



# Internet Shutdowns, Network Stability, and the Role of ICANN

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**A Data-Driven Perspective**

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03/10/2026



# The Internet as Critical Infrastructure

- Internet supports **finance, healthcare, education, governance**
- **Billions** rely on it daily
- Global stability **rarely measured** in real time

## ESSENTIAL SECTORS DEPENDENT ON INTERNET



Finance



Healthcare



Education



Government

# The Problem: Internet Shutdowns and Instability

- Effects: **Economic loss, Service disruption**
- DNS and routing anomalies detected
- Over **180 shutdowns** recorded globally
- Causes: **Government orders, Network failures, Routing errors**

Credit: Al Jazeera

## TECHNOLOGY

### Global internet shutdowns

In 2020, **29 countries** intentionally shut down or slowed their internet communications.

#### RECORDED SHUTDOWNS



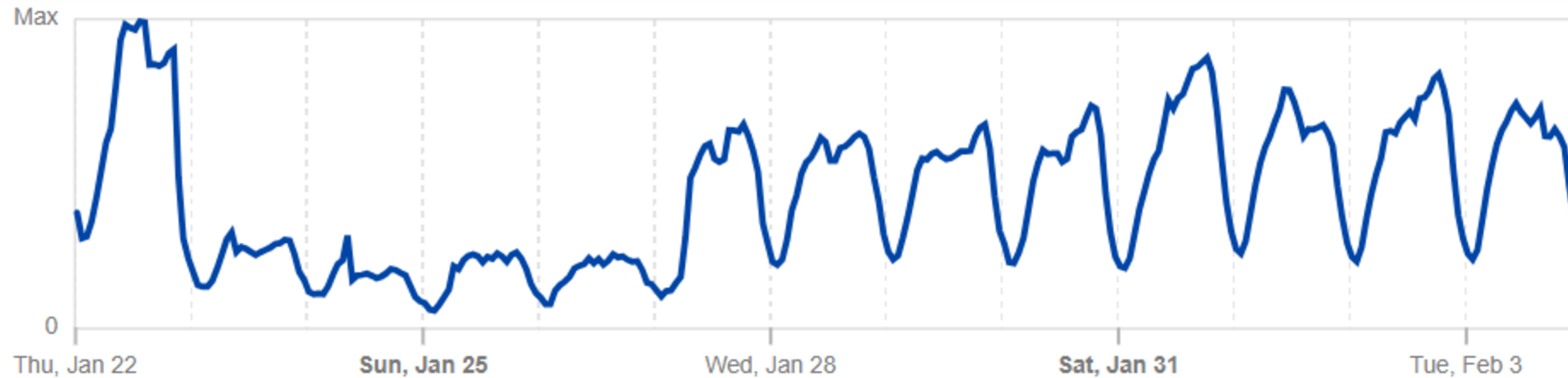
SOURCE: ACCESS NOW | MARCH 3, 2021



# How Shutdowns Appear in Network Data

## Observable Technical Events

- **Sudden drop** in DNS queries
- Loss of reachability to **root/TLD servers**
- Abnormal routing changes detected

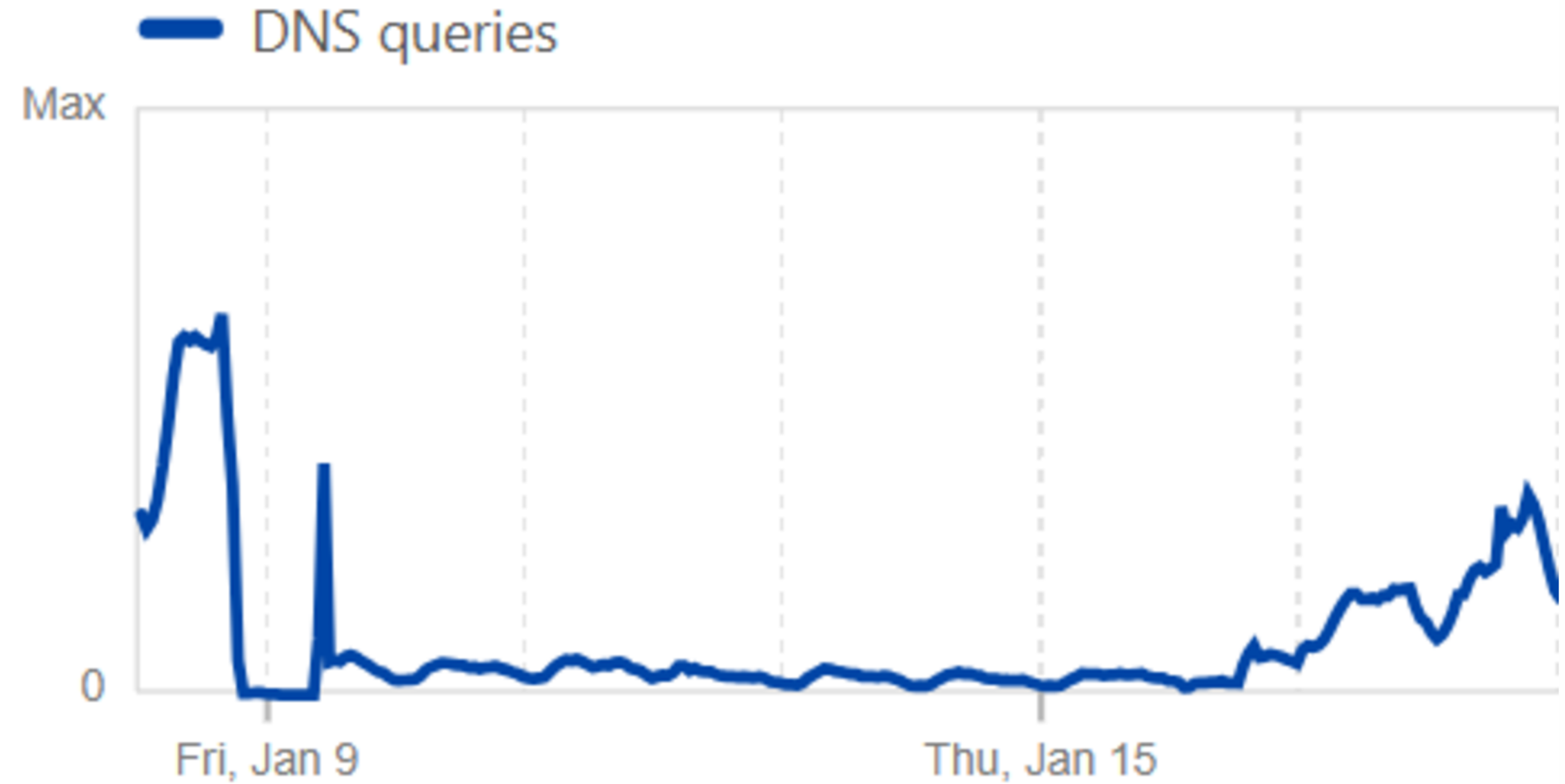


DNS Query Traffic Before, During, and After Shutdown

# Case Study: Iran 2026 Nationwide Shutdown

## Case Details

- DATE  
January 2026
- DURATION  
~3 weeks
- TYPE  
Near-total internet blackout
- TRAFFIC  
Dropped close to zero



BEFORE

Normal

DURING

Near Zero

AFTER

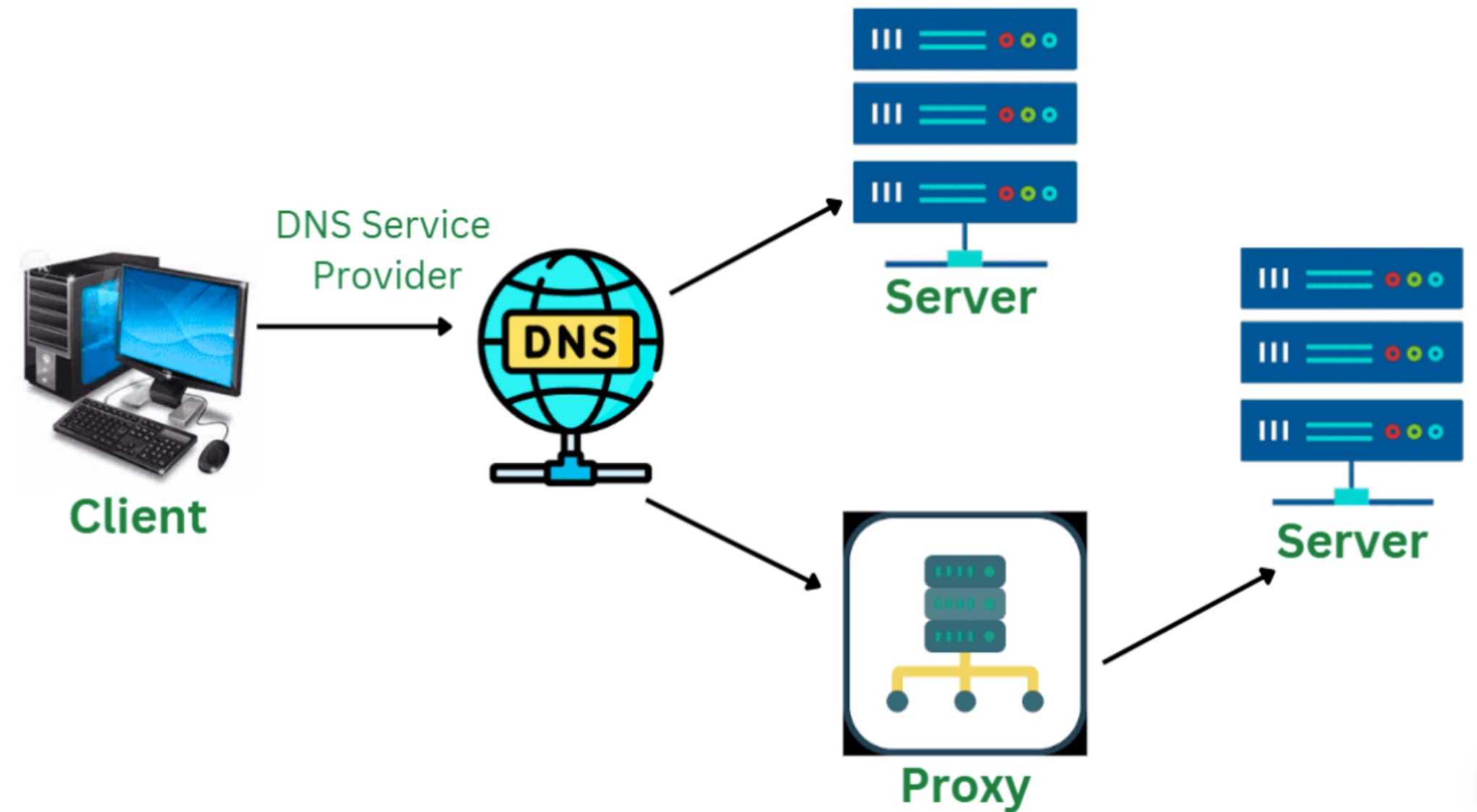
Gradual Recovery

💡 Key Takeaway: Shutdowns leave clear, measurable DNS and traffic signatures

# The DNS Layer as a Global Sensor

## Internet Vital Signs

- Every internet request **begins with DNS**
- DNS reflects **real user activity**
- Global DNS data reveals **regional disruptions**



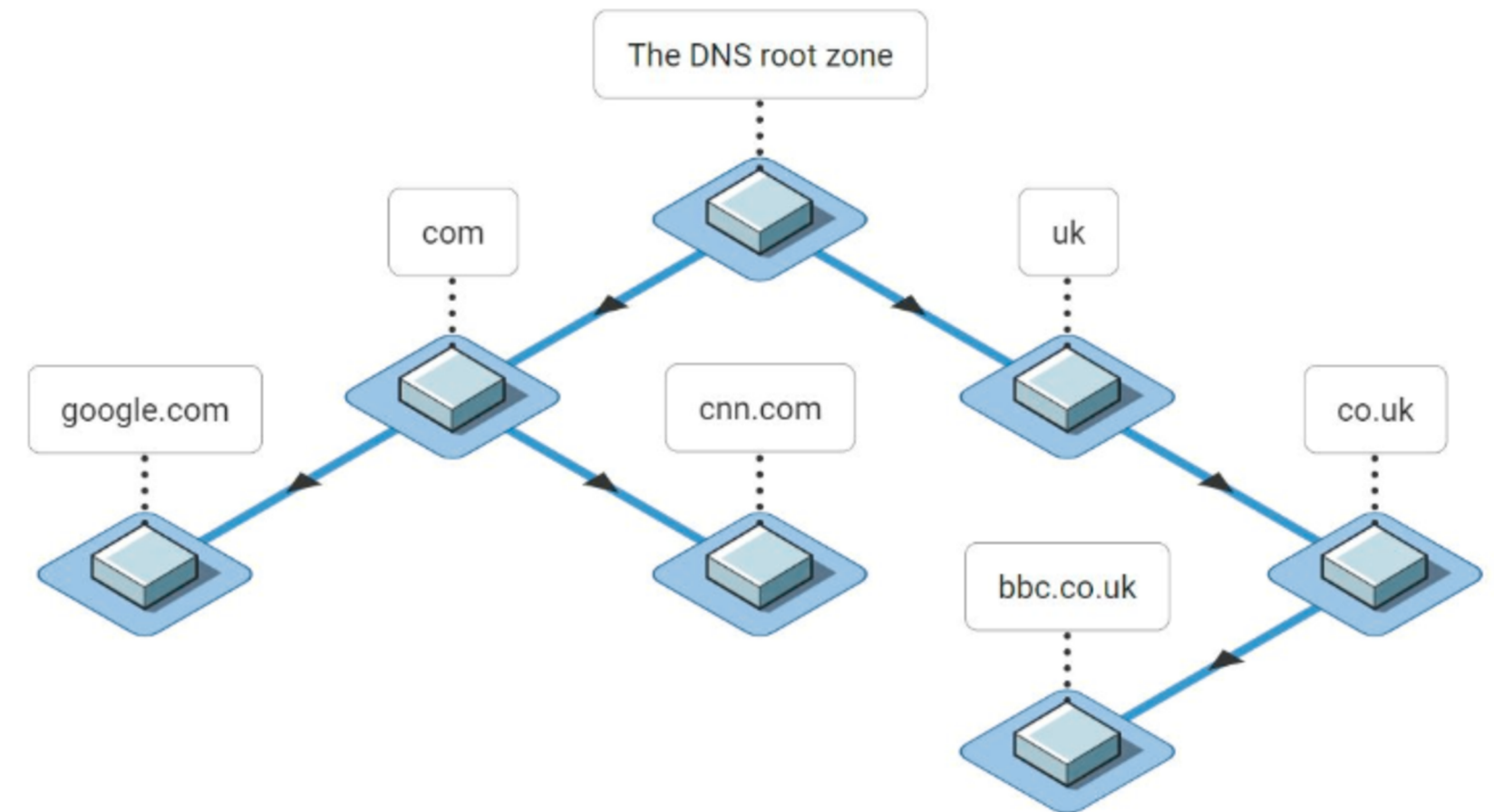
DNS Resolution: Global Observation Point

# ICANN's Unique Position

## Technical Coordinator

- Coordinates the **global DNS**
- Oversees **root server system**
- Has visibility across **naming infrastructure**

🎯 ICANN can observe global DNS stability in **real time**



# Proposal: Global Internet Stability Index

## Proposed Metrics

- DNS query **success rate**
- Root server **reachability**
- Latency to **TLD servers**
- Sudden **regional traffic drops**

## Global Internet Stability Index



DNS Query  
Success

**97%**



Root Server  
Reachability

**99,8%**



Median  
Latency

**28 ms**



Traffic Drop  
Incidents

**2,1%**

# Key Insights and Closing

## Core Findings



Shutdowns are **measurable** at DNS layer



DNS data acts as **early warning** signals



ICANN **uniquely positioned** to observe stability



Global stability index **improves resilience**

“ You cannot protect what you cannot measure. ”

# THANK YOU

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