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Constrained RESTful Environments (CoRE) Target Attributes Registry

Abstract

The Constrained RESTful Environments (CoRE) specifications apply web technologies to constrained environments. One such important technology is Web Linking (RFC 8288), which CoRE specifications use as the basis for a number of discovery protocols, such as the Link Format (RFC 6690) in the Constrained Application Protocol's (CoAP's) resource discovery process (Section 7.2 of RFC 7252) and the Resource Directory (RD) (RFC 9176).

Web Links can have target attributes, the names of which are not generally coordinated by the Web Linking specification (Section 2.2 of RFC 8288). This document introduces an IANA registry for coordinating names of target attributes when used in CoRE. It updates the "RD Parameters" IANA registry created by RFC 9176 to coordinate with this registry.

Status of This Memo

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1. Introduction

The Constrained RESTful Environments (CoRE) specifications apply web technologies to constrained environments. One such important technology is Web Linking [RFC8288], which CoRE specifications use as the basis for a number of discovery protocols, such as the Link Format [RFC6690] in the Constrained Application Protocol's (CoAP's) resource discovery process (Section 7.2 of [RFC7252]) and the Resource Directory (RD) [RFC9176].

Web Links can have target attributes. The original Web Linking specification (Section 3 of [RFC5988]) did not attempt to coordinate names of target attributes except for providing common target attributes for use in the Link HTTP header. The current revision of that specification (Section 2.2 of [RFC8288]) clarifies as follows:

This specification does not attempt to coordinate the name of target attributes, their cardinality, or use. Those creating and maintaining serialisations **SHOULD** coordinate their target attributes to avoid conflicts in semantics or syntax and **MAY** define their own registries of target attributes.

This document introduces an IANA registry for coordinating names of target attributes when used in CoRE, with specific instructions for the designated expert for this registry ([Section 2.1](#)). It updates the "RD Parameters" IANA registry created by [\[RFC9176\]](#) to coordinate with this registry.

With this registry now available, registration of target attributes is strongly encouraged. The incentive is that an unregistered attribute name might be registered with a different meaning at any time.

1.1. Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [\[RFC2119\]](#) [\[RFC8174\]](#) when, and only when, they appear in all capitals, as shown here.

2. IANA Considerations

Per this specification, IANA has created a new "Target Attributes" registry in the "Constrained RESTful Environments (CoRE) Parameters" registry group [\[IANA.core-parameters\]](#), with the policy "Expert Review" (Section 4.5 of RFC 8126 [\[BCP26\]](#)).

2.1. Instructions for the Designated Expert

The expert is requested to guide the registrant towards reasonably short target attribute names where the shortness will help conserve resources in constrained systems, but to also be frugal in the allocation of very short names, keeping them in reserve for applications that are likely to enjoy wide use and can make good use of their shortness.

The expert is also instructed to direct the registrant to provide a specification (Section 4.6 of RFC 8126 [\[BCP26\]](#)) but can make exceptions -- for instance, when a specification is not available at the time of registration but is likely forthcoming.

Any questions or issues that might interest a wider audience might be raised by the expert on the core-parameters@ietf.org mailing list for a time-limited discussion. This might include security considerations, or opportunities for orchestration, e.g., when different names with similar intent are being or could be registered.

If the expert becomes aware of target attributes that are deployed and in use, they may also initiate a registration on their own if they deem that such a registration can avert potential future collisions.

2.2. Structure of Entries

Each entry in the registry must include the following:

Attribute Name:
A lowercase ASCII string [STD80] that starts with a letter and can contain digits and hyphen-minus characters afterward ([a-z] [-a-z0-9]*). (Note that [RFC8288] requires target attribute names to be interpreted in a case-insensitive way; the restriction to lowercase here ensures that they are registered in a predictable form.)

Brief Description:
A brief description.

Change Controller:
See Section 2.3 of RFC 8126 [BCP26].

Reference:
A reference document that provides a description of the target attribute, including the semantics for when the target attribute appears more than once in a link.

2.3. Initial Entries

Initial entries in this registry are listed in Table 1.

Attribute Name	Brief Description	Change Controller	Reference
href	reserved (not useful as target attribute name)	IETF	[RFC6690]
anchor	reserved (not useful as target attribute name)	IETF	[RFC6690]
rel	reserved (not useful as target attribute name)	IETF	[RFC6690]
rev	reserved (not useful as target attribute name)	IETF	[RFC6690]
hreflang	(Web Linking)	IETF	[RFC8288]
media	(Web Linking)	IETF	[RFC8288]
title	(Web Linking)	IETF	[RFC8288]
type	(Web Linking)	IETF	[RFC8288]

Attribute Name	Brief Description	Change Controller	Reference
rt	resource type	IETF	Section 3.1 of [RFC6690]
if	interface description	IETF	Section 3.2 of [RFC6690]
sz	maximum size estimate	IETF	Section 3.3 of [RFC6690]
ct	Content-Format hint	IETF	Section 7.2.1 of [RFC7252]
obs	observable resource	IETF	Section 6 of [RFC7641]
hct	HTTP-CoAP URI mapping template	IETF	Section 5.5 of [RFC8075]
osc	hint: resource only accessible using OSCORE	IETF	Section 9 of [RFC8613]
ep	Endpoint Name (with rt="core.rd-ep")	IETF	Section 9.3 of [RFC9176]
d	Sector (with rt="core.rd-ep")	IETF	Section 9.3 of [RFC9176]
base	Registration Base URI (with rt="core.rd-ep")	IETF	Section 9.3 of [RFC9176]
et	Endpoint Type (with rt="core.rd-ep")	IETF	Section 9.3 of [RFC9176]

Table 1: Initial Entries in the Target Attributes Registry

A number of names are reserved, as they are used for parameters in links other than target attributes. A further set of target attributes is predefined in [\[RFC8288\]](#) and is imported into this registry.

[Section 9.3 of \[RFC9176\]](#) created the "RD Parameters" IANA registry. Per this document, IANA has added the following note to that registry:

Note: In accordance with RFC 9423, all entries with the "A" flag set, including new ones, **MUST** also be registered in the "Target Attributes" registry [\[IANA.core-parameters\]](#).

3. Security Considerations

The security considerations of [RFC8288] apply, as do those of the discovery specifications [RFC6690], [RFC7252], and [RFC9176].

4. References

4.1. Normative References

[BCP26] Best Current Practice 26, <<https://www.rfc-editor.org/info/bcp26>>.

At the time of writing, this BCP comprises the following:

Cotton, M., Leiba, B., and T. Narten, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 8126, DOI 10.17487/RFC8126, June 2017, <<https://www.rfc-editor.org/info/rfc8126>>.

[IANA.core-parameters] IANA, "Constrained RESTful Environments (CoRE) Parameters", <<https://www.iana.org/assignments/core-parameters>>.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.

[RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <<https://www.rfc-editor.org/info/rfc8174>>.

[RFC8288] Nottingham, M., "Web Linking", RFC 8288, DOI 10.17487/RFC8288, October 2017, <<https://www.rfc-editor.org/info/rfc8288>>.

[STD80] Internet Standard 80, <<https://www.rfc-editor.org/info/std80>>.

At the time of writing, this STD comprises the following:

Cerf, V., "ASCII format for network interchange", STD 80, RFC 20, DOI 10.17487/RFC0020, October 1969, <<https://www.rfc-editor.org/info/rfc20>>.

4.2. Informative References

[RFC5988] Nottingham, M., "Web Linking", RFC 5988, DOI 10.17487/RFC5988, October 2010, <<https://www.rfc-editor.org/info/rfc5988>>.

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- [RFC8613] Selander, G., Mattsson, J., Palombini, F., and L. Seitz, "Object Security for Constrained RESTful Environments (OSCORE)", RFC 8613, DOI 10.17487/RFC8613, July 2019, <<https://www.rfc-editor.org/info/rfc8613>>.
- [RFC9176] Amsüss, C., Ed., Shelby, Z., Koster, M., Bormann, C., and P. van der Stok, "Constrained RESTful Environments (CoRE) Resource Directory", RFC 9176, DOI 10.17487/RFC9176, April 2022, <<https://www.rfc-editor.org/info/rfc9176>>.

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The CoRE Working Group had been discussing setting up a registry for target attributes since the final touches were made on [RFC6690]. The update of the Web Linking specification to [RFC8288] provided the formal setting, but it took until Jaime Jiménez provided the set of initial registrations to generate a first draft version of this specification. The current document addresses additional input and Working Group Last Call comments by Esko Dijk, Marco Tiloca, Thomas Fossati, and Mohamed Boucadair, as well as Area Director review comments from Rob Wilton.

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