



SUSE Linux Enterprise High Performance Computing

The convergence of high performance data-intensive simulation and modeling with data analytics workloads requires a powerful software-defined parallel computing platform. Advanced analytics is being used today in intelligence and scientific communities along with machine learning, and new commercial users rely on analytics for business intelligence, personalized medicine, fraud detection, affinity marketing and more—all fueling the needs for more compute power and scale. Businesses around the world today are recognizing that a high performance computing infrastructure is vital to supporting the analytics applications of tomorrow.

Product Overview

SUSE Linux Enterprise High Performance Computing (SLE HPC) is a highly scalable, high performance open source operating system designed to utilize the power of parallel computing for modeling/simulation, AI/ML and advanced analytics workloads.

Key Benefits

- Accelerate innovation with a broad ecosystem of hardware and software partners delivering cohesive HPC stacks for the latest supercomputers
- High scalability, efficiency and performance by utilizing Linux clustering and the power of parallel computing
- Ease management and monitoring of your parallel computing environment with an updated and supported set of popular HPC tools and utilities, including tools for workload and cluster management

- Expand your x86-64 and Arm-based HPC cluster environment to the full range of hardware being used today for HPC - from low-cost to high-end supercomputers
- Increase resource efficiency and extreme scaling by offloading HPC processing to public and hybrid clouds, with updated SLE HPC images for both Microsoft Azure and AWS.

Key Features

SUSE Linux Enterprise High Performance Computing includes the following supported HPC services and capabilities:

- Workload management (Slurm)
- Remote and parallel shells
- Performance monitoring and measuring tools
- A new utility (clustduct) helps deploy small clusters
- Serial console monitoring tool
- Cluster power management tool
- Tool to discover the machine hardware topology
- Tool to monitor memory errors
- Scalable profiling library for MPI applications (Message Passing Interface in parallel computing)
- Tool to determine CPU model on capabilities (x86-64 only)
- User extensible heap manager capable of distinguishing between different kinds of memory (x86-64 only)
- Environment modules that simplify customizing the users' shell environment
- File format libraries for storing and organizing large amounts of numerical and scientific data
- Authentication service and credential validation in HPC clusters
- High performance Message Passing Library

With the exponential growth of advanced analytics we are seeing higher demands for the HPC platform to support them in many industries. From cost-effective Arm-based to high-end x86-based supercomputers, SUSE delivers an operating system that shapes the adoption of parallel computing technologies today and powers the analytics applications of tomorrow.

Contact us at:
www.suse.com

- High performance MPI over Infiniband
- Scientific and mathematical computing libraries for parallel computing
- Console access and management

Get the Latest HPC Functionality Faster and Easier

Deploy updated functionality faster and easier with the HPC module, which provides a selected set of tools and components popularly used in High Performance Computing environments. To keep up with the pace of changing customer needs for leading edge HPC support on both hardware and software, this module provides software components which are frequently updated to the latest versions available. The selection of software components has been inspired by (but not limited to) what is provided by the OpenHPC community project at <https://openhpc.community>. Because this module is updated more frequently than the base operating system, it allows you to keep up with rapidly evolving HPC without changing the base OS and therefore avoid extensive re-testing of your platform.

System Requirements

SUPPORTED PROCESSOR PLATFORMS

- x86_64 (64-bit)
- AArch64 (64-bit Arm)

HPC MODULE

SUSE® makes adopting HPC easier to implement by adding packages to the HPC module. This module is intended to simplify deployment and management of

HPC environments by providing a number of fully supported HPC packages to SUSE Linux Enterprise HPC customers. These packages were built and tested by SUSE and are provided at no additional cost with the SUSE Linux Enterprise HPC support subscription.

The module structure allows SUSE to deliver additions and enhancements to HPC packages more frequently than is possible via Service Packs. Here is the list of packages and release numbers available in the HPC module currently:

- conman 0.2.9
- clustduct 0.0.2-1.4
- cpuid 20170122 (x86 only)
- fftw 3.3.6
- ganglia 3.7.2
- ganglia-web 3.7.2
- genders 1.2.2
- GCC 7.3.1
- gsl 2.4
- hdf5 1.10.1
- hwloc 1.11.8
- hypre 2.15.1
- imb 2019.1
- lua-lmod 7.6.1
- memkind 1.6.0 (x86 only)
- metis 5.1.0
- mpip 3.4.1
- mrsh 2.12
- mumps 5.1.2
- munge 0.5.13
- mvapich2 2.2.13
- netcdf 4.6.1
- netcdf-cxx 4.3.0
- netcdf-fortran 4.4.4
- numpy 1.14.0

- ocr 1.0.1
- openblas 0.2.20
- openmpi 2.1.6
- papi 5.6.0
- pdsh 2.33
- petsc 3.8.3
- phdf5 1.10.1
- powerman in base OS
- prun 1.0
- rasdaemon in base OS
- ScaLAPACK 2.0.2
- scipy 1.2.0
- scotch 6.0.6
- slurm 18.08.05
- superlu 5.2.1
- trillinos 12.10.1

For detailed product specifications and system requirements, visit: www.suse.com/products/server/hpc/

“Although SLES HPC drives some of the world’s most powerful public-sector supercomputers, SUSE is especially strong in commercial environments that buy midrange HPC systems and place an especially high value on ease-of-use, along with strong service and support capabilities.”

HYPERION RESEARCH TECHNOLOGY SPOTLIGHT

Linux and Open Source Are Driving HPC into New High-Growth Markets, April 2017
Hyperion Research www.hpcuserforum.com

