GigaVUE Cloud Suite for OpenStack

Intelligent Network Visibility into OpenStack Private Clouds

There are many advantages of building an open-source cloud powered by OpenStack. But with advantages also come challenges, such as east-west blind spots for physical security and monitoring tools. Fortunately, you can avoid such challenges using the GigaVUE® Cloud Suite for OpenStack. Let's take a look, starting with the challenges you'll face.

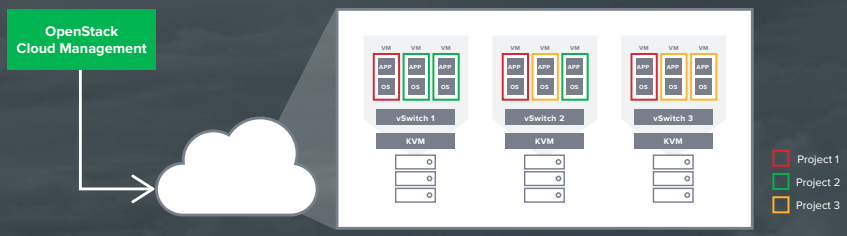

Figure 1. Typical OpenStack deployment

KEY FEATURES

- GigaSMART intelligence includes packet slicing, masking, tool load balancing and packet deduplication
- Traffic acquisition with agentless G-vTAP VMs with OVS mirroring or with G-vTAPs Modules that add IPsec security and pre-filtering
- Automatic Target Selection and Flow Mapping
- Tight coupling with OpenStack and other orchestration suites
- Centralized management across multiple clouds
- Monitoring sessions for simplified traffic orchestration

KEY BENEFITS

- Delivery of optimized traffic to the proper network and security monitoring tools
- Pervasive visibility into your OpenStack infrastructure
- Significantly lower tool processing demands and reduce scaling
- Achieve a fully automated and virtual private cloud with dynamic instantiation and configuration of all components
- Automatically discover new workloads, their traffic direction and adjustment of the visibility tier

First, a little background: From the start, OpenStack built its software for multi-tenancy, where a common set of physical compute and network resources create project domains with complete isolation and improved security.

Capabilities of a typical OpenStack deployment (see Figure 1) include:

- Multiple VMs from different projects can run on the same host
- Projects don't need to know what physical hosts their VMs are running on
- Projects can be distributed across several virtual networks and span multiple hosts

Challenges

While it may be efficient to support and host multiple projects (organizations, users, customers) and their applications, this model creates east-west blind spots for physical security and monitoring tools. It's also a challenge to provide project-level visibility given the following restrictions:

- One project's traffic visibility should not impact other projects' resources
- For security reasons, no traffic should leak from one project to any other project
- Projects should be prohibited from accessing host-level virtual switches that might provide port mirroring capability

Key Considerations for IT, Cloud and Security Architects

- How do you assure that CloudOps, NetOps and SecOps teams get full visibility to the desired workload VMs?
- How do you run more applications with OpenStack while meeting the needs for applying compliance and security controls?
- How do you provide complete automation with dynamic instantiation of virtual TAPs and visibility nodes?
- How do you detect and respond to security or network anomalies while deploying virtual network functions (VNFs) with OpenStack?
- What are the most efficient ways to consolidate network traffic flows to monitoring and security tools? Are there effective methods to reduce the cost of backhauling traffic when the tools monitoring traffic in the cloud are physical appliances vs. virtual applications?

Not addressing these considerations slows application migration to the cloud and leaves you vulnerable to potential security breaches, with potential impact to your organization's reputation.

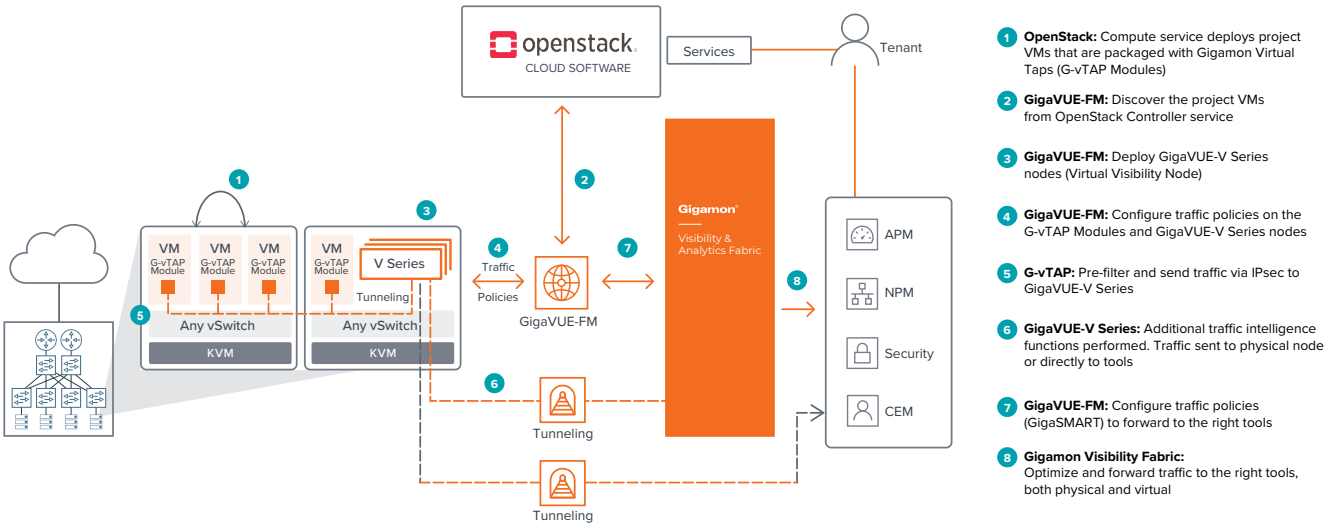

Figure 2. GigaVUE Cloud Suite with G-vTAP Modules for the OpenStack-powered clouds

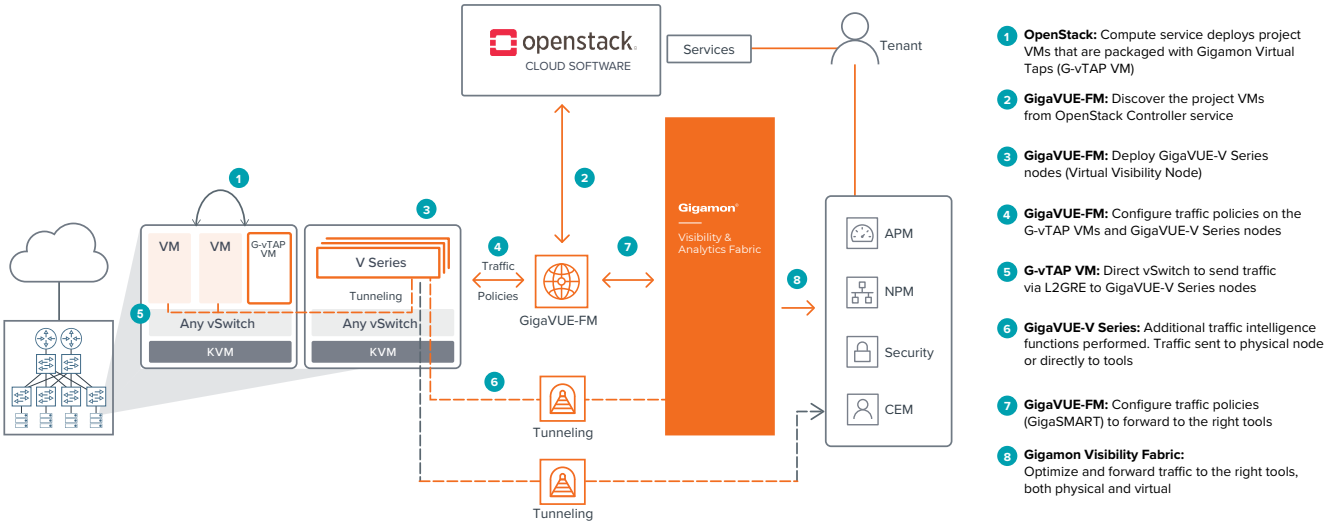

Figure 3. Application of GigaVUE Cloud Suit using G-vTAP VM with OpenStack

THE SOLUTION

GigaVUE Cloud Suite for OpenStack delivers intelligent network traffic visibility for workloads running in a private cloud based on OpenStack, which enables increased security automation, operational efficiency and scale across virtual private clouds (VPCs). With this solution, you can:

- Gain a single view for all network traffic and expedite network-based tool deployments and upgrades
- Use GigaSMART® traffic and subscriber intelligence to deliver correlated optimized traffic to the right tool, with up to 90 percent reduction in traffic[1]
- Increase your current tool stack's ROI by streamlining the traffic sent to each tool, based on the type of traffic it's designed for and the capacity it can handle

The solution consists of three key components (as shown in Figure 2):

- Traffic acquisition using either G-vTAP Modules or agentless G-vTAP VMs with OVS mirroring*
- Traffic processing (aggregation, intelligence and distribution) using GigaVUE V Series nodes
- Centralized orchestration and management using GigaVUE-FM fabric management

Note that for hybrid environments, you may also use GigaVUE H Series nodes as a complementary component to GigaVUE V Series nodes. Let's look at each of these in more detail.

Traffic Acquisition Using G-vTAP Modules

For traffic acquisition, lightweight G-vTAPs deployed within VM instances mirror traffic to GigaVUE V Series nodes. Key benefits include:

- Single, lightweight instances minimize impact on compute nodes
- Reduction in application downtime — there is no need to redesign the network when adding new tools
- The agents filter traffic of interest prior to sending it via IPsec to GigaVUE V Series or H Series on-premise nodes, thus reducing application and data-egress costs

Traffic Acquisition Using G-vTAP VMs*

These VMs are deployed on OpenStack servers and direct the Open vSwitch to mirror traffic from the workload VMs and send to GigaVUE H or GigaVUE V series node. Benefits include:

- Single, lightweight VM per hypervisor minimizes impact on compute nodes
- Scalability and automation: Automatically scale or move as deployed workloads expand or are relocated
- No need to run special software or changes to kernel modules

*Requires the use of third party orchestration tool such as Ansible, Chef or Puppet to automate instantiation

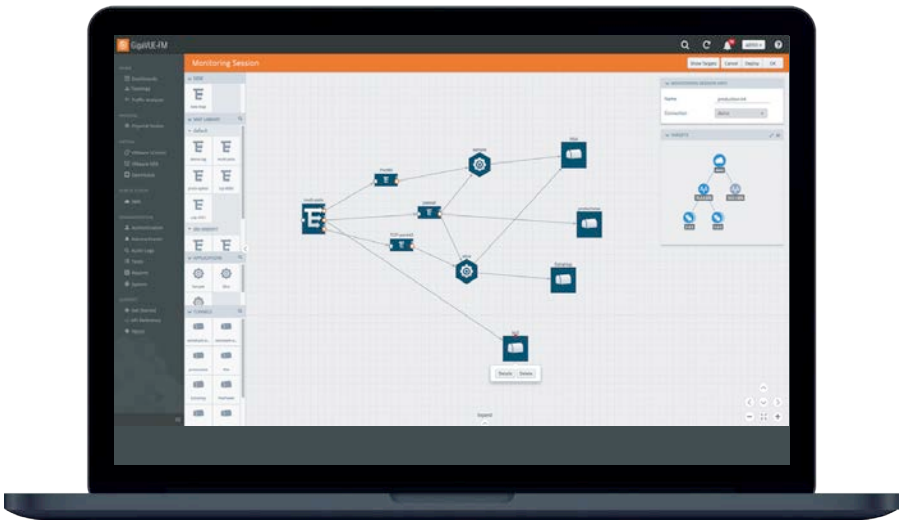

Figure 4. GigaVUE-FM for orchestration and management of GigaVUE H and GigaVUE V Series nodes

GigaVUE V Series Nodes

Traffic brokering (aggregation, intelligence and distribution) occurs with the GigaVUE V Series nodes deployed in the visibility tier (see Figures 2 and 3). Key benefits include:

- Automatic Target Selection (ATS): Automatically extract traffic of interest from any workload with an agent deployed without explicitly specifying target VPCs
- Flow Mapping®: Selection of traffic based on Layer 2–4 criteria
- GigaSMART intelligence: Packet deduplication, strip headers, slice and mask payloads, correlate and sample flows, to optimize traffic content and delivery to tools, thereby reducing overload and improving tool effectiveness
- Fully interoperable with native OpenStack Open vSwitch (OVS) traffic mirroring traffic acquisition methods
- Tool load balancing: Increases their availability and minimizes the need to over provision

GigaVUE-FM Fabric Management

GigaVUE-FM lets you centralize orchestration and management (see Figure 4). This single pane of glass creates policies for workloads within OpenStack. Key benefits include:

- Detect VM changes in a VPC and automatically adjust the visibility tier through pre-built integration with OpenStack APIs
- Publish REST APIs let you integrate with third-party systems and tools to dynamically adjust received traffic or to orchestrate new traffic policies
- Auto-discover and visualize end-to-end network topology, including VPC workloads, using an intuitive drag-and-drop user interface

Eliminate manual processes and errors by automatically identifying each new workload and its associated traffic mirroring via ATS, and then configuring the traffic mirroring to direct traffic to the GigaVUE V Series Nodes

The Help You Need for OpenStack Deployments

Whether your organization is already using OpenStack or considering a future migration, GigaVUE Cloud Suite for OpenStack provides intelligent network traffic visibility for workloads running in your cloud or NFV.

Integration with OpenStack APIs automatically deploys a visibility tier in all VPCs, collects aggregated traffic and applies advanced intelligence prior to sending selected traffic to monitoring tools. With GigaVUE Cloud Suite for OpenStack, you can obtain consistent insight into your infrastructure across your OpenStack and physical environments.

To learn how GigaVUE Cloud Suite for OpenStack can benefit your organization please read the datasheet and visit gigamon.com/openstack.

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