

vMTAS Network Impact Report from 1.4 to 1.6 MTAS

NETWORK IMPACT REPORT

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Contents

1	Introduction	1
2	General Impact	3
2.1	Backward Compatibility	3
2.2	Capacity and Performance	3
3	Interfaces	5
3.1	Inter-node Interfaces	5
3.2	Operation and Maintenance	6
4	Summary of Impacts per Feature	15
4.1	Other Interface Impacts	15
5	Impact on MTAS Features	19
5.1	Support for P-Asserted-Service Header in Signaling	19
5.2	AVP Suppression and CDF Failover	19
5.3	Update Destination-Host in Next ACR Message	20
5.4	3PTY Service Error Announcements	20
5.5	Error Announcements with Access/Location Information	20
5.6	SIP Embedded Tel in SCC AS	21
5.7	Support for Reboot Upgrade	21
5.8	VoLTE counters	22
5.9	SIP Upstream Overload Control	22
5.10	VLR Address to IDP for Wi-Fi	23
5.11	Apache Tomcat for Provisioning	23
5.12	NP Announcement based on B-Number	24
5.13	Call hold Bandwidth optimization without +sip.instance	24
5.14	Play Ringing Tone after OCS initiated precredit announcement during session setup	25
5.15	ATCF info restoration	25
5.16	CCxx invocation failure announcements	25
5.17	Priority services enhancements for VoLTE Deployment-Drop2	26
5.18	Additional Session statistics counters for MTAS.	27
5.19	Call Return interrogation support for date and time	28



5.20	Call Return Erasure for MTAS	28
5.21	Possibility to include an SDP Offer in the Initial INVITE to New Target	29
5.22	CAPv2 Support Play Tone in ACH	30
5.23	Reason Text in History-Info Header for CDIV Time-out	30
5.24	Provisioning VTP domain for Wholesale and FIP suppression over CAI3G	30
5.25	Support of load balancing traffic over Sh interface	31
5.26	Optimize the Local Ring Back Sequence	31
5.27	CDIV announcement after CAT invocation	32
5.28	Runtime assurance of Cloud SLA	32



1 Introduction

This Network Impact Report (NIR) describes how the Virtual Multimedia Telephony Application Server (vMTAS) 1.6 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

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
- Possibility to include an SDP Offer in the Initial `INVITE` to a New Target
- Reason Text in History-Info Header for CDIV time-out

For more information on the changed features, see Section 5 on page 19.



2 General Impact

This section describes the general impact owing to the introduction of the vMTAS 1.6.

2.1 Backward Compatibility

The vMTAS 1.6 is backward compatible and unless stated otherwise, legacy behavior is preserved.

2.1.1 Interoperable Network Elements

The interoperable Network Elements for vMTAS 1.6 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 1.6 if the same cloud environment is used.

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 1.6. The network performance and traffic capacity is estimated to be the same as in vMTAS 1.4.



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
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.
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.
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.

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

Interface	Protocol	Impact	Description of Change Compared to vMTAS 1.4
ICS	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/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 <code>cai3g-vip4</code> and <code>cai3g-vip6</code> are used instead of <code>oam-vip4</code> and <code>oam-vip6</code> respectively.
Ut	XCAP	Major Impact	Traffic separation is mandatory. The <code>ut-vip4</code> and <code>ut-vip6</code> are used instead of <code>oam-vip4</code> and <code>oam-vip6</code> respectively.
ISC	SIP	No impact	Removed the limitation on MTAS to support fetch RUI every second. OK to keep the CM attributes <code>mtasSipOcRegulationInterval</code> and <code>mtasSipOcValidity</code> as the default value of 1000/1500.
ISC	SIP	Minor Impact	P-headers are transferred from the incoming dialog to outgoing by MTAS in REFER and SUBSCRIBE events. The ACCEPT header is transferred from the incoming dialog to outgoing in the SUBSCRIBE event.
Mr	VXML	Minor Impact	The prompt tag is added to chained announcements in VXML. The apostrophe sign is removed from error handling variable in VXML.
Ro, Rf	Diameter	Minor Impact	New SSI ID 2602 added for Call Return Erasure
CAMEL	CAPv2	No impact	CAPv2 Parameter <code>ACH.releaseIfdurationExceeded.tone</code> is supported if the CM attribute <code>mtasNccCreditAnnouncementName</code> is configured.
ISC.	SIP	No impact	MTAS changes the behavior of session refresh handling for early UPDATE sip message based on the new CM attribute <code>mtasSipEnableSessionRefreshForEarlyUpdate</code> . By default, the new CM attribute value is set to TRUE and the MTAS legacy behavior is used. The UPDATE in the early dialog is handled the same way as the UPDATE in a confirmed dialog when concerning session refresh. Otherwise, new behavior is applied and the UPDATE in the early dialog is not treated as a session refresh message.
Sh	Diameter	No impact	Sh request messages are sent without the Destination-Host AVP if the load balancing (realm-based routing) feature is activated.
XCAP	HTTP	Major Impact	If no valid Ut access license or service profile license is available, MTAS sends the HTTP Error 403 Forbidden

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 7.

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>
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

3.2.2 Configuration

This section describes changed, deleted, 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.
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.
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



Attribute Name	Description of Change
mtasShIfEfficiency	Description is corrected. Dependency: mtasShIfEfficiency and mtasShIfRealmBasedRouting attributes are mutually exclusive
mtasShIfEffDiscoveryMode	Description is corrected. Dependency: This attribute has effect only if mtasShIfEfficiency is enabled
mtasShIfEffMandatoryBitSetting	Description is corrected. Dependency: This attribute has effect only if mtasShIfEfficiency is enabled
mtasConfNotificationUserCountBehavior	Increased range from 0-1 to 0-2 2 = EXCLUDECC_ONLY_IN_USERCOUNT
vtasConfNotificationUserCountBehavior	Increased range from 0-1 to 0-2 2 = EXCLUDECC_ONLY_IN_USERCOUNT
mtasMmtLocalRingBackMode	Increased range from 0-1 to 0-2 2 = NETWORK_PROVIDED_ORIG_TERM

3.2.2.2 Deleted Attributes

The deleted attributes are shown in Table 5.

Table 5 Deleted Attributes

Attribute Name
vtasIdPresDbIpVersion

3.2.2.3 Deprecated Attributes

The deprecated attributes are shown in Table 6.

Table 6 Deprecated Attributes

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

3.2.2.4 Obsolete Attributes

There are no obsolete attributes.



3.2.2.5

New Attributes

The new attributes are shown in Table 7.

Table 7 New Attributes

Attribute Name	Description
mtasCrLastCallInfoRestricted	Added and supported
mtasSubsDataSccAtcfInfoInHss	Added and supported
vtasCrLastCallInfoType	Added and supported
vtasCrLastCallInfoRestricted	Added and supported
mtasNpBNNumberList	Added and supported
mtasNpRnAndAnn	Added and supported
mtasPriorityCallGetsServiceOkResponses	Added and supported
mtasPriorityCallGetsServiceNOKResponses	Added and supported
mtasPriorityCallGetsServiceNetIdentifier	Added and supported
VtasPriorityCallGetsService	Now supported
vtasPriorityCallGetsServiceAnNumbers	Now supported
vtasPriorityCallGetsServiceNtNumbers	Now supported
vtasPriorityCallGetsServiceWithUnknwonGETSCallType	Now supported
vtasPriorityCallGetsServiceWithNoRPH	Now supported
mtasCrLastCallInfoType	Added and supported
mtasCrEraFailureAnnName	Added and supported
mtasCrEraSuccessAnnName	Added and supported
mtasSscCrEraComSyntInv	Added and supported
vtasCrEraFailureAnnName	Added and supported
vtasCrEraSuccessAnnName	Added and supported
vtasSscCrEraComSyntInv	Added and supported
mtasHoldBandwidthOptimizationBehaviour	Added and supported. Post upgrade, the recommended value is 1
vtasHoldBandwidthOptimizationBehaviour	Added and supported Post upgrade, the recommended value is 1
mtasCcInvokeUserErrorAnnouncementName	Added and supported
vtasCcInvokeUserErrorAnnouncementName	Added and supported
mtas3ptyDisableWithAnn	Added and supported
mtasDnmFixedDeviceSupportApplicableForLocalness	Added and supported
mtasMmtBusyAnnouncementName	Added and supported
mtasMmtGenericFailureAnnouncementName	Added and supported
mtasMrControllerVxmlPathReplacementForPlayParameter	Added and supported
mtasNccCreditAnnouncementName	Added, but not supported



Attribute Name	Description
vtasOctOfferEstablishedMediaTypesToTarget	Added and supported
mtasOctOfferEstablishedMediaTypesToTarget	Added and supported
vtas3ptyDisableWithAnn	Added and supported
vtasMmtBusyAnnouncementName	Added and supported
vtasCdivAfterByeOfferEstablishedMediaTypesToTarget	Added and supported
mtasCdivAfterByeOfferEstablishedMediaTypesToTarget	Added and supported
mtasNccCreditAnnouncementName	Added and supported
mtasCdivRequestTimeoutReason	Added and supported
vtasCdivRequestTimeoutReason	Added and supported
mtasCatUntilDiversionResponse	Added and supported
mtasChargingSubscriberCreditNotificationMrfOffer	Added and supported
mtasChargingSubscriberCreditNotificationVideoDirective	Added and supported
mtasSipEnableSessionRefreshForEarlyUpdate	Added and supported
mtasShIfRealmBasedRouting	Added and supported
vtasMmtGenericFailureAnnouncementName	Added and supported
mtasCbLocationInTransitMode	Added, but not supported
mtasChargingSubscriberCreditNotificationOfferEstablishedMediaToTarget	Added, but not supported
mtasMmtMobileUserDetermination	Added, but not supported
mtasMmtTermTrunkChargingProfileRef	Added, but not supported
MtasUCRouting	Added, but not supported
mtasUCRoutingAdministrativeState	Added, but not supported
mtasUCRoutingNormalizedNumberHeader	Added, but not supported
mtasUCRoutingOriginalDestinationNumberHeader	Added, but not supported
mtasUCRoutingPSUHeader	Added, but not supported
mtasUCRoutingTermReceivedNumberHeader	Added, but not supported
mtasUCRoutingTermTrunkResponse	Added, but not supported
vtasCbLocationInTransitMode	Added, but not supported
vtasMmtMobileUserDetermination	Added, but not supported
vtasMmtTermTrunkChargingProfileRef	Added, but not 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



Attribute Name	Description
vtasUCRoutingTermReceivedNumberHeader	Added, but not supported
vtasUCRoutingTermTrunkResponse	Added, but not supported
vtasNpBNumberList	Added and supported
vtasNpRnAndAnn	Added and supported
vtasPriorityCallGetsServiceOkResponses	Added and supported
vtasPriorityCallGetsServiceNokResponses	Added and supported
vtasPriorityCallGetsServiceNetIdentifier	Added and supported
vtasPriorityCallGetsServiceAdministrativeState	Now supported
vtasPriorityCallGetsServiceWps	Now supported
vtasPriorityCallGetsServiceWithNoRPH	Now supported
VtasSscPriorityCall	Added and supported
vtasSscPriorityCallComSyntInv	Added and supported
vtasPriorityCallResourcePriorityAdministrativeState	Added and supported
mtas3ptyBadInvocationAnnName	Added and supported
mtas3ptyServiceDisabledAnnName	Added and supported
MtasAdditionalAnnouncementConfigs	Added and supported
MtasAdditionalAnnouncementConfig	Added and supported
mtasAdditionalAnnouncementConfigRule	Added and supported
mtasAdditionalAnnouncementConfigAnnName	Added and supported
mtasAnnouncementParameterAdditional	Now supported
mtasFcdRelatedUserRouting	Added and supported
mtasGaAnnAdditionalForSegmented	Now supported
mtasMmtDefPAssertedService	Added and supported
mtasMmtPAssertedServiceBehavior	Added and supported
mtasNccVlrAddressForWiFi	Added and supported
mtasSdsUriSchema	Added and supported
mtasSipOcAdministrativeState	Now supported
mtasSipOcOnset	Now supported
mtasSipOcAbatement	Now supported
mtasSipOcDefIncrStep	Now supported
mtasSipOcDefDecrStep	Now supported
mtasSipOcValidity	Now supported
mtasSipOcRegulationInterval	Now supported
mtasSipOcResource	Now supported
vtas3ptyBadInvocationAnnName	Added and supported
vtas3ptyServiceDisabledAnnName	Added and supported
vtasFcdRelatedUserRouting	Added and supported



Attribute Name	Description
vtasMmtDefPAssertedService	Added and supported
vtasMmtPAssertedServiceBehavior	Added and supported

3.2.3 Fault Management

There are no changed, deleted, or new alarms.

3.2.4 Events and Notifications

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

3.2.5 IFC Triggers

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

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 8.

Table 8 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 9.



Table 9 *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 deprecated

3.2.6.3

New Counters

The new counters are shown in Table 10.

Table 10 *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
MtasTadsCsrnPulIOk	Added and supported
MtasTadsCsrnPulINOkl	Added and supported
MtasTadsCsrnPulINOKE	Added and supported
MtasTadsInfoPulIOk	Added and supported
MtasTadsInfoPulINOkl	Added and supported
MtasTadsInfoPulINOKE	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



4 Summary of Impacts per Feature

This section summarizes the impact per feature when the feature is turned on.

The description of impact is as follows:

- **Major Impact** - The feature has done an incompatible change so that another node requires an update.
- **Minor Impact** - The feature has caused changes that affect other nodes, but with extra configuration, the previous behavior can be kept.
- **No Impact** - The feature has no impact on the system.

4.1 Other Interface Impacts

4.1.1 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 11.

Table 11 Changed Services

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.4
ISC	MMTel Service	Minor 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.
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	Minor 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 Service	Minor Impact	Number Portability announcement can be played based on the optional B (Called) number list configuration

Table 11 *Changed Services*

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.4
ISC/Camel	Northbound Call Control Service	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 Service	Minor Impact	Bandwidth optimization feature in MMTel AS call hold service will not check the +sip.instance feature tag in contact header if mtasHoldBandwidthOptimizationBehaviour = 1 in REINVITE/UPDATE for HOLD/RESUME.
Sh	SCC AS registration	Minor Impact	When mtasSubsDataSccAtcfInfoInHss=1, the service data element SccData is created in HSS transparent repository data. Service Indication = SccData with registered ATCF info and IMPI for the SC UE (MSISDN). SccData is removed at de-REGISTER.
ISC	Priority Service	Minor Impact	When the CM parameter mtasPriorityCallGetsServiceAdministrativeState is UNLOCKED, overwrite "non-ets:0" value to "ets:0" in RPH header of received initial INVITES in originating MMTel AS.
ISC	Priority Service	Minor Impact	When the CM parameter mtasPriorityCallGetsServiceAdministrativeState is UNLOCKED, GETS priority service Call Pull, which is started by SSC Code, is not allowed.
ISC	Priority Service	Minor Impact	When the CM parameter mtasPriorityCallGetsServiceAdministrativeState is UNLOCKED, no GETS priority service Call Pull, which is started by Replaces Header.
ISC	Priority Service	Minor Impact	When the CM parameter mtasPriorityCallGetsServiceAdministrativeState is UNLOCKED, set the <exclusive> element value to TRUE in DEN, if Session is GETS Priority Service session.
ISC	Priority Service	Minor Impact	When the CM parameter mtasPriorityCallGetsServiceAdministrativeState 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 mtasPriorityCallGetsServiceAdministrativeState 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 mtasPriorityCallGetsServiceAdministrativeState 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 mtasPriorityCallGetsServiceAdministrativeState is UNLOCKED, increment NOK PM counter for "unsuccessful" calls keyed on GETS call type and target network (intra/inter/undetermined).
XCAP	Communication Diversion	Minor Impact	Support to add a No-Reply timer only in XCAP Put request, even if an XCAP rule exists.
XCAP	Flexible Communication Distribution (FCD)	Minor 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	Minor Impact	Users can erase their last saved call data by dialing SSC code for Call Return Erasure procedure.
ISC	Call Return	Minor Impact	When the CM attribute mtasCrLastCallInfoType 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 mtasCrLastCallInfoRestricted 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 mtasCrLastCallInfoType.



Table 11 Changed Services

Interface	Service Name	Impact	Description of Change Compared to vMTAS 1.4
ISC	OCT	Minor Impact	<p>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.</p> <p>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.</p>
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	Minor 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.
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 service	Minor Impact	<p>Play LRBT announcement to served user after OCS initiated precredit announcement during session setup in case no-fork scenario.</p> <p>After OCS initiated precredit announcement to the served user, MMTel AS supports playing an audible ringing tone to the caller.</p>
ISC	CCxx service	Minor 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 <code>AdminState</code> is set to locked . New CM parameter <code>mtas3ptyDisableWithAnn</code> is introduced to temporary disable 3PTY service with playing announcement to triggering party.





5 Impact on MTAS Features

This section shows the impact on the vMTAS 1.6 features when the feature is turned on.

5.1 Support for P-Asserted-Service Header in Signaling

5.1.1 Description

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`.

5.1.2 Impact

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

5.2 AVP Suppression and CDF Failover

5.2.1 Description

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

5.2.2 Impact

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



5.3 Update Destination-Host in Next ACR Message

5.3.1 Description

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.

5.3.2 Impact

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

5.4 3PTY Service Error Announcements

5.4.1 Description

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`.

5.4.2 Impact

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

5.5 Error Announcements with Access/Location Information

5.5.1 Description

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`.

5.5.2 Impact

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

5.6 SIP Embedded Tel in SCC AS

5.6.1 Description

SCC 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 `mtasSubsDataScsAtcfInfoInHss` and `mtasSdsUriSchema`.

5.6.2 Impact

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

5.7 Support for Reboot Upgrade

5.7.1 Description

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

5.7.2 Impact

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



5.8 VoLTE counters

5.8.1 Description

Additional Voice over LTE (VoLTE) counters are added and supported, see Table 10.

5.8.2 Impact

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

5.9 SIP Upstream Overload Control

5.9.1 Description

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
```

5.9.2 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.



5.10 VLR Address to IDP for Wi-Fi

5.10.1 Description

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.

5.10.2 Impact

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

5.11 Apache Tomcat for Provisioning

5.11.1 Description

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-traff
ic-0,safSi=SI-traffic-0,safApp=ERI
C-MMAS-APP
```

Change To

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

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



5.11.2 Impact

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

5.12 NP Announcement based on B-Number

5.12.1 Description

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`.

5.12.2 Impact

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

5.13 Call hold Bandwidth optimization without `+sip.instance`

5.13.1 Description

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.

5.13.2 Impact

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



5.14 Play Ringing Tone after OCS initiated precredit announcement during session setup

5.14.1 Description

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.

5.14.2 Impact

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

5.15 ATCF info restoration

5.15.1 Description

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.

5.15.2 Impact

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

5.16 CCxx invocation failure announcements

5.16.1 Description

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.

5.16.2 Impact

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

5.17 Priority services enhancements for VoLTE Deployment-Drop2

5.17.1 Description

It is now possible to change the `ets` value in a SIP INVITE 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

The enhanced features allows for MMTel AS to handle 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.

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

5.17.2 Impact

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

5.18 Additional Session statistics counters for MTAS.

5.18.1 Description

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.

5.18.2 Impact

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

5.19 Call Return interrogation support for date and time

5.19.1 Description

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`.

5.19.2 Impact

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

5.20 Call Return Erasure for MTAS

5.20.1 Description

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`



5.20.2 Impact

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

5.21 Possibility to include an SDP Offer in the Initial INVITE to New Target

5.21.1 Description

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`

5.21.2 Impact

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



5.22 CAPv2 Support Play Tone in ACH

5.22.1 Description

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.

5.22.2 Impact

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

5.23 Reason Text in History-Info Header for CDIV Time-out

5.23.1 Description

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

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

5.23.2 Impact

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

5.24 Provisioning VTP domain for Wholesale and FIP suppression over CAI3G

5.24.1 Description

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.

5.24.2 Impact

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



5.25 Support of load balancing traffic over Sh interface

5.25.1 Description

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 is 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.

5.25.2 Impact

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

5.26 Optimize the Local Ring Back Sequence

5.26.1 Description

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.

5.26.2 Impact

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



5.27 CDIV announcement after CAT invocation

5.27.1 Description

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.

5.27.2 Impact

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

5.28 Runtime assurance of Cloud SLA

5.28.1 Description

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 enable by default. The SLA KPIs are checked and presented in the node health check procedure.

5.28.2 Impact

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