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z/OS 3.2 User Experiences

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Our Environment

- Small, but mighty.
- z16-AGZ (3932) w/ 2 HMAs, 2 Cryptos, 3 CPs, 1 ICF, 1 IFL, 1 zIIP
- Various LPARs configured including:
  - Our z/OS primary parallel sysplex (PHXHQ)
    - Bronzeplex with multi-image JES2 and JES3plus® JESplexes
    - Mixed z/OS releases during the early test process
    - Eventually all are migrated to new z/OS
  - z/VM LPAR running numerous guests including:
    - New z/OS in a stand-alone system
    - New z/OS in a virtualized parallel sysplex
    - Two virtualized CFs and two z/OS images
- Storage
  - FICON-attached IBM DS8882F DASD
  - FICON-attached Optica zVT 3000i VTS

No ServerPac or z/OSMF-based Install

- During early testing, we install using the z/OS Early Test Program (ETP) system. After GA, we install using the z/OS ADLT (ADCD for Local Tape) system.
- Both installs involve restoring DSS backups of pre-installed systems.
- These install techniques have no relevance at all to clients that install products from ServerPac or CBPDO.
- Despite that, we do have experience with z/OSMF installations. In September 2019, PSI delivered the first-ever mainframe software product installed using z/OSMF and we continue to innovate in this space.

z/OSMF Workflow-Driven Installation

Looking for a modern, simplified approach to software installation on the mainframe? Join us as we take a look at a recently emerging mainframe strategic initiative using z/OSMF Workflows and Software Management. These tools provide a guided, web browser-based approach to software installation that increases productivity, facilitates training and reduces the possibility of errors.

This webinar will demonstrate a z/OSMF workflow-driven installation from downloading a product to running it for the first time.

Speaker

Ed Jaffe
Chief Technology Officer

Announcement Summary (AD25-0005)

- Fueling innovation and growth with AI
  - z/OS now supports the IBM z17 Telum II processor, the IBM Z Integrated Accelerator for AI, and the IBM Z Spyre Accelerator card.
  - The IBM Z Deep Neural Network Library (zDNN) now supports the IBM Telum II processor on IBM z17 systems. zDNN is packaged both for z/OS and Linux on IBM Z, which makes it usable in zCX.
  - New Object Access Method (OAM) REST APIs have been delivered.
  - Python EzNoSQL APIs now join existing C and Java APIs to create NoSQL JSON key-value databases, and access them in real-time, at scale, with the transactional consistency familiar to z/OS VSAM.
  - IBM Enterprise COBOL for z/OS 6.5 introduces support to connect to and access an EzNoSQL database, allowing interoperability between Python, Java, C, Assembler, and COBOL programs.
- AI-infused capabilities of z/OS
  - The configuration workflow for the AI Framework for IBM z/OS has been improved.
  - The AI Base Component for IBM z/OS (AIB) instances, which handle communication between core z/OS components and the Machine Learning element in AI Framework for IBM z/OS, now registers with Automatic Restart Management (ARM).

Announcement Summary (AD25-0005)

- AI-infused capabilities of z/OS (*continued…*)
  - AI System Services for IBM z/OS 1.2 includes Machine Learning for IBM z/OS 3.2 Core Edition with functionality and support for IBM Semeru 17, as well as an AI Framework Upgrade workflow. For additional information about AI System Services 1.2, see Software Announcement AD25-0932, dated 3 June 2025.
  - AI-powered WLM batch initiator management is improved. With the functionality in z/OS 3.2, pattern prediction of job service unit consumption is integrated into the model, which allows initiators to be started even faster and still ensure stable system utilization.
  - The z/OSMF AI Control Interface (AICI) task has been enhanced to introduce data visualization for AI-powered WLM batch initiator management. The visualization allows the user to compare the number of active batch initiators managed by WLM to the initiators predicted by AI in simulation mode.
  - An AI-infused capability in z/OS 3.2, AI-powered network packet batching, optimizes the communications between the TCP/IP stack and the OSA (initially OSD only) network interface, helping to reduce network CPU overhead with minimal impact to transaction latency. This capability is planned to be available in 4Q2025. See the statement of direction.
  - IBM SMF Explorer with Python is a data access and analysis toolkit designed to help clients access System Management Facility (SMF) data and extract insights leveraging Python and Jupyter Notebooks. SMF Explorer with Python now supports SMF type 30 records that include information related to address spaces and job activities. The extended Python support allows for more types of SMF data to be analyzed through contemporary AI toolkits. With z/OS 3.2, SMF Explorer can run in z/OS UNIX, which better facilitates analysis for clients who prefer that their system data remains on z/OS.

Announcement Summary (AD25-0005)

- Simplifying Systems Management
  - A new z/OSMF Storage Management Plugin that provides the display of SMS structures in the active configuration as well as non-active Control Data Sets (CDSs).
  - Numerous changes have been made to the z/OSMF data set and file search tool, including:
    - Display of informational data set attributes such as volume, track, record format, block size, and more, as well as additional informational attributes of Job Output.
    - Support for remote system (and sysplex) data sets and files.
    - Enhancements to the compare view, allowing users to compare files from different systems, uncataloged data sets, and to change the attributes of files directly from the compare editor.
    - z/OSMF Desktop editor support for syntax highlighting of Python programming language.
  - z/OSMF software update and management functions allow better selection of available fixes and maintenance. Performance improvements have been made to HOLDDATA gathering, and users can now select from a list of received PTFs and control which SOURCEIDs are used. Users can also start a software update process from external applications using a z/OSMF application link.
  - A REST API to query data stored in SMPCSI data sets has been added to z/OSMF Software Management. Also, a set of REST APIs to install software updates has been added which can be used in high level languages or driven with automation through corresponding Ansible support in the ibm_zosmf collection.
  - z/OSMF has added REST APIs to greatly simplify the management of Parmlibs by driving consistent syntax validation of many z/OS Parmlib members. Users can use one API call to identify possible Parmlib syntax errors before using those Parmlib members in their configuration.

Announcement Summary (AD25-0005)

- Simplifying Systems Management (*continued…*)
  - The z/OSMF Workflows task now supports dynamically reading external file templates that contain JCL, REXX exec, or Shell scripts when executing workflow steps. This support is designed to help users create more robust and adaptable workflows for orchestrating their z/OS tasks.
  - In z/OS 3.2, Resource Management Facility (RMF) priced feature has added support for WLM AI Initiator and Implicit CPU protection. Also, the PAGING Postprocessor Report has been enhanced to include Dedicated Memory metrics.
  - z/OSMF WLM Policy Advisor provides a user experience with an intuitive way to analyze the WLM service definition. A dashboard view links to focus areas for further analysis. Additionally, users can directly search for SMF performance data and load from multiple data sets in a single step.
  - The DFSMSrmm (RMM) priced feature z/OSMF plugin provides a customizable Dashboard view that presents information on the RMM address space and subsystem and is customizable with specific data that a user would like to have at a glance. Additionally, it provides the ability to generate, view, and download RMM extended reports based on shared templates with a flexible interface for sorting and filtering. In addition, RMM is enhanced to improve search capabilities allowing for scalable searching and providing the ability to do queries and reporting in a more efficient way.
  - z/OSMF now has the capability to gather certain product usage information, including system operational data. This information can be stored and used for reporting purposes by the client. For instance, using this information, a simple report could be written to compare similarities or differences between systems.

Announcement Summary (AD25-0005)

- Simplifying Systems Management (*continued…*)
  - The IBM z/OS Change Tracker priced feature has added the ability to visually compare data sets and volumes against one another with its z/OSMF interface and view their comparison summaries, which has been designed for users to quickly be able to find member-level changes, additions, and deletions within their customized comparisons. In addition, z/OS Health Checker checks have been provided to highlight any misconfiguration that may cause z/OS Change Tracker to not function correctly.
- Additional transformation and efficiency improvements
  - In z/OS 3.2, SDSF priced feature programming language support is extended with pySDSF, a Python programming interface to common SDSF functions and data. SDSF also provides additional panels and improvements to existing panels.
  - The JES2 Policy function has been improved in several ways, including a policy type called JCLEvaluation that provides the ability to write messages to a job's JESJCLIN and JESYSMSG data sets, and several new policy attributes and actions.
  - IBM z/OS Data Gatherer provides access to Monitor III data by means of the z/OS Data Gatherer Monitor III REST services. This allows applications to retrieve Monitor III data HTTP REST calls, described through the OpenAPI v3 specification.
  - CPENABLE in IEAOPTxx is essentially now an obsolete parameter. A default setting allows the system to choose the most suitable value for enabling processors for I/O interrupts. A health check will trigger if the CPENABLE parameter value does not contain this default value.
  - Support has been added to JES2 for allocating JES2-managed data sets on SPOOL (accessed via the SPOOL data set browse function) using SUBSYS=JES2 on the DD JCL statement.

Announcement Summary (AD25-0005)

- Cyber resiliency and securing the most important data
  - The z/OS Authorized Code Scanner (zACS) and RACF priced features have both been enhanced, in support of anti-malware detection and the new priced program IBM Threat Detection for z/OS. zACS provides expanded capabilities for integrity scanning of AC(1) load modules loaded with batch processing, as well as when invoked from a TSO/E environment. In z/OS 3.2, the Security Server (RACF) delivers user ID containment functionality, an extension of user ID revocation processing, providing quarantine functionality to disable an already-active user ID.
  - RACF password envelope support allows installations to synchronize password and password phrase changes across the enterprise. RACF supports stronger quantum-safe signing and encryption algorithms for password envelopes.
  - RACF provides functions for encrypting and decrypting passwords for external servers such as LDAP via the KEYSMSTR class. Enhancements in the RACF KEYSMSTR class functions present an option for quantum-safe cryptographic algorithm inclusion with support for the Advanced Encryption Standard (AES) encryption algorithm.
  - A z/OS UNIX callable service has been provided to allow applications to authenticate using user ID, password phrase, or a signed Identity Token against the security database. This service addresses the needs of the authentication methods being adopted by the industry.
  - z/OS Public Key Infrastructure (PKI) Services, System SSL, and RACDCERT EXPORT, ADD, and CHECKCERT now support PKCS#12 packages protected by Password-Based Encryption Scheme 2 (PBES2) with Password-Based Key Derivation Function 2 (PBKDF2) standards. Additionally, System SSL has enhanced protection of in-memory private keys and added AES-CBC support within PKCS#7 EncryptedData packages.

Announcement Summary (AD25-0005)

- Cyber resiliency and securing the most important data (*continued…*)
  - In the interest of digital certificate simplification, RACF delivers RACDCERT support for multiple Subject Alternative Names (SANs). Certificates with multiple SANs can be used to secure connections to a server which can be reached through multiple access methods or addresses. With this support, RACDCERT now allows for multiple SANs to be included in certificates it generates. It also allows for multiple SANs to be listed both from certificates it generates and from external providers. This enhancement addresses a significant pain point for clients using digital certificates in RACF.
  - RACF has been further enhanced in the interest of greater resiliency and recovery capabilities. To mitigate cases where an operator prompt is necessary when changing the state of the RACF database, the RVARY command now checks authorization using resources in the OPERCMDS class whenever possible, including when the RACF database is inactive. In any situation where the OPERCMDS profile cannot be accessed or the user is unauthorized, RACF falls back to the existing operator prompt.
  - RACF has added support in the DIAGxx member of SYS1.PARMLIB to allocate 3rd-party ACEEs in 31-bit memory. Additionally, the RACF subsystem now specifies REUSASID=YES on its internal start command such that the ASID is available for reuse when the address space is stopped, helping to alleviate a system-wide constraint on ASID values. Clients should add REUSASID=YES to their manual or automated start commands for the RACF address space.

Announcement Summary (AD25-0005)

- Cyber resiliency and securing the most important data (*continued…*)
  - In z/OS 3.2, a crypto administrator can provide National Institute of Standards and Technology (NIST) standard quantum-safe algorithms for application development. z/OS ICSF support for Common Cryptographic Architecture (CCA) Releases 7.5 and 8.2 provide additional flexibility for quantum safe key exchange with additional CRYSTALS-Kyber keys, creates a callable service CSNBMMS “Multi Mac Scheme” in support of the evolving German Banking Industry Committee standards, and implements the CKM-RAKW algorithm for RSA import operations. With the release of CCA Release 8.4, the NIST-approved algorithms Module-Lattice-Based Key-Encapsulation Mechanism (ML-KEM) and Module-Lattice-Based Digital Signature Algorithm (ML-DSA) are available to replace the use of CRYSTALS-Kyber and CRYSTLS-Dilithium keys. ICSF has been updated to support an EP11 coprocessor running in FIPS 140-2 compliant mode, providing PKCS#11 application programmers access to a FIPS-certified hardware security module. The ICSF query function CSFIQF has been updated to allow the query of Master Key Verification Patterns in all forms used in operational keys.
  - z/OS 3.2 RACF provides more granular control for encryption of sequential and PDSE data sets with a RACF DATASET profile ENCRYPTTYPES option in the DFP segment. In addition, VSAM applications that use global shared resources (GSR) will now be able to open and use encrypted data sets. A new interface for VSAM provides the capability to optimize copying encrypted data, as the data remains encrypted throughout the copy.

Announcement Summary (AD25-0005)

- Cyber resiliency and securing the most important data (*continued…*)
  - zERT Network Analyzer z/OSMF plugin for z/OS 3.2 is enhanced to streamline its Db2 for z/OS database access to use multiple commit points for import and to provide a configurable JDBC collection ID to use when binding Db2 for z/OS packages.
  - z/OS Communications Server 3.2 has enhanced zERT to distinguish between TLS/Secure Shell (SSH) connections (successful and failed) and unprotected connections and provide all the information necessary to ensure that the network traffic is protected per network policy.
  - zERT has been updated to recognize and report additional SSH key exchange methods and types. zERT policy-based enforcement is also updated to allow specification of the additional key exchange methods on zERT SSH rules.
  - CSSMTP, the z/OS email client, is enhanced to support the SMTP AUTH command in a manner that is consistent with RFC 4954. This provides a mechanism to allow mail servers to authenticate the originator of email.
  - z/OSMF has added surrogate user ID functionality for TSO. When configured, any actions performed in TSO by z/OSMF occur under the surrogate user ID.

Announcement Summary (AD25-0005)

- Enabling hybrid cloud workloads
  - z/OS Container Extensions 2.0 (zCX Standard) no longer requires an entitlement. Communications Server Sysplex Distributor support for zCX allows workload connection distribution among containers in zCX instances, thus replacing the need for an external load balancer. Additional enhancements have been made to allow logging and monitoring tools like ElasticSearch or OpenSearch to run in zCX.
  - z/OS Communications Server is enhanced to enable the configuration and use of multiple VIPARANGE ZCONTAINER statements for use by containers started with z/OS Container Platform (zOSCP) for z/OS applications. This allows for a broader set of IP addresses to be available to containerized applications.
  - A framework, called Java Interlanguage Batch, to establish Db2 connection sharing between COBOL and Java batch applications is now available. This framework provides Java methods and classes to initialize and terminate a Db2 connection and to commit or rollback transactions as part of a single unit of work. This is designed to allow clients to migrate COBOL batch to Java in a stepwise fashion at their own pace.
  - IBM Open XL C/C++ 2.1 for z/OS became available on 30 April 2024. It combines the benefits and innovations from the LLVM community with IBM XL C/C++ compiler technology to deliver application performance for the modern z/Architecture. Open XL C/C++ 2.1 for z/OS release is fully based on the open-source Clang and LLVM 18 technology framework and supports up to C17/C18 and C++17 language standards. This is designed to facilitate easy migration of C/C++ applications from distributed platforms to z/OS. Open XL C/C++ 2.1 for z/OS is available at no additional charge for clients that have enabled the optionally priced z/OS XL C/C++ compiler on z/OS 3.2.

Announcement Summary (AD25-0005)

- Enabling hybrid cloud workloads (*continued…*)
  - z/OS 3.2 adds support for a number of additional APIs and utilities in z/OS UNIX to improve application portability to z/OS and for better compatibility with Linux environments. Included is support for the concept of namespaces for isolation and virtualization through utilities like lsns, nsenter, and unshare. Additionally, the utilities shlock and flock have been added to support improved locking and serialization for z/OS UNIX applications. Finally, for application development the utility ldd is provided to display the shared object files of programs and executables. This utility assists developers and system programmers with debugging and understanding library dependencies.
  - DFSMSdfp Cloud Data Access (CDA) enables z/OS data to be shared across sysplexes while preserving the ability for Cloud applications to read the raw data without understanding a proprietary format. If the local data set does not exist on z/OS, CDA dynamically creates the local data based on the metadata tags associated with the cloud object. These changes enable more types of sequential data sets, like DSS backups, and VSAM ESDS and KSDS data sets to now be uploaded to, or downloaded from cloud object storage. The GDKUTIL utility is updated to exploit the new functionality.
  - DFSMSdfp CDA compresses data before storing it in cloud object storage and automatically decompresses the data after retrieving it. CDA provides a compression parameter for the GDKWRITE APIs to request either zEnterprise Data Compression (zEDC) or gzip compression be used. The GDKUTIL utility is also updated with a compression keyword for the UPLOAD commands to specify either zEDC or gzip compression.

Announcement Summary (AD25-0005)

- Enabling hybrid cloud workloads (*continued…*)
  - DFSMSdss (DSS) and DFSMShsm (HSM) priced features use CDA APIs to provide a storage vendor-agnostic direct-to-cloud solution to seamlessly back up and migrate z/OS data straight to the cloud. DSS and HSM utilize the CDA compression support, and zEnterprise Data Compression (zEDC) can be specified for these backup and migration copies. In addition to existing IBM DS8000 Transparent Cloud Tiering (TCT), this software only, direct-to-cloud solution provides another option to seamlessly incorporate cloud object storage as another storage tier, along with disk and tape, for backup and archive data.
  - /proc file system support (covered in my z/OS 3.1 User Experiences)
  - Union File System support (covered in my z/OS 3.1 User Experiences)
  - Network File System (NFS) support has been improved to provide non-interactive login without specifying a password on the command line. The mvslogin command can now load login information from netrc files or do a password-less certificate-based login using x509 certificates. Additionally, the z/OS NFS server has been enhanced to allow the unmounting of mountpoints on a per NFS client basis.

Announcement Summary (AD25-0005)

- Hardware support and optimization
  - A new IBM z17-only Tailored Fit Pricing for Hardware solution enables clients to:
    - Unlock a pool of always-on subscription zIIP capacity for new workloads (AI inference, OpenShift, and zCX workloads).
    - Leverage technology on IBM z17 that enables optimized price-to-value for new workloads.
    - Gain the flexibility of consumption-based pricing to meet the dynamic demands of new workloads.
  - Provided in z/OS 3.2 and all z/OS releases where IBM z17 operates, the z/OS z17 Upgrade Workflow provides the z/OS positioning/upgrade actions necessary to run z/OS on IBM z17.
  - Continuing with this latest release of z/OS, the z/OS 3.2 Upgrade Workflow is provided on supported coexisting releases in the service stream.
  - The IBM z17 platform represents a complete transformational change in the area of I/O for both storage (FICON Express and FCP) and networking (OSA). IBM z17 introduces the Network Express feature which provides both the latest Enhanced QDIO (EQDIO) architecture for reliable high-speed ethernet transport and RoCEv2 support for optimized TCP connectivity using Remote Direct Memory Access (RDMA) technology with Shared Memory Communications (SMC-R). z/OS 3.2 Communications Server provides the networking support for this I/O transformation.
  - The IBM z17 server introduces the Coupling Express3 (CE3) LR adapter. The CE3 adapter provides a 25G option for higher bandwidth when connected to another CE3 LR adapter. When configured for the 25G option, the coupling link type is CL6. z/OS 3.2 supports coupling link type CL6 when running on an IBM z17 server.

Announcement Summary (AD25-0005)

- Hardware support and optimization (*continued…*)
  - Along with the IBM z17, z/OS 3.2 makes sustainability more achievable and straightforward with the ability to monitor CEC and partition power consumption through new SMF metrics and related RMF priced feature reports, which report power consumption at the CEC level, partition level, and also granular power consumption by service class and report class.
  - IBM Hardware Configuration Definition (HCD) in z/OS has extended the support for hardware-only dynamic changes to IBM z16 and IBM LinuxONE 4 or later processors, which host Linux on IBM Z or IBM z/Transaction Processing Facility (z/TPF) instances. Hardware-only changes allow changes to the hardware I/O configuration of a remote IBM z16 or IBM LinuxONE 4 or later in standard (non-Dynamic Partition Manager (DPM)) mode dynamically, while the processor remains running.
  - Security between z/OS Base Control Program internal interface (BCPii), Hardware Management Consoles (HMCs), and IBM z17 and above Support Elements (SEs), has been enhanced to support the use of signed JSON Web Tokens (JWTs). The JWTs map z/OS users to HMC users or templates. With JWTs, one can now use the BCPii HWIREST and the HWIREST2 support to directly target HMCs with HMC Web Services Application Programming Interface (WSAPI) requests.
  - z/OS BCPii in z/OS 3.2 is more proactive in reestablishing lost communication with a monitored CPC. In addition, a DISPLAY BCPII system command can be used to obtain the current communication status.

Announcement Summary (AD25-0005)

- Hardware support and optimization (*continued…*)
  - z/OS 3.2 provides a System Recovery Boost (SRB) capability when large hardware dynamic I/O changes are detected. Additional SRB improvements include:
    - Improved SRB messages and SMF 90 subtype 40 record fields that document the z/OS procedure, step, and program names that are the subject of middleware startup boost activity.
    - Improved SMF type 89 records documenting the total recovery process boost duration.
    - Improved processing for transient boost zIIP processors when zIIPs are configured online during a boost and an API to support identification of any transient boost zIIPs.
  - The z/OS Integrated Cryptographic Services Facility (ICSF) exploits updates to CPACF in the IBM z17, including instructions for Hash-based Message Authentication Code (HMAC) processing and improved performance for Secure Hash Algorithm 3 (SHA-3) hashing. ICSF also provides support for the NIST standard algorithms ML-KEM and ML-DSA, updates to the TR-31 export service to allow the export of AES PINPROT type “B” keys, and the generation and use of 8192-bit RSA keys.
  - Several performance related improvements have been made within z/OS, including SRM Lock Contention Relief which is designed to reduce CPU consumption in the WLM service class period switching logic. Additionally, performance of I/O Path Validation for Peer-to-Peer Remote Copy (PPRC) secondary devices is changed to reduce the CPU overhead of HyperSwap load processing and Offline Device Discovery. Finally, Real Storage Manager (RSM) reduced its usage of the quiescing Set Storage Key Extended (SSKE) instruction with a goal of improving performance for multiprocessing environments as well as cross-LPAR environments in some cases.

Announcement Summary (AD25-0005)

- Hardware support and optimization (*continued…*)
  - z/OSMF Sysplex Management task is enhanced to support structure sizing for CF Level 26.
  - Updates to the Perform Locked Operation (PLO) instruction in IBM z17 enable similar granularity of memory serialization as constrained transactions, and is available for use as an alternate serialization mechanism when running on z17 hardware. Additionally, z/OS provides support for a new SLIP/PER trap-and-report function that can be used to identify the use of transactional execution.
  - New zFS health checks help with optimal tuning and to prevent outages and failures.
  - New conversion utility to help clients migrate their zFS directories from v4 to v5.
  - Another file system-related health check helps drive consistency of file system configuration according to best practices.
  - Data Set File System extended data set attributes and JES SPOOL data set access (covered in my z/OS 3.1 User Experiences)
  - DFSMSrmm (RMM) priced feature provides wildcard capability within the Defaults Table KEYDATE parameter. Additionally, the expiration date (EXPDT) retention method will allow an ABEND retention policy to make retention decisions based on whether a data set closes with the ABEND flag on. There are also a number of small enhancements that will help with efficiencies when interacting with Virtual Tape Libraries which include reducing calls to the tape libraries for a number of RMM operations, ensuring data remains consistent and valid between the tape configuration database (TCDB) and the RMM control data set (CDS), and ensuring RMM commands issued from the ISPF panels and TSO produce the same output.

Announcement Summary (AD25-0005)

- Enhancements to core z/OS functionality
  - DFSMSrmm (RMM) priced feature addresses several client requests for more flexibility in specifying expiration date policies with the EXPDT retention method. An 'ONLY' option for WHILECATALOG, which can be specified through management class, the Default Table, or RMM PARMLIB member will now expire an uncatalogued dataset without considering its expiry date.
  - First, an attribute to modify region limit for both above and below the line storage is available in the SMFLIMxx PARMLIB member. Second, a stop processing attribute that allows for more granular control over the matching of the REGION rules is available. Finally, additions to the existing filter REQMEMLIMIT are available to provide more control over matching the source of the MEMLIMIT value.
  - Users of z/OS provided zlib can choose to use compression accelerators or not for each thread, in a way that does not affect other threads.
  - The new SETIOS HSWAP,FREEZE command makes it easier to test unplanned PPRC suspension events for HyperSwap.
  - z/OS I/O error recovery efficiency when RECOVERY PATH_SCOPE=CU is in effect is improved by streamlining the processing required to remove faulty paths from devices within control units, thereby reducing the overall impact on the system.
  - z/OS 3.2 is designed to decrease the likelihood of a non-graceful address space termination due to out of memory in 24- or 31-bit storage conditions. Instead of a MEMTERM which skips task level recovery, the system will try to complete JOB cancellation before the address space runs out of private virtual memory.

Announcement Summary (AD25-0005)

- Enhancements to core z/OS functionality (*continued…*)
  - SMF30_HWMMemlimitMb is introduced to track the maximum amount of high virtual private memory charged against the MEMLIMIT across an interval, job step, or job. Rax64_MemlimitMbHWM is introduced to track the maximum amount of high virtual private memory across a job step.
  - IARQUERY is enhanced to report on virtual storage, report information on data space usage as well as return various counts related to real memory.
  - Log buffers for System Logger now reside in Logger High Virtual private memory, with a greatly expanded size limitation of 1 TB.
  - The system provides information needed to identify volumes whose VTOCs and INDEXes are running out of space via the LSPACE macro call, the LSPACE SMF19 record, and IDCAMS DCOLLECT type-V records. In addition, SMS provides the ability to define an SMS construct that prevents new allocations on volumes where the free VTOC or INDEX space falls below a threshold amount.
  - ICKDSF now provides the capability to create a VVDS automatically upon initialization of the volume instead of when the first catalog or SMS-managed data set is defined.
  - PDSEs now allow deletion of members from a full data set without encountering out of space conditions.
  - A JCL keyword has been introduced to allow for abnormal termination disposition of data sets based on job step completion or return code (covered in my z/OS 3.1 User Experiences)

Announcement Summary (AD25-0005)

- Enhancements to core z/OS functionality (*continued…*)
  - The zFS shrink function can now shrink zFS file systems that are mounted read-only and those that are not mounted. In addition, multiple zFS file systems can be shrunk using wild-carding capability (similar to other zFS administration tasks) and the ability to specify disk space requirements for the file system after the shrink action.
  - JES2 has been enhanced to use the IBM Function Registry for z/OS to indicate whether certain functions are enabled or disabled for the JES2 primary subsystem.
  - JES2 improves resiliency by protecting key JES2 data sets by using SYSDSN ENQs on the JES2 Checkpoint and JES2 SPOOL data sets, thereby avoiding inadvertent deletion of the data sets. JES2 has also been updated in z/OS 3.2 with operator commands to verify and repair JES2 queue errors, and support for ASCBV31 when starting JES2 or Functional Subsystems (FSS).
  - In z/OS 3.2, JES2 provides the ability to assign resource limits to resource groups, limiting the amount of those key JES2 resources that jobs in the group can use. Also included, is the ability to define what action to take when any job in the group causes any group resource limit to be exceeded.
  - DFSMS Media Manager updates zHyperLink write statistics with a keyword in the DISPLAY SMS,DSNAME(dsn),STATS command to provide additional information for users to determine what may be preventing zHyperLink write access from being established and take corrective action. Additionally, request- and device-level established zHyperLink write access stats are included in SMF type 42, subtype 6.

Announcement Summary (AD25-0005)

- Enhancements to core z/OS functionality (*continued…*)
  - The HTTP/HTTPS Enabler portion of the z/OS client web enablement toolkit has been enhanced to support a connection timeout option for the HWTHSET service.
  - The Functional Recovery Routine (FRR) stack is expanded by 12.5% to help reduce the chance of an outage due to FRR stack becoming full.
  - ASCBV31(YES) in DIAGxx parmlib member (covered in my z/OS 3.1 User Experiences)
  - z/OS Predictive Failure Analysis (PFA) has been enhanced to allow the installation to set the common storage usage (CSU) check exception threshold.

Small Programming Enhancements

CLOSED DATE (yyyy/mm/dd)	APAR	COMPID	COMPONENT NAME	REL/PTF	FIX DESCRIPTION
2025/09/12	OA66671	566527401	RMF DATA GATHERER	7E0/ 7F0/	New Function - REST Services and SMF Explorer 3Q2025 shipment
2025/09/12	PH61663	5655S2803	Z/OSMF WLM	313/	NEW FUNCTION
2025/09/11	OA68247	5695PMB01	PROGRAM MANAGEMENT	7E0/ 7F0/	NEW FUNCTION - Binder TLS support for new Open XL compiler
2025/09/11	PH62468	568819805	LE C LIB FOR Z/OS	7E0/ 7F0/	NEW FUNCTION - Additional Support for C/C++ Thread Local Storage
2025/09/10	OA68241	5752SCHZS	HEALTH CHECKER	7F0/	NEW FUNCTION - Health Checker support for ASCBV31 enabled
2025/09/10	OA68477	5655T0100	ZSEC BASE,ADMIN,BKS	250/UJ98010 310/UJ98009	NEW FUNCTION TO PROVIDE SUPPORT FOR IBM CICS TRANSACTION SERVER V
2025/09/10	PH67170	5655W1400	IMS FP SOLUTION PCK	210/UO04821	FP TOOLS SUPPORT AUTOMATED ADS ALLOCATION SIZE FUNCTION WITH CHA
2025/09/09	OA67886	5695DF122	VSAM REC LEV SHARNG	310/ 320/	NEW FUNCTION - Enhanced ResultSet APIs
2025/09/09	PH66944	5655Y2300	CICS PERF ANALYZER	540/UO04808 54C/UO04811 54E/UO04809 54K/UO04810	LATEST RELEASES
2025/09/08	OA68360	5608A41CC	PARMGEN ICAT CONFIG	310/UJ97989	CONFIGURATION MANAGER / PARMGEN ENHANCEMENTS 3Q 2025
2025/09/07	PH67907	568851500	DB2 ADMIN TOOL MVS	D10/UO04789	ADD SUPPORT FOR *. QUALIFIER FOR RACF FUNCTIONALITY
2025/09/05	OA67188	5695DF111	DEVICE SUPPORT DASD	250/ 310/	NEW FUNCTION - SUPPORT FOR NEW STORAGE CONTROLLER HEALTH MC 0XC
2025/09/05	PH62240	5655S2804	Z/OSMF DEPLYMNT MGR	314/	NEW FUNCTION - Software Update REST APIs
2025/09/05	PH64088	5655V9300	IMS TOOLS BASE	170/UO04777	ENHANCEMENT TO ENABLE DAI TCP SERVER FOR IPV6 COMMUNICATIONS
2025/09/04	PH66435	5655S2807	Z/OSMF WORFKLOW	317/ 327/	NEW FUNCTION - z/OSMF Workflow supports download of job output
2025/09/04	PH67906	568851500	DB2 ADMIN TOOL MVS	D10/UO04772	INTEGRATION WITH QUERY MONITOR
2025/09/03	PH67229	5655S7700	IMS DB SOLN PACK	220/UO04733	MODIFY JCL GENERATION TEMPLATE FOR IMS MACB SUPPORT
2025/09/03	PH67230	5655DBU00	DB UTIL SOL INSTALL	210/UO04732	MODIFY JCL GENERATION TEMPLATE FOR IMS MACB SUPPORT
2025/09/03	PH67252	5655E0900	IMS POINTER CHECKER	310/UO04731	MODIFY JCL GENERATION TEMPLATE FOR IMS MACB SUPPORT
2025/09/02	PH67245	5655E6701	DB2 QUERY MONITOR	340/UO04724	COLLECT AND DISPLAY QUERYNO, DECLARE STATEMENT NUMBER, DYNAMIC
2025/09/02	PH67247	5655E6701	DB2 QUERY MONITOR	340/UO04724	PRIMARY PA COMMAND FOR 'ACTIVITY BY SQL TEXT' PANEL.
2025/08/29	OA66632	5752SYBLD	INSTALLATION	7D0/UJ97937 7E0/UJ97938 7F0/UJ97939	NEW FUNCTION - z/OS 3.2 Upgrade Workflows
2025/08/29	OA68228	5608A2800	MGMT SERVER DS Z/OS	630/UJ97936	RESTFUL SERVICES ON ZOS TEMS ENHANCEMENTS AND BUG-FIXES
2025/08/29	PH66460	5755A0300	FILE MANAGER Z/OS	F10/UO04699	SUPPORT FOR REGULAR EXPRESSIONS IN FIND COMMANDS
2025/08/29	PH67255	5755A0300	FILE MANAGER Z/OS	F10/UO04699	ENHANCEMENT TO ALLOW MEMBERS TO BE SPECIFIED VIA A FMNMLST DD R
2025/08/29	PH67580	5755A0300	FILE MANAGER Z/OS	F10/UO04699	DIAGNOSTIC ENHANCEMENT TO PROVIDE ZDDL STATEMENTS WHEN AN ERRO
2025/08/28	PH65775	5635A0600	IMS V15	500/UO04689	IMS TRANSACTION ORCHESTRATION FUNCTION NEEDS TO SUPPORT MULTIPL
2025/08/27	PH67637	5655CAT00	IMS ADMIN TOOL	110/UO04658	EMBED THE DISCOVERED VALUES IN JCL TEMPLATES FOR THE RUN IMS UTILI
2025/08/26	PH66313	5608CSM8Z	CSM DS8K FOR Z	63A/UO04650	THIS PTF WILL UPGRADE COPY SERVICES MANAGER TO THE 6.3.15.0 LEVEL OF
2025/08/26	PH66320	5608CSM8Z	CSM DS8K FOR Z	63A/UO04651	THIS PTF WILL UPGRADE COPY SERVICES MANAGER TO THE 6.3.15.0 LEVEL OF
2025/08/26	PH67404	5740XYR00	DB2 OS/390 & Z/OS	D10/UO04645	New function to enhance package rebind
2025/08/26	PH67435	5608CSM8Z	CSM DS8K FOR Z	63A/UO04652	THIS PTF WILL UPGRADE COPY SERVICES MANAGER TO THE 6.3.15 dependency I
2025/08/26	PH67911	5608CSM8Z	CSM DS8K FOR Z	63A/UO04653	THIS PTF WILL UPGRADE COPY SERVICES MANAGER TO THE 6.3.15 dependency I

- https://public.dhe.ibm.com/s390/newfunctionapars/mvsstore.zosnewfu.html
- https://public.dhe.ibm.com/s390/newfunctionapars/mvsstore.zosnewfu.csv
- 1177 SPEs from z/OS 3.1 GA Oct 1, 2023 through Oct 6, 2025 (105 weeks).
- That's approximately 11.2 SPEs per week, the most I have ever seen!
- List includes not only z/OS, but also CICS, MQ, IMS, Db2, etc.
- Both formats have usable hyperlinks.
- I focused on PH66435.

Small Programming Enhancements

- Clicking the link takes you to the IBM support site where you can read about the APAR.
- Generally, the descriptions of new Function APARs are quite terse. APARs that solve problems tend to have a lot more detail.
- In this case, the main thing I wanted to know were the PTF numbers for z/OS 3.1 and z/OS 3.2 so we could ensure they were installed in-house.

Problem summary

```
****************************************************************
* USERS AFFECTED: All users of IBM z/OSMF Workflows on         *
*                 z/OS 3.1 and z/OS 3.2                        *
****************************************************************
* PROBLEM DESCRIPTION: Provide new function for z/OSMF         *
*                      Workflows to download job output.       *
****************************************************************
Provide new function for z/OSMF Workflows to download job
output.
```

Problem conclusion

Temporary fix

Comments

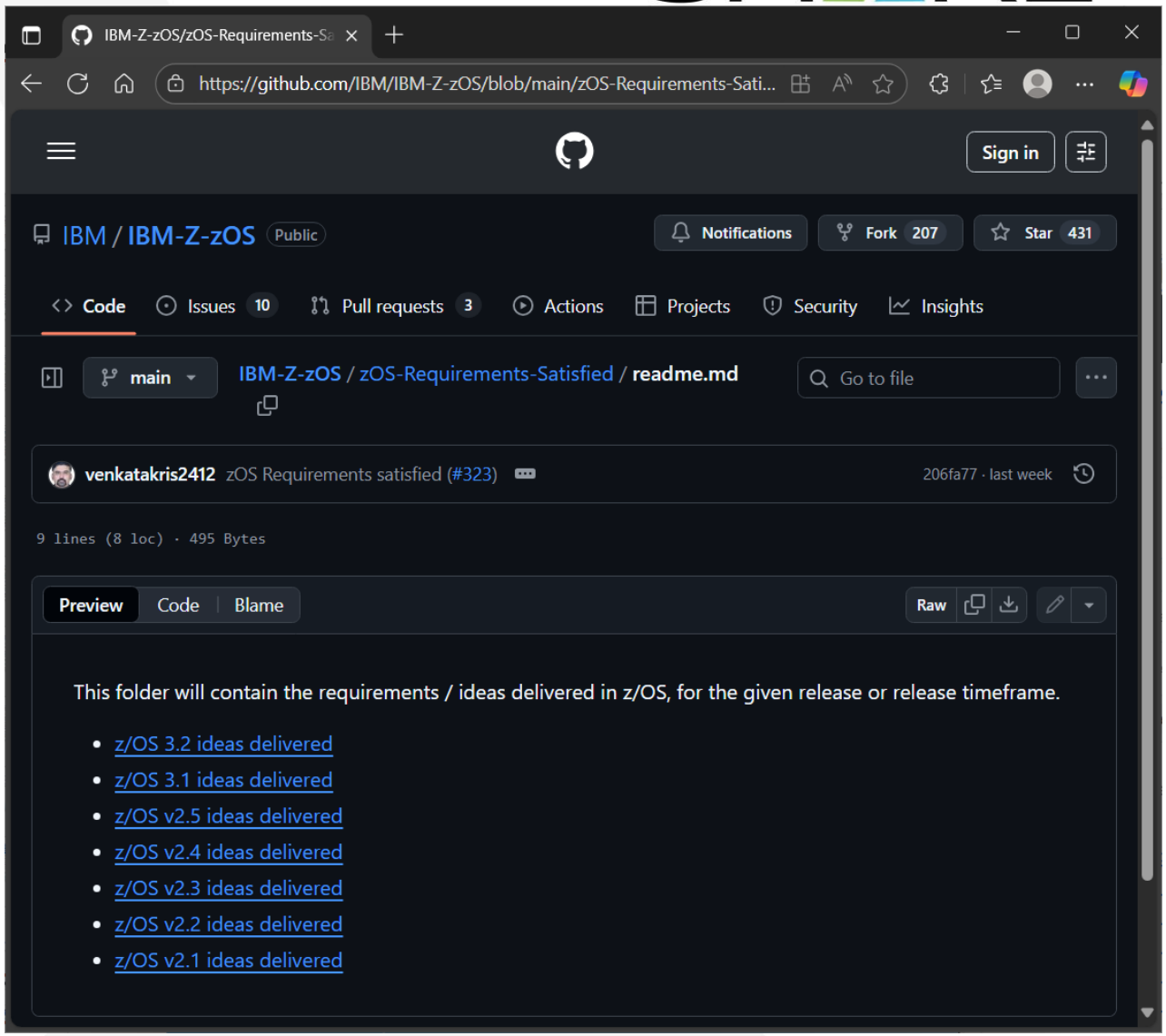
APAR Information

PTF numbers

APAR number	PH66435
Reported component name	Z/OSMF WORFKLOW
Reported component ID	5655S2807
Reported release	317
Status	CLOSED UR1
PE	NoPE
HIPER	NoHIPER
Special Attention	YesSpecatt / New Function / Xsystem
Submitted date	2025-05-07
Closed date	2025-09-04
Last modified date	2025-10-02
APAR is sysrouted FROM one or more of the following:	OA67670
APAR is sysrouted TO one or more of the following:	UO04765 UO04766

Customer Requirements Satisfied

- This information moved to github – though no github account needed
- https://github.com/IBM/IBM-Z-zOS/blob/main/zOS-Requirements-Satisfied/readme.md
- Previously “requirements satisfied” now (mostly) called “ideas delivered”
- Ideas only – far less user-group focused than it used to be
- Reading these ideas can prove interesting and insightful



This finally got updated with z/OS 3.2 info on Halloween 2025

Something I Learned By Reading The Ideas

- The default MEMLIMIT for REGION=0M jobs is no longer NOLIMIT!

IBM-Z-zOS/zOS-Requirements-Sa

https://github.com/IBM/IBM-Z-zOS/blob/main/zOS-Requirement...

main | IBM-Z-zOS / zOS-Requirements-Satisfied / 3.2-ideas-delivered.md | Top

Preview | Code | Blame | Raw

ZOS-I-3963	Add Client/Server role indicator into ZERT SMF 119 Subtype 11 Records	Communications Server
ZOS-I-3959	HSM 'Audit' runs for hours if cloud objects exists	DFSMS HSM
ZOS-I-3799	Avoid arbitrary MEMLIMIT=NOLIMIT assignments to REGION=0M jobs	BCP_SMF
ZOS-I-3744	switch from IEFUSI to SMFLIM	BCP_SMF
ZOS-I-3666	Allow HSM to configure the type of container that will create in the cloud for TCT.	DFSMS HSM
ZOS-I-3602	Force HSM to reconnect active request to DS8k HMC	DFSMS HSM
ZOS-I-3582	Use more frequent commits when importing SMF data in to the zNA database to reduce Db2 resource consumption	Communications Server
ZOS-I-3568	z/OSMF DataSet and File search - Small Tunings - Sort by changed date, searchfor options	z/OSMF
ZOS-I-3499	Download RECFM U	DFSMS Cloud Data Access
ZOS-I-3466	Add SMF119AP_TTStatus to SMF119 Subtype 1 Connection Init	Communications Server

Avoid arbitrary | IBM Z Hardware

https://ibm-z-hardware-and-operating-systems.ideas.ibm.com/ideas/ZOS-...

Home / ZOS-I-3421 / ZOS-I-3799

Add a new idea | Subscribe

9

VOTE

Status: Delivered
Workspace: z/OS
Categories: BCP_SMF
Created by: Guest
Created on: Aug 29, 2023

RELATED IDEAS

- Need SMFLIM to check for REGION=0M jobs (IEFUSI replacement)
- Need SMFLIM to win over IEFUSI
- switch from IEFUSI to SMFLIM
- Know how close an AS is to exceeding MEMLIMIT

Avoid arbitrary MEMLIMIT=NOLIMIT assignments to REGION=0M jobs

Our IEFUSI→SMFLIMxx conversion was halted by an unpredictable design choice, which is: An implicit MEMLIMIT=NOLIMIT default when REGION=0M that *overrides* the explicit MEMLIMIT default in SMRPRMxx.

This creates problems, such as: If a user does not specify MEMLIMIT=NOLIMIT, then it will default to NOLIMIT when REGION=0M is specified or defaulted to.

We realize that we could code REQMEMLIMIT(NOLIMIT) in SMFLIMxx, but this will *also* override explicit MEMLIMIT=NOLIMIT requests, which is not desired.

So we are forced to either accept MEMLIMIT=NOLIMIT when it is not specified in JCL, or to accept something else when MEMLIMIT=NOLIMIT is specified/desired.

In all circumstances, the MEMLIMIT value in SMFPRMxx should be honored when MEMLIMIT is not specified in JCL and is not overridden in SMFLIMxx.

We can handle one job allocating 2GB memory, but cannot handle that job trying to allocate 16 exabytes.

This conditional behavior is something that no user would expect. It has several inherent problems and adds no value.

Idea priority: High

What Did I Experiment With and Why?

1. Stuff that interests me
2. Things I haven't already presented in prior iterations of this presentation
3. Stuff that interests me
4. Features that I can actually test in my environment
5. Stuff that interests me

- I try to stay away from discussing program products and priced features.

- z/OS 3.2 has a LOT of new content; much more than I can show you in the time allotted to me to give this presentation.
- I hope you will learn from and find my experiences interesting…

Without A Little Help From my Friends

- I have many contacts at IBM
- When I get stuck, I can easily call or email someone for help
- I DON'T DO THAT!
- I do my best to muddle through without help, just like you or any other z/OS client might do
- No one helps me, I do it all on my own – 100%
- This helps ensure my experience is an honest and legitimate one

z/OSMF Storage Management Plugin

- I could find no mention of this “plugin” in the manuals.
- I searched the web (Duck Duck Go) and found this site:
  - https://www.ibm.com/support/z-content-solutions/storage-management-zosmf/
- The above page ultimately brought me here:
  - https://www.ibm.com/docs/en/zos/3.2.0?topic=services-configure-storage-management-service
- Turns out it’s not a plugin at all; it is a built-in z/OSMF “Task” just like Software Management and Workflows. As such, it can be enabled online or through the zosmf.json configuration settings file.

To enable Storage Management when z/OSMF is not started ("General Settings" page is not available), follow these steps:

1. Go to the UNIX System Services directory `/global/zosmf/configuration/settings/zosmf/`.
2. Edit `zosmf.json`. Paste the following contents into the JSON if it is empty.

```
{
  "services": {
     "IZU_STORAGE_CONFIGURE": "Y"
  }
}
```

To enable Storage Management, follow these steps:

1. Open the z/OSMF General Settings task.
2. "Enable" Storage Management listed under "Optional Services".
3. Restart the z/OSMF server.

z/OSMF Storage Management Task Messages

- Not sure how many other of these messages are undocumented

> **IZUSG0013E**
> List datasets API call failed with 1141. login: Message queue is not available: CEA TSO/E address space cannot be started or the TSO/E session log in failed. For possible causes, see the description of reason code 1141 in z/OSMF Programming Guide. TsoServerConnection(USER=EDJXADM, ASID=0x0039, QID=0x00060005), QID=0x00060005

- Perhaps IBM believes such messages should be self-explanatory
- This appeared on the system log:

```
INSTREAM 00000290   LOGON
T0032640 00000281   $HASP100 EDJXADM  ON TSOINRDR
T0032640 00000281   $HASP373 EDJXADM  STARTED
T0032640 00000281   IEF125I EDJXADM - LOGGED ON - TIME=12.29.32
T0032640 00000281   IEF453I EDJXADM - JOB FAILED - JCL ERROR - TIME=12.29.32
T0032640 00000281   $HASP395 EDJXADM  ENDED
T0032640 00000281   $HASP250 EDJXADM PURGED -- (JOB KEY WAS E19F7563)
         00000281   IEA989I SLIP TRAP ID=X33E MATCHED.  JOBNAME=*UNAVAIL, ASID=0039.
```

- Even when I held the SYSOUT to prevent it being purged, JES2 did not capture the JCL error in any of the three data sets – very frustrating

z/OSMF Storage Management Task Messages (*continued…*)

- I surmised it was IZUFPROC failing because that is documented as CEA's proc, but I could not see an obvious JCL error. I was using the unaltered proc in SYS1.PROCLIB. I checked to be sure every referenced data set was cataloged and present on the appropriate volume.
- Eventually, I set an error-event SLIP with MSGID=IEF453I and searched for IZUFPROC in the dump. The "smoking gun" was there.

```
EDJXADM  00000290  SLIP SET,ID=EEJ1,MSGID=IEF453I,A=SVCD,SD=(PSA,NUC,RGN),END
EDJXADM  00000080  IEE727I SLIP TRAP ID=EEJ1 SET
INSTREAM 00000290  LOGON
T0032642 00000281  $HASP100 EDJXADM  ON TSOINRDR
T0032642 00000281  $HASP373 EDJXADM  STARTED
T0032642 00000281  IEF125I EDJXADM - LOGGED ON - TIME=12.46.53
         00000090  IEA045I AN SVC DUMP HAS STARTED AT TIME=12.46.53 DATE=10/11/2025 831
     831 00000090  FOR ASID (0039)
     831 00000090  QUIESCE = YES
T0032644 00000281  $HASP250 EDJXADM PURGED -- (JOB KEY WAS E19F7946)
         00000281  IEF196I IEF285I   SYS3.DUMP.D251011.T124653.EDJXADM.S00001
                   CATALOGED
         00000281  IEF196I IEF285I   VOL SER NOS= T2USR1.
         00000090  IEA611I COMPLETE DUMP ON SYS3.DUMP.D251011.T124653.EDJXADM.S00001 857
     857 00000090  DUMPID=001 REQUESTED BY JOB (EDJXADM )
     857 00000090  FOR ASID (0039)
     857 00000090  INCIDENT TOKEN: PHXHQ    T2SY1    10/11/2025 19:46:48
```

```
A111I EDJXADM IS USING THE FOLLO
WING JOB RELATED SETTINGS:.{.
      SWA=ABOVE,TIOT SIZE=64K,D
SENQSHR=DISALLOW,GDGBIAS=JOB.{.
IEF210I EDJXADM IZUFPROC IZUFPRO
C ISPTLIB - UNIT FIELD SPECIFIES
 INCORRECT DEVICE NAME.........
```

IZUFPROC as delivered in SYS1.PROCLIB contains

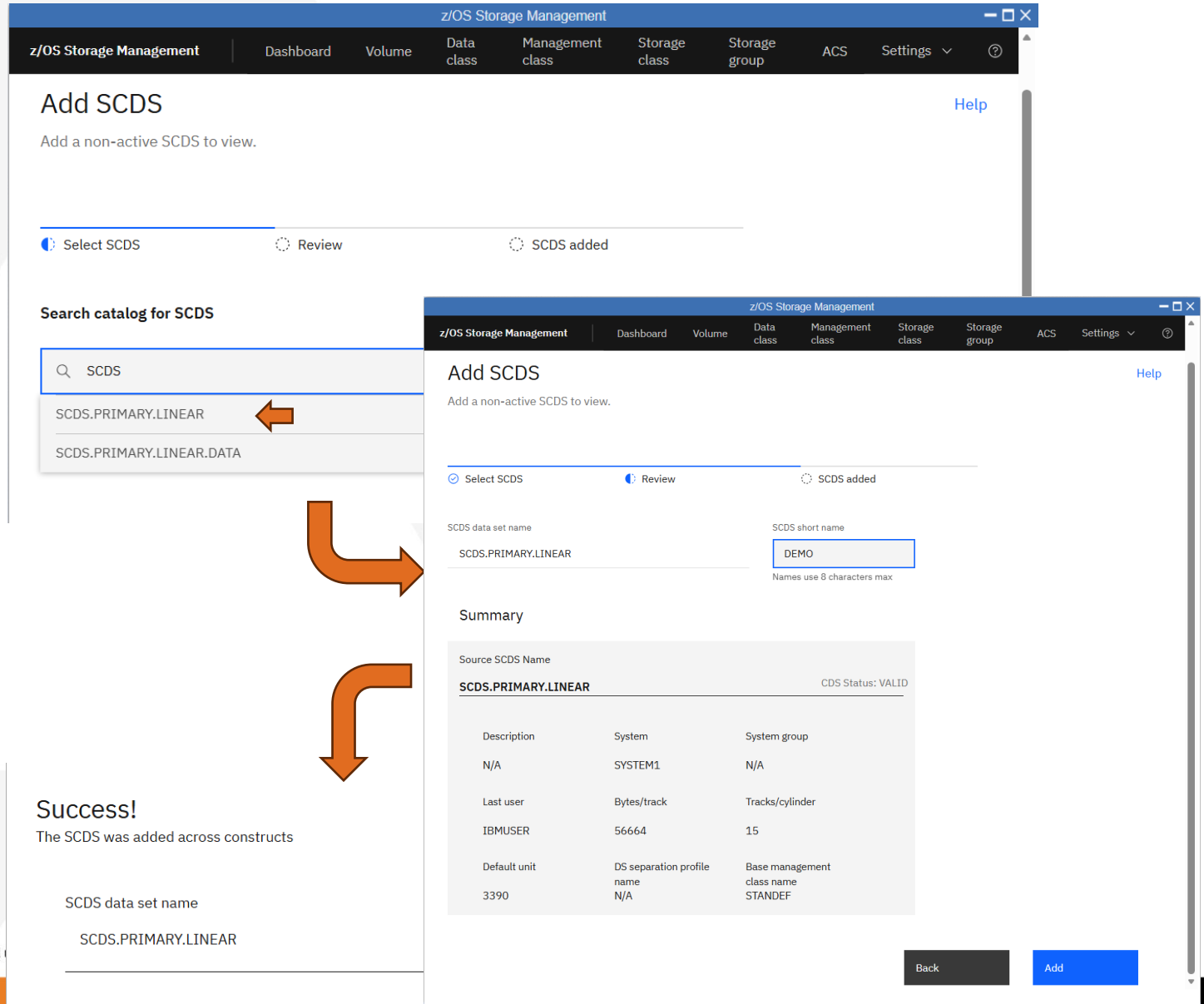
```
000024 //ISPTLIB   DD RECFM=FB,LRECL=80,SPACE=(TRK,(1,0,1)) UNIT=SYSALLDA
000025 //           DD DISP=SHR,DSN=ISP.SISPTENU
```

```
000024 //ISPTLIB   DD RECFM=FB,LRECL=80,SPACE=(TRK,(1,0,1)),UNIT=SYSALLDA
000025 //           DD DISP=SHR,DSN=ISP.SISPTENU
```

This comma needed in my non-SMS environment

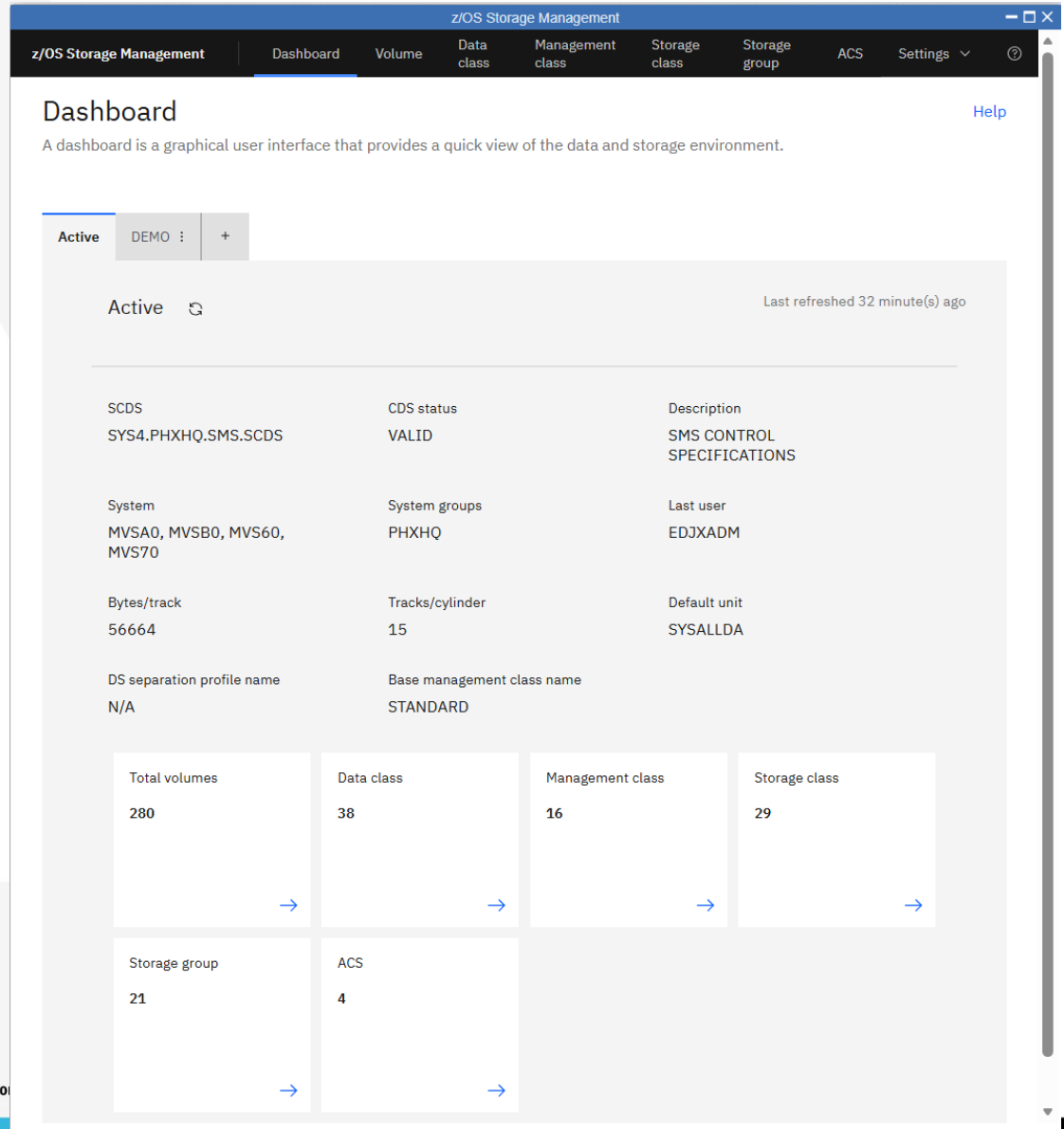
z/OSMF Storage Management Adding an SCDS

- The active SCDS is always present. Add others if needed. This page shows me adding the SMS starter set on a non-SMS system.
- After pressing **<Next>** it showed me some basic metadata and let me choose an 8-character nick name for the SCDS
- After clicking **<Add>** my SCDS was “added across constructs.”



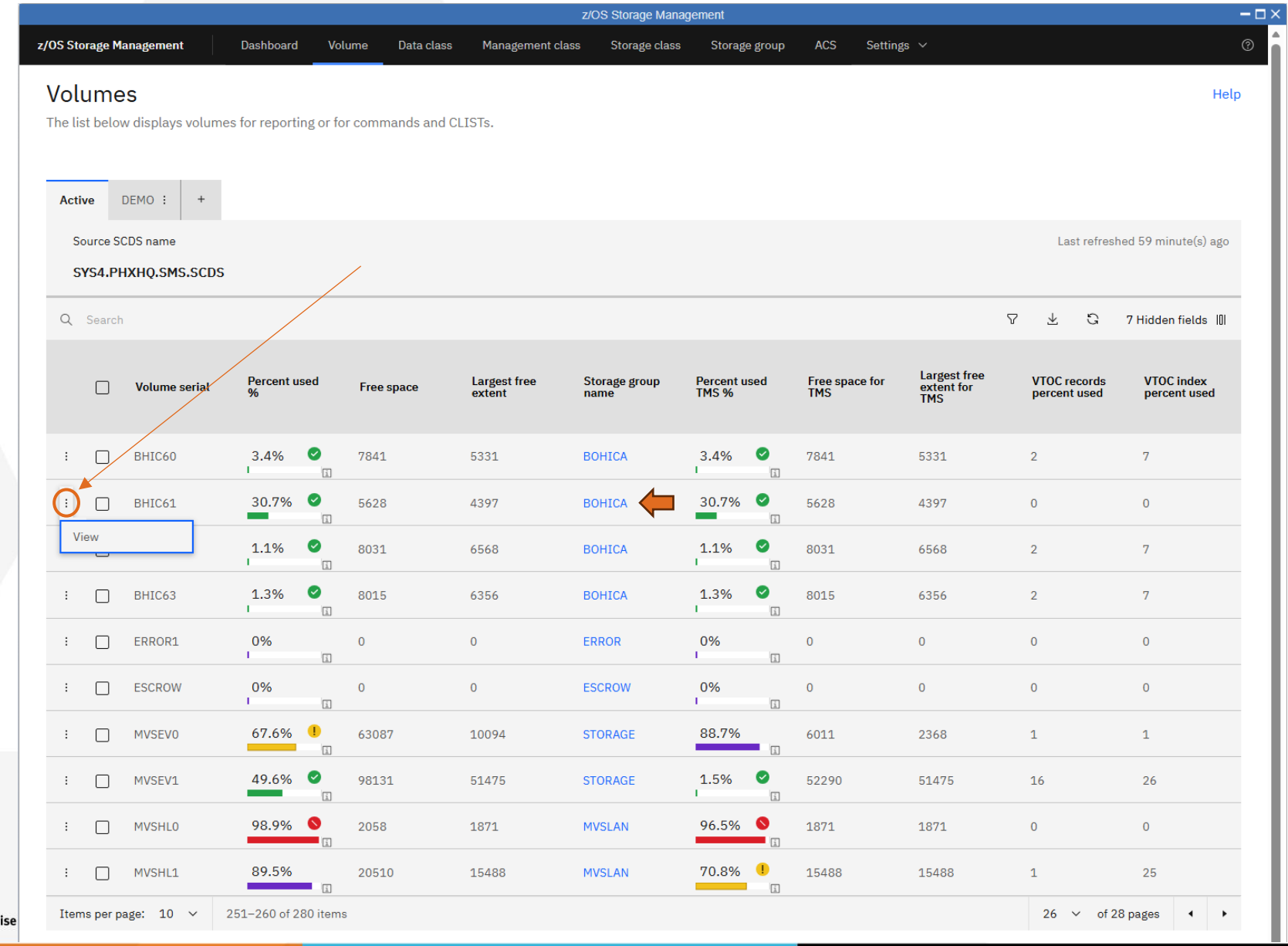
z/OSMF Storage Management Dashboard

- The dashboard has tabs for “Active” and every SCDS added through that process
- It displays SCDS metadata and cards for selecting the six subfunctions
  - Volumes, data classes, management classes, storage classes, storage groups, and ACS routines
- The use of cards gives the interface a modern feel
- You can use the menu across the top if you prefer



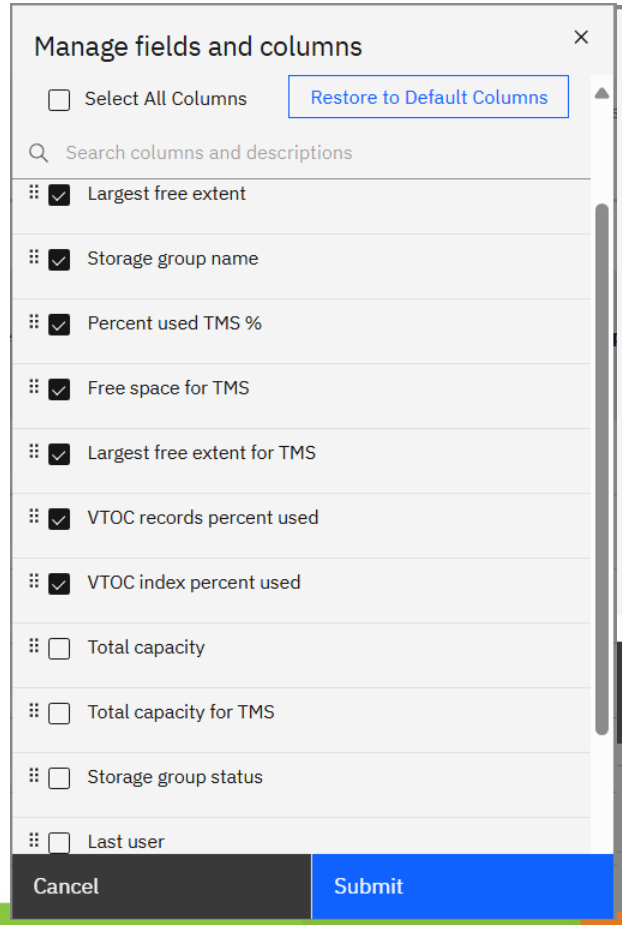
z/OSMF Storage Management Volumes

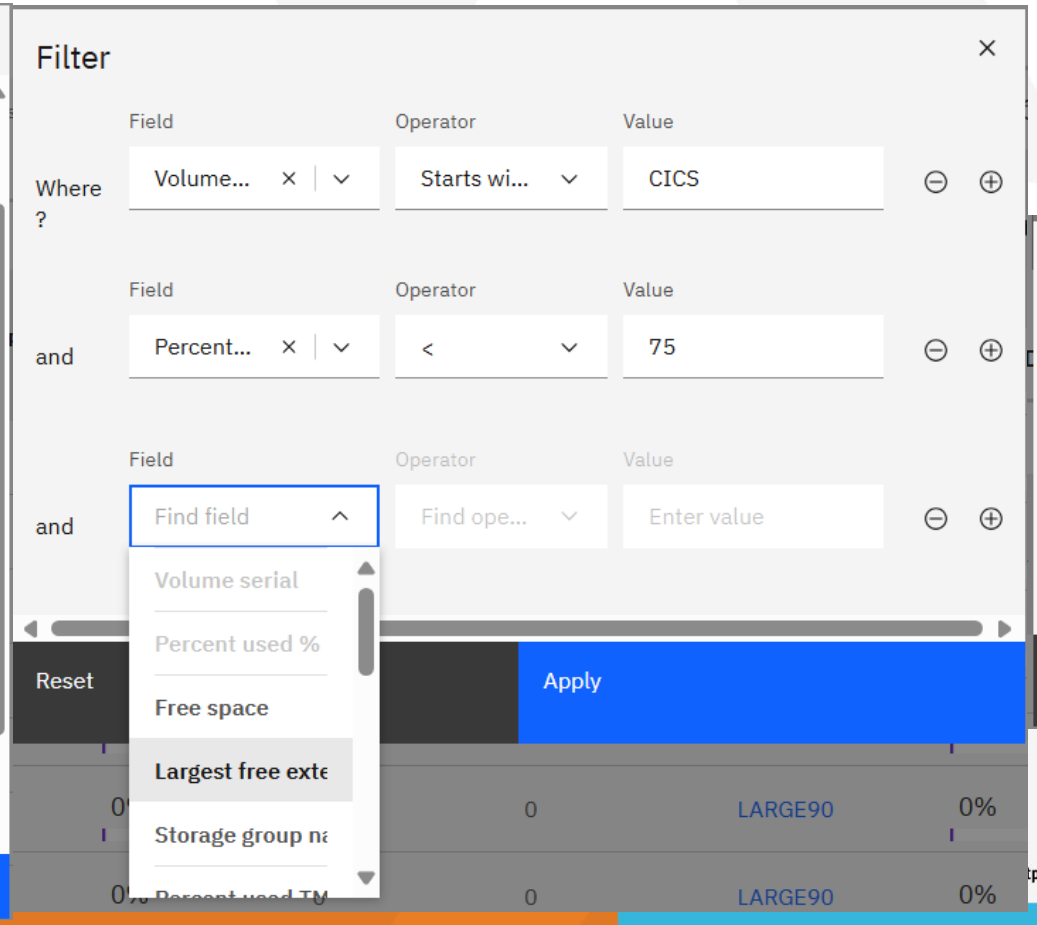
- Filtering on one or more columns: equals, contains, starts, ends, RegEx, etc.
- Each row (or all rows) can be selectively exported to CSV file
- The Kebab menu allows a View choice to show volume details
- Click on storage group name to show storage group details

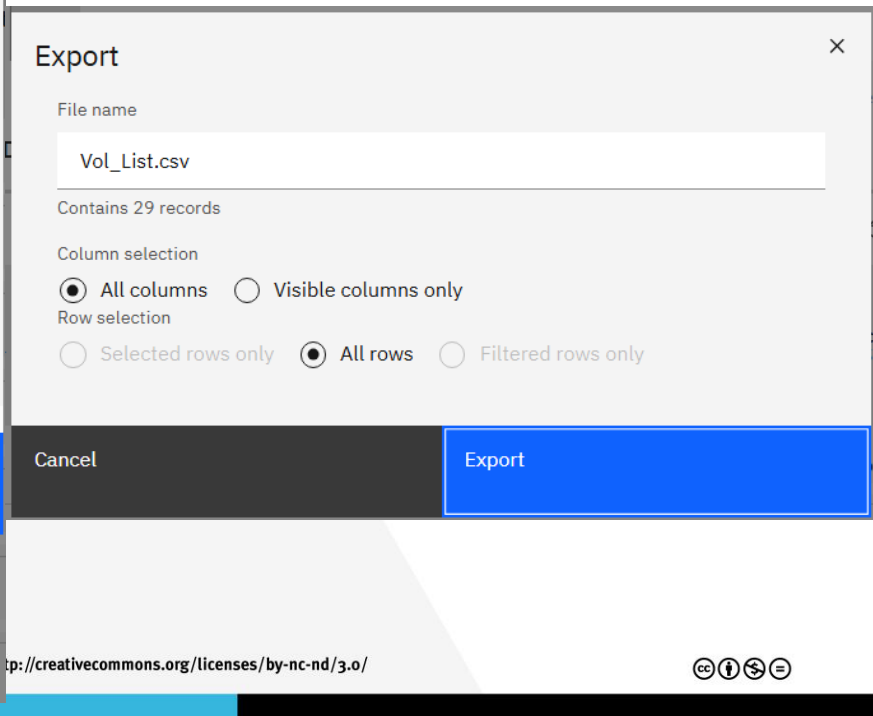


z/OSMF Storage Management Volumes Customization

- Choose which columns to display (tick/untick) and their order (grab the dot-six menu and drag up or down)
- Powerful filtering capabilities including RegEx support for character data
- Export to CSV file

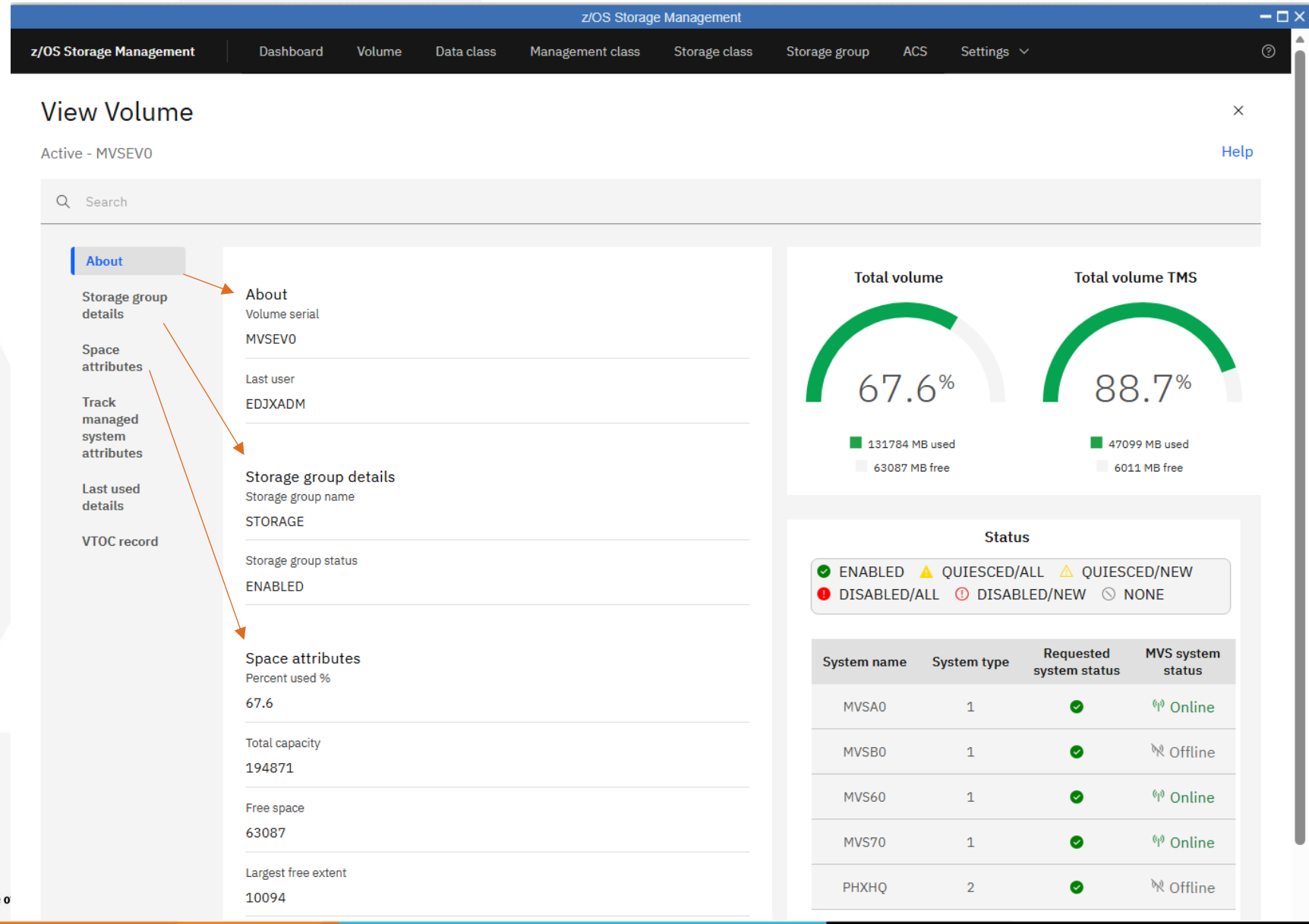






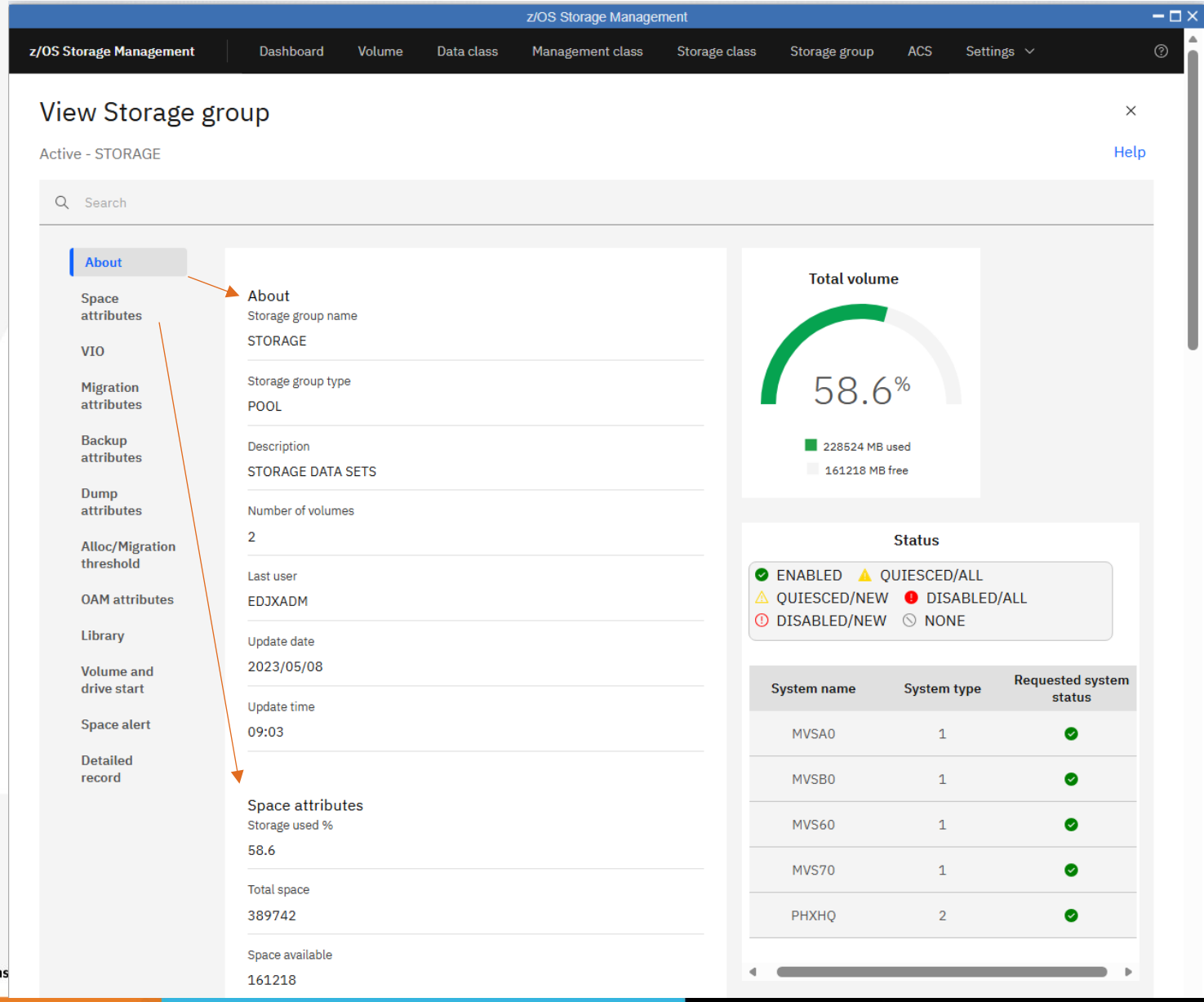
z/OSMF Storage Management View Volume

- View from kebab menu on Volumes display brings you here.
- A single page of data.
- Left menu choices are not submenus; they work like a standard web page TOC.
- This is a familiar behavior throughout these displays



z/OSMF Storage Management View Storage Group

- Clicking storage group name on Volumes display brings you here. So does View from kebab menu on Storage Groups display.
- A single page of data.
- Left menu choices are not submenus; they work like a standard web page TOC.
- This is a familiar behavior throughout these displays



z/OSMF Storage Management Other Cards

- The Data Class, Management Class, Storage Class, and Storage Group displays behave similarly to the Volumes display. Of course, the columns and data are appropriate to the display being accessed.
  - Volume List has 16 columns
  - Data Class has 64 columns
  - Management Class has 52 columns
  - Storage Class has 28 columns
  - Storage Group has 52 columns
  - The export, filter, and view capabilities all work similarly
- The Automatic Class Selection display provides information about the ACS routines being used and allows them to be edited, but not translated.

z/OSMF Storage Management Automatic Class Selection

- Similar capabilities to all of the other displays. In addition, clicking on the ACS data set name causes it to be displayed in the z/OSMF editor.
- If you click the pencil icon, you can edit the ACS routine.
- Of course, nothing changes on the system until the ACS routine is translated and the policy is activated.

	ACS routine type	ACS data set	Translator user ID	Last date translated	Last time translated
⋮ ☐	Storage Group	SYS1.SAMPLIB(DFPSSSGR)	EDJXADM	2025/10/11	12:27
⋮ ☐	Storage Class	SYS1.SAMPLIB(DFPSSSCR)	EDJXADM	2025/10/11	12:27
⋮ ☐	Management Class	SYS1.SAMPLIB(DFPSSMCR)	EDJXADM	2025/10/11	12:27
⋮ ☐	Data Class	SYS1.SAMPLIB(DFPSSDCR)	EDJXADM	2025/10/11	12:26

Items per page: 10 | 1–4 of 4 items | 1 of 1 pages

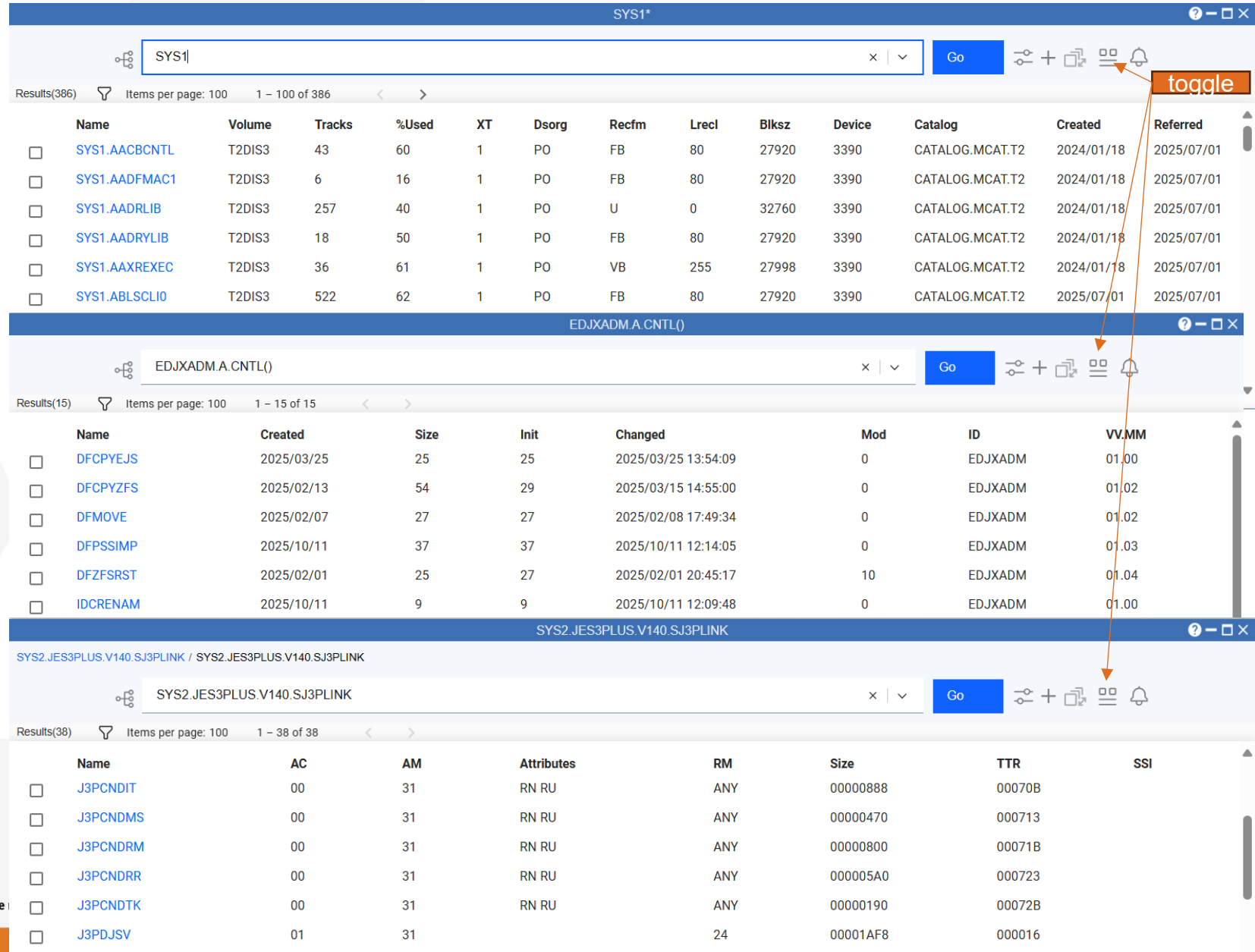
SYS1.SAMPLIB(DFPSSSGR)

SYS1.SAMPLIB(DFPSSSGR)

```
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8
1   PROC STORGRP
2
3   /*********************************************************************/
4   /*  The following ACS routines is provided on an "as is" basis. It is */
5   /*  only an example. You may modify it to suit the needs of your      */
6   /*  installation.                                                     */
7   /*                                                                    */
8   /*  Any comments on the usefulness and functionality of this          */
9   /*  example should be submitted via a Reader's Comment Form (RCF)     */
10  /*  and not via APARS or PTFs.                                        */
11  /*                                                                    */
12  /*********************************************************************/
13  /*                    C H A N G E    H I S T O R Y                   */
14  /*                    ============================                    */
15  /*                                                                    */
16  /*    DATE      RESP   DESCRIPTION OF CHANGE                          */
17  /*  --------    ----   ------------------------------------------------ */
18  /*  91/08/24    EG     Tape mount management logic added.             */
19  /*                                                                    */
20  /*  90/12/03    GTB    Logic to manage database data added.           */
21  /*                     Additional comments and change history         */
22  /*                     section incoporated.                           */
23  /*                                                                    */
24  /*  89/12/06    GTB    Initial routine created.                       */
25  /*                                                                    */
26  /*                                                                    */
27  /*  PURPOSE:    This routine assigns a valid storage group to DASD    */
28  /*              data sets.  It also assigns storage groups to tape    */
29  /*              data sets that are tape mount management candidates.  */
30  /*              Buffer storage groups, "TMMBUFxx" and "TMMBFSxx",     */
31  /*              contain these new tape allocations.  If TMM           */
32  /*              data sets are RECALLed or RECOVERed by HSM,           */
33  /*              the data sets are assigned to either the              */
34  /*              storage group "PRIMExx" or "LARGExx" based on         */
35  /*              data set size.                                        */
36  /*                                                                    */
37  /*  INPUT:      The following ACS variables are referenced:           */
38  /*                                                                    */
39  /*                  &ACSENVIR          &MAXSIZE                       */
40  /*                  &DATACLAS          &STORCLAS                      */
```

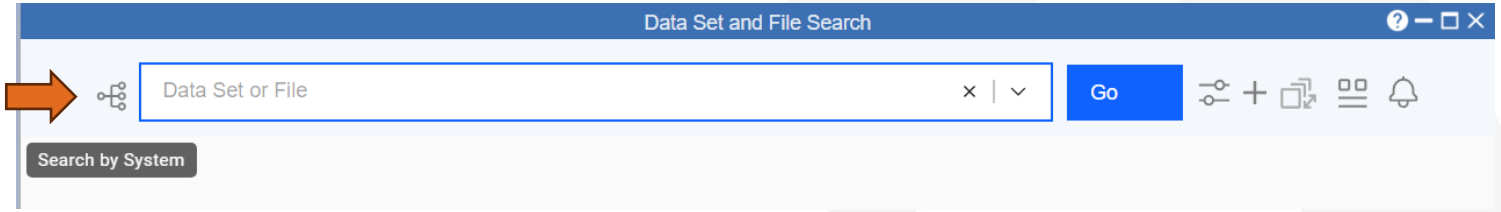
z/OSMF Data Set and File Search Classic Data Set Attributes

- Attributes for classic MVS data sets are now optionally shown
- You can avoid the extra overhead of reading the VTOC until you actually need to see the values
- A similar feature was added for both source PDS[E] members as well as loadlib and program object members as well

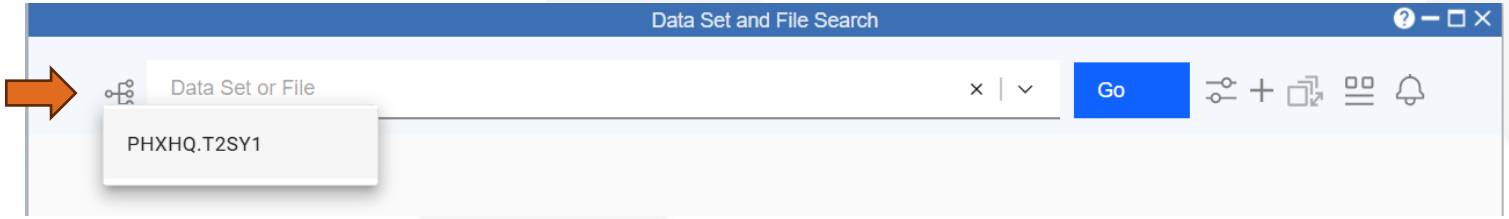


z/OSMF Data Set and File Search Cross-System Functions

- There is a new icon to the left of the data set/file name field. If you hover over it, it says “Search by System”



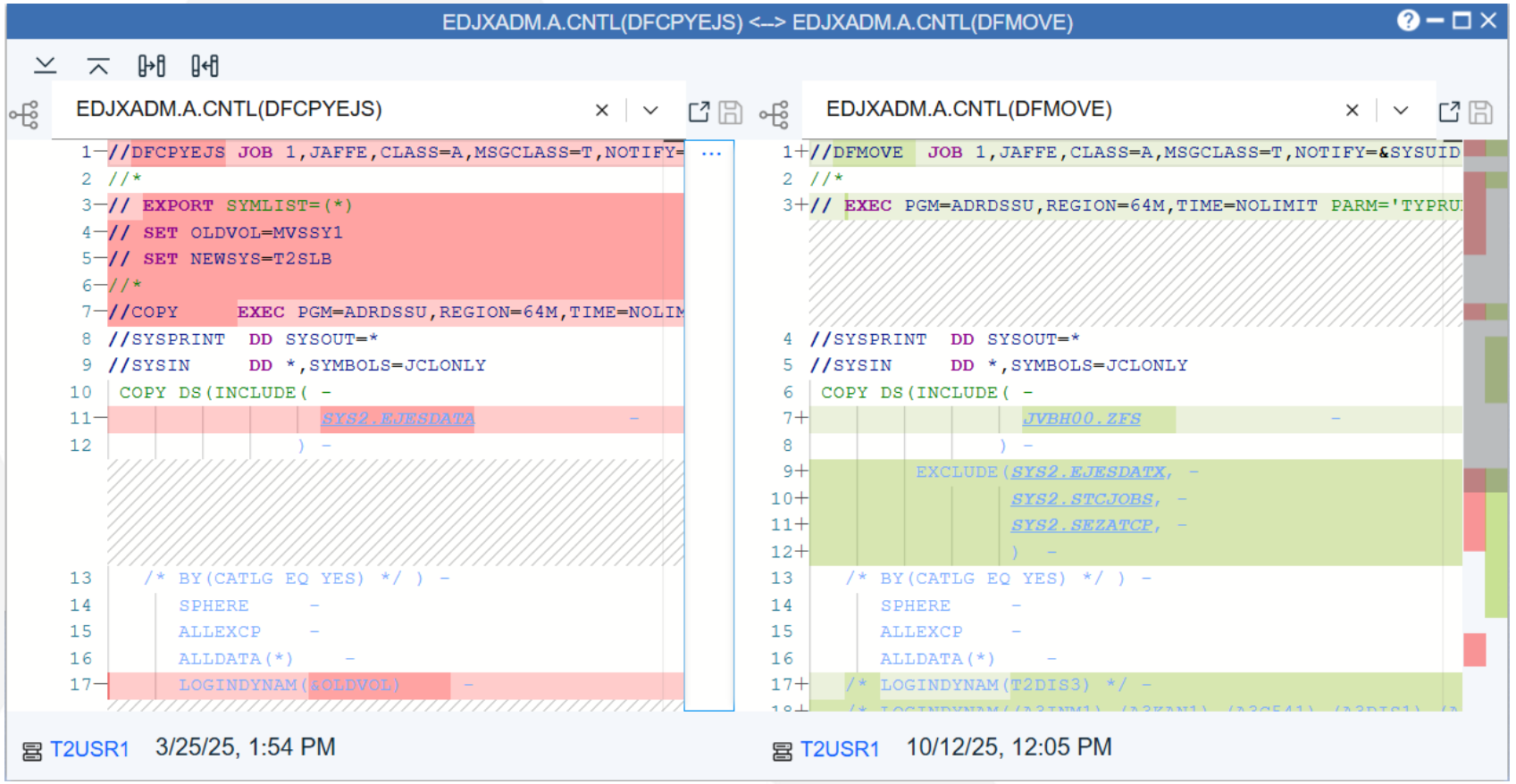
- If you click on it, you get to choose from a list of systems where z/OSMF is running

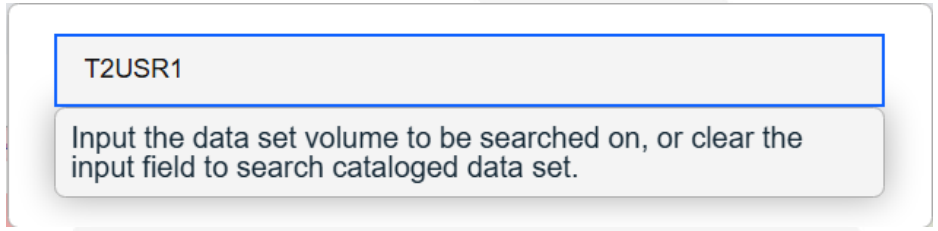


- We’re only running a single instance of z/OSMF in one sysplex
- I will demonstrate the cross-sysplex functions in future presentations once we migrate to z/OS 3.2 on multiple sysplexes

z/OSMF Data Set and File Search Cross-System Compare

- They've upgraded the copy function with those same system-selection icons on both sides.
- They've also added a Data Set Volume button at the bottom of each side. If you click on it, you are prompted to specify a different volser.





z/OSMF Data Set and File Search Python Syntax Highlighting

- The Python language is now supported for syntax highlighting

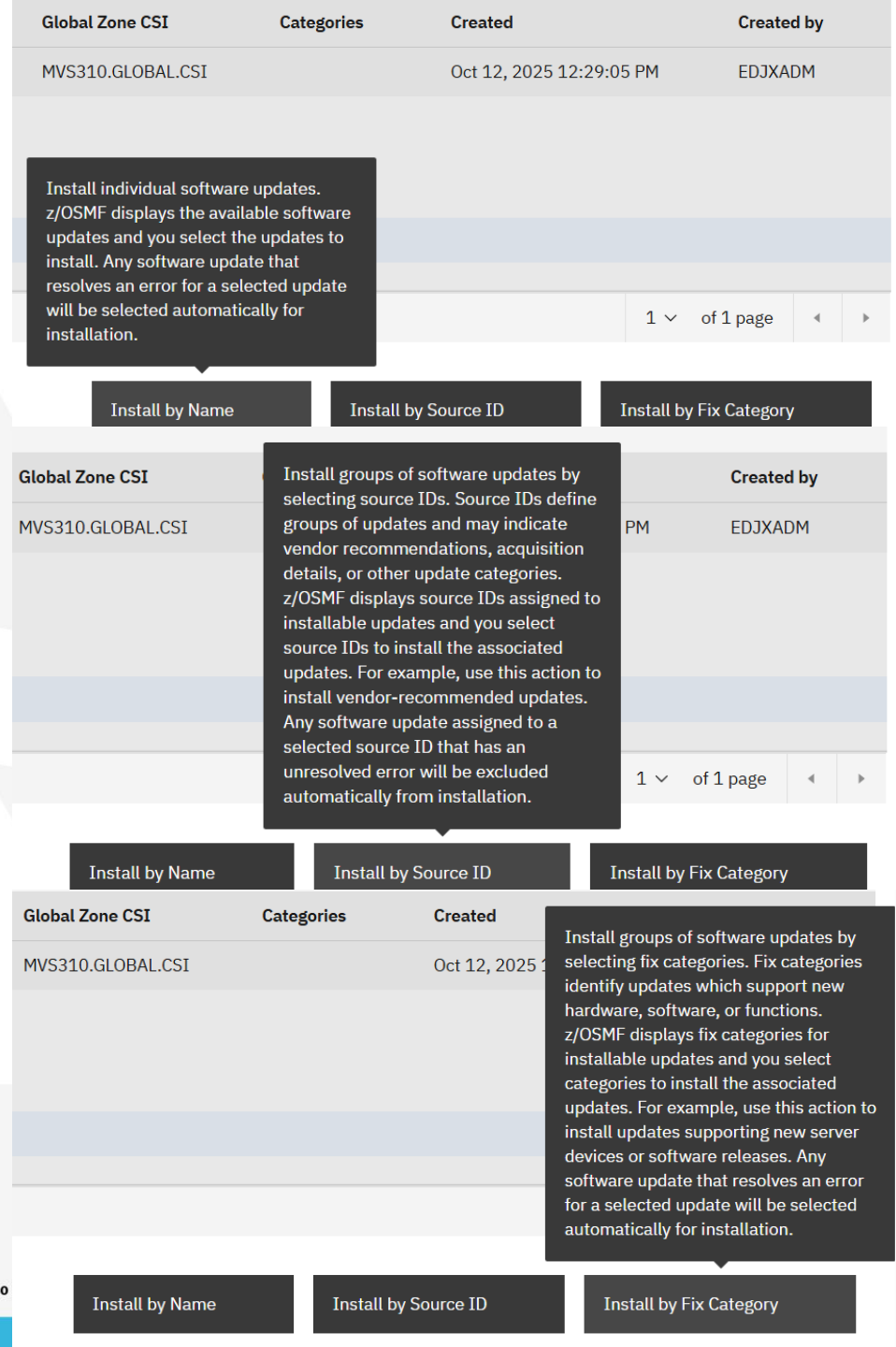
/usr/lpp/liberty_zos/24.0.0.9/clients/jython/restConnector.py

/usr/lpp/liberty_zos/24.0.0.9/clients/jython/restConnector.py

```
45
46  class JMXRESTConnector(object):
47      connector = None
48      mbeanConnection = None
49      trustStore = None
50      trustStorePassword = None
51      trustStoreType = None
52
53      def __init__(self):
54          pass
55
56      def connect(self, host, port, *args):
57          if len(args)==2:
58              self.connectBasic(host, port, args[0], args[1])
59          else:
60              self.connectAdvanced(host, port, args[0])
61
62      def connectAdvanced(self,host,port,map):
63          print("Connecting to the server...")
64          System.setProperty("javax.net.ssl.trustStore", self.trustStore)
65          System.setProperty("javax.net.ssl.trustStorePassword", self.trustStorePassword)
66          System.setProperty("javax.net.ssl.trustStoreType", "PKCS12");
67          url = JMXServiceURL("REST", host, port, "/IBMJMXConnectorREST")
68          self.connector = JMXConnectorFactory.newJMXConnector(url, map)
69          self.connector.connect()
70          print("Successfully connected to the server " + '"' + host + ':%i"' % port)
71
72      def connectBasic(self,host,port,user,password):
73          map = HashMap()
74          map.put("jmx.remote.provider.pkgs", "com.ibm.ws.jmx.connector.client")
75          map.put(JMXConnector.CREDENTIALS, jarray.array([user, password], String))
76          map.put(ConnectorSettings.READ_TIMEOUT, 2*60*1000)
77          map.put(ConnectorSettings.DISABLE_HOSTNAME_VERIFICATION, True)
78          self.connectAdvanced(host, port, map)
79
```

z/OSMF Software Update User Interface

- In October 2025, I stepped through every function in Software Update and saw no differences at all between my z/OS 3.2 and z/OS 3.1 systems
- Turned out this was a post-GA continuous delivery item in z/OS 3.1:
  - **Install by Name** provides a list of PTFs
  - **Install by Source ID** provides a list of source ids
  - **Install by Fix Category** provides a list of fix categories
  - Multiple selections are allowed on these selection panels



z/OSMF REST API to Query an SMPCSI

- I used the z/OSMF Swagger interface available from https://hostname:port/zosmf/api/explorer to test the new API

POST /zosmf/swmgmt/csi/csiquery/{csi-data-set-name} — Query an SMP/E CSI data set

Response Content Type: application/json

Parameters

Parameter	Value	Description	Parameter Type	Data Type
csi-data-set-name	MVS.GLOBAL.CSI	A global zone CSI data set to query when it is not associated with a defined software instance object.	path	string
body	{ "zones": ["MVST"], "entries": ["SYSMOD"] }	Request body. Include the JSON object in the request only if you are required to authenticate with a secondary z/OSMF instance or an HTTP proxy server. Otherwise, omit the JSON object.	body	Model | Example Value

Example Value:

```
{
  "zones": [
    "zone-name"
  ],
  "entries": [
    "entry-type"
  ],
  "subentries": [
    "subentry-type"
  ],
```

Response Code

202

Response Body

```
{
  "statusurl": "https://t2sy1.phx:10443/zosmf/swmgmt/statusmonitor/csiquery/1760297113668"
}
```

z/OSMF REST API to Query an SMPCSI (*continued…*)

GET /zosmf/swmgmt/statusmonitor/csiquery/{status-monitor-id} — Retrieve the status of the CSI query operation

Response Content Type application/json

Parameters

Parameter	Value	Description	Parameter Type	Data Type
status-monitor-id	**1760297113668**	**Status Monitor ID captured from the status URL of the csi query response.**	path	string

Response Body


```
{
  "status": "complete",
  "entries": [
    {
      "entryname": "AA01860",
      "entrytype": "SYSMOD",
      "zonename": "MVST",
      "subentries": []
    },
    {
      "entryname": "AA02305",
      "entrytype": "SYSMOD",
      "zonename": "MVST",
      "subentries": []
    },
    {
      "entryname": "AA02651",
```


Response Code

200

z/OSMF REST API to Perform a Software Update

- I didn't have time to fully explore this function, so I pretty much just read the doc and perused the Swagger interface.
- You can start, resume, cancel and copy the output from, a software update. All functions can specify either UUID or system and PSWI names. Once the process has been started, the remaining functions can specify a process id.
- An update can get suspended if HOLDs must be resolved. The resume call gets it going again.

UUID

GET	/zosmf/swmgmt/swi/{swi-uuid}/swupdate	Retrieve the status of a software update process on a software instance
POST	/zosmf/swmgmt/swi/{swi-uuid}/swupdate	Start a software update for a software instance
GET	/zosmf/swmgmt/swi/{swi-uuid}/swupdate/all	Retrieve the status of all software update processes on a software instance
POST	/zosmf/swmgmt/swi/{swi-uuid}/swupdate/cancel	Cancel a software update for a software instance
POST	/zosmf/swmgmt/swi/{swi-uuid}/swupdate/resume	Resume a software update for a software instance
PUT	/zosmf/swmgmt/swi/{swi-uuid}/swupdate?dir={directory}	Copy software update output for a software instance

System/PSWI Names

GET	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/swupdate	Retrieve the status of a software update process on a software instance
POST	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/swupdate	Start a software update for a software instance
GET	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/swupdate/all	Retrieve the status of all software update processes on a software instance
POST	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/swupdate/cancel	Cancel a software update for a software instance
POST	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/swupdate/resume	Resume a software update for a software instance
PUT	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/swupdate?dir={directory}	Copy software update output for a software instance

Process Id

POST	/zosmf/swmgmt/swupdate/cancel/{processid}	Cancel a software update for a software instance
POST	/zosmf/swmgmt/swupdate/resume/{processid}	Resume a software update for a software instance
GET	/zosmf/swmgmt/swupdate/{processid}	Retrieve the status of a software update process
PUT	/zosmf/swmgmt/swupdate/{processid}?dir={directory}	Copy software update output

z/OSMF REST API to Validate Parmlib Members

- I created member IEASYSER with a deliberate syntax error
- With the exception of that intentional error, the member is valid
- We IPL with it at least once per week

```
 File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
MVS60      SYS2.PARMLIB(IEASYSER) - 01.02                Columns 00001 00080
Command ===>                                              Scroll ===> CSR
****** ********************************* Top of Data ***********************************
000001 *START OF SPECIFICATIONS*****************************************
000002 *                                                                 *
000003 * MEMBER = IEASYSER                                              *
000004 *                                                                 *
000005 * DESCRIPTIVE NAME = System Startup with Syntax Error            *
000006 *                                                                 *
000007 * FUNCTION =                                                     *
000008 *                                                                 *
000009 *     This member provides the system startup parameters         *
000010 *     for PSI's production z/OS 3.2 system. A syntax error       *
000011 *     was introduced to test the Parmlib Validation REST API.    *
000012 *                                                                 *
000013 * CHANGE-ACTIVITY                                                *
000014 *                                                                 *
000015 *     2026-01-30 EEJ Clone from IEASYS20. Introduce error.       *
000016 *     2026-01-23 EEJ Clone from IEASYS11. Update for z/OS 3.2.   *
000017 *     2026-01-12 EEJ Switch from A3 to D3 volumes                *
000018 *     2023-12-16 EEJ Initial member creation                     *
000019 *                                                                 *
000020 *END OF SPECIFICATIONS*************************************
000021 *
000022 DEVSUP=00,                          Device Support Options
000023 DIAG=20,                            Supported DIAG Traps
000024 GRS=STAR,                           Use STAR Topology for GRS
000025 GRSCNF=00,                          No GRS Configuration Data
000026 GRSRNL=(00,01),                     Dflt+Custom GRS Resource Names List
000027 IZU=&SYSCLONE,                      Create z/OSMF autostart group
000028 LFAREA=(1M=2048,2G=1,NOPROMPT),     Large frame area
000029 LPA=(20,CK,01,L),                   Specify LPA List
000030 MAXUSER=300,                        Up to 300 address spaces
000031 OMVS=(00,20),                       z/OS UNIX Definitions
000032 OSPROTECT=SYSTEM,                   No Meltdown protection (was '1')
000033 PAGE=(SYS2.&SYSNAME..PAGE.PLPA,     PLPA Page Data Set
000034       SYS2.&SYSNAME..PAGE.COMMON,   Common Page Data Set
000035       SYS2.&SYSNAME..PAGE.LOCAL1,   Local Page Data Set
000036       SYS2.&SYSNAME..PAGE.LOCALA,   Local Page Data Set
000037       SYS2.&SYSNAME..PAGE.LOCALB,   Local Page Data Set
000038       L),                           List Page Data Sets
000039 PROD=(00,01,02,DB,FM,1C,1P),        Licensed features (1P = PSI software)
000040 PROG=(2A,0S,2L,01),                 APF, Syslib, Link List, Exit
000041 RACF=00,                            RACF specifications
000042 RSU=0, 01024M,                      Leave 1G reconfigurable storage offline
000043 RSVSTRT=25,                         Reserved ASVT Entries
000044 RSVNONR=256,                        Reserved ASVT Entries
000045 VIODXN=IGNORE, <--- ERROR HERE!!!   VIO Storage Index Data Set Name
000046 ZZ=YES                              Allow zAAP-eligible work on zIIP engines
****** ******************************** Bottom of Data ********************************
```

z/OSMF REST API to Validate Parmlib Members (*continued…*)

- I used the Swagger interface to test the new API
- Someone should proof/correct the English being used here

PUT /zosmf/parmlib/{version}/{membertype}/validate — Validation parmlib members

Response Content Type application/json

Parameters

Parameter	Value	Description	Parameter Type	Data Type
version	v1	**The z/OS parmlib member syntax validation service. The following value is valid: v1.**	path	string
membertype	IEASYS	**The member type of the z/OS parmlib member syntax validation service. E.g., BPXPRM is the member type for BPXPRM01. The value needs to be uppercase.**	path	string
deep	false (default)	Whether need validate all the members of all the Parmlib member types from LOAD. The TRUE value is acceptable only when 'membertype' is LOAD. The following value is valid: false/true	query	boolean
system		The remote system name. This remote system must be in same sysplex and share DASD with current system.	query	string
member	IEASYSER	A member name of supported 'membertype', e.g. LOAD01.	query	string
dataset	SYS2.PARMLIB	The PDS data set name, e.g. SYS0.IPLPARM, where 'member' is.	query	string

z/OSMF REST API to Validate Parmlib Members (*continued…*)

- One unexpected error with LFAREA. It generates no errors at IPL.
- More bad English seen with the expected VIODXN error.


```
"failures": [
  {
    "expectedField": [
      "1M"
    ],
    "input": "LFAREA=(1M=2048,2G=1,NOPROMPT),",
    "afterField": "1,",
    "index": 1,
    "currentField": "NOPROMPT",
    "location": {
      "line": 7,
      "position": 22
    },
    "message": "SYNTAX ERROR 1 START AT LINE 7, POSITION 22 :\nCURRENT FIELD : NOPROMPT\n  EXPECT 1M AFTER 1,\n"
  },
    "input": "VIODXN=IGNORE,",
    "afterField": "N/A",
    "index": 2,
    "currentField": "VIODXN",
    "location": {
      "line": 24,
      "position": 1
    },
    "message": "SYNTAX ERROR 2 START AT LINE 24, POSITION 1 :\nCURRENT FIELD : VIODXN\n  EXPECT ONE OF THE FOLLOWINGS AFTER N/A:\n    [ALLOC, APF, AUTOR, AXR, BOOST, CATALOG, CEA, C
  }
```

z/OSMF REST API to Validate Parmlib Members (*continued…*)

- I ran it on several random parmlib members and all ran successfully.
  - Surprised to learn that IEAOPTxx is not supported.
- I decided to try the “deep” validation beginning with LOADxx
- Unfortunately, something went wrong.

Response Body

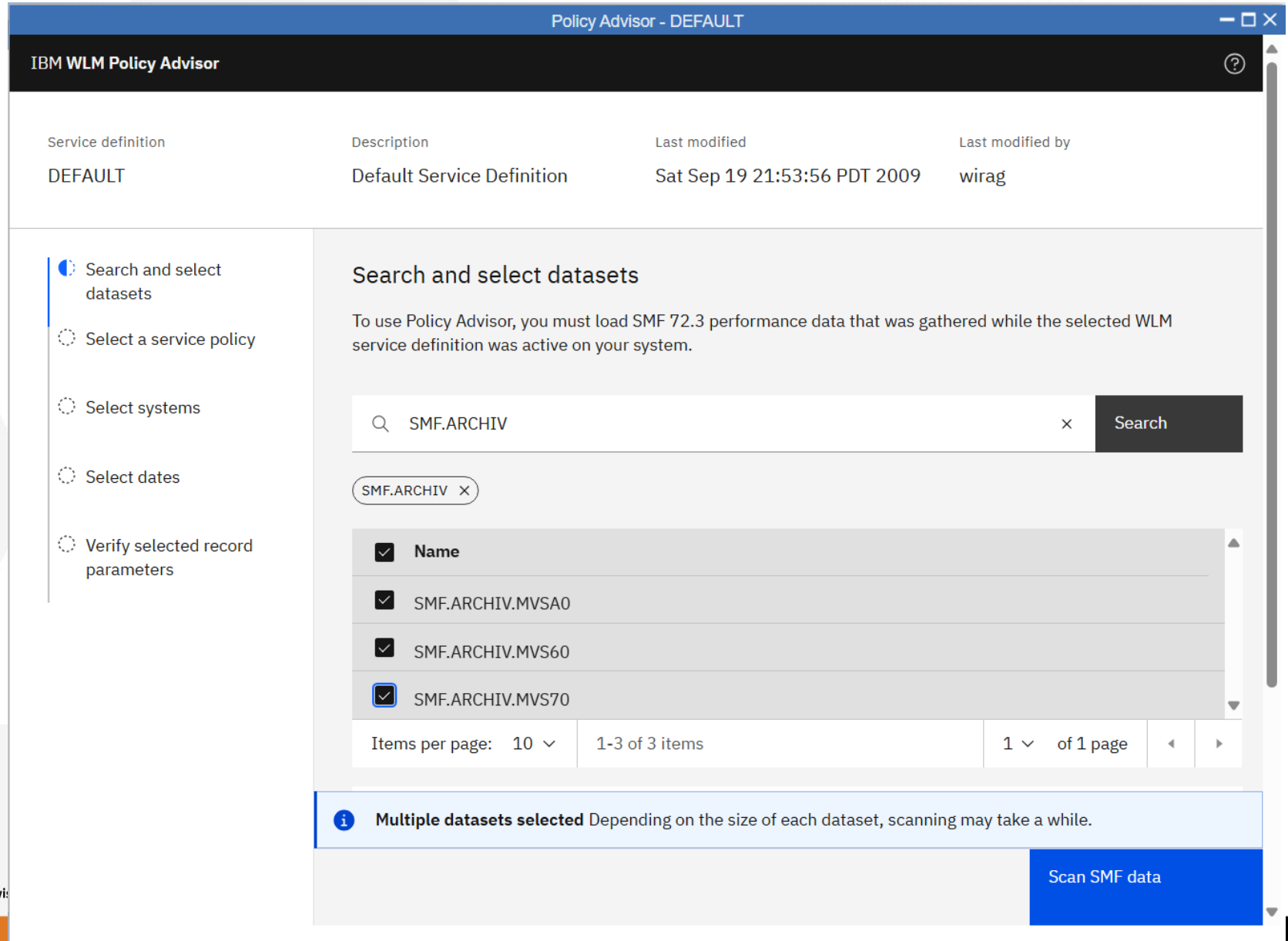

```
{
  "errorData": {
    "reason": "31",
    "messages": "The validation request was not completed. ParserException : \"Do query failed! com.ibm.zoszmf.pm.parser.RepeatableNode incompatible with com.ibm.zoszmf.pm.parser.VariableC
  }
}
```


- I opened a case with IBM support about this. They’re still looking at it.

- **Despite the above, I consider this *really* powerful facility.**
- **I wish it could be invoked by clicking an icon on the z/OSMF desktop, and not just through a REST API!**

z/OSMF WLM Policy Advisor

- In z/OS 3.1, the first panel prompted for an SMF data set – only one was allowed, which forced you to combine your system data externally
- In z/OS 3.2, you now have a “wizard” design that has a data set search and allows selection of multiple data sets



System-Controlled CPENABLE

- CPENABLE=SYSTEM is accepted and is advertised as allowing the system to always choose the best values for this setting.
- There is health check called WLM_OPT_PARM_CPENABLE that ensures you are coding this value.
- My system did not have this health check when I originally gave this presentation at GSUK last November. It has since been added.

```
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+
CHECK(IBMWLM,WLM_OPT_PARM_CPENABLE)
SYSPLEX:     PHXHQ       SYSTEM: MVS60
START TIME: 01/25/2026 15:26:26.095929
CHECK DATE: 20250410   CHECK SEVERITY: LOW

* Low Severity Exception *

IWMH112E OPT parameter CPENABLE=(5,15) does not match the
preferable CPENABLE=SYSTEM setting.

  Explanation:  CHECK(IBMWLM,WLM_OPT_PARM_CPENABLE) determined that
    CPENABLE=SYSTEM is neither specified in the active IEAOPTxx parmlib
    member nor accepted as the default value.

  System Action:  Processing continues.

  Operator Response:  Notify the system programmer.
```

Access JES2 SPOOL Data Sets Via Subsystem Allocation

SHARE
EDUCATE • NETWORK • INFLUENCE

- Previously SPOOL Browse required an assembler program
- Now it can be done through normal subsystem allocation!
- Consider the following unterse job with a SYSPRINT data set
- The data set name format is owner.jobname.jobid.dsnum.dsname

```
DSSTAT    SMFUNPK  J0032743    75 Records  0 Pages                                                                          Row 1 of 4
Command ===>                                                                                                            Scroll ===> CSR
Cmd DDName    StepName ProcStep Que* Step Program  C Destination        Records Pages Bytes     Cpy RF LRecL GrpName DSNum     DSName   PrMode Forms  FCB  UCS
    JESMSGLG  JES2              OUT                T LOCAL                   16     0      695   1 UA   133 1        D0000002  JESMSGLG LINE   STD    **** ***
    JESJCL    JES2CI01          OUT                T LOCAL                   15     0      827   1 V    132 1        D0000003  JESJCL   LINE   STD    **** ***
    JESYSMSG  JES2CI01          OUT                T LOCAL                   35     0    1,964   1 VA   133 1        D0000004  JESYSMSG LINE   STD    **** ***
_   SYSPRINT  UNPACK            OUT      2 AMATERSE T LOCAL                   9     0      724   1 FA   133 1        D0000101  ?        LINE   STD    **** ***
*************************************************************** Bottom of Data ****************************************************************
```

```
  Jobs  JES  System  Tools  Filter  View  Options  Help

 SMFUNPK  J0032743                                   <        .UNPACK   .SYSPRINT>                                     Line 1 of 9
 Command ===> _                                                                                                       Scroll ===> CSR
 Current Find Text:                                                                                                    Dataset 1 of 1
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+----9----+---10----+---11----+---12----+---13---
 ** AMA572I STARTING TERSE DECODE   UNPACK        20:21:08  10/13/2025 ****
 ** AMA527I  INPUT  - DDNAME : SYSUT1   DSNAME: EDJXADM.SMFA0.TRS
 ** AMA528I  OUTPUT - DDNAME : SYSUT2   DSNAME: EDJXADM.SMF.ARCHIVE.MVSA0
 ** AMA548I  OUTPUT LRECL IS LARGER THAN THE LARGEST RECORD OF THE ORIGINAL FILE
 ** AMA544I  OUTPUT LRECL IS:   32768     ORIGINAL LRECL IS: 32767
 ** AMA555I  THE VALUES ARE:  BLKSIZE= 32760   LRECL=32768   PACKTYPE=PACK    RECFM=VARIABLE
 ** AMA583I  INPUT DATASET SIZE IN BYTES: 22647808 OUTPUT DATASET SIZE IN BYTES: 169376151 COMPRESSION RATIO: 13%
 ** AMA573I TERSE COMPLETE DECODE   UNPACK        20:21:37  10/13/2025 ****
 ** AMA504I  RETURN CODE: 0
*************************************************************** Bottom of Data ****************************************************************
```

Access JES2 SPOOL Data Sets Via Subsystem Allocation

- I am using a simple IEBGENER to copy the data set to a new SYSOUT
- Notice the SUBSYS=JES2 specification

```
EDIT       EDJXADM.A.CNTL(PRTUNPK) - 01.00                    Columns 00001 00080
Command ===> _                                                 Scroll ===> CSR
****** ********************************* Top of Data ***********************************
000001 //PRTUNPK   JOB 1,JAFFE,CLASS=A,MSGCLASS=H,NOTIFY=&SYSUID
000002 //*
000003 //SMFUNPK   EXEC PGM=IEBGENER
000004 //SYSUT1     DD DSN='EDJXADM.SMFUNPK.J0032743.D0000101.?',
000005 //              SUBSYS=JES2
000006 //SYSUT2     DD SYSOUT=*
000007 //SYSPRINT   DD SYSOUT=*
000008 //SYSIN      DD DUMMY
000009 //
****** ********************************* Bottom of Data ********************************
```

```
PRTUNPK  J0032815                          <        .SMFUNPK .SYSUT2  >          Line 1 of 9
Command ===> _                                                                 Scroll ===> CSR
Current Find Text:                                                               Dataset 1 of 1
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8----+----9----+---10----+---11----+---12----+---13---
** AMA572I STARTING TERSE DECODE   UNPACK       20:21:08  10/13/2025 ****
** AMA527I  INPUT  - DDNAME : SYSUT1   DSNAME: EDJXADM.SMFA0.TRS
** AMA528I  OUTPUT - DDNAME : SYSUT2   DSNAME: EDJXADM.SMF.ARCHIVE.MVSA0
** AMA548I  OUTPUT LRECL IS LARGER THAN THE LARGEST RECORD OF THE ORIGINAL FILE
** AMA544I  OUTPUT LRECL IS:  32768     ORIGINAL LRECL IS: 32767
** AMA555I  THE VALUES ARE:  BLKSIZE= 32760   LRECL=32768   PACKTYPE=PACK    RECFM=VARIABLE
** AMA583I  INPUT DATASET SIZE IN BYTES: 22647808 OUTPUT DATASET SIZE IN BYTES: 169376151 COMPRESSION RATIO: 13%
** AMA573I TERSE COMPLETE DECODE   UNPACK       20:21:37  10/13/2025 ****
** AMA504I  RETURN CODE: 0
****************************************************************** Bottom of Data ******************************************************************
```

z/OSMF Surrogate Authority for TSO Functions

- This was a December 2023 continuous delivery item in z/OS 3.1.
- <smpe-user-id>.IZU.TSO resource in the SURROGAT class.

APAR number	PH56564
Reported component name	Z/OSMF TSO REST
Reported component ID	5655S28TS
Reported release	310
Status	CLOSED UR1
PE	NoPE
HIPER	NoHIPER
Special Attention	YesSpecatt / New Function / Xsystem
Submitted date	2023-08-28
Closed date	2023-12-07
Last modified date	2024-02-09

APAR is sysrouted FROM one or more of the following:

APAR is sysrouted TO one or more of the following: UI94766

PH56564: New function - TSO/E address space services enhancements

A fix is available

Obtain the fix for this APAR.

APAR status

Closed as new function.

Error description

```
NEW FUNCTION
```

Local fix

Problem summary

```
****************************************************************
* USERS AFFECTED: All users of IBM z/OS Management Facility    *
*                 TSO/E address space services on 3.1.         *
****************************************************************
* PROBLEM DESCRIPTION: This APAR enables TSO/E address space   *
*                      services to run as a surrogate user.    *
****************************************************************
This APAR provides enhancements to TSO/E address space services
to start a TSO address space as a surrogate user, and perform
actions in the address space with the identity of the surrogate
user.
```

z/OS UNIX Namespace Utilities

- This was a February 2024 continuous delivery item in z/OS 3.1 and z/OS V2R5.
- Provides three new commands

APAR number	OA62870
Reported component name	OPENMVS SHELL/U
Reported component ID	5695SCPX2
Reported release	7C0
Status	CLOSED UR1
PE	NoPE
HIPER	NoHIPER
Special Attention	YesSpecatt / New Function / Xsystem
Submitted date	2022-02-22
Closed date	2024-02-17
Last modified date	2024-04-01

APAR is sysrouted FROM one or more of the following:
APAR is sysrouted TO one or more of the following: UJ94663 UJ94664

OA62870: NEW FUNCTION - Provide namespace operation utilities unshare nsenter and lsns

A fix is available

Obtain the fix for this APAR.

APAR status

Closed as new function.

Error description

```
Provide namespace operation utilities unshare nsenter and lsns.

ZOSCP/K
```

Local fix

Problem summary

```
****************************************************************
* USERS AFFECTED: z/OS users of the unshare nsenter and lsns   *
*                 utilities                                    *
****************************************************************
* PROBLEM DESCRIPTION: Provide namespace operation utilities,  *
*                      including unshare nsenter and lsns.     *
****************************************************************
The namespace operation utilities:
unshare - Executes programs in new namespaces.
nsenter - Executes programs in different namespaces.
lsns    - List namespaces.
```

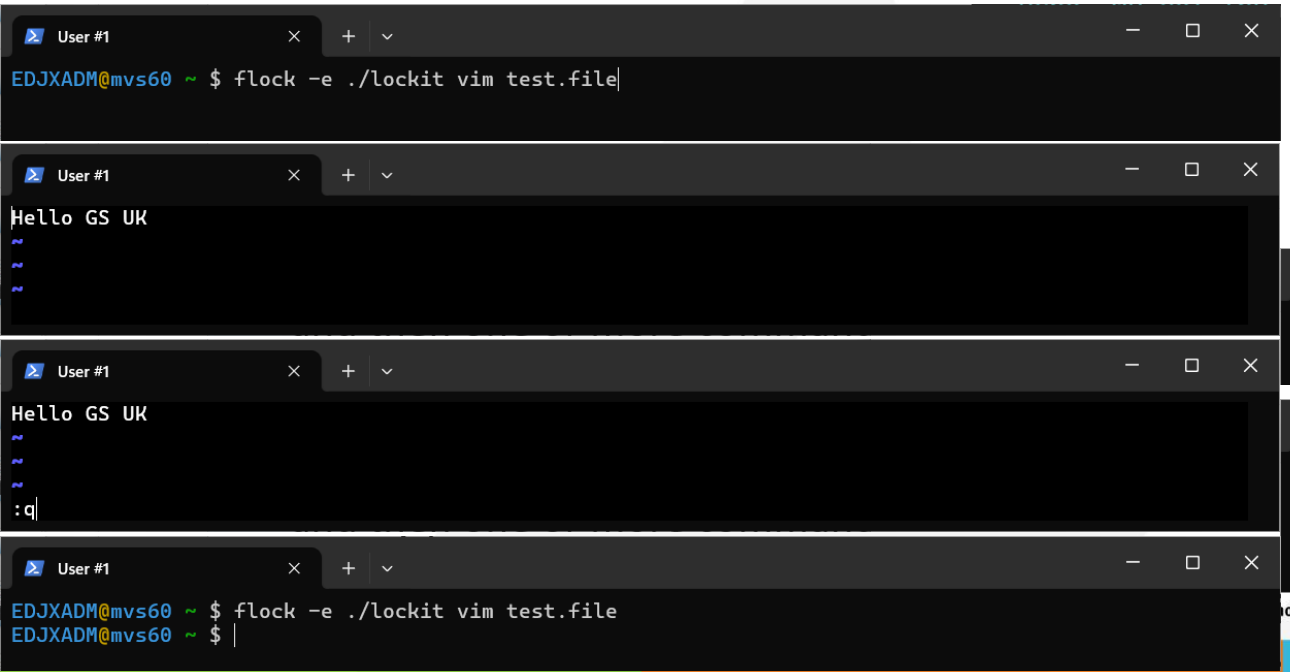
z/OS UNIX shlock and flock Commands

- I have seen shlock used in various Linux-based products with servers.
- It creates a lock file and places your process id (PID) inside. If the lock file already exists and in use by another PID, that PID is validated to see if it's stale or active.
- If stale, your PID is placed into the file just as if it had been created.
- If active, the PID is not placed into the file and the command result is FALSE.

```
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ cat lockit.sh
#!sh
LOCK=/u/edjxadm/LOCKIT
trap 'rm -f ${LOCK} ; exit 1' 1 2 3 15
if shlock -p $$ -f ${LOCK} ; then
  echo 'we got the lock'
else
   echo Locked by `cat ${LOCK}`
fi
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ ./lockit.sh
we got the lock
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ cat LOCKIT
  33620112
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ ./lockit.sh
we got the lock
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ cat LOCKIT
  83951760
EDJXADM@mvs60 ~ $ ps -A | fgrep TCPIP
     65554 ?         18:31 EZBTCPIP
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ echo '65554' > LOCKIT
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ ./lockit.sh
Locked by 65554
EDJXADM@mvs60 ~ $
```

z/OS UNIX shlock and flock Commands (*continued…*)

- flock is typically used for synchronizing scripts
- It has the concepts of exclusive, shared, blocking, non-blocking
- You specify your options, lock file or an entire directory, and one or more commands you wish to execute
- The default is blocking (wait for lock availability), but you can fail right away or after a specified number of seconds if the lock is not available



I've started two ssh sessions to show how flock can synchronize scripts

z/OS NFS password-less mvslogin

- This was a November 2024 continuous delivery item in z/OS 3.1
- Supports x.509 certificates or a netrc file

APAR number	OA66024
Reported component name	NETWORK FILE SY
Reported component ID	5695DF121
Reported release	25N
Status	CLOSED UR1
PE	NoPE
HIPER	NoHIPER
Special Attention	YesSpecatt / New Function / Xsystem
Submitted date	2024-01-17
Closed date	2024-11-04
Last modified date	2024-12-03

APAR is sysrouted FROM one or more of the following:

APAR is sysrouted TO one or more of the following: UJ96264 UJ96271

OA66024: NEW FUNCTION - support password-less mvslogin using x509 certificates or netrc files

A fix is available

Obtain the fix for this APAR.

APAR status

Closed as new function.

Error description

NEW FUNCTION

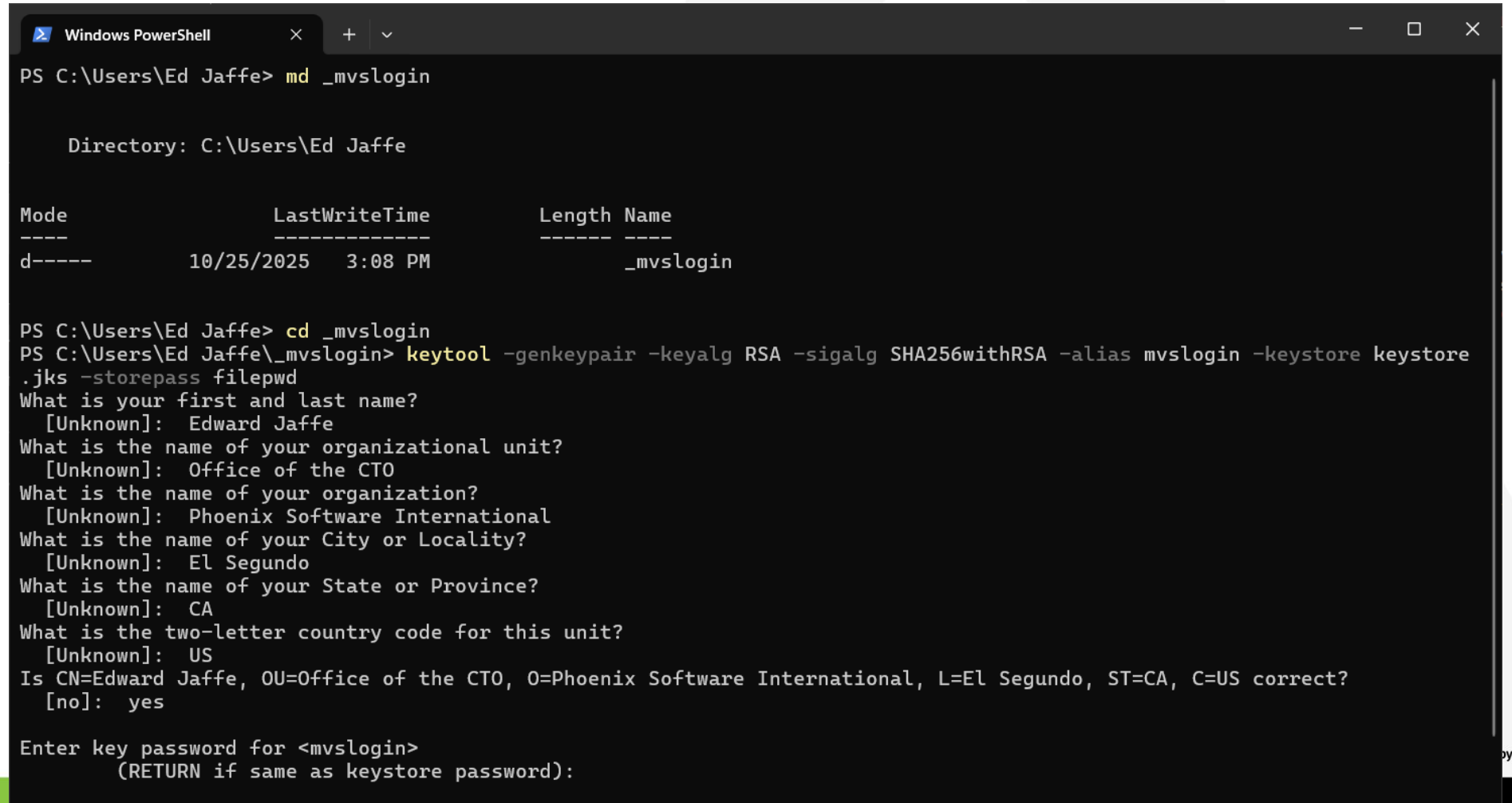
Local fix

Problem summary

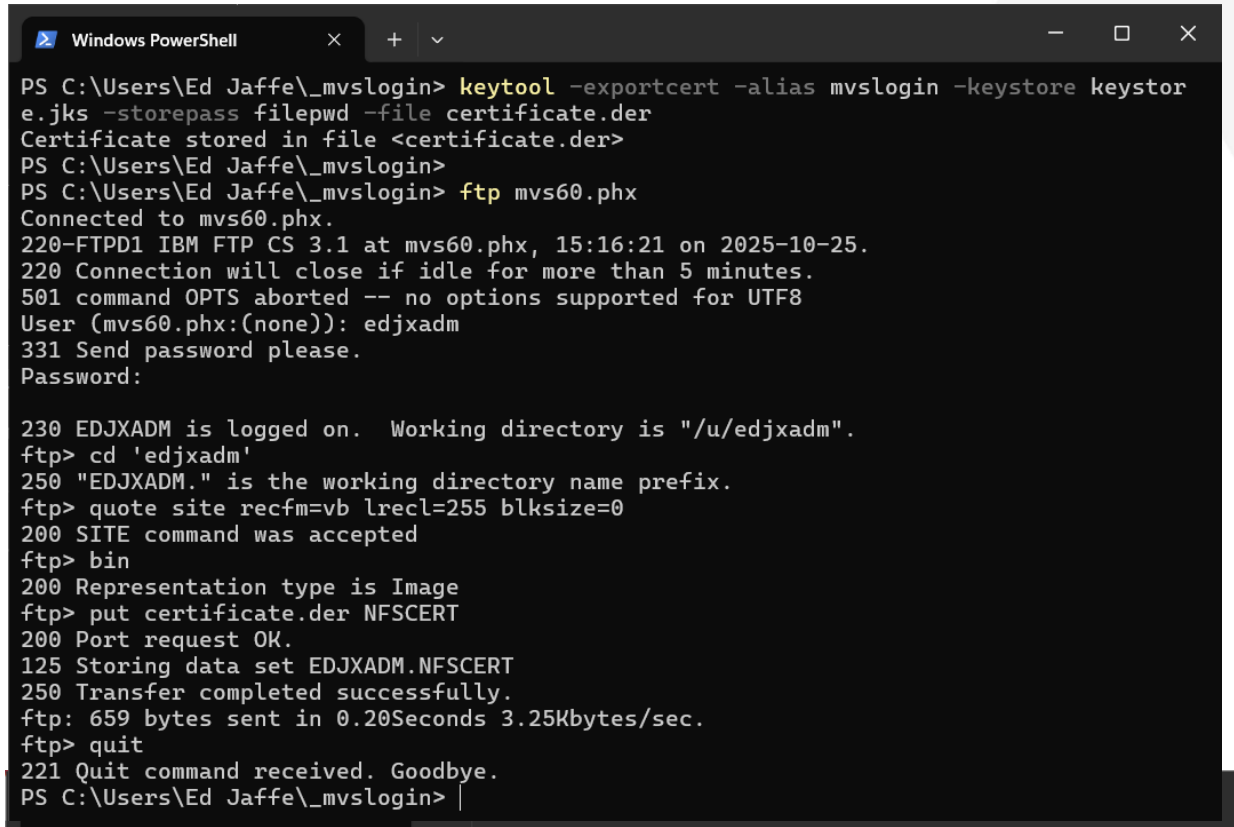
```
****************************************************************
* USERS AFFECTED: All users of the z/OS NFS server who wish to *
*                 run mvslogin by loading login information    *
*                 from netrc files or who wish to login using  *
*                 x509 certificates instead of passwords.      *
****************************************************************
* PROBLEM DESCRIPTION: Prior to OA66024 non-interactive        *
*                      mvslogins were only supported through   *
*                      putting a password on the command line  *
*                      -P parameter.  Also the only mvslogin   *
*                      method was using z/OS user name and     *
*                      password.                               *
*                                                              *
*                      With OA66024, the z/OS NFS server now   *
*                      supports non-interactive login without  *
*                      specifying a password on the command    *
*                      line, by either using netrc files to    *
*                      store the login information or by using *
*                      x509 certificates without a password.   *
*                      Interactive password-less login is also *
*                      supported using x509 certificates.      *
****************************************************************
```

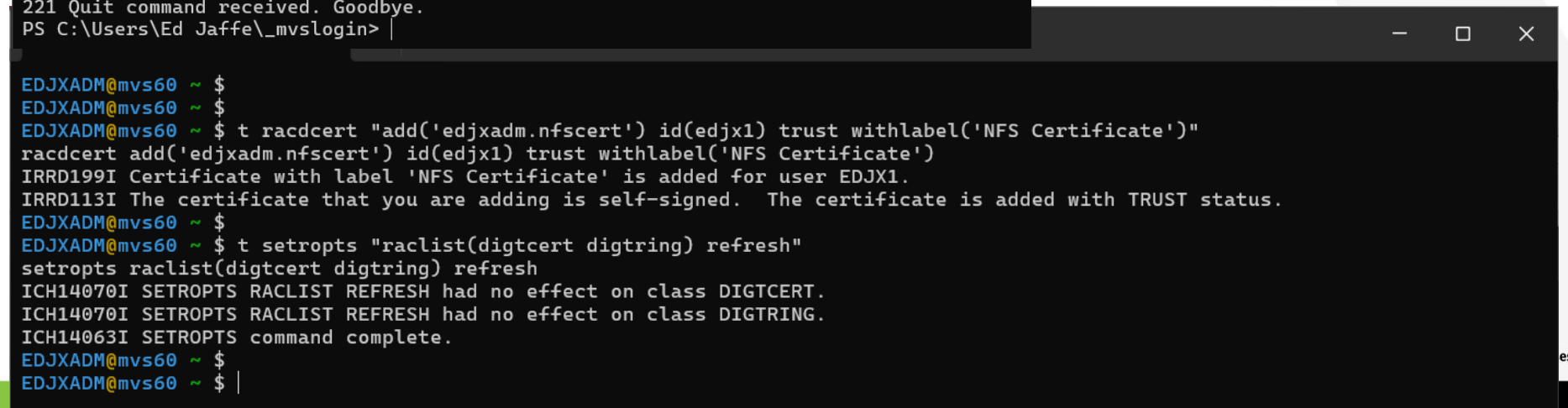
z/OS NFS x.509 Certificate Setup on Windows

- Created a _mvslogin subdirectory in my %USERPROFILE% directory
- Then used keytool to generate my x.509 keypair into _mvslogin



z/OS NFS x.509 Certificate Setup on Windows (*continued…*)

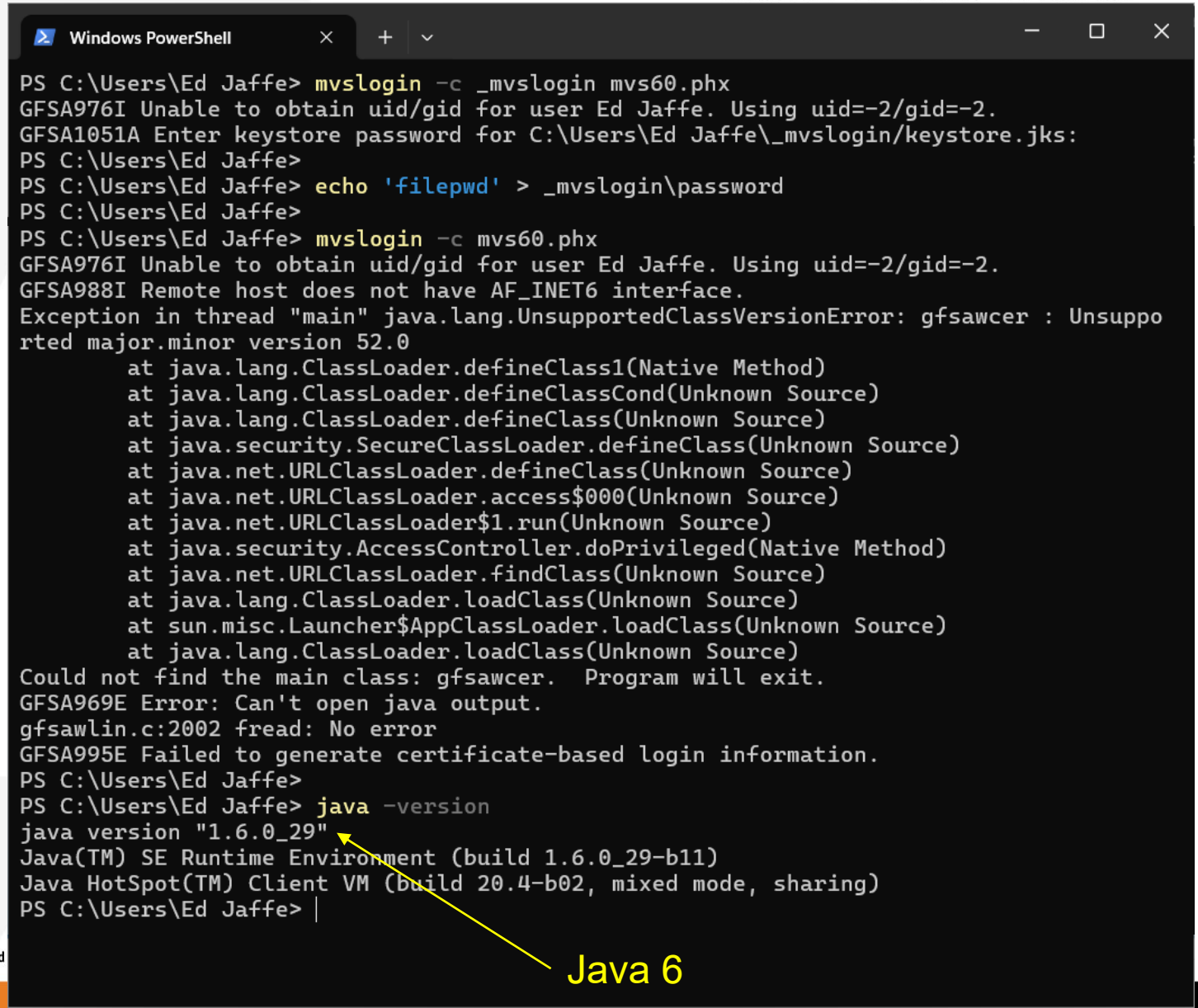




- Used keytool to export the x.509 certificate from the keypair
- Then, performed binary upload of the certificate to a RECFM=VB data set on my z/OS host using FTP
- Lastly, added the certificate to our ESM (in this case RACF), assigning it to the userid I typically use with NFS

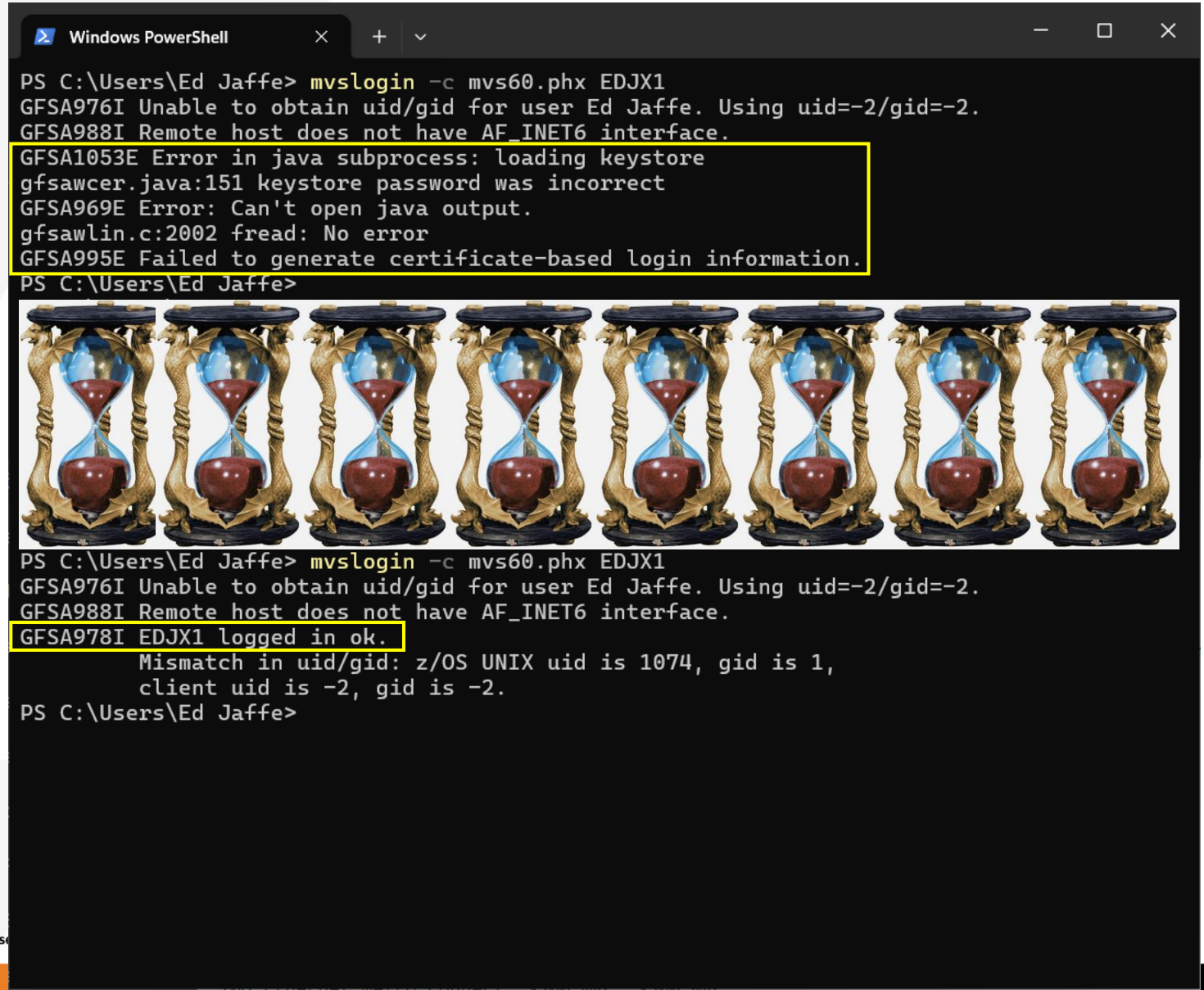
Using the x.509 Certificate with mvslogin

- On my first attempt, it prompted me for the keystore password
- I put that password into a file called “password” to inhibit prompting going forward
- This should have worked, but I had a Java “class not found” issue
- Frankly, I didn’t realize Java was needed until this occurred – now you know too
- IBM doc indicates Java 8 or higher required for this function; mine was only Java 6



Using the x.509 Certificate with mvslogin

- I installed Microsoft's OpenJDK Java 21
- Attempting the login now gave me a password mismatch error on the keystore
- The password looked 100% correct in every display interface, but somehow wasn't
- After many frustrating hours, I realized that populating the **password** file using the **echo** command resulted in UTF-16
- It worked with a UTF-8 file
- If you use Notepad, be aware it creates a file called **password.txt** that you must rename to simply **password**



z/OS NFS netrc File Setup on Windows

SHARE
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- I created a _netrc file following the formatting rules below and placed it into my %USERPROFILE% directory

Netrc file format

netrc files can be used by several programs (most commonly FTP), so you might already have a netrc file on your client system. There is no formal netrc specification, so with the **mvslogin** netrc function we have chosen to support a common subset of netrc files in use. netrc files can contain multiple entries for multiple hosts.

An entry can be on one line like this:

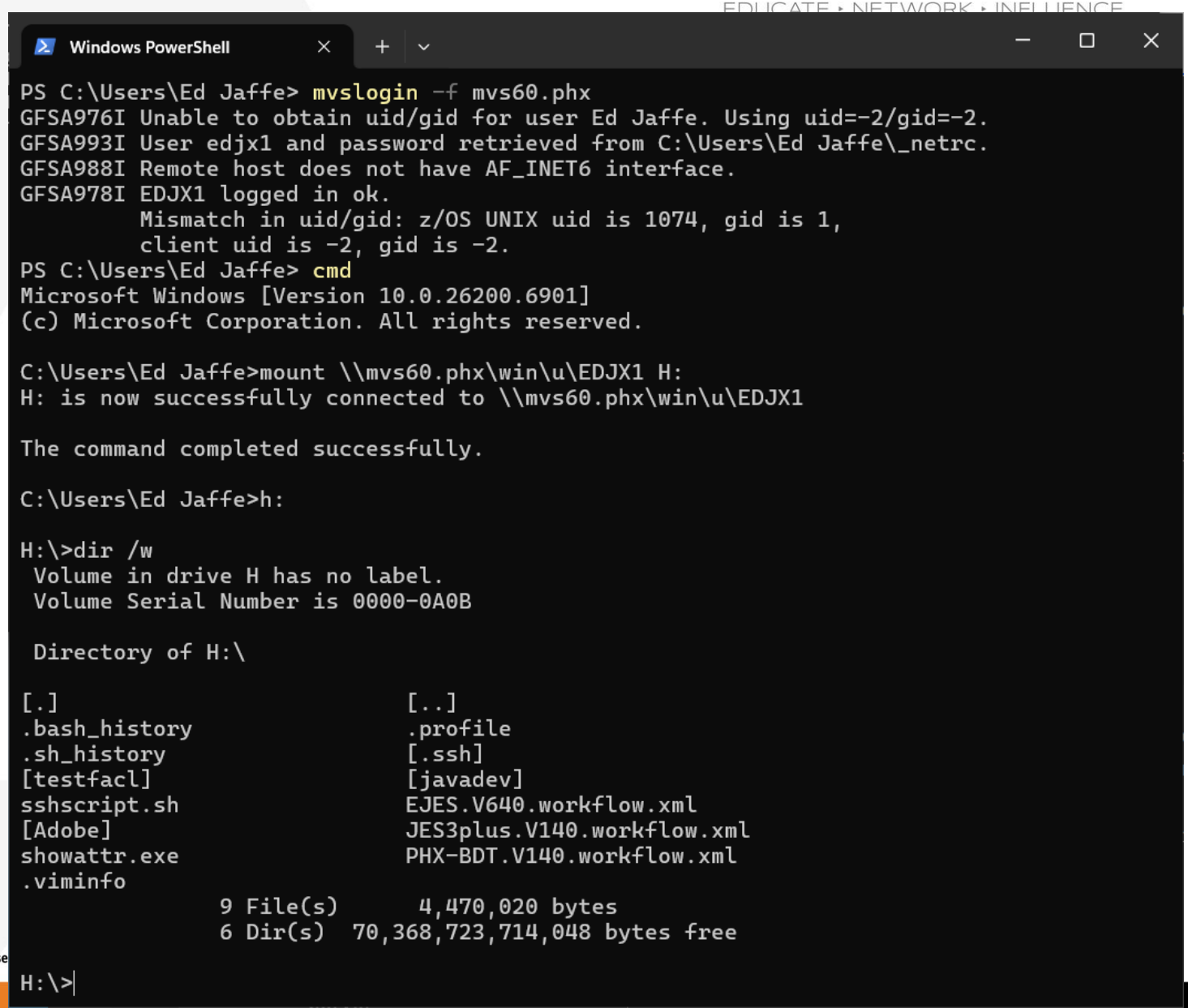
```
machine zos.host.name login myuser password S3cr3t!
```

Or it can be over multiple lines:

```
machine zos.host.name
login myuser
password S3cr3t!
```

z/OS NFS netrc File Setup on Windows

- mvslogin -f worked right away
- I couldn't remember off the top of my head the Powershell mount command syntax, so I invoked cmd shell instead
- Mounted home directory for my NFS userid to H: drive
- Issued dir /w command to display names of files in that directory
- All worked exactly as expected



New zFS Health Checks

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- Most-likely another continuous delivery item.
- My z/OS 3.1 system had these zFS health checks:

Cmd	Check	Owner	State	Status
	ZFS_EXCEPTIONS	IBMZFS	ACT-ENA	SUCCESSFUL
	ZFS_CACHE_REMOVALS	IBMZFS	ACT-ENA	SUCCESSFUL
	ZFS_VERIFY_COMPRESSION_HEALTH	IBMZFS	ACT-ENA	SUCCESSFUL
	ZFS_VERIFY_CACHESIZE	IBMZFS	ACT-ENA	SUCCESSFUL
	ZFS_CACHE_PERFORMANCE	IBMZFS	ACT-ENA	SUCCESSFUL

** Bottom of

- My z/OS 3.2 system has the very same zFS health checks:

Cmd	Check	Owner	State	Status
	ZFS_CACHE_PERFORMANCE	IBMZFS	ACT-ENA	SUCCESSFUL
	ZFS_CACHE_REMOVALS	IBMZFS	ACT-ENA	SUCCESSFUL
	ZFS_EXCEPTIONS	IBMZFS	ACT-ENA	SUCCESSFUL
	ZFS_VERIFY_CACHESIZE	IBMZFS	ACT-ENA	SUCCESSFUL
	ZFS_VERIFY_COMPRESSION_HEALTH	IBMZFS	ACT-ENA	SUCCESSFUL

*** Bottom

ZFS_EXCEPTIONS Health Check Found Something

- Every read/write zFS, in every one of z/OS our environments, was flagged with NH (not high availability) exceptions
- We missed a migration action going from z/OS V2R4 to V2R5 :-[
- If you missed it too, check out the HA= parameter in IOEFSPRM.

```
  Jobs  JES  System  Tools  Filter  View  Options  Help
 T2SY1    ZFS_EXCEPTIONS                                  Line 13 of 29
 Command ===> _                                        Scroll ===> PAGE
 Current Find Text:
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+---->
OMVS.T2SY1.VAR.ZFS                              T2SY1    RW,RS,NE,NC,NH.
OMVS.T2SY1.VARWBEM.ZFS                          T2SY1    RW,RS,L,NE,NC,NH.
OMVS.USERS.ZFS                                  T2SY1    RW,RS,NE,CO,NH.
SYS2.GLOBAL.ZOSMF.ZFS                           T2SY1    RW,RS,NE,CO,NH.
.
Legend:
       RW=Read-write
       L=Low on space
       RS=Mounted RWSHARE
       NE=Not encrypted
       CO=Compressed
       NC=Not compressed
       NH=Not high availability
The supported exception states are L, IE, CE, SE, DI, GF, GD, NH, LN, D4
 and AF.

END TIME: 10/25/2025 11:02:16.999061  STATUS: SUCCESSFUL
****************************** Bottom of Data ******************************
```

SMFLIMxx Enhancements

- This was a September 2024 continuous delivery item in z/OS 3.1
- New SMFLIMxx attributes CONTINUEMATCHING, REGIONLIMITBELOW, and REGIONLIMITABOVE
- New options for REQMEMLIMIT and MEMLIMIT filters

APAR number	OA66028
Reported component name	SMF SCHEDULER
Reported component ID	5752SC100
Reported release	7E0
Status	CLOSED UR1
PE	NoPE
HIPER	NoHIPER
Special Attention	YesSpecatt / New Function / Xsystem
Submitted date	2024-01-18
Closed date	2024-09-10
Last modified date	2024-10-02

APAR is sysrouted FROM one or more of the following:

APAR is sysrouted TO one or more of the following: UJ95926

OA66028: NEW FUNCTION - ENHANCEMENTS TO SMFLIM FOR JOB STEP PROCESSING

A fix is available

Obtain the fix for this APAR.

APAR status

Closed as new function.

Error description

```
New Function
```

Local fix

Problem summary

```
**************************************************************
* USERS AFFECTED: All HBB77E0 Installations.                 *
**************************************************************
* PROBLEM DESCRIPTION: New Function APAR to provide          *
*                      enhancements to SMFLIMxx              *
**************************************************************
New Function APAR to provide enhancements to SMFLIMxx.
```

Comments

```
This APAR provides support for the following new SMFLIMxx
attributes:
  - CONTINUEMATCHING
  - REGIONLIMITBELOW
  - REGIONLIMITABOVE
There are also updates to the following existing filters and
```

SMFLIMxx Enhancements (*continued…*)

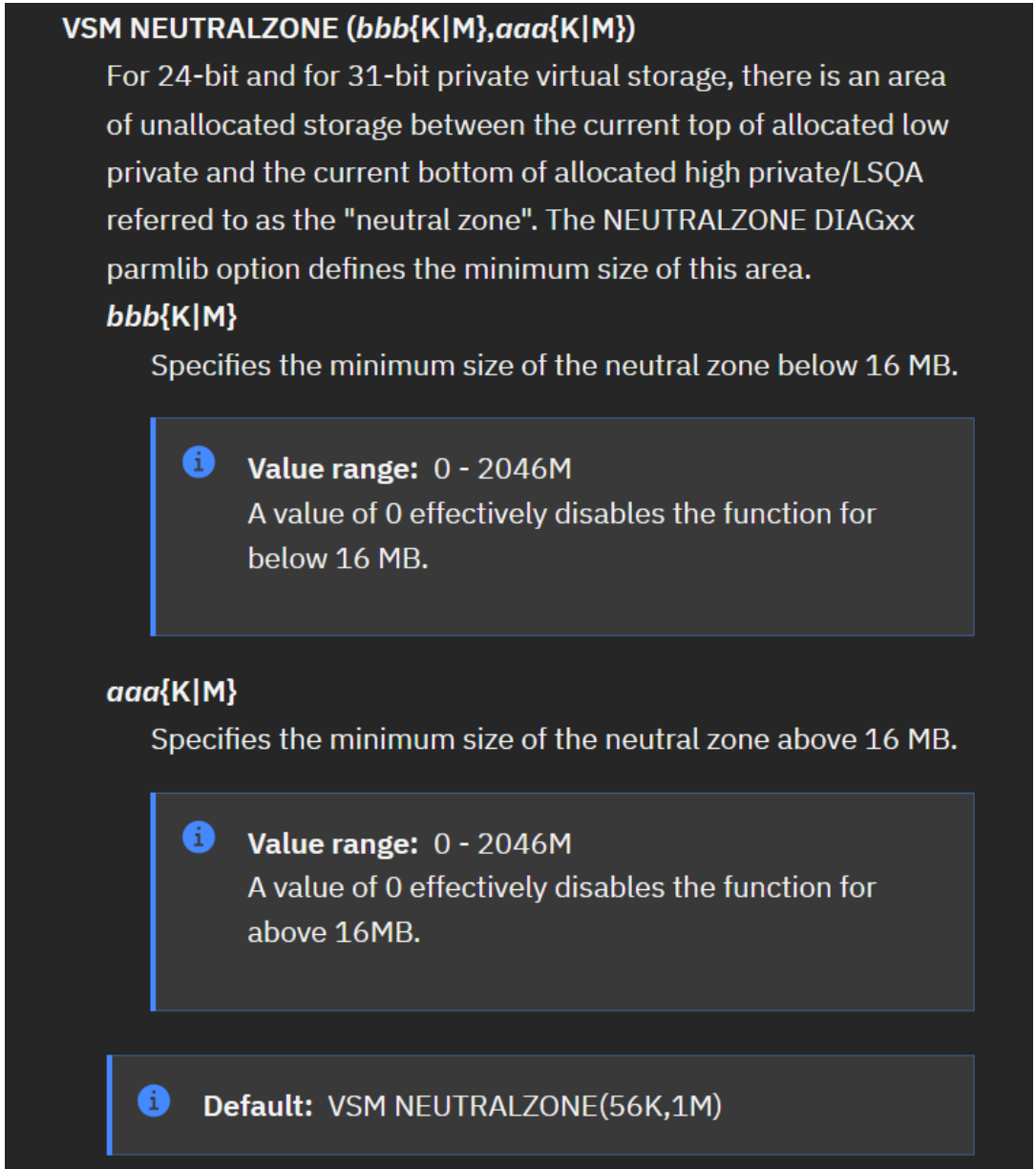
- I didn’t actually do any testing of this
- We’ve never had an IEFUSI exit and our SMFLIMxx is trivial:

```
 File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
EDIT       SYS2.PARMLIB(SMFLIM00) - 01.05            Columns 00001 00072
Command ===>                                         Scroll ===> CSR
****** ***************************** Top of Data ******************************
000001 REGION REGIONABOVE(768M)
000002        REGIONBELOW(10M)
000003        MEMLIMIT(256G)
****** **************************** Bottom of Data ****************************
```

- My goal here is to make you aware this is available in z/OS 3.1 so you can take advantage without upgrading to z/OS 3.2
- The new functions provided should help eliminate the need for some of the more complex IEFUSI implementations

Decreased Non-Graceful Termination for Out-of-Memory Issues

- This new DIAGxx parameter doesn't have a change bar next to it, but it should.
- By default, reserves 56K between 24-bit low/high private and a 1M between 31-bit low/high private.
- "A request for a low private subpool which would reduce the neutral zone to less than its minimum size will fail."
- "A request for high prIvate/LSQA which would reduce the neutral zone to less that 1/2 of its minimum will cause the job to be cancelled with [newish] system completion code 822-04."
- "The goal is to limit low private storage in order to reserve space for high private/LSQA, and to cancel a job which is running out of storage while there is still enough storage available to take a dump and run task level recovery routines such as ESTAE, ESTAEX, ARR, and task termination resource managers."
- Be aware of this in the event you see unexpected memory allocation issues in your environments.



VSM NEUTRALZONE (*bbb*{K|M},*aaa*{K|M})

For 24-bit and for 31-bit private virtual storage, there is an area of unallocated storage between the current top of allocated low private and the current bottom of allocated high private/LSQA referred to as the "neutral zone". The NEUTRALZONE DIAGxx parmlib option defines the minimum size of this area.

***bbb*{K|M}**

Specifies the minimum size of the neutral zone below 16 MB.

Value range: 0 - 2046M
A value of 0 effectively disables the function for below 16 MB.

***aaa*{K|M}**

Specifies the minimum size of the neutral zone above 16 MB.

Value range: 0 - 2046M
A value of 0 effectively disables the function for above 16MB.

Default: VSM NEUTRALZONE(56K,1M)

IARQUERY Enhancements

- Significant new function introduced on a release-boundary level.

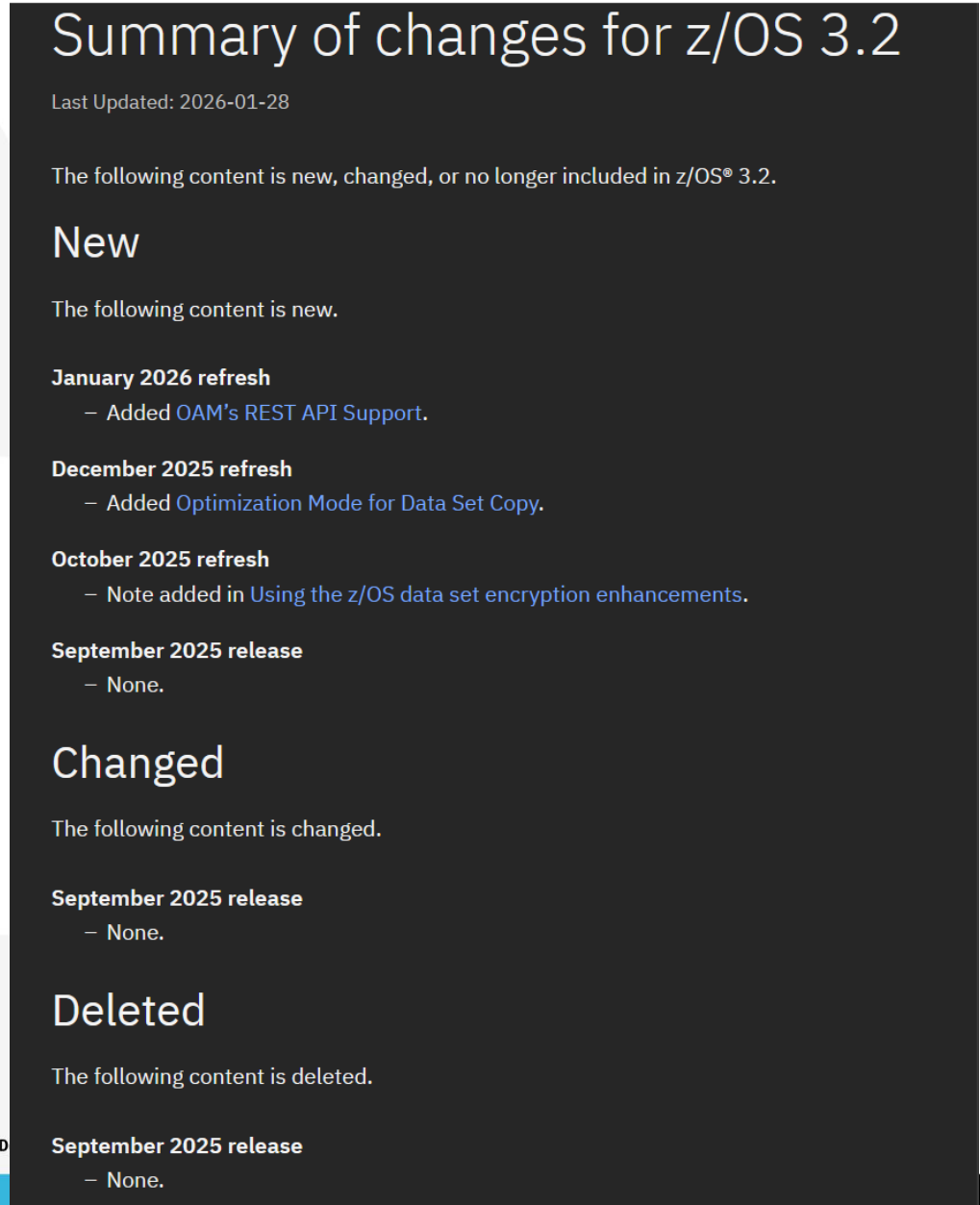
```
SEARCH    J0673943 <          .SUPERC   .OUTDD    > ------------------------------------------------------------------------------------ Columns 00001 00133
Command ===>                                                                                                                       Scroll ===> CSR
****** ************************************************************* Top of Data ******************************************************************
1  ISRSUPC    -    MVS/PDF FILE/LINE/WORD/BYTE/SFOR COMPARE UTILITY- ISPF FOR z/OS         2025/10/26  10.40     PAGE      1
  NEW: SYS3.ZOSV3R2.MACLIB(IARQUERY)                                         OLD: SYS3.ZOSV3R1.MACLIB(IARQUERY)

                           LISTING OUTPUT SECTION (LINE COMPARE)

  ID        SOURCE LINES                                                                         TYPE   LEN N-LN# O-LN#
        ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8
        */**** START OF SPECIFICATIONS *************************************** 00000100 MAT=     3 00001 00001
        *                                                                     * 00000200                00002 00002
        *                                                                     * 00000300                00003 00003
  I -   *01* MACRO NAME:  IARQUERY                          -05/13/25-(1)   * 00000400 RPL=     1 00004 00004
  D -   *01* MACRO NAME:  IARQUERY                          -11/30/22-(1)   * 00000400
        *                                                                     * 00000500 MAT=     7 00005 00005
        *                                                                     * 00000600                00006 00006
        *01* DESCRIPTIVE NAME:  Real Storage Manager Query Service           * 00000700                00007 00007
        *                                                                     * 00000800                00008 00008
        *01* PROPRIETARY STATEMENT:                                           * 00000900                00009 00009
        *                                                                     * 00001000                00010 00010
        *     LICENSED MATERIALS - PROPERTY OF IBM                            * 00001100                00011 00011
  I -   *     5655-ZOS COPYRIGHT IBM CORP. 2023, 2025                         * 00001200 RPL=     1 00012 00012
  D -   *     5655-ZOS COPYRIGHT IBM CORP. 2023, 2023                         * 00001200
        *                                                                     * 00001300 MAT=     1 00013 00013
  I -   * STATUS= HBB77F0                                                     * 00001400 RPL=     1 00014 00014
  D -   * STATUS= HBB77E0                                                     * 00001400
        *                                                                     * 00001500 MAT=    10 00015 00015
        *                                                                     * 00001600                00016 00016
        *                                                                     * 00001700                00017 00017
        *01* FUNCTION:                                                        * 00001800                00018 00018
        *                                                                     * 00001900                00019 00019
        *                                                                     * 00002000                00020 00020
        *      The RSM query service routine is given control from the       * 00002100                00021 00021
        *      IARQUERY macro to:                                             * 00002200                00022 00022
        *                                                                     * 00002300                00023 00023
        *                                                                     * 00002400                00024 00024
  I -   *           Report on a range of real storage frames                  * 00002500 INS=    15 00025 00025
  I -   *                                                                     * 00002600                00026
  I -   *           Report the characteristics of a range of virtual storage  * 00002700                00027
  I -   *          and its backing real storage                               * 00002800                00028
  I -   *                                                                     * 00002900                00029
  I -   *           Report counts and other attributes associated with Data   * 00003000                00030
  I -   *          spaces.                                                    * 00003100                00031
  I -   *                                                                     * 00003200                00032
  I -   *           Report address space frame counts                         * 00003300                00033
  I -   *                                                                     * 00003400                00034
  I -   *           Report system wide frame usage counts                     * 00003500                00035
  I -   *                                                                     * 00003600                00036
  I -   *           Report system configuration real storage counts           * 00003700                00037
  I -   *                                                                     * 00003800                00038
  I -   *           Report on DIV related frame counts.                       * 00003900                00039
  D -   *           Report on a range of real storage frames.                 * 00002500 DEL=     1 00025 00025
        *                                                                     * 00004000 MAT=   105 00040 00026
        *                                                                     * 00004100                00041 00027
        *                                                                     * 00004200                00042 00028
        *01* EXTERNAL CLASSIFICATION:                                         * 00004300                00043 00029
        *                                                                     * 00004400                00044 00030
1  ISRSUPC    -    MVS/PDF FILE/LINE/WORD/BYTE/SFOR COMPARE UTILITY- ISPF FOR z/OS         2025/10/26  10.40     PAGE      2
  NEW: SYS3.ZOSV3R2.MACLIB(IARQUERY)                                         OLD: SYS3.ZOSV3R1.MACLIB(IARQUERY)

                           LISTING OUTPUT SECTION (LINE COMPARE)

  ID        SOURCE LINES                                                                         TYPE   LEN N-LN# O-LN#
        ----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8
        *02* PI:    BASE                                                      * 00004500                00045 00031
        *                                                                     * 00004600                00046 00032
*DSSTAT
```

IARQUERY Enhancements (*continued…*)

- We and many other software vendors have code that needs to understand the attributes of the real storage backing a given virtual memory address.
- Until now, the answer has been to use the Page Frame Table Common Area Data Space (PFTCADS). It provides AR-mode access to the system's page frame table.
  - The ALET can be easily found: CVTPTR -> CVTRCEP -> RCEPFTAL
  - The format of the PFTEs is documented in z/Architecture Principles of Operation
- IBM has added a new keyword to IARPRMxx:
  - RESTRICTPFTCADS(NO|YES)
- If YES is specified, all applications will be forced to use this IARQUERY interface.
- Many (most?) are not yet ready for this. I know we are not. So don't specify YES until you know with certainty all of your software vendors have implemented this.
- My speculation is that industry-wide implementation will take years.

New DFSMS Support for Low on Space VTOCs and VTOC Indexes

- I wanted to read about this in the “DFSMS Using the New Functions,” but when I initially researched it for GS UK, there were no new or changed functions listed at all for z/OS 3.2.
- Since then, documentation about three new functions has been added to the book.
  - See image to the right
- I periodically inspect all of the base DFSMS and DFSMSdfp books. Some of them have new and changed functions listed now, but so far nothing about support for low on space VTOCs and VTOC indexes.
- I’m going to continue watching this space…



Summary of changes for z/OS 3.2

Last Updated: 2026-01-28

The following content is new, changed, or no longer included in z/OS® 3.2.

New

The following content is new.

January 2026 refresh
- Added OAM's REST API Support.

December 2025 refresh
- Added Optimization Mode for Data Set Copy.

October 2025 refresh
- Note added in Using the z/OS data set encryption enhancements.

September 2025 release
- None.

Changed

The following content is changed.

September 2025 release
- None.

Deleted

The following content is deleted.

September 2025 release
- None.

New ICKDFS Support for Creating VVDS

- Wanted this for a long time. My batch jobs often have a step to define the VVDS cluster right after the step that initializes a volume.

Syntax

Last Updated: 2025-04-01

INIT

Required Parameters:
DDNAME(*dname*)|SYSNAME(*sysxxx*)|UNITADDRESS(*ccuu*)
VERIFY(*serial*|**NONE***[,*owner*]*)|NOVERIFY

Optional Parameters:
BOOTSTRAP|**NOBOOTSTRAP**
CLEAROWNERID
CONTINUE|NOCONTINUE
CYLRANGE(*start,end*)
DATA|**NODATA**
DEVICETYPE(*devtype*)
DOS[VSE]VTOC(END|*cylinder,head*[,*extent*])
DSEXIST
FROMRANGE(*cylinder,head*)
HEADRANGE(*start,end*)
INDEX(*cylinder,head*[,*extent*])|NOINDEX
IPLDD(*{dname|sysin}*[,**OBJFORMAT**|,ABSFORMAT])
LDIPL(STANDARD|DUMP)
LDIRTS(*record-number*)
LABELS(*n*)
MAP|NOMAP
MIMIC(*type*)
NOCHECK
NODSEXIST
OWNERID(*owner*)
PASSWORDS((*dsname/password*),...)
PURGE|**NOPURGE**
RESERVED
RESERVEPOOLNAME
SMSDSEXIST
STORAGEGROUP
SUBCHSET(*subchset-identifier*)
TORANGE(*cylinder,head*)
UNRESERVED
VALIDATE|**NOVALIDATE**
VERIFYOFFLINE|NOVERIFYOFFLINE
VOLID(*serial*)
VTOC(END|OPENDISK|*cylinder,head*[,*extent*])

VVDS parameter: Define VVDS dataset

Last Updated: 2025-09-29

Parameter/Abbreviation	Description
VVDS(*primary*,*secondary*)	Define and create the VVDS dataset on device initialization. Use *primary* and *secondary* to determine the number of tracks to be allocated to the VVDS primary and secondary. If *primary* or *secondary* is set to a value greater than or equal to 0 but less than 10, it is set to the system default VVDS size. For more information about the VVDS default size, see Estimating space requirements for the VVDS in *z/OS DFSMS Managing Catalogs*.
Default:	None.
Restrictions:	Device must be able to vary online, and there must be no other devices with the same VOLSER online. For more information about the maximum allocations for *primary* and *secondary*, see Estimating space requirements for the VVDS in *z/OS DFSMS Managing Catalogs*.

- The syntax diagram for INIT shows no new parameters added, but I don't give up easily.
- A new optional VVDS parameter is indeed documented under optional parameters.

New ICKDFS Support for Creating VVDS (*continued…*)

- I submitted a job with the new VVDS keyword and the outcome was not as unexpected

```
 File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
EDIT       EDJXADM.A.CNTL(DSFMOD9) - 01.00                 Columns 00001 00080
Command ===>                                                Scroll ===> CSR
****** ********************************* Top of Data **********************************
000001 //DSFMOD9  JOB 1,'INIT NEW DISK',CLASS=A,MSGCLASS=T,NOTIFY=&SYSUID
000002 //*
000003 //INIT0    EXEC PGM=ICKDSF,PARM='NOREPLYU,FORCE',REGION=7M,TIME=NOLIMIT
000004 //SYSPRINT  DD SYSOUT=*
000005 //SYSIN     DD *
000006  INIT UNITADDRESS(7062)  -
000007       NOCHECK            -
000008       NOVALIDATE         -
000009       NOVERIFY           -
000010       VOLID(X97062)      -
000011       INDEX(000,01,89)   -
000012       VTOC(006,00,180)   -
000013       VVDS(45,45)        <-- Used to be done in second step
000014 //
****** ********************************* Bottom of Data *******************************
```

- Presumably the support will be added in a post-GA update
- Watch this space…

```
1ICKDSF - MVS/ESA    DEVICE SUPPORT FACILITIES 17.0          TIME: 12:53:00      10/26/25     PAGE    1
0
0 INIT UNITADDRESS(7062)  -
0      NOCHECK            -
0      NOVALIDATE         -
0      NOVERIFY           -
0      VOLID(X97062)      -
0      INDEX(000,01,89)   -
0      VTOC(006,00,180)   -
0      VVDS(45,45)        <-- USED TO BE DONE IN SECOND STEP
0ICK30211I KEYWORD 'VVDS' IS IMPROPER
0ICK30202I ABOVE TEXT BYPASSED UNTIL NEXT COMMAND. CONDITION CODE IS 12
0
-ICK00002I ICKDSF PROCESSING COMPLETE. MAXIMUM CONDITION CODE WAS 12
************************************************************ Bottom of Data ************************
```

zFS Shrink Enhancements

- Tom Conley authored four enhancement ideas for zFS shrink
  - ZOS-I-3390 - zfsadm shrink should provide means to mount R/O filesystem R/W, then switch back to R/O after zfsadm shrink completes
  - ZOS-I-3391 - zfsadm shrink should provide a means to automatically specify -size without running aggrinfo or calculating from fsinfo
  - ZOS-I-3392 - zfsadm shrink should support a wildcard for -aggregate
  - ZOS-I-3393 - zfsadm shrink should provide the ability to mount an unmounted zFS filesystem
- Business justification for implementing these ideas:
  - Drastically reduce amount of effort required to release zFS space
  - Make it possible to release free space for all zFS filesystems in one command
- He presented his ideas at the SHARE Kansas City Bit Bucket
- After the session, Kershaw Mehta from IBM asked for some clarification and said he would think about implementing Tom's ideas

zFS Shrink Enhancements (*continued…*)

- At the end of June, Kershaw sent Tom an email asking if the ++APARs were ready by the end of July, would he install and validate them?
- Unfortunately, Tom's zD&T system was missing an important PREREQ
- Tom asked if I would be willing to install and test the APAR for him so he could present about it at the SHARE Cleveland Bit Bucket and I agreed
- Kershaw sent the APAR (OA67431) to me, along with the ideas and documentation, and I installed it under z/OS 3.1
- Tom and I got together one afternoon in Cleveland and executed the tests he wanted to perform together using my laptop
- The following screenshots are those taken by me during that testing session
- The storyboard is based on what Tom came up for the Bit Bucket

zFS Shrink Enhancements (*continued…*)

- zFS Filesystems can be shrunk by invoking the zfsadm shrink command:
  - zfsadm shrink -aggregate name {-size Kbytes [-noai] | -release percent [-noai] | -cancel } [-remountro] -help -level -trace file_name
- Parameters
  - -aggregate name (modified)

    The name of the aggregate to shrink. The name can include the wildcard character * at the beginning, the end, or at both the beginning and end. If the wildcard is used, each mounted aggregate whose name matches the name pattern will have a shrink command invoked against it.

  - -release percent (new)

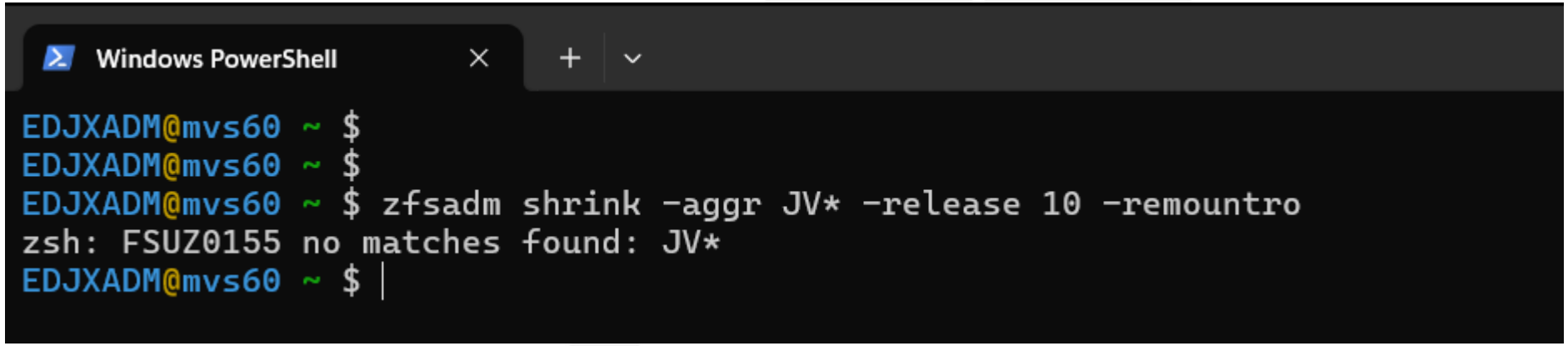
    The percentage of free space that is to be released during the shrink operation. The percent value can be from 1 – 100. zFS will internally generate a new size for the aggregate based on the current size of the aggregate and how many 8K blocks are currently free at the time the command is issued. If the amount of free space requested to be released is found to be larger than what is free in the aggregate, zFS will automatically increase the size value by at least 1 MB. This will result in less free space being released than was requested. This can occur if there is activity in the file system during the shrink operation, or if 8K blocks need to be allocated to store objects that were being kept in fragments.

  - -remountro (new)

    The use of the -remountro option indicates to zFS that if the aggregate is mounted read-only, it can be mounted read/write in order for the shrink operation to complete. After the shrink operation completes, the aggregate is remounted read-only. In some cases, the remount to read-only might fail (for example, the user session issuing the shrink command was canceled) and the aggregate might remain read/write. If you do not want it to remain read/write, you will need to manually remount the aggregate read-only. Be careful when using this option because the aggregate might be mounted on another system that is not part of your single system or shared file system environment. While the file system is mounted read/write, applications can change the file system.

zFS Shrink Enhancements (*continued…*)

- My initial test failed



- I had JVA800.ZFS, JVB800.ZFS, JVBB00.ZFS, JVBH00.ZFS, JVBL00.ZFS all of which should have matched the JV* wildcard
- At first, I thought there was a bug, but then I paid closer attention and noticed the error was written by Z shell and not by zfsadm
- I realized I needed to escape the asterisk

zFS Shrink Enhancements (*continued...*)

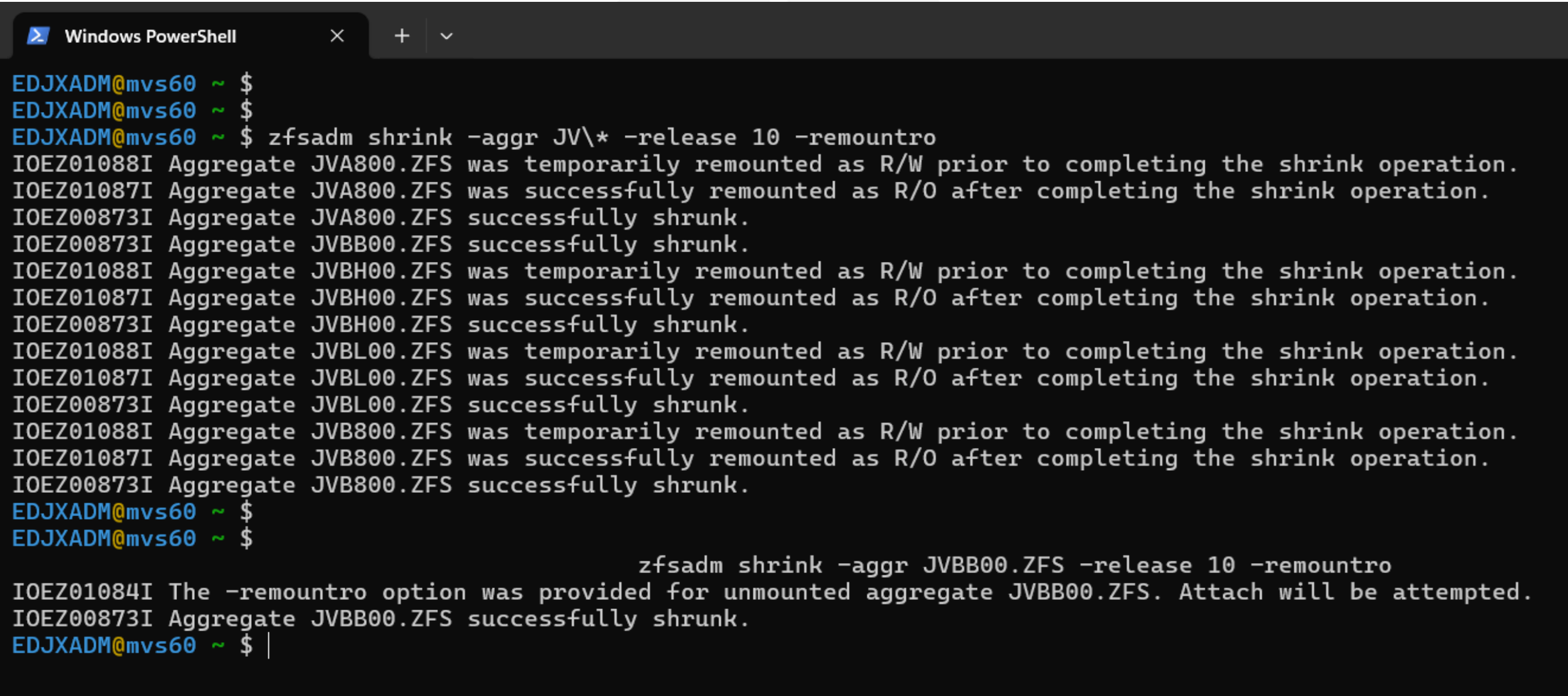
- The second attempt was much better, but why all of these errors?

Windows PowerShell

```
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ zfsadm shrink -aggr JV\* -release 10 -remountro
IOEZ01088I Aggregate JVA800.ZFS was temporarily remounted as R/W prior to completing the shrink operation.
IOEZ01087I Aggregate JVA800.ZFS was successfully remounted as R/O after completing the shrink operation.
IOEZ00872E Error shrinking aggregate JVA800.ZFS, error code=121 reason code=EF046C29.
IOEZ01088I Aggregate JVBH00.ZFS was temporarily remounted as R/W prior to completing the shrink operation.
IOEZ01087I Aggregate JVBH00.ZFS was successfully remounted as R/O after completing the shrink operation.
IOEZ00872E Error shrinking aggregate JVBH00.ZFS, error code=121 reason code=EF046C29.
IOEZ01088I Aggregate JVBL00.ZFS was temporarily remounted as R/W prior to completing the shrink operation.
IOEZ01087I Aggregate JVBL00.ZFS was successfully remounted as R/O after completing the shrink operation.
IOEZ00872E Error shrinking aggregate JVBL00.ZFS, error code=121 reason code=EF046C29.
IOEZ01088I Aggregate JVB800.ZFS was temporarily remounted as R/W prior to completing the shrink operation.
IOEZ01087I Aggregate JVB800.ZFS was successfully remounted as R/O after completing the shrink operation.
IOEZ00872E Error shrinking aggregate JVB800.ZFS, error code=121 reason code=EF046C29.
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ zfsadm shrink -aggr JVBB00.ZFS -release 10 -remountro
IOEZ01084I The -remountro option was provided for unmounted aggregate JVBB00.ZFS. Attach will be attempted.
IOEZ00872E Error shrinking aggregate JVBB00.ZFS, error code=121 reason code=EF046C29.
EDJXADM@mvs60 ~ $
```

zFS Shrink Enhancements (*continued…*)

- After a re-IPL all worked exactly as expected



zFS Shrink Enhancements (*continued…*)

- At this point, three out of Tom's four ideas had been tested:
  - Wildcard the dataset name so multiple zFS filesystems can be processed
  - Automatically remount filesystem RDWR and set it back to READ if necessary
  - Process zFS filesystems that aren't mounted
- The last test was the toughest
- It had to release all the free space in one run
- So, we ran zfsadm fsinfo to display the filesystem information
- Then we set zfsadm shrink to run with –release percent 100

zFS Shrink Enhancements (*continued…*)

- Here are the zfsadm fsinfo results from before the run
- We only got the “before” numbers from the mounted filesystems
- Frankly, we forgot about the unmounted one until it was too late :-[

```
File System Name: JVA800.ZFS
*** owner information ***
Owner:                MVS60          Converttov5:          OFF,n/a
Size:                 621584K        Free 8K Blocks:       9813
Free 1K Fragments:    0              Log File Size:        4608K

File System Name: JVBH00.ZFS
*** owner information ***
Owner:                MVS60          Converttov5:          OFF,n/a
Size:                 1117224K       Free 8K Blocks:       18579
Free 1K Fragments:    0              Log File Size:        11016K

File System Name: JVBL00.ZFS
*** owner information ***
Owner:                MVS70          Converttov5:          OFF,n/a
Size:                 1181416K       Free 8K Blocks:       25294
Free 1K Fragments:    0              Log File Size:        11016K

File System Name: JVB800.ZFS
*** owner information ***
Owner:                MVS70          Converttov5:          OFF,n/a
Size:                 841160K        Free 8K Blocks:       17032
Free 1K Fragments:    0              Log File Size:        5664K
```

zFS Shrink Enhancements (*continued...*)

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- All five zFS filesystems were shrunk to release 100 percent of the free space

Windows PowerShell

```
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $
                                                zfsadm shrink -aggr JV\* -release 100 -remountro
IOEZ01088I Aggregate JVA800.ZFS was temporarily remounted as R/W prior to completing the shrink operation.
IOEZ01087I Aggregate JVA800.ZFS was successfully remounted as R/O after completing the shrink operation.
IOEZ00873I Aggregate JVA800.ZFS successfully shrunk.
IOEZ01088I Aggregate JVBH00.ZFS was temporarily remounted as R/W prior to completing the shrink operation.
IOEZ01087I Aggregate JVBH00.ZFS was successfully remounted as R/O after completing the shrink operation.
IOEZ00873I Aggregate JVBH00.ZFS successfully shrunk.
IOEZ01088I Aggregate JVBL00.ZFS was temporarily remounted as R/W prior to completing the shrink operation.
IOEZ01087I Aggregate JVBL00.ZFS was successfully remounted as R/O after completing the shrink operation.
IOEZ00873I Aggregate JVBL00.ZFS successfully shrunk.
IOEZ01088I Aggregate JVB800.ZFS was temporarily remounted as R/W prior to completing the shrink operation.
IOEZ01087I Aggregate JVB800.ZFS was successfully remounted as R/O after completing the shrink operation.
IOEZ00873I Aggregate JVB800.ZFS successfully shrunk.
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ zfsadm shrink -aggr JVBB00.ZFS -release 100 -remountro
IOEZ01084I The -remountro option was provided for unmounted aggregate JVBB00.ZFS. Attach will be attempted.
IOEZ00873I Aggregate JVBB00.ZFS successfully shrunk.
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $
```

zFS Shrink Enhancements (*continued…*)

- As hoped, all five of the filesystems were shrunk such that no free space at all remained
- With the previous design it would have taken several iterations to get it right, and it would have been done one filesystem at a time
- Thanks to Kershaw Mehta for listening to IBM's clients

```
File System Name: JVA800.ZFS
*** owner information ***
Owner:                MVS60          Converttov5:          OFF,n/a
Size:                 543072K        Free 8K Blocks:       0
Free 1K Fragments:    0              Log File Size:        4608K

File System Name: JVBH00.ZFS
*** owner information ***
Owner:                MVS60          Converttov5:          OFF,n/a
Size:                 968568K        Free 8K Blocks:       0
Free 1K Fragments:    0              Log File Size:        11016K

File System Name: JVBL00.ZFS
*** owner information ***
Owner:                MVS70          Converttov5:          OFF,n/a
Size:                 979032K        Free 8K Blocks:       0
Free 1K Fragments:    0              Log File Size:        11016K

File System Name: JVB800.ZFS
*** owner information ***
Owner:                MVS70          Converttov5:          OFF,n/a
Size:                 704888K        Free 8K Blocks:       0
Free 1K Fragments:    0              Log File Size:        5664K

File System Name: JVBB00.ZFS
*** owner information ***
Owner:                MVS60          Converttov5:          OFF,n/a
Size:                 942664K        Free 8K Blocks:       0
Free 1K Fragments:    0              Log File Size:        14232K
```

JES2 Use of Function Registry

- I ran the following FXEPRINT job

```
Edit  Edit_Settings  Menu  Utilities  Compilers  Test  H
    EDJXADM.A.CNTL(FXEPRINT) - 01.00
 ===>
****************************** Top of Data ***********
//FXEPRINT JOB 1,JAFFE,CLASS=A,MSGCLASS=T,NOTIFY=&SYSUID
//*
//FXEPRINT EXEC PGM=FXEPRINT,TIME=1440,REGION=0K
//SYSOUT   DD SYSOUT=A,DCB=(LRECL=80)
//SYSIN    DD DUMMY
/*
****************************** Bottom of Data *********
```

- Issued FIND JES2 against the output
- Five functions are shown on my test system, but it's really only four
- Exits and exit bitmap are listed separately

```
 Jobs  JES  System  Tools  Filter  View  Options  Help
FXEPRINT J0033137                          <        .FXEPRINT.SYSOUT  >
Command ===>
Current Find Text: JES2
---+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8
-------------------------------------------------------------------------------
Product Name:           JES2
Product Release:        03.01.00
Product ID:             5655-ZOS
Instance ID:            01ST2-01S2
Product Description:    Job Entry Subsystem
Product Slot Path:      VS(1) PS(6,-)
Product Parent:         IBM
-------------------------------------------------------------------------------
Function Name:          JES2 Automatic Checkpoint Cycle Management
Function Description:   Automatic checkpoint tuning
Function Slot Path:     VS(1) PS(6,-) FS(1,AUTHONLY)
Function Parent:        JES2
Function Used:          NO
Function Enabled:       NO
-------------------------------------------------------------------------------
Function Name:          JES2 Policy
Function Description:   Policies in use
Function Slot Path:     VS(1) PS(6,-) FS(2,AUTHONLY)
Function Parent:        JES2
Function Used:          NO
Function Enabled:       NO
-------------------------------------------------------------------------------
Function Name:          JES2 Exits
Function Description:   Exits in use
Function Slot Path:     VS(1) PS(6,-) FS(3,AUTHONLY)
Function Parent:        JES2
Function Used:          YES
Function Enabled:       YES
-------------------------------------------------------------------------------
Function Name:          JES2 Checkpoint on CF
Function Description:   Checkpoint on CF
Function Slot Path:     VS(1) PS(6,-) FS(4,AUTHONLY)
Function Parent:        JES2
Function Used:          NO
Function Enabled:       NO
-------------------------------------------------------------------------------
Function Name:          JES2 Active Exits Bitmap
Function Description:   Exits defined and enabled at JES2 Initialization
Function Slot Path:     VS(1) PS(6,-) FS(5,AUTHONLY)
Function Parent:        JES2
Function Used:          YES
Function Enabled:       YES
Function Attributes:
 Attribute Name:        Exits 255-0 Bitmap
 Attribute Value:       0x0000000000000000000000000000000000000000000000000
       0000000000000001
```

JES2 Control of ENQ Processing for SPOOL & Checkpoint

- For decades, the DSI/NODSI PPT setting has been used to control the behavior of system ENQs in the JESes
- JES2 has now assumed ownership of this function for SPOOL and Checkpoint
- The new SYSDSENQ function can be set to either YES or NO and you can toggle this setting via operator command

```
  -  T2SY1          $dmasdef
     T2SY1          $HASP843  MASDEF                                    C
     $HASP843 MASDEF   OWNMEMB=T2Y1,AUTOEMEM=OFF,CKPTLOCK=ACTION,
     $HASP843          COLDTIME=(2025.045,00:47:27),COLDVRSN=z/OS 3.2,
     $HASP843          ENFSCOPE=SYSPLEX,DORMANCY=(75,500),HOLD=50,
     $HASP843          LOCKOUT=2000,RESTART=NO,SHARED=NOCHECK,
     $HASP843          SYNCTOL=120,WARMTIME=(2025.298,18:02:04),
     $HASP843          XCFGRPNM=MVST2,QREBUILD=0,CYCLEMGT=MANUAL,
     $HASP843          ESUBSYS=HASP,SYSDSENQ=YES
  -  T2SY1          $tmasdef,sysdsenq=no
     T2SY1          $HASP843  MASDEF                                    C
     $HASP843 MASDEF   OWNMEMB=T2Y1,AUTOEMEM=OFF,CKPTLOCK=ACTION,
     $HASP843          COLDTIME=(2025.045,00:47:27),COLDVRSN=z/OS 3.2,
     $HASP843          ENFSCOPE=SYSPLEX,DORMANCY=(75,500),HOLD=50,
00   $HASP843          LOCKOUT=2000,QUESHELD=T2Y1,RESTART=NO,
     $HASP843          SHARED=NOCHECK,SYNCTOL=120,
     $HASP843          WARMTIME=(2025.298,18:02:04),XCFGRPNM=MVST2,
     $HASP843          QREBUILD=0,CYCLEMGT=MANUAL,ESUBSYS=HASP,
     $HASP843          SYSDSENQ=NO

IEE612I CN=MSTRY1A   DEVNUM=0600 SYS=T2SY1     CMDSYS=T2SY1
_
IEE163I MODE= RD
```

JES2 Resource Limits for Resource Groups

- An earlier release established resource limits that can be set on the job class
  - TG and JOE limits can be established with NONE, WAIT or FAIL actions
- A subsequent release introduced the concept of resource groups, which is a collection of jobs assigned to the named group via the JobCreate policy
- Now you can set resource limits at the resource group level
- In addition to TGs and JOEs, you can also set limits on JQEs and BERTs
- For my test, I decided to assign all new jobs in CLASS=A to resource group GSEUK

```
{
    "policyName":      " GSEUK ",
    "policyVersion":   1,
    "policyType":      " JobCreate ",
    "definitions":
    [
      {
        "condition" : " JobClass = 'A' ",
        "actions" :
        [
          { "action"    : " ModifyJob ",
            "attribute" : " ResGroup  ",
            "value"     : " 'GSEUK'   "
          }
        ]
      }
    ]
}
```

JES2 Resource Limits for Resource Groups (*continued…*)

- Resource group GSEUK was added with a TG limit of 25 percent of the total
- A policy library called GSEUK was added that points to my admin home directory
- The JobCreate policy shown on the prior page was imported and enabled

```
  - T2SY1            $ADD RESGROUP(GSEUK),RESOURCE(TG)=(LIMIT=25,ACTION=WAIT)
    T2SY1            $HASP1800 RESGROUP(GSEUK)                              C
    $HASP1800 RESGROUP(GSEUK)      RESOURCE(TG)=(CURRENT=0,
    $HASP1800                      PERCENT=0.0000,LIMIT=25,
    $HASP1800                      ACTION=WAIT),
    $HASP1800                      RESOURCE(JQE)=(CURRENT=0,
    $HASP1800                      PERCENT=0.0000,LIMIT=100,
    $HASP1800                      ACTION=NONE),
    $HASP1800                      RESOURCE(JOE)=(CURRENT=0,
    $HASP1800                      PERCENT=0.0000,LIMIT=100,
00  $HASP1800                      ACTION=NONE),
    $HASP1800                      RESOURCE(BERT)=(CURRENT=0,
    $HASP1800                      PERCENT=0.0000,LIMIT=100,
    $HASP1800                      ACTION=NONE)

IEE612I CN=MSTRY1A  DEVNUM=0600 SYS=T2SY1    CMDSYS=T2SY1
-
IEE163I MODE= RD
```

```
00- T2SY1            $add policylib(gseuk),dd1=path='/u/edjxadm'
    T2SY1            $HASP737 POLICYLIB(GSEUK)                              C
    $HASP737 POLICYLIB(GSEUK)
    $HASP737                       DD(1)=(PATH=/u/edjxadm)

IEE612I CN=MSTRY1A  DEVNUM=0600 SYS=T2SY1    CMDSYS=T2SY1
-
IEE163I MODE= RD
```

```
  - T2SY1            $policy import,policylib=gseuk,member=gseuk
    T2SY1            $HASP1600 POLICY IMPORT request accepted.
    T2SY1            $HASP1603 Validation of policy GSEUK type JobCreate is
     complete.
00  T2SY1            $HASP1611 Policy GSEUK type JobCreate saved in the JES2
     checkpoint.
    T2SY1            $HASP1614 Policy GSEUK type JobCreate added to runtime
     repository.
    T2SY1            $HASP1601 IMPORT policy GSEUK request complete.

IEE612I CN=MSTRY1A  DEVNUM=0600 SYS=T2SY1    CMDSYS=T2SY1
-
IEE163I MODE= RD
```

JES2 Resource Limits for Resource Groups (*continued…*)

```
****** ********************************* Top of Data ***************
000001 //ABEND0C1 JOB 1,JAFFE,CLASS=A,MSGCLASS=T
000002 //*
000003 //ABEND0C1 EXEC PGM=ABEND0C1
000004 //STEPLIB   DD DSN=PHOENIX.PROD.LOADLIB,DISP=SHR
000005 //SYSMDUMP  DD SYSOUT=*
****** ********************************* Bottom of Data ************
```

```
 *T2SY1          *$HASP1805 TG resource shortage detected for resource
 * group GSEUK.
```

```
N 0200000 T2SY1     2025300 20:54:33.01 J0033149 00000281  $HASP100 ABEND0C1 ON INTRDR      JAFFE                  FROM T0033146
S                                                          EDJXADM
N 0000000 T2SY1     2025300 20:54:33.03 J0033149 00000290  IRR010I  USERID EDJXADM  IS ASSIGNED TO THIS JOB.
N 0020000 T2SY1     2025300 20:54:33.10 J0033149 00000281  ICH70001I EDJXADM  LAST ACCESS AT 20:53:28 ON MONDAY, OCTOBER 27, 2025
N 4000000 T2SY1     2025300 20:54:33.11 J0033149 00000281  $HASP373 ABEND0C1 STARTED - INIT 1     - CLASS A        - SYS T2Y1
N 0000000 T2SY1     2025300 20:54:33.11 J0033149 00000281  IEF403I ABEND0C1 - STARTED - TIME=20.54.33
N 4000000 T2SY1     2025300 20:54:44.16 J0033149 00000281  $HASP375 ABEND0C1 ESTIMATED KBYTES EXCEEDED
M 4040000 T2SY1     2025300 20:54:48.90 J0033149 00000090  $HASP1812 TG resource limit of resource group GSEUK encountered for
S                                                          692
D                                       692 00000090                job ABEND0C1.
E                                       692 00000090                ACTION=FAIL (RC=01).
M 0020000 T2SY1     2025300 20:54:49.12 J0033149 00000281  IEA995I SYMPTOM DUMP OUTPUT 695
D                                       695 00000281  SYSTEM COMPLETION CODE=0C1  REASON CODE=00000001
D                                       695 00000281   TIME=20.54.33  SEQ=00916  CPU=0000  ASID=0046
D                                       695 00000281   PSW AT TIME OF ERROR  078D0000   00008FFA  ILC 2  INTC 01
D                                       695 00000281    ACTIVE MODULE          ADDRESS=00000000_00008FF8  OFFSET=00000002
D                                       695 00000281    NAME=ABEND0C1
D                                       695 00000281    DATA AT PSW  00008FF4 - 00000000  00008000  00068000
D                                       695 00000281    AR/GR 0: 00000000/00000000_00000064    1: 00000000/00000000_00006FF8
D                                       695 00000281          2: FFFFFFFF/FFFFFFFF_00000040    3: FFFFFFFF/FFFFFFFF_1296FD00
D                                       695 00000281          4: FFFFFFFF/FFFFFFFF_00BD3D40    5: FFFFFFFF/FFFFFFFF_00BFB040
D                                       695 00000281          6: FFFFFFFF/FFFFFFFF_00BB9FC8    7: FFFFFFFF/FFFFFFFF_00FD2380
D                                       695 00000281          8: FFFFFFFF/FFFFFFFF_00BFB508    9: FFFFFFFF/FFFFFFFF_00BCACB0
D                                       695 00000281          A: FFFFFFFF/FFFFFFFF_01E3F900    B: FFFFFFFF/FFFFFFFF_00BF0001
D                                       695 00000281          C: FFFFFFFF/FFFFFFFF_05422488    D: FFFFFFFF/00000000_00007F68
D                                       695 00000281          E: 00000000/00000000_80FEB150    F: 00000000/00000000_00008FF8
E                                       695 00000281   END OF SYMPTOM DUMP
M 0000000 T2SY1     2025300 20:54:49.14 J0033149 00000080  IEF450I ABEND0C1 ABEND0C1 - ABEND=S0C1 U0000 REASON=00000001 697
E                                       697 00000080          TIME=20.54.49
N 0000000 T2SY1     2025300 20:54:49.15 J0033149 00000090  IEF404I ABEND0C1 - ENDED - TIME=20.54.49
N 4000000 T2SY1     2025300 20:54:49.15 J0033149 00000281  $HASP395 ABEND0C1 ENDED - ABEND=S0C1
N C000000 T2SY1     2025300 20:54:49.17          00000281  $HASP309 INIT 1    INACTIVE ******** C=A
N 4040000 T2SY1     2025300 20:54:49.42          00000090 *$HASP1805 TG resource shortage detected for resource group GSEUK.
N 0000000 T2SY1     2025300 21:00:29.41 T0033146 00000290  IEA630I  OPERATOR EDJXADM$ NOW ACTIVE,   SYSTEM=T2SY1    , LU=BY1608
NC0000000 T2SY1     2025300 21:00:29.42 EDJXADM$ 00000290  $DRESGROUP(GSEUK)
MR0000000 T2SY1     2025300 21:00:29.43 EDJXADM$ 00000090  $HASP1800 RESGROUP(GSEUK) 704
DR                                      704 00000090  $HASP1800 RESGROUP(GSEUK)      RESOURCE(TG)=(CURRENT=1001,
DR                                      704 00000090  $HASP1800                      PERCENT=25.0250,LIMIT=25,
DR                                      704 00000090  $HASP1800                      ACTION=WAIT),
DR                                      704 00000090  $HASP1800                      RESOURCE(JQE)=(CURRENT=2,
DR                                      704 00000090  $HASP1800                      PERCENT=0.0333,LIMIT=100,
DR                                      704 00000090  $HASP1800                      ACTION=NONE),
DR                                      704 00000090  $HASP1800                      RESOURCE(JOE)=(CURRENT=2,
DR                                      704 00000090  $HASP1800                      PERCENT=0.0133,LIMIT=100,
DR                                      704 00000090  $HASP1800                      ACTION=NONE),
DR                                      704 00000090  $HASP1800                      RESOURCE(BERT)=(CURRENT=0,
DR                                      704 00000090  $HASP1800                      PERCENT=0.0000,LIMIT=100,
ER                                      704 00000090  $HASP1800                      ACTION=NONE)
```

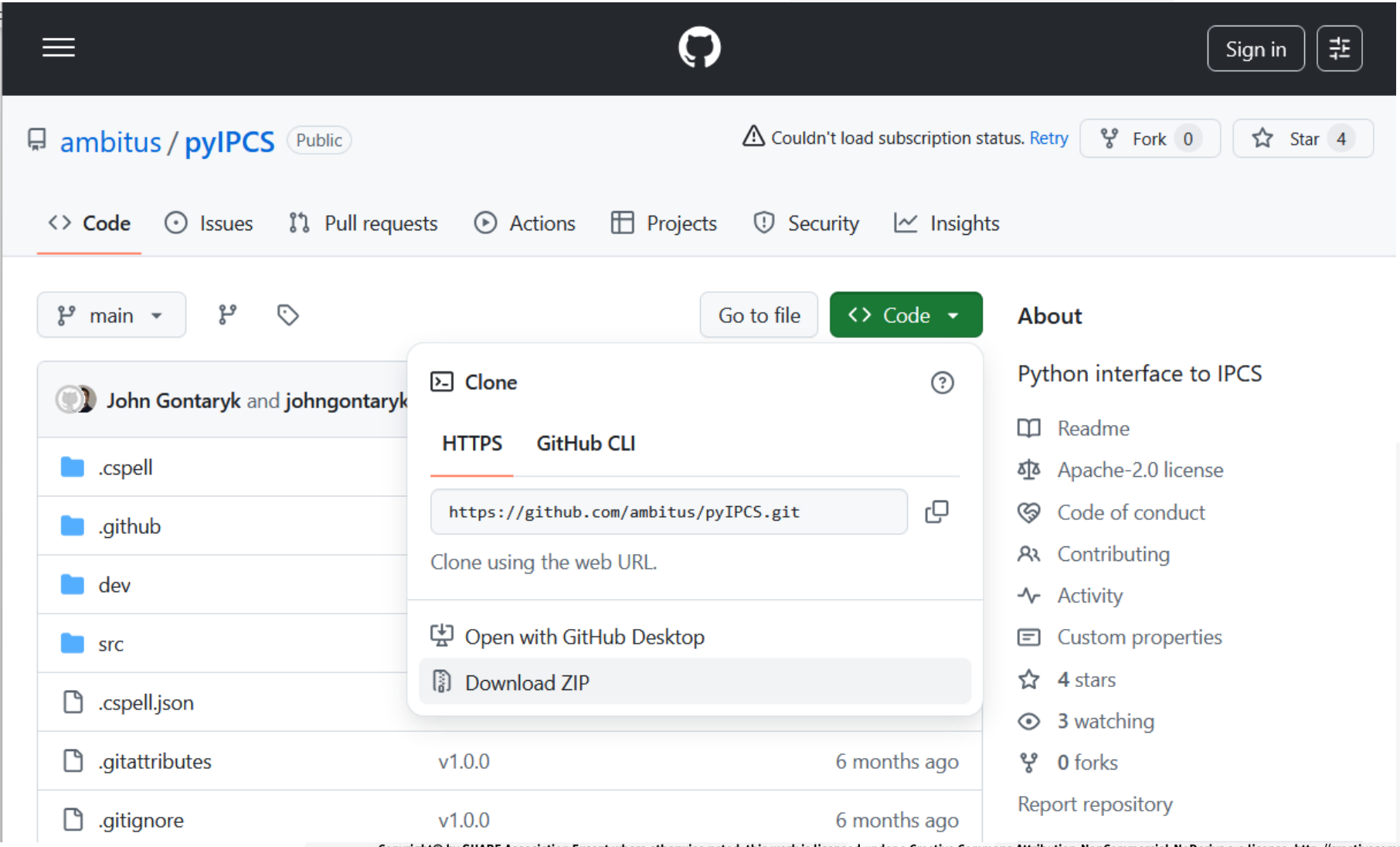
- Submitted job to produce large sysout
- TG overage was detected as expected

- However, the action taken did not match what was requested in the resource group definition

- Requested WAIT
- Observed FAIL

- Behavior unchanged Feb 1, 2026 with all service applied
- Watch this space …

pyIPCS: Python Interface to IPCS



- Visited the web site at https://github.com/ambitus/pyIPCS
- Clicked “Code”
- Clicked “Download ZIP”
- Uploaded the pyIPCS-main.zip file to a z/OS UNIX directory
- Unzipped the file using Java jar xf

pyIPCS: Python Interface to IPCS (continued…)

- Adapted one of their sample programs and called it gseuk.py
- Created an SVC dump using the ABEND command in one of our products
- Renamed it to EDJXADM.GSEUK.DUMP
- [Aside: This is the **pablo** color style in vim. I like it because comments are dim and code is bright

```
# Import pyIPCS objects and util functions
from pyipcs import Hex, IpcsSession, Subcmd
from pyipcs.util import *

# Create IpcsSession object
session = IpcsSession()

# Open IPCS Session
session.open()

# String dataset name of z/OS dump
dsname = "EDJXADM.GSEUK.DUMP"

# Create Dump object `dump`
# Initializes z/OS dump and stores general info
dump = session.init_dump(dsname)

# Print the dump title
print(dump.data["title"])

# Run IPCS subcommand against z/OS dump `dump` and store output
subcmd = Subcmd(session, "STATUS REGISTERS")

# Print portion of IPCS subcommand output
print(subcmd[10:1116])

# Close IPCS Session
session.close()
~
~
~
```

pyIPCS: Python Interface to IPCS (continued…)

- Established my PYTHONPATH to include ZOAU, but encountered a dependency on Python 3.9. I had only Python 3.11 available to me.
- The dependencies pyIPCS on GitHub show a minimum of Python 3.11.
- Was I running an old release of ZOAU?

```
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ export PYTHONPATH=/u/edjxadm/pyIPCS-main/src:/usr/lpp/IBM/zoau/v1r3/lib/
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ python3 gseuk.py
CEE3501S The module libpython3.9.so was not found.
         From entry point _PyImport_FindSharedFuncptr at compile unit offset +0000000012CFC2D8 at entry offset +0000000000000
0F0 at address 0000000012CFC2D8.
zsh: killed     python3 gseuk.py
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ find /usr/lpp/IBM -name libpython3.\*.so
/usr/lpp/IBM/cyp/v3r11/pyz/lib/libpython3.11.so
EDJXADM@mvs60 ~ $
```

4. Python 3.11 or Greater

- To run pyIPCS your Python version must be 3.11 or greater
- IBM Open Enterprise SDK for Python

pyIPCS: Python Interface to IPCS (continued…)

- When I ran this test, we were running ZOAU v1.3.6.2, which was the highest v1.3 release. (We have since upgraded to v1.4.0.0.) The ACTION HOLD mentions Python language bindings, which we never paid attention to before.

```
U005378   ++HOLD(U005378) SYSTEM FMID(HAL5130) REASON(ACTION) DATE(25289)
            COMMENT(
            This APAR (PH68399) supplies ZOAU v1.3.6.2

            To learn more about installing ZOAU, see:
            https://ibm.biz/zoau-install

            If you use the ZOAU Python language bindings, you may need to
            take further actions to upgrade them on your system.  Follow the
            instructions for "Install ZOAU Python APIs" in the ZOAU
            documentation.

            If you are migrating from a ZOAU v1.2.x release, you must read
            the ZOAU Migration Guide for important details, including
            incompatibilities between releases:
            https://ibm.biz/zoau-migration-v12-v13
            ).
```

- The book provides three alternatives to resolve this.
- The easiest one (and the one I chose) was simply to adjust PYTHONPATH.

pyIPCS: Python Interface to IPCS (continued…)

- IT WORKED !!

```
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ export PYTHONPATH=/u/edjxadm/pyIPCS-main/src:/usr/lpp/IBM/zoau/v1r3/lib/3.11
EDJXADM@mvs60 ~ $
EDJXADM@mvs60 ~ $ python3 gseuk.py
(E)JES DIAGNOSTIC SVC DUMP - ABCODE 000FA0
STATUS:
PSW=47141000 80000000 00000000 1204E712
    (Running in PRIMARY, key 1, AMODE 31, DAT ON, SUPERVISOR STATE)
    Enabled for PER I/O EXT MCH
   ASID(X'008A') 1204E712. AREA(Sp252Key00R31Exy#dq7F3Bb280)+2712 IN EXTENDED PRIVATE
   ASID(X'008A') 1204E712. EJESSUBS+2712 IN EXTENDED PRIVATE
  ASCB138 at FC6B80, JOB(EDJXADM), for the home ASID
  ASXB138 at AFD000 for the home ASID. No block is dispatched
  HOME ASID: 008A PRIMARY ASID: 008A SECONDARY ASID: 008A

  General purpose register values
     0-1   00080000_80000000  00000000_80000FA0
     2-3   00000000_00000010  00000000_44040000
     4-5   FFFFFFFF_80000000  00000000_1206C42A
     6-7   FFFFFFFF_FFFFF000  00000000_FFFFF000
     8-9   00000000_7F4E1500  00000000_7F3938F8
    10-11  00000000_7F391000  00000000_1204C000
    12-13  00000000_1208BCE0  00000000_7F4E1600
    14-15  00000000_9204E6F6  00000000_00000000

  Access register values
      0-3   00000068  00000000  00000000  FFFFFFFF
      4-7   FFFFFFFF  FFFFFFFF  FFFFFFFF  FFFFFFFF
      8-11  FFFFFFFF  00000000  00000000  00000000
     12-15  00000000  00000000  00000000  00000000
EDJXADM@mvs60 ~ $
```

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