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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 DERBY_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:DERBY_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 [GlobalNamingResources?](#):

```
<Resource name="jdbc/adminDB" auth="Container" type="javax.sql.DataSource" factory="org.apache.tomcat.dbcp.dbcp.BasicDataSource"
  validationQuery="SELECT count(*) FROM users" maxActive="20" maxIdle="10" username="admin" password="adm!n"
  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"/>
```

Expose the datasource as JNDI resource

TAP gets the datasource from the JNDI resource "jdbc/adminDB". Add to \$CATALINA_HOME/conf/context.xml the following line:

```
<ResourceLink global="jdbc/adminDB" name="jdbc/adminDB" type="javax.sql.DataSource"/>
```

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](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](http://yourhost/tap) and log in with the following credentials:

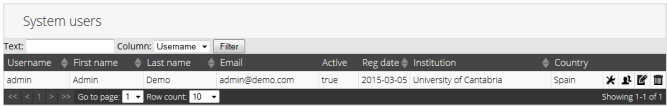
```

username: admin
password: adm!n

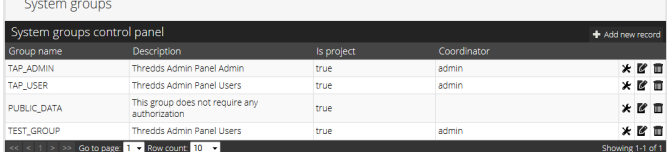
```

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

	<p>Operations:</p> <ol style="list-style-type: none"> User roles: Add or remove user roles directly. User groups: Add or remove user groups directly (Some requires user acceptance) Edit record: Edit user details. Delete record: Remove a user from the app and the relations with roles and groups.
---	---

System groups

	<p>Operations:</p> <ol style="list-style-type: none"> Group roles: Add or remove roles from the group. Edit record: Edit group details. Delete record: Remove a group from the app and the relations with roles and users.
---	--

System roles

System roles control panel						+ Add new record	
Role name	Description	Restricted	Dataset				
admin	Tomcat Admin			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
manager-gui	Tomcat Manager			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
ROLE_ADMIN	Control Panel Admin			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
ROLE_USER	Control Panel User			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
restrictedDatasetUser	Authorization for user			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
testDataset	Authorization to access testDataset	true	true	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
publicData	Authorization to access public data			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Operations:

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

System policies

System policies control panel		+ Add new record	
Policy name	Description		
TEST_DATASET_POLICY	Policy for TEST DATASET	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Operations:

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

System messages

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

System message

To

x TEST_GROUP

Subject

Message

Source
Save
Undo
Redo

Cut
Copy
Paste

Undo
Redo

Search

Link
Unlink

Image

Table

Omega

B
I
S
I_x

Align left
Align center
Align right

Text left
Text right

Quote

Decrease indent
Increase indent

Styles

Format

Font

Size

Color
Background color

Send

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

Description

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

Description

Description of the policy

Disable policy roles to users

Agreement

Source Save Undo Redo Find Link Image Table List Omega

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☰ ☰ ☰ ☰

Styles Normal Font Size
A- A+ ↔

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 (ECMWF) 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 NAACLIM projects) who

body p

Cancel
Save

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":

□

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

✕
Policies of role TEST_GROUP

Roles

Role selection

Assigned roles

Name: testDataset

Description: Authorization to access testDataset

✕ Remove

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 associate the dataset(role) testDataset to the group:

✕
Policies of role TEST_GROUP

Roles

Role selection

Assigned roles

Name: testDataset

Description: Authorization to access testDataset

✕ Remove