

vMTAS Network Impact Report from 1.13.0 to 1.14.0

MTAS

NETWORK IMPACT REPORT

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1 Introduction

This Network Impact Report (NIR) describes how vMTAS 1.14.0, with new and enhanced features and corrections, affects vMTAS 1.13.0. 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

- Announcement according to Reason header
- Communication Event Logging
- vMTAS Workflow enhancement when used with Ericsson Orchestrator

Enhanced Features

- Ro Announcement for errors without Announcement AVP
- Graceful locking from vMRF
- Increased number of Rating Centers in Number Analysis
- EM-driven instantiation
- EM-driven scaling
- Time-based auto-scale
- Improved Number Table Handling
- Realignment of TCO: Health check output
- Support for ANSI network (CAP)
- vMTAS improved resilience to network disturbances

For more information on the changed features, see Section 5 on page 25.

1.1 Terms of Phasing Out Features

The following terms are used when phasing out and removing features from the product:

Deprecated

A feature that is deprecated means that the feature is still there and usable, but is now substituted by another feature, and is subject to be made obsolete or be



deleted after one year. During the time from deprecation to making a feature obsolete or deleted, all use of the deprecated feature needs to be migrated to the new feature.

Obsolete

Making a feature obsolete means, that the feature or parts of it might be still part of the product (for technical reasons) but are not supported anymore. Use of these features is not possible.

Deleted

Deletion means that the feature is deleted as such, it is not visible and there is no way to use it any more, from the current Release and onwards.



2 General Impact

This section describes the general impact owing to the introduction of vMTAS 1.14.0.

2.1 Backward Compatibility

vMTAS 1.14.0 is backward compatible and unless stated otherwise, legacy behavior is preserved.

2.1.1 Interoperable Network Elements

The interoperable Network Elements for vMTAS 1.14.0 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	<p>O16A:</p> <p>Upgrade for OSS-RC is only needed when new parameters and counters are introduced in MTAS and are to be used.</p> <p>Up to O18B:</p> <p>The vMTAS 1.14 is backward compatible except synchronizing Number Normalization, Number Analysis and Carrier Select configuration. The same function level exists, but the method for synchronizing the configuration is changed. Respective Table EditAction and CommitAction commands need to be executed before and after the configuration change.</p>
EMA	7.0 CP2



Network Element	Earliest Supported Versions
SBG	15B
vENM	<p>vMTAS Lifecycle Management requires 17.15(-3.6.8) version of VNF-LCM; therefore use the 18A release of ENM.</p> <p>Up to ENM 19.1:</p> <p>The vMTAS 1.14 is backward compatible except synchronizing Number Normalization, Number Analysis and Carrier Select configuration. The same function level exists, but the method for synchronizing the configuration is changed. Respective Table EditAction and CommitAction commands need to be executed before and after the configuration change.</p>

2.2 Capacity and Performance

2.2.1 Subscriber Capacity

The subscriber capacity is not affected by the introduction of vMTAS 1.14.0.

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

2.2.2 Network Performance and Traffic Capacity

Compared to the baseline release, in vMTAS 1.14.0, there is approximately a 5–7% capacity increase.

2.2.3 License Handling

It is mandatory to use Network License Server (NeLS) product with vMTAS 1.14.0.

For more information, refer to [MTAS Licenses](#).



3 Licenses

This section lists the new and changed license codes added in vMTAS 1.14.0. For a list of (v)MTAS licenses, refer to [MTAS Licenses](#).

3.1 New Licenses

The new licenses are shown in Table 2.

Table 2 New Licenses

Name	Identity	Version
Multi-Persona	vMtasMultiPersona	CXC 401 2309

3.2 Changed Licenses

The changed licenses are shown in Table 3.

Table 3 Changed Licenses

Name	Description of Changes
-	-

3.3 Deprecated Licenses

The deprecated licenses are shown in Table 4.

Table 4 Deprecated Licenses

Name	Description of Changes
-	-

3.4 Deleted Licenses

The deleted licenses are shown in Table 5.

Table 5 Deleted Licenses

Name	Description of Changes
-	-





4 Interfaces

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

4.1 Inter-Node Interfaces

The changes to the inter-node interfaces are described in Table 6.

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 6 Changed Inter-Node Interfaces

Interface	Protocol	Impact	Description of Changes
CEL	SIP	No Impact	New “Communication Event Logging (CEL)” I/F is introduced where communication event is reported through PUBLISH message for a successful or unsuccessful call attempts. A PUBLISH Request is sent with “call-event-info” XML to event server whose address is configured in <code>mtasCelEventServerName</code> .
MP	H248	No Impact	MTAS supports new service change method: graceful reason: 908. After the arrival of the service change, new connections will not be allowed, but the established connections are not affected. New CM has been introduced to represent this state, called <code>mtasMrfpNodeOperState</code> .
Rf	DIAMETER	No impact	New Supplementary-Service-Identity AVP value added – UNSUCCESSFUL_MP_CS_SELECTION. This AVP will be populated by Multi-Persona service in Originating Call with Multi-Persona on CS Access use case, when MPCN from incoming INVITE could not be recognized by the service, what leads to unsuccessful call setup.
ISC	SIP	No impact	The following new cases of SIP MESSAGE usage are added: MESSAGE received outside an existing dialog carrying application specific information on an established SIP Control Channel (e.g. MCMP) MESSAGE is sent as an acknowledgement of reception and processing of the request from the previous paragraph on an established SIP Control Channel (e.g. MCMP) MESSAGE is sent as a result of an application specific condition on an established SIP Control Channel (e.g. MCMP). MTAS is rejecting not expected MESSAGE events with 606 Not Acceptable and Warning string “Not Acceptable Here
SIPCC	SIP	New interface	New control channel interface between MMTel AS and the VoLTE UE used for persona selection when being attached to CS.



Table 6 Changed Inter-Node Interfaces

Interface	Protocol	Impact	Description of Changes
ISC	SIP	Minor impact	One-time SUBSCRIBE message includes P-Charging-Vector header if the REGISTER or the initial INVITE contains it. See HX29660.
CAP, MAP	M3-IETF	Minor impact	Default retransmit behavior in M3-IETF is changed. Applications that use zero values (default values) of retransmit buffer and retransmit timer in M3-IETF configuration should be prepared to new M3-IETF behavior. The new behavior is that there will be no data retransmit between M3-IETF and SCTP layers in congestion situation. The reason is to prevent a retransmit loop of the same message causing high CPU load. To have a more stable retransmit handling the parameters should have other values than zero.
ISC	SIP	No impact	When multiple AS roles are invoked that is controlled by IFC configuration: One ISC triggering can invoke the co-located roles in MTAS for SIP signaling on AS generic SIP port. The order of invoked AS roles is specified in the Route header "as=" parameter in the initial SIP request from S-CSCF to MTAS. The invoked AS name is added to P-Ericsson.Invocation-History header of related SIP requests and responses for trouble shooting.
CAP	CAP	No impact	Previously ITU standard and Global Title was hardcoded for the CAP interface. Now support for configuration of standard (ITU or ANSI) used on the CAP signaling network is added. Configuration can be done with the mtasCsiCapSccpStandard CM attribute.
COM	CLI, NETCONF	Major Impact	The vMTAS 1.14 is backward compatible except synchronizing Number Normalization, Number Analysis and Carrier Select configuration. The same function level exists, but the method for synchronizing the configuration is changed. Respective Table EditAction and CommitAction commands need to be executed before and after the configuration change.

4.2 Operation and Maintenance

This section describes changes to attributes, alarms, triggers, and performance measurement counters.

4.2.1 Provisioning

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

4.2.1.1 New Provisioning Attributes

The new provisioning attributes are listed in Table 7.

Table 7 New Provisioning Attributes

Interface	Protocol	Description of Changes
CAI3G	CAI3G	New service element "communication-event-logging" is added in MTAS for CAI3G information model



4.2.1.2 Changed Provisioning Attributes

The changed provisioning attributes are listed in Table 8.

Table 8 Changed Provisioning Attributes

Interface	Protocol	Impact	Description of Changes
-	-	-	-

4.2.1.3 Deprecated Provisioning Attributes

The deprecated provisioning attributes are listed in Table 9.

Table 9 Deprecated Provisioning Attributes

Interface	Protocol	Description of Changes
-	-	-

4.2.1.4 Obsolete Provisioning Attributes

The obsolete provisioning attributes are listed in Table 10.

Table 10 Obsolete Provisioning Attributes

Interface	Protocol	Description of Changes
-	-	-

4.2.1.5 Deleted Provisioning Attributes

The deleted provisioning attributes are listed in Table 11.

Table 11 Deleted Provisioning Attributes

Interface	Protocol	Description of Changes
-	-	-

4.2.2 Configuration

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

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

4.2.2.1 New Configuration Attributes

The new configuration attributes are listed in Table 12.



Table 12 New Configuration Attributes

Attribute Name	Description
CarSelCarrierTableSyncState	Added and supported
carSelDialedStringAnalysisTableSyncState	Added and supported
genericThresholdAlarmEnable	Added and supported
interval_timeout	Added and supported
MtasCel	Now supported
mtasCelAdministrativeState	Now supported
mtasCelEventServerName	Now supported
mtasCelReportingFilterList	Now supported
mtasCelReportingHeaderFilter	Now supported
mtasChargingProfileEnhancedReportRoFailureOverRf	Added, but not supported
MtasChargingProfileRoReject	Added, but not supported
mtasChargingProfileRoReject	Added, but not supported
mtasChargingProfileRoRejectAnn	Added and supported
mtasChargingProfileRoRejectDefaultAnnRemoteUser	Now supported
mtasChargingProfileRoRejectDefaultAnnServedUser	Now supported
mtasChargingProfileRoRejectGa	Added, but not supported
MtasCsiCap	Added and supported
mtasCsiCapCdEs	Added and supported
mtasCsiCapCdGti	Added and supported
mtasCsiCapCdNai	Added and supported
mtasCsiCapCdNp	Added and supported
mtasCsiCapCdTt	Added and supported
mtasCsiCapCgEs	Added and supported
mtasCsiCapCgGti	Added and supported
mtasCsiCapCgNai	Added and supported
mtasCsiCapCgNp	Added and supported
mtasCsiCapCgTt	Added and supported
mtasCsiCapSccpStandard	Added and supported
mtasCsiRelayScfAddress	Added but not supported
mtasCsiRelayScfSubsystemNumber	Added but not supported
mtasIdPresOipDisplayNameFiltering	Added but not supported
mtasMmtDomesticRoaming	Added, but not supported
mtasMmtSipccIdentification	Now supported
mtasMmtVersion	Added, but not supported
mtasMrfpNodeOperState	Now supported
mtasMultiPersonaAdministrativeState	Now supported



Attribute Name	Description
mtasMultiPersonaEnhancement	Now supported
mtasMultiPersonaInviteDelay	Now supported
mtasMultiPersonaMpcnMaxLifetime	Added and supported
MtasMultiPersonaMpcnRange	Added and supported
mtasMultiPersonaMpcnRangeFirst	Added and supported
mtasMultiPersonaMpcnRangeLast	Added and supported
mtasMultiPersonaOrigPolicyRejectionAnnName	Added, but not supported
MtasNaAnnCauseT	Added and supported
mtasNaAnnCauseTAnnName	Added and supported
mtasNaAnnCauseTRejectCode	Added and supported
mtasNaAnnCauseTRejectReason	Added and supported
MtasScaling	Added and supported
mtasScalingScaleIn	Added and supported
mtasScalingScaleOut	Added and supported
mtasScalingTimeBasedScalingEnabled	Added and supported
mtasSdsConditionalServiceKeys	Added but not supported
mtasSdsConditionalTermCall	Added but not supported
mtasSrvccAlertAckFallbackTime	Added and supported
mtasSrvccPreconditionTime	Added and supported
MtasSscMultiPersona	Added, but not supported
mtasSscMultiPersonaEnforceSscSubscribe	Added, but not supported
mtasSscMultiPersonaNegInvAnnPersonaSel	Added, but not supported
mtasSscMultiPersonaSyntInvPersonaSel	Added, but not supported
numAnaLocalCallTableSyncState	Added and supported
numberNormalisationTableSyncState	Added and supported
shutdown_timeout	Added and supported
VtasCel	Now supported
vtasCelAdministrativeState	Now supported
vtasCelDropBack	Now supported
vtasCelEventServerName	Now supported
vtasCelReportingFilterList	Now supported
vtasCelReportingHeaderFilter	Now supported
vtasCwVersion	Added, but not supported
vtasIdPresOipDisplayNameFiltering	Added, but not supported
vtasMmtDomesticRoaming	Added, but not supported
vtasMmtSipccIdentification	Now supported
vtasMmtVersion	Added, but not supported
vtasMultiPersonaAdministrativeState	Now supported



Attribute Name	Description
vtasMultiPersonaEnhancement	Now supported
vtasMultiPersonaInviteDelay	Now supported
vtasMultiPersonaMpcnMaxLifetime	Added and supported
VtasMultiPersonaMpcnRange	Added and supported
vtasMultiPersonaMpcnRange	Added and supported
vtasMultiPersonaMpcnRangeFirst	Added and supported
vtasMultiPersonaMpcnRangeLast	Added and supported
vtasMultiPersonaOrigPolicyRejectionAnnName	Added, but not supported
VtasNaAnnCauseT	Added and supported
vtasNaAnnCauseTAnnName	Added and supported
vtasNaAnnCauseTRejectCode	Added and supported
vtasNaAnnCauseTRejectReason	Added and supported
VtasSscMultiPersona	Added but not supported
vtasSscMultiPersonaEnforceSscSubscribe	Added but not supported
vtasSscMultiPersonaNegInvAnnPersonaSel	Added but not supported
vtasSscMultiPersonaSyntInvPersonaSel	Added but not supported
watchdog_timeout	Added and supported

4.2.2.2

Changed Configuration Attributes

The changed configuration attributes are shown in Table 13.

Table 13 Changed Configuration Attributes

Attribute Name	Description of Changes
DN mmasMemoryMonitoringId=1,mmasMonitoringId=1,mmasId=1 "enabled"	"enabled" is set to false. For more information, see section Deleted Alarms.
mtasCbVersion	ENUM 3 = VERSION_3. When it is set to 3 (VERSION_3), Outgoing Communication Barring service reports 141 (INTERNATIONAL_TOLL_RESTRICTION) in charging event when call is barred because of International or International-exHC condition in barring rules.
mtasCsiMapSccpStandard	Corrected the dependency statement to "Can be set to ANSI (0) if mtasCsiMapCdGti and mtasCsiMapCgGti are NO_GT (0), GT_TT (2) or GT_TT_NP_ES (3) and if mtasCsiMapCdTt and mtasCsiMapCgTt is less than 255". See HX37396.
mtasMmtAsName	The attribute default value is changed from "MMTelAS" to "mmt".
mtasMrControllerMrfcNodeRecoveryTimer	Range changed from 10–7200 to 0–7200. 0 means that the timer is not started, and the MrfcNode is not put to blacklist at all. See HX52510. Value 0 is not yet supported.
MtasNaAnnCause	Changed Description to indicate, that the configuration is for the originating side.



Attribute Name	Description of Changes
mtasNaAnnCauseAnnName	Changed Description to indicate, that the configuration is for the originating side.
mtasNaAnnCauseRejectCode	Changed Description to indicate, that the configuration is for the originating side.
mtasNaAnnCauseRejectReason	Changed Description to indicate, that the configuration is for the originating side.
mtasSccAsName	The attribute default value is changed from "SCCAS" to "scc".
mtasStodCallPullPolicyRoaming	There is a new possible enum value: 3=SAME_NETWORK.
vtasCbVersion	ENUM 3 = VERSION_3. When it is set to 3 (VERSION_3), Outgoing Communication Barring service reports 141 (INTERNATIONAL_TOLL_RESTRICTION) in charging event when call is barred because of International or International-exHC condition in barring rules.
VtasNaAnnCause	Changed Description to indicate, that the configuration is for the originating side.
vtasNaAnnCauseAnnName	Changed Description to indicate, that the configuration is for the originating side.
vtasNaAnnCauseRejectCode	Changed Description to indicate, that the configuration is for the originating side.
vtasNaAnnCauseRejectReason	Changed Description to indicate, that the configuration is for the originating side.

4.2.2.3

Deprecated Configuration Attributes

The deprecated configuration attributes are listed in Table 14.

Table 14 Deprecated Configuration Attributes

Attribute Name	Description of Changes
MtasChargingProfileRoReject	Was never supported
mtasChargingProfileRoRejectGa	Was never supported
mtasFunctionMmtAsName	Upgrade from previous release – mtasMmtAsName value is copied to mtasFunctionMmtAsName. See HX31452.
mtasFunctionSccAsName	Upgrade from previous release – mtasSccAsName value is copied to mtasFunctionSccAsName. See HX31452.
mtasMultiPersonaImrnLifetime	Deprecated because IMRN acronym was changed for MPCN for readability and new CMs were introduced
mtasMultiPersonaImrnRange	Deprecated because IMRN acronym was changed for MPCN for readability and new CMs were introduced
mtasMultiPersonaImrnRangeFirst	Deprecated because IMRN acronym was changed for MPCN for readability and new CMs were introduced
mtasMultiPersonaImrnRangeLast	Deprecated because IMRN acronym was changed for MPCN for readability and new CMs were introduced
SC114 and SC115	Deprecated
vtasMultiPersonaImrnLifetime	Deprecated because IMRN acronym was changed for MPCN for readability and new CMs were introduced



Attribute Name	Description of Changes
VtasMultiPersonaImrnRange	Deprecated
vtasMultiPersonaImrnRange	Deprecated because IMRN acronym was changed for MPCN for readability and new CMs were introduced
vtasMultiPersonaImrnRangeFirst	Deprecated because IMRN acronym was changed for MPCN for readability and new CMs were introduced
vtasMultiPersonaImrnRangeLast	Deprecated because IMRN acronym was changed for MPCN for readability and new CMs were introduced

4.2.2.4 Obsolete Configuration Attributes

The configuration MOCs and attributes made obsolete are shown in Table 15.

Table 15 Obsolete Configuration Attributes

Attribute Name	Description of Changes
mtasMrfpNodeOperationalState	Not supported, obsolete, mtasMrfpNodeOperState has taken over the role of this CM
carSelDialedStringAnalysisTableSynchronization	CMCO – Carrier Select – made obsolete and replaced by carSelDialedStringAnalysisTableSyncState
carSelCarrierTableSynchronization	CMCO – Carrier Select – made obsolete and replaced by CarSelCarrierTableSyncState
numAnaLocalCallTableSynchronization	CMCO – Number Analysis – made obsolete and replaced by numAnaLocalCallTableSyncState
numberNormalisationTableSync	CMCO Number Normalization – made obsolete and replaced by numberNormalisationTableSyncState

4.2.2.5 Deleted Configuration Attributes

The deleted configuration attributes are shown in Table 16.

Table 16 Deleted Configuration Attributes

Attribute Name	Description
DN "fmAlarmTypeId=Memory,fmAlarmModelId=MMAS,fmId=1"	This is deleted. For more information, see section Deleted Alarms.

4.2.3 Fault Management

This section describes changed, new, and removed alarms.

4.2.3.1 New Alarms

The new alarms are shown in Table 17.



Table 17 New Alarms

Alarm Name	Description
MultiPersona Service License Absent	The alarm is raised when mtasMultiPersonaAdministrativeState is unlocked and MultiPersona Service license is absent, expired or invalid, and snoozed when a valid license is installed.
MTAS Time Based Scaling	This alarm will be raised at a specific time configured on the VNF, and is used for triggering the time based scaling feature.
SRM Alarm System Resources High Usage	This threshold-based alarm is raised when one or more system resources are above the configured limits and genericThresholdAlarmEnable is set to 1.
SRM Alarm System Resources Low Usage	This threshold-based alarm is raised when one or more system resources are below the configured limits and genericThresholdAlarmEnable is set to 1.

4.2.3.2

Changed Alarms

The changed alarms are shown in Table 18.

Table 18 Changed Alarms

Alarm Name	Description of Changes
-	-

4.2.3.3

Deleted Alarms

The deleted alarms are shown in Table 19.

Table 19 Deleted Alarms

Alarm Name	Description
MMAS, Heap Memory Load Limit Exceeded	<p>The alarm was raised by the Multimedia Application Server (MMAS) as part of overload protection when the heap memory load exceeds a configured threshold value.</p> <p>The reason to delete the alarm is because the behavior of standard Java raise the alarm, when the memory is allocated, and cease the alarm, when the garbage collection is executed. This result was a flaky alarm, without traffic impact. See HW61234.</p>

4.2.4

IFC Triggers

The new IFC triggers are listed in Table 20.



Table 20 New IFC Triggers

Reason	IFC
The device will send a SIP MESSAGE with its own IMPU as destination. This MESSAGE should reach the MMTel AS	Trigger the MMTel AS on either the generic SIP port or on the originating port (mtasSipTrafficOriginatingIpPort) when Method="MESSAGE" AND SessionCase="ORIGINATING_REGISTERED" AND Header="Content-Type" Content="application/vnd.call-id-info+xml"

The changed IFC triggers are listed in Table 21

Table 21 Changed IFC Triggers

Reason	IFC
Multiple AS roles invocation on one ISC triggering	For multiple AS invocation in co-location MTAS on AS generic SIP port, the IFC triggers must contain the AS roles. Example for originating MTAS: Trigger2ApplicationServers: xxx: sip:<mtas.operator.net>; as="scc,foiwf,mmt,prwf" The order of AS roles is specified in the Route Header "as="

4.2.5 Performance Measurement

This section lists new and changed, deprecated, obsolete, and deleted Performance Measurement (PM) counters.

For more information on counter description, refer to [MTAS Performance Measurements](#).

4.2.5.1 New PM Counters

The new PM counters are listed in Table 22.

Table 22 New PM Counters

Counter Name	Description
MtasCelNOkE	Now Supported
MtasCelNOkI	Now Supported
MtasCelOk	Now Supported
MtasMmtInitOrigPlmnSessNOkNet	Added, but not supported
MtasMmtInitOrigPlmnSessNOkService	Added, but not supported
MtasMmtInitOrigPlmnSessNOkSupportNode	Added, but not supported
MtasMmtInitOrigPlmnSessNOkUser	Added, but not supported
MtasMmtInitOrigPlmnUnregSessNOkNet	Added, but not supported
MtasMmtInitOrigPlmnUnregSessNOkService	Added, but not supported
MtasMmtInitOrigPlmnUnregSessNOkSupportNode	Added, but not supported
MtasMmtInitOrigPlmnUnregSessNOkUser	Added, but not supported



Counter Name	Description
MtasMmtInitTermPlmnSessNokNet	Added, but not supported
MtasMmtInitTermPlmnSessNokService	Added, but not supported
MtasMmtInitTermPlmnSessNokSupportNode	Added, but not supported
MtasMmtInitTermPlmnSessNokUser	Added, but not supported
MtasMmtInitTermPlmnUnregSessNokNet	Added, but not supported
MtasMmtInitTermPlmnUnregSessNokService	Added, but not supported
MtasMmtInitTermPlmnUnregSessNokSupportNode	Added, but not supported
MtasMmtInitTermPlmnUnregSessNokUser	Added, but not supported
MtasMmtOrigPlmnNetworkSuccessSessionEstablish	Added, but not supported
MtasMmtOrigPlmnUnregNetworkSuccessSessionEstablish	Added, but not supported
MtasMmtTermOrigPlmnSessNok	Added, but not supported
MtasMmtTermOrigPlmnSessNokECause	Added, but not supported
MtasMmtTermOrigPlmnSessNokServiceCause	Added, but not supported
MtasMmtTermOrigPlmnSessOk	Added, but not supported
MtasMmtTermOrigPlmnUnregSessNok	Added, but not supported
MtasMmtTermOrigPlmnUnregSessNokECause	Added, but not supported
MtasMmtTermOrigPlmnUnregSessNokServiceCause	Added, but not supported
MtasMmtTermOrigPlmnUnregSessOk	Added, but not supported
MtasMmtTermPlmnNetworkSuccessSessionEstablish	Added, but not supported
MtasMmtTermPlmnUnregNetworkSuccessSessionEstablish	Added, but not supported
MtasMmtTermTermPlmnSessNok	Added, but not supported
MtasMmtTermTermPlmnSessNokECause	Added, but not supported
MtasMmtTermTermPlmnSessNokServiceCause	Added, but not supported
MtasMmtTermTermPlmnSessOk	Added, but not supported
MtasMmtTermTermPlmnUnregSessNok	Added, but not supported
MtasMmtTermTermPlmnUnregSessNokECause	Added, but not supported
MtasMmtTermTermPlmnUnregSessNokServiceCause	Added, but not supported
MtasMmtTermTermPlmnUnregSessOk	Added, but not supported
MtasMultiPersonaOrigSelAttempts	Now supported
MtasMultiPersonaOrigSelectionsNokE	Now supported
MtasMultiPersonaOrigSelectionsNokI	Now supported
MtasMultiPersonaOrigSelectionsOk	Now supported
MtasMultiPersonaTermSelAttempts	Now supported
MtasMultiPersonaTermSelectionsNokE	Now supported
MtasMultiPersonaTermSelectionsNokI	Now supported
MtasMultiPersonaTermSelectionsOk	Now supported



Counter Name	Description
MtasSccInitOrigCsPlmnSessAttempts	Added, but not supported
MtasSccInitOrigCsPlmnSessNokNet	Added, but not supported
MtasSccInitOrigCsPlmnSessNokUser	Added, but not supported
MtasSccInitOrigCsPlmnSessOk	Added, but not supported
MtasSccInitTermCsPlmnSessAttempts	Added, but not supported
MtasSccInitTermCsPlmnSessNokNet	Added, but not supported
MtasSccInitTermCsPlmnSessNokUser	Added, but not supported
MtasSccInitTermCsPlmnSessOk	Added, but not supported
MtasSccTermOrigCsPlmnSessCompletionAttempts	Added, but not supported
MtasSccTermOrigCsPlmnSessNok	Added, but not supported
MtasSccTermOrigCsPlmnSessOk	Added, but not supported
MtasSccTermTermCsPlmnSessCompletionAttempts	Added, but not supported
MtasSccTermTermCsPlmnSessNok	Added, but not supported
MtasSccTermTermCsPlmnSessOk	Added, but not supported
MtasSdsCapInitDPRelayAttempt	Added, but not supported
MtasSdsPlmnCapInitDPOrigPlmnNOkE	Added, but not supported
MtasSdsPlmnCapInitDPOrigPlmnNOkI	Added, but not supported
MtasSdsPlmnCapInitDPOrigPlmnOk	Added, but not supported
MtasSdsPlmnImrnNOkE	Added, but not supported
MtasSdsPlmnImrnNOkI	Added, but not supported
MtasSdsPlmnImrnOk	Added, but not supported

4.2.5.2 Changed PM Counters

The changed PM counters are listed in Table 23.

Table 23 Changed PM Counters

Counter Name	Description of Changes
MtasSubsReregOk	Fixed no increment in common scenario when mtasSubsDataInitRegHSSFatchDelay=3. See HW90791.

4.2.5.3 Deprecated PM Counters

The deprecated PM counters are listed in Table 24.

Table 24 Deprecated PM Counters

Counter Name	Description of Changes
-	-



4.2.5.4 Obsolete PM Counters

The obsolete PM counters are listed in Table 25.

Table 25 Obsolete PM Counters

Counter Name	Description of Changes
-	-

4.2.5.5 Deleted PM Counters

The deleted PM counters are shown in Table 26.

Table 26 Deleted PM Counters

Counter Name	Description of Changes
-	-

4.3 Impacts to Continuous Delivery Machinery

This section summarizes the impacts to the Continuous Delivery Machinery, which can need changes based on the listed items.

A summary of impacts is shown in Table 27.

The description of impact is as follows:

- **No Impact** – This change has a very low chance to have an impact on any CD Machinery or can be activated with additional configuration.
- **Minor Impact** – This change has a medium chance to have an impact on any CD Machinery.
- **Major Impact** – This change is having an impact on CD Machinery with high probability.

Table 27 Summary of Impacts to CD Machinery

Service	Impact	Description of Changes
Health Check	Minor Impact	<p>Minor NBC changes on interface of Health Check triggering script:</p> <ul style="list-style-type: none"> Type 'troubleshooting' renamed to 'full' Periodic scheduling options changed Period scheduling unit changed from second to hour <p>XML format report changed because of schema changes. HTML report is unchanged.</p>



Table 27 Summary of Impacts to CD Machinery

Service	Impact	Description of Changes
Health Check	Minor Impact	'SoftwareVersions' check functionality is extended to verify if R-states of all MTAS components are the same.
SS7 trace	Minor impact	The ss7trace.log file has changed permission to prevent others than users with root privileges to read it. Also permissions for the ss7caf-collect-info script is changed to only allow users with root privileges to execute it. This means that if still root user executes it there is no impact. If a user is belonging to system-ts group is used, a password will be required to access the script. No other users are allowed to execute.

4.4 Summary of Impacts per Feature

All MTAS nodes in the network must be upgraded before taking new services in operation. This section summarizes the impact per feature when the feature is turned on. A summary of impacts per feature is shown in Table 28.

The description of impact is as follows:

- **No Impact** – This change has very low chance to have an impact or can be activated with additional configuration.
- **Minor Impact** – This change has medium chance to have an impact.
- **Major Impact** – This change has an impact with a high probability.

Table 28 Summary of Impacts per Feature

Feature	Service	Impact	Description of Changes
Announcement according to Reason header	Network Announcement	No impact	Instances of the new CMs parameters will not exist after the upgrade and accordingly the new function will be disabled by default. In terminating case an announcement can be played based on combination of SIP error status code + Q.850/SIP cause code and SIP error response can be configurable, the same way as it works for originating. This is controlled by a new MOC MtasNaAnnCauseT, or for Wholesale VtasNaAnnCauseT, and its attributes.



Communication Barring Service is enhanced to report SSID 141 for International or International-exHC condition in barring rules.	Communication Barring	No Impact	When mtasCbVersion is set to 3 (VERSION_3), Outgoing Communication Barring service reports SSID value 141 (INTERNATIONAL_TO_LL_RESTRICTION) in charging event when call is barred because of International or International-exHC condition in barring rules.
Communication Barring Service is enhanced to report SSID 141 for International or International-exHC condition in barring rules.	Communication Barring	No Impact	When mtasCbVersion is set to 3 (VERSION_3), Outgoing Communication Barring service reports SSID value 141 (INTERNATIONAL_TO_LL_RESTRICTION) in charging event when call is barred because of International or International-exHC condition in barring rules.
Ro Announcement for errors without Announcement AVP	Online Charging	No Impact	<p>MTAS can play Ro reject announcement in case any CCA-I or CCA-U message contains command or service level error code or Experimental-Result-Code AVP, even when the CCA does not contain Announcement-Instructions AVP, if CCFH action is set to TERMINATE and it is configured through CM parameters.</p> <p>Generic announcement will be played, if the result code entry in mtasChargingProfileRoRejectAnn matches the error result code (3xxx/4xxx/5xxx) returned in the CCA message by the OCS, or if that is not true, when mtasChargingProfileRoRejectDefaultAnnRemoteUser and/or mtasChargingProfileRoRejectDefaultAnnServedUser is configured. The generic announcement to be played is configurable through the CM parameters.</p> <p>The above CM parameters are configurable per charging profile. There can be multiple instances (0–32) of mtasChargingProfileRoRejectAnn, but only a single instance of the latter two parameters.</p>



Multi-Persona on CS	MultiPersonaService	Minor Impact	Multi persona selection when VoLTE UE attached to CS. See section Impact on MTAS Features.
Time-based auto-scale	VNF-LCM	No Impact	Time-based auto-scaling feature triggered by a preconfigured time-based alarm
EM-driven instantiation	VNF-LCM	No Impact	VNFs instantiated on VNF-LCM are now visible on EO (Ericsson Orchestrator)
EM-driven scale	VNF-LCM	No Impact	VNFs scaled on VNF-LCM are now updated on EO (Ericsson Orchestrator)

4.5 Other Interface Impacts

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

The changes to existing services are described in Table 29.

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 29 Other Interface Changes

Source of Change	Service	Impact	Description of Changes
HX25597	CDIV	Minor	CDIV in MTAS is now putting "privacy=history" into the History-Info header for 180/181/183/200OK SIP messages from UE_C if reveal-identity-to-caller=false. This is to prevent C-number to be exposed to A.
HX14490	Ad Hoc conference	Minor	Ad-Hoc conference service is now sending partial notification about CP joining into the conference, when conference created using uri list and answer confirmation is enabled. Until now, nothing was sent, because of a fault.
HX19590	PRIW	Minor	PRIW service is adding confirm-status attribute into the SDP of 183 session progress message sent from NWAS, requesting resource reservation confirmation from user.
HX34376	Online Charging	Minor Impact	When OCS orders call termination in CCA-U (response code is 4010 with Announcement-Instruction) after call establishment, then terminating MTAS rejects the SIP session with 480 Temporarily Unavailable.



Source of Change	Service	Impact	Description of Changes
HX34377	Online Charging	Minor Impact	When OCS orders call termination in CCA-I/CCA-U (response code is 4010 with Announcement-Instruction), then originating MTAS rejects the SIP session with 403 Forbidden.
HX34278	SRVCC	Minor impact	Before this update there was no possibility of PS fallback after the call was answered if the SRVCC transfer was done in alerting state. Now, if <code>mtasSrvccAlertAckFallbackTime > 0</code> , a (second) fallback timer is started at reception of ACK for 200OK on INVITE if the transfer was started in alerting state. A PS fallback can then occur until this timer expires.
HX45973	Japanese Charging	Minor Impact	Until now, because of an earlier fault "MtasJc ICBS Data Not Found" alarm was not raised. Now the alarm can be raised again.
HX26776	Number Portability	No Impact	MTAS Number Portability Service will support replacement based on regular expressions in NAPTR response for ENUM query.
HX34278	SRVCC	No Impact	Added support for <code>mtasSrvccAlertAckFallbackTime</code> . The new <code>alertAckFallback</code> timer for SRVCC alerting is started on ACK and fallback can then happen until it expires. If the <code>alertAckFallback</code> time > 0 , then fallback can also happen after the legacy fallback timer expires and before the new one is started (on ACK).
HX35299	SRVCC	Minor Impact	Added a check if preconditions exist in media stream, if they are present then add the precondition tag to Require header in the provisional response to access transfer INVITE.
HX32907	Short Number Dialing	Minor	With this fix when a SND user creates an Ad-Hoc conference with uri list, the From header of the dialout INVITEs will be updated.
HX35573	SRVCC	No Impact	When a new CM attribute (<code>mtasSrvccPreconditionTime</code>) is set to a value greater than 0, SRVCC pre-alerting access transfer INVITE will be delayed by SCC AS if there's an early dialog that does not have QoS parameters negotiated (if preconditions are required)
HW67604	Alarms	Minor Impact	Because of an earlier fault NeLS Alarms might not be cleared even if the related features are disabled in MTAS. Now this fault is fixed, so the alarms will be ceased in this case.
HX34278	SRVCC	No impact	The new <code>mtasSrvccAlertAckFallbackTime</code> timer is started on ACK and fallback can then happen until it expires. If the <code>mtasSrvccAlertAckFallbackTime</code> time > 0 , then fallback can also happen after the legacy fallback timer expires and before the new one is started (on ACK).
HX38859	MTAS Awareness after IS recovery	Minor Impact	The checking of the 'initialselection' tag in top most Route header was changed to case-insensitive for MTAS Awareness after IS recovery invocation





5 Impact on MTAS Features

This section describes the impact on vMTAS 1.14.0 features when the feature is turned on.

5.1 Announcement According to Reason Header

Network Announcement service is enhanced. In terminating case an announcement can be played based on combination of SIP error status code + Q.850/SIP cause code and SIP error response can be configurable, the same way as it works for originating. This is controlled by a new MOC `MtasNaAnnCauseT`, or for Wholesale `VtasNaAnnCauseT`, and its attributes.

Impact

No impact.

5.2 Communication Event Logging

The new communication event logging function is a Rf based MMTel AS service, sending notifications about served user session communication to an external server.

Communication events will be sent to the external logging server whenever there is a communication attempt from/towards served user. The event includes information about type of session state event, time, calling party, called party, subscription information, and so on.

The feature is controlled by the new `mtasCe1` MOC.

It is possible to provision this service both individually per subscriber and per groups of subscribers (Service Profile) and per MMTel context (Multi-Persona).

Impact

There is minor impact on capacity and performance when feature is enabled and provisioned.

5.3 vMTAS Workflow Enhancement When Used with Ericsson Orchestrator

The Ericsson Orchestrator (EO) is enhanced in a way that if an instance is successfully terminated in the VNF Life Cycle Manager (VNF-LCM), then it will be removed from the EO too.



Impact

No additional impact.

5.4 Ro Announcement for Errors Without Announcement AVP

MTAS plays Ro reject announcement in case any CCA message contains command or service level error code or Experimental-Result-Code AVP, even when the CCA does not contain an Announcement-Instructions AVP, if CCFH action is set to TERMINATE.

It can be configured and controlled through the following CM parameters:

The `mtasChargingProfileRoRejectAnn` CM parameter determines the announcement package to be played in case of a specific reject code. Announcement played to the served user, when the reject result code in the CCA-I on originating side, or in the CCA-U on both sides matches the result code configured in the CM parameter.

Example: `mtasChargingProfileRoRejectAnn = "4012|RoRejectAnnouncement"`. If the reject code in the CCA message is 4012, then the `RoRejectAnnouncement` keyed Generic announcement will be played to the served user.

The `mtasChargingProfileRoRejectDefaultAnnRemoteUser` CM parameter determines the announcement package to be played for call termination to the remote user when CCR-I rejected on the terminating side.

The `mtasChargingProfileRoRejectDefaultAnnServedUser` CM parameter determines the announcement package to be played for call termination to the served user, when CCR-I rejected on the originating side, or, when CCR-U rejected on both sides.

Example: `mtasChargingProfileRoRejectDefaultAnnServedUser = "DefaultRoRejectAnnouncement"`. If the reject code in the CCA message not matches the entries configured in `mtasChargingProfileRoRejectAnn` or `mtasChargingProfileRoRejectAnn` is not configured, then the `DefaultRoRejectAnnouncement` keyed Generic announcement will be played to the served user.

If both `mtasChargingProfileRoRejectDefaultAnnServedUser` and `mtasChargingProfileRoRejectAnn` CM parameters are configured and the reject code in the CCA message matches an entry in `mtasChargingProfileRoRejectAnn`, then the latter takes precedence.

These CM parameters are configurable per charging profile. There can be multiple instances (0–32) of `mtasChargingProfileRoRejectAnn`, but only a single instance of `mtasChargingProfileRoRejectDefaultAnnRemoteUser` and `mtasChargingProfileRoRejectDefaultAnnServedUser` per charging profile.



Impact

By default, there is no impact. There can be additional strain on MRF resources, when the feature is enabled and configured by the CM parameters (announcement will be ordered from the MRF by MTAS for CCA messages containing error response), depending on the details of the configuration.

5.5 Graceful locking from vMRF

New service change method graceful reason 908 is supported, this triggers graceful shutdown. After receiving this service change new connections will not be allowed (no more add message allowed), but ongoing transactions will not be affected. After all connection has been gracefully subtracted, `operationalState` will be `linkDown` (previously disabled, this means SCTP link is down).

A new CM parameter is introduced to indicate this state. The CM parameter is called `mtasMrfpNodeOperState`. The following states are represented with this CM:

- `linkDown := 0` (SCTP link is down)
- `linkUp := 1` (SCTP link is up)
- `linkShuttingDown := 2` (SCTP link is up, but we do not allow new connections)

The state `linkShuttingDown` represents the new function, graceful locking.

Impact

No impact.

5.6 Multi-Persona on CS

The Multi-Persona service enables a mobile subscriber to use different personas (identities) at incoming and outgoing communication. Multi persona selection when originating VoLTE UE attached to CS. Multi persona indication when terminating VoLTE UE attached to CS. For more information refer to Multi-Persona Service in MTAS.

This feature can be controlled with the following CM attributes:

- `mtasMmtSipccIdentification`
- `mtasMultiPersonaAdministrativeState`
- `mtasMultiPersonaEnhancement`
- `mtasMultiPersonaInviteDelay`



- `mtasMultiPersonaMpcnMaxLifetime`
- `mtasMultiPersonaMpcnRange`
- `mtasMultiPersonaMpcnRangeFirst`
- `mtasMultiPersonaMpcnRangeLast`

This feature requires a license to work: `MtasMultiPersona` or `vMtasMultiPersona`.

This feature uses the following counters for Performance Measurement:

- `MtasMultiPersonaOrigSelAttempts`
- `MtasMultiPersonaOrigSelectionsN0kE`
- `MtasMultiPersonaOrigSelectionsN0kI`
- `MtasMultiPersonaOrigSelections0k`
- `MtasMultiPersonaTermSelAttempts`
- `MtasMultiPersonaTermSelectionsN0kE`
- `MtasMultiPersonaTermSelectionsN0kI`
- `MtasMultiPersonaTermSelections0k`

This feature may raise the following new alarm: `MultiPersona Service License Absent`.

Impact

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

Minor impact. For backward compatibility with legacy behavior during upgrade, the CM `mtasMultiPersonaAdministrativeState` is to be set to `UNLOCKED`.

5.7 Increased Number of Rating Centers in Number Analysis

The cardinality of CM attribute `NumAnaRatingCenter` is increased from the present 5000 to 7000.

Impact

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



5.8 Support for ANSI network (CAP)

Previously ITU standard and Global Title was hardcoded for the CAP interface.

Now support for configuration of standard (ITU or ANSI) used on the CAP signaling network is added. Configuration can be done with the `mtasCsiCapSccpStandard` CM attribute.

Support for configuration of Global Title is added. This feature can be configured with the following attributes:

- `mtasCsiCapCdGti`
- `mtasCsiCapCdNai`
- `mtasCsiCapCdNp`
- `mtasCsiCapCdTt`
- `mtasCsiCapCdEs`
- `mtasCsiCapCgGti`
- `mtasCsiCapCgNai`
- `mtasCsiCapCgNp`
- `mtasCsiCapCgTt`
- `mtasCsiCapCgEs`

Impact

No impact.

5.9 Removal of Multiple AS Invocation in Co-Location Scenarios

When multiple AS roles are co-located, MTAS supports to invoke these AS roles by one ISC triggering on generic SIP port. The invoked AS order is specified in the top Route header "as=", as the following example:

```
Route:sip:mtas.operator.net; as="scc,foiwf,mmt,priwf"
```

Impact

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



5.10 Time-Based Auto-Scale

The customer can now configure an auto scaling operation (by configuring a timestamp and a scaling type – in/out – with additional scaling information via ECLI). The scale-out and scale-in workflows can be triggered automatically based on alarms which will be raised at the specific time configured on the VNF. The ENM triggers a scale workflow on VNF-LCM based on the alarm from the VNF.

Newly introduced alarm: MTAS Time Based Scaling

Newly introduced MOC: MtasScaling MOC

Impact

Scaling is a deliberate operation with direct impact on the capacity of the VNF. No impact on network elements and operation.

5.11 EM-Driven Instantiation

After a successful instantiation operation, started from the VNF-LCM, has been finished successfully, a newly created virtual application belonging to the newly instantiated VNF is available in the EO (Ericsson Orchestrator) as well.

Impact

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

5.12 EM-Driven Scaling

If an instance has been deployed from the EO (Ericsson Orchestrator), then after a successful scaling operation, started from the VNF-LCM, has been finished successfully, the newly updated stack-related information (number of virtual machines, IDs of VMs, and so on.) are available in the EO as well.

Impact

Scaling is a deliberate operation with direct impact on the capacity of the VNF. No impact on network elements and operation.

5.13 Support Hardware Watchdog for Intel 6300 ESB

vMTAS now supports the `lde-watchdogd` function that LDE provides as a CSM (CBA system model) component. `lde-watchdogd` provides a configurable watchdog daemon which periodically resets the watchdog timer by writing to `/dev/watchdog`.



The watchdog device can be real hardware, or emulated hardware, (for example, by a KVM hypervisor), or fully implemented in software as a kernel module.

In case of a hardware watchdog device, the LDE agent watchdog daemon relies that its driver (kernel module) is loaded. This is determined by checking for the existence of `/dev/watchdog`. If this file is not there when the LDE agent watchdog service is started, the service will attempt to load a software watchdog (softdog). This will result in `/dev/watchdog` appearing albeit backed by a software implemented “device”.

The watchdog configuration used by the LDE watchdogd component is set using the following parameters (provided in the CSM component configuration file `lde-agents-watchdogd.yaml`):

- `watchdog_timeout`: Time frame from the last received ping until the watchdog device triggers
- `interval_timeout`: Every `interval_timeout` a ping is sent to the watchdog device by the watchdog daemon
- `shutdown_timeout`: When the watchdog daemon is stopped, the time that watchdog device waits is set to `shutdown_timeout` value. It is used to ensure watchdog device triggers if a reboot hangs for any reason.

Impact

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

5.14 vMTAS Improved Resilience to Network Disturbances

To make vMTAS more resilient to network disturbances, the time-out value has been increased from 1500 milliseconds to 5000 milliseconds on the internal network interface (TIPC).

Impact

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