



**Australian Government**

# **ICTTEN810 Investigate the application of cloud networks in telecommunications switching**

**Release: 1**

# ICTTEN810 Investigate the application of cloud networks in telecommunications switching

## Modification History

| Release   | Comments                                                                                                     |
|-----------|--------------------------------------------------------------------------------------------------------------|
| Release 1 | This version first released with ICT Information and Communications Technology Training Package Version 2.0. |

## Application

This unit describes the skills and knowledge required to develop strategies to accommodate shortfalls in capacity and functionality for a switching network. It also covers how to develop solutions for network growth using emerging technologies, including cloud computing.

It applies to individuals with excellent technical and strategic management skills working as telecommunications planning engineers and senior technical staff.

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

## Unit Sector

Telecommunications – 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. Evaluate current physical network infrastructure | 1.1 Analyse scalability, functionality, cost, security and energy consumption of existing physical network infrastructure<br>1.2 Report on shortfalls and risks of existing physical infrastructure in accommodating network growth and increased functionality<br>1.3 Investigate capacity and functionality shortfalls of existing physical infrastructure to highlight limitations of the existing switching network<br>1.4 Document estimated costs and issues associated with meeting capacity and functionality shortfalls using existing physical |

| ELEMENT                                                                                                | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                        | infrastructure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 2. Investigate the application of cloud networks                                                       | <p>2.1 Analyse trends in cloud networks (infrastructure-as-a-service), technologies and multiprotocol label switching (MPLS) architectures against rapid changes in the landscape</p> <p>2.2 Determine applicability of cloud networks (infrastructure-as-a-service) to meet capacity and functionality requirements of the network</p> <p>2.3 Assess risks in using cloud networks to meet capacity and functionality requirements of the network</p> <p>2.4 Evaluate a range of cloud network solutions and justify selection of an optimum network switching solution</p> <p>2.5 Develop solution elements using a series of small project elements</p> <p>2.6 Produce a cloud network alternative solution to emulate the existing core network of a service provider</p>              |
| 3. Analyse the impact of the cloud network solution for system integration and across business domains | <p>3.1 Prepare a plan for organisational change control processes and integration of cloud network solutions within a complete network infrastructure</p> <p>3.2 Prepare a test scenario and produce a test management schedule for the testing process of system elements and interfaces using simulation</p> <p>3.3 Use integration document software to replicate issues exhibited in test environment</p> <p>3.4 Certify cloud network solution compatibility and compliance to requirements using the web-based test management tool (quality centre) to conduct performance evaluation tests</p> <p>3.5 Analyse test reports to evaluate load balancing and network security issues in test environment</p> <p>3.6 Document and resolve conflicts detected in simulation testing</p> |
| 4. Develop a business case for implementation of a cloud network                                       | <p>4.1 Prepare a cost-benefit analysis of the cloud network solution as a business case to evaluate the return on investment (RoI)</p> <p>4.2 Investigate staging of the solution and timing implementation of project elements as a scenario for real life implementation</p> <p>4.3 Research and report on key features of cloud network implementation in a business case study</p>                                                                                                                                                                                                                                                                                                                                                                                                     |

## Foundation Skills

*This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.*

| Skill             | Performance Criteria                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reading           | 1.1, 2.1, 3.5, 4.3                        | <ul style="list-style-type: none"> <li>Researches, evaluates and interprets complex technical documentation, such as software and hardware manuals and design specifications</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Writing           | 1.2, 1.4, 3.1, 3.2, 3.6, 4.1, 4.3         | <ul style="list-style-type: none"> <li>Prepares clear and concise workplace documentation, including reports and recommendations incorporating technical language, to communicate complex information</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Numeracy          | 1.1, 1.3, 1.4, 3.5, 4.1                   | <ul style="list-style-type: none"> <li>Uses numerical information to interpret results, evaluate different types of technical data, take measurements and determine cost-effective outcomes for RoI</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Get the work done | 1.1, 1.3, 1.4, 2.1-2.5, 3.1-3.4, 3.6, 4.2 | <ul style="list-style-type: none"> <li>Uses a combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high-impact activities with strategic implications</li> <li>Implements actions according to a predetermined plan, making adjustments if necessary</li> <li>Takes responsibility for high-impact decisions in complex situations involving many variables and constraints</li> <li>Uses formal, analytical and lateral thinking techniques to resolve problems or to generate ideas</li> <li>Actively identifies digital systems, devices and applications with potential to meet current and/or future needs</li> <li>Uses main features and functions of digital tools to complete work tasks</li> </ul> |

## Unit Mapping Information

| Code and title current version                                                  | Code and title previous version                                                    | Comments                                         | Equivalence status |
|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------|--------------------|
| ICTTEN810<br>Investigate the application of cloud networks in telecommunication | ICTTEN8194A<br>Investigate the application of cloud networks in telecommunications | Updated to meet Standards for Training Packages. | Equivalent unit    |

| Code and title<br>current version | Code and title<br>previous version | Comments | Equivalence status |
|-----------------------------------|------------------------------------|----------|--------------------|
| s switching                       | switching                          |          |                    |

## Links

Companion Volume implementation guides are found in VETNet -

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

# Assessment Requirements for ICTTEN810 Investigate the application of cloud networks in telecommunications switching

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## Performance Evidence

Evidence of ability to:

- evaluate the current physical network infrastructure's capacity and functionality shortfalls
- investigate application of cloud networks and plan architectural design
- develop components of cloud networking solution for meeting capacity and functionality requirements of the network
- assess risks in using cloud networks to meet capacity and functionality requirements of the network
- analyse impact of integration of cloud network solution on network
- prepare a test plan with test scenario and produce a test management schedule
- use integration document and software test management tools to replicate issues exhibited in test environment
- certify cloud network solution compatibility and compliance
- prepare a cost-benefit analysis of the cloud network solution
- develop a business case for implementation of a cloud network.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

## Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- analyse components of infrastructure-as-a-service solutions
- summarise existing digital switching technology in service provider's core network
- outline information required to develop architectural solutions
- explain *integration document software*
- explain new cloud network technologies
- provide a detailed summary of cloud networking transmission, transmitter and receiver architecture and their associated infrastructure

- outline performance and integration requirements
- prepare and/or interpret technical documentation
- outline protocols as used on multiprotocol label switching (MPLS) and infrastructure-as-a-service
- provide a detailed explanation of network components and their functions
- explain specific organisational requirements relating to computer systems
- summarise typical issues and challenges that occur with system changes.

## Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the telecommunications networks engineering field of work and include access to:

- a site where the application of cloud networks in telecommunications switching may be investigated
- software tools currently used in industry
- vendor products, specifications, equipment and enterprise policy required for the activity.

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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