

# IBM z/OS V2.4 2Q 2021 enhancements strengthen systems operations, automation, management, and security

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## Overview

IBM<sup>®</sup> z/OS<sup>®</sup> is designed to keep applications and data available, systems highly secure, server utilization high, and to enable agile development. z/OS continuous delivery (CD) offers clients the opportunity to use new z/OS functions, capabilities, and technologies by applying service rather than upgrading to a new z/OS release.

This quarter's CD update further extends the capabilities of z/OS V2.4 with enhancements and functions that can benefit clients across areas of systems operations, automation, management, and security. Key features delivered in this second-quarter CD release in support of z/OS V2.4 include the following:

- Enhanced Base Control Program internal interface (BCPii ). Enhancements include a new z/OS API named **HWIREST** that enables applications to access many previously unavailable attributes of the IBM z15.<sup>™</sup>
- Improved Tailored Fit Pricing (TFP) for IBM Z<sup>®</sup>. A new system parameter that automatically reports and applies the TFP solution to the system. This improvement is designed to be an easier and less error-prone alternative to defining TFP solutions with the Sub-capacity Reporting Tool (SCRT) control statements.
- Enhanced IBM z/OS Management Facility (z/OSMF). Improvements include a global configuration to the Interactive System Productivity Facility (ISPF) application settings and added support for users changing their z/OS password or passphrase.
- Enhanced z/OSMF desktop editor. Adds linkable URLs to data set names and z/OS File System (zFS) files, and can now be used to view diagnostic data with support from the z/OSMF Incident Log application.
- Enhanced Integrated Cryptographic Service Facility (ICSF). Enhancements include a new method for encrypting a Data Encryption Standard (DES) secure key token and new and updated utilities to migrate existing keys to a new wrapping method.
- 64-bit support for z/OS UNIX<sup>®</sup> memory-map service. Support is extended for applications using the z/OS UNIX or POSIX memory-map services to enable the use of 64-bit storage and map files of lengths greater than 2 GB.
- Object Access Method (OAM) cloud and additional backup enhancements. Additional backup enhancements are available. A cloud tier is added to the OAM storage hierarchy.

## Key requirements

z/OS V2.4 operates on the following IBM Z servers:

- IBM z15 Models T01 and T02
- IBM z14<sup>(R)</sup> Models M01-M05
- IBM z14 Model ZR1
- IBM z13<sup>(R)</sup>
- IBM z13s<sup>(R)</sup>
- IBM zEnterprise<sup>(R)</sup> EC12 (zEC12)
- IBM zEnterprise BC12 (zBC12)

If you run z/OS V2.4 as a guest of [IBM z/VM<sup>\(R\)</sup>](#), z/VM must be at a supported level.

For a complete description of z/OS V2.4 hardware requirements, see the [z/OS V2.4 Planning for Installation \(GA32-0890\)](#) web page.

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## Planned availability date

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June 30, 2021

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## Description

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### BCPii

z/OS BCPii provides a powerful way for z/OS applications to automate and control the operations of Z hardware in multiple languages, including REXX. A new z/OS BCPii API named **HWIREST** is being introduced for the z15 that enables applications to access many previously unavailable attributes of the z15, including central processor complex (CPC) storage, storage allocated for a logical partition (LPAR), CPC environmentals such as exhaust air temperature and dew points, and detailed information about processors and their assignments to an LPAR. BCPii **HWIREST** is an interface designed to act more as a passthrough interface to the z15 hardware APIs and machine information. As such, it is intended to surface future attributes that might become available in a new hardware firmware level or machine, without requiring a corresponding z/OS BCPii software update. This new interface is in addition to the existing BCPii services and requires exploiting software to explicitly request the new function.

With the PTF for APAR OA60351, this enhancement is available for z/OS V2.4 and later. It requires a z15, SE 2.15.0 with MCL P46598.370, Bundle S38 or higher, and HMC 2.15.0 with MCL P46686.001, Bundle H25 or higher.

### TFP ease of use

To reduce the effort of reporting on TFP solutions, a new system parameter named **SOLUT=** is added to the system parameter member **IEASYSxx**. Customers can indicate in the z/OS configuration of a system that it is running with a qualified TFP solution. z/OS reports this information in SMF 89 records. When used with SCRT 28.2.0, clients are no longer required to specify the TFP solution ID in SCRT CONTAINER control statements. Instead, SCRT captures the solution ID from the SMF data and automatically applies it to the system.

This is designed to be an easier and less error-prone alternative to defining TFP solutions with SCRT control statements. With the PTF for APAR OA60198, this function is available for z/OS V2.3 and later. SCRT 28.2.0, or later, is required to exploit the information provided by the new system parameter and is available with the PTF for APAR OA60919 for z/OS V2.3 and later.

### z/OSMF enhancements

- The z/OSMF ISPF application, which renders ISPF applications in a browser instead of requiring a 3270 emulator, is enhanced to add a global settings

configuration. This is intended to improve the user experience by providing system-wide defaults for the ISPF application settings rather than requiring each user to configure those values. The setting values of the z/OSMF ISPF application also can be captured in a file and used by an administrator to set up other systems' global configurations. With the PTF for APAR PH34102, this support is available for V2.3 and later.

- The z/OSMF desktop editor is enhanced to highlight data set names and zFS file paths as hot-linkable URLs. A user can open the referenced data set or a zFS file from the z/OSMF desktop editor simply by clicking on the link. With the PTF for APAR PH34912, this function is available on V2.4 and later.
- The z/OSMF Incident Log application adds support for viewing diagnostic data using the z/OSMF desktop editor application. This standardizes the user experience using a more native browser look and feel. Previously, viewing the diagnostic data was performed only using the z/OSMF ISPF application. With the PTF for APAR PH34912, this capability is available for V2.4 and later.
- A new REST API has been added to support changing a user's z/OS password or passphrase. With the PTF for APAR PH34912, this function is available for V2.4 and later.

### **ICSF enhancement**

A new method for encrypting a DES secure key token is introduced. This is the first proprietary Triple DES (TDES) key token (also known as a key block) to be independently reviewed and confirmed to be equivalent to the standards of Payment Card Industry (PCI) Security Standards Council (SSC) PIN<sup>(R)</sup> Security key block requirements as updated September 30, 2020. The new key block is backward compatible with existing applications, can be stored in the Cryptographic Key Data Set (CKDS), and introduces a new wrapping method called WRAPENH3. The wrapping method controls the cryptographic algorithms used to encrypt the clear-key material within the boundary of the coprocessor, resulting in what is known as a "secure key" from an ICSF perspective.

ICSF offers a utility that can be used to migrate all existing TDES secure keys in a CKDS to the new wrapping method, or it can be done on a key-by-key basis using updated callable services. In addition, a new SAF resource provides a way to override existing applications such that wherever a wrapping method is specified or defaulted, the wrapping method is automatically updated to WRAPENH3.

With the PTF for APAR OA60318, these capabilities are available for V2.2 and later.

### **z/OS UNIX and POSIX memory-map 64-bit support**

Applications using the z/OS UNIX or POSIX memory-map service can now use 64-bit storage and map files of lengths greater than 2 GB. This enhancement helps alleviate below-the-bar memory constraints by enabling applications to use above-the-bar storage for large memory-mapped files. In addition, this new support is designed to improve application performance and simplify data access by facilitating access to large amounts of data at once. With the PTFs for APARs OA60306 and PH32235, this support is available for z/OS V2.4 and later.

### **OAM cloud and additional backup enhancements**

With the PTF for APAR OA55700 for z/OS V2.3 and later, a cloud tier is added to the OAM storage hierarchy. With the OAM cloud tier support, the primary copy of an OAM object can be managed and stored as an object to a public, private, or hybrid cloud infrastructure that supports the S3 API. However, OAM-managed backup copies continue to be supported as they are today to removable media, typically virtual or physical tape. With the PTF for APAR OA59615 for z/OS V2.3 and later, an OAM-managed backup copy of a primary object is additionally supported in the cloud and in a file system (zFS or NFS). OAM continues to support up to two backup copies of an OAM object.

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## **Statement of direction**

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## Integrated Cryptographic Service Facility (ICSF) Regional Cryptographic Server (RCS) removal

In addition to statements made in Software Announcement [AP20-0362](#), dated September 22, 2020, z/OS V2.4 (ICSF FMID HCR77D0) and the web-deliverable Cryptographic Support for z/OS V2.2, z/OS V2.3, and z/OS V2.4 (ICSF FMID HCR77D1) are planned to be the last releases for which ICSF will support a network-attached RCS.

Statements by IBM regarding its plans, directions, and intent are subject to change or withdrawal without notice at the sole discretion of IBM. Information regarding potential future products is intended to outline general product direction and 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 IBM products remain at the sole discretion of IBM.

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### Reference information

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For information about z/OS V2.5 Preview, see Software Announcement [AP21-0051](#), dated March 2, 2021.

For additional information about z/OS and components with new capabilities in this continuous delivery release, see the following:

- [z/OS](#)
- [BCPii](#)
- [TFP](#)
- [z/OSMF](#)
- [ICSF](#)
- [OAM](#)

For information about z/OS V2.4, see:

- Software Announcement [AP21-0094](#), dated March 16, 2021
- Software Announcement [AP20-0469](#), dated December 8, 2020
- Software Announcement [AP20-0455](#), dated October 13, 2020
- Software Announcement [AP20-0362](#), dated September 22, 2020
- Software Announcement [AP20-0211](#), dated June 16, 2020
- Software Announcement [AP20-0097](#), dated March 17, 2020
- Software Announcement [AP19-0199](#), dated December 10, 2019
- Software Announcement [AP19-0326](#), dated July 23, 2019
- Software Announcement [AP19-0011](#), dated February 26, 2019

For information about z15, see:

- Hardware Announcement [AG20-0056](#), dated August 4, 2020
- Hardware Announcement [AG20-0006](#), dated April 14, 2020
- Hardware Announcement [AG20-0013](#), dated January 14, 2020
- Hardware Announcement [AG19-0094](#), dated November 26, 2019
- Hardware Announcement [AG19-0032](#), dated September 12, 2019

For information about z14 Model ZR1, see:

- Hardware Announcement [AG18-0074](#), dated October 2, 2018

- Hardware Announcement [AG18-0018](#), dated April 10, 2018

For information about z14, see:

- Hardware Announcement [AG18-0074](#), dated October 2, 2018
- Hardware Announcement [AG17-0093](#), dated November 28, 2017
- Hardware Announcement [AG17-0044](#), dated July 17, 2017

For information about z13<sup>(R)</sup>, see:

- Hardware Announcement [AG19-0045](#), dated May 7, 2019
- Hardware Announcement [AG19-0017](#), dated February 12, 2019
- Hardware Announcement [AG16-0058](#), dated June 7, 2016
- Hardware Announcement [AG15-0060](#), dated March 3, 2015
- Hardware Announcement [AG15-0001](#), dated January 14, 2015

For information about z13s<sup>(R)</sup>, see:

- Hardware Announcement [AG16-0058](#), dated June 7, 2016
- Hardware Announcement [AG16-0002](#), dated February 16, 2016

For information about zEnterprise EC12, see Hardware Announcement [AG12-0167](#), dated August 28, 2012

For information about zEnterprise BC12, see Hardware Announcement [AG13-0134](#), dated July 23, 2013

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## Availability of national languages

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The z/OS national language support features will become generally available when the executable code becomes available.

Translation information, if available, can be found at the [Translation Reports](#) website.

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## Program number

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Program number	VRM	Program name
5650-ZOS	2.4.0	z/OS

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## Technical information

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### Specified operating environment

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#### **Hardware requirements**

z/OS V2.4 runs on the following IBM Z servers:

- z15 Models T01 and T02
- z14 Models M01-M05
- z14 Model ZR1
- z13
- z13s
- zEnterprise EC12 (zEC12)
- zEnterprise BC12 (zBC12)

For a complete description of z/OS V2.4 hardware prerequisites, see the [z/OS V2.4 Planning for Installation \(GA32-0890\)](#) web page.

### **Software requirements**

The z/OS base is a system that can be IPLed. There are no software prerequisites to IPL. Specific functions might require additional products not included in the z/OS base or in the optional features of z/OS. See the [z/OS V2.4 Planning for Installation \(GA32-0890\)](#) web page for a listing of specific software requirements.

### **Compatibility**

For compatibility information about z/OS V2.4, see Software Announcement [AP19-0326](#), dated July 23, 2019.

### **Planning information**

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#### **Direct client support**

To obtain information on client eligibility and registration procedures, contact the appropriate support center.

#### **Security, auditability, and control**

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Data security and auditability in the z/OS environment are enhanced by the functions available in the optional Security Server for z/OS feature.

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

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## **Ordering information**

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### **New licensees**

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Not applicable.

### **Basic license**

To order a basic license, specify the z/OS V2.4 program number 5650-ZOS. Proceed to select the features listed which are required and then select any optional features.

### **New Application License Charge (NALC)**

New Application License Charge (NALC) ordering information

The NALC price is a price per MSU of the processor to which the software is licensed. Order the quantity of features equal to the MSU rating of the processor.

New Application License Charge

Basic license one-time charge

<b>Entitlement identifier</b>	<b>Description</b>	<b>License option/Pricing metric</b>
S01728T	z/OS V2 Base	Basic MLC, NALC
S01728Z	z/OS V2 XL C/C++	Basic MLC, NALC
S017291	z/OS V2 DFSMS dsshsm	Basic MLC, NALC
S017292	z/OS V2 DFSMS rmm	Basic MLC, NALC
S017293	z/OS V2 DFSMStvs	Basic MLC, NALC
S017294	z/OS V2 DFSORT	Basic MLC, NALC
S01729C	z/OS V2 RMF	Basic MLC, NALC

Entitlement identifier	Description	License option/Pricing metric
S01729D	z/OS V2 SDSF	Basic MLC, NALC
S01729F	z/OS V2 Security Server	Basic MLC, NALC
S01780D	z/OS V2 zEDC	Basic MLC, NALC
S018G2F	z/OS V2 RUCSA	Basic MLC, NALC

### **Basic machine-readable material**

The following no-charge features are added to z/OS V2.4 and can be ordered effective September 13, 2019. These no-charge media features have pricing/billing features associated with them. It is those associated pricing/billing features where the charges are listed and not the media features listed below. See **Notes** below for details on past announcements for this information.

z/OS V2.4 feature description	z/OS V2.4 orderable supply ID
Base	S018DSM
Alternate Base	S018DSZ

### **Notes:**

This product ships its executable code via Customized Offerings (ServerPac and CBPDO). The media type is chosen during the customized offering ordering procedure. Refer to the Customized Offerings section for the media types offered.

### **Basic product documentation**

#### **Customization options**

Expedite shipments will be processed to receive 72-hour delivery from the time IBM Software Delivery and Fulfillment (SDF) receives the order. SDF will then ship the order via overnight air transportation.

#### **Optional machine-readable material**

To order, select the feature number for the desired distribution medium:

#### **Optional machine-readable material**

Optional unpriced features -z/OS V2.4

The following optional features, offered at no additional charge, can be ordered effective September 13, 2019.

z/OS V2.4 feature description	z/OS V2.4 orderable supply ID
Communications Server Security Level 3	S018DSF
z/OS Security Level 3	S018DSC

#### **Optional priced features**

The following optional no-charge media features can be ordered effective September 13, 2019. These optional no-charge media features have pricing/billing features associated with them. It is those associated pricing/billing features where the charges are listed and not the media features listed below. For more information on the optional priced feature, see the [z/OS operating system](#) website.

z/OS V2.4 feature description	z/OS V2.4 orderable supply ID
BDT FTF	S018DSR
BDT SNA NJE	S018DSP
XL C/C++	S018DSL
DFSMS dss	S018DS8
DFSMS dss,hsm	S018DS7
DFSMS rmm	S018DSX
DFSMSStvs	S018DT1
DFSORT	S018DS5

<b>z/OS V2.4 feature description</b>	<b>z/OS V2.4 orderable supply ID</b>
GDDM-PGF	S018DSD
GDDM-REXX	S018DSK
HCM	S018DS6
HLASM Toolkit	S018DSS
Infoprint Server	S018DST
JES3	S018DT2
RMF	S018DT3
SDSF	S018DSJ
Security Server	S018DSG
zEDC	S018DSB
RUCSA	S018G2F

### **Optional unpriced language features**

The z/OS V2.4 language features will become generally available on the same date the release becomes available.

z/OS V2.4 provides support in the languages listed below. However, not all elements within z/OS V2.4 are translated into each language. See *z/OS Planning for Installation* (GA32-0890) in the [z/OS Internet Library](#) for information about the languages in which z/OS elements and features are available.

The following optional features, offered at no additional charge, are added to z/OS V2.4 and can be ordered effective September 13, 2019.

The language features for z/OS V2.4 are:

<b>z/OS V2.4 feature description</b>	<b>z/OS V2.4 orderable supply ID</b>
JPN Base	S018DS9
JPN XL C/C++	S018DSN
JPN Infoprint Server	S018DSV
JPN RMF	S018DSW
JPN Security Server	S018DSH
JPN ALT Base	S018DT0

### **Publications**

A program directory is supplied automatically with the basic machine-readable material.

To access the unlicensed z/OS product documentation, start at the [z/OS Internet Library](#). It contains direct links to the following repositories and content:

- [IBM Documentation](#) sections for z/OS V2.4 and other supported releases.
- z/OS V2.4 Library, hosted on [Resource Link](#),<sup>(R)</sup> to download individual or grouped PDFs. An IBMid and password are required.
- Adobe™ Indexed PDF Collections (SC27-8430) to easily conduct offline searches on z/OS product documentation.
- Downloadable collections of IBM Documentation plug-ins for clients who host their own instances of IBM Documentation for z/OS (KC4z).
- [IBM Z and LinuxONE content solutions](#), which provide comprehensive and interactive content such as workflows, videos, and content collections.
- [IBM Z Publications Library Archive](#), to obtain as-is content for out-of-service products and releases.

PDF collections are provided in the Zip format that any modern Zip utility can process.

Subsequent updates (technical newsletters or revisions between releases) to the publications shipped with the product will be distributed to the user of record for as

long as a license for this software remains in effect. A separate publication order or subscription is not needed.

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## Terms and conditions

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The terms are unaffected by this announcement.

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## Statement of good security practices

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**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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## AP distribution

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Country/Region	Announced
ASEAN *	Yes
India/South Asia **	Yes
Australia	Yes
Hong Kong	Yes
Macao SAR of the PRC	Yes
Mongolia	Yes
New Zealand	Yes
People's Republic of China	Yes
South Korea	Yes
Taiwan	Yes

\* Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Vietnam

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