Services to Help You Understand the Behavior of Your Network

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Outline

- Background and motivation
- Specific services
  - Test Traffic Measurements
  - DNS MONitoring
  - Routing Information Service
- How can you participate
- Conclusions

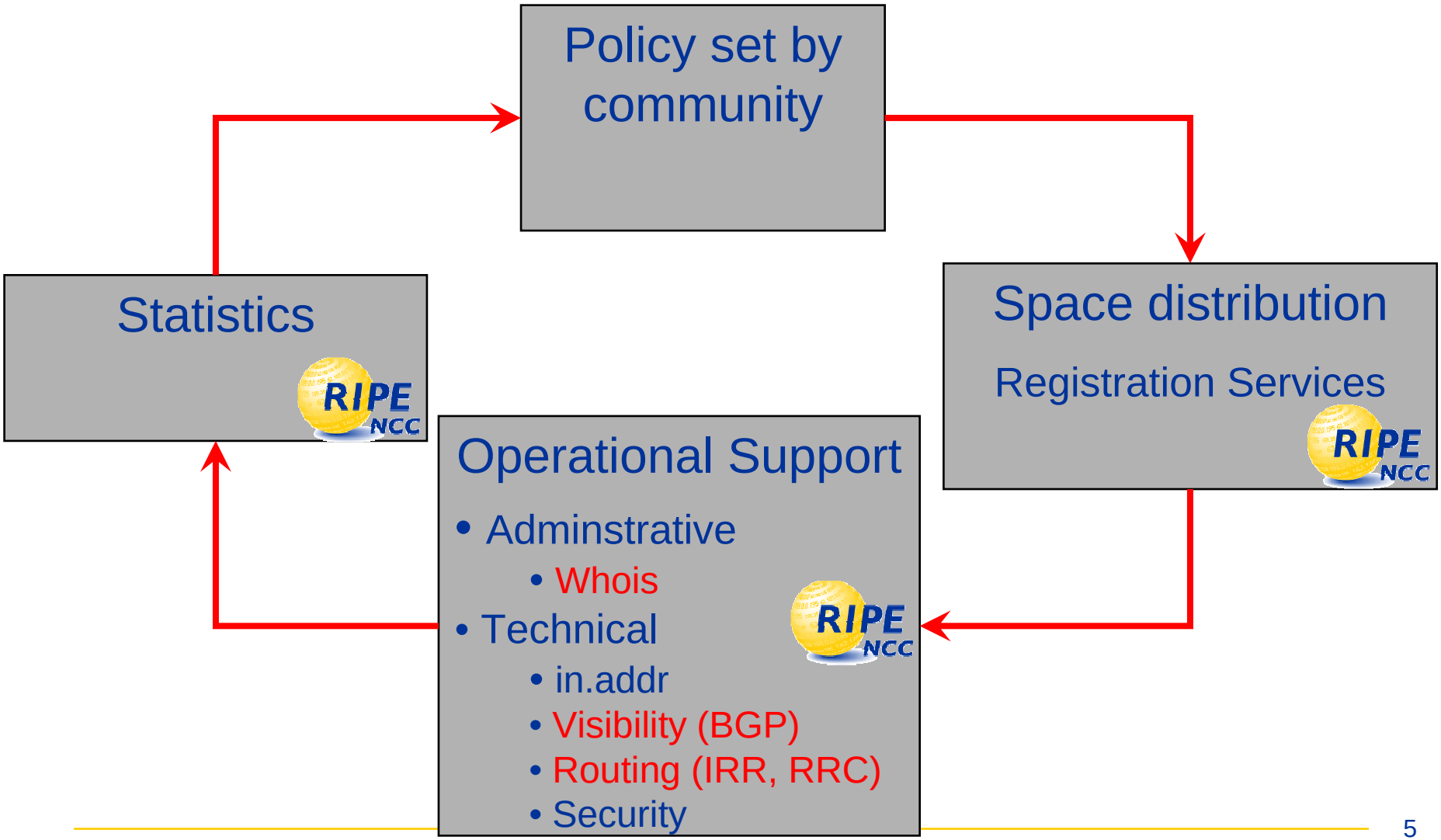
Traditional view on RIPE NCC services

- Membership services
  - Only available to paying customers
    - Resources (IPv4, IPv6, AS)
    - TTM (Test Traffic Measurements)
    - Training Courses
    - DNSMON
- Community services
  - Available to everybody
    - K root server
    - Whois database
    - RIS

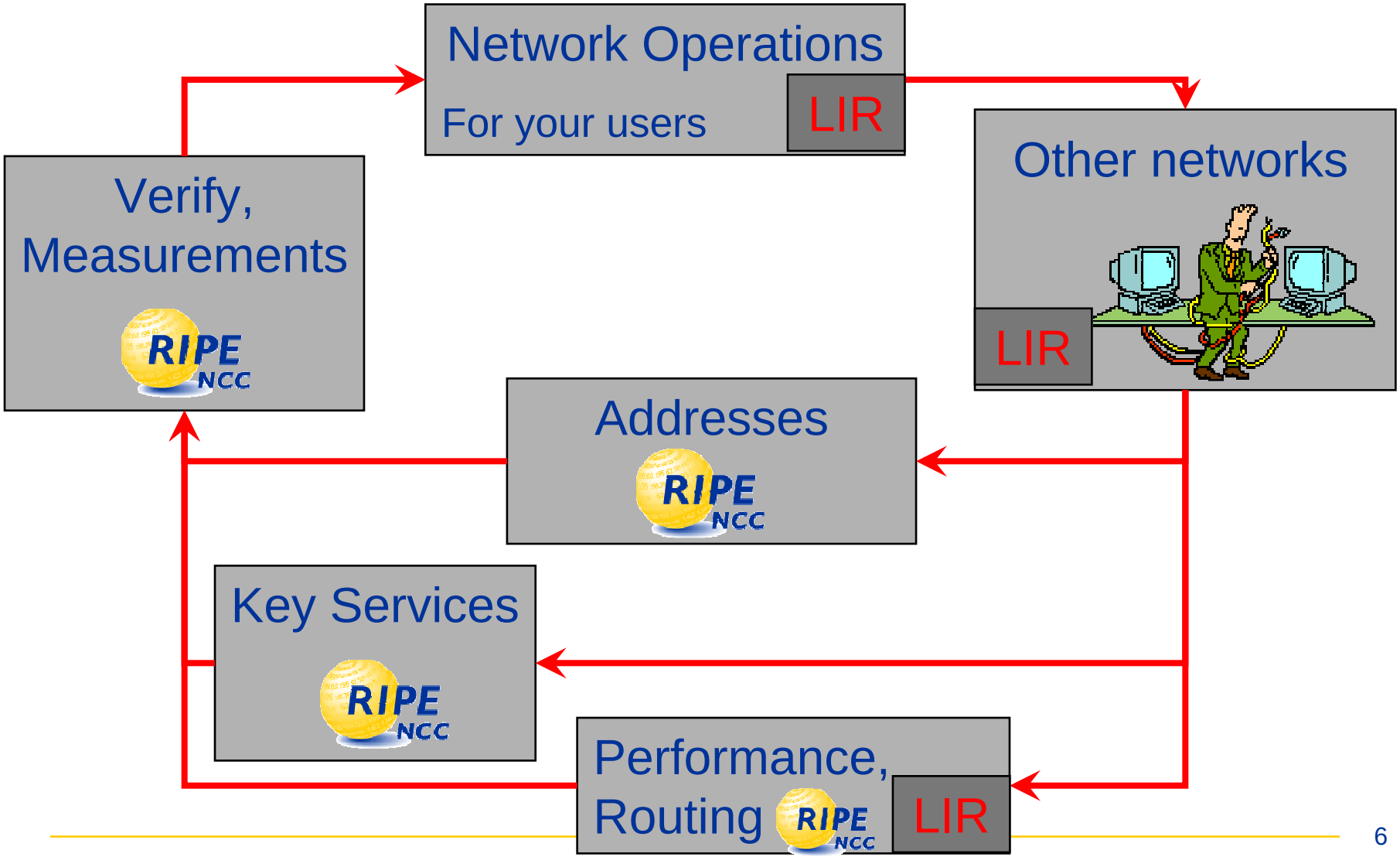
A different view

- In traditional view services are usually seen as separate
  - Do not form a consistent full picture
  - Services are highly related
- The NCC aims to offer a portfolio of related services that benefits its membership
  - Start from Internet resources (IP, AS)
  - Logical connection

Example 1: IP/AS allocation



Example 2/Network operations



Data that can be collected

- Routing
  - AS level
  - IP level
- Network Quality:
  - Delay, Loss, Jitter
- Quality of Services:
  - DNS
- Registration data
  - Allocations
  - Whois DB
  - Routing Registry
- Statistics & Analysis:
  - Hostcount
  - Whitepapers and reports

NCC facilities to collect data

Registration

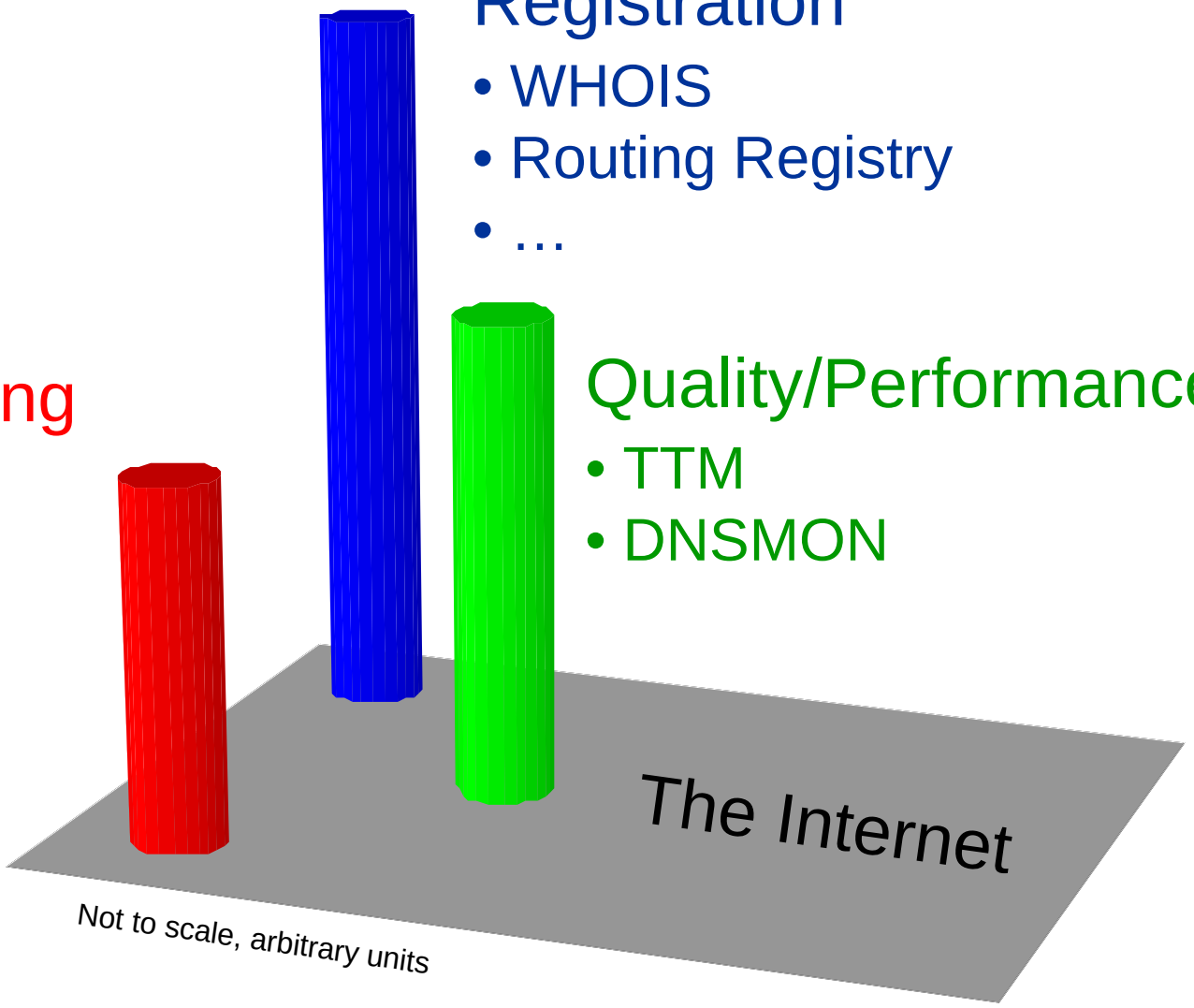
- WHOIS
- Routing Registry
- …

Routing

- RIS

Quality/Performance

- TTM
- DNSMON



Output

- Two basic output formats
  - Raw data
  - Products
- Raw data
  - You build your own tools on top
  - Research and analysis
- Products
  - Ready to use
  - Common applications
  - Need community feedback to build and improve them

Use Areas

- Operations:
  - Monitoring, troubleshooting
- Planning:
  - Capacity, performance
  - Policy groups
- Research and Analysis:
  - Anomalies
  - Understanding of behaviour of complex systems (The Internet).

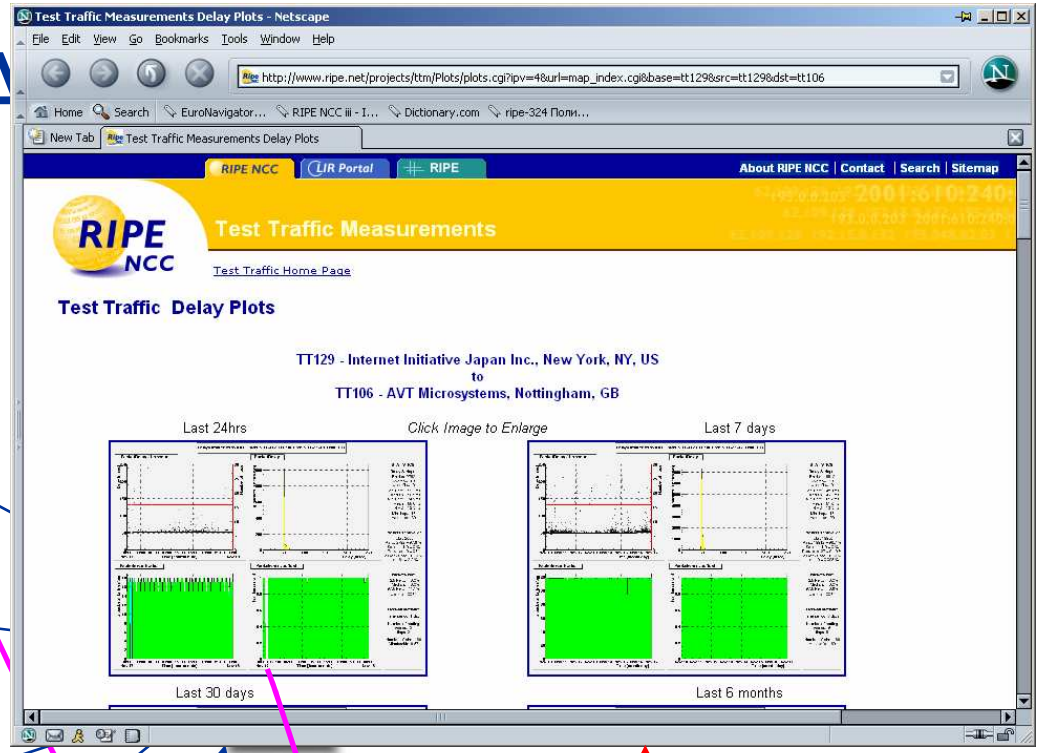
More about the services

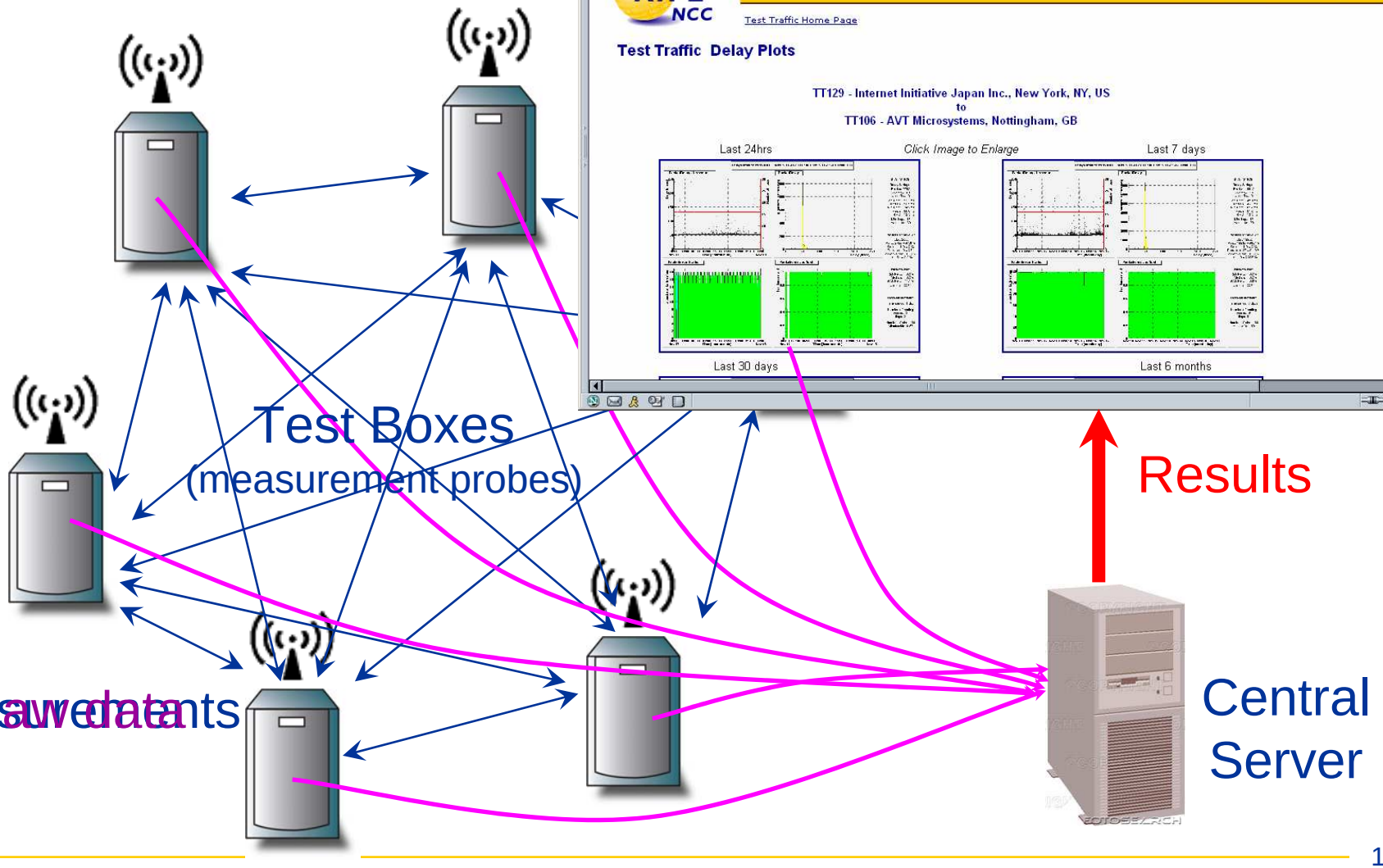
- Active Measurements
  - Test Traffic Measurements or TTM
  - DNS Monitoring or DNSMON
- Routing Information Service or RIS
  - BGP

TTM
Test Traffic Measurements

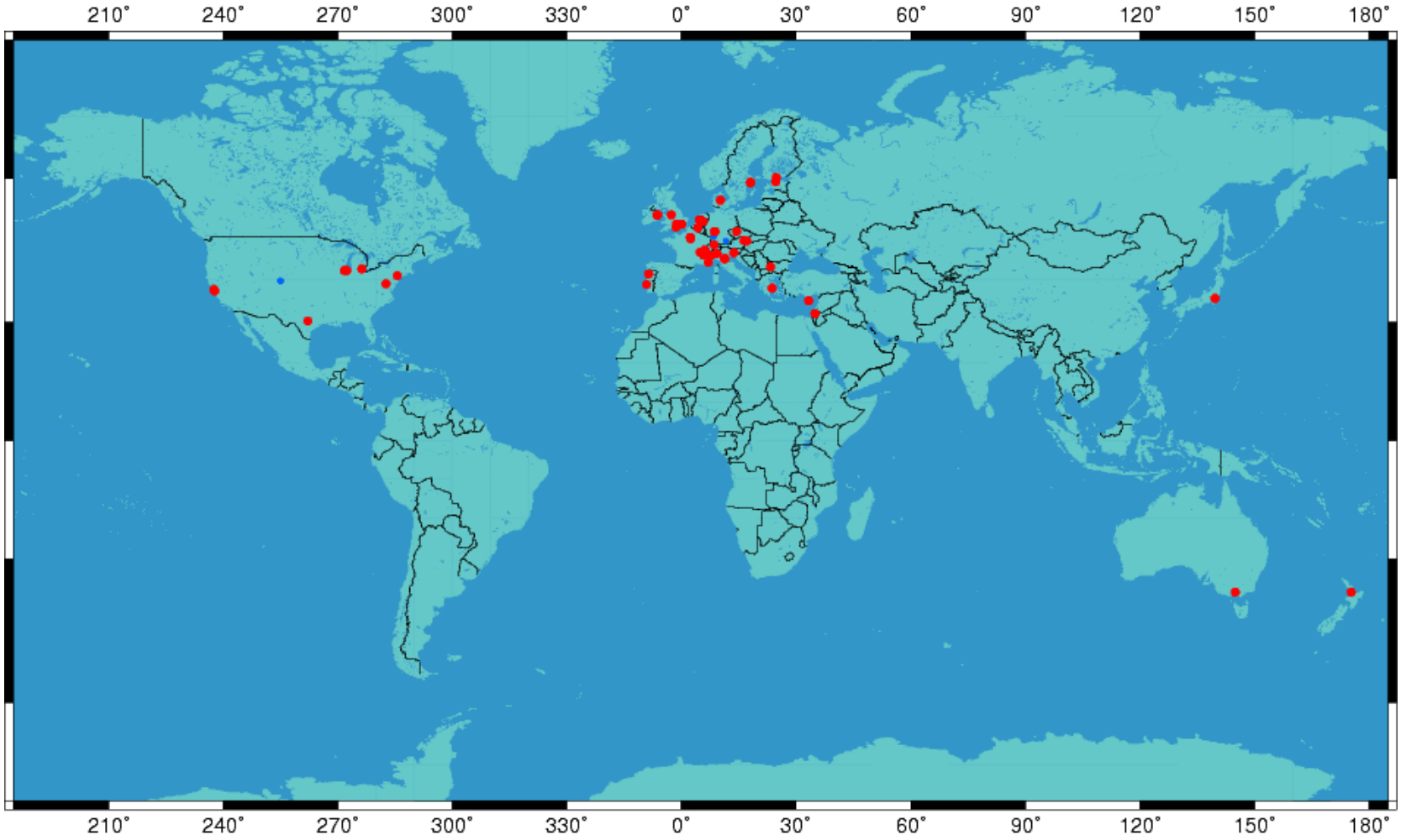
- Performance Measurements:
  - Delay, loss, jitter
  - IP level routing (“traceroute”)
  - One-way measurements
- Active measurements
  - Probe to generate packets or “test traffic”
  - Independent of user traffic, no privacy issues
- Follow applicable standards
  - RFC 2330, 2678-2681, 3393

TTM A


Test Traffic Measurements Delay Plots - Netscape
File Edit View Go Bookmarks Tools Window Help
http://www.ripe.net/projects/ttm/Plots/plots.cgi?ipv=4&url=map_index.cgi&base=tt129&src=tt129&dst=tt106
Test Traffic Measurements Delay Plots
RIPE NCC
LIR Portal
RIPE
About RIPE NCC | Contact | Search | Sitemap
Test Traffic Measurements
Test Traffic Home Page
Test Traffic Delay Plots
TT129 - Internet Initiative Japan Inc., New York, NY, US
to
TT106 - AVT Microsystems, Nottingham, GB
Last 24hrs
Click Image to Enlarge
Last 7 days
Last 30 days
Last 6 months

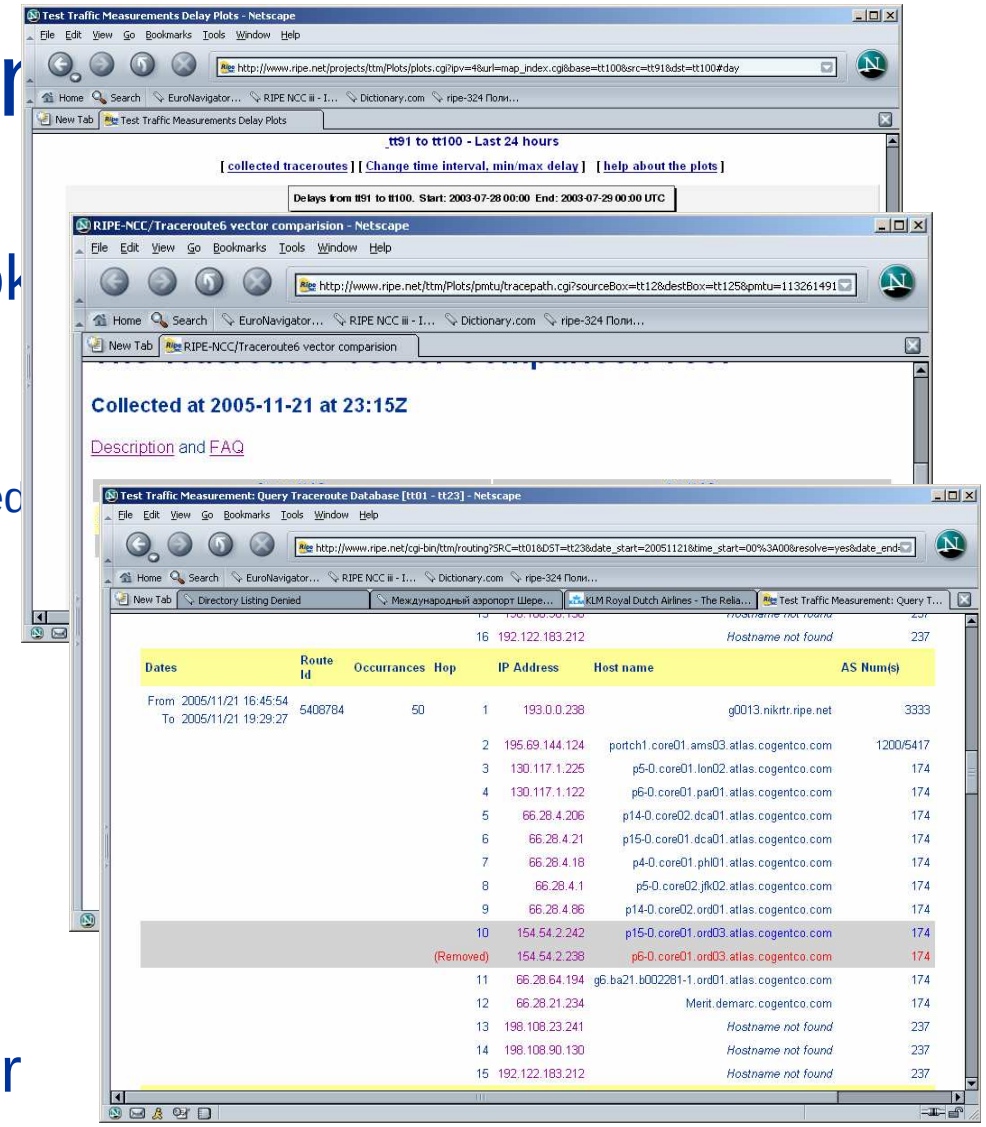

Test Boxes
(measurement probes)
Results
Measurements
Raw data
Central
Server

Distributed Platform



Data ar

- "Passive": user has to look
  - Standard Plots:
    - Delays, losses, jitter, …
      - Online (5 minutes, limited
      - Offline (next morning)
    - MTU/Tunnels for IPv6
    - Trends over long time
  - IP Level routing
    - Data base with paths
  - Raw data
    - User specific analysis
- "Active": we warn the user
  - Network alarms

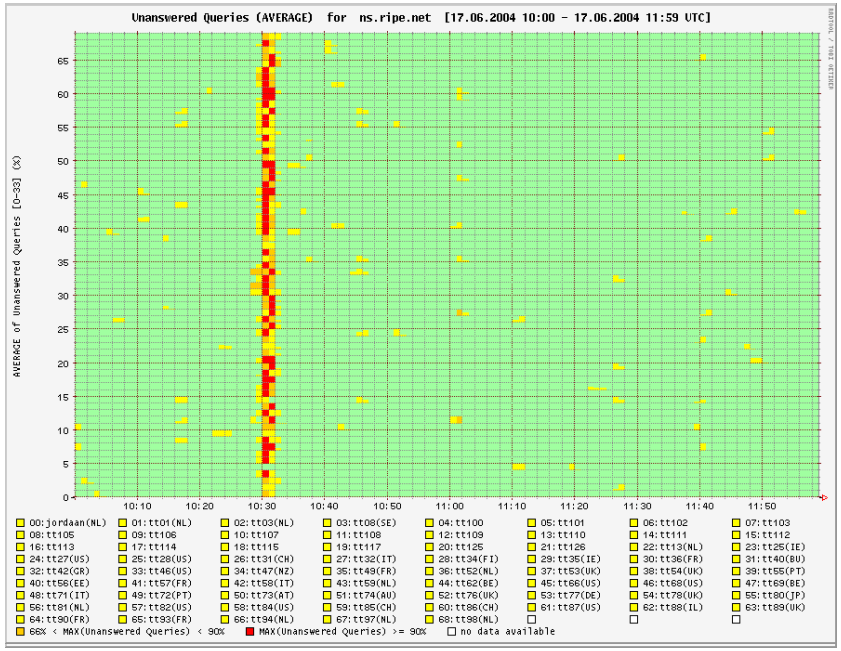


DNSMON: DNS Monitoring

- DNS service is important
  - QoS for root and ccTLD zones
- Measure composite performance
  - From multiple points in the Internet
  - Real DNS traffic
  - Servers + Network
- Interactive and better presentation
  - Stacked plots allow people to easily see trends
  - Plots on demand

Composite measurement

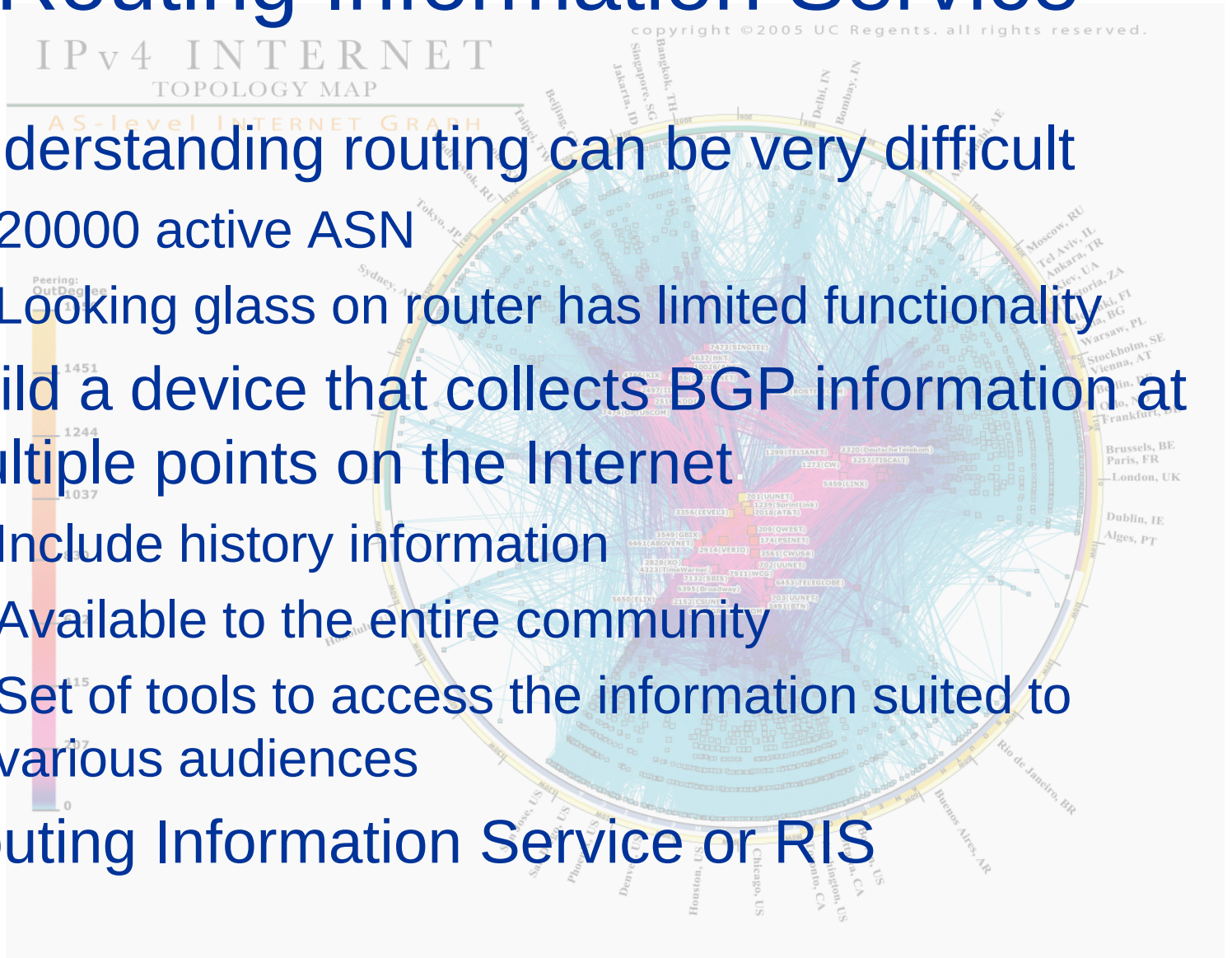
TT probe



Time

- 70+ measurement points
- Stacked plots
- Easy to see “dimension” of a problem

Routing Information Service



- Understanding routing can be very difficult
  - 20000 active ASN
  - Looking glass on router has limited functionality
- Build a device that collects BGP information at multiple points on the Internet
  - Include history information
  - Available to the entire community
  - Set of tools to access the information suited to various audiences
- Routing Information Service or RIS

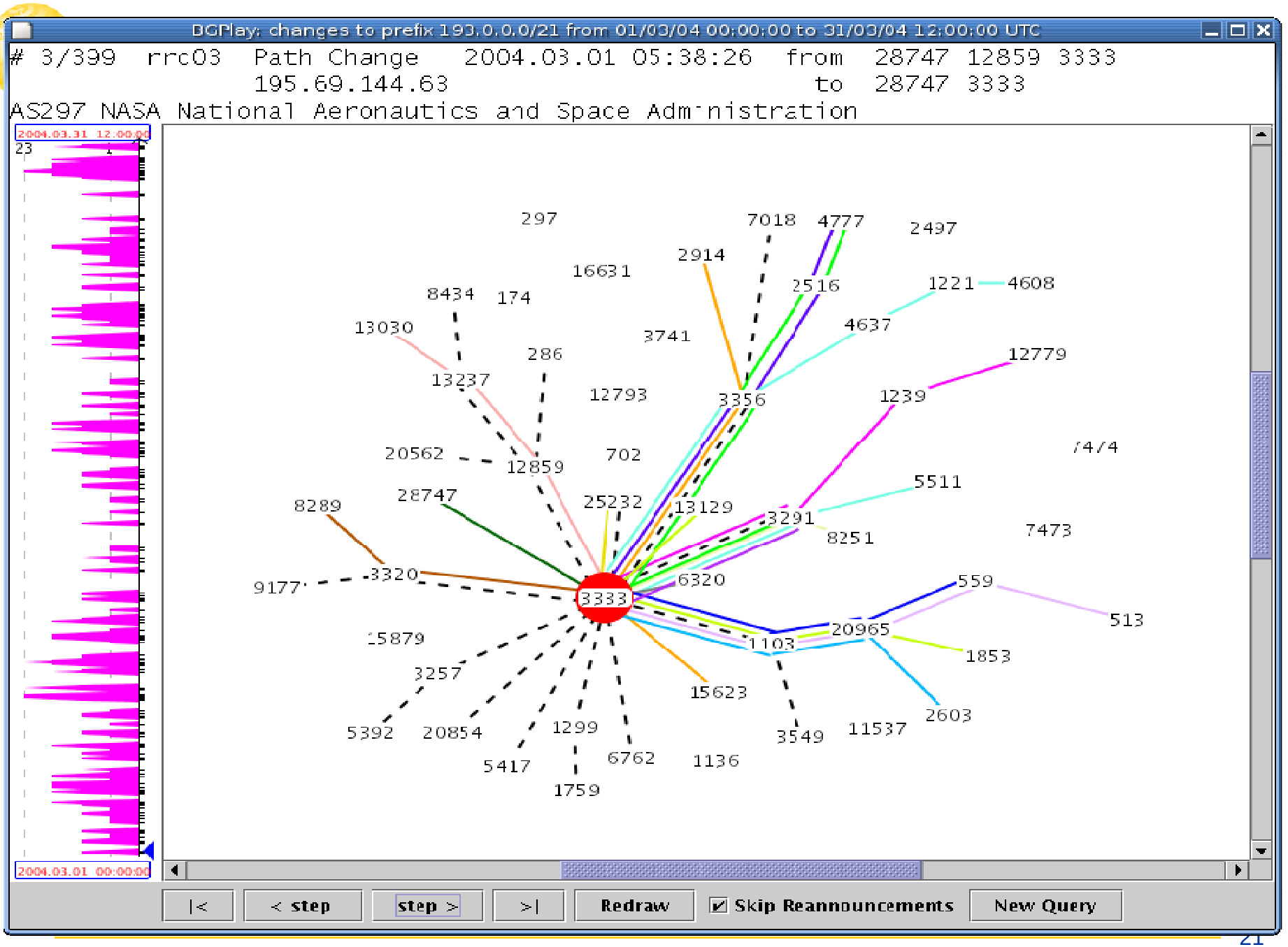
RIS Location

- Data collection:
  - 15 collection points
  - >350 peering sessions in total, v4 and v6
- Data that is being collected:
  - RIB: 3 times a day
  - All BGP updates
- Storage:
  - mySQL DB for 3 months
  - Raw data

- LINX, London, UK
- SFINX, Paris, FR
- AMS-IX, Amsterdam, NL
- CIXP, Geneva, CH
- VIX, Vienna, AT
- NSPIXP2, Othemachi, JP
- NETNOD, Stockholm, SE
- MIX, Milan, IT
- NYIIX, New York, USA
- DECIX, Frankfurt, DE
- MSK-IX, Moscow, RU
- PAIX, Palo Alto, USA
- PTTMetro-SP, Sao Paulo, BR
- RIPE NCC, Amsterdam, NL

RIS applications

- Database queries
  - Search by prefix, ASN
- Reports
  - Martians, black-holes, illegal announcements, activity, Routing Registry Consistency, …
- Visualization
  - Static graphs
  - Animation with BGP play
- Warnings
  - myASN service to warn you about unusual BGP events


BGPlay: changes to prefix 193.0.0.0/21 from 01/03/04 00:00:00 to 31/03/04 12:00:00 UTC
3/399 rrc03 Path Change 2004.03.01 05:38:26 from 28747 12859 3333
195.69.144.63 to 28747 3333
AS297 NASA National Aeronautics and Space Administration
2004.03.31 12:00:00
2004.03.01 00:00:00
297
7018
4777
2497
2914
16631
2516
1221
4608
8434
174
13030
4637
3741
286
12779
13237
12793
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28747
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13129
5511
8289
3291
8251
7473
9177
3320
6320
559
3333
513
15879
20965
1103
1853
3257
15623
2603
5392
20854
1299
3549
11537
5417
6762
1136
1759
|<
< step
step >
>|
Redraw
Skip Reannouncements
New Query

Why should the NCC collect data?

- Activity that benefits the entire community
  - The NCC was set up to do that
- Neutral & Impartial
  - No commercial bias
  - Results that reflect reality
- Access to networks operated by others

Funding Model

- Data collection benefits all.
  - Part of the membership fee is used for this
- Some will benefit more than others:
  - Examples:
    - TTM measurement probe at your site
    - Measurements on the TLD that you operate
  - Data about your specific situation, rather than the average
  - Pay extra

Participate?

- Just use it
  - www.ripe.net/ttm
  - www.ripe.net/ris
  - dnsmon.ripe.net
- Active Measurements
  - TTM:
    - Buy and install a probe
    - RIPE 297 explains the details
  - DNSMON
    - TTM service is free
    - TLD operators: RIPE 342 explains all details
- RIS:
  - Set up a peering session at any of our locations
  - Contact rispeering@ripe.net

Conclusions

- The RIPE NCC tries to offer a complete service portfolio for its members
- 3 Services aimed at collecting data on the Internet
  - Routing Information Service (RIS)
  - Test Traffic Measurements (TTM)
  - DNS Monitoring (DNSMON)
- Your participation and feedback are important

URLs, email

- Handout in registration pack

- TTM
  - http://www.ripe.net/ttm
  - ttm@ripe.net: TTM crew @ NCC
  - tt-wg@ripe.net: RIPE working group
- DNSMON:
  - http://dnsmon.ripe.net
  - dnsmon@ripe.net: DNSMON crew @ NCC
  - dns-wg@ripe.net: RIPE working group
- RIS
  - http://www.ripe.net/ris
  - ris@ripe.net: RIS crew @ NCC
  - routing-wg@ripe.net: WG

Questions, Discussion