Australian Government

Department of Education, Employment and Workplace Relations

ICAICT303A Connect internal hardware components

Release: 1

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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 modify and connect system hardware components according to client and user requirements.

Application of the Unit

This unit applies to support technicians who modify and connect system components. Ensuring the integrity of the system after the operation is critical in the context of minimising client disruption and need for continuing desktop operation.

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, categorise and distinguish between the different types of internal hardware components	1.1 Identify and categorise the different ***internal hardware components*** 1.2 Explain the purpose and characteristics of the different internal hardware component categories 1.3 Distinguish between the different types of devices within each internal hardware component category
2. Determine components required	2.1 Identify and clarify user internal hardware component requirements according to ***organisational guidelines*** 2.2 Organise and record user component requirements, pass on to ***appropriate person*** for evaluation and vendor selection
3. Obtain components	3.1 Contact vendors to obtain technical specifications for the proposed components 3.2 Assess the options and provide recommendations to the appropriate person for final analysis 3.3 Obtain components to prepare for installation
4. Install components	4.1 Develop plans, with prioritised tasks and contingency arrangements, for the installation of selected components with minimum disruption to ***clients*** 4.2 Liaise with appropriate person to obtain approval for the plans 4.3 Install and configure components according to plan, installation procedures and ***organisational requirements*** 4.4 Test components for error-free performance, using available technology 4.5 Identify and resolve identified problems 4.6 Test and enhance system performance, using knowledge of the system, to meet organisational benchmarks 4.7 Document the installation and configuration process according to organisation guidelines
5. Evaluate modified system	5.1 Collect client or user feedback and analyse against client 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 and 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
  - plan, prioritise and organise work
  - write technical reports and maintain records
- planning and organisational skills to address technical issues
- 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.

Required knowledge

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

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 internal hardware components • modify system's hardware to meet client requirements • plan the modification and connect internal hardware components according to vendor and technical specifications • install components across a variety of situations and account for unexpected contingencies.
Context of and specific resources for assessment	Assessment must ensure access to: • personal computer and internal hardware components for installation • 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. Note: The careful planning and promotion of hardware upgrades and changes are critical to the effective support of business functions. Hardware modifications need to be risk managed similar to other business processes. The effective management and execution of the component maintenance and replacement process may significantly determine the amount of downtime a company encounters.
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 system diagnostic software and system functionality • direct observation of candidate connecting internal hardware components • evaluation of client requirements and candidate's final recommendations • review of candidate's written notes.

	Note: Evidence for assessment from industry or vendor-certified training may be presented for the whole or part of this unit depending on the range of variables and performance criteria.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where 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.

Internal hardware components may include:	• adapter card components:
	  • communications:
	  • modem
	  • network interface card (NIC)
	  • I/O:
	  • parallel
	  • small computer system interface (SCSI)
	  • serial
	  • universal serial bus (USB)
	  • multimedia:
	  • capture cards
	  • sound card
	  • TV tuner cards
	  • video:
	  • AGP
	  • peripheral component interconnect (PCI)
	  • PCIe
	• cooling system components:
	  • CPU and case fans
	  • heat sinks
	  • liquid cooling systems
	  • thermal compound
	• CPU components and features:
	  • 32 bit versus 64 bit
	  • hyper threading
	  • identify CPU types:
	  • AMD
	  • Intel
	  • multi-core:
	  • dual core
	  • quad core
	  • triple core

	• onchip cache:
	  • L1
	  • L2
	  • speed (real versus actual)
	• display device components:
	  • connector types:
	  • component or RGB
	  • DVI pin compatibility
	  • HDMi
	  • S-Video
	  • VGA
	  • LCD technologies:
	  • contrast ratio
	  • native resolution
	  • resolution (e.g. XGA, SXGA+, UXGA, WUXGA)
	  • projectors, CRT and LCD
	  • settings:
	  • degauss
	  • multi-monitor
	  • refresh rate
	  • resolution
	• memory components and features:
	  • ECC versus non-ECC
	  • parity versus non-parity
	  • single channel versus dual channel
	  • single sided versus double-sided
	  • speed:
	  • PC100
	  • PC133
	  • PC2700
	  • PC3200
	  • DDR3-1600
	  • DDR2-667
	  • types:
	  • DRAM
	  • SRAM
	  • SDRAM
	  • DDR or DDR2 or DDR3
	  • RAMBUS

	• motherboard components:
	  • basic input/output system (BIOS), complementary metal oxide semiconductor (CMOS) or Firmware:
	  • CMOS battery
	  • POST
	  • bus architecture
	  • bus slots:
	  • AGP
	  • AMR
	  • CNR
	  • PCI
	  • PCIe
	  • Personal Computer Memory Card International Association (PCMCIA)
	  • chipsets
	  • contrast RAID (levels 0, 1, 5)
	  • form factor:
	  • ATX or BTX
	  • micro ATX
	  • NLX
	  • I/O interfaces:
	  • IEEE 1394 or Firewire
	  • modem
	  • NIC
	  • parallel
	  • PS/2
	  • serial
	  • sound
	  • USB 1.1 and 2.0
	  • video
	  • memory slots:
	  • DIMM
	  • RIMM
	  • SIMM
	  • SODIMM
	  • parallel advanced technology attachment (PATA):
	  • EIDE
	  • IDE
	  • processor sockets
	  • riser card or daughterboard

	• serial advanced technology attachment (SATA) • eSATA • power supply components: • AC adapter • ATX proprietary • pins (20, 24) • voltage selector switch • voltage, wattage and capacity • storage devices and backup media components: • floppy disk drive (FDD) • hard disk drive (HDD): solid state versus magnetic • optical drives, such as CD, DVD, RW or blu-ray • removable storage: • external CD-RW and hard drive • hot swappable devices and non-hot swappable devices • solid state (e.g. thumb drive, flash, SD cards, USB) • tape drive.
Organisational guidelines may include:	• communication methods • content of emails • dispute resolution • document procedures and templates • downloading information and accessing particular websites • financial control mechanisms • opening mail with attachments • personal use of emails and internet access • virus risk.
Appropriate person may include:	• authorised business representative • client • supervisor.
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.

Unit Sector(s)

General ICT