

# 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

Versioning in Fedora is composed of three specific types of resources - a versionable resource (a LDPRv), a versions container (a LDPCv), and the actual versioned resource (a LDPRm)- and a variety of strategies to interact with these resources. Each type of resource and the HTTP methods that can be used on them are discussed below.

## Working with a versionable resource (a LDPRv)

A versionable resource is a type of (regular) resource - see [RESTful HTTP API - Containers](#) - but it is created by invoking a specific Link header and the GET method has an additional interaction model beyond the GET scenarios when interacting with non-versioned resources. All of the headers and methods for regular resources are applicable to a versionable resource.

A resource can be declared versionable when it is created originally. This is achieved by including the following link header to your PUT or POST commands when creating the resource. When a versionable resource is created, the versions container will be created at the same time.

```
Link: <http://mementoweb.org/ns#OriginalResource>; rel="type"
```

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

Methods: GET, PUT, POST

GET

### Retrieve the versioned resource from a specific point in time.

For more details about Fedora's datetime negotiation behaviors, see [Memento Datetime Negotiation Algorithm](#).

#### Request Headers:

**ACCEPT-DATETIME** An RFC-1123 Date. (E.g. "Wed, 30 May 2018 23:02:44 GMT")

#### Example:

```
curl -H "Accept: text/turtle" -H "Accept-Datetime: Wed, 29 Aug 2018 15:47:50 GMT" http://localhost:8080/rest/path/to/resource
```

#### Response:

```
HTTP/1.1 302 Found
Date: Wed, 29 Aug 2018 22:09:28 GMT
Set-Cookie: JSESSIONID=hrj5jm80kdjdw9attrozpy19;Path=/
Expires: Thu, 01 Jan 1970 00:00:00 GMT
Set-Cookie: rememberMe=deleteMe; Path=/; Max-Age=0; Expires=Tue, 28-Aug-2018 22:09:28 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"
Link: <http://localhost:8080/static/constraints/ContainerConstraints.rdf>; rel="http://www.w3.org/ns/ldp#constrainedBy"
Link: <http://localhost:8080/rest/path/to/resource6>; rel="timegate"
Link: <http://localhost:8080/rest/path/to/resource>; rel="original"
Link: <http://localhost:8080/rest/path/to/resource/fcr:versions>; rel="timemap"
Link: <http://mementoweb.org/ns#OriginalResource>; rel="type"
Link: <http://mementoweb.org/ns#TimeGate>; rel="type"
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/path/to/resource/fcr:acl>; rel="acl"
Preference-Applied: return=representation
Vary: Prefer
Vary: Accept
Vary: Range
Vary: Accept-Encoding
Vary: Accept-Language
Vary: Accept-Datetime
Location: http://localhost:8080/rest/path/to/resource/fcr:versions/20180829154750
Content-Length: 0
Server: Jetty(9.3.1.v20150714)
```

#### Status:

200

302 Found

400

Bad Request: Accept-Datetime header not properly formatted per RFC-1123

406

Unacceptable: No appropriate versioned resource found for the supplied Accept-Datetime value

#### Examples:

```
#PUT
curl -X PUT -H "Link: <http://mementoweb.org/ns#OriginalResource>; rel=\"type\"" http://localhost:8080/rest/path/to/resource

#POST
curl -X POST -H "Link: <http://mementoweb.org/ns#OriginalResource>; rel=\"type\"" -H "Slug: resource" http://localhost:8080/rest/path/to
```

## Working with a versions container (a LDPCv)

Request URI: `/path/to/resource/fcr:versions`

Methods: GET, POST, DELETE

GET

Get a list of the available versions of an object

### Request Headers:

application/ld+json, application/link-format, 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: HTTP/1.1 200 OK

#### Headers:

```
ETag: W/"671df2a47622331ffb6b70b6156526a67e5ab760"
Last-Modified: Wed, 30 May 2018 21:03:54 GMT
Link: <http://www.w3.org/ns/ldp#Resource>;rel="type"
Link: <http://www.w3.org/ns/ldp#RDFSSource>;rel="type"
Link: <http://localhost:8080/rest/path/to/resource/fcr:versions/fcr:acl>; rel="acl"
Link: <http://mementoweb.org/ns#TimeMap>; rel="type"
Link: <http://localhost:8080/rest/path/to/resource>; rel="original"
Link: <http://localhost:8080/rest/path/to/resource>; rel="timegate"
Link: <http://localhost:8080/rest/path/to/resource/fcr:versions>; rel="timemap"
Vary-Post: Memento-Datetime
Allow: POST,HEAD,GET,OPTIONS,DELETE
Preference-Applied: return=representation
Vary: Prefer
Vary: Accept
Vary: Range
Vary: Accept-Encoding
Vary: Accept-Language
Content-Type: text/turtle;charset=utf-8
Content-Length: 1944
```

#### 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/path/to/resource/fcr:versions>
  rdf:type          fedora:TimeMap ;
  rdf:type          fedora:Resource ;
  fedora:lastModifiedBy "bypassAdmin" ;
  fedora:createdBy   "bypassAdmin" ;
  fedora:created     "2018-05-30T21:00:48.169Z"^^<http://www.w3.org/2001/XMLSchema#dateTime> ;
  fedora:lastModified "2018-05-30T21:03:54.88Z"^^<http://www.w3.org/2001/XMLSchema#dateTime> ;
  memento:original   <http://localhost:8080/rest/path/to/resource> ;
  rdf:type          ldp:RDFSSource ;
  fedora:writable    true ;
  ldp:contains      <http://localhost:8080/rest/path/to/resource/fcr:versions/20180530210300> ;
  ldp:contains      <http://localhost:8080/rest/path/to/resource/fcr:versions/20180530210354> .
```

### Status:

OK

Not Found: Versions container resource does not exist.

POST

## Create a new versioned resource (a new LDPRm)

Versions can be created in one of two ways, with a Memento-Datetime header and request body or with neither. If the Memento-Datetime header is omitted, the current time will be used by default and the current state of the versionable resource will be preserved. Any specified body will be ignored. If, however, the Memento-Datetime header is included, the versioned resource will be stored at this time marker and the request body will be stored as the versioned resource.

### Request Headers

**MEMENTO-DATETIME** (Optional) An RFC-1123 Date. (E.g. "Wed, 30 May 2018 23:02:44 GMT")

### Example 1 (Create a new version resource 'now.' Its state is that of the current versionable resource.):

```
# Create version from current state of the object
curl -X POST http://localhost:8080/rest/path/to/resource/fcr:versions
```

### Response:

```
HTTP/1.1 201 Created
Date: Wed, 29 Aug 2018 21:21:34 GMT
Set-Cookie: JSESSIONID=dmqpuv06yty7b0tf9y94z3rx;Path=/
Expires: Thu, 01 Jan 1970 00:00:00 GMT
Set-Cookie: rememberMe=deleteMe; Path=/; Max-Age=0; Expires=Tue, 28-Aug-2018 21:21:34 GMT
ETag: W/"f7c04eb7e3f04c17d1fc852bef5f6b030ea271e7"
Last-Modified: Wed, 29 Aug 2018 20:22:11 GMT
Link: <http://localhost:8080/static/constraints/ContainerConstraints.rdf>; rel="http://www.w3.org/ns/ldp#constrainedBy"
Link: <http://localhost:8080/rest/path/to/resource>; rel="timegate"
Link: <http://localhost:8080/rest/path/to/resource>; rel="original"
Link: <http://localhost:8080/rest/path/to/resource/fcr:versions>; rel="timemap"
Memento-Datetime: Wed, 29 Aug 2018 21:21:34 GMT
Link: <http://mementoweb.org/ns#Memento>; rel="type"
Location: http://localhost:8080/rest/path/to/resource/fcr:versions/20180829212134
Content-Type: text/plain
Content-Length: 68
Server: Jetty(9.3.1.v20150714)

http://localhost:8080/rest/versioning/v9/fcr:versions/20180829212134
```

### Status:

201

Created: if a new version is created successfully

404

Not Found: if the version container resource does not exist

### Example 2 (Create a new versioned resource at the supplied time marker. Its state is supplied as the request body.):

```
# Create version by supplying body and Memento-Datetime
curl -X GET http://localhost:8080/rest/path/to/resource > resource.ttl
curl -X POST -H "Memento-Datetime: Wed, 30 May 2018 23:02:44 GMT" -H "Content-Type: text/turtle" --data-binary
"@resource.ttl" http://localhost:8080/rest/path/to/resource/fcr:versions
```

### Response:

```
HTTP/1.1 201 Created
Date: Wed, 29 Aug 2018 21:38:01 GMT
Set-Cookie: JSESSIONID=7bs7ddtba91110261g9qyyotq;Path=/
Expires: Thu, 01 Jan 1970 00:00:00 GMT
Set-Cookie: rememberMe=deleteMe; Path=/; Max-Age=0; Expires=Tue, 28-Aug-2018 21:38:01 GMT
ETag: W/"a6b6c76b16935d00bcd1b5f259cfd2ecb225e3bd"
Last-Modified: Wed, 29 Aug 2018 20:22:11 GMT
Link: <http://localhost:8080/static/constraints/ContainerConstraints.rdf>; rel="http://www.w3.org/ns/ldp#constrainedBy"
Link: <http://localhost:8080/rest/path/to/resource>; rel="timegate"
Link: <http://localhost:8080/rest/path/to/resource>; rel="original"
Link: <http://localhost:8080/rest/path/to/resource/fcr:versions>; rel="timemap"
Memento-Datetime: Wed, 30 May 2018 23:02:44 GMT
Link: <http://mementoweb.org/ns#Memento>; rel="type"
Location: http://localhost:8080/rest/path/to/resource/fcr:versions/20180530230244
Content-Type: text/plain
Content-Length: 68
Server: Jetty(9.3.1.v20150714)

http://localhost:8080/rest/versioning/v9/fcr:versions/20180530230244
```

#### Status:

201

Created: if a new version is created successfully

400

Bad Request: Request body was empty or invalid.

404

Not Found: if the version container resource does not exist

409

Conflict: if a version with the same timestamp already exists for this resource.

415

Unsupported media type: If a Memento-Datetime is supplied without an accompanying Content-Type header to indicate the mime type.

DELETE

## Remove the versions container and all versioned resources

**NB: In addition to deleting all versioned resources, the parent - or versionable resource - will no longer be versionable, meaning the parent resource cannot be versioned until made versionable again.**

#### Example:

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

#### Response:

```
HTTP/1.1 204 No Content
Date: Wed, 29 Aug 2018 21:41:54 GMT
Set-Cookie: JSESSIONID=1hfa31aw3t4kp3z3wjps3qw84;Path=/
Expires: Thu, 01 Jan 1970 00:00:00 GMT
Set-Cookie: rememberMe=deleteMe; Path=/; Max-Age=0; Expires=Tue, 28-Aug-2018 21:41:54 GMT
Server: Jetty(9.3.1.v20150714)
```

#### Status:

204

No Content: if the version is reverted successfully

404

Not Found: if the version does not exist

## Working with a versioned resource (a LDPRm)

Request URI: `/path/to/resource/fcr:versions/<timestamp>`

Methods: GET, DELETE

---

GET

### Get a specific versioned resource

#### Request Headers:

ACCEPT

application/ld+json, application/link-format, 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/20180829154750
```

#### Response:

HTTP/1.1 200 OK

Date: Thu, 30 Aug 2018 14:31:30 GMT  
Set-Cookie: JSESSIONID=yb9ppso27n221qlxdvu4cqzi5;Path=/  
Expires: Thu, 01 Jan 1970 00:00:00 GMT  
Set-Cookie: rememberMe=deleteMe; Path=//; Max-Age=0; Expires=Wed, 29-Aug-2018 14:31:30 GMT  
ETag: W/"e766f5e674845e72f7d589e346b6a96a7735336e"  
Last-Modified: Wed, 29 Aug 2018 15:47:31 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"  
Link: <http://localhost:8080/static/constraints/ContainerConstraints.rdf>; rel="http://www.w3.org/ns/ldp#constrainedBy"  
Link: <http://localhost:8080/rest/path/to/resource>; rel="timegate"  
Link: <http://localhost:8080/rest/path/to/resource>; rel="original"  
Link: <http://localhost:8080/rest/path/to/resource/fcr:versions>; rel="timemap"  
Allow: GET,HEAD,OPTIONS,DELETE  
Memento-Datetime: Wed, 29 Aug 2018 15:47:50 GMT  
Link: <http://mementoweb.org/ns#Memento>; rel="type"  
Preference-Applied: return=representation  
Vary: Prefer  
Vary: Accept  
Vary: Range  
Vary: Accept-Encoding  
Vary: Accept-Language  
Content-Type: text/turtle;charset=utf-8  
Content-Length: 1754  
Server: Jetty(9.3.1.v20150714)

@prefix premis: <http://www.loc.gov/premis/rdf/v1#> .  
@prefix test: <info:fedora/test/> .  
@prefix memento: <http://mementoweb.org/ns#> .  
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .  
@prefix webac: <http://fedora.info/definitions/v4/webac#> .  
@prefix acl: <http://www.w3.org/ns/auth/acl#> .  
@prefix ns001: <http://localhost:8080/rest/ktest/> .  
@prefix xsi: <http://www.w3.org/2001/XMLSchema-instance> .  
@prefix xmlns: <http://www.w3.org/2000/xmlns/> .  
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .  
@prefix fedora: <http://fedora.info/definitions/v4/repository#> .  
@prefix xml: <http://www.w3.org/XML/1998/namespace> .  
@prefix ebucores: <http://www.ebu.ch/metadata/ontologies/ebucores/ebucores#> .  
@prefix ldp: <http://www.w3.org/ns/ldp#> .  
@prefix xs: <http://www.w3.org/2001/XMLSchema> .  
@prefix fedoraconfig: <http://fedora.info/definitions/v4/config#> .  
@prefix foaf: <http://xmlns.com/foaf/0.1/> .  
@prefix dc: <http://purl.org/dc/elements/1.1/> .

<http://localhost:8080/rest/path/to/resource>  
rdf:type ldp:RDFSResource ;  
rdf:type ldp:Container ;  
rdf:type fedora:Resource ;  
rdf:type ldp:BasicContainer ;  
rdf:type fedora:Container ;  
fedora:created "2018-08-29T15:47:31.041Z"^^<http://www.w3.org/2001/XMLSchema#dateTime> ;  
fedora:writable true ;  
fedora:lastModified "2018-08-29T15:47:31.041Z"^^<http://www.w3.org/2001/XMLSchema#dateTime> ;  
fedora:lastModifiedBy "fedoraAdmin" ;  
fedora:createdBy "fedoraAdmin" ;  
rdf:type ldp:RDFSResource ;  
rdf:type ldp:Container ;  
fedora:writable true .

Status:

200

OK

404

Not Found: Versions container resource does not exist.

DELETE

## Remove a previous version of an object

### Example:

```
curl -i -X DELETE http://localhost:8080/rest/path/to/resource/fcr:versions/20180829154750
```

### Response:

```
HTTP/1.1 204 No Content
Date: Thu, 30 Aug 2018 14:35:21 GMT
Set-Cookie: JSESSIONID=1w3ta3umg5nailq4mtfp5qn48p;Path=/
Expires: Thu, 01 Jan 1970 00:00:00 GMT
Set-Cookie: rememberMe=deleteMe; Path=/; Max-Age=0; Expires=Wed, 29-Aug-2018 14:35:21 GMT
Server: Jetty(9.3.1.v20150714)
```

### Status:

204

No Content: if the version was deleted successfully

404

Not Found: if the version does not exist