



IBM ESSL V5.2 extends optimization with new subroutines

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At a glance

IBM® Engineering and Scientific Subroutine Library (ESSL) V5.2 offers additional scientific subroutines for improved performance on IBM POWER® hardware.

For ordering, contact Your IBM representative or an IBM Business Partner.
For more information contact the Americas Call Centers at
800-IBM-CALL (426-2255).

Reference: RE001

Overview

ESSL offers a collection of mathematical subroutines that are tuned for performance on IBM Power Systems™ servers, including IBM POWER6® and IBM POWER7® processor-based servers and blades. ESSL products support both the AIX® operating system and Linux™ operating system.

There are 47 new subroutines available with ESSL V5.2:

- Matrix operations
 - CGECMI and ZGECMI - General Matrix Conjugate Transpose (In-Place)
 - CGECMO and ZGECMO - General Matrix Conjugate Transpose (Out-of-Place)
- LAPACK
 - SPBTRF, DPBTRF, CPBTRF, and ZPBTRF - Positive Definite Real Symmetric or Complex Hermitian Band Matrix Factorization
 - SPBTRS, DPBTRS, CPBTRS, and ZPBTRS - Positive Definite Real Symmetric or Complex Hermitian Band Matrix Multiple Right-Hand Side Solve
 - SPBSV, DPBSV, CPBSV, and ZPBSV - Positive Definite Real Symmetric or Complex Hermitian Band Matrix Factorization and Multiple Right-Hand Side Solve
 - SPTTRF, DPTTRF, CPTTRF, and ZPTTRF - Positive Definite Real Symmetric or Complex Hermitian Tridiagonal Matrix Factorization
 - SPTTRS, DPTTRS, CPTTRS, and ZPTTRS - Positive Definite Real Symmetric or Complex Hermitian Tridiagonal Matrix Multiple Right-Hand Side Solve
 - SPTSU, DPTSU, CPTSU, and ZPTSU - Positive Definite Real Symmetric or Complex Hermitian Tridiagonal Matrix Factorization and Multiple Right-Hand Side Solve

- SSPEVD, DSPEVD, CHPEVD, ZHPEVD, SSYEVD, DSYEVD, CHEEVD, and ZHEEVD - Eigenvalues and Optionally, Eigenvectors of a Real Symmetric or Complex Hermitian Matrix using a Divide and Conquer Algorithm
- SGGEV, DGGEV, CGGEV, and ZGGEV - Eigenvalues and, Optionally, Left and/or Right Eigenvectors of a General Matrix Generalized Eigenproblem
- SSPGVX, DSPGVX, CHPGVX, ZHPGVX, SSYGVX, CHEGVX, and ZHEGVX - Eigenvalues and, Optionally, the Eigenvectors of a Positive Definite Real Symmetric or Complex Hermitian Generalized Eigenproblem

Key prerequisites

Supported on all IBM POWER7 , POWER7+™ , POWER6 , and POWER6+™ servers and blades with the appropriate AIX or Linux operating system. Refer to the [Technical information](#) section for details.

Planned availability date

February 22, 2013

Description

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

Section 508 of the US Rehabilitation Act

ESSL V5 is capable as of February 22, 2013, 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

Product positioning

Use ESSL when you need outstanding performance through simple subroutine calls from floating-point engineering and scientific applications running on IBM Power Systems servers or blades.

Program number

Program number	VRM	Program name
5765-H25	5.2.0	ESSL for AIX
5765-L51	5.2.0	ESSL for Linux on Power

Product identification number

Program PID number	Maintenance	Maintenance
	1-year PID number	3-year PID number
5765-H25	5660-ESL	5663-ESL
	5661-ESL	5664-ESL
		5662-ESL
5765-L51	5660-ELL	5663-ELL
	5661-ELL	5664-ELL
		5662-ELL

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=213-026>

Publications

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

- IBM ESSL Guide and Reference
- IBM ESSL for AIX Installation Guide
- IBM ESSL for Linux on POWER Installation Guide

To access ESSL documentation, refer to the IBM Cluster information center website. It contains the most recent 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.

Specified operating environment

Hardware requirements

Supported on all IBM POWER7 , POWER7+ , POWER6 , and POWER6+ servers and blades.

Software requirements

Operating system support

- AIX 7.1, with the latest available Technology Level (TL)
- AIX 6.1, with the latest available TL
- SUSE Linux Enterprise Server 11 SP1, or later
- Red Hat Linux Enterprise Server 6, or later

On AIX

- For compiling (one of these):
 - IBM XL Fortran Enterprise Edition V13.1 or V14.1 for AIX with the latest service levels
 - IBM XL C/C++ Enterprise Edition V11.1 or V12.1 for AIX with the latest service levels
- For linking, loading, or running:
 - IBM XL Fortran Runtime Environment V13.1 or V14.1 for AIX provided with IBM XL Fortran Enterprise Edition for AIX , or downloadable from <http://www-01.ibm.com/support/docview.wss?rs=43&uid=swg21156900>
 - IBM XL C libraries (included in the AIX Application Development Toolkit)

On Linux

- For compiling (one of these):
 - IBM XL Fortran for Linux V13.1 or V14.1 with the latest service levels
 - IBM XL C/C++ for Linux V11.1 or V12.1 with the latest service levels
 - gcc provided with the Linux distribution
- For linking, loading, or running:
 - IBM XL Fortran for Linux V13.1 or V14.1 Runtime Environment and add-ons provided with IBM XL Fortran for Linux , or downloadable from <http://www-01.ibm.com/support/docview.wss?rs=43&uid=swg21156900>
 - gcc 32-bit and 64-bit libraries provided with the Linux distribution

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 Parallel Environment (PE) Runtime Edition is a high-function development and execution environment for parallel MPI applications that can reduce the time and effort required to develop parallel applications.
- Parallel ESSL is a scalable mathematical subroutine library that can provide outstanding performance through simple subroutine calls for engineering and scientific MPI applications using the IBM PE Runtime Edition MPI library for communications.

- 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.
- IBM Tivoli® Workload Scheduler LoadLeveler® for AIX or IBM LoadLeveler for Linux on Power® can be used to submit batch parallel jobs. It can help assist with node allocation for job management.

Limitations

ESSL for Linux , V5.2 is not supported on IBM Blue Gene/Q™ Systems.

ESSL for AIX , V5.2 is not supported on the AIX 5.3 operating system.

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

Migration considerations

Source code changes may be required in C or C++ application programs that call "cpcocn" or "zpcocn". See the Migration chapter of the *ESSL V5.2 Guide and Reference* for details.

The following non-LAPACK conforming subroutines are no longer provided in ESSL V5.2. To run with ESSL V5.2, existing applications using these subroutines will require source code changes to replace these subroutines as shown below.

ESSL V5.1 Non-LAPACK Conforming Subroutines	Replace with these ESSL LAPACK Subroutines
sggeev, dgeev, cgeev, zgeev	sggeevx, dgeevx, cgeevx, zgeevx
sspev, dspev, chpev, zhpev sspsv, dspv, chpsv, zhpsv	sspevx, dspevx, chpevx, zhpevx
sggegv, dgegv	sggegv, dggegv
ssygv, dsygv	ssygvx, dsygvx

Existing applications that do not use these non-LAPACK conforming subroutines will work without source code changes if you are migrating from ESSL V5.1 to ESSL V5.2.

Packaging

ESSL is distributed as a single package, AIX or Linux , available on DVD media. with the following:

- IBM International Program License Agreement in multilanguage booklet (LC23-5089-01 or LC23-5090-02) and its License Information in multiple languages
- Proof of Entitlement (POE)
- Product readme file that describes the program's specified operating environment and program specifications
- Program filesets for AIX :
 - `essl.loc.license.5.2.0.0.I`
 - `essl.man.en_US.5.2.0.0.I`
 - `essl.msg.En_US.5.2.0.0.I`
 - `essl.msg.en_US.5.2.0.0.I`
 - `essl.rte.5.2.0.0.I`
 - `essl.rte.mp.5.2.0.0.I`
 - `essl.rte.up.5.2.0.0.I`
- Program RPM's for Linux :
 - `essl.license-5.2.0-0.ppc64.rpm`
 - `essl.common-5.2.0-0.ppc64.rpm`
 - `essl.rte.common-5.2.0-0.ppc64.rpm`
 - `essl.rte-5.2.0-0.ppc64.rpm`
 - `essl.3232.rte-5.2.0-0.ppc64.rpm`
 - `essl.3264.rte-5.2.0-0.ppc64.rpm`
 - `essl.6464.rte-5.2.0-0.ppc64.rpm`
 - `essl.msg-5.2.0-0.ppc64.rpm`
 - `essl.man-5.2.0-0.ppc64.rpm`

Security, auditability, and control

ESSL uses the security and auditability features of the operating 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

Charge metric

Program name	Part number or PID number	Charge metric
ESSL for AIX	5765-H25	Per processor with 1 year SWMA
1-year SWMA: Registration and Renewal	5660-ESL	Per processor
1-year SWMA: After-license	5661-ESL	Per processor
3-year SWMA: Registration	5662-ESL	Per processor
3-year SWMA: Renewal	5663-ESL	Per processor
3-year SWMA: After-license	5664-ESL	Per processor

Program name	Part number or PID number	Charge metric
ESSL for Linux	5765-L51	Per processor with 1 year SWMA
1-year SWMA: Registration and Renewal	5660-ELL	Per processor
1-year SWMA: After-license	5661-ELL	Per processor
3-year SWMA: Registration	5662-ELL	Per processor
3-year SWMA: Renewal	5663-ELL	Per processor
3-year SWMA: After-license	5664-ELL	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.

Processor core (or processor)

Processor core (or processor) is a unit of measure by which the program can be licensed. *Processor core* (or *processor*) is a functional unit within a computing device that interprets and executes instructions. A processor core consists of at least an instruction control unit and one or more arithmetic or logic unit. With multicore technology, each core is considered a processor core. Entitlements must be acquired for all activated processor cores available for use on the server.

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.

System Program Order (SPO): An order for SPO 5692-A6P or 5692-LOP 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 ESSL for AIX or SPO 5692-LOP for ESSL for Linux . The individual licensed program order (for example, 5765-H25) 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	ESSL for AIX, v5.2	2280
5692-LOP	ESSL for Linux, v5.2	2270

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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.

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License Information form numbers

L-RHAN-92HL2Y, L-RHAN-92HLHS

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

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 (Software Maintenance) 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.

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

Choose the option entitled Purchase/upgrade tools.

Order now

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Reference: RE001

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Note: Shipments will begin after the planned availability date.

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