



Webcast Lets 38 Million Chinese Soccer Fans Enjoy Live World Cup Action

Intel® PRO Gigabit Network Connections delivers the performance and throughput for immediate, uninterrupted access

Case Highlights

Special Event

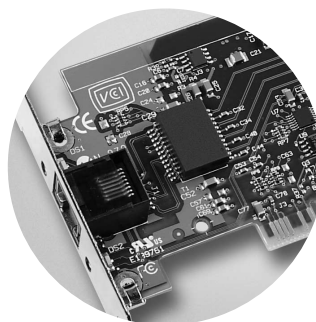
Description: Live Internet webcast of 2002 World Cup Soccer by China's largest content distribution network (CDN) provider.

Challenge: Design a fail-proof system that would provide immediate, uninterrupted access to millions of users during the live broadcast of World Cup Soccer, even with huge surges in traffic.

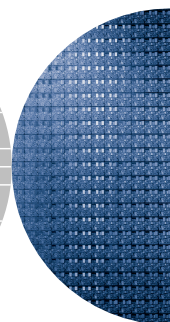
Solution: Install a distribution network with 50 web appliances, powered by Intel® PRO Gigabit Network Connections, to handle the expected explosion in web-traffic volume during the 5-day event. Using Intel® Pentium® III and Intel® Pentium® 4 processors for high-performance processing, as well as Intel® PRO/1000 XT Server Adapters for maximum throughput, each Array* 1000 Series Web Traffic Manager* effectively handled 20,000 to 30,000 connections per second.

Benefits: Accelerated response time and exceptional quality of service for 38 million Chinese Internet users during the World Cup Soccer event. Users did not need to wait for connections and experienced no disruption in service.

Intel® PRO
Network Connections



**Intel in
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Summary

The Chinese soccer team was preparing for its World Cup debut in the 2002 games. And 38 million Chinese soccer fans were counting on experiencing the games live via the web. For ChinaCache*, China's largest CDN, the ability to provide the fans with instant and simultaneous access to this enormously popular event depended entirely on network performance.

To support the Internet activities surrounding World Cup Soccer, ChinaCache purchased 50 Array 1000 Web Traffic Manager* appliances from Array Networks*. To ensure flawless performance, each appliance was equipped with an Intel PRO/1000 XT Server Adapter. The result? *"Each Array 1000 successfully handled more than 320 million requests during the five days of the World Cup,"* explained Wang Song, CEO and president of ChinaCache.

This case study examines the benefits of using Intel PRO Gigabit Network Connections to meet the rigorous – and often variable – performance demands of the Internet. The deployment of Array Networks' appliances in the ChinaCache network provides just one example of how Intel PRO Gigabit Network Connections deliver optimum performance under pressure.

The Challenge: Preparing For Extreme Traffic Surges

According to Array Networks, Internet use in China is exploding, up over 50 percent in just one year. And nearly all of those users rely upon ChinaCache for rapid, efficient delivery of web content. With team China making its World Cup Soccer debut during the 2002 tournament, and soccer being the most-watched sport in China, ChinaCache knew it had to be on top of its game to handle the expected surges in traffic. During five critical days in 2002, the network absolutely could not falter. After all, this was a non-repeatable event.

ChinaCache anticipated that China's 38 million soccer fans would tune in frequently during the event, resulting in billions of Internet requests. Web delivery of this real-time event required super high-speed performance that could not be interrupted by traffic surges. Reliability, load balancing, throughput, and speed were all critical requirements for the end solution.

The Solution: Gigahertz Processing With Gigabit Networking

ChinaCache selected the integrated Array Networks appliances over competing traffic management systems because the Array platform was able to demonstrate significantly higher performance at a lower cost per unit. *"Array's integrated functionality and exceptional performance help to ensure that the ChinaCache content delivery network accelerates response time and provides exceptional quality of service to China's Internet population,"* Song explained. In turn, Array Networks credits the exceptional performance to Intel Architecture and Intel PRO Gigabit Network Connections.

The Array 1000 Web Traffic Manager integrates load balancing, caching, SSL acceleration, server load balancing, and web security into one appliance. For critical reliability, Array turned to the top performance of Intel PRO/1000 XT Server Adapters and 1.2 GHz to 2.4 GHz Intel Pentium III and Intel Pentium 4 processors. Powered by this combination of Intel Architecture-based solutions, the Array 1000 easily handled the high-traffic, real-time World Cup event.

"Intel adapters offer excellent performance for the price," said Array Founder and CTO Lawrence Lu. *"They deliver the reliability required for live broadcast situations, as in the World Cup event,"* he added. *"With Intel, you just plug it in, and it works."*

"Array's integrated functionality and exceptional performance help to ensure that the ChinaCache content delivery network accelerates response time and provides exceptional quality of service to China's Internet population."

Wang Song

CEO and president
ChinaCache

For the World Cup event, ChinaCache and Array Networks felt traditional adapters were not an acceptable option. Non-Gigabit adapters interrupt the CPU every time a packet of information arrives. When the main system receives this signal, it stops whatever it is doing, pulls the packet out of the network interface card and sets it aside for processing. In a live situation – such as the World Cup webcast – the system can't be interrupted every time a new packet comes in. If it is, users will be dropped and service disrupted, resulting in unacceptable performance.

The Intel PRO/1000 XT Server Adapter alleviates this problem by batching packets before generating a signal to the main processor. This results in fewer interrupts and increased throughput. The PCI-X bus with its 8x performance over traditional PCI also boosts the overall system throughput, further enhancing system-level performance.

After an extensive in-house evaluation and comparison of competing Gigabit NICs, Array Networks found the Intel PRO/1000 XT Server Adapters to be the fastest adapters for their high-performance web appliances, enabling Gigahertz processing with Gigabit networking. In the Array Networks in-house tests, the Intel PRO/1000 XT Server Adapter performed at least 10 percent faster than other tested Gigabit adapters, and was able to meet and exceed the high performance required under a variety of conditions, including those of extremely intense denial of service attacks. *"This impressed our engineering team,"* said Array's Steve Shah, *"and the decision was made."*

Ultimately, however, Array Networks chose Intel technology because it provided a unique combination of capabilities – both processing power and network interface cards. During a live event, such as World Cup, more clicks mean more processing by the system. *"Traditionally, this processing has been done in software,"* Array's Lu explains. Using the Intel CPU, such high performance processing capability eliminates the need for ASIC technology. With Intel Architecture, the system also is extremely flexible and can be upgraded easily. *"We've found we can ride the Intel R&D wave and we can succeed,"* Lu added.

Using Intel Architecture and Intel PRO Gigabit Network Connections enables Array to get to market quickly and easily upgrade to the next generation without delay. *"With Intel introducing a new CPU every three months, this allows us to get to the next generation product very quickly,"* Lu says. Overall, he adds, *"We couldn't ask for anything more."*

The Future

For the next generation, Array is anticipating 10Gigabit throughput along with multiple ports on a card, and they plan to stick with Intel. *"Intel allows us to provide state of the art at all times. That protects the customer investment,"* Lu says.

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Lawrence Lu
CTO and Founder
Array Networks

For more information, visit the Intel web site at: www.intel.com/network/connectivity

For more information about Array Networks, please visit: www.arraynetworks.net




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