

CoRE: CRI

November 8th, (Monday), 16:00–18:00 UTC
(17:00–19:00 CEST, 08:00–10:00 PDT)

The Web (~ 1990)

component

big web

hyperreferences

URI

transfer protocol

HTTP

representation format

HTML

The Thing Web (~ 2010): CoRE

component

thing web

hyperreferences

URI

transfer protocol

CoAP

representation format

(CBOR-based formats)

Time for a cleanup? (~ 2020)

component

thing web

hyperreferences

URI → CRI

transfer protocol

CoAP

representation format

(CBOR-based formats)

UURI

[...] many implementations [...] support only an ad-hoc, informally-specified, bug-ridden, non-interoperable subset of half of RFC 3986.

— Klaus Hartke

RFC 3986, RFC 7252

RFC 3986: syntax of URIs, (implicit) data model

RFC 7252 maps that data model to CoAP options

Component	Structure	Separators
scheme	http:	
authority	//tzi.de	. — in hostnames
path	(path segments)	/
query	(query elements)	& — CoAP
fragment	#page-5	

URI references: RFC 3986 "resolution procedure"

URIs **relative** to a base (document URI): occur in **documents**, not in transfer protocols

Example	Resolution from <code>https://tzi.de/pa/t/h</code>	What happens to Path Segments?
<code>foo</code>	<code>https://tzi.de/pa/t/foo</code>	discard last 1
<code>/foo</code>	<code>https://tzi.de/foo</code>	discard all
<code>../foo</code>	<code>https://tzi.de/pa/foo</code>	discard last 2
<code>?bar</code>	<code>https://tzi.de/pa/t/h?bar</code>	discard 0
<code>//tzi.org/foo</code>	e.g., <code>https://tzi.org/foo</code>	(new authority), discard all

CRI

Concise Resource Identifier:

Concise equivalent of URIs and URI references (RFC 3986)

New **representation format** for **URI data model**

[draft-ietf-core-href](#) defines **CRIs** and CRI references

Evolution

- started by Klaus Hartke
- further developed with Jim Schaad, now CBOR-based

Abstract content:

```
[ ((scheme, authority) // discard), path, query, fragment ]
```

(path and query are arrays;
authority has address/name + optional port)

-06 ("authority anomaly")

URI

CRI

urn:x

["urn", null, ["x"]]

urn:/x/y

["urn", null, ["x", "y"]]

urn:/x

["urn", null, ["x"]]

Solution:

special-case non-rooted opaque

urn:x

["urn", **true**, ["x"]]

-06: parsed hostname

Component	representation	parsed out
scheme	"http" or -2	:
authority	["tzi", "de", 4711]	. and :
path	["pa", "th"]	/
query	["qu", "e=ry"]	? and &
fragment	"fragment"	#

<http://tzi.de:4711/pa/th?qu&e=ry#fragment>

– 08: Status

- consistent design
- feature-complete
- initial test vectors in PR (need updates)
- some implementations need updates
- (1) More implementer reviews, (2) WGGLC?

CRI in CURIE

CURIEs (JSON-LD, ...): Put a prefix into one place and concatenate the rest of the URI in another place.

CRI: Can do this with CBOR-packed in certain cases:

`[-4, ["www", "w3", "org"]] + [{"ns", "td", "title"}] ✓`

`[-4, ["www", "w3", "org"], ["ns", "td"]] + ??? [...["title"]] 🤔`

Percent-Encoded Text

Constraints in Section 2 generally bearable, except maybe:

CoAP/CRI does not support percent-encoding except for its own delimiters: /path%2Fslash/foo, not urn:aa:bb%3Ac

New (optional?) proposal in CRI -08:

encode application percent-encoded text via arrays:

[-5, true, ["aa:bb:c"]] — unencoded →

[-5, true, ["aa:bb", ":", "c"]] — odd elements %-encoded 🙌