



| Sample assessment task | |
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| Year level | Year 8 |
| Learning area | Technologies |
| Subject | Digital Technologies |
| Title of task | Network diagram task |
| Task guidelines | |
| Description of task | Students research and select appropriate network devices and transmission media to create a network diagram and justification of their dream home network. |
| Type of assessment | Summative |
| Purpose of assessment | <ul style="list-style-type: none">To assess students' understanding of the purpose of network devices and transmission media and their impact on network activitiesTo assess students' understanding of how networking devices and transmission media interrelate to create a network |
| Assessment strategy | Written evidence – electronic or hard copy |
| Evidence to be collected | Network diagram Written component |
| Suggested time | 3 x 1-hour lessons |
| Content description | |
| Content from the Western Australian Curriculum | <p>Digital systems Methods of data transmission and security in wired, wireless and mobile networks Specifications of hardware components and their impact on network activities</p> <p>Digital implementation Design the user experience of a digital system</p> <p>Investigating and defining Investigate a given need or opportunity for a specific purpose Consider components/resources to develop solutions, identifying constraints</p> <p>Designing Design, develop, evaluate and communicate alternative solutions, using appropriate technical terms and technology</p> <p>Producing and implementing Safely apply appropriate techniques to make solutions using a range of components and equipment</p> <p>Collaborating and managing Work independently, and collaboratively when required, to plan, develop and communicate ideas and information when managing processes</p> |
| Task preparation | |
| Prior learning | Students are familiar with: <ul style="list-style-type: none">the purpose of network devices and transmission mediaresearch skillsCISCO networking diagram symbols (if teacher chooses this format) |
| Assessment differentiation | Teachers should differentiate their teaching and assessment to meet the specific learning needs of their students, based on their level of readiness to learn and their need to be challenged. |

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| | Where appropriate, teachers may either scaffold or extend the scope of the assessment tasks. |
| Assessment conditions | Students will be allocated class time to plan, prepare and produce their task. This task may be assigned as homework if class time is limited. |
| Resources | <ul style="list-style-type: none">• Access to CISCO networking device symbols• If the teacher chooses, access to CISCO Packet Tracer• Task sheet and guidelines |

Instructions for teacher

Allow three one-hour lessons to complete this task.

Reinforce students' prior knowledge of Local Area Networks (LAN's) and Wide Area Networks (WANs) before commencement.

Reinforce students' prior knowledge of wireless and wired connections before commencement.

Prior learning needs to be delivered on network devices such as routers (wired and wireless), switches, Network Interface Cards (NIC), servers, firewalls, modems, Integrated Service Routers, etc.

Prior learning also needs to be delivered on network transmission media such as Unshielded Twisted Pair (UTP) Cat 5 and/or Cat 6 cables, Fibre optic cables, 5G transmission, WiFi standards and any other transmission media a teacher deems required.

Instructions for students

Part 1 – Setting up your dream home network

You are required to design a home network based on a house with four or more family members. You must use a combination of wired and wireless devices. All devices must be connected logically and all devices and cabling must be labelled. This can be done using CISCO Packet Tracer or by hand. Where possible, use CISCO network device symbols.

Part 2 – Explanation of the network

Explain why you have selected the devices you have in your dream network. Compare and identify the specifications of hardware components and coherently outline, in detail, their apparent impacts on network activities. Explain why you chose these devices and cables, and explain your network layout. Compare and contrast to other devices and alternative transition media.

Part 3 – Costing your network

Give an example of the devices you would use and the cost to set up. Research different costings for all the devices used in your dream network. Ensure that the devices chosen are accurate and match what you have displayed in your dream network. Arrange this in a table and show the total cost, e.g. Netgear N300 Wireless Modem Router Black: \$79.00.

| Sample marking key | |
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| Part 1 <u>Setting up your dream home network</u> | |
| Description | Marks |
| Network diagram for each networking device (maximum of five devices; 3 marks for each device) | |
| Selects and consistently positions networking device in relation to other devices and the network's effectiveness. | 3 |
| Selects and positions networking device in relation to other devices and the network's effectiveness. | 2 |
| Inconsistently positions networking device without consideration of effectiveness | 1 |
| Subtotal | 15 |
| Description | Marks |
| Network diagram connections | |
| All cabling and connections are accurately identified in detail. | 3 |
| Cabling connections are identified. | 2 |
| Some cabling and connections are identified. | 1 |
| Subtotal | 3 |
| Part 2 <u>Explanation of the network</u> | |
| Description | Marks |
| Explanation of the network devices (maximum of five devices; 3 marks for each device) | |
| Compares and identifies specifications of hardware components and coherently outlines, in detail, their apparent impacts on network activities. | 3 |
| Identifies specifications of hardware components and coherently outlines their apparent impacts on network activities. | 2 |
| Identifies specifications of hardware components and outlines their apparent impacts on network activities. | 1 |
| Subtotal | 15 |
| Description | Marks |
| Explanation of the network connections (maximum of three connections; 3 marks for each connection) | |
| Compares and identifies specifications of network connections and coherently outlines, in detail, their apparent impacts on network activities. | 3 |
| Identifies specifications of network connections and coherently outlines their apparent impacts on network activities. | 2 |
| Identifies specifications of network connections and outlines their apparent impacts on network activities. | 1 |
| Subtotal | 9 |
| Part 3 <u>Costing your network</u> | |
| Description | Marks |
| Costings and research | |
| All networking components costed with reference to examples, and with total cost identified. | 4–5 |
| Some networking components costed with references. | 2–3 |
| Attempt to cost some of the networking components without referencing. | 1 |
| Subtotal | 5 |
| Total | 47 |