Australian Government

Department of Education, Employment and Workplace Relations

ICANWK532A Identify and resolve network problems

Release: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

ICANWK532A Identify and resolve network problems

Modification History

Release	Comments
Release 1	This Unit first released with *ICA11 Information and Communications Technology Training Package version 1.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to troubleshoot local area network (LAN), wide area network (WAN) and wireless network problems.

Application of the Unit

This unit applies to network managers, network engineers and technical specialists, who generally work independently with limited supervision. Staff at this level perform a broad range of problem-solving activities, including troubleshooting, evaluating and analysing networks, and planning and developing new systems and procedures. They generally have excellent problem-solving skills and address more complex or non-routine situations where discretion and judgement are required.

They provide technical advice, guidance and leadership in resolution of network problems and the role may involve responsibility for others.

Licensing/Regulatory Information

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.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	Performance Criteria
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

1. Implement regular network monitoring	1.1 Set up appropriate logs to monitor *network* activity and to produce a management information base (MIB)
	1.2 Use *network tools* to benchmark the network and to establish a reference point for network performance
	1.3 Identify critical activity levels and network capacity
	1.4 Regularly review documents and logs to facilitate network tuning
	1.5 Make recommendations to management for additional network resources to improve performance or to proactively avoid problems
2. Troubleshoot network problems	2.1 Communicate with help desk and other support services to quickly identify network problems
	2.2 Use various tools and knowledge of *network topology* and *protocols* to identify network problems
	2.3 Consult with vendor or service suppliers for assistance where appropriate
3. Diagnose network faults	3.1 Establish likely fault hierarchy using data from previous resolution attempts
	3.2 Progressively isolate fault with concurrent testing of fault presence
	3.3 Document steps taken to resolve fault
	3.4 Refer fault to a higher level if not resolved within organisational limits
4. Rectify faults	4.1 Isolate and repair, replace and reconfigure equipment or software
	4.2 Test network to ensure fault rectification
	4.3 Advise *users* and clients of progress and solutions in a timely manner
	4.4 Complete support *documentation*
5. Finalise fault rectification process	5.1 Review resolution of fault for possible reoccurrence, planned maintenance or upgrade requirements
	5.2 Report to client with fault resolution and recommendations
	5.3 Obtain sign-off from the *appropriate person* for work and billing outside of warranty or service level agreements
	5.4 Forward necessary documentation to the appropriate person

Required Skills and Knowledge

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

Required skills

- analytical skills to identify, analyse and evaluate support issues and network problems
- communication skills to:
    - communicate with help desk
    - consult with vendors
- literacy skills to:
    - interpret technical documentation, equipment manuals and specifications
    - record findings and write reports
- planning skills to manage projects to scope, time, cost, quality, communications and risk management
- problem-solving skills to solve operational problems arising
- technical skills to use:
    - benchmarking techniques
    - current industry-accepted hardware and software
    - network management tools.

Required knowledge

- current industry-accepted hardware, cabling and software products, including general features and capabilities
- detailed knowledge of organisational maintenance response level escalation procedures
- client business domain, including client organisation structure and business functionality
- network management tools, with broad knowledge of general features and capabilities, with substantial depth in troubleshooting areas
- network topologies
- networking technologies and broad knowledge of their features and capabilities, including those relating to:
    - protocol stacks of transmission control protocol or internet protocol (TCP/IP) and open system interconnection (OSI)
    - Institute of Electrical and Electronics Engineers (IEEE)
    - International Telecommunications Union (ITU)
    - Internet Engineering Task Force (IETF)
    - protocols, such as ethernet, AppleTalk, Novell, Linux or Unix.

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: • produce a management information base • benchmark the network performance • troubleshoot and rectify network problems • provide constant monitoring and tuning of the network • review fault resolution and make recommendations.
Context of and specific resources for assessment	Assessment must ensure access to: • live system and sites with a representative range of network environments and operating systems • technical records and documentation • management information base of accumulated fault resolution information • network support tools • appropriate learning and assessment support when required • modified equipment for people with special needs.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct observation of candidate undertaking network benchmarking activities • direct observation of candidate performing network testing to ensure fault rectification • review fault resolution documentation and recommendations • verbal or written questioning to assess candidate's knowledge of the troubleshooting and monitoring facilities available in the operating environment.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate. Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed. Indigenous people and other people from a non-English speaking

	background may need additional support. In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.

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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.

Network may include:	• data • digital subscriber line (DSL) connections • internet • large and small LANs • private lines • use of the public switched telephone network (PSTN) for dial-up modems only • voice • virtual private networks (VPNs) • WANs • wireless networks.
Network tools may include:	• cable testing • carrier connection tests • data and voice integration measurements • equipment testing • frequency analysers • network performance software • policing and shaping tools.
Network topology may include:	• bus • hierarchical • hybrid • ring • star.

Protocols may include:	• AgentX
	• CMIP over TCP/IP
	• common management information protocol (CMIP)
	• ethernet
	• internet protocol (IP)
	• simple network management protocol (SNMP):
	  • SNMPv1
	  • SNMPv2
	  • SNMPv2c
	  • SNMPv2u

	• SNMPv3 • transport control protocol (TCP) • user datagram protocol (UDP).
Users may include:	• employees • external organisations • individuals • internal departments.
Documentation may follow:	• audit trails • International Organization for Standardization (ISO), International Electrotechnical Commission (IEC) and Australian Standards (AS) standards • naming standards • project management templates • report writing principles • version control.
Appropriate person may include:	• chief information officer (CIO) • project manager • subject matter expert • supervisor • system administrator.

Unit Sector(s)

Networking