SOLUTION BRIEF

DELIVERING A NEW CLASS OF NETWORK

A10 THUNDER ADC EMPOWERS UNIVERSITIES AND STUDENTS WITH A SUPERIOR AND SECURE END USER EXPERIENCE

HIGHER EDUCATION AND HIGHER DEMANDS

Higher education faces one of the most challenging environments in IT. In perhaps no other arena will the infrastructure have to deal reliably with so many unknown, unmanaged client devices. Universities are at the tip of the spear in BYOD issues, resulting in extremely high network traffic from the three to five devices carried by the average student. In addition to traditional IT network services, educational infrastructures must enable specialized resources, including student ERP, registration, billing, online classes and collaboration on devices that will increasingly run IPv6, while network infrastructures are likely to be running IPv4.

Not only do students bring their own devices to school, they bring the attitudes and demands of true digital natives. They expect to be able to further their education online with research and study, as well as enjoy movies and music or use VoIP phones. All of these activities are latency-sensitive and likely to peak daily as classes end and students return to their dorms, creating IT requirements that often have more in common with a service provider than an enterprise.

At the same time, faculty and staff applications must be available, fast and secure. Disaster recovery is essential, while video surveillance and security are also vital. Application availability and response is mission critical, especially when considered as part of the university curriculum. And these elements can actually be the difference between life and death if the institution is affiliated with a hospital where patient health is involved. To complicate matters further, education has many unique, highly specialized applications.

CHALLENGE

- BYOD with multiple devices per student
- Mandatory security compliance
- Highly specialized applications
- Price/performance and scalability
- Migration to IPv6

SOLUTION

- A10 Thunder Application Delivery Controllers
- Layer 4-7 load balancing and health monitoring
- Caching, compression and TCP optimization
- Web Application Firewall, SSL Insight and authentication
- Multi-tenancy with Hybrid Virtual Appliances and ADPs
- IPv4/IPv6 translation and IPv6 migration

BENEFITS

- Consistent application availability and uptime
- Superior user experience
- Easy to scale solutions to over 1 Tbps
- Protects vulnerable web app servers
- Up to five times the performance/price

A10 NETWORKS THUNDER ADC OPTIMIZES NETWORK PERFORMANCE

A10 Networks Thunder® ADC product line of high-performance, next-generation application delivery controllers offers institutions a host of features to help them meet the myriad hurdles posed by BYOD, widely varying traffic loads, security requirements, and the need to embrace future technology almost as quickly as it is developed. Some features particularly relevant to universities include:

- Flexible, scalable and high-performance architecture
- Intelligent traffic management for application availability
- Privacy and security
- Next-generation requirements
- No-licensing model
- Flexible, scalable architecture

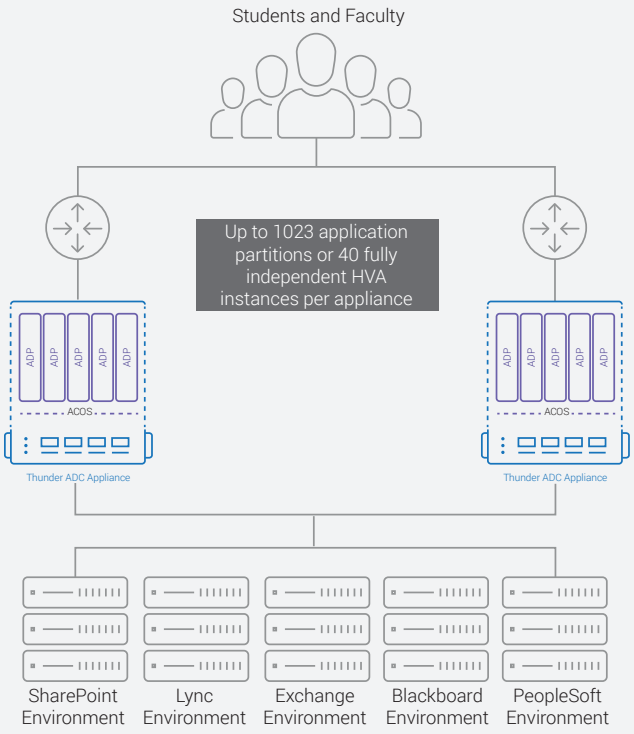

Figure 1: Thunder ADCs optimize application delivery

While universities and colleges offer state-of-the-art education, they often don't have extensive budgets, and never have infinite staff. A10 Networks takes a fundamentally different approach in building the A10 Thunder ADC to deliver a variety of application delivery controller offerings that are ideal for this challenging environment. The foundation is the A10 Networks Advanced Core Operating System (ACOS®). By taking full advantage of multi-core processors, the ACOS application networking platform delivers unprecedented performance in a small form factor. ACOS testing has validated up to 150 Gbps of throughput

with five million new sessions/second and 256 million concurrent sessions—all in a single rack unit appliance. While conventional application networking vendors have been challenged to scale system performance with rapidly escalating network backbone speeds, the A10 Networks ACOS platform leverages its Shared Memory Architecture and Flexible Traffic Accelerator (FTA) to efficiently utilize multi-core processors and scale performance linearly with increasing CPU/processor density.

At their core, higher educational institutions have much in common with the requirements of a service provider, and A10 gives them the same provisioning flexibility. They can choose from A10 Thunder Series appliances or Thunder hybrid virtual appliances (Thunder HVA). Thunder HVA provides a multi-tenant platform where up to 40 different independent "instances" of Thunder ADC can reside on one appliance. This allows the administrator to configure each instance to optimize ADC functions for a particular group of applications, users or services.

A10's application delivery partitions (ADPs) deliver the highest density multi-tenant ADC functionality with Layer 3 virtualization and the ability to scale to over one thousand private partitions. And A10 Networks aVCS™ virtual chassis system makes scalability easy by enabling up to eight Thunder Series appliances in a virtual cluster, which is operated and managed as a single unified device. aVCS allows universities to pay as they grow, resulting in a cost-effective solution that allows administrators to install just the appliances they need. Functionality includes support for Layer 2/Layer 3 topologies, more efficient high availability, and cluster resizing for seamless capacity provisioning/de-provisioning with graceful upgrades/downgrades.

ENABLE AVAILABILITY AND PERFORMANCE FOR ONLINE LEARNING, DIVERSE APPLICATIONS AND MARCH MADNESS

Higher education combines the technology requirements of a large enterprise with unique security needs, unpredictable traffic, the expectation of extensive collaboration, and highly specialized applications designed for the business of learning. A10 Thunder ADC is flexible, making it the ideal choice for ensuring availability and optimizing performance across the customized/complex applications upon which institutions specializing in higher education depend, including:

- Online learning solutions from vendors like Blackboard
- Student ERP solutions such as Banner
- Content delivery solutions such as Luminis
- CLE technologies that include open source applications like Sakai
- Applications from Microsoft, Oracle and others

Traffic across universities can be unpredictable, requiring a variety of intelligent traffic management schemes to handle cyclic events in the education calendar, like registration, finals and grading. Students streaming multimedia for class, or to view events such as lectures or the big game, can spike traffic even further. A10 Networks ADC delivers Server Load Balancing, Global Server Load Balancing (GSLB), and Layer 7 content switching features to ensure server uptime and availability. A10's technology for traffic steering, multiple Layer 4-7 load balancing techniques, and SSL offloading efficiently spread user traffic across the backend server infrastructure for an optimal viewing experience. Advanced server monitoring methods not only ensure basic connectivity, but customizable health checks make sure that applications and content are operational. Traffic is directed only to available servers and applications.

Advanced ADC features are required to scale and provide redundancy to the multitude of applications deployed in universities. The A10 Networks aFleX® scripting language enables IT to easily deal with customized applications by performing repetitive tasks and offloading servers. A10 Thunder ADC can be custom configured to unencrypt SSL sessions for processing by advanced applications, and then re-encrypt traffic before forwarding to servers to prevent visibility by hackers.

Availability is also vital for the application delivery controllers themselves. A10 supports active/active failover, to ensure that the ADC never becomes a bottleneck. aVCS can also be employed to provide an "N+M" scenario, with N active and M backup units to ensure redundancy of the ADCs with sub-second failover. Only one "master" unit in the cluster needs to be configured and all other nodes are automatically set up. If the master unit should fail, a second unit is automatically promoted to master and takes over cluster management duties.

A10 application acceleration techniques enable a greater end user experience with less infrastructure needs. Performance enhancement methods include: In-memory caching to speed delivery of frequently requested content; WAN and server side TCP optimization to make networks run more efficiently; and HTTP compression to substantially shrink transmitted content. By offloading these CPU and memory- intensive tasks to the Thunder ADC, not only are overall capital expenditures minimized, but the latency created by multiple point products is eliminated.

KEEP INFORMATION PRIVATE AND SECURE

Another major concern for universities is the need to keep personal, academic and copyrighted information secure, particularly during times of very high traffic load. The A10 Thunder ADC provides a built-in Web Application Firewall (WAF), which is designed to stop malicious attacks against vulnerable applications. These application-aware firewalls determine normal expected behavior and block attacks including SQL-injection, cross-site scripting and dozens of other day zero assaults. The included DNS application firewall (DAF) ensures that only legitimate DNS protocol traffic is allowed and it blocks invalid traffic from reaching the DNS infrastructure; Distributed Denial of Service (DDoS) attacks on these servers are also prevented.

A10 Thunder ADC also provides robust application access management features designed to offload authentication. Thunder ADC acts as an edge authentication point, offloading the processing from the servers and adding an extra layer of security which is vital for the users of cloud-based services such as Microsoft Office 365. Application Access Management (AAM) features also offer Online Certificate Status Protocol (OCSP), which enables seamless sign-on for BYOD devices using certificate-based authentication.

A10 offloads processing intensive encryption and decryption of SSL traffic with 2048 and 4098-bit key certificates. The revolutionary A10 Networks SSL Insight™ feature removes the traditional outbound "SSL blind spot" by enabling the inspection of traffic without further burdening servers.

UNIVERSITIES MUST ENABLE THE NEXT GENERATION OF STUDENTS AND NETWORKS

Today's higher educational institutions must provide a fast, reliable connection across a host of demanding applications today, and it must also be ready for tomorrow. Paradigm shifts like the move to IPv6 are already under consideration, and with A10's Carrier Grade NAT (CGNAT) features, the network will be ready. CGNAT enables organizations to deliver transparent IPv4 connectivity and a seamless user experience, while essentially oversubscribing their limited IPv4 addresses. Organizations can assign local (private) IPv4 addresses in their access network, and use a centralized device to manage the address translation to the global (public) Internet. Address translations between IPv4 and IPv6 are supported along with all IPv6 migration options such as 6rd, Dual Stack Lite and Lw4o6. With A10's HVA platform, multi-tenancy allows you to add instances of Thunder ADC and CGNAT on the same appliance.

NO-LICENSING MODEL

Because A10 Thunder ADC hardware appliances require no add-on licensing, customers can avoid budget surprises and the need to purchase licenses during unforeseen peak loads. This is a key feature for educational institutions requiring budget predictability. All innovative A10 features are included, such as: application acceleration, GSLB, WAF and aFleX scripting. Also included is A10 Networks aXAPI®, a REST-based application programming interface (API) for management, which is unique within the ADC market. In addition, annual support costs are significantly lower than those of industry competitors.

TAKE AVAILABILITY TO SCHOOL

The A10 Thunder ADC line of products delivers the balance of high performance and cost-effectiveness that universities and colleges need to keep up with demanding students, growing network traffic, unmanaged devices and security mandates. With Thunder ADC, the educational institution can deliver consistent application performance and service uptime with "LAN-like" connectivity regardless of campus location or device.

A10 features include innovations that offload CPU-intensive tasks to enable servers to do more, faster. The unique A10 Advanced Core Operating System (ACOS) offers you vastly improved performance in a remarkably small form factor. And you can manage the system in the way that works for you – from central network management systems via GUI to device-specific CLI – for a flexible and highly secure solution.

ABOUT A10 NETWORKS

A10 Networks (NYSE: ATEN) provides Reliable Security Always™ through a range of high-performance solutions that enable intelligent automation with deep machine learning to ensure business critical applications are protected, reliable and always available. Founded in 2004, A10 Networks is based in San Jose, Calif., and serves customers globally with offices worldwide.

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Part Number: A10-SB-19113-EN-03 MAY 2018