Case Study

**Intel® Xeon® Processor**

Service Providers & Media

Data Center Transformation

# Powering the Beijing 2008 Olympic Games Official Website

## Sohu.com helps Beijing spread Olympic spirit with the latest Quad-Core Intel® Xeon® processor 5400 series[1]

From 8th to 24th August 2008, Beijing will play host to the biggest international sports event of the year – The Games of the XXIX Olympiad.

At the historical event, participating athletes around the world will congregate in Beijing, China to vie for top honours in 302 events over 28 sporting categories.

And through it all, the Sohu.com-managed official Games website, enabled with the latest quad-core Intel® Xeon® processor 5400 series, will carry news of the progress of the Games to the furthest reaches of cyberspace and celebrate the spirit of the Olympics with the world.

"Based on 45nm manufacturing processes, the latest quad-core Intel® Xeon® processor 5400 series allows Sohu.com to effectively cope with the massive website traffic requirements typically associated with the Olympic Games."

Wang Xiaochuan
Senior Vice President
Sohu.com Inc.

**Challenge**

- **Deliver extensive Games coverage**
  The 2008 Beijing Olympic Games official website needed to undertake the massive task of hosting news on all aspects of the Games, including event calendar, results, athlete information for the media, and more.
- **Utilize robust technology to support web hosting and database management functions**
  The monumental effort of hosting Internet content for the Games means that official sponsor Sohu.com needed to utilize the latest computing technology to form an IT infrastructure capable of receiving, storing and hosting large volumes of data.
- **Manage website for optimum performance in the face of high traffic**
  On top of the massive amounts of information to be hosted on the 2008 Beijing Olympic Games official website, Sohu.com has to deal with an anticipated high traffic flow during the Games.

**Solution**

- **Work closely with Intel for robust server technology support**
  To realize the full potential of the 2008 Beijing Olympic Games official website, Sohu.com works closely with Intel, taking advantage of the latest computing technologies to form its IT infrastructure.
- **Acquire the right tools**
  Next-generation quad-core Intel Xeon processor-based servers form Sohu.com's new web and database server technology deployment for the 2008 Beijing Olympic Games official website.
- **Use the next level of computing performance**
  Servers running on the latest Quad-Core Intel® Xeon® processing technology boosts computing performance across the board, allowing Sohu.com to cope with extreme web-hosting workloads while maintaining optimum performance and uptime.

# Quad-Core Intel architecture forms the basis of Sohu.com's Beijing 2008 Olympic Games web hosting infrastructure deployment.

### Spotlight: Sohu.com Inc.

- Established by Dr. Charles Zhang, Sohu.com Inc. is China's premier online brand that delivers a vast network of community-based Web 2.0 services.
- Over the years, Sohu.com has built one of the most comprehensive matrices of Chinese language web properties and proprietary search engines, offering the vast Chinese Internet community a broad array of choices regarding information, entertainment and communication.
- Currently in its twelfth year of operation, Sohu.com has contributed immensely to making the Internet ubiquitously available for the mainland Chinese community, be it in the office, at home or event on the road.
- Sohu.com offers wireless messaging services for subscribers to receive the latest news, access their email account, stay in touch with friends, play games or sign up for a host of other information, entertainment and communication applications that have made the mobile phone an essential tool in China's daily lifestyle.
- Sohu.com also offers mobile services on SMS (short messaging services), RBT (Ring Back Tones), WAP (Wireless Application Protocol), MMS (multi-media messaging services), IVR (Interactive Voice Response) and K-Java based platforms.
- Having secured the Beijing 2008 Olympic Games official sponsorship in 2005, Sohu.com has since won the exclusive right to establish and operate the official website of the Games, which is estimated to attract massive traffic during the Games period.

**Source: Sohu.com Inc.

## Assessing the Situation

As one of the official sponsors for the Beijing 2008 Olympic Games, Sohu.com is responsible for the development, operation and maintenance of the official website for the Games.

However, the official website of the Beijing 2008 Olympic Games is a major undertaking that requires the deployment of high quality backend systems to support robust web-hosting capabilities.

According to Senior Vice President Wang Xiaochuan, the Olympics Games features a total of 302 events across 28 sports, all of which require database management of the results and subsequent posting onto the website after consolidation and analysis.

"The sheer number of sporting events alone means that we would require a massive number of servers simply to cope with the volume of information generated throughout the Games," says Wang.

Furthermore, the posting of Games results needs to be completed within a stipulated time frame so as to ensure that web users are able to access the Games results within the shortest time possible, posing considerable logistics and IT infrastructure challenges.

Additionally, the anticipated massive network traffic, both internally and externally, is expected to put considerable stress on Sohu.com's existing backend servers, not to mention raising overall energy consumption and adding to the already significant costs involved in maintaining a website of this size.

These challenges, along with numerous other factors such as overall system performance, reliability and stability as well as network security, requires extreme hardware performance to mitigate.

"Sohu.com needed a superior backend server system that features robust performance, optimized uptime and overall better energy efficiency in order to cope with the website demands of an event as significant as the Beijing 2008 Olympic Games." says Mr.Wang.

"Unfortunately, from experience and over the course of our own research, we felt that conventional server technology simply does not feature the performance capabilities and energy consumption standards we need to adequately support our web hosting requirements for the Games, Mr.Wang adds.

In the run-up to the Games, Sohu.com subsequently turned to long-time technology partner Intel for answers and it wasn't long before Intel delivered the solution for Sohu.com with the latest 45nm quad-core Intel® Xeon® processing technology.

"With the quad-core Intel® Xeon® processor technology deployment up and running online, Sohu.com has since seen our search engine and database efficiency improve by up to three times!"

Wang Xiaochuan
Senior Vice President
Sohu.com Inc.

## Delivering the Solution

Based on 45nm manufacturing processes, the latest quad-core Intel® Xeon® processor technology allows Sohu.com to effectively cope with the massive website hosting and traffic requirements typically associated with major sporting events such as the Beijing 2008 Olympics Games.

And Sohu.com agrees too, having deployed over 600 servers based on 45nm quad-core Intel Xeon processor technology, with another 300 more in the works to function as backup servers during the Games. These servers are deployed as database servers to host both the website and to house the Games results.

With roughly twice the density of Intel® 65nm technology, Intel's next-generation 45nm technology packs more than 400 million transistors for dual-core processors and more than 800 million for quad-core, enabling great performance leaps with up to 50 percent larger L2 cache on top of whole new levels of breakthrough energy efficiency.

As a result, servers based on the new 45nm quad-core Intel Xeon processor technology deliver greater performance per watt than conventional processor platforms while consuming less energy overall.

Additionally, quad-core Intel® Xeon® processor technology also comes with hardware-assisted Intel® Virtualization Technology (Intel VT), enabling Sohu.com to enjoy greater flexibility and maximum system utilization by consolidating multiple environments into a single server.

Besides running virtual machines that not only cuts down on energy needs but also saves precious data center space, Sohu.com also benefits from the enhanced virtualization capabilities afforded by the quad-core Intel® Xeon® processor with seamless software and operating system migration efficiencies. In all, Intel VT delivers these advantages to Sohu.com:

- Simplified resource management that increases IT efficiency
- Decreased disaster recovery time
- Greater systems reliability and availability, reducing corporate risk and real-time losses from downtime
- Lowered hardware acquisition costs with increased utilization of Sohu.com°Øs existing machines

"The enhanced performance and energy efficiency benefits that come with the new 45nm quad-core Intel Xeon processor technology allows us to rest easy knowing that our servers now come with faster response time, improved reliability and lower energy consumption," says Mr.Wang , "Sohu.com can now concentrate fully on managing the Games results without having to worry about backend support."

Indeed, with the deployment up and running, Sohu.com has since seen its search engine and database efficiency improve by up to three times!

Mr.Wang also revealed that the enhanced performance of 45nm quad-core Intel Xeon processor technology combined with virtualization techniques mean that Sohu.com now needs only 64 machines to do the work of 256 previously.

"Additionally, with lower power consumption per server, this generates overall greater cost savings with lesser machines and lower energy usage. In all, Sohu.com has experienced greater ROI and cost efficiencies from the deployment of 45nm quad-core Intel Xeon processor technology," says Mr.Wang.

"Intel's technology expertise and support has been invaluable to Sohu.com in our sponsorship of the Beijing 2008 Olympic Games. Together with Intel, we can now look forward to an exciting Games ahead!"

Wang Xiaochuan
Senior Vice President
Sohu.com Inc.

## Key Technologies

- Next generation 45nm Intel® Core™ microarchitecture forms the fundamental basis for Sohu.com's deployment of quad-core computing technology.
- With roughly twice the density of Intel 65nm technology, Intel's 45nm technology packs more than 400 million transistors for dual-core processors and more than 800 million for quad-core.
- Intel 45nm technology also enables great performance leaps with up to 50 percent larger L2 cache and new levels of breakthrough energy efficiency.
- As a result, servers based on quad-core Intel Xeon processor technology deliver greater performance per watt than conventional platforms yet stay energy efficient.
- Quad-core Intel Xeon processor technology also supports Intel Virtualization Technology (Intel VT), enabling Sohu.com to access greater functionality and compatibility compared to non-hardware assisted virtual environments.

## Integral Answers

- Sohu.com deploys 45nm-based quad-core Intel Xeon processor technology to satisfy its web-hosting requirements for the Beijing 2008 Olympic Games official website.
- In all, more than 600 servers based on quad-core Intel Xeon processor technology were deployed for web-hosting applications such as website and Games result hosting.
- Together these servers seamlessly run the Linux* operating systems, which form the basis of the software environment for Sohu.com's web-hosting applications.
- Besides delivering processor technology, Intel also played the key role of technology advisor to Sohu.com, collecting customer information and responses to aid Sohu.com in perfecting the IT infrastructure for the Beijing 2008 Olympics official website.

The performance boosts and benefits enjoyed by Sohu.com's 45nm quad-core Intel® Xeon® processor technology deployment mean that website users can now enjoy a smoother search experience when visiting the official website of the Olympics.

And Sohu.com could not be happier.

With Intel as its trusted technology partner, Sohu.com can now confidently deliver on its official sponsor commitments to the Beijing 2008 Olympic Games and celebrate the Olympic spirit with the world through its web-hosting capabilities, bringing athletes, officials and spectators alike closer to the Beijing 2008 Olympic ideals of One World One Dream.

## Return on Investment (ROI)

- Intel® technologies form a robust, stable and reliable infrastructure capable of sustaining the high volume of content hosting and delivery for the Beijing 2008 Olympic Games official website.
- 45nm-based quad-core Intel Xeon processor technology provides the reliability and performance capacity necessary to handle the Games' round-the-clock web traffic needs.
- As a result, website users can now enjoy a smoother search experience when visiting the official website of the Olympics.
- With the deployment up and running, Sohu.com has since seen its search engine and database efficiency improve by up to three times.
- Sohu.com also revealed that only 64 machines are now needed to support its usual web-hosting capabilities instead of 256, reflecting the huge performance boost afforded by quad-core Intel Xeon processor technology.
- Additionally, Sohu.com is also experiencing lower power consumption per server, generating overall greater cost savings with lesser machines and lower energy usage.
- Overall, Sohu.com not only benefits from greater ROI and cost efficiencies, it also garners greater cost savings with virtually no price differences between the latest 45nm-based quad-core Intel Xeon processor technology and its predecessors.

**Source: Sohu.com Inc.


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