

DELIVERING THE INFORMATION THAT POWERS THE MEDIA

Challenge:

Digital advertisers rely on constant access to big data analytics to function

- Dramatic growth in data processing
- Procuring highly scalable systems
- Maintaining server availability
- Ensuring redundant operations
- Offloading servers to control costs

Solution:

The A10 Thunder ADC product line of Application Delivery Controllers provide:

- Scalability to over 1 Tbps
- Advanced server load balancing and health monitoring
- Powerful hardware-based SSL processing
- Up to 5x better performance to price

Benefits:

- Handles any level of traffic demands
- Ensures application server availability
- Easy to deploy and manage
- Lowers costs by consolidating point products

Big data is big business for digital advertisers

Digital advertising has changed the face of media, offering highly personalized buying opportunities to consumers throughout virtually every facet of their online experience. Successful digital marketing programs map prospective customers' behavior – from their buying habits to their career – with advertisers' objectives. The result is a creative product driven by solid data that includes fulfillment method, purchase behavior analytics and consumer interest tracking. These companies are dedicated to optimizing the revenue for each ad impression targeted by analysis of the best markets. For digital advertisers to succeed, they must make the most of the power of the cloud, combined with granular analysis of almost unimaginable volumes of data and lightning fast ad delivery. Digital advertisers use information generated by systems that monitor and analyze tens of millions of simultaneous sessions; top agencies may process trillions of transactions in milliseconds. Complicating matters still further is the fact that this is a very competitive market, in which speed is equal to competitive advantage.

Network throughput with this volume of data can require very high maintenance costs and make the network prone to performance degradation or failure – and traffic is only increasing with the use of mobile devices. Companies must balance the need to quickly harness data and serve relevant advertising, while preventing network slowdowns or downtime, which has the potential to be catastrophic. The solution is in the ability to maintain constant uptime of your network infrastructure and application servers, as you offload these server farms in every way possible to maximize performance.

A10 Networks Thunder ADC meets digital advertisers' high expectations and their throughput requirements

Digital advertisers' high connection rates, huge number of simultaneous connections, and sessions consisting of very small packet sizes combine to create a unique set of needs. When scalability and availability are your most important criteria, you need A10 Networks® Thunder™ ADC product line of high-performance, next-generation application delivery controllers.

Flexible, scalable architecture maximizes throughput

A10 Networks Advanced Core Operating System (ACOS®) is the foundation for Thunder ADC, and it delivers unprecedented performance in a small form factor. While conventional application networking vendors have been challenged to scale system performance with rapidly escalating network backbone speeds, the ACOS platform leverages our Shared Memory Architecture, Flexible Traffic Accelerator (FTA) and up to 24 CPU processors to efficiently scale performance linearly with increasing CPU/processor density. ACOS handles processing in a linear fashion, resulting in the high speed and performance that digital advertisers count on, at a very low overhead. Thanks to A10's disruptive architecture, our customers enjoy a distinct competitive advantage that actually costs them less.

ACOS testing has demonstrated up to 150 Gbps of throughput with five million new sessions/second and 256 million concurrent sessions – all in a single rack unit appliance. Utilizing A10's aVCS™ Virtual Chassis System clustering technology enables up to eight appliances to be combined into one single system image to scale overall throughput to over 1 terabit per second of HTTP traffic. All these clustered units are centrally managed for simplicity. Over 2 billion concurrent sessions and 40 million new sessions per second can be achieved.

Ensure uptime and availability throughout the infrastructure

Digital advertisers require 99.99% uptime, so Server Load Balancing (SLB) solutions have to be rock solid, with capacity, scalability and redundancy. Thunder ADC meets these stringent criteria with advanced Layer 4/Layer 7 SLB features that include Fast TCP, UDP and HTTP proxy, as well as full HTTP proxy. Additional features include high-performance, template-based Layer 7 URL and URL hash switching; header, URL and domain manipulation; and comprehensive Layer 7 application persistence support. These sophisticated methods ensure that digital advertising servers are performing to capacity, and availability is maintained.

In addition to lightning-fast SLB, Thunder ADC can provide sophisticated health checks to ensure that both your network and your servers are operating as they should. Health monitors can test server availability at Layer 3, Layer 4 and Layer 7, and customized scripts can easily be created. You can also combine L3/L4/L7 tests to create exactly the verification that you need.

The next consideration is that the application delivery controllers (ADCs) themselves not become a single point of failure. Two units can be deployed in active/passive mode with full failover to a backup unit or in an active/active implementation, with full session synchronization for completely seamless failover. By clustering multiple devices with aVCS, Thunder ADC can be deployed to extend redundancy. aVCS enables "N+1" or "N+M" deployments, where "M" designates multiple redundant units available in case of failover. One appliance is designated as the master and configures all other units in the cluster; in the case of a master unit failure, another unit in the cluster will be elevated to this master position.

Digital advertisers can also deploy aVCS in conjunction with VRRP-a, A10's high availability protocol optimized for SLB. VRRP-a, like Virtual Router Redundancy Protocol (VRRP), eliminates single points of failure on the network, but VRRP-a also features sub-second failover and supports full scalability of up to eight appliances in a failover group. Together, aVCS and VRRP provide horizontal scaling stateful failover and always available ADCs, meeting the high availability requirements found in digital advertising.

Thunder ADC also provides Source IP persistence. Source IP persistence is essential for digital advertisers, since clients must have their future connections/traffic terminated on the same server. Source IP persistence can be implemented at Layer 4 or Layer 7, with simple templates that can be replicated for specific uses.

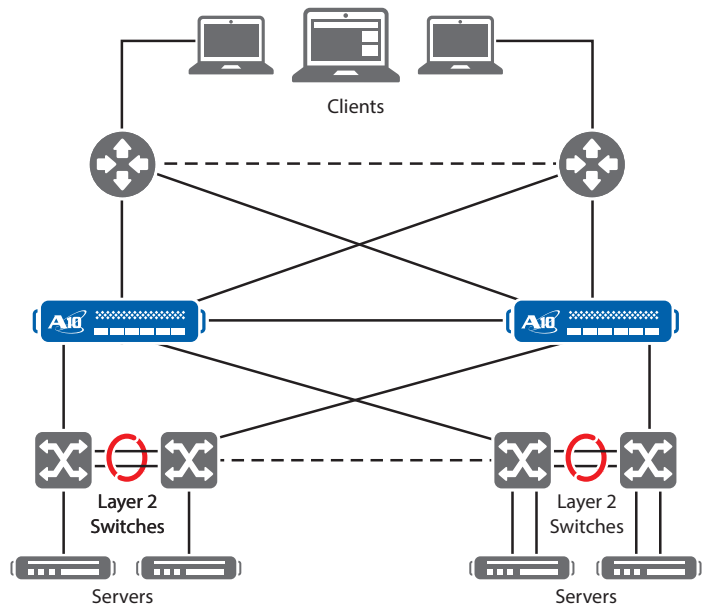


Figure 1: A10 Thunder ADCs provide the scalability, server availability and failover demands of complex big data environments

Increase overall performance as you minimize costs

One key method to increase performance is to ensure that applications are running as quickly as possible. Thunder ADC offloads complex SSL operations, with specialized multicore ASICs designed specifically for security encryption and decryption processing in gigabits per second with virtually zero latency. This prevents servers from potentially handling this task, often exaggerated with the use of 2048 or 4096-bit key certificates in software; such processing can add a delay of hundreds of milliseconds. ADC-based SSL offloading dramatically boosts performance, while eliminating the prohibitive expense of placing SSL adapters directly on the servers or a massive scale-out of the server farm to handle SSL in software. SSL-enabled ADCs from A10 further minimize TCO, by enabling companies to house SSL certificates in a single place rather than scattering them over different servers. Rather than placing an SSL certificate for each customer on each server, advertisers can place a certificate for each customer on the A10 platform, which greatly reduces the number of certificates that must be uploaded and managed.

Another application acceleration feature from A10 is TCP optimization. By multiplexing thousands of HTTP sessions over a handful of long-lived back-end TCP connections from the ADC to the data center, back-end servers are offloaded from the CPU-intensive task of setting up and tearing down TCP sessions. Not only does this speed the end user experience, it enables high performance with less infrastructure.

Thunder ADC uses these features to speed system performance, which is a key metric for digital advertisers. By offloading complex processing, however, advertisers can also lower their total cost of ownership. Fewer servers are required if each device implemented is working to capacity serving content.

Simplified deployment and management

A10 integrates an intuitive web-based Graphical User Interface (GUI) and de facto standard Command-Line Interface (CLI) to provide flexible management and ease of deployment. RESTful aXAPI® functionality enables administrators to swiftly integrate Thunder ADC into a production environment for custom management and monitoring of applications.

Thunder ADC also provides a “clone” feature which allows administrators to quickly create virtual servers that are similar to existing versions in seconds. Each of these virtual servers’ throughput and connections are exposed via SNMP, which allows integration into network monitoring tools. Administrators can, at a glance, visualize which of their websites are experiencing traffic anomalies without having to do packet capture or rely on sFlow, Netflow or other protocols.

Security you want at the scale you demand

A10 provides high-performance detection and prevention against Distributed Denial of Service (DDoS) and protocol attacks that can cripple servers and take down applications. Because the Thunder ADC devices are placed between the routers and data center resources, these ADCs are ideally positioned to detect and stop attacks directed at any data center server or application – even if you are already using perimeter firewalls. Using specialized ASICs, A10 can inspect, stop and redirect all application traffic at network speeds. Thunder ADC scales HTTP requests per second (RPS) performance to over tens of millions of connections per second, exhibits almost 200,000 SSL connections per second (CPS), and supports over 220,000,000 SYN cookies per second to ensure DDoS protection.

No licensing model

Thunder ADC hardware appliances include all features and performance without licenses, ensuring no budget surprises and no need to purchase licenses during unforeseen peak loads. All innovative and advanced features are included, such as aVCS clustering, application acceleration, Global Server Load Balancing (GSLB), Web Application Firewall (WAF), Application Access Management (AAM) and aFlex® scripting. Also included is 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 alternative solutions.

Optimize your infrastructure – accelerate your success

The A10 Thunder ADC line of application delivery controllers is built from the ground up to deliver the qualities that big data demands – traffic management features to ensure that specialized servers are always available, massive scalability that keeps pace with your big data analytics demands, and protection from the heaviest DDoS bombardments. Thunder ADC has been built on a platform that optimizes both user experience and your bottom line, with 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 system (NMS) via GUI to device-specific CLI.

About A10 Networks

A10 Networks is a leader in application networking, providing a range of high-performance application networking solutions that help organizations ensure that their data center applications and networks remain highly available, accelerated and secure. Founded in 2004, A10 Networks is based in San Jose, California, and serves customers globally with offices worldwide. For more information, visit: www.a10networks.com

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To learn more about the A10 Thunder Application Service Gateways and how it can enhance your business, contact A10 Networks at: www.a10networks.com/contact or call to talk to an A10 sales representative.