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Content Delivery Network Interconnection (CDNI) Media Type Registration

Abstract

This document defines the standard media type used by the Content Delivery Network Interconnection (CDNI) protocol suite, including the registration procedure and recommended usage of the required payload-type parameter.

Status of This Memo

This document is not an Internet Standards Track specification; it is published for informational purposes.

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1. Introduction and Scope

The Content Delivery Network Interconnection (CDNI) working group is developing a set of protocols to enable the interconnection of multiple content delivery networks (CDNs), as discussed in [RFC6770]. The CDNI protocol suite consists of multiple HTTP-based interfaces, many of which transfer various payloads encoded in JSON (JavaScript Object Notation) [RFC7159]. The main interfaces (i.e., CDNI Control interface, CDNI Footprint & Capabilities Advertisement interface, CDNI Request Routing Redirection interface, CDNI Metadata interface, and CDNI Logging interface) are described in [RFC7336]. It is desirable to be able to indicate the type of object carried in the HTTP entity-body without having to register separate media types for each CDNI object. To accomplish this aim, this document defines a single new media type for CDNI that includes a required payload-type parameter. A separate registry of CDNI payload-type parameters is also defined. CDNI protocol specifications may register interface-specific payload types, specifying the payload encoding and parsing semantics for that message (e.g., JSON serialization for a CDNI metadata object). The same payload-type parameter may also be used as references for other purposes (e.g., referencing CDNI metadata objects from CDNI capability advertisement objects).

2. IANA Considerations

This section contains the CDNI media type registration as well as the payload-type parameter registry definition for IANA.

2.1. CDNI Media Type

Type name: application

Subtype name: cdni

Required parameters:

ptype

The required parameter "ptype" describes the type of CDNI message contained in the message payload, as registered in the "Content Delivery Network Interconnection (CDNI) Parameters" registry (Section 2.2) defined below.

Optional parameters: none

Encoding considerations:

The CDNI protocol suite includes interfaces with encoded messages that may be 8bit or binary, as well as generic logging information that may be 7bit or binary.

Security considerations:

CDNI interfaces that return encoded data may be (mis)interpreted if parsed by non-CDNI or non-compliant CDNI implementations. In addition, CDNI logging information is likely to transfer large amounts of data that may overload unexpecting clients. The individual CDNI interface specifications provide more detailed analysis of security and privacy concerns, and define the requirements for authentication, authorization, confidentiality, integrity, and privacy for each interface.

The application/cdni media type is a generic media type to be used by multiple CDNI interfaces for transporting different types of control and logging information. Proper validation of message data requires parsing and understanding the ptype parameter and the associated data encoding. Failure to properly validate payloads may allow data extrusion under the auspices of the application/cdni media type.

Interoperability considerations:

The required ptype field is intended to fully describe the structure and parsing of CDNI messages, as enforced by the ptype registry designated expert.

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Applications that use this media type:

CDNI is intended for use between interconnected CDNs for sharing configuration and logging data, as well as for issuing content management and redirection requests.

Fragment identifier considerations: N/A

Additional information: N/A

Deprecated alias names for this type: N/A

Magic number(s): N/A

File extension(s): N/A

Macintosh file type code(s): N/A

Person & email address to contact for further information:

Kevin Ma <kevin.j.ma@ericsson.com>

Intended usage: LIMITED USE

Restrictions on usage:

This media type is intended only for use in CDNI protocol message exchanges.

Author: IETF CDNI working group

Change controller: IETF CDNI working group

Provisional registration: no

2.2. CDNI Payload-Types Parameters Registry

IANA has created a new "CDNI Payload Types" subregistry within the "Content Delivery Network Interconnection (CDNI) Parameters" registry. The "CDNI Payload Types" namespace defines the valid values for the required "ptype" parameter of the "application/cdni" media type. The CDNI payload type is an ASCII string value that consists of only visible (printing) characters but excludes equal signs (=), double quotes ("), and semicolons (;). It will not exceed 256 characters in length. The following Augmented Backus-Naur Form (ABNF) definition of the CDNI payload type is provided for clarity [RFC5234]

```
ptype = 1*256(ptype-char)
ptype-char = %x21 / %x23-3A / %x3C / %x3E-7E
           ; Includes ALPHA, DIGIT, and other printables
           ; Excludes equal signs (=), double quotes ("), semicolons (;)
```

Additions to the "CDNI Payload Types" namespace will be made via "Specification Required" as defined in [RFC5226]. The designated expert will verify that new type definitions do not duplicate existing type definitions (in name or functionality), prevent gratuitous additions to the namespace, and prevent any additions to the namespace that would impair the interoperability of CDNI implementations. The designated expert will review the specification, even if it is a Standards Track RFC, to verify that it contains the following information:

- o The review will verify that the specification contains a reasonably defined purpose for the new payload type. A reasonably defined purpose will relate to an existing or proposed CDNI interface and will not duplicate the functionality of any existing CDNI protocol feature without specifying a rational reason (e.g., updating an obsolete feature), a method for detecting and handling conflicts (e.g., a versioning system with prioritization matrix), and a suggested migration path (e.g., deprecation of the overlapped feature, or justification for co-existence).
- o The review will verify that the specification contains information as to which CDNI interface the new payload type pertains or affects. The payload type may be applicable to multiple CDNI interfaces, but the justification for the new payload type will include a reasonable relationship to at least one Standards Track CDNI interface.

- o The review will verify that the specification contains sufficient detail about the data encoding (e.g., JSON serialization for new CDNI metadata or capability advertisement objects, or ABNF and description for new CDNI logging file formats) to allow senders and receivers of the new payload type to implement compliant and interoperable payload parsers.

The registry contains the payload type and the specification describing the payload type. The registry will initially be unpopulated.

```

+-----+-----+
| Payload Type | Specification |
+-----+-----+
+-----+-----+

```

3. Security Considerations

See the portion of Section 2.1 labeled "Security considerations".

4. References

4.1. Normative References

- [RFC5226] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 5226, DOI 10.17487/RFC5226, May 2008, <<http://www.rfc-editor.org/info/rfc5226>>.
- [RFC5234] Crocker, D., Ed. and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", STD 68, RFC 5234, DOI 10.17487/RFC5234, January 2008, <<http://www.rfc-editor.org/info/rfc5234>>.

4.2. Informative References

- [RFC6770] Bertrand, G., Ed., Stephan, E., Burbridge, T., Eardley, P., Ma, K., and G. Watson, "Use Cases for Content Delivery Network Interconnection", RFC 6770, DOI 10.17487/RFC6770, November 2012, <<http://www.rfc-editor.org/info/rfc6770>>.
- [RFC7159] Bray, T., Ed., "The JavaScript Object Notation (JSON) Data Interchange Format", RFC 7159, DOI 10.17487/RFC7159, March 2014, <<http://www.rfc-editor.org/info/rfc7159>>.

[RFC7336] Peterson, L., Davie, B., and R. van Brandenburg, Ed.,
"Framework for Content Distribution Network
Interconnection (CDNI)", RFC 7336, DOI 10.17487/RFC7336,
August 2014, <<http://www.rfc-editor.org/info/rfc7336>>.

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