



DFS Deutsche Flugsicherung GmbH

DFS Deutsche Flugsicherung GmbH developed a radar data-processing system called PHOENIX, which runs on SUSE® Linux Enterprise Server for high availability and performance—helping ensure safety for aircraft across Germany. The company also ported several UNIX-based applications to Linux*, for greater flexibility and improved price-performance.

Overview

DFS Deutsche Flugsicherung GmbH is a government-owned company responsible for all air traffic control in Germany. With headquarters in Langen, near Frankfurt, DFS employs 5,200 staff, runs operations at four control centres and 19 international and regional airports across the country.

Challenge

With responsibility for one of the busiest airspaces in the world, DFS is required by the German Aviation Act to provide a number of air navigation services—with efforts mainly focused on air traffic control and the acceptance, processing and forwarding of flight plans.

DFS' software department for tower control systems SH/T developed a radar data processing system called PHOENIX, which proved to be so fast, efficient and stable that it replaced all previous systems and was quickly installed at almost 100 working positions in Germany's 17 international airports.

Most of the company's applications were running in a proprietary UNIX* environment, but the company decided to move the PHOENIX system to Linux.

"We wanted to move to an open-source platform because it would free us from being tied to a single vendor and would reduce licensing costs," said Ralf Heidger, Head of the SH/T department, which has maintained the PHOENIX development since its foundation in 2001.

Solution

DFS chose SUSE Linux Enterprise Server as its strategic platform for all ATC Systems, and also decided to port many of its other applications from UNIX to Linux. The powerful GNU C/C++ development toolkit included in the SUSE Linux package facilitated the development stages.

"Thanks to the direct availability of development systems on every PC, laptop and server, we are saving a lot of time—it may even be safe to say several man-months," said Heidger. "We haven't done all of the calculations yet, but it is clear that this will translate into a considerable reduction in costs."

As system availability is so vital to the safe handling of air traffic, DFS has implemented a fail-over solution by running SUSE Linux Enterprise Server on a pair of clustered servers. If one should fail, the other server will immediately take over service provision.

Deutsche Flugsicherung at a glance:

German state-owned air-traffic and navigation service provider

■ Industry:

Aviation

■ Location:

Germany

■ Solutions:

SUSE Linux Enterprise Server

■ Results:

- Achieved 24/7 uptime for safety-critical, air-traffic control systems
- Cut licensing costs by more than €100,000 annually by moving to an open-source platform
- Increased ability to sell DFS software to other air navigation companies

"Linux—and in our case SUSE Linux—is developing into a standard platform for air navigation services applications."

Alexander Schanz

*Head of Linux Competence and Service Centre (LCSC)
DFS Deutsche Flugsicherung GmbH*

“We are saving hundreds of thousands, if not millions of Euros, on licence fees—both at the development stage and when the systems are in operation. SUSE Linux Enterprise Server offers the same enterprise-class stability and performance as other UNIX derivatives, but at lower cost of ownership.”

Ralf Heidger

Head of SH/T, PHOENIX Development
DFS Deutsche Flugsicherung GmbH

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“Novell’s support for the Heartbeat cluster software was another important reason for our choice,” said Schanz. “SUSE Linux Enterprise Server is installed on all cluster nodes, and certification from Novell® assures a highly fail-safe solution.”

DFS is planning to leverage the support for Xen* virtualisation technology in SUSE Linux Enterprise Server. By consolidating multiple workloads to a single physical server, DFS will be able to increase server utilisation, maximising its ongoing investment in hardware. The use of virtualisation technology will also make it easier to manage separate development, test and production environments, and to rapidly set up new development environments.

“Novell’s early support for Xen virtualisation will help us make better use of our hardware, enabling us to concentrate more logical systems on each server,” said Schanz. “Not only will we reduce direct hardware costs, but we will also remove significant maintenance and licensing costs.”

Results

By choosing SUSE Linux Enterprise Server, DFS avoided additional investment in proprietary, closed-source operating systems, and enabled considerable improvements in price-performance.

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both at the development stage and when the systems are in operation,” said Heidger. “SUSE Linux Enterprise Server offers the same enterprise-class stability and performance as other UNIX derivatives, but at lower cost of ownership.”

Price, however, is a secondary consideration. In an industry where incorrect or delayed decisions could result in loss of life, maintaining high availability for systems is the number one priority.

“No air traffic control centre can afford to have system failures, however high the peak traffic becomes,” said Heidger. “Therefore our requirements for production and development systems focus particularly on the stability and performance of the operating system. SUSE Linux and SUSE Linux Enterprise Server meet our demanding requirements for both aspects.”

The stability of SUSE Linux Enterprise Server has contributed considerably to the success of the new PHOENIX radar data processing system, to the extent that DFS has been able to market the software to other European air navigation services organisations.

“We have already sold software to the Portuguese air traffic control network, and Linux is our recommended operating system,” said Heidger. “Linux—and in our case SUSE Linux—is developing into a standard platform for air navigation services applications.”



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