Preparing Windows environment

This document provides the steps to install the software required to begin the exercises on a Windows machine. The instructions were written for a Windows 7 Professional machine. Exceptions have been noted for Windows 8 and Windows 10. The sequence is as follows:

1. Install Java JDK 1.8
2. Edit the JAVA_HOME variable and edit the system PATH
3. Install Gradle
4. Install GIT
5. Install cURL
6. Install node.js
7. Install Docker
8. Install IBM Cloud (BLuemix) CLI
9. Install the IBM Container Service plugins
10. Install the Kubernetes kubectl CLI
11. Install the MYSQL client
12. Install Cygwin

Part 1: Install Java JDK 1.8

1. In a browser, open https://www.oracle.com
2. In the list of menu options, click **Downloads and Trials**.
3. Click **Java for Developers**.
4. At the time of writing, the current version of Java JDK 1.8 was under Java SE 8u171. In that section, click the **DOWNLOAD** button under JDK (Note: your minor version may be different)
5. In the section entitled Java SE Development Kit 8u171, click **Accept License Agreement**.
6. Select the .exe file for Windows x64 (**jdk-8u171-windows-x64.exe**). The file is downloaded to the machine's Download directory.
7. Run the Windows executable. Navigate to the Download directory. Double click **jdk-8u171-windows-x64.exe**.
8. At the Welcome screen, click **Next**.

9. Accept the features to install. Accept the default install location *_C:|Program Files|Java|jdk1.8.0_171_*. Click **Next**.
10. Upon successful installation, click **Close**.
11. Verify that the installation was successful. Open a command prompt. Change directories to *_C:|Program Files|Java|jdk1.8.0_171_*. You should see 6 directories, 6 files, and 2 zip files.

Part 2: Edit the system PATH.

Add JAVA_HOME to the Path by editing an environment variable.

1. Add or modify the JAVA_HOME environment variable to C:\Program Files\Java\jdk1.8.0_171
2. Add JAVA_HOME to the end of the Path system variable.
3. Close the Environment Variables window.
4. Restart the computer.
5. Verify that your installation of Java is recognized. Open a command prompt and type: `java -version`.
6. You should see information about the Java version, Java runtime, and Java HotSpot.

Part 3: Install gradle

1. In your browser, go to https://gradle.org/install/.
2. Follow the instructions for Windows installation. For most users, the instructions in the **Install manually** section will be the easiest to follow.

Part 4: Install GIT (Your version number might be newer)

1. Download GIT for Windows from https://git-scm.com/download/win
2. Find the latest executable for your version of Windows. At the time of writing, this was **Git-2.17.0-64-bit.exe**
3. Read the GNU General Public License and click **Next**.
4. Accept the installation location. Click **Next**.
5. Accept the default components for installation. Click **Next**.

6. Create a shortcut. Click **Next**.
7. Adjust the PATH environment by selecting the option labeled **Use Git from the Windows Command Prompt**. Click **Next**.
8. Configure the line ending conversions by selecting **Checkout Windows-style**, commit **Unix-style** line endings. Click **Next**.
9. Select Use **MinTTY** as the terminal emulator with Git Bash. Click **Next**.
10. Keep the default extra options **Enable file system caching** and **Enable Git Credential Manager**. Click **Next**.
11. Do not select any experimental options. Click **Install**.
12. Click **Finish**.
13. Open a command prompt and change to **C:\Program Files\Git\bin**. Type `git --version`
14. You should see the response `git version 2.11.windows.1`

Part 5: Install cURL

1. Create a folder named: C:\curl
2. Go to http://curl.haxx.se/download.html and download the zip file for the Win64 version of cURL: Scroll to the **Win64-Generic** section. Locate the latest Win64 ia64 zip version with SSL support. Click the version number to start the download.
3. Save the zip file.
4. Unzip the downloaded zip file. Move **curl.exe** to **C:\curl**.
5. Go to http://curl.haxx.se/docs/caextract.html and download the digital certificate file named **cacert.pem**.
6. Move **cacert.pem** to **C:\curl**. Rename the file **curl-ca-bundle.crt**.
7. Add **C:\curl** to the Windows PATH environment variable so the curl command is available from any location at the command prompt.
8. Verify that the installation is complete. Open a command prompt and enter curl https://www.google.com. The request returns the html in the command window.

Part 6: Install node.js (Your version number might be newer)

1. Go to https://nodejs.org/en/

2. There are two versions listed. Download the recommended version.
3. Start the Windows installer package for **node-v6.9.2-x64.msi**. Click **Run**.
4. At the Welcome window, click **Next**.
5. Accept the end-user license agreement. Click **Next**.
6. Accept the destination folder. Click **Next**.
7. Accept any custom setup options. Click **Next**.
8. Click **Install**.
9. Click Finish when notified the installation was successful.
10. Verify the installation. At a command prompt, enter npm version
11. You should see a JSON object like the following:

Part 7: Install Docker (Your version number might be newer)

Part 7a - Enabling Virtualization

You must have virtualization enabled on your machine for Docker to work. This must be done before you install Docker. There are instructions below for Windows 10, Windows 8 and Windows 7.

Windows 10

Virtualization can be enabled in the BIOS. There are instructions for Windows 10 and other versions at this location https://docs.microsoft.com/en-us/virtualization/.

Windows 8 or 8.1

1. Choose **Start** > **Task Manager**.
2. Navigate to the **Performance** tab. Under **CPU**, you should see **Virtualization: Enabled**.
3. If virtualization is not enabled, then follow the manufacturers documentation. The steps to configure BIOS settings are specific to the hardware you have. It varies from one hardware manufacturer to another, and, even different models from the same manufacturer can have different steps. Refer to the documentation or website for your

hardware make and model. You can also check on the Intel website for guidance from Intel about their VT-x product technology.

Windows 7

1. You should check your system BIOS to see if hardware virtualization is enabled. If it is not enabled, enable it through the BIOS.
2. Run the Microsoft Hardware-Assisted Virtualization Detection Tool which can be found at `https://www.microsoft.com/en-us/download/details.aspx?id=592`

- Download the MHAVDT. Be sure to select **havdetectiontool.exe** and the **User Guide**.
- Run the detection tool by clicking **havdetectiontool.exe**
- Accept the license agreement. Click **Next**.
- You should see a message **This computer is configured with hardware-assisted virtualization**.
- Select **No, I don't want to send data**. Click **OK**.

Part 7b - Installing Docker

If you have 64 bit Windows 7 or higher, follow these directions to install Docker with Toolbox.

1. Install Docker for Windows. Follow https://docs.docker.com/docker-for-windows for specific directions.
2. Follow https://docs.docker.com/engine/installation/windows/ and scroll down to the **Docker Toolbox** section.
3. Click the link for **Docker Toolbox** https://www.docker.com/products/docker-toolbox
4. Click **Download** (be sure to click the Windows option, not the Apple option)
5. Scroll down and find the **Downloads** section. Click the latest **DockerToolbox-1.12.3.exe** version.
6. Open the exe and save the file
7. Run the **DockerToolbox-1.12.3.exe**
8. At the Welcome screen, click **Next**. You can clear the checkbox to help improve Docker Toolbox.

9. Accept the default destination folder. Click **Next**.
10. Accept the list of components. Click **Next**.
11. Accept the additional tasks (shortcut, add docker binaries to PATH, and upgrade Boot2Docker VM). Click **Next**.
12. Review the settings and click **Install**.
13. Clear the checkbox to view shortcuts. Click **Finish**.
14. Verify your docker installation.
    - From the Start Menu, navigate to **All Programs** > **Docker**.
    - Click **Docker Quickstart Terminal**.
    - There are a number of preliminary steps and downloads that must happen. Wait for a message indicating the interactive shell can start and the $ prompt is available.
    - Type `docker run hello-world`.
    - You should see a response starting with **Hello from Docker!**

Part 8: Install the IBM Cloud (Bluemix) CLI

1. In a browser, go to https://console.bluemix.net/docs/cli/reference/bluemix_cli/get_started.html
2. Click the installer for Windows 64 bit and follow the instructions to install the IBM Cloud CLI.
3. Type `bx -v` to return the version number.

Part 9: Install the IBM Cloud Container Service plugins

There are two plugins associated with the IBM Cloud Container Service that you will need for the labs. They are the plugin for the container service itself (`bx cs` commands) and the plugin for the container registry (`bx cr` commands).

1. Type
   `bx plugin install container-service -r Bluemix`
   `bx plugin install container-registry -r Bluemix`
2. Check that the plugins are installed by typing `bx plugin list`

Step 10: Install the Kubernetes kubectl CLI

1. In your browser, go to https://kubernetes.io/docs/tasks/tools/install-kubectl. There are several package managers you can choose from to install the Kubernetes CLI, including Chocolatey and PowerShell Gallery. Follow the instructions on the page to install kubectl.

Part 11: Install the MYSQL Client

1. Open a browser to https://dev.mysql.com/downloads/mysql/
2. Download the ZIP Archive version of the Windows 64 bit MYSQL 5.7 Installer. It shoud be approximately 320 MB.
3. When the ZIP archive is downloaded, extract it to the directory of your choice.
4. You will only need the mysql.exe executable. From the bin subdirectory under your extraction directory, move or copy the mysql.exe file to any directory in your PATH.

Part 12: Install Cygwin

There are certain times in the labs where the way that Windows interprets quote characters makes it easier for you to issue those commands from a Linux shell. You can have that Linux shell available by installing Cygwin.

1. Open a browser to https://www.cygwin.com/
2. Under the Current Cygwin DLL version heading, click to download the latest Windows 64 bit installation exe file.
3. Run the installation exe file and follow the prompts to install Cygwin.

This completes the setup of your workstation.