



OpenHPC Update

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FOSDEM 2019
February 03

Agenda:

What is OpenHPC?



Agenda:

Why OpenHPC?



Agenda:

What is OpenHPC?



Agenda:

What is OpenHPC (again)?



Agenda: Future Changes



What is OpenHPC?



Software Repository



yum and zypper



CentOS 7 and SLES 12



x86_64 and aarch64



Why OpenHPC?



Multiple Compilers



Multiple MPIs



Three compilers
Two versions each
Already six permutations



Six compiler permutations
Three MPIs
Two versions each
Already 36 permutations



Common setup for many HPC sites



What is OpenHPC?



Community effort to reduce duplication



OpenHPC: Mission and Vision

Vision: OpenHPC components and best practices will enable and accelerate innovation and discoveries by broadening access to state-of-the-art, open-source HPC methods and tools in a consistent environment, supported by a collaborative, worldwide community of HPC users, developers, researchers, administrators, and vendors.



OpenHPC: Mission and Vision

Mission: to provide a reference collection of open-source HPC software components and best practices, lowering barriers to deployment, advancement, and use of modern HPC methods and tools.



OpenHPC: Current Project Members



OpenHPC: Current TSC Members

- Reese Baird, Intel (Maintainer)
- Brayford, LRZ (Maintainer)
- Coulter, Indiana University (End-User/Site Representative)
- Chris Downing, Red Oak Consulting (Maintainer)
- Craig Gardner, SUSE (Maintainer)
- Renato Golin, Linaro (Testing Coordinator)
- Michael Karo, Altair (Maintainer)
- Janet Lebens, Cray (Maintainer)
- Thomas Moschny, ParTec (Maintainer)
- Takayuki Okamoto, Fujitsu (Maintainer)
- Kevin Pedretti, Sandia National Laboratory (Maintainer)
- Paul Peltz, Los Alamos National Laboratory (Maintainer)
- Nam Pho, Harvard Medical School (Maintainer)
- Cyrus Proctor, Texas Advanced Computing Center (Maintainer)
- Adrian Reber, Red Hat (Maintainer)
- Karl W. Schulz, UT Austin (Project Lead, Testing Coordinator)
- Jeff Schutkoske, Cray (Component Development Representative)
- Derek Simmel, Pittsburgh Supercomputing Center (End-User/Site Representative)
- Chris Simmons, UT Dallas (Maintainer)
- Nirmala Sundararajan, Dell (Maintainer)

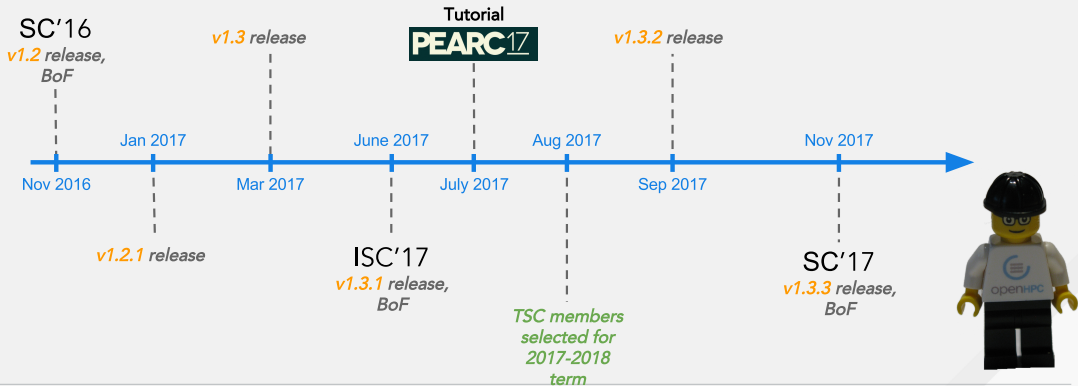




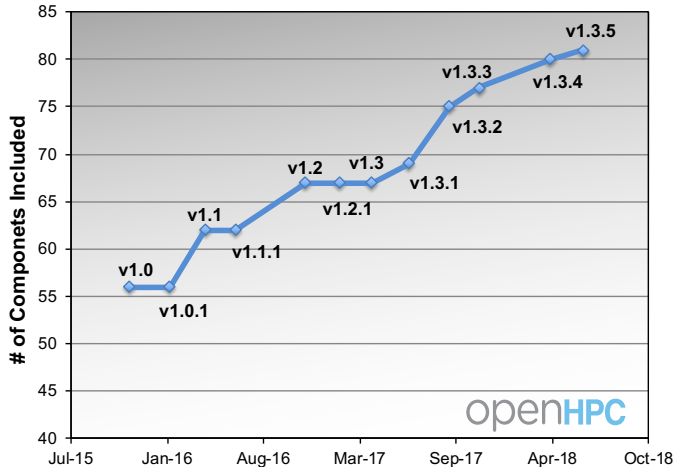
Building Blocks: Pick and Choose



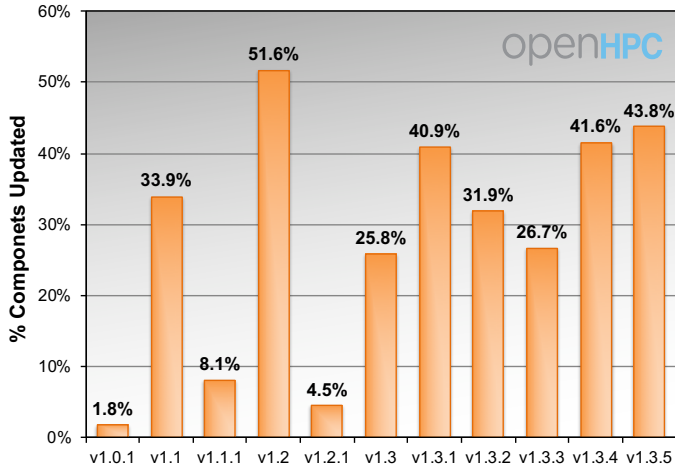
OpenHPC: Project History



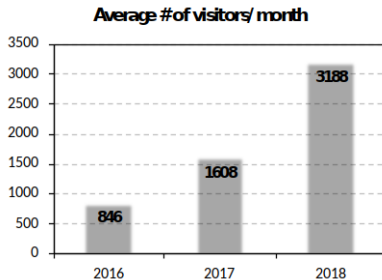
OpenHPC: Number of Components



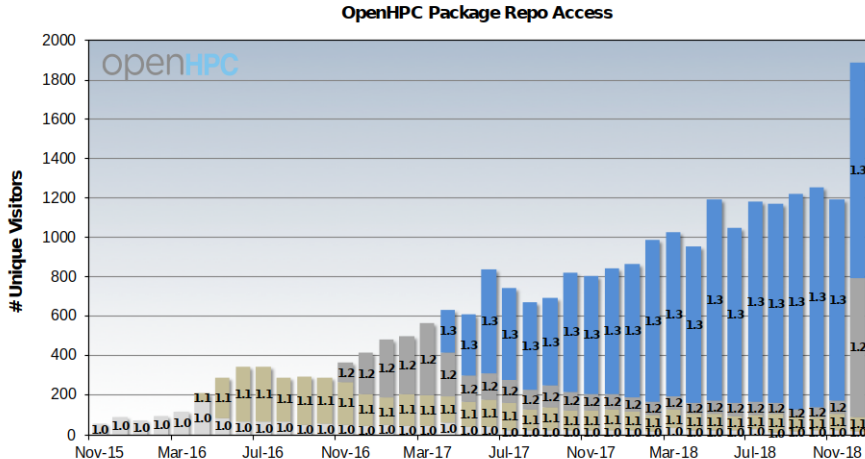
OpenHPC: Components Changed



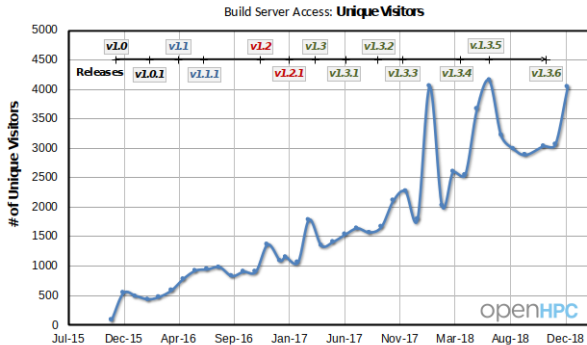
OpenHPC: Average Visitors



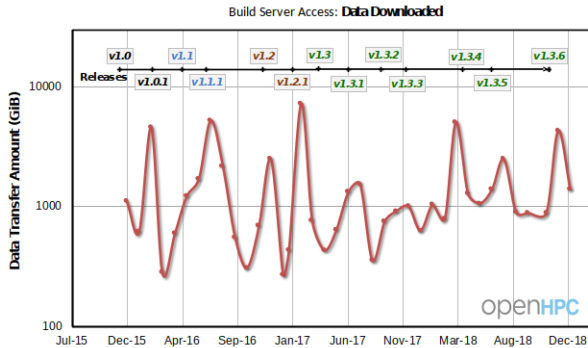
OpenHPC: Package Repository Access



OpenHPC: Unique Visitors



OpenHPC: Data Downloaded



What is OpenHPC?



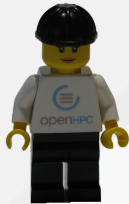
Software Repository



Including: Lmod



Including: Provisioning: Warewulf



Including: Provisioning: xCAT



Including: Monitoring: Nagios



Including: Monitoring: Ganglia



Including: Resource Manager: PBS Pro



Including: Resource Manager: Slurm



Including: Compiler: GCC



Including: Compiler: LLVM



Including: Compiler: Intel



Including: Compiler: ARM



Including: MPI: Open MPI



Including: MPI: MVAPICH2



Including: MPI: MPICH



Including: MPI: Intel



Including: Spack



Including: EasyBuild



Including: Charliecloud



Including: Singularity



Including: Lustre Client



Including: BeeGFS Client



Including:
Lot's of different libraries



But not just a Software Repository



Excellent Documentation Including Recipes



Each Release is
completely tested



OpenHPC: Same Interface Everywhere

```
[train01@sms001 ~]$ module avail
```

x86_64

```
----- /opt/ohpc/pub/moduledeps/gnu7-mpich -----
adios/1.11.0  mpiP/3.4.1      petsc/3.7.6    scorep/3.0
boost/1.63.0  mumps/5.1.1    phdf5/1.10.0   sionlib/1.7.1
fftw/3.3.6    netcdf-cxx/4.3.0  scalapack/2.0.2  superlu_dist/4.2
hypre/2.11.1  netcdf-fortran/4.4.4  scalasca/2.3.1  tau/2.26.1
imb/4.1       netcdf/4.4.1.1  scipy/0.19.0    trilinos/12.10.1
```

```
----- /opt/ohpc/pub/moduledeps/gnu7 -----
R/3.3.3      metis/5.1.0    numpy/1.12.1    openmpi/1.10.7
gs/2.3       mpich/3.2      (L) ocr/1.0.1      pdttoolkit/3.23
hdf5/1.10.0  mvapich
```

```
-----
EasyBuild/3.2.1
autotools      (L)
```

```
train01@cavium1:~> module avail
```

aarch64

```
----- /opt/ohpc/pub/moduledeps/gnu7-mpich -----
adios/1.11.0  mpiP/3.4.1      petsc/3.7.6    scorep/3.0
boost/1.63.0  mumps/5.1.1    phdf5/1.10.0   sionlib/1.7.1
fftw/3.3.6    netcdf-cxx/4.3.0  scalapack/2.0.2  superlu_dist/4.2
hypre/2.11.1  netcdf-fortran/4.4.4  scalasca/2.3.1  tau/2.26.1
imb/4.1       netcdf/4.4.1.1  scipy/0.19.0    trilinos/12.10.1
```

```
----- /opt/ohpc/pub/moduledeps/gnu7 -----
R/3.3.3      metis/5.1.0    ocr/1.0.1      pdttoolkit/3.23
gs/2.3       mpich/3.2      (L) openblas/0.2.19  superlu/5.2.1
hdf5/1.10.0  numpy/1.12.1    openmpi/1.10.7
```

```
----- /opt/ohpc/pub/modulefiles -----
EasyBuild/3.2.1  hwloc/1.11.6    singularity/2.3
autotools        (L) ohpc          (L) valgrind/3.12.0
```



Upcoming Changes



Release 1.3.7



Support new operating system releases?



SLES 15



RHEL 8



⇒ 1.4.x Release



Can OpenHPC support four
operating system releases?



This would double the
required testing!



When should OpenHPC switch to SLES 15 and RHEL 8



OpenHPC Home: <https://openhpc.community/>
Primary GitHub Site: <https://github.com/openhpc/ohpc>
Buildsystem: <https://build.openhpc.community/>
Package Repositories: [http://build.openhpc.community/OpenHPC:/](http://build.openhpc.community/OpenHPC/)
Component Submission: <https://github.com/openhpc/submissions>
System Registry: System Registration Form
CI Infrastructure: <http://test.openhpc.community:8080/>
OpenHPC Wiki: <https://github.com/openhpc/ohpc/wiki>
Mailing Lists: <https://openhpc.community/support/mail-lists/>





THANK YOU

