



Australian Government

ICT60210 Advanced Diploma of Telecommunications Network Engineering

Release 2

ICT60210 Advanced Diploma of Telecommunications Network Engineering

Modification History

Release	Comments
Release 2	This version first released with <i>ICT10 Integrated Telecommunications Training Package Version 3.0</i> . Units updated to current versions.
Release 1	This version first released with <i>ICT10 Integrated Telecommunications Training Package Version 1.0</i> .

Description

This qualification reflects the role of an individual involving a high level of specialist technical skills and knowledge in telecommunications and IT networks using internet protocol (IP) systems who can:

- forecast network growth for enterprise network planning
- design and manage IP based network telecommunications equipment
- implement convergence technologies in enterprise telecommunications networks
- design and manage optical and wireless network telecommunications architectures for high speed broadband capability.
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Job Roles

Job roles and titles vary across different sectors of the industry. Possible job titles relevant to this qualification include:

- telecommunications network manager
- network designer
- IP based convergence integrator
- IP based network designer
- network security manager.
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Prerequisite units

There are no prerequisite requirements for individual units of competency.

Pathways Information

Pathways into the qualification

Candidates may enter this qualification through a number of entry points demonstrating potential to undertake vocational education and training at advanced diploma level, including:

- after achieving the ICT50210 Diploma of Telecommunications Network Engineering or another relevant accredited Training Package qualification or relevant accredited course
- or
- providing evidence of competency in the core units required for the ICT50210 Diploma of Telecommunications Network Engineering or equivalent units with vocational experience
- or
- with substantial vocational experience but without a formal qualification.

Pathways from the qualification

After achieving the ICT60210 Advanced Diploma of Telecommunications Network Engineering, candidates may undertake the ICT70110 Vocational Graduate Certificate in Telecommunications Network Engineering or seek articulation into a University program.

Licensing/Regulatory Information

All training programs must be conducted with the reference to the regulatory regime of the prevailing statutory authority (currently ACMA).

Entry Requirements

There are no entry requirements for this qualification.

Employability Skills Summary

Employability Skill	Industry/enterprise requirements for this qualification include:
Communication	<ul style="list-style-type: none"> • determining options to rectify faults and discussing them with customer so that necessary action is determined • documenting test methods and results • making a complete check of installation against installation plans • reading, interpreting and using equipment/system manuals and specifications and relevant enterprise policy and documentation • conveying information to clients, colleagues and other site personnel • providing feedback to customers on operating the equipment
Teamwork	<ul style="list-style-type: none"> • identifying members and roles of team • identifying and contributing to team tasks and goals • recognising and responding positively to conflict within team • working with team members to work with clients and install equipment • relating personal role to the industry • participating in a team structure by identifying team members, tasks and goals and recognising and responding positively to conflict • applying interpersonal skills with clients, employer, supervisors, work associates, team members and other contractors • giving and receiving feedback to assist in meeting team and organisation goals
Problem solving	<ul style="list-style-type: none"> • ranking causes of problems, working from system-wide impacts to specific impacts • diagnosing network security problems to secure the network • identifying barriers to installation and developing strategies to overcome them within time and budget restrictions • identifying faults or optimisation options • rectifying faults and adjusting system to optimal operation • determining cable routes taking into account building services, safety, industry codes and practices, and customer requirements • following up promptly on difficulties and known problem areas

Initiative and enterprise	<ul style="list-style-type: none"> • prioritising urgent requests and acting according to organisational guidelines • identifying barriers to installation and developing strategies to overcome them within time and budget restrictions • adapting plan to suit specific features of site • identifying issues and possible solutions within established guidelines • interacting with enterprise personnel, customers and other contractors keeping a customer focus and considering customer needs
Planning and organising	<ul style="list-style-type: none"> • identifying realistic short and long-term career objectives • planning and provision to meet key dates and milestones • gathering data for the installation of systems and equipment • planning the installation of fibre cable, taking into account technical, scheduling and financial considerations • interpreting design and relating to site characteristics • prioritising work according to organisation guidelines • running a test of network security arrangements
Self-management	<ul style="list-style-type: none"> • identifying realistic short and long-term career objectives • identifying work to be completed • complying with all related OHS requirements and work practices • developing installation plans to ensure minimal disruption to the workplace • checking that tools and equipment are in safe working order and adjusted to manufacturer specification • relating own role to the industry and establishing own work schedule • using strategies to present a professional image to customers • interpreting and applying relevant regulations and standards
Learning	<ul style="list-style-type: none"> • relating current or intended role to career objectives in a positive manner • giving and receiving feedback to assist in meeting team and organisation goals • making clients aware of opportunities that exist for system upgrades, additional services and training • seeking assistance from team members when necessary • providing suitable training and assessment opportunities for work team members • providing training to customers on system, product, product features and facilities
Technology	<ul style="list-style-type: none"> • checking that tools and equipment are in safe working order and adjusted to manufacturer specifications

	<ul style="list-style-type: none">• converging many integrated and emerging technologies• testing and measuring of broadband network infrastructure• installing and operating telecommunications equipment and products• installing and operating equipment and products• identifying, replacing or repairing faulty parts and equipment• undertaking relevant acceptance tests and analysing results against specified performance criteria
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Packaging Rules

Total number of units = 10

4 core units, plus

6 elective units

Elective units must be relevant to the work outcome, local industry requirements and the qualification level. A minimum of 2 of these electives must be taken from Advanced Diploma level.

A maximum of two elective units may be substituted with two units of competency from any endorsed Training Package or accredited course at Advanced Diploma or Vocational Graduate Certificate level.

Units selected from other Training Packages or accredited courses must not duplicate units selected from or are available within the ICT10 Integrated Telecommunications Training Package.

CORE UNITS

ICTPMG6033A Develop a project management plan

ICTPMG6034A Prepare a detailed design brief

ICTSUS6233A Integrate sustainability in ICT planning and design projects

ICTTEN6206A Produce an ICT network architecture design

ELECTIVE UNITS

ICT use

(IP networks)

ICANWK502A Implement secure encryption technologies

ICANWK503A Install and maintain valid authentication processes

ICANWK509A Design and implement a security perimeter for ICT networks

ICANWK517A Determine best-fit topology for a wide area network

ICANWK518A Design an enterprise wireless local area network

ICANWK520A Design IT system security controls

ICASAS409A Manage risks involving ICT systems and technology

ICASAS505A Review and update disaster recovery and contingency plans

Network planning

ICTNPL6029A Plan the development and growth of the telecommunications network

ICTNPL6030A Forecast service demand

ICTNPL6046A Undertake network performance analysis

Occupational health and safety

BSBWHS504A Manage WHS hazards and risks
BSBWHS501A Ensure a safe workplace

Optical networks

ICTOPN6124A Manage optical ethernet transmission
ICTOPN6125A Manage dense wavelength division multiplexing transmission system
ICTOPN6128A Design a dense wavelength division multiplexing system
ICTOPN6129A Analyse optical transmission systems

Radio frequency networks

ICTRFN6098B Monitor the capacity of and recommend changes to the cellular mobile network
ICTRFN6171A Produce and evaluate architecture designs for WiMAX networks

Sustainability

ICTSUS6234A Establish a business case for sustainability and competitive advantage in ICT projects

Telecommunications engineering networks

ICTTEN6036A Undertake qualification testing of new or enhanced equipment and systems
ICTTEN6042A Undertake system administration
ICTTEN6043A Undertake network traffic management
ICTTEN6044A Coordinate fault rectification and restoration of service following network outages
ICTTEN6045A Implement planned network changes with minimal impact to the customer
ICTTEN6047A Manage a common channel signalling network
ICTTEN6091A Analyse and organise repair of highly complex telecommunications network faults
ICTTEN6094A Verify new software and hardware releases
ICTTEN6169A Produce and evaluate architecture designs for convergent cellular mobile networks

Emerging technologies

ICTTEN6216A Design and manage internet protocol TV in a service provider network

IP networks

ICTTEN6172A Install and configure an IP-MPLS network with virtual private network tunnelling

Selecting electives for different outcomes

The context of this qualification varies and this must guide the selection of elective units.

The following examples are designed to assist in the selection of appropriate electives for particular outcomes at this level but they are in no way prescriptive.

Network manager

Core units plus:

- ICTOPN6124A Manage optical ethernet transmission
- ICTTEN6042A Undertake system administration
- ICTTEN6043A Undertake network traffic management
- ICTSUS6234A Establish a business case for sustainability and competitive advantage in ICT projects
- two additional units from elective units as appropriate to the specific job role

Network designer

Core units plus:

- ICTOPN6128A Design a dense wavelength division multiplexing system
- ICTRFN6171A Produce and evaluate architecture designs for WiMAX networks
- ICTTEN6169A Produce and evaluate architecture designs for convergent cellular mobile networks
- ICTTEN6216A Design and manage internet protocol TV in a service provider network
- ICTSUS6234A Establish a business case for sustainability and competitive advantage in ICT projects
- one additional unit from elective units as appropriate to the specific job role

Network planner

Core units plus:

- ICTNPL6029A Plan the development and growth of the telecommunications network
- ICTRFN6098B Monitor the capacity of and recommend changes to the cellular mobile network
- ICTTEN6045A Implement planned network changes with minimal impact to the customer
- ICTSUS6234A Establish a business case for sustainability and competitive advantage in ICT projects
- two additional units from elective units as appropriate to the specific job role

IP convergence integrator

Core units plus:

- ICTOPN6124A Manage optical ethernet transmission

- ICTTEN6169A Produce and evaluate architecture designs for convergent cellular mobile networks
- ICTTEN6172A Install and configure an IP-MPLS network with virtual private network tunnelling
- ICTTEN6216A Design and manage internet protocol TV in a service provider network
- ICTSUS6234A Establish a business case for sustainability and competitive advantage in ICT projects
- one additional unit from elective units as appropriate to the specific job role

Network security manager

Core units plus:

- ICASAS505A Review and update disaster recovery and contingency plans
- ICANWK509A Design and implement a security perimeter for ICT networks
- ICANWK502A Implement secure encryption technologies
- ICANWK503A Install and maintain valid authentication processes
- ICANWK520A Design IT system security controls
- one additional unit from elective units as appropriate to the specific job role

Wireless network designer

Core units plus:

- ICANWK518A Design an enterprise wireless local area network
- ICTRFN6171A Produce and evaluate architecture designs for WiMAX networks
- ICTTEN6169A Produce and evaluate architecture designs for convergent cellular mobile networks
- three additional units from elective units as appropriate to the specific job role

Optical networks designer

Core units plus:

- ICTOPN6128A Design a dense wavelength division multiplexing system
- ICTOPN6129A Analyse optical transmission systems
- ICTTEN6036A Undertake qualification testing of new or enhanced equipment and systems
- three additional units from elective units as appropriate to the specific job role