

# Oracle Partitioning

Partitioning enables large tables and indexes to be subdivided into smaller objects that can be managed and accessed at a finer level of granularity. Oracle Partitioning **enhances the manageability, performance, and availability of large databases**. It offers comprehensive partitioning methods to address different business requirements and can be applied to transactional, data warehousing, and mixed workload applications without having to change any code. Zone maps furthermore allow breaking down tables and partitions in even smaller zones for unlimited data pruning. Oracle's comprehensive data management capabilities complement Oracle Database storage management and compression features to help customers reduce storage costs.

## IMPROVING DATABASE MANAGEABILITY, PERFORMANCE, AND AVAILABILITY

Oracle Partitioning is widely proven to enhance the manageability, performance and availability of multi-terabyte OLTP and Data Warehousing systems. It offers a comprehensive choice of partitioning methods (e.g. range, interval, hash, list and composite) to determine how the data is placed into partitions.

### Partition for Manageability

Oracle Partitioning enables database administrators to take a "divide and conquer" approach to data management, and perform maintenance operations such as indexing, loading data, compressing data, and purging data on a per-partition basis. For example, a database administrator could merge and compress multiple older partitions in a single operation, moving data onto a low-cost storage tier without disrupting access to data. By partitioning large table and indexes into smaller more easily managed chunks, such maintenance operations are applied to the relevant database objects (i.e. partitions) only.

With ever increasing data volumes and decreasing maintenance windows towards 24x7 uninterrupted business operations, transparent and efficient data maintenance operations in complete online fashion are becoming equally crucial and important than achieving extreme performance.

### Key Business Benefits

- Faster query performance without changing application code
- Unlimited pruning with zone maps on Engineered Systems
- Efficient data management through partition-level administrative operations
- Reduced storage costs using tiered storage and compression
- Higher availability of partitioned tables and indexes

## Partition for Performance

Oracle Partitioning address the challenge of performance degradation when faced with growing data volumes by limiting the amount of data to be examined or operated on, thus significantly improving performance beyond what is possible with a non-partitioned table. It fully complements Oracle Database performance features, and is used in conjunction with any indexing technique, join technique, or parallel access method. Plus, partitioning is implemented at the database level and doesn't require any changes to application code or query statements in order to easily take advantage of performance benefits, including:

**Partitioning Pruning** to automatically use partitioning metadata and only touch data of relevance for a SQL operation. This ensures that the database only accesses relevant partitions instead of accessing complete tables or indexes to satisfy certain queries.

**Zone Maps** to enable pruning of “zones of blocks” and full partitions for any column defined in a zone map, regardless of whether the column is included in the table's partitioning key. Partitioning, together with zone maps, provides the most comprehensive data pruning on the market.

**Partition-wise Joins** that can be applied with two tables being joined together and both tables are partitioned on the join key. This automatically breaks large joins into smaller joins that occur between each of the partitions, completing the overall join in less time and using less resources. This offers significant performance benefits for both serial and parallel query execution.

Together with Database In-Memory, the autonomy of individual partitions allows to populate only the most business- and performance-critical data as In-Memory Column store while less critical data still resides on lower cost flash or disk. Thus, even the largest data warehouse can see considerable performance benefits from In-Memory without being constrained by the available memory.

## Partition for Availability

Partitioned database objects provide partition independence, which is an important part of a high-availability strategy. For example, if one partition in a table is unavailable, all of the other partitions of the table remain online and accessible. Applications can continue to execute queries and transactions against this partitioned table, and these database operations that do not need to access the unavailable partition will run successfully. Moreover, partitioning can reduce scheduled downtime by enabling database administrators to perform maintenance operations on large database objects in relatively short time windows.

## INFORMATION LIFECYCLE MANAGEMENT WITH ORACLE PARTITIONING

Today's challenge of storing vast quantities of data for the lowest possible cost can be optimally addressed by using Oracle. The independence of individual partitions, together with efficient and transparent data maintenance operations for partitions, are key enablers for addressing the online portion of a “tiered archiving” strategy. Partitioning enables individual partitions (or groups of partitions) to be stored on different storage tiers, providing different physical attributes – such as compression or whether data is read only or not - and price points. With hybrid partitioned tables some of the older partitions can even reside outside the Oracle database on external storage.

For example, in a Sales orders table containing 5 years' worth of data, you could store only the most recent quarter on an expensive high-end storage tier and keep the rest of the table (almost 90% of the data) on an inexpensive low-cost storage tier. You furthermore can store the oldest 2 years as external partitions outside the database and the next 2 years as read only partitions. Only the most recent years' data can be changed, and all the older data is immutable and still available from within the system for regulatory purposes, even if not all data is stored within the database.

### Related Products

Oracle Partitioning complements many related products including:

- Database In-Memory
- Advanced Compression
- Real Application Cluster

## ORACLE PARTITIONING FOR ALL DATABASE APPLICATIONS

Partitioning large tables and indexes in Oracle Database ensure that an optimal method is available for every business requirement, and can enhance the manageability, performance, and availability of almost any database application. It is a very straightforward process to implement partitioning and can be applied to any transaction processing and data warehousing application to ensure success - both in terms of business user's performance and availability expectations, and in terms of reducing IT capital and operational costs.

Oracle Partitioning improves the performance, manageability, and availability for tens of thousands of customers and hundreds of thousands of applications. Everybody can benefit from it, and so can you.

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