

CDAR

Continuous Data-driven Analysis of Root Stability

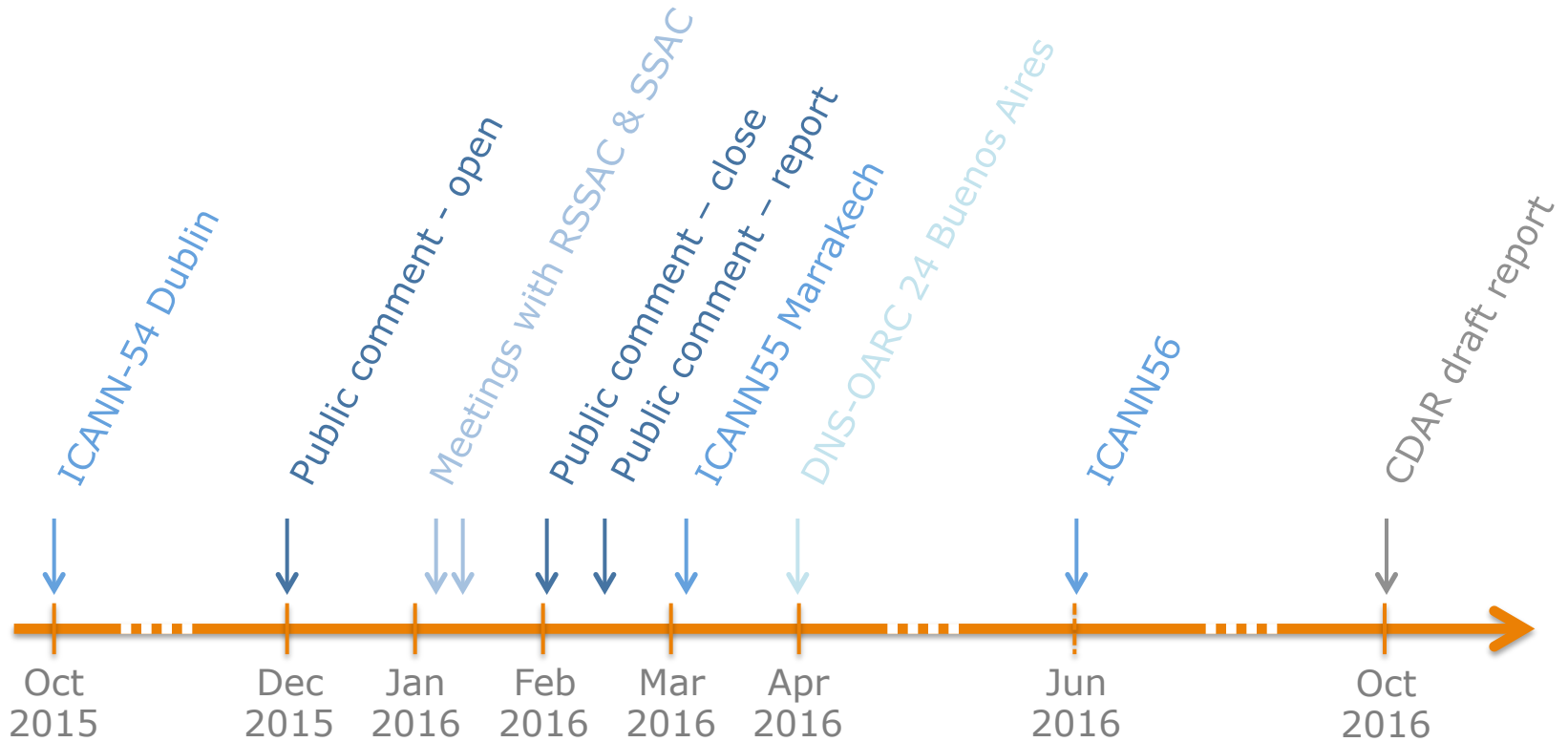
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ICANN55, Marrakech

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Objective

- Analyze technical impact of the New gTLD Program on stability of the root server system
- Input for policy development by ICANN community
 - For instance to develop contingency plans
- Today's goal: share and discuss approach and preliminary results

Community Interaction



Public Comments

- Feedback Business Constituency and an individual (DK)

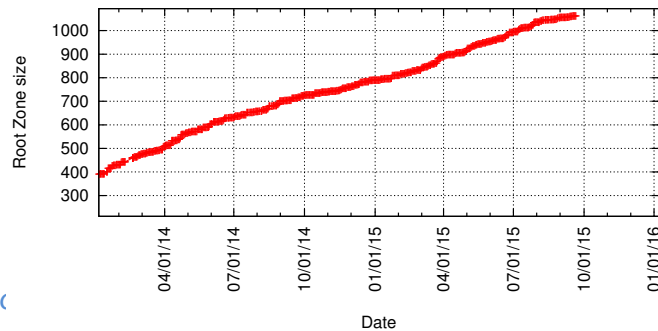
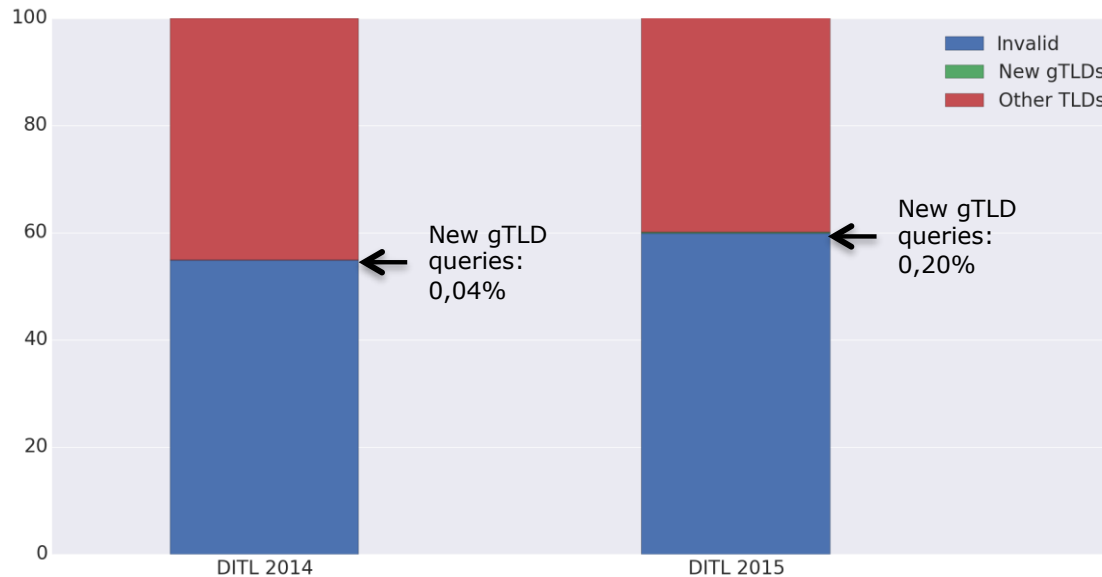
Main comments	CDAR response
Clarify limitations of the study	Study results will be a point of reference for RSS stability, comparable to past (DITL) references and extrapolation to near future scenarios where possible, but no stability “guarantees” can be provided
CDAR should identify risk parameters, ICANN should prepare contingency plans	CDAR will refine threats to RSS stability into measurable metrics
Outreach to broad DNS community to validate methodology and review results	CDAR team presents at many events and is open to any constructive suggestion (within the defined scope of the study)
Specific questions about breakdowns of study results	Results will be distinguished in relevant TLD and geographic classes

Approach

- Analysis over time of root stability parameters
 - Volume and type of new gTLD DNS traffic
 - Performance (round-trip times)
 - Correctness (DNS response codes)
 - Reachability (routes)
 - DNSSEC validation (valid/bogus delegations)
- Using real-world data
 - Passive: DITL and RSSAC002
 - Active: ATLAS/DNSMON, CDAR's (e.g., DNSSEC validation)
- Develop and share tools for continuous analysis
- Close interaction with the broader tech community
 - ICANN, DNS-OARC, IEPG/IETF

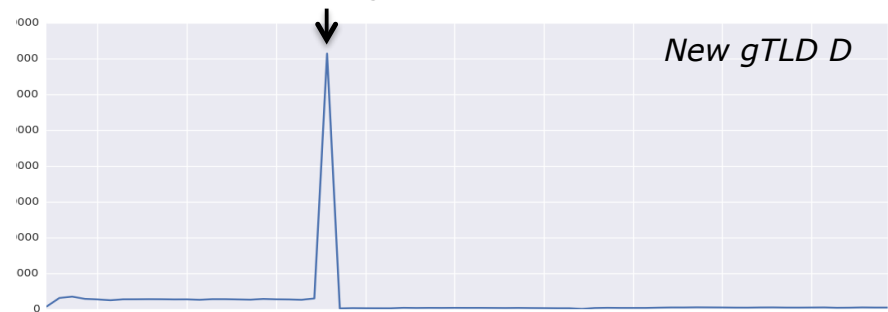
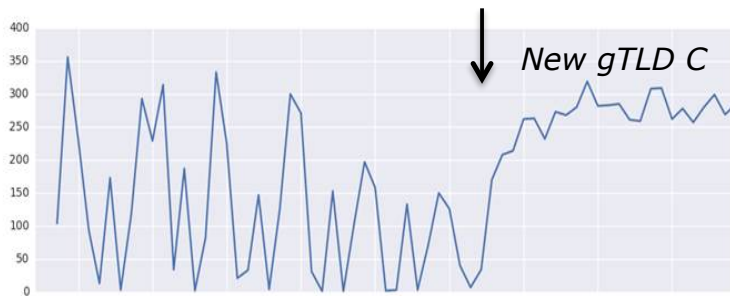
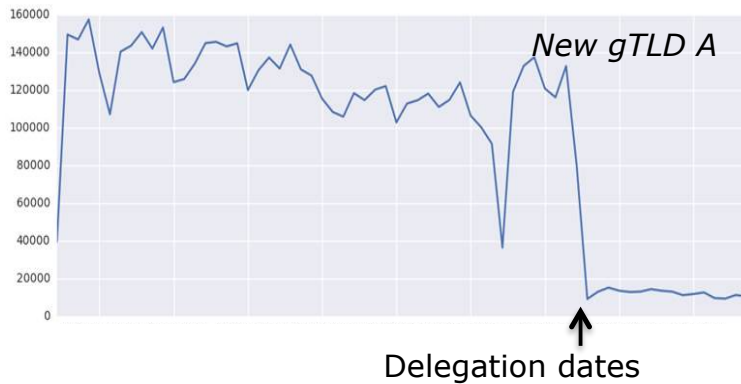
RSSAC002 and DITL Analysis

The percentage of queries to New gTLDs has increased from DITL 2014 to DITL 2015, but is still very low compared to other types of queries



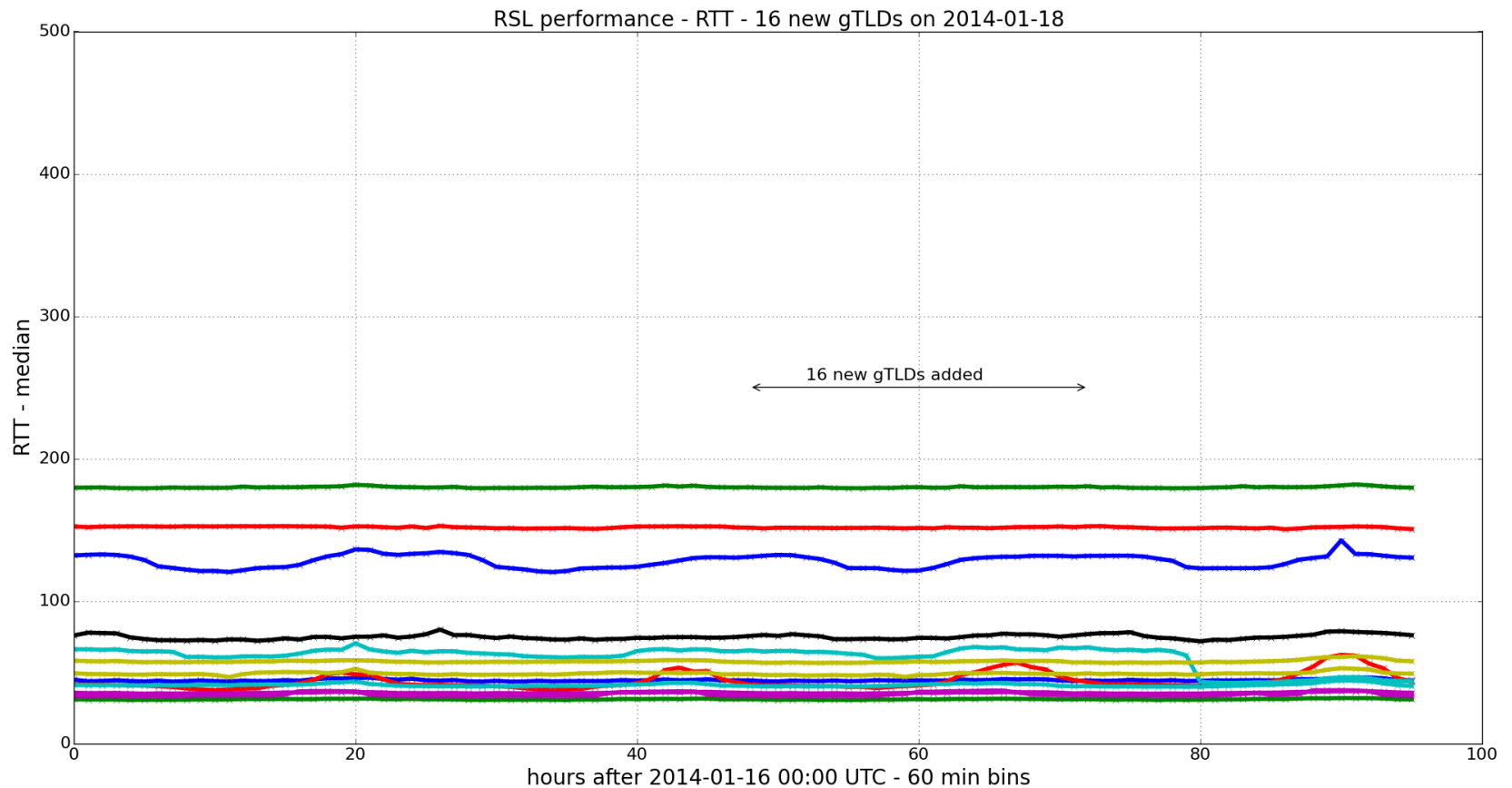
Analysis of PCAP Data

The volume of root traffic for a new gTLD often decreases significantly after delegation (gTLDs A and B), but sometimes also increases (gTLD C) or increases temporarily (gTLD D)



RIPE ATLAS Analysis (incl. DNSMON)

For one specific data point (Jan 18, 2014), the delegation of 16 New gTLDs had no statistically significant impact on the RTT



Next Steps

- Continue outreach and community interaction
 - After this presentation
 - DNS-OARC and IEPG meetings in April (Buenos Aires)
 - ICANN56
- Further data analysis
 - Break down of DNS traffic per TLD per root letter
 - Add more data points at which the root zone grew
 - Analyze stability parameters for different types of TLDs
 - Develop and share tools for continuous analysis
 - Use analysis for scenario development
- Obtain more measurement data
 - Work with RSOs to obtain root server PCAPs
 - Include DITL2016 (April)
 - Historical DSC data (DNS-OARC)

Questions and Discussion

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