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education

course description

NonStop Kernel principles (U4179S)

course overview

If you work with an HP NonStop™ server and want a solid understanding of the Guardian and Open System Services (OSS) environments and the NonStop Kernel operating system, this course is essential. In this course you will thoroughly examine major features of the NonStop Kernel. The topics covered in this course increase your awareness of the operations performed by the operating system and the Guardian and OSS environments, thus enhancing your ability to effectively utilize the system and perform troubleshooting activities. This course is a prerequisite for attending and understanding the NonStop Kernel Architecture course and is recommended for those with at least one year of experience on NonStop servers.

audience

- Programmers and software developers
- System managers and support staff
- Anyone who needs a broad overview of the NonStop Kernel

benefits to you

- Introduction to the NonStop K-series and S-series server architectures
- NonStop Kernel overview
- Processes
- Processor environment
- Process environment
- Message system
- File systems
- Memory management
- I/O subsystem

prerequisites

- Concepts and Facilities course
- One year development or system management experience on NonStop servers

next steps

- NonStop Kernel Architecture course
- Guardian API Programming course

to order

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

why hp education?

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module	key topics
course introduction	<ul style="list-style-type: none">• Review course and class schedule• Nine attributes of the design
the basics	<ul style="list-style-type: none">• General definition of the NonStop Kernel• Definition of a process and virtual memory• Two views of a process and the process environment• Demands that forward compatibility places on the operating system• Principle differences between the RISC and CISC architectures as those differences pertain to the NonStop Kernel
the processing environments	<ul style="list-style-type: none">• Possible process execution environments• Process components associated with each environment Lab Exercise (2.5 hours) <ul style="list-style-type: none">• Investigate the local system and the network• TNS and TNS/R process issues
the processor states	<ul style="list-style-type: none">• Five possible states of a processor• How the operating system handles interrupts• Basic function of principle structures and registers associated with interrupts• Rules for process execution• What happens when the processor is reloaded, the system is loaded, or a power fail occurs
application programming interfaces (APIs)	<ul style="list-style-type: none">• The Guardian APIs and their function in relation to the NonStop Kernel• The OSS APIs and their function in relation to the NonStop Kernel• The transaction processing and NonStop SQL/MP APIs and their function in relation to the NonStop Kernel Lab Exercise (3 hours) <ul style="list-style-type: none">• Observe a looping process• Explore the OSS file system
the message system	<ul style="list-style-type: none">• Link-listener (sender-receiver) model of process communication• How two processes communicate when both are in the same processor• How two processes communicate when each is in a different processor• How interprocess communication differs from the NonStop K-series to the NonStop S-series servers
process control	<ul style="list-style-type: none">• The six common process states• The process scheduling algorithm• Process creation, scheduling, and termination for Guardian and OSS processes• Displaying and explaining user process wait states Lab Exercise (1.5 hours) <ul style="list-style-type: none">• FIXUP, library, and process creation
memory management	<ul style="list-style-type: none">• The NonStop server 16-bit and 32-bit addressing schemes• Basic organization of virtual storage and real storage on a NonStop server• Two mapping schemes used to translate from a location in virtual storage to real storage• Swapping: why it is needed and the primary components that implement it
I/O subsystem	<ul style="list-style-type: none">• How I/O is handled in the NonStop K-series server• How I/O is handled in the NonStop S-series server• Interactions involved in the open of an IOP by a process• Major hardware components that make up the I/O system• Software structures that make up the I/O system Lab Exercise (2 hours) <ul style="list-style-type: none">• Observe stack operations• Use Peripheral Utilities Program (PUP) to understand the physical configuration (NonStop K-series servers) <ul style="list-style-type: none">• Comprehensive Course Review (45 minutes)

NonStop Kernel principles (U4179S)

onsite-delivery equipment requirements

- One NonStop server, K-series or S-series with two CPUs, 16 MB each
- NonStop Kernel operating system, version D4X or later for NonStop K-series servers, or any Gxx version for NonStop S-series servers
- One 6530 or equivalent character-based terminal per student
- Two 6530 or equivalent character-based terminals for the instructor

for more information

For more information on HP Education Services, contact any of our worldwide offices or visit our worldwide web site on the internet at <http://education.hp.com>

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