



Meeting of the Technical Steering Committee (TSC) Board

Wednesday, March 11th, 2020
11:00am ET

Meeting Logistics

- <https://zoom.us/j/556149142>
- United States : +1 (646) 558-8656
 - Meeting ID: 556 149 142

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Agenda/Updates

- Announcements:
 - Budget for 2020 Intern program (targeting max of 4 students) has been approved
- Upcoming deadlines:
 - SC'20
 - Tutorials?: Due April 16, 2020 - *Q: do we want to consider this?*
 - BoFs: Due July 31, 2020
- ARM HPC compiler updates
- 2.0 build status
- Continued PEARC'20 tutorial discussion (csim)

ARM HPC compiler updates

- Have enabled more “arm1” variants for relevant development packages in OBS
 - working through build failures
 - issue created to track failures (<https://github.com/openhpc/ohpc/issues/1153>)
- scalapack, scotch, and superlu have been updated to build successfully (*Srinath Vadlamani @arm*)
- working on extrae, mumps, plasms, phdf5, sionlib, hypre

Name	↑	Changed	↓
adios-arm1-mpich Link		2 days ago	
adios-arm1-openmpi4 Link		2 days ago	
arm-compilers-devel		8 days ago	
boost-arm1-mpich Link		15 days ago	
boost-arm1-openmpi4 Link		15 days ago	
dimemas-arm1-mpich Link		14 days ago	
dimemas-arm1-openmpi4 Link		14 days ago	
extrae-arm1-mpich Link		14 days ago	
extrae-arm1-openmpi4 Link		14 days ago	
fftw-arm1-mpich Link		14 days ago	
fftw-arm1-openmpi4 Link		14 days ago	
gsl-arm1 Link		14 days ago	
hdf5-arm1 Link		15 days ago	
hypre-arm1-mpich Link		14 days ago	
hypre-arm1-openmpi4 Link		14 days ago	
lmod-defaults-arm1-mpich Link		about 10 hours ago	
lmod-defaults-arm1-openmpi4 Link		about 10 hours ago	
metis-arm1 Link		15 days ago	
mpich-arm1 Link		15 days ago	
mumps-arm1-mpich Link		14 days ago	
mumps-arm1-openmpi4 Link		14 days ago	
netcdf-arm1-mpich Link		2 days ago	
netcdf-arm1-openmpi4 Link		2 days ago	
netcdf-cxx-arm1-mpich Link		2 days ago	
netcdf-cxx-arm1-openmpi4 Link		2 days ago	
netcdf-fortran-arm1-mpich Link		2 days ago	
netcdf-fortran-arm1-openmpi4 Link		2 days ago	
omb-arm1-mpich Link		14 days ago	
omb-arm1-openmpi4 Link		14 days ago	
openmpi-arm1 Link		about 1 month ago	
pdt toolkit-arm1 Link		6 days ago	
petsc-arm1-mpich Link		14 days ago	



2.0 Build Status

- Have enabled a good number of packages in 2.0 Factory
 - introduction of arm1 compiler variant means 10 compiler/MPI permutations for MPI-based builds

Administrative Tools

Package	Built?	Notes
conman	✓	
docs	✓	
examples	✓	
ganglia		
genders	✓	
lmod-defaults	✓	added (3/10/20)
losh	✓	
mrsh	✓	fixed (3/8/20)
nagios		
nagios-plugins		
ndoutils		
nhc	✓	added (3/10/20)
nrpe		
pdsh	✓	
prun	✓	
test-suite	✓	

Compiler Families

Package	Built?	Notes
gcc9	✓	
intel-compatibility	✓	
arm-compatibility	✓	
llvm		

Development Tools

Package	Built?	Notes
easybuild	✓	
autoconf	✓	
automake	✓	
cmake	✓	
hwloc	✓	
libtool	✓	
python-mpi4py		Adrian built subset ok
python-numpy		Adrian built subset ok
python-scipy		Adrian built subset ok
spack	✓	[still targets root usage though]
valgrind	✓	

MPI Families

Package	Built?	Notes
impi-compatibility	✓	no longer requires install of intel compat. package
mpich	✓	
mvapich2	✓	
openmpi4	✓	

Serial Libs

Package	Built?	Notes
R	✓	
GSL	✓	
metis	✓	
openblas	✓	
plasma	X	need tweaks for arm1/intel blas
superlu	✓	arm1 fixed (3/9/20)

2.0 Build Status (cont.)

Parallel Libraries

Package	Built?	Notes
boost	X	intel error
fftw	✓	build fixed
hypre	X	intel/arm1 blas issue
mfem	X	needs deps
mumps	X	arm1/impi issue
opencoarrays	X	leap/openmpi4 failures
petsc	X	intel/arm1 issue
scotch	✓	arm1 fixed (3/9/20)
scalapack	✓	arm1 fixed (3/9/20)
slepc	X	waiting on petsc
superlu_dist	X	.spec problem (3/11/20)
trilinos		Adrian built subset ok

Resource Management

Package	Built?	Notes
PBS Pro	X	need libical-devel on aarch/centos
pmix	✓	
slurm	✓	

Performance Tools

Package	Built?	Notes
dimemas	X	need some boost builds, suse failures
extrae	X	arm1 failures
geopm		Adrian built subset ok
imb		
likwid		
msr-safe		
omb	✓	3/4/20
papi	✓	
paraver	✓	added 3/5/20
pdtoolkit	X	intel/leap failure (3/5/20)
scalasca	X	need scorep deps (3/5/20)
scorep	X	variety of issues (3/5/20)
tau		Adrian built subset ok

Runtimes

Package	Built?	Notes
charliecloud		
ocr		
singularity	X	go problems (3/9/20)

Provisioning

Package	Built?	Notes
warewulf	✓	starting to run in CI (3/10/20)

2.0 Build Status (cont)

- Current package counts:
 - ~800 RPMs as of 3/11/2020

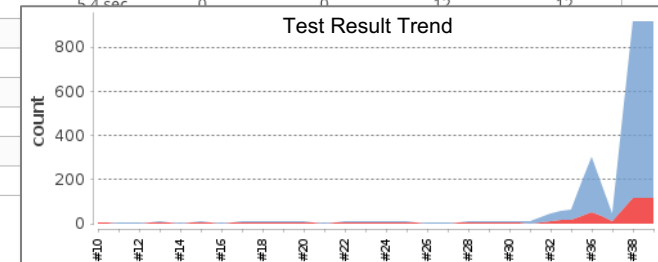
Base OS	aarch64	x86_64	noarch
CentOS 8	138	244	29
Leap 15	135	233	29

2.0 (cont)

- Mentioned last time that next big-ticket item was provisioning
 - have a basic working WW build now: have been testing x86/centos-8 first
 - variety of issues encountered, pulling from development branch of WW and adding more patches to work with our installation recipes
 - happy to report that basic provisioning of compute nodes is running in a CI job!
- Variety of failures from Jenkins installation test due to missing builds, but jobs are now running in SLURM
 - 610 user-level tests passing
 - expect 822 total for this ethernet only case (so sitting at 74% currently)

All Tests

Class	Duration	Fail (diff)	Skip (diff)	Pass (diff)	Total (diff)
Boost	32 sec	0	0	71 +71	71 +71
Boost-MPI	18 sec	6 +6	0	20 +20	26 +26
Compilers	1.9 sec	0	0	14 +14	14 +14
Dimemas	9.9 sec	0	0	14 +14	14 +14
Extrae	14 sec	2 +2	0	16 +16	18 +18
FTW	12 sec	1 +1	0	19 +19	20 +20
GSL	41 sec	27 +27	0	31 +31	58 +58
HDF5	8.2 sec	0	0	181 +71	181 +71
HWLOC	0.58 sec	0	0	9 +9	9 +9
Hypre	36 sec	12 +12	0	30 +30	42 +42
MPI	19 sec	6 -1	0	20 +1	26
MUMPS	13 sec	5 +5	0	9 +9	14 +14
MiniFE	39 sec	2	0	8	10
NetCDF	6.7 sec	0	0	68 +68	68 +68
PAPI	21 sec	0	0	25 +25	25 +25
PETSc	13 sec	4 +4	0	20 +20	24 +24
PHDF5	5.7 sec	2	0	9	11
PLASMA	2.4 sec	0	0	10 +10	10 +10
PNETCDF	11 sec	4	0	9	13
PTScotch	8.5 sec	3 +3	0	21 +21	24 +24
R	27 sec	1 +1	0	7 +7	8 +8
SCOTCH	0.71 sec	0	0	12 +12	12 +12
SLEPc	15 sec	4 +4	0	18 +18	22 +22
SUPERLU	1.1 sec	0	0	4	4
Scalasca	20 sec	3 +3	0	15 +15	18 +18
Valgrind	1.8 sec	0	0	10 +10	10 +10
/apps/hpcg	3.6 sec	10	0	4	14
charliecloud	0 ms	5	0	0	5
easybuild	6 sec	0	0	3	3
metis	2.6 sec	0	0	13 +13	13 +13
modules	5.4 sec	0	0	12	12
notest					
omb					
openblas					
scalapack					
tests					
user-env					



2.0 (cont)

- Some provisioning gotchas:
 - centos-8 now uses dnf
 - can still use yum, but all roads lead thru dnf
 - installing into chroot can expose issues with current version of dnf, consider:

```
# yum --installroot /tmp/foo4 install bash
```

```
[BaseOS]
name=CentOS-$releasever - Base
OK #mirrorlist=http://mirrorlist.centos.org/?release=$releasever&arch=$basearch&repo=BaseOS&infra=$infra
No Workie #baseurl=http://mirror.utexas.edu/$contentdir/$releasever/BaseOS/$basearch/os/
OK baseurl=http://mirror.utexas.edu/centos/8.1.1911/BaseOS/x86_64/os/
gpgcheck=1
enabled=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-centosofficial
```

appears to be a gotcha with dnf version in centos8.1; newer version from Stream works ok with all of the above

2.0 (cont)

- Some provisioning gotchas (cont):
 - previously we owned the build of munge (munge-ohpc)
 - per previous discussions, we decided to rely on distro version instead
 - reintroduces a problem related to consistency of "munge" user/group id creation
 - note that munge creates user/group for itself if not available
 - we need munge on SMS and compute nodes
 - in WW, this means munge is installed into chroot for VNFS assembly
 - no guarantee that munge uid/gid will be the same on host and inside the chroot
 - our recipes suggest synchronizing users across the system via WW file synchronization of {passwd,shadow,groups}
 - the gotcha is that munge cannot start on a compute node because the uid/gid provided from SMS is different than what it created initially in chroot
 - this means SLURM does not work and all our tests go south
 - we dealt with this previously by suggesting a uid/gid in munge scriptlets
 - to work around now, am suggesting to copy passwd/groups from SMS into chroot prior to installing munge:
 - BETTER IDEA: add munge uid/gid creation in ohpc-slurm-client
 - or, create munge-ohpc package that only created uid/gid...

```
# Add OpenHPC components to compute instance
cp /etc/passwd /etc/group $CHROOT/etc
yum -y --installroot=$CHROOT install ohpc-slurm-client
```

2.0 (cont)

- Next up:
 - enable python3 components
 - continuing working through missing builds
 - enable CI for Leap15 and aarch64
- Given how big of a change everything is (particularly on rhel side), starting to think we may want to put out a 2.0 tech preview first to let folks try things out
 - and to perhaps make things available prior to having every single component sorted out....

PEARC'20 Tutorial Discussion (csim)

- focus on staging ohpc cluster on ec2
- telecon: Tuesday next week (demo of EC2 installation framework)