

Creating the user environment to run dockerised training materials

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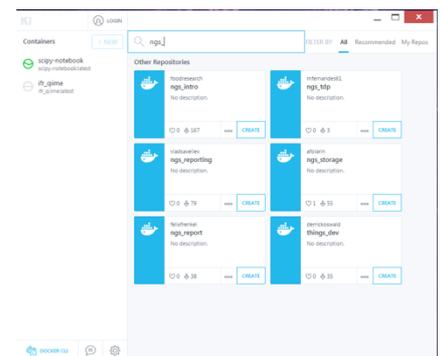
These instructions are aimed at users of Windows 10 or Mac computers
(Can be done for Ubuntu Linux machines but contact Mark for details & limitations)

- 1) Download & Install Docker for your machine – please note that you will need to create a Docker ID to download the software. We will be using the Community edition which is free software.
Mac: <https://docs.docker.com/docker-for-mac/install/>
Windows: <https://docs.docker.com/docker-for-windows/install/>
(Windows users please note the information about Hyper-V (used by Docker) & Virtualbox. If you use Virtualbox VMs you will need to switch Hyper-V off to use it and on to use Docker – of course if you're not a Virtualbox user then you can ignore this).
If you don't understand the section above then it's probably best to contact your local IT support.
- 2) Download & Install Kitematic for your machine
You need the zip-file for your computer from here (<https://github.com/docker/kitematic/releases>). Unzip it and it will give you a software installer (e.g.dmg on Mac .deb on Ubuntu). Note that we have had issues with the latest version – the newest version that we know works is 0.17.3 so you should install that version.
- 3) NB On the Mac both programs need to be moved to Applications and you may have to authorise opening them as they have been downloaded from the internet rather than the Apple Store.
- 4) Testing Kitematic:



- a. Launch Kitematic by clicking on this icon on Windows Desktop or from Mac Applications.

- b. After the application starts click on New button and icons for the available containers should appear. Type in the search bar 'ngs_' and the number of containers should reduce to include the ngs_intro Container



Kitematic at a Glance

Enable search for new Docker container to load

Login to Docker account

Start, Restart, Stop container buttons (greyed out = active)

Opens browser to container documentation on Docker Hub site

List of downloaded available containers

Open a terminal session

Visit Kitematic on GitHub

Kitematic settings:

This cog displays the settings menus (Shown later)

This cog is another way to get to the Settings tab

Select this URL, and Ctrl-C & Ctrl-V into browser to view app

Alternatively, your home tab may look like this - click on left-hand icon to launch the app

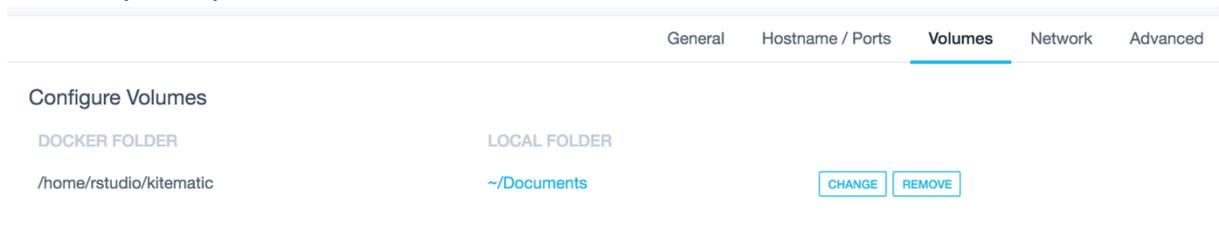
Many settings are accessible on the settings tab - the one we will use the most is the volumes one. Containers share some of their sub-directories and these can be linked/mounted to directories on your computers hard disk

Configure Volume	
CONTAINER VOLUME	LOCAL PATH
~/workspace	~/workspace
~/code	~/code
~/scripts	~/scripts
~/resources	~/resources

- To get an **RStudio** environment – search for rocker/rstudio
To log in via the browser the default username/password is 'rstudio'
- To get an **OpenRefine** environment – search for docker pull psychemedia/openrefine
- To get a Dockerised version of the Shiny apps as used in **Introduction to Statistical Analysis** course – search for mfernandes61/shiny_test

Docker containers are essentially read-only (They do actually have a small writeable area). To work around this, we need to map subdirectories in the container to subdirectories on the host computer (e.g. Mac) and this is where the Volumes panel comes into play.

An example would be the Rstudio container. Below you see the volumes tab from my computer:



It shows where the Docker container folder(s) have been mapped to my Mac. If we wish to change this to another directory (or if it has not set) then after entering the change, you will need to stop/start or restart (using the round buttons) the container. NB the web address to the application may change and you will have to ctrl-C and ctrl-V the new address into your web-browser.

Most of the containers we will meet will have their interface displayed in the browser after we have cut & pasted their URL into it. These may be command-line based in the case of the ngs_intro container (below)

```
Chrome File Edit View History Bookmarks People Window Help
guest@514eadb49394: ~ - Shell x
localhost:32769
Apps A. Introduction: U... Adventures in cod... Blogger: Adventur... command-line bo...

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

Welcome to the IFR Dockerised version of the Welsh Genepark's
Introduction to Command-line NGS Analysis course!
The original materials belong to Wesh Genepark and the original
materials and software can be found at
http://www.walesgenepark.cardiff.ac.uk/bioinformatics/training/

This was originally designed to be deployed onto Raspberry pi
computers. Our version will run on any linux machine running Docker
Host (or on Windows PC & Macs running Docker Toolbox (Kitematic)).

There are updated links to data files and we have provided an i86
version of the GATK (rather than the original ARM version).
*** NB ****
In Kitematic you will need to map the volume /coursehome to a directory
on your hard disk. Next stop then start the container (buttons towards
top RH corner) log in again and type '/scripts/copy_course.sh' to
copy the tools, data and documents to the mapped directory on your
local hard disk.
*****
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

guest@514eadb49394:~$ █
```

Or you may have a full linux graphical desktop like this:

