



# TRACK for VM

What's happening  
in *your* Virtual Machine?

***Review & Lab***

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August 2012  
VM Workshop 2014  
given by  
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# Topics

- What is TRACK?
- A tiny bit of history
- A few details for your reference
  - Documentation, installing, usage
- HANDS ON



# What is TRACK?

- TRACK examines one or more virtual machines as they execute. It is a full screen program that is PF key driven and displays information in a number of different panels. It shows selected information from the TRACKed user's VMDBK, real and virtual storage, all of a user's devices, details about one device, open console page along with certain information about a CMS user's virtual machine, such as accessed disks, open files, filedefs, etc.
- There are many other panels and commands available!



# A little history of TRACK



- Developed by Serge Goldstein from Princeton University's Computing Center (PUCC)
  - Around the mid 1980's
- Picked up by Ross Fried at City University of New York (CUNY)
- Other contributor(s)...
  - Perry Ruitter (then with BC Systems, now with IBM Canada)
  - Dave Jones from ITC
  - Dan Martin now with Rocket Software
- Currently maintained by Jim Vincent. (See last page for contact info)



# Where to find TRACK



- The *new* TRACK for VM web site!
  - <http://vm.marist.edu/track/>  
Graciously hosted by Marist College
- Currently “**TRACK for z/VM 6.3**” is available.
  - This will support all VM versions from XA through z/VM 6.3.0
  - The web site will be the location to find new updates, news, babblings, etc, about TRACK
- Postings to the VMESA-L listserv will also be used



# TRACK documentation

- TRACK has very well documented commands and functions
  - README FIRST and TRACK MEMO will get you started
    - Includes the install instructions and other notes of interest
  - 34 CMS HELP files included in the package
    - A TRACK MENU helps navigate them
  - What about a MANUAL?
    - Got one! PDF is on the web site



# Pre-built TRACK modules available



- There are **unsupported**, pre-built TRACK modules in the download VMARC package
  - I highly recommend Assembling your own TRACK modules if you can
    - Stuff happens... CP data areas change
  - Assembling your own will ensure TRACK will work correctly for your system
- The pre-built modules are **NOT** supported!





# Installing TRACK

- Start with the README FIRST and TRACK MEMO file
- Installation will depend on your current level of VM
- TRACK is mostly assembler and very dependent on CP source code (MACLIBs)
- Installed and maintained using the standard VM update scheme
  - Xedit Update files, AUX files, etc.





# Installing TRACK (more...)

- CNTRL files help you manage which version of TRACK is built
  - One for each level of VM supported
    - TRACKV63 z/VM 6.3.0 systems
    - TRACKV62 z/VM 6.2.0 systems
    - TRACKV54 z/VM 5.4.0 and 6.1.0 systems
    - TRACKV53 z/VM 5.3.0 64-bit systems
    - ...etc...



# Installing TRACK (more...)

- Select the right CNTRL file for the release of VM you have
- Verify your current CP control file entry, TEXT MACS to the TRACKV<sub>xx</sub> CNTRL file you are going to use (HCPVM or HCPVME)
  - Be sure TRAMAC is prefixed on the MACLIB list
  - Not using the right MACLIBs will cause bad things to happen to good people



# Installing TRACK (more...)



- You may need to modify some of the AUX files
  - Generally for a current VM, what is there is fine
  - Most updates were for older releases that fixed some things before they were included in the base CP code
  - Be sure to review the TRACK MEMO in the “Modifications” section for updates you may want to include
- Build TRAMAC MACLIB
  - VMFMAC TRAMAC TRACKV<sub>xx</sub>
    - TRACKV<sub>xx</sub> is the name of the CNTRL file you will be using



# Installing TRACK (more...)

- Assemble all the parts!
  - Nice little EXEC provided to help you do that
  - TRKASM EXEC VMFHLASM TRACKV<sub>xx</sub>
    - TRACKV<sub>xx</sub> is the name of the CNTRL file you will be using
- Modify the load list if you want
  - Handy if you want a ‘lite’ version of TRACK but these days, storage is cheap so build the whole thing!
- Build the TRACK module
  - TRKGEN TRACK TRACKV<sub>xx</sub>
    - TRACKV<sub>xx</sub> is the name of the CNTRL file you will be using
    - You can change the name of the module if you want
      - TRKGEN *modulename* TRACKV<sub>xx</sub>



# Installing TRACK (almost done!)



- Copy the TRACK MODULE and all HELP files to a tools disk
- Keep all the files somewhere – you will be updating them as your VM level changes or more updates are made available



# Using TRACK - requirements

- Required CLASSes
  - You will need CLASS E to use Diag 004 (read CP real storage) and CP LOCATE
  - You will need CLASS D for Diag 290 for view open spool data (optional; z/VM 5.2+ only)
  - You will need CLASS A for the CP LOCK/UNLOCK commands (optional)
  - If you moved these commands to different privileges, adjust accordingly...
- Note – although you need high privileges, TRACK never modifies storage in any way
  - It will only LOCK virtual pages as needed and UNLOCK them immediately if they were not locked in the first place



# Using TRACK – a little help

- Nifty front-end routine ZTRACK EXEC included in VMARC
  - Checks for the required privilege classes
  - Executes the correct TRACK module based on the level of z/VM you are running
    - Handy if you have both a 32 and 64 bit system you want to use TRACK on or sharing a tools disk on multiple VM systems with different levels of CP
  - Modify the code to fit your needs





# Using TRACK - notes

- 64 bit support in TRACK needed some panel changes/rearrangements
- Some of the panels will look a bit different depending on what mode you are in (32 vs 64 bit)
  - Registers and data locations expand to 16 bytes for 64 bit
  - Some data condensed to allow room (see VST/RST panels for example)
    - Offset field is only 7 bytes, yet offset could be much more than that



# Using TRACK - notes

- z/VM 5.2 required a new switch for CP storage
  - Default mode is Host Logical
  - New command:
    - HOSTREAL ON|OFF|?
      - ON makes TRACK look at Host REAL storage
      - OFF looks at Host Logical storage
      - ? Displays the current setting
  - RST will show [ LOGICAL ] or [ REAL ] above the addresses
  - Watch for possible storage errors; if you are set to Logical, Diag 4 may not get what you expect
    - FORMAT, DBK, etc...



# Really Using TRACK!

- The simplest invocation: TRACK userid
  - Example: TRACK OPERATOR
- Tap ENTER on any panel to update/refresh the contents
  - Or use the AUTO command to set an automatic update time and limit of updates, then use PF2 (AUTO)
  - Use “AUTO .5” for half-second, almost real-time updates
  - Sit back and watch!
    - Popcorn and ‘adult foamy beverage’ optional



```

Q - VMB
File Edit Font Transfer Macro Options Window Help

TRACK 1 USER : OPERATOR      ****   VMD   ****   z64 V4.3++ 14:07:59 02/21/06
=====
VMDBK @ 0D51E000             Class   = ABCDEGMRS             Share= 10000 R
Logon= 02/18/06 21:12 Virtcpu = 000:15.12 Totcpu = 000:20.39 26 Devices
Storage= 32M Account = *SERVC Console= DISC
Last CP= SET Locked= 0 Resident= 311 WSS= 408
PSW= 030E0000 00F35500 CC = 0 Stat = EC ENABLED WAIT SUPR
CPUaddr= 00 #CPUs= 01 Mach= XA Amode= 31-bit 370accom= ON
Sio= 102141 Pr= 44062 Pun= 0 Read = 0 Dist = 3-25-02
Rstat= Slist: 0B - Dormant since 14:07:44
Qstat=
Ostat= SYSOP IN-USERCT DISC
Com = EXEC Exec = LDEV Mod = DMSURS Tran= EXECDROP
Ipl = IPL 190 PARM AUTOCR
R0-7= 00000001 FF1A49D8 00000001 00000003 80E5B63C 00E5B628 00E5C8BC 00E5B528
R8-F= 00E5D538 00F363B8 0000A000 00007A50 00F353B8 00003108 00F127EC 00F35532

=====
CR=Upd CLEAR=Subset ==> _
2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 7=Prev 8=Next
MR 0.2 02/21/06.052 02:08PM vmb.ent.nwie.net a 30,26

```

## VMD Panel – 32 bit guest



Rate your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)



```

Q - VMB
File Edit Font Transfer Macro Options Window Help

TRACK 2 USERS: VMTEST          ****   VMD   ****   z64 V4.3++ 14:08:43   02/21/06
=====
VMDBK @ 05B43000 MP01 Class = ABCDEFG                               Share= 1500 R
Logon= 02/18/06 21:25 Virtcpu = 066:52.60 Totcpu = 104:07.44 Lastio= D30A
Storage= 256M Account = *SERVC Console= DISC
Last CP= LINK Locked= 165 Resident= 22532 WSS= 36401
PSW= 0706400080000000 0000000000000000 Stat = EC ENABLED WAIT SUPR DAT
CPUaddr= 00 #CPUs= 02 Mach= ESAME Amode= 64-bit 370accom= OFF
Sio= 55941007 Pr= 146 Pun= 0 Read = 0 Dist = 03-25-02
Rstat= Slist: 37 - Dispatch List
Qstat=
Ostat= IN-USERCT DISC
Com = ?????????? Exec = ?????????? Mod = ?????????? Tran= ??????????
Ipl = IPL D309 CLEAR LOADPARM 001F
R0-3= CC23000500000000 0000000060000000 0000000000000000 0000000000000000
4-7= 0000000000000000 0000000000127254 0000000000126D7C 0000000000D799F0
8-B= 000000000000E000 00000000002B7830 000000000003000 000000000002000
C-F= 000000000042C9D0 000000000000E000 00000000002B7990 00000000003B3A00

=====
CR=Upd CLEAR=Subset ==> _

2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 7=Prev 8=Next

MR 0.5 02/21/06.052 02:08PM vmb.ent.nwie.net a 30,26

```

## VMD Panel – 64 bit guest



Get your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)



# Using TRACK

- Let's look at the CMS settings
  - Type CMS on the command line
  - CMS panel can be customized to show any or all of the sections – in any order!
    - Handy to see DISKS and SFS directories accessed
  - CMS XEDIT will show the current Xedit data
  - CMS STACK shows what data is currently stacked by buffer number



```
Q - VMB
File Edit Font Transfer Macro Options Window Help
TRACK 2 USERS: OPERATOR      ****   CMS   ****   z64 V4.3++ 14:09:27 02/21/06
=====
LASTVIRT= 0.0      CURRVIRT= 0.16535   Last
LASTCMND= EXEC    PREVCMD= EXEC      LASTCPUT= 0.0      CURRCPUT= 0.285193
LASTLMOD= DMSURS  LASTTMOD= EXECDROP   LASTEXEC= SYSID   PREVEXEC= NAMECHG
CMNDLINE= EXEC PROPST CENTRAL DISC

=====   SVC202   =====
SVC 202 Depth= 4
SVC 202 Chain= SVC 1 PROP      DMSRTPRC EXEC

SVC 202 Plist= SVC 1

SVC 202 Elist= None
SVC 202 Regs = 00000001 FF1A49D8 00E5B528 00E5BD48 00E5B528 00E5B5A5 00F126D0
              00E5B528 00E5D538 00000031 00E5DD11 00E5D070 00E5C070 00E5D5F4
              00E5C8A8 00000000
SVC 202 OPSW = 03EC1000 00E5C8BC

=====   Storage   =====
MAINSTRT= 00000000 MAINHIGH= 00000000 FREELWE= 00000000 FREELWR= 00000000
STRADDR= 01F57000 FRSTLOC = 01F57000 LASTLOC = 01F5A868 LOCCNT = 00E3C010

=====   Flags   =====
MSGFLAGS=
=====
CR=Upd CLEAR=Subset ==> _

2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=Nxt 7=bak 8=for
MR 0.0 02/21/06.052 02:09PM vmb.ent.nwie.net  a 30,26
```

# CMS Panel (default)



te your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)





```

Q - VMB
File Edit Font Transfer Macro Options Window Help
TRACK 3 USERS: VINCENJ      ****   CMS   ****   z64 V4.3++ 14:10:02   02/21/06
=====
Label  Vdev M  Stat   Cyl Type  Blksz  Files  Blks Used-(%) Blks Left  Blk Total
-----
----- DIR B  R/W    -  SFS (4096)  145    n/a -    n/a    n/a
----- DIR C  R/W    -  SFS (4096)   27    n/a -    n/a    n/a
VMT00L 0192 D  R/O   25 3390  4096   984   3247-72  1253    4500
BEXECS 0100 E  R/O    5 3390  4096   291   625-69   275     900
----- DIR F  R/W    -  SFS (4096)   616   n/a -    n/a    n/a
----- DIR G  R/W    -  SFS (4096)   130   n/a -    n/a    n/a
MNT31A 031A L  R/O   45 3390  4096  1949   6123-76  1977    8100
MNT319 0319 P  R/O  120 3390  4096   658  11415-53 10185   21600
MNT190 0190 S  R/O  100 3390  4096   694  14668-81  3332   18000
MNT19E 019E Y/S R/O  200 3390  4096   663  25127-70 10873   36000
MNT193 0310 Z  R/O  133 3390  4096   878  15798-66  8142   23940
=====
                                End
=====

=== SFS Directories ===
FM Pool:Ownerid.Directory
B VMBSYS:VINCENJ.PERSONAL.NOTELOGS
C VMBSYS:SOFTWARE.UTILITY.TRACKXA.NEWCODING
F VMBSYS:SOFTWARE.UTILITY.TRACKXA
G VMBSYS:SOFTWARE.UTILITY.TRACKXA.BUILD
=====
                                End
=====

=====
CR=Upd CLEAR=Subset ==> _

2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=Nxt 7=bak 8=for
MR 0.1 02/21/06.052 02:10PM vmb.ent.nwie.net a 30,26

```

# CMS Panel (custom: TRACK user CMS DISKS SFS)



Get your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)



```
Q - VMB
File Edit Font Transfer Macro Options Window Help
TRACK 3 USERS: VINCENJ      ****  CMS  ****  z64 V4.3++ 14:10:54 02/21/06
=====
                ===== Xedit =====
README  FIRST  F1  F 80  Trunc=80 Size=470 Line=0 Col=1 Alt=0
|...+...1...+...2...+...3...+...4...+...5...+...6...+...7...
* * * Top of File * * *

                TRACK for VM 64-bit support
                Feb 25, 2005

                ***  VERSION 4, RELEASE 2  ***

                -----
                COPYRIGHT (C) CUNY AND PUCC
                ALL RIGHTS RESERVED
                -----

This memo contains the INSTALLATION INSTRUCTIONS for TRACK z64 Version
4.0, Additional information (and a good-read!) can be found in the
TRACK MEMO file. I recommend you read that file too.

Do not attempt to INSTALL or USE TRACK before reading this memo. If you
have never used TRACK before, you should scan the TRACK HELPCMS file to
get a feel for what TRACK does and read the TRACK MEMO. The
installation procedures below use terms that are defined in the TRACK
HELPCMS file. After scanning the TRACK HELPCMS file, you should come
=====
CR=Upd CLEAR=Subset ==> _

2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=Nxt 7=bak 8=for
MR 0.0 02/21/06.052 02:10PM vmb.ent.nwie.net  a 30,26
```

# CMS Panel (custom: TRACK user CMS XEDIT)



te your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)



```
Q - VMB
File Edit Font Transfer Macro Options Window Help
TRACK 3 USERS: VINCENJ      ****   CMS   ****   z64 V4.3++ 14:15:41 02/21/86
=====
*** Makebuf 0             ***
A queued line
=====
Stack
=====
End
=====

=====
CR=Upd CLEAR=Subset ==> _
2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=Nxt 7=bak 8=for
MR 0.0 02/21/86.052 02:15PM vmb.ent.nwie.net  a 30,26
```

# CMS Panel (custom: TRACK user CMS STACK)



# Using TRACK

- For examples, I will cycle through the following in order:
  - CONS (open console)
  - DEV (via PF11 – virtual devices)
  - NAM (‘query names’)
  - PFX (prefix page)
  - RST (real storage) and VST (virtual storage)
    - Both with “Disassembly mode” and ASCII display toggle
- Note that these are only a sampling of what TRACK can do!



```
Q - VMB
File Edit Font Transfer Macro Options Window Help
TRACK 4 USERS: HTTPD      ****  CON  ****  z64 V4.3++ 14:16:25  02/21/06
=====
20 14:16:20 HTTPD      99 VIWLOG0773I 29351 .SIE 6.0; Windows NT 5.1; .NET CLR 1
   www.vmb.ent.nwie.net/callup' 'Mozilla/4.0 (compatible; M.
   .1.4322)'.
21 14:16:20 HTTPD      6F VIWHTP0871I Connection 13914 closed, connection wait t
   imed out.
22 14:16:20 HTTPD      99 VIWHTT0800I 29352 172.29.47.49:10542::192.168.122.8:80
   GET /images/workgrp.gif HTTP/1.1.
23 14:16:20 HTTPD      99 VIWLOG0771I 29352 .172.29.47.49 - - [21/Feb/2006:19:16
   :20] 'GET /images/workgrp.gif HTTP/1.1' 304 95 'http://w.
24 14:16:20 HTTPD      99 VIWLOG0772I 29352 .ww.vmb.ent.nwie.net/callup?id=ROFN
   +DIRECTORY+C6+06000&caller=callup.html' 'Mozilla/4.0 (com.
25 14:16:20 HTTPD      99 VIWLOG0773I 29352 .patible; MSIE 6.0; Windows NT 5.1;
   .NET CLR 1.1.4322)'.
26 14:16:20 HTTPD      99 VIWHTP0871I Connection 13956 closed, client closed soc
   ket.
27 14:16:23 HTTPD      92 VIWHTP0871I Connection 13949 closed, client closed soc
   ket.
28 14:16:24 HTTPD      96 VIWHTT0800I 29353 10.197.20.133:3445::192.168.122.8:80
   GET /callup?id=NATIONUS+DIRECTORY+C6+12209&caller=callup
29 .html HTTP/1.1.
30 DMSACP723I C (310) R/O
31 14:16:24 HTTPD      96 VIWLOG0771I 29353 .10.197.20.133 - - [21/Feb/2006:19:1
   6:24] 'GET /callup?id=NATIONUS+DIRECTORY+C6+12209&caller.
32 14:16:24 HTTPD      96 VIWLOG0772I 29353 .=callup.html HTTP/1.1' 200 4315 'ht
   tp://www.vmb.ent.nwie.net/callup' 'Mozilla/4.0 (compatib.
33 14:16:24 HTTPD      96 VIWLOG0773I 29353 .le; MSIE 6.0; Windows NT 5.0)'.
=====
CR=Upd CLEAR=Subset ==> _
2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 7=Back 8=Forward
MR 0.0 02/21/06.052 02:16PM vmb.ent.nwie.net a 30,26
```

# CONS Panel – last active open console block



```

Q - VMB
File Edit Font Transfer Macro Options Window Help

TRACK 4 USERS: HTTPD          ****   DEV   ****   z64 V4.3++ 14:17:06 02/21/06
=====
TERM 0009 3215          SPOL 000C 2540R          SPOL 000D 2540P          SPOL 000E 3800
DASD 0119 3390          DASD 011A 3390          DASD 0181 3390          DASD 0190 3390
DASD 0191 3390          DASD 0193 3390          DASD 019D 3390          DASD 019E 3390
DASD 01B0 3390          DASD C191 3390          DASD F191 3390

(Chan= 4   Ctls= 7   Devs= 15   )=====
CR=Upd CLEAR=Subset ==> _

2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=ByC 7=ByA 8=ByT

MR 0.0 02/21/06.052 02:17PM vmb.ent.nwie.net  a 30,26

```

DEV Panel – all virtual devices for the user



```

Q - VMB
File Edit Font Transfer Macro Options Window Help
TRACK 4 USERS: HTTPD      ****  NAM      ****  z64 V4.3++  14:17:30  02/21/06
-----
ADAMSJ9  3C187000  ADSMSERV 1C718000  AFRINA   6F3B2000  AIENDLS  037FA000
ANDERSG  462BC000  ANDERSM  57CC5000  AOLASSUR 6DEFE000  ARATAJ   512E8000
ASDSINK  24732000  ASHBYG   53A96000  AUTREYD  450D2000  BARLOWR  6EF10000
BARLOWRT 73602000  BATHINB  57F60000  BAUMGAJ1 7B99B000  BEERYR   77180000
BERRYJ4  4D705000  BHARGAP  047C1000  BLUMBEB  65C6B000  BOLLISH  4A821000
BOTCHAK  1C8A5000  BOYSELS  64506000  BRASCHJ  4AF3D000  BROWNE2  2B8F1000
BUSHL4   46BD3000  CALDWEB  6C96F000  CALLUP   2F269000  CAMELA3  4AB52000
CFCC1    1E486000  CFCC2    1DEC1000  CFCONSOL 1BB3B000  CHANDRD1 3ADC9000
CHATMAL2 1852A000  CHILAKS  4A016000  CHILAMS  56D4E000  CHILSOR1 7F83B000
CHINTAM  2A988000  CHODISS  412B8000  CLARKJ46 75176000  COOKD1   45477000
COYNEC1  08D81000  CPRSINK  24785000  CRUMR1   64F2B000  DAIJ     6E01C000
DASARIV1 70267000  DATASYNC 1C73E000  DAVIDSD42 45AEA000  DHULIPR  144B2000
DISKACHT 0DB3F000  DORAISS  34F83000  DUGGANE  6D842000  EDWARDR1 029AF000
EDWINM   18D7C000  EREP     10ED7000  ESAMBAY  6D840000  ESASERVE 1BB36000
ESATCP   1BB33000  ESAWRITE 1D052000  ESPLANJ  09D9A000  ESTEPC   41A10000
EYREY1   716DE000  FARLERP  7076B000  FARRIES  50BD1000  FENDRUA  20E90000
FIROBEC  04953000  FISHERK  4874E000  FOLMARS1 3DACD000  FPTRSNK1 1C6F5000
FTPSEVE  1D1ED000  F000SNK1 1C6E0000  F330SNK1 44DBE000  F370SNK4 247BC000
F690SNK1 64A75000  GALLAGB  013F6000  GARRARC  50AF2000  GATTINA1 4E5D4000
GENSURT1 71899000  GOGINEA1 41E5C000  GRABERS  52B8B000  GRACED1  4D755000
GROSSMC  43C1C000  GRUEVSV  69340000  GUSTINK  31970000  HARDEND3 38B46000
HARIKRT  25274000  HARPERC  74DEE000  HELDR    065CC000  HIDRO    1C572000
HOGUEM4  6A1B2000  HOLTK    69BBF000  HOUSEHK  6685B000  HOWIEJ   2B7FF000
HOWILES  49ACF000  HTTPD    42033000  HTTPDNDC 1DE62000  HTTPDTAS 1DC39000
HTTPDTTL 1DB3A000  HTTPDTW2 48D18000  HTTPDTW3 09865000  HTTPDW5  2C83F000
HTTPD2   1D868000  HTTPD2W4 4F757000  HTTPD4   1D96A000  HTTPD6   1C683000
*** MORE ***=Users= 300
CR=Upd CLEAR=Subset ==> _
2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=ByN 7=ByA 8=Trk
MR 0.0 02/21/06.052 02:17PM vmb.ent.nwie.net  a 30,26

```

## NAMES Panel – lists all logged on userids





```

Q - VMB
File Edit Font Transfer Macro Options Window Help
TRACK 4 USERS: HTTPD      **** PFX      **** z64 V4.3++ 14:17:50 02/21/06
=====
Address  Offset  +-----PFXILPSW-----+
00000000  0  | 00FC3000 80304500 |
+-----PFXICCW1-----+
00000008  8  | FFFFFFFF FFFFFFFF |
+-----PFXICCW2-----+
00000010 10  | FFFFFFFF FFFFFFFF |
+-----PFXEXTOP-----+
00000018 18  | 00000000 00000000 |
+-----PFXSVCOP-----+
00000020 20  | 00000000 00000000 |
+-----PFXPRGOP-----+
00000028 28  | 00000000 00000000 |
+-----PFXMCHOP-----+
00000030 30  | 00000000 00000000 |
+-----PFXIPOP-----+
00000038 38  | 00000000 00000000 |
+-----PFXIPOP-----+
00000040 40  | //////////////// |
+-----PFXIPOP-----+
00000048 48  | //////////////// |
+-----PFXIPOP-----+
00000050 50  | //////////////// |
+-----PFXEXTNP-----+
00000058 58  | 000C0000 801478A8 |
+-----PFXSVCNP-----+
00000060 60  | 000C0000 803043D8 |
=====
CR=Upd CLEAR=Subset ==> _
2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=Nxt 7=bak 8=for
MR 0.0 02/21/06.052 02:17PM vmb.ent.nwie.net a 30,26

```

## PFX Panel – prefix page storage mapping



Rate your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)



```

Q - VMB
File Edit Font Transfer Macro Options Window Help

TRACK 4 USERS: HTTPD      ****   RST   ****   z64 V4.3++ 14:30:20 02/21/06
=====
Base address = 0000000000A75B80      3G Real Storage
[ LOGICAL ]      Offset      Hex      Ebcidic
0000000000A75B80 000000 00E5E5E5 00000000 00000000 C8C3D7C7 * VVV      HCPG*
0000000000A75B90 +000010 C6E24040 017AC5D4 C5F2F0F5 0000F0F5 *FS      :EME205 05*
0000000000A75BA0 +000020 61F1F961 F0F57AF1 F84BF5F6 D9C50000 */19/05:18.56RE *
0000000000A75BB0 +000030 00000000 0032A361 003F8C78 802E6EC8 *      t/      >H*
0000000000A75BC0 +000040 00000020 80155438 80156DE0 00A7AC90 *      -      x      *
0000000000A75BD0 +000050 002EDA80 00ADEBA0 002EEA90 00000010 *      *      *      *
0000000000A75BE0 +000060 80A7DAA0 80A7DB18 00B2EF70 00A7DCE8 * x      x      x Y*
0000000000A75BF0 +000070 803A3030 803A3178 003A1FF8 000000C0 *      8      *      *
0000000000A75C00 +000080 00A7ABC0 00ADEC10 8016A668 800CC7A8 * x      w      Gy*
0000000000A75C10 +000090 000CB1B8 8016A6B8 00156040 40000000 *      w      -      *
0000000000A75C20 +0000A0 00E5C3C4 00317E60 C0C0FFFF FFACBFEF * VCD      =-      *
0000000000A75C30 +0000B0 81304780 C0D49140 80004780 C17258B0 *a      Mj      A      *
0000000000A75C40 +0000C0 80045820 C03858F0 C03C0CEF 58B0D044 *      0      *      *
0000000000A75C50 +0000D0 47F0C172 91308001 4770C172 91038067 * 0A j      A j      *
0000000000A75C60 +0000E0 4780C172 91108013 4710C172 41000000 * A j      A      *
0000000000A75C70 +0000F0 5810C040 58FB0858 50F00AF8 58F0C044 *      &0 8 0      *
0000000000A75C80 +000100 0CEF58F0 C0480CEF 1861D203 6018B858 *      0      /K -      *
0000000000A75C90 +000110 40006006 96806010 96FE6011 96026004 * - o - o - o -      *
0000000000A75CA0 +000120 50B0600C 5840801C 50406000 5060801C *& -      & - &-      *
0000000000A75CB0 +000130 5820C04C 58B08004 58F0098C 0CEF9610 *      <      0      o      *
0000000000A75CC0 +000140 80679640 806894FC 806794F7 80194530 * o      m      m7      *
0000000000A75CD0 +000150 C96EBF1F 80084780 C17294BF 101D9180 *I>      A m      j      *
0000000000A75CE0 +000160 101D4710 C16E9540 10124770 C1729608 *      A>n      A o      *
0000000000A75CF0 +000170 806858FD 00140DEF 00E5C3C4 00317E60 *      VCD      =-*
=====
CR=Upd CLEAR=Subset ==> _
2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=dis 7=bak 8=for
MR 0.0 02/21/06.052 02:30PM vmb.ent.nwie.net  a 30,26

```

## RST Panel – real storage display



```

Q - VMB
File Edit Font Transfer Macro Options Window Help
TRACK 4 USERS: HTTPD      **** RST      **** z64 V4.3++ 14:31:41 02/21/06
=====
Base address = 0000000000A75C2E      3G Real Storage
[ LOGICAL ]      Hex data      Ins      Operands (in hex)      EbcDic      E
0000000000A75C2E      BFEF8130      ICM      R14,B'1111',304(R8)      * a *
0000000000A75C32      4780C0D4      BZ       212(,R12)      * M *
0000000000A75C36      91408000      TM       0(R8),X'40'      * j *
0000000000A75C3A      4780C172      BZ       370(,R12)      * A *
0000000000A75C3E      58B08004      L        R11,4(,R8)      * *
0000000000A75C42      5820C038      L        R2,56(,R12)      * *
0000000000A75C46      58F0C03C      L        R15,60(,R12)      * 0 *
0000000000A75C4A      0CEF        BASSM    R14,R15      * *
0000000000A75C4C      58B0D044      L        R11,68(,R13)      * *
0000000000A75C50      47F0C172      B        370(,R12)      * 0A *
0000000000A75C54      91308001      TM       1(R8),X'30'      * j *
0000000000A75C58      4770C172      BNZ      370(,R12)      * A *
0000000000A75C5C      91038067      TM       103(R8),X'03'      * j *
0000000000A75C60      4780C172      BZ       370(,R12)      * A *
0000000000A75C64      91108013      TM       19(R8),X'10'      * j *
0000000000A75C68      4710C172      BO       370(,R12)      * A *
0000000000A75C6C      4100000D      LA       R0,13      * *
0000000000A75C70      5810C040      L        R1,64(,R12)      * *
0000000000A75C74      58FB0858      L        R15,2136(R11)      * *
0000000000A75C78      50F00AF8      ST       R15,2808      * &0 8 *
0000000000A75C7C      58F0C044      L        R15,68(,R12)      * 0 *
0000000000A75C80      0CEF        BASSM    R14,R15      * *
0000000000A75C82      58F0C048      L        R15,72(,R12)      * 0 *
0000000000A75C86      0CEF        BASSM    R14,R15      * *
=====
CR=Upd CLEAR=Subset ==> _
2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=dis 7=bak 8=for
MR 0.0 02/21/06.052 02:31PM vmb.ent.nwie.net a 30,26

```

## RST Panel – real storage disassembled



Get your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)



```

Q - VMB
File Edit Font Transfer Macro Options Window Help
TRACK 5 USERS: VINCENJT      ****      VST      ****      z64 V4.3++ 14:32:20      02/21/06
=====
Base= 000000000020000      Real address= 00000000B6955000
Vaddr      Offset      Hex      Ebcidic
000000000020000      000000      47F0F00C      E3D9D2E4      E2D94040      90ECD00C      * 00 TRKUSR      *
000000000020010      +000010      45F0F05C      FFFFFFFF      0000A6D0      80026D1C      * 00*      w      *
000000000020020      +000020      4002070C      00026D08      00000400      00065000      *      -      -      X      &      *
000000000020030      +000030      00066000      00000000      00E70EC0      00000000      *      -      -      X      *
000000000020040      +000040      00023D40      00022D40      90020B90      00022014      *      *      *      *      *
000000000020050      +000050      00021014      00EE1548      00E70EC0      50F0D008      *      *      X      &0      *
000000000020060      +000060      50D0F004      18DF41AD      080041AA      0800419A      *& 0      *
000000000020070      +000070      08004199      08009101      93C047E0      D07841F0      *      r      j      l      0*      *
000000000020080      +000080      000211FF      50F0AFC8      47F0AF1C      D5071008      *      &0      H      0      N      *
000000000020090      +000090      93CC4780      D0F4D507      10089074      4770D178      *l      4N      J      *
0000000000200A0      +0000A0      47F0D0F4      4510D0BC      E3E8D7D3      C9D54040      * 0 4      TYPLIN      *
0000000000200B0      +0000B0      010200B8      C2000017      E4C9C440      8885A740      *      B      UID hex      *
0000000000200C0      +0000C0      8481A381      4089A240      8995A581      93898400      *data is invalid      *
0000000000200D0      +0000D0      0ACA0002      00D647F0      D0F40700      4510D0EC      *      0 0 4      *
0000000000200E0      +0000E0      E3E8D7D3      C9D54040      010200F0      C200000F      *TYPLIN      0B      *
0000000000200F0      +0000F0      E4C9C440      89A240A3      96964093      96958700      *UID is too long      *
000000000020100      +000100      0ACA0002      01060700      4510D12E      E3E8D7D3      *      J TYPL*
000000000020110      +000110      C9D54040      0102011C      C2000025      E2A895A3      *IN      B      Synt*
000000000020120      +000120      81A74089      A27A40E3      D9C1C3D2      40A48984      *ax is: TRACK uid*
000000000020130      +000130      404CA283      99858595      6E404C4D      9697A3A2      * <screen> <(opts*
000000000020140      +000140      6E000ACA      00020148      4510D166      E3E8D7D3      *      J TYPL*
000000000020150      +000150      C9D54040      0102015C      C200001E      C6969940      *IN      *B      For      *
000000000020160      +000160      8485A381      8993A26B      4089A2A2      A4857A40      *details, issue:      *
000000000020170      +000170      C8C5D3D7      40E3D9C1      C3D20ACA      00020180      *HELP TRACK      *
=====
CR=Upd CLEAR=Subset ==> _
2=Auto 3=Quit 4=Prt 5=File      1=RST 9=VMD 10=VST 11=DEV 12=DBK      6=dis 7=bak 8=for
MR      0.0 02/21/06.052 02:32PM vmb.ent.nwie.net      a      30,26

```

## VST Panel – virtual storage display



Get your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)

```

Q - VMB
File Edit Font Transfer Macro Options Window Help
TRACK 5 USERS: VINCENJT      ****      VST      ****      z64 V4.3++ 14:46:56      02/21/06
=====
Base= 00000000002005C      Real address= 00000000B69505C
Vaddr      Hex data      Ins      Operands (in hex)      Ebcidc
00000000002005C      50F0D008      ST      R15,8(,R13)      * &0      *
000000000020060      50D0F004      ST      R13,4(,R15)      * & 0      *
000000000020064      18DF      LR      R13,R15      *      *
000000000020066      41AD0800      LA      R10,2048(R13)      *      *
00000000002006A      41AA0800      LA      R10,2048(R10)      *      *
00000000002006E      419A0800      LA      R9,2048(R10)      *      *
000000000020072      41990800      LA      R9,2048(R9)      *      *
000000000020076      910193C0      TM      960(R9),X'01'      * j l      *
00000000002007A      47E0D078      BNO     120(,R13)      *      *
00000000002007E      41F00002      LA      R15,2      * 0      *
000000000020082      11FF      LNR     R15,R15      *      *
000000000020084      50F0AFC8      ST      R15,4040(,R10)      * &0 H      *
000000000020088      47F0AF1C      B      3868(,R10)      * 0      *
00000000002008C      D507100893CC      CLC     8(8,R1),972(R9)      * N l      *
000000000020092      4780D0F4      BE      244(,R13)      *      4      *
000000000020096      D50710089074      CLC     8(8,R1),116(R9)      * N      *
00000000002009C      4770D178      BNE     376(,R13)      * J      *
0000000000200A0      47F0D0F4      B      244(,R13)      * 0 4      *
0000000000200A4      4510D0BC      BAL     R1,188(,R13)      *      *
0000000000200A8      E3E8      DC      X'E3E8'      * TY      *
0000000000200AA      D7D3C9D54040      XC      2517(212,R12),64(R4)      * PLIN      *
0000000000200B0      0102      UPT     *      *
0000000000200B2      00B8C2000017      DC      X'00B8C2000017'      * B      *
0000000000200B8      E4C9C440      DC      X'E4C9C440'      * UID      *
=====
CR=Upd CLEAR=Subset ==> _
2=Auto 3=Quit 4=Prt 5=File      1=RST 9=VMD 10=VST 11=DEV 12=DBK      6=dis 7=bak 8=for
MR 0.0 02/21/06.052 02:47PM vmb.ent.nwie.net      a 30,26

```

# VST Panel – virtual storage disassembled



Get your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)



```

Q - VMB
File Edit Font Transfer Macro Options Window Help
TRACK 6 USERS: LINRHT04      **** VST **** z64 V4.3++ 14:49:09 02/21/06
=====
Base= 0000000011FFFCB0 Real address= 00000000109BDCB0
Vaddr      Offset      Hex      Ascii
0000000011FFFCB0 000000 20303B0A 7D0A0A2F 2A3D3D3D 3D3D3D3D * 0; /*=====*
0000000011FFFCB0 +000010 3D3D3D3D 3D3D3D3D 3D3D3D3D 3D3D3D3D *=====*
0000000011FFFCB0 +000020 3D3D3D3D 3D3D3D3D 3D3D3D3D 3D3D3D3D *=====*
0000000011FFFCB0 +000030 3D3D3D3D 3D3D3D3D 3D3D3D3D 3D3D3D3D *=====*
0000000011FFFCB0 +000040 3D3D3D3D 3D2A2F0A 0A737461 74696320 *=====*/ static *
0000000011FFFCB0 +000050 696E7420 68735F73 65745F69 6F5F6D61 *int hs_set_io_ma*
0000000011FFFCB0 +000060 7028756E 7369676E 65642069 6E742073 *p(unsigned int s*
0000000011FFFCB0 +000070 6F636B2C 20737472 75637420 70636361 *ock, struct pcca*
0000000011FFFCB0 +000080 72645F69 6F5F6D61 70202A69 6F290A7B *rd_io_map *io) *
0000000011FFFCB0 +000090 0A202020 20096873 5F736F63 6B65745F * hs_socket *
0000000011FFFCB0 +0000A0 74202A73 70203D20 2668735F 736F636B *t *sp = &hs_sock*
0000000011FFFCB0 +0000B0 6574735B 736F636B 5D3B0A09 696E7420 *ets sock; int *
0000000011FFFCB0 +0000C0 6D617020 3D20696F 2D3E6D61 703B0A09 *map = io->map; *
0000000011FFFCB0 +0000D0 73747275 63742070 63636172 645F696F *struct pccard_io*
0000000011FFFCB0 +0000E0 5F6D6170 202A7369 6F3B0A09 70677072 *_map *sio; pgpr*
0000000011FFFCB0 +0000F0 6F745F74 2070726F 743B0A0A 20202020 *ot_t prot; *
0000000011FFFCB0 +000100 09445052 494E544B 28226873 5F736574 * DPRINTF("hs_set*
0000000011FFFCB0 +000110 5F696F5F 6D617020 736F636B 3D25642C *_io_map(sock=%d,*
0000000011FFFCB0 +000120 206D6170 3D25642C 20666C61 67733D30 * map=%d, flags=0*
0000000011FFFCB0 +000130 7825782C 20737065 65643D25 646E732C *x%x, speed=%dns,*
0000000011FFFCB0 +000140 20737461 72743D30 78253034 782C2073 * start=0x%04x, s*
0000000011FFFCB0 +000150 746F703D 30782530 3478295C 6E222C0A *top=0x%04x) n", *
0000000011FFFCB0 +000160 09202020 20736F63 6B2C206D 61702C20 * sock, map, *
0000000011FFFCB0 +000170 696F2D3E 666C6167 732C2069 6F2D3E73 *io->flags, io->s*
ASCII display is ON =====
CR=Upd CLEAR=Subset ==> _

2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=dis 7=bak 8=for
MR 0.0 02/21/06.052 02:49PM vmb.ent.nwie.net a 30,26

```

## VST Panel – virtual storage in ASCII



Get your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)



# Using TRACK

- Internal TRACK command
  - Track userid <command> <(<NEW> <DUMP fn>>
  - For example,
    - Track operator
    - Track pvm (new
    - Track pvm format nucon v0
    - Track pvm format nucon v0 (new
    - Track pvm con (new
    - Track pvm ret off
    - T pvm track rscs
    - Track pvm t rscs c
    - Track pvm aup
    - Track \* (new
    - Track = VMD



# Using TRACK



- The internal TRACK command adds the userid to TRACK along with the one(s) you are already TRACKing
  - The “new” option starts a new instance of the tracked user so you can toggle between two different panels for the same userid
  - Enter TRACK on the command line by itself to toggle through them all one-by-one
- FORMAT – another of many cool commands and very powerful/helpful
  - Allows you to display storage (real, virtual) as mapped by a DSECT





# Using TRACK - FORMAT

- Read the FORMAT HELP for all the details!
- FORMAT with CP DSECTs
  - You need to have access to MAINT's 193 disk for the MACLIBs
  - Usually best to specify the MACLIB explicitly
    - FORMAT VMDBK 0E8F0000 HCPOM1
- A couple of specific examples...
  - TRACK OPERATOR FORMAT NUCON V0
  - TRACK \* FORMAT VMDBK 00002000 HCPOM1
- FORMAT allows a “point and shoot” option (V4.2)
  - Type the FORMAT command you need using a \* as the address
  - Place your cursor on the address you want to use that is displayed on the panel
  - Tap Enter

**Ex:** FORMAT VMDBK \* HCPOM1 MACLIB



```

Q - VMB
File Edit Font Transfer Macro Options Window Help
TRACK 7 USERS: PVM      ****   FRM   ****   z64 V4.3++ 14:50:18   02/21/06
=====
[ LOGICAL ]      Off  NUCON      DSECT
                   &T      SETC 'Q'
                   &T      SETC 'A'
000000005682C000 000  IPLPSW      D 03EC000000045AE0 Initial program loading PSW
000000005682C008 008  IPLCCW1     D 00EED898B0045ABC Initial program loading CCW1
000000005682C010 010  IPLCCW2     D 00007AE800000600 Initial program loading CCW2
                                ORG IPLPSW
000000005682C000 000  RSTNPSW    D 03EC000000045AE0 Restart new PSW
000000005682C008 008  RSTOPSW    D 00EED898B0045ABC Restart old PSW
000000005682C010 010  ACMSCVT    F 00007AE8 Address of simulated OS CVT
000000005682C014 014  ASYSREF    F 00000600 Address of nucleus address tab
000000005682C018 018  EXTOPSW    D FF06100400023668 External old PSW
000000005682C020 020  SVCOPSW    D FFE400B850045B0A Supervisor call old PSW
000000005682C028 028  PGMOPSW    D 0000000000000000 Program old PSW
000000005682C030 030  MCKOPSW    D 030C30000003842E Machine-check old PSW
000000005682C038 038  IOOPSW     D FFE4000900045D4E Input/output old PSW
000000005682C040 040  CSW        D 00001AF00C000000 Channel Status Word
000000005682C048 048  CAW        F E0E01000 Channel Address Word
000000005682C04C 04C  NUCRSV1    F 00000000 Reserved for hardware use
000000005682C050 050  TIMER      F FFFF7600 Interval timer
000000005682C054 054  NUCRSV2    F 00000000 Reserved for hardware use
000000005682C058 058  EXTNPSW    D 0004000000022918 External new PSW
000000005682C060 060  SVCNPSW    D 00040000000227F0 Supervisor call new PSW
000000005682C068 068  PGMNPSW    D 0004000000024A00 Program new PSW
000000005682C070 070  MCKNPSW    D 00080000000F3ED70 Machine-check new PSW
000000005682C078 078  IONPSW     D 0004000000023280 Input/output new PSW
Block display is incomplete ... un-parsable statement found in DMSGPI   MACLIB
CR=Upd CLEAR=Subset ==> _

2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=Fnd 7=bak 8=for
MR 0.1 02/21/06.052 02:50PM vmb.ent.nwie.net  a 30,26

```

# FORMAT Panel – TRACK PVM FORMAT NUCON V0



ate your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)

```

Q - VMB
File Edit Font Transfer Macro Options Window Help
TRACK 1 USER : VINCENJT      ****   FRM   ****   z64 V4.3++ 14:51:39   02/21/06
=====
00000000000002200 200 VMDUSER C 000000000000 SYSTEM USER LOGON IDENTIFICATION
00000000000002208 208 VMDACTID C 000000000000 SYSTEM ACCOUNTING USER IDENTIFICATION
00000000000002210 210 VMDALGID C 000000000000 USERID CAUSING THIS USER'S LOG
00000000000002218 218 VMDACTNO C 000000000000 SYSTEM USER ACCOUNTING NUMBER
00000000000002220 220 VMDDIST C 000000000000 USER DISTRIBUTION CODE
00000000000002228 228 VMDGRPN C 000000000000 RACF ACI GROUP NAME
00000000000002230 230 VMDTODON F 000000000000 SESSION LOGON TOD, BITS 0-31
00000000000002234 234 VMDATODN F BE65D08F VALUE OF VMDTODON AT LAST 'ACH
00000000000002238 238 VMDATTIM F 7FFFFBCD VALUE OF VMDTTIME AT LAST 'ACH
00000000000002240 240 VMDAVTIM F 000000000000 VALUE OF VMDVTIME AT LAST 'ACH
00000000000002248 248 VMDADIST C 000000000000 Accounting DISTRIBUTION field
00000000000002250 250 VMDSIGCT F 000000000000 Count of SIGA instructions
00000000000002254 254 VMDCCSIO F 000000000000 Count of completed virtual I/O
00000000000002258 258 VMDACPGW F 000172D6 TOTAL NUMBER OF PAGE/SPOOL WRI
0000000000000225C 25C VMDACPGR F 000101E7 TOTAL NUMBER OF PAGE/SPOOL REA
00000000000002260 260 :L1 D 0000000000000000 RESERVED FOR IBM USE
00000000000002268 268 :L2 D 0000000000000000 RESERVED FOR IBM USE
00000000000002270 270 VMDLACTM F 000000000000 Last time active, for IND ACT
00000000000002278 278 VMDDIAST X 00 DIAGNOSE STATUS BYTE
* BITS DEFINED IN VMDDIAST
VMDDIA4C EQU X'80' DIAG4C WAS LAST ACCOUNT RECORD
VMDUDST EQU X'40' Indicate user spool distributi
00000000000002279 279 VMDACFL X 00 Accounting Flag byte.
* BITS DEFINED IN VMDACFL
VMDNETA EQU X'80' This indicates Network
=====
CR=Upd CLEAR=Subset ==> _
2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=Fnd 7=bak 8=for
MR 0.0 02/21/06.052 02:51PM vmb.ent.nwie.net a 30,26

```

# FORMAT Panel – TRACK \* FORMAT VMDBK 00002000 HCPOM1



te your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)



```

Q - VMB
File Edit Font Transfer Macro Options Window Help

TRACK 2 USERS: VINCENJ      ****   FRM   ****   z64 V4.3++ 14:56:12 02/21/06
=====
000000004E4A22EC 2EC VMDTRQDL F 00000000 DELAYED SLEEP OR LOGOFF TRQDK
000000004E4A22F0 2F0 VMDCTPWD X 00      DIAGNOSE LINK PASSWORD COUNT
000000004E4A22F1 2F1 VMDMLVL  X F4      MESSAGE RECEIVING LEVEL
* BITS DEFINED IN VMDMLVL
      VMDMSGON EQU X'80'      ON CONTROLS WHETHER MESSAGES SENT
      VMDWNGON EQU X'40'      ON CONTROLS WHETHER MESSAGES SENT
      VMDMCOE  EQU X'20'      ON CONTROLS ERROR MESSAGE DISPLAY
      VMDMTEX  EQU X'10'      ON CONTROLS ERROR MESSAGE DISPLAY
      VMDSPMSG EQU X'08'      CONTROLS WHETHER SPECIAL
      VMDMIMSG EQU X'04'      ON CONTROLS THE DISPLAY OF SELECT
      VMDMCHFG EQU X'01'      Message level set from system
000000004E4A22F2 2F2 VMDMIUCV X 00      'SET' command IUCV flags
* BITS DEFINED IN VMDMIUCV
      VMDMSGIU EQU X'80'      Indicates that MSG is set to
      VMDWNGIU EQU X'40'      Indicates that WNG is set to
      VMDEMSGI EQU X'20'      Indicates that EMSG is set to
      VMDSMSGI EQU X'08'      Indicates that SMSG is set to
      VMDIMSGI EQU X'04'      Indicates that IMSG is set to
      VMDPCCOI EQU X'02'      Indicates that CPCONIO is set
      VMDVMCOI EQU X'01'      Indicates that VMCONIO is set
000000004E4A22F3 2F3 VMDMSSFL X 00      Message System Service flags
* BITS DEFINED IN VMDMSSFL
      VMDMSSVP EQU X'80'      Indicates there is a valid pat
      VMDMSSCS EQU X'40'      Indicates that an IUCV "connec
      VMDMSAVP EQU X'20'      Indicates there is a valid pat
      VMDMSACS EQU X'10'      Indicates that connection
=====
CR=Upd CLEAR=Subset ==> _
2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=Fnd 7=bak 8=for
MR 0.0 02/21/06.052 02:56PM vmb.ent.nwie.net a 30,26

```

## FORMAT Panel – FORMAT mapping of flags



# Using TRACK

- There is so much more to TRACK
  - Most commands have a ton of options!
- Okay okay... just ONE more then you have to go to bed!
  - DEV – you can check on IO pendings or active
    - track tcpip dev class \* io pending
    - track tcpip dev class \* io active



J - VMB

File Edit Font Transfer Macro Options Window Help

```

TRACK 1 USER : TCPIP          ****  DEV  ****  z64 V4.0 12:38:55  07/17/03
=====
SPEC 06B5 CTCA          LDEV L003 3278          LDEV L004 3278          LDEV L005 3278
LDEV L006 3278          LDEV L007 3278          LDEV L008 3278          LDEV L009 3278
LDEV L00A 3278          LDEV L00B 3278          LDEV L00C 3278          LDEV L00D 3278
LDEV L00E 3278          LDEV L00F 3278          LDEV L010 3278          LDEV L011 3278
LDEV L012 3278          LDEV L013 3278          LDEV L014 3278          LDEV L015 3278
LDEV L016 3278          LDEV L017 3278          LDEV L018 3278          LDEV L019 3278
LDEV L01A 3278          LDEV L01B 3278          LDEV L01C 3278          LDEV L01D 3278
LDEV L01E 3278          LDEV L01F 3278          LDEV L020 3278          LDEV L021 3278
LDEV L022 3278          LDEV L023 3278          LDEV L024 3278          LDEV L025 3278
LDEV L026 3278          LDEV L027 3278          LDEV L028 3278          LDEV L029 3278
LDEV L02A 3278          LDEV L02B 3278          LDEV L02C 3278          LDEV L02D 3278
LDEV L02E 3278          LDEV L02F 3278          LDEV L030 3278          LDEV L031 3278
LDEV L032 3278          LDEV L033 3278          LDEV L034 3278          LDEV L035 3278
LDEV L036 3278          LDEV L037 3278          LDEV L038 3278          LDEV L039 3278
LDEV L03A 3278          LDEV L03B 3278          LDEV L03C 3278          LDEV L03D 3278
LDEV L03E 3278          LDEV L03F 3278          LDEV L040 3278          LDEV L041 3278
LDEV L042 3278          LDEV L043 3278          LDEV L044 3278          LDEV L045 3278
LDEV L046 3278          LDEV L047 3278          LDEV L048 3278          LDEV L049 3278
LDEV L04A 3278          LDEV L04B 3278          LDEV L04C 3278          LDEV L04D 3278
LDEV L04E 3278          LDEV L04F 3278          LDEV L050 3278          LDEV L051 3278
LDEV L052 3278          LDEV L053 3278          LDEV L054 3278          LDEV L055 3278
LDEV L056 3278          LDEV L057 3278          LDEV L058 3278          LDEV L059 3278
LDEV L05A 3278          LDEV L05B 3278          LDEV L05D 3278          LDEV L05E 3278
LDEV L05F 3278          LDEV L060 3278          LDEV L061 3278          LDEV L062 3278
LDEV L063 3278          LDEV L064 3278          LDEV L065 3278          LDEV L066 3278
LDEV L067 3278          LDEV L068 3278          LDEV L069 3278          LDEV L06A 3278
* MORE *=Pending interrupts on hilghted devices=(Chan= 1  Ctls= 1  Devs= 1
CR=Upd CLEAR=Subset ==> -
2=Auto 3=Quit 4=Prt 5=File 1=RST 9=VMD 10=VST 11=DEV 12=DBK 6=ByC 7=ByA 8=ByT

```

MB Thursday 07/17/2003.198 12:39PM vmb.ent.nwie.net a 30,26

## DEV Panel – showing pending interrupt device(s)



...te your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)



# Advanced TRACK features - Macros

- TRACK Macros
  - You can design your own macros to enhance how TRACK functions
  - Build your own “panels”
- Some of the included TRACK macros:
  - QIUCV displays IUCV paths for user, CP, or a specific CP system service – but this is now an internal panel!
  - STORMAP maps all virtual storage and shows allocated subpools
  - NUCXMAP lists all nucleus loaded extensions



# Advanced TRACK features - Macros



- TRACK Macro sub-commands:
  - **READSTRG** <H>address <flag> <length> <( VAR <var>>>  
Read virtual or real storage
  - **TRACKEE** <USER|VMDBK> <(VAR <var>>>  
Get the userid or VMDBK of the TRACKEd user
  - **REGS** <Gn|Rn Cn An Fn> <(VAR <var>>>  
Return the TRACKEd user's registers
  - **CMSG** string  
Write contents of string to TRACK command line
  - **NOTE** string  
Write contents of string to the console  
(use REXX Say instead)





# Advanced TRACK features - Macros

- A TRACK MACRO: MYVMD

```
/* Test the TRACK macro facility */
```

```
Numeric Digits 16
```

```
'TRACKEE VMDBK'
```

```
Say 'TRACKEE returned:' result
```

```
Parse Value Diag(8,'Q CPLEVEL') with system .
```

```
If system = 'z/VM'
```

```
Then vmduseroff = '200'
```

```
Else vmduseroff = '080'
```

```
me = d2x(x2d(result) + x2d(vmduseroff))
```

```
Say '... VMDUSER is located at:' me
```

```
'READSTRG H'me '8 (VAR VMDUSER'
```

```
Say 'VMDUSER is:' vmduser
```

```
vmduser = x2c(vmduser)
```

```
Say 'VMDUSER field for this VMDBK is "'vmduser'"'
```

```
Exit
```



# Advanced TRACK features - Macros

- Two ways to execute
  - TRACK \* MACRO MYVMD
    - Inits TRACK environment, calls MYVMD and exits TRACK – no panel is displayed
  - TRACK \* MYVMD
    - Inits TRACK, calls MYVMD and remains in TRACK panel
- Either MACRO MYVMD or just MYVMD can also be entered on the TRACK command line. The same actions will occur as above except for MACRO: If more than one userid is being TRACKed, only the current userid is dropped and you remain in the TRACK panel for the other userids.



# Advanced TRACK features - Macros

- Running MYVMD TRACK on my userid produces:

```
TRACKEE returned: 6CA00000
```

```
... VMDUSER is located at: 6CA00200
```

```
VMDUSER is: E5C9D5C3C5D5D140
```

```
VMDUSER field for this VMDBK is "VINCENJ "
```



# Advanced TRACK features – FILE opt



- New FILE option in TRACK z64 V4.2  
**TRACK userid track-parms ( FILE**
  - Saves the contents of the screen into a file on the A disk called “userid TRACKFIL” and then exits TRACK
  - No TRACK panel(s) are displayed
  - Data written is 60 lines by 80 LRECL and contains the 3270 data stream used to display the panel; **no** non-display character translations are done
  - Data is appended to the file if the file exists already
  - File is automatically CLOSED when TRACK exits



# Advanced TRACK features – FILE opt



- New FILE option – why?
  - What could you possibly do with this file?
  - Just imagine the possibilities...



http://zservices.nwie.net:84/~vincenj/track.wrkexec?cmd=operator - Web

File Edit View Favorites Tools Help Google

Address http://zservices.nwie.net:84/~vincenj/track.wrkexec?cmd=operator

TrackWeb! Cmd:   3270?

Complete RC 0

```

TRACK 1 USER : OPERATOR          ****   VMD   ****       z64 V4.2 10:26:27   02/02/05
-----
VMDBK @ 7814A000          Class   = ABCDEGMRS          Share= 10000  R
Logon= 12/09/04 22:14  Virtcpu = 012:27.15  Totcpu = 015:42.57   25  Devices
Storage=          32M      Account = *SERVC      Console= DISC
Last CP= SET          Locked= 1          Resident=263          WSS= 263
PSW= 030E0000 00F35500      CC = 0          Stat   = EC ENABLED  WAIT SUPR
CPUaddr= 00      #CPUs= 01      Mach= XA          Amode= 31-bit      370accom= ON
Sio= 3694521  Pr= 870336      Pun= 11737      Read   = 0          Dist = 3-25-02
Rstat=          Slist: 0B - Dormant since 10:26:20
Qstat=
Ostat= SYSOP IN-USERCT DISC
Com = XEDIT          Exec = LDEV          Mod = DMSWRS      Tran= EXECDROP
Ipl = IPL 190 PARM AUTOOCR
R0-7= 00000001 FF1989D8 00000001 00000003 80E6763C 00E67628 00E688BC 00E67528
R8-F= 00E69538 00F363B8 0000A000 00007A50 00F353B8 00003108 00F127EC 00F35532
-----

```

Done Local intranet

Make TRACK available via the Web!



ate your sessions evaluation online at [SHARE.org/AnaheimEval](http://SHARE.org/AnaheimEval)



# Keeping VM on TRACK!

- TRACK is a very powerful tool for the VM Systems Programmer
- Extremely handy for debugging virtual machine or system problems
- Makes displaying virtual and real storage/devices a snap
- Once you get used to it, navigating through and checking key areas in a userid or storage area for problems will become second nature
- Use it!



# Contact Info

Light travels faster than sound, that's why people seem bright until you hear them...



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