Test Traffic Measurements, Status and Plans

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RIPE-NCC New Projects Group

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Overview

- Administrative Stuff
- Status of the measurement network
- The next series of test-boxes
- Turning TTM into a regular service
- Analysis and results
- Conclusions

Manpower

- 2 new faces:

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- Mark Santcroos
  - Junior Network Engineer
  - Installation and support of TB's
  - System programming

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- Mark Santcroos
  - Junior Network Engineer
  - Installation and support of TB’s
  - System programming
- Florian Gruber
  - Student, at the NCC for 9 months
  - GPS Site Survey Tool
- Now 6 people working on TTM
  - Hiring round for #7 in progress

PAM2001-Workshop (Commercial)

- An annual workshop on Passive and Active Measurements.
  - First workshop in New Zealand, April 2000, great success
  - Second workshop in Amsterdam, April 23-24, 2001
  - Organized by the RIPE-NCC
- Call for Papers issued, deadline October 18.
- See http://www.ripe.net/pam2001 if you are interested in participating.

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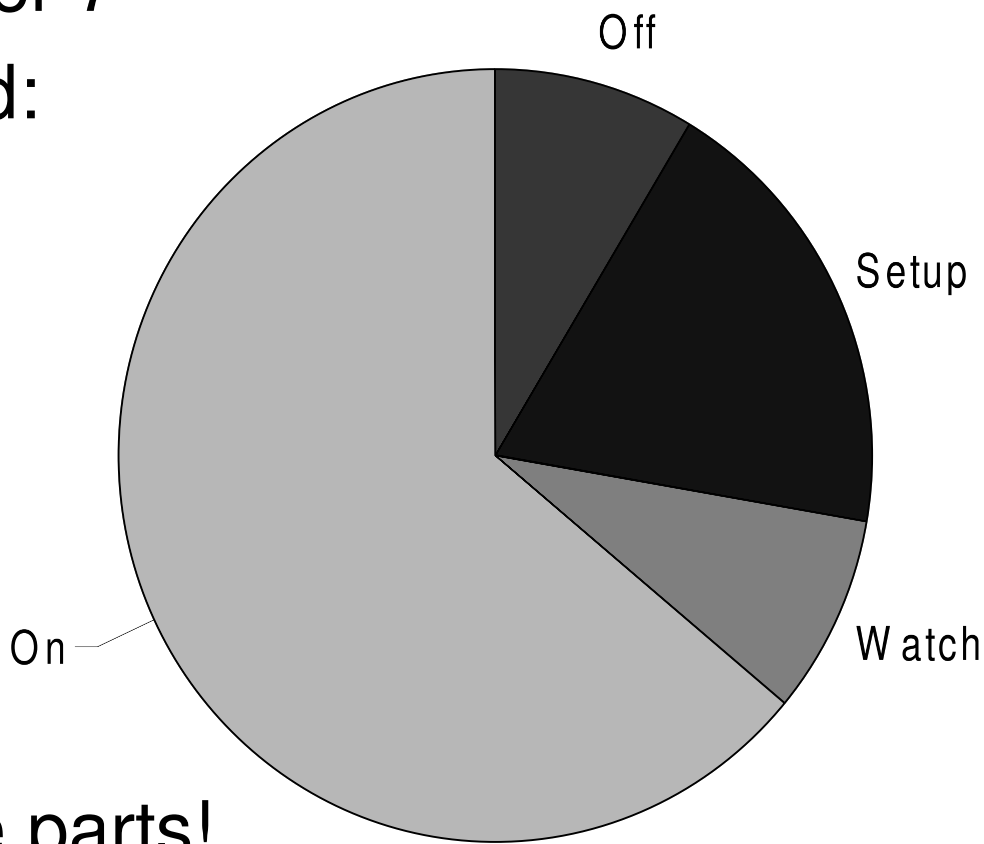
Status of the measurement network

- Status on September 7
- 41 boxes in the field:
  - Off: 4
  - Setup: 9
    - (Re-)Installation
  - Watch: 4
    - Data not useful
  - On/Taking Data: 25



- Please return spare parts!

Memory and O/S upgrade of Series A Test-Boxes

- Necessary to solve problems with TB's going into an undefined state
  - tt07…tt27 only
- Memory shipped after RIPE36
  - 10 minutes of work to install it
- Still waiting for 5 sites
- O/S upgrade cannot be done until the memory has been installed

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- Please do this when you get back home

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The next series of test-boxes

- Hardware
  - Has been ordered
  - Expect to have 25 boxes ready late September
- Antenna’s
  - Arrived at the NCC
- Interface card
  - Designed by the NIKHEF Electronics Workshop
  - Working prototype
  - Production series expected 30/9

GPS Site Survey Tool

- Finding a suitable spot for the antenna has always been a problem
- Written instructions are not always sufficient
- Sites often need to run cables
- It would be useful to have a tool that shows GPS reception conditions before anything has been installed

GPS Site Survey Tool

- Solution:
  - Handheld GPS plus PDA
  - Quickly find a promising spot
  - Collect data for a day
  - Send results to the NCC
- Feedback before installation

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Turning TTM into a regular service

- **RIPE35:** Consensus on the model:
  - buy a test-box
  - pay a service fee to operate them
- **RIPE36:** Draft service document
  - 2 iterations since then
  - Comments received and added to the document
  - Gave the document to the lawyers and the board
- **RIPE37:** New (final) proposal
  - Discuss here
  - Appointment with the lawyers to finalize on 20/9

Service Contract/Documents:

- RIPE209:
  - Describes the general idea
  - Understandable for humans
- “General Terms to the RIPE-NCC Test Traffic Measurements Service and Test-Box Purchase Agreement”:
  - Terms and conditions
  - Will be published as a RIPE-document
  - Has to be signed by the NCC and the TB-host
  - Understandable for lawyers
  - Ultimate reference

Membership

- Discussions with the board
- There are 2 things that we didn’t foresee when we planned this:
- The RIPE-NCC by-laws
  – Is this service covered by the NCC by-laws?
  – What about membership status and votes?
- The RIPE-NCC tax status
  – Can the NCC offer this service within its current tax status?
  – What happens with a possible profit?

Membership (2)

- Several possible solutions
  - No membership
  - Separate organization
  - Keep this in the general budget
  - …
- Implementing one takes time

- However, we should keep the momentum

- Short term solution

Membership (3)

- Continue to introduce the service as planned
- Start to sell test-boxes
- Have people sign the service contract
  - We don't want to sell test-boxes without a service contract
  - Service fee will be set to • 0 until the tax issue has been resolved
- In other words: TTM will continue to be paid from the general NCC budget for the time being
  - This has been approved by the board

Procedure for ordering a test-box

- The host site
  - Fills out a form with configuration data
  - Gets a copy of the current “General Terms…” by email
  - Prints and signs 2 copies of the document
  - Mails them to the NCC
- The RIPE-NCC
  - Signs both copies
  - Returns 1 when delivering the test-box
- Repeat customers:
  - No forms to sign, the new TB will be appended to the existing service contract if that is still in effect

Private Experiments and Software License

- Original proposal:
  - The technology will be freely available to everybody
- Strongly discouraged by our lawyers
- New proposal:
  - License that comes with the test-box
  - GPL to use the technology for other purposes
  - No difference in practice

Private Experiments and Software License (2)

- With the service contract, you get a restricted license:

- You can use a test-box as a test-box for a public experiment
- The license expires when the service contract ends
- Some rights granted by Dutch law

Private Experiments and Software License (3)

- Other experiments and other usage:
- Ask us for a license
  - You tell us what you want to do
  - You get a free license for the technology
    - Similar to the GPL
  - Special details to be discussed at that time
  - Document will be prepared after RIPE37
- This gives us a way to protect the rights of the NCC and its membership
- No difference w.r.t. the current practice

Service contract

- Services and analysis:
  - Not specified in detail in the “General Terms…”
  - This makes it much easier to adjust to future requirements
- Support from the NCC:
  - 1 working day initial response time to email
- Contract length:
  - 1/1-31/12, pro-rated for sites joining later in the year
  - Can be cancelled anytime

Existing sites

- We propose that all existing sites sign the service contract and start paying the service fee whenever this is introduced
- Existing sites can keep the existing hardware
- Upgrade path for existing hardware
  - to be announced as we get more experience with the new clocks
  - against cost

Schedule

- Finalize the contents of the documents today
- Do a consistency check early next week
- Meeting with lawyers on 20/9 for the last details
- This has to be in place before we can sell new test-boxes

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Daily Plots

- Replaced the old format by a new format in August

- Better layout, more statistics

- Added Plots on Demand feature
  - Alpha test at the NCC

Routing Vectors

- MySQL database
- New user interface:
  – http://www.ripe.net/cgi-bin/ttm/traceroutes
  – or go there from the test-traffic page
- Advantages:
  – Faster: query in seconds instead of minutes
  – Speeds up daily processing
  – Scales to 100’s of boxes
- 99% ready

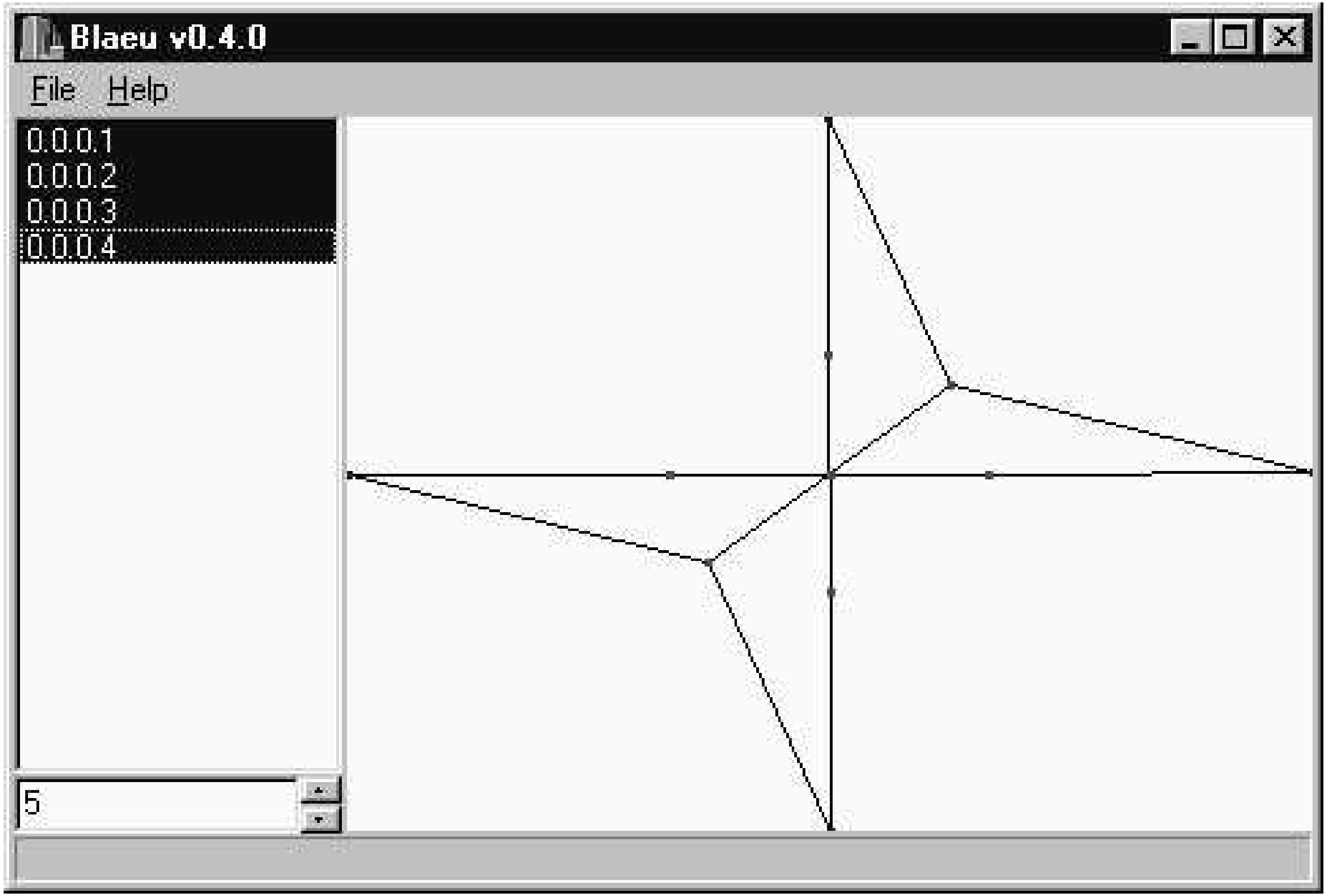
Topology maps

- **UMEEPI: U**nderstanding and **M**odeling of **E**nd-to-**E**nd **P**erformance on the **I**nternet
  - Research group at Delft University
  - Started this spring
- 1st project: Find common elements in the paths between various sites
- Draw maps of the traceroute vectors

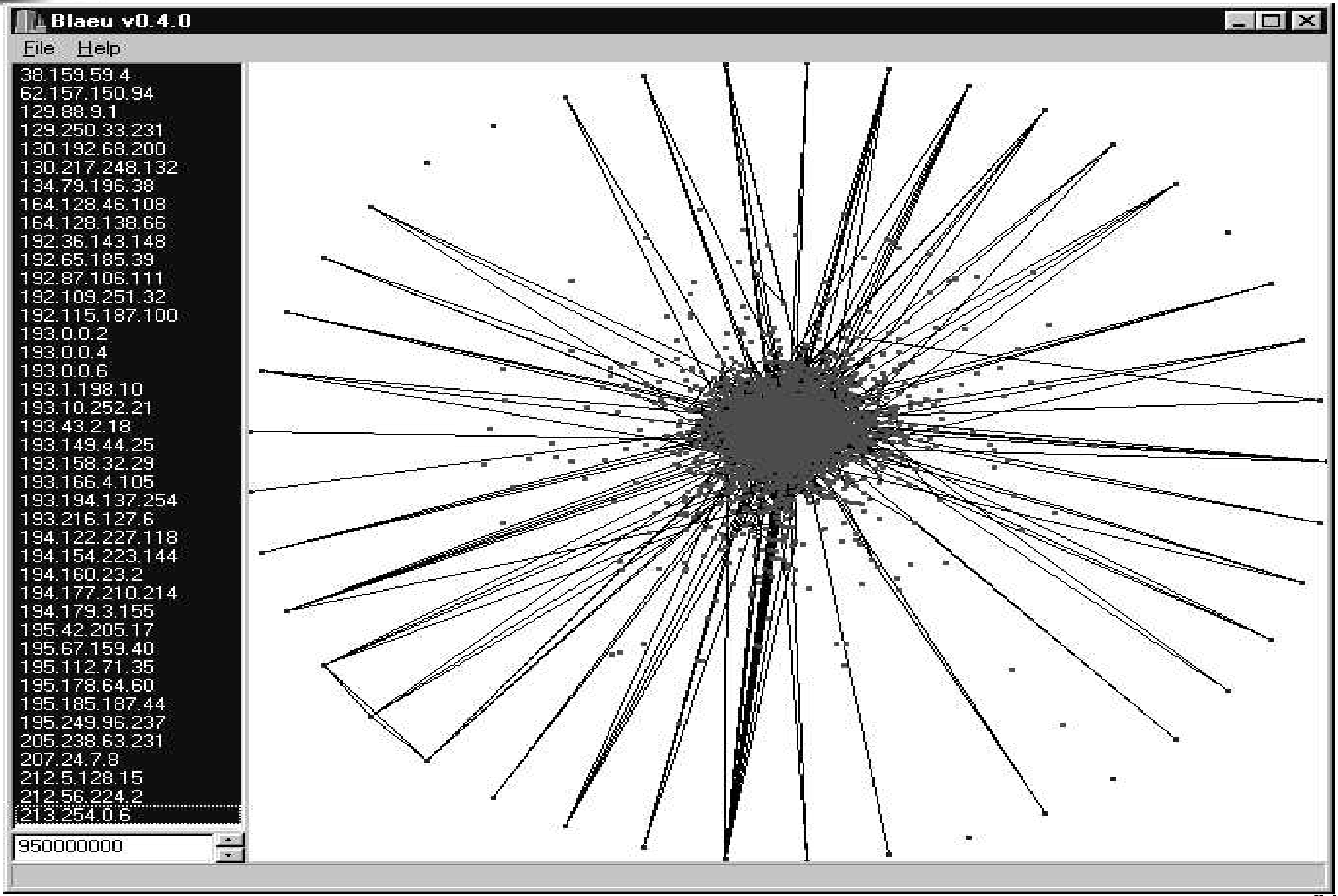
Topology maps

- Algorithm:
  - Take the vectors at a given time (and for a given set of boxes)
  - Remove all IP-addresses that occur only once
  - Replace the line elements by 2 vertices and spring between them
  - Draw the test-boxes on a circle
  - Randomly draw the “springs”
  - Minimize the energy
- Produces reasonable maps
  - Fine tuning in progress

Topology maps/Fake example



The current network



Topology maps

- We have been promised the source of tool once it is ready
  - Will be made available to TB hosts

- Plans to apply graph theory to the map and study its properties

Future topics

- Trends in the data
  – Johann Gutauer’s thesis
  – Ready to be turned into production code
- Summary pages
- Performance scores
- Delay variations
  – ID to last call
  – Running code from U.Twente
- Throughput and bandwidth
- ...

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Conclusions

- Getting ready to roll out the next series of test-boxes
- Finalizing the service contract
- Analysis

Questions, Discussion