Tech Articles

Marc GPU runs.

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Abstract (Question)

Requirements and Process for Marc GPU

Description (Answer)

A) Prerequisites for using the GPGPU capability:

1)To use the GPGPU capability on Windows and Linux, one should have

(a) one or more NVIDIA CUDA-capable GPGPU cards with at least 1.5 GB on-board memory and

(b) NVIDIA Developer Drivers.

The necessary drivers can be downloaded from one of the following NVIDIA sites:

(i) http://developer.nvidia.com/cuda-toolkit-41;

(ii) http://www.nvidia.com/Download/index.aspx?lang=en-us (http://www.nvidia.com/Download/index.aspx?lang=en-us)

2) Graphics cards supported by the GPGPU capability:

The GPGPU capability in Marc 2012 was developed on NVIDIA Tesla and Quadro GPU computing products with compute capability 2.0 or higher and CUDA 4.1 or higher.

A list of supported card includes Tesla C20*, Tesla M20*, Tesla S20* and Quadro 6000 and Quadro plex 7000

3) The GPGPU capability is supported only on Windows 64 Linux 64-bit platforms with Intel hardware.

B) How to check graphics cards are installed on my machine?

One can use the deviceinfo utility for brief information about GPGPU cards installed on a host machine.

Alternatively, the nvidia-smi utility supplied by NVIDIA can be used for detailed information about GPGPU cards installed on a host machine.

The utility is distributed as part of the Marc standard distribution and is located in the tools directory of the Marc installation directory.

C) Keywords for GPU mode:

• -gpuid 0 (use GPU 0)

• -gpuid 0:1 (use GPUs 0 and 1 in a DDM analysis; if there are more domains than GPUs, GPUs will be assigned in a round-robin fashion)

• -gpuid auto (leave the optimal GPU selection to Marc)

D) How to verify that the GPGPU capability is actually used by Marc?

If Marc uses the GPGPU capability, then it prints a user information message in the .out file like:

using gpu id <> : <card name> "

E) Common Errors:

1) "Exit 63" error:

Marc will issue this exit message when the "-gpuid <>" option is used along with solver type 8 on a non-supported platform.

The GPGPU capability in Marc is supported only on Windows 64 and Linux 64-bit platform with Intel hardware.

2) Missing library "nvcuda.dll" on Windows, or a missing shared object file "libcuda.so" on Linux:

The "nvcuda.dll" or "libcuda.so" is part of NVIDIAs CUDA driver.

This error will occur when CUDA drivers are not installed on the host machine. One can use the deviceinfo utility for further troubleshooting.

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