IBM Mixed Language Application Modernization Pattern V1.0 helps extend and reuse time-tested, COBOL and C application assets within a modern, cloud-ready Java Enterprise Edition framework

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At a glance

IBM® Mixed Language Application Modernization Pattern V1.0:

- Extends the capability of WebSphere® eXtended Transaction Runtime for usage within the context of IBM PureApplication™ Systems and IBM Workload Deployer.
- Enables extension and reuse of existing time-tested application components written in COBOL and C within a modern JEE-centric framework that is cloud-ready.
- Facilitates dynamic scaling of mixed language applications in a cloud environment.
- Allows readily available Java™ skills to be used to extend existing COBOL and C enterprise application.
- Reduces the investment required to create modern, cloud-ready, mixed language applications by simplifying the management of integration, provisioning, and scaling complexity.
- Enables deployment and management of Oracle Tuxedo and IBM CICS® applications for delivery through a cloud environment.
- Provides fully automated management of mixed language application as a single unit.
- Provides a significant reduction in time taken to deploy and test mixed language applications in a cloud environment.
- Provides a virtual application pattern compatible with IBM PureApplication System and IBM Workload Deployer, including IBM SmartCloud™ offerings.

Overview

IBM Mixed Language Application Modernization Pattern V1.0 is a virtual application pattern used to deploy and manage mixed language applications within a cloud environment using either the IBM Workload Deployer, or on the IBM PureApplication System. Using this pattern, in conjunction with the IBM Web Application Pattern V2.0, enables cloud application writers to efficiently create modern cloud-ready mixed language applications using existing application components written in COBOL, C, and Java Enterprise Edition (JEE).

Existing, time-tested enterprise application assets can therefore be used to create modern applications for the cloud. By utilizing readily available Java skills to extend existing applications into JEE, it is possible to deliver new functionality to meet new
Mixed language applications typically consist of application assets with relevant business logic written in COBOL, C, and JEE and are assembled and integrated to provide required business functionality. The business need to create and use such mixed language application assets in an enterprise arises from a continuing requirement to take advantage of investments that have already gone into existing applications developed in multiple languages over time. Reuse of such application assets while extending functionality to meet new business needs helps improve the agility of proven, time-tested application assets, and thereby reducing the overall costs.

IBM Mixed Language Application Modernization Pattern V1.0 provides a collection of plug-ins that define components and links for the execution of COBOL and C applications. This pattern provides an Enterprise Application (WebSphere eXtended Transaction Runtime) component that would enable execution of such applications. The Enterprise Application (WebSphere eXtended Transaction Runtime) component additionally provides the capability to run CICS applications and to host Oracle.
Tuxedo ATMI-based applications which require the Transactional Extensions part of IBM Mixed Language Application Modernization Pattern.

The pattern provides links to connect with other components provided by the patterns such as the IBM Database pattern and IBM Web Application pattern. The Enterprise Application (WebSphere eXtended Transaction Runtime) component can interact with Database components, such as IBM DB2®, with links representing a connection to a pattern-deployed database or to a remote database outside of the cloud environment.

The Web Application Pattern components such as the Web Application (WebSphere Application Server) and Enterprise Application (WebSphere Application Server) can be interconnected with Enterprise Application (WebSphere eXtended Transaction Runtime) component through links represented by the Java Naming and Directory Interface (JNDI) connection information. Therefore, you can configure the various language components of your mixed language applications using the pattern constructs and enable them to be easily deployed and managed in a cloud environment, by using either the PureApplication System or IBM Workload Deployer.

A typical scenario requiring the Transactional Extensions part of the IBM Mixed Language Application Modernization Pattern could include components such as the Web Application (WebSphere Application Server) component connected with the Enterprise Application (WebSphere eXtended Transaction Runtime) component and the links established to the Database Pattern components, such as DB2®, from both the IBM Web and Enterprise Application components.

With the help of the Transactional Extensions capability, this scenario would use the key features provided by the WebSphere eXtended Transaction Runtime V2.1 runtime services, such as the global transaction Support across the JEE and the Enterprise applications written in COBOL and C.

The Transactional Extensions part also supports deployment of CICS and Oracle Tuxedo ATMI-based applications by using this pattern. They would be managed as Enterprise Application (WebSphere eXtended Transaction Runtime) components in a deployment scenario. They can be linked to other Web Application components (WebSphere Application Server) and Database Pattern components. This enables such applications to be hosted and made available from a cloud environment.

When you deploy your applications using IBM Mixed Language Application Modernization Pattern V1.0, it is converted from a logical model to a topology of virtual machines that are deployed to the cloud. The system determines the underlying infrastructure and middleware that is required for the application and adjusts them as needed to ensure that the quality of service levels that are set for the application are maintained. A deployed topology that is based on such a virtual application pattern is called a virtual application instance. You can deploy multiple virtual application instances from a single virtual application pattern.

**Accessibility by people with disabilities**

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


**Product positioning**

Many businesses are now considering cloud adoption initiatives for their organizations to drive further efficiencies into their IT systems. These businesses have over the years invested significant time and effort in building tailored business logic implemented in COBOL and C-based applications. There is often a requirement to continue to expand these applications in Java to take advantage of the readily available skills in that language. Moving these mixed language COBOL, C, and Java applications in a cloud environment poses significant challenges to these customers.
The IBM PureSystems™ and IBM PureApplication Systems families provide ideal platforms for such customers as they begin their enterprise cloud initiatives.

The IBM Mixed Language Application Modernization Pattern, along with the IBM Web Application Pattern V2.0, automatically provisions various components of mixed language applications along with connections to persistence resources within a cloud using either the PureApplication System W1700 or the IBM Workload Deployer. This consistent and repeatable cloud-deployed environment helps minimize the time required to put applications into production.

Reference information

IBM PureApplication System W1700 (PureApplication System) is an expert integrated system. It combines the flexibility of a general purpose system, the elasticity of a cloud, and the simplicity of an appliance. Integrated expertise throughout the system helps fundamentally change the economics of IT. The PureApplication System comes integrated from the IBM factory, architected by IBM experts.


For information on IBM PureSystem, visit


For information on IBM Web Application Pattern V2.0, refer to Software Announcement AP11-0395, dated October 4, 2011.

For information on IBM Workload Deployer V3.1, refer to Hardware Announcement AG11-0212, dated October 4, 2011.

Availability of national languages

At availability, the product will support the following national languages:

- German
- English
- Spanish
- French
- Italian
- Japanese
- Korean
- Portuguese (Brazil)
- Simplified Chinese
- Traditional Chinese

Program number

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<td>5725-K59</td>
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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

The following publications are provided:

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<tr>
<td>IBM Mixed Language Application Modernization Pattern</td>
<td></td>
</tr>
<tr>
<td>- Quick Start Guide</td>
<td>CF3q9ML</td>
</tr>
<tr>
<td>- Release Notes</td>
<td>GC34-2927</td>
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IBM plans to publish the product documentation in an Information Center using the IBM Eclipse Help System framework.

Advantages of Information Centers are that:

- Content is indexed by Google and other Internet search engines to help locate information more easily.
- Custom searches can be created that include only the information you need for a particular task or job role.

The product documentation for IBM Mixed Language Application Modernization Pattern V1.0 for IBM Workload Deployer is planned to be made available as a plug-in to the IBM WebSphere eXtended Transaction Runtime V2.1 Information center. Visit

http://pic.dhe.ibm.com/infocenter/wxtrform/v2r1/index.jsp

The product documentation for IBM Mixed Language Application Modernization Pattern V1.0, for IBM PureApplication System W1700, will be made available with the PureApplication System W1700 Information Center.

The IBM Publications Center is available at

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 20 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

- **Hardware requirements (for IBM PureApplication System)**
  - IBM PureApplication System W1700

- **Hardware requirements (for IBM Workload Deployer)**
  - IBM Workload Deployer V3.1
Software requirements

- Software requirements (Common for both IBM Workload Deployer and IBM PureApplication System)
  - IBM Web Application Pattern V2.0
  - IBM Foundation Pattern V2.0
  - IBM Transactional Database Pattern V1.1 (Required only if deployed applications need to interact with DB2 database)

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.

Limitations

- Creation of multiple links from the IBM Web Application (WebSphere Application Server) or IBM Enterprise Application (WebSphere Application Server) component to the same Enterprise Application (WebSphere eXtended Transaction Runtime) component is not supported.
- Creation of multiple WebSphere eXtended Transaction Runtime containers on the same virtual machine is not supported.
- Exposing mixed language applications written in COBOL and C as an SCA service is not supported.

For additional information, refer to Usage restriction in the Terms and conditions section of this announcement, or to the license information document that is available on the IBM Software License Agreement website


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

The media pack for IBM Mixed Language Application Modernization Pattern V1.0 contains:

- IBM Mixed Language Application Modernization Pattern V1.0
- IBM International Program License Agreement
- License Information, with Transactional Extensions capability program-unique terms for optional chargeable component
IBM Mixed Language Application Modernization Pattern V1.0 can be downloaded from

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

IBM Mixed Language Application Modernization Pattern V1.0 is preloaded on IBM PureApplication System W1700 and the Language Runtime capability part is pre-entitled for use. To use the Transactional Extensions capability part, a separate license must be procured.

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

IBM Mixed Language Application Modernization Pattern V1.0 uses the security and auditability features of the operating system under which it is running.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communication facilities.

Ordering information

This product is only available via Passport Advantage. It is not available as shrinkwrap.

Product group: IBM Transaction Server

<table>
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Product category: Transaction Server

Charge metric

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Processor Value Unit (PVU)

PVU is a unit of measure by which the program can be licensed. The number of PVU entitlements required is based on the processor technology (defined within the PVU table by processor value, brand, type, and model number at the website below) and the number of processors made available to the program. IBM continues to define a processor, for the purpose of PVU-based licensing, to be each processor core on a chip. A dual-core processor chip, for example, has two processor cores. The PVU table can be found at


Licensee can deploy the program using either full capacity licensing or virtualization capacity (sub-capacity) licensing according to the Passport Advantage Sub-Capacity Licensing Terms (refer to the web page below). If using Full Capacity licensing, Licensee must obtain PVU entitlements sufficient to cover all activated processor cores in the physical hardware environment made available to or managed by the program, except for those servers from which the program has been permanently removed. If using Virtualization Capacity licensing, Licensee must obtain entitlements sufficient to cover all activated processor cores made available to or managed by the program, as defined according to the Virtualization Capacity License Counting Rules at


1 An activated processor core is a processor core that is available for use in a physical or virtual server, regardless of whether the capacity of the processor core can be or is limited through virtualization technologies, operating system commands, BIOS settings, or similar restrictions.

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 PVU entitlements for this program sufficient to cover the processor cores 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 PVU entitlements for this program sufficient to cover the processor cores managed by the program.
- A few programs on an exception basis may be licensed on a referenced basis. In that case, the following applies. Rather than obtaining entitlements for the activated processor cores available to the program, licensee must obtain PVU entitlements for this program sufficient to cover the environment made available to the referenced program as if the program itself were executing everywhere the referenced program was executing, independent of the basis on which the referenced program is licensed.

Processor Value Unit (PVU) sub-capacity licensing

This software product is eligible for sub-capacity licensing. Customers must accept the terms of the IBM International Passport Advantage Agreement Attachment for Sub-Capacity Licensing Terms (Attachment), and must obtain PVU Proofs of Entitlement (PoEs) for the maximum processor core capacity available to an eligible sub-capacity product when deployed in an eligible virtualization environment. This is also referred to as sub-capacity or virtualization capacity licensing.

Customers must use the IBM License Metric Tool unless they meet the exceptions described in the Attachment.

For information regarding PVU sub-capacity licensing, including terms and IBM License Metric Tool ordering information, visit

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.

This product is only available via Passport Advantage. It is not available as shrinkwrap.

**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. Part number products only, offered outside of Passport Advantage, where applicable, are license only and do not include Software Maintenance.

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

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 (also referred to as Software Maintenance) 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**

License: L-ACRR-936KUN

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

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 five 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 (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

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

**Usage restriction**

Yes

**Transactional Extensions capability**

You are not authorized to use IBM Mixed Language Application Modernization Pattern V1.0 Migration Assist tooling, or to compile, host, or run any application resulting in calls to EXEC CICS APIs, in conjunction with IBM Mixed Language Application Modernization Pattern V1.0, unless you have purchased entitlement to use the IBM Mixed Language Application Modernization Pattern V1.0 Transactional Extensions capability.

For additional information, refer to the License Information document that is available on the IBM Software License Agreement website


**Software Subscription and Support applies**

Yes. Software Subscription and Support (also referred to as Software Maintenance) is included with licenses purchased through Passport Advantage and Passport Advantage Express®. Product upgrades and Technical Support are provided by the Software Subscription and Support offering as described in the Agreements.
Product upgrades provide the latest versions and releases to entitled software and Technical Support provides voice and electronic access to IBM support organizations, worldwide.

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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 provides Severity 1 assistance 24 hours a day, 7 days a week. 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 the applicable agreements.

For additional information about the International Passport Advantage Agreement and the IBM International Passport Advantage Express Agreement, visit the Passport Advantage website at

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

**System i Software Maintenance applies**

No

**Variable charges apply**

Yes

**Educational allowance available**

Not applicable.

**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 Web site 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 all local charges, contact your IBM representative.

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**Variable charges:** The applicable processor-based one-time charge will be based on the group of the designated machine on which the program is licensed for use. If the program is designated to a processor in a group for which no charge is listed, the charge of the next higher group listed applies. For movement to a machine in a higher group, an upgrade charge equal to the difference in the then-current charges between the two groups will apply. For movement to a machine in a lower group, there will be no adjustment or refund of charges paid.

AP distribution

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* Brunei Darussalam, Indonesia, Cambodia, Lao People's Democratic Republic, Malaysia, Philippines, Singapore, Thailand, and Vietnam
**Bangladesh, Bhutan, India, Sri Lanka, Maldives, Nepal, and Afghanistan

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