Building and running VVR

This guide is for building and running VVR services. This has been created for Ubuntu 16.04. You may have problems if you use a different version.

What is VVR?

VVR is a service for companies with fleets of vehicles. Normal vehicle owners look after their V5C (vehicle registration document), but if you are a fleet with 600,000 vehicles, you don't want to have to look after 600,000 V5Cs.

Instead, fleet owners use VVR to maintain view their fleet vehicles and we retain their V5C document. When a company wants to sell a vehicle, they can request to have a V5C printed and sent to them.

Part 1 Install Required Software

Install Oracle VirtualBox

https://www.virtualbox.org/wiki/Downloads

Create a new virtual machine with recommended settings for Fujistu laptops

Click the New button
Give it a name such as VVR
Select Linux 64-bit
Select 8GB (8192MB)
Create a virtual hard disk
Give it 40GB of space

When you have created your VM right click on it and select Settings...
Select System
Click on processor tab
Change Processor(s) to 2 CPUs

If you feel like being adventurous you can enable 3D video acceleration. It'll result in smoother dragging around windowy things but could just show a blank screen or corrupt stuff.
Display->Enable 3D Acceleration checkbox
And probably increase the Video Memory. Not sure what is best here but I've got mine set to 96MB.

Useful keyboard shortcuts for VirtualBox

Right Ctrl + F : Change to full screen and back
Right Ctrl : release keyboard from VirtualBox so you can alt-tab, etc in Windows

Install Ubuntu on virtual machine

Recommended version is **16.04**. You will have issues using newer versions and may not be able to complete this.

Download Ubuntu ISO http://releases.ubuntu.com/xenial/
Run your new VM (double click it in VirtualBox or click it and press Start button)
Insert Ubuntu into VirtualBox start up disk
Follow all the prompts to install Ubuntu
Select install updates if you wish
Then Erase disk and install Ubuntu (this will only erase the virtual hard disk)
When it has finished installing press Restart Now button
Then press Enter to restart (The disk is automatically ejected so ignore that part)

Install Guest Additions on virtual machine

If a window pops up with keyboard shortcuts, close this or it'll cover up the next step
VirtualBox Devices menu -> Insert Guest Additions CD image...
A window should open. Click Run then type your password.
When it finished press Return to close the window
Probably nice to enable bi-directional clipboard: Devices -> Shared Clipboard -> Bidirectional

Reboot

Power/cog icon in top right -> Shutdown -> Restart
Or you can open a terminal (ctrl+alt+t) and type

```
reboot
```

Open a terminal window

ctrl+alt+t or through Ubuntu menu
ctrl+alt+5 will make the window fullscreen

Update apt-get

```
sudo apt-get update
```

If you get the following message when trying to run any apt-get commands

```
E: Could not get lock /var/lib/apt/lists/lock - open (11: Resource temporarily unavailable)
E: Unable to lock directory /var/lib/apt/lists/
```

It could be that there is an update being performed in the background. Run

```
ps -ef | grep apt
```

And you might see something like

```
root 2239 1 0 10:53 ? 00:00:00 /bin/sh /usr/lib/apt/apt.systemd.daily update
root 2247 2239 0 10:53 ? 00:00:00 /bin/sh /usr/lib/apt/apt.systemd.daily lock_is_held update
```

You will have to wait for the update to finish before you can continue.

(Optional but recommended) Install vim (nice colours and syntax hilighting in vi)

```
sudo apt-get install vim
```

(Optional) Install Chromium web browser (or stick to built in Firefox if you prefer)

```
sudo apt-get install chromium-browser
```

Run Chromium in terminal
Open terminal ctrl+alt+t

```
chromium-browser
```

Pin it to side bar so you can load it again (rlight click Chromium on left panl and select Lock to launcher and close Chromium

(Optional) Install Intellij (only required to make any code changes - or you could use vi for that if you really want)

https://www.jetbrains.com/idea/download/

(Optional) Download Play Framework (Is this needed?)

```
cd ~
wget https://downloads.typesafe.com/play/2.2.3/play-2.2.3.zip
unzip play-2.2.3.zip
```

(Optional) Install Pgadmin3 to connect to Postgres database

```
sudo apt-get install pgadmin3
```

Install Java OpenJDK 1.7

The apt repository that was previously used for installing OpenJDK 1.7 no longer works, so follow these instructions instead:

Visit https://www.azul.com/downloads/?version=java-7-lts&os=ubuntu&architecture=x86-64-bit&package=jdk

Scroll to the bottom of the page and you will see links to download a .deb file, currently version 7u302b01 - you should get a file similar to zulu7.46.0.11-ca-jdk7.0.302-linux_amd64.deb

When this has finished downloading, double click the .deb file and the Ubuntu Software page shows. Click Install at the top and this will install OpenJDK 1.7.

Install Postgresql

```
sudo apt-get install postgresql postgresql-contrib
sudo -u postgres psql postgres
\password postgres
```

You will be prompted to enter a new password. Enter the following password twice:

```
postgres
```

Then to quit psql

```
\q
```

Install RabbitMQ Server

```
sudo apt-get install rabbitmq-server
sudo rabbitmq-plugins enable rabbitmq_management
```

Install Maven

```
sudo apt-get install maven
```

Install git

```
sudo apt-get install git
```

Install RPM builder

```
sudo apt-get install rpm
```

Install SBT

```
echo "deb https://dl.bintray.com/sbt/debian /" | sudo tee -a /etc/apt/sources.list.d/sbt.list
sudo apt-key adv --keyserver hkp://keyserver.ubuntu.com:80 --recv
2EE0EA64E40A89B84B2DF73499E82A75642AC823
sudo apt-get update
sudo apt-get install sbt
```

Allow SBT to use TLSv1.2

```
echo '-J-Dhttps.protocols=TLSv1.1,TLSv1.2' | sudo tee -a /usr/share/sbt/conf/sbtopts
```

Part 2 Build VVR from source code

Clone VVR repo in BitBucket

Make sure you are in your home directory (~ is a shortcut for home)

```
cd ~
git config --global credential.helper cache
git clone https://bitbucket.tooling.dvla.gov.uk/scm/iep/iep-vvr.git
git clone https://bitbucket.tooling.dvla.gov.uk/scm/iep/iep-vvr-tests.git
```

Get latest version of tests

```
cd ~/iep-vvr-tests
git checkout develop
```

Create the database

```
cd ~/iep-vvr/batch/db-scripts
./import_test_data.sh
sudo su - postgres
psql -f /tmp/create_databases.sql
psql auth
CREATE EXTENSION "uuid-ossp";
select * from pg_extension;
\q
logout
```

Build the source (This will only work if VPN is connected and if the Nexus server is running)

```
cd ~/iep-vvr
mvn clean install -DskipTests -Dmaven.test.skip=true -Dhttps.protocols=TLSv1.2
```

Have lots of fun trying to fix pom versions

You'll no doubt receive errors when building this. Most likely to do with the version of some packages in pom files.
First error I had was

[ERROR] The project iep-vvr:vehicle-db-schema:1.30 (/home/vvr/iep-vvr/vehicle-db-schema/pom.xml) has 1 error
[ERROR] Non-resolvable parent POM for iep-vvr:vehicle-db-schema:1.30: Failure to find iep-vvr:iep-vvr:pom:1.30 in https://repo.maven.apache.org/maven2 was cached in the local repository, resolution will not be reattempted until the update interval of central has elapsed or updates are forced and 'parent.relativePath' points at wrong local POM @ line 8, column 13 -> [Help 2]

The last part is important. parent.relativePath points at the wrong local POM.

What this is saying is that the module vehicle-db-schema is looking for the parent (iep-vvr) which has the wrong version.

Looking at vehicle-db-schema/pom.xml it is looking for parent version 1.30

Looking at pom.xml its version is 1.31

Edit all modules pom.xml files to update the parent to 1.31

A quick way to do this is. This will replace the 1.31 in all the files and replace them with 1.32 (if nothing has changed in GIT since this guide was made)

```
sed -i 's/1\.31/1\.32/g' filter-validator-service/pom.xml
sed -i 's/1\.31/1\.32/g' emailing-consumer-service/pom.xml
sed -i 's/1\.31/1\.32/g' vehicle-client/pom.xml
sed -i 's/1\.31/1\.32/g' batch/iep_services
sed -i 's/1\.31/1\.32/g' message-enqueuer-service/pom.xml
sed -i 's/1\.31/1\.32/g' vehicle-db-schema/pom.xml
sed -i 's/1\.31/1\.32/g' authentication-runner/pom.xml
sed -i 's/1\.31/1\.32/g' vehicle-filter-service/pom.xml
sed -i 's/1\.31/1\.32/g' calculate-ved-client/pom.xml
sed -i 's/1\.31/1\.32/g' pdf-generator-vvr/pom.xml
sed -i 's/1\.31/1\.32/g' vehicle-enquiry-service/pom.xml
sed -i 's/1\.31/1\.32/g' v5c-batch-generator/pom.xml
```

Try running the maven command again

```
mvn clean install -DskipTests -Dmaven.test.skip=true -Dhttps.protocols=TLSv1.2
```

If you haven't run the previous sed commands to replace all version numbers, you might get an error such as:

Failed to execute goal on project vehicle-client: Could not resolve dependencies for project iep-vvr:vehicle-client:jar:1.30: The following artifacts could not be resolved: iep-vvr:api:jar:1.30, iep-vvr:common-service:jar:1.30: Could not find artifact iep-vvr:api:jar:1.30 in Kainos repository (https://nexus.iep.dvla.gov.uk/nexus/content/groups/public) -> [Help 1]

This is another version error. This was in vehicle-client/pom.xml. api and common-service are both at version 1.31 but vehicle-client is looking for version 1.30. Update vehicle-client.pom.xml and change the versions to 1.31.

Keep going. You'll get more errors. Probably change more 1.30 versions to 1.31.

Hopefully at the end of that **SUCCESS**

```
cd ~/iep-vvr/vehicle-portal
sbt compile
```

The sbt bit will take a while as it does... something, whatever SBT does.

If you manage that you have built VVR and can get some stuff running on it.

Part 3 Run VVR software and play with some test data

Time to insert some test data into the database and get the services running

```
cd ~/iep-vvr/batch/db-scripts
./insert_test_data.sh
```

Run stuff.

```
cd ~/iep-vvr/batch
./iep_services start all
```

This will give an error while trying to run the portal. Don't worry about that.

Open another terminal.

```
cd ~/iep-vvr/vehicle-portal
sbt run
```

View stuff

Visit http://localhost:9000 in the browser

Enter the details *123456@email.com* and *password*

Build vehicle-portal RPM for release

sbt clean stage

sbt rpm:package-bin

find -name '*.rpm'