caINTEGRATOR2 V.1.0

Local Installation Guide

NATIONAL® CANCER INSTITUTE

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Introduction

This *caIntegrator2 v.1.0 Installation Guide* provides you with the instructions to install and configure a fresh caIntegrator 2.0 v.1.0 application. The caIntegrator2 installation installs and configures a JBoss application server and creates a caIntegrator2-specific schema within a pre-existing database on a preinstalled MySQL server.

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

NOTE 	Published caIntegrator2 v.1.0 development documentation can be found on the caIntegrator2 page of the NCI wiki: https://wiki.nci.nih.gov/display/caIntegrator2/caIntegrator2+Wiki

Overview of caIntegrator2 Installation

The process for installing caIntegrator2 v.1.0 includes the following tasks described in this document:

1. Downloading and installing required software
2. Setting environment variables
3. Downloading caIntegrator2 v.1.0 distribution files
4. Installing
   a. GUI Installer Method
   b. Command-Line Method
      -- Editing `install.properties` file
5. Configuring JBoss servers and MySQLserver to run as a service
6. Post-Installation Tasks
   a. Using UPT to Add caIntegrator2 Users

caIntegrator2 v.1.0 Software and Technology Requirements

Tested Environment

The caIntegrator2 v.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 caIntegrator2

Many of the servers and services that make up caIntegrator2 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 caIntegrator2 v.1.0 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.

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 `jdk-1_5_0_10-linux-amd64-rpm.bin`. For Windows, you might download `jdk-1_5_0_10-windows-i586-p.exe`.	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 	As you install each application, record the installation directory path, and the hostname of your MySQL DB server, and the DB admin username/password, if you are going to install UPT.

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

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.

Linux

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

NOTE 	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.

Step	Action

1	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 `<some_path>` with the correct path fragment for Java and Ant installations.
	
	`export JAVA_HOME=<some_path>/jdk1.5.0_10`
	
	`export ANT_HOME=<some_path>/apache-ant-1.7.0`
	
	`export PATH=$JAVA_HOME/bin:$ANT_HOME/bin:$PATH`

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

Verifying the Environment Variables in Linux

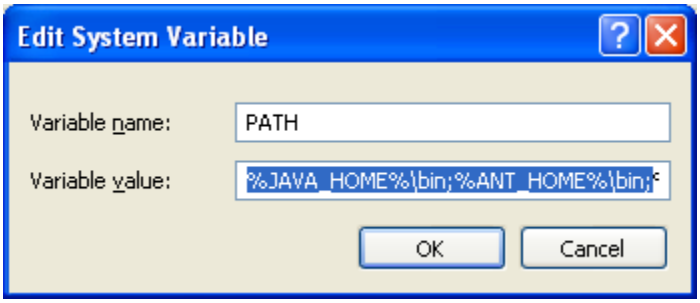
To verify that environment variables have been set correctly, follow these steps:

Step	Action
1	From the command line, enter: ***`echo $JAVA_HOME`*** ***`echo $ANT_HOME`*** Both of these commands should return the location where you installed these tools.
2	To verify your Java SDK installation, enter ***`java –version`*** from a command prompt. You should see `java version "1.5.0_10".`
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 environmental variables in Windows, follow these steps:

NOTE	
	The JAVA_HOME, ANT_HOME and PATH environment variables are set in the Systems Properties.

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. 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. a. In the **Variable name** text box, enter ***ANT_HOME.*** b. In the **Variable value** text box, enter the location of your Ant 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. 
5	In the Variable value text box, prepend the following text in front of the text that already exists in the **Variable Value** field. ***%JAVA_HOME%\bin;%ANT_HOME%\bin;*** Click **OK**.

Verifying the Environment Variables in Windows

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

Step	Action
1	From the command line, enter: ***echo %JAVA_HOME%*** ***echo %ANT_HOME%*** Both of these commands should return the location where you installed these tools.

Step	Action
2	To verify your Java SDK installation, enter ***`java -version`*** from a command prompt. You should see `java version "1.5.0_10".`
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`.

NOTE 	Environment variables for caIntegrator2 and, optionally, UPT are modified and set in those sections of this document: Installing a New caIntegrator2 v.1.0 on page 9 and Downloading and Installing UPT (Optional) on page 8.

MySQL Installation and Configuration

A MySQL 5.0.27 server must be downloaded, installed and running in order for the caIntegrator2installation 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=5.0.27

TIP 	You should consult the following three links to successfully set up secure and well-performing MySQL servers, in preparation for installing caIntegrator: • MySQL Security Guide - http://dev.mysql.com/doc/refman/5.0/en/security-guidelines.html • Performance – o General performance tuning - http://dev.mysql.com/books/hpmysql-excerpts/ch06.html o InnoDB engine performance tuning - http://dev.mysql.com/doc/refman/5.0/en/innodb-tuning.html

MORE TIPS 	• Record the MySQL root username/password chosen during the MySQL installation process, as you will need to use this as your `database.system.user/ database.system.password` later in the UPT installation process, should you choose to install UPT. • Note the MySQL port chosen during the MySQL installation process, as you will need to use this as your `database.port` later in both the caIntegrator2and UPT (if installing UPT) installation processes.

Working with Properties Files

About Properties

An important component of command-line installation of either caIntegrator2 or UPT, is configuring properties files.
Prior to initiating a command-line installation, property variables must be modified. Note the following points about changing or entering variables.

Paths in Properties Files

NOTE 	The paths in the `.properties` files should use *forward* slashes. For example, you would use `application.base.path=C:/apps/caIntegrator-app`, **not** `application.base.path=C:\apps\caIntegrator-app`. If you use backslashes, you will experience undesirable results.

Spaces in Path Property Values

NOTE 	You should not specify paths with spaces included as property values. In Windows, note that the `C:\Documents and Settings\<username>` path contains spaces and should not be used, or anything similar. If you are using Windows, use a path such as `C:/apps/caIntegrator`. Spaces are fine for property values which do not represent a path.

More About Property Values

NOTES 	• In each `*.properties` file, any property value marked with uppercase `REPLACE_*` must be manually updated with the appropriate value. • In each `*.properties` file, any property value marked with lowercase `replace_*` may be optionally updated with the appropriate value. • If there is reference to a `database.system.user` for your MySQL server, you can determine which users have full privileges to create and manage other databases, by executing ***`show grants`*** from a MySQL prompt to determine the correct level of privileges.

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 caIntegrator2 application, you **must** install UPT.

Overview of UPT

UPT is used to provision users in the caIntegrator2 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 caIntegrator2 application in the UPT. Then you can assign users to caIntegrator2.

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

NOTE 	UPT 4.2 is backwards compatible to previous versions of CSM. When you provision the application in UPT 4.2, you will be asked to specify the CSM version caIntegrator2 is using. You should enter version ***4.2***.

Installing caIntegrator2 v.1.0 Application and Services

To newly install the caIntegrator2 v.1.0 application and services, follow the steps in this section:

BEFORE YOU BEGIN 	• **Important**: There must already be a pre-existing MySQL DB and connection username/password for caIntegrator2 to install into; caIntegrator2 does not create its own DB.

Downloading caIntegrator2 v.1.0 files

To download the caIntegrator2 v.1.0 files, follow this step:

Step	Action
1	The various installation files for caIntegrator2 v.1.0 are between 100-200MB in size. All of the files can be downloaded from the caIntegrator2 distribution folder here: https://gforge.nci.nih.gov/frs/?group_id=507. • For a new command-line installer, download the `caIntegrator2_install_1_0.zip` file (around 153 MB). • For a command-line upgrade installer, download the `caIntegrator2_upgrade_1_0.zip` file (about 153 MB). • For a GUI installer that you can use to do a fresh caIntegrator2 installation, download the `caIntegrator2_gui_distribution_1_0.jar` file (about 180 MB). Remember the download location, as you will be using this file to run the installation in the steps that follow.

Server Components in caIntegrator2 v.1.0

These server components are installed and configured as part of the caIntegrator2 v.1.0 installation. You do not need to do anything further to download or install these components.

- JBoss 4.0.5 (hosts the caIntegrator2 application)

Installing a New caIntegrator2 v.1.0

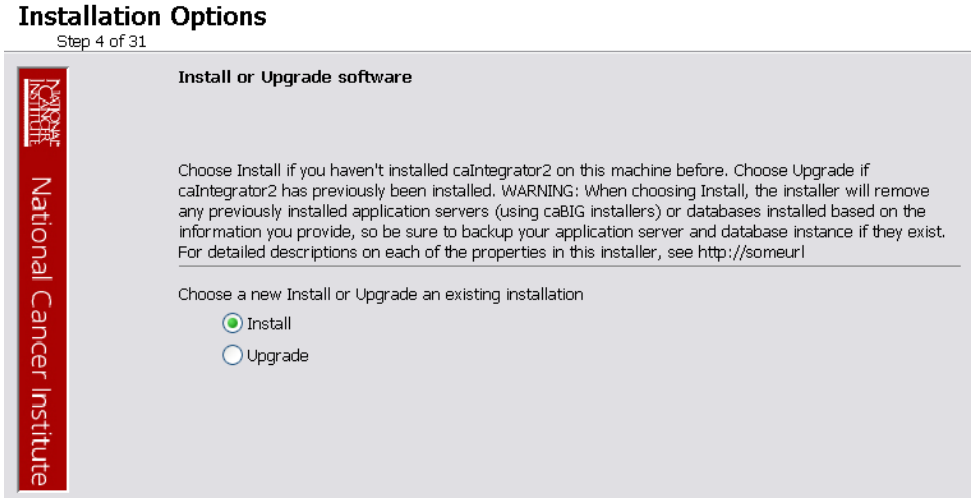
You can perform a new installation of caIntegrator2 v.1.0 using either of these two methods:

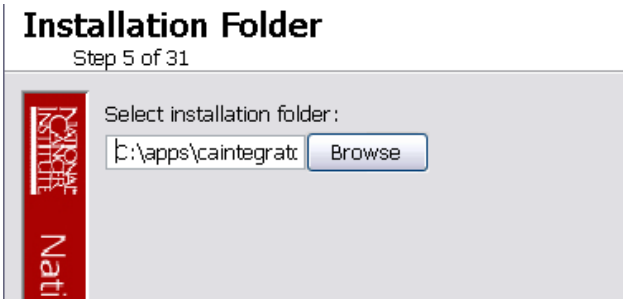
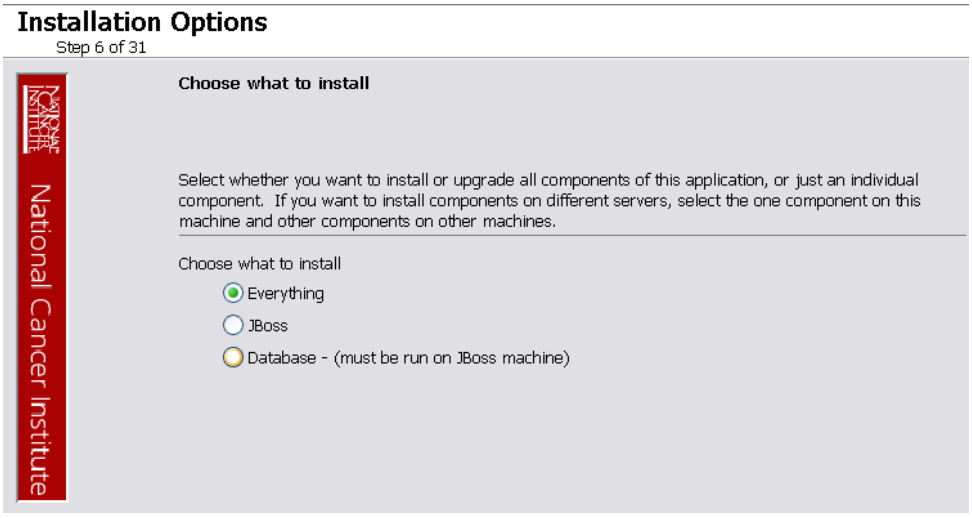
- A GUI Installation wizard. Instructions for this method start in the following section.
- A command-line installation. For instructions, see page 17.

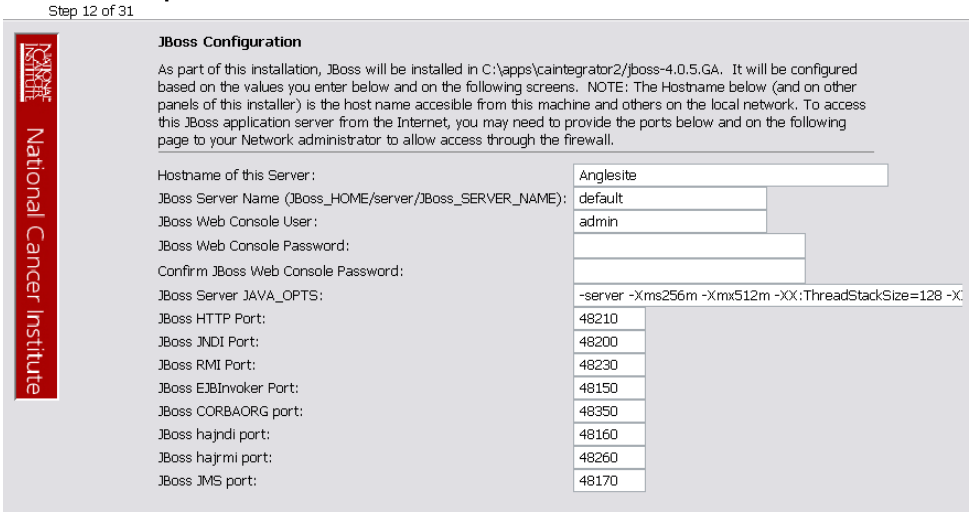
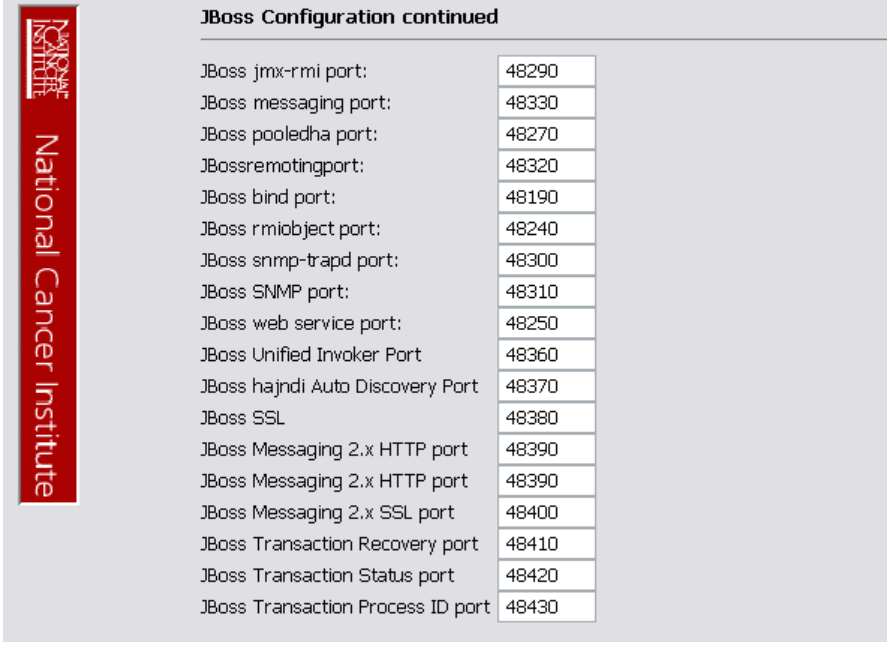
GUI Installer Method of Installation

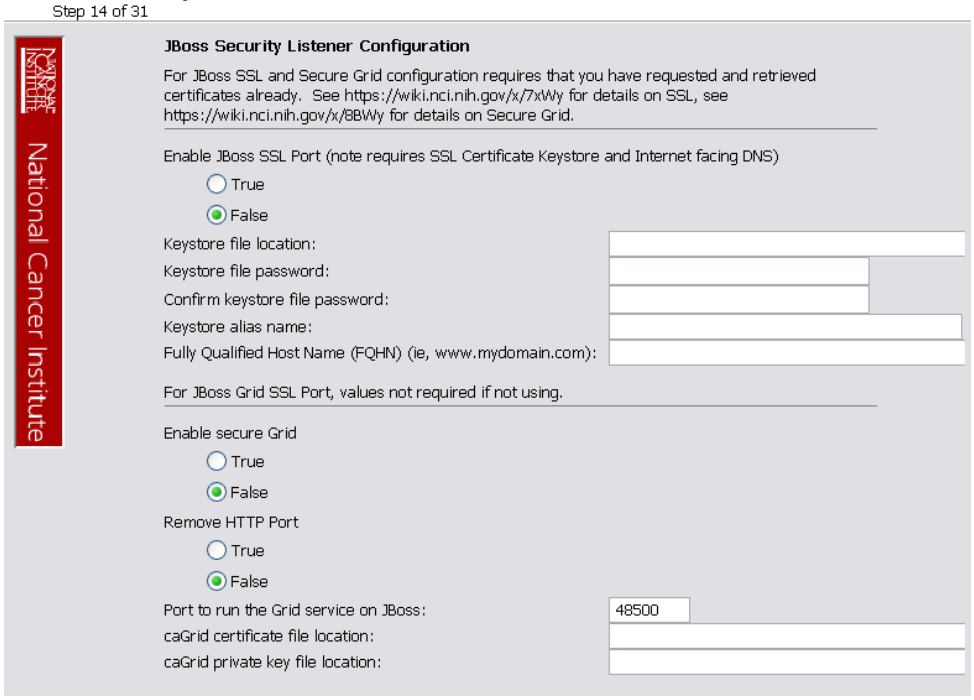
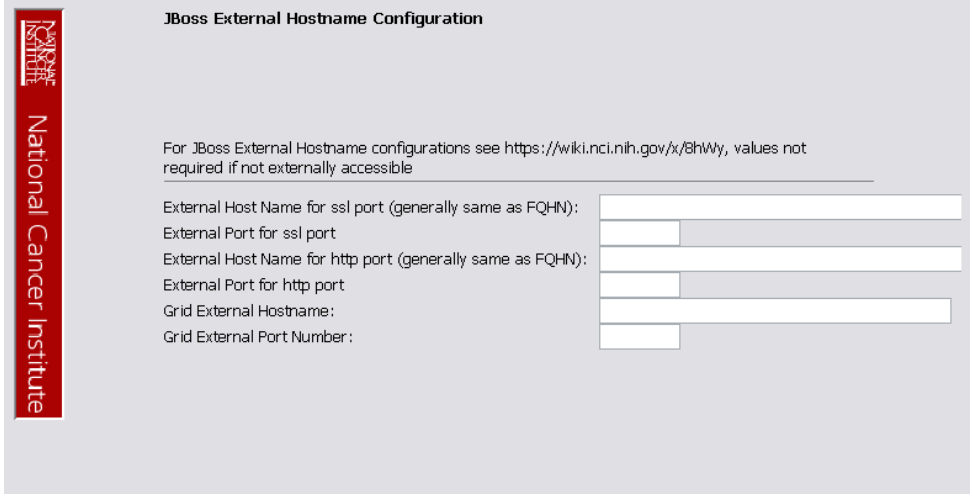
For detailed information on all of the GUI installer fields, refer to the documentation at this location: https://wiki.nci.nih.gov/x/NAUuAQ.

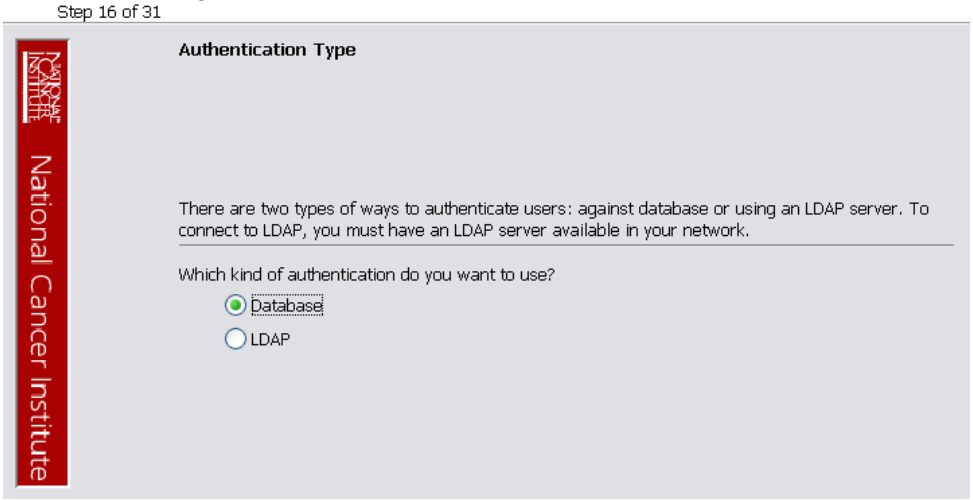
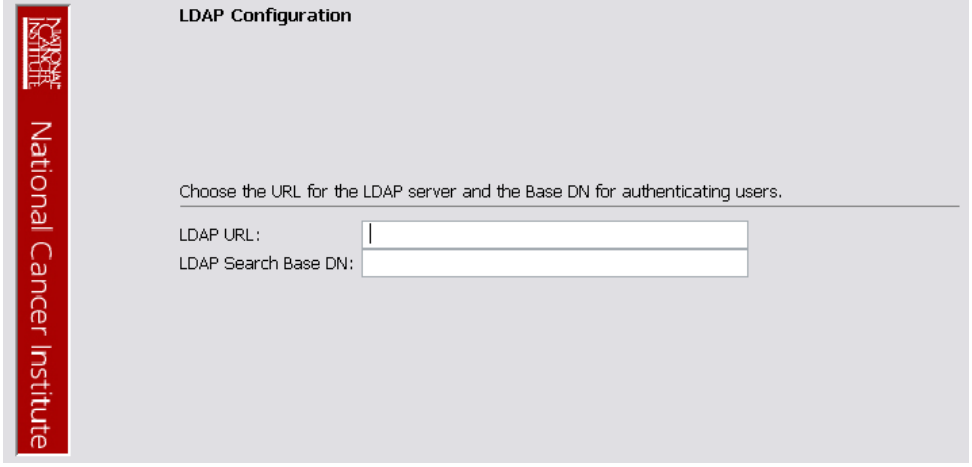
For performing an installation using the GUI Installer, follow these steps:

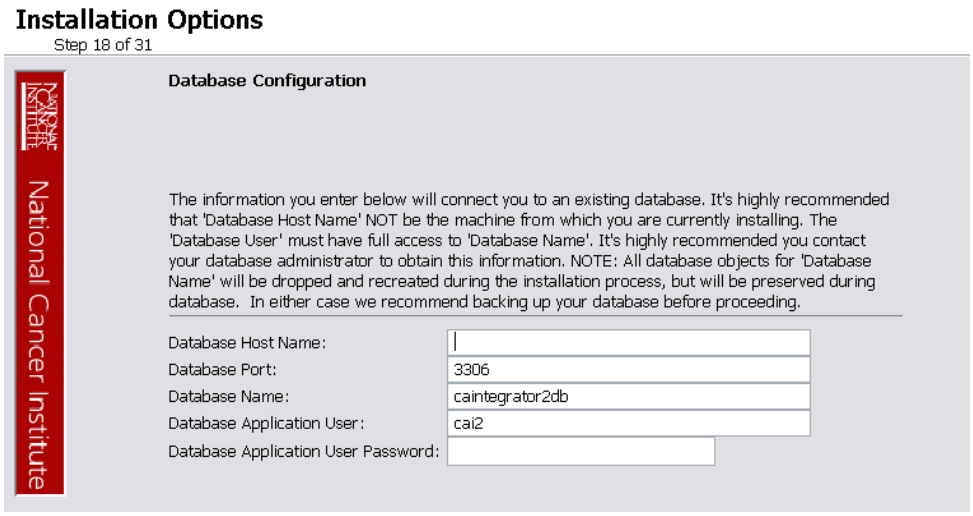
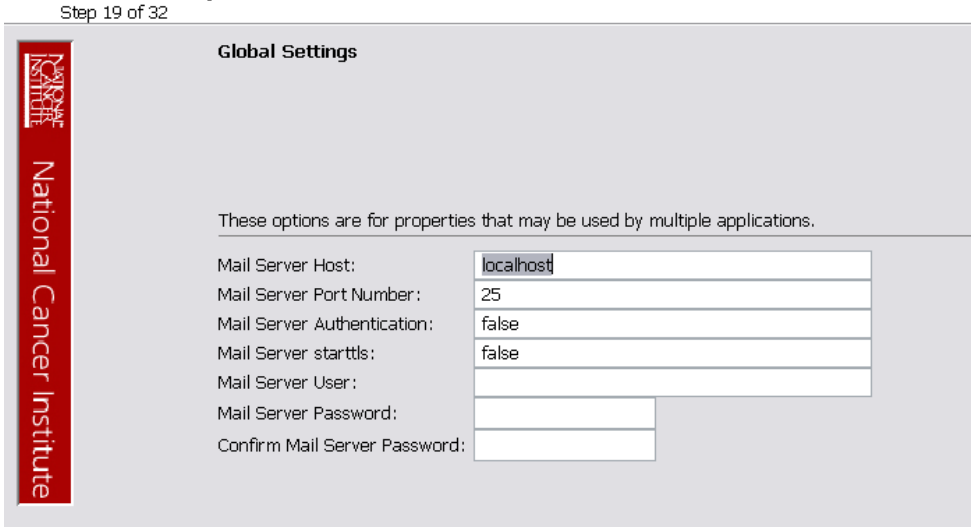
Step	Action
1	Open a command prompt in the directory where you downloaded the `caIntegrator2_gui_distribution_1_0.jar.` Enter this command to Invoke the GUI installer : `java –jar caIntegrator2_gui_distribution_1_0.jar`.
2	The Installation Wizard opens to facilitate the installation process. Click **Next** 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**. 

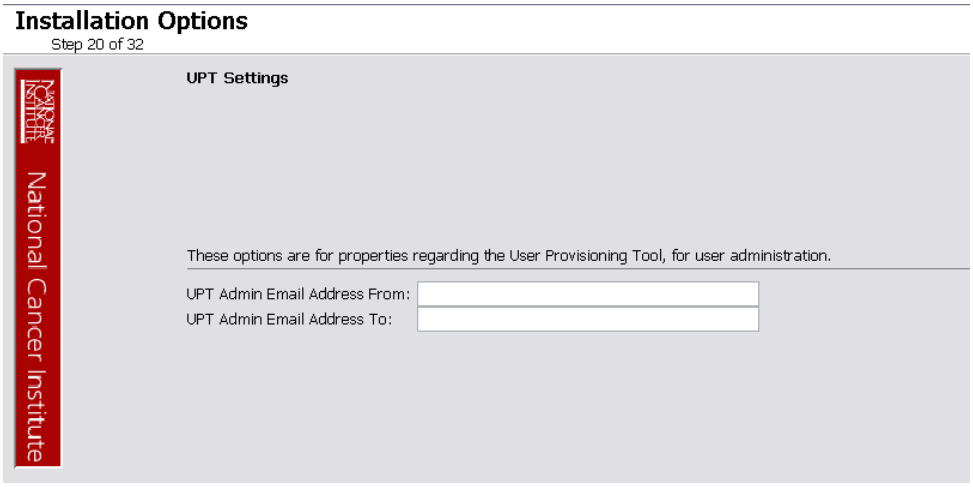
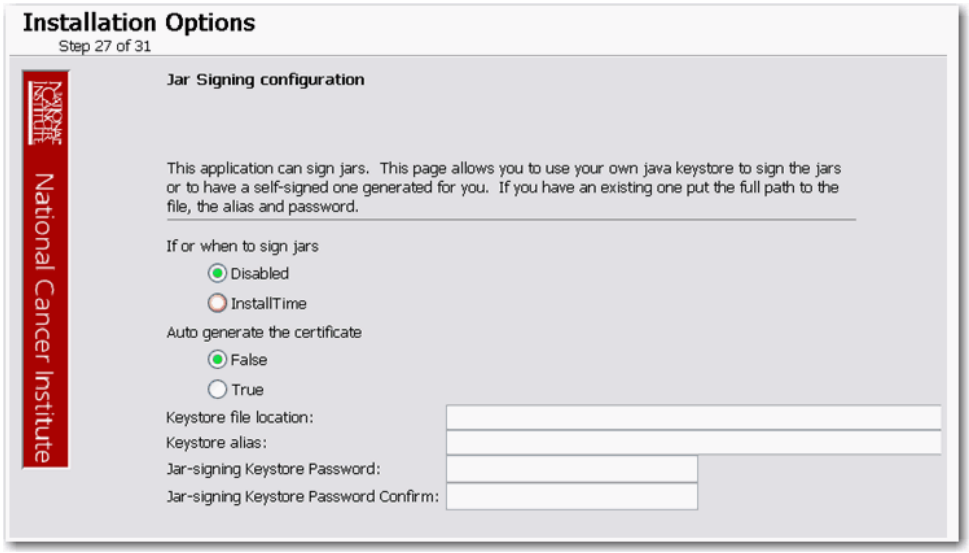
Step	Action
6	Navigate to the directory where you would like to install caIntegrator2.  If the folder does not yet exist, click **OK** in the dialog box to indicate that you want the folder to be created.
7	Select the type of installation you would like to do, you can install everything, or just specific components (JBoss or Database only). The remaining sections in this guide will assume you chose to install everything. 

Step	Action
8	Continue walking through the pages of the installer. Configure the caIntegrator2 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. **Installation Options** Step 12 of 31  **JBoss Configuration** As part of this installation, JBoss will be installed in C:\apps\caintegrator2/jboss-4.0.5.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 accesible 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. Hostname of this Server: Anglesite JBoss Server Name (JBoss_HOME/server/JBoss_SERVER_NAME): default JBoss Web Console User: admin JBoss Web Console Password: Confirm JBoss Web Console Password: JBoss Server JAVA_OPTS: -server -Xms256m -Xmx512m -XX:ThreadStackSize=128 -X JBoss HTTP Port: 48210 JBoss JNDI Port: 48200 JBoss RMI Port: 48230 JBoss EJBInvoker Port: 48150 JBoss CORBAORG port: 48350 JBoss hajndi port: 48160 JBoss hajrmi port: 48260 JBoss JMS port: 48170
9	**Installation Options** Step 13 of 31  **JBoss Configuration continued** JBoss jmx-rmi port: 48290 JBoss messaging port: 48330 JBoss pooledha port: 48270 JBossremotingport: 48320 JBoss bind port: 48190 JBoss rmiobject port: 48240 JBoss snmp-trapd port: 48300 JBoss SNMP port: 48310 JBoss web service port: 48250 JBoss Unified Invoker Port 48360 JBoss hajndi Auto Discovery Port 48370 JBoss SSL 48380 JBoss Messaging 2.x HTTP port 48390 JBoss Messaging 2.x HTTP port 48390 JBoss Messaging 2.x SSL port 48400 JBoss Transaction Recovery port 48410 JBoss Transaction Status port 48420 JBoss Transaction Process ID port 48430

Step	Action
10	JBoss SSL requires that you have requested and retrieved certificates already. If this doesn't apply to your installation, leave the values as false and continue. **Installation Options** Step 14 of 31 
11	If your JBoss is externally accessible then fill out this section, otherwise leave it blank and continue. **Installation Options** Step 15 of 31 

Step	Action
12	Specify the authentication type that caIntegrator2 should use. Database is the most likely choice if you aren't sure what to select here. **Installation Options** Step 16 of 31 
13	If you selected LDAP in the previous step, enter the appropriate configuration information for LDAP. **Installation Options** Step 17 of 31 

Step	Action
14	If the authentication type is database: Specify the database connection information, including the name of the **pre-existing** database where the caIntegrator2 schema will be installed, and the **pre-existing** user which will be used by caIntegrator2 to connect to its database.  Error messages inform you if the following occurs: • If the specified database host cannot be reached, or the field is blank. • If the specified database does not already exist, or the caIntegrator2 DB user's credentials are wrong.
15	Specify SMTP mail server connection information so that caIntegrator2 can send emails from users with new account requests. 

Step	Action
16	Specify email addresses for the administrator to approve user requests. 
17	If jar signing is necessary for the installation, then enable it on this page, however this is optional and can be skipped over. 
18	Review the summary of the information you entered.
19	Review the selected install type and the installation destination. After you click **Next** from reviewing the installation destination, the installer runs. The installation wizard displays the installation progress and completion.
20	When you are informed that the process is finished, click **Done** in the lower right corner of the wizard to close the installer.

Step	Action
21	To verify caIntegrator2 installation: • Open your web browser to http://<jboss.server.hostname>:<jboss.server.port>/caintegrator2. Refer to the <user home>/.installer-caintegrator2/caintegrator2_installer/install.properties file for the correct values. • Enter ***ncimanager*** as the user and ***changeme*** as the password.
22	After successfully installing caIntegrator2, make a backup of the <user home>/.installer-caintegrator2/caintegrator2_installer/install.properties file in a different directory for future reference.

Command-Line Method of Installation

Overview of caIntegrator 2.0 Command-Line Installer Properties Files

When you do a command-line installation of caIntegrator2 for the first time, you will work with the properties file included in the `caIntegrator2_distribution_1_0.zip`. The file is: `install.properties`.

If you are command-line upgrading from a previous version of caIntegrator 2.X, you will work with the `upgrade.properties` file included in the `caIntegrator2_upgrade_1_0.zip`.

caIntegrator2 Port Usage

NOTE 	Verify that default port values defined in `install.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.

JBoss Errors During Installation

NOTE 	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 stop previously installed servers to prevent problems during the installation. If this is your first time installing caIntegrator2, you may receive and disregard this error message.

Command-line Installation Steps

To install a new instance of caIntegrator2 using the command-line, follow these steps:

Step	Action
1	Refer to the command-line installation instructions found here: https://wiki.nci.nih.gov/x/NgUuAQ.
2	From the directory where you downloaded the `caIntegrator2_distribution_1_0.zip` from Downloading 2.0 files on page 9, 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 `unzip -q caIntegrator2_distribution_1_0.zip` (you must have a ZIP tool installed). This location will be referred to as the `<installer_directory>` henceforth. b. Use WinZip or a similar utility to unzip the files to a temporary location. This location will be referred to as the `<installer_directory>` henceforth. *Example*: `<installer directory>` = C:\caIntegrator_20_installer
3	**Note:** Setting the property values is an important step in the install process. Before you complete steps 2 & 3, review Working with Properties Files on page 7. Open the `<installer_directory>/install.properties` file, modify the values for your environment and save the file. For the latest details about configuring the properties for your environment, refer to this wiki page: https://wiki.nci.nih.gov/x/NAUuAQ.
4	**Record the property values you have set**. **Note:** You shouldn't 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.
5	From the command line, navigate to `<installer_directory>/`(*Example*:`cd C:\caIntegrator_2_0_installer`), and type ***`ant`***. This initiates the installation process. The anticipated duration is anywhere from 1-15 minutes, depending on your system's speed, power and memory. The installer installs the caIntegrator2 schema in the specified **pre-existing** database on your MySQL server, and installs, configures, and starts the JBoss server for the caIntegrator2 application.
6	To verify caIntegrator2 installation, open your web browser to http://<jboss.server.hostname>:<jboss.server.port>/caIntegrator . Refer to the `<installer_directory>/install.properties` file for the correct values. Enter ***`manager`*** as the user and ***`manager`*** as the password.
7	After successfully installing caIntegrator2, make a backup of the `<installer_directory>/install.properties file` in a different directory for future reference.

Configuring JBoss

NOTE	For optimal performance, you must modify your JBoss 4.0.5 configuration to increase the amount of available memory for the caIntegrator2 application. Directions for doing this in Windows are in the following step 1.

To configure JBoss in Windows, follow these steps:

Step	Action
1	Modify the following entry to the JBoss `run.bat` file which is located at `<application_root_directory>/jboss-4.0.5.GA/bin/run.bat`. Find the line that begins with "`set JAVA_OPTS= -Dbda=bda -Dprogram.name=%PROGNAME% -server`", modify the "`-Xms256m -Xmx512m`" to read "`-Xms2048m -Xmx2048m`". **Note:** If 2048m is higher than the physical memory on the machine, then reduce it to be less than the physical memory. **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. Then you can correct the spacing and copy-paste back into the `run.bat` file.
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 `shutdown.bat` and then `run.bat` under $JBOSS_HOME/bin. Refer to the publicly available JBoss user's guide at www.jboss.org for more information.

Configuring JBoss Servers and MySQL Server to Run as Services

NOTE	MySQL and the JBoss server that make up caIntegrator2, 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 caIntegrator2 deployment, there are at least three servers, and if UPT is installed, four servers: • JBoss 4.0.4 for UPT (optional) • JBoss 4.0.5 (for caIntegrator2application) • MySQL 5.0.27

Running JBoss as a Service

NOTE 	The default caIntegrator2 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 caIntegrator2. 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.

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.

Running MySQL as a Service

NOTE 	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.

To run MySQL as a service, follow these steps:

Step	Action
1	**Linux** See http://www.redhat.com/docs/manuals/enterprise/RHEL-AS-2.1-Manual/cluster-manager/s1-service-mysql.html.

Step	Action
2	**Windows** When installing MySQL server on Windows, choose the option to run MySQL as a Windows service.

Post-Installation Tasks

Using UPT to Administer caIntegrator2 Users

To add and administer caIntegrator 2 users in the UPT, refer to Chapter 6 in the caIntegrator2 version 1.0 User's Guide, located here:
https://wiki.nci.nih.gov/display/caIntegrator2/caIntegrator2+-+User+Guide

Appendix I: Default Users

The following users are provided by default by the caIntegrator2 installer.

- ncimanager / changeme
- nciinvestigator / changeme
- cai2admin / changeme - This is the UPT user who will have access to provision caIntegrator2 users.

Contacting Application Support

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