Managed Hosting and Cloud Provider Networks

Maximize Performance and Provision On-Demand Cloud Services with A10

Challenge:

Managed hosting providers must meet growing bandwidth demands, maintain availability and support advanced cloud provisioning and elasticity requirements.

Solution:

A10 Thunder ADC offers managed hosting providers a scalable, high-performance application delivery solution that supports cloud services and orchestration.

Benefits:

- Scale out networks with high-performance, data center efficient hardware appliances
- Support multi-tenant deployments with high-density Layer 3 partitions and virtual appliances
- Automate and streamline management with RESTful APIs and aGalaxy centralized manager
- Leverage cloud services like orchestration, SDN, NFV, and pay-as-you-go billing to meet next-generation requirements

Managed Hosting and Cloud Provider Challenges

Organizations around the world are moving their application infrastructure to hosting providers in the cloud. Cloud adoption presents opportunities as well as challenges for managed hosting providers.

Faced with growing bandwidth demands and competitive pricing pressures, managed hosting providers must scale out their networks while controlling costs. To meet service-level agreements (SLAs), they must minimize application downtime. And to increase subscription revenues, they need to develop new services they can offer to customers. Hosting and cloud networks are undergoing rapid change, and managed hosting providers require solutions that can help them evolve with this change.

Handle growing bandwidth and SSL demands: Data center traffic is expected to grow 31% annually from 2012 and 2017 and by 2017, over two-thirds of all data center traffic will come from the cloud.[1] Managed hosting providers must build out their data center infrastructure to support this growth. But to prevent device sprawl and escalating power and cooling costs, they need to scale out their infrastructure efficiently. With more and more organizations using SSL to encrypt website access, hosting providers must also ensure that their networks can handle current and future SSL encryption requirements.

Ease management in a large, multi-tenant environment: With thousands or millions of customers, hosting providers need to automatically provision new services, allocate server resources and monitor application uptime. Virtual private cloud (VPC) customers may require logically isolated network and server resources. To satisfy privacy requirements while controlling costs, hosting providers should deploy solutions that can support hundreds of logically isolated tenants on a single platform. To ensure interoperability with their orchestration systems, hosting providers should deploy solutions that support software defined networking (SDN) integration fabrics and scalable, centralized management.

Eliminate service downtime: Managed hosting providers must prevent service disruption and downtime. To do this, they need to build resilient networks that can withstand isolated server failures, entire site outages, or security threats such as Distributed Denial of Service (DDoS) attacks. With more and more attackers targeting application servers, hosting providers need to ensure that an attack targeting one customer does not affect other customers or cause performance degradation across the entire data center.

Prevent network bottlenecks and slow performance: Customers evaluate and compare website load times when selecting a hosting provider. As a result, hosting providers need to deliver lightning fast performance. Besides accelerating SSL, they should cache static and dynamic content to speed up webpage load times. Caching, compression and TCP optimization not only boost application performance, they also lower bandwidth and server expenses.

[1] Cisco Global Cloud Index: Forecast and Methodology, 2012-2017

Develop new, revenue-generating services that can be billed per customer: To counter competitive pricing pressure, managed hosting providers can roll out new value-added services such as DDoS protection, Web Application Firewall (WAF), and Load Balancing as a Service (LBaaS) that not only differentiate the hosting provider, but also provide additional, high-margin revenue streams.

A10 Solutions for Managed Hosting Providers

With A10 Networks, managed hosting and Infrastructure as a Service (IaaS) providers can rapidly scale out their networks, execute on virtualization, cloud and SDN initiatives, and maximize application uptime. A10 Thunder™ ADC is an application delivery controller that accelerates applications and delivers powerful protection against security threats.

A10 enables hosting providers to lower CAPEX and OPEX with high-performance hardware, as well as virtual and hybrid ADC appliances. By offering a broad array of form factors, hosting providers can successfully transition to new, virtualized environments while still supporting existing networks with specialized equipment.

Scale network capacity with high-performance hardware appliances: Thunder ADC hardware appliances meet the needs of the largest hosting providers, scaling to deliver up to 150 Gbps of throughput in a single rack unit appliance. Powered by the Advanced Core Operating System (ACOS®), Thunder ADC provides 64-bit scalability, shared memory efficiency and advanced flow processing for extremely high performance per rack unit and per watt.

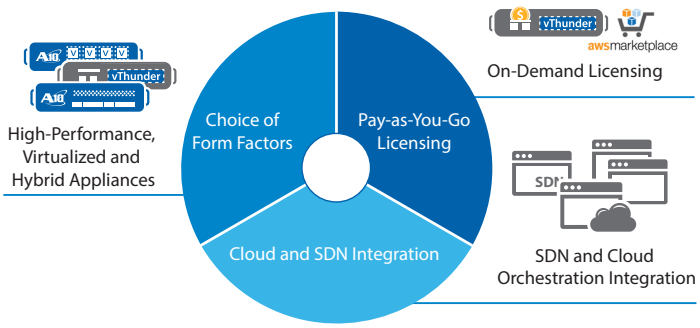

Figure 1: To meet the needs of managed hosting providers, A10 offers high-performance hardware, virtual and hybrid appliances, on-demand licensing, and SDN and cloud orchestration integration.

All models are dual power supply-capable and include solid-state drives and no inaccessible moving parts, drastically reducing hardware failures. Because a single rack unit Thunder appliance can replace multiple chassis systems, hosting provider customers can achieve significant costs savings with Thunder ADC by lowering power, cooling, space and hardware expenses.

Lower costs in cloud environments with virtual and hybrid appliances: Hosting providers depend on virtualization for economies of scale and on-demand resource allocation. vThunder™, an easy-to-deploy, full-featured virtual appliance, allows hosting providers to rapidly provision Thunder ADC technology in virtual environments, meet network functions virtualization (NFV) goals and offer tenants completely isolated application delivery instances. Supporting leading hypervisors, vThunder leverages A10's ACOS software to provide high performance on commodity servers.

Designed expressly for multi-tenant environments, Thunder Hybrid Virtual Appliances (HVAs) combine the flexibility of vThunder virtual appliances with the power of performance-optimized hardware appliances. Up to 40 isolated vThunder instances can be configured on one appliance.

Provision on-demand licensing with aCloud™ Services Architecture: A10 Networks equips hosting providers with the multi-tenancy, orchestration, SDN and billing features they need to be successful. With the aCloud Services Architecture and with many multi-tenant features already built into Thunder ADC appliances, A10 allows hosting providers to deliver application delivery services per tenant.

- **Integration with cloud orchestration systems:** To centrally provision tenant resources, including vThunder instances on-demand, Thunder ADC interoperates with OpenStack, Microsoft SCVMM, VMware vCloud Director[2] and other orchestration solutions.
- **Software defined networking:** With SDN integration for service chaining and traffic insertion, Thunder ADC supports SDN fabrics and overlay tunnels such as Virtual Extensible LAN (VXLAN) and Network Virtualization using Generic Routing Encapsulation (NVGRE) to integrate with Cisco ACI[2], IBM SDN-VE and VMware NSX[2].
- **Pay-as-you-go licensing:** Comprised of automated metering, reporting, billing and license management for Thunder ADC appliances, pay-as-you-go licensing enables hosting providers to offer on-demand services to their customers on a subscription basis. Supporting rental billing models (RBM) with fixed bandwidth and utility billing models (UBM) based on bandwidth consumption, hosting providers can quickly roll out billing services while requiring little to no upfront investment.

Together, A10's aCloud Services Architecture, along with Thunder ADC multi-tenancy features, enable hosting providers to roll out differentiated services like LBaaS, WAF as a Service and DDoS protection, to increase service revenues and improve customer loyalty.

Support multi-tenancy with Application Delivery Partitions (ADPs): To meet privacy and regulatory requirements, some customers will require logically separated networks. ADPs can help address this requirement by supporting over 1,000 partitions on a single ADC appliance or over 8,000 partitions in a Virtual Chassis System (VCS) cluster.

[2] Thunder ADC roadmap feature

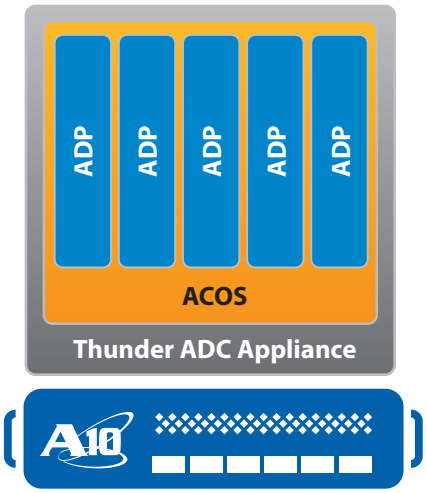

Figure 2: Application Delivery Partitions (ADPs) offer logically separated networks for multi-tenant environments.

Hosting providers can define network, system and application resources – such as bandwidth or route entries – per partition. This granular resource allocation protects each tenant's resources and ensures that the hosting provider meets customer SLAs. ADPs also allow hosting providers to test out new configurations without affecting existing partitions. Overall, ADPs offer high-performance multi-tenancy to Thunder ADC customers.

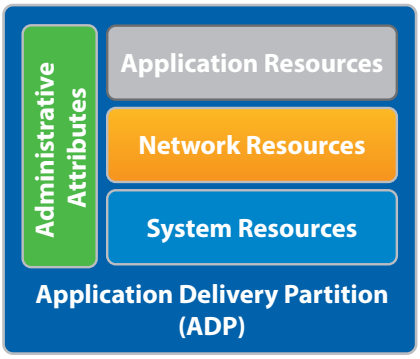

Figure 3: ADPs are made up of discrete computing elements designed to efficiently segment each ADC partition.

Role-based access control enables each customer to manage its own application delivery policies, reducing hosting providers' operational costs. Tenants can either directly access the Thunder ADC management interface, or the hosting provider can develop a portal and use API calls to manage load-balancing settings per partition.

Maximize application availability: Thunder ADC provides advanced server load balancing and flexible health monitoring capabilities, enabling hosting providers to deliver reliable service and meet customer SLAs. Thunder ADC includes a wide range of options for load-balancing methods to direct traffic efficiently to servers. Global Server Load Balancing (GSLB) aids in disaster recovery and business continuity efforts by detecting site outages and redirecting users to available data centers.

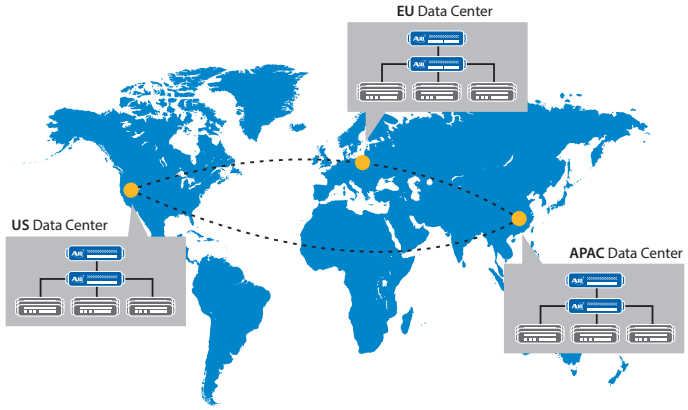

Figure 4: GSLB enables managed hosting providers to redirect traffic based on geographic proximity and offer disaster recovery services to customers.

Advanced health monitoring detects not only server downtime but unresponsive applications. Scriptable health checks detect response codes, response times, application errors and more to accurately pinpoint problems and route traffic to available servers.

For high availability and scalability, Thunder ADC offers a Virtual Chassis System (aVCS®), which enables up to eight Thunder appliances to operate as a single device with a single point of management. aVCS can failover the entire Thunder appliance or individual Layer 3 partitions to backup devices deployed in the same data center or in remote data centers. By clustering multiple devices, aVCS enables hosting providers to increase load-balancing capacity, simplify management and lower cost.

Hosting providers can deploy aVCS in conjunction with VRRP-a for redundant clusters. 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 scalability of up to eight appliances in a failover group. Together, aVCS and VRRP provide horizontal scaling and stateful failover, meeting the high availability requirements of the largest hosting and cloud providers.

Accelerate applications to deliver the best end user experience: Hosting providers must provide ultra-high performance to increase customer loyalty and grow revenues. A10 helps hosting providers meet their performance objectives by offering application acceleration in all Thunder ADC models at no additional cost. Static and dynamic RAM caching accelerates website load times and also decreases the burden on backend web servers. HTTP compression improves performance, particularly across slow and congested links, while TCP optimization pools TCP connections, reducing overhead on back-end servers.

To handle growing SSL bandwidth, Thunder ADC provides powerful security processors that deliver near parity performance between 1024- and 2048-bit SSL keys. Thunder ADC models offer up to 174,000 SSL connections per second and 1.55 million SSL transactions per second[3] with 2048-bit SSL keys.

[3] 1.55 million TPS with unlimited requests per connection

Safeguard applications and data center infrastructure from attack: Security threats like DDoS attacks, web attacks and DNS exploits can expose not just a single tenant, but a hosting provider's entire network to downtime and infiltration. Thunder ADC protects hosting providers' infrastructure from threats with the following defenses:

- **DDoS protection** that scales to stop multi-vector attacks of over 200 Mpps on a single appliance
- **WAF**, certified by ICSA Labs, that protects vulnerable applications from attacks such as SQL injection and cross-site scripting
- **DNS Application Firewall (DAF)** to protect critical services and infrastructure
- **DNS Security Extensions (DNSSEC)** compatibility and pass-through support
- **Application Access Management (AAM)** for web-based authentication

Besides shielding hosting providers' servers, Thunder ADC's security features allow hosting providers to offer value-added services like DDoS protection to customers.

Automate and scale management: Automation is essential for large-scale hosting providers. A10 offers the following features that streamline management and integrate seamlessly with hosting providers' existing monitoring and management systems:

- **aXAPI REST-based Application Programming Interface (API)**, which integrates with third-party management systems – including custom and packaged applications – for rapid deployment, configuration, monitoring and reporting of Thunder ADC appliances.
- **aGalaxy® for unified management and monitoring** of multiple Thunder ADC products. aGalaxy enables hosting providers to centralize and automate a variety of essential tasks, including performing software upgrades, SSL certificate management, aFleX® script management, configuration and backups.
- **SNMP for monitoring and managing thousands of ADC instances.** Thunder ADC is interoperable with many different SNMP managers and collectors. In addition, it supports sFlow, NetFlow and IPFIX for monitoring data center performance and bandwidth usage.
- **Intuitive web user interface and command line interface (CLI)** for per-device management. aFleX, an advanced TcL-based scripting language, extends the web user interface and CLI to offer full programmatic control over application traffic.

With a long history of supporting managed hosting providers, A10 delivers the management tools and APIs that hosting providers need to be successful.

Summary

A10 Thunder ADC offers managed hosting providers a scalable, flexible and cost-effective solution to address application delivery and security requirements. High-performance hardware appliances allow hosting providers to consolidate equipment and drive down operating costs, while efficient hardware, with low power, cooling and space requirements, reduce data center costs.

Managed hosting providers around the world trust A10 Networks because of its high-speed hardware appliances, scalable management, and advanced cloud and virtualization capabilities, as well as its high-touch technical support and advanced professional services offerings.

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**

Corporate Headquarters

A10 Networks, Inc
3 West Plumeria Ave.
San Jose, CA 95134 USA
Tel: +1 408 325-8668
Fax: +1 408 325-8666
www.a10networks.com

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Worldwide Offices

North America
sales@a10networks.com
Europe
emea_sales@a10networks.com
South America
latam_sales@a10networks.com
Japan
jinfo@a10networks.com
China
china_sales@a10networks.com
Taiwan
taiwan@a10networks.com
Korea
korea@a10networks.com
Hong Kong
HongKong@a10networks.com
South Asia
SouthAsia@a10networks.com
Australia/New Zealand
anz_sales@a10networks.com

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