Beyond the Single Resource Directory

draft-amsuess-core-rd-replication,
draft-amsuess-t2trg-rdlink

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Context

draft-amsuess-core-rd-replication
Presented at IETF101 in CoRE

draft-amsuess-t2trg-rdlink
Nascent project for thing-to-thing usable URIs without central infrastructure
Ground work: document structure

Resource Directory upscaling

goals, challenges, patterns
Ground work: RD replication

Single registration URI

Shared authority

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Ground work: RD replication

Distinct registration URIs (multi-/anycast or location-based DNS)

Proxy lookups
Ground work: Topics

- Failover for lookups
- Failover for registrants
- Lookup load balancing
- Registration load balancing
even though that’s only an issue with extensions
And Now for Something Completely Different
coaps://wither-be-gone.local/am-i-green?
rdlink: Address properties

- Stable
  as long as the server wants them to be

- Resolvable
  from where the server wants them to be

- Usable for end-to-end secure communication

and not increase constrained device code size at all
rdlink

Robust Distributed Links to IoT devices
Also, links assisted by a Resource Directory
rdlink: Addresses

will be defined in CoRE indicating other mechanism required

coop+at://nbsw...3de.ab.rdlink.arpa/green

base32-encoded raw public key or other cryptographic identifier
Link-local protocol negotiation multicasts
DHT lookup of the authority
Link-local protocol negotiation multicasts
DHT lookup of the authority assisted by helper servers that implement a distributed Resource Directory
rdlink: Prior art

- Tor /.onion addresses
- IPv6 mobile addresses
- HIP
- IPFS / IPNS
- Named Information (ni:) URIs
Prerequisites from CoRE
protocol-negotiation, coap+at

Prototypes

Operations
How is a .arpa domain run? Who else will run helpers?

Review

Usable in off-the-shelf IoT devices by 2023
Questions to RG, next steps

- General ideas and feedback
- Right place here?
  And with whom else will this need to be coordinated?
- Your requirements
- Your use cases
- Your participation