

## CHALLENGES

- Businesses and app teams need faster app development, rollouts, and updates
- Traditional ADCs provide inflexible architecture and static capacities
- Open-source proxies lack enterprise-grade features
- Traditional architectures lack the flexibility for CI/CD

## SOLUTION

- Integration with container app platforms like Red Hat OpenShift provide CI/CD, as well as developer-centric and operational capabilities
- Avi Vantage delivers automated load balancing for north-south and east-west traffic that works seamlessly with blue-green/canary app development
- Avi Vantage also offers end-to-end visibility, micro-segmentation, predictive autoscaling, and security with its intelligent WAF

## BENEFITS

- Integrating Avi Vantage and Red Hat gives developers a flexible, automated environment to build, deploy and scale applications quickly, easily, reliably, and securely

# Automated Application and Network Services from Red Hat and Avi

## APPLICATIONS AND MICROSERVICES

With modern technologies on the rise, businesses and app teams are looking for faster app development, rollouts, and updates. Unfortunately, traditional appliance-based application delivery controller (ADC) solutions limit enterprise IT teams with their inflexible architecture and static capacities, while open-source proxies lack full enterprise-grade features. To achieve optimal performance and agility, app teams require: continuous integration and delivery (CI/CD), automation, scalability, speed, consistency, and modular development and delivery in their environments. Microservices architectures fulfill these requirements, but continuous application delivery requires flexible and modern infrastructure.

## RED HAT OPENSIFT CONTAINER PLATFORM

Containers break up large applications into smaller services that can be developed, deployed, and updated independently without causing major outages. One of the leading container application platforms is the Red Hat OpenShift Container Platform, which is built on top of industry leading Docker containers and Kubernetes container cluster managers. The OpenShift container platform develops, deploys, and manages legacy and container-based applications seamlessly across physical, virtual, and public cloud infrastructures. To ensure secure and rapid application development, easy deployment, and scaling, OpenShift also provides developer-centric and operational capabilities that integrate with a modern, distributed application services platform – the Avi Vantage Platform (see Figure 1).

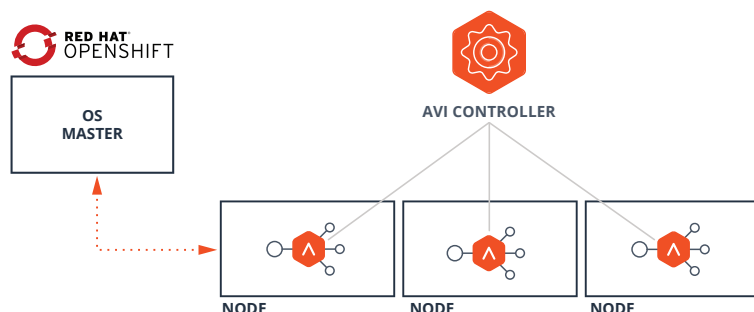


Figure 1: Avi Vantage and Red Hat Integration

## APPLICATION AND NETWORK SERVICES: AVI VANTAGE PLATFORM

The Avi Vantage Platform features load balancing, app analytics, micro-segmentation, an application dependency map, autoscaling, and security as a distributed fabric for on-premises and cloud environments. Delivered as software and built on software-defined principles, Avi separates the data plane (of distributed service proxies) and control plane (central management). The Avi Service Engines are deployed closest to apps, and the Avi Controller integrates with cluster management framework to automate service provisioning. Businesses and app teams that use microservice architectures can now consume network and app services, like load balancing, app analytics, micro-segmentation, app maps, autoscaling, and security.

## AVI VANTAGE AND RED HAT: AUTOMATED APP AND NETWORK SERVICES

The Avi Controller integrates with the OpenShift cluster management framework to automate the provisioning of service proxy instances (see Figure 2). As applications are created, scaled out, and scaled in, and as cluster nodes are added and deleted, the Avi Controller automatically updates the proxy configuration in the cluster. Avi provides end-to-end visibility into app performance and auto-scales app instances and load balancers across thousands of nodes based on real-time traffic and app performance.

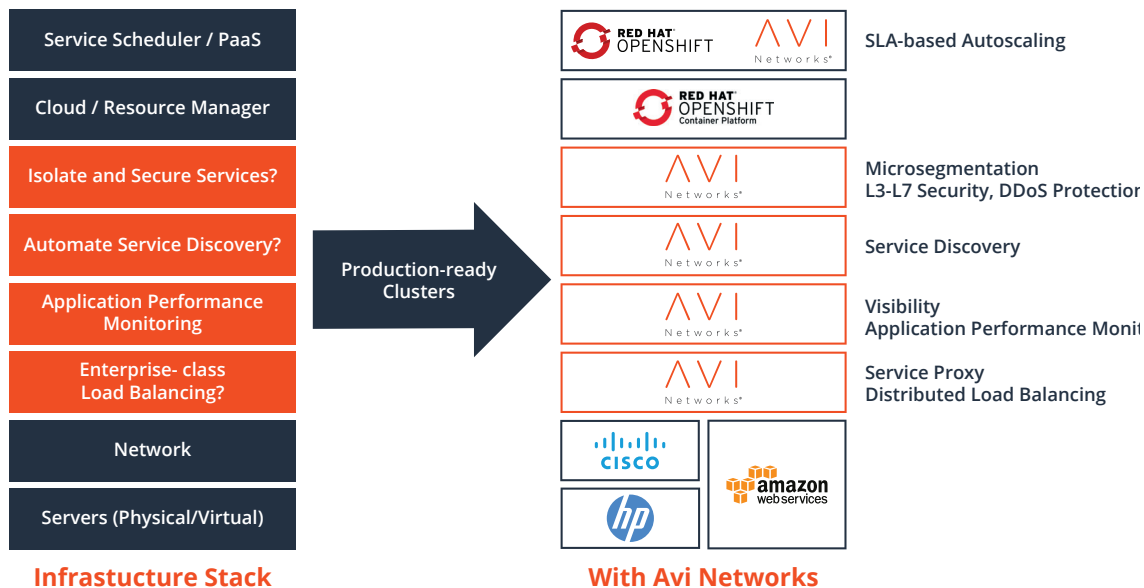


Figure 2: Avi and Red Hat Automate Application and Network Services

Avi Vantage integrates with Red Hat OpenShift and Kubernetes to deliver comprehensive and automated L4-L7 services for microservices applications, such as:

- Service Discovery, to identify all services that make up an application
- Security services including firewalling, micro-segmentation, URL filtering, SSL offload, and DDoS protection
- Service visibility and performance monitoring
- Predictive auto-scaling of services across thousands of nodes

Avi Vantage makes you production-ready for container-based microservices applications with:

- Application services adaptive to changes in dynamic container-based environments
- Automatic spin up (or down) the load balancing and application instances
- Automated operations and programmable self-service
- Role-based access (RBAC) for the DevOps team with control and security policies governed by the IT team
- A graphical app map of microservices, their interactions, and application performance in an intuitive way.

## CAPABILITIES

### Distributed Service Proxy

- Full-featured load balancer, including advanced L7 policy-based switching, SSL offload, and data plane scripting
- East-west and north-south traffic management
- Health monitoring of microservices with automatic state synchronization
- 100% REST API with centralized automation

### Real-time Application Insights and Visibility

- Application map with graph of microservice relationships that shows latency, connections, and throughput information
- Monitoring on 100s of metrics per microservice instance
- Full HTTP log analytics with Google-like search
- Health score and insights for each virtual service microservice
- End-user insights for north-south (external) traffic

### Predictive Autoscaling

- Autoscaling of load balancers and apps based on traffic patterns
- On-demand autoscaling triggered by learned traffic thresholds

### Web Application Security and Micro-segmentation

- Micro-segmentation with denylist and accept list policies
- URL and IP based filtering
- Dynamic DDoS protection against L4-L7 attacks

### Blue-Green/Canary App Deployment

- App deployment in test and production environments
- Non-disruptive migration to newer versions of apps
- Real-time visibility into app performance and end-user experience

A high-level summary of the benefits and features of integrating Avi and Red Hat is shown in Table 1 below:

Benefit	Feature
Self-service provisioning	Developers can quickly and easily create and deploy applications on demand directly from the tools they use most, while still giving operations full control over the entire environment
Automation	Avi and Red Hat streamline and automate application builds, deployments, scaling, health management, and more
User interfaces	Developers have direct access to a rich set of tools such as Red Hat JBoss® Developer Studio and Avi Vantage REST API
Operational simplicity	Users get real-time visibility into the individual container and the entire infrastructure and apps, with Red Hat CloudForms and Avi Vantage
Scalability	Applications running on OpenShift can easily auto- scale to hundreds of instances across thousands of self-healing nodes in a matter of seconds
Choice of cloud	Users can run applications in physical, virtual, public, private, or hybrid cloud infrastructures
Security	Micro-segmentation, DDoS protection, and URL filtering secure not only north-south, but also east-west traffic
Certified	Avi Vantage and Red Hat OpenShift are developed and tested together

**Table 1: Avi and Red Hat Integration At-a-Glance**