

## Case Study



### Long Term Care Partners improves scalability and customer satisfaction through Performance Driven Development \*

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#### Abstract

Long Term Care Partners (LTCP) partnered with Infosys to develop a web application to enable federal employees in the U.S.A to register & enroll for insurance services. LTCP's key objectives were optimizing response time and ensuring 100% system availability during the peak season, along with an intuitive, user-friendly system for senior employees. Adopting Infosys' Performance Driven Development approach, LTCP deployed a system with improved system performance on all parameters, including a 1900% enhancement in the capacity to handle concurrent users and a 40% reduction in the batch window. The re-architected application helped LTCP grow their business by handling a significantly higher volume of enrollments over the previous year without any IT issues.

*\* Performance driven Development is a methodology followed by Infosys to ensure a proactive and holistic focus on Performance & Scalability throughout the Software Development Life Cycle.*

## The Client

Long Term Care Partners, LLC (LTCP) is a joint venture between John Hancock Financial Services, Inc., and Metropolitan Life Insurance Company. LTCP administers the U.S. Government's Federal Long Term Care Insurance Program and BENEFEDES, a secure website enabling federal family members to enroll in and manage their FEDVIP (Federal Employees Dental and Vision Insurance Program) coverage, under the oversight of the U.S. Office of Personnel Management (OPM).

## Background

LTCP enrolls federal employees for its insurance schemes between November and February, the Open Enrollment Season. To cater to the increase in the number of people using the system, LTCP wanted to re-architect its existing application to handle a larger number of concurrent users on the system, without impacting response time and other system parameters significantly.

The application suffered frequent outages for a variety of reasons, primary among which were heavy loads and memory leakage. LTCP wanted the re-architected web application to co-exist with the batch applications. This application was set up to run in a clustered environment connecting to a DB2 database on AS/400 servers.

LTCP was faced with a number of challenges. The key ones were:

1. Reduce application outages by scaling the application to support a larger number of concurrent users
2. Keep the web application functioning during the batch window, i.e. run batch processes without bringing the online application down (both were accessing the same database)
3. Achieve *zero downtime* during the peak season when the rate of enrolment among online users is extremely high
4. Ensure best practices and patterns are followed during the software development process
5. Define non-functional requirements of the application in a manner that ensured a common understanding of the performance and availability parameters and managed user expectations of the online and batch applications.

LTCP and Infosys collaborated to re-architect the application with these objectives in mind

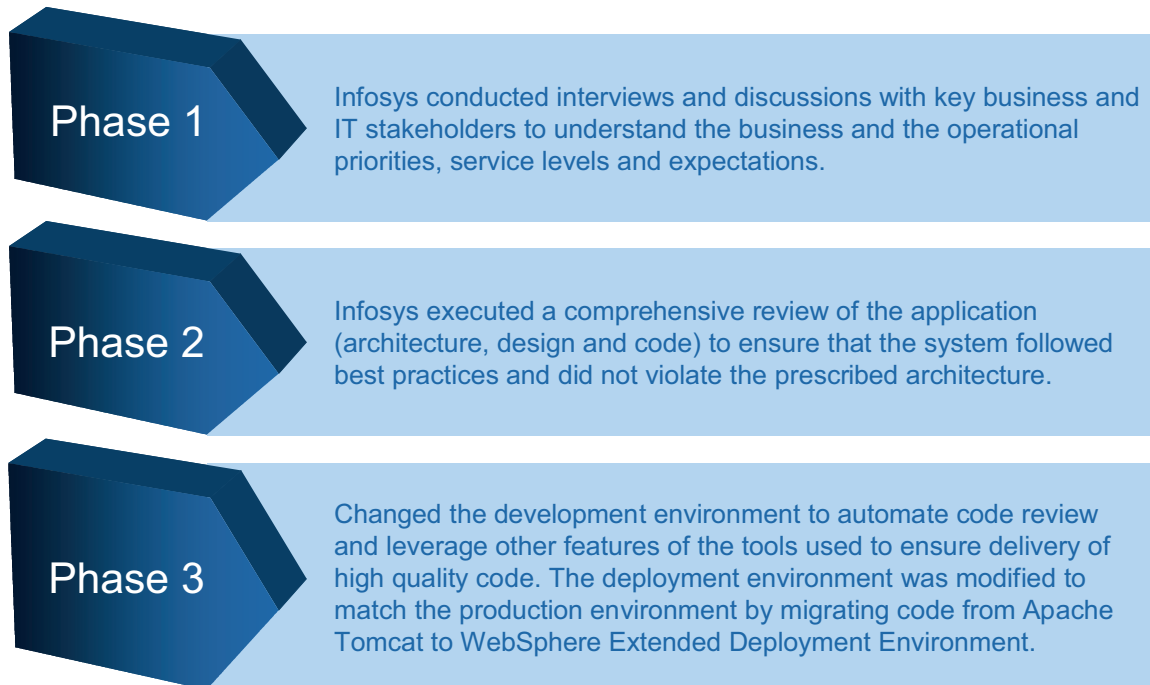
- *Increase the number of concurrent users on the system from 500 to 10,000*
- *Reduce the batch process window from over 8 hours to 6 hours*
- *Reduce application response time from 10 seconds to 6 second*

## Infosys' Solution

As part of the engagement, Infosys used a pro-active and holistic [performance engineering](#) approach to amplify the performance and scalability of the application. The approach involved

- Defining the performance strategy
- Reviewing the current architecture with a view to addressing performance concerns
- Reviewing the database design and application code to identify opportunities for improvement
- Analyzing and testing for performance
- Recommending measures for performance enhancements
- Implementing the performance enhancement measures
- Creating a performance repository to aid functional teams in future
- Deploying the system to be available on the Internet, as well as on LTCP's intranet

Working jointly with LTCP, Infosys executed the engagement in three phases:



## Benefits to LTCP

- Achieved all the stated objectives of the engagement and **exceeded performance objectives** on a couple of parameters, e.g. ensuring response times below 6 seconds on a majority of the web pages and completing the batch processing in 5 hours
- Handled an increase in load of 65% (from 37,000 in the previous year to 61,016), on the Internet deployment, on the last day of the Open Enrollment Season without any issues.
- Supported 33,393 calls, on the intranet deployment, on the last day of the Open Enrollment Season without any issues. This was an increase of 103% over the last day of the previous year
- Received one million website visits over a span of four weeks without any downtime, including 23,000 e-mail requests
- Increased know-how of **performance engineering** addressing architecture, design and coding best practices, a methodical approach to performance testing and a framework to identify hardware bottlenecks
- Improved memory usage in the applications by eliminating memory leakage
- Reduced the database size by 13 GB by tuning the database design with no impact on performance
- Significant increase in batch throughput by focusing on SQL tuning



- J2EE based architecture
- AS/400 (iSeries V5R4)
- Java / COBOL
- WebSphere Application Server Cluster (Apache Tomcat before re-architecting)
- DB2
- WebSphere Network Deployment Environment

## Client Testimonial

“Infosys helped us successfully meet our business requirements by re-architecting this application. Infosys’ comprehensive and methodical approach to performance enhancement helped us satisfy all objectives of this engagement. A substantial increase was also seen in the number of enrollments, calls, and site visits. While initial projections indicated anywhere between 200,000 to 300,000 enrollments, we finally received 1,014,896 enrollments. The re-architected system handled these enrollments smoothly without any issue. We are glad about the feat we accomplished.”

Thomas Bernier -Director, Information Technology, LTCP



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.

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