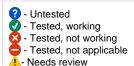
# Fedora API Spec and Delta Document Verification

Fedora's alignment with each category of the Fedora API Specification needs to be verified for completeness and correctness. Below is a listing of the specification categories, the person/people taking the lead on ensuring alignment, and the current status of alignment.

2018 Spring API Alignment Sprint 1 Planning

# Legend



## Environment

- Version of Fedora: https://github.com/fcrepo4/fcrepo4/commit/fe92e09c54949b930a27dbd5f24a591cbd4ed568 (as of 2018-06-12)
- Version of Fedora Specification: https://github.com/fcrepo/fcrepo-specification/commit/83b3bca9627e5ba9fda5b0c1718bea455747f559 (as of 2018-06-13)
- Test Compatibility Suite
- Legacy Version of script: 9d20fad (repo and usage here: https://github.com/rotated8/fedora-spec-testing)

# 3 Resource Management

## Lead

- Jared Whiklo
- Yinlin Chen

## 3.1 General (Jared Whiklo)

· Empty section

## 3.1.1 LDP Containers

- blocked URL MUST be able to create LDP Containers: Tested in 3.3
- MUST distinguish between triple types OR MUST return 409 with constrainedBy Link in headers for ldp:contains membership predicate if server cannot distinguish between triple types
- We return a 409 because we can't distinguish and therefore the next 2 tests are not applicable.
- MAY permit ldp:contains membership predicate if server can distinguish between triple types
- SHOULD allow Prefer header in request to distinguish triple types if server can distinguish triple types

#### 3.1.2 LDP-NR creation

SHOULD create an LDP-NR if creation request includes NonRDFSource type Link in headers, regardless of Content-Type headers

#### 3.1.3 Constraints Document

• SHOULD respond with <Link: http://www.w3.org/ns/ldp#constrainedBy> header on failures due to implementation choices

#### 3.1.4 Data Model

MUST respond with <Link: http://www.w3.org/ns/ldp#constrainedBy > header on failures due to unallowed data model ... like single-subject-restriction scenario

## 3.2 HTTP GET

#### 3.2.1 Additional values for the Prefer header

- SHOULD support PreferInboundReferences URI in Prefer header
  - Supports the old "http://fedora.info/definitions/v4/repository#InboundReferences" but not the one defined in the spec.
- blocked URL MAY support PreferContainedDescriptions URI in Prefer header

- blocked URL MUST return Preference-Applied header if request's Prefer header is honored (Always applied)
  - o note: also test with a combinations of Prefer headers: some validblocked URL, some invalid blocked URL
- · blocked URL MUST return describes Link to LDP-NR if request is to associated LDP-RS

#### 3.2.3 LDP-NRs

blocked URL MUST return Digest header as directed by request's Want-Digest header

## 3.3 HTTP HEAD

- blocked URL MUST NOT return a body
- SHOULD return same headers as if the request was a GET

it are not seen on HEAD Unable to locate Jira server for this macro. It may be due to Application Link configuration. ve

- blocked l
- blocked URL WAY OMIL Payload headers from response

## 3.4 HTTP OPTIONS (Yinlin Chen)

blocked URL Any LDPR must support OPTIONS per [LDP] 4.2.8. 4.2. LDP servers must support the HTTP OPTIONS method.

#### 3.5 HTTP POST

- blocked URL MUST be supported on LDPC
- MAY not be supported on LDPCv
- MUST include default interaction model in constrainedBy Link header
  - Correct for both LDP-RS and LDP-NR

## 3.5.1 LDP-NRs

- blocked URL MUST support creation of LDP-NRs
- blocked URL MUST create and associate an LDP-RS when an LDP-NR is created
- blocked URL MUST return 409 if request Digest header does not match calculated value for content of new LDP-NR
- blocked URL SHOULD return 400 if request Digest header's type is not supported (Should 'type' be 'algorithm', like the RFC?)

## 3.6 HTTP PUT

- MAY include type Link header in request

  SHOULD return 409 if request's type Link is not resource's current type or subtype thereof, or not in LDP namespace
- MUST change resource's type if request's type Link is a subtype of resource's current type
- MUST change resource's interaction model if request's type Link has an LDP interaction model

#### 3.6.1 LDP-RSs

- MUST support PUT on LDP-RSs for non-server-managed triples
- MUST return 4xx (409) if request modifies server-managed triples on a LDP-RS
- blocked URL MUST return constrainedBy Link in headers if request modifies server-managed triples on a LDP-RS
- MUST return info in body about which statements could not be persisted if request modifies server-managed triples on a LDP-RS
  - Currently we allow the use of the -Dfcrepo.properties.management=relaxed option to allow updating server managed triples, which is fine

## 3.6.2 LDP-NRs (Danny Bernstein)

- ✓ MUST support PUT on LDP-NRs to replace binary content
- MUST return 409 if request Digest header does not match calculated value for new content of target LDP-NR
- SHOULD return 400 if request Digest header's type is not supported

#### 3.6.3 Creating resources with HTTP PUT

• 🕢 If PUT is supported for creation of LDP-NRs, MUST create and associate an LDP-RS when an LDP-NR is created (Jared Whiklo )

## 3.7 HTTP PATCH (Jared Whiklo)

- blocked URL MUST be supported on LDP-RSs
- blocked URL MUST support Content-Type: application/sparql-update
- MAY support other update types
- blocked URL MUST return 4xx (409) when modifying protected resource statements
  - Tested by attempting to add "fedora:lastModifiedBy" property to a container via PATCH
- blocked URL MUST return info in body about which statements could not be persisted when modifying protected resource statements
  - Returns "Could not persist triple containing predicate http://fedora.info/definitions/v4/repository#lastModifiedBy to node /test\_container"
- blocked URL MUST return constrainedBy Link in headers when modifying protected resource statements
- blocked URL MUST return 2xx if successful

- blocked URL SHOULD return 409 Conflict if PATCH attempts to update containment triples
  - o Tested by attempting to add "ldp:contains" relation referencing another LDPR via PATCH.
  - o Rejected with status 409
  - Link: <a href="http://localhost:8080/static/constraints/ServerManagedPropertyException.rdf">http://localhost:8080/static/constraints/ServerManagedPropertyException.rdf</a>; rel="http://www.w3.org/ns/ldp#constraintedBy"
  - Could not persist triple containing predicate http://www.w3.org/ns/ldp#contains to node /test\_container

#### 3.7.2 Interaction models

• Ø MUST return 409 when modifying the interaction model to a type that is not a subtype of the current type

## 3.8 HTTP DELETE (Yinlin Chen)

• blocked URL MAY be supported

#### 3.8.1 Recursive Delete

- blocked URL An implementation that cannot recurse should not advertise DELETE in response to OPTIONS requests for container with contained resources.
- blocked URL MUST use LDP containment relations for recursive deletion, if recursive deletion is supported
  - o NOTE: Contained resource and all subresources were return the tombstone of the root resource deleted
- · blocked URL An implementation must not return a 200 (OK) or 204 (No Content) response unless the entire operation successfully completed.
- blocked URL An implementation must not emit a message that implies successful DELETE of a resource until the resource has been successfully removed.
- blocked URL Compliance with LDP 5.2.5.1 When a contained LDPR is deleted, the LDPC server must also remove the corresponding containment triple, which has the effect of removing the deleted LDPR from the containing LDPC.
- blocked URL Compliance with LDP 5.2.5.2 When a contained LDPR is deleted, and the LDPC server created an
  associated LDP-RS (see the LDPC POST section), the LDPC server must also delete the associated LDP-RS it created.
  - LDP-NR and associated LDP-RS both return 410
  - o Confirm LDP-NR and LDP-RS both return 410 after being deleted recursively

## 3.9 External Binary Content

- blocked URL Fedora servers should support the **creation** of LDP-NRs with content external to the request entity, as indicated by a link with rel="http://fedora.info/definitions/fcrepo#ExternalContent" and target that is the location of the external content.
  - o blocked URL handling="copy"
  - blocked URLhandling="redirect"
  - blocked URLhandling="proxy"
- blocked URL Fedora servers should support the update of LDP-NRs with content external to the request entity, as indicated by a link with rel="http://fedora.info/definitions/fcrepo#ExternalContent" and target that is the location of the external content.
  - blocked URL handling="redirect"
  - blocked URL handing="copy"
  - blocked URL handling="proxy"
- blocked URL Fedora servers that do not support the creation of LDP-NRs with content external must reject with a 4xx range status code
- Fedora servers that do not support the creation of LDP-NRs with content external must describe this restriction in a resource indicated by a re l="http://www.w3.org/ns/ldp#constrainedBy" link in the Link response header.
- blocked URLFedora servers must use the handling attribute in the external content link to determine how to process the request.
  - At least one of the following handling attributes must be supported
    - blocked URL copy requests that the server dereference the external content URI and treat that as if it were the entity body of the request
    - blocked URL redirect requests that the server record the location of the external content and handle requests for that content using HTTP redirect responses with the Content-Location header specifying the external content location.
    - blocked URL proxy requests that the server record the location of the external content and handle requests for that content by proxying. See also 3.9.3 Redirected and Proxied External Content.
- blocked URL Fedora servers must reject with a 4xx range status code requests for which the handling attribute is not present or cannot be respected.
- blocked URLIn the case that the specified handling cannot be respected, the restrictions causing the request to fail must be described in a resource indicated by a rel="http://www.w3.org/ns/ldp#constrainedBy" link in the Link response header.
- blocked URLFedora servers must use the value of the type attribute in the external content link as the media type of the external content, if provided.
- blocked URL Fedora servers should ignore any Content-Type header in the request .
  - blocked URL no "type=" attribute in the Link header results in 'application/octet-stream'
  - blocked URL "type=" as well as 'Content-Type' header result in "type=" taking precedence
  - blocked URL no "type=", but with 'Content-Type' results in 'Content-Type' being ignored (as it should be)
- If there is no type attribute:
  - blocked URL Servers may use the media type obtained when accessing the external content via the specified scheme (e.g. the Content t-Type header for external content accessed via http).
  - o blocked URL Servers may use a default media type.
    - server uses default content type of "application/octet-stream"
  - blocked URL Servers may reject the request with a 4xx range status code.
- blocked URL A Fedora server receiving requests that would create or update an LDP-NR with content external to the request entity must reject request if it cannot guarantee all of the response headers required by the LDP-NR interaction model in this specification
  - o Required "describedby" Link header present for all non-historic-memento

blocked URLHistoric mementos of external binaries are currently failing, so cannot confirm behavior for historic mementos (although they most likely will violate the Link requirement after the historic binary has been created but not the historic description):

```
curl -i -XPUT -H "Link: <a href="http://mementoweb.org/ns#OriginalResource">httpe\" -H "Link: <a href="http://fedora.info/definitions/fcrepo#ExternalContent\"; handling=\" proxy\"; type=\"image/png\"" "http://localhost:8080/rest/coollogo" -ufedoraAdmin:fedoraAdmin

curl -XPOST http://localhost:8080/rest/coollogo/fcr:versions -H "Memento-Datetime: Sat, 1

Jan 2000 00:00:00 GMT" -H "Link: <a href="http://wiki.duraspace.org/download/attachments/31655033">http://localhost:8080/rest/coollogo/fcr:versions -H "Memento-Datetime: Sat, 1

Jan 2000 00:00:00 GMT" -H "Link: <a href="http://wiki.duraspace.org/download/attachments/31655033">http://imperimements/sinfo/definitions/fcrepo#ExternalContent</a>

/* handling=\"proxy\"; type=\"image/png\"" -ufedoraAdmin:fedoraAdmin

#Response:

# < HTTP/1.1 415 Unsupported Media Type

# Invalid Content Type application/octet-stream

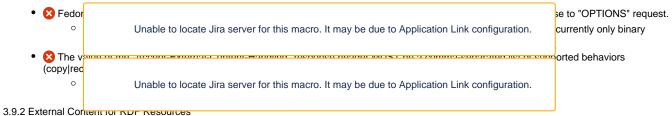
Unable to locate Jira server for this macro. It may be due to Application Link configuration.

*O Server pr

**Comminion for copy, redirectand proxy name of the source of the sour
```

NOTE: For a proxy binary from a HTTP URL that does not return a Content-Length header, the premis:hasSize property will be set to -1
and no Content-Length header is returned from Fcrepo.

#### 3.9.1 Advertising External Content Support



Non-normative section

3.9.3 Redirected and Proxied External Content

- V Fedora servers supporting "redirect" external content types MUST correctly respond to the "Want-Digest" header
- V Fedora servers supporting "proxy" external content types MUST correctly respond to the "Want-Digest" header
- A successful response to a GET and HEAD request for external content with handling of redirect must have status code of either 302 (Found) or 307 (Temporary Redirect)

# 4 Versioning

#### Leads

- Jared Whiklo
- Danny Bernstein
- 4 Resource Versioning
  - When an LDPR is created with a rel="type" link in the Link header specifying type http://mementoweb.org/ns#OriginalResource to indicate
    versioning, it must be created as an LDPRv
  - When an LDPR is created with a rel="type" link in the Link header specifying type http://mementoweb.org/ns#OriginalResource to indicate
    versioning, a version container (LDPCv) capturing time-varying representations of the LDPRv MUST be createde
- 4.1 Versioned Resources
  - · MUST provide TimeGate interaction model, detailed below

## 4.1.1 HTTP GET (LDPRv)

- The Accept-Datetime header is used to request a past state, exactly as per [RFC7089] section 2.1.1. A successful response must be a 302 (Found) redirect to the appropriate LDPRm
- 🗸 If no LDPRm is appropriate to the Accent-Datetime value, an implementation should return a 406 (Linaccentable)

0 Unable to locate Jira server for this macro. It may be due to Application Link configuration. The resp A rei= original timegate link in the Link neader referencing itself (Jared Whiklo) A <a href="http://mementoweb.org/ns#TimeGate">A <a href="http://mementoweb.org/ns#TimeGate">http://mementoweb.org/ns#TimeGate</a>; rel="type" link in the Link header (Jared Whiklo) At least one rel="timemap" link in the Link header referencing an associated LDPCv A Vary: Accept-Datetime header, exactly as per [RFC7089] section 2.1.2. 4.1.2 HTTP PUT (LDPRv) (Danny Bernstein) An implementation must support PUT, as is the case for any LDPR. 4.2 Version Resources (LDPRm) An LDPRm may be deleted
 An LDPRm must not be modified once created. 4.2.1 HTTP GET (LDPRm) An implementation must support GET, as is the case for any LDPR (LDP-RS memento) An implementation must support GET, as is the case for any LDPR (LDP-NR memento) The headers for GET requests and responses on this resource must conform to [RFC7089] section 2.1. Particularly it should be noted that the relevant TimeGate for an LDPRm is the original versioned LDPRv. ✓ Any response to a GET request must include a <a href="http://mementoweb.org/ns#Memento">http://mementoweb.org/ns#Memento</a>; rel="type" link in the Link header. 4.2.2 HTTP OPTIONS (LDPRm) An implementation must support OPTIONS. A response to an OPTIONS request must include Allow: GET, HEAD, OPTIONS An implementation may include Allow: DELETE if clients can remove a version from the version history 4.2.3 HTTP POST (LDPRm) An implementation must not support POST for LDPRms. 4.2.4 HTTP PUT (LDPRm) An implementation must not support PUT for LDPRms. 4.2.5 HTTP PATCH (LDPRm) An implementation must not support PATCH for LDPRms. 4.2.6 HTTP DELETE (LDPRm) An implementation may support DELETE for LDPRms. If DELETE is supported, the server is responsible for all behaviors implied by the LDPcontainment of the LDPRm. 4.3 Version Containers (LDPCv) (Jared Whiklo) An implementation must indicate TimeMap in the same way it indicates the container interaction model of the resource via HTTP headers. An implementation must not allow the creation of an LDPCv that is LDP-contained by its associated LDPRv. 4.3.1 HTTP GET (LDPCv) (Jared Whiklo) An implementation must support GET, as is the case for any LDPR. Any response to a GET request must include a <a href="http://mementoweb.org/ns#TimeMap">http://mementoweb.org/ns#TimeMap</a>; rel="type" link in the Link header. 🔇 An LDPCv must respond to GET Accept: application/link-format as indicated in [ RFC7089 ] section 5 and specified in [ RFC6690 ] section 7.3. An implementation must include the Allow heads If an L Unable to locate Jira server for this macro. It may be due to Application Link configuration. If an 🚺 An LD 0 Unable to locate Jira server for this macro. It may be due to Application Link configuration. 4.3.2 HTTP OPTIONS (EDPCV) (Jaied VVIIIKIO) Implementations MUST support OPTIONS Implementation's response to an OPTIONS request MUST include "Allow: GET, HEAD, OPTIONS" Implementations may Allow: DELETE if the versioning behavior is removable by deleting the LDPCv Implementations may Allow: PATCH if the LDPCv has mutable properties o (it does not allow PATCH because LDPCv does not have mutable properties).

Unable to locate Jira server for this macro. It may be due to Application Link configuration.

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#### 4.3.3 HTTP POST (LDPCv)

• ② Although an LDPCv is both a TimeMap and an LDPC, it may disallow POST requests. - POST is allowed

#### 4.3.3.1 Implementations that allow POSTs for LDPCvs

- Of an LDPCv supports POST, a POST request that does not contain a Memento-Datetime header should be understood to create a new LDPRm contained by the LDPCv, reflecting the state of the LDPRv at the time of the POST.
- V If an LDPCv supports POST, a POST request that does not contain a Memento-Datetime header MUST ignore any request body
- If an LDPCv supports POST, a POST with a Memento-Datetime header should be understood to create a new LDPRm contained by the LDP Cv, with the state given in the request body
- If an LDPCv supports POST, a POST with a Memento-Datetime header should be understood to create a new LDPRm contained by the LDP
   Cv, with the datetime given in the Memento-Datetime request header.

#### 4.3.3.2 Implementations that disallow POSTs for LDPCvs

• Of If an implementation does not support one or both of POST cases above, it must respond to such requests with a 4xx range status code and a link to an appropriate constraints document

#### 4.3.4 HTTP PUT (LDPCv)

• ✔ Imple

Unable to locate Jira server for this macro. It may be due to Application Link configuration.

4.3.5 HTTP PATCT (LDF CV)

• Implementations MAY disallow PATCH - disallowed

#### 4.3.6 HTTP DELETE (LDPCv)

- An implementation may support DELETE.
- An implementation that does support DELETE should do so by both removing the LDPCv and removing the versioning interaction model from the original LDPRv.

## 4.4 Implementation Patterns

• Non-normative section

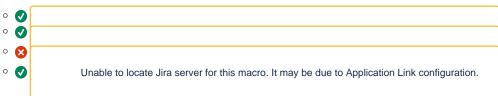
## 5 Resource Authorization

## Leads

- Aaron Birkland
- Peter Eichman
- Danny Bernstein

#### 5. Resource Authorization

Implementations MUST follow the recommendations of Web Access Control



## 5.1 ACLs are LDP RDF Sources

An AC
 Unable to locate Jira server for this macro. It may be due to Application Link configuration.

## 5.2 ACL Representation and Interpretation (Danny Bernstein)

- Implementations MUST use only statements associated with an authorization in the ACL RDF to determine access,

0 Unable to locate Jira server for this macro. It may be due to Application Link configuration. The a If none or the authorizations grant the requested access then the request MUS1 be denied.

#### 5.3 ACLs are discoverable via Link Headers

- ✓ A conforming server MUST advertise the individual resource ACL for every controlled resource in HTTP responses with a rel="acl" link in the Link header, whether or not the ACL exists.
- The ACL resource SHOULD be located in the same server as the controlled resource.

## 5.4 ACL linking on resource creation (Peter Eichman)

- 🔀 A client HTTP POST or PUT request to create a new LDPR MAY include a rel="acl" link in the Link header referencing an existing LDP-RS to use as the ACL for the new LDPR.
  - o (Peter Eichman) the rel="acl" link header for the second LDPR is ignored
  - o (Peter Eichman) instead, the second LDPR's rel="acl" link is to the /fcr:acl endpoint appended to that LDPR's URI
- 🔀 The server MUST reject the request and respond with a 4xx or 5xx range status code, such as 409 (Conflict) if it isn't able to create the LDPR with the specified LDP-RS as the ACL.
  - o (Peter Eichman) see the previous point; a 201 is returned instead of an expected 409 (or other 4xx or 5xx)
- 🔯 In that response, the restrictions causing the request to fail MUST be described in a resource indicated by a release to fail /ldp#constrainedBy" link in the Link response header

macro. It may be due to Application Link configuration.

heed to 4xx to change these to Unable to locate Jira server for this

## 5.5 Cross-Domain ACLs (Peter Eichman)

- MAY restrict support for ACLs to local resources.
- If an implementation chooses to reject requests concerning remote ACLs,

  - it MUST respond with a 4xx range status code
     it MUST advertise the restriction with a rel="http://www.w3.org/ns/ldp#constrainedBy" link in the Link response header.
    - (Pater Fichman) these are failing in the same manner as the requests in 5.4: the real = "agl " Link header in the request is
    - Unable to locate Jira server for this macro. It may be due to Application Link configuration.

# 5.6 Cross-Domain Group Listings

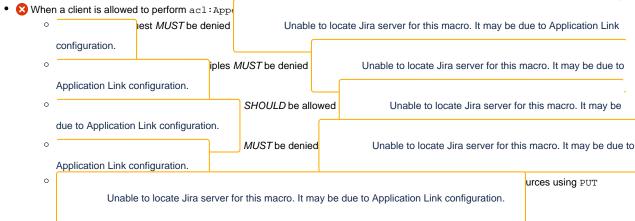
- blocked URL Implementations MAY restrict support for groups of agents to local Group Listing documents.
- If an implementation chooses to reject requests concerning remote Group Listings,

  - ✓ it MUST respond with a 4xx range status code
    ✓ it MUST advertise the restriction with a rel="http://www.w3.org/ns/ldp#constrainedBy" link in the Link response header.

## 5.7 Append Mode

🔯 In the context of a Fedora implementation, acl: Append should be understood as operations that only append, such as POSTing to a container, or performing a PATCH that only adds triples.

#### 5.7.1 LDP-RS (Append)



5.7.2 LDPC (Appena)

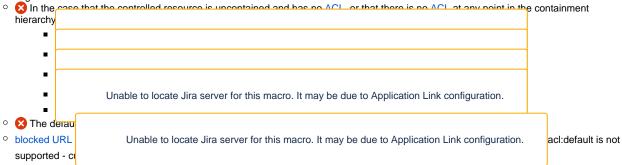
request MUST be allowed. Unable to locate Jira server for this macro. It may be due to Application Link configuration. 5.7.3 LDF-INK (Appena) When a client is allowed to perform acl: Append but not acl: uests MUST be denied Unable to locate Jira server for this macro. It may be due to Application Link configuration. modifies existing content MUST be denied A PATCH request that only ago us 2 (Jared Whiklo) Unable to locate Jira server for this macro. It may be due to Application Link configuration.

### 5.8 Access To Class

- ▼ The acl:accessToClass predicate MUST be supported.
- When an ACL includes an acl:accessToClass statement, it gives access to all resources with the specified type, whether that type is clientmanaged or server-managed.
- Implementations MAY use inference to infer types not present in a resource's triples or rel="type" links in the Link header.

## 5.9 Inheritance and Default ACLs

✓ Inheritance of ACLs in Fedora implementations MUST be reckoned along the LDP containment relationships linking controlled resources, with the following modification:



## 6 Notifications

#### Lead

Danny Bernstein

## 6.1 Notification Events

For every resource whose state is changed as a result of an HTTP operation, there must be a corresponding notification made available describing that change.

## 6.2 Notification Serialization

- ▼ The notification serialization must conform to the [ activitystreams-core ] specification.
- Wherever possible, data should be expressed using the [ activitystreams-vocabulary ].
- Each event described by a notification must contain:
  - The IRI of the resource that was created, modified or deleted
  - The event type(s) corresponding to the HTTP operation
- Each event described by a notification should contain:

  - The agent(s) that caused the change to occur
     The RDF type(s) of the resource that was changed
  - 🛑 The location of the <code>ldp:inbox</code> for the resource that was changed, if such an inbox link exists
- Notifications should not contain the entire content of repository resources.

#### 6.3 Examples

Non-normative section

# 7 Binary Resource Fixity

# Lead

Bethany Seeger

# 7.1 Transmission Fixity

• non-normative section

# 7.2 Persistance Fixity

• non-normative section