



This course provides the foundations to perform crash dump analysis on HP OpenVMS Integrity servers. Itanium architectural characteristics are introduced in order to analyze crash dumps and system hangs. The calling standard is reviewed, allowing students to walk call frames to determine where improper arguments to a function call have been passed. Interrupts and exceptions are discussed, as well as their handling by the Software Interrupt Services (SWIS). Considerable time is spent exploring different types of crashes and reviewing specific examples.

### Audience

- OpenVMS system programmers and support personnel needing to know the techniques involved in crash dump analysis on Integrity servers

### Prerequisites

- HP OpenVMS v8.3 Programming Features (HE634S) and
- HP OpenVMS v8.3 Alpha Internals I (U3719S) and
- HP OpenVMS v8.3 Alpha Internals II (U3720S) and
- HP OpenVMS v8.3 Alpha Internals III (U3721S) and
- Read and ideally write code written in C, Macro, and Bliss

### Course Objective

Students attending this course should leave with the ability to:

- Identify the general Integrity architecture and procedure call types
- Describe what causes a crash to occur
- Describe the general characteristics of interruptions on Integrity servers
- Identify the reasons for an "Unexpected System Service Exception" crash
- Describe and analyze basic "Invalid Exception" crashes
- Identify and analyze basic "Page Fault with IPL too high" crashes
- Describe monitoring oriented system parameters
- Describe and perform basic analysis of the "kernel stack not valid" crash
- Identify general causes of SMP-related crashes
- Describe and analyze basic AST-related crashes
- Analyze system hangs

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**Course Title:** U3723S HP OpenVMS Crash Dump Analysis for Integrity Servers

**HP Product Number:** U3723Sb.00

**Category/Subcategory:** OpenVMS

**Course Length:** 5 days

**Level:** Advanced

**Delivery Language:** English

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## Detailed Course Outline

### Overview of General Itanium Architecture

- General IA64 architecture
- Itanium application registers
- Predication
- Register conventions and usage considerations
- Using map and listing files

### Procedure Calls

- OpenVMS calling standard on IA64
- Calling procedures
- Passing parameters
- Register stack engine

### Crash Dump Fundamentals

- Overview of OpenVMS crashes
- Crash dump analysis tools
- General steps in analyzing crashes

### Interrupts and Exceptions

- Interrupts and exceptions
- Software Interrupt Services (SWIS)
- Exception frames
- SWIS log

### Exception-Related Crashes

- Exceptions and condition handling review
- Exception related crashes
- Examining unexpected system service exception crashes

### Invalid Exception Crashes

- Invalid exception crash concepts
- Analyzing invalid exception crashes

### Analysis of Page Fault with IPL too High Crashes

- Page fault with IPL too high crash concepts
- Analyzing page fault with IPL too high crashes

### More on SDA

- SDA techniques
- Monitoring oriented parameters

### Kernel Stack Not Valid Crashes

- Kernel stack not valid concepts
- Sample analysis of kernel stack not valid crashes

### SMP Related Crashes

- Symmetric multiprocessing
- SMP bugchecks
- Spin wait crashes
- CPU sanity timeout crashes

### AST Related Crashes

- AST concepts
- AST crash considerations
- Sample crashes in AST routines

### System Hangs

- System hangs
- Methods for forcing a system crash
- Analyzing system hangs
- Sample analysis of system hangs

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