


Errlog-Analyse unter OpenVMS

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Inhalt



- OpenVMS Error Logging
- Tools zur Errlog-Analyze
 - 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
 - \$SENDERR 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	
7834	23-MAY-2003	03:47:06.66	Timestamp Entry	
7809	23-MAY-2003	00:11:58.19	Volume Dismount	
7810	23-MAY-2003	00:12:07.68	Volume Mount	
6851	16-MAY-2003	15:32:00.03	Device Error	
6852	16-MAY-2003	15:32:00.03	Device Error	
6195	12-MAY-2003	13:28:29.90	Volume Mount	
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



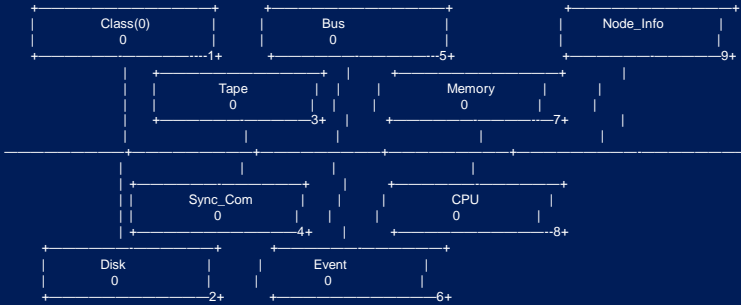
VAXsim - SDD (Symptom Directed Diagnosis)

- Released in 1989
- hauptsaechlich Ueberwachung auf Plattenfehler
- automatisches Shadowing
- VAXsim Monitor mit Anzeige Error Counter fuer verschiedene Error-Klassen


VAXsim



VAXsimPLUS>
Since: 5-APR-2004 16:17 Margin: 15 Clipping: On
Before: 6-APR-2004 16:23 Depth: 25 ReGIS: Off
DECUS



Errorlog-Analyse unter OpenVMS



Die Service Tools:

DECevent

und

SEA

DECevent



aktuelle Version: DECevent V3.4 - retired

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

- Kits und Documentation:
<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)

- DECEVENT-Lizenz (PAK) fuer Analysis und Notification

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.

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- 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 

- weitere Befehle

\$ DIAGNOSE/SUMMARY/SINCE=dd-mmm-yyyy
\$ diagno /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 V4.3.1
- neue Version: WEBES V4.3.2 im April 2004

- Download Kits und Dokumentation:
<http://h18023.www1.hp.com/support/svctools/webes/index.html>
ältere 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

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 (vormals: \$ 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)
- SICL (System Initiated Call Logging) = DSNlink
- PRS (Proactive Remote Service) = QSAP
- ISEE (Instant Support Enterprise Edition)

SEA - System Event Analyzer



- CPU Indictment (ab V7.3-2, DS25 oder hoeher)
- WEBES SEA V4.2 oder hoeher
- `SYSS$MANAGER:SYSS$INDICTMENT_POLICY.COM`
 - Logicals:
 - `SYSS$INDICT_START 1`
 - `SYSS$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  
  
$ 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
23	32	VMS Cold Start (i.e. System Boot) Message	04/08/04 13:58:06 +01
24	64	VMS Volume Mount Message	04/08/04 13:58:07 +01
25	64	VMS Volume Mount Message	04/08/04 14:00:08 +02
26	64	VMS Volume Mount Message	04/08/04 14:00:35 +02
27	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 zusätzlicher 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

Nointeractive 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

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

```

$ 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-EVTTOOLRG, 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
SYSTEM UPTIME: 0 DAYS 00:00:49
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)

```

$ anal/err/elv translate topas1_errlog.sys
Output file SYS$OUTPUT: created at 7-APR-2004 11:30:41.49

Output for USER_SUC:[HALLE]TOPAS1_ERRLOG.SYS;1

EVENT EVENT_TYPE          TIMESTAMP          NODE  EVENT_CLASS
1      New File Created    3-FEB-2004 14:42:04.02 TOPAS1 CONTROL_ENTRIES

DESCRIPTION          RANGE  VALUE          TRANSLATED_VALUE
Hardware Architecture 4      Alpha
Hardware System Type 39
Logging CPU          0
Number of CPU's in Active Set 6
System Marketing Model 2031    hp AlphaServer ES80 Series
Seconds Since Boot   49
Chip Type           15      EV7 (21364)
Error Sequence Number 65536
DSR String          hp AlphaServer ES80 7/1000
Operating System Version V7.3-1
    
```

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

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

```

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

$ 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 (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

