

VMware NSX® Advanced Load Balancer™ (by Avi Networks)

Multi-Cloud Load Balancing, Security and Analytics

KEY BENEFITS

- 90% Faster Service Provisioning
- Rapid Resolution In Seconds
- More Than 50% Reduction in TCO
- Security Insights with iWAF

WHAT'S INCLUDED

A single platform that provides

- L4-L7 load balancing
- Web application firewall
- Container ingress gateway
- Global server load balancing (GSLB)
- Real-time application analytics

APPLICATION SERVICES NEED A GENERATIONAL CHANGE

Today, applications are no longer just supporting the business, they are the business. The needs for applications to be available across any environments securely and reliably have outpaced the infrastructure that delivers them. The rise of automation, APIs, and analytics presents an opportunity for infrastructure to become intelligent, automated and elastic without limitations of appliance-based approach. Modern enterprises need a multi-cloud solution that facilitates consistent application delivery across on-premise and cloud environments.

ARCHITECTURAL OVERVIEW

VMware NSX Advanced Load Balancer (formerly known as Avi Networks) uses a software-defined architecture that separates the central control plane (Avi Controller) from the distributed data plane (Avi Service Engines). NSX Advanced Load Balancer is 100% REST API based, making it fully automatable and seamless with the CI/CD pipeline for application delivery. With predictive autoscaling NSX Advanced Load Balancer can scale based on elastic application loads across multi-cloud environments, including bare metal servers, virtual machines, and containers. See Figure 1.

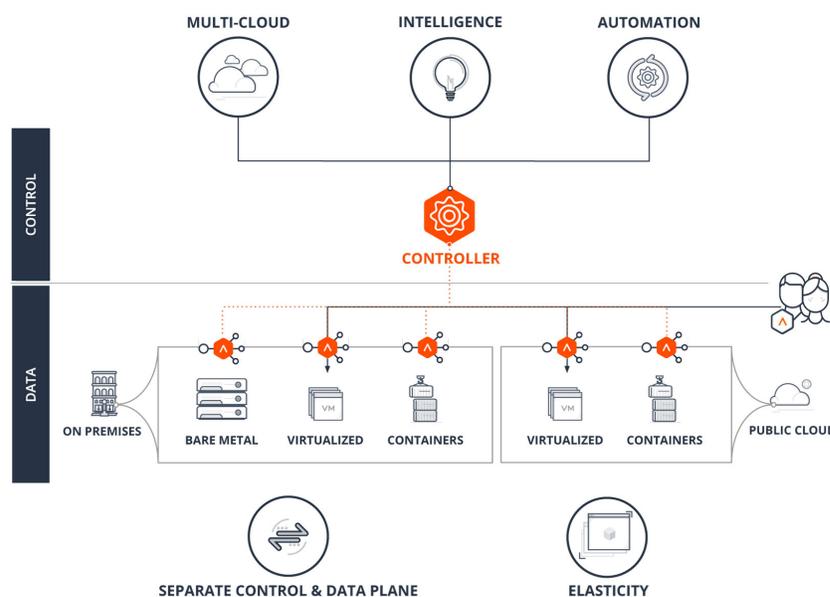


FIGURE 1: NSX Advanced Load Balancer High-level Architecture

The Avi Controller is the “brain” of the entire system and acts as a single point of intelligence, management, and control for the data plane. The Avi Service Engines represent full-featured, enterprise-grade load balancers, WAF, or analytics that manage and secure application traffic, and collect real-time telemetry from the traffic flows. The Avi Controller processes this telemetry and presents actionable insights to administrators on a modern web-based user interface that provides role-based access and analytics in a dashboard. Avi App Insights include application monitoring, end-to-end timing, “network DVR” like record and review capabilities, searchable traffic logs, security insights, log insights, client insights, and more. See Figure 2.

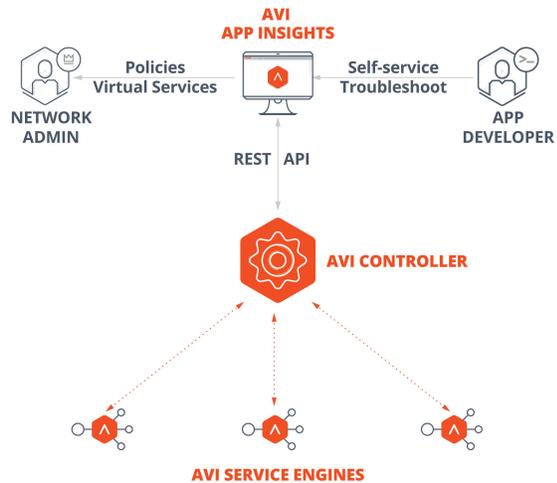


FIGURE 2: NSX Advanced Load Balancer Core Components

For security, NSX Advanced Load Balancer features an Intelligent Web Application Firewall (iWAF) that covers OWASP CRS protection, support for compliance regulations such as PCI DSS, HIPAA, and GDPR, and signature-based detection. It deploys positive security model and application learning to prevent web application attacks. Additionally, built-in analytics provide actionable insights on performance, end-user interactions and security events in a single dashboard (Avi App Insights) with end-to-end visibility. For container-based microservices applications, NSX Advanced Load Balancer offers a container ingress that provides traffic management, service discovery, and application maps.



90% FASTER SERVICE PROVISIONING

Self-service provisioning for continuous application delivery and CI/CD support (see Figure 3)

- Virtual IP (VIP) provisioning in seconds
- On-demand load balancing and application autoscaling
- Full automation with REST API to support faster application rollout in Blue/Green and Canary deployments

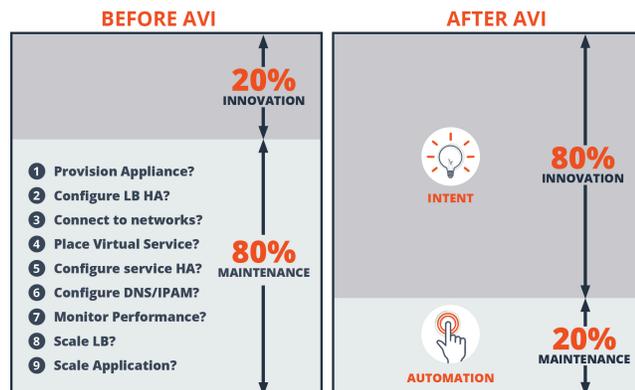


FIGURE 3: Service Provisioning Before and After NSX Advanced Load Balancer



RAPID RESOLUTION IN SECONDS

Google-search like capability for network transactions to troubleshoot quickly (see Figure 4)

- Application health score for a quick snapshot of network posture
- End-to-end round trip times with latencies between each network hop
- Network DVR for recording and replaying traffic events
- Granular insights into performance, security, and end user experience

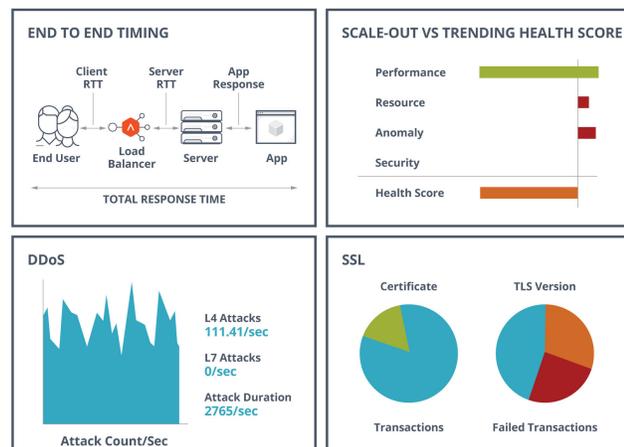


FIGURE 4: NSX Advanced Load Balancer Streamlines IT Resolution Processes



MORE THAN 50% REDUCTION IN TCO

Elastic load balancing and on-demand autoscaling without overprovisioning (see Figure 5)

- Flexible, subscription-based licensing model that eliminates high CapEx
- Simplified operations through central management of a distributed load balancers
- Reduced costs with software-defined load balancing on high-performance Intel x86 servers

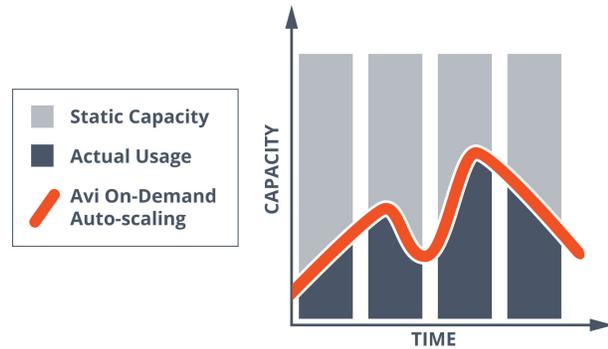


FIGURE 5: NSX Advanced Load Balancer Uses On-Demand Autoscaling to Cut Down TCO



SECURITY INSIGHTS WITH IWAF

Distributed web application security fabric to enforce security through closed-loop analytics and learning mode (see Figure 6)

- Point-and-click simplicity for security policies with central control
- Elastic scale with high performing, automatic scale-out architecture
- Granular security insights on traffic flows and rule matches for precise policies
- Positive security model to define and govern permissible traffic

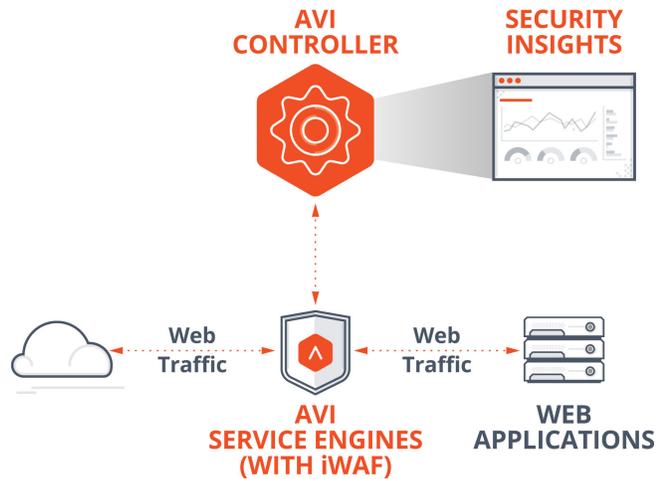


FIGURE 6: iWAF Provides Security Insights for Web Applications

SUPPORTED PLATFORMS		SYSTEM PERFORMANCE AND SCALE	
VMware	vCenter, vRealize Orchestrator (vRO), NSX-V, VMware Cloud on AWS	Max System Throughput	10 Tbps
OpenStack	Mitaka, Newton, Ocata, Pike, Queens, RHEL OSP, LBaaS, Keystone	Max Connections	100 million per second
Bare Metal	RHEL, CentOS, Ubuntu, Oracle Enterprise Linux, Cisco CSP 2100 / 5000 (NFV appliance)	Max Concurrent Connections	10 billion
Containers	Kubernetes, OpenShift, Docker, Amazon EKS, AKS, GKE	Max HTTP Requests	200 million per second
Public Cloud	Microsoft Azure, Amazon Web Services (AWS), Google Cloud Platform (GCP), IBM Cloud, Oracle Cloud	Max SSL TPS (2k RSA)	10 million
SDN	Cisco ACI/APIC, VMware NSX, Nuage VSP, Juniper Contrail	Max SSL TPS (SEC256r1 ECC)	30 million
IPAM / DNS	Avi DNS, Azure DNS, Azure DNS Private Zones, AWS Route 53, Infoblox	Max tenants (shared data plane)	Unlimited
Automation	Ansible, Terraform, Swagger, Python SDK, Go SDK	Max tenants (isolated data plane)	200
Monitoring	Splunk, Cisco Tetration, Cisco AppDynamics, Graphite, Datadog, Logstash, Elasticsearch, InfluxDB, Syslog, Prometheus, Zabbix	Max Avi Service Engines	200

FEATURE	DESCRIPTION
Enterprise-class load balancing	TLS 1.3 support, SSL termination, default gateway, GSLB, DNS, and other L4-L7 services
Multi-cloud load balancing	Intelligent traffic routing across multiple sites and across private or public clouds
Application performance monitoring	Monitor performance and record and replay network events like a Network DVR
Predictive autoscaling	Application and load balancer scaling based on real-time traffic patterns
Self-service	For app developers with REST APIs to build services into applications
Cloud connectors	VMware, SDN controllers, OpenStack, AWS, GCP, Azure, Linux Server Cloud, OpenShift/Kubernetes
Distributed application security fabric	Granular app insights from distributed service proxies to secure web apps in real time
Application security	Positive security model and learning mode for web application firewall (WAF)
SSO / Client Authentication	SAML 2.0 authentication for back-end HTTP applications
Automation and programmability	REST API based solution for accelerated application delivery; extending automation from networking to developers
Application analytics	Real-time telemetry from a distributed load balancing fabric that delivers millions of data points in real time
Centralized management and upgrade	Policy-based management and ability to selectively upgrade data plane with flexible upgrade