



Australian Government

Department of Education, Employment and Workplace Relations

ICAS4108B Complete database back-up and recovery

Release: 1

ICAS4108B Complete database back-up and recovery

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit defines the competency required to back-up and recover a database. The following units are linked and form an appropriate cluster: • ICAB4060B Identify physical database requirements • ICAB4061B Monitor physical database implementation • ICAB4136B Use structured query language to create database structures and manipulate data • ICAS4113C Identify and resolve common database performance problems • ICAS4114B Implement maintenance procedures • ICAS4125B Monitor and administer a database • 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		

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. Review database architecture	1.1. Identify the architecture of a database file system and consequently, determine the most appropriate methods for back-up and recovery 1.2. Identify and examine risks and failure scenarios that are likely or possible
2. Determine backup methods appropriate to database requirements	2.1. Evaluate a range of back-up and restoration methods based on organisational and security standards and on the assessment of likely or possible failure scenarios 2.2. Complete full off-line back-ups according to organisational and security standards with minimal down time 2.3. Complete on-line file back-ups as determined by organisational and security standards and with minimal down time 2.4. Employ disk mirroring and redundant array of inexpensive disks (RAID) hard disk configurations to keep copies of files 2.5. Arrange off-site copies of back-up files
3. Establish recovery points and disaster recovery procedures	3.1. Determine database recovery points based on the back-up arrangements according to organisational guidelines 3.2. Test the restore process in order to ensure that the database can be restored to a given recovery point, with minimal down time 3.3. Complete the restoration of the database to the point of failure, without loss of committed transactions
4. Create and deploy standby database	4.1. Create or set up a standby database to meet organisational guidelines 4.2. Implement standby database to support critical business functions 4.3. Prepare documentation for standby database

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

REQUIRED SKILLS AND KNOWLEDGE**Required skills**

- Analysis skills in relation to non-routine work processes
- Project planning skills in relation to set benchmarks and identified scope
- Report writing skills for business requiring depth in some areas, analysis and evaluation of information in a defined range of areas
- Problem solving skills in non-routine work processes
- Open file back-up procedures and restore operations
- Research skills for identifying, analysing and evaluating broad features of a particular business domain and best practice in back-up and recovery strategies

Required knowledge

- General knowledge of structured query language
- Detailed knowledge of database administration
- Basic knowledge of tuning methodologies
- General knowledge of the principles of databases
- Broad knowledge of diagnostic tools
- Detailed knowledge of back-up and recovery methods
- Detailed knowledge of database security

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 the ability to implement back-up and recovery procedures, with minimum disruption to the business and if necessary, to introduce contingency plans.

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

- Documentation standards
- Back-up and recovery policies
- Database package with data
- Server and networked PC on which to conduct back-up and recovery procedures

Context of and specific resources for assessment

Modern business practice requires organisations to implement efficient and effective methods of capturing, storing and retrieving business-critical information and data. The security and back-up of data repositories is of critical importance to most organisations.

Organisational databases are no longer static repositories of information rather they are dynamic, interactive and frequently 'live'. Client and customer access to on-line information can occur at any time and a key capability of any database system is the successful back-up in an efficient and timely manner without disruption or loss of data.

This unit addresses these three major elements in maintaining the integrity of an electronic database system - through creating periodic 'snapshot' back-ups of the open data files and then restoring them to working order.

EVIDENCE GUIDE

	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. Assessment of this unit of competency will usually include observation of the back-up and restore procedures, including the planning and the carrying out of the back-up and restore procedures, from determining what would be the best time to back up, to back up media, to the actual restore processes, including the use of particular tools or systems. Performance that involves evaluating and analysing current practices, to develop new criteria and procedures for performing current practices and for provision of some leadership and guidance to others, in the application of these skills. 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

EVIDENCE GUIDE	
	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, for example: - ICAB4060B Identify physical database requirements - ICAB4061B Monitor physical database implementation - ICAB4136B Use structured query language to create database structures and manipulate data - ICAS4113C Identify and resolve common database performance problems - ICAS4114B Implement maintenance procedures - ICAS4125B Monitor and administer a database - ICAS4127B Support system software An individual demonstrating this competency would be able to: - Demonstrate broad knowledge of database concepts - Identify and apply skill and knowledge areas to open file back-up procedures and restore operations

EVIDENCE GUIDE

	Additionally, 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.

Architecture may include but is not limited to:

- 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

Database may include but are not limited to:

- relational databases
- object-relational databases
- proprietary databases
- commercial off the shelf (COTS) database

RANGE STATEMENT	
	packages
Standards may include:	• ISO/IEC/AS standards • organisational standards • project standards (for further information refer to the Standards Australia website at: www.standards.com.au)
Back-up may involve:	• single or multiple tape units or DVD or CD back-up to more comprehensive and complex back-up facilities across the network or the internet
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
Documentation may follow:	• ISO/IEC/AS standards • audit trails • naming standards • version control • project management templates and report writing • maintaining equipment inventory • client training • satisfaction reports

Unit Sector(s)

Unit sector	Support
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Co-requisite units

Co-requisite units		

Competency field

Competency field	
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