OpenNet by kms

Installation

1 Abbreviations and acronyms

AMD **A**dvanced **M**icro **D**evices

DDK **D**river **D**evelopment **K**it

PCIe **P**eripheral **C**omponent **I**nterconnect **e**xpress

SDK **S**oftware **D**evelopment **K**it

2 Introduction

This document describes how to install the hardware and software and how to compile an application with OpenNet.

3 Hardware installation

Install the graphics card used for processing in the PCIe expansion slot that is closest to the processor. This is usually one of the expansion slots that offer the best performance.

Install the network adapter (s) in the other PCIe expansion slots.

4 Software installation on "Ubuntu 18.04.2 Server"

4.1 Compilation tools installation

Before installing NVIDIA's drivers, the compilation tools need to be installed.

1. In a terminal, execute the following commands

```
sudo apt install g++

sudo apt install make
```

4.2 Black listing "nouveau"

If you only use the computer developing and compiling application, without running them, you don't need to disable the "nouveau" driver and install NVIDIA drivers.

NVIDIA drivers can't be installed when the "nouveau" driver is active. If the installation is attempted while the "nouveau" driver is active, it will fail, but it will perform the procedure shown here (except for restarting the computer).

1. Add the file `nvidia-installer-disable-nouveau.conf` to the `/etc/modprobe.d` folder and add the 2 following lines to it

```
blacklist nouveau

options nouveau modeset=0
```

2. In a terminal, execute the command

```
sudo update-initramfs -u
```

3. Restart the computer

4.3 CUDA Toolkit installation

IMPORTANT

Don't install “CUDA Toolkit 10.1”.

OpenNet work with “CUDA Toolkit 10.0”.

1. Download the “CUDA Toolkit 10.0” from the NVIDIA’s web site. This a file with the “.run” extension.
2. In a terminal, execute the command

```
sudo sh cuda_10.1.105_418.39_linux.run
```

3. Restart the computer
4. In a terminal, execute the command

```
lsmod | grep nvidia
```

5. Verify that the NVIDIA’s drivers are listed
6. In a terminal, execute the command

```
nvidia-smi
```

7. Verify that the graphic card is shown

4.4 Add CUDA to the path

1. Edit the `.bashrc` file and add the following lines to it

```
PATH=$PATH/usr/local/cuda-10.1/bin

export PATH

LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/local/cuda-10.1/lib64

export LD_LIBRARY_PATH
```

4.5 Blacklisting the "igb" and the "ixgbe" drivers

If you use the computer only for developing and compiling applications without running them, you don't need to disable the "igb" driver and to install the OpenNet driver.

1. Create the `blacklist-igb.conf` file in the `/etc/modprobe.d` folder and add the following lines to it

```
blacklist igb

blacklist ixgbe
```

2. In a terminal, execute the command

```
sudo update-initramfs -u
```

3. Restart the computer

4.6 OpenNet driver installation

If you use the computer only for developing and compiling applications without running them, you don't need to install the OpenNet driver.

1. Install the kms-opennet-rt package by executing the following command

```
sudo dpkg -i kms-opennet-rt-0.0-0.deb
```

2. Add the `/usr/local/OpenNet_0.0/bin` folder to the path (`PATH`)
3. Add the `/usr/local/OpenNet_0.0/bin` to the library path (`LD_LIBRARY_PATH`)
4. Restart the computer

4.7 OpenNet SDK installation

1. Install the kms-opennet-sdk package by executing the following command

```
sudo dpkg -i kms-opennet-sdk-0.0-0.deb
```

4.8 OpenNet DDK installation

The SDK must be installed before installing the DDK.

1. Install the kms-opennet-ddk package by executing the following command

```
sudo dpkg -i kms-opennet-ddk-0.0-0.deb
```

4.9 Compiling application with the OpenNet SDK

The list of folders searched for header files must include `/usr/local/OpenNet_0.0/inc`

The list of folders searched for library files must include `/usr/local/OpenNet_0.0/bin`

When linking, add the arguments "`-pthread`" and "`-l OpenNet`".

4.10 Compiling driver with OpenNet DDK

The list of folders searched for header files must include `/usr/local/OpenNet_0.0/inc`

The list of folders searched for library files must include `/usr/local/OpenNet_0.0/lib`

When linking, add the `/usr/local/lib/ONK_Lib.a` file.

5 Software installation on "Windows 10"

5.1 AMD driver installation

If you use the computer only for developing and compiling applications without running them, you don't need to install the AMD driver.

1. Download the driver from the AMD's web site
2. Execute the installer

5.1.1 AMD driver configuration

1. Connect a monitor to the graphic card
2. Start "AMD Radeon Pro et FirePro Settings"
    a. Click "Advanced"
    b. Select the "SDI/DirectGMA" category
    c. Select the graphic card used with OpenNet
    d. Move the slider to the maximum value
    e. Click "Apply"
    f. Close the dialog
    g. Close the configuration application
3. Restart the computer
4. Change the display settings of Windows to don't use the graphic card for display.

5.2 AMD APP SDK installation

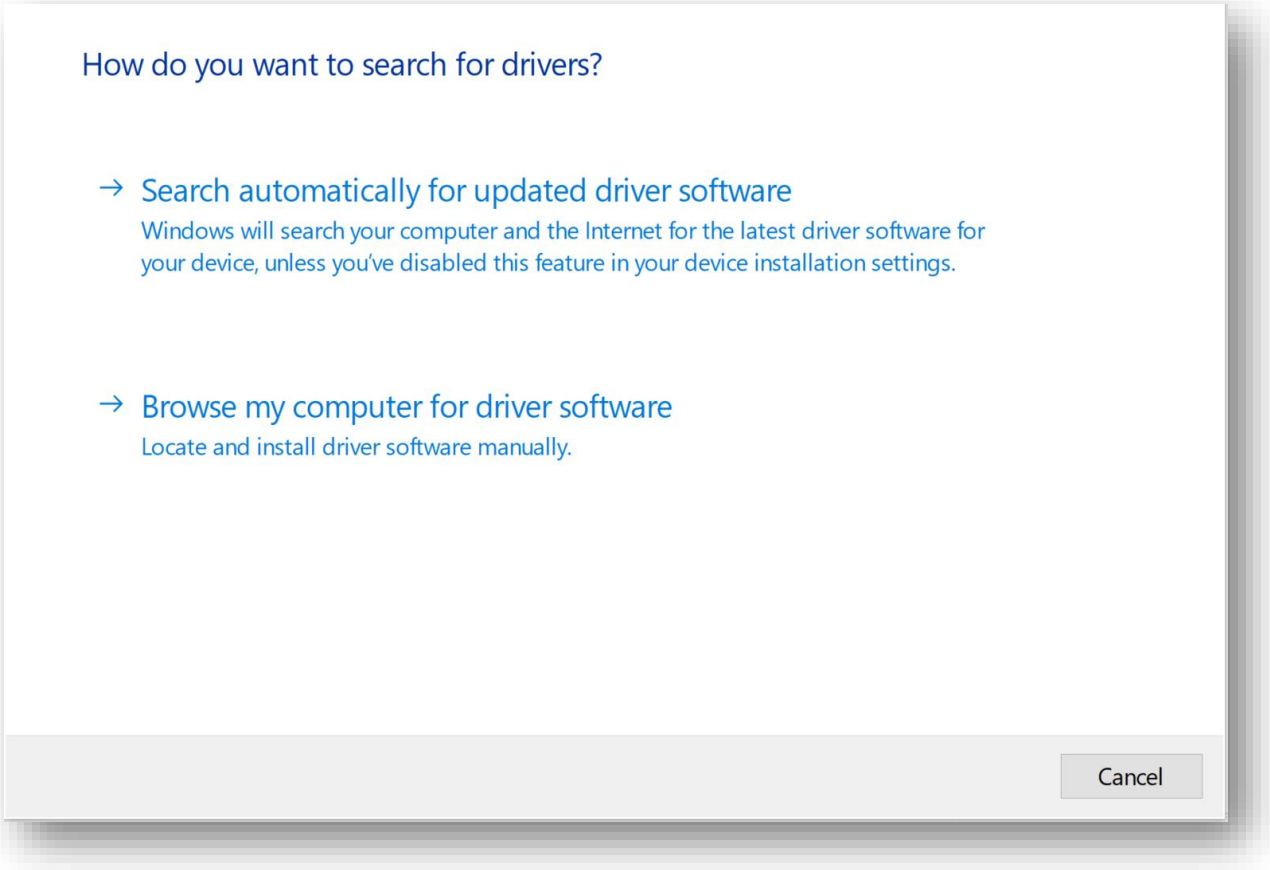
IMPORTANT AMD no longer support the AMD APP SDK. KMS is working to modify OpenNet to continue to support OpenCL on Windows without using AMD APP SDK.

1. Download the AMD APP SDK 3.0 from http://www.kms-quebec.com/d/AMD-APP-SDKInstaller-v3.0.130.135-GA-windows-F-x64
2. Execute the installer

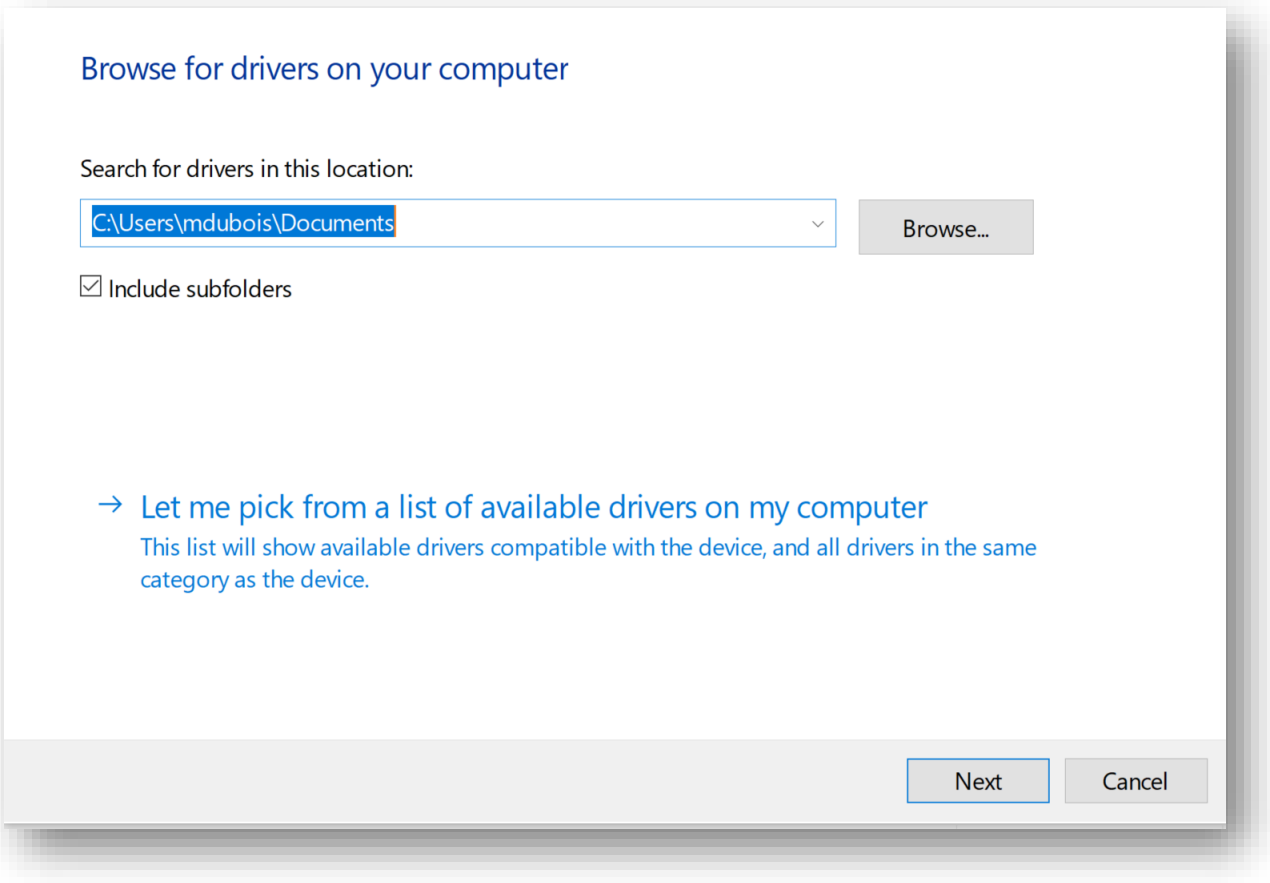
5.3 OpenNet driver installation

If you use the computer only for developing and compiling applications without running them, you don't need to install the OpenNet driver.

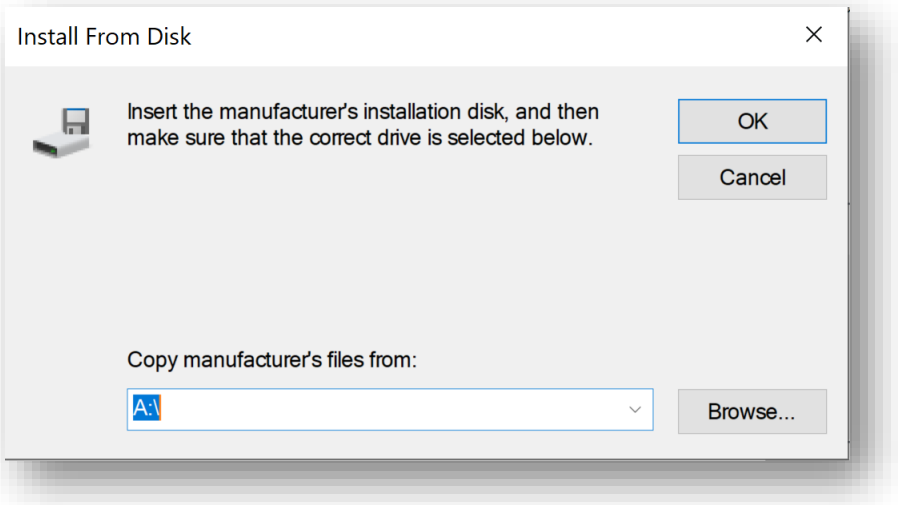
1. Extract files from `OpenNet_RunTime_0.0.0.zip`
2. Open the "Device Manager"
3. Right click the network adapter the OpenNet driver must be installed for. In the contextual menu, select "Update Driver"



   a. Click "Browse my computer for driver software"



b. Click “Let me pick from a list of available drivers on my computer.”
c. Click “Have Disk…”



d. In the “Install From Disk” dialog, click “Browse…”

e. Select the “Drivers/Release_64/ONK_Pr1000” folder extracted at step 1
f. Click “Open”
g. In the “Install From Disk” dialog, click “OK”
h. Select the ONK_Pro1000 driver
i. Cliquer « Next »

5.4 OpenNet SDK installation

1. Extract files from `OpenNet_SDK_0.0.0.zip`

5.5 OpenNet DDK installation

Installing the DDK also install the SDK.

1. Extract files from `OpenNet_SDK_DDK_0.0.0.zip`

5.6 Compiling application with OpenNet

See the samples available in the GIT repository at https://github.com/martindubois/OpenNet_Public