Handling bogus DNSSEC

CZ.NIC / www.nic.cz
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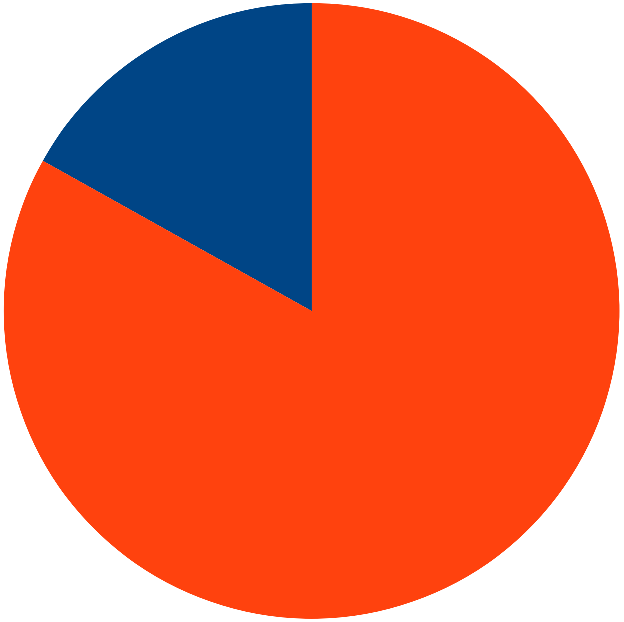
cz nic
cz domain registry

DNSSEC penetration at .CZ

Resolution 3000 x 2200 px - Free JPG file download - www.psdgraphics.com

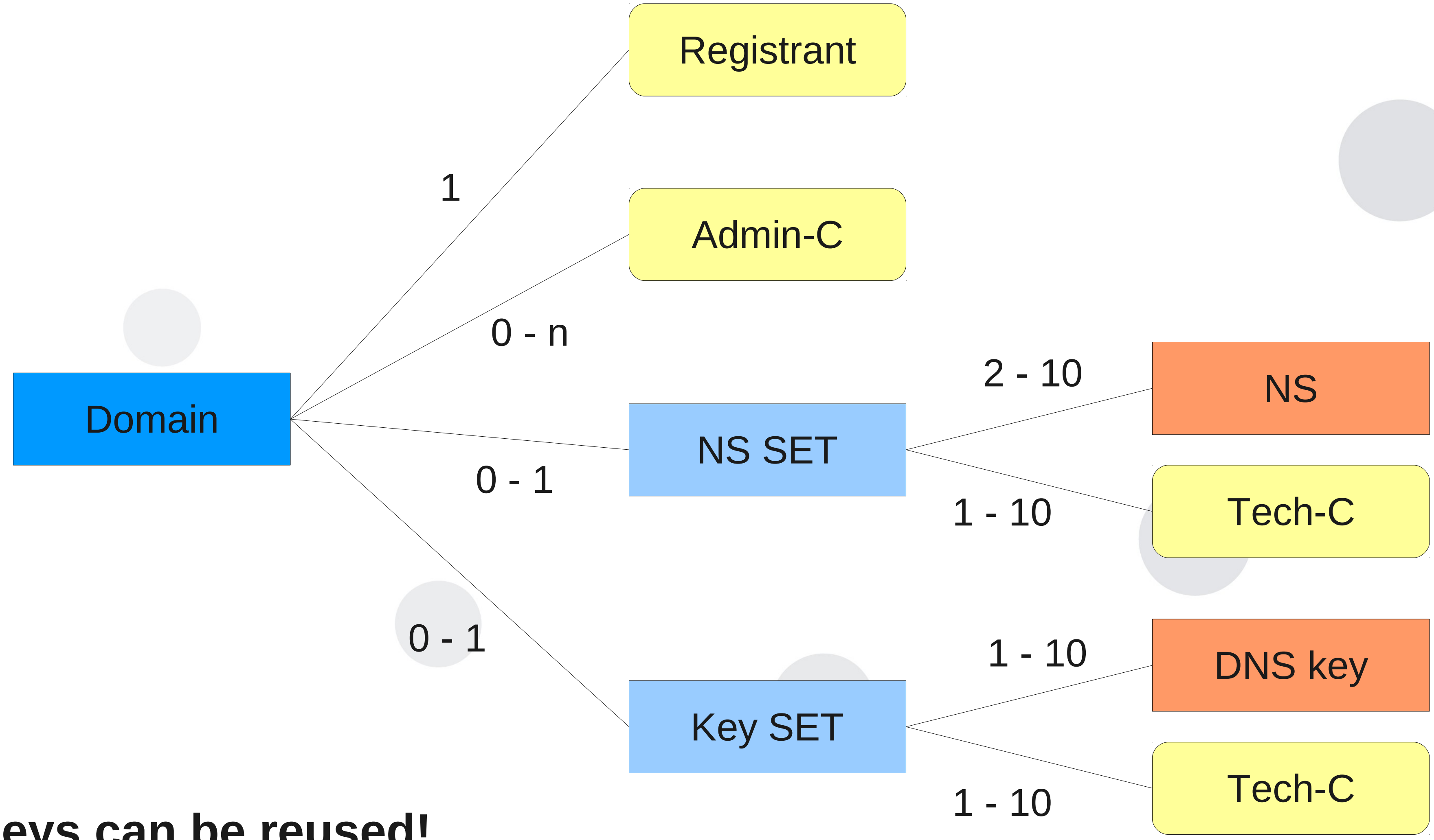
- About 17% domains is signed
- That means ~ **146.000** domains! (of 859.000)
- Check numbers at http://www.nic.cz



DNSSEC

- Three registrars enabled DNSSEC by default
  - domains on their DNS servers
- Well communicated – very good media coverage
- Some more to come...
- 11 registrars have more than 100 signed domains each
  - more than 90% of market share

KEYSET



Keys can be reused!

Problem

- DNSSEC domains get signed
- And they become bogus
  - Transfers between registrars
  - Negligence
- Some percentage of errors
  - The more domains are signed the more absolute number of failures you get
- Problem with **validating ISPs** – disadvantage compared to non-validating

First round

- EPP change of nameservers (NSSET)
  - Reset the secure delegation (KEYSET = DS)
  - Need to explicitly (re-)add the secure delegation
- Helps some cases
  - Transfer between registrars with DNS change
  - Transfer from DNSSEC-aware to DNSSEC-ignorant
- Some not
  - "Smart" registrar system
  - Only registrar → registrar transfers (and the old one stops supporting the domain)

Second round

- Detect bogus DNSSEC signatures
  - Remove secure delegation when:
    - DS exists (obviously)
    - Nameservers can be reached (not LAME)
    - Validation fails for 5 consecutive days
      - No DNSKEY in the zone
      - Bogus DNSSEC signature
      - DNSSEC signature has expired
    - Trace from root zone also fails
  - Reset counter if any other condition is met

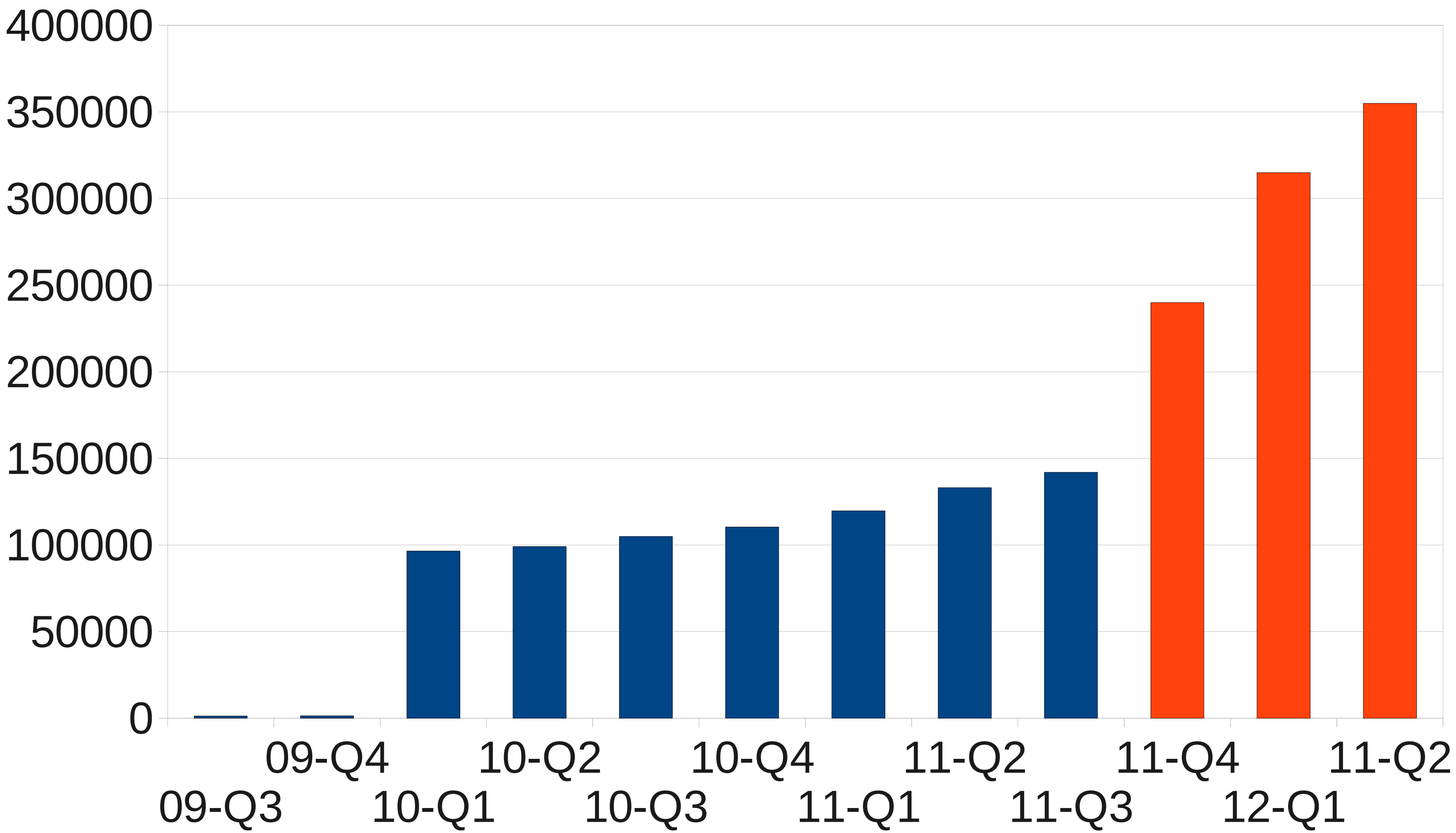
Second round (cont.)

- Registrar can choose the action:
  - Receive the list of validation failures (minority)
  - Let us handle the failures (delete KEYSET)
- Per registrar/KEYSET rule
  - Handle only well-known KEYSETs (mass hosting)
  - Rest is handled manually by help-desk (call to domain holder)
- Stop if
  - There's more than 100 secure delegations to delete
  - Any other error or unknown condition

Some boring numbers

- End of August
  - ~3000 bogus DNSSEC domains (2%)
  - Registrars fix their EPP scripts and interface
- September
  - ~1200 bogus DNSSEC domains (0,8%)
  - Some more fixing at registrar side
  - Some registrants contacted, mostly they don't care
    - But some fixed or at least removed the bogus signatures
- October
  - ~10 bogus DNSSEC domains daily

Some nicer numbers (forecast)



Conclusion

- Some percentage of signed domains does not resolve – errors, negligence, …
  - About 2% in .cz
- Disadvantage for validating ISPs
- Automatic removal of DNSKEY reference (DS)

Thank you

Questions?

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http://www.dnssec.cz