

DNSSEC Workshop

Dan York, Internet Society | ICANN 59 | June 2017

Program Committee

- Steve Crocker, Shinkuro, Inc.
- Mark Elkins, DNS/ZACR
- Jean Robert Hountomey, AfricaCERT
- Jacques Latour, CIRA
- Xiaodong Lee, CNNIC
- Luciano Minuchin, NIC.AR
- Russ Mundy, Parsons
- Ondřej Surý, CZNIC
- Yoshiro Yoneya, JPRS
- Dan York, Internet Society
- Julie Hedlund, Andrew McConachie, and Kathy Schnitt, ICANN

DNSSEC Lunch and Implementer's Gathering Sponsors

- Afilias
- CIRA
- SIDN



- Opportunity for a fourth sponsor for 2017/2018!
Please contact york@isoc.org

The DNSSEC Workshop and associated activities at ICANN are an organized activity of the:

- **ICANN Security and Stability Advisory Committee (SSAC)**



with additional assistance from the:

- **Internet Society Deploy360 Programme**



Program

Key to Level of Difficulty:

NOVICE = New to DNSSEC and want to learn more

INTERMEDIATE = Familiar with DNSSEC and how it works, but not of all concepts

EXPERT = Expert understanding of DNSSEC and extensive experience in deployment/implementation

0900-0915 – Presentation: *DNSSEC Workshop Introduction, Program, Deployment Around the World – Counts, Counts, Counts*

Presenter: Jacques Latour, CIRA

0915-0955 – Panel Discussion: *DNSSEC Deployment Challenges*

Moderator: Mark Elkins, DNS/ZACR

Panelists:

Alain Aina, WACREN

Mark Elkins, DNS/ZACR

Heinrich Strauss, Strauss Consultants

Abdalmonem Tharwat Galila, .MASR IDN -- *DNSSEC Deployment Challenges*

0955-1015 – Presentation: *Middlebox DANE for HTTPS*

Presenter: Andrew McConachie, ICANN

1015-1030: Coffee Break

1030-1100 – Tutorial/Discussion: *Root Key Signing Key Rollover Test Bed*

Presenter: Adiel Akplogan, ICANN

Moderator: Russ Mundy, Parsons

1100-1145 – Panel Discussion: *CDS and CNS Implementation – What is the Policy Impact?*

Moderator: Jacques Latour, CIRA

Panelists:

Erwin Lansing, DK Hostmaster

Jacques Latour, CIRA

David Lawrence, Akamai

John Levine, Taugh

Paul Wouters, RedHat

1145-1150 – Presentation: *DNSSEC How Can I Help?*

Presenter: Russ Mundy, Parsons

1150-1200 – *The Great DNS/DNSSEC Quiz*

Presenter: Jacques Latour, CIRA

1215-1315 – *Sponsored Lunch (Tickets Required) – Level 4 Foyer*



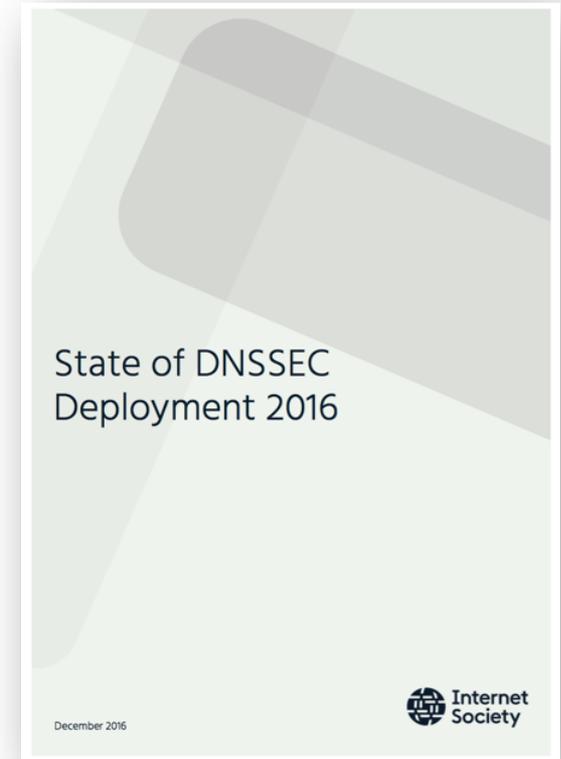
DNSSEC Deployment Around the World: Counts, Counts, Counts

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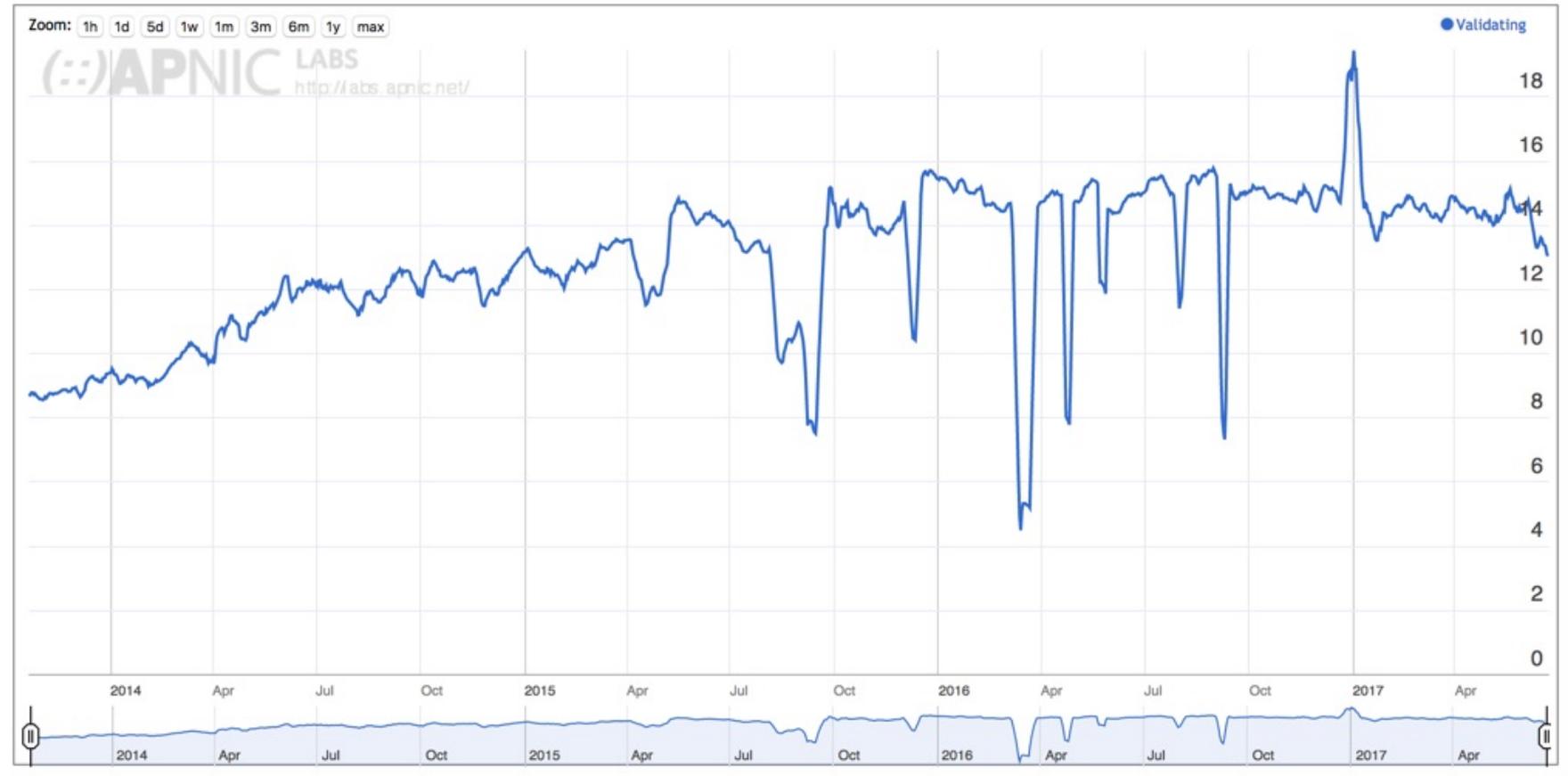
State of DNSSEC Deployment 2016

Detailed report on global deployment. Available for download now.

<https://www.internetsociety.org/doc/state-dnssec-deployment-2016>



Use of DNSSEC Validation for World (XA)



<http://stats.labs.apnic.net/dnssec/XA?c=XA&x=1&g=0&r=0&w=7&r=1>

Code	SubRegion	DNSSEC Validates	Uses Google PDNS
QQ	Melanesia, Oceania	35.18%	27.27%
XH	Eastern Africa, Africa	31.03%	33.75%
XK	Southern Africa, Africa	28.71%	21.28%
QO	Western Europe, Europe	26.56%	11.25%
XP	South America, Americas	26.27%	18.47%
QP	Australia and New Zealand, Oceania	26.20%	4.64%
QM	Northern Europe, Europe	24.77%	8.42%
XQ	Northern America, Americas	24.05%	9.35%
XW	Eastern Europe, Europe	21.94%	15.22%
XN	Caribbean, Americas	15.21%	20.94%
XV	Western Asia, Asia	15.06%	13.92%
XI	Middle Africa, Africa	14.97%	32.03%
QR	Micronesia, Oceania	14.49%	38.59%
XT	Southern Asia, Asia	13.93%	17.63%
XR	Central Asia, Asia	12.95%	15.77%
QN	Southern Europe, Europe	12.79%	12.23%
XU	South-Eastern Asia, Asia	10.47%	15.12%
XL	Western Africa, Africa	9.91%	37.71%
XO	Central America, Americas	7.75%	14.43%
XJ	Northern Africa, Africa	7.17%	15.27%
XS	Eastern Asia, Asia	2.77%	4.90%
QS	Polynesia, Oceania	2.77%	7.95%

Low % of Google PDNS usage means more DNSSEC support by local ISPs.

High % of Google PDNS usage means ISPs are using Google for DNS versus operating their own DNS servers.

<http://stats.labs.apnic.net/dnssec/XA?c=XA&x=1&g=1&r=0&w=7&r=1>

CC	Country	DNSSEC Validates	Uses Google PDNS
LR	Liberia, Western Africa, Africa	83.60%	93.92%
KM	Comoros, Eastern Africa, Africa	77.21%	58.50%
SL	Sierra Leone, Western Africa, Africa	50.79%	83.83%
KE	Kenya, Eastern Africa, Africa	46.52%	25.71%
SO	Somalia, Eastern Africa, Africa	44.57%	82.32%
TG	Togo, Western Africa, Africa	44.30%	46.80%
YT	Mayotte, Eastern Africa, Africa	40.83%	43.24%
CI	Cote d'Ivoire, Western Africa, Africa	39.69%	10.15%
GM	Gambia, Western Africa, Africa	39.13%	66.51%
CD	Democratic Republic of the Congo, Middle Africa, Africa	37.75%	67.50%
BJ	Benin, Western Africa, Africa	36.10%	84.78%
MG	Madagascar, Eastern Africa, Africa	35.41%	10.27%
TZ	United Republic of Tanzania, Eastern Africa, Africa	32.66%	40.79%
ZM	Zambia, Eastern Africa, Africa	29.39%	63.80%
ZA	South Africa, Southern Africa, Africa	29.31%	20.46%
MW	Malawi, Eastern Africa, Africa	27.91%	34.50%
TD	Chad, Middle Africa, Africa	26.90%	44.50%
SS	South Sudan, Northern Africa, Africa	24.62%	40.13%
SZ	Swaziland, Southern Africa, Africa	24.57%	38.90%
GH	Ghana, Western Africa, Africa	24.18%	45.72%
RW	Rwanda, Eastern Africa, Africa	23.30%	28.85%
DJ	Djibouti, Eastern Africa, Africa	21.72%	58.67%
CV	Cape Verde, Western Africa, Africa	21.10%	27.68%
LY	Libya, Northern Africa, Africa	20.64%	13.47%
MR	Mauritania, Western Africa, Africa	20.50%	53.23%

Low % of Google PDNS usage means more DNSSEC support by local ISPs.

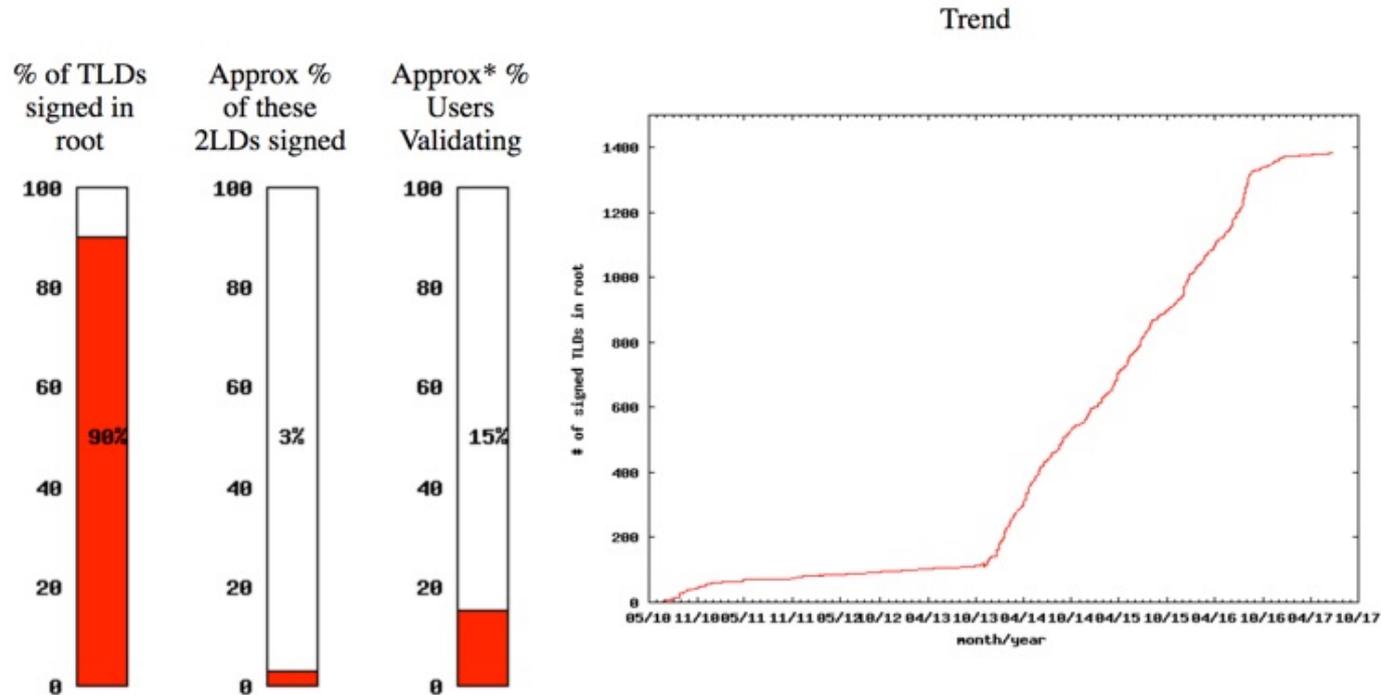
High % of Google PDNS usage means ISPs are using Google for DNS versus operating their own DNS servers.

<https://stats.labs.apnic.net/dnssec/XB?o=cXAw7x1g1r1>

DNSSEC Deployment Report

Thu Jun 22 23:09:19 UTC 2017

Total TLDs: 1534 / Signed TLDs in root: 1383 / Recently added: sa. (06/22/2017)



*From <http://stats.labs.apnic.net/dnssec> Some tools: <http://www.co.tt>

<https://rick.eng.br/dnssecstat/>

Top TLDs in number of signed domains

TLD		Description	DS Date	% Signed	Signed/Total	AlgNo:Count
nl.		SIDN (Stichting Internet Domeinregistratie Nederland)	11-NOV-2010	46.77	2687044/5745157	
br.		Comite Gestor da Internet no Brasil	23-JUN-2010	24.99	978423/3914608	
com.		VeriSign Global Registry Services	31-MAR-2011	0.55	704981/127633665	1:82 2:31 3:52 5:9932 6:2 7:465147 8:124865 10:735 12:22 13:104005 14:96 253:3 254:9
se.		The Internet Infrastructure Foundation	27-AUG-2010	47.96	699141/1457784	
cz.		CZ.NIC, z.s.p.o	24-JUN-2010	51.52	668366/1297400	
no.		UNINETT Norid A/S	15-NOV-2014	57.82	423629/732684	
net.		VeriSign Global Registry Services	9-DEC-2010	0.73	109055/14905359	1:19 2:3 3:19 5:3264 6:3 7:70907 8:15554 10:310 12:5 13:18885 14:82 253:2 254:2
hu.		Council of Hungarian Internet Providers (CHIP)	22-FEB-2015	15.30	108522/709310	

Note: Only includes the TLDs for which Rick Lamb can get statistics. (Example, .GOV is not listed.)

NEW! Rick is now tracking the number of domains using specific DNSSEC crypto algorithms

<https://rick.eng.br/dnssecstat/>

New gTLDs

TLD Breakdown		
new gTLD	Domains	% Share
1. .ovh	15,044	12.49%
2. .amsterdam	5,626	4.67%
3. .xyz	4,824	4.01%
4. .fr	3,280	2.72%
5. .bank	2,886	2.40%
6. .paris	2,601	2.16%
7. .online	1,853	1.54%
8. .top	1,404	1.17%
9. .shop	1,259	1.05%
10. .immo	963	0.80%
11. .tech	953	0.79%
12. .email	948	0.79%
13. .cloud	909	0.75%
14. .bzh	882	0.73%
15. .club	841	0.70%
16. .website	737	0.61%
17. .space	681	0.57%
18. .brussels	625	0.52%
19. .link	623	0.52%
20. .nrw	623	0.52%

Note that
.BANK has
100% signed,
as does
.INSURANCE.

<https://ntldstats.com/dnssec>

TLD DNSSEC Implementation Status

Experimental – internal experiments

Announced – Public commitment to deploy

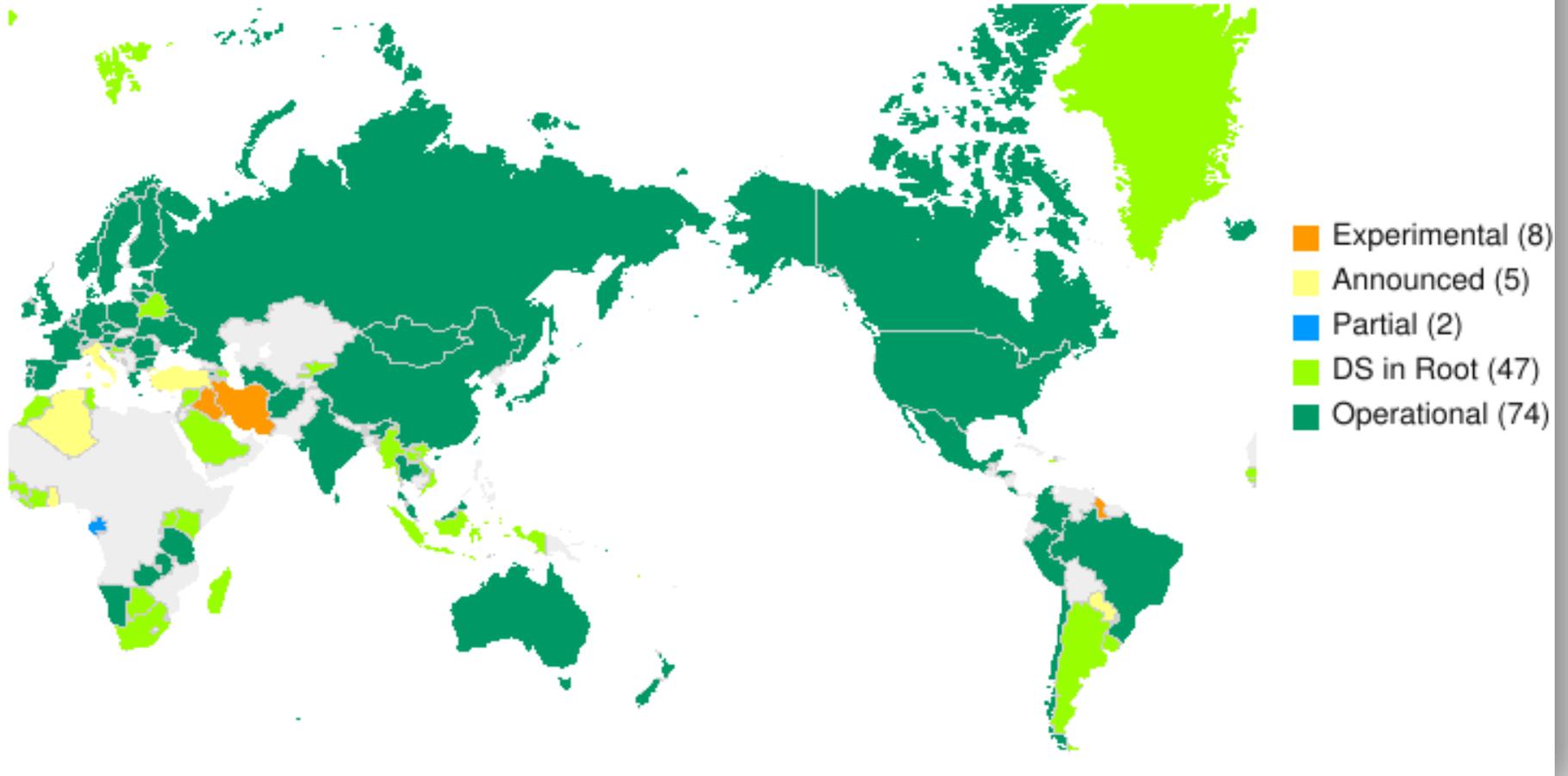
Partial – Zone is signed but not in operation

DS in Root

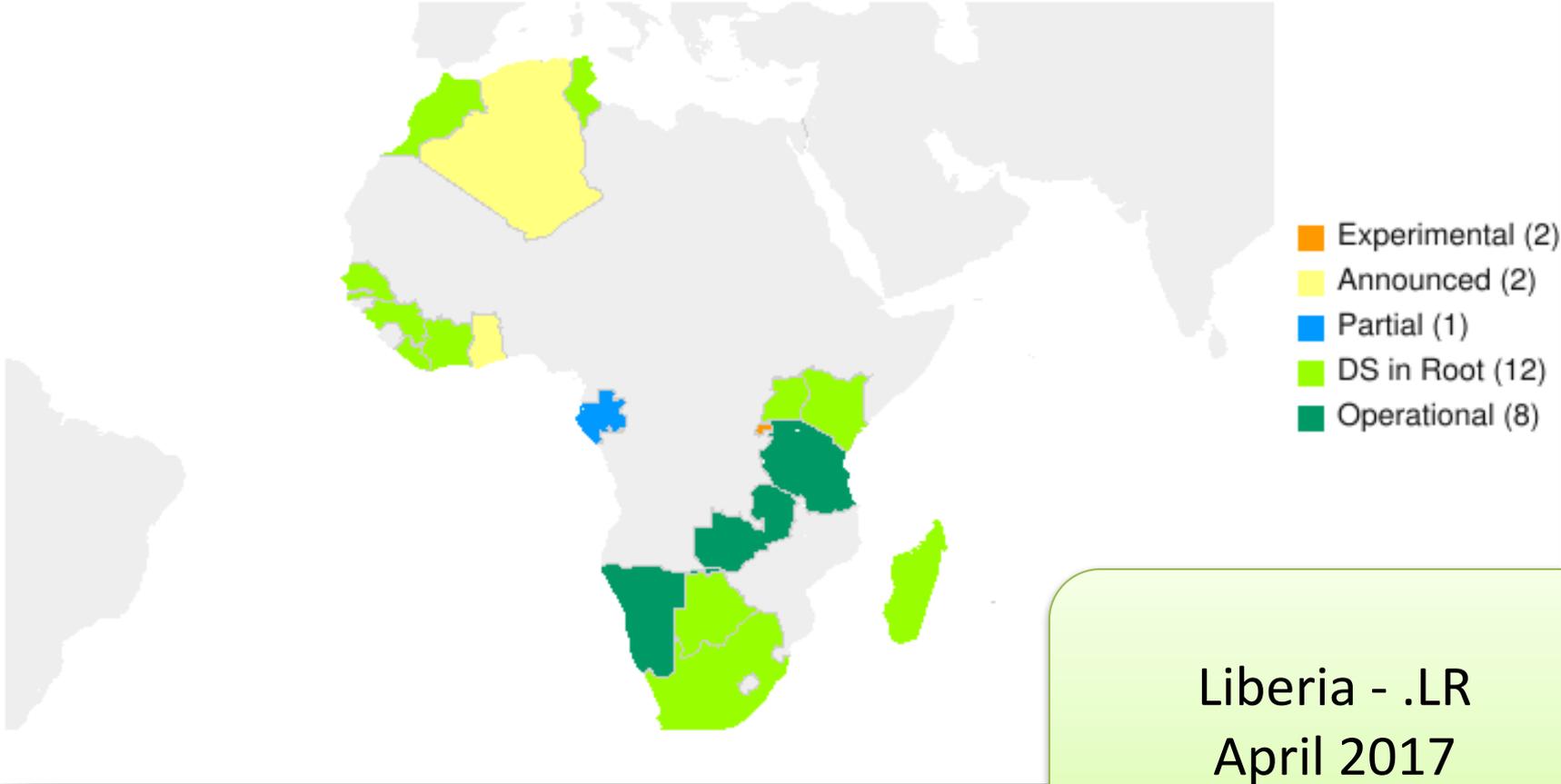
Operational – Accepting signed delegations



ccTLD DNSSEC Status on 2017-06-23



AF ccTLD DNSSEC Status on 2017-06-23

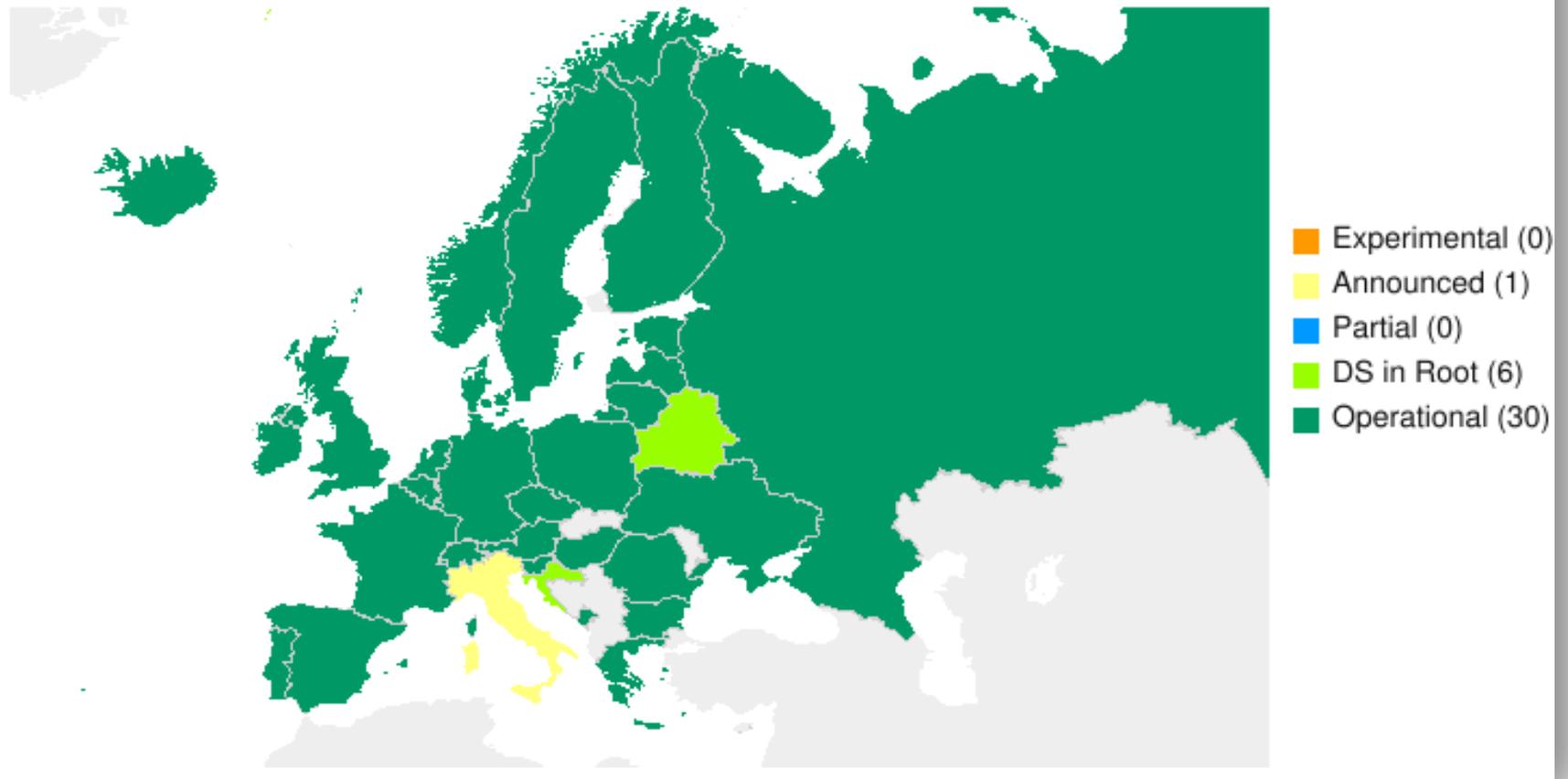


AP ccTLD DNSSEC Status on 2017-06-23

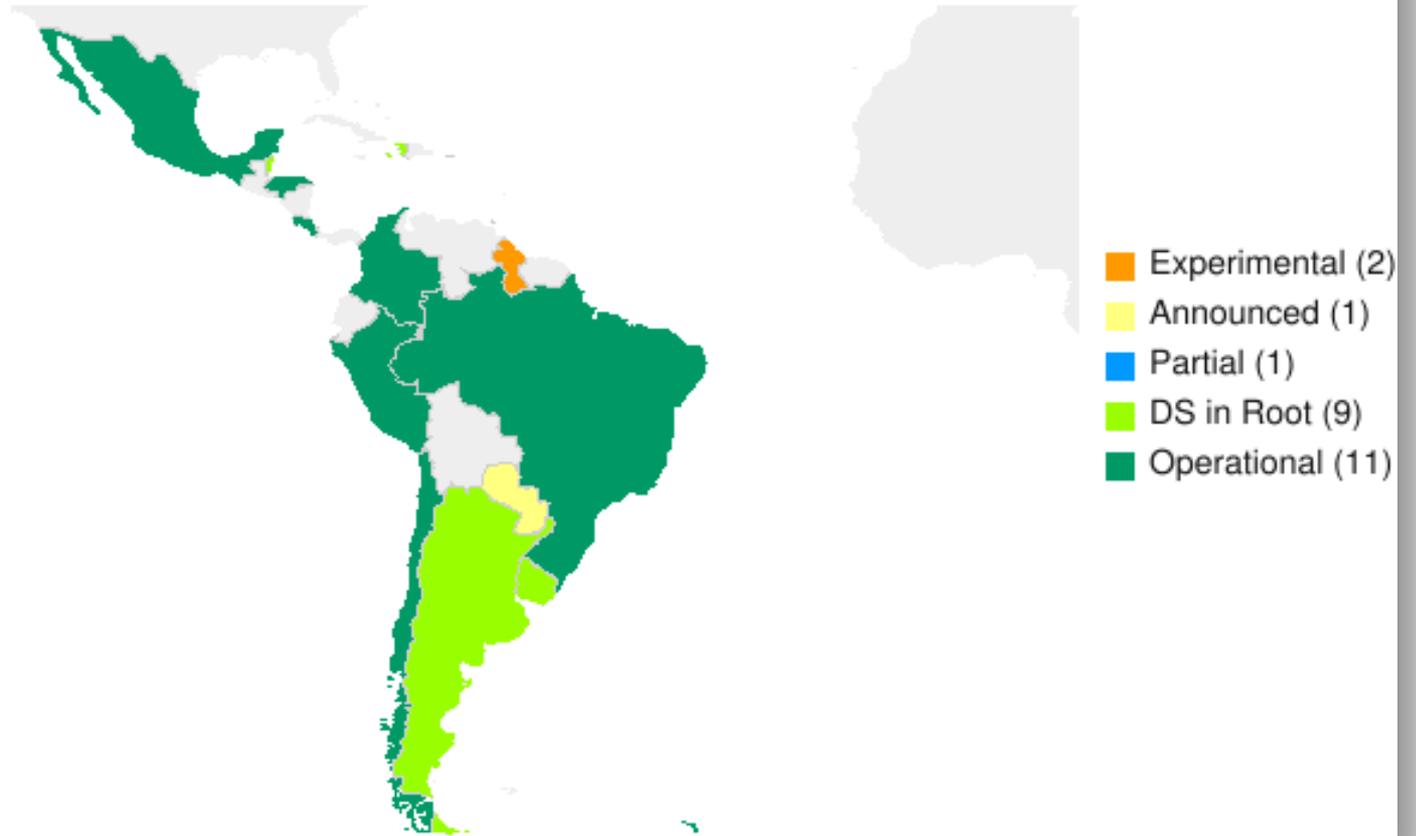


Saudi Arabia - .SA
June 2017

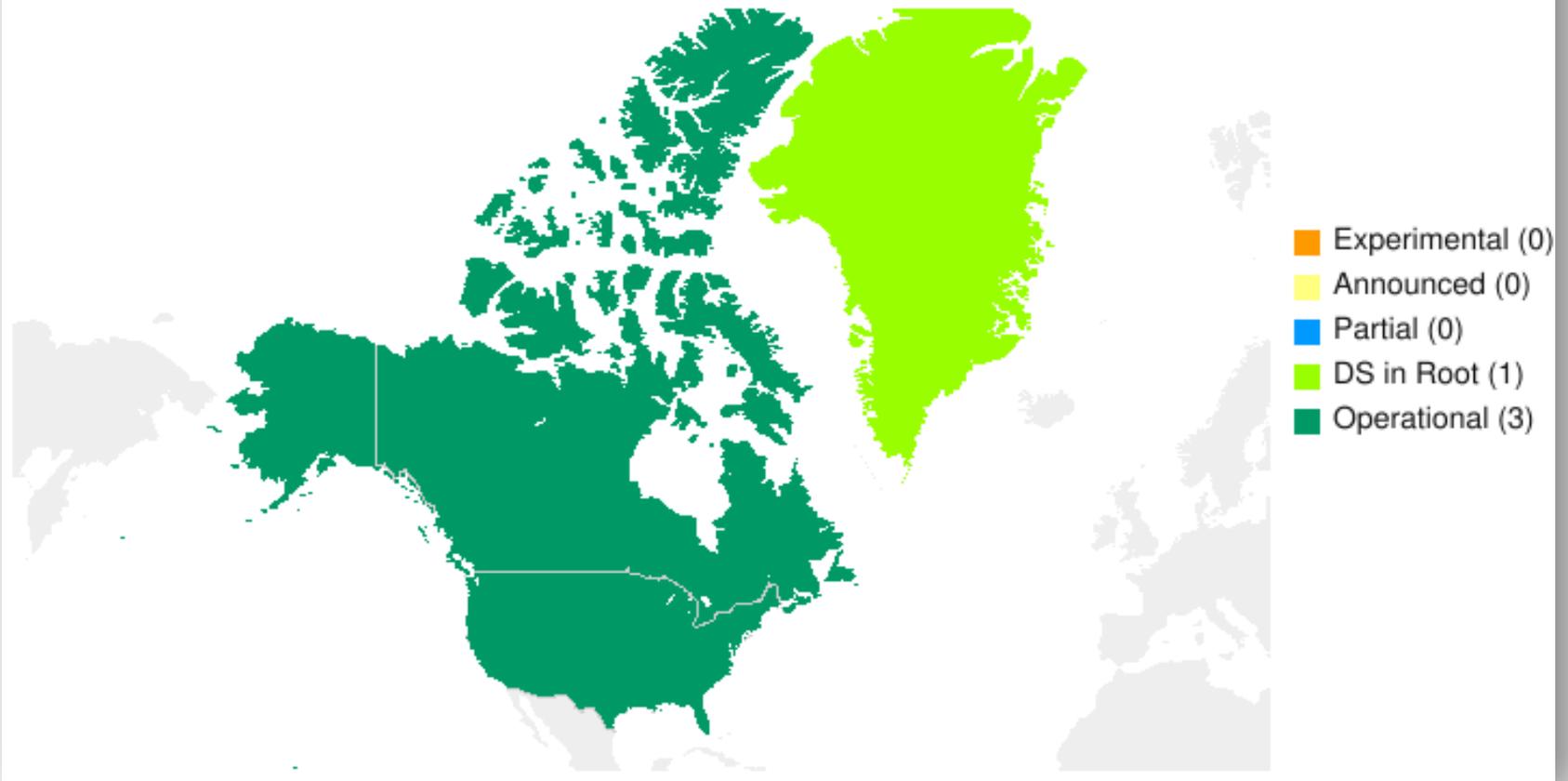
EUR ccTLD DNSSEC Status on 2017-06-23



LAC ccTLD DNSSEC Status on 2017-06-23



NA ccTLD DNSSEC Status on 2017-06-23



Receiving the DNSSEC Deployment Maps

The DNSSEC Deployment Maps are published via email every Monday morning through the Internet Society Deploy360 Programme.

To subscribe, visit:

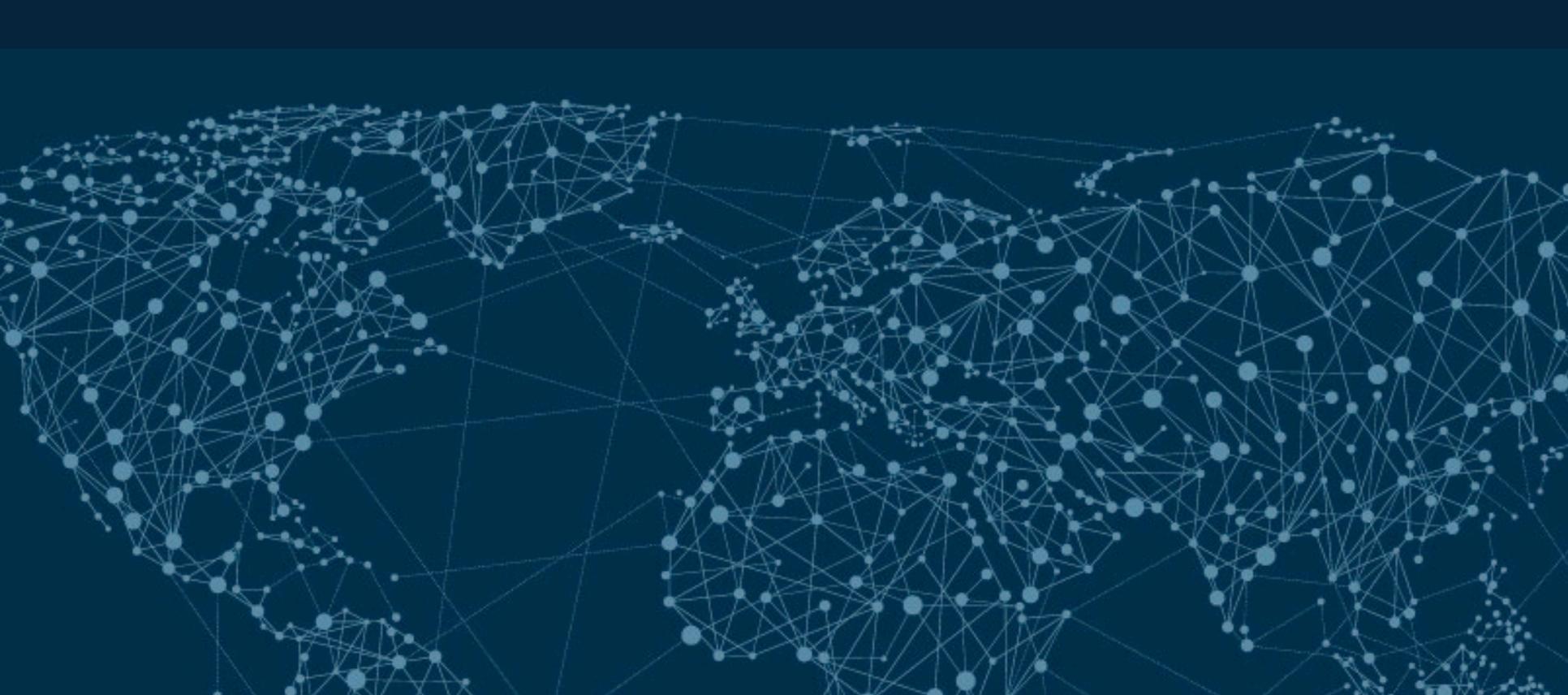
www.internetsociety.org/deploy360/dnssec/maps/

DNSSEC History Project

The DNSSEC History Project is an ongoing project to collect and record the history of the work that went into bringing about the deployment of DNSSEC. To view – or to contribute – please see:

<https://www.dnssec-deployment.org/history/>

NEW URL!



Thank you and Questions