



# CISCO APPLICATION-CENTRIC INFRASTRUCTURE AND A10 THUNDER ADC DELIVER DYNAMIC L4-L7 SERVICES

ACCELERATE AND SECURE YOUR APPLICATIONS WITH CISCO ACI AND A10 ADC

Modern data centers are increasingly focused on applications as the primary unit of currency. Current business trends like big data, mobility and cloud deployments are calling for a dynamic data center infrastructure that is secure, shared, flexible and capable of rapidly adapting to changing application needs. Cisco Application Centric Infrastructure (ACI) addresses these business challenges by providing an innovative architecture that simplifies the application delivery lifecycle through a common policy framework. A10 Networks also shares a similar vision to deliver on-demand, policy-based mechanisms for dynamic L4-L7 services in a cloud environment. The Cisco ACI framework is open and enables ecosystem partners to interoperate with the Cisco ACI fabric. A10 Networks is a key partner in the Cisco ACI ecosystem. A10 Networks Thunder<sup>®</sup> ADC line of Application Delivery Controllers seamlessly integrates into the Cisco ACI policy and automation model so that L4 through L7 application and security services can be deployed rapidly, providing the agility, automation and lower TCO needed in a modern data center.

## CHALLENGE

As businesses look to IT as a point of strategic differentiation, data center agility becomes more critical than ever. Evolving applications combined with the need for always-on reliability requires that IT organizations ensure a seamless infrastructure for application deployment and on-demand consumption.

## SOLUTION

Cisco ACI provides a centralized fabric control and automation framework for application policies. Through an A10 device package, ACI automates the service chaining and insertion of physical, hybrid and virtual A10 Thunder ADC appliances, enabling data center operators to deliver advanced L4-L7 tenant services while improving agility and reducing TCO.

## BENEFITS

Integration of Thunder ADC with Cisco ACI provides enterprises with rich application delivery and security capabilities in a shared infrastructure. This joint solution can effectively transform the data center by enabling automatic provisioning of application delivery and security services with a significant increase in provisioning speed, business agility and reduced costs.



## CHALLENGE

As businesses look to IT as a point of strategic differentiation, agility in the data center becomes more critical than ever. This puts the onus on IT to respond fast to changing business requirements. However, application agility is directly related to the infrastructure on which applications run. Evolving applications combined with the need for always-on reliability requires that IT organizations ensure a seamless infrastructure for application deployment and on-demand consumption. To address business demands, data center operators have to dynamically manage policies. As new applications are introduced or legacy applications change, it is critical to build data center infrastructures for delivering consistent application and security services in an elastic and cost-effective environment.

Existing data center infrastructure is a heterogeneous mix of physical and virtual devices with a device-centric management approach, and its operation is manual, repetitive and time-consuming. Provisioning applications and addressing their changing network services needs are also time-consuming and require significant process overhead. Most IT departments are not positioned to deploy applications quickly, scale them effectively and maintain required service levels. For the business owner, this means that time-to-service for an application is too long, operating costs are too high and customer satisfaction is at risk.

## THE A10 NETWORKS – CISCO ACI JOINT SOLUTION

Cisco Application-Centric Infrastructure is the foundation of an application-based data center. The Cisco ACI makes IT organizations more agile by providing a common programmable automation and policy management framework for network, application, security, L4-L7 service and virtualization teams. Within Cisco ACI, the Application Policy Infrastructure Controller (APIC) is the creation, repository and enforcement point for application policies, which can be set based on application-specific network requirements. Essentially, Cisco APIC serves as the single point of automation and fabric element management in both physical and virtual environments. The APIC communicates with other L4-L7 elements in the fabric via a plug-in (also known as a device package). A10 Networks physical, virtual and hybrid Thunder ADC appliances are integrated into the open ACI infrastructure via the A10 APIC device package, enabling data center operators to deliver automated advanced L4-L7 tenant services on the Thunder ADC appliance with choice of form factor that suits their consumption needs.

A10 Networks device package for Cisco APIC makes it easy to combine A10's L4-L7 application delivery controllers with ACI's L2-L3 network fabric. Network segmentation and security policies are enforced consistently whenever a new

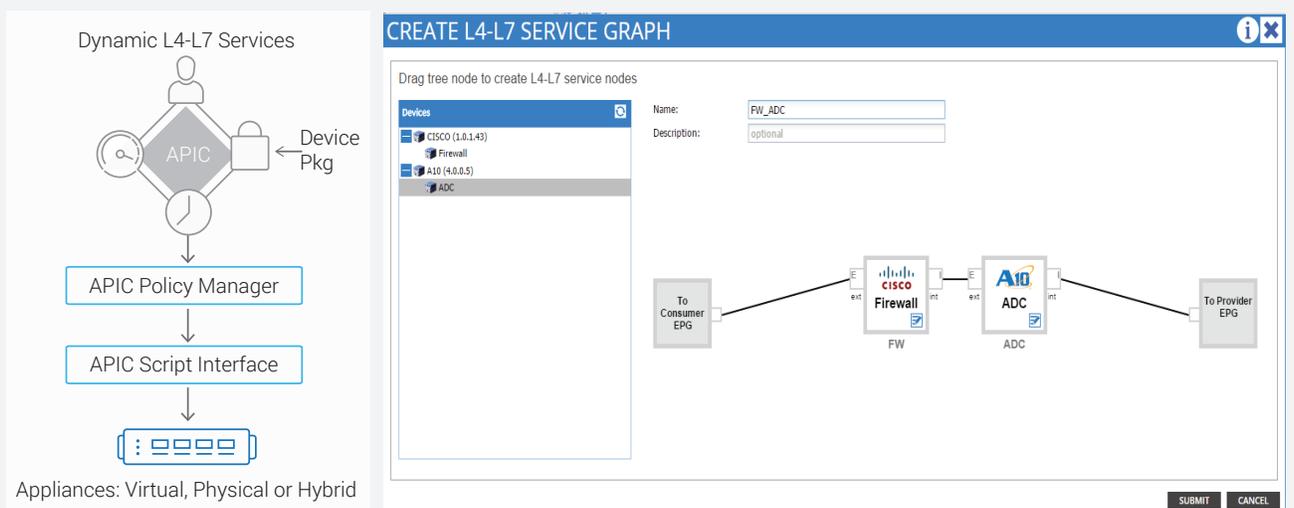


Figure 1: A10 Thunder ADC device package integration

application is deployed in the network. All A10 appliances run the innovative Advanced Core Operating System (ACOS®). The comprehensive ACOS features and flexibility combined with an architecture that allows the system to scale linearly, makes A10 products ideal for cloud scale and performance requirements. The rich services platform accelerates service integration and manageability via open and standards-based programmability. ACOS is completely Application Programming Interface (API) driven and programmatically exposes rich services for cloud, SDN and network functions virtualization (NFV) environments. An all-inclusive licensing model ensures flexibility and simplified operations. Furthermore, ACOS features and configurations are identical and transferable across all form factors. The A10 integration with Cisco ACI allows IT organizations to enable automatic provisioning of dynamic L4-L7 application networking and security services, thus reducing application deployment time.

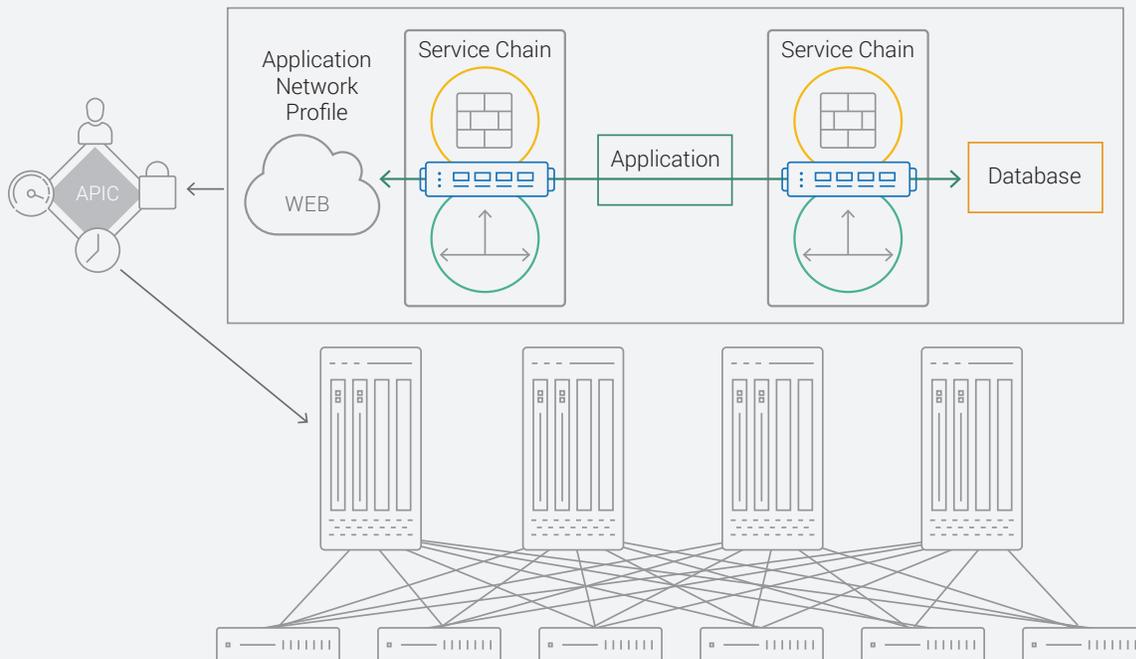
Together, Cisco ACI and A10 Thunder ADC appliances provide an automated approach based on application-specific policies that allow applications to dynamically scale on-demand throughout data centers. Furthermore, the ACI and Thunder ADC integration allows Cisco and A10 to independently innovate and address pervasive requirements of network programmability. As Cisco

and A10 continue to innovate, more advanced ADC and security functionality such as service chaining, Web Application Firewall (WAF), SSL Insight™ and Global Server Load Balancing (GSLB) will be integrated with Cisco ACI.

## SOLUTION DETAIL

The Cisco ACI fabric is designed with application connectivity and policy at the core. This focus allows both traditional enterprise applications and internally developed applications to run side by side on a network infrastructure designed to support them in a dynamic and scalable way. Cisco ACI technology provides the capability to insert L4-L7 services through simplified definitions on the APIC. The APIC serves as the central point of control for application policy management and redirects traffic to L4 through L7 devices.

Through the A10 device package, ACI automates the service chaining and service insertion of physical, hybrid and virtual A10 Thunder appliances (see Figure 1). The device package has been rigorously tested by A10 Networks in the Cisco ACI environment and offers rich L4-L7 network application services, application templates and HTTP optimization services for Cisco's ACI fabric. The A10 device package uses open APIs



**Figure 2:** Cisco ACI and A10 Thunder ADC appliances working together

and scripts that allow Cisco APIC to configure consistent automation and orchestration of application delivery controller (ADC) services within the fabric required to deploy applications in a fast, highly secure and reliable manner.

The integration with A10 Networks Thunder ADC appliances allows the Cisco APIC controller to communicate with the Thunder ADC via RESTful API to push the necessary L4-L7 ADC service policies and allocate network path to A10 Thunder devices. The policies can be applied on a choice of high-performance physical appliances and flexible virtualized appliances. Appliances can leverage multi-tenancy capabilities for increased resource utilization. The ACI integration allows L4-L7 service definition based on operational needs and essentially enables resource pooling of L4-L7 services on A10 appliances. Enterprises, service providers and cloud providers can all leverage this solution to rapidly deploy services that address changing demands.

The A10 integration with APIC enables a key innovation in the area of service insertion. Cisco APIC can create service insertion of functions offered by individual L4 through L7 on Thunder ADC appliances without having to connect discrete appliances in sequence. Cisco ACI locates the Thunder ADC appliances that provide L4-L7 functions and inserts them into the path as defined by the policy (see Figure 2). Appliances don't need to be put in any particular place in the fabric. The service insertion enables L4/L7 load balancing, application templates and HTTP optimizations in Cisco ACI fabric. With dynamic L4-L7 services, customers have the capability to create a logical flow of service functions, allowing them to provision very complex topologies instantaneously.

The ground up focus on open standards-based programmatic interfaces on Cisco ACI and A10 ACOS delivers programmable and scalable infrastructure to build a secure on-demand delivery model for dynamic and consistent provisioning of services. ACOS' comprehensive RESTful APIs ensure fast and accurate integration with the Cisco ACI fabric to provide a single point of provisioning through CLI, GUI, APIs and scripts. Data center operators can use portable configuration templates to simplify consumption of L4-L7 services. Additionally, RESTful APIs can be leveraged to monitor and analyze application traffic to develop powerful insights into infrastructure for capacity planning, performance and compliance.

Cisco ACI provides an advanced data center networking methodology that abstracts networking constructs from

application deployments. In combination with the A10 Thunder ADC appliances, Cisco ACI provides a robust set of network application, security and other L4 through L7 automation functions. Customers can now realize the value of fully orchestrated and programmatically controlled L4-L7 services, service chaining and centralized management. By leveraging the APIC integration with Thunder ADC, data center operators can define a dynamic sequence of service functions such as advanced ADC features, SSL offloading, WAF, load balancing and traffic filtering on the A10 platform in a way that can be abstracted from the concrete implementation. The integration allows operators to address needs of agility and on-demand consumption while ensuring security and compliance in an increasingly shared infrastructure.

## FEATURES AND BENEFITS

Benefits of a joint Cisco ACI – A10 Thunder ADC integrated solution include:

**Agility:** Data center operators can choose from a selection of Thunder ADC appliances to spawn new instances on-demand and support dynamic L4-L7 service insertion according to tenant-defined or provider-defined policies. With the joint Cisco ACI and A10 Thunder ADC solution, operators can dynamically respond to business needs by providing consistent services in a shared, multi-tenant environment via policy-based automated provisioning.

**Automation:** Cisco ACI and A10 Thunder ADC integration enables data center operators to build an automatically provisioned application networking infrastructure. Customers can benefit from programmability and open, standards-based RESTful APIs to rapidly instantiate consistent provisioning of networking services to enforce SLAs, compliance and security.

**Flexibility:** The Cisco ACI and A10 Thunder ADC integration also allows data center operators to automate data center operations with L4-L7 services independent of where services reside. The ACI policy framework provides a common policy abstraction regardless of whether services are physical or virtual, thus enabling choices and flexibility of service deployments.

**Lower TCO:** ACOS features and configurations are identical and transferable across all appliance form factors. The integration provides all-inclusive licensing and comprehensive programmatic interfaces resulting in quicker integration, and it facilitates dynamic provisioning of services and efficient resource utilization in a shared multi-tenant environment.

## SUMMARY

As businesses seek to make the data center more agile, the application-centric automation and virtualization of both hardware and software infrastructures become increasingly important. Cisco ACI builds the critical link between business-based requirements for applications and the infrastructure that supports them. The integration of A10 Networks Thunder ADC line of Application Delivery Controllers with Cisco ACI provides enterprises with rich application delivery and security capabilities in a shared infrastructure. This integration can be leveraged to dynamically provision L4-L7 application services, and to ensure that SLAs and security requirements are consistently met. The Thunder ADC platform can help customers accelerate, secure and optimize the performance of their data center applications and networks. The comprehensive joint solution can effectively transform the data center by enabling automatic provisioning of application delivery and security services with a significant increase in provisioning speed, business agility and reduced costs.

## NEXT STEPS

For more information, please visit [www.cisco.com/go/aci](http://www.cisco.com/go/aci) and [www.cisco.com/a10networks](http://www.cisco.com/a10networks).

## ABOUT A10 NETWORKS

A10 Networks (NYSE: ATEN) is a Secure Application Services™ company, 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, Calif., and serves customers globally with offices worldwide.

For more information, visit: [a10networks.com](http://a10networks.com) or tweet [@a10Networks](https://twitter.com/a10Networks)

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