Test-Traffic Project: Status and Plans

Henk Uijterwaal, René Wilhelm,
Fotis Georgatos, Johann Gutauer

RIPE-34, Amsterdam, September 1999

Overview

- Manpower
- Test-box installation
- Test-Traffic in 2000
- Analysis and New services
- Summary

Manpower

- Johann Gutauer joined on August 6
  - Austrian student, at the NCC for 7 months
  - Working on data-analysis, in particular trends in the data

Overview

- Manpower
- Test-box installation
  - Status
  - DNS issues
  - Future series of boxes
- Test-Traffic in 2000
- Analysis and New services
- Summary

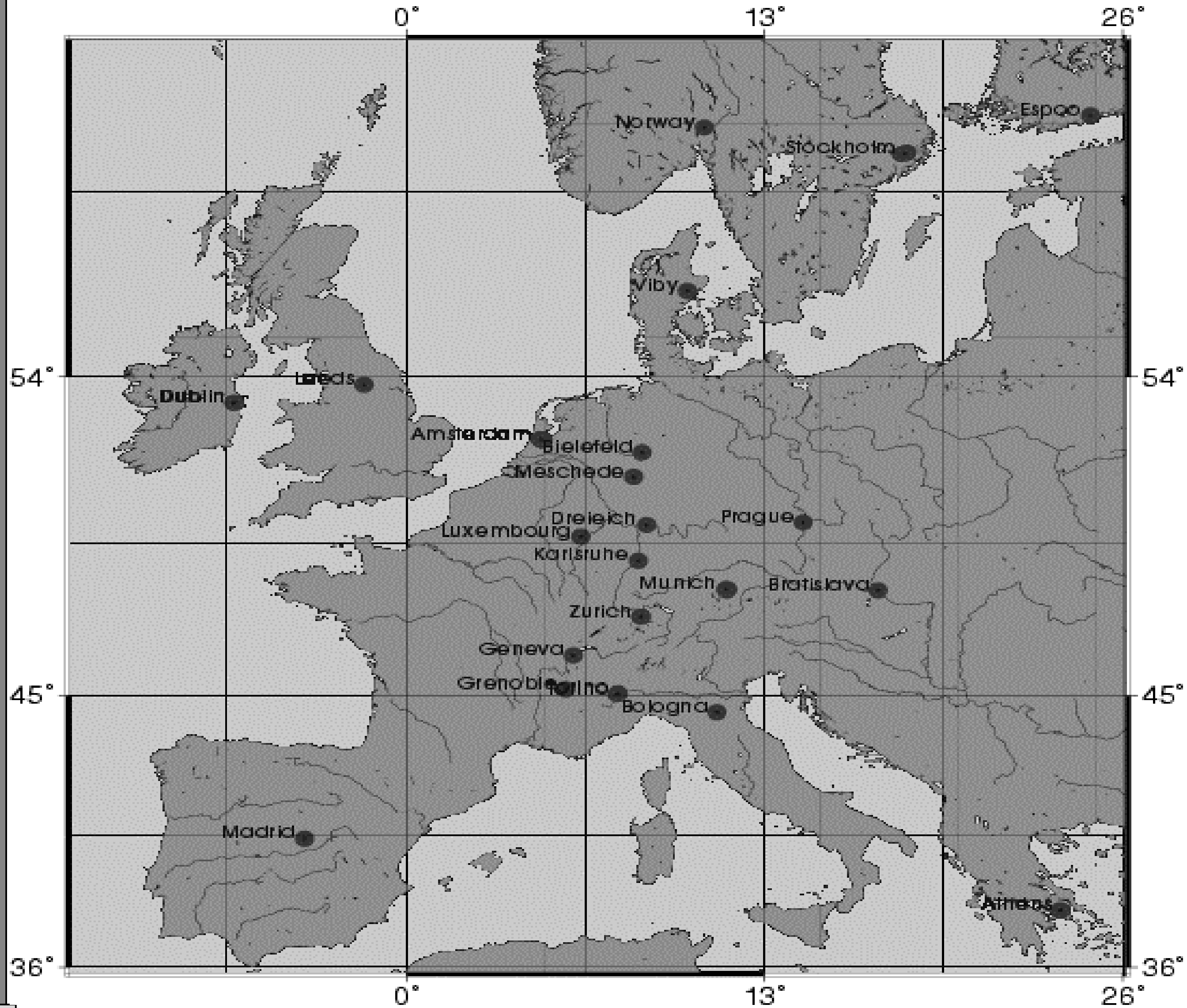
Test-box installation

Date	30-Sep	31-Jan	1-May	16-Sep
Spare	3	0	1	1
To be configured	0	3	4	0
At Remote Site	6	2	17	1
Installation/Problems	3	3	4	10
Operational	12	15	17	31
No Longer Participating	0	1	0	0
Lost/Broken	0	0	1	0
Total	24	24	44	43
New Applications			10...20	15...30

Where are the boxes located?

- Map of the active test-boxes
- Situation on September 16
- GMT-tools

Where are the boxes located?



- Sometimes >1 TB in a city
- TB-names to be added.

DNS problems (1)

- Current situation:
  - Host introduces an A-record in the DNS
  - RIPE-NCC introduces a CNAME-record
    - ttXY.ripe.net
- Advantage:
  - Hosts can follow their own naming schemes
  - We thought it was easier to change the configuration

DNS problems (2)

- Last 6 months:
  - DNS configuration errors
  - Boxes were accidentally removed
- Some TB hosts want LOC records
  - We have the data, but no easy way to insert it
- Configuration changes require work from both sides anyway

DNS solution

- We’ll insert
  - An A-record with the ttXY.ripe.net name
  - A LOC record once the TB is active
- The host
  - Can keep any existing entries OR
  - Can add CNAME’s
- Objections?

Future series of test-boxes

- Vienna/May'99
  - Installing a computer is never a problem
  - Installing the clock is often a problem
  - Solutions
    - #1: Low loss coax cable:
      - Still problematic
    - #2: Clock in separate box with line drivers
      - Existing cat-5 cable
      - Cheap, >200m

Future series of boxes (2)

- Implementation
  - Motorola unit
    - Exactly what we wanted, but
    - Motorola stopped production
  - Home built unit
    - Put existing interface board plus GPS engine and line-drivers in a box, but
    - Motorola will stop production of the VP-Oncore soon
    - Last orders October 15.
    - Spares ordered

Future series of boxes (3)

- Motorola has a replacement unit for the VP-Oncore unit
  - Not pin-compatible
  - There is interest in the user community to redesign the interface board
- There are 1 or 2 other candidate GPS units
  - Also require changes in the interface
- Following developments, we don't want to make a decision right now

Overview

- Manpower
- Test-box installation
- Test-Traffic in 2000
- Analysis and New services
- Summary

AP2000: Test-Traffic moves to "Membership Services"

- So far, Test-Traffic was a new (and experimental) project
- Experience shows that we can do Test-Traffic Measurements on a large scale
- Test-Traffic will become a "Membership service" in 2000
  - Plenary: philosophy behind the AP2000
  - Here: changes for (future) TB-hosts

AP2000: Test-Traffic moves to "Membership Services" (2)

- TT becomes a service that one can buy from the NCC
  - Buy as many boxes as you like once (and we can produce and support)
  - Become a member and pay a yearly fee for operating them
- Boxes can also be bought for "private" experiments
  - Basic installation support only

Test-box operation under Membership Services

- Essentially the same as today:
  - “Black” box
  - Measures the network between the host-site and the other test-boxes
  - Host gets access to the data and daily plots
  - Host gets access to all new products based on the TT-data

Things that won’t change

- The people
- Support for the existing boxes
  - We will continue to operate the already installed boxes for free in 2000
- Development of the project will continue
  - Covered in the general budget, independent of the number of boxes sold

Implementation Schedule

- The AP2000 has to be approved by the AGM (October 19)
- The charging scheme has to be worked out
- There is a lot of politics involved here, plans have to be discussed with the outgoing GM and new MD
- More on this in January

Overview

- Manpower
- Test-box installation
- Test Traffic in 2000
- Analysis and New services
  - DQM
  - Analysis framework/data for the TB-hosts
  - Daily plots
  - Delay and loss alarm
  - Future work
- Summary

Data Quality Monitoring

- Has been on our list for a long time
  - Find problems with the test-boxes
  - No manpower to do this in a structured way
- Started with regular checks of
  - Antenna conditions and daily plots
  - Already found (and solved) a few problems
- Will automate and expand DQM as we go along

Analysis framework

- Discussed in Vienna
- Hardware sufficient to keep 1 year of data online
- Data in ROOT: easier, more flexible analysis environment
- Running without (major) problems for several months
- Developed tools to extract subsets of the data for TB-hosts

Data for the test-box hosts

- Install ROOT: http://root.cern.ch

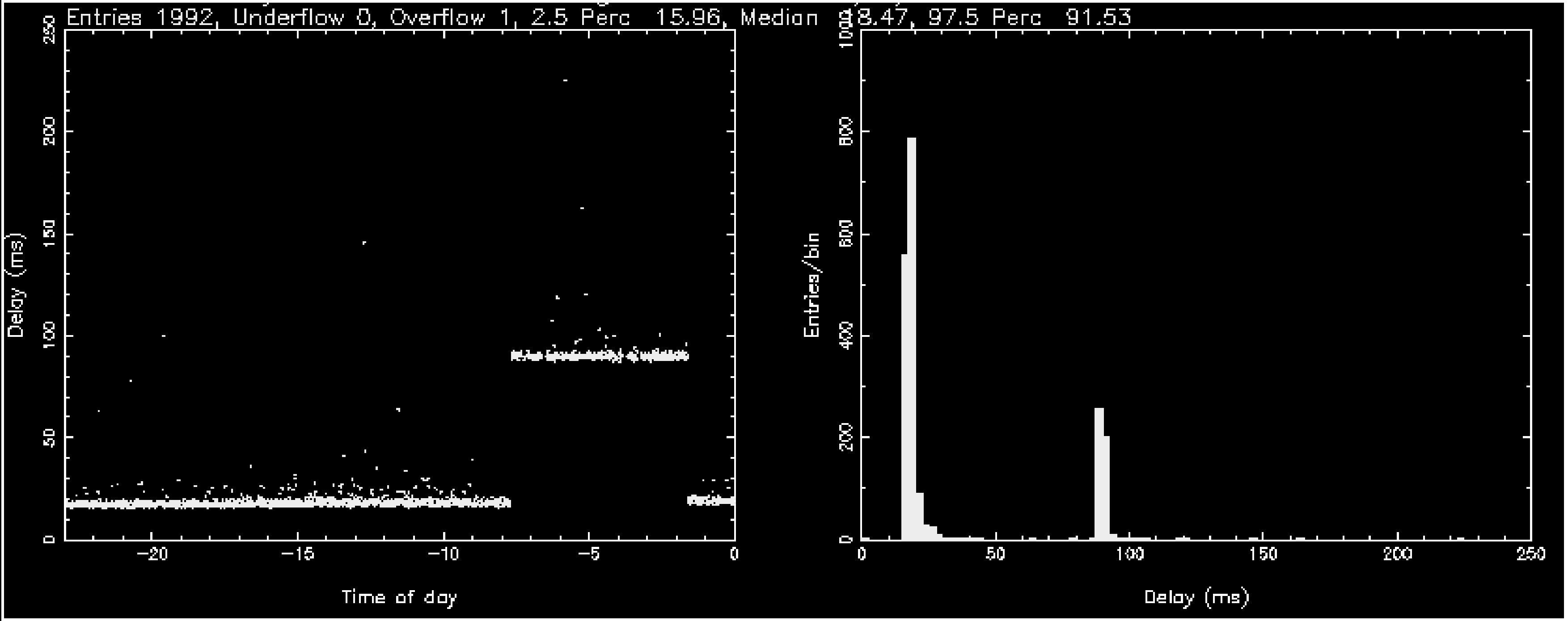
- Email us with TB-name and dates
- We'll put the root files on a ftp-server
- Root libraries needed to read the files are available

- Might be further automated at a later stage

Daily plots

- Popular product
- Hosts asked if they could show daily plots to their customers for SLA?
  - No, password just for the test-box hosts
  - Yes, always
  - In between: Install 2 passwords
    - All plots: TB-hosts only
    - Plots from/to a test-box: customers from this host only
- Consensus seems to be the third option?

Delay Alarm/New Service



- Typical example
- Something changed at 16.00 and 22.00
- Inform test-box hosts

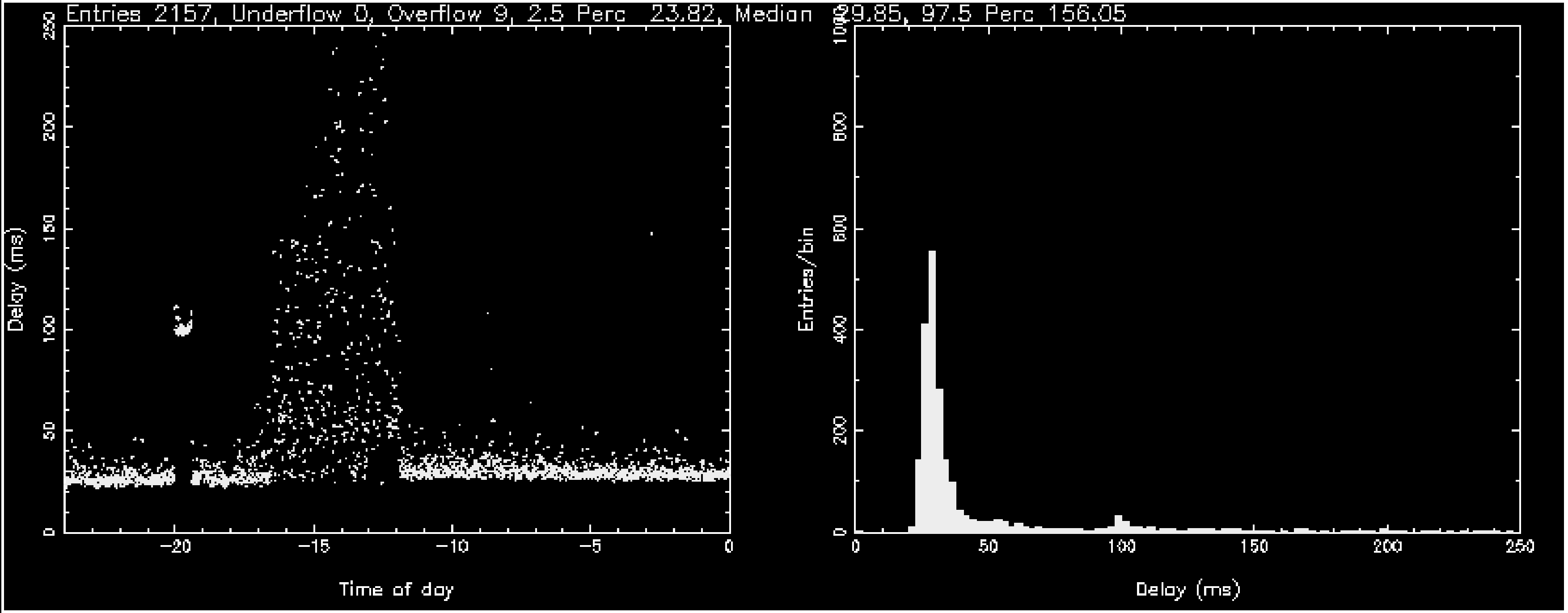
Delay alarm

- Long-Term-Average, Short-Term-Average ("LTA-STA") algorithm
  - Calculate mean and percentile delays both for a long and short term interval
  - Compare
  - Set alarm if the 5th-percentile of the STA is above the 95th-percentile of the LTA
    - "95% of the delays outside the expected range"
- Lots of parameters
  - Prototype to tune the algorithm

Tuning the algorithm BCP/No real arguments

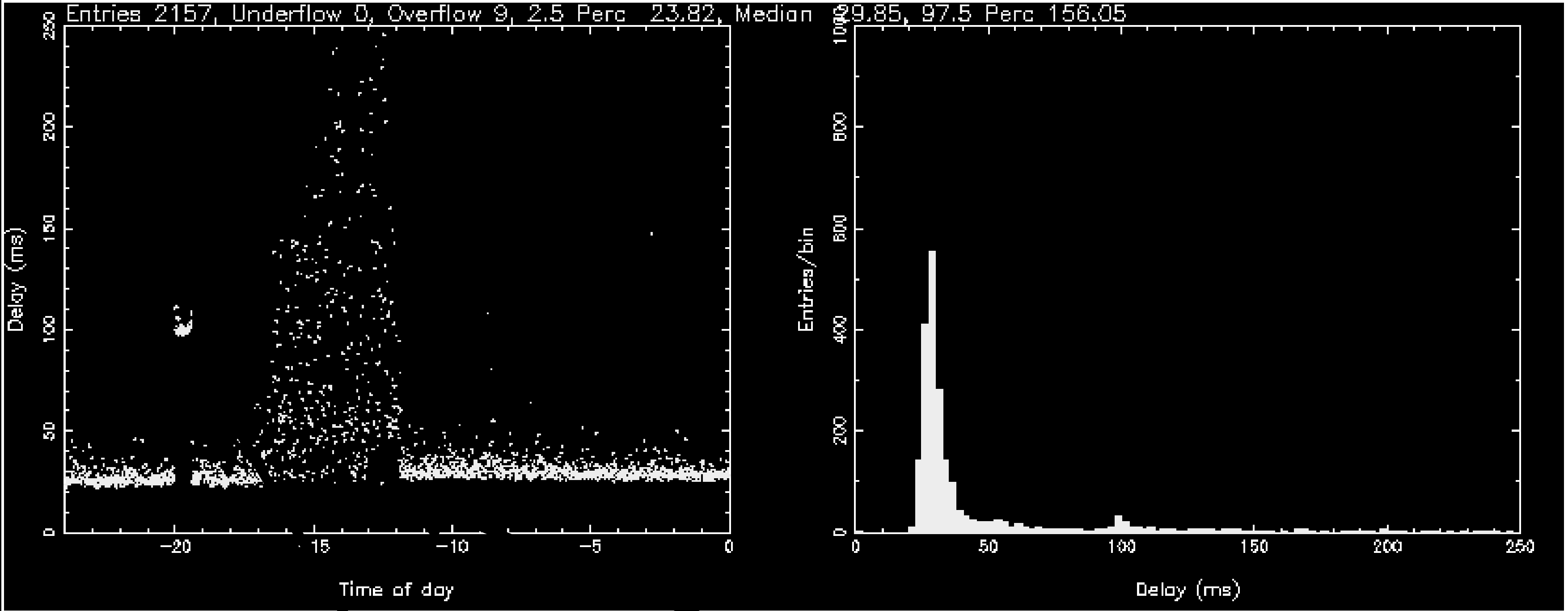
- 4 intervals/day, excludes day/night effects
- 30 days of history for LTA
- 30 minutes of history for STA
  - Shorter: too many false alarms, Longer: miss events
- Run programs every 15 minutes
  - 15…30 minutes response time
- Alarm if 5% of the STA is above the LTA
- Maintain state to reduce number of messages

Delay Alarm/Example



- What triggered the alarm?

Delay Alarm/Real Alarm



Day/Night effect, no alarm

Alarm

Delay Alarm/Example email

Date: Fri, 10 Sep 1999 15:26:19 GMT
From: ttraffic@ripe.net
To: henk@ripe.net
Subject: Testbox ALARM SET

Or RESET

The testbox alarm program on geuzenveld.ripe.net found:

TB 18 at 936977178 ALARM SET   old: No Alarm, new: Alarm
TB 18 at 936977178 Long: 429   1.0/ 6.5/ 16.0 Short: 43 37.0/ 41.5/44.0

This message has been sent to: tt18 geuzenveld

For an explanation of this email please see http://www.ripe.net/test-traffic

1 message to all affected hosts

Schedule for installing the delay alarm

- Final version running fine on 1 TB for weeks
  - Typically 5 alarm messages/day
  - Most of them real
- A few details still have to be sorted out
  - Check code
  - Documentation
  - Check the number of alarm messages for a large number of connections
  - ...

Schedule for installing the delay alarm

- Install on all test-boxes
- Fine-tune parameters

- Needs your feedback once installed
  - You know when something changed in your networks. Did you get an alarm?

- Time-scale: weeks

How about a loss alarm?

- Useful as well
- Problem: Data cannot arrive for 2 reasons:
  - No data sent
  - Connection lost
- Needs further thought

Future work

- Long term trends
  - Look for long term effects in the delays
  - Planning tool
- “Quality of the network” overview page
  - Data for a first iteration is there
  - Needs a bit of work in order to present it
  - After the delay alarm
  - Will need your input after version 1 has been released

Future work (2)

- Effects of packet size on delay
- N2 problem
- Continuation of comparison of results from several groups
- Topics brought up in IPPM-WG

- Your suggestions
- ...

Summary

- We doubled the size of the measurement network
- Test Traffic will become a membership services in 2000
- New services being developed
- Several new analysis topics on our list

Questions?

http://www.ripe.net