Introduction

- draft-eggert-hip-rendezvous
- ID is -00, talk is newer
- design options, not solutions

- 2 rendezvous scenarios
  - among HIP nodes
  - between HIP and non-HIP nodes
Basic HIP-to-HIP Scenario

I

DNS

FQDN(R)

<HI(R),IP(R)>

HIP base exchange

R
Focus

- IP address changes
  - mobility, etc.
- readdress ongoing associations
  - REA: draft-nikander-hip-mm
- new associations?
  - DNS has FQDN→<HI,IP> map
- Strawman:
  - IP change → DNS update
Strawman Limitations

- zone signatures costly
- stale DNS cache $\rightarrow$ no connection
- IP lookup still requires FQDN

Dynamic DNS

\[ \text{DNS} \xrightarrow{\text{FQDN} \mapsto \langle \text{HI, IP} \rangle} \]
Analysis

- DNS maintains FQDN\(\rightarrow\)<HI, IP>\)
- combines 2 maps
  - FQDN\(\rightarrow\)HI #1
  - FQDN\(\rightarrow\)IP #2
- #1 in DNS for app compatibility
- #2 only used by HIP \(\rightarrow\) move
  - and need only HI\(\rightarrow\)IP for HIP
HI→IP Alternatives

- rendezvous server (RVS)
  - use HI→IP to relay to current IP(R)
  - some traffic flows via RVS

- lookup service (LS)
  - return IP(R) given HI(R)
  - 2-phase HIP lookup: FQDN→HI→IP
  - all traffic end-to-end
Rendezvous Server

I

DNS

FQDN\rightarrow<HI,IP>

I_1, I_2, I_3

RVS

HI\rightarrow IP

update IP(R)

I_1

IP(R)

R
RVS Discussion

- how to relay?
  - forward, NAT, etc.

- how to locate?
  - current HIP arch ID: overload A
  - has implications, details later
can look up IP based on HI
  - inverse may be easier, too

- can tune data structure
  - DHT, etc.

- extra round-trip

- how to locate?
Non-HIP to HIP

- non-HIP: need FQDN $\rightarrow$ IP in DNS
  - IP: static + reachable
    - similar to MIP
- also similar to HIP-HIP RVS
- but for all traffic
Current Arch ID Issue

- current arch ID: IP(RVS) in DNS A
- changes semantics of DNS entry
  - IP of node ≠ IP of relay for node
- non-HIP nodes send to IP(RVS)
- RVS must **NAT** to relay
  - well-known general issues
  - how to identify HIP destination?
  - how to rev-NAT return traffic?
Non-HIP to HIP via RVS

I (non-HIP) \rightarrow IP(I) \rightarrow IP(RVS) \rightarrow R (HIP)

DNS

FQDN(R) \rightarrow <HI(R), IP(RVS)>

update IP(R)

relay via NAT

RVS

HI \rightarrow IP

IP(I) \rightarrow IP(RVS) \rightarrow IP(R)
Rendezvous Broker

- alternative to rendezvous server
  - similar to tunnel brokers
- unique, static IP per HIP node
  - from block delegated to RB
  - register in DNS
- tunnel between RB and HIP node
- RB does vanilla IP forwarding
Non-HIP to HIP via RB

1. (non-HIP) \(\langle HI(R), IP(R) \rangle\) to DNS
2. DNS resolves FQDN(R) to \(\langle HI, IP \rangle\)
3. Update IP(R')
4. (HIP) IP(R') tunnel to IP(RB)
5. (non-HIP) IP(I) to IP(R)
6. RB HI to IP
7. IP(R) to (HIP)
RVS vs. RB

- RB does IP fwd, RVS does NAT
  - RVS: well-known NAT issues
  - RB: tunnel has PMTU issues
  - RB solves dst ident + return traffic
- both RB + RVS need
  - setup protocol
  - address update protocol
- performance?
- security?
Conclusion

- reword HIP arch ID, RVS section
  - allow rendezvous alternatives
- investigate
  - lookup service for HIP-to-HIP
  - tunnels for non-HIP-to-HIP
- find other design alternatives
  - request WG/RG input
Questions

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