Lightweight Network Virtualization to Accelerate VXLAN Performance in Multi-tenant OpenStack Clouds

Akanda
Akanda is an open source network virtualization solution that provides centralized management and virtual network services to simplify operating and optimizing multi-tenant OpenStack cloud environments. Akanda eliminates the need for complex SDN controllers, and multiple plugins by providing a sophisticated lifecycle management and orchestration platform to monitor, configure and manage Akanda or 3rd party virtual L3-L7 services, including routers, load balancers and firewalls. Akanda is layer 2 agnostic and interfaces with the OpenStack Neutron REST APIs to deliver a complete OpenStack-ready networking solution.

Akanda Simplifies OpenStack Networking
Akanda takes the place of many of the agents that OpenStack Neutron communicates with (L3, DHCP, LBaaS, FWaaS) and acts as a single control point for all networking services. By removing the complexity of extra agents Akanda can centrally manage DHCP and L3, orchestrate load balancing and firewall services and overall reduce the number of components required to build, manage and monitor complete virtual networks within your cloud.

By combining all network services in a service VM, Akanda can centrally manage the critical functions of health monitoring, event processing and all interactions with the OpenStack Neutron API. Akanda takes event streams from Neutron and processes and distributes to manage the lifecycle of the VM. This greatly simplifies the task of monitoring network service VMs and enables Akanda to make intelligent decisions to update configurations as needed.

Cumulus Linux, the Operating System for Open Networking
With over one million ports in service, Cumulus Networks technology helps organizations of all sizes realize the promise of the software-defined data center by enabling high-capacity networks that are easy to deploy and affordable. Many organizations today are limited by complex infrastructure and long feature-development cycles on single-vendor networking platforms.

The open networking ecosystem provides an alternative. Disaggregation of networking hardware and software combined with a robust ecosystem including Akanda allow automation, accelerated innovation, consistent tools across the data center, and cost savings spanning both CapEx and OpEx. Cumulus Linux is unleashing the power of Open Networking with hardware-accelerated Linux networking supporting layer 2, layer 3 and overlay network architectures.

Integrated Solution
Akanda and Cumulus Networks have partnered to advance networking for OpenStack cloud operators. Through this partnership, Akanda and Cumulus Networks will provide support for Lightweight Network Virtualization (LNV), providing a complete networking stack for bare metal switches that greatly accelerates VXLAN performance in multi-tenant clouds and dramatically reduces complexity and cost.

Together, Akanda and Cumulus Networks will deliver the industry’s first lightweight network overlay solution for cloud services on bare metal switches. Akanda contributes the Linux bridge driver and multi-tenant layer 3 through 7 functionality to the Cumulus Networks hardware-accelerated underlay to offer an LNV solution that delivers a full OpenStack-ready networking stack. The joint solution enables OpenStack builders to eliminate the need for SDN controllers, accelerate VXLAN traffic for tenant network isolation and maximize hypervisor and top-of-rack switch network performance. The combination provides operational simplicity with a production proven solution.

“Our joint solution with Akanda represents a new way to meet the performance and networking needs of OpenStack users,” said Nolan Leake, co-founder and CTO of Cumulus Networks. “As our customers consider their choices for OpenStack deployments, this partnership enables best-in-class network virtualization with dramatically reduced costs.”
Solution Benefits

- Simplified OpenStack networking
- End-to-end open solution
- Complete L2-L7 network stack for bare metal switches
- Accelerated VXLAN performance
- Reduced cost and complexity for multi-tenant clouds

1. Simple – Akanda is designed to eliminate the need for complex and expensive SDN controllers and reduce the number of OpenStack agents and plugins required by building L3+ network services that can run natively in an OpenStack cloud.

2. Compatible – Akanda is designed to work with your existing network, not replace it. The layer 2 connected Linux bridge ensures the broadest support for industry standards and simplifies the ability to deliver additional network functions for clouds.

3. Open Source – Akanda has been an open source project for over 3 years with the core development work done by key contributors to OpenStack Neutron and the team at DreamHost, the same people that delivered the open source Ceph project. All source code is freely available on GitHub. Akanda is available in a traditional open source business model offering affordable premium support contracts.

Get Started

The Akanda project code lives in two main repositories on StackForge to ease packaging and management:

- Akanda Rug – Orchestration service for managing the creation, configuration, and health of network VMs in an OpenStack cloud.
- Akanda Appliance – Supporting software for the Akanda Software Router appliance, which is a Linux-based service VM that provides routing and L3+ services in a virtualized network environment. This includes a REST API for managing the appliance via the Akanda Rug orchestration service

Once you download and install the Akanda code, take it out for a test drive on Cumulus Linux with the Cumulus Workbench.

About Cumulus Networks®

Cumulus Networks helps customers realize cost-effective, high capacity networking for modern data centers. Linux transformed the economics and innovation for data center compute, and Cumulus Linux is doing the same for the network. It radically reduces the costs and complexities of operating modern data center networks for businesses of all sizes. Cumulus Networks has received venture funding from Andreessen Horowitz, Battery Ventures, Sequoia Capital, Peter Wagner and four of the original VMware founders. For more information visit cumulusnetworks.com or follow @cumulusnetworks.

About Akanda

Akanda, Inc. is the major developer and supporter of the open source Akanda network virtualization software project. Akanda's networking platform for OpenStack clouds is changing the future of networking by delivering an open, extensible and cost effective platform for enterprises and service providers to virtualize their networks. Akanda is layer 2 agnostic and powers network virtualization for DreamCompute, the OpenStack-based public cloud offered by DreamHost. Akanda interfaces with the OpenStack Neutron REST APIs and includes a sophisticated management and orchestration platform to monitor, configure, and manage 3rd party virtualized routers, load balancers and firewalls. For more information, visit www.akanda.io.

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