IBM Z Tech Bytes

Presented by the Washington Systems Center

z/OS 3.1 Update

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Agenda

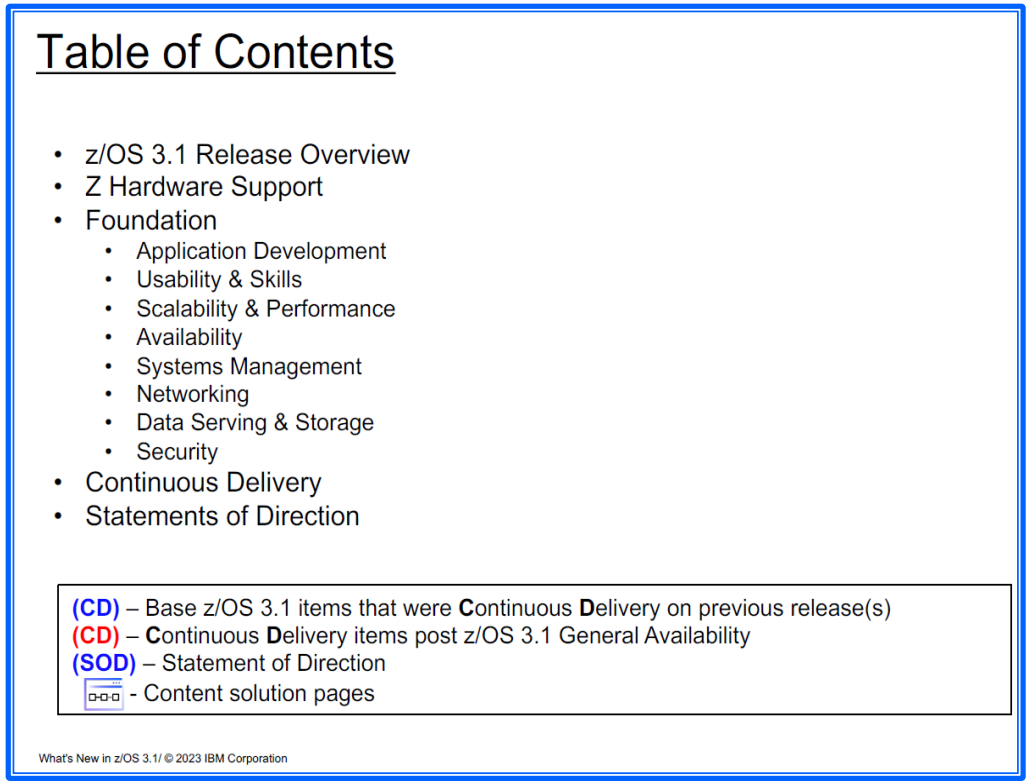
- z/OS 3.1 Release Overview & Big Picture
- Continuous Delivery Strategy & Announcements
- Critical but lesser-known resources
- IBM z16 – z/OS Hardware Support
- AI on z/OS – OS & Workloads
- Java for z/OS 3.1
- Dedicated Memory
- WLM and RMF Update
- JES2 and SDSF Update
- Installing and Upgrading to z/OS 3.1
- z/OSMF Update
- z/OS Requirements

About today's z/OS presentation

- z/OS has many components and in general in 'What is new in z/OS' presentations :

- We give information about all new functions and enhancements in z/OS Components and solutions such as :
  - z/OS BCP
  - JES2
  - SDSF
  - RMF
  - WLM
  - AI solutions in IBM z platform
  - zCX
  - ICSF
  - Security
  - z/OS Communication Server
  - Network
  - DFSMS – File management components
  - Unix Services
  - z/OSMF
  - SW Packaging

- z/OS Development Team publishes this in format as seen in right
  This type of presentation is fast-paced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- Foundation
  - Application Development
  - Usability & Skills
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  - Data Serving & Storage
  - Security
- Continuous Delivery
- Statements of Direction

(CD) – Base z/OS 3.1 items that were **C**ontinuous **D**elivery on previous release(s)
(CD) – **C**ontinuous **D**elivery items post z/OS 3.1 General Availability
(SOD) – Statement of Direction
- Content solution pages

What's New in z/OS 3.1/ © 2023 IBM Corporation

- In this presentation, we will cover some of them. We will also share some critical information about upgrading to z/OS 3.1 .

- Several information can be found in decks for you to check afterwards.

- We will also share some critical and useful but lesser-known resources

z/OS Support Summary

Release	z10 EC z10 BC WdfM	z196 Z114 WdfM	zEC12 zBC12 WdfM	z13 Z13s WdfM	z14 ZR1 WdfM	z15	z16	End of Service	Extended Defect Support
z/OS V2.2	X	X	X	X	X	X	X	9/20	9/23[2]
z/OS V2.3			X	X	X	X	X	9/22	9/25[2]
z/OS V2.4			X	X	X	X	X	9/24[1]	9/27[2]
z/OS V2.5				X	X	X	X	9/26[1]	9/29[2]
z/OS 3.1					X	X	X	9/28[1]	9/31[2]

Notes:

[1] - All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

[2] - Extended support dates are projected and are subject to change or withdrawal without notice.

WdfM - Server has been withdrawn from Marketing

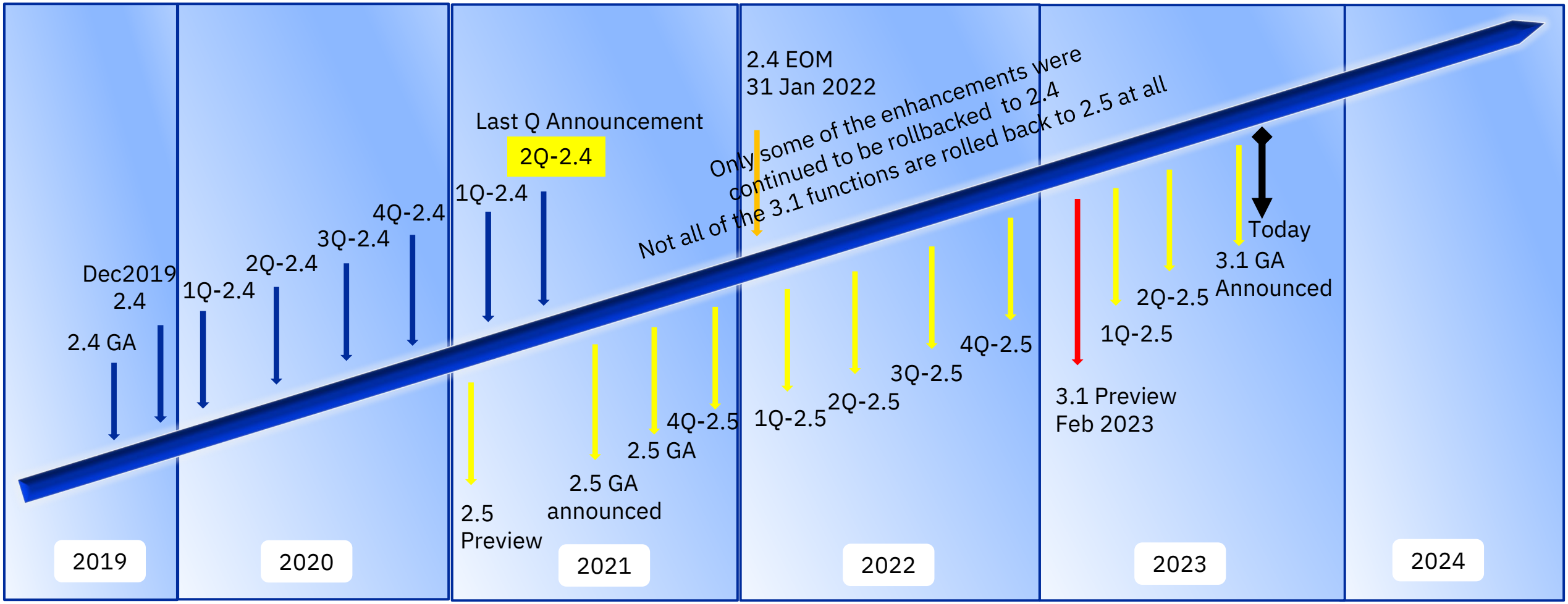
Legend

- Defect support provided with IBM Software Support Services for z/OS
- Generally supported

- ✓ *Preview Feb 2019- GA announced July 2019 - GA Sep 2019*
- ✓ *Preview Feb 2021- GA announced July 2021- GA Sep 2021*
- ✓ *Preview Feb 2023- GA announced August 2023 - GA Sep 2023*
- ✓ *'Nothing has changed here with Continuous Delivery.'*
- ✓ *z/OS 3.1 ---- > No V no R in name … Just 3.1*
- ✓ *z/OS 3.1 has new program number 5655-ZOS.*
- ✓ *First reversion in 10 years, updated license requirements, no price adjustment for base*

z/OS Versions & CD Enhancements

How can I continue to get the latest enhancements ? ? 2.5 or 3.1 ? Benefit of being in current release!!!



AI-Infused Operating System – z/OS 3.1

- ✓ ***Optimize IT processes***
- ✓ ***Simply Management***
- ✓ ***Improve Performance***
- ✓ ***Reduce Skill Requirements***

✓ ***Allows users to control and manage AI Capabilities without a need for additional AI and data science skills***

Capabilities are planned to be delivered iteratively and will provide optimization of IT processes, enable intelligent operations, and strengthen the IBM strategic direction of providing intelligent infrastructure.

z/OS 3.1 Release Overview

Usability and Skills
z/OSMF File compare utility, upload/download, Security Configuration assistant, Sysplex Mgmt and CFRM Policy Editor (CF structure sizing), Release Upgrade, ServerPac improvements…

Application Development
Artificial Intelligence, z/OS Container Extensions, Red Hat OpenShift, z/OS Containers, JSON Parser improvements, ISPF member generations, ABO, Java 11, Node.js, Python, Go, Enhanced zIIP usage

Enhancing Security
RACF DB encryption, RACF custom fields, ICSF/Crypto, zACS monitor, compliance support, GIMZIP code package signing/validation, z/OS Validated Boot…

Scalability & Performance
Greater than 4TB memory, Dedicated Memory Pools, RMF UI improvements, CF performance and scalability…

Data Serving & Storage
Cloud Data Access, EzNoSQL APIs, DFSMSrmm z/OSMF plug-in, simplified Catalog recovery & management, DFSMShsm & SMS enhancements, NFS Server enhancements, Union File System, Data Set File System…

Availability
Anomaly Mitigation, PFA and RTD improvements, System Recovery Boost, XCF Notepad resiliency…

Systems Management
AI infused z/OS, JES2 expanded policy support, Change Tracker, z/OS System Provisioning Service, z/OS Management Services Catalog, zWIC, SDSF new displays…

Networking
zERT, RDMA over ROCE 3, SyslogD, FTP security…

z/OS 3.1 Ordering - Critical Dates

September 19, 2023 -> z/OS 3.1 ordering begins

September 29, 2023 -> z/OS 3.1 general availability

If you decide on moving forward with z/OS 3.1 ,in addition to what is new in z/OS 3.1 , you will continue to get benefit more and will continue to get several new functions, enhancements that are being developed for z/OS NEXT release in future months with Continuous Delivery

*z/OS V2.5 Q22023 was the **last CD Quarterly Announcement** for z/OS V2.5*

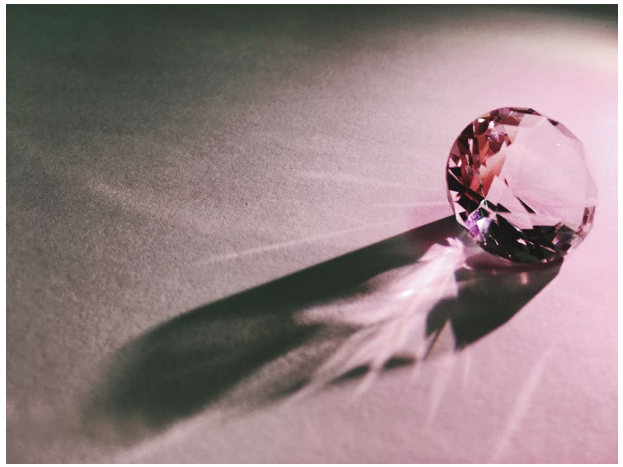
*There will be new **z/OS 3.1 Q42023 Continuous Delivery Announcement** in 4 th Quarter that will contain items from **z/OS NEXT!***

January 2024 **->** Ordering complete for z/OS V2.5

In this presentation

(CD XQ20XX) – 3.1 Base items that were rolled back to 2.5 as z/OS 2.5 CD

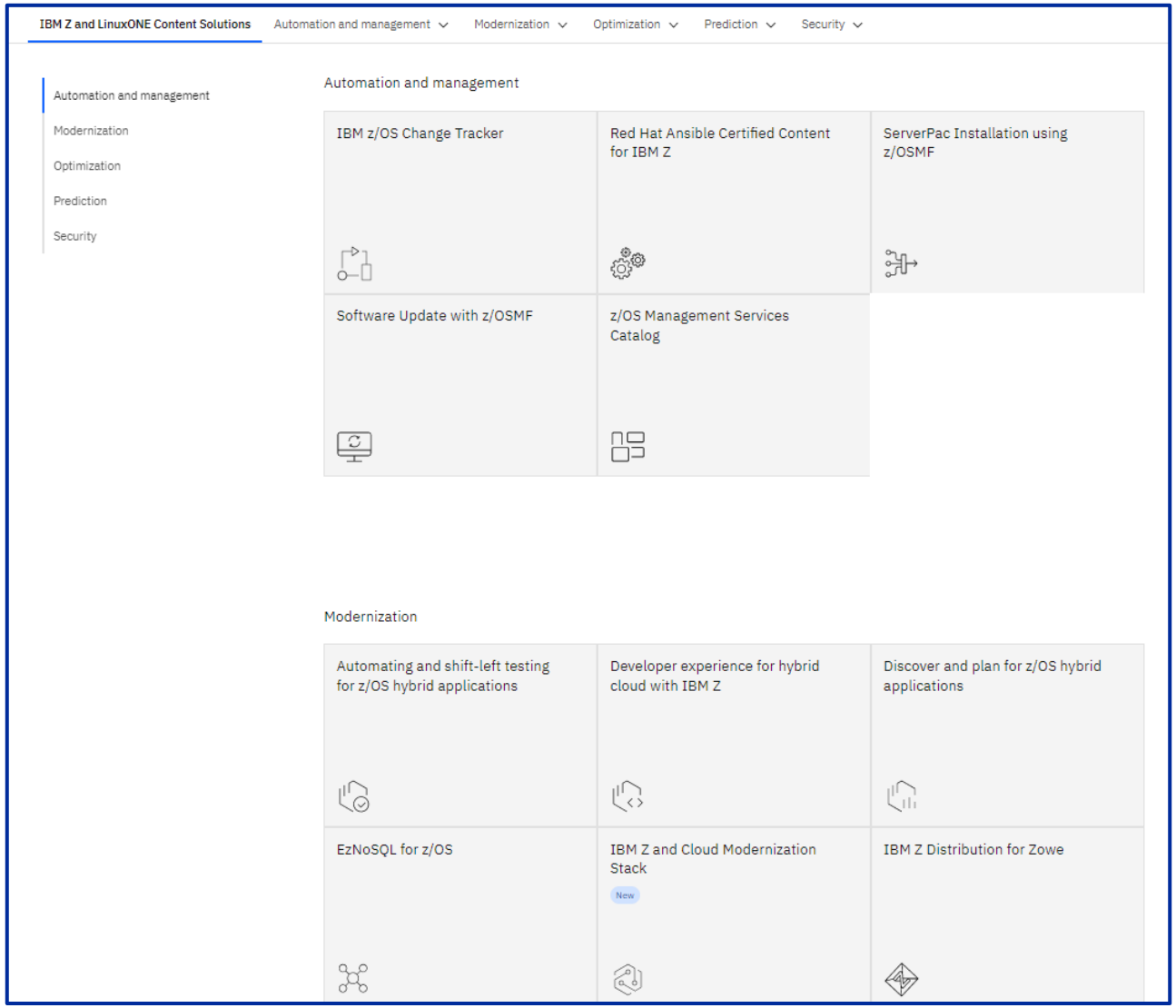
Critical & Useful But Lesser-Known Resources



IBM z Content Solutions Center

More than a year! Have you checked ? Great Place! Single Engaging place for everything you need to understand and use functions and products! https://www.ibm.com/support/z-content-solutions/

- A content solution helps you get started and provides a **single engaging place for everything** you need to understand and use a product or function. This can include product libraries in IBM Documentation, videos, workflows, Redbooks, and more. Visit this page often to find the latest content solutions



PDF version of IBM z Content Solutions' function specific docs

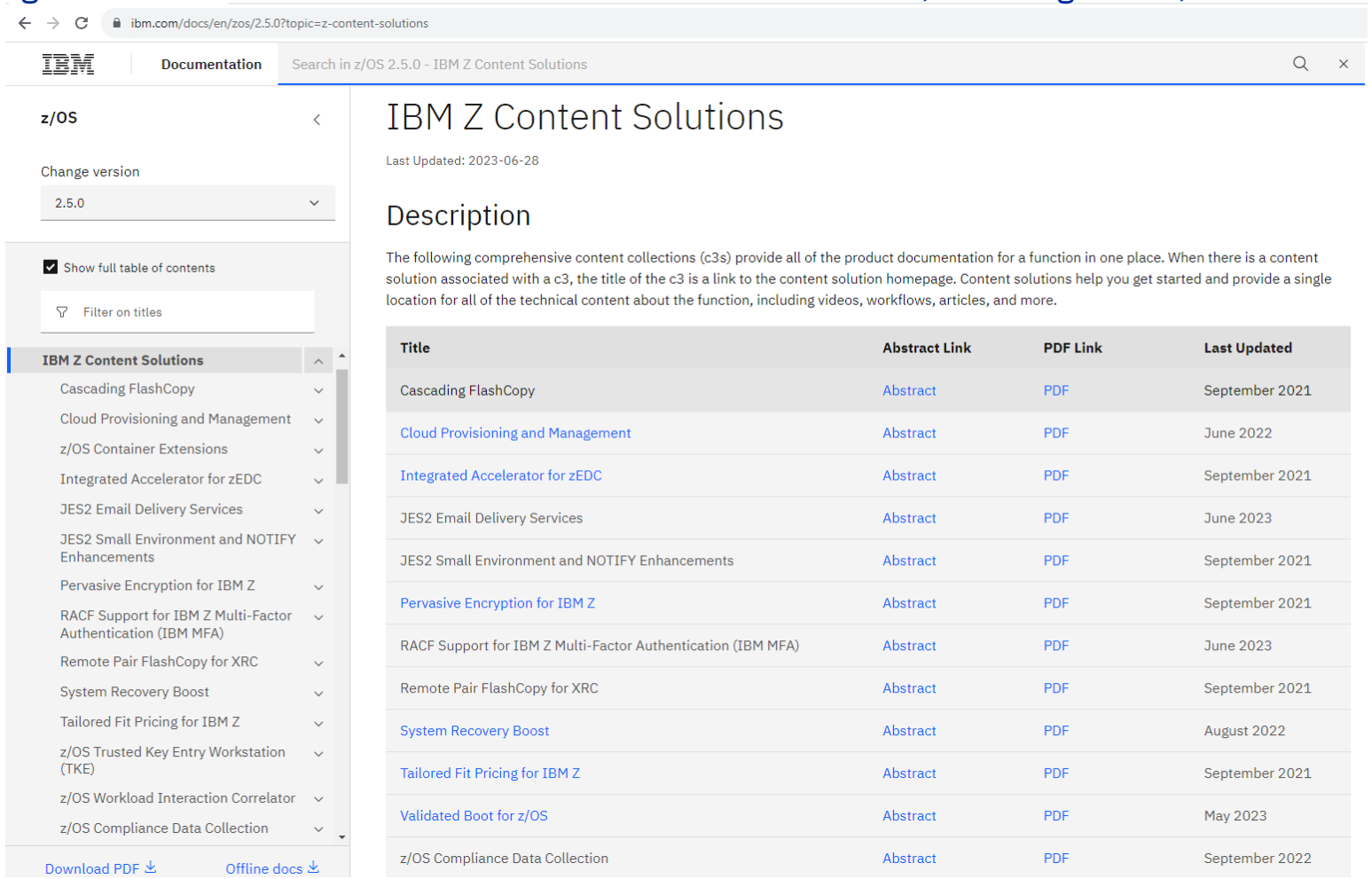
The following **comprehensive content collections (c3s)** provide all of the product documentation for a function in one place. When there is a content solution associated with a c3, the title of the c3 is a link to the content solution homepage.

Content solutions help you get started and provide a single location for all of the technical content about the function, including videos, workflows, articles, and more.

https://www.ibm.com/docs/en/zos/2.5.0?topic=z-content-solutions

IBM Documentation for z/OS (DOC4Z)- SOD from 3.1 GA Announcement

IBM intends to deliver a new component called DOC4Z on z/OS to replace Knowledge Center for z/OS (KC4Z). DOC4Z is a web application that provides IBM product publication content to web browser clients directly from a local z/OS server system. IBM also intends to provide IBM Documentation APIs for clients to programmatically interact with DOC4Z.

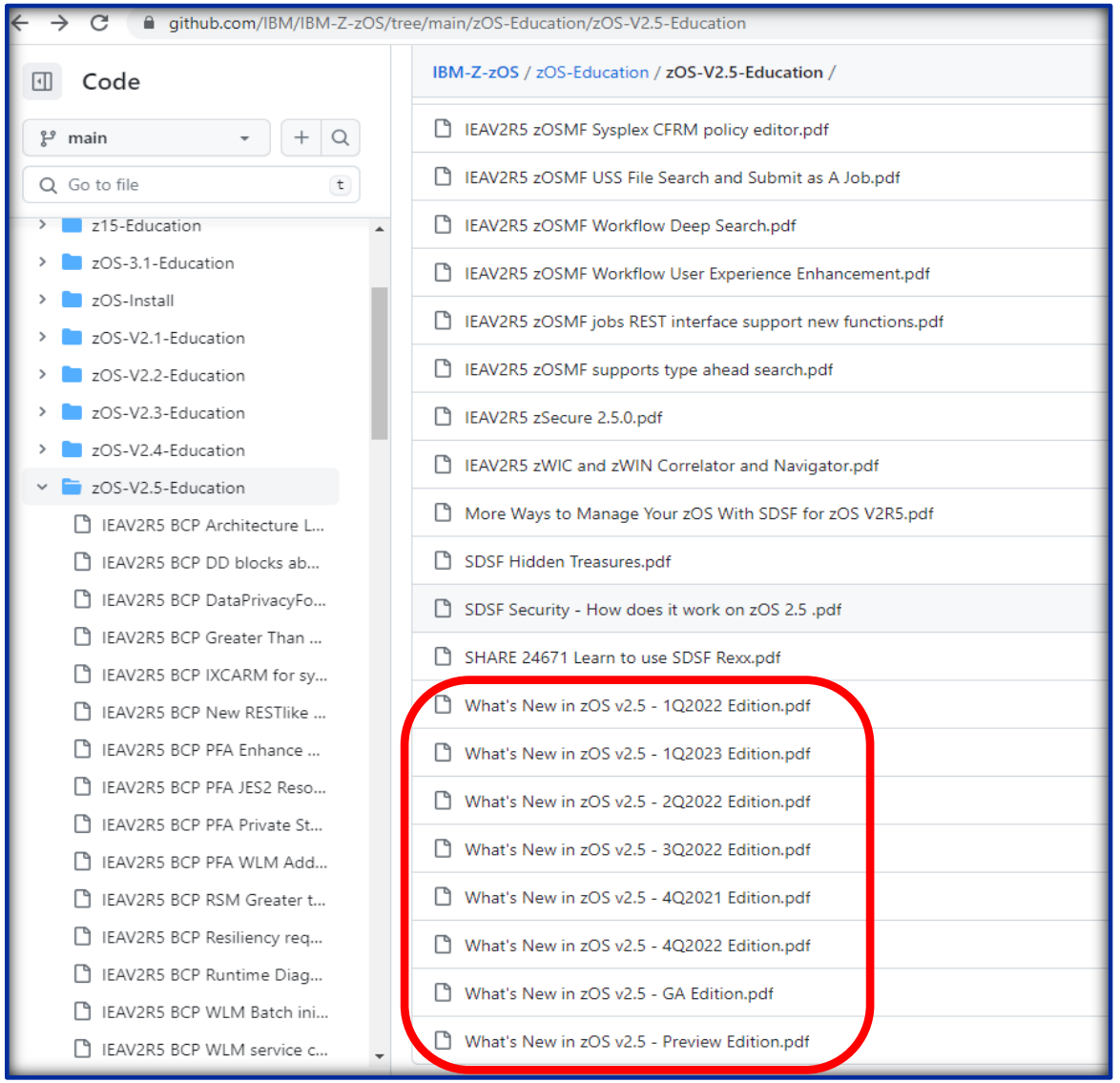


z/OS Version & CD Announcement Letters – GitHub For Presentations
IBM z/OS Education Assistance

- Check GitHub for presentation version of these announcements .
- You can see all changes with Continuous Delivery in latest version
- What's new 3.1 GA and preview edition pdfs. +80 specific topic files
- 86 pdfs about details of the items related to V2.5

z/OS github entry
(https://github.com/IBM/IBM-Z-zOS/tree/main/zOS-Education/zOS-V2.5- Education)

z/OS github entry
(https://github.com/IBM/IBM-Z-zOS/tree/main/zOS-Education/zOS-3.1- Education)



z/OS Continuous Delivery - Subscription

z/OS embraces continuous delivery through new function APARs
- Get weekly emails when APARs close with My Notification: start at https://www.ibm.com/support/entry/portal/support
- Look on the web, updated monthly: https://www-03.ibm.com/systems/z/os/zos/installation/zosnfapars.html

New Function APARs for the z/OS Platform

z/OS Library

When new function APARs are introduced in the IBM service stream, you can find them here collected in a convenient reference format. Use this information to review the latest enhancements from IBM and determine which ones to implement.

The APAR information is collected in the following files:

File name	Description
mvsstore.zosnewfu.html	New function APARs for the past 12 months (HTML)
mvsstore.zosallfu.html	New function APARs for the past five years (HTML)
mvsstore.zosnewfu.csv	New function APARs for the past five years (CSV)

Subscribe

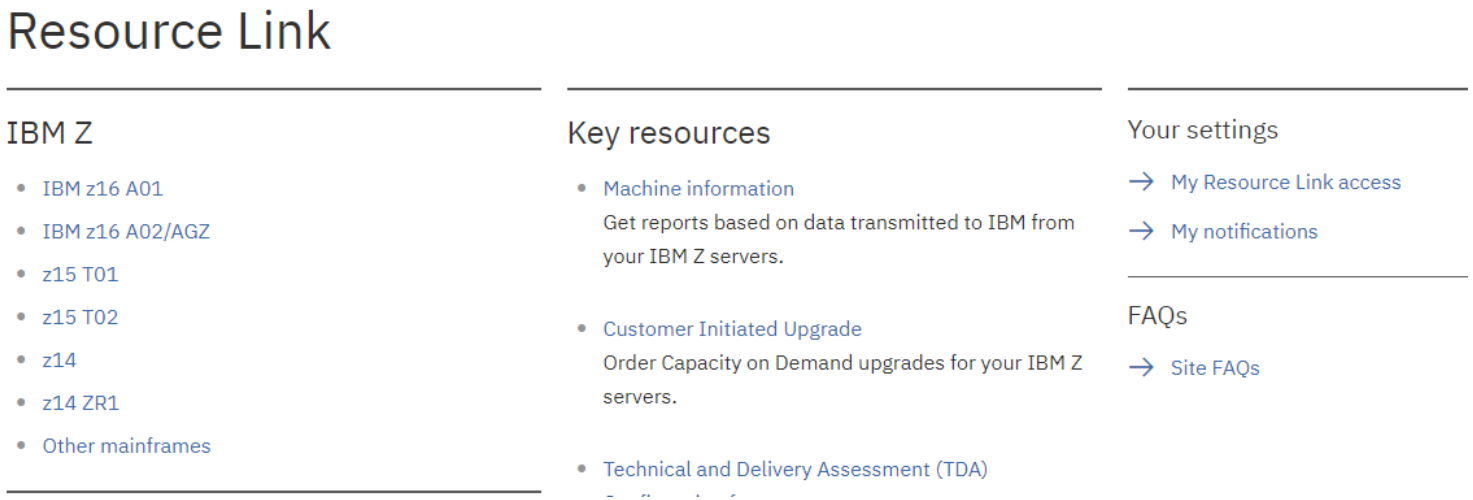
- *z/OSMF,SDSF,DFSMS are one of the first implementers of CD.*
- All z/OS Components are participating in CD!

Notifications - Subscription by HW& SW Product / Component 1/2

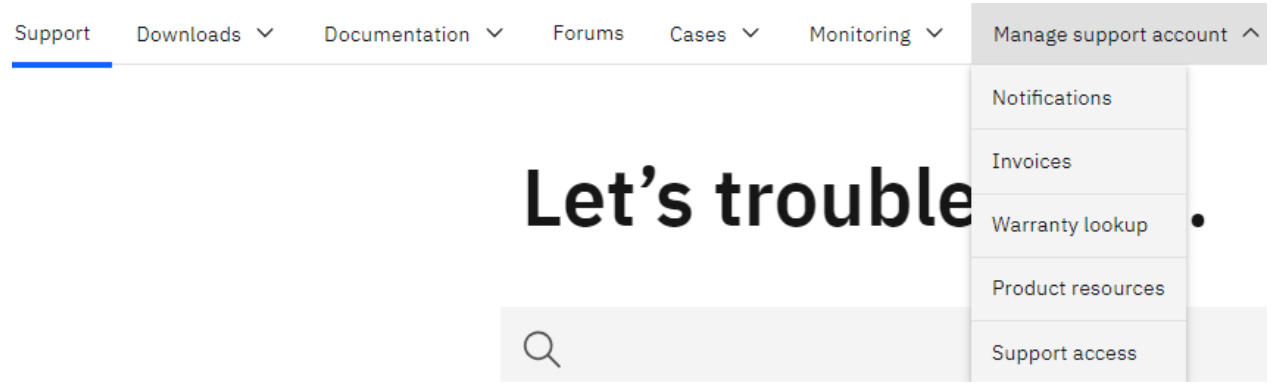
You can get notifications related to SW & HW Announcements , product updates ,alerts and more …

Here is just two options to do this:

1)



2)



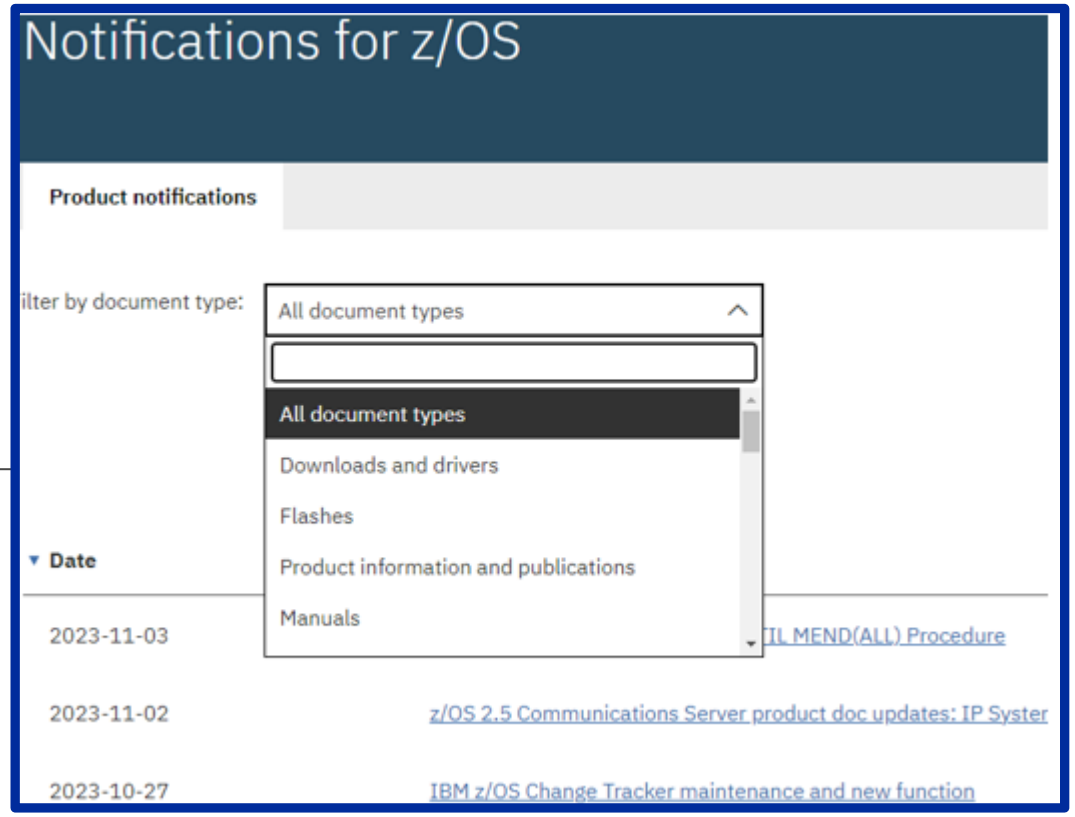
Notifications - Subscription by HW& SW Product / Component 2/2

- You can choose which HW/SW products to subscribe out of 75 HW/SW entries

❑ z/OS

XML Toolkit for z/OS	→ View	Links
z/OS (all current and future products)	→ View	Links
z/OS Change Tracker	→ View	Links

Showing 1 to 75 of 75 entries



❑ All Announcements

▲ Product	Notifications	RSS/Atom feed	Document types	Unsubscribe
All Announcements	→ View	Links	Edit	— Unsubscribe

For just announcements you can use above 2 options or directly from link https://www.ibm.com/docs/en/announcements

IBM z16 z/OS HW Support

IBM z16 Highlights - z/OS zHW Support

IBM **z16 (3931) Model A01** Functions & Features

One hardware model, Five Features, 1-4 19” Frame System
Up to 85 user partitions, 32 TB per partition, 200 CPUs/zIIPs/IFLs per partition, up to 224 Pus -Up to 16 TB per z/OS LPAR with z/OS V2.5
•2 CP chips on a Dual Chip Module (DCM), 5.4 GHz •L1 Private 128K i & 128K d •L2 n/a •L3 Shared 32 MB / core, 192 MB effective shared •L4 n/a
256 GB HSA, 40 TB maximum, 10 TB per drawer
Channel Subsystem scalability •Up to six (6) Channel Sub Systems (CSSs) •4 Subchannel Sets per CSS
HiperDispatch Enhancements
IBM Z Integrated Accelerator for AI
Hardware Instrumentation Services (CPUMF)
New machine instructions
Crypto Express8S
OSA Express7S 1.2

(z/OS support in blue)

IBM System Recovery Boost
Coupling Express2 LR 10Gb (CX6-DX) PCIe adapter
CF Level 25 •Retry buffers for cache and lock commands •Cache residency time metrics •Scalability improvements •Request latency/performance improvements
ICA-SR 1.1 Max ICA SR per CEC 48 adapters/96ports (same as z15)
Max ICP CHPIDs per CEC – 64
10 GbE and 25 GbE RoCE Express 3 SR and LR (CX6-DX)
FICON Express 32S
zHyperLink® Express1.1 • Maximum 16 Adapters /32 ports
IBM Flexible Capacity for Cyber Resilience
Validated Boot

- ***Industry First AI-Onchip***
- ***Hybrid Cloud***
- ***Industry First Quantum Safe Ready Platform***

IBM z16 Highlights - z/OS zHW Support

z/OS 3.1 Base & CD 2Q-2022

- Up to 16 TB of memory per z/OS instance used by select middleware
- 20 new instructions to help improve COBOL and AI applications, including instructions to leverage a new AI accelerator
- A new level of coupling facility support, CFLEVEL 25, which provides: (More Details in Next Slides…)
    - IBM z16 Coupling and Parallel Sysplex enhancements and CFLEVEL 25 support
    - CF cache and lock structure resiliency improvements
    - CF cache structure object residency time monitoring and metrics
    - CF latency and scalability enhancements
- Flexible Capacity for Cyber Resiliency is a new Capacity on Demand (CoD) offering available on IBM z16 machines that allows processing capacity flexibility between an organization's primary site and alternate data centers
- IBM Z Integrated Accelerator for AI is designed to provide machine learning acceleration with high throughput and low latency
    - IBM Deep Learning Compiler (DLC) enables deep learning models to be deployed on IBM Z, exploiting the IBM Integrated Accelerator for AI.
    - IBMZ Deep Neural Network library (zDNN) is a software library that provides high-level C APIs, which enable simplified exploitation of the IBM Z Integrated Accelerator for AI by AI frameworks and libraries.
- For z16, additional recovery process boosts added **(CD 2Q2022)**
    - Client-selected middleware starts and restarts
    - SVC dump processing
    - HyperSwap configuration load and reload
- ICSF Support For New CEX8 Coprocessor, New Quantum Safe Algorithms (Kyber& Dilithium8,7)
- z/OS IBM z16 Upgrade Workflow provided in PTF on V2.2 and higher to help position z/OS for use on IBM z16 server

IBM z16 Highlights -z/OS Parallel Sysplex Improvements

Parallel Sysplex Improvements With IBM z16

- CF Connectivity (Performance)
  - Enhanced ICA SR Coupling Link Protocol in IBM z16
  - New Coupling Express2 LR Adapter giving more Throughput compared Coupling Express LR (in z15)
- CF Level 25 - CF Image scalability improvements (Scalability)
- CF Level 25 - Lock record data and structure full conditions (Resilience)
- CF Level 25 - Cache residency metrics (Capability)
- CF Level 25 - Improved IFCC Handling for subset of Cache and Lock Structure Commands (Resilience)
- CF Level 25 - Only DYNDISP=THIN (Simplification)

IBM z16 Highlights -z/OS Parallel Sysplex Improvements

ICA SR **Protocol Efficiency Improvements** NEW with z16

IBM Integrated Coupling Adapter CA SR 1.1 (ICA SR 1.1)

reduced service time

- Short range links
  - Up to 150 meters
- Link type:CS5 (2 ports)
- PCIe gen3 x8 (up to 8 Gb/second)
- 8 primary send buffers/channel
- 4 channels/port
- Max 48 adapters (96 ports)

New Coupling Express LR Adapter with **more throughput** NEW with z16

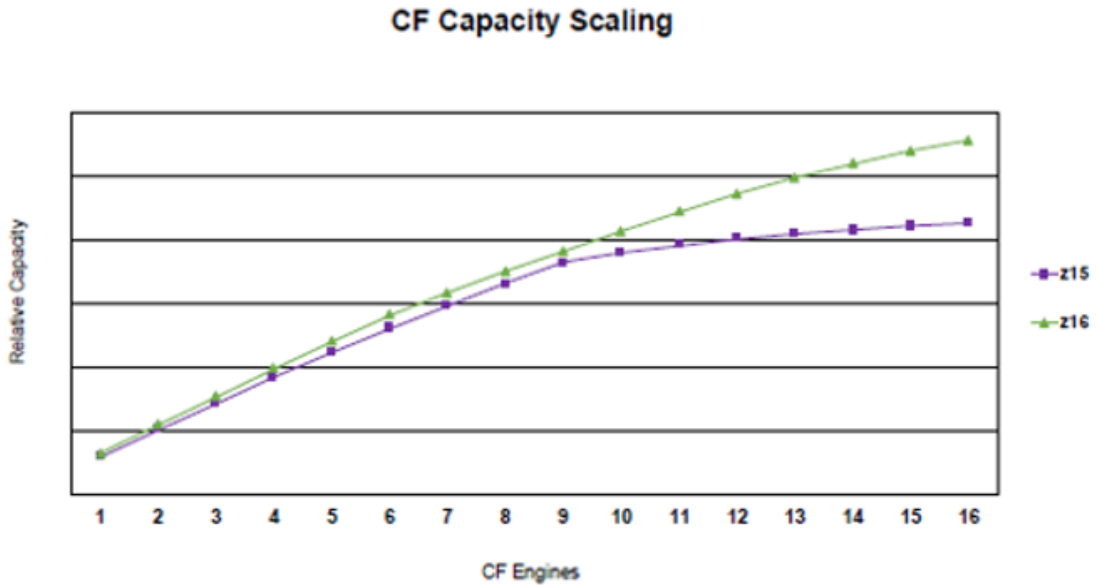
Coupling Express2 LR (CE LR)

more throughput

- Long range links
  - Up to 10 km unrepeated
  - Up to 100 km with qualified DWDM
- Link type: CL5 (2 ports)
- 10Gb Ethernet (1x)
- 32 primary send buffers/channel
  - Can use 8 at shorter distances
- 4 channels/port
- Max 32 adapters (64 ports)

Maximum of 384 coupling CHPIDs (of all types) per CEC

ICA SR coupling link protocol efficiency improvements
- > Reduced Service Time
New Coupling Express2 LR coupling links
–> More throughput



- IBM z16 provides improved CF processor scalability for CF images compared to IBM z15
- Processing and dispatching enhancements that result in meaningful scaling of effective throughput up to the limit of 16 ICF processors.

*Reach out to me via email to get my detailed Parallel Sysplex update presentation.

IBM z16 Highlights

Up to 16 TB memory per z/OS image

	z16	z15
LPAR Limit	32 TB	16 TB
z/OS 3.1 supports	16 TB	16 TB
z/OS 2.5 supports	16 TB	16 TB
z/OS 2.4 supports	4 TB	4 TB
z/OS 2.3 supports	4 TB	4 TB

All online real storage defined to the LPAR, more than 4 TB is part of the 2 GB LFAREA, in addition to what was specified in LFAREA.

Allows 2 GB LFAREA to exceed the prior 4 TB limit
Real memory is available only for 2 GB pages.

Adjust applications that make use of 2 GB frames to use more frames if applicable, such as Java, DB2, zCX.

IBM z16 Highlights - z/OS zHW Support

System Recovery Boost support

IPL and Shutdown boost

- Speed boost –run the general-purpose processors at full speed if they are running sub-capacity normally
- zIIPboost –allow general purpose work to run on the available zIIPs for increased capacity
- Up to 60 minutes of boost at IPL and up to 30 minutes of boost at shutdown

Sysplex Recovery (2.4CD 3Q2020)–support for recovery process boosts

- Sysplex partitioning –boost surviving systems for recovery
- CF structure recovery –boost systems participating in structure recovery
- CF data sharing member recovery –boost all systems recovering
- Hyper Swap –boost systems participating in HyperSwap processing
- Up to 30 minutes per LPAR per Day

For z16, additional recovery process boosts added **(CD 2Q2022)**

- Client-selected middleware starts and restarts
- SVC dump processing (Do not forget to consider using this. RPBMINSZ dump option needs to be coded)
- HyperSwap configuration load and reload

AI Framework For z/OS 3.1 (New z/OS 3.1 Only)

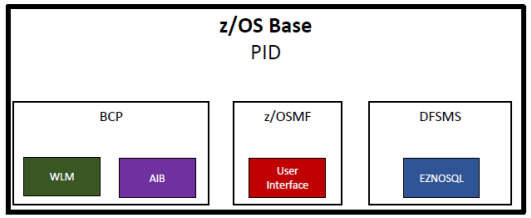
AI Framework For z/OS 3.1

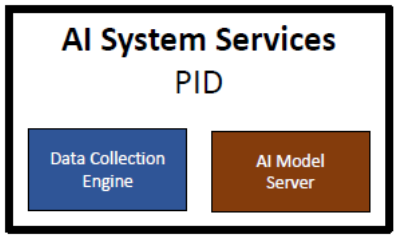
The AI Framework consist of

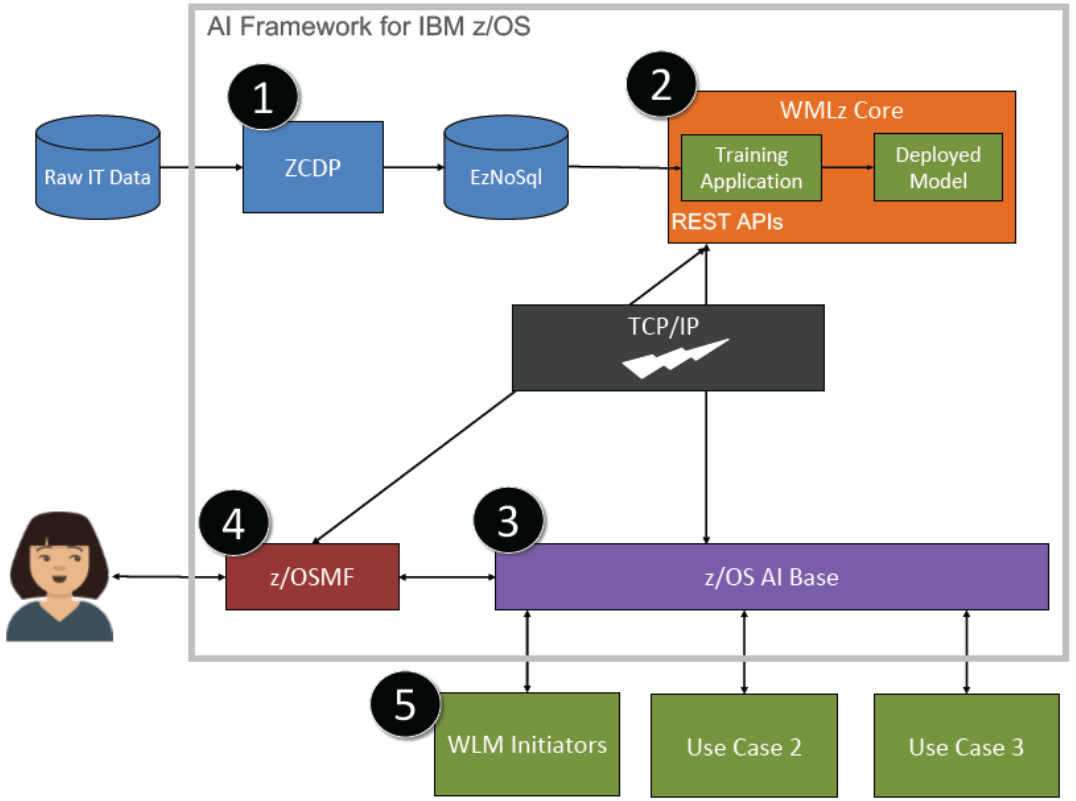
- Data collection engine (Included in new **AI System Services** Product)
- AI model server (Included in new **AI System Services** Product)
- AI base component (New **AI Base Component AIB** in z/OS **)**

- A modern user interface, and providers that can plug into the framework for expandable future use cases. (New z/OSMF Plug-in)

- New **z/OSMF workflows** for configuration of the AI framework.







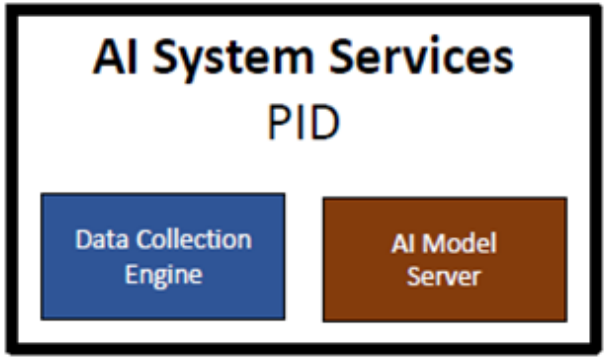
- z/OS 3.1 contains enhancements to WLM as first exploiter of AI Framework

AI System Services

- AI System Services for z/OS new product announced in same day as z/OS 3.1

  Announcement : https://www.ibm.com/docs/en/announcements/ai-system-services-zos?region=US

- One of the Key component of AI framework, delivers foundational AI Capabilities
- It is no charge for supporting AI infusion into z/OS base component only.
- It contains Watson Machine Learning for z/OS Core edition (WLMz core) and IBM Z Common Data Provider (ZCDP)



AI- powered WLM in z/OS 3.1

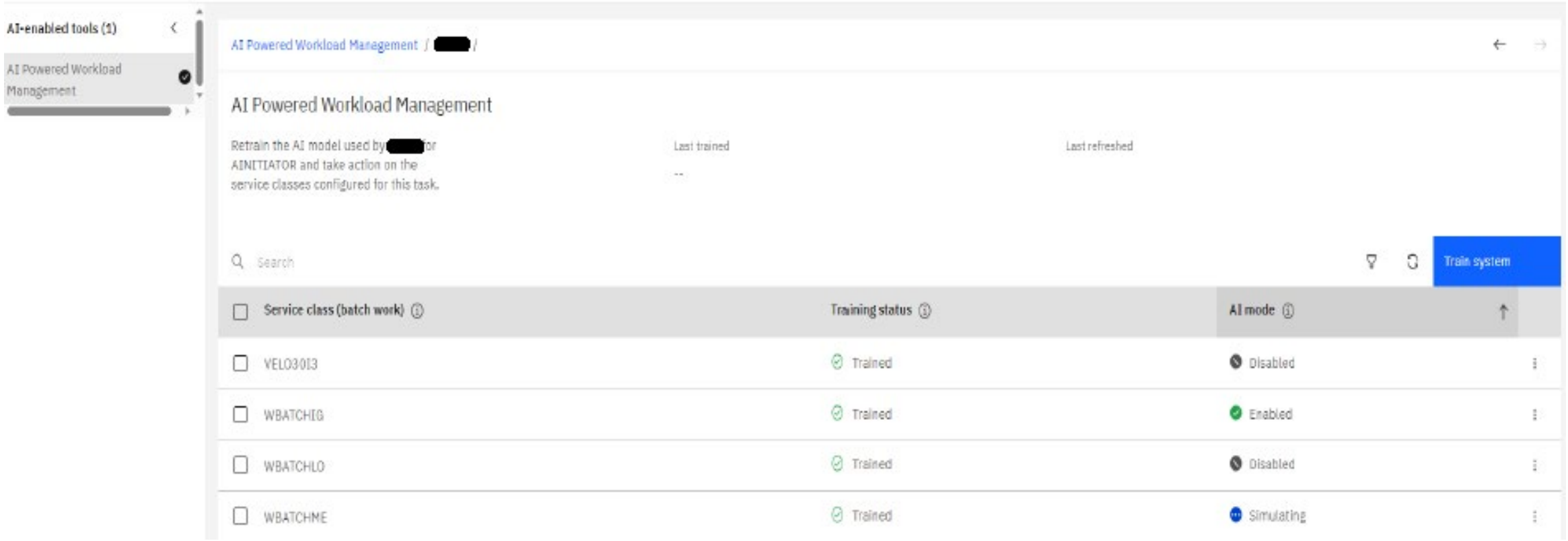
- IBM is augmenting WLM with AI to optimize the management of IBM Z workloads. These iteratively delivered capabilities will allow z/OS to intelligently predict upcoming batch workload and react by allocating an appropriate number of initiators. This is designed to optimize system resources and batch management, thus eliminating overhead from manual fine-tuning and trial-and-error approaches.

- **AI-powered WLM** is the initial use case leveraging the AI Framework for IBM z/OS.

- AI-Powered WLM, designed to **intelligently predict upcoming batch workload** and react accordingly for optimized system resources is **the first to leverage the AI System Services**.

z/OSMF AI Control Interface For z/OS (AICI)

z/OSMF AI Control Interface For z/OS **(New z/OS 3.1 only)**



More About AI – Existing and Enhanced Capabilities

Never too late to jump into AI topics as
z/OS System programmer – if not already done with your AI experts or your own.

AI on z is there for many years.
Now much stronger and wider – inside OS and as AI System Services

AI on z/OS

AI on z/OS –New materials to help jump start your AI adoption journey

Journey to AI on IBM zSystems and LinuxONE content solution → Guidance on identifying use cases, available solutions, recent developments and more.
https://www.ibm.com/support/z-content-solutions/journey-to-ai-on-z/

AI on IBM Z and LinuxONE community → Read recent blogs and announcements
Engage with subject matter experts on the latest topics around AI on IBM Z
https://ibm.biz/BdPBud

Client Engineering for Systems Workshop → Learn about analytics and AI technologies and solutions on IBM Z and where you are in your AI Journey
Each workshop is tailored to fit your needs
Contact ce4s@ibm.comor your local IBM Client Engineering team to find out more
https://ibm.biz/aionz-workshop

AI on IBM Z and LinuxONE Getting Started - 101 → Learn about the ecosystem and landscape for exploiting AI on IBM Z and LinuxONE systems.
https://ibm.github.io/ai-on-z-101/

Python on IBM z

Python AI Toolkit for IBM z/OS

- Industry leading AI Python packages available on z/OS
- Unlocks verified open-source software with supply chain security
- Familiar, flexible, and agile package installation process leveraging PyPi

IBM Z Content Solutions | Journey to open data analytics

z/OS is enhanced to allow IBM Open Enterprise SDK for Python to be zIIP enabled.

With IBM Open Enterprise SDK for Python on z/OS, advanced data analysis can be performed, with popular Python packages, natively on z/OS where the data is stored. zIIP enablement of Python on z/OS provides a competitive option for running Python workloads, and **up to 70%** of Python will be eligible to run on a zIIP.
This support is available with the PTFs for APARs PH52983 and OA63406 on z/OS V2.4 and later.

IBM SMF Explorer with Python (CD 4Q2022)

Data access and analysis toolkit designed to help access SMF data and extract insights in an easy and modern way
Leverages state-of-the-art technologies like JupyterNotebooks and Python
Understand, interpret SMF data and unlock value from it even with limited z/OS skills

https://ibm.github.io/IBM-SMF-Explorer/
Hot Topics Blog -How to turn your SMF data into valuable insights without z/OS expertise

Latest Compiler Offerings on z/OS

Required for z/OS 3.1 (At GA)

IBM Enterprise COBOL for z/OS 6.4

IBM Automatic Binary Optimizer 2.2

IBM Enterprise PL/I for z/OS 6.1

z/OS 3.1 XL C/C++
(entitled also to IBM Open XL C/C++ 1.1)

IBM Semeru Runtime Certified Edition for z/OS v11.0

IBM Open Enterprise SDK for Node.js – z/OS v18

IBM Open Enterprise SDK for Python v3.11

IBM Open Enterprise SDK for Go v1.20

IBM has issued a statement of direction indicating a future plan to deliver IBM Semeru Java 17.

More About IBM Java SDK for z/OS V11 (5655-DGJ-5655-I48) – IBM Semeru V11

z/OS 3.1 is designed with IBM Semeru 11 and later in mind. Java 8 is supported on z/OS 3.1, however, clients may find that operating system-provided Java facilities may require IBM Semeru 11. IBM Semeru 11 is the most current level of Java available on z/OS.

- At GA, z/OS 3.1 has an overall dependency on 'IBM Semeru 11 RunTimeCertified Edition 64 bit only.
  Most z/OS 3.1 Functions at GA : z/OSMF, SDSF, RACF,CommServer, SCRT, HCD...
- Some z/OS 3.1 functions still require IBM Java SDK 31-bit V8, but are planned to be converted to IBM Semeru 11
  z/OS PFA, CPM and InforprintServer (At GA)
- IBM 64-bit SDK for z/OS V8 and IBM 31-bit SDK for z/OS **V8 are supported for applications** as long as they remain supported.
- IBM has issued a statement of direction indicating a future plan to deliver IBM Semeru Java 17.

Client applications that previously used the 31-bit Java SDK might need to be modified to run in 64-bit mode.

Learn more → https://www.ibm.com/products/semeru-runtime-certified-zos

Dedicated Memory

Dedicated Memory (New z/OS 3.1 Only)

Dedicated Memory (New in z/OS 3.1 Only)

Utilization of >4T for applications that do not exploit 2G frames

- **Installations that are concerned about applications with irregular or unpredictable memory usage**
  SVC Dump capture for example - Mitigate Distruptions from SVCDUMP
- **Installations that want to preferentially assign memory to certain applications that exploit high virtual storage**
  zCX containers
- **Installations that want to exploit >4T of memory**

- Once assigned locally managed within AS
- It is restricted to High Virtual Private but it can be used by all frame types 4K,1MB fixed,1MB pageable and 2GB
- Never paged/stolen – address space owns the memory until end of job step, regardless of whether it actually uses the memory

Dedicated Memory

New Parmlib Member IARPRM

```
VIEW       SYS1.          ARMLIB(IARPRMZ4) - 01.02
****** ******************************** Top of Data **
000100 DMEM(1024G)
****** ***************************** Bottom of Data
```

New IEASYS Parm RSM

```
000010 IZU=Z1,
000050 LFAREA=(1M=(1048576,43008),2G=(1124,120)),
000060 RSM=Z4,
000061 SMFLIM=Z4,
```

Usage Display

```
-ro z4,f axr,iaxdmem dmem
 IAR067I DEDICATED MEMORY V1.0
    1.0TB : TOTAL SIZE
    0.0GB : OFFLINE SIZE
  828.0GB : UNASSIGNED
   18.0GB : SYSTEM USE
```

On Top Of 4 TB

```
RO Z4,D M=STOR
IEE174I 10.41.44 DISPLAY M 145
REAL STORAGE STATUS
ONLINE-NOT RECONFIGURABLE
    0T-5T
ONLINE-RECONFIGURABLE
    NONE
ONLINE-DEDICATED MEMORY
    5T-6T
PENDING OFFLINE
    NONE
 0M IN OFFLINE STORAGE ELEMENT(S)
 0M UNASSIGNED STORAGE
STORAGE INCREMENT SIZE IS 16G
```

DUMPSRV Usage Sample

```
          -ro z4,f axr,iaxdmem dmem,jobname=dumpsrv
S0051343   IAR069I DEDICATED MEMORY V1.0
           JOBNAME=DUMPSRV  ASID=0005
              64.0GB : ASSIGNED
              15.9GB : IN USE
              15.9GB : MAX IN USE
           PAGEABLE 4K STATISTICS
               1.0GB : IN USE FOR PAGEABLE 4K PAGES
               2.5GB : MAX IN USE FOR PAGEABLE 4K PAGES
           PAGEABLE 1M STATISTICS
              14.9GB : IN USE FOR PAGEABLE 1M PAGES
              14.9GB : MAX IN USE FOR PAGEABLE 1M PAGES
           FIXED 1M STATISTICS
               0.0MB : IN USE FOR FIXED 1M PAGES
               0.0MB : MAX IN USE FOR FIXED 1M PAGES
           FIXED 2G STATISTICS
               0.0GB : IN USE FOR FIXED 2G PAGES
               0.0GB : MAX IN USE FOR FIXED 2G PAGES
           DAT TABLE STATISTICS
               5.5MB : IN USE FOR DAT TABLES
```

WLM Updates For z/OS 3.1

WLM Policy Advisor (New z/OS 3.1 Only)

WLM Implicit Long Term CPU Protection (New z/OS 3.1 Only)

WLM Updates for z/OS 3.1

z/OSMF WLM Policy Advisor z/OS 3.1 **(New 3.1)**

z/OSMF provides an interface to display service definitions and their sections in structured tables and validates your service definitions based on built-in best practices. Users can define, modify, view, copy, import, export, install, activate, and print Workload Manager (WLM) service definitions. In z/OS 3.1:

- z/OSMF WLM intends to be augmented by the WLM Policy Advisor, enabling analysis of WLM policies through incorporating the performance data of their respective systems. The Policy Advisor provides a view that helps users identify error-prone WLM service definitions and determine more suitable goals and importance level settings for active workloads. This intends to enable system programmers to maintain a proper WLM policy, with fewer skill requirements.

- z/OSMF WLM task is intended to be enhanced to no longer require CIM server, which simplifies the technical stack of z/OSMF WLM.

WLM Implicit Long-term CPU Protection (New 3.1)

- With z/OS 3.1, any service class defined with an importance of 1 is implicitly set to CPU critical YES
  - New OPT parameter to control level of implicit CPU
  - CCImp=0|1|2 parm sets what importance level (all service classes) have implicit CPU protection
  - Set to '0' to turn off implicit CPU critical
- Long-term CPU protection ensures less important work will generally have a lower dispatch priority–Outside of certain CPU promotions
- With IBM z15 and z16 SRB, any service class with an importance of 1 or 2 is implicitly set to have CPU critical for the duration of the boost

RMF Updates For z/OS 3.1

RMF Updates

IBM Resource Measurement Facility –RMF Priced Feature

- A new browser based UI based on Open Source Grafana is available for monitor III metrics and reports **(New 3.1)**
  Grafana has many libraries of open source visualization widgets including bar charts, line charts, timeline visualization etc.

- The new UI is designed to support setting thresholds and issuing alerts **(New 3.1)**
  - A rich array of alerting mechanisms is available
  - Configurable duration of a time-slice
  - Data from various sources can be integrated into the dashboard

- A new DDS server is designed with 64-bit exploitation and additional security options **(New 3.1)**

- The new DDS server is zIIP eligible **(New 3.1)**

- Options exist to output data from the DDS server in JSON format to ease integration into other modern tooling **(New 3.1)**

- RMF is enhanced to report on crypto express 8S card **(CD 2Q2022)**

- RMF monitor III has been enhanced to show all logical partitions of a CPC and allows machine configurations up to 256 physical processors **(CD 2Q2022)**

JES2 Updates

JES2 Updates

JES2 policy-based exit reduction

- Intended to provide a non-assembler facility to *extend* JES2
  - Can be mixed with traditional JES2 exits
- In addition to end-of-conversion new exits points of pre-conversion, and SYSOUTGroup are added
- New predicates and actions
  - Look at and update attributes like jobclass, srvclass, destination, etc
  - Ability to access symbols during input processing
  - Ability to use symbols in JES2 Policy.
  - General SAF AuthorityCheck can be used with any attribute
- Character conversion to numeric in policy
- Policy files are Release neutral and do not require change during release or service upgrades (no reassembly required)
- Dynamically enabled – Changes can be applied and removed while JES2 is running ($POLICY IMPORT Command)
- MAS Wide definitions for policy (2.4CD)

JES2 Spool compression and encryption (2.4CD)

- Ability to compress spool to increase effective space
- Ability to encrypt spool for increased security

JES2 Additional job notification capability

- With JES system symbol SYS_JOB_NOTIFYX job notification is extended to submission and start of execution with PTF for APAR OA62804 (CD 4Q2022)

JES2 SMF 1153 Record for reporting JES2 Resource Usage and Limits Data

- JES2 is updated to generate a new type of SMF record, SMF Record Type 1153, for reporting JES2 resource usage and limits data.

- Support for
  - Job input is new (approximately exit 20/50) New in z/OS 3.1
  - Pre conversion
  - Post conversion (approximately exit 44)
  - Sysout Group (approximately exit 40)

Example of Pre conversion policy: Test if the job's output is protected….if it is…then modify the job's msgclass to A and send a message.

```
{  "policyName":     "PCONV1",
                     "policyVersion":  1,
                     "policyType":      " PreConversion ",
                     "definitions":
                        [
                          { "condition" : " JobIsProtected  ",
                             "actions"  :
                                [
                                   {  "action"     : " ModifyJob ",
                                      "attribute" : " MsgClass ",
                                      "value"      : " 'A' "
                                   },
                                   {  "action"  : " SendMessage ",
                                      "message" : " JobName || ' now has MSGCLASS: ' || MsgClass"
                                   }
                                ]
                          }
                        ]
                  }
```


JES2 64-bit Checkpoint Version

JES2 is updated to store checkpoint versions in 64-bit private storage, where storage pages of checkpoint data can be shared among checkpoint versions, instead of copying storage pages to checkpoint versions. This update reduces copying storage pages and helps lower CPU usage.

JES2 Updates – New in z/OS 3.1 only

JES2 Policy Function is enhanced in z/OS 3.1 to improve the flexibility and usability of JES2 policies by:(New 3.1)

- Implementing new policy type Job Input, which provides analysis and customization of key job attributes as part of job input processing, much like existing JES2 installation exits 20/50.
- Supporting the use of variables in the submitter environment within JES2 policies.
- Providing the ability to substitute system symbols utilized in JES2 policies.

JES2 Job Level Resource Limits & Resource Groups (JES2 Resiliency Improvements) (New 3.1)

- New Default spool policies to reduce situations leading to spool full conditions
- JES2 wide and Job based defaults for spool usage
  Can be tailored by installation through JES2 Policy
- Default policy is for the job to wait until the resources are available
  Other options are ”none” and “fail”
- Installation resource groups can be assigned to a job for display and policy enforcement

JES2 AI Job Selection (New 3.1)

JES2 provides infrastructure to support infusing AI into the operating system. Several JES system symbols have been created to help support AI prediction of upcoming batch workload.

JES2 Complaince Data Reporting (New 3.1)

JES2 is participating in the enhanced compliance support in z/OS by generating SMF 1154 subtype 114 records to begin reporting JES2 compliance evidence data.

SDSF Updates

SDSF Updates

```
MENU V2R5M0    UTCPLXJ8  J80
NAME     Description                 Group
DA       Active users                Jobs
I        Input queue                 Jobs
O        Output queue                Output
H        Held output queue           Output
ST       Status of jobs              Jobs
JG       Job groups                  JES
SYM      System symbols              System
LOG      System log                  Log
SR       System requests             Log
MAS      Members in the MAS          JES
JC       Job classes                 JES
SE       Scheduling environments     WLM
RES      WLM resources               WLM
ENC      Enclaves                    WLM
PS       Processes                   OMVS
SYS      System information          System
ENQ      Enqueues                    System
```

```
MENU V2R5M0    UTCPLXJ8  J80
NAME     Description
ENQC     Enqueue contention
ENQD     Enqueued data sets
DYNX     Dynamic exits
AS       Address space memory
INIT     Initiators
PR       Printers
PUN      Punches
RDR      Readers
LINE     Lines
NODE     Nodes
SO       Spool offload
SP       Spool volumes
NS       Network servers
NC       Network connections
RM       Resource monitor
CK       Health checker
LNK      Link list data sets
```

```
NAME     Description
LPA      Link pack data sets
APF      APF data sets
PAG      Page data sets
PARM     Parmlib data sets
PROC     Proclib data sets
SSI      Subsystem information
CFC      CF connections
CFS      CF structures
VMAP     Virtual storage map
SMSG     SMS storage groups
SMSV     SMS volumes
FS       File systems
CSR      Common storage remainin
GT       Generic tracker
NA       Network activity
DEV      Device activity
EMCS     Extended consoles
```

```
NAME     Description
BPXO     OMVS options
LPD      Link pack directory
XCFM     XCF groups and members
WLM      WLM policy data
SRVC     Service classes
REPC     WLM report classes
RGRP     WLM resource groups
WKLD     WLM workloads
RMA      Resource monitor alerts
JES      Job entry subsystems
JRI      JES resource information
JRJ      JES resource by job
LLS      Link list sets
MEM      Memory contents
CFD      Couple data sets
SVC      SVC routines
SYSP     System parameters
CS       Common storage subpools
PC       PC routines
AD       Address space diagnostic
ULOG     User session log
HELP     SDSF help facility
```

SDSF Updates

SDSF Enhancements **(New z/OS 3.1)**

- Key new feature Module Fetch Monitoring to show modules fetched, where, when and who **(New z/OS 3.1)**
- Key new feature Significant Event logging Indication of events such as volumes coming on and offline, actions etc. **(New z/OS 3.1)**
  Indication of significant events such as volumes coming on and offline, actions etc. with handy link to the Operlog based on the time an event occurred
- Many new Primary Displays Planned, New viewable fields **(New z/OS 3.1)**
  - Several new Primary Displays of RACF information including tabular SDSF display of classes, profiles, access lists etc.
  - More than ten new primary displays including Sysplex, LPARs, Program Properties Table (PPT), and SMF data
  - More than 20 new columns, and more than 20 new actions on existing panels
- The browser-based UI (in z/OSMF) is updated to continue to match function with ISPF
- SDSF is enabled for the Security Configuration Assistant of z/OSMF to ease security settings **(New z/OS 3.1)**
- SDSF now can display individual fields on a panel with unique highlighting, for example the return code fields in the job status display are color coded based on the return value making it easier to spot problems.

Installing & Upgrading z/OS 3.1

z/OSMF Portable Software Instance

z/OSMF Software Management Installation of z/OS 3.1 ServerPac

- Uses a simplified web-based GUI replacing the ISPF CustomPac Dialog
  - Manages allocation and placement of data sets, cataloging, and deployment in z/OSMF Software Management
  - Customization and verification is done in z/OSMF Workflows
  - Data set merge and disconnect Master Catalog on driving system . **(CD)**
  - Remove temporary catalog aliases are supported **(CD 4Q2022)**
  - REST APIs to run missing critical updates, missing FIXCAT updates, and software update search **(CD 4Q2022)**

- New Portable Software Instance Package signing –IBM plans to ship z/OS 3.1 ServerPac and PTF's with a signature that clients can verify. This will provide a means to verify the integrity of software. **(CD 1Q2023)**

- IBM (and participating major ISVs) deliver z/OSMF Portable Software Instances as a common installation method for z/OS stack software.

  - IBM z/OS, IMS, Db2, and CICS Transaction Server and associated products, all can be installed with z/OSMF today. CBPDO remains available and is unchanged.
  - z/OS 3.1 ServerPac is only provided as a z/OSMF Portable Software Instance
    - z/OSMF is a driving system requirement for all IBM ServerPacs. . **(CD)**

- For more information, see the z/OSMF ServerPac content solution (**https://www.ibm.com/support/z-content-solutions/serverpac-install-zosmf/)**

  - **Try a sample z/OSMF Portable Software Instance to be familiar with the install, before you install any ServerPac. Directions can be found in z-content solution website in the link above**

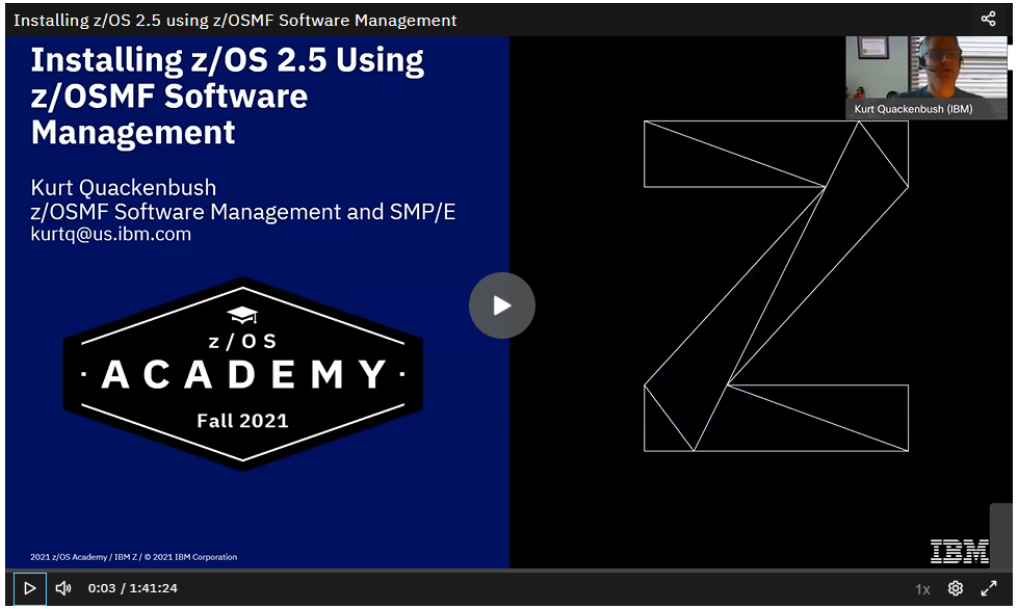
As stated in Software Announcement 222-214, dated June 21, 2022, the CustomPac Dialog installation method choice from Shopz was removed on July 10, 2022. As a result, any ServerPac for z/OS, IBM CICS, IBM DB2, IBM IMS, or program products ordered through Shopz are packaged and installable only with z/OSMF.

Installing z/OS 3.1 ServerPac Using z/OSMF

- Easy To Install z/OS Using z/OSMF compared to Custompac Dialog
- Check z/OSMF Community Guild Page : z/OSMF Community Guild Web page
- For more information, check z/OSMF ServerPac content solution (**https://www.ibm.com/support/z-content-solutions/serverpac-install-zosmf/)**
  - Try a **sample z/OSMF Portable Software Instance** to be familiar with the install, before you install any ServerPac.Directions can be found in z-content solution website in the link above

Highly recommend to watch this if 3.1 will be your first usage of z/OSMF to install z/OS !

Installing z/OS 2.5 using z/OSMF Software Management



z/OS Packaging Signing

z/OS Software Package Signing (CD 1Q2023)

- z/OS SMP/E and z/OSMF Software Management now provide the capability to digitally sign and verify the signature of GIMZIP packages of software that may be delivered both electronically and physically, on all supported z/OS releases.
  - This capability ensures that a software package has not been modified since it was created and the package was signed by the expected provider, designed for nonrepudiation and authenticity.
  - The choice to do this additional verification is left to the user upon receipt of the software package if the software provider has chosen to exploit this additional capability.
- IBM has chosen to sign the following software packages to allow clients more secure coverage for z/OS software deliverables:
  - z/OSMF ServerPac (also known as z/OSMF portable software instances) Delivered
  - CBPDO Delivered
  - Electronic Shopz PTF orders SOD
  - SMP/E RECEIVE ORDER PTFs and HOLDDATA SOD
- Designed to satisfy z/OS NIAP Certification with OS Protection Profile (OSPP) 4.2.1 package signing. Enabling package signing now facilitates enabling NIAP Certification in the future.

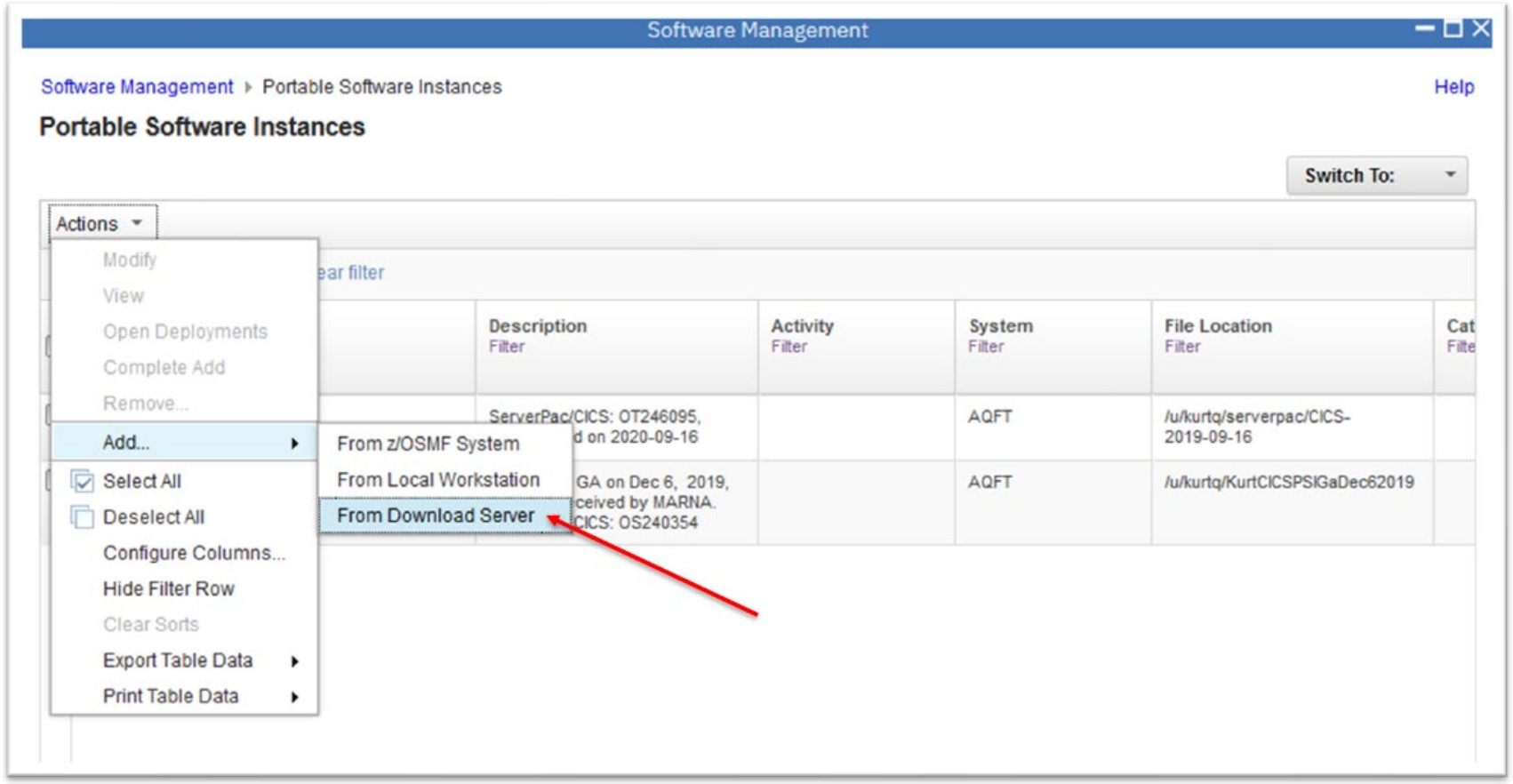
- Available with the PTFs for APARs IO28360.

Installing z/OS 3.1 ServerPac
As - > z/OSMF Portable Software Instance
Using -> z/OSMF Software Management

z/OS 3.1 ServerPac is only provided as a z/OSMF Portable Software Instance

Getting z/OS 3.1 as Portable Software Instance using z/OSMF

Add a new Portable Software Instance in z/OSMF
Specify the files to be downloaded from server – similiar jcl as you used to do on receiving from Shopz
(z/OSMF uses SMP/E GIMGTPKG program to download)

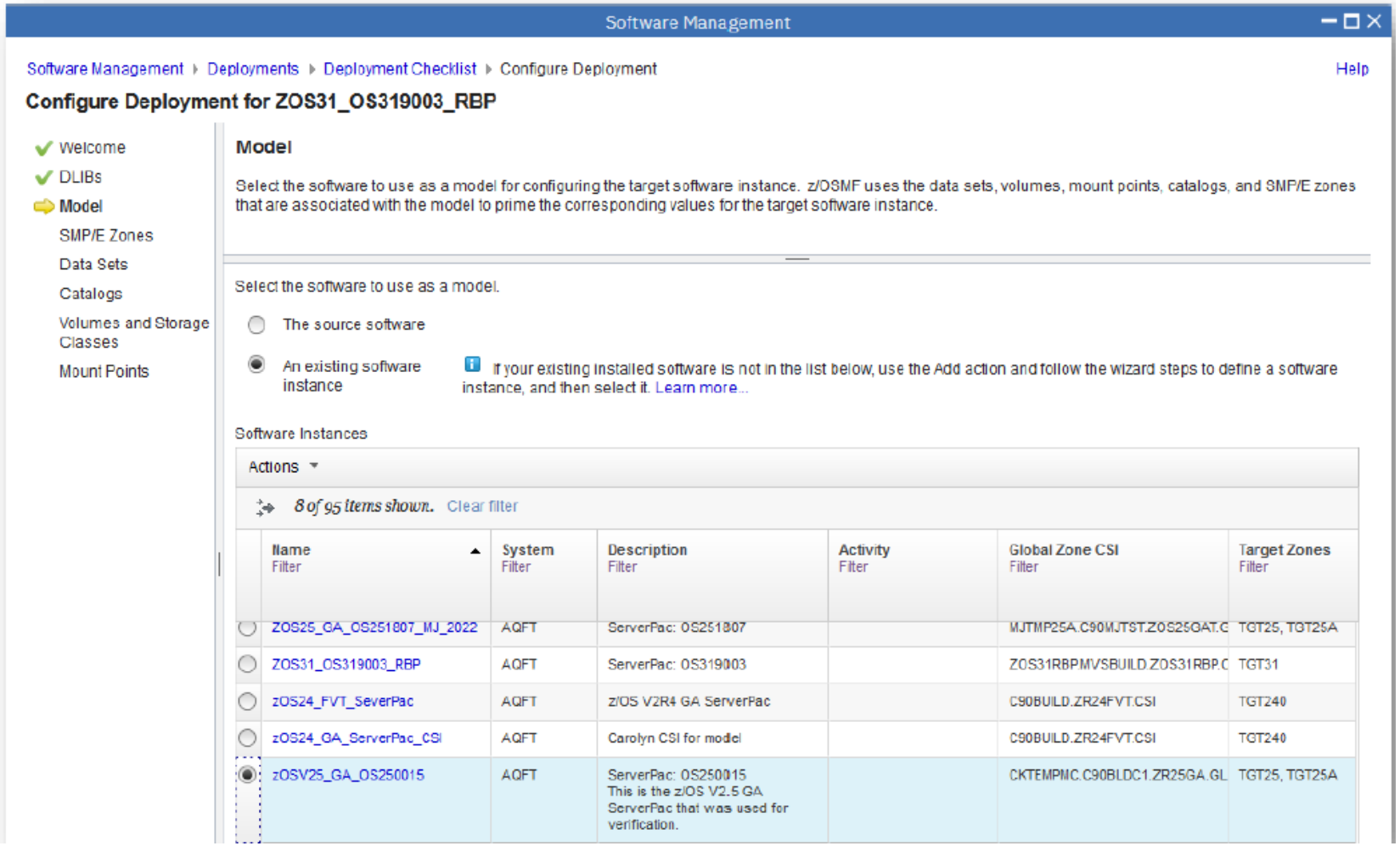


Installing z/OS 3.1 as Portable Software Instance

Similiar to what you used to do during installation in CustomPac Dialog, you can configure everything and jobs will be submitted using ‘submit deployment job’ step (in previous slide)

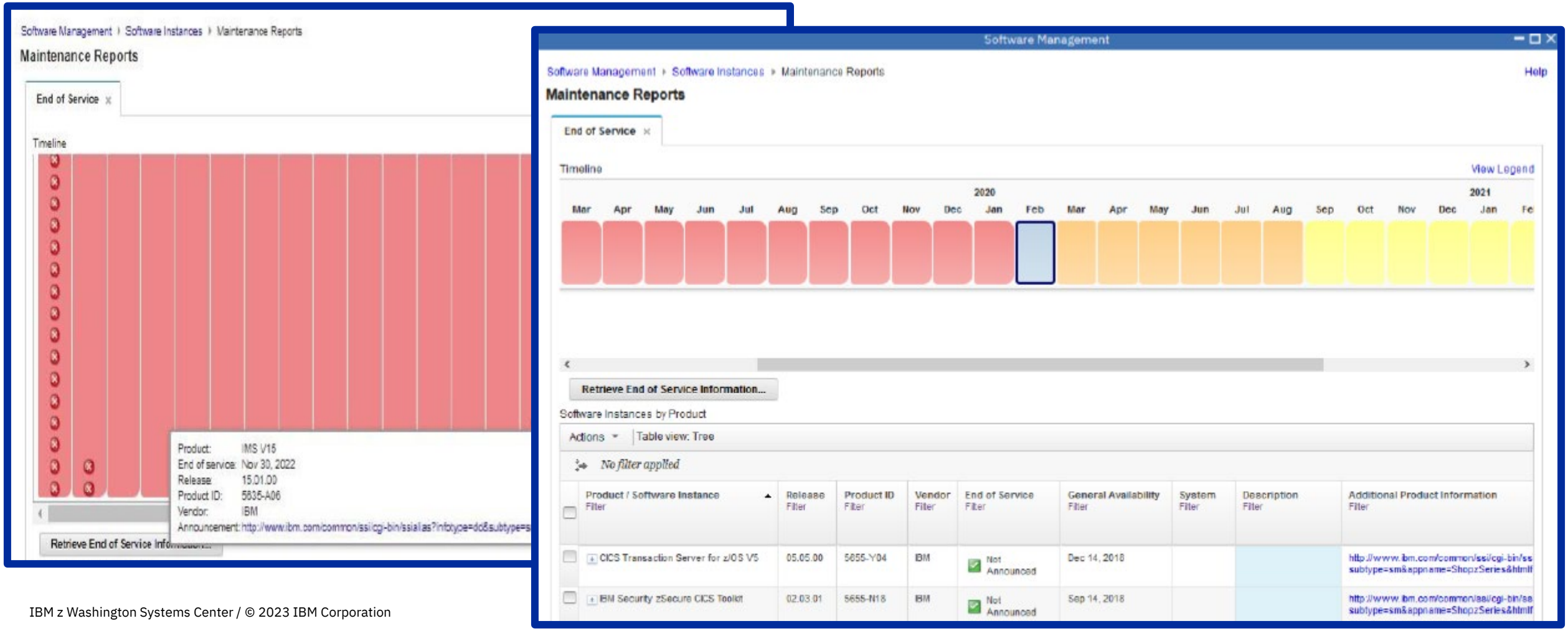
There are alot more capabilities with z/OSMF z/OS installation. Just some of them are :

- Reports
- SYSMOD Search
- Missing Critical Service



End Of Service Dates For IBM Products

- http://www.ibm.com/software/support/lifecycle/
- Use **z/OSMF Software Management** to look at the End of Service report

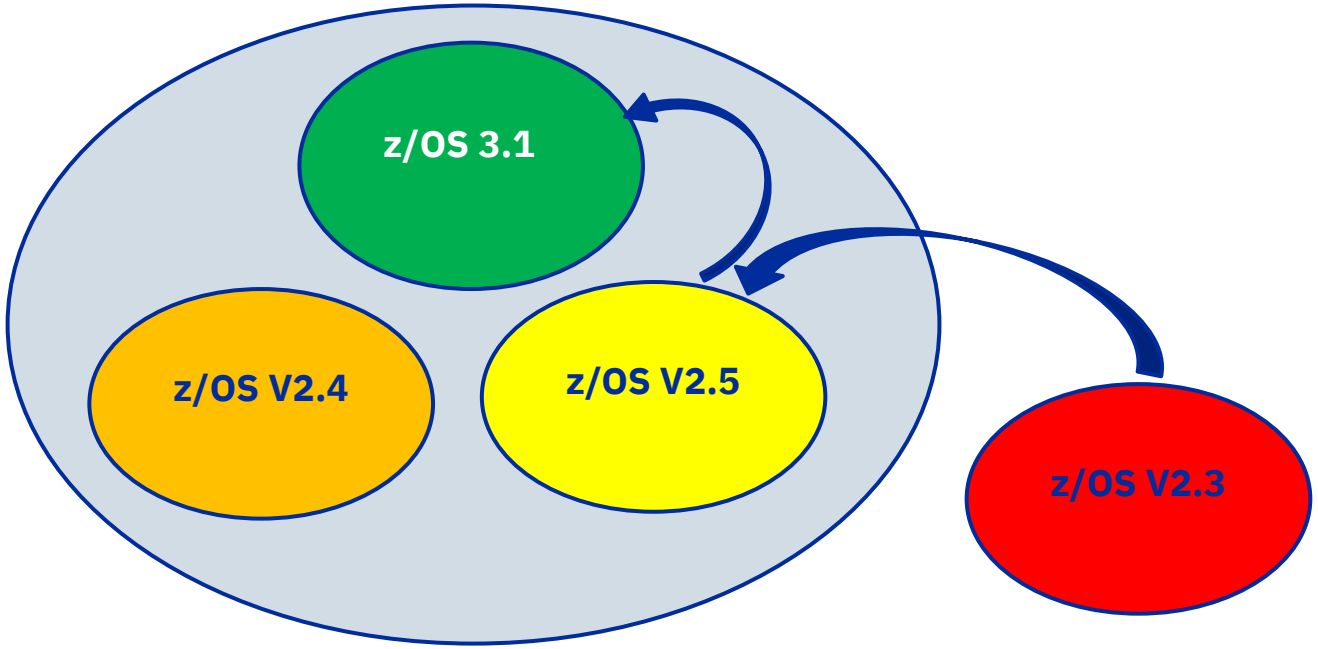


Upgrading to z/OS 3.1

* Email me and I will share my detailed Upgrading to z/OS 3.1 presentation

z/OS 3.1 Coexistence Policy

Three consecutive releases for coexistence policy remains same.



IBM.Coexistence.z/OS.3.1 ---- > FIXCAT name for you to check which ptfs you need for coexistence.

This rule applies for upgrade purposes as well as sysplex coexistence between systems at different release levels.

Changes in FMID : FMID Related Information since V2.4

z/OS Elements		Changed in z/OS V2.5	Changed in z/OS 3.1	New in z/OS V2.5	New in z/OS 3.1	Base Element	Optional Priced Feature	Optional Unpriced Feature
XML Toolkit (V1.11 level)					●			
z/OS Data Gatherer				●				
IBM z/OS Change Tracker				●				
z/OS Advanced Data Gatherer				●				
BCP								
	Program Binder							
	Capacity Provisioning Manager							
	BCP Support For Unicode							
	Web Enablement Toolkit							
	AI Based Component (AIB)				●			
Common Information Model (CIM)								
z/OS Communication Server								
Cryptographic Services								
	ICSF(FMID HCR77E0)							
	PKI Services							
	System SSL							
DFSMSdfp								
HCD								
Future Function(related to IBM Documentation for z/OS)								
IBM Tivoli Directory Server								
IBMZ Deep Neural Network (zDNN)								
IBM z/OS Management Facility (z/OSMF)								
Integrated Security Services	Network Authentication Service							
ISPF								
JES2								

Changes in FMID : FMID Related Information since V2.4

z/OS Elements		Changed in z/OS V2.5	Changed in z/OS 3.1	New in z/OS V2.5	New in z/OS 3.1	Base Element	Optional Priced Feature	Optional Unpriced Feature
Language Environment								
Network File System								
TSO/E								
z/OS File System (zFS)								
z/OS Font Collection								
z/OS OpenSSH								
z/OS UNIX								
DFSMSdss								
DFSMShsm								
DFSMSrmm								
DFSORT								
HCM								
IBM z/OS workload Interaction	Correlator (zWIC)							
Infoprint Server								
RMF								
RUCSA								
SDSF								
Security Server - RACF								
z/OS Security Level 3								
	Communication Server							
	IBM Tivoli Directory Server Security Level 3							
	Network Authentication Service Level 3							
	System SSL Level 3							

Orderable no Charge Products

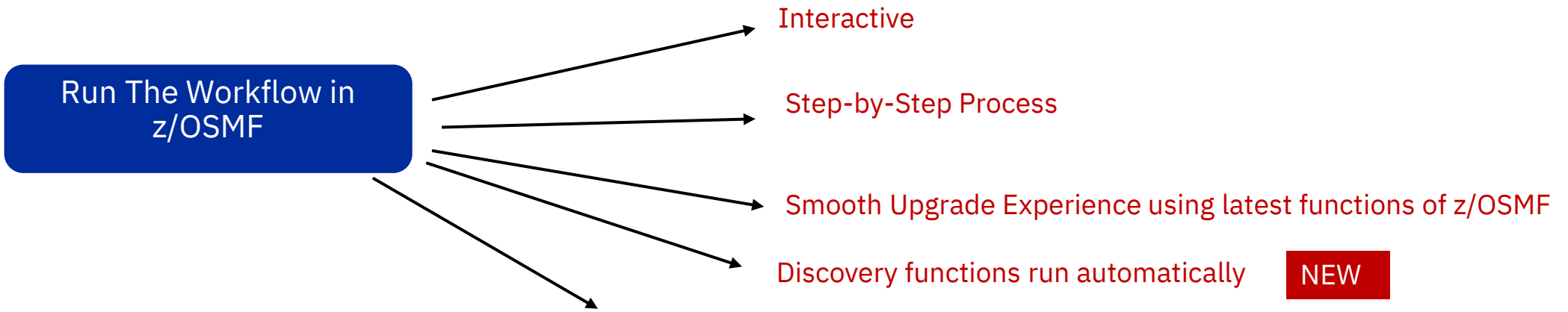
- IBM Java SDK for z/OS V11 (5655-DGJ-5655-I48) – IBM Semeru Runtime Certified Addition For z/OS
  Prereq for z/OS 3.1 (At GA) ▲
- IBM 31-bit SDK for z/OS V8 (5655-DGG, 5655-I48) → EOM – January 2024 EOS – September 2026 ▲
  Prereq for z/OS 3.1 for some functions (At GA)
- IBM 64-bit SDK for z/OS V8 (5655-DGH, 5655-I48) → EOM – January 2024 EOS – September 2026 ▲
- XML Toolkit is now inside z/OS
- IBM AI System Services for IBM z/OS (5655-164) → NEW PRODUCT ▲
- IBM Open Enterprise SDK for Node.js 16.0 ▲
- IBM Open Enterprise SDK for Node.js 18.0 ▲

▲ Subscription & Support is Priced

- DFSMStvs is part of the z/OS Base now
  DFSMStvs priced feature is now part the z/OS Base and is entitled to use as part of z/OS Base

z/OS 3.1 Upgrade Workflow – z/OSMF

Provides the steps for upgrading to z/OS® 3.1 from your currently supported z/OS system



The z/OS 3.1 Upgrade Workflow is available in a choice of two z/OSMF workflows, depending on your upgrade path — from z/OS 2.5 or z/OS 2.4:

- zOS3.1_From_zOS2.5_Upgrade_Workflow.xml
- **zOS3.1_From_zOS2.4_Upgrade_Workflow.xml**

Now included with z/OS: IBM provides the upgrade workflows as part of the z/OS product.
Updates and fixes for the upgrade workflows are delivered through the standard z/OS service process.

APAR that ships z/OS 3.1 Upgrade Workflows OA63269 → It is also in **IBM. Coexistence.z/OS.3.1** FIXCAT

For the z/OS 3.1, IBM z16™, and IBM z15 workflows, the workflow definition files reside in file path **/usr/lpp/bcp/upgrade** after you install the associated PTFs on your z/OS system.

Earlier than GA Announcement, through new function website that we mentioned today in our previous session- Subscribe!

z/OS 3.1 Upgrade Workflow

➢ New Capability in z/OS 3.1 Upgrade Workflow Discovery Function

NEW

The z/OS 3.1 Upgrade Workflow includes the following functional enhancements:

- **Runs the SMP/E MISSINGFIX report** to determine whether any fix category (FIXCAT) APARs exist that are applicable and have not yet been installed.
- **Discovers which upgrade-related APARs are installed**, then **automatically skip steps** for which no actions are required if a given APAR is installed.

Nice Capability

➢ There are Upgrade Related Health Checks

These Health Checks can be directly invoked by the z/OS 3.1 Upgrade Workflow when using z/OSMF with one Click

Driving System Requirements for Installing z/OS 3.1

Driving System Requirements for z/OSMF Portable Software Instance

- Minimally with z/OS V2.4 with z/OSMF configured and active.
- z/OSMF Software Management available for use.
- Your USERID requires READ access to datasets that starts with **CB.OS* and CB.ST*** for IBM ServerPacs
- IBM. DrivingSystem-RequiredService FIXCAT contains all necessary ptfs.
  Use the SMP/E REPORT MISSINGFIX command and fix category “IBM.DrivingSystem-RequiredService” to determine if you’re missing any PTFs

```
SET BDY(GLOBAL).
REPORT MISSINGFIX ZONES(ZOS25)
FIXCAT(IBM.DrivingSystem-RequiredService).
```

Package Signing Verification (OPTIONAL and COMPATIBLE)

- A Key Ring with RACF delivered STG Code Signing Certificate Authority-G2 connection is needed
- There is no need to indicate anything during Shopz ordering . All product packages will arrive signed.
  It is up to clients to verify or not.

Target System Requirements for z/OS 3.1

- HW Requirements
  IBM System Z Server z16 A01 , z16 A02, z15 T01 , z15 T02 , z14 , z14 ZR1

- Minimum Memory Requirements
  - 8 GB memory
  - If you are running z/OS 3.1 as guest of z/VM the z/VM release must be z/VM 7.2 or later
  - IBM Health Checker has HC about minimum memory requirements

- IBM. TargetSystem-RequiredService.z/OS.3.1 FIXCAT contains all necessary ptfs.
  Use the SMP/E REPORT MISSINGFIX command and fix category “IBM.TargetSystem-RequiredService.z/OS.3.1” to determine if you’re missing any PTFs

  SET BDY(GLOBAL).
  REPORT MISSINGFIX ZONES(ZOS25)
  FIXCAT(**IBM.TargetSystem-RequiredService.z/OS.3.1**).

- zFS Files: Root File System size will be close to 4 GB.
  Consider making it EA(Extended Addresability) capable to go beyond 4GB. For any zFS data sets that exceed the 4 GB size limit, you must define an SMS Data Class with extended format and extended addressability. **z/OS 3.1 ships with a version root file system that is extremely close to 4GB in size. If you merge other zFS data sets with this version root, it will exceed 4 GB in size**

Target Software for z/OS 3.1

You must determine the minimum product release levels and release levels for functional requirements.

- IBM middleware and application products require a specific level (version, release, or PTF) so that the products will run on z/OS 3.1. You cannot use the FIXCAT support to determine these release levels.
- FIXCAT 'IBM.TargetSystem-RequiredService.z/OS.3.1 ' is for fixes needed
- Instead, for release supports, you can refer to z/OS 3.1 Planning for Installation, Appendix B, for the functions of z/OS that require specific z/OS optional features, IBM middleware products, or IBM application products.
- **If you are upgrading from z/OS V2.4 or z/OS V2.5, you may generally use the product levels on z/OS 3.1 that you used on your prior z/OS release, as long as the product levels are still service-supported.**
- For Functional Dependencies, z/OS 3.1 Planning For Installation has tables in Appendix B.

For All Fixcats and Descriptions Check IBM Fix Category Values and Descriptions

IBM.TargetSystem-RequiredService.z/OS.3.1	Fixes required on other IBM products to allow them to run on z/OS 3.1.

IBM.DrivingSystem-RequiredService
IBM.Coexistence.z/OS.3.1
IBM.TargetSystem-RequiredService.z/OS.3.1
IBM.Function.HealthChecker
IBM.TargetSystem-RequiredService.Semeru.11

Functions Withdrawn from 2.5 (For Clients upgrading from z/OS 2.4 to 3.1)

- HFS
- ISPF Workstation Agent (WSA), also known as the ISPF Client/Server Component.
- VTAM Common Management Information Protocol (CMIP).
- Direct invocation of System SSL APIs for TLS/SSL protection.
- WLM Service Definition Coefficients in Service Detail Page.
- EIM (Enterprise Identity Mapping) and OCSF (Open Cryptographic Services Facility), and all of its plug-ins, such as OCEP (Open Cryptographic Enhanced Plug-ins) and PKITP (PKI Services Trust Policy).
- Network Configuration Assistant (NCA) z/OSMF plug-in support of the policy data import function, which allows you to import existing Policy Agent configuration files into the Network Configuration Assistant.
- z/OSMF Classic Tree Mode Interface
- DFSMSrmm Web Services.

Functions Withdrawn from 3.1

- **JES3** - Migrate to JES2 or if clients who want to continue with JES3 , may contact with Phoenix Software for JES3Plus
- **IBM Bulk Data Transfer BDT Features**
- **IBM z/OS Global Mirror (XRC)**
  Many years we have two critical Async Copy Methods (XRC and Global Mirror)
  Clients move to Global Mirror(GM) from XRC
- **Distributed File Manager -** > Use z/OS NFS instead
- **ISFPARMS Assembler Macros** - > Use ISFPRMXX instead
- **Knowledge Center For z/OS (KC4Z)** - > Use DOC4Z instead

Critical Upgrade Actions Before First IPL – SSD Capable CDS

SSD capable Sysplex Couple Dataset must be used in sysplex

Ensure that sysplex uses SSD – capable sysplex Couple Datasets. To use SSD is actually a best practice for many years.

Sysplex CDSes must be formatted to support System Status Detection (SSD) Protocol

- z/OS 3.1 can not initialize a sysplex containing a down-level sysplex CDS
- z/OS 3.1 can not join a running sysplex that contains a downlevel sysplex CDS

How to Check ? There are two ways to check it

1- Use XCF_SYSSTATDEF_PARTITIONING Health Check

2- Use `D xcf,cpl,type=sysplex` command and check that 'system status detection protocol is supported' for both primary and alternate sysplex CDS's

How to implement if it is not SSD capable ?

To format for SSD Capable Sysplex couple datasets, use the following items in format utility
NAME(SSTATDET) NUMBER(1)

Make the new sysplex CDSes used by the sysplex using SETXCF commands

Stop Using SDSF ISFPARMS Assembler Macros to configure SDSF

For many z/OS Releases, it has been recommended to configure SDSF with ISFPRMXX parmlib member.

There are several major advantages to using ISFPRMXX parmlib member format over assembler macros, modules.

With z/OS 3.1 , only option will be to use ISFPRMXX to configure SDSF .

If you are not using , you can convert to ISFPRMXX now!

If you are using ISFPRMXX , no action is needed

HCD: Remove unsupported processors from your IODF

Required if you unsupported processors are still defined in your IODF. In z/OS 3.1, HCD removes support for the following processors types because they are out of service:
- IBM z114, processor type 2818 models M05 and M10
- IBM z196, processor type 2817 models M15, M32, M49, M66, and M80

Previously, in z/OS V2R5, HCD removed support for older processor types
(IBM z10 EC, BM z10 BC, IBM z9 EC, IBM z9 BC, IBM z990, IBM z890)

You **cannot build a new production IODF** or modify a work IODF if an unsupported processor type is defined in the IODF.
This restriction applies to the z/OS system used to maintain the IODF

Check your currently active IODFs to determine whether you have any saved processor configurations for these out-of-service processors
If you still have any processor configuration for one or more of the out-of-service processor types, determine whether the processor is still in use. If not, delete the configuration. Otherwise, if the processor is still in use, the system that maintains the IODF cannot be upgraded to z/OS 3.1.

Stop using OSA DEVICE/LINK/HOME statements

As of z/OS 3.1, it is no longer possible to define Open Systems Adapter Express (OSA Express) connectivity through the following TCP/IP profile statements:

- DEVICE
- LINK
- HOME

z/OS V2R5 was the last z/OS release to support the use of these statements.

In previous releases, these statements were defined in the TCP/IP configuration file (PROFILE.TCPIP).
If you use these statements with a device type of MPCIPA and a link type of IPAQENET to define network connections for OSA devices**, you must convert the statements to equivalent INTERFACE statements.**

The INTERFACE statement improves stack configuration for IPAQENET interfaces, and some functions like multiple VLAN support require that the QDIO interface is defined with the INTERFACE statement.

If you use these statements with a device type of LCS, there is not an INTERFACE equivalent for this and, as support for LCS is also withdrawn in z/OS 3.1, you must use different connectivity to access the LAN.

Get & Activate Upgrade Health Checks (Before, During, After)

The IBM Health Checker for z/OS infrastructure is exploited for upgrade purposes.
Health Checks that are helpful for determining upgrade action applicability are provided.
These checks ("Migration Health Checks") should be used prior to your upgrade to the new z/OS release to assist with your upgrade planning, and re-run after your upgrade to verify that the upgrade action was successfully performed

zOSMIGREC_ROOT_FS_SIZE	*For 3.1*
XCF_SYSPLEX_CDS_CAPACITY	*For 2.5 and 3.1*
XCF_SYSSTATDET_PARTITIONING	*For 3.1*
RSM_MEMLIMIT	*For 2.5 and 3.1*
ALLOC_TAPELIB_PREF	*For 3.1*
SUP_ASVT_ABOVE_16M	*For 3.1*
ZOSMIGV2R4_NEXT_WLM_SERVCOEFF	*For 2.5 and 3.1*
ZOSMIGV2R4_NEXT_VSM_CHECKREGNLOSS	*For 2.5 and 3.1*
JES2_UPGRADE_CKPT_LEVEL_JES2	*For 2.5 and 3.1*
SDSF_ISFPARMS_IN_USE	*For 3.1*
SDSF_CLASS_SDSF_ACTIVE	*For 2.5 and 3.1*
RMF_DDS_OPTS	*For 2.5 and 3.1*
USS_HFS_DETECTED	*For 2.5 and 3.1*

ZOSMIGV2R4_NEXT_CS_OSIMGMT	*For 2.5 and 3.1*
ZOSMIGV2R4_NEXT_CS_DCAS_NTVSSL	*For 2.5 and 3.1*
ZOSMIGV2R4_NEXT_CS_TN3270_NTVSSL	*For 2.5 and 3.1*
ZOSMIGV2R4_NEXT_CS_FTPSRV_NTVSSL	*For 2.5 and 3.1*

ZOSMIGV2R5_NEXT_CS_LSA	*For 3.1*
ZOSMIGV2R5_NEXT_CS_OSADLH	*For 3.1*
OPENSSH CONFIG CHECK planned	*For 3.1*
ISPF_WSA	*For 2.5 and 3.1*

VERY USEFULL!

Check Missing PTFs in FIXCAT IBM.Function.HealthChecker and apply ptfs to get all Health Checks and activate them (Migration HCs are usually come as inactive)

Please Revisit Your Health Checker Policy and plan for actions for the HCs that you decreased Severity or WTO type once upon a time for the ones you might said 'lets decrease it so that we will get rid of alarms and we will check them later ' and forgot them totally ☹. (Some common usage issue)

Health Checks can be directly invoked by the z/OS 3.1 Upgrade Workflow when using z/OSMF

Special About z/OSMF

Security Configuration Assistant (SCA since 2.4 GA)
Software Update (Since 2.4CD)
Service Management Catalog (Since CD 4Q2021)
DFRMM Plug-in (Since 2.4 GA)
Sofware Management – Must be used for z/OS 3.1 Install
CFRM Policy Editor with CF Sizer (New with z/OS 3.1 only)
AI Control Interface for z/OS (AICI) (New in z/OS 3.1 only)
z/OS Upgrade Workflow Discovery Function (New in z/OS 3.1 only)

z/OSMF is your cockpit for managing z/OS!!!
Please Don't miss this!

Summary Of z/OS 3.1 and CD Updates

Reduce learning curve and improve efficiency

- Modernized z/OS daily operations, start with data set, USS file and job operations
- NEW plugin– AI Control Interface for z/OS
- Higher efficiency and less error-prone for Sysplex CFRM policy editing
- Simplify security configuration and trouble shooting
- Incident Log supports PDUU with HTTPS
- Systems task supports validating connection status

Easy to drive z/OS operations

- Enhanced Storage Management REST API
- NEW REST API for retrieving OPERLOG/SYSLOG messages
- NEW REST API for CFRM Policy operations
- NEW REST API for SCA based Security Validation and Security Provisioning
- NEW REST API for retrieving runtime value of z/OS Symbols
- Enhanced REST data set and USS file API and published tunning guide
- Enhanced REST Jobs API
- **Unleash z/OSMF capability to Ansible via Ansible collection “ibm_zosmf”**

Enhanced Workflow engine for persisting, streamline and collaborating z/OS tasks

- Workflow supports signing steps and run steps with different user id
- Policy based Workflow Archive
- Flexible cross sysplex communication by supporting basic authentication
- Improved workflow UX
- Improved workflow management
- Supports polling REST API workflow step
- Enhanced Workflow Editor

Improved z/OSMF management

- Verify security setup of z/OSMF nucleus with job or start command
- WLM CIM dependency removal
- NEW z/OSMF Configuration Trial

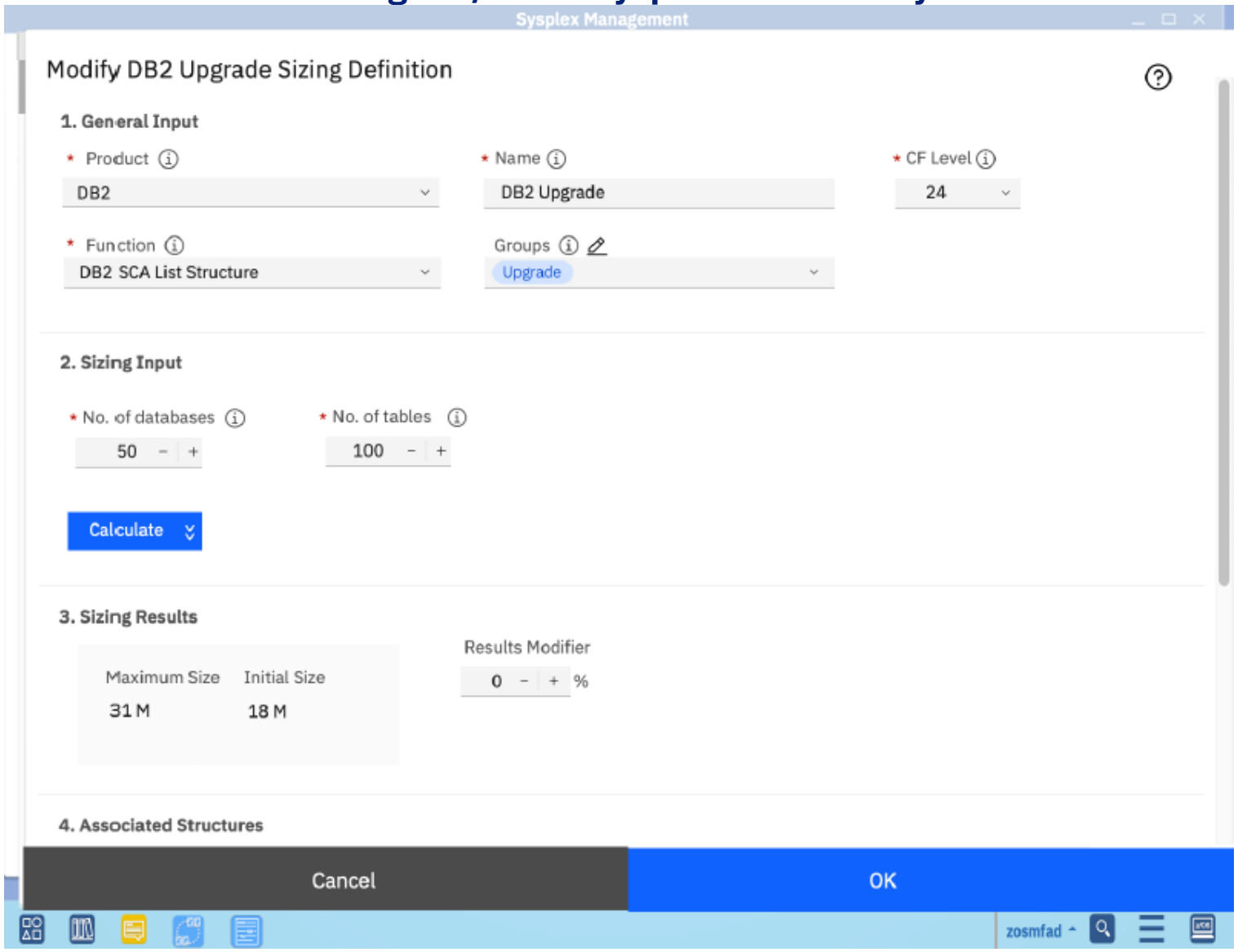
* Email me and I will share my detailed Special Focus on z/OSMF presentation

CF Structure Sizing With z/OSMF (z/OS 3.1 New Function)

Resolves a long-standing pain-point

CF Structure Sizing With z/OSMF

How it works ? CF Sizing in z/OSMF Sysplex CFRM Policy Editor



Editing /Adding a Sizing Definition

4 Sections

1. What is being sized(Product, Function)
2. Input Parameters
3. Sizing Results
4. What CF Structures are associated with this sizing definition

z/OS Requirements

- Engagement is great!. Add new ideas, Search, Vote and Follow ideas
- In the link below , all requirements that were addressed with z/OS 3.1 can be found

  https://github.com/IBM/IBM-Z-zOS/blob/main/zOS-Requirements-Satisfied/3.1-ideas-delivered.md

- z/OS accepts requirements through the Unified Ideas Portal at https://ideas.ibm.com/

  Directly for **z/OS** at https://ibm-z-hardware-and-operating-systems.ideas.ibm.com/?project=ZOS

- z/OS also accepts requirements through user groups like SHARE

THANK YOU!

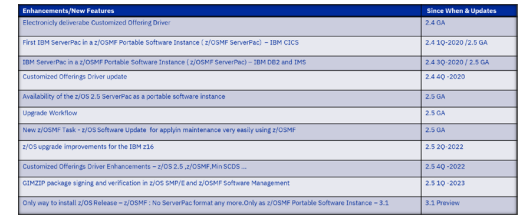
BACKUP SLIDES

Format Of This New Function Tables in this Presentation

With z/OS continues delivery , several of the new functions for the new release are available to clients.

It might be easier for you to see all enhancements related to one component or one area in table view. You can use these tables

- To get some of the enhancements history easily
- If you have already installed maintenance but not have time to check , you can use these tables to check whether you have done necessary actions to make use of these enhancements
- You will also see how long they have been there, so that , you may take this time as trigger item for you to not to be late on using them
- It is been arranged based on components, parts of z/OS , so that , you can handle in one shot, easily and with history behind; makes it easier for you to do the planning to start implementing them.
- With history behind, you may get better understanding easily some of the enhancement that is refering to previous enhancements on same component with all history as item in a table view.
- We will keep these up to date for each Quarterly announcements and special announceents as well
- To differentiate easier the new release functions



Enhancements/New Features	Since When & Updates
Electronicly deliverabe Customized Offering Driver	2.4 GA
First IBM ServerPac in a z/OSMF Portable Software Instance (z/OSMF ServerPac) – IBM CICS	2.4 3Q-2020 / 2.5 GA
IBM ServerPac in a z/OSMF Portable Software Instance (z/OSMF ServerPac) - IBM DB2 and IMS	2.4 3Q-2020 / 2.5 GA
Customized Offerings Driver update	2.4 4Q -2020
Availability of the z/OS 2.5 ServerPac as a portable software instance	2.5 GA
Upgrade Workflow	2.5 GA
New z/OSMF Task - z/OS Software Update for applyin maintenance very easily using z/OSMF	2.5 GA
z/OS upgrade improvements for the IBM z16	2.5 2Q -2022
Customized Offerings Driver Enhancements – z/OS 2.5 ,z/OSMF,Min SCDS ...	2.5 4Q -2022
GIMZIP package signing and verification in z/OS SMP/E and z/OSMF Software Management	2.5 1Q -2023
Only way to install z/OS Release – z/OSMF : No ServerPac format any more.Only as z/OSMF Portable Software Instance – 3.1	3.1 Preview

z/OS Parallel Sysplex Updates

Enhancements/New Features	Since When & Updates
Logger support for single-system logger	2.4 GA
Dynamic activation of I/O configurations for stand-alone Coupling Facilities	2.4 GA
XCF Transport Classes simplification	2.4 GA
Automatic Restart Manager (ARM) support for restarting a system task	2.4 2Q-2020 / 2.5 GA
Coupling Facility (CF) monopolization avoidance	2.4 2Q-2020 / 2.5 GA
System Recovery Boost sysplex recovery enhancements	2.4 3Q-2020 / 2.5 GA
XCF note pad resiliency enhancements	2.5 4Q-2021 / 2.5 GA
Complaince Center Support For XES/XCF	2.5 2Q-2022
Parallel Sysplex z16 Support –z16 Coupling & Parallel Sysplex Enhancements	2.5 2Q-2022
CF latency and scalability enhancements (z16)	2.5 2Q-2022
CF cache and lock structure resiliency improvements (z16 CF Level 25)	2.5 2Q-2022
CF cache structure object residency time monitoring and metrics (z16 CF Level 25)	2.5 2Q-2022
System Recovery Boost sysplex recovery enhancements (z16 only updates)	2.5 2Q-2022
Validated Boot	2.5 2Q-2023
XCF Storage Constrain Relief	3.1 / 2.5 CD
CF Sizer in z/OSMF CFRM Policy Editor	3.1

z/OS Performance General & WLM & RMF & Monitoring & Analysing Enhancements

Enhancements/New Features 1/3	Since When & Updates
TFP ease of use SOLUT Parameter	2.4 2Q-2021 / 2.5 GA
WLM batch initiator enhancements	2.5 GA
WLM Policy Advisor (z/OSMF)	3.1
AI-powered WLM	3.1
IBM z/OS Workload Interaction Correlator	2.4 1Q-2021 / 2.5 GA
New entitlement structure for IBM z/OS Workload Interaction Correlator	2.5 4Q-2021
z/OS Workload Interaction Navigator Inspector support	2.5 1Q-2023
zWIC I/O data-IOS Support (z/OS component exploitation of z/OS Workload Interaction Correlator is planned to be extended to include I/O Supervisor (IOS), providing clients with 5-second synchronized, micro-summary, enriched I/O data)	3.1

z/OS Performance General & WLM & RMF & Monitoring & Analysing Enhancements

Enhancements/New Features 2/3	Since When & Updates
zHyperWrite - Uncaptured Volume I/O Statistics	2.4 GA
zHyperLink write statistics	2.4 2Q-2020 / 2.5 GA
Faster Db2 active log writes with Media Manager parallel write support using zHyperLink	2.5 4Q - 2021
DFSMS zHyperLink write support for multivolume data sets	2.5 4Q -2022
zHPF VTOC I/O performance	2.4 2Q-2020 /2.5 GA
RMF System Recovery Boost Support Enhancements	2.4 3Q-2020 / 2.5 GA
RMF CF monopolization avoidance support	2.4 3Q-2020 / 2.5 GA
RMF storage class memory (SCM) busy percentage on a z15	2.4 3Q-2020 / 2.5 GA
RMF ICSF, Cyrpto HW Support	2.4 2.4 Q4-2020 / 2.5 GA
New Healtcheck- Verify the HTTPS (AT-TLS) configuration of the RMF Distributed Data Server (DDS)	2.4 4Q -2020 / 2.5 GA

z/OS Performance General & WLM & RMF & Monitoring & Analysing Enhancements

Enhancements/New Features 3/3	Since When & Updates
RMF - enhanced the Transport Class in XCF Singaling Report,more performance statistics	2.4 1Q-2021 /2.5 GA
RMF and z/OS ADG (Advance Data Gatherer) –New	2.5 GA
RMF and ADG optimizes CF data collection	2.5 GA
RMF and z/OS ADG z16 Support	2.5 2Q-2022
IBM SMF Explorer with Python	2.5 4Q-2022
z/OS Data Gatherer SMF REST Services (z/OSMF)	2.5 4Q-2022
RMF (The priced feature) is enhanced with a new, modern, web-based user interface supporting Monitor III Metrics and Reports	3.1
The RMF Distributed Data Server (DDS) is enhanced to increase security and the use of 64-bit for memory constraint relief	3.1
RMF DDS Server is zIIP elligible	3.1
WLM Implicit Long-Term CPU Protection	3.1

JES2 Updates

Enhancements/New Features	Since When & Updates
JES2 new infrastructure – JES2 Policy Based Management (Removing exit needs)	2.4 GA
JES3 to JES2 conversion aids	2.4 GA
single- system image support for policy-based exits	2.4 3Q-2020 / 2.5 GA
JES2 policy enhancements	2.5 GA
JES2 memory usage enhancements	2.5 GA
FTP server JES access control	2.5 1Q-2022
JES2 Policy Persistence (Store policies in JES2 CKPT – new keyword CDINUM)	2.5 GA / 2.4 CD
JES2 SMF 1153 Records for JES2 Resource Usage	2.5 GA
JES2 64 –bit Checkpoint version	3.1 GA / 2.5 CD
JES2 policy extention (New input queue exit 20/50)	3.1
JES2 Job Level Resource Limits and Resource Groups	3.1
JES2 Complaince Data Reporting	3.1
JES2 AI Job Selection	3.1
JES3 is not be delivered in 3.1 (as SOD and announced before)	3.1

SDSF Updates

Enhancements/New Features	Since When
SDSF enhancements Extended Operator Console Display,OMVS options,Link pack directory,Coupling (XCF) members and groups, JES2 Subsystems,JES2 resource monitor alerts,Enqueue by data sets,WLM policy information,SC,RC,RG,Workloads, Job memory objects,Job DD names,JES2 Checkpoint information	2.4 GA
SDSF Recover Boost Support	2.4 3Q-2020 / 2.5 GA
SDSF Several New Enhancements with 2.5 GA	2.5 GA
Key new feature Module Fetch Monitoring Planned to show modules fetched, where, when and who	3.1
Key new feature Significant Event logging Indication of events such as volumes coming on and offline, actions etc	3.1
z/OS 3.1 many new Primary Displays Planned, viewable field	3.1
The browser-based UI (in z/OSMF) is planned to be updated to continue to match function with ISPF	3.1
SDSF is planned to be enabled for the Security Configuration Assistant of z/OSMF to ease security settings	3.1

z/OS Anomaly Mitigation PFA , HZR, ...

Enhancements/New Features	Since When & Updates
z/OS anomaly mitigation	2.5 GA
New Runtime Diagnostics event for detecting and diagnosing active SLIP PER traps	2.5 1Q -2022
Reduce the impact of first failure data capture (FFDC) on a system	2.4 GA
z/OS Diagnostics Analyzer – Sensitive Data	2.4 3Q 2020 / 2.5 GA
MEMLIMIT diagnostics for CICS and Java	2.5 2Q-2022
zAIOps and Runtime Diagnostics integration	3.1
Predictive Failure Analysis (PFA) migration to Semeru 11	3.1

DFSMS – DSS,DFP, HSM, Catalog, OAM, Storage Related Items

Enhancements/New Features	Since When & Updates
IEBCOPY support for PDSE member generations	2.5 4Q-2021
DFSMS archived key support	2.5 4Q-2021
TS7700 CUIR enhancement	2.5 4Q-2021
EzNoSQL APIs	2.5 3Q-2022
Remove temporary catalog aliases Wizard	2.5 4Q-2022

DFSMS-HSM Enhancements/New Features	Since When & Updates
zFS file-level backup and restore capability by DFSMShsm and DFSMSdss backup&restore	2.4 GA
DFSMShsm UNIX File Level Backup and recovery wit EXCLUDE criteria	2.4 1Q-2020 / 2.5 GA
DFSMShsm file mode hosts	2.4 2Q-2020 / 2.5 GA
DFSMShsm recover UNIX files to a new directory	2.4 2Q-2020 / 2.5 GA
Enhanced DFSMShsm EXPIREBV support for UNIX files and directories	2.5 4Q-2021
DFSMShsm support for read-only file systems during incremental backup	2.5 4Q-2021
DFSMShsm UNIX file incremental backup enhancement	2.5 4Q-2021
DFSMShsm TCT full-volume dump	2.5 3Q -2022

zFS & Unix System Services Updates

Enhancements/New Features	Since When & Updates
Application transparency for unplanned outages affecting zFS file systems shared in a sysplex environment (New Mount Option)	2.4 GA
BPXWMIGF for zFS to ZFS (Files that are in use by the application during the movement process are automatically and transparently moved to the target file system without affecting the application)	2.4 GA
Faster mount of zFS file systems (IPL Time Enhancement)	2.5 GA
wildcard character in the aggregate name on the **zfsadm chaggr**	2.5 GA
Warning Capabillity on z/OS UNIX system limits (Change in default of LIMMSG keyword in BPXPRMxx)	2.5 GA
df utility provide the file system size in megabyte increments, instead of bytes, optionally	2.5 GA
New OVIEW utility	2.5 GA
BPXCOPY utility is enhanced to enable file tagging where the target z/OS UNIX file can be tagged with a CCSID	2.5 GA
rm utility with new options protect from recursively deleting files	2.5 GA
BPXBATCH facility has been enhanced with two new keywords, PGMRC and SHRC, to get the proper return code for the submitted job	2.5 GA
Updates in BPXPRMXX syntax checker, to validate ZFS parameters on the ROOT and MOUNT statements, (validation prior to re-IPLing)	2.5 GA
UNIX component trace (SYSOMVS CTRACE) buffer size limit has increased from a maximum of 64 M to 2047 M for improved service	2.5 GA
z/OS UNIX SMF recording function (__smf_record()) has been enhanced to provide extended SMF record support	2.5 GA
NEW ! Data Set File System	2.5 2Q- 2022
su auditing capability by issuing SYSLOGD message	2.5 2Q- 2023
date utility support for Julian date conversion	2.5 2Q- 2023
find utility enhancement to print filenames with a null character	2.5 2Q- 2023

zFS & Unix System Services Updates

Enhancements/New Features	Since When & Updates
grep –r/-R to search directories recursively	3.1
New utilities **readlink** and **banner**	3.1
OpenSSH 8.4p1 (Previously it was OpenSSH 7.6p1)	3.1
XML Toolkit V1.11 included in z/OS Base	3.1
The Xerxes and Xalan XML parsers can now be used within the z/OS Operating system	3.1
Z Shell on z/OS (Zsh)	3.1

zFS & Unix System Services Updates

- **Z Shell (Zsh) on z/OS(New in 3.1 only)**

  A ported version of Zsh v5.8.1 for z/OS 3.1.

  A unix shell that includes command line editing, spelling correction, programmable command completion, shell functions (with autoloading), a history mechanism and more...

- **XML Toolkit has been added as base element (New in 3.1 only)**

  This has been program product, now it is in base, this product is not orderable with z/OS 3.1

- **z/OS OpenSSH is updated to OpenSSH 8.4p1. (New in 3.1 only)**

  Previously, the product was based on OpenSSH 7.6p1.
  In z/OS OpenSSH V3.1, significant new features include the following:
  - •Support is added for FIDO/U2F key authentication, which is standardized support for user-present hardware tokens.
  - •z/OS OpenSSH supports these for verification only where the actual hardware token is not required, such as the following situations:
    - •z/OS SSHD authentication of a remote user with a FIDO/U2F token.
    - •z/OS ssh client verification of a host key, where the server has a FIDO/U2F token.
  - •Less-secure algorithms are either deprecated or removed as defaults:
    - •Diffie-hellman-group14-sha1 is removed from the default KexAlgorithms list.
    - •If ssh-keygen is used to create new OpenSSH certificates with an RSA key, the rsa-sha2-512 algorithm is used by default.
    - •The ssh-rsa (sha1) key algorithm is still supported as a default key algorithm, but is deprecated. It will be removed as a default in a future release.

z/OS Components Continue

BCPii - Enhancements/New Features	Since When & Updates
BCPii LPAR group control support	2.4 GA
A new z/OS BCPii API named HWIREST	2.4 2Q 2021 / 2.5 GA
BCPii HWIREST support for commands from ISV and TSO/E REXX environments	2.5 1Q 2022

zERT- Enhancements/New Features	Since When & Updates
IBM zERT Network Analyzer database administration enhancements	2.4 1Q-2020 / 2.5 GA
BM zERT aggregation recording interval	2.4 2Q-2020/ 2.5 GA
zERT policy-based enforcement	2.5 GA
zERT Network Analyzer z/OSMF plug-in is enhanced to support the use of passphrases as an authentication credential for the network analyzer's Db2 user ID on the plug-in's database settings panel.	2.5 2Q -2022

z/OS Communication Server - Enhancements/New Features	Since When & Updates
Shared Memory Communications Version 2 (SMCv2) multiple IP subnet support	2.4 3Q-2020 /2.5 GA
Notification of availability of TCP/IP extended services - Critical	2.5 GA
Communications Server exploitation of the IBM Function Registry for z/OS (Regularly store information about the maximum number of SNA applications and sessions in the IBM FunctionRegistry for z/OS. Insight into the amount of SNA application workloads executing on z/OS) – Critical	2.5 4Q 2022
SMTPD compatibility enhancements for Communications Server SMTP (CSSMTP) (Migrate from SMTPD- CSSMTP)	2.4 1Q-2020 / 2.5 GA

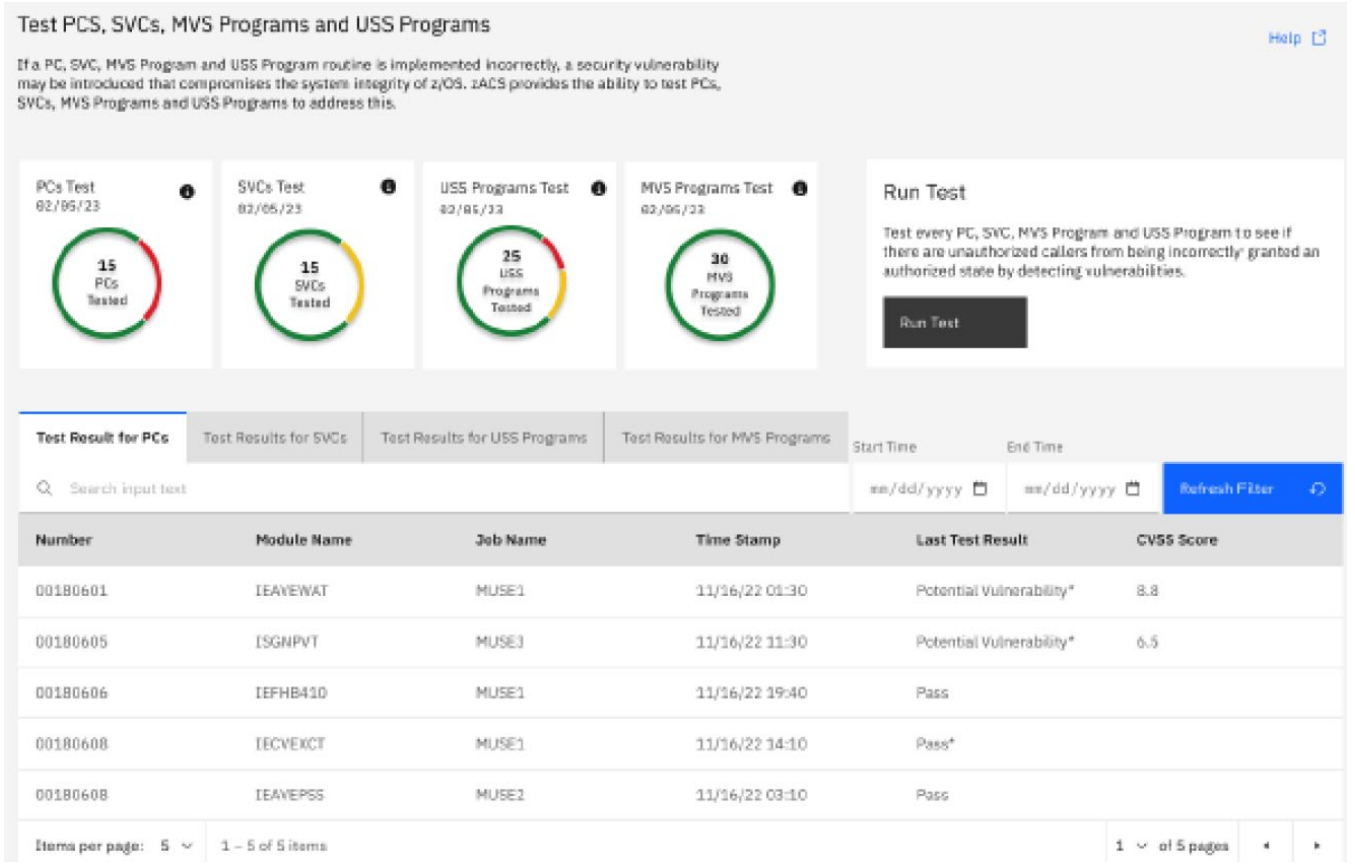
z/OS Authorized Code Scanner and Monitor Priced Feature

z/OS Authorized Code Scanner and Monitor Priced Feature

The IBM z/OS Authorized Code Scanner is an optional priced feature of z/OS that provides system integrity testing in a development/test environment as part of DevSecOps modernization. It scans for Program Calls (PCs) and Supervisor Calls (SVCs) and generates a series of tests that dynamically scan them for integrity.

zACS has extended its scanning ability to include AC(1) code found in MVS data sets and USS files, providing users greater coverage in testing their development/test system for potential vulnerabilities for remediation as needed. **(CD)**

The z/OS Authorized Code Monitor (zACM) is now available, as a non-disruptive tool for production systems, examining ABENDs from z/OS recovery processing and reporting on potential vulnerabilities
found there for remediation as needed. **(CD)**



HSM

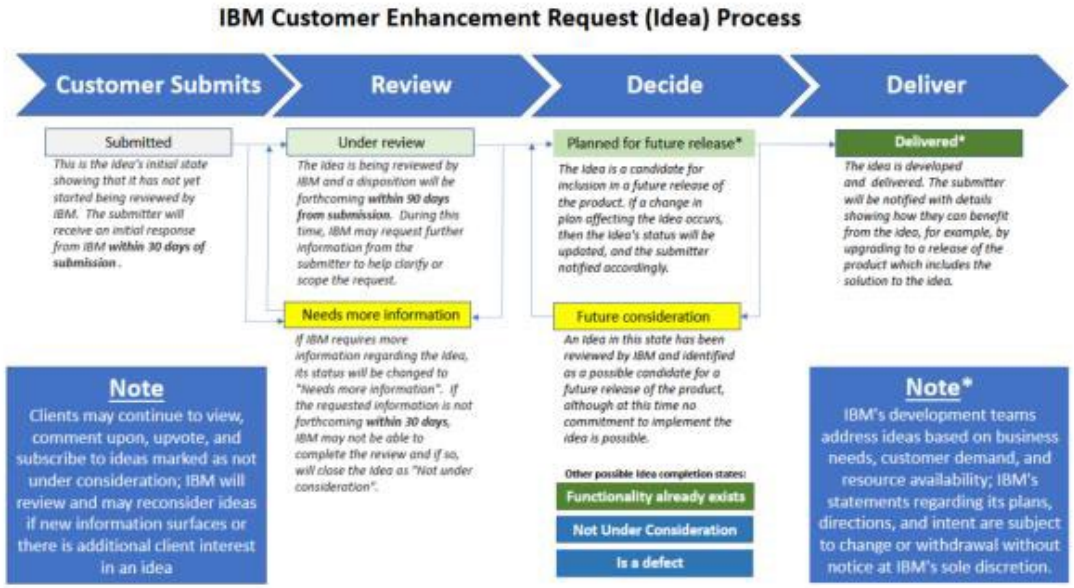
Enhancements to address client RFEs and ideas

Improved access control to DFSMShsmFIXCDS command
Provide controlled access to specific capabilities of the DFSMShsm (HSM) FIXCDS command to allow users to display records but limit who can modify the control data sets.

Improved DFSMShsm Extent Consolidation Configuration
Configure HSM such that extent consolidation only occurs on data sets for which a valid backup exists, providing the ability to recover in case a problem occurs while consolidating the extents.

Task Automation for DFSMShsm ARC0100I messages
Write ARC0100I message to syslog when HSM HOLD and RELEASE commands are issued from TSO or ISPF, to enable system automation to carry out necessary tasks to confirm the request.

Direct DFSMShsm HSENDCMD commands to a specified host
Provide equivalent TSO functionality to ARCHSEND macro.



UNIX file backup / restore enhancements (CD)

Clients want to use the same tools and applications to backup and restore individual z/OS UNIX files residing in z/OS File System (zFS) data sets as other z/OS data sets.Initial support to manage backup and restore of individual z/OS UNIX files is integrated into existing DFSMShsm/DFSMSdssfunctionality, allowing for centralized data management across the z/OS platform.

DFSMShsm UNIX file-level backup and recovery with EXCLUDE criteria (CD)

Unix files can be filtered with a new exclude option that includes directories, specific file names as well as file name patterns. `BACKDS '/u/ibmuser/' RECURSE`
`EXCLUDE('logs/,*.log,*.tmp,a??B.java,/u/ibmuser/app/logs/')`
`hrecover-voX-e'logs/,*.log,*.tmp,a??B.java,/u/ibmuser/app/logs/' /u/ibmuser/`

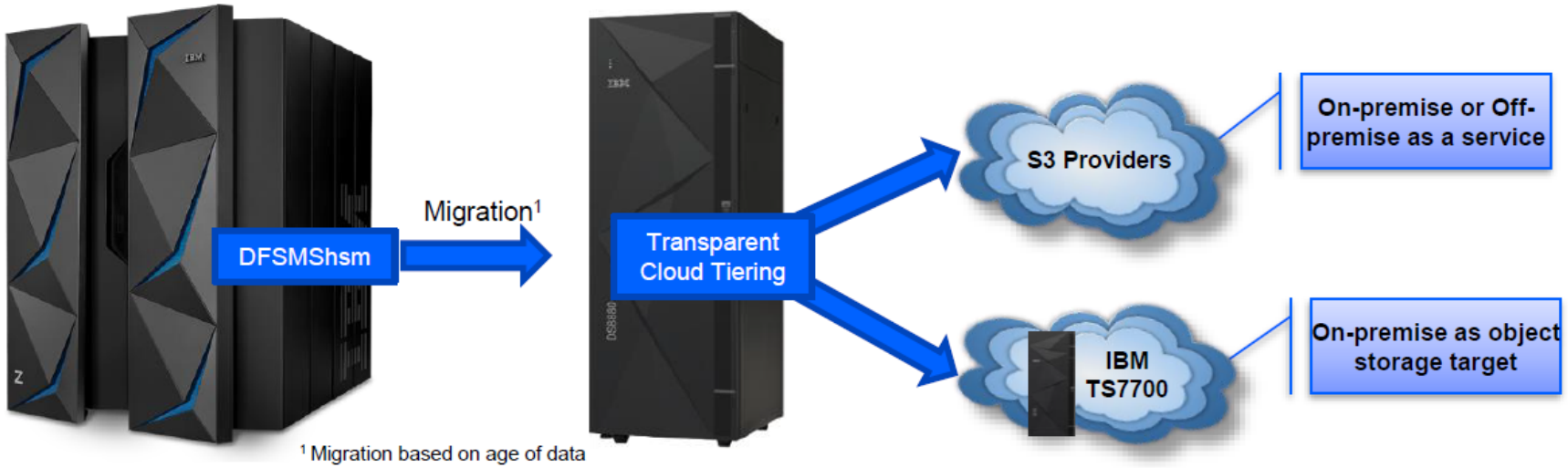
Specify a filename of a file that contains the exclude criteria **(CD 3Q2022)**Exclude criteria in a file works the same as criteria specified in a list on the EXCLUDE keyword. The same file can be used by multiple commands and is easily maintained.

Data Serving & Storage

Transparent Cloud Tiering improves business efficiency and flexibility while reducing capital and operating expenses with direct data transfer from DS8900 to hybrid cloud environments for simplified data archiving operations on IBM Z.

Transparent Cloud Tiering

- Off-loads data movement responsibility to the DS8880 avoiding the need for additional HW infrastructure.
- Dramatically reduces CPU resources to be efficiently used in other business-oriented applications.
- Saves z/OS MIPS utilization by eliminating constraints tied to original tape methodologies:
  - 16K Block sizes, dual data movement, recycle, serial access to tape



Data Serving & Storage

NFS Server Enhancements (CD)

NFS server restart recovery improved management of file handle errors

New AT-TLS security option to allow client certificate handshakes.
Improved authentication and end-to-end encryption

Union File System (CD)

Union file system works on top of the other file systems.
It enables a user to obtain a merged view of one more directories.
This merged view is obtained by accessing the union mount point and gives a single coherent and unified view of files and directories.
It is more of a mounting mechanism than a file system.
Usage: Union file systems are used extensively by containers.
They allow many containers to use one image without having to make multiple copies -saves on disk space.
Any changes made by one container will not affect any other container.

IBM built a Union File System from scratch -This is not a port of a union file system from Linux, but rather one that is purposefully built for z/OS.

DFSMS – Data Set File System

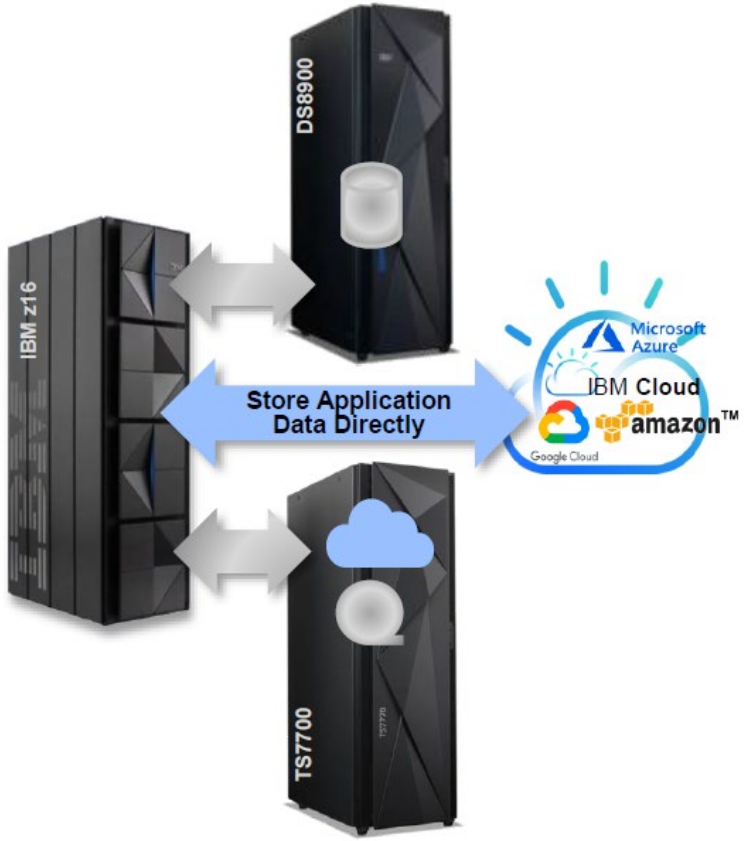
Data Set File System (**CD 2Q2022**)

- A new file system type that will allow customers to access data in data sets from the z/OS UNIX space.
- Enables z/OS UNIX applications, tools, and utilities to use data in data sets in a secure and consistent manner.
- Supports Sequential, PDS, PDSE data sets.
- Supports RECFM = F, FB, FBS, V, VB, U
- Compressed or encrypted data sets are also supported
- Existing cataloged data sets (DASD) can be read and written.
- Data Set File System can also create new data sets or delete a data set or PDS / PDSE member.
- Data set serialization is consistent with serialization done by ISPF edit.
- Access to a data set is governed by user permission to the data set -UNIX permissions are **not used**.
- User needs to know the type of data that is in the data set in order to use it under z/OS UNIX.
- A new class of applications can be developed using this technology.
- New support that allows specification of multiple data set qualifiers for the HLQ directory -useful to reduce scope of data sets being accessed by DSFS (CD)
- Use case scenarios: Use **grep**to search for things in data sets.\Use **vi**to edit data sets \Write data sets into **tar** archives\Make data sets part of a **pax**file**sftp**data sets \ etc…

Data Serving & Storage

Cloud Data Access (CDA)

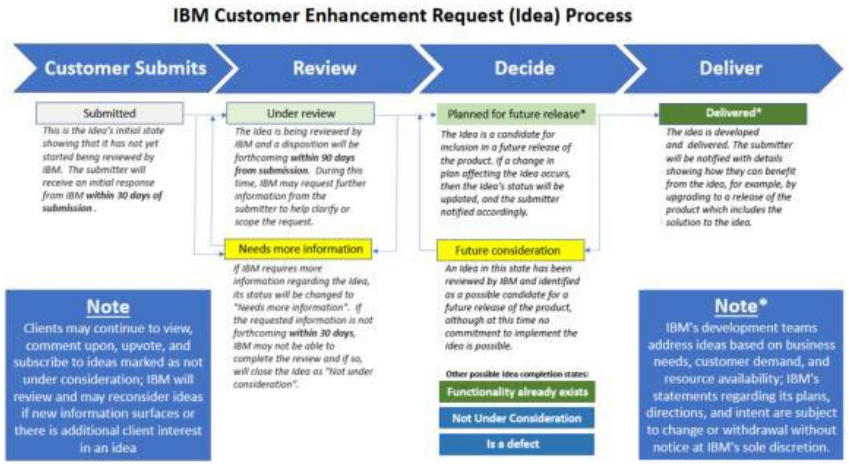
- Provides a simple method to store and share any z/OS data directly onto cloud object storage. Enables S3 / Cloud Object Storage as another tier for z/OS applications.
- Simplified data sharing –reduce and/or eliminate ETL.
- Simplified application development and flexibility with a single API to interact with various Cloud Object Storage providers.
- Simplified authentication with the Provider Configuration File describing the target Cloud Object Storage provider.
- Supported cloud providers include IBM Cloud Object Storage, Amazon Simple Storage Service (Amazon S3), Azure Blob Storage, and Google Cloud Storage.



Catalog

Enhancements to address client RFEs and ideas

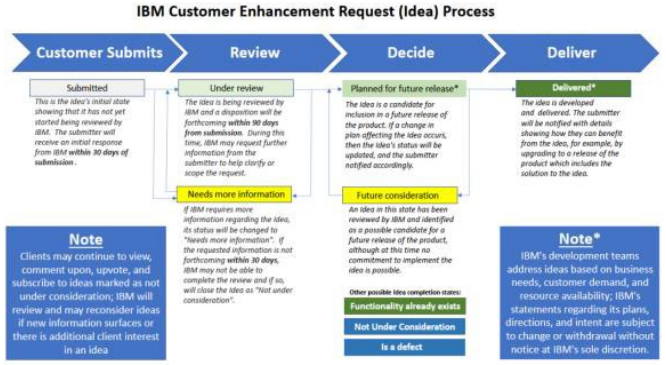
- Enhanced Catalog Recovery
  - Simplified catalog recovery with the use of more granular timestamps in the Catalog SMF records for more accurate merging of updates, and one IDCAMS command that drives the ICFRU recovery.
- MODIFY CATALOG Enhancements
  - Additional information about ICF catalogs and their environment to more effectively manage and maintain them.
  - Updates to the MODIFY CATALOG,REPORT output to indicate the current number of active tasks to provide a more accurate measure of the current activity in the Catalog Address Space (CAS).
  - Updates to the MODIFY CATALOG,ALLOCATED command to optionally filter by catalog name instead of VOLSER could potentially reduce the size of an IEC348I display for more efficient viewing.
- Simplified Catalog Address Space Startup
  - Enable the CAS and full catalog function to be available earlier during system startup and potentially improve the overall time it takes to startup or restart the system.



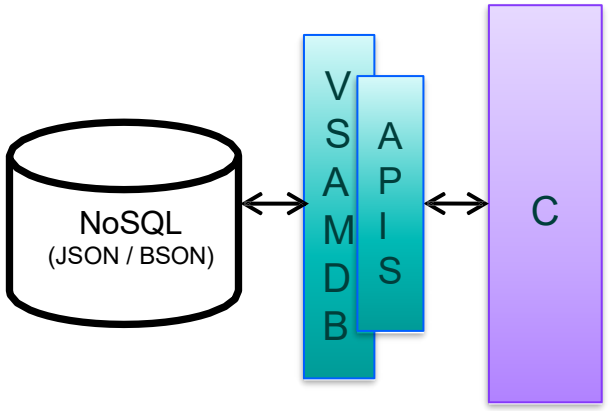
DFSMS

Enhancements to address client RFEs and ideas

- Simplified IGD306I Messages
  - SMS enhancements to clean-up logrec records cut due to internal errors and avoid filling up sys1.logrec datasets.
- Improved Data Set Allocation Processing
  - Display a new message indicating how many candidate volumes are marked as primary, secondary, tertiary, or rejected which can help determine the effectiveness of various configuration settings related to performance.
- Improved SMS Reporting
  - Provide additional message diagnostics to easily identify the datasets not assigned to a storage group so ACS routines can be reviewed and modified to rectify any issues.
  - Provide additional information to SMF 42.6 records to help optimize in-memory buffers for improved performance and utilization.
- SMS Storage Class Enhancements
  - Provide a storage class option that specifies if allocation should prefer or require an allocation to a storage controller that enables FlashCopy to be used as a copy technique.
- Improved SMS Storage Group WRITE Statement
  - SMS ACS WRITE statement will print out the entire list of assigned storage groups, instead of just the first one in the list, to assist in testing and troubleshooting SMS ACS routines.
- Dynamic SMS Exits
  - Install a new version or replace an existing version of SMS ACS installation exits (IGDACSDC, IGDACSMC, and IGDACSSC) without scheduling an IPL, as exits will use dynamic exit services.



Data Serving & Storage



EzNoSQL APIs (CD)

- NoSQL for z/OS provides a key:value document store on z/OS and allows applications the ability to store open standard BSON/JSON (UTF-8) objects.
- EzNoSQL provides a set of modern APIs, with a C-based, key-value interface, to simplify the application effort needed to access NoSQL VSAMDB data sets on z/OS in real-time, at scale, and with consistency.
  - C-based key-value interface to a NoSQL database enables higher level languages and interfaces.

17 August 2023 Update : Java support for EzNoSQL is now available!
The support is provided in z/OS release 2.4 and above with APARs OA64018 and OA64811.

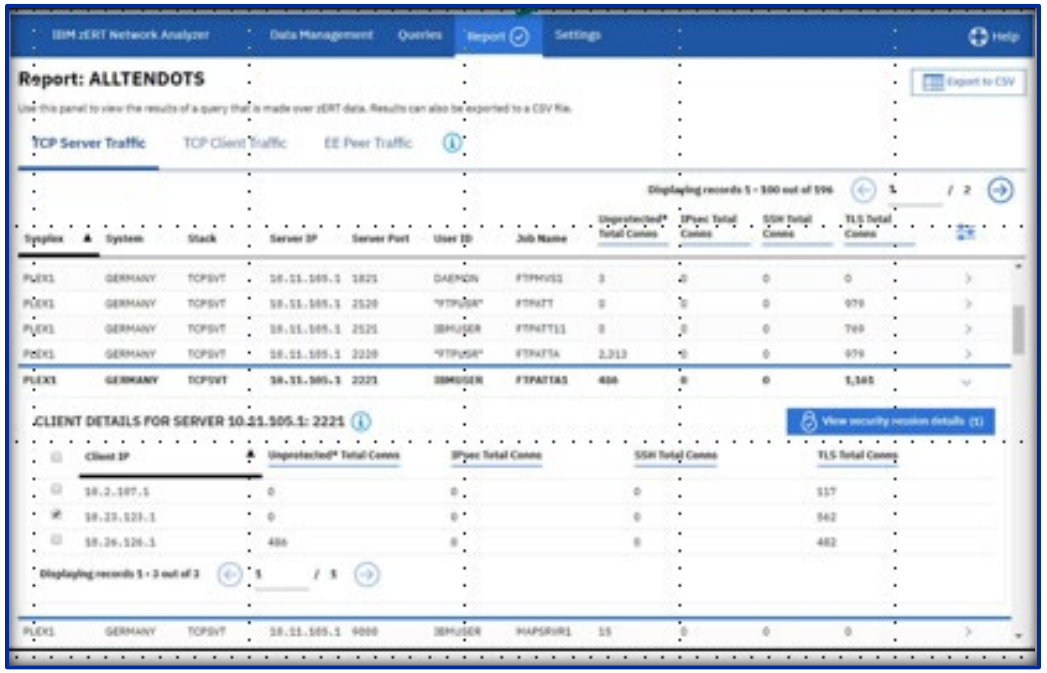
Content Solution website (https://www.ibm.com/support/z-content- solutions/eznosql) has everything needed to get started!

z/OS Encryption Readiness Technology - zERT

z/OS Encryption Readiness Technology (zERT)

zERTNetwork Analyzer, a z/OSMF plug-in, that provides an easy-to-use web UI for analyzing zERTdata reported in SMF 119 subtype 12 records

- Significantly improves Time-To-Value of gaining insights into zERTdata and driving a Pervasive Encryption strategy for all z/OS network communications
- **With z/OS 3.1, the zERTNetwork Analyzer is enhanced to automatically upgrade application and database settings from those configured for V2R4 or V2R5 releases.**
- Additionally, new tooling is provided to easily upgrade an existing V2R4 or V2R5 zERT Network Analyzer database to the 3.1 schema.



zERT security improvements (CD 2Q2022)

- Support for passphrases
- Support for saving DB2 users password or passphrase values

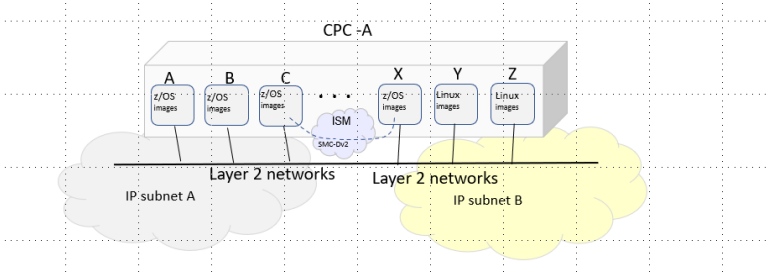
zERT policy-based enforcement – Critical (2.5 GA)

In z/OS 2.5, Communications Server extends zERT to provide enforcement of your network encryption standards through policy-based rules that describe different levels of cryptographic protection along with actions to take when TCP connections match those rules.
zERT rules and actions are processed by the Communications Server Policy Agent and are enforced by the TCP/IP stack. This feature enables immediate notification through messages, auditing through SMF records, and even automatic termination of connections when questionable or unacceptable cryptographic protection is used

Network

Shared Memory Communications Version 2 (SMCv2) multiple IP subnet support

- SMC –Shared Memory Communication is a more efficient protocol for sending data to and from z/OS.
- An improved protocol SMCv2 allows for multiple IP subnet support.
  - SMC-Rv2 is used over IBM RoCE Express2 adapters beginning with the IBM z15.



Communications Server support for RDMA over Converged Ethernet (RoCE) Express3 (CD)

- z/OS 3.1 Communications Server extends the Shared Memory Communications over Remote Direct Memory Access (SMC-R) function to support the next generation IBM RoCE Express3 feature. **The IBM RoCE Express3 feature is designed to allow TCP/IP stacks on different LPARs within the same central processor complex (CPC) to leverage the power of these state-of-the-art adapters to optimize network connectivity** for mission critical workloads by using Shared Memory Communications technology.

Application Development

ISPF Enhancements

- ISPF support for PDSE V2 member generations
  - Support specification of generation numbers in the Edit and View panels and primary commands BROWSE, EDIT, and VIEW.
  - A “generation list” can be viewed for members with generations, allowing the use of line commands to access commonly-used functions for desired generations.
  - Select ISPF services are also enhanced with additional member generations information.
- ISPF Allocate Data Set panel adds ‘dataset key label’ in support of pervasive encryption.
- z/OS UNIX Directory List Utility now supports case-insensitive sort option
- The settings from the ”Edit Color Settings” panel are available programmatically through ISPF variables. (CD)

zlib encryption Enhancement

- Support for **CRC-32** - a practical algorithm commonly used in digital networks and storage devices to detect accidental changes to digital data.

New C runtime APIs and header constants

- New APIs and constants to facilitate the porting of UNIX/Linux programs to z/OS

z/OS Version & CD Announcement Letters

IBM z/OS 3.1 GA Announcement	8 August 2023
Preview: IBM z/OS 3.1	28 Feb 2023
IBM z/OS V2.5 2Q 2023 enhancements	20 June 2023
IBM z/OS V2.5 1Q 2023 enhancements	21 March 2023
IBM z/OS V2.5 4Q 2022 enhancements	15 November 2022
IBM z/OS V2.5 3Q 2022 enhancements	20 September 2022
IBM z/OS V2.5 2Q 2022 enhancements	21 June 2022
IBM z/OS V2.5 1Q 2022 enhancements	15 Mart 2022
IBM z/OS V2.5 4Q 2021 enhancements	23 November 2021
z/OS 2.5 GA Date : 30 September 2021	
IBM z/OS V2.5 GA Announcement	27 July 2021
Preview IBM z/OS V2.5 Announcement	2 March 2021

GA Date: September 29, 2023

At the end of each announcement, you can find links previous ones

IBM Continuous Delivery Model Announcement

IBM z/OS Continuous Delivery Redpaper

z/OS System Recovery Boost Summary

Stage	Boost Class[2]	Description	Duration	Usage	Trigger
1	IPL Boost and Shutdown Boost z15, z16	IPL / Startup ShutDown GDPS® Enhancements[3] Standalone Dump	60 minutes At most 30 mins N/A Dump time or max 60 mins	Once per LPAR Once per LPAR N/A Speed boost only	IPL PROC IEASDBS GDPS Script IPL SADMP
2	Recovery Process z15, z16	Sysplex Partitioning Recovery CF Structure Recovery CF DataSharing Member Recovery Hyperswap Recovery	2 mins 1 min per structure 1 min per lock structure 2 mins	30 mins in 24 hours per eligible LPAR Shared Among Invocations Only 2 Reserved zIIPs brought online	Automatic Automatic Automatic Automatic
3	Recovery Process z16	SVC DUMP Middleware Start/Stop/Recycle Hyperswap load boost	2 mins[1] 5 mins 2 mins		CHNGDUMP RPBMINSZ= WLM Policy Automatic

[1] In order to see a benefit from zIIP Boost, you will need to turn on dump optimization, via the CHNGDUMP SET,SDUMP,OPTIMIZE=YES command.
[2] WLM will implicitly set all single-period importance 1 or 2 work as CPU Critical for all boost classes for duration of boost
[3] GDPS provides configuration and orchestration parallelization, no SRB related activities

IBM z16 Highlights – z/OS Validated Boot

Validated Boot for z/OS (CD 2Q2023)

- z16 and z/OS are providing a solution for Validated Boot for z/OS, which will allow IPL-time validation of digital signatures for certain z/OS executables

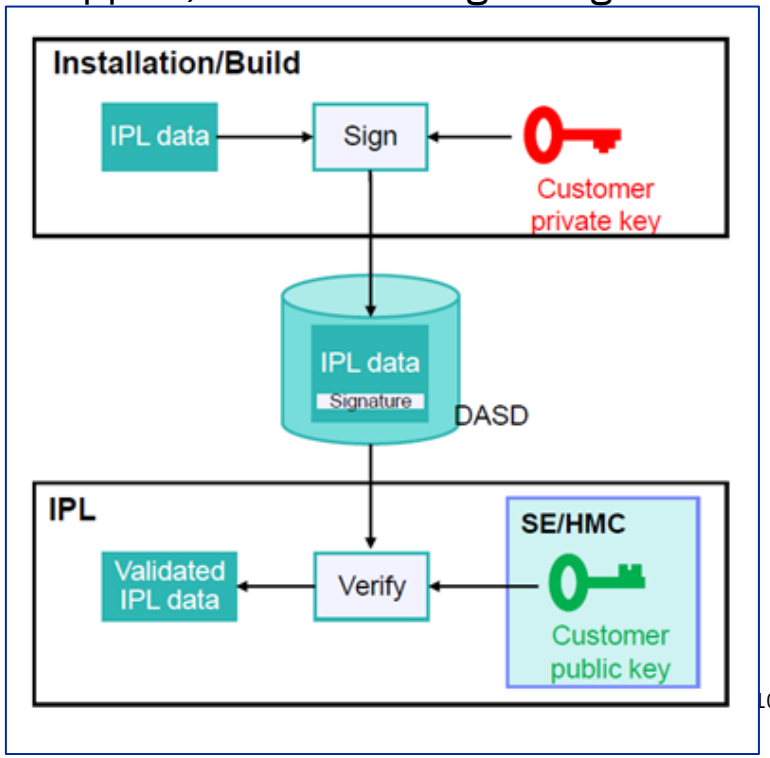
- It uses digital signatures to provide an IPL-time check that the z/OS system, including z/OS nucleus and LPA load module executables, is intact, untampered with, and originates from a trusted source from the time at which it was built and signed.(Digital Signatures for z/OS Software Packages via GIMZIP)

- It works together with the Digital Signatures for z/OS Software Packages via GIMZIP support, which uses digital signatures to validate the delivery of code packages from the software vendor to the client

- This enables the detection of subsequent unauthorized changes to those software executables, whether those changes be accidental or malicious in nature.

- Designed to meet standards such as the National Information Assurance Program (NIAP) Protection Profiles 4.3.

- CLPA is always enforced for Validated Boot for z/OS



zCX Enhancements

zCX - z/OS Container Extensions

z/OS Container Extensions – Run Linux Containerized workloads on z/OS!

- z/CX delivered first with z/OS 2.4 (July 2019 Announced)
- z/OS Container Extensions provides a virtual appliance for running Linux on Z workloads on z/OS
- The **same binary** container images that run on Linux on Z under z/VM or zKVM will run in zCX
  - No porting is typically required from Linux on Z
- The open mainframe project Ambitus provides an ecosystem for zCX
- Scalable to:
  - Up to 64 servers per z/OS image
  - Up to 1 TB of guest memory per server
  - Up to 245 virtual devices per server
    - Disk devices up to 1TB each
  - Up to 1000 containers per server
  - zIIP eligibility - 98%+ ziip offload in lab measurements*
- A self service trial is available to all z/OS customers, after 90 days purchase Container Hosting Foundation product to continue using zCX

For more information, see the zCX content solution (https://www.ibm.com/support/z-contentsolutions/container-extensions/).

zCX - z/OS Container Extensions

zCX Currency and LDAP Function (CD – Announced 2.5 November 2021)

- zCX large UID and GID range support.
- zCX Linux kernel is updated to use 5.4.0-81-generic.
- zCX Docker update and latest container runtime packages

zCX Workflow Recovery (CD – Announced 2.5 November 2021)

- zCX support to back out disk allocation failures

zCX NFS persistent storage (CD)

- Securely store and access stateful data using z/OS NFS server

zCX Support for WebSphere Hybrid Edition (CD)

- IBM zCX Foundation for Red Hat OpenShift can now support WebSphere Hybrid Edition co-located with z/OS

zCX - z/OS Container Extensions

IBM zCX Foundation for Red Hat OpenShift – 5655-ZCX

- Bringing Red Hat OpenShift Benefits to z/OS
- Key value
  - IBM zCX Foundation for Red Hat OpenShift that provides enterprise-level container orchestration and management capabilities around containerized software.
  - Clients can extend and modernize their native z/OS ecosystem through an agile and flexible deployment of Linux on Z applications in a self-contained Red Hat OpenShift cluster on z/OS while exploiting z/OS Quality of Service.
  - Enables Red Hat OpenShift applications to run on z/OS.
- Key information
  - Entitlement to Red Hat OpenShift is included in the purchase of IBM zCX Foundation for Red Hat OpenShift via ShopZ
  - The license for Red Hat OpenShift on z/OS (via zCX) is non-transferable between zCX and Linux on Z
  - Committed Term License options (1,3, and 5 years)
  - Price is based on zIIPs (not IFLs, as zCX and zCX for OpenShift do not run on IFLs)
  - Priced per core (this is comparable to OpenShift on Linux on Z)

Products like IBM Security and Compliance Center, IBM WebSphere Hybrid Edition, etc. will pre-req this new product.

zCX - z/OS Container Extensions

zCX for OpenShift shared persistent storage support (CD)

- IBM Storage Fusion, also known as Spectrum Fusion, provides highly scalable, resilient, enterprise- grade, persistent data storage options leveraging Red Hat OpenShift Data Foundation (ODF).

- It is now supported in zCX Foundation for Red Hat OpenShift.

- Clients that are licensed to deploy and use IBM Storage Fusion (5900-AOY) today can enjoy the benefits of enterprise-grade data storage and protection services on IBM zCX for OpenShift running on z/OS.

Containers – Kubernetes – OpenShift & z/OS System Programmers

For mainframe teams, who like to get ready for z/OS containers, you will be surprised how familiar subject it is for you to deal with Kubernetes and OpenShift as well.

If you are system programmer who manage System Automation and similar Automation products , it is not much different from managing perspective.

For Kubernetes , Container experts, Container is Container whether it is in mainframe or distributed, there seems no change for their knowledge when managing containers running on z/OS even with nicer capabilities.

Juergen Holtz from IBM created this table and shared in his blog.

Here is one nice blog that shows terms in each management product Kubernetes Vs System Automation. You can find more in his blog here.

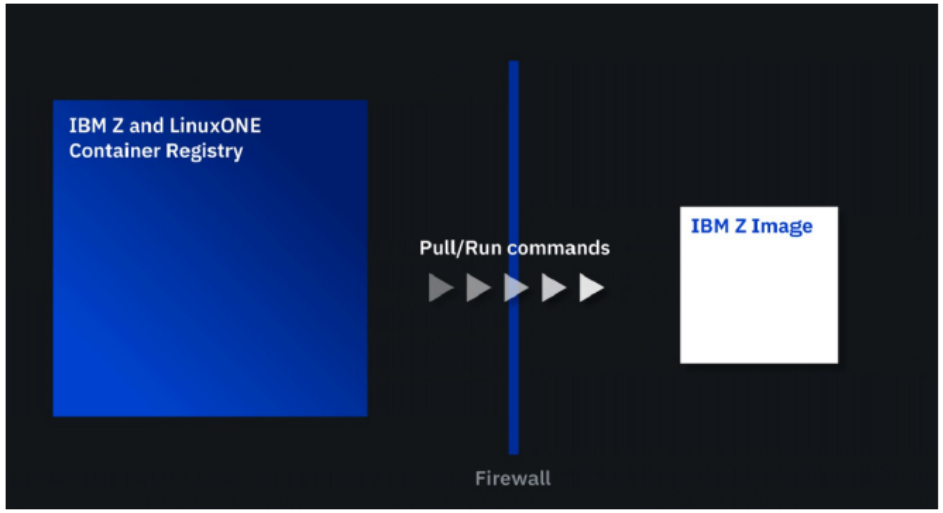
Kubernetes	z/OS & System Automation
Cluster	Sysplex, SAplex
Node	z/OS system
Pod	BASIC APG and APL
Deployment	SERVER APG
High Availability, scalability, rolling updates	SERVER and MOVE APG ▪ Availability targets ▪ Rolling recycle
Declarative management	Policy, goal-oriented automation

Linux One & IBM Container Registery

IBM Z® and LinuxONE Container Registry contains an ever-growing collection of common Open Source images that are used to create new workloads. Providing a trustworthy channel that enables IBM zSystems clients running z/OS®, Linux®, and LinuxONE to fully participate in the Open Source ecosystem

Benefits of the IBM Z and LinuxONE Container Registry

- Images are built from source - no un-intended binary payloads
- Images are scanned for known vulnerabilities with reports provided
- Hashes for each image are published for reference and secure image pulls
- Free of charge



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z/OS Containers (SOD)

- In June of 2020 IBM® made the following statements of general direction:
  - *IBM intends to deliver a container runtime for IBM z/OS® in support of Open Containers Initiative (OCI) compliant images comprising traditional z/OS software.*
  - *IBM intends to deliver Kubernetes orchestration for these containers on z/OS.*

- z/OS intends to provide the basis for future support of an OCI container runtime and Kubernetes container orchestration for **IBM z/OS applications and workloads**. This will enable clients to adopt a container based cloud native strategy for application development and operation of mission critical z/OS applications

- As a future item in z/OS - z/OS Containers intends to provide an industry standard container experience for z/OS that is consistent and familiar to application developers.

IBM z/OS Change Tracker: *Software solution for system management* (CD 2Q2022)

IBM z/OS Change Tracker is a comprehensive configuration change management tool for tracking, controlling, and managing changes in software across the z/OS platform

Real-time software configuration change tracking and control for system libraries

Identify and protect against undesired configuration changes

Enhance system resiliency with automatic data set versioning and recovery

IBM z/OS Change Tracker helps clients achieve a more secure, resilient IT system.

Software management

z/OS System Programmers can easily identify and control configuration files associated with software executables. Plan for a new strategic Change Tracker plug-in on z/OSMF.

Resiliency

Member-level backup and recovery for immediate rollback to undo unwanted/unplanned changes.

Compliance

Reliable, comprehensive reports on hardened system configuration changes to satisfy audit requirements.

Only available for z/OS 2.5 and 3.1

Self-service 90-day trial planned with APAR PH51954.
For more information, visit the z/OS Change Tracker content solution page.

IBM Dashboard For Resilience (SOD)

SOD -Resilience Dashboard

IBM intends to deliver a new dashboard for resiliency.

This solution will be a z/OSMF plug-in that is expected to provide clients with capabilities to summarize their resiliency posture.

The solution will help enable clients to proactively address resiliency deficiencies and to help to do better planning for future improvements on the resilience of their business environment.

This is a Statement of Direction. (SOD)

- *You may reach out to me to connect with Anastasiia and her team , they like to hear your feedbacks and ideas*

SOD - Resilience Dashboard

LPAR A

System Currency

Insights summary

Resiliency features implemented

All resiliency features

Data table description

Export

Name	Status	Category	Requirements
z/OS Automatic Restart Manager	Not implemented	Faster recovery after failure occurs	z/OS 2.5 or later
Sysplex Failure Management	Implemented	Faster recovery after failure occurs	z/OS 3.1 - Upgrade available
System Status Detection Partitioning Protocol	Implemented	Faster recovery after failure occurs	-
System Managed Duplexing	Not implemented	Faster recovery after failure occurs	z/OS 2.5 or later
Message Flood Automation	Implemented	Failure avoidance	-

Description: z/OS® Automatic Restart Manager (ARM) is a z/OS recovery function that can improve the availability of your queue managers. When a job or task fails, or the system on which it is running fails, ARM can restart the job or task without operator intervention.

IPL Required?: Yes **Dynamic info 2:** Dynamic info **Dynamic info 3:** Dynamic info **Dynamic info 4:** Dynamic info **Dynamic info 5:** Dynamic info **Dynamic info 6:** Dynamic info

SOD -Resilience Dashboard

Best Practices / Sysplex A

Sysplex A

Use this view to evaluate health check information at a Sysplex level

[redacted]

Insight summary

Health Check Summary →

Deviation
over the last 2 months

Health check exception trend
over 1 year

Search for LPARs

Export

Name	Health checks summary	Exception deviation	Exception health check severity	PFA Checks	GDPS summary	GDPS exception deviation
LPAR A	1 Success 3 Exception 10 Disabled	↑ 1 Exception	1 High severity 2 Medium severity 0 Low severity	4 Active 5 Inactive	1 Success 3 Exception 10 Disabled	– No change
LPAR B	1 Success 3 Exception 10 Disabled	↓ 1 Exception	1 High severity 2 Medium severity 0 Low severity	4 Active 5 Inactive	1 Success 3 Exception 10 Disabled	↑ 3 Exception
LPAR B	1 Success 3 Exception 10 Disabled	– No change	1 High severity 2 Medium severity 0 Low severity	4 Active 5 Inactive	1 Success 3 Exception 10 Disabled	↑ 2 Exception

z/OS Anomaly mitigation enhancements

z/OS Anomaly mitigation client pain points

- Improve client triage of anomaly observations and predictions with IBM System Automation mechanism to capture report details, including recommended actions
- Predictive failure analysis (PFA)
  - Predicts health based on velocity metrics, JES2 spool consumption, common storage consumption, above the bar private area etc.
- Runtime Diagnostics (RTD) enhancements
  - A New REST API will expose RTD data to other management products.
- Detection of active SLIP/PER events enabled. **(CD 1Q2022)**

zWIC Workload Interaction Correlator

zWIC–Workload Interaction Correlator Priced Feature

A priced feature of z/OS that implements a facility to report on high frequency events and can be used to improve diagnosis on z/OS
Addresses the problem of capturing data on a production system running under load by providing an efficient way to capture and report on various diagnostic items
Input/Output (IOS) information is planned to be added to zWIC.
IBM priced product IBM z/OS Workload Interaction Navigator can be used to visualize the data

zWIC is now entitled with RMF or the Advanced Data Gatherer (ADG) feature, available (CD 4Q2021) **For details see next slide**

Announce(IBM z/OS Workload Interaction Navigator V1.1)

Collect SMF 98 Records!. They are very useful!

Critical Ordering Changes

- **Do not forget to order if you need z/OS Security Level 3**
  z/OS Security Level 3
  - Communication Server Security Level 3
  - IBM Tivoli Directory Server Security Level 3
  - Network Authentication Service Level 3
  - System SSL Level 3

  Note that Communication Server Security Level 3 optional unpriced export controled feature is now part of the z/OS Security Level 3 feature
- **IBM JES3 and BDT Priced Features**
  - These prices features (as well as BDT Base element) have been removed from z/OS 3.1
  - JES2 will be installed into the z/OSMF Portable Software Instance base z/OS SMP/E zone and is not allowed to be removed.
- **z/OS Alternate Base**
  z/OS Alternate Base has been removed. This had been provided as alternate usage of Communication Server, which are no longer applicable
- **DFSMStvs is part of the z/OS Base now**
  DFSMStvs priced feature is now part the z/OS Base and is entitled to use as part of z/OS Base
- **XML Toolkit has been added as base element**
  This has been program product, not that it is in base, this product is not orderable with z/OS 3.1
- **IBM z/OS Change Tracker is new priced feature in z/OS 2.5 and 3.1**
- **From previous releases , continue with z/OS 3.1**
  Enabling z/OS Advance Gatherer Feature also implicitly enables z/OS WIC (Workload Interraction Correlator) Feature
  Ordering the RMF Feature causes z/OS Advance Gatherer feature to be enabled (More in future slides)

Update Your Check Customization (Health Check Updates)

Update your check customization for modified IBM Health Checker for z/OS checks (Recommend)

Changes that IBM makes to the checks provided by IBM Health Checker for z/OS can affect any updates you might have made.

New in z/OS V2R5:
VSM_CheckRegionLoss
RACF_ADDRESS_SPACE
RACF_ERASE_ON_SCRATCH
RACF_PROTECTALL_FAIL
RACF_PTKTDATA_CLASS
RACF_SYSPLEX_COMMUNICATION
IOS_ENDPOINT_SECURITY_LCUPATHS
ZOSMIGV2R5_NEXT_CS_OSADLH
ZOSMIGV2R5_NEXT_CS_LSA

Changed in z/OS V2R5:
RACF_SENSITIVE_RESOURCES
XCF_TCLASS_CLASSLEN

New in z/OS 3.1:
ICSF_STATUS
ICSF_CLEAR_KEYS
SUP_ASVT_ABOVE_16M

Changed in z/OS 3.1:

RACF_PASSWORD_CONTROLS (added password phrase interval)

z/OS Workload Interaction Correlator (WIC)

z/OS Workload Interaction Correlator enables z/OS components and middleware to generate cost-effective and enriched summary data. In z/OS 3.1:

Clients on z/OS V2.4 or later with an RMF license or z/OS V2.5 or later with an ADG license are entitled to use the z/OS Workload Interaction Correlator at no additional charge. (CD 4Q2021)

For more information on this entitlement and to view IBM recommended best practices for proactive problem diagnosis, see this IBM Best Practice: Always Collect Correlator SMF Records flash.

z/OS Workload Interaction Correlator support for z/OS Workload Interaction Navigator Inspector enables subject matter experts to **proactively identify workload anomalies so they have an opportunity to diagnose and address these anomalies before workload impacts, critical situations, and outages occur.** Correlator enables Inspector analysis over the last 8 weeks to transform activity anomalies with context into anomaly signatures and correlate and prioritize them based on workload resilience risk.

z/OS component exploitation of z/OS Workload Interaction Correlator has been extended to include I/O Supervisor (IOS), providing clients with 5-second synchronized, micro-summary, enriched I/O data. This enhancement provides subject matter experts, using IBM z/OS Workload Interaction Navigator, the insights needed to reactively diagnose and proactively avoid I/O-related workload impacts, critical situations, and outages.

Record Provider	SMF Record Type.Subtype	Min Hardware Requirements	Min Software Requirements	License Requirements
z/OS Supervisor	98.1	None	z/OS 2.2 with APAR OA55887 z/OS 2.3 with APAR OA57165 z/OS 2.4 or 2.5 with APAR OA62268	None
CICS	98.1024	z14	z/OS 2.3 with APAR OA57165 z/OS 2.4 or above with APAR OA62268 CICS 5.4 or above with APAR PH16392	Correlator[1]
IMS	98.1025	z14	z/OS 2.3, IMS 15 with APAR PH15062	Correlator[1]
Db2	100.n*	None	Db2 v12 with APAR PH18658	None

* Indicates all SMF record subtypes

[1] Indicates an IBM z/OS Workload Interaction Correlator license is required to generate this Correlator record. With Correlator Entitlement, customers running z/OS 2.4 and above with a Resource Monitor Facility (RMF) license or z/OS 2.5 with an Advanced Data Gatherer (ADG) license are entitled to a Correlator license at no additional cost. Otherwise, customers must purchase a separate Correlator license to generate this Correlator record.

Collect SMF 98 records

New Best Practice

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