



Analytical Processing Benchmark-1 (APB-1) Release II

November 16, 1998

Agenda

- History of the OLAP Benchmark
- Who contributed to the new benchmark
- Details of the announcement
- Benefits to the marketplace

The OLAP Council

- OLAP industry consortium, established 1995
 - ◆ Mission is to educate the market about OLAP technology, sponsor industry research, provide common definitions, etc.
- 12 member corporations
 - ◆ Applix
 - ◆ Business Objects
 - ◆ Cognos
 - ◆ Gentia
 - ◆ Hyperion Solutions
 - ◆ IBM
 - ◆ MSA
 - ◆ NCR
 - ◆ Oracle
 - ◆ Pilot
 - ◆ Platinum
 - ◆ Sun



History of the OLAP Benchmark

- First release finalized in October 1996
- Applix has published results once
- Hyperion Solutions has published three times
- Oracle has published three times
- Performance has already increased more than 40x since first results were published

The OLAP Benchmark

- Analytic application for sales analysis
 - ◆ Designed to reflect real-world business requirements
- Storage and technology independent
- Comprehensive auditing and disclosure requirements

The OLAP Benchmark

Sales Analysis Analytic Application

Product: minimum 10,000 products

7 levels of products

Top, division, line, family, group, class,
code

Scenario:

Complex calculated scenarios

Actual, budget, forecast, variances, etc

Customer: minimum 1,000 customers

3 levels of customers

Top, retailer, store

Measures:

Units sold, dollar sales, cost, margin,
inventory, ASP, smoothed sales, etc

Channel: minimum 10 channels

2 levels of channels

Top, base

Time:

2 years of monthly data

Quarterly, yearly and multiple period
to date rollups



The OLAP Benchmark

Sophisticated OLAP Calculations

- Demonstrates ability to perform sophisticated real-world business calculations required by OLAP applications
 - ◆ “Calculate total 1996 forecast values by the retailer level of the customer hierarchy as the annualized values of the second half actuals of 1995 increased by 15%”.
- Sample calculations defined by benchmark
 - ◆ Variance & percent variance
 - ◆ Ratios
 - ◆ Moving averages
 - ◆ Period to date calculations
 - ◆ Annualization
 - ◆ Aggregations
 - ◆ Allocations
 - ◆ Forecasting
 - ◆ Time Intelligent calculations
 - ◆ Procedural calculations

The OLAP Benchmark

Sophisticated OLAP Queries

- Queries are ad-hoc and dynamic, spanning the full range of the data described by the benchmark
- Benchmark specifies mix of queries
 - ◆ Channel Sales Analysis
 - ◆ Customer Margin Analysis
 - ◆ Product Inventory Analysis
 - ◆ Time Series Analysis
 - ◆ Customer Budget
 - ◆ Product Budget
 - ◆ Forecast Analysis
 - ◆ Budget Performance
 - ◆ Forecast Performance
 - ◆ Random Queries

OLAP Council Deliverables

- Benchmark generation program
 - ◆ Generates application, raw data, and queries
 - ◆ All are unique for each run of the benchmark
- Benchmark specification document
 - ◆ Includes benchmark rules, clarifications, and procedure for running and auditing the benchmark

OLAP Benchmark Update Process

- Nine month review by OLAP Council technical subcommittee
- Reviewed and approved by entire OLAP Council
- Technical subcommittee members include:
 - ♦ Applix
 - ♦ Dimensional Systems (auditor)
 - ♦ Hyperion Solutions
 - ♦ IBM
 - ♦ NCR
 - ♦ OLAP Council chair
 - ♦ Oracle
 - ♦ Symmetry (original benchmark author and auditor)
 - ♦ Sun

Central Features of New OLAP Benchmark

- Increased scalability
- Additional platform support
- Improved query generation
- Revised performance metrics
- Additional disclosure requirements
- Many clarifications and errata

Increased Scalability

- Query stream capacity increased
 - ◆ 1,000 query streams -1,000 concurrent users with no think time
 - ◆ Up to 100,000 real-world users
- Data capacity increased
 - ◆ At least 100 gigabytes of raw data
 - Theoretical capacity 4 terabytes
 - ◆ Up to 2 quadrillion (2×10^{15}) dimensional combinations

Additional Platform Support

- Benchmark generator provides native support for multiple hardware platforms
 - ◆ Microsoft Windows NT, Sun Solaris, IBM AIX, Hewlett Packard HP-UX
- Process in place for ports to additional operating systems
 - ◆ Secure process for neutral third party to port benchmark to new platforms

Improved Query Generation

- Span depth and breadth of data
- Limits queries that return no data
 - ◆ Truly random queries too often access sparse data
 - ◆ Attempts to represents how real users access OLAP applications

Revised Primary Metric

- Analytical Query Time (AQT) changed to Analytical Queries per Minute (AQM)
 - ◆ OLD: 0.00xx seconds per query
 - ◆ NEW: xx,xxx queries per minute
- Easier to understand, less abstract
- Better perspective on query throughput
 - ◆ AQM rises as performance improves

Business Rule Clarifications

- Forecast calculations
 - ◆ Specifies allocation calculation process
 - ◆ Provides forecast calculation instructions and includes execution diagram
- Aggregation rules
 - ◆ Non-summation aggregation methods (*Inventory, Cost factor, Percentage*)
 - ◆ Ordering rules for calculated measures

More Benchmark Clarifications

- Methods for value and percent differences
- Calculation order for difference measures
- Null suppression; missing/sparse data
- Labeling of calculated members
- Sample “correct answers” makes auditing process easier and more consistent

New Disclosure Rules

- Extensive list of mandatory disclosure items
 - ◆ All hardware and software used
 - ◆ All programs, code, scripts and formulas
 - ◆ Comprehensive performance and efficiency disclosures
- New fair use guidelines and required reporting components
 - ◆ Ensures fair comparisons

New Implementation Requirements

- Implementation is focused on server to ensure comparable results
- Auditors must be certified by the OLAP Council
- New benchmarks must be implemented using APB-1 R2 rules

Benefits to Marketplace

- Customer Benefits
 - ◆ Increased scalability reflects growing OLAP adoption and maturity
 - Unix support reflects customer platform choice
 - ◆ Easier to compare results
 - ◆ More meaningful measurements
 - ◆ More information is disclosed
 - ◆ Results in better products

Benefits to Marketplace

- Analysts/Advisors
 - ◆ Provide accurate advice for clients
 - ◆ Results are more directly comparable
- Hardware and Software Vendors
 - ◆ Easier to implement
 - ◆ Removes ambiguities
 - ◆ Ensures fair comparisons
 - ◆ New platforms encourage more participation

Summary: New Features of OLAP Benchmark

- Increased scalability
- Additional platform support
- Improved query generation
- Revised performance metrics
- Additional disclosure requirements
- Many clarifications and errata
- Major benefits to marketplace

Future OLAP Council Benchmark Projects Under Consideration

- APB-1: Sales Analysis
 - ◆ Moderate data volumes, complex calculations, complex data model, large user communities
- Consumer Marketing
 - ◆ Large data volumes, large dimensions, rich queries, attributes, moderate data models
- Planning / Forecasting
 - ◆ Multi-user read/write support, complex calculations, complex data models