

## Getting z/OS Ready for the IBM z17



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# Agenda



- **Where to find z/OS on IBM z17 info**
- **IBM z17 functions & features highlights**
- **z/OS support by release**
- **Installing z/OS support for IBM z17**
- **Upgrade considerations**
  - General
  - IBM z17 upgrade considerations
  - Required z/OS support for z17
  - Sysplex and Multisystem considerations
- **Exploitation considerations for select functions**
- **Summary**

# Where to find all the upgrade information for z/OS on the z17

To find the complete z/OS z17 upgrade information, use the following:

- ❖ **z/OS z17 Upgrade Workflow**, provided as a PTF on V2.4 and higher
  - Only contains the z/OS steps for upgrading to z17
  - Installs into the `/usr/lpp/bcp/upgrade` directory, file `z17_zOS_Upgrade_Workflow.xml`
  - Recommended format as z/OSMF offers interactive assistance and will run associated IBM Health Checker for z/OS health checks.

This PTF is identified with the SMP/E FIXCAT of `IBM.Device.Server.z17-9175.RequiredService`

- Use this FIXCAT, as subsequent updates, to support subsequent IBM z17 enhancements, will be included in PTFs.
- ❖ **Exported format of the z/OS z17 Upgrade Workflow, from IBM Documentation**
  - Not preferred, for reasons on the next chart.
  - <https://www.ibm.com/docs/en/zos/3.2.0?topic=level-zos-upgrade-workflow>

# Where to find all the upgrade information for z/OS on the z17

## z/OS z17 Upgrade Workflow for z/OSMF advantages:

- ✓ Check compatibility for server levels in a sysplex.
- ✓ Verify identified PTFs are installed (when PTFs are available)
- ✓ Run associated IBM Health Checker for z/OS check.
- ✓ Direct links to supporting associated documentation.
- ✓ Keep track of which upgrade tasks are completed, and which are still left to do, with delegation.

Workflows

Workflows > IBM z16™ Upgrade Workflow

### IBM z16™ Upgrade Workflow

Workflow Details

Workflow Steps

Actions

No filter applied

State Filter	No. Filter	Title Filter	Call Filter	Owner Filter	Skill Category Filter	Assignees Filter
<input type="checkbox"/>	1	Upgrade to an IBM z16 server		mvalle	z/OS Systems Programmer	mvalle
<input checked="" type="checkbox"/>	2	Upgrade to an IBM z16 server		mvalle	z/OS Systems Programmer	mvalle
<input checked="" type="checkbox"/>	3	Check compatibility of servers in the sysplex		mvalle	z/OS Systems Programmer	mvalle
<input checked="" type="checkbox"/>	4	General recommendations and considerations for an IBM z16™ server		mvalle	z/OS Systems Programmer	mvalle
<input checked="" type="checkbox"/>	4.1	Upgrade actions for IBM servers are cumulative		mvalle	z/OS Systems Programmer	mvalle
<input checked="" type="checkbox"/>	4.2	Run the SMP/E REPORT MISSINGFIX command		mvalle	z/OS Systems Programmer	mvalle
<input checked="" type="checkbox"/>	4.3	Install the necessary z/OS service		mvalle	z/OS Systems Programmer	mvalle

Total: 42 Selected: 1

Return to Workflows Refresh Last refresh: Feb 14, 2024, 4:42:45 PM local time (Feb 14, 2024, 9:42:45 PM GMT)

Make your own printable customized version!

### Export This Workflow in a Printable Format

Export workflow steps:

All steps

As filtered

Export Table of Contents:

Include the Table of Contents

Export additional information:

Include JCL, REXX, and UNIX shell contents from templates, and information from REST steps

OK Cancel Help

# Highlights of IBM z17 (9175) ME1 Functions & Features

**One hardware model**, Five Features, 1-4 19" Frame System, Maximum 8 cores/chip, 2 chips/DCM  
1 integrated I/O accelerator/chip. 5.4Ghz.

Up to 85 user partitions, 32 TB per partition,  
208 CPUs/zIIPs/IFLs per partition (up from 200)  
• Up to 16 TB per z/OS LPAR as of z/OS V2.5

•2 CP chips on a Dual Chip Module (DCM), 5.4 GHz  
•L1 Private 128K instruction & 128K data  
•L2 Shared 36 MB / core, 270 MB effective shared  
•10 x Private/Shared 36 MB L3 caches

684 GB HSA, 64 TB maximum, 16 TB per drawer

**Channel Subsystem scalability**  
•Up to six (6) Channel Sub Systems (CSSs)  
• 4 Subchannel Sets per LCSS

HiperDispatch Enhancements

IBM Z Integrated Accelerator for AI

Hardware Instrumentation Services (CPUMF)

New machine instructions

Network Express

Crypto Express8S

OSA Express7S 1.2 1/10/25 Gb



**Integrated I/O architecture (including Enhanced QDIO)**

**ICA-SR 2.0 for short-reach coupling**

- 8 (was 4) CHPIDs/port for CS5
- Same limits as z15/z16 with 48 adapters/96 ports.

**Coupling Express3 LR 10Gb/25Gb optics for long-reach**

- 8 (was 4) CHPIDs/port for CL5/CL6
- 64 (was 32) adapters, 128 (was 64) ports

**CF Level 26**

- Parallel Sysplex scalability, virtualization, consolidation, and density enhancements.
- Removal of support for CF Flash Memory and CF images using dedicated GP processors.

**Max coupling CHPIDs per CEC 512 (was 384)**

**10 GbE and 25 GbE RoCE Express 3 SR and LR (CX6-DX)**

FICON Express 32G

**zHyperLink® Express 2.0**

- Maximum 16 Adapters /32 ports

**IBM Flexible Capacity for Cyber Resilience**

(z/OS support in blue, z/OS GA Dec 2025 support in green)

# z/OS support summary

Release	zEC12 zBC12 Wdfm	z13 Z13s Wdfm	z14 z14 ZR1 Wdfm	z15 T01 z15 T02 Wdfm	z16 A01 <u>Wdfm</u> z16 A02	IBM z17 ME1	End of Service	Extended Defect Support (1)
z/OS V2.3 <sup>1</sup>	X	X	X	X	X		9/22 (*)	9/25 (*)
z/OS V2.4	X	X	X	X	X	X	9/24 (*)	9/27 (*)
z/OS V2.5		X	X	X	X	X	9/26 (*)	9/29 (*)
z/OS 3.1			X	X	X	X	9/28 (*)	9/31 (*)
z/OS 3.2				X	X	X	9/30 (*)	9/32 (*)

## Notes:

(1) The IBM Software Support Services offering provides the ability for customers to purchase extended defect support service for those z/OS releases which are end of service.

(\*) Planned. All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

**Wdfm** – Server has been withdrawn from Marketing

Legend

IBM Software Support Services required for z/OS support

Supported

Not supported

# Supported z/OS releases on z17

- z17 capabilities differ depending on z/OS release
- **Toleration support**
  - **z/OS V2.4 + PTFs** (Must have IBM Software Support Services offering purchased for support)
  - **z/OS V2.4 September 30, 2024 is End of Support.**
- **Exploitation support on z/OS:**
  - **z/OS V2.5 + PTFs** (September 30, 2026 is End of Support)
    - Exploitation support of select functions
  - **z/OS V3.1 + PTFs**
    - More exploitation support
  - **z/OS V3.2 + PTFs**
    - Most exploitation support

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# Fix Categories (FIXCATs) for z17 PTFs:

- There will be no PSP buckets created for z17!
  - Notification provided via [IBM Support note](#) in April 2024.
- Base support is provided by PTFs identified by:
  - **IBM.Device.Server.z17-9175.RequiredService**
- Exploitation of many functions is provided by PTFs identified by:
  - **IBM.Device.Server.z17-9175.Exploitation**
- Recommended service is identified by:
  - **IBM.Device.Server.z17-9175.RecommendedService**

Fixes that are required to run z/OS on the z17 ME1 servers. You **must** have these PTFs installed.

Fixes that are required to exploit the capabilities of the z17 ME1 server. **Only necessary** to install if you are exploiting the function.

Fixes that are recommended to run z/OS on the z17 ME1 server. They represent fixes that have been recommended by IBM Service. It is **recommended** that you review and install these PTFs.

# Common question

Without hardware  
PSP buckets, where  
should I get the  
z/OS information I  
need?

*Answer:* All the information you need to upgrade z/OS to support z17 is provided in the **z/OS z17 Upgrade Workflow**.

In that workflow, all the PTF FIXCATs are clearly documented, with steps to run the SMP/E REPORT MISSINGFIX command, to assist you in knowing if you are positioned for z17.

In that workflow, requirements and any restrictions are also covered.

The **z/OS z17 Upgrade Workflow** is supported by the IBM Support organization, and is refreshed when needed in the service stream, with FIXCAT identification.

For those that prefer the information in a single static file, the z17 Upgrade Workflow has been exported and is available at the bottom of this [page](#).

# Using SMP/E REPORT MISSINGFIX

REPORT MISSINGFIX command identifies fixes associated with particular fix categories that have not yet been installed and identifies whether any SYSMODs are available to satisfy those missing fixes

## 1. Get the latest Enhanced HOLDDATA

- Included when you use SMP/E RECEIVE ORDER ← recommended!
- You can also download it from the Enhanced HOLDDATA site
  - This site uses ftp, which is not commonly supported in several browsers
  - <http://service.software.ibm.com/holdata/390holddata.html#download>

## 2. Sample Command to identify missing fixes for Required, Exploitation and Recommended service.

```
SET BDY (GLOBAL) .  
  
REPORT MISSINGFIX ZONES (target_zone)  
FIXCAT (IBM.Device.Server.z17*) .
```



**CRITICAL: Run this command periodically,  
and review output carefully!**

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# General upgrade reminders

- z/OS does not require an z17
- Install all z/OS z17 service prior to upgrading your hardware
  - z17 only requires software identified as **Required**
    - *Note sysplex consideration:* Install all **Required** PTFs before introducing z17. Either as z/OS or CF image.
  - z17 does not require any **Exploitation** software
    - *Note sysplex consideration:* Before exploiting a z17 sysplex function, Install all **Exploitation** PTFs on all z/OS images.
  - z/OS z17 **Recommended** service should be reviewed to see if you need it.
- **Continued great news ! ICSF support for z17 is provided with PTFs, not Web deliverables.**
  - PTFs will be appropriately categorized into Required, Exploitation, and Recommended FIXCATs.
  - No FMID to install!

## Usual Recommendations:

- Avoid upgrading to new software releases and servers at the same time
  - Keep quantity of change smaller
  - Less-complex back out, if you do need to back out
- Review restrictions and upgrade considerations when creating your upgrade plan

# Unsupported features on z17 servers (1 of 2)

- **Removal of support for use of Virtual Flash Memory for Coupling Facility images**
  - IBM z16 was the last generation of IBM Z® to support the use of Virtual Flash Memory (also known as Storage Class Memory, or SCM) for Coupling Facility images.
    - If using Virtual Flash Memory as an "overflow" mechanism for MQ Shared Queue structures, you should plan to use other alternatives such as using larger Coupling Facility structures, using IBM MQ shared message data sets (SMDS), or using MQ techniques to offload MQ message data to Db2®.
- **Removal of support for Coupling Facility image use of dedicated general-purpose processors**
  - IBM z16 was the last generation of IBM Z to support the use of dedicated general-purpose processors (GPs) to provide processing capacity for Coupling Facility (CF) images.
    - If using dedicated GPs for Coupling Facility images, you should plan to migrate to one of the other supported processor configurations for CF images: dedicated or share Integrated Coupling Facility (ICF) processors. Note shared GPs will continue to be supported for use by CF images.

# Unsupported features on z17 servers (2 of 2)

Following hardware features **cannot be** ordered or carried forward to z17 servers:

- Existing ICA SR and ICA SR1.1 adapters
  - Existing CE LR and CE2 LR adapters
  - Coupling Express2 LR
  - Crypto Express6S
  - OSA Express6S
  - RoCE Express3
  - FICON Express 16S adapter
- **Removal of support for OSE CHPID Type**
    - Support for the Systems Network Architecture (SNA) protocol being transported natively out of the server using OSA-Express 1000BASE-T adapters configured as channel type "OSE" are eliminated on z17.
  - **Removal of support for OSA Express 1000BASE-T hardware adapters.**
    - IBM z16™ was the last IBM Z server to support OSA-Express 1000BASE-T hardware adapters (#0426, #0446, and #0458) on new build servers.
  - **Removal of support for legacy Capacity on Demand (CoD) automation**
    - IBM z16™ was the last IBM Z server family to support legacy Capacity on Demand (CoD) unique record type automation interfaces.
  - **System Recovery Boost (SRB) Upgrade record** for temp capacity boost.
    - Starting with the IBM z17, the SRB Upgrade record feature is no longer offered. If you already have the SRB Upgrade record feature on a z15 or z16, you can continue to use it.

# Accommodate functions to be discontinued on future servers

- **Prepare for the removal of support for the transactional execution facility**
  - IBM z17 is planned to be the last IBM Z hardware generation to support the constrained transactional execution facility (CTX).
  - On subsequent IBM Z hardware generations, the TBEGINC instruction that is used to start a constrained transaction will receive an operation exception, and no constrained transactional execution will be initiated or supported.

# IOCP (I/O Configuration Program) for z17

Required support

IOCP provides support for:

- z17 base machine definition:
  - Machine type 9175, model ME1 (and ML1).
- Includes support for:
  - z17 IBM Z Integrated Accelerator for AI
  - New Coupling Express3 LR 25Gb feature (CL6). Defaults to definition of 32 subchannels/devices per CHPID, with an option for 8.
  - New Coupling Express3 LR 10Gb feature (CL5). Defaults to definition of 8 subchannels/devices per CHPID, with an option for 32.
  - New OSH CHPID for z/OS Communications Server support for Network Express adapters.
  - New NETH PCIe function for ethernet including RoCE.
    - Allows port (PCHID) sharing between OSH and NETH
  - Up to 4 CHPIDs/port per physical coupling link for both ICA SR (CS5) and CE3 LR (CL5/CL6)
    - Long-reach coupling link support for 32 adapters and 64 ports.
    - (Short-reach remains unchanged at 48 adapters and 96 ports.)
  - 384 coupling CHPIDs per CEC
  - Expects at least 8 (up from 7) subchannels/devices per ICP CHPID
    - 8 is the recommended minimum.
    - 7 is allowed, and is supported by HCD.
- z/OS V2.4 and higher.

▪For z17 to IPL, it is required to have a new z17 IOCDs written. You cannot use a prior generation (z16 or z15) IOCDs. However, you can prepare your z17 IOCDs from a pre-z17 server.

▪Updated publication: *IOCP User's Guide* – SB10-7172

# HCD support for z17

Required support

HCD provides support for:

- z17 base machine definition:
  - Machine type 9175, model ME1.
- Including support for:
  - z17 IBM Z Integrated Accelerator for AI
  - New Coupling Express3 LR 25Gb feature (CL6). Defaults to definition of 32 subchannels/devices per CHPID, with an option for 8.
  - New Coupling Express3 LR 10Gb feature (CL5). Defaults to definition of 8 subchannels/devices per CHPID, with an option for 32.
  - New OSH CHPID for z/OS Communications Server support for Network Express adapters.
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    - Allows port (PCHID) sharing between OSH and NETH
  - Up to 4 CHPIDs/port per physical coupling link for both ICA SR (CS5) and CE3 LR (CL5/CL6)
    - Long-reach coupling link support for 32 adapters and 64 ports.
    - (Short-reach remains unchanged at 48 adapters and 96 ports.)
  - 384 coupling CHPIDs per CEC
  - Allows 7 **or** 8 subchannels/devices per ICP CHPID.
    - Helps with migration from z15/z16.
    - Default is 8, for z17.
- z/OS V2.4 and higher.
- z17 hardware can be defined on any supported z/OS version and server
- HCD supports dynamic activation locally or remotely via hardware-only dynamic activation if the machine is running coupling facilities, Linux for System Z, z/TPF, or any combination of those.
- **Note:** HCD support needs to be installed on all systems used for HCD definition and activation.

# z/OS support for z17 integrated I/O architecture: Measurements

- z17 has an entirely new I/O hardware and architecture model for both storage and networking. The new design moves processor and memory closer, which transforms I/O operations to allow workloads to grow and scale.
    - Adds new channel measurement characteristics and channel utilization counts for new Channel Measurement Groups (CMG) 4 and 5.
  - The channel utilization counts and channel measurement characteristics for the new CMGs are provided in Channel Path Measurement Block (IRACPMB) which is populated by the Channel Path Measurement Facility (CPMF) on z17 hardware.
  - z/OS WLM provides support in the Channel Path Measurement Block (IRACPMB).
  - z/OS Data Gatherer extends its data collection for Channel Measurement Groups 4 and 5 for SMF 73 records and Monitor III channel data table (ERBCPDG3).
  - Note: RMF Monitor II will not show detailed reporting for certain CMGs. [Use Monitor III.](#)
- Required support
- V2.4 and higher
  - The Channel Path Measurement Facility is not available under z/VM, no channel measurement characteristics and utilization data will be retrieved.

# z/OS support for z17 integrated I/O architecture: Network Express feature

- Network Express allows RoCE and OSA networking features to converge into a single network feature.
  - Reducing cost for physical networking resources (drawer I/O slots, adapters, ports, cables, switch port).
  - Single port on the new adapter can simultaneously have two “personalities“, managed independently (although service action on the physical card/port requires both entities to be varied offline):
    - ❖ **OSH** using Enhanced QDIO for OSA (Ethernet) – new OSA networking channel path id type
    - ❖ **NETH** using native PCI for RoCE (SMC-R)
  - z17 SMC-Rv2 support requires OSH and NETH CHPID types must be converged on the same PCHID/port, with matching interface statements.

Network Express supports Enhanced QDIO (EQDIO) architecture, allowing z/OS Communications Server to interact with hardware using optimized operations, to allow growing I/O rates.

- EQDIO builds the foundation for the introduction of advanced Ethernet and networking capabilities, which support IBM Z Hybrid Cloud Enterprise users.
- z/OS Communications Server SMF records are updated.
- z/OS IOS supports the new OSA networking channel path id type, OSH (OSA Hybrid – Network Express for Ethernet).
  - V2.4 and higher
  - z/VM Consideration: When used as guest of a z/VM that supports z17, there are two options for network connectivity: 1) Dedicate a device on an OSH CHPID to the z/OS guest. The z/OS configuration will operate the device as an OSH-type device. 2) Connect the z/OS guest to a z/VM virtual switch. The z/OS configuration will continue operate the virtual NIC as an OSD-type device. The virtual switch uplink will provide physical connectivity via a device on an OSH CHPID.

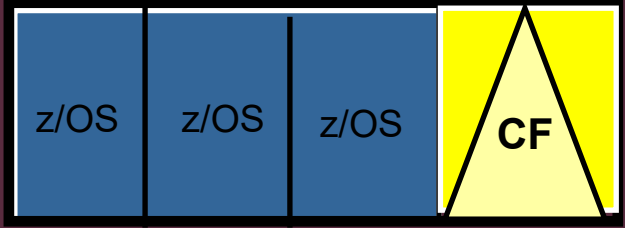
Required support

# Server participation in a Parallel Sysplex

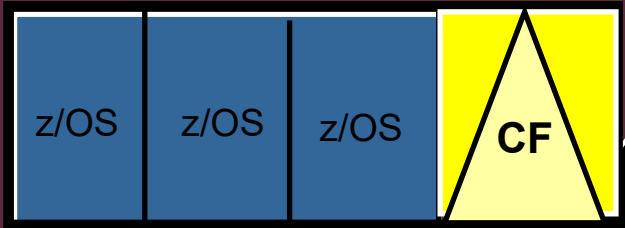
- z17 servers support active participation in the same Parallel Sysplex, and connection with, these servers.
  - IBM z16 A01, IBM z16 A02
  - IBM z15 T01, IBM z15 T02
  - This is both a direct CEC-CEC connectivity requirement, as well as *anywhere in the sysplex regardless of direct or indirect connectivity*.
  
- Which means:
  - Configurations with z/OS on one of these servers can add an z17 server to their Sysplex for either a z/OS or a Coupling Facility image
  - Configurations with a Coupling Facility on one of these servers can add an z17 server to their Sysplex for either a z/OS or a Coupling Facility image.
  
  - Use of Integrated Coupling Adapter (ICA SR) or Coupling Express LR (CE LR) coupling links required.
    - **z14 servers were the last generation servers to support HCA3-O and HCA3-O LR (Infiniband coupling links). These HCA3-O and HCA3-O LR links are not supported on z15 or higher.**
  
  - Ensure all **Required** PTFs are installed on all z/OS images in the sysplex before introducing an z17 server into the sysplex, either as a z/OS or CF image.
  - Ensure all necessary sysplex z/OS z17 **Exploitation** PTFs are installed on all z/OS images in the sysplex before using an exploitation function in the sysplex, which affects either a z/OS or CF image.

# Server connection and participation in a Parallel Sysplex ...

z14 or prior

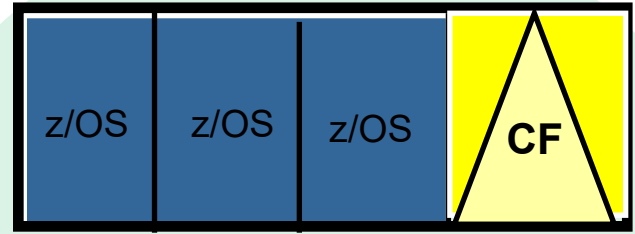


z17



- For connectivity and STP CTN: z14, z13, zEC12, zBC12, z196, z114, z10, z9, z990, z890 cannot connect to z17.
- For sysplex participation: z14, z13, z13s, zEC12, zBC12, z196, z114, z10, z9, z990, z890 is not supported with z17.

z17, z16, or z15

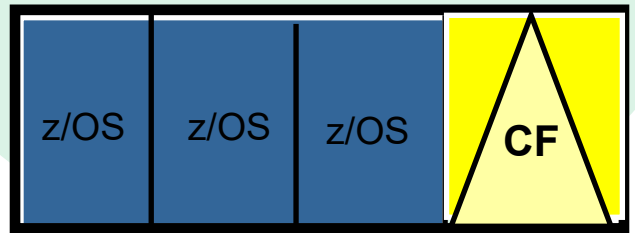


Integrated Coupling Adapter (ICA SR, CS5)  
8 Gb, up to 150M

Coupling Express LR  
10 Gb (or 25 Gb on z17 only\*), 10/100 km



z17



- ✓ For connectivity and STP CTN: z15, z16, and z17 can connect to z17.
- ✓ For sysplex participation: z15, z16, and z17 is supported with z17.
- ✓ **\*Note new z17 long distance coupling link adapter (CE3 LR 25Gb,CL6) can only be connected to CL6 links, and only on z17.**
- ✓ CL5 (10Gb) only connects to CL5, and can be used to communicate with pre-z17 or z17 servers..

# Firmware levels for coexisting Parallel Sysplex CEC connectivity

- Coupling facility code level on z17 is CF Level 26.
- IBM recommends the highest available MCL level for best performance and availability, in a sysplex.
- Read [“IBM Z Machine Code Maintenance Strategy and Recommendations”](#) notification.
- Find current CF Level information: [CPC support for coupling facility code levels](#)
- Important information:
  - **IBM intends to sunset the CFSizer web application in 4Q26.**
  - IBM recommends that all CFSizer users transition to using z/OSMF for workload-based structure sizing.
  - Note: The sunset of the CFSizer web application will not impact the availability of the SIZER utility.

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  - General
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  - Required z/OS support for IBM z17
  - Sysplex and Multisystem considerations
- **Exploitation considerations for select functions**



# z/OS Exploitation considerations for select z17 functions

**New z/Architecture and z17 machine instructions**

**CPU Measurement Facility new extended counters**

**z/OS BCPii and HMC/SE hardened security**

**Workload-level sustainability and power consumption reporting**

**Workload Classification Pricing**

**Replacement Capacity Records**

**z17 integrated I/O architecture**

**25Gb Long Distance Coupling Link Adapter (CL6)**

**Integrated Cryptographic Support Facility**

**zDNN for IBM Z Integrated Accelerator for AI**

**Open XL C/C++ exploitation**

**System Recovery Boost enhancements**

# New z/Architecture and z17 machine instructions

OPTABLE	MACHINE
Z17	Z17, ARCH-15
ZSB	zSeries-11, ZS-11

- By default (unless locally customized), the assembler uses the OPTABLE(UNI) universal operation code table.
  - This defines the mnemonics for instructions up to the latest supported z/Architecture level.
- Exploitation support for HLASM 1.6 (all z/OS releases), adding the new mnemonics for z17.
- These mnemonics may collide with the names of Assembler macro instructions you have
- It is safer to assemble using an OPTABLE option which matches the current highest target hardware level.
  
- If you code Assembly Language macros, you should compare the list of new instructions to the names of your Assembler macros.
  - Tool is available from IBM Support website, supporting z16 and z17 mnemonics, [here](#).
  - If a conflict is identified, then either:
    - Rename your affected macros
    - Specify a separate assembler OP CODE table – PARM=,ASMAOPT, or ‘\*PROCESS OPTABLE’ in the source
    - **See HLASM Programmer’s Guide**
  - Use a coding technique that permits both use of a new instruction and a macro with the same name in an assembly such as HLASM’s mnemonic tag (:MAC :ASM)
    - **See HLASM Language Reference**

Exploitation support

# CPU Measurement Facility new extended counters

- For every server generation, the hardware adds, removes, and moves extended counters in the CPU Measurement Facility (CPU/MF)
  - For z17 extended counters will begin with **HISCTR\_KEXT8\_\*** in the HISYCTRS mapping (*z/OS MVS Data Areas Volume 1*)
- z/OS Hardware Instrumentation Services (HIS) will collect z17 extended counters for performance problem diagnosis.
  - HIS must be setup and started to collect this information, on each LPAR. See “Collecting CPU MF (Counters) on z/OS – Detailed Instructions” [here](#) .
  - HIS writes the extended counters in SMF 113. Refer to *z/OS MVS SMF* book.
  - If changed extended counter sets are being used, then any programs relying upon those counters are impacted, and must be updated accordingly.
  - If unchanged extended counter sets are using, no changes are necessary.
- V2.5 and higher
- z/OS does not collect CPU MF data when running as a guest of z/VM.

**Reminder!** Gathering CPU MF Counters is an industry “best practice”. Review the methodology for successful IBM Z Systems Processor Capacity Planning found [here](#) .

1. Capture on pre-z17 (“before”) server to determine your LSPR workload
2. Capture on z17 (“after”) server
3. Having the “before” and “after” can allow you to:
  - Validate your achieved z17 processor performance, and
  - Provide insights for new features and functions.

Exploitation support

# Hardening security between z/OS BCPii and HMC/SE

- z/OS BCPii is being enhanced to support server-based authorization with JSON Web Tokens, JWT.
- This enhancement allows the application to issue operations previously not available, including asynchronous notification support, interaction with Dynamic Partition Manager CECs, User Management operations, and more.
- This process will correlate a z/OS user ID that issued the BCPii request with a Hardware Management Consoles (HMC) user ID. The correlated HMC user ID will then be used to determine if the 'user' is authorized to issue the request.

- Another V2 API, HWIREST2, will be introduced which only supports the JWT authorization scheme. Only supported with C and HLASM interfaces; no REXX interface.
  - HWIREST2 has the advantage of enabling z/OS BCPii to register an ENF 68 listener *on the user's behalf*.
  - HWIREST, the initial V1 API, makes the user application responsible for registering an ENF 68 listener exit.
    - HWIREST supports both FACILITY class and JWT authorization scheme for classical CEC non-HMC target operations. Supports C, HLASM, and REXX.
- 3.1 and higher.
- Local SE and any target SE or HMC, must be at z17. HMC managing the local SE must be at z17.
- z/VM support is not applicable.

Exploitation support

# z/OS support for Workload-level sustainability and power consumption reporting

- CEC-level and LPAR-level power consumption information is provided for z17:
  - CEC-level: total power, unassigned resources power, infrastructure power.
  - LPAR-level: CPU power, memory power, I/O power.
- Power consumption information is available to be gathered every 5 seconds.
  - However, your SMF interval will control how often it is reported.
- SMF 70.1 records (CPU control section) reports on the power consumption counts which are aggregated over the SMF interval.
- Intended to assist with current and future regulations and demands to report power metrics at a more granular level.
  - IBM intends reporting products to make use of service class/reporting class resource consumption data (in SMF 72.3) to provide workload-level granularity in reporting out the CPU, I/O, and memory power.
- V3.1 and higher

Exploitation support

# z/OS support for Workload Classification Pricing on z17

- Workload Classification Pricing enables classification of programs and collection metrics to allow for price differentiation on z/OS.
- Examples of workload classes might be:
  - Traditional General Purpose (GP) business workloads
  - Traditional zIIP-eligible work
  - AI inferencing work
  - zCX work, ...
- Workload instrumentation data can be collected with the `IEASYSxx WORKINST=` parameter.
  - `SYSTEM` is default, and will collect data if the system supports it.
  - Other options are `YES` (collect data), and `NO` (do not collect data).
- SCRT and SMF 70.1 records (new data section) report on the workload class usage.
- V2.5 and higher
- z/VM PTFs are required to enable workload classification for z/OS as a guest.

Exploitation support

# z/OS support for z17 Replacement Capacity Records

- z17 support Replacement Capacity Records for Tailored Fit Pricing for IBM Z Hardware (TFP-HW).
- z/OS WLM provides updates to support the model-replacement capacity values. In addition to existing values, now includes:
  - The model, model-permanent, and model-temporary capacity identifier and ratings.
- D M, CPU support for z17 indicates replacement capacity.
- z/OS Data Gatherer stores new metrics in SMF 70.1 and Monitor III measurement table ERBCPCDB.
- z/OS SCRT processes enhanced SMF 70.1 for TFP-HW.
- V2.5 and higher

Exploitation support

# z/OS support for z17 25Gb Long Distance Coupling Link Adapter (CL6)

- z17 has a new channel path type CL6 (Coupling Express3 25Gb LR, Coupling-over-RoCE)
  - This is intended to provide significantly higher throughput for coupling links at distance.
- z/OS support includes:
  - XCF/XES helps provide the infrastructure from z/OS to support the new link type including:
    - CL6 related information in the Accounting and Measurement data area (IXLYAMDA)
    - updated displays and IPCS reports.
  - Data Gatherer enhances the Monitor III Coupling Facility data gatherer for channel path details on this new channel path type (CL6).
    - retrieves channel path details from IXLYAMDA and stores information in SMF 74.4 records
    - and in the Monitor III coupling facility information table (ERBCFIG3)
  - IOS
  - HCD and IOCP

**Important note!** This new long distance coupling link adapter (CL6) can only be connected to CL6 links, and on z17 only. CL5 can be used to communicate with pre-z17 or z17 servers. CL5 can be used as fallback from CL6, if necessary.

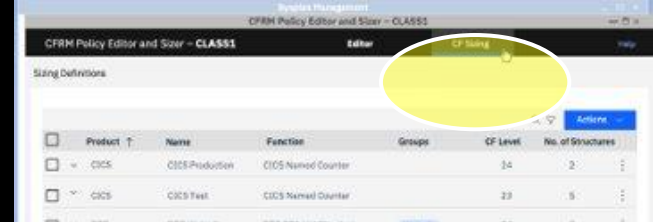
- V2.4 and higher.
- Ensure the complete set of exploitation support is installed before using.

Exploitation support

# z17 CF Level 26

## ■ Structure and Coupling Facility Storage Sizing with CF Level 26

- As expected, CF Level 26 structure sizes may increase.
- The **z/OSMF CFSizer** tool can help with resizing where CF Level 26 is not yet physically present. (Reminder: **IBM intends to sunset the CFSizer web application in 4Q26**).
  - CF Sizing capability can be found in z/OSMF CFRM Policy Editor, in Sysplex Management on z/OS V2.5 and higher!
    - Calculate CF structure sizes and directly apply changes to CFRM policies. Select your desired CF Level from the drop down.
    - z/OS support necessary to allow z/OSMF to support CF Level 26.
      - » z/OS V2.5 will support only one CF Level, and will be CF Level 26.
      - » z/OS 3.1 and 3.2 will support both CF Level 25 and 26.
- Alternatively, use the **Sizer** utility for resizing structures for a CF level upgrade. However, a CF at that new level must be installed and accessible which isn't always feasible.
  - <https://www.ibm.com/support/pages/cfsizer-alternate-sizing-techniques>



Exploitation support

# Integrated Cryptographic Support Facility Enhancements

- Clear key HMAC acceleration via CP Assist for Cryptographic Functions (CPACF)
- ICSF changes clear key HMAC requests internally to use the new CPACF instruction when running on z17.
- No new cryptographic algorithms are added.
- Available on z/OS V2.5 and higher.

Exploitation support

# Deep learning library (zDNN) IBM Z Integrated Accelerator for AI (zAIU)

- Specialized-function-assist instructions are intended to provide performance improvements for specific operations in software libraries, utilities, or operating system services. These facilities and instructions may be replaced or removed in the future, therefore a software library or operating system function should be used instead of directly accessing the instructions.
- zDNN is that deep learning library.
- zAIU has complex data layout requirements for the tensor to enhance performance characteristics or operations.
- zDNN formats the tensor appropriately on behalf of the caller, using an optimized approach.
- NNPA is the instruction that drives the zAIU.
- zDNN library provides a set of APIs that an exploiter will use to drive the desired request.
- zDNN is available on both z/OS and Linux on Z.
- Including support for Linux on Z is important as acceleration can be enabled in frameworks for z/OS via zCX.
- zDNN is supported on IBM z16, but there are new APIs and z17-aware optimizations which require z17.
- z17 has updated Neural Network Processor Assist (NNPA) instructions.
- V2.5 and higher.
- When using z/VM live guest relocation, ensure the relocation group members to be at least z16 in order to use the z17 functionality.

Exploitation support

# Open XL C/C++ for z/OS exploitation

z17 support has been added to the Open XL C/C++ compiler 2.2:

- New compiler sub-options to target z17 instructions: ``-march=arch15`` and ``-march=z17``.
- Binaries produced with these sub-options for z17 can only execute on z17 and higher.
- Use ``-march=arch14`` or ``-march=z16`` or below, if you intend to execute on pre-z17.
- Includes supports and optimization to exploit some of these new z17 instructions.
- Extensions to the existing C/C++ vector programming support making use of the Vector-Enhancements Facility 3 in z17. Including support of new scalar integer ``__int128`` data type.

Exploitation support  
via Web Deliverable

As in the past, the z/OS XL C/C++ compiler, included as a priced feature of z/OS, will not be updated with the support mentioned above.

- XL C/C++ supports up to z15 HW instructions with ARCH(13).
- Programs compiled with XL C/C++ will run on z17.

The Open XL C/C++ 2.2 compiler is available for download at this [website](#), and runs on z/OS 3.1 and higher.

# z17 and System Recovery Boost

z17 provides no new System Recovery Boost specific enhancements.

❖ But...z/OS 3.2 enhancement (rolled back to 3.1) does!

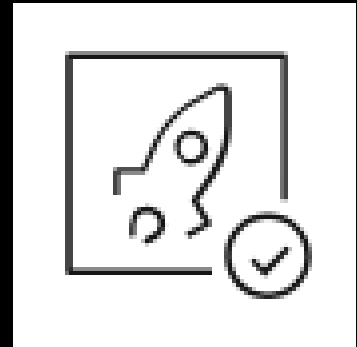
Meaning, all z17 System Recovery Boot enhancements available on z16, are the same enhancements which are available on z17.

System Recovery Boost is Exploitation Support

• *(Recap summary of IBM z16 support follows.)*



For more information see the [Systems Recovery Boost Content solution \(https://www.ibm.com/support/z-content-solutions/system-recovery-boost/\)](https://www.ibm.com/support/z-content-solutions/system-recovery-boost/).



# Summary: z/OS System Recovery Boost

# Aug 11, 2025

SMP/E FIXCAT IBM.Function.SystemRecoveryBoost											
z16 and z17											
Boosts are:	z15							z16 and z17			
	System Recovery Boost			Recovery Process Boost* at MCL P46602.005 for IBM z15 Driver 41C (Bundle S29)				Recovery Process Boost*			
1. Speed: subcap can run fullcap	IPL Startup	Standalone Dump (no zIIP boost)	Shutdown	Sysplex Partitioning - planned or unplanned removal	CF Structure Recovery - rebuild or duplex	CF Data sharing Member Recovery - disconnect or failure from locking resources	Planned/Unplanned HyperSwap	SVC Dump	Middleware start/restart	HyperSwap configuration load	Dynamic I/O Activate
2. zIIP: allowing workload onto zIIPs											
On by default in IEASYSxx BOOST=SYSTEM											
Intended Duration	60 min	60 min	30 min	2 min	1 min	1 min	2 min	2 min	5 min	2 min	2 min
Basis of use	Auto	Auto	S IEASDBS	Auto	Auto	Auto	Auto	CHNGDUMP SET,SDUMP, RPBMINSZ threshold	WLM service definition BOOST attribute	Auto	Auto, limited to larger I/O changes on systems with smaller number of CPs
Boost scope	System	System	System	Systems participating in removal	Systems participating in recovery	Systems participating in recovery	Systems participating in HyperSwap	System	System	Systems affected by configuration on load	System(s) affected by the hardware I/O change
z/OS 2.3	PTF	PTF	PTF	PTF	PTF	PTF	PTF				
z/OS 2.4	PTF	PTF	PTF	PTF	PTF	PTF	PTF	PTF	PTF	PTF	
z/OS 2.5	PTF	PTF	PTF	PTF	PTF	PTF	PTF	PTF	PTF	PTF	
z/OS 3.1	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	PTF
z/OS 3.2	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

\*Recovery Process Boost limited to 30 min per day per LPAR in aggregate. In V2.4 and higher, can be enabled or disabled with S IEASRE, CLASS=RP, REQ=DISABLE|ENABLE  
 New SMF 70-78 record interval at boost start and stop, on boosted systems. Flag in 70.1 for other LPARs on machine with boost period. SMF 90.40. contains the type of boost for the system..  
 GDPS provides configuration and orchestration parallelization in GDPS V4R2 and higher.

# Summary: z/OS Support for IBM z17 February 13, 2026

Note:  P = PTF is required, use SMP/E FIXCAT for identification  Y = Support is in the base  Release	IBM.Device.Server.z17-9175. RequiredService	IBM.Device.Server.z17-9175.Exploitation											Max Mem/ LPAR
	Base Support	Integrated I/O architecture: Measurements, and Network Express feature	z17 Assembler Support	CPU Measurement Facility	z/OS BCPli and HMC/SE hardened security	Workload-level sustainability and power consumption reporting	Workload Classification Pricing	Replacement Capacity Records for TFP-HW	25Gb Long Distance Coupling (CL6)	ICSF clear key HMAC support via CPACF	ZDNN support for new NNDA instructions	IBM Open XL C/C++ Exploitation	TB
z/OS 2.4 <sup>SS</sup>	P	P	P					P					4
z/OS 2.5	P	P	P	P			P	P	P	P			16
z/OS 3.1	P	P	P	P	P	P	P	P	P	P		W	16
z/OS 3.2	P	P	P	Y	Y	Y	Y	Y	P	Y	P	W	16

SS IBM Software Support Services required for z/OS support

W A web deliverable is required, available from <https://www.ibm.com/products/xl-cpp-compiler-zos>

# We want more input from you!

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