IPv6 in Cloud Providers

World IPv6 Day
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IPv6 in Vultr highlights

Dual stack since day one

Products are dual stack

Core network is dual stack

Transit providers and peers are dual stack

Everybody is happy!
Assigning IPv6 addresses

- Leaf and spine architecture
- IPv4 interfaces are /30
  - 192.0.2.1/30
- IPv6 interfaces are /127 from a /48
  - 2001:db8:ffff::c000:0201/127
- An IPv6 /38 is assigned per datacenter
  - 67,108,864 /64
- Customers may bring their own IP
  - Either version
BGP configuration

- Core BGP sessions are always dual stack
- Unified BGP policies for IPv4 and IPv6
  - Import and export policies contain terms for both versions
  - Terms, peering groups, etc. are labeled either as -v4 or -v6 if they only apply for one version
  - Example shows part of an import policy
- Customer BGP sessions are dual stack but have separated policies for each version

```plaintext
term NO_MARTIANS-v4 {
    from {
        route-filter-list rf-MARTIANS-v4;
    }
    then reject;
}
term NO_MARTIANS-v6 {
    from {
        route-filter-list rf-MARTIANS-v6;
    }
    then reject;
}
term RPKI_INVALID {
    from {
        protocol bgp;
        validation-database invalid;
    }
    then {
        validation-state invalid;
        community set origin-validation-state-invalid;
        reject;
    }
}
...
```
Dealing with IPv4 shortage

- We suffer from IPv4 shortage as any other industry
- IPv4 addresses are still available at a price
- We cannot NAT our customers
- We need more customers to embrace IPv6
  - Most of our customers are dual stack
  - While having IPv6, only use IPv4
  - IPv6 traffic is around 10-15%
- To deal with it we provide an IPv6 only VM option at a lower price
Conclusion

- Full dual stack
- Not affected by network elements that do not support IPv6
  - No CPEs
- Cannot use NAT and IPv4 consumption is faster than ISPs
  - Must use IP brokers
- Have IPv6 only options but not everybody is attracted to
Thank you!

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