

## Hands-On PC Configuration and Troubleshooting - 4 Days

### *Course 145 Overview*

- You Will Learn How To**
- Safely disassemble and reassemble a complete PC system
  - Install and configure the motherboard and adapter cards
  - Fix PC hardware and software problems
  - Install and configure hard discs, DVD-ROMs and PC memory
  - Utilise power-on self-test (POST) and advanced diagnostics
  - Troubleshoot PC hardware and driver problems with Device Manager

**Course Benefits** PCs are the lifeblood of an organisation, flowing with the constant traffic of information and data vital to daily operation. Maintaining these machines and responding quickly and effectively to trouble takes skilled professionals. In this course, hands-on exercises provide you with the knowledge and experience to take apart and reassemble computer components, and use specific techniques for identifying the source of hardware and software problems.

**Who Should Attend** All personnel involved in the daily operation, maintenance and support of PC hardware and software.

**Hands-On Training** You perform hands-on exercises on Core 2 Duo systems with Serial ATA hard discs, PCIe video cards and DVD-ROM drives. Exercises throughout this course reinforce the knowledge you gain in class, including:

- Disassembling the PC safely
- Installing a DVD-ROM drive and PCIe video card
- Identifying faults with POST and advanced diagnostics
- Installing and configuring PC memory
- Testing a network interface card
- Installing and configuring hard discs
- Troubleshooting device drivers

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### Course 145 Outline

#### Taking Apart the PC

##### Identifying key hardware components

- The motherboard and power supply
- Microprocessor and chipset
- Display adapters and memory cards
- Hard disc and DVD drives

##### Seeing how the PC is designed

- Structuring memory
- Bus types: ISA, PCI, AGP and PCIe
- Distinguishing among x86, Pentium I-IV and Core Duo systems

##### Basic software components

- Basic Input Output System (BIOS)
- Configuring BIOS settings
- Managing device drivers with Device Manager

#### Troubleshooting Strategy for PCs

##### Designing a troubleshooting methodology

- Avoiding trouble: preventive maintenance
- Ascertaining where to begin testing
- Pinpointing common failure causes
- Finding the board with the problem

##### Running the power-on self-test (POST)

- Troubleshooting system faults with POST
- Using POST audio and video error codes
- Determining what POST doesn't test

##### Employing advanced diagnostic programs

- Testing for motherboard failures
- Isolating keyboard and display problems
- Solving interrupt (IRQ) and I/O conflicts

#### Working with Basic PC Components

##### Exploring the motherboard

- CPU types: x86, Pentium, Itanium, Dual-Core, Quad-Core
- Configuring jumper and CMOS settings
- Upgrading motherboards
- Adding plug-and-play components

##### Troubleshooting the power supply

- ATX power supply standby behaviour
- Solving common power supply problems
- Uninterruptible power supplies and UPS monitoring software

#### Configuring I/O Devices and Displays

##### Making use of input/output devices

- Setting I/O device configurations
- Configuring and testing network interface cards
- Testing network card operation

##### Improving computer I/O capabilities

- Universal Serial Bus (USB 2.0)
- Firewire (IEEE 1394)

##### Monitors and display adapters

- AGP and PCI Express-video adapters
- Refresh, dot pitch and native resolution
- 2-D, 3-D graphics accelerator cards

#### The Memory

##### Upgrading memory

- Choosing and installing memory
- Determining memory speed
- Memory types: SDRAM, DDR-2, DDR-3

##### Troubleshooting memory problems

- Locating failed memory devices using memory diagnostic tests
- Detecting problems in lower memory with POST

#### Installing Disc Drives

##### Selecting disc drives

- Parallel ATA, Serial ATA, SCSI and Ultra-SCSI
- Configuring drive setting and cable connections

##### Using hard disc drives

- Partitioning and formatting drives
- Upgrading to larger hard discs
- Optimising hard disc performance

##### Mastering advanced-drive technologies

- SCSI drive configuration
- Exploring optical drive technology (CD/DVD/Blu-ray drives)

#### Printers and Portable Computers

##### Managing printers and ports

- Configuring serial and parallel ports
- Solving common printer problems
- Identifying laser printer components

##### Networking fundamentals

- Connecting a PC to a network
- Establishing TCP/IP settings
- Wireless network fundamentals