caARRAY 2.2.0 DATA PORTAL

Local Installation Guide

NATIONAL® CANCER INSTITUTE

Center for Biomedical Informatics
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Introduction

This *caArray 2.2.0 Installation Guide* provides you with the instructions to install and configure a fresh caArray 2.2.0 application, or upgrade an existing 2.X application. The caArray installation installs and configures two JBoss application servers, a grid service and creates a caArray-specific schema within a pre-existing database on a preinstalled MySQL server. An upgrade of caArray converts an existing 2.X caArray application and associated grid service to version 2.2.0.

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

NOTE 	Published caArray development documentation can be found on the caArray page of the NCICB web site: http://caarray.nci.nih.gov/

Overview of caArray Installation

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

1. Downloading and installing required software
2. Setting environment variables
3. Downloading caArray 2.2.0 distribution files
4. Installing caArray:
   a. GUI Installer Method
   b. Command-Line Method
      -- Editing `install.properties` file
5. Upgrading caArray
   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. Updating Help-Desk info in DB using SQL
   b. Using UPT to Add caArray Users

Before You Proceed 	If you have a 1.x version of caArray installed, you must do a fresh installation as there is no way to upgrade a 1.x caArray installation to 2.1.1. Contact NCICB Application Support directly for 1.x data migration support: Web: http://ncicb.nci.nih.gov/NCICB/support/caarraysupport E-mail: ncicb@pop.nci.nih.gov Telephone: 301-451-4384 Toll free: 888-478-4423

caArray 2.2.0 Software and Technology Requirements

Tested Environment

The caArray 2.2.0 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 caArray

Many of the servers and services that make up caArray 2.2.0 are automatically installed as part of this installation. However, certain tools that you must manually install and configure are listed in Table 1. The software name, version, description, and URL hyperlinks (for download) are indicated in the table.

Prior to the caArray 2.2.0 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.

Required Software Name ***Version***	***Description***
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:

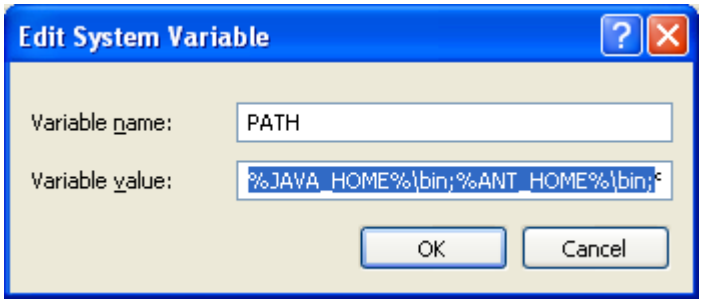
Step	Action
1	From the command line, enter: ***`echo $JAVA_HOME`*** ***`echo $ANT_HOME`*** Both of these commands should return the location where you installed these tools.
2	To verify your Java SDK installation, enter ***`java -version`*** from a command prompt. You should see `java version "1.5.0_10".`

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 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. 

Step	Action
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.
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.`

NOTES	
	Environment variables for caArray and, optionally, UPT are modified and set in those sections of this document: Installing a New caArray 2.2.0 on page 13 and Downloading and Installing UPT (Optional) on page 10.

MySQL Installation and Configuration

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

TIP 	You should consult the following three links to successfully set up secure and well-performing MySQL servers, in preparation for installing caArray:
	• MySQL Security Guide - http://dev.mysql.com/doc/refman/5.0/en/security-guidelines.html
	• Performance –
	  ○ 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

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 caArray and UPT (if installing UPT) installation processes.

Once installed, you must configure My-SQL for caArray.

Linux

Configure MySQL in Linux using the following steps:

Step	Action
1	*Lowercase Table Names in MySQL* Edit the `/etc/init.d/mysqld (or mysql)` file as follows: a. Locate the `start()` section and modify the `mysqld_safe` command (do not include the ellipses): ***/usr/bin/mysqld_safe --lower_case_table_names=1 ...*** b. Restart the MySQL service for the changes to take effect: Restart **`/etc/init.d/mysqld`**

Step	Action
2	*Modify the MySQL parameters* Open the `/etc/my.cnf` and add the following text. ***[mysqldump]*** ***max_allowed_packet=64M*** ***[mysqld]*** ***max_allowed_packet=64M*** ***[mysql]*** ***max_allowed_packet=64M*** **Note:** If the file is not present, you will need to create it. To do so, open a text editor such as Notepad. Add the above text, name and save the file.

Windows

Configure MySQL in Windows using the following step:

Step	Action
1	*Modify the MySQL parameters* a. Locate the [`MySQL installation directory`]`/my.ini` file. Open the file in a text editor such as Notepad and add the following text: ***[mysqldump]*** ***max_allowed_packet=64M*** ***[mysqld]*** ***max_allowed_packet=64M*** ***[mysql]*** ***max_allowed_packet=64M*** **Note:** If the file is not present, you will need to create it. To do so, enter the above text in a text editor such as NotePad. b. Save the amended or new `my.ini` file in the <`MySQL installation directory`>. 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**.

Working with Properties Files

About Properties

An important component of command-line installation of either caArray 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/caarray-app`, **not** `application.base.path=C:\apps\caarray-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/caarray`. 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 caArray application, you must install UPT.

Overview of UPT

UPT is used to provision users in the caArray application. Each application installs with its own Common Security Module (CSM) schema that has sample/default users and a role/permissions structure. To add additional users you must provision the caArray application in the UPT. Then you can assign users to caArray. Below is the general flow for UPT as it relates to caArray, but for more complete documentation of UPT see this document: https://gforge.nci.nih.gov/frs/download.php/2634/UPT_User_Guide.pdf.

NOTE 	Verify that default port values defined in `upt-install.properties` files are not in use on your system by running `netstat –a` from the command line. The installers run pre-installation checks and fail the installation if ports the installer must use are in use. If the ports are in use prior to installation, you will need to stop any processes that are running.

To download and install the **UPT 3.2** files, follow these steps:

Step	Action
1	The installation file for UPT 3.2 is over 30MB. From the https://gforge.nci.nih.gov/frs/?group_id=305 directory in GForge, download the `upt_distribution_[version].zip` file. Remember the download location as you will be using this file to run the installation in the steps that follow.
2	From the directory where you downloaded the `upt_distribution_[version].zip` Downloading UPT files 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 `unzip -q upt_distribution_[version].zip`. (You must have a ZIP tool installed.) This location will be referred to as the `<upt_installer_directory>` henceforth. *Example*: C:\UPT_installer. b. Use WinZip or a similar utility to unzip the files.

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>3</td><td>
Open the <upt_installer_directory>/upt/upt-install.properties file and modify the values for your environment and save the file. (See Working with Properties Files on page 9.) At a minimum, you will need to modify the values in the following table:

Note: Descriptions for UPT properties are included in this document, but descriptions for caArray properties are outlined in the wiki, referenced later in this document.
<table>
<tr><th>Environment Variable</th><th>Description</th></tr>
<tr><td>upt.home</td><td>The location where you want to install UPT.

Example: In Windows, it could be C:/apps/upt. Linux users can use ${user.home}/apps/upt or any other folder to which you have write permissions.

Important: The upt.home directory must be different than <upt_installer_directory> or the installation will fail.</td></tr>
<tr><td>database.system.user</td><td>This value should correspond to a MySQL username that has full system privileges. You should have recorded this when you installed MySQL.</td></tr>
<tr><td>database.system.password</td><td>This value must correspond to the password for the database.system.user user. You should have recorded this when you installed MySQL. In some cases, this password may be blank.</td></tr>
<tr><td>database.server</td><td>This value must correspond to the domain name of machine that hosts the MySQL server. You may need to consult your system administrator for this information.</td></tr>
<tr><td>database.port</td><td>This value must correspond to the port for the database.server. 3306 is the default port, but check with your database administrator to be certain.</td></tr>
<tr><td>database.name</td><td>Choose a name for the UPT MySQL database.</td></tr>
<tr><td>database.user</td><td>Choose a username to access database.name. This can be any valid name that you choose, but it must be different than database.system.user.</td></tr>
<tr><td>database.password</td><td>Choose a password to access database.name for the username identified in database.user. This must be different from the database.system.password.</td></tr>
</table>
Note: You shouldn't need to modify the other defaults values as we have chosen unique ports to reduce the risk of other applications using the same values. However, be sure to check the upt-install.properties to verify that the ports in this file are not being used by other applications, otherwise you will experience problems.
</td></tr>
</table>

Step	Action
4	From the command line, navigate to `<upt_installer_directory>/upt` (*Example*:cd C:\UPT_installer\upt), and type ***`ant`***. This runs the installation.
5	To verify the UPT installation, go to: http://<jboss.server.hostname>.<jboss.server.port>/upt (example; http://upt.nci.nih.gov/upt/. Refer to the `upt-install.properties` for the correct values. See note below.)
6	After successfully installing UPT, make a backup of `<upt_installer_directory>/upt/upt-install.properties` in another directory for future reference.

Installing caArray 2.2.0 Application and Services

To newly install the caArray 2.2.0 application and services, follow the steps in this section:

- Downloading caArray 2.2.0 files from GForge on this page
- Installing a New caArray on page 13
  - GUI Installer Method on page 13
  - Command-Line Method on page 18
- Configuring JBoss on page 28
  - Configuring JBoss Servers and MySQL Server to Run as Services on page 26
- Post-Installation Tasks on page 28
  - Using UPT to Add caArray Users on page 28

BEFORE YOU BEGIN	
	• **Important**: There must already be a pre-existing MySQL DB and connection username/password for caArray to install into; caArray does not create its own DB. • If you have installed a previous version of caArray 2.X, you must follow the upgrade procedures described in Upgrading caArray 2.X to 2.2 on page 20 to migrate to caArray 2.2.

Downloading caArray 2.2.0 files

To download the caArray 2.2.0 files, follow this step:

Step	Action
1	The installation files for caArray 2.2.0 are each 200-300MB. All of the files can be downloaded from the caArray distribution folder here: https://gforge.nci.nih.gov/frs/?group_id=305. • For a new command-line installer, download the `caarray_install_2_2_0.zip` file (around 200 MB). • For a command-line upgrade installer, download the `caarray_upgrade_2_2_0.zip` file (about 90 MB).. • For a GUI installer that you can use to do a fresh caArray 2.2.0 installation, download the `caarray_gui_distribution_2_2_0.jar` file (about 300 MB). Remember the download location, as you will be using this file to run the installation in the steps that follow.

Server Components in caArray 2.2

These server components are installed and configured as part of the caArray 2.2.0 installation. You do not need to do anything further to download or install these components.

- JBoss 4.0.4 (hosts the caArray grid service)
- JBoss 4.0.5 (hosts the caArray application)

Installing a New caArray 2.2.0

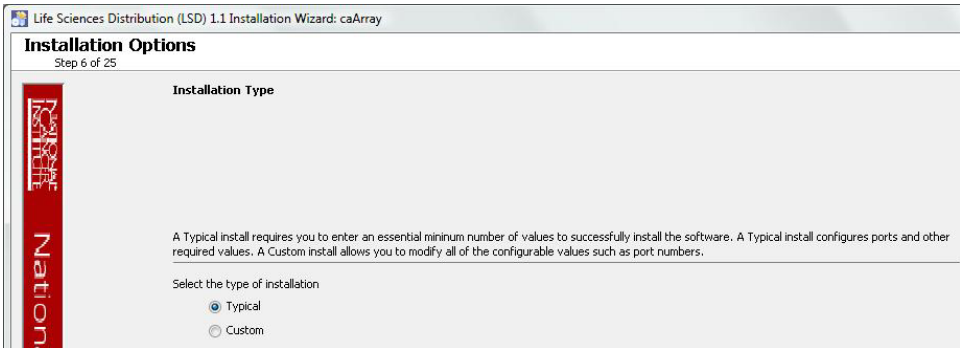
You can perform a new installation of caArray v.2.2.0 using either of these two methods:

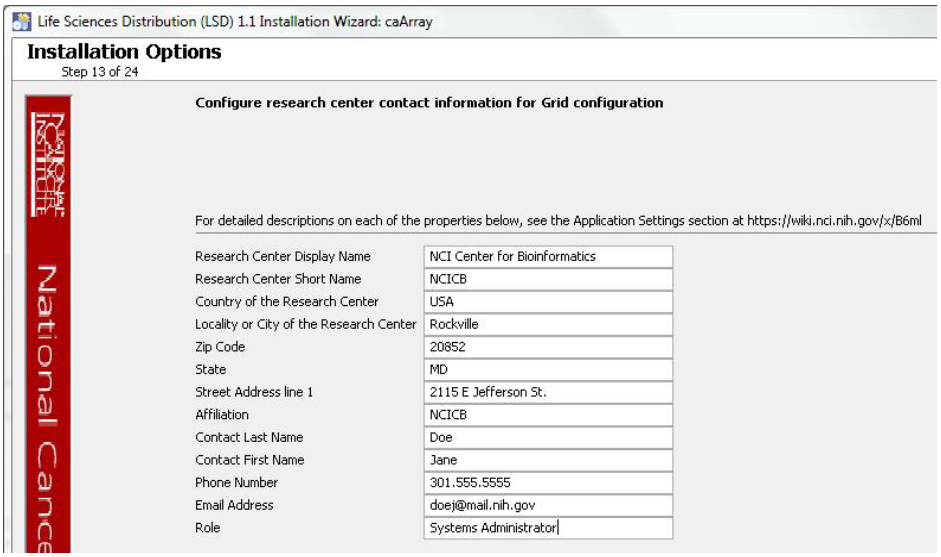
- A GUI Installation wizard. Instructions for this method begin on this page
- A command-line installation. For instructions, see page 18.

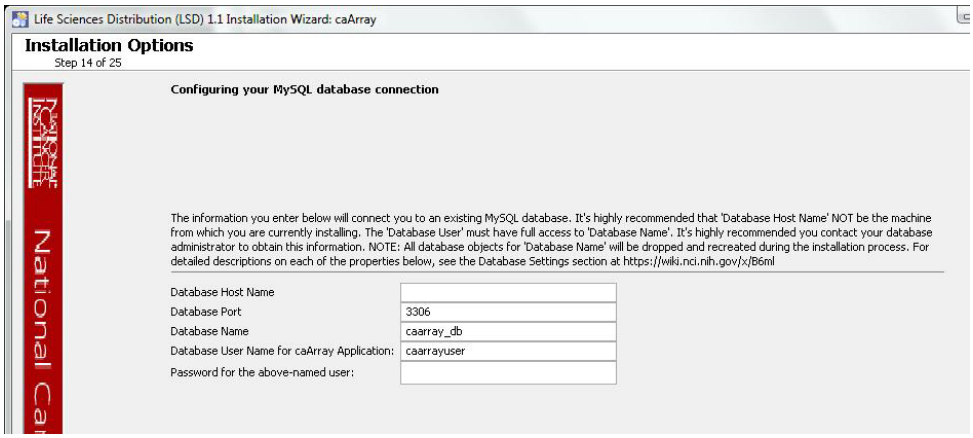
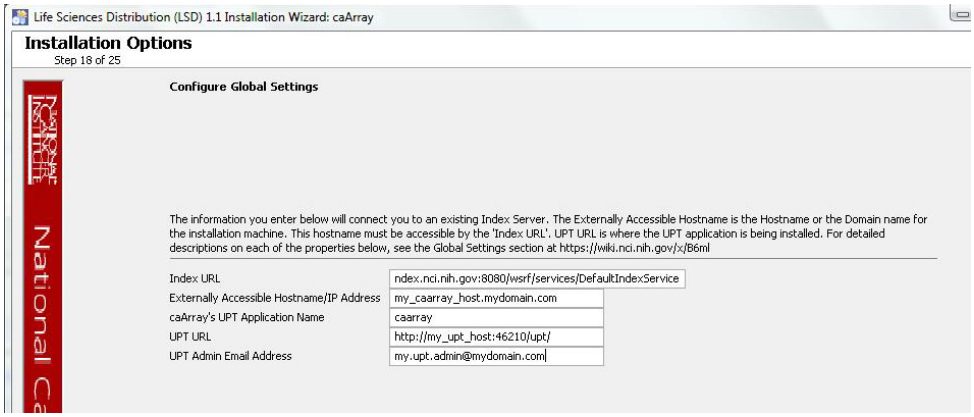
GUI Installer Method of Installation

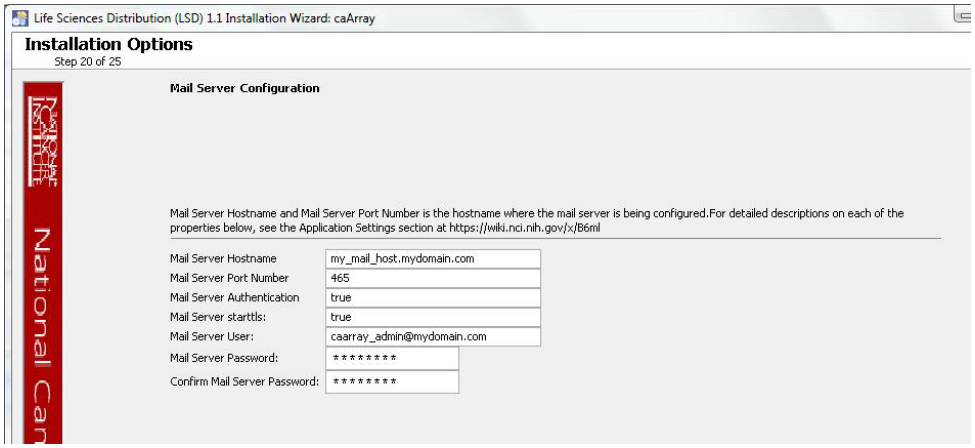
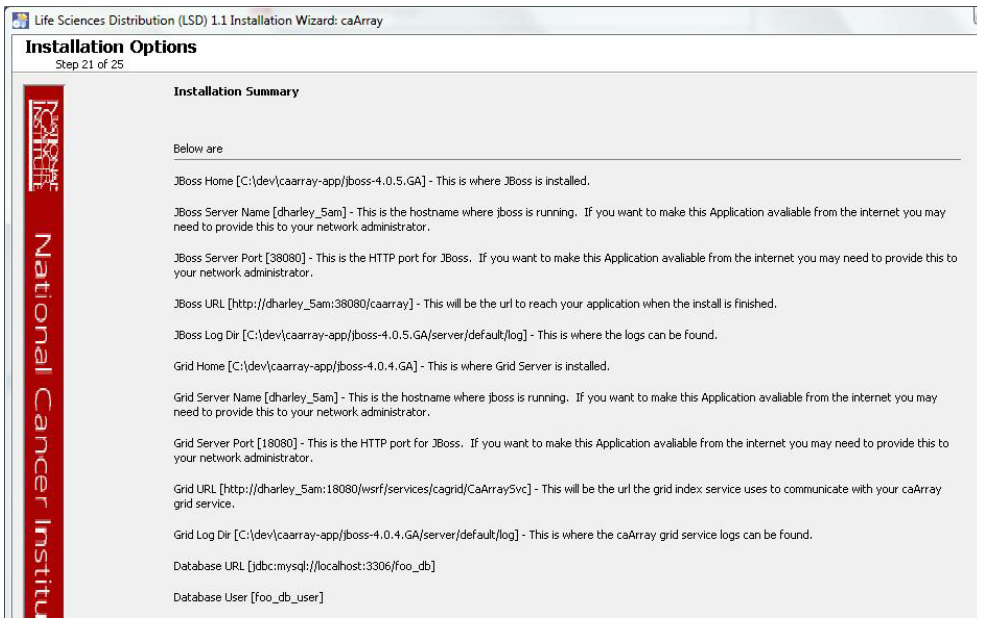
For detailed information on all of the GUI installer fields, refer to the documentation at this location: https://wiki.nci.nih.gov/x/LRKy.

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 `caarray_gui_distribution_2_2_0.jar`. Enter this command to Invoke the GUI installer : `java -jar caarray_gui_distribution_2_2_0.jar`.
2	The Installation Wizard opens to prompt you through the installation process. Click **Next** to proceed through the pages of the wizard, beginning with progressing past the Welcome page. **Note:** All screens are not shown in the steps in this section. Follow the instructions in the wizard, referring back to these steps, as appropriate.
3	Review the release notes.
4	You must accept the license agreement.
5	Select Install installation type. For a new installation, select **Install**.
6	Navigate to the directory where you would like to install caArray 2.2.  If the folder does not yet exist, click **OK** in the dialog box to indicate that you want the folder to be created.
7	Choose the type of installation you prefer **Typical** or **Custom**. **NOTE**  The Custom installation allows more detailed configuration options. If you choose to do a *Custom* installation type, go directly to the walk-through presented in the Appendix I: Custom Type GUI Installer Walk-Through on page 30. Do not proceed further with this section which describes the remaining steps for the *Typical* installation type. 

Step	Action
8	Specify the admin account password for the JBoss servers to be installed (caArray and grid service). The username is “admin” and is not currently configurable. The admin account is needed to login to the JBoss JMX console or admin console, or to shutdown a JBoss server from the command line.  If you do not specify passwords, or if one of the passwords does not match its confirmation field, you will see error messages.
9	Specify the research center and technical point-of-contact information needed for grid service registration.  An error message displays if you did not enter all of the required information.

Step	Action
10	Specify the database connection information, including the name of the **pre-existing** database where the caArray schema will be installed, and the **pre-existing** user which will be used by caArray 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 database admin user's credentials are incorrect. • If the specified database does not already exist, or the caArray DB user's credentials are wrong.
11	Specify the grid service index URL, an externally-visible hostname or IP address which the index service can use to communicate with the grid service, and optionally, the UPT user management URL.  If the index service cannot be reached at the specified URL, an error message displays, informing you to check your firewall or the proxy setting.

Step	Action
12	Specify the SMTP mail server connection information so that caArray can send emails from users with new account requests. 
13	Review the summary of the information you have entered. 
14	On the next two pages, 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.
15	When you are informed that the process is finished, click **Done** on the lower right corner of the wizard to close the installer.

Step	Action
16	To verify caArray installation, open your web browser to http://<jboss.server.hostname>.<jboss.server.port>/caarray (example; https://array.nci.nih.gov/caarray/. If needed, you can refer to the `<user home>/.installer-csarray/caarray_installer/install.properties` file for the correct values. Enter ***`caarrayadmin`*** as the user and ***`caArray2!`*** as the password.
17	After successfully installing caArray, make a backup of the `<user home>/.installer-csarray/caarray_installer/install.properties` file in a different directory for future reference.

Command-Line Method of Installation

Overview of caArray 2.2.0 Command-Line Installer Properties Files

When you do a command-line installation of caArray 2.2.0 for the first time, you will work with the properties file included in the `caarray_distribution_2_2_0.zip`. The file is: `install.properties`.

If you are command-line upgrading from a previous version of caArray 2.X, you will work with the `upgrade.properties` file included in the `caarray_upgrade_2_2_0.zip`. For more information about upgrading caArray, see Upgrade Using Command-Line Installer on page 24.

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

Command-line Installation Steps

To install a new instance of caArray 2.2.0 using the command-line, follow these steps:

Step	Action
	Refer to the command-line installation instructions found here: https://wiki.nci.nih.gov/x/MxKy .
1	From the directory where you downloaded the `caarray_distribution_2_2_0.zip` from Downloading caArray 2.2.0 files on page 13, 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 caarray_distribution_2_2_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:\caarray_220_installer
2	**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 9. 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/LRKy
3	**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.
4	From the command line, navigate to `<installer_directory>/`(*Example*:`cd C:\`caarray_220_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 caArray schema in the specified **pre-existing** database on your MySQL server, and installs, configures, and starts two JBoss servers, one for the caArray application, and one for the grid service.
5	To verify caArray installation, open your web browser to http://<jboss.server.hostname>.<jboss.server.port>/caarray (example; https://array.nci.nih.gov/caarray/. Refer to the `<installer_directory>/install.properties` file for the correct values. Enter ***`caarrayadmin`*** as the user and ***`caArray2!`*** as the password.
6	After successfully installing caArray, make a backup of the `<installer_directory>/install.properties file` in a different directory for future reference.

Upgrading caArray 2.X to 2.2.0

This section describes how to upgrade your product from caArray 2.X to caArray 2.2.
The instructions in this section apply only if you have already installed a caArray version 2.X.

You can perform an upgrade installation of caArray v.2.2.0 using either of these two methods:

- A GUI Installation wizard. Instructions for this method begin on page 21.
- A command-line installation. For instructions, see page 24.

Before You Begin 	• **Important:** Backup the 2.X database. You need to create a reliable copy of your entire caArray database—the DDL and DML. • **Important:** Backup the current installation of caArray and artifacts from the original installation, such as properties files.

If you are performing a new installation, go directly to the installation of version 2.2, Installing caArray 2.2.0 Application and Services, on page 12.

 **caArray 2.X Users Upgrading to caArray 2.2**	The directions in this section presume that you have a valid and functioning caArray 2.X. That assumes that Java SDK, Apache Ant and MySQL have all been successfully uploaded and installed, as described on pages 3 - 8 in this document.

Overview of Properties Files

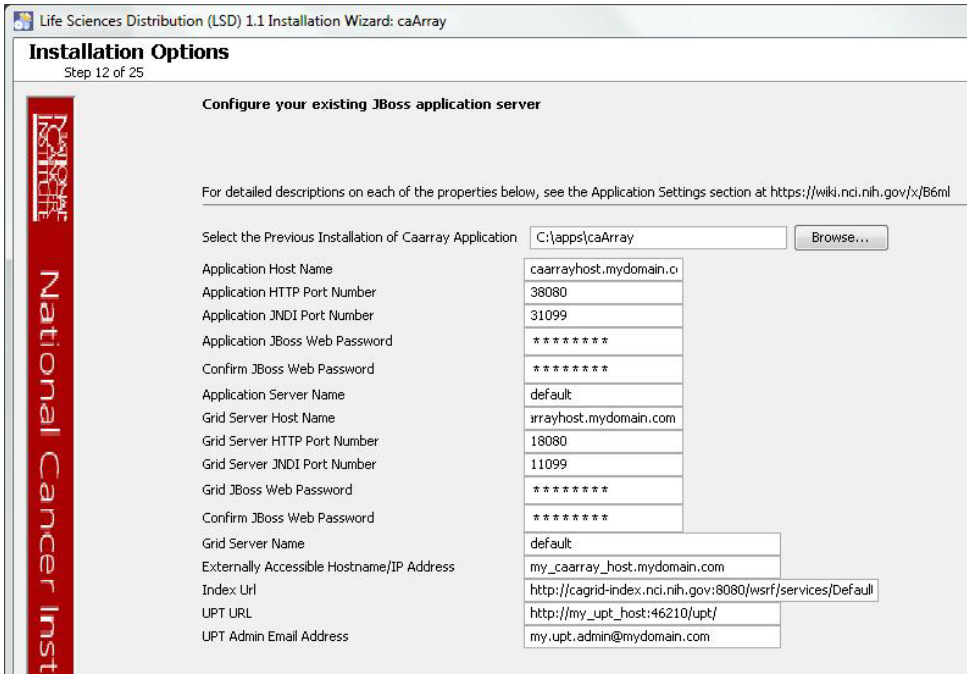
When you installed the previous version of caArray 2.X, you configured the `install.properties` file. To complete the upgrade to caArray 2.2, you must use some of the values from the orignal `install.properties` to configure values in the upgrade installer wizard GUI, or the `upgrade.properties` file if you are doing a command-line method of upgrade.

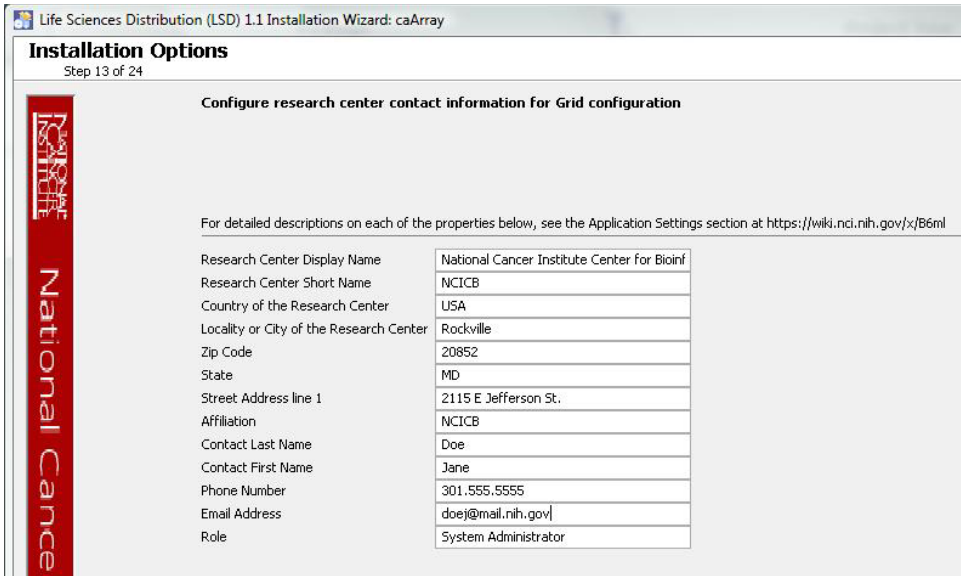
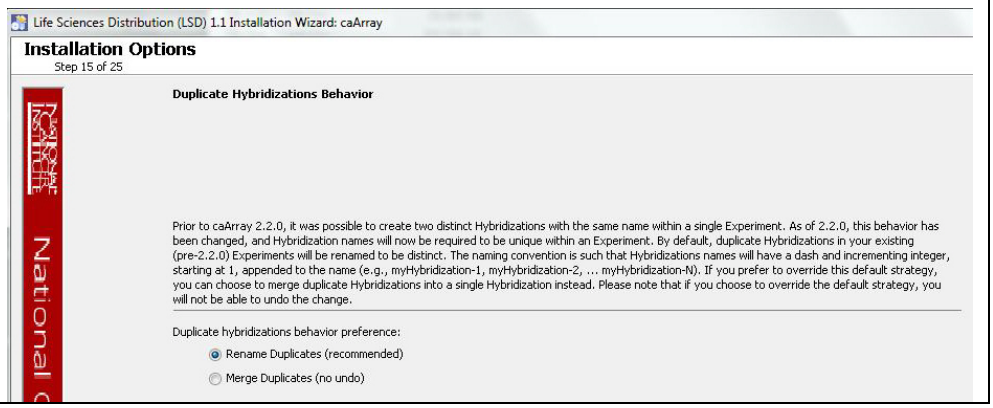
See the steps below for more information.

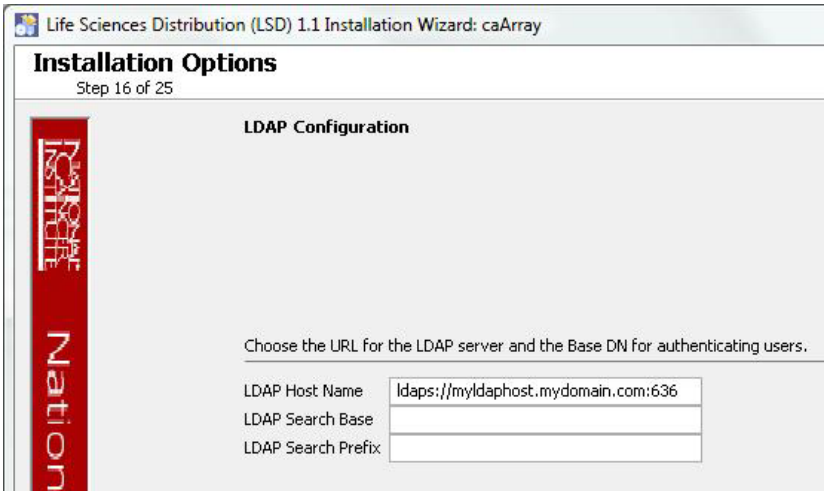
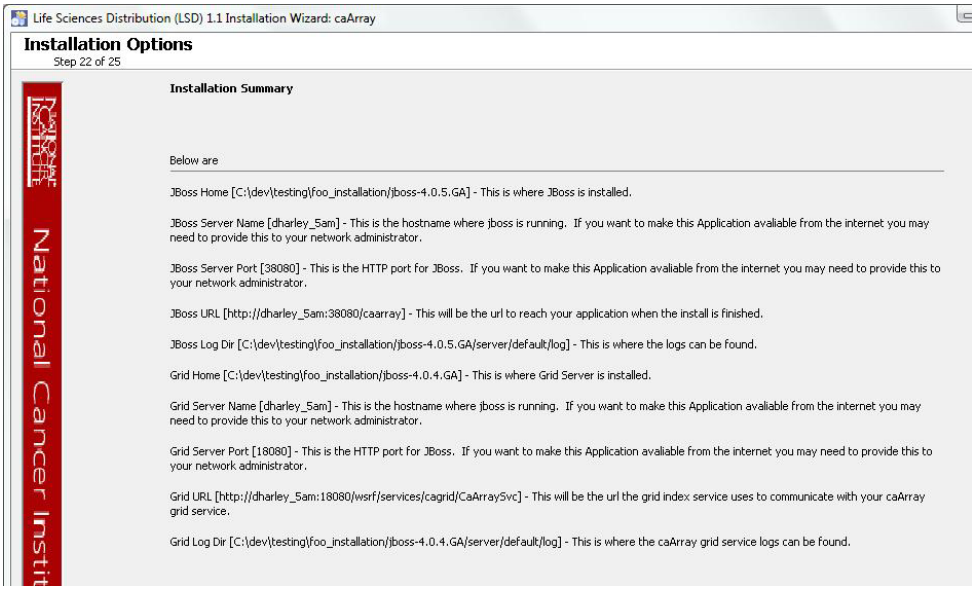
Upgrade Using the GUI Installer

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

To perform an upgrade to caArray 2.2.0 using the GUI Installation Wizard, follow these steps:

Step	Action
1	Open a command prompt in the directory where you downloaded the `caarray_gui_distribution_2_2_0.jar` and invoke the GUI installer like this: `java -jar caarray_gui_distribution_2_2_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 to continue.
5	Select the **Upgrade** installation type.
6	Configure the JBoss Server-related upgrade settings.  If the path pointing to the caArray installation to be upgraded is incorrect, an error message appears.

Step	Action
7	Specify a research center and technical point-of-contact information needed for grid service registration.  If you do not specify all of the required fields, an error message appears.
8	Set your duplicate hybridization behavior preference: 

Step	Action
9	Specify the authentication type that caArray is using. If you choose LDAP, configure the LDAP information. 
10	Review the summary of gathered information. 
11	Click **Next** to proceed through the next two pages. Review the selected upgrade installation type and the upgrade destination.
12	After you click **Next** from reviewing the installation destination, the installer runs. The installation wizard displays the installation progress and completion. When you are informed that the process is finished, click Done in the lower right corner to close the installation wizard.

Step	Action
13	To verify caArray installation, open your web browser to `http://<jboss.server.hostname>.<jboss.server.port>/caarray` (example: https://array.nci.nih.gov/caarray) and enter ***caarrayadmin*** as the user and ***caArray2!*** as the password. Refer to the original `install.properties` for the correct `jboss.server.hostname` and `jboss.server.port` values.

Upgrade Using Command-Line Installer

To perform an upgrade to caArray 2.2.0 using the command-line, follow these steps.

Step	Action
1	From the directory where you downloaded the upgrade zip file, extract 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 caarray_upgrade_2_2_0.zip`. (You must have a ZIP tool installed). **Note:** 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 caArray. This location will be referred to as the `<upgrade_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 `<upgrade_installer directory>` henceforth Example `<upgrade_installer directory>` = C:\caarray220_upgrade_installer
2	Edit the default properties in the `<upgrade_installer_directory>/upgrade.properties` file. Before doing so, review the Working with Properties Files section on page 9. To do so, open both properties files, the one you configured originally when you installed the previous version of caarray_2.X. (`<install properties file>`) and the `<upgrade_installer_directory>/upgrade.properties` file. For the latest details about configuring the properties for your updated environment, refer to this wiki page: https://wiki.nci.nih.gov/x/MBKy **Note:** The `upgrade.properties` file does not have as many attributes, so you will not need to transfer all values you sent in the previous installation file.
3	**Record these property values.** **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 check the `*.properties` to verify that the ports in this file are not being used by other applications.

Step	Action
5	From the command line, navigate to `<upgrade_installer_directory>/` (*Example*:`cd C:\caarray220_upgrade_installer`), and type ***`ant`***. This initiates the upgrade process. The anticipated duration is anywhere 1-15 minutes depending on your system's speed, power and memory. The installer upgrades your existing caArray database on your MySQL server, starts your existing JBoss servers and starts up the grid service for the caArray application. **Notes regarding upgrade:** 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 **Y** to proceed.
6	To verify caArray installation, open your web browser to `http://<jboss.server.hostname>.<jboss.server.port>/caarray` (example: https://array.nci.nih.gov/caarray) and enter ***caarrayadmin*** as the user and ***caArray2!*** as the password. Refer to the original `install.properties` for the correct `jboss.server.hostname` and `jboss.server.port` values.

Configuring JBoss

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

To configure JBoss in Windows, follow these steps:

Step	Action
1	Add the following entry to the JBoss `run.bat` file which is located will be located at `<application_root_directory>/jboss-4.0.5.GA/bin/run.bat`. Add the text right after the line "`rem Add -server to the JVM options, if supported`". `-server -Xms2048m -Xmx2048m -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` **Warning**: Be careful when copying and pasting from this document, whether PDF or MS Word. No spaces must come before and after the columns. A safe way to ensure that the text has no unwanted space and unwanted characters is to copy the text into a blank NotePad first. Correct the spacing, then copy and paste back into the `run.bat` file.

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 `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.

JBoss memory is configured through the `jboss.java.opts` property in `caarray2-install.properties`.

Configuring JBoss Servers and MySQL Server to Run as Services

NOTE 	MySQL, and the two JBoss servers that make up caArray, 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 caArray 2.2.0 deployment, there are at least three servers, and if UPT is installed, four servers: • JBoss 4.0.4 for UPT (optional) • JBoss 4.0.4 (for Grid services) • JBoss 4.0.5 (for caArray application) • MySQL 5.0.27

Running JBoss as a Service

NOTE 	The default caArray 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 caArray. 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.
2	**Windows** When installing MySQL server on Windows, choose the option to run MySQL as a Windows service.

Post-Installation Tasks

Using UPT to Add caArray Users

To use the UPT, follow these steps:

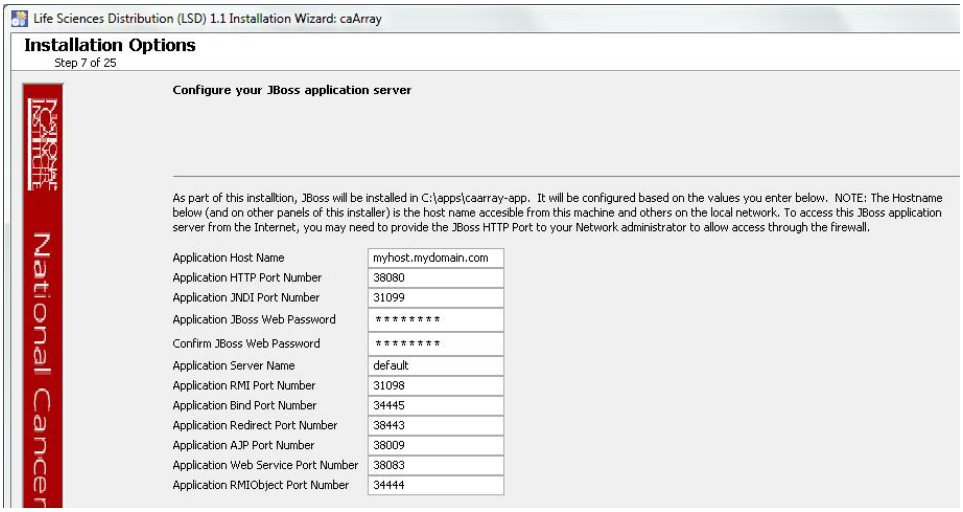
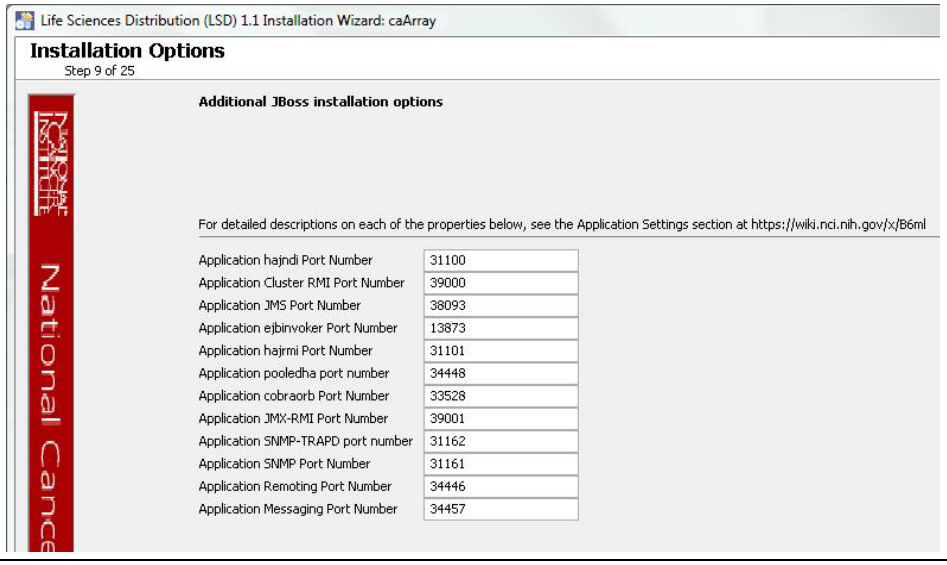
Step	Action
1	Install UPT. For more information, see page 10.
2	Launch a browser and access UPT via http://<jboss.server.hostname>:<jboss.server.port>/upt (from `upt-install.properties`).
3	Login to UPT, using the following profile: • Login ID=***superadmin*** • Password=***changeme*** • Application Name=***csmupt***
4	Select the **User** tab at the top of the page, and click **Create a New User**.
5	Enter **Login Name**, **User First Name**, **User Last Name**, **User Password**, **User Password Confirm**. Click **Add**.
6	On the **Application** tab at the top of the screen, click **Create a New Application**.
7	Enter the following parameters: • Application Name=***caArray*** • Application Description=***<Application Description>*** • Application Declarative Flag=***Yes*** • Application Active Flag=***Yes*** • Application Database URL=`jdbc:mysql://${database.server}:${database.port}/${caarray.database.name}` • Application Database User Name=***${caarray.database.user}*** • Application Database User Password=***${caarray.database.password}*** • Application Database Confirm Password=***${caarray.database.password}*** • Application Database Dialect=***org.hibernate.dialect.MySQLDialect*** • Application Database Driver=***${com.mysql.jdbc.Driver}***

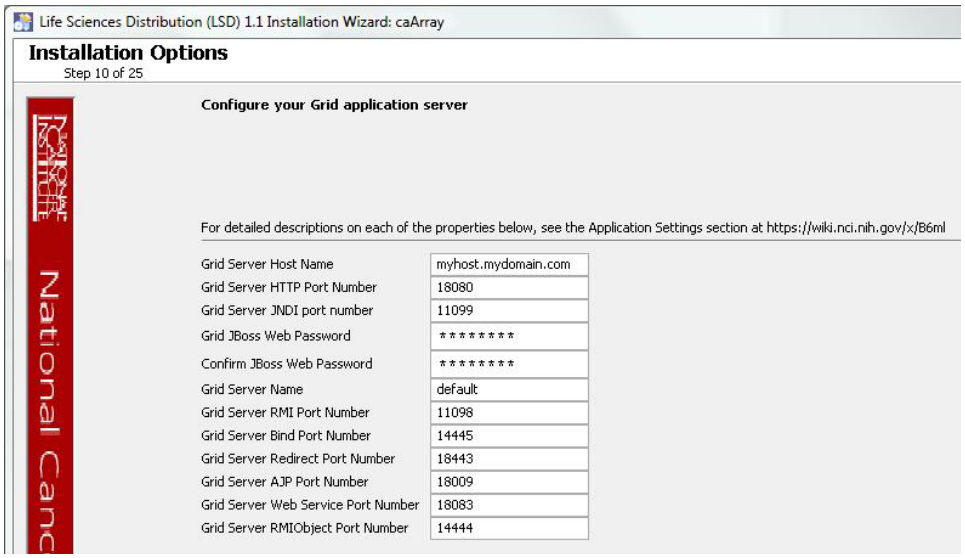
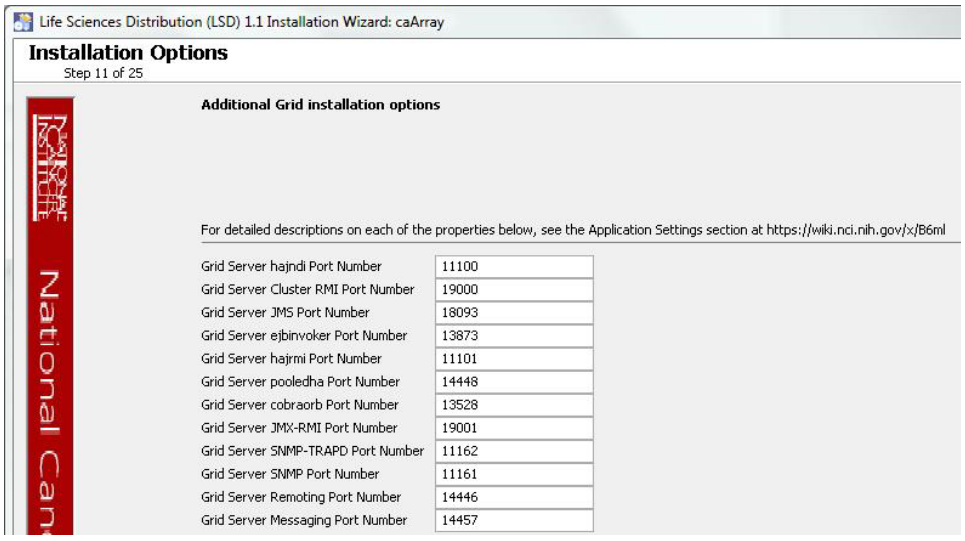
Step	Action
8	Click on **Add > Associated Admins**. then click on **Assign Admin**.
9	Highlight the user you want to be admin of the application, and click **Assign Admin**.
10	Logout of UPT.
11	Login to UPT at http://<jboss.server.hostname>:<jboss.server.port>/upt (from `upt-install.properties`). Use the following login profile: • Login ID=*<User created above>* • Password=*<Password for User created above>* • Application Name=*caArray*
12	Add users to the caArray application like you did above.
13	Click **Logout.**

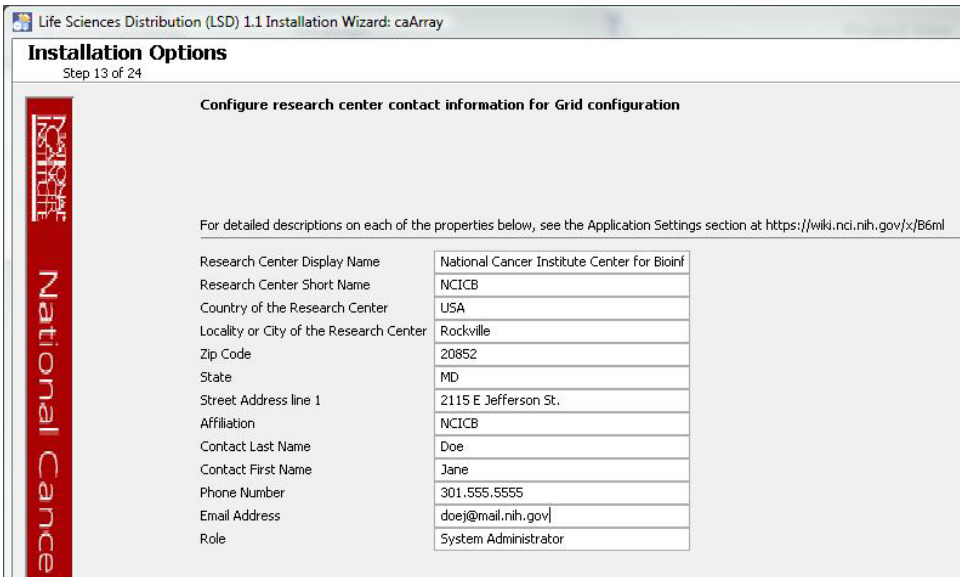
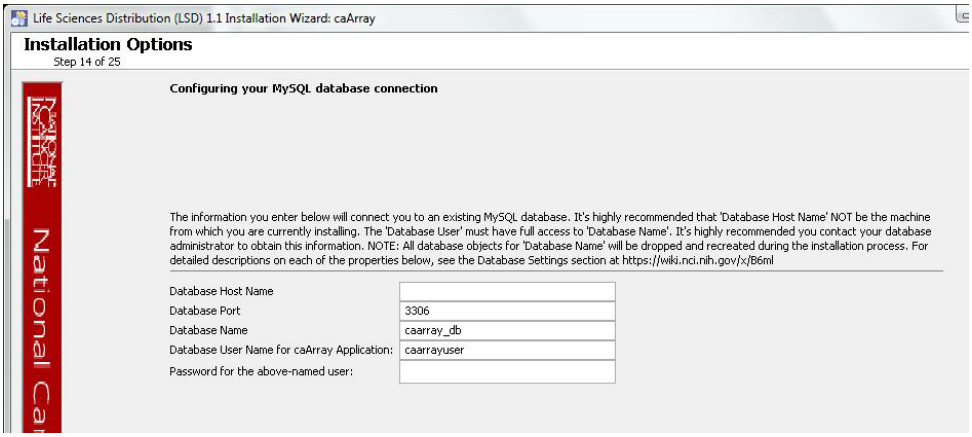
Appendix I: Custom Type GUI Installer Walk-Through

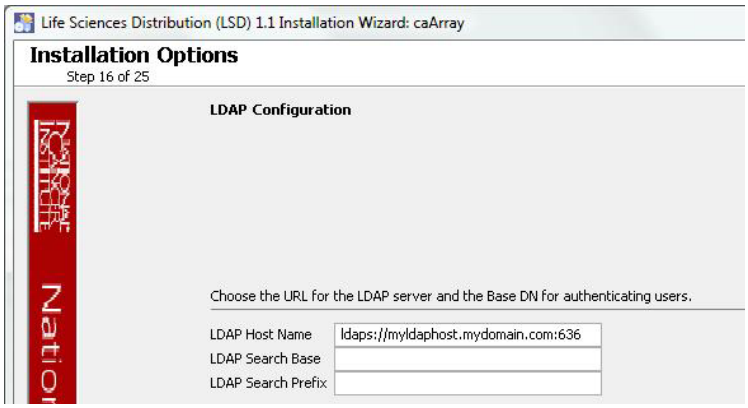
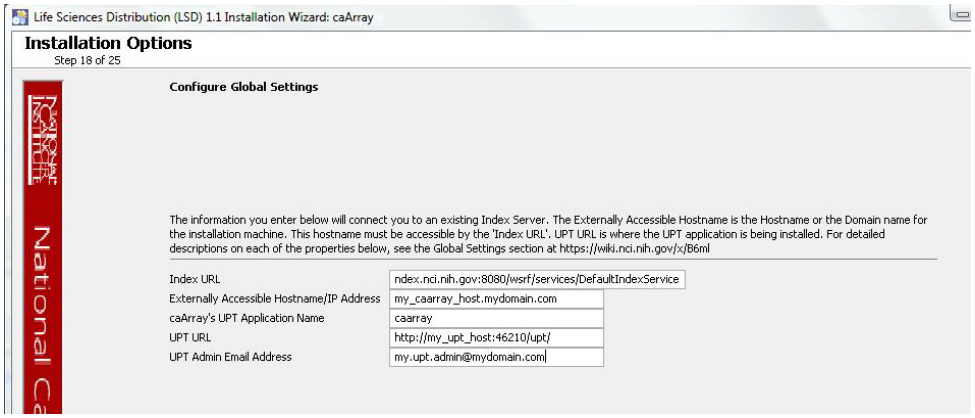
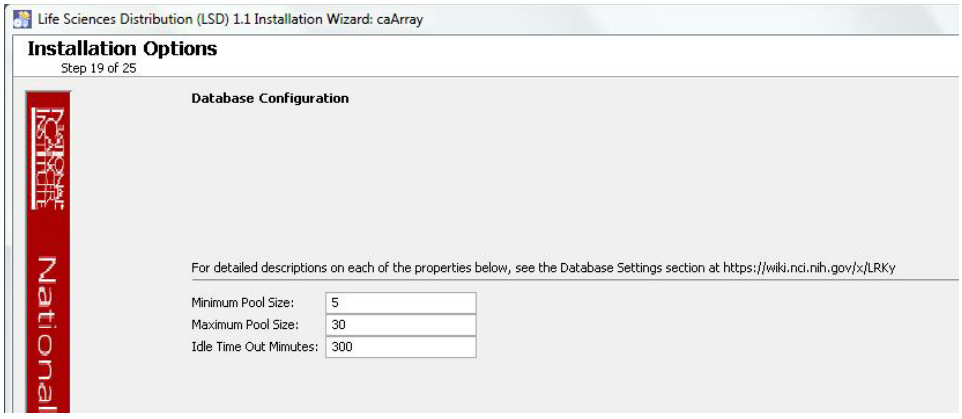
The Custom type GUI installer process walk-through begins on the panel immediately following the panel where you specified the Custom type install (page 14).

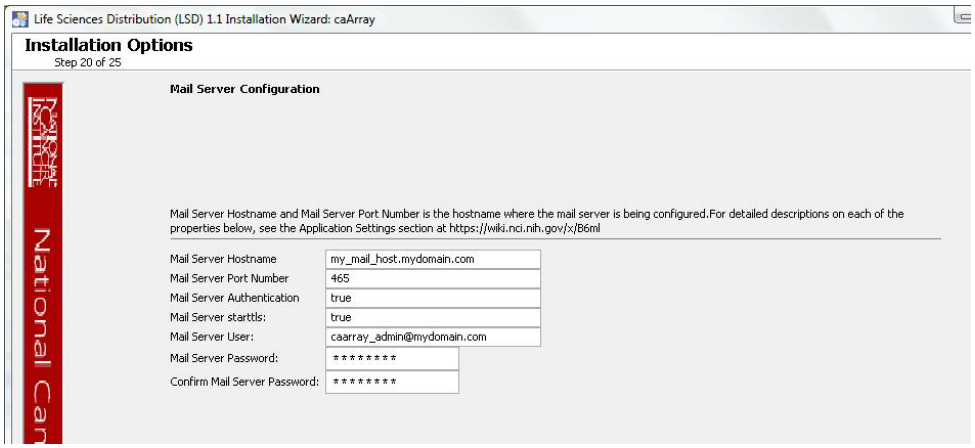
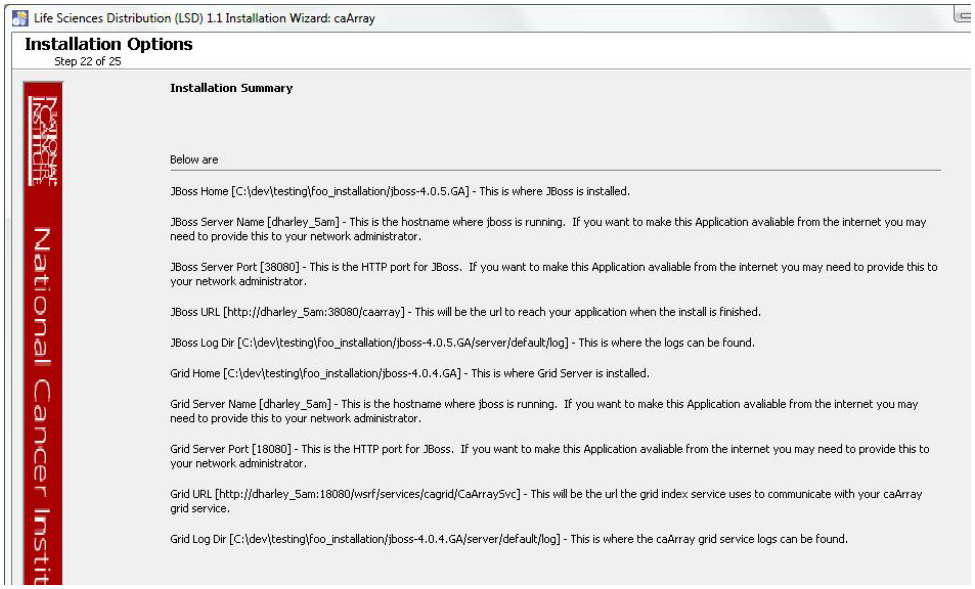
To continue with the Custom installation, follow these steps:

1	Configure caArray 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. 
2	

3	Configure grid service JBoss server on the next two pages of the installation wizard. The screen shots show example values. 
4	

5	Specify the research center and technical point-of-contact info needed for grid service registration.  An error message opens informing you of required fields you may have missed.
6	Specify the database connection information, including the name of the **pre-existing** database where the caArray schema will be installed, and the **pre-existing** user to be used by caArray 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 database admin user's credentials are incorrect. • If the specified database does not already exist, or the caArray DB user's credentials are wrong.

7	Specify the authentication type that caArray should use. If LDAP is chosen, configure LDAP info. 
8	Specify the grid service index URL, an externally-visible hostname or IP address which the index service can use to communicate with the grid service, and optionally, the UPT user management URL.  If the grid index service cannot be reached at the specified URL, an error message appears.
9	Configure the database connection pool settings. 

10	Specify SMTP mail server connection info so that caArray can send emails from users with new account requests. 
11	Review the summary of the information you entered. 
12	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.
13	When you are informed that the process is finished, click **Done** in the lower right corner of the wizard to close the installer.
14	To verify caArray installation, open your web browser to http://<jboss.server.hostname>.<jboss.server.port>/caarray (example; https://array.nci.nih.gov/caarray/. Refer to the `<user home>/.installer-csarray/caarray_installer/install.properties` file for the correct values. Enter ***`caarrayadmin`*** as the user and ***`caArray2!`*** as the password.

15	After successfully installing caArray, make a backup of the `<user home>/.installer-caarray/caarray_installer/install.properties` file in a different directory for future reference.

Appendix II: Default Users

The following users are provided by default by the caArray installer. The password for all is caArray2!.

- caarrayadmin
- caarrayuser
- researchscientist
- labadministrator
- labscientist
- biostatistician
- systemadministrator - This is the only user who will have access to the Manage Users functionality in caArray.
- collaborator

Contacting Application Support

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