SHARE 2021 Virtual Summit March 2-24, 2021 Notes
By Ed Webb of SPARTA

SHARE 2021 Virtual Summit March 2-4

https://event.share.org/attendee-portal then click on slides (https://event.share.org/p/do/sc/catid=67)

Tuesday, March 2, 2021

MainframeFlix for your Education Fix
Broadcom advertisement mostly

28577 - Women in IT Opening: Leadership Panel - The Ever Changing Landscape of Technology
By Nicole Fagan (Broadcom), Hagan Rivers (Broadcom), Elpida Tzortzatos (IBM), Teresa McClintic (Fidelity Investments), and "Kati" Dunn (USAA)

Agile, Design Thinking, User Experience
Refactoring during iterations is a problem

Working from home during pandemic has been successful for Fidelity
Moving toward agile teams including one for mainframe

Robust automated testing and verification of environment daily

Experienced people are leaving and new college graduates are taking over, but education is a challenge
    need automation more than ever, machine learning

Miro is a whiteboard tool that Broadcom uses
    brainstorm silently has helped keep online sessions from being dominated by vocal users

AI [Artificial Intelligence] is one of biggest technology disruptors
    Centaurs - humans and AI work together
        GPS is good example: directions are good but you change the route based on your own knowledge
    humans are good at asking the right questions and AI can find the right answers
    AI Identifying Anomalies and decide importance

New hires for Mainframe (Fidelity)
    compSci and Math degrees
    Master the Mainframe participants are excellent

What is Future of the Mainframe?
    touching mainframes from mobile devices, mainframes are essential piece of computing infrastructure
    IBM Z is core of hybrid cloud environments, most secure, resilient, flexible environment
    AI Inference product coming for MF
    Pervasive Encryption and Quantum Safe and homomorphic security

zNextGen says it's difficult to extract knowledge from SMEs (Subject Matter Experts - experienced developers and system programmers)

Skills is a big challenge both ways - Mainframers do not know GitHub, Jenkins, etc. and distributed do not know z/OSMF and SMP/E and others

28450 Mainframe Infrastructure Analytics: Rapidly Unleash Insights and Compare Best Practices
    by Chris "Spence" Spencer of Broadcom

Monitor - many solutions
Manage - mature solutions exist
Analyze - newest offerings, key long-term potential
Assess relevant data

Challenges
    A lot of data, complexity, more tools, noise
    reduce complexity, decrease noise, self service, reduce MTTR, Proactive and predictive, correlation across domains, end-to-end awareness
    real costs - fire drills, relationship challenges, prioritization, quality of service
    visibility and transparency across platforms
    AI OPs - data sources feed integrations and automation and analytics

Where do we go from here?
    AIOps - API first, Open Source, Powerful Integrations
        initially it's Machine Learning
        needs Mainframe Expertise
    Proactive Operations
        Anticipate (detect and identify)
        analyze (investigate and understand)
        Prioritize to fix most critical first
        integrate
        Automate
    AI table stakes
        Your contribution
            compute power, storage, memory
            high quality data
        Your solutions
            right tools and technologies
            deep and specific knowledge and expertise
Phased Approach
    5 steps in adopting and leverage AI
    assess existing environment , Understand whats' unique, gather and analyze, automate and implement initial AI, Learn, adjust , grow
Get Started
    don't wait - do assessment

initial AI target: keep it simple
adjust, learn, build
Keep an Open Mind - Apply AI creatively - don't be afraid of setbacks

28500 - Getting Started with Modern Automation of z/OS Sysprog Tasks - A Users Journey
by Frank De Gilio of IBM, Sriram Mathrubootham

Objective - non-SMP/E and SMP/E software maintenance. using automated CI/CD processing in reduced manual effort and improve service quality

Approach
breakdown process involved
use DevOps technique and tools to adopt modern deployment

Benefits
bridge skill gap and new and senior sysprogs (system programmers)
identify software defects quicker and improve quality by adopting automated testing

Start
simple non-SMP/E product
full product replacement
no IPL required to install
product with larger user base
IBM SCRT picked as experiment
Current path
download scrt.tar.gz from IBM
allocate a fresh zFS
upload tar to zFS
extract file
test new code
release into production
Tools for new path
z/OSMF - API Interface
Jenkins - orchestration tool
Visual Studio - Integrated Development Environment
Git Hub - Source code management
ZOWE - open source framework
New path
z/OSMF - get/put, ….
Jenkins - generate a pipeline script with API
Visual Studio code -
Github - Jenkins can call code from github
40 seconds runtime end-to-end

Current path
SMP/E installable products - Db2 and CICS
general steps -receive service from vendor, review error sysmods, apply check with selected fixes, review hold, apply maintenance, verify install with IVPs, release to environment

Tools
z/OSMF
Jenkins - frontend to restrict input from user, secure access by user, allow less experienced user
IVP reported via e-mail to team for review

Future directions
mature the setup
look for best practices
embrace change to reduce manual effort to deploy software

Benefits
quick turn-around, bridge skill gap, continuous improvement, adopt new CI/CD (Continuous Integration/Continuous Development)

28535 - Creating a PaaS environment on z/OS - A User Experience
by Rich Jackson and Randy Frerking at Walmart

z/OS Paas (Platform as a Service)

Cloud computing - NIST definition (NIST SP 800-145)
"ubiquitous, convenient, on-demand network access"
5 essential characteristics
on-demand self-service (not usually z/OS)
broad network access (web access via HTTPS, via CICS)
resource pooling - z/OS is a big pool of various resources
rapid elasticity - provisioned and released, perhaps automatically, to scale outward and inward based on demand
measured service - metrics about usage but not necessarily easily consumable
3 service models
Infrastructure as a Service (IaaS) - not a focus at Walmart (don't provide a server to a customer)
Internal customer needs admin services to get to what they need so not a goal
PaaS - Platform as a Service
SaaS - Software as a Service
4 deployment models
Private cloud - exclusive use by single organization
Community Cloud -
Public Cloud
Hybrid Cloud - mix of others

Private cloud is our focus today
PaaS/SaaS
Elasticity - parallel sysplex, Coupling facilities, VSAM RLS, WLM managed sysplex distribution

same port number on each LPAR and region, all service resources to all regions, distribute VIPA using server-level WLM weighting
Self-service aspect
Programmable resources, infrastructure, environment
    APIs, Virtual Resources, SPI/SVC (supervisor calls) , Configs (RDO), conventions and standards
    abstraction, automation (REXX, other)

ISPF panels and REXX plus a little Assembler and COBOL
    2 character ID is critical to this dev/test process
    provision an R&D environment
        setups RACF access to various tables, storage groups, etc. - a clean pristine world
    select various pieces of simulated production environment
        parmlibs, proclibs, linklibs, gig's, VSAM, flat files - scrubbed production data refreshed each week
    defines Binds, PSBs, etc., then links to CICS regions
    takes minutes or hours depending on amount of data requested
    a traditional development environment

    CICS Global exits to setup test 2-character id so actual production names and code does not change

Provisioning Portal
    Pure services available to R&D for other work
    strictly services, just a web-portal
    HTML5, CSS, JavaScript, App
    CICS URIMAP
    built primarily on COBOL!
    web-form to feed control region with control file, generated a tran id and cluster info, queue RACF requests, call IDCAMS for more files, set up RDO, install in cluster to multiple regions, then return URI back to user and other info (3-6 seconds)
        naming standard so URI and such can be mapped to this unique request
    security at access, data, resource level
    owner is only one who can dismantle the environment

CICS team is 4 or 5 Sysprogs, 4 others manage the Provisioning Portals (ISPF and web-portal)

Automation is very important along with standards and conventions
Out of Box z/OS stuff, not new software

See Redbooks authored by Walmart users for Cloud Provisioning stuff

28612 - Taking Over the World with Ansible
    by Mike F. of IBM at Ensono, Mike Neuliep of Global Automation at Ensono, Frank De Gilio of IBM

Mature Ansible Server
Recommended software stack
What is Ansible ?
    scheduler and simple workflow engine
    easy to learn
    vendor support - wide array of Ansible modules, no other automation tool has same level of support
    ansible galaxy - vendor parts and other collections are available as Open Source at https://galaxy.ansible.com
    AWX
Ansible Use Cases (on non-Z platforms)
    infrastructure provisioning
    application deployment including OS and 3rd party management and patching
    configuration management (enforce proper standard configs)
    reports, audits and audit remediation
    These are repetitive tasks well suited for Ansible Automation tool

Ansible on z/OS … and what about ZOWE?
    2020 Q2 IBM releases Ansible modules for Z and P (OS/400 and AIX)
    Less complex to make an LPAR Ansible-ready on z/OS than to make it ZOWE ready
    leverage IBM-supplied Ansible modules supporting a variety of segments
    Ansible modules can be easily written to consume APIs in ZOWE mediation API layer or can call code via zowe_cli (command line interface to ZOWE API)
    ideally both would be installed for greatest flexibility but we at Ensono don't live in ideal world

Case study provided to automate a part of userid setup for a customer using Ansible
    z/OS Core collection at ansible galaxy https://galaxy.ansible.com
    Used available z/OS functions, commands
 Use IBM Python, not Rocket version, on z/OS - it's newer and works with Ansible

Wednesday, March 3, 2021

28631 - MVS Program Opening
    by Ed Jaffe, Phoenix Software, and Skip Robinson, Southern California Edison

"MVS provides the essential operating system services of z/OS. It includes I/O Control Program, the z/OS Unix System Services Kernel, and z/OS XML System Services." - IBM Knowledgecenter

Every session at SHARE Virtual is recorded! Watch later.

z/OS 2.5 ServerPac Must Be Installed Using z/OSMF!!!
    ServerPac "grace period" (both z/OSMF and ISPF available) between Sept. 2021 and Jan. 2022; after Jan. 2022, z/OSMF-based ServerPac only

COBOL V4 goes out of service this Year, Making PDSE a Must!

z/OS Service and APARs by John Shebey (jshebey@us.ibm.com)

GRS APAR OA60313 Latch Serialization problem (R7B0 and R7C0) RSU2101
RSM APAR OA60256 Virtual page fix recovery (R7B0 and R7C0) RSU2101
XCF APAR OA59063 XTCSIZE with CF 22 (z14 or higher) lose signals (R7C0 only) RSU2012

JES2 APAR OA59665 (toleration fix for UJ03971) - see note 6414775 about gotcha's at https://www.ibm.com/support/pages/node/6414775
RAS - SDUMP CTRACE (z/OS 2.2 and later) Install CTIDMP00 in SYS1.PARMLIB to take advantage of this enhancement

28641 - Hidden Treasures in z/OS (a.k.a. Bit Bucket x'3D')

ISPF Crazies by Tom Conley
    CUCI (Kookie) CBT file967 cbttape.org
    Jan. 2021 V1R4 including JSON Highlighting, other enhancements
    Feb. 2021 V1R5 including SAS and XMLASCII highlighting, revised previous changes
That Really [Back] Ticks Me Off by Ed Jaffe
    Proportional fonts madness
    hardware/software problem reporting/tracking system should support monospaced fonts
    IBM's Cognitive Support Portal doesn't support embedded screen shots (Quill-based); can upload as jpg or pdf
    what about text-based info?
        pasted text is always proportional, garbles monospaced fonts
        IBM explained how to force monospaced fonts - ``` monospaced text ``` (triple back ticks, monospaced text, then triple back ticks)
            back ticks are on same key as tilde on most keyboards including Macs
Analysts Killing Mainframe by Sam Knutsen
    Perception is that analysts never say anything good about the mainframe. Is it true?
    Gartner and Forrester are major analysts
        very hard to find research on Mainframe
        Mike Chuba and Thomas Klinect of Gartner - Chuba mainframe hardware focus in the past, Klinect also does good work
        Publishes MIPS charts for IBM Mainframes
        G00352217
        G00383838 Leaving IBM? Better look at the paper first
        G00nnnnnn
    compare.com/mainframe-economics by Dr. Rubin every $1 on infrastructure costs, mainframe organizations earn $10.55 versus non-mainframe

28634 - Highlights of Upgrading to z/OS V2.4 and Beyond
    by Marna Walle of IBM and Mark Wallen of IBM
z/OS 2.4
    Priced - z/OS Authorized Code Scanner
    Deleted - BookManager Read….
    Last order will be produced in Jan. 2022 - so get V2R4 before 2022
    Cryptographic Support (HCR77D1) available after 30Sep2019 but HCR77D0 is part of z/OS 2.4
    end of service in 2024
    no Upgrade book, use GitHub to get z/OSMF Workflow, workflow can be upgraded if IBM updates the Workflow
z/OS 2.5
    Ordering starts in Sep. 2021
    HCR77D2 is part of z/OS 2.5 and will be upgraded via PTFs for new Hardware support
        no more web-deliverable for new Crypto
    JES3 last release
    JES2 z11 no longer supported, must be at z22
    end of service in 2026
    no DASD size changes between 2.4 and 2.5
    no zEC12 and zBC12 support
    IBM.TargetSystem-RequiredService.zOS25 ?
    Upgrade Workflow APAR OA60711 (for 2.3 and 2.4 as well)
        not on GitHub, instead IBM Service will support via PTFs
        /usr/lpp/bcp/upgrade will have upgrade workflow
        APAR OA60711 should be available soon - closing in progress
        separate file for 2.3 to 2.5 and 2.4 to 2.5
    Driving System Requirement Change
        Portable Software Instance for z/OSMF installable
        Must have z/OSMF on Driving System with Software management functions enabled
    CustomPac ServerPac (legacy SeverPac) - Jan. 2022 withdrawn for 2.4 and 2.5 for all SRELs
    z/OSMF ServerPac - Dec. 2019 for CICS, Aug. 2020 Db2 and IMS, Sept 2021 z/OS 2.5 (slide 21)
        MQ comes with z/OS SREL change
    DSLIMITNUM (dataspaces and hiperspaces) in SMFLIMxx PARMLIB member
        default was 4294967295, changed to 4096
    ASCB and WEB are backed in 64-bit Real Storage
    z/OSMF V2.5
        z/OSMF mobile notification service removed, other notifications still work
        Diagnostic Assistant instead of general settings diagnostic page
    IZUPRMxx AUTOSTART not changed but ….
    SDSF functions requires SAF-based security
        no ISFPARMS and ISFPRMxx security
    LIMMSG default change (BPXPRMxx)
        was NONE to control console warning messages
        now is SYSTEM so 85% triggers messages
Big Migs [Migration Actions] for z/OS 2.4
Big Migs for z/OS 2.5
    z/OSMF ServerPac driving system requirement
    Use SAF-based security for SDSF functions
    HFS removed
    JES2 move to z22
    JES3 removed in 2023 in next z/OS release
Q&A
    Java 8 required for z/OS 2.5
    Java 11 planned for z/OS

28633 - Introducing REST-enabled BCPii: A whole new way of controlling your Z hardware! (A Preview)
    by Steve Warren and Galina Gorelik of IBM

28639 - Installing ServerPac Using z/OSMF Software Management
    by Kurt Quakenbush of IBM

Common Vendor Install Experience
    z/OSMF enhancements started in 2019 and Sept. 2020

Software Instance
    deployable unit of installed software
    collection of data sets, SMP/E-managed and non-SMP/E-managed
Portable Software Instance
    Software Instance z/OSMF Software Management Export action creates a PSI with GIMZIP and adds some metadata files
Download direct to z/OS via z/OSMF
    Add>from Download Server>
    provide <SERVER> XML as you do today (Shopz)
    SM will download files directly to z/OS
Store and Forward to z/OS ....
    Add>from Local Workstation and then Browse to download directory on my PC/Mac
    uploads from desktop to z/OS
Install PSI via z/OSMF
    deployment objective - sysplex, global zone, new or replace
    missing SYSMODs and ERRORSYSMODS report and show HOLDDATA for review
    Configure this deployment - DLIBs yes or no, Model on existing software instance, SMP/E target and DLIB zones, target data set names, catalog, volumes capacity?,
mount points for DDDEFs for SMP/E
        ==> cannot change data set sizes, IBM plans to ship data sets that are big enough
        ==> cannot change secondary extents (Like set to zero)
    Define JOB settings and JCL data set - generate deployment jobs and summary (z/OSMF page with tabs)
        cannot edit the jobs but they are keyed, so changes will not work
    Submit Deployment Jobs - submit and review output
    Perform workflows - customize and setup
        IBM workflows - usually 3 for product installs
        switched to z/OSMF Workflows task
        YourOrder Workflow
        PostDeploy Workflow
            JCL for jobs, prompt for some variables as needed,
        Verify Workflow
            IVPs
    Name Target Software Instance

https://www.ibm.com/support/z-content-solutions/serverpac-install-zosmf/

z/OSMF End of Service report

No license tracking capability in z/OSMF Software Management

28638 - Applying PTFs using z/OSMF Software Update
    by Kurt Quakenbush of IBM

PTFs UI72028 (2.3) and UI72029 (2.4) in Oct. 2020 provided Software Update function

Software Update - IBM calls these PTFs, other vendors may have other names
Corrective, Recommended, functional (fix categories) to choose updates to be installed
    Software - choose Corrective Updates (or Recommended or Function)
    Resolve HOLDs [immediately] or After Install or Exclude Update from installation
        by PTF or all or selected from list
    APPLY CHECK to verify HOLD changes
    Pre-Install check
    Install Updates runs the APPLY (runs in TSO Address Space, not a batch job)
    post-Install HOLDs review
    Summary - files can be examined - SYSOUT, HOLDDATA, etc.

Install Recommended very similar to Individual
Install Functional updates
    Automatically runs REPORT MISSINGFIX FIXCAT(*)
    Select Categories that have unAPPLYed services
    Choose which Category or Categories to APPLY
    Similar to Corrective and Recommended after this

Most steps have Save and Exit to pause the process
To return to Saved Updates, go to View Updates in Progress to resume

Settings in Software Update
    Temporary data set allocation parameters (VOLSER or SMS parameters)

First release of Software Update - updates like these will be coming:
    RECEIVE ORDER for PTFs, for example
    RESTORE and ACCEPT will be coming sometime
    Merge dataset function on list
    Restrict RSU* to RSUyymm on list

Archived output stored in /global/zosmf/data/.... (preferred) or /var/zosmf/data directory

ibm.com/support/z-content-solutions/software-update-zosmf/

28637 - z/OSMF V2R4 Implementation and Configuration
    by Joey (Xiao Zhen) Zhu of IBM

z/OSMF V2R4 Lite Configuration
    nucleus
    9 z/OSMF Core Services - each separately documented

11 z/OSMF Optional Services - each separately documented
Advanced Configuration now in later chapter of Config Guide
z/OSMF Security Configuration Assistant
PH29907 Feb. 2021 supports External Products if product ships JSON format of security descriptor file
SDSF SCA function coming in z/OS 2.5 since SDSF requires SAF-based security
z/OSMF Nucleus setup
Verify Java 8 64-bit level
IZUNUSEC job to setup security
create z/OSMF data file system (IZUMKFS) /global/zosmf/
update VOLSER
Update PROCLIB with z/OSMF procedures
Start z/OSMF Nucleus at this time
make sure z/OSMF data file system is added to BPXPRMxx so it's mounted at IPL
Upgrade to z/OSMF V2R4 from V2R3
Nucleus and Core Services already enabled because they were enabled in V2R3
Use Workflow to move from V2R3 to V2R4
see slide 41 for recommended optional plug-ins
slack channel ???
There's a new RMM plug-in that can be imported
Web ISPF plug-in but not 3270 emulator, look at Zowe for the 3270 emulator

Browse data set or member should open new window in desktop

Thursday, March 4, 2021

28565 - What's New in DFSMS
by Barbara MacDonald of IBM (bawhite@us.ibm.com)

08Dec2020 Quarterly enhancements announcement

Dataset Encryption - provide users the ability to encrypt their data sets, using either SAF or SMS policies, without changing their application programs
3Q20 BSAM, QSAM, and EXCP (not temporary data sets) (APAR OA56622 for z/OS 2.2) - non-Extended format
required EXCP new API IGGENC macro
Migration considerations for Basic and large format data set encryption
New Draft of **Getting Started with z/OS Data Set Encryption** Redbook is available!
recommend changing BSAM and QSAM to Extended Format data sets
Compress data before Encryption to reduce elapsed and CPU time for encryption
IBM zBNA Tool to estimate CPU cost of Data Protection - see TechDoc on slide 18
zHyperLink - D SMS,DSNAME(dsn),STATS(ZHLWRITE{,RESET})
zBNA tool helps with zHyperLink
VSAM Performance (z/OS 2.5)
reduce size of below bar used by VSAM linear data sets and faster VSAM Open
Db2 APAR PH09189
DFSORT exploitation of Z Sort Accelerator - see other SHARE sessions
New SORTL instruction used by DFSORT and Db2 Utilities in 3Q20
Restrictions and in-memory only
Change Master Catalog without an IPL (z/OS 2.5) slide 31
MODIFY CATALOG,RESTART(new-mcat-name)
default
MODIFY CATALOG… now allows comments after a space (not rolled back to pre-2.5)
Enhance DIAGNOSE to Detect Rename-in-Progress (z/OS 2.5?)
RMM and Catalog issues when rename does not complete
New message with a dsname (old or new name)
New parameters for DELETE MASK
TEST to simulate command
EXCLUDE to keep some data sets out of selection list
Encryption for DEFINE CLUSTER MODEL
Now can MODEL include KEYLABEL
IDCAMS REPRO buffers above 31-bit line - constraint relief

OAM added Cloud Storage support
ZFS File Level Backup enhancements (slide 40)

28635 - What are Containers and Why Do I Care?
28636 - z/OS Container Extensions Sogei User Experiences!
28336 - zCX and Building Multi-Platform Containers

28678 - What's New in z/OS V2R5: Winter 2021 Virtual Edition
by Gary Puchkoff of IBM

Preview Announcement yesterday (March 2, 2021)
See slides and video
126 slides

28688 - Unmasking ZOROW - The Legend of z/OSMF Workflow
by Hiren Shah of IBM
Z Open Repository of Workflows (ZOROW)
Vendors and System Programmers to contribute and share z/OSMF Workflows
z/OSMF required for ServerPac install of z/OS 2.5

Samples provided by IBM and at ZOROW

Workflows provide Guided tasks with Help primarily for System Programmers
requires XML knowledge to create workflow
flat-file editor
Visual Code Editor (Workflow4z) code extension helps create and validate workflow
Workflow Editor (WFE) hides XML schema from developer to simplify WF creation

Workflows in z/OSMF to run a WF (Workflow)
    Overview of WF UI (slide 17)
    Step can be assigned to authorized user
    Automated steps (manual override available)
    Modify JCL or other actions during Run
    View output of WF step
    WF API RESTful interface to drive a WF externally including from Ansible
        z/OSMF collection in galaxy.ansible.com/ibm

Join ZOROW (Collaborate, Contribute, Consume)
    Time for current SysProgs to leave existing processes to others via z/OSMF Workflows and ZOROW
    GitHub.com/openmainframeproject/zorow

    signup in zorow email lists lists.openmainframeproject.org/g/zorow-discussion
    Slack slack.openmainframeproject.org channel #zorow

z/OSMF Workflow Editor
    syntax checks, browse to select file templates, easy to move or copy steps, prepare a property file (variables)
    import steps from samples
    export steps to share within or outside WF
    jumps to plain text editor for advanced edits
    launch WF task from editor to test/run workflow
    create System variable to reuse across WFs ${_sys_varName} to reference System Variable
    setVariable to dynamically set a variable within a WF

https://ibm.github.io/zOSMF/ is the z/OSMF One Stop Hub
    and from here to different parts of z/OSMF plug-ins (applications) - content solutions

z/OSMF Workflow Engine has several enhancements with the PTF for APAR PH28532 - this APAR provides the search option for workflow source.

Use plug-in manager to add Javascript to provide z/OSMF desktop

28640 - Watson & Walker zRoadShow
    by Frank Kyne and Cheryl Watson of W&W www.watsonwalker.com
    >215 attendees

z/OS 2.5 Preview this week
    requires z13 or newer
    requires z/OSMF to install via ServerPac
    last release with JES3 - talk to Phoenix Software for future of JES3

End-of-Support slide 5 for z/OS, CICS, IMS, z14

Open Beta for CICS Vx.x announced in January 2021

HW Instrumentation
    couple of MCL fixes for HIS ("CPU MF" and SMF113)

z15 Z Sort Accelerator (APAR PH03207 and PH33837 and related PDF)
    disabled by default
    zBNA shows potential candidates fo rZ Sort
    Syncsort bought by Precisely which was just bought by hedge fund? (Clearlake and TA Associates) - so no idea if Syncsort uses new z15 SORTL instruction

Db2 compression
    z14 improved by compression accelerator
    series of APARs (2019-2021) to enable compression for tables, table spaces, and partition level

Moving SMF Data to Distributed Systems
    SMF data compresses very well 7:1 but difficult to decompress on distributed system
    W&W colleague Mario Bezzi wrote a program WWUNTERSE runs on Windows and Linux (64-bit in both cases)
        check out Free Software section at Watson & Walker

Processing SMF Data with R
    IBM Dave Follis's White Paper using R to analyze SMF data (updated 02Mar2021)
    R needs SMF data into CSV format but produces nice reports

SMF Overdose
    ZEBRA project (based on ZOWE) consumes XML data from RMF, converts JSON, and presents data using GRAPHANA
    SHARE Session 28539 Proposed ZOWE Incubator on March 17 at 3 p.m. CT
    See YouTube video

RMF DDS AT-TLS Changes
    HTTPS parameter to say NO in GPMSRVxx member
    Two Health Checks to see if this an issue for you

Data Set Best Practices
    efficient block sizes but still see a lot of customers with bad block sizes
    DCOLLECT DCDNMBLX field reports how much space that system-determined block sizes would save you
    BLKSIZE=0 or SMS SDB=YES (only overrides JCL BLKZIE if not Opened)
    Sample DFSORT* and MXG* tools at W&W website

Recent HyperLink Enhancements (see slide 18)

Improved IBM Announcement Search Site

SMF Topics
    What's New in z/OS 2.5 SMF? See links on slide 22 or Gary Puchkoff's slides in Session 28678

SMF documentation - new naming
  see Changes section in each manual for Continuous Delivery updates
See SMF Reference Summary at W&W Publications for 219 SMF record types from IBM and vendors
Extended SMF Record Header
  SMF Record Type 255 (one-byte field)
  Extended Record Type flagged as Type 126 to use a new (z/OS 2.3) field with new max of 2047 types
  confirm support with vendors
  change your SMF dump filter to accept 2047 instead of 255
  SMF User Exit IEFU86
    replace IEFU83/84/85 with IEFU86
    Change SMFPRMxx to specify only IEFU86
  JES2 2.5 SMF Record Type 1153
Type 14/15 added Type 9 to note Pervasive Encryption
Type 30 (step and Job completion)
  added flag if zIIP-eligible work was offloaded to General Processor (z/OS 2.3)
Type 42 (DFSMS Statistics) lots of subtypes and information (z/OS 2.3)
Type 84 (JES Monitoring Facility Data) - excellent for Tuning JES2 (z/OS 2.3)

Where to Ask Questions
  IBM-MAIN
  MXG group
  IBM Community - hard to navigate
  See slide 35 for other sites
SDC Changes
  SOD - WLM Service Definition Coefficients being removed after z/OS 2.4
    OA59066 Health Check to see if your values are no longer valid
    change and rework your duration values to compensate for the changes
New Function z/OS APARs list
  Chrome can no longer FTP this data
  Marna looking for another distribution mechanism

28614 IBM Responses to SHARE Requirements

MVSE Requirements
Changes Since Last SHARE
  Top 46 List has been compiled by SHARE and are being reviewed by IBM

RFE 47890 (Ranked #4) SMP/E RESTORE GROUPEXTEND - Declined (but requestor asked that it remained Uncommitted)
  z/OSMF is development focus right now
RFE 119498 (#17) z/OSMF Workflow, Column of date updated or date created or both - Delivered
RFE 127041 (#22) non-programatic way to provide product registration - Declined

Many requirements have been reviewed - several delivered and some declined
Please resubmit declined ones if still an issue

New Category - Target for Open Methodology Code (TOMC - delivered by Tom Conley, not IBM)
  actually Targeted for Open Source

RFE 143854 - WLM Policy Activation reclassify active tasks - Declined
  too costly to rescan all active work and change
  RESET RESUMES work against each task

RFE 101870 (#12) IOEFSUTL format and other functions should identify Version of zFS formatted or changed

MVSS (MVS Storage) Requirements
Changes since Fort Worth SHARE
  Working on MVSS Top 'xx' List
  In planning for next z/OS Release so prioritization helps
MVSS 199/RFE 148105 backup for z/OS UNIX files must run faster - now in plan
MVSS 157/RFE 116668 Change Master Catalog without an IPL
MVSS 186/ RFE 139186 USERCATs in VLF Class IGGCAS
  RLS Catalogs are recommended instead of VLF but Master Cat should not be in VLF
DFSMS z/OS DFSMS Community
  Blog and Discussions ("DFSMS Community" in web Search to find it)
  Subscribe to participate

SHARE 2021 Virtual Summit March 9-11

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Tuesday, March 9, 2021

28623 z/OS Communication Server Update
  by Sam Reynolds of IBM

z/OS Encryption Readiness Technology (zERT)
  z/OSMF zNA plug-in for analyzing SMF 119 Type 11 zERT records
  zERT Aggregation Recording Interval (new in 2.3 and 2.4) to reduce volume of SMF 119 records with new Type 12
  zERT SoD in z/OS 2.5 to support policy-based enforcement of rules - realtime
    uses Network Configuration Assistant (z/OSMF) to create rules
    puts rules into Policy Agent and installs into the TCP/IP stack
    Actions taken to report violations, and later, if you choose, terminate connection
    Coming soon!

IPSec certificate reporting enhancements in z/OS 2.5
  Internet Key Exchange (IKE) adds display of certificate information for problem research and debugging to existing IPSec -k display command

AT-TLS and IPSec certificate diagnostics
    new System SSL API to provide more diagnostic information in messages if enabled in AT-TLS trace policy
    IPSec has similar new function if enabled

Share Memory Communications V2 (SMCv2)
    z12 SMC-R (remote memory access) using RoCE between processors
    SMC-D (direct memory access) similar between LPARs over Internal Shared Memory (ISM)
        very fast compared to HiperSockets and SMC-R
        Hipersockets is standard TCP/IP layers in-memory
        SMC-D/ISM eliminates many standard layers - reduces latency, throughput, and CPU cost are all much better than HiperSockets, particularly for bigger payloads>4K and streaming
        Simpler to implement?
    SMC limited to Single IP Subnet peers
    SMC-D Version 2: allow peers across subnet boundaries
        available on z15 with updated driver and z/OS 2.4 in 3Q 2020 (see presentation for APARs)
        z/OS 2.5 SoD from SMC-D and SMC-R go beyond subnet boundaries: SMC-Dv2 for RoCE V2 making RoCe a routable protocol (and for IBM Linux on Z and LinuxOne)

TCP/IP initialization complete or is it?
    EZAIN11I All services…available but Dynamic VIPA and PAGENT and other servers may not be ready yet

    in z/OS 2.5, new messages (and ENF signals) to say we are really really initialized
    EZD1314I TCP/IP and Extended Services are now initialized for Stack: tcpstackname
    Eventual action messages to provide reason for delays EZD1315E…
    Defaults should be good for most environments but GLOBALCONFIG statements can tweak settings

Function removals in z/OS 2.5 - see list in presentation
    TN3270E Telnet Server, FTP SERVER, and DCAS now require AT-TLS - old native TLS/SSL will not work

Follow Comm Server on new IBM Communities https://www.ibm.com/community/z/software/comm-server/

28566 Open Mainframe Project Education
    about 130 attendees
sponsored by Open Mainframe Project

Road Map to Job Expertise

Katie Branch of Ensono provides IT training for Mainframes
    Mainframe Academy

Need volunteers to give back to the Mainframe community
    Join, Contribute, Chat
Monthly community meetings, next on March 18 noon ET

Slack channel #omp-education-project

https://www.openmainframeproject.org/projects/mainframeopeneducation

28338 IBM Quantum: Potentials and Future
    by Faezeh Gholami of IBM

1-2% of world's energy industry is used to make fertilizers

Simulating Quantum Systems - quantum chemistry, arterial science, high energy physics
AI - better model training pattern recognition, fraud detection,
Financial

Daimler and IBM working on battery technologies using Quantum

Quantum bits (qubits) and quantum circuits
    qubits

1000 qubit machine in 2023

IBM Quantum Experience and IBM Cloud - it's free

300K users, 700 Billion quantum circuits have been run
1.4 billion quantum circuits per day
34 quantum computers deployed to date
140 clients and Partners - Industry, universities, …

Wednesday, March 10, 2021

29347 z/VM Highlights From Developers and Customers
    by xxx of IBM

Summary of Current Releases and Cadence

z/VM 6.4 End of Service March 31, 2021
z/VM 7.1 in Maintenance mode, EoS 2022
z/VM 7.2 is current (Sept. 18, 2020)
    Quarterly z/VM Continuous Delivery updates
    See z/VM Continuous Delivery Page for details

Overview of z/VM Release 7 R2
    z13 or newer are required
    New enhancements - Centralized Service Management, Foundational support for future CD APARs

TDISK clearing is default
SRM unpacking change to MEDIUM from LARGE
System Recovery Boost used
DirMaint NEEDPASS default is NO
Security changes
EREP shipped with base, no separate license
IBM Supplied USER IDs are better described, some new, some removed

Focus Value Areas
    Security
    Scaling and TCO
    Better Resource management

Survey of enhancements for z/VM 7.2
    March 3, 2021 - 4 TB Main Memory Support but still 1 TB virtual for each Virtual Machine
    https://vm.ibm.com/newfunction/index.html#4tb
    ADP runs 60 z/VM, all at 2 TB

    Resource management of Diverse Workloads
    (soon)   Dynamic Memory Downgrade - remove real from running z/VM system
        Sponsor user important for this function
    (soon)   z/XC Architecture Support
        New ARCH mode enables CMS application's to take advantage of multiple address spaces
    Enhanced Security
        MFA for z/VM - requires Linux on Z guest
        TLS/SSL certificate enhancements
        GDPS Peer-to-Peer Copy enhancements
    z/VM Adjunct Support - runs in same VM (one userid) but second configuration so diagnostic tools can run against primary configuration
    DirMaint Health checker coming soon
    Centralized Service Management (CSM)
        deploy to multiple z/VM systems
        Principal system uses Shared File System (SFS) to manage service levels fro the Managed systems
            Special purpose FTP server and SERVMGR command
    New QUERY commands
z/VM Education Workgroup

28466 Enterprise COBOL 6.3 What's New?
    by Tom Ross tmross@us.ibm.com
New Reserved Words
Predefined variables all prefixed with IGY-xxxxx
64-bit AMODE available for z/OS 2.3 and 2.4

Thursday, March 11, 2021

28486 - What's New in WebSphere Liberty
    by
Java hardware improvements by Z hardware made significant improvements in WebSphere over the past several years
WS Liberty takes advantage of accelerated compression on Z15
WS Liberty is much faster than WS itself

WS Liberty on z/OS
    Angel provides access to secured z/OS functions
    Part of z/OS base for z/OSMF and IBM products, and for application research and development, but not for non-IBM production applications
    Modify command flushes authorized cache so RACF keyring changes can be implemented dynamically

Use /global for WS Liberty applications such as z/OSMF so they can share across sysplexes

28397 - Linux on Z: How To Get the Most Out of the Latest Features
    by Stefan Raspl of IBM
LinuxONE E-II and RH-II only (not z15) have IBM Adapter for NVMe for NVMe drives (IBM does not provide drives)
    popular option
    Linux NVMe driver in latest Linux support
    dedicated devices, cannot be shared between LPARs
    Show up as PCI devices - lspci command
    use for swap, root, data file systems, and in some Linux releases, boot
    use of Software RAID recommended
SMC-Dv1 intra-CEC communication for TCP by Shared Memory (ISM) devices
    same IP subnet and devices paired by PNET IDs
SMC-Dv2 in any IP subnet, no PNET IDs required, requires z15 or LinuxONE, support in Linux kernel 5.10

zname and zhypinfo commands to show hardware and LPAR configuration

development focus on GCC and LLVM compilers with libraries and debuggers
    algebra libraries OpenBlas and libAtlas and Eigen with Z Vector support

Docker and Podman are supported for Containers

Kata containers - speed of containers and security of VMs as of Dec. 2018
    KVM containers inside Kata containers - see slide 31 for install details

Red Hat OpenShift container Platform on IBM Z (RHOCP, a.k.a. OCP)
    z/VM now and KVM support in future

KVM Hardware support for z15 including CPACF, Vector (SIMD), and extra-cost hardware for Secure Execution

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Tuesday, March 16, 2021

28334 - Everything you need to know about Open Source Software on Z
        by Javier Perez is Open Source Program Manager at IBM Z

see slides 2-3 for nice summary of Open Source history

Millions of Open-Source Libraries www.modulecounts.com
Top Ten contributors to Open Source - Microsoft, Google, Red Hat, Intel, IBM, Amazon, Facebook, GitHub, SAP, VMWare

What is Open-Source Software?
        1.   code
        2.   Open source License
        3.   README file
        4.   Contribution Guidelines
        5.   Code of Conduct

Roles in Open-Source software
        1. Maintainer
        2. Committer
        3. contributor

Linux on Z is main focus of IBM to add hardware support
        crypto
        compression
        other projects
        21 years of Linux on IBM Z - 6 years of LinuxONE and 2 years of Red Hat OpenShift for Linux on Z
See logo slide for Open-Source for applications for Linux on Z
See slide for Open-Source on z/OS Unix

Open Mainframe Open-Source Projects www.openmainframeprojects.org/projects

Porting and Validation of OSS to s390x
        1.   build and compile package
        2.   debug and address errors
        3.   testing on z86 and s390x platforms
        4.   contribute
        5.   xxx

little-endian to big-endian is a big change

DevOps Workflow and OSS tools are all available for Linux on Z and LinuxONE

28363 - Zowe: A User's Experience from an IT Infrastructure View
        by Cartier and Paiva of IBM and Milani of Broadcom

See slide 6 for Solution design

28453 - Test automation framework of your choice powered by Zowe
        by Petr Vacula of Broadcom

Test automation has long been a challenge for mainframe applications
Agile development teams consider test automation as part and parcel of development
Building automation requires coding

OpenSource Testing Frameworks are numerous so choosing is important - One size does not fit all
        programming language, libraries, extensions, IDE support, application under test
        don't underestimate the power of help and sharing
                "testing center of excellence"
                what are other teams using, including non-mainframe testing?

Automating Mainframe Tasks is Zowe CLI or better yet, Zowe Client SDK
        execute Zowe command to perform mainframe action
        call SDK library functions directly
                Zowe Node.js Client SDK
                Zowe Python Client SDK

Sample Test Scenarios are at https://github.com/vaculap/mf-test-automation

Test Automation is Coding
Proven and established testing framework
Zowe Client SDK enables Mainframe Testing

28489 - How to contribute Ansible content to the open source community
        by

28452 - How to configure z/OSMF for Zowe
        by Rose Sakach and Petr Plavjanik of Broadcom

https://docs.zowe.org/stable/user-guide/systemrequirements-zosmf-lite.html#introduction

Minimum Viable Program (MVP) configuration for z/OSMF Zowe

see slides

RESTful API in z/OSMF is primary requirement for Zowe use

Zowe CLI has several Command Groups (slide 10)

3 roles needed to configure z/OSMF
    Security Administrator review IZUSEC and IZUNUSEC
    System Programmer with supervisor authority, run IZUMKFS job to define data and log zFS, and set up IZUPRMxx PARMLIB member
    System Operator to start z/OSMF Angel and Server

Slide 12 for references for z/OSMF

z/OSMF pre-reqs needs CEA, Java 8 64-bit at SR4, Websphere Liberty element of z/OS
z/OSMF Nucleus
z/OSMF Core Services - not all are needed for Zowe

Add Security Configuration Assistant plug-in, Console services, and CIM Server
See slide 15 for Security permissions for z/OSMF Users
    available for CA Top Secret and CA ACF2 as well

z/OSMF Common Issues
    Port 443 needs to be available for use (NETSTAT PORTLIST)
    system host name must be unique and map to system where z/OSMF is run
        TSO HOMETEST
    Global Mount point exists
See slide 21 for most frequent errors symptoms and possible resolutions
    IPCMSGQBYTES values of at least 20 MB

28383 - Easy start in zOS with one of the most popular IDEs

28573 - Muscle Memory: New Zowe Desktop Apps for the Multi-tasker
    by Sean Grady, Sr. of Rocket Software

Focus on Zowe Desktop
Apps bundled with Zowe
    API Catalog, Editor, Explorers, Terminals, Web Browser
zTop: new process manager for z/OS Unix processes
    "top" is a process viewer for unix so zTop for z/OS Unix
    see all processes in one place, sort, and filter
    keep track of Zowe itself
    pairs well with SDSF (viewer for Jobs)
    no configuration needed, starts with your processes
    Table view of processes with sortable columns and filtering
        drill down to details or send a signal to stop a process
        SAF rules are honored
        Tree-list view available (parent-child tree)
        Settings menu to set columns displayed and sort order, unique to user
    zTop can query SDSF to get zIIP usage and total system usage
        here's an example: https://github.com/zowe/cpu_usage_sample

File Manager
    files and folders, data sets and members, empowered by Apps
    common tasks - copying, pasting, renaming, deleting via a common UI
    Tree list on left side with table or tree view in main area (slide 9)
    download and other options readily available
    Apps in Zowe desktop can cooperate
        File Manager can open file in the editor
    may support tersing files

Download from Rocket Software very soon
afterwards put through compliance review and checking so general availability will be later

28656 - Mainframe packaging and Deployment
    by Rosalind Radcliffe of IBM, Steve Solomon of BMC, others
Panel discussion

28657 - Using Git In A Mainframe World
    by Rosalind Radcliffe of IBM, Steve Solomon of BMC, others
Panel discussion

Git client on z/OS from Rocket Software recently updated with UTF-8 as well as EBCDIC translation
    your code is at Git Server which does not run on z/OS
ISPF Git interface available as Open Source
IBM provides an SMP/E package to Git

28312 - Mainframe packaging and deployment strategies in a modern pipeline
    by Senthil Nathan of HCL Technologies and Dennis Behm of IBM

see slides

28443 - Using Git As An Interface to DevOps Tools
    by Vaughan Marshall of Broadcom
see slides
Git is Version Control
    so widespread that most DevOps tools and IDEs offer OOTB (out of the box) integrations
Git-native solutions: Code in Git and build/deploy runs on mainframe
Some z/OS SCMs offer Git-based interfaces
Local Git solutions can be created via Zowe CLI and Git Hooks, not driven by Enterprise Git repositories

Git command-line interface (Rocket Git)
ISPF Git interfaces

IDE integrations, Continuous Integrations, Agile Tools, Enterprise Git Provider marketplaces and Platforms

Git Webhooks - HTTP-based

Wednesday, March 17, 2021

28371 - The Problems with RLS: A User Experience Implementing VSAM RLS with CICS

4 steps to implement

Issue 2: forward recovery issues
Issue 3: SHAREOPTIONS - change (3,x) to (2,x)
Issue 4: CICS Managed Data Tables changed to VSAM RLS - performance impact
Issue 5: ESDS converted to KSDS;
Issue 5a: training applications to use RLS
Issue 6: Retained Locks concern - changed operational processes
Issue 7: Rules enforced by RLS RIDFLD removed
Issue 8: AFCK Abends - BMC RUV uses DFSMSdss under covers for IBM Flashcopy
    change programs to retry several times, if still fails, then abend
    changed applications to do SYNCPOINT before MQ GetWait
Issue 9: Empty VSAM - Read-only shared files needed to be primed before sue

Used SMF Type 42 subtype 6 for VSAM RLS versus non-RLS (limited to only CICS and SMSVSAM)
    RLS averaged 8% better for some files, but other 19% worse, so bottom line probably RLS increased response time but hard to measure
CICS SMF 110 end of transaction stats to break down CICS response time but hard to compare because of other changes over time (IAM to VSAM, CMDT to RLS)
Reduced QRTCB? and made big performance improvement

28382 - Effective Development Methodologies for the Mainframe
audio quality not good, echoing, fading in and out

Agile is about strong engineering skills - too many inexperienced team members defeats value of agile
Agile is not for managers, it's for engineers - development team does not include manager - collective responsibility
everybody is responsible for quality

PPD - panic-driven development

28290 - Mainframe DevOps – Preventing Deployment Errors

Solarwinds "sunburst" attack via Supply chain attacks
    1. credentials captured, bought, internal employees go rogue, well meaning staff make mistakes
    motivated criminals will get in and mistakes will happen

backdoor, looked around, found sensitive stuff, remove backdoor
    entered via MS code but mainframe code or settings could be compromised instead

counter-measures slide
    automate backout and recovery plan - ensure backup integrity
    >>> Implement compliance recommendations - NIST Framework, PCI/DDS, Cyber Resiliency

28444 - Developing and Testing with Your Own Virtualized Mainframe
    by Vaughan Marshall of Broadcom
zD&T for development and testing
    several methods for use
    demo

28478 - Wowee It's Zowe! Overview and Deep Dive in How Customers, ISVS, and the Community are Using Zowe to Transform and Modernize the Mainframe

CLI built in node.js
SDK supports node.js, Python, Swift
Zowe Explorer for viewing and editing data sets
    COBOL training via Zowe
Master the Mainframe used Zowe for some of its tests
No desktop install required - use Web Browser
Single sign-on - one desktop with number of applications
JES Explorer
Open additional Tabs with Zowe desktop
Zowe can run in Docker
Zowe CLI Daemon is now available - zowex for faster command responses

z/OSMF SCA [Software Configuration Assistant] capability being considered

Program Increments - one per quarter, updates every 6 weeks

z/OSMF not required for Zowe, apps like CA Endeavor can use Zowe function without z/OSMF, but Zowe can take advantage of z/OSMF

"Joe Winchester   02:32 PM
Cheers Ed. It was Vit Tomica from Broadcom who wrote them (z/OSMF WF [Workflow] and SMP/E Install) so I'll let him know. Do you use workflows a lot ? One thing we're not sure about is how well adopted they are in the community"

28578 - How to get Involved in the Zowe Community for fun, education, contribution or commercial extensions
    by Bruce Armstrong of IBM

See slides
Zowe Teams
    Onboarding to help people get involved
    Systems Team - build/test infrastructure
Zowe.org website being refreshed in next few weeks
    beta https://deploy-preview-121--condescending-dubinsky-4645a9.netlify.app
    Learn, Consume, Extend, Contribute
Incubators
    Zowe Mobile App
    Zowe SDKs like python, swift, node.js, other languages
    Zowe RMF/SMF Visualization (ZEBRA Zowe Embedded Browser for RMF/SMF, APIs)
Conformance - minimum requirements guidelines, quality gate, earned "stamp" of approval
Documentation - docs.zowe.org, built on GitHub, links to other references
How to contribute
    See docs about how to contribute
    pull request for you to change and provide your change for review and approval and denial
    Slack.openmainframeproject.org to sign up
        10K message limit
    GitHub to raise issues (search existing issues before submitting new one)
        community - report errors, etc.
        project management
    OMP has listserv for meeting notifications
        use calendar and choose to subscribe to meeting
    Open Mainframe email Groups - not for detailed exchanges, announcements mainly
    Blogs

28455 - Build z/OS-connected apps using Node.js, Python or Swift Zowe SDKs

CLI, API Mediation Layer, Web UI, IDE Extension (VS Code), SDKs
SDKs provide familiar language-specific access to CLI functions
    CLI is language-agnostic
Zowe Node SDK is broken into packages - core, ….
    GitHub has samples
Python SDK has packages - core, files, jobs, z/OSMF, ….
    GitHub has samples
Swift SDK
    import, examples available, request help via GitHub
check Andrew Harn's blog: Zowe SDKs: Build z/OS connected Applications Faster
    https://medium.com/zowe/zowe-sdks-build-z-os-connected-applications-faster-b786ba7bb0d9

28539 - Proposed ZOWE Incubator - ZEBRA
see slides ZEBRA Zowe Embedded Browser for RMF/SMF, APIs

RMF Parsing Engine (ZEBRA) for RMF Monitor III and I

Need developers and vendor plug-ins to enhance ZEBRA offerings

Use Grafana Open Source Graphic display engine and MongoDB for historical data

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Need slides organized by Presentation Date

Tuesday, March 23, 2021

Getting to Zero Trust: How to Get Started - Sponsored by Broadcom

TAMz demo - manages RACF, ACF2, and TSS (Top Secret)
    Zero Trust Policy Engine (TAM is Trust and Access Manager)

28658 - How To Spin Up and Spin Down environments for Mainframe Development And Testing

28662 - Expert Panel - Audit Findings and How to Mitigate Them

No human needs Operation authority in RACF anymore
Identity Management specifically Identity Assurance
    Who should be required to use MFA?
        Some say all, others say minimally be those with elevated authorities
        Force MFA Z vendor to use existing MFA solutions rather than a separate one for Z
        Must cover all applications including CICS and others
    RACF - Special, Operations, possibly Auditor and ROAUDIT and any with CLAUTH to any CLASS
    ACF2 - ACCOUNT,AUDIT,LEADER….
    TSS - MSCA, SCA, ZCA …. Admin ACID, RESOURCE, ….
    Started Tasks with Trusted, Privileged, NON_CNCL, BYPSS, *.SUBMIT surrogate access, etc.
    Users with elevated access to data set and general resource access - many listed
STIG is an authority that can provide list of Privilege users and other details

28601 - Addressing the Top 3 Concerns with Privileged Users
    by Brian Marshall of Vanguard, Mark Wilson of RSM Partners, John Pinkowski of Broadcom

Systems Programmer needs access - not really, what if you the sysprog are compromised?
    controlled access only for period you need it, not all the time

    1.   Lack of Enhanced Authentication (MFA, TFA, etc.)

- If privileged or have extra access, then should use Enhanced Authentication
- Mainframe systems should not be delayed or excluded from protection
- start with system that has the data that is most important
- passphrase has been available for years but not used
- Unix Services side is more vulnerable because existing users don't understand Unix as well as z/OS

2. Lack of complete monitoring of Privileged Users
- Use ESM monitoring but preferably a Privileged Access Monitoring Program that alerts when undesirable changes are made, track changes back to approved change request, and monitors aberrant behavior.
- ESM monitoring is not very good; need more near real-time automation to detect unusual behavior, "outside the norm" may not be bad just unusual (see incident or change request)

3. Over provisioning of Privileged User Access
- review any privileged users' access periodically, is it still required, and only available when they actually require it
- separate system programmer or developer or other privilege users, even in small shop, from security review
- push back on vendor that requires UID 0, or Trusted, or APF access to explain, document why?
- Need to insure data integrity so protect access

"Definition of Privileged User: Any user with a user ID, if nothing else they have the privilege to get past the logon panel. They are by definition allowed to access resources that people who do not logon cannot access.

Definition of Trust: There are only two types of people, those you have caught doing bad things on the system and those dirty buggers who have outsmarted you so far and you just have to try harder to pin them against the wall. It is the only responsible way to exercise due diligence for your responsibilities as security admin or auditor."

"Two primary types of Privileged User - z/OS Infrastructure Privileged User and Mainframe Application Privileged user.   One has privileged access at the z/OS level and where application user has privileged access within the application but not at the OS level."
Track users as well - bank tellers can modify your account, health workers can read your health info

"Is there an industry standard on who should own the profiles themselves? For example the CICS RACF profiles should they be owned by CICS or by Security Admin? Who should determine frequency of validation of access list?" Important questions

28563 - Digital Certificate Lifecycle Management on z/OS

RACDCERT LIST and LISTRING and LISTCHAIN
search CLASS(DIGTCERT)
IRRDBU00 different record types and ICETOOL example to process

RACDCERT CHECKCERT to validate certificate file before adding to RACF

z/OS PKI Services extends RACDCERT capabilities
    email notifications
    generation and administration of certificates via customizable web pages

z/OS 2.5 - Certificate fingerprint is unique attribute within certificate, several RACF parts updated to support fingerprint, and can be viewed on z/OS or off-z/OS

see handout for Redbooks, links and other info

28602 - What's a STIG? Everything You Need to Know and More

What is STIG? Security Technical Implementation Guide is a collection of articles documenting secure configuration standards consisting of cybersecurity requirements ….

Software Solution providers or product vendors
organized users of software solutions
    US Dept. of Defense, Defense Information Security Agency (DISA)

What are in STIG article?
    recommend requirements - secure settings and secure roles
    how to validate or identify if it is an open audit finding
    how to remediate open audit finding
Mainframe CyberSecurity Governance Plan, same as Mainframe System Security Plan
    Why, Who, What, How, where, When
    STIGs provide What and How to secure
    NIST provides STIGs for Federal government
Reduce Mainframe and Enterprise risk with STIGs
    standardize secure config across all mainframes
    standard infrastructure role-based access controls
    assist discovery of security gaps "the weakest link"
How do STIGs help with Mainframe Auditing?
    roadmap to auditing and compliance team for validation and compliance
    no guessing at what MF config and control standards
    measurable and verifiable MF cybersecurity standards
    documented guides provide best security practices
What is Next?
    DISA publishes STIGs for US DoD - add and remove STIGs
    Broadcom STIGs for ACF2, Top Secret, other STIGs for Broadcom products
Where can you find Mainframe STIGs?
    links to Broadcom STIGs
    DoD z/OS STIG links provided
    MainframeSTIG.com for lists of STIGs

28332 - IBM z/OS Authorized Code Scanner (zACS)
    by Bryan Childs of IBM

ibm.com/security/data-breach

use cases for cybersecurity are called risks

Pervasive encryption, RACF, Z MFA provide security for IBM Z - all rely on System Integrity
authorized programs on z/OS and programming interfaces are critical to integrity

IBM Z and LInuxONE has a Security Portal for Security notices and CVSS ratings for APARs

Authorized programs, SVCs, and PC (Program Calls) with parameter lists need to be validated

CVSS 6.5 for fetch-related vulnerability ("medium)
CVSS 8.8 for store-related vulnerability ("high")

zACS is priced tool for Test and Development systems, not for Production
    powerful, repeatable tool, but false positives, no guarantees
Parts
    REXX, Batch, Started Task
    Generated PC and SVC tables, Syslog
    Output to data set that should be secured
Running the tool
    initialize the task
    run batch to generate the PC and SVCs tables
    run REXX to generate test cases in batch
        run directly or via ISPF
        filtering inclusion or exclusion lists
        wait for completion of the set
Discovery Output
    Abend Code, PSW, Assembler Translation, module and offset, CVSS, ….
    See sample
REXX configuration
    Overall testing settings
        clear LOGREC before testing, name of LOGREC
        provide testing JOB name and message class
        print log output target - screen, log data set
    Filter settings
        default is none
        include or Exclude, filter by mod name (list to be provided) or job name (list to be provided)
    Vulnerability log setting
        output data set, print status, print summary (All or Error)
    PC and SVC log parameters
    Started Task
    XFACILIT Class to control who can access the tools and its parts
    ISPF Support
    IFAPRMxx member update to enable this fee-based tool
See KnowledgeCenter
https://www.ibm.com/support/knowledgecenter/SSLTBW_2.4.0/com.ibm.zos.v2r4.bpn/bpn.htm

28289 - Combating Ransomware and Other Malicious Attacks
    by Al Saurette of MainTegrity Inc.
Dark web, phishing, email attachment, rogue employees, etc. - obtain legitimate credentials
    compromise backup, then encrypt, and submit ransomware request
Detection
    Enterprise checksums - heavy process but offload to Crytpo cards
    New security info - shared, REST APIs
    SIEM, Log, Server for on-demand detection, repeat
    Alert when breach detected
    Manage, Detect, Respond, Recover (policy-driven, suspend, quarantine)
Knowledge + Action = Avoidance, not Ransom

Whitelist - z/OS style
    "use application whitelisting - only execute programs permitted by security policies" - NIST
Checksums on Backups
    ECB say "backups should be tested regularly to verify availability and integrity"
Compliance
    Payment Card Industry (PCI) data security standard includes file-integrity monitoring tools
        checksum can be a component of FMT
NIST Security Framework (Nov. 2020)
    Identify, Protect, Detect, Respond
    Mainframes stand out as vulnerable to internal attacks

FIMPlus - installs in an hour or so including auto discovery
    Whitelist generated and initial reporting

28302 - Lessons Learned from Implementing IBM Z Pervasive Encryption from an Architect's Viewpoint
    by Dewayne Hughes of IBM
project plan and processes to implement Pervasive Encryption at a corporate site

this 2020 project encrypted all Db2 z/OS data (80% of total corporate data hosted on Z)
Core team members, key technical team members, IBM and Corporate Project Managers
early phases - plan education, planning, installation, and configuration in sandbox and test
    security standards for project - naming, key management, what data to encrypt
multiple meetings per week via WebEx
added Application manager and Technical manager to improve internal coordination
    encryption key owners involved, trained
product bug detected, fixed but IPL requirement delayed project by a month
Added Application education sessions - many application teams participated
    important to get buy-in from developers
important to communicate status and success to executive sponsors
coordinated with other on-going corporate project
as project advanced, kept key IBM and vendors on product schedule involved
DBA dug into tooling to determine impact while waiting on precut fix implementation
no zBNA study on CPU costs, had to measure through the project
    surprised to see no impact on CPU and latency issues
documentation of standards and procedures are also required

tested procedures after a D/R snapshot - allowed us to improve documentation sooner
Reorgs mostly done online, some done during maintenance windows
All development encrypted in a month and all production encrypted in a month
Up-front is hard and complex but encryption itself is fairly straight forward

10 LPARs over multiple data centers, 20 applications

28603 - Staying Ahead of the Bad Guys: Continuous Monitoring for Attacks
    by Broadcom

Security Information and Event Management (SIEM)
    more realtime event management
    feed Mainframe data to SIEM - still in early stages for most installations
Key drivers for continuous monitoring (and for getting funding for better security on MF)
    regulation and security policy and failed audits, least access policy, insider threat, vulnerabilities, hacking, breaches, virus
What Events from Mainframe?
    ESM events - ACF2 GSO, TSS contort optics, RACF SETROPTS
    z/OS Events - integrity, z/OS sensitive data sets, etc.
    z/OS Unix Events are critical vulnerabilities
    User Events - basic violations, privileged user events including SuperUser
    Data Events - sensitive data, regulated data , abnormal behavior
Focus on Privileged Users first
    what they do and what they are doing
    24-hour privileges should be a thing of the past
User activity monitoring
    not just privileged users, but users who can view data (again no 24 hour access)
    behavior analysis
z/OS System Integrity
    APFList, LNKList, LPAList and data sets listed there
        APF modifiers, SVCs, IKJTSO, PPT, Exits, NIPs
    Applications vs. supervisors
    PSW vs. Key Mask vs. Storage Protect Key
Off-platform analytics are powerful so little chance they'll be moved to mainframe
    limit data sent off-mainframe to SIEM
z/OS Unix (Unix System Services) SMF Type 80 records with security Classes like DIRSRCH, DIRACC, FSOBJ, others
Audit SuperUsers - including those within Applications (prove higher limits for example)

Some customers already using SMF data to monitoring security - start now if not ready for SIEM

28646 - Never Let a Good Crisis Go to Waste - Zero Trust in the Age of Covid
    by Christopher Perry of BMC (previously a military active cybersecurity hacker)

Trust but Verify - conventional security model, castle with a moat
    but vulnerable to phishing, credential reuse, edge vulnerability, insider threats
COVID pandemic dramatically up the exposures - most are working outside the perimeter
Zero Trust Core Principles
    verify explicitly
    least privileged access (hard to maintain, etc.)
    assume breach
    Never Trust, Always Verify
Extend Zero Trust to all systems, not just network
    Data needs protection
    People, workloads, devices, networks
        visibility and analytics
        automation and orchestration
    37% reduction in threat exposures, and can reduce costs
Mainframe is a computer and can be hacked
    large global bank victim of first known are of mainframe ransomware
        spear phishing attack to MF system programmers via LinkedIn
        key logger downloaded
        job to scan for sensitive data sets
        job encrypted sensitive data sets
        ransom requested

many enterprises think they have right tools but admit to significant unauthorized access
    audit not sufficient, get a mainframe hacker to test your security

NIST - Identify, Protect, Detect, Respond, Recover
    requires realtime 24 hour processes
    test security like every other server

Roadmap
    launch the (ZTX) Zero Trust eXtended program
    assess the gaps
    plan the future
    act to transform
    optimize the results
NSA now recommends Zero Trust
    https://www.nsa.gov/News-Features/Feature-Stories/Article-View/Article/2515176/nsa-issues-guidance-on-zero-trust-security-model/