



DNSSEC Workshop

Wes Hardaker, USC/ISI | ICANN 57 | November 2016

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 and Kathy Schnitt, ICANN

Luncheon Sponsors

- Afilias
- CIRA
- Dyn
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- Opportunity for a fifth sponsor for 2017!
Please contact york@isoc.org

DNSSEC Implementer's Gathering Sponsor

The Program Committee held a DNSSEC Implementers Gathering on 06 November sponsored by:



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

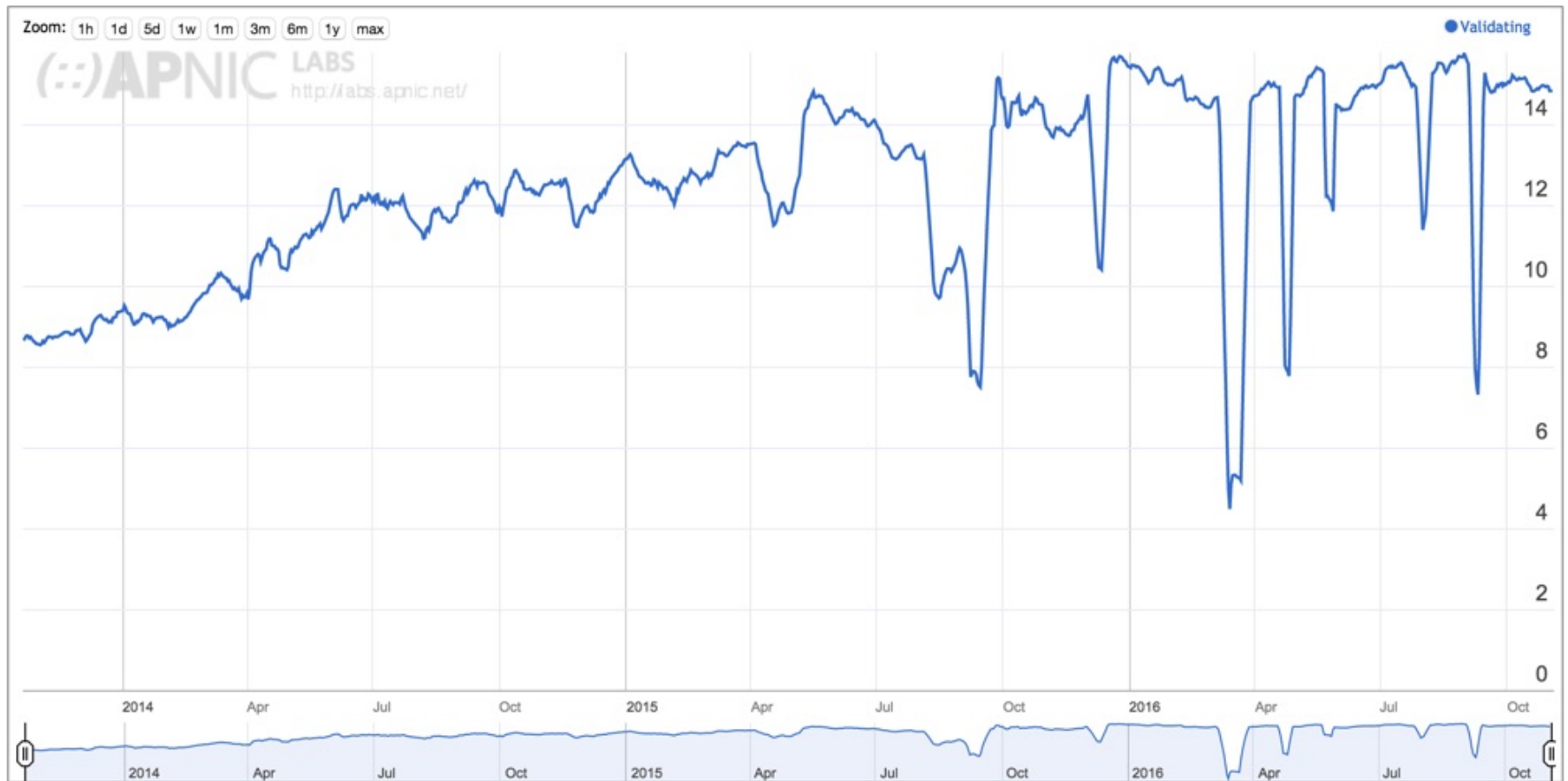
0900-0915 – Presentation: Wes Hardaker, USC/ISI – DNSSEC Workshop Introduction, Program, Deployment Around the World – Counts, Counts, Counts
0915-1000 – Panel Discussion: DNSSEC Activities in the Asia Pacific Region
Moderator: Julie Hedlund, ICANN
Panelists:
Rajiv Kumar, .IN Registry -- <i>.IN Registry DNSSEC Updates</i>
Ryan Tan, SGNIC -- <i>.sg DNSSEC</i>
Dang Duc Hanh, VNNIC – <i>DNSSEC Deployment for .VN Domain Name</i>
Yoshiro Yoneya, JPRS – <i>Root KSK Rollover Activities in Japan and Findings</i>
1000-1030 – Presentation: Aggressive Use of NSEC/NSEC3
Warren Kumari, Google
1030-1100: Coffee Break
1100-1145 – Panel: Root Key Rollover Discussion – Recursive Resolver Software Readiness
Moderator: Jacques Latour, CIRA
Panelists:
Jaap Akkerhuis, NLNet Labs – <i>Unbound and KSK Rollover</i>
David Conrad, ICANN -- <i>KSK Rollover</i>
Rod Rasmussen, Infoblox
Mukund Sivaraman, ISC – <i>BIND and Root Key Rollover</i>
Jaromír Talíř, CZNIC – <i>Knot Resolver: A flexible DNSSEC-Validating Resolver</i>
1145-1205 – Demonstration – DS Automated Provisioning (DSAP)
Jacques Latour, CIRA
1205-12:30 – Presentation – Critical Infrastructure DNS Research Testbed
Wes Hardaker, USC/ISI
1230-1245 – The Great DNSSEC/DNS Quiz – Wes Hardaker, USC/ISI
1245-1330: Lunch Break
1330-1355 – Demonstration: DNSSEC in Windows for DNS Server
Kumar Ashutosh, Microsoft
1355-1420 – Demonstration: DNSSEC-S/MIME-DANE Package for Microsoft Outlook
Richard Lamb, ICANN
1420-1450 – Presentation: Secure Mailserver Using DNSSEC/TLSA
Jaap Akkerhuis, NLNet Labs – <i>DNSSEC Enables Secure Mail</i>
1450-1500 – Presentation: DNSSEC How Can I Help?
Jacques Latour, CIRA



DNSSEC Deployment Around the World: Counts, Counts, Counts

Wes Hardaker, USC/ISI | ICANN 57 | November 2016

Use of DNSSEC Validation for World (XA)



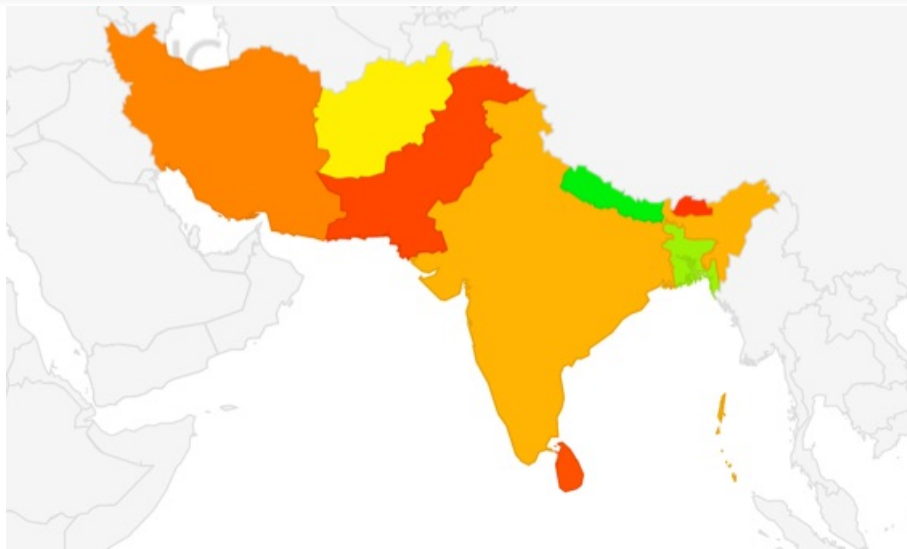
<http://stats.labs.apnic.net/dnssec/XA?c=XA&x=1&g=0&r=0&w=7&r=1>

Code	SubRegion	DNSSEC Validates	Uses Google PDNS
QQ	Melanesia, Oceania	35.23%	27.69%
XH	Eastern Africa, Africa	32.99%	29.26%
XK	Southern Africa, Africa	31.05%	15.81%
XQ	Northern America, Americas	25.44%	8.80%
QM	Northern Europe, Europe	22.68%	4.44%
QP	Australia and New Zealand, Oceania	21.59%	4.32%
QO	Western Europe, Europe	21.58%	6.33%
XT	Southern Asia, Asia	21.24%	23.82%
XP	South America, Americas	21.17%	15.17%
XW	Eastern Europe, Europe	20.27%	14.25%
XI	Middle Africa, Africa	15.33%	33.23%
XU	South-Eastern Asia, Asia	13.02%	16.01%
XN	Caribbean, Americas	12.94%	14.87%
XR	Central Asia, Asia	11.37%	14.52%
QN	Southern Europe, Europe	11.04%	10.38%
XV	Western Asia, Asia	10.84%	12.64%
QR	Micronesia, Oceania	10.49%	26.55%
XJ	Northern Africa, Africa	8.67%	16.94%
XO	Central America, Americas	7.51%	16.58%
XL	Western Africa, Africa	7.01%	34.79%
XS	Eastern Asia, Asia	2.64%	5.46%
QS	Polynesia, Oceania	2.23%	7.25%

<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
NP	Nepal, Southern Asia, Asia	55.47%	12.52%
BD	Bangladesh, Southern Asia, Asia	39.89%	45.23%
AF	Afghanistan, Southern Asia, Asia	27.67%	48.60%
IN	India, Southern Asia, Asia	20.47%	21.25%
MV	Maldives, Southern Asia, Asia	16.50%	24.95%
IR	Iran (Islamic Republic of), Southern Asia, Asia	14.91%	27.21%
LK	Sri Lanka, Southern Asia, Asia	8.36%	15.18%
PK	Pakistan, Southern Asia, Asia	6.79%	13.71%
BT	Bhutan, Southern Asia, Asia	3.95%	6.18%

Note: Minimal use of Google PDNS in some countries (this means DNSSEC support by local ISPs)

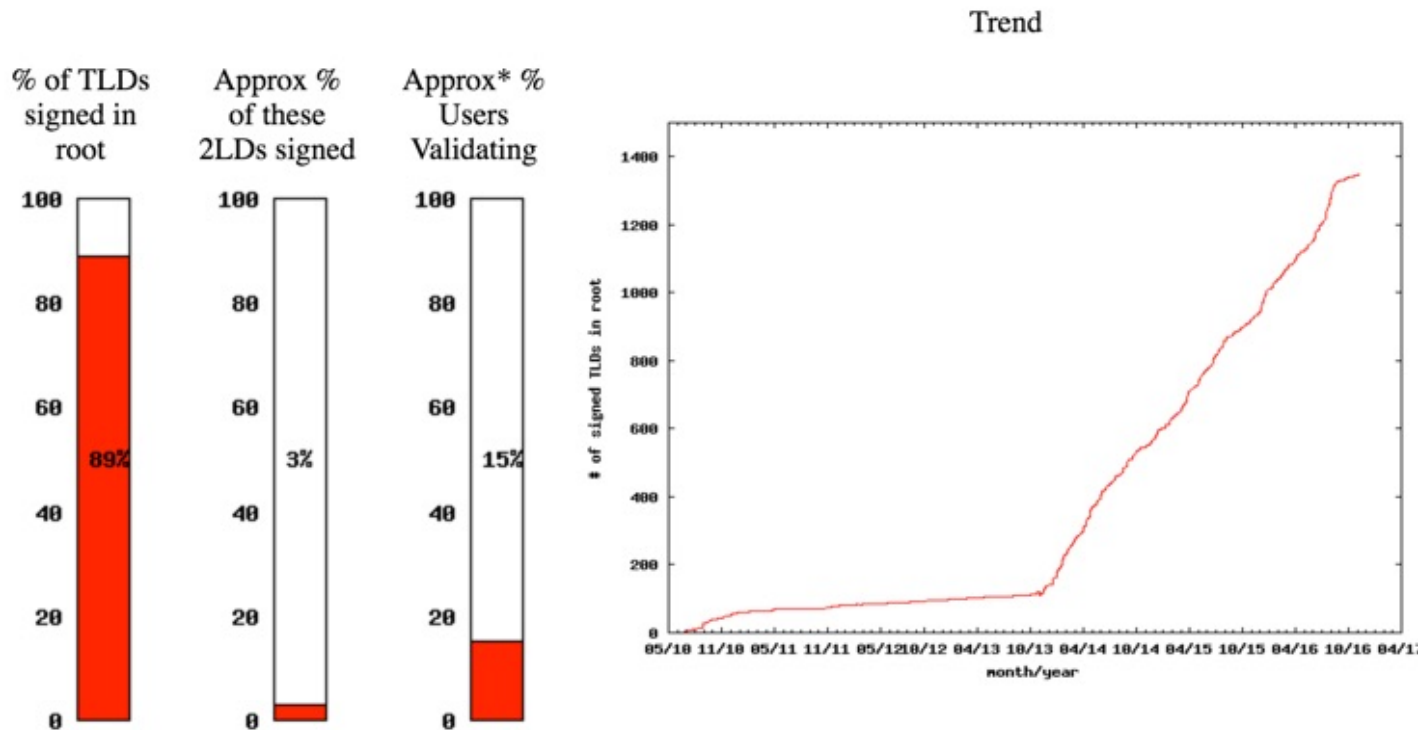


<http://stats.labs.apnic.net/dnssec/XT?o=cXAw7x1g1r1>

DNSSEC Deployment Report










Fri Nov 4 01:25:10 UTC 2016

Total TLDs: 1509 / Signed TLDs in root: 1349 / Recently added: baseball. case. caseih. iveco. newholland. (10/30/2016)



*From <http://stats.labs.apnic.net/dnssec>

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

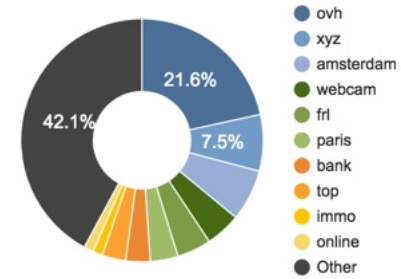
TLD		Description	DS Date	% Signed	Signed/Total
nl.		SIDN (Stichting Internet Domeinregistratie Nederland)	11-NOV-2010	44.92	2546766/5669950
se.		The Internet Infrastructure Foundation	27-AUG-2010	835.48	660347/79038
cz.		CZ.NIC, z.s.p.o	24-JUN-2010	99.56	636401/639212
com.		VeriSign Global Registry Services	31-MAR-2011	0.48	614630/127542550
no.		UNINETT Norid A/S	15-NOV-2014	58.23	414494/711772
net.		VeriSign Global Registry Services	9-DEC-2010	0.65	103062/15759930
org.		Public Interest Registry (PIR)	22-JUL-2010	0.68	73163/10750494
nu.		The IUSN Foundation	25-SEP-2010	24.25	69686/287306
info.		Afilias Limited	4-SEP-2010	0.48	26471/5465687
hu.		Council of Hungarian Internet Providers (CHIP)	22-FEB-2015	3.55	24727/697022
ovh.		OVH SAS	19-JUN-2014	37.92	19862/52377
biz.		Neustar, Inc.	7-AUG-2010	0.80	18085/2264773
xyz.		XYZ.COM LLC	19-FEB-2014	0.15	9243/6150562
webcam.		dot Webcam Limited	20-MAR-2014	19.80	7462/37689
amsterdam.		Gemeente Amsterdam	25-DEC-2014	23.26	5688/24455

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

Signed Domains



Proportional Distribution



Registrar Breakdown

Registrar	Domains	% Share
1. OVH sas	45,715	41.72%
2. Key-Systems, LLC (KeyDrive Group)	9,890	9.03%
3. Mijndomein.nl BV	6,302	5.75%
4. Domeneshop AS dba domainnameshop.com	4,764	4.35%
5. EnCirca, Inc.	2,026	1.85%
6. NameCheap, Inc.	912	0.83%
7. Hosting Concepts B.V. d/b/a Openprovider	853	0.78%
8. Global Village GmbH	452	0.41%
9. Gandi SAS	345	0.31%
10. GoDaddy.com, LLC (GoDaddy Group)	272	0.25%

TLD Breakdown

new gTLD	Domains	% Share
1. .ovh	15,892	14.50%
2. .xyz	5,528	5.04%
3. .amsterdam	5,041	4.60%
4. .webcam	3,459	3.16%
5. .frl	3,350	3.06%
6. .paris	2,727	2.49%
7. .bank	2,393	2.18%
8. .top	2,313	2.11%
9. .immo	962	0.88%
10. .online	947	0.86%
11. .win	876	0.80%
12. .bzh	789	0.72%

<https://ntldstats.com/dnssec>

TLD DNSSEC Implementation Status

Experimental – internal experiments

Announced – Public commitment to deploy

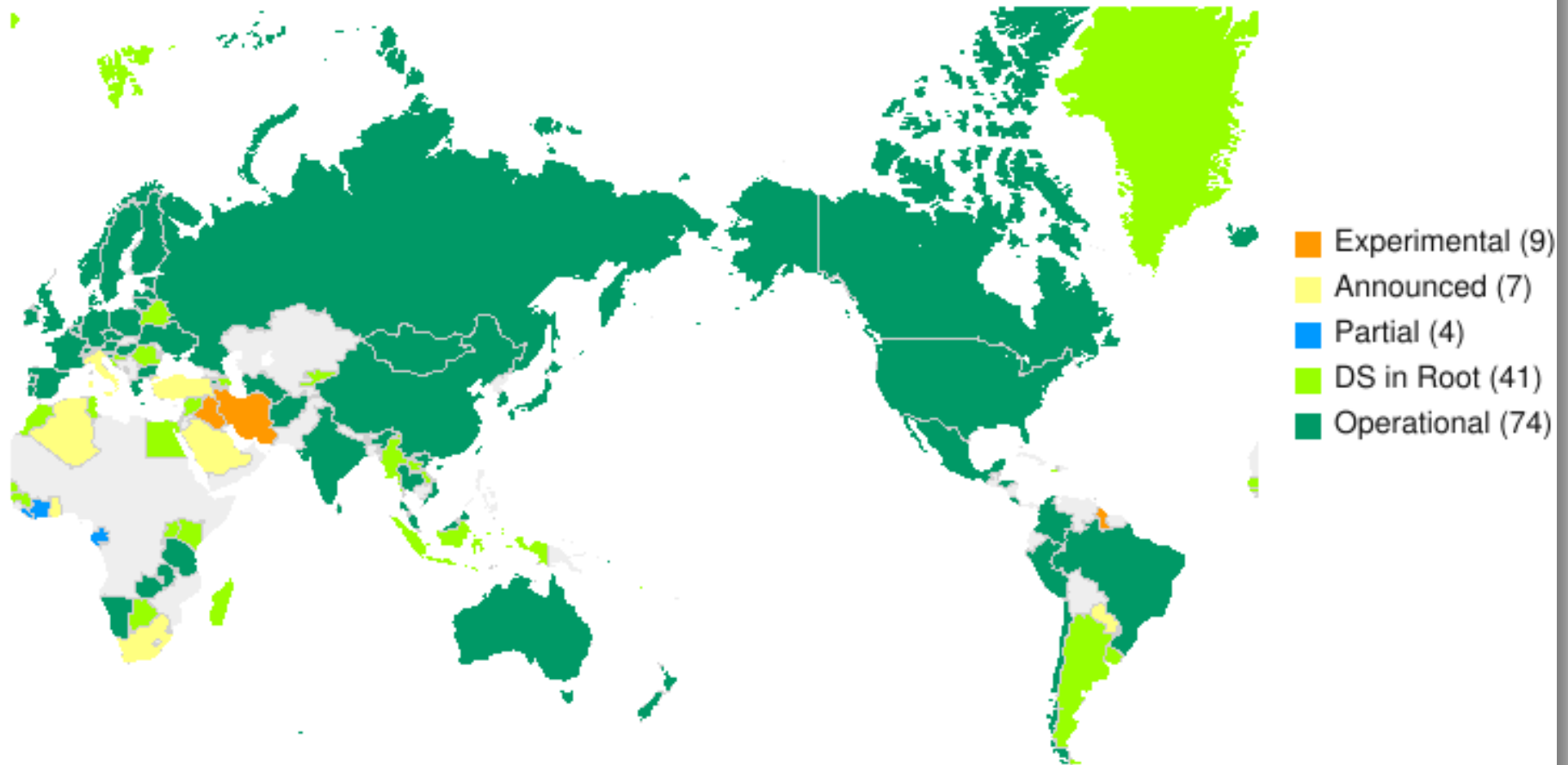
Partial – Zone is signed but not in operation

DS in Root

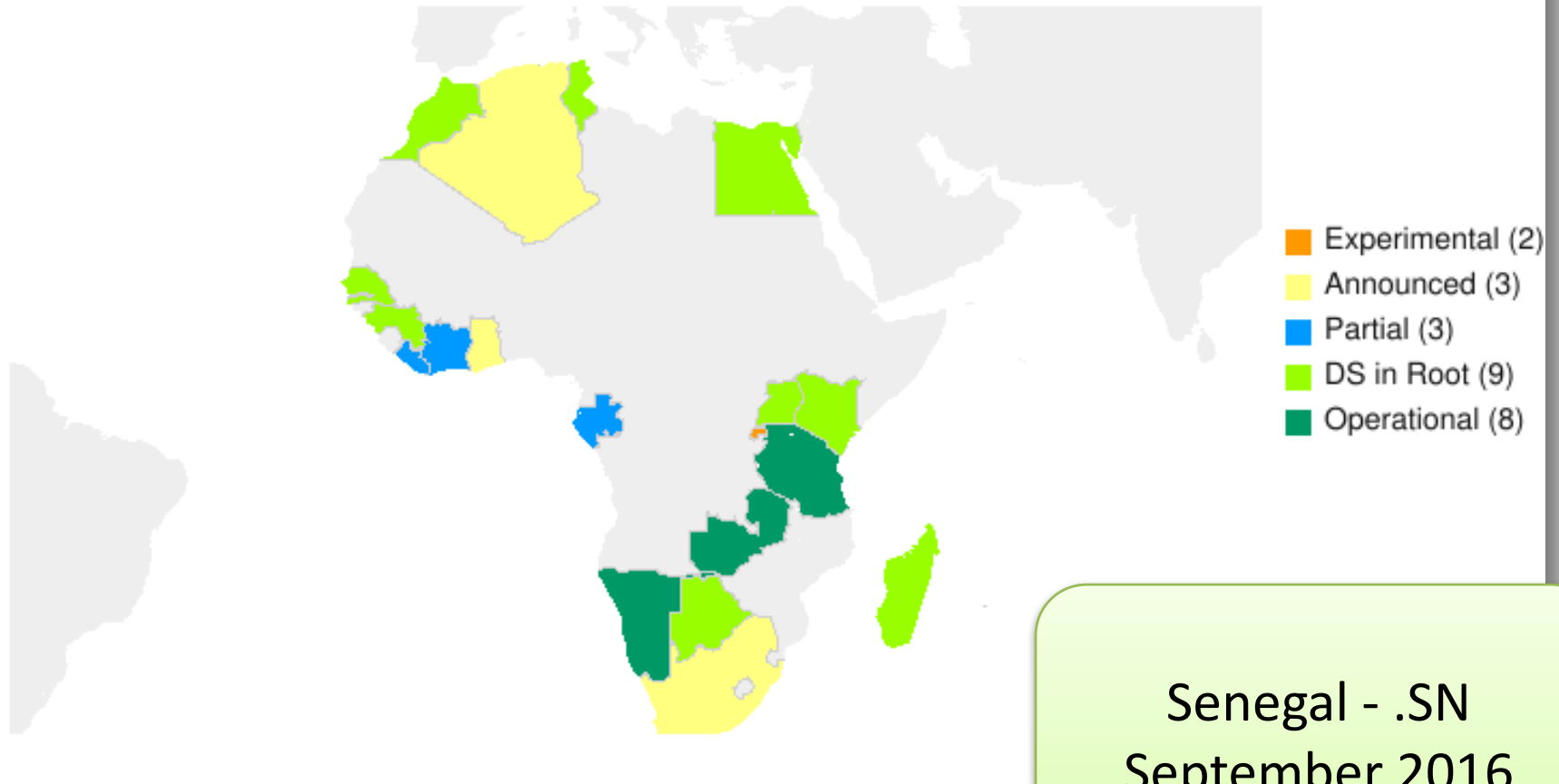
Operational – Accepting signed delegations



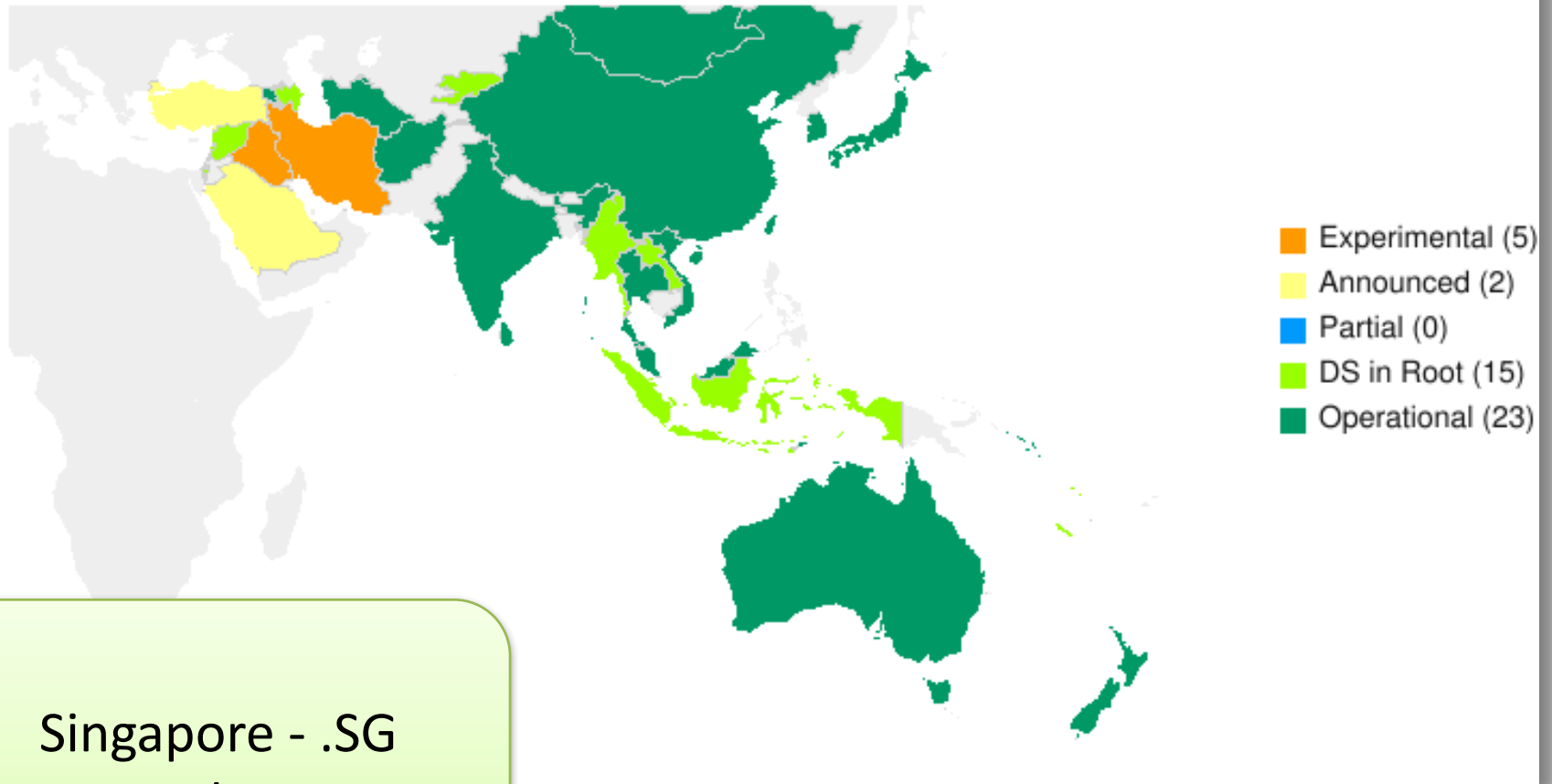
ccTLD DNSSEC Status on 2016-10-31



AF ccTLD DNSSEC Status on 2016-10-31

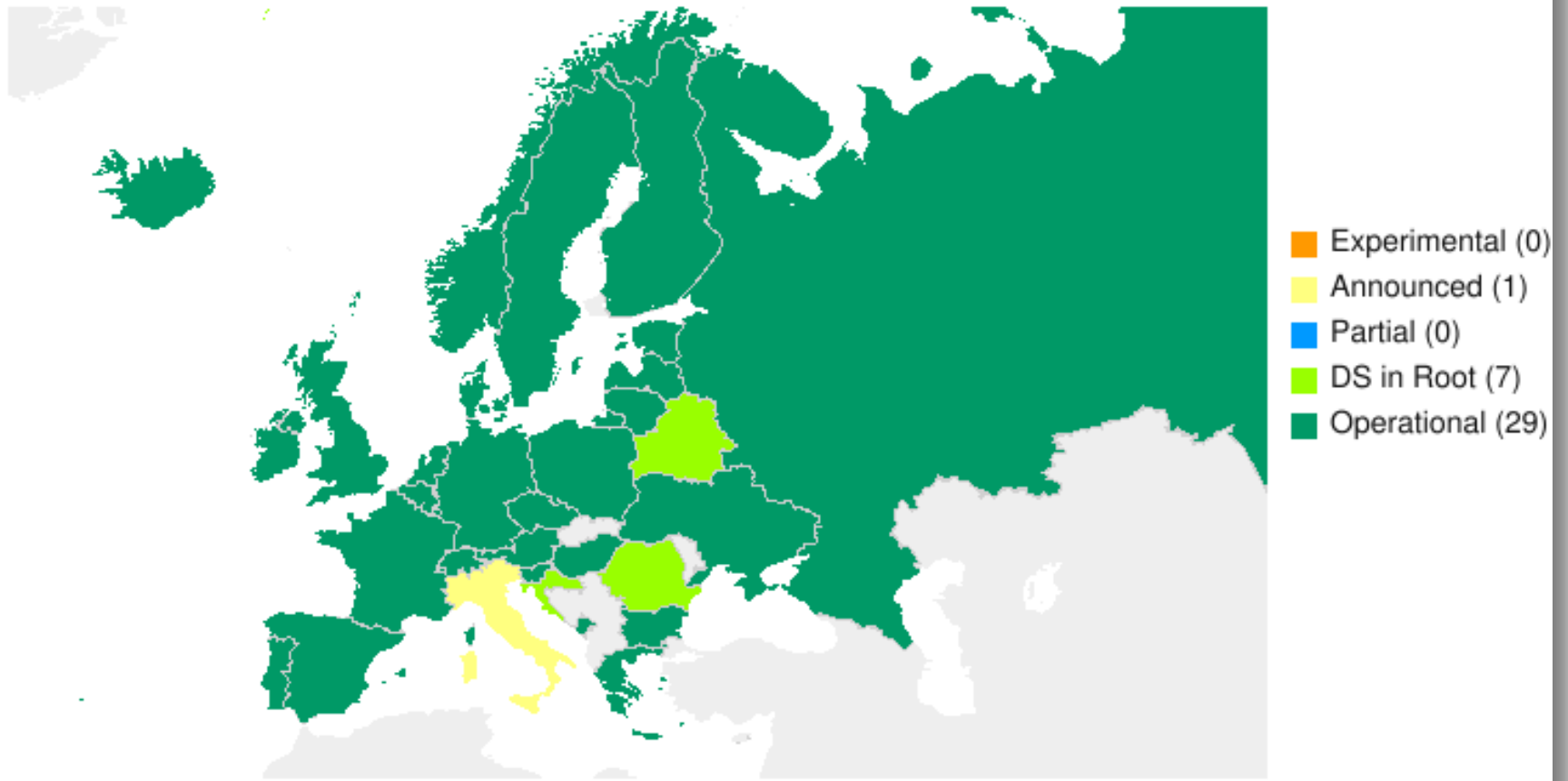


AP ccTLD DNSSEC Status on 2016-10-31

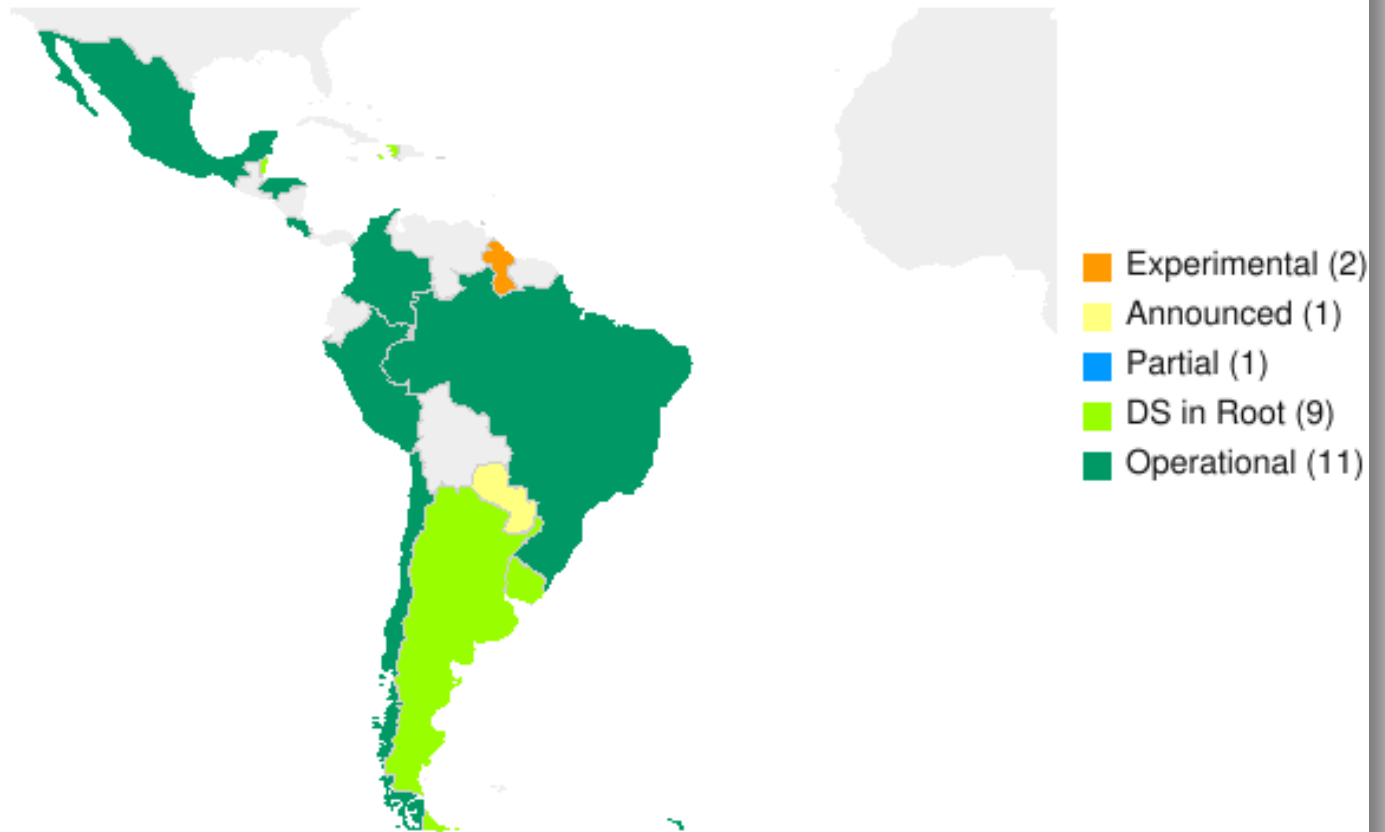


Singapore - .SG
September 2016

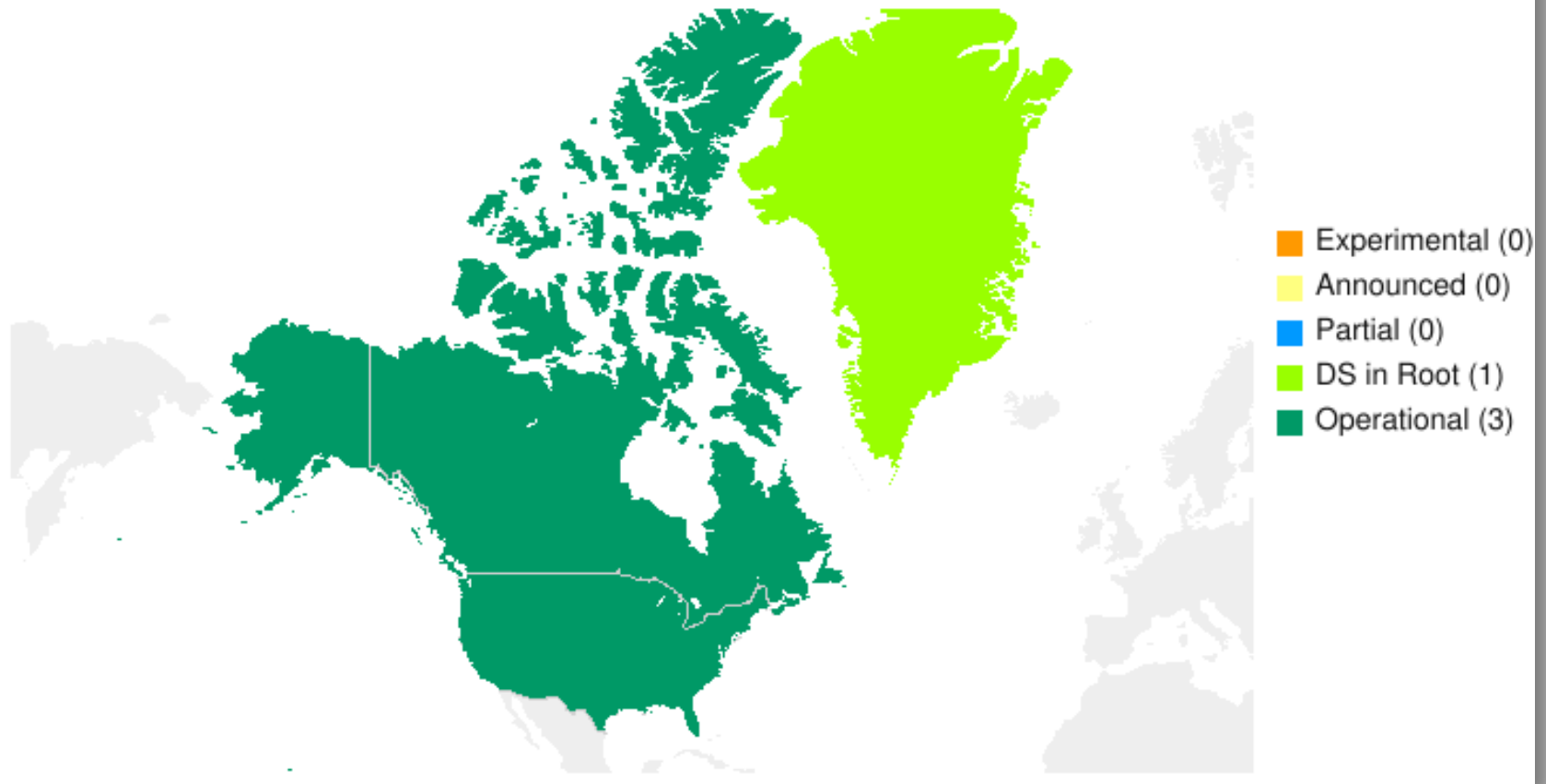
EUR ccTLD DNSSEC Status on 2016-10-31



LAC ccTLD DNSSEC Status on 2016-10-31



NA ccTLD DNSSEC Status on 2016-10-31



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/

Please send update requests to york@isoc.org

DANE for SMTP Statistics

Viktor Dukhovni reported on 11 Oct 2016:

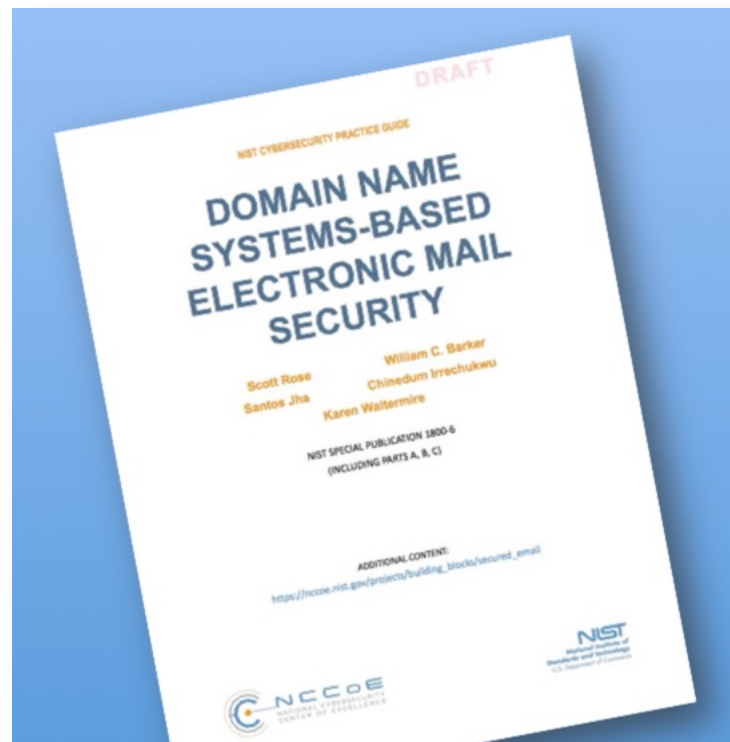
- Over 102,000 domains with TLSA records for SMTP
- Served by ~2,200 MX hosts
- 81 DANE-validated domains have sufficient volume to appear in Google's email transparency report (up from 24 one year previously)

Source: message to IETF DANE Working Group mailing list – 11 Oct 2016

Speaking of DANE for SMTP...

NIST published Special Publication 1800-6,
“**DNS-Based E-Mail Security**”

- DNSSEC, DANE, SMIMEA
- Read more:
- https://nccoe.nist.gov/projects/building_blocks/secured_email



IETF 97 Hackathon

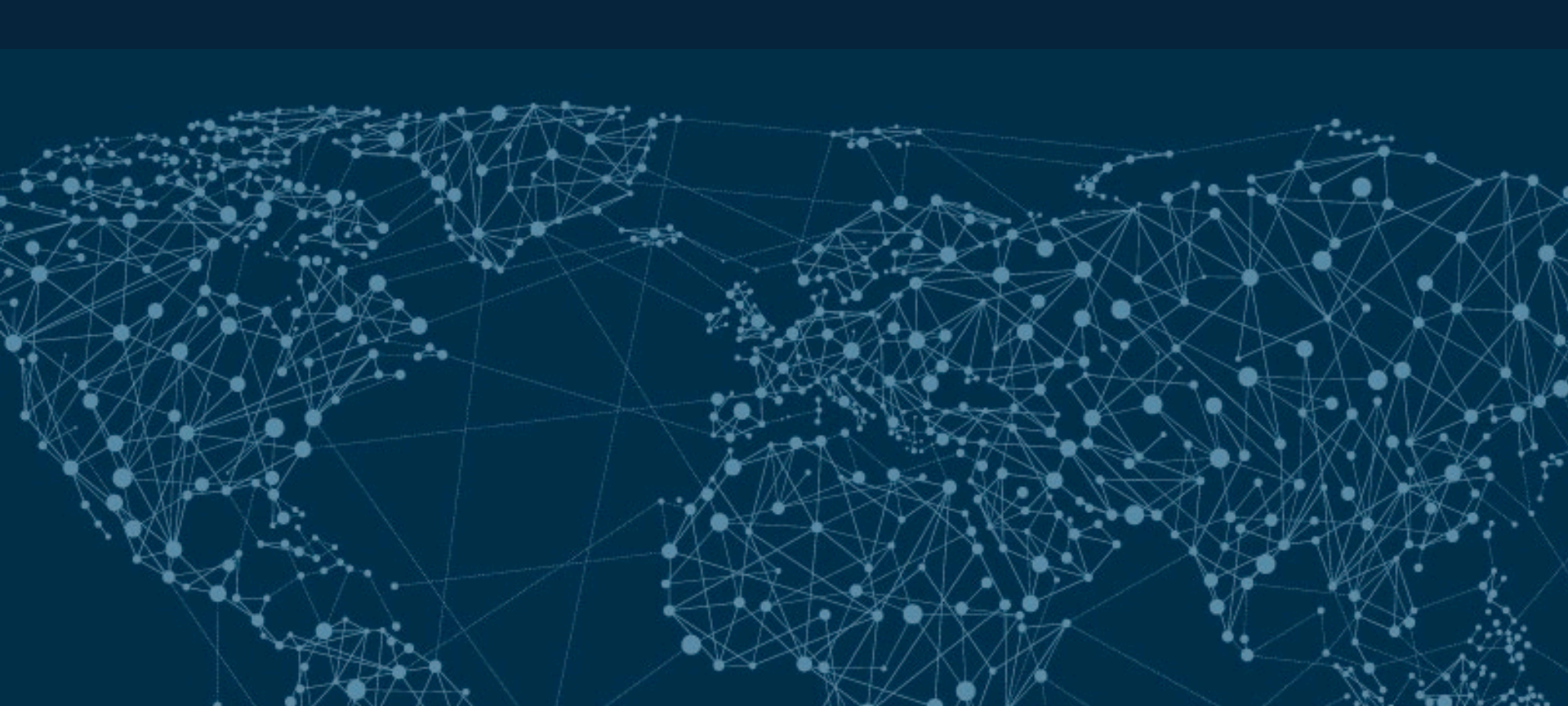
Sat/Sun, November 12/13 – Seoul

- <https://www.ietf.org/hackathon/97-hackathon.html>
- Opportunity to work on new tools or services for DNSSEC / DANE / DNS Privacy
- Join us!

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://wiki.tools.isoc.org/DNSSEC_History_Project



Thank you and Questions