AVI Networks®

DATA SHEET

AVI APP INSIGHTS:

Using a Software Load Balancer for Application Monitoring, Security, and End User Intelligence

THE "PRIVILEGED" POSITION OF THE LOAD BALANCER

The load balancer is an essential application and networking service for traffic management, SSL termination, content-switching, and caching. It occupies a strategic position in the network, inline with application traffic between end users and the servers. However, traditional load balancers have become single-purpose appliances that narrowly focus on passing traffic and are not architected to take advantage of their location in the network. They are not built as intelligent application services that collect data and provide analytics.

A SOURCE OF APPLICATION INTELLIGENCE

In many enterprises, a common challenge is the time required for resolving trouble-tickets submitted by application teams and internal users. Network engineers and architects are often frustrated by the need to search through log files and TCP dumps, or set up span ports to troubleshoot networking issues. Given the location advantage — in the path of application traffic — a software load balancer can be a significant source of application insights. With the right architecture, the load balancer can be a powerful tool for the network team and their troubleshooting tasks.

AVI VANTAGE PLATFORM – MODERN DISTRIBUTED ARCHITECTURE

The Avi Vantage Platform is an intent-based application services solution. The architecture (see Figure 1) separates the data and control planes to deliver application services beyond load balancing, such as real-time application analytics, security, and monitoring, predictive autoscaling, and end-to-end automation for L4–L7 services.

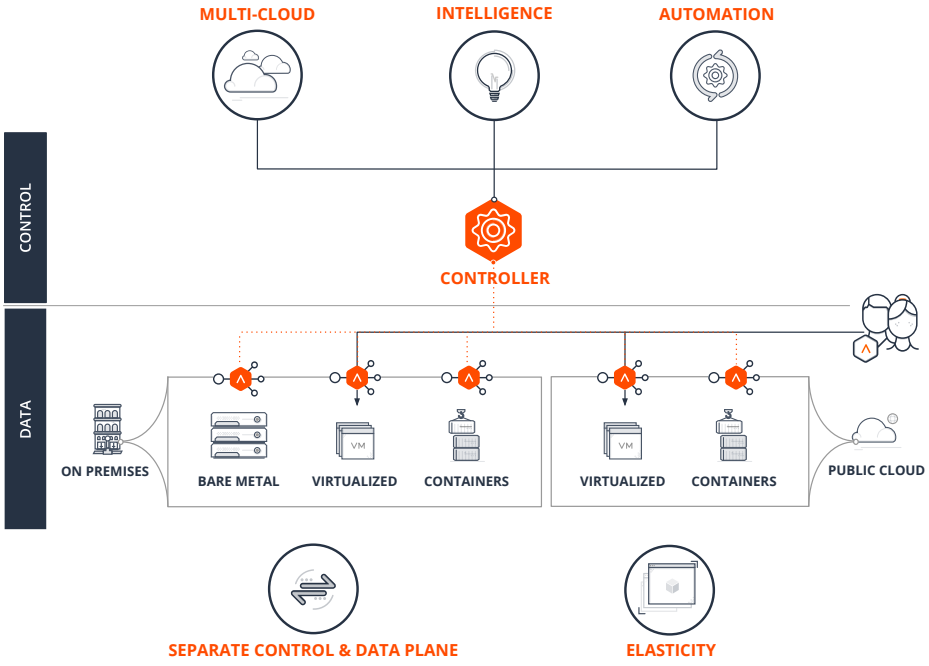

Figure 1: Avi Vantage Platform – High-level Architecture

AVI APP INSIGHTS

The Avi Controller centrally manages the Avi Service Engines that continuously collect millions of application telemetry data points. The Avi Controller processes the data in real time to deliver unprecedented application insights without impacting load balancer performance. The Avi Console displays these application analytics in three broad categories — application performance, security, and end user data. Avi App Insights is an industry-first application intelligence capability that delivers actionable insights to administrator and application owners.

Application Monitoring

Using intelligent machine learning, a cumulative health score (see Figure 2) is calculated based on application performance, resource utilization, security posture, and any anomalous traffic patterns. A health score of less than 100 alerts administrators to review and fix potential issues in the application.

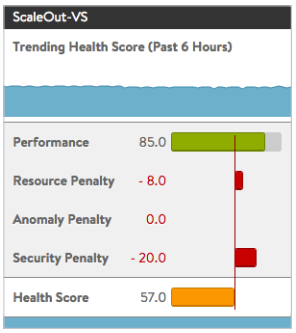

Figure 2: Application Health Score

End-to-End Timing

Avi App Insights displays the round-trip time at each hop in the network from client to backend application (see Figure 3). This level of visibility reduces troubleshooting time to minutes and significantly shortens the time for initial discovery (and potential bouncing back-and-forth) among teams. Avi services real-time and actionable analytics, which is critical to resolving hard-to-reproduce issues and ensuring a non-disruptive user experience.

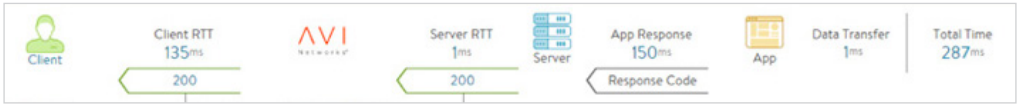

Figure 3: End-to-end Timing for Faster Troubleshooting

Network DVR and Searchable Traffic Logs

To view historical application traffic analytics, users can choose from the following options: Real Time, Past 15 minutes, Past 3 Hours, Past 6 Hours, Past Day, and so on (see Figure 4). Network administrators can review application traffic information, identify network or application issues, reduce trouble-ticket resolution times, and eliminate the need to reproduce failure scenarios. Specific transactions are easily analyzed using Google-like search criteria with over 50 predefined search parameters. For example, log files can be filtered by HTTP response codes, client devices, client location, app response times, and more.

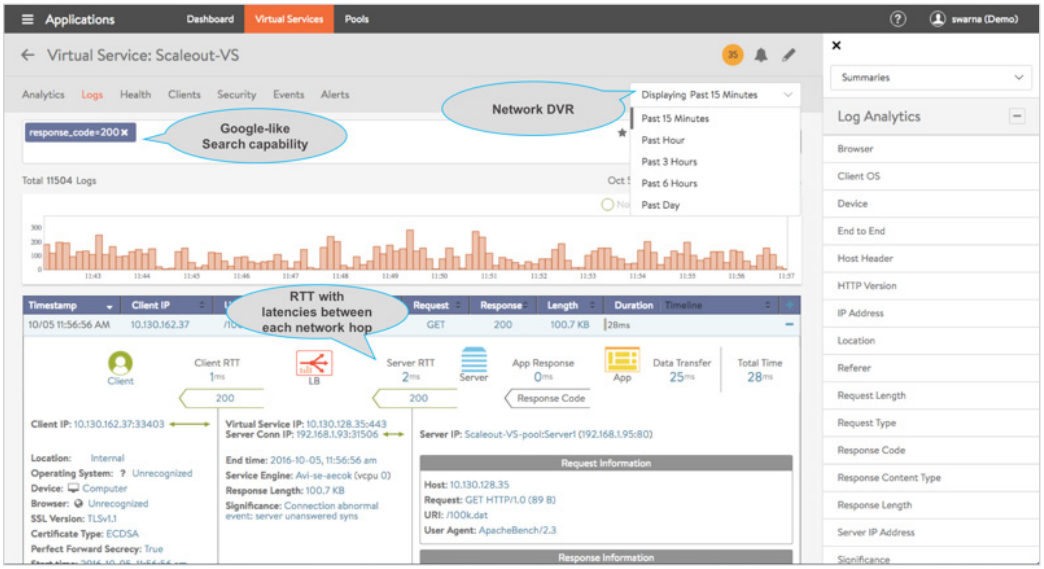

Figure 4: Application Analytics with Network DVR and Searchable Traffic Log

Security Insights

Users can analyze digital certificates used, TLS versions, and overall SSL score based on several criteria (see Figure 5), as well as real time and historical data on DDoS attacks (L4 and L7) and blocked connections.

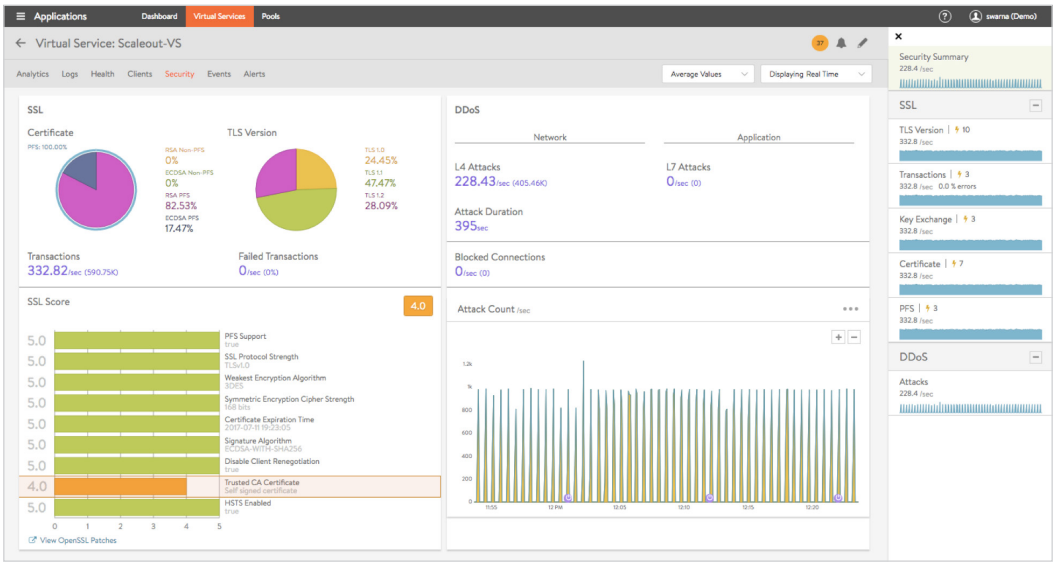

Figure 5: Security Insights with Real-time Data

Log Insights

Network administrators can analyze aggregate traffic statistics based on specific log criteria, such as distribution of client browsers, devices, IP addresses, URLs, and more (see Figure 6). These are pre-configured analytics modules that derive insights beyond the network into clients and applications.

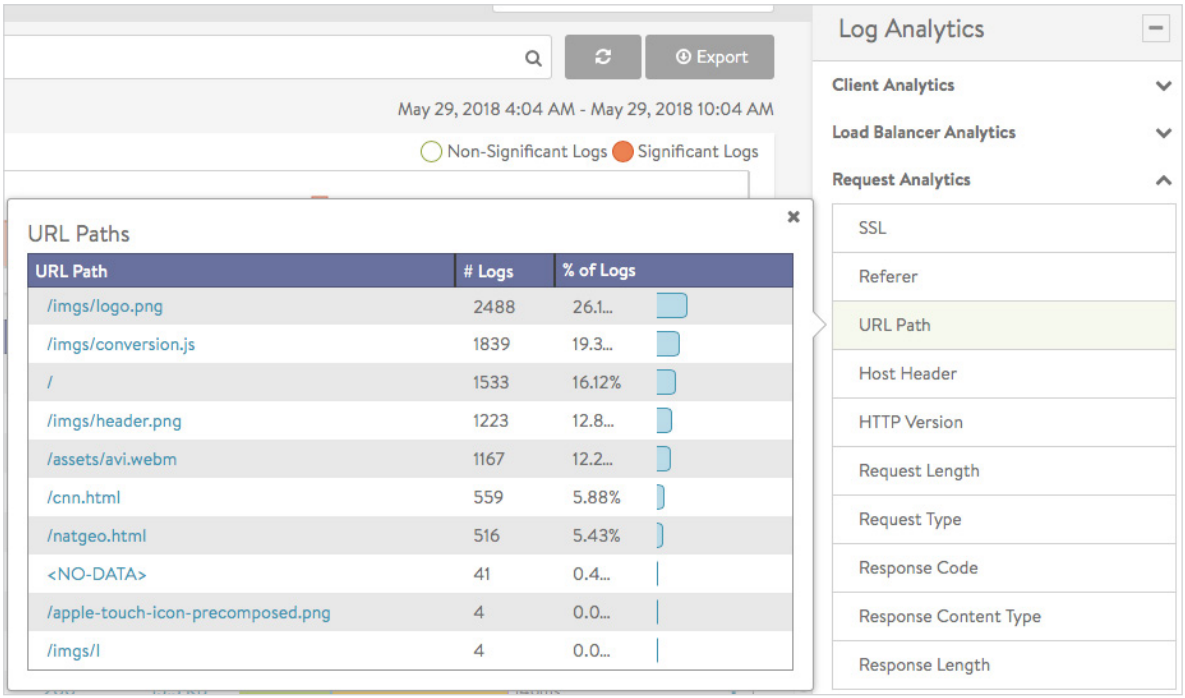

Figure 6: Log Analytics Pre-configured Modules

Client Insights

Users can browse through end user statistics, including average page load times, percentages of transactions by device type, browser, and operating system, and top URLs accessed (see Figure 7).

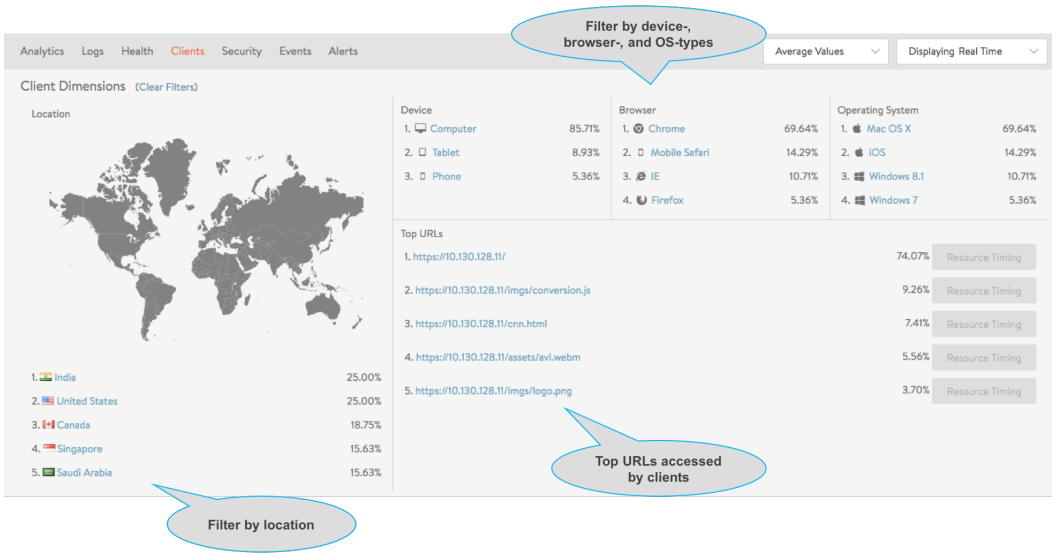

Figure 7: Client Insights

APP MAP AND INSIGHTS FOR CONTAINERIZED MICROSERVICES APPLICATIONS

Avi App Insights provides visual insights into inter-app communications in a container-based microservices application deployment. These relationships (captured in the Application Map, see Figure 8) are highly complex and ephemeral due to the nature of containers. Avi handles both ingress (north-south) and intra-cluster (east-west) traffic management and provides real-time visibility with:

- Application Map graph of microservice relationships with 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 microservice
- End-user insights for north-south (external) traffic

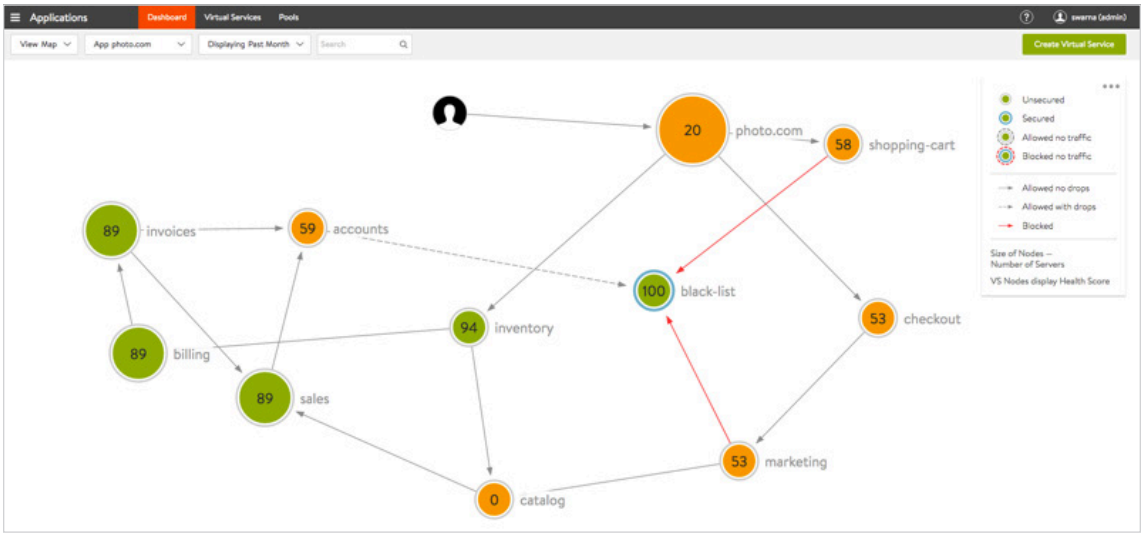

Figure 8: Application Map

With Avi App Insights, network administrators have a powerful tool to identify and resolve application issues. It eliminates finger-pointing when application issues occur and promotes collaborative problem solving. In addition, the closed loop feedback from the analytics engine enables on-demand scaling up (or down) of load balancers. Application teams benefit from gaining actionable intelligence about end users and their experience accessing and using the application.