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IBM z/OS Connect Enterprise Edition V2.0 enables z/OS-based programs and data to participate fully in the new API economy for mobile and cloud applications

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At a glance

IBM® z/OS® Connect Enterprise Edition (EE) V2.0:

- Delivers RESTful APIs as a discoverable, first-class resource with Swagger 2.0 descriptions. These are ready for consumption by today's application developers inside or outside of an organization, and also for integration with API management solutions.
- Provides intuitive Eclipse-based tooling that enables a developer with or without z/OS-skills to create RESTful APIs from traditional z/OS-based assets.
- Includes a new API package artifact that encapsulates the RESTful API, together with necessary detail to invoke underlying services in the z/OS subsystems.

    - The new API mapping model adds a powerful abstraction layer between the API consumer and the underlying z/OS assets, allowing in-line manipulation of requests such as the mapping of HTTP headers, pass-through, redaction or defaulting of JSON fields, and rearranging the order of JSON fields and data.
    - The API package encapsulation lends itself to application development lifecycle. This allows integration with change control-management processes.

- Supports standard JSON message format with translation to and from the required native format of z/OS subsystems.
- Integrates with IBM API Management for enterprise-class API management that covers consumer registration, API security controls, and version control.
- Provides flexibility in development, test, and production environments with new pricing methodology.
- Takes advantage of previously released z/OS Connect capabilities in WebSphere® Liberty Profile, which include security checking, activity reporting, and logging capabilities.

z/OS Connect EE V2.0 workstation tooling is available for download, separately from IBM. refer to

    https://developer.ibm.com/mainframe/

Under section "Eclipse platforms & tools for Mainframe", select " z/OS Connect".

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: LE001

Overview

IBM z/OS Connect Enterprise Edition (EE) V2.0 extends the value of applications that run on z/OS by allowing efficient and scalable APIs for contemporary mobile and cloud applications to be created easily. z/OS Connect EE V2.0 can help to deliver benefits for an enterprise in two ways:

- Provides intuitive tooling that enables a developer, with or without z/OS-skills, to create RESTful APIs from traditional z/OS-based assets. This means that core business assets that run on z/OS can easily be enabled for the latest mobile communication protocols, cloud deployment, hosting techniques, and message formats.
- Allows mobile and cloud application developers, whether they are in an enterprise, with partners, or are key innovators in an industry, to incorporate z/OS data and transactions into their applications without the need to understand z/OS subsystems. The z/OS resources appear as any other RESTful API.

z/OS Connect EE V2.0 creates new deployment artifacts, referred to as API packages. These are deployed to the z/OS Connect runtime to instantiate a z/OS-based RESTful API. The API package includes Swagger 2.0 definitions, which consuming developers expect to find, to help easily incorporate the APIs into applications. The primary design objective of z/OS Connect V2.0 is for z/OS assets to appear as any other platform that provides RESTful API services to mobile and cloud application developers. An enterprise API catalog can be populated with z/OS Connect-hosted APIs alongside any other provider and be consumed just the same.

This API package deployment can be automated by extending an existing enterprise change control process or performed manually. The associated deployment capabilities provide an enterprise with the ability to meet the demands of the fast-paced API economy, while meeting governance and audit requirements.

Descriptive Uniform Resource Identifiers (URIs) and JavaScript™ Object Notation (JSON) payloads are essential features of contemporary, well structured APIs, which mobile and cloud application developers expect. z/OS Connect EE V2.0 includes a significant new mapping capability that adapts URIs and JSON payloads to the required format of the z/OS subsystems. The API mapping model adds a powerful abstraction layer between the API consumer and the underlying z/OS assets. This allows the following inline transformations of HTTP request and response messages:

- Mapping of HTTP headers, path parameters (URI templates), and query parameters to the fields in the request message JSON body.
- Pass-through, redaction, or defaulting of fields in the request or response message JSON body.
- Mapping and defaulting of HTTP headers in the HTTP response message.

The API mapping functionality improves the productivity of the z/OS developer in the design and creation of RESTful APIs.

One consumer of the Swagger 2.0 standard description is IBM API Management, which provides additional management services on the APIs, such as lifecycle management and improved access security. The combination of z/OS Connect EE V2.0 and IBM API Management delivers the ability to define, socialize, monitor, secure, and manage the growth of RESTful APIs on z/OS.

The z/OS runtime component of z/OS Connect EE V2.0 can run one instance or several instances that depends on the needs of the environment. A particular instance can be used to support multiple z/OS subsystems, or clients may choose to run one or more instance per subsystem. z/OS Connect EE V2.0 includes a new pricing metric that allows flexibility in the way clients choose to implement

test, development, and production environments. This includes high availability considerations.

z/OS Connect EE V2.0 extends the capabilities of the earlier release of z/OS Connect, which was made available as a shared technology, with the major z/OS subsystems of IBM CICS(R) Transaction Server for z/OS (CICS TS), IBM IMS™, IBM DB2(R) using the DB2 Accessories Suite V3.3, and IBM WebSphere Application Server for z/OS. Key z/OS Connect capabilities in the areas of authorization security checking of those invoking a RESTful service, creation of System Management Facility (SMF) records, and logging of RESTful service requests are also applicable to the new API artifacts.

Key prerequisites

z/OS Connect EE V2.0 runtime requires IBM z/OS V1.13 or z/OS V2.1, or later, and one of the following:

- IBM 64-bit SDK for z/OS, Java™ Technology Edition V7.1.0
- IBM 64-bit SDK for z/OS, Java Technology Edition V8.0.0

z/OS Connect EE V2.0 workstation tooling requires one of the following:

- IBM CICS Explorer(R) V5.3
- IBM Explorer for z/OS V3.0 Aqua
- IBM IMS Explorer for Development V3.2

For further details, refer to the Hardware requirements and Software requirements sections.

Planned availability date

December 11, 2015

Description

Cloud and mobile applications reshape the way enterprises and systems interact. RESTful APIs that use JSON message formats are the predominate standards for new application development. Enterprises with critical business functions on z/OS, or critical data on z/OS, can benefit from these new standards.

As z/OS subsystems participate in these new application development standards, the usage of z/OS-based services and data can be seamless to the application developers that aid in the productivity of new application development. z/OS Connect EE V2.0 provides z/OS subsystems, and the applications that run on z/OS, with support for these modern interfaces.

z/OS Connect EE V2.0 consists of two major components:
- Workstation-based interface
- z/OS Connect EE V2.0 runtime

Workstation-based interface

The z/OS Connect EE V2.0 workstation tooling can work stand-alone, independent of the z/OS subsystems. It is designed work with IBM Explorer for z/OS Aqua, and associated offerings. The workstation-based interface (which uses Eclipse technology) is used for the composition of z/OS RESTful APIs. The API composition tasks include:

- Definition of the RESTful API, the JSON message formats that are required by the API (for both request and response)
- Definitions to invoke a specific service on z/OS.

These various definitions are encapsulated in an API package file, together with a matching Swagger 2.0 document.

The user interface is designed to be intuitive for a z/OS developer who is familiar with RESTful API concepts. Behind each API definition, the JSON request-response schema associated with a specific HTTP method (GET, POST, PUT, and DELETE) can be mapped to an associated z/OS Connect service. In combination with values from the HTTP headers, JSON fields can be passed-through, moved, omitted, or set to a default value, and taken together to form an "API mapping model".

The API mapping model provides a powerful degree of separation between the mobile or cloud application view of the API, and the underlying z/OS subsystem assets. This potentially allows many independent APIs to concurrently exploit common underlying assets, while maintaining the ability to evolve at their own rate.

In combination with the API mapping model, z/OS Connect EE V2.0 provides for the transformation of JSON data to the common format of z/OS subsystems. All together, the API mapping model and the transformation functions improve the productivity of the z/OS developer in the creation of RESTful APIs.

The z/OS Connect tooling allows the API developer to export an API project encapsulated as an API package file, which itself can be placed under change control and can then be deployed to the z/OS Connect EE V2.0 runtime.

In the dynamic API services market, it is important for z/OS subsystems to both support RESTful APIs and do so in a timely fashion.

z/OS Connect EE V2.0 runtime

The second component of z/OS Connect EE V2.0 is called the "runtime". The API package files originating from the workstation tooling are uploaded to the z/OS UNIX™ file system, which is accessible by the LPAR where z/OS Connect EE will run. z/OS Connect EE V2.0 is configured to locate and install API package files during initialization.

The API package file contains specific information about how z/OS subsystem might be involved. This specific information might change from one z/OS environment to another. For example, a transaction specified in a test environment might be different than a production environment transaction identifier. z/OS Connect EE V2.0 provides a utility to deploy an API package file to a specific instance of z/OS Connect EE. This utility can assist the automated deployment of API package files.

In addition to creating the RESTful APIs on z/OS, a standard Swagger 2.0 description is also produced. This provides portability of the API specifications to other systems that require instructions on how to invoke a RESTful API. IBM API Management is an enterprise API management product. It can discover z/OS Connect EE APIs and their associated Swagger 2.0 descriptions, to dynamically build a catalogue of z/OS-based API services.

The z/OS Connect EE V2.0 runtime also provides the following capabilities in support of APIs as a first-class resource:

- Security support through the z/OS System Authorization Facility (SAF) to validate that any requests for API calls are by authorized users, groups, or calling applications.
- Request-level logging of JSON payloads, which include both request or response data. Both SMF and file system logging options are available.

System Management Facility (SMF) records are also used for reporting on z/OS Connect EE V2.0 usage.

Value Unit-based pricing

Value Unit pricing for eligible IBM z Systems IBM International Program License Agreement (IPLA) programs enables a lower cost of incremental growth and enterprise aggregation. Each z Systems IPLA product with Value Unit pricing has a single price per Value Unit and a conversion matrix, called Value Unit Exhibit, for converting from some designated measurement to Value Units.

Value Unit pricing offers price benefits for you. For each z Systems IPLA program with Value Unit pricing, the quantity of that program needed to satisfy applicable IBM terms and conditions is referred to as the required license capacity. Value Unit Exhibits are uniquely identified by a three digit code and referred to using the nomenclature VUExxx, where xxx is the three digit code.

Subsequent acquisitions of Value Unit priced programs offer additional price benefits. The quantity of each z Systems IPLA program that you have acquired is referred to as entitled license capacity. If you wish to grow your entitled license capacity for a z Systems IPLA program, the calculation to determine additional needed Value Units is based upon the number of Value Units already acquired.

For each z Systems IPLA program with Value Unit pricing, you should:

- Determine the required license capacity, in number of instances
- Aggregate number of instances across the enterprise
- Convert the number of instances to Value Units, using the applicable Value Unit Exhibit
- Multiply the price per Value Unit by the total number of Value Units to determine the total cost

An online tool is available to help calculate the VUs. Go to_

http://www-03.ibm.com/systems/z/resources/swprice/zipla/vuc/download.

To simplify conversion from the designated measurement to Value Units or vice-versa, use the Value Unit Converter Tool. For additional information or to obtain a copy of the Value Unit Converter Tool, visit the Value Unit Converter Tool website

http://www-03.ibm.com/systems/z/resources/swprice/zipla/vuc/download.html

Note that Value Units of a given product cannot be exchanged, interchanged, or aggregated with Value Units of another product. To determine the required license capacity for the z Systems IPLA program you selected, refer to the Terms and conditions section.

Product positioning

z/OS Connect EE V2.0 builds on the z/OS Connect REST functions provided in WebSphere Liberty Profile V8.5[1]. Basic REST function is provided with the z/OS Connect V1, which offers one subsystem service call per REST request, typically using a POST REST operation. z/OS Connect V1 provides data translation from the JSON message format to that supported by the back-end subsystem, along with SAF support, SMF record creation, and discovery of defined services by API Management. z/OS Connect V1 is shipped with CICS TS V5, IMS Enterprise Suite, IBM DB2 Accessories Suite for z/OS V3.3, and WebSphere Application Server for z/OS V8.5. z/OS Connect V1 that is included in WebSphere Application Server for z/OS V8.5 can be used to run with multiple different subsystems. It continues to be available and supported for those clients only needing this basic level of RESTful support.

[1] With this announcement, the z/OS Connect function contained in WebSphere Liberty Profile is referred to as z/OS Connect V1.

z/OS Connect EE V2.0 extends the entitled capabilities of z/OS Connect V1 to support all REST verbs, such as GET, POST, DELETE, and PUT. It supports JSON message mapping in addition to data translation and provides new Eclipse tooling to define RESTful APIs. It also delivers an enhanced runtime environment on z/OS. z/OS Connect EE is designed to support multiple, different, subsystems concurrently. The intent is to allow one or more instances of z/OS Connect EE to communicate with CICS, IMS, or WebSphere Application Server for z/OS, as the environment necessitates. z/OS Connect EE can be deployed as a combination of dedicated instances per subsystem, such as one for CICS, one for IMS, and one for WebSphere Application Server for z/OS. z/OS Connect EE can be deployed using shared instances to multiple subsystems, such as one instance to communicate with CICS, IMS, and WebSphere Application Server for z/OS. This provides greater configuration flexibility than provided with z/OS Connect V1.

z/OS Connect EE supports the discovery of defined APIs, similar to z/OS Connect V1, but is enhanced by using the Swagger 2.0 standard to share API descriptions. z/OS Connect EE can operate as a gateway function to REST services and defined APIs on z/OS and provides a more complete solution when combined with IBM API Management. API Management provides not only the discovery of z/OS Connect EE APIs but, once discovered, lifecycle management, governance, socialization, and security of the z/OS APIs. z/OS Connect EE operates with API Management either on a client premises or as a service on IBM Bluemix™.

z/OS Connect EE provides RESTful APIs using z/OS applications and data that can be used by any mobile or cloud-based application configured to use REST. z/OS Connect EE provides a RESTful interface so that consuming applications are not aware that the APIs and services are running on the z/OS operating system.

Statement of general direction

IBM makes the following statements of general direction:

- IBM intends to deliver IBM z/OS Connect Enterprise Edition (EE) components and technologies through continuous delivery of new features in the coming months.
- IBM intends that a future release of IBM CICS Transaction Server for z/OS (CICS TS) will provide support for z/OS Connect EE to enable it to execute embedded within CICS TS.
- IBM intends that a future release of IBM MQ for z/OS will provide support for both z/OS Connect and z/OS Connect EE.
- IBM intends to update IBM System Automation for z/OS V3.5.0 to deliver a new sample policy to allow automated operations and restart of z/OS Connect and z/OS Connect EE.
- IBM intends that a future release of IBM IMS Enterprise Suite will provide support for z/OS Connect EE.
- IBM intends to offer IBM DB2 for z/OS Version 11, or later, with support for the external interface delivered in z/OS Connect EE V2.0, and DB2 RESTful API support that is fully integrated into the DB2 for z/OS Distributed Data Facility.

IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remain at our sole discretion.

Reference information

For information on IBM DB2 11.1 for z/OS, refer to Software Announcement 213-376, dated October 1, 2013.

For information on the IBM DB2 Adapter for z/OS Connect feature of DB2 Accessories Suite for z/OS V3.3, refer to Software Announcement 215-381, dated October 5, 2015.

For information on IBM Explorer for z/OS, V3.0, refer to Software Announcement 215-373, dated October 5, 2015.

For information on IBM Operations Analytics for z Systems™ V2.1, refer to Software Announcement 215-133, dated April 21, 2015.

For information on IMS 14, refer to Software Announcement 215-405, dated October 5, 2015.

For information on Rational(R) Developer for System z(R), V9.1, refer to Software Announcement 214-198, dated April 28, 2014.

For information on WebSphere Application Server, V8.5, refer to Software Announcement 212-109, dated April 24, 2012.

Program number

Program number	VRM	Program name
5655-CEE	2.0.0	IBM z/OS Connect Enterprise Edition
5655-CES	1.1.0	IBM z/OS Connect Enterprise Edition S&S

Product identification number

Program PID number	Subscription and Support PID number
5655-CEE	5655-CES

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(R) ID and password are required (use IBM ID).

BP Attachment for Announcement Letter 215-493

Publications

z/OS Connect EE V2.0 product documentation is provided in two ways:
- Online, through IBM Knowledge Center
- For the workstation-based tooling, as integrated help

Online information in IBM Knowledge Center

Online documentation for z/OS Connect EE is hosted in IBM Knowledge Center, which provides integrated tools for finding, filtering, customizing, saving, and sharing information.

For the z/OS Connect EE product documentation in IBM Knowledge Center, refer to

http://www.ibm.com/support/knowledgecenter/SS4SVW_2.0.0

Integrated help

z/OS Connect EE provides workstation-based tooling for creating RESTful APIs. The documentation that is needed to use this tooling is integrated as online help. This information can be accessed by selecting "Help" in the tooling.

Other z/OS Connect EE publications

Other publications for z/OS Connect EE V2.0 are available at

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

Publication	Form number
z/OS Connect EE V2.0 Program directory	GI13-3384
z/OS Connect EE V2.0 Data sheet	GI13-3385

Services

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, refer to

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

Technical information

Specified operating environment

Hardware requirements

z/OS Connect EE V2.0 runs on any machine that supports the required, supported, operating systems.

Software requirements

z/OS Connect EE V2.0 runtime requires IBM z/OS V1.13 or z/OS V2.1, or later, and one of the following:

- IBM 64-bit SDK for z/OS, Java Technology Edition V7.1.0
- IBM 64-bit SDK for z/OS, Java Technology Edition V8.0.0

z/OS Connect EE V2.0 workstation tooling requires one of the following:

- IBM CICS Explorer V5.3
- IBM Explorer for z/OS V3.0 Aqua

- IBM IMS Explorer for Development V3.2

For the most up-to-date information of the specified operating environments for z/OS Connect EE V2.0, go to the IBM Software Product Compatibility reports, at

http://www.ibm.com/software/reports/compatibility/clarity/index.jsp

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.

Planning information

Packaging

z/OS Connect EE V2.0 is shipped using CBPDO or other customized offerings, on 3590 tape.

The z/OS Connect EE V2.0 License Information DVD (GC34-7461) is shipped with the product.

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

z/OS Connect EE V2.0 uses the security and auditability features of the operating system under which they are 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

z/OS Connect EE V2.0 workstation tooling is available for download, separately from IBM. Refer to

https://developer.ibm.com/mainframe/

Under section "Eclipse platforms & tools for Mainframe", select " z/OS Connect".

The program in this announcement has Value Unit-Based pricing.

Program number	Program name	Value Unit Exhibit
5655-CEE	z/OS Connect EE V2.0	VUE037

For each z Systems IPLA program with Value Unit pricing, the quantity of that program needed to satisfy applicable IBM terms and conditions is referred to as the **required license capacity.** Your required license capacity is based upon the following factors:

- The z Systems IPLA program you select
- The applicable Value Unit Exhibit
- The applicable terms
- Whether your current mainframes are full-capacity or sub-capacity

Value Unit exhibit VUE037

The designated measure for the purpose of Value Unit calculation is a Simultaneous Instance of the Program. An Instance is a copy of the Program. Multiple copies of the Program in a single environment are each considered to be a separate Instance. Sufficient entitlements must be obtained for the highest number of Simultaneous Instances executing at any given time.

Number of Simultaneous Instances	VUs per Simultaneous Instance
1 to 4	1 VU per Simultaneous Instance
5 to 10	4 VUs + 0.6660 VUs per Simultaneous Instance > 4
11 to 20	8 VUs + 0.4000 VUs per Simultaneous Instance > 10
21 to 40	12 VUs + 0.2000 VUs per Simultaneous Instance > 20
41 to 100	16 VUs + 0.0660 VUs per Simultaneous Instance > 40
101 to 250	20 VUs + 0.0260 VUs per Simultaneous Instance > 100
251 to 500	24 VUs + 0.0160 VUs per Simultaneous Instance > 250
501 to 1000	28 VUs + 0.0080 VUs per Simultaneous Instance > 500
1001 to 3000	32 VUs + 0.0020 VUs per Simultaneous Instance > 1000
>3000	36 VUs + 0.0007 VUs per Simultaneous Instance > 3000

When calculating the total number of Value Units, the sum is to be rounded up to the next integer.

Ordering z/OS through the Internet

ShopzSeries provides an easy way to plan and order your z/OS ServerPac or CBPDO. It will analyze your current installation, determine the correct product upgrade, and present your new configuration based on z/OS. Additional products can also be added to your order (including determination of whether all product requisites are satisfied). ShopzSeries is available in the US and several countries in Europe. In countries where ShopzSeries is not available yet, contact your IBM representative (or IBM Business Partner) to handle your order using the traditional IBM ordering process. For more details and availability, refer to the ShopzSeries website at

http://www14.software.ibm.com/webapp/ShopzSeries/ShopzSeries.jsp

Charge metric

Program name	PID number	Charge metric
z/OS Connect EE V2.0	5655-CEE	Per Value Unit
z/OS Connect EE - Software Subscription and Support	5655-CES	Per Value Unit

Value Unit exhibit VUE037

The designated measure for the purpose of Value Unit calculation is a Simultaneous Instance of the Program. An Instance is a copy of the Program. Multiple copies of the Program in a single environment are each considered to be a separate Instance. Sufficient entitlements must be obtained for the highest number of Simultaneous Instances executing at any given time.

Number of Simultaneous Instances	VUs per Simultaneous Instance
1 to 4	1 VU per Simultaneous Instance
5 to 10	4 VUs + 0.6660 VUs per Simultaneous Instance > 4

Number of Simultaneous Instances	VUs per Simultaneous Instance
11 to 20	8 VUs + 0.4000 VUs per Simultaneous Instance > 10
21 to 40	12 VUs + 0.2000 VUs per Simultaneous Instance > 20
41 to 100	16 VUs + 0.0660 VUs per Simultaneous Instance > 40
101 to 250	20 VUs + 0.0260 VUs per Simultaneous Instance > 100
251 to 500	24 VUs + 0.0160 VUs per Simultaneous Instance > 250
501 to 1000	28 VUs + 0.0080 VUs per Simultaneous Instance > 500
1001 to 3000	32 VUs + 0.0020 VUs per Simultaneous Instance > 1000
>3000	36 VUs + 0.0007 VUs per Simultaneous Instance > 3000

Basic license

To order, specify the program product number and the appropriate license or charge option. Also, specify the desired distribution medium. To suppress shipment of media, select the license-only option in CFSW.

Program name: z/OS Connect EE V2.0

Program PID: 5655-CEE

Entitlement ID	Description	License option/Pricing metric
S017VH8	z/OS Connect EE V2.0	Basic OTC, Value Units

Orderable Supply ID	Language	Distribution Medium
S017W1G	Multilingual	3590 tape

Note: additional media type selections are offered during Custom Build Offering ordering.

Subscription and Support PID: 5655-CES

Entitlement ID	Description	License option/Pricing metric
S017VH9	z/OS Connect EE Subscription and Support	Basic ASC, per Value Unit SW S&S No charge, decline SW S&S

Orderable Supply ID	Language	Distribution Medium
S017W1J	Multilingual	Hardcopy publication

Subscription and Support

To receive voice technical support using telephone and future releases and versions at no additional charge, Subscription and Support must be ordered. The capacity of Subscription and Support (Value Units) must be the same as the capacity ordered for the product licenses.

To order, specify the Subscription and Support program number (PID) referenced above and the appropriate license or charge option.

IBM is also providing Subscription and Support for these products using a separately purchased offering under the terms of the IBM International Agreement for Acquisition of Software Maintenance (IAASM). This offering:

• Includes and extends the support services provided in the base support to include technical support using the telephone.

- Entitles you to future releases and versions, at no additional charge. Note that you are not entitled to new products.

When Subscription and Support is ordered, the charges will automatically renew annually unless cancelled by you.

The combined effect of the IPLA license and the Agreement for Acquisition of Software Maintenance gives you rights and support services comparable to those under the traditional ICA S/390 and z Systems license or its equivalent. To ensure that you continue to enjoy the level of support you are used to in the ICA business model, you must order **both** the license for the program **and** the support for the selected programs at the same Value Unit quantities.

Customized Offerings

Product deliverables are shipped only via CBPDO and ServerPac. These customized offerings are offered for Internet delivery in countries where Shopz product ordering is available. Internet delivery reduces software delivery time and allows you to install software without the need to handle tapes. For more details on Internet delivery, refer to the Shopz help information at

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

You choose the delivery method when you order the software. IBM recommends Internet delivery. In addition to Internet and DVD, the supported tape delivery options include:

- 3590
- 3592

Most products can be ordered in ServerPac the month following their availability in CBPDO. z/OS can be ordered via CBPDO and ServerPac at general availability. Many products will also be orderable in a Product ServerPac without also having to order the z/OS operating system or subsystem.

Shopz and CFSW will determine the eligibility based on product requisite checking. For more details on the product ServerPac, refer to the Help section on the Shopz website at

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

For additional information on the Product ServerPac option, refer to Software Announcement 212-272, dated July 7, 2012.

Production of software product orders will begin on the planned general availability date.
- CBPDO shipments will begin one week after general availability.
- ServerPac shipments will begin two weeks after general availability.

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[(R)] 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.

Agreement for Acquisition of Software Maintenance

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

This program is 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. 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. IBM z Systems™ Operational Support Services - SoftwareXcel is an option if you desire added services.

License Information number

License number: L-SBRY-A2DD3P

Program name: IBM z/OS Connect Enterprise Edition V2.0

The programs' License Information documents 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, see the IBM Handbook at

   http://www-304.ibm.com/support/customercare/sas/f/handbook/home.html

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

Program support

Enhanced support, called Subscription and Support, includes telephone assistance, as well as access to updates, releases, and versions of the program as long as support is in effect. You will be notified of discontinuance of support with 12 months' notice.

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)

No

Passport Advantage applies

No

Software Subscription and Support applies

Yes. During the S&S period, for the unmodified portion of a program, and to the extent problems can be recreated in the specified operating environment, IBM will provide the following:

- Defect correction information, a restriction, or a bypass.
- Program updates: Periodic releases of collections of code corrections, fixes, functional enhancements and new versions and releases to the program and documentation.
- Technical assistance: A reasonable amount of remote assistance by telephone or electronically to address suspected program defects. Technical assistance is available from the IBM support center in the organization's geography.

Additional details regarding Technical Assistance, that includes IBM contact information, are provided in the *IBM Software Support Handbook* at

http://www-304.ibm.com/support/customercare/sas/f/handbook/home.html

S&S does not include assistance for:

- The design and development of applications
- Organization's use of program in other than their specified operating environment, or
- Failures caused by products for which IBM is not responsible under the IBM Agreement for Acquisition of Software Maintenance.

S&S is provided only if the program is within its support timeframe as specified in the Software Support Lifecycle policy for the program.

For operating system software, the revised IBM Operational Support Services - SoftwareXcel offering will provide support for those operating systems and associated products that are not available with the Software Subscription and Support (Software Maintenance) offering.

This will ensure total support coverage for your enterprise needs, including IBM and selected non-IBM products. For complete lists of products supported under both the current and revised offering, go to the supported product list at

http://www-03.ibm.com/services/supline/products/

IBM Operational Support Services - SoftwareXcel

Yes

Other support

SoftwareXcel

System i Software Maintenance applies

No

Variable charges apply

No

Educational allowance available

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

For each z Systems IPLA program with Value Unit pricing, the quantity of that program needed to satisfy applicable IBM terms and conditions is referred to as the required license capacity. Your required license capacity is based upon the following factors:

- The z Systems IPLA program you select
- The applicable Value Unit Exhibit
- The applicable terms
- Whether your current mainframes are full capacity or sub-capacity

For more information on the Value Unit Exhibit for the z Systems IPLA program you selected, refer to the Ordering information section.

Full-capacity mainframes

In cases where full capacity is applicable, the following terms apply.

Execution-based, z/OS-based, full machine-based: The required capacity of a z Systems IPLA program with these terms equals the MSU-rated capacity of the machines where the z Systems IPLA program executes.

For more information on mainframe MSU-rated capacities, refer to

   http://www.ibm.com/servers/eserver/zseries/library/swpriceinfo/

Reference-based: The required license capacity of a z Systems IPLA program with these terms equals the license capacity of the applicable monthly license charge (MLC) program. This MLC program is called the parent program.

Sub-capacity mainframes

In cases where sub-capacity is applicable, the following terms apply.

Execution-based: The required capacity of a z Systems IPLA sub-capacity program with these terms equals the capacity of the LPARs where the z Systems IPLA program executes.

z/OS-based: The required license capacity of a z Systems IPLA program with these terms equals the license capacity of z/OS on the machines where the z Systems IPLA program executes.

Reference-based: The required license capacity of a z Systems IPLA program with these terms equals the license capacity of the applicable monthly license charge (MLC) program. This MLC program is called the parent program.

Full-machine-based: The required license capacity of a z Systems IPLA program with full machine-based terms equals the MSU-rated capacity of the machines where the z Systems IPLA program executes.

For more information on mainframe MSU-rated capacities, refer to *The IBM z Systems Machines Exhibit,* (Z125-3901), or refer to the Mainframes section of the z Systems Exhibits website

For additional information for products with reference-based terms, z Systems IPLA sub-capacity programs with reference-based terms adds value to the parent program across the environment, regardless of where in the environment the z Systems IPLA program executes.

An environment is defined as either a single or stand-alone machine or a qualified Parallel Sysplex(R). You might have one or more different environments across the enterprise. To determine the required license capacity for each z Systems IPLA program with referenced-based terms, each environment should be assessed separately.

When a z Systems IPLA sub-capacity program with reference-based terms is used in a qualified Parallel Sysplex environment, the required license capacity of the z Systems IPLA program must equal with the license capacity of the parent program across the Parallel Sysplex. Qualified Parallel Sysplex refers to one where MLC pricing is aggregated across the sysplex.

Sub-capacity eligibility

To be eligible for sub-capacity charging on select z Systems IPLA programs, you must first implement and comply with all terms of either sub-capacity Workload License Charges (WLC) or sub-capacity Entry Workload License Charges (EWLC). To implement sub-capacity WLC or EWLC, a machine must be z Systems (or equivalent). On that machine:

- All instances of the OS/390(R) operating system must be upgraded to the z/OS operating systems.
- Any licenses for the OS/390 operating system must be discontinued.
- All instances of the z/OS operating systems must be running in z/Architecture(R) (64-bit) mode.

For that machine, you must create and submit a Sub-Capacity Report to IBM each month. Sub-Capacity Reports must be generated using the Sub-Capacity Reporting Tool (SCRT). For additional information or to obtain a copy of SCRT, refer to the z Systems Software Pricing website

http://ibm.com/zseries/swprice

You must comply with all of the terms of the WLC or EWLC offering, whichever is applicable:

- The complete terms and conditions of sub-capacity WLC are defined in the IBM Customer Agreement - Attachment for z Systems Workload License Charges(Z125-6516).
- The complete terms and conditions for sub-capacity EWLC are defined in the IBM Customer Agreement - Attachment for IBM z Systems 890 and 800 License Charges(Z125-6587).

Additionally, you must sign and comply with the terms and conditions specified in the amendment to the IPLA contract - *Amendment for IBM z Systems z9(R) and z Systems Programs Sub-Capacity Pricing* (Z125-6929).Once the amendment is

signed, the terms in the amendment replace any and all previous z Systems IPLA sub-capacity terms and conditions.

Sub-capacity utilization determination

Sub-capacity utilization is not supported by the pricing metric for this offering.

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[R] V5.3, AIX V6.1, and AIX V7.1, 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 24x7 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 is designed to securely transmit either via the Internet (HTTPS or VPN) or modem 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 customersystem.

For additional information, refer to IBM Electronic Service Agent

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

More accurate reporting: Because system information and error logs are automatically uploaded to the IBM Support center in conjunction with the service request, you 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, you 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 your 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, you are able to see search results that apply specifically to your systems.

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

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

Prices

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Corrections

(Corrected on March 2, 2016.)
The Key prerequisites and Software requirements sections are revised.

(Corrected on February 25, 2016)
The Ordering information is revised.

(Corrected on January 21, 2016)
The Description and Ordering information sections are revised.