

## Case Study



### Replatforming Transaction Banking Applications to Enhance Performance

---

From HP-UX/ Oracle 9i to Red Hat Enterprise Linux/ Oracle 10g

A global bank facing performance issues, increasing complexity of business and the sunset of key parts of its technology platform, partnered with Infosys to migrate its Transaction Banking applications on to a Red Hat Linux platform with Oracle 10g on a grid as the database. Using Infosys' platform services, the bank successfully migrated 1.3 million lines of code and 1 TB of data on to the target platform. In the process, the bank enhanced performance by increasing transaction capacity by 300 % and reducing average processing time by 20 %.

## Background

The client, a prominent global bank, operates in more than 50 countries. The bank was experiencing performance issues in six key applications which supported 500 of its clients across the globe. To resolve these issues, the client undertook an initiative to migrate the Transaction Banking applications on to a platform that could support the increasing complexity of its business. The key drivers for the platform migration included:

- Inability of the platform to scale up to support the increasing customer base
- Inability of the platform to handle complexities and satisfy the new requirements of its business
- Lack of support for/ retirement of some of the technologies by the respective product vendors
- Reducing the total cost of ownership of the platform
- Improving the capability to handle business continuity and disaster recovery

## Infosys Solution

The client collaborated with Infosys to migrate all Transaction Banking applications from their existing environment – *Oracle 8i / 9i on HP-UX 11 High Availability Clusters* - to Oracle 10g on a grid on Red Hat Enterprise Linux 4 (RHEL). As part of the engagement, Infosys used several of its tools to handle the complexities and migrate the applications successfully. The key activities included:

- Developing a proof-of-concept to demonstrate the migration methodology
- Defining the migration strategy and developing the migration plan
- Assessing and analyzing the applications to identify incompatibilities and the code changes required to manage the platform transition
- Setting up the environments required for the migration
- Changing the code base in line with the requirements of the target platform
- Defining test strategy, test cases and executing these cases to validate the success of the migration
- Supporting the acceptance testing and deployment

## Tools Used

Infosys' tools expedited the migration process by automating several steps and ensured its success. The tools employed for this process included:

- *Incompatibility Finder*: This tool helped to determine the incompatibilities in the code with reference to the source and target platforms. It identifies incompatible function/ system calls, hard-coded values, environment variables etc. It highlights the lines of code facing issues and suggests equivalent compatible options.
- *Make Scan*: A tool used to identify dependencies for all executables and the compiler options used during the build stage. It also identifies the equivalent compiler options and libraries on the target platform.
- *Schema Comparison*: A tool used to compare source and target database schemas. This tool automates the comparison even in secure environments. It expedites the comparison process significantly, comparing 26 schemas in less than 4 hours.

## Technical Challenges:

There were a number of technical challenges to be addressed during the migration process. Some of these challenges were:

- *Issues with HP\_ALIGN Pragma*: This is a facility provided on the HP-UX platform. Addressing the issue required adding a resolution 'pack' in the RHEL environment
- *Engine 3 Mapper crashes*: The mapper engine crashed after fetching data due to errors in memory management. While this was not an issue on HP-UX because of the way pointers are handled, on RHEL this issue had to be explicitly addressed
- *LD\_PRELOAD error*: The mode of execution of the applications had to be fine tuned to handle this error as the applications were 32 bit and the operating system was 64 bit

- *Linker error*: A difference in the interpretation of '-i option' by the compilers – *cc on HP-UX* and *gcc on Linux* – lead to this issue
- *IO exception sun.io.MalformedInputException*: This error resulted in killed processes and lost data due to the default encoding on the Linux platform
- *SetProcTitle library incompatibility*: This is a third party library used in the HP-UX environment that is not available on Linux. An equivalent was implemented on the new environment



• Operating System	HP-UX 11 and Red Hat Enterprise Linux 4
• Programming Languages	C, Pro*C, Java and Shell scripts
• Software/ Tools	Java 1.4.2 SDK, Ant 1.6.5, Valgrind, gcc, Purify, Splint, TOAD, Rational ClearCase
• Database	Oracle 8i / 9i, Oracle 10g on a grid

## Benefits to the Client

- Successfully migrated 3000 source code files with 1.3 million lines of code, 1800 background processes and 1 TB of data with no impact on customers
- The new platform enabled a *300 % performance improvement* in throughput (number of transactions handled/ hour) by exploiting the features of the new platform such as the load sharing feature of Oracle 10g RAC
- Faster data migration by exploiting the data pump and transportable tablespaces features in Oracle 10g reduced the time required for migrating the applications
- Improved data back-up and recovery capabilities

## Testimonial

“The planning for this programme was very ambitious, but the project team, together with the business team, made it happen within the given budget and timelines. The infrastructure is now upgraded to a new, state-of-the-art environment. Based upon this environment, the suite of application will be able to manage a significant increase of transactions in the near future.”

*Project Manager,  
Replatforming Applications, IT - Transaction Banking*



For more information, contact [askus@infosys.com](mailto:askus@infosys.com)

## About Infosys

Many of the world's most successful organizations rely on Infosys to deliver measurable business value. Infosys provides business consulting, technology, engineering and outsourcing services to help clients in over 30 countries build tomorrow's enterprise.

For more information about Infosys (NASDAQ:INFY), visit [www.infosys.com](http://www.infosys.com).