



Australian Government

ICTTEN817 Plan transmission networks

Release: 1

ICTTEN817 Plan transmission networks

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 7.0.

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 requirements to plan transmission networks	1.1 Obtain project brief and scope from relevant personnel and arrange for site access in compliance with required security arrangements, legislation, codes, regulations and standards 1.2 Evaluate transmission options and select required transmission network that meets criteria outlined in project brief 1.3 Analyse limitations of transmission path characteristics and develop solutions for transmission impairments 1.4 Produce a report outlining reasons for selection of a transmission network, together with a shortlist of suitable equipment vendors and products 1.5 Obtain traffic load from network information sources or forecasts

ELEMENT	PERFORMANCE CRITERIA
	and dimension the proposed network service 1.6 Produce brief on relationship between transmission network architecture components and overall network, and their impact on the project 1.7 Evaluate equipment type and technologies, and determine availability, cost and compatibility with existing network equipment 1.8 Determine resources and equipment needed for work according to enterprise procedures and organisational requirements 1.9 Assess capacity limitation of various platforms in context of the work and optimise maximum network performance 1.10 Determine product capability and calculate allowable capacity of transmission network to allow for network growth
2. Produce link budget for transmission networks	2.1 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 networks	3.1 Conduct planning work using required equipment components in compliance 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 with consideration to job specifications, safety and enterprise procedures 3.4 Review plan and confirm that it complies with required standards and codes when working on network access, and make required adjustments
4. Complete plan of transmission networks	4.1 Produce final deployment plan and recommendations agreed with the customer 4.2 Provide report on network management and performance monitoring system to be incorporated in the transmission network

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	Interprets numerical information to determine business costs and conduct link budget calculations, interpret results and evaluate different types of technical data

SKILL	DESCRIPTION
Oral communication	• Uses highly developed listening, observational and questioning skills to understand project scope and clarify and explore meaning
Reading	• Organises, evaluates and interprets complex technical and non-technical information including legislative, enterprise and policy documentation
Writing	• Prepares workplace documentation, including reports and recommendations, incorporating technical language to communicate complex information clearly and effectively
Teamwork	• Selects and uses required 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
Planning and organising	• Uses a combination of formal, logical planning processes and an 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
Self-management	• Monitors adherence to organisational policies and protocols and legal and regulatory requirements of self and others

Unit Mapping Information

Supersedes and is equivalent to ICTTEN801 Plan a transmission network.

Links

Companion Volume Implementation Guide is found on VETNet -

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

Assessment Requirements for ICTTEN817 Plan transmission networks

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Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- plan at least two transmission networks.

In the course of the above, the candidate must:

- scope network requirements
- evaluate transmission options and select required transmission networks
- analyse effects of transmission path characteristics on transmission systems
- develop solutions for transmission impairments
- select required testing regimes for transmission technologies
- determine key multiplexing features of transmission technologies.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- required legislation, codes, company work practices, regulations and standards, workplace health and safety (WHS) requirements for scoped work
- alternating current and transmission line theory
- emerging network switching and transmission technologies
- network capacity and capability management
- capacity limitation of various platforms
- commercial considerations of Access Network deployment
- common switching and transmission support services
- compatibility issues for new technologies and equipment
- currency of technology and equipment under consideration
- features of:
 - data transmission

- digital multiplexing techniques and hierarchies
- enterprise deployment rules
- exemption process criteria
- network topologies
- product capability and availability that are allowable within a transmission network
- aspects of networks when planning a network, including:
 - alarm management
 - bearers
 - performance monitoring systems
 - transmission
 - architectures and geographical categorisation
 - information sources
 - technology and equipment
- cost analysis for a planned network
- workplace documentation, including reports.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

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

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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