

## GROMACS - Task #3033

Task # 3047 (Feedback wanted): Set required versions for GROMACS 2021

### Clean up and modernize googletest bundling and usage

07/11/2019 06:58 PM - Eric Irrgang

<b>Status:</b>	In Progress
<b>Priority:</b>	Normal
<b>Assignee:</b>	
<b>Category:</b>	build system
<b>Target version:</b>	2021-refactoring
<b>Difficulty:</b>	uncategorized
<b>Description</b>	
<p>There is a little bit of noise left from <a href="https://gerrit.gromacs.org/c/gromacs/+7502">https://gerrit.gromacs.org/c/gromacs/+7502</a> but there is also some house keeping we can do.</p> <p>Because we have moved to CMake 3.9, we could start using the <a href="https://cmake.org/cmake/help/v3.9/module/GoogleTest.html">https://cmake.org/cmake/help/v3.9/module/GoogleTest.html</a> and <a href="https://cmake.org/cmake/help/latest/module/GoogleTest.html#command:gtest_add_tests">https://cmake.org/cmake/help/latest/module/GoogleTest.html#command:gtest_add_tests</a></p> <p>We would also like to store a single copy of the googletest source in the repository, but we need to find a good way to use the bundled source when building the python_packaging/sample_restraint tests in the same build tree.</p>	
<b>modernizing usage in CMake</b>	
<p>0. Reduce use of global CMake variables for tests and test support targets (<a href="https://gerrit.gromacs.org/c/gromacs/+12197">https://gerrit.gromacs.org/c/gromacs/+12197</a>)</p> <p>1. Move custom googletest CMakeLists.txt file out of the way so that we can have a more standard googletest distribution in place.</p> <p>2. Remove global definitions of variables that are redundant with properties of the gtest and gmock targets.</p> <p>3. Import missing googletest files that allow for standard definitions of gtest and gmock targets. Replace GROMACS custom targets with standard targets.</p> <p>4. Migrate consuming targets from variable usage to target dependencies and other modern CMake tools.</p>	
<b>Update: post-release-2020</b>	
<p>Mitigation has included a lot of infrastructure in the form of additional CMake macros. There are also several patches applied to the googletest source that are non-trivial to reapply. Maintainability may be improved by</p> <ul style="list-style-type: none"><li>• simplifying infrastructure in terms behavior from more recent versions of CMake</li><li>• updating to more recent googletest in need of less patching</li><li>• maintaining the googletest patch separate from the googletest source</li><li>• isolating the googletest CMake environment, such as with ExternalProject, to reduce the need to manage multiple sets of compiler flags (warning suppressions)</li></ul>	
<p>The current issue can be closed when these proposals have been applied, rejected, or moved to separately tracked issues.</p>	
<b>Related issues:</b>	
Related to GROMACS - Task #3027: Move sample_restraint development from GitHu...	<b>Closed</b>
Related to GROMACS - Task #2756: gmxapi integration testing	<b>In Progress</b>
Related to GROMACS - Bug #3198: Fails to build on FreeBSD with Clang since f7...	<b>New</b>

#### Associated revisions

##### Revision e97a85b3 - 07/18/2019 03:36 PM - Eric Irrgang

Remove extraneous file.

A file was overlooked in Change-Id: I0d847bc2490935e0ddc3170b674d7460a5a08506

Refs #3033

Change-Id: I4fb6af0b6d51b477091c6305872c0c7124e754d6

##### Revision 9efd4499 - 08/02/2019 11:09 AM - Eric Irrgang

Reduce conflicts with external googletest files.

Move the custom googletest CMakeLists.txt up a level to src/external so that we can just drop in the downloaded googletest bundle as it is distributed. In a future change, we can use the gmock and gtest targets defined in that infrastructure instead of sculpting our own.

Refs #3033

Change-Id: I4c8ed84195f7673fd798301ba149de8c122ccb05

#### Revision 1e4d5573 - 08/06/2019 03:19 PM - Eric Irrgang

Convert test infrastructure targets to static library targets.

Convert CMake function ``gmx_add_unit_test_object_library()`` to ``gmx_add_unit_test_library()`` and produce STATIC instead of OBJECT targets. Update ``mdrun_test_objlib`` to ``mdrun_test_infrastructure`` using the helper function.

This allows the target to use ``target_link_libraries`` to get the compiler flags, definitions, and include directories necessary for compatibility with ``gmock`` and other resources. Resolves some noisiness from googletest headers under the standard GROMACS ``-Wundef`` flag. Relevant to related change that migrate from global GMOCK variables to modern usage of gtest and gmock CMake targets.

Removed unnecessary TESTUTILS\_LIBS variable.

Refs #3033

Change-Id: Id5b47774b679e8e205f899ea80df65153da44516

#### Revision f7940fa0 - 08/07/2019 10:13 PM - Eric Irrgang

Use gmock and gtest targets from googletest-release-1.8.0

Import a couple of missing files from the googletest-release-1.8.0 and switch to the upstream definition of the ``gmock`` and ``gtest`` targets.

Removed some outdated content from README.Gromacs

Refs #3033

Change-Id: laefe4d11b01a3d37e162d7d00bae7ba34a0b5b4e

#### Revision 298f4798 - 08/13/2019 01:25 PM - Eric Irrgang

Improve sample\_restraint project integration.

Build for testing as part of a gmxapi enabled GROMACS build. Fix some errors and collisions.

- Use distinct CMake options for using bundled pybind sources in gmxapi Python package and sample\_restraint package.
- Distinguish between "umbrella" build and standalone build when trying to determine googletest source for sample\_restraint.
- Avoid a couple of warnings about unused variables.
- Use GTest::Main target more consistently for sample\_restraint tests.

Refs #2056

Refs #3027

Refs #3033

Change-Id: I55d20e6228779ecc726587231c83298356192f6f

## History

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### #1 - 07/17/2019 05:09 PM - Eric Irrgang

- Related to Task #3027: Move sample\_restraint development from GitHub to Gerrit added

### #2 - 07/17/2019 05:10 PM - Eric Irrgang

- Related to Task #2756: gmxapi integration testing added

### #3 - 07/17/2019 05:10 PM - Eric Irrgang

- Description updated

#### #4 - 07/23/2019 12:02 PM - Eric Irrgang

Eric Irrgang wrote:

We would also like to store a single copy of the googletest source in the repository, but we need to find a good way to use the bundled source when building the python\_packaging/sample\_restraint tests in the same build tree.

Per discussion with Mark, we can use the googletest distribution bundled in src/external to configure and build a (sub-/external) project that we can then get targets from with add\_subdirectory, a la

<https://github.com/google/googletest/blob/master/googletest/README.md#incorporating-into-an-existing-cmake-project>

This entails migrating our customizations and custom src/external/googletest/CMakeLists.txt into more "standard" form (however it is we are supposed to make customizations) so that the 'gtest', 'gtest\_main', and 'gmock' targets are defined such that aliases to them will behave the way GTest::Main, etc, are expected to behave.

#### #5 - 07/23/2019 02:36 PM - Eric Irrgang

Also to do: update COPYING file.

#### #6 - 07/29/2019 01:41 PM - Eric Irrgang

- Description updated

#### #7 - 08/10/2019 07:34 AM - Mark Abraham

- Status changed from New to In Progress

#### #8 - 08/14/2019 04:48 PM - Eric Irrgang

Remaining tasks under this issue include

- updating to googletest 1.8.1 (or 1.9)
- migrating to the GoogleTest CMake module and gtest\_add\_tests()

but the primary infrastructure updates are done.

#### #9 - 08/16/2019 09:54 AM - Mark Abraham

Eric Irrgang wrote:

Remaining tasks under this issue include

- updating to googletest 1.8.1 (or 1.9)

I don't think that offers a compelling advantage for GROMACS 2020 to prioritize more time on it now, but on principle it makes sense to do for GROMACS 2021

- migrating to the GoogleTest CMake module and gtest\_add\_tests()

Likewise, I suggest we defer that improvement

#### #10 - 08/23/2019 03:33 PM - Mark Abraham

- Target version changed from 2020-infrastructure-stable to 2021-infrastructure-stable

- Parent task set to #3065

#### #11 - 08/24/2019 05:23 PM - Mark Abraham

- Parent task changed from #3065 to #3047

#### #12 - 01/16/2020 04:37 PM - Eric Irrgang

- Related to Bug #3198: Fails to build on FreeBSD with Clang since f7940fa01e8b6ef0703236b53721cca2d81b40d3 Use gmock and gtest targets from googletest-release-1.8.0 added

#### #13 - 01/16/2020 04:50 PM - Eric Irrgang

- Description updated

- Target version changed from 2021-infrastructure-stable to 2021-refactoring