



CHOICE DELIVERS SUCCESS FOR ORBITZ

Orbitz, a leading online travel company, is known for offering leisure and business travelers the widest selection of low fares, as well as deals on lodging, car rentals, cruises, vacation packages, and other travel. In fact, Orbitz returns 20% more choices per search than their closest competitor*, and they do so with a significantly smaller financial base and fewer resources.

Since its public launch in 2001, Orbitz has become one of the three largest online travel companies with access to 455 airlines, 65,000 hotel properties, and 23 rental car companies. Air search results are presented in an easy-to-use matrix that displays a vast array of travel options to consumers, enabling them to select the price and supplier that best meets their individual needs. Orbitz provides consumers with choice through dynamic packaging and tools such as Flex Search. Dynamic packaging lets users compare multiple travel combinations at a glance and create customized packaging. And Flex Search allows consumers to search flight and fare combinations in a single click versus dozens of searches on competitive sites. Orbitz has also leveraged its innovative technology for new business opportunities such as Orbitz for Business, a low-cost corporate travel solution to help companies maximize cost savings by reducing travel budgets an average of 20%.

With more than 23 million unique users and a growing product portfolio, innovative technology is essential to the Orbitz value proposition. "We got a late start in this market and have to be very efficient as we work to deliver more with less, all while keeping the store open 24/7," says Chris Hjelm, Chief Technology Officer at Orbitz. "From interaction with third party systems to things we engineer ourselves to the

infrastructure we build, everything at Orbitz is done with high availability and high reliability in mind." Additionally, Orbitz requires that their IT infrastructure be flexible, yet low-cost, allowing their talented team of engineers and developers to be more innovative and productive. According to Hjelm, "When it comes to innovation and getting new product features to the marketplace, we view projects in weeks from start to finish. Agility in technology is paramount at Orbitz, as is being fiscally responsible."

LINUX PROVES TO BE BETTER THAN EXPECTED

When Orbitz launched, the development team built a scalable, 3-tier architecture. Both the database and application layers were based on Sun Solaris, while the search engine and website ran on Red Hat Linux and Apache. "Then, Linux was just entering the mission-critical marketplace," explains Russ Kieckhafer, Director of Operations at Orbitz. "We based our decisions on where we could run applications at the time, and whether or not we could support the solutions."

Orbitz soon found that the flexible nature of Linux allowed them to move and react extremely quickly, giving them a marked advantage in the highly competitive travel industry. "It's all about being nimble, speed-to-market, attracting world-class talent, and doing more with less," says Hjelm. "It's possible through a low-cost infrastructure. Linux allows us to provide more choice at lower cost to our customers."

Impressed with the high-performance, low-cost capabilities of their Linux front end, Orbitz began to look for other areas in which to leverage those benefits. The first place they looked was in the application layer.



They compared price and performance per instance using BEA WebLogic on both Sun Solaris and Red Hat Linux, and found that Linux would allow significant cost savings with no sacrifice in performance. They decided to migrate.

NO DOWN TIME? NO PROBLEM

Unlike their first Linux deployment, this time Orbitz was live, and downtime was not an option. Fortunately, as they planned their UNIX-to-Linux migration, they were able to implement multiple steps to mitigate their risk. Pete Stoneberg, Director of Systems Engineering at Orbitz, explains, "Our costs were going down so much that we actually brought in a new, totally separate application layer, built it, and tested it against our staging infrastructure." And because Orbitz had built the majority of their applications using the platform-independent Jini and Java technologies, they could run the new system in quasi-production mode by pointing only their internal servers to it. Together, these steps created a strong fall-back plan; in the event that anything should go wrong, Orbitz could simply switch back to the old system until any problems were fixed.

In addition to migrating the operating system, Orbitz had to completely retest and modify their monitoring tools and performance metrics, which had initially been written for a Sun Solaris environment. "It ultimately came down to a lot of testing time, as well as development time, to ensure that things really did function the same on both the UNIX and Linux sides," Stoneberg says. "One of the highlights of the migration was when we confirmed that the version of JDK and Java we'd become accustomed to in our UNIX environment worked equally well with Linux. That was key—this had to be a transparent change as far as our customers were concerned." In total, Orbitz completed their migration from UNIX to Red Hat Linux in six weeks.

The result? No downtime.

UNIX-TO-LINUX MIGRATION OFFERS FLEXIBILITY

With both the front-end and application layers running on Linux, Orbitz found they had much more choice in the management of their infrastructure. They could use low-cost, commodity hardware

from their choice of vendor, without sacrificing performance. "We are able to have more people testing more things and developing new things, right there on their desktops. That just wasn't an option with proprietary hardware," Kieckhafer says.

Even more valuable, however, was the ability to manage and customize their infrastructure to get the results they need. "That's difficult or impossible to do with some operating systems that just don't let you have the flexibility to make your own choices," Stoneberg says. "If we have a problem with one of our applications, we can fix it ourselves because of the open source commitment to the community, and indeed, from Red Hat themselves."

EXPANDING HORIZONS WITH RED HAT ENTERPRISE LINUX

With the introduction of the Red Hat Enterprise Linux product line, Orbitz saw additional possibilities and potential benefits from Linux. Red Hat Enterprise Linux offered more extensive support options with a longer lifecycle. And it boasted extensive third-party support by vendors Orbitz depended on, most notably BEA WebLogic. "When WebLogic showed strong support of the Enterprise Linux products, we knew that it was a logical move to make," says Kieckhafer.

CURRENT IT ENVIRONMENT AT ORBITZ

Orbitz elected to undergo the migration from Red Hat Linux to Red Hat Enterprise Linux with the help of a Red Hat Technical Account Manager (TAM). The TAM is a dedicated resource, who quickly became intimately familiar with the Orbitz environment, including a comprehensive inventory of what Orbitz was using, how, and why.

According to Stoneberg, "This was a valuable resource for us as problems came up, even if the problems weren't totally Linux-focused. Our TAM was a huge asset in getting us through the idiosyncrasies of WebLogic 5.1 on Red Hat Linux over to WebLogic 8.1 on the Enterprise Linux platform. We were greatly advantaged by Red Hat's making this resource available to us."



Operating System Software Hardware:

Front end:	Clustered Red Hat Linux 7.3 with highly customized kernels	Apache Web Server	x86 machines from various hardware vendors. Both disk and diskless clients. Processor speeds range from 800mHz to 3.2GHz. Memory configurations range from 1GB to 4GB.
Application layer:	Red Hat Enterprise Linux ES v.2.1	BEA WebLogic 8.1.	
	Red Hat Enterprise Linux WS v.2.1	Multiple custom Java-based applications using Jini.	
Database layer:	Sun Solaris v.8	Oracle	
Desktop/clients:	Microsoft Windows	Various office productivity applications.	
	Fedora Project	Multiple open source tools.	

In addition to the TAM, Orbitz was able to rely on in-house expertise to ensure that everything went smoothly. Their IT and development staff were well-versed in UNIX and Linux from on-the-job experience. "Some had also taken the Red Hat Certified Engineer (RHCE) training courses, which was helpful," Stoneberg says.

Orbitz views the transition to Red Hat Enterprise Linux as one that was very easy, largely because the operating system required less kernel work and customization to achieve their performance goals as compared to previous versions of Linux they had used. "Aside from having to upgrade from JDK 1.3 to JDK 1.4 for application reasons, moving to Red Hat Enterprise Linux was pretty easy. We did have to recompile some RPMs that we'd been using, but really we were able to use Red Hat Enterprise Linux ES right out of the box," Kieckhafer says.



PERFORMANCE UP, COSTS DOWN

Since their initial migration from UNIX to Linux, Orbitz has seen substantial increases in performance. "Our performance gains per instance in the Linux environment are in excess of 50%," Stoneberg says. Additionally, the Java JVMs, which Orbitz relies on for its Web portal, show much stronger performance with Red Hat Enterprise Linux v.2.1 than with Sun Solaris v.7.

Cost savings are equally impressive at nearly 80%. "Much of our cost reduction came from the switch off of proprietary hardware and on to commodity x86 1-U machines," Stoneberg estimates.

In addition to Linux, Hjelm acknowledges that Orbitz uses other open source products and tools throughout the organization. For them, everything is a balance between the depth of their internal expertise, commercial availability and viability of the tool, and their ability to support its use widely. "We like that we control our own destiny with open source solutions. We also like the community support as a way to get answers to problems we might encounter," Hjelm says. And even if the open source option is too obscure for Orbitz to use confidently in production, they encourage their developers to use those tools in their personal work environment.

If the performance improvements and cost savings from migrating to Red Hat Enterprise Linux weren't enough, Orbitz believes it also has helped them attract and retain talented employees.

"We have a world-class team here at Orbitz, and they like using open source software and contributing to the movement, as well as benefiting from the technology that comes from it," Hjelm says. "My theory is that there's a complementary effect that comes from hiring world-class talent, working with open source software, and being in the critical path to the delivering value to the Orbitz customers."

PUTTING IT ALL IN PERSPECTIVE

Initially offering less than 30 airline carriers, Orbitz has grown significantly in only four years. 455 airlines. 65,000 hotels. 23 rental car companies. Orbitz offers more choice, faster, making them a recognized leader in online travel for consumers and businesses.

"Our low fare search engine runs on literally hundreds of Red Hat Enterprise Linux servers, and that technology allows us to return more results," Hjelm says. "You just can't do that without a very efficient and low-cost infrastructure. The depth and breadth of our offerings is facilitated by the technology we've put in place."

* "Comparison of Travel site fare Search Performance." Study by Massachusetts Institute of Technology (MIT). February 2003.

RED HAT SALES AND GENERAL INQUIRIES

Toll free numbers:

Europe, Middle East and Africa (EMEA)

00800 7334 2835

Turkey

00800 448 820 640

Israel

1809 449 548

UAE

80004449549

E-Mail:

europe@redhat.com

www.europe.redhat.com

