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The "pack" URI Scheme
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Abstract

A package is a logical entity that holds a collection of parts. Given the URI for a complete package, the "pack" URI scheme provides for the construction and use of URIs referring to individual parts within the package. It also provides for the use of part's URIs as base URIs for resolving relative references between the parts in a single package.

1. Introduction

The material in this document is also included within the "Office Open XML File Formats" ECMA-376 Standard (<http://www.ecma-international.org/publications/standards/Ecma-376.htm>, Part 2), and is being presented as an IETF RFC for informational purposes.

The purpose of the "pack" URI scheme is:

- a. To identify a part resource within a package that conforms to Open Packaging Conventions [4].
- b. To enable the use of a part's URI as a base URI for resolving relative references to parts within the same package as it is defined in [RFC 3986, section 5.2](#) [1].

2. Terminology

The following terms are used as they are defined in [RFC 3986](#) [1]: "URI", "relative reference", "base URI", "scheme", "component", "query", "unreserved", "sub-delims", "pct-encoded", "resource"

[Section 3.3](#) of this document defines the terms "authority", "path", and "segment" in a manner that is consistent with, but more restrictive than, [RFC 3986](#) [1].

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 [RFC 2119](#) [3].

3. Syntax Rules

3.1. General Syntax

The "pack" URI takes the form:

"pack:/" authority ["/" | path]

The authority component contains an encoded URI that identifies the package resource.

The path component identifies a particular part within the package identified by the authority component. When provided, the path component describes a path to a part in the package.

When the path component is missing, the "pack" URI identifies the package resource as a whole.

3.2. Examples

pack://http://www.mysite.com,my.package/a/b/foo.xml
pack://http://www.mysite.com,my.package
pack://http://www.mysite.com,my.package/

3.3. Grammar

The ABNF [2] (certain values are included by reference from [RFC 3986](#) [1]):

```
pack-uri      = "pack://" authority [ "/" | path ]

authority     = *( unreserved | sub-delims | pct-encoded | ":" )
path         = 1*( "/" segment )
segment      = 1*( pchar )

unreserved   = // as specified in RFC 3986
sub-delims   = // as specified in RFC 3986
pct-encoded   = // as specified in RFC 3986
pchar        = // as specified in RFC 3986
```

The <segment> grammar must fit the following restrictions:

- a. A segment MUST NOT contain pct-encoded "/" or "\" characters.
- b. A segment MUST NOT contain pct-encoded unreserved characters.
- c. A segment MUST NOT end with a dot (".") character.
- d. A segment MUST include at least one non-dot character.

4. Resolving

This section defines the process of resolving a "pack" URI to a resource (either a package or a package part):

- a. Parse the "pack" URI into the scheme, authority, and path components, following the rules established for these components for generic URI syntax in [RFC 3986](#) [1].
- b. In the authority component replace all "," characters with "/".
- c. In the resulting authority component un-escape all pct-encoded ASCII characters.
- d. The resulting authority component MUST hold an absolute URI identifying the package resource.
- e. If the path component is missing, "pack" URI resolves to the package resource identified by the authority component.
- f. If path component is present, "pack" URI resolves to the part, with the name equal to the path component, within the package identified by the authority component.

5. Equivalence

Pack URIs are equivalent if all three of the following conditions hold:

- a. The scheme components are octet-by-octet identical after they are converted to lowercase.
- b. The decoded (as it is defined by 4.b, 4.c in this document) authority components are equivalent URIs (the equivalency rules by scheme, as per [RFC 3986](#)).
- c. The path components are equivalent when compared as case-insensitive ASCII strings.

6. Security Considerations

- a. The "pack" URI scheme is not associated with any particular network protocols. Its grammar is fully compatible with the generic URI syntax defined in [RFC 3986](#) [1]. The "pack" URI scheme does not introduce any specific security issues related to URI parsing and relative reference resolution.
- b. Because the authority component of a "pack" URI identifies a package, resolving a relative reference that does not begin with "/" against a base "pack" URI will never yield a target URI identifying a resource outside of the package.

7. IANA Considerations

The IANA registry for URI schemes
<<http://www.iana.org/assignments/uri-schemes.html>> SHOULD be updated to include an entry for the "pack" URI scheme (under Provisional URI Schemes) when the "pack" URI scheme is accepted for publication as an RFC. This entry SHOULD contain the following values:

Scheme Name: pack

Description: "pack" URI scheme provides for the construction and use of URIs referring to individual parts within the package.

Reference: RFC TBD

8. Normative References

- [1] Berners-Lee, T., Fielding, R., and L. Masinter, "Uniform Resource Identifier (URI): Generic Syntax", STD 66, [RFC 3986](#), January 2005.
- [2] Crocker, D., Ed. and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", [RFC 4234](#), October 2005.
- [3] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [4] Open Packaging Conventions. (Standard ECMA-376 "Office Open XML File Formats", Part 2, December 2006)

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