

# vMTAS Network Impact Report from 1.8 to 1.10 MTAS

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## 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 1.8. 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**

- 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**

- 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 39.



## 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 1.8 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

*Table 2 New Licenses*

Name	Identity	Version
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 1.8
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.
Rf/Ro	Diameter	No impact	Introduce 2 new CMs under charging profile to control the behavior of Calling-Party-Address AVP. <ul style="list-style-type: none"> <li>• <b>New CM 1:</b> <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.</li> <li>• <b>New CM 2:</b> <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.</li> </ul>
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.



Table 4 Inter-Node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.8
Ro	Diameter	No impact	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):  Service-Specific-Info:  Service-Specific-Type: 1007 (Supplementary-Service-Type)  Service-Specific-Data: 72 (lastRedirectingNumber)
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.
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>&lt;fip-use-default-impu-identity&gt;</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 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 1.8
Ut	XCAP	No impact	When CM parameter <code>mtasXdmsUtValidation</code> is set to: <ul style="list-style-type: none"> <li>0, "No Impact" (default/legacy).</li> <li>1, "Minor Impact"</li> </ul> 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	<p><code>ucd-operator-configuration</code> is enhanced with <code>mobile-subscription-list</code> to configure the IMPI, CS CAPABLE, MSISDN, and IMSI.</p> <p>MTAS fetches MSISDN or IMSI values from HSS with IMPU and IMPI as key pair.</p>
CAI3G	CAI3G	No Impact	<p>Application constraint updated from:</p> <p>"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"</p> <p>to "Failed to meet an application constraint: Flexible Identity Presentation Failure: Activation without at least one of <code>fip-identity</code>, <code>msn-fip-identity</code>, <code>fip-use-default-impu-identity</code>, or <code>fip-alternative-user-identity</code> is not allowed".</p>
Rf	DIAMETER	No Impact	<p>New SSID "FIP Alternative User Identity" added.</p> <p>Will be populated when From header of the INVITE is updated with provisioned "fip-alternative-user-identity"</p>
Ro, Rf	DIAMETER	Minor impact	<p>CM <code>mtasChargingProfileMultiDeviceMode</code> is introduced to replace legacy CM <code>mtasChargingProfileMultiDevice</code> in HV95839. Legacy CM will be phased out in future release.</p> <p>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.</p> <ul style="list-style-type: none"> <li>0 - Multi-device charging is disabled. This is the default behavior and corresponds to deprecated CM <code>mtasChargingProfileMultiDevice</code> value 0.</li> <li>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.</li> <li>2 - Multi-device charging is active for offline charging only. Specific per device information will be provided to CCF.</li> <li>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.</li> </ul>
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.



Table 4 Inter-Node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.8
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.
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"> <li>• 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.</li> <li>• 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</li> <li>• 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.</li> </ul>
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.



Table 4 Inter-Node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.8
Rf	DIAMETER	No Impact	<p>The new CM <code>mtasChargingProfileSuppressRfMsisdnImsiSubscriptionId</code> AVP is introduced to suppress reporting MSISDN and IMSI in <code>SubscriptionId</code> AVP in offline charging (ACR event).</p> <p>Possible Values: TRUE, FALSE.</p> <p>FALSE (DISABLED) - When this attribute is set to FALSE, then MSISDN and IMSI is reported in <code>subscriptionID</code> AVP if value is available.</p> <p>TRUE (ENABLED)- When this attribute is set to TRUE, then MSISDN and IMSI is reported in the <code>subscriptionID</code> AVP even if value is available.</p>
ISC	SIP	Minor impact	<p>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</p>
CAI3G	CAI3G	No Impact	<p>TR HW21125 impact: Request will be rejected with "Failed to meet an application constraint: Communication Distribution Failure: Rule id="&lt;rule-id&gt;", identity is not SIP or TEL URI in "one"", if identity is not a valid SIP or TEL URI."<sup>(1)</sup></p>
Ut	XCAP	No Impact	<p>TR HW21125 impact: Request will be rejected with "Failed to meet an application constraint: Communication Distribution Failure: Rule id="&lt;rule-id&gt;", identity is not SIP or TEL URI in "one"", if identity is not a valid SIP or TEL URI.</p>
SS7CAF Configuration	SCTP, FEIF	Minor impact	<p>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.</p>
Mp	H.248	No impact	<p>New variable types supported are <code>int(ordinal)</code> and <code>month</code></p>
ISC	SIP	Minor Impact	<p>A 500 final response which includes the <code>Retry-After</code> 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 <code>mtasSipRetryAfterSupport</code> and <code>mtasSipRetryAfterTime</code> CM attributes.</p>
Sh	Diameter	No impact	<p>TR HW41809 impact: for CAI3G Create/Set/Get/Delete requests on MMTel document, when CM parameter <code>mtasXdmsCai3glrsDefaultImpuUsage</code> set to:</p> <ul style="list-style-type: none"> <li>· '0', (default) MTAS/XDMS uses the received IMPU to do the provisioning towards HSS</li> <li>· '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</li> </ul>
Ro and Rf	Diameter	Major impact	<p>MTAS reports Access-Network-Information and 3GPP-MS-TimeZone AVPs taken from PANI header in BYE or BYE response to Ro and Rf.</p> <p>When CM attribute <code>mtasChargingProfileReportAtDisconnection</code> is set to 1, charging termination is triggered at BYE response when session release is sent by the remote side.</p> <p>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.</p> <p>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.</p>
Rf	Diameter	No impact	<p>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 <code>mtasChargingProfileOmitAcr</code> MO therefore will be sent only when removed from the omit list.</p> <p>New values introduced in Ro-Status enumeration which can be sent in Ro-Information AVP when OCS failure detected.</p>

**Table 4 Inter-Node Interfaces**

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.8
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-Iden tifier 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.
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	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:  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.  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".
ISC, Ma	SIP	Major impact	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 for MMTel AS: Route:< sip:mtas.operator.net; as=MMTelAS; lr >  and for SCC AS: Route:< sip:mtas.operator.net; as=SCCAS; 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. In this case the AS name must not be included in the Route header.  The currently used AS choosing algorithm, based on the configured ports, is deprecated now.





**Table 4 Inter-Node Interfaces**

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.8
ISC, Ma	SIP	No impact	If CM attribute <code>mtasSipRetryAfterSupport</code> is set to <code>retryAfterSupportUasEnabled</code> , 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 ( <code>mtasSipRetryAfterTime</code> second) which the resend re-INVITE should be delayed.
Sh/Dh	DIAMETER	No impact	If CM attribute <code>mtasSipRetryAfterSupport</code> is set to <code>retryAfterSupportUasEnabled</code> , 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 ( <code>mtasSipRetryAfterTime</code> 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.
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 1.8
Sh	Diameter	-	New XML element under <code>&lt;common-data&gt;</code> is added: <code>&lt;number-normalization-phone-context&gt;</code> New XML element under <code>&lt;user-common-data&gt;</code> is added: <code>&lt;default-subscription&gt;</code>



Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.8
CAI3G	CAI3G	-	New XML element under <common-data> is added: <number-normalization-phone-context>  New XML element under <user-common-data> is added: <default-subscription>
CAI3G	CAI3G	-	The following new elements are added into service "User-Common-Data": <mobile-subscription-list> <subscription> <id> <impi> <cs-capable> <msisdn> <imsi>  The following new element is added into service "Flexible-Identity-Presentation": <fip-use-default-impu-identity>
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"> <li>• &lt;id&gt;</li> <li>• &lt;impi&gt;</li> <li>• &lt;cs-capable&gt;</li> <li>• &lt;msisdn&gt;</li> <li>• &lt;imsi&gt;</li> </ul> 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>



### 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
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.



Attribute Name	Description of Change
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.
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

#### 4.2.2.3 Deprecated Attributes

The deprecated attributes are listed in Table 8.

*Table 8 Deprecated Attributes*

Attribute Name	Description
mtasChargingProfileMultiDevice	Replaced by mtasChargingProfileMultiDeviceMode
mtasMrControllerSetupTimer	Replaced by mtasMrfOperationTimer
mtasChargingProfileMultiDevice	Deprecated, see HV95839, mtasChargingProfileMultiDeviceMode is introduced instead.
mtasMrControllerSetupTimer	Deprecated, mtasMrfOperationTimer is used instead.



Attribute Name	Description
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.
mtasCclInbandInvocationTimer	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 mtasMrControllerName was used as a default MRF to contact, in the case of no UNLOCKED mtasMrfcNode was configured. From now on, instead of the mtasMrControllerName, a new mtasMrfcNode 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 9.

*Table 9 Obsolete Attributes*

Attribute Name
mtasExtMrfcDtmfGrammarFileUrl



Attribute Name
mtasMrControllerDtmfGrammarFileUrl
mtasChargingProfileReportPani

#### 4.2.2.5

#### New Attributes

The new attributes are listed in Table 10.

*Table 10 New Attributes*

Attribute Name	Description
mtasAslw181Filtering	Added and supported
mtasAslwSessionProgressMappingOnPreconditionEnabled	Now supported
mtasCbLocationInTransitMode	Added and supported
mtasCcChargEventOnCcRecallFailure	Now supported
mtasCdivAfterByeOfferEstablishedMediaTypesToTarget	Added and supported
mtasCdivNotRegisteredReason	Added and supported
mtasChargingProfileTermCcaUpdateEvaluation	Added but not supported
mtasChargingMrfUserInputErrorHandlingProfile	Added but not supported
mtasChargingProfileOrigCcaUpdateEvaluation	Added but not supported
mtasChargingProfileReleaseReason	Added but not supported
mtasChargingProfileLongDurationInterimTimer	Added and supported
mtasChargingProfileMultiDeviceMode	Now supported
mtasChargingProfileSuppressRfMsisdnImsiSubscriptionIdAVP	Now supported
mtasChargingProfileSuppressRoMsisdnImsiSubscriptionIdAVP	Now supported
mtasChargingProfileUseFromHeaderAsCallingPartyAddressWhenNoPai	Added and supported
mtasChargingProfileUseUnkownAsCallingPartyAddressWhenNoPai	Added and supported
mtasChargingTimeZoneSource	Now supported
mtasChargingProfileReportAtDisconnection	Now supported
mtasConfMrfUserInputErrorHandlingProfile	Added but not supported
mtasCsDsaAllowSpecialChars	Added but not supported
mtasChargingProfileAssumePositiveDefaultCcfh	Now supported
MtasDns	Added but not supported
mtasDnsMonitoringEnabled	Added and supported
mtasIcbRoamingCallerPreferenceWifi	Now supported
mtasFcdNotRegisteredReason	Added and supported
mtasGmPemRemoval	Now supported



Attribute Name	Description
mtasMmtAsName	Added but not supported in this release, default value MMTelAS used
mtasMmtRoamingCheckMode	Now supported
mtasMmtEstablishedSessionGauge	Added and supported
mtasMmtMobileBehaviour	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
mtasMmtNpliOriginatingOnSessionRelease	Now supported
mtasMmtNpliTerminatingOnSessionRelease	Now supported
mtasMrControllerMrfcNodeRecoveryTimer	Now supported
MtasMrfUserInputErrorHandling	Added but not supported
MtasMrfUserInputErrorHandlingProfile	Added but not supported
mtasMrfcNodeOperationalState	Now supported
mtasMrfUserInputErrorHandlingProfileInterdigitTime out	Added but not supported
mtasMrfUserInputErrorHandlingProfileMaxAttempts	Added but not supported
mtasMrfUserInputErrorHandlingProfileNoInputAnnou ncement	Added but not supported
mtasMrfUserInputErrorHandlingProfileNoMatchAnn ouncement	Added but not supported
mtasMrfUserInputErrorHandlingProfileTimeout	Added but not supported
MtasPemlwf	Added but not used
mtasPemlwfAdministrativeState	Now 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
mtasSipTransparentEarlyBye	Added and supported
mtasSscCdivTargetNumberDenorm	Now supporteddd



Attribute Name	Description
mtasPermIwf199SupportedIndication	Added and supported
mtasSscRejectInvalidServiceCodeCommand	Added and supported
mtasSrvccAlertingBuffer18x	Added and supported
mtasSrvccR12Charging	Added and supported
mtaSdsPaniPolicy	Added and supported
mtasStCdivPostOpRulesBehavior	Added and supported
mtasStodCallPullPolicyRoaming	Now supported
MtasTa	Now supported
mtasTaAdministrativeState	Now supported
mtasTadsNotRegisteredReason	Added and supported
mtasTadsOngoingSessionGauge	Added and supported
MtasTestAnnNumbers	Now supported
mtasTestAnnNumbersGa	Now supported
mtasTestAnnNumbersNum	Now supported
mtasUCRoutingSessionContinuationErrorCodes	Added and supported
mtasXdmsUtValidation	Added and supported
mtasXdmsCai3glrsDefaultImpuUsage	Now supported
vtasCcChargEventOnCcRecallFailure	Now supported
vtasCdivNotRegisteredReason	Added and supported
vtasFcdNotRegisteredReason	Added and supported
vtasMmtRelInviteDelayTime	Added but not used
vtasMmtRelInviteRetryAfterSupport	Added but not used
vtasMmtRelInviteRetryAfterTimeMax	Added but not used
vtasSscCdivTargetNumberDenorm	Now supported
vtasSscRejectInvalidServiceCodeCommand	Added and supported
vtasUCRoutingSessionContinuationErrorCodes	Added but not supported
mtasCDivPostOpRulesBehavior	Now 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





Attribute Name	Description
mtasCrPlayCollectFailureAnnName	Now supported
mtasCrUnavailableSavedAnnName	Now upported
mtasCrUseFromHeader	Added but not supported
vtasCcMrfUserInputErrorHandlingProfile	Added but not supported
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



Attribute Name	Description
mtasSipRetryAfterSupport	Added and supported
mtasSipRetryAfterTime	Added and supported
mtasConfVersion	Added and supported
vtasConfVersion	Added and supported
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 11.

*Table 11 Changed Alarms*

Alarm	Description
MtasSip, Failed to Open Port	<p>Two new causes are added for this alarm:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> </ul>
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 12.

*Table 12 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, Multi Sim License Absent	Alarm raised when a valid multi-sim license is not granted.
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.

### 4.2.3.3 Deleted Alarms

The deleted alarms are listed in the table.

*Table 13 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.

**Table 13 Deleted Alarms**

Alarm	Description
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.
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.



Table 13 Deleted Alarms

Alarm	Description
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.
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.

**Table 13 Deleted Alarms**

<b>Alarm</b>	<b>Description</b>
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.
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

The new IFC triggers are listed in Table 14.

*Table 14 New IFC Triggers*

Reason	IFC
New IFC will be configured to route request to Terminating SCC-AS if <i>cscapable</i> attribute is present with any value (true/false) in Accept-Contact Header of incoming INVITE.	Trigger the SCC AS on the terminating port (mtasSipScdTermPort).  Method="INVITE" AND SessionCase="Terminating" AND (header="Accept-Contact"  (Content="*;cscapable=true" OR Content="*;cscapable=false" ) )
Use of AS generic SIP port	For MMTel and SCC AS using AS generic SIP port the iFC trigger must contain AS name. It will be possible to use FQDN in iFC triggers enabling Dynamic AS allocation/AS instance caching in S-CSCF with load balancing using srv records in DNS lookup. Example for MMTel AS: sip:mtas.operator.net; as=MMTelAS; lr and for SCC AS: sip:mtas.operator.net; as=SCCAS; lr Requires that the AS generic SIP port is used in the DNS configuration for mtas.operator.net .
Road Test Announcement calls to subdomain port in MMTelAS	Each fictive global number corresponding to a dialed test call number will be provisioned as a distinct PSI in the HSS

## 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, deprecated, 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 New Counters

The new counters are listed in Table 16.

*Table 16 New Counters*

Counter Name	Description
MtasTa	Added and supported
MtasMmtEstablishedSessionAvg	Added and supported
MtasMmtEstablishedSessionMax	Added and supported
MtasMmtEstablishedSessionMin	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





Counter Name	Description
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
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
MtasTalnvNOkE	Now supported
MtasTalnvNOkI	Now supported
MtasTalnvOk	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



Counter Name	Description
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
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



Counter Name	Description
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 17.

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 17 Changed Services*

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.8
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.

**Table 17** *Changed Services*

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.8
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.
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: <code>mtasMmtRelInviteDelayTime</code> )  -Re-INVITE retry for the final response 500 with Retry-After header received from the called party (Related CMs: <code>mtasMmtRelInviteRetryAfterSupport</code> , <code>mtasMmtRelInviteRetryAfterTimeMax</code> )
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 <code>mtasCcChargEventOnCcRecallFailure</code> 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 <code>mtasChargingProfileSuppressRfMsisdnImsiSubscriptionIdAVP</code> and <code>mtasChargingProfileSuppressRoMsisdnImsiSubscriptionIdAVP</code> are introduced to configure this behavior.



Table 17 Changed Services

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.8
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.
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_NEEDED) - 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.

**Table 17** *Changed Services*

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.8
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
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



**Table 17** *Changed Services*

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.8
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 18.

**Table 18** *Other Interface Changes*

Source of Change	Service	Interface	Impact	Description of Changes
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.



Source of Change	Service	Interface	Impact	Description of Changes
HW33031	SRVCC	ISC	Minor Impact	<p>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.</p> <p>Details about the five covered scenarios:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> </ul>
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.
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 ReleaseCall (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 "iQ850RejectReason" parameter as empty string, set "iRejectReason" 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





Source of Change	Service	Interface	Impact	Description of Changes
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)
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	Initial INVITE can contain multiple feature tags in Contact header.  Previously 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.  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">  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">
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.



Source of Change	Service	Interface	Impact	Description of Changes
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 <code>mtasSscMinLenOfNdNum</code>.</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 <code>MtasMmtInit*SessNOkService</code> 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 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.

### 5.2 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.

### 5.3 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.

## **5.4 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.

## **5.5 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.

## **5.6 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.



## 5.7 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/MSF after transfer has finished or to UE in case of PS fallback.

### Impact

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

## 5.8 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.

## 5.9 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.

## 5.10 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.

## 5.11 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.

## 5.12 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.

## 5.13 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.

## 5.14 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.

## 5.15 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.

## 5.16 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.

## 5.17 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.

## 5.18 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.

## 5.19 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.

## 5.20 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.

## 5.21 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.

## 5.22 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.

## 5.23 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: `mtasMmtRelInviteDelayTime`, `mtasMmtRelInviteRetryAfterSupport`, `mtasMmtRelInviteRetryAfterTimeMax`

### Impact

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

## 5.24 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 `mtasCcChargeEventOnCcRecallFailure`.

### Impact

No impact until activated.

## 5.25 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.

## 5.26 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.

## 5.27 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.



## 5.28 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.

## 5.29 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.

## 5.30 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.

## 5.31 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.

## 5.32 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.

## 5.33 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.

## 5.34 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.

## 5.35 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.

## 5.36 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.

## 5.37 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.

## 5.38 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.

## 5.39 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.

## 5.40 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`.

## 5.41 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.

## 5.42 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.