

Beyond Peering

Making DNS Resilience an Operator Practice

Yazid AKANHO
Technical Engagement Manager, MEA Region

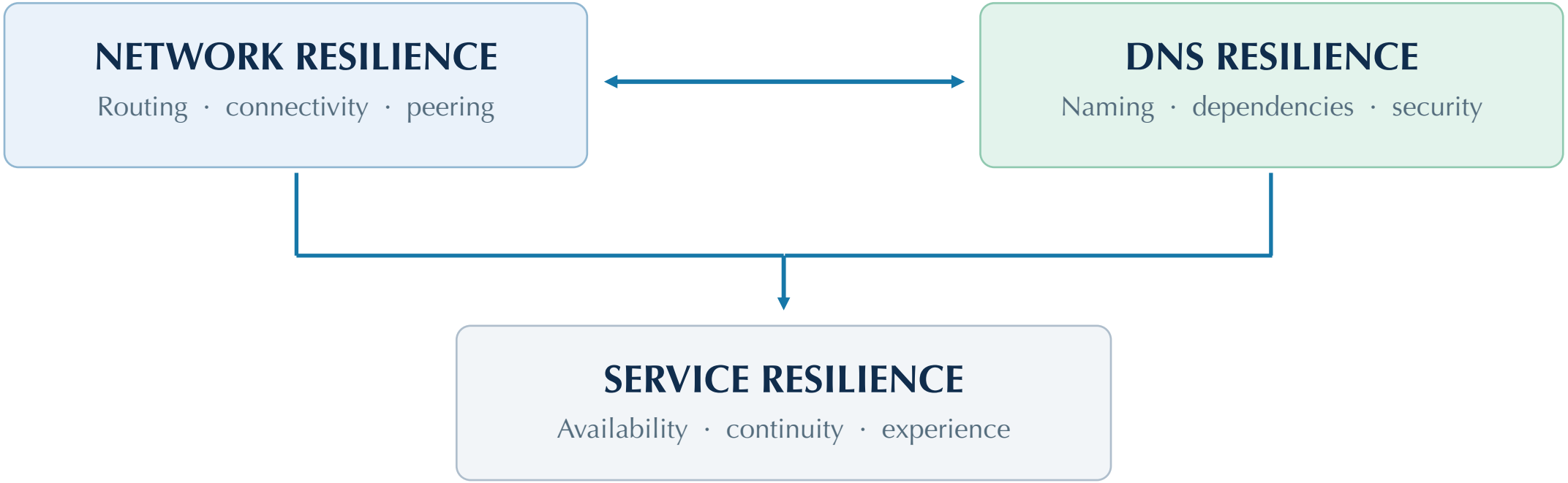
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Beyond Peering

Network and DNS resilience are interdependent.

We invest in resilient networks. How resilient is the DNS our users, systems, and applications depend on?



Resilient networks alone do not guarantee resilient services. DNS resilience is equally essential.

What Peering Optimizes, and What It Does Not Guarantee

The path to a service and the DNS required to reach it are distinct operational concerns.

PEERING CAN IMPROVE

- ✓ Traffic exchange
- ✓ Latency
- ✓ Transit efficiency
- ✓ Reachability of hosted infrastructure

PEERING ALONE DOES NOT GUARANTEE

- ! DNS service availability and locality
- ! Resilient recursive / authoritative DNS
- ! DNS data integrity: DNSSEC
- ! DNS operational visibility and readiness

Peering optimizes how traffic reaches content and services.
But it does not automatically make DNS resolution more secure or resilient.

DNS Resilience: An Ecosystem-Wide Responsibility

Six interconnected dimensions. Three complementary operational perspectives.

Availability & redundancy

Capacity · failover · diversity

DNS service architecture

Recursive · authoritative

DNS ecosystem security

DNSSEC · threat protection · privacy

Infrastructure dependencies

Root/TLD · external DNS · routing

Reachability & monitoring

Performance · availability · signals

Operations & readiness

Configuration · maintenance · response

HOW OPERATORS ENGAGE WITH THESE DIMENSIONS

CONTROL

Operate and secure what you manage

DEPEND ON

Understand external dependencies

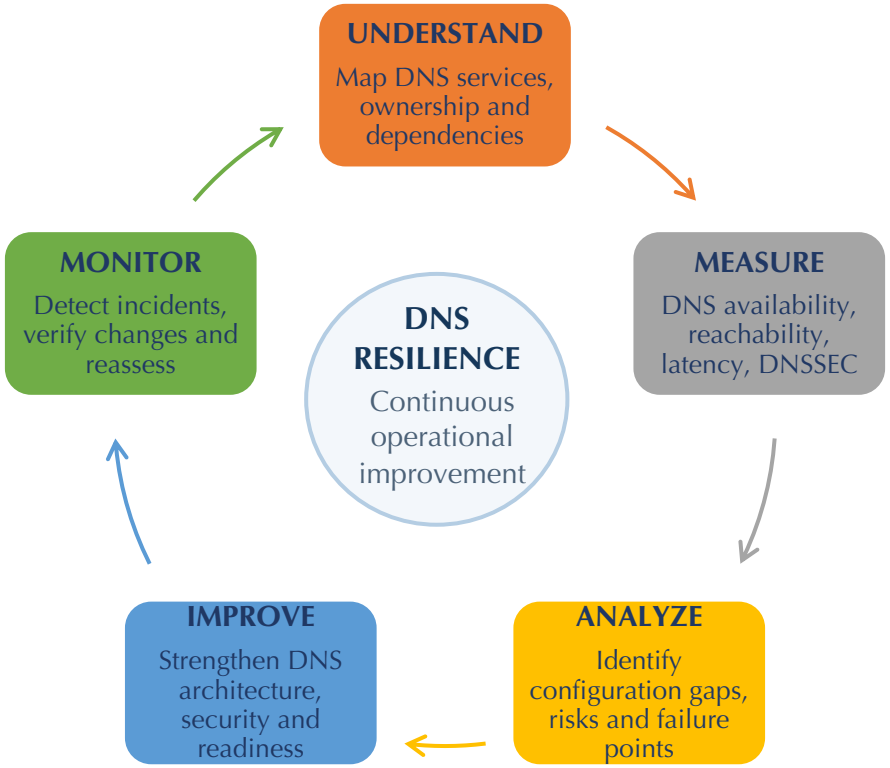
INFLUENCE

Collaborate on shared resilience

DNS resilience is not one feature. It is a continuous operational discipline.

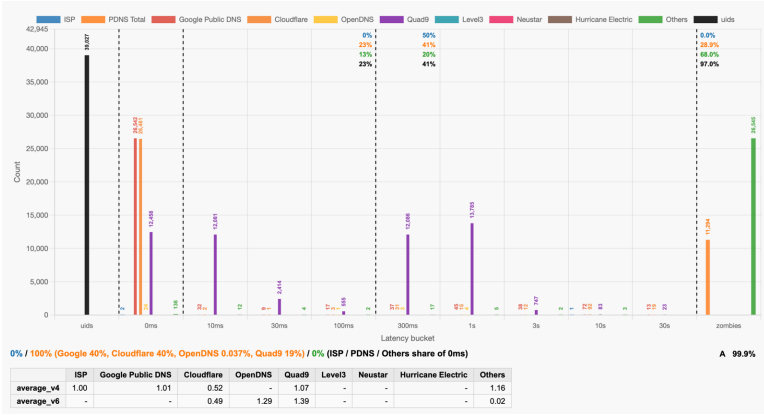
From Understanding DNS to Continuous Improvement

Making DNS resilience a continuous operational practice



Use of DNSSEC Validation for Nigeria (NG)





googlepdns	cloudflare	opendns	level3	quad9	dns4eu	dnswatch	freedns	cnnic	114dns
1.939%	0.248%	0.802%	0.006%	0.003%	0.000%	0.000%	0.000%	0.000%	0.000%
40.064%	1.425%	0.327%	0.017%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
16.841%	0.165%	3.765%	0.063%	0.004%	0.008%	0.000%	0.000%	0.000%	0.000%
71.049%	23.673%	1.203%	0.197%	0.007%	0.000%	0.000%	0.000%	0.000%	0.000%
60.245%	0.306%	0.000%	32.926%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
73.410%	1.145%	0.000%	23.664%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
74.474%	11.411%	7.357%	1.201%	0.000%	0.150%	0.000%	0.000%	0.000%	0.000%
41.444%	0.157%	0.000%	2.355%	0.157%	0.000%	0.000%	0.000%	0.000%	0.000%
97.271%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
69.723%	2.595%	0.000%	26.471%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

https://stats.labs.apnic.net/

KINDNS: From Operational Gaps to Good Practices

A framework of Voluntary DNS ecosystem security practices, matched to the operator's role

KINDNS helps turn operational awareness into actionable DNS ecosystem security practices

AUTHORITATIVE DNS

TLD & critical zones · other SLDs

- 7 practices for TLD & critical zones
- 6 practices for SLDs

RECURSIVE RESOLVERS

Private · shared private · public

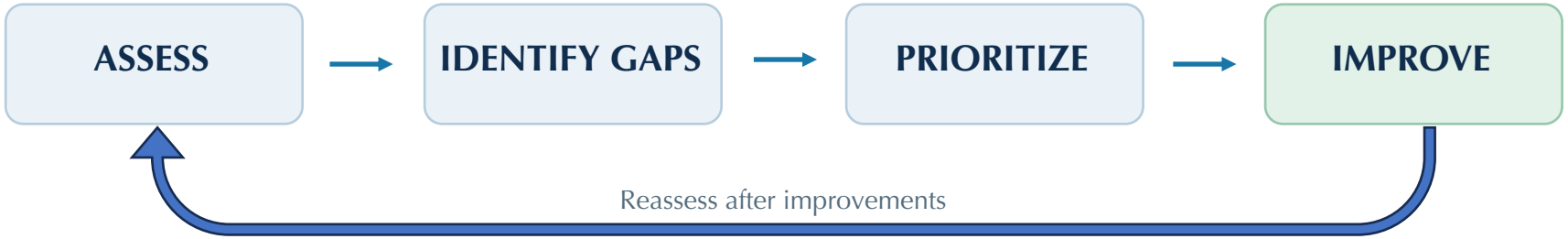
- 6 practices for Close & Private
- 7 practices for Shared & Private
- 7 practices for public resolvers

PLATFORM HARDENING

Applies across DNS operators

- 8 practices for hardening the Core

CONTINUOUS KINDNS SELF-ASSESSMENT



https://kindns.org/

Take This Back to Your Network

Turn DNS resilience into an owned, measured and continuously improved operational responsibility.

Two audiences, one shared operational responsibility.

MANAGEMENT SHOULD ASK

- Who owns DNS resilience and risk?
- Do we understand critical DNS dependencies?
- Are gaps prioritized, resourced and tracked?

TECHNICAL TEAMS SHOULD KNOW

- Which DNS services do we operate or depend on?
- Are they secure, resilient and monitored?
- Do we test DNSSEC, failover and recovery?

Understand what you operate and depend on. Measure what matters. Improve what you can.

Thank you


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