



AMS-IX Performance Measurements

Geert Nijpels

AMS-IX

- layer-2 Internet exchange
- 4 locations (soon 5)
 - WCW NIKHEF
 - WCW SARA
 - GlobalSwitch
 - Telecity 2

RIPE TTM

- metrics:
 - Packet loss
 - One way delay
 - Jitter
- trend analysis

AMS-IX quality statement

- AMS-IX publishes a quality statement
- Statement on the exchange
 - service delivery
 - network & service availability
 - service quality
- Need benchmark for this statement
 - RIPE TTM independent, trusted

Ripe TTM @ AMS-IX

- 4 boxes connected to local switches at each AMS-IX location
- Values are used for:
 - measuring compliance with the AMS-IX quality statement
 - notice and debug problems in the AMS-IX network

Ripe TTM @ AMS-IX

- RL usage:
 - In case of problems
 - After maintenance
 - History of AMS-IX availability
- NTP server

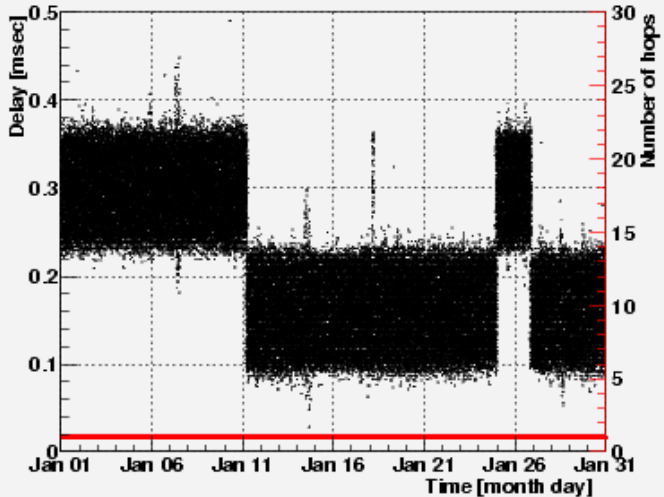
Performance statistics

- AMS-IX monthly report
 - RIPE TTM graphs
- Real-time matrix view
 - Built from the real-time raw datastream derived from each test-box

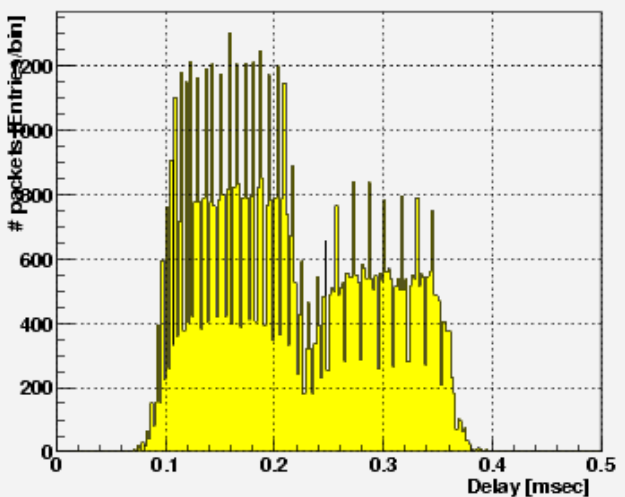
Monthly report

Delays from tt121b to tt122b. Start: 2005-01-01 00:00 End: 2005-01-31 00:00 UTC

PacketDelay / Hopcount



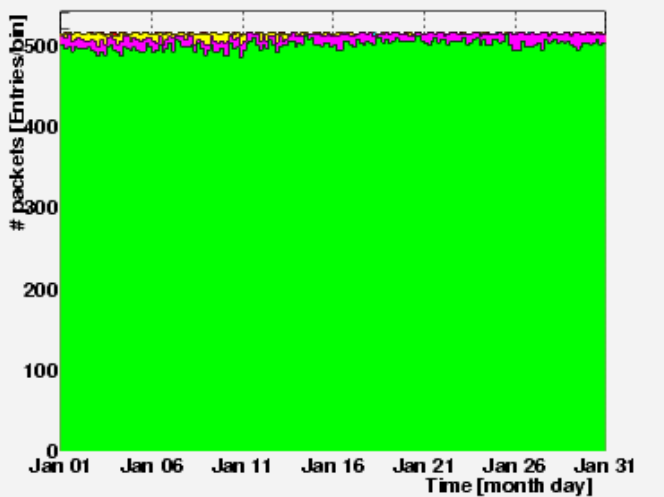
PacketDelay



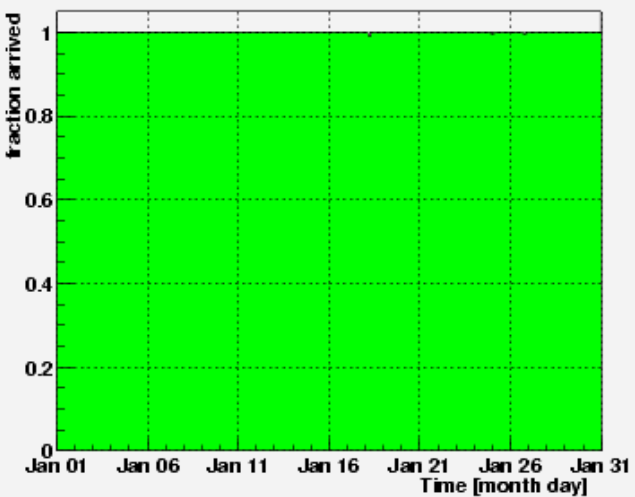
STATISTICS:
Delay & Hops:
 Entries: 83965
 Overflow: 6
 Underflow: 0
 2.5 Perc: 0.1ms
 Median: 0.2ms
 97.5 Perc: 0.4ms
 Mean: 0.2ms
 RMS: 0.1ms
 Min. hops: 1
 Max. hops: 1

Packets sent/valid:
 Total: 86400
 Valid: 83965 = 97.2 %
 Send bad: 1851 = 2.1 %
 Recv bad: 542 = 0.63 %
 2 Clocks bad: 37 = 0.043 %
 Lost: 5 = 0.0058 %

Packets sent/valid



Packets arrived/lost



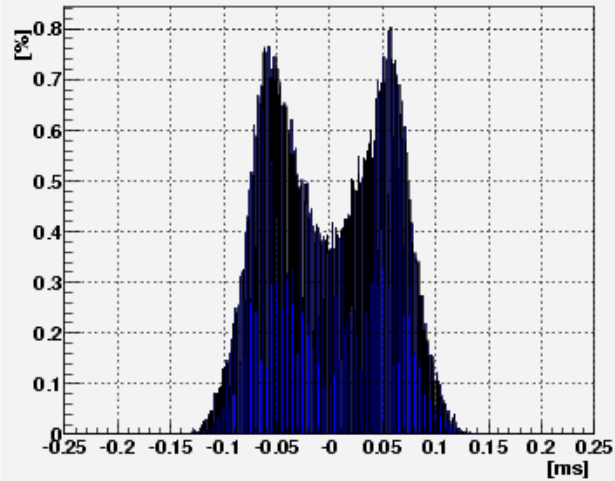
Packets lost:
 2.5 Perc: 0.0%
 Median: 0.0%
 97.5 Perc: 0.0%
 Uptime: 100 %

Over-all statistic:
 Time period: 30 days
 Number of routing vectors: 1
 flaps: 0
 Number of bins: 168
 Minutes/bin: 257

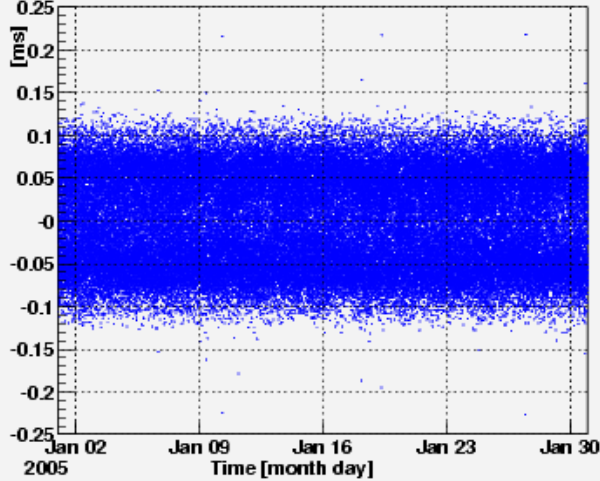
Monthly report; jitter

Delay Variations from tt121b to tt122b Start: 2005-Jan-01, 00:00 End: 2005-Jan-31, 00:00 UTC

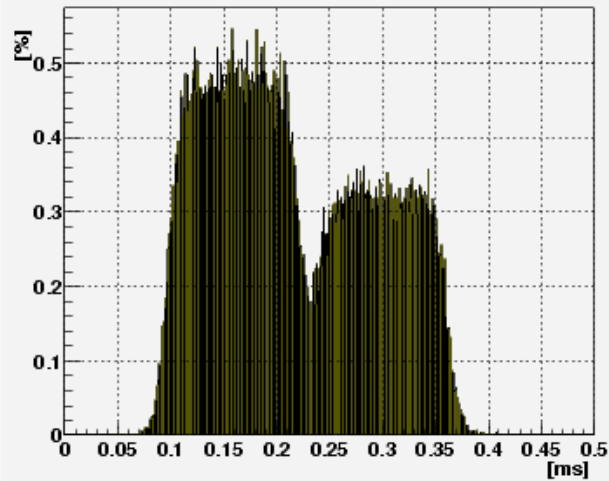
IPDV



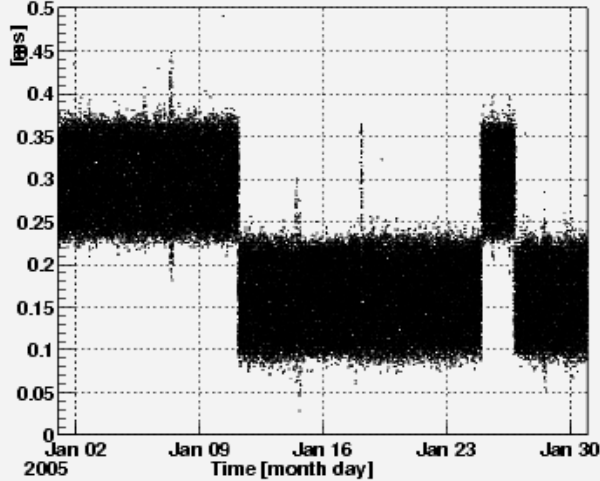
IPDV vs time



PacketDelay



delay (black) and hops*10 (red)



STATISTICS

Packets sent/valid
Total: 86395=100.00%
Valid: 83965=97.19%

Number of Routing
flaps: 0

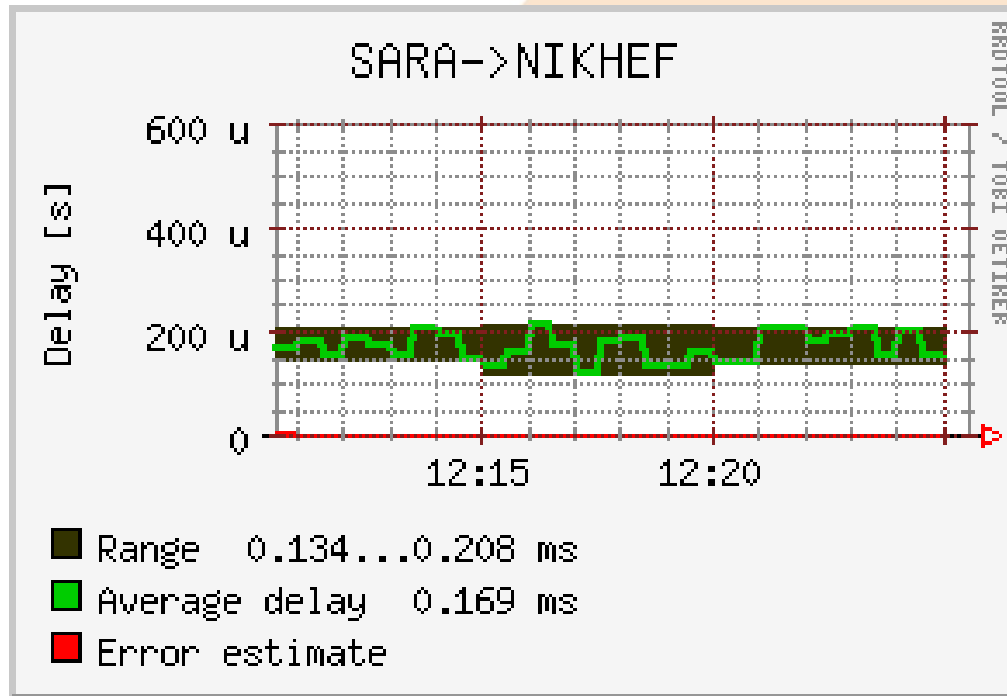
IPDV Percentiles

Mean: 0.00ms
RMS: 0.06ms
50% > -0.1ms
50% < 0.1ms
85.0% > -0.1ms
85.0% < 0.1ms
97.5% > -0.1ms
97.5% < 0.1ms

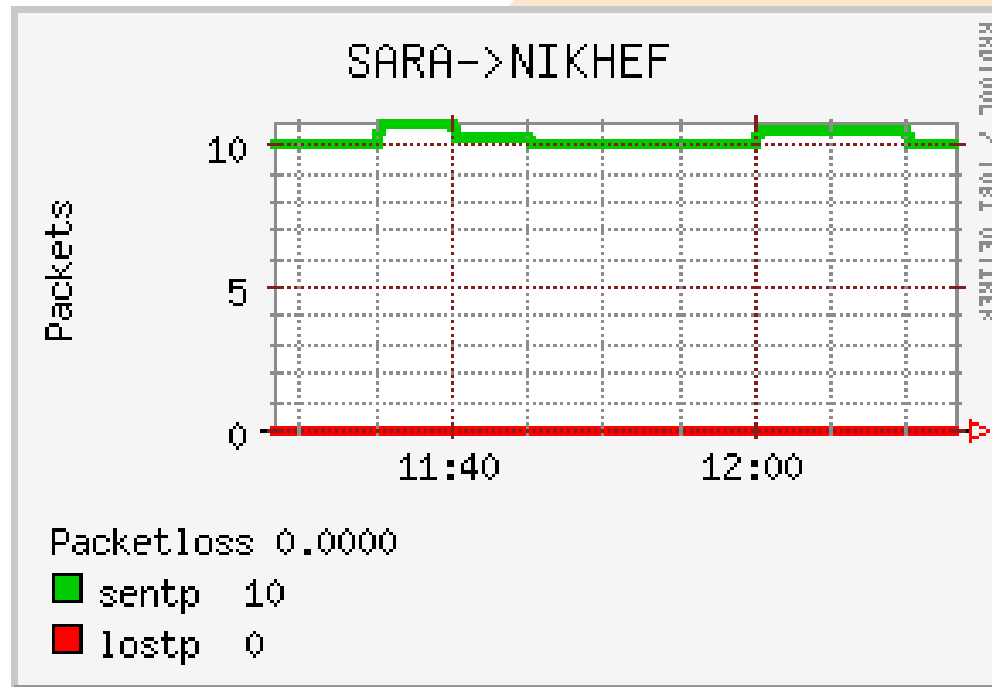
Delay Distribution

Mean: 0.22ms
RMS: 0.08ms

Real-time view; delay



Real-time view; packetloss



Reference

- TTM real-time view:
 - <http://www.ams-ix.net/ttm/stats.php>
- Monthly report:
 - <https://www.ams-ix.net/members/tools/mr/>
- Quality statement
 - https://www.ams-ix.net/technical/quality_statement.html