

CASE STUDY

STATOIL MIGRATES FROM UNIX TO RED HAT ENTERPRISE LINUX AND ACHIEVES 50% COST SAVINGS

Based in Norway and represented in 29 countries around the world, Statoil is an integrated oil and gas company and one of the world's biggest sellers of crude oil. They are a leading retailer of petrol and oil products in Scandinavia, Ireland, Poland and the Baltic states and one of the major suppliers of natural gas to the European market. To support such strong international growth, nearly 50 percent of Statoil's 24,000 employees work outside of Norway.

One of the world's largest operators of offshore oil and gas activities, Statoil is accustomed to tackling challenges. Their goal is to excel in three areas—environmental, social, and financial—believing the three are mutually supportive and combine to build a robust company. Statoil continually looks for ways to improve and provide increased value in those three areas.

Statoil determined that migrating their application infrastructure and HPC needs off legacy UNIX and standardising on Red Hat Enterprise Linux would allow them to manage operations more efficiently thus drastically reducing the cost of IT operations—and strengthening their bottom line.

NEED TO STANDARDISE IT SYSTEMS PROMPTS EARLY INTEREST IN LINUX

In the late 1990's Statoil's IT environment supported seven different proprietary Unix brands along with Microsoft Windows. According to Ole Petter Drange, Operation Manager for servers and data storage, "Our biggest goal was to standardise the server platforms as much as possible."

Statoil's interest in Linux started in 1999, when Linux was just beginning to emerge as a viable enterprise operating platform. According to Senior Engineer and Systems Programmer

Johnny Roen, decisions are made only after thorough research. "Some very experienced system managers did a study of the market situation for Linux and the possible uses for the new operating system. That study, which resulted in an internal report, triggered a project that even more thoroughly investigated how Linux could be adopted within Statoil," he explained.

The project assessed how and when the applications that Statoil depended on could be migrated and concluded that general services such as application servers and databases should be migrated first. In a second phase, Statoil should begin using Linux as the base for their HPC needs – analysing and simulating based on huge data sets.

FAST FACTS

Industry: Oil and Gas

Geography: Headquartered in Norway, with operations worldwide

Goal: To standardise from seven Unix variants to Linux, thereby cutting costs and increasing efficiency across the organization

Solution:

Platform: Red Hat Enterprise Linux, versions 2.1 and 3
Hardware: Intel
Applications: Oracle Database, BEA WebLogic, Schlumberger Eclipse, Landmark drilling software

Benefits: 50% cost savings as compared to Unix. Performance increase by a factor of 10-40.

MARKET LEADERSHIP AND EXPERTISE MAKE RED HAT A CLEAR CHOICE

Statoil chose Linux and Intel hardware largely because of the significant reduction in cost and complexity of operations, especially when compared to the cost of RISC-based platforms. "Statoil's strict requirements for application quality and availability are still very high, just as they were before our migration to Linux, so no compromises have been made in that area," said

Roen. "This very thorough standardisation, from seven UNIX variants to only Linux and Windows, will result in a drastically more efficient system administrator work force."

"We chose Red Hat Enterprise Linux for a number of reasons, the most basic being the openness of the operating system and the big market share that Red Hat had already at that time. Compared to the alternatives, where SuSE was the main competitor, Red Hat also had other advantages. The competency among third party suppliers was better, there was more documentation on the product, and there were also a number of "followers" among Linux vendors who based their products on Red Hat's source code," Roen explained.

RED HAT ENTERPRISE LINUX DEPLOYED ACCORDING TO PLAN

A test project on the Intel platform was launched so that Statoil could test primary applications such as Web and email. They deployed their first production systems on Linux in 2000, and by 2001 Linux was named the preferred platform at Statoil. As planned, Statoil initially focused on migrating Internet/intranet services like Web, mail, and DNS servers.

They then moved on to other enterprise applications, and now the largest usage areas of Red Hat Enterprise Linux are for Oracle databases and BEA Weblogic application servers. Currently Statoil has 16 large-scale Oracle servers, each with four-CPU Xeon processors by Intel and 16 GB of RAM. There are several smaller Oracle servers used for the Landmark drilling software. Each server is attached to a SAN storage system by EMC.

In keeping with their plan, Statoil then turned to Linux as the base for their HPC needs. They now have over 1000 nodes across multiple clusters and locations. Each utilize Red Hat Enterprise Linux on Intel hardware, analysing and creating simulations

based on huge data sets. Their largest single cluster went live in late 2004 with 512 nodes, making it the largest supercomputing cluster in Norway. It contains 1024 Intel Xeon processors running at 3.06 Ghz and can achieve a theoretical peak performance of 6.266 TFLOPS, ranking it among the 100 most powerful computers in the world (footnote: as of 17 March 2005 on www.top500.org). Acting as a single machine, this cluster processes seismic data in Statoil's search for new petroleum resources around the world.

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-Johnny Roen, Senior Engineer and Systems Programmer at Statoil.

Roen also acknowledges that there are a limited number of clients running Enterprise Linux for what Statoil calls 'under-the-ground' applications, whose purpose in to survey and monitor wells that are literally under ground.

LESSONS LEARNED AS AN EARLY ADOPTER

Because Statoil was such an early adopter of Linux, they experienced some technical issues that they had not experienced in their Unix environment. "It was to be expected, and identifying and correcting those problems took some time," explained Drange, "but nevertheless, the TCO was always far lower with Linux than it was with Unix, so it was worth it." 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.



redhat



CHOICE FOR THE ENTERPRISE

Even though Red Hat boasted significantly more 3rd party suppliers and application support than others in the market, when Statoil began migrating in 2000, some application software vendors were hesitant to port to Linux. However, according to Roen, software vendors have realized that Linux is a strategic platform for their customers, so this is becoming less of a problem.

Initially, Statoil required custom changes to the operating system, a process that allowed them to acquire huge amounts of knowledge and experience. "We made sure to carefully define routines for platform management and certification, as well as version handling," said Roen. "And one of the biggest lessons we learned is that it's safer to use well-tested kernels than taking a chance on the latest technology. This is one of the greatest values of the Red Hat Enterprise Linux release model." Statoil is able to take advantage of whichever version of Red Hat Enterprise Linux best suits the needs of a particular project. Drange says that they currently utilize both versions 2.1 and 3 throughout their organization.

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Roen believes that one of the biggest benefits of the vast internal knowledge at Statoil is that it has

enabled stronger relationships with Red Hat Global Support Services. "Statoil has used Red Hat's support on several occasions, both regular support and the Technical Account Manager. The TAM has been useful, not only in the normal support workflow, but also in discussions regarding technical issues between Statoil and some application software vendors. Because he's dedicated to our account, our TAM is able to pay special attention to our environment and can help proactively,"

SUCCESS: STANDARDISATION, COST SAVINGS AND PERFORMANCE INCREASE

Statoil's goals in migrating from legacy-UNIX to Red Hat Enterprise Linux were to manage IT operations more efficiently, cut costs and strengthen their bottom line. Although their consolidation work is ongoing, they've met and exceeded their original goal. Statoil has already reduced the number of Unix versions in their environment from seven to four. As a result, 70% of the services that were run on Unix now are run on Linux. "We reported a 50% cost savings after migrating those systems from Unix to Linux on Intel," Drange said.

Additionally, Statoil has noticed significant performance improvements. "Schlumberger's Eclipse, an application we use for reservoir simulation, gained 10-40 times the performance due to the platform change," reported Roen. "Even a current-technology Silicon Graphics server was slower than the Red Hat-Intel combination."

Moving forward, Drange says, "It is Statoil's expressed strategy since 2001 to use open source systems. Linux is preferred to Unix and gradually more and more systems will be phased out in favor of Red Hat Enterprise Linux."



CHOICE FOR THE ENTERPRISE