Application Centric Infrastructure

Cisco IT Insights

What

Fast-growing industry trends and new operational models – notably, cloud computing, big data, and software-defined networking – are driving the need for an agile, scalable, and flexible infrastructure. Meanwhile, IT organizations are increasingly expected to drive revenue growth, reduce operational costs, mitigate security risk, and preserve innovation. IT's relevancy to the business has never been greater.

The Cisco Application Centric Infrastructure (Cisco ACI™) addresses these challenges directly. Cisco ACI is a secure, programmable environment that anticipates application requirements. It can rapidly deliver the network infrastructure onto which applications are deployed, at large scale with high security and full visibility into the applications. ACI integrates into cloud environments easily, and enables consistently secure policies for both physical and virtual workloads. Two-way communication between applications and their infrastructure requirements are possible in the ACI model.

With additional orchestration or automation systems, ACI will enable a holistic approach to managing network, server, storage, and application resources within a data center and across multiple data centers. The foundation devices of ACI are the Cisco Application Policy Infrastructure Controller (Cisco APIC) and Cisco Nexus® 9000 Series Switches.

In the policy-controlled ACI environment, Cisco APIC automates and centralizes policies that apply to all layers of the network stack. These single, overarching policies can be easily audited and automated, reducing human errors made through manual configuration and mitigating compliance risks. Cisco APIC has northbound integration that allows for easy assimilation into cloud environments. Southbound communication enables the APIC to manage the entire data center network.

Underlying the infrastructure components are new policy models that deliver an adaptive, highly resilient infrastructure and simplified network security management. Policies traverse virtual and physical servers, and are not contained to the network, an infrastructure subcomponent, single device, or application middleware. Policies are defined per application profiles.

Why

Cisco ACI empowers IT to be more responsive to business needs while helping to drive revenue and reduce operating costs. After the infrastructure is deployed and application patterns change, communication between the infrastructure and application layers will allow IT to build a more elastic infrastructure that is easier to manage. IT can deliver and manage network and infrastructure resources faster, presenting them to applications simply and securely.

With ACI, IT can use a common toolset for defining application requirements, reducing provisioning times from weeks to minutes. Downtimes for planned changes are also shortened. IT organizations can innovate how applications are deployed, especially the more complicated applications that require development, testing, staging, and production.

From an operational excellence perspective, ACI allows IT to resolve challenges faster and offer higher availability with improved service-level agreements (SLAs). ACI can also lower operational costs significantly.

IT can have real-time monitoring and centralized visibility into application performance and infrastructure dependencies. Problems are easier to locate and faster to remediate. Health metrics reporting provides insight into application performance holistically and by individual application.

In an ACI environment, security is decoupled from IP. Security management is simplified and risks are mitigated through automated, centralized compliance and auditing. ACI also supports multitenant models and enables granular network security.

Cisco IT Migration to ACI

Cisco IT is migrating all traditional applications to a simplified ACI compute platform and programmable network (see Figure 1). On this journey, Cisco IT strives to ensure that the traditional and ACI infrastructure coexist seamlessly, while the creation of new workloads and transition of existing workloads to the ACI network are done with minimal disruption.

Figure 1. Cisco IT ACI Migration
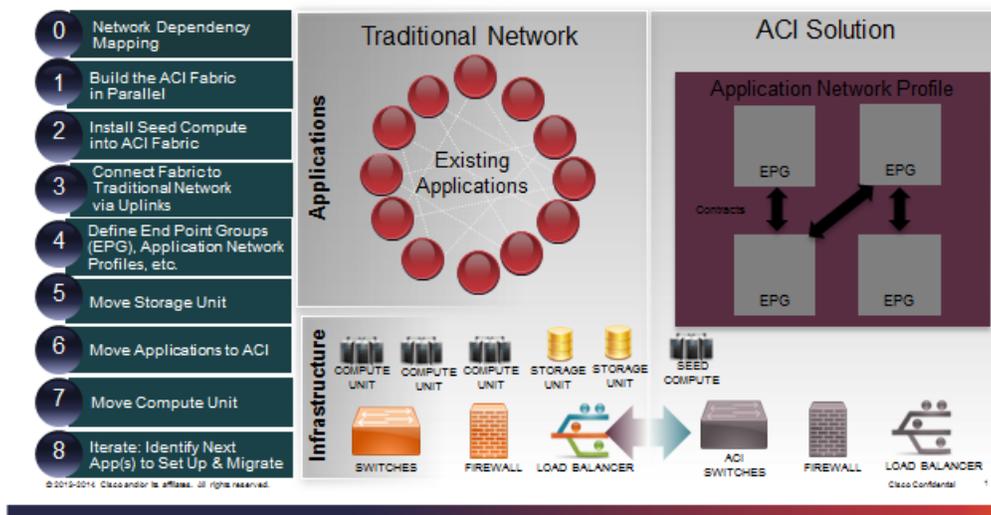
"ACI enables Cisco IT to deliver secure, programmable, policy-based, agile cloud infrastructure to deploy heterogeneous applications that drive business growth," says Benny Van de Voorde, data center architect, Global Infrastructure Services at Cisco.

For More Information

Inside Cisco IT Blog: [Cisco IT's Road to Application Centric Infrastructure: Organizational Readiness and the Program Team](#)

Inside Cisco IT Video Blog: [ACI Makes Sense for the Enterprise Environment](#)

Inside Cisco IT Blog: [How We Migrate Hundreds of Applications to the ACI Platform](#)

Inside Cisco IT Blog: [Network Dependency Mapping Helps Clean Up Our Application Portfolio](#)

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