

An Alternative to DHT for “P2P SIP”

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An example “overlay” network



Observation

- Use Cases seem to fall into two categories:
 - We want to communicate with folks on same layer 2 network when there is no or only sporadic access to Internet : solvable using Bonjour-style solution
 - We want to communicate with anyone on the Internet.... with distributed computing power not owned by a single organization.
- We can do this without DHT.
- We can do this so most existing SIP UAs can participate without code changes.

How? (1/2)

Mirror Configuration

- Use massive (voluntary) network of mirrored SIP and STUN/TURN servers instead of Super Nodes.
- Each mirror node is listed in the DNS domain of the target service.
- Make it very easy to add or remove your mirror from list (no human interaction).
- We've done something very much like this before at IETF: DNS root zone and top level domains.

How? (2/2)

State Sharing

- Mirror nodes flood all shared state entries to each other using:
 - some well known topology (ex: double ring, wagon wheel, double wagon wheel)
 - split horizon (don't send a state entry to someone who already sent you the same state entry)
- We already did this at IETF: Netnews basically does this now

What does each mirror node do?

- ***SIP Registrar***
- ***SIP Proxy which does outbound***
- ***STUN and TURN server***
- SIP Identity server
- SIP Presence server
- SIP certs server
- SIP config server
- XCAP server

Adding a user/resource

- Still requires a central authority per domain to say yes, at least to prevent naming conflicts
- If desired, you can anonymize the naming requests by sending the hash of the name and/or sending the requests through a mirror.
- Once the user/resource gets “permission” to join, it generates a certificate and can store the certificate with the SIP certs mechanism on any mirror node.