ADUCID Integration Manual Tomcat

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Table of Contents

1. Purpose of this document

This document serves as an integration manual for incorporating ADUCID® technology into the Tomcat web container.

2. Prerequisites

The following basic knowledge is assumed:

- Tomcat Installation Guide 5, 6 or 7
- aducid-architecture.pdf
- ADUCIDServerKit-administration-guide.pdf (if you are also the administrator of ADUCID Server Kit)
- ADUCIDServerKit-installation-guide.pdf (if you are also the administrator of ADUCID Server Kit)
- Knowledge of web technologies, programming and integration of web applications

3. Architecture and integration

In order to simplify the integration of ADUCID® technology with Tomcat web container, a Tomcat filter, known as Tomcat Valve, was created that allows only authenticated and authorized requests to pass through to the protected section.

From deployment perspective, it represents the following logical model:

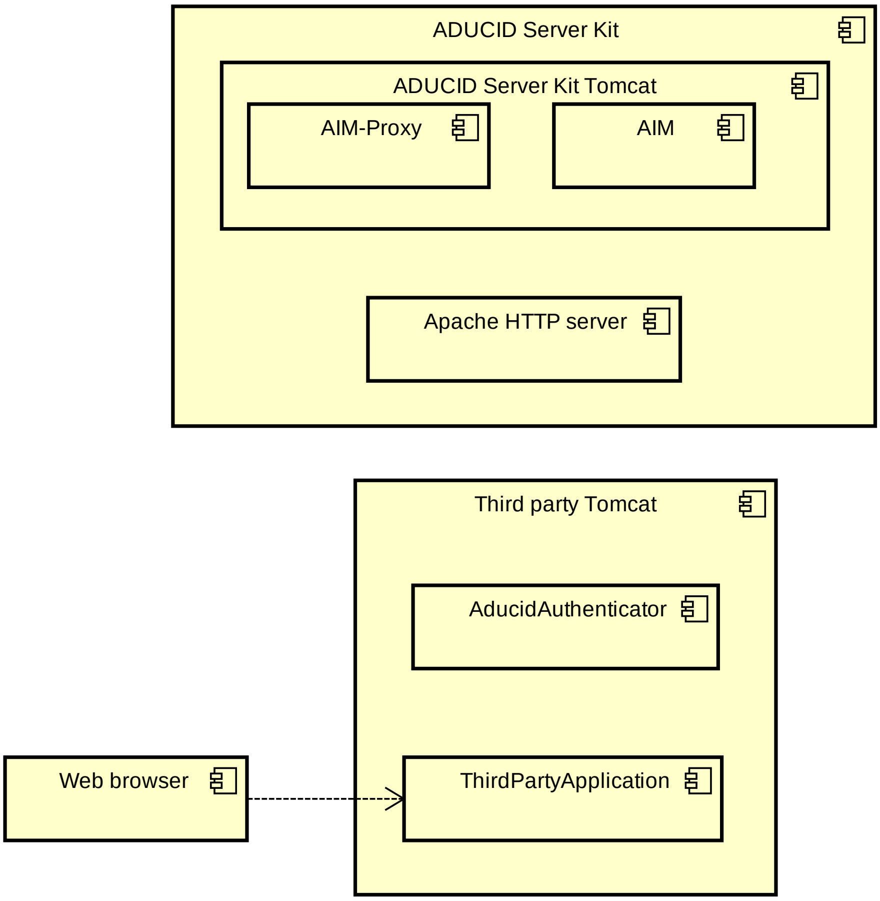


Figure 3-1 Logic deployment diagram

AducidAuthenticator is the key component of this model. It must be configured in the Tomcat web server that runs the application that you want to secure with ADUCID® technology. This component is responsible for:

1/ authenticating users against AIM server
2/ finding Principal for the authenticated user

The AducidAuthenticator component functions in the following way (to simplify the first use, the AIM-proxy component is used to handle authentication process):

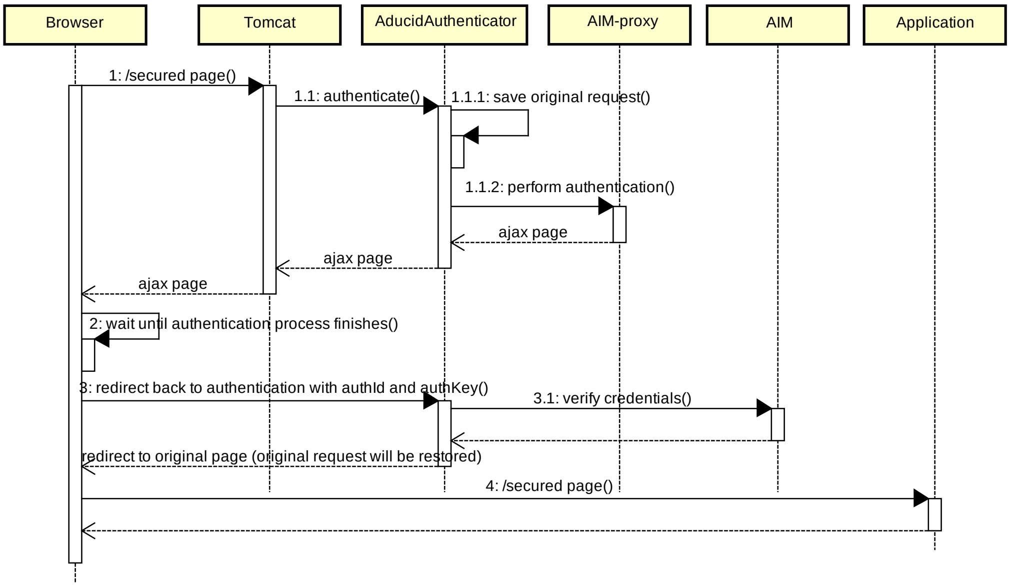

Browser
Tomcat
AducidAuthenticator
AIM-proxy
AIM
Application
1: /secured page()
1.1: authenticate()
1.1.1: save original request()
1.1.2: perform authentication()
ajax page
ajax page
ajax page
2: wait until authentication process finishes()
3: redirect back to authentication with authId and authKey()
3.1: verify credentials()
redirect to original page (original request will be restored)
4: /secured page()

Figure 3-2 Unauthenticated access to the protected section

1. User accesses a secure page within the application.
2. Tomcat detects that the page is protected with container authentication and delegates the processing to AducidAuthenticator.
3. If the request has not been authenticated yet, AducidAuthenticator stores the original request in the session and delegates the start of authentication process to the AIM-proxy component using redirect.
4. Once the authentication process has finished, the result is returned along with credentials to the authentication filter.
5. Authentication filter verifies the credentials against the AIM's authentication server.
6. If the authentication succeeds, a redirect to the original page is performed.
7. The original request is restored.
8. The application processes the request with verified credentials and with Principal assigned.

From the application's perspective, only authenticated and authorized requests are passed to the protected section.

4. Adapter installation

Adapter is available for Tomcat 5.5, Tomcat 6.0 and Tomcat 7.0, and need Java 1.5 or later to run. The installation consists of two steps: Configuring ADUCID® technology in Tomcat and modifying the web.xml web application descriptor.

4.1. Preparing Tomcat

This section describes installation of ADUCID® technology to Tomcat web container.

4.1.1. Tomcat 5.5

To install the adapter, following modifications are necessary:

1. Unpack aducid-tomcat-v5-[version].zip and copy the libraries to the $TOMCAT_HOME/server/lib folder.
2. In the $TOMCAT_HOME/conf/server.xml file, add the com.aducid.tomcat.AducidAuthenticatorV5 filter to the context that you want to secure with ADUCID® technology. For individual attributes that can be configured for the filter, see section 4.2.

4.1.2. Tomcat 6.0

1. Unzip aducid-tomcat-v5-[version].zip and copy the libraries to the $TOMCAT_HOME/lib folder.
2. In the $TOMCAT_HOME/conf/server.xml file, add the com.aducid.tomcat.AducidAuthenticatorV5 filter to the context that you want to secure with ADUCID® technology. For individual attributes that can be configured for the filter, see section 4.2.

4.1.3. Tomcat 7.0

1. Unzip aducid-tomcat-v7-[version].zip and copy the libraries to the $TOMCAT_HOME/lib folder.
2. In the $TOMCAT_HOME/conf/server.xml file, add the com.aducid.tomcat.AducidAuthenticatorV7 filter to the context that you want to secure with ADUCID® technology. For individual attributes that can be configured for the filter, see section 4.2.

4.2. Configuring server.xml

This section provides a list of attributes for the adapter and two different configuration scenarios.

4.2.1. Description of filter (valve) attributes

The following provides an overview of attributes that can be set for the filter. For sample configurations, see subsections below.

Attribute name	Type of value	Description
className	Constant: com.aducid.tomcat.AducidAuthenticatorV5 for Tomcat 5.5 and 6 or com.aducid.tomcat.AducidAuthenticatorV7 for Tomcat 7	(mandatory) Java class of the adapter
cache	Boolean	(optional) Indicates whether the Principal should be cached for further requests, or a re-authentication is to be performed for each request. If re-authentication is enforced (cache=false), it is performed with original credentials only for the duration of the AIM session. Once the AIM session expires, another login into PEIG is enforced. Default = true
loginPage	Relative/absolute URL	(mandatory) URL of the page to which redirect is performed for the authentication to start. For easier integration, you can use the AIM-proxy component, or create your own authentication page.
errorPage	Relative URL	(mandatory) A page within the application to which the user is forwarded in the event of authentication error.

Attribute name	Type of value	Description
aimUrl	Relative/absolute URL	(mandatory) URL of the endpoint where the R4 interface is available (URL of the AIM server).
collectionId	String	(mandatory) Identifier of the attribute set that stores user attributes from which the username and potential role are derived. Collections are assigned by the AIM administrator.
userAttribute	String	(mandatory) The name of the attribute in ADUCID® database that represents username.
roleAttribute	String	(mandatory, if **defaultRole** or **useRealm** are not set) The name of the attribute in ADUCID® database that represents role. This attribute is ignored if role lookup is used in the defined realm (useRealm=true). If the realm is not used (**useRealm**=false), this attribute is optional if **defaultRole** is defined.
defaultRole	String	(mandatory, if **roleAttribute** or **useRealm** are not set) The fixed role value. Use this attribute when the role is not defined in the ADUCID® database and the role has a constant value for all users. This attribute is ignored if the role lookup is used in the defined realm (**useRealm**=true). If the realm is not used (**useRealm**=false), this attribute is ignored if the **roleAttribute** is defined.
useRealm	Boolean	(mandatory) Indicates whether Principal creations should be delegated to the realm defined in Tomcat. Principal is looked up based on username found in the ADUCID® database. Default = false
logoutUrl	String	(mandatory) A regular expression URL pattern to log out an authentication session. If the current URL matches this pattern, the log out is called immediately.
logoutPage	Relative URL	(mandatory) A page within the application to which the user is forwarded in the event of an authentication log out.

Table 4-1 Filter attributes

4.2.2. Configuration using ADUCID® database only

In this scenario, username and roles are retrieved from ADUCID® database. For successful configuration, you need to have a set of user attributes defined that contains an attribute representing a username and attribute representing a list of roles. These attributes, along with the defined attribute set’s name, are provided by the ADUCID® administrator.

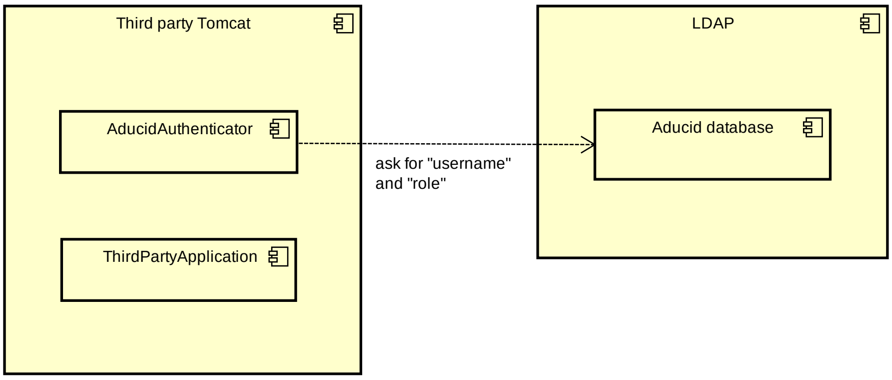


Figure 4-1 Using ADUCID® database only scheme

The following xml snippet represents an AducidAuthenticator configuration for a given context (with the name “aducid-tomcat-webapp”).

```
<Context
    docBase="aducid-tomcat-webapp"
    path="/aducid-tomcat-webapp">
<Valve
    className="com.aducid.tomcat.AducidAuthenticatorV5"
    loginPage="https://orangebox.example.com/AIM-proxy/process"
    errorPage="/error.jsp"
    aimUrl="http://orangebox.example.com/AIM/services/R4"
    collectionId="TEST"
    userAttribute="testUsername"
    roleAttribute="testRole"
    useRealm="false"
    cache="false"
    logoutUrl="/myprofile.*OP=LOGOUT.*"
    logoutPage="/logout.jsp"/>
</Context>
```

In this scenario, the key attributes are collectionId, userAttribute and roleAttribute. They are assigned by the AIM server administrator. In this scenario, the useRealm must be set to false.

4.2.3. Configuration using ADUCID® database and a defined realm

In this scenario, only username is retrieved from the ADUCID® database. Roles are then retrieved from the realm defined in the Tomcat server configuration using the username provided. For successful configuration, you need to a set of user attributes defined that contains an attribute representing a username. This attribute, along with the defined attribute set’s name, are provided by the ADUCID® administrator.

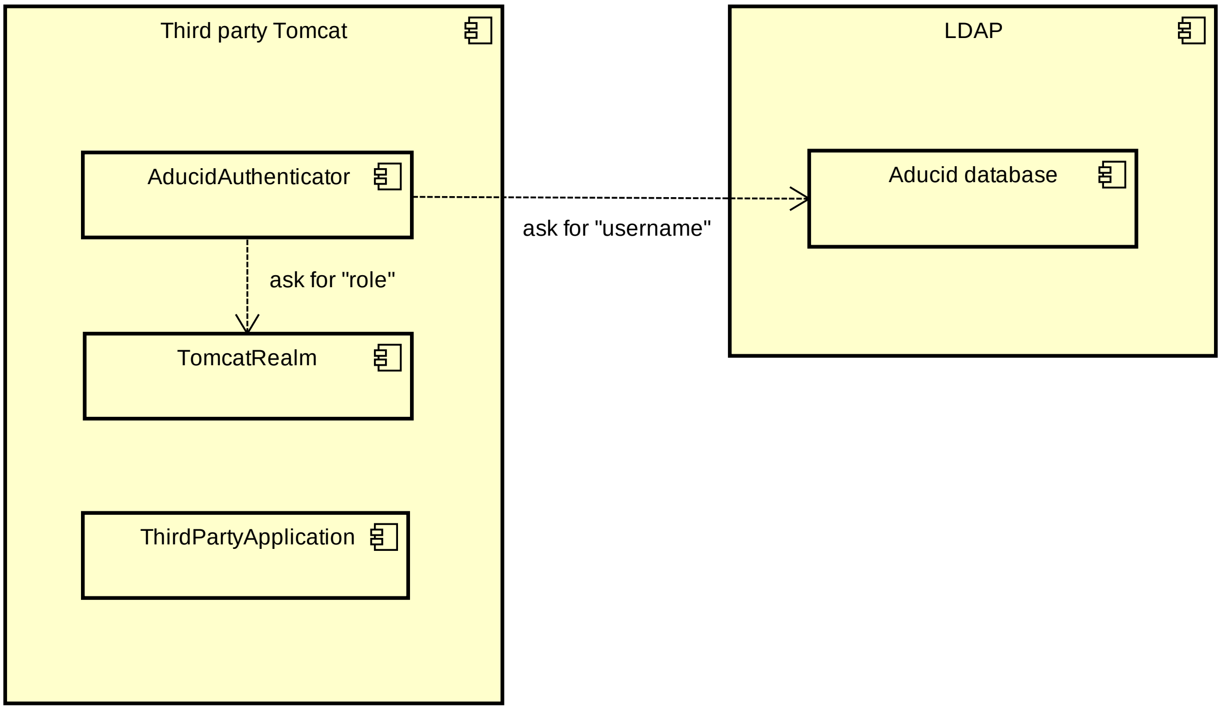


Figure 4-2 Using ADUCID® database and Tomcat realm scheme

The following xml snippet represents an AducidAuthenticator configuration for a given context (with the name “aducid-tomcat-webapp”).

```
<Context
    docBase="aducid-tomcat-webapp"
    path="/aducid-tomcat-webapp">
<Valve
    className="com.aducid.tomcat.AducidAuthenticatorV5"
    loginPage="http://ADUCIDServerKit.example.com/AIM-proxy/process"
    errorPage="/error.jsp"
    aimUrl="http://ADUCIDServerKit.example.com/AIM/services/R4"
    collectionId="TEST"
    userAttribute="testUsername"
    useRealm="true"
    cache="false"
    logoutUrl="/myprofile.*OP=LOGOUT.*"
    logoutPage="/logout.jsp"/>
</Context>
```

In this scenario, the key attributes are collectionId and userAttribute. They are assigned by the AIM server administrator. In this scenario, the useRealm must be set to true.

4.3. Configuring web.xml

Modifying web.xml is simple: you need to change current authentication method to the ADUCID constant (see Appendix A). Next, you need to add a special /auth_check URL, where the credentials for web-resource-collection are verified.

5. Attributes available to the application

When the authentication process has finished, the following attributes propagated as HttpServletRequest attributes are available to the application.

Attribute name	Type of value	Description
exception	java.lang.Throwable	Exception in the event that the authentication was not successful
aimStatus	Enumeration com.aducid.sdk.enums.AIMStatus	AIM server’s status after authentication
authStatus	Enumeration com.aducid.sdk.enums.AuthStatus	Authentication status

Table 5-1 Attributes available to the application

The adapter also creates a Principal object that is available through request.getUserPrincipal() and whose form depends on the value of the useRealm attribute. If that value is useRealm=true, the Principal returned was generated by the realm set in server.xml. For useRealm=false value, the com.aducid.tomcat.pojo.DefaultAducidUser object is returned.

The meaning of individual values for aimStatus and authStatus statuses is defined in *aducid-integration-manual.pdf* on the enclosed DVD.

6. Logging settings

Because the adapter is being implemented at the Tomcat web server level, the log4j.properties file must be placed in the /common/classes directory of the installation for Tomcat 5.5, and in the /lib directory of the installation for Tomcat 6.0 and Tomcat 7.0. For an example of the log4j.properties file, see Appendix B.

7. The Hello World application

The installation package contains a sample web application "Hello World" that serves as an example of ADUCID® technology integration. The installation DVD contains source files of the sample application.

7.1. Prerequisites

Preliminary condition must be fulfilled to be sure that sample application is fully working:

- PEIG must be running (Client's side of ADUCID®)
- There must be valid identity, in related ADUCID Server Kit (ADUCIDServerKit's URL is defined in application configuration. See chapter 7.2 for more information)

7.2. Installation

To install the web application, follow these steps:

1/ Ask the ADUCID Server Kit application administrator to configure new application and to assign an attribute set necessary to configure the adapter. For instructions on how to configure new application and assign an attribute set, see *ADUCIDServerKit-administration-guide.pdf*.
2/ Create an identity using UIM application.
3/ Ask the UIM application administrator to add a username attribute (potentially also the role) to your profile. (If you use useRealm=true, enter one of the following values: tomcat, role1 or both; these are predefined users in Tomcat.)
4/ Configure Aducid Authenticator as per instructions in section 4.2.
5/ Rename supplied sample web application "Hello World" from aducid-tomcat-webapp-[version].war to aducid-tomcat-webapp.war.
6/ Load the sample web application into Tomcat, specifically to $TOMCAT_HOME/webapps folder
7/ Run Tomcat, so that the installed sample web application unpacks.
8/ Stop Tomcat.
9/ Set application configuration parameters in the file $TOMCAT_HOME/webapps/aducid-tomcat-webapp/WEB-INF/classes/config.properties:
a/ host - the URL address where the UIM is running, in case the parameter is not configured, application won't work properly
b/ appName—the application name shown on the log out page
c/ loginPage—link to the log in page, used from the error and log out page
d/ refreshAfterErrorPage—link to a page where the user can go if an error occurs
10/ Run Tomcat.

After installation, sample application is accessible on address:

```
http://[ip_address_of_your_container]:[port_of_your_container]/aducid-tomcat-webapp
```

For example on address:

```
http://10.20.29.189:8080/aducid-tomcat-webapp
```

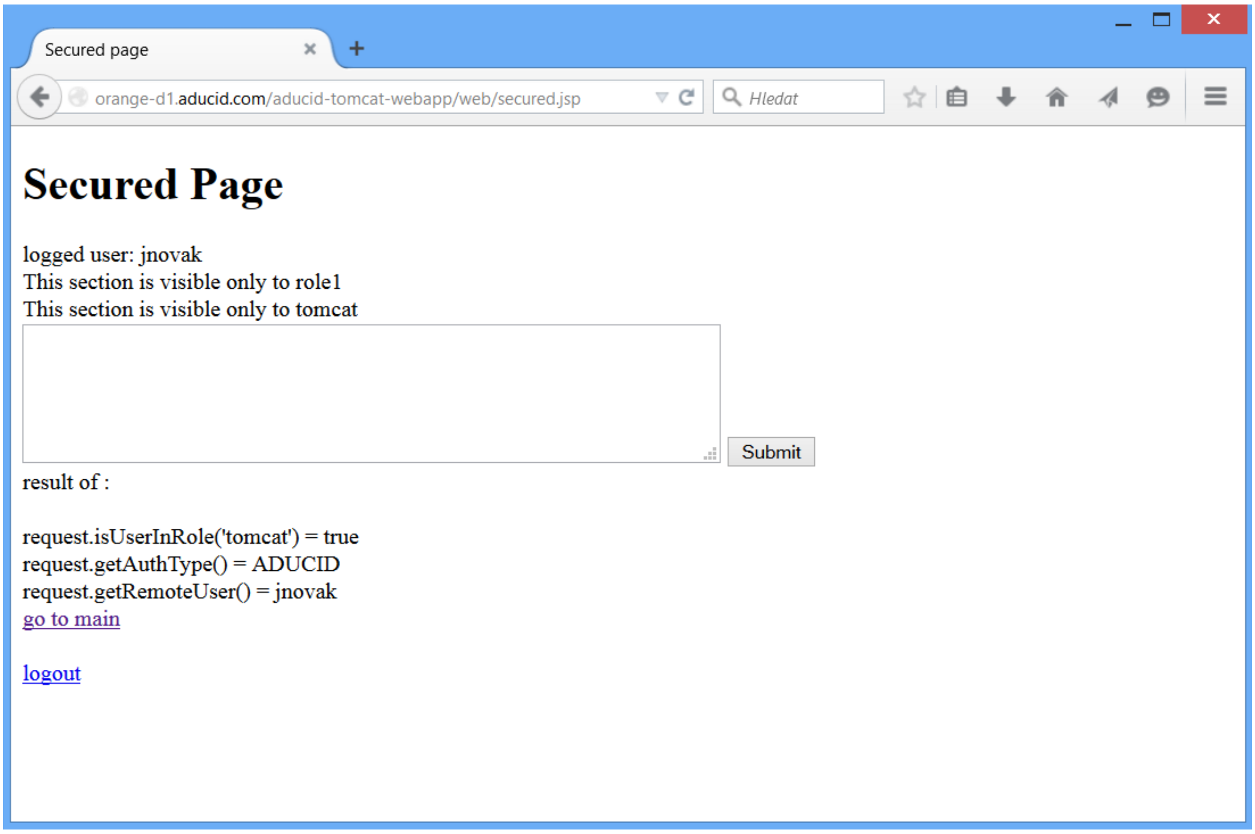
Consider also OS firewall settings.

The web application you have just installed contains two JSP pages.

/unsecured.jsp - this page is freely accessible.

/web/secured.jsp - this page is protected by the “role1” and “tomcat” role of Tomcat. These are standard roles defined in the Tomcat application server’s tomcat-users.xml file.

If both the application and Tomcat are configured properly, the /web/secured.jsp page will be accessible. Accessibility of individual sections depends on the role assigned.



Secured Page

logged user: jnovak
This section is visible only to role1
This section is visible only to tomcat

Submit

result of :

request.isUserInRole('tomcat') = true
request.getAuthType() = ADUCID
request.getRemoteUser() = jnovak
go to main

logout

Figure 7-1 Protected section of the sample application

7.3. Troubleshooting

If the result of authentication process is not according to Figure 7-1, check following:

- PEIG is active – indicator is green
- There is valid identity on ADUCID Server Kit (login into UIM application. ADUCIDServerKit’s address is defined in sample application configuration). Check validity of your identity (There is green or orange indicator on the preliminary page of UIM, check UIM user operation manual for more information).

8. Appendix A

The appendix shows the relevant part of the web.xml descriptor.

```
<security-constraint>
     <web-resource-collection>
            <web-resource-name>secured resources</web-resource-name>
            <url-pattern>/web/*</url-pattern>
            <url-pattern>/auth_check</url-pattern>
     </web-resource-collection>
     <auth-constraint>
            <role-name>tomcat</role-name>
            <role-name>role1</role-name>
     </auth-constraint>
</security-constraint>
<login-config>
     <auth-method>ADUCID</auth-method>
</login-config>
<security-role>
     <role-name>tomcat</role-name>
</security-role>
<security-role>
     <role-name>role1</role-name>
</security-role>
```

9. Appendix B

Example of log4j.properties settings

```
log4j.rootCategory=INFO, CONSOLE
log4j.logger.com.aducid.tomcat=DEBUG
log4j.appender.CONSOLE=org.apache.log4j.ConsoleAppender
log4j.appender.CONSOLE.layout=org.apache.log4j.PatternLayout
log4j.appender.CONSOLE.layout.ConversionPattern=[%p] [%c] %m%n
```