

# OpenVMS Hints & Kinks

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Session 2406



# Audience

- ***This is a technical session***
- Target Audience:
  - OpenVMS Programmers
  - OpenVMS System Managers
- OpenVMS Familiarity is Assumed:
  - User Commands
  - System Management Commands
  - Programming Commands
- ***This session is a series of vignettes***

**First, the  
OpenVMS...**

**Hints...**

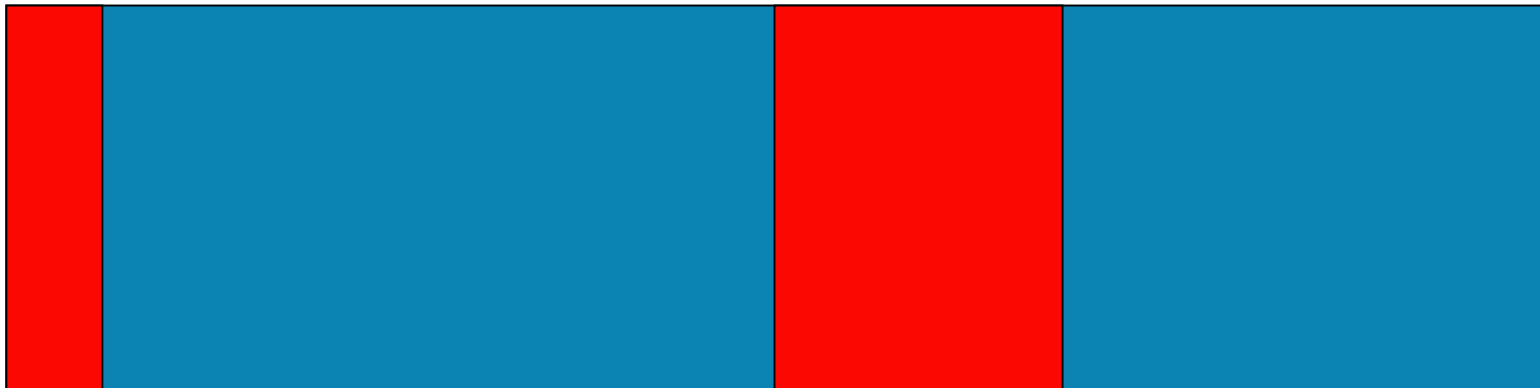


# OpenVMS I64 Bootstrap

- *Traditional OpenVMS System Disk Structure...*

Bootblock

Primary Bootstrap

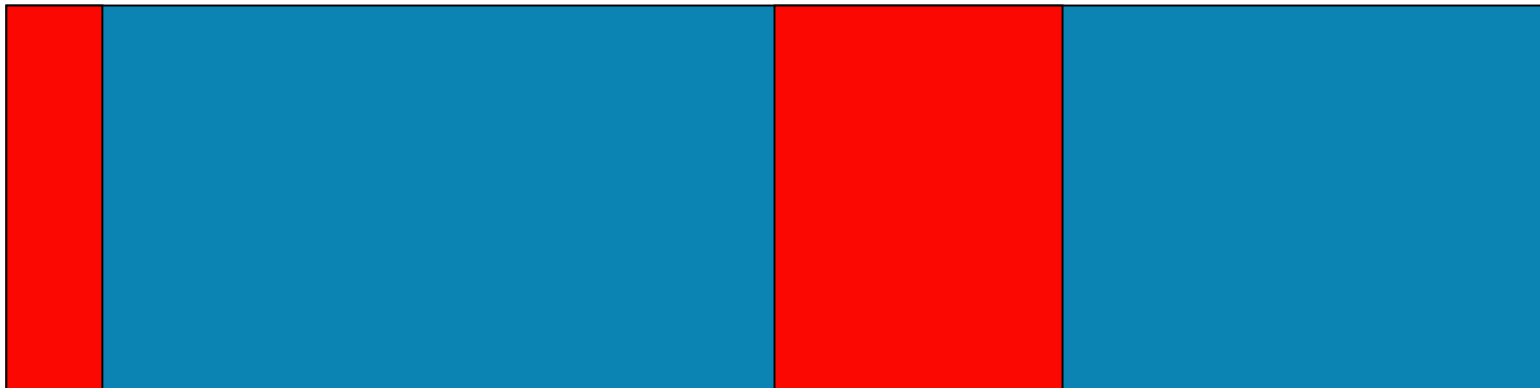


# OpenVMS I64 Bootstrap

- *EFI-Compatible OpenVMS System Disk Structure...*

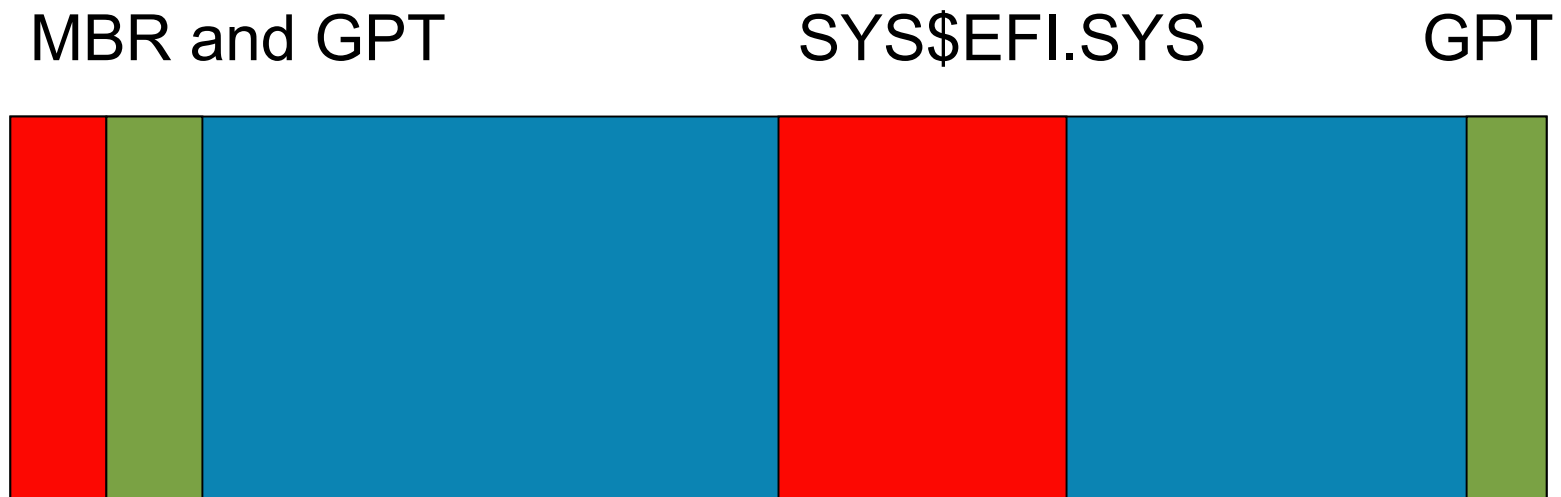
MBR

SYS\$EFI.SYS



# OpenVMS I64 Bootstrap

- *EFI-Compatible OpenVMS System Disk Structure...*



# Messages, Definitions

- GNM
  - SDML
    - DOCUMENT
  - MSG Message File
    - MESSAGE/SDL
    - SDL/LANGUAGE=  
SDML  
DOCUMENT

# Media Overwrites, Recovery

- *DLT and DDS media cannot generally be recovered (using standard drives and firmware) once overwritten...*
- Drive firmware does not allow access past EOT, and drives can silently erase data on media beyond EOT.
- Service vendors specializing in data recovery can potentially recover data from overwritten media.
- To avoid media overwrites should a tape be immediately (and erroneously) reloaded into the drive, consider:
  - /TAPE\_EXPIRATION="TODAY+7-"



# Shareable Images

- Shareable Image Cookbook
  - OpenVMS Ask The Wizard (ATW)
    - <http://www.hp.com/go/wizard/>
- Upward Compatibility
- Multiple Versions, Redirection

# Debugging

- ***Integrate Debugging***
- OpenVMS tools
- Application-specific tools
- CC/WARN=VERBOSE

# Debugging

- SS\$\_DEBUG signal
  - Counted ASCII string
- SS\$\_PRCDMP signal

# Debugging

- XQP Activity
  - SET WATCH/CLASS=cls FILE
    - ALL,NONE,etc
- Security Auditing
  - Use the privilege audits, alarms
- License PAK failures
  - LMF\$DISPLAY\_OPCOM\_MESSAGE

# Applications

- Descriptors
  - Static
  - Dynamic
  - 64-bit

# Applications

- ***VAX vs. Alpha vs. IA-64***
- Memory Page Size
  - VAX: Fixed Page Size
    - 0.5KB (512 bytes)
  - Alpha: Implementation-specific
    - 8KB to 64KB (8192 to 65536 bytes)
  - Itanium®: Implementation-specific
    - 8KB+ (8192+)

# Applications

- ***Ensure Completion***
- Condition Values
  - LBS/LBC
  - stsdef.h/\$stsdef
  - \$VMS\_STATUS\_SUCCESS(x)
- I/O Status Block (IOSB)
- Event Flags (EF)
  - efndef.h/\$efndef (V7.1 and later)

# Applications

- ***Signals***
- Centralize Error Handling
  - chfdef
  - stsdef
- VAX vs Alpha vs IA-64
  - VAX: Hardware
  - Alpha: Software
  - IA-64: Software



# Applications

- Compiler Code Generation Options
  - Architecture EV56
  - Tune Generic (or EV56)
  - FAQ
- Alpha AMASK/IMPLVER
  - Example code at ATW

# Applications

- ***Alpha, VAX, I64***
- Synchronization
  - ATW topics (1661), ...

# Applications

- *Alpha*
- Memory Caching
  - Memory Barriers
  - ATW Topics (1661), (2681), ...

# Applications

- ***VAX vs. Alpha***
- **LINKER**
  - SYS.STB vs. SYS\$BASE\_IMAGE
  - LINK/SYSEXEXE

# Applications

- ***VAX vs. Alpha***
- **LINKER and Shareable Images**
  - Transfer Vector vs. Linker Directive

# System Performance

- EXE\$GETSPI
  - I\_SPI.C
  - V7.3 and later, use \$GETRMI

# System Performance

- To dedicate 200MB memory for XFC caching
- Note that the MPW\_HILIMIT setting takes precedence over the allocation of memory for XFC cache.
- To reserve the memory, use the following:
  - SYSMAN> RESERVED\_MEMORY ADD - VCC\$MIN\_CACHE\_SIZE /ALLOCATE/NOPAGE\_TABLE-/NOZERO/NOGLOBAL/SIZE=200
  - Now set VCC\_CACHE\_SIZE to at least 200 MB in size.

# OpenVMS Hints & Kinks

- ***XFC...***
- Increments performance counters differently than VIOC
  - PMS\$GL\_DIRIO incremented for XFC cache hits
  - SDA extensions
    - XFC SHOW FILE/BRIEF
    - XFC SHOW VOLUME/BRIEF



# OpenVMS Hints & Kinks

- ***XRMS Indexed Files and EOF...***
- The End Of File (EOF) handling is subtle on indexed files...
  - The EBK value indicates the last block written, and not the actual EOF
  - EBK is updated for record-oriented extends, but not for block-mode extends
  - There are tools that depend on this EBK behaviour

# OpenVMS Hints & Kinks

- ***Alpha SRM Console...***
- SRM Console V6.3 and later have SET PROMPT
- P00>>> set prompt "\_foo>"
- P00\_foo>

# Kitting

- ***PCSI v VMSINSTAL***
- Choice of Tools
- Installation v Configuration

# Application Licensing

- ***Generating License PAKs***
- DSPP offers (free) PAK generator (PAKGEN)
- PAKGEN integrated in OpenVMS V7.2 and later

# Application Licensing

- ***C Version Prefixing***
- C Compiler can be sensitive to the OpenVMS version, and will not prefix symbols in ECO kits, but not previously known to the release. (*This behavior has changed back in current releases.*)

**And now, the  
OpenVMS...**

**Kinks...**



# OpenVMS Hints & Kinks

- ***BACKUP/IGNORE=INTERLOCK...***
- This command does ***NOT*** provide what most folks expect...
  - Silent corruptions are possible
  - Modification dates can (will) be wrong
- *The ignored interlocks were implemented for a reason...*
- *See the FAQ for related information*

# OpenVMS Hints & Kinks

- ***Core System Diagnostic Tools...***
- Please install
  - AMDS or...
  - Availability Manager
- Ensure you have the current ECO



# OpenVMS Hints & Kinks

- *Kinks in IP Printing, Third-party Printers...*
- DCPS
- TCP/IP
  - ATW topics (1020)...

# OpenVMS Hints & Kinks

- ***XFC...***
- Extended File Caching
  - Available in V7.3 and later
  - XFC V2.0 ECO for OpenVMS Alpha V7.3
    - Please install the ECO, or please set VCC\_FLAGS to one (1)

# OpenVMS Hints & Kinks

- ***XFC Revision and Modification Dates***
- Cached in-memory with XFC, updated values written on file close
  - REVDATE will return later of FCB\$Q\_MODDDATE
  - or the file header's Flx\$Q\_REVDATE
  - Related Commands:
    - Use DUMP/HEADER to show the on-disk value
    - SDA shows the FCB\$Q\_MODDDATE value
    - BACKUP/IGNORE=INTERLOCK

# OpenVMS Hints & Kinks

- ***VD64 (VDDRIVER) Virtual Disk Freeware...***
- Please upgrade to current VD64 kit, or to LD
  - VD64 revisions prior to August contain latent locking bug
  - Can trigger OpenVMS crashes, hangs.
  - Common with XFC, can also be shown by VIOC
  - INVEXCEPTN IOC\_STD\$REQCOM\_C+00198

# OpenVMS Hints & Kinks

- ***V7.3-1 SHOW DEVICE scaling...***
- Blocks display now self-scales
  - Or define SHOW\$OLD\_BLOCKS\_DISPLAY

# OpenVMS Hints & Kinks

- ***Kinks known in HSJ80...***
- HSJ80 block comparison failure
  - Adversely effects volume shadowing
  - upgrade to current firmware

# OpenVMS Hints & Kinks

- ***Shadowing Kinks...***
- Very conservative I/O (greatly) slows merge
  - SHAD\$MERGE\_DELAY\_FACTOR 1000
  - Also: ...DELAY\_FACTOR\_DSAnnn
  - Dynamic

# OpenVMS Hints & Kinks

- ***Shadowing Kinks...***
- System Dump files are written to one shadowset member
  - See FW4 CLUSTER tool COPY\_SHADOW\_DUMP
  - SDA on V7.3-1 and later can find the proper volume



# OpenVMS Hints & Kinks

- *Kernel Change in V7.3-1...*
- SPAWN process name algorithm changed!
- Kernel TQE linked list becomes a tree

# OpenVMS Hints & Kinks

- ***V7.3-1 ECO Kits Available, or In Progress...***
  - Spooled Devices
  - NFS (TCP/IP V5.3)
  - AMDS and Availability Manager

# OpenVMS Hints & Kinks

- ***V7.3 and ECO Kits...***
- *ECO rollback support*
  - PRODUCT INSTALL/SAVE

# OpenVMS Hints & Kinks

- ***V7.3 and ECO Kits...***
- ***Please read the cover letter!***
  - SYS\$UPDATE:VMS\$REMEDIAL\*.TXT
  - Key files can be *deleted* during V7.3 upgrade
  - If all else fails, apply the upgrade again!

# OpenVMS Hints & Kinks

- ***V7.3 PCSI Kits From Older OpenVMS...***
- To examine newer kits on older releases...
  - Boot OpenVMS V7.3 kit
  - Redirect to newer PCSI images
    - DEFINE pcsi\$main ddcu:[dir]PCSI\$MAIN
    - DEFINE pcsi\$shr ddcu:[dir]PCSI\$SHR
    - SET COMMAND ddcu:[dir]PCSI.CLD
- Do not modify any existing (old) products database with the newer PCSI tool

# OpenVMS Hints & Kinks

- ***Kinks discovered in OpenVMS V7.2...***
- latent bug in older versions of zip was triggered
  - Get new zip via Freeware V5.0 kit or website

# OpenVMS Hints & Kinks

- ***New Graphics Controller Support...***
- ***Get GRAPHICS ECO Kit...***
- Radeon 7500
- 3DLabs Oyxgen VX1 Graphics
  - Pause screen system interrupt loading bug found on V7.2-1 is fixed in current GRAPHICS ECO
- PowerStorm 300, PowerStorm 350
- ELSA GLoria Synergy (4D10)

# OpenVMS Hints & Kinks

- ***LAN Controller Negotiation...***
- "Beware hubs set to auto-negotiate or for full-duplex 10Mbit ethernet, as these are causing errors with the newer PEDRIVER support with the updated multi-path LAN support. 10Mbit must be half-dup, and auto-negotiation is not supported prior to later DE500 controllers."



# OpenVMS Hints & Kinks

- ***DECwindows Screen Saver Oddities..***
- The screen saver restarts the display every three minutes even if only one screen saver is selected, and this can increase accounting file activity
  - Increase the (default) three minute value

# Where to go for help?

**<http://www.hp.com/go/openvms/>  
Roadmaps, Documentation, Books**

**<http://www.hp.com/go/openvms/faq/>  
Frequently Asked Questions**

**<http://www.hp.com/go/openvms/wizard/>  
Ask The Wizard (and wizard.zip)**

**<http://www.hp.com/go/openvms/freeware/>  
OpenvMS Freeware**

# OpenVMS Hints & Kinks

## OpenVMS Technical Symposium



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