# Bit Bucket X'2E'

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# We're Bad, We're Sysplex-Wide

## (Tom Conley)

# IOGEN Activation - The Hard Way

- **My current client has 5 CEC's running 35 LPARs**
- **Process for activating IOGENs is:**
  - **Logon to each LPAR**
  - **Issue ACTIVATE SOFT,VALIDATE=TEST**
  - **Issue ACTIVATE SOFT**
  - **On last LPAR in each CEC, issue software and hardware ACTIVATE**
- **This process is very time-consuming and error-prone**
- **System controls prevent simultaneous logon in sysplex**
- **Single-threaded TSO sessions really slow down process**
- **I started looking for a better way to do this**

# IOGEN Activation - The Easy Way

- **Buried in HCD is a little-known and little-used option**
- **Option 2 Activate or process configuration data**
- **Then option 7, Activate configuration sysplex-wide**
- **This option should not be confused with complex-wide activation feature in z/OS V2R1**
- **Activate configuration sysplex-wide is available to you now on all current releases of z/OS**
- **It can activate an IOGEN across all LPARs in a sysplex**
- **HCD option 2 brings up the following menu:**

# IOGEN Activation – Goin' Sysplex-Wide

**Activate or Process Configuration Data**

 **Select one of the following tasks.**

 7_  **1.   Build production I/O definition file**
     **2.   Build IOCDS**
     **3.   Build IOCP input data set**
     **4.   Create JES3 initialization stream data**
     **5.   View active configuration**
     **6.   Activate or verify configuration**
          **dynamically**
     *7.   Activate configuration sysplex-wide*
     **8.   Activate switch configuration**
     **9.   Save switch configuration**
     **10. Build I/O configuration data**
     **11. Build and manage S/390 microprocessor**
          **IOCDSs and IPL attributes**
     **12. Build validated work I/O definition file**

  **F1=Help     F2=Split     F3=Exit     F9=Swap**
 **F12=Cancel**

# IOGEN Activation – List the Sysplex Images

```
  Goto   Query   Help
--------------------------------------------------------------------
                         Active Sysplex Member List              Row 1 of 9
Command ===> _____ Scroll ===> PAGE

Select one or more systems, then press Enter. To refresh the Activate/Verify
Status, press Enter without selections made.


IODF to be activated: SYS1.IODF01
Active sysplex  . . : PRODPLEX


  System      Processor Partition Active              Config.  EDT Act./Verify
/ Name        ID        Name      IODF                ID       ID  Status
_ SYSA        CEC1      SYSA      SYS1.IODF00          SYSA     00
_ SYSB        CEC2      SYSB      SYS1.IODF00          SYSB     00
_ SYSC        CEC3      SYSC      SYS1.IODF00          SYSC     00
_ SYSL        CEC1      SYSL      SYS1.IODF00          SYSL     00
_ SYSS        CEC2      SYSS      SYS1.IODF00          SYSS     00
_ SYST        CEC3      SYST      SYS1.IODF00          SYST     00
_ SYSV        CEC1      SYSV      SYS1.IODF00          SYSV     00
_ SYSW        CEC2      SYSW      SYS1.IODF00          SYSW     00
_ SYSX        CEC3      SYSX      SYS1.IODF00          SYSX     00
*************************** Bottom of data ***************************
```

# IOGEN Activation – Action Codes O A M V

```
   Goto   Query   Help
----------- .-------------- Actions on selected systems --------------.
            |                                                          |
Command ===> |                                                        |
            | Select by number or action code and press Enter.        |
Select one or |                                                       |
Status, press | __  1.  Activate software configuration only . . . . (o)    |
            |      2.  Activate software and hardware configuration (a)    |
IODF to be ac |    3.  Resume activation of target configuration  . (t)    |
Active sysple |    4.  Reset source configuration . . . . . . . . . (r)    |
            |      5.  Switch IOCDS for next POR  . . . . . . . . . (s)    |
  System   Pr |    6.  View activate messages . . . . . . . . . . (m)    |
/ Name     ID |    7.  Delete activate messages . . . . . . . . . (d)    |
/ SYSA     CE |    8.  View configuration status  . . . . . . . . (v)    |
_ SYSB     CE |    9.  Verify active configuration against system . (k)    |
_ SYSC     CE |    10. Verify target configuration against system . (l)    |
_ SYSL     CE |    11. Build CONFIGxx member  . . . . . . . . . . (b)    |
_ SYSS     CE |    12. Process DISPLAY M=CONFIG(xx) command . . . . (p)    |
_ SYST     CE |                                                        |
_ SYSV     CE |  F1=Help     F2=Split    F3=Exit     F9=Swap    F12=Cancel |
_ SYSW     CE '--------------------------------------------------------'
_ SYSX     CEC3     SYSX       SYS1.IODF00    SYSX       00
****************************** Bottom of data ******************************
```

# IOGEN Activation – Software Activation

```
   Goto   Query   Help
-----------  .--------------- Actions on selected systems ---------------.
             |                                                           |
Command ===> |                                                           |
             | Select by number or action code and press Enter.          |
Select one or|                                                           |
Status, press| 1_   1.  Activate software configuration only . . . . (o)  |
             |      2.  Activate software and hardware configuration (a)  |
IODF to be ac|      3.  Resume activation of target configuration  . (t)  |
Active sysple|      4.  Reset source configuration . . . . . . . . . (r)  |
             |      5.  Switch IOCDS for next POR . . . . . . . . . . (s)  |
  System   Pr|      6.  View activate messages . . . . . . . . . . . (m)  |
/ Name     ID|      7.  Delete activate messages . . . . . . . . . . (d)  |
/ SYSA     CE|      8.  View configuration status  . . . . . . . . . (v)  |
_ SYSB     CE|      9.  Verify active configuration against system . (k)  |
_ SYSC     CE|      10. Verify target configuration against system . (l)  |
_ SYSL     CE|      11. Build CONFIGxx member  . . . . . . . . . . . (b)  |
_ SYSS     CE|      12. Process DISPLAY M=CONFIG(xx) command . . . . (p)  |
_ SYST     CE|                                                           |
_ SYSV     CE|  F1=Help     F2=Split     F3=Exit     F9=Swap    F12=Cancel |
_ SYSW     CE'-----------------------------------------------------------'
_ SYSX     CEC3    SYSX       SYS1.IODF00    SYSX       00
******************************* Bottom of data *******************************
```

# IOGEN Activation – Test Software Activation

```
 Goto   Query   Help
.------------------ Activate Software Configuration Only ------------------.
|                                                            Row 1 of 1 |
| Command ===> _____  Scroll ===> PAGE   |
|                                                                          |
| Specify or revise the values for activation, then press Enter.           |
|                                                                          |
| IODF to be activated: SYS1.IODF01                                        |
|                                                                          |
| System    Processor Partition Config.  EDT  Valid. Test  Active          |
| Name      ID +      Name      ID +      ID + HW Ch. Only  IODF            |
| SYSA      CEC1      SYSA      SYSA      00   Yes    Yes   SYS1.IODF00      |
| *************************** Bottom of data *************************** |
|                                                                          |
|                                                                          |
|                                                                          |
|                                                                          |
|                                                                          |
|                                                                          |
|                                                                          |
|                                                                          |
|                                                                          |
|  F1=Help       F2=Split     F3=Exit       F4=Prompt       F5=Reset       |
|  F7=Backward   F8=Forward   F9=Swap       F12=Cancel      F22=Command     |
'--------------------------------------------------------------------------'
```

# IOGEN Activation – Activation Status

```
 Goto   Query   Help
--------------------------------------------------------------------------
                          Active Sysplex Member List                 Row 1 of 9
Command ===> _____ Scroll ===> PAGE

Select one or more systems, then press Enter. To refresh the Activate/Verify
Status, press Enter without selections made.

IODF to be activated: SYS1.IODF01
Active sysplex  . . : PRODPLEX


  System      Processor Partition Active              Config.  EDT Act./Verify
/ Name        ID        Name      IODF                ID       ID  Status
_ SYSA        CEC1      SYSA      SYS1.IODF00         SYSA     00  Activating
_ SYSB        CEC2      SYSB      SYS1.IODF00         SYSB     00
_ SYSC        CEC3      SYSC      SYS1.IODF00         SYSC     00
_ SYSL        CEC1      SYSL      SYS1.IODF00         SYSL     00
_ SYSS        CEC2      SYSS      SYS1.IODF00         SYSS     00
_ SYST        CEC3      SYST      SYS1.IODF00         SYST     00
_ SYSV        CEC1      SYSV      SYS1.IODF00         SYSV     00
_ SYSW        CEC2      SYSW      SYS1.IODF00         SYSW     00
_ SYSX        CEC3      SYSX      SYS1.IODF00         SYSX     00
**************************** Bottom of data ******************************
```

# IOGEN Activation - Activation Status

Goto   Query   Help
--------------------------------------------------------------------------
                        Active Sysplex Member List                Row 1 of 9
Command ===> _____ Scroll ===> PAGE

Select one or more systems, then press Enter. To refresh the Activate/Verify
Status, press Enter without selections made.


IODF to be activated: SYS1.IODF01
Active sysplex  . . : PRODPLEX


|   | System Name | Processor ID | Partition Name | Active IODF | Config. ID | EDT ID | Act./Verify Status |
|---|-------------|--------------|----------------|-------------|------------|--------|--------------------|
| _ | SYSA | CEC1 | SYSA | SYS1.IODF00 | SYSA | 00 | In Progress |
| _ | SYSB | CEC2 | SYSB | SYS1.IODF00 | SYSB | 00 | |
| _ | SYSC | CEC3 | SYSC | SYS1.IODF00 | SYSC | 00 | |
| _ | SYSL | CEC1 | SYSL | SYS1.IODF00 | SYSL | 00 | |
| _ | SYSS | CEC2 | SYSS | SYS1.IODF00 | SYSS | 00 | |
| _ | SYST | CEC3 | SYST | SYS1.IODF00 | SYST | 00 | |
| _ | SYSV | CEC1 | SYSV | SYS1.IODF00 | SYSV | 00 | |
| _ | SYSW | CEC2 | SYSW | SYS1.IODF00 | SYSW | 00 | |
| _ | SYSX | CEC3 | SYSX | SYS1.IODF00 | SYSX | 00 | |

*************************** Bottom of data ******************************

# IOGEN Activation - Activation Status

 Goto   Query   Help
--------------------------------------------------------------------------
                        Active Sysplex Member List

Command ===> _____  Scroll ===> PAGE


Select one or more systems, then press Enter. To refresh the Activate/Verify
Status, press Enter without selections made.


IODF to be activated: SYS1.IODF01
Active sysplex  . . : PRODPLEX


| / | System Name | Processor ID | Partition Name | Active IODF | Config. ID | EDT ID | Act./Verify Status |
|---|---|---|---|---|---|---|---|
| m | SYSA | CEC1 | SYSA | SYS1.IODF00 | SYSA | 00 | Messages |
| _ | SYSB | CEC2 | SYSB | SYS1.IODF00 | SYSB | 00 | |
| _ | SYSC | CEC3 | SYSC | SYS1.IODF00 | SYSC | 00 | |
| _ | SYSL | CEC1 | SYSL | SYS1.IODF00 | SYSL | 00 | |
| _ | SYSS | CEC2 | SYSS | SYS1.IODF00 | SYSS | 00 | |
| _ | SYST | CEC3 | SYST | SYS1.IODF00 | SYST | 00 | |
| _ | SYSV | CEC1 | SYSV | SYS1.IODF00 | SYSV | 00 | |
| _ | SYSW | CEC2 | SYSW | SYS1.IODF00 | SYSW | 00 | |
| _ | SYSX | CEC3 | SYSX | SYS1.IODF00 | SYSX | 00 | |

**************************** Bottom of data ****************************

# IOGEN Activation – Display Activation Messages

```
   Goto   Query   Help
.--------------------------------- Message List ---------------------------------.
|    Save   Query   Help                                                          |
| ------------------------------------------------------------------------------- |
|                                                                      Row 1 of 5 |
| Command ===> _____ Scroll ===> PAGE          |
|                                                                                 |
| Select one or more messages, then press Enter. To refresh the list, press      |
| ENTER without selections made. To reply to a WTOR message, use the REPLY        |
| command.                                                                        |
|                                                                                 |
|                                                                                 |
| System name: SYSA                                                               |
|                                                                                 |
|                                                                                 |
| / Message Text                                                                  |
| _    IOS500I ACTIVATE RESULTS 127                                               |
| #   TEST DETECTED NO CONDITIONS WHICH WOULD RESULT IN ACTIVATE                   |
| #   FAILURE                                                                      |
| #   NOTE = 0100,SOFTWARE-ONLY CHANGE                                             |
| #    COMPID=SC1C3                                                                |
| *************************** Bottom of data **************************** |
|                                                                                 |
|  F1=Help         F2=Split        F3=Exit         F4=Prompt        F5=Reset       |
|  F7=Backward     F8=Forward      F9=Swap         F10=Actions      F12=Cancel     |
| F13=Instruct    F22=Command                                                     |
'---------------------------------------------------------------------------------'
```

# IOGEN Activation – Software Activation

```
  Goto   Query   Help
 .----------------- Activate Software Configuration Only -----------------.
 |                                                            Row 1 of 1  |
 | Command ===> _____  Scroll ===> PAGE   |
 |                                                                        |
 | Specify or revise the values for activation, then press Enter.        |
 |                                                                        |
 | IODF to be activated: SYS1.IODF01                                      |
 |                                                                        |
 | System     Processor Partition Config.  EDT  Valid. Test  Active       |
 | Name       ID +      Name      ID +     ID + HW Ch. Only  IODF         |
 | SYSA       CEC1      SYSA      SYSA      00   Yes   No    SYS1.IODF00  |
 | *************************** Bottom of data *************************** |
 |                                                                        |
 |                                                                        |
 |                                                                        |
 |                                                                        |
 |                                                                        |
 |                                                                        |
 |                                                                        |
 |                                                                        |
 |                                                                        |
 |  F1=Help        F2=Split      F3=Exit       F4=Prompt      F5=Reset    |
 |  F7=Backward    F8=Forward    F9=Swap       F12=Cancel     F22=Command |
 '------------------------------------------------------------------------'
```

# IOGEN Activation – Display Activation Messages

```
 Goto   Query   Help
.-------------------------------- Message List -------------------------------.
|    Save   Query   Help                                                       |
| --------------------------------------------------------------------------- |
|                                                                  Row 1 of 7  |
| Command ===> _____ Scroll ===> PAGE   |
|                                                                              |
| Select one or more messages, then press Enter. To refresh the list, press   |
| ENTER without selections made. To reply to a WTOR message, use the REPLY     |
| command.                                                                     |
|                                                                              |
| System name: SYSA                                                            |
|                                                                              |
| / Message Text                                                               |
| _   IOS500I ACTIVATE RESULTS 437                                             |
| #  ACTIVATE COMPLETED SUCCESSFULLY                                           |
| #  NOTE = 0100,SOFTWARE-ONLY CHANGE                                          |
| #   COMPID=SC1C3                                                             |
| #  NOTE = 010F,NEW CONFIGURATION ACTIVE, CLEANUP IN PROGRESS                 |
| #   DESCTEXT=WAITING FOR OLD EDT TO BE DELETED                               |
| #   COMPID=SC1C3                                                             |
|  F1=Help        F2=Split       F3=Exit        F4=Prompt       F5=Reset       |
|   F7=Backward    F8=Forward     F9=Swap        F10=Actions     F12=Cancel    |
| F13=Instruct    F22=Command                                                  |
'------------------------------------------------------------------------------'
```

# IOGEN Activation – Multiple Activations

```
  Goto   Query   Help
-----------------------------------------------------------------------
                        Active Sysplex Member List               Row 1 of 9
Command ===> _____      Scroll ===> PAGE


Select one or more systems, then press Enter. To refresh the Activate/Verify
Status, press Enter without selections made.


IODF to be activated: SYS1.IODF01
Active sysplex  . . : PRODPLEX


  System      Processor  Partition  Active             Config.   EDT Act./Verify
/ Name        ID         Name       IODF               ID        ID  Status
_ SYSA        CEC1       SYSA       SYS1.IODF01        SYSA      00  Messages
o SYSB        CEC2       SYSB       SYS1.IODF00        SYSB      00
o SYSC        CEC3       SYSC       SYS1.IODF00        SYSC      00
o SYSL        CEC1       SYSL       SYS1.IODF00        SYSL      00
o SYSS        CEC2       SYSS       SYS1.IODF00        SYSS      00
o SYST        CEC3       SYST       SYS1.IODF00        SYST      00
_ SYSV        CEC1       SYSV       SYS1.IODF00        SYSV      00
_ SYSW        CEC2       SYSW       SYS1.IODF00        SYSW      00
_ SYSX        CEC3       SYSX       SYS1.IODF00        SYSX      00
**************************** Bottom of data ******************************
```

# IOGEN Activation – Multiple Software Activates

```
 Goto   Query   Help
.------------------ Activate Software Configuration Only ------------------.
|                                                              Row 1 of 1  |
| Command ===> _____    Scroll ===> PAGE        |
|                                                                         |
| Specify or revise the values for activation, then press Enter.          |
|                                                                         |
| IODF to be activated: SYS1.IODF01                                       |
|                                                                         |
| System      Processor Partition Config.  EDT  Valid. Test  Active       |
| Name        ID +      Name      ID +      ID + HW Ch. Only  IODF         |
| SYSB        CEC1      SYSB      SYSB      00   Yes    No    SYS1.IODF00   |
| SYSC        CEC1      SYSC      SYSC      00   Yes    No    SYS1.IODF00   |
| SYSL        CEC1      SYSL      SYSL      00   Yes    No    SYS1.IODF00   |
| SYSS        CEC1      SYSS      SYSS      00   Yes    No    SYS1.IODF00   |
| SYST        CEC1      SYST      SYST      00   Yes    No    SYS1.IODF00   |
| *************************** Bottom of data *************************** |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
|  F1=Help        F2=Split      F3=Exit       F4=Prompt      F5=Reset      |
|  F7=Backward    F8=Forward    F9=Swap      F12=Cancel     F22=Command    |
'-------------------------------------------------------------------------'
```

# IOGEN Activation – V Issues D IOS,CONFIG

```
  Goto   Query   Help
--------------------------------------------------------------------------
                          Active Sysplex Member List              Row 1 of 9
Command ===> _____  Scroll ===> PAGE

Select one or more systems, then press Enter. To refresh the Activate/Verify
Status, press Enter without selections made.


IODF to be activated: SYS1.IODF01
Active sysplex  . . : PRODPLEX


  System      Processor  Partition  Active          Config.  EDT  Act./Verify
/ Name        ID         Name       IODF            ID       ID   Status
_ SYSA        CEC1       SYSA       SYS1.IODF01     SYSA     00   Messages
v SYSB        CEC2       SYSB       SYS1.IODF01     SYSB     00   Messages
_ SYSC        CEC3       SYSC       SYS1.IODF01     SYSC     00   Messages
_ SYSL        CEC1       SYSL       SYS1.IODF01     SYSL     00   Messages
_ SYSS        CEC2       SYSS       SYS1.IODF01     SYSS     00   Messages
_ SYST        CEC3       SYST       SYS1.IODF01     SYST     00   Messages
_ SYSV        CEC1       SYSV       SYS1.IODF00     SYSV     00
_ SYSW        CEC2       SYSW       SYS1.IODF00     SYSW     00
_ SYSX        CEC3       SYSX       SYS1.IODF00     SYSX     00
*************************** Bottom of data ***************************
```

# IOGEN Activation – V Command Output

```
 Goto   Query   Help
.----------------------------- Message List -------------------------------.
|    Save   Query   Help                                                    |
| ----------------------------------------------------------------------- |
|                                                             Row 1 of 28  |
| Command ===> _____    Scroll ===> PAGE   |
|                                                                           |
| View configuration status of selected systems.                           |
|                                                                           |
| Message Text                                                              |
|   IOS506I 04.03.40 I/O CONFIG DATA 095                                    |
|   ACTIVE IODF DATA SET = SYS1.IODF01                                      |
|   CONFIGURATION ID = SYSB          EDT ID = 00                            |
|   TOKEN:  PROCESSOR DATE     TIME     DESCRIPTION                         |
|    SOURCE: CEC2       14-02-28 06:24:36 SYS1      IODF00                  |
|   ACTIVE CSS:  0    SUBCHANNEL SETS CONFIGURED: 0, 1, 2                   |
|   CHANNEL MEASUREMENT BLOCK FACILITY IS ACTIVE                           |
|   HARDWARE SYSTEM AREA AVAILABLE FOR CONFIGURATION CHANGES               |
|   PHYSICAL CONTROL UNITS                  7545                            |
|   CSS  0 - LOGICAL CONTROL UNITS      3469                               |
|    SS  0    SUBCHANNELS                   26024                           |
|    SS  1    SUBCHANNELS                   61215                           |
|  F1=Help        F2=Split       F3=Exit       F5=Reset       F7=Backward  |
|  F8=Forward     F9=Swap        F10=Actions   F12=Cancel     F22=Command  |
'---------------------------------------------------------------------------'
```

# IOGEN Activation – Hardware Activation

```
 Goto   Query   Help
 ----------------------------------------------------------------------
                        Active Sysplex Member List              Row 1 of 9
 Command ===> _____  Scroll ===> PAGE

 Select one or more systems, then press Enter. To refresh the Activate/Verify
 Status, press Enter without selections made.


 IODF to be activated: SYS1.IODF01
 Active sysplex  . . : PRODPLEX


   System       Processor  Partition  Active          Config.  EDT Act./Verify
 / Name         ID         Name       IODF            ID       ID  Status
 _ SYSA         CEC1       SYSA       SYS1.IODF01     SYSA     00  Messages
 _ SYSB         CEC2       SYSB       SYS1.IODF01     SYSB     00  Messages
 _ SYSC         CEC3       SYSC       SYS1.IODF01     SYSC     00  Messages
 _ SYSL         CEC1       SYSL       SYS1.IODF01     SYSL     00  Messages
 _ SYSS         CEC2       SYSS       SYS1.IODF01     SYSS     00  Messages
 _ SYST         CEC3       SYST       SYS1.IODF01     SYST     00  Messages
 a SYSV         CEC1       SYSV       SYS1.IODF00     SYSV     00
 _ SYSW         CEC2       SYSW       SYS1.IODF00     SYSW     00
 _ SYSX         CEC3       SYSX       SYS1.IODF00     SYSX     00
 **************************** Bottom of data ****************************
```

# IOGEN Activation – Test Hardware Activation

```
  Goto   Query   Help
.-------------- Activate Hardware and Software Configuration --------------.
|                                               Row 1 of 1 More:        >  |
|  Command ===> _____ Scroll ===> PAGE  |
|                                                                         |
|  Specify or revise the values for activation, then press Enter.         |
|                                                                         |
|  IODF to be activated: SYS1.IODF01                                      |
|                                                                         |
|  System    Processor Partition Config.  EDT  -FORCE Option- Switch  Test |
|  Name      ID +      Name      ID +     ID + DEVICE CANDID. IOCDS + Only |
|  SYSV      CEC1      SYSV      SYSV      00   No     No      __      Yes  |
|  *************************** Bottom of data *************************** |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
|   F1=Help        F2=Split       F3=Exit       F4=Prompt      F5=Reset    |
|    F7=Backward   F8=Forward     F9=Swap       F12=Cancel     F20=Right   |
|  F22=Command                                                            |
'-------------------------------------------------------------------------'
```

# IOGEN Activation – Hardware Activate Messages

```
   Goto   Query   Help
.----------------------------- Message List -------------------------------.
|    Save   Query   Help                                                    |
| ------------------------------------------------------------------------- |
|                                                              Row 1 of 3    |
| Command ===> _____ Scroll ===> PAGE       |
|                                                                           |
| Select one or more messages, then press Enter. To refresh the list, press |
| ENTER without selections made. To reply to a WTOR message, use the REPLY  |
| command.                                                                  |
|                                                                           |
| System name: SYSV                                                         |
|                                                                           |
| / Message Text                                                            |
| _    IOS500I ACTIVATE RESULTS 239                                         |
| #   TEST DETECTED NO CONDITIONS WHICH WOULD RESULT IN ACTIVATE            |
| #   FAILURE                                                               |
| *************************** Bottom of data **************************** |
|                                                                           |
|                                                                           |
|                                                                           |
|  F1=Help        F2=Split      F3=Exit       F4=Prompt       F5=Reset       |
|  F7=Backward    F8=Forward    F9=Swap       F10=Actions     F12=Cancel     |
| F13=Instruct   F22=Command                                                |
'---------------------------------------------------------------------------'
```

# IOGEN Activation - Summary

- Use HCD to drive ALL your IOGEN activates
- Complete all IOGEN activate tasks from a single screen
- Verify results of IOGEN activations from a single screen
- HCD much more efficient than RO commands from console or logging on to each individual LPAR
- In my case, activating IOGENs went from 90 to 30 mins, for a 66% performance and time improvement

"Look, you don't understand. There was [zFS] shrinkage." -- George Costanza

(Ed Jaffe)

# #1 SHARE "Top 50" Requirement for 2014

- <u>SSMVSO07004:</u> ZFS Shrinking
- <u>Description:</u> ZFS has the ability to automatically grow a filesystem to additional extents, which works well. But once a filesystem has grown there is not method for shrinking the size back down once files are removed at the Unix layer. We would like to see some method to (preferably) automatically shrink the filesystem or manually shrink a filesystem via zfsadm "shrink" command.
- <u>Solution:</u> I would recommend some mechanism in ZFS that can determine the true size of data inside the VSAM LDS and periodically release extents that are not needed. Perhaps based on some user specified timers and thresholds. If not feasible, a zfsadm "shrink" command might also be a workable solution that could be automated by customers.
- [SIC]

# zFS Reorganization Tool
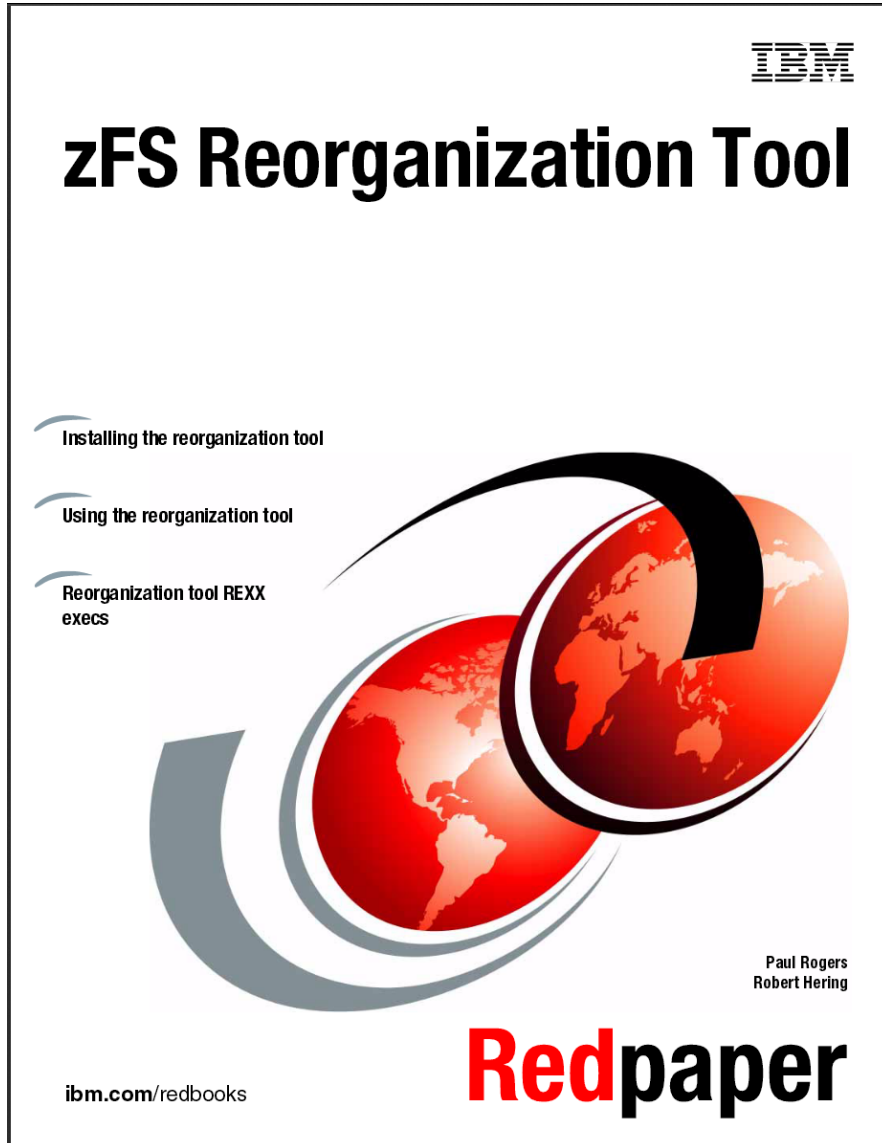


- **Described in Redpaper by Paul Rogers & Robert Hering: http://www.redbooks.ibm.com/redpapers/pdfs/redp4769.pdf**

- **The Redpaper shows how to download, install and use the tool.**

# zFS Reorganization Tool

- <u>Abstract:</u> "ZFSREORG is a tool for reorganizing and restructuring zFS compatibility mode aggregates. It is an alternative to directly using commands like pax and copytree. It provides more flexibility in many situations and offers options for how the reorganization or copy processing should be done."

- The tool creates a new zFS, makes a backup of the old one, copies over the data, unmounts/renames the old zFS, and renames/mounts the new zFS, all within seconds.

- Not as dynamic as the functionality requested by the requirement, but a good temporary measure that saves manual effort while IBM works on a better solution.

# zFS Reorganization Tool

- The tool can perform the copy operation using pax, copytree, or IDCAMS REPRO.

- An ISPF application helps interactively select one or more zFS data sets to be reorganized.

- New name/size/placement values for each selected zFS are specified via editable keyword parameters.

- Batch job submitted to perform actual reorganization.

- Submitter must have one of the following authorities:
  - A permanent z/OS UNIX superuser ID (UID=0)
  - READ access to BPX.SUPERUSER in FACILITY class
  - READ access to SUPERUSER.FILESYS.PFSCTL in UNIXPRIV class

# Download/Install zFS Reorganization Tool

- **Obtain the tool from IBM via FTP:**

```
ftp www.redbooks.ibm.com
User: anonymous
Password: my.email@xx.com
cd redbooks/REDP4769/
lcd 'myuserid'
locsite blk=3120 lrecl=80 recfm=fb
binary
get zfs.zfsreorg.unload.bin zfs.zfsreorg.unload.xmi
quit
```

- **The file is in portable NETDATA (TSO/E XMIT) format. Restore to your system using the TSO/E RECEIVE command:**

```
TSO RECEIVE INDATASET('myuserid.ZFS.ZFSREORG.UNLOAD.XMI')
```

- **Allocate (or use existing) REXX and JCL libraries**
- **Customize and submit member $INSTALL to populate those libraries.**

# zFS Reorganization Tool Parts

- **DEFRHELP command provides information on how to setup the reorganization tool and how to create reorganization definition files.**

- **DEFREORG command is used to create migration definition statements**

- **CPYRHELP command provides information about how to set job and z/OS UNIX environment variables and how to run reorganization processing**

- **ZFSREORG contains JCL to run TSO batch job to perform the reorganization**

# Results of DEFRHELP Command



```
   Menu   Utilities   Compilers   Help
 ─────────────────────────────────────────────────────────────────────────
  MVS60        SYS14064.T104508.RA000.EDJXADM.R0103609      Line 00000000 Col 001 080
  Command ===> _____     Scroll ===> CSR
 *************************************** Top of Data ***************************************

  #  ===================================================================  #
  #     DEFREORG Help Information                                         #
  #  ===================================================================  #


 1. DEFREORG Control Statements
 ---------------------------------

 ZFS_REORG_DEFINE_DSN=

 This is the full name of a sequential MVS data set including HLQ or the
 name of PDS. Preferred is to use a PDS as this allows simply to use new
 members for new migration tasks. This data set must be pre-allocated as
 VB80 or FB80. The default name is hlq.ZFS.REORG.DEFINE with "hlq" being
 your own userid.


 ZFS_REORG_DEFINE_MBR=

 Here you can specify the output member name to contain the migration
 the migration control statements. If no name is provided "WORKnn" is
 used by default with "nn" being a number that is not used currently.
 You can rename the member names using ISPF at any time as you like it.


   F1=Help     F3=Exit     F5=Rfind    F12=Cancel
 MA                                                                        26/067
```

# Parms Displayed by DEFREORG Command

```
   File   Edit   Edit_Settings   Menu   Utilities   Compilers   Test   Help

 MVS60          SYS14064.T135452.RA000.EDJXADM.R0103656        Columns 00001 00072
 Command ===> _____ Scroll ===> CSR
 ****** *************************** Top of Data ****************************
 000001 # ------------------------------------------------------------------ #
 000002 ZFS_REORG_DEFINE_DSN=EDJXADM.ZFS.REORG.DEFINE
 000003 ZFS_REORG_DEFINE_MBR=HQOMVS_
 000004 ZFS_REORG_DEFINE_DSP=APPEND
 000005 # ------------------------------------------------------------------ #
 000006
 000007 # ------------------------------------------------------------------ #
 000008 ZFS_DEF_DATACLASS=
 000009 ZFS_DEF_MANAGEMENTCLASS=
 000010 ZFS_DEF_STORAGECLASS=
 000011 # ------------------------------------------------------------------ #
 000012
 000013 # ------------------------------------------------------------------ #
 000014 ZFS_DATA_SETS_TO_REORG=HQOMVS.**.ZFS
 000015 ZFS_AGGRNAME_CHANGE_CMD=
 000016 # ------------------------------------------------------------------ #
 ****** *************************** Bottom of Data ***************************




 ┌──────────────────────────────────────────────────────────────────────────┐
 │ Enter DH to show REORG definition information. Change the data as needed. To│
 │ continue SAVE the changes,to stop processing use CANCEL.                    │
 └──────────────────────────────────────────────────────────────────────────┘

 F1=Help      F3=Exit      F5=Rfind      F6=Rchange   F12=Cancel

 MA                                                                    08/036
```

# Search Performed by DEFREORG

```
DEFRO050I Searching for data sets HQOMVS.**.ZFS ...
DEFRO048I Data set HQOMVS.MVSA0.Z113.DEV.ZFS will be examined.
DEFRO048I Data set HQOMVS.MVSA0.Z113.DEV.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.MVSA0.Z113.ETC.ZFS will be examined.
DEFRO048I Data set HQOMVS.MVSA0.Z113.ETC.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.MVSA0.Z113.VAR.ZFS will be examined.
DEFRO048I Data set HQOMVS.MVSA0.Z113.VAR.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.MVSA0.Z113.VARWBEM.ZFS will be examined.
DEFRO048I Data set HQOMVS.MVSA0.Z113.VARWBEM.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.MVS60.Z113.DEV.ZFS will be examined.
DEFRO048I Data set HQOMVS.MVS60.Z113.DEV.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.MVS60.Z113.ETC.ZFS will be examined.
DEFRO048I Data set HQOMVS.MVS60.Z113.ETC.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.MVS60.Z113.VAR.ZFS will be examined.
DEFRO048I Data set HQOMVS.MVS60.Z113.VAR.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.MVS60.Z113.VARWBEM.ZFS will be examined.
DEFRO048I Data set HQOMVS.MVS60.Z113.VARWBEM.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.MVS70.Z113.DEV.ZFS will be examined.
DEFRO048I Data set HQOMVS.MVS70.Z113.DEV.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.MVS70.Z113.ETC.ZFS will be examined.
DEFRO048I Data set HQOMVS.MVS70.Z113.ETC.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.MVS70.Z113.VAR.ZFS will be examined.
DEFRO048I Data set HQOMVS.MVS70.Z113.VAR.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.MVS70.Z113.VARWBEM.ZFS will be examined.
DEFRO048I Data set HQOMVS.MVS70.Z113.VARWBEM.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.PHXHQ.LOCAL.ZFS will be examined.
DEFRO048I Data set HQOMVS.PHXHQ.LOCAL.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.PHXHQ.ROOT.ZFS will be examined.
DEFRO048I Data set HQOMVS.PHXHQ.ROOT.ZFS.DATA will be examined.
DEFRO048I Data set HQOMVS.PHXHQ.SMBSRV.PUBLIC1.DOC.ZFS will be examined.
DEFRO048I Data set HQOMVS.PHXHQ.SMBSRV.PUBLIC1.DOC.ZFS.DATA will be examined.
***  _
MA    D                                                            32/006
```

# DEFREORG Generated Parameters

# DEFREORG Parameters for My Realloc Test

```
   File    Edit    Edit_Settings    Menu    Utilities    Compilers    Test    Help

MVS60          EDJXADM.ZFS.REORG.DEFINE(TEST) - 01.01          Columns 00001 00072
Command ===> _                                                  Scroll ===> CSR
****** ************************************ Top of Data *********************************
000001 # -------------------------------------------------------------------------- #
000002 # REORG CONTROL DEFINITIONS, CREATED 2014-03-05 15:11:42                      #
000003 # -------------------------------------------------------------------------- #
000004
000005 # -------------------------------------------------------------------------- #
000006 ZFS_OLD_NAME=                          EDJXADM.TEST.ZFS
000007 # -------------------------------------------------------------------------- #
000008 #ZFS_OLD_#_VOLUMES=                    1
000009 #ZFS_OLD_DEVICE_TYPE=                  3390
000010 #ZFS_OLD_ALLOC_UNIT=                   CYLINDER
000011 #ZFS_OLD_ALLOC_SPACE=                  1 1
000012 #ZFS_OLD_TOTAL_UNITS_ALLOCATED=       1
000013 #ZFS_OLD_TOTAL_UNITS_FORMATTED=       1 CYLINDERS
000014 #ZFS_OLD_TOTAL_UNITS_%USED=           23
000015 #ZFS_OLD_DATACLASS=                    DEFAULT
000016 #ZFS_OLD_MGMNTCLASS=                   NOMIG
000017 #ZFS_OLD_STORCLASS=                    BASE
000018 ZFS_OLD_NAME_SAV=                      EDJXADM.TEST.ZFS.SAV
000019 ZFS_NEW_NAME_TMP=                      EDJXADM.TEST.ZFS.TMP
000020 ZFS_NEW_NAME=                          EDJXADM.TEST.ZFS
000021 #ZFS_NEW_#_VOLUMES=                    1
000022 ZFS_NEW_VOLUMES=
000023 ZFS_NEW_ALLOC_NUM_CAND_VOLUMES=       1
000024 ZFS_NEW_ALLOC_UNIT=                   CYLINDERS
000025 ZFS_NEW_ALLOC_SPACE=                  1 1
000026 ZFS_NEW_ALLOC_NUM_SEC_ALLOCS=         0
 F1=Help        F3=Exit        F5=Rfind       F6=Rchange   F12=Cancel
MA   D                                                                    04/015
```

# ZFSREORG JCL for My Realloc Test

```
  File   Edit   Edit_Settings   Menu   Utilities   Compilers   Test   Help

MVS60          EDJXADM.A.CNTL(ZFSREORG) - 01.02          Columns 00001 00072
Command ===>                                                Scroll ===> CSR
******  ************************************* Top of Data *************************************
000001 //ZFSJOB    JOB 1,'ZFSREORG',CLASS=A,NOTIFY=&SYSUID.,REGION=0M
000002 //* --------------------------------------------------------------------
000003 //* Reorganize compat zFS aggregates to new zFS compat mode aggregates
000004 //* Property of IBM  (C) Copyright IBM Corp. 2011
000005 //* --------------------------------------------------------------------
000006 //  SET CPYTOOL=COPYPAX                      <=== Copy utility to be used
000007 //*               TSOREPRO: Use IDCAMS/TSO REPRO function for copying
000008 //*               COPYPAX : Use accessible (std) pax version for copying
000009 //*               COPYTREE: Use accessible (std) copytree for copying
000010 //  SET VERBOSE=N                    <=== Y or N, list all objects copied
000011 //*               VERBOSE is used only if COPYPAX is set.
000012 //  SET DEFREORG=&SYSUID..ZFS.REORG.DEFINE(TEST)  <=== REORG DEFs
000013 //* --------------------------------------------------------------------
000014 //  SET REXXLIB=&SYSUID..CLIST                <=== SYSEXEC library
000015 //* --------------------------------------------------------------------
000016 //ZFSREORG EXEC PGM=IKJEFT01,PARM='ZFSREORG &CPYTOOL. &VERBOSE.'
000017 //SYSEXEC   DD DSNAME=&REXXLIB.,DISP=SHR
000018 //STDENV    DD DATA,DLM=##
000019 # ---------------------------------------------------------------------
000020 # Force stopping after formal syntax check of STDIN data is done (N|Y)
000021   STOP_AFTER_SYNTAX_CHECK=N
000022 # Force stopping when old and existing new zFS is/are mounted (N|Y)
000023   STOP_AFTER_FSS_MOUNTED=N
000024 # Force stopping when the new zFS aggregate is formatted (N|Y)
000025   STOP_AFTER_ZFS_IS_FORMATTED=N
000026 # Run copy processing only if the target zFS structure is empty (Y|N)
 F1=Help      F3=Exit      F5=Rfind      F6=Rchange   F12=Cancel
MA                                                                      04/015
```

# ZFSREORG Non-Verbose Runtime Messages

# ZFSREORG Non-Verbose Runtime Messages

```
   Jobs   Resources   Devices   Tools   Filter   View   Options   Help
──────────────────────────────────────────────────────────────────────────────
MVS60 ZFSJOB    J0519533   <        .ZFSREORG.SYSTSPRT>         Line 112 of 121
Command ===> _                                            Scroll ===> CSR
Current Find Text:                                         Dataset 4 of 4
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+--->
ZFSRO131I The old zFS DATA part has been renamed to or is named EDJXADM.TEST.ZFS
IDC0531I ENTRY EDJXADM.TEST.ZFS.TMP ALTERED
ZFSRO104I The zFS aggregate has been renamed to EDJXADM.TEST.ZFS.
IDC0531I ENTRY EDJXADM.TEST.ZFS.TMP.DATA ALTERED
ZFSRO119I The zFS DATA part has been renamed to or is named EDJXADM.TEST.ZFS.DAT
ZFSRO107I Mounting zFS EDJXADM.TEST.ZFS at /u/edjxadm/temp now...
ZFSRO111I No errors have been recognized for the actual REORG process.

READY
END
********************************* Bottom of Data ********************************








                                                                                




 F1=Help         F3=Exit        F6=Info         F7=Up        F8=Down     F10=Left
 F11=Right      F12=Cancel     F24=Cretriev
MA█    D                                                                  04/015
```

Old McDonald had a (long) PARM

(Keith Moe)

# Long PARM support in z/OS 2.1

- **JCL PARM longer than 100 characters**
  - **Finally!**
- **Implemented via PARMDD on EXEC statement**
- **Authorized programs require LONGPARM Binder option**
  - **IBM provided pre-2.1 Binder compatibility PTFs**
    - **z/OS 1.13 with PTF UA69333**
    - **z/OS 1.12 with PTF UA69332**
    - **z/OS 1.11 with PTF UA69331**
    - **z/OS 1.10 with PTF UA69330**
  - **Check you own programs**
  - **Ask your ISVs**

# Long PARM Example (thanks to John Eells)

```
//NOTAREAL JOB (accounting info),MSGLEVEL=(1,1),CLASS=BATCHLOW,
// NOTIFY=&SYSUID
//*
//UNAUTH EXEC PGM=MYPGM,PARMDD=PARMS
//IN DD DISP=SHR,DSN=MY.DATA.SET
//OUT DD DISP=(,CATLOG),DSN=MY.NEW.DATA.SET,
//PRINT DD SYSOUT=*
//PARMS DD *
LONG PARAMETER LIST HERE IN THE DATA SET NAMED BY PARMDD.
NOTE THAT IT NEED NOT BE AN INSTREAM DATA SET. A SEQUENTIAL
DATA SET, A MEMBER OF A PDS OR PDSE, OR Z/OS UNIX FILE WILL
WORK AS WELL. AND, IF I COUNTED RIGHT, THEN THIS VERY VERY
LONG PARAMETER LIST IS NOW WELL OVER 100 CHARACTERS IN LENGTH
AND I CAN STOP TYPING!
/*
```

# Long PARM support in z/OS 2.1

- **Example is uninteresting**
  - **Batch job, not Started Task**
  - **Doesn't use symbolics**
- **Examples in the JCL manual are equally poor**
  - **Also batch**
  - **No mention of Started Task and Operator entered parameters**

# Long PARM support in z/OS 2.1

- **New EXPORT JCL Statement needed**
  - **Makes symbols available to JES for instream data set processing**
    - **Also in application program via API but we're talking JCL PARM**
  - **//LABEL EXPORT SYMLIST=(A,B,C)**
    - **Or better:**
  - **//LABEL EXPORT SYMLIST=***
- **EXPORT statement must be before symbol definition**
  - **Most symbolics defined in PROC Statement**
  - **EXPORT statement cannot be coded before the PROC statement**
  - **Symbolics can be defined with a SET statement**
    - **But SET statement definitions are not overridden by Operator parameters**

# Long PARM support in z/OS 2.1

- Use PROC statement to define symbolics and default values
- Use EXPORT SYMLIST=*
- Use SET statement to define alternate symbols equal to PROC symbols
- Use alternate symbols in the PARMDD data set

# Long PARM support in z/OS 2.1

```
//*
//MVSPAS  PROC ML=NOLIMIT,          ML and RGN only needed in JCL, not the PARMDD
//             RGN=128,
//*
//             AHS=00,              Parameters for START override
//             AKEY=4,
//             BBX=BBXS
//*
//EXPORT  EXPORT SYMLIST=*          Makes following SET statement symbols available
//*
//PASSET SET   @AHS=&AHS,           Defines alternate symbols
//             @AKEY=&AKEY,
//             @BBX=&BBX
//*
//PAS      EXEC PGM=BBM9DA00,
//             PARMDD=PARMDDS,       Specifies Long PARM data set DDName
//             REGION=&RGN.M,
//             MEMLIMIT=&ML
//*
//PARMDDS DD   *,SYMBOLS=EXECSYS    Interpret symbols on executing system
AHS=&@AHS,
AKEY=&@AKEY,
BBX=&@BBX,
TSP=&SYSCLONE                       Here's a System symbol as well
/*
```

# Long PARM support in z/OS 2.1

- **START MVSPAS,BBX=EIEIO**
  - **Long PARM becomes AHS=00,AKEY=4,BBX=EIEIO,TSP=XX**
- **And just because I like to show off, here's a PARM passed to our program:**
    - `PGM Parms: AHS=00,AKEY=4,BBX=BBXS,CC=,CD=,CPM=31,CW=,CX=N,DC=IPM,`    `(54)`
    - `Continued: DCDL=00,DEBUGOFF,DF=1,EM=00,HOST=Y,IPM=5M,JST=00,LTDC=00,`    `(57)`
    - `Continued: MD=10,MP=BBD,MSDP=00,MX=,QRJ=00,RLS=00,SRH=00,SRP=00,`    `(53)`
    - `Continued: SSID=XKEM,STDC=STOP,TSP=00,UZ=Y,XDM=N,XDS=00`    `(44)`

# Getting Pinned

# (Sam Knutson)

# The Scenario

- **IODF Dynamic Activate**
  - **Changing the IODF at the DR site**

- **AutoIPL implemented**
  - **DIAGxx has the primary site's SADMP unit address**

- **The Dynamic Activate was to change DASD. The address included the SADMP unit address.**
  - **The device was unused at this location**
  - **DIAGxx is not something we worry about at DR**

# The Problem: Dynamic Activate

```
────────────────── Message List ──────────────────
   Save  Query  Help
  ------------------------------------------------------------------
                                                        Row 1 of 61
 Command ===> _____    Scroll ===> PAGE

 Messages are sorted by severity. Select one or more, then press Enter.

 / Sev Msg. ID    Message Text
 _  E    IOS500I  ACTIVATE RESULTS
 #                ACTIVATE FAILED - ERROR MESSAGE(S) ISSUED
 _  E             REASON=0151,CAN NOT DELETE DEVICE 5231
 #                 DESCTEXT=DEVICE PINNED
 #                           DIAGxx AutoIPL policy
 #                 COMPID=SC1CH
 _  I    CBDA883I Following control units are to be deleted from processor
 #                TAN:
 #                1.1000,1.1100,1.1200,1.1300,1.1400,1.1500,1.1600,1.1700,1
 #                .1800,1.1900,1.1A00,1.1B00,1.1C00,1.1D00,1.1E00,1.1F00
 _  I    CBDA883I Following control units are to be deleted from processor
  F1=Help       F2=Split      F3=Exit       F4=Prompt      F5=Reset
  F7=Backward   F8=Forward    F9=Swap       F10=Actions    F12=Cancel
 F13=Instruct   F22=Command
```

# The Problem: Dynamic Activate with test

- ## DIAGYY had:
    - `AUTOIPL SADMP(5231,SO0770) MVS(LAST)`

- ## The device validation check is successful.
    - `BLWH0010I AutoIPL policy devices are valid. Devices specified in the`
    - `AutoIPL policy passed device validation.`

- ## Had it failed, we would have seen:
    - `BLWH0002E A problem was found for a device specified in the AutoIPL policy.`

# The diagnosis

- **A console dump and IPCS LISTU 5231 shows:**

  - **Device is dynamic**

  - **UCB pinned, COMPID = SC1CH, TEXT = DIAGxx AutoIPL policy**

# Auto IPL SADMP device

- The device must meet the following conditions to pass device validation:
  - Must be DASD
  - Must be accessible
  - Must exist
  - Must not be specified as a secondary device in a Metro Mirror pair
  -

- We changed DIAGYY to comment out the AUTOIPL Statement, but that did not update it.

- We then changed the AUTOIPL Statement to :
  - `AUTOIPL SADMP(NONE) MVS(LAST)`

- Issued SET DIAG=YY and were able to activate the IODF.

# About Pinning:

- z/OS V1R12.0 MVS Programming Authorized Assembler Services Guide SA22-7608-15:

- **In a dynamic configuration environment, any program that obtains a UCB address must ensure that the UCB will not be deleted before the program has finished referencing the UCB.**

# About Pinning:

- z/OS V1R12.0 MVS Programming Authorized Assembler Services Guide SA22-7608-15:

- A UCB must be pinned in the following environments:

- The device represented by the UCB is offline and unallocated, but a program might still require access to the UCB and its related control block structures.

  - Note: For a dynamic device to be deleted, it must be offline and unallocated, and its UCB must not be pinned. When a device is in the offline and unallocated state, the only way for a program to prohibit the deletion of the device is to pin the UCB for the device.

- The device represented by the UCB can become offline or unallocated while the program is accessing it.

- The UCB address is passed between programs that are running asynchronously.

# About Pinning:

- z/OS V1R12.0 MVS Programming Authorized Assembler Services Guide SA22-7608-15:

- Example: Pinning an unallocated and offline device

- A program receives a device number for a DASD as input. The program is to format the specified device, and needs to ensure that the device cannot be deleted while it is being formatted. To accomplish these things the program must do the following:

  - Pin the device by issuing the UCBLOOK macro with the PIN parameter, specifying the device number as input. UCBLOOK pins the UCB, and returns the UCB address and a pin token to the program.

  - Format the DASD.

  - Unpin the UCB through the UCBPIN macro with the UNPIN option, using the pin token returned when the UCB was pinned.

# About AutoIPL

- **The following report is generated by the SVA_AUTOIPL_DEV_VALIDATION check when the device validation fails for devices specified in the AutoIPL policy:**

```
AutoIPL    Device         Error
action     Address        Description


-------    ---------      ---------------------------------------

SADMP      03A0           Device is not DASD


In the output:

AutoIPL action        =       The AutoIPL action (SADMP or MVS).

Device Address        =       The address of the device failing the
device validation.

Error Description     =       The description of the problem
```

A Cautionary Tale

(Sam Knutson)

# Am I overreacting?

- A Systems Programmer friend called and said 'I'm seeing a volser with lowercase letters in it. Ever seen anything like that?

- The friend went on to say 'I'm pretty concerned about it, but no one else is. It doesn't seem to be causing any problems.

- Famous last words

- Two PMR's, thirty-some dumps, one system hang, two IPL's, and a zap later ...

# The first PMR

Good morning IBM. We have some hosed volsers:

```
RESPONSE=ACSC
  IEE457I 07.17.07 UNIT STATUS 157
  UNIT TYPE STATUS            VOLSER      VOLSTATE
  5508 3390 O                 DBdSXA      PRIV/RSDNT


RESPONSE=ACSC
  IEE457I 08.46.15 UNIT STATUS 021
  UNIT TYPE STATUS            VOLSER      VOLSTATE
  6B16 3390 O                 DSsT98      PRIV/RSDNT
```

Yes, those are lowercase letters in our volsers that should be uppercase. So far, those are the only two we have found in about 12K devices.

# The first PMR

- **We have several errors/abends/dumps:**
  - **IOSRMIHP abendC0D**
  - **IGVGVRGN abendC78**
  - **IOSVSSCH abend0C1**
  - **CVAF ERROR TYPE 3   abendB00**
  - **DASD ERROR RECOVERY PROGRAM  abend0C4**
- **Selected dumps sent to IBM Level-2 for diagnose**

- **IBM diagnosed an overlay of the UCBDDT**
- **Provided a SLIP to fix the bad DDT address**
- **Found an additional overlay of the UCBDDT for device 550A, provided another SLIP**

# The first PMR

- **The SLIP:**

```
SL SET,IF,NUCMOD=(IOSVSSCH),ID=UCBF,
      DATA=(0253D44C,EQ,00FD120C),
      A=REFBEFOR,
      REFBEFOR=(0253D44C,EQ,00FD520C),END
```

IBM provided UCB sniffer program, TESTDDT

The UCB sniffer is one of those specialty tools supplied by Level-2 when you need it.  An object deck is supplied which you link edit and run from an authorized library.

# A few days later

- **The sniffer is running on the initial LPAR to discover the problem**

- **The next occurrence happened on a different LPAR**

- **The volume was far more important than the previous two, a DB2 volume**

- **DB2 began to hang**

- **We began running the sniffer on that LPAR, and on our most beloved LPAR.**

# When the ^%$ hit the fan

- **Sunday morning, the issue hits again**

- **The volume somehow has catalog address space involvement that included a reserve via logger**

- **Catalog address space was bounced and there was some relief for 38 minutes. Varying a volume off/on sometimes fixed the problem, but you can't always do that**

- **In the end, the system was IPL'ed which was determined to be quicker than opening a Sev1 and getting a SLIP**

- **The problem got a lot more attention**

- MQmD5F 6522
- DP¥05B    5952

# The resolution

- The problem was occurring on new DASD with new HyperPAV turned on and there seemed to be some Innovation involvement.

- There was an impressive collaboration between IBM and Innovation to diagnose the problem

- From the IBM side, OA43805 (In ++ status right now) was opened and improves IOS recovery after the UCBIOQF has been corrupted.

- From the FDR side, there is a fix/zap documented in a technical bulletin

# The resolution

## OA43805: DEVICES STUCK ABENDC0D-3 IOSVIRBA DUE TO CORRUPTED UCBIOQF

APAR Identifier ...... OA43805     Last Changed ........ 14/03/06
  DEVICES STUCK ABENDC0D-3 IOSVIRBA DUE TO CORRUPTED UCBIOQF

  Symptom ...... AB ABENDC0D            Status ........... OPEN
  Severity .................... 2     Date Closed .........
  Component .......... 5752SC1C3        Duplicate of ........
  Reported Release ......... 780      Fixed Release ............
  Component Name IOS                   Special Notice
  Current Target Date ..14/04/18       Flags
  SCP ....................
  Platform ............

  Status Detail: DESIGN/CODE - APAR solution is being designed
                         and coded.

# The resolution

We have encountered a problem with FDREPORT V 5.4 L78 SPIN 00, 01 and 02 when a user is running FDREPORT that can cause ABENDs or overlaid UCBs.  We urge all customers running those levels to install the following fix, or to upgrade to V 5.4/80 SPIN 01, in which the fix is included.


```
ZAP-ID#    : P-54.7859
DATE       : 13.192
PREREQ     : V 5.4/78 SPIN 00, 01, or 02
STATUS     : APPLIED V 5.4L78 SPIN 03
SYMPTOMS  : ABEND S066, SC0D, S800, SC78, S0C1, SB00, S0C4;
            OVERLAID UCB'S.  CMD PRINT OR DEFAULT, WITH
            ENABLE=OFFLINE.
SOLUTION  : REMOVE THE REQUEST FOR UNBOUND ALIAS ENTRIES FROM
            UCB PROCESSING.
NOTE       : ZAP P-54.7873, OR V 5.4/80 WITH ZAP P-54.8011,
            REINSTATES PROCESSING OF UNBOUND PAV ALIAS
```

# The moral of the story is…

- **Trust your gut feeling.**
- **When something troubles you, continue to diagnosis it, even in the face of apathy. Be persistent.**

# Messages?

# I don't See No Stinkin' Messages

# (Skip Robinson)

- **Rexx CONSOLE/GETMSG is a great facility**
- **Allows you to issue most any z/OS command**
- **Retrieve command responses into an array**
- **Process each response line one by one**
- **Take any appropriate action including another command**
- **Userid must have CONSOLE authority in SAF**
- **E.g. RACF TSO/E segment**
- **Plus READ access to TSOAUTH profile CONSOLE**
- **Generally this is the userid of command issuer**

- We run a Rexx to put 'non-owned' volumes offline
- All volumes are accessible in the IODF
- VATLSTxx in PARMLIB indicates 'system ownership'
- Controlled by comments on each line
- Our Rexx builds an ISPF table of all online volumes
- DS QD,SSID=ALL,ONLINE
-  UNIT VOLSER SCUTYPE DEVTYPE   CYL ...
- 06375 RESH01 2107961 2107900 10017 ...
- Each volser compared with VATLSTxx comment
- Any volume that is 'not ours' is varied offline
- This Rexx has worked fine for years

- **After move to a new data center, Rexx began failing**
- **GETMSG terminated RC=4 and returned no data at all**
- **I discovered that the failure was count related**
- **Up to a certain number of command responses, all OK**
- **Over (some) limit, GETMSG failed with RC=4**
- **Each command response represents one online volume**
- **GETMSG failed at >6K online volumes**
- **Verified by varying some volumes offline manually**
- **So--too many volumes were online at IPL**
- **The fault of a hastily created IODF**
- **OSCONFIG should have marked most volumes offline**
- **Thus problem sort of explained but not solved**
- **What was wrong with GETMSG?**

- After lengthy SR, root cause came to light
- An EMCS console has a default 1 MB storage limit
- This default has no external knob, e.g. PARMLIB
- You can increase limit only in TSO/E OPERPARM
- STORAGE= is number of MB for that EMCS console
- Userid here is not necessarily the submitting userid
- Userid must match explicit or implicit console name
- CONSOLE ACTIVATE...NAME(xxx)
- If NAME() not specified, it is task level userid
- If NAME () is specified, matching OPERPARM is used
- Means creating 'phantom' userid(s) for all console names

- **IBM L2 could not recreate our problem**
- **Could not find an OS command with so many responses**
- **But our problem was evident**

- **IBM created marketing requirement MR0926135954S**
- **Allow simple installation control either by**
  - **Changing installation-wide EMCS storage default (PARMLIB)**
  - **Or allowing user to override default on CONSOLE command**

- **We have since fixed our underlying problem in IODF**
- **OSCONFIG puts most non-owned volumes offline at IPL**
- **Remainder fall well below >6K limit**
- **Rexx works fine again**

Where's that Amazon drone when I need it?

(Skip Robinson)

- We run z/VM to support zLinux
- First installed a few years ago on a z10 at V6.1
- Later needed maintenance for upgrade to z196
- Something to do with FCB channels for zLinux SAN
- Recently we set about to move z/VM to new zEC12
- In a new data center with all new hardware
- It was time to upgrade z/VM to current V6.3
- I had done the original install of V6.1
- I recall downloading from ShopzSeries to my PC
- I recall building a DVD and installing from an HMC
- I don't recall any major obstacles

- **This time I got stymied**
- **In Shopz, delivery choice was '3390' or 'DVD'**
- **When you order 'DVD', IBM ships you a DVD**
- **Policy prohibits us taking delivery of physical media**
- **So I chose '3390', got a zipped file for download**
- **Downloaded the zipped file to my PC**
- **Unzipped into 1200+ individual files**
- **Burned a DVD using 'standard' Windows 7 software**
- **Inserted new DVD into the HMC drive**
- **Pointed to the z/VM LPAR on zEC12**
- **Selected option 'Load from removable media'**
- **Got msg ACT36201 ~ Target LPAR cannot access media**
- **Also tried 'Access removable media', same result**

- **DVD looked just fine on my PC**
- **Matched C: drive contents exactly**

- **630GANUC**
- **630GARAM**
- **630prod.dvdimage**
- **630prod.srl**
- **630vm.ins**
- **CKD2A200**
- **. . .**
- **rsulevel.6302**
- **zvm630.copyrite**
- **zvm630.galevel**

- **Also a tried more direct approach**
- **Minimize Workspace window, right click on background**
- **Provides an option to display DVD contents**
- **This did not show my 1200+ files**
- **Only a couple of odd-looking entries**
- **Maybe it's Linux vs. Windows?**
- **One colleague had a Linux machine in his office**
- **DVD looked just fine there also**
- **Got local CE involved**
- **Opened SR with IBM**
- **Posted on discussion lists**
- **Got questions about DVD type (-R), HMC level**
- **Questions about directory name including case**
- **There was mention of 'Joliet file system extensions'**

- Google search led to discussions of 'ISO image'
- International Standards Organization
- My Win 7 burner seemed to offer no ISO option
- So I shagged an ISO-capable application on the web
- Burned a new DVD as ISO image of my 1200+ files
- Result behaved totally differently
- HMC loaded from DVD to z/VM LPAR with no problem
- Resulted in a running z/VM instance on zEC12
- z/VM installation could now proceed

- IBM created marketing requirement MR0206142613
- 'Provide Shopz option to download an ISO image'
- Burning ISO to DVD should work for everyone

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# See You in Pittsburgh...