

# Bit Bucket x'41'

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And Now for Some Things  
Completely Different...

(Jerry Edgington)

# z/OS Items of interest - A JES2 Syntax Checker & EasyIPL

- JES2 syntax checker
  - S JES2,PARM=(CHECK),SYSOUT=A,SUB=JES2
  - The output from the started task will be sent to output class A.
- Did you know you can IPL without HMC?
- Or just want to quickly recycle z/OS.
  - Vary XCF,"lpar",offline,reipl
  - The LPAR will be recycled using the last IPL parms.
  - If you have changed the IPL parms, this will not work

# z/OS Items of interest - Some configuration tips

- **TCPIP outbound from z/OS not connecting**
  - **Message and Issue:**
    - Immediate connect failed for x.x.x.x EDC8116I address not available
    - Closing connection 0
  - **Fix:**
    - The TCPIP definition of TCPSTACKSOURCEVIPA was pointing to DDVIPA
- **Java program failing to start on z/OS**
  - **Message:**
    - JVMJ9VM015W Initialization error for library j9gc29(2): Failed to instantiate compressed references metadata. 200M requested
  - **One possible fix:**
    - Too large of SHRLIBRGNSIZE
    - Decrease the size, but verify
    - Too small of SHRLIBRGNSIZE will fail as well

# Acknowledgements Knowing and Unknowing

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- Kenneth Irwin, IBM
- Mike Fitzpatrick, IBM



# Balancing Act

(Mike Shorkend)

## What is the problem?

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- Two-way dev/test sysplex, SYS1 and SYS2
- Most jobs are submitted and run on SYS1(from job scheduler and developers)
- Causes SYS1 to be loaded while SYS2 sleeps peacefully
- The solution: WLM initiators
- However.....



## Solution and its problem

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- Started moving job classes from JES managed to WLM managed
- Turns out that all developers are logged on to SYS1 via TSO or IDz
- IDz and IBM® Debug for z/OS are not sysplex friendly
- When a developer wants to debug a program, if the job runs on SYS2, the debugger is not invoked

## Possible Solutions

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- Have the developers logon to SYS1 and SYS2 and then monitor where the debug session starts(ugh).
- Use SYSAFF. Will the developer remember to delete it when the program is not being debugged?(No)
- Use a JOBCLASS that has a QAFF of SYS1(possible)
- Use a Scheduling Environment (the winner!)

## Assigning a Scheduling Environment to a debug job

- Could ask the programmer to add a SCHENV parameter but again, will the programmer remember to delete it (Still No)?
- A debug job is characterized with the CEEOPT DD card being added to it.
- It would be nice if there was a JES2 policy that scans for DD cards, but there is not.
- Shameless plug - please vote [here](#) to promote an IBM Idea for such a JES2 Policy
- We will write a JES2 exit instead of a policy

## JES2 EXIT 4/54

- Quite a few of the JES2 exits come in pairs. The logic is the same, the point of interception is different
- EXIT 4/54 reads all the JCL cards submitted by a job
- EXIT 4 is called if the job comes in over *Card readers, RJE, SNA and BSC NJE, and SPOOL reload.*
- EXIT54 is called if a job come in through an internal read or TCPIP NJE.
- It is good practice to code both exits. Have Exit 4 call Exit54
- Samples are in SYS1.SHASSAMP

# The Logic

```
Command ==> _____ Scroll ==> CSR
***** Top of Data *****
000001 USING XPL,R8 XPL ADDRESSABILITY
000002 EXIT054 $ENTRY BASE=R12,SAVE=YES PROVIDE EXIT ROUTINE ENTRY POINT
000003 LR R8,R0 COPY XPL ADDRESS
000004 *****
000005 * *
000006 * EXIT 54 RECEIVES CONTROL FOR EVERY CARD IMAGE. *
000007 * DETERMINE IF THIS IS A CARD TO BE PARSED BY THE *
000008 * EXIT. *
000009 * *
000010 *****
000011 USING JCT,R10 MAP THE JCT
000012 CLC JCTJOBID(1),=CL1'J' Q. IS THIS A JOB?
000013 JNE RJCLRET NO, THEN FINISH NORMALY
000014 CLC X054STMV(2),=CL2'DD ' Q. IS THIS A DD CARD?
000015 JNE RJCLRET NO, THEN FINISH NORMALY
000016 *****
000017 * DD CARD FOUND, CHECK IF CEEOPTS
000018 *****
000019 CLC X054STML,=CL8'CEEOPTS' Q. CARD NAME = CEEOPTS ?
000020 JNE RJCLRET NO, THEN FINISH NORMALY
000021 MVC JCTSCHEN(16),=CL16'DEBUG' MOVE IN SCHENV
000022 J RJCLRET
000023 RJCLRET DS OH
000024 $RETURN , RETURN TO CALLER
000025 DROP R8,R12
000026 LTORG ,
000027 $MODEND
***** Bottom of Data *****
```

# Setting up the scheduling Environment

```
Scheduling-Environments  Notes  Options  Help
-----
                          Modify A Scheduling Environment                      Row 1 to 1 of 1
Command ==> _____
Scheduling Environment Name : DEBUG
Description . . . . . _____
Action Codes: A=Add  D=Delete

Action  Resource Name      Required
-----  -----
      DEBUG                ON
***** Bottom of data *****
```

- Use automation to turn on the Resource Name when the debugger starts and off when it stops.
- F WLM, RESOURCE=DEBUG,ON
- F WLM, RESOURCE=DEBUG,OFF



# Colorful Console Language

(Ed Jaffe-Webb)

## 3270 Console History

- The original CRT displays had only one color: green
  - Normal intensity, high intensity, and no intensity (for passwords)
- Eventually four (non-programmable) colors were shown:
  - Green (low intensity input)
  - Blue (low intensity, output)
  - Red (high intensity input)
  - White (high intensity output)
- Later, extended data streams (EDS) were supported with seven programmable colors (green, blue, red, white, turquoise, pink and yellow) and extended attributes (reverse video, underscore and blink).
- IBM loves upward compatibility, so today's MCS console attributes are largely unchanged from the four-color days.



# mSys for Operations Console Innovation

- In OS/390, two z/OSMF predecessor products were made available:
  - mSys for Setup
  - mSys for Operations
- msys for Operations was a subset of System Automation for OS/390 V2 that eventually became a base element of z/OS, and came automatically on all z/OS 1.2 and later ServerPacs
- One of its most notable innovations was a new appearance for MCS consoles that provided greatly improved message heuristics by taking full advantage of EDS and programmable color attributes:
  - .MSGCOLR URGATTN (R, R) , IMEDACTN (B, R) , EVETACTN (P, R)
  - .MSGCOLR GENMSG (P, R) , PPMSG (Y, R) , SELPEN (B, R)
  - .MSGCOLR INSTRERR (W, R) , ENTRYARA (T, R) , WARNLGEN (B, R)
  - .MSGCOLR WARNRGEN (B, R) , WARNRURG (R, R) , OOLCNTL (T, R)
  - .MSGCOLR OOLLABEL (T, R) , OOLDATA (G, R)

# mSys for Operations Console Innovation

- One tremendous advantage is the ability to easily distinguish problem program messages from authorized program messages.

```
MVSA0          IST097I MODIFY ACCEPTED
MVSA0          IST1283I MODIFY USERVAR COMMAND COMPLETE
IST813I USERVAR CICA CHANGED FROM CICA1 TO CICA1
IST314I END
- MVSA0 S0296008 +DFHDDH0101I CICA1 Document domain initialization has
- ended.
- MVSA0 S0296008 +DFHXS1101I CICA1 Security initialization has ended.
- MVSA0 S0296008 +DFHSI1517 CICA1 Control is being given to CICS.
- MVSA0 S0296008 +DFHSO0200I CICA1 The CICS socket listener task is now
- accepting inbound TCP/IP connections.
- MVSA0 S0296008 +DFHSJ0102I CICA1 SJ domain initialization has ended.
- MVSA0 S0296008 +DFHQA2102I CICA1 Reading CICS tagging file:
- /var/cicsts/dfhconfig/cicstags.yaml
- MVSA0 S0296008 +DFHQA2103I CICA1 CICS tagging file could not be
- found: /var/cicsts/dfhconfig/cicstags.yaml
MVSA0          CSV210I LIBRARY LOOKASIDE INITIALIZED
- MVS60 JES3 IAT6100 (J0592797) JOB MODEREAD (J0592856), PRTY=02,
- ID=SYSOPER NET-ID=*NONE SUB=J0590386
- MVSA0 S0296008 +DFHFC0208I CICA1
- LSR pool 1 is being built dynamically by CICS because all of the
- necessary parameters have not been supplied. Either there is no
- LSRPOOL definition or it is incomplete. The following are not
- defined: 'DATA BUFFER SIZE' 'STRINGS' 'MAXKEYLENGTH'. A delay is
- possible.
- MVSA0 S0296008 +DFHFC0961 CICA1
- 02/25/2023 09:27:53 CICA1 Calculation of LSR pool 1 parameters
- incomplete. Filename DFHDBFK has no DSNAME.
- MVS70 APDGA620 IEF404I APDGA620 - ENDED - TIME=09.27.54
MVSA0          CSV210I LIBRARY LOOKASIDE INITIALIZED
MVS60          CSV210I LIBRARY LOOKASIDE INITIALIZED
```

```
MVSA0          IST097I MODIFY ACCEPTED
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MVSA0          CSV210I LIBRARY LOOKASIDE INITIALIZED
- MVS60 JES3 IAT6100 (J0592797) JOB MODEREAD (J0592856), PRTY=02,
- ID=SYSOPER NET-ID=*NONE SUB=J0590386
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- incomplete. Filename DFHDBFK has no DSNAME.
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MVSA0          CSV210I LIBRARY LOOKASIDE INITIALIZED
00 MVS60          CSV210I LIBRARY LOOKASIDE INITIALIZED
```

# mSys for Operations Console Innovation

- The Out-of-Line message area is arguably easier to read and understand (see images →)
  - I never saw or understood how to use the "F" and "E" selector pen fields until this theme was enabled in our shop. (<embarrassed emoji>)
- Being able to see the 3270 attribute characters is helpful too e.g., during console logon.

```
IEE112I 14.21.17 PENDING REQUESTS      FRAME 1      F      E      SYS=MVSA0
RM=2      IM=3      CEM=20      EM=2      RU=0      IR=0      AMRF
ID:R/K      T  SYSNAME  JOB ID  MESSAGE TEXT
   0215 R  MVS60          *0215 ISTEXC200 - DYN COMMANDS MAY BE
                        ENTERED
   0198 R  MVSA0          *0198 ISTEXC200 - DYN COMMANDS MAY BE
                        ENTERED
  48012 I  MVS70      S0296064 *$HASP1523 Unable to connect to z/OSMF
                        server.
  75010 I  MVSA0      S0295925 *$HASP1523 Unable to connect to z/OSMF
                        server.
   69010 I  MVSA0      S0295907 *IOSHM0803E HyperSwap Disabled
   68010 E  MVSA0      S0295905 HZS0002E CHECK(IBMJES,JES_NJE_SECURITY
                        ):
IEE612I CN=HMCSA0  TYPE=HMCS  SYS=MVSA0  CMDSYS=MVSA0  USERID=EDJXADM
█

IEE163I MODE= RD
```

```
IEE112I 14.17.51 PENDING REQUESTS      FRAME 1      F      E      SYS=MVSA0
RM=2      IM=3      CEM=20      EM=2      RU=0      IR=0      AMRF
ID:R/K      T  SYSNAME  JOB ID  MESSAGE TEXT
   0215 R  MVS60          *0215 ISTEXC200 - DYN COMMANDS MAY BE
                        ENTERED
   0198 R  MVSA0          *0198 ISTEXC200 - DYN COMMANDS MAY BE
                        ENTERED
  48012 I  MVS70      S0296064 *$HASP1523 Unable to connect to z/OSMF
                        server.
  75010 I  MVSA0      S0295925 *$HASP1523 Unable to connect to z/OSMF
                        server.
   69010 I  MVSA0      S0295907 *IOSHM0803E HyperSwap Disabled
   68010 E  MVSA0      S0295905 HZS0002E CHECK(IBMJES,JES_NJE_SECURITY
                        ):
IEE612I CN=HMCSA0  TYPE=HMCS  SYS=MVSA0  CMDSYS=MVSA0  USERID=EDJXADM
█

IEE163I MODE= RD
```

```
IEE187I ENTER LOGON PARAMETERS
LOGON      █      PW
GROUP      █      NEWPW
SECLABEL   █      VERPW
```

```
IEE187I ENTER LOGON PARAMETERS
LOGON      █      PW
GROUP      █      NEWPW
SECLABEL   █      VERPW
```

# mSys for Operations Console Innovation

- Beyond simply better readability, colorful heuristics can also prevent a NOOB operator from being fooled by a “mischievous” programmer.
- In both images, the fake emergency messages in the top half are created by an unauthorized program. Those below are created by an authorized program. Can your operators tell the difference?

```
- MVS70 WTOTESTU +IEE983A IMMEDIATE ACTION REQUIRED
- ASID JOBNAME VIRUS-CHECK STATUS
- 0002 PCAUTH INFECTED WITH GLOWWORM VIRUS
- 0008 SMSPDSE INFECTED WITH GLOWWORM VIRUS
- 0027 JES2 INFECTED WITH GLOWWORM VIRUS
- 0084 JES2CI01 INFECTED WITH GLOWWORM VIRUS
-
- ISSUE "QUIESCE" COMMAND IMMEDIATELY TO PREVENT MELTDOWN
- MVS70 WTOTESTA IEE983A IMMEDIATE ACTION REQUIRED
- ASID JOBNAME VIRUS-CHECK STATUS
- 0002 PCAUTH INFECTED WITH GLOWWORM VIRUS
- 0008 SMSPDSE INFECTED WITH GLOWWORM VIRUS
- 0027 JES2 INFECTED WITH GLOWWORM VIRUS
- 0084 JES2CI01 INFECTED WITH GLOWWORM VIRUS
-
- ISSUE "QUIESCE" COMMAND IMMEDIATELY TO PREVENT MELTDOWN
```

UNAUTH

AUTH

```
- MVS70 WTOTESTU +IEE983A IMMEDIATE ACTION REQUIRED
- ASID JOBNAME VIRUS-CHECK STATUS
- 0002 PCAUTH INFECTED WITH GLOWWORM VIRUS
- 0008 SMSPDSE INFECTED WITH GLOWWORM VIRUS
- 0027 JES2 INFECTED WITH GLOWWORM VIRUS
- 0084 JES2CI01 INFECTED WITH GLOWWORM VIRUS
-
- ISSUE "QUIESCE" COMMAND IMMEDIATELY TO PREVENT MELTDOWN
- MVS70 WTOTESTA IEE983A IMMEDIATE ACTION REQUIRED
- ASID JOBNAME VIRUS-CHECK STATUS
- 0002 PCAUTH INFECTED WITH GLOWWORM VIRUS
- 0008 SMSPDSE INFECTED WITH GLOWWORM VIRUS
- 0027 JES2 INFECTED WITH GLOWWORM VIRUS
- 0084 JES2CI01 INFECTED WITH GLOWWORM VIRUS
-
- ISSUE "QUIESCE" COMMAND IMMEDIATELY TO PREVENT MELTDOWN
```

UNAUTH

AUTH

- Tip of the day: Never issue QUIESCE to prevent a z/OS meltdown.
- Use other commands instead... 😊



See You In  
Nawlins!