

(quasi) CI Testing, etc. and Open MPI

Open MPI Developers Workshop – January 2015

Howard Pritchard – LANL

Topics

- Current state of Open MPI Testing
- Some concerns that have been voiced
- Pull Requests and Continuous Integration (CI) Testing
- Mechanics of CI Testing and more – open discussion

Current State of Open MPI Testing

- MLNX has added a github jenkins hook to open-mpi/ompi and open-mpi/ompi-release that is triggered when a PR is created with either of these repos as the merge target
 - Light weight, runs in about 15 minutes (usually)
 - Smoke test, not comprehensive
 - HIGHLY VISIBLE, **BIG READ X** if test doesn't pass
- MTT (MPI Testing Tool)
 - Comprehensive, heavy weight (if many tests run), not a good candidate for CI testing (can take over 2 hours to run the IBM test suite on a Cray XC using 4 nodes)
 - Requires open systems to be useful (problematic for sites with restricted access to internet)

Current Jenkins/PR Integration

open-mpi / ompi

Unwatch 39 Star 38 Fork 32

Issues Pull requests Labels Milestones Filters is:pr is:open New pull request

<input type="checkbox"/>	🔗 10 Open ✓ 78 Closed	Author	Labels	Milestones	Assignee	Sort
<input type="checkbox"/>	added unit test for pmix functionality ✓ #360 opened 3 hours ago by elenash					1
<input type="checkbox"/>	Topic/orte cr continue like restart ✓ #348 opened 11 days ago by adrianreber					4
<input type="checkbox"/>	BTL 3.0 ✓ enhancement #339 opened 19 days ago by hjelmn Open MPI 1.9					11
<input type="checkbox"/>	Introduce call to idle for a short period of time. ✗ #312 opened on Dec 9, 2014 by hjelmn					14
<input type="checkbox"/>	Topic/atomic fetch ✗ enhancement #293 opened on Nov 28, 2014 by bosilca Open MPI 1.9					5
<input type="checkbox"/>	Topic/enable atomics ✓ enhancement #288 opened on Nov 25, 2014 by bosilca					11
<input type="checkbox"/>	Poc/memory leaks ✓ bug #279 opened on Nov 20, 2014 by ggouaillardet					14
<input type="checkbox"/>	yoda: avoid useless memcopy in mca_spmi_yoda_get when the btl is get capa... ✓ #270 opened on Nov 12, 2014 by ggouaillardet					7
<input type="checkbox"/>	RFC/weak symbols status ignore ✓ bug #232 opened on Oct 13, 2014 by ggouaillardet Open MPI 1.8.5					5
<input type="checkbox"/>	Fix --with-fortran=... logic ✓ bug					5

MPI Testing Tool (MTT)

All phases
 MPI install
 Test build
 Test run

Time range:	past 24 hours	Hardware:	all	Show ▾
Category:	all	OS:	all	Show ▾
Local username:	all	MPI name:	all	Show ▾
Platform name:	all	MPI version:	all	Show ▾

[\[Reset form\]](#)
[\[Start over\]](#)
[Summary](#)
[Detail](#)
[Performance](#)
[\[Preferences\]](#)
[\[Advanced\]](#)

time (GMT): 2015-01-27 11:48:53
age (GMT): 2015-01-26 11:48:53 - 2015-01-27 11:48:53
 MPI install, Test build, and Test run (*Via Summary*)
of rows: 16

Absolute date range: [Create p...](#)
Relative date range: [Create p...](#)

Org ▼	Platform name ▼	Hardware ▼	OS ▼	MPI name ▼	MPI version ▼	MPI install		Test build		Test run			
						Pass ▼	Fail ▼	Pass ▼	Fail ▼	Pass ▼	Fail ▼	Skip ▼	Timed ▼
oft	Fortran_15.0_32_CentOS5.11	ia32	Linux	ompi-nightly-master	dev-756-ga4c1faa	1	0	1	0	23	1	0	0
oft	Fortran_15.0_32_CentOS5.11	ia32	Linux	ompi-nightly-v1.6	1.6.6rc1r31736	1	0	1	0	24	0	0	0
oft	Fortran_15.0_32_CentOS5.11	ia32	Linux	ompi-nightly-v1.8	v1.8.4-52-g9813dbb	1	0	1	0	30	0	0	0
oft	Fortran_15.0_64_RHEL6.4	x86_64	Linux	ompi-nightly-master	dev-756-ga4c1faa	1	0	1	0	24	0	0	0
oft	Fortran_15.0_64_RHEL6.4	x86_64	Linux	ompi-nightly-v1.6	1.6.6rc1r31736	1	0	1	0	24	0	0	0
oft	Fortran_15.0_64_RHEL6.4	x86_64	Linux	ompi-nightly-v1.8	v1.8.4-52-g9813dbb	1	0	1	0	30	0	0	0
zo	cisco-community_usNIC_build=mtt-usnic-294	x86_64	Linux	ompi-nightly-master	dev-756-ga4c1faa	34	0	305	0	13995	84	152	115
zo	cisco-usnic_usNIC_build=mtt-usnic-294	x86_64	Linux	ompi-nightly-master	dev-756-ga4c1faa	3	0	32	0	7297	27	66	44
lingen	esslingen-ppc64	ppc64	Linux	ompi-nightly-master	dev-754-ga170732	1	0	2	0	216	0	29	0
lingen	esslingen-psm	x86_64	Linux	ompi-nightly-master	dev-754-ga170732	3	0	3	0	0	0	0	3
i	laki	x86_64	Linux	ompi-nightly-trunk	dev-754-ga170732	1	0	1	0	1	0	0	0
l	carver-pgi-mpirun	x86_64	Linux	ompi-nightly-trunk	dev-756-ga4c1faa	1	0	1	0	0	0	0	0
l	Cray-XC-5.2-gnu-aprun	x86_64	Linux	ompi-nightly-trunk	dev-756-ga4c1faa	1	0	4	0	0	0	0	0
l	Cray-XC-5.2-gnu-aprun-short	x86_64	Linux	ompi-nightly-trunk	dev-754-ga170732	1	0	4	0	8	0	0	0
dia	ivy cluster	x86_64	Linux	ompi-nightly-master	.	1	0	5	0	2525	50	230	11
dia	ivy cluster	x86_64	Linux	ompi-v1.8	v1.8.4-52-g9813dbb	2	0	10	0	4600	0	426	2
						54	0	373	0	28797	162	903	175

3 sec. (PHP: 0.32 / SQL: 0.023)

IT contribution graph (updated nightly): [All Time](#) or [1 Year Window](#)

Concerns with Current CI Testing

- Not obvious to all stake holders what the MLNX test script is testing
- Are developers developers beginning to rely on it, and not doing sufficient testing prior to creating a PR?
- What good is CI testing if its only done on PRs? What about non-trivial commits that are checked directly in to master?
- Likely push back from senior Open MPI developers

Mechanics of testing problem

Commit policy

Some Suggestions for Enhancement to CI Testing

- Could use something more comprehensive than current MLNX jenkins smoke test, but lightweight enough to run as part of testing in a PR workflow
- Have interested stake holders run CI test for sanity check in addition to MLNX, even if only a simple test to make sure `./autogen.sh; ./configure --prefix=foobar; make check` works for your environment

*... to make the jenkins integration *really* awesome, we need to be able to distribute the jenkins work around and have some level of smoke tests be run in different environments (I don't even know if this is possible -- this is one of the things we wanted to discuss in Dallas). Each site could run whatever level of smoke testing that they want (from trivial to a bit more intensive).*

Jeff Squyres

PRs and Open MPI

- Want to make this a productive tool that fits with GitHub's *social coding* software development model
 - Easy enough to use that it encourages contributions (fixes and features) from the broader community
 - Good for peer review of commits that impact the broader community
 - PRs shouldn't languish in limbo
- Robust enough that PR method traps problems BEFORE they get into master if at all possible, much better than post commit scrambles

Strawman PR policy

- Some commits don't need to go through PR:
 - Commits to vendor/contributor specific code, e.g. yalla or usNIC BTL
 - Exception here is m4 code that will end up in every stake holders output *configure* file
 - Exception here is openib BTL. **ANYONE MODIFYING THIS BTL HAS TO GET SIGN-OFF FROM MLNX** since they are the ones stuck supporting it. Yes this includes "performance bugs".
 - White space changes
 - Bookkeeping/documentation changes
 - Ralph on Sundays (? , isn't this start of work week in Israel)
- Any code that impact multiple stake holders has to go through PR
- For really big changes (e.g. BTL or MTL interface change), developer should
 - Create topic branch in their github repo
 - Create PR request (include an RFC like writeup in the PR request)
 - Stakeholders test the topic branch against their MTT setup, etc.
 - Stakeholders sign off on the PR
 - Developer merges PR into master

Jenkins CI Testing mechanics

- Key here is visibility – want for PRs to be marked go/no go before going in to master
- Should we set up a Jenkins master on a vendor-neutral system (perhaps a VM at IU)?
- Jenkins master drives slave nodes provided by stake holders
- Slave nodes have env. specific setups for each stake holder

Expanding Jenkins usage issues:

- Master/slave may not be good
 - Need keywordless ssh?
 - Need jenkins “user” account
- Have a “repeater” script at IU to “repeat” github HTTP reqs. to stake holders’ jenkins/whatever – don’t need this
- how to get results back to github
- Use bots to add comments to a PR
- Magic phrase for driving tests by bots
- Assign to github gurus

Who will drive this:

- David G., Eugene V., Mike Dubmann – develop bot
- Stakeholders need to figure out what they want to test with their “bot”
- Iterate on Commit Policy – when is PR bypass allowed (Howard P.)

ACTION ITEMS