

Constrained Resource Identifiers

draft-ietf-core-href-11

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Encoding of URI Scheme

› CDDL definition for CRI CBOR Serialization (Section 5.1)

```
CRI = [  
  scheme,  
  authority / no-authority,  
  local-part  
]  
  
~snip
```

```
scheme      = scheme-name / scheme-id  
scheme-name = text .regex "[a-z][a-z0-9+.-]*"  
scheme-id   = (COAP / COAPS / HTTP / HTTPS / URN / DID /  
              other-scheme)  
              .within nint  
COAP = -1 COAPS = -2 HTTP = -3 HTTPS = -4 URN = -5 DID = -6  
other-scheme = nint .feature "scheme-id-extension"
```

The URI scheme can be expressed as:

- a text string
- a negative integer

At the moment, negative integers are for few “well-known” schemes mentioned upfront.

In general, how to ensure extensible and interoperable use of CRIs with negative integers to indicate URI Schemes?

No registry is defined for the negative integers encoding the URI scheme.

Case in point

› Plan to use CRIs in *draft-ietf-core-observe-multicast-notifications*

```
informative_response_payload = {  
  0 => array, ; 'tp_info', i.e., transport-specific information  
  ? 1 => bstr, ; 'ph_req' (transport-independent information)  
  ? 2 => bstr ; 'last_notif' (transport-independent information)  
  ? 3 => uint ; 'next_not_before'  
}
```

New approach – Ongoing [PR #13](#)

```
tp_info = [  
  tpi_srv ; Addressing information of the server, as a CRI with scheme “coap”  
  tpi_details_udp ; Additional information about the request, when CoAP over UDP is used  
]  
  
tpi_details_udp = (  
  tpi_token : bstr, ; Token of the phantom request and associated multicast notifications  
  tpi_client : CRI ; Destination of multicast notifications, as a CRI with scheme “coap”  
)
```

Example with CoAP over UDP

The “CoAP Transport Information” registry simply becomes

- **Scheme** – As in the “URI Schemes” registry; it needs an existing corresponding negative integer for CRIs
- **tpi_details** – The specific ‘tpi_details’ and its elements for this URI Scheme
- **References**

› Plan to use a subset of ‘tpi_srv’ in *draft-tiloca-core-groupcomm-proxy*

- The Response-Forwarding Option includes addressing information of the origin server
- This CRI would be limited to URI Scheme and authority, i.e., no local-part

Proposal #1

Section 5.1 – Extend the initial set of URI schemes with associated negative integer

OLD

scheme-id = (COAP / COAPS / HTTP / HTTPS / URN / DID /
other-scheme)
.within nint

COAP = -1 COAPS = -2 HTTP = -3 HTTPS = -4 URN = -5 DID = -6

NEW

scheme-id = (COAP / COAPS / HTTP / HTTPS / URN / DID /
COAP_TCP / COAPS_TCP / COAP_WS / COAPS_WS /
other-scheme)
.within nint

COAP = -1 COAPS = -2 HTTP = -3 HTTPS = -4 URN = -5 DID = -6

COAP_TCP = -7 COAPS_TCP = -8 COAP_WS = -9 COAPS_WS = -10

Proposal #2 (1/2)

Section 10 – Define new IANA registry

- Register negative integers associated with URI Schemes

› Tentative columns

- **URI Scheme:** a URI Scheme, with the same name registered in the “URI Scheme” column of the “Uniform Resource Identifier (URI) Schemes” registry.
- **Value:** the negative integer to use in a CRI for this URI Scheme
 - › The ranges -1..-24 and -25..-256 (i.e., 1- and 2-bytes in CBOR encoding) should be limited to IoT use cases.
 - › Other ranges can be for whatever use case.
- **Reference:** reference to the document defining the URI Scheme and/or the negative integer

Proposal #2 (2/2)

Section 10 – Define new IANA registry

- Register negative integers associated with URI Schemes

- › **Registration policy: “Specification Required”**

- › **Initial registrations, requested by this document**
 - The URI Schemes mentioned in the CDDL definition of Section 5.1
 - › coap, coaps, http, https, urn, did (, coap+tcp, coaps+tcp, coap+ws, coaps+ws)
 - Further URI Schemes from the “Uniform Resource Identifier (URI) Schemes” registry
 - › Only if expected to be used in CRIs

- › **Policy for future registrations**
 - Single registration chance: in the document defining and registering a new URI Scheme

Thank you!

Comments/questions?

<https://github.com/core-wg/href>