

Constrained Resource Identifiers

draft-ietf-core-href-11

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Encoding of URI Scheme in CRIs

› 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

Status

- › **Discussion started at the CoRE interim meeting on 2022-10-12**
 - <https://datatracker.ietf.org/meeting/interim-2022-core-14/session/core>

- › **Carsten has followed-up with a Pull Request**
 - <https://github.com/core-wg/href/pull/57>

- › **Further updates after discussions with Marco in December 2022**

- › **Still an open point deserving attention**

PR #57 (1/2)

* Discussed at the
CoRE interim meeting

› More URI Scheme IDs defined upfront *

- See also the Wiki at: <https://github.com/core-wg/href/wiki/uri-schemes-that-we-want-numbers-for>

scheme-id = (initially-registered-scheme-id / other-scheme)

.within nint

initially-registered-scheme-id = &(

coap: -1

coaps: -2

http: -3

https: -4

urn: -5

did: -6

"coap+tcp": -7

"coaps+tcp": -8

"coap+ws": -9

"coaps+ws": -10

)

other-scheme = nint .feature "scheme-id-extension"

PR #57 (2/2)

* Discussed at the CoRE interim meeting

** Discussed after the CoRE interim meeting

› **Defined new IANA registry “URI Scheme ID” ***

- URI scheme || CRI value || Reference
- Registration policy: “Expert Review”

› **Registration guidelines**

- Be frugal with the 1+0 and 1+1 integer spaces *
 - › Intended for URI schemes likely to enjoy wide use and benefiting from short encodings
- Registering a URI Scheme ID for a URI Scheme with registration status “Provisional” **
 - › Use the 1+2 integer space, unless strong reasons to deviate from it

› **Side request to IANA ****

- Addition of a note in the “URI Schemes” registry
- The note raises awareness of the new “URI Scheme ID” registry

PR #57 – Open point

* Discussed at the
CoRE interim meeting

- › **When can a URI Scheme ID be registered?**
 - Goal: avoid the case of a URI scheme name being in use in text form for a while before a CRI scheme-id value is assigned. That would likely reduce interoperability.

- › **Current text, as originally proposed ***
 - Besides the pre-registered URI Scheme IDs from *-href*, a new ID can be registered ...
 - ... only at the time the new URI scheme itself is registered in the “URI Schemes” registry

- › **Alternative approach ***
 - Pre-register all the currently existing URI Schemes
 - For any future URI Scheme, an associated negative integer is automatically registered when registering the URI Scheme → Update the new IANA note for reflecting that too
 - This also covers the case where a CRI scheme-id turns out to be useful only way later than the registration of the URI Scheme
 - Esko also suggested this; Christian mentioned a harder conversion from URI to CRI

Thank you!

Comments/questions?

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