Discovery Mapping

CoRE Link Format <-> DNS-SD RRs

draft-ietf-core-rd-dns-sd

Kerry Lynn, Peter van der Stok, Michael Koster, Christian Amsüss
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Why? (Use Cases)

• Support alternate methods of discovery in heterogeneous environments (e.g. HTTPS clients and CoAPS servers)

• Support hierarchical discovery in large environments (e.g. many K’s of points)
  – DNS-SD for coarse-grained discovery
  – CoRE Link Format for fine-grained discovery

• Discovery bootstrapping (i.e. locating Resource Directories)
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

<table>
<thead>
<tr>
<th>Link Format</th>
<th>DNS-SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource Instance (ins=)</td>
<td>&lt;Instance&gt;</td>
</tr>
<tr>
<td>Resource Type (rt=)</td>
<td>&lt;ServiceType&gt;</td>
</tr>
<tr>
<td>&lt;uri&gt;</td>
<td>TXT path=/{relativeURI}</td>
</tr>
<tr>
<td>Interface Description (if=)</td>
<td>TXT if={anyURI}</td>
</tr>
<tr>
<td>Other attribute (key=value)</td>
<td>TXT key=value</td>
</tr>
</tbody>
</table>

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**

_indoorTemp._oic._udp.example.com. IN PTR indoorTemp._oic._udp...
_r-temperature._sub._oic._udp.example.com. IN PTR indoorTemp._oic._udp...
_indoorTemp._oic._udp.example.com. IN TXT txtver=1
_indoorTemp._oic._udp.example.com. IN TXT path=/sensors/temp/1
_indoorTemp._oic._udp.example.com. IN TXT if=oic.if.s
_indoorTemp._oic._udp.example.com. IN SRV 0 0 5678 node1234...
node1234.example.com. IN AAAA fdfd::1234