IBM Platform HPC - Express Edition V3.2 speeds time to cluster readiness, delivers improved productivity, and shortens time to solution

At a glance

IBM® Platform HPC - Express® Edition V3.2 is technical computing management software that offers the following benefits:

- Reduces time to cluster readiness with easy-to-use cluster management capability.
- Increases user and administrator productivity with an intuitive web-based interface including simplified application integration.
- Improves resource utilization and reduces infrastructure cost with intelligent job scheduling that takes your organization into account.
- Accelerates time to results with robust workload management capabilities and advanced Message Parsing Interface (MPI) libraries.

Overview

IBM Platform HPC - Express Edition V3.2 is easy-to-use, yet comprehensive technical computing management software. Its robust cluster and workload management capabilities are accessible using the latest design in web-based interfaces. Platform HPC - Express Edition simplifies the application integration process so that users can focus on their work, instead of managing a cluster. For applications requiring MPI, the robust commercial MPI library accelerates and scales HPC applications for shorter time to solution.

Other HPC cluster solutions just combine multiple tools and interfaces, which are not integrated, certified, or tested together. Platform HPC - Express Edition is a single product with a unified set of management capabilities that make it easy to harness the power and scalability of a technical computing cluster, resulting in shorter time to system readiness and user productivity as well as optimal throughput. Backed by one of the industry's best customer support organizations, Platform HPC - Express Edition incorporates nearly two decades of product and technology leadership.

Platform HPC - Express Edition delivers the following key benefits:

- Faster time to cluster readiness

- Reduced infrastructure and management costs

- Optimal resource utilization

- Improved user and administrator productivity

- Shorter time to results

Key prerequisites

Key prerequisites to run Platform HPC - Express Edition V3.2 include:

- A cluster computing environment comprising two or more servers.
- A head node that has at least two network interfaces; one that connects to a public or corporate network. The other one is connected privately to all the other nodes.
- A supported operating system preinstalled on the head node.
- Access to the operating system media or image file used for installation of the operating system on all nodes in the cluster.

Non-head nodes can be set to PXE boot.

For additional information refer to the Hardware requirements and Software requirements sections.

Planned availability date

March 15, 2013

Description

Platform HPC - Express Edition works well in a cluster with fewer than 200 nodes with a typical technical computing workload. For larger clusters or special workloads, you should consider other individual IBM Platform products such as IBM Platform LSF® - Standard Edition, IBM Platform Application Center - Standard Edition, or IBM Platform Cluster Manager - Standard Edition.

Features and benefits include the following:

- Comprehensive, easy-to-use cluster management product: Takes the complexity out of setting up, managing, and monitoring a heterogeneous cluster environment, ensuring that technical computing environments are quickly up and running.
- Next-generation interface: Powerful web-based user interface with an intuitive design that is easy for both users and administrators to use.
- Integrated application support: Simplifies application integration and enables users to leverage the cluster transparently to accelerate their application workload.
- User-friendly workload management: Supports a heterogeneous computing environment. It is based on Platform LSF , the industry's powerful policy-driven workload manager, for improved productivity, utilization, and throughput with minimal administrative effort.
- Robust workload and system monitoring and reporting: Enables you to make timely decisions and proactively manage computing resources against business demand; maximizing uptime, optimizing application performance, and improving user productivity.
- Workload-driven, dynamic operating system switch: Improves resource utilization and user productivity by decreasing lag time between jobs.
- Graphics processing unit (GPU) scheduling, management, and monitoring: Makes it easy to take immediate advantage of the exceptional high-performance computing (HPC) offered by GPUs.
- Robust commercial MPI library (Platform MPI): Accelerates and scales HPC applications, for shorter time to solution.

Platform HPC - Express Edition runs on a variety of hardware and operating environments, including the latest generation of IBM System x® servers. By

prequalifying and certifying Platform HPC - Express Edition on these systems, IBM helps you take the risk out of deploying mission-critical, high-performance technical computing deployments.

Platform HPC - Express Edition unique propositions

Easy-to-use, comprehensive technical computing management solution:

Platform HPC - Express Edition helps you efficiently deploy, manage, and use a technical computing cluster while meeting the most demanding requirements for application performance and predictable workload management. It is a complete product that delivers a robust set of cluster management capabilities, from cluster provisioning and management to workload management and monitoring. All the functions required to operate and use a cluster are installed at once and are tightly integrated.

The next-generation web portal gives you a single point of access into your cluster, making it easy to manage jobs and optimize application performance. This is more than just a stack of software; Platform HPC - Express Edition is a fully integrated and certified product designed to ensure faster time to system readiness, ease of use, and improved application throughput.

Integrated application support:

Platform HPC - Express Edition enables users to fully harness the power of a technical computing cluster to optimize application performance. High-performing, HPC-optimized MPI libraries come integrated with the product, making it easy to get parallel applications up and running. Scripting guidelines and job submission templates for commonly used commercial applications enable easy application integration and ensure that users are immediately productive. It helps simplify job submission, reduce job setup time, and minimize operation errors. After the applications are up and running, Platform HPC - Express Edition improves application performance by intelligently scheduling resources based on workload characteristics.

Platform HPC - Express Edition product capabilities

Web-based interface - Easily manage a cluster and submit, monitor, and manage jobs:

A single, unified web-based interface with advanced capabilities help you manage all aspects of a technical computing cluster. This includes cluster provisioning, monitoring, application integration, and workload management and reporting. The intuitive interface gives you a robust set of management dashboards and reports that monitor resource performance and alerts to ensure that the technical computing infrastructure is optimally utilized.

Cluster management - A better way to deploy and manage technical computing clusters:

Platform HPC - Express Edition enables users to quickly provision and manage clusters with unprecedented ease. It ensures maximum uptime and can transparently synchronize files to cluster nodes without any downtime or reinstallation.

Workload management - Increased application performance and resource utilization:

Platform HPC - Express Edition includes a robust workload scheduling engine based on IBM Platform LSF , a proven, powerful, comprehensive, policy-driven workload management solution for engineering and scientific distributed computing environments. By scheduling workloads intelligently according to policy, Platform HPC - Express Edition improves end-user productivity with minimal effort by system administrators. In addition, it enables user teams to access and share all computing resources, while reducing time between simulation iterations.

Workload and system monitoring and reporting - Easy troubleshooting and capacity planning:

Platform HPC - Express Edition includes an operational dashboard that generates comprehensive administrative reports. It enables administrators to make timely decisions and proactively manage computing resources against business demand. By correlating workload information with system load, they can easily identify and troubleshoot issues. When it's time for capacity planning, administrators can use the unified web portal to run detailed reports and analyses, which quantify user needs and remove the guesswork from capacity expansion.

Dynamic operating system multi-boot - Automated operating system selection based on workload:

Platform HPC - Express Edition includes the flexibility to support multiple operating system versions concurrently on the same resource. Linux™ and Microsoft™ Windows™ operating systems can be dynamically booted based on the job requirement and application profile. You can also use the product's interface to manually switch nodes to the required operating system to meet application demands. This gives you the flexibility to support special requests and accommodate unanticipated changes.

GPU support - Take advantage of high-performing GPUs:

With Platform HPC - Express Edition you can schedule GPU-enabled applications specifically to resources with GPUs. This offers a distinct advantage in heterogeneous hardware and application environments. Administrators can configure Platform HPC - Express Edition so that only jobs that can benefit from running on GPUs are allocated to those resources. This frees up CPU-based resources to run other jobs. Using the unified management interface, administrators can also monitor GPU utilization, temperature, and status as well as detect ECC error accumulation.

MPI library - Accelerates and scales HPC applications, for shorter time to solution:

In order to make it easier to get parallel applications up and running, Platform HPC - Express Edition includes a robust and high-performing MPI implementation. IBM Platform MPI delivers consistent performance at application run time and for application scaling, resulting in top performance results across a range of third-party benchmarks.

Application support - Easy application integration, minimal job submission errors:

Platform HPC - Express Edition comes complete with job submission templates for common commercial ISV applications as well as configurable templates for your applications developed in-house. By configuring these templates based on the application settings in your environment, users can run jobs without writing scripts. These self-documenting, user-friendly interfaces help minimize job submission errors. Platform HPC - Express Edition also includes the Intel™ Cluster Ready Cluster Checker to ensure that the cluster will deliver the best performance for MPI applications.

Third-party software integration - Customize based on an organization's unique needs:

Platform HPC - Express Edition enables you to customize the metrics you monitor, including integrating with third-party management software such as Intel Cluster Checker and QLogic Fabric Manager. Administrators can monitor and alert abnormal status for non-server devices in the HPC environment. Custom actions and buttons can be added to the web-based interface, which can trigger a link to a URL or a command launched on the head node. These customizations enable administrators to create an environment that is tailored specifically to their organization's unique requirements.

Fully certified and supported by IBM Platform Computing:

Unlike other cluster toolkits, which are often collections of open-source software, Platform HPC - Express Edition is a single product with a single installer and a unified web-based management interface. It is based on the industry's well-

recognized, mature, and robust workload manager, IBM Platform LSF , making it a robust and reliable product. Platform HPC - Express Edition unlocks cluster management to deliver HPC management capabilities while reducing overall cluster cost with full support and certification from Platform Computing, the world leader in HPC management solutions.

Accessibility by people with disabilities

A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

   http://www.ibm.com/able/product_accessibility/index.html

Product positioning

IBM Platform product portfolio

Platform HPC - Express Edition is part of the Systems Software product portfolio and is specifically intended for technical computing clients. Platform HPC - Express Edition can be integrated with a variety of HPC product portfolios and services available from IBM , including:

- Several of the IBM Platform LSF products are available as add-ons for Platform HPC - Express Edition, further extending its robust capabilities. This includes IBM Platform Application Center - Standard Edition, IBM Platform RTM, and IBM Platform License Scheduler. Other LSF family add-on products require IBM Platform LSF - Standard Edition, which is available as an upgrade from Platform HPC - Express Edition. Upgrading to Platform LSF - Standard Edition enables you to manage workload across multiple Platform HPC - Express Edition clusters via a single job submission and management interface.
- For clients with diverse workload scheduling requirements, Platform HPC - Express Edition can be purchased in conjunction with IBM Platform Symphony® and associated add-on products. Both Platform HPC - Express Edition and Platform Symphony share a common resource management layer and can share resources on the same physical cluster.
- Depending on the nature of the your requirement, Platform HPC - Express Edition deployments often involve software development and integration services. With its breadth of services capabilities, IBM is uniquely positioned to help you integrate applications and be up and running quickly to get maximum value from your technical computing investment.
- Platform HPC - Express Edition is hardware-independent and runs on generic x86 servers. It can also be sold as stand-alone software for managing generic x86 clusters.

Program number

Program number	VRM	Program name
5725-K71	3.2.0	IBM Platform HPC – Express Edition

Education support

The following classes are available:

Course code	Course title	Course type
H080G	IBM Platform HPC – Express Edition 3.x	Classroom

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H180G     IBM Platform HPC - Express Edition 3.x    ILO*
H285G     IBM Platform HPC - Express Edition        Web based
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*ILO - Instructor-Led Online
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IBM training provides education to support many IBM offerings. Descriptions of courses for IT professionals and managers are on the IBM training website

   http://www.ibm.com/services/learning/

Call IBM training at 800-IBM-TEACH (426-8322) for catalogs, schedules, and enrollments.

Offering Information

Product information is available via the Offering Information website

   http://www.ibm.com/common/ssi

Also, visit the Passport Advantage® website

   http://www.ibm.com/software/passportadvantage

Publications

No hardcopy publications are shipped with this program. The following technical documents are available for the Platform HPC - Express Edition:

- Installing and Managing the Platform HPC - Express Edition Web Portal Kit
- Installing and Managing the NVIDIA CUDA kit
- Installing and Managing the IBM Platform Cluster Manager Base Kit
- Installing and Managing the OS OFED Kit
- Installing and Managing the IBM Platform Cluster Manager Kit
- Installing and Managing the IBM Platform Dynamic Multiboot Kit
- Installing and Managing the Platform HPC - Express Edition GPU Scheduling Kit
- Installing and Managing the IBM Platform MPI Kit
- Web Portal Customization Guide
- Kit Builder Guide
- Getting Started with Platform HPC - Express Edition (Administrators)
- Administering Platform HPC - Express Edition
- Installing Platform HPC - Express Edition
- Release Notes for Platform HPC - Express Edition 3.2

The IBM Publications Center

   http://www.ibm.com/shop/publications/order

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided. Payment options for orders are via credit card (in the US) or customer number for 50 countries. A large number of publications are available online in various file formats, and they can all be downloaded by all countries, free of charge.

Technical information

Specified operating environment

Hardware requirements

Platform HPC - Express Edition requires the following hardware:

- Minimum requirements for installer node/head node:
  - 2 GB of physical memory (RAM) for installer node/head node
  - 80 GB free disk space
  - Two Ethernet interfaces: one that connects to corporate/public network and one (provision) that connects to all compute nodes
  - DVD drive
- Minimum requirements for compute node for package-based installation:
  - 1 GB of physical memory (RAM) for compute node
  - 40 GB free disk space
  - One Ethernet interface
- Minimum requirements for image-based installation:
  - 3 GB of physical memory (RAM)
  - 40 GB free disk space
  - One Ethernet interface
- Minimum requirements for diskless installation:
  - 4 GB of physical memory (RAM)
  - One Ethernet interface
- Minimum requirements for compute node without using Platform HPC provisioning:
  - 512 MB of physical memory (RAM)
  - 10 GB of free disk space
  - One Ethernet interface

Software requirements

The operating systems requirement is as follows:

- Red Hat Enterprise Linux 6.2 x86 64 bit
- Red Hat Enterprise 5.7 x86 64 bit (non-head node)
- CentOS 6.2 x86 64 bit (non-head node)
- SUSE Linux Enterprise Server 11 SP1 x86 64 bit

The program's specifications and specified operating environment information may be found in documentation accompanying the program, if available, such as a README file, or other information published by IBM , such as an announcement letter. Documentation and other program content may be supplied only in the English language.

Compatibility

IBM Platform HPC - Express Edition V3.2 is fully compatible with other Platform HPC V3.x versions.

IBM System x and BladeCenter® servers are listed on the IBM ServerProven® website

http://www-03.ibm.com/servers/eserver/serverproven/compat/us/

Performance considerations

The performance of Platform HPC - Express Edition depends upon many factors, including the number of nodes in the cluster; the number of concurrently executing jobs; the number of pending jobs; the number of users querying the system; and the frequency of queries. As these increase, the scheduling cycle and user response time will increase.

IBM Electronic Support

The IBM Support Portal is your gateway to technical support. This includes IBM Electronic Support tools and resources, for software and hardware, to help save time and simplify support. The Electronic Support tools can help you find answers to questions, download fixes, troubleshoot, automate data collection, submit and track problems through the Service Request online tool, and build skills. All these tools are made available through your IBM support agreement, at no additional charge.

Read about the Electronic Support portfolio of tools: http://ibm.com/electronicsupport
Access the IBM Support Portal: http://ibm.com/support
Access the online Service Request tool: http://ibm.com/support/servicerequest

Planning information

Packaging

Platform HPC - Express Edition is distributed on DVD media options and available for electronic download with multiple eAssemblies. Included are:

- IBM International Program License Agreement in multiple languages
- Release notes
- Installation or User's Guide
- Required files

This program, when downloaded from a website, contains the applicable IBM license agreement and License Information, if appropriate, and will be presented for acceptance at the time of installation of the program. For future reference, the license and License Information will be stored in a directory such as LICENSE.TXT.

Security, auditability, and control

Platform HPC - Express Edition uses the security and auditability features of the system in which it is installed. The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Software Services

IBM Software Services has the breadth, depth, and reach to manage your services needs. You can leverage the deep technical skills of our lab-based, software services team and the business consulting, project management, and infrastructure expertise of our IBM Global Services team. Also, we extend our IBM Software Services reach through IBM Business Partners to provide an extensive portfolio of capabilities. Together, we provide the global reach, intellectual capital, industry insight, and technology leadership to support a wide range of critical business needs.

To learn more about IBM Software Services or to contact a Software Services sales specialist, visit

http://www.ibm.com/software/sw-services/

Ordering information

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shrinkwrap.

```
Product group: IBM Platform Computing
  Product Identifier Description (PID)
  Platform HPC - Express Edition  (5725-K71)

Product category: Other software
```

Charge metric

```
                  Part number or
Program name      PID number        Charge metric

IBM Platform
  HPC - Express
  Edition         5725-K71          Managed server
```

Server

Server is a unit of measure by which the program can be licensed. A server is a
physical computer that is comprised of processing units, memory, and input/output
capabilities and that executes requested procedures, commands, or applications for
one or more users or Client Devices. Where racks, blade enclosures, or other similar
equipment is being employed, each separable physical device (for example, a blade
or a rack-mounted device) that has the required components is considered itself
a separate server. For the purpose of server-based licensing, licensee must obtain
entitlements for each server that is made available to the program, regardless of the
number of processor cores and partitions in the server or the number of copies of
the program on the server.

Notes :

- Some programs may require licenses for the program and what is being
  managed. In that case, the following applies. In addition to the entitlements
  required for the program directly, licensee must obtain entitlements for this
  program sufficient to cover the servers managed by the program.
- Some programs may be licensed on a managed basis only. In that case, the
  following applies. Instead of the entitlements required for the program directly,
  licensee must obtain entitlements for this program sufficient to cover the servers
  managed by program.

Passport Advantage

```
                                                      Part
Program name/Description                              number
IBM Platform HPC-Express Edi Managed Svr Lic+SW S&S 12 Mo   D0YVSLL
IBM Platform HPC-Exp Edit Managed Svr Annual SW S&S Rnwl    E0H5TLL
IBM Platform HPC-Exp Ed Managed Svr SWS&S Reinstate 12 Mo   D0YVTLL

IBM Platform HPC-Express Ed V3.2 Multiplat Eng Media Pk     AJ01BEN
```

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License Information form number

L-ACHG-947RGC

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Yes

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  http://www.ibm.com/support/handbook

IBM will maintain this information for at least one year after the original licensee acquires the program (warranty period).

Money-back guarantee

If for any reason you are dissatisfied with the program and you are the original licensee, you may obtain a refund of the amount you paid for it, if within 30 days of your invoice date you return the program and its PoE to the party from whom you obtained it. If you downloaded the program, you may contact the party from whom you acquired it for instructions on how to obtain the refund.

For clarification, note that (1) for programs acquired under the IBM International Passport Advantage offering, this term applies only to your first acquisition of the program and (2) for programs acquired under any of IBM's On/Off Capacity on Demand (On/Off CoD) software offerings, this term does not apply since these offerings apply to programs already acquired and in use by you.

Volume orders (IVO)

No

Passport Advantage applies

Yes, and through the Passport Advantage website at

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   http://www.ibm.com/support/handbook

Software Subscription and Support does not include assistance for the design and development of applications, your use of programs in other than their specified operating environment, or failures caused by products for which IBM is not responsible under the applicable agreements.

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IBM Operational Support Services - SupportLine

No

System i Software Maintenance applies

No

Variable charges apply

No

Educational allowance available

Not applicable

Statement of good security practices

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Electronic Service Agent™ and the IBM Electronic Support web portal are dedicated to providing fast, exceptional support to IBM Systems customers. The IBM Electronic Service Agent tool is a no-additional-charge tool that proactively monitors and reports hardware events, such as system errors, performance issues, and inventory. The Electronic Service Agent tool can help you stay focused on your company's strategic business initiatives, save time, and spend less effort managing day-to-day IT maintenance issues. Servers enabled with this tool can be monitored remotely around the clock by IBM Support all at no additional cost to you.

Now integrated into the base operating system of AIX® 5.3, AIX 6.1, and AIX 7.1, Electronic Service Agent is designed to automatically and electronically report system failures and utilization issues to IBM , which can result in faster problem resolution and increased availability. System configuration and inventory information collected by the Electronic Service Agent tool also can be viewed on the secure Electronic Support web portal, and used to improve problem determination and resolution by you and the IBM support team. To access the tool main menu, simply type "smitty esa_main", and select "Configure Electronic Service Agent ." In addition, ESA now includes a powerful Web user interface, giving the administrator easy access to status, tool settings, problem information, and filters. For more information and documentation on how to configure and use Electronic Service Agent , refer to

http://www.ibm.com/support/electronic

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Benefits

Increased uptime: The Electronic Service Agent tool is designed to enhance the Warranty or Maintenance Agreement by providing faster hardware error reporting and uploading system information to IBM Support. This can translate to less wasted time monitoring the "symptoms," diagnosing the error, and manually calling IBM Support to open a problem record. Its 24 x 7 monitoring and reporting mean no more dependence on human intervention or off-hours customer personnel when errors are encountered in the middle of the night.

Security: The Electronic Service Agent tool is designed to be secure in monitoring, reporting, and storing the data at IBM . The Electronic Service Agent tool securely transmits either via the Internet (HTTPS or VPN) or modem, and can be configured to communicate securely through gateways to provide customers a single point of exit from their site. Communication is one way. Activating Electronic Service Agent does not enable IBM to call into a customer's system. System inventory information is stored in a secure database, which is protected behind IBM firewalls. It is viewable only by the customer and IBM . The customer's business applications or business data is never transmitted to IBM .

More accurate reporting: Since system information and error logs are automatically uploaded to the IBM Support center in conjunction with the service request, customers are not required to find and send system information, decreasing the risk of misreported or misdiagnosed errors. Once inside IBM , problem error data is run through a data knowledge management system and knowledge articles are appended to the problem record.

Customized support: Using the IBM ID entered during activation, customers can view system and support information in the "My Systems" and "Premium Search" sections of the Electronic Support Web site at

   http://www.ibm.com/support/electronic

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