Australian Government
Department of Education, Employment and Workplace Relations

ICANWK504A Design and implement an integrated server solution

Release: 1

INDUSTRY
SKILLS
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ICANWK504A Design and implement an integrated server solution

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 carry out the design and implementation of an integrated server solution to enable multiple operating system platforms to co-exist on the same network.

Application of the Unit

This unit applies to officers employed in network or systems engineering roles where they are required to support multiple operating systems in a complex computing environment of medium to large organisations. Officers may be required to:

- ensure multiple operating systems co-exist on the same network
- implement a network authentication model that allows users to login using the same user credentials
- provide a secure method of sharing files between operating system platforms.

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. Prepare for the design and installation of an integrated server solution	1.1 Consult with client and key *stakeholders* to identify *server integration requirements*
	1.2 Prepare for work, according to site-specific safety requirements and enterprise OHS processes and procedures
	1.3 Arrange access to site and advise client of deployment and potential down times
	1.4 Consult appropriate personnel to ensure the task is coordinated effectively with others involved at the worksite
2. Plan and design integrated server solution	2.1 Research and review authentication methods available for integration of network *operating systems*
	2.2 Select appropriate *authentication methods and protocols*
	2.3 Research redundancy and replication requirements for selected authentication model
	2.4 Produce the integrated server design, including authentication, file sharing and security
3. Install and configure the integrated server solution	3.1 Implement integrated authentication solution
	3.2 Implement integrated *file sharing* solution
	3.3 Configure workstations for integrated environment
	3.4 Implement *security* for the integrated server environment
4. Test and reconfigure network servers	4.1 Test server for benchmarking against client specification and requirements according to test plan, and record outcomes
	4.2 Analyse error report and make changes as required
	4.3 Use troubleshooting tools and techniques to diagnose and correct integration problems
	4.4 Test required changes or additions
	4.5 Validate changes or additions against specifications
5. Complete and document network design and installation	5.1 Make and document server configuration and operational changes
	5.2 Complete client report and notification of server status
	5.3 Clean up and restore worksite to client's satisfaction
	5.4 Secure sign-off from appropriate person

Required Skills and Knowledge

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

Required skills

- communication skills to liaise with internal and external personnel on technical, operational and business-related matters
- literacy skills to:
    - interpret technical documentation
    - write reports in required formats
    - read and interpret enterprise procedures, manuals and specifications
- numeracy skills to:
    - take test measurements
    - interpret results
    - evaluate performance and interoperability of network
- planning and organisational skills to plan, prioritise and monitor own work
- problem-solving and contingency-management skills to adapt configuration procedures to requirements of network and reconfigure, depending on differing operational contingencies, risk situations and environments
- safety-awareness skills to:
    - apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
    - follow enterprise OHS procedures
    - work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- research skills to interrogate vendor databases and websites to find appropriate integration solutions
- technical skills to:
    - design an integrated server solution
    - identify the technical requirements, constraints and manageability issues for given customer integration requirements
    - implement an integrated server design
    - select and use server and network diagnostics, test application software and hardware to suit integrated environment.

Required knowledge

- authentication methods and protocols, such as lightweight directory access protocol (LDAP) and Kerberos
- compatibility issues and resolution procedures
- current network operating systems (NOS)
- current server applications, compatibility issues and resolution procedures
- documentation required for networks
- error and event logging and reporting
- file and print management

- file system security
- high availability options for servers
- network file systems and shares
- network service configuration and security
- operating system help and support utilities
- performance monitoring tools and tuning options
- process or task management
- task scheduling utilities
- troubleshooting tools and techniques, including network diagnostic utilities
- user authentication and directory services.

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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 design documents to integrate multiple server operating systems for authentication, file sharing and security - install and configure the integrated solution, according to the produced design - monitor and test the solution - troubleshoot integration problems.
Context of and specific resources for assessment	Assessment must ensure access to: - site where server installation may be conducted - relevant server specifications: - multiple operating system platforms - cabling - networked (LAN) computers - server diagnostic software - switch - client requirements - workstations - relevant regulatory documentation that affects installation activities - appropriate learning and assessment support when required. Where applicable, physical resources should include equipment modified 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: - evaluation of design report for an integrated server solution - direct observation of the candidate installing and configuring the integrated server solution - verbal or written questioning of required skills and knowledge - evaluation of design and implementation of system in terms of integrated functionality and suitability for business needs.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where

	appropriate.
Assessment	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.

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.

Client may include:	• external organisations • information and communications technology (ICT) company • individuals • internal departments • internal employees • service industry.
Stakeholders may include:	• development team • information technology (IT) manager or representative • project team • sponsor • user.
Server Integration requirements may refer to:	• automatic synchronisation of passwords • central or synchronised identity management system to store information about users • data availability for mobile devices • login with same user credentials across multiple platforms • password security across platforms • secure file sharing across multiple platforms • single sign-on.
Operating systems may include:	• Linux • Mac • mobile device • Unix • Windows Server.
Authentication methods and protocols may incorporate a combination of:	• enterprise single sign-on • Kerberos • LDAP • network basic input/output system (NetBIOS) • network information system (NIS) • Novell Directory Services (NDS) • pluggable authentic modules (PAM) • public key authentication and digital certificates • Red Hat Directory Services • server messages block or Samba

	• two-factor and multi-factor authentication • winbind • Windows Active Directory Services.
File sharing must be across multiple platforms and may include:	• distributed file systems • network file system (NFS) • server messages block (SMB) or Samba.
Security must be across multiple platforms and may include:	• authentication, authorisation and access control • directory server security • encryption • Kerberos security, such as pre-authentication and ticket validation • network share permissions • password security • secure socket layer (SSL) certificates • transport layer security (TLS).

Unit Sector(s)

Networking