openCL avec carte graphique AMD

- Objet : installer openCL sur debian carte AMD
- Niveau requis : ~~débutant~~ avisé
- Commentaires : *openCL pour carte AMD Radeon RX 5xx et BLENDER 2.82a sur DEBIAN TESTING BULLSEYE*
- Débutant, à savoir : Utiliser GNU/Linux en ligne de commande, tout commence là !.
- Suivi :
  en-chantier, à-tester, à-placer

  - Fix Me! Pour choisir, voir les autres Tags possibles dans l'Atelier.

    - Création par Debian Alain 11/04/2020
    - co créé par Plop6 (irc) un grand merci pour ton soutien technique ! :)
    - Testé par <...> le <...> Fix Me!
- Commentaires sur le forum : Lien vers le forum concernant ce tuto [1)]

Nota :

Contributeurs, les Fix Me! sont là pour vous aider, supprimez-les une fois le problème corrigé ou le champ rempli !

Introduction

Ce petit tuto reprend les étapes d'installation du pilote openCL sur ces matériels et système :

- carte AMD RX 550 4GB
- carte AMD RX 570 8GB ITX

le tout , fait sur linux debian testing bullseye et avec

- X.org GNOME 3.34.2 et 3.36.2
- blender 2.82a
- processeur AMD RYZEN 7 1700 X

Un grand merci à **PLOP6** via (irc) sans qui rien de ce tuto n'aurait été possible.

Historique

Le pilote OpenCL, a été créé pour uniformiser “massivement” les programmes de calculs parallèles[2)]. Au départ , son emploi s'étendait aussi bien aux calculs fait par les CPU que ceux faits par les GPU, possibilité que l'on retrouve aujourd'hui dans Blender.

- OpenCL donne la possibilité d'utiliser ou/et le CPU ou/et le GPU.
- OpenCL est de plus en plus utilisé pour employer la puissance de calcul des cartes graphiques.

Petite bibliographie openCL

- fr.wikipedia : openCL
- OpenCL et Programmation Générique sur GPU
- OpenCL : le GPU Computing enfin démocratisé ?
- openCL - ubuntu.fr (résumé)

Petite bibliographie dtrx

- Paquet : dtrx (buster)
- dtrx github

Préambule

Un conseil : travaillez dans le répertoire ~/Téléchargements , c'est plus sûr.

Téléchargements

Avec la commande cd, se positionner dans le répertoire `Téléchargements` ainsi :

```
cd ~/Téléchargements/
```

Téléchargement de l'archive du pilote amdgpu-pro

1. Soit : (version 19.50 pour ubuntu 18.04 LTS) :

```
wget --referer=https://www.amd.com/ -P $HOME/Téléchargements/
https://drivers.amd.com/drivers/linux/19.50/amdgpu-pro-19.50-967956-ubu
ntu-18.04.tar.xz
```

2. Soit : (version 20.10 pour ubuntu 18.04 LTS) :

```
 wget --referer=https://www.amd.com/ -P $HOME/Téléchargements/
https://drivers.amd.com/drivers/linux/amdgpu-pro-20.10-1048554-ubuntu-1
8.04.tar.xz
```

Au cas où ces liens ne fonctionnent pas, vous pouvez vous connecter en graphique là :

- site AMD support :
https://www.amd.com/fr/support
- Ou en manuel :
https://www.amd.com/fr/support/graphics/radeon-500-series/radeon-rx-500-series/radeon-rx-550
- Ou encore là :
https://www.amd.com/fr/support/graphics/radeon-500-series/radeon-rx-500-series/radeon-rx-570

1. Cherchez la ligne

   ```
   + Ubuntu X86 64-bit
   ```

   et trouvez la case `Téléchargement` sur laquelle vous cliquez.

2. Vous téléchargez ensuite l'archive dans le répertoire `~/Téléchargements` de votre Debian.

sudo a l'avantage de passer des commandes root tout en restant user

1. Installer dtrx[3] :

   ```
   sudo apt install dtrx
   ```

2. Si cela ne fonctionne pas[4] :

   ```
   pip install dtrx
   ```

3. installer aussi clinfo et mesa-utils :

   ```
   sudo apt install clinfo mesa-utils
   ```

Scripts

Créer les scripts suivants :

copiez/collez chacun des blocs ci-dessous et lancez-les indépendamment en user, chacun d'eux créera son fichier dans “ ~/Téléchargements/ ”

```
 cat > ~/Téléchargements/Arborescence.sh <<EOF

#!/bin/bash

mkdir -p /opt/amdgpu-pro/lib/x86_64-linux-gnu
mkdir -p /etc/OpenCL/vendors

EOF
```

```
cat > ~/Téléchargements/Extraction.sh <<EOF

#!/bin/bash

if ! which dtrx > /dev/null; then
   echo -e "le paquet dtrx n'est pas installé. Install it and re-run
script!"
   echo "Error No PAckage dtrx" >> error_OnExtraitToutD1coup
   exit 1
fi
dtrx -r -q amdgpu-pro-*.tar.xz
```

```
EOF
```

le script ci-dessous[5] est souvent capricieux, assurez-vous bien de sa copie avant de le lancer, quitte à le copier à la main[6] avec nano .

```
cat > ~/Téléchargements/Copie.sh <<EOF

#!/bin/bash

LibDir="/opt/amdgpu-pro/lib/x86_64-linux-gnu/"
VendorsDir="/etc/OpenCL/vendors/"
DriversDir="amdgpu-pro-*/"

# on Copie les libs orca:
CustDir="${DriversDir}opencl-orca-amdgpu-pro-icd_*/opt/amdgpu-
pro/lib/x86_64-linux-gnu/"
for libso in libamdocl12cl64.so libamdocl-orca64.so; do
    cp ${CustDir}${libso} ${LibDir}
done

# on Copie les libs Opencl:
CustDir="${DriversDir}libopencl1-amdgpu-pro_*/opt/amdgpu-pro/lib/x86_64-
linux-gnu/"
for libso in  libOpenCL.so libOpenCL.so.1;do
    cp ${CustDir}${libso} ${LibDir}
done

# On copie libcltrace
CustDir="${DriversDir}opencl-amdgpu-pro-dev_*/opt/amdgpu-pro/lib/x86_64-
linux-gnu/"
cp ${CustDir}libcltrace.so ${LibDir}

# On Copie libamdocl64
CustDir="${DriversDir}opencl-amdgpu-pro-icd_*/opt/amdgpu-pro/lib/x86_64-
linux-gnu/"
cp ${CustDir}libamdocl64.so ${LibDir}

# On copie les Fichiers ICD
CustDir="${DriversDir}opencl-orca-amdgpu-pro-icd_*/etc/OpenCL/vendors/"
cp ${CustDir}amdocl-orca64.icd ${VendorsDir}
CustDir="${DriversDir}opencl-amdgpu-pro-icd_*/etc/OpenCL/vendors/"
cp ${CustDir}amdocl64.icd ${VendorsDir}

EOF
```

```
 cat > ~/Téléchargements/maj.sh <<EOF

#!/bin/bash

echo "/opt/amdgpu-pro/lib/x86_64-linux-gnu" > /etc/ld.so.conf.d/amdgpu-
pro_custom-opencl.conf
```

```
ldconfig

EOF
```

```
cat > ~/Téléchargements/raz.sh <<EOF

#!/bin/bash

rm -rf /etc/OpenCL
rm -rf /opt/amdgpu-pro
rm /etc/ld.so.conf.d/amdgpu-pro_custom-opencl.conf
ldconfig

EOF
```

Une fois les scripts copiés/collés, enregistrés, pour pouvoir les utiliser en user[7)], n'oubliez pas de modifier les droits d'utilisations des scripts[8)] avec la commande chmod.

Autorisation des scripts (les rendre exécutables)

puis on donne les autorisations au fichier :

```
sudo chmod u+x ~/Téléchargements/Arborescence.sh
```

```
sudo chmod u+x ~/Téléchargements/Extraction.sh
```

```
sudo chmod u+x ~/Téléchargements/Copie.sh
```

```
sudo chmod u+x ~/Téléchargements/maj.sh
```

```
sudo chmod u+x ~/Téléchargements/raz.sh
```

Installation

commencer par se placer dans le répertoire Téléchargements :

```
cd ~/Téléchargements/
```

On commence par créer l'arborescence : -

```
sudo bash ~/Téléchargements/Arborescence.sh
```

1. on décompacte les deb :

   ```
   sudo bash ~/Téléchargements/Extraction.sh
   ```

2. on copie les bons fichiers :

3. `sudo bash ~/Téléchargements/Copie.sh`
4. on met à jour :
5. `sudo bash ~/Téléchargements/maj.sh`
6. en cas de doute ou de besoin , on peut tout virer :

   `sudo bash ~/Téléchargements/raz.sh`

Script git

un script git qui télécharge amdgpu-pro et installe OpenCL et Vulkan .

actuellement la version 21.30 du 04/08/2021 pour ubuntu 20.04.3 LTS . fonctionne, en théorie , pour RX 5000 ET RX 6000 . prise en charge du noyau 5.11 (en théorie). toujours non fonctionnel sur debian sid . (noyau 5.10)

-- site github de kytulendu --

-- script git --

```
git clone https://gist.github.com/3351b5d0b4f947e19df36b1ea3c95cbe.git
```

installer “git” au préalable

```
sudo apt install --reinstall git
```

merci à kytulendu

Utilisation

pour tester blender avec openCL , on peut télécharger des exemples ici :
exemples blender

dans Edit / Preferences / System / OpenCL ,

vous pourrez choisir votre carte graphique (ici AMD Radeon RX 550 / 550 Series) et / ou votre processeur (AMD RYZEN 7 1700X , par exemple)

un grand merci à plop6 (irc) sans qui rien n'aurai été possible …

Post Scriptum

la carte (RX 550) est montée en pointe , à 75 °C , au maxi une conso de 22 watts et un ventilo de 1300 RPM . la RX 570 , elle , est montée , en pointe à 66 °C , conso maxi 100 watts et un ventilo à 1900 Tr/Min .

voici quelques écrans que vous obtiendrez peut être à la fin de l'installation :

tests fait avec la version 19.50 .

la version 20.10 donne le même résultat . (légèrement updaté)

AMD RX 550 4GB DDR5

ma carte graphique :

```
lspci -nnkd::0300
```

```
0a:00.0 VGA compatible controller [0300]: Advanced Micro Devices, Inc.
[AMD/ATI] Lexa PRO [Radeon 540/540X/550/550X / RX 540X/550/550X] [1002:699f]
(rev c7)
    Subsystem: Sapphire Technology Limited Lexa PRO [Radeon RX 550]
[1da2:e367]
    Kernel driver in use: amdgpu
    Kernel modules: amdgpu
```

son pilote openGL (amdgpu) :

```
glxinfo -B
```

```
name of display: :0
display: :0  screen: 0
direct rendering: Yes
Extended renderer info (GLX_MESA_query_renderer):
    Vendor: X.Org (0x1002)
    Device: Radeon RX550/550 Series (POLARIS12, DRM 3.35.0, 5.4.0-4-amd64,
LLVM 9.0.1) (0x699f)
    Version: 19.3.3
    Accelerated: yes
    Video memory: 4096MB
    Unified memory: no
    Preferred profile: core (0x1)
    Max core profile version: 4.5
    Max compat profile version: 4.5
    Max GLES1 profile version: 1.1
    Max GLES[23] profile version: 3.2
Memory info (GL_ATI_meminfo):
    VBO free memory - total: 3648 MB, largest block: 3648 MB
    VBO free aux. memory - total: 3577 MB, largest block: 3577 MB
    Texture free memory - total: 3648 MB, largest block: 3648 MB
    Texture free aux. memory - total: 3577 MB, largest block: 3577 MB
    Renderbuffer free memory - total: 3648 MB, largest block: 3648 MB
    Renderbuffer free aux. memory - total: 3577 MB, largest block: 3577 MB
Memory info (GL_NVX_gpu_memory_info):
    Dedicated video memory: 4096 MB
    Total available memory: 8192 MB
```

```
    Currently available dedicated video memory: 3648 MB
OpenGL vendor string: X.Org
OpenGL renderer string: Radeon RX550/550 Series (POLARIS12, DRM 3.35.0,
5.4.0-4-amd64, LLVM 9.0.1)
OpenGL core profile version string: 4.5 (Core Profile) Mesa 19.3.3
OpenGL core profile shading language version string: 4.50
OpenGL core profile context flags: (none)
OpenGL core profile profile mask: core profile

OpenGL version string: 4.5 (Compatibility Profile) Mesa 19.3.3
OpenGL shading language version string: 4.50
OpenGL context flags: (none)
OpenGL profile mask: compatibility profile

OpenGL ES profile version string: OpenGL ES 3.2 Mesa 19.3.3
OpenGL ES profile shading language version string: OpenGL ES GLSL ES 3.20
```

le pilote openCL :

```
clinfo
```

```
Number of platforms                               1
  Platform Name                                   AMD Accelerated Parallel
Processing
  Platform Vendor                                 Advanced Micro Devices,
Inc.
  Platform Version                                OpenCL 2.1 AMD-APP
(3004.6)
  Platform Profile                                FULL_PROFILE
  Platform Extensions                             cl_khr_icd
cl_amd_event_callback cl_amd_offline_devices
  Platform Host timer resolution                  1ns
  Platform Extensions function suffix             AMD

  Platform Name                                   AMD Accelerated Parallel
Processing
Number of devices                                 1
  Device Name                                     gfx804
  Device Vendor                                   Advanced Micro Devices,
Inc.
  Device Vendor ID                                0x1002
  Device Version                                  OpenCL 1.2 AMD-APP
(3004.6)
  Driver Version                                  3004.6
  Device OpenCL C Version                         OpenCL C 1.2
  Device Type                                     GPU
  Device Board Name (AMD)                         Radeon RX550/550 Series
  Device Topology (AMD)                           PCI-E, 0a:00.0
  Device Profile                                  FULL_PROFILE
  Device Available                                Yes
  Compiler Available                              Yes
```

```
  Linker Available                                 Yes
  Max compute units                                8
  SIMD per compute unit (AMD)                      4
  SIMD width (AMD)                                 16
  SIMD instruction width (AMD)                     1
  Max clock frequency                              1206MHz
  Graphics IP (AMD)                                8.0
  Device Partition                                 (core)
    Max number of sub-devices                      8
    Supported partition types                      None
    Supported affinity domains                     (n/a)
  Max work item dimensions                         3
  Max work item sizes                              1024x1024x1024
  Max work group size                              256
  Preferred work group size (AMD)                  256
  Max work group size (AMD)                        1024
  Preferred work group size multiple               64
  Wavefront width (AMD)                            64
  Preferred / native vector sizes
    char                                                 4 / 4
    short                                                2 / 2
    int                                                  1 / 1
    long                                                 1 / 1
    half                                                 1 / 1
(cl_khr_fp16)
    float                                                1 / 1
    double                                               1 / 1
(cl_khr_fp64)
  Half-precision Floating-point support            (cl_khr_fp16)
    Denormals                                      No
    Infinity and NANs                              No
    Round to nearest                               No
    Round to zero                                  No
    Round to infinity                              No
    IEEE754-2008 fused multiply-add                No
    Support is emulated in software                No
  Single-precision Floating-point support          (core)
    Denormals                                      No
    Infinity and NANs                              Yes
    Round to nearest                               Yes
    Round to zero                                  Yes
    Round to infinity                              Yes
    IEEE754-2008 fused multiply-add                Yes
    Support is emulated in software                No
    Correctly-rounded divide and sqrt operations   Yes
  Double-precision Floating-point support          (cl_khr_fp64)
    Denormals                                      Yes
    Infinity and NANs                              Yes
    Round to nearest                               Yes
    Round to zero                                  Yes
    Round to infinity                              Yes
```

```
    IEEE754-2008 fused multiply-add                 Yes
    Support is emulated in software                 No
  Address bits                                      64, Little-Endian
  Global memory size                                3816013824 (3.554GiB)
  Global free memory (AMD)                          3706992 (3.535GiB)
  Global memory channels (AMD)                      4
  Global memory banks per channel (AMD)             16
  Global memory bank width (AMD)                    256 bytes
  Error Correction support                          No
  Max memory allocation                             3054000332 (2.844GiB)
  Unified memory for Host and Device                No
  Minimum alignment for any data type               128 bytes
  Alignment of base address                         2048 bits (256 bytes)
  Global Memory cache type                          Read/Write
  Global Memory cache size                          16384 (16KiB)
  Global Memory cache line size                     64 bytes
  Image support                                     Yes
    Max number of samplers per kernel               16
    Max size for 1D images from buffer              134217728 pixels
    Max 1D or 2D image array size                   2048 images
    Base address alignment for 2D image buffers     256 bytes
    Pitch alignment for 2D image buffers            256 pixels
    Max 2D image size                               16384x16384 pixels
    Max 3D image size                               2048x2048x2048 pixels
    Max number of read image args                   128
    Max number of write image args                  8
  Local memory type                                 Local
  Local memory size                                 32768 (32KiB)
  Local memory syze per CU (AMD)                    65536 (64KiB)
  Local memory banks (AMD)                          32
  Max number of constant args                       8
  Max constant buffer size                          3054000332 (2.844GiB)
  Preferred constant buffer size (AMD)              16384 (16KiB)
  Max size of kernel argument                       1024
  Queue properties
    Out-of-order execution                          No
    Profiling                                       Yes
  Prefer user sync for interop                      Yes
  Profiling timer resolution                        1ns
  Profiling timer offset since Epoch (AMD)          1586590360034232392ns (Sat
Apr 11 09:32:40 2020)
  Execution capabilities
    Run OpenCL kernels                              Yes
    Run native kernels                              No
    Thread trace supported (AMD)                    Yes
    Number of async queues (AMD)                    2
    Max real-time compute queues (AMD)              0
    Max real-time compute units (AMD)               0
    SPIR versions                                   1.2
  printf() buffer size                              4194304 (4MiB)
  Built-in kernels                                  (n/a)
```

```
  Device Extensions                                   cl_khr_fp64 cl_amd_fp64
cl_khr_global_int32_base_atomics cl_khr_global_int32_extended_atomics
cl_khr_local_int32_base_atomics cl_khr_local_int32_extended_atomics
cl_khr_int64_base_atomics cl_khr_int64_extended_atomics
cl_khr_3d_image_writes cl_khr_byte_addressable_store cl_khr_fp16
cl_khr_gl_sharing cl_amd_device_attribute_query cl_amd_vec3 cl_amd_printf
cl_amd_media_ops cl_amd_media_ops2 cl_amd_popcnt cl_khr_image2d_from_buffer
cl_khr_spir cl_khr_gl_event

NULL platform behavior
  clGetPlatformInfo(NULL, CL_PLATFORM_NAME, ...)  No platform
  clGetDeviceIDs(NULL, CL_DEVICE_TYPE_ALL, ...)   No platform
  clCreateContext(NULL, ...) [default]            No platform
  clCreateContext(NULL, ...) [other]              Success [AMD]
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_DEFAULT)  Success (1)
    Platform Name                                 AMD Accelerated Parallel
Processing
    Device Name                                   gfx804
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_CPU)  No devices found in
platform
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_GPU)  Success (1)
    Platform Name                                 AMD Accelerated Parallel
Processing
    Device Name                                   gfx804
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_ACCELERATOR)  No devices
found in platform
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_CUSTOM)  No devices found in
platform
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_ALL)  Success (1)
    Platform Name                                 AMD Accelerated Parallel
Processing
    Device Name                                   gfx804
```

AMD RX 570 8GB DDR5

ma nouvelle carte graphique :

```
lspci -nnkd::0300
```

```
0a:00.0 VGA compatible controller [0300]: Advanced Micro Devices, Inc.
[AMD/ATI] Ellesmere [Radeon RX 470/480/570/570X/580/580X/590] [1002:67df]
(rev ef)
    Subsystem: Sapphire Technology Limited Ellesmere [Radeon RX
470/480/570/570X/580/580X/590] [1da2:e343]
    Kernel driver in use: amdgpu
    Kernel modules: amdgpu
```

son pilote classique

```
glxinfo -B
```

```
name of display: :0
display: :0  screen: 0
direct rendering: Yes
Extended renderer info (GLX_MESA_query_renderer):
    Vendor: X.Org (0x1002)
    Device: Radeon RX 570 Series (POLARIS10, DRM 3.36.0, 5.5.0-1-amd64, LLVM
9.0.1) (0x67df)
    Version: 19.3.3
    Accelerated: yes
    Video memory: 8192MB
    Unified memory: no
    Preferred profile: core (0x1)
    Max core profile version: 4.5
    Max compat profile version: 4.5
    Max GLES1 profile version: 1.1
    Max GLES[23] profile version: 3.2
Memory info (GL_ATI_meminfo):
    VBO free memory - total: 7650 MB, largest block: 7650 MB
    VBO free aux. memory - total: 8140 MB, largest block: 8140 MB
    Texture free memory - total: 7650 MB, largest block: 7650 MB
    Texture free aux. memory - total: 8140 MB, largest block: 8140 MB
    Renderbuffer free memory - total: 7650 MB, largest block: 7650 MB
    Renderbuffer free aux. memory - total: 8140 MB, largest block: 8140 MB
Memory info (GL_NVX_gpu_memory_info):
    Dedicated video memory: 8192 MB
    Total available memory: 16384 MB
    Currently available dedicated video memory: 7650 MB
OpenGL vendor string: X.Org
OpenGL renderer string: Radeon RX 570 Series (POLARIS10, DRM 3.36.0,
5.5.0-1-amd64, LLVM 9.0.1)
OpenGL core profile version string: 4.5 (Core Profile) Mesa 19.3.3
OpenGL core profile shading language version string: 4.50
OpenGL core profile context flags: (none)
OpenGL core profile profile mask: core profile

OpenGL version string: 4.5 (Compatibility Profile) Mesa 19.3.3
OpenGL shading language version string: 4.50
OpenGL context flags: (none)
OpenGL profile mask: compatibility profile

OpenGL ES profile version string: OpenGL ES 3.2 Mesa 19.3.3
OpenGL ES profile shading language version string: OpenGL ES GLSL ES 3.20
```

pilote open CL

```
clinfo
```

```
Number of platforms                               1

```

```
  Platform Name                                   AMD Accelerated Parallel
Processing
  Platform Vendor                                 Advanced Micro Devices,
Inc.
  Platform Version                                OpenCL 2.1 AMD-APP
(3004.6)
  Platform Profile                                FULL_PROFILE
  Platform Extensions                             cl_khr_icd
cl_amd_event_callback cl_amd_offline_devices
  Platform Host timer resolution                  1ns
  Platform Extensions function suffix             AMD

  Platform Name                                   AMD Accelerated Parallel
Processing
Number of devices                                 1
  Device Name                                     Ellesmere
  Device Vendor                                   Advanced Micro Devices,
Inc.
  Device Vendor ID                                0x1002
  Device Version                                  OpenCL 1.2 AMD-APP
(3004.6)
  Driver Version                                  3004.6
  Device OpenCL C Version                         OpenCL C 1.2
  Device Type                                     GPU
  Device Board Name (AMD)                         Radeon RX 570 Series
  Device Topology (AMD)                           PCI-E, 0a:00.0
  Device Profile                                  FULL_PROFILE
  Device Available                                Yes
  Compiler Available                              Yes
  Linker Available                                Yes
  Max compute units                               32
  SIMD per compute unit (AMD)                     4
  SIMD width (AMD)                                16
  SIMD instruction width (AMD)                    1
  Max clock frequency                             1244MHz
  Graphics IP (AMD)                               8.0
  Device Partition                                (core)
    Max number of sub-devices                     32
    Supported partition types                     None
    Supported affinity domains                    (n/a)
  Max work item dimensions                        3
  Max work item sizes                             1024x1024x1024
  Max work group size                             256
  Preferred work group size (AMD)                 256
  Max work group size (AMD)                       1024
  Preferred work group size multiple              64
  Wavefront width (AMD)                           64
  Preferred / native vector sizes
    char                                                 4 / 4
    short                                                2 / 2
    int                                                  1 / 1
```

```
    long                                                    1 / 1
    half                                                    1 / 1
(cl_khr_fp16)
    float                                                   1 / 1
    double                                                  1 / 1
(cl_khr_fp64)
  Half-precision Floating-point support           (cl_khr_fp16)
    Denormals                                     No
    Infinity and NANs                             No
    Round to nearest                              No
    Round to zero                                 No
    Round to infinity                             No
    IEEE754-2008 fused multiply-add               No
    Support is emulated in software               No
  Single-precision Floating-point support         (core)
    Denormals                                     No
    Infinity and NANs                             Yes
    Round to nearest                              Yes
    Round to zero                                 Yes
    Round to infinity                             Yes
    IEEE754-2008 fused multiply-add               Yes
    Support is emulated in software               No
    Correctly-rounded divide and sqrt operations  Yes
  Double-precision Floating-point support         (cl_khr_fp64)
    Denormals                                     Yes
    Infinity and NANs                             Yes
    Round to nearest                              Yes
    Round to zero                                 Yes
    Round to infinity                             Yes
    IEEE754-2008 fused multiply-add               Yes
    Support is emulated in software               No
  Address bits                                    64, Little-Endian
  Global memory size                              8016703488 (7.466GiB)
  Global free memory (AMD)                        7809228 (7.447GiB)
  Global memory channels (AMD)                    8
  Global memory banks per channel (AMD)           16
  Global memory bank width (AMD)                  256 bytes
  Error Correction support                        No
  Max memory allocation                           4244635648 (3.953GiB)
  Unified memory for Host and Device              No
  Minimum alignment for any data type             128 bytes
  Alignment of base address                       2048 bits (256 bytes)
  Global Memory cache type                        Read/Write
  Global Memory cache size                        16384 (16KiB)
  Global Memory cache line size                   64 bytes
  Image support                                   Yes
    Max number of samplers per kernel             16
    Max size for 1D images from buffer            134217728 pixels
    Max 1D or 2D image array size                 2048 images
    Base address alignment for 2D image buffers   256 bytes
    Pitch alignment for 2D image buffers          256 pixels
```

```
    Max 2D image size                                16384x16384 pixels
    Max 3D image size                                2048x2048x2048 pixels
    Max number of read image args                    128
    Max number of write image args                   8
  Local memory type                                  Local
  Local memory size                                  32768 (32KiB)
  Local memory syze per CU (AMD)                     65536 (64KiB)
  Local memory banks (AMD)                           32
  Max number of constant args                        8
  Max constant buffer size                           4244635648 (3.953GiB)
  Preferred constant buffer size (AMD)               16384 (16KiB)
  Max size of kernel argument                        1024
  Queue properties
    Out-of-order execution                           No
    Profiling                                        Yes
  Prefer user sync for interop                       Yes
  Profiling timer resolution                         1ns
  Profiling timer offset since Epoch (AMD)           1587542527048143648ns (Wed
Apr 22 10:02:07 2020)
  Execution capabilities
    Run OpenCL kernels                               Yes
    Run native kernels                               No
    Thread trace supported (AMD)                     Yes
    Number of async queues (AMD)                     2
    Max real-time compute queues (AMD)               0
    Max real-time compute units (AMD)                575513232
    SPIR versions                                    1.2
  printf() buffer size                               4194304 (4MiB)
  Built-in kernels                                   (n/a)
  Device Extensions                                  cl_khr_fp64 cl_amd_fp64
cl_khr_global_int32_base_atomics cl_khr_global_int32_extended_atomics
cl_khr_local_int32_base_atomics cl_khr_local_int32_extended_atomics
cl_khr_int64_base_atomics cl_khr_int64_extended_atomics
cl_khr_3d_image_writes cl_khr_byte_addressable_store cl_khr_fp16
cl_khr_gl_sharing cl_amd_device_attribute_query cl_amd_vec3 cl_amd_printf
cl_amd_media_ops cl_amd_media_ops2 cl_amd_popcnt cl_khr_image2d_from_buffer
cl_khr_spir cl_khr_gl_event

NULL platform behavior
  clGetPlatformInfo(NULL, CL_PLATFORM_NAME, ...)  No platform
  clGetDeviceIDs(NULL, CL_DEVICE_TYPE_ALL, ...)   No platform
  clCreateContext(NULL, ...) [default]            No platform
  clCreateContext(NULL, ...) [other]              Success [AMD]
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_DEFAULT)  Success (1)
    Platform Name                                  AMD Accelerated Parallel
Processing
    Device Name                                    Ellesmere
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_CPU)  No devices found in
platform
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_GPU)  Success (1)
    Platform Name                                  AMD Accelerated Parallel
```

```
Processing
    Device Name                                     Ellesmere
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_ACCELERATOR)  No devices
found in platform
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_CUSTOM)  No devices found in
platform
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_ALL)  Success (1)
    Platform Name                                   AMD Accelerated Parallel
Processing
    Device Name                                     Ellesmere
```

pilote 20.10 CL Info

```
clinfo
```

```
Number of platforms                               1
  Platform Name                                   AMD Accelerated Parallel
Processing
  Platform Vendor                                 Advanced Micro Devices,
Inc.
  Platform Version                                OpenCL 2.1 AMD-APP
(3075.10)
  Platform Profile                                FULL_PROFILE
  Platform Extensions                             cl_khr_icd
cl_amd_event_callback cl_amd_offline_devices
  Platform Host timer resolution                  1ns
  Platform Extensions function suffix             AMD

  Platform Name                                   AMD Accelerated Parallel
Processing
Number of devices                                 1
  Device Name                                     Ellesmere
  Device Vendor                                   Advanced Micro Devices,
Inc.
  Device Vendor ID                                0x1002
  Device Version                                  OpenCL 1.2 AMD-APP
(3075.10)
  Driver Version                                  3075.10
  Device OpenCL C Version                         OpenCL C 1.2
  Device Type                                     GPU
  Device Board Name (AMD)                         Radeon RX 570 Series
  Device Topology (AMD)                           PCI-E, 0b:00.0
  Device Profile                                  FULL_PROFILE
  Device Available                                Yes
  Compiler Available                              Yes
  Linker Available                                Yes
  Max compute units                               32
  SIMD per compute unit (AMD)                     4
  SIMD width (AMD)                                16
  SIMD instruction width (AMD)                    1
```

```
  Max clock frequency                                1244MHz
  Graphics IP (AMD)                                  8.0
  Device Partition                                   (core)
    Max number of sub-devices                        32
    Supported partition types                        None
    Supported affinity domains                       (n/a)
  Max work item dimensions                           3
  Max work item sizes                                1024x1024x1024
  Max work group size                                256
  Preferred work group size (AMD)                    256
  Max work group size (AMD)                          1024
  Preferred work group size multiple                 64
  Wavefront width (AMD)                              64
  Preferred / native vector sizes
    char                                                    4 / 4
    short                                                   2 / 2
    int                                                     1 / 1
    long                                                    1 / 1
    half                                                    1 / 1
(cl_khr_fp16)
    float                                                   1 / 1
    double                                                  1 / 1
(cl_khr_fp64)
  Half-precision Floating-point support              (cl_khr_fp16)
    Denormals                                        No
    Infinity and NANs                                No
    Round to nearest                                 No
    Round to zero                                    No
    Round to infinity                                No
    IEEE754-2008 fused multiply-add                  No
    Support is emulated in software                  No
  Single-precision Floating-point support            (core)
    Denormals                                        No
    Infinity and NANs                                Yes
    Round to nearest                                 Yes
    Round to zero                                    Yes
    Round to infinity                                Yes
    IEEE754-2008 fused multiply-add                  Yes
    Support is emulated in software                  No
    Correctly-rounded divide and sqrt operations     Yes
  Double-precision Floating-point support            (cl_khr_fp64)
    Denormals                                        Yes
    Infinity and NANs                                Yes
    Round to nearest                                 Yes
    Round to zero                                    Yes
    Round to infinity                                Yes
    IEEE754-2008 fused multiply-add                  Yes
    Support is emulated in software                  No
  Address bits                                       64, Little-Endian
  Global memory size                                 8022630400 (7.472GiB)
  Global free memory (AMD)                           7815016 (7.453GiB)
```

```
  Global memory channels (AMD)                    8
  Global memory banks per channel (AMD)           16
  Global memory bank width (AMD)                  256 bytes
  Error Correction support                        No
  Max memory allocation                           4244635648 (3.953GiB)
  Unified memory for Host and Device              No
  Minimum alignment for any data type             128 bytes
  Alignment of base address                       2048 bits (256 bytes)
  Global Memory cache type                        Read/Write
  Global Memory cache size                        16384 (16KiB)
  Global Memory cache line size                   64 bytes
  Image support                                   Yes
    Max number of samplers per kernel             16
    Max size for 1D images from buffer            134217728 pixels
    Max 1D or 2D image array size                 2048 images
    Base address alignment for 2D image buffers   256 bytes
    Pitch alignment for 2D image buffers          256 pixels
    Max 2D image size                             16384x16384 pixels
    Max 3D image size                             2048x2048x2048 pixels
    Max number of read image args                 128
    Max number of write image args                8
  Local memory type                               Local
  Local memory size                               32768 (32KiB)
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  Local memory banks (AMD)                        32
  Max number of constant args                     8
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  Preferred constant buffer size (AMD)            16384 (16KiB)
  Max size of kernel argument                     1024
  Queue properties
    Out-of-order execution                        No
    Profiling                                     Yes
  Prefer user sync for interop                    Yes
  Profiling timer resolution                      1ns
  Profiling timer offset since Epoch (AMD)        1591853725436918849ns (Thu
Jun 11 07:35:25 2020)
  Execution capabilities
    Run OpenCL kernels                            Yes
    Run native kernels                            No
    Thread trace supported (AMD)                  Yes
    Number of async queues (AMD)                  2
    Max real-time compute queues (AMD)            0
    Max real-time compute units (AMD)             909198854
    SPIR versions                                 1.2
  printf() buffer size                            4194304 (4MiB)
  Built-in kernels                                (n/a)
  Device Extensions                               cl_khr_fp64 cl_amd_fp64
cl_khr_global_int32_base_atomics cl_khr_global_int32_extended_atomics
cl_khr_local_int32_base_atomics cl_khr_local_int32_extended_atomics
cl_khr_int64_base_atomics cl_khr_int64_extended_atomics
cl_khr_3d_image_writes cl_khr_byte_addressable_store cl_khr_fp16
```

```
cl_khr_gl_sharing cl_amd_device_attribute_query cl_amd_vec3 cl_amd_printf
cl_amd_media_ops cl_amd_media_ops2 cl_amd_popcnt cl_khr_image2d_from_buffer
cl_khr_spir cl_khr_gl_event

NULL platform behavior
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  clCreateContext(NULL, ...) [other]              Success [AMD]
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_DEFAULT)  Success (1)
    Platform Name                                 AMD Accelerated Parallel
Processing
    Device Name                                   Ellesmere
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_CPU)  No devices found in
platform
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_GPU)  Success (1)
    Platform Name                                 AMD Accelerated Parallel
Processing
    Device Name                                   Ellesmere
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_ACCELERATOR)  No devices
found in platform
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_CUSTOM)  No devices found in
platform
  clCreateContextFromType(NULL, CL_DEVICE_TYPE_ALL)  Success (1)
    Platform Name                                 AMD Accelerated Parallel
Processing
    Device Name                                   Ellesmere
```

Solution Alternative

testé sur debian testing bullseye (kernel 5.9.0-1) le paquet et ses dépendances s'installe très bien mais n'est pas fonctionnel dans blender 2.83.5

```
apt search mesa-opencl-icd
```

```
En train de trier... Fait
Recherche en texte intégral... Fait
mesa-opencl-icd/testing,now 20.1.9-1 amd64  [installé]
  free implementation of the OpenCL API -- ICD runtime
```

```
apt show mesa-opencl-icd
```

```
Package: mesa-opencl-icd
Version: 20.1.9-1
Priority: optional
Section: libs
Source: mesa
Maintainer: Debian X Strike Force <debian-x@lists.debian.org>
Installed-Size: 29,4 MB
```

```
Provides: opencl-icd
Depends: libclc-r600 (>= 0.2.0+git20180312-1~), libclc-amdgcn (>=
0.2.0+git20180312-1~), ocl-icd-libopencl1 | libopencl1, libc6 (>= 2.29),
libclang-cpp10, libdrm-amdgpu1 (>= 2.4.100), libdrm-nouveau2 (>= 2.4.66),
libdrm-radeon1 (>= 2.4.31), libdrm2 (>= 2.4.75), libelf1 (>= 0.142),
libexpat1 (>= 2.0.1), libgcc-s1 (>= 3.4), libllvm10 (>= 1:9~svn298832-1~),
libstdc++6 (>= 5.2), libzstd1 (>= 1.3.2), zlib1g (>= 1:1.1.4)
Homepage: https://mesa3d.org/
Tag: role::shared-lib
Download-Size: 4809 kB
APT-Manual-Installed: yes
APT-Sources: http://deb.debian.org/debian testing/main amd64 Packages
Description: free implementation of the OpenCL API -- ICD runtime
 This package contains the mesa implementation of the OpenCL (Open Compute
 Language) library, which is intended for use with an ICD loader. OpenCL
 provides a standardized interface for computational analysis on graphical
 processing units.
```

1)

N'hésitez pas à y faire part de vos remarques, succès, améliorations ou échecs !

2)

En informatique, le calcul parallèle consiste en l'exécution simultanée d'une même tâche, partitionnée et adaptée afin de pouvoir être répartie entre plusieurs processeurs en vue de traiter plus rapidement des problèmes plus grands.

3)

stable

4)

sous testing bullseye kernel 5.8.0-2 , par exemple

5)

Copie.sh

6)

ou à la souris

7)

utilisateur

8)

actuellement réservés à root