



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.

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# 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 JBoss 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 JBoss onto a system that already has Tomcat running on it, one may find that the desired port already used by Tomcat. 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.*<sup>1</sup>
- *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.

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<sup>1</sup>NB: It is impossible to test all versions of prerequisite programs and combinations for purposes of support. For this reason, a set configuration is used in these installation guides. This does not mean that one is tied to the recommended applications; only that one accepts the additional burden of determining issues that may be related to the non-standard program version if one wishes to upgrade.

## 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.

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# Chapter 2. Install

## Installing the i2b2 VMware image application

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



### Important

In order to extract the .zip file, you will need a third party extractor such as WinZip or 7-Zip. The extractor built into Windows does not support large files.

<http://www.7-zip.org> [<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.

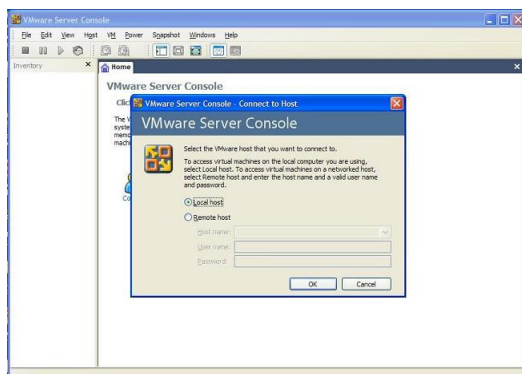
6. Extract all the files from the downloaded zip file into `C:\Virtual Machines\`.
7. A folder called `i2b2_server` will be created automatically when the files are extracted from the zip file to the Virtual Machine directory.

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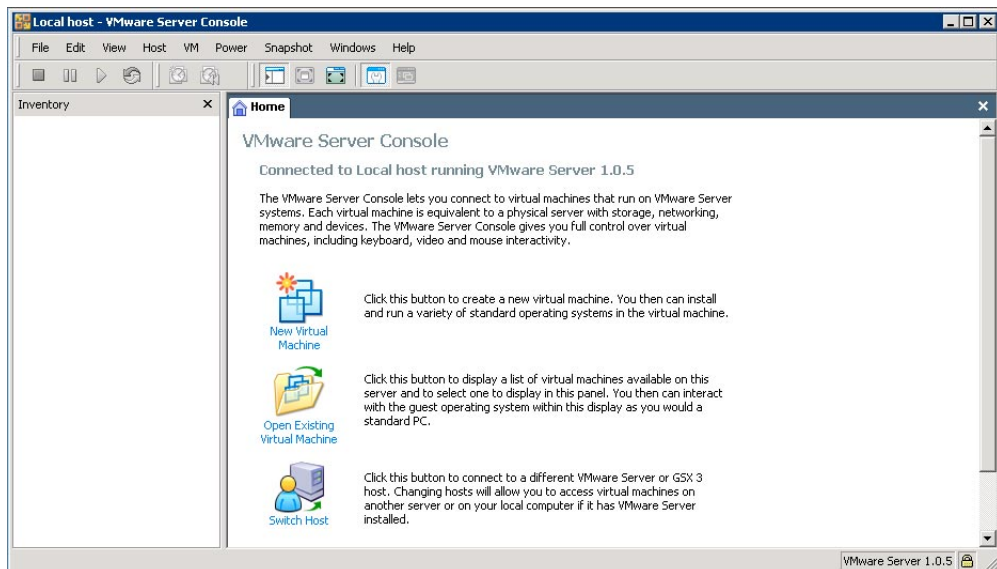
# Chapter 3. Execute

## Running the VMware Server Console

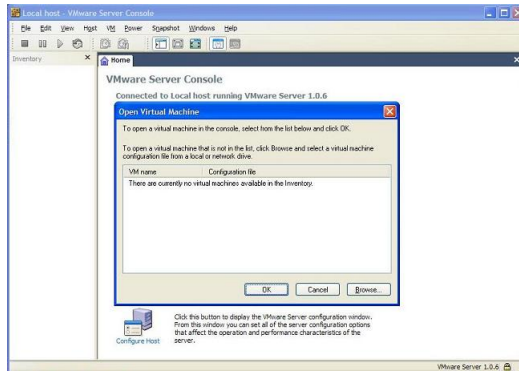
1. Click on the start menu.
2. Go to Programs -> VMware -> VMware Server
3. Click on the VMware Server Console application.
4. Select Local Host button.



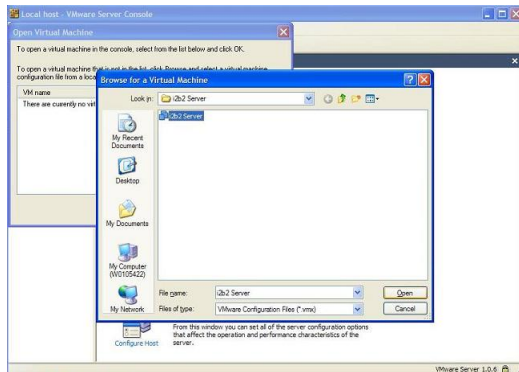
5. Click on the Open Existing Virtual Machine icon.



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



7. Browse to `c:\Virtual Machines\i2b2_server` and select `Other Linux 2.6.x.Kernel.vmx`. Click on the Open button.

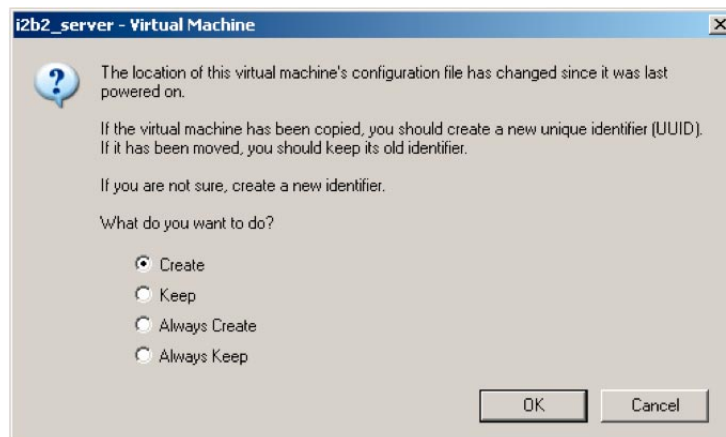


8. At this point, you should see the VMware Console screen again.
9. Click on the green arrow to start the Virtual Machine.



### Note

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

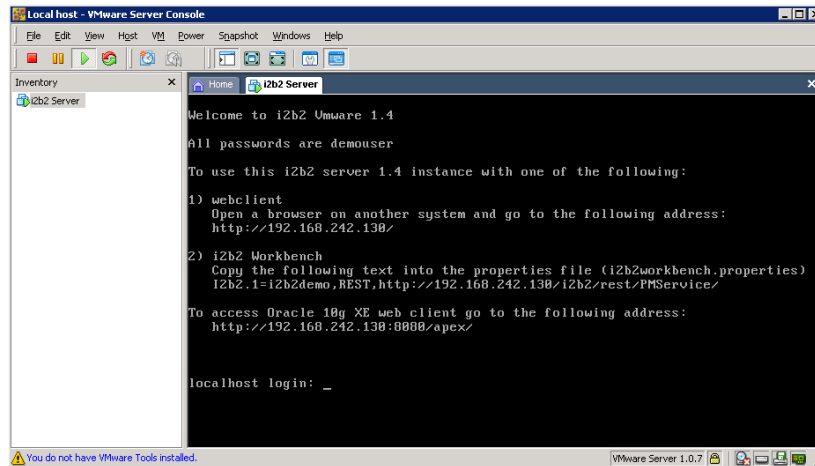




# Chapter 4. Configure

## Determine the IP address

1. Once you start the Virtual Machine the following will appear in the terminal window.



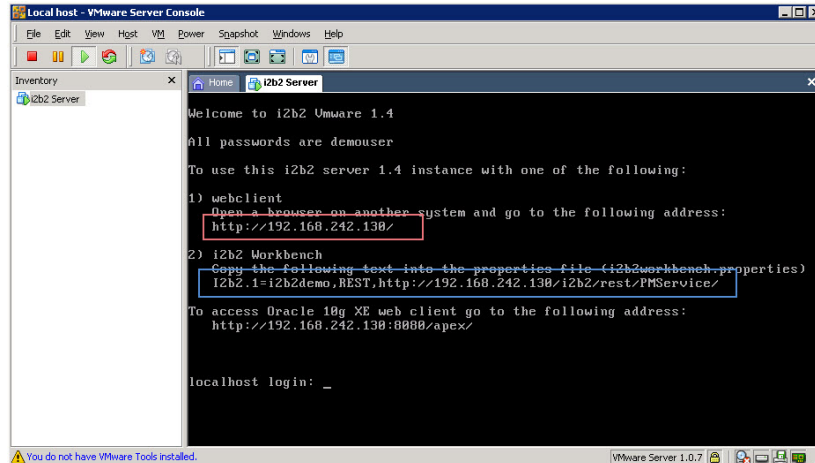
```
Local host - VMware Server Console
File Edit View Host VM Power Snapshot Windows Help
Inventory
i2b2 Server
Home i2b2 Server
Welcome to i2b2 Umware 1.4
All passwords are demouser
To use this i2b2 server 1.4 instance with one of the following:
1) weclient
Open a browser on another system and go to the following address:
http://192.168.242.130/
2) i2b2 Workbench
Copy the following text into the properties file (i2b2workbench.properties)
i2b2.1=i2b2demo,REST,http://192.168.242.130/i2b2/rest/PMService/
To access Oracle 10g XE web client go to the following address:
http://192.168.242.130:8080/apex/

localhost login: _
```



### Important

Make note of the "address" and/or "text" as it will be used later in the setup



```
Local host - VMware Server Console
File Edit View Host VM Power Snapshot Windows Help
Inventory
i2b2 Server
Home i2b2 Server
Welcome to i2b2 Umware 1.4
All passwords are demouser
To use this i2b2 server 1.4 instance with one of the following:
1) weclient
Open a browser on another system and go to the following address:
http://192.168.242.130/
2) i2b2 Workbench
Copy the following text into the properties file (i2b2workbench.properties)
i2b2.1=i2b2demo,REST,http://192.168.242.130/i2b2/rest/PMService/
To access Oracle 10g XE web client go to the following address:
http://192.168.242.130:8080/apex/

localhost login: _
```

## 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://192.168.242.130/> where 192.168.242.130 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 following:

- HarvardDemo to i2b2demo

- `services.i2b2.org` to the IP above
- PM to i2b2.

For example:

`I2b2.1=i2b2demo,REST,http://192.168.242.130/i2b2/rest/PMService/`

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

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# Chapter 5. Troubleshooting

## Error message received after upgrading VM Image to version 1.6

### SYMPTOMS

When logging on to the i2b2 workbench after upgrading the VM Image to version 1.6, 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 in Oracle.

### RESOLUTION

Check the IP address in Oracle

1. Log in to Oracle by going to the following address: <http://your ip address:8080/apex/>

#### **Log in details**

User name     i2b2pm  
Password     demouser

2. Click on Object Browser.
3. Click on pm\_cell\_data.
4. Click on the Data button.
5. Verify the IP address in the field labeled “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 in each cell by clicking on the button in the edit column.
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 1.6

## SYMPTOMS

When attempting to log on to the i2b2 workbench after upgrading the VM Image to version 1.6, 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 both of the following causes:

1. The i2b2 property file does not have the correct port or IP address defined.
2. JBoss 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 i2b2demo location is defined. The following line should appear:

```
I2b2.1=i2b2demo,REST,http://services.i2b2.org/i2b2/rest/PMService/
```



### **Important**

If “services.i2b2.org” 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. Save the file.
6. 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     tomcat

Password     `demouser`

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

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# Chapter 6. License Module

The i2b2 source code is licensed under the i2b2 Software License 2.1. This includes but is not limited to all code in the `edu.harvard.mgh.i2b2.*` package namespace.