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Internet-Draft   Stateless
Intended status: Informational   June 7, 2012
Expires: December 9, 2012

                  JSON Hypertext Application Lanuage
                        draft-kelly-json-hal-00

Abstract

   This document proposes a media type for representing resources with
   hyperlinks.

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   This Internet-Draft is submitted in full conformance with the
   provisions of BCP 78 and BCP 79.

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   This Internet-Draft will expire on December 9, 2012.

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[1](). Introduction

There is an emergence of non-HTML HTTP applications ("Web APIs")
which use hyperlinks to direct clients around their resources.

The JSON Hypertext Application Language (HAL) is a standard which
establishes conventions for expressing hyperlinks with JSON
[RFC4627].

HAL is a generic media type with which Web APIs can be developed and
exposed as series of links. Clients of these APIs can select links
by their link relation type and traverse them in order to progress
through the application.

HAL's conventions result in a uniform interface for serving and
consuming hypertext, enabling the creation of general-purpose
libraries that can be re-used on any API utilising HAL.

The primary design goals of HAL are generality and simplicity. HAL
can be applied to many different domains, and imposes the minimal
amount of structure necessary to cover the key hypertext requirements
(links and embedded documents).

[2](). Requirements

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
"SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
document are to be interpreted as described in [RFC2119].

[3](). HAL Documents

A HAL Document uses the format described in [RFC4627] and has the
media type "application/hal+json".

Its root object MUST be a Resource Object.

For example:

```
GET /orders/523 HTTP/1.1
Host: example.org
Accept: application/hal+json

HTTP/1.1 200 OK
Content-Type: application/hal+json

{
  "_links": {
    "self": { "href": "/orders/523" },
    "warehouse": { "href": "/warehouse/56" },
    "invoice": { "href": "/invoices/873" }
  },
  "currency": "USD",
  "status": "shipped",
  "total": 10.20
}
```

Here, we have a HAL document representing an order resource with the
URI "/orders/523". It has "warehouse" and "invoice" links, and its
own state in the form of "currency", "status", and "total"
properties.

4. Resource Objects

A Resource Object represents a resource.

It has two reserved properties "_links" and "_embedded", which
represent Links and Embedded Resources respectively.

All other properties MUST be valid JSON, and represent the current
state of the resource.

4.1. Links

The reserved "_links" property is REQUIRED.

It is an object whose names are link relation types (as defined by
[RFC5988]) and values are either a Link Object or an array of Link
Objects. The subject resource of these links is the Resource Object
of which the containing "_links" object is a property.

It MUST have a "self" property whose value is a Link Object who's
target SHOULD be the URI of the subject resource.

4.2. Embedded Resources

The reserved "_embedded" property is OPTIONAL

It is an object whose names are link relation types (as defined by [RFC5988]) and values are either a Resource Object or an array of Resource Objects.

5. Link Objects

A Link Object represents a hyperlink. It has the following properties:

5.1. href

The "href" property is REQUIRED.

Its value is either a URI [RFC3986] or a URI Template [RFC6570].

If the value is a URI Template then the Link Object SHOULD have a "templated" attribute whose value is true.

5.2. templated

The "templated" property is OPTIONAL.

Its value is boolean and SHOULD be true when the Link Object's "href" property is a URI Template.

5.3. title

The "title" property is OPTIONAL.

Its value is a string and is intended for labeling the link with a human-readable identifier (as defined by [RFC5988]).

5.4. hreflang

The "hreflang" property is OPTIONAL.

Its value is a string and is intended for indicating the language of the target resource (as defined by [RFC5988]).

6. Example Document

The following is an example document representing a list of orders

```
GET /orders HTTP/1.1
Host: example.org
Accept: application/hal+json

HTTP/1.1 200 OK
Content-Type: application/hal+json

{
  "_links": {
    "self": { "href": "/orders" },
    "next": { "href": "/orders?page=2" },
    "find": { "href": "/orders{?id}", "templated": true }
  },
  "_embedded": {
    "orders": [{
        "_links": {
          "self": { "href": "/orders/123" },
          "basket": { "href": "/baskets/98712" },
          "customer": { "href": "/customers/7809" }
        },
        "total": 30.00,
        "currency": "USD",
        "status": "shipped",
      },{
        "_links": {
          "self": { "href": "/orders/124" },
          "basket": { "href": "/baskets/97213" },
          "customer": { "href": "/customers/12369" }
        },
        "total": 20.00,
        "currency": "USD",
        "status": "processing"
    }]
  },
  currentlyProcessing: 14,
  shippedToday: 20
}
```

Here, the order list document provides a "next" link directing to the
next page, and a "find" link containing a URI Template which can be
expanded with an 'id' variable to go directly to a specific order.

It also has two embedded resources, "orders". Each of these has its
own links to the associated "basket" and "customer" resources, and
properties showing their "total", "currency" and "status".

Additionally, the order list resource has its own properties
"currentlyProcessing" and "shippedToday".

7. Security Considerations

    TBD

8. IANA Considerations

    TBD

9. Normative References

    [RFC2119]   Bradner, S., "Key words for use in RFCs to Indicate
                Requirement Levels", BCP 14, RFC 2119, March 1997.

    [RFC3986]   Berners-Lee, T., Fielding, R., and L. Masinter, "Uniform
                Resource Identifier (URI): Generic Syntax", STD 66,
                RFC 3986, January 2005.

    [RFC4627]   Crockford, D., "The application/json Media Type for
                JavaScript Object Notation (JSON)", RFC 4627, July 2006.

    [RFC5988]   Nottingham, M., "Web Linking", RFC 5988, October 2010.

    [RFC6570]   Gregorio, J., Fielding, R., Hadley, M., Nottingham, M.,
                and D. Orchard, "URI Template", RFC 6570, March 2012.

Appendix A. Acknowledgements

    Thanks to Darrel Miller, Mike Amundsen, and everyone in hal-discuss
    for their suggestions and feedback.

    The author takes all responsibility for errors and omissions.

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