Oracle® Communications Convergent Charging Controller

Release Notes

Release 12.0.0

December 2017

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Contents

About the Release Notes

This document provides the release notes for the new and enhanced features introduced between Oracle Communications Convergent Charging Controller release 6.0.1 and Oracle Communications Convergent Charging Controller release 12.0.0.

New Features

Convergent Charging Controller 12.0.0 includes the following enhancements:

- Installation Enhancements
- Compatibility Enhancements
- BRM Charging Driver Enhancements
- Data Access Pack Enhancements
- Diameter Charging Driver Enhancements
- Messaging Manager Enhancements
- Voucher Enhancements
- Voucher Security Enhancements

Installation Enhancements

This section describes the enhancements to the installer.

High Availability on Linux

This release supports Convergent Charging Controller SMP on Linux for High Availability and Disaster Recovery requirements.

Key HA features

Convergent Charging Controller can remain available in various failure conditions. Convergent Charging Controller in an HA environment has the following key features:

- Distributed multiprocess, multi-node, multi-system, and multi-site deployment with application resiliency and fault tolerance
- Application service HA with automatic process recycling and fail-over
- Hardware HA through redundancy and configuration

Disaster recovery

Disaster recovery requires that you set up a remote instance of Convergent Charging Controller that can be activated in the event of a catastrophic failure at the production site. An HA system for Convergent Charging Controller, consisting of multiple clustered servers, is usually limited by the length of the cables connecting the shared data disk devices and the network interfaces. A remote disaster recovery site that is geographically dispersed requires access to the same resources as the production site, including:

- Network connectivity to clients
- Hardware
- Up-to-date Convergent Charging Controller configuration data
- Dynamic provisioning data

An HA environment requires regular system backups and data replication mechanisms. Data backup must be implemented independent of Convergent Charging Controller.

Compatibility Enhancements

This section describes the enhancements to compatibility.

Oracle Linux 7.3 Support

Convergent Charging Controller is now supported on Oracle Linux 7.3. Convergent Charging Controller 12.0.0 is certified on Oracle Linux 7.3 with critical patch updates.

For more information about installing Convergent Charging Controller with Oracle Linux, see *Convergent Charging Controller Installation Guide.*

BRM Charging Driver Enhancements

This section describes the enhancements to BRM Charging Driver (BCD).

Suppress PCM_OP_TCF_AAA_* Messages

You can now suppress sending of PCM_OP_TCF_AAA_* messages by configuring the 'suppressAAAMessages' parameter in the BCD.bcdActionHandler section of the config file. This parameter takes the values "true" or "false". The default value is "false". When suppressAAAMessages is set to 'true', no PCM_OP_TCF_AAA_* messages will be sent. When the suppressAAAMessages is set to 'false', PCM_OP_TCF_AAA_* messages will be sent.

For more information, see the *BRM Charging Driver Technical Guide.*

TCF AAA Opcodes

This release includes the TCF AAA opcodes. OC3C calls the BRM TCF AAA opcodes and alternate BRM opcodes for retrieving balances and account details.

For more information, see the *BRM Charging Driver Technical Guide.*

Data Access Pack Enhancements

LDAP Query for ECE Selection using DAP

You can now retrieve a value from an LDAP server and place it in a temporary profile field to allow branching on its value.

With an active-active ECE deployed with the OC3C convergent (subscriberless) solution, you can now find the right ECE to communicate with for a Gy session by sending the MSISDN from a profile tag in an LDAP lookup. The LDAP reply can be used by DCD to communicate with the correct ECE Diameter Gateway (DGW).

For more information, see the *Data Access Pack User's and Technical Guide.*

Diameter Charging Driver Enhancements

This section describes the enhancements to Diameter Charging Driver (DCD).

Support for 3GPP R14 (Gy RAR)

Convergent Charging Controller has been enhanced to support the 3GPP R14 Gy Diameter specification.

With this release, ongoing Diameter sessions will now be informed of certain "out-of-band" events, such as voucher balance top-ups or depletions, which may affect obtainable reservation durations. The client (by means of a server-initiated RAR message) will be prompted to resubmit a new CCR-UPDATE. Diameter Control Agent (DCA) has been enhanced with capabilities to initiate RAR and process incoming RAA and CCR-U response sequences.

For more information, see the following guides:

- Diameter Charging Driver Technical Guide
- Diameter Control Agent Technical Guide

Support for Policy Integration

With this release, Convergent Charging Controller supports 3GPP TS 29.219 and implements spending limit reporting over Diameter Sy reference point. Convergent Charging Controller provides a Diameter Sy interface that enables policy rules to be applied by a PCRF.

For more information, see the *Diameter Sy Interface Technical Guide*.

Messaging Manager Enhancements

This section describes the enhancements to Messaging Manager.

Auditing of SMS Text

This release provides the Messaging Manager auditing feature. Messaging Manager auditing allows SMS text to be audited. To activate auditing, the smsAuditing section of the xmsTrigger configuration must be set to enabled.

For more information, refer to the *Messaging Manager Technical Guide*.

Voucher Enhancements

This section describes the enhancements to Vouchers.

Decryption of Voucher HRN Private Secret

Convergent Charging Controller now supports decryption of a voucher's private secret to view its HRN. You can now view a decrypted HRN for a voucher, provided that you have the appropriate required permissions. Decryption of voucher HRN private secret is supported both through the Provisioning Interface and the GUI.

The decryption operation is supported only for HRNs encrypted using a symmetric cipher.

For more information, see the *Voucher Manager User's Guide*.

New Voucher Commands Over SOAP

In previous releases, Convergent Charging Controller performed the voucher recharge reservation and commit actions in a single-step feature node, communicating with an OCS (Online Charging System) using the Diameter protocol.

With this release, you can now call the voucher reserve, recharge, revoke and commit actions separately so that you can use mediation platform upstream to manage the voucher orchestration.

This release introduces new commands and feature nodes for voucher reservation and voucher commit and revoke. These commands are available over SOAP.

The voucher reservation function returns all information about the voucher reservation from the VWS. With the information, the upstream mediation platform can make the appropriate decision on what step to take next. You can send recharge requests directly to the OCS via SOAP as Convergent Charging Controller acts as a Voucher Management and Mediation Platform. You can send all requests between the upstream platforms, SLC and OCS over SOAP so that you can integrate your platforms over a preferred corporate enterprise protocol.

For more information, see the *Feature Nodes Reference Guide*.

Support for encrypting Voucher HRNs

With this release, Convergent Charging Controller supports generation of voucher private secrets by encrypting voucher HRNs using AES-256 symmetric block cipher. You can encrypt voucher HRNs to generate and view the private secrets.

Encryption of voucher HRN is supported through the GUI.

For more information, see the *Voucher Manager User's Guide*.

Voucher Security Enhancements

This section describes the enhancements to Voucher Security.

New Authentication Module

The voucher security feature is now enhanced with CB-10 HRN AES256 authentication module. The CB-10 HRN AES256 authentication modules allow multiple levels of encryption. You can configure the number of iterations of encryption when authentication rule for CB10 HRN AES is defined. For more information about Voucher Security, see *Charging Control Services User's Guide*.

Known Problems

List of Known Problems

There are no known problems with this release.

Fixes in This Release

List of Fixes

The following table lists service request issues reported by external sources that have been fixed in this release. The issues are listed for each component in order of BugDB number.

Service Request (SR) Number	Bug DB Number	Component	Title
	26522211	ACS	acsMacroNodes shows unterminated string in debug
3-15593273881	26450240	ACS	Copying to Calling Logical Number causes unterminated string from normalisation
3-15367909941	26450240	ACS	Copying to Calling Logical Number causes unterminated string from normalisation
3-15267341351	26450240	ACS	Copying to Calling Logical Number causes unterminated string from normalisation
3-15283188361	26257204	ACS	Integer profile fields are interpreter incorrectly
3-15091099781	26257204	ACS	Integer profile fields are interpreter incorrectly
3-9463361881	19418665	ACS	Loop limit node makes a fatal engine error if configured for 0 loops
3-15157327591	26316501	ACS	Mid-call BFT in UATB takes wrong exit
3-15593273881	26495334	ACS	OC3C 6.0.1 Calling Party ID in Control Plan causes unwanted Prefix
3-15367909941	26495334	ACS	OC3C 6.0.1 Calling Party ID in Control Plan causes unwanted Prefix
3-15267341351	26495334	ACS	OC3C 6.0.1 Calling Party ID in Control Plan causes unwanted Prefix
3-15616358911	26703080	ACS	OC3C issue with Reading Integer Based profile Fields
3-15668029831	26703080	ACS	OC3C issue with Reading Integer Based profile Fields
3-13828274391	25301531	ACS	Processes in slee-ctrl status output missing after NCC 5.0.3 upgrade
3-7226090918	16854337	ACS	Profile counter always exit to error on updating an empty value of profile field
3-14484187651	25810873	ACS	Random Behavior of Promotion Trigger causing DAP notification failure
3-14921250498	26093067	ACS	Slee crash because because trying to use non 2n event, and event overrun
3-15076916933	26269996	ACS	slee_acs memory leak on SCP
3-15696261571	26788373	ACS	Unable to use Copy Node to convert Hex to Integer
3-15409277231	26608372	ACS	Undocumented Hidden ACS Parameter Defaults to ACS Not Working Properly
3-15629834211	26712626	BCD	BCD Reads Beyond Profile Tag Length
3-14537539981	25765337	BE	beVWARS blocks all signalls
3-14344303861	25599498	BE	Promotion is not fired due to missing CHANNEL value
3-14379401771	25652404	BE	VWS does not create reservation due expiredNotRemoved flag
3-13321501461	25211966	CCS	Balance overflows in EDR view of subscriber in screens

3-14122152231	25471925	CCS	Copy Balance FN Incorrectly Aligns Integer Data Type
3-15283188361	25471925	CCS	Copy Balance FN Incorrectly Aligns Integer Data Type
3-13094674211	24426568	CCS	DUCR/ATC Charging With Multi-Tariffs Does Not Observe Cascades
3-12875346531	23609086	CCS	DURATION_CHARGED Not Respecting Billing Resolution
3-14256216521	25559131	CCS	EDR costs field is not scaled
3-13827123521	25236980	CCS	GenBeClient Failing on NCC 5.0.3 Version
3-13923062111	24314350	CCS	Negative Balances when using ATCs with Balance Cascades
3-13022803621	24314350	CCS	Negative Balances when using ATCs with Balance Cascades
3-14797849891	25981598	CCS	Voucher Handler Doesn't Write Custom EDR Tags
3-15453014751	26560250	DAP	DAP does not populate XML tag parameters
3-14815797951	26022019	DAP	DAP fails to read response parameters even with generic path
3-14886842631	26078690	DAP	dapIF fails when HTTP response not parsed correctly
3-12569677831	23182173	DCA	DCA ERROR: Session timed out in state WaitingForReconnect
3-14546263891	25773787	DCA	DCA on 5.0.3 performance issues
3-14722248991	25773787	DCA	DCA on 5.0.3 performance issues
3-15161929691	26352368	LCP	The STML feature node is truncating the 15 digits of MSRN to a 14 digit
3-15541109881	26660814	OSD	Binary for decoding the be_event_storage table data
3-15458685631	26558422	OSD	osdInterface ERROR: Could not bind to UNKNOWN at port 0: Unknown error
3-15373391921	26558422	OSD	osdInterface ERROR: Could not bind to UNKNOWN at port 0: Unknown error
3-14454786031	25701948	OUI	CCC 6.0.0 installation - dapIf not starting on VWS without DAP section
3-14852092881	26023280	OUI	DB Indexes located in USERS tablespace on SMS
3-15230878981	26370896	OUI	Patch installation order for OC3C upgrade from 6.0.0 to 6.0.1
3-14432408361	25681674	PI	CCSBPL=EXT1 finished with Error
3-13181134621	24459775	PI	Bad response times on PI
3-11727702631	22259042	SIP	SCA Does Not Preserve PAI in Subsequent Invites
3-15631525071	26714009	SLEE	check-SLEE.sh Contains Bad nawk Regex Expression
3-14673050511	25877636	SLEE	SLEE Temp File Deleted After 10 Days by Default
3-11755883761	24438815	SLEE	slpit crash after missing connect/destroutingaddr parameter in slp file
3-15114843441	26266923	SMS	CCC 6.0.0 installation - smsLogCleaner under wrong user for OSD log on SMS
3-14832766561	26023112	SMS	High MEM_UTIL Value in SMF_STATISTICS post NCC 5.0.3 Upgrade
3-12986518741	24288211	SMS	Regular_expression from SMF_ALRM_DEFN not matching coresponding alarm text
3-15213558681	26358538	SMS	when SELinux is on permissive mode: smsAlarmDaemon restart, smsAlarmManager core

| 3-14686903941 | 25950747 | USSD_GW | USSD balance showing incorrectly to customers |
| 3-14986601467 | 26147068 | XMS | xmsAgent crash and produce core file |

About Convergent Charging Controller Documentation

Where to Start

The first guides to look at should be those that help with the installation and configuration of the Convergent Charging Controller software.

The next set of guides should be those pertaining to your usage of the Convergent Charging Controller software.

The guides have been generally classified according to their use.

Charging and Control Management Guides

The following table lists the primary charging and control guides.

Guide Title	File Name
Charging Control Services Technical Guide	ccc_1200_ccs_tg.pdf
Charging Control Services User's Guide	ccc_1200_ccs_ug.pdf
Voucher Manager Technical Guide	ccc_1200_voucher_mgmt_tg.pdf
Voucher Manager User's Guide	ccc_1200_voucher_mgmt_ug.pdf
Voucher Print Shop Operations Guide	ccc_1200_voucher_print_shop_og.pdf

External Provisioning Interface Guides

The following table lists the external Provisioning Interface guides.

Guide Title	File Name
ACS Provisioning Interface Commands	ccc_1200_acs_pi_commands_og.pdf
CCS Provisioning Interface Commands	ccc_1200_ccs_pi_commands_og.pdf
MM Provisioning Interface Commands	ccc_1200_mm_pi_commands_og.pdf
NP Provisioning Interface Commands	ccc_1200_np_pi_commands_og.pdf
Provisioning Interface User's and Technical Guide	ccc_1200_pi_utg.pdf
VPN Provisioning Interface Commands	ccc_1200_vpn_pi_commands_og.pdf

Installation and Configuration Guides

The following table lists the primary installation and configuration guides.

Guide Title	File Name
Advanced Control Services Technical Guide	ccc_1200_acs_tg.pdf
Advanced Control Services User's Guide	ccc_1200_acs_ug.pdf
Concepts	ccc_1200_concepts.pdf
Configuration User's guide	ccc_1200_configuration_ug.pdf

Guide Title	File Name
Control Plan Editor User's Guide	ccc_1200_cpe_ug.pdf
Configuration User's guide	ccc_1200_configuration_ug.pdf
Feature Nodes Reference Guide	ccc_1200_feature_nodes_rg.pdf
High Availability Operations Guide for Solaris	ccc_1200_high_availability_solaris_og.pdf
High Availability Operations Guide for Linux	ccc_1200_high_availability_linux_og.pdf
Installation Guide	ccc_1200_installation.pdf
Release Notes	ccc_1200_release_notes.pdf
Service Logic Execution Environment Technical Guide	ccc_1200_slee_tg.pdf
System Administrator's Guide	ccc_1200_sysadmin.pdf
Testing Utilities User's Guide	ccc_1200_testing_utilities_ug.pdf

Messaging Manager Guides

The following table lists the primary messaging manager guides.

Guide Title	File Name
Messaging Manager Navigator Technical Guide	ccc_1200_mm_navigator_tg.pdf
Messaging Manager Technical Guide	ccc_1200_messaging_manager_tg.pdf
Messaging Manager User's Guide	ccc_1200_mm_message_mgmt_ug.pdf

Number Services Manager Guides

The following table lists the primary numbering manager guides.

Guide Title	File Name
Number Portability Service Pack Technical Guide	ccc_1200_np_service_pack_tg.pdf
Number Portability Service Pack User's Guide	ccc_1200_np_service_pack_ug.pdf

Other Components Guides

The following table lists the guides for other components.

Guide Title	File Name
BRM Charging Driver Technical Guide	ccc_1200_brm_charging_driver_tg.pdf
CAP3GPRS Control Agent Technical Guide	ccc_1200_cap3_gprs_ctrl_agent_tg.pdf
CAP3 SMS Gateway Technical Guide	ccc_1200_cap3_sms_gateway_tg.pdf
Data Access Pack User's and Technical Guide	ccc_1200_dap_utg.pdf
Diameter Control Agent Technical Guide	ccc_1200_dca_tg.pdf
Diameter Charging Driver Technical Guide	ccc_1200_dcd_tg.pdf
EDR Control Agent Technical Guide	ccc_1200_eca_tg.pdf
ENUM Control Agent User's and Technical Guide	ccc_1200_enum_utg.pdf
Location Capabilities Pack Technical Guide	ccc_1200_lcp_tg.pdf
Location Capabilities Pack User's Guide	ccc_1200_lcp_ug.pdf
Messaging Firewall Technical Guide	ccc_1200_mfw_tg.pdf
Notification Gateway Technical Guide	ccc_1200_ngw_tg.pdf

Guide Title	File Name
Open Services Development User's and Technical Guide	ccc_1200_osd_ug_tg.pdf
Radius Control Agent Technical Guide	ccc_1200_rca_tg.pdf
Radius Control Agent User's Guide	ccc_1200_rca_ug.pdf
Roaming Technical Guide	ccc_1200_roaming_tg.pdf
Service Management System Technical Guide	ccc_1200_sms_tg.pdf
Service Management System User's Guide	ccc_1200_sms_ug.pdf
Session Control Agent Technical Guide	ccc_1200_sca_tg.pdf
Short Message Charging Bundle User's and Technical Guide	ccc_1200_sm_charging_utg.pdf
SIGTRAN Technical Guide	ccc_1200_sigtran_tcap_if_tg.pdf
SMS Center Technical Guide	ccc_1200_sms_centre_tg.pdf
SMS Email Interface Technical Guide	ccc_1200_sei_tg.pdf
Subscriber Event Service User's and Technical Guide	ccc_1200_ses_utg.pdf
Universal Call Agent for ISUP Technical Guide	ccc_1200_uca_for_isup_tg.pdf
USSD Gateway Technical Guide	ccc_1200_ussd_gw_tg.pdf
USSD Gateway User's Guide	ccc_1200_ussd_gw_ug.pdf
Virtual Private Network Technical Guide	ccc_1200_vpn_tg.pdf
Virtual Private Network User's Guide	ccc_1200_vpn_ug.pdf
Voucher and Wallet Server Technical Guide	ccc_1200_vws_tg.pdf
XML TCAP Interface Technical Guide	ccc_1200_tcap_if_tg.pdf

Protected Guide

SDK Developer's Guide is in the separate Oracle Communications Convergent Charging Controller Developer Pack. A password is required to download this media pack.

Guide Title	File Name
SDK Developer's Guide	ccc_1200_sdk_dev_guide.pdf

Reference Guides

The following table lists the reference guides to use for Oracle Communications Convergent Charging Controller:

Guide Title	File Name
Advanced Control Services Alarms Guide	ccc_1200_acs_ag.pdf
BRM Charging Driver Alarms Guide	ccc_1200_brm_charging_driver_ag.pdf
CAP3GPRS Control Agent Alarms Guide	ccc_1200_cap3_gprs_ctrl_agent_ag.pdf
CAP3 SMS Gateway Alarms Guide	ccc_1200_cap3_sms_gateway_ag.pdf
CDMA U-CA-IS41 Alarms Guide	ccc_1200_cdma_u_ca_is41_ag.pdf
Charging Control Services Alarms Guide	ccc_1200_ccs_ag.pdf
Data Access Pack Alarms guide	ccc_1200_dap_ag.pdf
Diameter Charging Driver Alarms Guide	ccc_1200_dcd_ag.pdf
Diameter Control Agent Alarms guide	ccc_1200_dca_ag.pdf

Guide Title	File Name
ENUM Control Agent Alarms Guide	ccc_1200_enum_ag.pdf
Event Detail Record Reference Guide	ccc_1200_edr_rg.pdf
Location Capabilities Pack Alarms Guide	ccc_1200_lcp_ag.pdf
Messaging Manager Alarms Guide	ccc_1200_mm_ag.pdf
Messaging Manager Navigator Alarms Guide	ccc_1200_mm_navigator_ag.pdf
NP Service Pack Alarms Guide	ccc_1200_np_service_pack_ag.pdf
Open Services Development Alarms Guide	ccc_1200_osd_ag.pdf
Provisioning Interface Alarms Guide	ccc_1200_pi_ag.pdf
Radius Control Agent Alarms Guide	ccc_1200_rca_ag.pdf
Roaming Alarms Guide	ccc_1200_roaming_ag.pdf
Sample Message Flows Reference Guide	ccc_1200_msg_flows_rg.pdf
Security Guide	ccc_1200_security_rg.pdf
Service Logic Execution Environment Alarms Guide	ccc_1200_slee_ag.pdf
Service Management System Alarms Guide	ccc_1200_sms_ag.pdf
Session Control Agent Alarms Guide	ccc_1200_sca_ag.pdf
Short Message Charging Bundle Alarms Guide	ccc_1200_sm_charging_ag.pdf
SIGTRAN Alarms Guide	ccc_1200_sigtran_tcap_if_ag.pdf
SMS Center Alarms Guide	ccc_1200_sms_center_ag.pdf
SMS Email Interface Alarms Guide	ccc_1200_sei_ag.pdf
Subscriber Event Service Alarms Guide	ccc_1200_ses_ag.pdf
Universal Call Agent for ISUP Alarms Guide	ccc_1200_uca_for_isup_ag.pdf
USSD Gateway Alarms Guide	ccc_1200_ussd_gw_ag.pdf
Web Services Description Language Reference Guide	ccc_1200_wsdl_rg.pdf

Third-Party Products and Licensing

For all the Oracle Communications Convergent Charging Controller licensing information and all related third-party product acknowledgments, see *Oracle Communications Convergent Charging Controller Licensing Information User Manual*.