



Dresden Chess Olympiad

Using SUSE® Linux Enterprise Server was one of the keys to success when Chess Olympiad 2008—Chess Foundation GmbH, a company of the City of Dresden, successfully broadcast its Chess Olympiad over the Internet. Combining high performance with stability and ease of management, the Novell® operating system helped the city to broadcast up to 550 concurrent games in near real-time to a global audience of millions.

Overview

Dresden is the capital of the German Federal Free State of Saxony. Located in the east of Germany, Dresden has more than 500,000 inhabitants. In 2008, the city hosted the 38th FIDE international Chess Olympiad, which attracted 146 teams in the open competition and 111 teams in the women's competition.

Challenge

To host the prestigious biennial FIDE Chess Olympiad, the organising company at Dresden needed to build up an infrastructure capable of broadcasting live games over the Internet. The city wanted to ensure that chess enthusiasts from around the world could follow any one of up to 550 simultaneous games—in as close as possible to real time.

It was vital to create a resilient Web site capable of serving large numbers of concurrent visitors, but without generating unsustainable costs and management overheads. The challenge was significant—and achieving it would be a first in the history of the Chess Olympiad. The two key requirements were high-bandwidth connectivity and a stable, high-performance operating platform.

The IT organisation was able to tap into the considerable IT resources of the Dresden Technical University, taking advantage of its 10Gb/s connectivity and gaining agreement to host part of the solution in the TU's centre for high-performance computing.

Solution

The city of Dresden designed a solution with two distinct elements: processing and presentation. In both cases, the IT team chose SUSE Linux Enterprise Server as the operating system.

“We estimated that we would need to serve an audience of up to one million people, with up to 550 games being played simultaneously—so it was absolutely crucial to ensure total reliability and high performance,” said Juergen Meier, Deputy IT Director, Chess Olympiad IT Organisation. “SUSE Linux Enterprise Server met our high requirements for both reliability and performance—and we also had knowledge of using the operating system elsewhere in the city, so training costs were effectively zero.”

For the processing system, the team selected 10 IBM® BladeCenter® HS21 blade servers, each with two quad-core processors.

Dresden at a glance:

Capital of the Federal Free State of Saxony in Germany

■ Industry:

Government

■ Location:

Germany

■ Products and Services:

SUSE Linux Enterprise Server

■ Results:

- Broadcast 6,050 chess games, with 550 concurrent games in early stages
- Served near real-time updates to up to one million simultaneous viewers
- Provided stable, high-performance environment at low cost

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*Deputy IT Director
Chess Olympiad IT Organisation*

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The blades were clustered to ensure high availability, and Dresden opted to use the NFS file system for its ease of sharing remotely stored files between different servers.

For the presentation system, Dresden installed two Sun* Niagara* servers each with two UltraSPARC* processors, and each with access to a separate 10Gb/s pipe. The UltraSPARC processors have eight cores, each executing eight threads, making it possible to run 128 processes in parallel on each server.

“We set up ordinary PCs to poll the 550 chess boards for updates every 10 seconds, then passed the data to the processing layer in our data centre,” said Meier. “The processed data was then fed to the Web proxy servers located in the Dresden Technical University. SUSE Linux Enterprise Server performed faultlessly across this architecture, helping us to offer an excellent service to a large international audience.”

To keep costs as low as possible, the team aimed to minimise hardware resource consumption. By selecting SUSE Linux Enterprise Server, which has a small footprint, and by intensively tuning the Web application and the data stream between the processing and presentation layers, the IT organisation was able to achieve superb performance from a relatively small-scale infrastructure. Equally, the operating system offers low

management overhead, which helps to keep costs down.

Results

For the first time in the history of the FIDE Chess Olympiad, a global audience was able to watch any of the games in near real-time. The IT organisation team pushed the performance as high as possible by offloading the visualisation of the chess moves to the Java* client running on the end-user’s own PC. During the tournament, viewers were able to receive updates every 10 seconds from any of the 550 chess boards.

“Using our infrastructure based on IBM and Sun servers running SUSE Linux Enterprise Server, we were able to broadcast all 6,050 games in near real-time,” said Meier. “The environment was also very reliable: we had successfully simulated a failover from one cluster to another beforehand, but we didn’t need to invoke it during the event.”

With SUSE Linux Enterprise Server at the heart of the Web broadcasting solution, the organisation was able to combine high performance and reliability with low total cost of ownership.

“Cost was an important factor in our choice of SUSE Linux Enterprise Server,” said Meier. “With its low licensing costs and small footprint, we were able to maximise our budget to produce excellent results.”



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