CASE STUDY

Offloading SaaS Traffic Improves SSL Virtualization Functionality

Industry | Education

The University of the Ryukyus was established as a general university on the site of Shurijo Castle in 1950, and includes seven faculties, nine graduate schools, and a university hospital. The university is well regarded for its local and international community service efforts.

As an educational and research institution, the University of the Ryukyus garners worldwide attention for the numerous research projects it oversees. Among those are specific to regional characteristics and needs such as biodiversity, marine science, island sustainability, aging and health, and studies delving into the unique Ryukyu and Okinawan cultures.

> *As a general university with different policies per faculty, we need to be able to manage virtualization individually. A10 Thunder CFW met our requirements, offering the necessary performance functionality with an affordable pricing model.*
>
> — Yasuharu Okawa
> Information Technology Center, University of the Ryukyus

Network Solution

A10 Thunder CFW

Critical Issues

- Needed to bolster IT infrastructure to support increased traffic on its academic information network, SINET
- Increasing the number of distributed UTMs was cost prohibitive
- Required solution that was able to support offloading of rapidly increasing SaaS traffic

Results

- Improved environment at approximately half the anticipated cost
- Offloaded SaaS traffic such as Microsoft 365
- Enabled enhanced security via SSL/TLS traffic inspection and enhanced firewall functionality

At the University of the Ryukyus, issues arose concerning its unified threat management (UTM) processing capability with its connections to the university's academic information network the Science Information Network (SINET). The A10 Thunder® CFW high-performance security platform was adopted to resolve offloading of SaaS traffic to reduce the UTM load.

Challenge: Improve Processing Capability of Distributed UTMs

Transparent and problem-free information technology services are at the heart of life in the twenty-first century, and this is certainly the case for the University of the Ryukyus. The university's SINET system is a key component of those services, and security is of paramount importance. But so is user experience for staff, faculty, and students.

Mr. Yasuharu Okawa of the Information Technology Center née General Information Processing Center, recalled, "In mid-2019, the university increased the number of lines connecting to the SINET to bolster network performance, which in turn required that the existing network environment also be improved."

He also described the background to the network renewal:

> *"As the addition of a 10 Gbps line doubled our bandwidth, we needed to install multiple UTMs per faculty to distribute traffic."*

In addition, encrypted communication was decrypted on the UTM side for URL filtering, which was necessary from a security perspective.

However, along with the rapid surge in encrypted communication, Okawa and his team became concerned that the existing UTMs wouldn't be able to process the increasing volume of traffic.

Selection Criteria

An initial consideration was to switch from UTMs that were also being used as a firewall to high-performance models, but those models capable of supporting greater bandwidth and enhanced performance were simply too cost-prohibitive.

As many encrypted communications do not need to be decrypted, including SaaS traffic, it was decided to consider a network environment that offloads the SaaS traffic — without routing it through a UTM.

Yasuharu Okawa stated, "If SaaS traffic, such as Microsoft 365, could be offloaded, the UTM load can certainly be reduced. We sought an environment that enables integrated management while reducing the operational burden of distributed UTM management."

A10's high-performance security platform, A10 Thunder CFW, attracted the university's attention as a potential solution to establishing a new network environment.

"We considered A10 our best choice as it was more cost-effective than other options and met our functionality requirements," explained Yasuharu Okawa.

Solution: Meet Performance and Functionality Requirements for the GIGA School Program with A10 Thunder CFW

The key criteria for the university in finding a solution were the ability to virtualize within appliances so that policies could be applied individually to each faculty's environment; the implementation of SSL/TLS visualization; and high performance.

> *"Policies differ per faculty as we are a general university. Since there is the possibility that a campus could relocate in the future, we need an environment that enables management per tenant," says Yasuharu Okawa*

He reaffirmed that a SSL/TLS inspection function is also important for efficient URL filtering by linking to existing UTMs after decrypting communications as a security countermeasure against threats embedded in encrypted communications — an issue that has been rapidly increasing for the university.

Yasuharu Okawa believes that the A10 Thunder CFW was selected because the university has affiliated schools within its campus, and 10 Gbps lines have been installed per classroom in the elementary and junior high schools to bolster their environment under the GIGA School Program.

He commented, "We designed the network to ensure sufficient performance over the next five years, including support for the GIGA School Program. For example, while reinforcing the UTM security function, it should be possible to offload traffic from the elementary and junior high schools. A10 met our requirements as a solution offering high performance while able to flexibly support such an environment."

As a result, the A10 Thunder CFW was selected as the solution for the new network environment required by the university.

Results

The bottom line for the University of the Ryukyus was that the A10 Thunder CFW solution supported the promotion of multi-functional cloud services for municipalities. The university found that A10 Thunder CFW is a high-performance security platform equipped with the functionality to meet a wide range of network security requirements to promote cloud services across companies and municipalities.

Even under tight traffic conditions associated with increased cloud service usage, network loads are reduced by flexibly distributing the traffic, and attacks concealed within encrypted communication — which are now widespread as cloud services become more popular — can also be handled via the SSL/TLS inspection function that features enhanced cryptographic processing.

Furthermore, network security functions to support smooth and secure utilization of cloud services by organizations, such as server load balancing, L4 firewalls, enhanced security via threat intelligence, and secure remote access via IPsec-VPN, can be used to meet demand.

Thunder CFW Provides "A Comfortable Network Environment for Half the Price"

With verification now complete in the university's Information Technology Center, the A10 Thunder CFW is being deployed in a production environment, handling traffic for over 10,000 students, faculty members, and assorted staff.

Having been battle tested with the inevitable user demand placed upon it during the COVID-19 pandemic's shutdown period with the GIGA School Program, Okawa believes the environment is well equipped to handle any increase in traffic over the next five years. Okawa also confirms that due to the A10 Thunder CFW solution, the university has successfully boosted overall network performance and enhanced user experience.

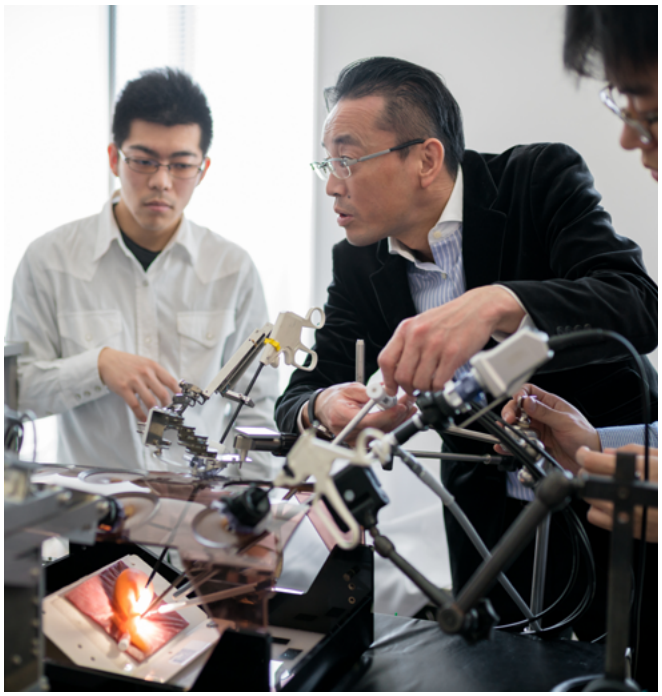
In addition, Okawa determined that the environment has been improved at about half the cost of a large UTM deployment (and its resulting high cost) thanks to offloading the SaaS traffic via the A10 Thunder CFW.

> *"Even if there is a performance shortfall, a UTM can simply be added, and load can be balanced flexibly with the A10 Thunder CFW" says Okawa*

Reinforcing and Planning for Future Security Requirements

A10 Thunder CFW is currently offloading SaaS traffic, notably Microsoft 365, which includes Microsoft Teams and SharePoint. Those two programs are especially vital for the university's online classes and for the sharing and collaboration of content.

Moreover, inspection of encrypted communication is being verified, including the operational methods employed.



Okawa elaborated, "The A10 Thunder CFW has a firewall, so we want to proactively use its many features while considering whether it can take over some of the firewall functionality of the UTMs. Countermeasures to detect infected C&C servers have recently become more widespread but can be dealt with by A10's threat intelligence. We expect to see enhanced security in conjunction with the UTMs."

Since Microsoft 365 consumes many global IPs, NAT processing by the A10 Thunder CFW — currently handled by the UTMs — is also under consideration. "By separating global IPs required for ordinary traffic from those used for the SaaS side, such as Microsoft 365, it provides a more efficient processing environment," Mr. Okawa said.

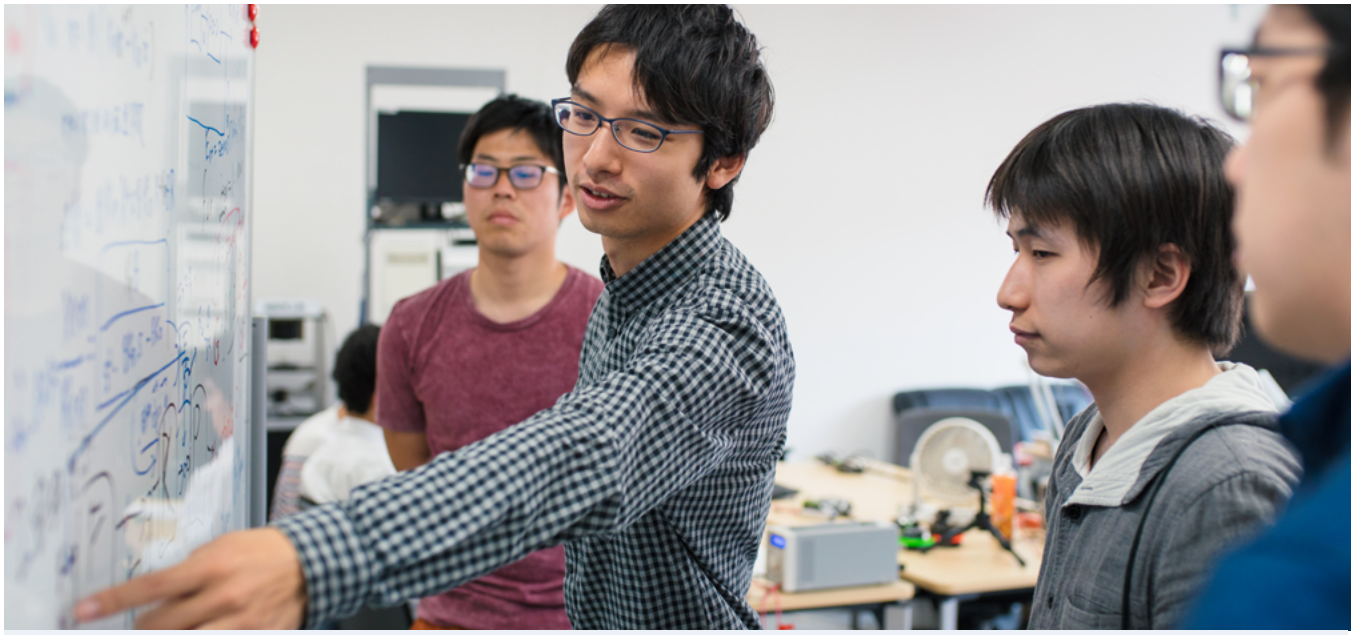
Okawa also appreciates the ease of operation of the A10 Thunder CFW's GUI. Once the system is operational, it can even be run by personnel who are unfamiliar with network operations. Also, since the system is available in Japanese, it is easy to talk through IT issues on the phone, enhancing technical support.

Success and Next Steps

Although the university has only installed 10 Gbps lines to classrooms in the affiliated elementary and junior high schools for the GIGA School Program so far, the plan is to sequentially renew the network, including upgrading all lines throughout the university.

To fulfill the university's mission, unimpeachable connectivity and cybersecurity are fundamental to preserving user experience and core to its IT investment is the Thunder CFW solution.

> *"Use of the A10 Thunder CFW 40GE interface will allow us to upgrade all lines to some 1,600 classrooms and research labs. We want to tap into the multifunctional and high-performance features of the A10 Thunder CFW,"*
>
> — Yasuharu Okawa
> Information Technology Center
> University of the Ryukyus



About the University of the Ryukyus

Located in the city of Nishihara, Okinawa Prefecture on the island nation of Japan, and established in 1950, the University of the Ryukyus is the Western most national university of Japan. With over 16,000+ undergraduate and post-graduate students, and 1,265 staff and faculty, the university offers a wide range of undergraduate and post-graduate degree programs spanning medicine, engineering, health sciences, agriculture, humanities, and law.

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