



Routing on the Host



Introduction

An increasing number of data center operators are deploying layer 3 Clos designs so they can declare their independence from layer 2 and the related challenges stemming from large broadcast and failure domains.

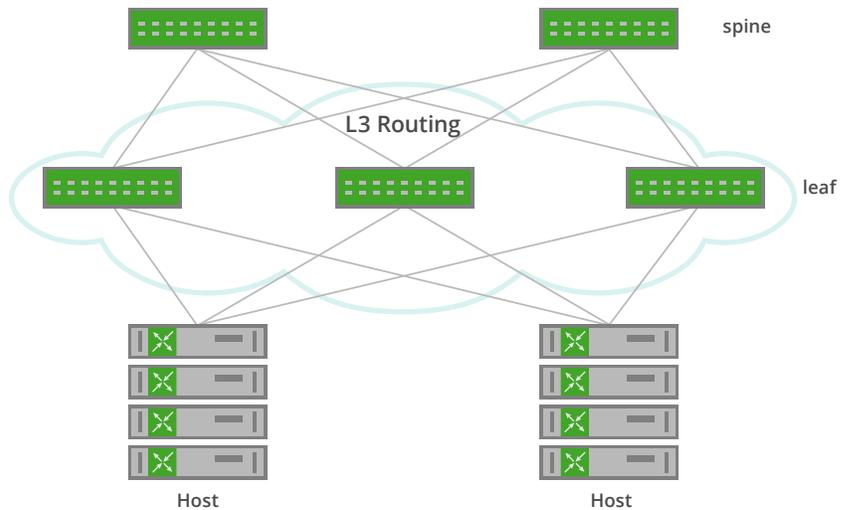
With Cumulus Networks Routing on the Host solution, customers can deploy the Cumulus Networks enhanced Quagga package to take advantage of layer 3 all the way to the host and build a modern unified data center that is simple to scale and provides increased freedom.

Benefits of Cumulus Quagga and Routing on the Host

Network Complexity Reduction

Data centers dependent on layer 2 continue to experience issues including large broadcast and failure domains, spanning tree (STP) challenges, and the need for proprietary protocols like MLAG for redundancy.

Routing on the Host expands layer 3 features to the host. This allows the use of same automation tools used for other services on the host to configure BGP or OSPF, making configuration simple and easy. Routing on the Host reduces dependency on layer 2, resulting in a unified layer 3 design that is easier to troubleshoot, provides redundancy, eliminates proliferation of layer 2 broadcast or multicast, all while using standard protocols.



Subnet Freedom and Mobility

Routing on the Host with OSPF or BGP allows host to advertise the /32 IP address(es) directly into the routing domain, making server/host placement a non issue. If a server/host is required to be relocated, its IP address moves along with it and the route to that IP address is maintained at its new physical location. Routing on the Host decouples the host from its rack, thus giving much needed network flexibility and freedom.

Increased Redundancy

MLAG allows a host to be connected to only two leaf switches. In the event of an outage, bandwidth to a host may be reduced by 50%, resulting in traffic loss.

Routing on the Host allows the host to be connected to any number of leaf switches. Whether scheduled or unscheduled outage, with Routing on the Host, a host will only lose a fraction of the bandwidth, resulting in increase redundancy.

Stateless Anycast Load Balancing

Data centers that require anycast must extend the layer 2 network between every rack that include the application and use MLAG between the leafs and spines. This increases complexity and dependence on expensive external load balancers.

However, Routing on the Host enables services to directly advertise their IP addresses into the routing domain and assigning the same IP address to multiple hosts, several routes to the same Anycast "destination" are available.



SWITCH

"Using Cumulus Networks enhanced Routing on the Host allowed us to eliminate MLAG and spanning tree in our environment, while still providing redundancy to the host. Cumulus Quagga's OSPF unnumbered gave us network agility, making it a core functionality for us. Deploying routing on the host with Cumulus Quagga improved our overall system availability while allowing simpler operation and troubleshooting."

Saverio Proto Cloud Operator
Simon Leinen Cloud Architect

Campaign Monitor

"The Cumulus Networks Routing on the Host solution is the next piece in the Open Networking puzzle. It has enabled Campaign Monitor to greatly improve the availability of critical services across our network. The biggest benefits are the addition of Quagga BGP unnumbered and the elimination of layer 2 technologies such as MLAG, FHRP and STP."

Tynan Young
Sr. Network Engineer

shapeways

"When inspiration strikes, the Shapeways community expects our 3D printing service and marketplace to be operational and accessible. Deploying Routing on the Host with Cumulus Quagga enabled us to design a complete layer 3 data center using BGP unnumbered. Eliminating layer 2 bridging is important for network reliability and ensures our production environment is ready to span a hybrid cloud."

Martín Beauchamp
Site Reliability Engineer

Cumulus Quagga Packages

Free packages can be downloaded at cumulusnetworks.com/roh

Debian Package

- Ubuntu 12.04
- Ubuntu 14.04
- Ubuntu 16.04

RPM Package

- RHEL 7

Docker Container

- Container

Support

Community Support

Join the **community** to collaborate with other Routing on the Host users. Ask, share and learn!

Enterprise Support

Take advantage of Cumulus Networks enterprise support to get your Routing on the Host running in no time.

Technical Support	24/7 x 365 phone-based access to our enterprise class technical support team to address all your Routing on the Host questions
Dedicated Support team	Expert coverage to assist you installation, configuration, troubleshoot any performance issues
Predictable SLA	Predictable response time on your tickets to reduce your downtime
Security and Bug Fixes Notification	Quick access to all security patches and bug fixes with prompt notification

About Cumulus Networks®

Cumulus Networks demystifies the complexity of networking and enables better, faster, easier networks to support your business. Our network operating system, Cumulus® Linux®, allows you to build and operate your network with the mindset of web-scale pioneers like Google and Amazon, radically reducing the costs and complexities of modern data center networks. More than 400 organizations, including some of the largest-scale data center operations in the world, run Cumulus Linux. Cumulus Networks has received venture funding from Andreessen Horowitz, Battery Ventures, Sequoia Capital, Peter Wagner and four of the original VMware founders.

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