Comparison of CoRE Resource Directory and OCF Resource Directory

Michael J Koster

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CoRE RD Features relative to OCF RD

- A registration is a collection of links in an RD which point to resources

- An Endpoint is a server that hosts registered resources

- A separate link collection is maintained for each Endpoint registration

- A device or Endpoint will typically have one registration per RD

- Groups are registered also, and are collections of endpoint registrations

- Each registration has a lifetime, set on registration, and restored using a simple refresh operation consisting of an empty POST operation

- Lookup query types return Endpoints, Resources, or Groups that match link relation and attribute values provided in the query

CoRE RD Operations

- Register Endpoint, returns the location of the registration resource
  - Endpoint attributes include endpoint type, domain, and lifetime
- Refresh registration
- Update registration
- Delete registration
- Create Group
- Remove Group
- Lookup (endpoint, resource, group) with endpoint & link attribute query

Register Example

method: **POST,** URI: **/rd**
payload:

```
[
 {
  "href": "coaps://[2001:db8:3::123]:61616/oic/res,
  "if": ["oic.if.ll", "oic.if.baseline"],
  "rt": ["oic.wk.res"]
  "type": "application/vnd.ocf+cbor",
  "ct": "10000"
 },
 {
  "href": "coaps"//[2001:db8:3::123]:61616/temp,
  "if": ["oic.if.s", "oic.if.rw", "oic.if.baseline"],
  "rt": ["oic.r.temperature"]
 }
]
```

Response:
2.01 Created
Location: 173ab3f4

Other Differences

- CoRE RD can be discovered in .well-known/core via links containing rt=core.rd and rt=core.rd*

- CoRE RD requires supporting core link-format (RCF6690)
  - RFC6690 does not allow object construction as a link target attribute

- Simple registration option using a device's .well-known/core

- "con" (context) target attribute used to set the base URI of a registration

- pagination of query results

- Each registration is observable

- OCF RD has "simple discovery" using multicast GET to /oic/res

How can OCF accommodate CoRE RD?

- Suitable for LAN and Cloud Service level discovery
  - Built into Thread Border Router
- Example: used to register links to /oic/res for device discovery
- "eps" needs to be flattened to an array or multiple links
  - Protocol negotiation scheme using "at" seems workable; client decides "pri":

```
{

"href": "ocf://f9e1dc1f-1550-492f-9e94-2588dc1b4866/oic/res",

"type": "application/vnd.ocf+cbor",

"rt": "oic.wk.res", "if": "oic.if.ll",

"anchor": "ocf://f9e1dc1f-1550-492f-9e94-2588dc1b4866",

"at": ["coap+tcp://[2001:db8:f1::2]", "coap+ws://server.example.com"]

}
```

References

- https://tools.ietf.org/html/rfc6690 (CoRE link-format)

- https://tools.ietf.org/html/draft-ietf-core-links-json-10 (link-format JSON)

- https://datatracker.ietf.org/doc/draft-ietf-core-resource-directory (CoRE RD)

- https://datatracker.ietf.org/doc/draft-silverajan-core-coap-protocol-negotiation/ (Protocol Negotiation)