



Australian Government

Department of Education, Employment and Workplace Relations

ICANWK401A Install and manage a server

Release: 1

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Modification History

Release	Comments
Release 1	This Unit first released with <i>ICAI1 Information and Communications Technology Training Package version 1.0</i>

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to install and manage a server. Server management includes initial configuration and testing as well as ongoing administration and troubleshooting. Server management includes initial configuration and testing, ongoing administration, software distribution and updates, profiling and monitoring servers and troubleshooting.

Application of the Unit

This unit applies to those employed in network management or server administration roles who are required to install and manage server operating systems.

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
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>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.</i>

Elements and Performance Criteria

<p>1. Prepare to install a server</p>	<p>1.1 Prepare for work, according to site-specific safety requirements and enterprise OHS processes and procedures</p> <p>1.2 Obtain <i>server applications</i> and features from <i>appropriate person</i></p> <p>1.3 Choose the most suitable operating system features and <i>network services</i> with reference to required server solution and technical <i>requirements</i></p> <p>1.4 Review required installation options</p> <p>1.5 Analyse data migration requirements</p> <p>1.6 Back up local data in preparation for installation</p> <p>1.7 Arrange access to site and advise client of deployment and potential down time</p>
<p>2. Install server as required by the specification</p>	<p>2.1 Create <i>disk-partitioning scheme</i></p> <p>2.2 Create <i>file systems</i> and virtual memory</p> <p>2.3 Install <i>network operating system</i></p> <p>2.4 Install and configure server applications and network services</p> <p>2.5 Reconnect and reconfigure connectivity devices</p> <p>2.6 Patch the operating system and applications to ensure maximum security and reliability</p> <p>2.7 Restore local data to new server</p>
<p>3. Configure and administer the server</p>	<p>3.1 Configure <i>network directory service</i></p> <p>3.2 Create and manage <i>accounts</i> to facilitate security and network access</p> <p>3.3 Configure <i>user environment</i> using operating system policies and scripts</p> <p>3.4 Create directory structure and quotas to meet client requirements</p> <p>3.5 Configure and manage <i>print services</i></p> <p>3.6 Set the security, access and sharing of <i>system resources</i> to meet client requirements</p> <p>3.7 Implement <i>security policy</i> to prevent unauthorised access to the <i>system</i></p> <p>3.8 Implement <i>backup and recovery</i> methods to enable restoration capability in the event of a disaster</p>

	3.9 Configure <i>update services</i> to provide automatic updates for operating system and applications
4. Monitor and test the server	<p>4.1 Test server for benchmarking against client specification and requirements according to test plan, and record outcomes</p> <p>4.2 Analyse the error report and make changes as required</p> <p>4.3 Use troubleshooting tools and techniques to diagnose and correct <i>server problems</i></p> <p>4.4 Test required changes or additions</p> <p>4.5 Validate changes or additions against specifications</p>
5. Complete documentation and clean up worksite	<p>5.1 Make and document server configuration and operational changes</p> <p>5.2 Complete client report and notification of server status</p> <p>5.3 Clean up and restore worksite to client's satisfaction</p> <p>5.4 Secure sign-off from appropriate person</p>

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
- 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
 - reconfigure depending on differing operational contingencies, risk situations and environments
- research skills to interrogate vendor databases and websites to implement different configuration requirements to meet security levels
- technical skills to:
 - select and use server and network diagnostics
 - test application software and hardware to suit different network applications.

Required knowledge

- features of:
 - current network operating systems (NOS)
 - current server applications compatibility issues and resolution procedures
- broad knowledge of:
 - compatibility issues and resolution procedures
 - desktop applications and operating systems as required
 - documentation skills for networks
 - error logging and reporting
 - high availability options for file systems, such as RAID and replication
 - network directory services
 - network service configuration
 - performance tuning options
 - user authentication
- detailed knowledge of:
 - best practice for implementing backup and recovery procedures
 - boot process

- operating system help and support utilities
- operating system installation methods, including installation from: CD or DVD, universal serial bus (USB) boot disk, network and script (automated install)
- print management
- process and task management, including process termination
- task-scheduling utilities
- troubleshooting tools and techniques, including network diagnostic utilities
- user account and password management.

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	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> • install and configure server • configure network connectivity • manage the server operating system, including user accounts, file, network directory and print services • perform backup and recovery • update operating system and software • monitor and test server • troubleshoot server and network failures. <p>Candidates should demonstrate competency in at least two different network operating systems.</p>
Context of and specific resources for assessment	<p>Assessment must ensure access to:</p> <ul style="list-style-type: none"> • site where server installation may be conducted • relevant server specifications: <ul style="list-style-type: none"> • cabling • networked (LAN) computers • server diagnostic software • switch • client requirements • WAN service point of presence • workstations • relevant regulatory documentation that affects installation activities • appropriate learning and assessment support when required. <p>Where applicable, physical resources should include equipment modified for people with special needs.</p>
Method of assessment	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> • direct observation of the candidate installing or updating a server • verbal or written questioning of required skills and knowledge

	<ul style="list-style-type: none">• evaluation of prepared report that outlines testing procedures, test results and recommendation to server changes.
Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate.</p> <p>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.</p> <p>Indigenous people and other people from a non-English speaking background may need additional support.</p> <p>In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.</p>

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.

<p><i>Server applications</i> may include:</p>	<ul style="list-style-type: none"> • database and data warehousing • directory services • file sharing • line of business applications • management • messaging • name services • network and remote access • printer sharing • terminal services • web applications.
<p><i>Appropriate person</i> may include:</p>	<ul style="list-style-type: none"> • authorised business representative • client • information technology (IT) support manager • network administrator • network manager • small or medium enterprise (SME) customer • small office home office (SOHO) customer • supervisor.
<p><i>Network services</i> may include:</p>	<ul style="list-style-type: none"> • dynamic host configuration protocol (DHCP) • dynamic name system (DNS) • file transfer protocol (FTP) • firewall • hypertext transfer protocol (HTTP or HTTPS) • internet message access protocol (IMAP) • network file system (NFS) • network time protocol (NTP) • post office protocol (POP) • proxy • server messages block (SMB) • simple mail transfer protocol (SMTP) • simple network management protocol (SNMP) • structured query language server (SQLS) • transmission control protocol or internet protocol (TCP/IP).

Requirements may be in reference to:	<ul style="list-style-type: none"> • application • business • database • network • people in the organisation • platform • system.
Client may include:	<ul style="list-style-type: none"> • external organisations • individuals • internal departments • internal employees.
Disk partitioning scheme may include:	<ul style="list-style-type: none"> • extended partitions • logical partitions • logical volumes • partitions • RAID • swap space.
File systems may include:	<ul style="list-style-type: none"> • EXT • FAT • HFS+ • NFS • new technology file system (NTFS).
Network operating system may include the latest versions of:	<ul style="list-style-type: none"> • Linux • Mac • Unix • Windows.
Network directory service may include:	<ul style="list-style-type: none"> • Hesiod • Kerberos • LDAP • NIS • Novell Directory Services (NDS) • Red Hat Directory Services • SMB or Samba • Windows Active Directory Services.
Accounts may include:	<ul style="list-style-type: none"> • computer accounts • groups • other objects defined by the operating system (OS) or network directory service • system and application accounts • user accounts.
User environment may	<ul style="list-style-type: none"> • automatic mounting or mapping of file systems or network

include:	<ul style="list-style-type: none"> shares • login defaults and options • password security, including length, ageing and expiry • user-desktop environment.
Print services may include:	<ul style="list-style-type: none"> • print drivers • print queues • print server • print spool location • printer pools.
System resources may include:	<ul style="list-style-type: none"> • applications • databases • files and directories • network file systems or shares • printers • SharePoint sites • websites.
Security policy may include:	<ul style="list-style-type: none"> • firewall • SE Linux • Windows Group Policy.
System may include:	<ul style="list-style-type: none"> • application • business • computers • database system • financial system • information system • management system • network • software • website.
Backup and recovery may include:	<ul style="list-style-type: none"> • automated backups using operating system backup and job scheduling tools • backup and recovery of mail systems • backup and recovery of network directory service objects • backups using third-party software • database backup and recovery • volume-shadow copies.
Update services may include:	<ul style="list-style-type: none"> • Pup • Red Hat Network • Windows Server Update Services • Yum.
Server problems may	<ul style="list-style-type: none"> • disk failure

include:	<ul style="list-style-type: none">• email hostname resolution• internet connectivity logged system errors• misconfigured networking.
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Unit Sector(s)

Networking