



Australian Government

Department of Education, Employment and Workplace Relations

ICAI5100C Build an internet infrastructure

Release: 1

ICAI5100C Build an internet infrastructure

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit defines the competency required to design and implement an infrastructure for internet services.
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Application of the Unit

Application of the unit	
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
	ICAB5160C	Build and configure a server

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and design internet infrastructure to meet business requirements	1.1. Select internet infrastructure in line with business and end-user requirements, within budget limitations 1.2. Evaluate the internet service for satisfactory performance and confirm that the service meets business and end-user requirements 1.3. Ensure that <i>hardware, software, network</i> and security requirements are in accordance with agreed business and end-user specifications 1.4. Research internet to source suppliers, technologies, delivery schedules and replacement parts and document findings 1.5. Evaluate internet service providers and establish their capability to deliver the required connection service 1.6. Determine internet protocol address allocation based on the number of addresses needed
2. Install and configure internet infrastructure to meet business requirements	2.1. Install and test cables, where appropriate 2.2. Build and test <i>servers</i> 2.3. Install, configure and test switches 2.4. Install, configure and test firewalls 2.5. Install and test broadband hardware with selected internet service provider 2.6. Install workstation <i>software</i> and configure access to services 2.7. If required, install the necessary <i>hardware</i> and <i>software</i> to connect the internet to intranets or <i>network</i> 2.8. Configure domain names, internet protocol addresses and network address translation settings to make internet access possible
3. Install and configure internet services to meet business requirements	3.1. Set up <i>software</i> to provide <i>services</i> as required 3.2. Install and configure <i>software</i> that provides internet links with existing <i>databases</i> , documents, files 3.3. Develop templates and style guides for internet documents 3.4. Configure security access levels to safeguard data, making use of appropriate tools
4. Test security and internet access	4.1. Test and verify security access levels 4.2. Monitor and evaluate capability and reliability of

ELEMENT	PERFORMANCE CRITERIA
	security systems 4.3. Make changes to system to ensure protection against known and potential <i>threats</i>
5. Ensure that user accounts are verified for security access and monitored	5.1. Verify user settings to ensure that they conform to security policies 5.2. Have legal notices displayed at appropriate locations for system users 5.3. Check passwords in accordance with business policies and verify with software utility tools 5.4. Plug well-known security gaps with appropriate <i>hardware</i> and/or <i>software</i>
6. Manage and support the internet	6.1. Assist management in developing procedures and policies for maintaining the internet infrastructure 6.2. Obtain, install and use management tools to assist in internet administration 6.3. Monitor traffic, appropriateness of broadcasts, content access and hits over the internet 6.4. Create logs and other reports required to manage and support the internet 6.5. Optimise internet performance

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- Communication skills in relation to dealing with clients and team members (e.g. when internet specifications are produced to meet client user requirements and budget constraints)
- Basic report writing skills for business, including analysis and evaluation
- Ability to create and use logs for examining and reporting, required to manage and support the internet service on the organisation's LAN
- Problem solving skills involving participation of other users and management.
- Basic research skills for identifying, analysing and evaluating broad features of a particular business and sound skills in internet security patching and monitoring
- Questioning and active listening skills in relation to clients and team members
- Ability to participate in project planning activities, in relation to scope, time, cost,

REQUIRED SKILLS AND KNOWLEDGE

quality, communications and risk management

Required knowledge

- Current and developing industry hardware and software (e.g. routers, servers, switches and modems), with broad knowledge of general features and capabilities (e.g. LAN or WAN application, network traffic management)
- General knowledge of the organisation's business needs and functions
- General understanding of LAN-based communications technologies
- Knowledge of internet (WAN-based) technologies, with general understanding of features and capabilities, incorporating depth in some areas, for example, being able to consider the various WAN technologies when managing and supporting the internet (e.g. ADSL, ISDN, PRI (primary rate interface) and BRI (basic rate interface), ATM, frame relay, leased line)
- General knowledge of OH&S requirements in relation to working in a safe manner; environmental aspects of work that is undertaken and basic and ergonomic considerations relating in particular to the workstation environment
- Security knowledge, with broad understanding of general features and capabilities, with limited depth in some areas (e.g. when monitoring security and internet access)
- Broad knowledge of vendor product and vendor directions (e.g. when installing and configuring internet infrastructure to meet business requirements (e.g. current trends are self-configuring ADSL or cable modem-router-switches, however, these apply to the simpler LANs, such as SOHO (Small Office, Home Office), where LAN configurations are relatively simple)
- Broad knowledge of open source options and software (e.g. Linux-based systems) as well as proprietary software (e.g. Microsoft based systems)

Evidence Guide

EVIDENCE GUIDE	
<p>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.</p>	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> • Assessment must verify knowledge of internet technologies and that internet technology (both hardware and software) is installed and configured correctly. <p>To demonstrate competency in this unit the person will require access to:</p> <ul style="list-style-type: none"> • Server hardware and software • Security policy guidelines • Networking hardware (e.g. switches, cables)
Context of and specific resources for assessment	<p>The choice of LAN/WAN technologies has increased notably in recent years. Two important aspects accompany these many alternatives: the affordable cost and the emerging trend to automated set-up predominantly for the home or small business market.</p> <p>This unit is geared for medium to large LAN/WAN designs rather than the automatic set-up approach and accordingly requires a more rigorous level of configuration. The breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and coordination would be characteristic.</p> <p>Assessment must ensure:</p> <ul style="list-style-type: none"> • The demonstration of competency may also require self-directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for

EVIDENCE GUIDE	
	<p>self and others.</p> <ul style="list-style-type: none"> • Applications involve participation in development of strategic initiatives as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team coordination may also be involved.
Method of assessment	<p>The purpose of this unit is to define the standard of performance to be achieved in the workplace. In undertaking training and assessment activities related to this unit, consideration should be given to the implementation of appropriate diversity and accessibility practices in order to accommodate people who may have special needs. Additional guidance on these and related matters is provided in ICA05 Section 1.</p> <ul style="list-style-type: none"> • Competency in this unit should be assessed using summative assessment to ensure consistency of performance in a range of contexts. This unit can be assessed either in the workplace or in a simulated environment. However, simulated activities must closely reflect the workplace to enable full demonstration of competency. • Assessment will usually include observation of real or simulated work processes and procedures and/or performance in a project context as well as questioning on underpinning knowledge and skills. The questioning of team members, supervisors, subordinates, peers and clients where appropriate may provide valuable input to the assessment process. The interdependence of units for assessment purposes may vary with the particular project or scenario.
Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p> <p>An individual demonstrating this competency would be able to:</p>

EVIDENCE GUIDE

	<ul style="list-style-type: none"> • Demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas • Analyse and plan approaches to technical problems or management requirements • Transfer and apply theoretical concepts and/or technical or creative skills to a range of situations • Evaluate information, using it to forecast for planning or research purposes • Take responsibility for own outputs in relation to broad quantity and quality parameters • Take some responsibility for the achievement of group outcomes • Maintain knowledge of industry products and services
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Range Statement**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.

Hardware may include but is not limited to:

- workstations
- personal computers
- modems and other connectivity devices
- networks
- DSL modems
- remote sites
- servers

Network may include but is not limited to:

- large and small LANs
- national WANs
- the internet
- VPNs
- the use of the PSTN for dial-up modems only
- private lines
- data

RANGE STATEMENT	
	<ul style="list-style-type: none"> • voice
<i>Services</i> may include:	<ul style="list-style-type: none"> • newsgroups • email • file transfer protocol facilities • multimedia • conferencing • general access to internal website HTML files
<i>Servers</i> may include:	<ul style="list-style-type: none"> • Application/web servers • BEA Weblogic servers • IBM VisualAge and WebSphere • Novell NDS servers • Email servers • File and print servers • FTP servers • Firewall servers • Proxy/cache servers
<i>Software</i> may include but is not limited to:	<ul style="list-style-type: none"> • commercial software applications • organisation-specific software • packaged software • in-house or customised software
<i>Databases</i> may include:	<ul style="list-style-type: none"> • Oracle • Sybase • Microsoft SQL Server • Ingres • DB2 • Informix • mSQL • MySQL • SQL server
<i>Threats</i> may include:	<ul style="list-style-type: none"> • eavesdropping • manipulation • impersonation • penetration • denial of service and by-pass • hackers • viruses

Unit Sector(s)

Unit sector	Implement
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Co-requisite units

Co-requisite units		

Competency field

Competency field	
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