Australian Government

ICANWK534A Monitor and troubleshoot virtual computing environments

Release 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

ICANWK534A Monitor and troubleshoot virtual computing environments

Modification History

Release	Comments
Release 1	This version first released with ICA11 Information and Communications Technology Version 2.

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to monitor and troubleshoot virtualisation technologies with the goal of providing more efficient and reliable information and communications technology (ICT) environment.

Application of the Unit

This unit applies to senior networking staff responsible for increasing the sustainability of an enterprise by using virtualisation technologies.

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

ELEMENTS	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. Plan strategies to monitor and troubleshoot the performance of enterprise virtual computing environment	1.1. Develop a plan to monitor ***virtual environment*** to ensure availability and optimal performance according to ***enterprise requirements*** 1.2. Identify virtual environment critical activity level and assign resources as needed 1.3. Review system logs and alerts to facilitate virtual environment tuning
2. Manage virtual environment performance to ensure full resource optimisation	2.1. Monitor and diagnose memory, central processing unit (CPU) and distributed power management performance 2.2. Review storage and cluster performance to maximise operational efficiency 2.3. Monitor tasks, events and alarms, and network activity and make relevant adjustments to ensure optimal operation
3. Analyse and troubleshoot virtual environments	3.1. Review virtual machine capacity, application and storage input and output (I/O) performance to identify and resolve performance issues 3.2. Test, analyse and troubleshoot identified ***virtual network*** problems 3.3. Analyse and troubleshoot ***high availability*** to ensure that virtual machines are running at optimal performance levels 3.4. Consult with ***virtualisation software vendors*** in order to provide solutions
4. Diagnose virtual environment faults and provide solutions	4.1. Use virtualisation client and server ***management software*** tools to help diagnose virtual environment problems 4.2. Install and configure ***external virtualisation management tools*** to help diagnose virtual environment problems 4.3. Use system logs and alerts to collect and analyse errors 4.4. Evaluate problems using log files and alerts

Required Skills and Knowledge

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

Required skills

communication skills to:

- liaise with clients
- convey and clarify information
- initiative and enterprise skills to proactively minimise, control or eliminate hazards in work activities
- literacy skills to:
  - record researched information
  - develop and document virtualisation configurations and processes
- 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 solutions to problems involving virtualised machine environments
- technical skills to apply current best practice to implementing sustainability options through virtualisation methodologies and technologies

Required knowledge

- overview knowledge of:
  - current government and industry policies and guidelines relating to developing efficient and reliable ICT environments
  - current technologies and processes designed to produce an efficient and reliable ICT environment
- structure, function and business organisation of client
- available tools and software applications required to manage virtual machines
- 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: • monitor enterprise virtual computing environment using the correct management tools • configure enterprise virtual computing environment to operate at an optimal performance level • troubleshoot problems in virtual computing environment using relevant management tools.
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 • range of suitable software • 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:
	  • current recommendations on sustainability options in ICT design
	  • benefits of virtualisation
	  • 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.

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.*

Virtual environment may include:	• clusters • guest VM • host VM • licensing • resources • storage • virtual machine.
Enterprise requirements may include:	• how and what the enterprise wants regarding the work environment • preventative maintenance and diagnostic policy • problem-solving processes • roles and technical responsibilities in network management • vendor and product service level support agreements.
Virtual networks may include:	• bridged networks • host-only networks • private virtual local area networks (VLANs) • networks using network address translation (NAT).
High availability may relate to use of:	• clustered virtual machines performing an identical task • load balancing between virtual machines to ensure service

	requirements are met • pre-configured virtual machines that can be rapidly stored and deployed in the event of a system failure • standby power solutions in the event of a power disruption.
Virtualisation software vendors may include:	• Citrix • KVM • Microsoft • Oracle • Parallels • VMware.
Management software may include:	• Citrix Essentials for Hyper-V • Citrix XenServer Management Console • Microsoft Hyper-V • Microsoft Systems Center Virtual Machine Manager • Parallels H-Sphere • VMware Infrastructure Client • VMware vCenter Lab Manager • VMware vSphere Client • vSphere Client and host update utility.
External virtualisation management tools may include:	• Citrix Essentials • PowerShell from Microsoft • RVTools from Robware.net • vControl from Vizioncore.

Unit Sector(s)

Networking