




Errlog-Analyse unter OpenVMS

DECUS IT-Symposium
VMS 3G01

Volker.Halle@invenate.de
07-APR-2005



Inhalt

- ▶ OpenVMS Error Logging
- ▶ Tools zur Errlog-Analyse
 - ANALYZE/ERROR
 - VAXsim
 - DECevent (DIAGNOSE)
 - WEBES SEA (CA)
 - ELV - Error Log Viewer (V7.3-2)

OpenVMS Error Logging

- ▶ Error Log Buffers
 - ERRORLOGBUFFERS * ERLBUFFERPAGES
 - allokiert beim OpenVMS System Init

- ▶ Error Log Messages
 - Operating System (Warm Start/Cold Start, Bugchecks, Machine Checks, Memory/CPU Errors, Mount/Dismount)
 - Device Driver
 - \$SNDERR system service
 - Time stamp

OpenVMS Error Logging

- ▶ ERRFMT Prozess
 - detached Process
 - schreibt Error-Messages in SYS\$ERRORLOG:ERRLOG.SYS
 - schreibt Time-Stamp (alle 10 Minuten)
Update Time-Stamp, falls letzte Error-Message =
Timestamp

- ▶ Error Log Mailbox
 - (unsupported) System Service \$DERLMB
 - Realtime Error Message Notification

OpenVMS Error Logging

- ▶ **SYS\$SYSTEM:SYS\$ERRLOG.DMP**
 - seit OpenVMS Alpha V7.1
 - erzeugt/modifiziert durch @SYS\$UPDATE:AUTOGEN
 - ▶ Groesse = ERRORLOGBUFFERS * ERLBUFFERPAGES + 2
 - aktuelle Error Log Buffers zum Crash/Shutdown-Zeitpunkt
 - wird geschrieben beim Crash/Shutdown
 - ▶ vor Schreiben von SYSDUMP.DMP
 - ▶ immer auf System-Platte (auch bei DOSD)
 - ▶ bei Shadowsets: auf alle Source Member (seit V7.3-1)
 - ▶ Zugriffsversuch auf System-Platte ueber BOOTED_DEV, danach ueber gueltige Entries in DUMP_DEV
 - ▶ **WICHTIG: Path-Definitionen in DUMP_DEV**

OpenVMS Error Logging

- ▶ **SYS\$SYSTEM:SYS\$ERRLOG.DMP**
 - gelesen beim Boot (SYSINIT)
 - falls SYS\$ERRLOG.DMP nicht existiert:
 - ▶ SYS\$SYSTEM:SYSDUMP.DMP
 - ▶ SYS\$SYSTEM:PAGEFILE.SYS
 - Ausgabe der Errlog Message durch ERRFMT in SYS\$ERRORLOG:ERRLOG.SYS

OpenVMS Error Logging

- ▶ Neues ERRLOG.SYS erzeugen
 - kleinere Dateien beschleunigen Analyse/Translation
 - z.B. taeglich/woechentlich/monatlich
- ▶ RENAME SYS\$ERRORLOG:ERRLOG.SYS ERRLOG.OLD
 - alte Dateien archivieren und Purgen
- ▶ Neues ERRLOG.SYS wird automatisch erzeugt beim naechsten Error oder Timestamp

OpenVMS Error Logging

- ▶ Errorlog Entries aus Crashdump extrahieren
 - \$ ANAL/CRASH SYS\$SYSTEM:SYSDUMP.DMP
 - SDA> CLUE ERRLOG
 - Dumpfile Errorlog Entry Information:
 -

Sequence	Date	Time	Error Message Type	(neu seit V7.3-1)
8100	25-MAY-2003	00:07:06.78	Timestamp Entry	
7833	23-MAY-2003	03:46:48.23	Volume Dismount	
7810	23-MAY-2003	00:12:07.68	Volume Mount	
6852	16-MAY-2003	15:32:00.03	Device Error	
8101	25-MAY-2003	00:09:22.44	* Crash Entry	

 - Config Entry and Errlog Entries written to CLUE\$ERRLOG.SYS file, use COMPAQ Analyze or DECEvent to analyze.

OpenVMS Error Logging

- ▶ FRU Configuration Entry aus Crashdump extrahieren
 - FRU = Field Replacable Unit

\$ ANAL/CRASH SYS\$SYSTEM:SYSDUMP.DMP

SDA> CLUE FRU

FRU Table written to CLUE\$FRU.SYS file, use COMPAQ Analyze or DECEvent to analyze.

SDA> Exit

\$ diagnose clue\$fru.sys

Tools zur Errlog-Analyse

Tool	Translation (bit-to-text)	Analysis	Notification
ANAL/ERR	ja	nein	nein
VAXsim	nein	nur RA70,RA80,RA81, RA82 (License)	ja
DECEvent	ja	ja (License)	ja
SEA (WEBES)	ja	ja	ja
ELV	ja	nein	nein

Errorlog-Analyse unter OpenVMS

Die alten Tools:

ANALYZE/ERROR_LOG

und

VAXsim

ANALYZE/ERROR_LOG

- ▶ Bestandteil von OpenVMS VAX und OpenVMS Alpha
- ▶ Neuer Errorlog Header (Common Event Header) ab OpenVMS Alpha V7.1-2
- ▶ Fehlermeldung (nur OpenVMS Alpha ab V7.1-2):
%ERF-F-CEHFND, New header format found. Install DECEvent and run conversion utility

ANALYZE/ERROR_LOG

DECEvent Conversion Utility:

```
$ MCR DECEVENT_CVT_CEF -  
  sys$errorlog:errlog.sys  errlog.cvt
```

```
$ ANAL/ERR errlog.cvt
```

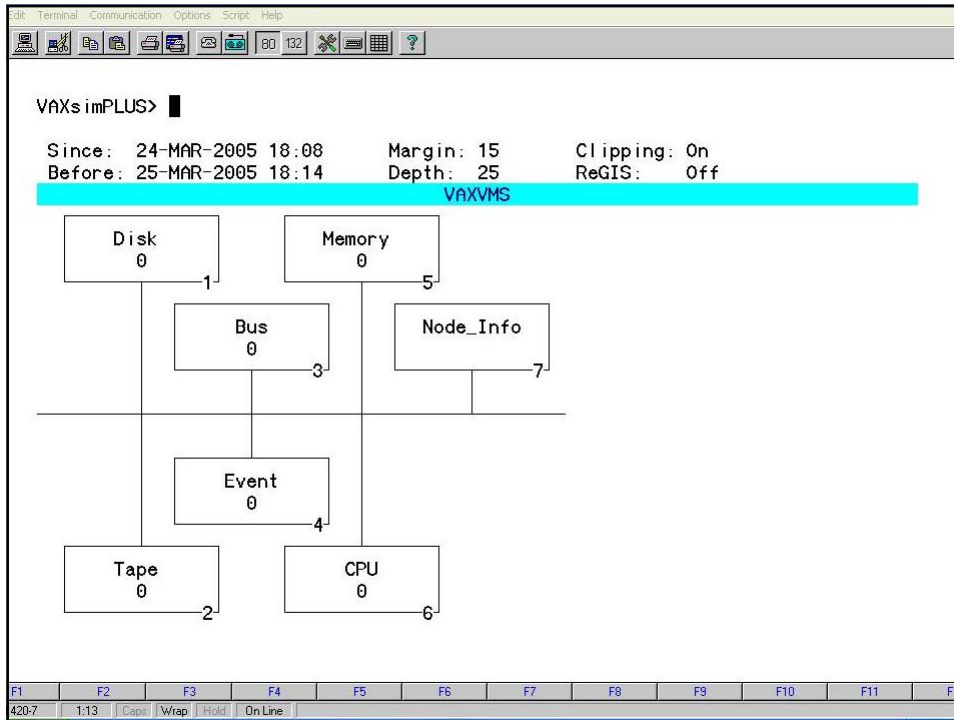
oder besser gleich DECEvent benutzen (\$ DIAGNOSE)

VAXsim

VAXsim - SDD (Symptom Directed Diagnosis)

- ▶ Released in 1989
- ▶ hauptsaechlich Ueberwachung auf Plattenfehler
- ▶ automatisches Shadowing

- ▶ VAXsim Monitor mit Anzeige Error Counter fuer verschiedene Error-Klassen



The slide features the **invenate** logo in the top right corner, with the tagline "Business & IT Consulting". The main title is "Errorlog-Analyse unter OpenVMS" in blue text. Below the title, it says "Die Service Tools:" followed by "DECevent" and "und WEBES / SEA" in large blue font.

DECevent

aktuelle Version: DECevent V3.4 - retired

- ▶ OpenVMS VAX (supported bis V6.2)
- ▶ OpenVMS Alpha (supported bis V7.3)
- ▶ laeuft auch auf hoeheren Versionen

- ▶ DECEVENT-Lizenz (PAK) fuer Analysis und Notification

DECevent

- ▶ Kits und Documentation
- ▶ URL: Analysis Service Tools
<http://h18023.www1.hp.com/support/svctools/decevent/index.html>
aeltere Versionen auf OpenVMS CD, z.B. [DECEVENT_029.KIT]
oder Service Tools CD (Compaq System Tools CD)
- ▶ ENP – Event Notification Program
 - DECEVENT_ENP_ALPHA.EXE und DECEVENT_ENP_VAX.EXE (anfordern bei HP Service Center)
 - Notification: DECevent -> ENP -> OSEM -> ISEE ->HP
 - HP Deutschland: 6 ISEE Deployment Engineers

DECevent

Supported Options

- ▶ OpenVMS VAX Hardware Support
 - Analysis und Notification RAXx und HSD/HSJ/HSZ
 - Translation VAX 6000 bis VAX 10000
 - hauptsaechlich StorageWorks Products
- ▶ OpenVMS Alpha Hardware Support
 - Analysis und Notification bis AlphaServer 8400 EV5
 - Translation bis AlphaServer GS140 6/xxx
- ▶ Details siehe Release Notes Appendix A und B

DECevent

Installation und Startup

- vor Upgrade: alte Version de-installieren mit
@SYS\$MANAGER:DECEVENT\$DEINSTAL
- Installation in jede Root [SYSn] notwendig
@SYS\$UPDATE:VMSINSTAL DIAA034 bzw. DIAV034
- @SYS\$STARTUP:DECEVENT\$STARTUP
- @SYS\$STARTUP:DECEVENT\$SHUTDOWN

DECevent

Nach OpenVMS Installation/Upgrade:

\$ DIAGNOSE [params]

%DIA-E-NOINSTAL, DIAGNOSE has not been installed on this system

- ▶ DECEvent muss neu installiert werden nach jedem VMS Upgrade.

DECevent

Komponenten

- detached Prozess: DECEvent_NODE
automatische Analyse und Notification (via Mail)
gueltiger DECEVENT License-PAK notwendig
neue PAKs (Laufzeit 1 Jahr) ueber Service-Center

- \$ DIAGNOSE Befehl

CLI -> \$ DIAG/INTERACTIVE

GUI -> \$ DIAG/INTERFACE=DECWINDOWS

DECevent

- ▶ Manuelle Bit-to-Text Translation
 - falls DECEvent_NODE Prozess laeuft, vorher stoppen mit
\$ DIAGNOSE SHUTDOWN node

\$ DIAGNOSE /SINCE filename

\$ DIAGNOSE/INTERACTIVE

DIA> /TRANSLATE /SINCE filename

Default filename: SYS\$ERRORLOG:ERRLOG.SYS

DECevent

Manuelle Analyse


- falls DECEvent_NODE Prozess laeuft, vorher stoppen mit
\$ DIAGNOSE SHUTDOWN node

\$ DIAGNOSE/ANALYZE filename

\$DIAGNOSE/INTERACTIVE

DIA> /ANALYZE filename

Default filename: SYS\$ERRORLOG:ERRLOG.SYS



DECevent

\$ diag/anal/sin


DECevent V3.4

The optional, licensed, software to perform analysis and/or notification is enabled.

<...>

- No Conclusions Available -

DECevent is not able to provide trouble shooting recommendations based on the data included in the input file.




DECevent

\$ diag/translate/sin

DECevent V3.4

**** V3.4 ***** ENTRY 1605 *****

Logging OS	1. OpenVMS
System Architecture	2. Alpha
OS version	V7.3-1
Event sequence number	32035.
Timestamp of occurrence	06-APR-2004 18:23:24
Time since reboot	27 Day(s) 2:18:46
Host name	MUN01
System Model	AlphaServer 4100 5/400 4MB
Entry Type	38. Time Stamp Entry
SWI Minor class	7. Timestamp



DECevent

```
$ DIAGNOSE/SUMMARY/SINCE=dd-mmm-yyyy
$ diagnose /since=1-jan-2004:00:00:00/summ
DECevent V3.4
SUMMARY OF ALL ENTRIES LOGGED ON NODE MUN01
unknown major class
  Timestamp           73.
  SCSI                160.
  MSCP                177.
  Volume mount       133.
  Volume dismount    108.
  System configuration 6.
  Crash Re-start     6.
  System startup      6.

DATE OF EARLIEST ENTRY  28-JAN-2004 20:16:09
DATE OF LATEST ENTRY   06-APR-2004 19:03:24
```



DECevent

Binary Errlog Extract:

```
$ DIAGNOSE/BINARY=file.bin /SINCE=.../BEFORE=...
```

Note: wenn file.bin mit WEBES/SEA/CA analysiert werden soll, muss ein FRU/CONFIGURATION Entry enthalten sein, d.h. mindestens ein System Startup

weitere Befehle:

```
$ DIAGNOSE/INTERACTIVE
DIA> help additional_commands
```

SEA - System Event Analyzer

- ▶ Bestandteil von WEBES (WEBased Enterprise Services)
- ▶ vormals CA (Compaq Analyze)
- ▶ aktuelle Version: WEBES V4.4 seit 20-JAN-2005

- ▶ Download Kits und Dokumentation:

<http://h18000.www1.hp.com/support/svctools/>

(aeltere Versionen auf Compaq System Tools CD)

SEA - System Event Analyzer

- ▶ OpenVMS Alpha V7.2-2 oder hoeher + aktuelle Patches
- ▶ Service Obligation (Eingabe der Serien-Nr. und Ansprechpartner etc. bei der Installation - Laufzeit 1 Jahr)

Befehl: \$ desta servob ...

- ▶ Supported Platforms ab AlphaServer DS10 und GS80
- ▶ Supported IO Controller: HSG, EVA, MSA1000
- ▶ Installation: siehe Installation Guide
 - Installation auf COMMON (auch non-system) Disk ist moeglich

SEA - System Event Analyzer

Komponenten

- ▶ Detached Prozesse:
 - DESTA Director
 - WCCproxy daemon
 - CA.n.n.n.n Subprozesse
 - @DESTA\$STARTUP (SYSMAN)
- ▶ SEA Command Line Interface
 - \$ WSEA command (vormal: \$ CA command)
- ▶ SEA WEB Interface
 - <http://hostname:7902>

SEA - System Event Analyzer

Notification

werden gesendet, wenn Automatic Analysis einen Problem Report erzeugt hat

- ▶ SMTP Mail zum lokalen User (Info und Service Events)
- ▶ ISEE (Instant Support Enterprise Edition)
- ▶ OSEM (Open Service Event Manager)
- ▶ SICL (System Initiated Call Logging) = DSNlink
- ▶ PRS (Proactive Remote Service) = QSAP

SEA - System Event Analyzer

- ▶ CPU Indictment (ab V7.3-2, DS25 oder hoeher)
- ▶ WEBES SEA V4.2 oder hoeher
- ▶ SYS\$MANAGER:SYS\$INDICTMENT_POLICY.COM
 - Logicals:
 - ▶ SYS\$INDICT_START 1
 - ▶ SYS\$INDICT_ALLOW_CPUS 1
- ▶ automatisches Stoppen von CPUs nach Correctable Errors

SEA - System Event Analyzer

Befehls-Syntax

- \$ WSEA n command_verb ! New common syntax
- \$ WSEA x command_verb ! Old common syntax

- \$ WSEA v command_verb ! DECEvent VMS syntax
- \$ WSEA u command_verb ! DECEvent UNIX syntax

- \$ WSEA SYNTAX v ! Neuen Syntax setzen
- \$ WSEA SYNTAX ! Default Syntax ansehen

SEA - System Event Analyzer

Befehls-Beispiele:

```
$ wsea v /tra/sin="31-Jan-2004,20:33:57"/out=x.x errlog.sys
```

```
$ wsea x analyze outtext results.txt
```

```
$ wsea n status
```

SEA - System Event Analyzer

► WSEA Syntax Beispiel

```
$ wsea sum [index] [input inputfile] -
```

```
  [out | outhtml outputfile] [filterstatement]
```

ohne „index“ = Anzahl der verschiedenen Events

mit „index“ = eine Zeile pro Event

```
$ wsea sum index "since=8-apr-2004"
```

```
===== /sys$errorlog/errlog.sys =====
```


Index	Type	Description	Date/Time
24	32	VMS Cold Start (i.e. System Boot) Message	04/08/04 13:58:06 +01
25	64	VMS Volume Mount Message	04/08/04 14:00:08 +02
26	38	VMS Time Stamp Message	04/08/04 14:48:30 +02



SEA - System Event Analyzer

```
$ wsea sum "since=8-apr-2004"
===== /sys$errorlog/errlog.sys =====
Qty  Type  Description
-----
  1   32  VMS Cold Start (i.e. System Boot) Message
  3   64  VMS Volume Mount Message
  1   38  VMS Time Stamp Message
```

Total Entry Count: 5
First Entry Date: Thu 8 Apr 2004 13:58:06 GMT+01:00
Last Entry Date: Thu 8 Apr 2004 15:18:30 GMT+02:00



SEA - System Event Analyzer

- ▶ Errlog-Analyse mit WEB Interface
<http://hostname:7902>
Username eingeben (Profil)
- ▶ OTHER_LOGS
 - vorher zu analysierende ERRLOG.SYS Files kopieren nach:

svctools_home:[common.ca.userdata]
svctools_home:[specific.ca.userdata]
 - Selektieren in Add Logs to Tree und danach auf Logfile Namen klicken (linke Frame) zum Start der Analyse

SEA - System Event Analyzer

▶ Errlog-Analyse mit WEB Interface ...

Direkte Eingabe von ERRLOG File Location in V4.3.1

```
$ desta dri add "CA.WUI.OLText"
```

```
$ desta dri set "CA.WUI.OLText" "username1,username2,..."
```

```
$ desta dri get "CA.WUI.OLText"
```

```
$ desta dri del "CA.WUI.OLText"
```

Stop und Start DESTA Director

Errorlog-Analyse unter OpenVMS

Das neue OpenVMS Alpha Tool in V7.3-2

ELV

ELV - Error Log Viewer (V7.3-2)

- ▶ Neu in V7.3-2
- ▶ Bestandteil von OpenVMS Alpha
- ▶ keine Ersatz fuer WEBES/SEA
- ▶ Möglichkeit der Bit-to-Text Translation von ERRLOG.SYS ohne Installation zusaetzlicher Tools
- ▶ erlaubt auch Konvertierung in altes ERRLOG.SYS Format fuer ANALYZE/ERROR_LOG
- ▶ Ausgabe mit 132 Spalten (\$ SET TERM/WIDTH=132)

ELV - Error Log Viewer (V7.3-2)

- ▶ ELV Befehle
- ```
$ HELP ANAL/ERR/ELV
```

Interactive Mode:

```
$ ANALYZE/ERROR_LOG/ELV
```

```
ELV> command file
```

Non-interactive Mode:

```
$ ANALYZE/ERROR_LOG/ELV command file
```

```
$
```

## ELV - Error Log Viewer (V7.3-2)


### ELV Befehle

- ▶ CONVERT
  - Konvertiert in altes ERRLOG.SYS Format fuer ANAL/ERR
- ▶ DUMP
  - ASCII formatierter Dump (keine Translation)
- ▶ TRANSLATE
  - bit-to-text Translation von Errlog-Entries (soweit supported)
- ▶ WRITE
  - binaere Kopie in neues ERRLOG File (neues CEH Format)
- ▶ EXIT

```
$ anal/err topas1_errlog.sys
Error Log Report Formatter (ERF) Version V7.3-2
%ERF-F-CEHFND, new header format found
-ERF-I-CEHCVT, use ANALYZE/ERROR_LOG/ELV CONVERT or DECevent conversion utility

$ anal/err/elv convert topas1_errlog.sys
%ELV-E-EVTTOLRG, 983140-byte error log event too large to convert
%ELV-I-SKPERLEVT, skipping error log event 2
...
$ dir .cvt
TOPAS1_ERRLOG.CVT;1

$ anal/err topas1_errlog.cvt
Error Log Report Formatter (ERF) Version V7.3-2
***** ENTRY 1. *****
ERROR SEQUENCE 0. LOGGED ON: CPU_TYPE 0000000F
DATE/TIME 3-FEB-2004 14:42:04.02 SYS_TYPE 00000027
SCS NODE: TOPAS1 OpenVMS AXP V7.3-1
HW_MODEL: 000007EF Hardware Model = 2031.
ERRLOG.SYS CREATED hp AlphaServer ES80 7/1000
```




## ELV - Error Log Viewer (V7.3-2)

| EVENT | EVENT_TYPE | TIMESTAMP               | NODE   | EVENT_CLASS     |
|-------|------------|-------------------------|--------|-----------------|
| 482   | Time Stamp | 17-FEB-2004 08:29:43.38 | TOPAS1 | CONTROL_ENTRIES |

| DESCRIPTION                   | RANGE    | VALUE                      | TRANSLATED_VALUE           |
|-------------------------------|----------|----------------------------|----------------------------|
| Hardware Architecture         |          | 4                          | Alpha                      |
| Hardware System Type          |          | 39                         |                            |
| Logging CPU                   |          | 5                          |                            |
| Number of CPU's in Active Set |          | 6                          |                            |
| System Marketing Model        |          | 2031                       | hp AlphaServer ES80 Series |
| Error Mask                    | <31:00>: | 0x00000005                 |                            |
| Seconds Since Boot            |          | 3648                       |                            |
| Chip Type                     |          | 15                         | EV7 (21364)                |
| Error Sequence Number         |          | 1173                       |                            |
| DSR String                    |          | hp AlphaServer ES80 7/1000 |                            |
| Operating System Version      |          | V7.3-1                     |                            |



## ELV - Error Log Viewer (V7.3-2)

\$ ANAL/ERR/ELV TRANSLATE CLUE\$ERRLOG.SYS

...

%ELV-E-B2TNOTFND, valid bit-to-text translation data not found  
 -ELV-W-NODNOTFND, bit-to-text node not found

**Valid Event**

- Header kann uebersetzt werden
- Event Body kann nicht uebersetzt werden
- z.B. SCSI Device Entries (DGA)

## ELV - Error Log Viewer (V7.3-2)

- ▶ ELV V7.3-2 Fehler mit non-rooted Directories

```
$ sho def
SYS$SYSDEVICE: <VOLKER>
$ anal/err/elv translate/sin=10:00
%ELV-E-FILOPNERR, error opening SYS$SYSDEVICE:[SYSEXE]ELV$HEADER.DAT;
%ELV-F-FATALERR, fatal error encountered

$ set def sys$manager
$ anal/err/elv translate/sin=10:00
Output file SYS$OUTPUT: created at 24-MAR-2004 10:25:32.18
...
Ist geloest in VMS732_UPDATE-V0100
```

## Tools zur Errlog-Analyse

| Tool        | Translation<br>(bit-to-text) | Analysis           | Notification |
|-------------|------------------------------|--------------------|--------------|
| ANAL/ERR    | ja                           | nein               | nein         |
| VAXsim      | nein                         | nur RAXx (License) | ja           |
| DECevent    | ja                           | ja (License)       | ja           |
| SEA (WEBES) | ja                           | ja                 | ja           |
| ELV         | ja                           | nein               | nein         |



