What is TAP

The aim of the Thredds Admin Portal (TAP) project lies in the idea of solving the huge problem existing in the Unidata Thredds application with the management of users, roles and dataset access. The Thredds user authentication is delegated to Tomcat Basic which gets users and roles from a given Realm. In order to authorize users, Thredds checks whether the dataset is restricted and if so, gets the user roles to make a decision. TAP manages the datasource mentioned to control user access to protected datasets.

Derby datasource setup

TAP and Thredds get users and roles from a database created specifically to model all the entities and processes involved. The main idea is to include easily a database instance to work with. Derby embedded was discarded because it is not possible to access it in a production server from another JVM simultaneously. Derby network allow users to access db instances even from outside when they are running. To accomplish this step you need two components:

- Derby 10.10.1.1 library
- Derby database

First, place the db-derby-10.10.1.1-bin library provided in a reachable folder. Second, place the preconfigured database. We suggest to include the derbydb folder provided in the Tomcat?s content folder. For example, CATALINA_HOME/content/tap/derbydb. The Derby database must be initialized in the Tomcat startup. Execute the following command to initialize it:

```
$JRE_HOME/bin/java -jar $PATH_TO_DERBY_LIB /db-derby-10.10.1.1-bin/lib/derbyrun.jar server start -p YOUR_PORT -h 0.0.0.0 &
```

To start derby successfully add a socket permission in JAVA 7 by including in $JRE_HOME/lib/security/java.policy the following line:

```
permission java.net.SocketPermission "HOST:PORT", "listen,resolve";
```

Expose our datasource in Tomcat

Tomcat gets users and roles from conf/tomcat-users.xml by default. We are going to change this in order to get users and roles from a given database. First of all, include both derbyclient.jar and derbynet.jar in $CATALINA_HOME/lib. After doing that, we need to add a new resource called ?jdbc/admin? in GlobalNamingResurces?:

```
<Resource name="jdbc/adminDB" auth="Container" type="javax.sql.DataSource" factory="org.apache.tomcat.dbcp.dbcp.BasicDataS
   validationQuery="SELECT count(*) FROM users" maxActive="20" maxIdle="10" username="password" password="secret"
   driverClassName="org.apache.derby.jdbc.ClientDriver" url="jdbc:derby://host:port/derbypath/derbydb" readOnly="false"/>
```

Set the realm

A Realm is a ?database? of usernames and passwords that identify valid users of a web application (or set of web applications), plus an enumeration of the list of roles associated with each valid user. The servlet container will be connected to the database and it also be aware of the username and the corresponding roles. Define this realm inside <Engine> in your server.xml:

```
<Realm className="org.apache.catalina.realm.DataSourceRealm" digest="MD5" debug="0" dataSourceName="jdbc/adminDB"
   userTable="USERS" userNameCol="USERNAME" userCredCol="PASSWORD" userRoleTable="V_USERS_ROLES" roleNameCol="ROLENAME"/>
```

Initial TAP setup

Before deploying TAP you need to configure some files in order to adapt it for your needs.

WEB_INF/classes/global_variables.properties

```
recaptcha.verificationurl = http://www.google.com/recaptcha/api/verify
recaptcha.privatekey = HASH_VALUE
recaptcha.publickey = HASH_VALUE

tap.baseurl = DEPLOYMENT_URL #For example: http://meteo.unican.es/tap
tap.managers.email = admin@host.com, manager@host.com #People aware when users join groups
tap.email.noreply = no-reply@your_host.com
tap.email.admin = admin@host.com
tap.filter.groups = TAP_USER,TAP_ADMIN #Invisible in TAP Groups
```

You need to create a recaptcha ?https://www.google.com/recaptcha/admin#list and set both private and public keys in the file. You also need to set your base url like localhost:8080/tap, the managers emails which allow people to keep in touch of the group events (when user wants to join a group, etc)

WEB-INF/classes/mail.properties

```
mail.port = port_number
mail.host = email_host
```

You can change the email templates optionally in WEB-INF/classes/templates

You can change the messages optionally in WEB-INF/classes/locale/messages.properties

Thredds and TAP deployment

The last part of this tutorial is manage to start both applications successfully. Move both thredds.war and tap.war to $CATALINA_HOME/webapps. Start the Tomcat instance and the Derby network instance. If Thredds is not able to start due to a directory error, please create a folder called ?thredds? in $CATALINA_HOME/content to solve that issue.

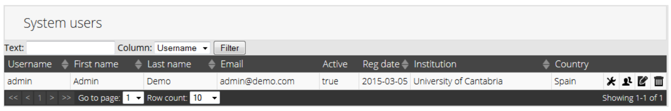
First steps in TAP

When the initial setup is finished TAP is ready to register users, send confirmation emails, let people join groups, etc. With your preconfigured TAP there is a Derby db with demo data. If you have deployed successfully both Thredds and TAP and they are running, go to ?http://yourhost/tap and log in with the following credentials:

```
username: admin
password: adm!n
```

You will find new admin options in the main menu. From there you can control users, roles, groups, dataset policies and send messages to your users or a set of them.

System users


System users

Text: Column: Username Filter

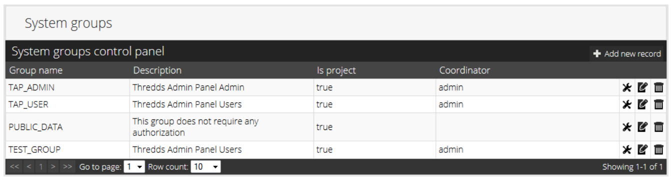
Username	First name	Last name	Email	Active	Reg date	Institution	Country
admin	Admin	Demo	admin@demo.com	true	2015-03-05	University of Cantabria	Spain

<< < 1 > >> Go to page: 1 Row count: 10 Showing 1-1 of 1

Operations:

1. **User roles:** Add or remove user roles directly.
2. **User groups:** Add or remove user groups direcly (Some requires user acceptance)
3. **Edit record:** Edit user details.
4. **Delete record:** Remove a user from the app and the relations with roles and groups.

System groups


System groups

System groups control panel

Add new record

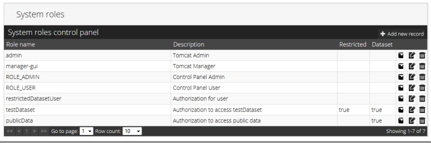
Group name	Description	Is project	Coordinator
TAP_ADMIN	Thredds Admin Panel Admin	true	admin
TAP_USER	Thredds Admin Panel Users	true	admin
PUBLIC_DATA	This group does not require any authorization	true	
TEST_GROUP	Thredds Admin Panel Users	true	admin

<< < 1 > >> Go to page: 1 Row count: 10 Showing 1-1 of 1

Operations:

1. **Group roles:** Add or remove roles from the group.
2. **Edit record:** Edit group details.
3. **Delete record:** Remove a group from the app and the relations with roles and users.

System roles


System roles

System roles control panel

Add new record

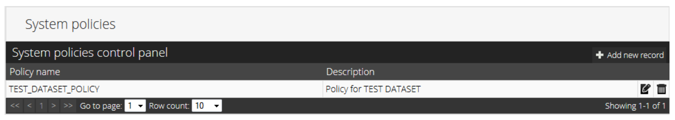
Role name	Description	Restricted	Dataset
admin	Tomcat Admin		
manager-gui	Tomcat Manager		
ROLE_ADMIN	Control Panel Admin		
ROLE_USER	Control Panel User		
restrictedDatasetUser	Authorization for user		
testDataset	Authorization to access testDataset	true	true
publicData	Authorization to access public data		true

<< < 1 > >> Go to page: 1 Row count: 10 Showing 1-7 of 7

Operations:

1. **Policy assignment:** Add or remove policies from the role/dataset.
2. **Edit record:** Edit role details.
3. **Delete record:** Remove a role from the app and the relations with groups and users.

System policies

	Operations: 1. **Edit record:** Edit policy details. 2. **Delete record:** Remove a policy from the app and the relations with roles.

System policies

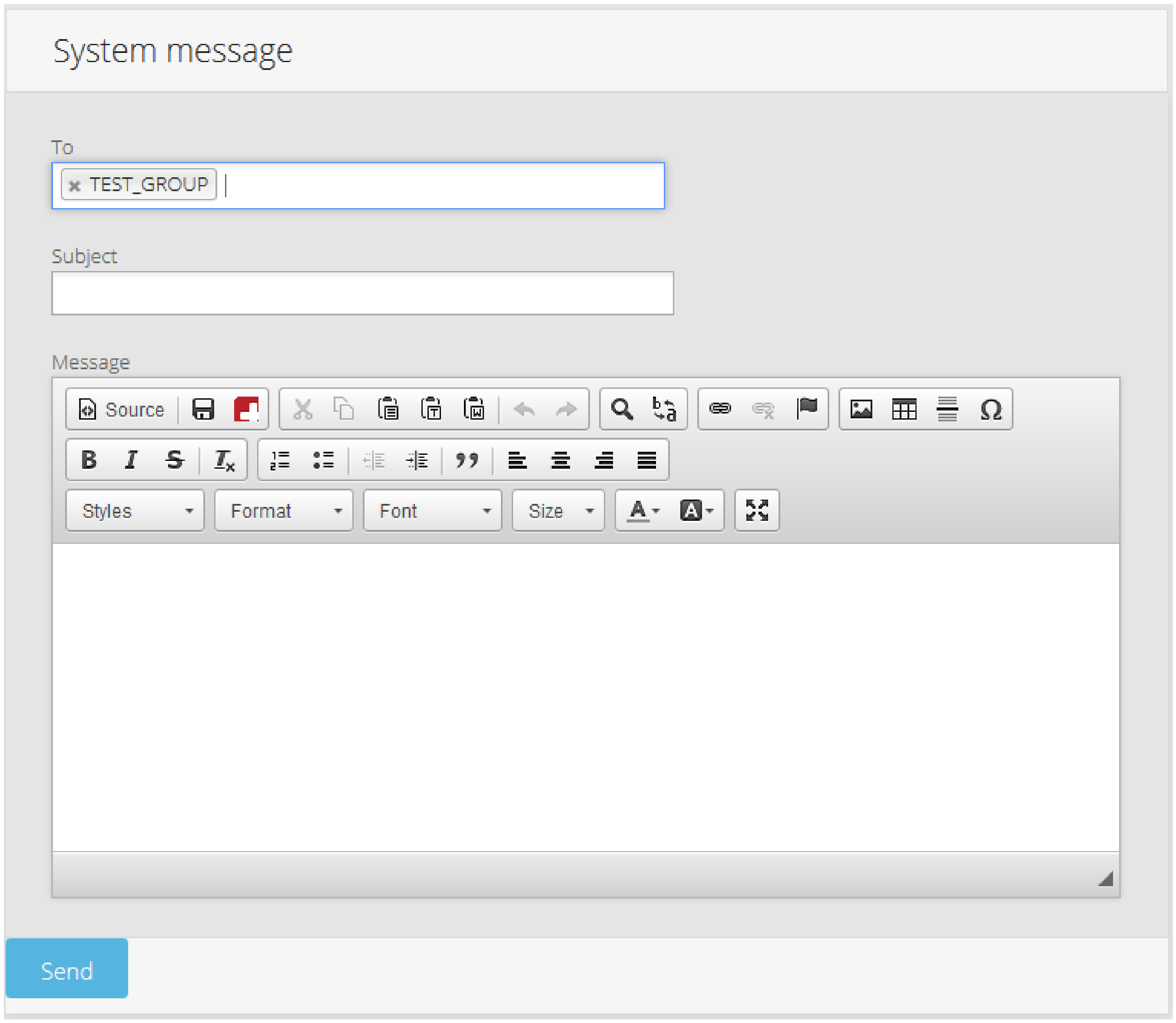
System policies control panel

Policy name	Description
TEST_DATASET_POLICY	Policy for TEST DATASET

Showing 1-1 of 1

System messages

You can send messages to your users filtering by groups, newsletter, admins, etc.



System message

To: TEST_GROUP

Subject

Message

The messages you send are customized. You don't need to include Hi, Dear nothing or goodbye. The template is the following:

```
Dear admin,

{YOUR MESSAGE}

Best regards,

TAP Manager
```

Thredds restricted dataset

Thredds allows users to restrict dataset access in two different ways:

- URL restriction using Tomcat: difficult to maintain. You need to restrict every dataset by URL and set the role in the web.xml
- Dataset restriction using TDS Catalog: most commonly used by adding an attribute on a dataset or datasetScan element in the TDS catalog. Eg, restrictAccess=?roleName?

If you set the mentioned attribute in a Dataset, users need two roles to access it: restrictedDatasetUser and roleName. That means, every user who wants to access to a restricted dataset needs the restrictedDatasetUser role by default and also the role of the dataset. Here is where TAP does the job for you.

Restrict dataset access

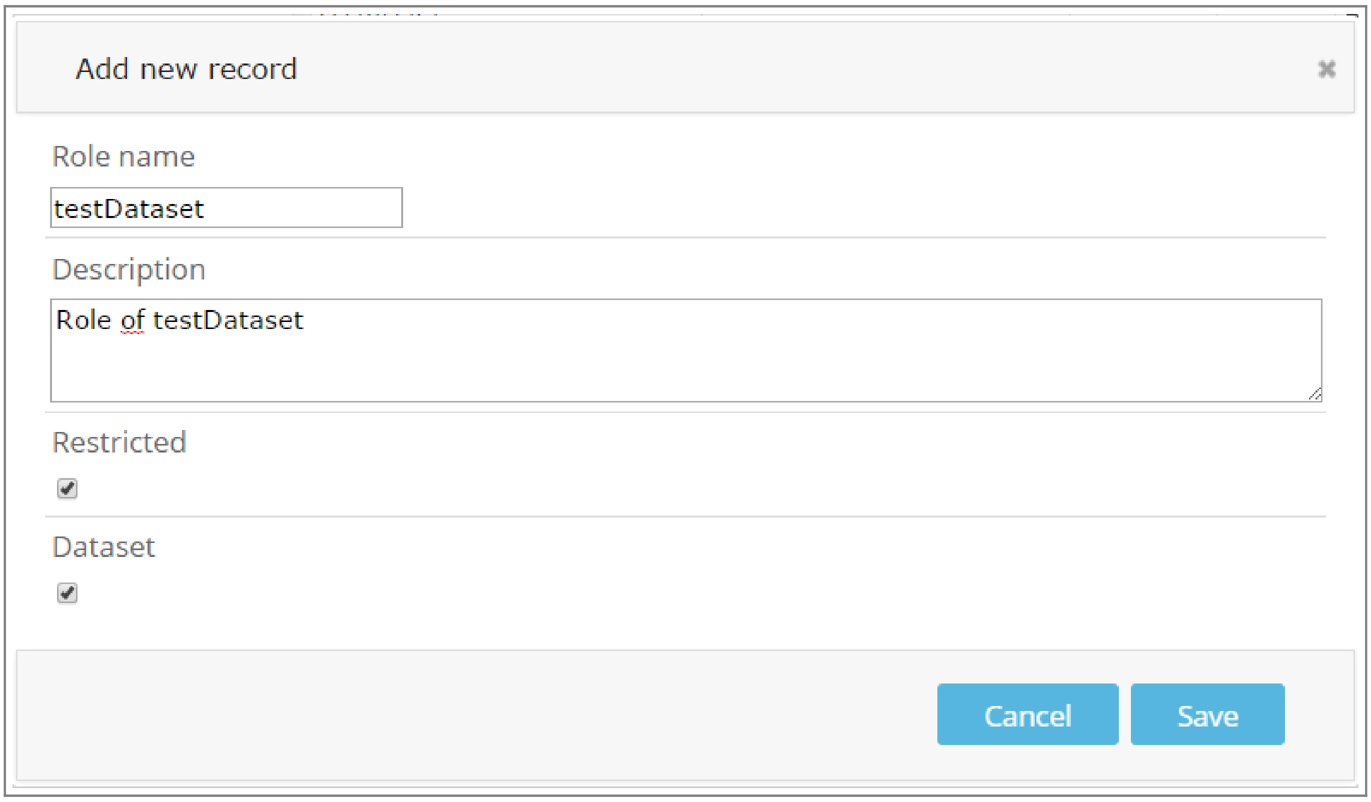
As we mentioned, TAP manages users, roles, groups, policies and their relationships. It is a common scenario to have a dataset with policies that prevent you of doing an illegal use of the data. In the given example you will find the default Thredds catalog example. The first step is to protect the dataset:

```
<dataset name="Test Single Dataset" ID="testDataset"
         serviceName="dap"  urlPath="test/testData.nc" dataType="Grid" restrictAccess="testDataset"/>
```

When a user tries to access this dataset, the Thredds authorizer expects to find the roles "testDataset" and "restrictedDatasetUser" in the user's granted authorities.

Allow access to a restricted dataset from TAP

To allow access to the previous dataset, create the role in /tap/admin/roles "Add new record":

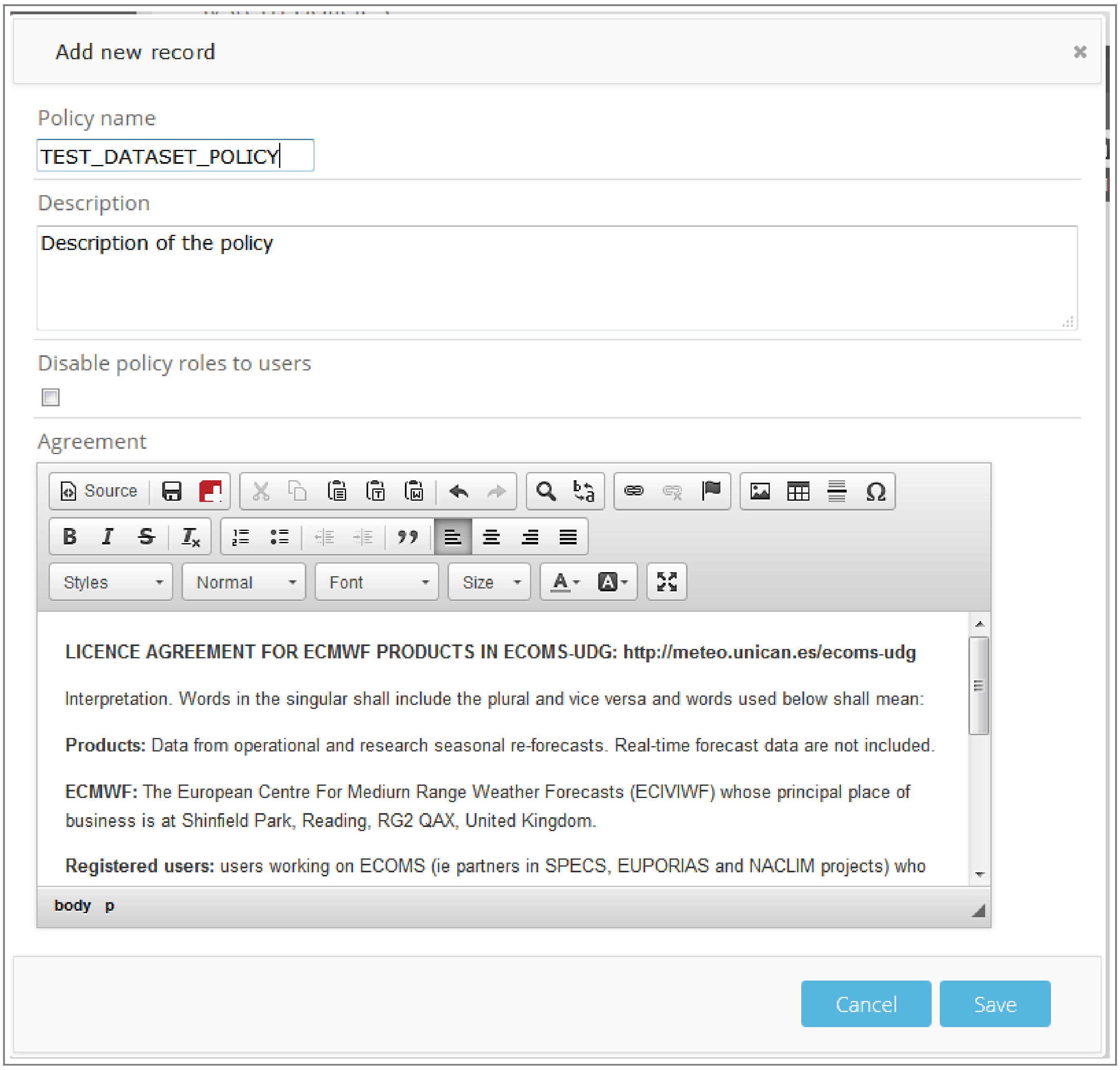

Add new record

Role name	testDataset
Description	Role of testDataset
Restricted	✓
Dataset	✓

Fill the form:

- Name: testDataset
- Description: a description of the dataset
- Restricted: True if you want to moderate its access. Users will wait until a confirmation from an Admin or manager
- Dataset: True in this case. If you want to create an internal role in TAP set to false.

Create a policy in /tap/admin/policies "Add new record" :



Add new record

Policy name

TEST_DATASET_POLICY

Description

Description of the policy

Disable policy roles to users

☐

Agreement

LICENCE AGREEMENT FOR ECMWF PRODUCTS IN ECOMS-UDG: http://meteo.unican.es/ecoms-udg

Interpretation. Words in the singular shall include the plural and vice versa and words used below shall mean:

Products: Data from operational and research seasonal re-forecasts. Real-time forecast data are not included.

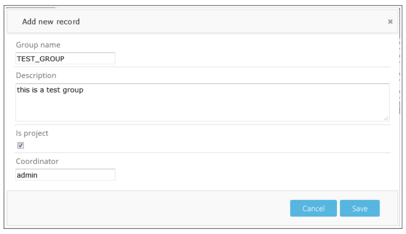
ECMWF: The European Centre For Medium Range Weather Forecasts (ECIVIWF) whose principal place of business is at Shinfield Park, Reading, RG2 QAX, United Kingdom.

Registered users: users working on ECOMS (ie partners in SPECS, EUPORIAS and NACLIM projects) who

Fill the form

- Name: TEST_DATASET_POLICY
- Description: Description of the policy
- Disable policy: ignore this in the creation. If you edit the policy and you want users accept again the agreement, set to true.
- Agreement: You can paste html directly by clicking in the source button.

Create a Group in /tap/admin/groups "Add new record":



Add new record

Group name

TEST_GROUP

Description

this is a test group

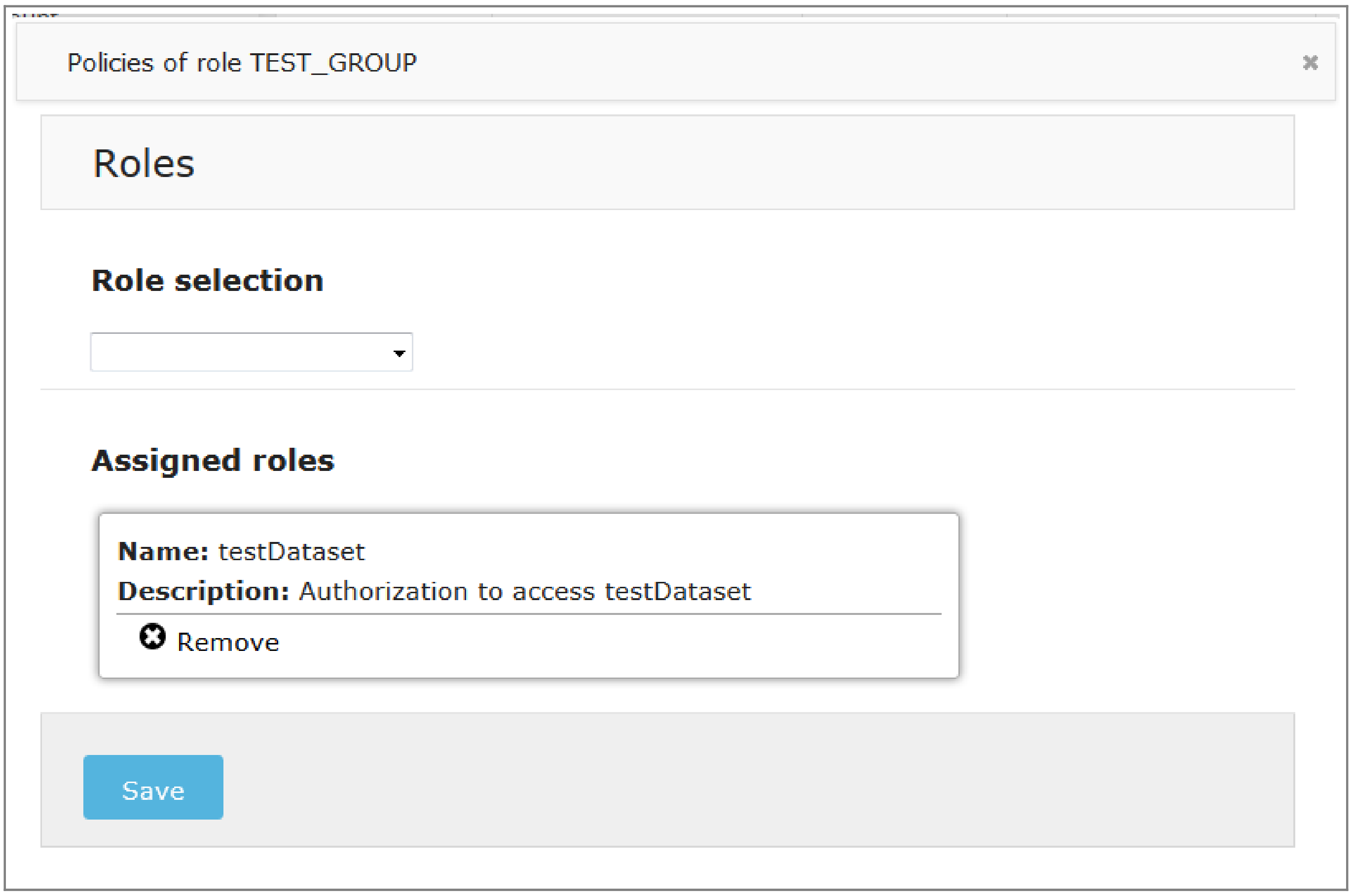
Is project

☑

Coordinator

admin

After creating the Policy, asociate it with the dataset (role) testDataset:

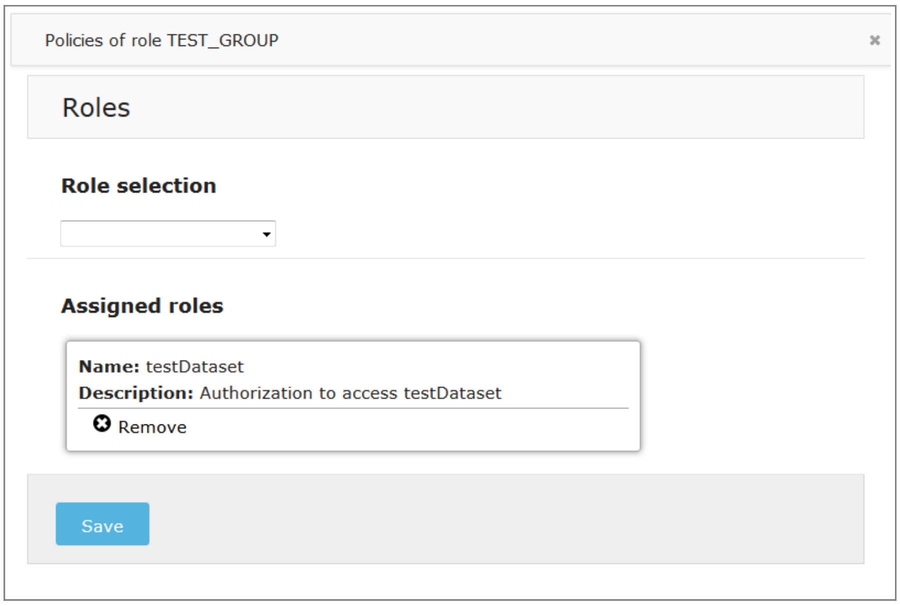


Name: testDataset
Description: Authorization to access testDataset

Fill the form

- Name: TEST_GROUP
- Description: Description of the group
- Is project: If the group represents a project like EUPORIAS, VALUE, CORDEX...
- Coordinator: If you want to delegate the user acceptance. TAP will send an email to the coordinator containing two links: accept or reject the user group request.

After creating the group, it is necessary to asociate the dataset(role) testDataset to the group:



Name: testDataset
Description: Authorization to access testDataset