



# IBM Parallel ESSL for AIX , V4.2 adds subroutines for continued performance gains

## Table of contents

<a href="#">1 Overview</a>	<a href="#">3 Publications</a>
<a href="#">1 Key prerequisites</a>	<a href="#">3 Technical information</a>
<a href="#">1 Planned availability date</a>	<a href="#">6 Ordering information</a>
<a href="#">2 Description</a>	<a href="#">6 Terms and conditions</a>
<a href="#">2 Product positioning</a>	<a href="#">10 Prices</a>
<a href="#">2 Program number</a>	<a href="#">11 Order now</a>

## At a glance

IBM® Parallel Engineering and Scientific Subroutine Library (Parallel ESSL) for AIX® , V4.2 offers additional ScaLAPack subroutines.

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: RE001).

## Overview

Parallel ESSL is a scalable mathematical subroutine library that supports parallel processing applications.

Release 4.2 includes the following new ScaLAPACK subroutines:

- PDLANTR/PZLANTR - Triangular or Trapezoidal Matrix Norms
- PZPBTRF/PZPBTRS/PZPBSV - Positive Definite Complex Hermitian Band Matrix Factor/Solve/Combined Factor and Solve
- PZPTTRF/PZPTTRS/PZPTSV - Positive Definite Complex Hermitian Tridiagonal Matrix Factor/Solve/Combined Factor and Solve
- PDSYEV/PZHHEV - All Eigenvalues, and Optionally the Eigenvectors, of a Real Symmetric or Complex Hermitian Matrix
- PZHHEVD - All Eigenvalues and Eigenvectors of a Complex Hermitian Matrix using a Parallel Divide-and-Conquer Algorithm

## Key prerequisites

- IBM AIX 7.1 with the latest service level
- Select IBM Power Systems™ or Flex System POWER7® technology-based servers

## Planned availability date

- November 30, 2012: Parallel ESSL for AIX
- December 14, 2012: Updated support on IBM Power® 775 solution

---

## Description

---

Parallel ESSL is a scalable mathematical subroutine library that supports parallel processing applications running on IBM Power Systems servers connected with a high-speed switch or a LAN supporting IP.

For communication, Parallel ESSL includes Basic Linear Algebra Communications Subprograms (BLACS), which use the Message Passing Interface (MPI). For computations, Parallel ESSL uses ESSL for AIX subroutines.

The Parallel ESSL SMP libraries are provided for use with the IBM Parallel Environment Runtime Edition MPI threads library. You can run single or multithreaded user space or IP applications on all types of nodes. However, you cannot simultaneously call Parallel ESSL from multiple threads.

The Parallel ESSL for AIX libraries support both 32-bit and 64-bit environment applications. The subroutines can be called from applications written in Fortran, C, and C++.

---

### 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](http://www.ibm.com/able/product_accessibility/index.html)

---

### Section 508 of the US Rehabilitation Act

---

Parallel ESSL for AIX is capable as of November 30, 2012, when used in accordance with IBM's associated documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly interoperates with it. A US Section 508 Voluntary Product Accessibility Template (VPAT) can be requested at

[http://www.ibm.com/able/product\\_accessibility/index.html](http://www.ibm.com/able/product_accessibility/index.html)

---

## Product positioning

---

Use Parallel ESSL for AIX when you need outstanding performance through simple subroutine calls from floating-point engineering and scientific MPI applications.

---

## Reference information

---

Refer to Software Announcement [211-091](#), dated July 12, 2011 .

---

## Program number

---

Program number	VRM	Program name
5765-ESX	4.2.0	Parallel ESSL for AIX

## Product identification number

---

Program PID number	Maintenance	Maintenance
	1-year PID number	3-year PID number
5765-ESX	5660-PES	5663-PES
	5661-PES	5664-PES
		5662-PES

---

## Offering Information

---

Product information is available via the Offering Information website

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

### Business Partner information

---

If you are a Direct Reseller - System Reseller acquiring products from IBM , you may link directly to Business Partner information for this announcement. A PartnerWorld® ID and password are required (use IBM ID).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=212-425>

---

## Publications

---

No publications are shipped with this program. The following publications are available on the web:

- IBM Parallel ESSL: Guide and Reference
- IBM Parallel ESSL for AIX : Installation Guide

To access ESSL and Parallel ESSL documentation, refer to the IBM Cluster information center website. It contains the most recent Parallel ESSL documentation in PDF and HTML formats and is located at

<http://publib.boulder.ibm.com/infocenter/clresctr/index.jsp>

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

One of the following:

- IBM Power 775 clusters using the Host Fabric Interface (HFI)
- IBM Flex System™ p260 and p460 compute nodes (based on POWER7 technology) with PureFlex™ IB6132 2-port QDR InfiniBand adapters interconnected using the PureFlex IB6131 InfiniBand Switch and, optionally, the

IBM QDR Mellanox external switch or running stand-alone or connected with a LAN supporting IP

- Power Systems or Flex System servers (based on POWER7 technology) running stand-alone or connected with a LAN supporting IP

**Note:** For supported levels, compatibility, and limitations, refer to the applicable readme located under documentation and IBM High Performance Computing Clusters Service Packs at

<https://www.ibm.com/developerworks/wikis/display/hpccentral/HPC+Central>

### **Software requirements**

AIX 7.1 operating system, with the latest service level

Software products

- For compiling (one of these):
  - IBM XL Fortran Enterprise Edition V13.1 for AIX or V14.1 for AIX with the latest service levels
  - IBM XL C/C++ Enterprise Edition V11.1 for AIX or V12.1 for AIX with the latest service levels
- For linking, loading, or running:
  - ESSL for AIX , V5.1 with the latest service level
  - Parallel Environment Runtime Edition for AIX , V1.2 with the latest service level
  - IBM XL Fortran Runtime Environment V13.1 or V14.1 for AIX with the latest service levels provided with the IBM XL Fortran Enterprise Edition for AIX or downloadable from <http://www.ibm.com/support/docview.wss?uid=swg24026634>
  - IBM XL C libraries (included in the AIX Application Development Toolkit)

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.

### **Companion products**

- IBM Tivoli® Workload Scheduler LoadLeveler® can be used to submit batch parallel jobs. It can help assist with node allocation for job management.
- IBM General Parallel File System ( GPFS™ ) is a high-performance cluster file system for AIX , Linux™ , and mixed clusters that provides users with shared access to files spanning multiple disk drives. GPFS delivers multicluster support, superior scalability and performance, support for extremely large files, failure recovery, and ease of administration.

### **Limitations**

Parallel ESSL is not thread-safe. However, the Parallel ESSL SMP libraries are thread-tolerant and can, therefore, be called from a single thread of a multithreaded application. Clients should not make multiple simultaneous calls to Parallel ESSL from different threads of a single process as this causes unpredictable results.

Support is not provided with Parallel ESSL for AIX , V4.2 for:

- AIX Version 6
- POWER4, POWER5, and POWER6® processor types, including IBM BladeCenter®
- Qlogic 9000 Series DDR InfiniBand switches
- High Performance Switch
- Myrinet-2000 switch with Myrinet/PCI-X adapters
- Parallel ESSL GM libraries

## **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/electronicssupport>

- Access the IBM Support Portal:

<http://ibm.com/support>

- Access the online Service Request tool:

<http://ibm.com/support/servicerequest>

## **Planning information**

---

### **Packaging**

Parallel ESSL for AIX is distributed as a single package available on DVD media, with the following:

- IBM International Program License Agreement in multilanguage booklet (LC23-5101-01) and its License Information (L-RHAN-8UYPMU) in multiple languages
- Proof of Entitlement (POE)
- Product readme file that describes the program's specified operating environment and program specifications
- Program filesets:
  - pessl.loc.license.4.2.0.0.I
  - pessl.man.en\_US.4.2.0.0.I
  - pessl.msg.En\_US.4.2.0.0.I
  - pessl.msg.en\_US.4.2.0.0.I
  - pessl.rte.4.2.0.0.I
  - pessl.rte.mp.4.2.0.0.I
  - pessl.rte.up.4.2.0.0.I

## **Security, auditability, and control**

---

Parallel ESSL uses the security and auditability features of the AIX 7 operating system.

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

---

## Ordering information

---

### Charge metric

Program name	Part number or PID number	Charge metric
Parallel ESSL for AIX	5765-ESX	Per processor with 1 year SWMA
1-year SWMA: Registration and Renewal	5660-PES	Per processor
1-year SWMA: After-license	5661-PES	Per processor
3-year SWMA: Registration	5662-PES	Per processor
3-year SWMA: Renewal	5663-PES	Per processor
3-year SWMA: After-license	5664-PES	Per processor

### Processor

A processor is the unit of measure by which this program is licensed. A *processor* (commonly called a *CPU* or *core* ) is a functional unit within a computing device that interprets and executes instructions. A processor consists of at least an instruction control unit and one or more arithmetic or logic units. With multicore technology, each core is considered a processor.

**Note:** No changes to ordering information for this release.

This software license includes one year Software Maintenance. Extending coverage for a total of three years from the date of acquisition may be elected. Order the program number, feature number, and quantity to extend coverage for your software licenses. If maintenance has expired, specify the after-license feature number.

Refer to Software Announcement [211-091](#), dated July 12, 2011 .

**System Program Order (SPO):** An order for SPO 5692-A6P is mandatory for shipments of program distribution. The individual licensed program orders are for registration and billing purposes only. No shipment occurs under these orders.

To receive shipment of machine-readable materials, the order needs to include SPO 5692-A6P for Parallel ESSL for AIX . The individual licensed program order (for example, 5765-ESX) must still be ordered but will be for registration and billing purposes only and will not result in shipment of materials.

Program number	Program/Function name	Feature number
5692-A6P	Parallel ESSL for AIX, V4.2	2286

---

## Terms and conditions

---

The information provided in this announcement letter is for reference and convenience purposes only. The terms and conditions that govern any transaction with IBM are contained in the applicable contract documents such as the IBM

International Program License Agreement, IBM International Passport Advantage® Agreement, and the IBM Agreement for Acquisition of Software Maintenance.

### ***Licensing***

IBM International Program License Agreement including the License Information document and Proof of Entitlement (PoE) govern your use of the program. PoEs are required for all authorized use.

This software license includes Software Subscription and Support (also referred to as Software Maintenance).

### ***Agreement for Acquisition of Software Maintenance***

The IBM Agreement for Acquisition of Software Maintenance (Z125-6011) applies for Subscription and Support (also referred to as Software Maintenance) and does not require customer signatures.

These programs are licensed under the IBM Program License Agreement (IPLA) and the associated Agreement for Acquisition of Software Maintenance, which provide for support with ongoing access to releases and versions of the program. IBM includes one year of Software Subscription and Support (also referred to as Software Maintenance) with the initial license acquisition of each program acquired. The initial period of Software Subscription and Support can be extended by the purchase of a renewal option, if available. These programs have a one-time license charge for use of the program and an annual renewable charge for the enhanced support that includes telephone assistance (voice support for defects during normal business hours), as well as access to updates, releases, and versions of the program as long as support is in effect.

### ***License Information form number***

L-RHAN-8UYPMU

The program's License Information will be available for review on the IBM Software License Agreement website

<http://www.ibm.com/software/sla/sladb.nsf>

### ***Limited warranty applies***

Yes

### ***Limited warranty***

IBM warrants that when the program is used in the specified operating environment, it will conform to its specifications. The warranty applies only to the unmodified portion of the program. IBM does not warrant uninterrupted or error-free operation of the program or that IBM will correct all program defects. You are responsible for the results obtained from the use of the program.

IBM provides you with access to IBM databases containing information on known program defects, defect corrections, restrictions, and bypasses at no additional charge. For further information, consult the IBM Software Support Handbook found at

<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).

### ***Program technical support***

Technical support of a program product version or release will be available for a minimum of three years from the general availability date, as long as your Software Subscription and Support (also referred to as Software Maintenance) is

in effect. This technical support allows you to obtain assistance (via telephone or electronic means) from IBM for product-specific, task-oriented questions regarding the installation and operation of the program product. Software Subscription and Support also provides you with access to updates (modifications or fixes), releases, and versions of the program. You will be notified, via announcement letter, of discontinuance of support with 12 months' notice. If you require additional technical support from IBM, including an extension of support beyond the discontinuance date, contact your IBM representative or IBM Business Partner. This extension may be available for a fee.

***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 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)***

Yes. Contact your IBM representative.

***Passport Advantage applies***

No

***Software Subscription and Support applies***

Yes. All distributed software licenses include Software Subscription and Support for a period of 12 months from the date of acquisition, providing a streamlined way to acquire IBM software and assure technical support coverage for all licenses. Extending coverage for a total of three years from date of acquisition may be elected.

While your Software Subscription and Support is in effect, IBM provides you assistance for your routine, short duration installation and usage (how-to) questions, and code-related questions. IBM provides assistance via telephone and, if available, electronic access, only to your information systems (IS) technical support personnel during the normal business hours (published prime shift hours) of your IBM support center. (This assistance is not available to your end users.) IBM offers optional Severity 1 assistance 24 hours a day, every day of the year.

For additional details, consult your IBM Software Support Handbook at

<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 this agreement.

***IBM Operational Support Services -- SoftwareXcel***

No

***Other support***

Power Systems SWMA



**System i Software Maintenance applies**

No

**Variable charges apply**

No

**Educational allowance available**

Yes. A 15% education allowance applies to qualified education institution customers.

---

**Statement of good security practices**

---

IT system security involves protecting systems and information through prevention, detection, and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed, or misappropriated or can result in misuse of your systems to attack others. Without a comprehensive approach to security, no IT system or product should be considered completely secure and no single product or security measure can be completely effective in preventing improper access. IBM systems and products are designed to be part of a comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products, or services to be most effective. IBM does not warrant that systems and products are immune from the malicious or illegal conduct of any party.

---

**IBM Electronic Services**

---

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>

The IBM Electronic Support portal is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. This portal enables you to gain easier access to IBM resources for assistance in resolving technical problems. The My Systems and Premium Search functions make it even easier for Electronic Service Agent tool-enabled customers to track system inventory and find pertinent fixes.

## 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 website at

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

My Systems provides valuable reports of installed hardware and software using information collected from the systems by Electronic Service Agent . Reports are available for any system associated with the customer's IBM ID. Premium Search combines the function of search and the value of Electronic Service Agent information, providing advanced search of the technical support knowledgebase. Using Premium Search and the Electronic Service Agent information that has been collected from your system, customers are able to see search results that apply specifically to their systems.

For more information on how to utilize the power of IBM Electronic Services, contact your IBM Systems Services Representative, or visit

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

---

## Prices

---

For additional information and current prices, contact your local IBM representative.

Information on charges is available at

<http://www.ibm.com/support>

Choose the option entitled Purchase/upgrade tools.

---

## Order now

---

To order, contact the Americas Call Centers or your local IBM representative, or your IBM Business Partner.

To identify your local IBM representative or IBM Business Partner, call 800-IBM-4YOU (426-4968).

Phone: 800-IBM-CALL (426-2255)  
Fax: 800-2IBM-FAX (242-6329)  
For IBM representative: [callserv@ca.ibm.com](mailto:callserv@ca.ibm.com)  
For IBM Business Partner: [pswana@us.ibm.com](mailto:pswana@us.ibm.com)  
Mail: IBM Teleweb Customer Support  
ibm.com® Sales Execution Center, Americas North  
3500 Steeles Ave. East, Tower 3/4  
Markham, Ontario  
Canada  
L3R 2Z1

Reference: RE001

The Americas Call Centers, our national direct marketing organization, can add your name to the mailing list for catalogs of IBM products.

**Note:** Shipments will begin after the planned availability date.

### **Trademarks**

Power Systems, IBM Flex System, PureFlex, GPFS and Electronic Service Agent are trademarks of IBM Corporation in the United States, other countries, or both.

IBM, AIX, POWER7, Power, PartnerWorld, Tivoli, LoadLeveler, POWER6, BladeCenter, Passport Advantage and [ibm.com](http://ibm.com) are registered trademarks of IBM Corporation in the United States, other countries, or both.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Other company, product, and service names may be trademarks or service marks of others.

### **Terms of use**

IBM products and services which are announced and available in your country can be ordered under the applicable standard agreements, terms, conditions, and prices in effect at the time. IBM reserves the right to modify or withdraw this announcement at any time without notice. This announcement is provided for your information only. Additional terms of use are located at

<http://www.ibm.com/legal/us/en/>

For the most current information regarding IBM products, consult your IBM representative or reseller, or visit the IBM worldwide contacts page

<http://www.ibm.com/planetwide/us/>