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ICT50220 Diploma of Information Technology (Advanced Networking) & (Cloud Engineering)

This qualification comes from a training package created by the Commonwealth Government for Information and Communications Technology (ICT) defining core and elective competency units. We've chosen specific elective units from the training package, based on input from industry experts, to address South Australia's workforce requirements.

This ICT50220 National Training Package qualification reflects the role of individuals who are job ready and competent in a wide range of information and communications technology (ICT) roles and apply a broad range of skills in varied work contexts, using problem solving skills and effective communication with others.

The skills required for these roles may include, but are not restricted to:

- > configuring and managing virtual computing environments
- > security within ICT networks
- > building, implementing and managing cloud infrastructure and virtual networks

Employment Opportunities

- > ICT administrator
- > ICT operations administrator
- > Network administrator
- > Network e-business coordinator
- > Network operations analyst
- > Network security coordinator
- > Network services administrator
- > Network support coordinator

The recommended full-time study plan, see below, will require 12 months of study to complete this qualification.

Assumed Skills and Knowledge

There are no formal entry requirements for this course however, participants are best equipped to achieve the course outcomes if they have completed:

- > Certificate IV in Information Technology (Networking); or
- > Other study equivalent to it; or
- > Have work experience and knowledge equivalent to it.

Information on the contents of the ICT40120 Certificate IV in Information Technology (Networking) can be found here:

[Certificate IV in Information Technology \(Networking\)](#)

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Incidentals

You will be required to provide your own access to the following hardware. This hardware costs approximately \$300.00.

- > 1TB SSD portable hard drive,
- > webcam and
- > headset with microphone.

*No additional costs if students have purchased Certificate IV incidentals.

Software

All software required to complete this course will be available for students at no additional cost.

Hardware

Access to computer hardware is provided at certain TAFE SA campuses.

It is important to note that for students studying this course and not able to attend a suitable campus it will be assumed that you have the necessary computer hardware to run the required resources. It is recommended that you have the following as a minimum.

- > Intel i5 CPU (or equivalent AMD), (Intel i7, preferred)
- > 16GB of RAM, (32GB, preferred)
- > 1TB SSD

Note: Apple MAC notebooks are not compatible with some of the software required for this course and cannot be supported.

Internet

To study away from a campus, you will be required to have internet access.

This qualification requires students to use virtual machines for learning activities and assessments. Students will be required to obtain these from either their local campus or on the Internet. Virtual machine file sizes can vary but are generally above 20GB in size. Downloading these virtual machines from the Internet may vary depending on your Internet connection speed.

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Required Competencies

Diploma of Information Technology (Advanced Networking) & (Cloud Engineering) National Code: ICT50220 TAFE SA Code: TP01267

This table shows the units of competency that you must have on your academic record to achieve this qualification. The National Training Package requires 20 units. The units are listed in the sequence that you should complete them. This is particularly important for part-time students. Standard study plans are provided below. The table also provides details of any assumed knowledge and skills for each unit. You must have these skills before attempting these units.

Unit Code	Unit Title	Core/Specialist Elective/Elective	Assumed knowledge & skills
ICTNWK557	Configure and manage advanced virtual computing environments	Specialist Elective	ICTNWK420, ICTNWK421, ICTNWK422 & ICTNWK423
ICTNWK559	Install an enterprise virtual computing environment	Specialist Elective	ICTNWK420, ICTNWK421, ICTNWK422 & ICTNWK423
ICTNWK543	Install, operate and troubleshoot medium enterprise routers	Elective	ICTNWK424, ICTNWK429 & ICTTEN434
BSBXCS402	Promote workplace cyber security awareness and best practices	Core	None
ICTSAS527	Manage client problems	Core	None
ICTCLD505	Implement cloud infrastructure with code	Specialist Elective	ICTCLD401
ICTCLD507	Build and deploy resources on cloud platforms	Specialist Elective	ICTCLD401
ICTNWK544	Design and implement a security perimeter for ICT networks	Elective	ICTNWK424, ICTNWK429 & ICTTEN434
ICTNWK540	Design, build and test network servers	Specialist Elective	ICTSAS518
ICTNWK536	Plan, implement and test enterprise communication solutions	Specialist Elective	ICTNWK421, ICTNWK422 & ICTNWK423
ICTICT532	Apply IP, ethics and privacy policies in ICT environments	Core	None
ICTNWK529	Install and manage complex ICT networks	Specialist Elective	ICTNWK421, ICTNWK422 & ICTNWK423 ICTSAS518
ICTICT517	Match ICT needs with the strategic direction of the organisation	Core	ICTCLD401

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ICTNWK542	Install, operate and troubleshoot medium enterprise routers	Elective	ICTNWK543
BSBXTW401	Lead and facilitate a team	Core	None
ICTCLD506	Implement virtual networks in cloud environments	Specialist Elective	ICTCLD401
ICTCLD508	Manage infrastructure in cloud environments	Specialist Elective	ICTCLD401
ICTNWK620	Design and implement wireless network security	Elective	ICTNWK421, ICTNWK422 & ICTNWK423 ICTNWK424, ICTNWK429 & ICTTEN434
BSBCRT512	Originate and develop concepts	Core	None
ICTNWK546	Manage network security	Specialist Elective	None

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TAFE SA Study Plan for Full-Time Students (12 months)

The following tables show the recommended study plan for the Diploma of Information Technology (Advanced networking) & (Cloud engineering). Each stage is one semester (or 6 months). Codes in brackets are the IT Subject names which are described in the Subject table below.

Stage 1	
Term 1	Term 2
ICTNWK557, ICTNWK559 NWK5C2HVS (2)	
ICTCLD505 ICTCLD507 CLD5C2AZA (4)	
ICTNWK543 NWK543CRS (2)	
ICTNWK544 NWK544FGT (2)	
BSBXCS402* XCS402 (2)	ICTSAS527 SAS527 (2)
ICTNWK536 NWK536MSO (4)	ICTNWK540# NWK540LXN (4)
IT Practical (4)	IT Practical (4)
20 hours week	20 hours /week

Stage 2	
Term 1	Term 2
ICTNWK529 NWK529WLN (2)	
ICTICT517 ICT517 (2)	
ICTCLD506 ICTCLD508 CLD5C2ACO (2)	
ICTNWK542 NWK542ESA (2)	
ICTNWK620 NWK620ARU (2)	
ICTICT532* ICT532 (2)	ICTNWK546 NWK546 (4)
BSBXTW401 XTW401 (2)	BSBCRT512* CRT512 (2)
IT Practical (6)	IT Practical (4)
20 hours week	20 hours /week

Legend:

- # ICTNWK540 is not required if already done in CIV in IT (Networking)
- * Competencies delivered online are marked with an asterisk
- () The number in brackets after the subject is the indicative number of contact hours per week that you expect to study at a TAFE SA campus for that subject.

IT Practical sessions provide support to complete subject activities and assessments.

NOTE: The study plan is for a full-time student with class attendance. This is usually between 16-20 hours a week of attendance. It is expected that an additional 12-15 hours would be required outside of class time to complete activities and assessments.

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Study Plan for Part-Time Students (24 months)

The following table shows the recommended study plan for studying the Diploma of Information Technology (Advanced networking) & (Cloud engineering) as part-time (half-time). If a half-time plan does not meet your needs, you can study more or less subjects per term/semester, but you must follow the recommended sequence in the Required Competencies table above. Each stage is one semester (or 6 months) in length.

Stage 1	
Term 1	Term 2
ICTNWK557, ICTNWK559 NWK5C2HVS (2)	
ICTNWK543 NWK543CRS (2)	
BSBXCS402* XCS402 (2)	ICTSAS527 SAS527 (2)
IT Practical (4)	IT Practical (4)
10 hours / week	10 hours / week

Stage 2	
Term 1	Term 2
ICTCLD505 ICTCLD507 CLD5C2AZA (4)	
ICTNWK544 NWK544FGT (2)	
ICTNWK536 NWK536MSO (4)	ICTNWK540# NWK540LXN (4)
	ICTICT532* ICT532 (2)
IT Practical (2)	IT Practical (2)
12 hours / week	12 hours / week

Stage 3	
Term 1	Term 2
ICTNWK529 NWK529WLN (2)	
ICTICT517 ICT517 (2)	
ICTNWK542 NWK542ESA (2)	
BSBXTW401 XTW401 (2)	
IT Practical (2)	IT Practical (4)
10 hours / week	10 hours / week

Stage 4	
Term 1	Term 2
ICTCLD506 ICTCLD508 CLD5C2ACO (2)	
ICTNWK620 NWK620ARU (2)	
BSBCRT512* CRT512 (2)	ICTNWK546 NWK546 (4)
IT Practical (4)	IT Practical (2)
10 hours / week	10 hours / week

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Legend:

- # ICTNWK540 is not required if already done in CIV in IT (Networking)
- * Competencies delivered online are marked with an asterisk
- () The number in brackets after the subject is the indicative number of contact hours per week that you expect to study at a TAFE SA campus for that subject.

IT Practical sessions provide support to complete subject activities and assessments.

NOTE: The study plan is for a full-time student with class attendance. This is usually between 16-20 hours a week of attendance. It is expected that an additional 12-15 hours would be required outside of class time to complete activities and assessments.

IT Studies Subjects

TAFE SA IT Studies uses subject codes to indicate the context that has been chosen for the unit, guided by industry needs in South Australia. For example, **NWK420VMW** indicates that the content for delivery of unit **ICTNWK420** will include coverage of VMWare (**VMW**).

The table below provided information on the context for each unit and provides the subject code that is used. If a subject contains more than one unit delivery and assessment will be done holistically so you will be awarded the same result for all units assessed in that subject that you have enrolled in. Your final official results will refer to the units.

Unit Code	IT Studies subject code	Description
ICTNWK557	NWK5C2HVS	This unit describes the skills and knowledge required to configure and manage advanced virtual computing environments and to provide a more efficient and reliable Information and Communications Technology (ICT) environment. It applies to senior networking staff who are responsible for increasing the sustainability of an organisation
ICTNWK559	NWK5C2HVS	This unit describes the skills and knowledge required to develop and implement virtualisation technologies to implement and enhance the efficiency and reliability of the Information and Communications Technology (ICT) environment. It applies to individuals working in senior networking roles, and responsible for increasing the sustainability of an organisation or similar environment.
ICTNWK543	NWK543CRS	This unit describes the skills and knowledge required to use tools, equipment, software and protocols to install, operate and troubleshoot medium enterprise switches and routers. It applies to individuals working as help desk technicians, network support technicians or in similar roles.
BSBXCS402	XCS402	This unit describes the skills and knowledge required to promote cyber security in a work area. It applies to those working in a broad range of industries who as part of their job role support policies, procedures and practice within an organisation that promotes cyber security.
ICTSAS527	SAS527	This unit describes the skills and knowledge required to liaise and support clients to manage and resolve problems in an Information and Communications Technology (ICT) environment. It applies to individuals who apply high-level technical and specialised knowledge in assisting clients to support, manage and resolve problems.
ICTCLD505	CLD5C2AZA	This unit describes the skills and knowledge required to create and implement cloud infrastructure as code using cloud platform templates. This includes creating templates and then using the templates to create and update cloud infrastructure. The unit applies to cloud engineers, cloud systems administrators and those who work

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		within cloud computing operations to program, implement and maintain cloud computing solutions for a business.
ICTCLD507	CLD5C2AZA	This unit describes the skills and knowledge required to configure, deploy and monitor a range of technology resources of core cloud computing services on a cloud platform. The unit applies to cloud engineers, cloud systems administrators and those who work within cloud computing operations to provision, implement and maintain cloud computing solutions for a business with little guidance or supervision. These ICT professionals may work from designs developed by cloud architects and focus on operational concerns, including automation and maintaining cloud resources.
ICTNWK544	NWK544FGT	This unit describes the skills and knowledge required to build a high-performance, high-security, failure-resistant security perimeter for an enterprise Information and Communications Technology (ICT) network. It applies to individuals with advanced ICT expertise and works in roles including middle managers, information security managers, network engineers, network technicians, security analysts or similar.
ICTNWK536	NWK536MSO	This unit describes the skills and knowledge required to manage the deployment and administration of enterprise communication solutions. It includes email and remote access email, a web portal or content management solution, and enterprise collaboration tools. It applies to individuals working as information and communications technology (ICT) professionals who configure and deploy software to supply email, collaboration and messaging services to meet the needs of enterprise users.
ICTNWK540	NWK540LXN	This unit describes the skills and knowledge required to design, install and test servers in complex network environments. It applies to individuals who are employed in network or systems engineering roles or similar and are required to design and build network servers in a complex computing environment of medium-to-large organisations.
ICTICT532	ICT532	This unit describes the skills and knowledge required to maintain professional and ethical conduct, as well as to ensure that the personal information of stakeholders is handled confidentially and professionally when dealing with stakeholders in an Information and Communications Technology (ICT) environment. It applies to ICT personnel who are required to gather information to determine the organisation's code of ethics and protect and maintain privacy policies and system security.
ICTNWK529	NWK529WLN	This unit describes the skills and knowledge required to install and manage enterprise-wide information and communications technology (ICT) networks. It applies to individuals with excellent ICT skills who are working as senior networking staff responsible for the sustainability of an organisation by using virtualisation technologies in complex computing environments of medium to large companies to provide network services and resources.
ICTICT517	ICT517	This unit describes the skills and knowledge required to ensure information and communications technology (ICT) products and systems match the strategic direction of the organisation. It applies to individuals whose responsibilities may include improving, evaluating, acquiring, maintaining and supporting ICT for organisations.
ICTNWK542	NWK542ESA	This unit describes the skills and knowledge required to use tools, equipment, software and protocols to install, operate and troubleshoot medium enterprise routers. It applies to individuals working as network technicians and network administrators or

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		in other network support roles.
BSBXTW401	XTW401	<p>This unit describes the skills and knowledge required to effectively lead and facilitate a team in a workplace within any industry.</p> <p>This unit has a specific focus on the teamwork skills required for a team leader or supervisor level (depending on organisational structure) workers with responsibility for others or teams.</p>
ICTCLD506	CLD5C2ACO	<p>This unit describes the skills and knowledge required to design and configure a virtual network according to networking requirements for a multi-tiered application on a cloud platform.</p> <p>The unit applies to cloud engineers, cloud systems administrators and those who work within cloud computing operations to program, implement and maintain cloud computing solutions to support a business.</p>
ICTCLD508	CLD5C2ACO	<p>This unit describes the skills and knowledge required to configure, monitor, maintain and update resources running in a cloud environment.</p> <p>It applies to cloud engineers, cloud systems administrators and those who work within cloud computing environments and are responsible for the day-to-day running of cloud resources.</p>
ICTNWK620	NWK620ARU	<p>This unit describes the skills and knowledge required to mitigate security threats to a wireless local area network (WLAN) by implementing security standards and policies.</p> <p>It applies to individuals working in specialised Information and Communications Technology (ICT) roles including wireless help desk support technicians, wireless network support specialists and wireless network engineers.</p>
BSBCRT512	CRT512	<p>This unit describes the skills and knowledge required to originate and develop concepts for products, programs, processes or services at an operational level.</p> <p>The unit applies to individuals who develop concepts for any business or community activity or process. This may include marketing and advertising campaigns, staff development programs, information technology and communication systems, radio and television programs and entertainment events. These individuals operate with a high degree of autonomy and also collaborate with others to generate ideas and refine concepts for implementation.</p>
ICTNWK546	NWK546	<p>This unit describes the skills and knowledge required to implement and manage security functions throughout a network.</p> <p>It applies to individuals with Information and Communications Technology (ICT) expertise and leads the development of strategic reviews of the security and provides technical advice, guidance and leadership in the resolution of specified problems.</p>