caARRAY 2.0.1 DATA PORTAL

Local Installation Guide

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Introduction

This caArray 2.0.1 installation Guide provides you with the instructions to install and configure the caArray 2.0.1 application in your environment. The caArray installation installs and configures three JBoss application servers, a grid service and creates a database on a preinstalled MySQL server.

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:

a. Downloading and installing required software
b. Setting environment variables
c. Downloading and installing the Universal Provisioning Tool (UPT)
d. Downloading caArray 2.0.1 distribution files
e. Editing caArray2-Install.properties file
f. Installing caArray
g. Upgrading caArray
h. Configuring JBoss and MySQL
g. Advertising the grid service

Before You Proceed 	• Even if you have had previous versions (1.x) of caArray, you must proceed through the pages and steps outlined in this installation guide as if it is a first-time install. It is not possible to “upgrade” an existing installation to caArray 2.0.1. • Please contact us 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 • Directions are given in this document for both Linux and Windows operating systems.

caArray 2.0.1 Software and Technology Requirements

Tested Environment

The caArray 2.0.1 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 2.0.1 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 2.0.1 installation, you must download and install the following tools and recommended versions in the order they are listed. Complete the directions for installing each, as directed on the corresponding website.

Required Software Name ***Version***	***Description***
Java 2 Platform Standard Edition 5.0 Update 10 (J2SE 5.0) http://java.sun.com/products/archive/j2se/5.0_10/. Be sure to download the correct Java SDK for your operating environment. For example, for Linux AMD 64, you would download `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 .	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 database.server, database username and password.

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 *<installation_directory>* with the directory where you have installed the Java SDK and Ant.
	
	(The location example in the Apache Ant installation is `/usr/java`.)
	
	`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`

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

Verifying the Environment Variables in Linux

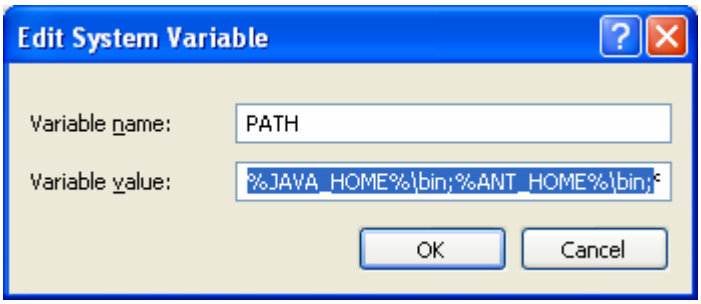
To verify that environment variables have been set correctly, follow these steps:

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.
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 UPT and caArray will be modified and set in those sections of this document: Downloading and Installing the UPT files on page 10 and Installing caArray 2.0 on page 13.

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 downloaded, installed and running in order for the caArray installation to work successfully.

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 password chosen during the MySQL installation process, as you may choose to use this as your `database.system.user` later in the caArray installation process. • Note the MySQL port chosen during the MySQL installation process, as you may choose to use this as your `database.port` later in the installation process. • As part of the installation process, the default character set is set to `latin1` for the caArray MySQL database.

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`**
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 steps:

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**.

Installing caArray 2.0.1 Application and Services

To install the caArray 2.0.1 application and services, follow the steps in this section:

- Downloading and Installing the UPT files
- Downloading caArray 2.0.1 files from GForge
- Installing caArray 2.0.1
- Configuring JBoss and MySQL to Run as Services
- Post-Installation: Advertising the Grid Service

BEFORE YOU BEGIN 	If you have previously installed caArray 2.0, you must follow the upgrade procedures described in *Upgrading caArray 2.0 to 2.0.1* on page 16 to migrate to caArray 2.0.1.

About Properties

An important component of caArray 2.0.1 installation is configuring properties.

Overview of caArray 2.0.1 Properties Files

When you install caArray 2.0.1, you will work with two properties files, both included in the `caarray_distribution_2_0_1.zip`. The two properties files are: `caarray2-install properties` and `caarray2-upgrade.properties`.

See the steps described on page 13 for more information.

In several instances in this section, 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 `caarray2.home=C:/apps/caarray-app`, **not** `caarray2.home=C:\apps\caarray-app`. If you use backslashes, you will experience unexpected results.

Spaces in Property Values

NOTE 	You should not put any spaces in the property values of `*-install.properties` files (e.g. `caarray2-install.properties`). In Windows, note that the `C:\Documents and Settings\<username>` path contains spaces and the installation will likely fail. If you are using Windows, use a path such as `C:/apps/caarray`.

More About Property Values

NOTES 	• In the `caarray2-install.properties` and the `caarray2-upgrade.properties` files, 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.

	• In many of the steps below, there is reference to a `database.system.user` for your MySQL server. To determine which users are have full privileges to create and manage other databases, type ***`show grants`*** from a MySQL prompt to determine the correct level of privileges.

Downloading and Installing the UPT files

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. This location will later be referred to as the `<installation_directory>`. *Example*: C:\UPT.
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 `<installation_directory>` henceforth.. Use WinZip or a similar utility to unzip the files.
3	Create an <application root> directory that is different from the <installation directory>. The <application root> directory is the location where you are going to install UPT. *Example*: C:\apps
4	Open the `<installation_directory>/upt/upt-install.properties` file and modify the values for your environment and save the file. At a minimum, you will need to modify the following values: • `upt.home` o The `<application root>` directory. This is the location, created in the previous step 3, where you are going to install UPT. Example, in Windows, the `<application_root_directory>` can be `C:/apps/upt`. Linux users can use `${user.home}/apps/upt` or any other folder to which you have write permissions. **Important:** The `<application_root_directory>` must be different than `<installation_directory>` or the installation will fail. Specifically, If the `upt.home` property value is the same location where the `build.xml` file is located, the installer will fail. For example, if `upt.home = C:\UPT` and `build.xml` is in `C:\UPT`, installation will fail.

Step	Action

	• `database.system.user`
	  o This value should correspond to a MySQL username that has full system privileges. You should have recorded this when you installed MySQL.
	• `database.system.password`
	  o 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.
	• `database.server`
	  o 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.
	• `database.port`
	  o 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.
	• `database.name`
	  o Choose a name for the UPT MySQL database.
	• `database.user`
	  o 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`.
	• `database.password`
	  o Choose a password to access `database.name` for the username identified in `database.user`. This must be different from the database.system.password.
	Remember the values you have used in this properties file. You will need some of them later in the caArray installation.
	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.

5	From the command line, navigate to `<installation_directory>/upt` (*Example*:cd C:\UPT), and type ***`ant`***. This runs the installation. You will verify UPT installation after Installing caArray 2.0.
6	After successfully installing UPT, make a backup of `<installation_directory>/upt/upt-install.properties in another directory for future reference.`

UPT Port Usage

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.

Downloading caArray 2.0.1 files

To download the caArray 2.0.1 files, follow this step:

Step	Action
1	The installation file for caArray 2.0.1 is over 300MB. From the https://gforge.nci.nih.gov/frs/?group_id=305 directory in GForge, download the `caarray_distribution_2_0_1.zip` file. Remember the download location as you will be using this file to run the installation in the steps that follow.

Server Components in caArray 2.0.1

These server components are installed and configured as part of the caArray 2.0.1 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)
- JEMS installer 1.0.2 GA – supports EJB 3.0 specification

Installing caArray 2.0.1

To install caArray 2.0.1, follow these steps:

Step	Action
1	From the directory where you downloaded the `caarray_distribution_2_0_1.zip` from Downloading caArray 2.0.1 files, 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_0_1.zip` (you must have a ZIP tool installed). This location will be referred to as the `<installation_directory>` henceforth. Once you unzip this file, it creates a directory called `caarray` which is a directory below the `<installation_directory>` b. Use WinZip or a similar utility to unzip the files to a temporary location. This location will be referred to as the `<installation_directory>` henceforth. Once you unzip this file, it creates a directory called `caarray` which is a directory below the `<installation_directory>.` Example `<installation directory>` = C:\caarray
2	**Note:** Setting the property values is an important step in the install process. Before you complete steps 2 & 3, review More About Property Values on page 9. **Follow steps 2 and 3 meticulously**. In the `caarray_distribution_2_0_1.zip,` the two properties files are: `caarray2-install properties` and `caarray2-upgrade.properties.` First, to modify the default properties in the **`caarray2-install properties`**, open the `<installation_directory>/caarray/`**`caarray2-install.properties`** file, modify the values for your environment and save the file. At a minimum, you will need to modify the following values: • `${application.base.path}` o The location where you are going to install caArray (your `<application_base_path>).` For example in Windows, the `<application_base_path> can be C:/apps/caarray2.` Linux users can use `/apps/caarray2` or any other folder to which you have write permissions. **Important:** `<application_base_path>` must be different than `<installation_directory>` or the installation will fail. • `database.system.user` o This value should correspond to a MySQL username that has full system privileges. This must correspond to that value used in Step 3 on page 10. • `database.system.password` o This value must correspond to the password for the `database.system.user` used in Step 3 on page 10. • `database.server`

Step	Action
	○ This value must correspond to the domain name of machine that hosts the MySQL server. Talk to your database administrator to learn the server name and port. • `database.port` ○ This value must correspond to the port for the `database.server`. 3306 is the default port, but check with your database administrator to be certain. • `database.name` ○ Choose a name for the caArray MySQL database. This must be different than the UPT database name (page 10). • `database.user` ○ Choose a user name to access `database.name`. This can be any valid name that you choose, but it must be different than `database.system.user`. • `database.password` ○ Choose a password to access `database.name` for the username identified in `database.user`. This must be different than the database.system.password. • `mail.smtp.host` ○ This value must correspond to an SMTP server available in your network. This will differ in your environment. Consult your email administrator for the SMPT server and port (next value). • `mail.smtp.port` ○ This value must correspond to the SMTP server. The default is 25, but this may be different in your environment. Consult your email administrator. • `Grid.index.url` is a new property in both property files (install and upgrade). It points to the training grid server but you can change it to point to a production grid server. **Record these values.** **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 `caarray2-install.properties` to verify that the ports in this file are not being used by other applications.
2	Now edit the default properties in the **`caarray2-upgrade.properties`** file. To do so, open both properties files, the one you just configured in step 2 (**`caarray2-install.properties`**) and the `<installation_directory_2>/caarray/`**`caarray2-upgrade.properties`** file. **Note:** Where there are duplicate attributes, the values must be the same in both files. a. Copy each entry you modified in step 2 in the `caarray2-install properties` file and paste it in the corresponding location in the

Step	Action
	`caarray2-upgrade.properties` file, replacing the default text, as appropriate. **Note:** The `upgrade.properties` file does not have as many attributes, so you may not need to transfer all values you set in step 2. **Record these values.** **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 `caarray2-install.properties` to verify that the ports in this file are not being used by other applications.
3	From the command line, navigate to `<installation_directory>/caarray` (*Example*:`cd C:\caarray`), and type ***`ant`***. This initiates the installation process. The anticipated duration is anywhere 1-15 minutes depending on your system's speed, power and memory. The installer creates a caArray database on your MySQL server, starts and configures two JBoss servers and starts up a grid service for the caArray application.
4	a. To verify UPT installation, go to: http://<jboss.server.hostname>:<jboss.server.port>/upt. (Refer to the `upt-install.properties` for the correct values. See note below.) b. To verify caArray installation, open your web browser to http://<jboss.server.hostname>:<jboss.server.port>/caarray. (Refer to the `caarray2-install.properties` for the correct values. See note below.) and enter ***`caarrayadmin`*** as the user and ***`caArray2!`***as the password. **Note:** `jboss.server.hostname` and `jboss.server.port` are values in the `<installation_directory>/caarray/caarray2-install.properties` and the `<installation_directory>/upt/upt-install.properties` files. The default administrator name is **`superadmin`** and the password is **`changeme.`**
5	After successfully installing caArray, make a backup of `<installation_directory>/caarray/caarray2-install.properties and caarray2-upgrade.properties files` in a different directory for future reference.

caArray Port Usage

NOTE	
	Verify that default port values defined in `caarray2-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.

Upgrading caArray 2.0 to 2.0.1

This section describes how to upgrade your product from caArray 2.0 to caArray 2.0.1. The instructions in this section apply only if you have already installed caArray version 2.0.

If you are performing a new installation, go directly to the installation of version 2.0.1, Installing caArray 2.0.1 Application and Services, on page 8.

 **caArray 2.0 Users Upgrading to caArray 2.0.1**	It is assumed that you have a valid and functioning caArray 2.0. 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 caArray 2.0, you configured the `caarray2-install properties`. The `caarray_upgrade_2_0_1.zip` that you must download to perform the upgrade to 2.0.1 includes another properties file, `caarray2-upgrade.properties` . To complete the upgrade to caArray 2.0.1, you must use values in the `caarray2-install properties` to configure values in the `caarray2-upgrade.properties`.

See the steps below for more information.

To upgrade to 2.0.1, proceed with these steps:

Step	Action
1	**Important:** Backup the 2.0 database. You need to create a reliable copy of your entire caArray database—the DDL and DML.
2	**Important:** Backup the `jboss.home` directory. To do this, make a copy of the `caarray2.home` folder along with any artifacts from the initial installation , such as the property files, already mentioned.
3	Download the `caarray_upgrade_2_0_1.zip` from https://gforge.nci.nih.gov/frs/?group_id=305. The files in this zip were not included in the `caarray_distribution_2_0_0.zip` you used to install 2.0.
4	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_0_1.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 `caarray_distribution_2_0_0.zip` for 2.0. This new location will be referred to as the `<installation_directory_2>` henceforth. Once you unzip this file, it creates a directory called `caarray` which is a directory below the `<installation_directory>` b. Use WinZip or a similar utility to unzip the files to a temporary location. This location will be referred to as the `<installation_directory>` henceforth. Once you unzip this file, it creates a directory called `caarray` which is a directory below the `<installation_directory>`. Example `<installation directory_2>` = C:\caarray2

Step	Action
5	Edit the default properties in the **`caarray2-upgrade.properties`** in the new zip file. To do so, open both properties files, the one you configured originally when you installed caArray 2.0 (**`caarray2-install.properties`**) and the `<installation_directory_2>/caarray/`**`caarray2-upgrade.properties`** file. **Note:** Where there are duplicate attributes, the values must be the same in both files. a. Copy each entry you modified in the `caarray2-install properties` file and paste it in the corresponding location in the `caarray2-upgrade.properties` file, replacing the default text, as appropriate. **Notes:** • `application.base.path` is a new property in `caarray2-upgrade.properties`, replacing `caarray2.home` in `caarray2-install.properties` • `Grid.index.url` is a new property in both property files (install and upgrade). It points to the training grid server but you can change it to point to a production grid server. • The `caarray2-upgrade.properties` file does not have as many attributes, so you may not need to transfer all values you set in `caarray2-install properties`. **Record these values.** **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 `caarray2-install.properties` to verify that the ports in this file are not being used by other applications.
6	From the command line, navigate to `<installation_directory>/caarray` (*Example*:`cd C:\caarray2`), 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 jboss is installed, it warns you about backing up the jboss home directory, which you were instructed to do earlier in this process. Press **Y** to proceed. • 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.

Step	Action
7	To verify caArray installation, open your web browser to **Error! Hyperlink reference not valid.** (Refer to the `caarray2-install.properties` for the correct values. See note below.) and enter ***`caarrayadmin`*** as the user and ***`caArray2!`***as the password. **Note:** `jboss.server.hostname` and `jboss.server.port` are values in the `<installation_directory>/caarray/caarray2-install.properties` and the `<installation_directory>/upt/upt-install.properties` files. The default administrator name is **`superadmin`** and the password is **`changeme.`**

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.
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 and MySQL to Run as Services

NOTE 	Both MySQL and the three JBoss servers that make up caArray must run continually as services. The instructions in this section cover all of these scenarios. For caArray 2.0.1, there are a total of four servers: • JBoss for UPT • 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

Updating Help Desk Contact Information in SQL

The Help Desk information provided by default in the caArray database must be changed for your environment.

Step	Action
1	Connect to your MySQL server and the caArray database and run the following script (replacing `email_address` with a return email address that is accessible at your location). ***update config_parameter set raw_value = '[email_address]' where param = 'REG_EMAIL_TO';*** ***update config_parameter set raw_value = '[email_address]' where param = 'EMAIL_FROM';***

Using UPT to Add caArray Users

UPT is used to provision users in the caArray application. Each application installs with its own CSM schema that has sample/default users and a role/permissions structure. To add additional users you need to provision the caArray application in the UPT. Then you can assign users to caArray. Below is the general flow.

Note 	`${some.thing}` identifies a value to lookup in the `caarray2-install.properties` file you used to build the caArray application.

For additional information on using UPT
https://gforge.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 the UPT files on 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: o Login ID=***superadmin*** o Password=***changeme*** o 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**.

Step	Action
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}***
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.
10	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*
11	Add users to the caArray application like you did above.
12	Click **Logout.**

Advertising the Grid Service

To advertise your caArray grid service, complete the following steps, then restart the JBoss 4.0.4 server instance. You can check if your grid service is advertised correctly at http://cagrid-portal.nci.nih.gov/web/guest/home.

Step	Action

1	**web.xml**
	The `web.xml` file contains the port and protocol your grid service will be advertised as. Change this file if your service is on a port other than the default port of 18080 and/or the default protocol of http
	`<init-param>`
	`<param-name>defaultProtcol</param-name>`
	`<param-value>http</param-value>`
	`</init-param>`
	`<init-param>`
	`<param-name>defaultPort</param-name>`
	`<param-value>18080</param-value>`
	`</init-param>`
	File Locations:
	`${caarray2.home}/jboss-4.0.4.GA/server/default/deploy/wsrf.war/WEB-INF`

2	**server-config.wsdd** Make sure your container is publishing the right host name. Your service must register with a publicly accessible address or DNS-resolvable host name, so the Index Service (and other clients) can connect to it. Add the following lines to this file if you want your service to have a specific name or if your service is trying to register a private IP address which is not allowed. You should see errors in your JBoss 4.0.4 log if you are trying to register a private IP address. <parameter name="logicalHost" value="somehost.cagrid.org"/> <parameter name="publishHostName" value="true"/> **File Location:** `${caarray2.home}/jboss-4.0.4.GA/server/default/deploy/wsrf.war/WEB-INF/etc/`globus_wsrf_core

Step	Action
3	**serviceMetadata.xml** This file contains the service's contact information. The two sections to update are at the top and bottom of the file. **Top of file under <ns2:pointOfContactCollection>:** <ns3:PointOfContact affiliation="" email="" firstName="" lastName="" phoneNumber="" role="" xmlns:ns3="gme://caGrid.caBIG/1.0/gov.nih.nci.cagrid.metadata.common"/> **Bottom of file under <ns1:hostingResearchCenter>:** <ns14:PointOfContact affiliation="" email="" firstName=" " lastName=" " phoneNumber="" role=" "/> **File Location:** `${caarray2.home}/jboss-4.0.4.GA/server/default/deploy/wsrf.war/WEB-INF/etc/caGrid_CaArraySvc`

4	**CaArraySvc_registration.xml**
	This file has the URL to the Index Server where you can see if your service is advertised. Ensure this file contains the following index server:
	`<wsa:Address>http://cagrid-index.nci.nih.gov:8080/wsrf/services/DefaultIndexService</wsa:Address>`
	File Location:
	`${caarray2.home}/jboss-4.0.4.GA/server/default/deploy/wsrf.war/WEB-INF/etc/cagrid_CaArraySvc/`

5	After making these changes, restart the JBoss 4.0.4 server (this hosts the grid service).
	For more troubleshooting information : http://www.cagrid.org/mwiki/index.php?title=CaGrid:How-To:TroubleshootIndexService

Contacting Application Support

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