



National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Exemplar for Internal Achievement Standard

Digital Technologies Level 3

This exemplar supports assessment against:

Achievement Standard 91905

Use complex techniques to develop a network

An annotated exemplar is an extract of student evidence, with a commentary, to explain key aspects of the standard. It assists teachers to make assessment judgements at the grade boundaries.

New Zealand Qualifications Authority

To support internal assessment

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| | Grade: Excellence |
| 1. | <p>For Excellence, the student needs to use complex techniques to develop a refined network.</p> <p>This involves:</p> <ul style="list-style-type: none"> • independently and accurately using tools, procedures, protocols and techniques when installing and configuring hardware and software to ensure the network meets end-user requirements • justifying the selection of parts and components (hardware and software). <p>There is no student work currently available at this grade.</p> <p>The student showed how their network meets the end-user requirements, using tools, procedures, and protocols independently and accurately to achieve this. For example, they followed normal expected protocols when working on the server, such as antistatic precautions and following the manufacturers recommended processes for installing and configuring hardware (rather than using trial and error).</p> <p>The student did most of the setup with minimal help from others, and has compared and justified the choice of parts, software and components used.</p> |

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| | Grade: Merit |
| 2. | <p>For Merit, the student needs to use complex techniques to develop an informed network.</p> <p>This involves:</p> <ul style="list-style-type: none"> • explaining the OSI model and the impact of layers in the design of the network • evaluating and applying information gained from testing, diagnostic and troubleshooting procedures to inform development and improve the quality of the network • explaining the purpose, function and behaviour of the parts and components (hardware and software) used. <p>There is no student work currently available at this grade.</p> <p>The student has explained the OSI model and the impact of layers in the design of the network. For example, they explain how:</p> <ul style="list-style-type: none"> • the Datalink Layer ensures that messages are delivered to the networked devices and messages are translated from the Network layer into bits for the Physical layer to transmit • the OSI model relates to their own network. <p>Information gained from testing procedures, diagnosing and troubleshooting has been evaluated and applied to inform further development and improve the quality of the specified network.</p> <p>Thorough testing has resulted in significant improvements to the behaviour and function of the network. This is more than correcting errors. For example, the student tested and revised the configuration settings, changed hardware components, and made the network more reliable as a result.</p> <p>The student has explained the purpose, function and behaviour of the parts and components (hardware and software) used. For example, they explained:</p> <ul style="list-style-type: none"> • the purpose, function and behaviour of a Raspberry Pi set up to be a printer interface with a 3D Printer • why software is configured to ensure that all components can 'talk' to each other. |

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| | Grade: Achieved |
| 3. | <p>For Achieved, the student needs to use complex techniques to develop a network.</p> <p>This involves:</p> <ul style="list-style-type: none"> • explaining networking concepts • using appropriate tools, procedures, protocols and techniques when installing and configuring hardware (including peripherals) and software • undertaking a range of appropriate testing, diagnostic and troubleshooting procedures to identify and resolve setup and configuration errors • investigating the parts and components (hardware and software) to be used • addressing relevant implications. <p>There is no student work currently available at this grade.</p> <p>The student has explained that the Internet Control Message Protocol (ICMP) is a set of communication rules that devices use to communicate data transmission errors in a network.</p> <p>The student used appropriate tools, procedures and protocols to install and configure hardware and software. They have used at least two complex techniques from the list in Explanatory Note 5. For example, they have:</p> <ul style="list-style-type: none"> • configured shared access to files, printers, ports, and miscellaneous communications between nodes on a network • installed and configured hardware and software with appropriate protocols and demonstrated a working network. <p>Testing, diagnosis and troubleshooting has been carried out to identify and resolve setup and configuration errors, showing that the network functions as intended. For example, the student:</p> <ul style="list-style-type: none"> • tested that all devices in the network can see each other and are connected to the same network and can access the internet • checked that shares in the network are configured properly • modified configuration on clients and the server so the network functions as intended. <p>The student has investigated the parts and components (hardware and software) to be used. For example, the student:</p> <ul style="list-style-type: none"> • looked at several network hubs and switches and chose Brand A, as it's very easy to set up compared to Brand B (but identified that there have been confirmed security issues with them) • after some investigation chose a Raspberry Pi to act as a media server and looked at several suitable Raspberry Pi media server options and chose Plex. <p>The student showed how their network addresses at least two identified relevant implications. This could include how they have addressed copyright concerns with software and met end-user considerations.</p> |