

**Oracle® Communications
Offline Mediation Controller**

Patch Set 3 Release Notes

Release 6.0

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Preface

This guide includes information about Oracle Communications Offline Mediation Controller 6.0 patch sets.

Audience

This guide is intended for all Offline Mediation Controller users.

Downloading Oracle Communications Documentation

Product documentation is located on Oracle Help Center:

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Document Revision History

The following table lists the revision history for this guide:

Version	Date	Description
E36137-01	July 2013	Initial release. Information about Patch Set 1 features, which are identified by "(Patch Set 1)", is added.
E36137-02	May 2014	Information about Patch Set 2 features, which are identified by "(Patch Set 2)", is added.

Version	Date	Description
E36137-03	June 2015	Information about Patch Set 3 features, which are identified by "(Patch Set 3)", is added.

Summary of Customer-Reported Fixes

This chapter provides an overview of the customer-reported bug fixes that were introduced in Oracle Communications Offline Mediation Controller 6.0 Patch Set 1 through Offline Mediation Controller 6.0 Patch Set 3.

Customer-Reported Fixes

[Table 1–1](#) lists the service request (SR) issues reported by external sources and provides a brief description of the resolution. The SRs are grouped by the respective patch sets.

Table 1–1 Customer-Reported Fixes

SR Number	Bug Number	Description
3-9327651021	19332428	(Patch Set 3) When the output directory of the GTP Collection Cartridge was full, though the input records were not being processed by the cartridge and the error messages were being logged, the cartridge was sending out acknowledgment messages to Charging Data Function (CDF) to indicate successful processing of records. This has been fixed.
3-10412915221	21024415	(Patch Set 3) The default expiry of the certificates generated by the packaged scripts to configure Secured Socket Layer (SSL) was 90 days. Even after the expiry of the certificates the mediation system components were communicating with each other. This has been fixed.
3-8509580748 3-8831133321	18289271 18645161	(Patch Set 2) In the previous releases, ASN.1 Collection Cartridge (CC) was not able to collect records with header information from Packet Data Network Gateway (PGW). This has been fixed.
3-7909128491	17634106	(Patch Set 2) When a node manager is restarted, the Aggregation Processor (AP) cartridge flush timer values were getting reset to the configured Flush Time value. Because of the timer reset, the node kept the keys for an extended period of time, which resulted in continuous increase in the heap. This has been fixed.
3-5572269481	14026828	(Patch Set 1) The JDBC Distribution Cartridge returned an "invalid data" error message instead of an appropriate error message. This has been fixed.

Table 1–1 (Cont.) Customer-Reported Fixes

SR Number	Bug Number	Description
3-6030687741	14556210	<p>(Patch Set 1) Upon reaching the maximum limit for its size, the log file was overwritten without a timestamp copy being saved.</p> <p>This has been fixed.</p> <p>See "Maximum Log File Size for Cartridges Increased to 2 GB (Patch Set 1)" for more information.</p>
3-6003050161	14592915	<p>(Patch Set 1) During record processing, the JDBC Distribution Cartridge was throwing a "Maximum open cursors exceeded" error message.</p> <p>This has been fixed.</p>
3-6321602031	15940707	<p>(Patch Set 1) The NAR Distribution Cartridge was not considering the value in the Max Records Per File field to close the output file for distribution.</p> <p>This has been fixed.</p>
3-6564967051	16198610	<p>(Patch Set 1) When directing a connection from one node to another using Administration Client, the connections between the nodes were getting dropped.</p> <p>This has been fixed.</p>
3-7020554301	16731086	<p>(Patch Set 1) Administration Server and Administration Client start-up scripts did not have Java Virtual Memory heap memory configuration and hence these processes were taking a large amount of heap space during start-up and run-time.</p> <p>This has been fixed.</p>

New Features

This chapter provides an overview of the feature enhancements introduced in Oracle Communications Offline Mediation Controller 6.0 Patch Set 1 through Offline Mediation Controller 6.0 Patch Set 3.

Note: Offline Mediation Controller 6.0 patch sets are cumulative. Offline Mediation Controller 6.0 Patch Set 3 includes all the changes introduced in Offline Mediation Controller 6.0 Patch Set 1 through Offline Mediation Controller 6.0 Patch Set 3.

New Features in Offline Mediation Controller 6.0 Patch Set 3

Offline Mediation Controller 6.0 Patch Set 3 includes enhancements to the following components:

- [Administration Client Enhancements](#)
- [Cartridge Pack Enhancements](#)
- [Support and Certification Enhancements](#)

Administration Client Enhancements

This section describes the enhancements to Administration Client.

Offline Mediation Controller Now Supports Compiling the NPL Rule File in NPL Editor (Patch Set 3)

In the previous releases, when you edited a node programming language (NPL) rule file in Offline Mediation Controller NPL Editor, there was no option to compile and validate the NPL rule file in NPL Editor. The NPL rule file was compiled when you saved the node. If the compilation failed, the node could not be saved.

With this patch, you can now compile and validate the NPL rule file in NPL Editor and make changes in the NPL rule file in case of any validation errors.

Compiling the NPL Rule File in NPL Editor

To compile the NPL rule file in NPL Editor:

1. Log on to Offline Mediation Controller Administration Client.
The Node Hosts & Nodes (logical view) screen appears.
2. In the **Mediation Hosts** table, select a host.

3. In the **Nodes on Mediation Host** section, select a node and click **Edit**.
The Node dialog box appears.
4. From the **Rule File** list, select an NPL rule file and click **Edit**.
The NPL Editor dialog box appears.
5. If you have any changes, modify the rule file.
6. From the **Actions** menu, select **Compile**.
The NPL rule file is compiled and the result is displayed in the **Compilation result** section. If the compilation fails, update the rule file and recompile.
7. Save the file and close the NPL Editor dialog box.

Offline Mediation Controller Now Supports Searching for NPL Functions in NPL Editor (Patch Set 3)

With this patch, you can now search for the NPL functions in the NPL functions table and filter the NPL functions to view the required function.

Searching for NPL Functions in NPL Editor

To search for NPL functions in NPL Editor:

1. Log on to Offline Mediation Controller Administration Client.
The Node Hosts & Nodes (logical view) screen appears.
2. In the **Mediation Hosts** table, select a host.
3. In the **Nodes on Mediation Host** section, select a node and click **Edit**.
The Node dialog box appears.
4. From the **Rule File** list, select an NPL rule file and click **Edit**.
The NPL Editor dialog box appears.
5. From the **Lookup** menu, select **Builtin Functions**.
The NPL Functions table dialog box appears.
6. In the search field, enter a function name.
As you enter text, the list of functions is displayed.

Note: Do not enter the CTRL keys, function keys, and the arrow keys in the search field.

If you enter a space character in the search field, it is considered as a NULL character and the trailing space characters entered at the end of the search string are truncated.

7. Close the NPL Functions table dialog box.
8. Save the file and close the NPL Editor dialog box.

Use Host Name When Configuring the Host in Offline Mediation Controller (Patch Set 2)

With this patch, you can now enter the Internet Protocol address or the host name of the computer on which the application is installed, **localhost**, or **127.0.0.1** when configuring the host in the following locations:

- The Map dialog box when mapping Node Manager during import customization and import configuration in Administration Client
- The **addhost**, **import**, and **export** commands in NMShell

Configuring the Java Virtual Machine Memory Usage when Running Administration Client (Patch Set 1)

You can now configure the maximum and minimum memory sizes the Java Virtual Machine (JVM) uses when running Administration Client. By configuring the maximum memory size, you can reduce the amount of memory JVM uses when running Administration Client.

To set the maximum and minimum memory sizes:

1. Open the *OMC_Home/bin/gui* file in a text editor, where *OMC_Home* is the directory in which Administration Client is installed.
2. Add or modify the following entries:

```
InitializeExternalConfig(){
    NM_MIN_MEMORY=value
    NM_MAX_MEMORY=value
}
```

where *value* is the appropriate value for the respective entry.

For example:

```
InitializeExternalConfig(){
    NM_MIN_MEMORY=1024
    NM_MAX_MEMORY=3500
}
```

3. Save and close the file.

Administration Server Enhancements

This section describes the enhancements to Administration Server.

Configuring the Java Virtual Machine Memory Usage when Running Administration Server (Patch Set 1)

You can now configure the maximum and minimum memory sizes the JVM uses when running Administration Server. By configuring the maximum memory size, you can reduce the amount of memory JVM uses when running Administration Server.

To set the maximum and minimum memory sizes:

1. Open the *OMC_Home/bin/adminsvr* file in a text editor.
2. Add or modify the following entries:

```
InitializeExternalConfig(){
    NM_MIN_MEMORY=value
    NM_MAX_MEMORY=value
}
```

```
}
```

where *value* is the appropriate value for the respective entry.

For example:

```
InitializeExternalConfig() {  
    NM_MIN_MEMORY=1024  
    NM_MAX_MEMORY=3500  
}
```

3. Save and close the file.

Cartridge Pack Enhancements

This section describes the enhancements to the cartridge packs.

Offline Mediation Controller Now Supports Enhanced Duplicate Checks (Patch Set 3)

With this release, you can now configure a duplicate check enhancement processor (EP) cartridge, which identifies duplicate records while processing the call detail records (CDRs).

For more information, see *Offline Mediation Controller Enhanced Duplicate Check Cartridge User's Guide*.

Offline Mediation Controller Now Supports Enhancing CDRs for Charging (Patch Set 3)

Offline Mediation Controller collects CDRs from different input sources and normalizes the CDRs by mapping the following external data to the internal data formats that are supported by Oracle Communication Billing and Revenue Management (BRM) before sending the enhanced records to the next node in the mediation node chain:

- Social number
- Prefix description
- Service code
- Usage class
- Access point name (APN)

With this release, you can now configure a record enhancement charging EP cartridge node to enhance the CDRs for charging before sending the records to the next node in the mediation chain.

Offline Mediation Controller Now Supports Oracle CDR Format (Patch Set 3)

With this release, Offline Mediation Controller now supports collecting CDR input files conforming to the Oracle CDR format, which is the CDR file format used by BRM. You can now configure an Oracle CDR Format Collection Cartridge (CC) node to collect the CDR input files in the Oracle CDR format, parse the data in the Oracle CDR format into a NAR file using the configured schema, and send the records to the next cartridge node.

For information about Elastic Charging Engine (ECE) Distribution Cartridge (DC) mapping to support Oracle CDR format, see *Offline Mediation Controller Elastic Charging Engine Cartridge Pack User Guide*.

Configuring the Oracle CDR Format CC Node

To configure the Oracle CDR format CC node:

1. Log on to Offline Mediation Controller Administration Client.
The Node Hosts & Nodes (logical view) screen appears.
2. In the **Mediation Hosts** table, select a host.
3. In the **Nodes on Mediation Host** section, click **New**.
The Create a Node dialog box appears.
4. Select **Cartridge Kit** and click **Next**.
5. Select **Collection Cartridge (CC)** and click **Next**.
6. Select **Oracle CDR Format File Collection Cartridge** and click **Finish**.
The New Node dialog box appears.
7. In the **Name** field, enter a name for the node.
8. From the **Rule File** list, select the rule file that matches the type of input file processed by the CC node.
To edit the rule file, see ["Configuring the NPL Rule File for Oracle CDR Format"](#).
9. Click the **General** tab and do the following:
 - a. From the **Debug** list, select one of the following:
To log short debug messages in the node log file, select **OFF**.
To log detailed debug messages in the node log file, select **ON**.
 - b. In the **Max Log File Size** field, enter the maximum size in bytes for the log file. When the log file reaches its limit, the node closes the file and opens a new file. The minimum value is **50000** and the maximum value is **2000000000**.
 - c. Select the **Enable Statistics** check box, which enables node statistics.
 - d. Select the **Enable bulk read/write** check box, which enables the node to read or write files in bulk.
 - e. In the **NARs Per File** field, enter the maximum number of NARs allowed in an output file. The minimum value is **1** and the maximum value is **10000**.
 - f. In the **Idle Write Time** field, enter the number of seconds Offline Mediation Controller waits before transferring the NAR output file to the output directory of the processing node, whether or not it has reached its maximum size. The minimum value is **1** and the maximum value is **3600**.
10. Click the **File Location** tab and do one of the following:
 - To collect files using File Transport Protocol (FTP), select **Files are pulled (via FTP)**, and do the following:
In the **Local Directory** field, enter the path and name of the directory where the CDR input files after collection are stored.
In the **Prefix of Files after Collection** field, enter the prefix to rename the CDR input file after collection.
In the **Suffix of Files after Collection** field, enter the suffix to rename the CDR input file after collection. The default is **.done**.

Select the **Delete Files After Processing** check box, which deletes the CDR files after processing.

- To collect files from a directory, select **Files are pushed to this node**, and do the following:

In the **Check for New Files Period** field, enter the duration of time that the node waits before checking for new files in the input directory. You also select the time unit: **Seconds**, **Minutes**, or **Hours**.

In the **Local Directory** field, enter the path and name of the directory that contains the input files to process.

Configure a file pattern: To configure a file pattern for the input files, select **Prefix** and enter the prefix in the **Prefix** field and suffix in the **Suffix** field. The default for **Suffix** is **.complete**; to configure a regular expression file pattern, select **Reg.Expr** and enter a file name pattern. To test the regular expression, click **Test**.

In the **Prefix of Files after Collection** field, enter the prefix to rename the CDR input file after collection.

In the **Suffix of Files after Collection** field, enter the suffix to rename the CDR input file after collection. The default is **.done**.

Select the **Delete Files After Processing** check box, which deletes the CDR files after processing.

11. If you selected **Files are pulled (via FTP)**, click the **FTP Settings** tab and do the following:

- a. From the **FTP Interval** list, select the interval in minutes or hours the node waits before checking for incoming data.
- b. From the **Interrupt Timer Delay** list, select the default timeout for the FTP client when opening a socket.
- c. Select the **Delete remote files** check box, which deletes the CDR files from the remote location after the files are collected.
- d. Select the **Rename remote files** check box, which renames the CDR files in the remote location after the files are collected.
- e. Click **Add**.

The FTP Configuration dialog box appears.

- f. From the **FTP Type** list, select one of the following:

If the client initiates the control connection with the server and the server initiates the data connection with the client, select **Regular**.

If both the data and the commands are transferred in specially formatted packets through a single connection, select **Secure (SFTP)**. When using SFTP, all data sent between the client and the server is encrypted using an encryption cipher.

If the client initiates all connections with the server, select **Passive**. The server informs the client about the port to be used for the data connection.

- g. In the **Host** field, enter the IP address of the FTP server.
- h. In the **Username** field, enter a valid user name for accessing the FTP server.
- i. In the **Password** field, enter the password for the user name.

- j. In the **Verify Password** field, re-enter the password used in the **Password** field.
- k. In the **Directory** field, enter the name of the remote directory that contains the input files to process.
- l. Configure a file pattern: To configure a file pattern for the input files, select **Prefix** and enter the prefix in the **Prefix** field and suffix in the **Suffix** field; to configure a regular expression file pattern, select **Reg.Expr** and enter a file name pattern. To test the regular expression, click **Test**.
- m. Click **OK**.

The FTP configuration is saved and the FTP Configuration dialog box closes.

12. Click the **Advanced tab and do the following:**

- a. Select the **File Level Transaction** check box, which enables file-level transactions.
- b. Select the **Reject Files With Duplicate File Name** check box, which enables validating the name of the input file for duplicate file names.

The **Expiry Time to Reject Duplicate Files** field is enabled.

- c. In the **Expiry Time to Reject Duplicate Files** field, enter the time in minutes after which the file names are flushed from memory. The minimum value is **1**, and the maximum value is **129600**. The default is **1**.

- d. Do one of the following:

To enable validating the order of the sequence number in the input file, select the **Sequence Ordering by File Name** check box.

To enable multithreading to process multiple files in parallel, select the **Multi Threaded** check box and enter the number of processing threads you require for your thread pool in the **Processing Threads** field. The maximum value is **20**. If you require the order of the output data across all threads to be processed in the same order as the input data, select the **Enable Ordering** check box.

13. Click the **Schema File tab and do the following:**

- a. From the **Schema file** list, select the schema file that is used to parse the Oracle CDR format data files.

14. Click the **Destination tab and do the following:**

- a. Select the **Enable** check box, which enables the connection between the CC node and any destination cartridge node.
- b. From the **Routing** list, select one of the following:

If the **Enable** check box is not selected, select **None**.

To enable multicast routing between the CC node and the destination cartridge node, select **Multicast**.

To enable round-robin routing between the CC node and the destination cartridge node, select **Round Robin**.

15. Click **Save.**

Configuring a New Oracle CDR Format Schema for the Oracle CDR Format CC Node

The Oracle CDR Format CC node uses the schema information in a schema file to parse the CDR files conforming to the Oracle CDR format into NARs.

To configure a new Oracle CDR format schema for the Oracle CDR Format CC node:

1. Log on to Offline Mediation Controller Administration Client.
The Node Hosts & Nodes (logical view) screen appears.
2. In the **Mediation Hosts** table, select the mediation host that contains the Oracle CDR Format CC node.
3. Stop the Oracle CDR Format CC node.
4. Copy the new schema file into the *OMC_Home/config/sol42/schema* directory.
5. In the Offline Mediation Controller Administration Client **Mediation Hosts** table, select the mediation host that contains the Oracle CDR Format CC node.
6. In the **Nodes on Mediation Host** section, select the Oracle CDR Format CC node for which you want to change the schema file, and click **Edit**.

The Node dialog box appears.

7. In the **Node Configuration** section, click the **Schema File** tab.
8. From the **Schema file** list, select the new schema file, which contains the schema information used to parse the Oracle CDR format data files.
9. Click **Save**.

The configuration is saved.

10. Start the Oracle CDR Format CC node.

Configuring the NPL Rule File for Oracle CDR Format

To configure the NPL rule file for Oracle CDR format:

1. Log on to Offline Mediation Controller Administration Client.
The Node Hosts & Nodes (logical view) screen appears.
2. In the **Mediation Hosts** table, select the mediation host that contains the Oracle CDR Format CC node.
3. In the **Nodes on Mediation Host** section, select the Oracle CDR format CC node that you want to configure, and click **Edit**.

The Node dialog box appears.

4. From the **Rule File** list, select one of the sample NPL rule files.
5. Click **Edit** for the selected rule file.

The NPL Editor dialog box appears.

6. In the configuration block, do the following:
 - Add the following entry, which defines the Oracle CDR format header record fields written to the NAR output file:

```
AddHeaderFields "headerFieldName1, headerFieldName2,...";
```

where *headerFieldNameX* is the name of the field in the Oracle CDR format header record.

If you want all the fields in the header record to be part of every NAR written by the Oracle CDR format CC node, specify **ALL**.

For example:

```
AddHeaderFields "RECORD_TYPE, RECORD_NUMBER";
```

- Add the following entry, which defines the Oracle CDR format trailer record fields written to the NAR output file:

```
AddTrailerFields " trailerFieldName1, trailerFieldName2,...";
```

where *trailerFieldNameX* is the name of the field in the Oracle CDR format trailer record.

For example:

```
AddTrailerFields "RECORD_TYPE";
```

- Add the following entry, which defines the order of the records:

```
RecordOrder "HEADER,DETAIL*,TRAILER";
```

For the DETAIL* record field, define the associated type of records and sub-records. For example:

```
RecordOrder "HEADER,DETAIL*,TRAILER";
DETAIL "ASSOCIATED_CHARGE*,ASSOCIATED_ZONE,ASSOCIATED_INFRANET*,ASSOCIATED_
GPRS,ASSOCIATED_WAP,ASSOCIATED_GSMW*,ASSOCIATED_CAMEL,ASSOCIATED_
MESSAGE,ASSOCIATED_SMS,ASSOCIATED_MMS,ASSOCIATED_SUSPENSE,ASSOCIATED_
ROAMING,ASSOCIATED_CIBER";
ASSOCIATED_CHARGE "RUM_MAP*,CHARGE_PACKET*,DISCOUNT_PACKET*,TAX_PACKET*";
DISCOUNT_PACKET "DISCOUNT_SUBBALANCE*";
ASSOCIATED_ZONE "ZONE_PACKET*";
ASSOCIATED_INFRANET "BALANCE_PACKET*,SUB_BAL_IMPACT*,MONITOR_
PACKET*,MONITOR_SUB_BAL_IMPACT*";
SUB_BAL_IMPACT "SUB_BAL*";
MONITOR_SUB_BAL_IMPACT "MONITOR_SUB_BAL*";
ASSOCIATED_GSMW "SS_EVENT_PACKET*";
```

7. Compile and save the file.
8. Close the NPL Editor dialog box.
9. Click **Save**.

The configuration is saved.

Validations Based on File Names (Patch Set 3)

By default, the file-based Collection Cartridges (CCs) do not validate the input files based on the file names. The CC nodes process the input files based on the alphabetical order of the file name.

With this patch, you can now configure a CC node to identify the duplicate files based on the file names and to validate the order of the sequence number in the input file name before processing the files.

If the CC node is configured to validate the order of the sequence number in the input file name, the CDR input file name must be with the following file name format:

```
sourceFilename[_seqNum].fileExtension
```

where:

- *sourceFilename* is the name of the original CDR input file.
- *seqNum* is the sequence number of the CDR input file. This should contain a fixed number of digits.
- *fileExtension* is the extension of the original CDR input file.

The CC node now reads the CDR input file names and stores the file names in memory and in the *OMC_Home/ocomc/scratch/node_id/file_duplicate_info* file for a specified length of time, and stores *seqNum* in memory and in the *OMC_Home/ocomc/scratch/node_id/file_seq_order_info* file.

where:

- *OMC_Home* is the directory in which Offline Mediation Controller is installed.
- *node_id* is the unique ID assigned to the node when the node configuration is saved.

The CC node compares the names of the incoming files to the names in memory. If the file name does not exist in memory, the file is processed. If the file name does exist in memory, the CC node renames the file to *sourceFilename.fileExtension.duplicate*, logs a warning in the node log, and displays an alarm.

The CC node performs the following validations on *seqNum* of the incoming files:

- If the file name does not include *_seqNum*, the CC node logs a warning in the node log and displays an alarm before processing the input file.
- If the file name includes *_seqNum* and *seqNum* is in numerical order, the CC node sets *seqNum* in memory and in the **file_seq_order_info** file and processes the input file without any warnings. For example:
 1. When the CC node processes **ABC_10.txt** as the first CDR input file, the CC node sets *seqNum* to 11, which is the next sequence number, and processes the input file.
 2. If the CC node receives **ABC_11.txt** as the next CDR input file, the CC node sets *seqNum* to 12 and processes the input file.
- If the file name includes *_seqNum* and *seqNum* is not in numerical order, the CC node logs a warning in the node log and displays an alarm before processing the input file. For example:
 1. When the CC node processes **ABC_10.txt** as the first CDR input file, the CC node sets *seqNum* to 11, which is the next sequence number, and processes the input file.
 2. If the CC node receives **ABC_15.txt** as the next file, the CC node logs the out-of-sequence file name in the node log, processes the input file, and resets *seqNum* to 16.
 3. If the CC node receives **ABC_5.txt** as the next file, the CC node logs the out-of-sequence file name in the node log, processes the input file, but does not reset *seqNum*.

You can use the node log information to identify the out-of-sequence file names.

If the CC node stops while processing CDR input files, Offline Mediation Controller uses the information in the **file_seq_order_info** and **file_duplicate_info** files to resume the file-name-based validations when the CC node is restarted.

Configuring File-Name-Based Validations

To configure file-name-based validations:

1. Log on to Offline Mediation Controller Administration Client.
The Node Hosts & Nodes (logical view) screen appears.
2. In the **Mediation Hosts** table, select the mediation host that contains the node that you want configure for file-name-based validations.
3. In the **Nodes on Mediation Host** section, select the CC node that you want to configure for file-name-based validations, and click **Edit**.
The Node dialog box appears.
4. In the **Node Configuration** section, click the **Advanced** tab.
5. Select the **Reject Files With Duplicate File Name** check box, which enables validating the name of the input file for duplicate file names.
The **Expiry Time to Reject Duplicate Files** field is enabled.
6. In the **Expiry Time to Reject Duplicate Files** field, enter the time in minutes after which the file names are flushed from memory. The minimum value is **1**, and the maximum value is **129600**. The default is **1**.
7. Select the **Sequence Ordering by File Name** check box, which enables validating the order of the sequence number in the input file name.
The **Multi-Threaded** check box is disabled.
8. Click **Save**.
The configuration is saved.

Table 2–1 lists the **Advanced** tab configuration fields for file name validations.

Table 2–1 Advanced Tab File Name Validations Fields

Field	Description
Reject Files With Duplicate File Name	Select this check box to enable validating the name of the input file for duplicate file names.
Expiry Time to Reject Duplicate Files	Enter the time in minutes after which the file names are flushed from memory. The minimum value is 1 and the maximum value is 129600 . The default is 1 .
Sequence Ordering by File Name	Select this check box to enable validating the order of the sequence number in the input file name. Note: This check box is enabled only when the Multi-Threaded check box is disabled.

Processing CDRs at File Level (Patch Set 3)

By default, Offline Mediation Controller processes the call detail record (CDR) input file as individual records.

With this patch, Offline Mediation Controller can now process the CDR input file as a single unit. This enables Offline Mediation Controller to reject the original CDR input file at any stage of processing by the nodes in the node chain.

About Processing CDRs at File Level

When processing individual records, the collection cartridge (CC) node processes the CDR input file, and each CDR in the CDR input file is converted to a NAR. In the CC node, any run-time errors during the CDR data processing are handled through the

NPL rule file, and the CDR input file is renamed to *sourceFilename.error*. The records that are already processed by the CC node and sent to the next cartridge node cannot be rolled back.

With this patch, you can configure a node to process the CDRs at file level. In case of any file errors, Offline Mediation Controller now allows rejecting the original CDR input file by the nodes in the node chain. If a node rejects the original CDR input file, the already processed records are rolled back and the rejected CDR input file goes through the batch suspense process.

You can configure file-level transaction for nodes, only if:

- Each node's configuration supports file-level transaction.
- The node chains contain a single flow without any splits.

When processing CDR input files, Offline Mediation Controller performs the following tasks:

- Generates a transaction ID and associates the ID with the input file.
- Does one of the following:
 - If the transaction is successful, completes the transaction and renames the original CDR input file to *sourceFilename.processedFileSuffix*.
where:
 - * *sourceFilename* is the name of the original CDR input file.
 - * *processedFileSuffix* is the file pattern suffix configured in the CC node to rename the CDR input file post processing. The default is **.done**.
 - If the transaction is rejected, renames the CDR input file to *sourceFilename.reject* and moves the file to the *OMC_Home/reject* directory. These rejected files are made available for suspense handling. See ["About File-Level Transaction Suspense Workflow"](#).
- Provides statistics related to the file-level transaction. The statistics are displayed in the **Transaction Details** table in the Node Performance screen.

About File-Level Transaction Threshold

When processing the input files, you can optionally configure the file-level transaction threshold in the Node Manager configuration file. The file-level transaction threshold determines what percentage of records in a file can be suspended before the entire input file is rejected. This is an optional parameter. The default is 100%.

For example, if you have configured the file-level threshold to be at 40%, if a file contains 10 records, the file will be rejected when the fourth error record is encountered.

See ["Configuring the File-Level Transaction Threshold"](#).

About File-Level Transaction Suspense Workflow

By default, CC supports only file-level rejections. You can configure other cartridge nodes to suspend records and recycle the records at the record level by using the record suspense workflow or reject the complete file and resubmit the file at the file-level by using the batch suspense workflow.

See the discussion about suspending and recycling call detail records in *Offline Mediation Controller Suspending and Recycling Call Detail Records User's Guide* for more information about the suspense workflow.

Record Suspense Workflow

When file-level transaction is enabled in the nodes in the mediation node chain, depending on the configuration in the NPL rule file, the records are processed as follows:

1. When file-level transaction is enabled in a CC node, any rejections by the CC node due to a validation failure must be handled in the NPL rule file, which results in the rejection of the original input file.

Note: CCs do not support record-level rejection.

See ["Configuring the NPL Rule File for File-Level Transaction"](#).

2. If the input file is successfully processed by the CC node, any records rejected by the other cartridge nodes in the mediation node chain will be written to the *OMC_Home/suspense/TransactionID_suspendedRecs.inProg* file as suspended records, where *TransactionID* is a unique ID generated when the CDR input file was processed by the CC node.
3. When the Distribution Cartridge (DC) node completes the transaction, the DC node renames the *TransactionID_suspendedRecs.inProg* file to *TransactionID_suspendedRecs.complete*. The DC node also renames the original CDR input file to *sourceFilename.processedFileSuffix*.
4. The NAR CC node configured to read the suspended records from the *OMC_Home/suspense* directory sends the *TransactionID_suspendedRecs.complete* file to the Suspense DC node. The input record block of the NAR CC node NPL rule file is a superset of the input record blocks of all the cartridge nodes in the mediation node chain.
5. The Suspense DC node generates the **Create** or **Update** files in a format that is understood by Suspended Event (SE) Loader, which is a component of BRM.

See the discussion about the suspense-handling workflow for event CDRs in *Offline Mediation Controller Suspending and Recycling Call Detail Records User's Guide* for more information about the event suspense workflow.

Batch Suspense Workflow

When file-level transaction is enabled in the nodes in the mediation node chain, depending on the validations, the files are processed as follows:

1. The original CDR input file can be rejected by any cartridge node in the mediation node chain.
2. If the entire CDR input file is rejected, Offline Mediation Controller renames the CDR input file to *sourceFilename.reject* and moves the file into the *OMC_Home/reject* directory.
3. Offline Mediation Controller generates a NAR file with the file name *sourceFilename_uniqueID.arch* in the *OMC_Home/reject* directory, where *uniqueID* is the time in milliseconds when the CDR input file was rejected. This NAR file contains a single record with following fields:
 - Original source file name
 - Original source directory
 - Error directory
 - Error reason

- Pipeline name
 - Pipeline category
 - Original source file name prefix
 - Original source file name suffix
 - Target source file name prefix
 - Target source file name suffix
4. The NAR CC node sends the `sourceFilename_uniqueID.arch` file to the Suspense DC node.
 5. The Suspense DC node generates the **Create** or **Update** files in a format that is understood by SE Loader, which is a component of BRM.

See the discussion about the suspense-handling workflow for batch CDRs in *Offline Mediation Controller Suspending and Recycling Call Detail Records User's Guide* for more information about the batch-suspense workflow.

Configuring File-Level Transactions For an Existing Mediation Node Chain

Important: If a node is in a mediation node chain, you cannot enable file-level transaction for a single node. For an existing mediation node chain, to enable file level transaction for the individual nodes, you must first remove the node connections, enable file-level transaction for each node, and then reconnect the node chain.

To configure file-level transactions for an existing mediation node chain:

1. Log on to Offline Mediation Controller Administration Client.
The Node Hosts & Nodes (logical view) screen appears.
2. In the **Mediation Hosts** table, select the mediation host that contains the node that you want configure for file-level transaction.
3. If the node that you want to configure for file-level transaction is in a mediation node chain, first remove the node connections.
4. In the **Nodes on Mediation Host** section, select the node that you want to configure for file-level transactions, and click **Edit**.
The Node dialog box appears.
5. In the **Node Configuration** section, click the **Advanced** tab.
6. Select the **File Level Transaction** check box, which enables file-level transactions.

Note: If this check box is selected for a node in the mediation node chain, every node in the mediation node chain must have this check box selected.

7. Click **Save**.
The configuration is saved.
8. Repeat the steps 4 through 7 for each node in the mediation node chain.
9. Reconnect the nodes in the mediation node chain.

Table 2–2 lists the **Advanced** tab configuration fields for file-level transaction.

Table 2–2 Advanced Tab File-Level Transaction Field

Field	Description
File Level Transaction	Select this check box to enable file-level transaction. Note: If this check box is selected for a node in the mediation node chain, every node in the mediation node chain should have this field selected.

Configuring File-Level Transactions For a New Node

To configure file-level transactions for a new node:

1. Log on to Offline Mediation Controller Administration Client.
The Node Hosts & Nodes (logical view) screen appears.
2. In the **Mediation Hosts** table, select a host.
3. In the **Nodes on Mediation Host** section, click **New**.
The Create a Node dialog box appears.
4. Select **Cartridge Kit** and click **Next**.
5. Select a cartridge type and click **Next**.
6. Select a cartridge and click **Finish**.
The New Node dialog box appears.
7. In the **Node Configuration** section, click the **Advanced** tab.
8. Select the **File Level Transaction** check box, which enables file-level transactions.
9. From the **Rule File** list, select one of the sample NPL rule files.
To edit the rule file, see ["Configuring the NPL Rule File for File-Level Transaction"](#).
10. Click **Save**.
The configuration is saved.

Configuring the NPL Rule File for File-Level Transaction

To configure the NPL rule file for file-level transaction:

1. Log on to Offline Mediation Controller Administration Client.
The Node Hosts & Nodes (logical view) screen appears.
2. In the **Mediation Hosts** table, select the mediation host that contains the node that you want configure for file-level transaction.
3. In the **Nodes on Mediation Host** section, select the node that you want to configure for file-level transactions, and click **Edit**.
The Node dialog box appears.
4. From the **Rule File** list, select one of the sample NPL rule files.
5. Click **Edit** for the selected rule file.
The NPL Editor dialog box appears.
6. In the InputRec block, define the input fields as shown in the example.
7. In the OutputRec block, define the following parameters as shown in the example:

- The output fields.
 - **FileReject**: Specifies that the entire CDR input file is rejected if the conditions are met. When you set this parameter, the node does not wait for the file-level transaction threshold to be reached.
 - **RecordReject**: Specifies that only records are rejected if the conditions are met. When you set this parameter, the node verifies if the percentage of rejected records in the CDR input file is within the file-level transaction threshold and accordingly processes the file.
8. Define the validation conditions using an **if()** statement.
 9. Compile and save the file.
 10. Close the NPL Editor dialog box.
 11. Click **Save**.

The configuration is saved.

The following example of an NPL rule file contains the **FileReject** and **RecordReject** parameters.

```
InputRec {
String calling_number;
String product_type;
String Start_time;
String End_time;
String Duration;
} in;

OutputRec {
String calling_number;
String product_type;
String Start_time;
String End_time;
String Duration;
Byte FileReject;
Byte RecordReject;
} out;

if ( in.calling_number == null)
out.FileReject = 1;
if ( in.calling_number != "10220100111" || in.product_type != "VOICE" )
out.RecordReject = 1;
//Map input to output
write(out);
```

See ["Configuring the File-Level Transaction Threshold"](#) for more information about configuring the file-level transaction threshold.

See *Offline Mediation Controller Suspending and Recycling Call Detail Records User's Guide* for more information about configuring error detecting NPL rule files.

Configuring the File-Level Transaction Threshold

The file-level transaction threshold determines what percentage of records in a file can be suspended before the entire input file is rejected. This is an optional parameter.

To configure the file-level transaction threshold:

1. Stop Node Manager.

2. Open the *OMC_Home/bin/nodemgr.cfg* file in a text editor.
3. Add the following entry to the file:

```
FILE_LEVEL_TRANSACTION_THRESHOLD 'value'
```

where *value* specifies the threshold percentage.

For example:

```
FILE_LEVEL_TRANSACTION_THRESHOLD '50'
```

4. Save and close the file.
5. Start Node Manager.

Viewing the File-Level Transaction Performance

To view the file-level transaction performance:

1. Log on to Offline Mediation Controller Administration Client.
The Node Hosts & Nodes (logical view) screen appears.
2. From the **Administrative Function** list, select **Node Performance**.
3. In the **Mediation Hosts** table, select the mediation host that you want to monitor.
The **Transaction Details** table displays the file-level transactions currently running under the selected mediation host.

Elastic Charging Engine Distribution Cartridge Now Supports the Update, Refund, and Cancel Usage Types (Patch Set 3)

In the previous releases, Elastic Charging Engine (ECE) Distribution Cartridge (DC) supported only the Terminate usage type for offline usage requests.

With this patch, ECE DC now supports the following usage types:

- Update
- Refund_Unit
- Refund_Amount
- Cancel

Note: For refund usage types, the call detail records (CDRs) should contain the **correlation_identifier** of the original debit request.

For more information, see *Offline Mediation Controller Elastic Charging Engine Cartridge Pack User Guide*.

Aggregating Call Detail Records by Time or Volume (Patch Set 2)

Long-duration sessions can be received by Offline Mediation Controller in multiple call detail records (CDRs). Depending on how you configure Aggregation Processor (AP), you can aggregate the CDRs into one or more network accounting records (NARs) that are written to a NAR archive file.

You can now aggregate CDRs based on:

- **Time.** You specify the time duration allowed for aggregating CDRs in memory before writing the aggregated CDRs as one or more NARs to a NAR archive file.
- **Volume.** You specify the maximum volume of a usage event in the CDR to aggregate before writing as one or more NARs to a NAR archive file.
- **Both time and volume.** You specify the arrival time of the CDRs and the volume of the aggregated CDRs. Depending on which condition is fulfilled first, AP writes the aggregated CDRs as one or more NARs to a NAR archive file.

About Time-Based Aggregation of CDRs

Offline Mediation Controller supports aggregating the CDRs based on the arrival time of the CDRs before AP writes the aggregated CDRs as one or more NARs to a NAR archive file.

If you set the option for session segmentation by the arrival time of the first CDR, the CDRs are aggregated in memory from the arrival time of the first CDR until the time configured in the **Flush Time** field (or until the arrival of a termination CDR). When the flush time is reached, AP writes the aggregated CDRs as a NAR to a NAR archive file. With this option, if the flush time occurs before the arrival of the termination CDR, the CDRs are written as multiple NARs to a NAR archive file.

For example, if the segmentation of the aggregated CDRs is time-based set by the arrival of the first CDR, the flush time is set to 600 (10 minutes), and the flow of CDRs is as follows:

1. The first CDR for session A arrives at 10:10 am
2. The second CDR for session A arrives at 10:15 am
3. The third CDR for session A arrives at 10:17 am
4. The fourth CDR for session A arrives at 10:21 am

The first three CDRs are aggregated and stored in the memory until 10:20 am (time of arrival of the first CDR + flush time). At 10:20 am, AP writes the aggregated CDRs as a NAR to a NAR archive file. The fourth CDR is aggregated and stored in the memory in a new aggregation session.

If you set the option for session segmentation by the arrival time of the last CDR, the CDRs are aggregated in memory from the arrival time of the last CDR until the time configured in the **Flush Time** field (or until the arrival of a termination CDR). When the flush time is reached, AP writes the aggregated CDRs as a NAR to a NAR archive file. If a new CDR arrives before the flush time is reached, the flush time is reset to begin from the arrival time of the new CDR. With this option, the CDRs for long-duration sessions are aggregated into a single NAR unless the flush time is reached before the arrival of the termination CDR.

For example, if the segmentation of the aggregated CDRs is time-based set by the arrival of the last CDR, the flush time set to 600 (10 minutes), and the flow of CDRs is as follows:

1. The first CDR for session A arrives at 10:10 am
2. The second CDR for session A arrives at 10:15 am
3. The third CDR for session A arrives at 10:17 am

If no more CDRs arrive, the three CDRs are aggregated and stored in memory until 10:27 am (time of arrival of the last CDR + flush time). At 10:27 am, AP writes the aggregated CDRs as a NAR to a NAR archive file.

About Volume-Based Aggregation of CDRs

Offline Mediation Controller supports aggregating the CDRs based on volume. When the volume of the aggregated CDRs reaches the configured maximum volume, AP writes the aggregated CDRs as a NAR to a NAR archive file.

For example, if the segmentation of the aggregated CDRs is volume-based, the data volume is a maximum of 1 MB, and the flow of CDRs is as follows:

1. The first CDR for session A has the value of 300 KB in the CDR's **dataVolume** field
2. The second CDR for session A has the value of 700 KB in the CDR's **dataVolume** field
3. The third CDR for session A has the value of 100 KB in the CDR's **dataVolume** field

The maximum volume limit is exceeded when the third CDR arrives and AP writes the aggregated CDRs as a NAR to a NAR archive file.

Note: When using volume-based aggregation, AP may create NARs for a partial session. That is, if the session contains two CDRs of 6 MB and 2 MB respectively, and the maximum volume is set to 1 MB, Offline Mediation Controller creates two NARs for the session instead of one NAR per session.

About Both Time-Based and Volume-Based Aggregation of CDRs

Offline Mediation Controller supports aggregating the CDRs based on the arrival time of the CDRs and on the volume of the aggregated CDRs. Depending on which condition is fulfilled first, AP writes the aggregated CDRs as one or more NARs to a NAR archive file.

Configuring Time-Based, Volume-Based, or Both Time-Based and Volume-Based Aggregation

To configure time-based, volume-based, or both time-based and volume-based aggregation:

1. On the **Aggregator** tab, do one of the following:
 - To configure time-based aggregation, select **Time Based Session Segmentation**.
 - To configure volume-based aggregation, select **Volume Based Session Segmentation**.
 - To configure both time-based and volume -based aggregation, select **Both (Time Based and Volume Based Session Segmentation)**.

The fields related to the session segmentation are enabled.

2. If you selected **Time Based Session Segmentation**, do the following:
 - a. Select the **Segmentation by 1st CDR arrival time** check box, which sets the flush time to begin when the first CDR arrives.
Deselecting this check box sets the flush time to begin when the last CDR arrives.
 - b. In the **Flush Time** field, enter the interval in seconds.

- c. In the **Compression Threshold** field, enter the number of stale records the node allows before compressing the aggregation table.
3. If you selected **Volume Based Session Segmentation**, do the following:
 - a. In the **Volume Field** field, enter the name of the field in the NPL file that provides information about the data volume in the incoming CDR. In the NPL file, this field is of Long data type.
 - b. In the **Maximum Volume** field, enter the maximum amount of data AP has to gather before the aggregated CDRs are written to an output file. You also select the data unit: kilobyte (**KB**), megabyte (**MB**), gigabyte (**GB**), or terabyte (**TB**).
4. If you selected **Both (Time Based and Volume Based Session Segmentation)**, do the following:
 - a. Select the **Segmentation by 1st CDR arrival time** check box, which sets the flush time to begin when the first CDR arrives.
Deselecting this check box sets the flush time to begin when the last CDR arrives.
 - b. In the **Flush Time** field, enter the interval in seconds.
 - c. In the **Compression Threshold** field, enter the number of stale records the node allows before compressing the aggregation table.
 - d. In the **Volume Field** field, enter the name of the field in the NPL file that provides information about the data volume in the incoming CDR. In the NPL file, this field is of Long data type.
 - e. In the **Maximum Volume** field, enter the maximum amount of data AP has to gather before the aggregated CDRs are written to an output file. You also select the data unit: kilobyte (**KB**), megabyte (**MB**), gigabyte (**GB**), or terabyte (**TB**).
5. Select the **Scheduled Daily CDR Flush** check box, which writes all the aggregated CDRs to a NAR archive file at the specified time regardless of whether the aggregator is finished.
If the **Scheduled Daily CDR Flush** check box is selected, in the **Daily Flush at Time (hh:mm)** field, select the time at which the aggregated CDRs are flushed.
6. Click **Save**.

Table 2–3 lists the fields in the **Aggregator** tab to enable aggregating the CDRs based on the CDR arrival time, volume of the aggregated CDRs, or both.

Table 2–3 Fields in the Aggregator Tab

Field	Description
Time Based Session Segmentation	Select to aggregate CDRs based on the arrival time of CDRs. This is the default.
Volume Based Session Segmentation	Select to aggregate CDRs based on the volume of the aggregated data.
Both (Time Based and Volume Based Session Segmentation)	Select to aggregate CDRs based on CDR arrival time and data volume.

Table 2–3 (Cont.) Fields in the Aggregator Tab

Field	Description
Segmentation by 1st CDR arrival time	Select to flush the aggregated CDRs from memory to a NAR archive file based on the arrival time of the first CDR processed in an aggregated set of CDRs. Note: Use this option for time-based aggregation of CDRs.
Flush Time	Enter the interval, in seconds, AP waits before the aggregated CDRs are written to an output file. This is a positive number. The minimum value is 1 . The recommended range is 1 to 604800 . The default is 7200 . Note: Use this option for time-based aggregation of CDRs.
Compression Threshold	Enter the number of stale records the node allows before compressing the aggregation table.
Volume Field	Enter the name of the field in the NPL file that provides information about the data volume in the incoming CDR. In the NPL file, this field is of Long data type. The default is DataVolume . Note: Use this option for volume-based aggregation of CDRs.
Maximum Volume	Enter the maximum volume of CDRs to aggregate in memory before writing the aggregated CDRs to a NAR archive file. You also select the data unit: kilobyte (KB), megabyte (MB), gigabyte (GB), or terabyte (TB). The default is 1000 KB . Note: Use this option for volume-based aggregation of CDRs.
Scheduled Daily CDR Flush	Select to write all the aggregated CDRs to a NAR archive file at the specified time regardless of whether the aggregator is finished.
Daily Flush at Time (hh:mm)	Select the time at which the aggregated CDRs are flushed.

Offline Mediation Controller Now Supports Secure File Transfer Protocol While Transferring Data (Patch Set 2)

In the previous releases, when configuring File Transport Protocol (FTP) in ASCII Collection Cartridge and Network Accounting Record Collection Cartridge, you could only select passive FTP or regular FTP.

With this patch, while configuring FTP, you can now select secure FTP (SFTP) from the **FTP Type** list of the FTP Configuration dialog box. [Table 2–4](#) lists the values in the **FTP Type** list of the FTP Configuration dialog box and their description.

Table 2–4 Values in the FTP Type List

FTP Type List Value	Description
Regular	The client initiates the control connection with the server and the server initiates the data connection with the client.
Secure (SFTP)	Both the data and the commands are transferred in specially formatted packets through a single connection. When using SFTP, all data sent between the client and the server is encrypted using an encryption cipher.

Table 2–4 (Cont.) Values in the FTP Type List

FTP Type List Value	Description
Passive	<p>The client initiates all connections with the server. The server informs the client about the port to be used for the data connection.</p> <p>Use the Passive FTP mode when the FTP server is not able to establish the data connection; for example, when using FTP over a network firewall. Though you can define a firewall rule to open the FTP connections, the servers may not be authorized to open the data connection through the firewall. By using the Passive FTP mode, both types of connections are opened from the client side.</p>

Improved NAR Archive File Performance with Bulk Read and Write Processing (Patch Set 2)

Offline Mediation Controller now supports caching the bulk processing of network accounting record (NAR) data.

By default, each intermediate NAR archive file is created and read line by line by each processing node.

With this patch, when the **Enable bulk read/write** check box is selected, each NAR archive file is read and stored in memory for processing by the respective node, and the NAR output files are written into memory before writing to the cache output file, reducing the processing time.

For more information, see ["Improving the Reading and Writing of Network Accounting Records"](#).

Improving the Reading and Writing of Network Accounting Records

By default, processing nodes read and write intermediate NAR archive files line by line.

You can configure the node to use bulk read and write. The bulk read and write function:

- Reads and stores each intermediate NAR archive file as a whole into memory for processing by the respective node.
- Writes the NAR output file as a whole into memory, until either the maximum number of NARs for a file is reached or the idle write time has expired, before writing the output data to a cache file.

Bulk read and write operations process and pass data records using memory, reducing the processing time.

Important: If you have system memory constraints, use the **Enable bulk read/write** function only for your critical path node chains.

Configuring Bulk Reading and Writing of Network Accounting Records

To configure bulk reading and writing of NARs:

1. Log on to Offline Mediation Controller Administration Client.

The Node Hosts & Nodes (logical view) screen appears.

2. In the **Mediation Hosts** table, select the mediation host that contains the cartridge node that you want to configure for bulk reading and writing.
3. In the **Nodes on Mediation Host** section, select the cartridge node that you want to configure for bulk reading and writing, and click **Edit**.

The Node dialog box appears.

4. In the **Node Configuration** section, click the **General** tab.
5. Select the **Enable bulk read/write** check box.
6. In the **NARs Per File** field, enter the maximum number of NARs allowed in an output file.
7. In the **Idle Write Time** field, enter the number of seconds Offline Mediation Controller waits before transferring the NAR output file to the output directory of the processing node, whether or not it has reached its maximum size.
8. Click **Save**.

Table 2–5 lists the **General** tab configuration fields for bulk reading and writing.

Table 2–5 General Tab Bulk Read and Write Fields

Field	Description
Enable bulk read /write	Select this check box to enable bulk reading and writing of network accounting record (NAR) archive files. When selected, each NAR archive file is stored in memory for processing by the respective node, and output NAR archive files are kept in memory until the maximum number of records for a file is reached, or the idle write time has expired. Important: Do not enable if your system is low in memory, such as, for nodes that run high volumes of data processing.
NARs Per File	Enter the maximum number of NARs allowed in an output file. The range is 1 to 10000.
Idle Write Time	Enter the number of seconds Offline Mediation Controller waits before transferring the NAR output file to the output directory of the processing node, whether or not it has reached its maximum size. The range is 1 to 3600.

Maximum Log File Size for Cartridges Increased to 2 GB (Patch Set 1)

The maximum log file size for all cartridges has increased to 2 GB.

To set the log file size:

1. From the Node Configuration window, click the **General** tab.
2. In the **Max Log File Size** field, enter the number of bytes. For example, to set the maximum size to 2 GB, enter **2000000000**.

The default is **100000**, the minimum value is **50000**, and the maximum value is **2000000000**.

When the maximum size is exceeded, the node closes the log file and opens a new log file. Closed log files are saved using the cartridge node name, and a timestamp extension in the format YYYY.MM.DD.HH.MM.SS. For example, *Node_Name.2013.07.03.23.24.58*.

Images, Audio, and Multimedia Objects Can Now be Accessed, Inserted, and Updated in the Database Using JDBC Distribution Cartridge (Patch Set 1)

The JDBC Distribution Cartridge (DC) now supports character large object (CLOB) and binary large object (BLOB) data types. You can insert image, audio, and multimedia objects into the database using the JDBC DC.

To support CLOB and BLOB data types in the JDBC DC:

1. Open the *OMC_Home/customization/rules/CartridgeKit/OI/JDBC/JDBCDC_NPL.npl* file in a text editor, where *JDBCDC_NPL* is the name of the JDBC DC NPL file.
2. Add the following entry in the configuration clause:

```
LOBData "LOBMAPPING";
```

3. Add the following block for the LOBMAPPING configuration parameter:

```
Expose for LOBMAPPING{
    out.attribute1    "CLOB";
    out.attribute2    "BLOB";
}
```

where:

- *attribute1* is the CLOB data column of an Oracle database table.
 - *attribute2* is the BLOB data column of an Oracle database table.
4. Save and close the file.

Integration Enhancements

This section describes the enhancements to Offline Mediation Controller when integrated with external applications.

Offline Mediation Controller Now Supports Suspense Management (Patch Set 2)

Offline Mediation Controller now integrates with BRM to support suspense handling of call detail records (CDRs).

The Offline Mediation Controller Suspense Distribution Cartridge (DC) receives the suspended CDRs, generates files in a format that is understood by the BRM components, and distributes these files to the BRM database. After being corrected by Suspense Management Center or the **pin_recycle** utility, the suspended CDRs are recycled back into Offline Mediation Controller, where the Recycle AQ Job Collection Cartridge (CC) picks up the recycle notification and the Recycle Enhancement Processor (EP) restores the CDRs. The corrected CDRs are then sent to the Elastic Charging Engine, which is a component of BRM, for rating.

For more information, see *Offline Mediation Controller Suspending and Recycling Call Detail Records User's Guide*.

Node Manager Enhancements

This section describes the enhancements to Node Manager.

Improved Enhancement Processor Performance with Multi-Threaded Processing (Patch Set 3)

Offline Mediation Controller now supports multi-threaded record processing with Record Processing Enhancement Processor (EP) nodes.

By default, an EP processes records in sequential order, using a single processing thread. When you use a single-threaded EP to enrich the data records with a multi-threaded Collection Cartridge (CC) and a multi-threaded Distribution Cartridge (DC), the records processing is slower. With this patch, when multi-threading is enabled for Record Processing EP nodes, multiple files are processed in parallel, reducing the processing time.

Configuring Multi-Threaded Processing for Record Processing EPs

To configure multi-threaded processing for Record Processing EPs:

1. Log on to Offline Mediation Controller Administration Client.

The Node Hosts & Nodes (logical view) screen appears.

2. In the **Mediation Hosts** table, select the mediation host that contains the Record Processing EP node that you want configure for multi-threading.
3. In the **Nodes on Mediation Host** section, select the Record Processing EP node that you want to configure for multi-threading, and click **Edit**.

The Node dialog box appears.

4. In the **Node Configuration** section, click the **Advanced** tab.

5. Select the **Multi Threaded** check box.

When the **Multi Threaded** check box is selected, the **Processing Threads** field and the **Enable Ordering** check box are enabled.

6. In the **Processing Threads** field, enter the number of processing threads you require for your thread pool. The maximum value is 20.
7. (Optional) If you require the order of the output data across all threads to be processed in the same order as the input data, select the **Enable Ordering** check box.
8. Click **Save**.

Table 2–6 lists the **Advanced** tab configuration fields for multi-threading.

Table 2–6 Advanced Tab Multi-Threading Fields For Record Processing EPs

Field	Description
Multi Threaded	Select this check box, to enable multi-threading.
Processing Threads	<p>Enter the number of processing threads required for your thread pool.</p> <p>For Record Processing EPs:</p> <ul style="list-style-type: none"> ▪ The processing thread number is the number of threads required for your thread-pool and indicates the number of files processed in parallel. ▪ Up to 20 threads can run concurrently. ▪ The default is 1 for a single-threaded cartridge. If multi-threading is enabled, the default is 2.

Table 2–6 (Cont.) Advanced Tab Multi-Threading Fields For Record Processing EPs

Field	Description
Enable Ordering	Select this check box to keep the order of the output across all threads in the same order as the input data, when using the multi-threaded process for Record Processing EPs.

Improved Node Processing Performance with Multi-Threaded Processing (Patch Set 2)

Offline Mediation Controller now supports multi-threaded processing with file-based Collection Cartridge (CC) nodes and file-based Distribution Cartridge (DC) nodes and Local Data Manager (LDM).

By default, file-based CC and file-based DC node input files are processed in sequential order, using one processing thread. With this patch, when multi-threading is enabled for file-based CC and DC nodes, multiple input files are processed in parallel, reducing the processing time.

For more information, see ["About Multi-Threading with File-Based Cartridges"](#).

Currently, LDM uses a single-threaded process, which transfers all the first-processing-node output files, before beginning to transfer all the second-processing-node output files to the destination cartridges. With this patch, LDM transfers the output files in parallel from multiple processing nodes to the destination cartridges, reducing the processing time or the transfer time.

For more information, see ["About Multi-Threading with Local Data Manager"](#).

About Multi-Threading with Local Data Manager

LDM moves data between processing nodes on the same mediation host, using a multi-threaded process.

In a multi-threaded process, LDM transfers the output files in parallel from multiple processing nodes to the destination cartridges. The number of source nodes you have in your node chain is the number of threads.

About Multi-Threading with File-Based Cartridges

By default, file-based CC and file-based DC node input files are processed in sequential order, using one processing thread.

When multi-threading is enabled for file-based CC and file-based DC nodes, input files are processed in parallel.

Defining the Processing Order of Files

By default, file-based CC nodes process input files based on the ascending order of the filenames. When multi-threading is enabled, the order is not maintained. If you require your file-based CC and file-based DC nodes to output files in the order that the files are read and processed, even when multi-threading is enabled, select the **Enable Ordering** check box.

Note: For ASCII DC file-based cartridges:

If **Multi Threaded** and **Enable Ordering** are enabled, the maximum number of records set in the **Max Records Per File** field in the **File Output** node tab is disregarded. Files retain the original number of records received by the ASCII DC node.

Configuring Multi-Threading Processing for File-Based Cartridges

To configure multi-threading processing for file-based cartridges:

1. Log on to Offline Mediation Controller Administration Client.
The Node Hosts & Nodes (logical view) screen appears.
2. In the **Mediation Hosts** table, select the mediation host that contains the file-based cartridge node that you want configure for multi-threading.
3. In the **Nodes on Mediation Host** section, select the functional file-based cartridge node that you want to configure for multi-threading, and click **Edit**.
The Node dialog box appears.
4. In the **Node Configuration** section, click the **Advanced** tab.
5. Select the **Multi Threaded** check box.
6. In the **Processing Threads** field, enter the number of processing threads you require for your thread pool. The maximum value is **20**.
7. (Optional) If you require the order of the output data across all threads to be processed in the same order as the input data, select the **Enable Ordering** check box.
8. Click **Save**.

Table 2–7 lists the **Advanced** tab configuration fields for multi-threading.

Table 2–7 Advanced Tab Multi-Threading Fields

Field	Description
Multi Threaded	Select this check box, to enable multi-threading.
Processing Threads	<p>Enter or select the number of processing threads required for your thread pool.</p> <p>For file-based cartridges:</p> <ul style="list-style-type: none"> ■ The processing thread number is the number of threads required for your thread-pool and handles the amount of input files processed in parallel. ■ Up to 20 threads can run concurrently. ■ The default is 1 for a single-threaded cartridge. If multi-threading is enabled, the default is 2.
Enable Ordering	Select this check box to keep the order of the output across all threads in the same order as the input data, when using the multi-threaded process for file-based cartridges.

Improved Processing and Resource Performance when Using Node Manager (Patch Set 2)

The following Node Manager performance improvements were made:

- Start time processing
Currently, when you start multiple nodes in a node chain, faster-starting nodes have to wait for slower-starting nodes, before they can process any available input data. For example, a node that receives input data from a database will take longer to start than a node that receives input data from a file.

With this release, when you start multiple nodes in a node chain, Node Manager processes the requests in parallel, improving the time in which the input data starts to be processed.

- Response time between Administration Server and Node Manager

Currently, when you run operational requests such as **Start**, **Stop**, **Delete**, **Clear**, and **View Log**, you have to wait until one operation request is finished before you can run another operational request.

With this release, Administration Server processes Administration Clients incoming requests asynchronously, allowing multiple independent operations to run at the same time, improving the user experience.

- System resource allocation

Currently, you can start multiple instances of Node Manager from the same installation location.

With this release, you can start only one instance of Node Manager from the installation location, improving system resource allocation.

Note: If you use multiple Node Managers to control large sets of node chains, you must install each Node Manager in a different location.

Record Editor Enhancements

This section describes the enhancements to Record Editor.

Editing Multiple Records Now Supported in Record Editor (Patch Set 2)

In the previous releases, to edit an attribute in a network account record (NAR) file, you could edit only one record at a time.

With this patch, you can now update or delete the attribute of multiple records at one time.

For more information about editing multiple records, see the discussion about updating and deleting multiple records in *Offline Mediation Controller System Administrator's Guide*.

Improving NAR Archive File Editing by Exporting NAR Archive Files to XML Files (Patch Set 2)

When editing NAR archive files, you can edit the records in XML format rather than in NAR format.

With this patch, you can now export all the records in a NAR archive file to an XML file, manually edit the records in the XML file, and import the edited records back into a NAR archive file.

For more information, see the discussion about working with NAR archive files and XML files in *Offline Mediation Controller System Administrator's Guide*.

Support and Certification Enhancements

This section describes the enhancements to support and certification.

Offline Mediation Controller Administration Client Is Now Certified on Windows 8.1 (Patch Set 3)

With this patch, Offline Mediation Controller Administration Client is now certified on Windows 8.1.

Offline Mediation Controller Is Now Certified with Apache Xalan 2.7.2 (Patch Set 3)

With this patch, Offline Mediation Controller is now certified with Apache Xalan 2.7.2.

Offline Mediation Controller Is Now Certified with J2SSH Maverick 1.6.5 (Patch Set 3)

With this patch, Offline Mediation Controller is now certified with J2SSH Maverick 1.6.5.

Offline Mediation Controller Is Now Certified with SNMP API 4.0 Service Pack 7 (Patch Set 3)

With this patch, Offline Mediation Controller is now certified with SNMP API 4.0 Service Pack 7.

Offline Mediation Controller Is Now Certified with OSS Nokalva ASN.1 Tools for Java 6.0 (Patch Set 3)

With this patch, Offline Mediation Controller is now certified with OSS Nokalva ASN.1 tools for Java 6.0.

Offline Mediation Controller Now Supports Remote Diagnostic Agent 8.03 (Patch Set 2)

With this patch, Offline Mediation Controller now supports Remote Diagnostic Agent (RDA) 8.03.

Offline Mediation Controller Is Now Certified on Oracle Linux 6.3 and Red Hat Enterprise Linux 6.3 (Patch Set 2)

With this patch, Offline Mediation Controller is now certified on Oracle Linux 6.3 and Red Hat Enterprise Linux 6.3.

Offline Mediation Controller Administration Client Is Now Certified on Windows 7 (Patch Set 1)

You can now install and run Offline Mediation Controller Administration Client on Windows 7.

System Administration Enhancements

This section describes the enhancements to system administration.

Changes in the Closed Log File Name (Patch Set 2)

In the previous releases, the closed log files were saved using the Offline Mediation Controller component or cartridge node name, and a timestamp extension in the format YYYY.MM.DD.HH.MM.SS; for example, *Node_Name.2013.07.03.23.24.58*.

With this patch, the closed log files are saved using the Offline Mediation Controller component or cartridge node name, and an incrementing number; for example, `nodemgr.log.1`, `nodemgr.log.2`.

Offline Mediation Controller Now Supports Modifying the Reporting Level for Logging Messages (Patch Set 2)

With this patch, when an Offline Mediation Controller component or a node is started for the first time, a logger properties file is dynamically created in the `OMC_Home/config/component` directory and the reporting level is set to log the information messages (where *component* is the Offline Mediation Controller component, such as **nodemgr**, **adminserver**, and **GUI**).

You can now set the `log4j.logger.component.component` entry in the logger properties file to the following reporting levels:

- NO = no logging
- WARN = log only warning messages
- INFO = (default) log information messages
- DEBUG = log debug messages
- ALL = log warning, information, and debug messages

For more information about Offline Mediation Controller log files and their logger properties files, see the discussion about using logs to monitor Offline Mediation Controller components in *Offline Mediation Controller System Administrator's Guide*.

Offline Mediation Controller Now Provides New User Roles (Patch Set 2)

With this patch, Offline Mediation Controller now allows you to create users for the following new user roles:

- Administrator
- Designer
- Operator
- Guest

For more information about the user roles, see the discussion about users in Offline Mediation Controller in *Offline Mediation Controller System Administrator's Guide*.

Debugging Messages Are Now Stored in a Log File (Patch Set 1)

In the previous releases, when you used the `-d` parameter with the **nodemgr**, **adminsvr**, or **gui** scripts, the debugging messages were stored in a `.out` file. With this patch, when you use the `-d` parameter with the **nodemgr**, **adminsvr**, or **gui** scripts, the debugging messages are stored in a log file. [Table 2–8](#) lists the scripts and their log files with their locations.

Table 2–8 Offline Mediation Controller Scripts and Log Files

Script	Log File Name and Location
nodemgr	<code>OMC_Home/log/nodemgr/nodemgr.log</code>
adminsvr	<code>OMC_Home/log/adminserver/adminserver.log</code>
gui	<code>OMC_Home/log/gui/gui.log</code>

Known Problems

This chapter provides an overview of the known problems in Oracle Communications Offline Mediation Controller 6.0 Patch Set 1 through Offline Mediation Controller 6.0 Patch Set 3.

Offline Mediation Controller Installation

This section describes known problems and workarounds for the Offline Mediation Controller installation.

Offline Mediation Controller 6.0 Installation Fails When Oracle Unified Directory 11g Release 2 Is Installed

SR number: Not applicable

BugDB number: 17002607

When installing Offline Mediation Controller 6.0 in an environment where Oracle Unified Directory 11g Release 2 is installed, the installation fails and the post-installation scripts do not run.

To work around this problem, do the following:

1. Complete the Offline Mediation Controller 6.0 installation. The installation fails.
2. Install Offline Mediation Controller 6.0 patch set on the same system on which you have installed Offline Mediation Controller 6.0.
3. Go to the *OMC_Home/bin* directory, where *OMC_Home* is the directory in which you have installed Offline Mediation Controller 6.0.
4. Create the **populateDirTemp.ldif** file if it does not already exist and add the following text:

```
dn: uid=Admin,ou=People,dc=ocomcexample.com
changetype: modify
replace: userpassword
userpassword: adminpassword
```

where *adminpassword* is the password for the Administration Client administrator user.

5. Save and close the file.
6. Run the following command:

```
oudConfig -i oud_instance_path -h oud_host -p oud_admin_port -d "oud_binddn" -w
oud_admin_password -b "dc=ocomcexample.com" -l oud_ldapport
```

where:

- *oud_instance_path* is the path to the directory where the Oracle Unified Directory 11g Release 2 instance is installed.
- *oud_host* is the IP address or the host name of the system on which Oracle Unified Directory 11g Release 2 is installed.
- *oud_admin_port* is the port used for administration traffic with Oracle Unified Directory 11g Release 2. The default is **4444**.
- *oud_binddn* is the root user distinguished name (DN). The default is **"cn=Directory Manager"**.
- *oud_admin_password* is the root user bind password for Oracle Unified Directory 11g Release 2.
- *oud_ldapport* is the port used by LDAP to send and receive data. The default is **1389**.

For example:

```
./oudConfig -i /Oracle_Home/Oracle/Middleware/asinst_1/OUU
             -h oud1.example.com
             -p 4444
             -d "cn=Directory Manager"
             -w Welcome1@
             -b "dc=ocomcexample.com"
             -l 1389
```

Important: The **oudConfig** script will remove all the existing user accounts in your Oracle Unified Directory 11g Release 2 instance and will create an **Admin** user based on information provided in the **populateDirTemp.ldif** file.

7. Start all Offline Mediation Controller processes.

See the discussion about starting and stopping Offline Mediation Controller in *Offline Mediation Controller System Administrator's Guide* for more information.