Enterprise Health Management Platform Integration and Transition Support (eHMP ITS)

Windows Installation Guide for OSEHRA

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1.   Introduction

The purpose of this guide is to demonstrate how to install a full eHMP stack on Windows 10.

Note: These instructions may work on Windows 7 and 8, but the Windows 7 and 8 environments are not supported.

Note: The components required to install eHMP are version specific and many are installed globally. If you are concerned the eHMP installation process will impact your development toolchain for other projects it is recommended that you create a new user environment specifically for installing eHMP. To do this follow the instructions for creating a user with administrative rights at http://www.technicalnotes.org/add-a-new-user-with-administrator-right-to-windows-10/.

2.   Prerequisites

To install the complete eHMP development environment you will need a computer running Windows 10, 16GB of RAM, and at least 100 GB of free hard drive space.

Previous experience with Gradle, Vagrant, and Chef is required.

Your windows user name must NOT contain any spaces. If it does, you will need to create a new user with administrative rights.

2.1. Install Microsoft Visual Studio 2010

Node.js requires the C++ compiler included with Visual Studio 2010. Follow the Visual Studio node setup instructions located at: https://github.com/nodejs/node-gyp/wiki/Visual-Studio-2010-Setup

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2.2. Download and Run the Configure Workspace Script

To download and run the Configure Workspace Script:

1. Download the configure workspace script to your Downloads folder from:
   http://nexus.vaftl.us:8081/nexus/content/repositories/setup/workspace-setup/configure_workspace/0.1.0/configure_workspace-0.1.0.bat
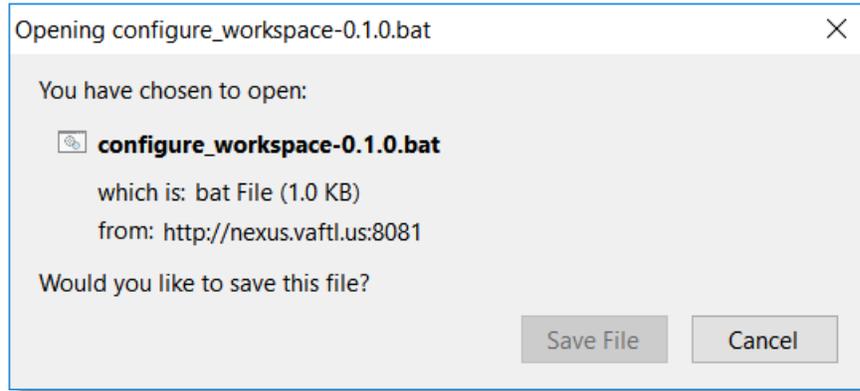
Figure 1: Download Window

2. Open the Command Prompt window as an Administrator. To open the Command Prompt as an Administrator, right-click the Start Menu and select "Command Prompt (Admin)". Alternatively, when selecting the Command Prompt from the applications list, right-click and select "Run as Administrator".
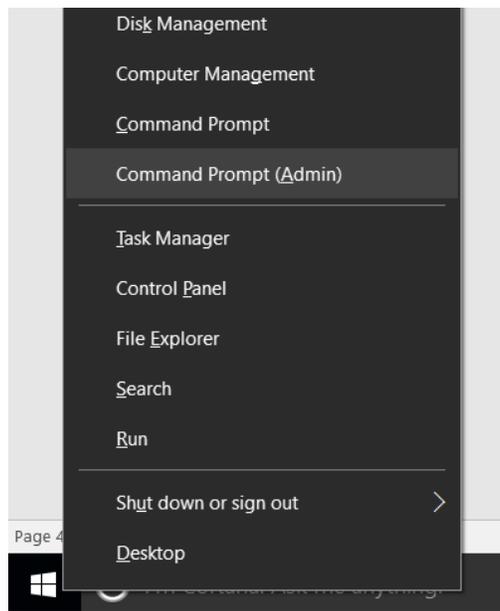
Figure 2: Windows Advanced Menu Options

3. Run the following commands in the Command Prompt:

```
cd %homepath%/Downloads
configure_workspace-0.1.0.bat
```
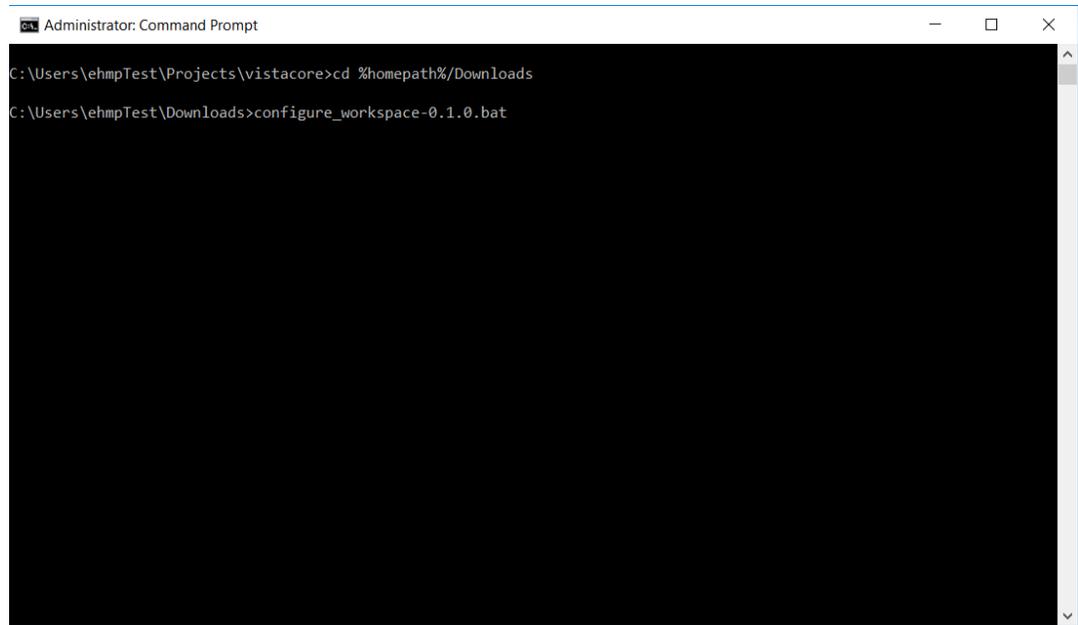

Figure 3: Administrator Command Prompt

Note: The script will complete the configuration by itself and does not require input. The script will run two installers (Google Chrome and Firefox), and should be allowed to continue; manually installing these applications may cause conflict with the workspace configuration.

Note: The script may cause your computer to restart unexpectedly, it is recommended that you close other programs that may be running and save any unsaved work. If the script restarts your computer, you will need to re-run the configure workspace script when it reboots.

2.3. Upgrade VirtualBox

The eHMP build scripts require VirtualBox 4.3.38. The configure workspace script will attempt to install VirtualBox 4.3.38 on your machine. However, depending on which Windows update you have installed VirtualBox 4.3.38 will not open on Windows 10, so it is recommended that you upgrade to 4.3.40:

1. Download VirtualBox 4.3.40 from
   http://download.virtualbox.org/virtualbox/4.3.40/VirtualBox-4.3.40-110317-Win.exe

2. Double-click the download file and follow the prompts to install

2.4. Download and run the VirtualBox Windows 10 Patch

In order to build eHMP successfully you will need to download and run the Windows 10 VirtualBox patch. This executable needs to be run anytime you deploy virtual machines.

1. Download the patch to your Downloads folder from:
   https://www.virtualbox.org/attachment/ticket/14040/VBox-Win10-fix-14040.exe

2. After the patch has downloaded, run the as an administrator by right-clicking the file and selecting Run as Administrator from the options menu.
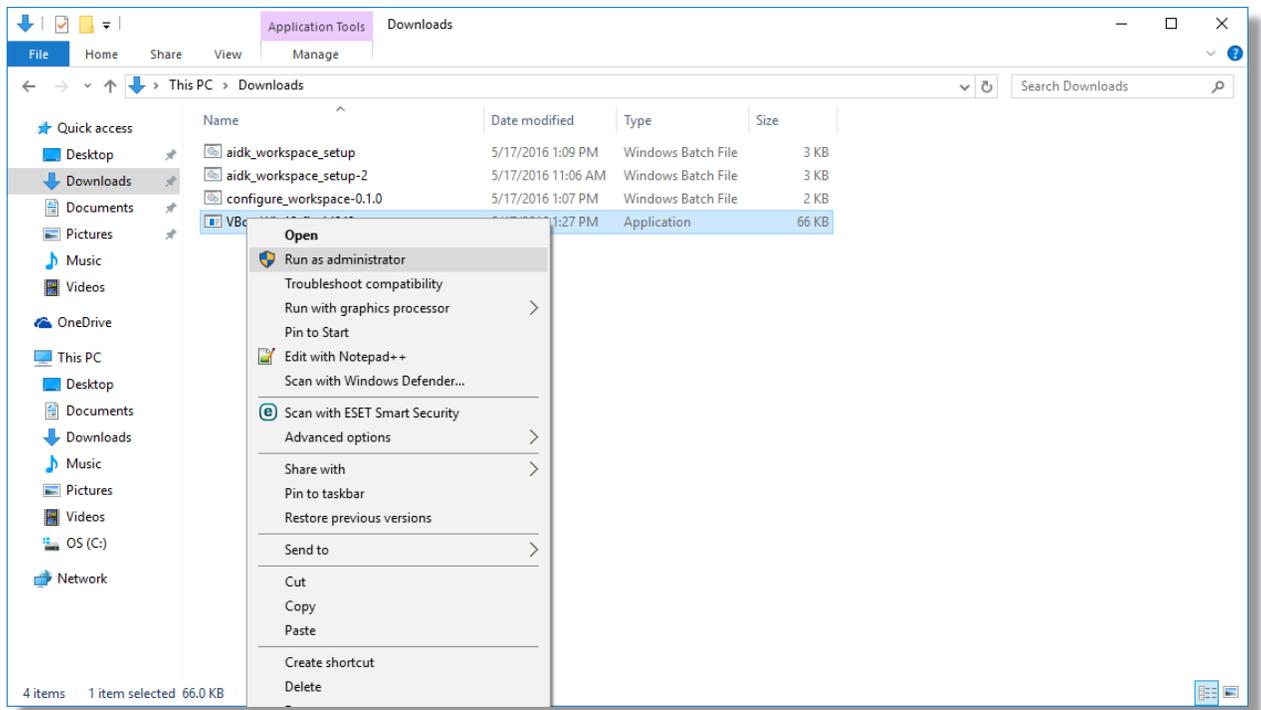
Figure 4: Running the VirtualBox Patch as an Administrator

2.5. Replace knife.rb file

Since this installation utilizes a local chef repository you will need to replace the knife.rb file that was created by the configure workspace script. The replacement knife file is located inside the vistacore directory. The purpose of this file is to tell chef where to find the local chef repository.

From inside Command Prompt run the following command:

xcopy /R %homepath%/Projects/vistacore/knife.rb %homepath%/Projects/vistacore/.chef/

2.6. Download Ancillary Components

These components have licensing agreements that prevent us from distributing them. Download (without renaming) the following files and place them in the specified folders. Do not unzip the files after downloading. Use Chrome or Firefox to download the files as Safari utilizes a different naming schema that will prevent the build from working, and will attempt to automatically unzip the file.

Note: Download the exact versions called out in the instructions.

2.6.1. Backbone Session Storage

1. Download Backbone_sessionstorage.js latest revision (4) from https://gist.github.com/davemo/3875274.

2. Place the file in %homepath%/Projects/vistacore/private_licenses/bower/backbone-sessionStorage

2.6.2. Highstock

1. Download Highstock-4.2.5 from: http://www.highcharts.com/download

2. Place the file in %homepath%/Projects/vistacore/private_licenses/bower/

2.6.3. Java

1. Download Java jdk-8u66-linux-x64.tar.gz from: http://www.oracle.com/technetwork/java/javase/downloads/java-archive-javase8-2177648.html#jdk-8u66-oth-JPR

2. Place the file in %homepath%/Projects/vistacore/private_licenses/java

Note: The Oracle webpage will detect that you are on a Windows machine and try to direct you to download the Windows version of these files; download the ***Linux*** version instead.

2.6.4. Oracle

1. Download Oracle express edition from: http://www.oracle.com/technetwork/database/database-technologies/express-edition/downloads/index.html

2. Download Oracle linux.x64_11gR2_database_1of2.zip and linux.x64_11gR2_database_2of2.zip from: http://www.oracle.com/technetwork/database/enterprise-edition/downloads/index.html

3. Place all three files in %homepath%/Projects/vistacore/private_licenses/oracle

Note: The Oracle webpage will detect that you are on a Windows machine and try to direct you to download the Windows version of these files, download the ***Linux*** version instead.

2.6.5. Caché-Server

1. Download the rpm for Caché Server from:
   http://nexus.vaftl.us:8081/nexus/service/local/repositories/ehmp/content/yum-managed/fakepath/cache-server/2014.1.3.775.0-1.rh.x86_64.rpm/cache-server-2014.1.3.775.0-1.rh.x86_64.rpm

2. Place the rpm and the license for intersystems caché for Red Hat Enterprise Linux x86-64 in %homepath%/Projects/vistacore/private_licenses/cache_server/

3. The cache license should be named cache.key

```
▼ 📁 private_licenses
     📄 .DS_Store
  ▼ 📁 bower
       📄 .DS_Store
    ▼ 📁 backbone-sessionStorage
         📗 backbone.sessionStorage.js
    ▼ 📁 Highstock-4.2.5
         📄 .DS_Store
       ▶ 📁 api
       ▶ 📁 examples
       ▶ 📁 gfx
       ▶ 📁 graphics
         📄 index.htm
       ▶ 📁 js
  ▼ 📁 cache_server
       📄 cache-server-2014.1.3.775.0-1.rh.x86_64.rpm
       📄 cache.key
  ▼ 📁 java
       📄 jdk-8u66-linux-x64.tar.gz
  ▼ 📁 oracle
       📄 .DS_Store
       📄 linux.x64_11gR2_database_1of2.zip
       📄 linux.x64_11gR2_database_2of2.zip
       📄 oracle-xe-11.2.0-1.0.x86_64.rpm
```
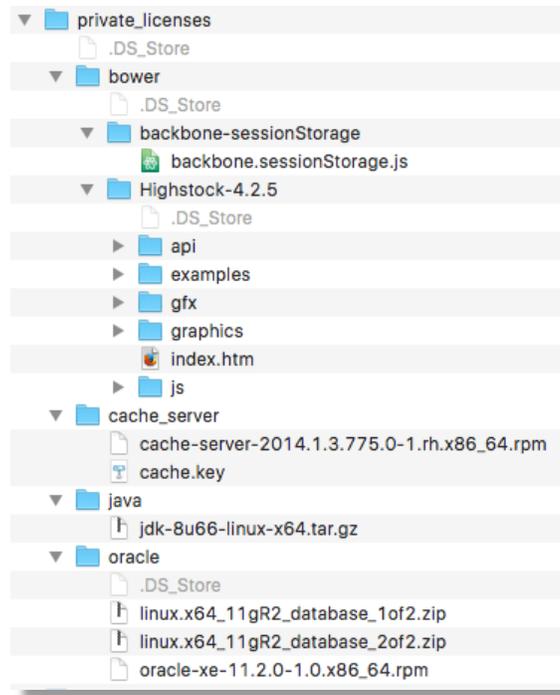
Figure 5: Screenshot for Directory Structure – See Note

Note: This screen shot is from an OS X Machine to show the correct directory structure for the %homepath%/Projects/vistacore/private_licenses folder. On a Windows machine the structure will be the same except ***.DS_Store files will not exist***.

3.   Getting Started

Working in your Development Workspace will require you to work at the Command Prompt. Depending on how you like to navigate in your development workspace, you can do all of your work in one window or you can set up profiles to navigate each repository individually. This project works in four different repositories, which were included with your download: ehmp, rdk, adk, and ehmp-ui

Within each repository, the primary area is the product folder (for items related to the product we are building). In general, when you are building, developing and debugging the product, you will be directed to the product folder.

These instructions assume that you are working in a single command prompt window.

Note: These tasks can take a long time. Internet connectivity interruptions will cause the process to fail. If a failure occurs and the error is different each time, re-run the scripts until successful. If re-running the script does not remedy the failure, run the command with the --debug flag and attach the output to a help desk ticket by going to https://help.vaftl.us.

3.1. Deploying the Back End

Deploying the back end primarily refers to the stack of servers deployed from the ehmp directory (jds, mocks, vista-kodak, vista-panorama, vxsync) and the rdk resource server deployed from the rdk directory (rdk and jbpm).

3.1.1. Manually Deploying the Virtual Machines

There are five Gradle tasks to deploy the five virtual machines (VMs) inside the ehmp repository; if you open VirtualBox; you will see each VM as it deployed.

- jds-<USERNAME>-master
- mocks-<USERNAME>-master
- vista-kodak-<USERNAME>-master
- vista-panorama-<USERNAME>-master
- vxsync-<USERNAME>-master

To execute the Gradle tasks:

1. Open a new Command Prompt with Administrator privileges and enter the following commands:

```
cd %homepath%/Projects/vistacore/ehmp/product
../infrastructure/set.env.bat
set CHEF_REPO=local
gradle deployjdsdev
```

2. Due to complications with the Windows version of eHMP, the mocks vm cannot be deployed using a Gradle task and must be imported from an OVA file. To import a VM:

a. Open VirtualBox and select Import Appliance from the File menu.
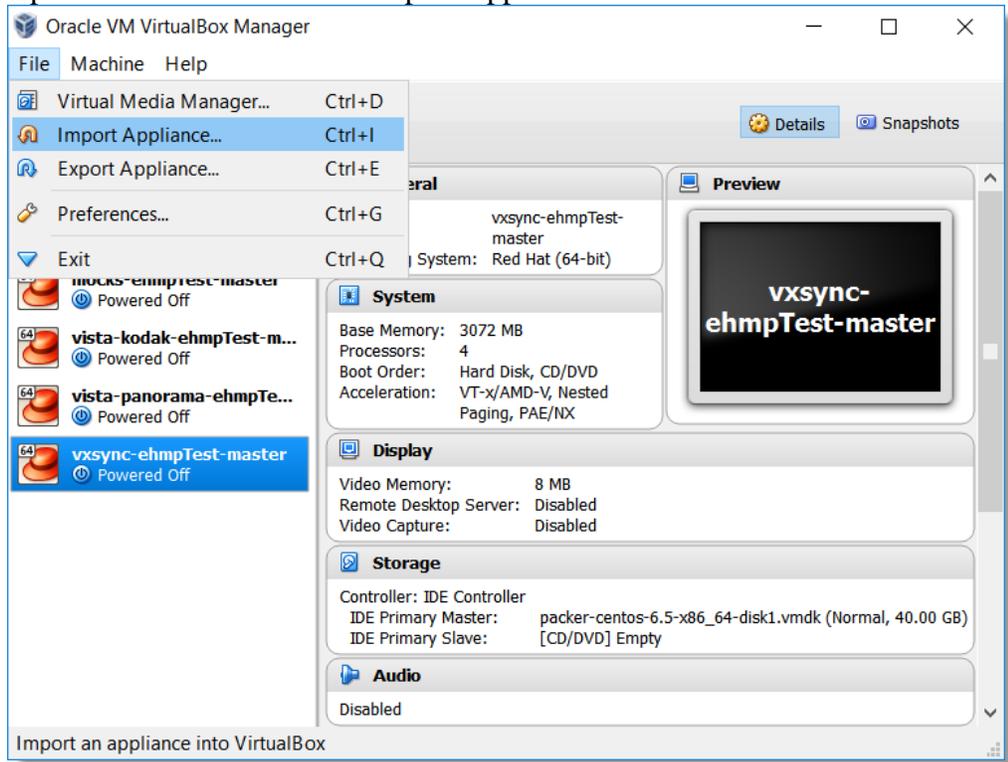
b. Select the Mocks OVA image included in your download of eHMP.

c. Rename the VM to be mocks-<your username>-master by double clicking the name on the Appliance Settings prompt.
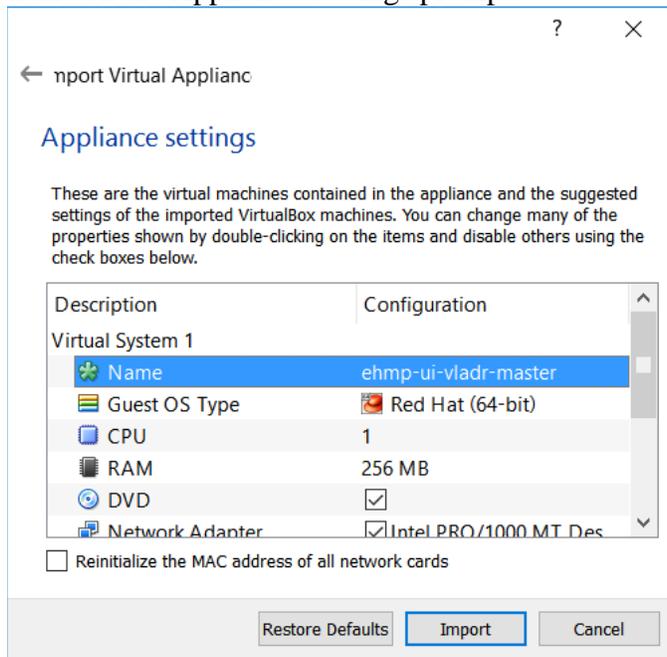
d. Follow the prompts to import the image.

3. Open a new Command Prompt with Administrator privileges and enter the following commands:

```
cd %homepath%/Projects/vistacore/ehmp/product
../infrastructure/set.env.bat
set CHEF_REPO=local
gradle deploykodakdev
gradle deploypanoramadev
gradle deployvxsyncdev
```

3.1.2. deployRdkDev

Open a new instance of Command Prompt with Administrator privileges and enter the following commands:

1. ```
   cd %homepath%/Projects/vistacore/rdk/product
   ../infrastructure/set.env.bat
   set CHEF_REPO=local
   gradle deployrdkdev
   ```

2. Due to complications with the Windows version of eHMP, the jbpm vm cannot be deployed using a Gradle task and must be imported from an OVA file. To import a VM:

   a. Open VirtualBox and select Import Appliance from the File menu.

   b. Select the jbpm OVA image included in your download of eHMP.

   c. Rename the VM to be jbmp-<your username>-master by double clicking the name on the Appliance Settings prompt.

   d. Follow the prompts to import the image.

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3.2. Verify Back End Deployment

After ehmp and the rdk successfully build, you can test it by navigating to http://172.16.105:8888/resource/resourcedirectory, which represents the address of your local installation of eHMP. You should see the list of resources available. The screen shot below shows a small sample of the resources you will see when the build is successful.

http://172.16.4.105.8888/resource/resourcedirectory

{"data":{"link":[{"title":"resource-directory","href":"/resource/resourcedirectory","rel":"vha.read"},{"title":"reso
/core","rel":"vha.read"},{"title":"healthcheck-healthy","href":"/resource/healthcheck/healthy","rel":"vha.read"},{"t
/detail/html","rel":"vha.read"},{"title":"healthcheck-checks","href":"/resource/healthcheck/checks","rel":"vha.read"
/detail","rel":"vha.read"},{"title":"healthcheck-noupdate","href":"/resource/healthcheck/noupdate","rel":"vha.read"}
api.*/","rel":"vha.read"},{"title":"authentication-authentication","href":"/resource/authentication","rel":"vha.crea
/authentication","rel":"vha.read"},{"title":"authentication-destroySession","href":"/resource/authentication","rel":
/authentication/list","rel":"vha.read"},{"title":"authentication-systems-authenticate","href":"/resource/authenticat
systems-destroy-session","href":"/resource/authentication/systems","rel":"vha.delete"},{"title":"authentication-syst
/systems","rel":"vha.read"},{"title":"user-service-userinfo","href":"/resource/user/info","rel":"vha.read"},{"title"
/user/list","rel":"vha.read"},{"title":"synchronization-load","href":"/resource/sync/load","rel":"vha.read"},{"title
/sync/demographics-load","rel":"vha.create"},{"title":"synchronization-clear","href":"/resource/sync/clear","rel":"v
/sync/status","rel":"vha.read"},{"title":"synchronization-datastatus","href":"/resource/sync/data-status","rel":"vha
/resource/sync/status-detail","rel":"vha.read"},{"title":"synchronization-operationalstatus","href":"/resource/sync/
evaluate","href":"/resource/asu/evaluate","rel":"vha.create"},{"title":"evaluateWithActionNames","href":"/resource/a
{"title":"patient-search-full-name","href":"/resource/patient-search/full-name","rel":"vha.read"},{"title":"patient-
/last5","rel":"vha.read"},{"title":"patient-search-pid","href":"/resource/patient-search/pid","rel":"vha.read"},{"ti
/global","rel":"vha.create"},{"title":"search-mvi-patient-sync","href":"/resource/patient-search","rel":"vha.create"
search/cprs","rel":"vha.read"},{"title":"uid","href":"/resource/patient/record/uid","rel":"vha.read"},{"title":"pati
/text","rel":"vha.read","description":{"get":"Perform a text search on records for one patient"}},{"title":"patient-

Figure 6: Resource Directory Test

Note: After installing jbpm it may be necessary to re-deploy the rdk. If you do not see the list of available resources, try re-running the rdk install command listed in section 3.1.2.

3.3. Deploying the Front End

Deploying the front end refers to the ehmp-ui server, which includes the adk. To deploy the eHMP front end:

1. Open a new instance of Command Prompt with Administrator privileges and enter the following commands:

```
cd %homepath%/Projects/vistacore/adk/product
../infrastructure/set.env.bat
set CHEF_REPO=local
gradle clean build
```

2. Due to complications with the Windows version of eHMP, the ehmp-ui vm cannot be deployed using a Gradle task and must be imported from an OVA file. To import a VM:
   a. Open VirtualBox and select Import Appliance from the File menu.
   b. Select the ehmp-ui OVA image included in your download of eHMP.
   c. Rename the VM to be ehmp-ui-<your username>-master by double clicking the name on the Appliance Settings prompt.
   d. Follow the prompts to import the image.

3.4. Verifying Deployment

The easiest way to verify deployment is to check that the eHMP application comes up in Internet Explorer 11 (IE11), Firefox, or Chrome (the three supported browsers). Microsoft Edge is known to have issues displaying eHMP. You can check this by navigating to https://172.16.1.150/ (the address of your local eHMP installation) using one of the supported browsers.
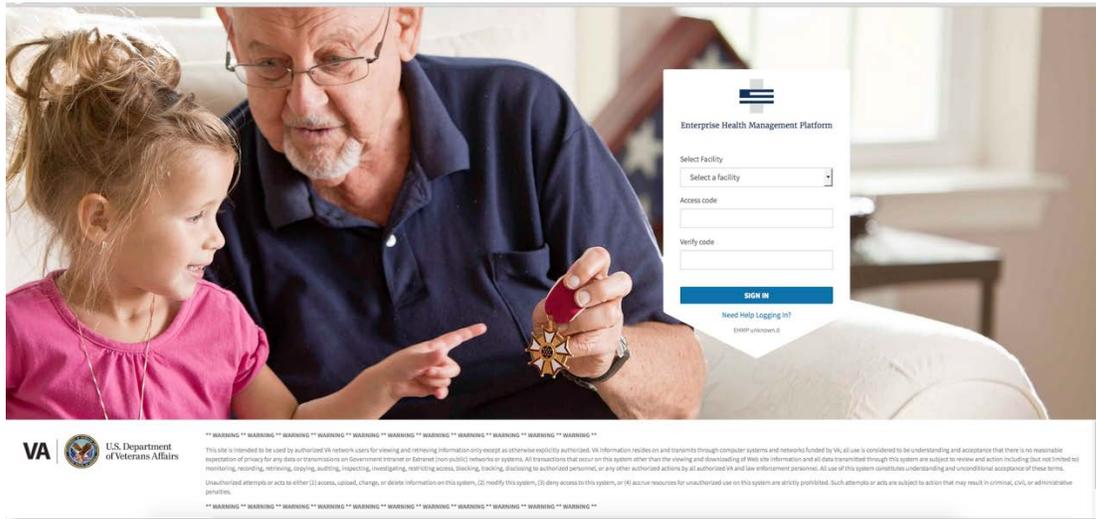
Figure 7: eHMP Local Instance

Note: If this page does not display, you may need to manually start the httpd service on the ehmp-ui VM. To do this, in Terminal navigate to %homepath%/Projects/vistacore/.chef/vms. Then run the following commands: vagrant ssh ehmp-ui-<insert your username>-master then run service httpd start

Note: If this page does not load content correctly you may have to manually move backbone.sessionStorage.js from: %homepath%/Projects/vistacore/private_licenses/bower/backbone-sessionStorage to %homepath%/Projects/vistacore/adk/product/production/_assets/libs/bower/backbone/backbone-sessionStorage/

3.4.1. Local eHMP Credentials

Use the following test credentials to interact with the local eHMP. First, select a facility from the drop-down list and then choose and enter one of the credentials provided in the following table.

Access Code	Verify Code	Notes
mx1234	mx1234!!	**Role**: Clinician, Provider **Permissions**: read
vk1234	vk1234!!	**Role**: Clinician, Provider **Permissions**: add, cosign, discontinue, edit, exe, read, release, remove, sign

Access Code	Verify Code	Notes
tk1234	tk1234!!	**Role**: Pharmacist, Non-Provider **Permissions**: add, edit (limited), read, release (only for med order)
md1234	md1234!!	**Role**: Lab Tech, Provider **Permissions**: add, cosign (lab order only), edit, read

4. Working with Virtual Machines

Use the vms.bat script to start and stop eHMP Project VMs.

4.1. Using the vms.sh script

To start and stop project VMs, open Terminal.

To start VMs that have been stopped enter the following commands:

```
cd %homepath%/Projects/vistacore
sh vms.bat master startAll
```

To stop running Project VMs enter the following commands:

```
cd %homepath%/Projects/vistacore
sh vms.bat master stopAll
```

You must always stop the VMs using this script before shutting down the host machine, otherwise you may corrupt the VM and be unable to recover them.

4.2. Accessing a VM

To log into a specific VM enter the following commands into Terminal:

```
cd %homepath%/Projects/vistacore/.chef/vms
vagrant ssh <name of vm excluding .vm extension>
```

<The remainder of this page intentionally left blank>

5. Uninstalling eHMP

Uninstalling eHMP is a two-step process.

5.1. Remove eHMP VMs

To uninstall and remove eHMP VMs from your machine, enter the following commands into Terminal:

```
cd %homepath%/Projects/vistacore/ehmp-ui/product
source ../infrastructure/set.env.sh
export CHEF_REPO=local
gradle destroyehmp-ui

cd %homepath%/Projects/vistacore/rdk/product
source ../infrastructure/set.env.sh
export CHEF_REPO=local
gradle destroyrdk

cd %homepath%/Projects/vistacore/ehmp/product
source ../infrastructure/set.env.sh
export CHEF_REPO=local
gradle destroyall
```

5.2. Remove eHMP Repository

You can now safely delete the %homepath%/Projects/vistacore folder and its contents.