Archiving in Oracle

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Introduction

There are three forms of archiving to address for an Oracle or other enterprise-level database product. The first is Database Archiving, which is generally implemented as an automated process. Automated DB Archiving ensures that the database structure is recoverable in the event of a loss of data center, infrastructure, media or software corruption. More recently, we look to Database Archiving to protect us from the impact of ransomware.

The second form is Data Archiving; which is implemented as a customized process to manage legacy data the organization may need to retain for purposes of internal governance, external regulations, or in the event of litigation.

The third is encryption key archiving which will be discussed last.

As with everything in the Oracle Database, the wealth of features provides a rich tapestry that can be used to design and deploy an archiving strategy that meets the customer's needs balancing Quality of Service (QoS) and Total Cost of Ownership (TCO).

Database Archiving

Database Archiving is most commonly achieved with Oracle's redo log process. Briefly, when changes are made within the database, they're recorded in the Oracle REDO buffer as they happen. When the change is committed, the changes are then written to an online "REDO" log files by a background process and may be then written to one or more remote locations by another background process.

Good so far, but often, in the form of files, they can be lost through mishap or corrupted by ransomware. This is where the Zione Z-Edge makes the difference.

Most organizations backup the redo logs to disk or tape which creates an additional copy but does not add an extra layer of protection. At Zione we prefer to store the archived redo logs in a manner that protects them from accidental deletion and corruption. We do this by creating archival storage in an Oracle Database specifically designed to retain the archive through use of Oracle's Database File System (DBFS). DBFS creates a file system simulation inside the database and by using ASM storage which,

because tablespaces are stored on raw disk rather than files, cannot be attacked by any currently known ransomware.

Data Archiving

Data Archiving requirements are quite different and are driven by the organization's needs as well as by regulatory requirements such as retaining 7 years of financial data supporting tax filings.

The best method to archive data is different for different organizations and often within an organization based upon a specific database and its business purpose. Here are some examples of technologies we employee:

If the organization wants to delete data after specified number of days or years. The Zione team would explore with the customer the use of partition option and automatically relocating data within the database to less expensive Tier 2 or Tier 3 storage through the use of Automatic Data Optimization (ADO) which has been built into every Oracle Database since version 12.1.

If the organization wants to retain the information indefinitely we would explore creating a data warehouse or data lake and determine whether it needed all schemas, all tables, all columns, or only specific elements based on how they would be accessed in an effective indexing strategy.

Still another solution, available in Oracle 12.1 and above, is a feature called "In-Database Archiving" that can be enabled at the database table level. This feature makes possible the automatic retention of older rows of data at the table level. Rarely, for more complex and/or custom needs, creation of database triggers and/or application code might be required.

Ultimately a business needs to decide when to let go of old data. The cost of compute (server horsepower, memory, diskspace, performance, etc.) is always on ongoing concern.

Key Archiving

Far too many times the members of Zione's team have seen the following scenario play out.
The database is backed up nightly and the tapes stored at a secure location for some period of time.
Three months later there is a need to access data that is no longer stored in the database and a request is made by the organization's legal counsel to reconstruct a database as it existed in the past for purposes of record recovery: So far so good. The issue arises, however, when the encryption key or certificate required for the encryption has been replaced and no one can find the keys to unlock the old backup.

Zione' Oracle Database archival process includes a Discovery phase that does more than just capture the basics such as what's the name of the database, what do you want to archive and for how long ... we make sure that we protect the customers entire needs making sure that retention includes the ability to restore the operating system, the database home, the data that was in the database and the keys or

certificates that may have been used for that data's encryption.

At Zione our experts have the "Edge" to help you design and deploy the optimum archival strategy for your organization success. Give us a call to find out more.