



DNSMON

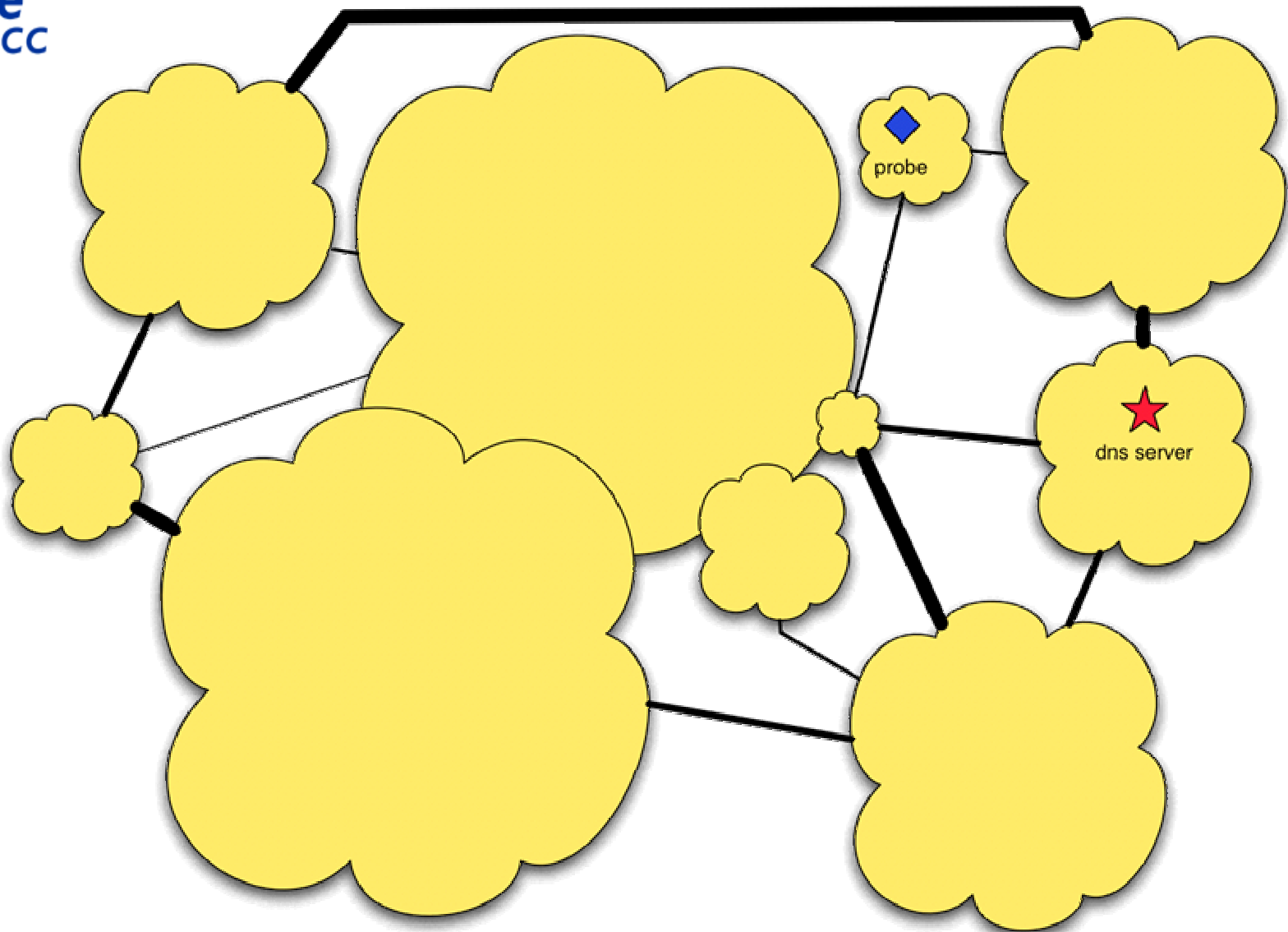
DNS Server Monitoring

RIPE NCC

29 August 2005

DNSMON, Goals

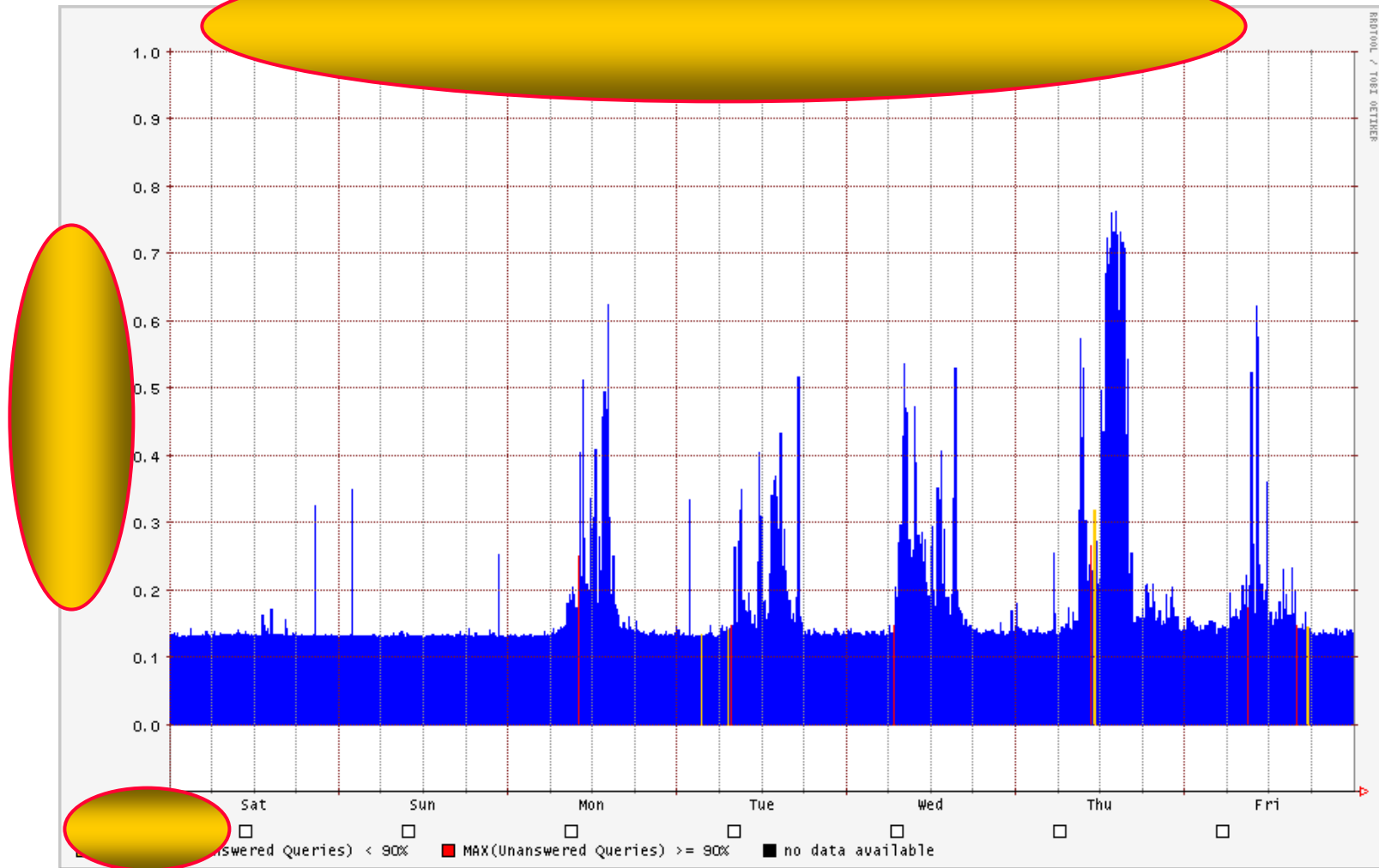
- Monitor DNS servers from many places
- Independent and Objective
- Novel and Interactive Presentation



Why Measure This Way?

- There are lots 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
 - Use measurement probes for TTM service

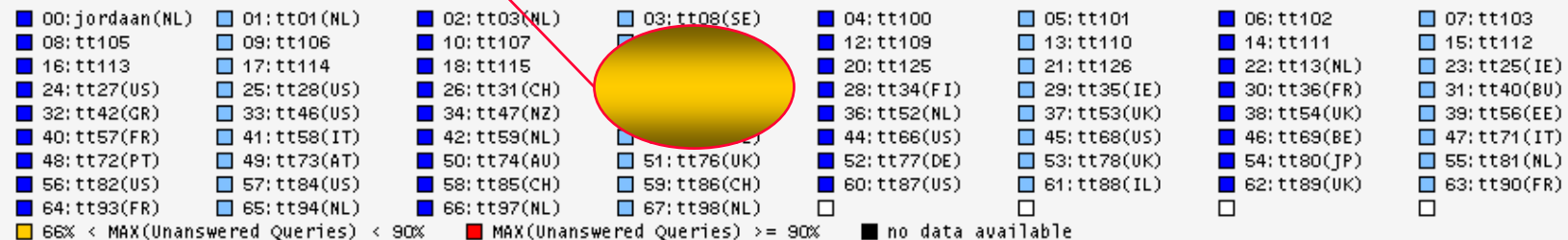
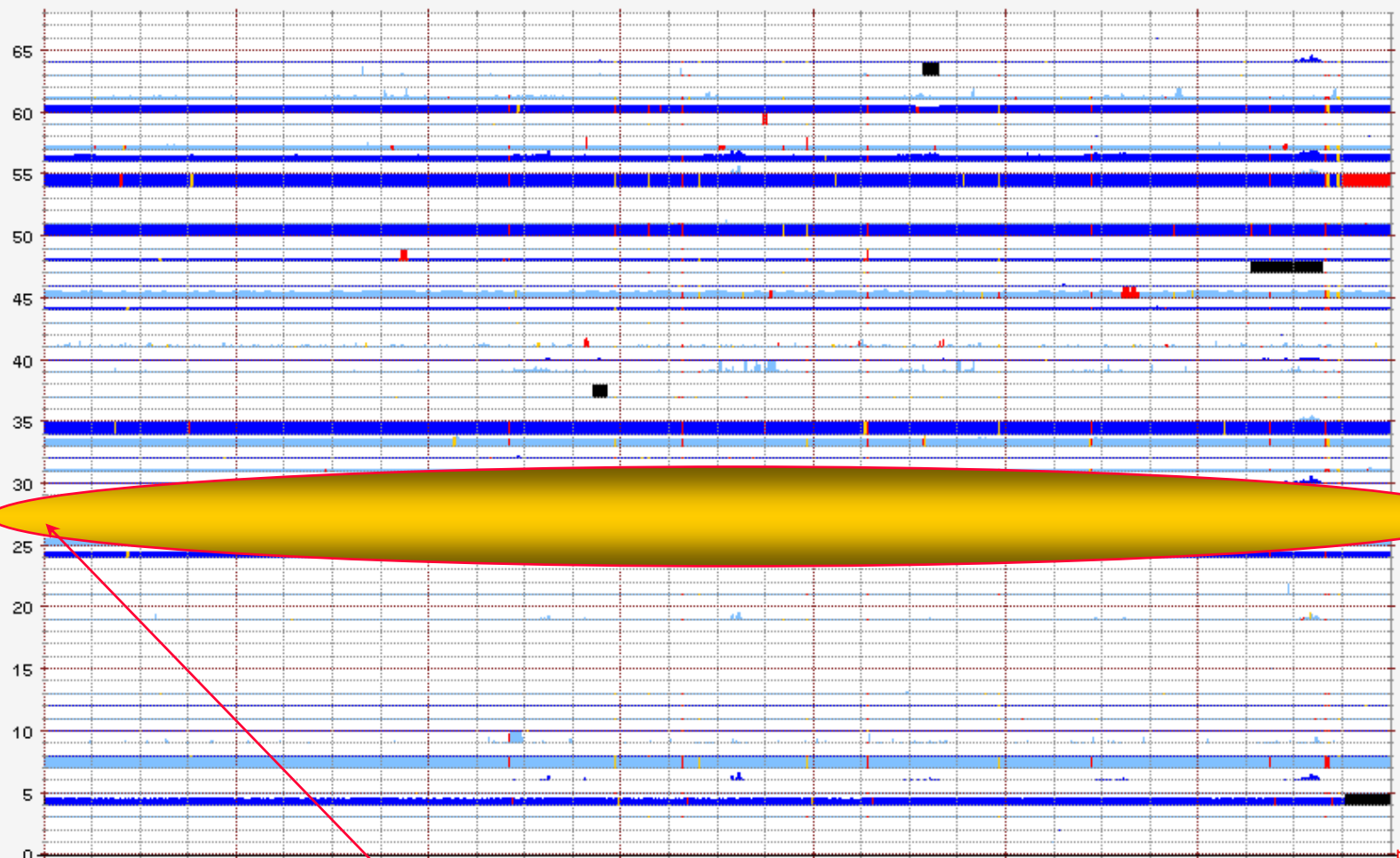
Single Point Measurement





Query Delays (AVERAGE) for ns.ripe.net [12.06.2004 00:00 - 18.06.2004 23:59 UTC]

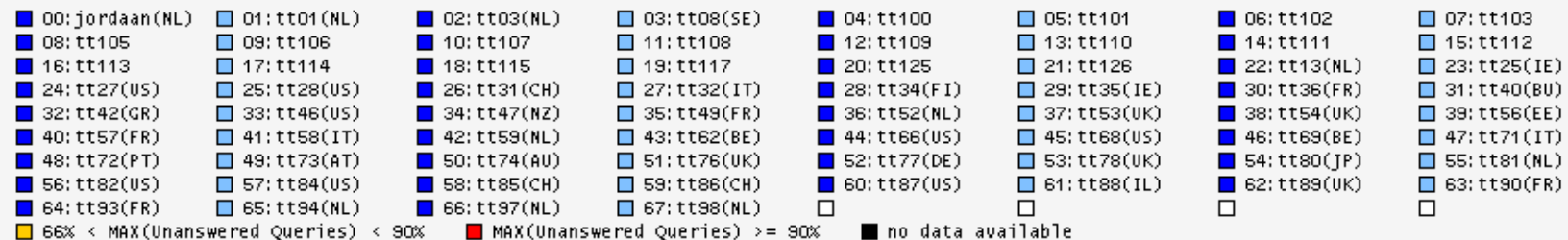
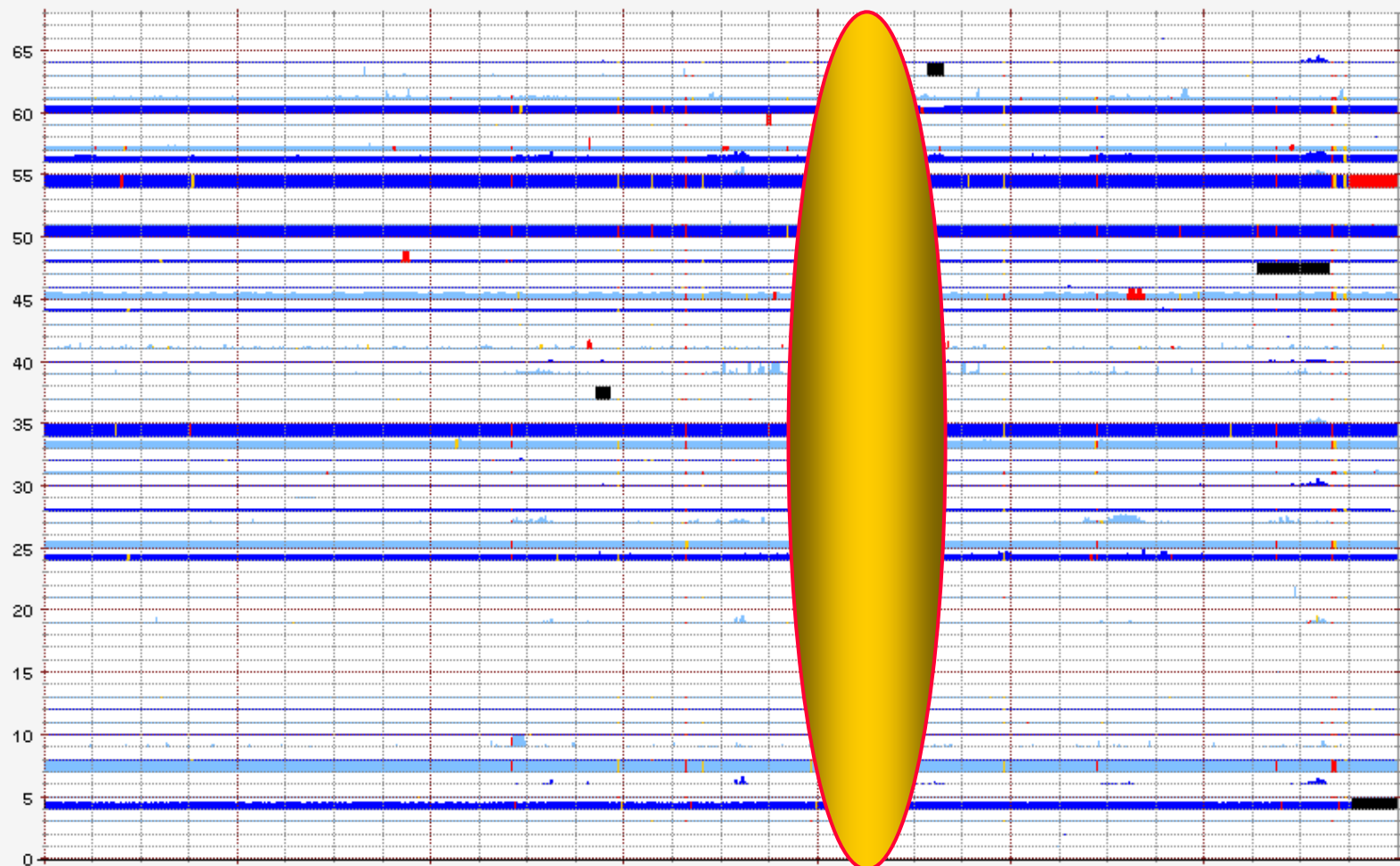
AVERAGE of Response Time [0-250] (ms)



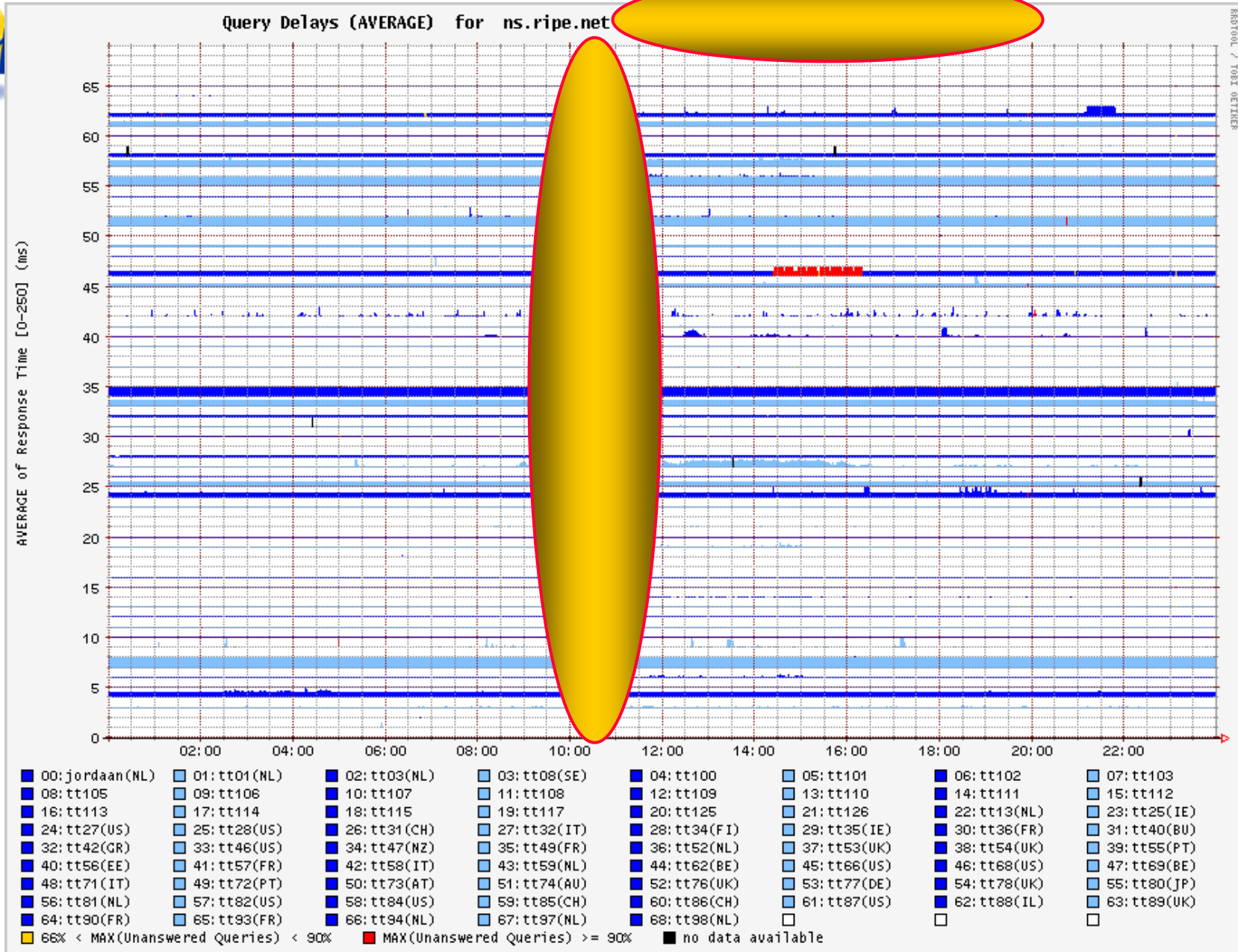


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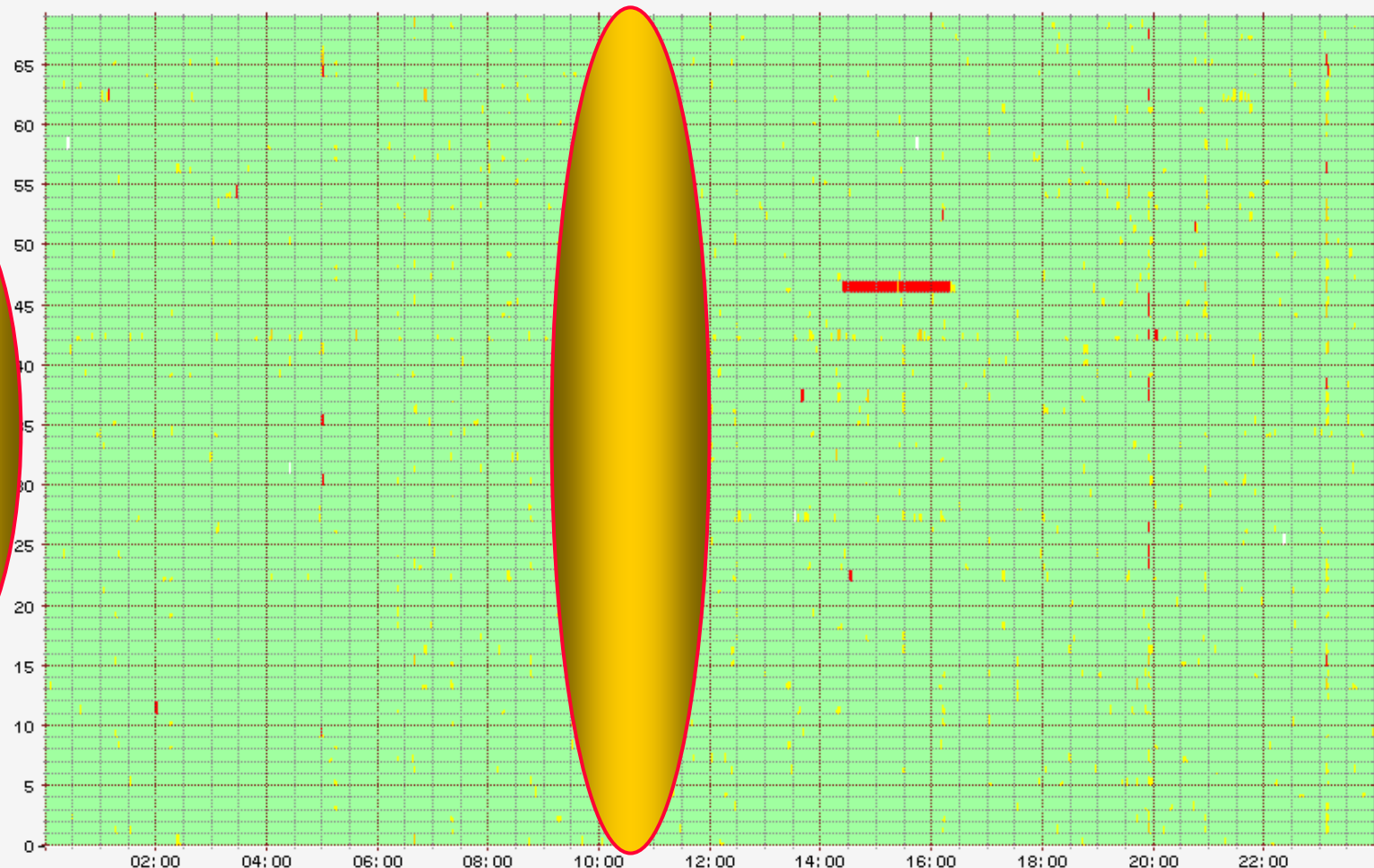
RRDTOOL / TOBI OETIKER



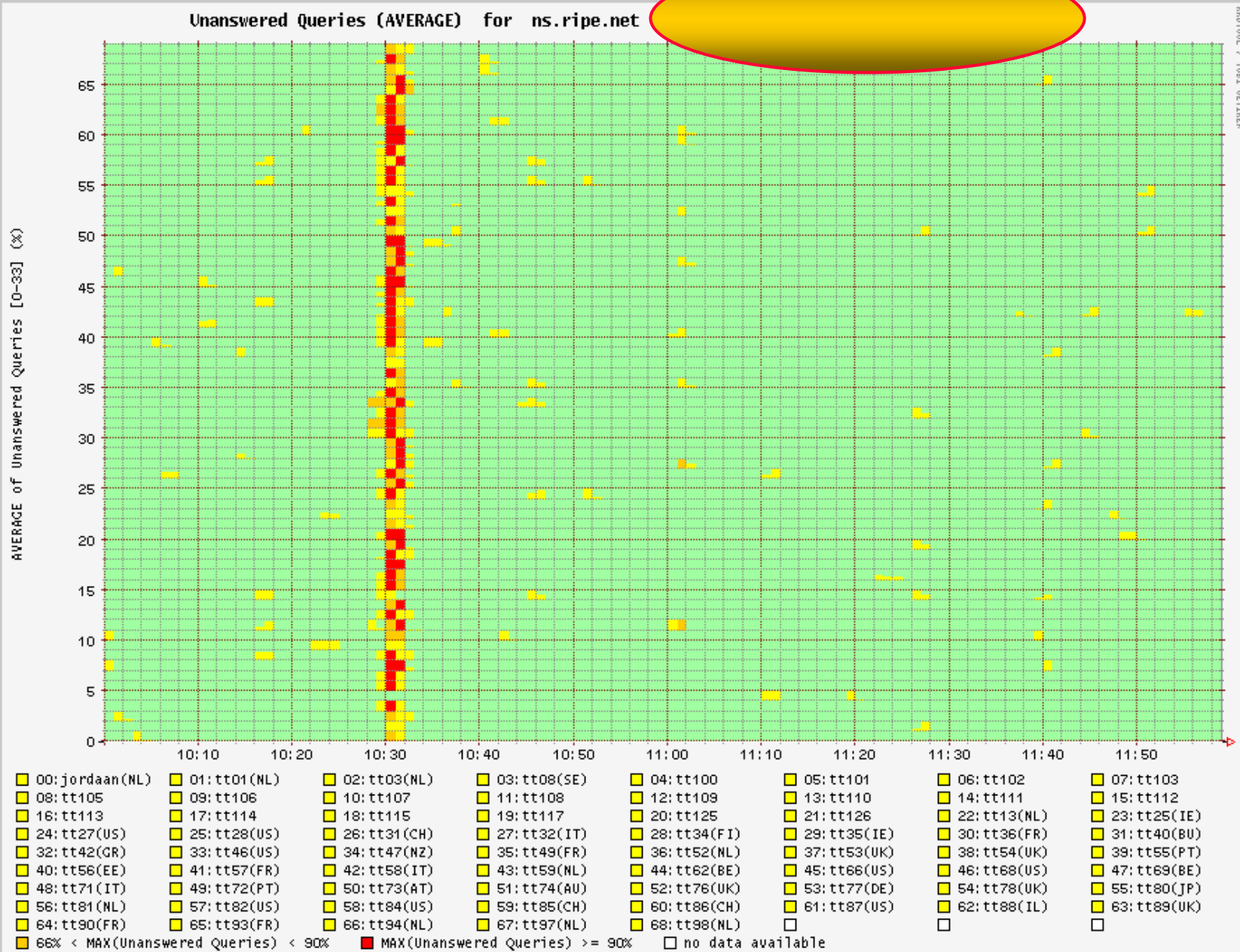


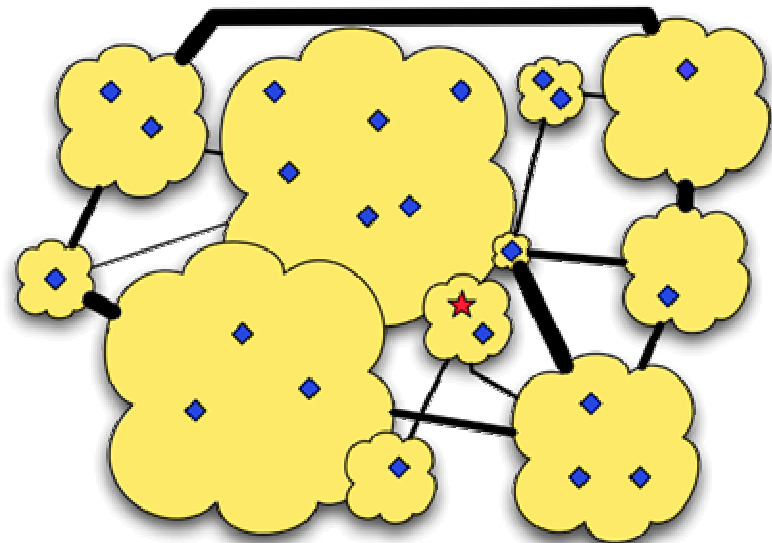
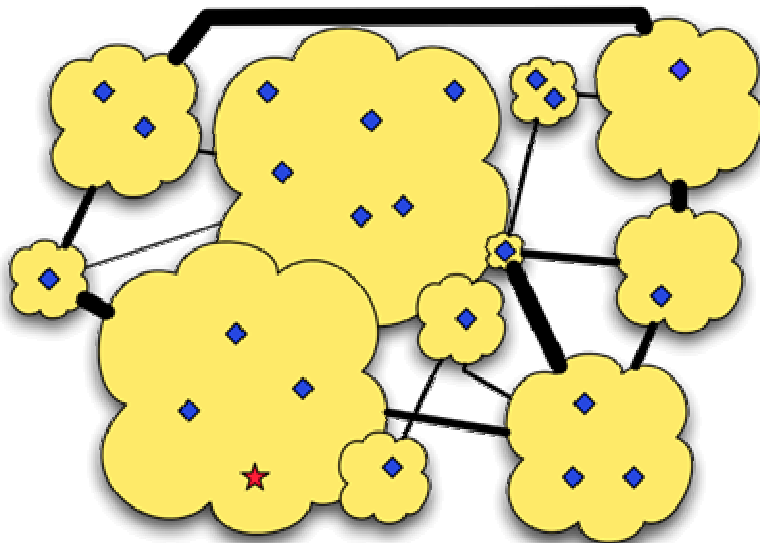
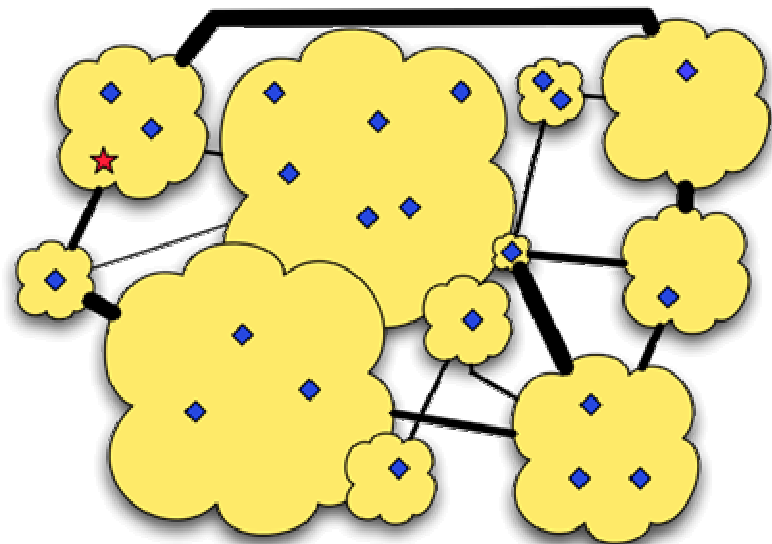
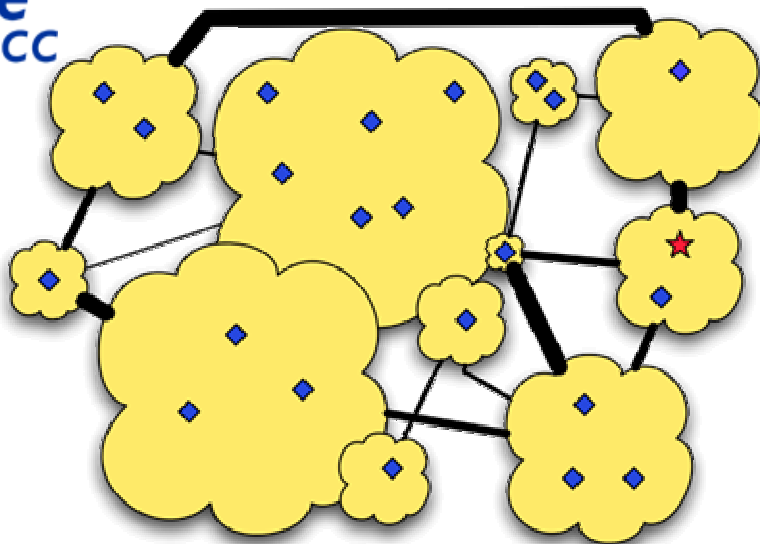
Unanswered Queries (AVERAGE) for ns.ripe.net [17.06.2004 00:00 - 17.06.2004 23:59 UTC]

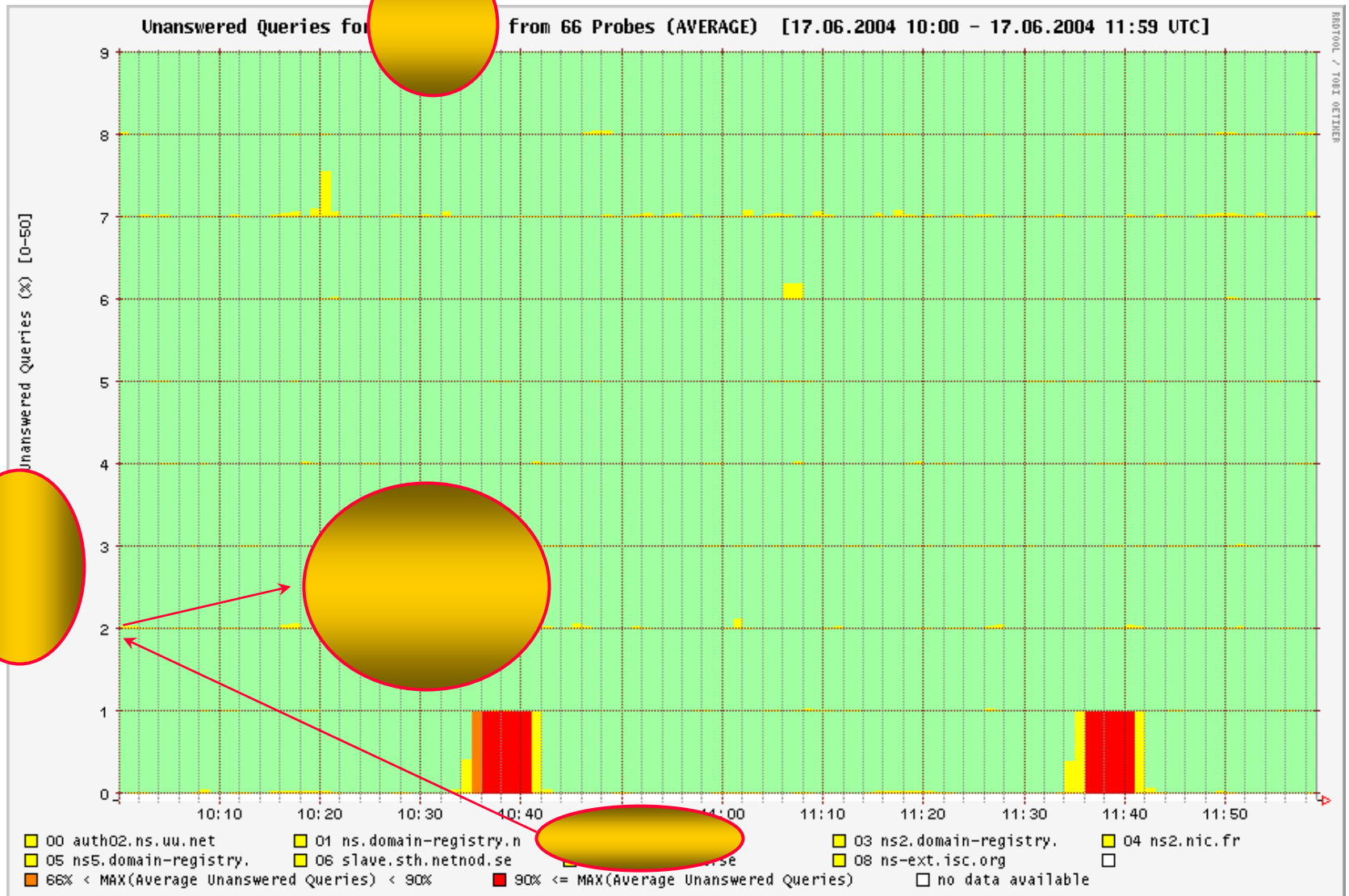
RRDTool / Toad Outliner



00: jordan(NL)	01: tt01(NL)	02: tt03(NL)	03: tt08(SE)	04: tt100	05: tt101	06: tt102	07: tt103
08: tt105	09: tt106	10: tt107	11: tt108	12: tt109	13: tt110	14: tt111	15: tt112
16: tt113	17: tt114	18: tt115	19: tt117	20: tt125	21: tt126	22: tt13(NL)	23: tt25(IE)
24: tt27(US)	25: tt28(US)	26: tt31(CH)	27: tt32(IT)	28: tt34(FI)	29: tt35(IE)	30: tt36(FR)	31: tt40(BU)
32: tt42(GR)	33: tt46(US)	34: tt47(NZ)	35: tt49(FR)	36: tt52(NL)	37: tt53(UK)	38: tt54(UK)	39: tt55(PT)
40: tt56(EF)	41: tt57(FR)	42: tt58(IT)	43: tt59(NL)	44: tt62(BE)	45: tt66(US)	46: tt68(US)	47: tt69(BE)
48: tt71(IT)	49: tt72(PT)	50: tt73(AT)	51: tt74(AU)	52: tt76(UK)	53: tt77(DE)	54: tt78(UK)	55: tt80(JP)
56: tt81(NL)	57: tt82(US)	58: tt84(US)	59: tt85(CH)	60: tt86(CH)	61: tt87(US)	62: tt88(IL)	63: tt89(UK)
64: tt90(FR)	65: tt93(FR)	66: tt94(NL)	67: tt97(NL)	68: tt98(NL)			
66% < MAX(Unanswered Queries) < 90%				MAX(Unanswered Queries) >= 90%		no data available	



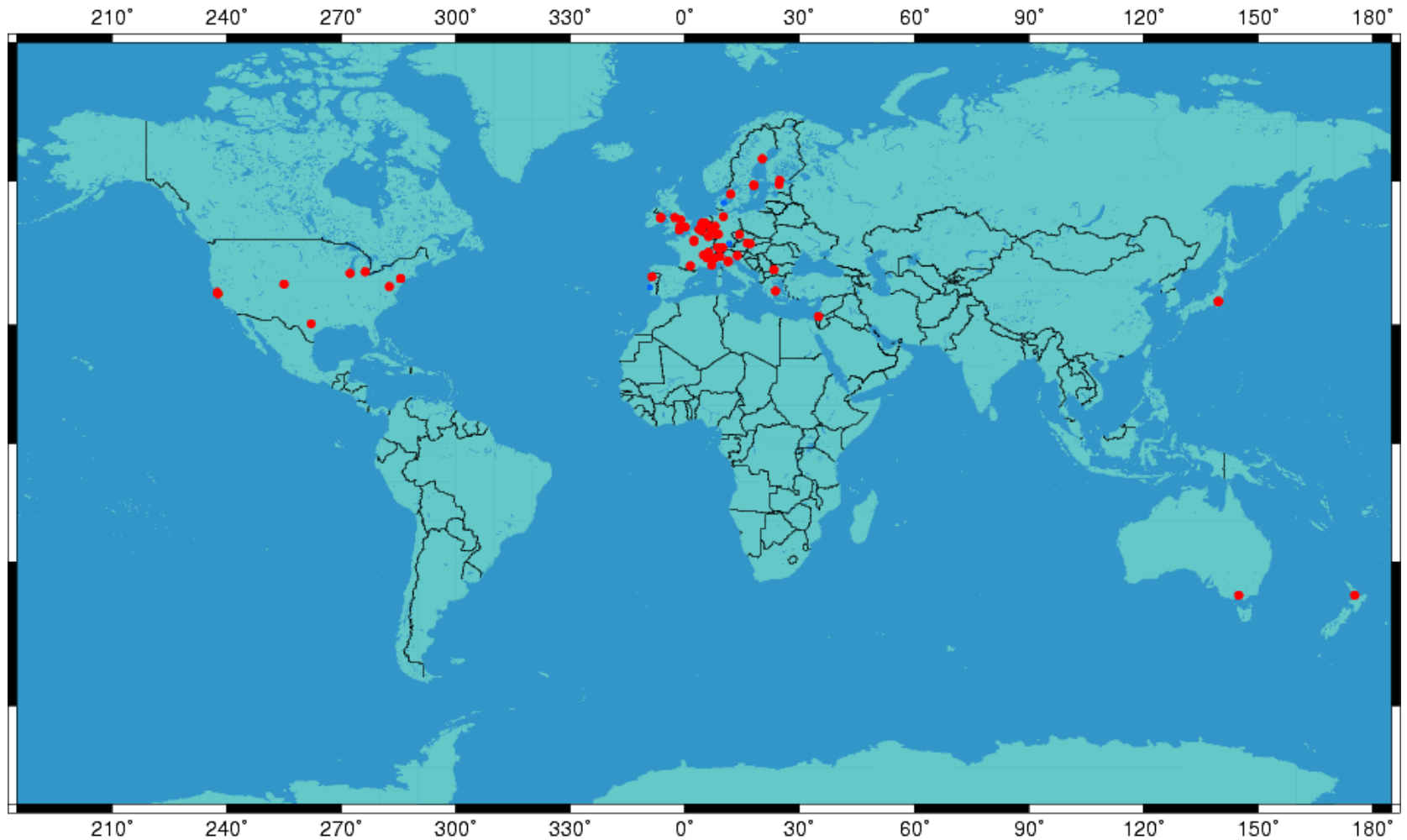




Views of the data

- Server View
 - shows **quality of service** provided by the **server** to all probes
- Domain View
 - **summarises** quality of service provided by **all servers** serving a **domain**
- Probe View
 - shows quality of service provided by all servers at a particular probe location
 - Of interest to TB host (probe host)

dnsmon Probe Locations



What is Measured

- Real DNS queries
- Poisson distributed, ~60/hour/server/probe
- From 60+ probes around the world

- Response time
- Server instance ID (anycast, load balancing)
- SOA version number
- Server software version

What is ***Not*** Measured

- DNS queries used in actual name resolution
- Total DNS serv***ice*** quality, e.g. 'user experience'
- global service quality: 60+ points, RIPE region bias
- Effects that last less than about a minute

But still very comprehensive measurements!

DNSMON Users

- Network Operators
 - LIR, ISP and other RIPE NCC members
 - Paid for development and beta service
- TLD Administrators
- Internet Community
 - Including governments and regulators

Participate as TLD Administrator

- Obtain data about quality of core service
- Service improvements
- Documentation of (non)-problems
- Demonstrate service quality to the public
- Should be paying part of production service operating cost
 - €2000-6000/year, depending on size
- Every TLD administrator world-wide



Service for TLD Administrators

- Non-exclusive
 - RIPE NCC Membership also a paying user
- Benefits
 - Credible third party monitoring
 - *Web site and help desk* service level guarantees
 - Guarantee of 12 months service continuity
 - Presence on dnsmon web site
 - Visibility of support
 - Comments on data (to be implemented)
 - "Real Time" data
 - Influence development



Participate as a Network Operator

- Have to install a test box in your network
 - DNSMON
 - Network performance (delay, loss, jitter, ...)
 - RFC2679-2680
 - NTP server
- Independently monitor critical service
 - Can identify interesting TLD's
- Better understand customer problems
- Have to buy a probe and service contract
 - €2500 hardware, €1000/year service
- Available for everybody (LIR, ISP, ...)

Service for Network Operators

- Non-exclusive
 - TLD Administrators are also a paying user
- Benefits
 - as for the TLD admin's plus
 - other network measurements
 - NTP server

Internet Community

- Regulators, researchers, ISP's without a TB,
...
- Monitor Key Infrastructure
 - Go to the site and look at the plots
 - Raw data available for analysis on request
- Data delayed by 2 hours
- Free
- Support on best effort basis

Time Line

- Currently ‘public beta’
 - Has provided useful service for > 1year
 - Operated by developers
- Production service March 1, 2005
 - Operated by service people
 - Current version
- Address list of requests for features

More information

- Sites:
 - <http://dnsmon.ripe.net>: DNSMON site
 - <http://www.ripe.net/ttm>: TTM site
- Documentation (<http://www.ripe.net/ripe/docs>):
 - RIPE324: DNSMON for TLD Administrators
 - RIPE297: TTM/DNSMON service for LIR's
 - TTM Glossy
- Email:
 - ttm@ripe.net

Questions, Discussion

