# IT Essentials 5.0 Release Notes

**Last Updated 8 March 2013**

## Purpose

Release 5.0 is the fifth major release of the IT Essentials curriculum. These notes provide detailed information about this release, including curriculum content, known issues, and support information.

## Release Content

| Component | Description |
|---|---|
| **E-Learning Content** | 12 chapters |
| **Total Labs** | 143 hands-on labs involving equipment |
| **Labs** | 25 Windows 7 labs; 25 Windows Vista labs; 25 Windows XP labs; and 68 hardware, networking, and advanced troubleshooting labs |
| **Worksheets** | 32 worksheets |
| **Cisco® Packet Tracer Activities** | 8 Packet Tracer activities (PT version 5.3.x or above is required.) |
| **Virtual Learning Tools** | Virtual Desktop and Virtual Laptop |
| **Simulations** | 4 Mobile device OS simulations to allow students without mobile devices in the classroom to experience common tasks performed in both Android and iOS environments. |
| **Summary and Review** | 12 summary sections and 12 chapter quizzes |
| **Chapter Quizzes** | 12 chapter quizzes |
| **Chapter Exams** | 12 chapter exams |
| **Chapter 1-6 Checkpoint Exam** | The ITE Checkpoint Exam is designed to give the learner feedback on acquired knowledge and skills related to basic PC hardware, software, and networking operations learned in chapters 1 through 6. |
| **Final Exam** | 1 final exam |
| **CompTIA A+ Practice Certification Exams** | These certification practice exams are designed to help you prepare for the 220-801 and 220-802 certification exams presented by CompTIA. These practice exams should be used only as part of your preparation to complete the actual certification exams. Although we have taken all possible measures to help ensure that our practice exams cover similar content, there is no way to predict the actual item types or content that you will receive on the certification exams. Because of this, they may not accurately predict your results on the certification exams. For more information on the CompTIA A+ certification exams, please visit their site at: http://certification.comptia.org/getCertified/certifications/a.aspx |
| **Skills-Based Assessments** | 11 skills-based assessments to verify the development of course skills. These assessments can be taken individually or in groups at strategic points in the learning path, or at the end of the course as a single assessment. |
| **Accessibility** | 12 chapters containing accessible text and media text. The course introduction video and mobile device simulations do not have accessible media text. |

## Known Issues and Caveats

| Item | Description |
|---|---|
| **Text Area Sizing** | After resizing the text area of a page, subsequent pages retain the same text area size. The text area size will return to default when the browser session ends. |
| **Virtual Tools File Sizes** | The file sizes for both the Virtual Desktop and Virtual Laptop are quite large. After the file has been downloaded, each layer of access needs to load up before the user can begin. This may take a full minute or longer for some of the layers. |
| **Virtual Tools Instructional Window** | In the Learn mode for both the Virtual Desktop and Virtual Laptop, an instructional pop-up window appears in the upper left corner of the main window. This window does not appear in the Test mode. |
| **Virtual Tools Animation** | In the Learn mode for both the Virtual Desktop and Virtual Laptop, if the user makes three incorrect attempts to install a component from the antistatic mat or connect a cable, the animation plays automatically. This is not true in the Test mode. |
| **Virtual Tools Install Order** | In both the Learn and test modes, it is possible to install or connect many items in an incorrect order. For example, it is possible to install an adapter card screw before installing the adapter card. |
| **Virtual Tools Laptop Disassembly** | The Virtual Laptop is never completely disassembled in the way that the Virtual Desktop is. This is because laptops have a more proprietary design. Also, many laptop manufacturers require special training to disassemble and reassemble a laptop. |
| **Virtual Tools Component Configuration** | The components found in the Virtual Desktop are specific to the machine purchased by the Cisco Networking Academy™ team for the purposes of creating this interactive application. Other desktops have different configurations, and it is likely that many of the desktops in use at academies differ from the one used for this application. |
| **Mobile Device Simulations** | To use the mobile device simulations in chapter 8, an HTML 5 compliant browser is required. Other browsers may not display the simulations correctly. The Google Chrome browser is suggested for the best simulation experience. |

## Updates in ITE 5.0

| Chapter / Section / Topic | Description |
|---|---|
| **1.0 Introduction to the Personal Computer** | |
| **1.1 Personal Computer Systems** | |
| **1.1.1 Cases and Power Supplies** | SATA connector and voltage<br>Dual voltage options |
| **1.1.2 Internal PC Components** | ITX motherboard; PCI-X; miniPCI; mini PCIe; and AGP 2x, 4x, and 8x expansion slots<br>5400, 7200, 10000, and 15000 rpm hard drives<br>Optical and tape media capacities<br>Integrated GPU<br>Micro-ATX specification<br>25-pin SCSI device cable types<br>Network device functions and features (modem)<br>Flash memory devices |
| **1.1.3 External Ports and Cables** | USB 3.0 speed and distance characteristics<br>Analog vs. digital transmission<br>VGA vs. HDMI<br>DVI-A, Displayport, DB-15, BNC, miniHDMI, and Din-6 display connector types<br>HDMI, DVI, VGA, Composite, S-video, and RGB display cable types |
| **1.1.4 Input and Output Devices** | LED, Plasma, and OLED display devices<br>Characteristics of monitors: Lumens<br>Multiple displays<br>Camcorder<br>Game pads, joysticks, and digitizer |
| **1.2 Selecting Replacement Computer Components** | |
| **1.2.1 Selecting PC Components** | Compact flash, SD, Micro-SD, Mini-SD, and xD media cards<br>Intel 1155 and 1156 socket types<br>AMD AM3+ and FM1 socket types<br>A, B, mini, and micro USB connector types<br>IDE and SATA speeds |
| **1.3 Configurations for Specialized Computer Systems** | |
| **1.3.1 Specialized Computer Systems** | Graphic / CAD / CAM design workstation: powerful processor, high-end video, and maximum RAM<br>Audio/Video editing workstation: specialized audio and video cards, large and fast hard drive, dual monitors<br>Virtualization workstation: maximum RAM and CPU cores<br>Gaming PC: powerful processor, high-end video with specialized GPU, better sound card, and high-end cooling<br>Home Theater PC: surround sound, HDMI output, HTPC compact form factor, and TV tuner<br>Home Server PC: media streaming, file sharing, gigabit NIC, and RAID<br>Standard thick client: desktop applications, meeting recommended requirements for running Windows<br>Thin client: basic applications, meeting minimum requirements for running Windows |
| **2.0 Lab Procedures and Tool Use** | |
| **2.1 Safe Lab Procedures** | |
| **2.1.2 Procedures to Protect Equipment and Data** | Self-grounding safety procedures |
| **2.2 Proper Use of Tools** | |

| Chapter / Section / Topic | Description |
|---|---|
| **2.2.1 Hardware Tools** | Use appropriate networking tools: crimper, wire strippers, toner probe, and punchdown tool<br>Use tools to troubleshoot hard drives and RAID arrays: external enclosures<br>Troubleshoot common laptop issues<br>Disassembling process: document and label cable and screw locations, organize parts, and use appropriate hand tools |
| **2.2.2 Software Tools** | Use tools to troubleshoot hard drives and RAID arrays: CHKDSK |
| **2.2.3 Organizational Tools** | Fundamentals of dealing with prohibited content or activity<br>Use of documentation and documentation changes<br>Troubleshoot common laptop issues<br>Disassembling process: refer to manufacturer documentation |
| **3.0 Computer Assembly** | |
| **3.1 Computer Assembly** | |
| **3.1.1 Open the Case and Install the Power Supply** | SATA connection type and voltage<br>Micro-ATX form factor<br>Dual voltage options |
| **3.1.5 Install the Cables** | Install front panel USB, audio, power button, power light, drive activity lights, and reset button connectors |
| **3.2 Boot the Computer** | |
| **3.2.1 POST and BIOS** | POST card |
| **3.2.2 BIOS Configuration** | BIOS component information for RAM, hard drive, optical drive, and CPU<br>Configure devices, date and time, clock speeds, and virtualization support in BIOS<br>Drive encryption and Lojack<br>Monitoring temperature, fan speeds, voltage, clock, and bus speeds in BIOS<br>Using built-in diagnostics<br>Virtualization support |
| **3.3 Upgrading and Configuring a PC** | |
| **3.3.2 Storage Devices** | IDE Cable Select configuration and setup |
| **3.3.3 Input and Output Devices** | Privacy and antiglare filters for display devices |
| **4.0 Overview of Preventive Maintenance** | |
| **4.1 Preventive Maintenance** | |
| **4.1.1 PC Preventive Maintenance Overview** | Environmental controls: enclosures for protection from airborne particles<br>Patch management |
| **4.2 Troubleshooting Process** | |
| **4.2.2 Common Problems and Solutions for PCs** | Troubleshoot common PC problems: intermittent device failure, smoke, overheat shutdown<br>Troubleshoot common RAID problems: Read/write failure, slow performance, loud clicking noise, OS not found, RAID not found, RAID stops working, and BSOD |
| **5.0 Operating Systems** | |
| **5.1 Modern Operating Systems** | Windows Vista Enterprise features and requirements |
| **5.1.3 Customer Requirements for an Operating System** | Operating system upgrade paths<br>Differences between in place upgrades<br>Compatibility tools |
| **5.2 Operating System Installation** | |
| **5.2.1 Hard Drive Setup Procedures** | Operating system installation methods<br>Boot methods: PXE, USB, and DVD<br>Partitioning: dynamic and basic disks<br>File system types/formatting: CDFS and quick versus full format<br>Load alternate third party drivers when necessary<br>Single sign-on user authentication |

| Chapter / Section / Topic | Description |
|---|---|
| **5.2.2 Custom Installation Options** | OS preventive maintenance tools: recovery image |
| **5.2.4 Multiboot** | Operating system tools: disk management<br>Splitting partitions, adding drives, and adding arrays |
| **5.2.5 Directory Structure and File Attributes** | Operating system features: Shadow Copy |
| **5.3 The Windows GUI and Control Panel** | |
| **5.3.2 Control Panel Utilities** | Operating system features – Ready Boost, Security Center, and Control Panel category view vs. classic view<br>Control panel utilities – System – hardware profiles and Security Center |
| **5.3.3 Administrative Tools** | Use OS administrative features and tools: Component services, Data sources, and Windows memory diagnostics |
| **5.3.4 System Tools** | Perform scheduled disk checks |
| **5.3.6 Control Panel Utilities Unique to Specific Windows Versions** | Operating system features: Windows Defender<br>Control Panel utilities unique to Windows XP: Network setup wizard<br>Control Panel utilities unique to Windows Vista: Tablet PC settings, Pen and input devices, Problem ports and solutions, and Printers<br>Control Panel utilities unique to Windows 7: HomeGroup, Action center, Remote applications and desktop applications, and Troubleshooting |
| **5.3.7 Command-Line Tools** | Use OS command-line tools: kill, shutdown, tlist, del, robocopy, and diskpart,<br>MSCONFIG, MSTSC, and notepad |
| **5.4 Client-Side Virtualization** | |
| **5.4.1 Purpose and Requirements of Virtualization** | Operating system features: XP Mode and Easy Transfer<br>Client-side virtualization: purpose of virtual machines; Resource, Emulator, Security, and Network requirements<br>Hypervisor |
| **5.5 Common Preventive Maintenance Techniques for Operating Systems** | |
| **5.6 Basic Troubleshooting Process for Operating Systems** | |
| **5.6.2 Common Problems and Solutions for Operating Systems** | Troubleshoot operating system problems: Improper shutdown, RAID not detected during installation, missing dll message, missing OS, missing GUI<br>Troubleshoot common security issues: Internet connectivity issues and Windows update failures |
| **6.0 Networks** | |
| **6.1 Principles of Networking** | |
| **6.2 Identifying Networks** | |
| **6.2.1 Types of Networks** | PAN and MAN network types |
| **6.3 Basic Networking Concepts and Technologies** | |
| **6.3.2 Networked Equipment Addressing** | IPv4 vs. IPv6<br>Client-side DNS<br>Gateway characteristics<br>Configure an alternate IP address |
| **6.3.3 Common Ports and Protocols** | DNS and RDP ports and purpose<br>LDAP, SNMP, SMB, and SFTP protocols and purpose |
| **6.4 Physical Components of a Network** | |
| **6.4.1 Network Devices** | Network device functions and features: NAS and Internet appliances<br>PoE |

| Chapter / Section / Topic | Description |
|---|---|
| **6.4.2 Cables and Connectors** | T568A and T568B wiring standards<br>Coaxial cable BNC and F-connector<br>Twisted pair PVC<br>Twisted pair speed and transmission limitations<br>Coaxial speed and transmission limitations |
| **6.5 Network Topologies** | |
| **6.5.1 Topologies** | Hybrid network topology |
| **6.6 Ethernet Standards** | |
| **6.6.1 Cabled and Wireless** | RF speeds, distances, and frequencies |
| **6.7 OSI and TCP/IP Data Models** | |
| **6.8 Computer to Network Connection** | |
| **6.8.2 Network Cards** | QoS |
| **6.8.3 Wireless and Wired Router Configurations** | Wireless and wired router appropriate settings: channels 1-11, basic QoS<br>Use command line tools: NBTSTAT<br>Set up and configure Windows networking: Home vs. Work vs. Public network settings<br>Wireless locator |
| **6.8.4 OS Configurations** | Install and configure the operating system: Domain vs. Workgroup setup<br>Set up and configure Windows networking on a client/desktop: Workgroup vs. Domain setup |
| **6.9 Select an ISP Connection Type** | |
| **6.9.1 Connection Technologies** | WiMAX and Line of Sight wireless Internet service connection type and features |
| **6.10 Common Preventative Maintenance Techniques Used for Networks** | |
| **6.11 Basic Troubleshooting Process for Networks** | |
| **6.11.2 Common Problems and Solutions for Networks** | Troubleshoot wired and wireless networks: intermittent connectivity and slow transfer speeds |
| **7.0 Laptops** | |
| **7.1 Laptop Components** | |
| **7.1.1 Laptop Components** | Laptop special function keys: dual displays |
| **7.2 Laptop Display Components** | |
| **7.2.2 Internal Components** | Laptop display components: Wi-Fi antenna connector/placement, inverter and its function, and backlight<br>Laptop special function keys: keyboard backlight |
| **7.4 Laptop Wireless Communication Technologies** | |
| **7.4.1 Features and OS Configuration** | IR speeds, distances, and frequencies |
| **7.5 Laptop Hardware and Component Installation and Configuration** | |
| **7.5.2 Replacing Hardware Devices** | Laptop hardware/device replacement: hard drive (2.5 vs. 3.5), DC jack, touchpad, plastics, speaker, system board, CPU |
| **7.7 Basic Troubleshooting Process for Laptops** | |
| **7.7.2 Common Problems and Solutions for Laptops** | Troubleshoot common video and display issues: dead pixels, artifacts, incorrect color patterns, flickering image, distorted image, and degaussing<br>Troubleshoot common laptop issues: intermittent wireless, flickering display, ghost cursor, no Bluetooth connectivity |
| **8.0 Mobile Devices** | |

| Chapter / Section / Topic | Description |
|---|---|
| **8.1 Mobile Device Hardware Overview** | |
| **8.1.1 Mobile Device Hardware** | Field serviceable parts and upgrades |
| **8.2 Mobile Operating Systems** | |
| **8.2.1 Android versus iOS** | Open source vs. closed source mobile operating systems<br>Mobile device application sources |
| **8.2.2 Android Touch Interface** | Touch Flow<br>Multitouch |
| **8.2.3 iOS Touch Interface** | Multitouch |
| **8.2.4 Common Mobile Device Features** | Screen orientation and calibration<br>GPS and geo-tracking |
| **8.3 Network Connectivity and Email** | |
| **8.3.1 Wireless and Cellular Data Network** | Wireless / cellular data network connectivity<br>Set up and configure Windows networking: VPN |
| **8.3.2 Bluetooth** | Enabling Bluetooth and pairing for mobile devices<br>Testing Bluetooth connectivity |
| **8.3.3 Configuring Email** | Configure email server address<br>Email SSL settings<br>Exchange<br>Gmail |
| **8.3.4 Mobile Device Synchronization** | Types of data to synchronize: contacts, programs, email, pictures, music, and videos<br>Application installation requirements<br>Connection types to enable synchronization |
| **8.4 Methods for Securing Mobile Devices** | |
| **8.4.1 Passcode Locks** | Passcode locks<br>Restrictions on failed login attempts |
| **8.4.2 Cloud-Enabled Services for Smart Devices** | Remote wipes<br>Locator applications<br>Remote backup applications |
| **8.4.3 Software Security** | Mobile device antivirus<br>Patching and OS updates |
| **9.0 Printers** | |
| **9.1 Common Printer Features** | |
| **9.1.1 Characteristics and Capabilities** | Print device sharing for wired printers: USB, parallel, serial, and Ethernet |
| **9.2 Types of Printers** | |
| **9.2.1 Printer Types** | Thermal printer feed assembly and heating element<br>Laser printer imaging process |
| **9.3 Installing and Configuring Printers** | |
| **9.3.3 Optimizing Printer Performance** | Use OS administrative features and tools: print management<br>Troubleshoot printers: low memory errors |
| **9.4 Sharing Printers** | |
| **9.4.1 Operating System Settings for Sharing a Printer** | Print device sharing for wireless printers: Bluetooth, 802.11x, and Infrared |
| **9.4.2 Print Servers** | Printer hardware print server |
| **9.5 Preventive Maintenance Techniques for Printers** | |

| Chapter / Section / Topic | Description |
|---|---|
| **9.5.1 Printer Preventive Maintenance** | Thermal printer maintenance: clean heating element<br>Impact printer maintenance: replace ribbon and print head |
| **9.6 Basic Troubleshooting Process for Printers** | |
| **9.6.2 Common Problems and Solutions for Printers** | Troubleshoot printers: faded prints, toner not fused to the paper, creased paper, paper not feeding, paper jam, no connectivity, access denied, color prints in wrong print color, unable to install printer, error codes |
| **10.0 Security** | |
| **10.1 Security Threats** | |
| **10.1.1 Types of Security Threats** | Apply and use privacy filters<br>Common security threats: Rootkits |
| **10.1.2 Access to Data and Equipment** | Data destruction/disposal methods<br>Low level format vs. standard format<br>Hard drive sanitation and sanitation methods<br>Physical destruction: drill, electromagnetic, and degaussing tool |
| **10.2 Security Procedures** | |
| **10.2.1 Security Policies** | Use OS administrative features and tools: local security policy<br>Digital security using strong passwords and directory permissions<br>Apply principle of least privilege<br>Implement security best practices: requiring passwords, restricting user permissions, changing default user names, and requiring screensaver password |
| **10.2.2 Protecting Data** | Wireless/wired router appropriate settings: firewall<br>Operating system features: Bit Locker |
| **10.2.3 Protection Against Malicious Software** | Troubleshoot operating system problems: boots to safe mode<br>Troubleshoot common security issues: rogue antivirus, quarantine infected system, disable system restore, and remediate infected systems; educate end user |
| **10.2.4 Security Techniques** | 802.11n wireless networking standards<br>TKIP and AES wireless networking encryption types<br>Wireless/wired router appropriate settings: DMZ, WPS<br>Radio power levels and antenna and access point placement to secure a wireless network |
| **10.2.5 Protecting Physical Equipment** | Apply and use RSA token<br>Disable Autorun<br>Disabling ports |
| **10.3 Common Preventive Maintenance Techniques for Security** | |
| **10.3.1 Security Maintenance** | User and group OS security settings: Administrator, Power user, Guest, Standard user |
| **10.4 Basic Troubleshooting Process for Security** | |
| **10.4.2 Common Problems and Solutions for Security** | Troubleshoot common security issues: renamed system files and access denied |
| **11.0 The IT Professional** | |
| **11.2 Ethical and Legal Issues in the IT Industry** | |
| **11.2.2 Legal Procedures Overview** | Fundamentals of dealing with prohibited content/activity<br>First response: identify, report through proper channels, and data/device preservation<br>Chain of custody: tracking of evidence/documenting process |
| **12.0 Advanced Troubleshooting** | |
| **12.1 Computer Components and Peripherals** | |
| **12.1.1 Apply Troubleshooting Process to Computer Components and Peripherals** | Troubleshoot operating system problems: missing OS, missing GUI |

| Chapter / Section / Topic | Description |
|---|---|
| **12.2 Operating Systems** | |
| **12.2.1 Apply Troubleshooting Process to Operating Systems** | OS troubleshooting tools: Fixboot, REGSRV32 |
| **12.3 Networks** | |
| **12.3.1 Apply Troubleshooting Process to Networks** | Troubleshoot wired and wireless networks with appropriate tools: low RF signal |
| **12.4 Laptops** | |
| **12.4.1 Apply Troubleshooting Process to Laptops** | Troubleshoot common laptop issues: sticking keys |
| **12.6 Security** | |
| **12.6.1 Apply Troubleshooting Process to Security** | Troubleshoot common security issues: security alerts and hijacked email |

## Support

For general assistance with curriculum, classroom, or program issues, please contact the Networking Academy™ Support Desk by signing into the Cisco NetSpace™ learning environment and clicking **Help** > **Contact Support** at the top of the page.


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