



IT Essentials: PC Hardware and Software v4.1 Overview



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Cisco | Networking Academy®
Mind Wide Open™



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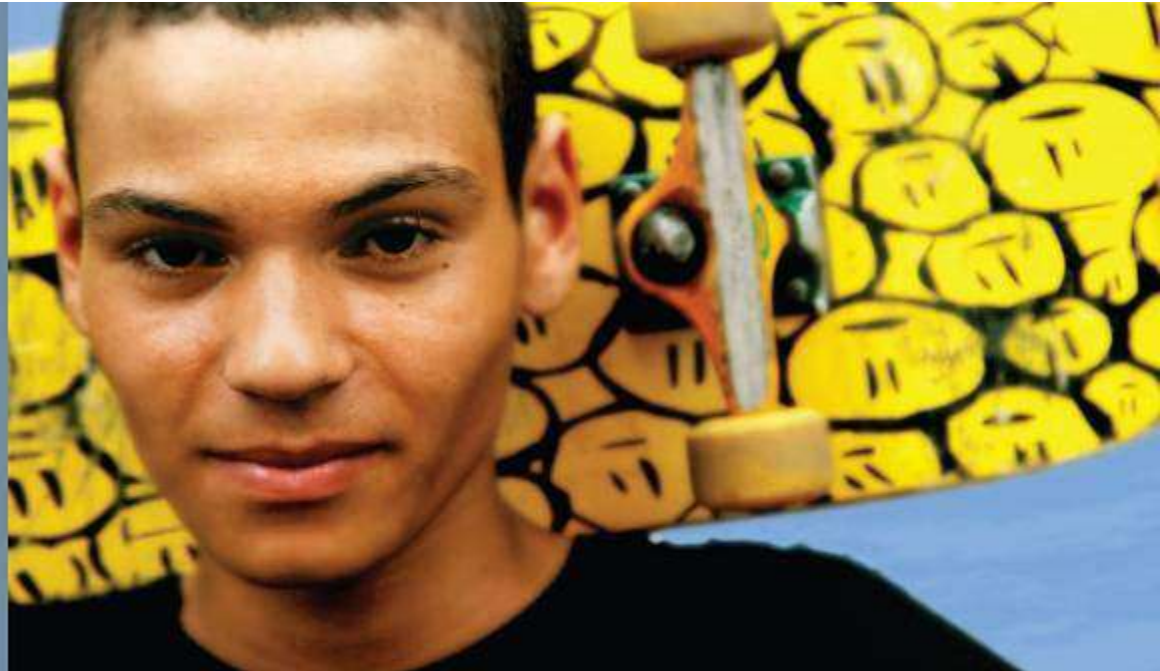
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Overview





ITE: PC Hardware and Software v4.1

- A comprehensive overview of computer hardware and software with an introduction to advanced concepts
- Integrates virtual learning tools and Cisco Packet Tracer activities to supplement classroom learning and provide an interactive “hands-on” experience
- Designed for students pursuing careers in IT and wanting practical knowledge of how a computer works
- Helps prepares students for CompTIA 2009 A+ certification exams - approved as CompTIA Authorized Quality Curriculum
- No changes to equipment bundle or PC requirements
- Same Graphical User Interface (GUI) as v4.0





New in Version 4.1

- **New and updated content including:**
 - New hardware technology
 - Windows Vista and Windows 7 operating systems information
 - More troubleshooting skills
 - Increased network application skills
 - Increased wireless and security skills
 - Reported errors in prior version corrected
- **Addition of Cisco Packet Tracer activities**

Packet Tracer's rich simulation environment allows students to explore, experiment, and develop problem solving and troubleshooting skills

Activities include the following topics:

 - Introduction to Packet Tracer
 - Configuration of DHCP
 - Connecting, installing, and testing a wireless network



Benefits for Students

- Offers an excellent introduction to the IT industry
- Provides interactive exposure to personal computers, hardware, and operating systems
- Learn by “doing” – hands-on activities and lab-based learning help students become familiar with various hardware and software components and discover best practices in maintenance and safety
- Helps develop greater skills and confidence in working with desktop and laptop computers
- Helps students prepare for CompTia A+ certification and for entry-level IT positions within various environments





Who Should Enroll?

- Students seeking career-oriented, entry-level hardware and software skills to prepare for careers in information and communication technology (ICT)
- Students who want to gain skills and working knowledge of how computers work, how to assemble computers, and how to troubleshoot hardware and software issues
- Students at many education levels and types of institutions
 - Including high schools, secondary schools, universities, colleges, career and technical schools, community organizations, and other non-traditional learning environments

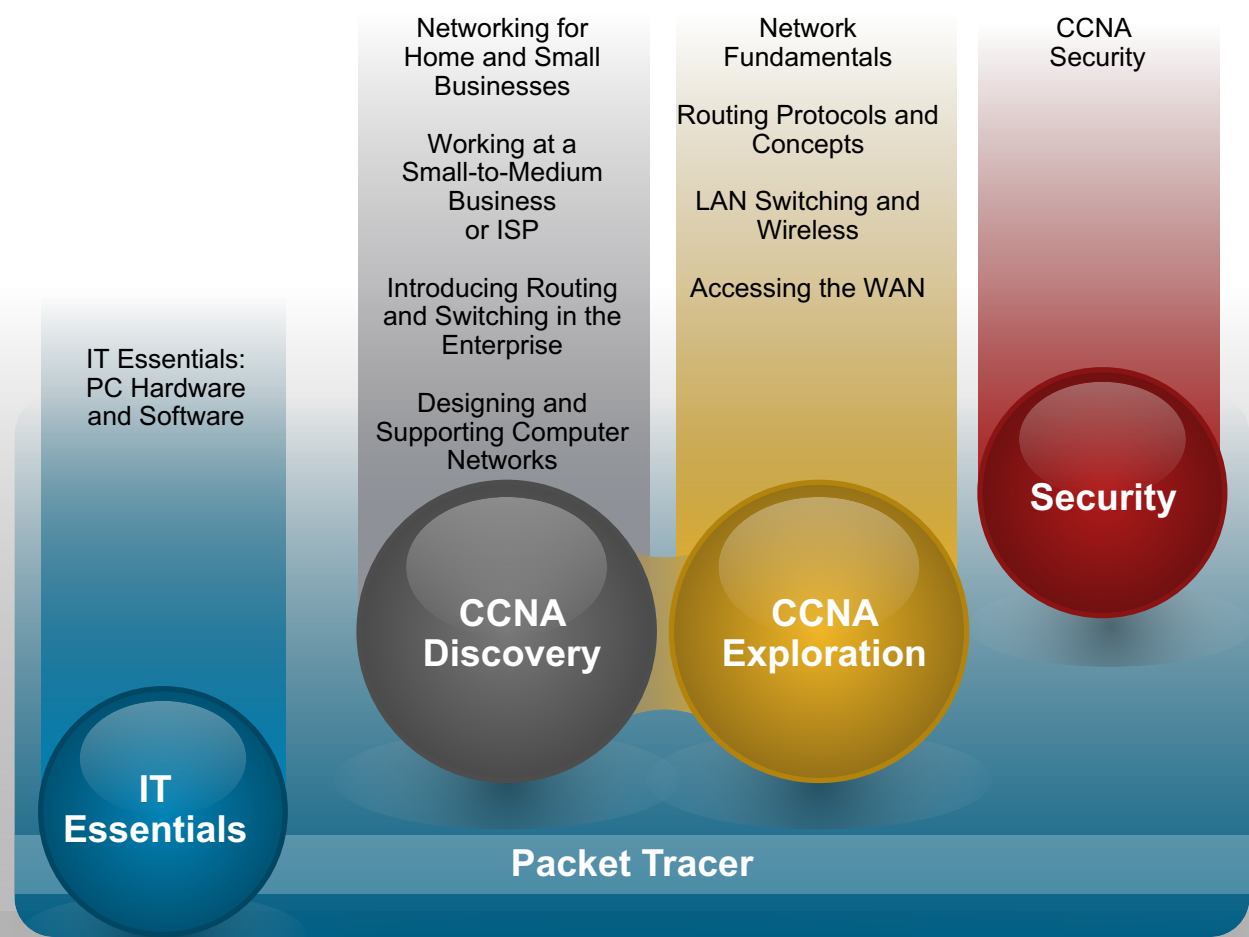




Cisco Networking Academy

Curricula Portfolio

Network Professional
Network Specialist
Network Associate
Network Technician
IT Technician



ROUTE:
 Implementing IP Routing

SWITCH:
 Implementing IP Switched Networks

TSHOOT:
 Troubleshooting and Maintaining IP Networks

CCNP

Student Networking Knowledge and Skills

Course Design





ITE: PC Hardware and Software v4.1

Course Design

- Same Graphical User Interface (GUI) as v4.0 curricula
- 16 chapters and chapter exams
- Windows 7 supplement document
- Approximately 450 new assessment items
- 2 final exams, 1 skills-based assessment, 1 Windows 7 exam
- New or updated hands-on labs, including labs for Windows 7
- 5 new Packet Tracer activities
- Aligned to the new CompTIA 2009 A+ certification exams
- New translated versions will be based on v4.1
- 1 course divided into 2 sections, Fundamentals and Advanced





ITE: PC Hardware and Software v4.1

Course Divided Into 2 Parts

Part 1 - Fundamentals

- **Course Chapters 1 - 10**
- Core competencies in latest hardware and software technologies
- Greater emphasis on
 - New OS
 - New hardware
 - Networking application
 - Troubleshooting
- Content maps directly to the CompTIA A+ Essentials certification exam

Part 2 - Advanced

- **Course Chapters 11 - 16**
- More hands-on and lab-based
- Greater depth with more practical application and troubleshooting
- Content maps directly to the CompTIA A+ Practical Application certification exam



ITE: PC Hardware and Software v4.1

Windows Vista and Windows 7 Labs

- The Windows Vista and Windows 7 labs include information covered in the CompTIA A+ certification and IT Essentials course chapter and final exams. These labs must be completed to prepare for the certification as well as the course chapter and final exams. If the class does not have access to the Windows Vista or Windows 7 operating systems and compatible computer equipment, students should complete the labs using the provided screenshots.



Scope and Sequence





ITE: PC Hardware and Software v4.1

Course Objectives

After completing the course, students will be able to perform the following:

- ✓ Define Information Technology (IT) and describe the components of a personal computer
- ✓ Describe how to protect self, equipment and the environment from accidents, damage, and contamination
- ✓ Perform a step-by-step assembly of a desktop computer
- ✓ Explain and perform preventive maintenance
- ✓ Explain the steps of the troubleshooting process and perform basic troubleshooting
- ✓ Upgrade or replace components of a laptop, printer, or scanner based on customer needs
- ✓ Configure computers to attach to an existing network
- ✓ Implement basic physical and software security principles
- ✓ Apply good communications skills and professional behavior while working with customers
- ✓ Assess customer needs, analyze possible configurations, and provide solutions or recommendations for hardware, operating systems, networking, and security



ITE: PC Hardware and Software v4.1

Part 1 – Fundamentals

Chapter	Objectives
1. Introduction to the Personal Computer	Identify and describe the various components that make up a personal computer and define Information technology
2. Safe Lab Procedure and Tool Use	Identify and describe tools used for computer service and how to use those tools safely
3. Computer Assembly Step-by-Step	Describe the assembly of a personal computer
4. Basics of Preventive Maintenance and Troubleshooting	Describe the purpose of preventative maintenance and basic troubleshooting steps
5. Operating Systems	Describe operating system capabilities, installation process, navigation, basic preventive maintenance, and troubleshooting
6. Laptops and Portable Devices	Identify and describe the various components of laptops & portable devices, basic preventive maintenance, and troubleshooting
7. Printers and Scanners	Identify and describe the differences between printers and scanners, installation & configuration, basic preventive maintenance, and troubleshooting
8. Networks	Identify and describe basic network components, technologies, basic preventive maintenance, and troubleshooting
9. Security	Identify and describe security threats, procedures, basic preventive maintenance, and troubleshooting
10. Communication Skills	Describe professional skills and communication techniques



ITE: PC Hardware and Software v4.1

Part 2 – Advanced Topics

Chapter	Objectives
11. Personal Computers	Describe the process for replacing or upgrading personal computer components, apply preventive maintenance and troubleshooting techniques
12. Operating Systems	Describe the process of installation/upgrade, configuration, and optimization of a computer operating system, apply preventive maintenance and troubleshooting techniques
13. Laptops and Portable Devices	Describe the process for replacing or upgrading laptop or portable device components, common wireless communication technologies, apply preventive maintenance and troubleshooting techniques
14. Printers and Scanners	Install and configure local and network shared printers and scanners, apply preventive maintenance and troubleshooting techniques
15. Networks	Design and implement a basic network based on customer requirements, apply preventive maintenance and troubleshooting techniques
16. Security	Implement security measures based on customer requirements, apply preventive maintenance and troubleshooting techniques



For More Information

- Latest documents are posted on [IT Essentials Course Catalog page](#) on Academy Connection
 - IT Essentials Scope and Sequence
 - IT Essentials FAQs
 - IT Essentials Datasheet
 - IT Essentials At A Glance
 - IT Essentials Overview Presentation
- Certification information
 - [CompTIA A+ certification](#)



Cisco Packet Tracer Information

- **Packet Tracer is available free to all Networking Academy instructors, students and alumni on Academy Connection**

- **To obtain Packet Tracer**

Log in to Academy Connection

Click the Packet Tracer image on the left side of your Home Page



View information resources then click on [Software Downloads](#)

- **Recommendation**

Download to a local server at your academy and have students install Packet Tracer from the local server

Equipment





Equipment Requirements

■ Hardware

Two 128 MB memory modules (minimum) or two 256 MB memory modules (recommended)

Some labs will require one module of RAM to be uninstalled or the simulation of a faulty module for troubleshooting purposes.

128 MB is the minimum requirement to run the full functions of Windows XP Pro

■ Software

Microsoft Windows XP Professional (Media CD)

■ Additional Items/Resources

One Internet connection for Internet searches and driver downloads (this could be the instructor's workstation)

One integrated printer/scanner/copier for the class to share

One Linksys wireless router/switch or equivalent for the class to share, Linksys model WRT 300N preferred

■ Supplemental Material

Windows 7 content and labs on instructor and student class home page

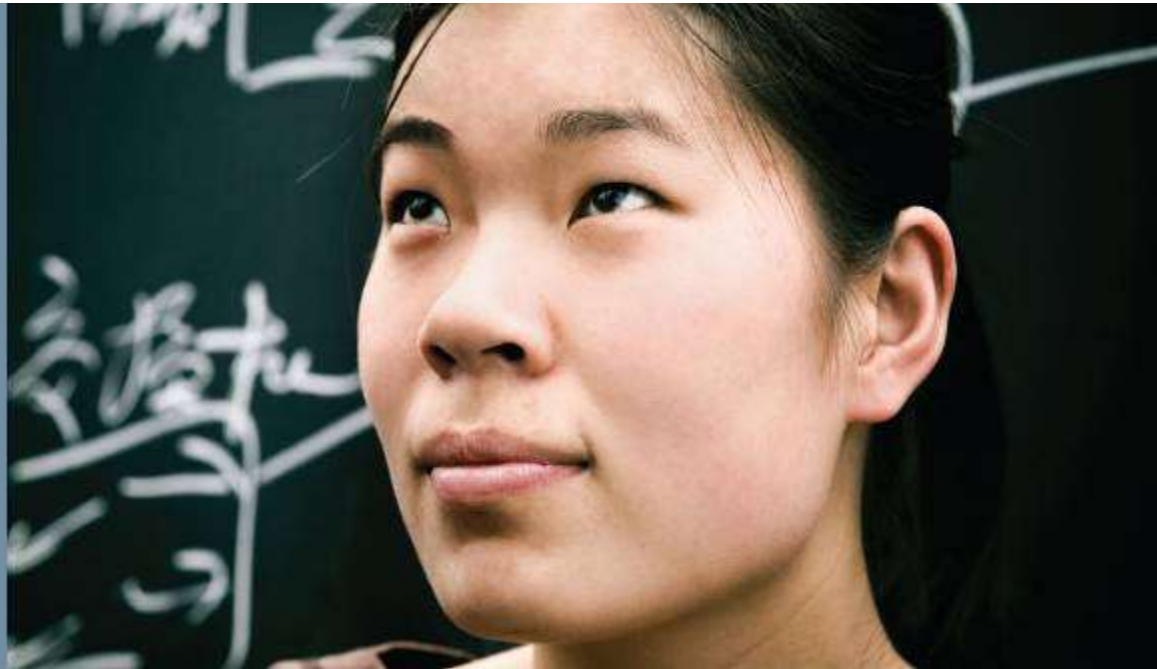


Typical Lab Layout

- Lab size of 12-15 students for hands-on lab activities
 - Recommend ratio of 1 Lab PC per student
- Some lab activities require the student Lab PCs to be connected to a local network
- 2 instructor workstations
 - 1 connected to Internet to search for, and download. Files
 - Other instructor workstation used for hands-on lab demonstrations



Instructor Training





Version 4.1 Instructor Training

- Existing ITE: PC Hardware & Software v4.0 instructors
 - No instructor training required
 - Qualified to teach v4.1 course
- New ITE: PC Hardware & Software instructors
 - Instructor training required (in-person or blended)
 - Instructor Fast Track option available to those with prior subject matter knowledge
 - Eligibility is verified by:
 - Specific industry certification
 - Formal evidence of industry experience
 - Formal evidence of teaching experience





Cisco Packet Tracer Training

- 5 Packet Tracer activities have been added to ITE v4.1
 - Help instructors demonstrate networking concepts
 - Help students gain hands-on practice and practice troubleshooting
- First activity provides an introduction to Packet Tracer for new users
- Packet Tracer also provides tutorials within the application
- Instructor materials

[Instructor Resources Page](#) on Academy Connection:

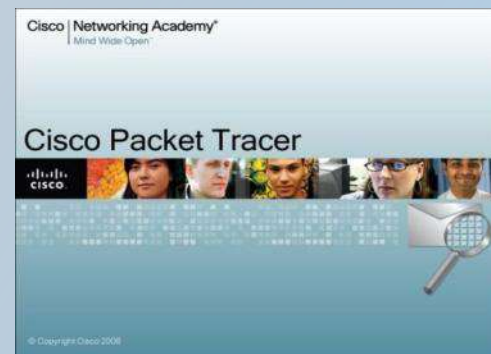
Overview video and datasheet

Video of instructor led Packet Tracer activity

PPT on best practices

Networking Academy Instructor Webinar series

[Webinars](#) can be viewed and downloaded



Virtual Learning Tools





Virtual Learning Tools

- Two standalone tools are provided with the curriculum
 - Virtual Desktop
 - Virtual Laptop
- Designed to supplement classroom learning and provide interactive learning opportunities
- Both provide a virtual “hands-on” experience where physical equipment access is limited
- Enable students to virtually disassemble and reassemble desktops and laptops
- The following slides demonstrate the Virtual Laptop introductory tutorial



Virtual Laptop Tutorial



IT Essentials Virtual Laptop

Help ?

Or click the Skip button to go directly to using Virtual Laptop.

SKIP X

WELCOME TO IT ESSENTIALS VIRTUAL LAPTOP

Our Virtual Laptop enables you learn the steps required to install specific components of the laptop, explore these and other components and test your knowledge.

If this is your first time, please take a moment to walk through the key features of the Virtual Laptop. This tutorial is always available by pressing Help in the upper right hand corner.

Click on the arrow to view the brief tutorial.





The Three Modes

LEARN ← **Learn Mode** → **Step-by-step instructions for removing and installing Components**

UNDERSIDE LAYER

The underside of the laptop gives you access to the battery, RAM, and the hard disk drive. You can also see the docking connector, the battery release lever, the battery latch, speakers, and the Microsoft Certificate of Authenticity (COA) label.

On the underside of the laptop, you will work with the following components:

- Battery
- RAM
- Hard Disk Drive

Show Instructions

TOP & SIDES LAYER

DOCKING STATION LAYER

EXTERNAL CABLES LAYER

TEST ← **Test Mode** → **Self-check for understanding**

EXPLORE ← **Explore Mode** → **Information about many laptop features and components**



Learn Mode: Underside Layer



IT Essentials Virtual Laptop
Help ?

LEARN

UNDERSIDE LAYER

The underside of the laptop gives you access to the battery, RAM, and the hard disk drive. You can also see the docking connector, the battery release lever, the battery latch, speakers, and the Microsoft Certificate of Authenticity (COA) label.

On the underside of the laptop, you will work with the following components:

- Battery
- RAM
- Hard Disk Drive

Show Instructions

TOP & SIDES LAYER

DOCKING STATION LAYER

EXTERNAL CABLES LAYER

TEST

EXPLORE

Components in the Underside Layer






ANTISTATIC MAT


Battery


RAM


RAM Access Panel


RAM Panel Screw


HDD Panel Screw


Hard Disk Drive (HDD)


HDD Screw



Learn Mode: Show Instructions

IT Essentials Virtual Laptop

Help ?

LEARN

UNDERSIDE LAYER

REMOVE BATTERY

- It is good practice to remove the battery before replacing any other hardware. Click the battery to begin the removal process.
- Unlock the battery using the battery latch.
- Release the battery using the battery release lever.
- Remove the battery from the laptop.

REPLACE RAM

- Position the laptop for RAM replacement.
- Remove the RAM access panel screw.

Show Instructions

TOP & SIDES LAYER

DOCKING STATION LAYER

EXTERNAL CABLES LAYER

TEST

EXPLORE

For step-by-step instructions

ANTISTATIC MAT

Battery

RAM

RAM Access Panel

RAM Panel Screw

HDD Panel Screw

Hard Disk Drive (HDD)

HDD



Antistatic Mat



IT Essentials Virtual Laptop

Help

LEARN

UNDERSIDE LAYER

TOP & SIDES LAYER

The sides of the laptop have bays that allow you to install devices that increase the functionality of the laptop. You can install many different devices into the universal bay, including optical drives, hard disk drives, and extra batteries. You can install different types of cards into the PC card slots, including Ethernet, wireless Ethernet, modems, and memory card readers.

On the top and sides of the laptop, you will work with:

- Optical drives
- PC cards

Show

DOCKING STATION

EXTERNAL CABLES

TEST

EXPLORE

ANTISTATIC MAT

 Battery	 RAM	 RAM Access Panel	 RAM Panel Screw	 HDD Panel Screw	 Optical Drive	 Hard Drive
---	---	--	---	---	---	--

PC Card

Laptop

Docking Station

Power Cable

Ethernet Cable

Modem Cable



Aligning and Installing Components





Completing a Layer in Learn Mode

IT Essentials Virtual Laptop
Help ?

LEARN

UNDERSIDE LAYER

You have completed the Power Supply installation. You may now return to the course lesson, or continue exploring your virtual computer.

OK

TOP & SIDES LAYER

DOCKING STATION LAYER

EXTERNAL CABLES LAYER

TEST

EXPLORE

ANTISTATIC MAT

Battery

RAM

RAM Access Panel

RAM Panel Screw

HDD Panel Screw

Hard Disk Drive (HDD)

HDD Screw



Learn Mode: Top & Sides Layer

IT Essentials Virtual Laptop
Help ?

LEARN

UNDERSIDE LAYER

TOP & SIDES LAYER

The sides of the laptop have bays that allow you to install devices that increase the functionality of the laptop. You can install many different devices into the universal bay, including optical drives, hard disk drives, and extra batteries. You can install different types of cards into the PC card slots, including Ethernet, wireless Ethernet, modems, and memory card readers.

On the top and sides of the laptop, you will work with the following components:

- Optical Drive
- PC Card

Show Instructions

DOCKING STATION LAYER

EXTERNAL CABLES LAYER

TEST

EXPLORE

ANTISTATIC MAT

PC Card

Laptop

Docking Station

Power Cable

Ethernet Cable

Monitor Cable



Learn Mode: Docking Station Layer



IT Essentials Virtual Laptop

Help ?

LEARN

UNDERSIDE LAYER

TOP & SIDES LAYER

DOCKING STATION LAYER

You use the docking station to quickly connect and use devices that are normally connected to desktop computers, including a mouse, a full-sized keyboard, and an external monitor. You can charge the laptop while it is connected to the docking station. The docking station also provides additional expansion ports, including USB ports, the PC Card slot and the ExpressCard slot. You can charge the laptop battery while it is connected to the docking station.

On the docking station, you will work with the following components:

- Laptop

Show Instructions

EXTERNAL CABLES LAYER

TEST

EXPLORE



ANTISTATIC MAT





Learn Mode: External Cables Layer

IT Essentials Virtual Laptop

Help ?

LEARN

UNDERSIDE LAYER

TOP & SIDES LAYER

DOCKING STATION LAYER

EXTERNAL CABLES LAYER

External cables connect the docking station to the monitor, mouse, keyboard, USB devices, Ethernet, and AC power.

In the external cables layer, you will work with the following components:

- Monitor Cable
- Keyboard Cable
- Mouse Cable
- USB Cable
- Ethernet Cable
- Power Cable

Show Instructions

TEST

EXPLORE

Ethernet
Cable

Monitor
Cable

USB Cable

Keyboard
Cable

Mouse
Cable



Test Mode

LEARN

TEST

Use this mode to test your ability to assemble a laptop computer from scratch. You must still follow the layers of access, however you will not receive any instruction. Once you have completed a layer, you will automatically be forwarded to the next level of access.

If you need instruction, switch to Learning Mode or return to the course.

Good luck!

EXPLORE

ANTISTATIC MAT

Battery	RAM	RAM Access Panel	RAM Panel Screw	HDD Panel Screw	Hard Disk Drive (HDD)	HDD Screw



Explore Mode

LEARN

TEST

EXPLORE

This section acts as a quick reference to the components in their installed state.

Rollover a highlight box to learn more and to see detailed views of the item





The “Learn More” Option

IT Essentials Virtual Laptop
Help ?

LEARN

TEST

EXPLORE

This section acts as a quick reference to the components in their installed state.

Rollover a highlight box to learn more and to see detailed views of the item

AVAILABLE VIEWS:

EXPLORE: RAM

AVAILABLE VIEWS:

Use the scrubber to rotate hardware

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