CASE STUDY

Japanese Cable Operator Reduces Costs and Operational Burdens using Thunder CFW DNS Solutions

KCT 倉敷ケーブルテレビ

Industry | Technology

KCT Co., Ltd., which operates cable TV broadcasting and telecommunications services primarily in Kurashiki City, Okayama Prefecture, planned to renew its operational environment due to the age of the cache DNS servers used to run its internet connection services and load balancers. It chose the A10 Thunder® CFW to simplify the configuration by integrating multiple required functions.

> *We had gradually added extra cache DNS as needed, so we wanted to use this opportunity to tidy up the configuration. We were already aware of how easy A10 solutions were to use because some operations can be done via a GUI and the CLI that is normally used to configure network equipment."*
>
> – Mr. Makiya Kobayashi
> Fundamental Technology Section, Technology Department,
> KCT Co., Ltd.

Network Solution

A10 Thunder® CFW for cache DNS and load balancing

Critical Issues

- Cache DNS servers and load balancers became obsolete
- Operating 13 devices in total was troublesome, so a simpler configuration was needed
- Looking for the most cost-effective upgrade to the environment

Results

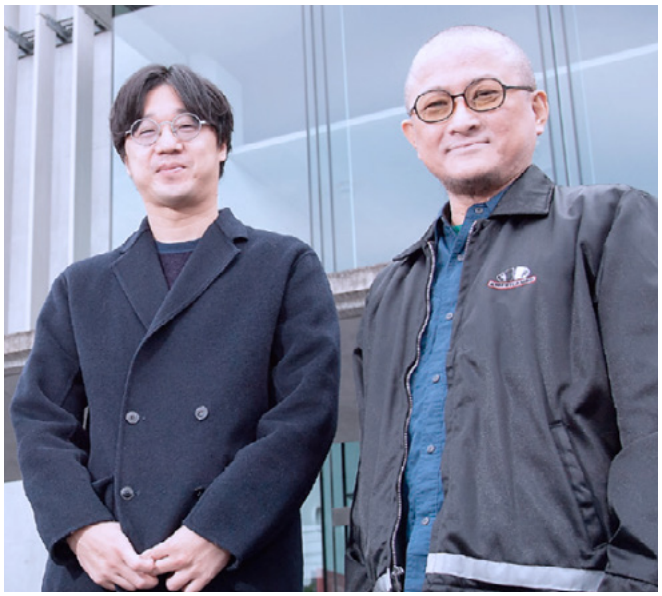
- Reduction from 13 to just two devices led to significant cost reductions, including for electricity
- Streamlined device configuration makes operational checks easier, while reducing the operational burden
- Benefits business continuity, with some formerly outsourced cached DNS functions returning in-house

Urgent Need to Refresh Environment

KCT Co., Ltd. is a cable TV broadcaster and telecommunications services provider in Kurashiki City, Soja City, Tamano City, and Hayashima Town in Okayama Prefecture. KCT currently has over 94,000 cable TV subscribers, and in excess of 40,000 subscribers to its internet services. It provides comprehensive support for community development, while striving to contribute to the community through cable TV broadcasting, which also provides community-based information, and telecommunications, which provides infrastructural support for local information.

KCT deployed authoritative DNS servers and multiple cache DNS servers as the platform for its internet connection service. It subsequently increased the number of cache DNS servers and adopted load balancers as demand for services grew. KCT provides fixed IP-based internet connection services not only for general consumers, but also for corporations, such as companies and municipalities.

> *"We used six load balancers and seven cache DNS servers in a redundant configuration but began to consider how to migrate to a new set-up as the maintenance service agreement for those servers, which operate on open source cache DNS, and load balancers as dedicated equipment, was set to expire."*
>
> — Taisuke Yoneda
> Manager of Fundamental Technology Section



Mr. Makiya Kobayashi (left) and Mr. Taisuke Yoneda, Manager (right) Fundamental Technology Section, Technology Department

The Thunder CFW Recursive DNS Solution Provided a Cost-Effective, Simpler DNS Environment

The primary consideration for KCT in creating a new environment was to minimize the reconstruction costs. As Mr. Yoneda recalled, "At first, we were considering solutions similar to or more compact than the current equipment, as setting up and running seven servers is troublesome, so we were seeking an operational configuration that was as simple as possible."

Mr. Kobayashi of the same section commented, "In fact, many of those tasked with operating the servers on a day-to-day basis are freshmen learning the ropes for the first time. As such, we ideally wanted something easy to operate, even for inexperienced members of the team."

Multiple options were considered based on the latest servers using the same configuration pattern as the current equipment, such as a consolidated hardware pattern using server virtualization in a private cloud, while only outsourcing the cache DNS function.

However, even using the same configuration with the latest equipment, the cost for adoption would be

50 percent higher due to changes in the exchange rate and a shortage of semiconductors. So contrary to the company's expectations, updating the existing environment was not feasible. Operation under a virtual environment was also more expensive than anticipated, making that option less palatable.

Service costs for general consumers were reduced by outsourcing the cache DNS function, but corporate services needed to be handled internally as fixed IP payments were also required.

For this reason, the attention shifted to A10 Thunder CFW, a load balancer with cache DNS server functionality. As Mr. Yoneda recalled, "Previously, we adopted A10 solutions as a load balancer about 10 years ago, but when I participated in a cable TV industry-related webinar, I first learned about the A10 Thunder series, which has built-in cache DNS functionality. Being able to implement both functions using just the A10 Thunder proved very attractive."

Mr. Yoneda reflected that he had the impression that A10 solutions were expensive, but when he got an estimate, he changed his mind. Mr. Yoneda explained, "Although low-cost load balancers offer some cost benefits, the absence of a cache DNS function means that a separate cache DNS server is required.

Mr. Kobayashi also evaluated it highly, stating, "We had gradually added extra cache DNS as needed, so we wanted to use this opportunity to tidy up the configuration. We were already aware of how easy A10 solutions were to use because some operations can be done via a GUI and the CLI that is normally used to configure network equipment."

As a result, KCT decided to adopt A10 Thunder CFW to replace the aging load balancers and cache DNS servers.

Solution: A10 Thunder CFW Recursive DNS Solution Consolidates Equipment and Reduces Costs

A10 Thunder CFW consolidates multiple security functions, such as a firewall, IPSec VPN, secure web gateway, CGNAT, and DDoS protection, in addition to application delivery. By replacing the existing cache DNS server, the equipment is consolidated, leading to a simpler configuration and lower costs. Additionally, the use of the DNS over HTTPS feature encrypts DNS queries sent in plain text and enables implementation of DNS security functions that protect the infrastructure from multiple types of DNS attacks.

Thirteen Total Devices were Consolidated Down to Two A10 Appliances

A total of 13 devices, comprised of load balancers and cache DNS servers, were consolidated down to two redundant A10 Thunder CFWs.

The cache DNS for general consumers has been outsourced, but in the event of failure, all systems are sufficiently specified to switch to an in-house environment and operate in a way that ensures business continuity. Although the firewall is deployed via a different solution, they envision that A10 Thunder CFW's firewall functionality can be used in an emergency.

From a security standpoint, there had recently been an increase in attacks trying to redirect targets to phishing sites posing as cable TV sites in order to collect information. A10 Thunder CFW uses a flow collector to visualize the URL and forwards the URL of the fake site to a dummy site, making it impossible to access the DNS.

Mr. Yoneda stated that operating costs will be significantly reduced once the operation starts in earnest with the new environment.

"Not only will we eliminate all hardware and software maintenance costs for seven cache DNS servers, but we will also significantly reduce other costs such as electricity. The three sets of load balancers will be reduced to one, and since no servers are required, we can likely reduce the electricity bill by 90 percent."

There are also significant operational advantages due to functional consolidation in the A10 Thunder CFW. Under Mr. Kobayashi's assessment, contact points for enquiries will also be consolidated. He noted, "Previously, we needed to separately access the equipment that performs each function to confirm its operational status. Now, evaluation is possible via the A10 Thunder CFW's web GUI. Version upgrades and so on are possible using the web GUI, making it easier for on-site operators to handle."

KCT also evaluates A10's support highly, such as receiving appropriate answers whenever a technical enquiry is made concerning the latest changes in the environment. Mr. Yoneda commented, "Browser specifications have changed recently, with DNS enquiries increasingly being made from UDP to TCP connections. This has often led to malfunctions in customers' broadband routers. During the investigation process, we received appropriate advice on how best to tune the equipment." KCT evaluates A10's strong and appropriate support whenever needed; for example, KCT can, not only consult with partners, but can also consult with manufacturers if there are any enquiries.

Additional Thunder CFW Functions Valuable in Upcoming Security Upgrades

KCT added that using the A10 Thunder series will also be considered when updating the current firewall. It would also like to continue consulting about trends in migration to CGNAT and IPv6 with A10, to benefit from its extensive experience, in order to create the optimal operating environment. In addition, KCT is interested in the A10 Harmony® Controller, which provides visibility into the contents of DNS communications.

> *"We know how many connections there are, but we don't have a detailed understanding of DNS communications. If necessary for operations, we would like to consider upgrading that environment."*
>
> — Mr. Makiya Kobayashi
> Manager of Fundamental Technology Section

About KCT Co., Ltd.

Kurashiki Cable Television is a cable television broadcasting and telecommunications business covering the areas of Kurashiki City, Soja City, Tamano City, and Hayashima Town. KCT Co., Ltd., supports local urban development efforts and contribute to the local community through its two businesses: cable television broadcasting, which delivers locally focused information, and telecommunications, which supports the local information infrastructure.

Learn more about us at: www.kct.co.jp

Challenges and Recommended Best Practices to Secure DNS Infrastructure

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Protect Critical DNS for Low Latency, Highly Available Broadband Networks

Download Solution Brief

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A10 Networks provides security and infrastructure solutions for on-premises, hybrid cloud, and edge-cloud environments. Our 7000+ customers span global large enterprises and communications, cloud and web service providers who must provide business-critical applications and networks that are secure, available, and efficient. Founded in 2004, A10 Networks is based in San Jose, Calif. and serves customers globally.

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