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Root Zone KSK Rollover update

Office of the CTO

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The KSK rollover has happened!

⊙ The KSK rollover occurred on time as planned at 1600 UTC on 11 October 2018 with the publication of a root zone with KSK-2017 signing the root zone DNSKEY set for the first time.

Known issues at 72 hours post rollover

- ⊙ No direct reports of trouble to ICANN so far

- ⊙ A small number of reports of issues (<10) via Twitter, mailing lists and operational forums
  - ⊙ Mostly individual administrators relating minor issues
  - ⊙ No reports of significant number of issues affected

- ⊙ Two outages may potentially be the result of the KSK rollover. We are trying to reach the ISPs involved to get more information.
  - ⊙ eir (Irish ISP): https://www.rte.ie/news/2018/1013/1002966-eir-outage/
  - ⊙ Consolidated Communications (Vermont, US ISP): https://www.wcax.com/content/news/Consolidated-Communications-scrambles-to-fix-Vt-internet-outage-497030071.html

Technical Outreach

Pre-roll outreach effort

- ⊙ We spoke at more than 100 events over 3.5 years, including:

- ⊙ 2015: DNS-OARC, RIPE (twice), APNIC, ENOG, LACNOG, NETNOD
- ⊙ 2016: FIRST, RIPE (twice), AIS, NANOG (twice), ICANN56, SANOG
- ⊙ 2016: AUSNOG, LACNOG, LACNIC,NETNOD,DNS-OARC, ALAC
- ⊙ 2016: AFRINIC, EE DNS, GTER
- ⊙ 2017: NANOG (twice), APRICOT, FIRST (twice), RIPE (twice), SaudiNIC
- ⊙ 2017: CITC, NLUUG, dot AE/TRA, ENOG, ICANN 59&60, DEFCON
- ⊙ 2017: NIC EE, APNIC, LACNOG, DNS-OARC
- ⊙ 2018: DNS-OARC, ICANN 61, IETF, US-CIB, EE cert, LACNIC, CENTR
- ⊙ 2018: ENOG, i2c webinar

Pre-roll outreach effort

- We found many minor software issues related to the KSK rollover and reached out to the software vendors to get these fixed.

- BIND (ISC)
- Unbound (NLNetLabs)
- PowerDNS Recursor (PowerDNS)
- Knot Resolver (CZ NIC)

- 2000+ software repositories on Github that appeared to include code to perform DNSSEC validation
- 1400 did not have KSK-20178:
  - 762 were notified
  - 638 have not been updated in the last 6 years, or were not open to receiving any issue reports

Pre-roll outreach effort

- ⊙ We created an automated testbed for operators to test RFC 5011 automated updates
  - ⊙ 1424 subscriptions/participants

- ⊙ We sent a survey to operators of 16,308 networks
  - ⊙ 4% responded to the survey
  - ⊙ 150 operators sought more help
  - ⊙ 9 new subscriptions to the RFC 5011 testbed

- ⊙ We contacted eight major public DNS providers to confirm their readiness
  - ⊙ Clean Browsing
  - ⊙ Cloudflare
  - ⊙ Oracle (Dyn)
  - ⊙ DNS.WATCH
  - ⊙ Google Public DNS
  - ⊙ Hurricane Electric
  - ⊙ Neustar
  - ⊙ Quad9

Communications efforts

Web content and Media Relations

- Dedicated root KSK roll webpage with content available in nine languages
  - Arabic, Chinese, English, French, Russian, Spanish, Portuguese, Japanese and Korean

- Between July 2017 and October 2018 there were:
  - 59,339 Unique Page Views for the English page
  - 10,700 Unique Page Views for the Japanese page (second language with more page views).

- Media relations: over 480 articles published to date worldwide

Social Media

- ⊙ Strong presence via our social media channels in nine languages using hashtags *#keyroll* and *#kskroll*

- ⊙ Two social media paid campaigns launched:
  - ○ "What To Expect During the Root KSK Rollover" Guide
    - • 87 retweets, 3966 clicks for the English version
    - • 59 retweets for the Spanish version
    - • 1.382 clicks for the Japanese and Arabic versions
  - ○ "KSK Rollover Board Approval" Announcement
    - • 124 retweets, 4326 clicks for the English version
    - • 63 retweets for the Spanish version
    - • 1244 clicks for the Arabic version

- ⊙ 11 October milestone, first tweet to announce that the rollover occurred
  - ○ 173 retweets and 148 likes for the English version
  - ○ 90 retweets and 100 likes for the Spanish version

Resources and Correspondence

- ⊙ More than 40 resources published:
    - ⊙ Blogs
    - ⊙ Announcements
    - ⊙ Guides
    - ⊙ One-pagers
    - ⊙ Educational videos
    - ⊙ PowerPoint decks
    - ⊙ Stories in meeting and regional newsletters
    - ⊙ Homepage banners (*icann.org*)

- ⊙ Correspondence:
    - ⊙ June 2017: Göran Marby sent a letter to telecommunications regulators and GAC representatives in over 150 countries notifying them of the root KSK roll and asking them to contact network operators in their countries.
    - ⊙ October 2017: a follow-up letter was sent to announce the postponement of the root KSK rollover.
    - ⊙ May 2018: David Conrad sent a letter to Internet Exchange Points (IXP) administrators around the world.

Upcoming milestones

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- ⊙ Q4 Root KSK Ceremony
  - ⊙ Signatures are generated in advance that, when published, will revoke KSK-2010 via the RFC 5011 automated update protocol

- ⊙ 11 January 2019
  - ⊙ The root zone is published with the RFC 5011 revoke bit set on KSK-2010

- ⊙ 22 March 2019
  - ⊙ The root zone is published without KSK-2010 for the first time
  - ⊙ Only KSK-2017 remains published

- ⊙ Q3 Root KSK Ceremony
  - ⊙ KSK-2010 is deleted from the HSMs in the U.S. East Coast Key Management Facility

- ⊙ Q4 Root KSK Ceremony
  - ⊙ KSK-2010 is deleted from the HSMs in the U.S. West Coast Key Management Facility