



**VyOS**  
Networks



**Red Hat**  
OpenShift



**/ SOLUTION BRIEF**

# **VYOS UNIVERSAL ROUTER FOR RED HAT OPENSIFT VIRTUALIZATION**

## VyOS on Red Hat OpenShift Virtualization

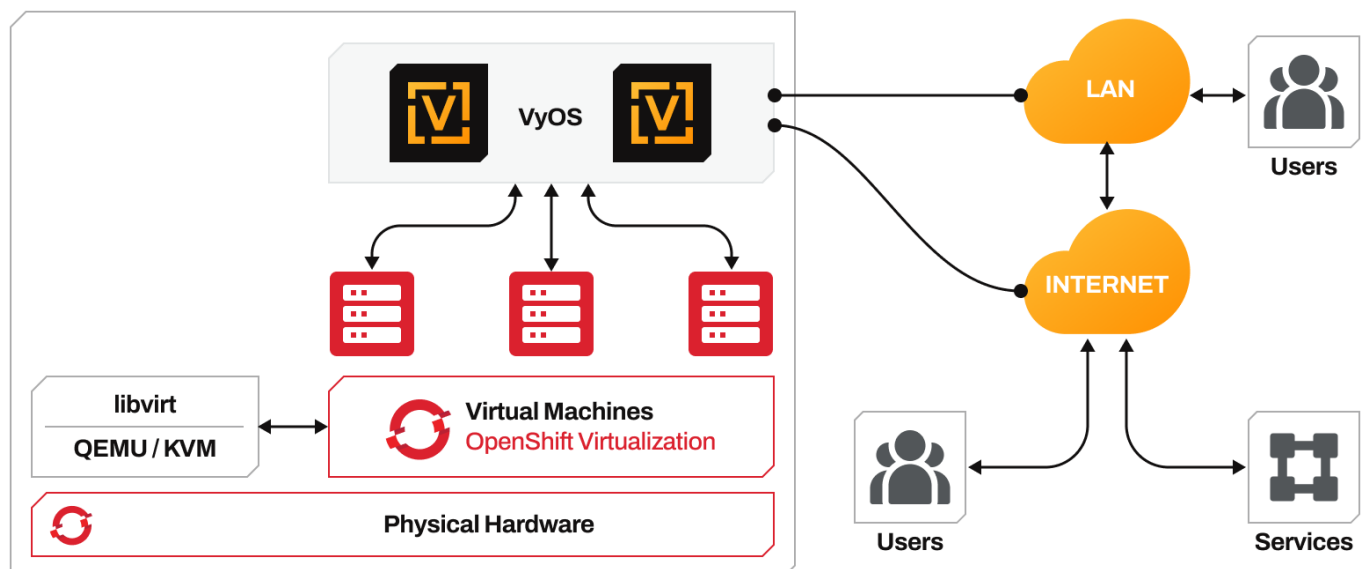
Red Hat® OpenShift® Virtualization provides a modern platform for organizations to run and deploy virtual machine (VM) workloads.

**Red Hat® OpenShift® Virtualization** allows you to create and manage virtual machines, virtual networks, and various virtual resources—all integrated into a Kubernetes-native environment. It provides a modern, flexible virtualization layer ideal for hybrid and cloud-native environments. This powerful virtualization solution can be enhanced by **VyOS Universal Router**, which brings advanced networking capabilities to the platform. Unlike traditional hypervisors, OpenShift Virtualization does not require per-core or per-instance licensing, allowing you to scale your deployments without incurring additional costs. It leverages KVM under the hood and is fully managed using Kubernetes-native tools and APIs.

The virtual networking features in OpenShift Virtualization, including support for multiple CNI plugins and programmable network policies, enable virtual machines to connect seamlessly with other devices on both virtual and physical networks.

**VyOS** acts as a virtual router that lets you segment network traffic between your OpenShift Virtualization workloads and route it to external networks through private infrastructure. With just a few virtual network interfaces and the use of VLANs, you can define and manage multiple routed subnets within your OpenShift virtual environment.

**VyOS** includes optimized drivers and modules to ensure high performance and dynamic network reconfiguration within OpenShift. Moreover, VyOS has no per-instance or per-core licensing, allowing you to scale your network architecture without increasing costs.



## Common Use Cases

Discover VyOS and OpenShift Virtualization most used cases:

### Multi-site Gateway

Connect your private and public networking infrastructure to remote sites using a plethora of tunneling and encryption protocols: GRE, VXLAN, IPsec, IPsec, SIT, WireGuard.

### Multi-protocol VPN Gateway

Get all benefits from different VPN protocols: IPsec (IKEv1 and IKEv2), OpenVPN in client-server mode, WireGuard, open-source implementation of DMVPN compatible with other vendors.

### Edge Gateway

VyOS opens a lot of opportunities: load-balancing, traffic control, device protection with a powerful, zone-based stateful firewall that supports both IPv4 and IPv6, as well as source and destination NAT.

## Advantages

### Routing traffic between VMs inside a hypervisor

Simplify your network topology. Traffic between VMs does not need to leave the hypervisor.

### Run a web server or other software behind a router

Protect your web servers from unauthorized access; use a single public IP address for multiple servers.

### Replacing hardware router appliances with a virtual one

Reduce or even outright eliminate expenses for hardware appliances by replacing them with virtual machines.

### Analyzing traffic for anomalies and collecting statistics

Get actual information about the network state and be prepared to react to new events.

## Benefits

Red Hat OpenShift Virtualization and VyOS help to deliver end-to-end solutions for clients to build complex or simple network infrastructure.

Here are the main benefits of this solution:

- **Fully Open-Source Highly Customizable Operating System.**
- **Advanced Routing and Networking services: DHCP server and relay, DNS forwarding, and Web Proxy.**
- **QoS and policy-based routing allow ensuring optimal handling of the traffic flows. Support of advanced firewall and NAT.**

- **Reliable Connection** by establishing controlled access to your private and public networks.
- **Increased availability and reliability** of routing paths via automatic routers redundancy on an IP subnetwork by applying the VRRP.
- **Configurable Environment** by flexible adaptation to any network topology and required extent functionality.

## Conclusion

Deploying VyOS on Red Hat OpenShift empowers businesses with a modern, agile, and fully automated networking solution. By combining VyOS's proven routing and security capabilities with OpenShift's scalable, cloud-native platform, organizations can simplify network management, accelerate service delivery, and ensure consistent performance across hybrid and multi-cloud environments. This solution enables companies to innovate faster, reduce operational complexity, and confidently support the demands of today's digital business landscape.