

### Overview

### HPE Performance Software – Core Stack v2.2

The HPE Performance Software – Core Stack is a complete software set that supports the creation and optimization of high-performance computing (HPC) applications. It brings together open source, third party and Hewlett Packard Enterprise-authored components into a single, integrated distribution.

The HPE Performance Software – Core Stack includes development tools, runtime libraries, workload schedulers, and cluster management tools required by system administrators. Hewlett Packard Enterprise integrates and validates each component, diminishing the need for endless scripts and hours of testing to piece together an HPC software environment.

The HPE Performance Software – Core Stack leverages different HPE-authored components to make it easy to get started and maintain operational efficiency. The HPE Cluster Setup Tool speeds installation, while the HPE Cluster Test software validates the cluster to ensure that all components are correctly installed and functioning. HPE Insight Cluster Management Utility (CMU) provides control over system provisioning, monitoring, and management capabilities, from a single server to an entire cluster.

### Components

The HPE Performance Software – Core Stack includes the following components:

Functional Area	Components	Version
Base operating system <i>(supported, not included)</i>	CentOS RHEL SLES	7.3 7.2 12 SP2
Cluster configuration	HPE Cluster Setup Tool	2.0
Cluster management	HPE Insight Cluster Management Utility (CMU)	8.2
Workload scheduler	Altair® PBS Pro™ Open Source SLURM	14.1.0 16.05.10
Development tools	GNU: C, C++ Fortran Gdb PAPI PDT TAU	4.9.4, 5.4.0, 6.2.0 7.11.1 5.4.3 3.22.1 2.25.1
Communication libraries	Open MPI OSHMEM MVAPICH2	1.10.4 2.1
Cluster validation	HPE Cluster Test	5.7
Fabric management	Mellanox OFED Mellanox HPC-X™ Intel® Omni-Path Host Software	4.0 1.8 10.3.1.0.22
Accelerator and Deep learning software	NVIDIA CUDA® Toolkit and GPU drivers CogX	8.0.61 5.0.0
Math and scientific libraries	FFTW gmp	2.1.5, 3.3.5 6.1.1

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	Atlas	3.10
File systems and IO	Lustre client LibStorageMgmt	2.9 1.3.4
Monitoring	HPE Insight Cluster Management Utility Redfish Nagios Htop collectl sysstat iotop	8.2 1.0 4.3.1 2.0.2 4.1.0 10.1.5 0.6
Interoperability interface	Ansible	2.2.0.0-4

### What's New

- Updated compatibility with the latest OpenHPC components, including the SLURM workload scheduler and the tau (Tuning and Analysis Utilities) toolkit.
- Now includes access to the most up-to-date releases of the NVIDIA CUDA Toolkit, NVIDIA drivers, Mellanox OFED and HPC-X, and Intel Omni-Path Architecture.
- Upgraded operating systems, specifically for Red Hat Enterprise Linux and CentOS.

### Models

#### Licensing and Media Options

HPE Perf SW

Q5U61AAE

**NOTE:** The HPE Performance Software – Core Stack is available for free for customers with standalone clusters of 32 nodes or less. To register for a free license, please visit [HPE Software Depot](#).

**NOTE:** A 120-day evaluation license is automatically activated for new users and for users upgrading to the latest version of the product, no matter the size of the cluster. To continue running the HPE Performance Software – Core Stack beyond the trial license period, users need to purchase an HPE Insight Cluster Management Utility (CMU) license.

Core Stack 32-node E-LTU

HPE Perf SW Core Stack Moonshot E-LTU

Q5U62AAE

**NOTE:** HPE Performance Software – Core Stack is available for free for customers with a single, standalone Moonshot chassis. To register for a free license, please visit [HPE Software Depot](#).

**NOTE: NOTE:** A 120-day evaluation license is automatically activated for new users and for users upgrading to the latest version of the product, no matter the number of Moonshot chassis or number of cartridges within the chassis. To continue running the HPE Performance Software – Core Stack beyond the trial license period, users need to purchase an HPE Insight Cluster Management Utility (CMU) license.

## Standard Features

### HPE Added-Value Components

#### HPE Insight Cluster Management Utility (CMU)

HPE Insight Cluster Management Utility (CMU) is a proven and highly capable tool for the management of HPC and Big Data clusters, as well as other high performance scale-out environments. HPE Insight CMU is an integrated, easy-to-use tool for provisioning, management, and monitoring clusters of any scale. With extensive capabilities to manage system images, HPE Insight CMU can rapidly provision and manage a single server, dynamically defined groups of servers, or entire systems using disk-based or diskless deployment.

HPE Insight CMU includes a Command Line Interface (CLI) and a customizable Graphical User Interface (GUI) that allows access to compute node consoles from a single screen with a single mouse click. The HPE Insight CMU GUI and CLI can, halt, boot, or power off any selection of nodes, and broadcast commands to selected sets of nodes. HPE Insight CMU monitoring makes it possible to see, at a glance, the state of the entire cluster. Very large configurations (up to thousands of nodes) are supported through monitoring synchronization and a scalable display mechanism in which groups of nodes are aggregated and displayed in user-selected 2D or 3D representations. Other features available are automated firmware updates, BIOS consistency verification, and BIOS setting modifications.

Please visit <http://www.hpe.com/info/cmu> for more information.

#### HPE Cluster Setup Tool

The HPE Cluster Setup Tool was developed to assist system administrators during the installation of a new HPC cluster. The tool minimizes actions that could cause a system administrator to misconfigure a cluster, but provides the flexibility for users to tailor the cluster to their environment requirements. Through the HPE Cluster Setup Tool dashboard, administrators can easily track installation progress and track pending issues.

Optimized for speed, the HPE Cluster Setup Tool can setup a small to medium-sized cluster in less than 60 minutes, depending on interconnect speed. And with the introduction of version 2.0, the tool provides full automated installation, including backup and cloning capabilities, for multiple image groups.

#### HPE Cluster Test

Integrated with the HPE Cluster Setup Tool, HPE Cluster Test is a light-weight version of the tool originally developed for the Hewlett Packard Enterprise factories—and therefore proven over the installation of thousands of clusters. HPE Cluster Test assures that the entire cluster is set up and functioning correctly by providing user-selectable tests for functionality, consistency, and performance.

The software also includes a dashboard to clearly indicate test results. In the latest version of HPE Cluster Test, system administrators have access to a new performance monitor to track loads at the cluster- and node-levels in real time.

## Standard Features

<b>Pricing</b>	The HPE Performance Software – Core Stack is available without charge. See licensing below.
<b>Distribution</b>	For ease of use and installation, including when access to a network is unavailable, the HPE Performance Software – Core Stack is available as a single ISO image which can be downloaded at <a href="https://www.hpe.com/support/softwaredepot">https://www.hpe.com/support/softwaredepot</a>
<b>Interface</b>	HPE Insight Cluster Manager Utility (CMU), which is the core management component of the stack, comes with a Command Line Interface (CLI) and a full JAVA® Graphical User Interface (GUI) that allows access to compute node consoles from a single screen with a single mouse click. HPE Insight CMU also provides a REST API for database activity, such as adding, cloning and removing nodes and groups. Very large cluster configurations (thousands of nodes) are supported via these interfaces.
<b>Documentation</b>	The HPE Performance Software – Core Stack includes a User Guide with complete, step-by- step installation instructions. This guide is included in the ISO image but is available as a separate download at <a href="https://www.hpe.com/support/softwaredepot">https://www.hpe.com/support/softwaredepot</a>
<b>Operating System Compatibility</b>	The HPE Performance Software – Core Stack is validated on Red Hat Enterprise Linux (RHEL) Advanced Server 7.3, CentOS 7.3 and SLES 12 SP2. Operating system software is not included as part of the stack and must be supplied separately.
<b>Hardware Requirements</b>	<p>The HPE Performance Software – Core Stack runs on HPE ProLiant DL-series, BL-series, SL-series, XL-series, HPE Apollo, and HPE Moonshot systems.</p> <p>Servers can be connected with a valid system interconnect, including Gigabit Ethernet, InfiniBand, or Intel® Omni-Path.</p> <p>All SATA or SAS hard disk drives configurations are supported, provided that those drives are supported by the servers.</p> <p>All NVIDIA® GPU, AMD GPU and Intel® Xeon® Phi coprocessor option configurations are supported, provided that those processors are supported by the servers.</p>
<b>Tested Configurations</b>	<p>The HPE Performance Software – Core Stack has been tested on configurations of Hewlett Packard Enterprise servers from a trivial configuration to 144 total server nodes. (Cluster size is not limited by the software. Total cluster configuration is only limited by the bandwidth of the implemented management network for the traffic configured.)</p> <p>The following servers and systems have been used in testing in various roles as both head and compute nodes:, ProLiant DL560 Gen8, ProLiant SL230s Gen8, ProLiant DL360p Gen8, ProLiant BL460c Gen9, ProLiant DL560 Gen9, and ProLiant XL170r Gen9.</p>

## Related Options

### Community Support

The HPE Performance Software – Core Stack is supported by Hewlett Packard Enterprise and its community of users via an HPE moderated email group. Users can communicate with the group by sending a message to [hpc\\_sw\\_stack\\_support@hpe.com](mailto:hpc_sw_stack_support@hpe.com).

For issues reported by users having, in the sole judgement of HPE, a significant impact on business operations of users of the stack, Hewlett Packard Enterprise will use reasonable commercial efforts to provide, at its sole discretion, an updated version of the ISO, and updated software component, or a patch. No service level is expressed or implied.

### Licensing

The HPE Performance Software – Core Stack is available for download and use without license for 120 days from date of install. The user is required to accept the applicable End User License Agreements (EULAs) at the time of download. The EULAs are available for review and are contained in a directory in the ISO image.

After 120 days, use of the HPE Performance Software – Core Stack may be continued by simply purchasing a license for HPE Insight Cluster Management Utility. For standalone clusters of up to 32 nodes, users can apply for a free license. The software does not have to be reinstalled to extend use.

HPE Insight CMU licenses—with the exception of the free license—include support from HPE Technical Services. Details can be found through the HPE Insight CMU product web page at <http://www.hpe.com/info/cmu> or by contacting your Hewlett Packard Enterprise sales representative.

The HPE Performance Software – Core Stack is limited for use on Hewlett Packard Enterprise servers. For use on other servers, please contact your HPE sale representative.

### Warranty

The HPE Performance Software – Core Stack is provided “as is”, and any use of the product is at the user’s own risk. Hewlett Packard Enterprise makes no expressed or implied warranty of any kind with respect to the HPE Performance Software – Core Stack, and specifically disclaims the implied warranties of merchantability, fitness for a particular purpose, title and non-infringement.

For issues reported by users having, in the sole judgement of HPE, a significant impact on business operations of users of the stack, Hewlett Packard Enterprise will use reasonable commercial efforts to provide, at its sole discretion, an updated version of the ISO, and updated software component, or a patch. No service level is expressed or implied.

### Security Defects

Users of the HPE Performance Software – Core Stack may subscribe to the United States Computer Emergency Readiness Team (“US-CERT”) for information about security vulnerabilities, alerts and updates at <https://public.govdelivery.com/accounts/USDHSUSCERT/subscribers/new>

## Summary of Changes

Date	Version History	Action	Description of Change
5-Jun-2017	From version 3 to 4	Updated	QuickSpecs updated throughout to reflect the release of version 2.2
13-Feb-2017	From version 2 to 3	Updated	Updated Overview, What's New and Operating System Compatibility sections to reflect new SLES support. Added new Models section.
28-Nov-2016	From version 1 to 2	Updated	QuickSpecs updated throughout to reflect the release of version 2.0
20-Jun-2016	Version 1	Created	Create QuickSpecs for HPE Core HPC Software Stack



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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.

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