



Australian Government

Department of Education, Employment and Workplace Relations

ICASUS701A Plan and manage virtualisation for IT sustainability

Release: 1

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Modification History

Release	Comments
Release 1	This Unit first released with <i>ICA11 Information and Communications Technology Training Package version 1.0</i>

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to analyse, plan and manage options using virtualisation and managed services for organisational processes to meet sustainability targets.

Application of the Unit

This unit applies to those who have responsibility for conducting or managing information and communications technology (ICT) infrastructure projects, such as network managers, information technology (IT) infrastructure managers, network planners and designers, consultants or contractors.

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
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>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.</i>

Elements and Performance Criteria

1. Develop an organisational plan to implement IT virtualisation	1.1 Analyse current enterprise operations to determine what processes or practices can be realised using virtualisation to ensure long-term sustainability within the organisational guidelines 1.2 Research and analyse alternative virtualisation scenarios, including a risk analysis and relative comparisons of each, considering return on investment (RoI) 1.3 Produce results of the analysis prioritising the sequence of processes to be virtualised, based on enterprise priorities and the setting of sustainability targets for the organisation
2. Manage strategies for deploying virtual machines	2.1 Analyse business factors that cause enterprises to migrate to virtualisation 2.2 Identify virtualisation inhibitors that are preventing the organisation from deploying strategies on local virtual machines 2.3 Produce a virtualisation management plan to capitalise on using virtual machines according to enterprise priorities
3. Manage outsourced services and cloud networks	3.1 Analyse the IT requirements of the organisation to produce a cloud architecture using multiple cloud computing elements indicating the layers of the cloud client stack 3.2 Produce a cost-benefit analysis 3.3 Produce analytical justifications that will determine the deployment model that meets the business requirements of the organisation 3.4 Set up a service level agreement (SLA) with the managed services provider (MSP) or the network provider to ensure the responsibilities of the stakeholders are specified and agreed to

Required Skills and Knowledge

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

Required skills

- analytical skills to compare and evaluate effective and innovative technical solutions involving the introduction or improvement of sustainability
- communication skills to:
 - adjust communication to suit different audiences
 - consult on and validate policy
 - liaise with stakeholders to outline resulting sustainability benefits
 - respond effectively to diversity
 - work as a member of a team
- literacy skills to:
 - prepare analytical reports, management plans and SLAs regarding the level of achievement of sustainability benchmarks, environmental targets and performance highlights
 - document technical requirements and procedures
 - evaluate complex and formal documents, such as government policy and legislation
 - interpret:
 - related sustainability documentation
 - technical specifications and installation manuals
 - process and present written information to a diverse range of people
 - write reports, design solutions and recommendations in required formats
- numeracy skills to:
 - analyse and confirm capacity and interoperability requirements
 - calculate budget requirements and limitations
 - determine workforce requirements
 - perform calculations to produce cost-benefit analysis
- planning and organisational skills to plan, prioritise and monitor own work
- problem-solving skills to:
 - account for unexpected variations to requirements
 - manage different points of view and dissenting stakeholders
 - resolve installation issues
- research and writing skills to:
 - prepare written SLA requiring precise expression, language and structures suited to the intended audience
 - research and present information
- research skills to:
 - interrogate vendor databases and websites to identify different solutions to meet client business specifications
 - gain and maintain relevant knowledge on current technology driving sustainability
- technical skills to:
 - evaluate virtual machines and methodologies

- produce cloud architecture and integration into existing network
- use sustainability software tools.

Required knowledge

- best practice approaches relevant to sustainability
- business processes, including:
 - relevant organisational policies, procedures and protocols
 - relevant systems and procedures to aid in the achievement of workplace sustainability
- client business domain, including client organisation structure and business functionality
- cloud computing architecture
- compatibility issues and resolution procedures
- configuration of internet protocol (IP) networks
- current industry-accepted products
- customer and business liaison
- energy consumption and energy audit methodology
- environmental and sustainability legislation, regulations and codes of practice applicable to industry and organisation
- environmental impacts of products, processes, systems and services
- equal employment opportunity, equity and diversity principles and OHS implications of policy being developed
- IT power-consumption calculations
- linkage between processes
- policy development processes and practices
- principles, practices and available tools and techniques of sustainability management relevant to the ICT industry
- quality assurance systems relevant to own organisation
- range of relevant managed services, including software, network and support
- systems diagnostic features
- technologies:
 - cloud computing
 - power supply requirements and management
 - server design and network architecture
 - set-up and configuration procedures
 - single and multiple processors
 - vendor specifications and requirements for software installation
 - virtual server functionality
 - virtualisation using software simulation.

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: • develop plan for virtualisation and manage strategies, including managed services • determine and meet client requirements for installation and testing of virtual server • install, integrate and test virtualisation components according to vendor and technical specifications • produce cost-benefit analysis and virtualisation management plan for justification • set up SLAs.
Context of and specific resources for assessment	Assessment must ensure access to: • appropriate learning and assessment support when required • modified equipment for people with special needs • site and equipment on which servers can be virtualised • server virtualisation currently used in industry • relevant documentation, feasibility studies, equipment manuals and other site-related documentation.
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: • direct observation of the candidate carrying out installation, integration and testing of virtual server • review of plans completed by the candidate for different sites outlining design and resources required • verbal or written questioning to assess knowledge of methodologies used.
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.
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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.

<i>Organisational guidelines</i> may include:	• budget allocations • capital expenditure • integrity • operational expenditure • projected growth • reliability • risk management • security.
<i>Virtualisation scenarios</i> may include:	• cloud networking: • hybrid • private • public • managed services: • backup • network management • software production, support and maintenance • storage • system management • user management • virtual machines: • IP network and voice over internet protocol (VoIP) • PC • server • simulators • storage • test machines.
<i>Enterprise priorities</i> may include:	• dynamic loads and demands • frequency of changes to specifications • return on investment • system integrity and security • time for implementation.
<i>Business factors</i> may	• improved IT responsiveness and effectiveness • backup and data protection

include:	• company profitability and growth rate • guaranteed application quality of service • improved application availability • improved business continuity • stronger security • time spent on routine IT administrative tasks • virtualisation of business critical applications.
Virtualisation inhibitors may include:	• lack of: • available budget • resources or skills to deploy • uncertainty about: • best possible solution • business benefits of return on investment.
Virtualisation management plan may include:	• acquiring skills and resources • obtaining reliable business consultant on virtualisation • preparing risk analysis • revisiting budget allocations • using tools on total cost of ownership (TCO) to prove cost benefits.
Cloud computing elements may include:	• cloud infrastructure: • billing • security • software testing • cloud platform: • access control service • application server • data protection • web applications • web frontend • cloud service: • communication • customer relationship management (CRM) • database • email server • file server • finance and accounting • IT tools • productivity • scheduling • storage and backup

	- cloud storage: - database.
Layers of the cloud client stack may include:	- application services or software as a service (SaaS): - Aviary - image editor - business applications - Google docs - Jaycut - video editor - MS Office Web applications - Pixlr - photo editor - infrastructure services or infrastructure as a service (IaaS): - Amazon Web Services - Flexiscale - GoGrid - platform services or platform as a service (PaaS): - Force.com - Google AppEngine - Microsoft Azure - RackSpace.
Analysis would:	- verify if virtualisation, either through cloud computing or managed services, would offer better returns on investment - allow the organisation to meet sustainable targets.
Deployment model may include:	- hybrid cloud - private or internal cloud - public or external cloud.
Business requirements may include:	- availability and performance - compliance - legal - open source - privacy - security - sustainability.
Service level agreement may include:	- backup - costs - interoperability - quality of service - reliability - risk management.

Unit Sector(s)

Sustainability