Cloud-grade Routing as a Micro-service for Open Networking Platforms

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cRPD: Cloud-Grade routing for microservices environment

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cRPD: Introduction

Juniper routing protocol daemon decoupled from JUNOS and packaged for Linux container environments

- Deployable on demand as a microservice
- Lightweight: 3 seconds startup, ~256 MB image size, ~512 MB RAM
- Can program Linux FIB: IPv4, IPv6, MPLS
- JUNOS CLI
- Automation & Programmability
- Supports Kubernetes, Docker swarm
Usecase: SONiC

- Rich route policy language
- Route Aggregation
- BGP add-path for path diversity
- Programmability: gRIBI, JET
- MPLS Ready
Usecase: Egress Peer Engineering

Goal
- Steer traffic from CDN server towards one of the peering connections to lower transit costs

Solution
- BGP add-path to advertise multiple BGP paths
- Install route into multiple tables, each with different paths or tunnels (Multi Topology Routing) using policies
- For each session, application picks a table to send data traffic using one of the tables based on criteria
- Use either MPLS or GRE tunnels
Scale out Route Server

Goal
- Build a BGP route server that can service thousands of BGP clients

Solution
- Multiple instances of cRPD behind a NATed bridge or load balancer
- Clients see all routes come from a single route server
- Support large number of BGP clients > 10K
Use Case: DDOS Mitigation using BGP

**Goal**
- Mitigate DDOS attacks

**Solution**
- Dynamically steer traffic to scrubber upon detecting DDOS attack
- Distribute firewall filters over BGP using flowspec
- cRPD as RR to advertise flow routes into the network
- Firewall rules can also be distributed to servers over BGP
- Filters installed into kernel using nftables
RPD: Advantages

- Large deployment base: Datacenter, Service Provider, Enterprise
- Feature richness: Extensive Policy Language, BGP add-path, LU, BMP, …
- Single sourced: Same code across all Juniper platforms
- Familiarity and expertise: JUNOS CLI & Manageability features
- Programmability: gRPC based APIs
- Standards compliant: Extensive interop experience, Hardened over years
- Performance: Deployed in demanding environments

- Qualification, Professional Services, Support
root@nvinay-mp-lnx:~]$
Additional Information

Demos

• Visit Juniper Booth at Expo hall

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