

RESTful HTTP API

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Overview

Introduction

The Fedora 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 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/fcrepo#PreferInboundReferences	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)
http://www.w3.org/ns/oa#PreferContainedDescriptions	Embed "child" resources in the returned representation
http://www.w3.org/ns/ldp#PreferContainment	Include/Exclude "ldp:contains" assertions to contained resources (enabled by default)
http://www.w3.org/ns/ldp#PreferMembership	Include/Exclude assertions to member resources established by the Direct and Indirect containers (enabled by default)
http://www.w3.org/ns/ldp#PreferMinimalContainer	Include/Exclude triples that would be present when the container is empty (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"
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 -i -u fedoraAdmin:fedoraAdmin http://localhost:8080/rest/collection -H 'Prefer: return=representation;
include="http://fedora.info/definitions/fcrepo#PreferInboundReferences"; omit="http://www.w3.org/ns
/ldp#PreferMembership
http://www.w3.org/ns/ldp#PreferContainment" '
```

Response:

Status: 200 OK

Headers:

Date: Sat, 13 Oct 2018 00:03:25 GMT
Set-Cookie: JSESSIONID=1pgwewtt9ucywx13hwo9mtjow; Path=/
Expires: Thu, 01 Jan 1970 00:00:00 GMT
Set-Cookie: rememberMe=deleteMe; Path=/; Max-Age=0; Expires=Fri, 12-Oct-2018 00:03:25 GMT
ETag: W/"fee2096961dcdf1c475d394319fc34a53bec39ac"
Last-Modified: Fri, 12 Oct 2018 23:24:34 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#RDFSSource>; rel="type"
Link: <http://www.w3.org/ns/ldp#BasicContainer>; rel="type"
Link: <http://localhost:8080/rest/collection>; rel="timegate"
Link: <http://localhost:8080/rest/collection>; rel="original"
Link: <http://localhost:8080/rest/collection/fcr:versions>; rel="timemap"
Link: <http://mementoweb.org/ns#OriginalResource>; rel="type"
Link: <http://mementoweb.org/ns#TimeGate>; rel="type"
Accept-External-Content-Handling: copy,redirect,proxy
Accept-Patch: application/sparql-update
Accept-Post: text/turtle,text/rdf+n3,text/n3,application/rdf+xml,application/n-triples,application/ld+json
Allow: MOVE,COPY,DELETE,POST,HEAD,GET,PUT,PATCH,OPTIONS
Link: <http://localhost:8080/rest/collection/fcr:acl>; rel="acl"
Preference-Applied: return=representation; include="http://fedora.info/definitions/fcrepo#PreferInboundReferences"; omit="http://www.w3.org/ns/ldp#PreferMembership http://www.w3.org/ns/ldp#PreferContainment"
Vary: Prefer
Vary: Accept
Vary: Range
Vary: Accept-Encoding
Vary: Accept-Language
Vary: Accept-Datetime
Content-Type: text/turtle;charset=utf-8
Content-Length: 1082
Server: Jetty(9.3.25.v20180904)

Body:

@prefix memento: <http://mementoweb.org/ns#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix fedora: <http://fedora.info/definitions/v4/repository#> .
@prefix ldp: <http://www.w3.org/ns/ldp#> .

<http://localhost:8080/rest/collection>
 rdf:type fedora:Container ;
 rdf:type fedora:Resource ;
 rdf:type ldp:BasicContainer ;
 fedora:lastModifiedBy "fedoraAdmin" ;
 fedora:createdBy "fedoraAdmin" ;
 fedora:created "2018-10-12T23:24:34.286Z"^^<http://www.w3.org/2001/XMLSchema#dateTime> ;
 fedora:lastModified "2018-10-12T23:24:34.286Z"^^<http://www.w3.org/2001/XMLSchema#dateTime> ;
 rdf:type ldp:RDFSSource ;
 rdf:type ldp:Container ;
 fedora:writable true .

<http://localhost:8080/rest/collection/fcr:versions>
 memento:original <http://localhost:8080/rest/collection> .

<http://localhost:8080/rest/item>
 ldp:isMemberOfCollection <http://localhost:8080/rest/collection> .

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 (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.

If the MIME type corresponds to a supported *RDF format* or *SPARQL-Update*, and you also provide a `Link: <http://www.w3.org/ns/ldp#NonRDFSource>; rel="type"` header. Then the contents will be stored as a binary resource with the provided MIME type as Content-type.

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

Supported RDF formats: `text/turtle`, `text/rdf+n3`, `application/n3`, `text/n3`, `application/rdf+xml`, `application/n-triples`, `text/html`, `text/plain`, `application/ld+json`

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. Valid 'Digest' algorithms/values are: `sha`, `sha-256`, or `md5`.

LINK

With a value containing subfield `rel=` <http://fedora.info/definitions/fcrepo#ExternalContent> the client may provide binary content from an external path. See the [external content documentation](#) for details about syntax and handling options (note, this is disabled by default), and [Example 7](#) for usage.

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: "487f188240d2be3ae32d49958c0eeeea18224be0a"
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: sha=cbl5a576f22e8e3e110611b616e3e2f5ce9bdb941"
"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: sha=cb1a576f22e8e3e110611b616e3e2f5ce9bdb941, sha-256=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: sha=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
```

Example (7): Creating a new binary resource using proxied external content

```
curl -i -X POST -H"Link: <file:///path/to/picture.jpg>; rel=\"http://fedora.info/definitions/fcrepo#ExternalContent\"; handling=\"proxy\"; type=\"image/jpg\"" "http://localhost:8080/rest/parent/container"
```

Response:

Status: 201 Created

Headers:

ETag: "fe4e2bf389fe05dab6390564e40012d8d36eca19"

Location: http://localhost:8080/rest/parent/container/<autogenerated-ds-id>

Body:

http://localhost:8080/rest/parent/container/<autogenerated-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 binary content or triples associated with a resource with the binary content or triples provided in the request body.

For RDFSsource resources



Some resource properties are repository managed and cannot be removed or modified. Any attempt to do so may result in a 4xx error.

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' in POST above)

CONTENT-TYPE

(Optional) MIME type of the uploaded binary or RDF 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.

If the MIME type corresponds to a supported *RDF format* or *SPARQL-Update*, and you also provide a Link: <<http://www.w3.org/ns/ldp#NonRDFSsource>>; rel="type" header. Then the contents will be stored as a binary resource with the provided MIME type as Content-type.

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

Supported RDF formats: text/turtle, text/rdf+n3, application/n3, text/n3, application/rdf+xml, application/n-triples, text/html, text/plain, application/ld+json

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. Valid `Digest` algorithms/values are: sha, sha-256, or md5.

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.

LINK

With a value containing subfield `rel=http://fedora.info/definitions/fcrepo#ExternalContent` the client may provide binary content from an external path. See the [external content documentation](#) for details about syntax and handling options (note, this is disabled by default), and [Example 4](#) for usage.

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: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> , 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:sha=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"Link: <http://www.example.com/file>; rel=\"http://fedora.info/definitions/fcrepo#ExternalContent\"; handling=\"redirect\"; type=\"text/plain\" \"http://localhost:8080/rest/node/to/create"
```

Response:

Status: 201 Created

Headers:

ETag: "ef214795c3b9109389ffa542a6c081976ele9587"
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 of a binary's description:

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

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: The MOVE action has been deprecated and will be removed in a future version of Fedora.

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

NOTE: The COPY action has been deprecated and will be removed in a future version of Fedora.

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

Versioning

RESTful HTTP API - Versioning

- Working with a versionable resource (a LDPRv)
 - GET Retrieve the versioned resource from a specific point in time.
- Working with a versions container (a LDPCv)
 - GET Get a list of the available versions of an object
 - POST Create a new versioned resource (a new LDPRm)
 - DELETE Remove the versions container and all versioned resources
- Working with a versioned resource (a LDPRm)
 - GET Get a specific versioned resource
 - DELETE Remove a previous version of an object

Services

Backup and Restore

RESTful HTTP API - Backup and Restore

Request URI: /rest/fcr:backup

Methods: POST

POST

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

You may include a backup directory in the body of the POST request. If you do not specify a directory, the backup will be stored in a temporary directory on the server (which will be returned in the response body). 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

Example 2: Including a destination directory

```
curl -X POST -d /path/to/backup/destination "http://localhost:8080/rest/fcr:backup"
```

Response:

Status: 200 OK

Status:

200

OK

Request URI: /rest/fcr:restore

Methods: POST

POST

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

Note: Restoring a backup replaces the repository content with the contents of the backup, so any data in the repository will be lost.

Example:

```
curl -X POST -d "/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/binary**

Methods: HEAD, GET

HEAD

Request the fixity checksum for a given digest algorithm

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

Request Headers:

WANT-DIGEST

md5, sha, sha-256

Example:

```
curl -I -H "Want-Digest: sha-256" "http://localhost:8080/rest/path/to/some/binary"
```

Response (fixity success):

Status: 200 OK

Headers:

ETag: "51c5ed5fff4b6c79233cc7573a387902f7d171e7"
Last-Modified: Fri, 04 May 2018 18:14:47 GMT
Content-Type: image/jpeg
Accept-Ranges: bytes
Content-Disposition: attachment; filename="IMG_4023.JPG.jpg"; creation-date="Fri, 04 May 2018 18:14:47 GMT";
modification-date="Fri, 04 May 2018 18:14:47 GMT"; size=47021
Link: <http://www.w3.org/ns/ldp#Resource>;rel="type"
Link: <http://www.w3.org/ns/ldp#NonRDFSsource>;rel="type"
Link: <http://localhost:8080/rest/examples/binary/fcr:acl>; rel="acl"
Link: <http://localhost:8080/rest/examples/binary/fcr:metadata>; rel="describedby"
Link: <http://localhost:8080/static/constraints/NonRDFSsourceConstraints.rdf>; rel="http://www.w3.org/ns/
ldp#constrainedBy"
Link: <http://localhost:8080/rest/examples/binary>; rel="timegate"
Link: <http://localhost:8080/rest/examples/binary>; rel="original"
Link: <http://localhost:8080/rest/examples/binary/fcr:versions>; rel="timemap"
Link: <http://mementoweb.org/ns#OriginalResource>; rel="type"
Link: <http://mementoweb.org/ns#TimeGate>; rel="type"
Accept-External-Content-Handling: copy,redirect,proxy
Allow: DELETE,HEAD,GET,PUT,OPTIONS
Digest: sha-256=08692ca74dc1e08c84f90feda5e64c72617be850a7c7adca88b03f6ccd3db406
Content-Length: 47021

Status:

200

OK

400

Bad request (the 'Want-Digest' request-header algorithm type is either invalid or unsupported)

404

Resource not found

NOTE: While the following feature is still available in Fedora 5, it is deprecated and may be removed in a future release.

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.

The /fcr:fixity endpoint is not part of the Fedora API Specification. This feature is currently supported for backwards compatibility reasons and may be removed in a future release.

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:shal: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:shal:1d3d03c656cf0a944c393bf9257c6cecdba5263f> ;
  premis:hasSize       "1287509"^^<http://www.w3.org/2001/XMLSchema#long> .
```

Status:

200

OK

404

Resource not found

Note: Default Fixity Algorithm

When ingesting a binary resource, one or more checksums may be provided, see [API reference](#) (POST example 4, POST example 4b, PUT example 3). The supported algorithms are: SHA-1, SHA-256 and MD5.

By default, the algorithm used by the /fcr:fixity endpoint is SHA-1. However, that may be changed - per resource - to one of the other supported algorithms by configuring the property: `fedoracfg: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