

i2b2 Desktop Install: Full VM Server

Windows Installation Guide

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About this Guide

Informatics for Integrating Biology and the Bedside (i2b2) is one of the sponsored initiatives of the NIH Roadmap National Centers for Biomedical Computing (<http://www.bisti.nih.gov/nbc/>). One of the goals of i2b2 is to provide clinical investigators broadly with the software tools necessary to collect and manage project-related clinical research data in the genomics age as a cohesive entity a software suite to construct and manage the modern clinical research chart. This guide with the provided source code will help you to learn about the developing and understand the requirements for creating i2b2 cells.

Chapter 1. Prerequisites

Introduction

As with many client-server application installations, assuring a correct base system configuration is often the most challenging aspect of the installation. That is, one needs to be sure the OS, referenced libraries, and associated applications are all installed correctly before you can validate the newly installed i2b2 Hive and client are working correctly. A system may appear to be functioning even though some prerequisites are missing; problems may only become apparent later when certain features do not work, or work erratically. Besides issues with prerequisites, other inconsistencies that may cause system issues are:

- *Similar software components running on the machine competing for the same system resources as i2b2 components:* For example, the Hive Server runs within the Apache Tomcat application server. Application servers communicate externally via ports dedicated to that server. While no standard exist as to which ports are used, one often sees the application server listening on Port 8080 or Port 8888. The issue is that a great percentage of servers have an application server running on them, most often Apache Tomcat or JBoss, often both. When installing Tomcat onto a system that already has JBoss running on it, one may find that the desired port already utilized by JBoss. For this reason, installing on a dedicated system eliminates any of these types of issues, unless one is very familiar with all of the other applications running on the i2b2 server.
- *Installing versions of prerequisites other than the recommended versions.* Usually, versions of prerequisite software that are higher (more recent) than the recommended version result in no issues, as developers of such applications usually endeavor through convention to be completely *backwards compatible*, so that those with environments that have other applications depending upon their package (read: almost every environment) will work smoothly after upgrading. This should always be the case for minor revision upgrades. A minor revision is usually indicated by a version number which uses the same integer prefix, but the portion after the decimal point is higher (e.g., 5.3 is a minor upgrade from 5.2). Whenever possible, one might wish to use the highest minor revision available. If one wishes to use a higher major release, it should be tested after the i2b2 environment is set up and known to be working correctly, and one should be ready to "roll-back" to the last working version if problems are encountered. *It is highly discouraged to use any versions lower than those recommended for any prerequisite referenced in these installation guides.*¹
- *Intermittent issues observed when other applications are running on the server.* This may be different from an application that is always running, such as Apache Tomcat (see the item above on Application Servers). Specifically, this means that issues may only be encountered when other seemingly unrelated applications are running concurrently with the i2b2 server, but not present when these applications are not running. Again, a dedicated system, at least initially, can help ameliorate these potential issues.

Whenever practical, one can assure a configuration without conflicts by dedicating a piece of hardware as the i2b2 Server, and using it exclusively for that purpose.

Required Software

If you installed the prerequisite software from the Hive Installation Guide you may skip this section; however, you might want to verify that your prerequisite software is installed and available by executing the verification command at the end of each item in this section.

VMware Server

Important

One component of VMware called VMware Management Interface requires the installation of Microsoft IIS on the server. If you plan on using this Management Interface for other applications at your institution you will need to install IIS prior to installing VMware.

It is important to note that Microsoft IIS is NOT required for the i2b2 VMware image. If you receive the warning when installing VMware and do not plan on using the Management Interface you can ignore the message when it appears.

1. Download VMware Server 1.0.5 or higher from <http://www.vmware.com/products/server/>

Tip

Disable any "auto run" drives as they can cause problems on virtual machines

2. Install the VMware Server into a directory of your choice

Note

Depending on the machine configuration you may receive a warning similar to the following: VMWare Management Interface is only supported on server operating systems. You may encounter some issues when using VMWare Management Interface on this system. If you do receive this warning you can continue with the install.

Chapter 2. Install

Installing the i2b2 VMware image application

1. You will be downloading the VMware image from <https://www.i2b2.org/rc> [<https://www.i2b2.org/software>]

Important

In order to access the release candidate ("RC") section of the i2b2 website you need to have an active user account. If you do not have an account you can request one by going to the release candidate registration page (see link below) on i2b2 website. Simply follow the directions to setup a new account.

<https://www.i2b2.org/RC/Register.php> [<https://www.i2b2.org/software/registration>]

2. Once on the main release candidate page, click on "login" and enter your email address and password.
3. Click on either the link that says "Download Page" or the "Download" located on the left hand navigation menu.
4. Scroll to the bottom of the download page where you will see a table listing all the files that can be downloaded.
5. Once you have located the file that has the description of i2b2 Virtual Image, click on the download link next to it.

Note

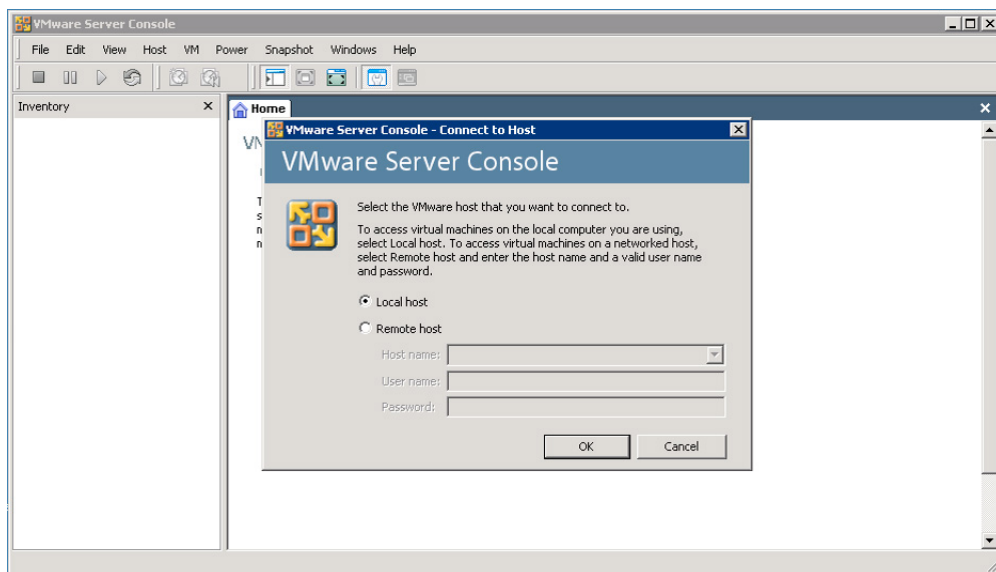
In the description you will also see the release candidate information and/or the version number.

6. Extract all the files from the downloaded zip file in to `C:\Virtual Machines\`.
7. A folder called `i2b2_server` will be created automatically when the files are extracted from the zip file to the Virtual Machine directory.

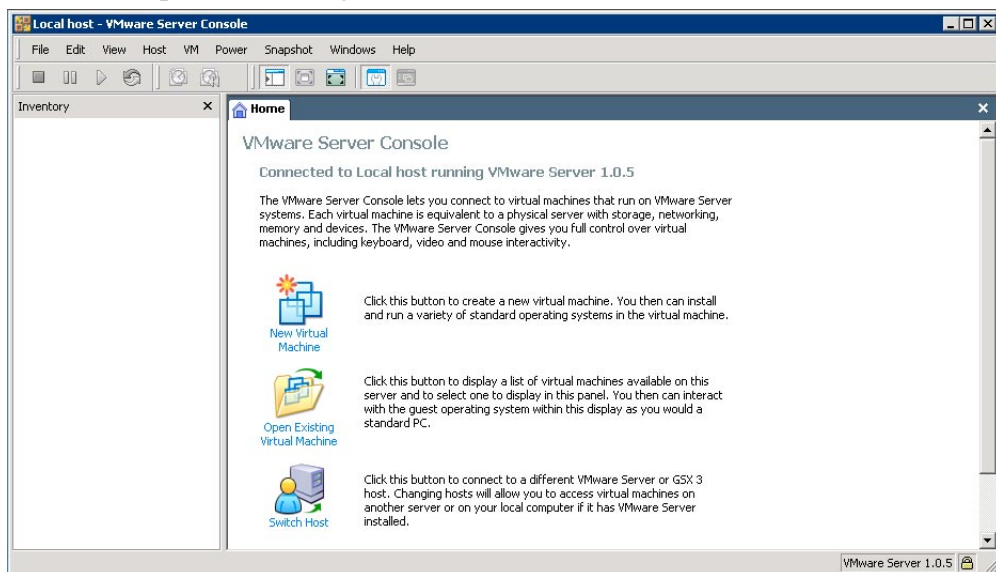
Chapter 3. Execute

Running the VMware Server Console

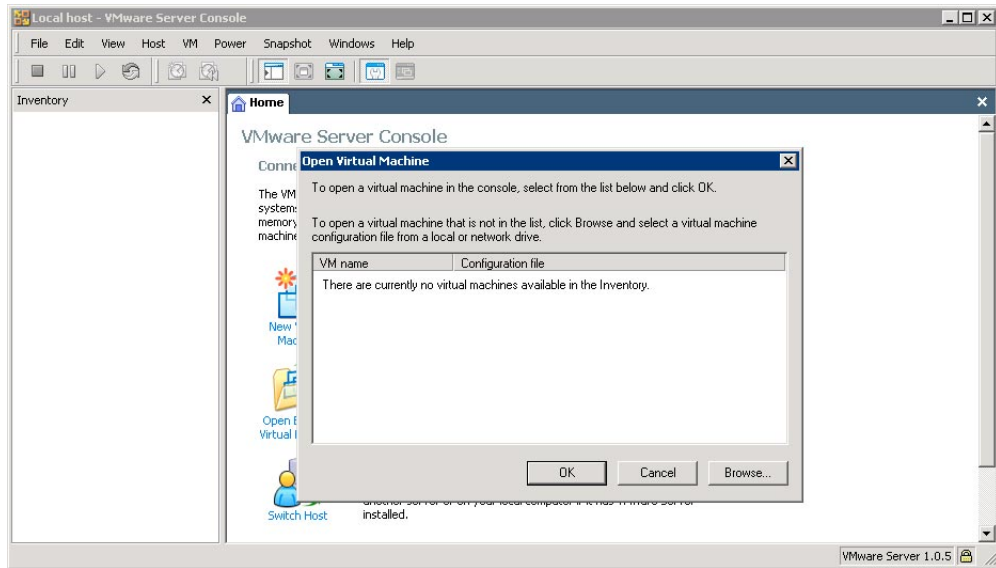
1. Click on the start menu.
2. Go to Programs -> VMware -> VMware Server
3. Click on the VMware Server Console application.
4. Select Local Host button.



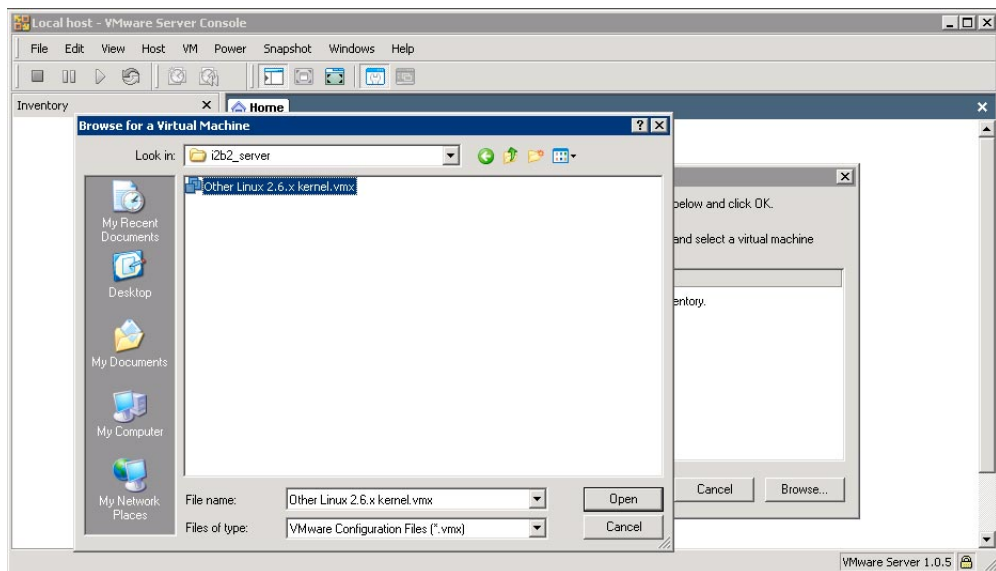
5. Click on the Open Existing Virtual Machine icon.



6. The open Wizard Machine dialog screen appears, click the Browse button:



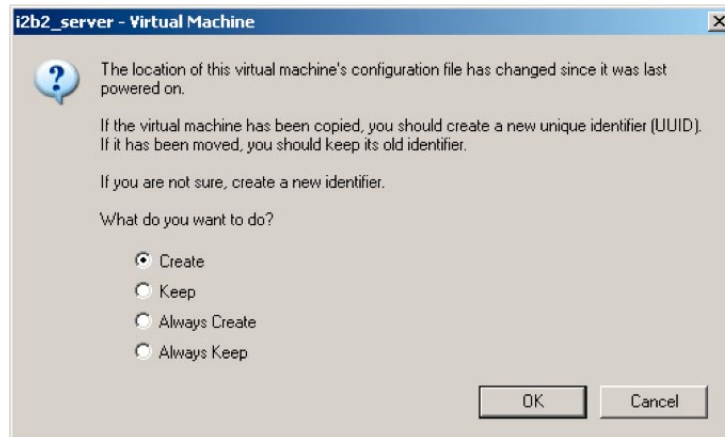
7. Browse to `c:\Virtual Machines\i2b2_server` and select `i2b2 Server`. Click on the `Open` button.



8. At this point, you should see the VMware Console screen again.
9. Click on the green arrow to start the Virtual Machine.

Note

In some instances another dialog box will appear. If this happens, click on `Create` and then `OK` to create a new UUID.



Chapter 4. Configure

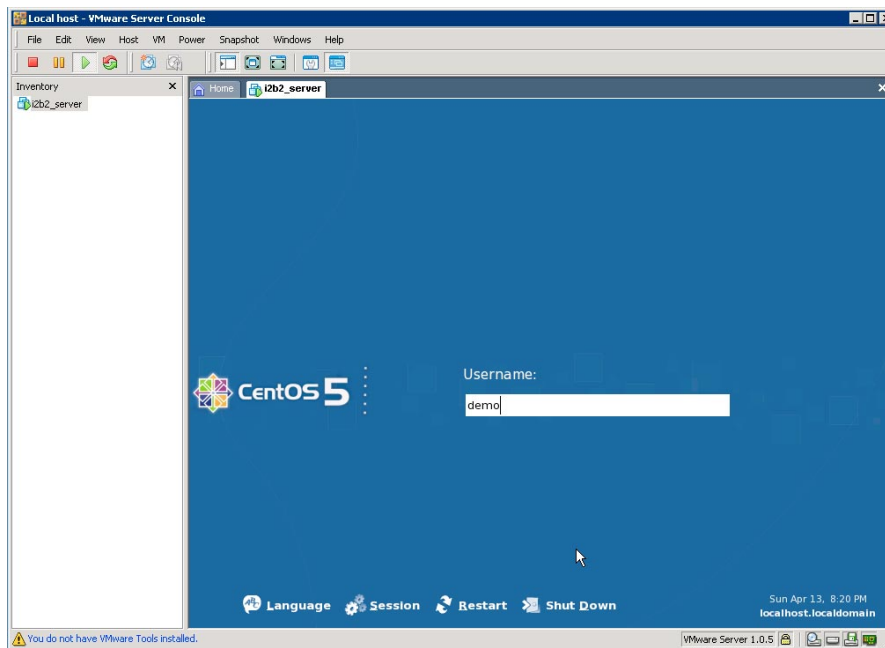
Determine the IP address

1. Login using the following username and password:

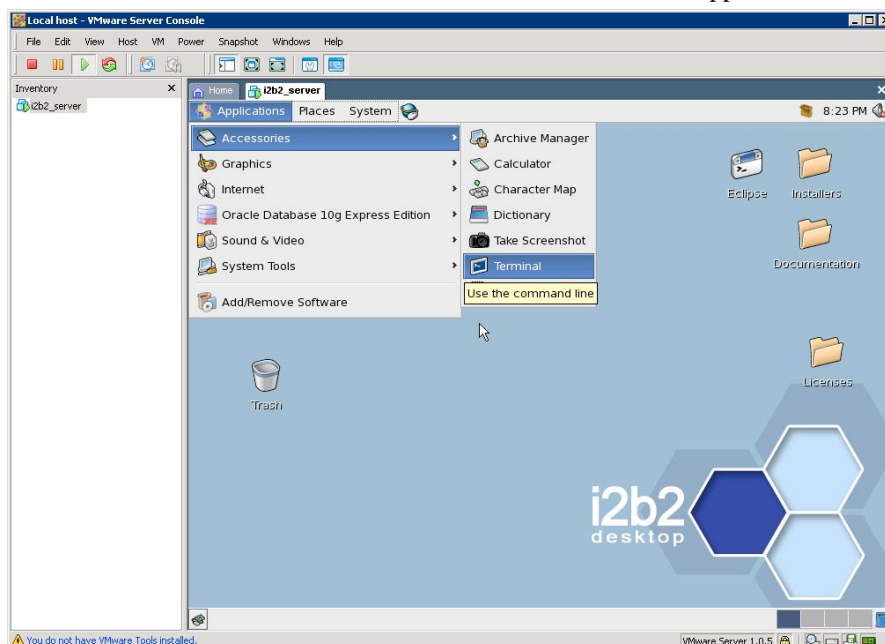
Login details

User name demo

Password demouser



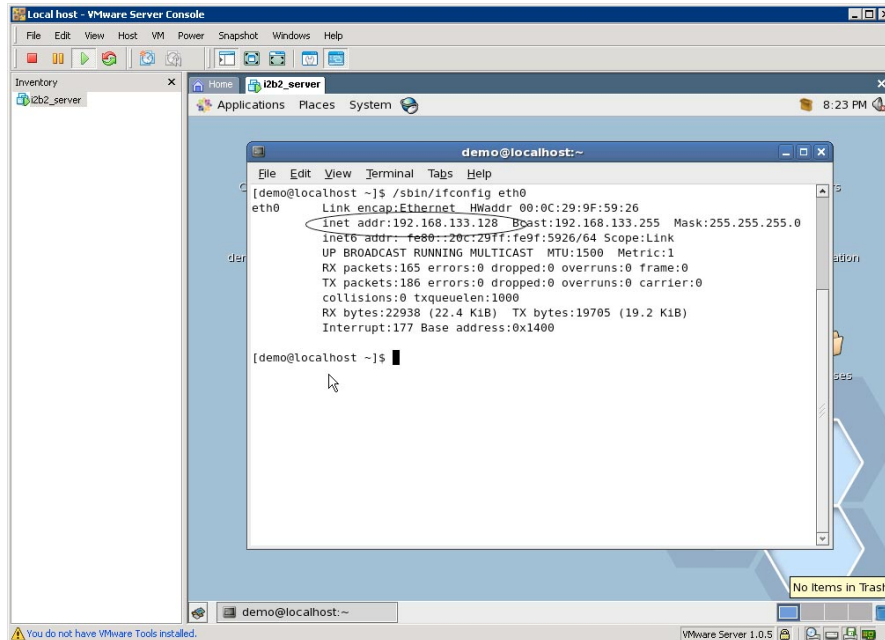
2. Select Applications from the menus bar. Once the drop down menu appears select Accessories, and then Terminal. A terminal window will appear:



3. Enter the command `/sbin/ifconfig eth0`. The IP address value located at "inet addr:"

Important

Make note of this address as it will be used later in the setup



Change the registered Cells IP

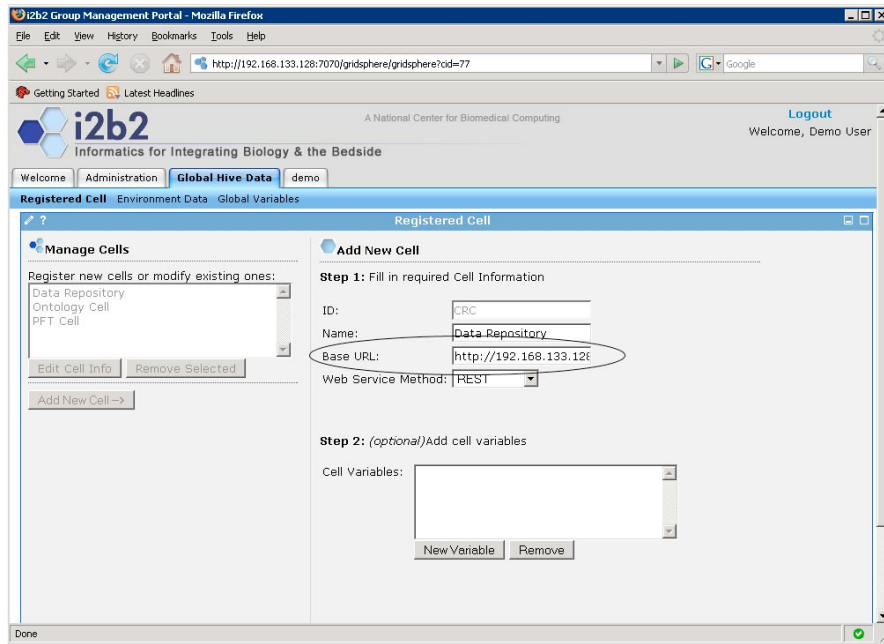
1. Using a web browser goto <http://192.168.133.128:7070/gridsphere> where *192.168.133.128* is the IP address received above. Log in with

Login details

User name demo
Password demouser

2. Select the Global Hive Data tab. Click on one of the cells such as Data Repository and select Edit Cell Info button:

Configure



3. Using the IP address you noted in previous section and used in step one of this section update the IP in the Base URL.

Save the changes and repeat this process for all the remaining cells.

Configure the client

1. Install the i2b2 workbench (client based). The i2b2 Workbench Users Guide can be used as a reference for the installation process.

The web based client can be accessed by going to: <http://192.168.133.128:7070/webclient> where 192.168.133.128 is the IP address received earlier.

2. In your target's i2b2workbench directory, edit the file `i2b2workbench.properties` in the line that begins with `i2b2.1`, change the `webservices.i2b2.org`, to the IP above followed by a `:7070`. In addition change `PM` to `axis2`. For example:

```
I2b2.1=Demo,REST,http://192.168.133.128:7070/axis2/rest/PMService/
```

3. Launch `C:\i2b2workbenchv13009\client\Windows\i2b2workbench.exe`

Chapter 5. Troubleshooting

Error message received after upgrading VM Image to version 1.3

SYMPTOMS

When logging on to the i2b2 workbench after upgrading the VM Image to version 1.3, you may receive one or both of the following error messages:

Ontology service is not available

Workplace service is not available

CAUSE

This behavior can occur if the IP address from the VMware image is not defined correctly in the gridsphere.

RESOLUTION

Check the IP address in the gridsphere

1. Go to the gridsphere and log in with the following:

Log in details

User name demo

Password demouser

Note

Steps on how to access the gridsphere can be found in chapter 4, the section titled “*Change the registered Cells IP*”.

2. Click on the Global Hive Data tab.
3. Click on the Ontology cell.
4. Click on the Edit Cell Info button.
5. Verify the IP address in the field labeled “Base URL:”, is the same one defined in the `i2b2workbench.properties` file.

Note

This IP address is the one from the VMware image.

6. If necessary, update the IP address.
7. Save the information.

8. Repeat the same steps for the Workplace cell.
9. Log back on to the i2b2 Workbench.

Cannot log on to the i2b2 workbench after upgrading VM Image to version 1.3

SYMPTOMS

When attempting to log on to the i2b2 workbench after upgrading the VM Image to version 1.3, you may receive an error message stating the i2b2 Workbench is not compatible with this version:

CAUSE

This behavior can occur as a result of one or many of the following causes:

1. The i2b2 property file does not have the correct port or IP address defined.
2. JBoss is not running
3. Tomcat is not running

RESOLUTION

Method 1: Check information in property file

1. Go to the target directory where you installed the i2b2 Workbench.
2. Open the file `i2b2workbench.properties`.
3. Verify that the demo location is defined. The following line should appear:

```
I2b2.1=Demo,REST,http://webservices:7070/axis2/rest/PMService/
```

Important

If “webservices” still appears in the line, you need to edit this to the IP address for the location of the VMware i2b2 server. Information on how to find this address can be found in Chapter 4 of this manual.

4. If the above line is missing, add it to the file. Make sure you replace “webservices” with your IP address, from the VMWare image.
5. In addition to verifying the demo location, check to make sure the port is defined correctly. The port that appears after the IP address should be 7070.
6. Save the file.

7. Go back to the i2b2 workbench and verify you can now sign on.

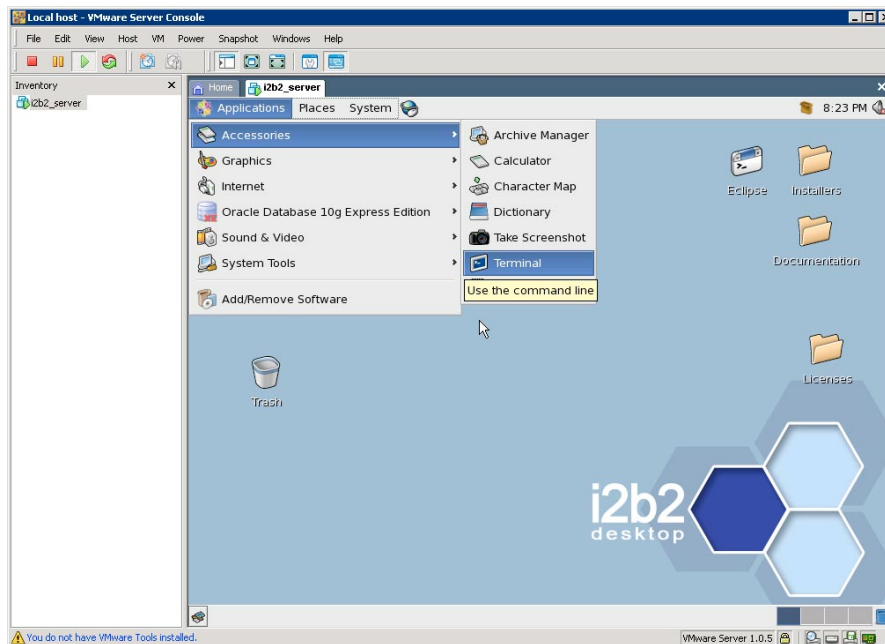
Method 2: Stop and Start JBoss

1. Go to the VMware Server Console and log in with the following:

Log in details

User name demo
Password demouser

2. Select Applications from the menus bar. Once the drop down menu appears select Accessories, and then Terminal. A terminal window will appear:



3. Stop JBoss by entering the following command: `/opt/jboss-4.2.2.GA/bin/shutdown.sh -S`
4. Start JBoss by entering the following command: `/opt/jboss-4.2.2.GA/bin/run.sh -b 0.0.0.0 &`
5. Go back to the i2b2 workbench and verify you can now sign on.

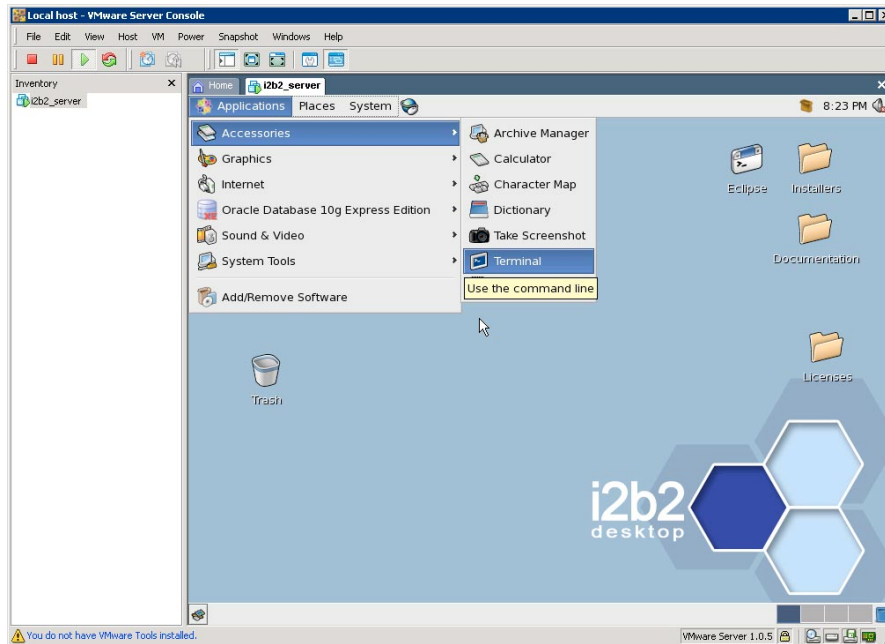
Method 3: Stop and Start Tomcat

1. Go to the VMware Server Console and log in with the following:

Log in details

User name demo
Password demouser

2. Select Applications from the menus bar. Once the drop down menu appears select Accessories, and then Terminal. A terminal window will appear:



3. Stop Tomcat by entering the following command: `/opt/apache-tomcat-5.5.26/bin/catalina.sh stop`
4. Start Tomcat by entering the following command: `/opt/apache-tomcat-5.5.26/bin/catalina.sh start`
5. Go back to the i2b2 workbench and verify you can now sign on.

Chapter 6. License Module

The i2b2 source code is licensed under the i2b2 Software License 2.0. This includes but is not limited to all code in the `edu.harvard.mgh.i2b2.*` package namespace.