



**Australian Government**

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

# **ICAI5176C Install and configure router**

**Release: 1**

## ICAI5176C Install and configure router

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit descriptor</b>	<p>This unit defines the competency required to install and configure a router to a basic level.</p> <p>The following units are linked and form an appropriate cluster:</p> <ul style="list-style-type: none"> <li>• ICAI5172B Implement backbone technologies in a local area network</li> <li>• ICAI5173B Install and configure a single segment local area network switch</li> <li>• ICAI5174B Install high end switches in multi switched local area networks</li> </ul>
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### Application of the Unit

<b>Application of the unit</b>	
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### Licensing/Regulatory Information

Not Applicable

### Pre-Requisites

<b>Prerequisite units</b>		
	ICAI3101B	Install and manage network protocols

## Employability Skills Information

<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. Select and install router	1.1. Select <i>router</i> based on organisational needs and criteria 1.2. Assemble <i>router</i> and <i>peripherals</i> in accordance with manufacturer requirements, enterprise guidelines and <i>protocols</i> 1.3. Configure <i>router</i> according to manufacturer instructions and technical requirements, taking into account interoperability requirements with network components 1.4. Reconfigure individual workstations to operate within the new environment, if required
2. Configure and test router	2.1. Test <i>router</i> and <i>peripherals</i> in accordance with manufacturer instructions and technical requirements 2.2. Test <i>hardware</i> and <i>router</i> to ensure full functionality and interoperability 2.3. Reconfigure additional <i>hardware</i> as required 2.4. Make adjustments to <i>network</i> depending on test results

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

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

#### Required skills

- Configuring router protocols
- Configuring network peripherals
- Selecting and installing a router
- Network testing and troubleshooting (e.g. using Ping, telnet commands)

#### Required knowledge

- Router functions
- Router-based network architectures
- Broadcast traffic and bandwidth
- Redundant paths
- Intelligent packet forwarding
- Routing tables

**REQUIRED SKILLS AND KNOWLEDGE**

- Routing protocols and how they operate
- Dynamic routing
- Router firewalls
- Australian Computer Society Code of Ethics

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>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.</p>	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> <li>Assessment must confirm the ability to install and configure a router for optimum performance and operate the LAN, WLAN or WAN.</li> </ul> <p>To demonstrate competency in this unit the person will require access to:</p> <ul style="list-style-type: none"> <li>A network environment</li> <li>A router (preferably two or more)</li> <li>Documentation on the network topology</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Routers are devices or sometimes software in a computer that directs information packets to the next point in their destination. Routers are generally located at any juncture of networks, including each internet point of presence. Poorly configured routers can have significant negative consequences and care must be taken to reduce risk associated with router settings and security.</p> <p>The breadth, depth and complexity covering planning and initiation of alternative approaches to skills or knowledge applications across a broad range of technical and/or management requirements, evaluation and coordination would be characteristic.</p> <p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>The demonstration of competency may also require self-directed application of knowledge and skills, with substantial depth in some areas where judgement is required in planning and selecting appropriate equipment, services and techniques for self and others.</li> <li>Applications involve participation in development of</li> </ul>

<b>EVIDENCE GUIDE</b>	
	<p>strategic initiatives as well as personal responsibility and autonomy in performing complex technical operations or organising others. It may include participation in teams including teams concerned with planning and evaluation functions. Group or team coordination may also be involved.</p>
<b>Method of assessment</b>	<p>The purpose of this unit is to define the standard of performance to be achieved in the workplace. In undertaking training and assessment activities related to this unit, consideration should be given to the implementation of appropriate diversity and accessibility practices in order to accommodate people who may have special needs. Additional guidance on these and related matters is provided in ICA05 Section 1.</p> <ul style="list-style-type: none"> <li>• Competency in this unit should be assessed using summative assessment to ensure consistency of performance in a range of contexts. This unit can be assessed either in the workplace or in a simulated environment. However, simulated activities must closely reflect the workplace to enable full demonstration of competency.</li> <li>• Assessment will usually include observation of real or simulated work processes and procedures and/or performance in a project context as well as questioning on underpinning knowledge and skills. The questioning of team members, supervisors, subordinates, peers and clients where appropriate may provide valuable input to the assessment process. The interdependence of units for assessment purposes may vary with the particular project or scenario.</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>• ICAI5172B Implement backbone technologies in a local area network</li> <li>• ICAI5173B Install and configure a single-segment local area network switch</li> <li>• ICAI5174B Install high-end switches in multi-switched local area networks</li> </ul>

**EVIDENCE GUIDE**

An individual demonstrating this competency would be able to:

- Demonstrate understanding of a broad knowledge base incorporating theoretical concepts, with substantial depth in some areas
- Analyse and plan approaches to technical problems or management requirements
- Transfer and apply theoretical concepts and/or technical or creative skills to a range of situations
- Evaluate information, using it to forecast for planning or research purposes
- Take responsibility for own outputs in relation to broad quantity and quality parameters
- Take some responsibility for the achievement of group outcomes.
- Demonstrate knowledge and competencies of configuration issues
- Maintain knowledge of industry products and services

Additionally, an individual demonstrating this competency would be able to:

- Demonstrate understanding of routers
- Apply solutions to defined routing problems
- Identify and evaluate information from a variety of sources

**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. **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.



<b>RANGE STATEMENT</b>	
<b>Router</b> may include:	<ul style="list-style-type: none"> <li>• Cisco 700 to the 2600 Series routers</li> <li>• Cisco 800 and ISR Series routers</li> <li>• Linksys routers</li> <li>• Cisco uBR7200 universal broadband routers</li> <li>• 3Com OfficeConnect Remote 810 ADSL</li> <li>• 3Com SuperStack 400</li> <li>• Netopia routers</li> <li>• D-Link routers</li> <li>• Motorola Vanguard Series</li> <li>• Intel express Series</li> </ul>
<b>Peripherals</b> may include but are not limited to:	<ul style="list-style-type: none"> <li>• Printers, scanners, tape cartridges</li> <li>• Speakers, multimedia kits</li> <li>• Personal computer fax, modems</li> <li>• Input equipment may include mouse, touch pad, keyboard, pens</li> <li>• Mobile phones, palmtops and personal digital assistants (PDAs), laptops and desktop computers</li> <li>• Bluetooth devices, universal serial bus (USB), Firewire (IEEE 1394)</li> </ul>
<b>Hardware</b> may include but is not limited to:	<ul style="list-style-type: none"> <li>• workstations</li> <li>• personal computers</li> <li>• modems and other connectivity devices</li> <li>• DSL modems</li> <li>• networks</li> <li>• remote sites</li> <li>• servers</li> </ul>
<b>Network</b> may include but is not limited to:	<ul style="list-style-type: none"> <li>• large and small LANs</li> <li>• VPNs</li> <li>• national WANs</li> <li>• the internet</li> <li>• the use of the PSTN for dial-up modems only</li> <li>• private lines</li> <li>• data</li> <li>• voice</li> </ul>
<b>Protocols</b>	<ul style="list-style-type: none"> <li>• Novell Protocol suite; internetwork packet exchange (IPX), sequenced packet exchange (SPX), NetBIOS emulator, netware core protocol</li> <li>• TCP/IP; internet control message protocol</li> </ul>

**RANGE STATEMENT**

	<p>(ICMP) see router protocols above, Net BT</p> <ul style="list-style-type: none"> <li>• Dynamic host configuration protocol (DHCP)</li> <li>• AppleTalk protocol - Phase 2 (1989)</li> <li>• WAN protocols (encapsulations): synchronous data link control (SDLC) (generally not used, as superseded by point-to-point protocol (PPP); binary synchronous control (BSC) high-level data link control (HDLC), advanced data communications protocol (ADCP)</li> </ul>
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**Unit Sector(s)**

<b>Unit sector</b>	Implement
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**Co-requisite units**

<b>Co-requisite units</b>		

**Competency field**

<b>Competency field</b>	
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