ORACLE DATA SHEET

Oracle In-Database SQL Analytics

ENTERPRISE WIDE IN-DATABASE ANALYTICS

KEY FEATURES

Developers and business users can leverage a wide range of analytic functionality that they can combine with other SQL constructs and analytical pipelines to gain deeper insights, including:

- Data Wrangling Functions
- Ranking
- Windowing
- Reporting Aggregates
- Advanced Approximate Functions
- LAG/LEAD
- FIRST/LAST
- Inverse Percentile
- Hypothetical Rank and Distribution
- Pattern Matching
- Modelling
- Advanced Aggregations
- Approximate Aggregations
- User Defined Functions

Included in Oracle Database 19c[1] is a compelling array of analytical features and functions that are accessible through SQL. These include: SQL to drive enhanced reporting, data sampling features, advanced aggregations, user-defined functions, advanced pattern matching and spreadsheet-like data modeling.

By moving processing inside the database and making it transparently accessible through SQL developers can benefit from increased productivity and business users can benefit from improved query performance across a broad range business-driven calculations.

Oracle's in-database SQL analytics provide the following key benefits:

Simplified Way to Solve More Business Problems

SQL analytical functions features that are embedded inside the Oracle Database can be used to answer a wide variety of business problems, such as:

Business Problem	Supporting Analytics
Who are the top ten sales-reps in each region?	Analytical Feature Rank
What is the 90-day moving average of stock price?	Moving Window
What is the percentage growth of Jan-2013 sales over Jan-2012?	Period-over-period comparisons
What are January's sales as a percentage of the sales for the full year?	Compare aggregates on different levels
Roughly how many unique sessions were logged on our website today?	Approximate count distinct
What is the median salary by department?	Approximate median or median
Which transactions are fraudulent?	Pattern matching

[1] Oracle Database 19c, the latest generation of the world's most popular database, is now available in the Oracle Cloud

Enhanced Developer Productivity

Developers can simplify their application code by using concise, compact SQL rather than creating complex bespoke code inside their application. Tasks that in the past required the use of procedural languages and/or multiple SQL statements can now be expressed using single, simple SQL statements. This simplified SQL is quicker to formulate, maintain and deploy compared to older approaches, resulting in greater developer productivity. The productivity benefits also extend to SQL-literate business users who are now able to write their own reports and workflows and manage their own enhancement requests.

Increased Performance

By using SQL analytics developers can boost the performance of their applications. The Oracle Database Optimizer is SQL analytics- aware which means it is able to select best execution plan that delivers the best performance.

Minimized Learning Effort

The declarative nature of SQL helps reduce the amount of effort required to learn Oracle's analytical features and functions. The design of the syntax for these features and functions either conform to the existing ANSI SQL standards or are in the process of becoming incorporated into this standard.

By using procedural-based in-database SQL analytics the amount of time required for project enhancements, maintenance and upgrades can be minimized because more people will be able to review and enhance the existing SQL code rather than having to rely on a few key people with specialized programming skills.

Standardized Syntax

Most companies adopt internal standards within their projects to ensure consistency and reusability. Where possible, these companies also prefer to adopt industry standards, such as the ANSI SQL standard, and/or best practices as way to ensure they deliver the most stable and usable projects and applications. Oracle's SQL analytics conform to the ANSI SQL standard.

Oracle is working with vendors of query, reporting and multidimensional products to assist them in exploiting the huge library of analytic functions. Already many independent software vendors are integrating support for the new 19c in-database analytic functions into their products.

Embedding SQL analytics into applications

The real power of pushing the processing into the database is that this approach makes the processing and output available to all users. This makes it much easier to support the following types of data warehouse scenarios:

- Need to simplify sophisticated SQL statement for business users
- Create a re-usable processes for ELT workflows
- Create a re-usable processes to embed in operational applications

Lower Total Cost of Ownership

With Oracle's in-database SQL analytics, there is no need for separate analytical servers or special coding in any application. Oracle's architecture eliminates the need for dedicated hardware systems for analytics as well as the administrative overhead of managing separate systems. The Oracle Database platform is the analytical platform.

Summary

Oracle's SQL analytic functions provide business users and SQL developers with a simplified way to support the most important operational and business intelligence reporting requirements. The flexibility and power of the Oracle analytic functions, combined with their status as international SQL standards, makes them an important tool for all SQL users.

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