

Issues when translating between IPv4 and IPv6

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Translation Problems

- All problems that come with NAT
- NAT-PT (RFC 2766)
 - DNS-ALG specification

Desired address resolution

Src	Dst	IPv4-only	dual stack	IPv6-only
IPv4-only		IPv4 address	IPv4 address	t(IPv6)->IPv4 address
Dual stack		IPv4 address	IPv4 or IPv6 address	IPv6 address
IPv6-only		t(IPv4)->IPv6	IPv6 address	IPv6 address

Address resolution due to DNS-ALG

Src	Dst	IPv4-only	dual stack	IPv6-only
IPv4-only		IPv4 address	IPv4 address	t(IPv6)->IPv4 address
Dual stack		IPv4 address or	IPv4 or IPv6 address	IPv6 address or t(IPv6)->IPv4
IPv6-only		t(IPv4)->IPv6 >IPv6	IPv6 address	IPv6 address

Name resolution failure

AAAA from v6 → DNS-ALG → AAAA
→ A

(no answer) ← DNS-ALG ← (no answer)

AAAA ← DNS-ALG ← A or AAAA

DNS resolver will ignore the subsequent
answer

Name resolution failure(contd.)

Case 1:

AAAA query \rightarrow DNS-ALG \rightarrow AAAA (1)

\rightarrow A (2)

AAAA \leftarrow DNS-ALG \leftarrow AAAA

(reply 1)

Case 2:

A query \rightarrow DNS-ALG \rightarrow AAAA

AAAA \leftarrow DNS-ALG \leftarrow AAAA reply

Name resolution failure (contd.)

DNS-ALG cannot distinguish between cases 1 & 2

‘A’ query results in a AAAA reply due to DNS-ALG

Due to stateless nature...

Scalability issues

- Single exit point causes bottleneck.
- Concern for 3GPP networks.

NAT or NAT-PT

- Dual stack hosts – Use NAT or NAT-PT ?

WG item ?