

# Capgemini Solves Multi-Tenancy, Load Balancing and Virtual Context Problems with Thunder Series from A10 Networks

## Company

- Capgemini

## Industry

- IT services, IT consulting, management consulting

## Network Solution

- Thunder Series

## Critical Issues

- Suitability for multi-tenancy
- Existing load-balancer hardware running out of available virtual context
- Customers are under pressure to streamline processes and lower costs

## Results

- Chose A10's Thunder Series; large amount of configurable Layer 3 Virtualization (L3V) partitions met multi-tenancy needs
- Very happy with A10's load balancing
- Great price/performance ratio

*“We're especially happy with the load balancing. Plus it's easy to configure.”*

**Sven Verbeek**  
Technical Consultant,  
Capgemini

Capgemini The Netherlands is one of the world's foremost providers of consulting, technology, outsourcing services and local professional services, operating in over 40 countries. Over 130,000 Capgemini employees help clients transform their businesses in order to improve their performance and competitive positioning. Capgemini offers integrated services that help organizations identify, build and execute programs to sharpen their competitive edge.

## Multi-Tenant Data Center Running Out of Virtual Context

Based in Paris, France, Capgemini serves customers in many industries – from aerospace to utilities. These customers are under tremendous pressure to streamline processes in order to lower costs and quickly address client demands.

Capgemini had built out a multi-tenant data center to serve its customers. Using VLANs, Virtual Routing and Forwarding (VRF), firewall rules and application delivery controller (ADC) partitions, Capgemini ensures that each customer's environment is secure and isolated. Capgemini had deployed Cisco ACE load balancers to load balance web, mail and other applications in the multi-tenant data center.

“Capgemini shares the same hardware for a lot of different customers,” says Sven Verbeek, Capgemini's technical consultant. A major requirement for new networking hardware is suitability for multi-tenancy; it needs to provide a considerable amount of virtual devices on the same equipment. Also, the existing Cisco ACE load balancer hardware was running out of available virtual context, couldn't be upgraded and was having issues – so another solution was needed fast.

## Multi-Tenancy Features, Load Balancing and Price/Performance Factors in Buying Decision

Verbeek considered several vendors before choosing A10 Thunder™ Series. He went with A10 because the large number of configurable Layer 3 Virtualization (L3V) partitions makes it very suitable for multi-tenancy, A10 has a positive reputation with virtual applications and he liked the price/performance.

“We're especially happy with the load balancing,” says Verbeek. “Plus it's easy to configure.” No more training was needed since the configuration is very similar to the ACE platform. In addition, A10 has a good Graphical User Interface for easy deployment.

Verbeek also likes the direct contact that A10 provides. “You feel that you work together,” says Verbeek, which is different from his experience with some other vendors.

## A Network Designed for Flexibility

As seen in Figure 1, two distinct topologies are used to deploy A10's Thunder Series on Capgemini's network. One is where a partition of the A10 Thunder solution is part of the DMZ (as shown on the left); in the other, it is placed in the same VLAN as where the real servers are located. When it's placed in the same VLAN as the real servers, it is only used to load balance traffic that is destined for these real servers. Connectivity to other VLANs from a real server VLAN is not allowed.

Since it provides the most flexibility, deploying the A10 Thunder solution in the DMZ is the default deployment. In this scenario, a single partition is allowed to reach multiple real server VLANs. When the A10 Thunder solution is deployed in front of a web-based application, source NAT and client IP header insertion are used to transport the traffic to the real servers. This is to make sure that the return traffic passes back to the A10 Thunder solution, since the default gateway usually points to the firewall.

When the traffic is non-HTTP and the original client IP address must be available on the real server, source NAT is not used; instead, the A10 Thunder solution is used as the default gateway for the real servers.

This works well because the A10 Thunder solution supports Virtual Router Redundancy Protocol (VRRP). In case of a failure, all of the traffic would be handed off to the standby unit.

## Price, Scalability and Excellent Service Important to Capgemini

A10's Thunder Series gave Capgemini the following important differentiators:

- **Competitive Performance.** The Thunder Series is designed for performance. It scales Layer 7 performance to over 1.5 million transactions per second (TPS), exhibits over 540,000 Layer 4 connections per second (CPS) and supports over 9 million SYN cookies per second.
- **Industry's First 64-Bit Application Delivery Controllers (ADCs) and Operating System.** A10 is the first to market with true 64-bit application delivery and load-balancing platforms, with the integrated 64-bit Thunder Series ADCs and 64-bit Advanced Core Operating System (ACOS®). While 32-bit systems have been used for decades, computing evolution has impacted networking. 64-bit processing is the latest significant leap, increasing addressable memory to achieve the industry's highest levels of scalability and performance.
- **Scalability for Future Demands.** A10 ADCs include a wide range of virtualization technologies for flexible deployment, such as the A10 Virtual Chassis System (aVCS™) for multiple device scaling, multi-tenancy with Application Delivery Partitions (ADPs), and software appliances running atop hypervisors for rapid deployment and resource scaling.

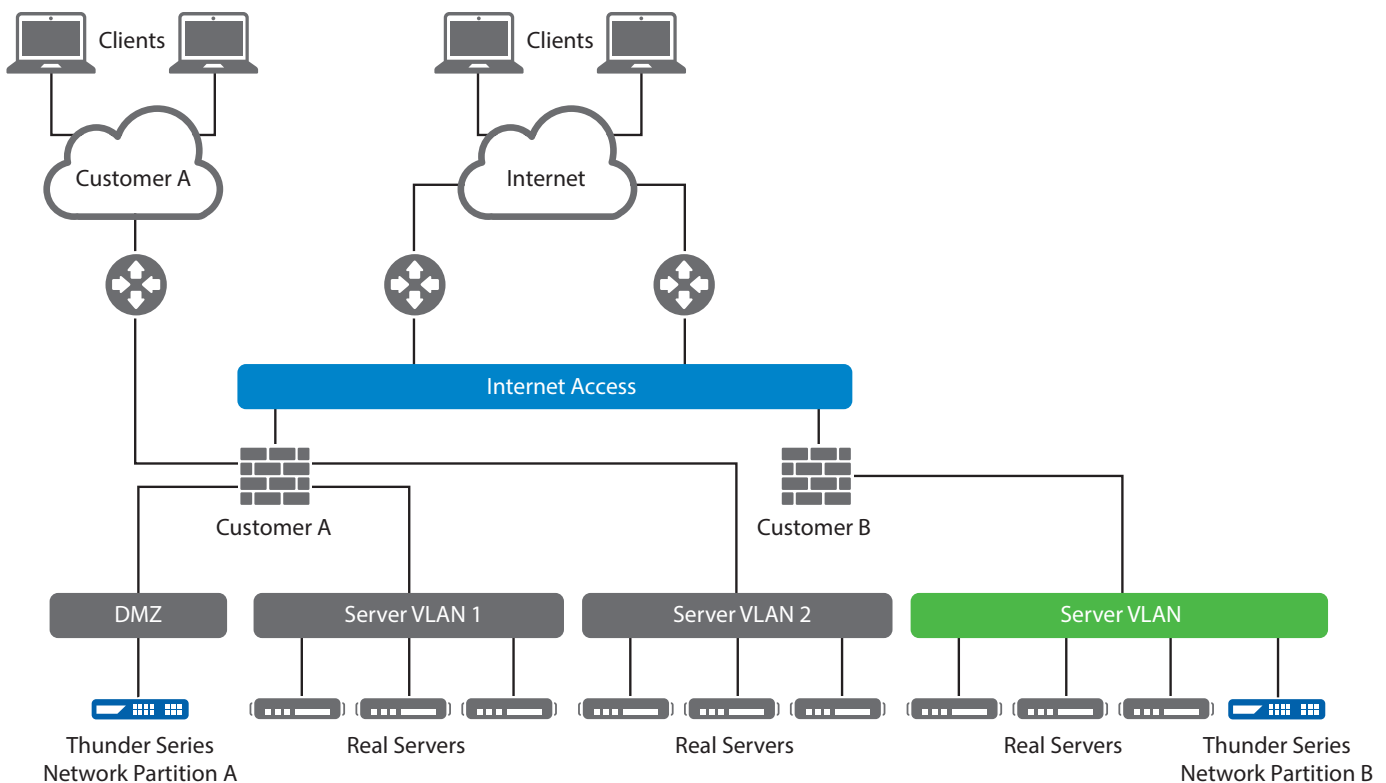


Figure 1. The A10 Thunder Series provides server load balancing and other application features to meet data center challenges.

- **Proven Product Features.** The following Thunder Series features are particularly useful to Capgemini:
  - L7 server load balancing (SLB) for various web applications (HTTP/HTTPS), including persistence (both cookie and source IP), connection reuse and source NAT
  - L7 SLB for mail (Zarafa)
  - L4 SLB for a diverse range of applications
  - IPv6 to IPv4 SLB (SLB-PT) or a mail environment plus normal IPv6
  - Web Application Firewall (WAF) used for Uniform Resource Identifier (URI) whitelisting for a university web application
  - SSL offloading
  - aFlex® used for HTTP-to-HTTPS redirect
  - Reverse proxy functionality (combination of SSL offload and security features)
  - A10 to replace Microsoft NLB, which is currently configured on several Windows systems
- **Ease of Deployment.** A10's intuitive web-based GUI and industry-standard command-line interface (CLI) provide flexible management options and easy deployment. In the future, if Capgemini needs to introduce additional applications, the staff can quickly roll out new deployments without extra training or unnecessary expenses.
- **Superior Price/Performance.** "You get a lot for a fair price," says Verbeek.
- **No Licensing Model Means No Budget Surprises.** A10 ADC hardware appliances and virtualized solutions 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 application acceleration, Global Server Load Balancing (GSLB), WAF and TCL-based scripting; also included is aXAPI®, a REST-based Application Programming Interface (API) for management, which is unique to A10 within the SLB/ADC market. In addition, annual support costs are significantly lower than those of industry competitors.
- **Excellent Service and Support.** "I haven't even had to call the Help Desk," says Verbeek, who works closely with his A10 systems engineer "on everything."

## The A10 Solution

A10 Thunder ADC product line and Thunder Threat Protection System (TPS) provide a way to enhance service availability and optimize network infrastructure efficiency. Thunder Carrier Grade Networking (CGN) devices extend IPv4 services with Carrier Grade NAT (CGNAT), providing time and technologies to transition to IPv6. For management and oversight, aGalaxy® provides a consolidated interface to monitor A10 devices. A10's varied product offerings for scaling, optimization and monitoring provide the most efficient hardware form factors, which ensure that your data center resources are used efficiently. The combination of high performance in a small form factor results in lower costs through reducing power usage, rack space consumption and cooling requirements. For more information, visit: [www.a10networks.com/solutions/service\\_provider\\_networks\\_solutions.php](http://www.a10networks.com/solutions/service_provider_networks_solutions.php).

## About ACOS

The ACOS platform is an application networking software architecture optimized for 64-bit multi-core processor systems. In order to maximize the capabilities of these increasingly dense multi-core CPUs, ACOS implements a proprietary shared memory architecture that scales more efficiently than conventional memory management architectures, like inter-processor communications (IPC). This shared memory architecture enables A10 products to utilize these increasingly common multi-core CPUs efficiently and scale performance with increasing CPU cores, enabling ACOS-based products to process two to five times more web transactions in certain head-to-head product comparisons per unit of computing and memory resources, power, rack space or list price. For more information, visit: [www.a10networks.com/about/technology\\_platform\\_acos.php](http://www.a10networks.com/about/technology_platform_acos.php).

## About Capgemini

With more than 130,000 people in over 40 countries, Capgemini is one of the world's foremost providers of consulting, technology and outsourcing services. Capgemini reported 2013 global revenues of EUR 10.1 billion. Together with its clients, Capgemini creates and delivers business and technology solutions that fit their needs and drive the results they want. A deeply multicultural organization, Capgemini has developed its own way of working, the [Collaborative Business Experience™](#), and draws on [Rightshore®<sup>1</sup>](#), its worldwide delivery model. Learn more about us at [www.capgemini.com](http://www.capgemini.com).

<sup>1</sup>Rightshore® is a trademark belonging to Capgemini.

## 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:

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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](http://www.a10networks.com/contact) or call to talk to an A10 sales representative.