

GROMACS - Task #2522

Feature # 2054 (Accepted): PME on GPU

Task # 2453 (Resolved): PME OpenCL porting effort

OpenCL context duplication

05/25/2018 12:38 PM - Aleksei lupinov

Status:	New
Priority:	Normal
Assignee:	
Category:	
Target version:	2020
Difficulty:	uncategorized
Description	
<p>Current PME OpenCL code creates its own <code>cl_context</code> in <code>PmeGpuProgramImpl</code>, based on input <code>gmx_device_info_t*</code>. NB with OpenCL also creates its own OpenCL context. OpenCL contexts can correspond to multiple devices: https://www.khronos.org/registry/OpenCL/sdk/1.2/docs/man/xhtml/classDiagram.html</p> <p>NB and PME not sharing same <code>cl_context</code> on the rank can even be detrimental - it's possible they would not have access to each other's <code>cl_mem</code>'s.</p> <p><code>cl_context</code> management should be taken away from <code>PmeGpuProgramImpl/nbnxn_gpu_create_context()</code> and put into a new class, which would get constructed from a set of <code>gmx_device_info_t*</code>.</p> <p>The instance of this class should get created based on the GPU task assignment.</p> <p>PME/NB still need to store references to this object to get the <code>cl_context/gmx_device_info_t*</code> out of it.</p>	
Related issues:	
Related to GROMACS - Feature #3115: Device stream manager New	

Associated revisions

Revision b2a95c76 - 05/28/2018 03:11 PM - Aleksei lupinov

Support persistent device context-derived data in PME tests

PME OpenCL will need to not recompile kernels for running each unit test. With this in mind, a persistent `PmeGpuProgram` class is tasked with GPU kernel setup, and passed around, using a typedef. The purpose of the class is to hold the PME program data that should only be set up once and live forever for the given device context. `PmeGpuProgramImpl` structure is now tasked with managing function pointers to the CUDA kernels' instances, and will later be tasked with compiling OpenCL kernels.

Refs #2453, #2522

Change-Id: I85a01bfc92ec3a108825414b14e2be3731433c9a

History

#1 - 05/25/2018 01:51 PM - Aleksei lupinov

- Description updated

#2 - 05/28/2018 12:16 PM - Aleksei lupinov

- Description updated

#3 - 05/28/2018 03:13 PM - Gerrit Code Review Bot

Gerrit received a related patchset '19' for Issue [#2522](#).
Uploader: Mark Abraham (mark.j.abraham@gmail.com)
Change-Id: gromacs~master~I85a01bfc92ec3a108825414b14e2be3731433c9a
Gerrit URL: <https://gerrit.gromacs.org/7818>

#4 - 10/30/2018 12:07 PM - Mark Abraham

- Target version changed from 2019 to 2020

#5 - 10/03/2019 10:47 PM - Szilárd Páll

- Related to Feature #3115: Device stream manager added