



Australian Government

Department of Education, Employment and Workplace Relations

ICAS4112B Optimise system performance

Release: 1

ICAS4112B Optimise system performance

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit defines the competency required to identify areas of poor system performance and take steps to improve and monitor performance. The following units are linked and form an appropriate cluster: • ICAI4030B Install software to networked computers • ICAI4097C Install and configure a network • ICAS4107B Rectify system faults on a live system • ICAS4113C Identify and resolve common database performance problems • ICAS4116B Undertake capacity planning • ICAS4127B Support system software No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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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		
	ICAI3110C	Implement system software changes

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. Identify areas of poor performance	1.1. Collect system performance data, during various usage conditions and times, utilising available technical tools 1.2. Evaluate the collected system performance data in relation to organisational benchmarks and client feedback, to ascertain areas of poor performance
2. Investigate methods to improve system performance	2.1. Identify options to improve performance through discussing the system performance findings with appropriate person and accessing technical resources 2.2. Create a report including cost analysis for appropriate person, detailing alternative courses of action based on the identified options and designed to measurably improve performance 2.3. Present the report to appropriate person for decision as to the preferred course of action
3. Develop an implementation plan for system optimisation	3.1. Develop a plan for implementing the approved optimisation, with prioritised tasks and minimum disruption to clients 3.2. Factor into the implementation plan, project budget and staff availability 3.3. Submit the implementation plan to the appropriate person for approval and revision, if necessary
4. Modify system to optimise performance	4.1. Install or configure system components in accordance with installation procedures and organisational guidelines, following the implementation plan 4.2. Measure and record the change in performance resulting from the system modification, in order to assess that the required level of optimisation has been achieved 4.3. Update appropriate documents according to organisational guidelines, to reflect the system optimisation
5. Monitor ongoing system performance	5.1. Implement and maintain a performance register 5.2. Review and assess benchmarks and performance regularly with the work team, to enable timely optimisation and updates

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- Measuring system performance against predefined benchmarks
- Risk analysis skills in relation to reviewing change procedures
- Comprehension of technical manuals
- Adequate use of diagnostic tools
- Report writing and recording skills

Required knowledge

- Current industry-standard hardware and software monitoring tools and the how to interpret information produced from monitoring
- Broad knowledge of the role of stakeholders and the degree of stakeholder involvement
- Detailed knowledge of the system's current functionality
- Broad knowledge of quality assurance practices
- One or more change management tools
- General knowledge of system performance, change control procedures and theoretical concepts
- Detailed knowledge of the system under modification
- Business scheduling requirements

Evidence Guide

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 following is essential:

- Assessment must confirm sufficient knowledge of the indicators of inadequate performance.
- Assessment must confirm the ability to keep the system balanced and performing well.
- Assessment must confirm the ability to analyse system performance.

To demonstrate competency in this unit the learner will require access to:

- System components and software for performance tuning
- Technical manuals and resources
- Fault logs
- Diagnostic tools

Context of and specific resources for assessment

As systems grow, they can become fragmented and congested with incompatible software and unused programs, which can lead to wasted CPU cycles and unnecessary overuse of RAM.

The role of optimising system performance can avoid spending money on unnecessary hardware and software when all that is required is careful management of current resources.

The breadth, depth and complexity of knowledge and skills in this competency would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance would be involved when organising activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

EVIDENCE GUIDE	
	Assessment must ensure: • Performance of a broad range of skilled applications including the requirement to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills would be characteristic. • Applications may involve responsibility for, and limited organisation of, others.
Method of assessment	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. • 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	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended,

EVIDENCE GUIDE

	for example: • ICAI4030B Install software to networked computers • ICAI4097C Install and configure a network • ICAS4107B Rectify system faults on a live system • ICAS4113C Identify and resolve common database performance problems • ICAS4116B Undertake capacity planning • ICAS4127B Support system software An individual demonstrating this competency would be able to: • Demonstrate understanding of a broad knowledge base incorporating some theoretical concepts • Apply solutions to a defined range of unpredictable problems • Identify and apply skill and knowledge areas to a wide variety of contexts, with depth in some areas • Identify, analyse and evaluate information from a variety of sources • Take responsibility for own outputs in relation to specified quality standards • Take limited responsibility for the quantity and quality of the output of others • 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 performance including network capacity and throughput can be affected by:

- imbalances in disk utilisation and available space
- memory availability and utilisation

RANGE STATEMENT	
	• processor utilisation • disk speed • allocation of files across disk space • number of concurrent users • work load • physical limitations of system • poor design in a program/s • queue depth • seek time • i/o channel availability
Tools may include:	• software • electronics equipment (e.g. volt-meter, oscilloscope, data analyser)
Client may include but is not limited to:	• internal departments • external organisations • individual people • employees
Appropriate person may include:	• supervisor • teacher • authorised business representative • client
Components may include:	• motherboards • CMOS battery • central processing unit (CPU) • CD and DVD drives • interface cards • drives • fax/modem cards • RAM upgrades • CPU upgrades
Organisational guidelines may include but are not limited to:	• personal use of emails and internet access • content of emails • downloading information and accessing particular websites • opening mail with attachments • virus risk • dispute resolution • document procedures and templates • communication methods • financial control mechanisms

RANGE STATEMENT	
Documentation may follow:	• ISO/IEC/AS standards • audit trails • naming standards • version control • project management templates • report writing principles
Improve performance may include:	• Load balancing between servers or other network devices (e.g. using switches or routers) • Tuning the disk sub-system • Reducing total load by tuning the operating system • Tuning applications to reduce the load they impose • Using various systems tools to adjust system parameters, including hardware or software upgrade

Unit Sector(s)

Unit sector	Support
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Co-requisite units

Co-requisite units		

Competency field

Competency field	
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