

RESTful HTTP API

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Overview

Introduction

The Fedora 4 HTTP API is generally a RESTful API. HTTP methods like GET, PUT, POST and DELETE are implemented on most resource paths. The API also relies heavily on content negotiation to deliver context-appropriate responses, and a HATEOAS-driven text/html response (providing a decent GUI experience on top of the repository). The Fedora 4 RDF-based responses may be serialized as:

- [application/ld+json](#)
- [application/n-triples](#)
- [application/rdf+xml](#)
- [text/n3](#) (or [text/rdf+n3](#))
- [text/plain](#)
- [text/turtle](#) (or [application/x-turtle](#))

The text/html response also includes embedded RDFa markup.

Fedora 4 implements the [Linked Data Platform 1.0 Architecture](#), which:

[...] describes the use of HTTP for accessing, updating, creating and deleting resources from servers that expose their resources as Linked Data. It provides clarifications and extensions of the rules of Linked Data [LINKED-DATA]:

1. *Use URIs as names for things*
2. *Use HTTP URIs so that people can look up those names*
3. *When someone looks up a URI, provide useful information, using the standards (RDF*, SPARQL)*
4. *Include links to other URIs, so that they can discover more things*

Endpoints

Resources

Repository objects can be loosely divided into two classes of resources:

- Containers ("fedora:Container"), containing RDF properties and 0 or more child resources
- Binaries, containing any binary payload (roughly corresponding to Fedora 3 datastreams)

Containers

RESTful HTTP API - Containers

Request URI: **/path/to/some/resource**

Methods: GET, POST, PUT, PATCH, HEAD, OPTIONS, DELETE, MOVE, COPY

GET

Retrieve the content of the resource

Request Headers:

RANGE

Byte range of content to retrieve, of the form: "Range: bytes=500-999"

ACCEPT

RDF sources support content negotiation with these formats: application/ld+json, application/n-triples, application/rdf+xml, application/x-turtle, application/xhtml+xml, application/xml, text/html, text/n3, text/plain, text/rdf+n3, text/turtle

Note: JSON-LD profiles can be requested by using the following `Accept` headers:

Accept: application/ld+json; profile="http://www.w3.org/ns/json-ld#expanded" - *default*

Accept: application/ld+json; profile="http://www.w3.org/ns/json-ld#compacted"

Accept: application/ld+json; profile="http://www.w3.org/ns/json-ld#flattened"

LIMIT

Number of child resources to list. If paired with Accept: (X)HTML, the default is 100. Otherwise, the default is -1 (all children are listed)

IF-NONE-MATCH

IF-MODIFIED-SINCE

PREFER

return=minimal

return=representation

return=representation; include=" *URIs* "

return=representation; omit=" *URIs* "

where minimal indicates that only triples directly related to a resource should be returned, and representation indicates that links to other resources and their properties should also be included. *URIs* is a space-separate list of LDP defined preferences, and also:

URI	Description
http://fedora.info/definitions/v4/repository#EmbedResources	Embed "child" resources in the returned representation
http://fedora.info/definitions/v4/repository#InboundReferences	Include assertions from other Fedora resources to this node (excluded from representation by default)
http://fedora.info/definitions/v4/repository#ServerManaged	Embed server managed properties in the representation (enabled by default)

Example (1): Turtle

```
curl -H "Accept: text/turtle" "http://localhost:8080/rest/path/to/resource"
```

Response:

Status: 200 OK

Headers:

ETag: "0ed38fe211c2663ace5322e970e7b7d606196e00"
Last-Modified: Mon, 19 May 2014 19:44:59 GMT
Preference-Applied: return=representation; include="http://www.w3.org/ns/ldp#PreferMembership http://www.w3.org/ns/ldp#PreferContainment"
Vary: Prefer
Accept-Patch: application/sparql-update
Allow: MOVE,COPY,DELETE,POST,HEAD,GET,PUT,PATCH,OPTIONS
Accept-Post: text/turtle,text/rdf+n3,application/n3,text/n3,application/rdf+xml,application/n-triples,multipart/form-data,application/sparql-update
Link: <http://www.w3.org/ns/ldp#Resource>;rel="type"
Link: <http://www.w3.org/ns/ldp#DirectContainer>;rel="type"
Content-Type: text/turtle

Body:

```
<http://localhost:8080/rest/path/to/resource> <http://fedora.info/definitions/v4/rest-api#hasAccessRoles>
<http://localhost:8080/rest/path/to/resource/fcr:accessroles> ;
  <http://fedora.info/definitions/v4/rest-api#exportsAs> <http://localhost:8080/rest/path/to/resource/fcr:
export?format=jcr/xml> ;
  <http://fedora.info/definitions/v4/repository#hasParent> <http://localhost:8080/rest/path/to> ;
  a <http://www.w3.org/ns/ldp#Container> , <http://www.w3.org/ns/ldp#DirectContainer> ;
  <http://www.w3.org/ns/ldp#membershipResource> <http://localhost:8080/rest/path/to/resource> ;
  <http://www.w3.org/ns/ldp#hasMemberRelation> <http://fedora.info/definitions/v4/repository#hasChild> ;
  a <http://www.jcp.org/jcr/nt/1.0folder> , <http://www.jcp.org/jcr/nt/1.0hierarchyNode> , <http://www.jcp.
org/jcr/nt/1.0base> , <http://www.jcp.org/jcr/mix/1.0created> , <http://fedora.info/definitions/v4/rest-
api#resource> , <http://fedora.info/definitions/v4/rest-api#object> , <http://fedora.info/definitions/v4/rest-
api#relations> , <http://www.jcp.org/jcr/mix/1.0created> , <http://www.jcp.org/jcr/mix/1.0lastModified> ,
<http://www.jcp.org/jcr/mix/1.0referenceable> , <http://purl.org/dc/elements/1.1/describable> ,
<http://fedora.info/definitions/v4/rest-api#resource> ;
  <http://fedora.info/definitions/v4/repository#primaryType> "nt:folder"^^<http://www.w3.org/2001
/XMLSchema#string> ;
  <http://fedora.info/definitions/v4/repository#created> "2014-05-19T19:44:59.647Z"^^<http://www.w3.org/2001
/XMLSchema#string> ;
  <http://fedora.info/definitions/v4/repository#lastModified> "2014-05-19T19:44:59.645Z"^^<http://www.w3.org
/2001/XMLSchema#string> ;
  <http://fedora.info/definitions/v4/repository#mixinTypes> "fedora:resource"^^<http://www.w3.org/2001
/XMLSchema#string> , "fedora:object"^^<http://www.w3.org/2001/XMLSchema#string> ;
  <http://fedora.info/definitions/v4/repository#lastModifiedBy> "bypassAdmin"^^<http://www.w3.org/2001
/XMLSchema#string> ;
  <http://fedora.info/definitions/v4/repository#uuid> "2b655d37-e88a-44c5-86c1-3b3935cdea49"^^<http://www.
w3.org/2001/XMLSchema#string> ;
  <http://fedora.info/definitions/v4/repository#createdBy> "bypassAdmin"^^<http://www.w3.org/2001
/XMLSchema#string> ;
  a <http://www.jcp.org/jcr/nt/1.0folder> , <http://www.jcp.org/jcr/nt/1.0hierarchyNode> , <http://www.jcp.
org/jcr/nt/1.0base> , <http://www.jcp.org/jcr/mix/1.0created> , <http://fedora.info/definitions/v4/rest-
api#resource> , <http://fedora.info/definitions/v4/rest-api#object> , <http://fedora.info/definitions/v4/rest-
api#relations> , <http://www.jcp.org/jcr/mix/1.0created> , <http://www.jcp.org/jcr/mix/1.0lastModified> ,
<http://www.jcp.org/jcr/mix/1.0referenceable> , <http://purl.org/dc/elements/1.1/describable> ,
<http://fedora.info/definitions/v4/rest-api#resource> .
```

Example (2): RDF/XML

```
curl -H "Accept: application/rdf+xml" "http://localhost:8080/rest/path/to/resource"
```

Response:

Status: 200 OK

Headers:

ETag: "0ed38fe211c2663ace5322e970e7b7d606196e00"
Last-Modified: Mon, 19 May 2014 19:44:59 GMT
Preference-Applied: return=representation; include="http://www.w3.org/ns/ldp#PreferMembership http://www.w3.org/ns/ldp#PreferContainment"

org/ns/ldp#PreferContainment"
Vary: Prefer
Accept-Patch: application/sparql-update
Allow: MOVE,COPY,DELETE,POST,HEAD,GET,PUT,PATCH,OPTIONS
Accept-Post: text/turtle,text/rdf+n3,application/n3,text/n3,application/rdf+xml,application/n-triples,
multipart/form-data,application/sparql-update
Link: <http://www.w3.org/ns/ldp#Resource>;rel="type"
Link: <http://www.w3.org/ns/ldp#DirectContainer>;rel="type"
Content-Type: application/rdf+xml

Body:

```
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">

  <rdf:Description rdf:about="http://localhost:8080/rest/path/to/resource">
    <hasAccessRoles xmlns="http://fedora.info/definitions/v4/rest-api#" rdf:resource="http://localhost:8080/rest/path/to/resource/fcr:accessroles"/>
    <exportsAs xmlns="http://fedora.info/definitions/v4/rest-api#" rdf:resource="http://localhost:8080/rest/path/to/resource/fcr:export?format=jcr/xml"/>
    <hasParent xmlns="http://fedora.info/definitions/v4/repository#" rdf:resource="http://localhost:8080/rest/path/to"/>
    <rdf:type rdf:resource="http://www.w3.org/ns/ldp#Container"/>
    <rdf:type rdf:resource="http://www.w3.org/ns/ldp#DirectContainer"/>
    <membershipResource xmlns="http://www.w3.org/ns/ldp#" rdf:resource="http://localhost:8080/rest/path/to/resource"/>
    <hasMemberRelation xmlns="http://www.w3.org/ns/ldp#" rdf:resource="http://fedora.info/definitions/v4/repository#hasChild"/>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/nt/1.0folder"/>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/nt/1.0hierarchyNode"/>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/nt/1.0base"/>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/mix/1.0created"/>
    <rdf:type rdf:resource="http://fedora.info/definitions/v4/rest-api#resource"/>
    <rdf:type rdf:resource="http://fedora.info/definitions/v4/rest-api#object"/>
    <rdf:type rdf:resource="http://fedora.info/definitions/v4/rest-api#relations"/>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/mix/1.0created"/>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/mix/1.0lastModified"/>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/mix/1.0referenceable"/>
    <rdf:type rdf:resource="http://purl.org/dc/elements/1.1/describable"/>
    <rdf:type rdf:resource="http://fedora.info/definitions/v4/rest-api#resource"/>
    <primaryType xmlns="http://fedora.info/definitions/v4/repository#" rdf:datatype="http://www.w3.org/2001/XMLSchema#string">nt:folder</primaryType>
    <created xmlns="http://fedora.info/definitions/v4/repository#" rdf:datatype="http://www.w3.org/2001/XMLSchema#string">2014-05-19T19:44:59.647Z</created>
    <lastModified xmlns="http://fedora.info/definitions/v4/repository#" rdf:datatype="http://www.w3.org/2001/XMLSchema#string">2014-05-19T19:44:59.645Z</lastModified>
    <mixinTypes xmlns="http://fedora.info/definitions/v4/repository#" rdf:datatype="http://www.w3.org/2001/XMLSchema#string">fedora:resource</mixinTypes>
    <mixinTypes xmlns="http://fedora.info/definitions/v4/repository#" rdf:datatype="http://www.w3.org/2001/XMLSchema#string">fedora:object</mixinTypes>
    <lastModifiedBy xmlns="http://fedora.info/definitions/v4/repository#" rdf:datatype="http://www.w3.org/2001/XMLSchema#string">bypassAdmin</lastModifiedBy>
    <uuid xmlns="http://fedora.info/definitions/v4/repository#" rdf:datatype="http://www.w3.org/2001/XMLSchema#string">2b655d37-e88a-44c5-86c1-3b3935cdea49</uuid>
    <createdBy xmlns="http://fedora.info/definitions/v4/repository#" rdf:datatype="http://www.w3.org/2001/XMLSchema#string">bypassAdmin</createdBy>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/nt/1.0folder"/>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/nt/1.0hierarchyNode"/>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/nt/1.0base"/>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/mix/1.0created"/>
    <rdf:type rdf:resource="http://fedora.info/definitions/v4/rest-api#resource"/>
    <rdf:type rdf:resource="http://fedora.info/definitions/v4/rest-api#object"/>
    <rdf:type rdf:resource="http://fedora.info/definitions/v4/rest-api#relations"/>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/mix/1.0created"/>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/mix/1.0lastModified"/>
    <rdf:type rdf:resource="http://www.jcp.org/jcr/mix/1.0referenceable"/>
    <rdf:type rdf:resource="http://purl.org/dc/elements/1.1/describable"/>
    <rdf:type rdf:resource="http://fedora.info/definitions/v4/rest-api#resource"/>
  </rdf:Description>
```

```
</rdf:RDF>
```

Example (3): Prefer headers

```
curl -H "Prefer: return=representation; include=\"http://fedora.info/definitions/v4/repository#InboundReferences\"; omit=\"http://www.w3.org/ns/ldp#PreferMembership http://www.w3.org/ns/ldp#PreferContainment\"" http://localhost:8080/rest/parent
```

Response:

Status: 200 OK

Headers:

ETag: "25fb5cb1d24983d57b10cb0b4656de113d5b8257"
Last-Modified: Mon, 19 May 2014 19:24:40 GMT
Preference-Applied: return=representation; include="http://fedora.info/definitions/v4/repository#InboundReferences"
Vary: Prefer
Accept-Patch: application/sparql-update
Allow: MOVE,COPY,DELETE,POST,HEAD,GET,PUT,PATCH,OPTIONS
Accept-Post: text/turtle,text/rdf+n3,application/n3,text/n3,application/rdf+xml,application/n-triples,multipart/form-data,application/sparql-update
Link: <http://www.w3.org/ns/ldp#Resource>;rel="type"
Link: <http://www.w3.org/ns/ldp#DirectContainer>;rel="type"
Content-Type: text/turtle

Body:

```
<http://localhost:8080/rest/parent> <http://fedora.info/definitions/v4/rest-api#hasAccessRoles>
<http://localhost:8080/rest/parent/fcr:accessroles> ;
  <http://fedora.info/definitions/v4/rest-api#exportsAs> <http://localhost:8080/rest/parent/fcr:export?
format=jcr/xml> ;
  <http://fedora.info/definitions/v4/repository#hasParent> <http://localhost:8080/rest/> ;
  a <http://www.w3.org/ns/ldp#Container> , <http://www.w3.org/ns/ldp#DirectContainer> ;
  <http://www.w3.org/ns/ldp#membershipResource> <http://localhost:8080/rest/parent> ;
  <http://www.w3.org/ns/ldp#hasMemberRelation> <http://fedora.info/definitions/v4/repository#hasChild> ;
  a <http://www.jcp.org/jcr/nt/1.0folder> , <http://www.jcp.org/jcr/nt/1.0hierarchyNode> , <http://www.jcp.
org/jcr/nt/1.0base> , <http://www.jcp.org/jcr/mix/1.0created> , <http://fedora.info/definitions/v4/rest-
api#resource> , <http://fedora.info/definitions/v4/rest-api#object> , <http://fedora.info/definitions/v4/rest-
api#relations> , <http://www.jcp.org/jcr/mix/1.0created> , <http://www.jcp.org/jcr/mix/1.0lastModified> ,
<http://www.jcp.org/jcr/mix/1.0referenceable> , <http://purl.org/dc/elements/1.1/describable> ,
<http://fedora.info/definitions/v4/rest-api#resource> .

<http://localhost:8080/rest/collection> <http://fedora.info/definitions/v4/rels-ext#hasCollectionMember>
<http://localhost:8080/rest/parent> .

<http://localhost:8080/rest/parent> <http://fedora.info/definitions/v4/repository#primaryType> "nt:folder"
^^<http://www.w3.org/2001/XMLSchema#string> ;
  <http://fedora.info/definitions/v4/repository#created> "2014-05-19T19:21:37.182Z"^^<http://www.w3.org/2001
/XMLSchema#string> ;
  <http://fedora.info/definitions/v4/repository#lastModified> "2014-05-19T19:24:40.662Z"^^<http://www.w3.org
/2001/XMLSchema#string> ;
  <http://fedora.info/definitions/v4/repository#mixinTypes> "fedora:resource"^^<http://www.w3.org/2001
/XMLSchema#string> , "fedora:object"^^<http://www.w3.org/2001/XMLSchema#string> ;
  <http://fedora.info/definitions/v4/repository#lastModifiedBy> "bypassAdmin"^^<http://www.w3.org/2001
/XMLSchema#string> ;
  <http://fedora.info/definitions/v4/repository#uuid> "c21706cd-ccla-4d77-b637-d940e0dc7888"^^<http://www.
w3.org/2001/XMLSchema#string> ;
  <http://fedora.info/definitions/v4/repository#createdBy> "bypassAdmin"^^<http://www.w3.org/2001
/XMLSchema#string> ;
  a <http://www.jcp.org/jcr/nt/1.0folder> , <http://www.jcp.org/jcr/nt/1.0hierarchyNode> , <http://www.jcp.
org/jcr/nt/1.0base> , <http://www.jcp.org/jcr/mix/1.0created> , <http://fedora.info/definitions/v4/rest-
api#resource> , <http://fedora.info/definitions/v4/rest-api#object> , <http://fedora.info/definitions/v4/rest-
api#relations> , <http://www.jcp.org/jcr/mix/1.0created> , <http://www.jcp.org/jcr/mix/1.0lastModified> ,
<http://www.jcp.org/jcr/mix/1.0referenceable> , <http://purl.org/dc/elements/1.1/describable> ,
<http://fedora.info/definitions/v4/rest-api#resource> .
```

Example (4): Non-RDF Source

```
curl "http://localhost:8080/rest/path/to/binary/resource"
```

Response:

Status: 200 OK

Headers:

ETag: "0ed38fe211c2663ace5322e970e7b7d606196e00"

Last-Modified: Mon, 19 May 2014 19:44:59 GMT

Vary: Prefer

Link: <http://localhost:8080/rest/path/to/binary/resource/fcr:metadata">;rel="describedby"

Content-Type: image/jpg

Body:

{binary content}

Status:

200

OK

304

Not Modified

404

Not Found

406

Not Acceptable (the 'Accept' request-header media type is either invalid or unsupported)

POST

Create new resources within a LDP container

Request Headers:

CONTENT-DISPOSITION

(Optional) The filename provided in the content disposition header will be stored in a `ebucore:filename` property. (See ['Example \(6\): Uploaded file with filename'](#))

CONTENT-TYPE

(Optional) MIME type of the uploaded binary or RDF content, including: `message/external-body` (See ['Example \(2\): Create a new child binary resource with empty content'](#))

If the MIME type corresponds to a supported RDF format or SPARQL-Update, the uploaded content will be parsed as RDF and used to populate the child node properties. RDF will be interpreted using the current resource as the base URI (e.g. `<>` will be expanded to the current URI). Namespaces must be declared in full.

For other MIME types, the uploaded content will be used to create a binary resource.

SLUG

(Optional) A suggested name for the new child resource, which the repository may ignore.

The slug you provide does not guarantee the location of the created resource. Clients must check the Location header for the path to the created resource.

DIGEST

(Optional) A way of providing one or more checksums (SHA-1, SHA-256, MD5) which will be checked against the uploaded content to ensure error-free transfer. The header is interpreted according to [RFC-3230](#) (See ['Example \(4\): Uploaded file with checksum'](#) and ['Example \(5\): Uploaded file with checksum mismatch'](#)) If the provided checksum does not match the calculated value for the uploaded file a 409 Conflict will be returned. See [PATCH example](#) for documentation on how to change the default algorithm used during on-demand fixity checking.

Example (1): Create a new child node

```
curl -X POST "http://localhost:8080/rest/"
```

Response:

Status: 201 Created

Headers:

ETag: "3ac31b09de1536a332d9c6ee8453669947721840"

Location: http://localhost:8080/rest/some/path/to/a/new/resource

Body:

http://localhost:8080/rest/some/path/to/a/new/resource

Example (2): Create a new child binary resource with empty content

```
curl -i -X POST -H "Content-Type:text/plain" "http://localhost:8080/rest"
```

Response:

Status: 201 Created

ETag: "487f188240d2be3ae32d49958c0eeea18224be0a"

Last-Modified: Thu, 29 May 2014 15:46:13 GMT

Link: <http://localhost:8080/rest/b8/fc/32/be/b8fc32be-34be-428e-bf7c-81be97e5f2e3/fcr:metadata>; rel="describedby"; anchor="http://localhost:8080/rest/b8/fc/32/be/b8fc32be-34be-428e-bf7c-81be97e5f2e3"

Location: http://localhost:8080/rest/b8/fc/32/be/b8fc32be-34be-428e-bf7c-81be97e5f2e3

Content-Type: text/plain

Transfer-Encoding: chunked

Body:

http://localhost:8080/rest/b8/fc/32/be/b8fc32be-34be-428e-bf7c-81be97e5f2e3

Example (3): Create a new container with RDF properties

```
curl -i -X POST -H "Content-Type: text/turtle" --data-binary "@body.rdf" "http://localhost:8080/rest/"
```

Request Body:

PREFIX dc: <http://purl.org/dc/elements/1.1/>

<> dc:title "some-resource-title"

Response:

Status: 201 Created

Headers:

ETag: "a66937ca13bc29c63f7b1a55d447a76cd8f1d573"

Location: http://localhost:8080/rest/new/node/uri

Body:

http://localhost:8080/rest/new/node/uri

Example (4): Uploaded file with checksum

```
curl -i -X POST --data-binary "@picture.jpg" -H"digest: sha1=cbl576f22e8e3e110611b616e3e2f5ce9bdb941"
"http://localhost:8080/rest/parent/container"
```

Response:

Status: 201 Created

Headers:

ETag: "fe4e2bf389fe05dab6390564e40012d8d36eca19"

Location: http://localhost:8080/rest/parent/object/auto/generated/ds/id

Body:

http://localhost:8080/rest/parent/object/auto/generated/ds/id

Example (4b): Uploaded file with multiple checksum

```
curl -i -X POST --data-binary "@picture.jpg" -H"digest: sha1=cb1a576f22e8e3e110611b616e3e2f5ce9bdb941, sha256=95331b60710d0400ee4913b5613c78f54" "http://localhost:8080/rest/parent/container"
```

Response:

Status: 201 Created

Headers:

ETag: "fe4e2bf389fe05dab6390564e40012d8d36eca19"

Location: http://localhost:8080/rest/parent/object/auto/generated/ds/id

Body:

http://localhost:8080/rest/parent/object/auto/generated/ds/id

Example (5): Uploaded file with checksum mismatch

```
curl -X POST --data-binary "@picture.jpg" -H"digest: sha1=checksumdoesntmatch" "http://localhost:8080/rest/parent/object"
```

Response:

Status: 409 Conflict

Body:

Checksum Mismatch of cb1a576f22e8e3e110611b616e3e2f5ce9bdb941 and urn:sha1:checksumdoesntmatch

Example (6): Uploaded file with filename

```
curl -i -X POST --data-binary "@picture.jpg" -H "Content-Disposition: attachment; filename=\"picture.jpg\"" "http://localhost:8080/rest/parent/container"
```

Response:

Status: 201 Created

Headers:

ETag: "fe4e2bf389fe05dab6390564e40012d8d36eca19"

Location: http://localhost:8080/rest/parent/object/auto/generated/ds/id

Body:

http://localhost:8080/rest/parent/object/auto/generated/ds/id

Status:

201

Created

404

Not Found (resource does not exist – use PUT to specify a new resource name)

409

Conflict (checksum mismatch)

PUT

Create a resource with a specified path, or replace the triples associated with a resource with the triples provided in the request body.

Some resource properties are repository managed and cannot be removed or modified. Any attempt to do so may result in a 4xx error. RDF will be interpreted using the current resource as the base URI (e.g. <> will be expanded to the current URI)

Request Headers:

CONTENT-TYPE

text/turtle, text/rdf+n3, application/n3, text/n3, application/rdf+xml, application/n-triples, text/html, text/plain, application/ld+json, message/external-body

IF-MATCH

IF-UNMODIFIED-SINCE

DIGEST

(Optional) A way of providing one or more checksums (SHA-1, SHA-256, MD5) which will be checked against the uploaded content to ensure error-free transfer. The header is interpreted according to [RFC-3230](#) (See 'Example (3): Creating new binary resource at a specified path') If the provided checksum does not match the calculated value for the uploaded file a 409 Conflict will be returned. See [Fixity Service](#) for documentation on how to change the default algorithm used during on-demand fixity checking.

PREFER

With the value `handling=lenient; received="minimal"` allows replacing the properties of a container without having to provide all of the server-managed triples.

Example (1): Updating properties with RDF content

1.1 Perform a GET to the current container's RDF content

```
curl -X GET -H "Accept: text/turtle" "http://localhost:8080/rest/node/to/update"

Body:
PREFIX dc: <http://purl.org/dc/elements/1.1/>
...
PREFIX ldp: <http://www.w3.org/ns/ldp#>
<http://localhost:8080/rest/node/to/update> a ldp:RDFSResource , ldp:Container , <http://www.jcp.org/jcr/nt/1.0folder> , <http://www.jcp.org/jcr/nt/1.0hierarchyNode> , <http://www.jcp.org/jcr/nt/1.0base> , <http://www.jcp.org/jcr/mix/1.0created> , fedora:Container , fedora:Resource , fedora:Resource , <http://www.jcp.org/jcr/mix/1.0created> , <http://www.jcp.org/jcr/mix/1.0lastModified> , <http://www.jcp.org/jcr/mix/1.0referenceable> ;
    fedora:primaryType "nt:folder"^^<http://www.w3.org/2001/XMLSchema#string> ;
    fedora:created "2014-11-20T16:23:31.684Z"^^<http://www.w3.org/2001/XMLSchema#dateTime> ;
    fedora:lastModified "2014-11-20T16:23:31.684Z"^^<http://www.w3.org/2001/XMLSchema#dateTime> ;
    fedora:mixinTypes "fedora:Container"^^<http://www.w3.org/2001/XMLSchema#string> , "fedora:Resource"^^<http://www.w3.org/2001/XMLSchema#string> ;
    ...
<http://fedora.info/definitions/v4/repository#jcr/xml> rdfs:label "jcr/xml"^^<http://www.w3.org/2001/XMLSchema#string> .
<http://54.173.23.104:8080/fcrepo4/rest/test1/fcr:export?format=jcr/xml> dc:format <http://fedora.info/definitions/v4/repository#jcr/xml> .
```

1.2 Add your updates (e.g. <> dc:title "some-resource-title" .) under the full result of the GET response in 1.1

```
curl -X PUT -H "Content-Type: text/turtle" --data-binary "@new-triples.rdf" "http://localhost:8080/rest/node/to/update"
```

Request Body:

```
PREFIX dc: <http://purl.org/dc/elements/1.1/>
...
PREFIX ldp: <http://www.w3.org/ns/ldp#>
<http://localhost:8080/rest/node/to/update> a ldp:RDFSsource , ldp:Container , <http://www.jcp.org/jcr/nt/1.0folder> , <http://www.jcp.org/jcr/nt/1.0hierarchyNode> , <http://www.jcp.org/jcr/nt/1.0base> , <http://www.jcp.org/jcr/mix/1.0created> , fcrepo:Container , fcrepo:Resource , fcrepo:Resource , <http://www.jcp.org/jcr/mix/1.0created> , <http://www.jcp.org/jcr/mix/1.0lastModified> , <http://www.jcp.org/jcr/mix/1.0referenceable> ;
    fcrepo:primaryType "nt:folder"^^<http://www.w3.org/2001/XMLSchema#string> ;
    fcrepo:created "2014-11-20T16:23:31.684Z"^^<http://www.w3.org/2001/XMLSchema#dateTime> ;
    fcrepo:lastModified "2014-11-20T16:23:31.684Z"^^<http://www.w3.org/2001/XMLSchema#dateTime> ;
    fcrepo:mixinTypes "fedora:Container"^^<http://www.w3.org/2001/XMLSchema#string> , "fedora:Resource"^^<http://www.w3.org/2001/XMLSchema#string> ;
    ...
<http://fedora.info/definitions/v4/repository#jcr/xml> rdfs:label "jcr/xml"^^<http://www.w3.org/2001/XMLSchema#string> .
<http://54.173.23.104:8080/fcrepo4/rest/test1/fcr:export?format=jcr/xml> dc:format <http://fedora.info/definitions/v4/repository#jcr/xml> .
<> dc:title "some-resource-title" .
```

Response:

```
Status: 204 No Content
```

Note that to prevent conflicts, the value of the `fedora:lastModified` triple in the request must match its current counterpart in the repository. The way to ensure this is to base the changes in a PUT request on the RDF content obtained in an immediately prior GET request, and never try to PUT consecutively, as this will result in a 400 error.

Example (2): Creating a new resource at a specified path

```
curl -i -X PUT "http://localhost:8080/rest/node/to/create"
```

Response:

```
Status: 201 Created
```

Response Headers:

```
Etag: "ef214795c3b9109389ffa542a6c081976e1e9587"
```

```
Last-Modified: Mon, 19 May 2014 20:52:57 GMT
```

```
Location: http://localhost:8080/rest/node/to/create
```

Body:

```
http://localhost:8080/rest/node/to/create
```

Example (3): Creating new binary resource at a specified path

```
curl -X PUT --upload-file image.jpg -H"Content-Type: image/jpeg" -H"digest:sha1=cb1a576f22e8e3e110611b616e3e2f5ce9bdb941" "http://localhost:8080/rest/new/image"
```

Response:

Status: 201 Created

Headers:

ETag: "urn:sha1:ea3d29b28522724a82de042a7b7a4e79a1653435"
Last-Modified: Mon, 19 May 2014 20:55:31 GMT
Location: http://localhost:8080/rest/new/image

Body:

http://localhost:8080/rest/new/image

Note that once a resource is created as an RDF or non-RDF source, it must remain an RDF or non-RDF source. In order to change the type of resource, you must DELETE and then re-create the resource.

Status:

204

No Content

412

Precondition Failed

Example (4): Creating a new binary resource at a specified path redirecting to external content

```
curl -X PUT -H"Content-Type: message/external-body; access-type=URL; URL=\"http://www.example.com/file\""
"http://localhost:8080/rest/node/to/create"
```

Response:

Status: 201 Created

Headers:

ETag: "ef214795c3b9109389ffa542a6c081976e1e9587"
Last-Modified: Mon, 19 May 2014 20:52:57 GMT
Link: <http://localhost:8080/rest/node/to/create/fcr:metadata>; rel="describedby"
Location: http://localhost:8080/rest/node/to/create

Body:

http://localhost:8080/rest/node/to/create

PATCH

Modify the triples associated with a resource with SPARQL-Update

Request Headers:

IF-MATCH

IF-UNMODIFIED-SINCE

CONTENT-TYPE

Example (1):

```
curl -X PATCH -H "Content-Type: application/sparql-update" --data-binary "@body.rdf" "http://localhost:8080/rest/node/to/update"
```

Request Body:

```
PREFIX dc: <http://purl.org/dc/elements/1.1/>
INSERT {
  <> dc:title "some-resource-title" .
}
WHERE { }
```

Response:

Status: 204 No Content

Example (2) Update default fixity algorithm:

```
curl -X PATCH -H "Content-Type: application/sparql-update" --data-binary "@body.rdf" "http://localhost:8080/rest/binary/resource/to/update"
```

Request Body:

```
PREFIX fedoraconfig: <http://fedora.info/definitions/v4/config#>
INSERT {
  <> fedoraconfig:defaultDigestAlgorithm "sha-256"
}
WHERE { }
```

Response:

Status: 204 No Content

Status:

204

No Content

412

Precondition Failed

DELETE

Delete a resource

Example:

```
curl -X DELETE "http://localhost:8080/rest/resource/to/delete"
```

Response:

Status: 204 No Content

Delete requests create "tombstone" resources which need to be removed before you can reuse a URI.

Example:

```
curl -X GET "http://localhost:8080/rest/some/deleted/resource"
```

Status: 410 Gone

Link: <http://localhost:8080/rest/some/deleted/resource/fcr:tombstone>; rel="hasTombstone"

Body:

Discovered tombstone resource at /some/deleted/resource, departed: 2016-11-14T17:26:17.334-06:00

```
curl -X DELETE "http://localhost:8080/rest/some/deleted/resource/fcr:tombstone"
```

Status: 204 No Content

Create a new node and reuse the deleted URL

```
curl -X PUT "http://localhost:8080/rest/some/deleted/resource"
```

Status: 201 Created

Status:

204

No Content

404

Not Found

HEAD

Retrieve the resource headers

Example:

```
curl -i -X HEAD "http://localhost:8080/rest/resource/to/head"
```

Response:

Status: 200 OK

ETag: "bbdd92e395800153a686773f773bcad80a51f47b"

Last-Modified: Wed, 28 May 2014 18:31:36 GMT

Last-Modified: Thu, 20 Nov 2014 15:44:32 GMT

Link: <http://www.w3.org/ns/ldp#Resource>;rel="type"

Link: <http://www.w3.org/ns/ldp#Container>;rel="type"

Link: <http://www.w3.org/ns/ldp#BasicContainer>;rel="type"

Accept-Patch: application/sparql-update

Accept-Post: text/turtle,text/rdf+n3,text/n3,application/rdf+xml,application/n-triples,multipart/form-data,application/sparql-update

Allow: MOVE,COPY,DELETE,POST,HEAD,GET,PUT,PATCH,OPTIONS

Status:

200

OK

404

Not Found

OPTIONS**Outputs information about the supported HTTP methods, etc.****Example:**

```
curl -i -X OPTIONS "http://localhost:8080/rest/node/to/options"
```

Response:

```
Status: 200 OK
Accept-Patch: application/sparql-update
Allow: MOVE,COPY,DELETE,POST,HEAD,GET,PUT,PATCH,OPTIONS
Accept-Post: text/turtle,text/rdf+n3,application/n3,text/n3,application/rdf+xml,application/n-triples,
multipart/form-data,application/sparql-update
```

Status:**200**

OK

MOVE**Move a resource (and its subtree) to a new location**

Note: A federated resource can be moved within the federation, but not from the federation to the internal repository (or vice versa)

Example (1):

```
curl -X MOVE -H "Destination: http://localhost:8080/rest/new/path/to/resource" "http://localhost:8080/rest/path/to/resource"
```

Response:

```
Status: 201 Created

Headers:
Location: http://localhost:8080/rest/new/path/to/resource
```

Example (2):

```
curl -X MOVE "http://localhost:8080/rest/path/to/resource"
```

Response:

```
Status: 502 Bad Gateway
```

Status:**201**

Created

409

Source path doesn't exist

412

Destination path already exists

502

Destination URI isn't a valid resource path

COPY

Copy a resource (and its subtree) to a new location

Example:

```
curl -X COPY -H "Destination: http://localhost:8080/rest/new/path/to/resource" "http://localhost:8080/rest/path/to/resource"
```

Response:

Status: 201 Created

Headers:

Location: http://localhost:8080/rest/new/path/to/resource

Status:

201

Created

409

Source path doesn't exist

412

Destination path already exists

502

Destination URI isn't a valid resource path

Export and Import

Error rendering macro 'excerpt-include'

User 'null' does not have permission to view the page.

Versioning

RESTful HTTP API - Versioning

Request URI: **/path/to/some/resource/fcr:versions**

Methods: GET, POST, PATCH

GET

Get a list of the available versions of an object

Request Headers:

ACCEPT

application/ld+json, application/n-triples, application/rdf+xml, application/x-turtle, application/xhtml+xml, application/xml, text/html, text/n3, text/plain, text/rdf+n3, text/turtle

Example:

```
curl -H "Accept: text/turtle" http://localhost:8080/rest/path/to/resource/fcr:versions
```


Response:

Status: 200 OK

Headers:

Content-Type: text/turtle

Body:

```
<http://localhost:8080/rest/path/to/resource> fedora:hasVersion <http://localhost:8080/rest/path/to/resource
/fcr:versions/87a0a8c317f1e749515d33-cb73-4fd7-9d1d-c715eb6947e0> .
<http://localhost:8080/rest/path/to/resource/fcr:versions/87a0a8c317f1e749515d33-cb73-4fd7-9d1d-c715eb6947e0>
fedora:hasVersionLabel "v0"^^<http://www.w3.org/2001/XMLSchema#string> ;
    fedora:created "2014-12-03T23:55:38.47Z"^^<http://www.w3.org/2001/XMLSchema#dateTime> .

<http://localhost:8080/rest/path/to/resource> fedora:hasVersion <http://localhost:8080/rest/path/to/resource
/fcr:versions/87a0a8c317f1e7dae533ec-b1b6-4dal-8bb9-f1964e253572> .
<http://localhost:8080/rest/path/to/resource/fcr:versions/87a0a8c317f1e7dae533ec-b1b6-4dal-8bb9-f1964e253572>
fedora:hasVersionLabel "v1"^^<http://www.w3.org/2001/XMLSchema#string> ;
    fedora:created "2014-12-03T23:56:12.863Z"^^<http://www.w3.org/2001/XMLSchema#dateTime> .
```

Status:

200

OK

404

Not Found: This resource is not versioned or this resource is not exist.

Response: The requested resource is not available.

GET

Get a previous version of an object

Request Headers:

ACCEPT

application/ld+json, application/n-triples, application/rdf+xml, application/x-turtle, application/xhtml+xml, application/xml, text/html, text/n3, text/plain, text/rdf+n3, text/turtle

Example:

```
curl http://localhost:8080/rest/resource/fcr:versions/<version-label>
```

Response:

Status: 200 OK

Response Headers:

ETag: "39f0d8a01a066771e56f70be892a39a7b505843c"

Last-Modified: Tue, 20 May 2014 19:29:10 GMT

Content-Type: text/turtle

Body:

```
<http://localhost:8080/rest/resource/fcr:versions/87a0a8c317f1e72c658170-624d-40f9-96cb-21ede3392155>
<http://fedora.info/definitions/v4/repository#primaryType> "nt:frozenNode"^^<http://www.w3.org/2001
/XMLSchema#string> ;
    <http://fedora.info/definitions/v4/repository#frozenPrimaryType> "nt:folder"^^<http://www.w3.org/2001
/XMLSchema#string> ;
    <http://fedora.info/definitions/v4/repository#created> "2014-05-20T19:29:00.192Z"^^<http://www.w3.org/2001
/XMLSchema#string> ;
    <http://fedora.info/definitions/v4/repository#frozenMixinTypes> "fedora:resource"^^<http://www.w3.org/2001
/XMLSchema#string> , "mix:versionable"^^<http://www.w3.org/2001/XMLSchema#string> , "fedora:object"
^^<http://www.w3.org/2001/XMLSchema#string> ;
    <http://fedora.info/definitions/v4/repository#lastModified> "2014-05-20T19:29:10.555Z"^^<http://www.w3.org
/2001/XMLSchema#string> ;
    <http://fedora.info/definitions/v4/repository#frozenUuid> "fed529c6-2121-4b1d-83fc-cc4274563612"
^^<http://www.w3.org/2001/XMLSchema#string> ;
    <http://fedora.info/definitions/v4/repository#lastModifiedBy> "bypassAdmin"^^<http://www.w3.org/2001
/XMLSchema#string> ;
    <http://fedora.info/definitions/v4/repository#uuid> "87a0a8c317f1e72c658170-624d-40f9-96cb-21ede3392155"
^^<http://www.w3.org/2001/XMLSchema#string> ;
    <http://fedora.info/definitions/v4/repository#createdBy> "bypassAdmin"^^<http://www.w3.org/2001
/XMLSchema#string> ;
    a <http://www.jcp.org/jcr/nt/1.0frozenNode> , <http://www.jcp.org/jcr/nt/1.0base> , <http://www.jcp.org
/jcr/mix/1.0referenceable> .
```

Status:

200

OK

404

Not Found: if the version or the resource does not exist

Response: The requested resource is not available.

POST

Create a new version of an object

Request Headers

SLUG

(Required) A suggested name for the new child resource, which the repository may ignore.

Example:

```
curl -X POST -H "Slug: newVersionName" http://localhost:8080/rest/path/to/resource/fcr:versions
```

Response:

Status: 201 Created

Status:

201

Created: if a new version is created successfully

404

Not Found: if the resource does not exist

409

Conflict: if the version label is already in use for another version of this resource

Response: The requested resource is not available.

PATCH

Revert to a previous version of an object

Example:

```
curl -X PATCH http://localhost:8080/rest/path/to/resource/fcr:versions/existingVersionName
```

Response:

Status: 204 No Content

Status:

204

No Content: if the version is reverted successfully

404

Not Found: if the version does not exist

Response: The requested resource is not available.

Request URI: **/path/to/some/resource/fcr:versions/versionName**

Methods: DELETE

DELETE

Remove a previous version of an object

Example:

```
curl -X DELETE http://localhost:8080/rest/path/to/resource/fcr:versions/versionName
```

Response:

Status: 204 No Content

Trying to delete the current version of a resource will result in an error. To revert to an old version of a resource, first revert to the old version using the PATCH method, and then delete the newer version.

Status:

204

No Content: if the version is reverted successfully

400

Bad Request: if trying to delete the most recent version

Response: Cannot remove current version

404

Not Found: if the version does not exist

Response: The requested resource is not available.

Services

Backup and Restore

RESTful HTTP API - Backup and Restore

Request URI: /

Methods: GET, POST

POST

fcr:backup Initiate a (consistent) backup of the repository

The backup will be stored in a temporary directory on the server. As yet, there is not a REST API method for retrieving the content of the backup.

Example:

```
curl -X POST "http://localhost:8080/rest/fcr:backup"
```

Response:

Status: 200 OK

Body:
/tmp/fcrepo4-data/path/to/backup/directory

Status:

200

OK

POST

fcr:restore Replace repository content with data from a backup directory

Example:

```
curl -X POST --data-binary "/tmp/fcrepo4-data/path/to/backup/directory" "http://localhost:8080/rest/fcr:restore"
```

Response:

Status: 204 No Content

Status:

204

Backup restored

500

Error restoring backup

Fixity

RESTful HTTP API - Fixity

Request URI: `/path/to/some/resource/fcr:fixity`

Methods: GET

GET

Get the fixity report for an object

Checking fixity requires retrieving the content from the binary store and may take some time.

Request Headers:

ACCEPT

application/ld+json, application/n-triples, application/rdf+xml, application/x-turtle, application/xhtml+xml, application/xml, text/html, text/n3, text/plain, text/rdf+n3, text/turtle

Example:

```
curl -H "Accept: text/turtle" "http://localhost:8080/rest/path/to/some/resource/fcr:fixity"
```

Response (fixity success):

Status: 200 OK

Headers:

Content-Type: text/turtle

Body:

```
@prefix premis: <http://www.loc.gov/premis/rdf/v1#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .

<http://localhost:8080/rest/path/to/some/resource>
  premis:hasFixity <http://localhost:8080/rest/path/to/some/resource#fixity/1494431303920> .

<http://localhost:8080/rest/path/to/some/resource#fixity/1494431303920>
  rdf:type          premis:Fixity ;
  rdf:type          premis:EventOutcomeDetail ;
  premis:hasEventOutcome "SUCCESS" ;
  premis:hasMessageDigestAlgorithm "SHA-1" ;
  premis:hasMessageDigest <urn:sha1:ca3392593351ef8e6554bdabfbd8bdc1002ecb6f> ;
  premis:hasSize        "1277811"^^<http://www.w3.org/2001/XMLSchema#long> .
```

Response (fixity failure):

```
Status: 200 OK
Headers:
Content-Type: text/turtle

Body:

@prefix premis: <http://www.loc.gov/premis/rdf/v1#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .

<http://localhost:8080/rest/path/to/some/resource>
  premis:hasFixity <http://localhost:8080/rest/path/to/some/resource#fixity/1494445619308> .

<http://localhost:8080/rest/path/to/some/resource#fixity/1494445619308>
  rdf:type          premis:Fixity ;
  rdf:type          premis:EventOutcomeDetail ;
  premis:hasEventOutcome "BAD_CHECKSUM" ;
  premis:hasEventOutcome "BAD_SIZE" ;
  premis:hasMessageDigestAlgorithm "SHA-1" ;
  premis:hasMessageDigest <urn:sha1:1d3d03c656cf0a944c393bf9257c6cecdba5263f> ;
  premis:hasSize        "1287509"^^<http://www.w3.org/2001/XMLSchema#long> .
```

Status:

200

OK

404

Resource not found

Default Fixity Algorithm

When ingesting a binary resource, one or more checksums may be provided, see [API reference](#) (POST example 4b). The supported algorithms are: SHA-1, SHA-256 and MD5.

By default, the algorithm used by the Fixity service is SHA-1. However, that may be changed to one of the other supported algorithms by configuring the property: `fedoraconfig:defaultDigestAlgorithm`. See [API reference](#) (PATCH example 2).

Transactions

RESTful HTTP API - Transactions

Request URI: `/fcr:tx; /tx:{transaction_id}/path/to/resource, /tx:{transaction_id}/fcr:tx, /tx:{transaction_id}/fcr:commit, /tx:{transaction_id}/fcr:rollback`

Methods: GET, POST

GET

Get the current status of the repository in a transaction

Example:

```
curl -i "http://localhost:8080/rest/tx:86dd0891-d975-42d8-8837-a24ad6041b59"
```

Response:

```
Status: 200 OK

Link: <http://localhost:8080/rest/>;rel="canonical"

Body:
Same as non-transaction response.
```

Status:

200

OK: If the request was successful

410

Gone: Transaction not found

POST

Create a new transaction

After retrieving a transaction resource, the client can execute any REST API method prefixed by the transaction location.

Transactions are automatically closed and rolled back after 3 minutes of inactivity. Transactions can be refreshed by POSTing to `/rest/{tx:id}/fcr:tx`

Example:

```
curl -i -X POST "http://localhost:8080/rest/fcr:tx"
```

Response:

Status: 201 Created

Headers:

Location: `http://localhost:8080/rest/tx:83e34464-144e-43d9-af13-b3464a1fb9b5`

Expires: Sat, 16 Nov 2013 00:32:57 GMT

Usage:

When a transaction has been created, it will return a Location header. Use this location as the base URL for performing REST API operations within the transaction. When you are done with the transaction, either append `/fcr:tx/fcr:commit` to commit the transaction to the repository or `/fcr:tx/fcr:rollback` to discard the changes.

```
curl -X POST "http://localhost:8080/rest/tx:83e34464-144e-43d9-af13-b3464a1fb9b5/path/to/object/to/create"
curl -X DELETE "http://localhost:8080/rest/tx:83e34464-144e-43d9-af13-b3464a1fb9b5/path/to/resource/to/delete"
curl -X POST "http://localhost:8080/rest/tx:83e34464-144e-43d9-af13-b3464a1fb9b5/fcr:tx/fcr:commit"
```

Status:

201

Created: if the transaction is created successfully

POST

Keep an existing transaction alive**Example:**

```
curl -i -X POST "http://localhost:8080/rest/tx:83e34464-144e-43d9-af13-b3464a1fb9b5/fcr:tx"
```

Response:

Status: 204 No Content

Headers:

Location: `http://localhost:8080/rest/tx:83e34464-144e-43d9-af13-b3464a1fb9b5`

Expires: Sat, 16 Nov 2013 03:35:43 GMT

Status:

204

No Content: if the transaction is renewed successfully

410

Gone: if the transaction doesn't exist

POST

Save and commit an open transaction

Any operations you made within the scope of the transaction will be applied together, meaning if any of them fail, the whole transaction will fail.

Example:

```
curl -i -X POST "http://localhost:8080/rest/tx:123456789/fcr:tx/fcr:commit"
```

Response:

Status: 204 No Content

Status:

204

No Content: if the transaction is committed successfully

410

Gone: if the transaction doesn't exist

POST

Rollback and close an open transaction

Example:

```
curl -i -X POST "http://localhost:8080/rest/tx:123456789/fcr:tx/fcr:rollback"
```

Response:

Status: 204 No Content

Status:

204

No Content: if the transaction is discarded successfully

410

Gone: if the transaction doesn't exist