



Case Study

Virtualization

Quad-Core Intel® Xeon® processors

Parallels™ Software and Intel® Quad-Core Processors Accelerate Virtual Private Servers for Service Providers



HostEurope uses Parallels™ virtualization and automation software on servers with Quad-Core Intel® Xeon® processors to deliver maximum performance while reducing power consumption

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- Challenges**
- Select key technologies that will help enable a new virtual private server (VPS) hosting services model that combines the low cost of shared hosting and the guaranteed resources of a dedicated server
 - Deliver the processing performance required to support at least 15 to 20 virtual private servers on each physical server
 - Minimize energy costs to help ensure a profitable business model

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- Solutions**
- The team deployed Parallels™ Virtuozzo™ Containers and Parallels Infrastructure Manager™ software to create virtual private servers and maximize the Intel® processor power available to HostEurope customers
 - To deliver ample performance with low energy consumption, the HostEurope team chose servers with the Quad-Core Intel® Xeon® processor 3300 series and the Quad-Core Intel Xeon processor 5400 series

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- Benefits**
- The HostEurope team can install up to 100 virtual environments on a single server with two Quad-Core Intel Xeon processors, exceeding initial requirements and enabling a highly successful business model
 - Parallels running on the Intel Xeon processors helps increase revenue per physical server by 60 percent
 - Sales of virtual private servers on Intel®-based systems increased twentyfold in three years
 - Parallels Virtuozzo Containers software helps reduce IT administration costs by 77 percent
 - Intel Xeon processors help reduce energy requirements by 52 percent



“The Intel® Xeon® processors permit high utilization of the server, and the Parallels™ software lets the power of the Intel processors come through.”

Patrick Pulvermueller, Managing Director, HostEurope



“We went from 50 new virtual private servers per month three years ago to a net growth of 1,000 per month today, all without encountering any reliability or scalability issues.”

Patrick Pulvermueller
Managing Director
HostEurope

HostEurope, one of the largest Web hosting service providers in Europe, is constantly looking for new technologies that can benefit its customers. The company has developed close working relationships with key suppliers to ensure early access to the most promising hardware and software available. Those relationships have made a difference: using advanced software from Parallels™ and the latest Intel® processor technology, HostEurope has helped revolutionize the hosting services marketplace through the innovative use of virtualization.

Traditionally, Web hosting customers had to choose between shared hosting and dedicated server offerings. The shared model was the most economical, but each customer’s flexibility and access to server resources was necessarily limited. Dedicating a server to one customer ensured full access but was more costly and often provided more capacity than the customer could use. HostEurope saw an opportunity to close the gap between shared and dedicated hosting by offering an affordable solution with more flexibility, resources, and performance.

The Challenges

To succeed, the solution had to be cost-effective for customers while also making sense from a business standpoint. HostEurope explored virtualization technologies as a way to combine the low cost of shared hosting and the guaranteed resources of a dedicated server. “Our studies showed that if we could use virtualization

to place 15 to 20 hosting customers on each physical server, we would have a viable offering,” says Patrick Pulvermueller, HostEurope managing director. “We could provide a very attractive price reduction for the customer and still maintain the margins we needed.”

Selecting the right hardware and software was critical. With 15 to 20 customers per server, delivering the necessary performance to each customer would require powerful processor technology. Further complicating the equation, virtualization technology could add processing overhead and make server processing power less available for customer applications. HostEurope also needed highly energy-efficient servers to help keep operating costs down, and robust functionality in the virtualization software to enable large-scale management.

The Solution

HostEurope engineers examined several options for virtualization software and chose the Parallels™ Virtuozzo™ Containers solution. “The container technology in Parallels Virtuozzo is the only technology we have found that allows us to place the number of customers we need on each physical server without negative effects on performance,” says Pulvermueller.

Unlike solutions that create multiple virtual machines running different operating systems, Virtuozzo Containers hosts a single operating system and

Key Technologies

- Quad-Core Intel® Xeon® processor 5400 series
- Parallels Infrastructure Manager™ software
- Quad-Core Intel Xeon processor 3300 series
- Parallels™ Virtuozzo™ Containers virtualization software

creates multiple independent operating system instances, or containers. This approach minimizes overhead and makes more of the server processor power available to customer applications.

Although the HostEurope team considered multiple processor options and vendors, it ultimately selected multi-core Intel® Xeon® processors to power its servers. "It was a performance decision and a reliability decision," says Pulvermueller. "Intel leads the industry in multi-core processing, with leadership performance in both dual-core and quad-core processors, and the energy efficiency of its processors is excellent. Intel also maintains a stable, long-term roadmap, which enables us to plan ahead and keep deploying the latest innovations in a controlled way."

HostEurope deploys over 7,000 Intel® processor-based servers

After testing dual-core and quad-core processors, HostEurope ultimately decided to use two different hardware configurations running Virtuozzo Containers: one-socket servers with the Quad-Core Intel Xeon processor 3300 series for mainstream customers, and two-socket servers with the Quad-Core Intel Xeon processor 5400 series for more demanding customer requirements. The HostEurope team has deployed more than 7,000 Intel processor-based servers to date, spreading them across three data centers located near the company headquarters in Cologne, Germany.

The combination of Parallels Virtuozzo Containers and Quad-Core Intel Xeon processors has far exceeded HostEurope's initial requirement of supporting 15 to 20 virtual private servers per physical machine. The HostEurope team can install up to 100 virtual environments, each with its own dedicated workload, on a single server with two Quad-Core Intel processors. "We're getting high VPS density and high CPU utilization, which means we are making optimum use of our server resources," says Pulvermueller. "At the same time, each virtual environment has very fast response time, which benefits our customers in daily operation."

Successful business model increases revenue per server by 60 percent

By selecting and deploying Intel and Parallels products, HostEurope produced a successful business model

Spotlight on HostEurope

Founded in 1997, HostEurope develops and markets innovative Internet services for private and business clients. HostEurope won the German Internet Industry Award as "Best Internet Hoster" in 2005, and "Webhoster with the Best Technical Performance and Usability" and "Best Business Hoster" in 2007. Its partnerships with leading technology companies, extensive services, and customer-oriented support help make HostEurope one of the leading hosting service providers in Europe.

that is popular with customers and profitable for the company. "Our average monthly revenue is about USD 250 per physical machine with dedicated servers," says Pulvermueller. "With virtual private servers, the average monthly revenue per physical machine is about USD 400, an increase of approximately 60 percent, while our capital expenditures remain the same. The only reason we can achieve this greater revenue is that the Intel Xeon processors permit high utilization of the server, and the Parallels software lets the power of the Intel processors come through."

In fact, customer demand for the virtual private servers has resulted in a twentyfold increase in VPS growth over the past three years for HostEurope. "Our VPS sales have skyrocketed with the quad-core Intel technology-based servers running Virtuozzo Containers," says Pulvermueller. "We went from 50 new virtual private servers per month three years ago to a net growth of 1,000 per month today, all without encountering any reliability or scalability issues."

Management tools allow growth without excessive service costs

An important factor in HostEurope's success is the management functionality built into the Parallels software. Parallels Infrastructure Manager™ enables HostEurope customers to manage their own virtual server using a web-based interface. It also provides the

"We work closely with Intel to optimize our products and ensure that they run great and utilize all the benefits of the latest Intel®-based platforms. This allows our hosting provider customers to maximize their revenue by running a virtualization platform with minimal overhead."

Soeren von Varchmin
Vice President
SaaS and Service
Providers International
Parallels

HostEurope IT team with a centralized administrative panel to easily monitor and manage the thousands of virtual private servers spread across the company's three data centers. The IT team can configure a VPS, bring it online, put it in suspension mode, and migrate it from one physical server to another using the centralized panel.

"The simplified management has helped us lower IT administrative costs by 77 percent," says Pulvermueller. "We can manage our 16,600 virtual private servers with just seven people, or one person for every 2,371 virtual servers, using the Parallels software."

Intel® processors help improve energy efficiency by approximately 52 percent

The energy efficiency of the Intel® Xeon® processor-based servers contributes to the success of the HostEurope VPS business model by helping to keep electricity costs down. "With the Quad-Core Intel Xeon processors, we have been able to improve energy efficiency by approximately 52 percent," says Pulvermueller. "The latest Intel Xeon processor-based servers we are using consume

approximately 121 watts each by our measurements, compared to our previous servers that consumed over 250 watts each. That enables us to increase our processing capability without excessive energy costs."

HostEurope makes technology choices for the future

With virtual private servers established as a standard offering for hosting customers, the HostEurope team is confident that their technology choices will enable them to meet future demand. "The Quad-Core Intel Xeon processors give us ample headroom to add new virtual environments, and the Parallels software makes it easy to do," says Pulvermueller. "If a current customer needs to expand, we can quickly add more resources to an existing VPS as well. Although we still offer dedicated and shared hosting, virtual private servers are the right choice for a growing number of customers—and the Parallels software and Intel processors help make that possible."



For more information about Intel® Virtualization Technology, contact your Intel representative or visit intel.com/technology/virtualization

For more information on Parallels, send e-mail to info@parallels.com or call +1 (703) 815-5670 to get in touch with a Parallels representative.

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