

vMTAS Network Impact Report from 1.4 to 1.8 MTAS

NETWORK IMPACT REPORT

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1 Introduction

This Network Impact Report (NIR) describes how the Virtual Multimedia Telephony Application Server (vMTAS) 1.8 with new and enhanced features affects the vMTAS 1.4. The NIR also describes the impact on the overall network, including all affected products and functions.

This document covers the following new and enhanced features:

New Features

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

Enhanced Features

- Apache Tomcat for Provisioning
- Support P-Asserted-Service Header in Signaling
- AVP Suppression and CDF Failover
- Update Destination-Host in Next ACR Message



- 3PTY Service Error Announcements
- Error Announcements with Access/Location Information
- SIP Embedded Tel in SCC AS
- VoLTE Counters
- SIP Upstream Overload Control
- VLR Address to IDP for Wi-Fi
- NP Announcement Based on B-Number
- ATCF Information Restoration
- CCxx Invocation Failure Announcements
- Call Return Erasure
- Provisioning VTP Domain for Wholesale and FIP Suppression over CAI3G
- CDIV Announcement after CAT Invocation
- Support of Load Balancing Traffic over Sh Interface
- CAPv2 Support Play Tone in ACH
- Additional Session Statistics Counters
- Optimize the Local Ring Back Sequence
- Call Return Interrogation Support for Date and Time
- Include an SDP Offer in the Initial INVITE to New Target
- Reason Text in History-Info Header for CDIV Time-Out
- International Outgoing Call Barring for Wi-Fi Access
- Display MDUCAC calls as available for Call Pull
- IMEI in MMTel AS Charging
- Destination-based CAP Triggering
- Addition of Two Subscriber Transparent Data and CS-Retry Prefix
- Backward ICBS Parameter for FCD Primary User
- Configurable FCH Parameters for Japanese Charging Service
- Include SDP Offer in re-INVITE for Moving to an Ad-hoc Conference
- SIP URI without Phone-context for SCC AS



- SDP Offer for Initial INVITE to New Target for Account Activation
- Match Existing Session in Move Active Session to Existing Conference
- Enhancements of Offline Charging Interim ACR Handling
- Extension Number Support (Line Sharing Phase 1.0+)

For more information on the changed features, see Section 4 on page 33.





2 General Impact

This section describes the general impact owing to the introduction of the vMTAS 1.8.

2.1 Backward Compatibility

The vMTAS 1.8 is backward compatible and unless stated otherwise, legacy behavior is preserved.

2.1.1 Interoperable Network Elements

The interoperable Network Elements for vMTAS 1.8 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

2.2 Capacity and Performance

2.2.1 Subscriber Capacity

The subscriber capacity is not affected by the introduction of the vMTAS 1.8.

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, NW, and SIP Trunking AS.



2.2.2 Network Performance and Traffic Capacity

The in-service network performance and traffic capacity is not affected by the introduction of the vMTAS 1.8. The network performance and traffic capacity is estimated to be the same as in vMTAS 1.4.

2.2.3 License Handling

It is mandatory to use Network License Server (NeLS) product with vMTAS 1.8 .

For more information, refer to *MTAS Licenses*.



3 Interfaces

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

3.1 Inter-node Interfaces

The changes to the inter-node interfaces are described in Table 2.

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 2 Inter-node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.4
Charging Rf	Diameter	No Impact	Offline charging output extended with Interim-Reason AVP in ACR[Interim].
Charging Rf	Diameter	No Impact	Interim-Interval timer spread (+/-2%) is configurable using new configuration attribute. The randomization is disabled by default for new installations and enabled for existing installations during upgrade procedure.
CAT	SIP	No Impact	From now on, operator can configure MTAS so it won't include Route header in the messages sent directly to CAT-s without any intermediate SIP proxy node. Refer to <i>MtasSpecializedMediaResourceRoute</i> in the <i>MTAS Parameter Description</i> for details
DNS	TCP/UDP	Minor Impact	When CM attribute <i>DNS.DnsDscpValue</i> is configured, DSCP value will be shown in all DNS sockets.
Ro, Rf	Ro	No Impact	Any AVP can be omitted in the charging output over the Ro and Rf interfaces with exception of the following: <ul style="list-style-type: none"> • ACR: <ul style="list-style-type: none"> Session-Id Accounting-Record-Type Accounting-Record-Number • CCR: <ul style="list-style-type: none"> Session-Id CreditControl-Request-Type CreditControl-Request-Number
Ro/Rf	Diameter	No Impact	The Transaction-Info AVPs are composed from any of the SIP responses and not only the final SIP responses.



Table 2 Inter-node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.4
Rf	Diameter	No Impact	MTAS uses the latest received Origin-Host AVP when populating the Destination-Host AVP in the Rf signaling for a given session. If operator network uses multiple destination-hosts in charging session, use RRT to avoid multiple entries in peer table.
Ro	Diameter	No Impact	For Service-Specific-Info AVP, Service-Specific-Data value 30 is used instead of 11 national when there is a session corresponding to the Conference Creator SIP dialog.
Ro	Diameter	Minor Impact	New Retarget-Instruction APV introduced.
XDMS	XCAP	No Impact	The <code>MtasXdmsXcapDeleteNOkE</code> , <code>MtasXdmsXcapGetNOkE</code> , and <code>MtasXdmsXcapPutNOkE</code> are extended with additional key containing the reject code string 403 and 412.
XDMS	NETCONF	No Impact	When a configuration parameter is changed, a delay of up to five seconds occurs until the new value is reflected.
ISC	SIP	No Impact	If the new <code>mtasSipOcAdministrativeState</code> is UNLOCKED and the SIP out-of-dialog request supports OC, the OC parameters are added in SIP by header to support RFC 7339 reporting node functions. This enables sending overload status to SIP Upstream node and the reacting node reduces a percentage of the requests being forwarded based on the information.
ISC	SIP	Minor Impact	To keep the from URI toward the remote network unchanged, the "from-change" support is disabled after a successful SRVCC transfer regardless of the preconfigured scheme in MSC, for both SIP or Tel.
ISC	SIP	No Impact	Warning header is added for 503 response, in case of license failure for Mmtel and SCC license.
ISC	SIP	No Impact	New attribute <code>mtasSipRemoveSupportedHeaderInErrorResponse</code> is added to enable MTAS to remove the supported header in SIP response when its value is set to "1". The SIP error responses include these SIP responses forwarded or triggered by MTAS. The error codes of these SIP error response must be greater or (equal to) 300. When the value of parameter is set to "0", the Supported headers are not removed by MTAS if there in these SIP error response as legacy. After upgrade, the default value("0") of the CM attribute will be used, that is, the legacy behavior will be kept.
ISC	SIP	No Impact	New CM attribute <code>mtasSipChangeRefresherRoleInReinviteAndUpdate</code> is added. This attribute defines the MTAS behaviour of changing the refresher role for reINVITE and normal UPDATE in an exception case. If this attribute is disabled, then when MTAS sends out the reINVITE or normal UPDATE, it will not change the role of refresher parameter which means that it will be same as the previous negotiated result. Enabling the attribute, an exception will occur if the previous negotiated result is the remote side as refresher. In this case, MTAS will change the refresher role to empty, i.e. no refresher parameter in the reINVITE and normal UPDATE. In case that before upgrade, the <code>mtasSystemConstantSC ID 84</code> is set to 1, then this CM attribute will be set to FALSE and the new behavior will be applied. Otherwise, the default value(TRUE) of this CM attribute will be used after the upgrade, that is, legacy behavior will be performed.
ISC	SIP	No Impact	New CM attribute <code>mtasSubsDataRegEventNotifier</code> is added. This attribute defines whether MTAS sends the one-time SUBSCRIBE to SCSCF or ICSCF. The possible values are as follows: - SCSCF: MTAS sends the SUBSCRIBE to SCSCF (default). - ICSCF: MTAS sends the SUBSCRIBE to ICSCF at de-registration and to SCSCF at registration. In parallel, <code>mtasSystemConstantSC ID 83</code> is deprecated. If MTAS is upgraded from 1.6 or 1.7 and <code>mtasSystemConstantSC</code> is set (presents) then the value of the new CM parameter must be 'ICSCF' on the new MTAS version (4.8/1.8 and above).
ISC	SIP	No Impact	CM attribute <code>mtasSubsDataRegEventNotifier</code> has been modified: Before MTAS 1.8, MTAS sends the SUBSCRIBE to ICSCF at de-registration and to SCSCF at registration when <code>mtasSubsDataRegEventNotifier: 1=ICSCF</code> . From MTAS 1.8, MTAS sends the SUBSCRIBE to ICSCF in all cases (at registration, at implicit registration and at de-registration as well) when <code>mtasSubsDataRegEventNotifier: 1=ICSCF</code> .



Table 2 Inter-node Interfaces

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.4
ISC/CAMEL	SIP	No Impact	MTAS reports Q.850 cause codes with Cause Indicator only and no Extension Indicator. The Cause Indicator is 7 bit long while the Extension Indicator is 1 bit long, that is 1000 0000 where the last octet is set to 1.
CAI3G	CAI3G	Major Impact	Traffic separation is mandatory. The cai3g-vip4 and cai3g-vip6 are used instead of oam-vip4 and oam-vip6 respectively.
CAI3G	CAI3G	No impact	Add support of new service "Multi-Persona"
Ut	XCAP	Major Impact	Traffic separation is mandatory. The ut-vip4 and ut-vip6 are used instead of oam-vip4 and oam-vip6 respectively.
ISC	SIP	No impact	Removed the limitation on MTAS to support RUI fetch every second. OK to keep the CM attributes mtasSipOcRegulationInterval and mtasSipOcValidity as the default value of 1000/1500.
ISC	SIP	Minor Impact	P-headers are transferred from the incoming dialog to outgoing by MTAS in REFER and SUBSCRIBE events. The ACCEPT header is transferred from the incoming dialog to outgoing in the SUBSCRIBE event.
Mr	VXML	Minor Impact	The prompt tag is added to chained announcements in VXML. The apostrophe sign is removed from error handling variable in VXML.
Mr	NetAnn(SIP)	No Impact	Operators can configure MTAS/vMTAS so it won't include Route header in the messages sent directly to MRFC without any intermediate SIP proxy node. Refer to mtasMrControllerRoute in the MTAS Parameter Description for details
Mr	SIP	No Impact	Legacy fault has been corrected. While caller sends a CANCEL towards terminating MTAS during play of OCS initiated final announcement, the announcement will be terminated.
Ro, Rf	Diameter	Minor Impact	New SSI ID 2602 added for Call Return Erasure
CAMEL	CAPv2	No impact	CAPv2 Parameter ACH.releaseIfdurationExceeded.tone is supported if the CM attribute mtasNccCreditAnnouncementName is configured.
ISC.	SIP	No impact	MTAS changes the behavior of session refresh handling for early UPDATE sip message based on the new CM attribute mtasSipEnableSessionRefreshForEarlyUpdate. By default, the new CM attribute value is set to TRUE and the MTAS legacy behavior is used. The UPDATE in the early dialog is handled the same way as the UPDATE in a confirmed dialog when concerning session refresh. Otherwise, new behavior is applied and the UPDATE in the early dialog is not treated as a session refresh message.
ISC	SCC AS NPLI	No impact	When the CM attribute mtasSccNpliOriginatingCSLocationInformation is set to "CGI_VLR_MSC" the initial INVITE request sent to MMTel AS shall include the PANI header where CGI (as of today) and VLR and MSC information is included if they were available in location information from HSS. Also the Access-type in the PANI header will include the Access-type if defined in CM attribute mtasSccNpliDefaultCSAccessType. If not defined, "3GPP-GERAN" is used as access-type. When the CM attribute mtasSccNpliTerminatingCSLocationInformation is set to "CGI_VLR_MSC" the initial INVITE request sent to MMTel AS shall include the PANI header where CGI (as of today) and VLR and MSC information is included if they were available in location information from HSS. Also the Access-type in the PANI header will include the Access-type as defined in CM attribute mtasSccNpliDefaultCSAccessType (default value is, "3GPP-GERAN")
ISC	SIP	No impact	Legacy fault has been corrected. From now on UCAC's waiting-limit can be applied on originating side by setting mtasUCacApplyWaitingLimitOnSide to '0'. By default waiting-limit will be applied on terminating side only (default value is '1').
ICS, Ro	SIP, DIAMETER	Minor Impact	SCN Service will reject the INVITE when END_USER_SERVICE_DENIED(4010) received for the CCA-I as result multi-device charging behavior will be suppressed. SCN Service will suppress CDIV if multi-device charging is enabled and a negative response is received for the CCA-I.

**Table 2** *Inter-node Interfaces*

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.4
Sh	Diameter	No impact	Sh request messages are sent without the Destination-Host AVP if the load balancing (realm-based routing) feature is activated.
Sh	Diameter	No impact	Add support of new service “Multi-Persona”
XCAP	HTTP	Major Impact	If no valid Ut access license or service profile license is available, MTAS sends the HTTP Error 403 Forbidden
Ut	XCAP	Major impact	When the Service Profile license is not valid or present, the response is 403 Forbidden instead of 409 Conflict. See HV64567.
Rf	SCC AS NPLI	No impact	When the CM attributes <code>mtasSccNpliTerminatingCSLocationInformation</code> is set to “CGI_VLR_MSC” the ANI AVP sent in ACR start for terminating charging session shall include VLR and MSC information if available. In addition an access-type as defined in <code>mtasSccNpliDefaultCSAccessType</code> , shall be included in the ANI AVP.
Rf	Diameter	Minor Impact	New Ericsson proprietary AVP with info that the corresponding Ro signaling is suppressed. Ro-Information ::= < AVP Header: 1478 193 > [Ro-Status] The AVP has m-bit false and is included only when Ro suppression is triggered and enabled.
Rf/Ro	Diameter	No impact	Online and offline charging output extended with Instance-Id and User-Equipment-Info AVPs in ACR-Start, CCR-Initial, ACR-Event, and CCR-Event for normal sessions or diverted after “No response” or “Busy” subscriber. The new AVPs are default omitted.
Rf/Ro	Diameter	No impact	If <code>mtasNccReportSsiToCharging</code> is enabled, MTAS report to charging the use of CAMEL service in Supplementary-Service-Identity AVP and new values are added in the existing S-S-I AVP.
ISC	SIP	No impact	A feature tag in the Accept-Contact header is added by the terminating MMTel AS if the <feature-tags> data is provisioned by the operator before the INVITE message is sent to the terminating SCC AS. The SCC AS removes the feature tag from the INVITE message when it contains a province.
ISC	SIP	No impact	A feature tag in the Accept-Contact header is added by the terminating MMTel AS if the <feature-tags> data is provisioned by the operator before the INVITE message is sent to the terminating SCC AS. The SCC AS removes the feature tag from the INVITE message when it contains the “+ps” value.
ISC	SIP	No impact	Warning header is added for 503 response, in case of license failure for Mmtel and SCC license.
Rf/Ro	Diameter	No impact	The provisioned customized charging information in <common-data><charging-avp-list><service-specific-info> is reported to offline/online charging nodes in grouped Service-Specific-Info AVP
CAI3G	CAI3G	Minor impact	The MMTel charging profile check-in provisioning is removed. It is now possible to provision a MMTel charging profile to a user which is not configured MTAS. See HV62951.

3.2 Operation and Maintenance

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

3.2.1 Provisioning

There are no changed or deleted attributes.



3.2.1.1 New Attributes

The new attributes are shown in Page 11.

Table 3 New Attributes

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.4
Sh	Diameter	No impact	The following new elements are added in the Sh schema: <ul style="list-style-type: none"> <vtp-domain> <fip-suppression>
Sh	Diameter	-	New service "Multi-Persona" introduces a new element: <operator-multi-persona>
Sh	Diameter	-	MTAS supports the parsing of the IMSPublicIdentity from the ImplicitIdentities . E.g.: <pre><Sh-Data> <Extension> <ImplicitIdentities> <IMSPublicIdentity>sip:+17014801382@test.com </IMSPublicIdentity> <IMSPublicIdentity>tel:+17014801382</IMSPublicIdentity> </ImplicitIdentities> </Extension> </Sh-Data></pre>
CAI3G	CAI3G	No impact	The following new elements are added in the CAI3G schema: <ul style="list-style-type: none"> <vtp-domain> for Wholesale <fip-suppression> for FIP
CAI3G	CAI3G	No impact	The operator has the possibility to configure through CAI3G request customized charging information. New CAI3G element <common-data><charging-avp-list><service-specific-info> is used for provisioning.
CAI3G	CAI3G	-	New service "Multi-Persona" introduces the following new elements: <pre><multi-persona> <mup-operator-configuration> <activated></pre>
CAI3G	CAI3G	-	New service UC Routing is added: <pre><mc:unified-communication-routing> <mc:ucr-operator-configuration> <mc:activated>true</mc:activated> <mc:originating-number>467611111</mc:originating-number> <mc:terminating-number>467622222</mc:terminating-number> </mc:ucr-operator-configuration> </mc:unified-communication-routing></pre> <p>New XML element under <common-data> is added: <pre><mc:subscriber-type>BUSINESS</mc:subscriber-type></pre> <p>New XML element under <user-common-data> is added: <pre><mc:ucr-served-identity>tel:+4610123456</mc:ucr-served-identity></pre> <p>Note: Corresponding Sh elements are added on the Sh interface.</p> </p></p>

3.2.2 Configuration

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



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

3.2.2.1 Changed Attributes

The changed attributes are shown in Table 4.

Table 4 Changed Attributes

Attribute Name	Description of Change
mtasChargingProfileOmitCcr	Enables configuration of any AVP in omit list for online charging. The Charging Message now contains only the OCS relevant AVPs in message.
mtasChargingProfileOmitAcr	Enables configuration of any AVP in omit list for offline charging. The Charging Message now contains only the CDF relevant AVPs in message.
mtasChargingProfileOmitAcr	The Interim-Reason AVP code is added to the list of allowable values
mtasChargingProfileOmitAoc	Enables configuration of any AVP in omit list for AoC. The Charging Message now contains only the OCS relevant AVPs in message.
MtasComCcmCcc	Default Zone 3, 4 values for MtasComCcmCcc=44 changed from 235 to 234.
mtasFcdCallToRelatedUserTag	Attribute cardinality is changed from 1-1 to 0-1
mtasEsCbTag	Attribute cardinality is changed from 1-1 to 0-1
vtasFcdCallToRelatedUserTag	Attribute cardinality is changed from 1-1 to 0-1
vtasEsCbTag	Attribute cardinality is changed from 1-1 to 0-1
mtasMrControllerRoute	There is a third possible value, "2 - omitRouteHeader". If set, MMTel AS will not include Route header in the messages sent directly to the CAT server.
mtasNccImsiBehavior	The old value 0-IMSI_REQUIRED, 1-IMSI_NOT_REQUIRED is deprecated, the new value 2-IMSI_NOT_REQUIRED_PROVISION 3-IMSI_REQUIRED_PROVISION_IN_NCC_OR_UCD is used. If upgrade from old version, the value of the CM is automatically migrated from 0 to 2, and from 1 to 3.
mtasNumberTranslationRule	A new optional element in the syntax for Number Translation rule which can be used for B number classification. Colon is used to separate from previous element. For toll-free classification the element shall be ":BNumType=Tollfree". For National Short Code classification the element shall be ":BNumType=NSC".
mtasSccNpliOriginating	Value 6 = FIXED_ORDER is deleted from the list of possible values.
mtasSccNpliTerminating	Value 6 = FIXED_ORDER is deleted from the list of possible values.
vtasMmtLocalRingBackMode	Increased range from 0-1 to 0-2 2 = NETWORK_PROVIDED_ORIG_TERM
mtasShIfDestinationHost	Dependency: mtasShIfDestinationHost attribute is ignored if mtasShIfRealmBasedRouting is activated
mtasShIfEfficiency	Description is corrected. Dependency: mtasShIfEfficiency and mtasShIfRealmBasedRouting attributes are mutually exclusive



Attribute Name	Description of Change
mtasShIfEffDiscoveryMode	Description is corrected. Dependency: This attribute has an effect only if <code>mtasShIfEfficiency</code> is enabled
mtasShIfEffMandatoryBitSetting	Description is corrected. Dependency: This attribute has an effect only if <code>mtasShIfEfficiency</code> is enabled
mtasConfNotificationUserCountBehavior	Increased range from 0-1 to 0-2 2 = EXCLUDECC_ONLY_IN_USERCOUNT
vtasConfNotificationUserCountBehavior	Increased range from 0-1 to 0-2 2 = EXCLUDECC_ONLY_IN_USERCOUNT
mtasMmtLocalRingBackMode	Increased range from 0-1 to 0-2 2 = NETWORK_PROVIDED_ORIG_TERM
mtasSdsUriSchema	New ENUM value 2 <code>sipEmbeddedTelWithoutPhoneContext</code>
mtasSscAbDialEnforceSscSubscribe	Attribute description updated. Changed "AbDial Service" to "Abbreviated Dialing Service".
vtasSscAbDialEnforceSscSubscribe	Attribute description updated. Changed "AbDial Service" to "Abbreviated Dialing Service".
mtasChargingProfileInterimIntervalSpread	Default valued changed from 0 (do not apply randomization) to 1 (apply randomization) to keep backwards compatibility after upgrading from previous releases
mtasSubsDataRegEventNotifier	Description has been changed

3.2.2.2 Deleted Attributes

The deleted attributes are shown in Table 5.

Table 5 Deleted Attributes

Attribute Name
vtasIdPresDbIpVersion
Configuration of the Arwa server connection properties MOC <i>ArwaConfiguration</i> is removed under <code>ManagedElement=1, SystemFunctions=1, Lm=1</code> .

3.2.2.3 Deprecated Attributes

The deprecated attributes are shown in Table 6.

Table 6 Deprecated Attributes

Attribute Name	Description
MtasAdditionalAnn	Replaced by <code>MtasAdditionalAnnouncementConfigs</code>
mtasChargingProfilePreserveChargSessAtCallPull	CM parameter not used
vtasConfCoLocated	Status of the parameter changed to deprecated
mtasOctRingBackToneAnn	Replaced by <code>mtasMmtLocalRingbackAnnouncementName</code>
mtasOctBusyToneAnn	Replaced by <code>mtasMmtGenericFailureAnnouncementName</code>



Attribute Name	Description
mtasOctGenericFaultAnn	Status of the parameter changed to deprecated
vtasOctRingBackToneAnn	Replaced by mtasMmtLocalRingbackAnnouncementName
vtasOctBusyToneAnn	Replaced by vtasMmtBusyAnnouncementName
vtasOctGenericFaultAnn	Replaced by vtasMmtBusyAnnouncementName

3.2.2.4

New Attributes

The new attributes are shown in Table 7.

Table 7 New Attributes

Attribute Name	Description
DNS.DnsDscpValue	Added and supported
mtas3ptyBadInvocationAnnName	Added and supported
mtas3ptyDisableWithAnn	Added and supported
mtas3ptyServiceDisabledAnnName	Added and supported
MtasAdditionalAnnouncementConfig	Added and supported
mtasAdditionalAnnouncementConfigAnnName	Added and supported
mtasAdditionalAnnouncementConfigRule	Added and supported
MtasAdditionalAnnouncementConfigs	Added and supported
mtasAnnouncementParameterAdditional	Now supported
mtasAslwSessionProgressMappingOnPreconditionEnabled	Now supported
mtasCatUntilDiversionResponse	Added and supported
mtasCbLocationInTransitMode	Added and supported
mtasCbVersion	Now supported
mtasCcInvokeUserErrorAnnouncementName	Added and supported
mtasCdivAfterByeOfferEstablishedMediaTypesToTarget	Added and supported
mtasCdivRequestTimeoutReason	Added and supported
mtasChargingProfileInterimIntervalSpread	Added, but not supported
mtasChargingProfileLongDurationInterimTimer	Added and supported
mtasChargingProfileReportFipIdInOrigChargingMessages	Now supported
mtasChargingProfileReportFipIdInTermChargingMessages	Now supported
mtasChargingSubscriberCreditNotificationMrfOffer	Added and supported
mtasChargingSubscriberCreditNotificationOfferEstablishedMediaToTarget	Added and supported
mtasChargingSubscriberCreditNotificationVideoDirective	Added and supported
mtasConflmpuBasedMoveInEnabled	Added and supported



Attribute Name	Description
mtasConfMoveCodecOfferingMode	Added and supported
mtasCrEraFailureAnnName	Added and supported
mtasCrEraSuccessAnnName	Added and supported
mtasCrLastCallInfoRestricted	Added and supported
mtasCrLastCallInfoType	Added and supported
mtasCwSend180RingingAfterPreconditionNegotiation	Added and supported
mtasChargingProfileRoSuppressionOnBNumber	Added and supported
mtasDnmFixedDeviceSupportApplicableForLocalness	Added and supported
mtasEsCbTag	Added, but not supported
mtasFcdCallToRelatedUserTag	Now supported
mtasFcdRelatedUserRouting	Added and supported
mtasFcdSuppressEarlyMediaToRelatedUser	Added, but not supported
mtasFcdSuppressOrigOnlineChargingToRelatedUser	Now supported
mtasFcdSuppressOnlineChargingOnRelatedUser	Added but not Supported
mtasFcdEarlyMediaSuppressionHeaderToRelatedUser	Now supported
mtasGaAnnAdditionalForSegmented	Now supported
mtasHoldBandwidthOptimizationBehaviour	Added and supported. Post upgrade, the recommended value is 1
mtasJcBackwardIcbsBehavior	Added and supported
mtasJcFchChargeRateNoflex	Added and supported
mtasJcFchChargeRateOrdinary1	Added and supported
mtasJcFchChargeRateOrdinary2	Added and supported
mtasJcFchChargeRatePayphone1	Added and supported
mtasJcFchChargeRatePayphone2	Added and supported
mtasMmtBusyAnnouncementName	Added and supported
mtasMmtEstablishedSessionGauge	Added, but not supported
mtasMmtDefPAssertedService	Added and supported
mtasMmtGenericFailureAnnouncementName	Added and supported
mtasMmtMobileUserDetermination	Added and supported
mtasMmtPAssertedServiceBehavior	Added and supported
mtasMmtServedSubscriberType	Added and supported
mtasMmtTermTrunkChargingProfileRef	Added and supported
mtasMrControllerVxmlPathReplacementForPlayParameter	Added and supported
mtasNccBNumberBasedTrigger	Added and supported
mtasNccBNumberList	Added and supported
mtasNccCreditAnnouncementName	Added and supported
mtasNccReportSsiToCharging	Added and supported



Attribute Name	Description
mtasNccVlrAddressForWiFi	Added and supported
mtasNpBNumberList	Added and supported
mtasNpRnAndAnn	Added and supported
mtasOctOfferEstablishedMediaTypesToTarget	Added and supported
mtasPriorityCallGetsServiceNetIdentifier	Added and supported
mtasPriorityCallGetsServiceNokResponses	Added and supported
mtasPriorityCallGetsServiceOkResponses	Added and supported
mtasReBalancing	Added and supported
mtasReBalancingAdministrativeState	Added and supported
mtasReBalancingState	Added and supported
mtasReBalancingTargetNodeSipUri	Added and supported
mtasReBalancingThreshold	Added and supported
mtasSdsUriSchema	Added and supported
mtasShIfRealmBasedRouting	Added and supported
mtasSipEnableSessionRefreshForEarlyUpdate	Added and supported
mtasSipChangeRefresherRoleInReinviteAndUpdate	Now supported
mtasSipOcAbatement	Now supported
mtasSipOcAdministrativeState	Now supported
mtasSipOcDefDecrStep	Now supported
mtasSipOcDefIncrStep	Now supported
mtasSipOcOnset	Now supported
mtasSipOcRegulationInterval	Now supported
mtasSipOcResource	Now supported
mtasSipOcValidity	Now supported
mtasSipRemoveSupportedHeaderInErrorResponse	Now supported
mtasSrvccAlertingBuffer18x	Added but Not Supported
mtasSscAbDialEnforceSscSubscribe	Added and supported
mtasSscCrEraComSyntInv	Added and supported
mtasSscCellAnnEnforceSscSubscribe	Added and supported
mtasSscCrEnforceSscSubscribe	Added and supported
mtasSscHotlineEnforceSscSubscribe	Added and supported
mtasSscPriorityCallEnforceSscSubscribe	Added and supported
mtasSscVmEnforceSscSubscribe	Added and supported
mtasSccNpliDefaultCSAccessType	Added and supported
mtasSccNpliOriginatingCSLocationInformation	Added and supported
mtasSccNpliTerminatingCSLocationInformation	Added and supported
MtasSpecializedMediaResourceRoute	Added and supported



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



Attribute Name	Description
vtas3ptyBadInvocationAnnName	Added and supported
vtas3ptyDisableWithAnn	Added and supported
vtas3ptyServiceDisabledAnnName	Added and supported
vtasCbLocationInTransitMode	Added and supported
vtasCbVersion	Added but not Supported
vtasCcInvokeUserErrorAnnouncementName	Added and supported
vtasCdivAfterByeOfferEstablishedMediaTypesToTarget	Added and supported
vtasCdivRequestTimeoutReason	Added and supported
vtasConfImpuBasedMoveInEnabled	Added and supported
vtasConfMoveCodecOfferingMode	Added and supported
vtasCrEraFailureAnnName	Added and supported
vtasCrEraSuccessAnnName	Added and supported
vtasCrLastCallInfoRestricted	Added and supported
vtasCrLastCallInfoType	Added and supported
vtasEsCbTag	Added, but not supported
vtasFcdCallToRelatedUserTag	Now supported
vtasFcdRelatedUserRouting	Added and supported
vtasFcdSuppressEarlyMediaToRelatedUser	Added and supported
vtasFcdSuppressOrigOnlineChargingToRelatedUser	Now supported
vtasFcdSuppressOnlineChargingOnRelatedUser	Added but not Supported
vtasFcdEarlyMediaSuppressionHeaderToRelatedUser	Now supported
vtasHoldBandwidthOptimizationBehaviour	Added and supported Post upgrade, the recommended value is 1
vtasMmtBusyAnnouncementName	Added and supported
vtasMmtDefPAssertedService	Added and supported
vtasMmtGenericFailureAnnouncementName	Added and supported
vtasMmtMobileUserDetermination	Added and supported
vtasMmtPAssertedServiceBehavior	Added and supported
vtasMmtServedSubscriberType	Added, but not supported
vtasMmtTermTrunkChargingProfileRef	Added, but not supported
vtasNpBNumberList	Added and supported
vtasNpRnAndAnn	Added and supported
vtasOctOfferEstablishedMediaTypesToTarget	Added and supported
VtasPriorityCallGetsService	Now supported
vtasPriorityCallGetsServiceAdministrativeState	Now supported
vtasPriorityCallGetsServiceAnNumbers	Now supported
vtasPriorityCallGetsServiceNetIdentifier	Added and supported



Attribute Name	Description
vtasPriorityCallGetsServiceNokResponses	Added and supported
vtasPriorityCallGetsServiceNtNumbers	Now supported
vtasPriorityCallGetsServiceOkResponses	Added and supported
vtasPriorityCallGetsServiceWithNoRPH	Now supported
vtasPriorityCallGetsServiceWithUnknwonGETSCall Type	Now supported
vtasPriorityCallGetsServiceWps	Now supported
vtasPriorityCallResourcePriorityAdministrativeState	Added and supported
vtasSscCrEraComSyntInv	Added and supported
VtasSscPriorityCall	Added and supported
vtasSscPriorityCallComSyntInv	Added and supported
vtasSscAbDialEnforceSscSubscribe	Added and supported
vtasSscCellAnnEnforceSscSubscribe	Added and supported
vtasSscCrEnforceSscSubscribe	Added and supported
vtasSscHotlineEnforceSscSubscribe	Added and supported
vtasSscHotlineEnforceSscSubscribe	Added and supported
vtasSscVmEnforceSscSubscribe	Added and supported
VtasUCRouting	Added, but not supported
vtasUCRoutingAdministrativeState	Added, but not supported
vtasUCRoutingDropBack	Added, but not supported
vtasUCRoutingNormalizedNumberHeader	Added, but not supported
vtasUCRoutingOriginalDestinationNumberHeader	Added, but not supported
vtasUCRoutingPSUHeader	Added, but not supported
vtasUCRoutingTermReceivedNumberHeader	Added, but not supported
vtasUCRoutingTermTrunkResponse	Added, but not supported
vtasMmtMobileBehaviour	Added, but not supported
vtasMmtMultiMobileSupport	Added, but not supported
mtasCDivPostOpRulesBehavior	Added, but not supported
mtasSscMobileBehaviour	Added, but not supported
vtasCwSend180RingingAfterPreconditionNegotiation	Added and supported
vtasUCacApplyWaitingLimitOnSide	Added and supported
mtasUCacApplyWaitingLimitOnSide	Added and supported
mtasMmtMobileBehaviour	Added, but not supported
mtasMmtMultiMobileSupport	Added, but not supported
vtasSscPriorityCallEnforceSscSubscribe	Added and supported



3.2.3 Fault Management

The new attributes are shown in Table 8.

Table 8 New Alarms

Alarm	Description
MtasMmt, MMTel Voice Base License Absent	If MMTel Voice Base license absent, then this alarm will be raised.
MtasLicenses, MMTel Service Exposure License Absent	If MMTel Service Exposure license absent, then this alarm will be raised.
MtasLicenses, MMTel Location Services License Absent	If MMTel Location Services Support license absent, then this alarm will be raised.
MtasLicenses, MMTel Legacy IN reuse License Absent	If MMTel Legacy IN-reuse license absent, then this alarm will be raised.
MtasLicenses, MMTel Multimedia License Absent	If MMTel Multimedia license absent, then this alarm will be raised.
MtasLicenses, MMTel Multi Device License Absent	If MMTel Multi Device license absent, then this alarm will be raised.
MtasLicenses, MMTel Communication State Exposure License Absent	If MMTel Communication State Exposure license absent, then this alarm will be raised.
MtasLicenses, Scc Base License Absent	If SCC AS base pack license absent, then this alarm will be raised.
MtasSrvcc, Single Radio Voice Call Continuity License Absent	If SRVCC license absent, then this alarm will be raised.
MtasScc, WiFi Calling License Absent	If WiFi Calling license absent, then this alarm will be raised.
MtasMmt, BL Voice Base License Absent	Raised when MMTel is configured for business usage and BL Voice Base license is absent when the <code>mtasMmtAdministrativeState</code> is unlocked.
MtasLicenses, BL Legacy IN reuse License Absent	Raised when MMTel is configured for business usage and BL Legacy IN Reuse license is absent when the <code>mtasSsfCaps2AdministrativeState</code> is unlocked.
MtasLicenses, BL Location Services Support License Absent	Raised when MMTel is configured for business usage and BL Location Services Support license is absent when the <code>mtasDnmAdministrativeState</code> is unlocked.
MtasLicenses, BL Multimedia License Absent	Raised when MMTel is configured for business usage and BL Multimedia license is absent when the <code>mtasVideoFBAdministrativeState</code> is unlocked.
MtasLicenses, BL Service Exposure License Absent	Raised when MMTel is configured for business usage and BL Service Exposure license is absent when the <code>mtasFsfAdministrativeState</code> and/or <code>mtasMmtPxAdministrativeState</code> are unlocked.
MtasLicenses, BL UC Routing License Absent	Raised when MMTel is configured for business usage and BL UC Routing license is absent when the <code>mtasUCRoutingAdministrativeState</code> is unlocked.
MtasLicenses, Communication Interworking Function NW AS Base License Absent	If Communication Interworking Function NW AS Base License absent or License Server Not reachable or License expired or License Server in LOCKED mode and <code>mtasNwAdministrativeState</code> is unlock, then this alarm will be raised.
MtasLicenses, SIP Trunking AS Base License Absent	If SIP Trunking AS Base License absent or License Server Not reachable or License expired or License Server in LOCKED mode and <code>mtasStAdministrativeState</code> is unlock, then this alarm will be raised.

3.2.4 Events and Notifications

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

3.2.5 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

3.2.6 Counters

This section lists changed and new counters.

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

There are no deleted or obsolete counters.

3.2.6.1 Changed Counters

The changed counters are shown in Table 9.

Table 9 Changed Counters

Counter Name	Description of Change
MtasXdmsXMtasXdmsXcapGetNOkEcapDeleteNOkE	The counter key is extended with additional key containing the reject code string such as 403, 412.
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.

3.2.6.2 Deprecated Counters

The deprecated counters are shown in Table 10.

*Table 10 Deprecated Counters*

Counter Name	Description of Change
MtasMmtOrigCommDurationInit	This measurement is depreciated and replaced by MtasMmtOrigCommDurationInitial
MtasMmtOrigUnregCommDurationInit	This measurement is depreciated and replaced by MtasMmtOrigUnrgeCommDurationInitial
MtasMmtTermCommDurationInit	This measurement is depreciated and replaced by MtasMmtTermCommDurationInitial
MtasMmtTermUnregCommDurationInit	This measurement is depreciated and replaced by MtasMmtTermUnregCommDurationInitial
MtasFuncTcpConnections	Measurement is depreciated

3.2.6.3**New Counters**

The new counters are shown in Table 11.

Table 11 New Counters

Counter Name	Description
MtasSipOcOvlPeriods	Added and supported
MtasPriorityCallGetsServiceAttempt	Now supported
MtasPriorityCallGetsServiceOk	Now supported
MtasPriorityCallGetsServiceNOk	Now supported
MtasCrInvEraOk	Added and supported
MtasCrInvEraNOkI	Added and supported
MtasCrInvEraNOkE	Added and supported
MtasMmtOrigCommDurationInitial	Added and supported
MtasMmtOrigUnregCommDurationInitial	Added and supported
MtasMmtTermCommDurationInitial	Added and supported
MtasMmtTermUnregCommDurationInitial	Added and supported
MtasMmtOrigCommDurationAlert	Added and supported
MtasMmtOrigUnregCommDurationAlert	Added and supported
MtasMmtTermCommDurationAlert	Added and supported
MtasMmtTermUnregCommDurationAlert	Added and supported
MtasCsiNoCredit	Added and supported
MtasCsiCallReleasedNoCredit	Added and supported
MtasSipOcOvlDuration	Added and supported
MtasSipOcOvlPeak	Added and supported
MtasSipOcOvlAvg	Added and supported
MtasSrvccEAttempt	Added and supported
MtasSrvccETransferOk	Added and supported
MtasSrvccETransferNOkE	Added and supported



Counter Name	Description
MtasSrvccETTransferNOkl	Added and supported
MtasTadsCsrnPullOk	Added and supported
MtasTadsCsrnPullNOkl	Added and supported
MtasTadsCsrnPullNOkE	Added and supported
MtasTadsInfoPullOk	Added and supported
MtasTadsInfoPullNOkl	Added and supported
MtasTadsInfoPullNOkE	Added and supported
MtasTadsInfoCsSelected	Added and supported
MtasTadsInfoPsSelected	Added and supported
MtasTadsRetryToCsAttempt	Added and supported
MtasTadsRetryToCsAlerting	Added and supported
MtasTadsRetryToCsAnswered	Added and supported
MtasTadsRetryToCsCancelledEarly	Added and supported
MtasTadsRetryToCsCancelled	Added and supported
MtasTadsRetryToCsRejected	Added and supported
MtasTadsToCsAnswered	Added and supported
MtasTadsToCsCancelledEarly	Added and supported
MtasTadsToCsCancelled	Added and supported
MtasTadsToCsRejected	Added and supported
MtasTadsToPsAnswered	Added and supported
MtasTadsToPsCancelledEarly	Added and supported
MtasTadsToPsCancelled	Added and supported
MtasTadsToPsRejected	Added and supported
MtasTadsUnregToCsAnswered	Added and supported
MtasTadsUnregToCsCancelledEarly	Added and supported
MtasTadsUnregToCsCancelled	Added and supported
MtasTadsUnregToCsRejected	Added and supported
MtasCsiBNumberTriggerInitDPOK	Added and supported
MtasMmtEstablishedSessionAvg	Added, but not supported
MtasMmtEstablishedSessionMax	Added, but not supported
MtasMmtEstablishedSessionMin	Added, but not supported
MtasSubsDataServedUsers	Added and supported
MtasSubsDataRegisteredUsers	Added and supported
MtasReBalancingMovedUsers	Added and supported
MtasReBalancingRedirections	Added and supported
MtasTadsDurationAlertedSessCs	Added, but not supported
MtasTadsDurationAlertedSessPs	Added, but not supported



Counter Name	Description
MtasTadsDurationAnsweredSessCs	Added, but not supported
MtasTadsDurationAnsweredSessPs	Added, but not supported
MtasTadsDurationInitialSessCs	Added, but not supported
MtasTadsDurationInitialSessPs	Added, but not supported
MtasTadsOngoingAlertedSessCs	Added, but not supported
MtasTadsOngoingAlertedSessPs	Added, but not supported
MtasTadsOngoingAnsweredSessCs	Added, but not supported
MtasTadsOngoingAnsweredSessPs	Added, but not supported
MtasTadsOngoingInitialSessCs	Added, but not supported
MtasTadsOngoingInitialSessPs	Added, but not supported
MtasUCRoutingOrigOk	Added and supported
MtasUCRoutingTermOk	Added and supported
MtasUCRoutingTermNOk	Added and supported
MtasConfBusinessParticipants	Added and supported
MtasChargingSuppressedRo	Added and supported

3.3 Other Interface Impacts

3.3.1 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 12.

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 12 Changed Services

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.4
ISC	MMTel	No Impact	If CM attribute <code>mtasMmtPAssertedServiceBehavior</code> is set, every INVITE requests (value 1 and 2) and optionally 18x/200 OK for INVITE responses (value 1) sent by the AS includes a P-Asserted-Service header configured with CM <code>mtasMmtDefPAssertedService</code> . In addition, any received P-Preferred-Service header is removed from messages when sending further.
Mr	FCD AAA AdHocConference AnswerConfirmation Call Completion Call Return	Major Impact	In VXML grammar generation external grammar changed to embedded. The listed services used the <code>mtasMrControllerDtmfGrammarFileUrl</code> CM attribute to tell the MRF where to get the grammar from. This CM is now obsolete and the grammar is auto generated based on the service configuration. The following Service CM attributes are used during the VXML generation: <code>mtasCcbsInvocationCode</code> , <code>mtasCcnrInvocationCode</code> , <code>mtasCcnlInvocationCode</code> , <code>mtasCrCallReturnCode</code> , <code>mtasConfAnsConfirmDigitMap</code> .
Mr	AdHocConference AnswerConfirmation	Minor Impact	Previously, the user could not retry after entering an invalid pin. This behavior is kept if the <code>mtasConfAnsDeclineDigitMap</code> CM attribute is not configured. When configured, user can retry five times and hear the error announcement configured in the <code>mtasConfAnsConfirmNomatchAnnouncement</code> .
ISC	O-SDS	No Impact	Originating SDS uses tel URI scheme to create out-of-the-blue call when <code>mtasSdsUriSchema</code> is configured.
CAMEL	Northbound Call Control	Minor Impact	The originating MMTel AS sets VLR address to configured value when the access type in the received PANI starts with "IEEE-802.11".
ISC	Number Portability	Minor Impact	Number Portability announcement can be played based on the optional B (Called) number list configuration
ISC/Camel	Northbound Call Control	Major Impact	When CAP Release Call (RC) message is received from SCP, MTAS sends SIP BYE with corrected Q.850 cause value.
ISC	Call Hold	No Impact	Bandwidth optimization feature in MMTel AS call hold service will not check the <code>+sip.instance</code> feature tag in contact header if <code>mtasHoldBandwidthOptimizationBehaviour = 1</code> in REINVITE/UPDATE for HOLD/RESUME.
Sh	SCC AS registration	No Impact	When <code>mtasSubsDataSccAtcfInfoInHss=1</code> , the service data element <code>SccData</code> is created in HSS transparent repository data. Service Indication = <code>SccData</code> with registered ATCF info and IMPI for the SC UE (MSISDN). <code>SccData</code> is removed at de-REGISTER.
ISC	Priority Service	Minor Impact	When the CM parameter <code>mtasPriorityCallGetsServiceAdministrativeState</code> is UNLOCKED, overwrite "non-ets:0" value to "ets:0" in RPH header of received initial INVITE in originating MMTel AS.
ISC	Priority Service	Minor Impact	When the CM parameter <code>mtasPriorityCallGetsServiceAdministrativeState</code> is UNLOCKED, GETS priority service Call Pull, which is started by SSC Code, is not allowed.
ISC	Priority Service	Minor Impact	When the CM parameter <code>mtasPriorityCallGetsServiceAdministrativeState</code> is UNLOCKED, no GETS priority service Call Pull, which is started by Replaces Header.
ISC	Priority Service	Minor Impact	When the CM parameter <code>mtasPriorityCallGetsServiceAdministrativeState</code> is UNLOCKED, set the <code><exclusive></code> element value to TRUE in DEN, if Session is GETS Priority Service session.

Table 12 *Changed Services*

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.4
ISC	Priority Service	Minor Impact	When the CM parameter <code>mtasPriorityCallGetsServiceAdministrativeState</code> is UNLOCKED, an Ad-hoc conference is handled with priority, when the Conference Creator has at least one originating priority call independent of the priority of the other calls and the priority of the conference creating the INVITE.
ISC	Priority Service	Minor Impact	When the CM parameter <code>mtasPriorityCallGetsServiceAdministrativeState</code> is UNLOCKED, increment attempt PM counter for each incoming GETS request keyed on the GETS call type.
ISC	Priority Service	Minor Impact	When the CM parameter <code>mtasPriorityCallGetsServiceAdministrativeState</code> is UNLOCKED, increment OK PM counter for "successful" calls keyed on GETS call type and the target network (intra/inter/undetermined).
ISC	Priority Service	Minor Impact	When the CM parameter <code>mtasPriorityCallGetsServiceAdministrativeState</code> is UNLOCKED, increment NOK PM counter for "unsuccessful" calls keyed on GETS call type and target network (intra/inter/undetermined).
XCAP	Communication Diversion	No Impact	Support to add a No-Reply timer only in XCAP Put request, even if an XCAP rule exists.
XCAP	Flexible Communication Distribution (FCD)	No Impact	Support to add only one or more of divert-primary, No-Reply timers, or target-list in XCAP Put request, even if an XCAP rule exists
ISC	Call Return	No Impact	Users can erase their last saved call data by dialing SSC code for Call Return Erasure procedure.
ISC	Call Return	No Impact	When the CM attribute <code>mtasCrLastCallInfoType</code> is set to 1 the service plays date and time of last saved call together regardless of the moment of interrogation. When the CM attribute <code>mtasCrLastCallInfoRestricted</code> is set to 1 the service plays date and time together regardless of the presentation of the users identity. This functionality depends on the CM attribute <code>mtasCrLastCallInfoType</code> .
ISC	OCT	Minor Impact	When the CM attribute <code>mtasOctOfferEstablishedMediaTypesToTarget</code> is set to enabled , the initial INVITE request sent to refer-to target contains a SDP-offer that is the same as the last SDP-offer sent from the caller when calling OCT number. In relation to initiating ring tone at redirection to refer-to user, the OCT service uses the existing CM attribute <code>mtasMmtLocalRingbackAnnouncementName</code> , instead of <code>mtasOctRingToneAnn</code> . Ensure that <code>mtasMmtLocalRingbackAnnouncementName</code> is configured before the upgrade.
ISC	CDIV	Minor Impact	When the CM attribute <code>mtasCdivAfterByeOfferEstablishedMediaTypesToTarget</code> is set to enabled the initial INVITE request, sent to VMS after CDIV after BYE service has been triggered, contains a SDP-offer that is the same as the last SDP-offer sent from the caller when calling the original user.
CAMEL	Northbound Call Control	No Impact	When CAPv2 Apply Charging (ACH) message is received including the "Release If Duration Exceeded" element, tone parameter and the CM attribute <code>mtasNccCreditAnnouncementName</code> is configured, a warning tone is played to the served user before the allowed call duration is reached.
ISC	FIP	No Impact	New option to allow FIP service suppression in toll-free calls.
ISC	SCN	Minor Impact	SCN use the directive "inactive" when a video call is put on hold and get SDP-offer from MRF.



Table 12 *Changed Services*

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.4
ISC	LRBT	Minor Impact	LRBT uses an optimized sequence when early update is received in call diversion cases.
ISC	CAT	No Impact	New option for CAT to stop playing at diversion so that it is possible to play a diversion announcement.
Mr/Mp	MMT	No Impact	Play LRBT announcement to served user after OCS initiated precredit announcement during session setup in case no-fork scenario. After OCS initiated precredit announcement to the served user, MMTel AS supports playing an audible ringing tone to the caller.
ISC	CCxx	No Impact	When the CCxx Caller does not provide the required input to the CCxx invocation prompt, the feature introduces new announcement that is being played to the CCxx Caller before the final SIP response.
ISC	SCN	Major Impact	In SCN Service, when multiple announcements are requested towards the MRF, one chained announcement is requested instead of many simple announcements.
ISC	3PTY	Minor Impact	The 3PTY service is not executed when the AdminState is set to locked . New CM parameter <code>mtas3ptyDisableWithAnn</code> is introduced to temporary disable 3PTY service with playing announcement to triggering party.
ISC	DNM	No Impact	Based on new configuration <code>mtasDnmFixedDeviceSupportApplicableForLocalness</code> , Localness check is applied also when the call is from a fixed device. Source of change: HV54656
ISC	Call Return	Minor Impact	When the <code>mtasCrAdministrativeState</code> is in Locked state or the license is not present, the CR service will not start, instead of rejecting the call with 403 error response. Source of change: HV55537
ISC	Communication Barring	No Impact	Based on configuration <code>non-3gpp Access for Mobile subscriber</code> will not be considered fixed access for OCB international/international-exHC/Roaming checks
ISC	Dialog Event Notification (STOD Call Pull)	Major Impact	Inform subscribers that are subscribing to dialog event, if a session cannot be pulled due to device call limits restrictions (MDUCAC).
CAMEL	NorthboundCallControl	No Impact	If <code>mtasNccBNumberBasedTrigger</code> is enabled, the IDP sending can be triggered by B-number matching function.
ISC	Japanese Charging Service	No Impact	Introduction of optional configuration based behaviour to send backward ICBS parameter of FCD primary user (B) towards the originating network New Configurable FCH parameters introduced
ISC	Adhoc Conference	No Impact	Introduced optional configuration (<code>mtasConfMoveCodecOfferingMode</code>) based behavior to carry SDP in reINVITE for move operation in Adhoc conference.
ISC	Re-balancing	No Impact	The Re-balancing feature supports for the redistribution of the registering users. If the feature is active, then the initial and the re-REGISTER requests are redirected to a configurable destination address (target SIP URI) by rejecting the request with a 305 (Use Proxy) response – the Contact header of the response contains the new target address.



Table 12 Changed Services

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.4
ISC	Account activation triggered by OCS service	No Impact	<p>When the CM attribute <code>mtasChargingSubscriberCreditNotificationOfferEstablishedMediaToTarget</code> is set to "enabled" the initial INVITE request sent to user B after account activation triggered by OCS has been executed, will contain an SDP-offer that is the same as originally sent from the caller.</p> <p>The CM attributes <code>mtasOctRingToneAnn</code>, <code>mtasOctBusyToneAnn</code> and <code>mtasOctGenericFaultAnn</code> was deprecated in MTAS 4.6 and vMTAS 1.6 and instead the Account Activation triggered by OCS service will now use the existing <code>mtasMmtLocalRingbackAnnouncementName</code>, <code>mtasMmtBusyToneAnnouncementName</code> and the <code>mtasMmtBusyToneAnnouncementName</code> CM attributes that must have been configured before the upgrade.</p>
ISC	O-SDS service	No Impact	New enum value 2 (<code>sipEmbeddedTelWithoutPhoneContext</code>) for <code>mtasSdsUriSchema</code> makes it possible to use SIP URI with embedded tel without Phone-Context in O-SDS MO local/national calls
ISC	Ad-hoc Conference	No Impact	Conference service will use IMPU in Refer-to header of REFER message to match existing active session to move to conference based on configuration as a fall back option when no session is found using dialog-id or sessionID in Replaces header.
SIP	Line Sharing	No Impact	<p>When the CM attribute <code>mtasFcdSuppressEarlyMediaToRelatedUser</code> is set to "enabled" the initial INVITE request sent to related user in a FCD call will contain an Early Media Suppression header if configured in <code>mtasMmtSuppressEarlyMediaHeader</code>.</p> <p>When a feature tag is configured in the CM attribute <code>mtasFcdCallToRelatedUserTag</code> is set to "enabled" the initial INVITE request sent to related user in a FCD call will contain an Accept-Contact header with the configured tag.</p>
Diameter	Line Sharing	No Impact	<p>When the CM attribute <code>mtaschargingProfileReportFipIdInOrigChargingMessages</code> is enabled for online charging and FIP service is active for the calling user the CCR messages on the originating side will contain Subscription-id and calling-Party-Address AVPs set to FIP identity.</p> <p>When the CM attribute <code>mtaschargingProfileReportFipIdInTermChargingMessages</code> is enabled for online charging, and FIP service is active for the called user the CCR messages on the originating side will contain Subscription-id, Called-Asserted-Identity and Calling-Party-Address AVPs set to FIP identity and the Requested-Party-Address AVP will be present at CCR initial and have the contain of the real served user number.</p>
Diameter	Line Sharing	No Impact	<p>When the CM attribute <code>mtaschargingProfileReportFipIdInOrigChargingMessages</code> is enabled for offline charging and FIP service is active for the calling user the CCR messages on the originating side will contain Subscription-id and calling-Party-Address AVPs set to FIP identity.</p> <p>When the CM attribute <code>mtaschargingProfileReportFipIdInTermChargingMessages</code> is enabled for offline charging and FIP service is active for the called user the CCR messages on the originating side will contain Subscription-id, Called-Asserted-Identity and Calling-Party-Address AVPs set to FIP identity.</p>
Ro Initiated Retarget	Subscriber Credit Notification	Minor Impact	Allow Retarget-Instruction or Final-Unit-Indication AVPs to trigger retarget of session at call setup.
Multi-Persona	Common Service	Minor Impact	The Common Service provides Multi-Persona indication information to the Charging component which send this information to the Charging nodes



Table 12 *Changed Services*

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.4
Enhancements to NPLI support in SCC AS	User Location Service	No Impact	Inclusion of VLR and MSC addresses provided by NPLI into the network-provided P- ANI in SIP signaling and in ANI AVP for offline charging for originating and terminating calls from/to CS domain
IMS Support for UC Mobility	Unified Communication Routing Service	No Impact	Originating/Terminating VoLTE sessions for UC users are routed via the external Unified Communication System. In addition to the UC Routing service; new set of business licenses both for the native and virtual MTAS are introduced.
Ro suppression based on B number	Online Charging	No Impact	The Ro signaling for a call can be suppressed by configuration. By default suppression is disabled.
DSCP markings	SIP Service FW	No Impact	DSCP value will be present in DNS queries.
Graceful Scale-in VNF work flow (WF)	vMTAS Lifecycle management (LCM)	No Impact	Graceful Scale-in VNF WF is now supported for MTAS on the VNF-LCM.
CAI3G	SOAP	Minor Impact	Because of an earlier fault, when sending fault response for a sent in CAI3G Login message with wrong credentials is in wrong (mixed version) SOAP format. Now MTAS will answer in either 1.1 or 1.2 SOAP version, based on the incoming request version. See HV63884

3.3.2 Other Interface Impacts

The changes to other user services are described in Table 13.

Table 13 *Other Interface Changes*

Source of change	Service	Impact	Description of Changes
HV78946	SSC	No Impact	There are 6 services with SSC codes that doesn't enforce SSC service to be subscribed before allowing use of SSC code. This TR fix introduces 6 new CM attributes, one for each service, that makes it possible to enable check on SSC Service subscription before allowing use of SSC code. If enabled, use of SSC will be prevented in case SSC is not subscribed. Default is legacy behavior. The following CM attributes are added: <code>mtasSscVmEnforceSscSubscribe</code> <code>mtasSscCellAnnEnforceSscSubscribe</code> <code>mtasSscPriorityCallEnforceSscSubscribe</code> <code>mtasSscAbDialEnforceSscSubscribe</code> <code>mtasSscCrEnforceSscSubscribe</code> <code>mtasSscHotlineEnforceSscSubscribe</code>
HV74386	FCD	Minor Impact	Because of an earlier fault FCD service was not adding a mobile terminal selector in the outgoing INVITE for the PRIMARY_MOBILE when configured in <code>mtasFcdAdditionalTermSelectorMobile</code> . Now FCD service will include it.
HV61332	User Location	Minor Impact	Because of an earlier fault at User Location Service MTAS removed the PIDF+XML (Presence) MIME part within the body included in the received INVITE, if it is not in addr-spec format. Now MTAS will reject such requests with 400 Bad request. In case of response message the session will be terminated.
HV81300	Gateway Model	Minor Impact	The Gateway Model service removes precondition attributes in SDP of INVITE before forwarding the request when 'precondition' tag is not present in Supported/Require header.



HV91603	CC	Minor Impact	The measure of CM attribute "mtasCcInbandInvocationTimer" is seconds (see: [6]). It is stored in an internal object in milliseconds. The original value was multiplied by 100 by mistake. Now it is corrected. Consequences: - Using the internal interface (Mp): no change in duration and 'to' values as they need to be sent in 10 ms granularity, however 'mrt' and 'wit' values were sent out in milliseconds, now it is corrected and they are sent out in 10 ms granularity as standard says they need to be. - Using the external interface (Mr): operator might experience duration values being 10 times longer than before in CC scenarios. In case the service fills our internal object with "duration" value, we start a timer. Previously it was started with "duration" × 2, it has been changed to "duration" + 2 seconds. (If MRF does not react before this timer expires MTAS will send a BYE towards it.)
HV88319	Communication Barring	Minor Impact	The Communication Barring service tries to extract MCC from any access-info key-value of PANI header before returning MCC extraction failure result.
HV67706	FIP	Minor Impact	For specific FCP/FIP service interaction case as described in HV98521, FIP AVP will not be reported anymore in ACR STOP.
HV94744	Northbound Call Control	Minor Impact	If the call is rejected or released by CAP ReleaseCall (RC) message, the warning text in rejection or BYE will be updated to "Release Call received from CAP". If the call is released by ACH.ReleaseSelfDurationExceed, the warning text in BYE will be updated to "Credit limit reached".
HV16088	Communication Barring	No Impact	New CM attribute mtasCbVersion: This attribute defines the version of the Communication Barring service used when set to 0 (INITIAL_VERSION) legacy behaviour of the service will be active i.e Communication Barring Service is not forced to add a warning header to each and every rejection case. when set to 1 (VERSION_1) Communication Barring Service is forced to add a warning header to each and every rejection case.
HV91894	IdPres	Minor Impact	from-change options tag re-inserted by user in subsequent in-dialog signaling is removed (i.e. EARLY_UPDATE, INVITE_ACCEPT, ReINVITE + UPDATE and ReINVITE_ACCEPT+ UPDATE_ACCEPT).
HV96929	Hold/OCT	No Impact	Current implementation for SDP offer in INVITE for end-point move was, The MMTEL AS shall re-use the last SDP offer from the caller when an initial INVITE is sent to (new) target. MTAS has implemented this requirement. Call flow in the TR shows that the OT is putting User A on hold. So OctService is picking the last SDP (SDP in 200OK from User A for the HOLD Invite) and sending it to User C. This SDP contains 'recvonly' which will be rejected by User B. The TR was solved by making to use the last SDP from User A in the HOLD sequence and modify the media direction in SDP to sendrecv.
HV59547	FIP	Minor Impact	Because of an earlier fault, Originating MTAS was not changing FROM/PAI according to FIP provisioning data in Unregistered case as it should. This issue is now fixed
HV62178	Adhoc Conference Service	Minor Impact	Because of an earlier fault, MTAS was not able to answer messages with ill-formed Tel-Uri in the Refer-To header. Now MTAS is answering with code 416 Unsupported URI Scheme with warning code and "Invalid URI format." warning text.
HV70143	FIP	Minor Impact	Because of an earlier fault, the MtasIdPresFip counter was not incremented when MsnFip was invoked, only when Fip was invoked. Now MTAS is increasing the counter in MsnFip cases as well, so increased counting is possible, if MsnFip is used.
HV61985	Adhoc Conference	Minor Impact	Because of an earlier fault, Long duration call supervision was not considered, when moving a call to conference. Now MTAS is restarting the Long duration call supervision when a session is moved to conference. See the Multi Media Telephony in MTAS document.
HV64259	Number Normalization	Minor Impact	Because of an earlier fault, Number Normalization was not applied for Tel-Uris which contained SSC with #. Now MTAS will apply Number Normalization to those Tel-Uris as well.
HV48535	FCD	Minor Impact	Because of an earlier fault, FCD Service did not put 100rel into the outgoing REINVITE messages. Now FCD Service is adding 100rel into the outgoing REINVITE messages into the Supported header.
HV51184	DEN	Minor Impact	Because of an earlier fault, in case of an active DEN subscription, MTAS could not handle calls after the client was not providing Device identity in the DEN related SUBSCRIBE message. Now MTAS tries to get the Device identity from the earlier sent REGISTER message.
HV60636	ST-AS	Minor Impact	Because of an earlier fault, in case of originating call from an Invalid PBX subscriber, no ACR is triggered from ST-AS. Now MTAS is sending ACR event in this case



HV64418	Emergency State	Minor Impact	In case of Emergency Callback call, every owned device was ringing. Now based on mtasEsCbTag the attributes specifies the tag of the top-most Route header to identify an emergency callback call. MTAS classify served user as being in emergency state if the top-most Route header of an incoming INVITE includes the configured string. Default value is empty, which means that no search of Route header is performed. See the FS 'Emergency State in MTAS' for more details.
HV57010	Sip Overload Control	Minor Impact	Because of an earlier fault, responses for Out of Dialog requests ,other than INVITE and REGISTER, did not contain OC information. Now MTAS is sending OC related info in those responses as well.
HV73662	FSFS	Minor Impact	Because of an earlier fault, FSF header was removed by MMTService independent on CM mtasFsfPatternRemoveFlag. Now MTAS will not remove, if the mtasFsfPatternRemoveFlag is set to 0=DO_NOT_REMOVE
HV76617	GCAC	Minor Impact	Because of an earlier fault, at GCAC Service rejection we used "User Call Admission Control" phrase in the warning strings. Now GCAC will use "Group Call Admission Control" instead.
HV49809	3pty	Minor Impact	Because of an earlier not handled case, during 3pty conference creation the re-INVITE with media mode 'inactive' caused not handled problems at the call, resulting call termination. Now MTAS is rejecting it with SIP 480.
HV74522	AoC	Minor Impact	Because of an earlier fault, AoC Service was not sending AoC information in the 180 Ringing message. Now MTAS is sending this information.
HV77906	CDIV	Minor Impact	Minor impact Because of an earlier fault, MTAS forwarded the RTTI related message body from the C-Party to A-Party in a Call Forwarding Unconditional scenario, in the provisional response. Now MTAS is not forwarding the RTTI related message body in this case.
HV74386	FCD	Minor Impact	Because of an earlier fault, FCD Service did not add configured AdditionalTermSelector if target was PRIMARY_MOBILE and has not been registered. Now MTAS is checking if CM mtasFcdAdditionalTermSelectorMobile has a configured value in this case. If configured, it will add it to the AC header.





4 Impact on MTAS Features

This section shows the impact on the vMTAS 1.8 features when the feature is turned on.

4.1 Support P-Asserted-Service Header in Signaling

Every `INVITE` sent by MMTel AS includes a P-Asserted-Service: `urn:urn-7:3gpp-service.ims.icsi.mmtel`. If an `INVITE` received by MMTel AS already has a P-Asserted-Service or P-Preferred-Service header, the received headers are removed from the `INVITE` requests sent through the TAS toward the called party. This is applicable for all `INVITE` requests sent by the MMTel AS, including normal calls, forked `INVITE` requests sent to shared devices, `INVITE` requests sent to announcement and conference MRFs, `INVITE` requests sent to the PRBT server, and `INVITE` requests sent after call forwarding is begun.

Every 18x and 200 `INVITE` response sent by MMTel AS includes a P-Asserted-Service: `urn:urn-7:3gpp-service.ims.icsi.mmtel`. If an `INVITE` response received by MMTel AS already has a P-Asserted-Service header, that received header is removed from the response sent through the TAS toward the calling party.

This feature is controlled by the CM attributes `mtasMmtPAssertedServiceBehavior` and `mtasMmtDefPAssertedService`.

Impact

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

4.2 AVP Suppression and CDF Failover

MTAS allows configuration of any AVP in omit AVP List for Ro and Rf Interface for any vendorId.

Impact

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

4.3 Update Destination-Host in Next ACR Message

In the Rf signaling for a given charging session, MTAS is always using the latest received Origin-Host AVP when populating the Destination-Host AVP. This enhancement is always turned on.

Impact

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

4.4 3PTY Service Error Announcements

MMTel AS support playing an announcement for the following fault cases related to the 3PTY service:

- The user tries to start the 3PTY service while the service is disabled in MMTel AS
- The user tries to start the 3PTY service without having the service provisioned
- The user tries to start the 3PTY service while using an incorrect URI list in the 3PTY re-INVITE

These enhancements are controlled by the CM attributes `mtas3ptyServiceDisabledAnnName` and `mtas3ptyBadInvocationAnnName`.

Impact

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

4.5 Error Announcements with Access/Location Information

When an error occurs that requires an announcement to be played and the location of the calling device is known from the PANI header, the originating MMTel AS supports playing a segmented announcement consisting of the concatenation of a fixed error part, an access part, and a variable part with information on the location of the calling party.

The access part is depending on the location part retrieved by the PANI header. If the location of the calling device is not known from the PANI header, the access part and variable part are not played.

This feature enhancement is controlled with the CM attributes `MtasAdditionalAnn`, `mtasAdditionalAnnConfig`, `mtasGaAnnAdditionalForSegmented`, and `mtasAnnouncementParameterAdditional`.

**Impact**

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

4.6 SIP Embedded Tel in SCC AS

SSC AS can be configured to construct the B-Number in the R-URI and the To header as a SIP embedded tel; `sip:+B@ims.mnc[MNC].mcc[MCC].3gppnetwork.org;user=phone` where B is Global E.164 number for B UE (MSISDN) Mobile Country Code (MCC) for served calling party, from IMSI Mobile Network Code (MNC) for served calling party, from IMSI.

This feature enhancement is controlled with the CM attributes `mtasSubsDataSccAtcfInfoInHss` and `mtasSdsUriSchema`.

Impact

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

4.7 Support for Reboot Upgrade

A new upgrade type is supported for MTAS when upgrading from vMTAS 1.5 to 1.8. For information about the new upgrade, refer to *vMTAS Upgrade Instruction from 1.4.2 and 1.5.1 to 1.6*.

Impact

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

4.8 VoLTE Counters

Additional Voice over LTE (VoLTE) counters are added and supported, see Table 11.

Impact

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

4.9 SIP Upstream Overload Control

MTAS supports SIP overload control reporting role using the OC parameter in line with RFC 7339. This feature is only applicable for MMTel AS and on the ISC interface. SIP Upstream Overload Control is controlled with the following CM attributes:



mtasSipOcAdministrativeState
mtasSipOcOnset
mtasSipOcAbatement
mtasSipOcDefIncrStep
mtasSipOcDefDecrStep
mtasSipOcValidity
mtasSipOcRegulationInterval
mtasSipOcResource

Impact

The effective traffic handling capacity depends on the configuration of the OC. Fewer calls are served by the node, because of the reduced traffic from CSCF when system overload.

4.10 VLR Address to IDP for Wi-Fi

When CAP is provisioned for the served user and the MMTel AS receives a PANI set to `IEEE-802.11`, the CAP IDP message sent to the SCP contains the VLR address `"11111111"`. This is applied for originating calls.

This feature enhancement is controlled with the `mtasNccVlrAddressForWiFi` CM attribute.

Impact

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

4.11 Apache Tomcat for Provisioning

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

The advantages are decreased license costs.

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

Note: The supported from states are 1.4.2 and 1.5.1.

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



The following shows the required changes to the CSI attribute:

Previous CSI Attribute

```
cmw-utility immcfg --attribute
saAmfCSIAttriValue=jbcpr6
safCsiAttr=as_name,safCsi=CSI-oam-0
,safSi=SI-oam-0,safApp=ERIC-MMAS-A
PP
```

```
cmw-utility immcfg --attribute
saAmfCSIAttriValue=jbcpr6
safCsiAttr=as_name,safCsi=CSI-traffic-0,safSi=SI-traffic-0,safApp=ERIC-MMAS-APP
```

Change To

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

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

Impact

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

4.12 NP Announcement Based on B-Number

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

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

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

Impact

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

4.13 Call Hold Bandwidth Optimization without +sip.instance

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

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

Impact

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



4.14 Play Ringing Tone after OCS Initiated Precredit Announcement during Session Setup

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

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

Impact

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

4.15 ATCF Information Restoration

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

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

This feature is controlled by `mtasSubsDataSccAtcfInfoInHss` CM attribute.

Impact

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

4.16 CCxx Invocation Failure Announcements

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

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



CCxx Indicated - Unsuccessful Invocation, Unrecognised speech
MRFP sends “asr/asrfail”, rc=629

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

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

Impact

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

4.17 Priority Services Enhancements for VoLTE Deployment-Drop2

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

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

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

The affected target networks are described as follows:

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

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

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



- GETS-FC + GETS-NT

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

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

Impact

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

4.18 Additional Session Statistics Counters

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

- Total call duration for originating calls

Start when originating MMTel AS receives initial `INVITE`, stop on the final negative response, or established session released (`BYE`). Total SUM value reported

- Total call duration for terminating calls

Start when terminating MMTel AS receives `INVITE`, stop on final negative response or established session released (`BYE`). Total SUM value reported.

- Total alerting call duration for originating calls.

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

- Total alerting call duration for terminating calls.

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

Impact

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



4.19 Call Return Interrogation Support for Date and Time

The Call Return Service provides the following information at interrogation:

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

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

Impact

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

4.20 Call Return Erasure

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

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

Impact

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

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

It is possible to include an SDP offer in the initial `INVITE` to new target for the OCT and Diversion after `BYE` services. The last SDP offer from the caller is reused when an initial `INVITE` is sent to new target.

The following services are involved:

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

In the Session Description Protocol (SDP) offer to the new target, MMTel AS is deactivating any media lines which were deactivated during the establishment

or during the lifetime of the original session to the old target. This is done by setting the corresponding port to 0.

The feature enhancements are controlled by the following CM attributes:

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

Impact

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

4.22 CAPv2 Support Play Tone in ACH

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

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

Impact

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

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

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

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

Impact

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



4.24 Provisioning VTP Domain for Wholesale and FIP Suppression over CAI3G

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

Impact

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

4.25 Support of Load Balancing Traffic over Sh Interface

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

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

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

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

Impact

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

4.26 Optimize the Local Ring Back Sequence

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

- When UE-C answer the call, the received SDP answer (from 18x or 200 OK response) is used to establish the session without using `re-INVITE` to the answering terminal after 200 OK (`INVITE`).
- If an early `UPDATE` is received from UE-C with only IP address or port change before 200 OK (`INVITE`), this SDP is stored and used later toward the caller.
- If an early `UPDATE` is received from UE-C with a new codec offer, the offer is answered with a dummy SDP. The MMTel AS starts a short timer and



at the timer expiry sends an early-UPDATE with the same SDP as in the original SDP offer, the already rejected media lines are also considered.

Impact

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

4.27 CDIV Announcement after CAT Invocation

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

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

Impact

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

4.28 Runtime Assurance of Cloud SLA

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

```
PmJob=MtasSla_OSProcessingLogicalUnit
```

```
PmJob=MtasSla_OSProcessingUnit
```

```
PmJob=MtasSla_OsmDevice
```

Impact

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

4.29 Support of Local Viewing of PM Counters and KPIs

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

**Impact**

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

4.30 International Outgoing Call Barring for Wi-Fi Access

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

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

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

Impact

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

4.31 Display MDUCAC Calls as Available for Call Pull

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

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

Impact

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

4.32 IMEI in MMTel AS Charging

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



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

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

Impact

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

4.33 Destination-based CAP Triggering

The enhancement includes the following features:

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

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

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

Impact

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

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

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

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

**Impact**

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

4.35 Backward ICBS Parameter for FCD Primary User

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

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

Impact

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

4.36 Configurable FCH Parameters for Japanese Charging Service

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

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

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

Impact

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

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

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



The following options are supported:

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

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

Impact

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

4.38 SIP URI without Phone-context for SCC AS

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

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

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

This feature is controlled with `mtasSdsUriSchema` CM attribute.

Impact

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

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

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

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



Impact

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

4.40 Rebalancing by Moving Users between MTAS Instances

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

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

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

Impact

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

4.41 Match Existing Session in Move Active Session to Existing Conference

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

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

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

Impact

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

4.42 Network Level Licensing of Feature Licenses in MTAS – CLOUD

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

Impact

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

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

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

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

Impact

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

4.44 Extension Number Support (Line Sharing Phase 1.0+)

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

- Offers the possibility to include an early media suppression header on FCD calls to related users, if early media suppression is included, media



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

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

Extension Number Support can be controlled with following Configuration attributes:

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

Impact

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

4.45 Generic Ro Initiated Retarget in MMTel AS

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



Impact

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

4.46 Multi-Persona: Alternative Line Identity for Voice Calls

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

Impact

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

4.47 Enhancements to NPLI support in SCC AS

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

Impact

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

4.48 IMS Support for UC Mobility

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

Impact

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

4.49 Suppressing of Online Charging based on B number

It is possible to suppress Ro in case the B number is classified as toll-free.



Impact

- Not possible to perform credit control on such calls
- Not possible to get announcements initiated by OCS since there will be no CCA[initial] and thus no announcement instruction.
- Account activation via Prompt And Collect will be bypassed since the function is triggered by AVPs in CCA[initial], which will not be sent if the session is suppressed.

4.50 DSCP Markings

It is possible to define Differentiated Services Code Point (DSCP) value for all DNS sockets. This applies for both TCP and UDP sockets used by DNS Resolver.

Impact

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

4.51 Graceful Scale-in WF

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

Impact

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

4.52 Enhancements of Offline Charging Interim ACR Handling

- An additional ACR[Interim] are generated per Long Duration Timer period. The Long Duration Timer is configurable using `mtasChargingProfileLongDurationInterimTimer` configuration parameter.
- New Interim-Reason AVP is reported for Interim-Interval Timer Triggered ACR[Interim], Media Change Triggered ACR[Interim] and Long Duration Timer Triggered ACR[Interim]. The Interim-Reason AVP is in the omit list by default.
- The design-base spread (up to 2%) of Interim-Interval Value is configurable by the new configuration parameter `mtasChargingProfileInterimIntervalSpread`.



Impact

- The Long Duration Timer is disabled by default.
- The Interim-Reason AVP is in the omit list by default.
- The Interim-Interval Value spread is disabled by default for new installations and enabled for existing installations during upgrade procedure.