Open for All.
SONIC Beyond IDC: Rich Features and High Scalability

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SONIC Deployed in IDC
SONIC Deployed in IDC

- Massive number of switches
  - Challenging to monitor/manage
  - Key: to make the boxes as simple as you can!
    - Scale:
      - ~10K routes, IPv4 + IPv6
      - 100+ BGP neighbors
    - Features:
      - ECMP, warm reboot, INT …..
      - No IGP, MPLS, Multicasts
Beyond IDC

Extend SONIC to Utilize development, testing, management efforts

- Access switches
- Metro switches
Beyond IDC

Access Switches

- Connect customer IDC to public cloud
- Via ISP or via dedicated line in PoPs
Beyond IDC

- **To CPE**
  - Shared line for multiple customers, or one customer with multiple segments
    - Traffic encapsulated in 802.1Q
    - VRF on subinterfaces
  - Dedicated line for customers with high bandwidth demand
    - VRF on physical interface

- **To controller**
  - Exchange routes via MP-BGP

- **To GW**
  - VxLAN underlay
Beyond IDC - Features

Bandwidth Management

- Traffic policing to cloud
  - Ingress: enforce rate limit based on SLA $$$
  - Egress: balance traffic among VPCs

Main interface: customers with high bandwidth demand
Sub-interface: sub-leased customers

- Traffic shaping
Beyond IDC - Features

Dynamic Configuration Management

- Adjust resource on demand
- No traffic interruption

Diagram:

- Customer
- Cloud Service
- Add/Del/Update connections
- Traffic history and current status
Beyond IDC - Features

Fast Convergence on non-ECMP

- BFD
- BFD dampening
- Interact with graceful restart, extend IETF BGP dynamic capability
Beyond IDC - Features

- Controller Involvement: MPBGP + feedback from monitoring
- Tunnel to VPC: eVPN and static co-exist
- Multicast forwarding
Beyond IDC - Scale

- Access switches
  - BGP neighbors: 100 -> 400
  - BFD sessions: 300ms x 3
  - Monitoring: periodic status check and event trigger report
Beyond IDC - Scale

- MC switches
  - MC BGP routes: 10k range -> ~100k range
  - MC ECMP paths: 100k * # of nexthop
SONIC Beyond IDC

- Leverage the Success of SONIC
  - Accelerate deployment in IDC
  - Invest in Unified Networking Management across all areas
  - Extend SONIC beyond IDC
    - Rich features
    - High scalability
Open for All.

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