

CAGWAS 1.1.0

Local Installation Guide for LSD 1.2.0



caBIG[®]
cancer Biomedical
Informatics Grid[®]

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Introduction


This *caGWAS 1.1.0 installation Guide* provides you with the instructions to install and configure the caGWAS 1.1.0 application in your environment. The caGWAS (Cancer Genome-Wide Association Scan) installation installs and configures the JBoss application servers.

<p>NOTE</p> 	<p>Published caGWAS documentation can be found on the caGWAS section of the LSD GForge site:</p> <p>https://gforge.nci.nih.gov/frs/?group_id=450</p>
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Overview of caGWAS Installation

The process for installing caGWAS includes the following tasks described in this document:

- a. Downloading and installing required software
 - b. Setting environment variables
 - c. Downloading caGWAS 1.1.0 distribution files
 - d. Installing caGWAS
 - e. Configuring JBoss
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<p>Before You Proceed</p> 	<ul style="list-style-type: none"> • Please contact us directly with any questions: E-mail: ncicb@pop.nci.nih.gov Telephone: 301-451-4384 Toll free: 888-478-4423 • Directions are given in this document for both Linux and Windows operating systems.
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caGWAS 1.1.0 Software and Technology Requirements

Tested Environment

The caGWAS 1.1.0 installation has been tested on Linux Red Hat Enterprise Linux AS 4 64/32-bit (for AMD chipset) and the Windows XP/2003 environments. While the installation may work in other Linux and Windows environments, it has only been tested in these environments.


Required Software—Not Included in caGWAS

Many of the servers and services that make up caGWAS 1.1.0 are automatically installed as part of this installation. However, certain tools that you must manually install and configure are listed in Table 1. The software name, version, description, and URL hyperlinks (for download) are indicated in the table.

Prior to the caGWAS 1.1.0 installation, you must download and install the following tools and recommended versions in the order they are listed. Complete the directions for installing each, as directed on the corresponding website.

Required Software Name Version	Description
Java 2 Platform Standard Edition 5.0 Update 10 (J2SE 5.0) http://java.sun.com/products/archive/j2se/5.0_10/ Be sure to download the correct Java SDK for your operating environment. For example, for Linux AMD 64, you would download <code>jdk-1_5_0_10-linux-amd64-rpm.bin</code> . For Windows, you might download <code>jdk-1_5_0_10-windows-i586-p.exe</code> .	The J2SE Development Kit (JDK) supports creating J2SE applications.
Apache Ant, 1.7.0 https://gforge.nci.nih.gov/svnroot/lsd/trunk/tools/apache-ant-1.7.0-bin.zip	Apache Ant is a Java-based build tool.
MySQL, 5.0.45 http://downloads.mysql.com/archives.php?p=mysql-5.0&v=5.0.45	MySQL is an open-source database software application.

Table 1 Required Software

IMPORTANT 	<p>As you install each application, record the installation directory path, and the hostname of your MySQL DB server, and the DB admin username/password.</p> <p>Also, if you plan to install caGWAS locally, do these installs first and record the hostname, application port, and grid port for each.</p>
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Java SDK Installation


When you install the Java SDK, you will be prompted to select the installation directory. Record the path, as this directory will be used when you set the environment variables.

Apache Ant Installation

Unzip the Apache Ant distribution files using a command line unzip tool or a zip utility, such as WinZip.


After extracting the zip, you must set the environment variables, described in the following section, so that Ant is available in the system PATH.

Apache Ant Environment Variables

<p>NOTE</p> 	<p>The purpose of setting operating system environment variables is so that the Java SDK and Ant build tool are available to run from anywhere in the system.</p>
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Linux

To set the environmental variables in Linux, follow these steps:

<p>NOTE</p> 	<p>The <code>JAVA_HOME</code>, <code>ANT_HOME</code> and <code>PATH</code> environment variables are set in <code>/etc/profile</code>. You may need to create the variables, or modify them if they already exist.</p>
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Step	Action
1	<p>As the root user (or sudo w/ privileges), enter the following in the <code>/etc/profile</code> file. A <code>PATH</code> variable should already be created in this file, so be sure to define the <code>JAVA_HOME</code> and <code>ANT_HOME</code> export before the <code>PATH</code> export. Replace <code><installation_directory></code> with the directory where you have installed the Java SDK and Ant.</p> <p>(The location example in the Apache Ant installation is <code>/usr/java</code>.)</p> <pre>export JAVA_HOME=<installation_directory>/jdk1.5.0_10 export ANT_HOME=<installation_directory>/apache-ant-1.7.0 export PATH=\$JAVA_HOME/bin:\$ANT_HOME/bin:\$PATH</pre>

Step	Action
2	Log out and log back in so that the system recognizes your changes.


Verifying the Environment Variables in Linux

To verify that environment variables have been set correctly, follow these steps:

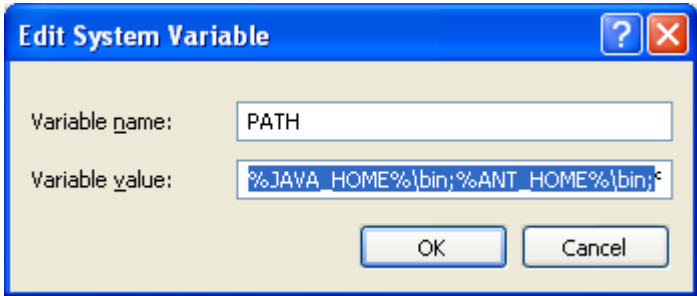
Step	Action
1	From the command line, enter: <code>echo \$JAVA_HOME</code> <code>echo \$ANT_HOME</code> Both of these commands should return the location where you installed these tools.
2	To verify your Java SDK installation, enter <code>java -version</code> from a command prompt. You should see <code>java version "1.5.0_10"</code> .
3	To verify your Ant installation, enter: <code>ant -version</code> from a command prompt. You should see: <code>Apache Ant version 1.7.0 compiled on December 13 2006</code> .

Windows

To set the environmental variables in Windows, follow these steps:

<p>NOTE</p> 	<p>The JAVA_HOME, ANT_HOME and PATH environment variables are set in the Systems Properties.</p>
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Step	Action
1	In Windows, select Control Panel , then select the Systems application. In the Systems window, select the Advanced tab.


Step	Action
2	<p>On the Advanced tab, click the Environment Variables button. To add a new system variable, select the New button.</p> <p>a. In the Variable name text box, enter <code>JAVA_HOME</code>.</p> <p>b. In the Variable value text box, enter the location of your Java installation.</p>
3	<p>Click the New button again.</p> <p>a. In the Variable name text box, enter <code>ANT_HOME</code>.</p> <p>b. In the Variable value text box, enter the location of your Ant installation.</p>
4	<p>Select the PATH system environment variable, and select the Edit button. This opens the Edit System Variable dialog box, displayed here as an example.</p> 
5	<p>In the Variable value text box, prepend the following text in front of the text that already exists in the Variable Value field.</p> <p><code>%JAVA_HOME%\bin;%ANT_HOME%\bin;</code></p> <p>Click OK.</p>

Verifying the Environment Variables in Windows

To verify the environment variables have been set correctly, follow these steps:

Step	Action
1	<p>From the command line, enter:</p> <pre>echo %JAVA_HOME% echo %ANT_HOME%</pre> <p>Both of these commands should return the location where you installed these tools.</p>
2	<p>To verify your Java SDK installation, enter <code>java -version</code> from a command prompt. You should see <code>java version "1.5.0_10"</code>.</p>


Step	Action
3	To verify your Ant installation, enter ant -version from a command prompt. You should see: Apache Ant version 1.7.0 compiled on December 13 2006.


NOTES 	Environment variables for caGWAS will be modified and set in those sections of this document: Installing a New caGWAS on page 9.
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MySQL Installation and Configuration

A MySQL 5.0.45 server must be downloaded, installed and running in order for the caGWAS installation to work successfully.

To download and install MySQL, follow the steps outlined on the MySQL website:
<http://downloads.mysql.com/archives.php?p=mysql-5.0&v=5.0.45>

TIP 	<p>You should consult the following three links to successfully set up secure and well-performing MySQL servers, in preparation for installing CAGWAS:</p> <ul style="list-style-type: none"> • MySQL Security Guide - http://dev.mysql.com/doc/refman/5.0/en/security-guidelines.html • Performance – <ul style="list-style-type: none"> ◦ General performance tuning - http://dev.mysql.com/books/hpmysql-excerpts/ch06.html ◦ InnoDB engine performance tuning - http://dev.mysql.com/doc/refman/5.0/en/innodb-tuning.html
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MORE TIPS 	<ul style="list-style-type: none"> • Record the MySQL root username/password chosen during the MySQL installation process, as you will need to use this as your <code>database.system.user/ database.system.password</code> later in the CAGWAS installation process. • Note the MySQL port chosen during the MySQL installation process, as you will need to use this as your <code>database.port</code> later in the installation process. • As part of the installation process, the default character set is set to <code>latin1</code> for the CAGWAS MySQL database.
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Once installed, you must configure My-SQL for CAGWAS (only for Linux).

Linux

Configure MySQL in Linux using the following steps:

Step	Action
1	<p><i>Lowercase Table Names in MySQL</i></p> <p>Edit the <code>/etc/init.d/mysqld</code> (or <code>mysql</code>) file as follows:</p> <ol style="list-style-type: none"> Locate the <code>start()</code> section and modify the <code>mysqld_safe</code> command (do not include the ellipses): <pre><i>/usr/bin/mysqld_safe --lower_case_table_names=1 ...</i></pre> Restart the MySQL service for the changes to take effect: <pre>Restart /etc/init.d/mysqld</pre>

Downloading and Installing UPT (Optional)

If you do not already have a User Provisioning Tool (UPT) installed, and you wish to manage user accounts for your caGWAS application, you **must** install UPT.

Overview of UPT	<p>UPT is used to provision users in the caGWAS application. Each application installs with its own Common Security Module (CSM) schema that has sample/default users and a role/permissions structure. To add additional users you must provision the caGWAS application in the UPT. Then you can assign users to caGWAS.</p>
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You can download UPT 4.2 through the following link:

https://gforge.nci.nih.gov/frs/download.php/7298/CSM_UPT_42_Release.zip


For instructions on how to install UPT 4.2, refer to the chapter, UPT Installation and Deployment, in the following document:

https://gforge.nci.nih.gov/docman/view.php/12/18945/caCORE_CSM_v42_ProgrammersGuide.pdf

Installing caGWAS 1.1.0 Application and Services

To install the caGWAS 1.1.0 application and services, follow the steps in this section:

- [Downloading caGWAS 1.1.0 files from GForge](#)
- [Installing a New caGWAS](#)
- [Configuring JBoss to Run as a Service](#)

<p>IMPORTANT</p> 	<p>Before running the installers, be sure your Database Administrator has created an empty database (if installing the software for the first time) and a database user with full access to this database. Once the database has been created and permissions granted, you will need the following information before beginning the install:</p> <ul style="list-style-type: none"> • Database Name • Database User • Database Password • Port where MySQL is installed
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Downloading caGWAS 1.1.0 files

To download the caGWAS 1.1.0 files, follow this step:

Step	Action
1	<p>The installation file for caGWAS 1.1.0 is over 100MB.</p> <ul style="list-style-type: none"> For a new installation, from the http://gforge.nci.nih.gov/frs/?group_id=379 directory in GForge, create a new folder on your Home directory/local drive to download the <code>cagwas_gui_distribution_1.1.0.jar</code> file. <p>Remember the download location as you will be using this file to run the installation in the steps that follow.</p>

Server Components in caGWAS 1.1.0


These server components are installed and configured as part of the caGWAS 1.1.0 installation. You do not need to do anything further to download or install these components.

- JBoss 4.0.5 (hosts the caGWAS application)

Installing a New caGWAS

For performing a new installation of caGWAS, v. 1.1.0, follow these steps:

Running GUI installer in Headless Environment


 <p>NOTE</p>	<p>If you are attempting to use the GUI installers in an environment that has no GUI (such as a headless Linux operating system), you can install a tool on your Windows workstation to install in a remote headless environment. See https://wiki.nci.nih.gov/x/gg6l for more information.</p>
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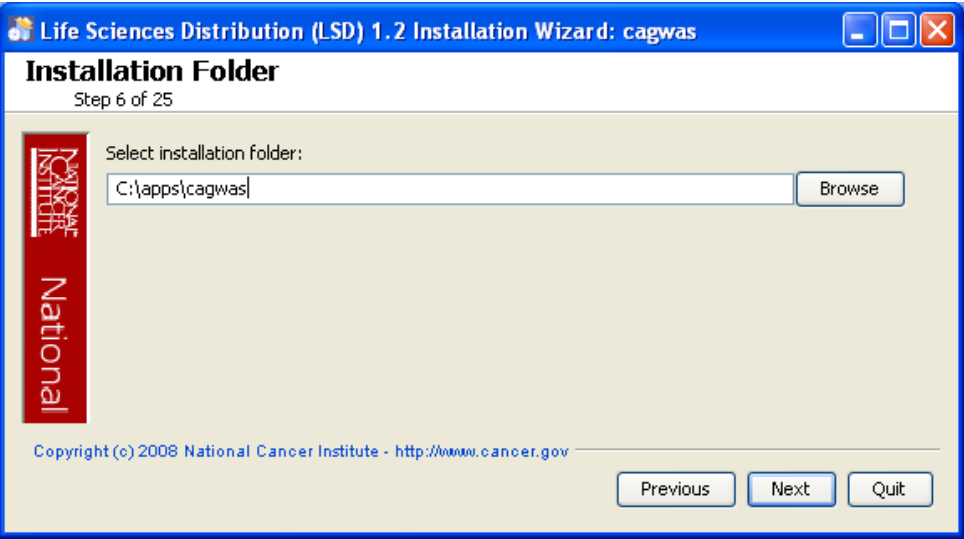
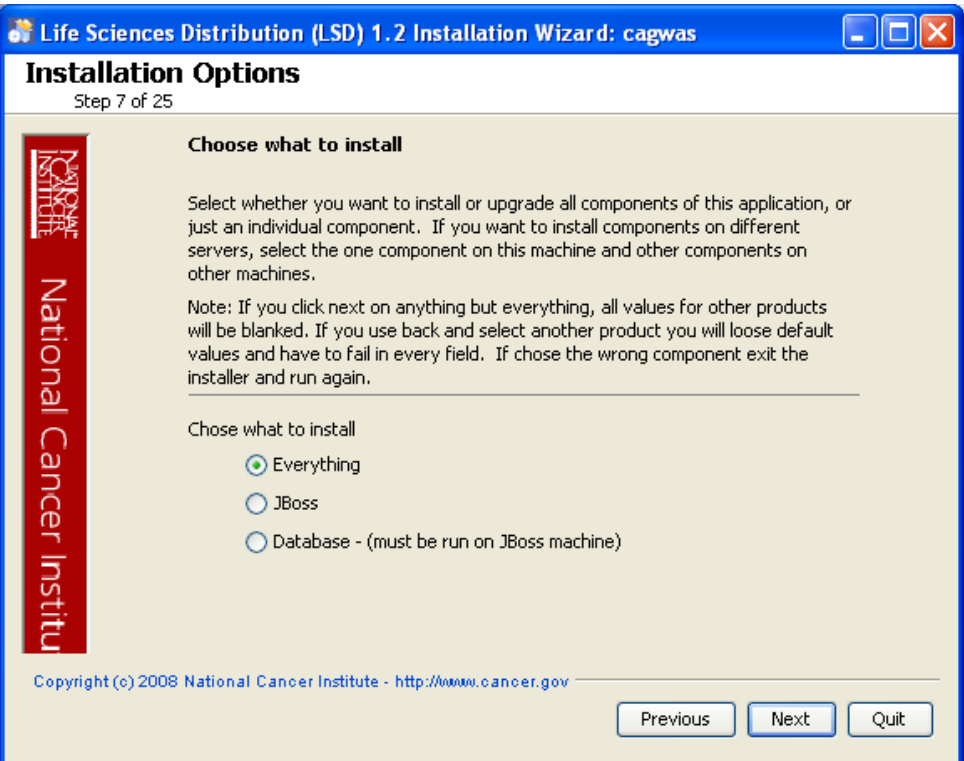
Step	Action
1	<p>From the directory where you downloaded the <code>cagwas_gui_distribution_1.1.0.jar</code> from Downloading caGWAS 1.1.0 files, open a command prompt and type:</p> <pre>java -jar cagwas_gui_distribution_1.1.0.jar</pre>
2	<p>A graphic user interface (GUI) wizard-based installer will prompt you for information. If you running GUI installer in headless environment. Such as headless Linux operating system, please see the above Note.</p>
	<p>Configuring property values is an important step in the installation process. For</p>

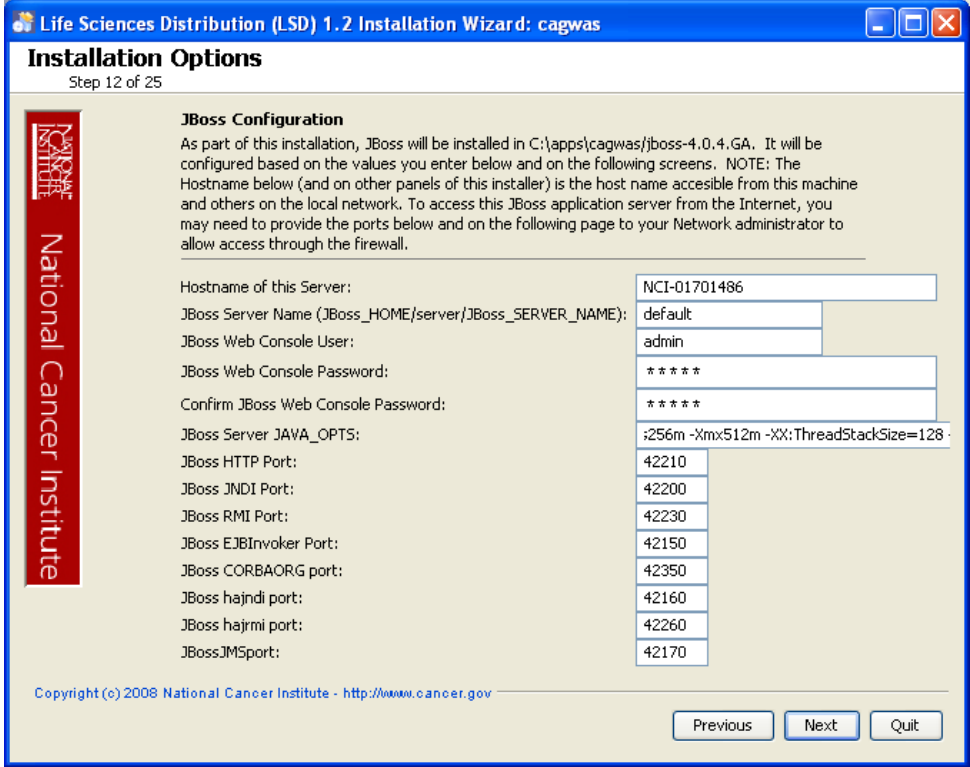
Step	Action
3	detailed information on the property values you will enter during the installation process, see https://wiki.nci.nih.gov/x/Caml

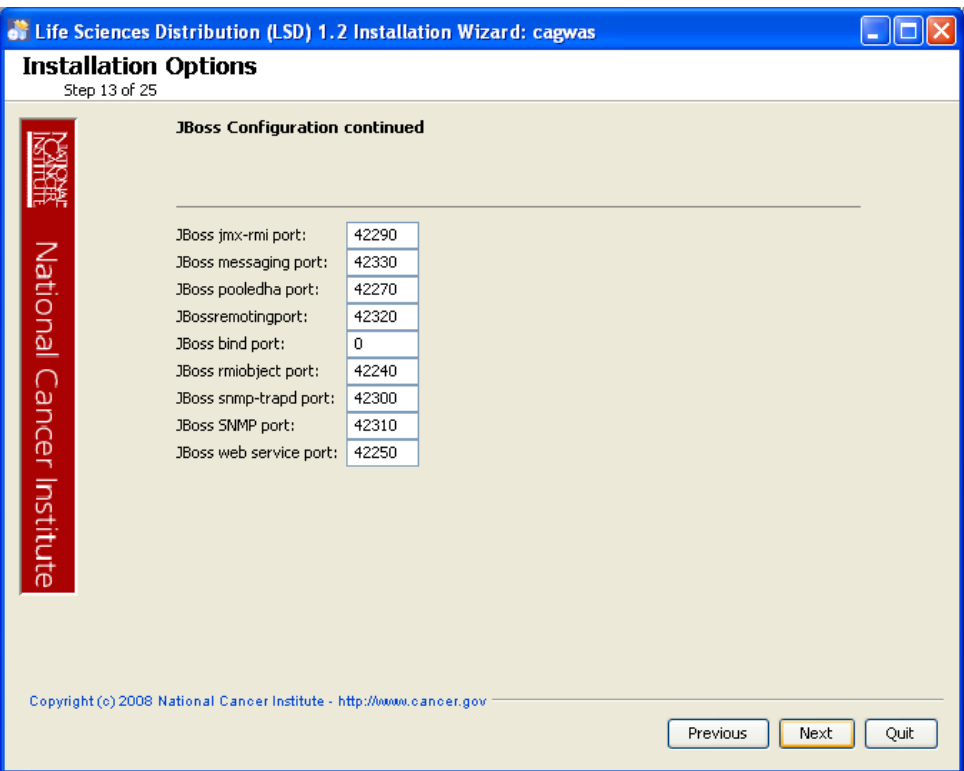
The GUI installer generates installation files into the `${user.home}` directory. (For example, in Windows, this might be something like `C:\Documents and Settings\name.greene\cagwas`). In particular, the installer generates a file called **antlog_installer.txt** in this directory that can be useful when troubleshooting.

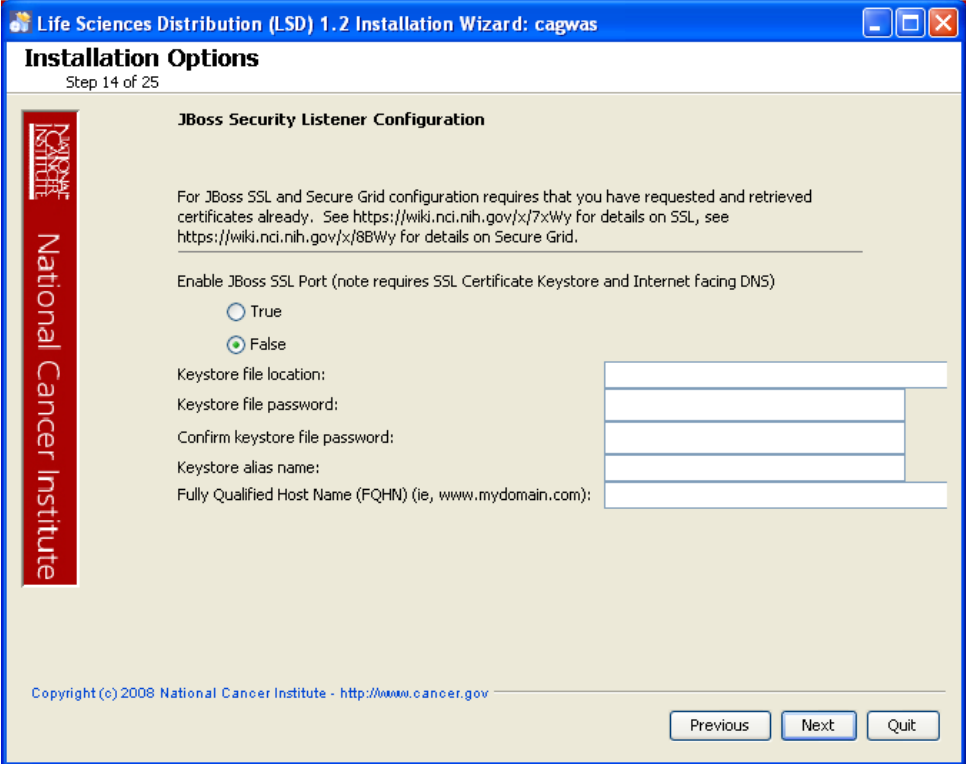
For performing an installation using the GUI Installer, follow these steps:

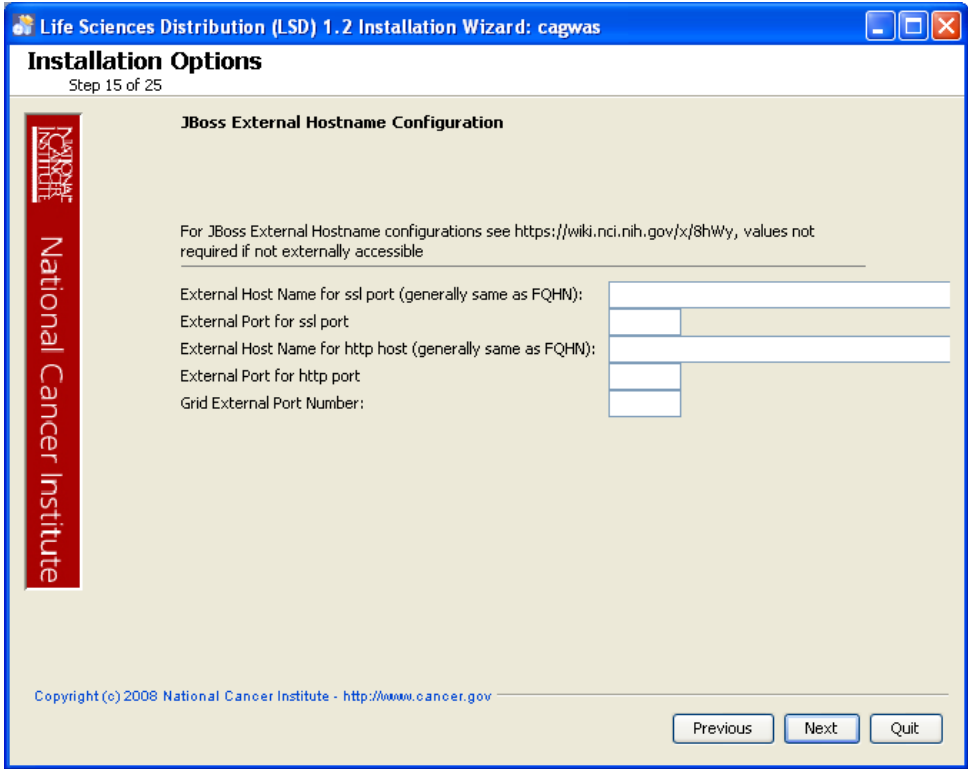
Step	Action
1	Open a command prompt in the directory where you downloaded the <code>cagwas_gui_distribution_1.1.0.jar</code> . Enter this command to Invoke the GUI installer: <code>java -jar cagwas_gui_distribution_1.1.0.jar</code> .
2	The Installation Wizard opens to facilitate the installation process. Click Next to proceed through the pages of the wizard, beginning with progressing past the Welcome page.
3	Review the release notes.
4	You must accept the license agreement.
5	Select Install installation type. For a new installation, select Install . 

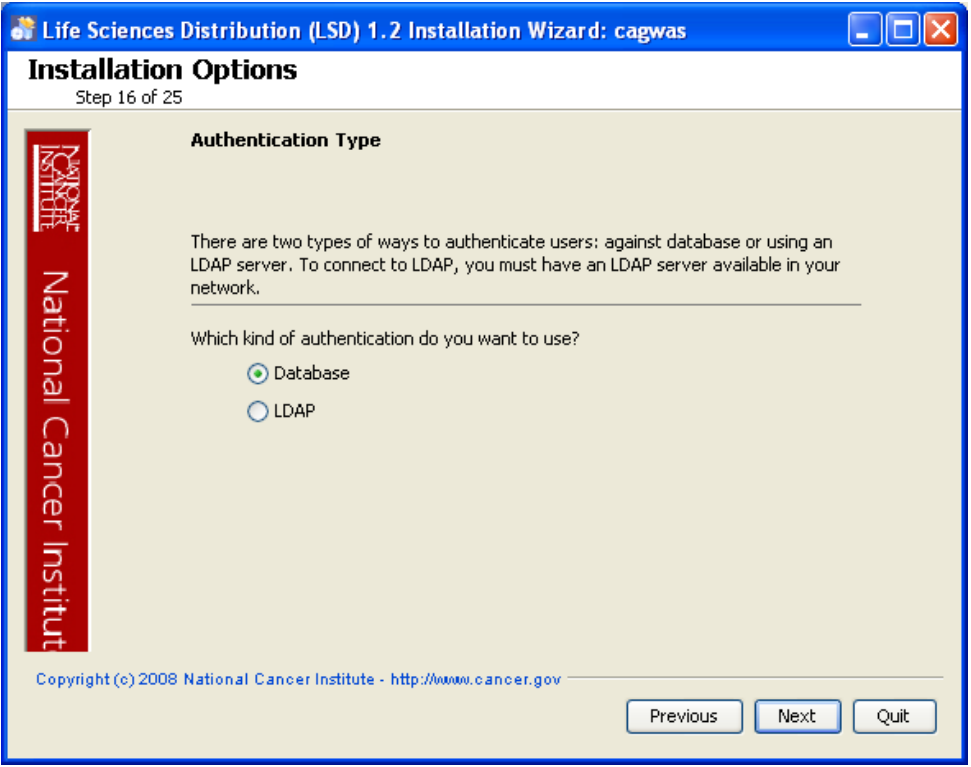
Step	Action
6	<p>Navigate to the directory where you would like to install caGWAS 1.1.0.</p>  <p>If the folder does not yet exist, click OK in the dialog box to indicate that you want the folder to be created.</p>
7	<p>Select "Everything" if this is a new installation and you would like to install both the Jboss server and the database.</p> 

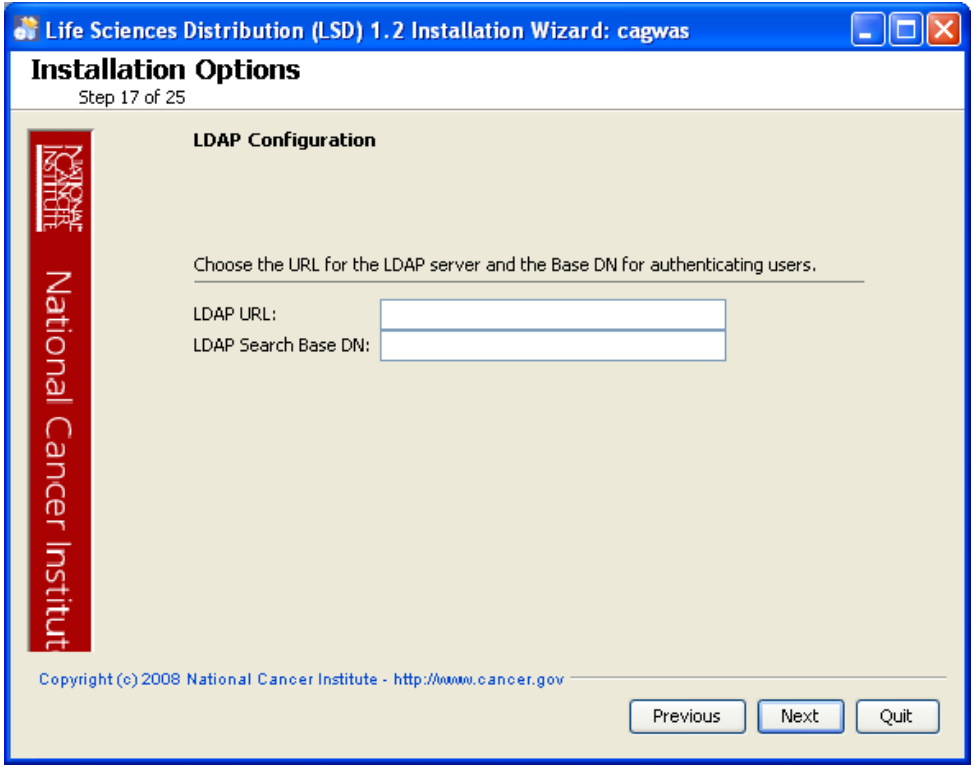
Step	Action
8	<p>Configure caGWAS JBoss server on the next two pages of the installation wizard. The screen shots show example values. The port values which are specified are the defaults and can be used unless you want to reconfigure the values because of values already in use.</p>  <p>Life Sciences Distribution (LSD) 1.2 Installation Wizard: cagwas Step 12 of 25</p> <p>JBoss Configuration As part of this installation, JBoss will be installed in C:\apps\cagwas\jboss-4.0.4.GA. It will be configured based on the values you enter below and on the following screens. NOTE: The Hostname below (and on other panels of this installer) is the host name accessible from this machine and others on the local network. To access this JBoss application server from the Internet, you may need to provide the ports below and on the following page to your Network administrator to allow access through the firewall.</p> <p>Hostname of this Server: NCI-01701486</p> <p>JBoss Server Name (JBoss_HOME/server/JBoss_SERVER_NAME): default</p> <p>JBoss Web Console User: admin</p> <p>JBoss Web Console Password: *****</p> <p>Confirm JBoss Web Console Password: *****</p> <p>JBoss Server JAVA_OPTS: -Xms512m -Xmx512m -XX:ThreadStackSize=128</p> <p>JBoss HTTP Port: 42210</p> <p>JBoss JNDI Port: 42200</p> <p>JBoss RMI Port: 42230</p> <p>JBoss EJBInvoker Port: 42150</p> <p>JBoss CORBAORG port: 42350</p> <p>JBoss hajndi port: 42160</p> <p>JBoss hajrmi port: 42260</p> <p>JBossJMSport: 42170</p> <p>Copyright (c) 2008 National Cancer Institute - http://www.cancer.gov</p> <p>Previous Next Quit</p>

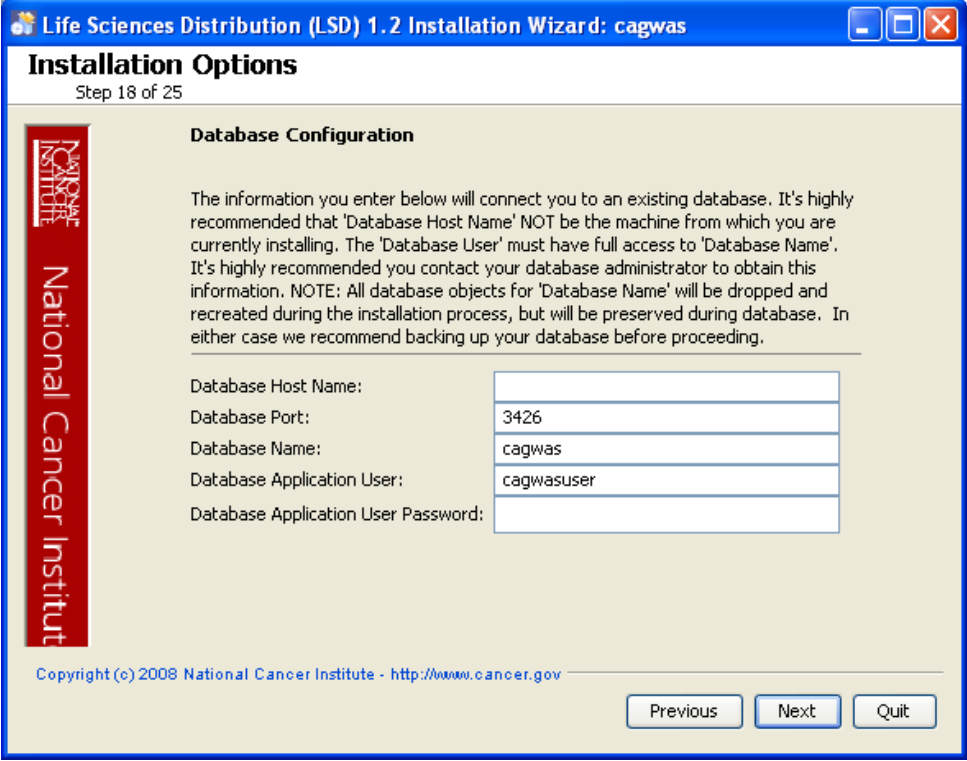
Step	Action
9	 <p>Life Sciences Distribution (LSD) 1.2 Installation Wizard: cagwas</p> <p>Installation Options Step 13 of 25</p> <p>JBoss Configuration continued</p> <p>JBoss jmx-rmi port: 42290 JBoss messaging port: 42330 JBoss pooledha port: 42270 JBossremotingport: 42320 JBoss bind port: 0 JBoss rmiobject port: 42240 JBoss snmp-trapd port: 42300 JBoss SNMP port: 42310 JBoss web service port: 42250</p> <p>Copyright (c) 2008 National Cancer Institute - http://www.cancer.gov</p> <p>Previous Next Quit</p>

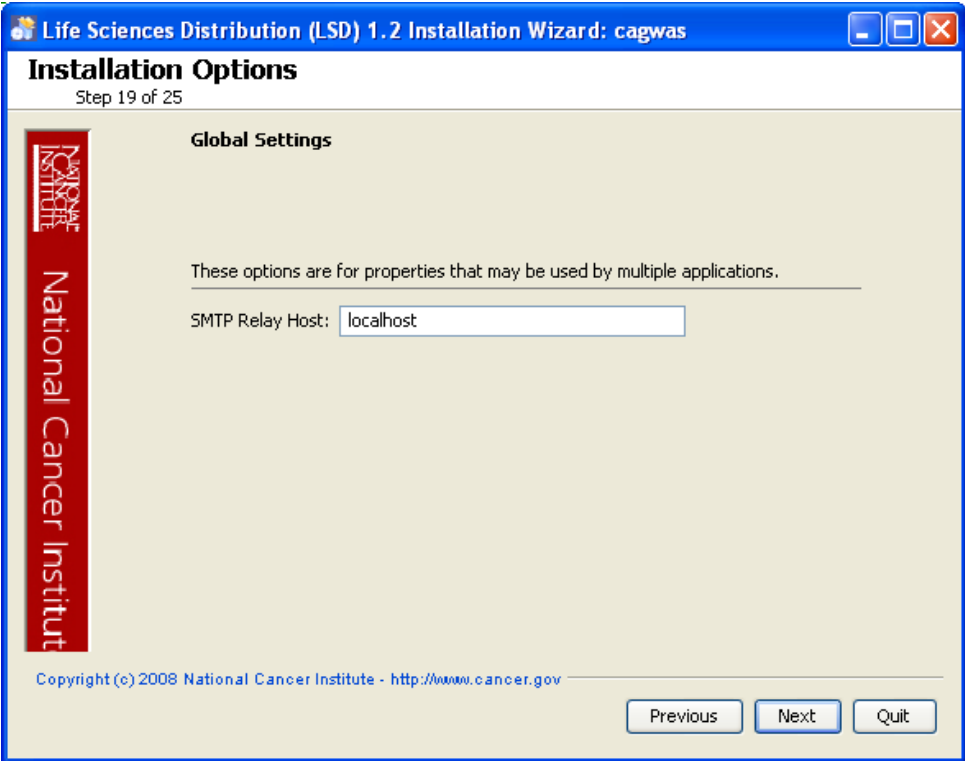
Step	Action
10	<p>For JBoss SSL and Secure Grid configuration requires that you have requested and retrieved certificates already. See https://wiki.nci.nih.gov/x/7xWy for details on SSL, caGWAS does not have a caGrid service.</p> <p>If you are not configuring caGWAS as an SSL, then select Next</p> 

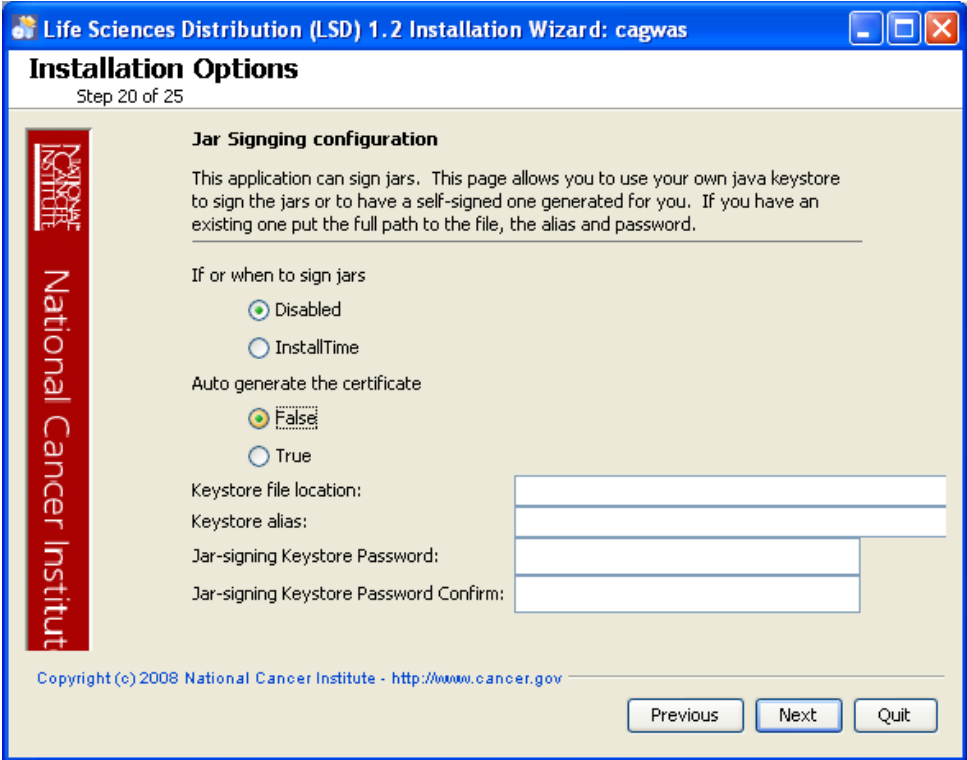
Step	Action
	<p>For JBoss External Hostname configurations see https://wiki.nci.nih.gov/x/8hWy, Values are not required if not externally accessible, just select Next</p> 

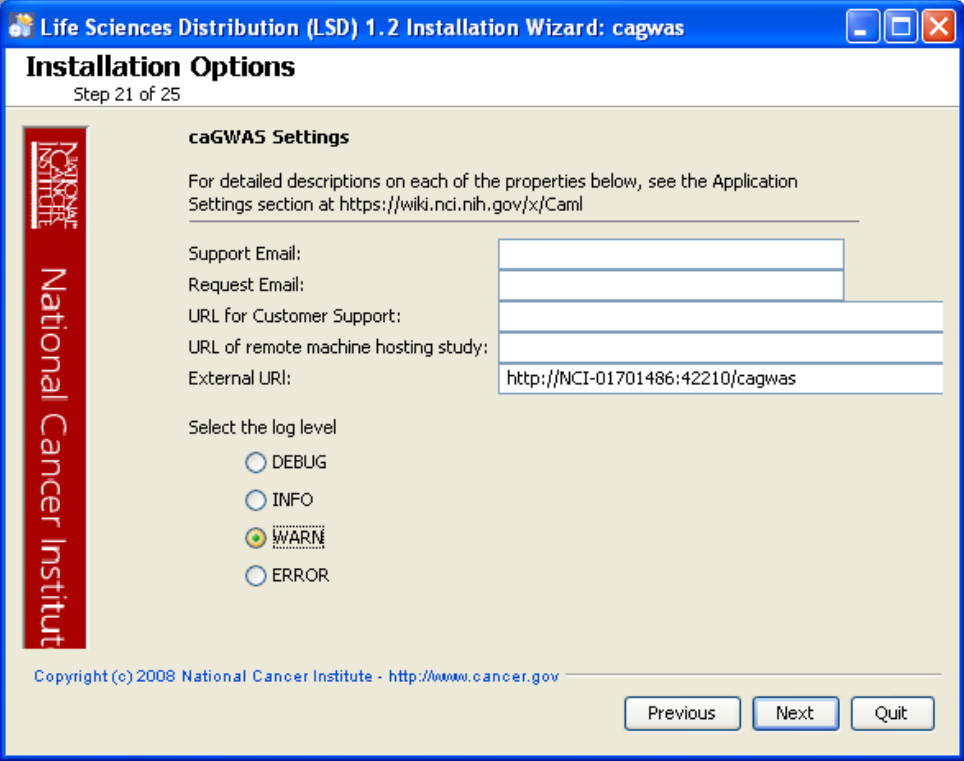
Step	Action
9	<p>Specify the authentication type that caGWAS should use. Database is the most likely choice if you aren't sure what to select here.</p> 

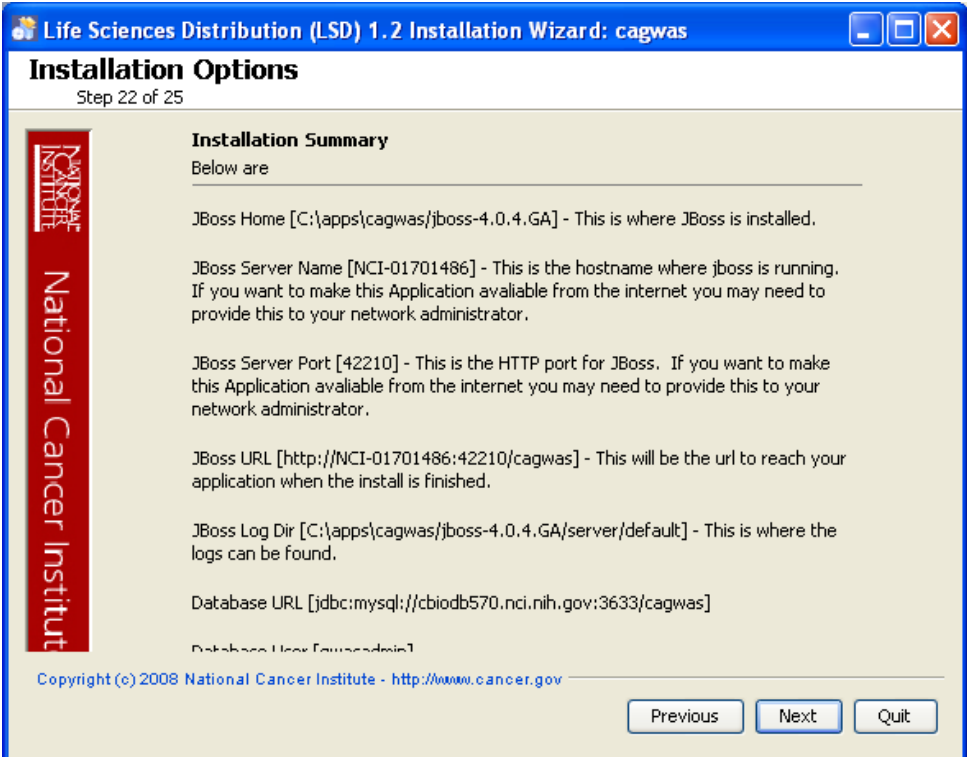
Step	Action
10	<p>If LDAP was selected in the previous step, enter the appropriate configuration information for LDAP.</p> 

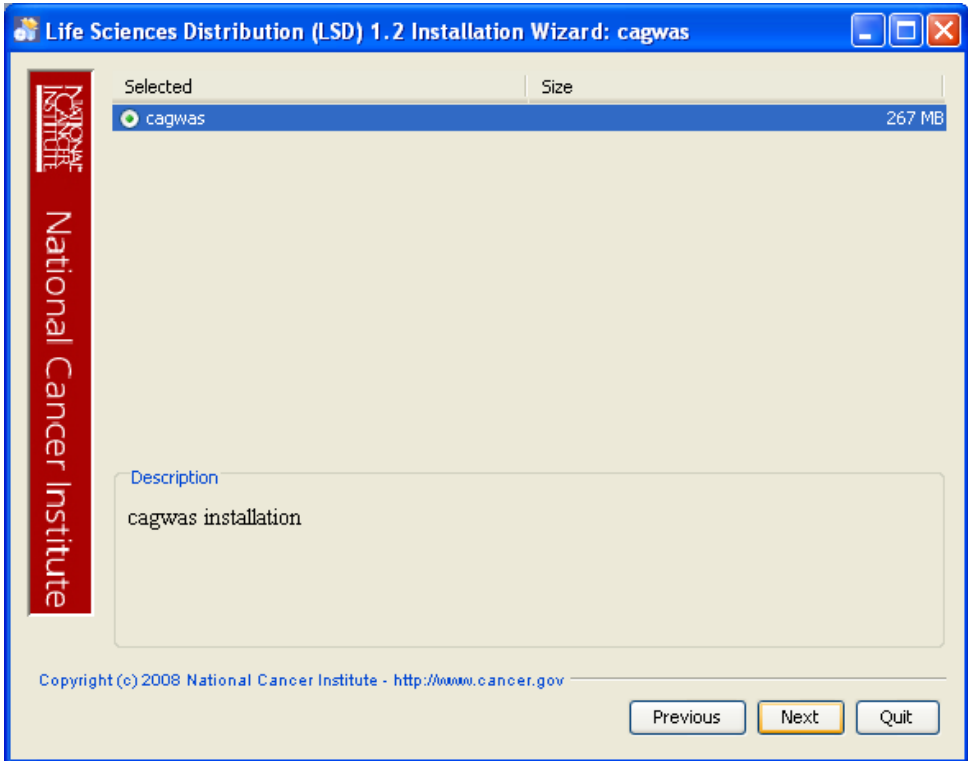
Step	Action										
11	<p>If the authentication type is database:</p> <p>Specify the database connection information, including the name of the pre-existing database where the caGWAS schema will be installed, and the pre-existing user which will be used by caGWAS to connect to its database.</p>  <p>The information you enter below will connect you to an existing database. It's highly recommended that 'Database Host Name' NOT be the machine from which you are currently installing. The 'Database User' must have full access to 'Database Name'. It's highly recommended you contact your database administrator to obtain this information. NOTE: All database objects for 'Database Name' will be dropped and recreated during the installation process, but will be preserved during database. In either case we recommend backing up your database before proceeding.</p> <table border="1"> <tr> <td>Database Host Name:</td> <td><input type="text"/></td> </tr> <tr> <td>Database Port:</td> <td>3426</td> </tr> <tr> <td>Database Name:</td> <td>cagwas</td> </tr> <tr> <td>Database Application User:</td> <td>cagwasuser</td> </tr> <tr> <td>Database Application User Password:</td> <td><input type="password"/></td> </tr> </table> <p>Copyright (c) 2008 National Cancer Institute - http://www.cancer.gov</p> <p>Previous Next Quit</p> <p>Error messages inform you if the following occurs:</p> <ul style="list-style-type: none"> • If the specified database host cannot be reached, or the field is blank. <p>If the specified database does not already exist, or the caGWAS DB user's credentials are wrong.</p>	Database Host Name:	<input type="text"/>	Database Port:	3426	Database Name:	cagwas	Database Application User:	cagwasuser	Database Application User Password:	<input type="password"/>
Database Host Name:	<input type="text"/>										
Database Port:	3426										
Database Name:	cagwas										
Database Application User:	cagwasuser										
Database Application User Password:	<input type="password"/>										

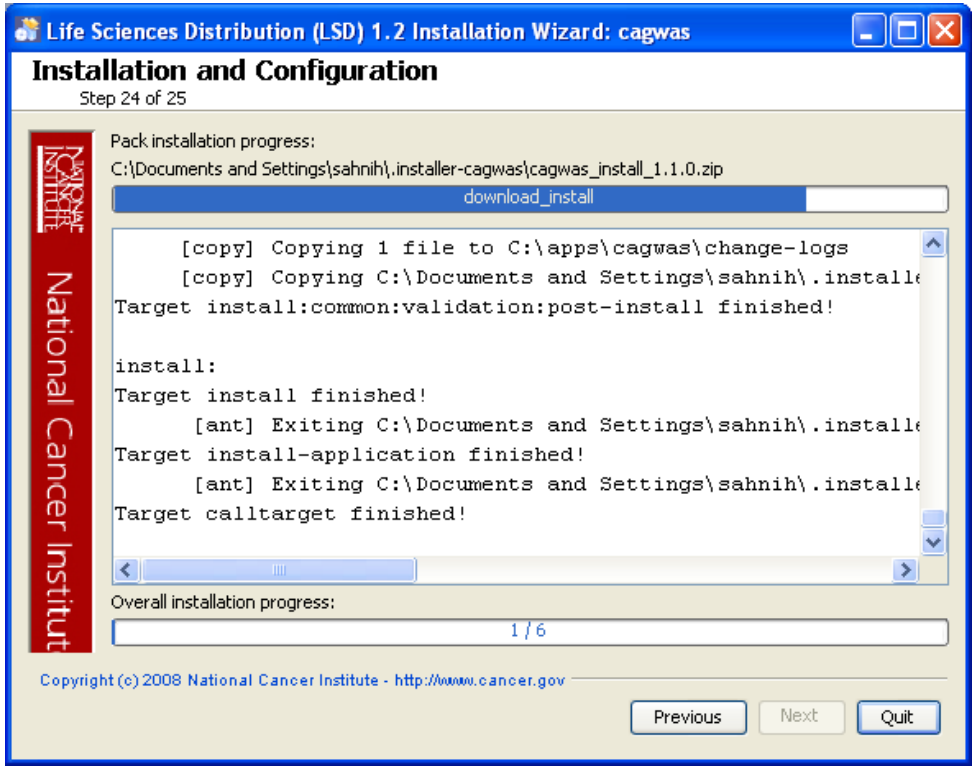
Step	Action
12	<p>Specify SMTP mail server connection info so that caGWAS can send emails from users with new account requests.</p> 

Step	Action
13	<p>This page allows you to use your own java keystore to sign the jars or to have a self-signed one generated for you. If you have an existing one put the full path to the file, the alias and password.</p> <p>Otherwise, just select Next</p> 


Step	Action
14	<p>Specify the caGWAS Settings.</p> <p>For detailed descriptions on each of the properties below, see the Application Settings section at https://wiki.nci.nih.gov/x/Caml</p>  <p>An error message opens informing you of required fields you may have missed.</p>

Step	Action
15	<p>Review the summary of the information you entered and if everything appears fine, select Next.</p> 


Step	Action
16	<p>Review the selected install type.</p> <p>After you click Next from reviewing the installation destination, the installer runs. The installation wizard displays the installation progress and completion.</p>  <p>The screenshot shows the 'Life Sciences Distribution (LSD) 1.2 Installation Wizard: cagwas' window. On the left is the National Cancer Institute logo. The main area contains a table with two columns: 'Selected' and 'Size'. The table has one row with 'cagwas' and '267 MB'. Below the table is a 'Description' box containing 'cagwas installation'. At the bottom, there is a copyright notice: 'Copyright (c) 2008 National Cancer Institute - http://www.cancer.gov'. To the right of the copyright notice are three buttons: 'Previous', 'Next', and 'Quit'.</p>

Step	Action
17	<p>When you are informed that the process is finished, click Done in the lower right corner of the wizard to close the installer.</p> 
18	<p>To verify caGWAS installation:</p> <ul style="list-style-type: none"> • open your web browser to <a href="http://<jboss.server.hostname>.<jboss.server.port>/cagwas">http://<jboss.server.hostname>.<jboss.server.port>/cagwas • Refer to the <installtion folder>/cagwas/change-logs/install.properties-DDMMYYXXXX file for the correct values. • Such as C:\apps\cagwas\change-logs\ • Enter cagwas_user as the user and cagwas_user as the password.
19	<p>After successfully installing caGWAS, make a backup of the <installtion folder>/cagwas/change-logs/install.properties-DDMMYYXXXX file in a different directory for future reference.</p>


Command-Line Installation

<p>NOTE</p> 	<p>An alternative to using the GUI-based installer is to install caGWAS via the command line. See https://wiki.nci.nih.gov/x/r6ql for detailed instructions on installing from the command line.</p>
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caGWAS Port Usage

<p>NOTE</p> 	<p>Verify that default port values, as provided by the installer are not in use on your system by running <code>netstat -a</code> from the command line. The default ports for caGWAS are in the 42000 series. If the ports are in use prior to installation, you will likely experience problems with your installation.</p>
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JBoss Errors During Installation

<p>NOTE</p> 	<p>You may receive an error such as Exception in thread "main" <code>java.lang.NoClassDefFoundError: org/jboss/Shutdown</code>. This should not be a problem, as the installer attempts to remove previously installed servers to prevent problems during the installation. If this is your first time installing caGWAS, you may receive and disregard this error message.</p>
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Configuring JBoss


<p>NOTE</p> 	<p>For optimal performance, you must modify your JBoss 4.0.5 configuration to increase the amount of available memory for the caGWAS application. Directions for doing this in Windows are in the following step 1.</p>
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To configure JBoss in **Windows**, follow these steps:

Step	Action
1	<p>Add the following entry to the JBoss <code>run.bat</code> file which is located will be located at <code><application_root_directory>/jboss-4.0.5.GA/bin/run.bat</code>. Add the text right after the line "rem Add -server to the JVM options, if supported".</p> <pre>-server -Xms1024m -Xmx1024m -XX:ThreadStackSize=128 - XX:SurvivorRatio=10 -XX:PermSize=128m -XX:MaxPermSize=128m - Dsun.rmi.dgc.client.gcInterval=3600000 - Dsun.rmi.dgc.server.gcInterval=3600000 - Djava.awt.headless=true</pre> <p>Warning: Be careful when copying and pasting from this document, whether PDF or MS Word. No spaces must come before and after the columns. A safe way to ensure that the text has no unwanted space and unwanted characters is to copy the text into a blank Notepad first. Correct the spacing, then copy and paste back into the <code>run.bat</code> file.</p>
2	<p>Restart your JBoss 4.0.5 server for the changes to take effect. The method of doing this may depend on the start/stop/restart scripts you created after the installation. Most commonly, you can execute <code>shutdown.bat</code> and then <code>run.bat</code> under <code>\$JBASS_HOME/bin</code>. Refer to the publicly available JBoss user's guide at www.jboss.org for more information.</p>

Configuring JBoss to Run as a Service

 <p>NOTE</p>	<p>The JBoss server that runs caGWAS must run continually as a service. The instructions in this section covers this scenario. For caGWAS 1.1.0, there are is a single server:</p> <ul style="list-style-type: none"> • JBoss 4.0.5 (for caGWAS application)
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 <p>NOTE</p>	<p>The default caGWAS installation runs JBoss as a command line process using the user currently logged on. Therefore, when you log out as this user, JBoss will no longer be available for caGWAS. For that reason, it is recommended that you configure your JBoss servers to run as a Linux or Windows service. The instructions are contained in this section.</p>
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Running JBoss as a Service

To run JBoss as a service, follow these steps:

Step	Action
1	Linux See http://wiki.jboss.org/wiki/Wiki.jsp?page=StartJBossOnBootWithLinux .
2	Windows To run an existing JBoss command line installation as a service, follow the directions for creating a user-defined service at http://support.microsoft.com/kb/137890/EN-US/ Note: You need to have access to the Windows Resource Kit.

Contacting Application Support

Application Support <http://ncicb.nci.nih.gov/NCICB/support>
Telephone: 301-451-4384
Toll free: 888-478-4423
