



This course is designed to provide a detailed look at the various components, data structures and mechanisms used to implement the OpenVMS Alpha operating system. Topics include memory management and Files-11. The materials will include SDA displays from live systems and kernel mode programs, in addition to the usual flow descriptions and data structure diagrams.

#### Audience

- OpenVMS System Programmers

#### Prerequisites

- HP OpenVMS Programming Features
- The ability to read and ideally write code in VAX macro
- Ability to program in the DEC C Language
- HP OpenVMS v8.3 Alpha Internals I and II courses.

#### Course Objective

- The primary objective of the course is to give the system programmer a living big picture of the operating characteristics and the interrelationships of the major OpenVMS subsystems. The majority of code will be presented in the C language and will be current as of Version 8.3 of OpenVMS.

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**Course Title:** u3721s HP OpenVMS v8.3 Alpha Internals III

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**HP Product Number:** u3721sc.00

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**Category/Subcategory:** OpenVMS

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**Course Length:** 3 days

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**Level:** Intermediate

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**Delivery Language:** English

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**To Order:** You can order this course online at <http://www.hp.com/learn>. At the site, select a country, then choose "registration" or "Book a course" and fill out the online registration form.

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**Next Steps:** HP OpenVMS v8.3 Crash Dump Analysis (u3723s)

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**Next Steps:** HP OpenVMS v8.3 Galaxy and NUMA Programming and Internals (u3722s)

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## Detailed Course Outline

### Image Activation

- Memory Management Concepts
- The Process Header
- Image Activation
- Image Activation and Paging
- Clustering on Pagefault Reads

### Paging Dynamics and Structures

- Evolution of a Page Table Entry
- Sections
- The Working Set List
- The PFN Database
- The Free Page List
- The Modified Page List
- Page Files
- Page File Internal Support
- Swapper Related Activities

### Global Paging

- Shared Images and Global Sections
- Global Section Dynamics
- Shareable Image Issues
- Fixup Sections
- OpenVMS Alpha Shareable Images
- Known Files
- The System Header

### Memory Management: "Big Picture" Review

- Three-Level Address Translations
- Image Activation
- Making a Page Valid
- A Page on the Free or Modified Page List
- Page File Interval Support
- A Page No Longer In Memory
- Swapping Related Structures
- The System Header
- Working Set Slots

### Files-11

- Files-11 Concepts
- File Header
- The Files-11 Reserved Files

### XQP Switches

- The Extended QIO Procedures
- File Open Related Data Structures
- Data Structures Relateing to Mounted Volumes
- Contiguity and the File System
- File System Caching Parameters

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