

Keane Optimizes Global Hotel Chain's Online Booking System

New Architecture Helps Global Hotel Brand Boost Web Performance by More Than 100%

Abstract

The Web is a highly competitive and the primary revenue-generating channel for many leading hotel chains. Yet our client's 24x7 Web booking reservation self-service tool was being stressed to its limits. It was experiencing daily outages and duplicate bookings. Keane recommended the client migrate the application to a new architecture to improve the system's performance, reliability, and availability – the best option to maximize the value of the client's existing investment in the tool. However, the company had planned a \$1 million Web personalization project with a launch date just seven months away. The question for the client was: How could it implement two sizeable IT projects before the next peak travel season? And was there a way to ensure the seamless integration of the two projects? Keane laid out an extensive risk mitigation plan and partnered with the client to implement all aspects of the system overhaul. The new architecture was a true success, boosting performance by more than 100% and cutting response rates in half — outranking rival chains. What's more, with the delivery of the migration project a success, the personalization project could proceed as scheduled.

Business Challenge

This worldwide hotel brand has over 4,000 hotels across the globe. The chain has historically harnessed the power of technology to bring convenience to its guests: In 1995, it used the Internet to list hotels online, and by 2000 the company introduced Web booking to its guests all over the world.

Web booking systems are a highly competitive channel, requiring hotel

chains to continually provide better and faster service in order to attract and maintain customers.

Competitive position at risk

But our client's leading edge in the online arena was faltering. July is the highest revenue-generating month in the travel industry and during this time the system could neither support the onslaught of bookings nor meet performance targets. Moreover, the system was experiencing daily system outages and duplicate bookings. With such highly visible system defects, our client knew that more was at stake than loss of critical revenue; its very reputation was at risk.

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Keane's application management and development support team was engaged on a daily basis to resolve system outages and apply patches. It was this dynamic, real-time experience working inside the client's applications, processes, and infrastructure that led the team to quickly identify the problem and design a cost-effective solution.

An aging system stressed to its limits

The Web booking system was being stressed to its limits. The problem was at the aging system's core: It was built to process transactions sequentially, essentially queuing up users' transactions and increasing the wait time for those at the end of the queue. As the queue lengthened, some transactions timed out altogether.

The single-threading in the code, however, was not the only problem.

Inefficient transaction management was causing bookings to be duplicated, which was directly related to revenue loss.

Merely adding more servers would not improve performance. The application was already running on 46 blades, far too many, Keane estimated, for an average daily volume of 2 million Web users.

Solution

Keane helped the hotel chain optimize its investment in this mission-critical, revenue-generating system by designing an agile, scalable architecture that would address these core limitations.

A legacy modernization strategy to improve Web performance

Keane recommended the hotel company migrate the application to an n-tier clustered architecture, which would improve non-functional aspects such as performance, reliability, availability, scalability, extensibility, and security. Although the migration would mean rewriting 70% of the code, the new system would support clustering, parallel transaction processing, and caching, allowing multiple transactions to be processed simultaneously, significantly improving the response time for users.

Our client clearly saw the need to migrate to a new architecture; however, the company had already engaged Keane to implement a \$1 million Web personalization project with a launch date of just seven months away. Adding personalized features to its Web booking system, such as single sign-on to multiple areas of the Web site, was key to helping the hotel chain regain competitive ground. This presented a seemingly insurmountable challenge: Even if it could find the budget to implement two sizeable IT projects simultaneously, how could it pull them off before the start of



Client Story: International Hotel Chain

the peak travel season, while ensuring their seamless integration?

A risk mitigation plan to ensure business continuity

With both the migration and the personalization teams working on the same code baseline, there were many risks. The two teams collaborated and proposed a solution that would ensure both projects would be completed in time for start of the next travel season. Keane laid out an extensive risk mitigation plan and configuration management strategy that ensured the two teams could simultaneously work on parallel branches of the same code and provided a contingency plan that protected one project, if the second incurred delays.

Keane partnered with the client to implement all aspects of the system overhaul: selecting and installing hardware and software, building the application architecture, setting up infrastructure, clustering servers, ensuring system failover, developing the deployment strategy, and performing all phases of development, from design and coding to testing and implementation.

Results

Keane was able to optimize the hotel chain's investment in the online reservation system by designing a new architecture that:

- **Improved Web site performance by more than 100%.** A fact that was confirmed by Gomez.com, the Internet performance-monitoring service that ranks the performance, availability, and consistency of travel-related Web sites. Our client's ranking before the Web booking project launch was typically 13th or 14th, with an average response time of 13 seconds. After the migration, it jumped to 4th place, cutting its response rate in half to 6.5 seconds and outranking rival chains like Starwood and travel sites such as Travelocity.
- **Boosted system availability to over 99.9%.** Previously, a one- to two-hour outage was required each time the client needed to update or repair the system. With Keane's architecture changes, developers could now make software updates without shutting down the system.

The architecture solution created an agile, scalable booking system that enables our client to get more value from its application investment by:

- Improving search functionality by 500%, reducing response time from 10-25 seconds to 2-4.
- Eliminating duplicate bookings issue. The system now experiences 0 duplicate bookings.
- Reducing lines of code from 500K to 100K.

- Reducing server instances from 106 to 50.
- Reducing hardware from 46 to 26 physical blades.
- Reducing Internet backbone bandwidth from 50 to 25 terabytes.
- Consolidating data and lessening the application's dependence on external systems.
- Increasing security by moving application code from the Internet zone to a secure zone.

In addition, the migration engagement met all provisions of the SLA, releasing the new system on time, on budget, and with a defect density of less than .001% per lines of code.

With the migration to the modern architecture completed, the personalization project proceeded as scheduled and was delivered successfully.

As a result of Keane's work, this hotel chain was able to retain its competitive position in the market by providing its customers with a better user experience and architecting a solution that is built to evolve along with our client's business.

With an optimized Web booking system, Keane helped this hotel chain outrank rival chains as rated by Gomez.com.

About Keane

Keane partners with businesses and government agencies to *optimize* IT investments by delivering exceptional operation, maintenance, and evolution of mission-critical systems and business processes. Keane helps clients realize the greatest value from their IT investments by leveraging an insider's hands-on understanding of the nuances and subtleties of their applications, processes and infrastructure making the recommendations we give more actionable, the work we do more pragmatic, and the results realized more measurable.

In business since 1965, Keane is an agile, midsized, full service IT services firm with headquartered in the United States and more than 13,000 employees globally. For more information on Keane's services, solutions, and locations, please visit www.keane.com.

