Australian Government

Department of Education, Employment and Workplace Relations

ICANWK402A Install and configure virtual machines for sustainable ICT

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 develop and implement virtualisation technologies with the goal of providing a more sustainable information and communications technology (ICT) environment.

Application of the Unit

This unit applies to those who work in the network area of organisations and are responsible for the use of virtual machines to increase sustainability.

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 virtualisation benefits and features	1.1 Research and determine ***government and industry*** guidelines and policies for use of desktop and server virtualisation 1.2 Identify benefits of virtualisation of desktop and server environments 1.3 Identify available features of current ***virtualisation software*** 1.4 Select virtualisation solution based on current and future needs of the client
2. Install and configure virtualisation software	2.1 Identify, clarify and organise requirements of the ***client*** relating to virtualisation technologies, following ***organisational requirements*** 2.2 Identify the ***hardware*** and software, infrastructure components, required to be installed and configured to meet technical requirements 2.3 Install and configure software to provide support for virtualisation of desktop and server operating systems 2.4 Configure virtualisation software application features to accommodate required functionality, relating to client and business needs
3. Install and configure virtual machines	3.1 Install virtual machine consistent with client, ***commercial and business requirements*** 3.2 Configure virtual machine consistent with client, commercial and business requirements 3.3 Test functionality of installed virtual machine
4. Configure virtual networks of virtual machines	4.1 Configure IP addressing to match chosen network configuration 4.2 Configure virtual network as host only configuration 4.3 Configure virtual network as bridged configuration 4.4 Configure virtual network as network address translation (NAT) configuration 4.5 Configure services to operate under current network configuration 4.6 Test functionality of virtual network configuration
5. Back up and restore virtual machines	5.1 Back up virtual machine state on shutdown 5.2 Restore state on start-up of virtual machine

	5.3 Back up virtual hard drive and software configuration files 5.4 Restore virtual hard drive and software configuration files

Required Skills and Knowledge

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

Required skills

- communication skills to:
  - convey and clarify information
  - liaise with clients
- literacy skills to:
  - develop and document virtualisation configurations and processes
  - record researched information
- planning skills to plan methods for integrating and maintaining a virtualised machine environment
- problem-solving skills to:
  - apply solutions in networks, including virtualised machine environments
  - deploy rapid deployment of solutions to problems involving virtualised machine environment
- safety awareness skills to apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
- technical skills to apply current best practice to implement sustainability options through virtualisation methodologies and technologies.

Required knowledge

- overview knowledge of:
  - current government and industry policies and guidelines related to developing sustainable ICT environments
  - current technologies and processes designed to produce a sustainable ICT environment
- detailed knowledge of:
  - available tools and software applications required to manage virtual machines
  - structure, function and business organisation of client
  - configuration of software applications required to manage virtual machines
  - configuration required to integrate virtual machines into existing network design.

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: • display knowledge of current sustainability practice related to ICT network design • develop, implement and maintain virtual machine environments.
Context of and specific resources for assessment	Assessment must ensure access to: • site or prototype where virtual machine environments may be implemented • network technical requirements • software tools to support implementation of virtual machines • appropriate learning and assessment support when required. Where applicable, physical resources should include equipment modified 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 emerging policies related to:
	  • current recommendations on sustainability options in ICT design
	  • benefits of virtualisation
	• verbal or written questioning to assess candidate's knowledge of:
	  • installation and configuration of virtualisation software
	  • installation and configuration of virtual machines
	  • configuration of virtual machines into network design
	• direct observation of candidate demonstrating:
	  • installation and configuration of virtualisation software
	  • installation and configuration of virtual machines
	  • configuration of virtual machines into network design
	• review of documentation prepared by candidate to:
	  • record research of current recommendations on

	sustainability options in ICT design and the benefits of virtualisation • record the process of installing and configuring virtual machines.
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.

Government and industry may include:	• Australian Computer Society
	• Australian government
	• Climate Savers Computing Initiative
	• state government
	• The Green Grid:
	  • AMD
	  • APC
	  • Dell
	  • HP
	  • IBM
	  • Intel
	  • Microsoft
	  • Sun Microsystems
	  • VMware.

Virtualisation software may include:	• KVM • Microsoft Virtual PC • Microsoft Virtual Server • Parallels Desktop for Mac • Sun Virtual Box • VMware • Xen.
Client may include:	• external organisations • individuals • internal departments • internal employees.
Organisational requirements may include:	• how and what the organisation wants in regard to work environment • preventative maintenance and diagnostic policy • problem-solving processes • roles and technical responsibilities in network management • vendor and product service level support agreements.
Hardware may include:	• personal computers • servers

	• workstations.
Commercial and business requirements may include:	• availability • backup and recovery of data • confidentiality • firewalls • hacking prevention • integrity • password logons • remote access to internal network.

Unit Sector(s)

Networking