



REAL-TIME VISIBILITY AT THE NETWORK EDGE VIA VECTOR PACKET PROCESSING-BASED DPI

Graphiant leverages cloud-native VPP DPI engine R&S®vPACE to deliver high-performance traffic filtering for enterprise connectivity

ROHDE & SCHWARZ

Make ideas real



Connecting a rapidly growing network that is highly distributed requires a powerful network edge equipped with real-time application awareness. R&S[®]vPACE delivers deep traffic insights for the Graphiant Network Edge via advanced traffic filtering that is highly optimized for demanding computing environments.

SUMMARY

Business area

- ▶ Next-gen edge services by a leading enterprise connectivity provider

Challenge

- ▶ Delivering real-time visibility in the network edge to power application-based traffic controls and policies for fast growing 'network-as-a-service' offering

Solution

- ▶ Integration of ipoque's vector packet processing (VPP)-based cloud-native deep packet inspection (DPI) engine R&S[®]vPACE into the Graphiant Network Edge to enable high-speed application classification and threat detection close to the data source

Benefits

- ▶ The incorporation of R&S[®]vPACE in the Graphiant Network Edge enables flexible and scalable filtering, supporting Graphiant's usage-based model for enterprise connectivity. It enables Graphiant to streamline network policies and controls across multiple networks while optimizing resources and enhancing threat detection, paving the way for highly adaptive, fast-performing and secure networks

CHALLENGE

Real-time application visibility for intelligence at the network edge

The network edge serves as the connection gateway for scores of remote users, millions of dispersed devices and various clouds and third-party sites. It has the critical role of authenticating, filtering and routing traffic flows across the network. Often however, enterprises grapple with a highly fragmented network where localized policies and controls are used to manage the continuous proliferation of users, devices and applications. This inadvertently leads to inconsistencies and redundancies in how application traffic is controlled, managed and secured. This results in network inefficiencies, performance issues and security vulnerabilities.

Enterprises thus require a consolidated solution that is able to streamline various disparate networks which include the enterprise WAN, its network edges, various hybrid and multi-clouds and multiple partners/customer sites. It is crucial for such a solution to support an integrated approach to traffic management and policy implementation, regardless of how distributed an enterprise's IT workloads are or how dispersed its user base is.

In response to these growing requirements, Graphiant, a Silicon Valley-based provider of next-generation edge services has launched a cutting-edge 'network-as-a-service' solution for enterprise connectivity. The solution, Graphiant Network Edge, combines the performance and security of private MPLS networks with the agility and last-mile flexibility of SD-WAN. It enables enterprises to connect the enterprise WAN, hybrid clouds, network edges, customers and partners in a highly-scalable and flexible architecture. This greatly improves the speed and efficiency by which enterprises build their networks.

To achieve this level of coordination and synchronization, Graphiant requires network intelligence at the edge. This has to be powered by high-performant Deep packet inspection that can cater to computing-intensive environments with an architecture that is cloud-native and highly scalable. The tool must be able to accurately and reliably identify existing and emerging protocols, applications and services in real-time. DPI-driven comprehensive and granular traffic analysis will underpin Graphiant's application-based policies and threat filtering while taking into account the diversity of applications and network architectures. Additionally, it is highly adaptable to changes in traffic types and patterns.

SOLUTION

Using cloud-native VPP based DPI for application and threat awareness

Graphiant partnered with ipoque to embed the VPP-based DPI engine R&S®vPACE in the Graphiant Network Edge. The decision is driven primarily by the engine's performance and fidelity. Based on the Intel DPDK and the open-source VPP stack, R&S®vPACE boasts 5 times the speed of regular, scalar packet processing-based DPI engines due to its optimized for cloud computing environments.

The deployment of R&S®vPACE enables Graphiant to accurately classify traffic by protocols, applications and services. It merges statistical, behavioural and heuristic analysis with encrypted traffic intelligence. It is able to identify even encrypted, obfuscated and anonymized flows by using machine learning, deep learning and high-dimensional data analysis. Other factors that led to Graphiant selecting R&S®vPACE include its weekly updated signature library, first packet classification capability and custom service classifier, which allows user defined signatures.

The integration of R&S®vPACE enables thousands of applications to be classified in real-time, converting this information into Graphiant policy metadata at the edge node that is closest to the data source. The Graphiant Stateless Core taps into this information to enable rich application-based features including prioritization, geo-fencing, global private reachability and compliance. R&S®vPACE ensures this analysis is provided instantaneously and efficiently, minimizing latency and supporting a high throughput.

Identification of traffic at the edge enables Graphiant to guarantee end-to-end encryption, reducing security risks and processing inefficiencies associated with multiple intermediate probes and decryption tools.

The benefits of licensing R&S®vPACE

- ▶ Native VPP implementation especially for cloud
- ▶ Highest classification accuracy in the market
- ▶ Weekly updated signature library
- ▶ Memory footprint of < 400 bytes per 5-tuple connection and < 700 bytes per network endpoint
- ▶ Nearly linear scalability
- ▶ Well-defined APIs with FD.io VPP integration examples
- ▶ Thread-safe endpoint access
- ▶ Customizable SLAs to suit specific requirements
- ▶ Custom service classifier for IPv6, HTTPs, DNS etc.

RESULT

Scalable, enterprise-grade networks with improved performance and security

The deployment of R&S®vPACE allows Graphiant to combine application visibility and policy control at performance levels for the modern edge, leveraging the speeds and capacity enabled by a VPP-based DPI technology. This allows Graphiant to rapidly scale its services, and meet the demands of the cloud. Insights from R&S®vPACE enhances Graphiant's usage-based 'as-a-service' model, enabling it to align its network design, policies and capacity according to client requirements.

R&S®vPACE enables an intelligent network edge, with resource allocation optimized to the underlying applications, bolstering application performance and improving network efficiencies. Predictive analytics from R&S®vPACE support network automation, creating a responsive network edge that adapts progressively to emerging trends.

The VPP DPI engine also provides a single point of traffic intelligence that supports various analytics-dependent functions, reducing redundancies, eliminating inconsistencies and streamlining various disparate networks. The integration of R&S®vPACE greatly enhances a zero-trust security framework for the edge, with user privileges and authority fine-tuned to respective clouds, applications and files. The ipoque DPI technology also enables threat and anomaly detection throughout the whole network. This helps to address malicious traffic while safeguarding against data infiltration and data loss.

As Graphiant forges ahead with innovative edge offerings, ipoque's continuous research and technological advancements in the traffic intelligence space will greatly enhance Graphiant's suite of edge services, enabling a powerful and intelligent next-gen enterprise connectivity solution.

"It is critical that we partner with vendors capable of delivering high-performance services for the edge. R&S®vPACE is a perfect fit for Graphiant as it delivers superior filtering capabilities with future-proof, cutting-edge traffic classification techniques that enable us to speed up our deployments and greatly improve the security and performance of the modern edge."

Ali Shaikh, Chief Product Officer of Graphiant

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