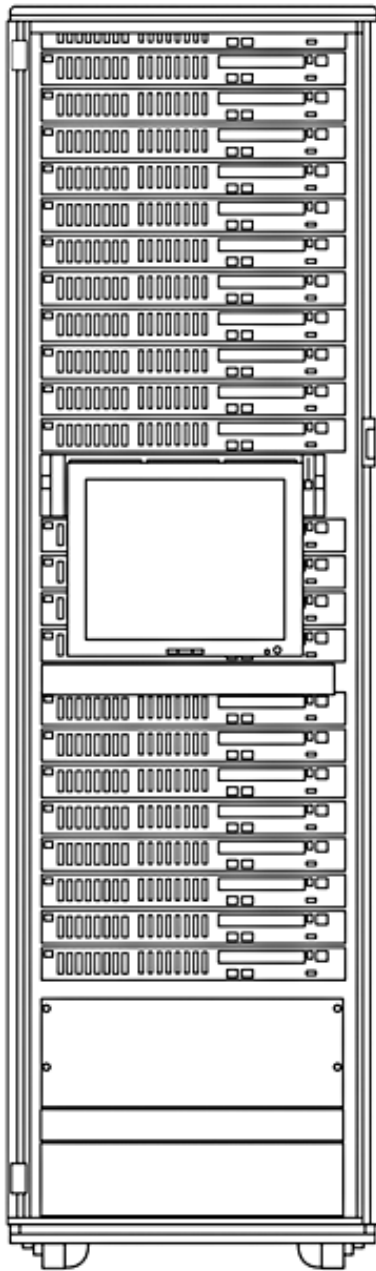
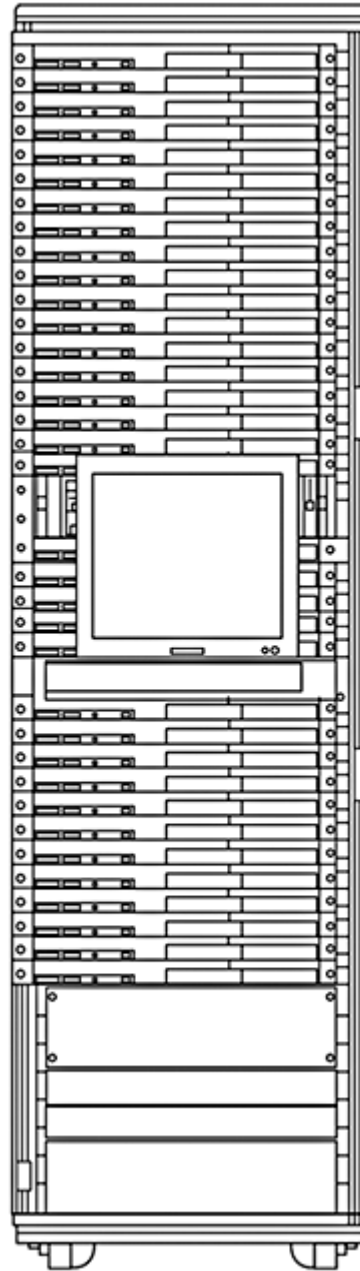


Overview



CP3000 - EM64T Solution



CP40000 - AMD Opteron Solution

The HP Unified Cluster Portfolio and Cluster Platform Series family of High Performance Computing Clusters

The HP ProLiant HPC Partner Software Suite is a series of software products providing a set of partner developed solutions that complement or expand choices beyond HP's branded offerings. These offerings can be used in stand alone server, custom cluster, or workstation configurations where applicable, in clusters defined as Cluster Platform configurations, or in clustered configuration of mixed server, blade, and in some mixed vendor environments.

Overview

These offerings are certified to operate on the HP ProLiant family of high performance designated servers using the latest Red Hat and Novell SuSE offerings, as well as, Windows Compute Cluster Server 2003 in some cases. Please see the Operating System Compatibility Matrices to ensure applicable utilization in this document or on the web at: <http://www.hp.com/go/linux> and <http://www.hp.com/go/microsoft>

The HP Unified Cluster Portfolio is based on HP developed and supported hardware delivered as Cluster Platforms depicted above. In addition HP developed and supported software also is provided under the Unified Cluster Portfolio and is referenced in other product offering documentation. Please refer to the following url for HP developed and supported hardware and software - <http://www.hp.com/go/clusters>

The HP ProLiant HPC Software Suite includes:

- Linux 8 Pack Operating system packages in both 32 and 64 bit offerings for ease of install and administration for both Red Hat and Novell SUSE
 - Windows Compute Cluster Server2003 for 64-bit Windows operations - which is referenced in its own product offering but listed here as a component of the HPC Partner Suite.
 - Job Managers for 32 and 64-bit Linux or Windows environments
 - Cluster Managers for 32 - 64-bit Linux environments
-

What's New

- Updated Red Hat HPC 8 Packs to support RHEL 5 for one and three year subscription services with additional single node licensing for compute nodes. A stand alone Red Hat offering is still required for the Control or Head node
 - Consolidated Scali Manage and Scali Manage/Connect and Scali Manage Departmental offerings in cluster node solution offerings for ease of configuration and ordering.
 - Consolidated Altair Engineering PBS Pro offerings into a single per Code offering for ease of configuration and ordering
-

At A Glance

With the introduction of the HP Unified Cluster Portfolio, HP has combined the flexibility of a custom solution with the simplicity, reliability and value of a pre-configured, factory-built product. A wide range of qualified options ensures flexible choices, simple implementation and successful results. The foundation of the Unified Cluster Portfolio is the HP Cluster Platform, standard, integrated implementations of cluster designs that provides customers with a choice of processors, operating systems and interconnects. The HP Cluster Platforms (CP) 3000 and 4000 for ProLiant DL Rack Mount Servers and the CP3000BL and CP4000BL for Xeon and Opteron based HP Blade System. Servers are integrated, customer-ready solutions that enable rapid and confident deployment of High Performance Computing (HPC) clusters.

- The HP ProLiant High Performance Computing (HPC) Software Suite is designed to make more effective use of the HP Cluster Platform series, custom designed clusters, or independent servers attached or used in high performance computing environments. These suites have been certified across the range of HP ProLiant servers and interconnect options used in the HP Cluster Platform series or in custom cluster configurations
-

Overview

HP ProLiant HPC Partner Software Suite

The HP ProLiant High Performance Computing Partner Software Suite is an industry standard suite of applications driven by customer need and request. The high performance computing marketplace extends beyond the traditional areas considered in the past. Laboratories, research centers and major industrial segments; including auto and aircraft manufacturing, petrochemical exploration and modeling, electronic design and government defense. This market now covers the entire enterprise spectrum of activities from rendering, financial analytics and gaming; to mention some major areas of growth in high performance computing implementations. As the cost of high performance computing has been greatly reduced with the utilization of industry standard computing technology and open source community software, all organizations, no matter what size, can afford a compute farm or distributed computing environment to meet their specific computing needs. HP ProLiant servers and storage can scale to very high capacity computing configurations to address the most demanding problems and workload demand. A major advantage that HP brings is a wide and varied portfolio of hardware and software technology including HP branded and supported or HP certified partner supported solutions. The HP ProLiant HPC Partner Software Suite is an example of this choice that HP brings to its customers.

The core functionality for any HPC cluster is provided by the underlying operating system. For ProLiant-based clusters, built on Intel and AMD technologies, HP offers specially priced Linux subscriptions from Red Hat and Novell SUSE as well as the Microsoft Compute Cluster Edition (packaged with Compute Cluster Server 2003). These options are available as standard factory-installable options for HP Cluster Platforms, but are also available for custom cluster implementations (where the design and/or components may differ from the Cluster Platform implementation).

HP offers branded Linux offerings for cluster management - XC Cluster Software, and Cluster Management Utility (CMU), which operate across the Cluster Platform 3000, 4000 and 6000 based on HP's Integrity servers. In addition for BladeSystem based Clusters, HP offers Insight Control Linux Edition (ICLE), which provides a Blade optimized user interface for software installation and system monitoring. Scali is our strategic partner for cluster management, providing an alternative to HP's offerings that can be deployed in multivendor environments. Please refer to the following websites for additional information on HP's cluster offerings: <http://www.hp.com/go/hptc> or <http://www.hp.com/go/clusters>

OS and cluster management options are available as factory-installed options for HP Cluster Platforms, as well as the customer-installed option with software download by customer. These OS and cluster management options can be complemented by the job managers featured in the HP ProLiant HPC Partner Software Suite, to provide a comprehensive, ready-for-deployment solution for high performance computing. Their inclusion in the HP product suite enables customers to source their whole solution from a single vendor, with options to ship together in a consolidated delivery. (Note: HP Services can arrange for pre-test and in-factory integration on your cluster, if desired.)

HP's ProLiant HPC Partner Software Suite, adaptable across all HP ProLiant supported Linux and Microsoft operating systems, HP ProLiant HPC select servers and HP BladeSystem p-Class and c-Class Servers and all Gigabit Ethernet, Myrinet and InfiniBand interconnects either configured within the Cluster Platform configuration specifications or in a customer specified configuration. This is the advantage that HP ProLiant HPC Partner Software offers:

- Flexibility and choice across key cluster software components
- Extensibility across multiple platform types, 32 or 64 bit and OS environments or scale out and evolution
- Immediate control over existing configurations and the ability to extend their use
- Validated support for leadership application choices supported across a large array of server and storage devices
- Functional richness in certified and selectable in building blocks providing the customer choice

All HPC partner applications conforming to the Novell Validation Suite for High Performance Computing, as well as, the HP Linux Reference Architecture test suites enabling customer success.

Overview

Cluster Platform Series Design and Configuration Guide and Orderable Options

The Cluster Platform Series Design and Configuration offers the customer the opportunity to design and configure their own customer cluster from 5 - 1024 nodes to build a cluster to meet their own environmental needs. There is a Design Guide for each type of Cluster Platform: CP 3000 and CP 3000BL Series - based on Intel Xeon technology, CP 4000 and CP 4000BL Series - based on AMD Opteron technology, and CP6000 Series - based on HP Integrity technology featuring Itanium 2 processors.

These are available on the HP Web site at <http://www.hp.com/techservers/clusters/ucp.html>

HPC Partner Suite Software Organization

The HPC Partner Suite consists of Operating Systems, Cluster Management, and Job Management Kits used in the creation, operation, and expansion of high performance computing environments. The offerings can be ordered for a stand alone server or a cluster of servers consisting of one or more Head Nodes or Control Nodes which act as a central monitoring and deployment server to a number of attached Compute Node servers linked in a common interconnect domain or domains providing cluster interconnect for message passing commands and data, administrative command and control for hardware and software events and performance, and for remote management where local systems administration services are not available or desired. Listed below are the offerings which comprise the HPC Partner Suite of infrastructure applications and their targeted server node placements. These offerings are electronically downloaded from our partner web sites for the most current level of software.

For Partner SKU Operating System Compatibility please visit: <http://www.hp.com/go/hpc-resource-room>

Product Highlights

Factory Systems Integration Services

Factory Integration in the Americas- This part number is unique to NA orders for Factory Integration charges. This Part Number is required by the Order Entry System to Flag the order for Factory Integration quoting and administration.

Factory Integration in EMEA: To order an integrated cluster or for additional requests, send the required specifications in an email to [HPTC EMEA cluster team@hp.com](mailto:HPTC_EMEA_cluster_team@hp.com) (EMEA HPTC Competency Center). A quotation will be provided containing the appropriate configuration and integration charges for approval.

Cluster Customization For additional optional requests, please contact the Americas Integration Center (AIC) 1-800-837-8036 for additional information such as loading other software offerings, adding optional Control Nodes or Storage Subsystem interfaces, customer software, partitioning disk subsystems, UPS installations. For Consulting and Integration services in EMEA, send your request detailing your requirements via email to [EMEA HPC engineering consulting@hp.com](mailto:EMEA_HPC_engineering_consulting@hp.com). A quotation for Consulting and Integration services will be provided for approval. For Consulting and Integration services in AP/J, send your request detailing your requirements via email to APJ ESS Competency Lab at: apjESScompetencylab@hp.com. For pre sales support send email to APJ Configuration Engineering Hub apj-config@hp.com.

System Software and Consulting and Integration Services

Consulting and Integration Services

HP Consulting and Integration Services part numbered offerings that are geared towards a Services led engagement model for current partner products. These products require an order thru HP's C&I organization. Also available from the Consulting and Integration Services organization are a series of professional service offerings covering site and architecture planning and analysis, training, and deployment of Cluster Platform or custom clusters. These offerings must be coordinated and ordered thru Americas C&I organization (contact HPC_Quote_Request@hp.com) or [EMEA HPC engineering consulting@hp.com](mailto:EMEA_HPC_engineering_consulting@hp.com)

Linux Distributions

If you are a customer that is only interested in Linux, HP supports the enterprise versions of both Red Hat and SUSE distributions. In addition, the Red Hat and SUSE High Performance Computing license agreements provide for low cost enterprise operating system software on these clustered configurations. Please review these part numbers in the Partner Offerings section below. Other Linux variants such as community distributions or vendor Professional offerings have also been tested on these machines but HP does not offer support for these variants. Please refer to the Linux Certification matrix for current certification status

<http://h18004.www1.hp.com/products/servers/linux/hpLinuxcert.html>

Product Highlights

Linux Operating System Offerings	Red Hat Universal Linux HPC Offering	
	HPC RHEL 8-pack 2Socket 1yr License	443934-B21
	HPC RHEL 8-pack 2Socket 3yr License	443935-B21
	HPC RHEL 8-pack 4Socket 1yr License	443936-B21
	HPC RHEL 8-pack 4Socket 3yr License	443937-B21
	HPC RHEL Single Node 2Socket 1yr License	443938-B21
	HPC RHEL Single Node 2Socket 3yr License	443939-B21
	HPC RHEL Single Node 4Socket 1yr License	443940-B21
	HPC RHEL Single Node 4Socket 3yr License	443941-B21
	Novell SUSE SLES HPC Offering	
	Novell SUSE HPC SLES 1 Yr Base 8 pk X64 ALL	431123-B21
	Novell SUSE HPC SLES 1 Yr add on 8 pk X64 ALL	431127-B21
	Novell SUSE HPC SLES 3 Yr Base 8 pk X64 ALL	431128-B21
	Novell SUSE HPC SLES 3 Yr add on 8 pk X64 ALL	431129-B21

Scali Manage and Scali Connect

Scali Manage™ enables rapid installation and configuration of clusters including the operating system, middleware, communication modules, third party applications and user data. Companies benefit from having their clusters up and running quickly, reducing the total cost traditionally associated with cumbersome installations. The clusters and applications are brought online quickly and the organization is able to actively predict and prevent system failures through advanced monitoring and alarms. Scali Manage provides a centralized point of installation and ongoing management for clusters, applications, interconnects and industry-standard hardware platforms.

The Scali MPI Connect™ implementation is built on a direct data transfer model that leverages the standardized API intermediate layer based on the Direct Access Transport (DAT) specification. Highly optimized algorithms for message passing through the direct data transport mechanism eliminate overhead and reduce latency. Scali MPI Connect is fully integrated and compatible with the leading underlying inter connect hardware, which enables customers to select the best solution for their applications. The MPI includes a directly attached driver for channel bonded Gigabit Ethernet, as well as 10/100 Fast Ethernet, Myrinet, and InfiniBand enabling high performance clusters to run over commodity interconnect technology as well as specialty cluster interconnect hardware.

A sophisticated, integrated, full-featured Cluster Management software package for clusters using standard Ethernet, Gigabit Ethernet, InfiniBand or Myrinet. Scali supports a specific MPI library which is included with the Scali Manage / Connect package. When using Scali as a Cluster Manager, HP-MPI can also be used as a MPI library instead of Scali Connect. In this case, use the Scali manage offering.

Scali Manage features include:

- Operates in 32 and/or 64 Bit operations in the same cluster
- Operates with both RHEL and/or SUSE OS environments in the same cluster
- Operates across both ProLiant DL and BladeSystem servers in the same cluster
- Operates in a mixed Vendor cluster such as Dell, IBM or most X86 devices
- Installation, reinstallation and configuration of the operating system, middleware, communication modules, third party applications and user data
- Ability to manage multiple and mixed interconnect environments
- Resource management, system monitoring and alarms, job management, remote out-of-band operations and software distribution functionality

Product Highlights

- Consistent interface regardless of interconnect or cluster
- Monitoring of variables, such as, CPU load, traffic, disk space, swap usage, fan-speed and temperature
- Parallel shell tools for cluster wide command execution
- Interface to any external data source including SNMP
- GUI and command line interfaces for system administrators and application users
- 2D and 3D bar and histogram graphs and charts

Scali MPI Connect features include:

- Dynamic binding to operator- or user-selected interconnects
- Support for key interconnects and standards, including TCP/IP, Direct over Ethernet, SCI, Myrinet and InfiniBand
- Single binary, multiple interconnect architecture enables single instances of ISV applications to be interconnect independent
- Channel bonding and out-of-order package handling in the DET enables near linear scalability
- Support for IA32 and IA64 processing architectures
- Transparency to transient network errors, interconnect resets or change of routing tables
- Dynamic selection of optimal transport medium at runtime
- Failover between interfaces by automatic switching to alternate networks
- Built-in tracing and timing facilities for performance tuning and debugging of parallel codes
- Integration with the Etnus' Total View and GNU gdb debuggers and the Pallas' Vampir MPI analysis tool
- Full compliance with the MPI 1.2 specification from the Message Passing Interface Forum
- Support across both Linux and Microsoft Operating systems 32 and 64 bit implementations

All third-party software products supplied by HP shall be governed exclusively by the manufacturer's license terms and other documentation accompanying such third-party software.

Scali Solution Offerings

A Support offering is required for each licensed Node

Scali Manage / Connect

Scali Manage/Connect Commercial Solution License / Node 366382-B21

Scali Manage/Connect Educational Solution License / Node 372756-B21

Scali Manage

Scali Manage Commercial Solution License / Node 389396-B21

Scali Manage Educational Solution License / Node 389397-B21

Scali Support Offerings for above Solutions per Node

Scali 1 Yr Support License - Silver Support / Node 389399-B21

Scali 1 Yr Support License - Gold Support / Node 389400-B21

Scali Manage Departmental Offerings for clusters less than 67 Nodes

Scali Manage Departmental Cluster Solution License / Node 432801-B21

Scali Manage/Departmental Cluster Support License / Node 432802-B21

A Support offering is required for each licensed Node

NOTE: Above options may be factory installed or shipped as separate option. Please refer to the configuration planning matrix at the end of this section for an example of configuration requirements for different cluster examples.

Product Highlights

Altair Engineering - PBS Pro Job Manager for Cluster Platform Series

The management systems were inadequate for modern parallel/distributed computers and clusters. From the initial design forward, PBS has included innovative new approaches to resource management and job scheduling, such as the extraction of scheduling policy into a single separable, completely customizable module

Key Features:

User Interfaces - Designed for production environments, xPBS provides a graphical interface for submitting both batch and interactive jobs, querying job, queue, system status, and tracking the progress of jobs. Also available is the PBS command line interface (CLI) providing the same functionality as xPBS.

Job Priority - Users can specify the priority of their jobs, and defaults can be provided at both the queue and system level.

Job-Interdependency - enables the user to define a wide range of interdependencies between batch jobs. Such dependencies include: execution order, synchronization, and execution conditioned on success or failure of a specified other job.

Cross-System Scheduling - provides transparent job scheduling on any system by any authorized user. Jobs can be submitted from any client system or any compute server.

Security and Access Control Lists - Configuration options permit the administrator to allow or deny access on a per-system, per-group, and/or per-user basis.

Job Accounting - maintains detailed logs of system activity for charge back or usage analysis. Custom charges can be tracked per-user, per-group, and/or per-system.

Comprehensive API - a complete Application Programming Interface (API) for sites who desire to integrate PBS with their applications, or have unique job scheduling requirements.

Automatic Load-Leveling - The cluster jobs scheduler provides numerous ways to distribute the workload across a cluster of machines, based on hardware configuration, resource availability and keyboard activity (all of which information is available via PBS).

Enterprise-wide Resource Sharing - PBS does not require that jobs be targeted to a specific computer system. This allows users to submit their job, and have it run on the first available system that meets their resource requirements. This also prevents waiting on a busy system when other computers are idle.

Username Mapping - provides support for mapping user account names on one system to the appropriate name on remote server systems. This allows PBS to fully function in environments where users do not have a consistent username across all the resources they have access to.

Parallel Job Support - supports parallel programming libraries such as MPI, MPL, PVM, and HPF. Such applications can be scheduled to run within a single multiprocessor system or across multiple clustered systems.

Automatic File Staging - provides users with the ability to specify any files that need to be copied onto the execution host before the job runs, and any that need to be copied off after the job completes. The job will be scheduled to run only after the required files have been successfully transferred. Broad Platform Availability.

NOTE: All third-party software products supplied by HP shall be governed exclusively by the manufacturer's license terms and other documentation accompanying such third-party software.

Altair PBS Pro Offering

Altair PBS Pro Media Kit	432795-B21
Altair PBS Pro - Perpetual License / Core, 1 Year Support	432796-B21
Altair PBS Pro - Perpetual License / Core Follow on 1 Year Support	432798-B21

NOTE: Each Core requires 1 PBS Pro license (P/N 432796-B21)

Please refer to the configuration planning matrix at the end of this section for an example of configuration requirements for different cluster examples.

Product Highlights

HPC Software Configuration Guide

The HPC Software Suite options have multiple pricing and configuration options based on ISV Preference. Scali, for example is priced on Cluster Node, Altair is priced on processor Core. This provides a challenge to determine the correct quantity of each HPC optional SKU.

Sample Configurations are provided with appropriate quantities for each offering as a configuration guide for your use in planning and ordering the correct quantities of these HPC options.

32 Node Compute Cluster with 2 Head or Control Nodes

Compute Nodes are 2 Processor - Dual Core Units

Control Nodes are 2P - Dual Core Units

Description	Quantity	Part Number
HPC RHEL 8-pack 2Socket 3yr License First 8 Compute Nodes	1	443935-B21
HPC RHEL Single Node 2Socket 3yr License Remaining 24 Compute Nodes and 2 Head Nodes	24	443939-B21
RHEL 1-2 Sockets; No Media; 3 YR Subscription, 9x5 HP SNS included; not preinstalled 2 Head nodes	2	445210-B21
32 Compute Nodes and 2 Head Nodes	34	389396-B21
Scali 1 Yr Support License - Gold Support / Node 34 Nodes x 3 years	102	389400-B21
Altair PBS Pro Media Kit	1	432795-B21
Altair PBS Pro - Perpetual License / Core, 1 Year Support 34 Nodes with 2 processors and 2 Cores/processor 34x2x2 with 1yr Support	136	432796-B21
Altair PBS Pro - Perpetual License / Core Follow on 1 Year Support 136 Core licenses x 2 follow on years support	272	432798-B21

96 Node Compute Cluster with Single Head or Control Node

Compute Nodes are 2 Processor - Quad Core Units

Control Nodes are 2P - Quad Core Units

One Year Support on all offerings

Description	Quantity	Part Number
Novell SUSE HPC SLES 1 Yr Base 8 pk X64 ALL 1 head Node license and 8 Compute Node Licenses for 1st 9 Nodes	1	431123-B21
Novell SUSE HPC SLES 1 Yr add on 8 pk X64 ALL 8Pack for remaining 88 Nodes 88/8	11	431127-B21
Scali Manage/Connect Commercial Solution License / Node 97 Nodes - 96 Compute and 1 Head or Control Node	97	366382-B21
Scali 1 Yr Support License - Gold Support / Node 97 Nodes - 96 Compute and 1 Head or Control Node	97	389400-B21
Altair PBS Pro Media Kit 1 per cluster or site as an option. Not required	1	432795-B21
Altair PBS Pro - Perpetual License / Core, 1 Year Support 34 Nodes with 2 processors and 2 Cores/processor 34x2x2 with 1yr Support	136	432796-B21
Altair PBS Pro - Perpetual License / Core Follow on 1 Year Support 136 Core licenses x 2 follow on years support	272	432798-B21

Product Highlights

Community Software Offerings

RedHat and Rocks High-Performance Cluster Software Freeware

HP solutions adhere to industry standards, and are deployed at multiple sites with range of open source and community solutions. One of the most popular open source stacks for clustering is ROCKS. If you are a customer that has Linux cluster experience, you can download a RedHat-Rocks combination and configure your own cluster. Rocks consists of a fully integrated and easy to install software bundle designed for high performance cluster Clusters. Everything needed to install, build, maintain, and use a modest sized Linux cluster is included in the suite, making it unnecessary to download or even install any individual software packages on your cluster. HP provides no support for ROCKS. For customers seeking a commercially supported version of ROCKS, Platform Computing offers Open Cluster Software (OCS) utilizing many of the technologies and procedures defined in ROCKS.

HP has done minimal testing for ROCKS to date. If ROCKS is a requirement for a project, please contact the HPC division via the contact form on the web

HP Customer Service Offerings

Customer Support

HP CS provides on-site hardware break-fix support and remote remedial software call center support. CS off-site software services will provide and assist level 1 and 2 support for Red Hat and Novell SUSE Linux and Windows operating system offerings.

- Level 1 is defined as everyday user/system administration issues.

Level 2 is defined as issues relating to installation and configuration problems, along with other problems not being solvable by following the Vendor supplied documentation. The CS software support team will work in parallel with the appropriate Vendor and development groups to address level 3 and 4 support escalations:

- Level 3 elevations typically will require patches and modifications to be generated by the Vendor to resolve deficiencies in the product.
- Level 4 elevations deal with enhancements in functionality of the product and will typically be included in future releases.

The HP ProLiant HPC Partner Solution Suite offerings are covered thru optional partner support agreements which are ordered as additional sku offerings. Customers are asked to contact the respective partner support contacts when the software is delivered either stand alone or pre installed to confirm the service and support linkages and to alert partner support organizations of software receipt. Please contact the appropriate ISV for support conditions.

Software contracts can be also obtained to meet any and all needs of customers, to include remedial break/fix along with migration and upgrade planning along with a full suite of proactive deliverables. These services can be obtained through HP Care Pack Services to cover all needed levels of services for a limited number of instances or through software contracts from Bronze up to and including Platinum/Custom levels of service.

Technical Specifications

Product Description	Dimensions	Weight	P/N
Red Hat Enterprise			
HPC RHEL 8-pack 2Socket 1yr License	7.5x5.25x1.25	0.008	443934-B21
HPC RHEL 8-pack 2Socket 3yr License	7.5x5.25x1.25	0.008	443935-B21
HPC RHEL 8-pack 4Socket 1yr License	7.5x5.25x1.25	0.008	443936-B21
HPC RHEL 8-pack 4Socket 3yr License	7.5x5.25x1.25	0.008	443937-B21
HPC RHEL Single Node 2Socket 1yr License	9x6x.08	1.75	443938-B21
HPC RHEL Single Node 2Socket 3yr License	9x6x.08	1.75	443939-B21
HPC RHEL Single Node 4Socket 1yr License	9x6x.08	1.75	443940-B21
HPC RHEL Single Node 4Socket 3yr License	9x6x.08	1.75	443941-B21
Product Description	Dimensions	Weight	P/N
Novell SUSE Enterprise			
HPC SUSE SLES 1 Yr Base 8 pk X64 ALL	6x9x1	0.05	431123-B21
HPC SUSE SLES 1 Yr add on 8 pk X64 ALL	6x9x1	0.05	431127-B21
HPC SUSE SLES 3 Yr Base 8 pk X64 ALL	6x9x1	0.05	431128-B21
HPC SUSE SLES 3 Yr add on 8 pk X64 ALL	6x9x1	0.05	431129-B21
Product Description	Dimensions	Weight	P/N
Scali Manage/Connect			
Clusters greater than 66 Nodes / Support Licenses for each Node			
Scali Manage/Connect Commercial Solution License / Node	5.75x8.25x.25	0.588	366382-B21
Scali Manage/Connect Educational Solution License / Node	5.75x8.25x.25	0.588	372756-B21
Scali Manage Commercial Solution License / Node	9x6x.08	1.75	389396-B21
Scali Manage Educational Solution License / Node	9x6x.08	1.75	389397-B21
Scali 1 Yr Support License - Silver Support / Node	9x6x.08	1.75	389399-B21
Scali 1 Yr Support License - Gold Support / Node	9x6x.08	1.75	389400-B21
Product Description	Dimensions	Weight	P/N
Scali Manage/Departmental			
Clusters less than 67 Nodes requires a Support License for each Node			
Scali Manage Departmental Cluster Solution License / Node	6x9x1	0.05	432801-B21
Scali Manage/Departmental Cluster Support License / Node	6x9x1	0.05	432802-B21
Product Description	Dimensions	Weight	P/N
Altair Job Managers			
Altair PBS Pro Media Kit	6x9x1	0.05	432795-B21
Altair PBS Pro - Perpetual License / Core, 1 Year Support	6x9x1	0.05	432796-B21
Altair PBS Pro - Perpetual License / Core Follow on 1 Year Support	6x9x1	0.05	432798-B21

Technical Specifications

Product Description	Dimensions	Weight	P/N
Cluster Development Kits and Parallel Development Tools			
PGI Cluster Dev Kit 32 -64Bit 16 CPU 5 Academic User Follow on 1Yr Subscription	6x9x1	0.05	432786-B21

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