

# IBM Watson Machine Learning for z/OS, V2.1 improves deployment flexibility with a new architecture on IBM z/OS; IBM Db2 AI for z/OS, V1.2 builds on Watson Machine Learning for z/OS to help optimize the performance of IBM Db2 for z/OS subsystems

## Table of contents

<a href="#">1 Overview</a>	<a href="#">5 Technical information</a>
<a href="#">3 Key requirements</a>	<a href="#">9 Ordering information</a>
<a href="#">3 Planned availability date</a>	<a href="#">11 Terms and conditions</a>
<a href="#">3 Description</a>	<a href="#">16 Prices</a>
<a href="#">5 Program number</a>	<a href="#">17 Order now</a>
<a href="#">5 Publications</a>	

## At a glance

With version 2.1, IBM<sup>(R)</sup> Machine Learning for z/OS<sup>(R)</sup> is rebranded to **IBM Watson<sup>(R)</sup> Machine Learning for z/OS**. It offers a hybrid cloud approach to model development and model deployment lifecycle management and collaboration that is designed to help organizations innovate and transform on an enterprise scale. It helps data scientists more quickly develop, deploy, and monitor behavioral models that continually learn as new data is introduced. Version 2.1 offers:

- Ability to operationalize machine learning models on IBM z/OS
- Greater deployment flexibility through a new architecture where model management, model deployment management, administration, and scoring services install and execute on z/OS
- A complete solution that incorporates IBM Open Data Analytics for z/OS, which includes Spark for z/OS, Python, Anaconda, and Mainframe Data Service for Apache Spark

**IBM Db2<sup>(R)</sup> AI for z/OS, V1.2**, a separately licensed product, uses machine learning to improve the operational performance of Db2 for z/OS systems.

- Built on the services that are provided by Watson<sup>TM</sup> Machine Learning for z/OS to help optimize performance.
- Empowers the optimizer in the Db2 for z/OS engine to determine the best-performing query access paths based on workload characteristics that use machine learning capabilities.
- Version 1.2 delivers more Db2 generated machine learning models to help improve Db2 for z/OS performance in the following areas:
  - Intelligent SQL concurrency
  - Enhanced application performance through sort optimizations
  - Exception detection from Db2 statistics with recommended actions
- Version 1.2 also includes the underlying Watson Machine Learning for z/OS services as a complete solution.

## Overview

## Watson Machine Learning for z/OS, V2.1

Watson Machine Learning for z/OS, V2.1 is a key component for operationalizing machine learning models on z/OS. It provides the ability to deploy models on z/OS that were developed and trained in the cloud, on IBM Z<sup>(R)</sup> or on non IBM Z platforms. This provides greater deployment flexibility through a new architecture where model management, administration, and scoring services install and execute on z/OS. The new version includes capabilities that were previously separately available through IBM Open Data Analytics for z/OS to help simplify the acquisition, installation, and configuration of the product.

Watson Machine Learning for z/OS provides an environment that fosters collaboration to enable innovation and transformation on an enterprise scale. Data scientists and machine learning stakeholders across the organization benefit from:

- Model portability, model development: develop and train models anywhere.
- Enterprise-grade, collaborative, extensible open source software: no technology lock-in.
- Real-time insights that are embedded with transactions: model deployment and lifecycle management on z/OS.
- Reliability, resiliency, availability, and encryption in a security-rich environment: IBM Z qualities of service.

Version 2.1 offers a hybrid cloud approach with the flexibility of platform choice for model development, deployment, and management. Models can be trained on Z, in the public or private cloud, or a data lake environment, and then published to Watson Machine Learning for z/OS close to transactional applications. Similarly, models can also be developed on Z and then saved and published to the IBM Cloud<sup>™</sup>. More capabilities include:

- Support for XGBoost models in Python and XGBoost model deployments in joblib format
- Extended capability in Db2 IT Operational Analytics solution template to detect inefficiencies at the Db2 application level
- New data visualization services to exploit mainframe data (Db2, IMS<sup>™</sup>, VSAM, and SMF, and other supported sources) in numerous chart types with data processing on Z
- Extended current online scoring services on IBM Z to support inference of select neural network model types when they are successfully converted to the Open Neural Network Exchange (ONNX) format.
- Simplified Python package management through a dedicated Conda environment for Watson Machine Learning for z/OS
- Auto-feature-engineering libraries to construct and recommend relevant features
- New option of running Ubuntu Linux<sup>(R)</sup> on the Linux on Z cluster
- Ability to perform online scoring of time series (ARIMA and Seasonal ARIMA) models
- Java<sup>™</sup> APIs of online scoring services for applications running in the same Liberty server as the Watson Machine Learning for z/OS scoring service

Organizations can use their own machine learning platform or IBM Watson Studio to develop models that can then be deployed and managed on z/OS through Watson Machine Learning for z/OS. For clients that do not have an existing model development environment, Watson Machine Learning for z/OS continues to provide an integrated development environment (IDE). This IDE installs on Linux. For x86 or IBM Integrated Facilities for Linux (IFL) installation, see the [Hardware requirements](#) and [Software requirements](#) sections.

## Db2 AI for z/OS

Db2 AI for z/OS, V1.2 is a separate offering that is built on the Watson Machine Learning for z/OS platform. It provides operational analytics capabilities by leveraging the rich set of Watson Machine Learning for z/OS services to help

optimize Db2 for z/OS subsystems. The new release helps improve Db2 for z/OS performance by ingesting operational data to gain insight on unique subsystem characteristics and provide tuning recommendations to ensure that Db2 runs at optimal levels.

Db2 AI for z/OS, V1.2 delivers more Db2 generated machine learning models to help improve Db2 for z/OS performance in the following areas:

- Intelligent SQL concurrency: SQL queries are reviewed and enabled to run in parallel, where appropriate.
- Enhanced application performance through sort optimizations: sort processes are optimized based on query statistics.
- Exception detection from Db2 statistics with recommended actions to apply for optimal performance: models are trained on client data to establish baselines from which deviations are detected.

In addition to the new features and capabilities for Db2 performance optimization, Db2 AI for z/OS, V1.2 also incorporates the underlying services that are part of Watson Machine Learning for z/OS to provide a complete solution.

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## Key requirements

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An IBM z14™, IBM z14 Model ZR1, IBM z13<sup>(R)</sup>, IBM z13s<sup>(R)</sup>, or IBM zEnterprise<sup>(R)</sup> EC12 system running IBM z/OS V2.2 (5650-ZOS), or later. For details, see the [Hardware requirements](#) and the [Software requirements](#) sections.

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## Planned availability date

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March 15, 2019

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## Description

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### Watson Machine Learning for z/OS, V2.1

A major theme in this new rebranded version is simplification for rapid time to value. The new architecture supports the installation of core model management, and deployment and scoring services on z/OS along with the runtimes that enable those services directly on z/OS.

This new architecture offers Z clients a deployment option that better complements their existing infrastructure investments. For example, data scientists can continue to use existing machine learning tools or platforms for model development. To gain optimal benefit from those models, they should be deployed where transactions can occur. Watson Machine Learning for z/OS enables models to be deployed within the transactional applications on Z while also supporting model lifecycle management.

### Db2 AI for z/OS, V1.2

Db2 AI for z/OS, V1.2 continues to build the models delivered with the prior release that leveraged machine learning to find better access paths for SQL queries. The capability to predict host variables and screen scrolling has been shown through IBM internal benchmarking to reduce CPU and elapsed time by up to 25%. Key new features to further improve Db2 performance in Db2 AI for z/OS, V1.2 include:

- Intelligent SQL Concurrency Model. The Db2 optimizer uses statistics on query CPU and elapsed time for client specific workloads to make better access path decisions on when a static SQL query should exploit parallelism and to what degree. Workload characteristics from execution history help determine whether the query should process sequentially or exploit parallelism to optimize CPU and elapsed time benefits.

- Optimized RDS Sort Processes. A built-in feedback loop gives Db2 additional insight into relational data services (RDS) sort processes (for example, CPU and memory), the sort procedure required for completing the process. Insight from this data is placed into an internal control block in order for the next SQL execution to reap the benefit of a predefined, accurate space and allocation amount for the sort function. By providing the RDS sort process more accurate information, the number of runs and merge passes required is reduced, thereby improving performance.
- Expert Recommendations for Db2 Performance Tuning. Built-in Db2 domain expertise leverages machine learning on Db2 statistics to identify exceptions. This offers clients, with required tools and expertise, the ability to ensure that Db2 operates at optimal performance levels.

## Accessibility by people with disabilities

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A US Section 508 Accessibility Compliance Report containing details on accessibility compliance can be found on the [Product accessibility information](#) website.

## Value Unit-based pricing

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Value Unit pricing for eligible IBM z Systems<sup>(R)</sup> IBM International Program License Agreement (IPLA) programs enables a lower cost of incremental growth and enterprise aggregation. Each z Systems<sup>(R)</sup> 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. 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 stipulate 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 want 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, visit the Value Unit Converter Tool, see the [IBM System z<sup>\(R\)</sup> 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.

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## Program number

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Program number	VRM	Program name
5698-WML	V2.1.0	IBM Watson Machine Learning for z/OS
5698-MLS	V1.1.0	IBM Machine Learning for z/OS Subscription and Support
5698-CGN	V1.2.0	IBM Db2 AI for z/OS
5698-CGS	V1.1.0	IBM Db2 AI for z/OS Subscription and Support

  

Program number	Subscription and Support PID number
5698-WML	5698-MLS
5698-CGN	5698-CGS

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## Offering Information

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Product information is available on the [IBM Offering Information](#) website.

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## Business Partner information

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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<sup>(R)</sup> ID and password are required (use IBMid).

[BP Attachment for Announcement Letter 219-058](#)

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## Publications

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Technical documentation for Db2 AI for z/OS can be found in [IBM Knowledge Center](#).

Technical documentation for Watson Machine Learning for z/OS can be found in [IBM Knowledge Center](#).

Technical documentation for Open Data Analytics for z/OS can be found in [IBM Knowledge Center](#).

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## Services

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### Software Services

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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, contact your Lab Services Sales or Delivery Leader.

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## Technical information

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### Specified operating environment

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## **Hardware requirements**

### **Watson Machine Learning for z/OS, V2**

One of the following Z systems running IBM z/OS V2.2 or z/OS V2.3 (5650-ZOS) with APAR OA52344 applied to either release:

- IBM z14, IBM z14 Model ZR1, z13<sup>(R)</sup>, or zEnterprise EC12 system

It is recommended that clients allocate four or more zIIP<sup>1</sup> processors, one general purpose processor, and 100 GB or more memory with 50 GB storage to the LPAR where Watson Machine Learning will operate.

The Watson Machine Learning V2 component on Linux requires an x86 hardware or IBM s/390x hardware and virtual environment.

- To support Watson Machine Learning for z/OS on Linux x86, three x86 (virtual) systems with 8-core CPU 48 GB memory, and 250 GB disk each is recommended with a minimum of 650 GB secondary storage for each server.
- To support Watson Machine Learning for z/OS on Linux on Z, three s390x 64-bit servers with three IFL processors each, 48 GB memory, and 250 GB disk each is recommended with a minimum of 650 GB secondary storage for each server.

<sup>1</sup> This information provides only general descriptions of the types and portions of workloads that are eligible for execution on specialty engines (SEs). IBM authorizes clients to use IBM SEs such as zIIPs, zAAPs, and IFLs only to execute the processing of Eligible Workloads of specific programs expressly authorized by IBM as specified in the Authorized Use Table for IBM Machines (AUT). No other workload processing is authorized for execution on an SE. IBM offers SEs at a lower price than general processors and central processors because clients are authorized to use SEs only to process certain types or amounts of workloads as specified by IBM in the [Authorized Use Table](#) website.

Watson Machine Learning V2 Linux on Z requires the following:

- s390x 64-bit server that runs on an LPAR of a z14, z14 Model ZR1, z13, z13s<sup>(R)</sup>, zEnterprise EC12, zEnterprise BC12, LinuxOne Emperor, or LinuxOne Rockhopper system

### **Db2 AI for z/OS, V1.2**

Db2 AI for z/OS requires zEnterprise EC12, or later, which is the minimum hardware level supported by both Db2 12 for z/OS and Watson Machine Learning for z/OS, Version 2.

In addition to Watson Machine Learning for z/OS, V2 hardware requirements, Db2 AI for z/OS requires an additional 1 GB memory per Db2 subsystem (this includes additional buffer pool usage) and may require additional zIIPs capacity.

## **Software requirements**

### **IBM Watson Machine Learning for z/OS, V2**

#### **Mandatory installation requirements:**

The Watson Machine Learning V2 component requires the following:

- z/OS V2.2 or z/OS V2.3 with APAR OA52344 applied

The Watson Machine Learning V2 for Linux component requires the following:

- Red Hat Enterprise Linux Server 7.4, 7.5, or later; or Ubuntu 18.04, or later
- OpenJDK 1.8.0, or later
- One additional IP address as a proxy IP for the three Linux systems in the same subnet as the three Linux systems where it connects to the backend on z/OS

### **Mandatory operational requirements:**

The Watson Machine Learning for z/OS V2 components required for installation in the z/OS only solution, for Model Management, Deployment, and Scoring Services on z/OS working with existing IDE, are as follows:

- IBM SDK for Node.js 6.14.3.
- IBM 64-bit SDK for z/OS, Java Technology Edition, V8 (5655-DGH), Refresh 3 Fix Pack 12, or later. Ensure that JAVA\_HOME is set as your installation directory.
- z/OS Integrated Cryptographic Service Facility (ICSF). Ensure that the ICSF component is properly configured and started.
- IBM Tivoli<sup>(R)</sup> Directory Server for z/OS LDAP, a component of z/OS.
- IBM Db2 11 for z/OS (5615-DB2<sup>(R)</sup> or 5697-P43), or later.

The Watson Machine Learning for z/OS V2 components required for installation that includes IDE running on Linux on Z, includes the following:

#### **z/OS:**

- IBM 64-bit SDK for z/OS, Java Technology Edition, V8 (5655-DGH), Refresh 3 Fix Pack 12, or later. Ensure that JAVA\_HOME is set to your installation directory.
- z/OS Integrated Cryptographic Service Facility (ICSF). Ensure that the ICSF component is properly configured and started.
- IBM Tivoli Directory Server for z/OS LDAP, a component of z/OS.
- IBM Db2 11 for z/OS (5615-DB2 or 5697-P34), or later, only if you plan to use it as the database for the Machine Learning for z/OS repository service. The repository service requires the use of either the built-in Db2 for Linux, UNIX<sup>(R)</sup>, and Windows<sup>TM</sup> or an external Db2 for z/OS. If you choose the latter, install Db2 11 for z/OS with APAR PI13725 applied, or later.
- IBM CICS<sup>(R)</sup> Transaction Server for z/OS, V5.4.0 or V5.3.0 with APAR PI63005 applied only if you plan to install and run the machine learning scoring service in a CICS region.
- IBM z/OSMF only if you plan to use the z/OSMF workflow service to create and configure a machine learning scoring service through the administration dashboard.
  - z/OS MF is shipped as a base element of z/OS V2.2, or later. If you run z/OS V2.2, enable z/OS MF and then apply APAR PI66845. z/OS MF (5610-A01) is not shipped with z/OS V2.1. You must order it separately. After installing and enabling z/OSMF, apply APAR PI69103.

#### **Linux on Z:**

- Red Hat Enterprise Linux Server 7.4 or 7.5, or Ubuntu 18.04
- OpenJDK 1.8.0, or later

The Watson Machine Learning for z/OS, V2 components required for installation that includes IDE running on Linux x86, includes the following:

#### **z/OS:**

- IBM 64-bit SDK for z/OS, Java Technology Edition, V8 (5655-DGH), Refresh 3 Fix Pack 12, or later. Ensure that JAVA\_HOME is set to your installation directory.
- z/OS Integrated Cryptographic Service Facility (ICSF). Ensure that the ICSF component is properly configured and started.
- IBM Tivoli Directory Server for z/OS LDAP, a component of z/OS.
- IBM Db2 11 for z/OS (5615-DB2 or 5697-P34), or later, only if you plan to use it as the database for the Machine Learning for z/OS repository service. The repository service requires the use of either the built-in Db2 for Linux, UNIX, and Windows or an external Db2 for z/OS. If you choose the latter, install Db2 11 for z/OS with APAR PI13725 applied, or later.

- IBM CICS Transaction Server for z/OS, V5.4.0 or V5.3.0 with APAR PI63005 applied only if you plan to install and run the machine learning scoring service in a CICS region.
- IBM z/OSMF only if you plan to use the z/OSMF workflow service to create and configure a machine learning scoring service through the administration dashboard.
  - z/OS MF is shipped as a base element of z/OS 2.2, or later. If you run z/OS V2.2, enable z/OS MF and then apply APAR PI66845. z/OS MF (5610-A01) is not shipped with z/OS 2.1. You must order it separately. After installing and enabling z/OSMF, apply APAR PI69103.

#### **Linux:**

- Red Hat Enterprise Linux Server 7.4, 7.5, or 7.6
- OpenJDK 1.8.0, or later

#### **IBM Db2 AI for z/OS, V1.2**

##### ***Mandatory installation requirements***

- z/OS V2.2 (5650-ZOS), or later, including Product Registration Services

##### ***Mandatory operational requirements***

- Db2 12 for z/OS (5650-DB2 or 5770-AF3), Function level 500 activated
- Watson Machine Learning for z/OS, V2.1 (5698-WML)

#### **Open Data Analytics for z/OS, V1.1.0**

##### ***Mandatory installation requirements:***

- z/OS V2.2, or later

##### ***Mandatory operational requirements:***

- IBM 64-bit SDK for z/OS, Java Technology Edition, Version 8 Refresh 4 Fix Pack 6, or later
- Anaconda FMID HANA110 (APAR PH01443/PTF UI59379), or higher
- MDS FMID HMDS120 (APAR PH00556/PTF UI58510), or higher
- Spark FMID HSPK120 2.2.0.8 (APAR PH03469/PTF UI60037), or higher

#### ***The IBM Support Community***

The [IBM Support Community](#) is your gateway to technical support tools and resources that are designed to help you save time and simplify support. Support Community tools can help you find answers to questions, download fixes, troubleshoot, automate data collection, submit and track problems, and build skills.

You can also access the [Service requests and PMRs](#) tool for more support.

#### **Planning information**

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##### ***Packaging***

The programs in this announcement are distributed with the following content:

- Basic machine-readable material
- Program Directories
- IBM International Program License Agreement (IPLA) documents
- IBM Agreement for Acquisition of Software Maintenance (IAASM)

#### **Direct client support**

For technical support or assistance, contact your IBM representative or see the [IBM Support Portal](#) website.

## Ordering information

Consult your IBM representative.

### 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, see the [Shopz](#) website.

### Charge metric

The charge metrics for these licensed products can be found in the following License Information documents (available March 15, 2019):

Program identifier	License Information document title	License Information document number
5698-WML	IBM Watson Machine Learning for z/OS, V2 License Information	<a href="#">L-HLIU-B7KE3C</a>
5698-CGN	IBM Db2 AI for z/OS, V1.2 License Information	<a href="#">L-DCLN-B7DV8N</a>

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.

### 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 ID number and the appropriate license or charge option. To suppress shipment of media, select the license-only option in CFSW.

### Program name: IBM Watson Machine Learning for z/OS, V2

#### Program ID: 5698-WML

Entitlement identifier	Description	License option/Pricing metric	
S018DS0	Watson Machine Learning for z/OS, V2	Basic OTC, per Install	
		Multi-Version Measurement No Charge	
Orderable supply ID	Description	Language	Distribution medium
S018F2R	Watson Machine Learning for z/OS-Db2	English US	DVD

Orderable supply ID	Description	Language	Distribution medium
S018F2P	Watson Machine Learning for z/OS-z/OS	English US	DVD

**Program name: IBM Db2 AI for z/OS, V1.2**

**Program ID: 5698-CGN**

Entitlement identifier	Description	License option/Pricing metric
S018CXV	IBM Db2 AI for z/OS, V1.2	Multi-Version Measurement No Charge Value Units
		On Off Capacity on demand Temporary use Charge MSU-DAY(s)
		Use-Based License One-Time Charge Value Units

Orderable supply ID	Description	Language	Distribution medium
S018F2S	IBM Db2 AI for z/OS-Db2	English US	DVD
S018CHB	IBM Db2 AI for z/OS-z/OS	English US	DVD

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 Program ID: 5698-MLS**

Entitlement identifier	Description	License option/Pricing metric
S0183FW	Machine Learning for z/OS S&S	Basic ASC, per Install SW S&S
		No charge, Decline SW S&S
		Multi-Version Measurement S&S No Charge

Orderable supply ID	Language	Distribution medium
S0183FX	English US	Paper

**Subscription and Support Program ID: 5698-CGS**

Entitlement identifier	Description	License option/Pricing metric
S018CXW	IBM Db2 AI for z/OS S&S	Decline Subscription and Support No Charge Value Units
		Multi-Version Measurement S&S No Charge Value Units
		SW Subscription and Support Registration (minus Supply right) No Charge Per MSU

Orderable supply ID	Language	Distribution medium
S018CHF	English US	Paper

**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 ID referenced above and the appropriate license or charge option.

IBM is also providing Subscription and Support for these programs with 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 by telephone.
- Entitles you to future releases and versions, at no additional charge. Note that you are not entitled to new programs.

When Subscription and Support is ordered, the charges will automatically renew annually unless canceled 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 IBM Z 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**

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Product deliverables are shipped only through CBPDO and ServerPac. These customized offerings are offered for internet delivery. For more details on Internet delivery, see 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 the month following their availability in CBPDO. z/OS can be ordered through 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, see the Help section on the [Shopz](#) website.

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 four weeks after general availability.

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## **Terms and conditions**

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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<sup>(R)</sup> Agreement, and the IBM Agreement for Acquisition of Software Maintenance.

### **Licensing**

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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

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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 International 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 Operational Support Services - SoftwareXcel is an option if you desire added services.

## License Information number

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The following License Information documents (available March 15, 2019) apply to the offerings in this announcement:

Program identifier	License Information document title	License Information document number
5698-WML	IBM Watson Machine Learning for z/OS License Information	<a href="#">L-HLIU-B7KE3C</a>
5698-CGN	IBM Db2 AI for z/OS License Information	<a href="#">L-DCLN-B7DV8N</a>

Follow-on releases, if any, may have updated terms. See the [License Information documents](#) website for more information.

## Limited warranty applies

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Yes

## Limited warranty

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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).

## Program technical support

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Technical support of a program product version or release will be available for a minimum of two 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 (by 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 versions, releases, and updates (CD releases, Long Term Support Releases or fixes) of the program. You will be notified, through an announcement letter, of discontinuance of support with six 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.

For additional information on the IBM Software Support Lifecycle Policy, see the [IBM Software Support Lifecycle Policy](#) website.

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### **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.

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### **Volume orders (IVO)**

No

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### **Passport Advantage applies**

No

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### **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 time frame as specified in the Software Support Lifecycle policy for the program.

Yes. 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, see 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.

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

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Yes

### **Variable charges apply**

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No

### **Educational allowance available**

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

### **Multi-Version Measurement**

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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 [Multi-Version Measurement](#) web page. For a list of eligible programs, see the [IPLA Execution-Based Programs](#) web page.

### **Sub-capacity terms and conditions**

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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.

<b>Program number</b>	<b>Program name</b>	<b>Terms</b>	<b>Parent, if applicable</b>
5698-CGN	IBM Db2 AI for z/OS, V1.2	Reference-based	IBM Db2 for z/OS, V12 (5650-DB2)

Program number	Program name	Terms	Parent, if applicable
			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, see 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 *The IBM z Systems Machines Exhibit*, Z125-3901, or see the Mainframes section of the [IBM System z Software Contracts](#) 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<sup>(R)</sup>. 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<sup>(R)</sup> 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<sup>(R)</sup> (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, see 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.

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## **Statement of good security practices**

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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.

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## **Prices**

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

Registered external clients and IBM Business Partners can access [IBMLink](#) to view pricing information.

Specify "Price type," "Search type," and "Search value," then click "Search."

**Note:** Enter program number in the "Search value."

You can also contact your local IBM representative or IBM Business Partner for the applicable charges.

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## Order now

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To order, contact the IBM Digital Sales Center, your local IBM representative, or your IBM Business Partner. To identify your local IBM representative or IBM Business Partner, call 800-IBM-4YOU (426-4968). For more information, contact the IBM Digital Sales Center.

Phone: 800-IBM-CALL (426-2255)

Fax: 800-2IBM-FAX (242-6329)

For IBM representative: [askibm@ca.ibm.com](mailto:askibm@ca.ibm.com)

For IBM Business Partner: [pwcs@us.ibm.com](mailto:pwcs@us.ibm.com)

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The IBM Digital Sales Center, our national direct marketing organization, can add your name to the mailing list for catalogs of IBM products.

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

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