

CONSTRUCTING THE FUTURE: SHANDONG UNIVERSITY'S NEXT- GENERATION CAMPUS NETWORK

Summary

Industry: Education

Challenges: Provide a reliable, secure core network capable of supporting more than 50,000 user devices for the university's faculty and students, with provisions for future expansion.

Selection Criteria: Traffic performance, solution reliability, network security, services flexibility, and cost-efficient scalability and administration.

Network Solution: Juniper Networks MX960 3D Universal Edge Router and Juniper Networks M120 Multiservice Edge Router.

Results: Enhanced performance, reliability, and stability; reduced security threats; smooth integration into existing network; and improved cost efficiencies increased the university's "brand value" with a world-class educational infrastructure.

Shandong University is a fully accredited academic institution providing some of China's topmost education programs for students. Since its founding in 1901, when it was the Shandong Learning Institute, the university has undergone many changes. It became the National Qingdao University, then the National Shandong University, and finally today's Shandong University. Throughout the transformation, Shandong University has endured as an important cradle for China's modern university education and an important player in cultural, scientific, and educational development.

Throughout its rich history, Shandong University has always cultivated a large number of the genuinely talented for China, and has contributed to the development of China's higher education and social construction causes. Today, Shandong University is one of the country's most crucial universities and is under the direct administration of the Ministry of Education. It is also a participant in the national "211" and "985" projects designed to support and improve top-level institutions of higher education in China.

Challenges

Currently, Shandong University is in one of its most important developmental phases under its 11th Five-Year Plan. Focusing on the long-term target of developing into a world-renowned, top-level research university, the university is in the midst of efforts to promote its academic competitiveness, increase its social influence, improve its research capabilities, and raise its international standing.

The campus network—a crucial platform of scientific research, teaching, and learning resources—is playing an increasingly important role in these expansion plans. Due to the university's rapid growth, increases in the number of students and faculty, and the continuous expansion and enrichment of campus network applications, the legacy network's capabilities were no longer able to meet the university's needs for further development. Shandong University already reached 50,000 campus network user devices, exerting great pressure on infrastructural components. The large user base exceeded the capacity of the original core router, which could no longer deliver stability, reliability, and security. Most importantly, the network was unable to scale and support the university in its long-term development goals.

Selection Criteria

Shandong University recognized that a key pillar to its ultimate objective—of becoming one of the world's leading educational institutions—was its campus network infrastructure. Thus, it prioritized network enhancement and, particularly, the upgrade of its core router. The university vetted an extensive list of criteria, including the following:

1. Products must demonstrate the carrier-class highest levels of performance, reliability, stability, and security, and support existing network applications as well as network development over the next five years.
2. Vendors must render the highest level service quality and flexibility to enrich business functions.

3. Products must be easy to implement and manage, without sacrificing efficiency and cost-effectiveness, and seamlessly interoperate with the original network and protect existing digital assets.
4. Products have to demonstrate outstanding expandability, with scalability for network development, and quickly deliver maximum ROI.

Solution

Collaborating on the network upgrade, technical teams from Juniper Networks® and Shandong University jointly laid out a topology using Juniper Networks MX960 3D Universal Edge Router and M120 Multiservice Edge Router. The deployment plan called for systematically introducing Juniper's technology, with organized technical training, to ensure users at the university gained the requisite skills and confidence to make the most of the core routers and gained high performance, high reliability, and high stability.

Juniper Networks MX Series 3D Universal Edge Routers are a family of high-performance Ethernet services routers, with powerful switching and security features that deliver unmatched flexibility and reliability to support advanced services and applications. This fuels a sustainable network edge, which is crucial to supporting Shandong University's growing body of users. In addition, the MX Series meets network requirements for advanced IP voice and video services—including VoIP, interactive videoconferencing, IPTV, and multicast services—as well as data-intensive HPCS, supercomputing, and grid computing applications, all of which factor into the university's plans if not already deployed. The MX Series essentially integrates the best hardware platform with the reliability and flexibility of the Juniper Networks Junos® operating system to provide carrier-class Ethernet connectivity with superior features and functionality.

The Juniper Networks M Series Multiservice Edge Routers are a family of high-performance multiservice edge routers, with advanced routing features that deliver exceptional flexibility and reliability over a wide range of connectivity options without compromise. This allows Shandong University to rapidly deploy new services as it evolves its infrastructure and supported IT applications, while minimizing the overhead and administrative

burden that can add significantly to the total cost of ownership with other vendor platforms. The M Series router at Shandong University perfectly complements the MX Series router by also supporting a wide range of advanced IP services—including voice, video, IPTV, multicast services—and other data-intensive HPCS, supercomputing, and grid computing applications

Results

Once the core routers were deployed at Shandong University's campus network, the MX960 and M120 significantly improved overall network performance, and brought better management, scalability, ease of use, and reliability to the university's infrastructure.

This network upgrade is giving Shandong University a strong foundation upon which it can continue building itself into one of the world's top educational institutions, and also serves as a success story to inspire network enhancements at other institutes of higher education in China.

Next Steps and Lessons Learned

The deployment of Juniper routers into Shandong University's campus network has proven the immense value of these infrastructure platforms, and thus the importance of choosing the right solutions to build an education network.

Shandong University will continue to serve as an important base for China's cultivation of high-level creative talent and high-tech research. The university's continued expansion and progress will provide an excellent real-world setting that is ideal for reaping the full potential, and ROI, of Juniper routers—now and in the future.

For More Information

To find out more about Juniper Networks products and solutions, visit www.juniper.net.

About Juniper Networks

Juniper Networks, Inc. is the leader in high-performance networking. Juniper offers a high-performance network infrastructure that creates a responsive and trusted environment for accelerating the deployment of services and applications over a single network. This fuels high-performance businesses. Additional information can be found at www.juniper.net.

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