

Oregon Route-Views Project Update



David Meyer
Cisco/University of Oregon
www.routeviews.org
dmm@1-4-5.net

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Agenda

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

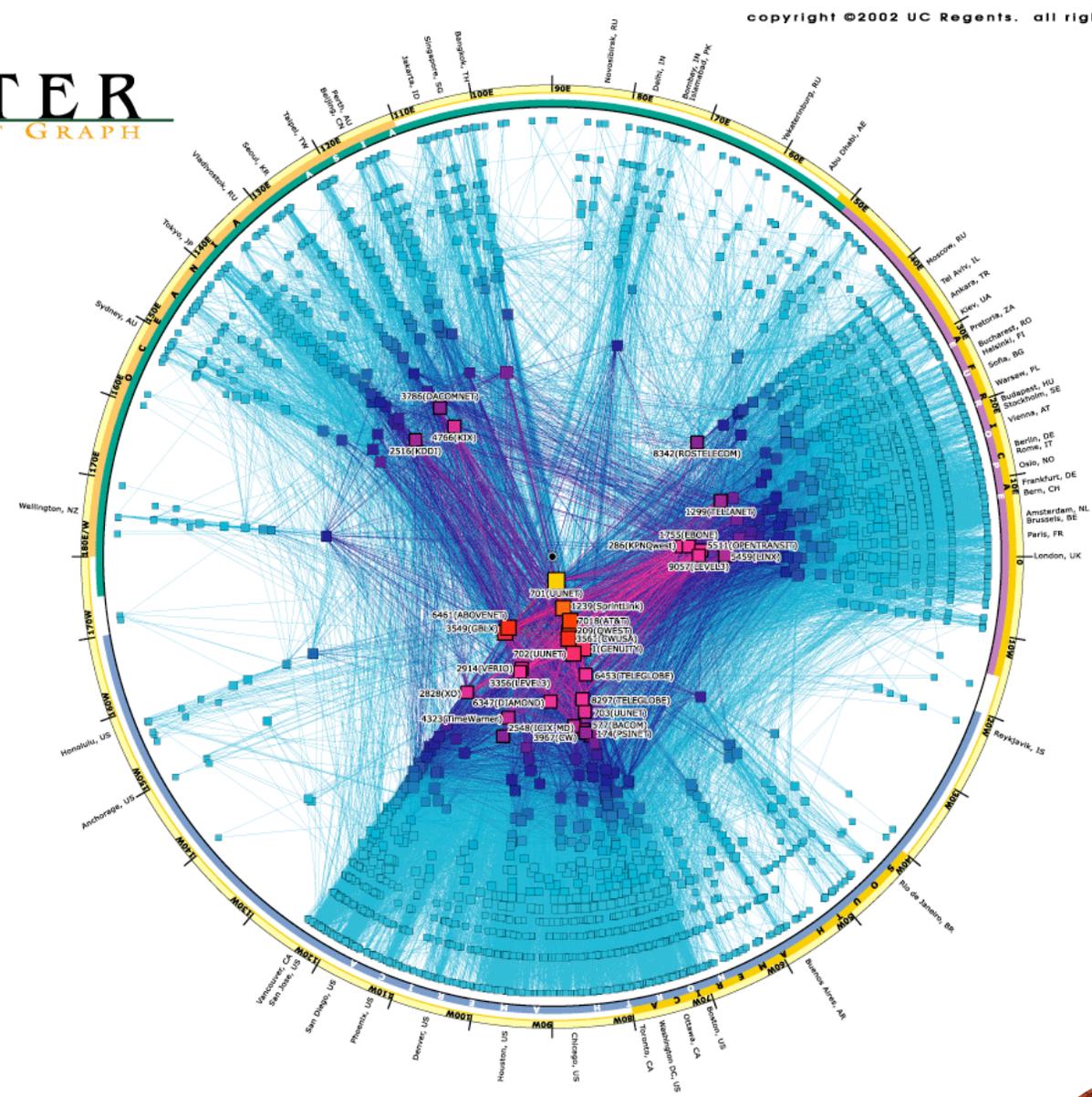
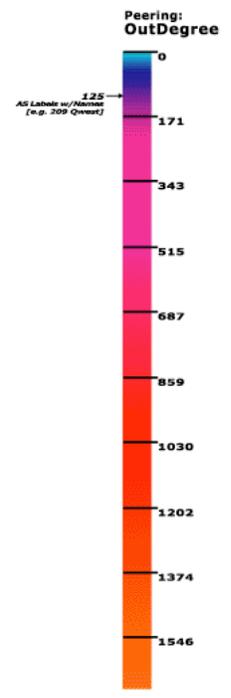
History

- 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)...

SKITTER

AS INTERNET GRAPH

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cooperative association for internet data analysis ○ [Routeviews Update](http://www.routeviews.org) ○ [san diego supercomputer center](http://www.sdsu.edu) ○ [university of california, san diego](http://www.ucsd.edu)
 9500 gilman drive, mc0505 ○ la jolla, ca 92093-0505 ○ tel. 858-534-5000 ○ <http://www.caida.org/>



CAIDA is a program of the University of California's San Diego Supercomputer Center (UCSD/SDSC)
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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>)
 - 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

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>
- 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!

help@routeviews.org

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