

LIFE SCIENCES DISTRIBUTION 1.1.0

Local Installation Guide



NCI Center for Biomedical Informatics
and Information Technology

This is a U.S. Government work.


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Introduction

This Life Sciences Distribution (LSD) installation Guide provides you with the instructions to install and configure the LSD application in your environment. The LSD installation installs and configures multiple JBoss application servers, grid services and creates databases on a preinstalled MySQL server.

<p>NOTE</p> 	<p>More information on capabilities of individual tools in LSD can be found on the LSD page of the caBIG™ web site:</p> <p>https://cabig.nci.nih.gov/tools/toolsuite_view#LSD</p>
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Overview of LSD Installation

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

- Downloading and installing required software
- Setting environment variables
- Downloading and installing LSD software applications
- Configuring JBoss and MySQL

The following applications are provided in the LSD distribution:

- UPT (User Provisioning Tool)
 - caArray
 - caGWAS (Cancer Genome-Wide Association Scan)
 - caTissue
 - CTODS (Clinical Trials Object Data System)
 - NCIA (National Cancer Imaging Archive)
 - geWorkbench
 - LSD Browser
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<p>Before You Proceed</p> 	<ul style="list-style-type: none"> • Please contact us directly for support: Web: http://ncicb.nci.nih.gov/NCICB/support/ 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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LSD 1.1.0 Software and Technology Requirements

Tested Environment

The LSD 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.

Linux - Tested Environment

- HP ProLiant DL585
- AMD Opteron 852 2.4 (4 processors)
- 32GB memory
- Red Hat Enterprise Linux 4 AS
- 400 GB local storage

Windows - Tested Environment

- HP ProLiant DL585
- AMD Opteron 852 2.4 (4 processors)
- 16GB memory
- Windows 2003 Enterprise Edition Service Pack 2
- 400 GB NTFS local storage

If you choose to install all of the LSD server-based products (UPT, caArray, caGWAS, caTissue, CTODS, NCIA), the table below indicates the amount of memory that is allocated for each product.

LSD Product	Memory Allocated
Operating System	1024 MB
caTissue	2560 MB
caArray	2304 MB
NCIA	2304 MB
CTODS	768MB
caGWAS	768MB
UPT	768 MB
LSDB	768 MB
Total	11264 MB


Required Software—Not Included in the LSD

Many of the servers and services that make up LSD 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 LSD 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. (Apache ant installation follows on page 4.)

Required Software Name Version URL to Download	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, 5.0.27 http://downloads.mysql.com/archives.php?p=mysql-5.0&v=5.0.27	MySQL is an open-source database software application.


Table 1 Required Software

IMPORTANT 	<ul style="list-style-type: none"> As you install each application, make note of the installation directory path, and the <code>database.server</code>, <code>database.username</code> and <code>database.password</code>. LSD users should be aware that the size of installed applications and their corresponding downloaded datasets may impact the installation and performance of other installed LSD applications. For more information about recommendations, see individual application installation guides.
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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


NOTE 	Apache Ant, version 1.7.0, is the required build tool to install the LSD 1.1.0 applications and services.
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To download and extract the Ant build tool, follow these steps:

Step	Action
1	Download Apache Ant, as described in Table 1, to a directory where you wish to install the tool. Example: <code>/usr/java</code>
2	From the directory where you downloaded the <code>apache-ant-1.7.0-bin.zip</code> file, unzip the files, using one of these two methods: 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 apache-ant-1.7.0-bin.zip</code> (You must have a ZIP tool installed). b. Use WinZip or a similar utility to unzip the files.


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

NOTE 	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.
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Linux

To set the environment variables in Linux, follow the steps below.

 <p>NOTE</p>	<p>The JAVA_HOME, ANT_HOME and PATH environment variables are set in /etc/profile. 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 /etc/profile file. A PATH variable should already be created in this file, so be sure to define the JAVA_HOME and ANT_HOME export before the PATH export. Replace <i><installation_directory></i> with the directory where you have installed the Java SDK and Ant.</p> <p>(The location example in the Apache Ant installation (p. 3) is /usr/java.)</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>
2	<p>Log out and log back in so that the system recognizes your changes.</p>

Verifying the Environment Variables in Linux


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

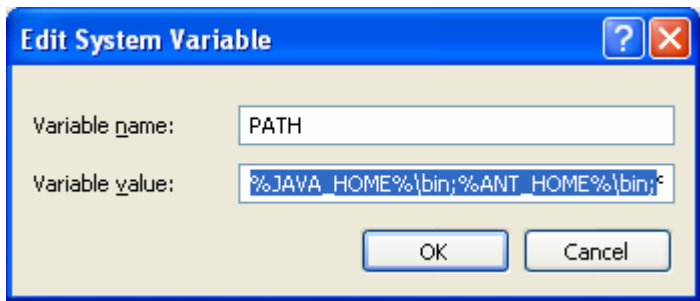
Step	Action
1	<p>From the command line, enter:</p> <pre>echo \$JAVA_HOME echo \$ANT_HOME</pre> <p>Both of these commands should return the location where you installed these tools.</p>
2	<p>To verify your Java SDK installation, enter java -version from a command prompt. You should see java version "1.5.0_10".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

Windows

To set the environment variables in Linux, 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.
2	On the Advanced tab, click the Environment Variables button; to add a new system variable, select the New button. <ul style="list-style-type: none"> a. In the Variable name text box, enter JAVA_HOME. b. In the Variable value text box, enter the location of your Java installation.
3	Click the New button again. <ul style="list-style-type: none"> a. In the Variable name text box, enter ANT_HOME. b. In the Variable value text box, enter the location of your Java installation.
4	Select the PATH system environment variable, and select the Edit button. This opens the Edit System Variable dialog box, displayed here as an example. <div data-bbox="438 1486 1133 1785">  </div>

Step	Action
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> <pre>%JAVA_HOME%\bin;%ANT_HOME%\bin;</pre> <p>Click OK.</p>

Verifying the Environment Variables in Windows


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	<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>
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

To download and install MySQL, follow the steps outlined on the MySQL website:
<http://downloads.mysql.com/archives.php?p=mysql-5.0&v=5.0.27>.

A MySQL 5.0.27 server must be installed and running in order for the installation to work successfully.

<p>TIP</p> 	<p>You should consult the following three links to successfully set up secure and well-performing MySQL servers, in preparation for installing LSD tools:</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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<p>MORE TIPS</p> 	<ul style="list-style-type: none"> • Record the MySQL root password chosen during the MySQL installation process, as you may choose to use this as your <code>database.user</code> later in the LSD tool installation processes. • Note the MySQL port chosen during the MySQL installation process, as you may choose 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 <code>caArray</code> MySQL database.
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Create Empty Database and User

Your DBA should perform these steps if you have not created a database for each software product you are installing or you choose to reinstall a new version (and drop the existing database). Replace *yourdatabasename* , *yourdatabaseuser* and *yourdatabasepassword* with the appropriate values for each software product you are installing:

Step	Action
1	<p>Launch the MySQL server client. From the command line, type the following command:</p> <pre>DROP DATABASE IF EXISTS yourdatabasename; CREATE DATABASE yourdatabasename DEFAULT CHARACTER SET latin1;</pre>
2	<p>Next, from the MySQL server command line, type the following command:</p> <pre>DELETE FROM mysql.user WHERE User='yourdatabasename' ;</pre>
3	<p>Finally, from the MySQL server command line, type the following command:</p> <pre>GRANT ALL ON yourdatabasename.* TO 'yourdatabaseuser'@'localhost' IDENTIFIED BY 'yourdatabasepassword' WITH GRANT OPTION; GRANT ALL ON yourdatabasename.* TO 'yourdatabaseuser'@'%' IDENTIFIED BY 'yourdatabasepassword' WITH GRANT OPTION;</pre>

Step	Action
4	Repeat the steps above for each software product you are installing (e.g. UPT, caArray, NCIA, etc.)

Once installed, you must configure MySQL for the LSD tools you may install.

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><code>/usr/bin/mysqld_safe --lower_case_table_names=1 ...</code></pre> Restart the MySQL service for the changes to take effect: <pre><code>Restart /etc/init.d/mysqld</code></pre>
	<p><i>Modify MySQL parameters</i></p> <p>Open the <code>/etc/my.cnf</code> and add the following text. If the file is not present, you will need to create it.</p> <pre><code>[mysqldump] max_allowed_packet=64M [mysqld] max_allowed_packet=64M [mysql] max_allowed_packet=64M</code></pre>

Windows

Configure MySQL in Windows using the following steps:

Step	Action
1	<p><i>Modify the MySQL parameters</i></p> <p>a. Locate the [MySQL installation directory] /my.ini file. Open the file in a text editor and add the following text:</p> <pre>[mysqldump] max_allowed_packet=64M [mysqld] max_allowed_packet=64M [mysql] max_allowed_packet=64M</pre> <p>Note: If the file is not present, you will need to create it.</p> <p>b. Save the amended or new my.ini file in the [MySQL installation directory] .</p> <p>c. Restart the MySQL Windows service for the changes to take effect. To do so, select Settings > Control Panel. Select Administrative Tools > Services. Scroll down to MySQL. Right click and select Restart.</p>

Installing LSD 1.1.0 Application and Services

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

- Download and install the User Provisioning Tool 3.2 (UPT)
- Download LSD 1.1.0 software distributions from GForge
- Use each of the Product Installation Guides to configure JBoss and MySQL

Downloading and Installing UPT

Because all of the other LSD products use the User Provisioning Tool (UPT), you must install UPT prior to installing any other LSD product For information about downloading and installing UPT, see the [upt_\[version\]_lsd_1_1_0_installation_guide.pdf](#) link at:

https://gforge.nci.nih.gov/frs/?group_id=450.

For more information in this document, see Using UPT on page 12.

Downloading and Installing caArray

For information about downloading and installing caArray, see the **Installing caArray** section of *caarray_[version]_installation_guide.pdf* link at:

https://gforge.nci.nih.gov/frs/?group_id=450.

There are instructions in the PDF for managing MySQL and JBoss servers.

Downloading and Installing caGWAS

For information about downloading and installing caGWAS, see the **Installing caGWAS** section of *cagwas_[version]_lsd_1_1_0_installation_guide.pdf* link at:

https://gforge.nci.nih.gov/frs/?group_id=450.

There are instructions in the PDF for managing MySQL and JBoss servers.

Downloading and Installing caTissue

For information about downloading and installing caTissue, see the *catissue_[version]_lsd_1_1_0_installation_guide.pdf* link at:

https://gforge.nci.nih.gov/frs/?group_id=450.

There are instructions in the PDF for managing MySQL and JBoss servers.

Downloading and Installing CTODS

For information about downloading and installing CTODS, see the **Installing CTODS** section of *ctods_[version]_lsd_1_1_0_installation_guide.pdf* link at:

https://gforge.nci.nih.gov/frs/?group_id=450.

There are instructions in the PDF for managing MySQL and JBoss servers.

Downloading and Installing geWorkbench

For information about downloading and installing geWorkbench, see the https://gforge.nci.nih.gov/frs/shownotes.php?release_id=2700 link at

https://gforge.nci.nih.gov/frs/?group_id=78

Downloading and Installing NCIA

For information about downloading and installing NCIA, see the **Installing NCIA** section of *ncia_[version]_lsd_1_1_0_installation_guide.pdf* link at:

https://qforge.nci.nih.gov/frs/?group_id=450.

There are instructions in the PDF for managing MySQL and JBoss servers.

Downloading and Installing LSDB

For information about downloading and installing LSD Browser, see the **Installing LSDB** section of *lsdb_[version]_lsd_1_1_0_installation_guide.pdf* link at:

https://qforge.nci.nih.gov/frs/?group_id=450.

There are instructions in the PDF for managing MySQL and JBoss servers.

Using UPT

UPT's Essential Role in the LSD

UPT is used to provision users in all LSD applications. Each application installs with its own CSM schema that has sample/default users and a role/permissions structure. To add additional users you must provision the other application (for example, caGWAS) in the UPT. Then you can assign users to the applications. You can install all the applications and configure them in UPT or install UPT and configure each application one by one. Below is the general flow *using caGWAS as an example*.

Note



`${some.thing}` identifies a value to lookup in the `install.properties` file you used to build the application.

For additional information on using UPT

https://qforge.nci.nih.gov/frs/download.php/2634/UPT_User_Guide.pdf

To use the UPT, follow these steps:

Step	Action
1	Install UPT. See Downloading and Installing UPT on page 10.
2	Launch a browser and access UPT via <a href="http://<jboss.server.hostname>:<jboss.server.port>/upt">http://<jboss.server.hostname>:<jboss.server.port>/upt (from <code>install.properties</code>).
3	Login to UPT, using the following profile: <ul style="list-style-type: none"> • Login ID=<i>superadmin</i> • Password=<i>changeme</i> • Application Name=<i>csmupt</i>
4	Select the User tab, and click Create a New User .
5	Enter Login Name , User First Name , User Last Name , User Password , User Password Confirm and click Add .
6	On the Application tab, click Create a New Application .
7	Enter the following parameters (change values based on the application): <ul style="list-style-type: none"> • Application Name=<i>caGWAS</i> • Application Description=<i><Application Description></i> • Application Declarative Flag=<i>Yes</i> • Application Active Flag=<i>Yes</i> • Application Database URL=<code>jdbc:mysql://\${database.server}:\${database.port}/\${database.name}</code> • Application Database User Name=<code>\${database.user}</code> • Application Database User Password=<code>\${database.password}</code> • Application Database Confirm Password=<code>\${database.password}</code> • Application Database Dialect=<i>org.hibernate.dialect.MySQLDialect</i> • Application Database Driver=<code>\${database.driver}</code>
8	Click on Add > Associated Admins , then click on Assign Admin .
9	Enter * in a search field and click Search .
10	Select the user you want to be admin of the application, and click Assign Admin .

Step	Action
11	Login to UPT at <a href="http://<jboss.server.hostname>:<jboss.server.port>/upt">http://<jboss.server.hostname>:<jboss.server.port>/upt (from <code>install.properties</code>). Use the following login profile: <ul style="list-style-type: none"> Login ID=<<i>User created above</i>> Password=<<i>Password for User created above</i>> Application Name=<<i>Application name created above</i>>
12	Click Update Association .
13	Click Logout .

FAQs

A list of frequently asked questions and answers are maintained on the NCI wiki:
<https://wiki.nci.nih.gov/x/MK6I>

Contacting Application Support

NCICB Application Support Email: ncicb@pop.nci.nih.gov
Local: 301.451.4384
Toll-Free: 888.478.4423
<http://ncicb.nci.nih.gov/support>
