

Achievement Standard

Subject Reference Digital Technologies 3.6

Title Use complex techniques to develop a network

Level 3 **Credits** 4 **Assessment** Internal

Subfield Technology

Domain Digital Technologies

Status XX

Status date XX

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This achievement standard involves using complex techniques to develop a network.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
Use complex techniques to develop a network.	Use complex techniques to develop an informed network.	Use complex techniques to develop a refined network.

Explanatory Notes

- 1 This achievement standard is derived from the Technology learning area in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007; and is related to the material in the *Teaching and Learning Guide for Technology*, Ministry of Education at <http://seniorsecondary.tki.org.nz>.

Further information can be found at <http://www.technology.tki.org.nz/>.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools*, Ministry of Education at <http://technology.tki.org.nz/Technology-in-the-NZC/Safety-in-Technology-Education-revised-2017>, and the Health and Safety at Work Act 2015.

This standard is also derived from *Te Marautanga o Aotearoa*. For details of *Te Marautanga o Aotearoa* outcomes to which this standard relates, see the [Papa Whakaako](#) for the relevant learning area.

2. *Use complex techniques to develop a network* involves:

- explaining networking concepts
- using appropriate tools, procedures, protocols and techniques when installing and configuring hardware, software and peripherals for a specified network
- undertaking a range of appropriate testing procedures, diagnosing and troubleshooting to identify and resolve given setup and configuration faults for a specified network
- investigating the parts and components (hardware and software) to be used in the specified network
- addressing relevant implications.

Use complex techniques to develop an informed network involves:

- explaining the OSI model and the impact of layers in the design of the specified network
- evaluating and applying information gained from testing procedures, diagnosing and troubleshooting to inform development and improve the quality of the specified network
- explaining the basic purpose, function and behaviour of the parts and components (hardware and software) used in the specified network.

Use complex techniques to develop a refined network involves:

- independently and accurately using tools, procedures, protocols and techniques when installing and configuring hardware and software to ensure the outcome is fit for purpose
- justifying the selection of parts and components (hardware and software) used in the development of the specified network.

3 Examples of relevant implications include:

- social
- cultural
- legal
- ethical
- intellectual property
- privacy
- accessibility
- usability
- functionality
- aesthetics
- sustainability and future proofing
- end user requirements
- health and safety.

4 Examples of protocols include: SMB, NTP, DNS, IPV4/IPV6, IP addressing and ICMP.

- 5 Complex techniques rely on the type of network established. Examples of *complex techniques* include:
- configuring shared access to files, printers, ports and miscellaneous communications between nodes on a network
 - configuring appropriate protocols
 - server configuration.
- 6 An example of an appropriate testing procedure is QoS.
- 7 Networking concepts include:
- the Open System Interconnection (OSI) model
 - ICMP (Internet Control Message Protocol)
 - data transmission modes (Unicast, Broadcast, and Multicast).
- 8 Specified networks could be given by the teacher or could be student designed. The quality of the network should be of sufficient rigour to be implemented in-situ and may include VLANs.
- 9 Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards>.
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Replacement Information

Quality Assurance

- 1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.
- 2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference

0233