Discovery Mapping

CoRE Link Format <-> DNS-SD RRs

draft-ietf-core-rd-dns-sd

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Use Cases

- 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
  - CoRE 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)
  - Clients/Servers/"Servients"
    - CRUDN methods (create, read, update, delete, notify)
    - Stateless transactions
  - 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 [RFC8288]
  - Typed link = URI + link relation [+ target attributes]
- GET /.well-known/core (perhaps with a query string) and receive a body containing a collection of typed links
- [RFC6690] defines new target attributes:
  - rt (resource type); application-specific semantic tag
  - if (interface description); e.g. a URI to a schema or WADL
  - sz (maximum size estimate for target resource)

New/Required Link Target Attributes

- exp, hint that information about this resource should be exported

- ins=, instance name in UTF-8 format

- rt=, resource type (federated namespace?)

- if=, semantic tag or link to interface description

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

TBD:
- Domain name (the DNS zone where the records are created)
- Host name (if it doesn't already exist) for naming AAAA RRs

Link Format -> DNS-SD Example

CoRE query

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

RES: 2.05 "Content" (from [fdfd::1234]:5678)

</sensors/temp/1>;exp;ct=50;rt="oic.r.temperature";
   ins="indoorTemp"; if="oic.if.s",

Resulting RRs

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

_oic._udp IN PTR indoorTemp._oic._udp

r.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=oic.if.s