Test Traffic Measurements
Status and Plans

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RIPE NCC New Projects Group
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Topics

- General
- TB installation
- Data analysis and new features
- IETF developments
- Plans

Staff Change

- Maximo Alves left the NCC

Invoices

- billing@ripe.net: Finance department
  - Invoices
  - Do not send billing queries to other addresses
    - tt-ops@ripe.net, ttm@ripe.net, henk@ripe.net
- EU-sites
  - If we do not have your VAT number of file, we have to charge VAT **even if you are VAT exempt**
  - For a VAT-free invoice, send us your VAT number

Topics

- General
- TB installation
  - Documents
  - Service setup
  - TB installation
- Data analysis and new features
- IETF developments
- Plans

TB installation documents

- Document RIPE 214 replaced by RIPE 297
  - Conditions of sale
  - Handful of small changes in the text
  - New TB's only
- Document RIPE 180 replaced by RIPE 300
  - Data disclosure policy
  - Sent to the list for comments
  - Did not receive any comments
  - Published 23 January 2004

Main changes in RIPE298

- Lightweight AUP:
  - Data can be used for any study
  - Avoids abuse of data
  - Peer review before publication
    - TT-WG meeting or list
    - Comments to be discussed with the authors
    - Next iteration if necessary
  - NCC to control distribution of the data
  - Papers should include reference to source of data
  - Papers will appear on NCC web site

Access restrictions to website

- Access restrictions to www.ripe.net/ttm will be removed
- Changes to be made:
  - Show AUP the first time on access the page
  - Pointers to AUP on website
  - Data on ftp
  - Passwords to be removed
- “Soon” after RIPE meeting

- No access for outsiders to website on local box

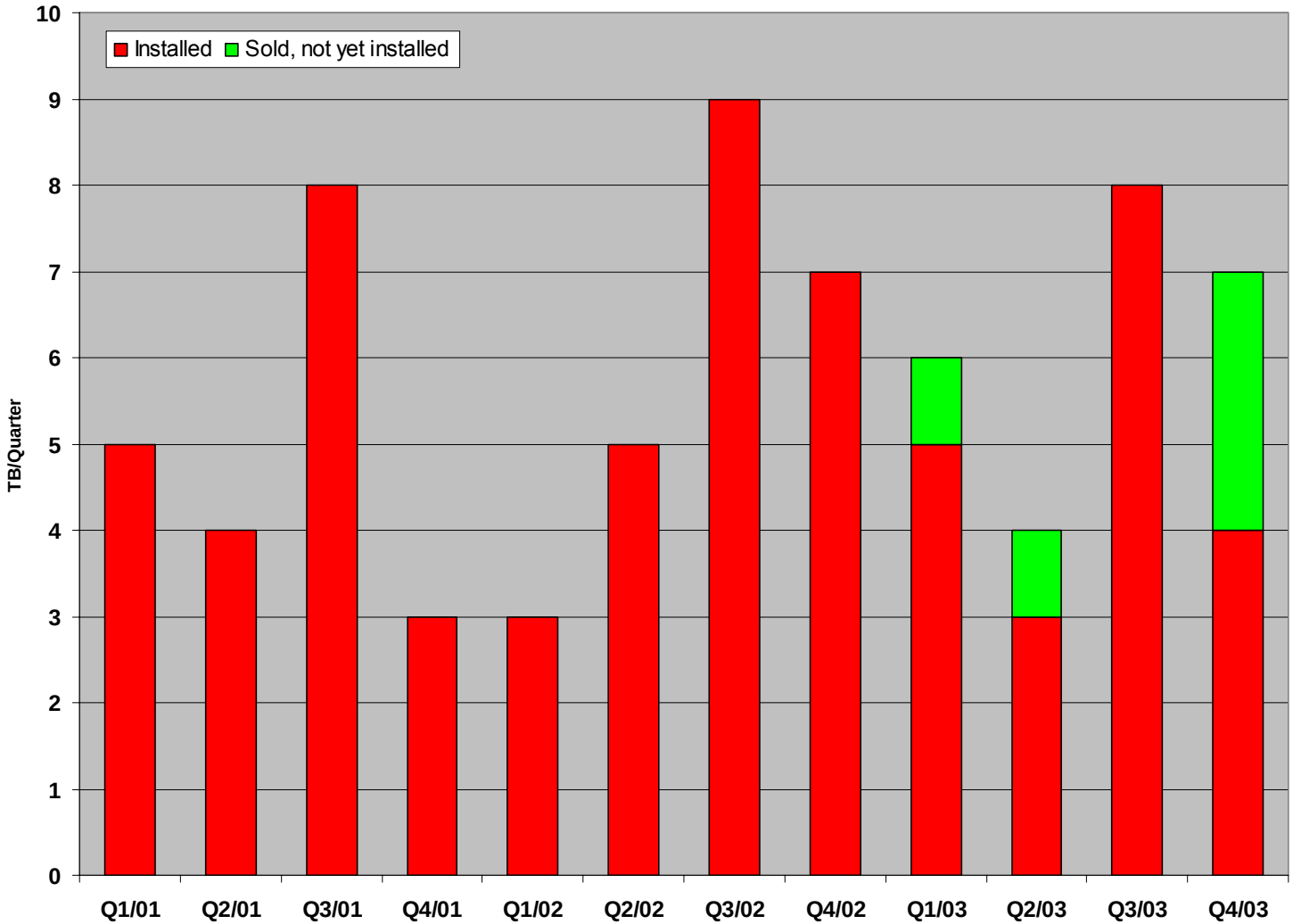
Annual Service Fee

- ~~2003: € 3000.- 1st box~~
- ~~€ 1500.- 2nd to 9th box~~

- 2004: € 1000.- 1st box
- € 500.- 2nd to 9th box

- Hardware:
  - Prices have dropped
  - Next batch of TB will be ≈5% cheaper

Number of new test-boxes



Kernel upgrades

- Kernel upgrade for boxes with series C/D software
- Dropped support for the so-called series C/D software
- Almost all sites upgraded
  - 5 left
  - Please respond to email

Topics

- General
- TB installation
- Data analysis and new features
  - IP to AS mapping
  - Tunnel detection
  - Support for Multiple NIC's
  - Bandwidth
  - DNSMON
  - Altitude in output files
  - NTP and v6
- IETF developments
- Plans

IP address to Origin Mapping

http://www.ripe.net/ris/riswhois.html

- Study presented at RIPE46 by René
- Compared IRR and RIS
- Started to use the RIS for TTM data on November 10, 2003

- Requests from the community to make this tool available to the general public
  - Whois protocol
  - Output format RPSL
  - Easy to use in existing tools
  - IPv4 and IPv6

RIS Whois example

```
$ whois -h riswhois.ripe.net 193.0.1.49

% This is RIPE NCC's Routing Information Service
% whois gateway to collected BGP Routing Tables
% IPv4 or IPv6 address to origin prefix match
%
% For more information visit
   http://www.ripe.net/ris/riswhois.html

route:          193.0.0.0/21
origin:         AS3333
descr:          RIPE-NCC-AS RIPE NCC
source:
   rrc00,rrc01,rrc02,rrc03,rrc04,rrc05,rrc06,rrc07,
   rrc08
```

Plans

- Announced December 5, 2003
- Some comments by mail
- Add those features
- Done

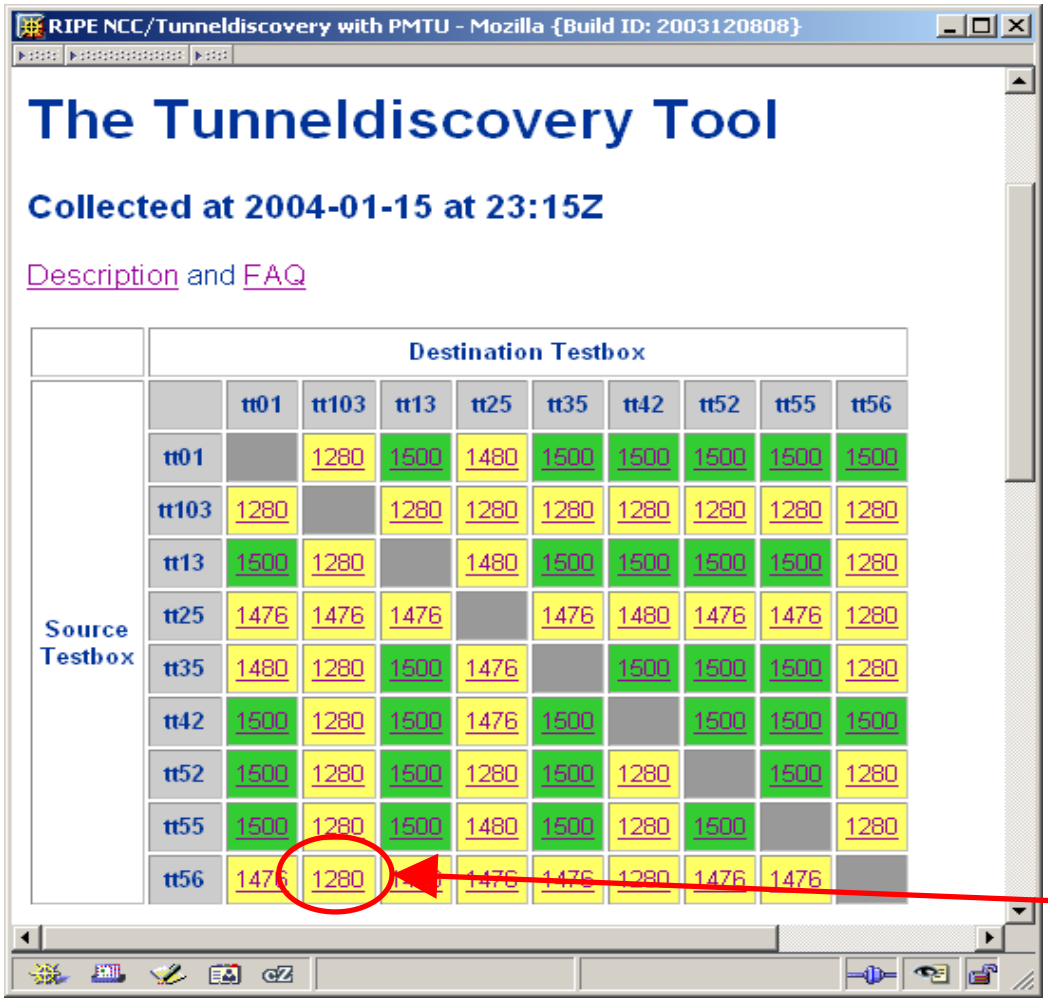
- This tool can be used for any application where one wants to map IP's to AS#'s

IPv6 Tunnel Detection

- IPv6 traffic is frequently tunneled over IPv4 paths
  - Pack IPv6 packet in an IPv4 packet
  - MTU for those paths will be smaller
- Measuring the MTU shows the (first) tunnel
- Details in Lorenzo Colitti's talk

- Wrapper to run this tool on the TB's
  - http://www.ripe.net/ttm/Plots/IPv6

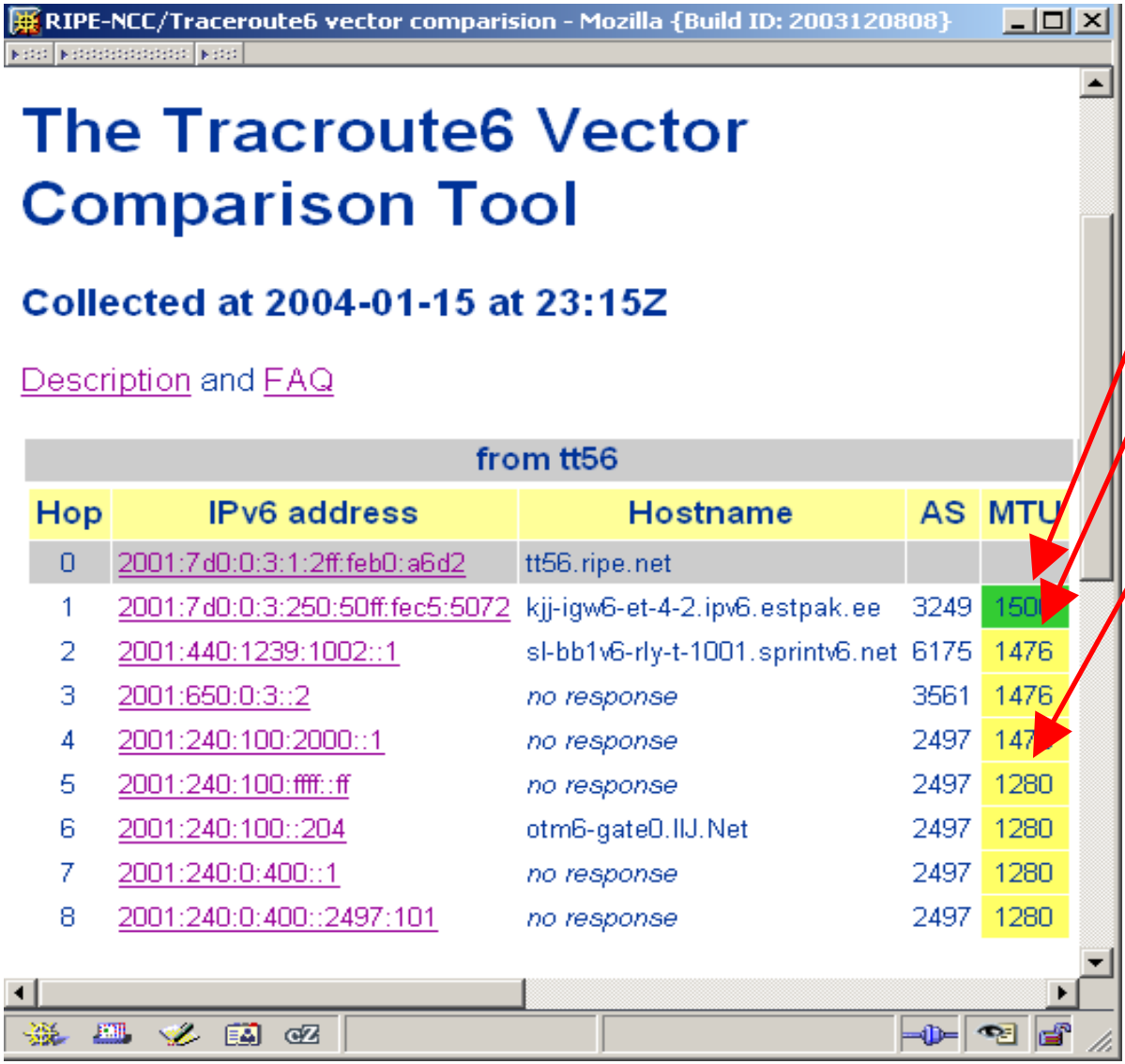
Tunnel discovery tool



- Native
- Tunnel
- No data

- Buttons to select specific TB's or time
- Link to traceroute

Tunnel Discovery Tool



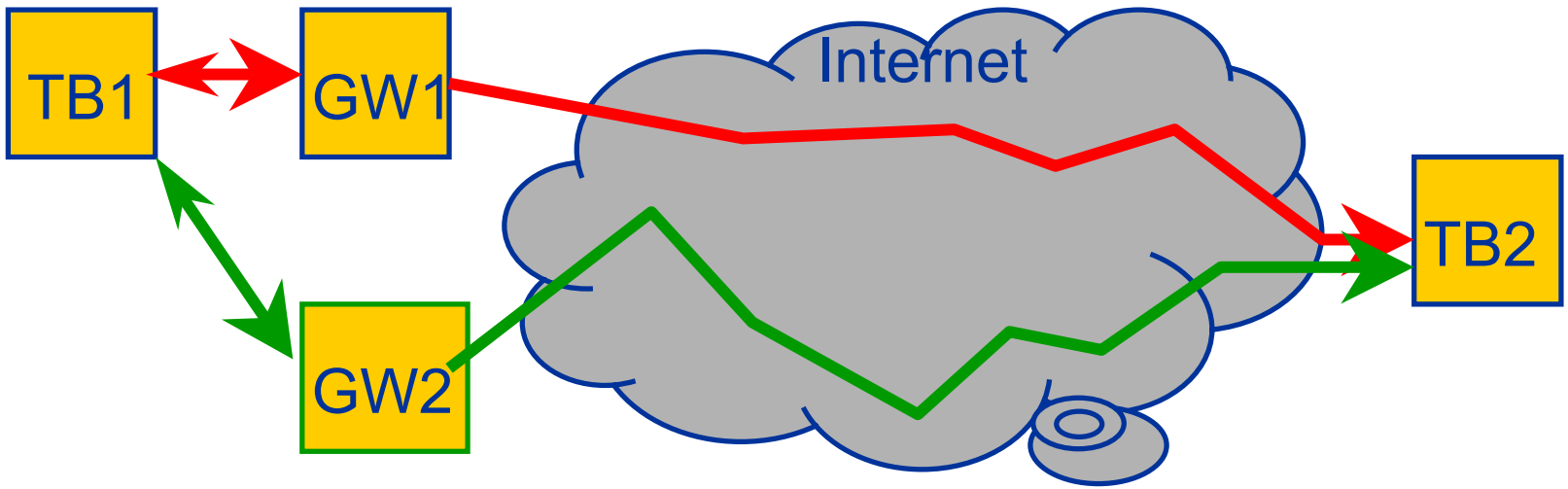
- Traceroute
- Native
- Start of first tunnel
- Start of second tunnel

Support for Multiple NIC's

- Request from various users
- Applications requiring a second NIC in a TB
  - 2 upstreams
  - Local/Global Network
  - IX
- Support for a second NIC has been added
  - "Virtual" second TB
  - Data split for presentation
- Has to be configured by tt-ops

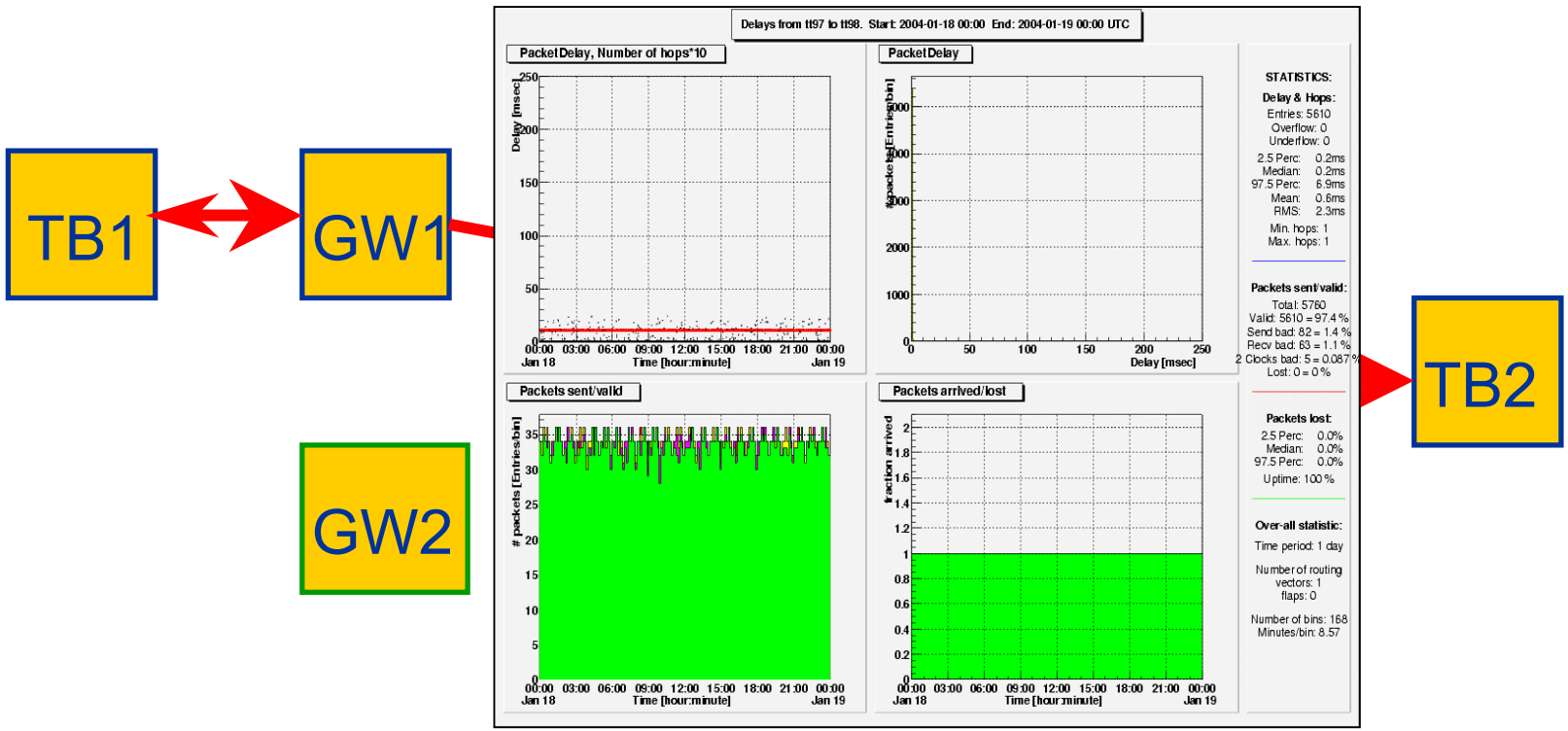
Example

- Two test boxes
  - Regular path, upstream A
  - Backup path, upstream B



Example

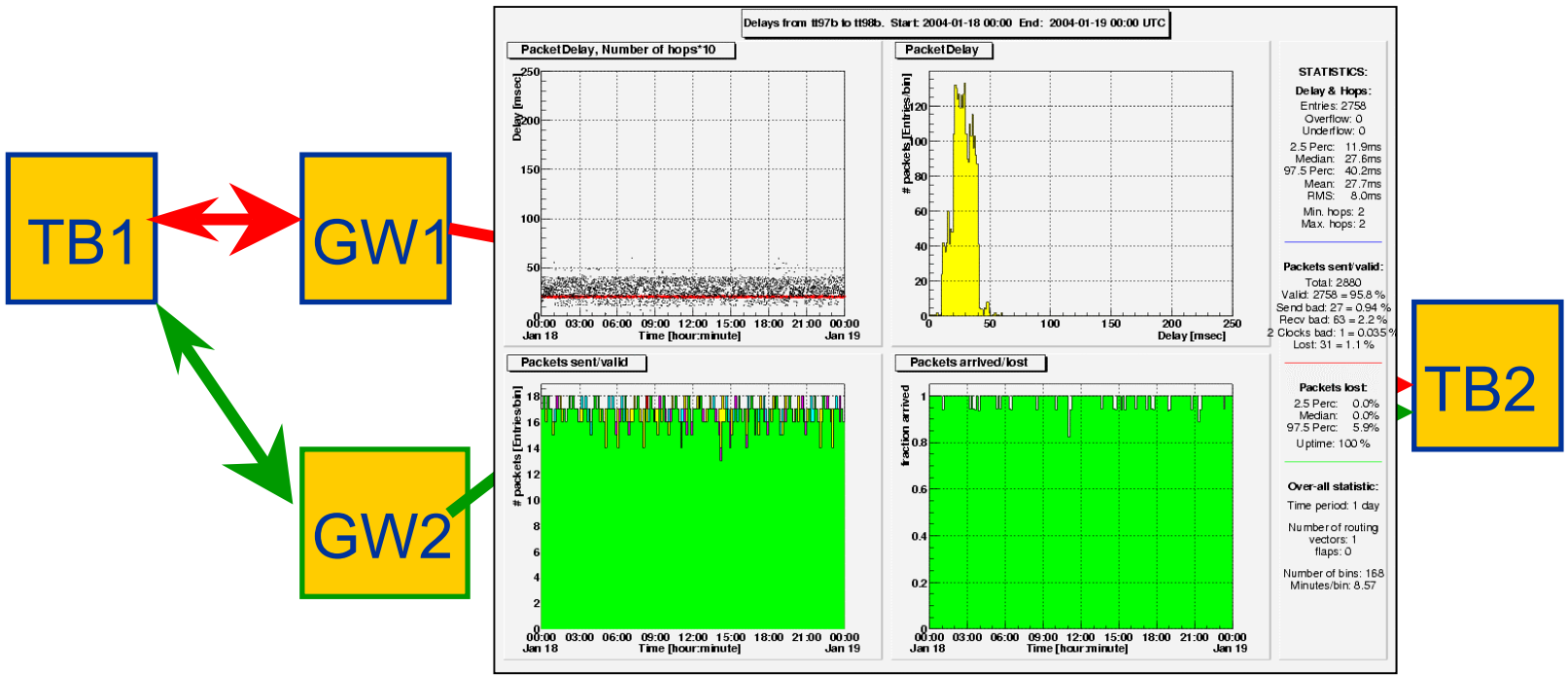
- Standard measurement



- But what about the backup path?

Example

- Configure second NIC, measure in parallel



- This path doesn't behave as it should!

Bandwidth, developments

- Activities:
  - Mark's thesis published
  - Attended CAIDA Workshop on bandwidth estimation

    http://www.caida.org/outreach/isma/0312/index.xml
- Tools have improved significantly last year
  - Accuracy now ± 10% on faster hardware
  - Time to do a measurement has been reduced
  - Code more stable

Bandwidth, next steps

- Plan:
  - Back to our original plan
  - Install on some machines
  - Measure Bandwidth
  - Need your feedback to calibrate results

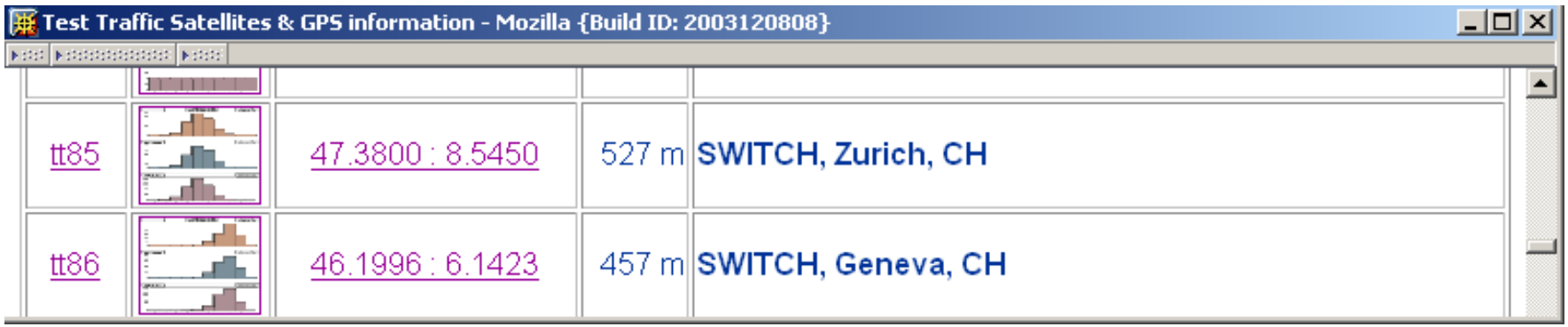
- This is still research, not production quality

DNSMON

- Moving towards regular production:
  - Tests with a large number of servers:
    - a-m.root,
    - .at, .ch, .de, .li, .nl, .no, .se, .uk
    - .com, .net, .org
  - Documentation added
  - Released as β-service
- To be done:
  - Last details
  - Work out SLA's and have them signed
  - Set start date for charging

Altitude of test boxes

- Added to list of coordinates
- Accurate altitude measurement was never a requirement in GPS design
  - "Doesn't really matter when you drop a bomb"
  - Accuracy limited to O(10) m
- Altitude is altitude of the antenna, not the box



- And yes, the boxes at Switch are the highest in the world

NTP and v6

- Installed a v6 aware NTP daemon
- Boxes can now act as an v6-NTP server

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OWAMP

One Way Active Measurements Protocol

- TTM (and others) follow IETF standards for active measurements
- So-far, IETF only specified the metrics, not the packet formats and control protocols
- OWAMP specifies a common format
- Advantages:
  - Boxes from different vendors will become interoperable
  - Number of possible measurements doubles or triples

- Non-trivial amount of work to change to OWAMP
- Is there interest in this?

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Plans

- Ongoing studies:
  - Summary numbers (Roberto Percacci proposal)
  - IPv4 vs IPv6 performance comparison
  - Bandwidth
  - CVS server with all TTM software
- Finish
  - DNSMON
  - Riswhois
  - Tunnel tool
  - Implement AUP changes on website
- IS, presenting the data to a wider audience
- Should we pick up OWAMP?

Conclusions

- Service model:
  - New AUP
  - Cheaper
- Several new features
- OWAMP?

Questions, Discussion