

Key Benefits

- Accelerate cloud adoption by securing and monitoring project traffic while maintaining isolation
- Automate visibility and monitoring while scaling cloud deployments

Challenges

IT organizations and service providers are investing heavily into building open source clouds powered by OpenStack and KVM hypervisor, primarily to avoid vendor lock-in.

According to a recent OpenStack user survey, 48% of OpenStack users are cloud operators, citing operational efficiency, speed, and cost as the leading business drivers for OpenStack adoption.¹ Adding to this, a leading IT industry analyst research report predicts that by 2019, OpenStack enterprise deployments will grow 10X, due to increased maturity and ecosystem support.²

The OpenStack software was designed from the ground up for multi-tenancy, where a common set of physical compute and network resources are used to create project domains providing isolation and security.

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

- VMs belonging to different projects may be placed on the same host
- Projects are unaware of the physical hosts on which their VMs are running
- A project can have several virtual networks and may span across multiple hosts

While it may be optimal and 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. Another challenge with this model is providing project-level visibility given the following restrictions:

- One project's traffic visibility should not impact the other projects' resources
- There should be no traffic leakage from one project to any other project (security considerations)
- Should not be permitted to access host-level virtual switches that might provide port-mirroring capability

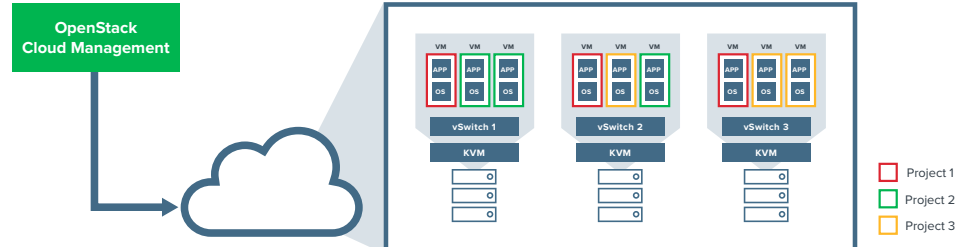


Figure 1: Typical OpenStack deployment

¹OpenStack User Committee, May 14, 2015 <http://superuser.openstack.org/articles/user-survey-identifies-leading-industries-and-business-drivers-for-openstack-adoption>

²Gartner, How to Succeed in Your OpenStack Deployment*, Donna Scott, Arun Chandrasekaran, 20 February 2015.

The GigaSECURE® Cloud for OpenStack Solution

Gigamon's unique solution extends the GigaVUE-V Series node and addresses the above challenges in a very elegant and efficient manner using the following rules:

- Support project-wide monitoring domains—project may monitor any and all interfaces on their VMs
- Honor project isolation boundaries—no traffic leakage from one project to any other tenant during monitoring
- Cloud admin privileges for traffic monitoring activities are not required
- Traffic monitoring activity of one project does not adversely affect other projects

This solution, which integrates with OpenStack can be deployed as follows by the tenant owner:

- GigaVUE-FM for integration with OpenStack to identify project VMs
- A tiny footprint user-space agent (G-vTAP) is loaded in the project VM that is selected for monitoring
- Traffic policy filters are configured to mirror vNIC interface traffic to a Gigamon V Series node
- GigaVUE-V Series node optimizes (complex filters and slicing) and delivers traffic to the physical GigaSECURE nodes [using GigaSMART® tunneling (GMIP)], where additional GigaSMART traffic intelligence (SSL/TLS Decryption, Application Session Filtering, NetFlow Generation, etc.) can be applied.

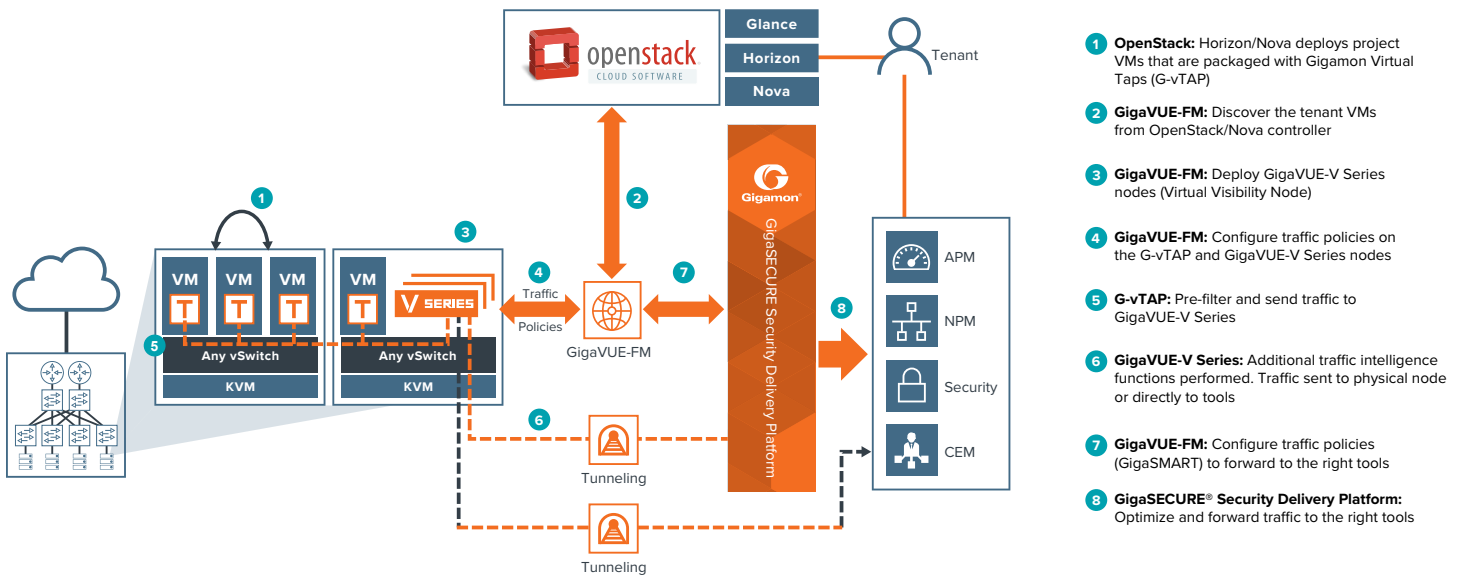
Can also use REST APIs (published by Gigamon) for GigaVUE-FM for automation and orchestration as needed.

Key Use Cases

- Enterprises providing public and private hosting services for multiple customers or internal groups
- Service providers adopting the Network Functions Virtualization (NFV) architecture to virtualize their physical network functions like SBC, EPC, IMS, etc.

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- 1 **OpenStack:** Horizon/Nova deploys project VMs that are packaged with Gigamon Virtual Taps (G-vTAP)
- 2 **GigaVUE-FM:** Discover the tenant VMs from OpenStack/Nova controller
- 3 **GigaVUE-FM:** Deploy GigaVUE-V Series nodes (Virtual Visibility Node)
- 4 **GigaVUE-FM:** Configure traffic policies on the G-vTAP and GigaVUE-V Series nodes
- 5 **G-vTAP:** Pre-filter and send traffic to GigaVUE-V Series
- 6 **GigaVUE-V Series:** Additional traffic intelligence functions performed. Traffic sent to physical node or directly to tools
- 7 **GigaVUE-FM:** Configure traffic policies (GigaSMART) to forward to the right tools
- 8 **GigaSECURE® Security Delivery Platform:** Optimize and forward traffic to the right tools

Figure 2: GigaSECURE Cloud for the OpenStack/KVM powered clouds

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