

Announcing The Oracle Rdb Continuous LogMiner

A feature of Oracle Rdb

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What Is It, And What Can It Do For Me?

For years, Rdb database administrators have struggled with how to configure a database for efficient on-line transaction processing while also maintaining the indexes necessary for complex—even ad hoc—reporting access. For many customers, the solution was to copy the OLTP database once a day and add the indexes necessary. Others used various means to record database changes in one or more database tables and periodically replicate those changes to the reporting database. This technique typically requires application changes which introduce maintenance problems and also causes database hot spots and excessive after image journal growth.

Starting with Rdb version 7.0.4, the LogMiner for Rdb feature, makes replication of OLTP database changes to a reporting database simple, efficient and reliable. This Rdb feature permits extraction of changed database records from backup after-image journal files.

Introduced in Oracle Rdb versions 7.0.6.4 and 7.1.0.4, the Oracle Rdb Continuous LogMiner™ (sometimes also known as CLM) functionality is an extension to the Oracle Rdb LogMiner feature. The Rdb Continuous LogMiner allows "on-line" extraction of changed data from the database after-image journal in near real time. The Oracle Rdb Continuous LogMiner extends LogMiner operations from off-line backup AIJ files to the "live" on-line AIJ information. This capability is realized with minimal impact to the running production system.

With the Oracle Rdb Continuous LogMiner, changed records from the database are available moments after transactions commit the updates. These database changes are thus nearly instantly available for population of reporting or data warehouse databases. So now, your reporting database can be kept up-to-the-minute updated from your Oracle Rdb OLTP database.

Using the Oracle Rdb LogMiner feature requires no application changes and provides minimal or no performance impact to the production system in most cases. If an existing application maintains "change" tables or additional indexes to facilitate data transfer to other systems, the Oracle Rdb LogMiner and Continuous LogMiner features can be leveraged to increase application performance and potentially reduce maintenance costs by allowing existing change data transfer methods to be modified or removed entirely from the system.

Configuring To Use The Oracle Rdb Continuous LogMiner

Databases must be configured to allow use of the Oracle Rdb LogMiner. Enabling the basic LogMiner feature causes the Rdb database software to record additional information in the after-image journal. This information includes the contents of database records before they are deleted and the timestamp from when the transaction was started. Enabling the Continuous LogMiner feature causes the Rdb database software to maintain additional after-image journal "highest written" location information in real time to allow Continuous LogMiner processes to track the location of the current end-of-file.

The `RMU/SET LOGMINER/ENABLE/CONTINUOUS` command configures a database to allow Oracle Rdb Continuous LogMiner processing. This command requires exclusive database access.

Using The Oracle Rdb Continuous LogMiner

You can extract information about any changes to any user table from backup after-image journals using the `RMU/UNLOAD/AFTER_JOURNAL` command. The output of this operation can be a file, an OpenVMS pipe, an OpenVMS mailbox or even a user provided application routine. Using backup after-image journals in this method is sometimes referred to as the Oracle Rdb "static" LogMiner.

The `RMU/UNLOAD/AFTER_JOURNAL/CONTINUOUS` command is used to extract user table changes in real-time. The Continuous LogMiner feature is intended to be always running. Output can be directed to one or more disk files, but it is expected that directing output to an OpenVMS mailbox is a significant advantage for most applications. Writing output to a disk file is completely functional with the Continuous LogMiner feature, however no built-in functionality currently exists to prevent the files from growing endlessly.

The output from the Oracle Rdb LogMiner feature is a continuous stream of information. Customer supplied application programs can read records that are written by the Oracle Rdb Continuous LogMiner and then apply them to a downstream database or application. It is important that the callback routine or mailbox be very responsive. If the user's callback routine blocks, or if the mailbox isn't being read fast enough and fills, the `RMU/UNLOAD/AFTER_JOURNAL` command will stall.

The Oracle Rdb Continuous LogMiner feature provides methods for applications to maintain "checkpoint" locations and use these checkpoints to restart the Continuous LogMiner at a known position in the data stream. As an extension to the traditional Rdb LogMiner, backup AIJ files can

be used to allow seamless transition to online journals. Multiple, independent Continuous LogMiner processes can run simultaneously, extracting the same or different table data to different destinations. Because the Continuous LogMiner reads "behind" the writers to the after-image journal file, additional I/O load may occur as more Continuous LogMiner processes run. In most cases, data caches in the operating system, controllers or devices should help eliminate the performance impact of the Continuous LogMiner on application database processing.

Monitoring The Continuous LogMiner

The Oracle Rdb `RMU/SHOW STATISTICS` utility includes a "LogMiner Information" statistics screen. This screen is available when the Continuous LogMiner feature is enabled for a database. For each active process running the `RMU/UNLOAD/AFTER/CONTINUOUS` command, the current state (Inactive, Hibernating, Polling, or Extracting) of the process and the last accessed journal block are displayed.

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