Resilience and security of Critical Internet Infrastructures in Africa

By

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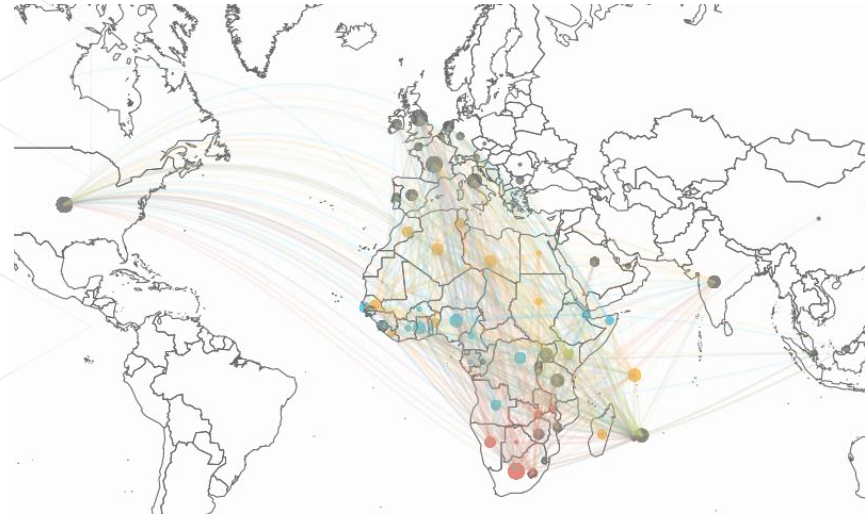# Critical Internet Infrastructure

- Not only hardware (ISP Backbone, transmission lines, routing equipment, etc.)
- But also Software services (DNS, Email, DB, Web hosting, etc.)
- Any interruption for a significant period of time will seriously impact Internet

To ensure resilience and security of Critical Internet Infrastructure ..

WHAT DO WE DO?

Internet Measurement

- Get a pulse of Internet connectivity

- Monitor routing paths

- Identify connectivity gaps

Internet Measurement (2)

- What you can do
  - Get involve in measurement program like RIPE Atlas (Probes/Anchor), Mlab, Speedtest

- Why?
  - Identify infrastructure connectivity gap
  - Check routing path, speed, etc
  - Periodic report to monitor connectivity

ccTLD Registry

- More website using **dotCountry**
  - Promote National/Regional identity
  - Encourage local content

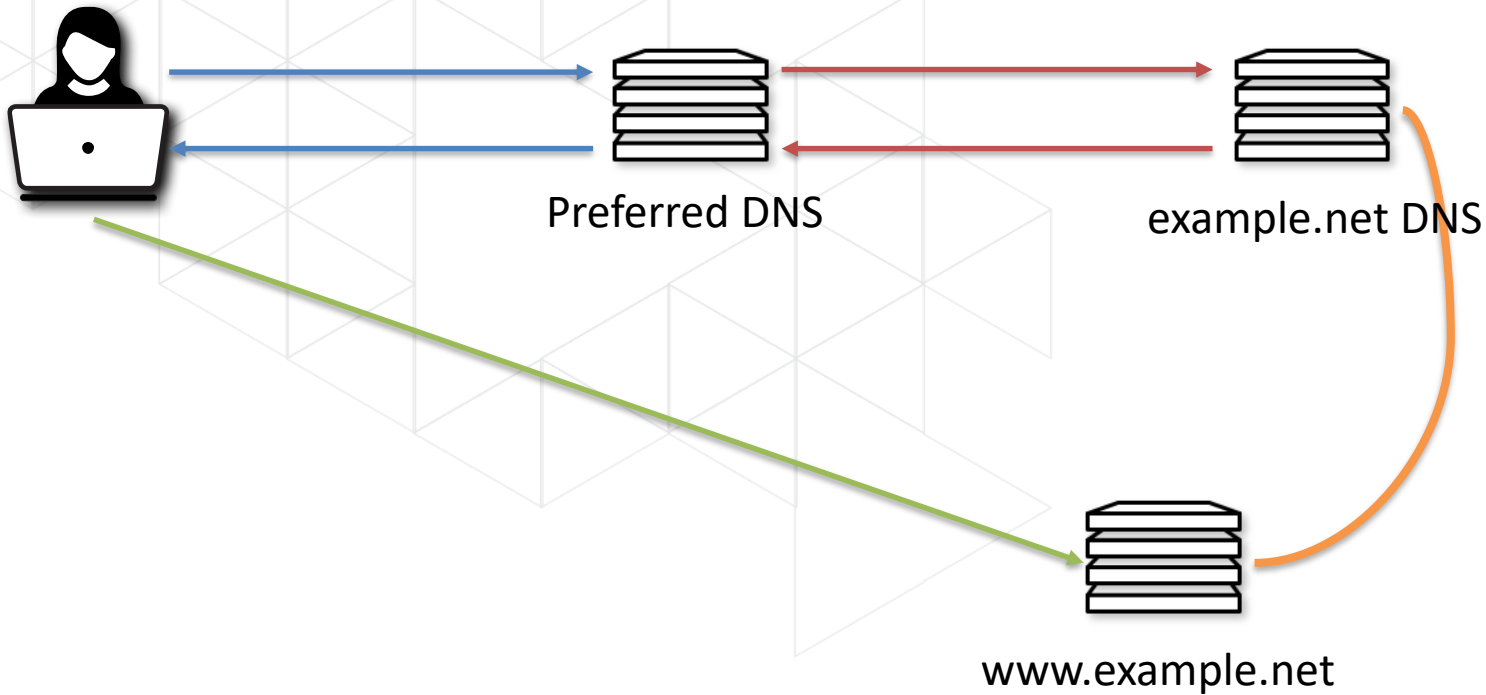- More and more local/regional (web) hosting facilities

ccTLD Registry (2)

- What you can do
  - Get at least one Secondary for your Registry (1ˢᵗ and 2ⁿᵈ level if different)
  - Promote use of **dotCountry** and local (web) hosting

- Why?
  - Stable/secure registry build user confidence
  - No need for international bandwidth
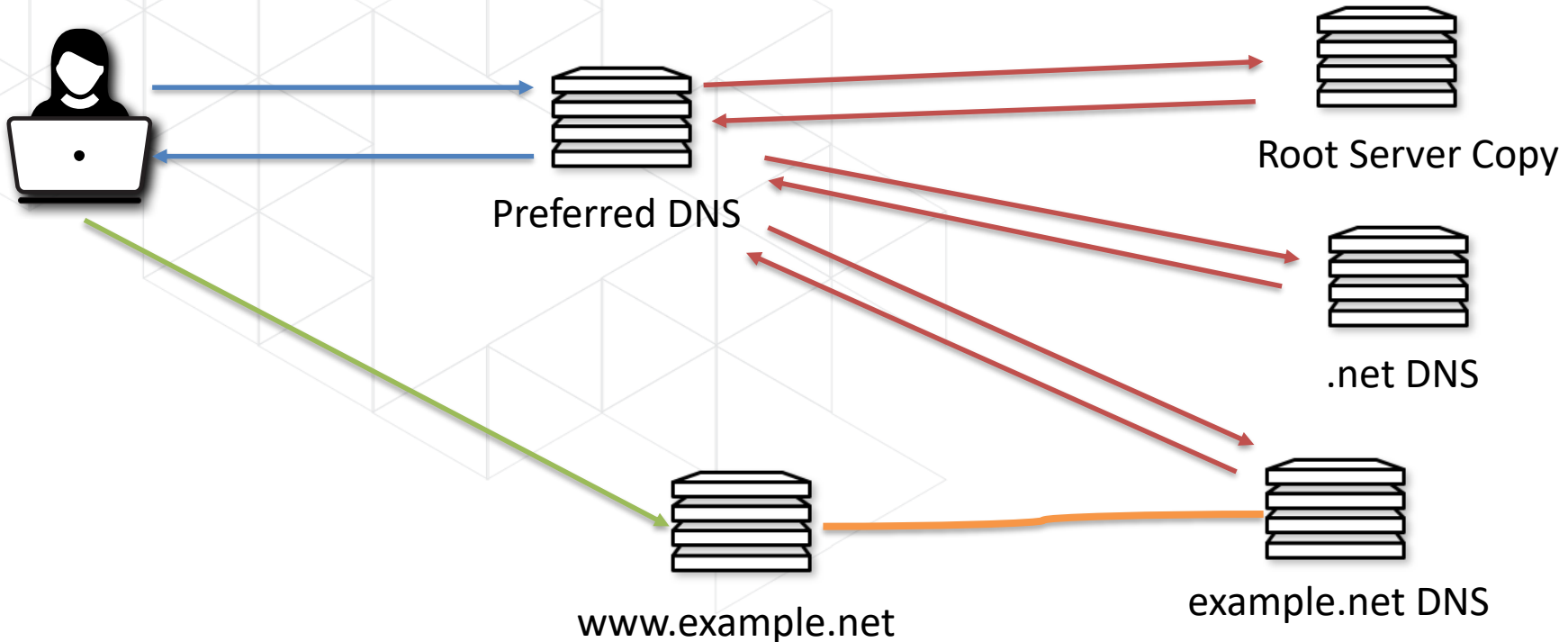 - User can always access local content / website

DNS Infrastructure

- How we see DNS resolution vs reality

Preferred DNS

example.net DNS

www.example.net

DNS Infrastructure

- How we see DNS resolution vs reality (Ctd)

Root Server Copy

Preferred DNS

.net DNS

www.example.net

example.net DNS

DNS Infrastructure (2)

- What you can do
  - Deploy copy of Root server (13 Root server operators)
  - More Authoritative DNS server – manage your Zones locally
- Why?
  - "." is always available
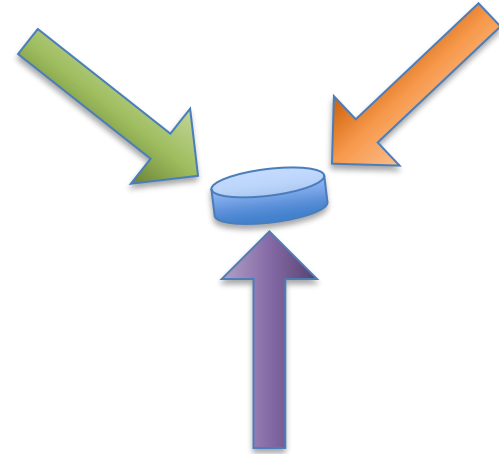 - Local website can always be found
  - rDNS to reduce Spam

Internet Exchange Point - IXP

- (IXP) keeps local traffic local (national, regional, etc.)

Without IXP

With IXP

Internal Exchange Point - IXP(2)
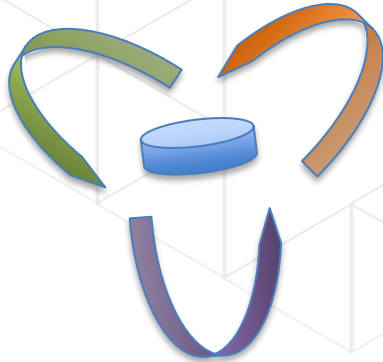
- What you can do
  - Promote / Enforce IXP and Open peering policy
  - Talk to CDN provider to host cache (Google, Akamai, CloudFlare, etc.)
- Why?
  - Reduce unnecessary International traffic
  - Strengthen local (web) hosting
  - Content available without International bandwidth

Thank you for your Attention

Questions?

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