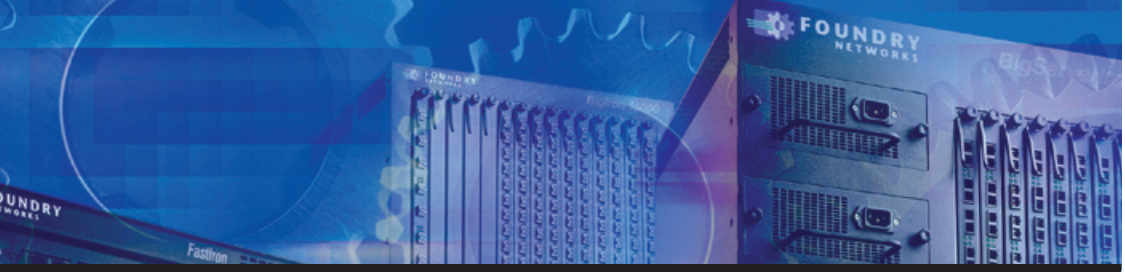

CASE STUDY: SHANGHAI JIAO TONG UNIVERSITY

University Reduces Costs by Converging Network Services

SUMMARY

Founded in 1896, Shanghai Jiao Tong University (SJTU) has a long history of educating the country's most gifted students. The leading university is jointly run by the Ministry of Education and Shanghai Municipality, and students and faculty throughout China attend the school for its exceptional educational standards.

Today SJTU boasts 20 academic schools and an enrollment of 38,000 full-time students. These students can choose from 60 undergraduate programs, 152 masters-degree programs, 93 PhD programs, 16 post-doctorate programs, and 16 state key doctorate programs. The campus hosts 14 state key laboratories and national engineering centers, and the university's elite staff includes 22 members of the Academy of Sciences and Academy of Engineering, 31 "Changjiang Chair Professors," and more than 1,400 professors and associate professors.

OBJECTIVE

With six campuses, an ever-increasing student body, and advanced teaching and research facilities, SJTU needed a network solution that could deliver multiple network services at a reasonable cost. Most campus networks must use multiple platforms to support different services. SJTU wanted to minimize management—and cost—by converging different services on a single solution that would scale as the school's population increased and educational demands evolved.

SJTU turned to Foundry Networks' NetIron® MLX to provide a stable, reliable, cost-effective network solution that could support IPv4, IPv6, and MPLS VPN services. With Foundry's high-performance infrastructure in the network, SJTU would have the foundation it needed to support 21st century education.

SOLUTION

SJTU deployed Foundry's NetIron MLX-8 routers into its core network and runs IPv4/IPv6 and MPLS VPN services over the single Foundry platform. MPLS isolates and secures the inter-connections between different departments that manage the campus billing systems, finance systems, and medical systems. As the China Education & Research Network (CERNET) node, which connects to multiple campuses, SJTU uses IPv4/IPv6 to support Web, email, and other commonly used applications on the education system's servers. IPv6 ensures that SJTU has plenty of IP addresses available, and it supports the China National IPv6 field test, as well as HD video, voice, and other applications on the IPv6 servers.

All these network services, as well as multiple virtual networks for different departments in the campus and inter-campus, are supported by the flexible, robust NetIron MLX. Students, faculty, and administrative staff can access all their favorite applications easily and securely.

WWW.SJTU.EDU.CN

INDUSTRY

Education and Research

COMPANY DESCRIPTION

Shanghai Jiao Tong University (SJTU) is a key university in China, jointly run by the Ministry and Shanghai Municipality. Formerly the Nang Yang Public School, Shanghai Jiao Tong University was founded in 1896 by Mr. Sheng Xuanhuai, and it is one of the oldest universities in China.

OBJECTIVE

- Deliver reliable, high-performance network services to students, faculty, and administrative staff
- Ensure the network supports all research and educational facilities
- Achieve a scalable, converged network that will increase flexibility and protect the university's current network investments

SOLUTION

- The Foundry NetIron MLX Series routers offer a rich set of high-performance IPv4, IPv6, MPLS, and Multi-VRF capabilities as well as advanced Layer 2 switching capabilities

RESULTS

- SJTU converged multiple network services on the single Foundry platform, enabling reliable IPv4, IPv6, and MPLS VPN services for campus users
- SJTU supports IPv4, IPv6, and MPLS VPN services from one platform instead of multiple physical networks
- The NetIron MLX helps SJTU lower operational costs by reducing infrastructure costs and decreasing power and cooling expenses
- Deploying multiple virtual networks for different departments in the campus helps secure the network and limit users to certain areas of the network
- The converged network will scale as the campus population increases and educational needs change, protecting the network investment and adapting for the future

RESULTS

Adding the NetIron MLX routers into the campus network led to a number of improvements and costs savings at SJTU.

The students, faculty, and administrative staff are enjoying a high-performance network that provides access to all their critical applications. Students send and receive email or do research on the Internet, professors post assignments and test results online, and the administrative staff can manage the university's business. SJTU supports all these applications over IPv4, IPv6, and MPLS from the NetIron MLX platform.

At one busy border core router with multiple 10 gigabit connections, SJTU deployed IPv4 (with a large number of access control lists and rate limits), IPv6 and IPv6-in-IPv4 tunnels, and MPLS/VPN simultaneously—with no performance loss or degradation. The line-rate packets forwarding is consistent, even when a large number of hardware access control lists (ACLs) and strict rate limits for different user groups are added to secure the network.

The SJTU IT team is able to easily view network traffic and activity for these different services using sFlow. This industry-standard technology is included in the NetIron MLX, and it allows SJTU to monitor the high-performance campus network for security breaches and traffic inconsistencies.

Running multiple services on one platform helps SJTU save money and meet budget requirements. Without the NetIron MLX, SJTU would have to deploy separate network devices for each service, creating multiple physical networks. The NetIron MLX reduces capital expenditures and operational costs because these services are converged to a single platform on a single network.

The university is experiencing additional costs savings in the data center due to the NetIron MLX router's reduced power needs and smaller footprint. The NetIron MLX has the lowest power consumption and heat dissipation among routers in its class. The high-density router's small form factor requires less real estate in the data center, which translates to significant savings on power, cooling, and rack space costs.

The most significant cost savings is SJTU's investment in its network infrastructure. Instead of purchasing multiple platforms to support its diverse set of services, the university can converge logical and virtual network services on the NetIron MLX without deploying different platforms and additional physical networks.

"Foundry has the only solution that allows us to combine network services and value-added services simultaneously in one single platform without any performance loss," says Professor Wang WeiNong, vice director of network information center, PhD at SJTU. "We can support a large number of routers in one OSPF area and provide faster convergence time for a large flat network, which means the network can tolerate failures under different levels without affecting the high-layer application services. Our network is now much more scalable and stable."

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> " FOUNDRY HAS THE ONLY SOLUTION THAT ALLOWS US TO COMBINE NETWORK SERVICES AND VALUE-ADDED SERVICES SIMULTANEOUSLY IN ONE SINGLE PLATFORM WITHOUT ANY PERFORMANCE LOSS "
>
> – Professor Wang WeiNong
> Vice Director of Network
> Information Center, PhD,
> Shanghai Jiao Tong University

FOUNDRY NETWORKS

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