OpenVMS Utilities update

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DCL Products

Acne Healing System	AHA Oily and Acne Solution 8	AHA Revitalizing Cleanser 4	AHA Revitalizing Gel HP20	AHA Revitalizing Gel MP15
AHA Revitalizing Lotion 10	AHA Revitalizing Lotion HP20	AHA Revitalizing Lotion MP15	Alpha Beta Acne Gel Treatment	Beta Hydroxy Acne Cleanser
B-Prox 10 Wash	C Scape Serum	Clay Mint Mask	Dry Skin Hand & Body Lotion	Facial Moisturizing Cream
Glycolic Acid Pads 20%	Hair Repair Shampoo	High Potency Body Moisturizer	High Potency C Scape Serum 25	Hydrating Treatment Mask
Light Textured Moisturizer	Neutral Cleansing Bar	Non-Drying Cleansing Lotion	Nourishing Eye Gel	Oil-Free Ultra Light Hydrator
Platinum Series Balancing Cleanser	Platinum Series Essential Skin Protection SPF 30+	Platinum Series Eye Refining Matrix	Platinum Series Hydrating Serum	Platinum Series Skin Renewal Complex
Platinum Series Vitamin Infusion	Profoundly Effective A	Salicylic Acid Shampoo	Super Rich Eye Cream	T-Shampoo
Ultra Gentle Eye Cream	Wash Off Cleansing Lotion	Zoma Shampoo		

The Category is: **DCL**

Next Page

DCL has 38 items

Sort DCL results by: **Manufacturer ▲ / Price ▲ / Product**

Featured Products:

Show ALL Specials

Glytone
Acne Treatment Toner

Sale Price: $8.50
Reg. Price: $9.50

Skin Again

Agenda

- **Quick overview**
  - **V7.3-2 features**
  - **IA64 port**
- EDCL phase II
- V8.2 new features

Summary of V7.3-2 new features

- Resetting device counters
  - $ SET DEVICE/RESET=(ERROR,OPERATION)
- B2B support
  - SET PROC/UNITS=(BYTES,BLOCKS)
  - JPI$_UNITS
- Lexical functions
  - New shadowing item codes in $GETDVI
  - F$UNIQUE
  - F$DELTA_TIME
  - New (DCL only) F$GETSYI item codes
  - F$GETQUI (FILE_DID,FILE_DEVICE)

Summary of V7.3-2 new features

- Significant performance enhancements to COPY, SEARCH and the LINKER
- Support image sections up to 1GB (was 32MB)
- SHOW CLUSTER
- DIRECTORY/SELECT=SIZE=UNUSED
- VMSINSTAL no broadcast option
- TYPE/TAIL support records exceeding 512 bytes
- RECALL/ALL and RECALL/SEARCH
- EDCL phase I

Summary of V7.3-2 new features

- ***VMS732_DCL-V0200 TIMA kit should be installed on every system running V7.3-2***
  - Lexical function F$ENVIRONMENT returns wrong results in subroutines running in batch mode
  - ACCVIO while accessing the RECALL buffer
  - VMS732_DCL-V0300 will be shipped soon
    - We uncovered a bug in the symbol manipulation code
      - DCL loop will run ~30% faster

OpenVMS I64 port

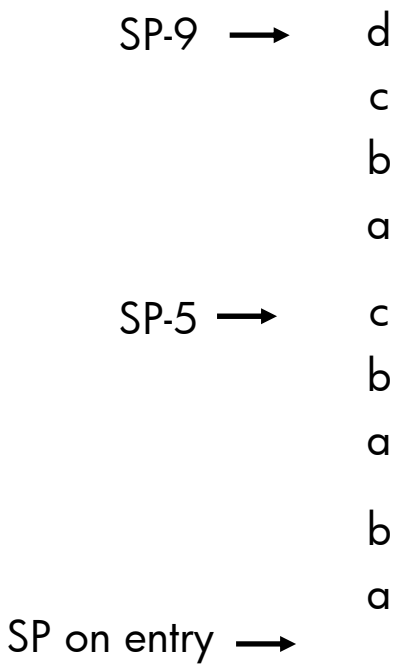
- Utilities port is done
- Very few issues seen during the port
- DCL changed to run two threads using common threading package
  - Ease context switch between user images and DCL supervisor mode processing
  - ALPHASUBS.MAR ported to IA64SUBS.S
- SYS$PAL_CHMS is called to change mode to supervisor
- Small tweak to LOGINOUT.EXE
  - Required for Multi step batch jobs (not supported in V8.0)

I64 port - Expression concatenation

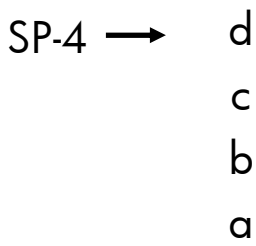
X = a + b + c + d

a="a", b="b", c="c", d="d"

Old Algorithm



New Algorithm



Agenda

- Quick overview of V7.3-2 features
- **EDCL phase II**
- V8.2 new features

EDCL phase I

- Command length increased to 4096 bytes
  - 8192 bytes using the hyphen sign
- Symbol size increased to 8192 bytes
  - Large symbols can now be displayed
- The Recall buffer was modified to support long commands
  - CLUE PROC/RECALL modified as well
- WRITE & READ buffers increased to support 8192 length records
- Supervisor stack increased to 128KB (was 32KB)
- **Full support in command procedures/interactive commands/programs**

EDCL phase I

- LIBRTL routines modified
  - LIB$SET_SYMBOL
  - LIB$GET_SYMBOL
  - LIB$GET_COMMAND
  - LIB$DO_COMMAND
  - LIB$GET_FOREIGN
- CRTL (argv,argc)

- The change is transparent to CLI$* routines
- TCP/IP and DECNET were modified to support large buffers
- Full support from Lexical functions
  - Cluster lexicals use 1024 bytes buffer to maintain compatibility
- Check your code for assumptions of command line length

Example

```
$ sym=" This is a very long symbol used to demo the new EDCL symbol length"
$ write sys$output f$length(sym)
67
$ long_sym = sym+sym+sym+sym+sym+sym+sym+sym+sym+sym
$ long_sym = long_sym + long_sym + long_sym + long_sym
$ write sys$output f$length(long_sym)
2680
$ show sym long_sym

  LONG_SYM = " This is a very long symbol used to demo the new EDCL symbol length This is a very long symbol used to demo the new ED
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```

EDCL phase II – Extended token support

- EDCL Phase II increases the token size from 255 bytes to 4000 bytes
- Extended tokens allow file specifications to exceed 255 characters
  - Need to use NAML blocks instead of NAM blocks
- DCL has been modified to support long file names
  - DCL OPEN
  - Command procedures
  - Redirection of SYS$OUTPUT
  - RECALL/OUTPUT, RECALL/INPUT
  - F$FILE
- Every product/Utility/Runtime library accepting file name as input is potentially impacted by this change
  - OpenVMS Guide for Supporting Extended DCL

EDCL phase II

- Extended token support is disabled by default
  - Minimize effect on applications
- System token size controlled by SYSGEN parameter DCL_CTLFLAGS
  - Bit 0 controls the spawn algorithm
  - Bit 1 controls large tokens, bit clear extended token support disabled
- Process token size :
  - $ SET PROCESS/TOKEN=EXTENDED | traditional
  - JPI$_TOKEN
  - SHOW PROCCES / TOKEN
- The token size may be toggled during the life of the process (traditional/extended) using the SET PROCESS command, no need to logout
- Public definitions for DCL command/token added to CLI$ROUTINES.H
- Shipping with V8.2

Agenda

- Quick overview of V7.3-2 features
- EDCL phase II
- **V8.2 new features**

All features available on both Alpha and IA64 unless stated differently

SEARCH

- Three new qualifiers has been added to the search utility
  - /WILDCARD_MATCHING
    - Support wildcard searches
  - /LIMIT
    - Limit the number of matches displayed
  - /SKIP
    - Skip the first n matches
- Let's look at few examples

```
IPL31> type test.txt
first line
second line
third line
fourth line
fifth line
sixth line
```

SEARCH……examples

Wildcards search

```
IPL31>  sea test.txt "*c%n*"
%SEARCH-I-NOMATCHES, no strings matched
IPL31>  sea test.txt "*c%n*"/wil
second line
```

Skip the first 3 matches and display only 2 matches

```
IPL31>  sea test.txt line/limit=2/skip=3
fourth line
fifth line
```

SEARCH……examples

The new qualifier may be used to type a file from the middle, Here is an example of typing the file starting from the 3rd line….

```
IPL31>  search test.txt/skip=3/match=nor
  "nonexistancestring"
fourth line
fifth line
sixth line
```

F$LICENSE

- Returns TRUE if the product is licensed to run on the current node
  - Supported only for DEC/CPQ/HP products
- On OpenVMS I64, the lexical function searches the Operating Environment database as well
- Used by VMSINSTAL.COM
  - On I64 logical names are not the way to determine PAK existence
- Additional items codes may be added in the future (units loaded…)

```
IPL31> show licen openvms-i64-mcoe

Active licenses on node IPL31:

------- Product ID --------    ---- Rating ----- -- Version --
Product            Producer    Units PPL   Activ Version Release    Termination
OPENVMS-I64-MCOE   HP             10  1     0      0.0  (none)      (none)
IPL31> write sys$output f$license("vmscluster")
TRUE
IPL31> write sys$output f$license("unknown")
FALSE
IPL31>
```

F$FID_TO_NAME

- Converts file id to file specification using LIB$FID_TO_NAME
- Accepts two arguments, device name and file id
  - The fid may be provided with or without brackets
- LIB$FID_TO_NAME has been modified to support wild operations

```
$ write sys$output f$fid_to_name("sys$sysdevice","(2901,33,0)")
DISK$BLUSKY_XA77:[VMS$COMMON.SYSEXE]SHOW.EXE;1

$ write sys$output f$fid("$1$dkc600","(9232,0,0)")
PEPTO:[GUY]LOGIN.COM;29

IPL31> write sys$output f$fid("sys$login",f$file("sys$login:sda.init","fid"))
PEPTO:[GUY]SDA.INIT;2
```

Better MULTIPATH support

- New lexical function F$MULTIPATH
  - **Functionality equivalent to SYS$DEVICE_PATH_SCAN**
  - **Returns the displayable pathname for a given device**
  - **Can be used to return all displayable paths**
  - **Currently accepts only one item code – MP_PATHNAME**
- Optional PATHNAME argument added to $GETDVI and F$GETDVI

```
$ write sys$output –
_ f$getdvi("$1$dga100","errcnt","PGB0.5000-1FE1-0000-0AF4")
0
```

SHOW SYSTEM/IMAGE

- The /IMAGE qualifier adds a call to JPI$_IMAGNAME to retrieve the name of the current image
- May be used on remote systems that know nothing about the new qualifier
  - SHOW SYSTEM/NODE=FOO /IMAGE
- May be combined with any existing qualifier
  - SHOW SYSTEM/IMAGE/INTER to get list of images being executed by all the interactive users on the system

SHOW SYSTEM/IMAGE

```
IPL31> show sys/image
OpenVMS XAAU-T3Z  on node IPL31  17-MAY-2004 10:36:18.28  Uptime  0 00:33:20
  Pid    Process Name    State  Pri      I/O       CPU       Page flts  Pages
23E00401 SWAPPER         HIB     16        0   0 00:00:06.26         0      0
23E00407 CLUSTER_SERVER  HIB     14       12   0 00:00:00.02       149    209
         $5$DKA0:[SYS0.SYSCOMMON.][SYSEXE]CSP.EXE;1
23E00408 SHADOW_SERVER   HIB      5        6   0 00:00:00.06       338    256
         $5$DKA0:[SYS0.SYSCOMMON.][SYSEXE]SHADOW_SERVER.EXE;1
23E00409 CONFIGURE       HIB      8       15   0 00:00:00.01       118    130
         $5$DKA0:[SYS0.SYSCOMMON.][SYSEXE]CONFIGURE.EXE;1
23E0040A USB$UCM_SERVER  HIB      4      156   0 00:00:00.31       490    493
         $5$DKA0:[SYS0.SYSCOMMON.][SYSEXE]USB$UCM_SERVER.EXE;1
23E0040B LANACP          HIB     14       59   0 00:00:00.10       418    265
         $5$DKA0:[SYS0.SYSCOMMON.][SYSEXE]LANACP.EXE;1
23E0040C FASTPATH_SERVER HIB     10        8   0 00:00:00.05       350    256
         $5$DKA0:[SYS0.SYSCOMMON.][SYSEXE]FASTPATH_SERVER.EXE;1
23E0040D IPCACP          HIB     10        9   0 00:00:00.02       121    173
         $5$DKA0:[SYS0.SYSCOMMON.][SYSEXE]IPCACP.EXE;1
23E0040E ERRFMT          HIB      7      121   0 00:00:00.12       364    418
         $5$DKA0:[SYS0.SYSCOMMON.][SYSEXE]ERRFMT.EXE;1
23E0040F CACHE_SERVER    HIB     16        2   0 00:00:00.01        94    128
         $5$DKA0:[SYS0.SYSCOMMON.][SYSEXE]FILESERV.EXE
23E00410 OPCOM           HIB      6       49   0 00:00:00.03       183    150
         $5$DKA0:[SYS0.SYSCOMMON.][SYSEXE]OPCOM.EXE
23E00411 AUDIT_SERVER    HIB      8       60   0 00:00:00.08       265    265
         $5$DKA0:[SYS0.SYSCOMMON.][SYSEXE]AUDIT_SERVER.EXE;1
23E00412 JOB_CONTROL     HIB      8       51   0 00:00:00.05       157    239
         $5$DKA0:[SYS0.SYSCOMMON.][SYSEXE]JBC$JOB_CONTROL.EXE;1
23E00414 QUEUE_MANAGER   HIB      8       80   0 00:00:00.07       244    338
```

DIRECTORY/SELECT=VERSION

- DIR/SELECT=VERSION=MIN=xxx
- DIR/SELECT=VERSION=MAX=yyy

$ dir/sele=ver=(min=75,max=80)

```
Directory SYS$SYSROOT:[SYSMGR]

DECW$SERVER_0_ERROR.LOG;77          DECW$SERVER_0_ERROR.LOG;76
OPERATOR.LOG;75

Total of 3 files.
```

- Useful tool for detecting files approaching the maximum version limit
- $ dir sys$sysdevice:[000000...]*.* /sele=ver=min=32000

SHOW FASTPATH

```
meat> show fastpath
Fast Path preferred CPUs on MEAT  1-OCT-2004 06:28:28.34
Compaq AlphaServer GS140 6/525 with 6 CPUs

Device:           Fastpath CPU:
EBA0                     7
EWA0                     8
EWB0                     7
EWC0                     6
EWD0                     5
EWE0                     9
FGA0                     9
PEA0                     6
PKA0                     8
PKB0                     7
PKC0                     6
PKD0                     5
PKE0                     4

OpenVMS TCP/IP is currently running on CPU 8
OpenVMS Lock Manager is currently running on CPU 5
```

SHOW FASTPATH

- Displays fastpath port assignment and usage
  - Supported qualifiers - /CPU and /OUT

```
meat> sh fast/cpu=(8,5)
Fast Path preferred CPUs on MEAT 17-MAY-2004 04:52:40.64
Compaq AlphaServer GS140 6/525 with 6 CPUs

Device:              Fastpath CPU:
PKA0                        8
PKD0                        5
EWA0                        8
EWD0                        5

OpenVMS TCP/IP is currently running on CPU 8
OpenVMS Lock Manager is currently running on CPU 5
```

Clusterwide logical names

- SHOW LOGICAL/CLUSTER
  - Displays all the logical names under the LNM$CLUSTER table.
  - The /full qualifier parses the clusterwide bit in LNMB$L_FLAGS
- DEFINE/CLUSTER_SYSTEM and ASSIGN/CLUSTER_SYSTEM
  - Defines a logical name in the LNM$SYSCLUSTER table
- DEASSGIN/CLUSTER_SYSTEM
  - Deassigns a logical name from the LNM$SYSCLUSTER table

COPY

- CTRL-T AST routine has been added to the copy utility
  - Displays the progress of a COPY operation

```
$ copy sys$system:sysdump.dmp [] /log
 Copying: SYS$SYSROOT:[SYSEXE]SYSDUMP.DMP;1 (0% completed)
          2032 blocks copied of 375777
 Copying: SYS$SYSROOT:[SYSEXE]SYSDUMP.DMP;1 (3% completed)
          11938 blocks copied of 375777
 Copying: SYS$SYSROOT:[SYSEXE]SYSDUMP.DMP;1 (8% completed)
          32766 blocks copied of 375777
```

- What about “estimated time left”?

DELETE / PURGE

- CTRL-T AST routine has been added to delete and purge
  - Displays the file currently being deleted
  - If /GRAND specified, the total number of blocks/bytes deleted are also displayed

```
IPL31> del SYS$SYSDEVICE:[TEST]*.*;*
IPL31::_TNA3: 15:19:20 DELETE    CPU=00:00:08.44 PF=1359 IO=31790 MEM=231
 Deleting: SYS$SYSDEVICE:[TEST]DECW$SERVER_MAIN.EXE;1
IPL31::_TNA3: 15:19:23 DELETE    CPU=00:00:08.53 PF=1367 IO=32118 MEM=239
 deleting: SYS$SYSDEVICE:[TEST]NICONFIG.EXE;1

IPL31> del SYS$SYSDEVICE:[TEST]*.*;*/grand
IPL31::_TNA3: 15:20:21 DELETE    CPU=00:00:10.35 PF=1628 IO=38407 MEM=207
 Deleting: SYS$SYSDEVICE:[TEST]CMS$DW.EXE;1
           75651 total blocks deleted
```

TRACEBACK

- Traceback information was not being displayed for resident images
  - Oracle blackmailed us to get it working ☺
- The new trace image available for V7.3-1 and V7.3-2
  - TIMA kits will be shipping soon
- With the completion of this change, Oracle will now support installing the main Oracle image resident
  - Requires a new Linker for V7.3-1
  - Approx. 30% performance enhancement for Oracle users
  - DISMNTSHR is now installed with /SHARE=ADDRESS

CREATE & DELETE /MAILBOX

- Support creating temporary and permanent mailboxes from DCL
- The following qualifiers are supported for creating a mailbox from DCL
  - /MAILBOX
  - /PERMANENT (default is NOPERMANENT)
  - /MESSAGE_SIZE
  - /BUFFER_SIZE
  - /PROTECTION
  - /LOG
- The /MAILBOX qualifier has been added to DELETE
  - DELETE/MAILBOX only marks the mailbox for deletion, the actual deletion of the device will occur when the reference count will drop to 0.

CREATE & DELETE /MAILBOX

```
$ create/mailbox/message=1024/buffer=1024/perm/log my_mbx
%CREATE-I-CREATED, MBA40: created
$ show log my_mbx
   "MY_MBX" = "MBA40:" (LNM$SYSTEM_TABLE)
$ show dev mba40/full

Device MBA40:, device type local memory mailbox, is online, record-oriented
    device, shareable, mailbox device.

    Error count                    0    Operations completed                0
    Owner process                 ""    Owner UIC                      [SYSTEM]
    Owner process ID        00000000    Dev Prot    S:RWPL,O:RWPL,G:RWPL,W:RWPL
    Reference count                0    Default buffer size                1024

$ del/mail mba40 /log
%DELETE-I-MBXDEL, Mailbox MBA40 has been marked for deletion
$ show dev mba40
%SYSTEM-W-NOSUCHDEV, no such device available
$
```

WRITE /NOWAIT

- The first time I tried writing to a mailbox, my process hanged (waiting for a reader)

- When the /NOWAIT qualifier is specified, the $PUT service uses the IO$M_NOW modifier
  - The operation completes immediately instead of synchronizing with another reader of the mailbox

- If the QIO server was still alive we could have implemented ICC and not only IPC in DCL ☺

OpenVMS V8.2 MONITOR

- **MONITOR changes for OpenVMS V8.2**
  - Did you know that MONITOR was written in VAX PL/I ?
  - Did you know that MONITOR is a VESTed image on OpenVMS Alpha – even on V7.3-2?
  - Did you know that too many users of MONITOR can impact system performance?

MONITOR Updates

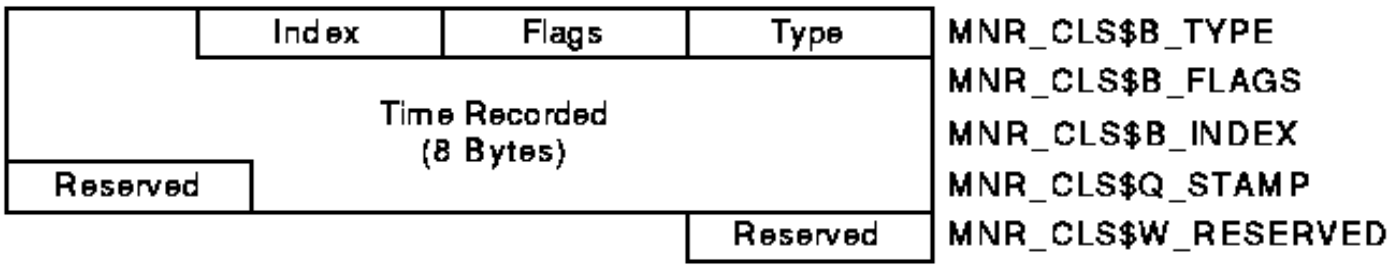
- The VAX PL/1 code has been converted to C.
  - Monitor now runs Native on both OpenVMS Alpha and IPF with V8.2
- A number of Performance enhancements have been made
- A few fixes have been made
  - seeing an ave higher than a max
  - seeing more than 100%
- Added a CUR display for MONITOR SYSTEM
  - Current processes used to be listed as “Other”

Monitor Performance Updates

- Better internal algorithms for collecting data
- Usage of the SCHED spinlock when collecting various data has been removed
- Heavy alignment faulting has been corrected
  - This performance change does have a compatibility impact

Monitor Data Alignment

- The internal data buffers and output file records used by MONITOR were designed when it was more important to save a byte
- A 13 byte header preceded each record



- This left the data following the header unaligned
- If the data consisted of 20 longwords, an alignment fault would often occur on each item

Alignment Updates

- To resolve this issue, the header has been increased to 16 bytes
- In addition, three other records had poor alignment and were corrected.
- These changes impact the output record format of monitor and the format of data passed to other nodes in the cluster
- The MONITOR utility on V8.2 can understand pre V8.2 formats when reading recorded data or when monitoring pre V8.2 nodes within the cluster.
- However, pre V8.2 nodes DO NOT understand the new format
  - Pre V8.2 nodes can not read recorded data files from V8.2 nodes
  - Pre V8.2 nodes can not interactivity monitor V8.2 nodes in the same cluster

MONITOR_CONVERT

- We have provided a utility that allows V8.2 format MONITOR data files to be converted back to the prior format.
- The image and source is available in SYS$EXAMPLES:
  - MONITOR_CONVERT.C
  - MONITOR_CONVERT.EXE
  - Usage:
    - $ define monitor_convert sys$examples:monitor_convert
    - $ mc monitor_convert <input-file> <output-file>

System Service Logging

- Mechanism to record information about system service activity for:
  - Exec and kernel mode services
  - Execlet and privileged shareable image services
  - a specific process
- Main goal is to aid in troubleshooting
- Information that's recorded
  - Service identification, Caller of the service request – image and offset, Access mode of requestor, Service arguments, Time stamp, & Completion status
- Display logged information via DCL command ANALYZE/SSL <file>

System Service Logging

```
IPL31> ana/ssl/stat

START  version: 1.1 process: 3720041f GUY              ! 7-JUL-2004 15:47:56.31
       username: GUY                               node: IPL31   platform: IA64
       buffer count: 2    size: 65024   start_flags:  00000003
```

Service	Count	User	Super	Exec	Kernel	Rate/sec
SYS$QIO	52	0	0	43	9	2.9
SYS$TRNLNM	47	0	10	37	0	2.6
SYS$CLRAST_INTERNAL	43	0	0	43	0	2.4
SYS$PAL_SWASTEN	42	0	0	42	0	2.3
SYS$DCLAST	22	0	0	22	0	1.2
SYS$RMS_GET	22	0	22	0	0	1.2
SYS$SYNCH_INT	22	0	22	0	0	1.2
SYS$GETDVI	21	0	11	10	0	1.2

SET / SHOW IMAGE

- SET IMAGE modifies or restores the image attributes of an OpenVMS ELF image file
  - /RESTORE – Restores the original image attributes
  - /SUCCESS – Modifies the image link completion code value to success
  - /FLAGS – image attribute flags to modify
    - CALL_DEBUG, DBG_IN_DSF, DBG_IN_IMG, EXE_INIT, IMGSTA, INITIALIZE, MAIN, MKTHREADS, NOP0BUFS, P0IMAGE, TBK_IN_DSF, TBK_IN_IMG, UPCALLS

```
IPL31> show image hello
Show Image Version 1.2                                  2-OCT-2004 13:00:46.70
$1$DKC600:[GUY]HELLO.EXE;11
This is an OpenVMS IA64 (Elf format) executable image file

Image Identification Information

                  Image name: HELLO
    Global Symbol Table name: HELLO
   Image file identification: V1.0
  Image build identification: <unavailable>
         Link identification: Linker I02-14
              Link Date/Time:  2-OCT-2004 12:48:03.39
             Patch Date/Time: Never
       Manipulation Date/Time:  2-OCT-2004 13:00:42.21
  Image Dynamic Data Version: 1.2

Image Completion Code Value: SUCCESS  State: Original

Image Link Flags state: Manipulated

     Current Image Flags        Original Link Flags
     -------------------        -------------------
     IMGSTA                     IMGSTA
     TBK_IN_IMG                 MAIN
                                TBK_IN_IMG

     Image Link Flag   Description
     ---------------   -------------------------------------
     IMGSTA          : Call SYS$IMGSTA
     MAIN            : Image has main transfer
     TBK_IN_IMG      : Traceback records in image file
```

General Enhancements

- When resetting the error count of a device, we now send a message to the operator log
- B2B support added to SHOW WORKING_SET and SHOW DEVICE/FULL
  - TSAVO> sh work

  Working Set (bytes) /Limit=1.77MB /Quota=4MB /Extent=256MB

  Adjustment enabled Authorized Quota=4MB Authorized Extent=256MB

- Performance enhancement in SHOW MEMORY
- /GRAND_TOTAL qualifier added to DELETE and PURGE

```
IPL31> del/grand hello.txt;*
%DELETE-I-TOTAL, 61 files deleted (274KB)
```

SHOW DEV/FULL

```
$ show dev dsa0/full

Disk DSA0:, device type Generic SCSI disk, is online, mounted, file-oriented
    device, shareable, available to cluster, error logging is enabled, device
    supports bitmaps (no bitmaps active).

    Error count                    0    Operations completed                52
    Owner process                  ""   Owner UIC                       [SYSTEM]
    Owner process ID         00000000   Dev Prot            S:RWPL,O:RWPL,G:R,W
    Reference count                1    Default buffer size                512
    Total size                 16.95GB  Sectors per track                  254
    Total cylinders               7001  Tracks per cylinder                 20
    Logical Volume Size        16.95GB  Expansion Size Limit             1.00TB

    Volume label          "MIKAXPSYS"   Relative volume number              0
    Cluster size                   9    Transaction count                   1
    Free space                 12.90GB  Maximum files allowed          419004
    Extend quantity                5    Mount count                         3
    Mount status              System    Cache name          "_$5$DKA0:XQPCACHE"
    Extent cache size             64    Maximum blocks in extent cache  2705832
    File ID cache size            64    Blocks in extent cache              0
    Quota cache size               0    Maximum buffers in FCP cache     2604
    Volume owner UIC           [1,1]    Vol Prot    S:RWCD,O:RWCD,G:RWCD,W:RWCD
```

General Enhancements

- OPEN/NOSHARE
  - Add the ability to open a file from DCL for "no sharing" Set FAB$M_NIL in FAB$B_SHR
- Allow the use of GMT timezones on VMS system
  - Also available with the latest TDF kits for V7.3-1 and V7.3-2
- SHOW DEVICE – Allow combining /MULTIPATH and /MOUNT

```
meat> show dev/multi/mount
Device                  Device           Error         Current
 Name                   Status           Count  Paths    path
$1$DGA3800:     (MEAT)  Mounted              0   2/ 2  PGA0.5000-1FE1-0011-B15D
$1$DGA3810:     (MEAT)  Mounted              0   2/ 2  PGA0.5000-1FE1-0011-B15D
```

General Enhancements

- The PATCH utility has been ported to Alpha and I64
  - Currently only absolute mode supported
  - On I64 the patching time is recorded in the image header or in the object header.
  - ANALYZE/IMAGE and SHOW IMAGE display the patch time
- Phantom process holding tape drive problem finally fixed.
  - The fix is also available in VMS732_MOUNT96-V0100
- BACKUP/PHYSICAL does not require disks to be identical in size.

Overflow of CPU time

- It takes approximately 10 month of CPU time to get the sign bit set in PHD$L_CPUTIM
- At this point SHOW PROC/ACC and SHOW SYSTEM will go crazy

```
IPL31> sho proc/id=53800128/acc
Accounting information:
 Elapsed CPU time:       18-NOV-1858 20:38:48.58
```

- We now support up to 500 days of CPU time
  - To go beyond this, the field will have to be expanded to a quadword.

Feedback…..

- Here is what we have in mind for future versions
  - Floating point and 64 bit support
  - User written lexical functions
  - Pipeless pipe
  - B2B input support
  - Multiple item codes support (in lexical functions)
  - Customized CTRL-T output

- What features you would like to be implemented in future release?


invent