Cisco and F5: Building Application Centric, Service-Enabled Data Centers

Cisco Application Centric Infrastructure together with F5 Software Defined Application Services™ to deliver application centric network and services orchestration.

Today's IT organizations are under significant pressure to deliver applications faster and with greater frequency than ever before. Existing applications have to respond to changing business requirements and policies on-demand while adjusting their resource utilization to adjust to elastic demands and reduce costs. To meet this nearly insatiable demand from businesses and end-users for applications, IT must transform data center infrastructures to enable rapid provisioning and scale of critical network and application delivery services. This must be done while at the same time maintaining or improving performance, security and reliability. Key to this transformation is the dynamic orchestration of services in real-time. Orchestration of services provides the opportunity to reduce the complexity experienced with the traditional layering of disparate traffic steering techniques. The orchestration of services is key to the enabling the ecosystem of technologies needed to create the next generation of service fabrics.

Cisco Application Centric Infrastructure (ACI) provides a groundbreaking service insertion framework that automates the creation and provisioning of application-specific networks and services. This includes directing traffic to appropriate network service nodes independent of their location, and orchestrating application policies and ongoing management tasks. This new view of datacenter resources simplifies a currently complex and inflexible data center and cloud architecture ACI enables applications and policies to dynamically respond to business requirements. The Application Policy Infrastructure Controller (APIC), a component within ACI, which provides centralized service automation and policy control, is the key to integrating F5 Software Defined Application Services™ (SDAS) delivered via F5 Synthesis™. This integration of critical datacenter technology directly incorporates F5 application solutions into the ACI automation framework.

F5's Synthesis architecture is a vision for delivering Software Defined Application Services. Its high performance services fabric enables organizations to rapidly provision, manage and orchestrate a rich catalog of services using simplified business models that dramatically changes the economy of scale for layer 4-7 services.

By tying the technologies of the Cisco Application Centric Infrastructure and F5 Software Defined Application Services, IT organizations are able to deliver application centric, service-enabled network and application service automation in existing and next-generation data centers. The joint solution enables virtual workload mobility and continuous delivery of applications without compromising on consistent, scalable network and L4-L7 services.

Challenges

Applications have become critical to the survival of business, and are the reason for the delivery network. Issues that impact the security, reliability, or performance of applications impact business in a variety of ways, from lost productivity to customer dissatisfaction and marred reputations. Applications should not only just work, but they need to respond to business objectives in nearly real-time to maximize business goals. Yet significant shifts in technology are making it increasingly complex and costly to achieve these objectives.

IT organizations struggle with automating the network to match the velocity of increasingly agile development and operational environments, as well as dynamic business requirements. Maintaining predictable performance of thousands of applications is challenging enough without the added pressure to operationalize network and application delivery controller (ADC) services in an increasingly multi-tenant, application-driven world. But IT must operationalize the network if they are to meet increasing demands for services upon which applications rely for security, performance and reliability.

The joint Cisco ACI and F5 Synthesis solution enables IT to operationalize key data center network and L4-L7 services necessary to meet business and consumer demands for application performance, security and reliability in a compliant, standard, and repeatable way.

Solution Overview

Cisco ACI defines a policy-based L4-L7 service insertion mechanism, providing full service life-cycle management based on workload instantiation and decommission. Cisco APIC centrally manages service policy definitions as well as insertion, enabling consistent orchestration of services across a full range of network, application and security infrastructure.

F5 Synthesis integrates with Cisco APIC through well established and open APIs. This open API framework automates network and service provisioning across the F5 services fabric, providing end-to-end telemetry and visibility of applications and tenants. The APIC acts as a centralized point of configuration management and automation for L4-L7 services, and tightly coordinates service delivery serving as the controller for network automation. The APIC enables service redirection and orchestration dynamically, adjusting automatically to network topology changes in the application infrastructure.

The Cisco ACI service definition model is highly complementary with F5's ADC profile and iApp driven technologies. This enables organizations to preserve existing application delivery profiles and service definitions, while adding network and service stitching automation. Cisco APIC's layered policy approach is the perfect fit for F5 application delivery, which has been profile template driven from its beginnings. The layered approach taken by Cisco and F5 to the integration of their industry leading data center technologies allows organizations who desire richer application features or a more standardized deployment, which have been the hallmark of F5 technology, to rapidly develop the attributes of the service chain they desire. The common fabric stitching components are maintained in a consistent manner regardless of the degree of out-of-the-box or programmable features required. The standardization needed to reach the goals of the application fabric have risen to meet the programmability and flexibility of F5. It's an end to end application fabric tailored to fit any customer's need.

Figure 1.   Cisco APIC Service Chaining Example
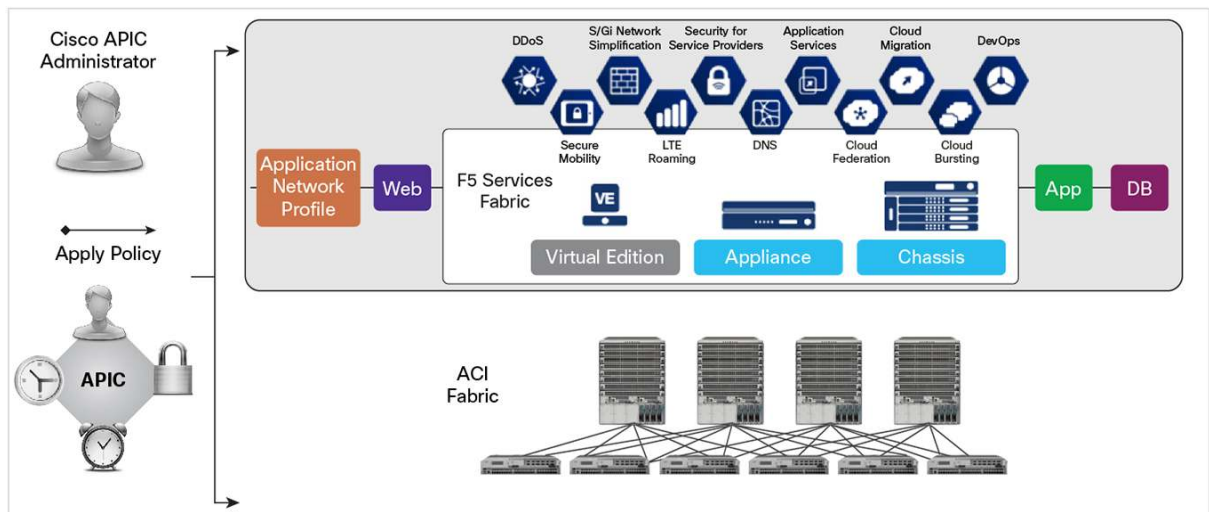
Cisco APIC is capable of orchestrating services deployed on any combination of physical and virtual F5 BIG-IP form factors. This supports F5's High Performance Service Fabric heterogeneous multi-tenant approach, which in any combination of hardware and software resources combine to comprise the service fabric on which its application services are deployed.

Solution Benefits

The joint solution enables virtual workload mobility while retaining consistent L4-L7 services and without requiring co-location of services with the application. As workloads migrate, so do the network and L4-L7 services they need to ensure they meet the reliability, security and performance requirements demanded by customers and business stakeholders.

By centralizing network and application service policy management and topological control, the solution ensures the best user experience without compromising performance, security or scale of applications. Thus one-off application deployments are transformed into dynamic and scalable application fabric solutions.

Benefits of a joint Cisco ACI-F5 Synthesis solution:

- **Improved Service Velocity.** Both Cisco ACI and F5 Synthesis are highly extensible through programmatic extensions, enabling consistent automation and orchestration of critical services needed to support business and application requirements for performance, security and reliability.
- **Reduced Costs.** Automation and orchestration are critical tools that enable IT to reduce overhead from manual operations and to minimize the costs of downtime due to misconfiguration. Cisco ACI and F5 Synthesis are highly programmable, enabling significant cost savings from integration and automation.
- **Preserved Existing Investments.** Cisco ACI supports F5's existing application delivery model as well as F5 Synthesis' fabric-based model, preserving existing investments in both infrastructure and policy creation. Doing so enables IT to transition to new data center models at its own pace, without requiring disruptive change to applications.

Together, Cisco's ACI and F5 SDAS offer a comprehensive, application centric set of network and L4-L7 services, enabling both traditional and next-generation data centers to deploy and deliver applications with the speed, reliability and security necessary to meet the challenges of an increasingly interconnected and highly-demanding application world.

To Learn More

About Cisco ACI strategy, please visit: http://www.cisco.com/go/aci

About F5, please visit: http://www.f5.com/products/technology/cisco

F5

F5 Networks (NASDAQ: FFIV) is the global leader in Application Delivery Networking with a mission of Delivering the Most Secure, Fast, and Reliable Applications to Anyone, Anywhere at Anytime. F5 helps organizations meet the demands and embrace the opportunities that come with the relentless growth of voice, data, and video traffic, mobile workers, and applications - in the data center, the network, and the cloud. The world's largest businesses, service providers, government entities, and consumer brands rely on F5's intelligent services framework to deliver and protect their applications and services while ensuring people stay connected. Learn more at http://www.f5.com.

Cisco

Cisco (NASDAQ: CSCO) is the worldwide leader in IT that helps companies seize the opportunities of tomorrow by proving that amazing things can happen when you connect the previously unconnected. One of Cisco's key differentiators has been our ability to capture market transitions which drive innovation that enables our customers' long-term success. At the heart of these transitions - cloud, mobility, video, any device and social - is the network. Cisco's vision is to become our customers' most strategic business partner by delivering intelligent networks and technology and business architectures built on integrated products, services, and software platforms which enable our customers' success. Cisco has shaped the future of the Internet by creating unprecedented value and opportunity for our customers and ecosystem partners and has become the worldwide leader in networking - transforming how people connect, communicate and collaborate.