



Australian Government

Department of Education, Employment and Workplace Relations

ICTTEN6042A Undertake system administration

Release: 1

ICTTEN6042A Undertake system administration

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to conduct system administration to maintain the integrity of network support systems and software. The unit applies to both system platforms and applications of computer systems including local area networks (LAN) and wide area networks (WAN). Computer-based networks such as call centres, billing centres, customer records, internet protocol (IP) based media content managers for internet protocol TV (IPTV) and web sites all require efficient system administration to maintain a viable network. System administration involves proactive maintenance, providing application support, creating and deleting user accounts and special investigations. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.
------------------------	--

Application of the Unit

Application of the unit	System administration support officers from service providers and large organisations apply the skills and knowledge in this unit to manage and administer the network and make recommendations for improved customer support.
--------------------------------	---

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
-----------------------------	--

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.
---	--

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Undertake proactive maintenance of system	1.1. Prepare methodology to undertake platform data base optimisation and administration effectively 1.2. Produce a cost benefit analysis of database optimisation schedule to evaluate the effective return on investment (RoI) benefit to the organisation 1.3. Produce training instructions for new users on methodology to ensure effective database optimisation and administration 1.4. Interrogate and monitor system platforms to determine error logs, aging time on processes, data base checks and system loadings 1.5. Notify appropriate personnel of problems with advice and guidance on likely solutions 1.6. Conduct measurements of the system from a user perspective on response times and initiate investigations on problem where specifications are not being met 1.7. Assess availability of data storage space and initiate appropriate action where required 1.8. Develop procedures for system backup and restoration, review for efficiency of operation and amend where required
2. Provide application support to system users	2.1. Produce a set of procedures for formal meetings with users on a regular basis for effectiveness to discuss user issues and provide support 2.2. Set up a user support network to provide responsive system administration to users on an ongoing basis as critical issues arise
3. Create and delete user accounts	3.1. Create a hierarchical user profiling system to manage user accounts effectively according to enterprise policy 3.2. Establish and monitor security procedures relating to access according to policy 3.3. Assess grounds for deletion of user accounts and determine necessary action
4. Undertake special investigations	4.1. Evaluate request for investigation to determine detail of action required 4.2. Prepare activity plan including timelines, specific goals, investigative team and resources required to conduct the investigation

ELEMENT	PERFORMANCE CRITERIA
	4.3. Conduct investigation methodically according to plan and record the findings 4.4. Analyse findings and prepare and forward reports, including recommendations to the requesting body

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

- analytical skills to:
 - perform cost benefit analysis of database
 - analyse findings of investigation
- communication skills to:
 - liaise with technical and other staff to ensure requirements are known
 - support users of applications
- initiative and enterprise skills to identify improvements to system administration tools and methods
- literacy skills to:
 - interpret technical specifications and related documentation and prepare reports and recommendations
 - produce training instructions
 - produce reports on system administration and investigations
- numeracy skills to make statistical calculations on traffic predictions
- planning and organisational skills to:
 - prepare methodology for data base optimisation and administration
 - develop support systems to manage user accounts
 - prepare activity plan for special investigations
- problem solving skills to:
 - overcome system problems
 - undertake special investigations
- technical skills to:
 - conduct database and data storage checks
 - develop user profiling system
 - interrogate and monitor system platforms:

REQUIRED SKILLS AND KNOWLEDGE

- conduct measurements
- monitor system loadings
- monitor system platforms
- provide system backup and restoration

Required knowledge

- back up systems
- computer knowledge
- meeting procedures
- methodology of system administration
- network management systems
- optimisation and administration database
- overview knowledge of telecommunications monitoring tools and telecommunications networks
- system:
 - investigation requests and actions
 - optimisation
- training instructions development
- user accounts security and profiling system

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 ability to:

- provide methodology for system maintenance
- produce cost benefit analysis and training for database optimisation and administration
- conduct system measurements
- develop support processes for system users
- manage user accounts and security procedures
- investigate potential system administration problems and make recommendations.

Context of and specific resources for assessment

Assessment must ensure:

- a network for maintenance and analysis of special investigations
- equipment and systems manuals, specifications and enterprise policy.

Method of assessment

The following assessment method is appropriate for this unit:

- direct observation of the candidate undertaking system measurements and investigations
- direct observation of the candidate providing application support, and creating and deleting user accounts
- review of reports and recommendations completed by the candidate for special investigations
- oral or written questioning to assess knowledge required to prepare methodology for system maintenance.

Guidance information for assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

- ICTNPL6046A Undertake network performance analysis
- ICTTEN6043A Undertake network traffic management

EVIDENCE GUIDE

- ICTTEN6044A Coordinate fault rectification and restoration of service following network outages
- ICTTEN6045A Implement planned network changes with minimal impact to the customer.

Aboriginal people and other people from a non-English speaking background may have second language issues.

Access must be provided to appropriate learning and assessment support when required.

Assessment processes and techniques must be culturally appropriate, and appropriate to the oral communication skill level, and language and literacy capacity of the candidate and the work being performed.

In all cases where practical assessment is used it will be combined with targeted questioning to assess required knowledge. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.

Where applicable, physical resources should include equipment modified for people with special needs.

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.

Methodology may include:

- implementation
- logical design

RANGE STATEMENT	
	• scoping • technical optimisation.
Optimisation refers to:	• steps: • add indexes • combine tables • de-normalise • sort • store derived data • use ranges.
Administration includes:	• administer users • awareness of database security • awareness of net and shared services • control database • create database • install database software • manage database interfaces • manage schema objects and data • manipulate storage structures • monitor and resolve lock conflicts • perform database backup • perform database recovery • performance monitoring • proactive maintenance.
Cost benefit analysis indicators include:	• benefit cost ratio (BCR) • net benefit • net present value (NPV) • present value of benefits (PVB) • present value of costs (PVC)
System platforms may include:	• Command post • HP open view • Oracle • SUN Operating system • UNIX • Windows 2000 • Windows NT.
Data base checks refer to:	• use of system resources, such as: • central processing unit (CPU) • internal and external hard drives • mesh networks

RANGE STATEMENT	
	• RAM • server farms • servers.
Problems may include:	• authorisations • backups • CPU usage time • data retrieval • flaky sectors on hard drive • lockups • logons • security breaches.
Measurements of the system may refer to:	• simulated or live environment • dummy loading of data to measure response in various situations, such as adding new customers to an existing data base.
Specifications refer to:	• speed of response and applications • vendor or platform and application specific.
Data storage may include:	• software and hardware variations • software redesign • storage area networks (SAN) • storage rearrangements.
User support network may include:	• email for logging issues • helpdesk for routine user support • hotline for critical system support • Wiki for collaborative and interactive user network and support.
User profiling system may include:	• allocation of users to specific groups • creation of customer user groups • creation of system access levels • creation of user profiles.
Security may include:	• encryption • firewall • logons with username and password • PINs • session initiation protocol (SIP).
Request for investigation may include:	• accessibility • availability • bandwidth allocation • data rate

RANGE STATEMENT

	• filtering • network congestion • performance of platform • performance of platform application • remote access using virtual private network(VPN) • uploads and downloads.
--	--

Unit Sector(s)

Unit sector	Telecommunications
--------------------	--------------------

Co-requisite units

Co-requisite units		

Competency field

Competency field	Telecommunications networks engineering
-------------------------	---