



Australian Government

Department of Education, Employment and Workplace Relations

ICAA5044C Develop system infrastructure design plan

Release: 1

ICAA5044C Develop system infrastructure design plan

Modification History

Not Applicable

Unit Descriptor

<p>Unit descriptor</p>	<p>This unit defines the competency required to specify the hardware, network, software and infrastructure required to support the system.</p> <p>The following units are linked to form an appropriate cluster:</p> <ul style="list-style-type: none"> • ICAS5123C Manage network security • ICAA5054C Validate quality and completeness of design specifications • ICAA5056B Prepare disaster recovery and contingency plans • ICAT5083B Develop and conduct client acceptance test • ICAI5100C Build an internet infrastructure • ICAA5045C Produce network architecture design <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

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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		
	ICAA4041C	Determine and confirm client business expectations and needs
	ICAA5144B	Determine best-fit topology for a local network
	ICAA5145B	Identify best-fit topology for a wide area network
	ICAD4217B	Create technical documentation

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. Specify architecture requirements	<p>1.1. Identify the critical principles, functions and framework for the <i>system</i> to operate across business units, taking into account the project deliverables, <i>acceptance criteria</i> and current data and voice blueprint including forecast system demand</p> <p>1.2. Organise the functions into layers or wrappings and components to meet <i>business requirements</i></p> <p>1.3. Identify the processing environment, the <i>hardware, network</i>, cabling infrastructure and <i>software</i> required to support the operational environments</p> <p>1.4. Refine the <i>system</i> topology model, templates and <i>standards</i> to guide development</p> <p>1.5. Utilise the <i>project</i> guidelines, <i>standards</i>, models, <i>acceptance criteria</i> and general framework to develop the <i>architecture</i></p>
2. Specify hardware and software	<p>2.1. Evaluate various products and vendors against the <i>requirements</i> of the <i>architecture</i> to determine the best data and voice <i>solution</i></p> <p>2.2. Estimate and evaluate current and future capacity <i>requirements</i> against <i>client</i> future <i>requirements</i></p> <p>2.3. Identify the <i>requirements</i> for upgrade or change through analysis of <i>software</i> versions and interoperability status of existing <i>system</i> and <i>applications</i></p>
3. Conduct walkthrough and compare/contrast expected performance criteria against vendor proposed offerings	<p>3.1. Compare the <i>requirements</i> model against technical <i>specifications</i> and <i>acceptance criteria</i></p> <p>3.2. Benchmark the <i>requirements</i> model against current industry <i>standards</i> and IT blueprint for performance, interoperability and expected future <i>organisational requirements</i></p>
4. Document and report on findings	<p>4.1. Prepare the system infrastructure design plan, including hardware, network, cabling infrastructure, wireless access, software and general infrastructure aspects</p> <p>4.2. Document recommendations for improvement and refer to the <i>appropriate person</i></p>

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- Problem solving skills for a broad range of unpredictable problems involving analysis, diagnosis and evaluation (e.g. when specifying the critical principles, functions and framework for the system to operate across the enterprise or business units, taking into consideration the project deliverables, acceptance criteria and current IT blueprint)
- Plain English literacy and communication skills in relation to analysis, evaluation and presentation of information (e.g. when the initial statement of hardware needs is written)
- Group facilitation and presentation skills in relation to transferring and collecting information (e.g. when estimating current and future capacity requirements and evaluating against client's future requirements, and for documenting recommendations for improvement and referring them to appropriate technical specialists)
- Questioning and active listening skills (e.g. when specifying the critical principles, functions and framework for the system to operate across the enterprise or business units, taking into consideration the project deliverables, acceptance criteria and current IT blueprint)
- Technological capability assessment skills involving analysis, diagnosis and evaluation (e.g. when evaluating various products against architecture requirements to determine the best IT solution, and for estimating current and future capacity requirements and evaluating against client's future requirements)
- Research skills for specifying, analysing and evaluating broad features of a particular business domain and best practice in system development (e.g. when evaluating various products against architecture requirements to determine the best IT solution, and for benchmarking requirements model against current industry standards and IT blueprint for performance, interoperability and expected future organisational needs)
- Project planning skills in relation to set benchmarks and identified scope (e.g. when specifying the critical principles, functions and framework for the system to operate across the enterprise or business units, taking into consideration the project deliverables, acceptance criteria and current IT blueprint)
- Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas (e.g. when documenting recommendations for improvement and referring them to appropriate technical specialists)

Required knowledge

- Current industry-accepted hardware and software products
- Broad general knowledge of the client business domain, particularly the business function and organisation (e.g. when specifying architecture requirements)
- Basic knowledge of cabling and telecommunications technologies (e.g. when

REQUIRED SKILLS AND KNOWLEDGE

- specifying architecture requirements)
- Broad knowledge of vendor product directions and technology directions (e.g. when specifying hardware and software)
- Networking technologies, including broad knowledge of general features and capabilities incorporating substantial depth in some areas (e.g. when specifying architecture requirements)
- Broad knowledge of systems architectural design principles and methodologies (e.g. when specifying architecture requirements)
- Broad knowledge of modelling techniques and methodologies (e.g. when specifying architecture requirements, and for comparing and contrasting after walk-through of expected performance criteria against vendor proposed offerings)

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 sufficient knowledge of communications technology, hardware, software and data modelling. Assessment must confirm the ability to translate business processes into technical processes • Assessment must confirm the ability to plan and develop a model for a physical system from the requirements <p>To demonstrate competency in this unit the learner will need access to:</p> <ul style="list-style-type: none"> • Client requirements • The project deliverables • The acceptance criteria • Current IT blueprint • Information on a range of IT business solutions and vendor offerings • Future organisational business process requirements • Technical specifications
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>

EVIDENCE GUIDE	
	<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 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.
Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. In the case of this unit, it could be assessed in a holistic manner with:</p> <ul style="list-style-type: none"> • ICAA5054C Validate quality and completeness of system design specifications • ICAA5056B Prepare disaster recovery and contingency plans

EVIDENCE GUIDE

	<ul style="list-style-type: none"> • ICAT5083B Develop and conduct client acceptance test • ICAI5100C Build an internet infrastructure • ICAA5045C Produce network architecture design <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 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.

System

- Databases,
- applications,
- servers,
- cabling,
- wireless,
- operating systems,

RANGE STATEMENT	
	<ul style="list-style-type: none"> • gateways, • ASP • ISP
Acceptance criteria may include:	<ul style="list-style-type: none"> • timeframe, • cost implications, • technical and logistical considerations
Business requirements may be in reference to:	<ul style="list-style-type: none"> • business, • system, • application, • network • people in the organisation
Hardware may include but is not limited to:	<ul style="list-style-type: none"> • workstations, • personal computers, • modems and other connectivity devices, • networks, • communication connections, • remote sites • servers
Network may include but is not limited to:	<ul style="list-style-type: none"> • large and small LANs, • WANs, • the internet, • PSTN for dial-up modems, • DSL lines, • private lines, • VPNs, • data and voice, • policing and shaping
Software may include but is not limited to:	<ul style="list-style-type: none"> • commercial, • in-house, • packaged • customised software
Standards may include:	<ul style="list-style-type: none"> • ISO/IEC/IEEE/IETF/ITUAS standards, • organisational standards, • project standards
Project may include:	<ul style="list-style-type: none"> • a total organisational change, • a systems-only change, • a business improvement process, • data and voice integration • an e-business solution involving the total

RANGE STATEMENT	
	organisation or part of the organisation
Architecture may include but is not limited to:	<ul style="list-style-type: none"> • Operating system: Novell NetWare 5 or above or any operating system that has multi-user ability, Linux, Mac OS, Windows 2000 or above • Database software: Oracle, Sybase, Microsoft SQL server, Ingres, DB2, Informix, mSQL, MySQL, SQL server • Configuration: small memory model, large memory model, requests per second
Requirements may be in reference to:	<ul style="list-style-type: none"> • business, • system, • application, • network • people in the organisation
Solution may include but is not limited to:	<ul style="list-style-type: none"> • new hardware, • hardware upgrades, • new software, • software upgrades, • user training • implementing a new system
Client may include but is not limited to:	<ul style="list-style-type: none"> • internal departments, • external organisations, • customers, • individual people • employees
Applications may include but is not limited to:	<ul style="list-style-type: none"> • commercial software applications; • organisation-specific software; • word processing, • spreadsheet, • database, • graphic and communication packages • may include presentation applications contained in: Microsoft Office, Lotus Suite, Claris Works and Star Office
Specifications may include but is not limited to:	<ul style="list-style-type: none"> • technical requirements, • user problem statement, • current system functionality
Documentation may follow:	<ul style="list-style-type: none"> • ISO/IEC/IEEE/IETF/ITU/AS standards, • audit trails,

RANGE STATEMENT	
	<ul style="list-style-type: none"> • naming standards, • version control, • project management and report writing conventions, • maintaining equipment inventory, • client training and satisfaction reports
Appropriate person may include:	<ul style="list-style-type: none"> • a supervisor, • teacher, • authorised business representative • client
Organisational requirements may be in reference to:	<ul style="list-style-type: none"> • business, • system, • application, • network, • cabling • others specified by the organisation

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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