



## Success Brief

Intel® Xeon® processor  
7400 series  
Online Gaming



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Bjoern Metzdorf,  
Director Information Technology,  
Turtle Entertainment

# The Power of Six

## Turtle Entertainment gains sweeping consolidation benefits with the multi-core Intel® Xeon® processor 7400 series

<b>Company:</b>	Turtle Entertainment is a market-leading provider of online gaming leagues, tournaments and events and the driving force behind the Electronic Sports League, Europe's largest online gaming community with over 875,000 members.
<b>Product evaluated:</b>	Intel® Xeon® processor 7400 series
<b>Challenge:</b>	Because of extraordinarily high growth rates the company needs robust and high-performing web server systems that can scale accordingly. However, this leads to server sprawl in which ever more hardware is required to keep up with demand. In turn, power and cooling costs rise, and system management becomes more complex. Turtle Entertainment wanted to avoid this while maintaining performance capability.
<b>Results:</b>	It achieved a web server consolidation ratio of 1:7.5, required only 16 network ports rather than the previous 60, and 24 network and power cables rather than 66.
<b>Impact:</b>	The server consolidation ratio enabled the company to reduce power consumption and cooling requirements, gain more rack server space and simplify management of its systems. This reduced the Total Cost of Ownership over a 24-month period from EUR 149,840 to EUR 98,517, a 34 per cent reduction.
<b>Next steps:</b>	Turtle Entertainment now plans to roll out servers powered by Intel Xeon processor 7400 series to replace its existing web servers.

### Challenge

Turtle Entertainment specialises in online multi-player gaming and is the driving force behind the European Electronic Sports League (ESL), which has over 875,000 members. As the largest online gaming community in Europe, the ESL requires a robust infrastructure to serve content for each one of its members and also to handle exponential website traffic growth rates. Since its launch in 2000, the number of ESL page-impressions (PIMPS) has doubled approximately every 12 months. For example, in early 2002 it registered 4.5 million PIMPS per month and by the third quarter of 2007, 162 million PIMPS per month. The Turtle Entertainment system consists of thirty web servers. New web servers can be added to meet growing demand. However, adding new servers also means increased management complexity, growing power, cooling and hardware costs and the need for more space, which taken together increase management complexity and drive up the overall costs of running the server farm.

### Deployment

Turtle Entertainment's existing system is based on LAPP (Linux, Apache, PostgreSQL, PHP) running on about 50 physical servers. At the back end there are four major SQL database servers. More than 30 diskless web servers request content from the SQL servers, delivering it to the clients. The database system is powered by Intel® Xeon® 7300 processor series, which Turtle Entertainment had earlier upgraded to with great success. For example, following the upgrade the amount of time it took to generate a web page decreased by 60 per cent, from 177 milliseconds to 72 milliseconds.

However, with growth expected to continue at a high rate, which means adding more web servers to meet the demand, the company was keen to see whether it could not only improve server performance but also at the same time reduce power, cooling and space requirements as well as ensuring simpler management. With these goals in mind it evaluated the Intel® Xeon® processor 7400 series.

Each Intel Xeon processor 7400 series has six cores. Turtle Entertainment used a server powered by four Intel Xeon processor 7400 series, a total of 24 central processing unit (CPU) cores. From a technical perspective, this deployment delivered 3.0 GHz, 32 GB RAM, four gigabit network interface cards and two redundant 1570 watt power supplies in a 4U server chassis.

## Results

The company discovered that the server powered by the Intel Xeon processor 7400 series, with its six cores, could also replace 7.5 of Turtle Entertainment's conventional web servers. If four server configurations were utilised, 30 web servers could be replaced, bringing significant consolidation benefits. For example, the 30 web servers require 60 rack space units, 60 network cables and 30 power cables. This alone complicates management and cooling. The power consumption of each web server is also approximately 250 watts or for all the web servers 7,500 watts. Sixty network ports are also required, which results in two 48-port switches.

In contrast, the system powered by the Intel Xeon processor 7400 series revealed to Turtle Entertainment that it could consolidate its physical hardware while also gaining performance and energy-efficiency benefits. For example, 6,280 watts would be required to power the servers, resulting in a minimum saving of 1,220 watts. Only sixteen network cables rather than 60, and eight power cables rather than 30 were needed, cutting out the requirement for a further 66 cables. And only 16 rackspace units were required rather than 60, a saving of 44 units.

This delivered a Total Cost of Ownership for its web servers of EUR 24,629 over six months compared to EUR 37,469 for the previous 30 server system. When projected over 24 months the costs savings were substantially greater, EUR 98,517 for the four servers

## Impact

Turtle Entertainment's continued success is absolutely dependent on reliable systems that can meet and successfully manage its dramatic growth. The company's evaluation of the Intel® Xeon® processor 7400 series revealed substantial hardware consolidation benefits that bring in their wake further advantages.

For example, the higher density and increased processing power of the Intel Xeon processor 7400 series also permits Turtle Entertainment to consolidate its server hardware at a ratio of approximately 1:7.5, which in turn frees up rack space, simplifies management, lowers power costs and reduces overall management costs. Importantly the six-core processor also ensures the company has the performance levels it requires to scale up the business.

Bjoern Metzdorf, Director Information Technology, Turtle Entertainment said: "The Intel Xeon processor 7400 series enables us to have a higher CPU power density and less cooling and management effort than any other solution. It also helps us significantly cut down server and power costs while providing a reliable and powerful platform for future growth."



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The test also revealed that four servers powered by Intel Xeon processor 7400 series would easily enable 162 million page impressions a month, the same number of page impressions enabled by the 30 web servers. The system could also be scaled to meet growing demand, ensuring that the company could continue to grow, while keeping operational and management costs down.

## Future

As part of a wider equipment upgrade, Turtle Entertainment now plans to eventually replace its existing web servers with servers powered by the Intel Xeon processor 7400 series. In doing so, it will consolidate 30 web servers into four, while reducing operational and management costs.

The Intel Xeon processor 7400 series also supports the company's demanding data processing and by also lowering energy and cooling costs enables Turtle Entertainment to adopt features of the Predictive Enterprise, in which the actions of today help an organisation directly achieve the goals of tomorrow.

In short, the Intel Xeon processor 7400 series is the ideal platform for Turtle Entertainment to galvanise its position as the market leader in the European online interactive games market while also positioning for low-cost future growth.

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