

Internal Assessment Resource

Achievement standard: 91905

Standard title: Use complex techniques to develop a network

Credits: 4

Resource title: Serving up my home

Resource reference: Digital Technologies & Hangarau
Matihiko 3.6A

Student/Akonga instructions

Introduction/Kupu Arataki

Your family has a number of devices, but they are finding that when they use a different device they don't have access to their information. They would like a central repository of their documents, videos, songs etc.

This assessment activity requires you to use complex tools and techniques to create a microcomputer-based file server and to connect it to other devices.

You can access help and are encouraged to do so. This assessment is about your ability to show the how and why of what you are doing and your ability to apply your knowledge to your own context.

Due Date: September 23rd

Read this information first

You will need to:

- Investigate a range of hardware and software that would be appropriate for this project. You will need to consider the purpose and function of both the hardware and software to be used for the outcome and justify your selection of the parts and components, taking into account relevant implications such as accessibility and price.
- Make some software and hardware selections based on how you develop your outcome.
- Use appropriate tools, procedures, protocols and techniques when installing and configuring hardware (including peripherals) and software.
 - Examples of protocols include: SMB, NTP, DNS, IPV4/IPV6, IP addressing and ICMP.
- Diagnose, test configure, and troubleshoot your hardware and software throughout the development process using appropriate testing procedures such as:
 - configuring and booting the computer hardware (router, scanner, and client)
 - configuring wireless adaptors

- building and installing monitoring and scanning tools
- installing a daemon to execute scheduled commands.
- Demonstrate understanding of the networking concepts and the underlying OSI framework including:
 - the Open System Interconnection (OSI) model
 - ICMP (Internet Control Message Protocol)
 - data transmission modes (Unicast, Broadcast, and Multicast).
- Show clear evidence of the procedures, decisions and your thinking as you develop this outcome.
- Show that you recognise and address any relevant implications.
- Regularly check in with your teacher to demonstrate your learning.

You will need to supply your teacher with a selection of equipment you plan to investigate and select from for this assessment, and a list of equipment you require.

You will also be expected to:

- install and configure an appropriate OS
- configure a networking router
- configure a file server
- connect and configure other devices.

You will be assessed on your ability to:

- show an understanding of the parts and components selected, through explaining the purpose, function and behaviour of the parts and components
- explain the networking concepts used to develop the network, including specific reference to the layers of the OSI model and the impact this has on the design of the network
- independently and accurately install, test and configure your selected hardware to ensure the outcome meets end user requirements
- independently and accurately install, test and configure your selected software to ensure the outcome meets end user requirements
- demonstrate that you have considered and addressed relevant implications
- evaluate the findings from the tests and apply this information to improve the quality of your network
- ensure your outcome is fit for purpose by justifying your selection of parts and components (hardware and software).

You may work with others to help generate ideas and develop those ideas. However, you will be expected to show your own thinking and evidence of how you discussed and combined ideas together to write and submit your own assessment evidence.

Task/Hei Mahi

You are going to develop a network file server and configure both the file server and the other devices settings to allow them to connect to the file server to allow data to be shared across a network.

You could follow this sequence of steps to complete in order to configure this network file server outcome.

Investigate a range of hardware and software that would be appropriate for this project. You will need to consider the purpose and function of both the hardware and software to be used for the outcome and justify your selection of the parts and components, taking into account relevant implications such as accessibility and price.

At each stage of development identify and explain the relevance this has on the OSI model, why it is relevant, and how this will impact the design of the network. This will be needed as evidence for the presentation of your outcome to your class.

Ensure that at each stage of development you use appropriate testing procedures to evaluate, diagnose and troubleshoot any configuration errors to ensure your outcome will be fit for purpose for the end users.

Configure the microcomputer hardware and boot the selected OS.

Configure the router and any other devices in your network.

Investigate and determine the best way to connect to the WIFI network and give reasons for your selection. Ensure the solution is configured and working.

Configure your microcomputer to enable a number of configurations as set by your teacher. (e.g. assigning a different static IP address, configure DHCP etc.).

Secure your device appropriately.

Install and configure the file sharing software you have selected.

Edit network interfaces.

Connect to the network and carry out standard configuration practices as determined by your teacher. Test on the file server, and test that you can access the data on the other devices in the network.

Ask your teacher to check your network.

Produce a simple presentation that maps your project stages against the OSI model to illustrate how your project links to each stage and allows your teacher or peers to critique your understanding and your process. Your teacher will check your network.

Your presentation should include:

- an explanation of the purpose, function and behaviour of the parts and components used and why you used them
- an explanation of the networking concepts used to develop the network, including specific reference to the layers of the OSI model and the impact this has on the design of the network
- how you used testing procedures to evaluate, diagnose and troubleshoot configuration errors to improve the quality of your file server
- why your outcome is fit for purpose including a justification of your selection of parts and components used (hardware and software)
- how you have considered and addressed relevant implications.