Australian Government

ICT50210 Diploma of Telecommunications Network Engineering

Release 2

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

ICT50210 Diploma of Telecommunications Network Engineering

Modification History

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

Description

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

- install, test and commission voice and data communications networks in medium to large enterprises using Next Generation Networks (NGN) technologies
- provide specialist technical support in monitoring and administering the installation and upgrade of large telecommunications and IT networks
- cover local area networks (LAN) and wide area networks (WAN), IP based protocol systems, voice over internet protocol (VoIP) and unified communications networks, secured networks, 3G/4G cellular mobile networks, microwave systems, wireless and wired line networks, databases, routers, switches and servers
- install and maintain IP based network telecommunications equipment.
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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:

- installer of emerging technologies
- IP based network installer
- specialised network infrastructure installer
- secure IT network installer
- telecommunications technical specialist.
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Prerequisite units

There are no prerequisite requirements for individual units of competency.

Pathways Information

Pathways into the qualification

Preferred pathways for candidates considering this qualification include:

- after achieving the ICT40210 Certificate IV in 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 ICT40210 Certificate IV in Telecommunications Network Engineering or equivalent units with vocational experience

or

- with substantial vocational experience but without a formal qualification.

Pathways from the qualification

For candidates seeking to develop more specialised technical skills and knowledge, the electives selected in the ICT50210 Diploma of Telecommunications Network Engineering, should be considered with a view to meeting pathways into the ICT60110 Advanced Diploma of Optical Networks qualification or the ICT60210 Advanced Diploma of Telecommunications Network Engineering or a range of other Advanced Diploma qualifications or University programs.

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	• 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	• 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	• 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	• 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	• 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	• 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	• 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	• checking that tools and equipment are in safe working order and adjusted to manufacturer specifications

	• 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

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

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

CORE UNITS

BSBPMG522A Undertake project work
BSBSUS501A Develop workplace policy and procedures for sustainability
ICTPMG5031A Prepare a project brief
ICTTEN5037A Design a telecommunications project

ELECTIVE UNITS

Compliance

ICTCMP5176A Undertake radio communications site audit

Education

ICTEDU5025A Develop and deliver training associated with new and modified products

ICT use

(IP networks)

ICAICT508A Evaluate vendor products and equipment
ICANWK516A Determine best-fit topology for a local network

Network planning

ICTNPL5071A Develop planning strategies for core network design
ICTNPL5096A Develop planning strategies for access network design
ICTNPL5101A Apply service measures and demand forecasting to products and services planning
ICTNPL5154A Develop planning strategies for building environment design

Optical networks

ICTOPN5118A Plan and configure dense wavelength division multiplexing systems
ICTOPN5119A Perform acceptance and commissioning tests on optical network
ICTOPN5120A Plan for an optical system upgrade and cut over
ICTOPN5121A Test and commission a dense wavelength division multiplexing transmission system
ICTOPN5122A Test the performance of specialised optical devices
ICTOPN5123A Analyse and integrate specialised optical devices in the network

Project management

ICTPMG5027A Develop customer premises equipment installation project plans
ICTPMG5039A Prepare project specifications

Product specific skills and advice

ICTPRO5026A Develop training, marketing and sales resources for telecommunications products

Radio frequency networks

ICTRFN5097A Test cellular handset enhancements and international roaming agreements
ICTRFN5148A Test and measure cellular phone and network equipment performance
ICTRFN5179A Evaluate and analyse radio frequency signal coverage plots

Sustainability

ICTSUS5187A Implement server virtualisation for a sustainable ICT system

Telecommunications engineering networks

ICTITU5144A Test telecommunications network using virtual instruments
ICTTEN5024A Provide consultancy and technical support in the customer premises equipment sector
ICTTEN5038A Design an electronic system for a telecommunications network
ICTTEN5058A Acceptance test new systems and equipment
ICTTEN5059A Commission telecommunications network equipment
ICTTEN5060A Integrate new systems and equipment into the telecommunications network
ICTTEN5061A Cut over new and replacement network equipment
ICTTEN5083A Locate, diagnose and rectify complex faults
ICTTEN5084A Provide expert advice and support on complex faults
ICTTEN5092A Undertake planned outage management
ICTTEN5204A Produce technical solutions from business specifications

Emerging technologies

ICTTEN5203A Dimension and design a radio frequency identification system

ICTTEN5217A Plan a wireless mesh network

IP networks

ICTTEN5147A Administer a data communications network
ICTTEN5168A Design and implement an enterprise voice over internet protocol and a unified communications network
ICTTEN5200A Install, configure and test a local area network switch
ICTTEN5201A Install, configure and test a server

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.

Customer business

Core units plus:

- ICAICT508A Evaluate vendor products and equipment
- ICTPMG5027A Develop customer premises equipment installation project plans
- ICTPMG5039A Prepare project specifications
- ICTTEN5024A Provide consultancy and technical support in the customer premises equipment sector
- ICTTEN5204A Produce technical solutions from business specifications
- one additional unit from elective units as appropriate to the specific job role

IP Networks

Core units plus:

- ICANWK516A Determine best-fit topology for a local network
- ICTTEN5147A Administer a data communications network
- ICTTEN5168A Design and implement an enterprise voice over internet protocol and a unified communications network
- ICTTEN5200A Install, configure and test a local area network switch
- ICTTEN5201A Install, configure and test a server
- one additional unit from elective units as appropriate to the specific job role

Emerging technologies

Core units plus:

- ICTSUS5187A Implement server virtualisation for a sustainable ICT system

- ICTTEN5203A Dimension and design a radio frequency identification system
- ICTTEN5217A Plan a wireless mesh network
- three additional units from elective units as appropriate to the specific job role

Broadband infrastructure

Core units plus:

- ICTOPN5118A Plan and configure dense wavelength division multiplexing systems
- ICTOPN5120A Plan for an optical system upgrade and cut over
- ICTOPN5121A Test and commission a dense wavelength division multiplexing transmission system
- ICTRFN5179A Evaluate and analyse radio frequency signal coverage plots
- two additional units from elective units as appropriate to the specific job role

Workplace development

Core units plus:

- ICTEDU5025A Develop and deliver training associated with new and modified products
- ICTPRO5026A Develop training, marketing and sales resources for telecommunications products
- ICTTEN5084A Provide expert advice and support on complex faults
- three additional units from elective units as appropriate to the specific job role