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SUMMIT

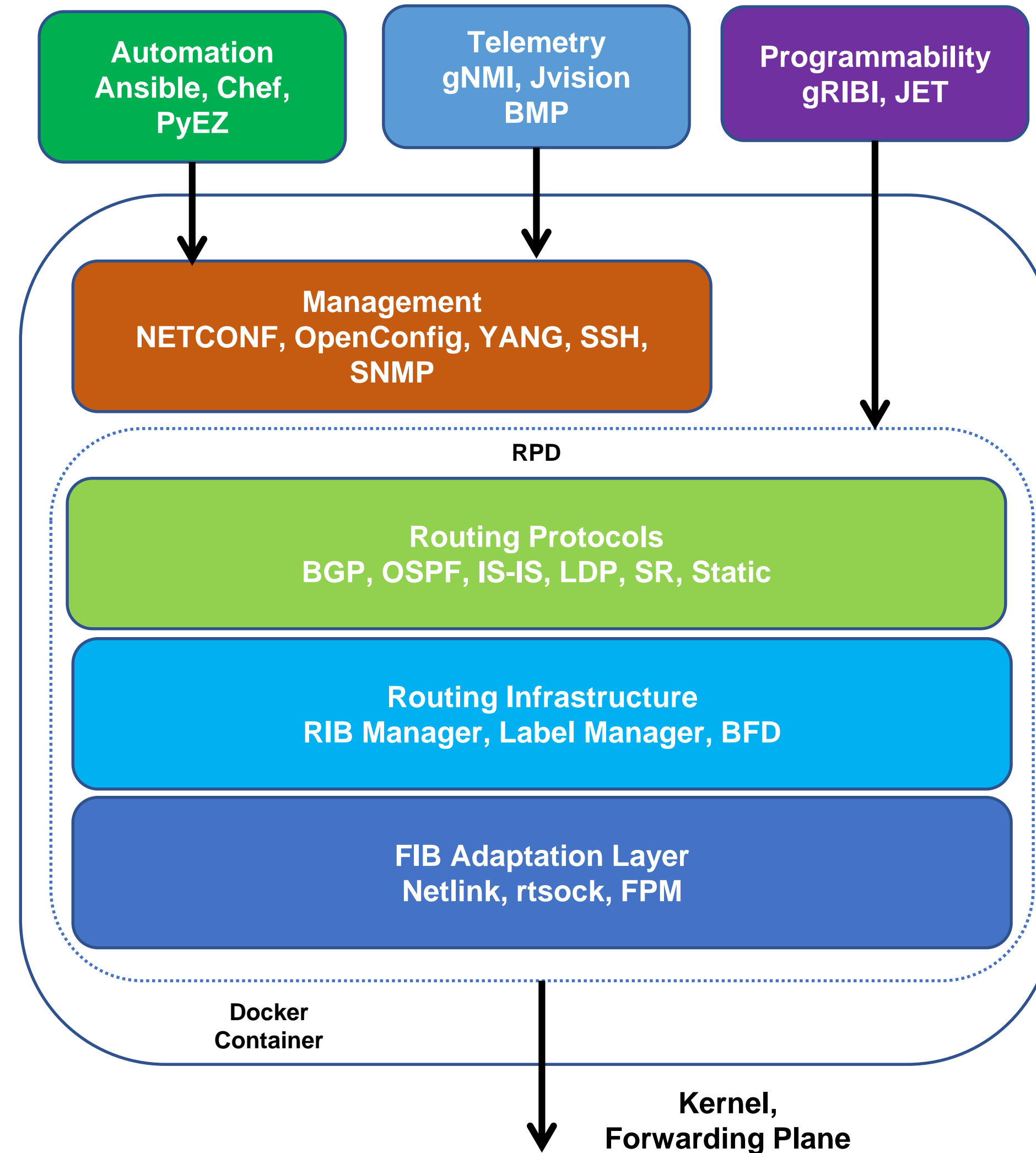
# cRPD: Cloud-Grade routing for microservices environment

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# cRPD: Introduction

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

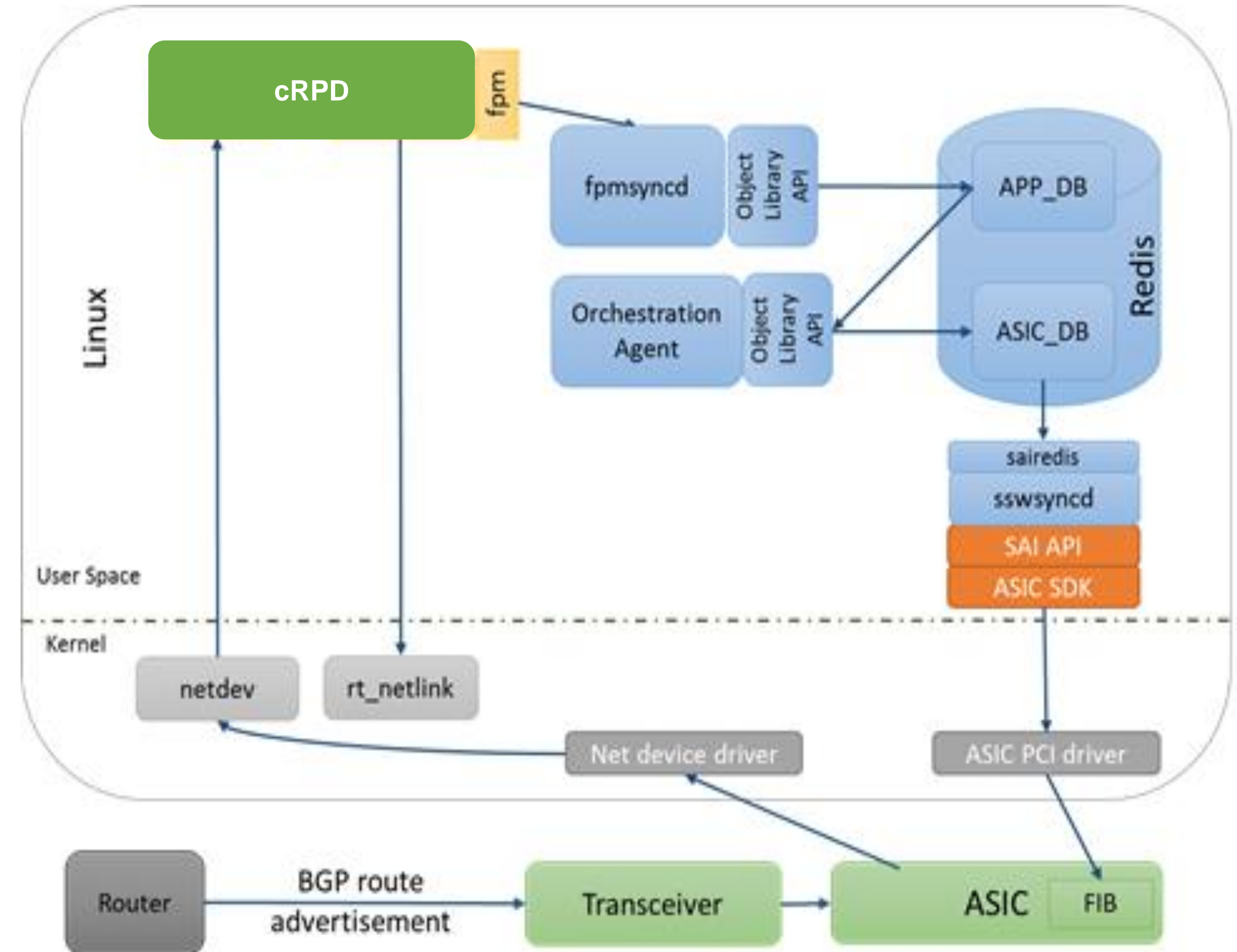
- Deployable on demand as a microservice
- Lightweight: 3 seconds startup, ~ 256 MB image size, ~ 512 MB RAM
- Can program Linux FIB: IPv4, IPv6, MPLS
- NETCONF, OpenConfig, CLI
- Automation, Telemetry, Programmability
- Supports Kubernetes, Docker swarm



NETWORKING

# Usecase: SONiC

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



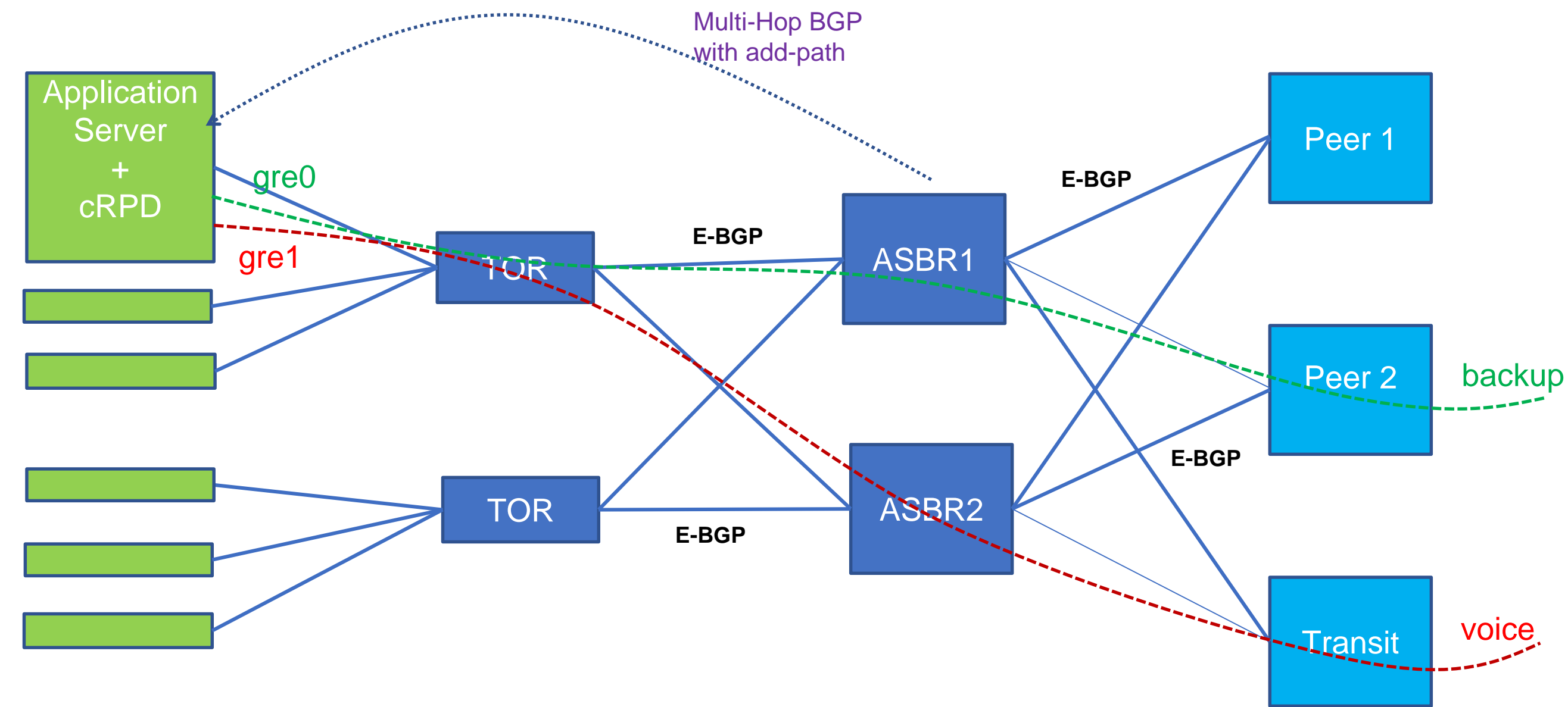
# Usecase: Egress Peer Engineering

## 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



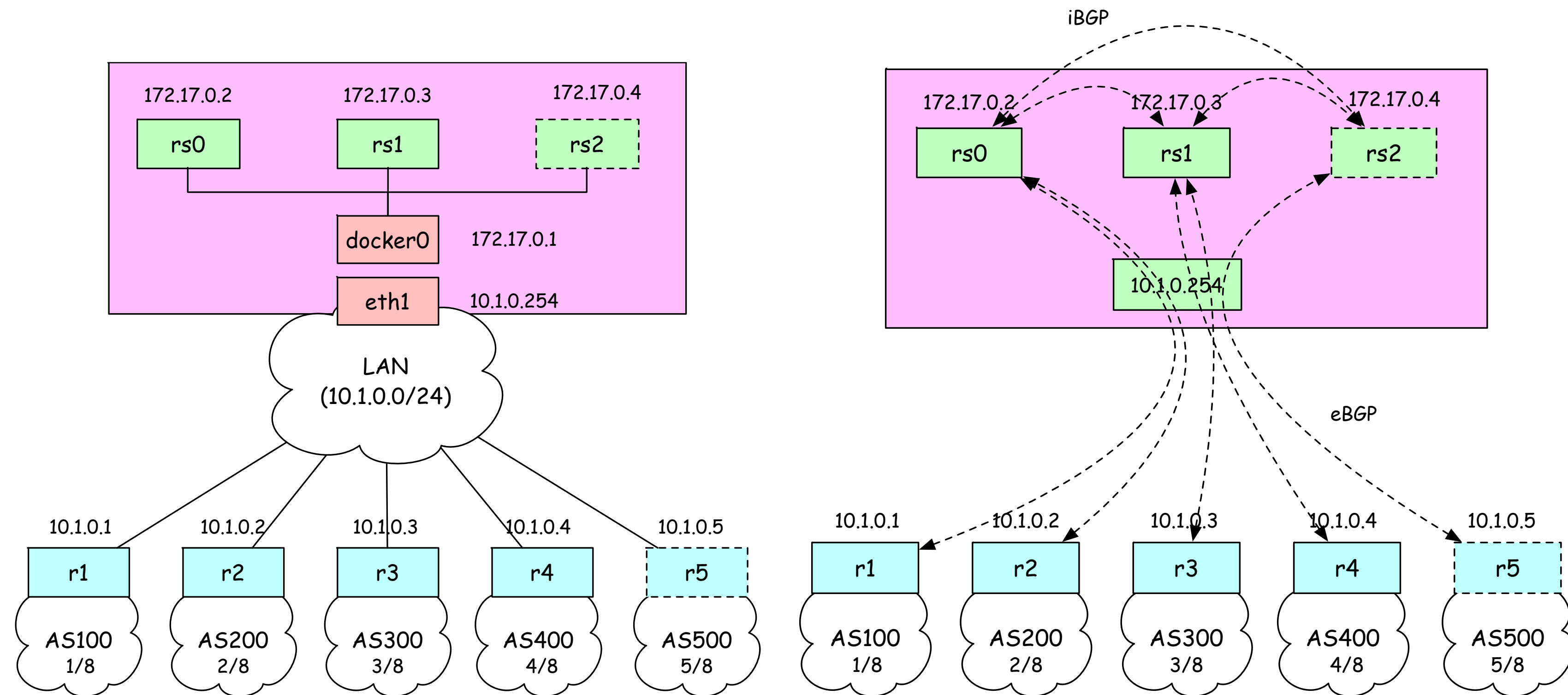
# Usecase: Scale out Route Server

## 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



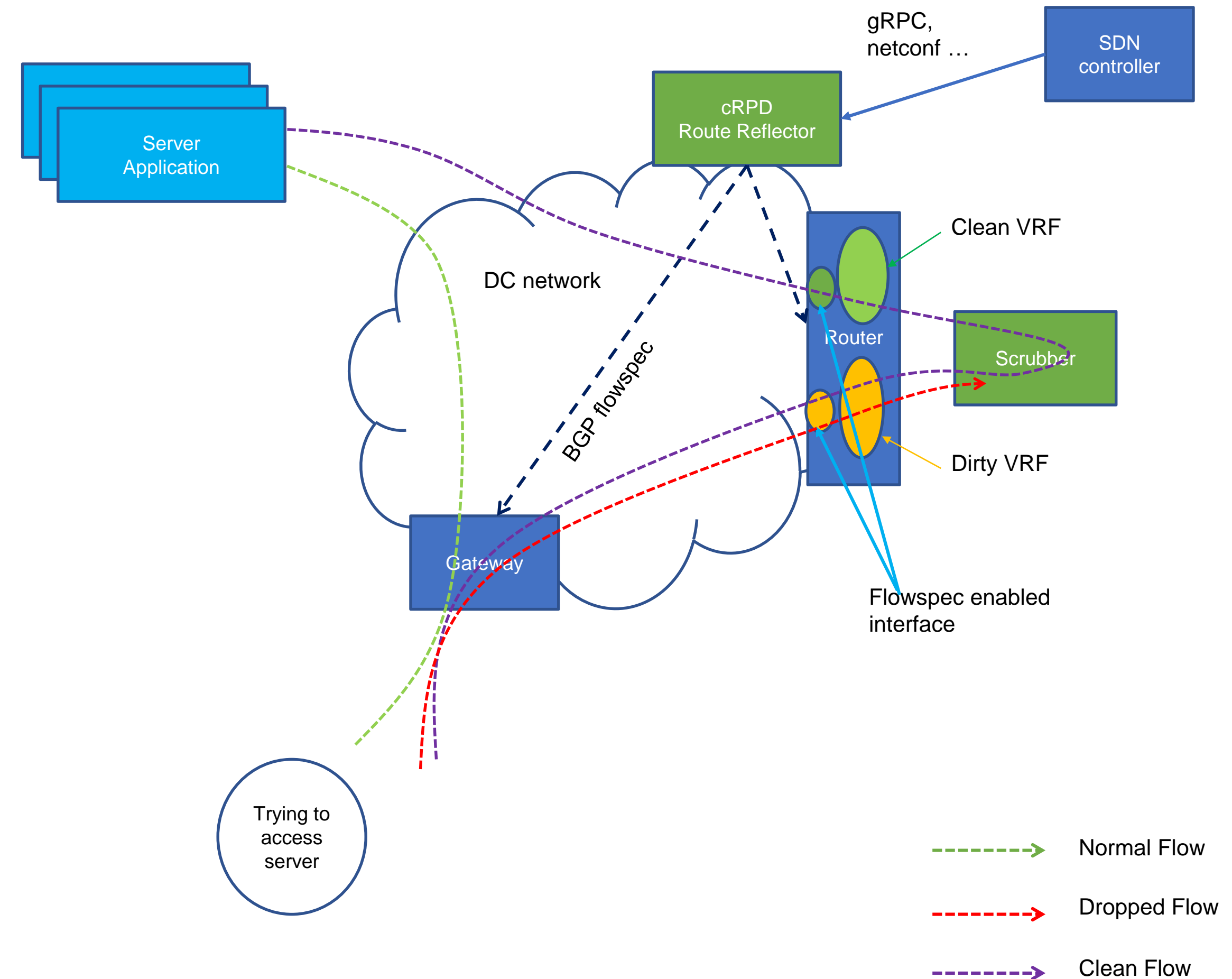
# Usecase: DDoS Mitigation using BGP

## 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 application 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, ...
- Performance: Deployed in the most demanding networks, High scale, Low footprint
- Standards compliant: Extensive interop testing, Hardened over years
- Familiarity and expertise: Juniper CLI
- Single sourced: Same code across all Juniper platforms
- Programmability: gRPC based APIs, Easy integration with SDN controllers
- Open Interfaces: NETCONF, OpenConfig, gRIBI, ...
  
- Qualification, Professional Services, Support



# Additional Information

## Demos at Expo Hall

- cRPD + SONiC on QFX 5200, QFX 5210
- cRPD as BGP Peering Router with 200M route scale
- cRPD Programmable Routing using gRPC APIs

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