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Comparison of CoRE Resource Directory and OCF Resource Directory

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April 20, 2018



OCF Resource Directory

- OCF has a .well-known/core equivalent called /oic/res
- OCF RD is based on some (always-on) device exposing its /oic/res for other (sleepy) devices to use as a resource directory
- The links from the registering device are added to the links already in the directory device
- There is a link target attribute "ins" to help distinguish links from different registered devices
- Multicast GET from /oic/res/ will return from the RD device instead of the registered device



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 (RFC6690)
 - 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)



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