

Bit Bucket X'2F'

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Getting Loopy

(Ed Jaffe)

XL C/C++ Compiler "Fun"

- After upgrading to z/OS 2.1, we recompiled some of our products that are written in C/C++
- Numerous SOC4s were the result
- Looking very carefully at generated code, we found a wrong branch instruction used as a loop terminator. **GAAA!**
- Applied all compiler maintenance up to and including that made available on July 17, 2014. No change.

SYSMOD	STATUS	TYPE	FMID	REQUISITE	SYSMODS
UI16362	SUPD	PTF		SUPBY	UI18560
UI16444	SUPD	PTF		SUPBY	UI18562
UI18560	APPLIED	PTF	HLB7790	REQ	UI18562
UI18562	APPLIED	PTF	HLB7790	REQ	UI18560
UI18564	APPLIED	PTF	HLB7790		

Program source snippet

```
for (k = i = 0; i < ExtentCount; i++)
{
    Buffer          = (BYTE *) BufferPtr [i];
    Length         = Extent[i].Length;
    StartBlock    = Extent[i].StartBlock;
    LastBlock     = StartBlock + (Length - 1);

    if (LastBlock > ParmList.HighBlock)
        ParmList.HighBlock = LastBlock;

    for (j = 0; j < Length; j++, k++)
    {
        BlockList [k] = StartBlock + j;
        LengthList [k] = XferBlkSize;
        BufferList [k] = Buffer;
        Buffer += XferBlkSize;
    }
}
return 0;
```

Generated assembler "object" code

```
0001B2 1E89          000073 | 1          ALR      r8,r9
0001B4 50AE 2004        000075 | 1          ST       r10,(*uchar*(r14,r2,4)
0001B8 508E F008        000073 | 1          ST       r8,(*int(r14,r15,8)
0001BC 1890           000073 | 1          LR       r9,r0
0001BE 504E 1008        000074 | 1          ST       r4,(*int(r14,r1,8)
0001C2 58A0 D0C0        000075 | 1          L        r10,#SPILL7(,r13,192)
0001C6 1E9B           000073 | 1          ALR      r9,r11
0001C8 50AE 2008        000075 | 1          ST       r10,(*uchar*(r14,r2,8)
0001CC 509E F00C        000073 | 1          ST       r9,(*int(r14,r15,12)
0001D0 A76A 0004        000071 |           AHI      r6,H'4'
0001D4 504E 100C        000074 | 1          ST       r4,(*int(r14,r1,12)
0001D8 58B0 D0C4        000075 | 1          L        r11,#SPILL8(,r13,196)
0001DC 50BE 200C        000075 | 1          ST       r11,(*uchar*(r14,r2,12)
0001E0 41E0 E010        000000 |           LA      r14,#AMNESIA(,r14,16)
0001E4 4670 3124        000071 |           BCT     r7,@1L8
0001E8           000071 |           @1L9   DS      0H
0001E8 5850 D0B8        000000 |           L       r5,#SPILL5(,r13,184)
0001EC 5800 D0A4        000061 |           L       r0,#SPILL0(,r13,164)
0001F0 5860 D0B4        000000 |           L       r6,#SPILL4(,r13,180)
0001F4 A70A FFFF        000061 |           AHI      r0,H'-1'
0001F8 4150 5004        000000 |           LA      r5,#AMNESIA(,r5,4)
0001FC 5000 D0A4        000061 |           ST       r0,#SPILL0(,r13,164)
000200 5050 D0B8        000000 |           ST       r5,#SPILL5(,r13,184)
000204 4160 6008        000000 |           LA      r6,#AMNESIA(,r6,8)
000208 5060 D0B4        000000 |           ST       r6,#SPILL4(,r13,180)
00020C 47D0 30C6        000061 |           BNH     @1L5
000210           000061 |           @1L6   DS      0H
000210 41F0 0000        000079 | 1          LA      r15,0
000214           000080 | 1          @1L10  DS      0H
```



GAAA!

1 reply [Latest Post](#) - Mar 31 by Visda



DaveyC
51 Posts

Bug z/OS 2.1 compiler optimizing using ARCH(3)

Mar 27 | Tags: *none*

I ran into a bug with the z/OS 2.1 compiler optimizing C code with the ARCH(3) compiler option. OK, ARCH(3) is clearly not a good idea but the option was hard coded in a build script.

Using the 1.13 compiler a for loop decrements a counter until it reaches zero using an SL instruction and a BNH. This is correct.

```
0049A6 5FF0 3692      000757 |                SL      r15,=F'1'  
0049AA 5010 D0E4      000000 |                ST      r1,#SPILL5(,r13,2  
0049AE 5000 D0E0      000757 |                ST      r0,#SPILL4(,r13,2  
0049B2 50F0 D0E8      000757 |                ST      r15,#SPILL6(,r13,  
0049B6 47D0 30E8      000757 |                BNH     @27L452
```

Using the 2.1 compiler, the counter is decremented using a AHI instruction and tested using BNH. This is wrong.

```
004B76 A75A FFFF      000757 |                AHI     r5,H'-1'  
004B7A 5050 D0EC      000757 |                ST      r5,#SPILL7(,r13,2  
004B7E 41F0 F03C      000000 |                LA      r15,#AMNESIA(,r15  
004B82 50F0 D0E8      000000 |                ST      r15,#SPILL6(,r13,  
004B86 47D0 30EC      000757 |                BNH     @27L452
```

[Log in to reply.](#)



Visda
21 Posts

Re: Bug z/OS 2.1 compiler optimizing using ARCH(3)

Mar 31 in response to [DaveyC](#)

The fix for this bug is in the April PTF of 2.1 if it is not already in the December PTF.

Thanks,

Visda

[Log in to reply.](#)

What is wrong with this branch?

- **SUBTRACT LOGICAL cond-code result:**
 - 0 --
 - 1 Result not zero; borrow
 - 2 Result zero; no borrow
 - 3 Result not zero; no borrow
- **ADD HALFWORD IMMEDIATE cond-code result:**
 - 0 Result zero; no overflow
 - 1 Result less than zero; no overflow
 - 2 Result greater than zero; no overflow
 - 3 Overflow
- Branch Mask for BNH is 1101 which works after SL
- Branch Mask should be 0111 or BNZ after AHI
- A good "heads up" for HLASM programmers too. Always remember and never forget: Logical and arithmetic instructions generate wildly different condition codes.

Our Workaround

- The responder (from IBM's compiler team) indicated the compiler bug was fixed, but even with all service applied we see the issue.
 - Perhaps fixed for ARCH(3) only?
- Turned out this product is compiled with ARCH(4) which allows execution on ESA/390 architecture.
- We chased away the problem by changing the compiler options to use ARCH(5) for z/Architecture.
- This problem is not yet fixed, so please be aware!
- You can avoid it by either:
 - Not recompiling programs after upgrading to z/OS 2.1 or
 - Writing programs without loops or
 - Compiling with ARCH(5) or higher
- We will continue to work with IBM to get this bug fixed.



Upgrades can be Wonderful. But,
Sometimes a Downgrade is Best!

(Ed Jaffe)

A 27 Year-old SHARE Requirement

- SSSHARE011386: EXC to SHR ENQ Downgrade
- Submitted by David White, Mutual Life of Canada, against MVS/XA on July 1, 1986.
- As with most requirements, probably recognized as a need by customers long before that.
- “IBM should enhance the MVS ENQ/DEQ mechanism so as to allow a task which is running with exclusive control of an ENQ resource to downgrade the task's control of that resource to shared.”
- Serious work on revitalizing SHARE MVS requirements began in 2009 with the formation of the Requirements Committee.
- This requirement finally addressed (after 27 years!) with z/OS 2.1: GA September 2013.

What was the Problem?

- Many tasks can [ISG]ENQ for SHR, but only one EXC
 - SHR typically held by “readers” of a resource
 - EXC typically held by “writer” of a resource
- Suppose your task held SHR for “reading” and then realized it needed to “write” (update) the contents of the resource?
- There is an [ISG]ENQ function to request upgrade from SHR to EXC. (Works only for single holder of SHR. Therefore, typically DEQ and re-ENQ for EXC.)
- There was no function to downgrade from EXC to SHR. Once EXC held, no others could get SHR until DEQ.
- DEQ and re-ENQ might be unacceptable because the resource could be changed or deleted by another task between the DEQ and the re-ENQ SHR.
- If that could not be tolerated, then your only option was to continue to hold EXC, blocking all other tasks.

What was the Solution?

- New **CONTROL=** keyword added to **ISGENQ** for **REQUEST=CHANGE**.
 - **CONTROL=EXCLUSIVE** is default, of course
 - **CONTROL=SHARED** requests the downgrade
- When **CONTROL=SHARED** specified, system control blocks are updated to effect a downgrade of the **ENQ** from **EXC** to **SHR** request.
- Queued **SHR** requests for the resource from other tasks are immediately honored. (Good luck getting back to **EXC**. See previous slide. 😊)
- No update to **ENQ RET=CHNG** (upgrade request).
 - **ENQ/DEQ** support stabilized when **ISGENQ/ISGDEQ** introduced in **z/OS 1.6**

Where is it Used Right Now?

- The most obvious need was in MVS Common Allocation. Indeed, this was the use case cited by Mr. White in his original requirement.
- Once obtained, a SYSDSN ENQ is not released until after the last step in which the data set is used and, prior to z/OS 2.1, it could not be downgraded.
 - Problem cited was that of a 30-second DISP=OLD/MOD step followed by hours-long DISP=SHR step(s).
- In z/OS 2.1, when no more job steps need exclusive control of a data set and the DSENQSHR option allows, the data set's SYSDSN ENQ is downgraded under the initiator task from EXC to SHR, thus allowing other DISP=SHR users to proceed.
- Beyond common allocation, this useful new serialization feature will eventually permeate the whole of the z/OS software stack from IBM to ISVs and everything in-between.

Have Faith in the Requirements Process

- The Requirements Committee combed through hundreds of requirements, retired many, and asked YOU - the SHARE membership - to rank and reprioritize them.
- A "Top 39" requirements list was turned over to IBM in August 2011 at SHARE in Anaheim. Roughly 1/3 of them - some quite old- were addressed in z/OS 2.1, making it one of the most well-received releases in recent memory.
- A new "Top 50" requirements list was turned over to IBM in August 2013 at SHARE in Boston. Good progress on these requirements is being made.
- Our goal is to shave at least a couple/few months off that 27-year implementation time, so don't be shy about opening up new requirements...
- OK. That was a joke. Our goals are far, far loftier! ☺




Recent SCE Pain Points - Hurts so Good
(Skip Robinson)

JES2 Control Block Changes

- Several fields moved from \$DTE/\$DCN to \$CIWORK
- This in support of 'batch modernization'
- In Exit 6, we used these fields
 - DCNVMMSG 'ACB FOR SYSTEM MSGS DATA SET'
 - DCNVSCHE 'Scheduling environment for job'
 - DCNVCAT 'Address of CAT for job'
- These and other fields are now in \$CIWORK
- Fields now in \$CIWORK
 - Pointed directly to by exit parm list word 6 (+20)
- CIWBMSG 'ACB for system msgs data set'
- CIWJSCHE 'Scheduling environment'
- CIWCATA 'Address of CAT for job'
- Control block changes hit exits up front
- **Regardless of JES2 run time options**

Product Upgrades in ServerPac

- ServerPac typically comes with latest levels
- We were a bit down-level for Netview SA
- On first IPL of 'real' SCE system, SA choked
- Required a 'migration action' from 3.3 to 3.4
- The SA SME had not budgeted time for this
- Still trying to get it to work
- Without automation, testing is hamstrung



~~Snakes~~ Limits, Why'd there have to be
~~snakes~~ limits?

(Anonymous)

Background



- MVS is a highly reliable system
- Evolved over many years
- Its design has scaled incredibly over decades

- Mainframe storage use has grown at many shops just like it has grown all across IT
- Many shops have used DFHSM for decades to manage this storage
- What hasn't grown?
- The MVS address space introduced in MVS/XA was 2 gigabytes in size
- It's still 2 gigabytes today, in 31 bit mode
- Of course there's now 64-bit virtual, data spaces, etc, but you have to *change* to use them

The Problem

- A few months back, the Storage Team was checking the environment
- TSO user issued a normal DFHSM command to see how things are going
- HSEND QUERY REQUEST
- Hit ENTER, system crashed (hate when that happens!)

- Standalone dump sent in, IBM analysis:
- "Your issue is OA07825"
- OUTPUT FROM QUERY REQUEST ISSUED FROM TSO CAUSED CSA SHORTAGE
- CANNOT LIMIT HSM CSA USAGE FOR OUTPUT
- Status: CLOSED PRS (circa 2004)
 - PRS = Permanent Restriction REALLY???

Further Observations

- Since 2004, DASD storage usage has grown
- Tens of thousands of data sets became ...
- Hundreds of thousands of datasets, which later became ...
- Millions of data sets - over this period
- When large volumes are acted upon by HSM, LOTS of work elements (MWEs) occur
- If you query HSM activity, a bit of CSA is used to tell your TSO userid about EACH of them
 - CSA / ECSA to communicate from a server address space to a TSO user REALLY????

What's New in this Space?



- As of May 2014, APAR OA44478 introduces an optional limit
- Interface: HSM PATCH command
- Default: Current behavior (no limit on CSA usage)
- Suggestion: Read this APAR. Set a limit.
- There's only so much CSA in your system!



Go Away Boy, Ya Botha Me
(Skip Robinson)

ISRLOGO

- In vanilla ISPF, primary panel displays a 'logo'
- Really an IBM copyright notice
- We have never displayed it
- But in new ISPF, we could not suppress it

```
+-----+
| Licensed Materials - Property of IBM          |
| 5650-ZOS      Copyright IBM Corp. 1980, 2013. |
| US Government Users Restricted Rights -      |
| Use, duplication or disclosure restricted    |
| by GSA ADP Schedule Contract with IBM Corp. |
+-----+
```


ISRLOGO

- We modify primary panel ISR@PRIM a lot
- Same mods appeared to carry forward
- No change we could see would explain
- After discussion on IBM main, we commented out two lines
- Logo no longer displays

```
/* .MSG = ISRL0999      Set logo information      @L5A*/  
/* .RESP = ENTER       Simulate enter           @L5A*/
```

- Another option is to add the NOLOGO option to your ISPF invocation
 - "ISPF NOLOGO"
 - "ISPSTART PANEL(ISR@PRIM) NOLOGO NEWAPPL(ISR)"



I Come Not to Praise HFS, But to Bury It
(Tom Conley)

Bit Bucket '2D' in Boston

- I reported an issue with zFS V4 running on z/OS V1R12
- zFS V4 directories with large numbers of files (>50,000) performed poorly due to a linear list structure
- Application extracted 100,000-500,000 reports to ship offsite in batches
- Deleting the files for the next batch took hours in zFS V4
- HFS was the temporary solution prior to z/OS V2R1
- Earlier this week, I heard rumblings that people at z/OS V2R1 were still holding off on going to zFS V5
- Since I presented this in Boston, I wanted to follow up to see if zFS V5 delivered on the performance promises
- So I ran some tests on the SHARE LPAR at z/OS V2R1

Check, 123, Check

- With Marna Walle's help (thank you Marna!), I created an HFS directory with 100,000 files and a zFS V5 directory with 100,000 files
- I listed the directories in ISHELL
- I was pleasantly surprised to see that ISHELL actually displayed the zFS directory slightly more quickly than the HFS directory
- I then deleted the datasets with ISHELL
- Delete performance took a little longer for zFS V5 than HFS, but it was on the order of seconds, instead of the hours and hours for zFS V4
- YMMV, but I'm a believer in zFS V5, and I'll be converting my HFS filesystems as soon as I have z/OS V2R1

z/OS V2R1 to the Rescue!

- IBM has addressed zFS directory performance issues in z/OS V2R1 with creation of zFS v5
- zFS v5 uses tree structure for directory, with improved performance that scales linearly as directory grows
- Even small directories will benefit from zFS v5
- zFS v4 directories can be converted to v5 with IBM tooling
- For full details on performance improvements and migration paths from zFS v4 to v5, reference Marna Walle's presentation [zFS V5 Migration and Performance](#)
- If you need large directories prior to z/OS V2R1, use HFS
- Postpone any HFS to zFS conversions until z/OS V2R1
- FIRE ITEM from Marna Walle's zFS V5 session: IBM recommends not using V5 filesystems until you are fully on z/OS V2R1 with no plans to go back to prior releases
- But once you're there, convert your HFS's to zFS V5



Searching for Meaning
(Tom Conley)

SRCHFOR is Your Friend (Sometimes)

- SRCHFOR will search for strings in ISPF
- Can be invoked from a member list (MEMLIST) to search all members of a PDS
- Can be invoked from DSLIST (ISPF 3.4) to search all the datasets on the dataset list
- New with z/OS V2R1, SRCHFOR can be invoked from UDLIST (ISPF 3.17) to search the files in a USS directory
- Unfortunately, SRCHFOR is implemented in three different ways, and not all options are available to each of the three lists
- There are also useful features which are somewhat hidden and are unclear due to their names
- Entering the SRCHFOR command in any of these displays with no options will bring up the SRCHFOR options popup panel

MEMLIST SRCHFOR

```
SHARE
File Edit Font Transfer Macro Options Window Help

Menu Functions Confirm Utilities Help
      MEMBER LIST Srchfor Options

Command ==> _____

You are about to search the members of the data set(s) specified.
Specify search string(s) and options and press ENTER to run the search.
Enter the END or the CANCEL command to cancel the search.

==> REVIEW _____
==> _____
==> _____
==> _____
==> _____
==> _____

Listing DSN: 'TCONLEY.SRCHML.LIST'

Select Process Options with /          Select Output Options with /
- Mixed Mode                          - View output
- Any case                             - Save output
- ASCII                                / Filter list
/ Set EDIT FIND string
/ Set BROWSE FIND string

_____ $$$$SECUR
_____ $$$$TRAP                28  1998/01/27  2007/03/14  14:15:09  TRIDJK
_____ $$$$UCB                 75  1997/08/27  2011/08/10  07:20:52  TRIDJK
_____ $$$$UNDOC              266  1998/09/08  2012/05/23  09:11:21  TRIDJK
_____ $$$$XSTAT              86  2009/10/19  2014/08/03  18:07:51  TCONLEY
_____ $$$Y2K                 138  1997/08/27  2011/08/10  07:20:56  TRIDJK
_____ $$$BIGMEM             65535  2014/08/03  2014/08/03  17:52:52  TCONLEY

Ma 0.0 a 11,10
```


MEMLIST SRCHFOR



- The "Set EDIT/BROWSE FIND string" option will let you edit/browse a member from the hit list, enter FIND, and go to the string you searched for
- The "Filter List" option will only show hits on the resulting member list screen
- Edit the first member on the list
- Enter the FIND command (PF5)
- Note that you don't have to enter "FIND string-you-just-found-with-SRCHFOR"

MEMLIST SRCHFOR

SHARE
File Edit Font Transfer Macro Options Window Help

Menu Functions Confirm Utilities Help

EDIT TCONLEY.PDS.INSTALL String(s) found
Command ==> Scroll ==> CSR

Name	Prompt	Size	Created	Changed	ID
\$\$\$\$DOC	*Found	158	1997/11/24	2012/08/02 13:55:52	TRIDJK
\$\$\$\$EQUAL	*Found	83	2004/06/30	2005/08/10 08:34:36	TRIDJK
\$\$\$\$FAQ	*Found	213	2006/11/21	2012/05/16 10:52:38	TRIDJK
\$\$\$\$INST	*Found	415	1998/09/27	2011/08/10 07:20:04	TRIDJK
\$\$\$\$MODS	*Found	999	1997/09/09	2012/02/29 11:29:37	TRIDJK
\$\$\$\$PROSE	*Found	3871	1997/11/24	2000/02/16 08:55:38	ABL-SS
\$\$\$BIGMEM	*Found	65535	2014/08/03	2014/08/03 17:52:52	TCONLEY
\$\$\$QUOTES	*Found	140	2004/09/07	2012/08/13 11:24:45	TRIDJK
\$\$\$STRUCT	*Found	214	2006/05/30	2011/09/07 14:16:23	TRIDJK
\$\$FILE182	*Found	183	2011/02/09	2011/08/17 11:31:36	TRIDJK
\$PDSARTH	*Found	1826	1998/01/28	2009/11/04 09:45:20	TRIDJK
\$PDSART1	*Found	431	2011/08/09	2011/08/09 07:59:18	SBGOLOB
\$PDSART2	*Found	695	1998/01/27	1998/01/27 07:56:18	SBGOLOB
\$PDSART3	*Found	577	1998/01/27	1998/12/29 11:11:48	SBGOLOB
#PDSGEN	*Found	733	1992/01/10	2012/07/24 08:07:30	TRIDJK
#PDSMODS	*Found	2401	2000/06/19	2012/02/29 11:30:16	TRIDJK
#PDSTBL	*Found	161	1989/12/27	2011/08/03 15:22:05	TRIDJK
@DIAMEML	*Found	2426	1997/08/27	2011/08/30 08:21:52	TRIDJK
@GLOBAL	*Found	689	2006/04/14	2012/07/25 08:55:56	TRIDJK
@PARSE	*Found	6001	2009/09/23	2011/11/01 09:07:55	TRIDJK
@PDSMODS	*Found	338	2002/12/18	2012/06/06 09:34:59	TRIDJK
@PRINTO	*Found	146	1989/12/27	2010/05/06 09:28:09	TRIDJK
NOTES	*Found				
PDSHELP	*Found	8378	1997/09/25	2012/08/13 11:11:37	TRIDJK
PDSHELPQ	*Found	9052	1997/09/25	2012/02/29 11:21:49	TRIDJK
P86ART1	*Found	443	1998/01/28	2005/08/10 08:34:48	TRIDJK
P86ART2B	*Found	322	1998/01/28	2005/08/10 08:34:05	TRIDJK

Ma 1.2 a 4,15

MEMLIST SRCHFOR

```
SHARE
File Edit Font Transfer Macro Options Window Help

File Edit Edit_Settings Menu Utilities Compilers Test Help

EDIT          TCONLEY.PDS.INSTALL($$$DOC) - 01.99          CHARS 'REVIEW' found
Command ==>          Scroll ==> CSR
000109  UTILXMIT -- BLKDISK, COBANAL, COMPARE*, DELINKI, DISASM, DSAT, DVOL,
000110          HEL, MXI, OFFLOAD, PDSLOAD, PDSMATCH, RELEASE, REVIEW,
000111          and VTOC commands in TSO XMIT format (load modules)
000112  Z035XMIT -- PDS, PDS38, PDS86, PDS86I, PDS8638 commands
000113          in TSO XMIT format (load modules)
000114  ACFC      -- ACFC rexx edit macro (compile ACF2 access/resource rule)
000115  CBTFTP    -- CBTFTP rexx example (FTP pop-up dialog to XMIT/FTP CBT)
000116  IDCAMS   -- IDCAMS rexx example (edit macro to run IDCAMS commands)
000117  ABEHELP   -- ABE TSO help member
000118  HELPLIST  -- HELPLIST assembler source code
000119  PDSBOOK  -- PDSBOOK rexx exec to create a PDS quick reference booklet
000120          from the PDSHELP member
000121  PDSMSGSG -- PDSMSGSG rexx exec to create a list of PDS messages
000122          from the PDSHELP member
000123  PDSLAB    -- SHARE 2214 - PDS Lab instructions for running at home
000124  PDSLIBDF -- PDS LIBDEF clist
000125  PDSQWGEN -- Edit macro to generate Quickref K (index) tags in PDSHELP
000126  PDSQWLOD -- Loads PDSHELPQ to a MVS/QuickRef User database
000127  PDSSETUP  -- SHARE 2214 - PDS Lab setup clist
000128  PDSTI    -- PDSTI rexx exec to run CA-1 tape inquiry from LISTC/LISTF
000129  PDSTRAP  -- PDSTRAP clist for 80-byte wide View Log
000130  PDSTRAPT  -- PDSTRAPT test clist for TRAP function
000131  PDSTRAPW -- PDSTRAP clist for > 80-byte wide View Log (&LOGWIDE=YES)
000132  PDSTRIM  -- PDSTRIM rexx example (trim VB LRECL down to largest LRECL)
000133  RRGGEN   -- RRGGEN programming facility for System/360
000134  SAMPM1   -- Message member for dialog clist example
000135  SAMPPREP -- ISPPREP dialog clist example
000136  SAMPPRE1 -- ISPPREP dialog panel 1

Ma 0.0 a 6,70
```

DSLIST (ISPF 3.4) SRCHFOR

- In the DSLIST SRCHFOR, you'll see that the Set EDIT FIND string and Set BROWSE FIND string options are not listed
- The option "Exclude not found" is similar to the "Filter List" option in the MEMLIST SRCHFOR, but not quite
- As you'll see on the next slide, a number of datasets are excluded, with the excluded line counts shown, where MEMLIST just showed members where the string was found

DSLIS (ISPF 3.4) SRCHFOR

```
SHARE
File Edit Font Transfer Macro Options Window Help

Menu Options View Utilities Compilers Help
DSLIS Srchfor Options

Command ==> _____

You are about to search multiple data sets.
Specify search string(s) and options and press ENTER to run the search.
Enter the END or the CANCEL command to cancel the search.

==> REVIEW More: +
==> _____
==> _____
==> _____
==> _____
==> _____

Listing DSN: 'TCONLEY.SRCHDSL.LIST'

Select Process      Search      Search      Select Display
Options with /      Migrated   Excluded    Options with /
- Mixed Mode        1 1. None   3 1. Excluded  / View output
- Any case          2 2. First level 2. Non-excluded / Exclude not
- ASCII             3 3. All       3. Both      found

TCONLEY.JCL.CNTL      SHTS01
TCONLEY.OFFLOAD       SHTS07
TCONLEY.PDS.INSTALL  SHTS02
TCONLEY.PDS.LOADLIB  SHTS01
TCONLEY.PDSVEGAS.INSTALL SHTS08
TCONLEY.REPORT.JCL   SHTS08
TCONLEY.REPORT.LIB   SHTS02
TCONLEY.REXX.DATAFILE SHTS05
```

DSLIST (ISPF 3.4) SRCHFOR

```
SHARE
File Edit Font Transfer Macro Options Window Help

Menu Options View Utilities Compilers Help
-----
DSLIST - Data Sets Matching TCONLEY                               String(s) found
Command ==> _____ Scroll ==> CSR

Command - Enter "/" to select action                               Message                               Volume
-----
TCONLEY.PDS.INSTALL                                               String(s) found                          SHTS02
TCONLEY.PDS.LOADLIB                                               String(s) found                          SHTS01
TCONLEY.PDSVEGAS.INSTALL                                          String(s) found                          SHTS08
- - - - -                                                         9 data set(s) not displayed
TCONLEY.SPFTEMP2.CNTL                                             String(s) found                          SHTS05
- - - - -                                                         10 data set(s) not displayed
***** End of Data Set list *****
```

UDLIST (ISPF 3.17) SRCHFOR

- For the UDLIST SRCHFOR, you'll see that the Set EDIT FIND string and Set BROWSE FIND string options exist!
- There is no option to either "Exclude not found" or "Filter List"
- To see all the hits at the top of UDLIST, enter a "sort message d" command

UDLIST (ISPF 3.17) SRCHFOR

```
SHARE
File Edit Font Transfer Macro Options Window Help

Menu Utilities View Options Help
      z/OS UNIX Directory Srchfor Options

Command ==> _____

You are about to search the regular files in this directory.
Specify search string(s) and options and press ENTER to run the search.
Enter the END or the CANCEL command to cancel the search.

==> temp
==> _____
==> _____
==> _____
==> _____
==> _____

Listing DSN: 'TCONLEY.SRCHUDL.LIST'

Select Process Options with /          Select Output Options with /
Mixed Mode                            _ View output
/_ Any case                            _ Save output
ASCII
/_ Set EDIT FIND string
/_ Set BROWSE FIND string

ftp.data      File rwxrwxrwx  fff-- --s- ----
ftp.data.old  File rwxrwxr-x fff-- --s- ----
gskssl        Dir  rwxrwxrwx  fff--      ----
hosts         File rwxr-xr-x fff-- --s- ----
hosts_old     File rwxrwxr-x fff-- --s- ----
httpd.conf    File rwxrwx--  fff-- --s- ----
httpd.conf.b37 File rwxr-xr-x fff-- --s- ----
```


UDLIST (ISPF 3.17) SRCHFOR

```
SHARE
File Edit Font Transfer Macro Options Window Help

Menu Utilities View Options Help

z/OS UNIX Directory List                               String(s) found
Command ==> sort message d                             Scroll ==> CSR

Pathname . : /etc
EUID . . . : 1934
Command  Filename      Message              Type Permission Audit  Ext  Fmat
-----
cloud9.conf      String(s) found     File rwxrwxr-x  fff--  --s  ----
cloud9.envvars   File rwxrwxr-x  fff--  --s  ----
cmx              Dir  rwxrwxr-x  fff--  --s  ----
cpoprovider.pro File rw-r--r--  fff--  --s  ----
db2config        Dir  rwxr-xr-x  fff--  --s  ----
dce              Dir  rwxrwxr-x  fff--  --s  ----
dfs              Dir  rwxr-xr-x  fff--  --s  ----
dnsdata          Dir  rwxrwxr-x  fff--  --s  ----
ftp.data         File rwxrwxrwx  fff--  --s  ----
ftp.data.old     File rwxrwxr-x  fff--  --s  ----
gskssl           Dir  rwxrwxrwx  fff--  --s  ----
hosts            File rwxr-xr-x  fff--  --s  ----
hosts_old        File rwxrwxr-x  fff--  --s  ----
httpd.conf       String(s) found     File rwxrwx--  fff--  --s  ----
httpd.conf.b37   String(s) found     File rwxr-xr-x  fff--  --s  ----
httpd.conf.info  String(s) found     File rwxr-xr-x  fff--  --s  ----
httpd.conf.new   String(s) found     File rwxrwxr-x  fff--  --s  ----
httpd.conf.old   String(s) found     File rwxr-xr-x  fff--  --s  ----
httpd.conf.wast  String(s) found     File rwxr-xr-x  fff--  --s  ----
httpd.conf.was3  String(s) found     File rwxrwxr-x  fff--  --s  nl
httpd.conf.was3  String(s) found     File rwxrwxr-x  fff--  --s  ----
httpd.conf.0005  String(s) found     File rwxrwxr-x  fff--  --s  ----
httpd.conf.0720  String(s) found     File rwxr-xr-x  fff--  --s  ----
```

UDLIST (ISPF 3.17) SRCHFOR

```
SHARE
File Edit Fcgt Transfer Macro Options Window Help

Menu Utilities View Options Help

z/OS UNIX Directory List Row 1 to 23 of 118
Command ==> Scroll ==> CSR

Pathname . : /etc
EUID . . : 1934
Command Filename Message Type Permission Audit Ext Fmat
-----
cloud9.conf String(s) found File rwxrwxr-x fff--- --s- ----
httpd.conf String(s) found File rwxrwx--- fff--- --s- ----
httpd.conf.b37 String(s) found File rwxr-xr-x fff--- --s- ----
httpd.conf.info String(s) found File rwxr-xr-x fff--- --s- ----
httpd.conf.new String(s) found File rwxrwxr-x fff--- --s- ----
httpd.conf.old String(s) found File rwxr-xr-x fff--- --s- ----
httpd.conf.wast String(s) found File rwxr-xr-x fff--- --s- ----
httpd.conf.was3 String(s) found File rwxrwxr-x fff--- --s- nl
httpd.conf.was3 String(s) found File rwxrwxr-x fff--- --s- ----
httpd.conf.0005 String(s) found File rwxrwxr-x fff--- --s- ----
httpd.conf.0720 String(s) found File rwxr-x--- fff--- --s- ----
httpd.conf.t String(s) found File rwxrwxr-x fff--- --s- ----
httpd.conf01 String(s) found File rwxrwxrwx fff--- --s- ----
httpdPKIServ.co String(s) found File rwxr-xr-x fff--- --s- ----
httpd1443.conf String(s) found File rwxr-xr-x fff--- --s- ----
log String(s) found File rwxrwxr-x fff--- --s- ----
profile_erin_9M String(s) found File rwxrwxrwx fff--- --s- ----
services String(s) found File rwxrwxr-x fff--- --s- ----
services.bkup String(s) found File rwxrwxr-x fff--- --s- ----
socks.conf String(s) found File rwxrwxr-x fff--- --s- ----
socks.conf.exp String(s) found File rwxrwxr-x fff--- --s- ----
x Empty file File rwx----- fff--- --s- ----
. Dir rwxr-xr-x fff--- ----

Ma 0.0 a 4,15
```



Has Anyone Seen Mike Onsole?

(Mary Anne Matyaz)

Integrated 3270 Console use

- z/OS 2.1 now supports a NIP and MVS console using the HMC 'Integrated 3270 Console' function.
- z/VM has done this for quite some time
- It makes OSA-ICC's, well, unnecessary
- It doesn't have to be in the IODF for NIP
- If nothing else, it's a nice backup/emergency use function

Select From the HMC

The screenshot displays the HMC Hardware Management Console Workplace (Version 2.11.1) interface within a Windows Internet Explorer browser window. The interface is divided into several sections:

- Views (Red Header):** A navigation bar with icons and labels for Groups, Exceptions, Active Tasks, Console Actions, Task List, Books, and Help.
- CPC Images Work Area:** A central workspace showing a grid of icons representing different CPC images. The icons are labeled with system names and their respective OS versions:
 - OS08R1 (LCP)
 - OS08R2 (LNX)
 - OS08R1 (LNX)
 - OS07R1 (SBX) - This icon is highlighted with a grey selection box.
 - OS08R1 (TD1)
 - OS08R1 (VM)
 - OS08R1 (VLC)
 - OS08R1 (XXX)
- Recovery Panel (Right Side):** A vertical list of recovery actions and console options:
 - Hardware Messages
 - Operating System Messages
 - Single Object Operations
 - Start All
 - Stop All
 - Reset Normal
 - PSW Restart
 - Reset Clear
 - Load
 - Integrated 3270 Console
 - Integrated ASCII Console
 - Access Removable Media
 - Load from Removable Media or Server

CONSOLxx

```
/*-----*/  
/* NOTE: HMC CONSOLE */  
/*-----*/  
CONSOLE DEVNUM(HMCS) ROUTCODE(ALL)  
        NAME(HMC&SYSCLONE.)  
        AUTH(MASTER)  
        USE(FC)  
        AREA(NONE)  
        MSCOPE(*)  
        CMDSYS(*)  
        DEL(RD)  
        LEVEL(ALL)  
        CON(N)  
        RNUM(20)  
        SEG(20)  
        RTME(1/4)  
        MFORM(T,S)  
        INTIDS(Y)  
        UNKNIDS(Y)
```


Top Secret Security Definitions

```
TSS CREATE(HMC52) TYPE(USER) DEPT(M5-DEPT) +  
    Password(abcdef#1,0) name('HMC console id')  
TSS ADD(HMC52) PROFILE(M5-TND,M5-CON)  
TSS ADD(M5-DEPT) SYSCONS(HMC)  
TSS PER(HMC52) SYSCONS(HMC)  
TSS PER(M5-MVS) SYSCONS(HMC)
```

Display

```
D C,A
CNZ4100I 09.53.44 CONSOLE DISPLAY 504
CONSOLES MATCHING COMMAND: D C,A
MSG:CURR=0      LIM=3000 RPLY:CURR=0      LIM=50      SYS=OS07R1
PFK=Z0
HARDCOPY LOG=(SYSLOG,OPERLOG)  CMDLEVEL=CMDS
      ROUT=(ALL)
...

HMC71      TYPE=HMCS      STATUS=ACT-OS07R1
          DEFINED=(*ALL)
          MATCHED=(*ALL)
          ATTRIBUTES ON OS07R1
          AUTH=(MASTER)      CMDSYS=N/A      NBUF=0
SUPSBY=Y
          DEV=NONE          LOGON=AUTO      USERID=HMC71
          MFORM=(T,S)      AREA=(Z)        PFKTAB=CON1920
          USE=FC  DEL=RD    RTME=1/4  RNUM=20  SEG=20      CON=N
          LEVEL=(ALL)
          MONITOR=(NONE)    INTIDS=Y
UNKNIDS=Y
          ROUT=(ALL)
```



HMC2: Integrated 3270 Console for DAL1:SBX

File Keys Font Help

```
- 10.12.41 OS07R1 d iplinfo
10.12.41 OS07R1 IEE254I 10.12.41 IPLINFO DISPLAY 682
SYSTEM IPLED AT 09.26.08 ON 07/09/2014
RELEASE z/OS 02.01.00 LICENSE = z/OS
USED LOADZ1 IN SYS0.IPLPARM ON 02300
ARCHLVL = 2 MTLSHARE = N
IEASYM LIST = (Z1,L)
IEASYS LIST = (Z1,70) (OP)
IODF DEVICE: ORIGINAL(02300) CURRENT(02300)
IPL DEVICE: ORIGINAL(0B49C) CURRENT(0B49C) VOLUME(M517R5)
```

Usage Notes

- If you bring up the icon on a non z/os 2.1 system, you simply get a black window.
- NIP Search order *starts* with this console, so if it's up, NIP will go there, regardless of whether you have it defined in CONSOLxx.
- After NIP, must have definition in CONSOLxx
- If you X out of HMC, and get the Logoff or disconnect window, the 3270 window is ALREADY gone. Even if you say cancel.
- Try the SET CON=xx if you haven't yet. Can use the new SETCON DELETE also.

More Usage Notes

- Screen size is 43 X 80. Period.
- Only one per z/OS LPAR
- Lots of doc about 'Attention', but it came right up for me after IPL

Reference

- https://www.ibm.com/developerworks/community/blogs/IBMRedbooksSystemz/entry/z_os_v2r1_technical_updates_hmc_integrated_3270_console_hmcs?lang=en or google **hmcs console blog**

- **z/OS MVS Planning: Operations**

<http://publibz.boulder.ibm.com/epubs/pdf/iea3g300.pdf>

- **z/OS Init and Tuning Reference for CONSOLxx**

- **Redbook**

z/OS Version 2 Release 1 Technical Updates, SG24-8140



It's only "Mostly Dead"
(Sam Knutson)

OS/360

- OS/360, officially known as IBM System/360 Operating System, is a discontinued batch processing operating system developed by IBM for their then-new System/360 mainframe computer, announced in 1964; it was heavily influenced by the earlier IBSYS/IBJOB and Input/Output Control System (IOCS) packages. It was among the earliest operating systems to make direct access storage devices a prerequisite for their operation.
- http://en.wikipedia.org/wiki/OS/360_and_successors
- OS/360 n. A small free operating system that took IBM to total dominance of the global computing market. See Linux From <http://www.isham-research.co.uk/dd.html>
- Download from <http://www.ibiblio.org/jmaynard/>

Rick Fochtman's OS/360 CD #1

- As described by Rick this CD-ROM contains as complete a set of OS/360 source materials as I was able to find. It also contains a "genned" minimal system and a complete set of distribution libraries. The IBM Corporation, through its agents, has assured me that this material may be distributed freely, since it was not protected by copyright at the time of distribution. As a courtesy, you should make any appropriate attributions when re-using these materials. Rick Fochtman "Gatherer of Archaica". This is the version distributed at the MVT 30th Birthday Party during SHARE in Dallas. Format is CD-R
- <http://cbttape.org/cdrom.htm>

Jay Maynard's OS/360 MVT Turnkey CD #1

- A turnkey OS/360 MVT system configured to use with the Hercules emulator. Includes a non functional copy of HASP III. This is the version distributed at the MVT 30th Birthday Party during SHARE in Dallas. Format is CD-R
- <http://cbttape.org/cdrom.htm>

Rick Fochtman

- Richard "Rick" A. Fochtman Jr., 61, died Friday, June 29, 2012, at his home in Woodridge, Ill.
- Born Aug. 2, 1950, in Charlevoix, Mich., to the late Richard and Bonnie (Sutton) Fochtman, Rick graduated from Charlevoix High School in 1969. He attended Michigan Technological University, majoring in computer science.
- Rick was employed as a systems programmer by Trailer Train Company in Chicago until 1981 and then joined Clearing Corporation, servicing the Chicago Board of Trade as senior systems programmer specialist until his retirement in 2006.
- Key role in preservation of OS/360
- CBT Tape file # 147 ARCHIVER All your non-VSAM datasets to 1 VSAM file, also #447, 684, more!

Hercules - What is it?



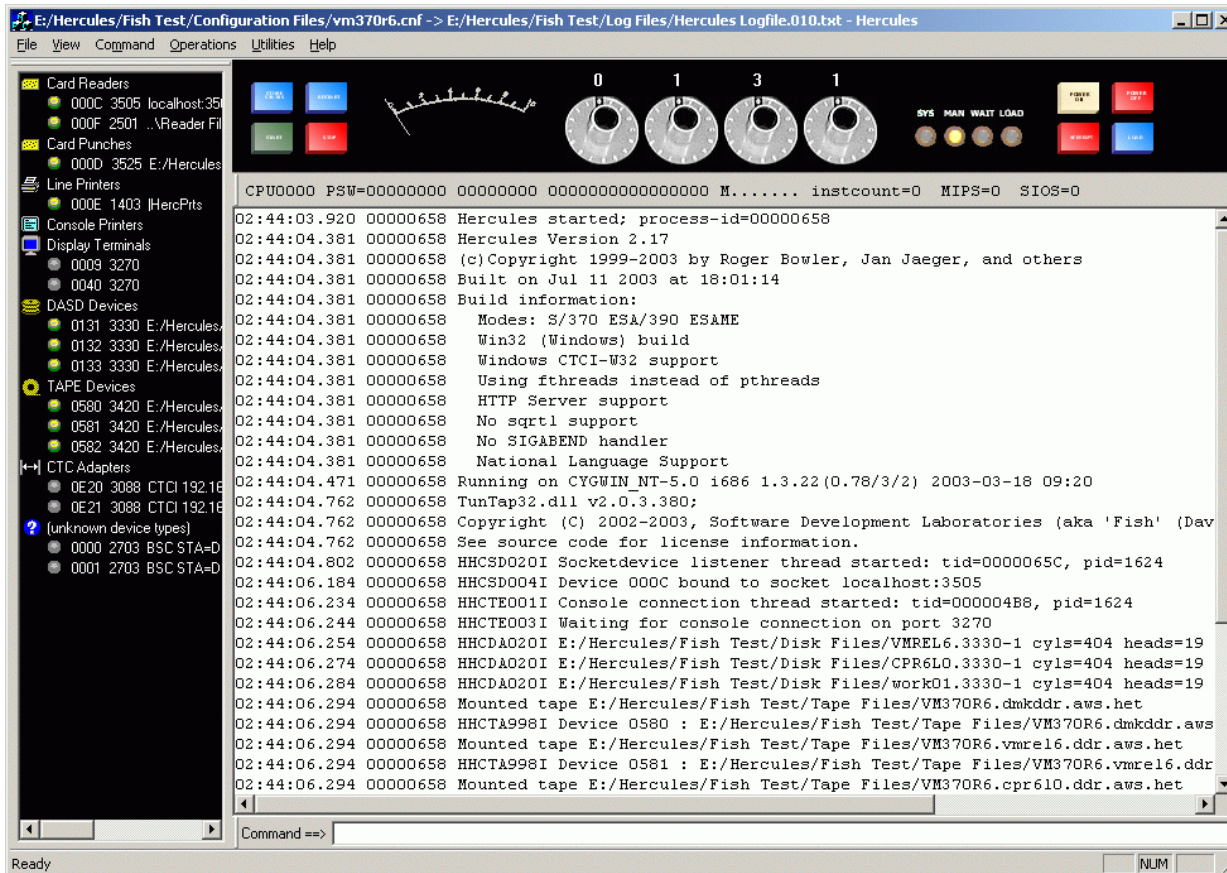
- Hercules is a System/370, ESA/390 and z/Architecture emulator which can IPL and execute most of the instructions defined for these architectures. It can also emulate CKD and FBA DASD, printer, card reader, tape, channel-to-channel adapter, and local non-SNA 3270 devices.
- Currently runs under Linux, Windows, Mac OS X 10.2 or later, BSD, and experimental ports for other platforms are underway
- Capable of running nearly all software written for S/370, ESA/390 and z/Architecture
- Hercules Home Page <http://www.hercules-390.org>

Hercules - Find out more?



- Active User Community on Yahoo Groups
- <http://groups.yahoo.com/group/hercules-390>
- Post message: hercules-390@yahoogroups.com
- Subscribe: hercules-390-subscribe@yahoogroups.com
- Unsubscribe: hercules-390-unsubscribe@yahoogroups.com
- List owner: hercules-390-owner@yahoogroups.com
- Groups now include [hercules-390](#), [H390-MVS](#), [turnkey-mvs](#), [H390-VM](#), more!

Hercules - Windows GUI



- Low cost, high quality tools from "Fish" David B. Trout
- <http://www.softdevlabs.com> & <http://hercgui.pedroramos-si.com/>

Hercules - Mac & Linux GUI



The screenshot shows the Hercules Studio interface. At the top, there's a menu bar with 'Edit', 'Command', 'Utilities', and 'Help'. Below the menu is a 'Controls' section with a digital display showing '47.01', several buttons (power, reset, etc.), and four disk drive icons. On the left, a 'Devices' sidebar lists various components like 'Display Terminal', '0009', 'CTC', '0420 CTCI 192.168', '0421 CTCI 192.168', 'Dasd', '0180 /media/Hercu...', and '0181 /media/Hercu...'. The main terminal window displays the following boot logs:

```
udev: starting version 147
dracut: Starting plymouth daemon
dracut: rd_NO_DM: removing DM RAID activation
dracut: rd_NO_MD: removing MD RAID activation
dasd-eckd 0.0.0180: New DASD 3390/OA (CU 3990/02) with 3339 cylinders, 15 heads,
224 sectors
dasd-eckd 0.0.0180: DASD with 4 KB/block, 2404080 KB total size, 48 KB/track, co
mpatible disk layout
dasda:VOL1/ OX0180: dasda1 dasda2
dasd-eckd 0.0.0181: New DASD 3390/OA (CU 3990/02) with 3339 cylinders, 15 heads,
224 sectors
MHCCD0011: Readahead thread 1 started: tid=7f70b18ad700, pid=29457
MHCCD0011: Readahead thread 2 started: tid=7f70b17ac700, pid=29457
dasd-eckd 0.0.0181: DASD with 4 KB/block, 2404080 KB total size, 48 KB/track, co
mpatible disk layout
dasdb:VOL1/ OX0181: dasdb1
dracut: Scanning devices dasda2 dasdb1 for LVM logical volumes vg_linux/lv_roo
t vg_linux/lv_swap
dracut: inactive '/dev/vg_linux/lv_root' 2.12 GiB! inherit
dracut: inactive '/dev/vg_linux/lv_swap' 1.97 GiB! inherit
EXT4-fs (dm-0): mounted filesystem with ordered data mode
dracut: Mounted root filesystem /dev/mapper/vg_linux-lv_root
dracut: Loading SELinux policy
SELinux: Disabled at runtime.
type=1404 audit(1355312122.866:2): selinux=0 auid=4294967295 ses=4294967295
dracut: /sbin/load_policy: Can't load policy: No such file or directory
dracut: Switching root
readahead: starting
```

- <http://www.jacobdekel.com/hercstudio/>
- Hercules Studio - a Hercules gui for Mac OS X and Linux

MVT IPLed on Mac

Terminal — hercules

```
HHCCD0011 Readahead thread 1 started: tid=01892E00, pid=18298
HHCCD0011 Readahead thread 2 started: tid=01893200, pid=18298
HHCCD0021 Writer thread 1 started: tid=0196CE00, pid=18298
HHCCD0031 Garbage collector thread started: tid=01826600, pid=18298
HHCCP0481 001F:CCH=090324A4 60000019=>40C9C5C5 F1F4F0C9 40E2E8E2 E3C5D440 IEE14
01 SYSTEM
HHCCP0751 001F:Stat=0200 Count=0019
HHCCP0761 001F:Sense=40000000 00000000 00000000 00000000 00000000 00000000
HHCCP0771 001F:Sense=INTREQ
HHCCD0021 Writer thread 2 started: tid=01970C00, pid=18298
HHCCP0481 0200:CCH=03000000 60000001=>00000000 00000000 00000000 00000000 .....
.....
HHCCP0751 0200:Stat=0200 Count=0001
HHCCP0761 0200:Sense=40220000 00C00300 00000000 00000100 010000FF FF000000
HHCCP0771 0200:Sense=INTREQ EOC WRI
HHCRD013E Error opening file *: No such file or directory
HHCCP0481 000C:CCH=027EF8D0 20000050=>00000000 00000000 000000C0 00000000 .....
.....{.....
HHCCP0751 000C:Stat=0E00 Count=0050 =>00000000 00000000 000000C0 00000000 .....
.....{.....
HHCCP0761 000C:Sense=10000000 00000000 00000000 00000000 00000000 00000000
HHCCP0771 000C:Sense=EQC
Command ==> █
CPU0000 PSW=FF8600CB 00000000 0000000000000000 ..H.... inst count=49266690
```

Hercules

```
- D A

IEE1021 23.14.41 ACTIVE DISPLAY      FRAME LAST      F      E      1A
STRADDR  ENDADDR  SQR   R  SUBT  NAME1      NAME2      NAME3
00130K  00192K  02048  01  MASTER SCHEDULER
00000K  00000K  00504  00  INIT
00066K  00130K  00768  00  RDR          00C

IEE1521  ENTER  CANCEL  D C,K
```

Tue 21 Jun 12:15

Main Desktop

Acknowledgements Both Knowing and Unknowing

- Brian Childs, IBM
- Brian Peterson, UHG
- Marna Walle, IBM
- Kim Bailey, IBM
- Jay Maynard, <http://www.conmicro.com/>
- Rick Fochtman, Chicago Board of Trade
- "Fish" David B. Trout, SoftDevLabs

See You in Seattle...

