

# External Search

To support the differing needs for sophisticated, rich searching, Fedora 4 comes with a standard mechanism and integration point for indexing content in an external service. This could be a general search service such as Apache Solr or a standalone triplestore such as Sesame or Fuseki.

To set up external index and searching you must:

- 1 [Install and configure standalone search applications](#)
- 2 [Install and configure fcrepo-message-consumer](#)
- 3 [Mark a resource as Indexable and assign an appropriate indexing transformation](#)
  - 3.1 [Create new objects with indexing properties](#)

## Install and configure standalone search applications

fcrepo-message-consumer currently supports the following triplestores:

- Jena Fuseki ([Fuseki setup instructions](#))
- Sesame ([Sesame setup instructions](#))

See the [External Triplestore page](#) for more details on the triplestore setup.

fcrepo-message-consumer currently supports the following indexer:

- Apache Solr (<https://cwiki.apache.org/confluence/display/solr/Getting+Started>)

See the [Solr Indexing Quick Guide](#) to get quickly up and running with a Fedora 4 Solr integration.

## Install and configure fcrepo-message-consumer

The fcrepo-message-consumer project includes software for a web service that sits between your Fedora 4 repository and an external search service. As its name implies, it is a generic framework that allows for easy extension for integrating unanticipated or proprietary services with the Fedora 4 repository. There are proof-of-concept implementations for Jena Fuseki, Sesame and Apache Solr.

The following github page has detailed instructions as to how to set up fcrepo-message-consumer. This standalone app listens to messages produced by fcrepo4 and invokes the search applications as configured:

<https://github.com/fcrepo4/fcrepo-message-consumer>

## Mark a resource as Indexable and assign an appropriate indexing transformation

For a resource to be indexed it must:

1. have the rdf type <http://fedora.info/definitions/v4/indexing#Indexable>
2. (optionally) have the property <http://fedora.info/definitions/v4/indexing#hasIndexingTransformation> set to a registered index transformation

Indexing Transformations



A default indexing transformation exists that maps the appropriate properties to the field names "title", "uuid" and "id". To meet your needs, you can write and register [custom indexing transformations](#).

## Create new objects with indexing properties

For an object to be indexed it must have a `rdf:type` of `indexing:Indexable`, and optionally a `indexing:hasIndexingTransformation` corresponding to an LDPATH program.

### create object

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

object.rdf:

```
PREFIX dc: <http://purl.org/dc/elements/1.1/>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX indexing: <http://fedora.info/definitions/v4/indexing#>

DELETE { }
INSERT {
  <> indexing:hasIndexingTransformation "default";
  rdf:type indexing:Indexable;
  dc:title "This title will show up in the index." }
WHERE { }
```