

VirtualBox

The simplest method of getting OpenFOAM running for this course is to set up a *virtual machine*. We prepared a [VirtualBox](#) appliance which runs on any operating system that VirtualBox supports (Windows, Mac OS X and Linux being among the more popular choices). For the purposes of this course, we strongly recommend that you install OpenFOAM on your laptop using this method. This will give you a working installation with very little effort required on your side and has the added benefit that all installations are uniform. Our VirtualBox appliance was tested with the version of VirtualBox which is distributed on the USB sticks during the course. Please install this specific version on your laptop (see below).

1) Installing VirtualBox

- Copy the whole content of the provided USB stick to your hard drive. Please note that there is one large file (>10 GB).
- Install VirtualBox by running the executable/package that corresponds to your operating system.
- Install the corresponding ExtensionPack (the file with extension *vbox-extpack*).

2) Importing the IFD VirtualBox image

- Open the file *IFD-Tools.vbox*. This will create a new virtual machine with the correct configuration and use the virtual disk image contained in the file *IFD-Tools.vdi* which is in the same folder.

3) Starting and testing the virtual machine

- Start the virtual machine by clicking the *Start* button in the VirtualBox window.
- When the login-screen appears, you will be prompted to type a password. The password will be announced in the lecture.
- Start a command line terminal by clicking on *Applications*→*Favorites*→*Terminal*. Enter the following commands and verify that they do not produce any error message:

```
run
cp -r $FOAM_TUTORIALS/incompressible/icoFoam/cavity cavity
cd cavity
blockMesh
icoFoam
paraFoam &
```

- The last command should start the *ParaView* application. Click the green *Apply* button. If a red rectangle appears, everything is fine with your installation.

4) Setting up a shared folder (optional)

With a shared folder you can easily transfer files and directories from and into your virtual machine.

- First, install the VirtualBox Guest Additions. In Virtual Box, click on *Devices* → *Insert Guest Additions CD image*. Type the password you were provided with when you get prompted to, then wait for the installation to be finished.

- Add the user `ifdtools` to the group `vboxsf` by entering in a terminal

```
su
[enter password...]
usermod -aG vboxsf ifdtools
exit
```

- From the machine settings (*Machine* → *Settings*) select the *Shared Folders* pane and add a new shared folder using the icon looking like a folder with a plus sign.
- In the newly opened dialog use the upper drop-down box to select the directory on the host computer you want to share with the virtual machine. In the text box below give that share a name, usually the default proposed by VirtualBox is OK. We will refer to this name as *SHARE* from here on. Tick the boxes *Auto-mount* and *Make permanent*, then click *Ok* and close the settings dialog.
- Start (or reboot) the virtual machine. Now you should be able to read and write files in the */media/sf_SHARE* folder of the virtual machine.