

vCSCF Network Impact Report from 1.10.x to 1.11.0

Call Session Control Function

NETWORK IMPACT REPORT

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1 Introduction

This Network Impact Report (NIR) describes how the Virtual Call Session Control Function (vCSCF) 1.11.0 with new and enhanced commercial features affects the vCSCF 1.10.x. The NIR also describes the impact on the overall network, including all affected products and functions.

In this document, the term “vCSCF” refers to the product and the term “CSCF” refers to the CSCF application, independent of being deployed in a native or virtual environment.

Note: The vCSCF product is a software-only product. It is not bundled with any hardware platform or virtualization software.

This document covers the following enhanced features:

- 3rd Party Registration
- OAM Management (Virtualized)
- Offline Charging
- P-CSCF Restoration
- Traceability and Troubleshooting
- User Initiated Registration/Deregistration
- VNF-LCM Workflows





2 General Impact

This section describes the general impact because of the introduction of the vCSCF 1.11.0.

2.1 Backward Compatibility

The vCSCF is backward compatible.

The previous non-backward compatible EATF changes are removed.

2.2 Capacity and Performance

The subscriber capacity decreases slightly by the introduction of the vCSCF 1.11.0 if the same version of cloud environment is used.

The network performance is not affected by the introduction of the vCSCF 1.11.0.

2.3 Hardware and Platform

The vCSCF is a software-only product.

The demands on the hardware and platform are specified in [Virtual CSCF Infrastructure Requirements](#).

2.4 Upgrade Impact

Smooth upgrade is supported for the vCSCF 1.10.x – vCSCF 1.11.0 upgrade.

2.5 Deprecated Features

There are no deprecated features.

2.6 Other Network Elements

The Northbound Interface (NBI) is modified, which may affect external management systems, for example the Operation and Support System Radio and Core (OSS-RC).





3 Interfaces

This section describes interface changes between the existing and new revisions of the product. The changes to interfaces described here can require changes to the operator systems, technical plans, training of operator personnel, and so on.

No impact indicates that no changes are needed.

3.1 Inter-Node Interface

The changes to the inter-node interfaces are listed in Table 1.

The description of impact is as follows:

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

Table 1 Inter-node Interfaces

Interface	Protocol	Impact	Description of Change Compared To vCSCF 1.10.x
ISC	SIP	No Impact	Redistribution of application server traffic in CSCF is enhanced by configuration of the parameter <code>scscfReregAsEntry</code> .

3.2 Operation and Maintenance

This section describes changes to attributes, alarms, SNMP alerts, and counters.

3.2.1 Provisioning and Configuration

This section lists changed, deleted, and new attributes.



Further information on attributes can be found in the following documents:

- Managed Object Model (MOM)
- CSCF Configuration Management

3.2.1.1 Changed Attributes

There are no changed attributes.

3.2.1.2 Deleted Attributes

There are no deleted attributes.

3.2.1.3 Deprecated Attributes

There are no deprecated attributes.

3.2.1.4 Obsolete Attributes

There are no obsolete attributes.

3.2.1.5 New Attributes and Environment Variables

The new attributes are described in Table 2.

The new environment variables are described in Table 3.

Table 2 New Attributes

Attribute Name	Description
3rd Party Registration	
scscfReregAsEntry	Each entry in this multi-value attribute holds an IP address of an AS instance. For these IP addresses, CSCF invokes 3rd party registration for re-registration when a 3rd party registration trigger is configured in the service profile of a user even if the Registration Type is not configured with re-registration. An empty list means that the function is disabled. Default value: <No Value>.

Table 3 New Environment Variables

New Environment Variable	Description
Offline Charging	



Table 3 New Environment Variables

New Environment Variable	Description
CSCF_CHARGING_BACKUP_RETRY_LIMIT	<p>This parameter defines the maximum number of retries to back up an offline charging request. After all retries fail, the charging information is lost. Together with parameter CSCF_CHARGING_BACKUP_RETRY_TIMER_INTERVAL, this parameter defines how long time the charging information is cached in the memory at most, but not more than 10 minutes. The value 0 disables caching of the charging information at backup failure.</p> <p>Range: 0–5</p> <p>Default value: 3</p>
CSCF_CHARGING_BACKUP_RETRY_TIMER_INTERVAL	<p>This parameter defines the time interval between two retries to back up an offline charging request. Together with parameter CSCF_CHARGING_BACKUP_RETRY_LIMIT, this parameter defines how long time the charging information is cached in the memory at most, but not more than 10 minutes.</p> <p>Unit: s</p> <p>Range: 10–180</p> <p>Default value: 20</p>

3.2.2 Fault Management

This section describes alarms that have been changed, deleted, or added.

3.2.2.1 Changed Alarms

The changed alarms are described in Table 4.

Table 4 Changed Alarms

Alarm Name	Description of Change
Offline Charging	
CSCF Charging Backup File System Unavailable	The value of Additional Text is changed to Backup Write Failure or Backup Disk Full.



3.2.2.2 Deleted Alarms

There are no deleted alarms.

3.2.2.3 Deprecated Alarms

There are no deprecated alarms.

3.2.2.4 Obsolete Alarms

There are no obsolete alarms.

3.2.2.5 New Alarms

The new alarms are described in Table 5.

Table 5 New Alarms

Alarm Name	Description
OAM Management (Virtualized)	
C-Diameter, Diameter Measurement Threshold Crossed	This generic C-Diameter threshold-based alarm was raised because at the end of the Granularity Period the measured value for one of the DiameterCC measurement types was higher than the configured threshold.
C-Diameter, Peer Connection Congestion	This generic C-Diameter threshold-based alarm indicates congestion in the Own or in the Peer Diameter Node. The congestion was measured on one of the peer connections, that is, the message amount dropped because the diameter link congestion crossed the threshold defined by the related threshold job level.
C-Diameter, RTT to Remote Node Exceed Limits	This generic C-Diameter threshold-based alarm indicates disturbances in egress request message delivery. That is, the message amount dropped because the time-out crossed the threshold defined by the related threshold job.

3.2.3 Events and Notifications

This section describes events and notifications that have been changed, deleted, or added.

3.2.3.1 Changed Events and Notifications

There are no changed events and notifications.



3.2.3.2 Deleted Events and Notifications

There are no deleted events and notifications.

3.2.3.3 Deprecated Events and Notifications

There are no deprecated events and notifications.

3.2.3.4 Obsolete Events and Notifications

There are no obsolete events and notifications.

3.2.3.5 New Events and Notifications

There are no new events and notifications.

3.2.4 Counters

This section describes counters that have been changed, deleted, or added.

3.2.4.1 Changed Counters

There are no changed counters.

3.2.4.2 Deleted Counters

There are no deleted counters.

3.2.4.3 Deprecated Counters

The deprecated counters are described in Table 6.

Table 6 Depreciated Counters

Counter Name	Description
OAM Management (Virtualized)	
cscfActiveUsers	The measurement status of the PM counter cscfActiveUsers is set to DEPRECATED.
cscfActiveUsersPerProfile	The measurement status of the PM counter cscfActiveUsersPerProfile is set to DEPRECATED.

3.2.4.4 Obsolete Counters

There are no obsolete counters.



3.2.4.5 New Counters

The new counters are described in Table 7.

Table 7 New Counters

Counter Name	Description
OAM Management (Virtualized)	
DiaNode	This C-Diameter Performance Management group consists of 49 new counters. For more information, see Managed Object Model (MOM) .
DiaPeer	This C-Diameter Performance Management group consists of 49 new counters. For more information, see Managed Object Model (MOM) .
DiaPeerConn	This C-Diameter Performance Management group consists of 49 new counters. For more information, see Managed Object Model (MOM) .



4 Summary of Impacts per Feature

This section summarizes the impact per feature when the feature is turned off, as listed in Table 8.

The description of impact is as follows:

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

Table 8 Impacts per Feature

Feature	Impact			Basic or Optional New or Enhanced	Included in Value Packs and Basic Packs	Relation to Other Features or Nodes
	Major	Minor	No			
3rd Party Registration			X	Basic Enhanced	Voice Messaging Service Identity SIP Trunking Dynamic User	AS
OAM Management (Virtualized)			X	Basic Enhanced	Voice Messaging Service Identity SIP Trunking Transit Dynamic User	
Offline Charging			X	Basic Enhanced	Voice Messaging Dynamic User SIP Trunking Service Identity	Charging Control Function
P-CSCF Restoration			X	Optional Enhanced	Voice Messaging Service Identity SIP Trunking Dynamic User	



Table 8 Impacts per Feature

Traceability and Troubleshooting			X	Basic Enhanced	Voice Messaging Service Identity SIP Trunking Transit Dynamic User	
User Initiated Registration/Deregistration			X	Optional Enhanced	Voice Messaging Service Identity SIP Trunking Dynamic User	
VNF-LCM Workflows			X	Optional Enhanced	Voice Messaging Service Identity SIP Trunking Transit Dynamic User	ENM



5 Impact on CSCF Features

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

5.1 3rd Party Registration

This section describes the enhanced feature 3rd Party Registration.

5.1.1 Description

This enhancement enables 3rd party registration when an AS needs to redistribute users to another AS instance because of different reasons. In most cases, the 3rd party registration trigger is not configured for re-registration, which prevents traffic from being redistributed in time. This problem is solved by enabling the CM parameter `scscfReregAsEntry`.

Redistribution of AS traffic is only needed when AS caching is used, meaning when the parameter `as-profile` is set to 1 in the service profile of a user.

Each entry in the multi-value attribute `scscfReregAsEntry` holds an IP address of an AS instance. For these IP addresses, CSCF invokes 3rd party registration for re-registration requests when a 3rd party registration trigger is configured in the service profile of a user even if the Registration Type is not configured with re-registration.

An empty `scscfReregAsEntry` list means that this function is disabled.

When the traffic handover to the target AS node reaches the desired level, the `scscfReregAsEntry` for the specific AS is disabled.

5.2 OAM Management (Virtualized)

This section describes the enhanced feature OAM Management (Virtualized).

5.2.1 Description

ECIM for eVIP

eVIP is configured by pushing predefined eVIP configurations to the CSCF with the Parameter Database (PDB) tool.



New Diameter Stack

The C-Diameter stack is integrated with the vCSCF and removed from vDicos. It is backward compatible, but there are some additional O&M-related enhancements.

Three new alarms, C-Diameter, Diameter Measurement Threshold Crossed, C-Diameter, Peer Connection Congestion, and C-Diameter, RTT to Remote Node Exceed Limits are added. For more information, see Section 3.2.2.5 New Alarms on page 8.

New Diameter throughput/latency Performance Management counters are introduced, see Section 3.2.4.5 New Counters on page 10.

Log Management Framework

With the introduction of the Log Management (LogM) framework, centralized registered log stream management through the Northbound Interface (NBI) is possible. This includes setting the severity filter, performing a manual export of logs, and configuring automatic streaming of log entries towards a log server.

5.3 Offline Charging

This section describes the enhanced feature Offline Charging.

5.3.1 Description

Backup Handling

The Additional Text of alarm CSCF Charging Backup File System Unavailable is updated to indicate that the alarm occurs when backing up charging requests fail because of disk full or disk writing failure.

When the charging backup file system fails to back up charging requests because of disk full or disk writing failure, the charging requests are cached in the memory for a predefined time. During the predefined time, the system retries to back up charging requests for predefined times. After all retries fail, the charging requests are lost.

5.4 P-CSCF Restoration

This section describes the enhanced feature P-CSCF restoration.

5.4.1 Description

The condition to trigger the P-CSCF restoration procedure in S-CSCF is expanded from only triggering when access types contain the strings 3GPP-GERAN, 3GPP-UTRAN, or 3GPP-E-UTRAN, to also trigger when they contain 3GPP-NR.



5.5 Traceability and Troubleshooting

This section describes the enhanced feature Traceability and Troubleshooting.

5.5.1 Description

CSCF Health Check Single Sign-On Support

The vCSCF supports Single Sign-On for the CSCF health check to align with the health check functions of the other IMS nodes to simplify the use of the Core Network Operations Manager (CNOM).

5.6 User Initiated Registration/Deregistration

This section describes the enhanced feature User Initiated Registration/Deregistration.

5.6.1 Description

The S-CSCF stores the content of the PVNI header of a selected contact in the originating SIP INVITE request. Any PVNI content stored in REGISTER of the same contact is overwritten by the S-CSCF. Stored PVNI content is not removed if there is no PVNI header in the incoming INVITE.

5.7 VNF-LCM Workflows

This section describes the enhanced feature VNF-LCM Workflows.

5.7.1 Description

Time-Based Scaling

The Managed Scaling workflow can be also triggered for time-based scaling on VMware.