

# TAIWAN EDUCATION NETWORK CENTER SECURES THE WIRELESS NETWORKS OF 240 SCHOOLS WITH SA6000 SERIES



**Industry:** Education

**Challenge:** Protect the wireless networks of 240 schools.

**Network Solution:** Juniper Networks SA6000 SSL VPN appliances

**Selection Criteria:** TCENC selected the Juniper Networks SA6000 Application Acceleration Appliances based on its performance and cost effectiveness compared to similarly priced competitive solutions

**Results:** TCENC achieved its goal of a highly secure, end-to-end wireless network in a school environment and improved the usefulness of the wireless networks of 240 Taiwanese schools.

The Taoyuan County Education Network Center (TCENC) is responsible for providing data center services and Internet connectivity for municipal education institutions and plays a critical role in ensuring that educational standards in Taiwanese schools keep up with the times. A key charge of TCENC is to meet the Taiwanese government's goal of fostering nationwide Internet use. For TCENC, the wireless LAN (WLAN)—highly convenient and easy to provision for large numbers of users—is a crucial technology for achieving this goal.

## Challenge

In 2006, TCENC undertook a project to offer Internet access to students at 240 elementary and junior high schools.

The task was massive: The solution would have to scale well into the thousands of users. The corresponding security challenges for the undertaking were equally daunting, given WLAN technology's inherent susceptibility to unauthorized access, traffic interception, data theft, and other types of intrusion.

A key project goal for TCENC is to deploy a wireless network security infrastructure that is easy to administer and that also fits with the center's centralized identity management system. "While our original intention was simply to have consistent provisioning and management of user names and passwords of differentiated users and groups, we eventually realized that it would be too expensive and time consuming to install and maintain independent gateways in every regional school," explained Chuang Shih-kai, head network engineer at the Education Network Center, Bureau of Education, Taoyuan County Government.

The fact that many campus wireless networks under TCENC's charge have extremely wide network coverage presented a difficult security administration challenge. In addition, above all, Chuang needed a cost-effective solution.

## Selection Criteria

During evaluation, Chuang's team looked at security solutions from numerous vendors. Initially, the team considered solutions that directly tracked and authenticated IP addresses with corresponding hardware MAC addresses, but the solutions currently available were either immature or incurred too much administrative overhead.

The team then considered the viability of deploying VPNs. "To provide secure wireless access to students, faculty and staff, we discovered that SSL VPN technology enabled us to offer network authentication and traffic security to our large user base via a simple Web login process," said Chuang. "It can also handle our growing array of learning and administrative applications, as well as offer sophisticated guest access features."





Once TCENC decided to implement a VPN solution, it began to drill deeper into the features offered by existing products. “While many vendor solutions offer virtual tunnel interfaces designed to provide encrypted sessions, we were discouraged by unstable connections and the lack of a Chinese user interface,” Chuang said. “In the end, we selected the Juniper Networks SA6000 Series for its ease of use, comprehensive security features and, above all, its complete support for a Chinese language interface.” He added, “The SA6000’s management system also simplifies management and usage in a secure and cost-effective manner.”

## Solution

Two Juniper Networks SA6000 SSL VPN appliances were deployed: one acting as the master platform and the other as a backup. Each supports up to 2,500 concurrent authorized users, or some 25,000 total users, with 10 percent of the users online at any given time.

Basic deployment took three months—an impressive achievement considering 240 schools had to be provisioned—with an additional month spent on extensive testing of the authentication system for monitoring and managing campus guests.

TCNEC hosts three virtual systems over the SSL VPN: a WLAN platform for managing regional elementary and junior high schools, an administrative system for network administrators to control specific online services such as remote desktops, and a networking appliance for accessing the Taoyuan County Government’s intranet, which services human resources, administration procedures, and official documentation requests.

## Results

“Enhancing digital learning in education is one of our top goals. Juniper Networks has helped us fulfill this crucial task by enabling us to quickly deploy a secure wireless network with broad coverage and strong authentication and access management,” said Mr Chang Ming-Wen, director of TCENC.

Indeed, so confident is TCNEC of the security capabilities of the SA6000 that it now allows mobile guests to connect to the campus network through port 80 to browse Web pages, chat via instant messaging, and talk over Skype.

But perhaps the most important result is the empowerment of mobility in a learning environment. With the SA6000, Chang said, TCENC’s wireless campus project has introduced unprecedented mobility for students and education staff at a minimal infrastructure cost.

## Next Steps and Lessons Learned

TCNEC’s wireless network initiative is just the start of mobile computing plans for students and faculty. Robust wireless identity management has enabled TCENC to become part of a nationwide wireless campus roaming program, spearheaded by Taiwan’s National Center for High-Performance Computing (NCHC) and the Institute for Information Industry (III).

The program provides seamless roaming among educational institutions across Taiwan, with a unified access control system. Chang said that this breakthrough roaming model for pervasive Internet access boosts education and commerce across Taiwan, taking it to the next level for a knowledge-based economy.

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**Dr. Chang Ming-Wen**  
Director of the Taoyuan County Education Network Center (TCENC)

## 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](http://www.juniper.net).

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