Australian Government

Department of Education, Employment and Workplace Relations

ICAICT421A Connect, maintain and configure hardware components

Release: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

ICAICT421A Connect, maintain and configure hardware components

Modification History

Release	Comments
Release 1	This Unit first released with *ICA11 Information and Communications Technology Training Package version 1.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to install, configure and maintain personal computer devices, including mobile devices according to client and user requirements. It provides an understanding of different types of available hardware components and peripherals, and gives an insight into their interconnectivity.

Application of the Unit

This unit applies to support technicians who set up, modify and connect system components.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

Elements and Performance Criteria

1. Identify hardware components	1.1 Identify different types of *personal computer devices*
	1.2 Identify and categorise the different *personal computer components*, including *mobile personal computer components*
	1.3 Explain the purpose and characteristics of the different personal computer component categories
	1.4 Distinguish between the different types of devices within each personal computer component category
2. Identify types of peripheral hardware components	2.1 Identify and categorise the different *peripheral hardware components*
	2.2 Explain the purpose and characteristics of the different peripheral hardware components
	2.3 Distinguish between the different types of devices within each peripheral hardware component category
3. Install and configure personal computer components	3.1 Install and configure personal computer components
	3.2 Install and configure mobile personal computer components
	3.3 Develop plans, with prioritised tasks and contingency arrangements, for the installation and configuration of selected components with minimum disruption to *clients*
	3.4 Liaise with appropriate person to obtain approval for the plans
	3.5 Install and configure components according to plan, installation procedures and *organisational requirements*
	3.6 Use appropriate *testing tools* to test components for error-free performance
	3.7 Identify and resolve identified problems
	3.8 Test and enhance system performance, using knowledge of the system, to meet organisational benchmarks
	3.9 Document the installation and configuration process according to organisation guidelines
	3.10 Develop and document a maintenance plan and schedule based on vendor specifications for the installed components
4. Install and configure print devices	4.1 Install and configure *print devices*
	4.2 Detect and identify common *printer issues*
	4.3 Undertake *printer issue resolution* to meet client requirements
5. Evaluate modified	5.1 Collect client or user feedback and analyse against client

system	requirements
	5.2 Correct identified shortcomings in the system and record actions

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
    - consult with peers, supervisors and internal and external clients
    - interpret technical computer installation manuals
    - interpret user manuals and help functions
- literacy skills to:
    - organise resources for one-to-one instruction
    - read technical manuals
- planning and organisational skills to:
    - address technical issues
    - plan activities, including milestones
- problem-solving skills to anticipate and respond to a range of driver-related errors that may arise
- technical skills to:
    - comprehend how the operating system will communicate with the installed component
    - install components
    - test components using available technology
    - test system performance
    - write technical reports and maintain records.

Required knowledge

- environmental considerations in e-waste disposal
- systems diagnostic software
- areas of the operating system related to configuration and testing
- current industry-accepted hardware and software products
- organisational guidelines
- organisational requirements
- system's current functionality
- vendor specifications and requirements for component installation.

Innovation and Business Skills Australia

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • identify and categorise the different types of hardware, internal hardware and peripheral hardware components • install components across a variety of situations and account for unexpected contingencies • modify system's hardware, internal hardware and peripheral hardware components to meet client requirements • plan the modification and connection hardware, internal hardware and peripheral hardware components according to vendor and technical specifications • test components and rectify identified problems.
Context of and specific resources for assessment	Assessment must ensure access to: • hardware, internal hardware and peripheral hardware components for installation and configuration • use of current industry standard performance testing software • documents detailing organisational guidelines and requirements • technical manuals and tools • appropriate learning and assessment support when required • modified equipment for people with special needs.

Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:
	• verbal or written questioning to assess candidate's knowledge of systems diagnostic software and systems functionality
	• direct observation of candidate:
	  • connecting hardware, internal hardware and peripheral hardware components
	  • testing components and rectifying identified problems
	• evaluation of client requirements and candidate's final recommendations
	• review of candidate's written notes.

Guidance information	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where

for assessment	appropriate.
	Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed.
	Indigenous people and other people from a non-English speaking background may need additional support.
	In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Personal computer devices may include:	- iPAD (or similar) - laptop - notebook - personal digital assistant (PDA) - personal computer (Mac or PC) - server - workstation.
Personal computer components may include:	- cooling systems: - case fans - CPU fans - heat sinks - thermal compound - memory: - adapter cards - capture cards (TV and video) - graphics cards - I/O cards: - Firewire - parallel - serial - universal serial bus (USB) - media reader - sound cards - storage controllers: - eSATA cards - redundant array of inexpensive or independent disks (RAID) cards (RAID array - levels 0,1,5) - wired and wireless network cards - motherboards: - advanced network basic input/output system (BIOS) settings - bus speeds - chipsets

Innovation and Business Skills Australia

	- complementary metal oxide semiconductor (CMOS) battery - expansion slots - firmware updates - front panel connectors - I/O ports - jumper settings - memory slots - socket types - sound, video, USB 1.1, USB 2.0, serial, IEEE 1394 or Firewire, parallel, NIC, modem, PS/2 - power supplies: - connector types and quantity - output voltage - wattages and capacity - processors: 32bit versus 64bit - cache - front side bus - number of cores - power consumption - socket types - speed - storage devices: - CD, DVD, RW or blu-ray - external - floppy disk drive (FDD) - hard disk drive (HDD): - parallel advanced technology attachment (PATA) - serial advanced technology attachment (SATA) - solid state - optical drives - removable.
Mobile personal computer components may include:	- components of the LCD, including inverter, screen and video card - communication connections: - Bluetooth - cellular wireless area network (WAN) - ethernet - infra-red

	• modem
	• expansion devices:
	   • docking station
	   • peripheral component interconnect (PCI) express cards
	   • Personal Computer Memory Card International Association (PCMCIA) cards
	• hard drive and memory
	• input devices:
	   • function keys
	   • point devices, such as touch pad, point stick or track point
	   • stylus or digitiser
	• internal laptop expansion slot types
	• keyboard, processor, plastics, pointer devices, heat sinks, fans, system board, CMOS battery, and speakers
	• power and electrical input devices:
	   • auto-switching
	   • batteries
	   • fixed input power supplies
	• wireless cards and video card.

Peripheral hardware components may include:	• input devices:
	   • bar code reader
	   • biometric devices
	   • keyboard
	   • KVM switch
	   • mouse
	   • multimedia, such as web and digital cameras, MIDI, microphones
	   • touch screen
	• output devices:
	   • printers
	   • screen
	   • speakers
	• printer consumables
	• printer drivers (compatibility).

Clients may include:	• department within the organisation • person within a department • third party.
Organisational requirements may include:	• how and what the organisation wants in regard to work environment • preventative maintenance and diagnostic policy

	- problem solution processes - roles and technical responsibilities in the IT department - vendor and product service level support agreements.
Testing tools may include:	- anti-static pad and wrist strap - cable testers - extension magnet - loop back plugs - multi-meter - power supply tester - specialty hardware or tools.
Print devices may include:	- impact - inkjet - laser - local versus network printers - thermal.
Printer issues may include:	- blank paper - error codes - garbage printout - ghosted image - lines and smearing - no connectivity - out of memory error - paper jams.
Printer issue resolution may include:	- clean printer - clear paper jam - install maintenance kit (reset page count) - power cycle - replace drum - replace fuser - set IP on printer.

Unit Sector(s)

General ICT