CoRE RD/DNS-SD Interop

CoRE Link Format <-> DNS-SD RRs

draft-ietf-core-rd-dns-sd

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Motivation

- Support alternate methods of discovery in heterogeneous environments (e.g. HTTP clients and CoAP servers)

- Support hierarchical discovery in large environments (e.g. 1000's of points)

  - DNS-SD for coarse-grained discovery

  - Link format for fine-grained discovery

CoRE Background

- CoRE => CoAP (COnstrained Application Protocol) [RFC7252]
- CoAP = UDP + REST (Note: REQs can be multicast)
- REST (Representational State Transfer) =
  - Servers
    - CRUDN methods (create, read, update, delete, notify)
    - Stateless interactions
  - Resources
    - Identified by URIs [RFC3986], have a Content Type
  - HATEOS (Hypertext As The Engine Of Application State

CoRE Resource Discovery

- CoRE Link Format [RFC6690] based on Web Linking [RFC5988]
  - Typed link = URI + link relation [+ target attributes]
- GET /.well-known/core (perhaps with a query string) and get back a body containing a collection of typed links
- New target attributes defined:
  - rt (resource type); an application-specific semantic tag
  - if (interface description); e.g. a tag or a URI to a schema or WADL
  - sz (maximum size estimate for target resource)

Link Format to DNS-SD mapping

Link Format	DNS-SD
Resource Instance (ins=)	<Instance>
Resource Type (rt=)	<ServiceType>
<uri>	TXT path=/{relativeURI}
Interface Description (if=)	TXT if={anyURI}
Other attribute (key=value)	TXT key=value

Things decided by the mapping entity:
- Domain name (the DNS zone where the records are created)
- Host name (if it doesn't already exist) for naming AAAA RRs.
- txtver=n (TXT record version)

Link Format -> DNS-SD Example

CoAP query

REQ: GET coap://[ff02::1]/.well-known/core?exp

RES: 2.05 "Content" (from [fdfd::1234]:5678)
</sensors/temp/1>;exp;ct=41;rt="oic.temperature";
    ins="indoorTemp";if="sensor",

Resulting RRs

node1234.example.com. IN AAAA fdfd::1234

oic._udp IN PTR indoorTemp.oic._udp

temperature._sub.oic._udp IN PTR indoorTemp.oic._udp

indoorTemp.oic._udp IN SRV 0 0 5678 node1234.example.com.
    IN TXT txtver=1
    IN TXT path=/sensors/temp/1
    IN TXT if=sensor