

DB Audit™ 3.x- 4.x

Using Web-Based Management Console with Apache Tomcat web server

Table of Contents

ABOUT THIS GUIDE	4
CONVENTIONS USED IN THIS DOCUMENT.....	4
ABBREVIATIONS AND TERMS.....	4
TRADEMARKS	4
MINIMUM REQUIREMENTS	5
SOFTWARE	5
HARDWARE	5
APACHE TOMCAT INSTALLATION	5
STARTING WEB SERVER	6
STOPPING WEB SERVER	6
DB AUDIT WEB-BASED MANAGEMENT CONSOLE INSTALLATION	7
LOCAL INSTALLATION	7
REMOTE INSTALLATION	8
UPGRADING EXISTING INSTALLATION.....	8
POST-INSTALLATION STEPS – UPDATING CONFIGURATION FILES.....	9
Securing Configuration Files.....	9
Setting Path to Configuration Files	9
Setting DB Audit Users and Their Permissions	9
STARTING DB AUDIT WEB-BASED MANAGEMENT CONSOLE	10
USING DB AUDIT WEB-BASED MANAGEMENT CONSOLE	10
TROUBLESHOOTING	11

About This Guide

This reference describes how to install, configure and run DB Audit Web-based Management Console with Apache Tomcat Servlet/JSP Container on all supported operating systems. This reference assumes that you understand basic concepts of your operation system and web server technologies.

Conventions Used in This Document

This section describes the style conventions used in this document.

Italic

An *italic* font is used for filenames, URLs, emphasized text, and the first usage of technical terms.

Monospace

A monospaced font is used for code fragments and data elements.

Bold

A **bold** font is used for important messages, names of options, names of controls and menu items, and keys.

Graphical marks



- This mark is used to indicate product specific options and issues and to mark useful tips.



- This mark is used to indicate important notes.

Abbreviations and Terms

This guide uses common abbreviations for many widely used technical terms including FTP, HTTP, RAS, SQL, DBMS, SSH and other.

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Minimum Requirements

Software

1. Java Development Kit (JDK) version 1.4.2. **JAVA_HOME** environment variable must be set to the pathname of the directory into which you installed the JDK release.
2. Apache Tomcat Servlet/JSP Container (web server) version 4.1, 5.0 or 5.5.
3. **DB Audit Web-based Management Console WAR file**

Hardware

1. Windows, Mac OS X, Linux or UNIX system capable to run Apache Tomcat web-server. See <http://tomcat.apache.org/> for specific requirement
2. 9 MB free disk space for the DB Audit Web-based Console and 5 MB free disk space for compiled JSP files and temporary files.
3. 128 MB RAM or better. Actual amount may vary for different operation systems and Tomcat versions.

Apache Tomcat Installation

Apache Tomcat Servlet/JSP Container version 4.1.0 or better can be used to run DB Audit Web-based Management Console. If you don't Apache Tomcat installed, use the following 3 simple steps to download and install this software package:

1. Download and install the Tomcat Binary Distribution (either .ZIP or TGZ file) from <http://tomcat.apache.org/>


Make sure to select version 4.x or 5.x or later.
2. Save the downloaded file into a temporary directory. The downloaded file name will have a name like jakarta-tomcat-[version].zip where [version] will be replaced with the Tomcat version number, for example, *jakarta-tomcat-5.0.28.zip*



Important Notes:

- In order to run the Tomcat web-server and the DB Audit Web-based Management Console you must have JDK 1.4.2 or later installed on the computer where the Tomcat web server will run. If you don't have it download from <http://java.sun.com/j2se/> Install JDK according to the instructions included with the release.
- Make sure **JAVA_HOME** environment variable is set to the pathname of the directory into which you installed the JDK release. See your operation system manual or search the web for instructions on setting environment variables.

3. After Tomcat Binary Distribution is downloaded, unzip it to the directory where you want the web-server to reside. The web server is now ready to be started


 **Tips:** Further information about configuring and running Tomcat can be found in the documentation included here with the package, as well as on the Tomcat web site <http://jakarta.apache.org/tomcat/>

Starting Web Server

Tomcat web server can be started by executing the following commands:

- **[Tomcat directory]\bin\startup.bat** (Windows)
- **[Tomcat directory]/bin/startup.sh** (UNIX, Linux, Mac OS X)

After startup, the default Tomcat instance will be available by visiting <http://localhost:8080/>

 **Important Notes:** The default port used by Tomcat is port 8080 which it will be trying to bind on startup. In case if you have another web server or any other process using that port the Tomcat server will fail to start properly. To avoid that conflict configure Tomcat to some other port number. Edit **[Tomcat directory]/conf/server.xml** file and replace 8080 with some other port number which is not in use, for example, 8081. Restart Tomcat. If changes are made correctly the Tomcat instance will be available by visiting <http://localhost:8081/> or whatever you have entered as the new port number.

Stopping Web Server

Tomcat web server can be stopped by executing the following commands:

- **[Tomcat directory]\bin\shutdown.bat** (Windows)
- **[Tomcat directory]/bin/shutdown.sh** (UNIX, Linux, Mac OS X)

DB Audit Web-based Management Console Installation

Local Installation

Use the following simple steps to install DB Audit Web-based Management Console:

1. FTP or copy DB Audit Web-based Management Console web archive file **dbaudit.war** file to the computer running Tomcat
2. Create directory where the console will be installed

md [Tomcat directory]/webapps/dbaudit

3. Deploy DB Audit Web-based Management Console to the Tomcat web server. There are several ways of deploying the copied WAR file. The following paragraphs demonstrate 3 simple methods. Please note while second methods seems to be easier it requires Tomcat restart which might be unacceptable if you use Tomcat with other applications.

- **Method 1 – Local installation using the Tomcat web application auto-deployment feature (requires Tomcat 5.0 or better):**

Copy dbaudit.war file into **[Tomcat directory]/webapps** folder. Wait several seconds while Tomcat deploys the application.

- **Method 2 – Remote installation using the Tomcat web application deployment tool or "Manager" application (can be used with Tomcat 5.0 and later):**

The application deployment tool is available starting with Tomcat version 5, the "Manager" tool is available in most versions. Because of that we will review the latest method.

(a) Deploy using the manager tool by entering the following URL into your web browser
http://localhost:8080/manager/deploy?path=/dbaudit&war=jar:file:/path_to_war/dbaudit.war/

Here "path_to_war" substring needs to be replace with the absolute path to the directory where you copied or FTPed **dbaudit.war** file.

if the deployment process completes successfully you will get a web page with the following contents:

OK - Deployed application at context path /dbaudit



Important Notes: The Tomcat Manager web-application may prompt you to enter user id and password. You must enter user and password that you have entered in the Tomcat **tomcat-users.xml** configuration file. If you haven't setup this file yet, edit **[Tomcat directory]/conf/tomcat-users.xml** with any text editor. This file contains an XML <user> for each individual user, which might look something like this:

```
<?xml version='1.0' encoding='utf-8'?>
<tomcat-users>
  <role rolename="tomcat"/>
  <role rolename="standard"/>
  <role rolename="manager"/>
  <user username="tomcat" password="tomcat" roles="tomcat"/>
  <user name="john" password="secret" roles="standard,manager"/>
</tomcat-users>
```

```
</tomcat-users>
```

To enable access to the Manager web-application, you must either create a new username/password combination and associate the role name **manager** with it, or add the **manager** role to some existing username/password combination as in example above.

- **Method 3 – Using the file system:**

(a) Rename **dbaudit.war** to **dbaudit.zip** and then unzip it into the **[Tomcat directory]/webapps/dbaudit** directory. Be sure to unzip using *Restore Folder Names* option.

(b) Restart Tomcat. Tomcat will automatically find the new web application, register it and start.

To restart Tomcat you can use stop **shurdown** and **startup** commands described in the previous topics.

4. You can test the console is running by entering the following URL into your web browser
<http://localhost:8080/dbaudit>

Remote Installation

You will need to perform same basic steps that have been described in the Local Installation topic but in all URLs replace word "localhost" with the name of your web server computer, for example,
http://yourwebserver:8080/manager/deploy?path=dbaudit&war=jar:file:/path_to_war/dbaudit.war/

Upgrading Existing Installation

Use either of the following methods:

- **Method 1 - Using the Tomcat web application deployment tool or "Manager" application:**

(a) Undeploy the old version using the following command:

<http://localhost:8080/manager/undeploy?path=dbaudit>

or if doing it remotely

<http://yourwebserver:8080/manager/undeploy?path=dbaudit>

(b) Deploy the new version as described in the "Installation" topic.

- **Method 2 – Using the file system:**

Stop the console web-application using the following command:

<http://localhost:8080/manager/stop?path=dbaudit>

or if doing it remotely

<http://yourwebserver:8080/manager/stop?path=dbaudit>

- (a) Rename **dbaudit.war** to **dbaudit.zip** and then unzip it to the **[Tomcat directory]/webapps/dbaudit** directory overwriting existing files. Be sure to unzip using *Restore Folder Names* option.
- (b) Restart the application as described in the following topic.

Post-installation Steps – Updating Configuration Files

Securing Configuration Files

The DB Audit Web-based Management console uses 4 configuration files for storing various settings.

1. The **web.xml** is a general-purpose standard web application configuration file that must reside in **[Tomcat directory]/webapps/dbaudit/WEB-INF** directory.
2. The **dbaud-users.xml** is a configuration file for storing names and permissions of user working with the DB Audit Web-based Management Console. It is highly recommended that you move this file to a secure location accessible by Apache Tomcat web server, but not located in a web application directory so that it cannot be accessed and modified using any form of web-based interface. For example, you can move this file to **[Tomcat directory]/conf** directory.
3. **profiles.xml** is a configuration for storing database connection profiles and their properties. It is highly recommended that you move this file to a secure location accessible by Apache Tomcat web server, but not located in a web application directory so that it cannot be accessed and modified using any form of web-based interface. For example, you can move this file to **[Tomcat directory]/conf** directory.
4. **config.xml** is a configuration for storing Alert Center connection parameters and license keys. In future versions this use of this file can be expanded to store other parameters. It is highly recommended that you move this file to a secure location accessible by Apache Tomcat web server, but not located in a web application directory so that it cannot be accessed and modified using any form of web-based interface. For example, you can move this file to **[Tomcat directory]/conf** directory.

Setting Path to Configuration Files

Before the web application can be used its **web.xml** file must be updated. The file is located in **[Tomcat directory]/webapps/dbaudit/WEB-INF** directory. Here is what you want you need to change in that file:

1. Open this file in Windows Notepad, Unix vi or other text editor. Search for **<param-name>dbaudit-users</param-name>** text. On the next line update value of this parameter replacing **D:\Work\dbaudit_users** text with the actual path to dbaudit-users.xml file.
2. Search for **<param-name>dbaudit-profiles</param-name>** text. On the next line update value of this parameter replacing **D:\Work\dbaudit_users** text with the actual path to profiles.xml file.
3. Search for **<param-name>dbaudit.config.path</param-name>** text. On the next line update value of this parameter replacing **D:\Work** text with the actual path to config.xml file.

Setting DB Audit Users and Their Permissions

DB Audit Web-based console supports 3 types of users. User types are associated with their roles. Roles in turn control what users can do within DB Audit Web-based Management Console:

- **admin** – Users associated with this role, have access to all functions available in DB Audit console including access to the **Administration menu**, which can be used to manage other users and their roles
- **dba** – Users associated with this role, have access to virtually all functions available in DB Audit console excluding access to the **Administration menu**, which they cannot use. Users having this role can create new database connection profiles and manage existing profiles, they can also setup and reconfigure audit settings for any database for which they have true DBA permissions as setup in the database server.
- **user**– Users associated with this role, have access only to DB Audit Reporting functions.



Important Notes: After initial installation one user is automatically configured. The name of the user is **admin** and the password is also **admin**. You should logon to DB Audit Management console as that user and immediately change user's password and if desired user's name. Use the **Administration menu**, available in console to console. In that menu click **Manage Web Users submenu** to access the user management screen. Setup other users as deemed necessary.

Starting DB Audit Web-based Management Console

Normally after the deployment Tomcat automatically starts DB Audit Web-based Management Console. If for whatever reason it was stopped you can restart it using the following command:

<http://localhost:8080/manager/start?path=/dbaudit>

You can test the console is running by using the following URL:

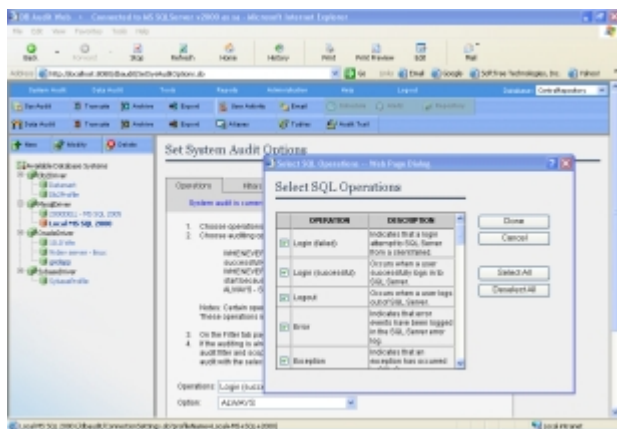
<http://localhost:8080/dbaudit>

or if you are doing it remotely

<http://yourwebserver:8080/dbaudit>

Using DB Audit Web-based Management Console

DB Audit Web-based Management Console and DB Audit Graphical Management Console feature the interface, graphical menus, toolbars, functions, reports, and the same User's Guide manual is provided with both versions. In the Web-console the on-line version of the User's Guide is accessible through the **Help menu**.



Troubleshooting

Why do I get the error "Bind exception: Address already in use" when I try to startup Tomcat?

The most probable reason is that you have an application conflict, in other words, an instance of Tomcat or some other application is already active in your system and using the default Tomcat port number 8080.

To avoid that conflict configure Tomcat to some other port number. Edit **[Tomcat directory]/conf/server.xml** file and replace 8080 with some other port number which is not in use, for example, 8081. Restart Tomcat. If changes are made correctly the Tomcat instance will be available by visiting <http://localhost:8081/> or whatever you have entered as the new port number.

Why does the memory usage increase when I redeploy DB Audit Web-based Console?

Because the Tomcat's Classloader (and the Class objects it loaded) cannot be recycled. They are stored in the permanent heap generation by the JVM, and when you redeploy DB Audit Web-based Console a new class loader is created, which loads another copy of all these classes. This can eventually cause **OutOfMemoryErrors** errors. To avoid this issue restart Tomcat.

Why does Tomcat hang after starting on a Linux computer?

The most likely cause of such hang is the incompatibility of JDK with the new implementation of POSIX library on Red Hat Linux Systems. Multithreading applications like application servers are likely to face threading issues when using the new NPTL implementation on Linux.

To fix this issue, an environment variable `LD_ASSUME_KERNEL` needs to be exported before starting Tomcat. Add the following line to Tomcat's startup.sh script.

```
export LD_ASSUME_KERNEL=2.4.1
```

Why do I get "404 Error – page not found" while running DB Audit Web-based Console?

The most likely cause of such error is that some console files have been deleted from the deployment directory or haven't been installed. Try redeploying the application as described in the "Upgrading existing installation" topic.

Why do I get "Logon denied" or similar error when logging into the DB Audit Web-based Console?

The most likely causes of such error are:

- you forgot to update **dbaudit-users.xml** and add your name to the file or misspelled your name/password
- you forgot to update or incorrectly updated **web.xml** file and the configuration parameter in this file points to incorrect location of **dbaudit-users.xml** file