

Beyond BIND and NSD



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Beyond BIND and NSD

AGENDA

- Who are we?
- What have we done?
- Why are we doing it?
- Where are we going?
- When?
- Wow?

Who is EURid?

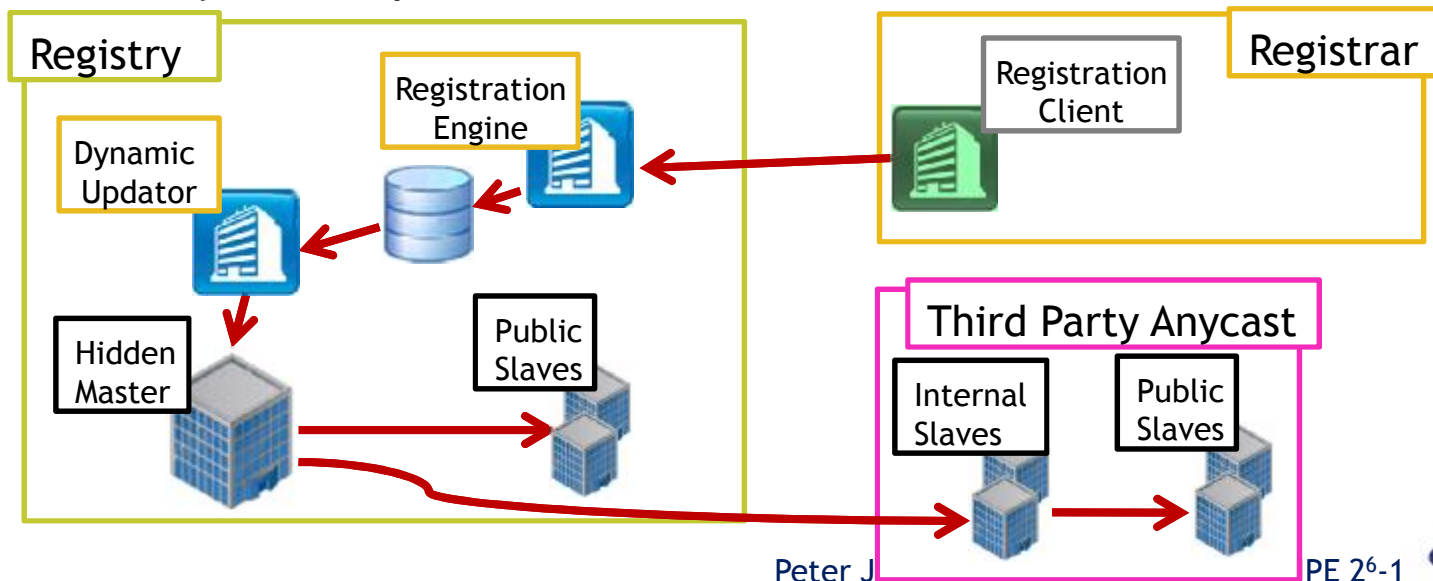
- Belgian not for profit organisation
- Under contract with the European Commission
- Offices in Brussels, Prague, Stockholm and Pisa
- Manage .eu TLD space
 - Registration services (EPP, IDN, DNSSEC, ...)
 - “Run” the .eu zone
 - Support services (phone, email, chat, ...) in all 23 official languages of the EU
- Currently 3.4 million domain names

The .eu zone

- Name servers
 - “Own maintained” unicast nodes
 - “Third party” anycast meshes
- Update mechanism
 - Dynamic updates

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“Challenges”

- TLD public authoritative slaves
 - Geographical spread
 - Network topological spread
 - Hardware diversification
 - OS diversification
 - Name server software diversification
- Zone Update mechanism
 - Seperate process
 - “Listening” on core database
 - Sending “dynamic update” messages to name server
 - Room for improvement/de-complexification

A new DNS implementation

■ Primary Design goals

- Standards compliant
 - Only “RFCs” as design goals
 - Common sense/practice where RFCs are “open for interpretation”
- Portable, clean, fast
- Authoritative
- DNSSEC support
- AXFR/IXFR support (master and slave)

■ Secondary goals

- Recursive caching resolver?
- “higher level storage” backend (sql, ...)
- Dynamic update API
- Dynamic provisioning

Release 1.0 (Roadmap)

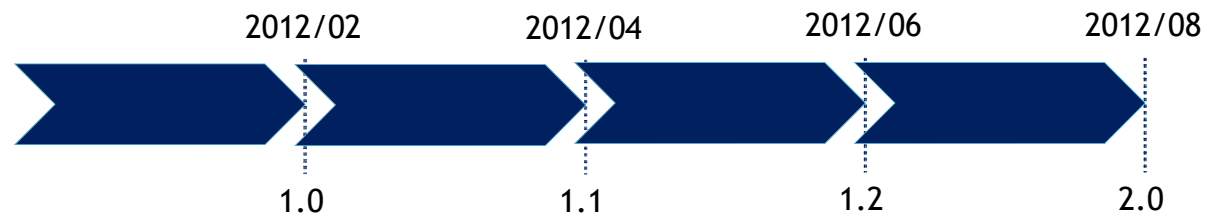
- Supported platform : Linux, *BSD, OS X, *Windows*
- Authoritative
- Load/parse zone files
 - *Include*, *, @, /
 - Resource record types
 - SOA, A, AAAA, NS, CNAME, PTR, DNAME, HINFO, MX, TXT
 - DNSKEY, DS, RRSIG, NSEC, NSEC3, NSECPARAM
- Zone transfer
 - Master & Slave
 - AXFR / IXFR
 - *Notify*
 - TSIG
- nsupdate
 - add, remove RR
- DNSSEC
 - RSASHA1(5,7)
 - Online re-signing
 - *key roll-over*

Release x.y (Roadmap)

- Release 1.1
 - DSA/SHA1, DSA-NSEC3-SHA1, RSASHA256, RSASHA512
- Release 1.2
 - Full client to “control” the name server daemon
- Release 2.0
 - Caching resolver
 - Validating
 - Stand alone libraries; perl wrapper around dnsresolv
- Release 3.0
 - Sql backend API
 - ...

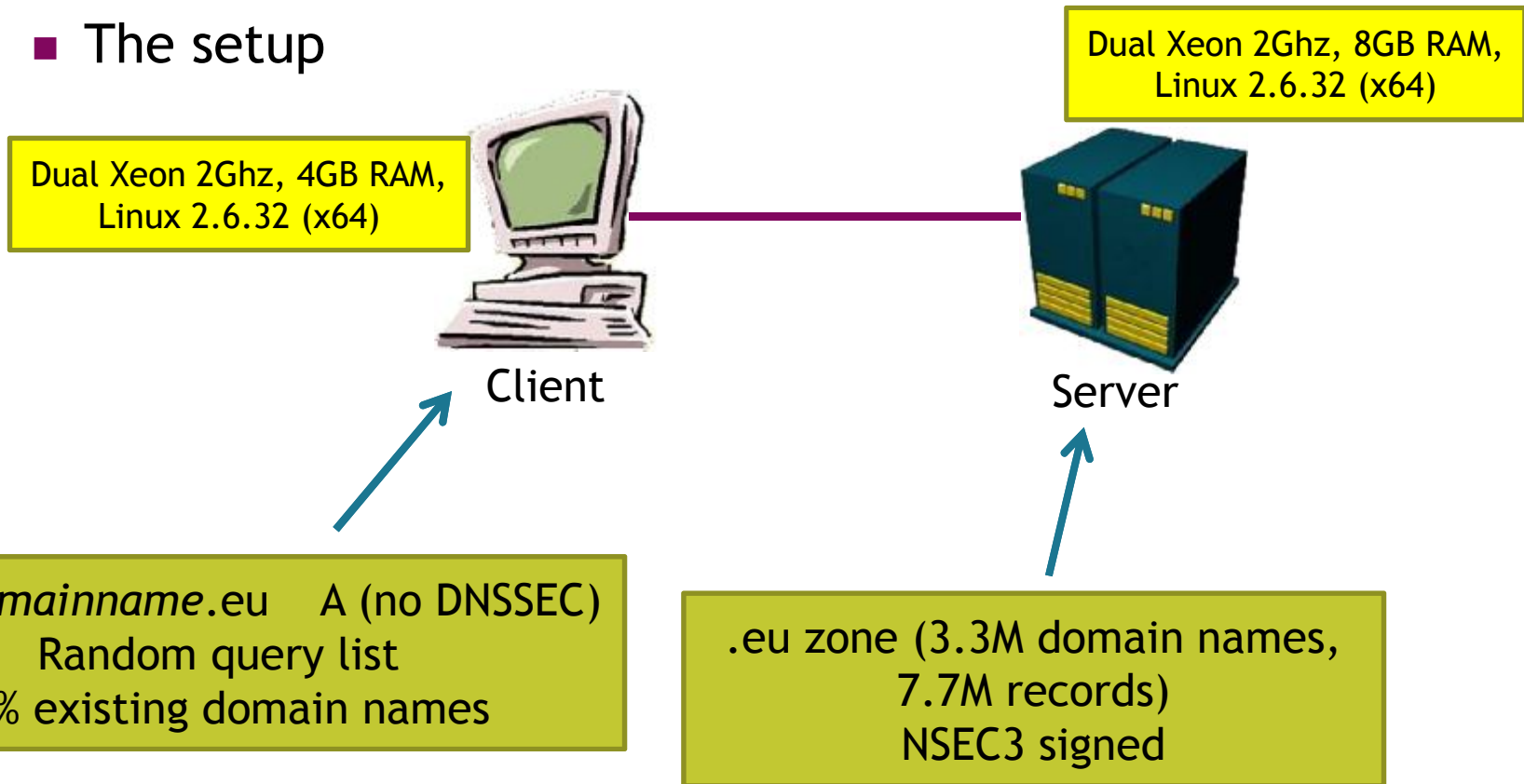
Roadmap

- Code clean up
- Bug fixing
- Documentation



Performance measurements

■ The setup



Performance measurements

■ The setup

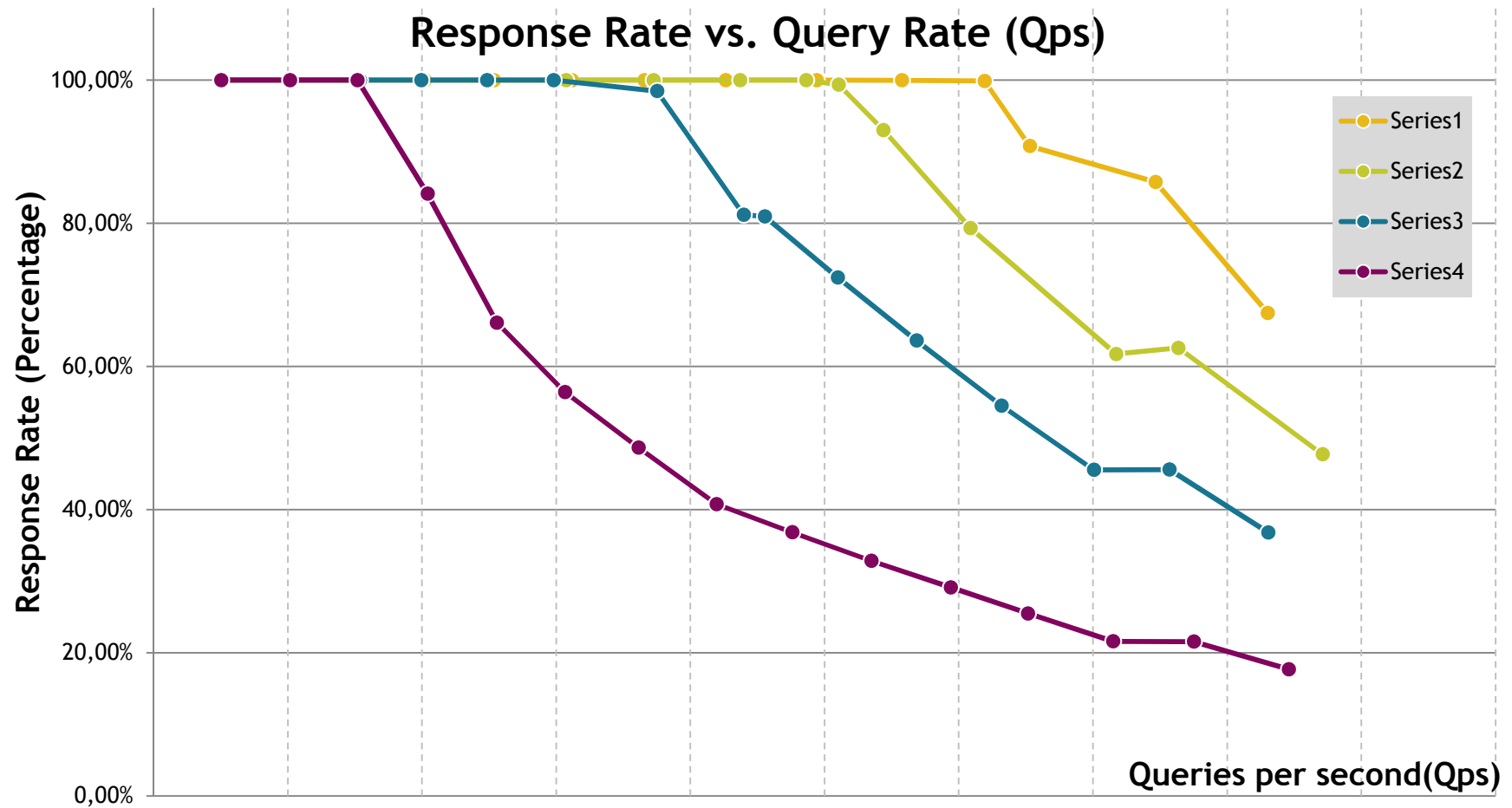
- Pre-created PCAP file
- Tcpreplay -p *speed* 'pcapfile' : to generate queries
- Tcpcap : to capture responses
- Runs of 30 seconds

■ Eg. 50Kq/s

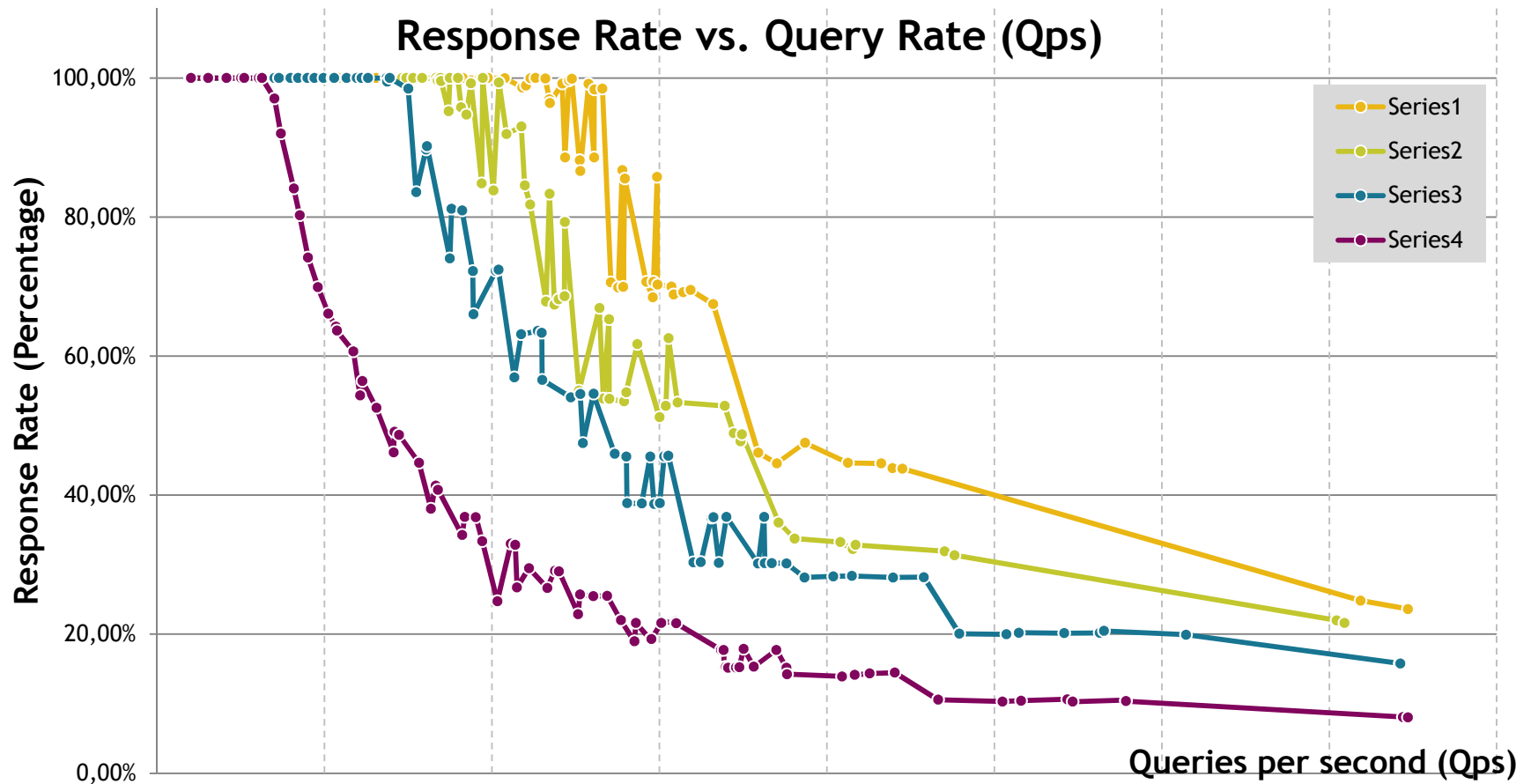
- $50\text{Kq/s} * 30\text{s} = 1.500.000$ packets -> pcap file
- Tcpreplay -p 50000
 - 29.7 seconds -> 50.505 q/s
- Tcpcap results
 - How many packets received

q/s	Real q/s	Sent	Received	%
50K	50.50K	1.5M	1.5M	100
75K	74.47K	2.25M	2.2M	97.7
100K	101.2K	3M	2.8M	93.3

Performance measurements

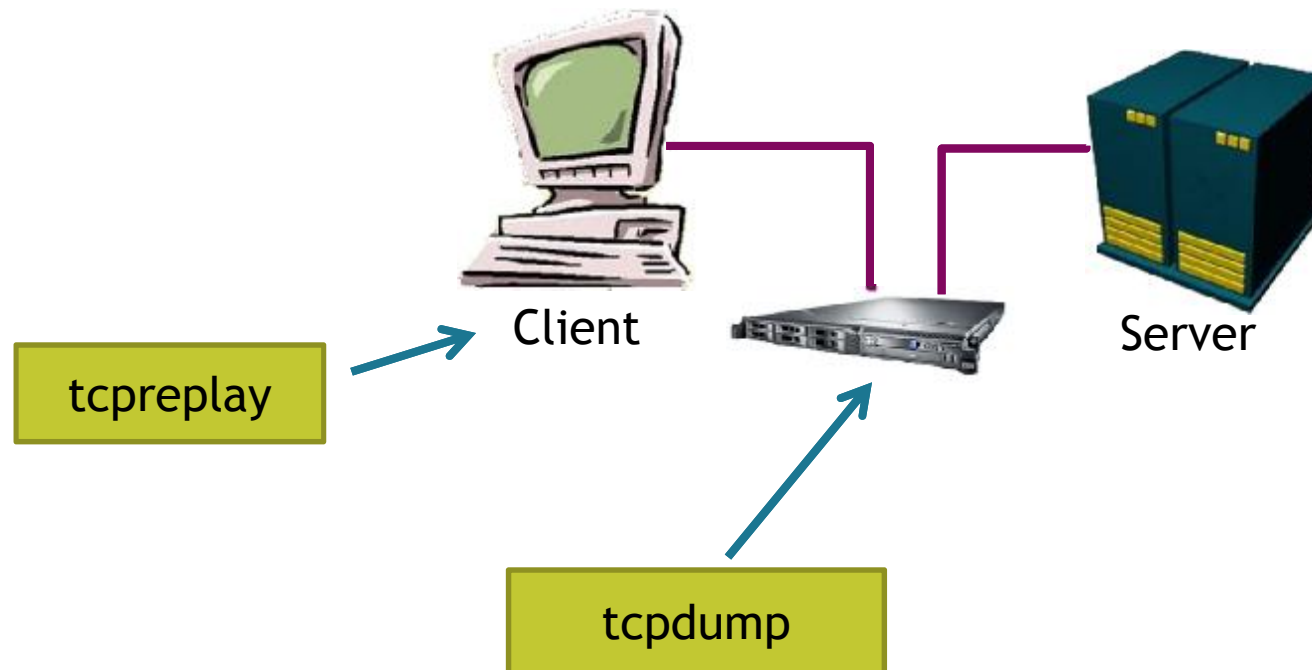


Performance measurements

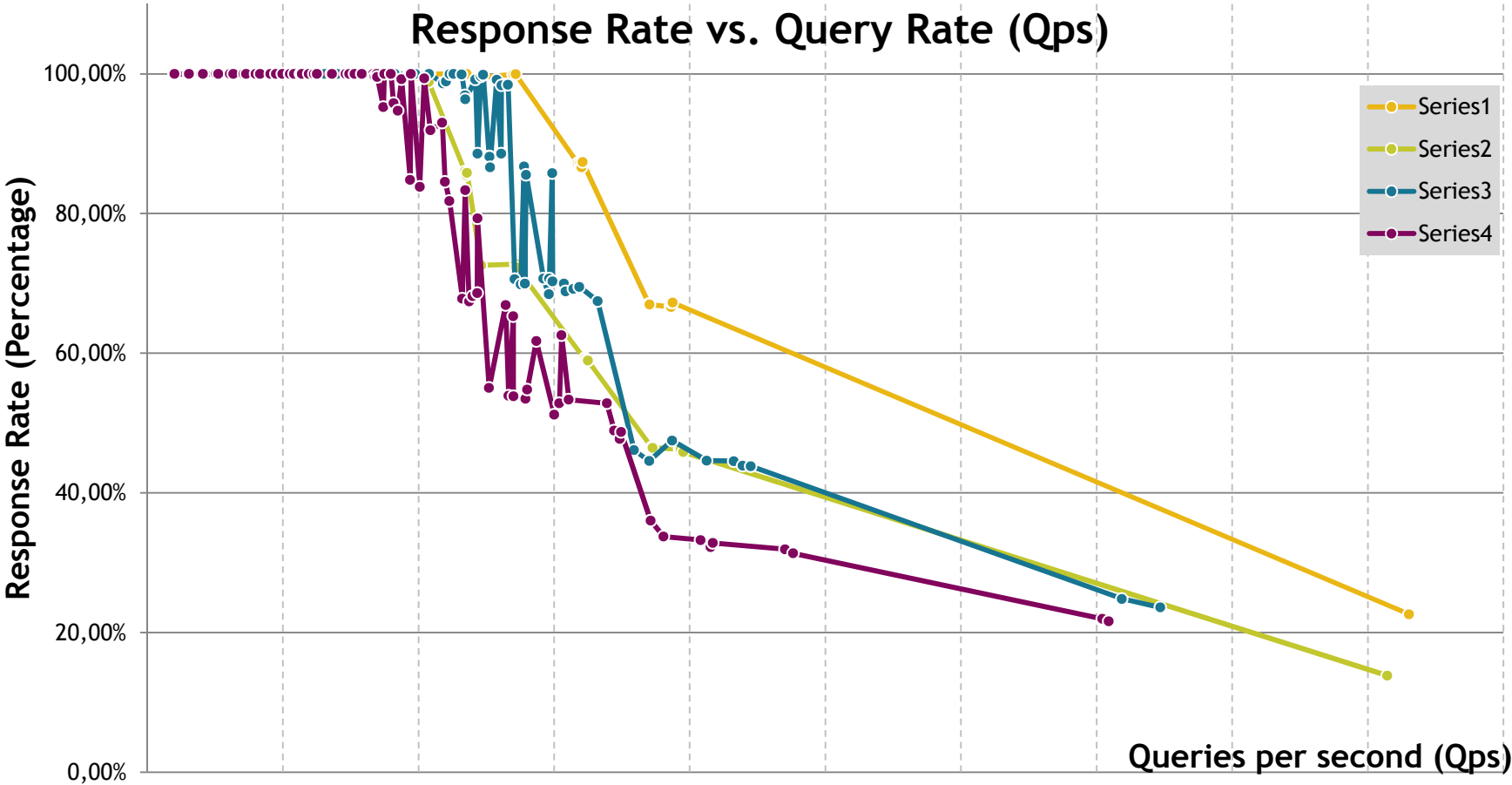


Performance measurements

- The setup (2nd coming)

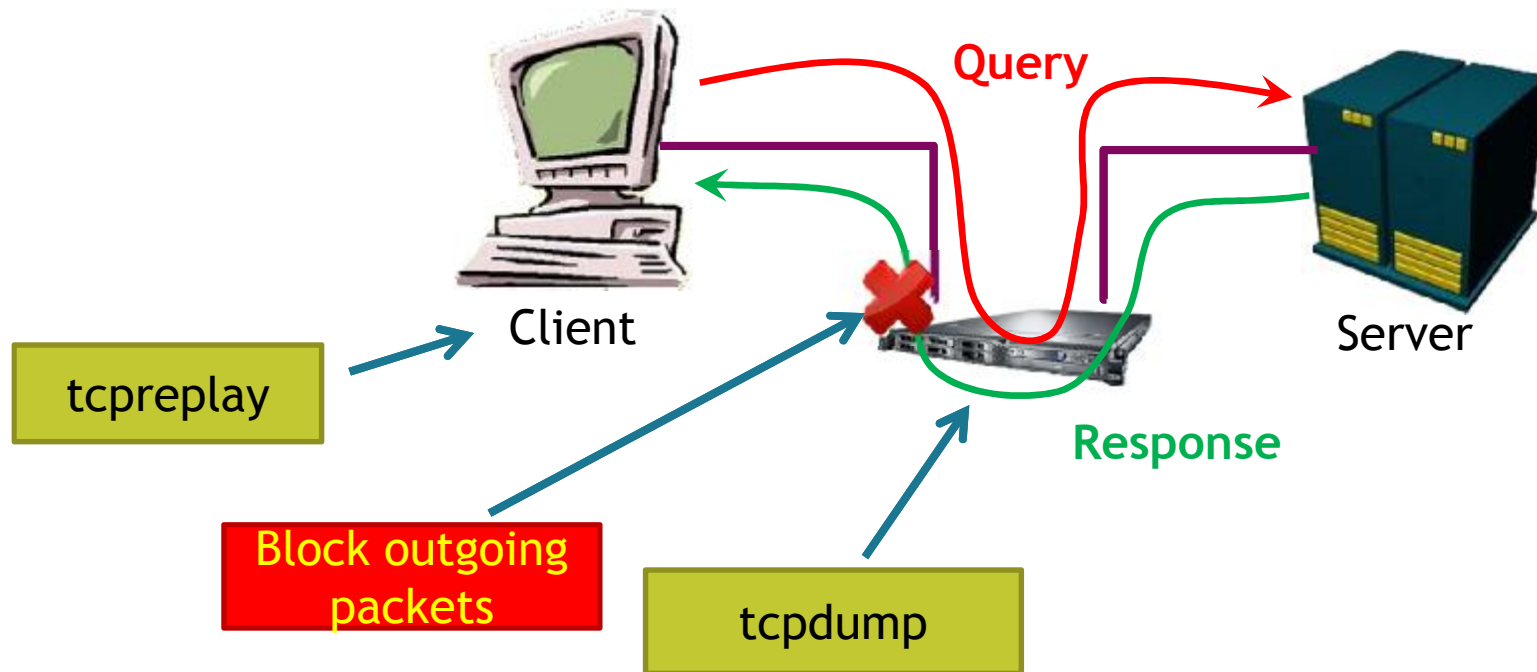


Performance measurements

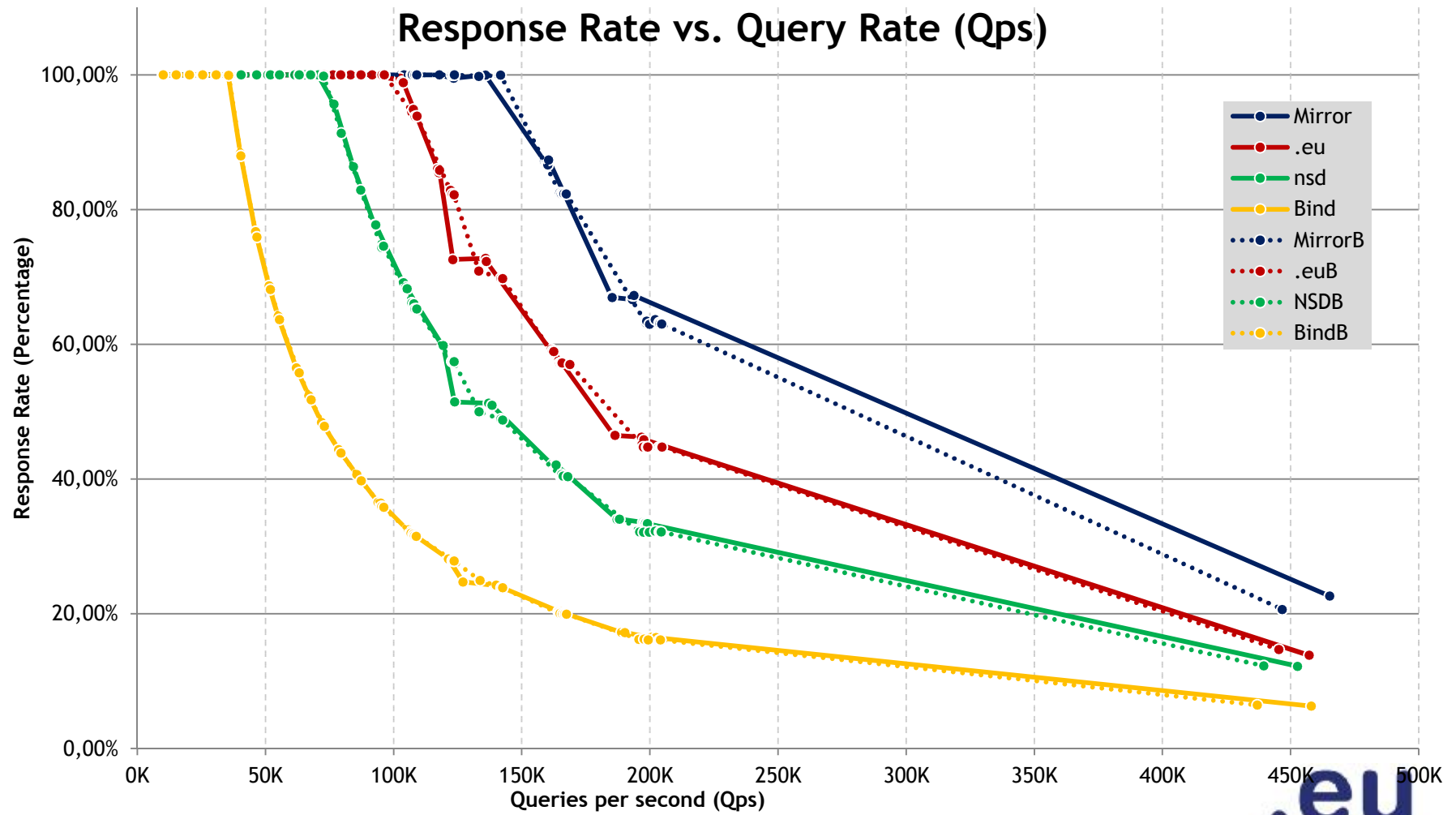


Performance measurements

- The setup (3rd coming)



Performance measurements



Conformity testing

- RFCs
- Automated testing
 - Random Bit flipping
- Manual testing
 - Deliberate bit manipulation
- Community input/testing
 - Node on the internet with “known zone file”

Availability

- “Some sort of open source” license
- Test node(s)
- Binary packages for “home testing/playing”

Code & stats

- Written in C
- Libraries
 - dnsscore : 11K lines code + 2.6K lines header
 - dnsdb : 17K lines code + 2.7K lines header
 - dnszone : 2K lines code + 0.2K lines header
- Main program
 - 8.9K lines code + 1.1K lines header
- Dev effort
 - 2.2 man year

Does it have a name?

- All the good ones were taken....
- But yes, it has a name.....

Does it have a name?

Y:A:D::I::F:A

One more thing ...



```
yadifa.eu. IN SOA ...  
      NS ns.yadifa.eu.  
      NS yadifa.eurid.eu.  
www.yadifa.eu. A ....  
yadifa.eu. MX ....
```

<http://www.yadifa.eu>

info@yadifa.eu