

z/OS 2.1 User Experience

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14250



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)

SHARE : Blogs : Get your DASD installation requirements in early! - Mozilla Firefox

File Edit View History Bookmarks Tools Help

SHARE : Communities : MVS Program x SHARE : Blogs : Get your DASD install... x +

www.share.org/p/bl/ar/blogaid=239

Most Visited GNATS (E)JES Support zwiki z/OSMF IBMLink HMC IBM Service Request PSI Confex (E)JES Web z/OS V1R13

May 17 2013 **Get your DASD installation requirements in early!**
By: Marna Walle [Edit Article](#) [Actions](#)

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Been a while since I've been able to blog... z/OS V2.1 is strongly underway here, and that has been taking me away from my "treat" of blogging. For this entry, I wanted to pass along some information about planning for z/OS V2.1 that you may find helpful. (Remember, I've already mentioned to use the IBM Health Checker for z/OS right now.)

I've had the question on how much DASD storage installing z/OS and z/OSMF V2.1 will take. Here's some numbers that you might find interesting. Of course, these are sizes taken from our systems and the usual caveats apply:

- we use both JES's, we use all NLY's, we don't count non-z/OS program products,
- the z/OS V2.1 sizes are close estimates
- for the total z/OSMF sizes for R13, you need to add the "z/OSMF R13" and "WAS OEM" columns. For the total z/OSMF V2.1 sizes, you *only* need the z/OSMF V2.1 column (thank you Liberty profile!)

DASD installation sizes (in 3390 cylinders)

	z/OS R13	z/OS V2.1	z/OSMF R13	z/OSMF R13 WAS OEM	z/OSMF V2.1
Target PDS and PDSE	5,868	10,000	2	2	2
DLIB	8,941	18,000	148	1,582	200
File System (zFS)	3,309	3,300	147	2,600	400
Font File System (zFS)	---	2,050	---	---	---
Grand Total	18,118	33,350	297	4,184	602
		(15,115 more)			(3,879 less)

z/OSMF V2.1 does NOT "imbed" Java SDK. Meaning that if you want to use z/OSMF V2.1 there will be an external dependency on Java SDK R7 64-bit + PTF. z/OSMF R13 did "imbed" Java SDK, so that was included in the table sizes above. How does possibly one less Java SDK to lug around sound to you??


Notice that there is a new file system for z/OS V2.1 - the font file system. More about that in a later blog. For now, know that you've got another 2,000 cylinders of file system space coming at you for z/OS V2.1.

We told you there was a lot coming in z/OS V2.1!

-Marna

About this Blog

Marna's Musings
Marna Walle provides thoughts and insight on timely System Z issues



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Recent Articles

- Thinking of Brad Carson
- What's your favorite dynamic function in z/OS???
- Get your DASD installation requirements in early!
- SuperBowl Pre-Game
- MVS Core Project Dinner

Our Environment

- z10BC with 4 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

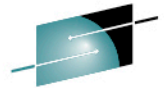
```

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 PFK=00
                                                NAME      TYPE      STATUS      DEFINED      MATCHED
                                                HMCSA000 HMCS      STDBY-MVSA0 MVSA0        MVSA0

```

Use HMC to Activate the Console



HMC: Hardware Management Console Workplace (Version 2.11.1) - Mozilla Firefox
https://192.168.10.239/hmc/connects/mainuiFrameset.jsp

Hardware Management Console

Systems Management > Systems > P00C9632

Images Topology

S	Name	Status	Activation Profile	Last Used Profile	OS Name	OS Type	OS Level
<input type="radio"/>	MVS60	Operating	MVS60		MVS60	z/OS	V1R13
<input type="radio"/>	MVS70	Operating	MVS70		MVS70	z/OS	V1R13
<input checked="" type="radio"/>	MVSA0	Operating	MVSA0		MVSA0	z/OS	V1R13
<input type="radio"/>	VM80	Operating	VM80		ZVMV6R10	z/VM	6.1.0 - 0901
<input type="radio"/>	VSEB0	Not Activated	VSEB0				

Max Page Size: 10 Total: 8 Filtered: 8 Selected: 1

Tasks: MVSA0

Image Details
Toggle Lock

- Daily**
 - Activate
 - Deactivate
 - Grouping
 - Hardware Messages
 - Operating System Messages
 - Reset Normal
- Recovery**
 - Access Removable Media
 - Integrated 3270 Console**
 - Integrated ASCII Console
 - Load
 - Load from Removable Media or Server
 - PSW Restart
 - Reset Clear
 - Start All
 - Stop All
- Operational Customization**
 - Configure Channel Path On/Off
 - Customize/Delete Activation Profiles
 - Logical Processor Add

Status: Hardware Messages

https://192.168.10.239/hmc/bonsai/action/T65cb#

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! 😊

```
HMC: Integrated 3270 Console for P00C9632:MVSA0
File Keys Font Help
*MVS60 *HZS0003B CHECK (IBMXCF,XCF_CDS_SPOF):
*IXCH0242E One or more couple data sets have a single point of failure.
- is complete.
- MVSA0 S0173135 +DFHEC1006I CICA1 Event processing status is STARTED.
MVSA0 IST097I MODIFY ACCEPTED
MVSA0 IST1283I MODIFY USERVAR COMMAND COMPLETE
IST813I USERVAR CICA CHANGED FROM CICA1 TO CICA1
IST314I END
- MVSA0 S0173135 +DFHEJ0102 CICA1 Enterprise Java domain
- initialization has ended.
- MVSA0 S0173135 +DFHSJ0102I CICA1 SJ domain initialization has ended.
- MVSA0 S0173135 +DFHSI1517 CICA1 Control is being given to CICS.
- MVSA0 S0173135 +DFHHD0101I CICA1 Document domain initialization has
- ended.
- MVSA0 S0173135 +DFHFC0208I CICA1
- LSR pool 1 is being built dynamically by CICS because all of the
- necessary parameters have not been supplied. Either there is no
- LSRPOOL definition or it is incomplete. The following are not
- defined: 'CI SIZE' 'STRINGS' 'MAXKEYLENGTH'. A delay is possible.
- MVSA0 S0173135 +DFHFC0952 CICA1
- Dynamic allocation of Non-RLS file DRSLG01 failed. Return code
- X'0004',X'1708' in module DFHFCFS.
- MVSA0 S0173135 +DFHFC0955 CICA1 Associated data set is
- ADD.TEST.DRSLG01. Module DFHFCFS.
00- MVS60 ISZSMGR ISZ0262I EDJXADM LU A60TCP32 Session AA0TCAS (102) ended
CNZ4100I 14.45.46 CONSOLE DISPLAY FRAME 1 F E SYS=MVSA0
CONSOLES MATCHING COMMAND: D C,CN=HMCSA0A
MSG:CURR=0 LIM=5000 RPLY:CURR=4 LIM=20 SYS=MVSA0 PFK=00
HMCSA0A TYPE=HMCS STATUS=ACT-MVSA0
DEFINED=(MVSA0)
MATCHED=(MVSA0)
ATTRIBUTES ON MVSA0
AUTH=(MASTER) CMDSYS=* NBUF=0 SUPSBY=Y
DEV=NONE LOGON=REQUIRED USERID=N/A
MFORM=(S,J) AREA=(Z,A) PFKTAB=PFKTAB1
USE=FC DEL=RD RTIME=1/4 RNUM=5 SEG=16 CON=N
LEVEL=(ALL)
MONITOR=(JOBNAMES) INTIDS=N UNKNIDS=N
ROUT=(1-2,7-10,16-96,99-112,115-128)
IEE187I ENTER LOGON PARAMETERS
LOGON PASSWORD
GROUP SECLABEL
IEE163I MODE= RD
41/9
```

- 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
- One HMCS console per LPAR (per HMC?) Start of second session receives:



Also Supported as a NIP Console ☺

```
HMC: Integrated 3270 Console for P00C36322MVSA1
File  Keys  Font  Help
/*      THREADSTACK (OFF, 4K, 4080, ANYWHERE, KEEP, 4K, 4080) ,      */
/*      TRACE (OFF, 4K, DUMP, LE=0) ,                                  */
/*      TRAP (ON, SPIE) ,                                             */
/*      UPSI (00000000) ,                                             */
/*      NOUSRHDLR () ,                                               */
/*      VCTRSAVE (OFF) ,                                             */
/*      XUFLOW (AUTO)                                               */
/*      )
/*
/*****
/* 64 bit options group
/*****
  CELQDOPT(
/*      DYNDUMP (*USERID, NODYNAMIC, TDUMP) ,                        */
/*      ENVAR ('TZ=BST8PDT')                                         */
/*      FILETAG (NOAUTOCVT, NOAUTOTAG) ,                              */
/*      HEAPCHK (OFF, 1, 0, 0, 0) ,                                  */
/*      HEAPPOLLS64 (OFF, 8, 4000, 32, 2000, 128, 700, 256, 350,    */
/*      1024, 100, 2048, 50, 3072, 50, 4096, 50, 8192, 25, 16384, 10, */
/*      32768, 5, 65536, 5) ,                                       */
/*      HEAP64 (1M, 1M, KEEP, 32K, 32K, KEEP, 4K, 4K, FREE) ,      */
/*      INFOMSGFILTER (OFF, , , ,) ,                                  */
/*      IOHEAP64 (1M, 1M, FREE, 12K, 8K, FREE, 4K, 4K, FREE) ,     */
/*      LIBHEAP64 (1M, 1M, FREE, 16K, 8K, FREE, 8K, 4K, FREE) ,    */
/*      NATLANG (ENU) ,                                              */
/*      NOTEST (ALL, *, PROMPT, INSPREF) ,                            */
/*      POSIX (OFF) ,                                               */
/*      PROFILE (OFF, ' ') ,                                         */
/*      RPTOPTS (OFF) ,                                             */
/*      RPTSTG (OFF) ,                                              */
/*      STACK64 (1M, 1M, 128M) ,                                    */
/*      STORAGE (NONE, NONE, NONE) ,                                 */
/*      THREADSTACK64 (OFF, 1M, 1M, 128M) ,                         */
/*      TERMTHDACT (TRACE, , 96) ,                                  */
/*      TRACE (OFF, , DUMP, LE=0) ,                                  */
/*      TRAP (ON, SPIE)                                             */
/*      )
CEE3739I LANGUAGE ENVIRONMENT INITIALIZATION COMPLETE
IEA301I IGGCAT00 NOT FOUND IN PARMLIB
```

- 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"  
&SYSCONE. = "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 (&ZEPPPELIN='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"
  &SYSCONE. = "Y1"
  &SYSNAME. = "T4SY1"
  &SYSOSLVL. = "Z1020100"
  &SYSPLEX. = "PHXHQ"
  &SYSR1. = "T4RES1"
  &ADCDVER. = "Z112"
  &CICSHLQ. = "DFH410"
  &CNMNETID. = "PHX"
  &CNMTCPN. = "TCPN"
  ... (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 MVSAA 2013210 07:18:43.06 EDJXADM 00000290 D PPT
MR0000000 MVSAA 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 CSVLPMSF HAS BEEN COPIED
IGW01551I MEMBER CSVMODI HAS BEEN COPIED
IGW01551I MEMBER CSVQUERY HAS BEEN COPIED
IGW01551I MEMBER CSVRTAA HAS BEEN COPIED
IGW01551I MEMBER CSVTEST 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
```



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 000000000AFFFFFF
B BDY CSA      00B000000D2CFFF
B BDY CSAALLO0003B9E80206CEE8
B BDY CSACONVT000000000000000
B BDY MLPA     000000000000000
B BDY FLPA     000000000000000
B BDY PLPA     00D2D0000F06FFF
B BDY SQA      00F070000FD3FFF
B BDY SQAALLO000501780143AAB0
B BDY RWNUC    00FD40000FE2DDF
B BDY RON      00FE30000FFFFFFF
B BDY ERON     010000001A8AECF
B BDY ERWN     01A8B0001AEAFFF
B BDY ESQA     01AEB00003B4FFFF
B BDY EPLPA    03B500007410FFF
B BDY EFLPA    0741100007413FFF
B BDY EMLPA    0741400007421FFF
B BDY ECSA     074220000C4FFFFF
B BDY EPRV     0C5000007FFFFFFF
B BDY DONUC    7FD360007FD39FFF
CNUC IEAVFX0000000000000001FFF
... (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 0000000000000000000000000AFFFFFF
B BDY CSA      000000000B000000000000000D25FFF
B BDY CSAALLO000000000037C20000000001E92208
B BDY CSACONVT0000000000000000000000000000000
B BDY MLPA     0000000000000000000000000000000
B BDY FLPA     0000000000000000000000000000000
B BDY PLPA     000000000D26000000000000F07FFF
B BDY SQA      000000000F08000000000000FD4FFF
B BDY SQAALLO00000000003DD200000000014AFBE0
B BDY RWNUC    000000000FD5000000000000FE0367
B BDY RON      000000000FE1000000000000FFFFFFF
B BDY ERON     000000001000000000000001B3407F
B BDY ERWN     000000001B35000000000001B97FFF
B BDY ESQA     000000001B98000000000003BFCFFF
B BDY EPLPA    000000003BFD000000000007698FFF
B BDY EFLPA    00000000769900000000000769BFFF
B BDY EMLPA    00000000769C0000000000076A9FFF
B BDY ECSA     0000000076AA00000000000C6FFFFF
B BDY EPRV     00000000C70000000000007FFFFFFF
B BDY DONUC    000000007FD8B00000000007FD8EFFF
CNUC IEAVFX00000000000000000000000000000001FFF
... (more entries)

```

Health Checks that Appeared in 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

Missing Health Check in z/OS 2.1

- CEE_USING_LE_PARMLIB
 - I did not research why this check isn't there.
 - Perhaps it appears only with some post-install customization that wasn't done?

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=ADDRSSU,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

ZCMD+0

Line 1 of 4

Command ==> _____ Scroll ==> PAGE

this is the start of a command that is just too long to type into the limited 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 "[=*e1t*=]", which adds the collating elements that are equivalent to *e1t* to the set defined by *expr*.
 - A [collating symbol](#), of the form "[.*e1t*.]", which adds the collation element *e1t* 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 "\d*d*" 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 *N*th [capture group](#).

- Regular Expressions
 - Regular Expression Grammar
 - Grammar Summary
 - Semantic Details
 - Matching and Searching
 - Format Flags
- STL Conventions
- Containers overview

- Notices
- References
- z/OS C Curses
- z/OS XL C/C++ Compiler and Run-Time Migration
- z/OS XL C/C++ Language Reference
- z/OS XL C/C++ Messages
- z/OS XL C/C++ Programming Guide
- z/OS XL C/C++ Run-Time Library Reference
- z/OS XL C/C++ User's Guide

z/OS Common Information Model

z/OS Communications Server

z/OS Cryptographic Services

z/OS DFSMS

z/OS DFSORT

z/OS Distributed File Service

z/OS EREP

z/OS First Failure Support Technology (FFST)

z/OS GDDM

z/OS HCD

z/OS HCM

z/OS HLASM

z/OS IBM HTTP Server

z/OS ICKDSF

z/OS Infoprint Server, Infoprint Transformers

z/OS Integrated Security Services

z/OS ISPF

z/OS JES2

z/OS JES3

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.SCUNTBLL 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.SCUNTBLL
 - SYS1.SCUNLOCL

The Sample Programs Need Minor Rework

- The first thing the samples do is read in the IDF files
- The data sets they reference are not available
- The real location of the IDFs on customer systems is SYS1.MACLIB

```
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 seems 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: MVSNOV0
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. ☹️

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.