



**Australian Government**

# **ICTTEN622 Produce ICT network architecture designs**

**Release: 1**

# ICTTEN622 Produce ICT network architecture designs

## Modification History

| Release   | Comments                                                                                                     |
|-----------|--------------------------------------------------------------------------------------------------------------|
| Release 1 | This version first released with ICT Information and Communications Technology Training Package Version 7.0. |

## Application

This unit describes the skills and knowledge required to compile and evaluate business specifications from a client and produce a set of architecture design solutions to cater for present and future forecast demands.

It applies to individuals working in the field who carry out design and implementation of technical solutions of information communications technology (ICT) networks, employed by information technology networking provisioning companies specialising in integrating converging and emerging technologies of ICT networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

## Unit Sector

Telecommunications Networks Engineering

## Elements and Performance Criteria

| ELEMENT                                               | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Elements describe the essential outcomes.</i>      | <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>                                                                                                                                                                                                                                                                                                                          |
| 1. Prepare to produce ICT network architecture design | 1.1 Obtain work details, specifications and scope from relevant personnel and arrange for site access in compliance with required security arrangements, legislation, codes, regulations and standards<br>1.2 Consult with key stakeholders to identify their requirements of the scoped network architecture design<br>1.3 Assess business problems, opportunities and objectives, and confirm details with relevant personnel |
| 2. Produce preliminary ICT network                    | 2.1 Determine hardware, software and network requirements according to manufacturer specifications                                                                                                                                                                                                                                                                                                                              |

| ELEMENT                                                     | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| architecture design                                         | 2.2 Select required software solutions<br>2.3 Develop preliminary physical network diagrams as a preface to architecture blueprint<br>2.4 Produce a document on the possible impact of the network design on the business requirements                                                                                                                                                                                                                                   |
| 3. Evaluate preliminary design and anticipated performance  | 3.1 Predict forecast traffic demands, and impact on network design, from current and future demand requirements<br>3.2 Benchmark design using expected performance parameters<br>3.3 Review likely performance profile of the design<br>3.4 Determine costs involved with a range of supplier products<br>3.5 Produce an evaluation report on predicted performance and costs of the network architecture design, addressing business specifications and recommendations |
| 4. Finalise network architecture design and obtain approval | 4.1 Review benchmarks, requirements and final design proposed<br>4.2 Determine support and training requirements needed<br>4.3 Obtain latest technical specifications and pricing by contacting possible vendors<br>4.4 Document network design and present documentation to required person for approval<br>4.5 Obtain sign off on final business solution                                                                                                              |

## Foundation Skills

*This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.*

| SKILL              | DESCRIPTION                                                                                                                                                                                                         |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Numeracy           | <ul style="list-style-type: none"><li>Interprets numerical information according to business requirements and specifications to evaluate possible technical design scenarios within budgetary constraints</li></ul> |
| Oral communication | <ul style="list-style-type: none"><li>Participates in verbal exchanges using clear language and active listening, observational and questioning techniques to confirm, clarify or revise understanding</li></ul>    |
| Reading            | <ul style="list-style-type: none"><li>Organises, evaluates and interprets technical documentation and required enterprise policy and documentation</li></ul>                                                        |
| Writing            | <ul style="list-style-type: none"><li>Prepares workplace documentation, including diagrammatic material, incorporating technical language to communicate complex information clearly and effectively</li></ul>      |

| SKILL                   | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Planning and organising | <ul style="list-style-type: none"><li>• Uses a combination of formal, logical planning processes to identify required information, test strategies and resources</li><li>• Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses this to propose solutions</li><li>• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering required information, and identifying and evaluating options against agreed criteria</li><li>• Uses formal, analytical and lateral thinking techniques for diagnosing problems and generating and evaluating possible solutions</li></ul> |
| Technology              | <ul style="list-style-type: none"><li>• Selects and uses required conventions and protocols when communicating with stakeholders in a range of work contexts</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## Unit Mapping Information

Supersedes and is equivalent to ICTTEN611 Produce an ICT network architecture design.

## Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

# Assessment Requirements for ICTTEN622 Produce ICT network architecture designs

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## Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- produce at least two information communications technology (ICT) network architecture designs.

In the course of the above, the candidate must:

- adapt technologies to specified technical solutions
- use site design software and hardware
- evaluate client specifications against accepted industry practices
- produce technical designs from business specifications
- analyse feedback from client and adjust proposal
- apply design concepts to business solutions
- produce technical reports
- make recommendations and offer optimum design solutions.

## Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- required legislation, codes, company work practices, regulations and standards, workplace health and safety (WHS) requirements for scoped work
- principles of the following technologies:
  - access networks
  - core networks
  - information communications technologies (ICT) network topologies
  - mobile cellular networks
  - network protocols and operating systems

- optical networks and principles
- radio frequency (RF) technologies and principles
- radio frequency identification (RFID) hardware and software
- ICT industry business processes, including software solutions and supplier costing
- compatibility issues and resolution procedures
- configuration of internet protocol (IP) networks
- desktop applications and operating systems
- security protocols, standards and data encryption
- network design documentation.

## Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site for design work
- client functional requirements
- business specifications
- database software
- simulation software
- organisational guidelines
- a network or computer layout
- site design software and hardware
- information on a range of ICT business solutions.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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