C A S E  S T U D Y

# Changing the Channel at HBO: Premier Entertainment Provider Switches to JProbe to Dramatically Improve Application Performance

***HBO has always pushed the envelope, most obviously in its programming – first-run movies and compelling original series. But HBO is equally innovative behind the scenes, developing cutting-edge J2EE applications in-house. When an unexpected performance problem surfaced during testing of one new system, HBO switched to JProbe to identify and eliminate the problem. The tenfold performance improvement ensured that the more than 20 HBO scheduling staff would be able to use the application productively when they needed to.***

Home Box Office (HBO) is America's most successful premium television network, whether measured by operating performance, subscribers, awards, ratings or critical acclaim. Its two 24-hour services, HBO and Cinemax, have grown to serve approximately 38 million U.S. subscribers. Offering blockbuster movies, innovative original programming, provocative documentaries, concert events and championship boxing, HBO is the highest-rated premium cable service during the day and in prime time. Cinemax, the second-highest rated premium service, features award-winning documentaries and more than 1,600 movie titles a year.

HBO's IT Applications group creates various types of internal applications that enable HBO staff to do their jobs more effectively. One application is called SCHEME. SCHEME enables HBO to create interactive television programming more quickly and collaboratively. The finished schedules are presented to HBO on Demand and Cinemax on Demand subscribers through their Interactive TV menu.

SCHEME is used internally by scheduling staff to put together schedules for HBO's "on Demand" services, namely HBO on Demand and Cinemax on Demand. Schedulers collaboratively drag-and-drop show titles on a graphical calendar interface, each seeing what others have been doing, in real time. At the same time, creative staff are adding images and other collateral to the system, making them available to the schedulers. All in all, more than 20 staff could be concurrently using the application.

SCHEME is a rich J2EE application – it has a Swing-based GUI front end (deployed to users via Java Web Start), and a back-end architecture that uses EJBs, JMS, and works with a database. In production, the back-end runs on BEA WebLogic application servers on Solaris.

"During development, we didn't detect any large performance problems," said the project's technical lead. "Our developers worked with most of the systems running on their local Windows machines, and we used a small subset of the database to facilitate our work."

It wasn't until SCHEME went into testing that the team started to see performance problems. When the application was tested with a full sized database and several users, the application's general performance slowed to a crawl.

To make matters worse, the team realized that the performance tuning tool on hand would not be able to diagnose the problem. An ancient version of a tool that was popular several years ago, it wasn't designed to work with application servers, nor would it profile code fully in the modern JRE being used. (Needless to say, this tool wasn't JProbe.) The team needed to upgrade, and fast.

**User:**
HBO – America's most successful premium television network

**Quest Software products:**
JProbe

**Environment:**
Application: SCHEME J2EE-based programming and scheduling system

Operating System: Sun Solaris

Application Server: BEA WebLogic

**ROI:**
"JProbe helped us reduce the load time of the application data from seven minutes down to about 40 seconds."

SCHEME Technical Lead, HBO

**Benefits:**

- Rapidly identified code-related performance problems
- Measured the impact of performance enhancements
- Enabled faster deployment of production-ready application
- Easy to use even for less-experienced developers

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## Selecting an Up-To-Date Java Performance Tuning Toolkit

SCHEME's technical lead led the evaluation process to choose a new J2EE code tuning tool suite. The basic requirement was a suite that provided complete profiling, memory debugging, thread analysis and code coverage. The tools also had to work with WebLogic and support Solaris and their chosen JDK. JProbe was one tool that seemed to fit the bill.

"I've been a fan of JProbe for a long time – I even have my own personal copy," said the technical lead. "But I wasn't going to impose my preference on the team. We planned to evaluate the top three performance tuning toolkits and choose the best one for our group."

Because the application was in testing, it wasn't the ideal time to be evaluating tools. The team needed to "overload" the evaluation with actually searching for the problem. SCHEME's technical lead reasoned that the tool that pinpointed this particular real-world performance problem most quickly would likely be the best one for solving other performance problems. The team also decided to test with their standard set of use cases, for completeness.

Each senior developer installed one performance tuning tool in their development environment and configured it to work with their own local WebLogic application server and database. The development environments were fairly consistent.

"One important criteria for us was ease of use. We have a number of less-experienced developers, and it was important that they be able to pick up the tool, and without extensive training or documentation, be able to track down performance or memory problems."

## Solving the Performance Problem

As the results came in, JProbe became the clear choice. The team had suspicions the performance bottleneck had something to do with the application's use of the database. Architecturally, the design was sound – the application mapped one particular EJB to a table in the database, while other EJBs were also in use. However, JProbe graphically showed the full ramifications of the design of one particular EJB. An inordinate amount of time was being spent in the code of one large entity bean – it assembled and made a very complex query to the database, which was effectively a bottleneck for the entire application.

The solution was to get out of the EJB framework for this data-loading task and hand-code loading data from the database. The team replaced the large EJB query with a much simpler data access object, which eliminated the performance bottleneck.

"JProbe helped us reduce the load time of the application data from seven minutes down to about 40 seconds," explained the technical lead. "JProbe quickly zeroed in on the primary performance hotspot and helped us evaluate possible solutions. We optimized several methods in our code and profiled the new version with JProbe again to ensure that performance was improved without impacting other areas of the application."

*"JProbe quickly zeroed in on the primary performance hotspot and helped us evaluate possible solutions. We will undoubtedly use all of the tools in the JProbe Suite."*

*SCHEME Technical Lead*
*HBO*

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## Localized Code Change = Big Productivity Gain

This one performance improvement alone resulted in a tenfold performance gain for the users of SCHEME. The application was delivered on time and in a usable form. The return on investment of JProbe becomes more obvious when you consider the comparative cost of a typical “brute force” solution, that is, adding hardware and processing power to the server cluster.

HBO also realized the development cost savings of using a tool that enables inexperienced developers to find any kind of code-level performance problem quickly versus one that takes longer to learn and requires more time and effort to pinpoint the true source of the problem.

JProbe proved itself at HBO, helping the IT Applications group fix a tricky performance bottleneck that cropped up unexpectedly. “Now that we have JProbe in-house, we can start using it earlier, during development,” mused the technical lead. “Even though our application now performs well, there are undoubtedly memory-related optimizations we should make, and analyzing for thread-correctness will also improve the reliability of SCHEME. We will undoubtedly use all of the tools in the JProbe Suite.”

For more information on HBO, please see http://www.hbo.com.

## About Quest’s J2EE Performance Assurance Solutions

A proven leader in J2EE Performance Assurance, Quest delivers advanced diagnostic solutions that help companies to pinpoint and eliminate performance hazards in mission-critical J2EE applications. These products include PerformaSure, a transaction-centric J2EE diagnosis solution, JProbe performance tuning tools, JClass Java components, and DeployDirector, a Java application deployment solution. Through industry alliances with companies such as IBM, BEA Systems and Sun Microsystems, Quest ensures that our products integrate seamlessly with the latest development environments and platforms.

## About Quest Software, Inc.

Quest Software, Inc. is a leading provider of application management solutions. Quest provides customers with Application Confidence[sm] by delivering reliable software products to develop, deploy, manage and maintain enterprise applications without expensive downtime or business interruption. Targeting high availability, monitoring, database management and Microsoft infrastructure management, Quest products increase the performance and uptime of business-critical applications and enable IT professionals to achieve more with fewer resources. The company is headquartered in Irvine, Calif. and has offices around the globe. For more information on Quest Software visit www.quest.com.

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