ICTTEN6043A Undertake network traffic management

Release: 1

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Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to monitor, analyse and improve network performance for the purpose of effectively managing traffic flow in telecommunications networks.
	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.

Application of the Unit

Application of the unit	Field officers, technicians or technical supervisors from carriers, contractors or other service providers apply the skills and knowledge in this unit to manage network traffic and make recommendations for capacity planning.
	This unit applies to switching and transmission networks from a carrier or service provider.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units	

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

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.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Evaluate network capacity and traffic problems	1.1. Interrogate network alarms to identify any areas of route and circuit unavailability
	1.2. Assess planned and unplanned outages to determine *network* unavailability and verify restoration times
	1.3. Interrogate system to identify traffic status using network management system
	1.4. Analyse system alert to identify real and potential traffic problems
	1.5. Analyse customer complaints and traffic measurement *data* to identify network problems
	1.6. Activate and deactivate semi permanent controls active in the network on a regular basis to simulate irregular traffic
2. Develop strategies to overcome network traffic problems	2.1. Conduct *traffic measurements* across all identified routes
	2.2. Analyse results including historical data to make assessment of traffic volume requirements
	2.3. Determine specific thresholds, loading and grading levels to alter traffic flows
	2.4. Liaise with *personnel* to determine amendments to plan based on funding parameters and budgeted levels
	2.5. Develop strategies based on traffic analyses and patterns to control traffic and prevent congestion or other traffic problems
	2.6. Develop strategies for recovery where traffic congestion occurs
	2.7. Develop contingency plans to allow for problems during network changes
3. Apply short and long term solutions	3.1. Implement software changes according to planned strategy
	3.2. Develop short term ad hoc solutions where temporary solution only is required
	3.3. Implement action plan to ensure that reversal action can be initiated in the case of temporary solution
	3.4. Implement contingency plan where required
	3.5. Undertake *monitoring* of changes and take measurements to assess the outcome of variations
	3.6. Prepare a report based on analysis of measurements for appropriate personnel with recommendations for

ELEMENT	PERFORMANCE CRITERIA
	further changes or actions
	3.7. Review and monitor strategies regularly and initiate corrective action where required
4. Detect and take action on potential traffic congestion	4.1. Measure and analyse *traffic loads* to assess potential congestion problems and determine possible impact
	4.2. Control traffic flow to prevent processor overloads
	4.3. Evaluate potential traffic increases for impact on the network and develop contingencies to control traffic flow if required
5. Provide traffic indicators for capacity planning	5.1. Predict future potential traffic trends and requirements using data on current and historical traffic patterns
	5.2. Identify potential network traffic problems and make recommendations to network planners
	5.3. Complete reports with recommendations and forward to enterprise planners and account managers

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
- analytical skills to interpret statistical data to determine trends   - communication skills to liaise with customers and technical staff to ensure requirements are known and can be met within timeframes   - literacy skills to read and interpret technical specifications and related documentation and prepare reports and planning documentation   - numeracy skills to make statistical calculations on traffic predictions   - planning and organisational skills to develop activity plans and strategies for traffic management   - problem solving skills to overcome network traffic problems   - research skills to identify traffic trends and network capacity   - technical skills to perform statistical measurements
Required knowledge
- customer policies and service level agreements   - planning principles

REQUIRED SKILLS AND KNOWLEDGE

- traffic blocking, congestion and dimensioning principles
- traffic engineering
- traffic patterns
- transmission type and signals that may be encountered
- typical network topologies, switching, routing and transmission techniques
- various network management systems suitable for conducting traffic evaluations

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: • implement a contingency plan • apply short and long term solutions to traffic problems • conduct traffic measurements • develop contingencies to control traffic flow • identify potential network traffic problems and make recommendations • provide information for capacity planning.
Context of and specific resources for assessment	Assessment must ensure: • a network and equipment for traffic monitoring and management • equipment and systems manuals, specifications and enterprise policy.
Method 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 undertaking traffic monitoring and management • review of report completed by the candidate containing analysis of traffic flow and recommendations for potential problems • oral or written questioning to assess required knowledge.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • ICTNPL6046A Undertake network performance analysis. Aboriginal people and other people from a non-English speaking background may have second language issues.

EVIDENCE GUIDE	
	Access must be provided to appropriate learning and assessment support when required.
	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.
	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.
	Where applicable, physical resources should include equipment modified for people with special needs.

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. 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.	

Network may include:	• equipment associated with:
	  • code division multiple access (CDMA)
	  • emerging technologies
	  • Ethernet
	  • global system for mobiles (GSM)
	  • multiprotocol label switching (MPLS)
	  • synchronous digital hierarchy (SDH)
	  • transmission control protocol (TCP)/internet protocol (IP)

RANGE STATEMENT	

	• Next Generation Networks (NGN):
	    • broadband access
	    • data transfer
	    • IP based systems
	    • IP private branch exchange (PBX)
	    • internet protocol TV (IPTV)
	    • mobile data
	    • mobile telephony
	    • multimedia
	    • video
	    • voice over internet protocol (VoIP)
	 • radio:
	    • fixed
	    • mobile
	 • satellite
	 • switching
	 • transmission.

Data may include:	• bit error rate (BER) • call completion rates • circuit occupancy rate • current measurements • customer queuing times • customer satisfaction level • data throughput levels • dropout rates • erlang • historical results • jitter • packet loss • propagation delay • route availability • route blocking • route congestion • signal to noise ratio.
Traffic measurements may use:	• communication system analysers • digital analysers • microwave link analyser • network management tool • optical fibre power meters

RANGE STATEMENT	
	• optical time domain multiplexing (OTDR) • protocol analyser • radio frequency (RF) microwave test sets • RF sweep tester • spectrum analysers • traffic flow meter.
Personnel may include:	• customer care and support centres • customer provisioning • equipment vendors • finance department • network management • network operations • network planning • other network providers • sales or account management • senior management • traffic engineering • traffic management.
Monitoring may include:	• live tests via alarms • network management systems • real-time performance indicators • surveys • temporarily connected test equipment • trend data.
Traffic loads may refer to:	• active sessions • call attempts • call holding time • call volumes • circuit occupancy • data throughput in bits • frames • packet volumes.

Unit Sector(s)

Unit sector	Telecommunications

Innovation and Business Skills Australia

Co-requisite units

Co-requisite units		

Competency field

Competency field	Telecommunications networks engineering

Innovation and Business Skills Australia