

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



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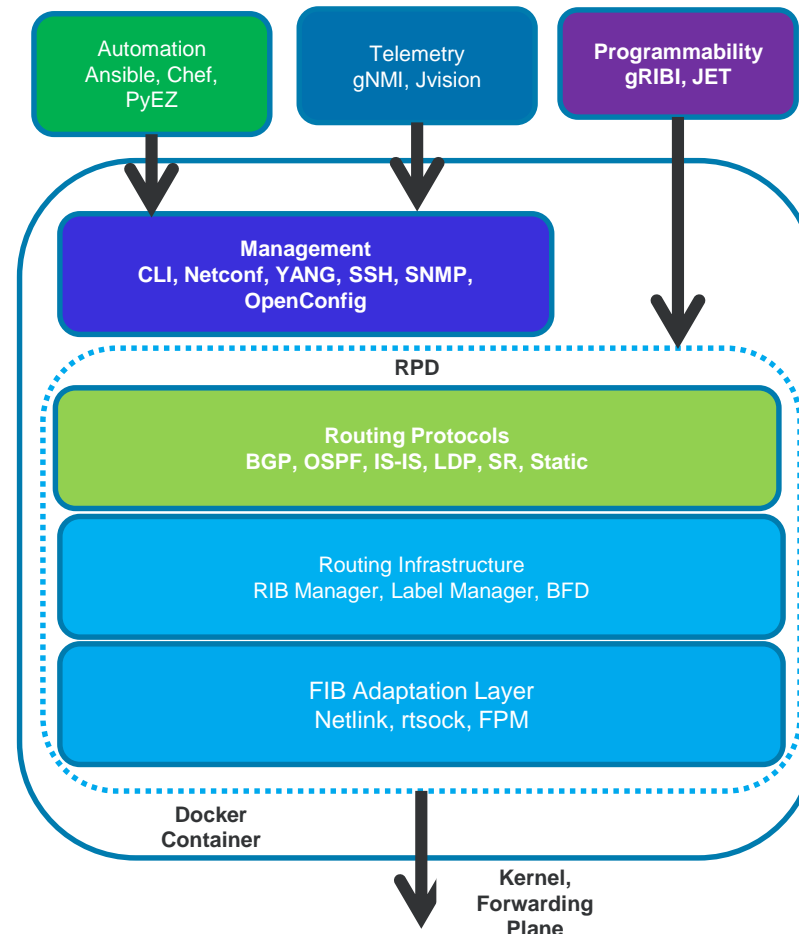
cRPD: Cloud-Grade routing for microservices environment

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cRPD: Introduction

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

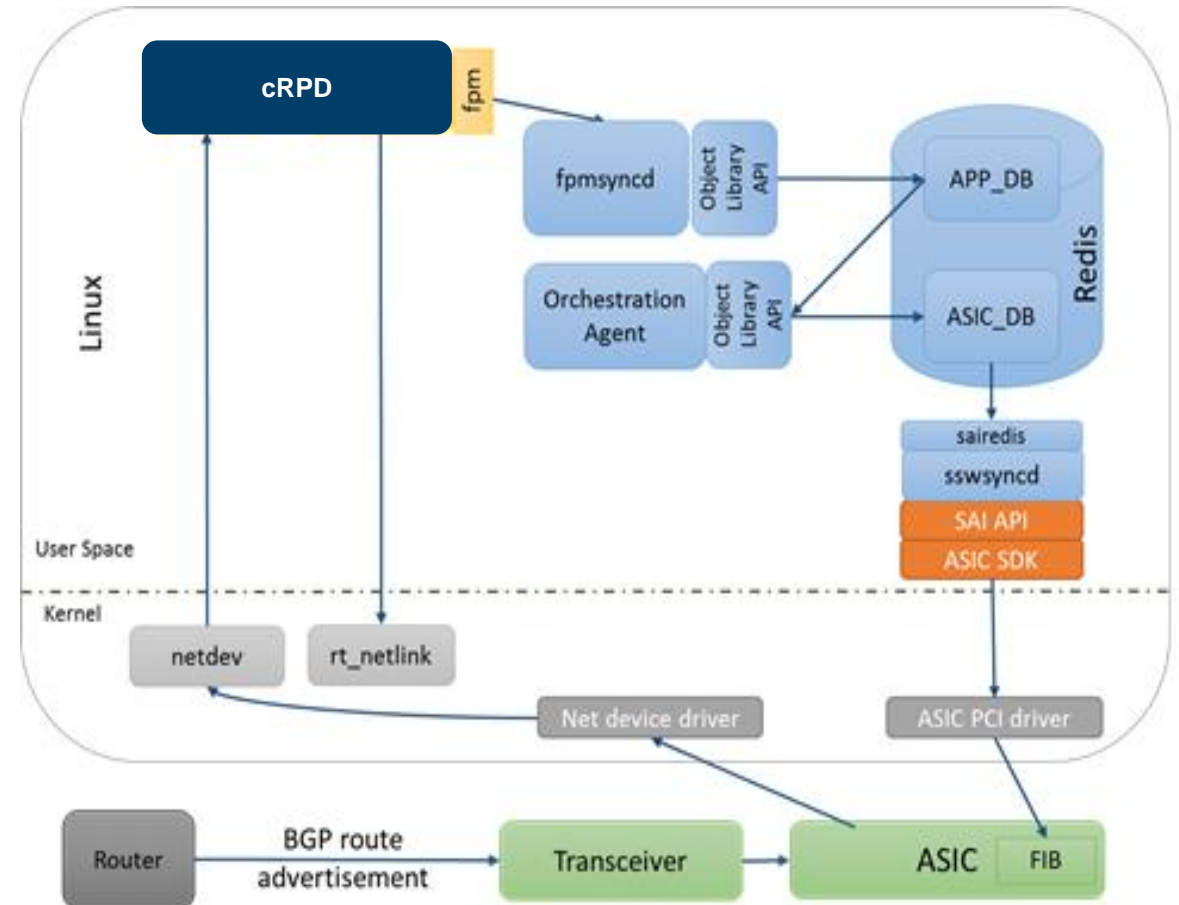
- Deployable on demand as a microservice
- Lightweight: 3 seconds startup, ~ 256 MB image size, ~ 512 MB RAM
- Can program Linux FIB: IPv4, IPv6, MPLS
- JUNOS CLI
- Automation & Programmability
- Supports Kubernetes, Docker swarm



NETWORKING

Usecase: SONiC

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



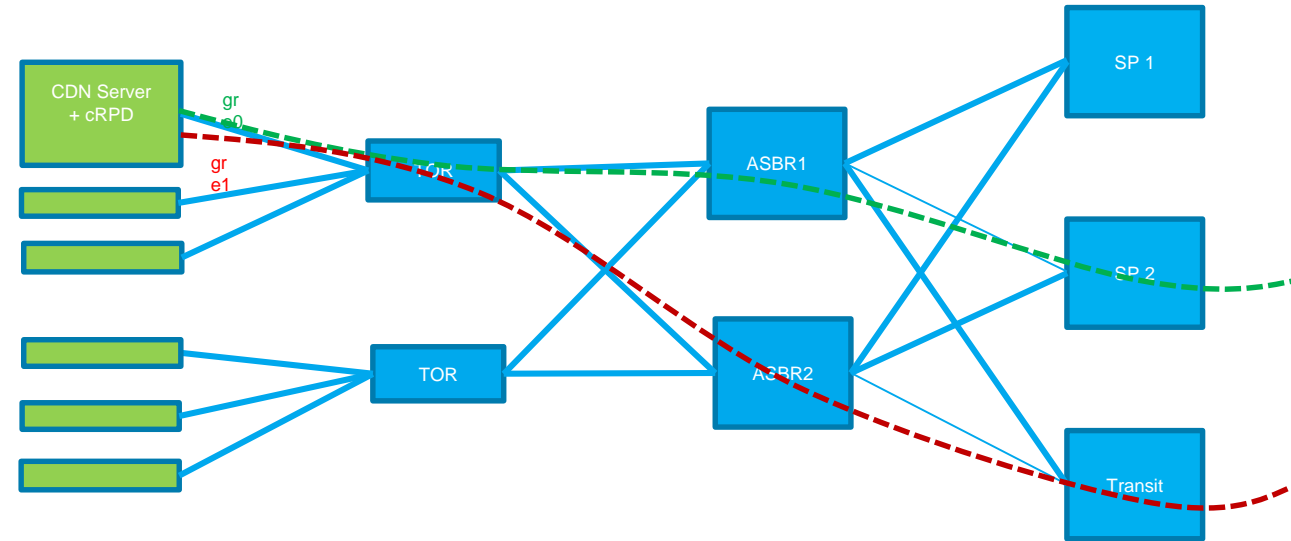
Usecase: Egress Peer Engineering

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



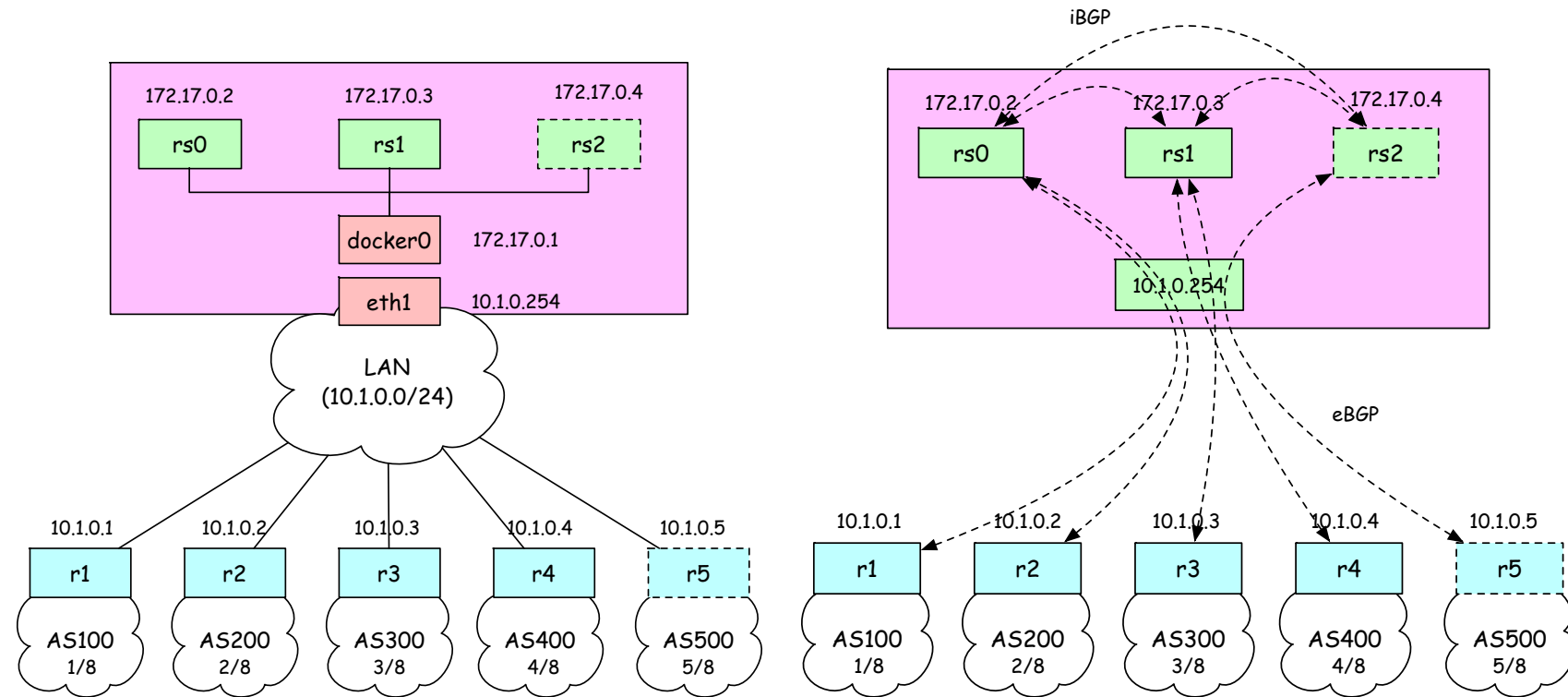
Scale out Route Server

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



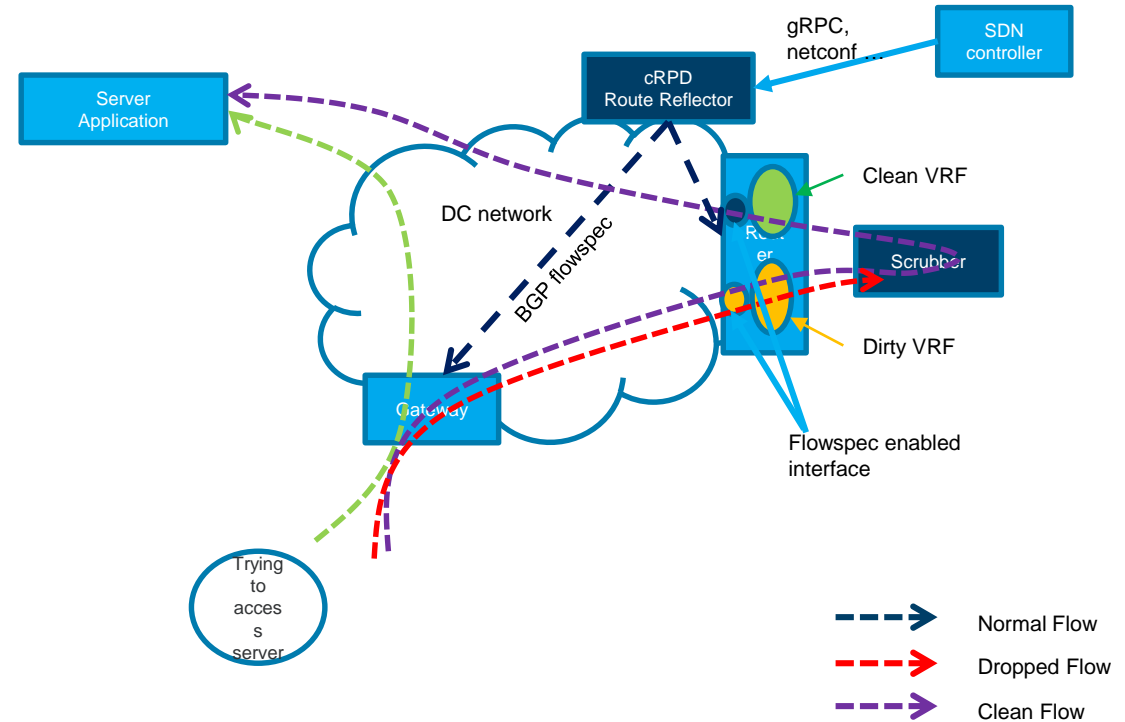
Usecase: DDoS Mitigation using BGP

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

Demo

[root@nvinay-mp-lnx ~]# █

Additional Information

Demos

- Visit Juniper Booth at Expo hall

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