

**Avi Networks +
Cisco Cloud Services Platform 2100 =
Turn-key NFV Load Balancer**

Gain elastic next-generation application delivery with application analytics, automation, and self-service IT deployed on the Cisco® Cloud Services Platform (CSP) 2100.

Challenges

- Inelastic load balancing
- High capital and operational costs
- Complex, manual, error-prone operations
- Lack of visibility into applications and end-user experience

Solution: Avi Vantage Platform with Cisco® Cloud Services Platform 2100

- Enterprise-class, flexible software load balancing with the reliability of hardware
- Central point of management and control
- Automated operations and self-service IT
- Simple scale-as-you-grow model with turn-key network functions virtualization (NFV) platform

Benefits

- Five times faster application deployment
- Actionable insights into application performance, security, and user experience
- Capability to troubleshoot application problems in seconds
- Elimination of server and patch management concerns
- Greater than 50 percent savings in total cost of ownership (TCO)

Introduction

Implementing Layer 4 through Layer 7 (L4-L7) services such as load balancers and firewalls for modern applications in data centers can be cumbersome and expensive. The current “rack-and-stack” approach based on closed and purpose-built appliances lacks flexibility, automation, and elasticity. Sizing these services adds another layer of complexity. Services can be sized either initially based on expected peak performance, or periodically to account for changing traffic patterns. However, the first approach frequently results in wasteful overprovisioning, and the latter is reactive and challenges IT resources. A software load-balancing approach built on a network functions virtualization (NFV) platform like the CSP 2100 holds promise to address these challenges while retaining the performance characteristics of purpose-built physical appliances. This solution delivers a scalable and distributed application services fabric that reduces capital expenditures and operating costs. Unlike traditional approaches, NFV solutions scale elastically while providing much needed flexibility, application analytics, and intelligence.

Load Balancing for NFV Deployments

With the CSP 2100 NFV Platform and the Avi Vantage Platform, both enterprises and service providers are no longer confined to appliances that can only support one network service. The CSP 2100 is an open x86 Linux Kernel-based Virtual Machine (KVM) platform, and the Avi Vantage software platform transparently deliver NFV capabilities while providing superior elastic load balancing and expanded L4-L7 services.

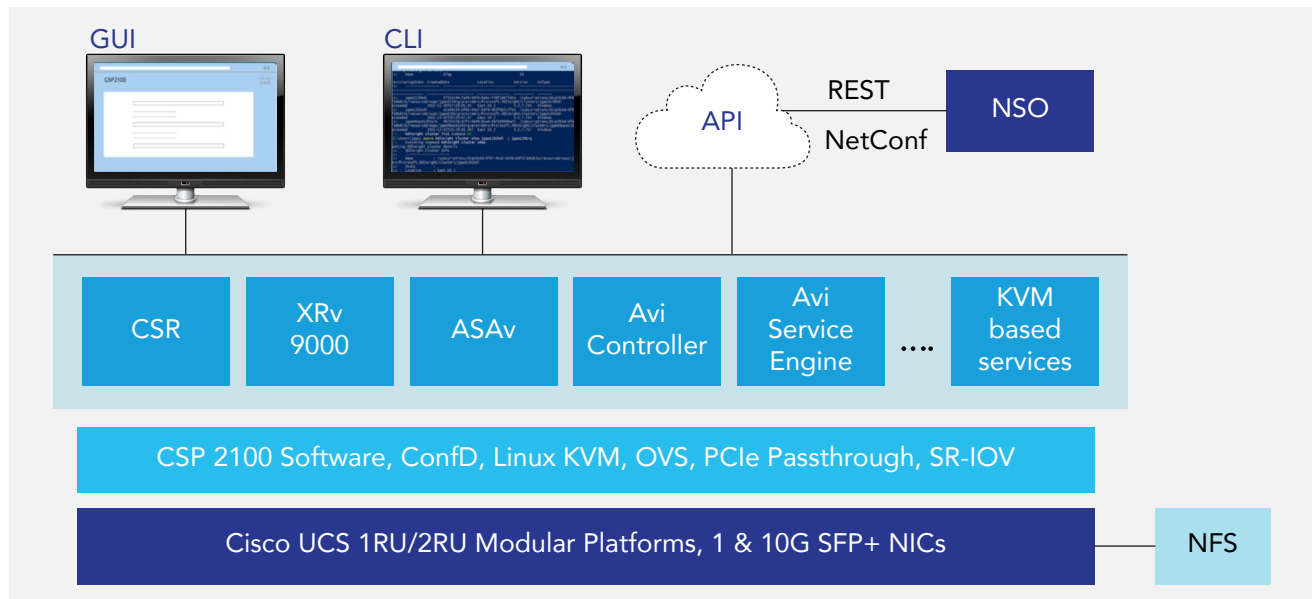
Why Cisco Cloud Services Platform 2100?

NFV represents a significant change for the networking and network services industries, in which such capabilities traditionally have been restricted to proprietary hardware. NFV virtualizes networking functions and runs them as software in cloud-like infrastructure. NFV represents a fundamental architectural shift for network engineers and network administrators who are concerned about patch management and updates for standard x86 servers and virtual machines in their critical network infrastructure. Delivering network functions on an appliance form factor using standard hardware simplifies server management and delivers a scalable approach to network functions. The CSP 2100 is designed to support virtualized networking components and automate network services through:

- Standard x86 servers
- Virtualized and software-based functions
- API-based approach
- Elastic scalability

The Cisco CSP 2100 is built on the Linux Operating System and tightly coupled with Cisco UCS x86 servers with the latest drivers and firmware to ensure optimal performance and reliability. This combination results in a convenient appliance form factor that provides the agility of software along with the performance benefits of hardware (Figure 1).

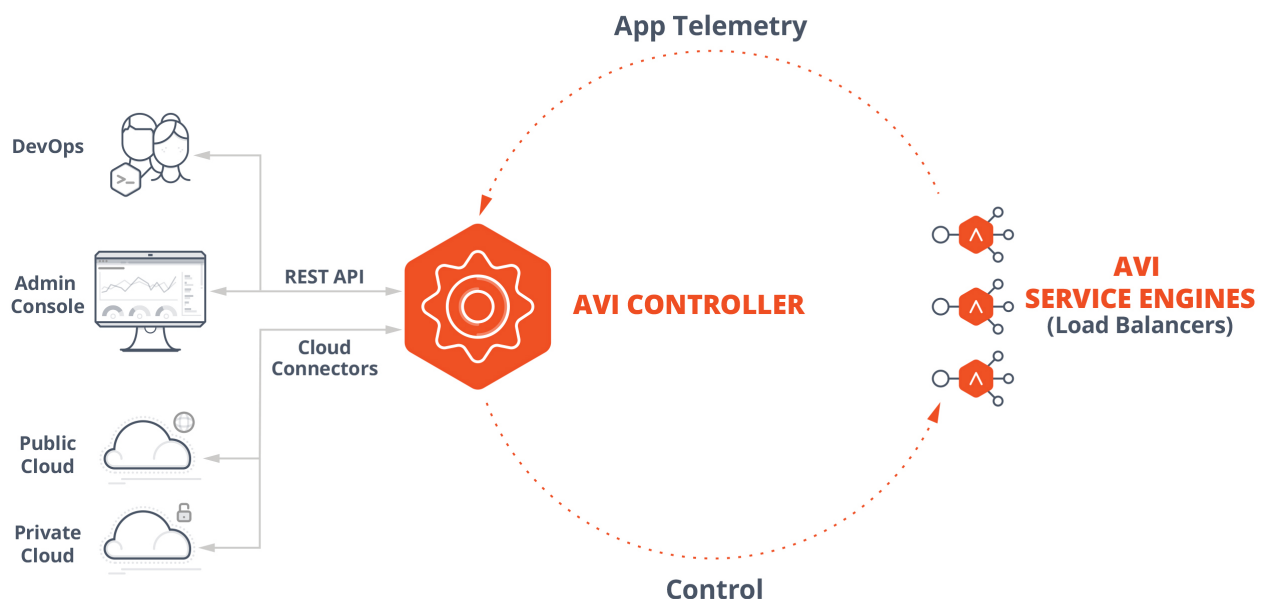
Figure 1. Cisco Cloud Services Platform 2100 High-Level Architecture



Avi Vantage Platform

Avi provides a software load-balancing solution that truly fulfills the promise of NFV. With its software-defined architecture separating the control (Avi Controller) and data planes (Avi Service Engine distributed load balancers), the Avi Vantage Platform provides the capabilities of an enterprise-class application delivery controller (ADC) in an elastic, software-only solution. It goes beyond load balancing to deliver precise application analytics, security, application visibility, and predictive autoscaling. The platform provides central management of a distributed load-balancing fabric deployed close to applications (Figure 2).

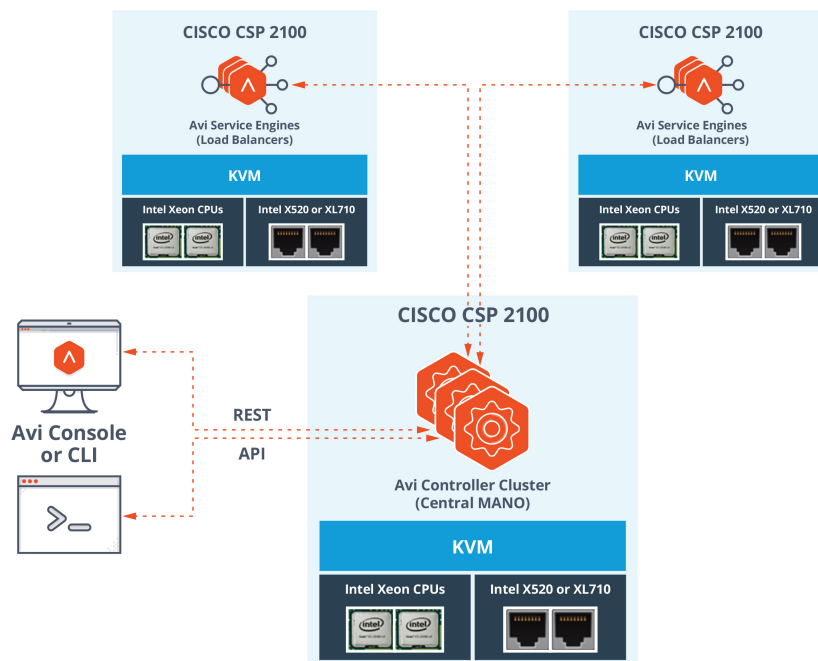
Figure 2. Avi Vantage Platform



Avi Networks and Cisco Cloud Services Platform 2100 Joint Solution

The Cisco CSP 2100 NFV Platform and the Avi Vantage Platform together provide a turn-key solution for the rapid deployment of application services such as load balancing on an elastic NFV platform without requiring any additional technical expertise. The centralized management—critical to both Avi Vantage and the CSP 2100—helps ensure that administrators can efficiently roll out elastic load-balancing and application-monitoring capabilities with industry-leading performance. With a single CSP 2100 NFV Platform supporting tens of Gbps of throughput, tens of thousands of SSL transactions per second (TPS), and several million concurrent connections, performance is not a concern for network functions. In addition, the system can transparently scale to several terabits per second (Tbps) of throughput and millions of SSL TPS as a single load-balancing fabric (Figure 3).

Figure 3. Avi Vantage Platform with CSP 2100 Elastic Load Balancing



Turn-key, Scalable ADC for NFV Deployments

With the Cisco CSP 2100 and Avi Vantage, enterprises and service providers are no longer confined to proprietary, purpose-built appliances or their poorer virtual appliance cousins. Avi provides an ADC load-balancing solution that truly fulfills the promise of NFV. With Avi, new load balancers can be provisioned within seconds and virtual services configured instantaneously with a single representational state transfer (REST) API call. The platform also uses the inline location of the Avi Service Engines to gather application data. It then processes this data with a big data engine in the Avi Controller and presents insightful performance, security, and end-user analytics information about applications. The Avi Vantage GUI and command-line interface (CLI) deliver a single point of management and control across all the load-balancing resources in the data center or hybrid cloud deployment. With its software-defined architecture and real-time analytics, the platform enables predictive and intelligent autoscaling of load-balancing resources through analysis of traffic thresholds. Enterprises and service providers can autoscale network services within a single CSP 2100 or across a cluster of several CSP 2100s.

Greater than 50% TCO Savings:

- Avi is priced as a subscription with no upfront Capex
- CSP 2100 is built on Linux KVM
- High performance hardware with the flexibility of software
- On-demand, elastic scalability – no overprovisioning
- Powerful application, security, and end-user insights

Global 2000 enterprises have already experienced the flexibility and agility that the combination of the Cisco CSP 2100 and the Avi Vantage Platform provide for application services, accelerating application rollouts, troubleshooting applications in minutes, and gaining TCO savings greater than 50 percent.