

# Community building blocks for HPC systems

## Mission

OpenHPC is a Linux Foundation Collaborative Project whose mission is 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.

## Key Takeaways for the Project

- OpenHPC provides a collection of pre-built ingredients common in HPC environments - fundamentally it is a package repository
- OpenHPC repositories are publicly accessible for direct use with Linux package managers:
  - yum (CentOS/RHEL)
  - zypper (SLES)
- OpenHPC is building-block oriented: administrators can choose relevant package(s) of interest
- Multiple compiler/MPI family combinations are supported
- In addition to being a package repository, OpenHPC also provides validated recipes for bare-metal system installs:
  - recipes are organized by choice of OS, architecture, and key administrative components (e.g. provisioner and resource manager)
  - latest guides always available on main GitHub site:  
[github.com/openhpc/ohpc](https://github.com/openhpc/ohpc)

## 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.

## Available Software Overview (v1.3.9)

Functional Areas	Components (89 Components Available)
Base OS	CentOS 7.7, SLES12 SP4
Architecture	aarch64, x86_64
Administrative Tools	Conman, Ganglia, Lmod, LosF, Nagios, NHC, pdsh, pdsh-mod-slurm, prun, EasyBuild, ClusterShell, mrsh, Genders, Shine, Spack, test-suite
Provisioning	Warewulf, xCAT
Resource Mgmt.	SLURM, Munge, PBS Professional, PMIx
Runtimes	Charliecloud, OpenMP, OCR, Singularity
I/O Services	Lustre client, BeeGFS client
Numerical/ Scientific Libraries	Boost, GSL, FFTW, Hypre, Metis, MFEM, Mumps, OpenBLAS, OpenCoarrays, PETSc, PLASMA, Scalapack, Scotch, SLEPc, SuperLU, SuperLU_Dist, Trilinos
I/O Libraries	HDF5 (pHDF5), NetCDF/pNetCDF (including C++ and Fortran interfaces), Adios
Compiler Families	GNU (gcc, g++, gfortran), Clang/LLVM
MPI Families	MVAPICH2, OpenMPI, MPICH
Development Tools	Autotools, cmake, hwloc, mpi4py, R, SciPy/NumPy, Valgrind
Performance Tools	PAPI, IMB, Likwid, mpiP, pdtoolkit TAU, Scalasca, ScoreP, SIONLib, GeoPM, msr-safe, Dimemas, Extrae, Paraver, OSU micro-benchmarks

Learn more, join us!

## Membership

*Anyone may download from or contribute to OpenHPC.*

The community has continued to grow in membership and use of the open source system software stack since started in November 2015. The community's business is led by a member Governing Board while technical matters are led by an elected Technical Steering Committee. Current community members are highlighted below:



Learn more, join us!

Community site: [openhpc.community](https://openhpc.community) GitHub repository: [github.com/openhpc/ohpc](https://github.com/openhpc/ohpc) Mailing Lists: [openhpc.community/support/mail-lists/](https://openhpc.community/support/mail-lists/)

Membership contact: Neal Caidin, Linux Foundation ([ncaidin@linuxfoundation.org](mailto:ncaidin@linuxfoundation.org))