Industry: Healthcare payments

Client: Requested confidentiality due to competitive advantage of solution

Challenge: Needed faster data processing

Data is exploding, especially in healthcare companies. In fact, it's estimated that growth of data in enterprise organizations is outpacing storage capacity 2 to 1. A national leader in revenue cycle management solutions for the health care industry needed to optimize costs, return IT value back to the business and maximize effectiveness of all assets.

OVERVIEW:

This Rolta client connects physicians, practice management systems and health plans with essential real-time business information to drive staff productivity and facilitate better patient experiences. Using the power of automated workflows and connecting health plans and practice management systems, this industry leader sought help in utilizing Oracle Engineered Systems to maintain high levels of productivity, now and in the future.

CHALLENGE:

As with most enterprise organizations, this healthcare payer was deluged in data. Its enormous data warehouse contained multiple terabytes of information, all critical to the smooth operation of the business and that of its customers. As the speed of the business continued to increase, executives recognized the importance of access to real-time data analysis to enable them to make strategic business decisions.

As the company grew, its legacy database system was unable to grow with it. The database handled ad hoc queries, canned/fixed reports as well as batch loading and incremental feeds from source systems. Like any warehouse, the nature of the queries tended to be unpredictable, subject to long runtimes and consumed high levels of Physical I/O for both reads and writes.

The organization needed a comprehensive evaluation if its current database management system and recommendations on how to improve performance.
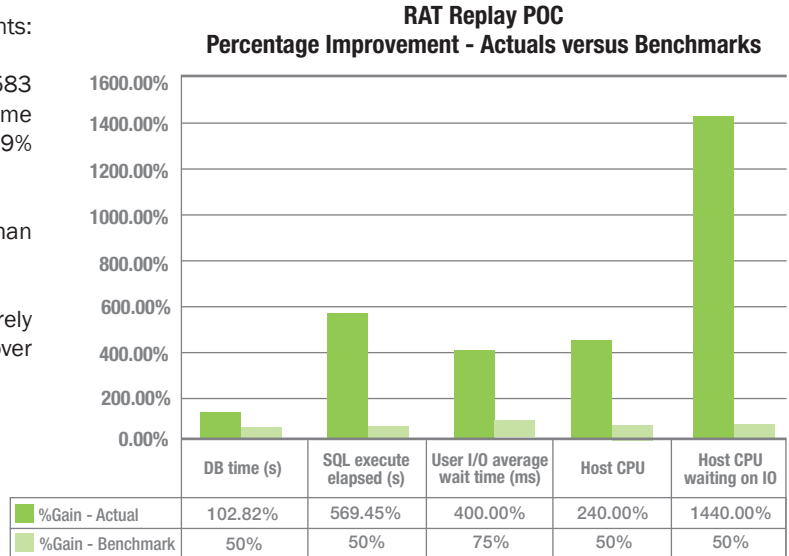
SOLUTION:

Implementation of any enterprise data solution requires that a company get three fundamental things correct – the hardware configuration, the physical data model and the data loading process. Rolta's Engineered Systems Center of Excellence helps companies maximize the value of all of their data assets. The COE provides advisory services, architecture and planning, Proof of Concept (POC) trials, implementation support and a full suite of support services.

A senior architect from Rolta worked with the client to assess the current architecture and identify Oracle 11gR2 and Exadata Database Machine features that would take performance, stability and availability to new levels. Rolta used Real Application Testing (RAT) to capture the workload on the legacy database and replay it on the Exadata environment to determine performance gains, scalability and stability.

Enterprise organizations with large data warehouses and/or large OLTP databases that need to consolidate workloads find that consolidating database tiers by migrating to the Oracle Exadata Database Machine serves their needs. The POC Rolta managed for the healthcare payer indicated that processes run on Exadata versus its legacy system showed significant improvement, with all critical success metrics reaching rates above those targeted as successful for the POC. Exadata spent far less time working to execute the same load over the same period of time and utilized less system resources.

Overall performance rates showed the following improvements:

- Drop on Database Time from 70,141 seconds to 34,583 — a 102% improvement. The SQL execute elapsed time went from 68,491 seconds to 10,230 seconds — a 569% reduction.

- I/O wait was reduced from an average 5ms to less than 1 — a 400% reduction.

- Host CPU waiting on I/O never got above 1% and rarely showed a value other then 0 — a 1440% reduction over the 15.4 from the legacy database.

RAT Replay POC
Percentage Improvement - Actuals versus Benchmarks

	DB time (s)	SQL execute elapsed (s)	User I/O average wait time (ms)	Host CPU	Host CPU waiting on IO
%Gain - Actual	102.82%	569.45%	400.00%	240.00%	1440.00%
%Gain - Benchmark	50%	50%	75%	50%	50%

These results, along with many other evaluations conducted by the Rolta team, showcased the value of migrating to Exadata. But while the benefits of Exadata are many, the pitfalls of poor implementation and management can be highly destructive to an organization. Analyst firm Gartner warns that the skills needed to operate an Oracle Exadata environment must be considered. Organizations considering deployments must identify resources offering expert design and skilled management in order to achieve maximum benefits.

"Initially, we were looking for staff augmentation support, but we soon realized that Rolta provided a much greater value, with their vast experience and knowledge of best practices that they brought to the table."

Director of Database Administration

Rolta's experienced consultants helped develop data modeling and data loading processes to obtain maximum effectiveness from the technology. To minimize the down time during the migration, Rolta used Golden Gate to replicate and move large volumes of data in real time and minimize the downtime for the migration to less than an hour. Advanced Compression and Hybrid Columnar compression was used to develop and deploy an ILM strategy that shrunk the database size by over 60%.

RESULTS:

Following migration to the Oracle Exadata Database Machine, disk storage requirements were cut by 60%, performance is 5 times faster, with availability and stability at 100%.

The top five wait events observed during the workload capture show significant improvement.
- Single Block reads improved from 15,500 seconds of wait down to 516 seconds — a 2,913% improvement.
- DB CPU wait time reduced from 9,568 to 2,026 seconds — a 372% improvement.
- Log file sync wait time went from 1,213 seconds down to 38 seconds — a 3,092% improvement.
- Control file sequential read went from 335 seconds down to 6 seconds — a 5,482% improvement.
- Direct path read wait time was eliminated on the Exadata from 118 seconds.

As a Managed Services client, Rolta provides operational monitoring and support, simultaneously giving the client access to its Oracle experts' vast pool of experience. Rolta delivers the critical expertise necessary to reach desired results when the client needs to maximize the effectiveness of its solutions.

ABOUT ROLTA

Rolta is a leading provider of Consulting, Managed Services and Technology for many vertical segments, including Financial Services, Utilities, Oil & Gas, Retail, Healthcare and Manufacturing. Enterprise-level solutions are built around Rolta's intellectual property and domain expertise to offer deep insights and understanding of industry drivers and supporting business processes that help organizations achieve their business goals. Through our innovative approach, Rolta makes a lasting impact on your business.