UEENEEF110A Select and arrange data and voice equipment for local area networks

Release: 2

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Modification History

Not applicable.

Unit Descriptor

Unit Descriptor	1) Scope:
	1.1) Descriptor
	This unit covers selecting and arranging data and voice communication cabling routes, socket outlets, termination modules, switches, routers and distributors in LANs intended for connection to a telecommunications network. The unit encompasses selecting compliant equipment, developing LAN arrangements that comply with regulation, based on calculated and deemed-to-comply solutions and completing network documentation.

Application of the Unit

Application of the Unit	2)
	This unit is intended as an additional competency to relevant competencies previously acquired and is therefore not applicable to those entering work.

Licensing/Regulatory Information

License to practice	3)
	The skills and knowledge described in this unit do not require a license to practice in the workplace. However practice in this unit is subject to regulations directly related to occupational health and safe and contracts of training such as new apprenticeships.

Pre-Requisites

Prerequisite Unit(s)	**4)**	

Competencies	**4.1)**	

Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

UEENEEE101A	Apply Occupational Health and Safety regulations, codes and practices in the workplace
UEENEEE102A	Fabricate, assemble and dismantle utilities industry components
UEENEEE104A	Solve problems in d.c. circuits
UEENEEE105A	Fix and secure electrotechnology equipment
UEENEEE107A	Use drawings, diagrams, schedules, standards, codes and specifications
UEENEEF102A	Install and maintain cabling for multiple access to telecommunication services
UEENEEF104A	Install and modify performance data communication copper cabling
UEENEEF105A	Install and modify optical fibre performance data communication cabling

Literacy and numeracy skills	**4.2)**	

Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading	3	Writing	3	Numeracy	3

Employability Skills Information

Employability Skills	**5)**	
		The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit

Performance Criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

ELEMENT		PERFORMANCE CRITERIA	
1	Prepare to select equipment.	1.1	The extent and nature of the communications network is determined from job specifications.
		1.2	Safety and other regulatory requirements to which the communications network area shall comply are identified, obtained and understood.
2	Arrange locations of equipment and cable routes.	2.1	Location of equipment is arranged to comply with job specifications and regulatory requirements.
		2.2	Cable routes are planned to ensure maximum lengths specified by standards and the manufacturer are not exceeded.
		2.3	Cable routes are planned to comply with job specifications and regulatory requirements.
		2.4	Earthing is arranged to comply with job specifications and regulatory requirements.

ELEMENT		PERFORMANCE CRITERIA	
3	Select cables and equipment.	3.1	Cables types are selected for suitability for the environments in which they are to be installed, required performance and regulatory requirements.
		3.2	Cable sizes are selected to meet capacity and performance requirements.
		3.3	Earthing components are selected to meet regulatory and earthing requirements.
		3.4	Evidence is obtained that network equipment selected complies with safety requirements.
		3.5	Electronic equipment types are selected for suitability for the environments in which they are to be installed, required performance and regulatory requirements.
4	Document communications network.	4.1	Reasons for selections made, including calculations, are documented in accordance with established procedures.
		4.2	Communications network arrangement and specifications for all selected items are documented in accordance with established procedures and forwarded to appropriate person(s).

E-OZ Training Standards

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and selecting and arranging equipment for local area networks.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-EF110A   Local Area Network equipment, selection and arrangements

Evidence shall show an understanding of Local Area Network fundamentals, applying safe working practices and relevant Standards, Codes and Regulations to an extent indicated by the following aspects:

T1.   Local Area Network fundamentals

- Analogue and digital signals encompassing:
    - How information is carried
    - Signal distortion

Examples include attenuation, reflection, noise, dispersion, jitter, latency and collisions

- Types of networks, network components and hardware
- Local Area Network (LAN) architectures
- Networking protocols and the OSI model
- Network signal propagation
- Transmission Control Protocol / Internet Protocol (TCP/IP)
- Basics of Encoding Networking Signals
- Internet services

T2.   PABX fundamentals encompassing:

- Programming methods
- Configuration options
- Programming options

T3.   Switches, hubs and routers encompassing:

- Purpose and function
- Selection
- Circuit configurations
- Connection arrangements
- System protocols

T4.   Decoders encompassing:

- Purpose and function

REQUIRED SKILLS AND KNOWLEDGE

- Selection
- Circuit configurations
- Connection arrangements
- System protocols

T5.   Coaxial cable installation and terminations encompassing:

- Coaxial cable types encompassing:
    - Structure of qualshield and trishield coaxial cables armour plated coaxial cable
    - Typical applications
    - Selection
- Coaxial cabling installation and termination encompassing:
    - Separation and segregation requirements and techniques.
    - Coaxial cable connectors compatible with the cable type and the environment
    - Installation requirements and techniques applicable to coaxial cables
    - Coaxial cable connectors and termination techniques

T6.   Enterprise work activities records encompassing:

- Purpose and extent of maintaining work activities records in an enterprise
- Types of records for maintaining work activities in an enterprise
- Methods for recording and maintaining work records
- Work records required by regulation requirements

Evidence Guide

EVIDENCE GUIDE

9) This provides essential advice for assessment of the unit and must be read in conjunction with the performance criteria and the range statement of the unit and the Training Package Assessment Guidelines.

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all parts of the unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment	**9.1)**
	Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment

intervention. It is the industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it is to include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accordance with industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal everyday work have a bearing on the decision as to how much and how detailed the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit	9.2)

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically.   Each element and associated performance criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines – UEE11'.   Evidence shall also comprise:

• A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this

shall incorporate evidence that shows a candidate is able to:

- Implement Occupational Health and Safety workplace procedures and practices, including the use of risk control measures as specified in the performance criteria and range statement
- Apply sustainable energy principles and practices as specified in the performance criteria and range statement
- Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
- Demonstrate an appropriate level of skills enabling employment
- Conduct work observing the relevant Anti Discrimination legislation, regulations, polices and workplace procedures

- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
  - Select and arrange equipment for local area networks as described in 8) and including:

A	Arranging network to comply with safety and other regulatory and functional requirements.
B	Selecting appropriate types and sizes of cables.
C	Arranging network equipment.
D	Selecting appropriate earthing components.
E	Documenting installation arrangement, specification for items selected and reasons for the selections made.
F	Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in a holistic assessment with the above listed items

Context of and specific resources for assessment

9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a

workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

These should be used in the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to selecting and arranging equipment for local area networks.

Method of assessment	9.4)

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:

Competent performance with inherent safe working practices is expected in the Industry to which this competency standard unit applies. This requires assessment in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

Concurrent assessment and relationship with other units	9.5)

For optimisation of training and assessment effort, competency development in this unit may be arranged concurrently with unit:

UEENEED10 1A   Use basic computer applications relevant to a workplace

Range Statement

RANGE STATEMENT

10) This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit shall be demonstrated in relation to selecting and arranging equipment for local area networks comprising a distribution frame, at least 20 telecommunication and 20 data outlets PABX and server.

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

Unit Sector(s)

Not applicable.

Competency Field

Competency Field   **11)**

Data and Voice Communications