



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **ICTTEN7224A Manage voice, data and internet protocol network solutions**

**Release: 1**

## ICTTEN7224A Manage voice, data and internet protocol network solutions

### Modification History

Not Applicable

### Unit Descriptor

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| <b>Unit descriptor</b> | <p>This unit describes the performance outcomes, skills and knowledge required to develop, analyse test results, manage deployment and maintain currency of voice, data and IP network solutions for a telecommunications service provider.</p> <p>This involves integration of new solutions to an existing network and the management of change implementation.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.</p> |
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### Application of the Unit

|                                |                                                                                                                                                                                                                                                                                                                                                                 |
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| <b>Application of the unit</b> | <p>Network engineering staff or senior technical officers with appropriate project management roles and authority to direct the activities of installation staff, manufacturers and vendors apply the skills and knowledge in this unit.</p> <p>This unit applies to service provider network infrastructure implementing new applications layer solutions.</p> |
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### Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

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|---------------------------|--|--|
| <b>Prerequisite units</b> |  |  |
|                           |  |  |
|                           |  |  |

## Employability Skills Information

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| <b>Employability skills</b> | This unit contains employability skills. |
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## Elements and Performance Criteria Pre-Content

|                                                                   |                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Elements describe the essential outcomes of a unit of competency. | Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide. |
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## Elements and Performance Criteria

| ELEMENT                                                         | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Develop voice, data and IP network solutions                 | <p>1.1. Produce the <b>requirements for voice, data and IP network solutions</b> for the delivery of <b>new voice, data and IP networks</b> to customers using <b>forecasting demand data</b></p> <p>1.2. Prepare a plan for an organisational change control process and the <b>integration of new solutions</b> within a complete network infrastructure</p> <p>1.3. Produce a <b>test management schedule</b> for the testing process of the network product solution</p> <p>1.4. Translate complex design and architecture requirements to traceable software application characteristics according to design requirements</p> <p>1.5. Develop network architecture solution specifications using an <b>industry process</b> according to design requirements</p> <p>1.6. Develop software and hardware resource profiling and select suitable vendor for negotiations</p> <p>1.7. Translate complex requirements into software packaging</p> <p>1.8. Produce software deployment mapping and version control to ensure complete integration and compatibility of network application solution to existing system</p> <p>1.9. Complete configuration management and provide complex input network design requirements</p> |
| 2. Analyse test results of voice, data and IP network solutions | <p>2.1. Use design document and <b>integration document software</b> to replicate issues exhibited in test environment</p> <p>2.2. Certify software solution compatibility and compliance to requirements using web based test management tool (quality centre) to conduct <b>performance evaluation tests</b></p> <p>2.3. Analyse test reports to evaluate load balancing and network security issues in test environment</p> <p>2.4. Resolve complex issues in interface to isolate defects</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 3. Manage deployment of voice, data and IP network solutions    | <p>3.1. Plan and prepare evidence for customer acceptance and certification</p> <p>3.2. Plan and manage <b>transition to operation activities</b> required for transition to operation of integrated IP network solution</p> <p>3.3. Prepare an installation failures procedure to make</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| ELEMENT                                                      | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                              | changes whilst maintaining service levels<br>3.4. Manage <b>change implementation plan</b> to maintain system stability                                                                                                                                                                                                                                                                                                         |
| 4. Maintain currency of voice, data and IP network solutions | 4.1. Manage ongoing <b>monitoring activities</b> to prolong new IP network solution life cycle for cost-effective business reasons<br>4.2. Produce <b>tuning activities</b> to make efficient use of resources<br>4.3. Analyse the current demands for resources for deriving forecasts and future requirements<br>4.4. Produce a capacity plan predicting the infrastructure resources needed to achieve agreed service levels |

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- analytical skills to interrogate and evaluate complex information from multiple sources to manage and maintain network solutions
- communication skills to liaise with internal and external personnel on technical and operational matters
- literacy skills to:
  - interpret relevant enterprise policy and documentation
  - interpret technical documentation, such as software and hardware manuals and specifications
  - read and comply with related occupational health and safety (OHS) requirements and work practices
- numeracy skills to:
  - interpret technical data
  - take and analyse measurements
- PC skills for:
  - desktop research
  - word processing
- planning and organisational skills to:
  - manage change

**REQUIRED SKILLS AND KNOWLEDGE**

- schedule tests
- tune activities to maintain currency
- problem solving skills to:
  - develop procedures such as for installation failure
  - produce new IP network solutions
- research skills to access technical information and sources to assist with planning and predicting infrastructure resources
- task management skills to work systematically with required attention to detail and adherence to project requirements
- technical skills to:
  - translate complex requirements design and architecture to traceable software application characteristics
  - use forecasting demand data
  - use test management tools

**Required knowledge**

- installation failure procedures
- manage change
- new IP network solutions
- software and hardware resources
- system integration techniques
- test management scheduling
- tuning activities to maintain currency
- use of forecasting demand data
- use of test management tools

## Evidence Guide

### EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

#### Overview of assessment

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the ability to:

- produce a test management schedule
- develop network architecture solution specifications
- develop software and hardware resource profiling and select suitable vendor for negotiations
- undertake configuration management of voice, data and IP network and provide complex input network design requirements
- analyse test reports to evaluate load balancing and network security issues
- plan and prepare evidence for customer acceptance
- prepare installation failures procedure
- produce tuning activities to enable efficiencies
- produce a capacity plan predicting the infrastructure resources needed.

#### Context of, and specific resources for assessment

Assessment must ensure:

- a site where management of voice, data and IP network solutions can be undertaken
- software and hardware resources suitable for developing, deploying and managing voice, data and IP network solutions
- tests and equipment currently used in industry.

#### Methods of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct observation of the candidate using design document and integration document software to replicate issues exhibited in test environment
- oral and written questioning of the candidate to assess required knowledge of requirements developing voice, data and IP network solutions
- review of the candidate's plan for new voice, data and IP network solutions within a complete network infrastructure

| <b>EVIDENCE GUIDE</b>                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                            | <ul style="list-style-type: none"> <li>review of the candidate's documented capacity plan predicting infrastructure resources needs.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Guidance information for assessment</b> | <p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>ICTTEN7223A Manage application layer solutions.</li> </ul> <p>Aboriginal people and other people from a non-English speaking background may have second language issues.</p> <p>Access must be provided to appropriate learning and assessment support when required.</p> <p>Assessment processes and techniques must be culturally appropriate, and appropriate to the oral communication skill level, and language and literacy capacity of the candidate and the work being performed.</p> <p>In all cases where practical assessment is used it will be combined with targeted questioning to assess required knowledge. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.</p> <p>Where applicable, physical resources should include equipment modified for people with special needs.</p> |

## Range Statement

| <b>RANGE STATEMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p> |                                                                             |
| <b><i>Requirements for voice, data and IP</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>diagnostic software tools</li> </ul> |

**RANGE STATEMENT**

|                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b><i>network solutions</i></b> may include:               | <ul style="list-style-type: none"> <li>• hardware resources: <ul style="list-style-type: none"> <li>• data: <ul style="list-style-type: none"> <li>• routers</li> <li>• servers</li> <li>• switches</li> </ul> </li> <li>• optical</li> <li>• wireless</li> </ul> </li> <li>• management software tools</li> <li>• protocols</li> <li>• software resources.</li> </ul>                                                                                                                                                                                                                                                              |
| <b><i>New voice, data and IP networks</i></b> may include: | <ul style="list-style-type: none"> <li>• IP games</li> <li>• IP home networks</li> <li>• IP security</li> <li>• IP private branch exchange (PBX)</li> <li>• internet protocol TV (IPTV)</li> <li>• mesh network</li> <li>• mesh network applications</li> <li>• mobile data</li> <li>• multiprotocol label switching (MPLS) network</li> <li>• multicast mobile applications</li> <li>• multimedia products</li> <li>• voice over internet protocol (VoIP)</li> <li>• web applications.</li> </ul>                                                                                                                                  |
| <b><i>Forecasting demand data</i></b> may be:              | <ul style="list-style-type: none"> <li>• collected from: <ul style="list-style-type: none"> <li>• customers: <ul style="list-style-type: none"> <li>• actual</li> <li>• prospective</li> </ul> </li> <li>• economic planners</li> <li>• internal organisational groups</li> <li>• local</li> <li>• marketing organisations</li> <li>• real estate agents</li> <li>• sales organisations</li> <li>• state and federal governments</li> <li>• statutory bodies</li> <li>• traffic management systems</li> </ul> </li> <li>• in relation to: <ul style="list-style-type: none"> <li>• access transport planning</li> </ul> </li> </ul> |

| <b>RANGE STATEMENT</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                          | <ul style="list-style-type: none"> <li>• changing customer use patterns</li> <li>• demographic changes</li> <li>• economic forecasts</li> <li>• industry trends</li> <li>• influence of technology on traffic demand</li> <li>• land developments</li> <li>• local industry</li> <li>• market conditions</li> <li>• marketing programs</li> <li>• population trends</li> <li>• possible environmental impacts</li> <li>• power re-zoning</li> <li>• sales forecasts</li> <li>• shire planning</li> <li>• traffic patterns.</li> </ul> |
| <b><i>Integration of new solutions</i></b> may include:  | <ul style="list-style-type: none"> <li>• hardware compatibility</li> <li>• platform compatibility</li> <li>• protocol compatibility</li> <li>• software compatibility</li> <li>• technology compatibility</li> <li>• no contentions</li> <li>• signalling contention</li> <li>• system interoperability.</li> </ul>                                                                                                                                                                                                                   |
| <b><i>Test management schedule</i></b> may include:      | <ul style="list-style-type: none"> <li>• post-installation test procedures</li> <li>• pre-installation test procedures</li> <li>• produces test summary report</li> <li>• profiling of software solution</li> <li>• risk defects report</li> <li>• simulation testing</li> <li>• test process is testable for network software built.</li> </ul>                                                                                                                                                                                      |
| <b><i>Industry process</i></b> may include:              | <ul style="list-style-type: none"> <li>• complex architectural input</li> <li>• complex constructor table input</li> <li>• idea consultation.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                              |
| <b><i>Integration document software</i></b> may include: | <ul style="list-style-type: none"> <li>• fine-tuning capabilities in multi-operating environments</li> <li>• integration with existing system</li> <li>• links to legacy systems.</li> </ul>                                                                                                                                                                                                                                                                                                                                          |
| <b><i>Performance evaluation tests</i></b> may           | <ul style="list-style-type: none"> <li>• defects: <ul style="list-style-type: none"> <li>• defects detected are logged and mapped to failed</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                    |

| <b>RANGE STATEMENT</b>                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| include:                                                  | <ul style="list-style-type: none"> <li>cases               <ul style="list-style-type: none"> <li>releases:                   <ul style="list-style-type: none"> <li>manage software releases and iterations</li> </ul> </li> <li>requirements:                   <ul style="list-style-type: none"> <li>traceability</li> <li>management</li> </ul> </li> <li>test lab:                   <ul style="list-style-type: none"> <li>execute test cases from test plan</li> </ul> </li> <li>test plan:                   <ul style="list-style-type: none"> <li>creating and updating test cases.</li> </ul> </li> </ul> </li> </ul> |
| <b><i>Transition to operation activities</i></b> include: | <ul style="list-style-type: none"> <li>installation procedures</li> <li>operations and maintenance (OM) expenses</li> <li>OM</li> <li>project scope</li> <li>schedule and milestones</li> <li>training procedures.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b><i>Change implementation plan</i></b> may include:     | <ul style="list-style-type: none"> <li>back out procedures</li> <li>pre-validate changes prior to the change to assess environment stability</li> <li>test process pre and post scheduled change to identify success.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b><i>Monitoring activities</i></b> may include:          | <ul style="list-style-type: none"> <li>current and future capacity</li> <li>current and future performance</li> <li>throughput of the infrastructure components.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b><i>Tuning activities</i></b> may include:              | <ul style="list-style-type: none"> <li>configuration settings</li> <li>database performance tuning</li> <li>network settings.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## Unit Sector(s)

|                    |                    |
|--------------------|--------------------|
| <b>Unit sector</b> | Telecommunications |
|--------------------|--------------------|

## Co-requisite units

|                           |  |  |
|---------------------------|--|--|
| <b>Co-requisite units</b> |  |  |
|                           |  |  |
|                           |  |  |

## Competency field

|                         |                                         |
|-------------------------|-----------------------------------------|
| <b>Competency field</b> | Telecommunications networks engineering |
|-------------------------|-----------------------------------------|