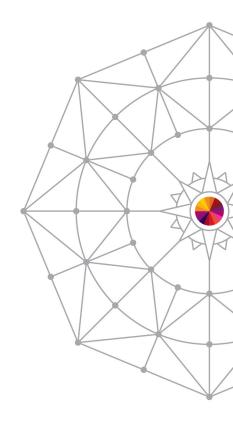# z/OS 2.1 User Experiences

Ed Jaffe
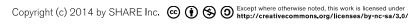*Phoenix Software International*

5 August 2014
Session Number 15597

Early Test Program

- Phoenix Software International (PSI) was privileged to work with early z/OS 2.1 drivers via IBM's Early Test Program.
  - http://dtsc.dfw.ibm.com/MVSDS/%27HTTPD2.DSN01.PUBLIC.PDF%28ISVEPROG%29%27
- This program is available only to participating ISVs and not to customers. Then why should you care about it?
- *Every* serious ISV on planet Earth should be involved in IBM Early Test programs. They provide access to early code builds for purposes of:
  - Developing/testing ISV products to ensure they support the latest operating system and middleware. ISVs should (at least) tolerate new releases by the IBM Early Support Program start.
  - Helping to "shake out" bugs and re-shape APIs in z/OS and related products before customers see them.

Early Test Program *(continued…)*

- Our first ETP was in 1994 with MVS/ESA 4.3. Since then, we have maintained a *coincident-with-GA* toleration policy.
- Before that, we had a *GA-plus-six-months* toleration policy.
- Apparently, based on IBM-MAIN postings, not all ISVs avail themselves of this opportunity. Recent "surprises" include:
  - Abends after **AllowUserKeyCsa(No)** became default
  - Abends after **CaptUcb Protect=Yes** became default
  - Abends after **UseZosV1R9Rules(No)** became default
- If you have ISVs with *GA-plus-non-zero-time* toleration policies, you might ask if they are involved with IBM Early Testing programs. If not, politely suggest they should be.
- It's an extra cost, but—for us at least—well worth it!

Table of ISV Products Supporting z/OS 2.1

http://www.ibm.com/systems/z/os/zos/software/isv210.html

Company Name	Product(s)	Available	EAV
MVS Solutions	Thruput Manager SE (PTF TMT6219) Thruput Manager AE (PTF TMT6219) Thruput Manager AE+ (PTF TMT6219)	At z/OS GA for all products listed	Yes for all products listed
NewEra	ImageFOCUS The Control Editor IPLCheck Stand Alone Environement (SAE) Fast DASD Erase for z/OS Step One z/OS New Release Analysis	At z/OS GA for all products listed	Yes Yes Yes Limited Limited Yes Yes
Phoenix Software International	CONDOR (E)JES FALCON Key/101 NetTester PHX-Adders PHX-KeyPlus PHX-ODE zHISR	Now for all products listed	Yes for all products listed

- Part of IBM's Global Solutions Directory
- Consult this table as you plan your upgrade to z/OS 2.1
- If an ISV product you use is not listed, then ask "Why not?"
- Similar tables are available going all the way back to z/OS 1.3

What Difference Did Agile Make?

- Previously, IBM development used a so-called "waterfall" development approach. In recent years, they have starting using Agile development techniques.
  - Agile is similar to what most development organizations have done for years, but more formalized and with rich project management tooling that is integrated with the development process
- With the "waterfall" approach, most functions appeared in the first driver. Each subsequent driver was more stable.
- With Agile development, we now get the first driver much earlier than before! ☺ However, many functions will not appear until later drivers.

ETP Install is not ServerPac

- The package is delivered in a format agreed upon by ISVs and IBM back in the early 1990s. It is a DSS logical dump of Target, DLIB, and SMP/E volumes.
  - No JCL or tooling to help build a system
  - No catalogs or operational data sets
  - Intended to be overlaid by the next driver rather than being serviced with PTFs.
- In general, this install technique has little relevance for a presentation to customers that will use ServerPac.
- However, we did encounter one big surprise at install time that should be quite relevant…

Biggest Surprise: DASD Space "Explosion"

- Space requirement nearly *doubled*!
- Upon inspection, we found that much of the difference was attributable to fonts, which are now part of the base.
  – It's nice that software can now depend on the fonts always being there. Too bad they take up so much space… ☹
- We chose not to restore the fonts. Everything we needed worked just fine without them. But, this is not a suggestion for you.
- There is no ServerPac option for leaving out the fonts like there is for the *other* JES. And, unilaterally choosing not to install a base component is not supported.

Excerpt from Marna's Musings (a blog available through the SHARE web site)

Our Environment

- (Then) z10BC with 4 CPs, 1 ICF, 1 IFL, 1 zIIP, 1 HMC
- (Now) zBC12 with 3 CPs, 1 ICF, 1 IFL, 1 zIIP, 1 HMC
- Various LPARs configured including:
  - Our z/OS "primary" parallel sysplex (PHXHQ)
    - Bronzeplex with multi-image JES2 MAS and JES3 complex
    - All LPARs but one run current z/OS; one LPAR runs new z/OS
    - Eventually all are migrated to new z/OS which is then current
  - z/VM LPAR running numerous guests including:
    - New z/OS in a stand-alone system
    - New z/OS in a virtualized parallel sysplex
      - *Two virtualized CFs and two z/OS images*
- Storage
  - FICON-attached IBM DS8100 DASD (w/zHPF)
  - FICON- and FCP-attached IBM Totalstorage Tape Drives

Deployment

- We first deploy new z/OS under a stand-alone z/VM guest.

- Then we deploy into a z/VM virtual parallel sysplex with two virtualized CFs and two z/OS systems. Both systems run the new z/OS release. We do some development and testing here. This is also where we apply service.

- Lastly, we deploy into an LPAR as part of our primary parallel sysplex. The other systems in the parallel sysplex run the current z/OS release with necessary toleration maintenance applied. We do most of our development and testing here.

- All new z/OS images run from exactly the same read-only SYSRES volumes—shared between z/OS and z/VM.

Toleration Maintenance is *Critical*

- Applying toleration maintenance on back level releases should be S.O.P. and it's easier than ever to get it right.

```
SET BDY(GLOBAL) .
REPORT MISSINGFIX ZONES(MVST)
      FIXCAT(IBM.TargetSystem-RequiredService.z/OS.V2R1).
REPORT MISSINGFIX ZONES(MVST)
      FIXCAT(IBM.Coexistence.z/OS.V2R1).
```

▸ Sometimes, when something falls through the cracks, the results are minor inconveniences and are easily resolved simply by applying the missing PTF(s).

▸ Not so with z/OS 2.1.

▸ We experienced problems—most likely due to incomplete deployment of toleration ++APARs on our z/OS 1.13 systems—that precipitated a sysplex-wide "warm" start.

Dynamic Console Add and Remove
(SHARE Top 39 Requirement!)

- SET CON=xx adds consoles via CONSOLxx
- SETCON DELETE deletes a console
- I wanted to delete and re-add an inactive console.
- Be sure to remove obsolete specifications.
  - I still had CNGROUP and ALTGRP keywords in my CONSOLxx member. ALTGRP was flagged as error.

```
-D C,CN=TAPEY1E
 T4SY1 R=          CNZ4100I 22.30.53 CONSOLE DISPLAY 099
 T4SY1 R=          CONSOLES MATCHING COMMAND: D C,CN=TAPEY1E
 T4SY1 R=          MSG:CURR=0    LIM=5000 RPLY:CURR=1    LIM=20    SYS=T4SY1    PFK=00
 T4SY1 R=          NAME     TYPE     STATUS         DEFINED            MATCHED
 T4SY1 R=          TAPEY1E  MCS      INACT          *ALL               *ALL

-SETCON DELETE,CN=TAPEY1E
 T4SY1 R=          CNZ4300I MCS CONSOLE TAPEY1E HAS BEEN REMOVED

-D C,CN=TAPEY1E
 T4SY1 R=          IEE274I DISPLAY  CONSOLE TAPEY1E   NOT VALID
```

Dynamic Console Add and Remove *(continued…)*

```
-T CON=01
 T4SY1 R=          CNZ6003I COMMAND ACCEPTED FOR EXECUTION: SET CON=01
 T4SY1 R=          IEE252I MEMBER CONSOL01 FOUND IN SYS2.PARMLIB
 T4SY1 R=          IEA196I CONSOL01 0600: DEVNUM ALREADY DEFINED. STATEMENT IGNORED.
... <-- lots more "babbling" here
-VARY OPERLOG,HARDCPY    ISSUED FOR SET CON=01
-T PFK=00    ISSUED FOR SET CON=01
-T MMS=00    ISSUED FOR SET CON=01
-T MPF=(MS,RS,00)    ISSUED FOR SET CON=01
-MN SPACE    ISSUED FOR SET CON=01
-MN DSNAME    ISSUED FOR SET CON=01
 T4SY1 R=          IEE252I MEMBER PFKTAB00 FOUND IN SYS2.PARMLIB
 T4SY1 R=          IEE536I PFK      VALUE 00 NOW IN EFFECT
 T4SY1 R=          IEE252I MEMBER MPFLSTMS FOUND IN SYS2.PARMLIB
 T4SY1 R=          IEE252I MEMBER MPFLSTRS FOUND IN SYS2.PARMLIB
 T4SY1 R= MMS      IEE252I MEMBER MMSLST00 FOUND IN SYS2.PARMLIB
 T4SY1 R=          IEE252I MEMBER MPFLST00 FOUND IN SYS2.PARMLIB
 T4SY1 R=          IEA630I  OPERATOR *OPLOGY1 NOW ACTIVE,   SYSTEM=T4SY1   , LU=NONE
 T4SY1 R= MMS      IEE252I MEMBER CNLENU00 FOUND IN ADCD.Z113.PARMLIB
-D C,HC,L=Z
-VARY ,HARDCPY,ROUT=(1-10,12-13,15-128)    ISSUED FOR SET CON=01

-D C,CN=TAPEY1E
 T4SY1 R=          CNZ4100I 22.31.59 CONSOLE DISPLAY 162
 T4SY1 R=          CONSOLES MATCHING COMMAND: D C,CN=TAPEY1E
 T4SY1 R=          MSG:CURR=0    LIM=5000 RPLY:CURR=1    LIM=20    SYS=T4SY1    PFK=00
 T4SY1 R=          NAME      TYPE    STATUS        DEFINED          MATCHED
 T4SY1 R=          TAPEY1E  MCS     INACT         *ALL             *ALL
```

Integrated 3270 Console Support
(SHARE Top 39 Requirement!)

- I created a parmlib member called CONSOLHM:

```
/********************************************************************/
/*                                                                  */
/* HMC CONSOLE                                                      */
/*                                                                  */
/********************************************************************/
CONSOLE DEVNUM(HMCS)
        NAME(HMCS&SYSCLONE.A)
        ROUTCODE(1-2,7-10,16-96,99-112,115-128)
        PFKTAB(PFKTAB1)
        AUTH(MASTER)
        MONITOR(JOBNAMES-T)
        CON(N) SEG(16) DEL(RD) RNUM(5) RTME(1/4) MFORM(J,S) AREA(14)
        RBUF(15)
        LOGON(REQUIRED)
```

▸ SET CON=HM issued an ACK message only, so I issued 'D C' and found the console in STDBY status

```
MVS60     2013211 13.13.03.62 EDJXADM   -RO MVSA0,T CON=HM
MVSA0     2013211 13.13.03.68 EDJXADM    CNZ6003I COMMAND ACCEPTED FOR EXECUTION: SET CON=HM


MVS60     2013211 13.15.14.88 EDJXADM   -RO MVSA0,D C,CN=HMCSA0A
MVSA0     2013211 13.15.14.94 EDJXADM    CNZ4100I 13.15.14 CONSOLE DISPLAY 762
                                         CONSOLES MATCHING COMMAND: D C,CN=HMCSA0A
                                         MSG:CURR=0    LIM=5000 RPLY:CURR=3    LIM=20      SYS=MVSA0
                                         NAME      TYPE    STATUS        DEFINED           MATCHED
                                         HMCSA000 HMCS    STDBY-MVSA0   MVSA0             MVSA0
```
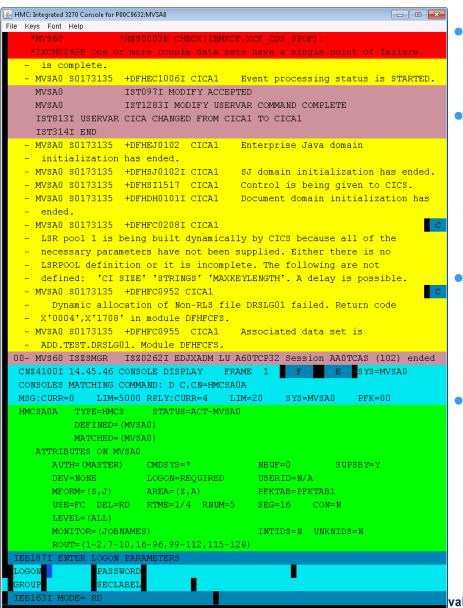
Use HMC to Activate the Console

Wrong release info is apparently not a z/OS problem. You need to update your HMC/SE code to fix this issue.
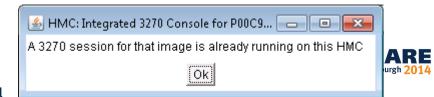
Console is Operational! ☺

- Requires Java support in your browser.
- Presentation size for HMCS fixed at 43x80 (This does not appear to be customizable.)
- LOGON(REQUIRED) is honored exactly as for SMCS consoles
- Only one HMCS console per LPAR. Start of second session receives:

Also Supported as a NIP Console ☺

- We have no NIP consoles defined via HCD.
- We want NIP messages directed to the Operating System Messages folder for the LPAR on the HMC.
- We do this so we can IPL remotely and respond to any message that might appear on NIP console.
- Just as one would hope, NIP messages appear in Integrated 3270 Console.

Update Symbols via SETLOAD Command
(SHARE Top 39 Requirement!)

- Issue D SYMBOLS to display existing symbols:

```
-D SYMBOLS
IEA007I STATIC SYSTEM SYMBOL VALUES 328
        &SYSALVL.  = "2"
        &SYSCLONE. = "Y1"
        &SYSNAME.  = "T4SY1"
        &SYSOSLVL. = "Z1020100"
        &SYSPLEX.  = "PHXHQ"
        &SYSR1.    = "T4RES1"
        &ADCDVER.  = "Z112"
        &CICSHLQ.  = "DFH410"
        &CNMNETID. = "PHX"
        &CNMTCPN.  = "TCPIP"
        ... (additional symbols)
        &J3MEM.    = "00"
        &J3QUAL.   = "PHXHQ"
        &OSREL.    = "ZOSR1"
        &PLEXQUAL. = "PHXT4"
        &SYSP1.    = "ZCPRD1"
        &SYSP2.    = "ZCPRD2"
        &SYSP3.    = "ZCPRD3"
        &SYSR2.    = "T4RES2"
        &SYSR3.    = "T4RES3"
        &SYSR4.    = "T4RES4"
        &SYSS1.    = "T4SYS1"
        &TSOKEY.   = "00"
        &UNIXVER.  = "VERSYSB"
```

&SYSOSLVL is a new system-defined static symbol

Update Symbols via SETLOAD Command *(continued…)*

- Use D IPLINFO to learn LOADxx and IEASYMxx names:

```
-D IPLINFO
IEE254I  11.52.52 IPLINFO DISPLAY 331
 SYSTEM IPLED AT 16.26.31 ON 07/18/2013
 RELEASE z/OS 02.01.00    LICENSE = z/OS
 USED LOADT4 IN SYS4.IPLPARM ON 08128
 ARCHLVL = 2   MTLSHARE = N
 IEASYM LIST = (00,11,L)
 IEASYS LIST = (11,03) (OP)
 IODF DEVICE: ORIGINAL(08128) CURRENT(08128)
 IPL DEVICE: ORIGINAL(08110) CURRENT(08110) VOLUME(T4RES1)
```

▸ Add the following to the end of IEASYM11:

```
SYMDEF(&ZEPPELIN='LED')
```

▸ Issue SETLOAD to update the symbols:

```
-SETLOAD T4,IEASYM,DSN=SYS4.IPLPARM
IEE252I MEMBER    LOADT4 FOUND IN SYS4.IPLPARM
IEE252I MEMBER IEASYM00 FOUND IN SYS2.PARMLIB
IEE252I MEMBER IEASYM11 FOUND IN SYS2.PARMLIB
IEF196I IEF285I    SYS4.IPLPARM                        KEPT
IEF196I IEF285I    VOL SER NOS= T4SYS1.
IEF900I SYSTEM SYMBOLS WERE UPDATED FROM LOADT4
```

Update Symbols via SETLOAD Command *(continued…)*

- Display updated symbols:

```
-D SYMBOLS
IEA007I STATIC SYSTEM SYMBOL VALUES 328
        &SYSALVL.  = "2"
        &SYSCLONE. = "Y1"
        &SYSNAME.  = "T4SY1"
        &SYSOSLVL. = "Z1020100"
        &SYSPLEX.  = "PHXHQ"
        &SYSR1.    = "T4RES1"
        &ADCDVER.  = "Z112"
        &CICSHLQ.  = "DFH410"
        &CNMNETID. = "PHX"
        &CNMTCPN.  = "TCPIP"
        ... (additional symbols)
        &J3MEM.    = "00"
        &J3QUAL.   = "PHXHQ"
        &OSREL.    = "ZOSR1"
        &PLEXQUAL. = "PHXT4"
        &SYSP1.    = "ZCPRD1"
        &SYSP2.    = "ZCPRD2"
        &SYSP3.    = "ZCPRD3"
        &SYSR2.    = "T4RES2"
        &SYSR3.    = "T4RES3"
        &SYSR4.    = "T4RES4"
        &SYSS1.    = "T4SYS1"
        &TSOKEY.   = "00"
        &UNIXVER.  = "VERSYSB"
        &ZEPPELIN. = "LED"
```

- Processing is complete symbol replacement—*not additive*

- If I restore IEASYM11 to its original state and reissue the SETLOAD command, the new symbol &ZEPPELIN is removed.

Display PPT Command
(SHARE Top 39 Requirement!)

```
NC0000000 MVSA0    2013210 07:18:43.06 EDJXADM  00000290  D PPT
MR0000000 MVSA0    2013210 07:18:43.11 EDJXADM  00000090  IEF386I 07.18.43 DISPLAY PPT 647
LR                                      647 00000090  Parmlib Values
LR                                      647 00000090  PgmName  NC NS PR ST ND BP Key 2P 1P NP NH CP
DR                                      647 00000090  ANFFIEP   . Y  . Y  Y  . 1   .  . Y  .  .
DR                                      647 00000090  BBGCTL    . Y  Y  . .  . 2   .  . .  .  .
DR                                      647 00000090  BBGDAEMN  . Y  Y  Y  .  . 2   .  . .  .  .
DR                                      647 00000090  BBOCTL    . Y  Y  . .  . 2   .  . .  .  .
DR                                      647 00000090  BBODAEMN  . Y  Y  Y  .  . 2   .  . .  .  .
DR                                      647 00000090  BPXVCLNY  . Y  Y  Y  . Y  8   .  . .  .  .
DR                                      647 00000090  CASRVASI  . Y  Y  Y  .  . 4   . Y  Y  .  .
                                        ... (more parmlib entries)
DR                                      647 00000090  SNALINK   . Y  . Y  .  . 6   .  . .  .  .
LR                                      647 00000090  Default Values
LR                                      647 00000090  PgmName  NC NS PR ST ND BP Key 2P 1P NP NH CP
DR                                      647 00000090  AHLGTF    Y Y  . Y  .  . 0   .  . Y  .  .
DR                                      647 00000090  AKPCSIEP  . Y  . Y  Y  . 1   .  . Y  .  .
DR                                      647 00000090  APSHPOSE  . Y  . Y  Y  . 1   .  . Y  .  .
DR                                      647 00000090  APSKAFPD  . Y  . Y  Y  . 1   .  . Y  .  .
DR                                      647 00000090  APSPPIEP  . Y  . Y  Y  . 1   .  . Y  .  .
DR                                      647 00000090  ASBSCHIN  . Y  . Y  .  . 1  Y Y  .  .  .
DR                                      647 00000090  ASBSCHWL  . .  Y  . .  . 1   .  . .  .  .
DR                                      647 00000090  ATBINITM  . Y  . Y  .  . 1  Y Y  .  .  .
DR                                      647 00000090  ATBSDFMU  . .  Y  . .  . 1   .  . .  .  .
DR                                      647 00000090  AVFMNBLD  Y Y  . Y  .  . 3   .  . Y  .  .
                                        ... (78 system entries altogether)
DR                                      647 00000090  IXZIX00   Y Y  Y  Y  .  . 1   .  . .  .  .
LR                                      647 00000090  Reference
LR                                      647 00000090  Synonym ------------Meaning--------------  ----SCHEDxx keyword-----
DR                                      647 00000090    NC   Non-cancelable                     NOCANCEL
DR                                      647 00000090    NS   Non-swappable                      NOSWAP
DR                                      647 00000090    PR   Privileged                         PRIV
DR                                      647 00000090    ST   System task                        SYST
DR                                      647 00000090    ND   No dataset integrity               NODSI
DR                                      647 00000090    BP   Bypass password protection         NOPASS
DR                                      647 00000090    Key  PSW key for this program           KEY(x)
DR                                      647 00000090    2P   Second level preferred storage     SPREF
DR                                      647 00000090    1P   First level preferred storage      LPREF
DR                                      647 00000090    NP   No preferred storage               NOPREF
DR                                      647 00000090    NH   No honor IEFUSI region settings    NOHONORIEFUSIREGION
ER                                      647 00000090    CP   Critical paging                    CRITICALPAGING
```

Wildcard Character Support in IEBCOPY
(SHARE Top 39 Requirement!)

```
1                                          IEBCOPY MESSAGES AND CONTROL STATEMENTS
PAGE      1
-IEB1135I IEBCOPY   FMID HDZ2210   SERVICE LEVEL NONE      DATED 20130313 DFSMS 02.01.00 z/OS     02.01.00
HBB7790   CPU 2098
 IEB1035I COPYCSV             09:01:22 MON 29 JUL 2013 PARM=''
- COPYGROUP INDD=((INPUT,R),OUTDD=OUTPUT
  SELECT MEMBER=CSV*
0IEB1013I COPYING FROM PDS    INDD=INPUT    VOL=T4RES2 DSN=SYS1.MACLIB
 IEB1014I              TO PDS  OUTDD=OUTPUT   VOL=T4USR1 DSN=EDJXADM.CSV.MACLIB
 IGW01264I TOTAL PRIMARY NAMES: 1924, FILTER PATTERN MATCHES: 20
 IGW01551I MEMBER CSVAPF  HAS BEEN COPIED
 IGW01551I MEMBER CSVAPFAA HAS BEEN COPIED
 IGW01551I MEMBER CSVDLAA  HAS BEEN COPIED
 IGW01551I MEMBER CSVDLCB  HAS BEEN COPIED
 IGW01551I MEMBER CSVDLENF HAS BEEN COPIED
 IGW01551I MEMBER CSVDLSMF HAS BEEN COPIED
 IGW01551I MEMBER CSVDYLPA HAS BEEN COPIED
 IGW01551I MEMBER CSVDYNEX HAS BEEN COPIED
 IGW01551I MEMBER CSVDYNL  HAS BEEN COPIED
 IGW01551I MEMBER CSVEXAA  HAS BEEN COPIED
 IGW01551I MEMBER CSVEXRET HAS BEEN COPIED
 IGW01551I MEMBER CSVEXTI  HAS BEEN COPIED
 IGW01551I MEMBER CSVINFO  HAS BEEN COPIED
 IGW01551I MEMBER CSVLPRET HAS BEEN COPIED
 IGW01551I MEMBER CSVLPSMF HAS BEEN COPIED
 IGW01551I MEMBER CSVMODI  HAS BEEN COPIED
 IGW01551I MEMBER CSVQUERY HAS BEEN COPIED
 IGW01551I MEMBER CSVRTAA  HAS BEEN COPIED
 IGW01551I MEMBER CSVTTEST HAS BEEN COPIED
 IGW01551I MEMBER CSVXMENV HAS BEEN COPIED
 IGW01550I 20 OF 20 SPECIFIED  MEMBERS WERE COPIED
 IEB147I END OF JOB – 0 WAS HIGHEST SEVERITY CODE
```

Another important enhancement is that aliases are now copied for PDS as was being done previously only for PDSE.

Be Careful! Do Not Use COPYGRP!

COPYGRP Statement

Use the COPYGRP statement to begin a group copy, unload, or load. A group consists of a member and all of its aliases. COPYGRP treats the group as a single entity.

The syntax of the COPYGRP statement is:

Label	Statement	Parameters
[label]	COPYGRP	OUTDD=*DDname* ,INDD={*DDname*	((*DDname*,R))} [,LIST={YES	NO}]

COPYGROUP Statement

Use the COPYGROUP statement to begin a group copy, unload, or load. A group consists of a member and all of its aliases. COPYGROUP treats the group as a single entity.

The syntax of the COPYGROUP statement is:

Label	Statement	Parameters
[label]	COPYGROUP	OUTDD=*DDname* ,INDD={*DDname*	((*DDname*,R))} [,LIST={YES	NO}]

- This confused me for a while. It's yet another IBMIOSYNCRASY!
- I'm sure someone at IBM has a valid rationale for why this was done.
- Seems like an odd choice. I'm thankful to have this feature no matter how it's implemented. ☺

```
1                                              IEBCOPY MESSAGES AND CONTROL STATEMENTS
PAGE      1
-IEB1135I IEBCOPY  FMID HDZ2210  SERVICE LEVEL NONE      DATED 20130313 DFSMS 02.01.00 z/OS     02.01.00
HBB7790   CPU 2098
 IEB1035I COPYCSV            09:05:50 MON 29 JUL 2013 PARM=''
- COPYGRP INDD=((INPUT,R),OUTDD=OUTPUT
  SELECT MEMBER=CSV*
 IEB105I PARAMETER INVALID
 IEB118I CONTROL STATEMENT ERROR
 IEB115I END OF FILE ON SYSIN
 IEB151I JOB HAS TERMINATED WITH ERROR(S)
 IEB147I END OF JOB - 8 WAS HIGHEST SEVERITY CODE
```

PARMDD Instead of PARM='string' in JCL

- PARMDD provides support similar to existing STDPARM support for z/OS UNIX utility called BPXBATCH
  - The primary advantage is to support for more than 100 bytes, but it also provides support for out-of-stream parameters i.e., in PDS members, z/OS UNIX files, etc.
- Records can be fixed or variable up to 32K in length
- Fixed length records are examined to see if there are eight contiguous numeric characters in the last eight positions of the record. If so, those eight characters are stripped off.
- Trailing blanks are stripped off—blank lines disappear
- All remaining characters concatenated up to 32K

```
//STEP1     EXEC PGM=mypgm,PARMDD=ddname
...
//ddname    DD *
This is an alternate way of providing parameters to
 mypgm.
//
```

No PARMDD Equivalent in TSO/E CALL?! ☹

- According to the help, TSO/E CALL was not updated with PARMDD support:
  - SHARE requirement needed? Must we wait two years?

```
HELP CALL
CALL    'dsname(member)' 'parm'
        CAPS/ASIS    NOENVB/PASSENVB
...
        'parm'    - Specifies a parameter string (up to 100 characters)
                    that is passed to the program to be executed.
```

▸ REXX LINKMVS and ATTCHMVS already pass up to 32K using the exact same linkage convention as CALL, but cannot invoke programs via LNKLST.

▸ REXX LINK, LINKPGM, ATTACH, and ATTCHPGM use an entirely different linkage convention from JCL EXEC and TSO/E CALL and have always supported arbitrarily long values.

JES Features

- As you would expect, because we have a product in this space, we tried some of the new JES features.
- We "played around" a bit with the JES3 support that's been rolled back to JES2: 8-character job classes, job class groups, pre-execution C/I. All seems to work as advertised.
  - **Note:** There is no **LOCATE** function happening at C/I time. The biggest advantage seems to be JES3-like detection of JCL errors prior to actually running the job.
  - Previous JES2 releases couldn't detect obvious JCL spelling errors like **DISP=(NEW,CATLX)**. If you enable this support, now it will.
- It's *highly* convenient that using new JCL keywords forces execution onto a z/OS 2.1 system.
- The use of symbols in SYSIN is *huge*. 'nuff said!

HIS Enhancements

- We also have a product in this area (zHISR), so it's no surprise that we explored the new HIS capabilities
- z/OS 2.1 HIS provides the ability for profilers to create their own profiling sessions, totally independent of any profiling or SMF 113 data collection going inside HIS itself.
  - No need to interrupt SMF 113 data collection to do profiling
  - New HISSERV macro/service provides all necessary support
  - Supports any number of profilers—each with its own stream
- This new support works extremely well!
- We had a few issues, but IBM fixed them right away— usually with the very next driver

Warning: HIS MAP Files are Incompatible!

```
I SYS MVS70
I SMFIMV70
I OS  z/OS
I FMIDHBB7780
I DATE13131
I TIME19075713
I MAP V1R1
I LPID00000006
I MACH00002098
B BDY PRIVATE 0000000000AFFFFF
B BDY CSA      00B0000000D2CFFF
B BDY CSAALLOC0003B9E80206CEE8
B BDY CSACONVT0000000000000000
B BDY MLPA     0000000000000000
B BDY FLPA     0000000000000000
B BDY PLPA     00D2D00000F06FFF
B BDY SQA      00F0700000FD3FFF
B BDY SQAALLOC000501780143AAB0
B BDY RWNUC    00FD400000FE2DDF
B BDY RON      00FE300000FFFFFF
B BDY ERON     0100000001A8AECF
B BDY ERWN     01A8B00001AEAFFF
B BDY ESQA     01AEB00003B4FFFF
B BDY EPLPA    03B5000007410FFF
B BDY EFLPA    0741100007413FFF
B BDY EMLPA    0741400007421FFF
B BDY ECSA     074220000C4FFFFF
B BDY EPRV     0C5000007FFFFFFF
B BDY DONUC    7FD360007FD39FFF
CNNUC IEAVFX000000000000001FFF
... (more entries)
```

```
I SYS MVSA0
I SMFIMVA0
I OS  z/OS
I FMIDHBB7790
I DATE13214
I TIME08555635
I MAP 02.01
I MODE64-BIT
I LPID00000004
I MACH00002098
B BDY PRIVATE 000000000000000000000000AFFFFF
B BDY CSA      0000000000B00000000000000D25FFF
B BDY CSAALLOC0000000000037C200000000001E92208
B BDY CSACONVT000000000000000000000000000000000
B BDY MLPA     000000000000000000000000000000000
B BDY FLPA     000000000000000000000000000000000
B BDY PLPA     0000000000D26000000000000F07FFF
B BDY SQA      0000000000F08000000000000FD4FFF
B BDY SQAALLOC000000000003DD2000000000014AFBE0
B BDY RWNUC    0000000000FD50000000000000FE0367
B BDY RON      0000000000FE10000000000000FFFFFF
B BDY ERON     0000000001000000000000001B3407F
B BDY ERWN     0000000001B350000000000001B97FFF
B BDY ESQA     0000000001B980000000000003BFCFFF
B BDY EPLPA    0000000003BFD000000000007698FFF
B BDY EFLPA    00000000076990000000000000769BFFF
B BDY EMLPA    00000000769C0000000000076A9FFF
B BDY ECSA     0000000076AA00000000000C6FFFFF
B BDY EPRV     000000000C7000000000007FFFFFFF
B BDY DONUC    000000007FD8B0000000007FD8EFFF
CNNUC IEAVFX000000000000000000000000000001FFF
... (more entries)
```

Health Checks Added with z/OS 2.1

- CATALOG_RNLS
- OCE_XTIOT_CHECK
- RACF_CERTIFICATE_EXPIRATION
- SLIP_PER
- SUP_SYSTEM_SYMBOL_TABLE_SIZE
- SYSTRACE_BRANCH
- SYSTRACE_MODE
- USS_KERNEL_PVTSTG_THRESHOLD
- USS_KERNEL_STACKS_THRESHOLD
- VLF_MAXVIRT
- ZOSMIGV2R1_DEFAULT_UNIX_ID

Humorous Health Check Result

```
CHECK(IBMOCE,OCE_XTIOT_CHECK)
SYSPLEX:    PHXHQ      SYSTEM: MVSA0
START TIME: 07/29/2013 00:31:11.448365
CHECK DATE: 20110410  CHECK SEVERITY: LOW

* Low Severity Exception *

IECH0100I OPEN macro support for XTIOT, uncaptured UCBs and DSAB
above the line is enabled for non-VSAM. This follows IBM's
recommendation.

  Explanation:  Specifying NON_VSAM_XTIOT=YES in the DEVSUPxx member of
    PARMLIB decreases the chances of running out of virtual storage when
    allocating and concurrently opening many sequential and partitioned
    data sets.

  System Action:  The system continues processing.

  Operator Response:  N/A

  System Programmer Response:  Encourage the use of XTIOT allocations.

  Problem Determination:  N/A

  Source:  DFSMS OPEN/CLOSE/EOV

  Reference Documentation:  For additional information see:

    z/OS MVS Initialization and Tuning Reference
```

– IBM APAR OA42543 moves message IECH0100I from an "exception" to an "information" message class.

Health Checks Removed in z/OS 2.1

- CEE_USING_LE_PARMLIB

```
   File   Edit   Edit_Settings   Menu   Utilities   Compilers   Test   Help

 EDIT       SYS2.MVSUTIL.CNTL(BACKUPVM) - 01.16          Columns 00001 00072
 Command ===> this is the start of a command that is just too  Scroll ===> CSR
 ****** *************************** Top of Data ***************************
 000001 //BKUPVM01 JOB 1,JAFFE,CLASS=A,MSGCLASS=T,NOTIFY=&SYSUID,
 000002 //            REGION=64M,TIME=NOLIMIT USER=EDJXADM
 000003 /*ROUTE XEQ PHXHQ
 000004 //*MAIN CLASS=TAPECOPY
 000005 //*
 000006 //BACKUP    PROC U=,V=,L=
 000007 //VARYON    EXEC PGM=EJESLNK,PARM='/V &U,ONLINE'
 000008 //EJESOUT   DD SYSOUT=*,RECFM=F,LRECL=80
 000009 //EJESIN    DD DUMMY
 000010 //WAIT5SEC EXEC PGM=WAIT5SEC
 000011 //DUMP      EXEC PGM=ADRDSSU,REGION=64M
 000012 //SYSPRINT DD SYSOUT=*
 000013 //INVOL     DD UNIT=/&U,VOL=SER=&V,DISP=OLD
 000014 //TAPE      DD DSN=PHOENIX.BACKUP.V&V,
 000015 //            UNIT=(3590-1,,DEFER),VOL=(,RETAIN,SER=BKPVM1),
 000016 //            LABEL=(&L,SL,EXPDT=98000),DISP=(NEW,KEEP)
 000017 //VARYOFF   EXEC PGM=EJESLNK,PARM='/V &U,OFFLINE',COND=EVEN
 000018 //EJESOUT   DD DUMMY,RECFM=F,LRECL=80
  F1=Help     F3=Exit      F4=Expand    F5=Rfind     F6=Rchange  F12=Cancel
 MA    D                                                               04/062
```

Line   1 of   4

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

this is the start of a command that is just too long to type into the limi
ted command line offered by ISPF EDIT/VIEW_

_____

_____

F1=Help   F3=Exit   F4=Expand   F5=Rfind   F6=Rchange F12=Cancel

MA   D   06/046

Regular Expressions in ISPF

- Some folks on IBM-MAIN and MVS-OE believe that the use of regular expressions separates the adults from the children in the programming world.

- Regular expressions can be useful. Mine are usually not more complex than ordinary search strings. But I'm no regular expressions expert, nor was I ever an APL geek.

- ISPF now calls the REGCOMP function in the C runtime library to evaluate regular expressions for FIND, CHANGE and EXCLUDE.

- I tried the example in the help. It worked.

```
 _    Example -    ===> find r'l[ai]ne' word    will find words lane and line
                                                 in the file being edited
```

Regular Expression Grammar

Standard C++ Library Reference
SC09-4949-05

Element

An **element** can be any of the following:

- An ordinary character, which matches the same character in the target sequence
- A wildcard character, '.', which matches any character in the target sequence except a newline
- A bracket expression, of the form "[*expr*]", which matches a character or a **collation element** in the target sequence that is also in the set defined by the expression *expr*, or of the form "[^*expr*]", which matches a character or a collation element in the target sequence that is not in the set defined by the expression *expr*. The expression *expr* can consist of any combination of any number of each of the following.
  - An **individual character**, which adds that character to the set defined by *expr*.
  - A character range, of the form "*ch1-ch2*", which adds all of the characters represented by values in the closed range [*ch1*, *ch2*] to the set defined by *expr*.
  - A character class, of the form "[:*name*:]", which adds all of the characters in the named class to the set defined by *expr*.
  - An equivalence class, of the form "[=*elt*=]", which adds the collating elements that are equivalent to *elt* to the set defined by *expr*.
  - A collating symbol, of the form "[.*elt*.]", which adds the collation element *elt* to the set defined by *expr*.
- An anchor, either '^' or '$', which matches the beginning or the end of the target sequence, respectively
- A capture group, of the form "(**Subexpression**)", or "\(**Subexpression** \)" in *BRE* and *grep*, which matches the sequence of characters in the target sequence that is matched by the pattern between the delimiters
- An identity escape, of the form "*k*", which matches the character *k* in the target sequence

Examples:

- **"a"** matches the target sequence "a" but none of the target sequences "B", "b", or "c".
- **"."** matches all of the target sequences "a", "B", "b", and "c".
- **"[b-z]"** matches the target sequences "b" and "c" but does not match the target sequence "a" or the target sequence "B".
- **"[:lower:]"** matches the target sequences "a", "b", and "c" but does not match the target sequence "B".
- **"(a)"** matches the target sequence "a" and associates capture group 1 with the subsequence "a", but does not match any of the target sequences "B", "b", or "c".

In *ECMAScript*, *BRE*, and *grep* an element can also be:

- a back reference, of the form "*dd*" where *dd* represents a decimal value N, which matches a sequence of characters in the target sequence that is the same as the sequence of characters matched by the Nth capture group.

FTP MVSGET and MVSPUT

- These are *hugely* helpful new FTP client commands
- You can now easily transfer sequential and PDS[E] without needing to know allocation details
- For PDS[E] the client sets up a loop and issues transfer commands iteratively for every member in the library.

```
EZA1701I >>> EPSV
229 Entering Extended Passive Mode (|||1179|)
EZA1701I >>> RETR CATIMPT
125 Sending data set SYS2.MVSUTIL.CNTL(CATIMPT) FIXrecfm 80
250 Transfer completed successfully.
EZA1617I 1312 bytes transferred in 0.010 seconds.  Transfer rate 131.20 Kbytes/
        sec.
EZA1701I >>> EPSV
229 Entering Extended Passive Mode (|||1181|)
EZA1701I >>> RETR CATLOCK
125 Sending data set SYS2.MVSUTIL.CNTL(CATLOCK) FIXrecfm 80
250 Transfer completed successfully.
EZA1617I 172 bytes transferred in 0.020 seconds.  Transfer rate 8.60 Kbytes/sec
```

REXX Interface to BCPii

- IBM provides nice REXX samples in SYS1.SAMPLIB. The members I chose to "play" with were:
    - HWIXMRJL – JCL to run a REXX exec in batch via SYSREXX
    - HWIXMRS1 – REXX to list basic information from your CPC
- First thing I noticed was that the HWIBCPII address space was not started on my z/OS 2.1 system. Why not?
- S HWISTART failed with:

```
HWI022I THE SNMP COMMUNITY NAME REQUIRED BY BCPII FOR THE LOCAL
CPC WAS REJECTED BY THE SUPPORT ELEMENT. CORRECT THE COMMUNITY NAME
IN THE SECURITY PROFILE THAT WAS RETRIEVED BY BCPII USING THIS
ENTITY (HWI.TARGET.IBM390PS.P00C9632).
```

I Was Scratching My Head

- It suggests that the community name in the CPC and in the RACF profile do not match. Yet, my z/OS 1.13 LPARs—running in the very same sysplex on the very same CPC (we have only one!) and sharing the same RACF data base—had no issues.

- I tried various things to no avail. I was doing this while on-site at SHARE and I reached out to Steve Warren for help.

- Steve's L2 person was on-site and recognized the problem from his explanation.

- BCPii uses Unicode conversion tables to uppercase the community name. A problem accessing those tables is not surfaced via any messages.

BCPii Problem Solved!

- It turned out that, due to the font space issues, SYS1.SCUNTBL never got restored on our system.

- Under the gun, just to make things work, I cataloged the z/OS 1.13 of the data set on the z/OS 2.1 system.

- IT WORKED!!!!!!!!!!!!!!!!!!!!!!!!!!!!! ☺

- *It helps to have friends in high places. You have me...*

- Anyway, Steve took that back as a suggestion either to surface Unicode service failures in BCPii or to update the Migration Guide to let you know the Unicode conversion files need to be cataloged and available:
  – SYS1.SCUNTBL
  – SYS1.SCUNLOCL

The Sample Programs Needed Minor Rework

- The first thing the samples do is read in the IDF files
- The data sets they referenced were not available
- The real location of the IDFs on customer systems is SYS1.MACLIB
- This inconvenience was corrected with:
  - **IBM APAR OA43115 z/OS BCPii REXX IDF Include Files**

```
   File   Edit   Edit_Settings   Menu   Utilities   Compilers   Test   Help

VIEW          SYS1.SAMPLIB(HWIXMRS1) - 01.00              Columns 00001 00072
Command ===> _____     Scroll ===> CSR
000122 /* call set_hwi_constants */
000123 "ALLOC F(HWICIREX) DA('HWI.HWICIREX.IDF') SHR REUS"
000124 "execio * diskr "HWICIREX" (stem  linelist.  finis     "
000125 "FREE F(HWICIREX)"
000126 do x = 1 to linelist.0
000127    interpret linelist.x
000128 end
000129 drop linelist.
000130
000131 "ALLOC F(HWIC2REX) DA('HWI.HWIC2REX.IDF') SHR REUS"
000132 "execio * diskr "HWIC2REX" (stem  linelist.  finis     "
000133 "FREE F(HWIC2REX)"
000134 do x = 1 to linelist.0
```

Output of Sample HWIXMSR1 REXX

```
=>> BCPii REXX Sample starting ... <<=
=>> HWILIST - List CPCs
                    REXXHostRc  =  0
                    HWILIST rc  =  0
                    Number of CPCs found = 00000001
                    CPC 1 = IBM390PS.P00C9632
=>> HWICONN - Connect to CPC IBM390PS.P00C9632
                    REXXHostRc  =  0
                    HWICONN rc  =  0
=>> HWIQUERY - Query CPC attributes
                    REXXHostRc  =  0
                    HWIQUERY rc =  0
    > Model Number is  E10
    > SNA Addr is      IBM390PS.P00C9632
    > Num GPP is       00000004
=>> HWILIST - List images
        REXXHostRc  =  0
        HWILIST rc  =  0
        Number of images found = 00000008
        Image 1 = CF01
        Image 2 = CF02
        Image 3 = LINUX
        Image 4 = MVSA0
        Image 5 = MVS60
        Image 6 = MVS70
        Image 7 = VM80
        Image 8 = VSEB0
=>> HWICONN - Connect to image CF01
        REXXHostRc  =  0
        HWICONN rc  =  0
=>> HWIQUERY - Query image attributes
        REXXHostRc  =  0
        HWIQUERY rc =  0
```

Output of Sample HWIXMSR1 REXX

```
Image 8 = VSEB0
=>> HWICONN - Connect to image CF01
      REXXHostRc  =  0
      HWICONN rc  =  0
=>> HWIQUERY - Query image attributes
      REXXHostRc  =  0
      HWIQUERY rc =  0
   > OS Type is
   > MSG STAT is    00000000
=>> HWIDISC - Release Image connection
      REXXHostRc  =  0
      HWIDISC rc  =  0
=>> HWICONN - Connect to image CF02
      REXXHostRc  =  0
      HWICONN rc  =  0
=>> HWIQUERY - Query image attributes
      REXXHostRc  =  0
      HWIQUERY rc =  0
   > OS Type is
   > MSG STAT is    00000000
=>> HWIDISC - Release Image connection
      REXXHostRc  =  0
      HWIDISC rc  =  0
=>> HWICONN - Connect to image LINUX
      REXXHostRc  =  0
      HWICONN rc  =  0
=>> HWIQUERY - Query image attributes
      REXXHostRc  =  0
      HWIQUERY rc =  0
   > OS Type is
   > MSG STAT is    00000000
. . .
```

Output of Sample HWIXMSR1 REXX

```
=>> HWIDISC - Release Image connection
      REXXHostRc  =  0
      HWIDISC rc  =  0
=>> HWICONN - Connect to image MVSA0
      REXXHostRc  =  0
      HWICONN rc  =  0
=>> HWIQUERY - Query image attributes
      REXXHostRc  =  0
      HWIQUERY rc =  0
   > OS Type is      MVS
   > MSG STAT is     00000000
=>> HWIDISC - Release Image connection
      REXXHostRc  =  0
      HWIDISC rc  =  0


...


=>> HWICONN - Connect to image VSEB0
      REXXHostRc  =  0
      HWICONN rc  =  0
=>> HWIQUERY - Query image attributes
      REXXHostRc  =  0
      HWIQUERY rc =  0
   > OS Type is
   > MSG STAT is     00000000
=>> HWIDISC - Release Image connection
      REXXHostRc  =  0
      HWIDISC rc  =  0
=>> HWIDISC - Release CPC connection
      REXXHostRc  =  0
      HWIDISC rc  =  0
=>> BCPii REXX Sample ending ... <<=
```

There were many other z/OS 2.1 features I knew about, but did not explore due to lack of time, lack of pre-reqs, or just good ol' fashioned lack of interest…

PDS Utility on CBT Tape

▸ The PDS command received:

`IEC190I INVALID DCBE: EXCP DCB WITHOUT FOUNDATION EXT`

• Which seemed odd since msgIEC190I is documented as:

`IEC190I ddname, DCB RESIDES ABOVE 16MB`

▸ The required fixes are:

`OA42694` `ABEND0C4 IFG0554P`
`ERROR DESCRIPTION:`
`0c4 in IFG0554P incorrectly accessing`
`a 24bit ucb address as a 31bit`
`address with a dirty high order byte.`
`Abend0c4 out of IFG0554P due to dirty`
`high order UCB address. Also invalid`
`IEC190I INVALID DCBE: EXCP DCB`
`WITHOUT A FOUNDATION EXTENSION.`

`PTF: UA69759/1307`
`This PTF additionally prereqs UA69690`

`OA42406` `OCE FIX ROLLUP FOR HDZ2210`
`ERROR DESCRIPTION:`
`Fixes PCK in IFG019TR. Also adds`
`ALIAS name in SMF14/15. Also fixes`
`an invalid IEC190I EXCP DCB without`
`a foundation extension..`

`PTF: UA69690/1307`

ShowZOS Utility on CBT Tape

▸ As distributed, the utility would not assemble

```
                                   68120          AIF    (NOT D'CVTH7790).CONS15A    z/OS V2R1 ? No         JH0112
                                   68121          AIF    ('&SYSSTATE_OSREL'(1,6) LT '010201').CONS15A       RS0112
0001A13E 9104 D12F        0000012F 68122          TM     HBB7790,L'HBB7790          running on z/OS V2R1 ?  JH0112
0001A142 0000 0000             00000000 68123     JNO    CONSOL15A                  ...jif not              JH0112
** ASMA044E Undefined symbol – CONSOL15A
** ASMA435I Record 27381 in EDJXADM.CBTV485.FILE492.SRCLIBX(SHOWZOS) on volume: MVSNV0
                                   68124 * UCMSTRNM structure name moved to UPEA area at CVTH7790            JH0112
                                   68125 * The following is temporary since we do not yet know the           JH0112
                                   68126 * structure of the UPEA area pointed to by UCMUPEA                  JH0112
0001A146 5860 4080        00000080 68127          L      R6,UCMUPEA          R6 -> UPEA area                 JH0112
                                   68128          STRING64 '  OpLog-Str: ',(0(R6),16),INTO=LINE              JH0112
```

▸ Two assembler statements were out of order:

```
         AGO    .CONS15B                                                    JH0112
CONSOL15A DS    0H                                                          JH0112
```

Changed to:

```
CONSOL15A DS    0H                                                          EJ0713
         AGO    .CONS15B                                                    JH0112
```

▸ After that, the utility assembled, but failed with abend0C4 while processing ZFS information. ☹

List of Recent z/OS 2.1 PTFs/APARs
Courtesy of Ed Webb at SAS Institute

```
        UA72782   /* z/OS JES2 $SN err msg enhanced  SASI OA43178 */
        UA72766   /* z/OS Binder Abend 0C4           SASI OA44133 */
        UA72508   /* z/OS zFS VSAM datasets          SASI OA44214 */
        UA72712   /* z/OS DFS task Abend S422        SASI OA44266 */
        UA72888   /* z/OS Unix CEEOGLAT Deadlock     SASI OA44393 */
        UA73172   /* z/OS IOSVSPOF Abends S0C4 HChk  SASI OA44475 */
        UA72605   /* z/OS STOW VIO failure           SASI OA44616 */
        UA73519   /* z/OS BCP AMASPZAP msg IEC999I.. SASI OA44721 */
        UA73132   /* z/OS DFS garbage in message     SASI OA44857 */
/* xA45105   /* z/OS DFHSM Abend S978 ARCMXSB        SASI OA45105 */
/* xA45589   /* z/OS zHPF incorrect chan pgms        SASI OA45589 */
        UI16656   /* z/OS SDSF S0C4 if MAXUSER diff. SASI PI11088 */
        UI18965   /* z/OSMF CIMIVP failure           SASI PI16584 */
        UK98029   /* IBM PL/1 IVP produces garbage   SASI PM96905 */
```

All in all I think IBM did a great job with this release and it was gratifying to see many of SHARE's Top 39 Requirements addressed.