Peering at the IXP: The Service Provider Perspective

Mauricio Rodriguez, Senior Systems Engineer, CLAdirect

Introduction

Mauricio Rodriguez

Senior Systems Engineer, CLAdirect

mrodriguez@cladirect.com

http://www.cladirect.com

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Agenda

- Motivations for Peering
- Peer Expectations
- Negotiating Peering
- Administrative Policy
- Technical Policy
- In Retrospect
- Peering Operations Tools
- References

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Motivations for Peering Commercial

- Claim Tier-2 ISP status [3]
  - Marketing benefits
  - Competitive advantage for larger accounts
  - Decrease costs / increase revenue
- Save on Transit costs (Caveat Emptor) [4]
  - Delta between transit and peering needs to be significant
  - Traffic volume offload needs to be significant
  - Cost to build needs to be considered
- Build relationships with your peers

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Motivations for Peering Technical

- Offload transit traffic onto peering
  - Other ISP's
  - CDN Connectivity (40%+ share of traffic)
  - Connect Local Eyeballs to local content
- Distribute traffic to various networks
- Improve connectivity and performance
  - Improve "hop-count"
  - Reduce latency
  - Reduce risk of bottlenecks

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Peer Expectations

- Clear communications between peers
- Stable BGP sessions
  - Responsible prefix filtering
  - Control leaking prefixes
  - Keep advertised prefixes as consistent as possible
- Never, never “point default” to your peer!

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Negotiating Peering

- Commercial Aspects
  - Settlement-free peering
  - Paid peering
- Connectivity Arrangement
  - Shared Public IXP
  - Private Link
  - Virtual Public / Private Link (IE: VPN, VLAN, PBR)
- Route servers make it easier

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Administrative Policy

- Policy Type [2]
  - Open
  - Selective
  - Restrictive
  - No Peering
- Professional agreement or contractual agreement?

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Technical Policy General

- Use MD5 Auth on BGP sessions
- Hot-potato routing
- BCP 38 / uRPF filtering
- Filter BOGONS / Martians prefixes and ASN
- IPv4/IPv6 NDS from day 1

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Technical Policy
Import / Inbound

- Peer AS-Path filter
- Prefix filtering
  - Manual: High maintenance overhead
  - Automated: Added complexity
- Apply a peer community to identify prefixes
- Use localpref to prefer peer over transit, but customer over peer
- Limit max prefixes to peer's reported value
  - Alarm at warning threshold
  - Shutdown at 100%, alarm, timed hold down

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Technical Policy
Export / Outbound

- Announce only customer prefixes and customer access network prefixes to peers
- Filter peer prefixes at transit; filter transit and peer prefixes at peering

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In Retrospect

- Involve product management from the outset
- Involve your NOC/Operations from the outset
- People networking is as important as telecom networking

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Peering Operations Tools

- Flow-based Peering Analysis
- PeeringDB: https://www.peeringdb.com
- BGPMon: http://www.bgpmon.net/
- CIDR Report: http://www.cidr-report.org/v6
- RADb: http://www.ra.net/
- Looking Glasses: http://www.bgp4.as/looking-glasses
- DrPeering: http://drpeering.net/

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References

[1]http://drpeering.net/AskDrPeering/blog/articles/Peering_Rules_of_the_Road_-_Dont_Abuse_Peering_Clauses.html

[2]http://drpeering.net/AskDrPeering/blog/articles/Internet_Service_Providers_and_Peering___Peering_Policy.html

[3]http://drpeering.net/white-papers/Ecosystems/Tier-2-ISP.html

[4]http://drpeering.net/core/ch5-Business-Case-for-Peering.html

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QUESTIONS, COMMENTS?

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Thank you!

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