

# Unit 140: CompTIA A+ Essentials

**Unit code:** H/602/1386

**QCF Level 2:** BTEC National

**Credit value:** 10

**Guided learning hours:** 60

## ● Aim and purpose

Learners taking this unit will be able to develop the knowledge, skills and understanding to be able to complete the CompTIA A+ Essentials Examination. Focussed on Hardware and Systems maintenance, this is a practical unit, where hands on experience of installation and faultfinding are essential.

## ● Unit introduction

This unit offers a comprehensive introduction to the principles of computer hardware giving the learner a chance to explore the technology used in a range of hardware and operating systems.

The unit covers repair techniques, maintaining a system and the professional roles and responsibilities of a systems support specialist. Working with different operating systems, the learner will also explore issues around networking systems, safe practices and systems security.

CompTIA link with a number of different partners to offer a range of learning resources, which learners and centres can access through CompTIA's Academic learning programme. To attain a pass in this unit, learners must take the CompTIA A+ essentials certification exam.

This unit will prepare learners to sit the CompTIA A+ Essentials certification exam. This unit is also assessed with BTEC merit and distinction criteria.

To view general information about CompTIA objectives please visit: [www.comptia.org](http://www.comptia.org), where the detailed scope and sequence for all certifications are available for anyone to download.

## ● Learning outcomes

**On completion of this unit a learner should:**

- 1 Use Personal Computer Components
- 2 Understand Personal Computer Troubleshooting, Repair and Maintenance
- 3 Understand Operating Systems
- 4 Understand Basic Networking Fundamentals
- 5 Understand Security Concepts and Technology
- 6 Understand Operational Considerations when working with Personal Computers

# **Unit content in relation to Merit and Distinction Criteria**

## **1 Use Personal Computer Components**

*Desktop system components: storage devices e.g. optical, solid state, magnetic; motherboards; power supplies; CPUs; cooling methods; memory; display devices; input devices e.g. keyboard, mouse, microphone, touch screen; adapter cards; specialised laptop components; printing devices;*

## **2 Understand Personal Computer Troubleshooting, Repair and Maintenance**

*System faults: printer faults; operating system faults; hardware faults; laptop faults; preventative techniques;*

## **3 Understand Operating Systems**

*Operating systems: types e.g. Windows XP, Windows Vista, Windows 7, Windows 8, Windows 8.1, Linux, Mac; user interfaces e.g. types, enhancement, accessibility; installation; boot sequences e.g. methods, startup utilities*

## **4 Understand Basic Networking Fundamentals**

*Networking Technologies: devices e.g. host, router, switch, wireless access point; protocols e.g. TCP/IP suite; cables e.g. connectors, cable types; network types e.g. local area network, wide area network, personal area network, metropolitan area network, star, bus, ring, mesh, Internet;*

## **5 Understand Security Concepts and Technology**

*Security features: wireless encryption; protection against malware; BIOS/UEFI security; password management; password complexity; locking workstations; biometrics;*

## **6 Understand Operational Considerations when working with Personal Computers**

*Health and safety requirements: use of tools; electrical safety; manual handling; electrostatic protection of computer equipment*

*Professional requirements: communication skills; working with others; accepting supervisory support*

## Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

<b>Assessment and grading criteria</b>		
<b>To achieve a pass grade the evidence must show that the learner is able to:</b>	<b>To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:</b>	<b>To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:</b>
<b>Pass current CompTIA A+ Essentials Certification Exam</b>  The centre will evidence this with a copy of the learners results, the learner MUST PASS at the minimum set by CompTIA.	<b>M1</b> Explain the purpose and interaction of desktop system components [IE]  <b>M2</b> Explain how to prevent common system faults [IE]  <b>M3</b> Compare the installation of two operating systems [IE]  <b>M4</b> Explain the interaction of networking technologies [IE]  <b>M5</b> Explain the current use of common security features [IE]  <b>M6</b> Explain the purpose of current health and safety requirements [IE]	<b>D1</b> Test and troubleshoot a system with predefined system faults [IE, RL, SM]  <b>D2</b> Install an operating system, following health and safety and professional requirements [TW,SM,EP]

**PLTS:** This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

<b>Key</b>	IE – independent enquirers CT – creative thinkers	RL – reflective learners TW – team workers	SM – self-managers EP – effective participators
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# Essential guidance for tutors

## Delivery

The CompTIA A+ essentials course and associated certifications are delivered as part of an academic programme available to centres in UK and Eire. Centres may only access this certification's associated discounts from within this programme and are advised to seek guidance on what current courses comprise the study/delivery required for learners to access the certification.

More information on the programme, membership and delivery requirements can be found at [www.comptia.org](http://www.comptia.org).

If learners are taking CompTIA study as part of their BTEC programme, it is recommended that both programmes of study become integrated. Practical and theory tasks for the CompTIA programme can be integrated into the study required for the merit and distinction criteria within this unit.

The outcomes of this unit are synergic with the A+ Practical Applications; both units may be delivered in parallel or in sequence. Units in systems support and networking, that are both BTEC specific as well as from other vendors may be taught in conjunction with the CompTIA units to enhance the learners experience.

## Outline learning plan

CompTIA as part of their academy programme, provide learning plans and study guidance for their courses. CompTIA recommend an estimated 75 hours of delivery to attain the pass criteria, in line with QCF credit and notional learning hours. The notional hours for managed learning is set at 40 for learners to attempt the merit and distinction.

## Assessment

To achieve a pass grade, learners must pass the current CompTIA A+ essentials examination.

### Programme of suggested assignments

The table below shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the assessment and grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Pearson assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
M1, M2, D1	Knowing your system	The learner working as a junior technician will be given a faulty computer and expected to resolve the 'known' faults.	For M1/M2 written artefact, presentation, wiki or blog. For D1 witness/observation with some notes on how the learner resolved the issue (via Q+A) other evidence such as photo evidence will be needed
M3, M4, M5, M6, D2	Installing your system	The learner working as a junior technician will have the opportunity to install an operating system	For M3/M4/M5/M6 written artefact, presentation, wiki or blog. For D2 witness/observation with some notes on how the learner resolved the issue (via Q+A) other evidence such as photo evidence will be needed

## **Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications**

Links to 6.1 of the NOS and may be co-presented with all other CompTIA modules

### **Essential resources**

As members of the CompTIA academic programme, centres may choose to access a range of teaching and assessment practice resources. The technological requirement for this unit does not demand any more than the 'average' centre is already providing for a computer systems session, old computers, spare components, replacement parts will enhance the learning experience. If a centre is restricted by the cost of licensing, many Linux distributions exist, that are easy to install and now comparable in support and management terms to other popular operating systems.

### **Employer engagement and vocational contexts**

CompTIA certification is internationally recognised by a range of employers (from SME's to large corporations) as one of the principal certifications in systems support and maintenance.

### **Indicative reading for learners**

For access to the CompTIA academic programme resources and more information on joining the programme, please visit [www.comptia.org](http://www.comptia.org)

### **Delivery of personal, learning and thinking skills**

The table below identifies the opportunities for personal, learning and thinking skills (PLTS) that have been included within the pass assessment criteria of this unit.

<b>Skill</b>	<b>When learners are ...</b>
<b>Independent enquirers</b>	
<b>Creative thinkers</b>	
<b>Reflective learners</b>	The pass criteria is set by an examination, the PLTS of self management and reflective learning is supported by the learner, taking personal study and revision in advance of the Examination.
<b>Team workers</b>	
<b>Self-managers</b>	
<b>Effective participants</b>	

Although PLTS are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

<b>Skill</b>	<b>When learners are ...</b>
<b>Independent enquirers</b>	Investigating current hardware and operating system solutions as well as testing and troubleshooting a system
<b>Creative thinkers</b>	Whilst suggesting system solutions
<b>Reflective learners</b>	During troubleshooting and faultfinding tasks
<b>Team workers</b>	During installation, troubleshooting and faultfinding tasks
<b>Self-managers</b>	At some stages during installation
<b>Effective participants</b>	At some stages during installation

## ● Functional Skills — Level 2

Skill	When learners are ...
<b>ICT – Use ICT systems</b>	
Select, interact with and use ICT systems independently for a complex task to meet a variety of needs	During installation and fault resolution
Use ICT to effectively plan work and evaluate the effectiveness of the ICT system they have used	During installation and fault resolution
Manage information storage to enable efficient retrieval	During installation and fault resolution
Follow and understand the need for safety and security practices	During installation and is met in outcome 6
Troubleshoot	This is a core feature of this entire module
<b>ICT – Find and select information</b>	
Select and use a variety of sources of information independently for a complex task	During installation and fault resolution
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	During installation and fault resolution
<b>ICT – Develop, present and communicate information</b>	
Enter, develop and format information independently to suit its meaning and purpose including: <ul style="list-style-type: none"> <li>• text and tables</li> <li>• images</li> <li>• numbers</li> <li>• records</li> </ul>	During the presentation of findings when addressing the merit criteria
Bring together information to suit content and purpose	During the presentation of findings when addressing the merit criteria
Present information in ways that are fit for purpose and audience	During the presentation of findings when addressing the merit criteria
Evaluate the selection and use of ICT tools and facilities used to present information	During the presentation of findings when addressing the merit criteria
Select and use ICT to communicate and exchange information safely, responsibly and effectively including storage of messages and contact lists	During the presentation of findings when addressing the merit criteria

Skill	When learners are ...
<b>Mathematics</b>	
Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations	Use of computer/network based addressing schemes and voltages
Identify the situation or problem and the mathematical methods needed to tackle it	
Select and apply a range of skills to find solutions	
Use appropriate checking procedures and evaluate their effectiveness at each stage	
Interpret and communicate solutions to practical problems in familiar and unfamiliar routine contexts and situations	
Draw conclusions and provide mathematical justifications	
<b>English</b>	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	