

Bit Bucket x'2A'

Ed Jaffe, edjaffe@phoenixsoftware.com

Sam Knutson, SKnutson@geico.com

Skip Robinson, robinsjo@sce.com



SHARE 118
Session 10599
Atlanta, GA
16 March 2012





View From The "Topo"
(Ed Jaffe)

HMC Topology View

- I first learned HMCs with the original OS/2-based consoles that came out with the first 9672s.
- When IBM transitioned to the Linux-based HMCs, they introduced the “Tree” view which I have been using for quite a while.
- Looking for something better, I recently discovered the “Topology” view which I absolutely LOVE!
- My eyes aren't what they used to be (probably from far too many hours staring at computer monitors) and the nice big icons look great!
- Also, I find the interface to be quite user friendly.
- If you haven't seen this, give it a try. You might like it! 😊

HMC Topology View

The screenshot shows the IBM Hardware Management Console (HMC) interface in Mozilla Firefox. The browser title is "HMC: Hardware Management Console Workplace (Version 2.10.2) - Mozilla Firefox". The address bar shows the URL "https://192.168.10.239/hmc/connects/mainuiFrameset.jsp". The main header displays "Hardware Management Console" and the IBM logo. The user is logged in as "edjx".

The interface is divided into a left sidebar and a main content area. The sidebar contains a navigation menu with the following items:

- Welcome
- Systems Management
 - Servers
 - P00C9632
 - Custom Groups
 - All Images
 - All Objects
- HMC Management
- Service Management
- Tasks Index

The main content area is titled "Systems Management > Servers" and shows a "View: Topology" dropdown. Below the title is a toolbar with icons for search, zoom, and other actions, along with dropdown menus for "Tasks", "Selection", "Zoom", and "Layout". The main display area shows a single server icon labeled "P00C9632".

At the bottom of the sidebar, there is a status bar that reads "Status: Hardware Messages". The system tray at the bottom of the browser window shows the time "Read 192.168.10.239".

HMC Topology View

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The main header reads "Hardware Management Console" with the IBM logo on the right. Navigation links for "edjx", "Help", and "Logoff" are present. The breadcrumb path is "Systems Management > Servers". The view is set to "Topology".

The left sidebar contains a navigation menu with the following items:

- Welcome
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The main content area shows a topology view for server P00C9632. The server is represented by a central icon of a server rack with a blue square and a green square overlaid on it. The server ID "P00C9632" is displayed in large black text below the icon. The interface includes a toolbar with search, zoom, and selection tools, and a status bar at the bottom indicating "Status: Hardware Messages".

HMC Topology View

HMC: Hardware Management Console Workplace (Version 2.10.2) - Mozilla Firefox

192.168.10.239 https://192.168.10.239/hmc/connects/mainuiFrameset.jsp

Hardware Management Console

edjx | Help | Logoff

Systems Management > Servers View: Topology

The diagram illustrates a central server node, P00C9632, connected to several other nodes via dashed arrows. The nodes are: VM80, MVS A0, MVS70, MVS60, LINUX, CF02, CF01, and VSEB0. The central node P00C9632 is highlighted in purple. The nodes are arranged in a circular pattern around the center. The MVS A0 node has a red 'X' icon, indicating a problem. The MVS70 node has a green checkmark icon, indicating it is healthy. The other nodes have green checkmark icons. The diagram is displayed in a window titled 'Systems Management > Servers' with a 'View: Topology' dropdown menu. The window also contains a toolbar with icons for search, zoom, and layout, and a 'Tasks' dropdown menu.

VM80 MVS A0 MVS70 MVS60 LINUX CF02 CF01 VSEB0 P00C9632

Status: Exceptions and Messages

Transferring data from 192.168.10.239...

HMC Topology View

HMC: Hardware Management Console Workplace (Version 2.10.2) - Mozilla Firefox

192.168.10.239 https://192.168.10.239/hmc/connects/mainuiFrameset.jsp

Hardware Management Console

edjx | Help | Logoff

Systems Management > Servers View: Topology

The screenshot displays the HMC Topology View interface. The main area shows a network diagram with several servers: VM80, MVSA0, VSEB0, P00C9632, CF01, and CF02. Dashed lines indicate connections between these servers. A context menu is open over the MVSA0 server, showing options such as Zoom To, Center here, Image Details, Toggle Lock, Daily, Recovery, and Operational Customization. The Recovery menu is expanded, showing options like Access Removable Media, Integrated 3270 Console, Integrated ASCII Console, Load, Load from Removable Media or Server, PSW Restart, Reset Clear, Start All, and Stop All.

Tasks Selection Zoom Layout

Zoom To
Center here
Image Details
Toggle Lock
Daily
Recovery
Operational Customization

Access Removable Media
Integrated 3270 Console
Integrated ASCII Console
Load
Load from Removable Media or Server
PSW Restart
Reset Clear
Start All
Stop All

VM80 MVSA0 VSEB0 P00C9632 CF01 CF02

Systems Management > Servers View: Topology

Tasks Selection Zoom Layout

Zoom To
Center here
Image Details
Toggle Lock
Daily
Recovery
Operational Customization

Access Removable Media
Integrated 3270 Console
Integrated ASCII Console
Load
Load from Removable Media or Server
PSW Restart
Reset Clear
Start All
Stop All

VM80 MVSA0 VSEB0 P00C9632 CF01 CF02

Status: Exceptions and Messages

javascript:menuItemLaunchAction();

HMC Topology View

The screenshot displays the HMC Hardware Management Console interface. The browser title is "HMC: Hardware Management Console Workplace (Version 2.10.2) - Mozilla Firefox". The address bar shows the URL "https://192.168.10.239/hmc/connects/mainUIFrameset.jsp". The main header reads "Hardware Management Console" with the IBM logo on the right. The user is logged in as "edjx".

The interface is divided into a left sidebar and a main content area. The sidebar contains a "Systems Management" tree with the following items:

- Welcome
- Systems Management
 - Servers
 - P00C9632
 - Custom Groups
 - All Images
 - All Objects
- HMC Management
- Service Management
- Tasks Index

The main content area is titled "Systems Management > Servers" and shows a "Topology" view. A central server icon labeled "P00C9632" is connected via dashed arrows to several other server icons: VM80, MVSA0, MVS70, MVS60, LINUX, CF01, and CF02. The VSEB0 server is also present but not connected to the central node. The interface includes navigation icons, a search bar, and a toolbar with "Tasks", "Selection", "Zoom", and "Layout" options. The status bar at the bottom indicates "Status: Hardware Messages" and "Transferring data from 192.168.10.239..."



Put A Little ZIP In Your Job Step
(Ed Jaffe)

Native z/OS ZIP/UNZIP Functionality

- I have seen mention on IBM-MAIN that some installations are using software products to get ZIP/UNZIP functionality on z/OS.
- In the OS/390 days, Info-ZIP was ported to z/OS. I used it from time-to-time, but it was quirky. So, the need for supported products was understandable.
- At WAVV a few years ago, I learned that IBM was providing ZIP/UNZIP functionality to z/VSE.
- I asked the developer why they didn't provide that to z/OS. He said, "You don't need that. You have Java!"
- Sure enough Java JAR provides full ZIP/UNZIP support. We've been using it ever since!
- Of course, ZIP/UNZIP software products might provide additional worthwhile value adds.

Native z/OS ZIP/UNZIP Functionality

- One caveat is that I have had no luck making JAR read directly from, or write directly to, classic MVS data sets.
- Instead, I use the cp command to copy the data to/from the z/OS UNIX filesystem. For example:

```
>cp -v -B "'EJES.PROD510.SERVICE(V5100002)'" v5100002.smp  
EJES.PROD510.SERVICE(V5100002) -> v5100002.smp: binary
```

```
>/usr/lpp/java/J6.0.1_64/bin/jar cvfM v5100002.zip v5100002.smp  
adding: v5100002.smp(in = 989360) (out= 275331)(deflated 72%)
```



The DSN Check Is In The Mail
(Ed Jaffe)

Optional Data Set Name Checking

- The rules most people understand for cataloged data set names go back to the old OS CVOLs.
- Technically, modern ICF catalogs are not subject to the same constraints as CVOLs.
- IBM-MAIN rumor has it that IBM provides the DSNCHECK catalog option for customers that wish to exploit modern catalog architecture. MYTH or FACT?
- The method for enable/disable of DSN syntax checking is fully documented:
 - `MODIFY CATALOG,ENABLE(DSNCHECK)`
 - `MODIFY CATALOG,DISABLE(DSNCHECK)`
- The book states (paraphrased) that with DSNCHECK disabled, syntax checking of data set names, to ensure they conform to the old CVOL rules, does not occur.
- Indeed this bypass in the CATALOG code has been confirmed by folks at IBM. Sounds cool!

Optional Data Set Name Checking

```
F CATALOG,REPORT
IEC351I CATALOG ADDRESS SPACE MODIFY COMMAND ACTIVE
IEC359I CATALOG REPORT OUTPUT 874
* CAS*****
*  CATALOG COMPONENT LEVEL      = HDZ1D10          *
*  CATALOG ADDRESS SPACE ASN    = 0037             *
*  SERVICE TASK UPPER LIMIT     = 180              *
*  SERVICE TASK LOWER LIMIT     = 60               *
*  HIGHEST # SERVICE TASKS      = 27               *
*  # ATTACHED SERVICE TASKS     = 27               *
*  MAXIMUM # OPEN CATALOGS      = 1,024           *
*  ALIAS TABLE AVAILABLE        = YES              *
*  ALIAS LEVELS SPECIFIED       = 2.....          *
*  SYS% TO SYS1 CONVERSION      = OFF              *
*  CAS MOTHER TASK              = 00AFF358         *
*  CAS MODIFY TASK               = 00A8EE88         *
*  CAS ANALYSIS TASK            = 00A8EA28         *
*  CAS ALLOCATION TASK           = 00A8EC58         *
*  CAS ECS TASK                 = 00A8E7F8         *
*  VOLCAT HI-LEVEL QUALIFIER    = SYS1             *
*  NOTIFY EXTENT                = 80%              *
*  DEFAULT VVDS SPACE           = ( 10, 10) TRKS    *
*  CONTENTION SYSZTIOT TIME     = 10              *
*  ENABLED FEATURES             = DELFORCEWNG SYMREC UPDTFAIL *
*  DISABLED FEATURES            = DSNCHECK VVRCHECK AUTOTUNING *
*  DISABLED FEATURES            = BCSCHECK DELRECOVWNG *
*  DISABLED FEATURES            = EXTENDEDALIAS    *
*  INTERCEPTS                 = (NONE)          *
* CAS*****
IEC352I CATALOG ADDRESS SPACE MODIFY COMMAND COMPLETED
```

Optional Data Set Name Checking

```
//CATNAME1 JOB 1,JAFFE,CLASS=A,MSGCLASS=T
//STEP1     EXEC PGM=IEFBR14
//DD1       DD DSN=PHOENIX.QUALIFIER.IS.TOO.LONG,
//           UNIT=SYSALLDA,
//           SPACE=(TRK,1),
//           DISP=(,CATLG)
```

3 IEF642I EXCESSIVE PARAMETER LENGTH IN THE DSNAME FIELD

```
//CATNAME1 JOB 1,JAFFE,CLASS=A,MSGCLASS=T
//STEP1     EXEC PGM=IEFBR14
//DD1       DD DSN=PHOENIX.BREAK_CHARACTER_USED,
//           UNIT=SYSALLDA,
//           SPACE=(TRK,1),
//           DISP=(,CATLG)
```

3 IEFC620I UNIDENTIFIABLE CHARACTER _ ON THE DD STATEMENT

3 IEFC620I UNIDENTIFIABLE CHARACTER _ ON THE DD STATEMENT

Optional Data Set Name Checking

```
//CATNAME1 JOB 1,JAFFE,CLASS=A,MSGCLASS=T
//STEP1     EXEC PGM=IEFBR14
//DD1       DD DSN='PHOENIX.QUALIFIER.IS.TOO.LONG',
//           UNIT=SYSALLDA,
//           SPACE=(TRK,1),
//           DISP=(,CATLG)
```

```
3 IEF648I INVALID DISP FIELD- KEEP SUBSTITUTED
3 IGD01018I DATA SET PHOENIX.QUALIFIER.IS.TOO.LONG
HAS A NONSTANDARD DATA SET NAME
AND IS NOT ELIGIBLE TO BE SMS-MANAGED
```

```
//CATNAME1 JOB 1,JAFFE,CLASS=A,MSGCLASS=T
//STEP1     EXEC PGM=IEFBR14
//DD1       DD DSN='PHOENIX.BREAK_CHARACTER_USED',
//           UNIT=SYSALLDA,
//           SPACE=(TRK,1),
//           DISP=(,CATLG)
```

```
3 IEF648I INVALID DISP FIELD- KEEP SUBSTITUTED
3 IGD01018I DATA SET PHOENIX.BREAK_CHARACTER_USED
HAS A NONSTANDARD DATA SET NAME
AND IS NOT ELIGIBLE TO BE SMS-MANAGED
```


Optional Data Set Name Checking

Menu RefList Utilities Help

Data Set Utility

Invalid DSN - qualifier

Option ==> A

A Allocate new data set	C Catalog data set
R Rename entire data set	U Uncatalog data set
D Delete entire data set	S Short data set information
blank Data set information	V VSAM Utilities

ISPF Library:

Project . . . _____	Enter "/" to select option
Group . . . _____	/ Confirm Data Set Delete
Type _____	

Other Partitioned, Sequential or VSAM Data Set:

Name _____	'PHOENIX.QUALIFIER.IS.TOO.LONG'
Volume Serial . . . _____	(If not cataloged, required for option "C")
Data Set Password . . . _____	(If password protected)

F1=Help F3=Exit F10=Actions F12=Cancel

Optional Data Set Name Checking

```
READY
alloc f(bucket) da('phoenix.qualifier.is.too.long') new catalog
IKJ56709I INVALID DATA SET NAME, 'phoenix.qualifier.is.too.long'
IKJ56718A REENTER THIS OPERAND+ -
DA: 'phoenix.break_character_used'
IKJ56709I INVALID DATA SET NAME, 'PHOENIX.BREAK_character_used'
IKJ56718A REENTER THIS OPERAND+ -
DA: I GIVE UP!!!
IKJ56709I INVALID DATA SET NAME, UP!!!
IKJ56718A REENTER THIS OPERAND+ -
DA:
|
READY
```

Optional Data Set Name Checking





First Reports Are Often Wrong
(Ed Jaffe)

Problem Statement and Brief History

- Large PDSEs on EAV have been spontaneously 'breaking'.
- At first, suspected serialization issues. Dead end.
- In June of 2010, opened PMR 31744,227,000 to report SOF4 RC24 in IGWDACND+1AFA at z/OS 1.11 base level. IBM recommended APAR OA30338. That did not help.
- Hoped others would eventually discover and fix the problem.
- Problems continued in z/OS 1.12 and, when we saw it again under z/OS 1.13, opened PMR 57302,227,000 to report SOF4 RC24 in IGWBITX1+10F8.
- This time IBM recommended APAR OA37090 ""DIAGNOSTIC CODE TO TRAP WRITING OUT BAD PDSE DIRECTORY ENTRIES""
 - Improves RAS by catching corruption issue when it actually occurs. Otherwise, it's the job that next uses the PDSE that gets abended.
- Last October, I relayed this information to IBM-MAIN to enlist the aid of others in the community to install these PTFs to help aid in general PDSE diagnostics.

NOT A PDSE Problem

- Working with PDSE L2, we eventually dumped a PDSE track only to find it was not PDSE data at all. PDSE data blocks are always 4K. These blocks were $\frac{1}{2}$ track! (No wonder the PDSE code was failing!) How did it get that way?? (BTW, did you know DSS PRINT TRACKS holds SYSVTOC EXCLUSIVE for the duration of the print? Talk about disruptive!)
- Attempting to search our SMF archives, we discovered similar corruption in extended sequential data sets on EAV. PMR 82690,227,000 was opened.
- Searching syslog/operlog and comparing HSM messages to known data-set-good and data-set-corrupted time frames, we eventually began to suspect DEFrag.
- We stopped all EAV DEFrag for two months and no corruption was reported. We then ran a single DEFrag on the EAV and the corruption returned in spades.
- What do these PDSE and extended sequential data sets have in common in our environment? MULTIPLE EXTENTS BEING CONSOLIDATED DOWN TO A SINGLE EXTENT DURING THE DEFrag PROCESS!

NOT A PDSE Problem

- We're still working with IBM DSS L2 on this.
- DEFRAg and/or CONSOLIDATE corruption issues are hard to debug (require lots of doc gathered before, during and after) AND we have been dragging our feet somewhat because the corruption is quite disruptive and we don't have a large staff to deal with support issues of this type.
- I will certainly let the "community" know the outcome.
- On the positive side... in dealing with this, I learned from IBM how to delete a "problem" PDSE.
- Never let an opportunity to SHARE go to waste! 😊



Taking Out The PDSE Trash
(Ed Jaffe)

How to Delete a Problem PDSE

- Step 2: ZAP off the DS1PDSE (x'08') bit in field DS1SMSFG at offset x'4E' (78 decimal) into the DSCB.

```
DS1SMSFG DS      XL1                SYSTEM MANAGED STORAGE INDICATORS  X09977700
                                                @L4A 10005400
DS1SMSDS EQU     X'80'  1...  ....  SYSTEM MANAGED DATA SET          @L4A 10033100
DS1SMSUC EQU     X'40'  .1..  ....  NO BCS ENTRY EXISTS FOR DATA SET  X10060800
                                                @P6C 10088500
DS1REBLK EQU     X'20'  ..1.  ....  SDB AND D.S. MAY BE REBLOCKED     @02C 10107900
DS1CRSDB EQU     X'10'  ...1  ....  DADSM CREATE ORIGINATED BLKSIZE  @P5A 10127300
DS1PDSE EQU      X'08'  ....  1...  PDSE DATA SET                    @P7C 10131700
DS1STRP EQU      X'04'  ....  .1..  EXTENDED FORMAT DATA SET        @LAC 10136100
DS1PDSEX EQU     X'02'  ....  ..1.  HFS DATA SET                    @L8A 10140500
DS1DSAE EQU      X'01'  .....1  Extended attributes are          @L9C 10143500
*                                                maintained in catalog entry @P11C 10146500
```

```
//ZAPVTOC EXEC PGM=AMASPZAP
//SYSPRINT DD SYSOUT=*
//SYSLIB DD UNIT=3390,VOL=SER=volser,DSN=FORMAT4.DSCB,DISP=OLD
//SYSIN DD *
CCHHR 001200000F
VER 004E 88
REP 004E 80
/*
```

How to Delete a Problem PDSE

- Step 3: Delete/Scratch the data set. This will succeed because DADSM will not invoke PDSE code.
- Step 4: *Immediately* allocate a DSORG=PS data set on the volume to reuse the discarded DSCB.
- Why??
- Internally a PDSE is identified by a VSGT (Virtual Storage Group Token), comprised of the volser and the TTR address of the FORMAT-1 (or FORMAT-8) DSCB.
- The VSGT is used in various structures to uniquely identify the PDSE across the sysplex for member binds, buffer caching, etc.
- You wouldn't want to have someone accidentally allocate a new PDSE using the old PDSE's DSCB. (At least not until all knowledge of the old PDSE is gone from every image in the sysplex.)
- Not sure if new command V PDSE,DSN(...),FLUSH in z/OS 1.13 takes the place of this step.



zTools Updates (Sam Knutson)

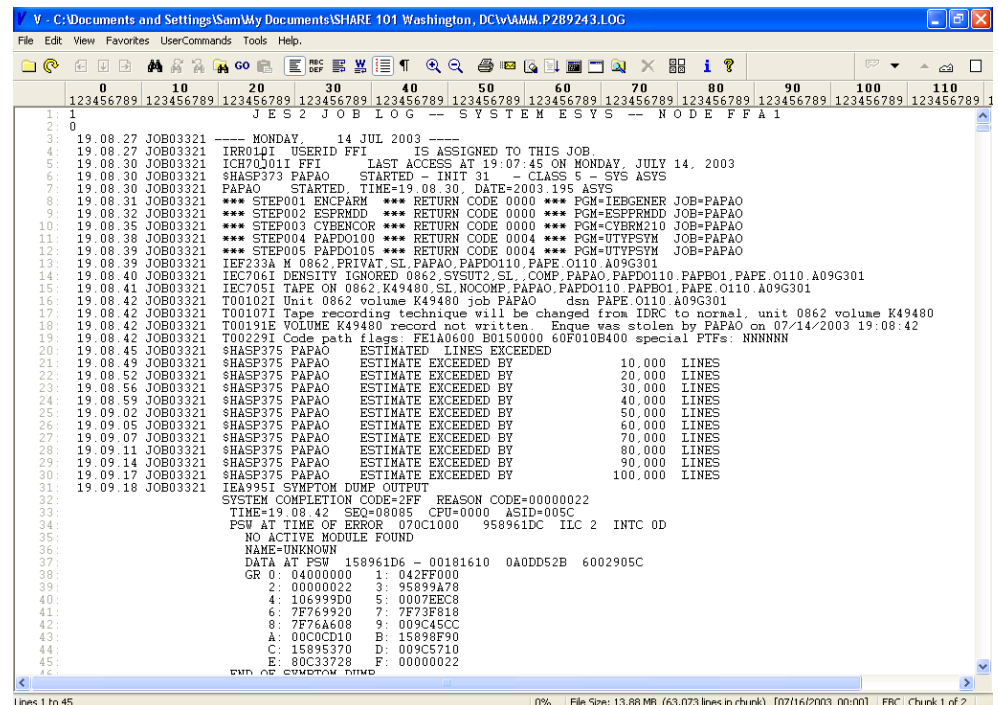
The V File Viewer

V is an all-purpose File Manager for Windows with a powerful inbuilt text file viewer which excels at viewing files quickly - whether they are 100 bytes or 100 gigabytes.

- Good support for EBCDIC
- Author of V Charles Prineas has been very responsive
- Inexpensive but not free \$20 with 6 years free upgrades included
 - Ruler and Line numbers
 - HEX support
 - Fast!
 - <http://www.fileviewer.com>

The V File Viewer

- V will automatically recognize most EBCDIC files and will display them accordingly (including XMIT and AWS files).
- XMIT and AWS tape archives support added in V13 this year!
- Carriage Control
- Rulers
- Columns
- Grid Lines
- Chase the files tail
- Green bar!



The screenshot shows the V File Viewer application window. The title bar reads "V - C:\Documents and Settings\Sam\My Documents\SHARE 101 Washington, DC\VAMM.P289243.LOG". The application window has a menu bar (File, Edit, View, Favorites, UserCommands, Tools, Help) and a toolbar. Below the toolbar is a ruler with column markers at 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, and 110. The main display area shows a system log file with a grid overlay. The log content includes:

```
1: 123456789 123456789 123456789 123456789 123456789 123456789 123456789 123456789 123456789 123456789
2: 0
3: JES2 JOB LOG -- SYSTEM ESYS -- NODE FFA1
4: 19.08.27 JOB03321 ---- MONDAY, 14 JUL 2003 ----
5: IRR01DI USERID FFI IS ASSIGNED TO THIS JOB
6: 19.08.30 JOB03321 ICH7001I FFI LAST ACCESS AT 19:07:45 ON MONDAY JULY 14, 2003
7: 19.08.30 JOB03321 SHASP373 PAPA0 STARTED - INIT 31 - CLASS 5 - SYS ASVS
8: PAPA0 STARTED, TIME=19.08.30, DATE=2003.195 ASVS
9: 19.08.31 JOB03321 *** STEP001 ENCPARM *** RETURN CODE 0000 *** PGM=IEBGENER JOB=PAPA0
10: 19.08.32 JOB03321 *** STEP002 ESPRMD *** RETURN CODE 0000 *** PGM=ESPRMD JOB=PAPA0
11: 19.08.35 JOB03321 *** STEP003 CYBENCOR *** RETURN CODE 0000 *** PGM=CYBER210 JOB=PAPA0
12: 19.08.39 JOB03321 *** STEP004 PAPDO100 *** RETURN CODE 0004 *** PGM=UTYPESVM JOB=PAPA0
13: 19.08.39 JOB03321 *** STEP005 PAPDO105 *** RETURN CODE 0004 *** PGM=UTYPESVM JOB=PAPA0
14: 19.08.39 JOB03321 IEF233A M 0862,PRIVAT,SL,PAPA0,PAPDO110,PAPE,0110,A09G301
15: 19.08.40 JOB03321 IEC706I DENSITY IGNORED 0862,SYSDT2,SL,COMP,PAPA0,PAPDO110,PAPBO1,PAPE,0110,A09G301
16: 19.08.41 JOB03321 IEC705I TAPE ON 0862,K49480,SL,NOCOMP,PAPA0,PAPDO110,PAPBO1,PAPE,0110,A09G301
17: 19.08.42 JOB03321 T00102I Unit 0862 volume K49480 job PAPA0 dsn PAPE,0110,A09G301
18: 19.08.42 JOB03321 T00107I Tape recording technique will be changed from IDRC to normal, unit 0862 volume K49480
19: 19.08.42 JOB03321 T00191E VOLUME K49480 record not written. Enque was stolen by PAPA0 on 07/14/2003 19:08:42
20: 19.08.42 JOB03321 T00229I Code path flags: PEA04600 E0150000 60F010B400 special PTFs: NNNNNH
21: 19.08.45 JOB03321 SHASP375 PAPA0 ESTIMATE LINES EXCEEDED
22: 19.08.49 JOB03321 SHASP375 PAPA0 ESTIMATE EXCEEDED BY 10,000 LINES
23: 19.08.52 JOB03321 SHASP375 PAPA0 ESTIMATE EXCEEDED BY 20,000 LINES
24: 19.08.56 JOB03321 SHASP375 PAPA0 ESTIMATE EXCEEDED BY 30,000 LINES
25: 19.08.59 JOB03321 SHASP375 PAPA0 ESTIMATE EXCEEDED BY 40,000 LINES
26: 19.09.02 JOB03321 SHASP375 PAPA0 ESTIMATE EXCEEDED BY 50,000 LINES
27: 19.09.05 JOB03321 SHASP375 PAPA0 ESTIMATE EXCEEDED BY 60,000 LINES
28: 19.09.07 JOB03321 SHASP375 PAPA0 ESTIMATE EXCEEDED BY 70,000 LINES
29: 19.09.11 JOB03321 SHASP375 PAPA0 ESTIMATE EXCEEDED BY 80,000 LINES
30: 19.09.14 JOB03321 SHASP375 PAPA0 ESTIMATE EXCEEDED BY 90,000 LINES
31: 19.09.17 JOB03321 SHASP375 PAPA0 ESTIMATE EXCEEDED BY 100,000 LINES
32: 19.09.18 JOB03321 IEA995I SYMPTOM DUMP OUTPUT
33: SYSTEM COMPLETION CODE=FF REASON CODE=00000022
34: TIME=19.08.42 SEQ=08085 CPU=0000 ASID=005C
35: PSW AT TIME OF ERROR 070C1000 958961DC ILC 2 INTC 0D
36: NO ACTIVE MODULE FOUND
37: NAME=UNKNOWN
38: DATA AT PSW 158961D6 - 00181610 0A0DD52B 6002905C
39: GR 0: 04000000 1: 042FF000
40: 2: 00000022 3: 95899A78
41: 4: 106999D0 5: 0007EEC8
42: 6: 7F769920 7: 7F73F818
43: 8: 7F76A608 9: 009C45CC
44: A: 00C0CD10 B: 15898F90
45: C: 15895370 D: 009C5710
46: E: 80C33728 F: 00000022
```



	0	10	20	30	40	50	60	70	80	90	100	110	120
	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789	123456789

```

1: 9
2: *****9
3: * *9
4: * HZSPRINT (UA55710-10200) 2011/06/16 06:32 *9
5: * *9
6: * HZSU002I Log stream: HZS.HEALTH.CHECKER.HISTORY *9
7: * *9
8: * Filter: CHECK(IBMPPFA,PFA_COMMON_STORAGE_USAGE) *9
9: * Filter: Only checks with exception(s) *9
10: * *9
11: *****9
12: 9
13: 9
14: 9
15: *****9
16: * *9
17: * Start: CHECK(IBMPPFA,PFA_COMMON_STORAGE_USAGE) *9
18: * Sysplex: DEVLPLX System: BSYS *9
19: * *9
20: *****9
21: CHECK(IBMPPFA,PFA_COMMON_STORAGE_USAGE)9
22: START TIME: 06/16/2011 06:32:06.2175299
23: CHECK DATE: 20071101 CHECK SEVERITY: MEDIUM9
24: CHECK PARM: DEBUG(0) THRESHOLD(5) COLLECTINT(15) MODELINT(360)9
25: COLLECTINACTIVE(1)9
26: 9
27: 9
28: * Medium Severity Exception *9
29: 9
30: AIRH109E9
31: The common storage usage (CSA and SQA) above the line has been9
32: predicted to exceed the capacity in the future.9
33: 9
34: Explanation: The model of common storage utilization for this LPAR9
35: has predicted that usage of common storage (CSA and SQA) above the9
36: line will exceed the threshold set by the user before the current9
37: model interval ends at 06/16/2011 12:17:27. The prediction was9
38: modeled at 06/16/2011 06:17:27. The threshold used in the9
39: calculations is controlled by the user of predictive failure9

```

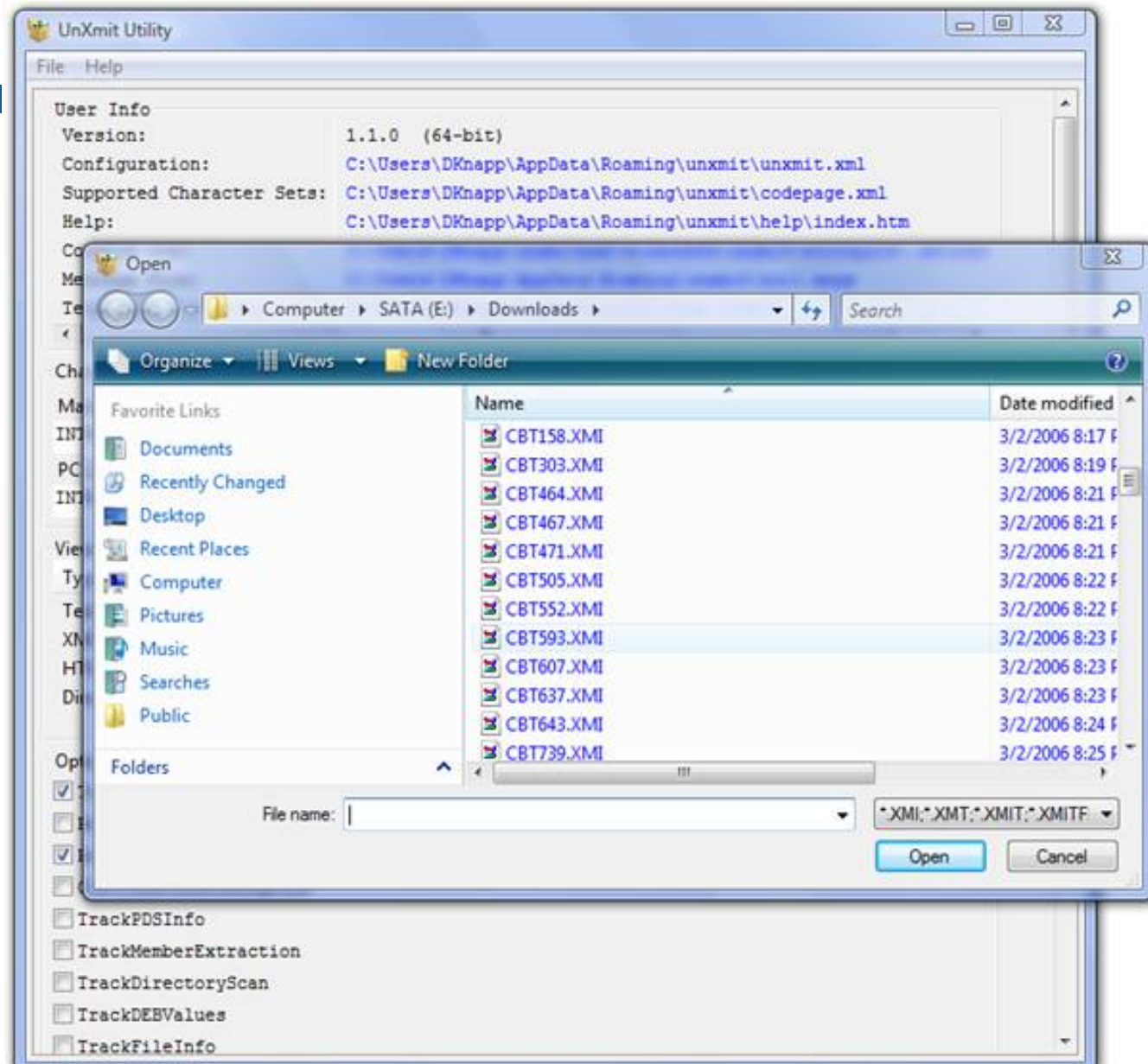
unXmit

- UnXmit extracts data from files created by TSO/e's XMIT command. UnXmit presents a directory of members and gives the workstation user an opportunity to extract members. Source-type members are stored as TXT members converted from EBCDIC to ASCII.
- MVS free software site CBTTAPE.ORG and others use XMIT files access from a Windows PC is useful



- Free and Open Source
- Supports Windows 7
- Good replacement for XMIT Manager which was free, closed source, and does not support Windows 7
- <http://unxmit.sourceforge.net/>
- Author DeWitt Knapp has been enthusiastic and responsive to bug reports and requests for enhancements

unXmit



Vista tn3270

- TN3270 client built for programmers by a programmer
- Inexpensive but not free \$30 with free upgrades
- Vista has features designed especially for programmers, such as built-in multiple cut and paste buffers, fully tailorable keyboard, extensive select/copy/paste functions (I love **Paste by Typing And Paste into Window**) - including SelectJCL, which can pick out dataset names, parms, and other Items with a single mouse click.
- IND\$FILE support
- Small, Fast and just works!
- <http://www.tombrennansoftware.com>
- A feature I especially like is Reconnect and easily adjust your TN3270 session attributes



Journey to zHPF
(Sam Knutson)

Journey to zHPF

- zHPF dramatically lowers channel protocol overhead and promises to be a “good thing”
- IBM zEnterprise 196 and IBM zEnterprise 114 I/O and FICON Express8S Channel Performance (Cathy Cronin, Version 2, November 2011) (ZSW03196USEN01)
- <http://public.dhe.ibm.com/common/ssi/ecm/en/zsw03196usen/ZSW03196USEN.PDF>
- High Performance FICON for System z Technical summary for customer planning by Iain Neville
- <ftp://ftp.software.ibm.com/common/ssi/sa/wh/n/zsw03058usen/ZSW03058USEN.PDF>
- Our FICON Upgrade H/W upgrade positioned us to exploit zHPF

Journey to zHPF

- We had updated RSU most recently to RSU1111 and use IBM FIXCAT to check for recommended service
- + IBM.Device.Server.z196-2817.zHighPerformanceFICON
- We also consulted with IBM after a recent flash related to data loss on DS8000.
- S1004012 "Potential DS8100/DS8300/DS8700 FICON Host Adapter Loss of Access due to unavailable adapters during certain zHigh Performance FICON (zHPF) workloads."
- <http://www-01.ibm.com/support/docview.wss?uid=ssg1S1004012>

Journey to zHPF

- This problem can be exposed by the application of APAR OA34661 on z/OS V1 R11 and V1 R12; and is also exposed at the base level of z/OS V1 R13. APAR OA34661 enhanced the construction of zHPF channel programs making it possible to transfer larger amounts of data in a single channel program. In certain instances this capability allows certain IO requests for small CKD records to exceed the 16K byte threshold that exposes this microcode defect.
- HIPER APAR OA38777 will also be available by the end of February to ensure that Media Manager zHPF channel programs do not exceed 16K byte data transfer for Multi-Track Read IO for records with data lengths less than 128 bytes as a bypass for the defect. DS8100/DS8300s running zHPF should not be moved to a Release 4.3 bundle without applying the HIPER APAR just mentioned, unless zHPF is disabled until the HIPER APAR is applied. DS8100s/DS8300s already on release 4.3 code (64.3x.xx.0) should also apply this HIPER APAR when it is available.

zHPF APARs of Interest

- Latest recommendation in order to enable zHPF was to install all HIPER Media Manager service including
- IOS Level-2 recommended we also install PTFS for a list of HIPER APARs. The best course of action would be for you to open a PMR and ask IBM for a current recommendation before making a significant change in your I/O processing.
- APAR recommended to us included: OA33098, OA38260, **OA38777**, OA35057, OA35260, OA35834, OA34728
- APAR OA38916 AVOID ZHPF IO ERROR WITH FORMAT WRITES (**open**)

OA39087

- APAR OA39087 DB2 "LOAD" WITH RESUME TAKES EXCESSIVE TIME LOADING TO A Z/HP ENABLED DEVICE. MANY ICYTRACE LOGRECS. (open)
 - Performance degradation during DB2 Utility LOAD RESUME with output to a zHPF enabled device. There are no messages on the console, but many logrec ICYTRACE records for the DB2 DBM1 address space.
 - Turning off zHPF is an option disable z/HPF on LPARS running DB2 via the MVS command SETIOS ZHPF=NO
 - There is no data loss because Media Manager will redrive the I/O with a non-zHPF channel program. All that is seen is slow performance.
 - Performance problem may be extreme



2 - 1 What are the Odds?
(Sam Knutson)

2 - 1 CEC consolidation

- z/OS LPARs running on z10 consolidated onto z196 with excess capacity to reduce operational expenses
- Daily critical batch process for invoicing and billing begins to breach SLA the next day and every day after that
- IBM ATS performance team at WSC was engaged as it was unclear why this was occurring and was contrary to CP3000 studies done in advance and our own data
- We were already deploying RSU1111
- WSC identified some freshly minted HiperDispatch APARs that addressed situations which prevented us from using the full capacity of the processor
- Once these were installed we once again were meeting the SLA

HiperDispatch APARs

- **OA35989** On a large CEC with low utilization, except for a small test partition running with HD=YES, vertical low processors may not be unparked, even though there is sufficient demand on the small partition and there is a large amount of free capacity on the CEC
 - Routine which calculates free capacity suffered an overflow due to large amount of unused capacity
- **OA35860** Running with HD=YES, vertical low processors may be unparked even though there is no unused capacity available on the CEC - WLM calculations of available capacity did not account for capacity used by *PHYSICAL partition
 - Impact is only when there is high Physical LPAR management time
- **OA36459** - Closed 12/1/2011 Not calculating the capacity used by vertical mediums and vertical low processors correctly



Hardware "Problem" Child

(Sam Knutson)

Problem Management Viewable (PMV) Records

- Console Actions zEnterprise Driver 93 "Report a Problem"

The screenshot displays the TSYSENSA Primary Hardware Management Console Workplace (Version 2.11.1) in Mozilla Firefox (IBM Edition). The browser address bar shows the URL: <https://tsysensa.wsdab.washington.ibm.com/hmc/connects/mainuiFrameset.jsp>.

The interface features a red navigation bar with the following views: Groups, Ensemble, Exceptions, Active Tasks, **Console Actions**, Task List, Books, and Help. The 'Console Actions' view is currently selected.

The main work area, titled 'Console Actions Work Area', contains a grid of icons for various actions:

- Authorize Internal Code Changes
- Domain Security
- Install Component
- Report a Problem** (highlighted with a green arrow)
- View Console Tasks Performed
- Network Diagnostic Information
- Rebuild Vital Product Data
- Archive Security Logs
- View Security Logs
- Save Upgrade Data
- Reassign Hardware Management Console
- Enable Electronic Service Agent

The right sidebar, titled 'Remote Customization', lists the following options:

- Hardware Messages
- Operating System Messages
- Remote Service
- Customer Information
- Support Element Operations Guide

The status bar at the bottom indicates: 'Transferring data from tsysensa.wsdab.washington.ibm.com...'

Problem Management Viewable (PMV) Records

- "Report a Problem", Select PMV, Enter Description, Request Service

TSYSENSA: Report a Problem - Mozilla Firefox: IBM Edition

ibm.com https://tsysensa.wsclab.washington.ibm.com/hmc/content?taskId=2052&refresh=6096

Report a Problem

To report a problem, select a problem type then enter the problem description.

Problem Type

Test automatic problem reporting

Type V Viewable PMH(PMV)

HMC problem

Problem Description

This is a PMV Test only not a real problem report. |



Request Service Cancel Help

Problem Management Viewable (PMV) Records

- Enter Contact Information, Select Electronic, Request Service

TSYSENSA: Report a Problem - Mozilla Firefox: IBM Edition

ibm.com https://tsysensa.wsclab.washington.ibm.com/hmc/wd/T67cf5

 **Problem Analysis** 

A service request will be sent for the error. Change any information that is not correct, and select a transmission type for the request.

Customer name:

Customer phone:

Transmission Type

Electronic transmission

Voice transmission

Request Service...

Problem Management Viewable (PMV) Records

The screenshot shows the TSYSENSA Primary Hardware Management Console Workplace (Version 2.11.1) running in Mozilla Firefox. The browser address bar shows the URL: <https://tsysensa.wsclab.washington.ibm.com/hmc/connects/mainuiFrameset.jsp>.

The interface features a red navigation bar with the following options: Groups, Ensemble, Exceptions, Active Tasks, **Console Actions** (highlighted), Task List, Books, and Help. A green arrow points to the 'View PMV Records' icon in the Console Actions Work Area.

The Console Actions Work Area contains the following options: Restore Legacy HMC Data, Shutdown or Restart, Tip of the Day, Users and Tasks, View Licenses, View PMV Records (highlighted with a green arrow), and What's New.

On the right side, there is a 'Remote Customization' sidebar with the following options: Hardware Messages, Operating System Messages, Remote Service, Customer Information, and Support Element Operations Guide.

The status bar at the bottom indicates: Transferring data from tsysensa.wsclab.washington.ibm.com...

Problem Management Viewable (PMV) Records

- A PMV Record is a new viewable hardware problem record (PMH) in the IBM Service Support System (Retain) that is designed to facilitate reporting of and work on problems encountered with zEnterprise Ensemble Licensed Internal Code (LIC). For example, a PMV may be appropriate for problems encountered with the Unified Resource Manager or LIC running in hardware components in the zBX when a problem is suspected but is **NOT** reported automatically as a classic hardware PMH record by the SE and HMC Remote Support Facility (RSF) "phone home" function.
- A PMV record like a software PMR record (but unlike a classic hardware PMH record) can be viewed, refreshed, and directly updated by a customer.

Problem Management Viewable (PMV) Records

- A customer can report a problem in a PMV record using new PMV option in the HMC "Report a Problem" Console Task. This can be done for any z196 or z114 managed by the HMC. A customer can view and update PMV records created for any z196 or z114 on the HMC using the new "View PMV Records" Console Task. This includes PMV records created on any HMC for the same CEC.

Report a Problem

To report a problem, select a problem type then enter the problem description.

Problem Type

- Test automatic problem reporting
- Type V Viewable PMH(PMV)
- HMC problem

Problem Description

This is a PMV Test only not a real problem report. |

["Request Service" offers the option of an electronic RSF "phone home" or telephone contact to a specified number.](#)

Request Service Cancel Help

View PMV Records

Select the PMV to view.

--- Select Action ---

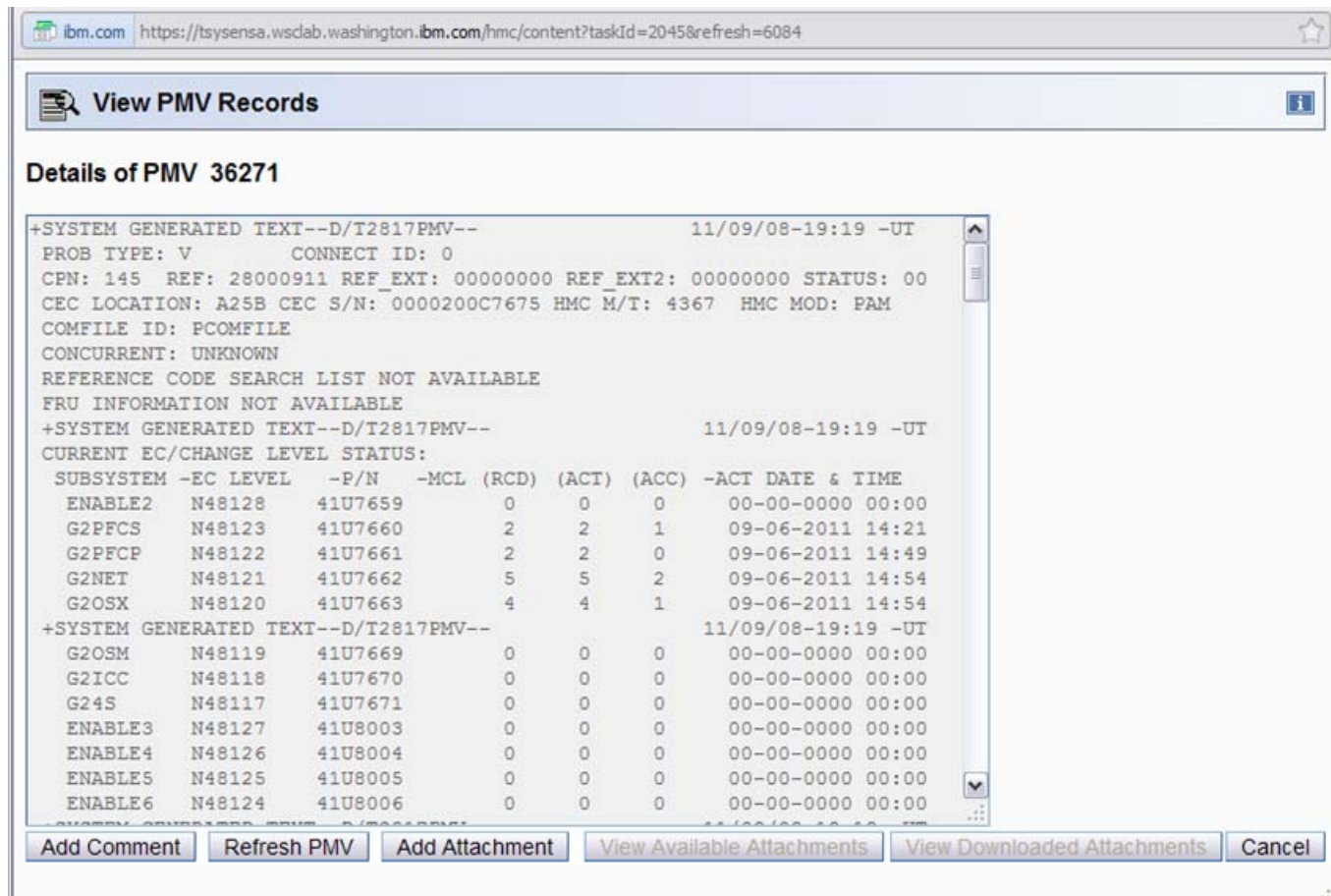
Select	PMV	Machine
<input type="radio"/>	09791	2817/M80-0000200C7675
<input checked="" type="radio"/>	36271	2817/M80-0000200C7675
<input type="radio"/>	53358	2817/M80-0000200C7675
<input type="radio"/>	64522	2817/M80-0000200C7675
<input type="radio"/>	67669	2817/M80-0000200C7675
<input type="radio"/>	69401	2817/M80-0000200C7675
<input type="radio"/>	76375	2817/M80-0000200C7675

Total: 7

View PMV Exit Help

Problem Management Viewable (PMV) Records

- View, Refresh, Add a Comment, View, Add or Download an Attachment to a PMV Record (System Generated Information is NEW shown)



The screenshot displays the IBM Problem Management Viewable (PMV) Records interface. The browser address bar shows the URL: <https://tsysensa.wsclab.washington.ibm.com/hmc/content?taskId=2045&refresh=6084>. The page title is "View PMV Records".

Details of PMV 36271

```
+SYSTEM GENERATED TEXT--D/T2817PMV-- 11/09/08-19:19 -UT
PROB TYPE: V CONNECT ID: 0
CPN: 145 REF: 28000911 REF_EXT: 00000000 REF_EXT2: 00000000 STATUS: 00
CEC LOCATION: A25B CEC S/N: 0000200C7675 HMC M/T: 4367 HMC MOD: PAM
COMFILE ID: PCOMFILE
CONCURRENT: UNKNOWN
REFERENCE CODE SEARCH LIST NOT AVAILABLE
FRU INFORMATION NOT AVAILABLE
+SYSTEM GENERATED TEXT--D/T2817PMV-- 11/09/08-19:19 -UT
CURRENT EC/CHANGE LEVEL STATUS:
SUBSYSTEM -EC LEVEL -P/N -MCL (RCD) (ACT) (ACC) -ACT DATE & TIME
ENABLE2 N48128 41U7659 0 0 0 00-00-0000 00:00
G2PFCS N48123 41U7660 2 2 1 09-06-2011 14:21
G2PFCP N48122 41U7661 2 2 0 09-06-2011 14:49
G2NET N48121 41U7662 5 5 2 09-06-2011 14:54
G2OSX N48120 41U7663 4 4 1 09-06-2011 14:54
+SYSTEM GENERATED TEXT--D/T2817PMV-- 11/09/08-19:19 -UT
G2OSM N48119 41U7669 0 0 0 00-00-0000 00:00
G2ICC N48118 41U7670 0 0 0 00-00-0000 00:00
G24S N48117 41U7671 0 0 0 00-00-0000 00:00
ENABLE3 N48127 41U8003 0 0 0 00-00-0000 00:00
ENABLE4 N48126 41U8004 0 0 0 00-00-0000 00:00
ENABLE5 N48125 41U8005 0 0 0 00-00-0000 00:00
ENABLE6 N48124 41U8006 0 0 0 00-00-0000 00:00
```

At the bottom of the interface, there are several buttons: "Add Comment", "Refresh PMV", "Add Attachment", "View Available Attachments", "View Downloaded Attachments", and "Cancel".



Some Quality "Alone" Time With IOCP
(Skip Robinson)

Standalone IOCP

- A CEC needs an IOCDS for POR
 - Defines CEC, channels, control units, devices
- IBM supplies a default IOCDS in every CEC
 - Used by CE to test and 'Code 20' the machine
 - Never close to what customer needs
- Before customer POR, tailored IOCDS must be loaded
- With no devices connected, cannot copy from disk
- Hence 'standalone' IOCP
 1. Produce customized IOCP deck in HCD
 2. Import deck to SE via HMC
 3. 'Compile' IOCP to produce IOCDS for POR

Standalone IOCP

- In olden days, IOCP would be loaded from tape
- CE would type in minimal IOCP to define tape device
- POR to get access to tape drive
- Mount tape, read in cust. IOCP deck, create IOCDs
- Modern boxes offer other means to load IOCP
 - HMC diskette
 - HMC USB flash drive
 - FTP
- Easiest to use is thumb (flash) drive
- Must be inserted in HMC, but not necessarily in SE

Standalone IOCP

- Creating IOCP deck in HCD

```
z/OS V1.13 HCD
Command ==>
Copyright IBM Corp. 1990, 2011. All rights reserved.
Hardware Configuration

Select one of the following.

2 0. Edit profile options and policies
1. Define, modify, or view configuration data
2. Activate or process configuration data
3. Print or compare configuration data
4. Create or view graphical configuration report
5. Migrate configuration data
6. Maintain I/O definition files
7. Query supported hardware and installed UIMs
8. Getting started with this dialog
9. What's new in this release
```

Standalone IOCP

- Select Build IOCP input data set

```
z/OS V1.13 HCD
----- Activate or Process Configuration Data -----
Select one of the following tasks.
3 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
```

Standalone IOCP

- Select Processor to be target CEC

```
----- Available Processors -----
Row 1 of 4
Command ==>
Select one.

Processor ID  Type      Model    Mode    Description
/ BACKUPS     2097     E12      LPAR    2097 running 5 images in LPAR
PRIMARY      2817     M32      LPAR    2817 Running 12 Images In LPAR
SUPPORT      2817     M15      LPAR    2817 Running 4 Images In LPAR
VSM          2097     E12      LPAR    VSM FICON RTDs
```

Standalone IOCP

- Enter data set name to contain IOCP deck

```
Build IOCP Input Data Set

Specify or revise the following values.

IODF name . . . . . : 'SYS1.IODFB6'
Processor ID . . . . . : BACKUPS
Title1 . xxx.yyy
Title2 : SYS1.IODFB6 - 2012-02-02 15:11

IOCP input data set
'MY.IOCP.INPUT'
Input to Stand-alone IOCP? Yes (Yes or No)

Job statement information
//IOCD$B6 JOB (TE000ROBIN,DK1D),'ROBINSON, SKIP',MSGCLASS=A,
// TIME=(9,00),REGION=32M,MSGLEVEL=(1,1),NOTIFY=&SYSUID TYPRUN=HOLD
```

Standalone IOCP

- Following assumes that CEC already defined to HMC
 - Must be accessible on the HMC network
 - Must have unique name even if a temporary one
- On HMC, select Single Object Operation to target CEC
- Select CPC Configuration > I/O Configuration
- Insert thumb drive
- Wait for HMC to recognize drive
- Click on Options drop down
- Select USB option
- Select IOCP file on thumb drive

Standalone IOCP

BACKUPS: Input/output (I/O) Configuration - Windows Internet Explorer

Input/Output Configuration - BACKUPS

Options ▾ View ▾ Help ▾

Select an input/output configuration data set (IOCDS), then select an action.
Active input/output configuration data set (IOCDS): A0
IOCDS matching hardware system area (HSA): A3

Select	Data Set	Name	Write Protected	Date	Time	Data Set Status	Source Status	Version
<input type="radio"/>	A0	IODFB9	N	3-8-2012	0:11	Active	Empty	03.02.00
<input type="radio"/>	A1	IODFB9	N	3-8-2012	0:13	Valid	Empty	03.02.00
<input type="radio"/>	A2	IODFB8	N	3-8-2012	0:03	Valid	Empty	03.02.00
<input checked="" type="radio"/>	A3	IODFB8	N	3-8-2012	0:05	Valid	Empty	03.02.00
<input type="radio"/>	D0	DIAGNOSE	Y	9-12-2006	14:53	Valid	Empty	02.01.00

Standalone IOCP

Input/Output Configuration - BACKUPS

Enable Write Protection
 Disable Write Protection
 Copy Configuration...
 Export Source File...
 Import Source File...
 Open Source File...
 Delete Source File...
 Print Data Set Report...
 Build Data Set...
 Disassemble Data Set...
 Exit

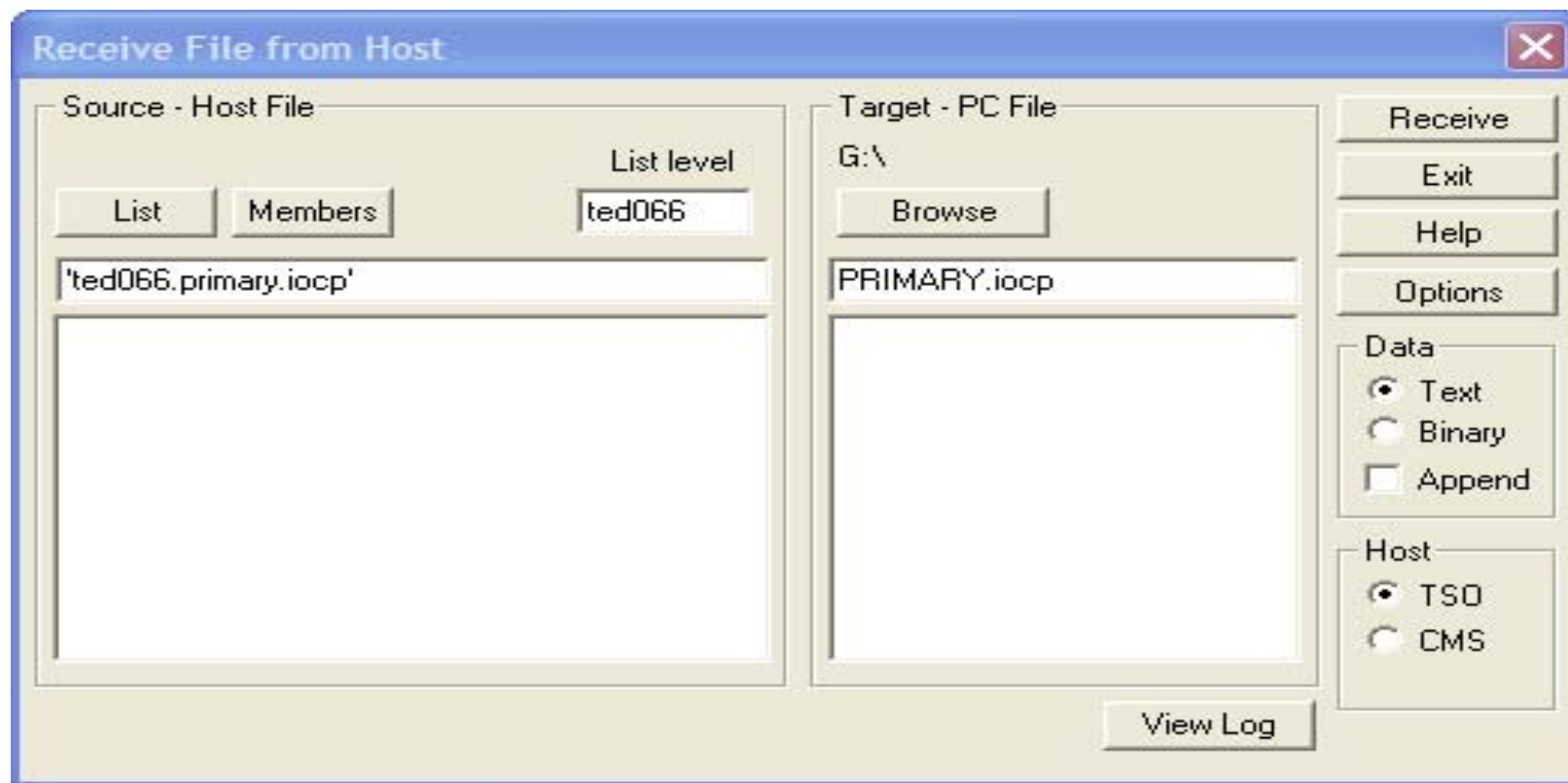
Configuration data set (IOCDS), then select an action.
 Configuration data set (IOCDS):

						Source Status	Version
							A0
							A3
						Empty	03.02.00
	N	3-8-2012	0:13	Valid		Empty	03.02.00
	N	3-8-2012	0:03	Valid		Empty	03.02.00
	N	3-8-2012	0:05	Valid		Empty	03.02.00
E	Y	9-12-2006	14:53	Valid		Empty	02.01.00

Standalone IOCP

- Must transfer IOCP deck from z/OS to thumb drive
- Could use FTP, but life is short, life is busy
- My 3270 emulator has built-in interface to IND\$FILE
- It's old, it's slow for large files
- But it's easy to use with point & click screens
- Only 2,000 text lines
- It's free
- So that's how I downloaded to thumb drive

Standalone IOCP



Standalone IOCP

```
PRIMARY.iocp - Notepad
File Edit Format View Help
ID MSG1='IODFB6',MSG2='SYS1.IODFB6 - 2012-02-02 15:11', *
SYSTEM=(2817,1),LSYSTEM=PRIMARY, *
TOK=('PRIMARY',00800001CB312097151153150112033F00000000, *
00000000,'12-02-02','15:11:53','SYS1','IODFB6')
RESOURCE PARTITION=((CSS(0),(AOLPAR,1),(A1LPAR,2),(BOLPAR,4),(*
B1LPAR,5),(CFPLEXB,D),(CFPLEXC,F),(CFPLEXI,E),(COLPAR,6)*
,(C1LPAR,7),(C2LPAR,8),(DOLPAR,9),(VOOLPAR,A),(VO1LPAR,B*
),(*,3),(*,C)),(CSS(1),(*,1),(*,2),(*,3),(*,4),(*,5),(*,*
6),(*,7),(*,8),(*,9),(*,A),(*,B),(*,C),(*,D),(*,E),(*,F)*
),(CSS(2),(*,1),(*,2),(*,3),(*,4),(*,5),(*,6),(*,7),(*,8*
),(*,9),(*,A),(*,B),(*,C),(*,D),(*,E),(*,F)),(CSS(3),(*,*
1),(*,2),(*,3),(*,4),(*,5),(*,6),(*,7),(*,8),(*,9),(*,A)*
),(*,B),(*,C),(*,D),(*,E),(*,F)))
CHPID PATH=(CSS(0),00),SHARED, *
PARTITION=((AOLPAR,A1LPAR,BOLPAR,B1LPAR,COLPAR,C1LPAR,C2*
LPAR,DOLPAR,VOOLPAR,VO1LPAR),(=)),PCHID=500,TYPE=OSD *
UNITADD=((00,256)),LINK=((CSS(0),7305,7405,7409,7309)), *
CUADD=D,UNIT=2107
IODEVICE ADDRESS=(ED00,200),CUNUMBR=(ED00),STADET=Y,UNIT=3390B
IODEVICE ADDRESS=(EDC8,056),CUNUMBR=(ED00),STADET=Y,UNIT=3390A
CNTLUNIT CUNUMBR=EE00,PATH=((CSS(0),A5,C0,C4,B7)), *
UNITADD=((00,256)),LINK=((CSS(0),7305,7405,7409,7309)), *
CUADD=E,UNIT=2107
...
IODEVICE ADDRESS=(EE00,200),CUNUMBR=(EE00),STADET=Y,UNIT=3390B
IODEVICE ADDRESS=(EEC8,056),CUNUMBR=(EE00),STADET=Y,UNIT=3390A
```

Standalone IOCP

- HMC totally choked on imported file!
- Hung up with hour glass 'forever'
- Able to break out once, then retry was fatal
- I had to reboot HMC to recover
- Problem is x' 1A' at end of file
- Inserted by IND\$FILE (so much for free software)
- Easy to edit it out with Notepad
- Then reimport to HMC and proceed
- This time no problem

Standalone IOCP

Input/Output Configuration - BACKUPS

Configuration data set (IOCDS), then select an action.
 Configuration data set (IOCDS):

						Source Status	Version
						Empty	03.02.00
						Empty	03.02.00
						Empty	03.02.00
						Empty	02.01.00

Standalone IOCP

- Remaining steps after successful import
- Open Source File (just to look at, optional)
- Build Data Set
 - Requires you to select an idle LPAR for compile
 - Anything running there will be trashed!
 - CEC comes with some default LPAR definitions
- Enable Write Protection (good idea, optional)
- POR with full customer configuration
- You're ready to connect your devices and IPL

Acknowledgements Both Knowing and Unknowing

- An IBM z/VSE developer, presenting at WAVV, whose name Ed Jaffe neglected to remember. (Sorry) 😊
- John Burg, IBM
- Harv Emery, IBM
- Walt Farrell, IBM
- Paul Gilmartin, Oracle
- Karla Houser, SHARE
- Dave Lytle, Brocade
- Keith Martens, GEICO
- Miguel Perez, IBM
- Brad Snyder, IBM
- John Wallingford, GEICO
- Kathy Walsh, IBM



See You in Anaheim...