OASES 3.1 - Installation Guide

This is a 'friendly' installation guide for the OASES 3.1 software made by the MIT using the Ubuntu App of the Microsoft Store. All of the external softwares needed to complete the installation are included in the installation folder for Windows 10 x32 and x64. Even though it was installed in a x64 version of Windows 10 it should work as well with a x32 (not tested yet).

Warning 1 - It should take around 30 minutes to complete the installation.

1.1 Installing Ubuntu from Microsoft Store

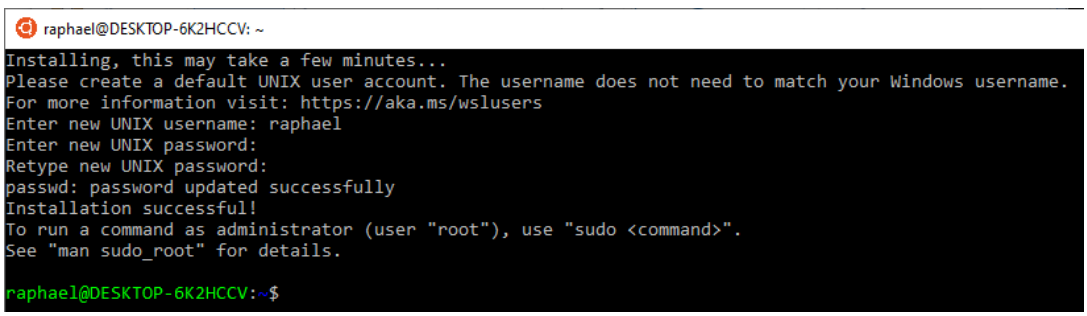
At first, it is needed to enable Windows 10 to support a linux subsystem to then install Ubuntu from the Microsoft Store.

1. Enter the Windows PowerShell as an administrator and copy / paste the following command

```
Enable-WindowsOptionalFeature -Online -FeatureName Microsoft-Windows-Subsystem-Linux
```

Warning 2 - The following step will make your computer reboot.

2. Type *Y* in the PowerShell to restart the computer (needed to complete the installation).
3. Download the Ubuntu 18.04 LTS application made by Canonical Group Limited from the Microsoft Store (should be around 230 MB)
4. Open the Ubuntu application from the taskbar, it will install automatically and then ask for a user name and a password.



Check 1 - Type **whoami** in the Ubuntu terminal to verify that the installation is done.

5. Enable the 'Show hidden files, folders, drives' on Windows 10.

The Ubuntu application is installed in
`C:\Users\USERNAME\AppData\Local\Packages\CanonicalGroupLimited.UbuntuonWindows_VERSION`,
where `USERNAME` and `VERSION` need to be replaced.

The Ubuntu `home` folder is found typically in
`...\CanonicalGroupLimited.UbuntuonWindows_VERSION\LocalState\rootfs\home\UNIX_USERNAME`
where `VERSION` and `UNIX_USERNAME` need to be replaced.

Check 2 - It is strongly recommended to create a shortcut of the `UNIX_USERNAME` folder wherever wanted (on the Windows Desktop for example) for an easy access.

6. Update the installed Ubuntu version.

```
sudo apt-get update
sudo apt-get upgrade
```

7. Go to the UNIX_USERNAME folder and open `.bashrc` file with a notepad. In order to permanently have all the required user privileges for all folders and files, copy and paste

```
chmod -R +rwx ~/
```

at the end of the file and save it.

Check 3 - Ubuntu is set up!

1.2 Installing OASES

8. In the Ubuntu Terminal, install many dependencies at once

```
sudo apt-get install cmake gfortran gcc python3-pip libx11-dev csh

pip3 install numpy matplotlib scipy tqdm
```

9. Download VcXsrv[1] and install it with the default values. Install `plotmtv`, the plotting module of OASES following `https://askubuntu.com/questions/679724/installing-plotmtv`.

10. Run Winrar (or winzip) *as an administrator* and unzip the `oases-public` folder of `oases-public.tgz`[2] into the `UNIX_USERNAME` folder.

11. Inside the `oases-public/bin` folder, there is a `CMakeLists` file. Open it with a notepad and completely remove `rdoasp` and `rdoast` from it. These two packages don't come attached with the public software of OASES and therefore make the installation fail.

12. In the Ubuntu terminal, type

[1] You can directly download it from `https://sourceforge.net/projects/vcxsrv/`
[2] You can directly download it from `http://lamss.mit.edu/lamss/tars/oases-public.tgz`

```
ls ~/
```

you should now see the folder `oases-public`. Then, create a folder `Oases`

```
mkdir ~/Oases
```

It will contain all the binaries to run the OASES software.

Warning 3 - For the software to run properly, this folder should not in any case be deleted or tempered with.

13. Build the OASES software by typing

```
~/oases-public/build.sh ~/Oases
```

There will be a lot of warnings but as long as the software continues to install, it is normal.

14. Exactly like in step 7., go to the UNIX_USERNAME folder and open the `.bashrc` file with a notepad. In order to permanently have the environment variables set up[3], copy and paste the following

```
export DISPLAY=localhost:0.0
export PATH=$PATH:~/Oases/bin
export OASES_SH=~/Oases/bin
export OASES_BIN=~/Oases/bin
export OASES_LIB=~/Oases/lib
export USRTERMTYPE=x
export CON_PACKAGE=MTV
export MTV_COLORMAP=hot
export MTV_WRB_COLORMAP='ON'
export MTV_PRINTER_CMD='lpr'
export MTV_PSCOLOR='on'
export CON_BWCOL=COL
export CON_PACKGE=MTV
export CON_DEVICE=X11
```

at the end of the file and save it.

Warning 4 - To make sure the environment variables are defined correctly, restart the Ubuntu terminal.

15. Start Xlaunch previously installed in step 9. with all default values and copy / paste the file `test.dat` into the UNIX_USERNAME folder. Compute the transmission loss and plot the transmission loss contour respectively with

```
oast ~/test
cplot ~/test
```

[3]Following the OASES 3.1 User Guide.

Check 4 - OASES is set up!