NAT64
draft-bagnulo-behave-nat64-02

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Application scenario

- Communications initiated by the v6-only host
- Compatible with ICE
- No support for communications initiated by the v4 only side without previous action from the v6 side (i.e. No support for v6 only servers, beyond the creation of static mappings)
- No changes required in any host for basic functionality
- Supports communications initiated using the FQDN (of the v4 node) using DNS64
Application scenario – refined
An-IPv6-network-to-IPv4-Internet

IPv6 end site or IPv6 end site and IPv6 ISP

IPv4 Internet
Application scenario – refined IPv6-Internet-to-an-IPv4-network

IPv6 Internet - Only host

IPv4 end site - Only Host

IPv6

NAT64

DNS64
Comparison with NATPT (RFC2766)

- NAT64 only supports v6 initiated communications
  - NATPT supports both v4 and v6 initiated, requiring a set of cumbersome techniques
- NAT64 and DNS64 are completely decoupled
  - No relation between the NAT64 state and the synthetic RR
  - DNS64 preserves DNS semantics, DNS responses are valid irrespective of the path used by data packets
- NAT64 allows to prefer native connectivity over translated connectivity
- NAT64 is compatible with DNSSec
- NAT64 supports some modes of IPSec
- NAT64 is fully specified, compatible with behave requirements
Relation with other documents

- NAT64 only defines how to create the address mappings
- Header translation defined in stateless translation draft
- DNS64 defined in DNS64 draft
- How this all fits together defined in framework draft
Overview

AAAA RR for FQDN(H4)?
Overview

AAAA RR for FQDN(H4) ?

NAT64

DNS64

DNS

AAAA RR for FQDN(H4) ?

NAT64

DNS

v6

v4

H6

IP6

IP4

H4

IPT
Overview

NAT64

v6

DNS64

empty

AAAA RR for FQDN(H4) ?

DNS

v4

H4

IP4

IPT

H6

IP6

AAAA RR for FQDN(H4)?
Overview

AAAA RR for FQDN(H4) ?

A RR for FQDN(H4) ?

DNS64

DNS

IP6

H6

v6

IP4

H4

v4

IPT

NAT64
Overview

- NAT64 v6
- DNS64 v4
- DNS v4
- IPT
- AAAA RR for FQDN(H4) ?
- A RR for FQDN(H4) ?
- H6 IP6
- v6
- H4 IP4
Overview

Synthesizes AAAA RR as Pref::/96+IPv4
Overview

Src: IP6,s
Dest: Pref:IP4,d
Overview

- NAT64
- DNS64
- DNS
- IPT
- Dest: IP4,d
- Src: T,t
- H6
- IP6
- v6
- v4
- H4
- IP4
- v4
Some questions
Protocols supported in base spec

• UDP
• TCP
• SCTP
• DCCP
• IPSec

• Should we define support for all these in the base spec or can we define UDP TCP support in base spec and then define SCTP, DCCP and IPSEc support in other documents
Endpoint independence vs. Higher utilization of v4 addresses

- Endpoint independence requires mappings are: \((\text{srcIP}6,\text{srcp}) \leftrightarrow (T,t)\)
- Address and port dependent mapping are: \((\text{srcIP}6,\text{srcp},\text{dstIP}6,\text{dstp}) \leftrightarrow (T,t,\text{dstIP}4,\text{dstp’})\)
- Can we afford endpoint independence in v6?
Questions?