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The Atom Publishing Protocol
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Abstract

The Atom Publishing Protocol (APP) is an application-level protocol for publishing and editing Web resources. The protocol is based on HTTP transfer of Atom-formatted representations. The Atom format is documented in the Atom Syndication Format [RFC4287].

Editorial Note

To provide feedback on this Internet-Draft, join the atom-protocol mailing list (http://www.imc.org/atom-protocol/index.html) [1].

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1. Introduction

The Atom Publishing Protocol is an application-level protocol for publishing and editing Web resources using HTTP [RFC2616] and XML 1.0 [W3C.REC-xml]. The protocol supports the creation of Web resources and provides facilities for:

- Collections: Sets of resources, which can be retrieved in whole or in part.
- Services: Discovery and description of Collections.
- Editing: Creating, updating and deleting resources.

The Atom Publishing Protocol is different from many contemporary protocols in that the server is given wide latitude in processing requests from clients. See Section 4 for more details.

2. Notational Conventions

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].

2.1. XML-related Conventions

2.1.1. Referring to Information Items

Atom Protocol Document formats are specified in terms of the XML Information Set [W3C.REC-xml-infoset], serialized as XML 1.0 [W3C.REC-xml].

The Infoset terms "Element Information Item" and "Attribute Information Item" are shortened to "element" and "attribute" respectively. Therefore, when this specification uses the term "element", it is referring to an Element Information Item, and when it uses the term "attribute", it is referring to an Attribute Information Item.

2.1.2. RELAX NG Schema

Some sections of this specification are illustrated with fragments of a non-normative RELAX NG Compact schema [RNC]. However, the text of this specification provides the definition of conformance. Complete schemas appear in Appendix B.

2.1.3. Use of xml:base and xml:lang

XML elements defined by this specification MAY have an xml:base attribute [W3C.REC-xmlbase-20010627]. When xml:base is used, it serves the function described in Section 5.1.1 of URI Generic Syntax [RFC3986], by establishing the base URI (or IRI) for resolving relative references found within the scope of the xml:base attribute.

Any element defined by this specification MAY have an xml:lang attribute, whose content indicates the natural language for the element and its descendents. Requirements regarding the content and interpretation of xml:lang are specified in Section 2.12 of XML 1.0 [W3C.REC-xml].

3. Terminology

For convenience, this protocol can be referred to as the "Atom Protocol" or "APP".

URI/IRI - A Uniform Resource Identifier and Internationalized Resource Identifier. These terms and the distinction between them are defined in [RFC3986] and [RFC3987]. Before an IRI found in a document is used by HTTP, the IRI is first converted to a URI (see Section 4).

In this specification the phrase "the URI of a document" is shorthand for "a URI which, when dereferenced, is expected to produce that document as a representation".

Resource - A network-accessible data object or service identified by an IRI, as defined in [RFC2616]. See [W3C.REC-webarch-20041215] for further discussion on resources.

Representation - An entity included with a request or response as defined in [RFC2616].

Collection - A resource that contains a set of Member Entries. See Section 9.

Member - A resource whose IRI is listed in a Collection by a link element with a relation of "edit" or "edit-media". See Section 9.1. The protocol defines two kinds of Members - Entry and Media resources.

Entry Resource - Member Resources of a Collection that are represented using the "application/atom+xml" media type.

Media Resource -Member Resources of a Collection that are represented with a media type other than "application/atom+xml".

Media Link Entry - an Entry Resource that contains metadata about a Media Resource.

Workspace - A named group of Collections. See Section 8.1.

Service Document - A document that describes the location and capabilities of one or more Collections. See Section 8.

Category Document - A document that describes the categories allowed in a Collection. See Section 7.

4. Protocol Model

The Atom Publishing Protocol uses HTTP methods to author Member Resources as follows:

- GET is used to retrieve a representation of a known resource.
- POST is used to create a new, dynamically-named, resource. When the client submits non-Atom-Entry representations to a Collection for creation, two resources are always created - a Media Entry for the requested resource, and a Media Link Entry for metadata (in Atom Entry format) about the resource.
- PUT is used to update a known resource.
- DELETE is used to remove a known resource.

The Atom Protocol does not specify the form of the URIs that are used. HTTP ([RFC2616]) specifies that the URI space of each server is controlled by that server, and this protocol imposes no further constraints on that control. What is specified here are the formats of the representations that are exchanged and the actions that can be performed on the IRIs embedded in those representations.

The Atom Protocol only covers the creation, update and deletion of Entry and Media resources. Other resources could be created, updated, and deleted as the result of manipulating a Collection, but the number of those resources, their media-types, and effects of Atom Protocol operations on them are outside the scope of this specification.

Since all aspects of client-server interaction are defined in terms of HTTP, [RFC2616] should be consulted for any areas not covered in this specification.

Along with operations on Member Resources, the Atom Protocol defines Collection Resources for managing and organizing Member Resources. The representation of Collections are Atom Feed documents, and contain the IRIs of, and metadata about the Collection's Member Resources. The Atom Protocol does not make a structural distinction between Feeds used for Collections and other Atom Feeds. The only mechanism that this specification supplies for indicating a Collection Feed is its appearance in a Service Document.

Atom Protocol documents allow the use of IRIs [RFC3987], as well as URIs [RFC3986]. Before an IRI found in a document is used by HTTP, the IRI is first converted to a URI according the procedure defined in Section 3.1 of [RFC3987]. In accordance with that specification,

this conversion SHOULD be applied as late as possible. Conversion does not imply resource creation - the IRI and the URI into which it is converted identify the same resource.

There are two kinds of Member Resources - Entry Resources and Media Resources. Entry Resources are represented as Atom Entries [RFC4287]. Media Resources can have representations in any media type. A Media Link Entry is an Entry Resource that contains metadata about a Media Resource. This diagram shows the classification of the resources:

```
Member Resource
    -> Entry Resource
         -> Media Link Entry
    -> Media Resource
```

A Collection Feed's Atom Entries contain the Entry and Media Resource IRIs of the Collection. A Collection Feed can contain any number of Entries for either kind, or an ordered subset of the Entries (see Section 10.1). In the diagram of a Collection below, there are two Entries. The first contains the IRI of an Entry Resource. The second contains the IRIs of both a Media Resource and a Media Link Entry Resource, which contains the metadata for that Media Resource:

```
Collection
   Entry
      Member Entry IRI    ->   Entry Resource
   Entry
      Member Entry IRI    ->   Media Link Entry
      Media IRI           ->   Media Resource
```

Service Documents represent server-defined groups of Collections, and are used to initialize the process of creating and editing resources.

4.1. Client Implementation Considerations

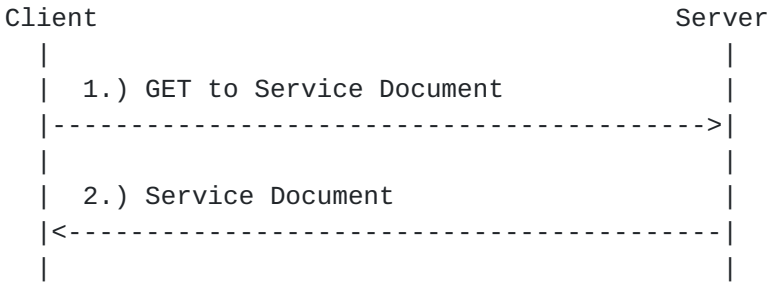
The Atom Protocol imposes few restrictions on the actions of servers. Unless a constraint is specified here, servers can be expected to vary in behavior, in particular around the manipulation of Atom Entries sent by clients. For example, although this specification only defines the expected behavior of Collections with respect to GET and POST, this does not imply that PUT, DELETE, PROPPATCH and others are forbidden on Collection resources - only that this specification does not define what the server's response would be to those methods. Similarly while some HTTP status codes are mentioned explicitly, clients ought to be prepared to handle any status code from a server. Servers can choose to accept, reject, delay, moderate, censor, reformat, translate, relocate or recategorize the content submitted

to them. Only some of these choices are immediately relayed back to the client in responses to client requests; other choices may only become apparent later, in the feed or published entries. The same series of requests to two different publishing sites can result in a different series of HTTP responses, different resulting feeds or different entry contents.

As a result, client software has to be written flexibly to accept what the server decides are the results of its submissions. Any server response or server content modification not explicitly forbidden by this specification or HTTP ([RFC2616]) is therefore allowed.

5. Protocol Operations

5.1. Retrieving a Service Document

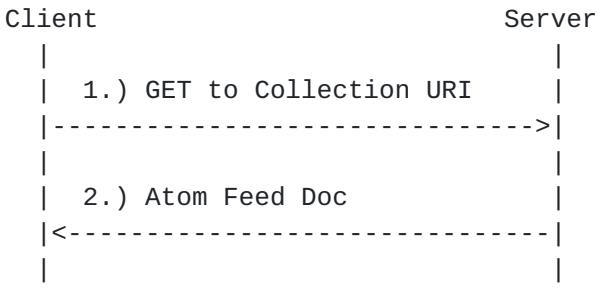


1. The client sends a GET request using the URI of the Service Document.

2. The server responds with the document enumerating the IRIs of a group of Collections and the capabilities of those Collections supported by the server. The content of this document can vary based on aspects of the client request, including, but not limited to, authentication credentials.

5.2. Listing Collection Members

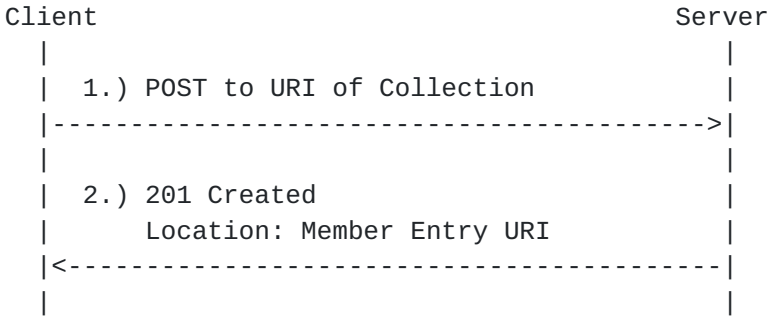
To list the members of a Collection, the client sends a GET request to the URI of a Collection. An Atom Feed Document is returned whose Entries contain the IRIs of Member Resources. The returned Feed may describe all, or only a partial list of the Members in a Collection (see Section 10).



1. The client sends a GET request to the URI of the Collection.

2. The server responds with an Atom Feed Document containing the IRIs of the Collection members.

5.3. Creating a Resource



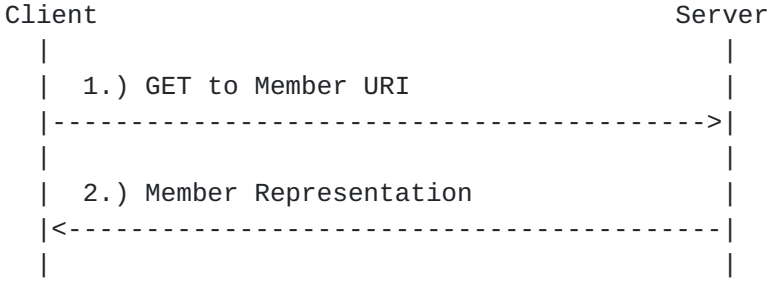
1. The client POSTs a representation of the Member to the URI of the Collection.

2. If the Member Resource was created successfully, the server responds with a status code of 201 and a Location: header that contains the IRI of the newly created Entry Resource. Media Resources could have also been created and their IRIs can be found through the Entry Resource. See Section 9.6 for more details.

5.4. Editing a Resource

Once a resource has been created and its Member URI is known, that URI can be used to retrieve, update, and delete the resource. Section 11 describes extensions to the Atom Syndication Format used in the Atom Protocol for editing purposes.

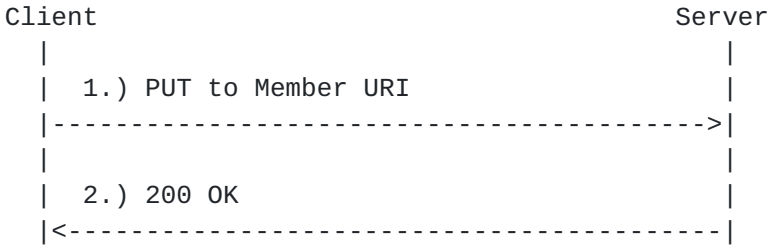
5.4.1. Retrieving a Resource



1. The client sends a GET request to the URI of a Member Resource to retrieve its representation.

2. The server responds with the representation of the resource.

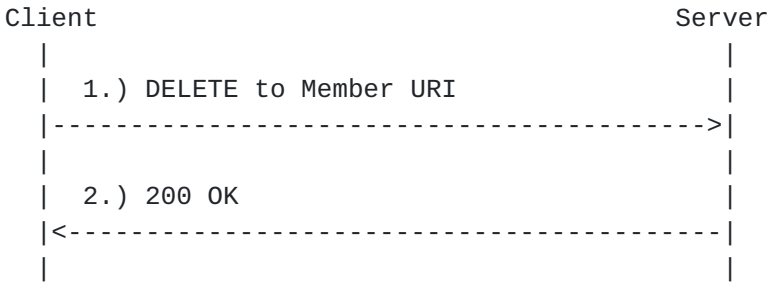
5.4.2. Updating a Resource



1. The client PUTs an updated representation to the URI of a Member Resource.

2. If the update is successful the server responds with a status code of 200.

5.4.3. Deleting a Resource



1. The client sends a DELETE request to the URI of a Member Resource.

2. If the deletion is successful the server responds with a status code of 200.

A different approach is taken for deleting Media Resources; see Section 9.6 for details.

5.5. Use of HTTP Response codes

The Atom Protocol uses the response status codes defined in HTTP to indicate the success or failure of an operation. Consult the HTTP specification [RFC2616] for detailed definitions of each status code. Implementers are asked to note that according to the HTTP specification, HTTP 4xx and 5xx response entities SHOULD include a human-readable explanation of the error.

6. Atom Publishing Protocol Documents

6.1. Document Types

This specification defines two kinds of Documents - Category Documents and Service Documents.

A Category Document (Section 7) contains lists of categories specified using the "atom:category" element from the Atom Syndication Format.

A Service Document (Section 8) groups available Collections into Workspaces.

The namespace name [W3C.REC-xml-names] for either kind of document is:

http://purl.org/atom/app#

[[anchor8: The namespace name needs to be updated with the final URI upon publication]]

This specification uses the prefix "app:" for the namespace name. The prefix "atom:" is used for "http://www.w3.org/2005/Atom", the namespace name of the Atom Syndication Format [RFC4287]. These namespace prefixes are not semantically significant.

Atom Publishing Protocol Documents MUST be well-formed XML. This specification does not define any DTDs for Atom Protocol formats, and hence does not require them to be "valid" in the sense used by XML.

6.2. Document Extensibility

Unrecognized markup in an Atom Publishing Protocol document is considered "foreign markup" as defined in Section 6 of [RFC4287]. Such foreign markup can be used anywhere within a Category or Service Document unless it is explicitly forbidden. Processors that encounter foreign markup MUST NOT stop processing and MUST NOT signal an error. Clients SHOULD preserve foreign markup when transmitting such documents.

The namespace name "http://purl.org/atom/app#" is reserved for forward compatible revisions of the Category and Service Document types - this does not exclude the addition of elements and attributes that might not be recognized by processors conformant to this specification. Such unrecognized markup from the "http://purl.org/atom/app#" namespace MUST be treated as foreign markup.

[[anchor9: The namespace name needs to be updated with the final URI upon publication]]

7. Category Documents

Category Documents contain lists of categories described using the "atom:category" element from the Atom Syndication Format [RFC4287]. Categories can also appear in Service Documents, where they describe the categories allowed in a Collection (see Section 8.3.5).

Category Documents are identified with the "application/atomcat+xml" media type (see Section 16).

7.1. Example

```
<?xml version="1.0" ?>
<app:categories
    xmlns:app="http://purl.org/atom/app#"
    xmlns="http://www.w3.org/2005/Atom"
    fixed="yes" scheme="http://example.com/cats/big3">
  <category term="animal" />
  <category term="vegetable" />
  <category term="mineral" />
</app:categories>
```

This Category Document contains three categories, with the terms "animal", "vegetable", and "mineral". None of the categories use the 'label' attribute defined in [RFC4287]. They all inherit the "http://example.com/cats/big3" 'scheme' attribute declared on the app:categories element. Therefore if the "mineral" category were to appear in an Atom Entry or Feed Document, it would appear as:

```
<category scheme="http://example.com/cats/big3" term="mineral" />
```

7.2. Element Definitions

7.2.1. The "app:categories" element

The root of a Category Document is the "app:categories" element. An app:categories element can contain zero or more "atom:category" elements from the Atom namespace ("http://www.w3.org/2005/Atom").

An app:category child element that has no "scheme" attribute inherits the attribute from its app:categories parent. An app:category child element with an existing "scheme" attribute does not inherit the "scheme" value of its "app:categories" parent element.

```
atomCategory =
    element atom:category {
       atomCommonAttributes,
       attribute term { text },
       attribute scheme { atomURI }?,
       attribute label { text }?,
       undefinedContent
    }

appInlineCategories =
    element app:categories {
        attribute fixed { "yes" | "no" }?,
        attribute scheme { atomURI }?,
        (atomCategory*)
    }

appOutOfLineCategories =
    element app:categories {
        attribute href { atomURI },
        undefinedContent
    }

appCategories = appInlineCategories | appOutOfLineCategories
```

7.2.1.1. Attributes of "app:categories"

The app:categories element can contain a "fixed" attribute, with a value of either "yes" or "no", indicating whether the list of categories is a fixed or an open set. The absence of the "fixed" attribute is equivalent to the presence of a "fixed" attribute with a value of "no".

Alternatively, the app:categories element MAY contain an "href" attribute, whose value MUST be an IRI reference identifying a Category Document. If the "href" attribute is provided, the app:categories element MUST be empty and MUST NOT have the "fixed" or "scheme" attributes.

8. Service Documents

For authoring to commence, a client needs to discover the capabilities and locations of the available Collections. Service Documents are designed to support this discovery process.

How Service Documents are discovered is not defined in this specification.

Service Documents are identified with the "application/atomserv+xml" media type (see Section 16).

8.1. Workspaces

A Service Document groups a server's Collections into Workspaces. Operations on Workspaces, such as creation or deletion, are not defined by this specification. In general, this specification assigns no meaning to Workspaces; that is, a Workspace does not imply any specific processing assumptions.

There is no requirement that a server support multiple Workspaces. In addition, a Collection MAY appear in more than one Workspace.

8.2. Example

```
<?xml version="1.0" encoding='utf-8'?>
<service xmlns="http://purl.org/atom/app#"
         xmlns:atom="http://www.w3.org/2005/Atom">
  <workspace>
    <atom:title>Main Site</atom:title>
    <collection
        href="http://example.org/reilly/main" >
      <atom:title>My Blog Entries</atom:title>
      <categories
         href="http://example.com/cats/forMain.cats" />
    </collection>
    <collection
        href="http://example.org/reilly/pic" >
      <atom:title>Pictures</atom:title>
      <accept>image/*</accept>
    </collection>
  </workspace>
  <workspace>
    <atom:title>Side Bar Blog</atom:title>
    <collection
        href="http://example.org/reilly/list" >
      <atom:title>Remaindered Links</atom:title>
      <accept>entry</accept>
      <categories fixed="yes">
        <atom:category
          scheme="http://example.org/extra-cats/"
          term="joke" />
        <atom:category
          scheme="http://example.org/extra-cats/"
          term="serious" />
      </categories>
    </collection>
  </workspace>
</service>
```

The Service Document above describes two Workspaces. The first Workspace is called "Main Site", and has two Collections called "My Blog Entries" and "Pictures", whose IRIs are "http://example.org/reilly/main" and "http://example.org/reilly/pic" respectively. The "Pictures" Workspace includes an "accept" element indicating that a client can post image files to the Collection to create new Media Resources (entries with associated Media Resources are discussed in Section 9.6).

The second Workspace is called "Side Bar Blog" and has a single Collection called "Remaindered Links" whose IRI is

"http://example.org/reilly/list".

Within each of the two Entry collections, the categories element provides a list of available categories for Member Entries. In the "My Blog Entries" Collection, the list of available categories is available through the "href" attribute. The "Side Bar Blog" Collection provides a category list within the Service Document, but states the list is fixed, signaling a request from the server that Entries be POSTed using only those two categories.

8.3. Element Definitions

8.3.1. The "app:service" Element

The root of a Service Document is the "app:service" element.

The "app:service" element is the container for service information associated with one or more Workspaces. An app:service element MUST contain one or more app:workspace elements.

```
namespace app = "http://purl.org/atom/app#"
start = appService


appService =
   element app:service {
      appCommonAttributes,
      ( appWorkspace+
        & extensionElement* )
   }
```

8.3.2. The "app:workspace" Element

Workspaces are server-defined groups of Collections. The "app: workspace" element contains zero or more app:collection elements describing the Collections of resources available for editing.

```
appWorkspace =
   element app:workspace {
      appCommonAttributes,
      ( atomTitle
        & appCollection*
        & extensionSansTitleElement* )
   }

atomTitle = element atom:title { atomTextConstruct }
```

8.3.2.1. The "atom:title" Element

The app:workspace element MUST contain one "atom:title" element (as defined in [RFC4287]), giving a human-readable title for the Workspace.

8.3.3. The "app:collection" Element

The "app:collection" element describes a Collection. The app:collection element MAY contain one app:accept element and MAY contain any number of app:categories elements. The app:collection element MUST NOT contain more than one app:accept element.

```
appCollection =
   element app:collection {
      appCommonAttributes,
      attribute href { atomURI  },
      ( atomTitle
        & appAccept?
        & appCategories*
        & extensionSansTitleElement* )
   }
```

8.3.3.1. Usage in Atom Feed Documents

The app:collection element MAY appear as a child of an atom:feed or atom:source element in an Atom Feed Document. Its content identifies a Collection by which new Entries can be added to appear in the feed. The app:collection element is considered foreign markup as defined in Section 6 of [RFC4287].

8.3.3.2. The "href" Attribute

The app:collection element MUST contain an "href" attribute, whose value gives the IRI of the Collection.

8.3.3.3. The "atom:title" Element

The app:collection Element MUST contain one "atom:title" element (as defined in [RFC4287]), giving a human-readable title for the Collection.

8.3.4. The "app:accept" Element

The "app:accept" element value specifies a comma-separated list of media-ranges (see [RFC2616]). The list identifies the types of representations that can be POSTed to the URI of a Collection.

Whitespace around and between media-range values is insignificant and MUST be ignored.

The app:accept element is similar to the HTTP Accept request-header [RFC2616] with the exception that app:accept has no notion of preference. As a result, the value syntax of app:accept does not use "accept-params" or "q" arguments as specified in [RFC2616], section 14.1.

The order of media-ranges is not significant. For example, the following lists are all equivalent:

```
<app:accept>image/png,image/*</app:accept>
<app:accept>image/*, image/png</app:accept>
<app:accept> image/* </app:accept>
```

A value of "entry" MAY appear in any list of media-ranges and indicates that Atom Entry Documents can be POSTed to the Collection. The value is equivalent to the media type and format parameter "application/atom+xml;type=entry", as defined in Section 12. If the accept element exists but is empty, clients SHOULD assume that the Collection does not support the creation of new Entries. If the accept element is not present, clients SHOULD treat this as equivalent to <app:accept>entry</app:accept>.

```
appAccept =
   element app:accept {
         appCommonAttributes,
         ( appTypeValue? )
   }

appTypeValue = ( "entry" | media-type |entry-or-media-type  )
media-type = xsd:string { pattern = "entry,(.+/.+,?)*" }
entry-or-media-type = xsd:string { pattern = "(.+/.+,?)*" }
```

8.3.5. The "app:categories" Element

The "app:categories" element provides a list of the categories that can be applied to the members of a Collection. See Section 7.2.1 for the detailed definition of app:categories.

The server MAY reject attempts to create or update members whose categories are not listed in the Collection Document. Collections that indicate the category set is open SHOULD NOT reject otherwise acceptable members whose categories are not listed by the Collection.

The absence of an "app:categories" element means that the category handling of the Collection is unspecified.

9. Creating and Editing Resources

9.1. Member URIs

The Member URI allows clients to retrieve, update and delete a Member Resource using HTTP's GET, PUT and DELETE methods. As their name indicates, Entry Resources have Atom Entry documents as representations.

Member URIs appear in two places. They are returned in a Location header after successful resource creation using POST, as described in Section 9.2 below. They can also appear in a Collection feed's entries, as atom:link elements with a link relation of "edit".

A Member Entry SHOULD contain such an atom:link element with a link relation of "edit", which indicates the Member URI.

9.2. Creating resources with POST

To add members to a Collection, clients send POST requests to the URI of the Collection.

Successful member creation is indicated with a 201 ("Created") response code. When the Collection responds with a status code of 201 ("Created"), it SHOULD also return a response body, which MUST be an Atom Entry Document representing the newly-created resource. Since the server is free to alter the POSTed Entry, for example by changing the content of the "atom:id" element, returning the Entry can be useful to the client, enabling it to correlate the client and server views of the new Entry.

When a Member Resource is created, its Member Entry URI MUST be returned in a Location header in the Collections's response.

If the creation request contained an Atom Entry Document, and the subsequent response from the server contains a Content-Location header that matches the Location header character-for-character, then the client is authorized to interpret the response entity as being the representation of the newly created Entry. Without a matching Content-Location header the client MUST NOT assume the returned entity is a complete representation of the created resource.

The request body sent with the POST need not be an Atom Entry. For example, it might be a picture, or a movie. Collections MAY return a response with a status code of 415 ("Unsupported Media Type") to indicate that the media-type of the POSTed entity is not allowed or supported by the Collection. For a discussion of the issues in creating such content, see Section 9.6.

9.2.1. Example

Below, the client sends a POST request containing an Atom Entry representation to the URI of the Collection:

```
POST /myblog/entries HTTP/1.1
Host: example.org
User-Agent: Thingio/1.0
Authorization: Basic ZGFmZnk6c2VjZXJldA==
Content-Type: application/atom+xml
Content-Length: nnn
Slug: First Post

<?xml version="1.0" ?>
<entry xmlns="http://www.w3.org/2005/Atom">
  <title>Atom-Powered Robots Run Amok</title>
  <id>urn:uuid:1225c695-cfb8-4ebb-aaaa-80da344efa6a</id>
  <updated>2003-12-13T18:30:02Z</updated>
  <author><name>John Doe</name></author>
  <content>Some text.</content>
</entry>
```

The server signals a successful creation with a status code of 201. The response includes a Location: header indicating the Member Entry URI of the Atom Entry, and a representation of that Entry in the body of the response.

```
HTTP/1.1 201 Created
Date: Fri, 7 Oct 2005 17:17:11 GMT
Content-Length: nnn
Content-Type: application/atom+xml; charset="utf-8"
Location: http://example.org/edit/first-post.atom

<?xml version="1.0"?>
<entry xmlns="http://www.w3.org/2005/Atom">
  <title>Atom-Powered Robots Run Amok</title>
  <id>urn:uuid:1225c695-cfb8-4ebb-aaaa-80da344efa6a</id>
  <updated>2003-12-13T18:30:02Z</updated>
  <author><name>John Doe</name></author>
  <content>Some text.</content>
  <link rel="edit"
      href="http://example.org/edit/first-post.atom"/>
</entry>
```

The Entry created and returned by the Collection might not match the Entry POSTed by the client. A server MAY change the values of various elements in the Entry, such as the atom:id, atom:updated and atom:author values, and MAY choose to remove or add other elements

and attributes, or change element content and attribute values.

9.3. Updating Resources with PUT

To update a Member Resource, clients send PUT requests to its Member URI, as specified in [RFC2616].

To avoid unintentional loss of data when editing Member Entries or Media Link Entries, Atom Protocol clients SHOULD preserve all metadata that has not been intentionally modified, including unknown foreign markup as defined in Section 6 of [RFC4287].

9.4. Deleting Resources with DELETE

To delete a Member Resource, clients send DELETE requests to its Member URI, as specified in [RFC2616]. For a Media Resource, the deletion of its Media Link Entry SHOULD result in the deletion of the Media Resource.

9.5. Caching and entity tags

Implementers are advised to pay attention to cache controls, and to make use of the mechanisms available in HTTP to make editing resource easier, in particular entity-tags as outlined in [W3C.NOTE-detect-lost-update-19990510]. Clients are not assured to receive the most recent representations of Collection Members using GET if the server is authorizing intermediaries to cache them.

9.5.1. Example

Below, the client creates a Member Entry using POST:

```
POST /myblog/entries HTTP/1.1
Host: example.org
Authorization: Basic ZGFmZnk6c2VjZXJldA==
Content-Type: application/atom+xml;type=entry
Content-Length: nnn
Slug: First Post

<?xml version="1.0" ?>
<entry xmlns="http://www.w3.org/2005/Atom">
  <title>Atom-Powered Robots Run Amok</title>
  <id>urn:uuid:1225c695-cfb8-4ebb-aaaa-80da344efa6a</id>
  <updated>2007-02-123T17:09:02Z</updated>
  <author><name>Captain Lansing</name></author>
  <content>It's something moving... solid metal</content>
</entry>
```

The server signals a successful creation with a status code of 201, and returns an ETag header in the response. Because in this case the server returned a Content-Location and Location header with the same value, the returned Entry representation can be understood to be complete (see Section 9.2) and thus the ETag entity value can be also be used.

```
HTTP/1.1 201 Created
Date: Fri, 23 Feb 2007 21:17:11 GMT
Content-Length: nnn
Content-Type: application/atom+xml;type=entry
Location: http://example.org/edit/first-post.atom
Content-Location: http://example.org/edit/first-post.atom
ETag: "e180ee84f0671b1"

<?xml version="1.0" ?>
<entry xmlns="http://www.w3.org/2005/Atom">
  <title>Atom-Powered Robots Run Amok</title>
  <id>urn:uuid:1225c695-cfb8-4ebb-aaaa-80da344efa6a</id>
  <updated>2007-02-123T17:09:02Z</updated>
  <author><name>Captain Lansing</name></author>
  <content>It's something moving... solid metal</content>
</entry>
```

The client can if it wishes use the returned ETag value to later construct a "Conditional GET" as defined in [RFC2616]. In this case, prior to editing the client sends the ETag value for the Member using the If-None-Match: header.

```
GET /edit/first-post.atom HTTP/1.1
Host: example.org
Authorization: Basic ZGFmZnk6c2VjZXJldA==
If-None-Match: "e180ee84f0671b1"
```

If the Entry has not been modified, the server (or an intermediary cache) can return a status code of 304 (Not Modified). This allows the client to determine it still has the most recent representation of the Entry at the time of editing.

```
HTTP/1.1 304 Not Modified
Date: Sat, 24 Feb 2007 13:17:11 GMT
ETag: "e180ee84f0671b1"
```

After editing, the client can PUT the updated Entry and send the ETag entity value in an If-Match header, informing the server to accept the entry on the condition the entity value sent still matches the server's.

```
PUT /edit/first-post.atom HTTP/1.1
Host: example.org
Authorization: Basic ZGFmZnk6c2VjZXJldA==
Content-Type: application/atom+xml;type=entry
Content-Length: nnn
If-Match: "e180ee84f0671b1"

<?xml version="1.0" ?>
<entry xmlns="http://www.w3.org/2005/Atom">
  <title>Atom-Powered Robots Run Amok</title>
  <id>urn:uuid:1225c695-cfb8-4ebb-aaaa-80da344efa6a</id>
  <updated>2007-02-24T16:34:06Z</updated>
  <author><name>Captain Lansing</name></author>
  <content>Update: it's a hoax!</content>
</entry>
```

The server however has since received a more recent update than the client's, and responds with a status code of 412 (Precondition Failed).

```
HTTP/1.1 412 Precondition Failed
Date: Sat, 24 Feb 2007 16:34:11 GMT
ETag: "r34rrt84f0671b22"
```

This informs the client that the server has a more recent version of the Entry and will not allow the update.

9.6. Media Resources and Media Link Entries

A client can POST a media type other than application/atom+xml to a Collection. Such a request always creates two new resources - one that corresponds to the entity sent in the request, called the Media Resource, and an associated Member Entry, called the Media Link Entry. Media Link Entries are represented as Atom Entries and appear in the Collection.

The Media Link Entry contains the metadata and IRI of the (perhaps non-textual) Media Resource. The Media Link Entry thus makes the metadata about the Media Resource separately available for retrieval and update.

The server can signal the media types it will accept using the "accept" element in the Service Document as specified in Section 8.3.4.

Successful responses to creation requests MUST include the URI of the Media Link Entry in the Location header. The Media Link Entry SHOULD contain an atom:link element with a link relation of "edit-media"

that contains the Media Resource IRI. The Media Link Entry MUST have an "atom:content" element with a "src" attribute. The value of the "src" attribute is an IRI for the newly created Media Resource. It is OPTIONAL that the IRI of the "src" attribute on the atom:content element be the same as the Media Resource IRI. For example, the "src" attribute value might instead be a link into a static cache or content distribution network and not the Media Resource IRI.

Implementers are asked to note that according to the requirements of [RFC4287], Entries, and thus Media Link Entries, MUST contain an atom:summary element. Upon successful creation of a Media Link Entry, a server MAY choose to populate the atom:summary element (as well as any other required elements such as atom:id, atom:author and atom:title) with content derived from the POSTed entity or from any other source. A server might not allow a client to modify the server selected values for these elements.

For resource creation this specification only defines cases where the POST body has an Atom Entry entity declared as an Atom media type ("application/atom+xml"), or a non-Atom entity declared as a non-Atom media type. It does not specify any request semantics or server behavior in the case where the POSTed media-type is "application/atom+xml" but the body is something other than an Atom Entry. In particular, what happens on POSTing an Atom Feed Document to a Collection using the "application/atom+xml" media type is undefined.

The Atom Protocol does not specify a means to create multiple representations of the same resource (for example a PNG and a JPG of the same image) on creation or update.

9.6.1. Examples

Below, the client sends a POST request containing a PNG image to the URI of a Collection that accepts PNG images:

```
POST /media/ HTTP/1.1
Host: example.org
Content-Type: image/png
Slug: The Beach
Authorization: Basic ZGFmZnk6c2VjZXJldA==
Content-Length: nnn

...binary data...
```

The server signals a successful creation with a status code of 201. The response includes a Location header indicating the Member URI of the Media Link Entry and a representation of that entry in the body

of the response. The Media Link Entry includes a content element with a src attribute. It also contains a link with a link relation of "edit-media", specifying the IRI to be used for modifying the Media Resource.

```
HTTP/1.1 201 Created
Date: Fri, 7 Oct 2005 17:17:11 GMT
Content-Length: nnn
Content-Type: application/atom+xml; charset="utf-8"
Location: http://example.org/media/edit/the_beach.atom

<?xml version="1.0"?>
<entry xmlns="http://www.w3.org/2005/Atom">
  <title>The Beach</title>
  <id>urn:uuid:1225c695-cfb8-4ebb-aaaa-80da344efa6a</id>
  <updated>2005-10-07T17:17:08Z</updated>
  <author><name>Daffy</name></author>
  <summary type="text" />
  <content type="image/png"
     src="http://media.example.org/the_beach.png"/>
  <link rel="edit-media"
     href="http://media.example.org/edit/the_beach.png" />
  <link rel="edit"
     href="http://example.org/media/edit/the_beach.atom" />
</entry>
```

Later, the client PUTS a new PNG to the URI indicated in the Media Link Entry's "edit-media" link:

```
PUT /edit/the_beach.png HTTP/1.1
Host: media.example.org
Content-Type: image/png
Authorization: Basic ZGFmZnk6c2VjZXJldA==
Content-Length: nnn

...binary data...
```

The server signals a successful update with a status code of 200.

```
HTTP/1.1 200 Ok
Date: Fri, 8 Oct 2006 17:17:11 GMT
Content-Length: nnn
```

The client can update the metadata for the picture. First GET the Media Link Entry:

```
GET /media/edit/the_beach.atom HTTP/1.1
Host: example.org
Authorization: Basic ZGFmZnk6c2VjZXJldA==
```

The Media Link Entry is returned.

```
HTTP/1.1 200 Ok
Date: Fri, 7 Oct 2005 17:18:11 GMT
Content-Length: nnn
Content-Type: application/atom+xml; charset="utf-8"

<?xml version="1.0"?>
<entry xmlns="http://www.w3.org/2005/Atom">
  <title>The Beach</title>
  <id>urn:uuid:1225c695-cfb8-4ebb-aaaa-80da344efa6a</id>
  <updated>2005-10-07T17:17:08Z</updated>
  <author><name>Daffy</name></author>
  <summary type="text" />
  <content type="image/png"
     src="http://media.example.org/the_beach.png"/>
  <link rel="edit-media"
     href="http://media.example.org/edit/the_beach.png" />
  <link rel="edit"
     href="http://example.org/media/edit/the_beach.atom" />
</entry>
```

The metadata can be updated, in this case to add a summary, and then PUT back to the server.

```
PUT /media/edit/the_beach.atom HTTP/1.1
Host: example.org
Authorization: Basic ZGFmZnk6c2VjZXJldA==
Content-Type: application/atom+xml
Content-Length: nnn

<?xml version="1.0"?>
<entry xmlns="http://www.w3.org/2005/Atom">
  <title>The Beach</title>
  <id>urn:uuid:1225c695-cfb8-4ebb-aaaa-80da344efa6a</id>
  <updated>2005-10-07T17:17:08Z</updated>
  <author><name>Daffy</name></author>
  <summary type="text">
      A nice sunset picture over the water.
  </summary>
  <content type="image/png"
     src="http://media.example.org/the_beach.png"/>
  <link rel="edit-media"
     href="http://media.example.org/edit/the_beach.png" />
  <link rel="edit"
     href="http://example.org/media/edit/the_beach.atom" />
</entry>
```

The update was successful.

```
HTTP/1.1 200 Ok
Date: Fri, 7 Oct 2005 17:19:11 GMT
Content-Length: 0
```

Multiple media resources can be added to the Collection.

```
POST /media/ HTTP/1.1
Host: example.org
Content-Type: image/png
Slug: The Pier
Authorization: Basic ZGFmZnk6c2VjZXJldA==
Content-Length: nnn

...binary data...
```

The resource is created successfully.

```
HTTP/1.1 201 Created
Date: Fri, 7 Oct 2005 17:17:11 GMT
Content-Length: nnn
Content-Type: application/atom+xml; charset="utf-8"
Location: http://example.org/media/edit/the_pier.atom

<?xml version="1.0"?>
<entry xmlns="http://www.w3.org/2005/Atom">
  <title>The Pier</title>
  <id>urn:uuid:1225c695-cfb8-4ebb-aaaa-80da344efe6b</id>
  <updated>2005-10-07T17:26:43Z</updated>
  <author><name>Daffy</name></author>
  <summary type="text" />
  <content type="image/png"
     src="http://media.example.org/the_pier.png"/>
  <link rel="edit-media"
     href="http://media.example.org/edit/the_pier.png" />
  <link rel="edit"
     href="http://example.org/media/edit/the_pier.atom" />
</entry>
```

The client can now create a new Atom Entry in the blog Entry Collection that references the two newly created Media Resources.

```
POST /blog/ HTTP/1.1
Host: example.org
Content-Type: application/atom+xml
Slug: A day at the beach
Authorization: Basic ZGFmZnk6c2VjZXJldA==
Content-Length: nnn

<?xml version="1.0"?>
<entry xmlns="http://www.w3.org/2005/Atom">
  <title>A fun day at the beach</title>
  <id>urn:uuid:1225c695-cfb8-4ebb-aaaa-80da344efa6b</id>
  <updated>2005-10-07T17:40:02Z</updated>
  <author><name>Daffy</name></author>
  <content type="xhtml">
      <xhtml:div xmlns:xhtml="http://www.w3.org/1999/xhtml">
          <xhtml:p>We had a good day at the beach.
              <xhtml:img
                  src="http://media.example.org/the_beach.png"/>
          </xhtml:p>
          <xhtml:p>Later we walked down to the pier.
              <xhtml:img
                  src="http://media.example.org/the_pier.png"/>
          </xhtml:p>
      </xhtml:div>
  </content>
</entry>
```

The resource is created successfully.

```
HTTP/1.1 200 Ok
Date: Fri, 7 Oct 2005 17:20:11 GMT
Content-Length: nnn
Content-Type: application/atom+xml; charset="utf-8"
Location: http://example.org/blog/atom/a-day-at-the-beach.atom

<?xml version="1.0"?>
<entry xmlns="http://www.w3.org/2005/Atom">
  <title>A fun day at the beach</title>
  <id>http://example.org/blog/a-day-at-the-beach.xhtml</id>
  <updated>2005-10-07T17:43:07Z</updated>
  <author><name>Daffy</name></author>
  <content type="xhtml">
      <xhtml:div xmlns:xhtml="http://www.w3.org/1999/xhtml">
          <xhtml:p>We had a good day at the beach.
              <xhtml:img
                 src="http://media.example.org/the_beach.png"/>
          </xhtml:p>
          <xhtml:p>Later we walked down to the pier.
              <xhtml:img
                 src="http://media.example.org/the_pier.png"/>
          </xhtml:p>
      </xhtml:div>
  </content>
  <link rel="edit"
    href="http://example.org/blog/edit/a-day-at-the-beach.atom"/>
  <link rel="alternate" type="application/xhtml+xml"
    href="http://example.org/blog/a-day-at-the-beach.xhtml"/>
</entry>
```

Note that the returned Entry contains a link with a relation of "alternate" that points to the associated XHTML page that was created. This is not required by this specification, but is included to show the kinds of changes a server may make to an Entry.

9.7. The Slug: Header

Slug is a HTTP entity-header that when accompanying a POST to a Collection, constitutes a request by the client that its value be used as part of the URI for the to-be-created Member Resource.

Servers MAY use the value of the Slug header when creating the Member URI of the newly-created resource, for instance by using some or all of the words in the value for the last URI segment. Servers MAY also use the value when creating the atom:id or as the title of a Media Link Entry (see Section 9.6.).

Servers MAY choose to ignore the Slug entity-header and MAY alter the

value before using it. For instance, a server might filter out some characters or replace accented letters with non-accented ones, replace spaces with underscores, change case, and so on.

9.7.1. Slug: Header syntax

The syntax of this header MUST conform to the augmented BNF grammar in section 2.1 of the HTTP/1.1 specification [RFC2616]. The TEXT rule is described in section 2.2 of the same document.

```
Slug = "Slug" ":" *TEXT
```

Clients MAY send non-ASCII characters in the Slug entity-header, which they MUST encode using "encoded-words", as defined in [RFC2047]. Servers SHOULD treat the slug as [RFC2047] encoded if it matches the "encoded-words" production.

9.7.2. Example

Here is an example of the Slug: header that uses the encoding rules of [RFC2047].

```
POST /myblog/entries HTTP/1.1
Host: example.org
Content-Type: image/png
Slug: =?iso-8859-1?q?The_Beach?=
Authorization: Basic ZGFmZnk6c2VjZXJldA==
Content-Length: nnn

...binary data...
```

See Section 9.2.1 for an example of the Slug: header applied to the creation of an Entry Resource.

10. Listing Collections

Collection Resources MUST provide representations in the form of Atom Feed documents whose Entries contain the IRIs of the Members in the Collection. No structural distinction is made between Collection Feeds and other kinds of Feeds - a Feed might act both as a 'public' feed for subscription purposes and as a Collection Feed.

Each Entry in the Feed Document SHOULD have an atom:link element with a relation of "edit" (See Section 11.1).

The Entries in the returned Atom Feed SHOULD be ordered by their "atom:updated" property, with the most recently updated Entries coming first in the document order. Since the Atom Syndication Format states that the value of atom:updated is altered when the changes to an Entry are something that "the publisher considers significant", clients SHOULD be constructed in consideration of the fact that changes which do not result in alterations to the atom: updated value of an Entry will not affect the position of the Entry in a Collection. The atom:updated value is not equivalent to the HTTP Last-Modified: header and can not be used to determine the freshness of cached responses.

Clients MUST NOT assume that an Atom Entry returned in the Feed is a full representation of an Entry Resource and SHOULD perform a GET on the URI of the Member Entry before editing it. See Section 9.5 for a discussion on the implications of cache control directives when obtaining entries.

10.1. Collection partial lists

Collections can contain large numbers of resources. A client such as a web spider or web browser might be overwhelmed if the response to a GET contained every Entry in a Collection - in turn the server might also waste bandwidth and processing time on generating a response that cannot be handled. For this reason, servers MAY respond to Collection GET requests with a feed document containing a 'partial list' of the Collection's members, which also links to the next partial list feed if it exists. The first such partial list returned MUST contain the most recently updated member resources and MUST have an atom:link with a "next" relation whose "href" value is the URI of the next partial list of the Collection. This next partial list will contain the next most recently updated set of Member Resources (and an atom:link to the following partial list if it exists).

In addition, partial list feeds MAY contain link elements with "rel" attribute values of "next", "previous", "first" and "last" that can be used to navigate through the complete set of entries in the

Collection.

For instance, suppose a client is supplied the URI "http://example.org/entries/go" of a Collection of Member entries, where the server as a matter of policy avoids generating feed documents containing more than 10 Entries. The Atom Feed document for the Collection will then represent the first partial list of a set of 10 linked feed documents. The "first" relation will reference the initial feed document in the set and the "last" relation references the final Atom Feed Document in the set. Within each document, the "next" and "previous" link relations reference the preceding and subsequent documents.

```
<feed xmlns="http://www.w3.org/2005/Atom">
  <link rel="first"
        href="http://example.org/entries/go" />
  <link rel="next"
        href="http://example.org/entries/2" />
  <link rel="last"
        href="http://example.org/entries/10" />
  ...
</feed>
```

The "next" and "previous" link elements for the partial list feed located at "http://example.org/entries/2" would look like this:

```
<feed xmlns="http://www.w3.org/2005/Atom">
  <link rel="first"
        href="http://example.org/entries/go" />
  <link rel="previous"
        href="http://example.org/entries/go" />
  <link rel="next"
        href="http://example.org/entries/3" />
  <link rel="last"
        href="http://example.org/entries/10" />
  ...
</feed>
```

10.2. The "app:edited" Element

The "app:edited" element is a Date construct as defined by [RFC4287] whose content indicates the last time an Entry was edited. If the entry has not been edited yet, the content indicates the time it was created. Atom Entry elements in Collection documents SHOULD contain one "app:edited" element, and MUST NOT contain more than one.

```
appEdited = element app:edited ( atomDateConstruct )
```

The server SHOULD change the value of this element every time a Collection Member Resource or an associated Media Resource has been edited.

11. Atom Format Link Relation Extensions

11.1. The "edit" Link Relation

This specification adds the value "edit" to the Atom Registry of Link Relations (see section 7.1 of [RFC4287]). The value of "edit" specifies that the value of the href attribute is the IRI of an editable Member Entry. When appearing within an atom:entry, the href IRI can be used to retrieve, update and delete the resource represented by that Entry. An atom:entry MUST contain no more than one "edit" link relation.

11.2. The "edit-media" Link Relation

This specification adds the value "edit-media" to the Atom Registry of Link Relations (see section 7.1 of [RFC4287]). When appearing within an atom:entry, the value of the href attribute is an IRI that can be used to modify a Media Resource associated with that Entry.

An atom:entry element MAY contain zero or more "edit-media" link relations. An atom:entry MUST NOT contain more than one atom:link element with a rel attribute value of "edit-media" that has the same "type" and "hreflang" attribute values. All "edit-media" link relations in the same Entry reference the same resource. If a client encounters multiple "edit-media" link relations in an Entry then it SHOULD choose a link based on the client preferences for "type" and "hreflang". If a client encounters multiple "edit-media" link relations in an Entry and has no preference based on the "type" and "hreflang" attributes then the client SHOULD pick the first "edit-media" link relation in document order.

12. The Atom Format Type Parameter

The Atom Syndication Format (RFC 4287) defines the "application/atom+xml" media type to identify both Atom Feed and Atom Entry Documents. Implementation experience has demonstrated that Atom Feed and Entry Documents can have different processing models and that there are situations where they need to be differentiated. This document defines an optional "type" parameter used to differentiate the two types of Atom documents.

12.1. The 'type' parameter

This document defines a new "type" parameter for use with the "application/atom+xml" media type:

```
type = "entry" / "feed"
```

Neither the parameter name nor its value are case sensitive.

The value "entry" indicates that the media type identifies an Atom Entry Document. The root element of the document MUST be atom:entry.

The value "feed" indicates that the media type identifies an Atom Feed Document. The root element of the document MUST be atom:feed.

If not specified, the type is assumed to be unspecified, requiring Atom processors to examine the root element to determine the type of Atom document.

12.1.1. Conformance

New specifications MAY require that the type parameter be used to identify the Atom Document type. Producers of Atom Entry Documents SHOULD use the type parameter regardless of whether or not it is required. Producers of Atom Feed Documents MAY use the parameter.

Atom processors that do not recognize the "type" parameter MUST ignore its value and examine the root element to determine the document type.

Atom processors that do recognize the "type" parameter SHOULD detect and report inconsistencies between the parameter's value and the actual type of the document's root element.

13. Atom Publishing Controls

This specification defines an Atom Format Structured Extension, as defined in Section 6 of [RFC4287], for publishing control within the "http://purl.org/atom/app#" namespace.

13.1. The "app:control" Element

```
namespace app = "http://purl.org/atom/app#"

 pubControl =
    element app:control {
    atomCommonAttributes,
    pubDraft?
    & extensionElement
 }

 pubDraft =
   element app:draft { "yes" | "no" }
```

The "app:control" element MAY appear as a child of an atom:entry which is being created or updated via the Atom Publishing Protocol. The app:control element MUST appear only once in an Entry. The app:control element is considered foreign markup as defined in Section 6 of [RFC4287].

The app:control element and its child elements MAY be included in Atom Feed or Entry Documents.

The app:control element can contain an optional "app:draft" element as defined below, and can contain extension elements as defined in Section 6 of [RFC4287].

13.1.1. The "app:draft" Element

The inclusion of the app:draft element represents a request by the client to control the visibility of a Member Resource. Server support is optional and thus the app:draft element MAY be ignored by the server.

The number of app:draft elements in app:control MUST be zero or one. The content of an app:draft element MUST be one of "yes" or "no". If the element contains "no" this indicates a client request that the Member Resource be made publicly visible. If the app:draft element is not present then servers that support the extension MUST behave as though an app:draft element containing "no" was sent.

14. Securing the Atom Publishing Protocol

The Atom Publishing Protocol is based on HTTP. Authentication requirements for HTTP are covered in Section 11 of [RFC2616].

The use of authentication mechanisms to prevent POSTing or editing by unknown or unauthorized clients is RECOMMENDED but not required. When authentication is not used, clients and servers are vulnerable to trivial spoofing, denial of service and defacement attacks, however, in some contexts, this is an acceptable risk.

The type of authentication deployed is a local decision made by the server operator. Clients are likely to face authentication schemes that vary across server deployments. At a minimum, client and server implementations MUST be capable of being configured to use HTTP Basic Authentication [RFC2617] in conjunction with a TLS connection as specified by [RFC2818]. See [RFC4346] for more information on TLS.

The choice of authentication mechanism will impact interoperability. The minimum level of security referenced above (Basic Authentication with TLS) is considered good practice for Internet applications at the time of publication of this specification and sufficient for establishing a baseline for interoperability. Implementers are encouraged to investigate and use alternative mechanisms regarded as equivalently good or better at the time of deployment. It is RECOMMENDED that clients be implemented in such a way that allows new authentication schemes to be deployed.

Because this protocol uses HTTP response status codes as the primary means of reporting the result of a request, servers are advised to respond to unauthorized or unauthenticated requests using an appropriate 4xx HTTP response code (e.g. 401 "Unauthorized" or 403 "Forbidden") in accordance with [RFC2617].

15. Security Considerations

As an HTTP-based protocol, APP is subject to the security considerations found in Section 15 of [RFC2616].

15.1. Denial of Service

Atom Publishing server implementations need to take adequate precautions to ensure malicious clients cannot consume excessive server resources (CPU, memory, disk, etc).

15.2. Replay Attacks

Atom Publishing server implementations are susceptible to replay attacks. Specifically, this specification does not define a means of detecting duplicate requests. Accidentally sent duplicate requests are indistinguishable from intentional and malicious replay attacks.

15.3. Spoofing Attacks

Atom Publishing implementations are susceptible to a variety of spoofing attacks. Malicious clients may send Atom Entries containing inaccurate information anywhere in the document.

15.4. Linked Resources

Atom Feed and Entry documents can contain XML External Entities as defined in Section 4.2.2 of [W3C.REC-xml]. Atom implementations are not required to load external entities. External entities are subject to the same security concerns as any network operation and can alter the semantics of an Atom document. The same issues exist for resources linked to by Atom elements such as atom:link and atom:content.

15.5. Digital Signatures and Encryption

Atom Entry Documents sent to a server might contain XML Digital Signatures [W3C.REC-xmldsig-core] and might be encrypted using XML Encryption [W3C.REC-xmlenc-core] as specified in Section 5 of [RFC4287].

Servers are allowed to modify received resource representations in ways that can invalidate signatures covering those representations.

15.6. URIs and IRIs

Atom Publishing Protocol implementations handle URIs and IRIs. See Section 7 of [RFC3986] and Section 8 of [RFC3987].

16. IANA Considerations

16.1. Content-type registration for 'application/atomserv+xml'

An Atom Publishing Protocol Service Document, when serialized as XML 1.0, can be identified with the following media type:

MIME media type name: application

MIME subtype name: atomsvc+xml

Mandatory parameters: None.

Optional parameters:

"charset": This parameter has identical semantics to the charset parameter of the "application/xml" media type as specified in [RFC3023].

Encoding considerations: Identical to those of "application/xml" as described in [RFC3023], section 3.2.

Security considerations: As defined in this specification. [[anchor30: update upon publication]]

In addition, as this media type uses the "+xml" convention, it shares the same security considerations as described in [RFC3023], section 10.

Interoperability considerations: There are no known interoperability issues.

Published specification: This specification. [[anchor31: update upon publication]]

Applications that use this media type: No known applications currently use this media type.

Additional information:

Magic number(s): As specified for "application/xml" in [RFC3023], section 3.2.

File extension: .atomsvc

Fragment identifiers: As specified for "application/xml" in [RFC3023], section 5.

Base URI: As specified in [RFC3023], section 6.

Macintosh File Type code: TEXT

Person and email address to contact for further information: Joe Gregorio <joe@bitworking.org>

Intended usage: COMMON

Author/Change controller: This specification's author(s). [[anchor32: update upon publication]]

16.2. Content-type registration for 'application/atomcat+xml'

An Atom Publishing Protocol Category Document, when serialized as XML 1.0, can be identified with the following media type:

MIME media type name: application

MIME subtype name: atomcat+xml

Mandatory parameters: None.

Optional parameters:

"charset": This parameter has identical semantics to the charset parameter of the "application/xml" media type as specified in [RFC3023].

Encoding considerations: Identical to those of "application/xml" as described in [RFC3023], section 3.2.

Security considerations: As defined in this specification. [[anchor33: update upon publication]]

In addition, as this media type uses the "+xml" convention, it shares the same security considerations as described in [RFC3023], section 10.

Interoperability considerations: There are no known interoperability issues.

Published specification: This specification. [[anchor34: update upon publication]]

Applications that use this media type: No known applications currently use this media type.

Additional information:

Magic number(s): As specified for "application/xml" in [RFC3023], section 3.2.

File extension: .atomcat

Fragment identifiers: As specified for "application/xml" in [RFC3023], section 5.

Base URI: As specified in [RFC3023], section 6.

Macintosh File Type code: TEXT

Person and email address to contact for further information: Joe Gregorio <joe@bitworking.org>

Intended usage: COMMON

Author/Change controller: This specification's author(s). [[anchor35: update upon publication]]

16.3. Header field registration for 'SLUG'

Header field: SLUG

Applicable protocol: http [RFC2616]

Status: standard.

Author/Change controller: IETF (iesg@ietf.org) Internet Engineering Task Force

Specification document(s): draft-ietf-atompub-protocol-13.txt ([[anchor36: update on rfc number assignment]])

Related information:

16.4. The Link Relation registration "edit"

Attribute Value: edit

Description: An IRI of an editable Member Entry. When appearing within an atom:entry, the href IRI can be used to retrieve, update and delete the resource represented by that Entry.

Expected display characteristics: Undefined; this relation can be used for background processing or to provide extended functionality without displaying its value.

Security considerations: Automated agents should take care when this relation crosses administrative domains (e.g., the URI has a different authority than the current document).

16.5. The Link Relation registration "edit-media"

Attribute Value: edit-media

Description: An IRI of an editable Media Resource. When appearing within an atom:entry, the href IRI can be used to retrieve, update and delete the Media Resource associated with that Entry.

Expected display characteristics: Undefined; this relation can be used for background processing or to provide extended functionality without displaying its value.

Security considerations: Automated agents should take care when this relation crosses administrative domains (e.g., the URI has a different authority than the current document).

16.6. The Atom Format Media Type Parameter

IANA is requested to add a reference to this specification in the 'application/atom+xml' media type registration.

17. References

17.1. Normative References

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17.2. Informative References

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[W3C.REC-webarch-20041215]
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URIs

[1] <http://www.imc.org/atom-protocol/index.html>

Appendix A. Contributors

The content and concepts within are a product of the Atom community and the Atompub Working Group.

[[anchor40: chairs to compile a contribution list for 1.0 --dehora]]

Appendix B. RELAX NG Compact Schema

This appendix is informative.

The Relax NG schema explicitly excludes elements in the Atom Protocol namespace which are not defined in this revision of the specification. Requirements for Atom Protocol processors encountering such markup are given in Section 6.2 and Section 6.3 of [RFC4287].

The Schema for Service Documents:

```
# -*- rnc -*-
# RELAX NG Compact Syntax Grammar for the Atom Protocol

namespace app = "http://purl.org/atom/app#"
namespace atom = "http://www.w3.org/2005/Atom"
namespace xsd = "http://www.w3.org/2001/XMLSchema"
namespace xhtml = "http://www.w3.org/1999/xhtml"
namespace local = ""

start = appService

# common:attrs

atomURI = text

appCommonAttributes =
   attribute xml:base { atomURI }?,
   attribute xml:lang { atomLanguageTag }?,
   undefinedAttribute*


atomCommonAttributes = appCommonAttributes

undefinedAttribute =
  attribute * - (xml:base | xml:lang | local:*) { text }



atomLanguageTag = xsd:string {
   pattern = "[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*"
}

atomDateConstruct =
    appCommonAttributes,
    xsd:dateTime
```

```
   # app:service

   appService =
      element app:service {
         appCommonAttributes,
         ( appWorkspace+
           & extensionElement* )
      }

   # app:workspace

   appWorkspace =
      element app:workspace {
         appCommonAttributes,
         ( atomTitle
           & appCollection*
           & extensionSansTitleElement* )
      }

   atomTitle = element atom:title { atomTextConstruct }

   # app:collection

   appCollection =
      element app:collection {
         appCommonAttributes,
         attribute href { atomURI  },
         ( atomTitle
           & appAccept?
           & appCategories*
           & extensionSansTitleElement* )
      }

   # app:categories

   atomCategory =
       element atom:category {
          atomCommonAttributes,
          attribute term { text },
          attribute scheme { atomURI }?,
          attribute label { text }?,
          undefinedContent
       }

   appInlineCategories =
       element app:categories {
           attribute fixed { "yes" | "no" }?,
           attribute scheme { atomURI }?,
```

```
          (atomCategory*)
       }

   appOutOfLineCategories =
       element app:categories {
           attribute href { atomURI },
           undefinedContent
       }

   appCategories = appInlineCategories | appOutOfLineCategories


   # app:accept

   appAccept =
      element app:accept {
            appCommonAttributes,
            ( appTypeValue? )
      }


   appTypeValue = ( "entry" | media-type |entry-or-media-type  )
   media-type = xsd:string { pattern = "entry,(.+/.+,?)*" }
   entry-or-media-type = xsd:string { pattern = "(.+/.+,?)*" }
   # above is an approximation, rnc doesn't support interleaved text


   # Simple Extension

   simpleSansTitleExtensionElement =
      element * - (app:*|atom:title) {
         text
      }

   simpleExtensionElement =
      element * - (app:*) {
         text
      }


   # Structured Extension

   structuredSansTitleExtensionElement =
      element * - (app:*|atom:title) {
         (attribute * { text }+,
            (text|anyElement)*)
       | (attribute * { text }*,
          (text?, anyElement+, (text|anyElement)*))
```

```
      }

   structuredExtensionElement =
      element * - (app:*) {
         (attribute * { text }+,
            (text|anyElement)*)
       | (attribute * { text }*,
          (text?, anyElement+, (text|anyElement)*))
      }

   # Other Extensibility

   extensionSansTitleElement =
    simpleSansTitleExtensionElement|structuredSansTitleExtensionElement


   extensionElement =
      simpleExtensionElement | structuredExtensionElement

   undefinedContent = (text|anyForeignElement)*

   # Extensions

   anyElement =
      element * {
         (attribute * { text }
          | text
          | anyElement)*
      }

   anyForeignElement =
       element * - app:* {
          (attribute * { text }
           | text
           | anyElement)*
       }

   atomPlainTextConstruct =
       atomCommonAttributes,
       attribute type { "text" | "html" }?,
       text

   atomXHTMLTextConstruct =
       atomCommonAttributes,
       attribute type { "xhtml" },
       xhtmlDiv

   atomTextConstruct = atomPlainTextConstruct | atomXHTMLTextConstruct
```

```
   anyXHTML = element xhtml:* {
       (attribute * { text }
        | text
        | anyXHTML)*
   }

   xhtmlDiv = element xhtml:div {
     (attribute * { text }
      | text
      | anyXHTML)*
   }

   # EOF
```

The Schema for Category Documents:

```
   # -*- rnc -*-
   # RELAX NG Compact Syntax Grammar for the Atom Protocol

   namespace app = "http://purl.org/atom/app#"
   namespace atom = "http://www.w3.org/2005/Atom"
   namespace xsd = "http://www.w3.org/2001/XMLSchema"
   namespace local = ""

   start = appCategories

   atomCommonAttributes =
      attribute xml:base { atomURI }?,
      attribute xml:lang { atomLanguageTag }?,
      undefinedAttribute*

   undefinedAttribute =
     attribute * - (xml:base | xml:lang | local:*) { text }

   atomURI = text

   atomLanguageTag = xsd:string {
      pattern = "[A-Za-z]{1,8}(-[A-Za-z0-9]{1,8})*"
   }


   atomCategory =
       element atom:category {
          atomCommonAttributes,
          attribute term { text },
          attribute scheme { atomURI }?,
          attribute label { text }?,
          undefinedContent
```

```
      }

   appInlineCategories =
       element app:categories {
           attribute fixed { "yes" | "no" }?,
           attribute scheme { atomURI }?,
           (atomCategory*)
       }

   appOutOfLineCategories =
       element app:categories {
           attribute href { atomURI },
           (empty)
       }

   appCategories = appInlineCategories | appOutOfLineCategories


   # Extensibility

   undefinedContent = (text|anyForeignElement)*

   anyElement =
      element * {
         (attribute * { text }
          | text
          | anyElement)*
      }

   anyForeignElement =
       element * - atom:* {
          (attribute * { text }
           | text
           | anyElement)*
       }

   # EOF
```

Appendix C. Revision History

[[anchor42: This section to be removed upon publication.]]

draft-ietf-atompub-protocol-14: typos; removed "The language context is only significant for elements and attributes declared to be "Language-Sensitive" by this specification. "; "Successful member creation is normally indicated with a 201 ("Created") response code." removed "normally" from that sentence (9.2); Added "Media Link Entries are represented as Atom Entries and appear in the Collection." to 9.6; said that an app:accept value of "entry" is equivalent to "application/atom+xml;type=entry"; double-check spec terms; Member Entry Resource -> Entry Resource; Added MLE, Entry Resource and Media Resource terms defs; 6.1 para split; 10.1 collection paging, rewrote for clarity; 13.1.1 app:edited rewrote for clarity/conflict; text for GETting entries and cache handling; 4: Typo: "And Media Resources IRIs", s/Resources/Resource/; consensus call: application/atomsvc+xml, extension is .atomsvc; DRY app: categories; make it clear the app:draft support is optional whether or not the value is sent; 9.2: put related ideas together into paragraphs.; 10: partial list editing; security: use elharos text; app:edited: tweak text suplied by ari; create a section for workspaces and move the descriptive text there; Moved rfc2818 to non-normative references. Added the W3C note on lost updates as a reference.

draft-ietf-atompub-protocol-13: Added Lisa's verbiage. Folded in James' Atom Format media type 'type' parameter spec. Updated document references to be more consistent, added URLs to some, and shortened up their anchors. Debugged rnc.

draft-ietf-atompub-protocol-11: Parts of PaceAppEdited. PaceSecurityConsiderationsRevised.

draft-ietf-atompub-protocol-10: PaceRemoveTitleHeader2, PaceSlugHeader4, PaceOnlyMemberURI,PaceOneAppNamespaceOnly, PaceAppCategories, PaceExtendIntrospection, UseElementsForAppCollectionTitles3, renamed Introspection to Service, lots of good editorials suggestions, updated media example with slug, moved xml conventions to convention sections, renamed XMl related Conventions to Atom Publishing Protocol Documents, added auth header to examples, consolidated definition of all resource types into the model section, added IANA reg info for application/atomcat+xml.

draft-ietf-atompub-protocol-09: PaceWorkspaceMayHaveCollections, PaceMediaEntries5, http://www.imc.org/atom-protocol/mail-archive/msg05322.html, and http://www.imc.org/atom-protocol/mail-archive/msg05272.html

draft-ietf-atompub-protocol-08: added infoset ref; added wording re IRI/URI; fixed URI/IRI ; next/previous fixed as per Atom LinkRelations Attribute (http://www.imc.org/atom-protocol/mail-archive/msg04095.html); incorporated: PaceEditLinkMustToMay; PaceMissingDraftHasNoMeaning, PaceRemoveMemberTypeMust, PaceRemoveMemberTypePostMust, PaceTitleHeaderOnlyInMediaCollections, PacePreserveForeignMarkup, PaceClarifyTitleHeader, PaceClarifyMediaResourceLinks, PaceTwoPrimaryCollections;

draft-ietf-atompub-protocol-07: updated Atom refs to RFC4287; incorporated PaceBetterHttpResponseCode; PaceClarifyCollectionAndDeleteMethodByWritingLessInsteadOfMore; PaceRemoveAcceptPostText; PaceRemoveListTemplate2; PaceRemoveRegistry; PaceRemoveWhoWritesWhat; PaceSimplifyClarifyBetterfyRemoveBogusValidityText; PaceCollectionOrderSignificance; PaceFixLostIntrospectionText; PaceListPaging; PaceCollectionControl; element typo in Listing collections para3 (was app:member-type, not app:list-template); changed post atom entry example to be valid. Dropped inline use of 'APP'. Removed nested diagram from section 4. Added ed notes in the security section.

draft-ietf-atompub-protocol-06 - Removed: Robert Sayre from the contributors section per his request. Added in PaceCollectionControl. Fixed all the {daterange} verbage and examples so they all use a dash. Added full rnc schema. Collapsed Introspection and Collection documents into a single document. Removed {dateRange} queries. Renamed search to list. Moved discussion of media and entry collection until later in the document and tied the discussion to the Introspection element app:member-type.

draft-ietf-atompub-protocol-05 - Added: Contributors section. Added: de hOra to editors. Fixed: typos. Added diagrams and description to model section. Incorporates PaceAppDocuments, PaceAppDocuments2, PaceSimplifyCollections2 (large-sized chunks of it anyhow: the notions of Entry and Generic resources, the section 4 language on the Protocol Model, 4.1 through 4.5.2, the notion of a Collection document, as in Section 5 through 5.3, Section 7 "Collection resources", Selection resources (modified from pace which talked about search); results in major mods to Collection Documents, Section 9.2 "Title: Header" and brokeout para to section 9.1 Editing Generic Resources). Added XML namespace and language section. Some cleanup of front matter. Added Language Sensitivity to some attributes. Removed resource descriptions from terminology. Some juggling of sections. See: http://www.imc.org/atom-protocol/mail-archive/msg01812.html.

draft-ietf-atompub-protocol-04 - Add ladder diagrams, reorganize, add SOAP interactions

draft-ietf-atompub-protocol-03 - Incorporates PaceSliceAndDice3 and PaceIntrospection.

draft-ietf-atompub-protocol-02 - Incorporates Pace409Response, PacePostLocationMust, and PaceSimpleResourcePosting.

draft-ietf-atompub-protocol-01 - Added in sections on Responses for the EditURI. Allow 2xx for response to EditURI PUTs. Elided all mentions of WSSE. Started adding in some normative references. Added the section "Securing the Atom Protocol". Clarified that it is possible that the PostURI and FeedURI could be the same URI. Cleaned up descriptions for Response codes 400 and 500.

Rev draft-ietf-atompub-protocol-00 - 5Jul2004 - Renamed the file and re-titled the document to conform to IETF submission guidelines. Changed MIME type to match the one selected for the Atom format. Numerous typographical fixes. We used to have two 'Introduction' sections. One of them was moved into the Abstract the other absorbed the Scope section. IPR and copyright notifications were added.

Rev 09 - 10Dec2003 - Added the section on SOAP enabled clients and servers.

Rev 08 - 01Dec2003 - Refactored the specification, merging the Introspection file into the feed format. Also dropped the distinction between the type of URI used to create new entries and the kind used to create comments. Dropped user preferences.

Rev 07 - 06Aug2003 - Removed the use of the RSD file for auto-discovery. Changed copyright until a final standards body is chosen. Changed query parameters for the search facet to all begin with atom- to avoid name collisions. Updated all the Entries to follow the 0.2 version. Changed the format of the search results and template file to a pure element based syntax.

Rev 06 - 24Jul2003 - Moved to PUT for updating Entries. Changed all the mime-types to application/x.atom+xml. Added template editing. Changed 'edit-entry' to 'create-entry' in the Introspection file to more accurately reflect its purpose.

Rev 05 - 17Jul2003 - Renamed everything Echo into Atom. Added version numbers in the Revision history. Changed all the mime-types to application/atom+xml.

Rev 04 - 15Jul2003 - Updated the RSD version used from 0.7 to 1.0.

Change the method of deleting an Entry from POSTing <delete/> to using the HTTP DELETE verb. Also changed the query interface to GET instead of POST. Moved Introspection Discovery to be up under Introspection. Introduced the term 'facet' for the services listed in the Introspection file.

Rev 03 - 10Jul2003 - Added a link to the Wiki near the front of the document. Added a section on finding an Entry. Retrieving an Entry now broken out into its own section. Changed the HTTP status code for a successful editing of an Entry to 205.

Rev 02 - 7Jul2003 - Entries are no longer returned from POSTs, instead they are retrieved via GET. Cleaned up figure titles, as they are rendered poorly in HTML. All content-types have been changed to application/atom+xml.

Rev 01 - 5Jul2003 - Renamed from EchoAPI.html to follow the more commonly used format: draft-gregorio-NN.html. Renamed all references to URL to URI. Broke out introspection into its own section. Added the Revision History section. Added more to the warning that the example URIs are not normative.

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