

Installing and configuring the legacy CAST Engineering Dashboard and Discovery Portal

 This documentation is no longer maintained and may contain obsolete information.

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Target audience:

CAST AI Administrators

 **Summary:** This section describes how to install and configure the the **CAST Engineering Dashboard** and the **CAST Discovery Portal** - used for detailed investigation of the data generated during the analysis/snapshot generation process. This chapter assumes that you have installed the CAST databases - see [Install CAST AIP schemas](#) for more information.

 Note that the CAST Engineering Dashboard and CAST Discovery Portal are now considered "**legacy**" features. Please use the [Engineering Dashboard](#) instead.

CAST Engineering Dashboard/CAST Discovery Portal

The CAST Engineering Dashboard and CAST Discovery Portal are two distinct dashboards with their own specific features; however, they are also intrinsically linked:

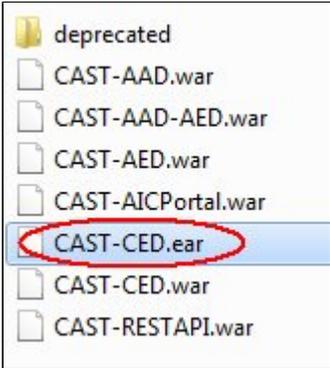
- They are shipped in one distinct WAR/EAR file and are thus run from one unique application server (such as Apache Tomcat)
- Access to the portals is governed on a user login and role basis - users can be granted access to both portals or one and not the other
- A user with "Administrative" rights can access either portal and manage users and roles
- Some aspects of the CAST Discovery Portal are included in the CAST Engineering Dashboard
- Both portals can run and be accessed at the same time

A CAST Engineering Dashboard/Discovery Portal installation includes the installation of the following items:

- 1 **CAST Dashboard Service** (already completed - see [Install CAST AIP schemas](#))
- 1 or more **CAST Analysis Services** (already completed, see [Install CAST AIP schemas](#))
- Java Development Kit
- an application server (such as Apache Tomcat)

Requirements

The following basic requirements must be met before starting the installation process. Please see the [Release Notes](#) for more up-to-date information about these requirements.

✓	Application Server	<ul style="list-style-type: none"> • Please see the Release Notes about Application Server support. • The application server can run on either the Linux or Windows operating systems (this document describes an installation in a Windows environment).
✓	Java JDK	Must be installed on the machine hosting the Application Server. Please see Supported Platforms about JDK support.
✓	Web browser	Required for accessing the portals. Please see the Release Notes about Web Browser compatibility.
✓	CAST Analysis /Dashboard Services	To ensure compatibility you must only use a CAST Analysis or Dashboard Service installed with a version of CAST AIP that exactly matches the major, minor or Service Pack release number of the CAST CED WAR that you are installing.
✓	WAR file	<p>The CAST dashboards are provided as one .WAR file (CAST-CED.war) - it can be retrieved from the WARS folder located in the CAST installation folder:</p>  <p>Note that the WAR file must originate from the current release of CAST AIP.</p>
✓	Miscellaneous	<ul style="list-style-type: none"> • Check that anti-virus or firewall software installed on your workstation is not set to block scripts, ActiveX controls or Java applets. • For Internet Explorer ActiveX controls are turned off when working at High security level (see http://support.microsoft.com/kb/308260/en-us). If you use this level of security for the zone in which the CAST Engineering Dashboard is deployed (normally this is Local Intranet) change the security level, or add the URL of the CAST Engineering Dashboard to your list of Trusted Sites where security levels are lower.

Installation procedure

The installation process for the CAST Engineering Dashboard and the CAST Discovery Portal can be carried out on the:

- CAST Administration workstation
- Or a dedicated workstation for the dashboard components - recommended if you have a large deployment

i This document assumes you are using the **CAST Administration workstation** to host the portals and thus in a Windows environment. It also only discusses installation using an **Apache Tomcat/IBM Websphere 6.1** application server.

Step 1 - Java JDK installation

Please see [Appendix - web application server configuration](#).

Step 2 - Application Server installation

Please see [Appendix - web application server configuration](#).

Step 3 - .WAR/.EAR file deployment

The CAST Engineering Dashboard and CAST Discovery Portal are shipped in the form of a .WAR file (CAST also provides an .EAR file for Websphere servers prior to version 6.1).

 The next step involves deploying the WAR file on your application server - this document provides instructions for doing so on Apache Tomcat and on IBM Websphere 6.1.

.WAR file deployment on Apache Tomcat

To deploy the .WAR file on Apache Tomcat:

- Locate the .WAR file and move it to the web application installation location. By default on Apache Tomcat this is set to:

```
%CATALINA_HOME%\webapps
```

- If the Apache Tomcat server is running, the file will be automatically unpacked and deployed
- You can now access the CAST Engineering Dashboard / CAST Discovery Portal using the URL:

```
http://<server_name>:<port_number>/CAST-CED
```

You now need to configure the **web.xml** file - see **Step 4 - web.xml configuration** below.

 Please note that you can also install multiple instances of the CAST Engineering Dashboard/Discovery Portal - see [Appendix - Multiple CAST dashboard installation scenario](#) for more information.

.EAR file deployment on IBM Websphere 6.1

To deploy the .EAR file on IBM Websphere 6.1:

- Launch the **Websphere Administration Console** from the **Start** menu or the **First Steps** console:
 - Start > All Programs > IBM Websphere > Application Server V6.1 > Profiles > AppSrv01 > Administration Console
 - Start > All Programs > IBM Websphere > Application Server V6.1 > Profiles > AppSrv01 > First Steps and then click the **Administration Console** option
- Enter the **username and password** that you created in the installation process (see **Websphere 6.1 installation: Appendix - web application server configuration**) to gain access to the Administration Console
- Once logged in, expand the left hand menu option **Applications** and choose the **Install a new application** option:
 - Step 1: In the displayed screen (the first in a series of wizards), enter the location of your **CAST-CED.EAR** file in the **Local File System** option. You also need to enter the name of the Web application in the **Root Context** section - CAST recommends entering **CAST-CED**. Then click **Next**.
 - Step 2: In the next screen select the module that is to be installed (in most circumstances there will only be one item listed in this screen) to map it to the server. Click **Next**.
 - Step 3: In the next screen, select the web module that is to be installed (in most circumstances there will only be one item listed in this screen) to map it to the correct host (select **default_host**). Click **Next**.
 - A summary screen will then be displayed listing the options you have chosen. If you are happy, click **Finish** to proceed with the application installation.
 - The application will then be installed. When complete, click Save to save the master configuration.
- When the process is complete, you will return to the screen displayed in **Step 1**.
- Expand the left hand menu option **Applications** and choose the **Enterprise Applications** option.
- A list of applications installed on the server will then be displayed. The application called CAST-CED (or whatever name you chose for the **Root Context** in **Step 1**) will be displayed and you will see that under the column **Application State**, a **red cross** will be displayed indicating that the application has not been started. Tick the box corresponding to CAST-CED and then click the **Start** button.
- If all processes are working correctly, a successful start-up message will be displayed.
- You can now access the CAST Engineering Dashboard/Discovery Portal using the URL:

```
http://<server_name>:9080/CAST-CED
```

You now need to configure the **web.xml** file - see **Step 4 - web.xml configuration** below.

Step 4 - web.xml configuration

Before you can use the CAST Engineering Dashboard or CAST Discovery Portal, you need to configure the **web.xml** file. The **web.xml** file contains a variety of configuration settings, however, when first installing the portals, only some of them require changing. Those that require modification are listed below:

 Make sure database connections are tailored to the server hosting the **CAST Dashboard Service**

✓	Ensure the web application load up settings are set as required
✓	Tailor your URL connection settings

To do any of the above, open the following file with a text editor (this is the location on Apache Tomcat):

```
%CATALINA_HOME%\webapps\CAST-CED\WEB-INF\web.xml
```



You can find a list of the more advanced configuration options available in the **web.xml file** (such as configuring LDAP/Kerberos integration, connecting via a DataSource, configuring the logging options etc.) in [Dashboard administration: CAST-CED - Advanced web.xml configuration](#).

Connection settings for CAST Dashboard Service

By default, the **web.xml** file supplied by CAST will contain an uncommented connection settings template for the **CAST Storage Service**:

```
<!-- Template for CAST Storage Services -->
<context-param>
  <param-name>jdbc.driver</param-name>
  <param-value>org.postgresql.Driver</param-value>
  <description>JDBC driver</description>
</context-param>
<context-param>
  <param-name>jdbc.subprotocol</param-name>
  <param-value>postgresql</param-value>
  <description>JDBC sub protocol</description>
</context-param>
<context-param>
  <param-name>jdbc.database</param-name>
  <param-value>//localhost:2280/postgres</param-value>
  <description>JDBC database</description>
</context-param>
<context-param>
  <param-name>jdbc.user</param-name>
  <param-value>operator</param-value>
  <description>JDBC user</description>
</context-param>
<context-param>
  <param-name>jdbc.password</param-name>
  <param-value>CastAIP</param-value>
  <description>JDBC password</description>
</context-param>
<context-param>
  <param-name>jdbc.schema</param-name>
  <param-value>[Dashboard Service schema]</param-value>
  <description>JDBC Central database</description>
</context-param>
<!-- Template for CAST Storage Services -->
```

This template is provided **uncommented** so that J2EE compliant application server GUIs (part of the web application administration tool set) can directly edit the connection information if required.

If you prefer to edit the settings yourself, you need to modify the last four **<param-value>** tags in the template above to match your **own environment**. In reality, values two and three will NOT need changing in a CAST Storage Service environment at this initial stage:

1. **<param-value>//localhost:2280/postgres</param-value>**
2. **<param-value>operator</param-value>**
3. **<param-value>CastAIP</param-value>**
4. **<param-value>Dashboard Service schema</param-value>**

If you are NOT working in a CAST Storage Service environment, you need to:

- **Comment** the entire CAST Storage Service connection settings template by adding **<!--** and **-->** around the template section
- **Uncomment** the connection settings you require by removing the **<!--** and **-->** from the specific template
- Edit the required information

In both cases, following any changes you make, **save the web.xml file** and then **restart** your application server so that the changes are taken into account.



Please note the following:

- In **Oracle Server** environments, note that the fields `<param-name>jdbc.user</param-name>` and `<param-name>jdbc.schema</param-name>` require the same input.
- In **Microsoft SQL Server** environments when using a default instance (as opposed to a named instance), you can simply use the IP address or DNS name to gain access - in other words, omit the `;instance=[InstanceName]`:

```
<context-param>
<param-name>jdbc.database</param-name>
<param-value>//[IPAddress];instance=[InstanceName]</param-value>
<description>JDBC database</description>
</context-param>
```

- In Microsoft SQL Server environments, **Trusted Mode** or **Single Sign-on** is not supported, as such you must enter an RDBMS login and password in the relevant fields in the `web.xml` file, rather than a Windows login.
- Please refer to the **JTDS documentation** for more information about URL formats for Microsoft SQL Server: <http://jtds.sourceforge.net/faq.html#urlFormat>

CAST web application start-up settings

By default the `web.xml` file contains settings that will load the CAST web application when the first user attempts to access the CAST Engineering Dashboard / CAST Discovery Portal following an application server startup or restart. This load process can take some time and thus penalizes the first user to login (all subsequent logins are normal speed).

If you would prefer that the web application is loaded at the same time as the application server is started or restarted, then you need to edit the following line in the `web.xml` file:

```
<load-on-startup>-1</load-on-startup>
```

Change this to:

```
<load-on-startup>1</load-on-startup>
```

Following any changes you make, **save the `web.xml` file** and then **restart** your application server so that the changes are taken into account.

URL access configuration

By default, the `web.xml` file is configured to launch the **CAST Engineering Dashboard** when users go to the URL:

- `http://YOUR_SERVER_NAME:8080/CAST-CED - Apache Tomcat`
- `http://YOUR_SERVER_NAME:9080/CAST-CED - IBM Websphere`

If users want to access the **CAST Discovery Portal**, they need to use the following URL:

- `http://YOUR_SERVER_NAME:8080/CAST-CED/OpenAIP - Apache Tomcat`
- `http://YOUR_SERVER_NAME:9080/CAST-CED/OpenAIP - IBM Websphere`

If you prefer users to be able to access the **CAST Discovery Portal** using:

```
http://YOUR_SERVER_NAME:<port_number>/CAST-CED
```

you need to re-configure the `web.xml` file. Open the `web.xml` file with a text editor (this is the location on Apache Tomcat):

```
%CATALINA_HOME%\webapps\CAST-CED\WEB-INF\web.xml
```

In this file, locate the following section:

```
<welcome-file-list>
  <welcome-file>OpenPortal</welcome-file>
  <welcome-file>index.html</welcome-file>
</welcome-file-list>
```

Change this section to:

```
<welcome-file-list>
  <welcome-file>OpenAIP</welcome-file>
  <welcome-file>index.html</welcome-file>
</welcome-file-list>
```

Following any changes you make, **save the web.xml file** and then **restart** your application server so that the changes are taken into account. Users can now access the CAST Discovery Portal using the URL:

```
http://YOUR_SERVER_NAME:<port_number>/CAST-CED
```

Note that if you do make this change to the web.xml file, users then requiring access to the **CAST Engineering Dashboard** will need to use the following dedicated URL instead:

```
http://YOUR_SERVER_NAME:<port_number>/CAST-CED/OpenPortal
```

Populate the CAST Dashboard Service

When all previous installation operations have been successfully completed, you are now ready to use the **CAST Management Studio** to populate the CAST Dashboard Service with Quality Rule information via snapshot generation. See [Onboarding an Application in CAST AIP](#) for more information.

i Please note that this step is optional at this point, but CAST recommends that you carry this out BEFORE you manage and configure users and roles (see [CAST-CED - Managing users and roles](#)). This is simply because the contents of your CAST Dashboard Service (i.e. the Quality Rule result data) are used to determine access rights for users through roles, therefore if your CAST Dashboard Service is empty, Role configuration is not possible

Initial portal login

To access the CAST portals, point your browser to:

CAST Engineering Dashboard	http://YOUR_SERVER_NAME::<port_number>/CAST-CED
CAST Discovery Portal	http://YOUR_SERVER_NAME::<port_number>/CAST-CED/OpenAIP

i

- Note that the above URLs are the default - depending on the changes you may have made in the **web.xml file** (see **URL access configuration** (above) for more information), the above URLs may not launch what you expect.
- The default user login and password combination for either portal is CAST/CAST - this user has **administrative privileges** and should therefore be used with caution.

- Enter the login and password combination:

LOGIN AREA

User Id

Password

- Click the **Connect** button to begin the connection process.
- If the login is successful, you will be presented with a page similar to the following (depends on the user used to log in):

CAST Engineering Dashboard

CAST Investigation View Welcome, CAST 98 Logout

Snapshot: Computed on 201201031158 - Version: V2 - Date: 01-03-2012

Select context... **PARIS - MEUDON**

BUSINESS CRITERIA

Grade	Var.	Business Criterion
2.36	-0.4%	Documentation
2.53	-4%	Security
2.78	-14%	Performance
2.99	-4%	Programming Practices
3.02	-4%	Technical Quality Index
3.09	-5%	Architectural Design
3.1	-0.6%	Transferability
3.18	-1%	Robustness
3.3	-5%	Changeability
3.4	+1%	SEI Maintainability

Export all

TECHNICAL CRITERIA

Grade	Var.	Weight	Critical	Technical Criterion
1.1	-	1	No	Documentation - Automated Documentation
1.24	+24%	1	No	Documentation - Volume of Comments
2.64	+10%	1	No	Documentation - Style Conformity
2.82	-13%	1	No	Documentation - Naming Convention Conformity
4	-	1	No	Documentation - Bad Comments

Export all

QUALITY RULES, DISTRIBUTIONS AND MEASURES

Grade	Var.	Weight	Critical	Rule Name
1	-	6	No	Classes and interfaces must have JavaDoc @author tag
1	-	6	No	Classes and interfaces must have JavaDoc Comments
1	-	6	No	Fields must have JavaDoc Comments
1	-	6	No	Methods must have appropriate JavaDoc @param tags
1	-	6	No	Methods must have appropriate JavaDoc @return tags
1	-	6	No	Methods must have JavaDoc comments
1	-	6	No	Private fields must have JavaDoc Comments
1.46	-	6	No	Methods must have appropriate JavaDoc @exception tags
1.46	-	6	No	Methods must have appropriate JavaDoc @throws tags

Export all

OBJECTS WITH VIOLATION

Act/ Object Name

- com.caastofwre.utl.io.Recorder
- com.caastofwre.utl.gui.Menu
- com.caastofwre.utl.gui.GuiHtml
- com.caastofwre.dbconnection.jdbc.ConnectionIf
- com.caastofwre.dbconnection.jdbc.ConnectionAbstract
- com.caastofwre.booldemo.servlet.BootDemoServletIf
- com.caastofwre.utl.Converter
- com.caastofwre.booldemo.javabean.SaleManager
- com.caastofwre.booldemo.javabean.NewSaleEptf
- com.caastofwre.booldemo.javabean.Book

Export all

DETAILS

RULE DETAILS / COMPUTING DETAILS

Name Classes and interfaces must have JavaDoc @author tag

Description When enforcing the utilization of JavaDoc Comments to document an application, the @author tag should be used to know who wrote a given Class or Interface.

Output This report lists all Classes and Interfaces not having the @author JavaDoc comments. This report provides the following information:
Class or Interface Full Name

Applicable Technologies
JEE

If a warning is displayed as follows:

Context Useful Links Search Bread Crumbs

The central repository does not contain any Snapshot. Page can not be displayed. Check with portal administrator if you are authorized to access the requested information.

...you have not yet used the **CAST Management Studio** to generate any snapshots. See [Onboarding an Application in CAST AIP](#) for more information.

CAST Discovery Portal

CAST **Discovery Portal** Help Discovery Portal Site selector Home Page Logout

Site Selection

Please select the site to connect to

CONNECTION LIST

Site name	Site description	Database/Schema name
v707_local	v707_local	V707_LOCAL
V707_LOCAL	V707_LOCAL	V707_LOCAL

Discovery Portal Admin

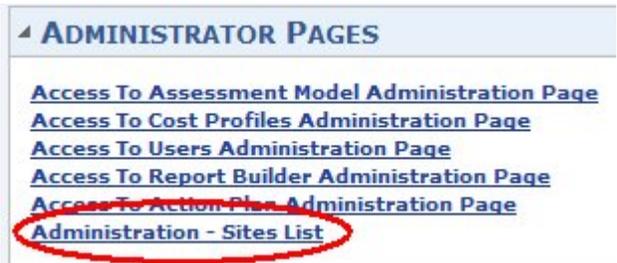
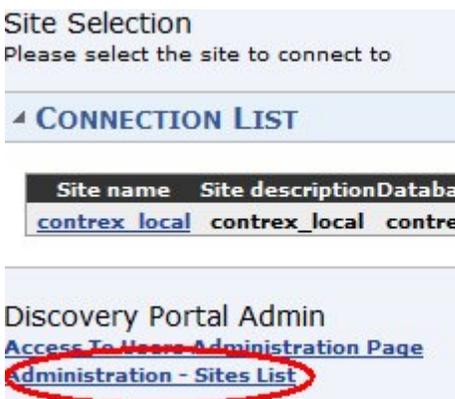
[Access To Users Administration Page](#)
[Sites List](#)

i The **Connection List** section should already be populated with information derived from the CAST Management Studio.

Site List configuration (optional)

i Note that the **CAST Management Studio** will manage the Site List for you automatically, as such the only reason to manually configure the Site List is in a situation where you need to add an additional site that is NOT managed via the CAST Management Studio for whatever reason.

The Site List is used as follows:

CAST Engineering Dashboard	CAST Discovery Portal
<p>To manage the CAST Analysis Services you want to access via the Technical Context link in the CAST Engineering Dashboard:</p>  <p>In effect the Technical Context link directs you straight to the CAST Discovery Portal (in a new browser Window or tab).</p> <p>To access the Site List, use the Quick Access page (Quick Access):</p> 	<p>To manage access to the CAST Analysis Services you want to access via the Site Selection link in the CAST Discovery Portal:</p>  <p>To access the Site List settings, click the Site Lists or Pages.</p>

In both instances, the following screen will be displayed. This screen lists the CAST Analysis Services that have ALREADY been defined in the CAST Management Studio:

Administration - Sites List									
State	Name	ID	Description	User	Password	Host	Schema	Driver	
N/A	contrex_local	828712368		operator	*****	//CEMAES:2278/postgres	contrex_local	Postgres	
N/A	Empty	N/A	Empty	Empty		Empty	Empty	Datasource	

[Back to CAST Dashboard](#)

The **State** column indicates the current status of the site and its configuration settings:

- N/A** will be displayed when the page is first loaded. This is because the status of the site is not known at this time.
- will be displayed after entering configuration settings and clicking either the or the icons to test or save the site and the test connection fails. In this case you need to amend the settings.
- will be displayed after entering configuration settings and clicking either the or the icons to test or save the site and the test connection succeeds.

Add a new Site

To add a new site, you need to enter appropriate connection information into each field. This is summarized below:

Field Name	What you should enter...
Name	<p>This field is read-only:</p> <ul style="list-style-type: none"> • CAST Discovery Portal only > "Empty" • CAST Engineering Dashboard and Discovery Portal > will contain the name of the CAST Analysis Service as defined in the CAST Management Studio.
ID	<p>This field is read-only:</p> <ul style="list-style-type: none"> • CAST Discovery Portal only > "N/A" • CAST Engineering Dashboard and Discovery Portal > will contain the ID of the CAST Analysis Service as defined in the CAST Management Studio.
Description	<p>This field is read-only:</p> <ul style="list-style-type: none"> • CAST Discovery Portal only > "Empty" • CAST Engineering Dashboard and Discovery Portal > will contain the Description of the CAST Analysis Service as defined in the CAST Management Studio.
User	This field defines the user name that is used to connect to your RDBMS. Make sure you enter a user name that has sufficient rights to access the data/database/schema you need.
Password	This field defines the password that corresponds to the user specified in the User field.
Host	<p>This field is used to define the host access parameters. These are identical to the parameters defined in the web.xml file described above (see Step 4 - web.xml configuration). Choose one of the following according to your CAST Storage Service/RDBMS:</p> <p>CAST Storage Service</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <pre>[IPAddress]:[PortNumber]/postgres</pre> </div> <p>Oracle</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <pre>@[IPAddress]:[PortNumber]:[InstanceName]</pre> </div> <p>Microsoft SQL Server (with Instance Port Number)</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <pre>//[IPAddress]:[Port]</pre> </div> <p>Microsoft SQL Server (with Instance Name)</p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <pre>//[IPAddress]:instance=[InstanceName]</pre> </div> <p>Default port settings are as follows:</p> <ul style="list-style-type: none"> • CAST Storage Service > 2280 • Oracle > 1521 • Microsoft SQL Server > 1433
Schema	Enter the name of the database/schema that is hosting the CAST Analysis Service
Driver	<p>Select the appropriate driver from the drop down list - jDTS corresponds to Microsoft SQL Server.</p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p> Choose the Datasource option if you are using an Apache Tomcat or BEA Weblogic datasource - see CAST-CED - Connecting using a DataSource.</p> </div>

- Once the information is entered, use the  button to test the connection. If the information is correct, a message "Valid Profile" will be displayed. If not, then a warning message will appear - check your settings and try again.
- Next click the  button to save the site configuration. The "Site registered" message will be displayed.

Delete an existing site

To delete an existing site from the Connection List:

- Select **Site Lists** from the **Administrator pages** section in **Quick Access to**
- Click the  button corresponding to the site you want to delete. The site will be removed from the Site List.

Deleting a Site only deletes the connection information, not the physical database that it refers to.

Updating an existing site

To update an existing site from the Connection List:

- Select **Site Lists** from the **Administrator pages** section in **Quick Access to**
- Make the necessary changes to the site information
- Click the  button to test the connection.
- If the test is successful ("Valid Profile" message) click  to save the settings.

Adding a site using a DataSource

To add a site when using a DataSource to connect to your CAST Dashboard Service (see [CAST-CED - Connecting using a DataSource](#)), you need to do the following:

- In the **Host** field, enter the name of your DataSource
- In the **Schema** field, enter the name of the database/schema hosting your site (Analysis Service)
- In the **Driver** field, choose the "DataSource" option
- It is not necessary to fill in any other fields, however, please make sure you remove the text "Empty" from fields that are not used in this scenario - particularly the "User" field - otherwise the connection may fail.

Managing users and roles for the CAST portals

Once the above configuration settings and installation processes have been completed, you can then go on to manage users and roles for your CAST Engineering Dashboard and CAST Discovery Portal. Please see [CAST-CED - Managing users and roles](#).

Additional information

You can find additional information about **advanced configuration changes** in [Legacy CAST Engineering Dashboard and CAST Discovery Portal](#) such as:

- [CAST-CED - Advanced web.xml configuration](#)
 - [CAST-CED - Active Directory LDAP and Kerberos integration](#)
 - [CAST-CED - Changing theme and style](#)
 - [CAST-CED - Configure the CSV delimiter for Export to CSV feature](#)
 - [CAST-CED - Configure the hard disk location for auto generated PDF reports](#)
 - [CAST-CED - Configure the log](#)
 - [CAST-CED - Connecting to a Microsoft SQL Server with a Windows Active Directory domain user](#)
 - [CAST-CED - Connecting using a DataSource](#)
 - [CAST-CED - Disabling Technical Context link to the CAST Discovery Portal](#)
 - [CAST-CED - Enabling and disabling the AppMarq link](#)
 - [CAST-CED - Setting the maximum number of cached JDBC connections](#)
- [CAST-CED - Managing users and roles](#)
- [CAST-CED - Date display formatting](#)
- [CAST-CED - Troubleshooting](#)

There is also additional information about implementing an enhanced security configuration for your application server in [Common security configuration options for web application deployment](#):

- [Configuring the use of secure https protocol with Tomcat for the CAST web applications](#)
- [Setting up a Reverse Proxy on Apache web server](#)
- [Disabling insecure HTTP methods in Apache Tomcat - webdav](#)
- [Disabling weak SSL cipher suites to improve security](#)