Cisco Application Policy Infrastructure Controller (Cisco APIC)

Overview

Cisco® Application Centric Infrastructure (ACI) is an innovative Data Center architecture that simplifies optimizes and accelerates the entire application lifecycle through a common policy management framework. Network, security, virtualization, and applications teams can now work in a common management architecture, enabling the disconnected management processes that have burdened most data centers to finally come together.

Cisco APIC serves as the single point of automation and fabric element management in both physical and virtual environments. As a result, operators can build fully automated and scalable multitenant networks.

Figure 1. Infrastructure Components of Cisco APIC
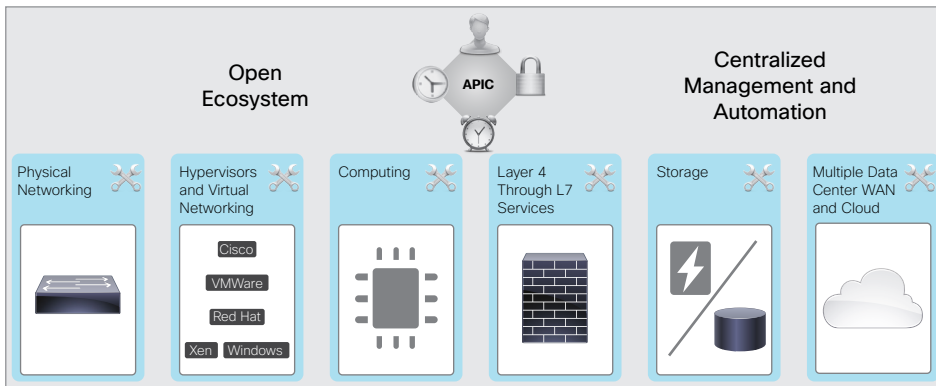
Cisco APIC attributes and features include the following (Figure 1):

- The ability to build and enforce application centric network policies
- An open framework through northbound and southbound APIs
- Integration of third-party Layer 4 through 7 services, virtualization, and management
- Intelligent telemetry and visibility for applications and tenants
- The ability to provide security for multitenant environments at scale
- A common policy platform for physical, virtual, and cloud networking

Application Centric Network Policies

Cisco APIC is the creation, repository, and enforcement point for Cisco ACI application policies, which you can set based on application-specific network requirements.

Cisco APIC also provides policy authority and resolution mechanisms. Cisco ACI policies define connectivity, security, and networking requirements for agile and scalable application deployments.

Open Framework

The Cisco APIC framework enables broad ecosystem and industry interoperability with Cisco ACI. It enables interoperability between a Cisco ACI environment and management, orchestration, virtualization, and Layer 4 through 7 services from a broad range of vendors (Figure 2).

Cisco APIC provides centralized access to your Cisco ACI through an object-oriented RESTful API framework with XML and JSON binding. It also supports a modernized, user-extensible command-line interface (CLI) and GUI. APIs have full read and write access to the Cisco ACI, providing tenant- and application-aware programmability, automation, and system access.

Northbound APIs allow rapid integration with existing management and orchestration frameworks. They also allow integration with OpenStack interfaces to provide Cisco ACI policy consistency across physical, virtual, and cloud environments.

Southbound APIs let you extend Cisco ACI policies to existing virtualization and Layer 4 through 7 service and networking components. They will support computing and storage environments in the future. Cisco intends to fully publish and open source the Cisco API data model to foster a broader ecosystem.

**Figure 2.** Cisco APIC Integration of Third-Party Services
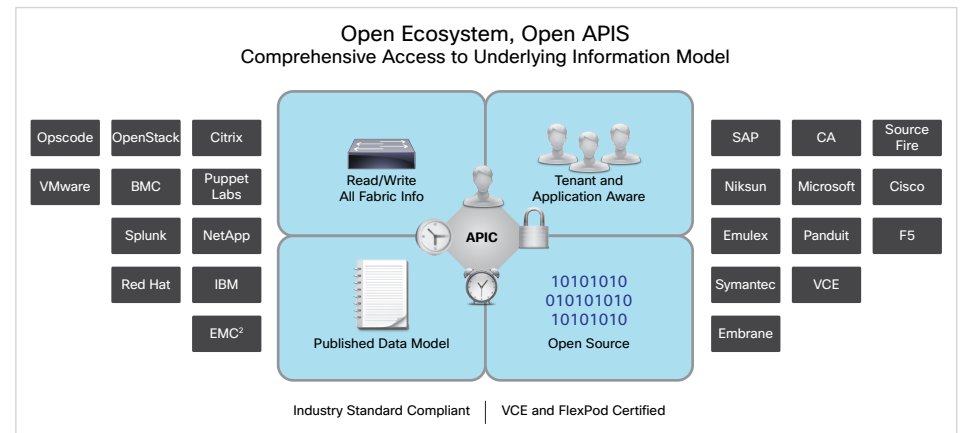
Intelligent Telemetry and Visibility for Applications and Tenants

Cisco APIC provides centralized analytics and visibility of network health as it relates to applications and tenants. Cisco APIC is designed to provide application and tenant health at a system level by using real-time metrics, latency details, atomic counters, and detailed resource consumption statistics (Figure 3).

Figure 3. Cisco APIC Next-Generation Analytics Capabilities
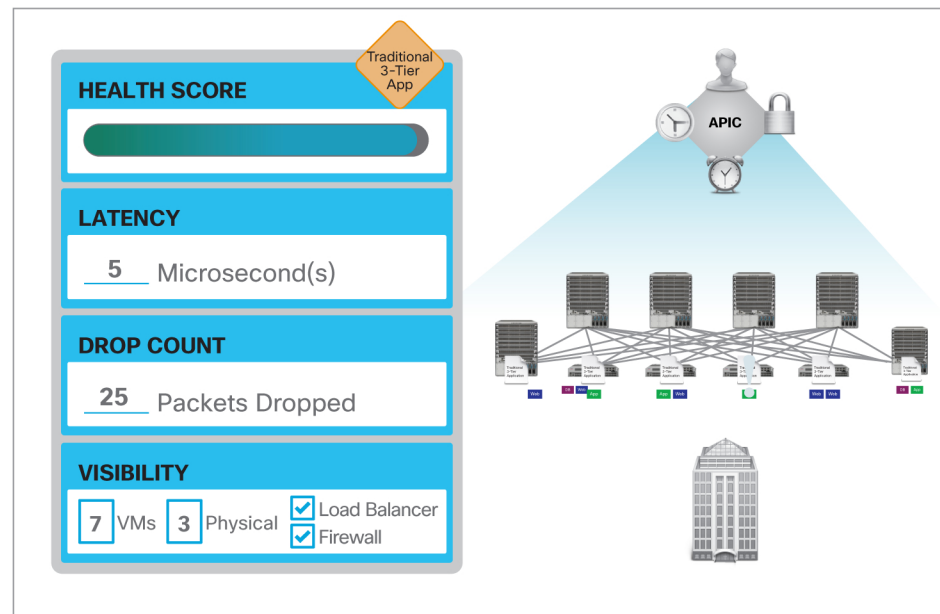
Benefits of Cisco APIC

With Cisco APIC you get single-pane management of applications, security services, network services, and network configuration. This integration delivers the following benefits:

- Centralized, application-level visibility, with real-time application health monitoring across the physical and virtual environments

- Simplified operations across application, network, and security elements (with computing and storage elements to be added in the future)

- Common platform for managing physical, virtual, and cloud-based environments

- Investment protection of existing third-party environments that become interoperable with Cisco ACI

- Open APIs, open standards, and open source elements, which enable software flexibility for development and operations (DevOps) teams, and ecosystem partner integration

Cisco Services for ACI

Cisco offers a range of professional and technical services to support your deployment, including:

- **Cisco Business Strategy** capabilities help you articulate the strategy and develop the business case and an architectural-led master plan for ACI. We assess the specific benefits of ACI for your environment, and identify and prioritize business-impacting scenarios into an overall plan, using tools and frameworks that we have developed and tested internally and with others.

- **Cisco Readiness Planning** capabilities help transform your data center networks to an ACI by identifying risks and opportunities; analyzing operational elements; and recommending detailed migration plans to enable a smooth and successful transition to ACI.

- **Cisco Quick Start Service for Nexus 9000** provides consulting services that include technical advice and assistance to help deploy the Cisco Nexus 9000.

- **Cisco Accelerated Deployment Services for Nexus 9000** support rapid transition to an application centric architecture.

- **Cisco Data Center Services for Operations Enablement** are existing services which can prepare your environment for ACI while addressing all stages of the operations lifecycle.

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