Using Link-Rank for BGP Visualization

Nanog-34 BOF

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Objectives

- What does Link-Rank visualize?
- Demo and try the new pre-release version 0.8
- Hands on: How to start using the tool?
  - In the next 15-20 minutes!
- Analyze case studies together.
- Feedback
  - Improving the tool
  - Deploying to visualize your own routing dynamics

Java Virtual Machine required to visualize!
Part I
Introduction
Current Setup

LinkRank Client → LinkRank Server → RouteViews → Monitored Peer (AS 7018) → BGP update

LinkRank Client → LinkRank Server → RouteViews → Monitored Peer (AS 1239) → BGP update
What a client sees...

- Visualization Options
- Rank-Change Graph
- Controls
- Activity Slider
Rank-Change Graph

Monitored peer

Number of prefixes lost on this link

Old path

New path
At any time, the activity bars indicate the total rank gains and the total rank losses.

Sum of all the gains = 508
Sum of all the losses = -369
Part II
Identifying and Investigating Problems
Activity: Zooming In

12.0.1.63 [Jan-01-2005, May-05-2005] (125 day span)

12.0.1.63 [Mar-01-2005, Apr-04-2005] (35 day span)

12.0.1.63 [Mar-30-2005]
Identifying what is going on?

Give me a summary of what happened here?

12.0.1.63 [Mar-01-2005, Apr-04-2005] (35 day span)
First Look at Rank-change graph
Drilling down
Repeat until...
Part III
Assembling Multiple Views
View from AS 16150
Assembled View:
AS 16150 and AS 6939
Summary So far ...

- Activity-plots [high level summary plot]
- Rank-change graph
- Assembled Rank-change graph
Link-Rank Web Services
http://linkrank.cs.ucla.edu

- Updated Link-Rank data for RouteViews Oregon collector. (Jan 1, 2004 to present)
  - Plan to expand to other collectors.
- Updated Activity graphs for monitored peers of Oregon over 7 days.
- On-demand activity plot generator for any monitored peer of Oregon at RouteViews.
Link-Rank at your ISP: Option 0

Download from linkrank.cs.ucla.edu

Data updated daily
Link-Rank at your ISP: Option 1

Download from linkrank.cs.ucla.edu

Download server from linkrank.cs.ucla.edu (within 1 month)
Link-Rank at your ISP: Option 2

Download from linkrank.cs.ucla.edu

Download server from linkrank.cs.ucla.edu (within 1 month)
Part IV:
Let's get our hands dirty
Start: Activity Graphs

144.228.241.81 [Apr-29-2005, May-05-2005] (7 day span)

Typical Activity Graph

203.62.252.26 [Apr-29-2005, May-05-2005] (7 day span)

Cause for concern!
The Link-Rank client

- Free Download (Open source)
- System Requirements:
  - Java Virtual Machine
- Recommended:
  - At least 256 MB memory, higher the better.
- User Guide (Version 0.7 beta)
  - [http://linkrank.cs.ucla.edu/userguide/](http://linkrank.cs.ucla.edu/userguide/)
Setup and First Run

- Create a new directory for the client.
- Download LinkRank.jar and Config.txt from:
  - [http://linkrank.cs.ucla.edu/newClient/](http://linkrank.cs.ucla.edu/newClient/)
- Running the Client
  - Double click on LinkRank.jar
  - or
  - From command line:
    
    java -jar LinkRank.jar
Configuring the Client

Select Configuration from Options menu

- Server providing data
- Server port to connect
- Local data directory
- Explained later....
Selecting data to view

1. Select Data Management
2. Server contacted and data-tree loaded.

- Data range
- Type in partial IP for match
- IPs available for given data range
Generating Rank-Change Graphs

Select one or more observation Points for visualization

Select multiple points and click here To assemble all views into one graph.

Start and end time for visualization

Click on Preview Activity or graph
Rank-Change graph

Set animation width to 100
Summary Information

- Website
  - [http://linkrank.cs.ucla.edu](http://linkrank.cs.ucla.edu)

- New Client link
  - To be released soon.
  - Preliminary version at
    - [http://linkrank.cs.ucla.edu/newClient/](http://linkrank.cs.ucla.edu/newClient/)

- Email for any questions, comments or feedback
  - [linkrankhelp@cs.ucla.edu](mailto:linkrankhelp@cs.ucla.edu)