NAT64/DNS64 detection via SRV Records

draft-ietf-v6ops-nat64-srv-00

Martin Hunek <martin.hunek@tul.cz>
Why?

• There are solutions for NAT64 detection, but:
  • RFC7050 doesn't work with „foreign“ DNS
  • RFC8484 (DoH) introduces „foreign“ DNS
  • Undetected DNS64 breaks DNSSEC
  • Undetected NAT64 prefix = no IPv4
Current solutions

- RFC7050 (via local DNS)
- RFC7225 (via PCP)
- draft-pref64folks-6man-ra-pref64-02 (via RA)
- draft-ietf-v6ops-nat64-srv-00 (via global DNS)
RFC7050

• Pros:
  - Works without modifications to protocols
  - Solves most of the RFC7051 issues

• Cons:
  - Requires DNS64 with same NSP/WKP
  - No priorities
  - WKP not secured by DNSSEC
  - The first step is insecure
RFC7225

- **Pros:**
  - Solves all of RFC7051 issues

- **Cons:**
  - Requires both client and server to have PCP support
  - Requires effort
draft-pref64folks-6man-ra-pref64-02

• Pros:
  - Single packet configuration
  - Solves all RFC7051 issues

• Cons:
  - Requires local DNS64
  - For now /96 only
  - System level change
• Pros:
  - Solves most of the RFC7051 issues
  - Allows priorities
  - Works with „foreign“ DNS
  - Application level change
  - No changes in protocols

• Cons:
  - Requires local domain detection
  - Requires DNS
Local domain detection

- SLAAC-DNSSSL option
- DHCPv6 option 24
- PTR record
- RIR whois
- ...

Detection of NAT64 prefix

• By asking of SRV record for each local domain
• `_nat64._ipv6` IN SRV 5 10 9632 nat64pool.example.com.

• Then AAAA MUST point to NAT64 IPv6 prefix
• A MAY point to IPv4 prefix used for NAT64
• „Port“ MAY be used to indicate prefix length
Detection of DNS64

- By asking of SRV record for each local domain
- _dns64._<proto> IN SRV 5 10 <port> dns64.example.com.

- Optional vs. Required? MUST/SHOULD?
Inputs from WG

- Name of the draft
- Negative answer $\rightarrow$ SRV allows "."
- Change in configuration $\rightarrow$ TTL, CNAME
- Multiple area specific prefixes $\rightarrow$ view, subzone
- Detection of local domain after the CPE
Next step

• Input required
  – DNS64 record MUST/SHOULD be supported
  – How to resolve naming issue?
  – Or any other input, so I can prepare next version

• Then v01

• Then maybe WG item?
Discussion