IBM Db2 AI for z/OS empowers the Db2 for z/OS optimizer to select improved access paths for SQL and improves application performance using machine learning models

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At a glance

Using the Db2(R) for z/OS(R) optimizer and leveraging IBM(R) Machine Learning for z/OS (ML for z/OS) technology, IBM Db2 AI for z/OS (Db2ZAI) provides:

- Improved Db2 SQL access path selection
- Improved Db2 application performance
- Rapid model learning specific to the data and configuration per Db2 subsystem

Models trained and deployed from Db2ZAI are managed by the security-rich infrastructure in ML for z/OS, which also gives defined users a window into the models' performance metrics.

Overview

IBM Db2ZAI empowers the optimizer in your Db2 for z/OS engine to determine the best-performing query access paths based on your workload characteristics.

New intelligence in the optimizer, using host-variable and number of rows fetched insight, enables it to identify the optimal access paths for SQL queries. This can significantly improve application performance by reducing optimization complexity.

Key prerequisites

IBM Db2 AI for z/OS, V1.1 requires:

- IBM Db2 12 for z/OS (either 5650-DB2(R) or 5770-AF3), plus Function Level 503 APAR PH00506
  - Note: Function Level 503 *must be activated.*
- IBM Machine Learning for z/OS, V1.2.0 (5698-ML1), with MLz APARs PI99400, PI99401, and PH02006 plus MLz 1.2.0.1 Linux(R) packages

Planned availability date

September 21, 2018

Description

IBM Db2 AI for z/OS empowers the optimizer in your Db2 for z/OS engine to determine the best-performing query access paths based on your workload characteristics. The optimizer consists of Relational Data Services (RDS) components that govern query transformation, access path selection, run time, and parallelism for every SQL statement in your system. The access path for an SQL statement essentially dictates how Db2 accesses the data that the query specifies. It determines the indexes and tables that are accessed, the access methods that are used, and the order in which objects are accessed.

Leveraging machine learning technology, Db2ZAI collects data from the optimizer and execution history for Db2 for z/OS that are derived from workloads in your unique operating environment. It then finds patterns from this data and learns the optimal access paths for queries entering Db2 for z/OS as part of the model training process.

Once trained, the models can be put into production to provide insights that help drive access path selection of the optimizer. These insights build upon what the optimizer uses today to select the best query path. The information is unique to your environment, and currently unknown to the traditional query optimizer, which ensures that performance benefits are tuned to your workloads.

Today, the query optimizer estimates the cost of each access path for each SQL statement and chooses the optimal access path with the lowest estimated cost for the given query. The additional capability provided by Db2ZAI includes the ability to predict:

- The host-variables for a given query achieved through insights gained from repeated evaluation of associated data for similar queries
- The number of rows of the result set the application will ultimately fetch

With the new insight on host-variables and the number of rows expected to be fetched, the query optimizer can identify the optimal access paths for applicable SQL queries.

Internal IBM benchmarks show up to 25% performance benefit in terms of reduction in CPU time when machine learning technology integrated with Db2ZAI was employed for a set of qualifying Db2 queries compared to when the query path was selected by the Db2 optimizer without employing machine learning technology. Additionally, the majority of processing associated with Db2ZAI is enabled to run on System z(R) Integrated Information Processors (zIIPs), resulting in minimal impact to general-purpose processors in query-intensive workloads.

The core predictive capabilities in Db2ZAI are built on top of IBM's Machine Learning for z/OS platform, enabling real-time analytics with data in place on Db2 for z/OS. For more information, see Software Announcement ZP18-0129, dated April 10, 2018. Models trained and deployed from Db2ZAI are managed by the security-rich infrastructure in Machine Learning for z/OS, which also gives defined users a window into the models' performance metrics.

Db2ZAI manages and deploys the machine learning models, thus alleviating the user from the data science tasks associated with machine learning.

In support of Db2ZAI and as part of the IBM commitment to deliver new features and functions on a continuous delivery model, the following new capabilities are

available in Machine Learning for z/OS, V1.2 with MLz APARs PI99400, PI99401, and PH02006 plus MLz 1.2.0.1 Linux packages:

- **Newly defined "DevOps" role**

  The new "DevOps" is intended to provide the defined user with ability to utilize machine learning as a service. The DevOps user will be enabled with privileged access to utilize the repository and deployment service APIs to fully automate model lifecycle management activities, such as deployment, evaluation, and re-training of a model. Armed with these service APIs, clients can embed model management activities into their DevOps framework.

- **Data visualization**

  Exploring and understanding data through visualization is a key step for data scientists to develop machine learning models. An automated data visualization tool is provided in the latest release of Machine Learning for z/OS for users to visualize the data set from various perspectives and in numerous formats or chart types through the Machine Learning for z/OS graphical user interface. Furthermore, when the data is on IBM Z®, the computation for visualization is pushed to the Spark on IBM Z engine so latency or security risks associated with data movement are mitigated.

- **XGBoost support**

  XGBoost is an optimized machine learning framework that implements machine learning algorithms under the Gradient Boosting framework. XGBoost provides a parallel tree boosting that solves many data science challenges in a fast and accurate way. With Machine Learning for z/OS, V1.2 and IBM Open Data Analytics for z/OS, data scientists can train, evaluate, and deploy XGBoost models on z/OS. Along with scikit-learn and Spark ML, data scientists have all the popular frameworks on z/OS.

- **Built-in metadata repository**

  Prior to this latest release, Machine Learning for z/OS has a mandatory prerequisite for Db2 for z/OS as the metadata repository. The latest release of ML for z/OS includes a built-in alternative metadata repository that Machine Learning for z/OS automatically manages and maintains. This enables those IBM Z clients without Db2 for z/OS to leverage the built-in metadata repository.

- **Scoring service deployed as a Liberty feature**

  Today, the ML for z/OS scoring service can run either in a dedicated built-in Liberty server or in a CICS® Liberty server. The latest release of Machine Learning for z/OS supports a new deployment option, which allows the scoring service to be deployed as a Liberty feature in an existing Liberty server supporting other applications. The applications executing in the same Liberty server can call scoring services via highly performant Java™ APIs. The new deployment option enables the integration of ML for z/OS and Operational Decision Manager.

- **Db2 Analytics Accelerator as a new runtime**

  The latest release of Machine Learning for z/OS continues to build on strength through integration with IBM Db2 Analytics Accelerator (Accelerator) to provide IBM Z clients with a complete solution for advanced analytics without impacting the performance of operational systems. Data scientists can use ML for z/OS today to access data in the Accelerator to develop machine learning models. The latest release enables Machine Learning for z/OS to be configured to run workloads such as model training, evaluation, and batch scoring within the built-in Spark instance in the Accelerator. Clients may see significant performance benefits, particularly when the data required by those workloads is processed by the Accelerator.

Value Unit-based pricing

Value Unit pricing for eligible IBM z Systems(R) IBM International Program License Agreement (IPLA) programs enables a lower cost of incremental growth and enterprise aggregation. Each z Systems(R) IPLA product with Value Unit pricing has a single price per Value Unit and a conversion matrix, called a Value Unit Exhibit, for converting from some designated measurement to Value Units. Most commonly, Millions of Service Units (MSUs) is the measurement designated by IBM to be converted to Value Units. Some other measurements are engines or messages. Since MSUs are the most common measurement, that measurement will be used for the remainder of this description.

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** . Each of the various Value Unit Exhibits stipulates that the larger your required license capacity, the fewer Value Units per MSU you will need. 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 MSUs.
- Aggregate the MSUs across the enterprise.
- Convert the total MSUs 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.

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, go to the IBM System z(R) Software Pricing website.

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, see the Terms and conditions section.

Program number

Program number	VRM	Program name
5698-CGN	1.1.0	IBM Db2 AI for z/OS
5698-CGS	1.1.0	IBM Db2 AI for z/OS Subscription and Support

Offering Information

Product information is available on the IBM Offering Information website.

Publications

The following publications are shipped with the product.

Title	Order number
IBM Db2 AI for z/OS, V1.1	
License Information	GC27-9135
Program Directory	GI13-5007
Accessing IBM Db2 AI for z/OS (Memo to Users)	LCD4-8604

Additional technical information can be found in IBM Knowledge Center.

Services

Global Technology Services

Contact your IBM representative for the list of selected services available in your country, either as standard or customized offerings for the efficient installation, implementation, or integration of this product.

Technical information

Specified operating environment

Hardware requirements

IBM Db2 AI for z/OS, V1.1 hardware requirements:

- May require additional zIIPs capacity
- Requires additional 1 gigabyte of memory per Db2 subsystem (this includes additional buffer pool usage)

Software requirements

IBM Db2 AI for z/OS, V1.1 requires the following software:

Mandatory installation requirements:

- z/OS, V2.1 (5650-ZOS), or higher, including Product Registration Services

Mandatory operational requirements:

- IBM Db2 12 for z/OS (5650-DB2 or 5770-AF3), plus Function Level 503 APAR PH00506. (Function Level 503 *must be activated.*)
- IBM Machine Learning for z/OS, V1.2 (5698-ML1), plus MLz APARs PI99400, PI99401, and PH02006 and MLz 1.2.0.1 Linux packages.

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. Read about the Electronic Support portfolio of tools on the IBM Electronic Support website.

You can also access the IBM Support Portal page and the online Service requests and PMRs tool for more support.

Planning information

Client responsibilities

The client must provide at least the minimum hardware and software environments in which the IBM Db2 12 for z/OS and IBM Machine Learning for z/OS, V1.2 products will operate. The client must assign a systems administrator who has responsibility for planning for, installing, maintaining, and administering the IBM Db2 12 for z/OS and IBM Machine Learning for z/OS, V1.2 products.

Packaging

The program in this announcement is distributed with the following content:

- Basic machine-readable material
- Program Directory
- Accessing IBM Db2 AI for z/OS CD (Memo to Users)
- IBM International Program License Agreement (IPLA)
- IBM Agreement for Acquisition of Software Maintenance (IAASM)

Security, auditability, and control

The announced product uses the security and auditability features and functions of host hardware, host software, and application software.

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

Ordering information

Consult your IBM representative.

The programs in this announcement all have Value Unit-Based pricing.

Program number	Program name	Value Unit Exhibit
5698-CGN	Db2 AI for z/OS	VUE007

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 VUE007

	MSUs minimum	MSUs maximum	Value Units/MSU
Base	1	3	1
Tier A	4	45	0.45
Tier B	46	175	0.36
Tier C	176	315	0.27
Tier D	316	+	0.20

Ordering example

The total number of Value Units is calculated according to the following example.

If your required license capacity is 1,500 MSUs for your selected z Systems IPLA product, the applicable Value Units would be:

Tier	MSUs	Multiplied by Value Units per MSU	Equal Value Units
Base	3	1.00	3.00
Tier A	42	.45	18.90
Tier B	130	.36	46.80
Tier C	140	.27	37.80
Tier D	1,185	.20	237.00
Total	1,500		343.50

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

Shopz provides an easy way to plan and order your z/OS ServerPac or CBPDO. It will analyze your current installation, determine the correct product migration, 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). For more details and availability, go to the Shopz website.

Charge metric

Definitions of the charge metric for this licensed product can be found in the following License Information document:

Program name	PID number	Charge metric	License Information document number
IBM Db2 AI for z/OS	5698-CGN	Value Unit	L-DCLN-AZQSUZ

Select your language of choice and scroll down to the Charge Metrics section.

Basic license

Translation from MSUs to Value Units

	MSUs	Value Units/MSU
Base	1-3	1.00
Tier A	4-45	0.45
Tier B	46-175	0.36
Tier C	176-315	0.27
Tier D	316 or greater	0.20

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

Program name: IBM Db2 AI for z/OS

Program PID: 5698-CGN

Entitlement identifier	Description	License option/Pricing metric
S018CXV	IBM Db2 AI for z/OS	Multi-Version Measurement No Charge Value Units
		On Off Capacity on demand Temporary Use Charge MSU-DAY(s)

Entitlement identifier	Description	License option/Pricing metric
		Use-Based License One-Time Charge Value Units

Orderable supply ID	Language	Description
S018CHB	English US	IBM Db2 AI for z/OS

You choose the delivery method when you order the software. IBM recommends internet delivery. However, if you still require physical media, you can choose DVD.

Subscription and Support PID: 5698-CGS

Entitlement identifier	Description	License option/Pricing metric
S018CXW	IBM Db2 AI for z/OS Subscription and Support	Decline Subscription and Support No Charge Value Units
		MultiVersion Measurement S&S No Charge Value Units
		SW Subscription and Support Annual Support Charge Value Units
		SW Subscription and Support Monthly Support Charge Value Units
		SW Subscription and Support Registration (minus Supply right) No Charge Per MSU
		SW Subscription and Support Reseller One Year Value Units

Orderable supply ID	Language	Description
S018CHF	English US	IBM Db2 AI for z/OS Subscription and Support

Subscription and Support

To receive voice technical support via 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 via a separately purchased offering under the terms of the IBM International Agreement for Acquisition of Software Maintenance. This offering:

- Includes and extends the support services provided in the base support to include technical support via 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 IBM Z(R) 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 through CBPDO, ServerPac, SystemPac, FunctionPac, and ProductPac(R).

These customized offerings are offered for internet delivery from Shopz in countries where Shopz product ordering is available. For more details on internet delivery, go to the Help section on the Shopz website.

You choose the delivery method when you order the software. IBM recommends internet delivery. however, if you still require physical media, you can choose DVD.

Many products can be ordered in ServerPac, SystemPac, FunctionPac, and ProductPac the month following their availability in CBPDO. z/OS can be ordered through CBPDO, ServerPac, and SystemPac 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, go to the Help section on the Shopz website.

For additional information about the Product ServerPac option, refer to Software Announcement ZP12-0358, 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, SystemPac, FunctionPac, and ProductPac shipments will begin four weeks after general availability due to additional customization, and data input verification.

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 IBM Agreement for Acquisition of Software Maintenance.

Licensing

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

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

Software Maintenance

The following agreement applies for Software Subscription and Support (Software Maintenance) and does not require client signatures:

- IBM Agreement for Acquisition of Software Maintenance (Z125-6011)

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. 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 if support is in effect. IBM z Systems Operational Support Services - Support Line is an option if you desire added services.

License Information number

The following License Information document applies to the offering in this announcement:

Program identifier	License Information document title	License Information document number
5698-CGN	License Information for IBM Db2 AI for z/OS	L-DCLN-AZQSUZ

Select your language of choice and scroll down to the Charge Metrics section. Follow-on releases, if any, may have updated terms. See the License Information documents website for more information.

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 Software Support Handbook.

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

Money-back guarantee

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

For clarification, note that 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 Software Subscription and Support 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, which includes IBM contact information, are provided in the IBM Software 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.
- Failures caused by products for which IBM is not responsible under the IBM Agreement for Acquisition of Software Maintenance.

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

All distributed software licenses include Software Subscription and Support (also referred to as Software Maintenance) 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 by 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, every day of the year. For additional details, go to the IBM Support Handbooks page.

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.

Variable charges apply

No

Educational allowance available

Yes. When ordering through the program number process, a 15% education allowance applies to qualified education institution clients.

Education Software Allowance Program applies when ordering through the program number process.

ESAP available

Yes, to qualified clients

Multi-Version Measurement

Multi-Version Measurement (MVM) replaces the previously announced Migration Grace Period time limit of six months and allows unlimited time for clients to run

more than one eligible version of a software program. Clients may run multiple versions of a program simultaneously for an unlimited duration during a program version upgrade. Clients may also choose to run multiple versions of a program simultaneously for an unlimited duration in a production environment. MVM does not extend support dates for programs withdrawn from service.

For more information about MVM, including requirements for qualification, see the MVM web page. For a list of eligible programs, see the IPLA Execution-Based web page.

Sub-capacity terms and conditions

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, see the Ordering information section.

Program number	Program name	Terms	Parent, if applicable
5698-CGN	IBM Db2 AI for z/OS	Reference-based	IBM Db2 for z/OS, V12 (5650-DB2)
			IBM Db2 for z/OS Value Unit Edition, V12 (5770-AF3)
			IBM Db2 for z/OS, V11 (5615-DB2)
			IBM Db2 for z/OS Value Unit Edition, V11 (5697-P43)
			IBM DB2 for z/OS, V10 (5605-DB2)
			IBM DB2 for z/OS Value Unit Edition, V10 (5697-P31)

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, go to the IBM System z Software Contracts website.

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, see the IBM z Systems Machines Exhibit (Z125-3901), or go to the Mainframes section of the z Systems Exhibits website.

z Systems IPLA sub-capacity programs with reference-based terms add 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 may 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 migrated 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, go to the IBM System z Software Pricing website.

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 EWLC, TWLC, zELC, and z/OS.e 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 Amendment for IBM 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.

Statement of good security practices

IT system security involves protecting systems and information through intrusion 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 regulatory compliant, comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products, or services to be most effective.

Important: IBM does not warrant that any systems, products, or services are immune from, or will make your enterprise immune from, the malicious or illegal conduct of any party.

Prices

For all local charges, contact your IBM representative.

Announcement countries

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