiceAdministrativeState is UNLOCKED, no GETS priority service Call Pull, which is started by Replaces Header.
ISC	Priority Service	Minor Impact	When the CM parameter mtasPriorityCallGetsServiceAdministrativeState is UNLOCKED, set the <exclusive> element value to TRUE in DEN, if Session is GETS Priority Service session.



Table 18 Changed Services

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.5
ISC	Priority Service	Minor Impact	When the CM parameter <code>mtasPriorityCallGetsServiceAdministrativeState</code> is UNLOCKED, an Ad-hoc conference is handled with priority, when the Conference Creator has at least one originating priority call independent of the priority of the other calls and the priority of the conference creating the INVITE.
ISC	Priority Service	Minor Impact	When the CM parameter <code>mtasPriorityCallGetsServiceAdministrativeState</code> is UNLOCKED, increment attempt PM counter for each incoming GETS request keyed on the GETS call type.
ISC	Priority Service	Minor Impact	When the CM parameter <code>mtasPriorityCallGetsServiceAdministrativeState</code> is UNLOCKED, increment OK PM counter for “successful” calls keyed on GETS call type and the target network (intra/inter/undetermined).
ISC	Priority Service	Minor Impact	When the CM parameter <code>mtasPriorityCallGetsServiceAdministrativeState</code> is UNLOCKED, increment NOK PM counter for “unsuccessful” calls keyed on GETS call type and target network (intra/inter/undetermined).
XCAP	Communication Diversion	No Impact	Support to add a No-Reply timer only in XCAP Put request, even if an XCAP rule exists.
XCAP	Flexible Communication Distribution (FCD)	No Impact	Support to add only one or more of divert-primary, No-Reply timers, or target-list in XCAP Put request, even if an XCAP rule exists
ISC	Call Return	No Impact	Users can erase their last saved call data by dialing SSC code for Call Return Erasure procedure.
ISC	Call Return	No Impact	When the CM attribute <code>mtasCrLastCallInfoType</code> is set to 1 the service plays date and time of last saved call together regardless of the moment of interrogation. When the CM attribute <code>mtasCrLastCallInfoRestricted</code> is set to 1 the service plays date and time together regardless of the presentation of the users identity. This functionality depends on the CM attribute <code>mtasCrLastCallInfoType</code> .
ISC	OCT	Minor Impact	When the CM attribute <code>mtasOctOfferEstablishedMediaTypesToTarget</code> is set to enabled , the initial INVITE request sent to refer-to target contains a SDP-offer that is the same as the last SDP-offer sent from the caller when calling OCT number. In relation to initiating ring tone at redirection to refer-to user, the OCT service uses the existing CM attribute <code>mtasMmtLocalRingbackAnnouncementName</code> , instead of <code>mtasOctRingToneAnn</code> . Ensure that <code>mtasMmtLocalRingbackAnnouncementName</code> is configured before the upgrade.
ISC	CDIV	Minor Impact	When the CM attribute <code>mtasCdivAfterByeOfferEstablishedMediaTypesToTarget</code> is set to enabled the initial INVITE request, sent to VMS after CDIV after BYE service has been triggered, contains a SDP-offer that is the same as the last SDP-offer sent from the caller when calling the original user.
CAMEL	Northbound Call Control	No Impact	When CAPv2 Apply Charging (ACH) message is received including the “Release If Duration Exceeded” element, tone parameter and the CM attribute <code>mtasNccCreditAnnouncementName</code> is configured, a warning tone is played to the served user before the allowed call duration is reached.
ISC	FIP	No Impact	New option to allow FIP service suppression in toll-free calls.
ISC	SCN	Minor Impact	SCN use the directive “inactive” when a video call is put on hold and get SDP-offer from MRF.



Table 18 Changed Services

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.5
ISC	LRBT	Minor Impact	LRBT uses an optimized sequence when early update is received in call diversion cases.
ISC	CAT	No Impact	New option for CAT to stop playing at diversion so that it is possible to play a diversion announcement.
Mr/Mp	MMT	No Impact	Play LRBT announcement to served user after OCS initiated precredit announcement during session setup in case no-fork scenario. After OCS initiated precredit announcement to the served user, MMTel AS supports playing an audible ringing tone to the caller.
ISC	CCxx	No Impact	When the CCxx Caller does not provide the required input to the CCxx invocation prompt, the feature introduces new announcement that is being played to the CCxx Caller before the final SIP response.
ISC	SCN	Major Impact	In SCN Service, when multiple announcements are requested towards the MRF, one chained announcement is requested instead of many simple announcements.
ISC	3PTY	Minor Impact	The 3PTY service is not executed when the AdminState is set to locked . New CM parameter <code>mtas3ptyDisableWithAnn</code> is introduced to temporary disable 3PTY service with playing announcement to triggering party.
ISC	DNM	No Impact	Based on new configuration <code>mtasDnmFixedDeviceSupportApplicableForLocalness</code> , Localness check is applied also when the call is from a fixed device. Source of change: HV54656
ISC	Call Return	Minor Impact	When the <code>mtasCrAdministrativeState</code> is in Locked state or the license is not present, the CR service will not start, instead of rejecting the call with 403 error response. Source of change: HV55537
ISC	Communication Barring	No Impact	Based on configuration <code>non-3gpp Access for Mobile subscriber</code> will not be considered fixed access for OCB international/international-exHC/Roaming checks
ISC	Dialog Event Notification (STOD Call Pull)	Major Impact	Inform subscribers that are subscribing to dialog event, if a session cannot be pulled due to device call limits restrictions (MDUCAC).
CAMEL	NorthboundCallControl	No Impact	If <code>mtasNccBNumberBasedTrigger</code> is enabled, the IDP sending can be triggered by B-number matching function.
ISC	Japanese Charging Service	No Impact	Introduction of optional configuration based behaviour to send backward ICBS parameter of FCD primary user (B) towards the originating network New Configurable FCH parameters introduced
ISC	Adhoc Conference	No Impact	Introduced optional configuration (<code>mtasConfMoveCodecOfferingMode</code>) based behavior to carry SDP in reINVITE for move operation in Adhoc conference.
ISC	Re-balancing	No Impact	The Re-balancing feature supports for the redistribution of the registering users. If the feature is active, then the initial and the re-REGISTER requests are redirected to a configurable destination address (target SIP URI) by rejecting the request with a 305 (Use Proxy) response – the Contact header of the response contains the new target address.



Table 18 Changed Services

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.5
ISC	Account activation triggered by OCS service	No Impact	<p>When the CM attribute <code>mtasChargingSubscriberCreditNotificationOfferEstablishedMediaToTarget</code> is set to "enabled" the initial INVITE request sent to user B after account activation triggered by OCS has been executed, will contain an SDP-offer that is the same as originally sent from the caller.</p> <p>The CM attributes <code>mtasOctRingToneAnn</code>, <code>mtasOctBusyToneAnn</code> and <code>mtasOctGenericFaultAnn</code> was deprecated in MTAS 4.6 and vMTAS 1.6 and instead the Account Activation triggered by OCS service will now use the existing <code>mtasMmtLocalRingbackAnnouncementName</code>, <code>mtasMmtBusyToneAnnouncementName</code> and the <code>mtasMmtBusyToneAnnouncementName</code> CM attributes that must have been configured before the upgrade.</p>
ISC	O-SDS service	No Impact	New enum value 2 (<code>sipEmbeddedTelWithoutPhoneContext</code>) for <code>mtasSdsUriSchema</code> makes it possible to use SIP URI with embedded tel without Phone-Context in O-SDS MO local/national calls
ISC	Ad-hoc Conference	No Impact	Conference service will use IMPU in Refer-to header of REFER message to match existing active session to move to conference based on configuration as a fall back option when no session is found using dialog-id or <code>sessionID</code> in Replaces header.
SIP	Line Sharing	No Impact	<p>When the CM attribute <code>mtasFcdSuppressEarlyMediaToRelatedUser</code> is set to "enabled" the initial INVITE request sent to related user in a FCD call will contain an Early Media Suppression header if configured in <code>mtasMmtSuppressEarlyMediaHeader</code>.</p> <p>When a feature tag is configured in the CM attribute <code>mtasFcdCallToRelatedUserTag</code> is set to "enabled" the initial INVITE request sent to related user in a FCD call will contain an Accept-Contact header with the configured tag.</p>
Diameter	Line Sharing	No Impact	<p>When the CM attribute <code>mtaschargingProfileReportFipIdInOrigChargingMessages</code> is enabled for online charging and FIP service is active for the calling user the CCR messages on the originating side will contain Subscription-id and calling-Party-Address AVPs set to FIP identity.</p> <p>When the CM attribute <code>mtaschargingProfileReportFipIdInTermChargingMessages</code> is enabled for online charging, and FIP service is active for the called user the CCR messages on the originating side will contain Subscription-id, Called-Asserted-Identity and Calling-Party-Address AVPs set to FIP identity and the Requested-Party-Address AVP will be present at CCR initial and have the contain of the real served user number.</p>
Diameter	Line Sharing	No Impact	<p>When the CM attribute <code>mtaschargingProfileReportFipIdInOrigChargingMessages</code> is enabled for offline charging and FIP service is active for the calling user the CCR messages on the originating side will contain Subscription-id and calling-Party-Address AVPs set to FIP identity.</p> <p>When the CM attribute <code>mtaschargingProfileReportFipIdInTermChargingMessages</code> is enabled for offline charging and FIP service is active for the called user the CCR messages on the originating side will contain Subscription-id, Called-Asserted-Identity and Calling-Party-Address AVPs set to FIP identity.</p>
Ro Initiated Retarget	Subscriber Credit Notification	Minor Impact	Allow Retarget-Instruction or Final-Unit-Indication AVPs to trigger retarget of session at call setup.
Multi-Persona	Common Service	Minor Impact	The Common Service provides Multi-Persona indication information to the Charging component which send this information to the Charging nodes

Table 18 *Changed Services*

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.5
Enhancements to NPLI support in SCC AS	User Location Service	No Impact	Inclusion of VLR and MSC addresses provided by NPLI into the network-provided P- ANI in SIP signaling and in ANI AVP for offline charging for originating and terminating calls from/to CS domain
IMS Support for UC Mobility	Unified Communication Routing Service	No Impact	Originating/Terminating VoLTE sessions for UC users are routed through the external Unified Communication System. In addition to the UC Routing service; new set of business licenses both for the native and virtual MTAS are introduced.
Ro suppression based on B-Number	Online Charging	No Impact	The Ro signaling for a call can be suppressed by configuration. By default suppression is disabled.
DSCP markings	SIP Service FW	No Impact	DSCP value will be present in DNS queries.
Graceful Scale-in VNF workflow (WF)	vMTAS Lifecycle management (LCM)	No Impact	Graceful Scale-in VNF WF is now supported for MTAS on the VNF-LCM.
CAI3G	SOAP	Minor Impact	Because of an earlier fault, when sending fault response for a sent in CAI3G Login message with wrong credentials is in wrong (mixed version) SOAP format. Now MTAS will answer in either 1.1 or 1.2 SOAP version, based on the incoming request version. See HV63884
Interaction between No reply timers	MMTel	Minor Impact	Logic of MMTel Service has been updated to handle race conditions between MMTel No-Reply and CDIV-Call forward No-Reply/FCD No-Reply timers.
TADS and additional MMTel session statistics	MMTEL and SCCAS	No Impact	New Counter in MMTEL AS and SCC AS. MMTel AS, PM MMTel established session gauge counters. SCC AS, PM CS duration and simulations ongoing session gauge counters. SCC AS, PM PS duration and simulations ongoing session gauge counters.
Destination specific Nuisance call handling & Allowing users without subscription to call white-listed number	TelSession Service	No impact	Allowing user without subscription call white-listed number. The number not in white-listed is barred with configured announcement. Support simultaneous white-listed calls up to a configurable limit, new call attempt is rejected with 486. Add PM counter and SSID for Nuisance Call.
SCC AS cache	SRVCC	No impact	Changes enable 18x responses received during (pre-)alerting to be buffered and forwarded after transfer has finished or PS fallback.
Session Setup Counters	TelSessionService	No impact	Add a number of new PM counters for Session Setup.
Supplementary services for Multi-Sim	MMTel Services and SCC services	Minor Impact	Multi mobile feature allows multiple mobile subscriptions per subscriber in MMTel AS and SCC AS. Charging and call behavior changes if this feature is enabled.
MTAS CDIV action for switched-off terminals	CDiv, FCD, T-Ads services	No Impact	MTAS CDIV action for switched-off terminals allows to provision different call diversion actions, depending on whether a subscriber's terminal is switched off or only temporarily unavailable.



Table 18 Changed Services

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.5
Session Continuation Support by the UC Routing Service	UCRoutingService	Service logic change	The service is updated to support 2 new call flows for originating and terminating session continuation. In short, rerouting original INVITE to IMS network when UC system is unavailable.
More robust handling of re-INVITE requests	LRBT, CAT, FCD, Ad-hoc Conf., NRBT	No Impact	Change in the SIP signaling of the indicated services: -Delayed sending of re-INVITE request when the service triggers session renegotiation to the called party (Related CM: mtasMmtRelInviteDelayTime) -Re-INVITE retry for the final response 500 with Retry-After header received from the called party (Related CMs: mtasMmtRelInviteRetryAfterSupport, mtasMmtRelInviteRetryAfterTimeMax)
Generic test call announcement service	Test Announcement	No Impact	New terminating endpoint service
Update UE Terminal Type and Access Domain determination	SubscriberDataService	No Impact	Change in UE Terminal Type and Access Domain determination. UE access node is "MME" if PANI indicates "3GPP-E-UTRAN", else if PANI indicates "3GPP-GERAN" or "3GPP-UTRAN" access node is "SGSN". If PANI not present UE access node remains Unknown.
CC Recall without answer captured in charging	Communication Completion	No Impact	Introduction of optional configuration based behaviour for originating MMTel AS to generate ACR(Event)/ CCR(Event) with Supplementary-Service-Information AVP indicating the usage of the CC service type (CCBS or CCNR or CCNL) when CC Recall to user A is unsuccessful. New CM Attribute mtasCcChargEventOnCcRecallFailure is introduced to configure this behavior.
Multi Mobile Device in Single IRS support in MTAS iteration-3	ChargingDataCollectorService	No Impact	Introduction of optional configuration based behaviour for SSC and MMTel AS to report ACR(Event)/ CCR(Event) with Subscription-ID with or without MSISDN, IMSI. New CM Attribute and mtasChargingProfileSuppressRfMsisdnImsiSubscriptionIdAVP and mtasChargingProfileSuppressRoMsisdnImsiSubscriptionIdAVP are introduced to configure this behavior.
Multi Mobile Device in Single IRS support in MTAS iteration-3	IncomingCallBarring	No Impact	Multi Mobile Subscriber incoming Barring Due to Roaming. ICB service executed in MTAS. B's incoming communication barring rules is evaluated if subscriber is a multi-mobile subscriber then ICB request location of default subscription from HSS. ICB reject the communication if default subscription is roaming.
Multi Mobile Device in Single IRS support in MTAS iteration-3	UserLocationService	No Impact	Multi Mobile Subscriber's NPLI retrieval from HSS. MMTel retrieves network provided location information from HSS for all the provisioned Multi Mobile Subscriber.
MTAS NPLI query at session release	UserLocationService	No Impact	When NPLI retrieval on session release is configured, there is an extra query to HSS for location information on BYE / 200 OK for BYE. By default, the retrieval on session release is disabled.

**Table 18** *Changed Services*

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.5
Alignment of MTAS Call Return with PSTN	H.248	No Impact	If CM attribute mtasCrLastInfoCallType is set to new value= "2", and CR invocation is done at least 2 days after last incoming call was saved, voice variables "int(ordinal)" and "month" voice variables types are requested via h.248 to be played in prompt or privacy announcement.
Call Return based on FROM header	H.248	No Impact	If CM attribute mtasCrLastInfoCallType is set to new value = "2", and CR invocation is done at least 2 days after last incoming call was saved, voice variables "int(ordinal)" and "month" voice variables types are requested via h.248 to be played in "No classification" announcement.
Reporting Ro interface failure over Rf	Charging	Minor impact	The feature reports Ro interface failure over Rf when offline charging configured for the SIP session and Rf connection established.
Multi-Sim Phase-2 Single IRS support in MTAS	FCD	No Impact	When new mobile behaviour is enabled and mobile-subscription list is provisioned, - FCD will assume below 5 CM setting from Reference configuration and distribute calls in parallel to provisioned mobile subscriptions. - mtasFcdDistributeToPrimaryUserDevices: 1 (Unlocked) - mtasFcdDistributeToPrimaryUserDevicesBehavior: 1 (EXPLICIT_PRIMARY_USER_DEVICE_DISTRIBUTION) - mtasFcdToPrimaryUserSubscription: 1 (SUBSCRIPTION_NE EDED) - mtasCbVersion: 2(VERSION 2) - mtasFcdVersion:2 (BUSYEVERYWHERE_ENDUSER)
	Call Pull	No Impact	When new mobile behaviour is enabled, mobile-subscription list is provisioned and mtasStodCallPullPolicyRoaming is set to SAME-COUNTRY(1), Call Pull Service will reject the request, if pulling device and device with existing session is not in same country. Fixed devices will always pull call when mtasStodCallPullPolicyRoaming is set to SAME_COUNTRY_FIXED_EXCEPTION(2). Call Push is restricted for Multi Mobile Subscribers
	Call Admission Control	No Impact	For MultiMobile Subscriber, Number of mobile session control and simultaneous mobile device usage control is added.
	Comminucation Waiting	No Impact	For MultiMobile Subscriber, CW will be device aware
	SRVCC	No Impact	For multiple mobile subscriptions, support for SRVCC is added.
	Communication Barring	Major Impact	Supplementary-Service-Information AVP is reported in CCR-U instead of CCR-T by ICB for media barring decision when SDP offer from B is sent in final response.
Release reason header addition when terminating PS session	SRVCC	No Impact	After a successful SRVCC access transfer, when SRVCC terminates the PS session and sends BYE/CANCEL/404 (depending on call state and serving MTAS role) the outgoing message is sent with a new reason header if mtasSrvccReleaseReason is set to 1: Reason: SIP;cause=487;text="Terminating PS access after successful transfer"
National dialing plan format in announcements for CR and CD services in MMTel AS	Call Return	No Impact	New option to Call Return service added to trigger last calling number denormalization for segmented announcement



Table 18 *Changed Services*

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.5
National dialing plan format in announcements for CR and CD services in MMTel AS	SSC, Communication Diversion	No impact	New option added to trigger CDiv target number denormalization for segmented announcement
Call Return service based on FROM header	Call Return	No impact	New option to trigger Call Return service based on FROM header.
Call Return service based on FROM header	SSC, Communication Diversion	No impact	New option added to trigger CR segmented announcement for call type "No classification"
MTAS Improvements to S8HR roaming	SDS	No impact	The O-SDS service of SCC AS can add PVNI header to INVITE for ICS mobile originating calls using location information received in CAP IDP, if PVNI header is not present in incoming INVITE.
MTAS Improvements to S8HR roaming	ICB	No impact	ICB service of MMTel AS adds a predefined caller preference in case served user has an active Roaming condition and is currently on WiFi access.
MTAS Improvements to S8HR roaming	TADS	Minor impact	T-ADS service of SCC AS can terminate the call on WiFi access only if a specific caller preference feature tag is present in incoming INVITE.
MTAS Improvements to S8HR roaming	OCB	No impact	OCB service of MMTel AS can use the PLMN ID from PVNI header in incoming INVITE as additional input to roaming state check.
MTAS Improvements to S8HR roaming	ICB	No impact	ICB service of MMTel AS can use the PLMN ID from stored PVNI as additional input to roaming state check.
MTAS Improvements to S8HR roaming	Charging	No impact	Online charging service of MMTel AS can use the PLMN ID from PVNI as additional input to disable Ro signalling towards charging system if the terminating call ends with UE located in HPLMN
MTAS Improvements to S8HR roaming	Northbound Call Control	No impact	Northbound Call Control service of MMTel AS can use the PLMN ID from PVNI as additional input to disable CAP T-CSI invocation towards SCF system if the terminating user is located in HPLMN.
SSC announcement handling for OCB operations.	SSC	Minor impact	Enhancement to the SSC service which allows playing the detailed announcements on OCB BP activation, deactivation and interrogation alternatively to the existing announcements in the design base.

4.3.2 Other Interface Impacts

All vMTAS nodes in the network must be upgraded before taking new services in operation. The changes to other user services are described in Table 19.

Table 19 Other Interface Changes

Source of Change	Service	Interface	Impact	Description of Changes
HV78946	SSC	ISC	No Impact	Six services with SSC codes do not enforce SSC service to be subscribed before allowing use of SSC code. This TR fix introduces six new CM attributes, one for each service, which makes it possible to enable check on SSC Service subscription before allowing use of SSC code. If enabled, use of SSC will be prevented in case SSC is not subscribed. Default is legacy behavior. The following CM attributes are added: <code>mtasSscVmEnforceSscSubscribe</code> , <code>mtasSscCellAnnEnforceSscSubscribe</code> , <code>mtasSscPriorityCallEnforceSscSubscribe</code> , <code>mtasSscAbDialEnforceSscSubscribe</code> , <code>mtasSscCrEnforceSscSubscribe</code> , and <code>mtasSscHotlineEnforceSscSubscribe</code> .
HV74386	FCD	ISC	Minor Impact	Because of an earlier fault FCD service was not adding a mobile terminal selector in the outgoing INVITE for the PRIMARY_MOBILE when configured in <code>mtasFcdAdditionalTermSelectorMobile</code> . Now FCD service will include it.
HV61332	User Location	ISC	Minor Impact	Because of an earlier fault at User Location Service MTAS removed the PIDF+XML (Presence) MIME part within the body included in the received INVITE, if it is not in addr-spec format. Now MTAS will reject such requests with 400 Bad request. In case of response message the session will be terminated.
HV81300	Gateway Model	ISC	Minor Impact	The Gateway Model service removes precondition attributes in SDP of INVITE before forwarding the request when 'precondition' tag is not present in Supported/Require header.
HV91603	CC	Mp, Mr	Minor Impact	The measure of CM attribute " <code>mtasCcInbandInvocationTimer</code> " is seconds (see: [6]). It is stored in an internal object in milliseconds. The original value was multiplied by 100 by mistake. Now it is corrected. Consequences: - Using the internal interface (Mp): no change in duration and 'to' values as they need to be sent in 10 ms granularity, however 'mrt' and 'wit' values were sent out in milliseconds, now it is corrected and they are sent out in 10 ms granularity as standard says they need to be. - Using the external interface (Mr): operator might experience duration values being 10 times longer than before in CC scenarios. In case the service fills our internal object with "duration" value, we start a timer. Previously it was started with "duration" × 2, it has been changed to "duration" + 2 seconds. (If MRF does not react before this timer expires MTAS will send a BYE towards it.)
HV88319	Communication Barring	ISC	Minor Impact	The Communication Barring service tries to extract MCC from any access-info key-value of PANI header before returning MCC extraction failure result.
HV67706	FIP	Rf	Minor Impact	For specific FCP/FIP service interaction case as described in HV98521, FIP AVP will not be reported anymore in ACR STOP.
HV94744	Northbound Call Control	ISC	Minor Impact	If the call is rejected or released by CAP ReleaseCall (RC) message, the warning text in rejection or BYE will be updated to "Release Call received from CAP". If the call is released by ACH.ReleaselfDurationExceed, the warning text in BYE will be updated to "Credit limit reached".
HV16088	Communication Barring	ISC	No Impact	New CM attribute <code>mtasCbVersion</code> : This attribute defines the version of the Communication Barring service used when set to 0 (INITIAL_VERSION) legacy behaviour of the service will be active i.e Communication Barring Service is not forced to add a warning header to each rejection case. when set to 1 (VERSION_1) Communication Barring Service is forced to add a warning header to each rejection case.
HV91894	IdPres	ISC	Minor Impact	from-change options tag re-inserted by user in subsequent in-dialog signaling is removed (that is, EARLY_UPDATE, INVITE_ACCEPT, ReINVITE + UPDATE and ReINVITE_ACCEPT+ UPDATE_ACCEPT).



Source of Change	Service	Interface	Impact	Description of Changes
HV96929	Hold/OCT	ISC	No Impact	Current implementation for SDP offer in INVITE for end-point move was, The MMTel AS shall re-use the last SDP offer from the caller when an initial INVITE is sent to (new) target. MTAS has implemented this requirement. Call flow in the TR shows that the OT is putting User A on hold. So OctService is picking the last SDP (SDP in 200OK from User A for the HOLD Invite) and sending it to User C. This SDP contains 'recvonly' which will be rejected by User B. The TR was solved by making to use the last SDP from User A in the HOLD sequence and modify the media direction in SDP to sendrecv.
HV59547	FIP	ISC	Minor Impact	Because of an earlier fault, Originating MTAS was not changing FROM/PAI according to FIP provisioning data in Unregistered case as it should. This issue is now fixed
HV62178	Adhoc Conference Service	ISC	Minor Impact	Because of an earlier fault, MTAS was not able to answer messages with ill-formed Tel-Uri in the Refer-To header. Now MTAS is answering with code 416 Unsupported URI Scheme with warning code and "Invalid URI format." warning text.
HV70143	FIP	Counter	Minor Impact	Because of an earlier fault, the MtasIdPresFip counter was not incremented when MsnFip was invoked, only when Fip was invoked. Now MTAS is increasing the counter in MsnFip cases as well, so increased counting is possible, if MsnFip is used.
HV61985	Adhoc Conference	ISC	Minor Impact	Because of an earlier fault, Long duration call supervision was not considered, when moving a call to conference. Now MTAS is restarting the Long duration call supervision when a session is moved to conference. See the Multi Media Telephony in MTAS document.
HV64259	Number Normalization	ISC	Minor Impact	Because of an earlier fault, Number Normalization was not applied for Tel-Uris which contained SSC with #. Now MTAS will apply Number Normalization to those Tel-Uris as well.
HV48535	FCD	ISC	Minor Impact	Because of an earlier fault, FCD Service did not put 100rel into the outgoing REINVITE messages. Now FCD Service is adding 100rel into the outgoing REINVITE messages into the Supported header.
HV51184	DEN	ISC	Minor Impact	Because of an earlier fault, in case of an active DEN subscription, MTAS could not handle calls after the client was not providing Device identity in the DEN related SUBSCRIBE message. Now MTAS tries to get the Device identity from the earlier sent REGISTER message.
HV60636	ST-AS	Rf	Minor Impact	Because of an earlier fault, in case of originating call from an Invalid PBX subscriber, no ACR is triggered from ST-AS. Now MTAS is sending ACR event in this case
HV64418	Emergency State	ISC	Minor Impact	In case of Emergency Callback call, every owned device was ringing. Now based on mtasEsCbTag the attributes specifies the tag of the top-most Route header to identify an emergency callback call. MTAS classify served user as being in emergency state if the top-most Route header of an incoming INVITE includes the configured string. Default value is empty, which means that no search of Route header is performed. See the FS 'Emergency State in MTAS' for more details.
HV57010	Sip Overload Control	ISC	Minor Impact	Because of an earlier fault, responses for Out of Dialog requests ,other than INVITE and REGISTER, did not contain OC information. Now MTAS is sending OC related info in those responses as well.
HV73662	FSFS	ISC	Minor Impact	Because of an earlier fault, FSF header was removed by MMTService independent on CM mtasFsfPatternRemoveFlag. Now MTAS will not remove, if the mtasFsfPatternRemoveFlag is set to 0=DO_NOT_REMOVE
HV76617	GCAC	ISC	Minor Impact	Because of an earlier fault, at GCAC Service rejection we used "User Call Admission Control" phrase in the warning strings. Now GCAC will use "Group Call Admission Control" instead.
HV49809	3pty	ISC	Minor Impact	Because of an earlier not handled case, during 3pty conference creation the re-INVITE with media mode 'inactive' caused not handled problems at the call, resulting call termination. Now MTAS is rejecting it with SIP 480.
HV74522	AoC	ISC	Minor Impact	Because of an earlier fault, AoC Service was not sending AoC information in the 180 Ringing message. Now MTAS is sending this information.



Source of Change	Service	Interface	Impact	Description of Changes
HV77906	CDIV	ISC	Minor Impact	Minor impact Because of an earlier fault, MTAS forwarded the RTTI related message body from the C-Party to A-Party in a Call Forwarding Unconditional scenario, in the provisional response. Now MTAS is not forwarding the RTTI related message body in this case.
HV74386	FCD	ISC	Minor Impact	Because of an earlier fault, FCD Service did not add configured AdditionalTermSelector if target was PRIMARY_MOBILE and has not been registered. Now MTAS is checking if CM <code>mtasFcdAdditionalTermSelectorMobile</code> has a configured value in this case. If configured, it will add it to the AC header.
HV76242	CDIV	ISC	No Impact	When <code>mtasCdivPostOpRulesBehavior</code> parameter is disabled (its value is 0) CDIV can only forward if both operator ruleset and user ruleset are activated. When <code>mtasCdivPostOpRulesBehavior</code> parameter is enabled (its value is 1) CDIV can only forward if operator ruleset is activated. <code>mtasCdivPostOpRulesBehavior</code> parameter is disabled by default. <code>mtasCdivPostOpRulesBehavior</code> replaces SC-90.
HW24580	SSC	ISC	No Impact	When the CM attribute <code>mtasSscRejectInvalidServiceCodeCommand</code> is set to FALSE, calls will not be rejected due to invalid SSC command. Default value is TRUE in which case legacy behavior applies where invalid SSC command will result in call rejection.
HV97812	STAS	ISC	No Impact	The STAS now supports to transfer a SIP NOTIFY (refer event) that is received inside of dialog as a response to a REFER message previously sent transparently through ST AS in the other direction. The NOTIFY is sent transparently through ST AS.
HW31744	CDIV	ISC	No impact	When <code>mtasStCdivPostOpRulesBehavior</code> parameter is disabled (its value is 0) CDIV can only forward if both operator ruleset and user ruleset are activated. When <code>mtasStCdivPostOpRulesBehavior</code> parameter is enabled (its value is 1) CDIV can only forward if operator ruleset is activated. <code>mtasStCdivPostOpRulesBehavior</code> parameter is disabled by default.
HW33031	SRVCC	ISC	Minor Impact	SRVCC service is corrected in general to forward the reason header of BYE/CANCEL from UE on CS to the remote UE after SRVCC transfer. Details about the five covered scenarios: <ul style="list-style-type: none">• Originating ongoing call transfer: After SCC AS receives AT-INVITE, BYE from CS contains a reason header. SCC AS sends the BYE to the remote user containing the same reason header.• Terminating ongoing call transfer: After SCC AS receives AT-INVITE, BYE from CS contains a reason header. SCC AS sends the BYE to the remote user containing the same reason header.• Originating alerting transfer: After SCC AS receives AT-INVITE, early BYE/CANCEL from CS contains a reason header. SCC AS sends a CANCEL (or BYE in some corner case) to the remote user containing the same reason header.• Terminating alerting transfer: After SCC AS receives AT-INVITE, BYE/CANCEL from CS contains a reason header. SCC AS sends an error response to the remote user containing the same reason header.• Pre-alerting transfer: After SCC AS receives AT-INVITE, BYE/CANCEL from CS contains a reason header. SCC AS sends a CANCEL (or BYE in some corner case) to the remote user containing the same reason header.
HV98094	Ad-hoc Conference Service	ISC	No impact	During an Ad-hoc Conference it is decided whether the user-entity part of conference info XML of the NOTIFY message has to be anonymous or not according not only to the presence/lack of the privacy header of REFER message but also according to the return value of <code>isMovedInCPAnonymous()</code> function of the <code>AdHocConferenceParticipant</code> object.



Source of Change	Service	Interface	Impact	Description of Changes
HV71205	SIPSFW	Counters	No impact	Fix counter <code>MtasMmtTermUnregServiceDuration</code> , now it can count service execution duration correctly.
HW37628	NCC Service / Ad-hoc Conference Service	CAPv2	No impact	NCC Service has been corrected to not terminate session when receiving <code>ReleaseCall</code> (RC) from CSI in case session is a conference session. It is Ad-hoc Conference service that controls when to terminate a conference session.
HW20725	FCD	ISC	No impact	FCD service changed to not remove provisioned feature tag preference for INVITE sent to the primary target.
HW17822	TADS	ISC	No impact	TADS service rejects early UPDATE coming from remote network during early CS-breakout procedures. Previously such request resulted in Capsule Abortion, now it is rejected with 491 Request Pending.
HW29736	Northbound CallControl Service	ISC	Minor impact	After the call has been established, when NCC receives a <code>ReleaseCall</code> from SCP, then SIPSFW will only put Q850 reason in the Reason header in SIP BYE message.
HW23213	Priority Service	ISC	Major impact	MTAS changes the RPH header handling if the Resource Priority service is enabled. The new behavior is for the both SIP responses and requests originating from MTAS will include an RPH header if it was included in the initial INVITE. Otherwise, RPH header contains if and as it was included in the latest received request on this dialog.
TR HW33693	SRVCC	ISC, Ma	Major impact	If Rel12 charging correlation is enabled (<code>mtasSrvccR12Charging = 1</code>), SCC AS will Store P-Charging-Vector's "icid" and "icid-generated-at" parameters on the source access leg and use them in PCV's "related-icid" and "related-icid-generated-at" that's sent in responses to AT-INVITE.
HW29736	Northbound CallControl Service	ISC, Ma	Major impact	After the call has been established, when NCC receives a <code>ReleaseCall</code> from SCP and generates the <code>TERMINATE_SESSION</code> event, it should only set the 'Q850RejectReason' parameter as empty string, set 'RejectReason' as zero, set 'warningString' as empty string. In this way SIPSFW will only put Q850 reason in the Reason header when translate <code>TERMINATE_SESSION</code> event to SIP BYE message
HW39603	SSC Service	ISC, Ma	No impact	SDP with port set to "0" will be included in 200 OK from MTAS for INVITE when external MRF does not respond on request for playing announcement and when Gateway Model is unlocked
HW23213	Priority Service	ISC, Ma	Major impact	MTAS changes the RPH header handling if the Resource Priority service is enabled. The new behavior is for the both SIP responses and requests originating from MTAS will include an RPH header if it was included in the initial INVITE. Otherwise, RPH header contains if and as it was included in the latest received request on this dialog
HV97228	Number Normalization	ISC, Ma	Major impact	The behaviour is corrected to use Default Context in case no context is found for profile in Number Normalization. Although it is not recommended, but still if faulty legacy behavior is needed, it can be achieved using the ENV variable.
SIP P-Early-Media Header Support and early delivery of the SDP answer	Gateway Model Service	ISC, Ma	No Impact	New option added to keep P-Early-Media header support capability of served user
SIP P-Early-Media Header Support and early delivery of the SDP answer	PEM Interworking service	ISC, Ma	No Impact	New P-Early-Media Interworking service added
HW44703	CAP	Mp	No Impact	Prior to this version CAP to Megaco mapping of Interruptable announcement was incorrect. Now the Boolean is negated (as it should have been done before)



Source of Change	Service	Interface	Impact	Description of Changes
HW31458	Gateway Model Service	ISC, Ma	Minor Impact	If the MMTel AS is operating in non-transparent mode and initial INVITE is received with Request-Disposition: no-fork, Gateway Model service accept early UPDATE.
HW53307	CDIVService	ISC, Ma	Minor impact	<p>Initial INVITE can contain multiple feature tags in Contact header.</p> <p>Perviously during the preparation of the forwarding INVITE CDIVService checked the Contact header feature tag extensions found in the initial INVITE and removed all except for 3 predefined ones (video, audio and isFocus tags). CDIVService doesn't remove any feature tags.</p> <p>Example: Contact header in initial INVITE: Contact: <sip:+16692481015@[fc00:0:12:1284:d45e:bc27:2d43:4d4b]:5060>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mmtel";video;+sip.instance="urn:gsma:imei:99000704-145023-0"></p> <p>Contact header in forwarding INVITE : Contact: <sip:p65548t1513024309m979584c101381s1@[2607:f160:0:1152::2000:3]:5060;transport=udp>;video Contact header in forwarding INVITE : Contact: <sip:p65548t1513024309m979584c101381s1@[2607:f160:0:1152::2000:3]:5060;transport=udp>;+g.3gpp.icsi-ref="urn%3Aurn-7%3A3gpp-service.ims.icsi.mmtel";video;+sip.instance="urn:gsma:imei:99000704-145023-0"></p>
HW50536	Adhoc Conference	-	Minor impact	When vtas/mtasConfVersion is zero, partial notification to CC is not delayed. This setup could cause race condition between explicit and implicit notifications towards conference creator. If CM parameter is set to 1 (default) partial notify will be delayed with 1 sec.
HW56944	SSC Service	-	No impact	A failed supplementary service code command, when early media is not allowed (mtasSSCodesPlayEarlyMedia == false), will be responded. If mtasSscRejectFailedServiceCodeCommand is false (default value), the INVITE will be responded with 200 OK and a negative announcement will be played. If attribute is true, the INVITE will be responded with 3xx/4xx (REJECT) and no announcement will be played.
HW62511	OIR and FIP	-	Minor impact	Because of an earlier fault, when OIR and FIP services were both invoked for the very same call, the Privacy=history parameter in History-Info headers were duplicated. Now that error is fixed, so in these cases only one will be sent.
HW64049	SSC and DNM services	-	No impact	<p>Previously it might happen, that with special configuration DNM and SSC codes might overlap, and maybe not the wanted behavior was taken place. Since in our service chain SSC Service is before DNM Service, in overlapping cases always SSC was triggered.</p> <p>Now there is a new possibility to configure a minimum length for the ND part of the SSC calls, which is triggering SSC. If the minimum length is not reached DNM Service will have also a chance to be triggered.</p> <p>See mtasSscMinLenOfNdNum.</p>
HW12803	CDiv and CPC services	-	Minor impact	Because of an earlier fault, Supplementary-Service-Identity was not included in ACR start for CPC service, if CDiv service was also triggered. Now it is added.
HW63921	NCC	-	Minor impact	When configured to update the number and the display-name, privacy header in the incoming SIP INVITE and Address Presentation Restricted indicator in CAPv2 CON message is checked. Only in case of both privacy settings are "allowed", updating PAI and FROM headers are performed. The updates are done regardless a new destination number is received in CON or not.
HW66668	TelSession Service	-	No Impact	Because of an earlier fault MtasMmtlntit*SessNokService counter was stepped every time the call has been rejected due to internal reasons. Now with this fault fixed, changed counter measurements might be seen.
HW38622	Charging	UC Mobility	-	2 New AVPs have been introduced for the UC mobility feature in the Charging Subsystem: UC-Mobility-Call-Leg and Subscriber-Type. Both of them are added to the default omit lists.



5 Impact on MTAS Features

This section describes the impact on the vMTAS 1.10 features when the feature is turned on.

5.1 Support for Reboot Upgrade

A new upgrade type is supported for MTAS when upgrading from vMTAS 1.5 to 1.10. For information about the new upgrade, refer to *vMTAS Upgrade Instruction from 1.4.2 and 1.5.1 to 1.6*.

Impact

No impact on capacity, performance, network elements, and operation.

5.2 Apache Tomcat for Provisioning

MMAS is uplifted to a version that supports alternative container Apache Tomcat. Apache Tomcat has replaced JBoss that previously has been used for provisioning in MTAS (XDMS).

The advantages are decreased license costs.

In MTAS, traffic separation is mandatory, the `cai3g-vip4`, `cai3g-vip6` and `ut-vip4`, `ut-vip6` are used instead of `oam-vip4` and `oam-vip6` respectively.

Note: The supported from states are 1.4.2 and 1.5.1.

The CAMEL Subscription Information (CSI) attribute `as_name` is updated in MMAS for all clusters.

The following shows the required changes to the CSI attribute:

Previous CSI Attribute

```
cmw-utility immcfg --attribute
saAmfCSIAttriValue=jbcp6
safCsiAttr=as_name,safCsi=CSI-oam-0
,safSi=SI-oam-0,safApp=ERIC-MMAS-A
PP
```

```
cmw-utility immcfg --attribute
saAmfCSIAttriValue=jbcp6
safCsiAttr=as_name,safCsi=CSI-traff
ic-0,safSi=SI-traffic-0,safApp=ERI
C-MMAS-APP
```

Change To

```
cmw-utility immcfg --attribute
saAmfCSIAttriValue=tomcat8
safCsiAttr=as_name,safCsi=CSI-oam-0,saf
Si=SI-oam-0,safApp=ERIC-MMAS-APP
```

```
cmw-utility immcfg --attribute
saAmfCSIAttriValue=tomcat8
safCsiAttr=as_name,safCsi=CSI-traffic-0
,safSi=SI-traffic-0,safApp=ERIC-MMAS-A
PP
```


Impact

No impact on capacity, performance, network elements, and operation.

5.3 NP Announcement Based on B-Number

Number Portability (NP) service is configured with an optional configuration that allows the operator to set its own number ranges.

If at least one B-Number range is defined, the NP announcement is only played if the design base conditions are satisfied and the normalized B-Number matches the configured B-Number range. If no B-Number range is defined, the basic design conditions apply for NP announcement playing.

This feature enhancement is controlled with the CM attributes `mtasNpBNumberList` and `mtasNpRnandAnn`.

Impact

No impact on capacity, performance, network elements, and operation.

5.4 Call Hold Bandwidth Optimization without +sip.instance

MMTel AS supports bandwidth optimization function related to the Communication Hold request even if no `sip.instance` feature tag is included in the SIP `INVITE` or `UPDATE`.

This feature enhancement is controlled by the `mtasHoldBandwidthOptimizationBehaviour` CM attribute.

Impact

No impact on capacity, performance, network elements, and operation.

5.5 Play Ringing Tone after OCS Initiated Precredit Announcement During Session Setup

MMTel AS supports playing an audible ringing tone to the caller, after an Online Charging System (OCS) initiated precredit announcement to the served user.

This feature enhancement is controlled by the `mtasMmtLocalRingBackMode` CM attribute.

Impact

No impact on capacity, performance, network elements, and operation.



5.6 ATCF Information Restoration

Service Centralization and Continuity Application Server (SCC AS) stores Access Transfer Control Function (ATCF) binding information, received in the latest third-party registration in transparent data over Sh.

If no ATCF information is stored when SCC AS receives an initial `INVITE`, the information is fetched from HSS through an Sh transparent data request. The SCC AS updates the ATCF with the ATU-STI/C-MSISDN returned from the HSS in a SIP MESSAGE.

This feature is controlled by the `mtasSubsDataSccAtcfInfoInHss` CM attribute.

Impact

No impact on capacity, performance, network elements, and operation.

5.7 CCxx Invocation Failure Announcements

MMTel AS supports playing an announcement before sending the SIP error response for the following cases related to unsuccessful invocation of the CCxx service:

- User fails to enter the invocation code
CCxx Indicated - Unsuccessful Invocation, Not Invoked
- User says **no** to the invocation question
CCxx Indicated - Unsuccessful Invocation, User says No
MRFP sends "asr/asrsucc", `asrr=no`
- User responds with the wrong invocation code
CCxx Indicated - Unsuccessful Invocation, Wrong Code
MRFP sends `rc=619`
- User voice response cannot be understood
CCxx Indicated - Unsuccessful Invocation, Unrecognised speech
MRFP sends "asr/asrfail", `rc=629`

The announcement is the same for all cases and is also supported over the Mr interface.

This feature is controlled by the `mtasCcInvokeUserErrorAnnouncementName` CM attribute.

Impact

No impact on capacity, performance, network elements, and operation.

5.8 Priority Services Enhancements for VoLTE Deployment-Drop2

The `ets` value can be changed in a SIP request. If a SIP `INVITE` request is received with an `ets` value different than 0, the value can be set to 0 by the user.

MMTel AS supports the following counters for the GETS priority calls:

- One counter stepped for each incoming GETS request keyed on the GETS call type
- One counter for successful calls is keyed on GETS call type and target networks are stepped at successful response
- One counter for unsuccessful calls is keyed on GETS call type and target networks are stepped at unsuccessful response

The affected target networks are described as follows:

- `Intra` - Originating and Terminating GETS call in operator network.
- `Inter` - Originating GETS call in operator network that is terminating in an External Network.
- `Unidentified` - Originating GETS call in operator network that is terminating in an unknown network.

Each of the counters is keyed according to the following categories:

- GETS-FC
- GETS-AN
- GETS-NT
- GETS-FC + GETS-AN
- GETS-FC + GETS-NT

MMTel AS handles an Ad-hoc conference with priority when the Conference Creator has at least one originating priority call, independent of the priority of the other calls and the priority of the conference creating `INVITE`. Also, MMTel AS does not allow the call pull of a GETS priority service call.

These features are controlled by the `mtasPriorityCallGetsServiceOkResponses`, `mtasPriorityCallGetsServiceNoOkResponses`, and `mtasPriorityCallGetsServiceNetIdentifier` CM attributes.

Impact

No impact on capacity, performance, network elements, and operation.



5.9 Additional Session Statistics Counters

The following PM measurement types are supported by the MMTelAS Basic Service:

- Total call duration for originating calls

Starts when originating MMTel AS receives initial `INVITE`, stops on the final negative response, or established session released (`BYE`). Total SUM value reported.
- Total call duration for terminating calls

Starts when terminating MMTel AS receives `INVITE`, stops on final negative response or established session released (`BYE`). Total SUM value reported.
- Total alerting call duration for originating calls.

Starts when originating MMTel AS sends 180 or 200 if no 180 (for initial `INVITE`), stops on final negative response or established session released (`BYE`). Total SUM value reported.
- Total alerting call duration for terminating calls.

Starts when terminating MMTel AS sends 180 or 200 if no 180 (for initial `INVITE`), stops on final negative response or established session released (`BYE`). Total SUM value reported.

Impact

No impact on capacity, performance, network elements, and operation.

5.10 Call Return Interrogation Support for Date and Time

The Call Return Service provides the following information at interrogation:

- The time and date of the last call stored by the Call Return service
- The time and date for calls stored by the Call Return service although received from users with restricted presentation

This feature is controlled by the `mtasCrLastCallInfoType` and `mtasCrLastCallInfoRestricted` CM attributes.

Impact

No impact on capacity, performance, network elements, and operation.

5.11 Call Return Erasure

All subscribers provisioned with the Call Return service can now erase the last call data by dialing a supplementary service code for a Call Return Erasure procedure. Successful invocation of the Call Return Erasure procedure is acknowledged by playing a specific announcement.

This feature is controlled by the `mtasSscCrEraComSyntInv`, `mtasCrEraSuccessAnnName`, and `mtasCrEraFailureAnnName` CM attributes.

Impact

No impact on capacity, performance, network elements, and operation.

5.12 Include an SDP Offer in the Initial INVITE to New Target

An SDP offer can be included in the initial `INVITE` to new target for the OCT and Diversion after `BYE` services. The last SDP offer from the caller is reused when an initial `INVITE` is sent to new target.

The following services are involved:

- Operator Controlled Transfer (OCT) to UE-C
- Diversion after `BYE` (CDBYE) to VMS
- OCS triggered Account Activation to UE-B

In the Session Description Protocol (SDP) offer to the new target, the MMTEL AS deactivates any media lines that were deactivated during the establishment or during the lifetime of the original session to the old target. This is done by setting the corresponding port to 0.

The feature enhancements are controlled by the following CM attributes:

- `mtasCdivAfterByeOfferEstablishedMediaTypesToTarget`
- `mtasChargingSubscriberCreditNotificationOfferEstablishedMediaToTarget`
- `mtasMmtBusyAnnouncementName`
- `mtasMmtGenericFailureAnnouncementName`
- `mtasOctOfferEstablishedMediaTypesToTarget`

**Impact**

No impact on capacity, performance, network elements, and operation.

5.13 CAPv2 Support Play Tone in ACH

If the received CAPv2 Apply Charging (ACH) message includes the “Release If Duration Exceeded” with a tone parameter, the MMTel AS can trigger a warning tone to the served user for an ongoing call before the allowed duration has been reached.

This feature is controlled by the `mtasNccCreditAnnouncementName` CM attribute.

Impact

No impact on capacity, performance, network elements, and operation.

5.14 Reason Text in History-Info Header for CDIV Time-Out

When diversion is triggered because of “No-answer time-out”, the reason header to the first History-Info header includes `Reason=SIP;cause=408;text="Request Timeout"`.

This feature is controlled by the `mtasCdivRequestTimeoutReason` CM attribute.

Impact

No impact on capacity, performance, network elements, and operation.

5.15 Provisioning VTP Domain for Wholesale and FIP Suppression over CAI3G

MTAS supports the provision of Wholesale. A domain provisioned (`vtp-domain`) or fetched from the IMPU (first id) in the IRS is considered in the Number Normalization or when CM parameters are fetched.

Impact

No impact on capacity, performance, network elements, and operation.

5.16 Support of Load Balancing Traffic over Sh Interface

The load balancing feature is realized by realm-based routing for each Sh request message created by the MTAS towards the HSS. The Sh answer messages created by the HSS towards the MTAS are not affected by the feature.

If the host realm is missing from the Sh request message, a peer node is randomly selected from the Realm Routing Table, for example HSS-FE, before it is routed to the selected node.

The host realm is stored in the Destination-Host AVP of the Sh request message.

This feature is controlled by the `mtasShIfRealmBasedRouting` CM attribute.

Impact

No impact on capacity, performance, network elements, and operation.

5.17 Optimize the Local Ring Back Sequence

If Communication Forwarding on No Reply (CFNR) is started and MMTel AS is configured to send an SDP offer to the UE-C, the Local Ring Back sequence avoids the use of a no-SDP `re-INVITE` to the UE-C according to the following:

- When UE-C answers the call, the received SDP answer (from 18x or 200 OK response) is used to establish the session without using `re-INVITE` to the answering terminal after 200 OK (`INVITE`).
- If an early `UPDATE` is received from UE-C with only IP address or port change before 200 OK (`INVITE`), this SDP is stored and used later towards the caller.
- If an early `UPDATE` is received from UE-C with a new codec offer, the offer is answered with a dummy SDP. The MMTel AS starts a short timer and at the timer expiry sends an early-`UPDATE` with the same SDP as in the original SDP offer; the already rejected media lines are also considered.

Impact

No impact on capacity, performance, network elements, and operation.

5.18 CDIV Announcement after CAT Invocation

If Customized Alerting Tones (CAT) are enabled for the served user and a call is diverted, a diversion announcement is played to the caller.



This feature is controlled by the `mtasCatUntilDiversionResponse` CM attribute.

Impact

No impact on capacity, performance, network elements, and operation.

5.19 Runtime Assurance of Cloud SLA

MTAS provides Runtime assurance of Service Level Agreement (SLA) parameters in a cloud infrastructure. The Performance Management (PM) jobs are provided by MTAS and the measurements for SLA Key Performance Indicators (KPIs) (LDE and vDicos) are enabled by default. The SLA KPIs are checked and presented in the node health check procedure.

```
PmJob=MtasSla_OSProcessingLogicalUnit
```

```
PmJob=MtasSla_OSProcessingUnit
```

```
PmJob=MtasSla_OsmDevice
```

Impact

No impact on capacity, performance, network elements, and operation.

5.20 Support of Local Viewing of PM Counters and KPIs

MTAS supports viewing of Performance Management (PM) Counters and node Key Performance Indicators (KPIs) without the need of a Network Management node, when logging on to a live node to enhance the troubleshooting conditions of the system. The Automatic Counter Check tool displays a selection of PM Counters and KPIs from a sequence of time intervals in tabular view.

Impact

No impact on capacity, performance, network elements, and operation.

5.21 International Outgoing Call Barring for Wi-Fi Access

MMTel AS applies the roaming/international/international-exHC conditions in the outgoing call barring service, if enabled for the Mobile Subscriber, even when the user initiates the call on Wi-Fi access. For Wi-Fi initiated calls the roaming/international/international-exHC conditions are evaluated with the current country as the home country.

Based on non-3GPP configuration Access for Mobile subscriber is not considered fixed access for Outgoing Communication Barring (OCB) international/international-exHC/Roaming checks.

This feature is controlled by the `mtasCbLocationInTransitMode`, `vtasCbLocationInTransitMode`, `mtasMmtMobileUserDetermination`, and `vtasMmtMobileUserDetermination` CM attributes.

Impact

No impact on capacity, performance, network elements, and operation.

5.22 Display MDUCAC Calls as Available for Call Pull

When setting the exclusive element, the MMTel AS Communication State Exposure evaluates the Multi-Device User Call Admission Control (MDUCAC) sent in the NOTIFY messages for DEN Service Subscription, as specified in RFC7463.

The dialog event subscriber is informed, if a session cannot be pulled owing to MDUCAC limits restrictions.

Impact

No impact on capacity, performance, network elements, and operation.

5.23 IMEI in MMTel AS Charging

For a single, registered device, the MMTel AS provides International Mobile Station Equipment Identity (IMEI) number in the User-Equipment-Info AVP and Instance-ID AVP over both Ro and Rf interfaces. SCC AS provides the IMEI number in the User-Equipment-Info AVP and Instance-ID AVP only over the Rf interface.

The reporting of the User-Equipment-Info AVP and Instance-ID AVP is only applicable for terminating charging.

Sending of new AVPs is omitted with the `mtasChargingProfileOmitAcr` and `mtasChargingProfileOmitCcr` CM attributes.

Impact

No impact on capacity, performance, network elements, and operation.



5.24 Destination-based CAP Triggering

The enhancement includes the following features:

- The originating MMTel AS can trigger the CAMEL Application Part International Dialing Prefix (CAP IDP) for certain dialed B-Numbers.
- Individual B-Numbers and B-Number series are configurable.
- The Signaling Control Point (SCP) address is configurable for every B-Number.
- The destination-based CAP trigger replaces the subscription-based CAP trigger.

If `mtasNccBNumberBasedTrigger` is enabled, the IDP sending can be triggered by the B-Number matching function.

This feature is controlled with the `mtasNccBNumberBasedTrigger`, `mtasNccBNumberList`, and `mtasSsfReportSsiToCharging` CM attributes.

Impact

No impact on capacity, performance, network elements, and operation.

5.25 Addition of Two Subscriber Transparent Data and CS-Retry Prefix

SCC AS supports selection of Circuit Switch Routing Number (CSRN) prefix (for TADS) based on the MMTel AS provisioned subscriber transparent data. SCC AS supports removal of Country Code from the CSRN before adding the CSRN prefix for all CSRN prefixes. This is supported for CSRN prefixes with overdecadic digits.

This feature is controlled with the `mtasTadsRegion`, `mtasTadsRegionCsrnPrefix`, and `mtasTadsDenormalizeAllCsrs` CM attributes.

Impact

No impact on capacity, performance, network elements, and operation.

5.26 Backward ICBS Parameter for FCD Primary User

When MMTel AS executes Flexible Communication Distribution (FCD) and receives backward Interconnection Charge Billing System (ICBS) parameters of the FCD target users in the SIP responses, MMTel AS does not forward the ICBS parameters transparently to the originating network. Instead, MMTel

AS returns the backward ICBS parameters of the primary FCD user to the originating network.

This feature is controlled with the `mtasJcBackwardIcbsBehavior` CM attribute.

Impact

No impact on capacity, performance, network elements, and operation.

5.27 Configurable FCH Parameters for Japanese Charging Service

New Configurable Flexible Charging (FCH) parameters are introduced and optional configuration-based behavior to send backward ICBS parameter of FCD primary user towards the originating network is available.

Configurable FCH parameters for Japanese Charging service are introduced with default values from hard-coded settings in the design base.

This feature is controlled with the following CM attributes: `mtasJcFchChargeRateNoflex`, `mtasJcFchChargeRateOrdinary1`, `mtasJcFchChargeRateOrdinary2`, `mtasJcFchChargeRatePayphone1`, and `mtasJcFchChargeRatePayphone2`.

Impact

No impact on capacity, performance, network elements, and operation.

5.28 Include SDP Offer in re-INVITE for Moving to an Ad-hoc Conference

MMTel AS supports optional configuration-based behavior to carry Session Description Protocol (SDP) in `re-INVITE` when moving in an existing session to an Ad-hoc Conference.

The following options are supported:

- The SDP offer in the `re-INVITE` is based on the codec list received from the conference mixer (MRF/MRFP).
- The SDP offer in the `re-INVITE` is based on the last negotiated SDP of the ongoing session.

This feature is controlled with the `mtasConfMoveCodecOfferingMode` and `vtasConfMoveCodecOfferingMode` CM attributes.

**Impact**

No impact on capacity, performance, network elements, and operation.

5.29 SIP URI without Phone-context for SCC AS

New ENUM value 2 in the `sipEmbeddedTelWithoutPhoneContext` for `mtasSdsUriSchema` allows use of SIP URI with embedded tel without Phone-Context in the Originating Session Data Services (O-SDS) MO local/national calls.

At MO, Call Out Of the Blue from SCC AS in the role of break out for Business Mobility when SIP URI is configured. There is no phone context added to it when called party is local/national number.

The SIP URI has the `<local-B-number>@ims.mnc<MNC>.mcc<MCC>.3gppnetwork.org; user=phone` format sip.

This feature is controlled with `mtasSdsUriSchema` CM attribute.

Impact

No impact on capacity, performance, network elements, and operation.

5.30 SDP Offer for Initial INVITE to New Target for Account Activation

When the CM attribute `mtasChargingSubscriberCreditNotificationOfferEstablishedMediaToTarget` is enabled, the MMTel AS reuses the last SDP offer from the caller, when an initial INVITE is sent to target involving OCS triggered Account Activation, to UE-B. In the SDP offer to the new target, MMTel AS is deactivating any media lines that were deactivated during establishment or during the lifetime of the original session to the old target by setting the corresponding port to 0.

This feature is controlled with the `mtasChargingSubscriberCreditNotificationOfferEstablishedMediaToTarget` CM attribute.

Impact

No impact on capacity, performance, network elements, and operation.

5.31 Rebalancing by Moving Users between MTAS Instances

MTAS supports redistribution of the registering users, where all the initial, the re-registration and de-registration procedures are in the scope of the redistribution/re-balancing. If the Rebalancing feature is active, the initial and `re-REGISTER` requests are redirected to a configurable destination address (target SIP URI) by rejecting the request with a 305 (Use Proxy) response. The Contact header of the response contains the new target address and the de-registration procedure starts on the de-registration of the last contact.

The redistribution procedure stops automatically if the number of registered users on the node falls below a configurable threshold. The operator can start and stop the redistribution procedure manually and check if the Rebalancing is in progress.

This feature is controlled with the following CM attributes: `mtasReBalancingAdministrativeState`, `mtasReBalancingState`, `mtasReBalancingTargetNodeSipUri`, `mtasReBalancingThreshold`, and the actions `mtasReBalancingActivate`, `mtasReBalancingDeactivate`.

Impact

No impact on capacity, performance, network elements, and operation.

5.32 Match Existing Session in Move Active Session to Existing Conference

MMTelAS Ad-hoc Conference Service can use the IP Multimedia Public Identity (IMPU) in the Refer-to header to match the active session on MTAS, instead of using dialog-id in Replaces header.

Conference service uses IMPU in Refer-to header of `REFER` message to match existing active session to move to conference based on configuration, as a fall back option when no session is found using dialog-ID or session-ID in Replaces header.

This feature is controlled with the `mtasConfImpuBasedMoveInEnabled` and `vtasConfImpuBasedMoveInEnabled` CM attributes.

Impact

No impact on capacity, performance, network elements, and operation.



5.33 Network Level Licensing of Feature Licenses in MTAS – CLOUD

- vMTAS support licensing control for MMTel-AS and SCC-AS services.
- vMTAS must be configured to connect to a network license server (NeLS) that hosts the purchased licenses.
- NeLS Server configuration parameters found under `ManagedElement=1, SystemFunctions=1, Lm=1`.
- Multiple instances of vMTAS are deployed in a customer network – each instance can be connected to the same NeLS and receive the same feature permissions as defined in the installed license for that VNF type.
- Each license key defined in the license affects a set of related features. Related feature sets are to correspond to at least one and optionally more than one Base/Value pack as defined in the vMTAS's commercial model unless a strong motivation for more granular licensing control exists.

Impact

If no license information is available to vMTAS (for example, the license has not been purchased and installed in NeLS and Configuration of Nels in vMTAS), vMTAS does not provide services belonging to MMTel AS, SCC AS.

5.34 Generation of 180 Ringing in MMTel AS at the Reception of 183 Session Progress

Originating and Terminating MMTel AS triggers 180 Ringing as an indication of reaching to alerting state when end-to-end preconditions are fulfilled after receiving 183 Session Progress and PANI matched to specific configured access types.

This feature is controlled by the `mtasAsIwSessionProgressMappingOnPreconditionEnabled` CM attribute, which extends functionality of the `mtasAsIwSessionProgressMapping` CM attribute.

Impact

No impact on capacity, performance, network elements, and operation.

5.35 Extension Number Support (Line Sharing Phase 1.0+)

The Extension Number Support in MMTel Supports the following new functions:

- An early media suppression header can be included on FCD calls to related users, if early media suppression is included, media direction in SDP is set

to `sendreceive`. If an early update is received from the related user with only IP address or code change before 200 OK, this SDP is stored and used later towards the caller. If early UPDATE is received from related user with a new codec offer, the codec offer is answered with a dummy SDP. A timer starts and at timer expiry an early UPDATE is sent with the same SDP as in the original SDP-offer, but considering also the already rejected media lines.

- If an early media suppression header is included in initial INVITE in an originating or terminating MMTel AS, services, if invoked, suppresses playing any locally generated early media.
- An Accept-Contact header can be added with a FCD feature tag in initial INVITE sent in FCD call to related users. This feature tag can, for example, be used on the terminating side to suppress services at the related user.
- Offers a possibility on user level to report FIP Id in Subscription-Id and Calling-Party-Address AVPs in originating online and or offline charging messages if the served user is provisioned with FIP service
- Offers a possibility on user level to report FIP Id instead of user's real number in Subscription-Id, Called-Party Address, and Called-Asserted-Identity AVPs in terminating online and or offline charging depending on if the served user is provisioned with the FIP service.

Extension Number Support can be controlled with following configuration attributes:

- `mtasFcdSuppressEarlyMediaToRelatedUser`
- `mtasFcdCallToRelatedUserTag`
- `mtasFcdSuppressOnlineChargingOnRelatedUser`
- `mtasChargingProfileReportFipIdInOrigChargingMessages`
- `mtasChargingProfileReportFipIdInTermChargingMessages`

Impact

No impact on capacity, performance, network elements, and operation.

5.36 Generic Ro Initiated Retarget in MMTel AS

Ro-Initiated Retarget allows OCS to trigger session retarget at call setup through Retarget Instruction or Final Unit Indication AVPs in initial Credit Control Answer.

**Impact**

No impact on capacity, performance, network elements, and operation.

5.37 Multi-Persona: Alternative Line Identity for Voice Calls

MTAS supports the “Multi-Persona” feature. When an alternative persona is used, MTAS adds Multi-Persona indication in the charging messages and sends this information to the charging nodes.

Impact

No impact on capacity, performance, network elements, and operation.

5.38 Enhancements to NPLI support in SCC AS

MTAS includes the VLR and MSC addresses provided by NPLI into the network-provided P- ANI in SIP signaling and in ANI AVP for offline charging for originating and terminating calls from/to CS domain if configured in attributes `mtasSccNpliOriginatingCSLocationInformation` and `mtasSccNpliTerminatingCSLocationInformation`. If no CS Access-Type is available in the P-ANI header, the Access-Type configured in `mtasSccNpliDefaultCSAccessType` is used.

Impact

No impact on capacity, performance, network elements, and operation.

5.39 IMS Support for UC Mobility

MTAS supports the business users and routes their VoLTE calls to the non-IMS external unified communication system to execute the enterprise services. A new business licensing structure enables the MMTel business features.

Impact

No impact on capacity, performance, network elements, and operation.

5.40 Network Level Licensing

- vMTAS support licensing control for ST-AS and Communication Interworking Function NW AS Base services.
- vMTAS must be configured to connect to a network license server (NeLS) that hosts the purchased licenses.

- Multiple instances of vMTAS are deployed in a customer network – each instance can be connected to the same NELs and receive the same feature permissions as defined in the installed license for that VNF type.
- Each license key defined in the license affects a set of related features. Related feature sets are to correspond to at least one and optionally more than one Base/Value pack as defined in the vMTAS's commercial model unless a strong motivation for more granular licensing control exists.

Impact

If no license information is available to vMTAS (for example, the license has not been purchased and installed in NeLS and Configuration of NeLS in vMTAS), vMTAS does not provide services belonging to ST AS, Communication Interworking Function NW AS.

5.41 Suppressing of Online Charging Based on B-number

The Ro can be suppressed if the B-number is classified as toll-free.

Impact

Not possible to perform credit control on such calls.

Not possible to get announcements initiated by OCS since there will be no CCA[initial] and thus no announcement instruction.

Account activation through Prompt And Collect will be bypassed since the function is triggered by AVPs in CCA[initial], which will not be sent if the session is suppressed.

5.42 DSCP Markings

The Differentiated Services Code Point (DSCP) value can be defined for all DNS sockets. This applies for both TCP and UDP sockets used by DNS Resolver.

Impact

No impact on capacity, performance, network elements, and operation.

5.43 Graceful Scale-in WF

The user interface (UI) of the VNF-LCM can be used to gracefully scale-in scaled PL VMs. The user can specify the number of scaled PL VMs to be removed from the VNF.



Impact

The capacity of vMTAS can be gracefully decreased from the UI of VNF-LCM.

5.44 Enhancements of Offline Charging Interim ACR Handling

An additional ACR[Interim] is generated per Long Duration Timer period. The Long Duration Timer can be configured using the `mtasChargingProfileLongDurationInterimTimer` configuration parameter.

New Interim-Reason AVP is reported for Interim-Interval Timer Triggered ACR[Interim], Media Change Triggered ACR[Interim] and Long Duration Timer Triggered ACR[Interim]. The Interim-Reason AVP is in the omit list by default.

The design-base spread (up to 2%) of Interim-Interval Value can be configured by the new configuration parameter `mtasChargingProfileInterimIntervalSpread`.

Impact

The Long Duration Timer is disabled by default.

The Interim-Reason AVP is in the omit list by default.

The Interim-Interval Value spread is disabled by default for new installations and enabled for existing installations during upgrade procedure.

5.45 DNS Server Monitoring

MTAS supports monitoring the availability of the DNS servers configured. Monitoring is done by periodically sending DNS A lookup queries to the DNS servers. By default, the name 'availability.test' is used in the query. The name can be configured in the `DNS_SERVER_AVAILABILITY_QUERY_DOMAIN` environment variable. The "MTASDns, Configured DNS server unavailable" alarm is raised if DNS monitoring is enabled and any of the DNS servers configured is not available. Severity is Major if at least one DNS server is available. Severity is Critical if none of the DNS servers are available. The alarm is cleared if all DNS servers are available or DNS monitoring is disabled.

DNS server monitoring is controlled with the configuration attribute `mtasDnsMonitoringEnabled`.

Impact

No impact on capacity, performance, network elements, and operation.

5.46 Interaction Between No Reply Timers

The general No Reply supervision of MMTel AS is suppressed at Call Forward No-Reply/Flexible Communication Distribution No-Reply triggering, so when MMTel AS at no answer starts executing the Communication Diversion or Flexible Communication Distribution services, the execution is not stopped by the expiry of the MMTel No-Reply Timer.

Impact

No impact on capacity, performance, network elements, and operation.

5.47 Number Translation Based on A-Subscriber Profile

MTAS supports the normalization of a called number based on the provisioning data for the calling user. The provisioned data is to be set in the <mmt-op:number-normalization-phone-context>, which can be found in the <mmt-op:operator-common-data> part. The normalization is done based on CM attributes in the following path: NumberNormalisation, NumNormProfile.

Impact

No impact on capacity, performance, network elements, and operation.

5.48 Multi Mobile Device in Single IRS Support

Multi-Sim “default subscription” that can be provisioned by setting in <mobile-subscription-list>, <subscription> the default-subscription into “User-Common-Data”. Mobile-Subscription-List can have one or more entries, but only the first entry (primary mobile subscription) is considered to execute below the new mobile behavior. This feature can be turned on with `mtasMmtMultiMobileSupport` set to 1 (ALL_MOBILE_SUBSCRIPTIONS_ACTIVE) and `mtasMmtMobileBehaviour` set to 1(MOBILE_ENHANCEMENT_ON).

Impact

No impact on capacity, performance, network elements, and operation.

5.49 Allowing User Without Subscription Call White-Listed Number

Originating MMTel AS allows calls from users without a subscription to the configured OCB Global White-List. Call attempts towards numbers not in the configured white-list are barred and announcement is triggered. Support



simultaneous white-listed calls up to a configurable limit, new call attempt is rejected with 486.

Impact

No impact on capacity, performance, network elements, and operation.

5.50 Destination-Specific Nuisance Call Handling Description

Originating MMTel AS triggers an announcement to the nuisance caller, which is detected by the called URI, and then terminates the call.

Impact

No impact on capacity, performance, network elements, and operation.

5.51 SCC AS Cache 18x

The feature is about handling of 18x responses at SRVCC access transfer during (pre-) alerting.

When the service is enabled, if SCC AS receives a SIP 18x response on the remote leg in an early dialog within the transfer session set, during SRVCC originating (pre-)alerting transfer, the responses are buffered and forwarded to CS/MSC after transfer has finished or to UE in case of PS fallback.

Impact

No impact on capacity, performance, network elements, and operation.

5.52 Session Setup Counters in MMTel AS

The feature corrects and extends performance measurement in MMTel AS. `MtasMmt*NetworkSuccessSessionEstablish` counters now take into account if early media or preconditions were used in session establishment: the counters are incremented not on the first provisional response but on 180 ringing or 200 OK. New unsuccessful session setup because of user cancellation, external support node, network problems, and service logic counters are added. One instance of each counter counts sum of all events causing the counter to increment.

Impact

No impact on capacity, performance, network elements, and operation.

5.53 Multiple Mobile Subscriptions

The feature provides support for the Multiple Mobile Subscriptions for one subscriber provisioned in single IRS. If this feature is active for all mobile subscription, MMTEL AS sends charging information per subscription and the user gets seamless service experience on all mobile subscriptions.

Impact

There is extra signaling on the Sh Interface to fetch the MSISDN and IMSI, if it is not provisioned in mobile-subscription-list.

There is extra signaling because of attempt to terminate the call to mobile devices for subscriber.

Location Information for all subscriptions is fetched, if not found in the incoming 180 message.

5.54 CDIV Action for Switched-Off Terminals

The feature allows provision different call diversion actions, depending on whether a subscriber's terminal is switched off or only temporarily unavailable. The feature can be configured with CM attributes. It has impact on the Flexible Communication Distribution and the Communication Diversion service. When the 480 Temporarily Unavailable response contains the pre-configured Q.850 Reason header, it triggers the not-registered rule. This allows the user to define separate diversion rules for turned off or not reachable users.

Also, it has an impact on TADS service. TADS service adds Q.850 Reason header to 480 response to indicate a not registered user, so not-registered CDIV and FCD rules can be evaluated in MMTel-AS.

Impact

No impact on capacity, performance, network elements, and operation.

5.55 Selective Validation of XDMS Document for IR.92 Feature Set

It shall be possible to configure whether, upon reception of a received request through Ut/XCAP, MMTel AS shall exclude from document validation any item in the initial user document/service profile related to IR.92 feature set.

The following configuration options shall be possible:

- (0) = Check complete document
- (1) = Check only the received request through Ut/XCAP



Impact

No impact on capacity, performance, network elements, and operation.

5.56 Session Continuation Support by the UC Routing Service

This functionality extends the existing UC Routing Service with session continuation support, that is, on receiving the configurable error response(s) from the UC-System, MMTel AS (BL) reroutes the call to the original dialed number. This functionality is needed so that VoLTE calls are still established even if the UC-System times out or sends an error response.

Note: If the UC System times out, then the SBG is to be configured to send a SIP error response, which is configured to trigger the session continuation.

Impact

No impact on capacity, performance, network elements, and operation.

5.57 Add Last Redirecting Number Information in Service-Specific-Info (SSI) AVP

Reporting of the last redirecting number information on Ro with the Service-Specific-Info AVP in CCR-I.

Impact

No impact on capacity, performance, network elements, and operation.

5.58 TADS and Additional MMTEL Session Statistics

New counter support in MMTEL AS and SCC AS:

- MMTel AS, PM MMTel established session gauge counters. SCC AS
- PM CS duration and simulations ongoing session gauge counters SCC AS
- PM PS duration and simulations ongoing session gauge counters

New supported counters:

- `MtasMmtEstablishedSessionMin`
- `MtasMmtEstablishedSessionAvg`
- `MtasMmtEstablishedSessionMax`
- `MtasTadsDurationInitialSessCs`

- MtasTadsDurationAlertedSessCs
- MtasTadsDurationAnsweredSessCs
- MtasTadsDurationInitialSessPs
- MtasTadsDurationAlertedSessPs
- MtasTadsDurationAnsweredSessPs
- MtasTadsOngoingInitialSessCs
- MtasTadsOngoingAlertedSessCs
- MtasTadsOngoingAnsweredSessCs
- MtasTadsOngoingInitialSessPs
- MtasTadsOngoingAlertedSessPs
- MtasTadsOngoingAnsweredSessPs

Impact

No impact on capacity, performance, network elements, and operation.

5.59 Auto Healing Work Flow Feature

This functionality will auto heal single PL failure or multiple PLs failure but it does not support unhealable PLs (PL-3, PL4) and System Controllers (SCs).

A VNF can be healed from a computer resource or neutron port failure using the VNF-LCM in two ways:

- Manually from the VNF-LCM User Interface (UI)
- Automatically triggered on the reception of the “CLM Cluster Node Unavailable” alarm from the VNF instance

Impact

No impact on capacity, performance, network elements, and operation.

5.60 Alternative Presentation Number for UK Market

MMTel AS use provisioned network verified user identity `fip-alternative-user-identity` in the From header at outgoing calls of the subscriber.

Impact

No impact on capacity, performance, network elements, and operation.



5.61 Support for FQDN as PAI in SIP SUBSCRIBE to CSCF

With Support for FQDN as PAI in SIP SUBSCRIBE to CSCF it will be possible to use FQDN identity in subscription for Reg Event packages in case of INVITE based registrations with caching contact data enabled.

Impact

No impact on capacity, performance, network elements, and operation.

5.62 SIP P-Early-Media Header Support and Early Delivery of the SDP Answer

The P-Early-Media (PEM) Interworking Service allows an operator to solve interoperability problems when calling VoLTE devices do not support the SIP P-Early-Media header and associated functions.

Impact

No impact on capacity, performance, network elements, and operation.

5.63 Support Change of Payload Type Number in a Session

With support of this feature, terminating MTAS reads rtp mapping for each codec listed in early UPDATE from B (offer) and consider any dynamic codec mapping in UPDATE answer to B in accordance with RFC 3264.

Impact

No impact on capacity, performance, network elements, and operation.

5.64 AS Interworking Filtering of SIP 181

With support of this feature, the originating MTAS is able to filter the 181 Call is being forwarded responses from the terminating network.

Impact

No impact on capacity, performance, network elements, and operation.

5.65 PC: Extension to Feature Assume Positive on Ro

The extension to the already implemented feature “Assume Positive on Ro” Verizon Online Charging Control feature is realized by linking of an MMTel

Charging Profile to a user. Charging Prepaid parameter is used to provide separate Charging Profiles for prepaid and non-prepaid subscribers using Ro.

Impact

No impact on capacity, performance, network elements, and operation.

5.66 PC: Generic Test Call Announcement Service

Test Announcement service allows an end user to receive a long duration announcement on an established session.

Impact

No impact on capacity, performance, network elements, and operation.

5.67 Robust Handling of re-INVITE Requests

Handling of 500 with Retry-After response to reINVITE

The initiator service of the re-Invite is Retrying re-INVITE upon reception of 500 (Server Internal Error) response with Retry-After header (0 - 10 seconds), honoring the Retry-After value (can be 0 as well).

Delaying reINVITE

When a service has to send re-INVITE immediately after sending the ACK of initial invite, the service needs to support configurable timer to control interval between ACK and re-INVITE. The recommended range of timer value is 0-100ms.

This feature enhancement can be controlled by the following CM attributes: `mtasMmtReInviteDelayTime`, `mtasMmtReInviteRetryAfterSupport`, `mtasMmtReInviteRetryAfterTimeMax`

Impact

No impact on capacity, performance, network elements, and operation.

5.68 CC Recall Without Answer Captured in Charging

MMTel AS generates ACR(event)/CCR(Event) with Supplementary-Service-Information AVP indicating the usage of the CC service type (CCBS or CCNR or CCNL) when CC Recall to user A is unsuccessful.



The feature can be controlled with the new CM `mtasCcChargEventOnCcRccallFailure`.

Impact

No impact until activated.

5.69 Subscription-ID AVP without MSISDN and IMSI in Charging

SSC and MMTel AS to report ACR(Event)/ CCR(Event) with Subscription-ID with or without MSISDN, IMSI. The new CM attributes `mtasChargingProfileSuppressRfMsisdnImsiSubscriptionIdAVP` and `mtasChargingProfileSuppressRoMsisdnImsiSubscriptionIdAVP` are introduced to configure this behavior.

Impact

No impact on capacity, performance, network elements, and operation.

5.70 MTAS NPLI Query at Session Release

The feature is mainly to find the up-to-date location information of the served user during session release. When the feature is enabled, during session release MTAS is able to trigger NPLI retrieval on served user message (BYE/200 OK for BYE) if the message does not contain a valid P-Access-Network-Info header or the header does not contain a valid location.

The feature can be enabled or disabled respectively for originating MMTel AS, terminating MMTel AS, originating SCC AS and terminating SCC AS with the following 4 CMs:

- `mtasMmtNpliOriginatingOnSessionRelease`
- `mtasMmtNpliTerminatingOnSessionRelease`
- `mtasScCNpliOriginatingOnSessionRelease`
- `mtasScCNpliTerminatingOnSessionRelease`

Impact

When the feature is enabled, there could be an extra location information query to HSS during session release, dependent on whether or not the messages (BYE/200 OK for BYE) from served users contain valid location information in P-Access-Network-Info header.

5.71 National Dialing Plan

For Call Return service it shall be possible to announce the last calling number in national dialling plan format. For Supplementary Service Codes service it shall be possible to announce the Communication Diversion target number according to the national dialling plan format. This feature can be controlled with the following CM attributes: `mtasCrCallingPartyDenorm`, `mtasSscCdivTargetNumberDenorm`, `vtasCrCallingPartyDenorm`, `vtasSscCdivTargetNumberDenorm`.

Impact

No impact on capacity, performance, network elements, and operation.

5.72 Increase Size of CDiv Blacklist

The size of CDIV Blacklists in MMTel and BL AS shall be increased from 255 to 2048.

Impact

Using more than 255 entries for the Blacklist might cause a small capacity degradation. An improvement is planned for the next releases to address this issue.

5.73 Support for 2nd External MRFC FQDN

The MMTel AS is supporting a second External MRFC Node which is used if a first External MRFC Node fails. SRV query is allowed for both first and second External MRFC Node. If all the MRFCs returned for the first External MRFC Node fails, then the MMTel AS is querying the second External MRFC Node and use the MRFCs returned by DNS for this query.

The second External MRFC Node is chosen in the same way as the first External MRFCNode from the defined External MRFC pool.

Impact

No impact on capacity, performance, network elements, and operation.

5.74 Reporting Ro failure over Rf

The feature implements a mechanism which handles fault scenarios in online charging by leveraging on the offline charging when the call continues, to avoid revenue loss. The Ro failure information is reported over Rf using proprietary Ro-Information AVP.



Impact

No impact on capacity, performance, network elements, and operation.

5.75 NW Level Licensing, capacity

New capacity license supervision implemented for vMTAS. Integration unlock period default value 30 days will be set.

Two new vMTAS capacity licenses: `vMtasSTBaseCapacity` and `vMtasNWCommIwfBaseCapacity`

New Alarms are implemented for Missing/invalid/expired license.

Impact

No impact on capacity, performance, network elements, and operation.

5.76 Selective validation of XDMS documents

It is now possible to configure whether, upon reception of a received request via CAI3G, MMTel AS shall exclude from document validation any item in the initial user document/service profile related to IR.92 feature set.

The following configuration options are possible:

(0) = Check complete document

(1) = Check only the received request via CAI3G

The following PM Counter is connected to this feature enhancement:
`MtasXdmsCai3gConflict`.

Impact

No impact on capacity, performance, network elements, and operation.

5.77 etc Hardened Overlay

Hardened Etc overlay is used for hardening configuration files. Where the configurations must be applied in a non-dynamic fashion in order to prevent damaged configuration files.

With HEO RPM in place, vMTAS will introduce below functionality:

1 Default Umask 027

- 2 Legal Warning at Login
- 3 Inactivity Timer for Login
- 4 Inactivity timer for User Accounts
- 5 Strong Password
- 6 Auditing

Impact

vMTAS will be more secure and hardened from security prospective.

5.78 SCTP Support for DIAMETER

The purpose of this feature to introduce Profile 2 of vMTAS reference connectivity. vMTAS reference connectivity has defined evolution steps toward achieving traffic separation profile goals.

The following are introduced as part of this feature:

- Introduction of Multi-Homing for SIGTRAN-
- Introduction of SCTP for DIAMETER and multi-homing SCTP support.

Impact

Minor impact on capacity, performance due to memory and CPU use by SCTP on multiple interfaces.

5.79 MTAS selection between MMTel AS and SCC AS

MMTel AS and SCC AS is starting to use the AS generic SIP port instead of using dedicated SIP ports for each session case and registration state. The use of the AS generic SIP port requires that the Application server trigger in HSS includes the AS name in the trigger. The AS name is added in the Route header in the 'as=' parameter.

Example: Route:<sip:mtas.operator.net; as=mmt; lr>

To be able to determine the session case and reg state, the P-Served-User header must be included in the SIP request. The AS generic SIP port is also handling the PSI functionality over the MA interface. MMTel and SCC AS is adding the P-Ericsson.Invocation-History header to outgoing SIP requests and responses.

**Impact**

No impact on capacity, performance, network elements, and operation.

5.80 Reporting PLMN ID in S8HR

Access to the PANI header and report timezone information to charging, if available. Improvement in MMTel-AS and SCC-AS to use PLMN for charging and roaming status of UE for S8 Home Routing (S8HR) architecture. This new feature can be controlled with the following CM attributes: `mtasChargingTimeZoneSource`, `mtasIcbRoamingCallerPreferenceWifi`, `mtasMmtRoamingCheckMode`, `mtasSdsCreatePvni`, `vtasIcbRoamingCallerPreferenceWifi`, `vtasMmtRoamingCheckMode`.

Impact

No impact on capacity, performance, network elements, and operation.

5.81 Re-INVITE/ACK Race Condition Handling When Acting as UAS

When `mtasSipRetryAfterSupport` is set to `retryAfterSupportUasEnabled` and originating MMTel AS receives a re-INVITE request while still waiting for the ACK for the initial INVITE transaction, MMTel AS rejects the re-INVITE request using 500 final response with Retry-After, whose value is configurable via `mtasSipRetryAfterTime`.

Impact

Minor impact on capacity, performance, network elements, and operation.

5.82 Multi-Sim Phase-2 Single IRS support in MTAS

To support multiple sim devices for one subscriber under single IRS. Following functionality is introduced:

1. Multiple mobiles can be used for originating call.
2. MTAS will terminate call on multiple mobile devices.
3. Online and offline Charging support for multiple mobile devices, reporting subscription ID information for each devices.
4. Call admission control for multisim subscriber.
5. Device aware call barring.

6. Device aware call PULL

Impact

No impact on capacity, performance, network elements, and operation.

5.83 Alignment of MTAS Call Return with PSTN

Call Return service based on From header feature offers the new functions:

- Possibility to use announcement with “Today”, “Yesterday” and Day and Month at CR invocation for “No classification” announcement.
- Possibility for CR invocation based on ‘From’ header.

Impact

No impact on capacity, performance, network elements, and operation.

5.84 Latest Location Info in Charging

When CM attribute `mtasChargingProfileReportAtDisconnection` is set to 1 and session is terminated by the remote user, ACR Stop/CCR Terminated is triggered on BYE response and report PANI from the BYE response in ANI AVP when applicable. . This feature enhancement is controlled by the following configuration parameters: `mtasChargingProfileReportAtDisconnection`.

5.85 SSC Announcement Handling for OCB Operations

Enhancement to the SSC service which allows playing the detailed announcements on OCB BP activation, deactivation and interrogation alternatively to the existing announcements in the design base.

This feature enhancement can be controlled with the following CM attributes: `mtasSscOcbBpGroup`, `mtasSscOcbBpGroupAnnAct`, `mtasSscOcbBpGroupAnnDeact`, `mtasSscOcbBpGroupAnnInt`, `mtasSscOcbDetailedAnn`.

Impact

No impact on capacity, performance, network elements, and operation.



5.86 Improved Early Dialog Handling in CDIV

CDIV service is extended to act as a B2BUA to be able to intercept UPDATE messages from caller and send UPDATE_ACCEPT messages to caller on more than one early dialogs on behalf of the callee. CDIV service sends UPDATE_ACCEPT in case UPDATE arrives from caller to callee after INVITE_REJECT is received from callee or in case UPDATE from caller is sent out to callee but callee sends INVITE_REJECT before it receives the UPDATE (race condition).

CDIV service is extended with early dialog termination functionality. All early dialogs that are not terminated by other services (with the exception of the early dialog of initial INVITE) are terminated by CDIV service with SIP 199 message before forwarding the call. CDIV service terminates the early dialogs if 199 is supported in the initial INVITE message, and the configuration parameter `mtasMmt199Generation` is unlocked.

Impact

No impact on capacity, performance, network elements, and operation.