Oregon Route-Views Project Update

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Agenda

• (Ancient) History
• Current Utilization Profile
• Issues in Operating Routeviews
• What’s on the Horizon
• Questions/Comments
History

• Circa 1997: route-views started life as a purely operational tool
  – We needed a way to look at how providers saw our prefix (this was pre-looking glass)
  – Randy Bush was kind enough to give me a multi-hop eBGP connection from MAE-WEST

• People started using route-views and contributing views

• But this is what made it really take off (thank you to the CAIDA folks)...

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Routeviews Update
Summary -- History

• Operators need(ed) real-time access to how other networks see their customers' routes
• Route-Views: the first publicly available service fulfilling this need
  – "looking glasses" had not evolved (good list at [http://neptune.dti.ad.jp](http://neptune.dti.ad.jp))
  – Route-Views has the richest set of peers
• Currently 100+ peers including AOL, AT&T, Sprint, NTT America, Abilene, APAN, GLOBIX, France Telecom, C&W USA . . .
Operational Use Profile

• route-views.routeviews.org receives 1000's of CLI connections daily from almost every service provider and from every part of the planet
  – And its holding millions of paths

• So its under some stress...

• Well, if you’ve been on the CLI recently you likely already know this...
And lots of research use too

• 100s of data downloads/day
  – ~ 12 GB/day transferred
• Both MRT and ‘sh ip bgp’ format data

• See google scholar with keywords “route views”
• And check out
  – http://bgplay.routeviews.org/bgplay
Operational Issues

- route-views is like a control-plane only ISP
  - All the same problems, only worse...
  - e.g., we’re not actually anyone’s customer, even though we take routes from you...
- As always, sys admin resources
  - New peer setup, dead peer detection and resolution
  - Contact maintenance
  - ...
- Physical resources
  - Processor/memory/network scaling
    - route-views.routeviews.org has O(5M) paths
    - Memory/CPU an issue
    - ‘sh ip bgp’ screen scraping stopped (more on that later)
- Aging infrastructure
  - Old collectors, RAID arrays, etc
Operational Issues, cont.

• multiple, topologically diverse collection points
  – multi-hop eBGP connections hurt
    • Any failure along the long multi-hop BGP peering path makes data unavailable
  – single data collection point cannot capture the full routing dynamics of richly connected Internet topology
  – presence at international locations critical

• Database front end lacking
  – Data sets are getting too big to download

• A set of toolkit for data mining
  – Data sets are getting too big to look at
What is on the Horizon

• “Deal” with route-views.routeviews.org
  – CPU/memory stressed
  – Upgrade v. converting the cisco gear to PC/Quagga
  – MRT-> ‘sh ip bgp’
    • Want to rehome/duplicate peers on a quagga box for this purpose
    • Need to talk to folks about this
    • Thnx heas for writing the converter
• Deploying a few new collectors
  – Upgrading others
• Hardening other operational infrastructure
• Expand IPv6 coverage/views
• Large scale archival storage
  – We have data going back to 1997

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Horizons, cont...

- **New data format/collector software**
  - bgpmon → xml format UPDATEs/RIBs
  - Converters for MRT and 'sh ip bgp'
  - See [http://bgpmon.netsec.colostate.edu](http://bgpmon.netsec.colostate.edu)

- **Would like to hire staff to develop a set of toolkit for data mining**
  - analysis and visualization tools

- **More analysis of the properties of data sets**
  - For example, we’d like a better understanding of sample bias

- **Adding more peers that are further down the hierarchy (e.g., small ISPs, etc)**
Questions/Comments?

Thanks!

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