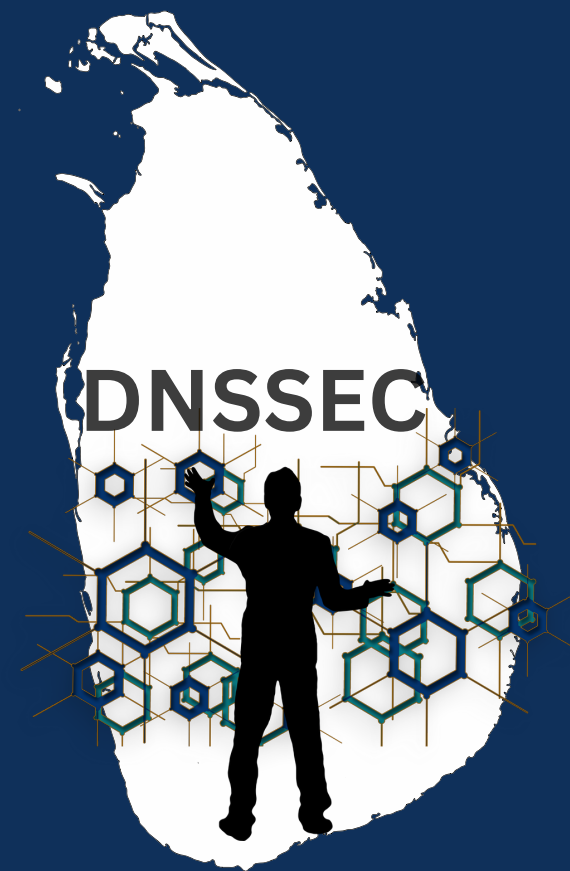


DNS DEPLOYMENT IN “.IK” ZONE & CHALLENGES



WHO WE ARE..?

- Registry for “.lk” Domain
- More than **50K** Active Domains
- IDN, DNSSEC and IPv6 supported

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Punycode:

xn--fzc2c9e2c

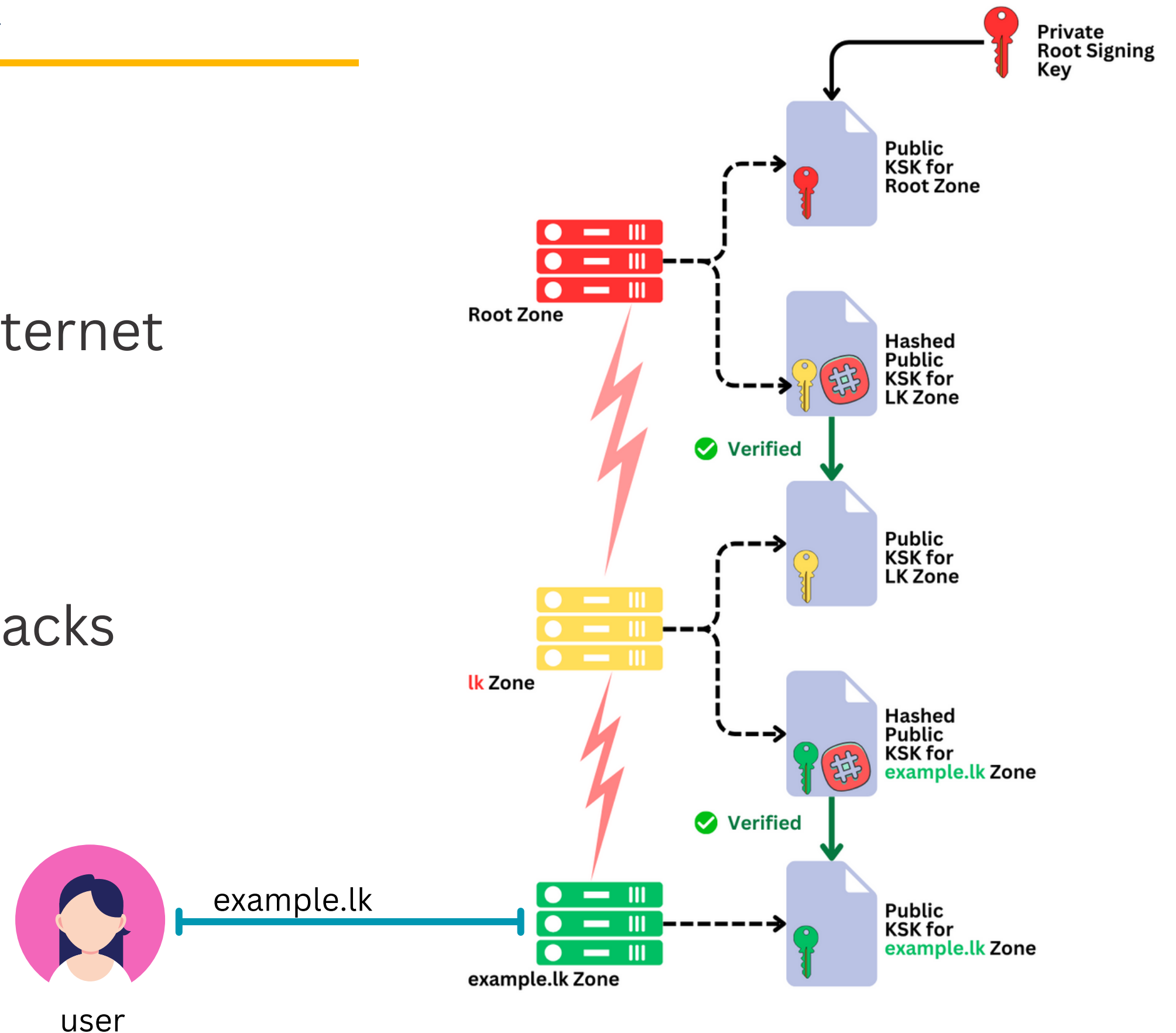
•இலங்கை

Punycode:

xn--xkc2al3hye2a

ABOUT DNS & DNSSEC

- DNS critical foundation for internet
- DNSSEC
 - > Enhance the DNS Security
 - > Protect users from DNS attacks



DNSSEC IMPLEMENTATION PLAN

Preparation

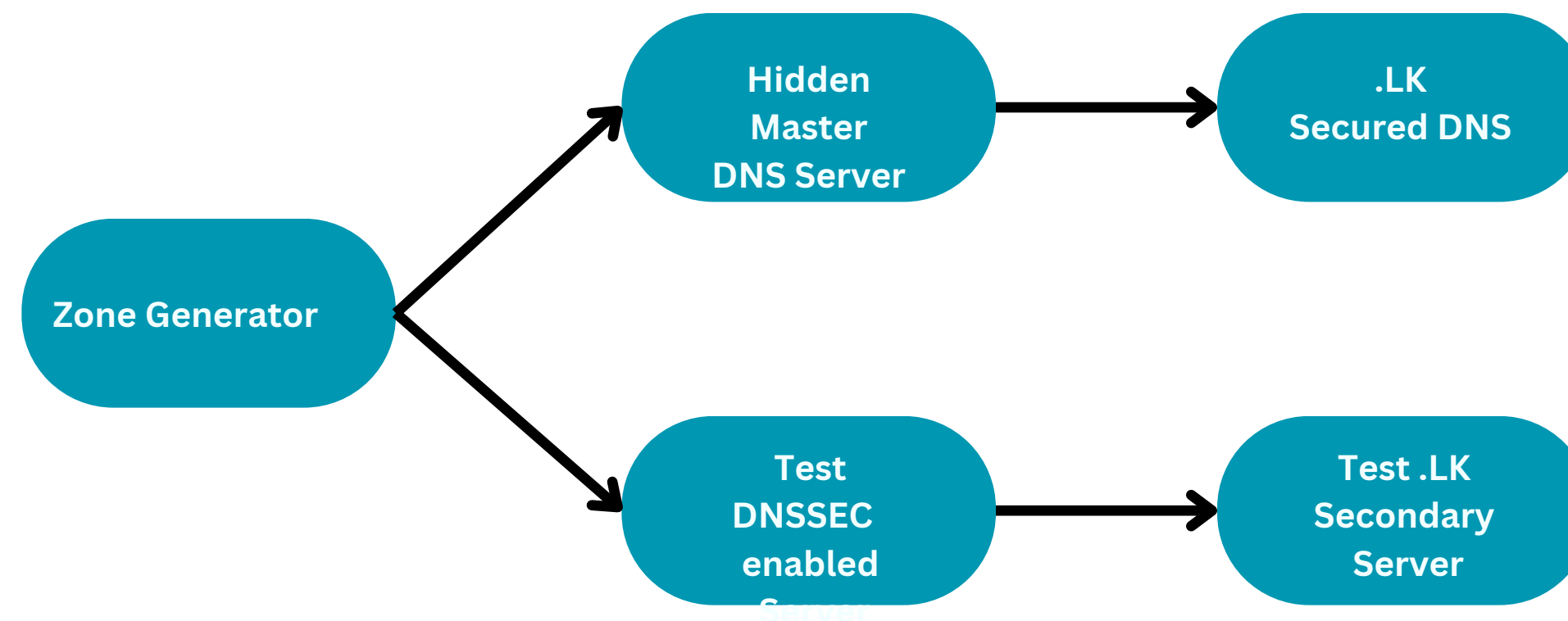
- Planning Project
- Preparing Human Resource
- Knowledge sharing with other ccTLD

Implementation

- Tested DNSSEC and prepared to roll back the plan
- Key Generation (KSK/ ZSK) & zone signing for “.lk”
- “.lk” Zone signed and published the DS record in ROOT

DNSSEC DEPLOYMENT

- Deployed a new DNSSEC production system
 - New DNS Hidden Master
 - Zone transfer to both live DNS hidden master and new DNS hidden master (DNSSEC enabled)
- DNS service (without DNSSEC) online for resolving and DNSSEC service off-line testing

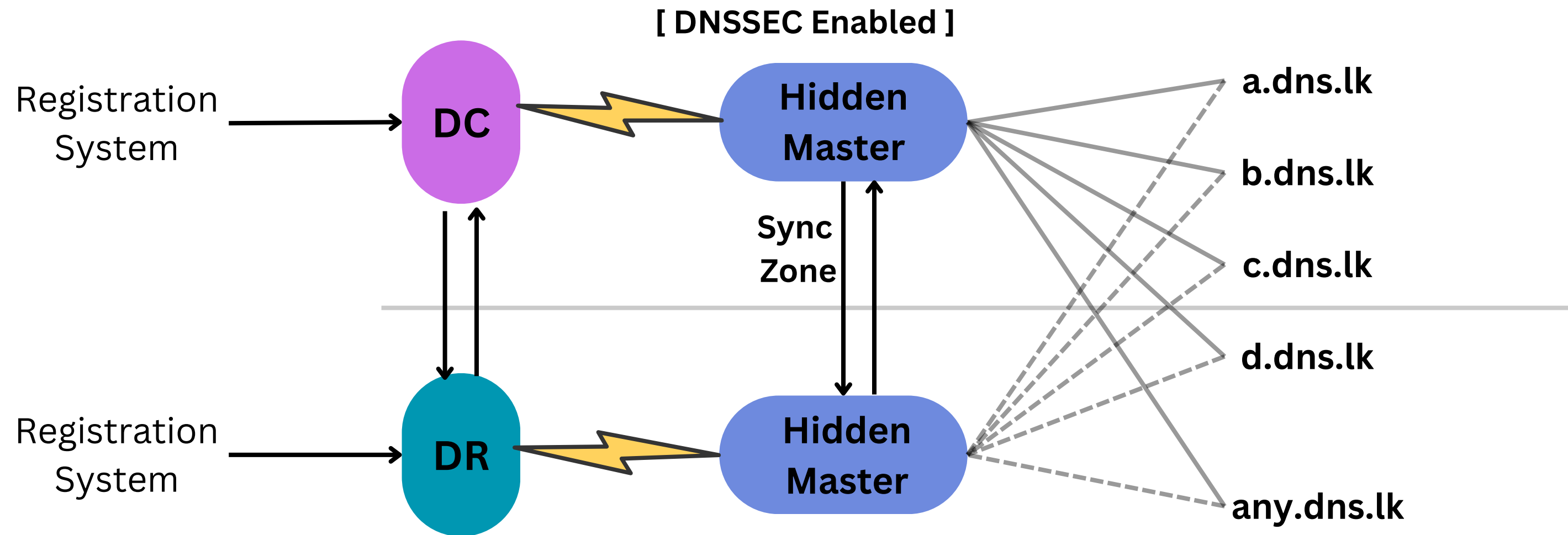


DNSSEC ONLINE

- Key Signing Ceremony for “.LK” zone (July 2010)
 - Generate Key for “.LK” zone (KSK/ZSK)
- Change DNS Master to DNSSEC master to publish the “.LK” zone
- Check “.LK” Secondary Server with new signed zone
- Verify IANA's validation for DS Records of “.LK”
- “.LK” Zone becomes available for DNSSEC effectively



OVERVIEW OF LK DNS INFRASTRUCTURE



Improvement of DNSSEC infrastructure

- Enable IXFR (Incremental zone transfer)
- Auto DNSSEC is enabled from Bind 9.0 onward

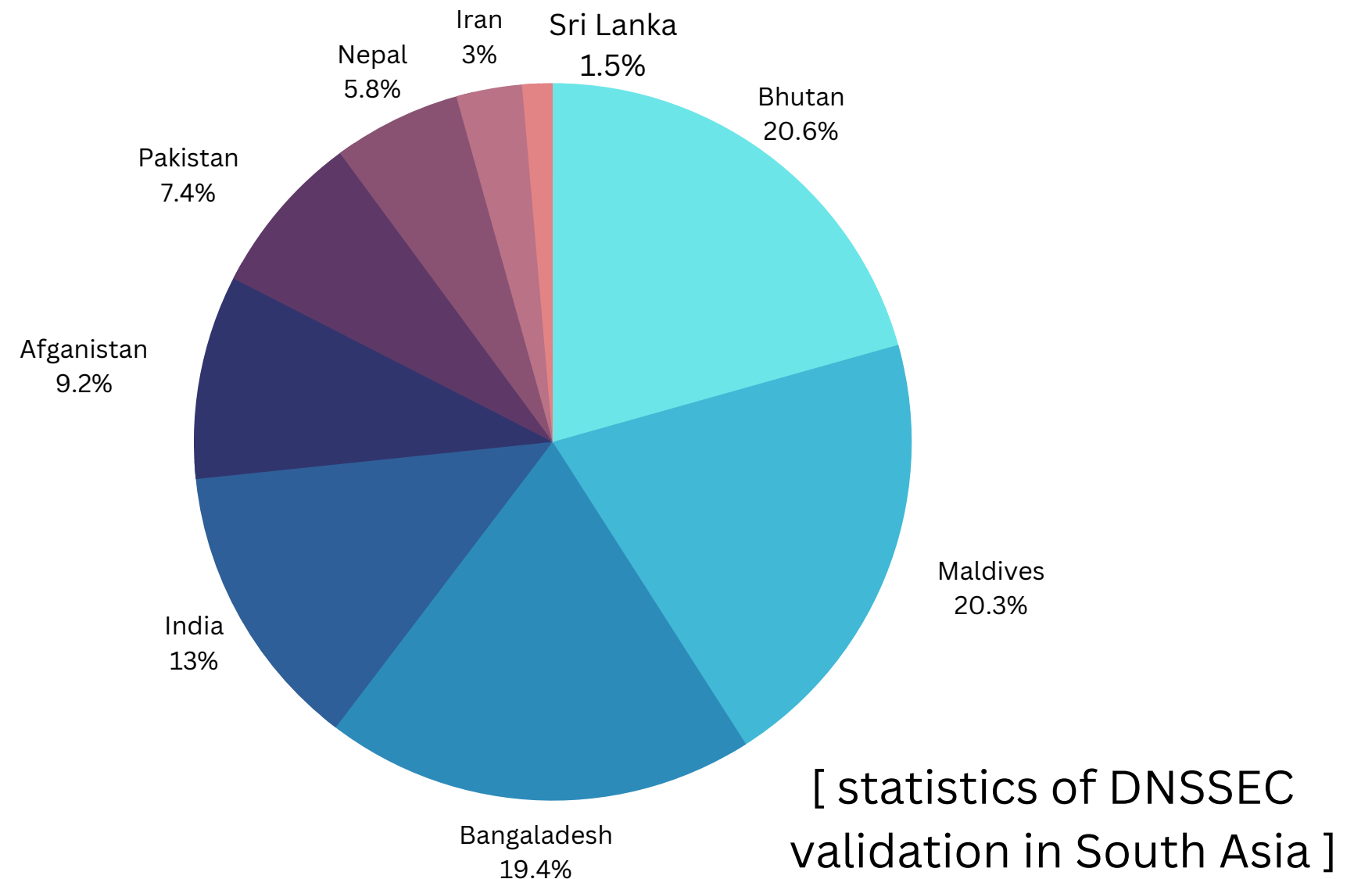
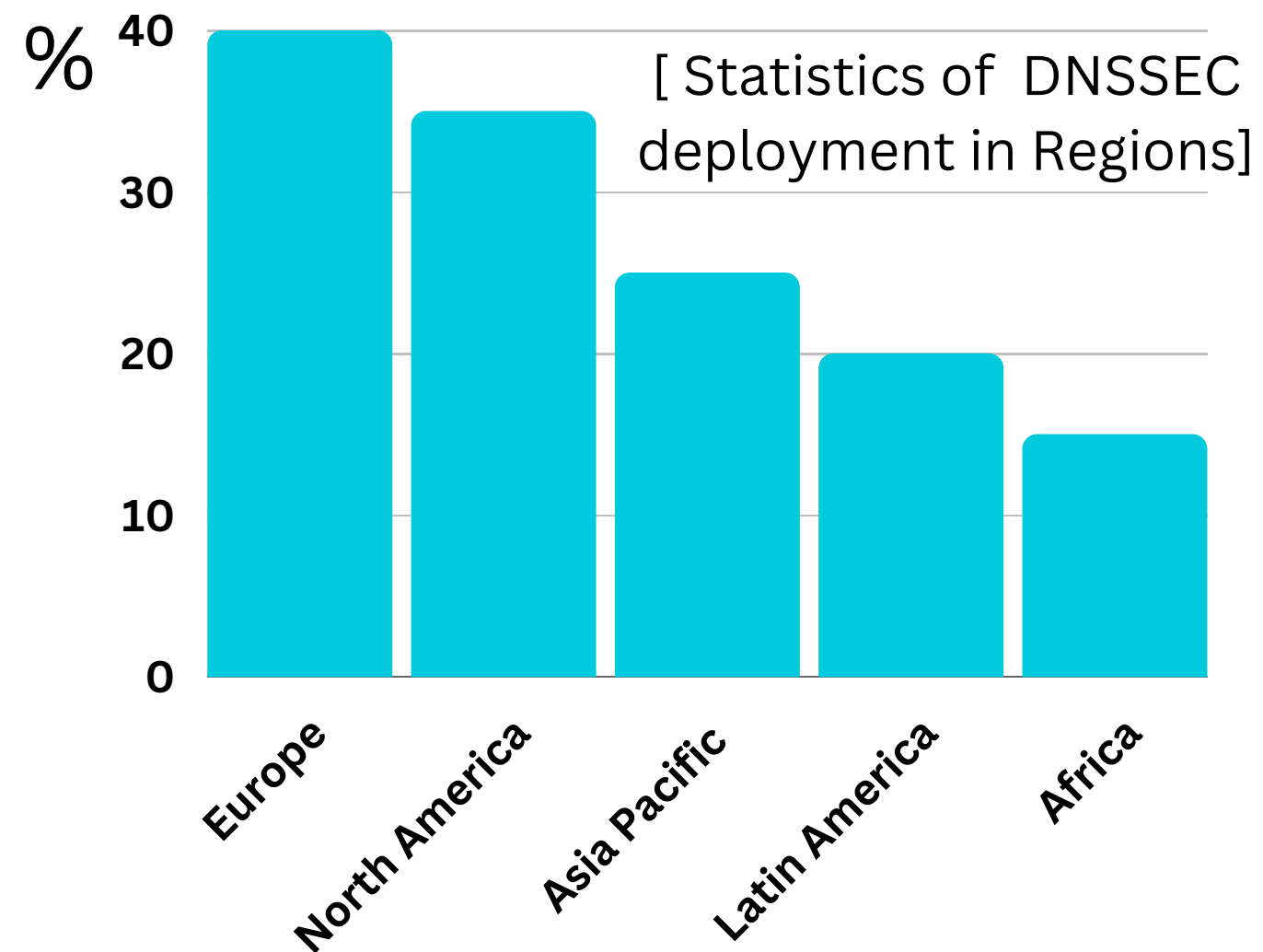
DNSSEC OPERATIONAL CHALLENGES

- **Key Management:** The key management process should be secure.
- **Resource-Intensive:** Increased computational overhead.
- **Trust Anchor Distribution:** Ensuring secure distribution of trust anchors.
- **Monitoring and Reporting:** Real-time DNSSEC status and incident response.
- **DNSSEC Awareness:** The need for education and expertise in DNSSEC.

HOW DNSSEC BENEFITED FOR '.LK'

- **End Users** : can assure that they are accessing the right DNS Record
- **Registrant** (Domain Owner) : Prevent fraud & protect the organizational reputation.
- **Registrar** (Agents) : Adhere to Industry Standards & enhance Security
- **Registry** (“.lk”) : Meet industry Best Practices & registrars’ demand for increased Domain Security.

GLOBAL DNSSEC DEPLOYMENT

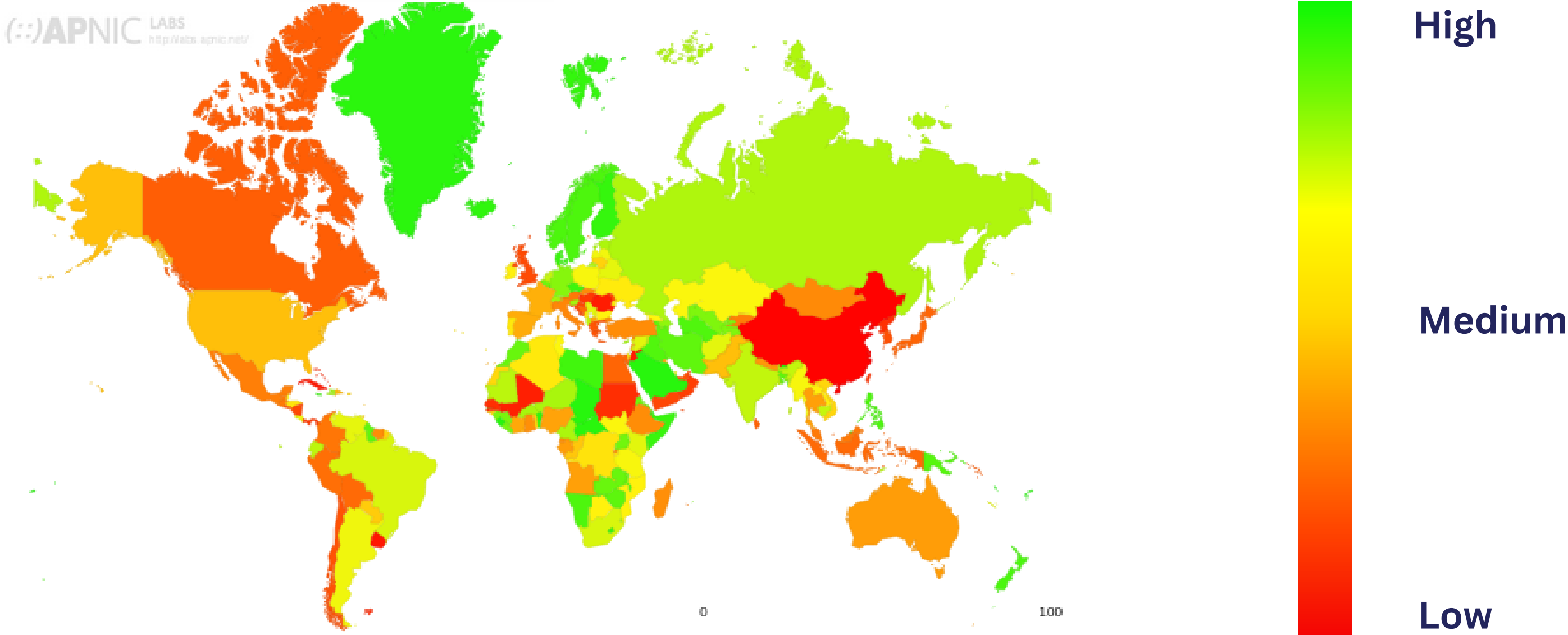


Reference : DNSSEC World Map by APNIC,
<https://stats.labs.apnic.net/dnssec>
<https://stats.labs.apnic.net/dnssec/XD>
<https://stats.labs.apnic.net/dnssec/XT?o=cXTw1v1p1x0l1>

DNSSEC VALIDATION MAP

Total DNSSEC Validation Rate by country (%)

[Click here for a zoomable map](#)
 Remember current choice for 7 days



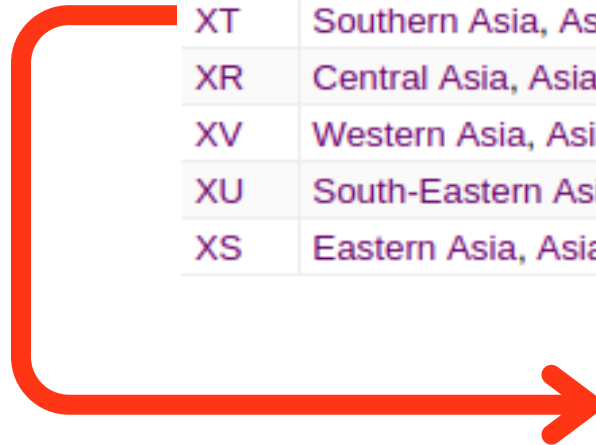
365 day average (15/10/2022 - 14/10/2023)

DNSSEC VALIDATION IN SOUTH ASIA

Code	Region	DNSSEC Validates	Partial Validates	Samples	Weight	Weighted Samples
XA	World	30.49%	8.51%	10,740,722	1	10,740,722
XD	Asia	27.45%	7.77%	6,930,653	0.88	6,083,770



Code	SubRegion	DNSSEC Validates	Partial Validates	Samples	Weight	Weighted Samples
XT	Southern Asia, Asia	56.97%	9.69%	2,678,156	0.72	1,925,736
XR	Central Asia, Asia	50.56%	18.01%	83,595	1.34	112,369
XV	Western Asia, Asia	44.24%	7.68%	515,128	1.06	546,452
XU	South-Eastern Asia, Asia	24.38%	20.86%	1,110,568	0.82	910,713
XS	Eastern Asia, Asia	1.89%	1.28%	2,543,206	1.02	2,588,503



CC	Country	DNSSEC Validates	Partial Validates	Samples	Weight	Weighted Samples
BT	Bhutan, Southern Asia, Asia	97.63%	1.18%	507	2.21	1,122
MV	Maldives, Southern Asia, Asia	96.72%	2.24%	671	1.4	936
BD	Bangladesh, Southern Asia, Asia	92.01%	4.44%	134,116	0.65	87,844
IN	India, Southern Asia, Asia	61.76%	2.77%	2,324,817	0.65	1,517,384
AF	Afghanistan, Southern Asia, Asia	44.19%	8.64%	2,349	6.13	14,392
PK	Pakistan, Southern Asia, Asia	36.63%	9.01%	138,860	0.72	99,673
NP	Nepal, Southern Asia, Asia	30.02%	2.36%	31,633	0.61	19,147
IR	Iran (Islamic Republic of), Southern Asia, Asia	16.59%	77.95%	25,067	6.55	164,306
LK	Sri Lanka, Southern Asia, Asia	6.47%	9.69%	20,136	1.04	20,925

TOOLS AND GUIDE FOR DNSSEC DEPLOYMENT

- **Tools for testing whether DNSSEC is correctly implemented**
 - > <https://dnsviz.net/>
 - > <https://dnssec-analyzer.verisignlabs.com/>
 - > <https://www.internetsociety.org/deploy360/dnssec/tools/>
 - > <https://en.internet.nl/>
- **Deployment Guide**
 - > <https://www.icann.org/en/system/files/files/octo-029-12nov21-en.pdf>

Q & A



THANK YOU!

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