



Australian Government

Department of Education, Employment and Workplace Relations

ICANWK524A Install and configure network access storage devices

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 select, install and test a network access storage (NAS) device in a local area network (LAN).

Application of the Unit

This unit addresses the knowledge, processes and techniques necessary to install, configure and test a NAS device.

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

1. Determine specifications for NAS	<p>1.1 Determine and document the <i>topology</i> of the LAN</p> <p>1.2 Investigate and determine current and future <i>storage requirements</i> according to current and future business requirements</p> <p>1.3 Determine the number and type of <i>NAS</i> devices required, and refer to current and future network requirements</p> <p>1.4 Determine the requirements for network management, backup, security and redundancy, according to organisational policy</p>
2. Select appropriate hardware and software	<p>2.1 Select the hardware and <i>operating system</i> software version with the appropriate features according to required specifications</p> <p>2.2 Choose storage <i>applications</i> to determine access and response times</p>
3. Install hardware and software	<p>3.1 Install required level of RAID hardware or software</p> <p>3.2 Install <i>hard disks</i> as specified by manufacturer instructions</p> <p>3.3 Install operating system software according to manufacturer instructions</p> <p>3.4 Connect to network media using <i>media</i> that meets required <i>standard</i></p> <p>3.5 Connect power, power it up and check operation</p>
4. Configure NAS	<p>4.1 Configure a <i>network address</i> and <i>hostname</i></p> <p>4.2 Establish and test a valid network connection with other LAN devices</p> <p>4.3 Configure hard disks according to RAID requirements and format with appropriate file system</p> <p>4.4 Configure access and security according to application and organisational requirements</p>
5. Test and troubleshoot NAS	<p>5.1 Test NAS according to manufacturer requirements and organisational guidelines</p> <p>5.2 Ensure access and response times are acceptable to required applications, users and organisational policy</p> <p>5.3 Make adjustments to the configuration, depending on test and troubleshooting results</p>

Required Skills and Knowledge

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

Required skills

- literacy skills to:
 - conduct and document a wireless survey
 - develop a cut sheet or cabling map
 - document installed networks with appropriate labelling of cable terminations
- technical skills to:
 - attach a network device to the LAN
 - configure a workstation or server within a network environment
 - implement and configure networks
 - install and configure operating system
 - install hard disk drives
 - open, edit and save word-processing documents
- research skills to gather information to determine NAS requirements.

Required knowledge

- overview knowledge of:
 - advantages and disadvantages of NAS versus direct attached storage (DAS) devices
 - Australian Computer Society Code of Ethics
 - common hard drive types and connectors
 - common network cable types and connectors
 - common network topologies
 - implementation and configuration of networks
 - RAID configurations.

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 NAS device without interruption to other LAN services • configure LAN services accessing the NAS to allow user-less intervention for normal operation.
Context of and specific resources for assessment	<p>Assessment must ensure access to:</p> <ul style="list-style-type: none"> • NAS device or basic components to build a NAS, such as personal computer, operating system, hard disk, and network connection • network devices, such as switches and routers • workstations and servers • cabling access points and wireless access point • appropriate learning and assessment support when required • modified equipment for people with special needs.
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 setup of NAS device • evaluation of NAS systems and vendor products • completion of a design of NAS setup for a network storage problem • analysis of NAS performance in different usage situations.
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.

<i>Topology</i> may include:	<ul style="list-style-type: none"> • bus • hierarchical • hybrid • ring • star.
<i>Storage requirements</i> may include:	<ul style="list-style-type: none"> • amount of data to be stored • minimum free space required • temporary storage space • type of data to be stored: <ul style="list-style-type: none"> • bit torrents • databases • streaming media • user data files • websites.
<i>NAS</i> may be:	<ul style="list-style-type: none"> • built from basic components • produced by vendors: <ul style="list-style-type: none"> • Buffalo • Connex • D-Link • Hewlett-Packard • LinkSys • NetGear • Network Appliance • Reldata • Seagate • Synology • Western Digital.
<i>Operating system</i> may include:	<ul style="list-style-type: none"> • Citrix • HP-UX • IBM AIX • Linux variants: <ul style="list-style-type: none"> • ClarkConnect

	<ul style="list-style-type: none"> • Fedora • FreeNas • Naslite • OpenFiler • Red Hat • SME Server • Ubuntu • Mac • Microsoft Windows (client and server versions) • Novell SUSE Linux • Sun Solaris.
Applications may include:	<ul style="list-style-type: none"> • deployment servers • domain controllers • file servers • gaming server • media server • print servers • structured query language (SQL) server • user workstations • web server.
Hard disks may include:	<ul style="list-style-type: none"> • Firewire • parallel advanced technology attachment (PATA): <ul style="list-style-type: none"> • EIDE • IDE • serial advanced technology attachment (SATA) • eSATA • SAS • SCSI (multiple variations).
Media may include:	<ul style="list-style-type: none"> • fibre optic • STP • UTP • wireless: <ul style="list-style-type: none"> • infra-red • radio • satellite.
Standard may include:	<ul style="list-style-type: none"> • Cat5, 5e, 6 and 7 • EIA/TIA 568A • EIA/TIA 568B • FDDI • IEEE 802.11 (a, b, g or n)

	<ul style="list-style-type: none">• RJ45.
<i>Network address</i> may include:	<ul style="list-style-type: none">• IPX or SPX address• transmission control protocol or internet protocol (TCP/IP) address.
<i>Hostname</i> may include:	<ul style="list-style-type: none">• computer name• DNS name• NetBeui name.

Unit Sector(s)

Networking