



DNS Server Monitoring Update

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Why it is Measured

- There are a lot of bad measurements out there!
 - Ping - what does it measure??
 - From single locations ...
- People (press, regulators) use them!
- Better Measurements are Needed
 - From multiple points
 - Real DNS traffic



What is Measured

- Real DNS queries
- Poisson distributed, 60/hour
- From 50+ points around the world
- Response time
- Server instance ID (anycast, load balancing)
- SOA version number
- Server software version



DNS Probe Locations



Daniel Karrenberg

RIPE 45, Barcelona, May 2003

<http://www.ripe.net>



New Features

- Autonomous measurement software.
No central `ssh` triggering any more.
- Query for server instance & software version
- Poisson distributed measurements
- Better data about unanswered queries
 - Which try failed?
- Nicer plots, ... well working on them ;-)



How to Read the Graphs

- Two Views
 - *Probe* view: shows service quality at probe location
 - *Server* view: shows quality of service provided by the server (to all probe locations)
- Two Plots (so far)
 - *Delay*: shows response times (colored for drops)
 - *Drops*: shows percentage of unanswered queries



Graphs

- First 7 days of May
- Just Examples
- No particular points made
- No particular selection



“Legend”

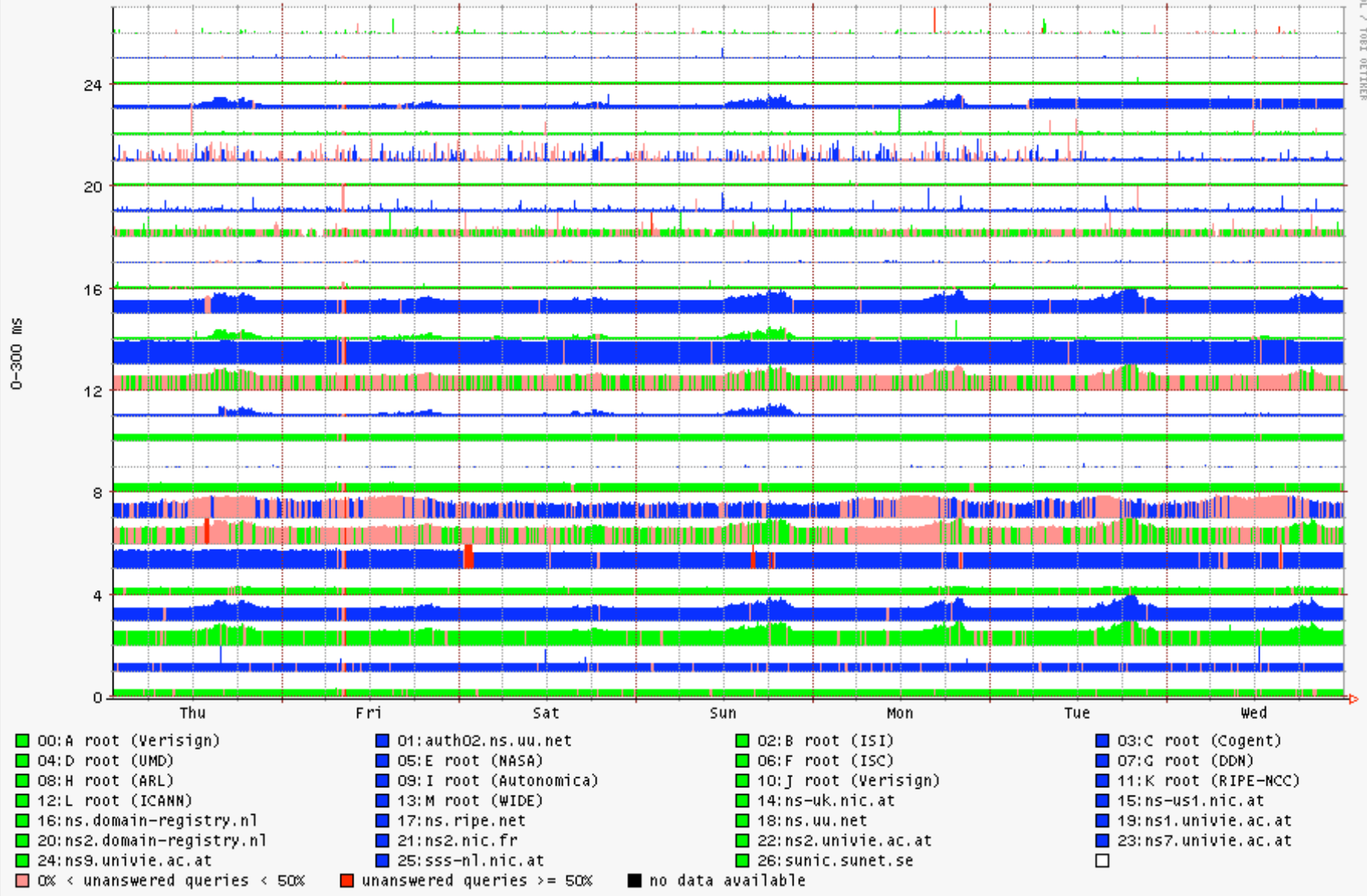
- Black: no data available.
- Red: drop rate $\geq 50\%$
- Rose (in delay plots): $0\% < \text{drop rate} < 50\%$

- More white and less red is better.
Black does not matter.

- Look for vertical patterns
 - Server view: issue close to server (across all probes)
 - Probe view: issue close to probe (across all servers)



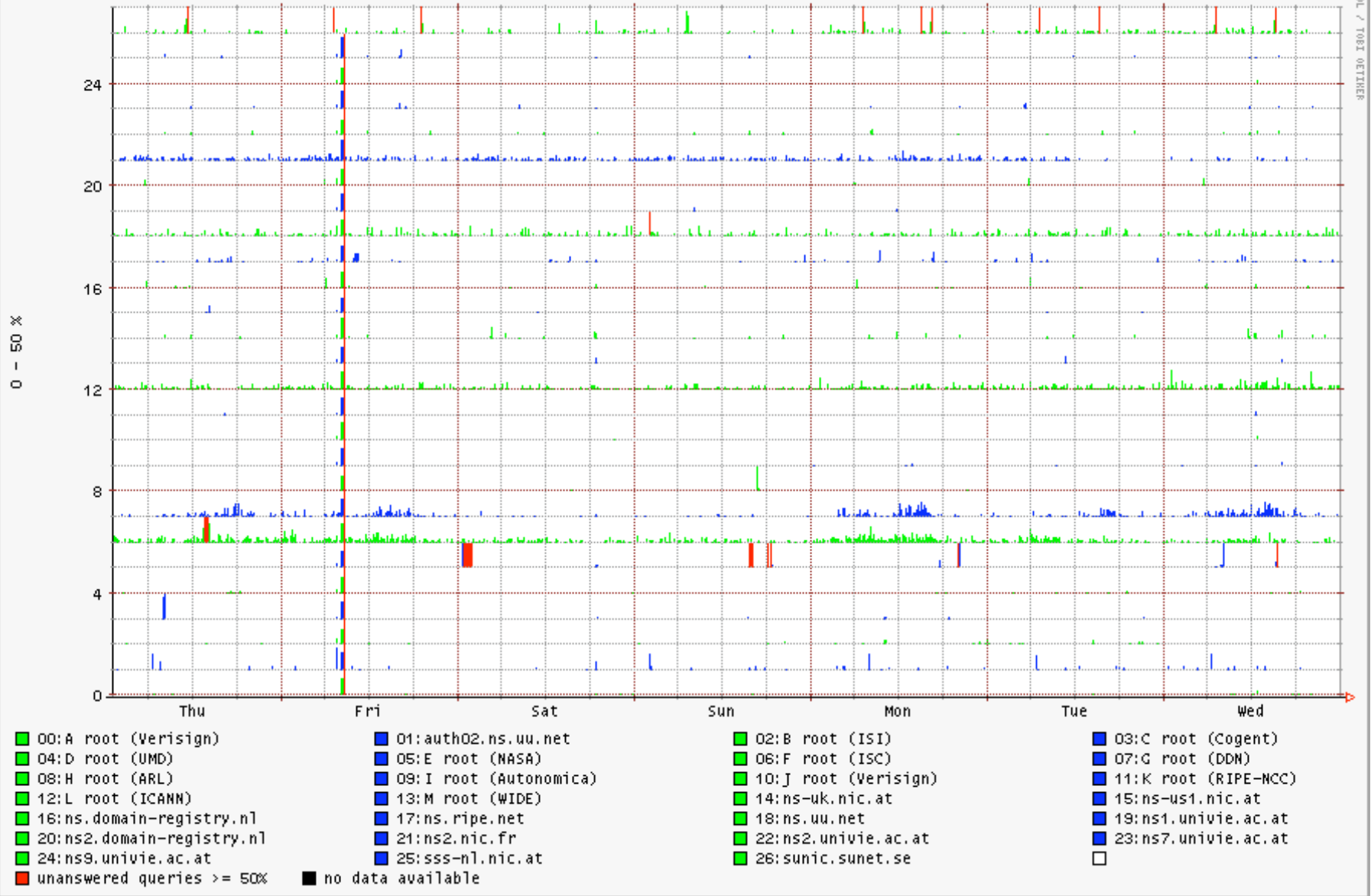
Query Delays (AVERAGE) from tt07.ripe.net (SE) [1.5.03 01:00 - 7.5.03 23:59]

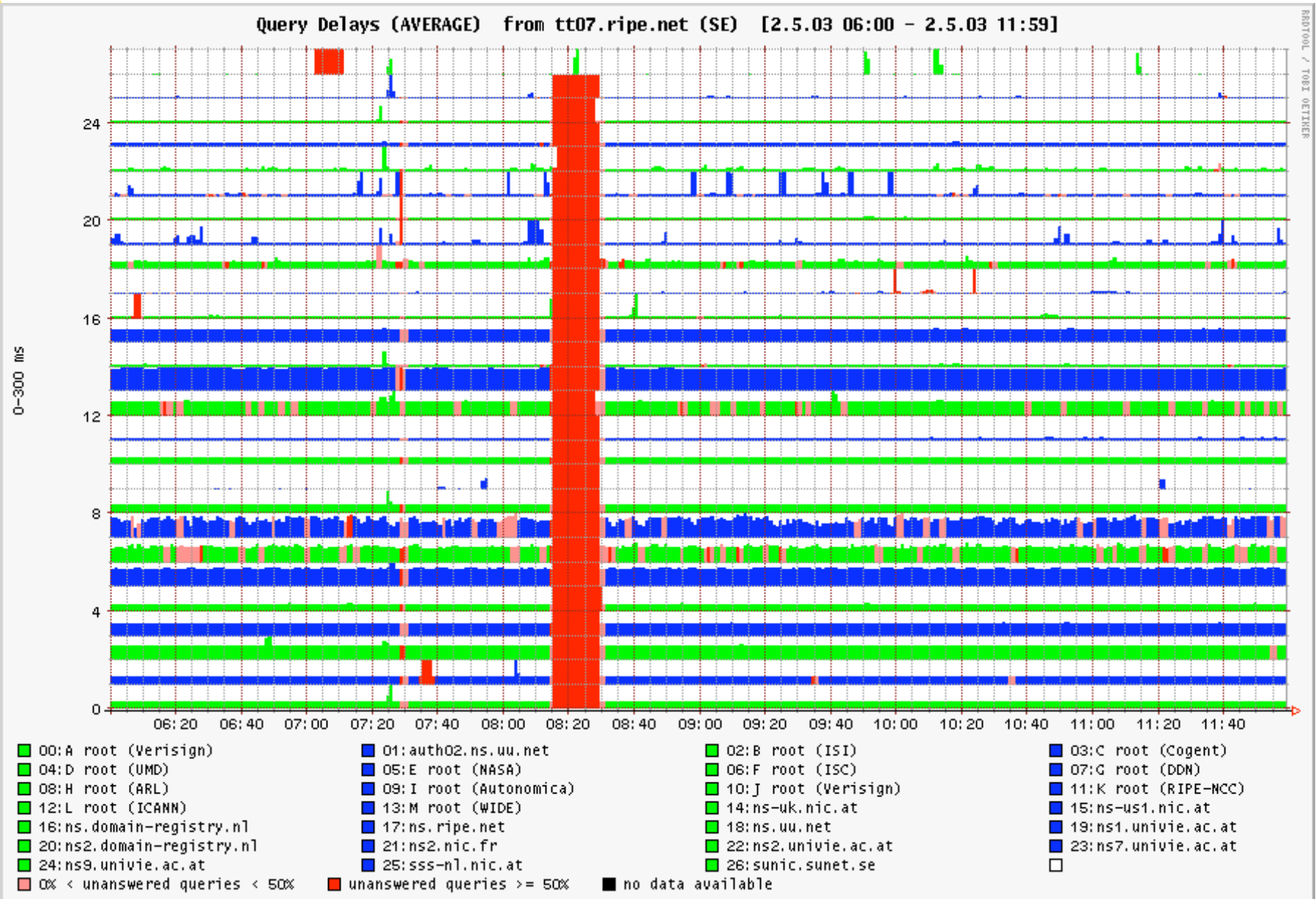


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Unanswered Queries (AVERAGE) from tt07.ripe.net (SE) [1.5.03 01:00 - 7.5.03 23:59]

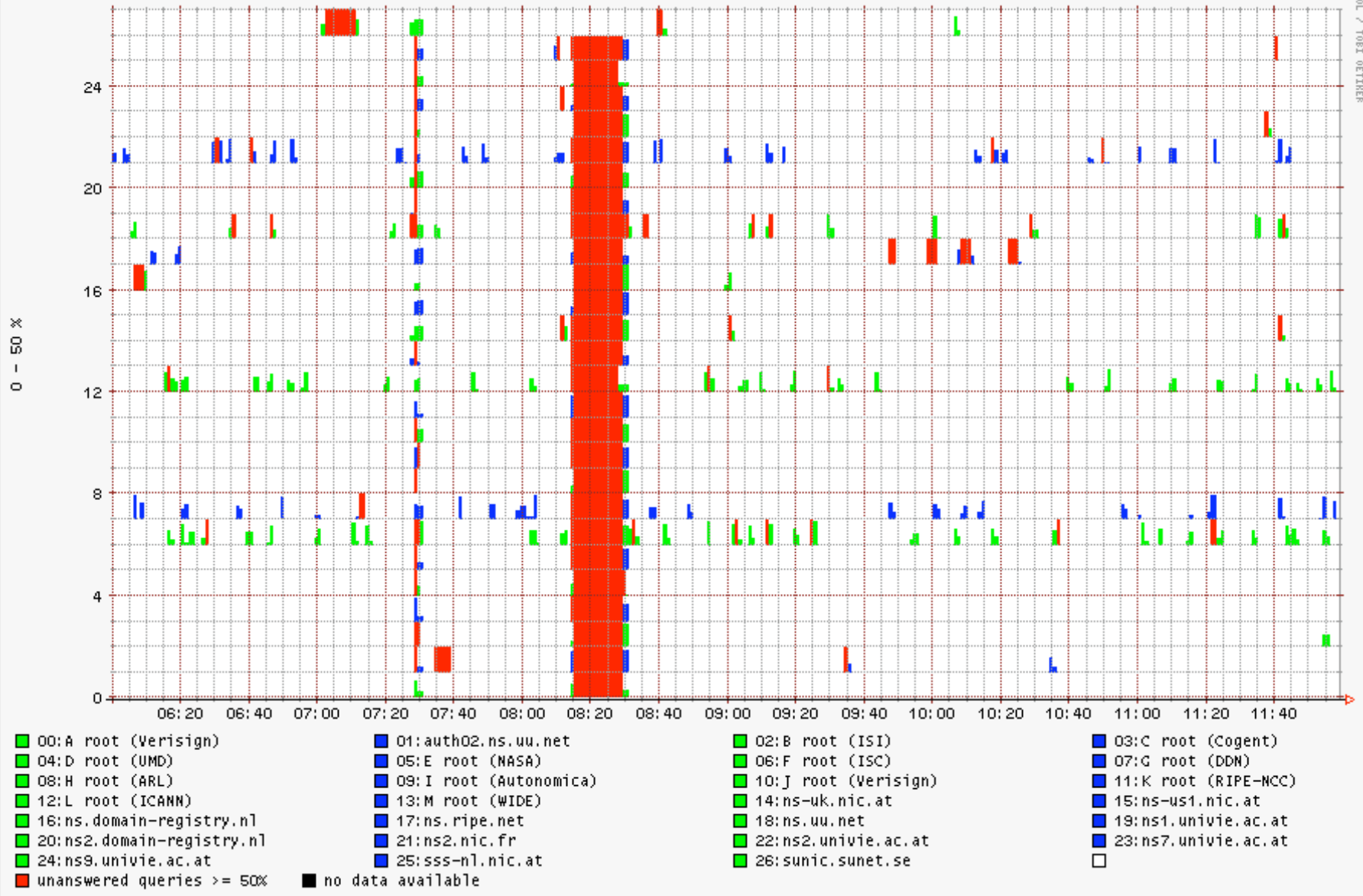




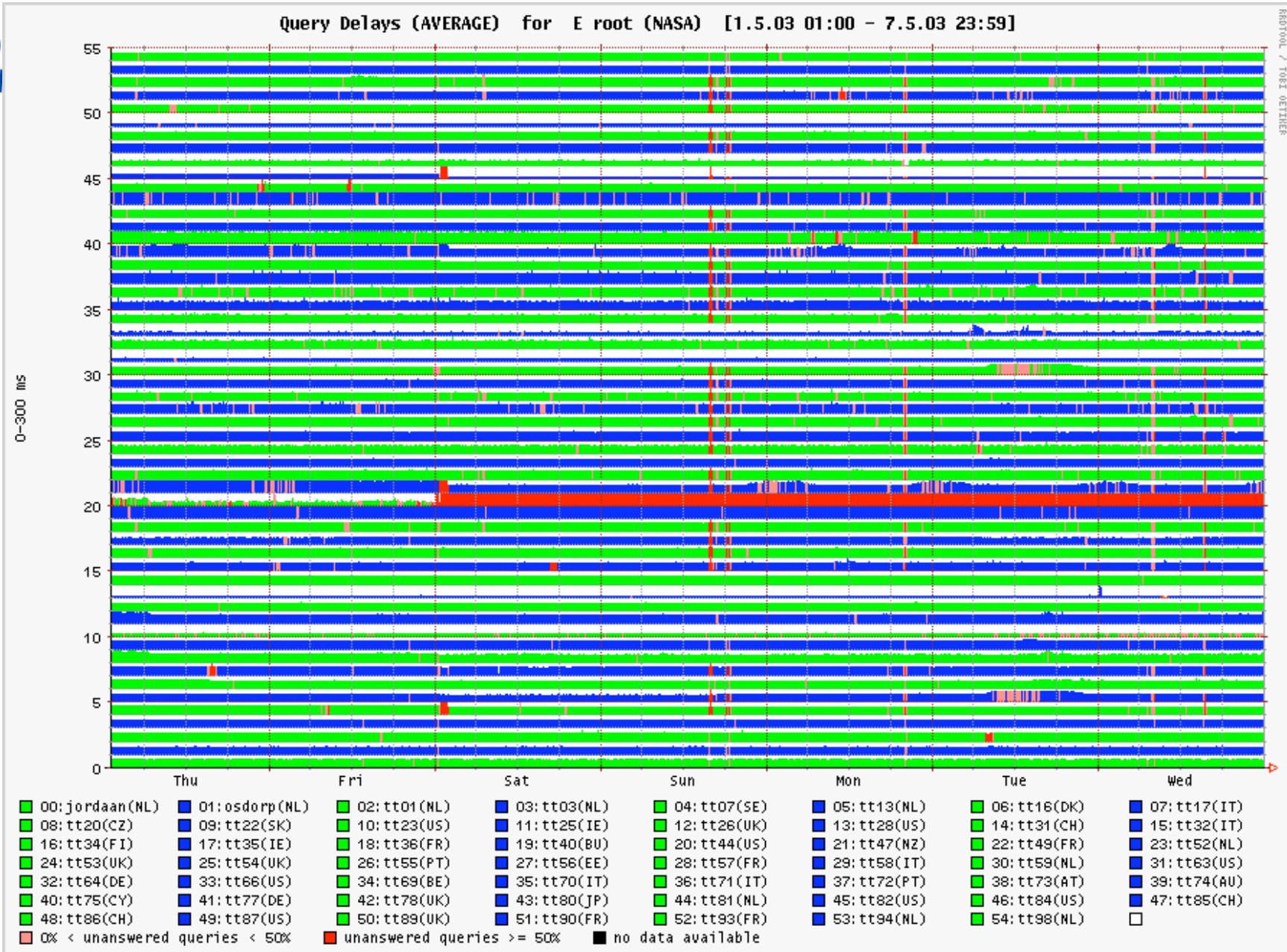
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Unanswered Queries (AVERAGE) from tt07.ripe.net (SE) [2.5.03 06:00 - 2.5.03 11:59]



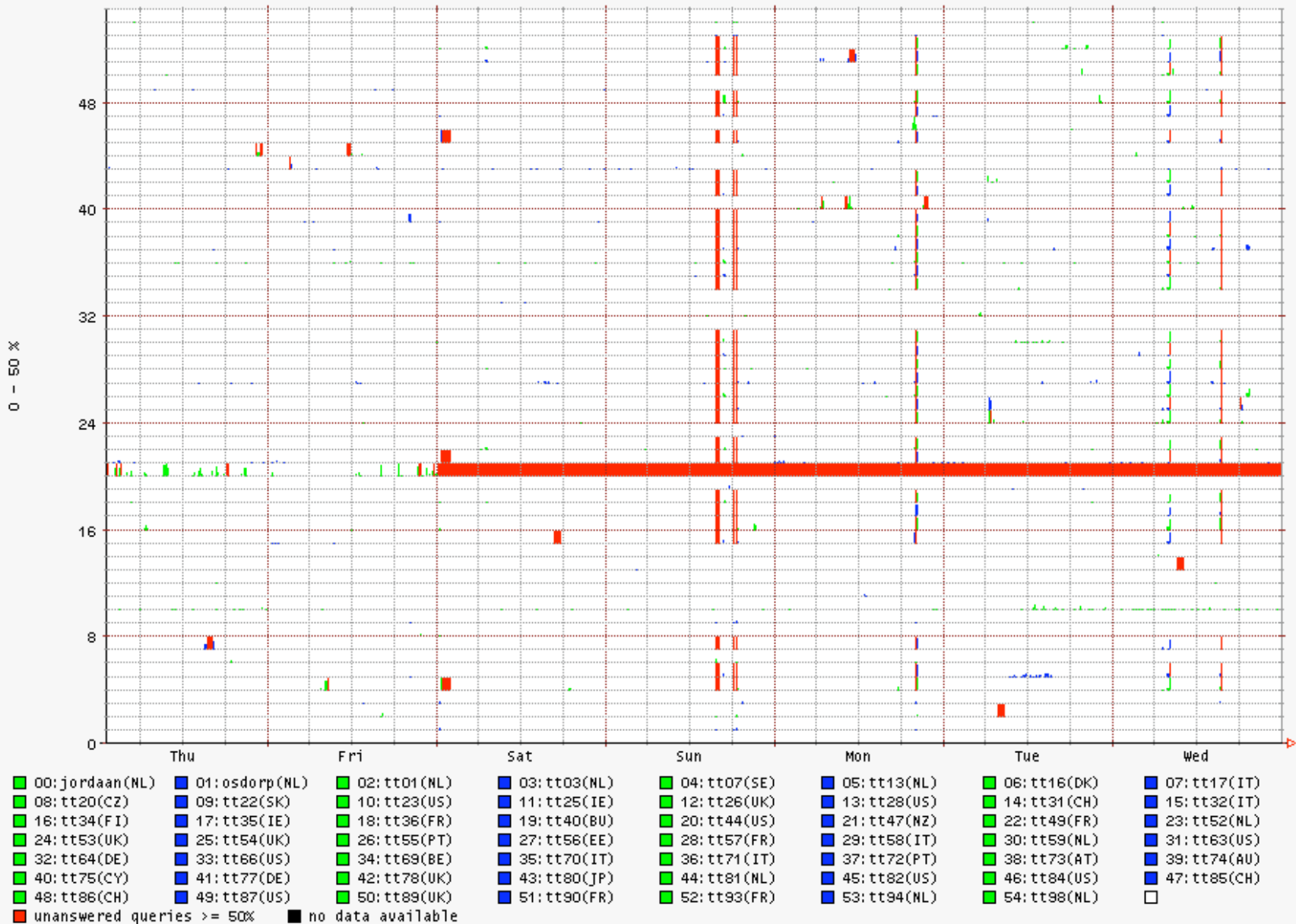
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Unanswered Queries (AVERAGE) for E root (NASA) [1.5.03 01:00 - 7.5.03 23:59]

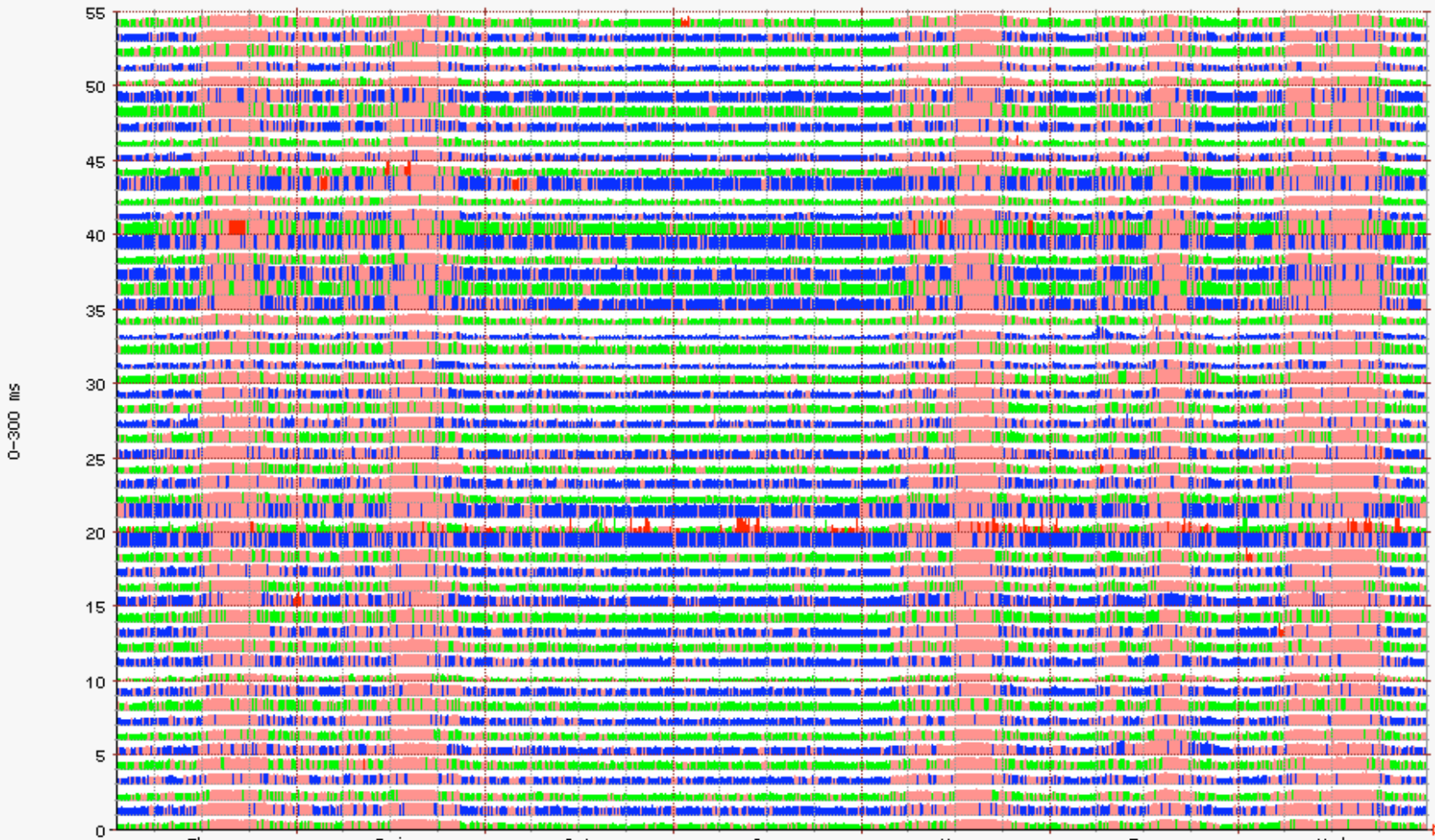
RRDTOOL / T081.02T08P





Query Delays (AVERAGE) for G root (DDN) [1.5.03 01:00 - 7.5.03 23:59]

RRDTOOL / 1081 DETIMER

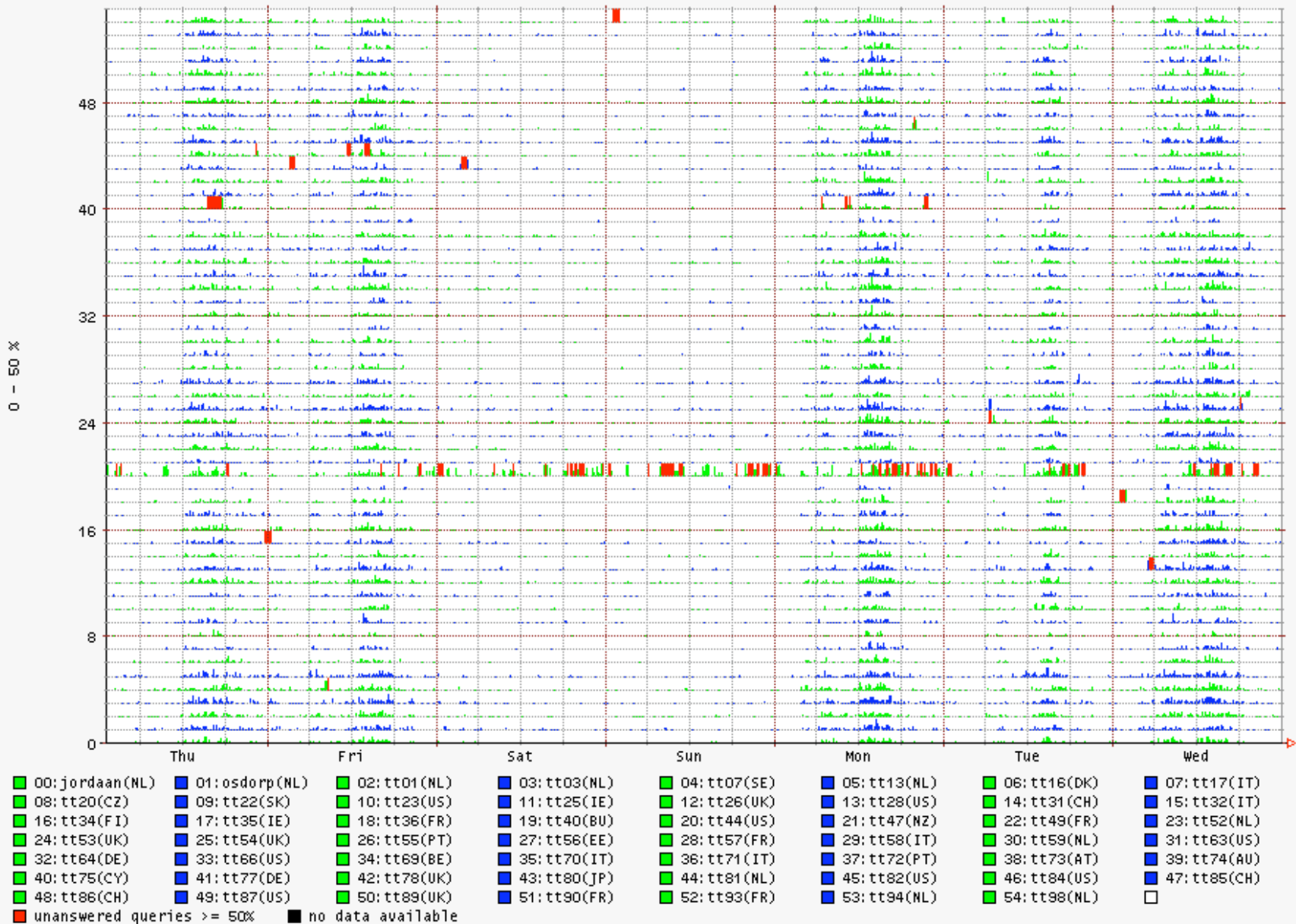


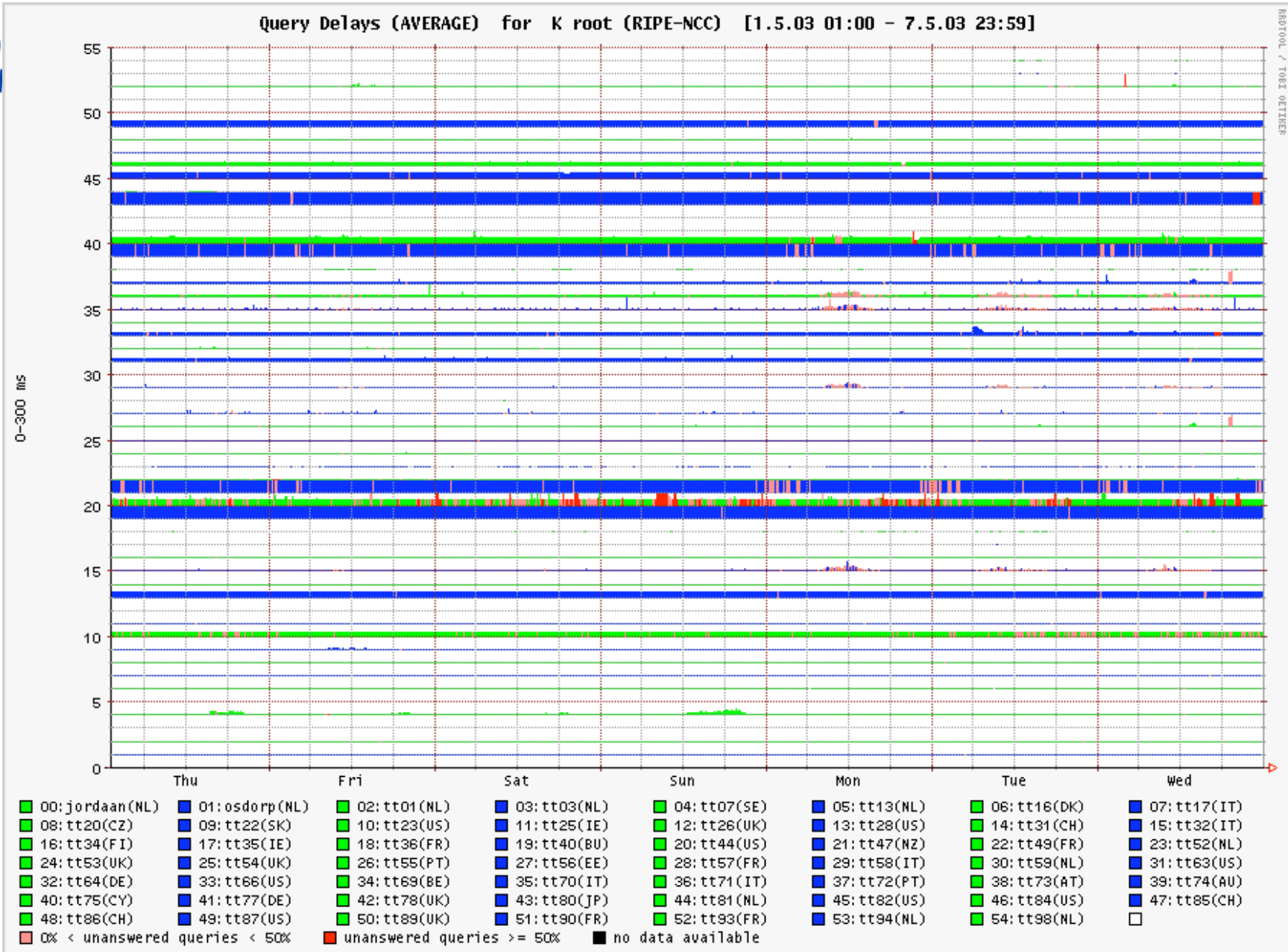
- 00: jordan(NL)
 - 01: osdorp(NL)
 - 02: tt01(NL)
 - 03: tt03(NL)
 - 04: tt07(SE)
 - 05: tt13(NL)
 - 06: tt16(DK)
 - 07: tt17(IT)
 - 08: tt20(CZ)
 - 09: tt22(SK)
 - 10: tt23(US)
 - 11: tt25(IE)
 - 12: tt26(UK)
 - 13: tt28(US)
 - 14: tt31(CH)
 - 15: tt32(IT)
 - 16: tt34(FI)
 - 17: tt35(IE)
 - 18: tt36(FR)
 - 19: tt40(BU)
 - 20: tt44(US)
 - 21: tt47(NZ)
 - 22: tt49(FR)
 - 23: tt52(NL)
 - 24: tt53(UK)
 - 25: tt54(UK)
 - 26: tt55(PT)
 - 27: tt56(EE)
 - 28: tt57(FR)
 - 29: tt58(IT)
 - 30: tt59(NL)
 - 31: tt63(US)
 - 32: tt64(DE)
 - 33: tt66(US)
 - 34: tt69(BE)
 - 35: tt70(IT)
 - 36: tt71(IT)
 - 37: tt72(PT)
 - 38: tt73(AT)
 - 39: tt74(AU)
 - 40: tt75(CY)
 - 41: tt77(DE)
 - 42: tt78(UK)
 - 43: tt80(JP)
 - 44: tt81(NL)
 - 45: tt82(US)
 - 46: tt84(US)
 - 47: tt85(CH)
 - 48: tt86(CH)
 - 49: tt87(US)
 - 50: tt89(UK)
 - 51: tt90(FR)
 - 52: tt93(FR)
 - 53: tt94(NL)
 - 54: tt98(NL)
 - □
- 0% < unanswred queries < 50%
 ■ unanswred queries >= 50%
 ■ no data available



Unanswered Queries (AVERAGE) for G root (DDN) [1.5.03 01:00 - 7.5.03 23:59]

RIPE TOOL / TORG1 DETIMER

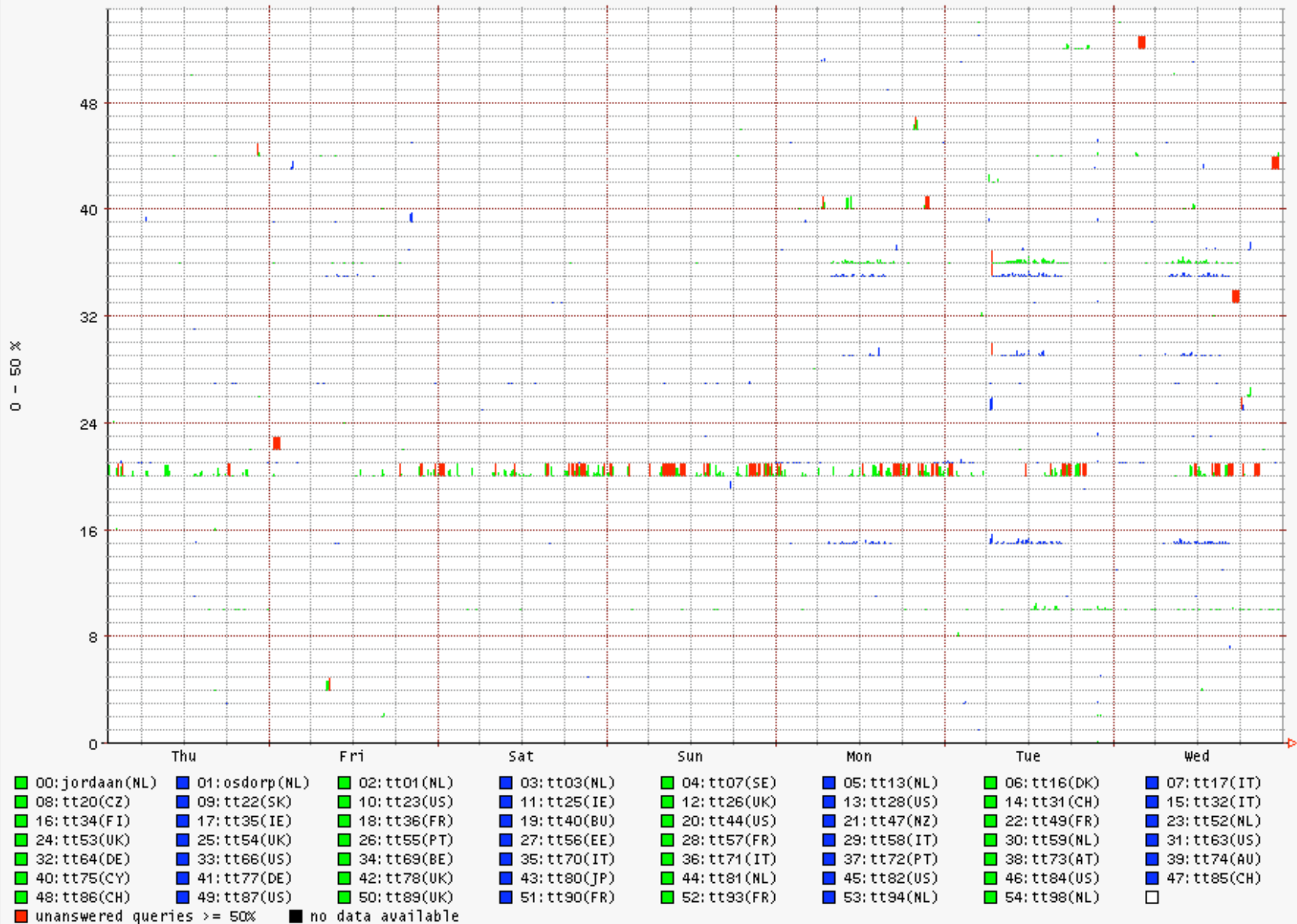






Unanswered Queries (AVERAGE) for K root (RIPE-NCC) [1.5.03 01:00 - 7.5.03 23:59]

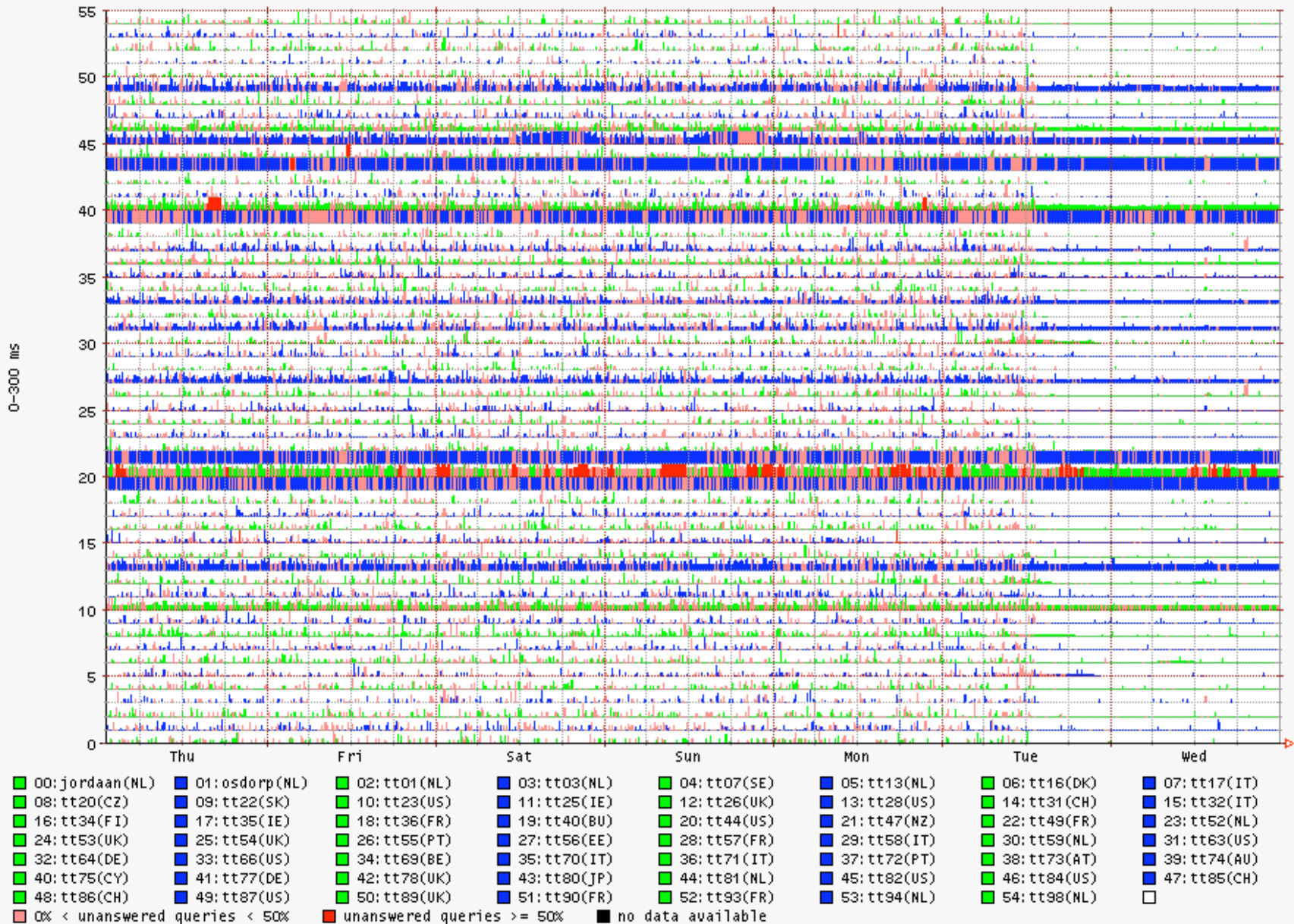
RIPE TOOL / TOBI OETIKER





Query Delays (AVERAGE) for ns2.nic.fr [1.5.03 01:00 - 7.5.03 23:59]

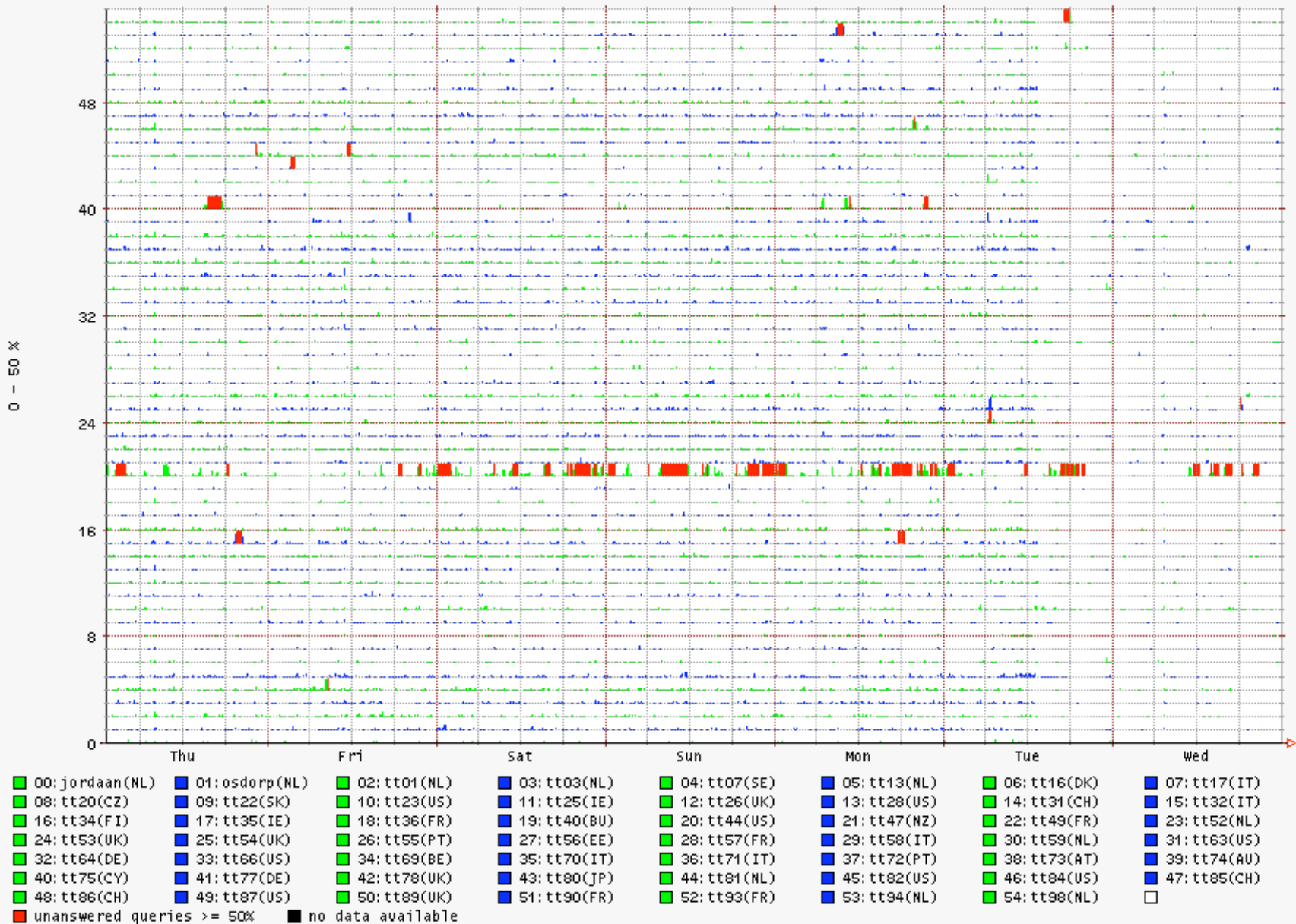
RRDTOOL / T081 0211E8





Unanswered Queries (AVERAGE) for ns2.nic.fr [1.5.03 01:00 - 7.5.03 23:59]

RRDTOOL / T081 DETIMER





What is ***Not*** Measured

- DNS queries used in actual name resolution
- DNS ***service*** (as opposed to ***server***) quality
- global service quality: 50+ points, RIPE region bias
- Effects that last less than about a minute

But still very comprehensive measurements!



Plans

- Modelling resolver behavior in order to approximate *service* quality
- More servers / ccTLDs
- More probes: Measurements from your site?

- The beta plots are still available
- The new ones will be there soon (with interactive plotting)

<http://www.ripe.net/ttm/DNS/>