

NBIA 4.4

*Local Installation Guide*



Center for Biomedical Informatics  
and Information Technology

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## Introduction


This *NBIA 4.4 Installation Guide* provides you with the instructions to install and configure a fresh NBIA 4.4 application, or upgrade an existing 4.3.x application. The NBIA installation installs and configures two JBoss application servers and creates a NBIA-specific schema within a pre-existing database on a preinstalled MySQL server. An upgrade of NBIA converts an existing 4.3.x NBIA application and associated grid service to 4.4.

Directions are given in this document for both Linux and Windows operating systems.

### Overview of NBIA Installation

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

1. Downloading and installing required software
2. Setting environment variables
3. Downloading NBIA 4.4 distribution files
4. Installing NBIA:
  - a. GUI Installer Method
  - b. Command-Line Method
    - Editing `install.properties` file
5. Upgrading NBIA
  - a. GUI Installer Method
  - b. Command-Line Method
    - Editing `upgrade.properties` file
6. Configuring JBoss servers and MySQLserver to run as a service
7. Post-Installation Tasks
  - a. Using UPT to Add NBIA Users

<p><b>Before You Proceed</b></p> 	<p>If you have a 3.x version of NBIA installed, you must do a fresh installation as there is no way to upgrade a 3.x NBIA installation to 4.x. Contact NCICB Application Support directly for 3.x data migration support:</p> <p>Web: <a href="http://ncicb.nci.nih.gov/NCICB/support">http://ncicb.nci.nih.gov/NCICB/support</a>                  E-mail: <a href="mailto:ncicb@pop.nci.nih.gov">ncicb@pop.nci.nih.gov</a>                  Telephone: 301-451-4384                  Toll free: 888-478-4423</p>
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## NBIA 4.4 Software and Technology Requirements

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**Tested Environment**

The NBIA 4.4 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.

**Minimal Requirement Environment**

The system requirement varies according to the capacity the system is planned for, such as concurrent users, number of images, etc.

- OS -- Windows or Linux server
  - CPU – Intel 64-bit Core Duo processor or AMD Opteron
  - HD – 160 GB SATA HD
  - RAM – 3GB
- 

**Required Software—Not Included in NBIA**


Many of the servers and services that make up NBIA 4.4 are automatically installed as part of this installation. However, there are certain tools that you must manually install and configure. These tools are listed in Table 1. The software name, version, description, and URL hyperlinks (for download) are indicated in the table.

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Prior to the NBIA 4.4 installation, you must download and install the following tools and recommended versions in the order they are listed in Table 1. Complete the directions for installing each, as directed on the corresponding website.

<b>Required Software Name Version</b>	<b>Description</b>
Java 2 Platform Standard Edition 5.0 Update 14 (J2SE 5.0) <a href="http://java.sun.com/products/archive/j2se/5.0_14/">http://java.sun.com/products/archive/j2se/5.0_14/</a> 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_14-linux-amd64-rpm.bin</code> . For Windows, you might download <code>jdk-1_5_0_14-windows-i586-p.exe</code> .	The J2SE Development Kit (JDK) supports creating J2SE applications.
Apache Ant, 1.7.0 <a href="https://gforge.nci.nih.gov/svnroot/lisd/trunk/tools/apache-ant-1.7.0-bin.zip">https://gforge.nci.nih.gov/svnroot/lisd/trunk/tools/apache-ant-1.7.0-bin.zip</a>	Apache Ant is a Java-based build tool.
MySQL, 5.0.45 <a href="http://downloads.mysql.com/archives.php?p=mysql-5.0&amp;v=5.0.45">http://downloads.mysql.com/archives.php?p=mysql-5.0&amp;v=5.0.45</a>	MySQL is an open-source database software application.

Table 1 Required Software

<p><b>IMPORTANT</b></p> 	<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>
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## Java SDK Installation

When you install the Java SDK, you are 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><b>NOTE</b></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><b>NOTE</b></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, 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>&lt;some_path&gt;</code> with the correct path fragment for Java and Ant installations.</p> <pre>export JAVA_HOME=&lt;some_path&gt;/jdk1.5.0_14 export ANT_HOME=&lt;some_path&gt;/apache-ant-1.7.0 export PATH=\$JAVA_HOME/bin:\$ANT_HOME/bin:\$PATH</pre>
2	Log out and log back in so that the system recognizes your changes.

### Verifying the Environment Variables in Linux

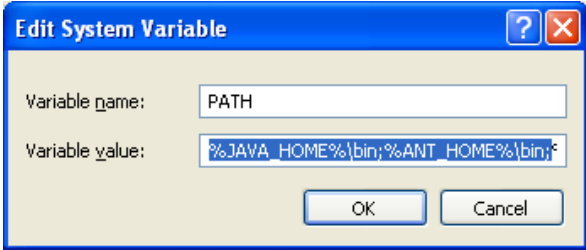
To verify that environment variables have been set correctly, follow these steps:

Step	Action
1	<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	To verify your Java SDK installation, enter <code>java -version</code> from a command prompt. You should see <code>java version "1.5.0_14"</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><b>NOTE</b></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 <b>Control Panel</b> , then select the <b>Systems</b> application. In the Systems window, select the <b>Advanced</b> tab.
2	On the <b>Advanced</b> tab, click the <b>Environment Variables</b> button. To add a new system variable, select the <b>New</b> button. <ol style="list-style-type: none"> <li>a. In the <b>Variable name</b> text box, enter <i>JAVA_HOME</i>.</li> <li>b. In the <b>Variable value</b> text box, enter the location of your Java installation.</li> </ol>
3	Click the <b>New</b> button again. <ol style="list-style-type: none"> <li>a. In the <b>Variable name</b> text box, enter <i>ANT_HOME</i>.</li> <li>b. In the <b>Variable value</b> text box, enter the location of your Ant installation.</li> </ol>
4	Select the PATH system environment variable, and select the <b>Edit</b> button. This opens the Edit System Variable dialog box, displayed here as an example. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;">  </div>
5	In the Variable value text box, prepend the following text in front of the text that already exists in the <b>Variable Value</b> field. <pre><b>%JAVA_HOME%\bin;%ANT_HOME%\bin;</b></pre> <p>Click <b>OK</b>.</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%</pre> <pre>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_14"</code>.</p>
3	<p>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></p>


## MySQL Installation and Configuration

A MySQL 5.0.45 server must be downloaded, installed and running in order for the NBIA 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>

<p><b>TIP</b></p> 	<p>You should consult the following three links to successfully set up secure and well-performing MySQL servers, in preparation for installing NBIA:</p> <ul style="list-style-type: none"> <li>• MySQL Security Guide - <a href="http://dev.mysql.com/doc/refman/5.0/en/security-guidelines.html">http://dev.mysql.com/doc/refman/5.0/en/security-guidelines.html</a></li> <li>• Performance –             <ul style="list-style-type: none"> <li>○ General performance tuning - <a href="http://dev.mysql.com/books/hpmysql-excerpts/ch06.html">http://dev.mysql.com/books/hpmysql-excerpts/ch06.html</a></li> <li>○ InnoDB engine performance tuning - <a href="http://dev.mysql.com/doc/refman/5.0/en/innodb-tuning.html">http://dev.mysql.com/doc/refman/5.0/en/innodb-tuning.html</a></li> </ul> </li> </ul>
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<p><b>MORE TIPS</b></p> 	<ul style="list-style-type: none"> <li>• 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 NBIA installation process.</li> <li>• 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.</li> <li>• As part of the installation process, the default character set is set to <code>latin1</code> for the NBIA MySQL database.</li> </ul>
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Once installed, you must configure My-SQL for NBIA (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"> <li>a. Locate the <code>start()</code> section and modify the <code>mysqld_safe</code> command (do not include the ellipses):           <pre style="margin-left: 20px;"><code>/usr/bin/mysqld_safe --lower_case_table_names=1 ...</code></pre> </li> <li>b. Restart the MySQL service for the changes to take effect:           <pre style="margin-left: 20px;"><code>Restart /etc/init.d/mysqld</code></pre> </li> </ol>

**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 NBIA application, you **must** install UPT.

## Overview of UPT

UPT is used to provision users in the NBIA application. Each CBIIT 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 NBIA application as “NCIA” in the UPT. Then you can assign users to NBIA.


You can download UPT 4.2 through the following link:

[https://qforge.nci.nih.gov/frs/download.php/7298/CSM\\_UPT\\_42\\_Release.zip](https://qforge.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://qforge.nci.nih.gov/docman/view.php/12/18945/caCORE\\_CSM\\_v42\\_ProgrammersGuide.pdf](https://qforge.nci.nih.gov/docman/view.php/12/18945/caCORE_CSM_v42_ProgrammersGuide.pdf).

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<p><b>NOTE</b></p> 	<p>UPT 4.2 is backwards compatible to previous versions of CSM. When you provision the application in UPT 4.2, you are asked to specify the CSM version NBIA is using. You should enter v. 4.0.</p>
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## Installing NBIA 4.4 Application and Services

To newly install the NBIA 4.4 application and services, follow the steps in this section:

- [Downloading NBIA 4.4 files from GForge](#) on page 9
- [Installing a New NBIA 4.4](#) on page 10
  - [GUI Installer Method](#) on page 10
  - [Command-Line Method](#) on page 23
- [Configuring JBoss](#) on page 28
  - [Configuring JBoss Servers and MySQL Server to Run as Services](#) on page 36
- [Post-Installation Tasks](#) on page 38
  - [Starting Up NBIA](#) on page 38

<p><b>BEFORE YOU BEGIN</b></p> 	<ul style="list-style-type: none"> <li>• <b>Important:</b> There must already be a pre-existing MySQL DB and connection username/password for NBIA to install into; NBIA does not create its own DB.</li> <li>• If you have installed a previous version of NBIA 4.3, you must follow the upgrade procedures described in <a href="#">Upgrading NBIA 4.3 to 4.4</a> on page 29 to migrate to NBIA 4.4.</li> </ul>
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## Downloading NBIA 4.4 files

To download the NBIA 4.4 files, follow this step:

Step	Action
1	<p>The installation files for NBIA 4.4 are each over 300MB. All of the files can be downloaded from the NBIA distribution folder here: <a href="https://gforge.nci.nih.gov/frs/?group_id=312">https://gforge.nci.nih.gov/frs/?group_id=312</a>.</p> <ul style="list-style-type: none"> <li>• For a new command-line installer, download the <a href="#">NBIA_install_4_4.zip</a> file.</li> <li>• For a command-line upgrade installer download the <a href="#">NBIA_upgrade_4_4.zip</a> file.</li> <li>• For a GUI installer that you can use to do a fresh NBIA 4.4 installation, download <a href="#">NBIA_gui_distribution_4_4.jar</a> file.</li> </ul> <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 NBIA 4.4

These server components are installed and configured as part of the NBIA 4.4 installation. You do not need to do anything further to download or install these components.

- JBoss 4.0.5 (hosts the NBIA application and NBIA grid service)
- CTP

## Installing a New NBIA 4.4

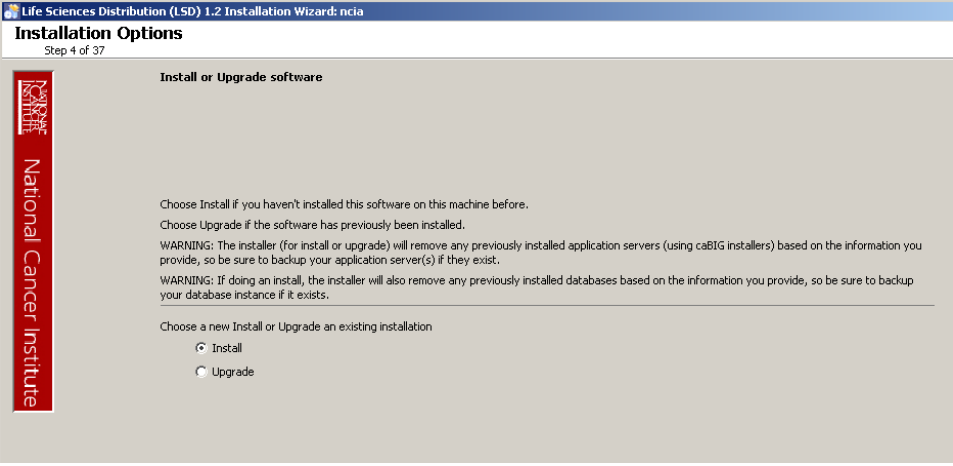
You can perform a new installation of NBIA v.4.4 using either of these two methods:

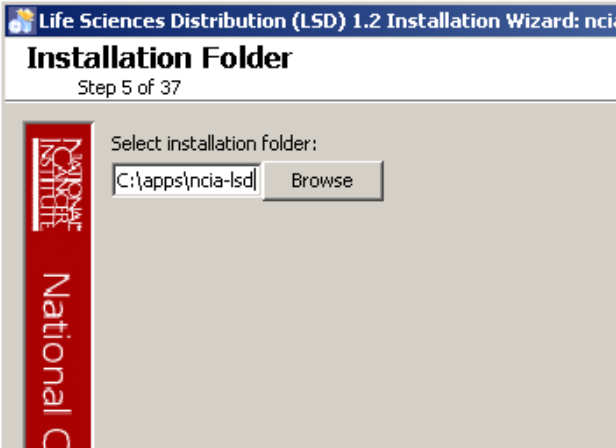
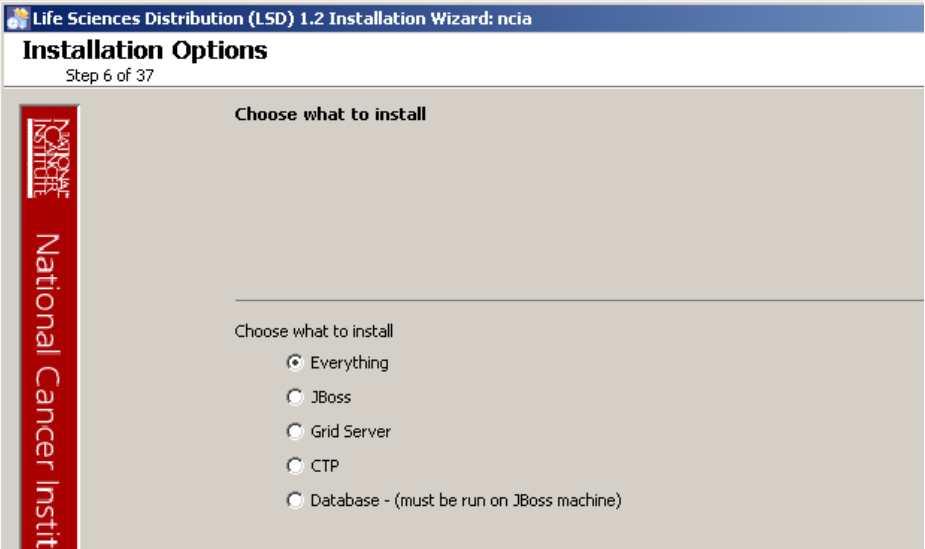
- A GUI Installation wizard. Instructions for this method begin on this page.
- A command-line installation. For instructions, see page 23.

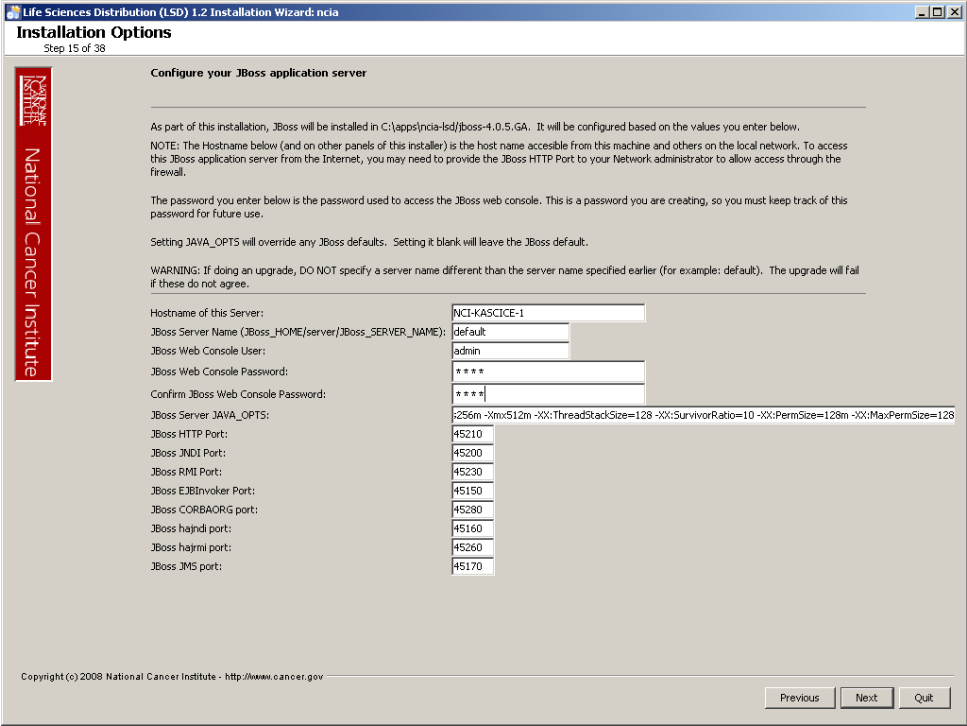
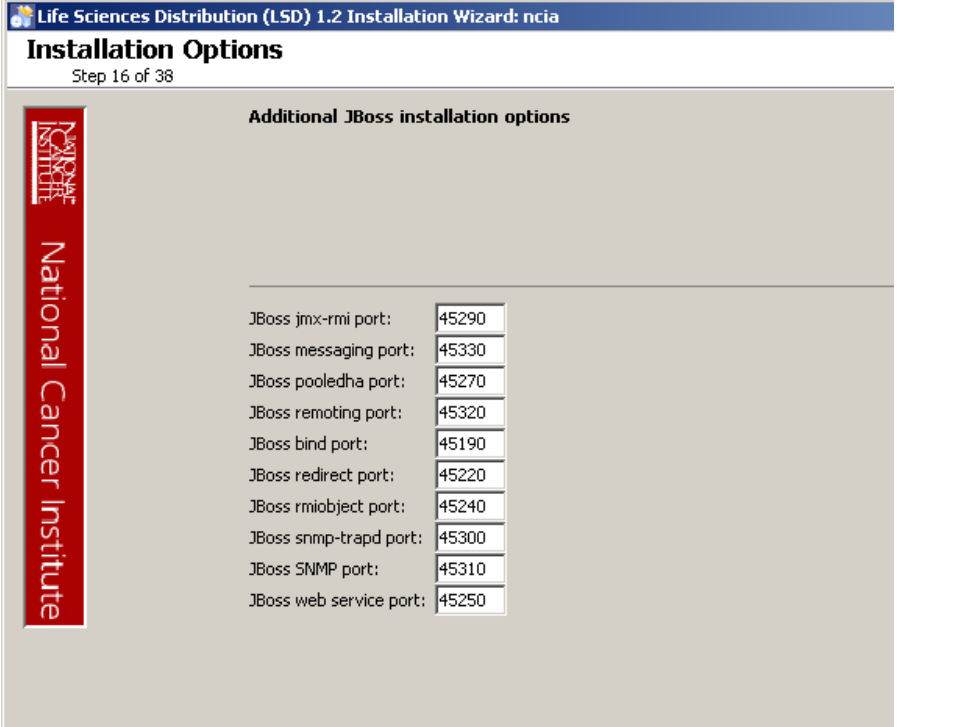
## GUI Installer Method of Installation

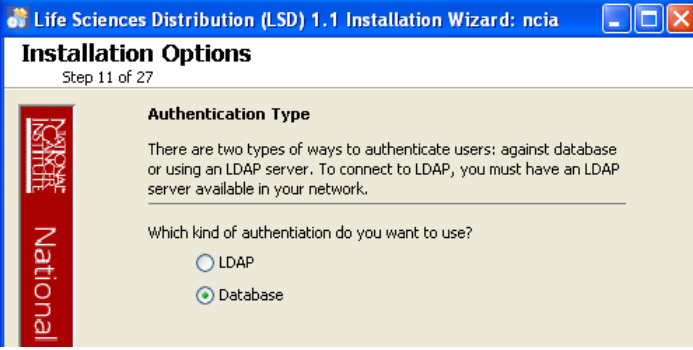
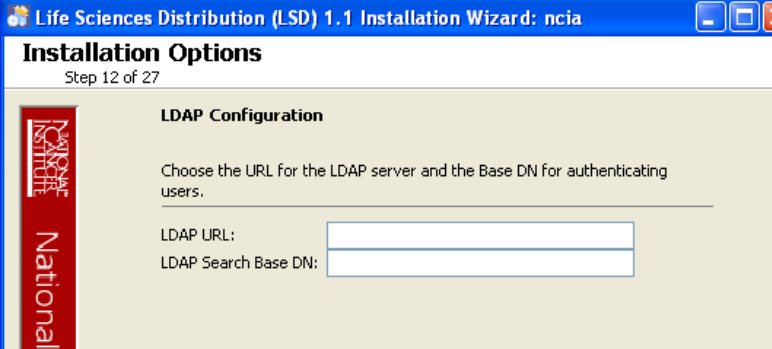
For detailed information on all of the GUI installer fields, refer to the documentation at this location: <https://wiki.nci.nih.gov/x/D6ml>.

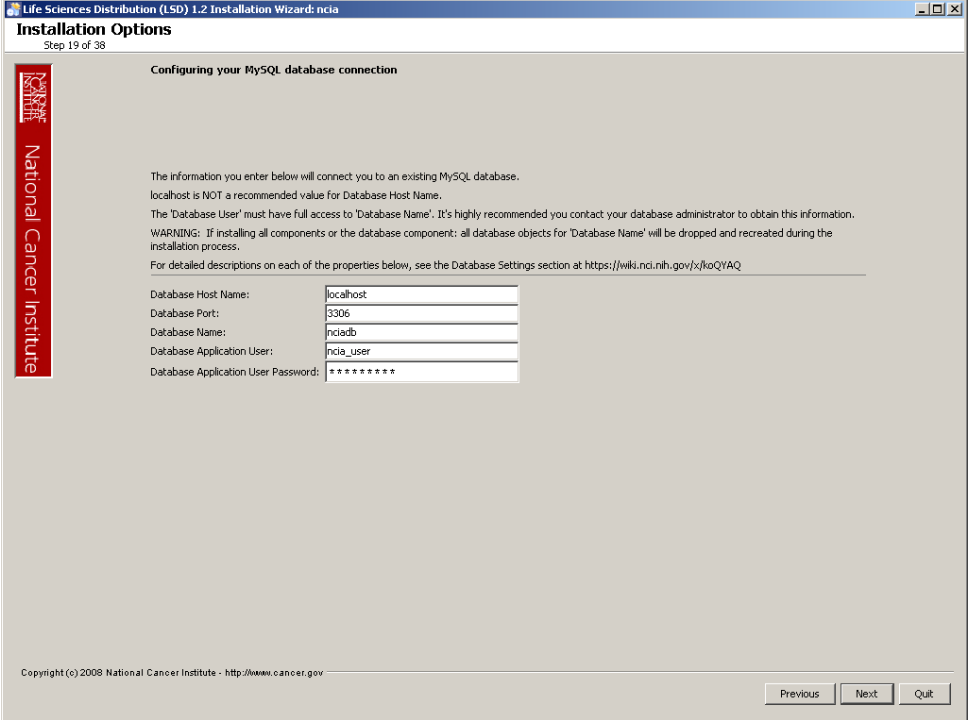
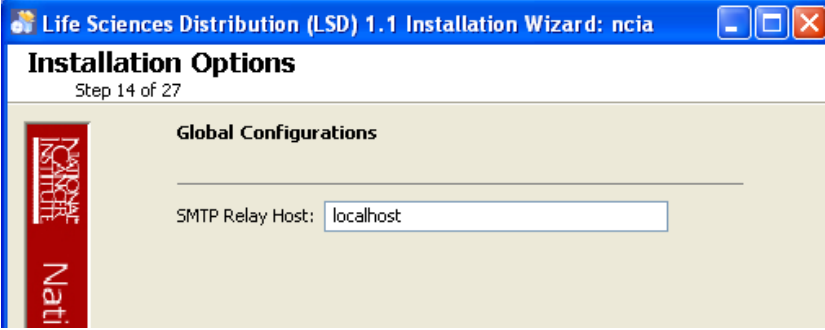
For performing an installation using the GUI Installer, follow these steps:

Step	Action
1	Open a command prompt in the directory where you downloaded the NBIA_gui_distribution_4_4.jar. Enter this command to invoke the GUI installer: <code>java -jar NBIA_gui_distribution_4_4.jar</code> .
2	The Installation Wizard opens to facilitate the installation process. Click <b>Next</b> 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 the installation type. For a new installation, select <b>Install</b> . 

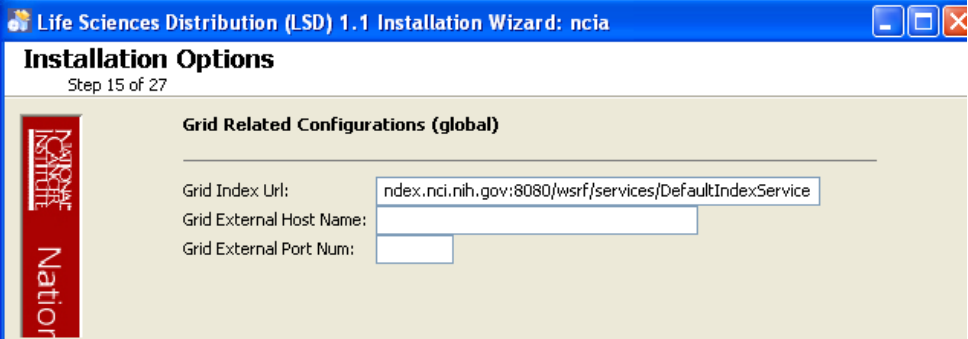
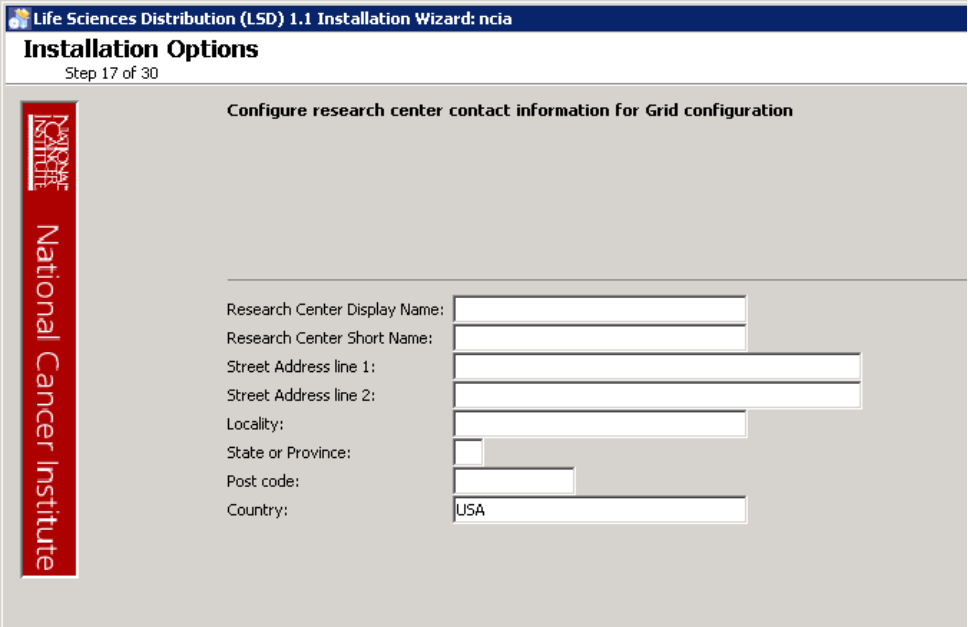
Step	Action
6	<p>Navigate to the directory where you would like to install NBIA 4.4 using the <b>Browse</b> button.</p>  <p>If the folder does not yet exist, click <b>OK</b> in the dialog box to indicate that you want the folder to be created.</p>
7	<p>Select which components of NBIA to install. To install the entire system, select <b>Everything</b>.</p> <p>Alternately, you can install selective components to allow them to be installed on different machines (in order to spread the load).</p> 

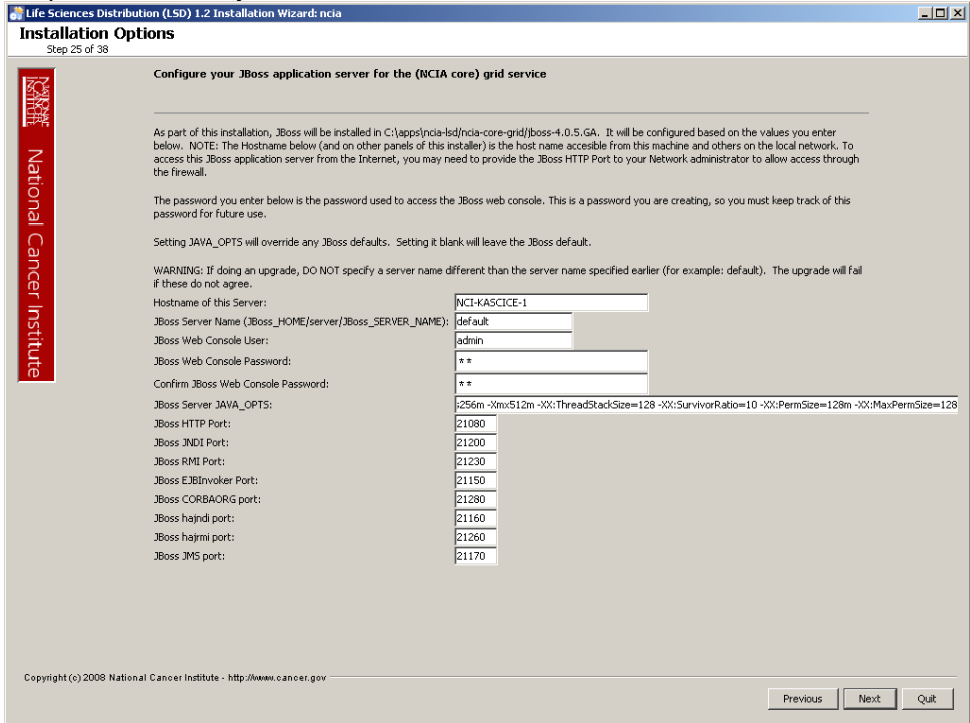
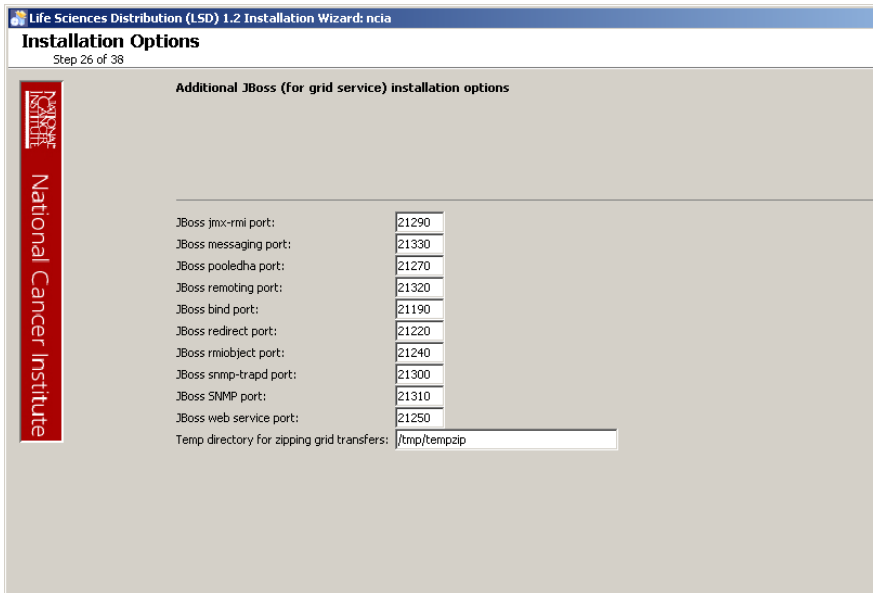
Step	Action
8	<p>Configure the NBIA JBoss server on the next two pages of the installation wizard. The screen shots show example values. The port values which are specified are the defaults and can be used unless you want to reconfigure the values because the ports are already in use.</p> 
9	

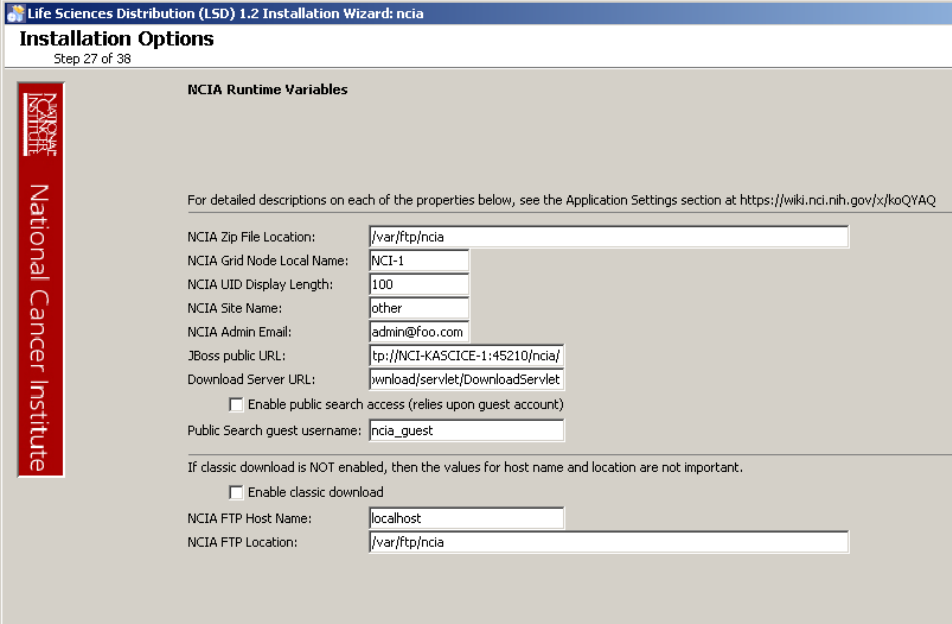
Step	Action
10	<p>Specify the authentication type that NBIA should use. Database is the most likely choice if you aren't sure what to select here.</p> 
11	<p>If LDAP was selected in the previous step, enter the appropriate configuration information for LDAP.</p> 

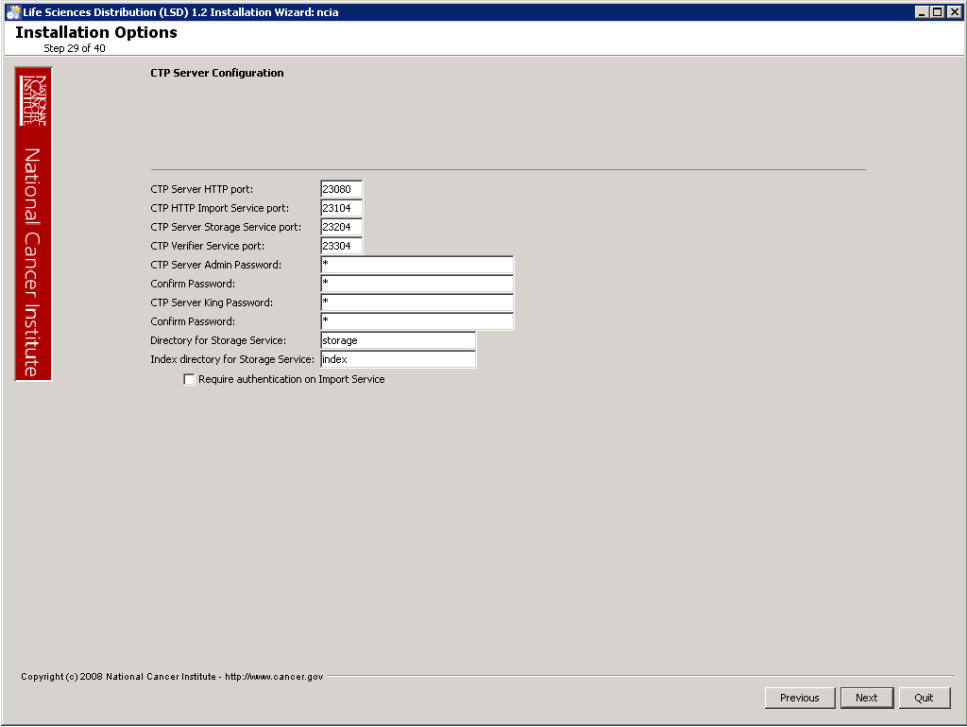
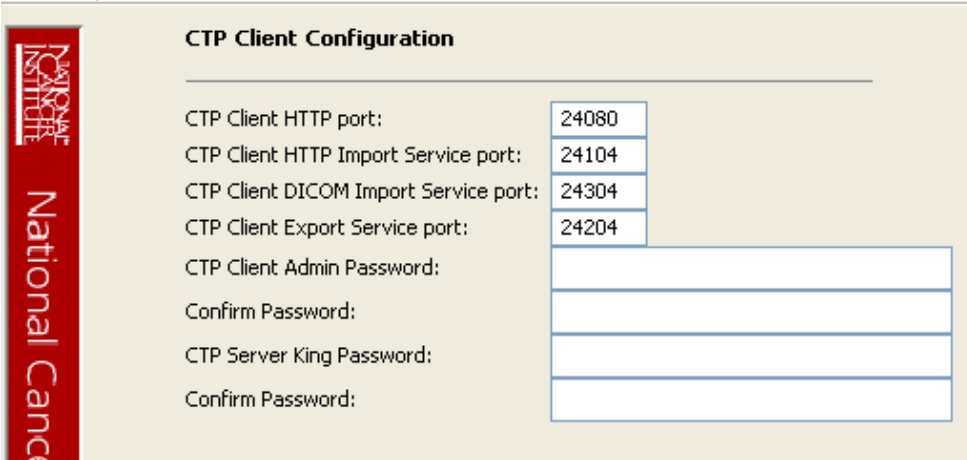
Step	Action
12	<p>If the authentication type is Database:</p> <p>Specify the database connection information, including the name of the <b>pre-existing</b> database where the NBIA schema will be installed, and the <b>pre-existing</b> user which will be used by NBIA to connect to its database.</p> <p>Regardless of the authentication type, the database connection parameters must be filled out. If you are installing everything or just the database, beware that all data in the specified database will be WIPED out. For other components (JBoss Grid, CTP), this information is just used to fill out the configuration (and won't be used to wipe anything).</p>  <p>Error messages inform you if the following occurs:</p> <ul style="list-style-type: none"> <li>• If the specified database host cannot be reached, or the field is blank.</li> <li>• If the specified database does not already exist, or the NBIA DB user's credentials are wrong.</li> </ul>
13	<p>Specify the SMTP mail server connection information so that NBIA can send emails from users with new account requests.</p> 

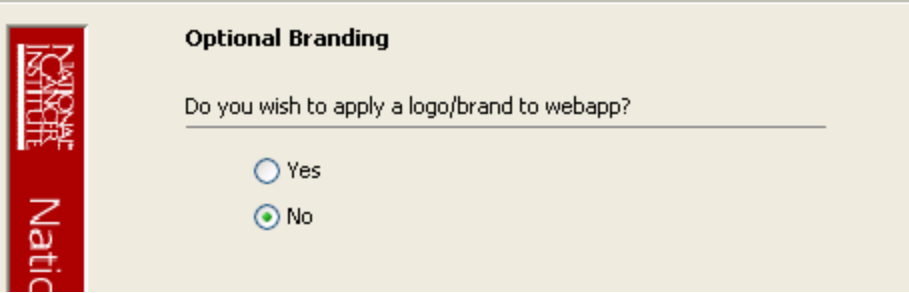
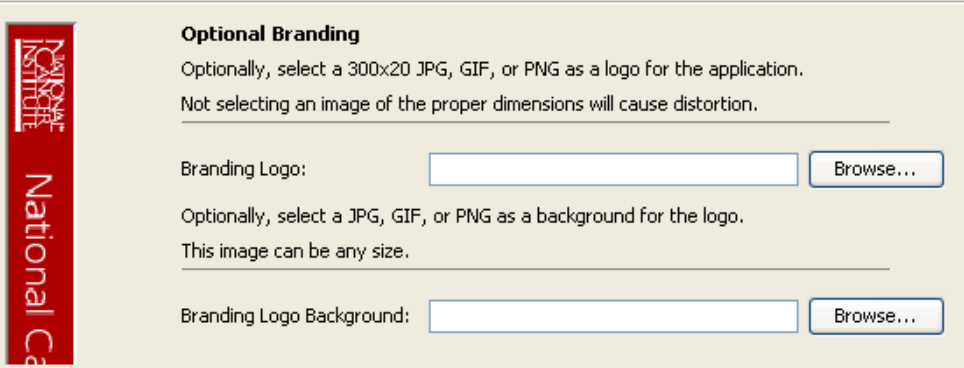


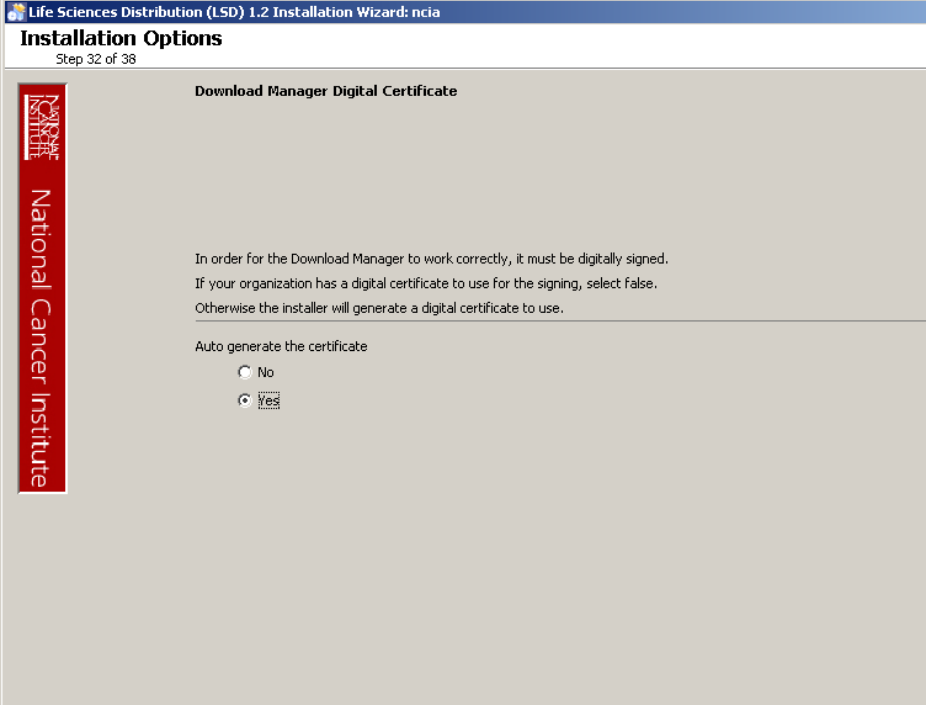
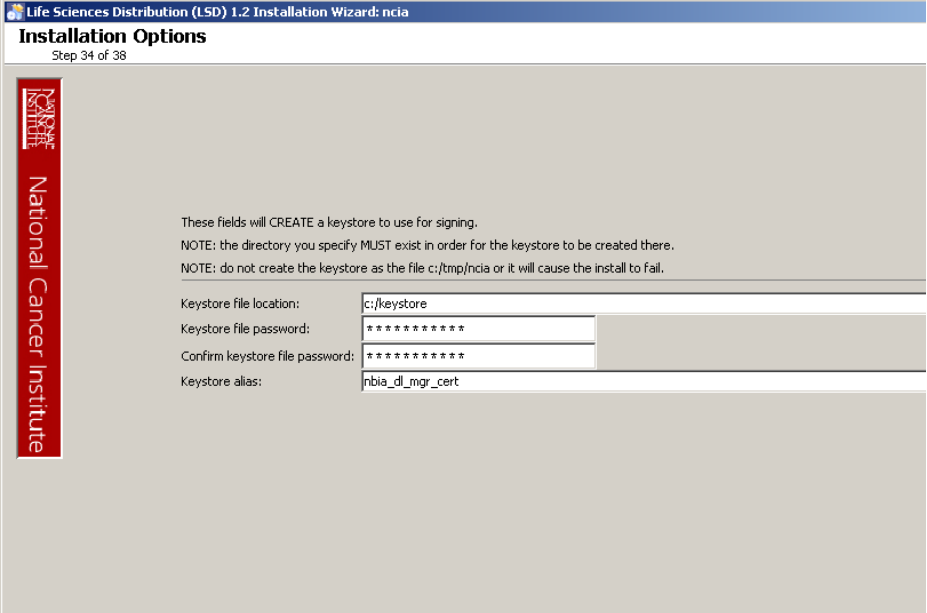
Step	Action
14	<p>Specify the grid service index URL, an externally-visible hostname or IP address which the index service can use to communicate with your NBIA grid service .</p> 
15	<p>Specify the point-of-contact information needed for grid service registration. This information will span several pages of the install wizard.</p>  <p>An error message informs you of any required fields you miss.</p>

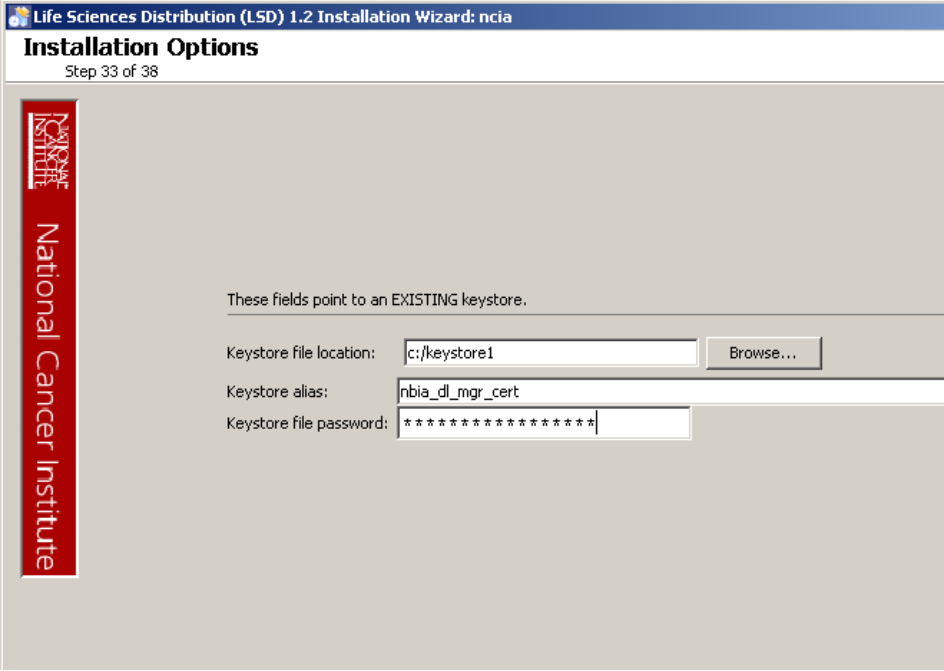
Step	Action
<p>16</p>	<p>Configure the JBoss grid server on the next two pages of the installation wizard. The screen shots show example values. The port values which are specified are the defaults and can be used unless you want to reconfigure the values because the ports are already in use.</p> 
<p>17</p>	<p>In addition to the JBoss ports for the grid server, this page allows specifying a temporary directory for zipping DICOM files. The directory that is specified should be on a partition that has plenty of space.</p> 

Step	Action
18	<p>Specify the runtime variables for NBIA. For detailed descriptions on each of the properties, see the Application Settings at <a href="https://wiki.nci.nih.gov/x/D6mI">https://wiki.nci.nih.gov/x/D6mI</a></p> 

Step	Action
19	<p>Specify the configuration for the CTP (Clinical Trial Processor) Server.</p> <p>King user is a superadmin that has the privilege to shutdown the CTP server and others.</p> <p>Admin user has all the privileges of king without the privilege to shutdown the server.</p> 
20	<p>Specify the configuration for the CTP (Clinical Trial Processor) Client.</p> 


Step	Action
21	<p>To display a logo in the NBIA application's header select <b>Yes</b>.</p> <p><b>Installation Options</b> Step 23 of 29</p> 
22	<p>Select two image files on the local system: one for the logo, and one for the background to be displayed behind the logo. The logo should be 300x20 or else it will be distorted. Both of these fields must have values.</p> <p><b>Installation Options</b> Step 24 of 29</p> 

Step	Action
23	<p>The NBIA Download Manager requires that the jar files that constitute it be digitally signed. There is an option to let the installer generate a “self-signed” certificate. Alternately, if there is an existing (organization) certificate, that can be used.</p> <p>To auto-generate the certificate, select <b>Yes</b>.</p> 
24	<p>If you opt to auto-generate the certificate, you can specify on this page where the keystore will be created. It also allows you to specify the alias of the key to be created.</p> 

Step	Action
25	<p>If you opt to use an existing certificate, you can specify on this page where the keystore is (already) located.</p> 
26	<p>Review the selected install type and the installation destination.            After you click <b>Next</b> from reviewing the installation destination, the installer runs. The installation wizard displays the installation progress and completion.</p>
27	<p>When you are informed that the process is finished, click <b>Done</b> in the lower right corner of the wizard to close the installer.</p>
28	<p>To verify NBIA installation:</p> <ul style="list-style-type: none"> <li>• Open your web browser to <a href="http://&lt;jboss.server.hostname&gt;.&lt;jboss.server.port&gt;/ncia">http://&lt;jboss.server.hostname&gt;.&lt;jboss.server.port&gt;/ncia</a> (example; <a href="https://imaging.nci.nih.gov/ncia/">https://imaging.nci.nih.gov/ncia/</a>).</li> </ul> <p>Refer to the &lt;user home&gt;/.installer-NCIA/NCIA_installer/install.properties file for the correct values.</p> <ul style="list-style-type: none"> <li>• Enter <i>nciadevtest</i> as the user and <i>changeme</i> as the password.</li> </ul>

29	<p>To verify that the NBIA Grid Service is up and running:</p> <ul style="list-style-type: none"> <li>• Check that NBIA Grid Service appears on the local “services” page. <ul style="list-style-type: none"> <li>○ Point a browser to the “services” page. The URL for this page is <a href="http://host:port/wsrf/services">http://host:port/wsrf/services</a>.</li> <li>○ Examine the page and ensure that “cagrid/NCIACoreService” appears on the page.</li> <li>○ Select the “wsdl” link next to “cagrid/NCIACoreService”.</li> <li>○ Examine the WSDL and check that the host and port in the //wsdl:import@location attribute are correct.</li> <li>○ Examine the WSDL and check that the host and port in //soap:address@location attribute are correct.</li> </ul> </li> <li>• Check that the NBIA Grid Service appears on the caGrid Portal.</li> </ul>
30	<p>After successfully installing NBIA, make a backup of the <code>&lt;user home&gt;/ .installer-NCIA/NCIA_installer/install.properties</code> file in a different directory for future reference.</p>

## Installing NBIA One Component at a Time

<p><b>Important</b></p> 	<p>When installing NBIA one component at a time, be aware of the following:</p> <ul style="list-style-type: none"> <li>• The configuration parameters must agree across the components.</li> </ul> <p>A few examples:</p> <ol style="list-style-type: none"> <li>1. All of the components should share the same database connection parameters.</li> <li>2. The grid component must communicate with the JBoss web application so the JBoss host and port must agree between these two components.</li> <li>3. The JBoss and database components both require configuration information about the guest account. These must agree.</li> </ol> <ul style="list-style-type: none"> <li>• Strictly speaking, there is not a strict order in which the components must be installed. However, the database is likely the first thing to install since the installer will try to start all the other components and if the database is not there, the servers will show errors upon starting. These servers must be restarted after the database is installed.</li> <li>• The installer pages for the individual components are, for the most part, the same pages that are used when installing “Everything” so the documentation for the “Everything” path should largely apply.</li> </ul>
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## Command-Line Method of Installation

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### About Properties

An important component of NBIA 4.4 command-line installation is configuring properties.

#### Overview of NBIA 4.4 Command-Line Installer Properties Files

When you do a command-line installation of NBIA 4.4 for the first time, you will work with the `install.properties` file included in the `NBIA_install_4_4.zip`.

If you are using the command-line to upgrade from the previous version of NBIA 4.3, you will work with the `upgrade.properties` file included in the `NBIA_upgrade_4_4.zip`. For more information about upgrading NBIA, see *Upgrade Using Command-Line Installer* on page 30.

#### Overview of Properties Files


When you installed the previous version of NBIA 4.3, you configured the `install.properties`. The `NBIA_upgrade_4_4.zip` that you must download to perform the upgrade to 4.4 includes another properties file, `upgrade.properties`. To complete the upgrade to NBIA 4.4, you should use the values in the `install.properties` to configure values in the upgrade installer wizard GUI, or the `upgrade.properties` file if you are doing a command-line method of upgrade.

See the steps below for more information.

---


In several instances in this section, property values must be modified. Note the following points about changing or entering variables.

### Paths in .properties Files


<p><b>NOTE</b></p> 	<p>The paths in the <code>.properties</code> files should use <i>forward slashes</i>. For example, you would use <code>application.base.path.window=C:/apps/NBIA</code>, <b>not</b> <code>application.base.path.window=C:\apps\NBIA</code>. If you use backslashes, you will experience undesirable results.</p>
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### Spaces in Property Values

<p><b>NOTE</b></p> 	<p>You should not put any spaces in the property values of *.properties files (e.g. install.properties). In Windows, note that the C:\Documents and Settings\<i>&lt;username&gt;</i> path contains spaces and the installation will likely fail. If you are using Windows, use a path such as C:/apps/NBIA.</p>
--	---


### More About Property Values

<p><b>NOTES</b></p> 	<ul style="list-style-type: none"> <li>• In the install.properties and the upgrade.properties files, any property value marked with <u>uppercase</u> REPLACE_* must be manually updated with the appropriate value.</li> <li>• In each *.properties file, any property value marked with <u>lowercase</u> replace_* may be optionally updated with the appropriate value.</li> <li>• In many of the steps below, there is reference to a database.system.user for your MySQL server. To determine which users have full privileges to create and manage other databases, type <i>show grants</i> from a MySQL prompt to determine the correct level of privileges.</li> </ul>
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### NBIA Port Usage

<p><b>NOTE</b></p> 	<p>Verify that default port values defined in install.properties and upgrade.properties files are not in use on your system by running netstat -a from the command line. 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><b>NOTE</b></p> 	<p>You may receive an error such as Exception in thread "main" java.lang.NoClassDefFoundError: org/jboss/Shutdown. 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 NBIA, you may receive and disregard this error message.</p>
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## Command-line Installation Steps

To install a new instance of NBIA 4.4 using the command-line, follow these steps:

Step	Action										
1	<p>From the directory where you downloaded the NBIA_install_4_4.zip from <a href="#">Downloading NBIA 4.4 files</a> on page 9, unzip the files, using one of these two methods:</p> <ol style="list-style-type: none"> <li>Open a command prompt and use it to extract this file to a temporary location. For example, you may enter a command such as <code>unzip -q NBIA_install_4_4_0.zip</code> (you must have a ZIP tool installed). This location will be referred to as the <code>&lt;installer_directory&gt;</code> henceforth.</li> <li>Use WinZip or a similar utility to unzip the files to a temporary location. This location will be referred to as the <code>&lt;installer_directory&gt;</code> henceforth.</li> </ol> <p><i>Example:</i> <code>&lt;installer_directory&gt; = C:\NBIA_4_4_installer</code></p>										
2	<p><b>Note:</b> Setting the property values is an important step in the install process. Before you complete steps 2 &amp; 3, review <a href="#">About Properties</a> on page 23. <b>Follow steps 2 and 3 carefully.</b></p> <p>Open the <code>&lt;installer_directory&gt;/install.properties</code> file, modify the values for your environment and save the file. At a minimum, you will need to modify the values in the following table.</p> <p>For detailed information on all of the properties, refer to the documentation at this location: <a href="https://wiki.nci.nih.gov/x/D6ml">https://wiki.nci.nih.gov/x/D6ml</a>.</p>										
	<table border="1"> <thead> <tr> <th data-bbox="440 1052 857 1100">Property Name</th> <th data-bbox="857 1052 1411 1100">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="440 1100 857 1299">application.base.path</td> <td data-bbox="857 1100 1411 1299">The location where you are going to install NBIA . For example in Windows, the <code>&lt;application_base_path&gt;</code> can be <code>C:/apps/NBIA</code>. Linux users can use <code>/apps/NBIA</code> or any other folder to which you have write permissions.</td> </tr> <tr> <td data-bbox="440 1299 857 1518">database.type</td> <td data-bbox="857 1299 1411 1518">This value by default is 'MYSQL' and should not be changed.  <b>Note:</b> mysql is the only database supported by NBIA 4.4 at this time. The use of any other database may cause the application to function improperly.</td> </tr> <tr> <td data-bbox="440 1518 857 1717">database.system.user</td> <td data-bbox="857 1518 1411 1717">This value should correspond to a MySQL username that has full system privileges. This must correspond to the administrator account defined when MySQL was configured. See the first bullet in More Tips on page 7.</td> </tr> <tr> <td data-bbox="440 1717 857 1854">database.system.password</td> <td data-bbox="857 1717 1411 1854">This value <u>must</u> correspond to the password for the <code>database.system.user</code> defined when MySQL was configured. See the first bullet in More Tips on page 7.</td> </tr> </tbody> </table>	Property Name	Description	application.base.path	The location where you are going to install NBIA . For example in Windows, the <code>&lt;application_base_path&gt;</code> can be <code>C:/apps/NBIA</code> . Linux users can use <code>/apps/NBIA</code> or any other folder to which you have write permissions.	database.type	This value by default is 'MYSQL' and should not be changed.  <b>Note:</b> mysql is the only database supported by NBIA 4.4 at this time. The use of any other database may cause the application to function improperly.	database.system.user	This value should correspond to a MySQL username that has full system privileges. This must correspond to the administrator account defined when MySQL was configured. See the first bullet in More Tips on page 7.	database.system.password	This value <u>must</u> correspond to the password for the <code>database.system.user</code> defined when MySQL was configured. See the first bullet in More Tips on page 7.
Property Name	Description										
application.base.path	The location where you are going to install NBIA . For example in Windows, the <code>&lt;application_base_path&gt;</code> can be <code>C:/apps/NBIA</code> . Linux users can use <code>/apps/NBIA</code> or any other folder to which you have write permissions.										
database.type	This value by default is 'MYSQL' and should not be changed.  <b>Note:</b> mysql is the only database supported by NBIA 4.4 at this time. The use of any other database may cause the application to function improperly.										
database.system.user	This value should correspond to a MySQL username that has full system privileges. This must correspond to the administrator account defined when MySQL was configured. See the first bullet in More Tips on page 7.										
database.system.password	This value <u>must</u> correspond to the password for the <code>database.system.user</code> defined when MySQL was configured. See the first bullet in More Tips on page 7.										

Step	Action	
	database.server	This value <u>must</u> correspond to the domain name of machine that hosts the MySQL server. Talk to your database administrator to learn the server name and port.
	database.port	This value <u>must</u> correspond to the port for the database.server. 3306 is the default port, but check with your database administrator to be certain.
	database.name	Choose a name for the NBIA MySQL database. This must be different than the UPT database name.
	database.user	Choose a user name to access database.name. This can be any valid name that you choose, but it must be different than database.system.user.
	database.password	Choose a password to access database.name for the username identified in database.user. This must be different than the database.system.password.
	mail.smtp.server	This value <u>must</u> correspond to an SMTP server available in your network. This will differ in your environment. Consult your email administrator for the SMPT server and port (next value).
	grid.index.url	The default value points to the production grid index server. To change to a different grid index, uncomment the desired one while commenting-out the production value.
	jboss.web.password	Set to a secure password to be used to secure the NBIA JBoss server's administrative functions (e.g, admin console, JMX console, command-line shutdown of JBoss server, etc.)
	authentication.type	This value (ldap/db) indicates to use either LDAP or Database to authenticate users. This determines whether passwords will be stored in the NBIA database or in an external LDAP server. Most sites will likely set this to 'db'.
	research.center.displayName	Set this value to the full name of the research center which is hosting the NBIA installation. This value will show in the caGrid Portal application (as will the other research.center.* property values).
	research.center.shortName	Set this value to the short name, or initials, for the research institution which is hosting the NBIA installation.

Step	Action	
	research.center.address.country	Set this value to the name of the country where the research institution which is hosting the NBIA installation resides.
	research.center.address.locality	Set this value to the name of the locality where the research institution which is hosting the NBIA installation resides.
	research.center.address.postalCode	Set this value to the postal code where the research institution which is hosting the NBIA installation resides.
	research.center.address.stateProvince	Set this value to the name of the state or province where the research institution which is hosting the NBIA installation resides.
	research.center.address.street1	Set this value to the street address of the research institution which is hosting the NBIA installation.
	point.of.contact.affiliation	Set this value to the name of the institution with which the primary point of contact for the NBIA installation is affiliated.
	point.of.contact.email	Set this value to the email address of the primary point of contact for the NBIA installation.
	point.of.contact.firstName	Set this value to the first name of the primary point of contact for the NBIA installation.
	point.of.contact.lastName	Set this value to the last name of the primary point of contact for the NBIA installation.
	point.of.contact.phoneNumber	Set this value to the phone number of the primary point of contact for the NBIA installation.
	point.of.contact.role	Set this value to the role of the primary point of contact for the NBIA installation.

Step	Action	
	<code>gov.nih.nci.NBIA.imaging.server.url</code>	<p>URL for image server location. An example of this URL would be:  <a href="http://imaging.nci.nih.gov">http://imaging.nci.nih.gov</a>.</p> <p>This should be the protocol scheme combined with the public domain name for the host where the application server is running. This will usually be the actual domain name for the host, but if there is a proxy, the name may be different.</p> <p>If this is not set correctly, then thumbnail views on the “series page” will not show.</p>
	<code>gov.nih.nci.NBIA.grid.local.node.name</code>	<p>Required Identification of the local instance of NBIA.</p>
	<code>gov.nih.nci.NBIA.ui.uid.display.length</code>	<p>This property will determine the maximum length for DICOM UID values in the user interface. Any UID longer than this value will be truncated with a trailing ellipsis.</p>
	<code>gov.nih.nci.NBIA.jboss.mq.url</code>	<p>The value of this property should ALWAYS be “localhost:&lt;port&gt;” where &lt;port&gt; have the exact same value as <code>#{jboss.server.jndi.port}</code>.</p> <p>If this is not configured properly curation upload and the zipping of DICOM image files for download will not work properly.</p>
	<code>gov.nih.nci.NBIA.admin.email</code>	<p>The email address of the NBIA administrator</p>
	<code>ctp.server.admin.password</code>	<p>Administration password for CTP server</p>
	<code>ctp.client.admin.password</code>	<p>Administration password for CTP client</p>
	<code>gov.nih.nci.NBIA.jboss.public.url</code>	<p>Public accessible url for NBIA instance.</p>
<p>3</p>	<p><b>Record these property values.</b></p> <p><b>Note:</b> You should not need to modify the other default values as we have chosen unique ports to reduce the risk of other applications using the same values. However, be sure to verify that the ports in this file are not being used by other applications.</p>	
<p>4</p>	<p>From the command line, navigate to &lt;installer_directory&gt; (<i>Example:cd C:\NBIA_4_4_installer</i>), and type <b>ant</b>. This initiates the installation process. The anticipated duration is anywhere from 7-15 minutes, depending on your system's speed, power and memory.</p> <p>The installer installs the NBIA schema in the specified <b>pre-existing</b> database on your MySQL server, and installs, configures, and starts the JBoss server and the Tomcat server for the grid service. The installer does not currently start the CTP server.</p>	


Step	Action
5	To verify NBIA installation, open your web browser to <a href="http://&lt;jboss.server.hostname&gt;.&lt;jboss.server.port&gt;/ncia">http://&lt;jboss.server.hostname&gt;.&lt;jboss.server.port&gt;/ncia</a> (example; <a href="http://imaging.nci.nih.gov/ncia/">http://imaging.nci.nih.gov/ncia/</a> ). Refer to the <installer_directory>/install.properties file for the correct values. Enter <i>nciadevtest</i> as the user and <b>changeme</b> as the password.
6	After successfully installing NBIA, make a backup of the <installer_directory>/install.properties file in a different directory for future reference.

## Upgrading NBIA 4.3 to 4.4


This section describes how to upgrade your product from NBIA 4.3 to NBIA 4.4. The instructions in this section apply only if you have already installed NBIA version 4.3.x.

You can perform an upgrade installation of NBIA v.4.4 using either of these two methods:

- A GUI Installation wizard. Instructions for this method begin on this page.
- A command-line installation. For instructions, see page 33.

<p><b>Before You Begin</b></p> 	<ul style="list-style-type: none"> <li>• <b>Important:</b> Backup the 4.3 database. You need to create a reliable copy of your entire NBIA database—the DDL and DML.</li> <li>• <b>Important:</b> Backup the <code>jboss.home</code> directory. To do this, make a copy of the <code>NBIA.home</code> folder along with any artifacts from the initial installation, such as the property files, already mentioned.</li> </ul>
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If you are performing a new installation, go directly to the installation of version 4.4, [Installing NBIA 4.4 Application and Services](#), on page 8.

 <b>NBIA 4.3 Users Upgrading to NBIA 4.4</b>	<ul style="list-style-type: none"> <li>• The directions in this section presume that you have a valid and functioning NBIA 4.3. That assumes that Java SDK, Apache Ant and MySQL have all been successfully uploaded and installed, as described on page 3 in this document.</li> <li>• The upgrade to NBIA 4.4 will add new constraints to the data model. This is done in order to stop erroneous submissions from happening. If such submissions have already happened, there may already be duplicate or corrupt data in the database. The upgrade will fail in such a case, and the corrupt data needs to be cleaned out before the upgrade can be successful.</li> </ul>
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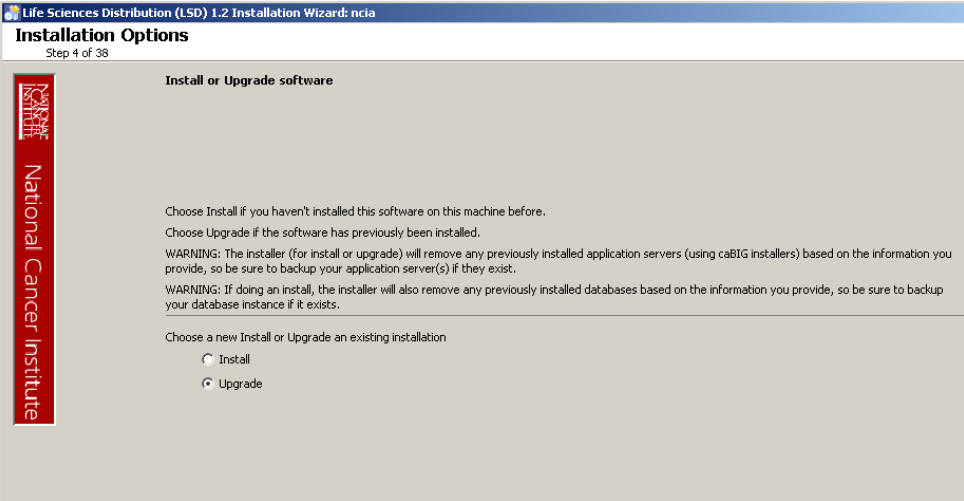
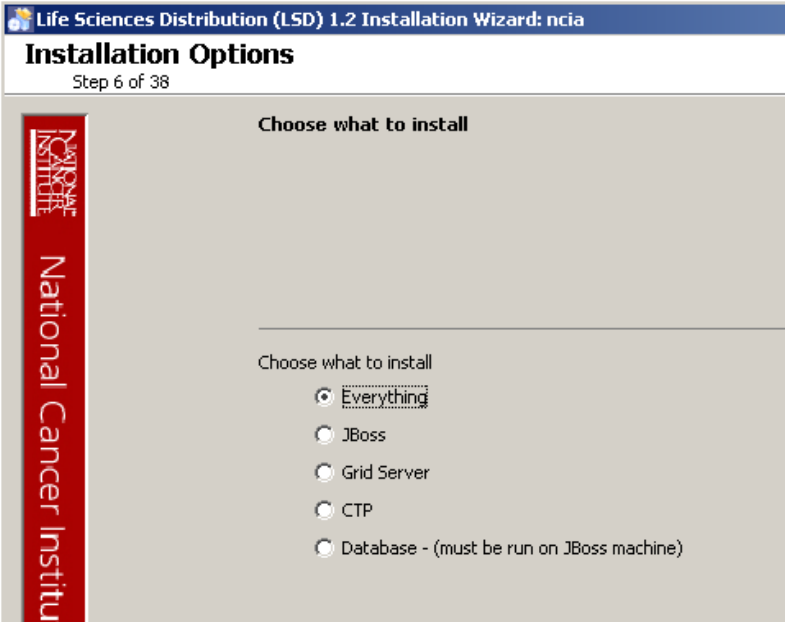
## Upgrading NBIA Using the GUI Installer

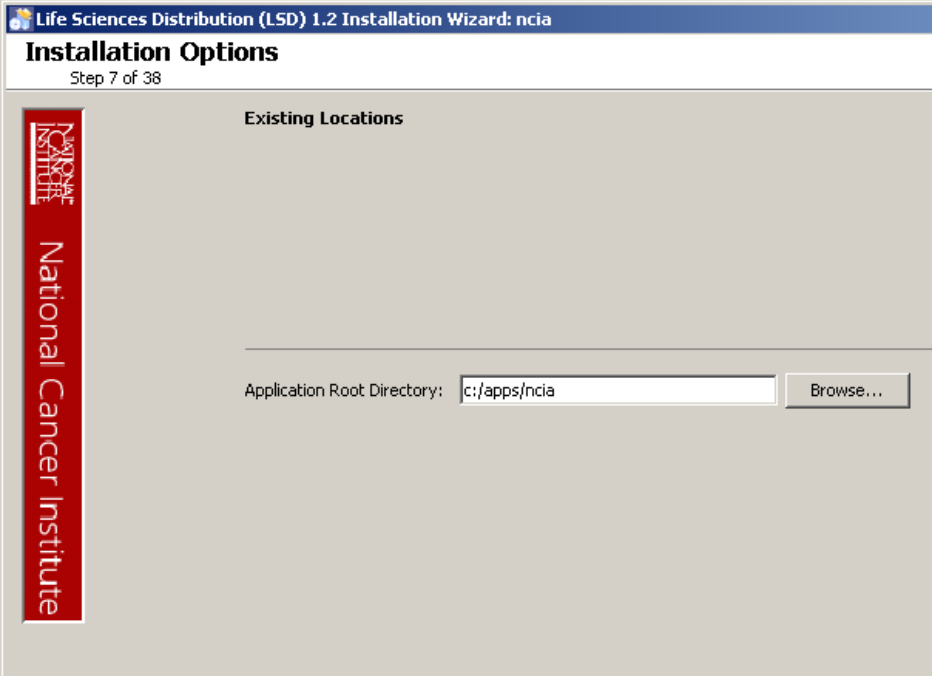
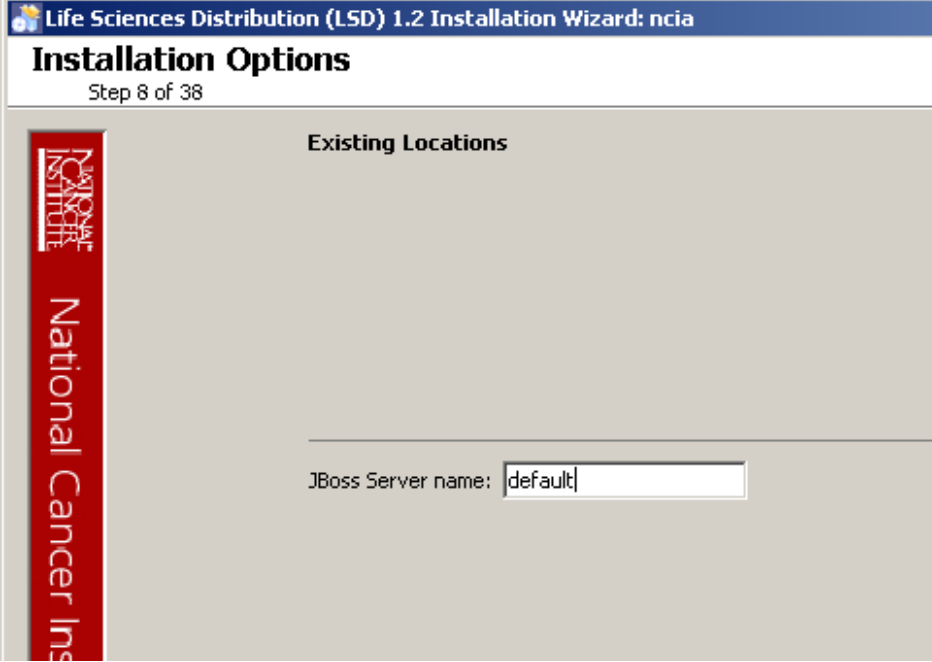
For detailed information on all of the GUI installer fields, refer to the documentation at this location: <https://wiki.nci.nih.gov/x/koQYAQ>.

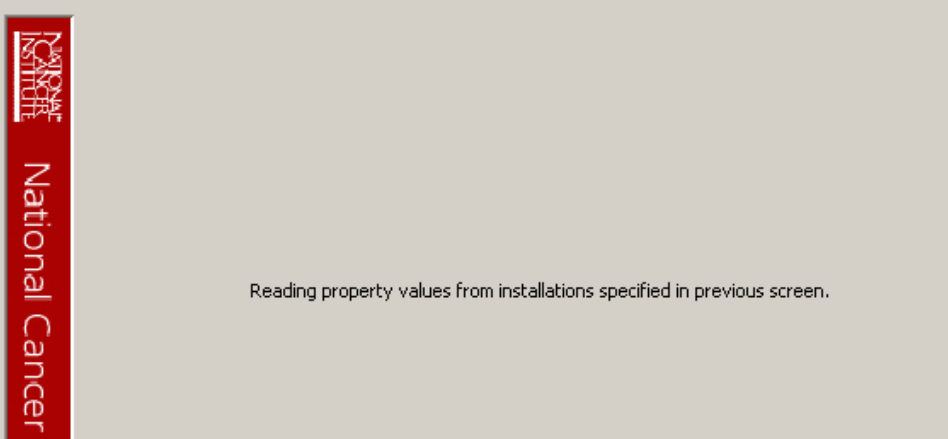
To perform an upgrade to NBIA 4.4 using the GUI Installation Wizard, follow these steps:

Step	Action
1	Open a command prompt in the directory where you downloaded the <code>NBIA_gui_distribution_4_4.jar</code> and invoke the GUI installer like this: <code>java -jar NBIA_gui_distribution_4_4.jar</code> .
2	The Installation Wizard opens to facilitate the installation process. Click <b>Next</b> 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 to continue.



Step	Action
5	<p>Select the <b>Upgrade</b> installation type.</p> 
6	<p>Select the components of NBIA to upgrade. To upgrade the entire system, select <b>Everything</b>.</p> <p>Alternately, selective components can be upgraded per machine.</p> 

Step	Action
7	<p>Select the location for the previous installation. If the path pointing to the NBIA installation to be upgraded is incorrect, an error message appears.</p> 
8	<p>For each JBoss container, the upgrader solicits for the server name to upgrade.</p> 

Step	Action
9	<p>The installer software now inspects the application base path to determine the existing configuration (the best that it can). This page indicates this action. There is nothing for you to enter here.</p> <p><b>Installation Options</b> Step 7 of 29</p> 
10	<p>From here on, the upgrade process looks almost exactly like the install process, described starting on page 10 in this document. The installer software has populated the defaults for all fields from the existing installation the best that it can.</p> <p>For fields that are new in this release, there are sensible defaults.</p>

**Overview of Properties Files**

When you installed the previous version of NBIA 4.3, you configured the `install.properties`. The `NBIA_upgrade_4_4.zip` that you must download to perform the upgrade to 4.4 includes another properties file, `upgrade.properties`. To complete the upgrade to NBIA 4.4, you must use values in the `install.properties` to configure values in the upgrade installer wizard GUI, or the `upgrade.properties` file if you are doing a command-line method of upgrade.

See the steps below for more information.


## Upgrading NBIA Using Command-Line Installer

To perform an upgrade to NBIA 4.4 using the command-line, follow these steps.

Step	Action
1	<p>From the directory where you downloaded the upgrade zip file, extract the files, using one of these two methods:</p> <ol style="list-style-type: none"> <li>a. Open a command prompt and use it to extract this file to a temporary location. For example, you may enter a command such as <code>unzip -q NBIA_upgrade_4_4.zip</code>. (You must have a ZIP tool installed).</li> </ol> <p><b>Note:</b> It is recommended that you use a new directory for the unzipped files, rather than the one you used to unzip the installer for the previous version(s) of NBIA. This location will be referred to as the <code>&lt;upgrade_installer_directory&gt;</code> henceforth.</p> <ol style="list-style-type: none"> <li>b. Use WinZip or a similar utility to unzip the files to a temporary location. This location will be referred to as the <code>&lt;upgrade_installer_directory&gt;</code> henceforth</li> </ol> <p>Example <code>&lt;upgrade_installer_directory&gt; = C:\NBIA41_upgrade_installer</code></p>
2	<p>Edit the default properties in the <code>&lt;upgrade_installer_directory&gt;/build/upgrade.properties</code> file. To do so, open both properties files, the one you configured originally when you installed the previous version of NBIA 4.3.x. (<code>&lt;install_properties_file&gt;</code>) and the <code>&lt;upgrade_installer_directory&gt;/build/upgrade.properties</code> file.</p> <p><b>Note:</b> Where there are duplicate attributes, the values must be the same in both files.</p> <p>Copy each entry you modified in the 4.3 installation file and paste it in the corresponding location in the <code>upgrade.properties</code> file, replacing the default text, as appropriate. All the properties that appear in <code>upgrade.properties</code> appear in <code>install.properties</code> (but not vice versa). Consult the Command-Line Method of Installation of this guide on page 23 for more background on the meaning of the properties.</p>
3	<p><b>Record these property values.</b></p> <p><b>Note:</b> You should not need to modify the other default values as we have chosen unique ports to reduce the risk of other applications using the same values. However, be sure to check the <code>*.properties</code> to verify that the ports in this file are not being used by other applications.</p>

Step	Action
4	<p>From the command line, navigate to &lt;upgrade_installer_directory&gt;/ (Example: cd C:\NBIA42_upgrade_installer), and type <b>ant</b>. This initiates the upgrade process. The anticipated duration is anywhere 7-15 minutes depending on your system's speed, power and memory.</p> <p>The installer upgrades your existing NBIA database on your MySQL server, starts your existing JBoss servers and starts up the grid service for the NBIA application.</p> <p><b>Notes regarding upgrade:</b></p> <p>When the installer detects that a database exists, it warns you to back it up, which you were instructed to do earlier in this process. Press <b>Y</b> to proceed.</p>
5	<p>To verify NBIA installation, open your web browser to <code>http://&lt;jboss.server.hostname&gt;.&lt;jboss.server.port&gt;/NBIA</code> (example: <code>http://imaging.nci.nih.gov/NBIA</code>) and enter <b>nciadevtest</b> as the user and <b>changeme</b> as the password. Refer to the original <code>install.properties</code> for the correct <code>jboss.server.hostname</code> and <code>jboss.server.port</code> values.</p>

## Configuring JBoss

 <p><b>NOTE</b></p>	<p>For optimal performance, you must modify your JBoss 4.0.5 configuration to increase the amount of available memory for the NBIA 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 &lt;application_root_directory&gt;/jboss-4.0.5.GA/bin/run.bat. 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><b>Warning:</b> 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>

Step	Action
2	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>\$JBOSS_HOME/bin</code> . Refer to the publicly available JBoss user's guide at <a href="http://www.jboss.org">www.jboss.org</a> for more information.

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## Configuring JBoss Servers and MySQL Server to Run as Services


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 <p><b>NOTE</b></p>	<p>MySQL, and the two JBoss servers that make up NBIA, and the JBoss server optionally installed for UPT, must run continually as services. The instructions in this section cover all of these scenarios. For a NBIA 4.4 deployment, there are at least four servers, and if UPT is installed, five servers:</p> <ul style="list-style-type: none"> <li>• JBoss 4.0.5 (for NBIA application and grid service)</li> <li>• MySQL 5.0.27</li> <li>• CTP (Clinical Trial Processor)</li> </ul>
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## Running JBoss as a Service

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 <p><b>NOTE</b></p>	<p>The default NBIA installation runs JBoss as a command line process using the user currently logged on. Therefore, when you log out as this user, JBoss is no longer available for NBIA. 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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To run JBoss as a service, follow these steps:

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

### Running MySQL as a Service

<p><b>NOTE</b></p> 	<p>It is assumed that your MySQL server was installed as a service. If it was not, follow these recommendations for installing this server as a service.</p>
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To run MySQL as a service, follow these steps:

Step	Action
1	<b>Linux</b> See <a href="http://www.redhat.com/docs/manuals/enterprise/RHEL-AS-2.1-Manual/cluster-manager/s1-service-mysql.html">http://www.redhat.com/docs/manuals/enterprise/RHEL-AS-2.1-Manual/cluster-manager/s1-service-mysql.html</a> .
2	<b>Windows</b> When installing MySQL server on Windows, choose the option to run MySQL as a Windows service.

## Post-Installation Tasks

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### Starting Up NBIA

Note that if JBoss and CTP are not installed as services, they must be manually started/re-started. The following files will start the respective servers.

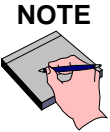
On Windows:

- JBoss: ncia/jboss-4.0.5.ga/bin/run.bat
- Grid JBoss: ncia/ncia-core-grid/jboss-4.0.5.ga/bin/startup.bat
- CTP: ncia/CTP-server/CTP/ctp.bat

On Linux:

- JBoss: ncia/jboss-4.0.5.ga/bin/run.sh
  - Tomcat: ncia/ncia-core-grid/jboss-4.0.5.ga/bin/startup.sh
  - CTP: ncia/CTP-server/CTP/ctp.sh
- 

### Using UPT to Add NBIA Users

 <p><b>NOTE</b></p>	<p>To add users to NBIA, you must provision the NBIA application as “NCIA” in the UPT. See <a href="#">Downloading and Installing UPT (Optional)</a> on page 7.</p>
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To use the UPT, follow these steps:

Step	Action
1	Install UPT.
2	Launch a browser and access UPT via value of <code>application.url</code> (from UPT's <code>install.properties</code> ).
3	Log in to UPT, using the following profile: <ul style="list-style-type: none"> <li>• Login ID=<i>superadmin</i></li> <li>• Password=<i>changeme</i></li> <li>• Application Name=<i>csmupt</i></li> </ul>
4	Select the <b>User</b> tab at the top of the page, and click <b>Create a New User</b> .



Step	Action
5	Enter <b>Login Name, User First Name, User Last Name, User Password, User Password Confirm</b> . Click <b>Add</b> .
6	On the <b>Application</b> tab at the top of the screen, click <b>Create a New Application</b> .
7	<p>Enter the following parameters:</p> <ul style="list-style-type: none"> <li>• Application Name=<b>NCIA</b></li> <li>• Application Description=&lt;<i>Application Description</i>&gt;</li> <li>• Application Declarative Flag=<b>Yes</b></li> <li>• Application Active Flag=<b>Yes</b></li> <li>• Application Database URL=jdbc:mysql://\${database.server}:\${database.port}/\${NBIA.database.name}</li> <li>• Application Database User Name=\${NBIA.database.user}</li> <li>• Application Database User Password= \${NBIA.database.password}</li> <li>• Application Database Confirm Password= \${NBIA.database.password}</li> <li>• Application Database Dialect=<b>org.hibernate.dialect.MySQLDialect</b></li> <li>• Application Database Driver=<b>com.mysql.jdbc.Driver</b></li> </ul> <p><i>NOTE: \${NBIA.xxxx} should be interpreted as the value of property xxxx when NBIA was installed (as opposed to any UPT installation property value)</i></p>
8	Click on <b>Add &gt; Associated Admins</b> . then click on <b>Assign Admin</b> .
9	Highlight the user you want to be admin of the application, and click <b>Assign Admin</b> .
10	Log out of UPT.
11	<p>Log in to UPT (from UPT's <code>install.properties</code>). Use the following login profile:</p> <ul style="list-style-type: none"> <li>• Login ID=&lt;<i>User created above</i>&gt;</li> <li>• Password=&lt;<i>Password for User created above</i>&gt;</li> <li>• Application Name=<b>NCIA</b></li> </ul>
12	Add users to the NBIA application like you did above.

Step	Action
13	Click <b>Logout</b> .

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## Contacting Application Support

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