

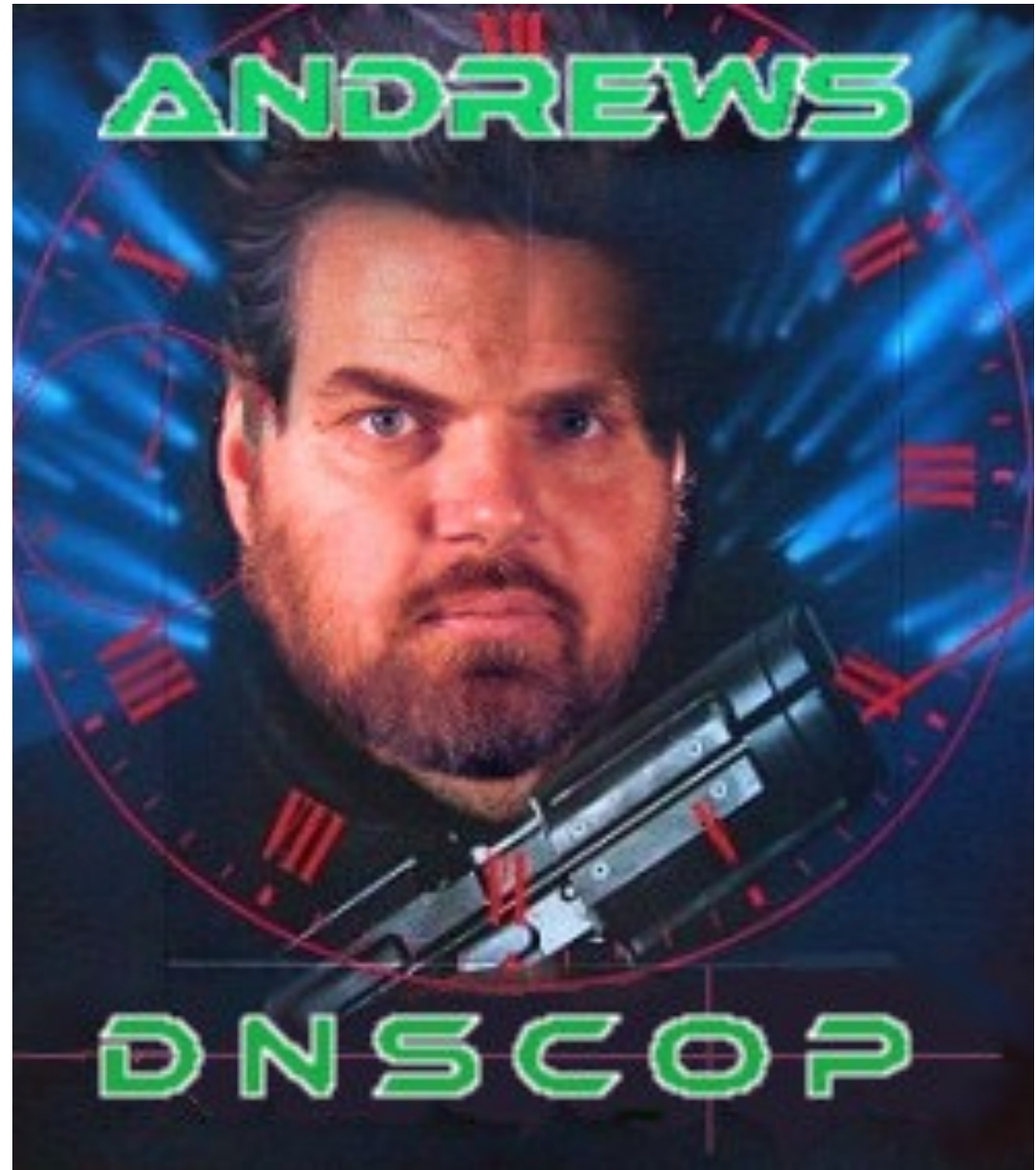
# EDNS (in)Compatibility: Adventures in Protocol Extension

APRICOT 2016

## Is Mark just being a stickler?

“dropping packets is just plain anti-social and always has been”

“A firewall can generate a BADVERS response, just like it can generate a TCP RST. You don't have to break the protocol, you can co-operate with the protocol.”



# What is EDNS?

**Original max allowable size of a DNS message over UDP**

512  
bytes



Extension mechanisms for DNS

**2000ish+ DNS msg max over UDP, up to 4096 bytes**

512

512

512

512

512

512

512

512

# Why would you want EDNS?

- DNSSEC, IPv6 (signatures and/or several IPv6 addresses)
- Client-subnet Identifier (identify query originator)
- DNS cookies (abuse mitigation tool)
- there will be more new applications ...

# Why is EDNS incompatibility a problem?

1. Firewall blocking is indistinguishable from packet loss, causing DNS servers to retry uselessly, slowing response to users
2. Poor failure modes can disable DNSSEC, making DNSSEC-signed sites unreachable for clients using validating resolvers
3. NEW applications using EDNS may be stifled
  - DNS cookies (DDOS mitigation tool)
  - Client-subnet identifier (CDN optimization)

# Firewalls may block the following:

- DNS queries with EDNS flag set
- EDNS version not equal to 0
- Unknown EDNS options

*“These firewalls are not providing any ‘security’ benefit to anyone by doing this. All they are doing is stuffing up the ability to deploy protocol extensions.”*

# ednscomp.isc.org



Internet Systems  
Consortium

## EDNS Compliance

ISC is testing [EDNS](#) compliance because the lack of proper EDNS compliance impacts the [Cookies](#) which requires Unknown EDNS Options to be correctly handled by all servers.

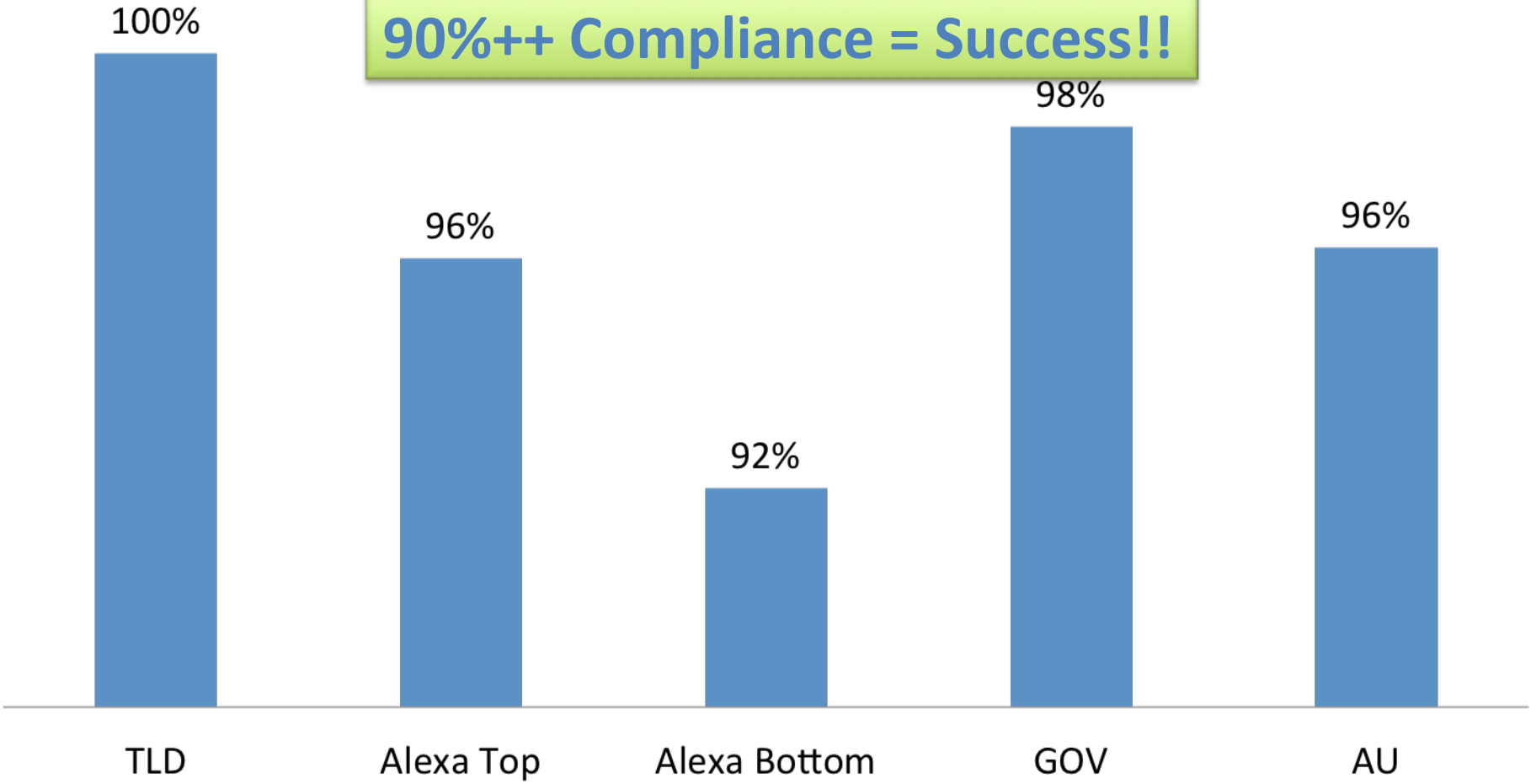
That said we are testing all of the features of EDNS as we don't know when we are going we can see sooner rather than later as delaying will only increase the amount of fixing re deterministic.

## EDNS Compliance Tester

[Test Your Servers Here](#)

# EDNS Aware Servers (Sept 12, 2015)

**90%+ Compliance = Success!!**

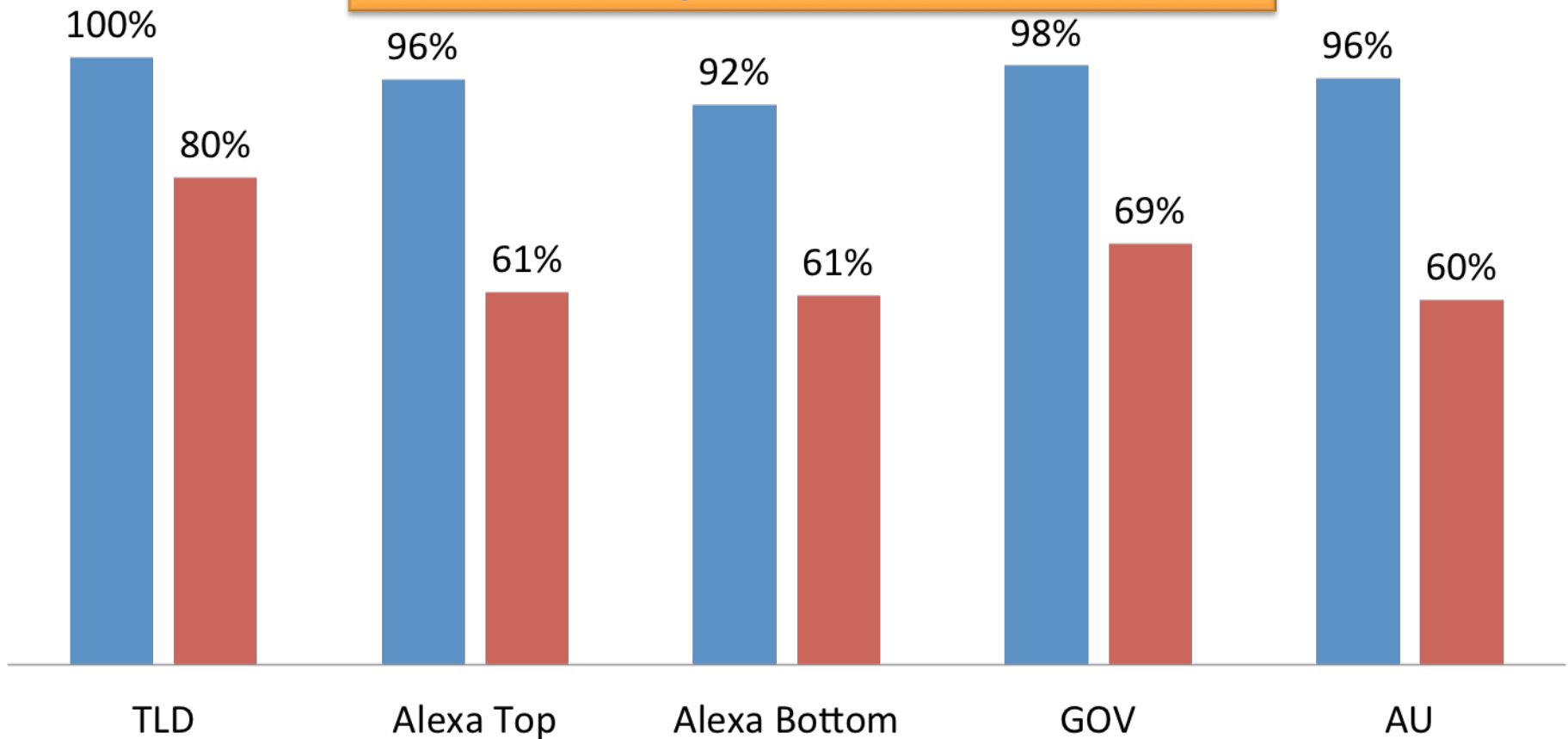


<http://ednscomp.isc.org/compliance/summary.html>



## EDNS Aware Servers and Full EDNS Compliance (Sept 15, 2015)

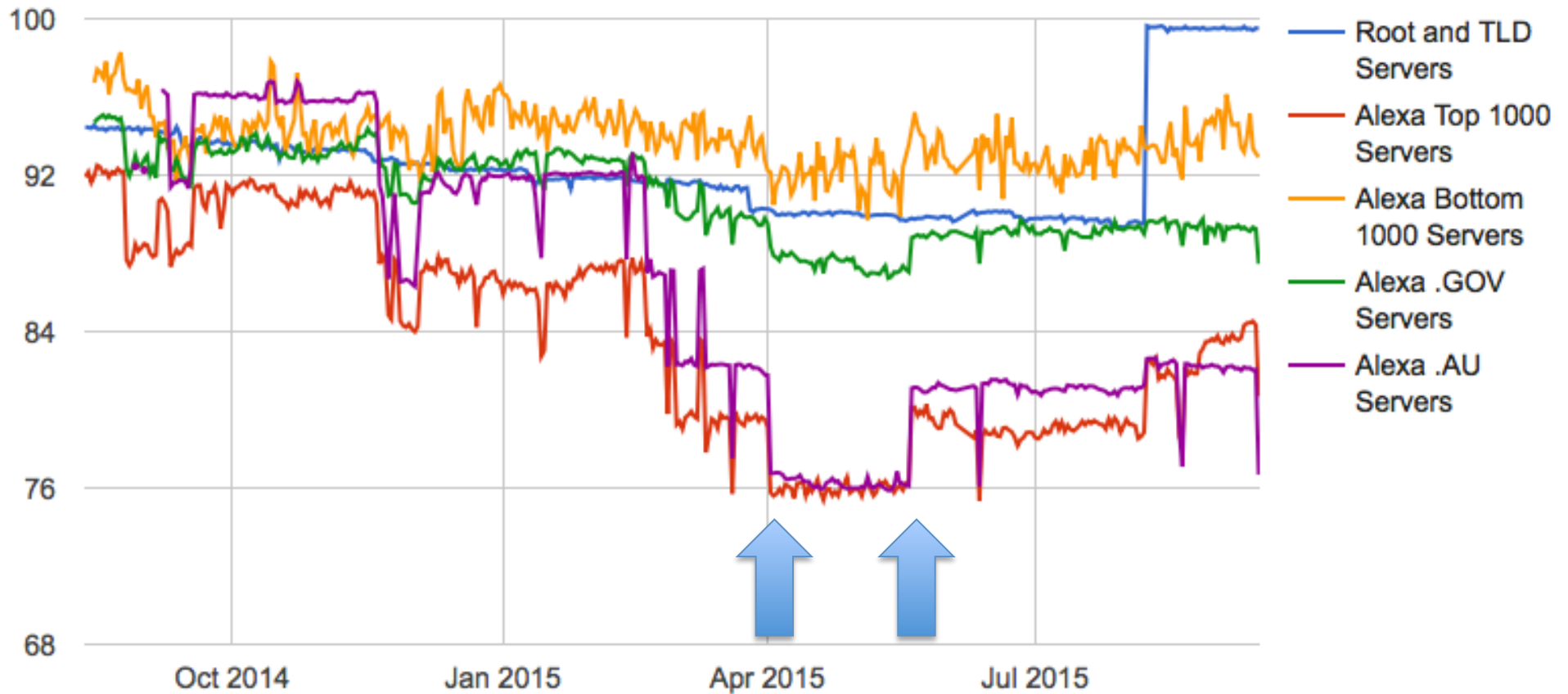
60%+ Compliance = Success????



<http://ednscomp.isc.org/compliance/summary.html>

# 5-20 Route 53 Firewall updated

Percentage of responding servers that responded to a plain EDNS(1) request



# What can you do?

- Test your DNS services at [ednscomp.isc.org](https://ednscomp.isc.org)
- Remove rules blocking EDNS responses from Firewalls
- Keep your DNS servers updated
- Keep in mind while debugging DNSSEC validation failures