



Australian Government

ICTTEN801 Plan a transmission network

Release: 1

ICTTEN801 Plan a transmission network

Modification History

Release	Comments
Version 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to analyse requirements and plan a new or upgraded telecommunication transmission network or convergence to Next Generation Networks (NGN).

It applies to individuals with high-level technical skills working as technical officers, supervisors and engineers working with optical, dense wavelength division multiplexing (DWDM), fibre networks and wireless networks.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Scope the project	1.1 Obtain and interpret relevant legislation, codes, regulations and standards including work health and safety (WHS) and environmental requirements for the given work 1.2 Obtain project brief from appropriate person 1.3 Evaluate potential transmission options and select most suitable type of transmission network that meets criteria outlined in project brief 1.4 Analyse limitations of transmission path characteristics and develop solutions for transmission impairments

ELEMENT	PERFORMANCE CRITERIA
	1.5 Produce a report outlining reasons for selection of a transmission network, together with a shortlist of suitable equipment vendors and products 1.6 Obtain traffic load from network information sources or forecasts, and then dimension the proposed network service 1.7 Produce brief on relationship between transmission network architecture components and overall network, and their impact on the work 1.8 Evaluate equipment type and technologies to determine availability, cost and compatibility with existing network equipment 1.9 Determine resources and equipment needed for work according to enterprise procedures and check for correct operation and safety 1.10 Assess capacity limitation of various platforms in context of the work to optimise maximum network performance 1.11 Determine product capability and calculate allowable capacity of transmission network to allow for network growth
2. Produce link budget	2.1 Critically analyse transmission system using equipment and vendor's specifications to produce a link budget and assess resulting margin 2.2 Document results of link budget analysis
3. Produce deployment plan for transmission network	3.1 Conduct planning work using current equipment components and complying with transmission network deployment rules and exemption process criteria 3.2 Produce preliminary plan on network deployment that maintains transmission network integrity 3.3 Establish a solution to unexpected situations through discussion with appropriate personnel, with consideration to job specifications, safety and enterprise procedures 3.4 Review plan to ensure it complies with all standards and codes required when working on network access, and make adjustments where appropriate
4. Complete work	4.1 Produce final deployment plan including recommendations agreed with customer 4.2 Provide report on network management and performance monitoring system to be incorporated in the transmission network to ensure network is performing at optimum level

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.9, 3.4	Organises, evaluates and interprets complex technical and non-technical information including legislative, enterprise and policy documentation
Writing	1.5, 1.7, 2.2, 3.2, 3.4, 4.1, 4.2	Prepares clear and concise workplace documentation, including reports and recommendations, incorporating technical language to communicate complex information clearly and effectively
Oral Communication	1.2	Uses highly developed listening, observational and questioning skills to understand project scope and clarify and explore meaning
Numeracy	1.8, 1.11, 2.1	Interprets numerical information to determine business costs and undertake link budget calculations, interpret results and evaluate different types of technical data
Navigate the world of work	1.1, 1.9, 3.3, 3.4	Monitors adherence to organisational policies and protocols and legal and regulatory requirements of self and others
Interact with others	1.6, 3.3	- Selects and uses appropriate conventions and protocols when communicating with stakeholders in various work contexts - Collaborates with others to achieve joint outcomes, taking the lead in identifying all issues and facilitating agreement
Get the work done	1.3, 1.4, 1.8, 1.9, 1.10, 1.11, 2.1, 3.1, 3.3	- Uses combination of formal, logical planning processes and an increasingly intuitive understanding of context for complex, high impact activities with strategic implications - Demonstrates a sophisticated understanding of principles, concepts, language and practices associated with the digital world and uses these to understand uses and potential of technology - Implements actions according to a predetermined plan, making adjustments if necessary - Takes responsibility for high-impact decisions in complex situations involving many variables and constraints - Uses formal analytical and lateral thinking techniques for identifying issues, generating and evaluating

		possible solutions
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Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTTEN801 Plan a transmission network	ICTTEN7193B Plan a transmission network	Updated to meet Standards for Training Packages. Recoded and minor changes to PC's to meet AQF requirements.	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

Assessment Requirements for ICTTEN801 Plan a transmission network

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Performance Evidence

Evidence of the ability to:

- evaluate potential transmission options and select most suitable type of transmission network
- analyse effect of transmission path characteristics on transmission systems
- develop solutions for transmission impairments
- select appropriate testing regimes for transmission technologies
- determine key multiplexing features of transmission technologies
- develop transmission network work plan.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- outline impact of relevant legislation, codes, regulations and standards involved with planning networks
- explain alternating current and transmission line theory
- compare emerging telecommunications switching and transmission technologies
- define network capacity and capability management
- outline capacity limitation of various platforms
- explain commercial considerations of Access Network deployment
- outline common switching and transmission support services
- explore compatibility issues for new technologies and equipment
- evaluate currency of technology and equipment under consideration
- explain data transmission
- summarise digital multiplexing techniques and hierarchies
- clarify enterprise deployment rules

- explain exemption process criteria
- outline network topologies
- formulate product capability and availability that are allowable within a transmission network
- establish aspects of telecommunications when planning a network, including:
 - alarm management
 - bearers
 - performance monitoring systems
 - transmission:
 - architectures and geographical categorisation
 - information sources
 - technology and equipment
- determine a cost analysis for a planned network.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances should be typical of those experienced in the Telecommunications – Telecommunications Networks Engineering field of work and include access to:

- a site to plan transmission network
- equipment and system manuals and specifications
- legislation and documentation to plan a transmission network.

Assessors must satisfy NVR/AQTF assessor requirements.

Links

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