A NETWORK TO GROW ON
A10 Thunder ADC Helps Healthcare Organizations Thrive

Challenge:

Healthcare organizations face new and changing issues:

- State and federal regulations demand security
- New programs mandate electronic record keeping
- Resource availability is mission critical
- Application performance is essential
- Downtime can have life-and-death implications

Solution:

A10 Thunder ADC delivers:

- Server Load Balancing including advanced health checks
- Global Server Load Balancing (GSLB)
- Cluster-based scalability to over 1 Tbps
- Application acceleration, including caching, compression and TCP optimization
- Web Application Firewall and volumetric DDoS protection
- SSL Intercept that eliminates SSL "blind spot"

Benefits:

- Ensures 24/7 uptime and availability
- Built from the ground up to do more in less space
- Enables massive scalability
- Saves on CAPEX and OPEX
- Simplified licensing makes solutions affordable

Network security and availability help in the delivery of efficient, accurate patient care

Today's healthcare organizations face challenges that were unimaginable only 10 years ago. The drive toward 100 percent electronic health records (EHR) has revolutionized the way hospitals handle patient information, spurred on in the U.S. by the health IT provisions of the American Recovery and Reinvestment Act of 2010. This drive to EHR opens the door to greater efficiency, higher accuracy and new treatment options, but it also brings vastly greater demands on the network. The security of patient health information (PHI) has always been a vital underpinning of state regulations, as well as federal mandates like the Health Insurance Portability and Accountability Act (HIPAA). The movement to electronic systems opens PHI to new vulnerabilities, both from inside and outside the local network, as the application flow inbound from across the organization is as great as the requirements for outbound connections. This is particularly true in the case of healthcare data security, where breaches are likely to occur, sometimes unintentionally, from inside the organization.

As healthcare moves from the clipboard onto networked systems, including mobile devices, application availability and accelerated user experience become mission critical. Applications such as McKesson and Kronos, as well as clinical apps from Epic, Cerner and GE Healthcare put huge demands on servers. Picture Archiving and Communications systems (PACs) require massive throughput. And complex business applications such as Nagios, Exchange or Microsoft 365 add to the burden. Complicating matters further is the fact that many healthcare organizations operate from a number of sites, with medical centers, outpatient facilities and specialty clinics. Some large healthcare groups are formed from merged organizations, which can result in numerous data centers. And at the same time, more and more applications are moving to the Internet, which requires consideration as well.

A10 Networks Thunder ADC keeps the network healthy

Today's healthcare organization is constantly being tasked to do more with less. Meeting this edict is particularly challenging given the combination of specialized applications and high traffic levels that are currently flooding healthcare institutions. This is particularly important with systems like PACs, where huge volumes of traffic are transiting the network.

A10 Networks® Thunder™ ADC line of high-performance, next-generation application delivery controllers is the answer. A10 ADCs can be seamlessly added to data centers, and are fully interoperable and work transparently with the applications in use today. Thunder ADC optimizes healthcare applications in a variety of ways to improve application response times, ensure server availability, increase application security and improve overall performance – even when running SSL/TLS encrypted traffic.

Ensure uptime

Thunder ADC delivers a full complement of server load balancing capabilities, including advanced application health monitoring that goes beyond simple connectivity to check databases and even what specific data is available on a given webpage. These

comprehensive load balancing methods, including support for Layer 7 content switching, promote fully redundant and efficient use of your application server resources. For healthcare organizations with distributed data centers, A10's Global Server Load Balancing (GSLB) is included; this feature's primary benefit is disaster recovery, ensuring that content remains available by redirecting traffic flows and preventing loss in the case of a major event or outage.

The next consideration is that the 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. Thunder ADC also features aVCS™ Virtual Chassis System that allows up to eight appliances to handle over 1 Tbps of Layer 7 throughput while they operate as a single device with centralized management. By clustering multiple devices with aVCS, A10 ADCs 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.

Healthcare organizations can also deploy aVCS in conjunction with VRRP-a, A10's high availability protocol optimized for Server Load Balancing. 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 needed in healthcare.

Performance you can count on

Thunder ADC delivers a host of application acceleration features, which help healthcare infrastructure run at maximum efficiency, particularly as applications move to the Internet. TCP optimization features support running numerous HTTP sessions over a limited number of long-lived backend TCP server connections. Such multiplexing of connections from the ADC to the data center free backend servers from the CPU-intensive task of setting up and tearing down TCP sessions by enabling reuse of those connections. Not only does this speed the end user experience, it enables high performance with less infrastructure.

TCP optimization on the WAN side improves data transfer with reduced processing needs still further. These TCP enhancements are fully transparent with no modifications to applications or services required, enabling IT administrators full control to tune TCP communications as desired. Specific TCP variables that can be adjusted include: Delayed and selective acknowledgments, fast ramp, client keep-alive and window scaling. Such optimizations are fully compliant with network standards and are easy to configure. Resulting connectivity rates have been shown to double with much less bandwidth required.

A10 adds proprietary additions to further optimize TCP-based data transmissions. By using a full proxy architecture, A10 solutions separately negotiate client and origin server-side connections. Each connection has its own windows scaling parameters to allow tailored

connectivity for the end user and LAN sides of the user session. Such a methodology obviates the need for client and server to negotiate the lowest common denominator when experiencing congestion. Each side of the connection is maximized to obtain the best achievable performance. The A10 appliance acts as an intermediary for the client to optimize the client-side delivery while the same is done for the server side.

A10 Thunder ADC provides caching features which store frequently requested items in RAM, speeding the delivery of common items such as web content. Thunder ADC also provides HTTP compression designed to shrink WAN payloads. Not only does compression remove this processor-intensive task from the servers, it reduces the load on network links.

Thunder ADC also features complete SSL offload, which can significantly improve the performance of critical business applications that use TLS/SSL encryption. Select models offer high-performance SSL security processors designed specifically for this task. This functionality becomes increasingly important as key sizes become longer and SSL is used more frequently, resulting in higher SSL transaction rates and bulk throughput at a reduced cost.

Flexible, scalable architecture

A10 Networks Advanced Core Operating System (ACOS®) is the foundation for Thunder ADC. By taking full advantage of multi-core processors, 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.

A10 ADCs also deliver features and form factors designed to help healthcare organizations scale. In addition to traditional physical appliances, A10's virtual ADCs, vThunder™, may be instantly spun-up on any industry standard server. These virtual appliances are designed for organizations that require a flexible, strongly isolated and easy-to-deploy solution with a full ADC feature set running in a virtualized infrastructure. vThunder instances can be deployed to run on your choice of commodity hardware, with support for multiple hypervisors such as VMware ESXi, XenServer, KVM and Microsoft Hyper-V.

The Thunder HVA hybrid virtual appliance is a hybrid solution for high-density vThunder deployments on a purpose-built optimized hardware appliance, combining the flexibility of virtualized appliances with the
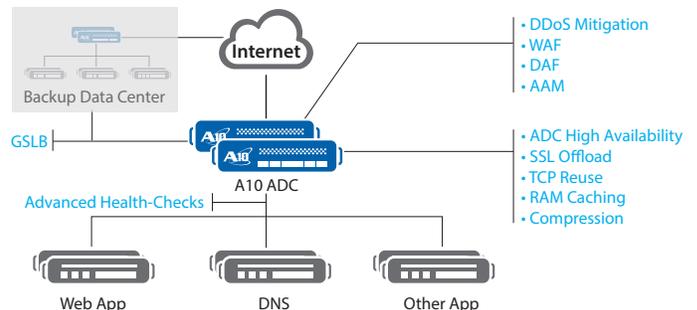

Figure 1: A10 Thunder ADC consolidates numerous point products into one appliance to minimize cost and complexity

performance of dedicated hardware. Thunder HVA is the ultimate multi-tenancy solution, with complete instance isolation. Thunder HVA's SSL security processors, combined with an SR-IOV software implementation, enable high-performance SSL offload and networking function acceleration, which is not present in conventional virtual appliances deployed on commodity server hardware.

Finally, Application Delivery Partitions (ADPs) are a proven ADC virtualization solution within A10 ADCs (both virtual appliances and hardware), providing large-scale and high-performance multi-tenancy for application networking. ADPs allow you to provision ultra-granular policy configurations for applications, users and services, as well as administrative, system and network functions. Over 1,000 ADPs per appliance can be optimally configured for a particular application, service or group of users.

With Thunder ADC, you get scalability, manageability and a terrific return on investment (ROI). Applications can be serviced by a particular HVA or ADP instance and managed by a dedicated IT team. This is because A10 incorporates many disparate point appliances into a single form factor, saving both capital and operating expenses as Thunder ADC enables easy scalability.

Deliver security and privacy

Healthcare organizations at all levels are subject to strict security and privacy rules. Many recent breaches are shown to have been perpetrated by insiders. Thunder ADC can ease the burden of compliance, with features that include the revolutionary A10 SSL Intercept feature, which removes the traditional outbound SSL "blind spot" by enabling inspection of traffic before it leaves the network. Data Leakage Prevention (DLP) features add additional security by enabling IT to selectively block, drop or mask sensitive information including medical IDs, Social Security numbers, credit card information and more. And Application Access Management (AAM) technology ensures that users are authenticated before access is allowed, and diminishes any performance issues by offloading validation from backend servers.

Healthcare organizations must also be protected from Internet-borne threats. ICSA-certified Web Application Firewall (WAF) technology provides robust, high-performance application protection. Customized actions can even be taken against advanced application-layer attacks, using A10 Networks aFleX® deep packet inspection

(DPI) scripting technology for protection against zero-day attacks. The Thunder ADC line offers multiple vectors of Distributed Denial of Service (DDoS) protection as well, allowing healthcare organizations to stay safe in a landscape of rapidly changing threats. DDoS prevention is available in both hardware and software, designed to handle over 150 Gbps of traffic.

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, GSLB, WAF 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.

Protect your network – and your business – with A10

The A10 Thunder ADC line of next-generation application delivery controllers ensures that healthcare organizations get what they need from their networks: Security from the inside out, highly available resources, and application acceleration that makes the most of your backend servers. Thunder ADC has been built on a platform that optimizes both the 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 offers you vastly improved performance in a remarkably small form factor. And you can manage the system in the way that works best 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**