

FEDORA

Flexible Extensible Digital Object Repository
Architecture

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Usage Scenarios

- Digital Asset Management
- Institutional Repository
- Digital archives and preservation
- Content Management System (CMS)
- Educational Software

Advantages of FEDORA

- Digital Object Model
 - Abstraction for heterogeneous complex digital resources
 - Container for both content and metadata
 - Aggregates local and remote content
 - Associate different behaviors with different objects

Advantages cont...

- Repository web service
 - Digital object storage
 - Web service APIs (SOAP* and REST*) to manage, access, search
 - Define and query object-to-object relationships
 - * *SOAP: Simple Object Access Protocol*
 - * *REST: Representational State Transfer*

Advantages cont...

- Archiving and preservation
 - XML object serialization for ingest, storage, and export
 - Content versioning
 - Event history

Advantages cont...

- Content re-purposing
 - Reuse digital content in different contexts
 - Re-purpose content by dynamically transforming content to suit new contexts

Advantages cont...

- Web Services
 - SOAP and REST bindings
 - WSDL* to define interfaces
 - XML transmission
 - WSDL: Web Services Description Language

FEDORA Digital Object Model

- Includes
 - Persistent ID
 - Default view for disseminating the object
 - Additional views of dissemination can be added
 - Internal metadata to manage the object
 - Datastreams

Data Streams in FEDORA

- Managed Datastream: To store and manage the content byte-stream
- External Datastream: Store content from Reference URL
- Redirect Datastream: Redirect to the URL for content
- XML Datastream: stores a name-spaced block of XML content within the Fedora digital object XML file

Features

- Management module
 - Ingest and Export (METS or FOXML)
 - Validation (XML and Schematron Rules)
 - PID assignment
 - Replication to object cache
 - Incremental indexing of metadata
 - Object create/modify/delete/purge
- XML Translation (XSLT) module
 - METS or FOXML ingest and export
 - Convert between formats

Features

- Storage module:
 - File system for XML object wrappers
 - relational db object registry and object cache
- Content Versioning
 - Automatic version control for datastreams and disseminators
 - Enables *date-time stamped API requests*

- Security module
 - HTTP Basic Authentication and simple access control
 - LDAP tie-in for user attributes
 - XACML* policies and policy enforcement
 - Shibboleth in future releases
- OAI-PMH
 - *XACML: eXtensible Access Control Markup Language

- Resource Index
 - RDF-based index of repository
 - Contains key object attributes, DC, relationships
 - REST-based query interface (using RDQL)

Web Service APIs

- Management Service (API-M)
 - Ingest Object
 - Export Object
 - Get Object XML
 - Purge Object
 - Modify Object
 - Get Next PID

 - Get Datastream(s)
 - Get DatastreamHistory
 - Get DisseminatorHistory
 - Get Disseminator(s)

 - Add/modify/purge Datastream
 - Add/modify/purge Disseminator
 - Set State

Web Service APIs

- Access Service (API-A and API-A-LITE)
 - Describe Repository
 - Get Object Profile
 - Get Object History
 - Get Datastream
 - Get Dissemination

 - Find Objects
 - Resume Find Objects

Web Service APIs

- API-A-Lite
 - Repository-level operations:
 - fedora/describe - Describe Repository
 - fedora/search – methods to locate objects via the default repository index
 - Object-level operations:
 - fedora/get - method to get object profile
 - fedora/get/.. – method to “disseminate” a view of an object’s content
 - Fedora/getMethods – methods get information about all disseminations available on object
- OAI-PMH Provider Service
 - All OAI-PMH methods to harvest OAI-DC from each object

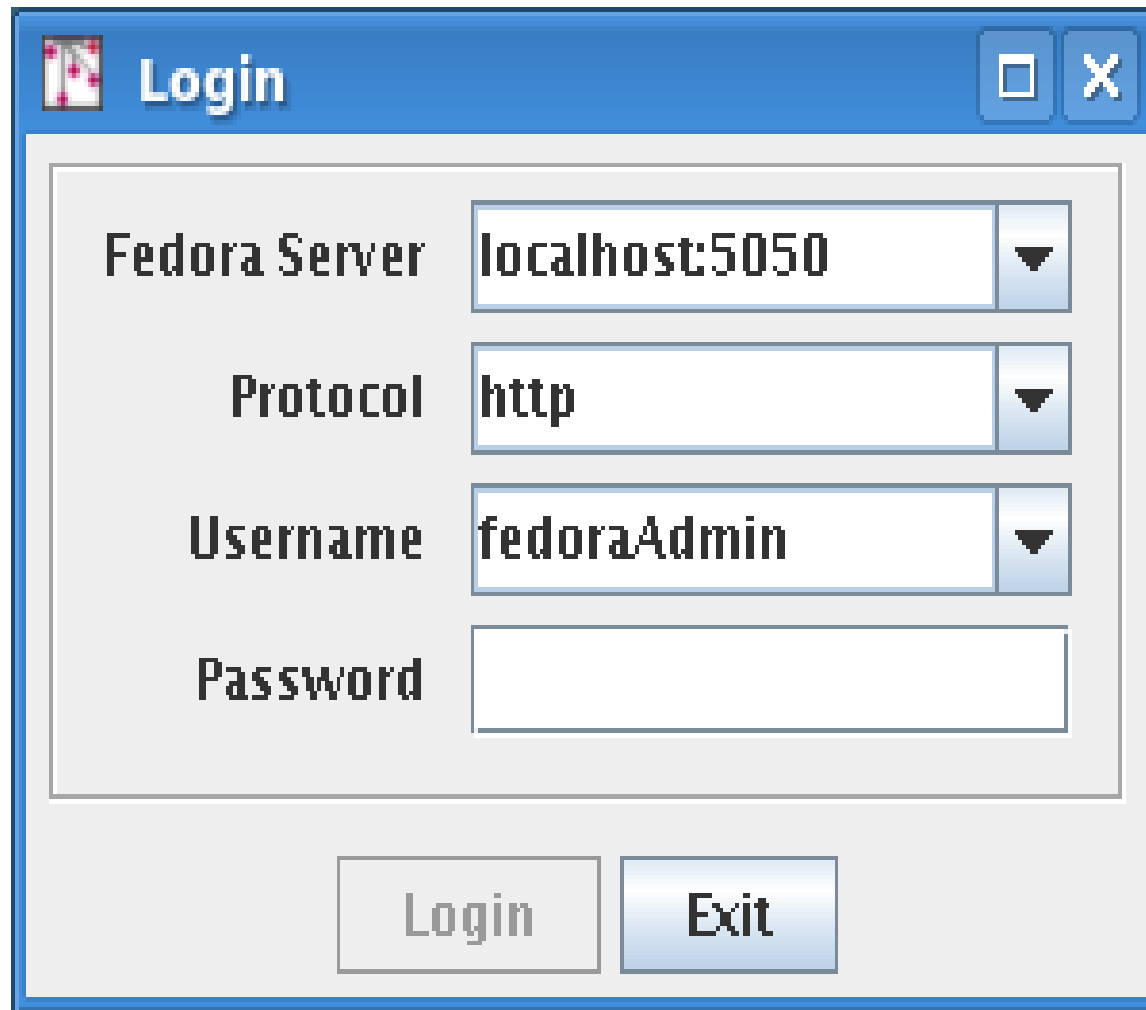
FEDORA Software

- Latest release available on sourceforge.net site is “fedora-installer-3.1.jar” released on 24th October 2008.
- Fedora installation requires:
 - Ant
 - Java SE Development Kit (JDK) 5.0
 - Apache Tomcat
 - MySql or Oracle or PostgreSQL or McKoi database

FEDORA Admin Tool

- The Fedora Repository is able to store any sort of digital content item such as documents, videos, data sets, computer files, images plus it can store information (often called metadata) about the content items in any format. In addition, the relationships between content items can also be stored in Fedora repository.
- FEDORA has client and server model.
- From client tool i.e. `/home/fedora/client/bin` one can run `./fedora-admin.sh` file to start fedora-admin tool for building collections in FEDORA.

- Administration Login Screen

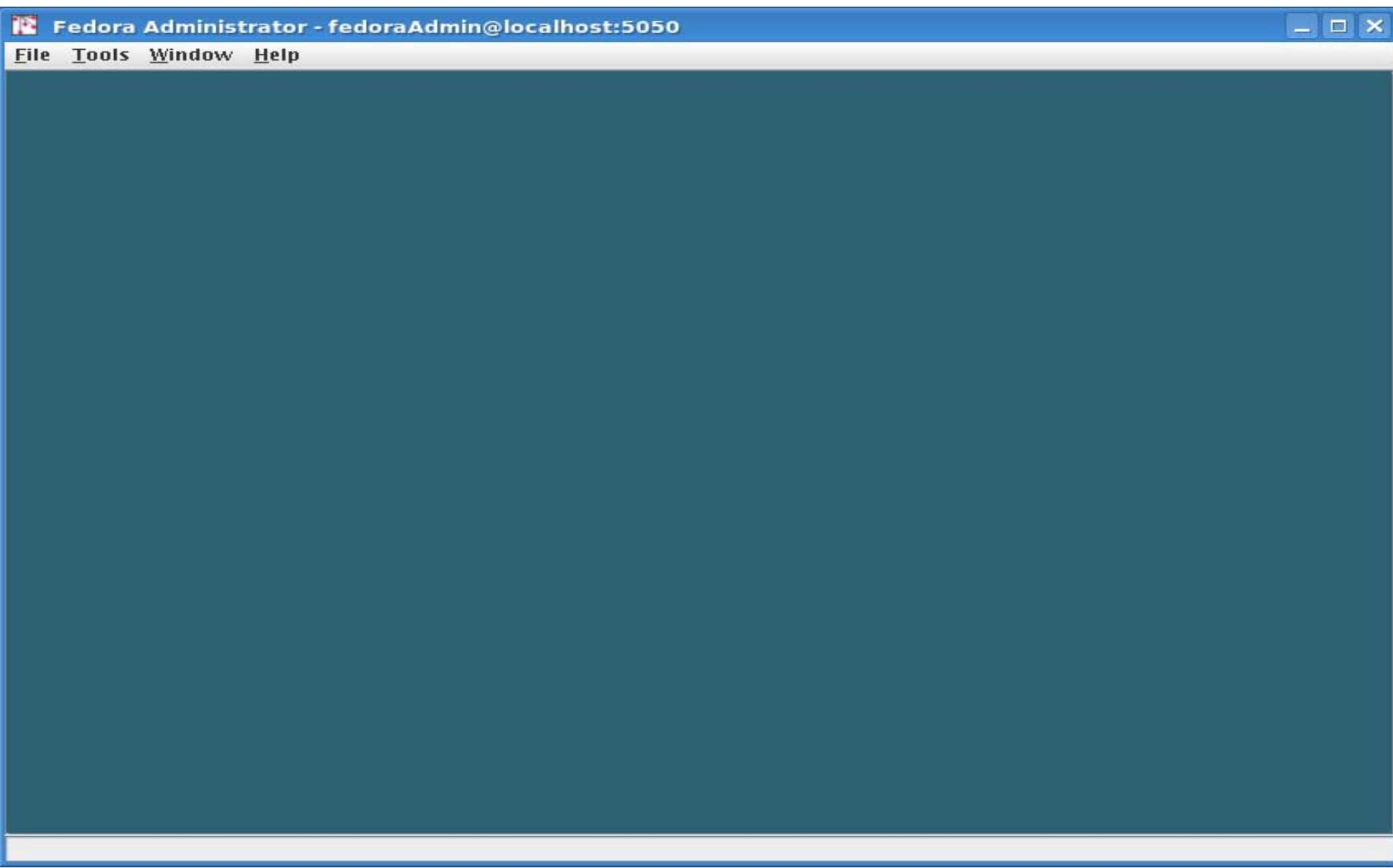


The image shows a graphical user interface for a login screen. The window has a blue title bar with the text "Login" and a small icon on the left. On the right side of the title bar are standard window control buttons: a maximize button (a square with a smaller square inside), a close button (an 'X'), and a minimize button (a horizontal line). The main content area is light gray and contains four input fields, each with a label to its left and a dropdown arrow on the right:

- Fedora Server**: The input field contains the text "localhost:5050".
- Protocol**: The input field contains the text "http".
- Username**: The input field contains the text "fedoraAdmin".
- Password**: The input field is empty.

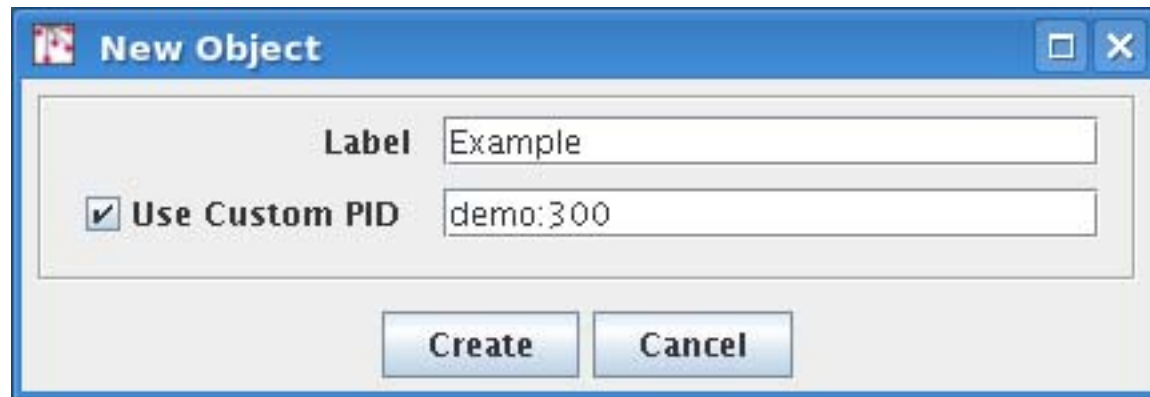
At the bottom of the window, there are two buttons: "Login" and "Exit". The "Login" button is disabled (grayed out), while the "Exit" button is active (blue with a gradient).

Fedora-Admin Main Screen

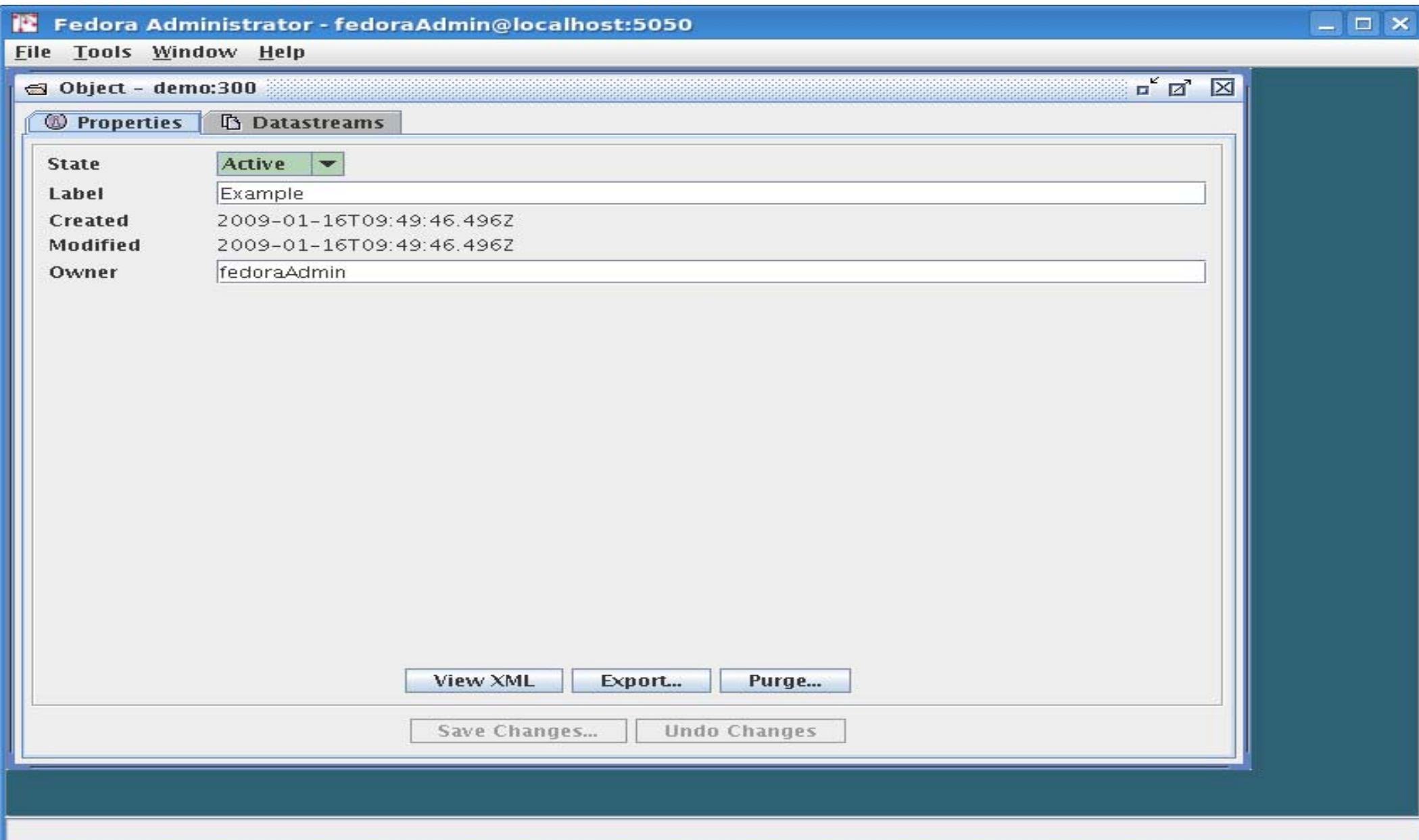


Add PID number

- After clicking on “File–New–Data Object”, user can *enter unique identifier* to each digital document that is to be added into the repository. Here check the box for custom-pid and enter “Example” and “demo:300” and press enter. Label and PID can be anything which is unique in the repository.



- To define **Datastreams**, use datastreams tab. Fedora automatically creates basic DC metadata for each digital object.



Datastream

- In Fedora datastream can either be managed content (which means user uploads contents from his/her local disk into the fedora repository) **OR**
- Externally referenced (E) which means datastream is external content and is added in the fedora repository by just adding URL of the content. **OR**
- Redirected Content(R) which means datastream content is delivered to the end user without any fedora mediation i.e. via http.

- Datastream stores metadata and actual digital contents. A digital object can have many datastreams

The screenshot shows the Fedora Administrator web interface. The window title is "Fedora Administrator - fedoraAdmin@localhost:5050". The main content area is titled "Object - demo:300" and has two tabs: "Properties" and "Datastreams". The "Datastreams" tab is active, showing a list of datastreams on the left and a configuration form on the right.

Datastream Configuration:

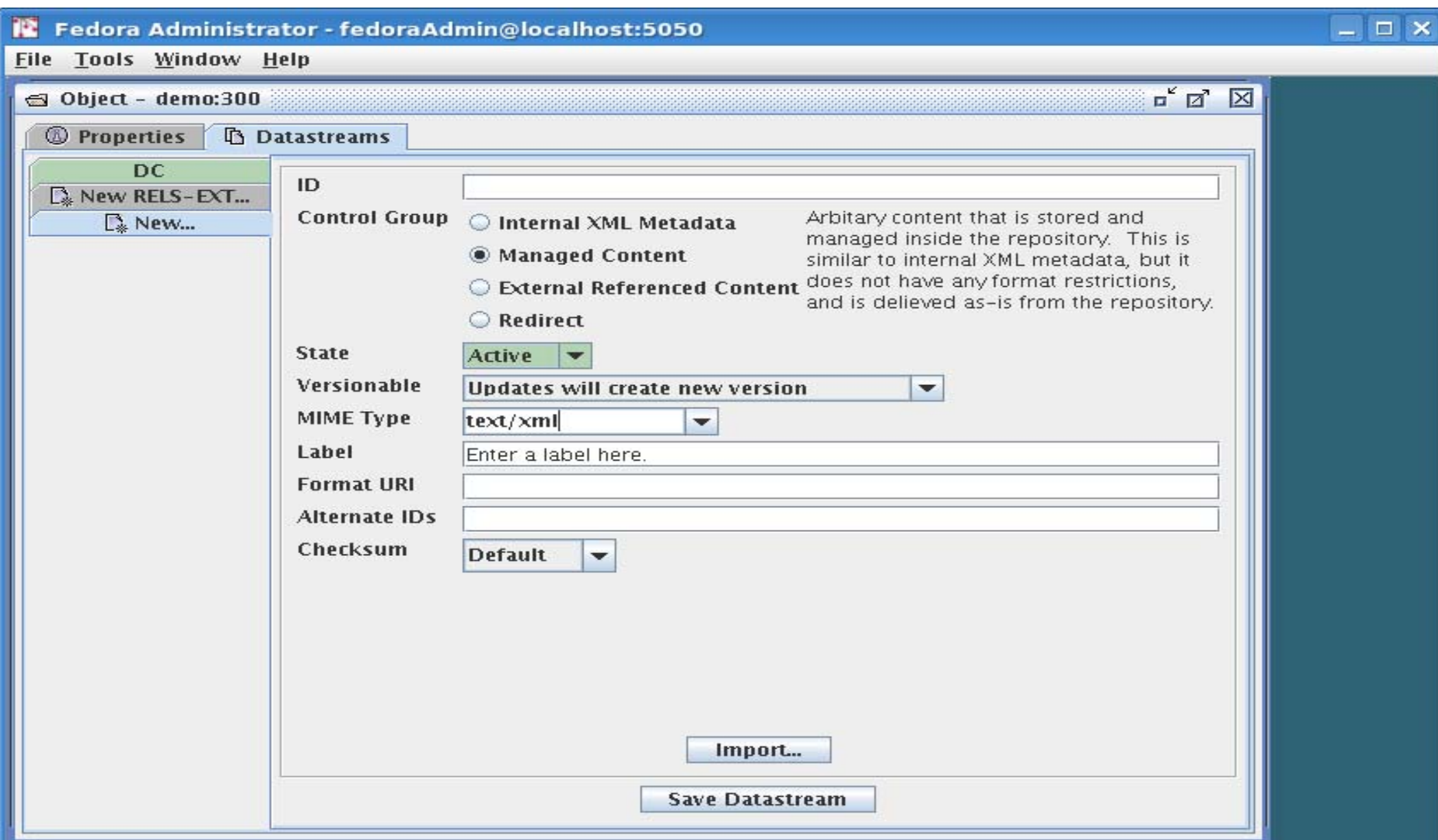
ID	DC
Control Group	Internal XML Metadata
State	Active
Versionable	Updates will create new version
Created	2009-01-16T09:49:46.496Z
Label	Dublin Core Record for this object
MIME Type	text/xml
Format URI	http://www.openarchives.org/OAI/2.0/oai_dc/
Alternate IDs	
Fedora URL	http://localhost:5050/fedora/get/demo:300/DC
Checksum	DISABLED none

At the bottom of the configuration form, there are buttons for "Edit", "Import...", "Export...", and "Purge...". Below these are two larger buttons: "Save Changes..." and "Undo Changes".

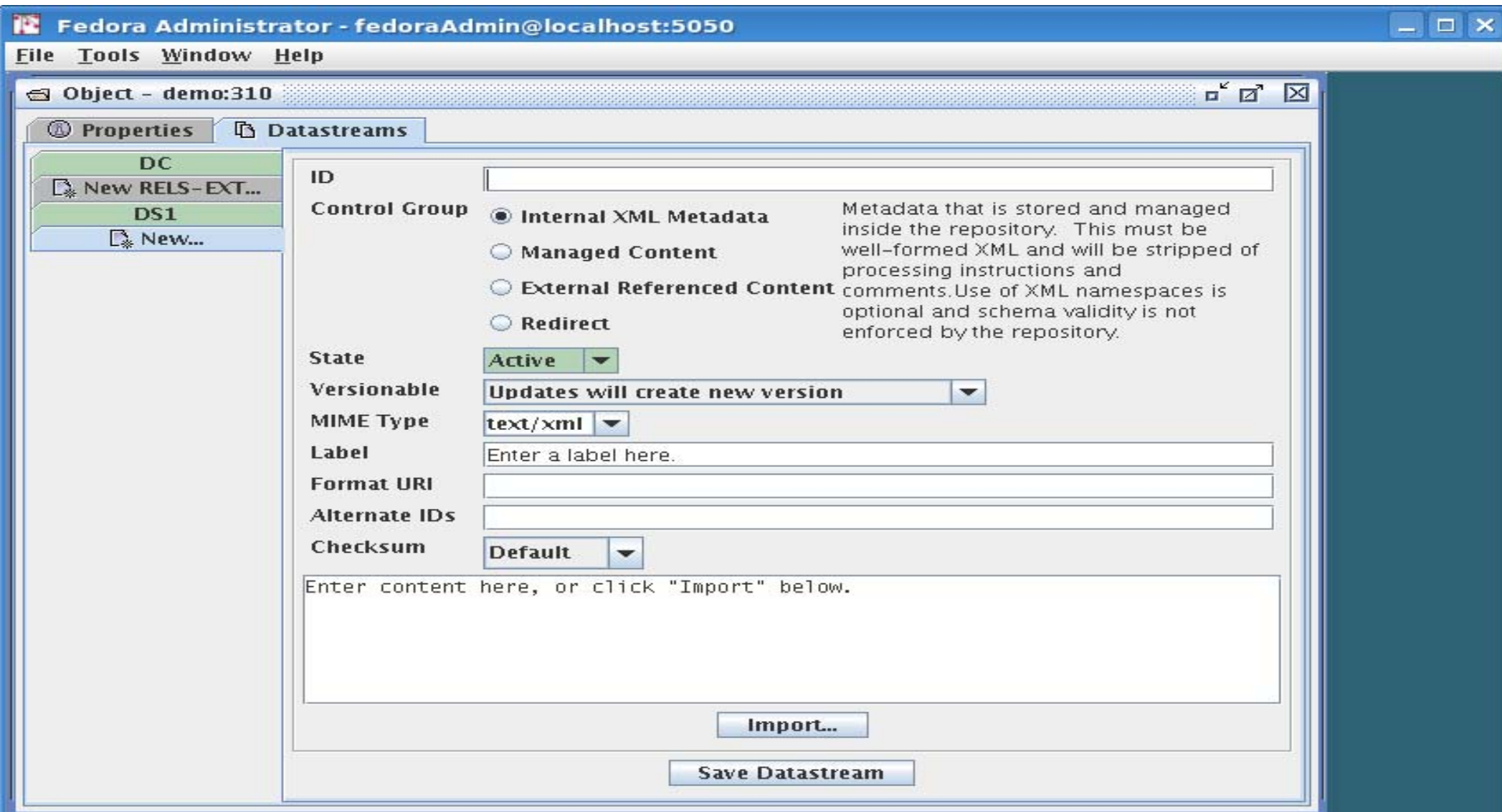
Metadata

- Fedora can add multiple metadata for each datastream such as MARC, LOM, DC etc.
- Automatically created DC metadata can be edited in Fedora easily.
- It is also possible to create DC metadata in external editor and import in Fedora.

- One select “MIME Type” to add a pdf, jpeg etc.



- One can “Format URI” OR “Alternate ID” to enter any other existing identifiers available



Object - demo:310



Properties

Datastreams

DC

New RELS-EXT...

DS1

DS2

New...

ID	DS2
Control Group	Managed Content
State	Active ▼
Versionable	Updates will create new version ▼
image/jpeg - GMRT Telescope photo (M)	2009-01-10T10:47:13.723Z
Created	
Label	GMRT Telescope photo
MIME Type	image/jpeg
Format URI	
Alternate IDs	
Fedora URL	http://localhost:5050/fedora/get/demo:310/DS2
Checksum	DISABLED ▼ none

View

Import...

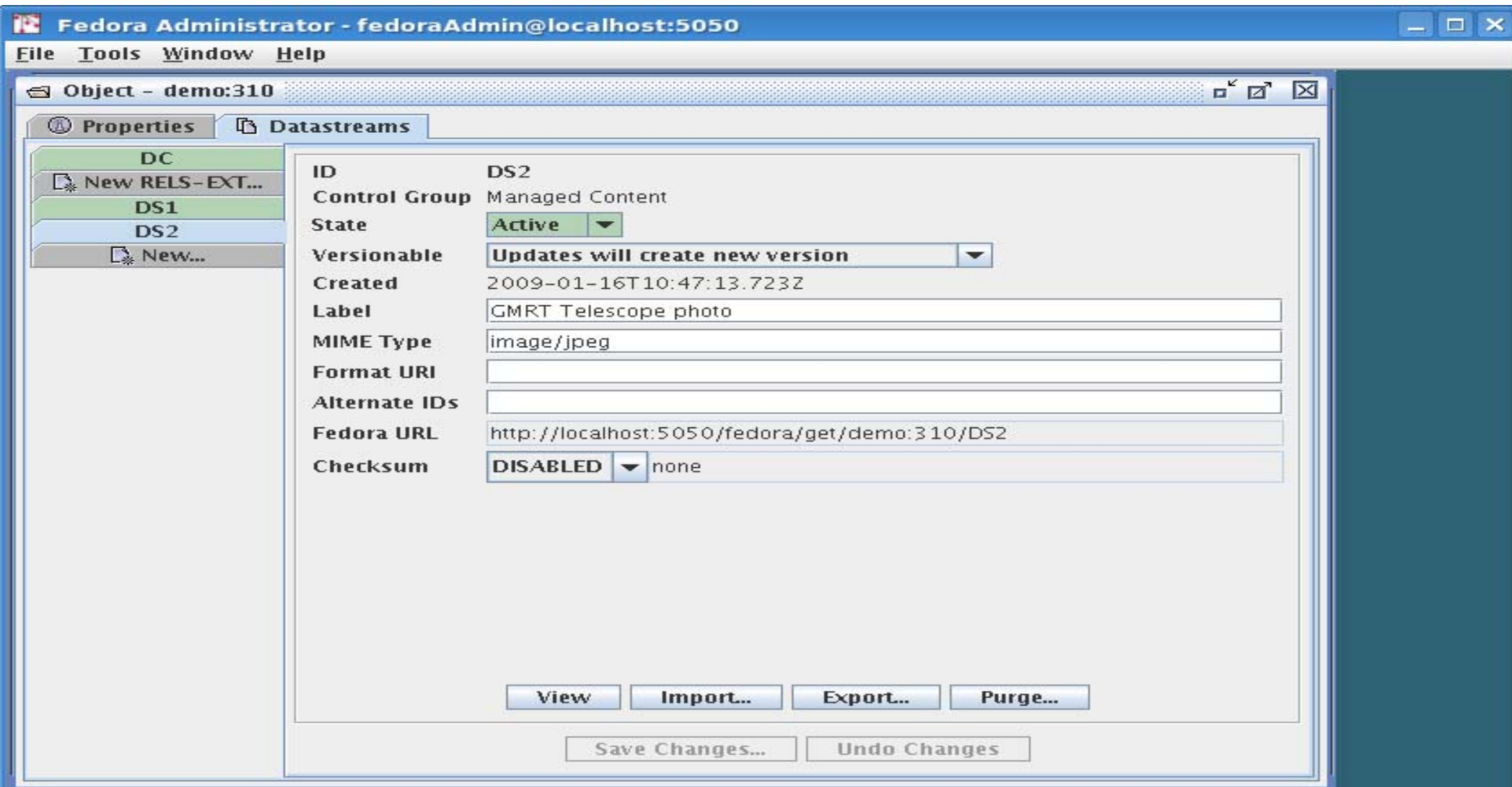
Export...

Purge...

Save Changes...

Undo Changes

- Fedora URL for each digital document is added into the repository.




Fedora Search

Search Repository - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:5050/fedora/search

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Fedora Repository

Find Objects

Fields to display:

<input checked="" type="checkbox"/> pid	<input checked="" type="checkbox"/> title	<input type="checkbox"/> type
<input type="checkbox"/> label	<input type="checkbox"/> creator	<input type="checkbox"/> format
<input type="checkbox"/> state	<input type="checkbox"/> subject	<input type="checkbox"/> identifier
<input type="checkbox"/> ownerId	<input type="checkbox"/> description	<input type="checkbox"/> source
<input type="checkbox"/> cDate	<input type="checkbox"/> publisher	<input type="checkbox"/> language
<input type="checkbox"/> mDate	<input type="checkbox"/> contributor	<input type="checkbox"/> relation
<input type="checkbox"/> dcmDate	<input type="checkbox"/> date	<input type="checkbox"/> coverage
		<input type="checkbox"/> rights

Search all fields for phrase: [help](#)

Or search specific field(s): [help](#)

Maximum Results:

pid	title
demo:310	Example2



Fedora Digital Object

Object Profile View

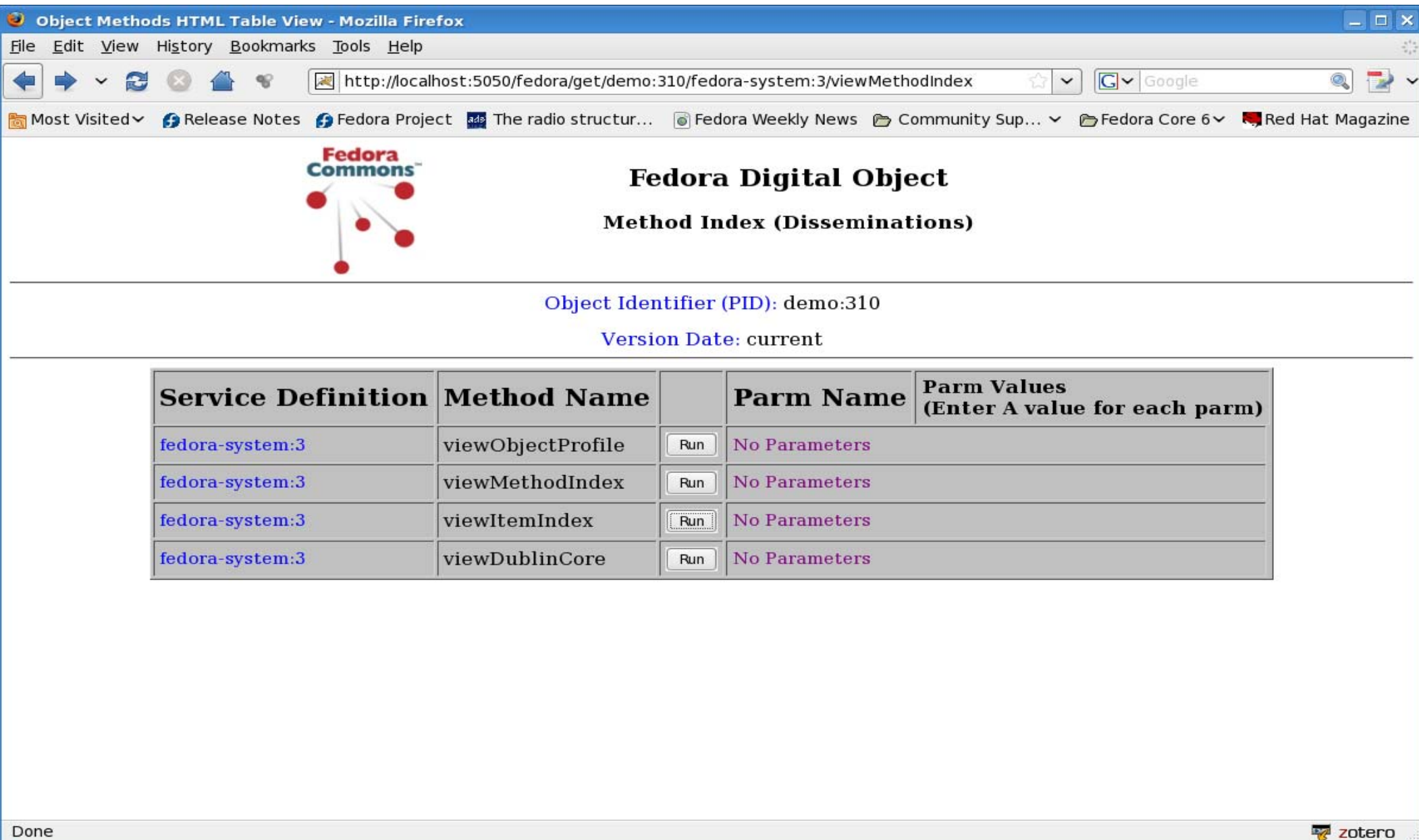
Version Date: current

[View the Dissemination Index for this Object](#)

[View the Item Index for this Object](#)

Object Identifier (PID):	demo:310
Object Label:	Example2
Object Content Model(s):	info:fedora/fedora-system:FedoraObject-3.0
Object Creation Date:	2009-01-16T10:20:48.596Z
Object Last Modified:	2009-01-16T10:47:13.723Z
Object Owner Identifier:	fedoraAdmin

View Disseminated Index



Fedora Commons


Fedora Digital Object

Method Index (Disseminations)

Object Identifier (PID): demo:310

Version Date: current

Service Definition	Method Name		Parm Name	Parm Values (Enter A value for each parm)
fedora-system:3	viewObjectProfile	<input type="button" value="Run"/>	No Parameters	
fedora-system:3	viewMethodIndex	<input type="button" value="Run"/>	No Parameters	
fedora-system:3	viewItemIndex	<input type="button" value="Run"/>	No Parameters	
fedora-system:3	viewDublinCore	<input type="button" value="Run"/>	No Parameters	

Done 


View Item Index

Object Items HTML Presentation - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://localhost:5050/fedora/get/demo:310/fedora-system:3/viewItemIndex/

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Fedora Digital Object


Default Disseminator - Item Index View

Object Identifier (PID): [demo:310](#)

Version Date: [current](#)

Item ID	Item Description	MIME Type
DC	Dublin Core Record for this object	text/xml
DS1	Marathi song	audio/mpeg
DS2	GMRT Telescope photo	image/jpeg

Done



Thank You

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