Oracle® Communications Convergent Charging Controller

Release Notes

Release 15.1

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About the Release Notes

This document provides the release notes for the new and enhanced features introduced between Oracle Communications Convergent Charging Controller (OC3C) release 15.0.1 and Oracle Communications Convergent Charging Controller (OC3C) release 15.1.

New Features

Convergent Charging Controller 15.1 includes the following enhancements:

- Support for Additional SIP Parameters (NPDI and RN)
- Support for Voucher Batch Generation Using Provisioning Interface
- Support for Forward to Number (FTN) by LCP Plugin
- Support for Long SMS Notifications
- Support for Java 21 and Helidon 4.x
- Support for Oracle Linux 9 (Runtime Only) and Oracle Database 19.25

Support for Additional SIP Parameters (NPDI and RN)

OC3C now supports sending NPDI and RN parameters in the SIP response from IN-SLC for SIP call. To support this, a new profile tag Routing Number is added which gets populated during control plan processing based on the location information from HLR or NPDB. By including both these parameters in the SIP Response, the system ensures proper call routing based on the latest portability information.

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

Support for Voucher Batch Generation Using Provisioning Interface

Earlier, OC3C only supported generating voucher batches using GUI or command line. Provisioning Interface allowed only single voucher generation.

OC3C is now enhanced to support generating voucher batches using Provisioning Interface. New options CVB and VBS are added to CCS PI voucher command CCSVR1 to trigger the voucher batch generation request and to check the status of the voucher batch generation.

For more information, see the following documents:

- *CCS Provisioning Interface Commands*
- *Provisioning Interface User's and Technical Guide*
- *Voucher Manager Technical Guide*

Support for Forward to Number (FTN) by LCP Plugin

Earlier, LCP only supported extraction of MSRN from SRI response sent from HLR. So, when SLC receives an MT Voice call over SIP invite, and if the Call Forward Unconditional is activated, SLC was unable to find MSRN in SRI response and hence forwards the call to the voicemail of the B-Party.

OC3C is now enhanced to support retrieving the FTN returned in SRI response and forward the call to that FTN instead of voicemail of B party. LCP plugin now supports FTN.

For more information, see *Location Capabilities Pack Technical Guide*.

Support for Long SMS Notifications

Earlier, there was a system limitation of 1021 bytes for SMS notifications. With this enhancement, SMS notification limit is increased from 1021 bytes to 2045 bytes.

Support for Java 21 and Helidon 4.x

OC3C is now certified with Java 21 and Helidon 4.x versions.

You can now access UI screens using java process through script files instead of Java Web Start (jnlp files).

Support for Oracle Linux 9 (Runtime Only) and Oracle Database 19.25

OC3C is now certified on Oracle Linux 9 (Runtime Only) and Oracle Database 19.25.

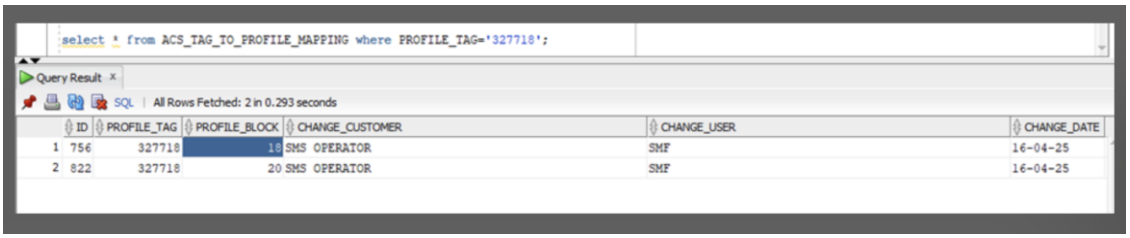
Support for Solaris is Deprecated

Solaris is no longer supported from OC3C 15.1 version.

Known Problems

List of Known Problems

- From Oracle DB 19.23 onwards, the default crypto algorithm has been changed while creating Oracle wallet. If 12c Oracle DB client is used and upgraded to the latest CCC, then there might be compatibility issues related to the default crypto algorithm used by Oracle wallet. So, you might need to re-create the Oracle wallet.
  Steps to create wallet:
  1. Take the back up of existing Oracle wallet directory.
  2. Create wallet directory in the existing directory.
     ```
     mkdir /path_to/wallet_directory/wallet
     ```
  3. Create a wallet.
     ```
     cd /path_to/wallet_directory/wallet
     orapki wallet create -wallet . -auto_login
     ```
  4. Create credentials in Oracle wallet with SID, db user, and db password.
     ```
     mkstore -wrl /path_to/wallet_directory/wallet -createCredential
     <DB_SID> <db_user> <db_password>
     ```
  5. Give permissions to the directory.
     ```
     sudo chmod -R 755 /path_to/wallet_directory/wallet
     ```
  6. Restart listener.
     ```
     lsnrctl stop
     lsnrctl start
     ```
- If the Routing Number profile tag **327718** is mapped to the profile block **18** in SMS node as shown in the below screenshot, then run the following steps:



In the SMS node:

– Login to SMS node as smf_oper.
– Connect sqlplus smf/<DB_PASSWORD_SMF_USER>
– Run the following query in SMS:

```
select * from ACS_TAG_TO_PROFILE_MAPPING where PROFILE_TAG='327718'
and PROFILE_BLOCK=18;
```

Note: If any records exist with the above query, perform the following operation to remove the PROFILE_BLOCK 18 mapped to PROFILE_TAG 327718. Here, 327718 is the Routing Number profile tag.

```
delete from ACS_TAG_TO_PROFILE_MAPPING where PROFILE_TAG='327718' and
PROFILE_BLOCK=18;

commit;
```

- If the following error is displayed in the Linux environment while applying 15.1 patch (during upgrade from 15.0.1 to 15.1), when using the rpm command:

```
rpm -ivh <PATCHNUMBER>.linux.rpm
Verifying... ################################## [100%]
Preparing... ################################## [100%]
file /usr/lib/.build-id/09/43d3c013e8c897a472751a9e92a66a26564a29 from
install of <PATCHNUMBER>-0.231-0.0.0.i686 conflicts with file from
package
<PATCHNUMBER>-1.0-0.0.0.i686
file /usr/lib/.build-id/5c/d223c31c826824b53ad2f8278c1289457ca15c from
install of <PATCHNUMBER>-0.231-0.0.0.i686 conflicts with file from
package
<PATCHNUMBER>-1.0-0.0.0.i686
```

Use the -- force option with the rpm command as follows:

```
rpm -ivh <PATCHNUMBER>.linux.rpm –force
```

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.

BUG Number	SR Number	Description
37514746	3-39459208091	**Issue Found:** Whenever customer was dialling a USSD string using iPhone with Arabic language, the USSD response is received as blank on Handset. **Solution Description:**

BUG Number	SR Number	Description
		The data coding scheme was hardcoded to 5, which was not correctly processed by iOS devices, thus resulting in a blank screen rather than used screen. For iOS devices, the correct data coding scheme is 4. We have provided an option to configure data coding group to 5 in USSD command line parameter.
37380453	3-39001596011	**Issue Found:** General Cash reservation for Data session in NRES (No Reservation) scenario for SRs add the existing reserved amount again to reserved funds. It leads to negative balance for reserved balance type on WRI (Wallet Reservation Information) query. **Solution Description:** We have handled the use case so that it does not add the reserved amount again in NRES scenario.
37359083	3-38913158841	**Issue Found:** 1. Profile tags type Unsigned 64-bit integer are not properly read from OSD request and stored in profile tag. 2. In wsdls u_int64 are compiled as string. That is <xs:element name="Test_64bit" type="xs:string" minOccurs="0"/> **Solution Description:** 1. Added support for Unsigned 64-bit profile tag in OSD. File modified: SOAPParsing.cc SOAPParsing.hh osdInterfaceCache.cc osdInterfaceCache.hh 2. As per the standard https://www.w3.org/TR/xmlschema-2/ u_int64 profile tags should be considered as unsignedLong while generating the wsdls.
37356237	3-38930153311	**Issue Found:** OC3C could not process long SMS text received from Siebel payload for SMS Notification with character up to 1400 max. OC3C generated the truncated text MMX EDR and sent the truncated text message to SMSC during SM_Submit message towards end user. Support required for parsing the long text in Arabic language and same should be written into MMX EDR as it is used for retrying mechanism. NCC is supporting a message of maximum 1021 English characters. This message length decreases while sending messages of other languages (where characters take 2 to 3 byte code points). The extra characters/ substring of sent message is truncated by SLEE and the rest of the message is sent to SMSC. **Solution Description:** Increase the maximum limit of SMS from 1021 to 2045 characters. The capacity of string type profile tags was 512 chars. With the message length getting enhanced, customer is finding the limit of profile tag inconvenient. As they must use multiple profile tags for every single message. To avoid this inconvenience, capacity of profile tag is increased to 1024 characters per PT. But main challenge with this enhancement is increased SLEE event size. The longer messages will send bigger sized SLEE events which might impact overall performance. So, a new class “Asn1DoubleOctetString” and corresponding methods are added to support longer SMS. This class is using the arrays and buffers to hold messages of up to 2045 octets.
37332320	3-38879017581	**Issue Found:**

BUG Number	SR Number	Description
		While installing 15.0.1.0.0, the Oracle home directory is auto filled with 12.2.0 on the screens where it asks for ORACLE HOME while running OUI installer. **Solution Description:** Updated the ORACLE_DB_HOME and ORACLE_CLIENT_HOME to display the correct path and set ORACLE_VERSION to the correct version in compdefxml.ccc and compdefxml.ncc.
37248967	3-38641234121	**Issue Found:** slee_acs was crashing when trying to convert integer to string. **Solution Description:** Made code changes to handle the invalid data configuration for config parameter AVPProfileTagData.
37228318	3-38250052991	**Issue Found:** CLI extract operation was failing within the EXN feature node due to improper handling of std::string initialization for input and output buffers. As a result, the Prefix variable became null or empty while running the CLI extract process. **Solution Description:** 1) Updated the initialization logic for the input and output strings. 2) Changed output to static to ensure it retains its state across function calls.
37209330	3-38509012971	**Issue Found:** ChangeCDR FN still expects 4-byte dates: When trying to use a PDS node to store the current date/time to a profile tag, then using a CCDR node to add said date/time to an ACS EDR, it fails with an error because the CCDR FN thinks the date/time should be 4-bytes. **Solution Description:** Added the support for 64-bit integers in CCDR FN for date type values.
37195374	3-38476158623	**Issue Found:** DAP2 macro node crashes while trying to convert 64-bit epoch value to timestamp. **Solution Description:** It needed to convert the epoch value to host byte order, so code changes are made to handle the same.
37136025	3-38291115631	**Issue Found:** MRQ function was exiting via the 6th branch (timeout) regardless of the query result, even when no timeout occurred. **Solution Description:** Modified rimsMapQueryNode.cc to use reinterpret_cast<RimsEventResponse*> for proper type casting when accessing result->data.buffer. Adjusted the structure RimsEventResponse in rimsChassisEventTypes.h, ensuring the timeoutOccurred flag is declared before the response message to align memory correctly.
37110623	3-37963285811	**Issue Found:**

BUG Number	SR Number	Description
		NCC was supporting a message of maximum 1021 English characters. While sending messages of other languages, the limit was decreasing further with the wider charset (i.e. Arabic in this case). **Solution Description:** Increased the maximum limit of SMS from 1021 to 2045 octets.
37107844	3-38164041299	**Issue Found:** IN not triggered (IDP request not forwarded to slee_acs) when <cgPn> and <cdPn> configured to "all"/generic type in tdp.conf in SCA module during SIP call. **Solution Description:** Added the capability to support "all" type of <cgPn> and <cdPn> numbers.
37093173	3-38111713101	**Issue Found:** OC3C is unable to send SM_SUBMIT to SMSC and generate transient failure error. Observed PRES=2 Error while sending SMS Notification to SMSC. **Solution Description:** Created string and extracted c-style string and passed it to iconv api.
36982736	3-37825444611	**Issue Found:** The findBalance() function was causing a beVWARS crash due to being called from balanceChangeBefore() and balanceChangeAfter() without proper handling for a null wallet scenario. **Solution Description:** In case the wallet is NULL, added a check for setContextWallet(walletId) to log an error and return early, preventing the dereferencing of a NULL pointer.
36931640	3-37168934141	**Issue Found:** The number of dcaIF slee events were increasing, indicating towards a leak of slee events. **Solution Description:** The newly created RAA SLEE event was not sent and were neither getting cleared properly there after resulting in a leak of slee events.
36891949	3-37311276101	**Issue Found:** beVWARS does not start if TLS/SSL is enabled. **Solution Description:** Maintaining separate connection for child and parent.
36742300	3-35929594721	**Issue Found:** ccsChangeDaemon starts sending WU requests even before the connection to VWS is established and results in "WARNING: Failed to send WalletUpdateRequest to billing engine" ccsChangeDaemon sends a WU req for all the entries of ccs_pc_queue table, causing many of them to be timed out "Communications Exception: Message sent to pair 1 timed out. **Solution Description:** Process will now check for a response of BEG before sending WU requests.

BUG Number	SR Number	Description
		Introduced a config parameter batchSize to configure the maximum number of ccs_pc_queue table entries to be recorded at once.
36731236	3-37085384911	**Issue Found:** The password entered by the user is printed in plaintext in debug logs. **Solution Description:** Changed the code to conceal the password and replaced the password logging by text “<PASSWORD>".
36680346	3-36931865271	**Issue Found:** when NCC generates a RAR, it always sets the End-to-End Identifier to 0. This causes issues with the receiving end which thinks the RAR is a duplicate and drops it. **Solution Description:** To fix this, we are setting end-to-end-id with a unique value for each RAR trigger. Unique value is a combination of "Seconds since Midnight" + "Milliseconds" + "Unique-ID" rand() function seeded with timestamp (till microsecond value) is used to generate the Unique-ID for more precise and uniquely identified number.
36649797	3-35929594721	**Issue Found:** PCs that Apply to Existing/Activating Subscribers are still being attempted to be subscribed to by ccsChangeDaemon. This causes the following error to be logged/thrown for each attempt: May 22 00:03:39.568974 ccsChangeDaemon(1923) ERROR: Error updating wallet 204. See file /IN/service_packages/CCS/logs/ccsChangeDaemon/ccsPCChange/failed.11.205: XNS : Subscriber not subscribed to periodic charge : Cannot update bucket, balance type has been deleted: 101 On the SMS ccsChangeDaemon handles periodic charge changes when a subscriber: • Is associated with a new wallet • Changes product type for a wallet The change to the CCS_AT_PERIODIC_CHARGE table triggers adding a new record to CCS_PC_QUEUE.ccsChangeDaemon. The daemon receives its tasks by reading CCS_PC_QUEUE table. Even though the PC assigned to product type expired/deleted, during new subscriber creation, and during changing of product type of wallet, even deleted PCs were getting subscriber by ccsChangeDaemon. **Solution Description:** Updated CCS_AAR_W_PCQ_AI and CCS_AAR_P_PCQ_AU triggers. Irrespective of number of periodic charges configured in product type during subscriber creation/changes of product type on a wallet, there will be one entry for a subscriber in CCS_PC_QUEUE table. So to resolve this issue the trigger is updated to delete the expired PC from CCS_AT_PERIODIC_CHARGE which holds the information about product type and periodic charge mapping and also Updated conditional based insert query to CCS_PC_QUEUE table.
36567810	3-35874115581	**Issue Found:** EDR tags are limited to store maximum length of 600 char resulting in char loss in EDR information. **Solution Description:** Code is modified to increase the length from 600 to 1000**.**

BUG Number	SR Number	Description
36561622	3-36747108837	**Issue Found:** ccsCDRTrimDB was unable to delete records from database and threw error. **Solution Description:** Updated voucher handler in VWS to generate proper values for CCS_ACCT_ID field in case account in not present in system (i.e. in OC3C). Updated ccsCDRTrimDB to handle 64-bit values for CCS_ACCT_ID field.
36550823	3-35010978591	**Issue Found:** Some applications logging to the same file causing Performance problems. **Solution Description:** Changed logging mechanism for below list of files by changing the OUI file used to manage logging. -timerIF -cdrIF -alarmIF -tfrApplication -acsStatsLocalSLEE Modified existing script file too for logging in separate log files: -BeClientStartup.sh
36294350	3-35110988541	**Issue Found:** smsStatsDaemon crashes daily due to memory corruption. There were 3 crash point related to this issue: 1. Process was getting crashed because of deleting a dangling or invalid pointer 2. Process was getting crashed during new memory allocation 3. Process was getting crashed during popen API **Solution Description:** Added the logic to handle the dangling/invalid pointer. Deleted overloaded new and delete function to allow it to call default new & delete function. Replaced popen API with alternate third_party API and implemented the logic to read/write the command/output. The Popen implementation calls fork(), which creates a new child process. The child process is a duplicate of the parent process. In the child process, Popen then calls exec() (or one of its variants) to replace the child process's memory with a new program or command specified by the user.
35510194	3-33362374731	**Issue Found:** In the multi-tariff scenario, the rating engine makes reservations against all the balance cascades associated in the multi-tariff CLI-DN based on the rate defined for tariffs. So, when the reservation rounds down to 0, then during charging it sees the zero reservation and doesn't charge, making it a free call. **Solution Description:** Changes made to modify the default value of "skipZeroBalances" to false.
35275453	3-32641722911	**Issue Found:** beVWARS crashes intermittently in production set up. Whenever beVWARS tries to use extended map for the processing of escher messages, it crashes with SIGSEV or SIGBUS. **Solution Description:** Corrected the proper offset value to read TariffChangeRatingChangeDetail data.

BUG Number	SR Number	Description
35236662	3-32596638841	**Issue Found:** mipt doesn't set the SCTP PPI in sctp packet, hence wireshark fails to decode it and it shows as "Payload protocol identifier: not specified (0)". **Solution Description:** Added support for sctp API to send PPI in sctp packet
28229022	3-16916685101	**Issue Found:** During log file creation, the filename is set only at startup and does not dynamically reflect the actual runtime timestamp. This leads to a mismatch between the timestamps in debug logs and the log file names. For example: * Debug Message Timestamp: 2018/06/17 11:13:23 * Filename Timestamp: removedWallet19875-20180517145825.log **Solution Description:** 1. Unconditional Filename Creation: * The conditional check if (filename[0] == '\0') was removed to ensure createFilename() is always invoked when opening a new log file. 2. Dynamic Filename Update: * Ensures the log filenames are generated with the correct runtime timestamp during initialization.

About Convergent Charging Controller Documentation

Where to Start

Convergent Charging Controller product documentation is available on Oracle Help Center: https://docs.oracle.com/communications/G13323_01/index.htm

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.

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*.