

Configuration Options Inventory

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fcrepo-webapp

Fedora [RESTful HTTP API](#) uses the open source Jersey RESTful Web Services framework that provides support for JAX-RS APIs and serves as a JAX-RS (JSR 311 & JSR 339) Reference Implementation. The jersey servlet dispatcher is configured in [web.xml](#) as follows:

web.xml

```
<servlet>
  <servlet-name>jersey-servlet</servlet-name>
  <servlet-class>com.sun.jersey.spi.spring.container.servlet.SpringServlet</servlet-class>
  <init-param>
    <param-name>com.sun.jersey.config.property.packages</param-name>
    <param-value>org.fcrepo</param-value>
  </init-param>
  <init-param>
    <param-name>com.sun.jersey.api.json.POJOMappingFeature</param-name>
    <param-value>>true</param-value>
  </init-param>
  <load-on-startup>1</load-on-startup>
</servlet>
```

The following spring files exist in a directory as configured in [web.xml](#), which contains a context-param element with param-name "contextConfigLocation". The param-value points to your spring context configuration files, WEB-INF/classes/*.xml. Note that these files are in the source tree under fcrepo-webapp/src/main/resources/spring and copied to WEB-INF/classes upon build.

fcrepo-webapp/src/main/resources/spring

repo.xml

- here you can specify the repository.json file to be loaded as the repositoryConfiguration, as well as the bean for repository factory and metrics

repo.xml

```
<bean name="modeshapeRepofactory" class="org.fcrepo.kernel.spring.ModeshapeRepositoryFactoryBean">
  <property name="repositoryConfiguration" value="{fcrepo.modeshape.configuration:classpath:/config
/single/repository.json}"/>
</bean>
```

rest.xml

- bean implementation for InternalIdentifierConverter (identifier translationChain), StoragePolicyDecisionPointImpl, SessionFactory, and base-packages to auto scan into spring

eventing.xml

- bean implementation for eventing - observer, filter, event bus

jms.xml

- here you can specify the implementation for processing events

generator.xml

- beans implementation for datastream generation, ex: dublin core

security.xml

- bean implementation for OAuth security

transactions.xml

- Specify the config for transactions

minter.xml

- bean implementation for minting identifiers

fcrepo4/fcrepo-configs/src/main/resources/config

activemq.xml

- config for message broker

jgroups-fcrepo-tcp.xml

- Config for the Messaging Toolkit JGroups to transfer state between nodes in a Fedora Cluster.

fcrepo4/fcrepo-webapp/src/main/resources

logback.xml

- logging configuration (logging can also be [configured with System properties](#))

Modeshape repository configuration

Fedora 4 uses Modeshape, a JCR implementation. We distribute a handful of known-good configurations for Modeshape and Infinispan, although we anticipate configuration tuning for deployment environments will be common.

<https://github.com/ModeShape/modeshape/blob/master/modeshape-jcr/src/main/resources/org/modeshape/jcr/repository-config-schema.json>

<http://docs.jboss.org/infinispan/5.3/configdocs/>

Modeshape Configurations

These configuration files are copied to WEB-INF/classes from [fcrepo-configs/src/main/resources](#) upon build.

/config/minimal-default/repository.json

- Our default Modeshape configuration.

/config/servlet-auth/repository.json

- Default configuration with servlet authentication enabled.

/config/clustered/repository.json

- Default configuration with repository clustering enabled. By default, uses /config/infinispan/clustered/infinispan.xml persistence configuration.

Infinispan configurations

These configuration files are copied to WEB-INF/classes from [fcrepo-configs/src/main/resources](#) upon build.

/config/infinispan/leveldb-default/infinispan.xml

- Default configuration with leveldb object storage

/config/infinispan/leveldb/infinispan.xml

- Configuration with leveldb object storage and filecachestore object storage

/config/infinispan/clustered/infinispan.xml

- Example clustering configuration. Replicates object storage, distributes 2 copies of binary storage.

/config/infinispan/file/infinispan.xml

- Configuration with filecachestore

/config/infinispam/ram/infinispan.xml

- In-memory configuration for object storage (useful for testing)

Repository Config Options

```
fcrepo.modeshape.query.enabled:true
fcrepo.modeshape.query.mode:sync
```

Fedora 4 uses the Modeshape query index to power administrative search APIs. It can be disabled (or switched to asynchronous mode) to improve performance (see below).

```
fcrepo.modeshape.index.location:target/indexes
fcrepo.infinispan.cache_configuration:config/infinispan/leveldb-default/infinispan.xml
```

Fedora 4 can be configured to use different Infinispan configurations. By default, Fedora 4 configurations use the leveldb-default configuration.

```
fcrepo.ispn.repo.CacheDirPath:target/FedoraRepository/storage
```

Fedora 4 will store object properties to `fcrepo.ispn.repo.CacheDirPath`. These probably won't be very large, and should be stored on fast disk. The object properties are stored as binary JSON documents within the given cache store configuration.

```
fcrepo.binary-store-path:target/binaries
fcrepo.ispn.binary.CacheDirPath:target/FedoraRepositoryBinaryData/storage
```

`fcrepo.ispn.binary.CacheDirPath:target/FedoraRepositoryBinaryData/storage` - path to store binary content (when it's stored in infinispan e.g. `/config/infinispan/clustered/infinispan.xml`)

Fedora 4 stores binary content separately (to one of the above paths, depending on configuration). These files are stored hashed by the content SHA-1 hash.

Performance considerations

If your application does not use the query index (which powers basic administrative search, and the simple `for:sparql` endpoint), you can significantly improve repository performance by disabling indexing, or using asynchronous indexing instead.

```
fcrepo.modeshape.query.mode = async
fcrepo.modeshape.query.enabled = false
```

Setting	Average (s)	Median (s)	Standard Deviation
mode=async	0.0781	0.0680	0.0477
enabled=false	0.0736	0.0630	0.0445
mode=sync	0.1689	0.148	0.0685

Different Infinispan configurations can also have an impact on repository performance.

Infinispan Configuration	Average	Median	Standard Deviation
filecachestore	0.1121	0.105	0.0313

leveldb	0.0736	0.0630	0.0445
leveldb with async persistence	0.0610	0.0550	0.0220
RAM	0.0517	0.0480	0.0148
leveldb with file binary store *	0.0644	0.0570	0.0196
Total	0.0703	0.0590	0.0318

* default configuration

Other module resources

fcrepo-module-auth-xacml

This XACML Authorization Delegate Module is based on the design documented here: [XACML Authorization Delegate](#)

/src/main/resources/policies

AdminPermissionPolicySet.xml

- policy set for the admin role

AdminRolePolicySet.xml

- define the policies for the admin role

GlobalPermissionPolicySet.xml

- policy set for the basic role

GlobalRolesPolicySet.xml

- define the policies for the basic role

PreventReadingMasterFilesPolicySet.xml

- policy set that prevents access to any files with the mime type "image/tiff" that have the "http://example.com/mixins#master" type (example-mixins: master mixin)

ReadNormalNodePermissionPolicySet.xml

- policy set for reading normal nodes

ReadOnlyExceptToLocalPolicySet.xml

- policy set that prevents all repository-changing actions by all but those a localhost or on an internal network.

ReaderRolePolicySet.xml

- define the policies for the reader role

WriteNormalNodePermissionPolicySet.xml

- policy set for writing normals nodes.

WriterRolePolicySet.xml

- define the policies for writing the normal nodes

/src/main/resources/cnd

xacml-policy.cnd

- namespace properties to enable XACML authorization

fcrepo-jms-indexer-pluggable

This is an indexer that listens to the Fedora JMS topic, retrieves a message including pid and eventType, looks up object properties, gets and passes the transformed or untransformed properties on to any number of registered handlers.

/fcrepo-jms-indexer-webapp/src/main/resources/spring

indexer-core.xml

- bean implementation for HttpSolrServer, SolrIndexer and IndexerGroup (SparqlIndexer, FileSerializer)

indexer-events.xml

- config for jms messaging with ActiveMQ

/fcrepo-jms-indexer-webapp/src/main/resources

logback.xml

- logging configuration

/fcrepo-jms-indexer-core/src/main/resources

indexing.cnd

- namespace property to enable object indexing using triplestore and solr