

IT Essentials: PC Hardware and Software v4.0: Обхват и последователност (април 2007)

Този документ е предварителен преглед на новия Cisco курс IT Essentials: PC Hardware and Software v4.0 и е обект на промяна, тъй като курсовете все още са в процес на разработка. Английската версия на IT Essentials: PC Hardware and Software v4.0 ще бъде налична през юни 2007 г.

Целева група

IT Essentials: PC Hardware and Software v4.0 е предназначен за ученици от средни училища, технически училища или институции, които обучават студенти за кариери в сферата на ИКТ и искат да получат опит и знания в това как работят компютрите, как да сглабят компютри и как да решават проблеми от хардуерен и софтуерен характер.

Предварителни знания и умения

Не се изискват предварителни знания и умения за този курс.

Сертификации

IT Essentials: PC Hardware and Software v4.0 помага на студентите да се подготвят за сертификационните изпити на CompTIA A+ (www.comptia.org). Първата част на курса /основи – глави 1-10/ подготвя студентите за задължителния изпит CompTIA A+ Essentials. Втората част на курса /за напреднали – глави 11-16/ подготвя студентите за трите сертификационни изпити за професии на CompTIA: IT technician (220-602), remote support technician (220-603) и bench technician (220-604). Курсът също е съвместим и с първите три модула на сертификацията EUCIP IT Administrator certification (www.eucip.org): модул 1 PC Hardware, модул 2 Operating Systems и модул 3 Local Area Networks and Network Services.

Описание на съдържанието

Курсът покрива основите на компютърния хардуер и софтуер, както и концепции за по-напреднали в тази област. Студентите, които завършат този курс, ще могат да описват съставните части на компютъра, да сглабят компютърна система, да инсталират операционна система и да откриват проблеми чрез системни инструменти и диагностициращ софтуер. Също така, студентите ще се научат да се свързват към интернет и да споделят ресурси в мрежа. Новите теми включени в курса включват преносими компютри и устройства, безжични мрежи, сигурност и комуникации.

Практическите упражнения остават важен елемент на курса. Допълнително са интегрирани и виртуални инструменти за обучение. „Виртуален лаптоп”, „Виртуален десктоп” и „Виртуален принтер и скенер” са самостоятелни инструменти създадени да дообогатят преподаването и да осигурят интерактивни упражнения в среди с ограничен достъп до оборудване.

Цели на курса

Основната цел на курса е да подготви студентите за начални позиции в областта на ИКТ в няколко различни работни среди:

- Корпоративна или мобилна среда с висока степен на контакт с клиенти. Възможни позиции: enterprise technician, IT administrator, field service technician и PC technician;
- Отдалечена среда където се акцентира на взаимодействие с клиенти, обучение на клиенти, операционни системи и проблеми със свързаността. Възможни позиции: remote support technician, help desk technician, call center technician, IT specialist и representative;
- Среда с ограничен контакт с клиенти където се акцентира на дейности по хардуера. Възможни позиции: depot technician и bench technician.

Освен това, студентите ще придобият увереност с компонентите на настолен и преносим компютър като изучат процедурите по хардуерни и софтуерни инсталции, ъпгрейди и откриване на проблеми.

До края на курса студентите ще могат да се справят със следните задачи:

- Да дефинират „информационни технологии” (ИТ) и да описват компонентите на компютър;
- Да се пазят от злополуки и травми, да пазят оборудването от повреди и да предпазват работната среда от зарази;
- Да сглабят стъпка по стъпка компютърна система;
- Да изяснят целта на предпазващата поддръжка /preventive maintenance/ и да описват елементите на процеса по откриване на грешки;
- Да описват, инсталират и работят с операционна система; да ъпгрейдват различни компоненти на компютърната система според нуждите на клиенти и да извършват предпазваща поддръжка /preventive maintenance/ и задълбочено откриване на грешки;
- Да описват и заменят дадени компоненти на преносим компютър; да ъпгрейдват различни компоненти на компютърната система според нуждите на клиенти и да извършват предпазваща поддръжка /preventive maintenance/ и задълбочено откриване на грешки;
- Да описват и заменят дадени компоненти на принер/скенер; да извършват предпазваща поддръжка /preventive maintenance/ и откриване на грешки;
- Да описват и инсталират мрежа; да ъпгрейдват различни компоненти според нуждите на клиенти и да извършват предпазваща поддръжка /preventive maintenance/ и задълбочено откриване на грешки;
- Да показват добри комуникационни умения и професионално поведение при работа с клиенти;
- Да извършват професионална инсталация на настолна компютърна система; да избират компоненти според нуждите на клиентите и да извършват

предпазваща поддръжка /preventive maintenance/ и задълбочено откриване на грешки;

- Да ъпгрейдват компоненти по сигурността и да извършват предпазваща поддръжка /preventive maintenance/ и задълбочено откриване на грешки;

Минимални системни изисквания

Практическите упражнения на курса IT Essentials: PC Hardware and Software v4.0 изискват следните компютърни конфигурации и периферия.

Типична подредба на лабораторията

За най-доброто обучение препоръчваме групи 12-15 студента с компютър за всеки студент. 1 компютър за двама студенти е минималното приемливо изискване за лабораторните упражнения. Някои от упражненията изискват свързване на лабораторните компютри към локална мрежа. Студентските лабораторни компютри ще бъдат разглобени, така че не са подходящи за преглед на учебното съдържание на тях.

Хардуерни изисквания на лабораторните компютри

- PC Tower Case with 300W power supply
- PCI, PCIe, or AGP-compatible motherboard
- Intel Pentium/Celeron family, AMD K6/Athlon/Duron family, or compatible processor, 300 MHz or faster recommended
- Cooling fan and heat sink
- Two 128 MB memory modules (minimum) or two 256 MB memory modules (recommended)
- 128 MB е минимума за да се използват пълните функции на Windows XP Pro;
- Floppy drive
- 15 GB hard drive (minimum); 20 GB or more (recommended)
- CD-ROM (minimum) or 24x CD/DVD-ROM (recommended)
- Ethernet card
- PCI, PCIe (recommended), or AGP video card
- Ribbon cables to connect HDD/CD/Floppy
- Mouse
- Keyboard
- Super VGA (800 x 600) или монитор с по-висока резолюция
- Някои лабораторни упражнения ще изискват повече от един модул RAM да се деинсталира или симулация на дефектен/повреден модул за откриване на грешки;
- Системата трябва да поддържа пълна инсталация на Windows XP и два 5 GB дяла;

Софтуерни изисквания на лабораторните компютри

Съдържанието на IT Essentials PC v4.0 се фокусира върху операционните системи Microsoft Windows XP и Windows 2000, тъй като Vista не се изисква за сертифицирациите на CompTIA A+ или EUCIP IT Administrator.

- Нужна е само операционната система Microsoft Windows XP Professional (Media CD) за правене на лабораторните упражнения.

Майкрософт предлага програми за академични институции за покупка на софтуер на по-ниска цена. Пример за такава програма е MSDN Academic Alliance, за която може да прочетете на <http://msdn.microsoft.com/academic>. Посетете сайта на Майкрософт за да научите повече на <http://www.microsoft.com/bulgaria/>.

Инструменти за поправка на лабораторните компютри

Наборът от инструменти трябва да включва следните:

- Phillips screwdriver
- Flathead screwdriver
- Hex Socket Drivers (various sizes)
- Needle-nose pliers
- Electrostatic discharge (ESD) wrist strap and cord
- Electrostatic discharge (ESD) mat with a ground cord
- Safety glasses
- Lint-free cloth
- Electronics cleaning solution
- Flashlight
- Thermal compound
- Multimeter (optional)
- Compressed air service canister (optional due to globally varying classroom health and safety laws)

Допълнителни материали и ресурси

Препоръчително:

- Една интернет връзка за всеки студент за да извършва търсене в интернет и да сваля драйвери;
- Едно многофункционално устройство (принер/скенер/копир) на два лабораторни компютъра;
- Един Linksys безжичен рутер/суич (или еквивалентен) на два лабораторни компютъра, предпочитан модел Linksys WRT 300N;
- Един безжичен PCI мрежов адаптер (съвместим с горния безжичен рутер/суич) за всеки лабораторен компютър.

Минимум:

- Една интернет връзка за търсене в интернет и сваляне на драйвери (това може да бъде работната станция на инструктора);

- Едно многофункционално устройство (принер/скенер/копир) за цялата група;
- Един Linksys безжичен рутер/суич (или еквивалентен) за цялата група, предпочитан модел Linksys WRT 300N;
- Два безжични PCI мрежови адаптера (съвместими с горния безжичен рутер/суич) за цялата група.

Минимално оборудване, необходимо за преглед на съдържанието на курса

Отношението компютър/студент за преглед на съдържанието е 1:1. Препоръчителния размер на групата е 15-20 студента. Компютъра със съдържанието на курса може да е всеки, който поддържа Internet Explorer v5.0 или по-горна и Flash Player v6.0 или по-горна.

Забележка: Съдържанието ще включва незадължително виртуално оборудване като част от курса: „Виртуален лаптоп”, „Виртуален десктоп” и „Виртуален принтер и скенер”. За да е възможна пълноценната употреба на тези инструменти, компютрите на студентите е необходимо да притежават минимум 512MB RAM и Windows 2000.

Преглед на курса

IT Essentials: PC Hardware and Software

Този курс предлага чудесно въведение в ИТ индустрията и задълбочени познания по персонални компютри, хардуер и операционни системи. Студентите изучават функционалността на различни хардуерни и софтуерни компоненти и най-добрите практики по поддръжката и безопасността. Чрез практически лабораторни упражнения студентите се научават да сглобяват и конфигурират компютри, да инсталират операционни системи и софтуер, и да откриват хардуерни и софтуерни проблеми.

Предварителни знания и умения: никакви

Part 1: Fundamentals

1. Fundamentals: Introduction to the Personal Computer

- 1.1 Explain the IT industry and your place in it
 - 1.1.1 Identify the education and certifications required
 - 1.1.2 Describe the A+ certification
 - 1.1.3 Describe the EUCIP certification
 - 1.1.4 Identify advanced careers
- 1.2 Explain the differences between PCs based on implementation needs
 - 1.2.1 Gather information from the customer about use
 - 1.2.2 Describe a home computer
 - 1.2.3 Describe an entertainment/gaming computer
 - 1.2.4 Describe a work computer
 - 1.2.5 Describe an advanced work computer

- 1.2.6 Describe a server
- 1.2.7 Determine the type of computer based on customer needs
- 1.3 Identify the names, purposes, and characteristics of cases and power supplies
 - 1.3.1 Describe cases
 - 1.3.2 Describe power supplies
- 1.4 Identify the names, purposes, and characteristics of internal components
 - 1.4.1 Identify the names, purposes, and characteristics of motherboards
 - 1.4.2 Identify the names, purposes, and characteristics of processor/CPU's
 - 1.4.3 Identify the names, purposes, and characteristics of cooling systems
 - 1.4.4 Identify the names, purposes, and characteristics of RAM and ROM
 - 1.4.5 Identify the names, purposes, and characteristics of adapter cards
 - 1.4.6 Identify the names, purposes, and characteristics of drives
 - 1.4.7 Identify the names, purposes, and characteristics of internal cables
- 1.5 Identify the names, purposes, and characteristics of ports and cables
- 1.6 Identify the names, purposes, and characteristics of input devices
- 1.7 Identify the names, purposes, and characteristics of output devices
- 1.8 Explain system resources and their purpose, IRQ, I/O Address, and DMA
- 1.9 Chapter summary

2. Fundamentals: Safe Lab Procedure and Tool Use

- 2.1 Identify safe working conditions and procedures
 - 2.1.1 Identify safety procedures and potential hazards for users and technicians
 - 2.1.2 Identify safety procedures to protect equipment from damage and data from loss
 - 2.1.3 Identify safety procedures to protect the environment from contamination
- 2.2 Identify tools and software used with PC components and their purpose
 - 2.2.1 Identify hardware tools and their purpose
 - 2.2.2 Identify software tools and their purpose
 - 2.2.3 Identify organizational tools and their purpose
- 2.3 Implement proper tool use
 - 2.3.1 Demonstrate proper use of wrist strap
 - 2.3.2 Demonstrate proper use of antistatic mat
 - 2.3.3 Demonstrate proper use of various hand tools
 - 2.3.4 Demonstrate proper use of cleaning materials
- 2.4 Chapter summary

3. Fundamentals: Computer Assembly Step by Step

- 3.1 Open the case
- 3.2 Install the power supply
- 3.3 Attach components to the motherboard and install the motherboard
 - 3.3.1 Install a CPU and heat sink/fan assembly
 - 3.3.2 Install the RAM

- 3.3.3 Install the motherboard
- 3.4 Install internal drives
- 3.5 Install external drives
 - 3.5.1 Install the optical drive
 - 3.5.2 Install the floppy drive
- 3.6 Install the adapter cards in the appropriate slots
 - 3.6.1 Install the NIC
 - 3.6.2 Install the wireless NIC
 - 3.6.3 Install the video adapter card
- 3.7 Connect all internal cables
 - 3.7.1 Connect the motherboard power cables
 - 3.7.2 Connect the drive power cables
 - 3.7.3 Connect the drive data cables
- 3.8 Reattach the side panels and connect the external cables to the computer
 - 3.8.1 Reattach the side panels to the case
 - 3.8.2 Connect peripherals to the computer
 - 3.8.3 Connect other external cables to the computer
 - 3.8.4 Connect the hub and all-in-one printer to the computer using USB cable
- 3.9 Boot computer for the first time
 - 3.9.1 Identify beep codes
 - 3.9.2 Describe how to enter BIOS and use settings
- 3.10 Chapter summary

4. Fundamentals: Basics of Preventive Maintenance and Troubleshooting

- 4.1 Explain the purpose of preventive maintenance
- 4.2 Identify the elements of the troubleshooting process
 - 4.2.1 Gather data from the customer
 - 4.2.2 Verify the obvious issues
 - 4.2.3 Try quick solutions first
 - 4.2.4 Gather data from the computer
 - 4.2.5 Evaluate the problem and implement the solution
 - 4.2.6 Close with the customer
- 4.3 Chapter summary

5. Fundamentals: Operating Systems

- 5.1 Explain the purpose of operating systems
 - 5.1.1 Describe the characteristics of modern operating systems
 - 5.1.2 Explain operating system concepts
- 5.2 Describe and compare operating systems to include purpose, limitations, and compatibilities
 - 5.2.1 Compare and contrast operating systems
 - 5.2.2 Compare and contrast network operating systems
- 5.3 Determine operating system based on customer needs

- 5.3.1 Identify job tasks, applications, OS, and ensure compatibility
- 5.3.2 Determine minimum hardware requirements
- 5.3.3 Ensure compatibility with platform
- 5.4 Install an operating system
 - 5.4.1 Identify hard drive setup procedures
 - 5.4.2 Install the OS using default settings
 - 5.4.3 Prepare disk
 - 5.4.4 Create accounts
 - 5.4.5 Complete the installation
 - 5.4.6 Describe custom installation option
 - 5.4.7 Identify the boot sequence files and registration files
 - 5.4.8 Describe how to manipulate OS files
 - 5.4.9 Describe directory structures
- 5.5 Navigate a GUI (Windows)
 - 5.5.1 Manipulate items on the desktop
 - 5.5.2 Install, remove, and configure control panel applets
 - 5.5.3 Install, navigate, and uninstall an application
 - 5.5.4 Describe upgrading OS
- 5.6 Identify and apply common preventive maintenance techniques for OS
 - 5.6.1 Create a preventive maintenance plan
 - 5.6.2 Schedule a task using the Schedule Task Wizard
 - 5.6.3 Back up the hard drive
- 5.7 Troubleshoot operating systems
 - 5.7.1 Gather data from the customer
 - 5.7.2 Verify the obvious issues
 - 5.7.3 Try quick solutions first
 - 5.7.4 Gather data from the computer
 - 5.7.5 Evaluate the problem and implement the solution
 - 5.7.6 Close with the customer
- 5.8 Chapter summary

6. Fundamentals: Laptops and Portable Devices

- 6.1 Describe laptops and the various portable devices currently available
 - 6.1.1 Identify the common uses of laptops
 - 6.1.2 Identify the common uses of PDAs and Smartphones
- 6.2 Identify the names, purposes, and characteristics of laptops
 - 6.2.1 Describe the components found on the outside of the laptop
 - 6.2.2 Describe the components found on the inside of the laptop
 - 6.2.3 Describe the components found on the laptop docking station
- 6.3 Compare and contrast desktop and laptop components
 - 6.3.1 Compare and contrast desktop and laptop motherboards
 - 6.3.2 Compare and contrast desktop and laptop processors
 - 6.3.3 Compare and contrast desktop and laptop power management
 - 6.3.4 Compare and contrast desktop and laptop expansion capabilities

- 6.4 Explain how to configure laptops
 - 6.4.1 Describe how to configure power
 - 6.4.2 Describe installation of laptop components
- 6.5 Define the various mobile phone standards
- 6.6 Identify common preventive maintenance techniques for laptops and portable devices
 - 6.6.1 Identify appropriate cleaning procedures
 - 6.6.2 Identify optimal operating environments
- 6.7 Troubleshoot laptops and portable devices
 - 6.7.1 Gather data from the customer
 - 6.7.2 Verify the obvious issues
 - 6.7.3 Try quick solutions first
 - 6.7.4 Gather data from the computer
 - 6.7.5 Evaluate the problem and implement the solution
 - 6.7.6 Close with the customer
- 6.8 Chapter summary

7. Fundamentals: Printers and Scanners

- 7.1 Describe the types of printers currently available
 - 7.1.1 Describe the characteristics and capabilities of printers
 - 7.1.2 Explain printer-to-computer interfaces
 - 7.1.3 Describe laser printers
 - 7.1.4 Describe impact printers
 - 7.1.5 Describe inkjet printers
 - 7.1.6 Describe solid ink printers
 - 7.1.7 Describe other printer types
- 7.2 Describe the installation and configuration process for printers
 - 7.2.1 Describe how to set up a printer
 - 7.2.2 Explain how to power and connect a device using local or network port
 - 7.2.3 Describe how to install and update a device driver, firmware, and RAM
 - 7.2.4 Identify configuration options and default settings
 - 7.2.5 Explain how to optimize printer performance
 - 7.2.6 Describe how to print test pages
 - 7.2.7 Describe how to share a printer
- 7.3 Describe the types of scanners currently available
 - 7.3.1 Describe scanner types, resolution, and interfaces
 - 7.3.2 Describe all-in-one devices
 - 7.3.3 Describe flatbed scanners
 - 7.3.4 Describe handheld scanners
 - 7.3.5 Describe drum scanners
 - 7.3.6 Compare costs of different types of scanners
- 7.4 Describe the installation and configuration process for scanners

- 7.4.1 Explain how to power and connect a scanner
- 7.4.2 Describe how to install and update the device driver
- 7.4.3 Identify configuration options and default settings
- 7.5 Identify and apply common preventive maintenance techniques for printers and scanners
 - 7.5.1 Describe printer maintenance
 - 7.5.2 Describe scanner maintenance
- 7.6 Troubleshoot printers and scanners
 - 7.6.1 Gather data from the customer
 - 7.6.2 Verify the obvious issues
 - 7.6.3 Try quick solutions first
 - 7.6.4 Gather data from the computer
 - 7.6.5 Evaluate the problem and implement the solution
 - 7.6.6 Close with the customer
- 7.7 Chapter summary

8. Fundamentals: Networks

- 8.1 Explain the principles of networking
 - 8.1.1 Define computer network
 - 8.1.2 Explain the benefits of networks
- 8.2 Describe types of networks
 - 8.2.1 Describe a LAN
 - 8.2.2 Describe a WAN
 - 8.2.3 Describe a WLAN
 - 8.2.4 Explain Peer to Peer
 - 8.2.5 Explain Client/Server
- 8.3 Describe basic networking concepts and technologies
 - 8.3.1 Explain bandwidth
 - 8.3.2 Describe IP addressing
 - 8.3.3 Define DHCP
 - 8.3.4 Describe common network protocols
 - 8.3.5 Define ICMP
- 8.4 Describe physical components of a network
 - 8.4.1 Identify names, purposes, and characteristics of network devices
 - 8.4.2 Identify names, purposes, and characteristics of common network cables
- 8.5 Describe LAN topologies and architectures
 - 8.5.1 Describe topologies
 - 8.5.2 Describe LAN architectures
- 8.6 Identify standards organizations
- 8.7 Identify Ethernet standards
 - 8.7.1 Explain cabled Ethernet standards
 - 8.7.2 Explain wireless Ethernet standards
- 8.8 Explain OSI and TCP/IP Data Models

- 8.8.1 Define the OSI model
- 8.8.2 Define the TCP/IP model
- 8.8.3 Compare OSI and TCP/IP
- 8.9 Configure a NIC and a modem
 - 8.9.1 Update a driver
 - 8.9.2 Attach a computer to an existing network
 - 8.9.3 Describe installation of a modem
- 8.10 Identify names, purposes, and characteristics of other technologies for establishing connectivity
 - 8.10.1 Describe telephone technologies
 - 8.10.2 Define Electronic Wireline
 - 8.10.3 Define Broadband
 - 8.10.4 Define VoIP
- 8.11 Identify and apply common preventive maintenance techniques for networks
- 8.12 Troubleshoot the network
 - 8.12.1 Gather data from the customer
 - 8.12.2 Verify the obvious issues
 - 8.12.3 Try quick solutions first
 - 8.12.4 Gather data from the computer
 - 8.12.5 Evaluate the problem and implement the solution
 - 8.12.6 Close with the customer
- 8.13 Chapter summary

9. Fundamentals: Security

- 9.1 Explain why security is important
- 9.2 Describe security threats
 - 9.2.1 Define virus, worms, and Trojan horses
 - 9.2.2 Explain Internet security
 - 9.2.3 Define adware, spyware, and grayware
 - 9.2.4 Explain denial of service
 - 9.2.5 Describe SPAM and pop-ups
 - 9.2.6 Explain social engineering
 - 9.2.7 Explain TCP/IP attacks
 - 9.2.8 Explain hardware deconstruction and recycling
- 9.3 Identify security procedures
 - 9.3.1 Explain what is required in a basic local security policy
 - 9.3.2 Explain the tasks required to protect physical equipment
 - 9.3.3 Describe the various ways to protect data
 - 9.3.4 Describe wireless security techniques
- 9.4 Identify common preventive maintenance techniques for security
 - 9.4.1 Explain how to update signature files for virus checker and spyware
 - 9.4.2 Explain how to install operating systems service packs and security patches
- 9.5 Troubleshoot security threats

- 9.5.1 Gather data from the customer
- 9.5.2 Verify the obvious issues
- 9.5.3 Try quick solutions first
- 9.5.4 Gather data from the computer
- 9.5.5 Evaluate the problem and implement the solution
- 9.5.6 Close with the customer
- 9.6 Chapter summary

10. Fundamentals: Communication Skills

- 10.1 Explain the relationship between communications and troubleshooting
- 10.2 Describe good communication skills and professional behavior
 - 10.2.1 Determine the customer's computer problem
 - 10.2.2 Display professional behavior with the customer
 - 10.2.3 Focus the customer during the call
 - 10.2.4 Use proper Netiquette
 - 10.2.5 Implement time and stress management techniques
 - 10.2.6 Observe Service Level Agreements (SLAs)
 - 10.2.7 Follow business policies
- 10.3 Explain ethics and legal aspects of working with computer technology
- 10.4 Perform Call Center labs
 - 10.4.1 Complete Level 1 Tech labs
 - 10.4.2 Complete Level 2 Tech labs
- 10.5 Perform role-playing labs
- 10.6 Chapter summary

Part 2:

Advanced

Предварителни знания и умения: никакви

11. Advanced: Personal Computers

- 11.1 Give an overview of field, remote, and bench technician jobs
- 11.2 Explain safe lab procedure and tool use
 - 11.2.1 Review safe working environment and procedures
 - 11.2.2 Review names, purposes, characteristics, and appropriate and safe use of tools
 - 11.2.3 Identify potential safety hazards and implement proper safety procedures of computer components
 - 11.2.4 Describe environmental issues
- 11.3 Describe situations requiring replacement of computer components
 - 11.3.1 Select a case/power supply
 - 11.3.2 Select a motherboard
 - 11.3.3 Select a CPU/cooling system
 - 11.3.4 Select RAM

- 11.3.5 Select adapter cards
- 11.3.6 Select storage devices/hard drive
- 11.3.7 Select input and output devices
- 11.4 Upgrade and/or configure PC components and peripherals
 - 11.4.1 Upgrade and/or configure motherboard
 - 11.4.2 Upgrade and/or configure CPU/cooling system
 - 11.4.3 Upgrade and/or configure RAM
 - 11.4.4 Upgrade and/or configure BIOS
 - 11.4.5 Upgrade and/or configure storage devices/hard drive
 - 11.4.6 Upgrade and/or configure input and output devices
- 11.5 Identify and apply common preventive maintenance techniques for PC components
 - 11.5.1 Clean internal components
 - 11.5.2 Clean the case
 - 11.5.3 Inspect computer components
- 11.6 Troubleshoot PC components and peripherals
 - 11.6.1 Gather data from the customer
 - 11.6.2 Verify the obvious issues
 - 11.6.3 Try quick solutions first
 - 11.6.4 Gather data from the computer
 - 11.6.5 Evaluate the problem and implement the solution
 - 11.6.6 Close with the customer
- 11.7 Chapter Summary

12. Advanced: Operating Systems

- 12.1 Select the appropriate OS based on the customer's needs
 - 12.1.1 Describe operating systems
 - 12.1.2 Describe network operating systems
- 12.2 Install, configure and optimize OS
 - 12.2.1 Compare and contrast a default versus custom installation
 - 12.2.2 Install Windows XP Pro using a custom installation
 - 12.2.3 Create, view, and manage disks, directories, and files
 - 12.2.4 Identify procedures and utilities used to optimize the performance of operating systems
 - 12.2.5 Identify procedures and utilities used to optimize the performance of browsers
 - 12.2.6 Describe installation, use, and configuration of mail software
 - 12.2.7 Set screen resolution and update video drive
 - 12.2.8 Describe installation of a second OS
- 12.3 Describe how to upgrade operating systems
- 12.4 Describe preventive maintenance procedures for operating systems
 - 12.4.1 Schedule automatic tasks and updates
 - 12.4.2 Set restore points
- 12.5 Troubleshoot operating systems

- 12.5.1 Gather data from the customer
- 12.5.2 Verify the obvious issues
- 12.5.3 Try quick solutions first
- 12.5.4 Gather data from the computer
- 12.5.5 Evaluate the problem and implement the solution
- 12.5.6 Close with the customer
- 12.6 Perform OS Work Order labs
- 12.7 Chapter summary

13. Advanced: Laptops and Portable Devices

- 13.1 Describe wireless communication methods for laptops and portable devices
 - 13.1.1 Describe Bluetooth
 - 13.1.2 Describe Infrared
 - 13.1.3 Describe Cellular WAN
 - 13.1.4 Describe WiFi
 - 13.1.5 Describe Satellite
- 13.2 Describe repairs for laptops and portable devices
 - 13.2.1 Describe CRU and FRU repairs
 - 13.2.2 Describe repair center and manufacturer repairs
- 13.3 Select laptop components
 - 13.3.1 Select batteries
 - 13.3.2 Select docking station or port replicator
 - 13.3.3 Select storage devices
 - 13.3.4 Select additional RAM
- 13.4 Describe preventive maintenance procedures for laptops
 - 13.4.1 Describe how to schedule and perform maintenance for laptops
 - 13.4.2 Explain how to manage data version control between laptops and desktops
- 13.5 Describe troubleshooting laptops
 - 13.5.1 Gather data from the customer
 - 13.5.2 Verify the obvious issues
 - 13.5.3 Try quick solutions first
 - 13.5.4 Gather data from the computer
 - 13.5.5 Evaluate the problem and implement the solution
 - 13.5.6 Close with the customer
- 13.6 Perform Laptop Work Order labs
- 13.7 Chapter summary

14. Advanced: Printers and Scanners

- 14.1 Describe potential safety hazards and safety procedures associated with printers and scanners
- 14.2 Install and configure a printer/scanner locally
 - 14.2.1 Connect the device using a local port
 - 14.2.2 Install and update the device driver and software

- 14.2.3 Configure options and default settings
- 14.2.4 Verify functionality
- 14.2.5 Educate user about basic printer/scanner features and operations
- 14.3 Describe how to share a printer/scanner on a network
 - 14.3.1 Describe types of printer servers
 - 14.3.2 Describe how to install network printer software and drivers on a computer
- 14.4 Upgrade and configure printers and scanners
 - 14.4.1 Describe printer upgrades
 - 14.4.2 Optimize scanner
- 14.5 Describe preventive maintenance techniques used with printers and scanners
 - 14.5.1 Determine scheduled maintenance according to vendor guidelines
 - 14.5.2 Describe a suitable environment for printers and scanners
 - 14.5.3 Describe cleaning methods
 - 14.5.4 Explain how to check the capacity of ink cartridges and toners
- 14.6 Describe troubleshooting printers and scanners
 - 14.6.1 Gather data from the customer
 - 14.6.2 Verify the obvious issues
 - 14.6.3 Try quick solutions first
 - 14.6.4 Gather data from the computer
 - 14.6.5 Evaluate the problem and implement the solution
 - 14.6.6 Close with the customer
- 14.7 Perform Printers and Scanners Work Order labs
- 14.8 Chapter summary

15. Advanced: Networks

- 15.1 Identify potential safety hazards and implement proper safety procedures associated with networks
 - 15.1.1 Explain fiber optics safety hazards
 - 15.1.2 Explain cable, cable cutter, and cable cuttings safety hazards
- 15.2 Design a network based on the customer's needs
 - 15.2.1 Determine a topology
 - 15.2.2 Determine protocols and network applications
- 15.3 Determine the components for your customer's network
 - 15.3.1 Select cable types
 - 15.3.2 Select ISP connection type
 - 15.3.3 Select network cards
 - 15.3.4 Select the network device (hub, switch, router)
- 15.4 Implement the customer's network
 - 15.4.1 Install and test network
 - 15.4.2 Describe Internet configuration and network resources
- 15.5 Upgrade the customer's network
 - 15.5.1 Install and configure wireless NIC
 - 15.5.2 Install and configure access points

- 15.5.3 Test connection
- 15.6 Describe installation, configuration, and management of a simple mail server
- 15.7 Define and compare SMTP, POP, and IMAP
- 15.8 Describe preventive maintenance procedures for networks
- 15.9 Troubleshoot the network
 - 15.9.1 Gather data from the customer
 - 15.9.2 Verify the obvious issues
 - 15.9.3 Try quick solutions first
 - 15.9.4 Gather data from the computer
 - 15.9.5 Evaluate the problem and implement the solution
 - 15.9.6 Close with the customer
- 15.10 Perform Networks Work Order labs
- 15.11 Chapter summary

16. Advanced: Security

- 16.1 Outline security requirements for customer's needs
 - 16.1.1 Outline a local security policy
 - 16.1.2 Explain when and how to use security hardware
 - 16.1.3 Explain when and how to use security applications
- 16.2 Select security components based on customer's needs
 - 16.2.1 Describe and compare security techniques
 - 16.2.2 Describe and compare access control devices
 - 16.2.3 Describe and compare firewall types
- 16.3 Implement customer's security plan
 - 16.3.1 Configure security
 - 16.3.2 Explain how to configure control devices
 - 16.3.3 Explain how to configure firewall types
 - 16.3.4 Describe protection against malicious software
- 16.4 Perform preventive maintenance on security risks
 - 16.4.1 Describe the configuration of OS updates
 - 16.4.2 Maintain accounts
 - 16.4.3 Explain data backup procedures, access to backups, and secure physical backup material
- 16.5 Troubleshoot security risks
 - 16.5.1 Gather data from the customer
 - 16.5.2 Verify the obvious issues
 - 16.5.3 Try quick solutions first
 - 16.5.4 Gather data from the computer
 - 16.5.5 Evaluate the problem and implement the solution
 - 16.5.6 Close with the customer
- 16.6 Perform Security Work Order labs
- 16.7 Chapter summary