



Australian Government

Department of Education, Employment and Workplace Relations

ICAA5140C Design a server

Release: 1

ICAA5140C Design a server

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	<p>This unit defines the competency required to choose appropriate hardware and software and to design a server.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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Application of the Unit

Application of the unit	
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		
	ICAA4041C	Determine and confirm client business expectations and needs
	ICAI4029C	Install network hardware to a network
	ICAS3120C	Configure and administer a network operating system

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. Choose server application	1.1. Determine and analyse requirements and collect possible server designs 1.2. Analyse client needs to determine specifications of server 1.3. Identify and research available applications 1.4. Identify server applications and features 1.5. Analyse server applications with reference to identified requirements 1.6. Provide alternative solutions , including system requirements and make options available to client 1.7. Select and source server application
2. Choose network operating system	2.1. Identify the network operating system features with reference to required server solution 2.2. Research available network operating system based on technical specification and capability and requirements 2.3. Analyse the most suitable network operating system with reference to identified requirements and current and projected needs 2.4. Choose the most suitable network operating system based on technical and business requirements
3. Select server components	3.1. Identify server components with reference to required server application and server features 3.2. Identify product specifications and limitations 3.3. Identify and analyse system interdependencies, including hardware prior to selection 3.4. Provide alternative solutions with reference to required server application and server features
4. Design server	4.1. Review vendor design and specified server for design applicability 4.2. Document server design and specifications 4.3. Analyse server design against requirements of the client 4.4. Test server for benchmarking against client specification and requirements 4.5. Make required changes to the design from the outcomes of the design testing

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- Planning and designing servers
- Performance analysis at the system and component level
- Basic cost-benefit comparisons (including return on investment (ROI) and total cost of ownership (TCO) in relation to applications, NOSs and overall server design
- Product analysis
- The use of tools for measuring (e.g. generic benchmarks, software sizing models, workload testing, performance monitoring)

Required knowledge

- Features of current server applications depending on requirements, (e.g. Lotus Notes/Novell GroupWise for messaging)
- Apache/MS IIS for web services
- Novel Border Manager/MS Proxy server for network services
- Oracle/MS SQL server/IBM DB2 for databases and data warehousing, Novell Directory Services/iPlanet for directory services
- HP Openview/Intel LAN Desk Server Manager/CA UniCenter for management
- SAP/PeopleSoft/Baan for line of business applications
- MS Terminal server/Citrix MetaFrame for terminal services
- Linux Terminal Services
- SMB servers (Linux, BSD-based)

Features of a range of hardware components, including:

- Single and multiple processors
- Memory (SD and RD RAM, memory leads, bandwidth)
- Chassis (size, thermals, EMI specifications, security, drive bays, cable management, ease of maintenance, LED/LCD panels, aesthetics)
- Disk drives and internal/external storage devices (RAID solutions and functionality, drive formats, back-up systems - DAT/DLT/AIT, storage area networks (SANs))
- Load balancers
- Power (supply requirements and management; protection: back-up/line-conditioning/surge suppression, power budgeting)
- Hot plug peripherals (PCI expansion cards, power supplies, hard drives, fans)
- Ancillaries (racks, keyboard, monitor, cabinets, air flow)
- Scaling up and scaling out

REQUIRED SKILLS AND KNOWLEDGE

- Fault tolerant failover clusters
- The data bus (SA bus, PCI bus)
- Memory cache and storage cache in relation to server performance and scalability
- Current storage interfaces (IDE, SCSI, SSA and Fibre Channel) in relation to storage selection
- Australian Computer Society Code of Ethics

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 confirm the ability to select the required hardware and software and design the server based on business and technical requirements. <p>To demonstrate competency in this unit the learner will require access to:</p> <ul style="list-style-type: none"> Server hardware Requirements documentation Business planning documentation Network operating software
Context of and specific resources for assessment	<p>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>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 self and others.</p> <p>Assessment must ensure:</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</p>

EVIDENCE GUIDE

	<p>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 to 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
<p>Guidance information for assessment</p>	<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> <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

EVIDENCE GUIDE

	<p>group outcomes</p> <ul style="list-style-type: none"> • 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.

Client may include but is not limited to:

- internal departments,
- external organisations,
- individual people
- employees

Requirements may be in reference to:

- business,
- system,
- application,
- network
- people in the organisation

Server -one or more servers depending on size and functionality of website and may include:

- Apache HTTP
- IBM VisualAge and WebSphere
- Microsoft-Internet-Information-Server, Microsoft-IIS, Microsoft-IIS-W
- Windows Server Family Products
- NetDynamics
- Lotus Domino
- Netscape Enterprise server, Netscape-FastTrack, Netscape-Commerce
- Sun Microsystems iPlanet web server
- iPlanet-Enterprise
- Sun Microsystems Java web server
- Email servers
- File and print servers
- FTP servers
- Proxy servers

RANGE STATEMENT	
Server application	<ul style="list-style-type: none"> • File sharing, • printer sharing, • messaging, • web services, • network and remote access, • database and data warehousing, • directory services, • management, • line of business applications, • terminal services, • virtual private networks, • web-DAV directory sharing
Network operating system may include features relating to:	<ul style="list-style-type: none"> • architecture, • scalability, • availability and reliability, • client support, • functionality (both features and limitations), • server management, • security, • application development tools, • middleware, • maintenance • cost
Business requirements may include:	<ul style="list-style-type: none"> • customer, • supplier, • payroll, • inventory • tax requirements of the organisation
System may include but is not limited to:	<ul style="list-style-type: none"> • hardware and software components that run a computer
Hardware may include but is not limited to:	<ul style="list-style-type: none"> • workstations, • personal computers, • modems and other connectivity devices, • networks, • DSL modems, • remote sites • servers
Solution may include but is not	<ul style="list-style-type: none"> • new hardware, • hardware upgrades,

RANGE STATEMENT

limited to:

- new software,
- software upgrades,
- user training
- implementing a new system

Unit Sector(s)

Unit sector	Analyse and Design
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Co-requisite units

Co-requisite units	

Competency field

Competency field	
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