NTT BGP Configuration Size and Scope

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Our Focus

NTT Communications delivers consistent IP connectivity globally
NTT America Product Portfolio

- NT TA Cloud
- NT TA Enterprise Cloud

Cloud

- Managed Private Network:
  - MPLS IP VPN
  - Private Line
  - Global Ethernet

Managed Hosting

- Managed Services
- Managed Security
- Managed Data Services
- Managed Network Services
- Managed Virtualization
- Managed Applications

Colocation

- Managed Colocation
- Managed Data Services
- Managed Security Services
- Customer Premise Device Management

Network

- Managed Servers
- Managed Security
- Managed Data Services
- Managed Network Services
- Managed Virtualization
- Managed Applications

*Note: Integration/Professional Services: added service/overlay for all products
2011

Typical Router configuration
1000-225k lines
Average: 30k lines
Top 50% average 57.2k lines

2013

Typical Router configuration
1000-473k lines (2.1x)
Average: 79k lines (2.6x)
Top 50% average 155k lines (2.7x)
IOS 2011 - Sample configuration breakdown:
r01.chwahk02.hk.bb
- 7 BGP peers (external)
- 9 non-infrastructure interfaces
- 17 total interfaces (configured)
- 78,711 lines of configuration
- 76,362 lines of prefix-list (96%)
- 2349 lines of non prefix-list
  - 467 lines interfaces (~19%)
  - 16 lines AAA configuration
  - 219 lines community-list (~9%)
  - 219 lines “router bgp” (~9%)
  - 734 lines route-map, community-list (policy) (~31%)
- ...
XR (2013) Sample configuration breakdown: r04.miamfl02.us.bb
- 7 BGP peers (external)
- 24 physical infrastructure interfaces
- 14 Bundle-Ether interfaces
- 6 Loopback interfaces
- 78 non-infrastructure interfaces (Customer, Peer)
  - 33 subinterfaces underneath the 78 physical non-phy
- 169 total interfaces (configured)
- 270,822 lines of configuration
- 260,826 lines of prefix-set (96.3%)
- 8742 lines of non prefix-list
  - 1484 lines interfaces (~17%)
  - 378 lines community-set (~4%)
  - 2549 lines “router bgp” (~29%)
  - 2846 lines route-policy (~32%)
  - 167 lines access-list (v6, v4)
  - … other stuff …
- Configuration growth poses challenge
- Denser routers will continue to see size increase
- Parsing of configuration very CPU intensive
- Lack of optimization poses challenge
- Inefficient generation of prefixes from tools
  - IRR, others
  - At least one expands to nearly full DFZ
- Operational impact of configuration updates
  - Scheduler Slips
  - Commit times > 5 minutes