



Australian Government

Department of Education, Employment and Workplace Relations

ICTOPN6125A Manage dense wavelength division multiplexing transmission system

Release: 1

ICTOPN6125A Manage dense wavelength division multiplexing transmission system

Modification History

Not Applicable

Unit Descriptor

<p>Unit descriptor</p>	<p>This unit describes the performance outcomes, skills and knowledge required to manage a dense wavelength division multiplexing (DWDM) transmission system using graphical user interface (GUI) management software.</p> <p>Network management software provides a single point of access to the fault, performance, security and administrative functions of network management. Alarms are displayed and performance data and statistics are visible, allowing network degradation to be detected before actual failure occurs.</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

<p>Application of the unit</p>	<p>Technical staff in telecommunications who work with DWDM optical transmission systems where network management is implemented apply the skills and knowledge in this unit. The network management operations are often carried out at a central Network Operations Centre (NOC).</p>
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	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. Prepare to manage transmission system	1.1. Determine <i>networking issues</i> and requirements from <i>appropriate person</i> 1.2. Install network management software according to vendor instructions, including access, security and administration 1.3. Create a customised representation of the enterprise's <i>network topology</i> 1.4. Set and configure thresholds for performance monitoring 1.5. Prepare a plan to integrate the DWDM management system into a broader network management system where applicable
2. Manage transmission system	2.1. <i>Manage the network</i> using appropriate communications links 2.2. Monitor the network for faults and performance and produce a fault and performance report
3. Use network management to report on the overall state of transmission system	3.1. Analyse performance monitoring data and alarm data 3.2. Prepare a report and make recommendations based on the analysis 3.3. Report on <i>network degradation</i> over a period of time

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
Required skills
<ul style="list-style-type: none"> • analytical skills to identify and rectify faults in DWDM transmission system • communication skills to: <ul style="list-style-type: none"> • liaise with internal and external personnel on technical and operational matters • relate to work associates, supervisors, team members and clients • information technology skills particularly interoperability between management systems • literacy skills to: <ul style="list-style-type: none"> • interpret technical documentation, such as equipment manuals, specifications and service orders

REQUIRED SKILLS AND KNOWLEDGE

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| <ul style="list-style-type: none">• write reports using standard formats• problem solving skills to resolve software inoperability problems• research skills to gather data, observe and analyse transmission issues• technical skills to operate test equipment |
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Required knowledge

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| <ul style="list-style-type: none">• familiarity with workplace and industry environment• optical communications principles• DWDM technology• simple network management protocol (SNMP)• organisational policy and procedures |
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Evidence Guide

EVIDENCE GUIDE	
<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>	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> monitor the network for faults and performance and produce a fault and performance report analyse performance monitoring and alarm data and prepare a report with recommendations based on this analysis.
Context of and specific resources for assessment	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> access to sites on which DWDM equipment and associated network management can be operated access to DWDM system and test equipment currently used in industry access to relevant equipment manuals, software manuals and other procedural documentation.
Method of assessment	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> direct observation of the candidate using transmission system manuals and specifications to manage the network and analyse test results evaluation of measurement results and reports produced by the candidate.
Guidance information for assessment	<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"> ICTOPN5121A Test and commission a dense wavelength division multiplexing transmission system ICTOPN6124A Manage optical ethernet transmission ICTOPN6128A Design a dense wavelength division multiplexing system. <p>Aboriginal people and other people from a non-English speaking background may have second language issues.</p>

EVIDENCE GUIDE	
	<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

RANGE STATEMENT	
<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>	
<p><i>Networking issues</i> may include:</p>	<ul style="list-style-type: none"> • access • administration • protocols: <ul style="list-style-type: none"> • SNMP • security • transaction language 1 (TL1).
<p><i>Appropriate person</i> may include:</p>	<ul style="list-style-type: none"> • network administrator • network planner • project manager.
<p><i>Network topology</i> may include:</p>	<ul style="list-style-type: none"> • background maps • communications links between network elements or groups

RANGE STATEMENT	
	<ul style="list-style-type: none"> • groups of elements • nested groups of elements • physical shapes.
<i>Manage the network</i> may include:	<ul style="list-style-type: none"> • acknowledging or clearing alarms • determining alarm severity • determining overall network status • integrated with external management system • locally • managing connections • managing protection • monitoring the network for faults • monitoring the performance of network elements • performing software download and upgrade • producing equipment inventory at a given site • remotely • stand alone management • viewing historical event logs and alarm data • viewing performance parameters and thresholds • viewing real time active alarm data.
<i>Network degradation</i> may include:	<ul style="list-style-type: none"> • decreasing received optical power level • decreasing transmit optical power level.

Unit Sector(s)

Unit sector	Telecommunications
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Co-requisite units

Co-requisite units	

Competency field

Competency field	Optical networks
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