

Assessment schedule/Mahere Aromatawai: Digital Technologies & Hangarau Matihiko 91905 - Serving up my home

Evidence/Judgements for Achievement/Paetae	Evidence/Judgements for Achievement with Merit/Kaiaka	Evidence/Judgements for Achievement with Excellence/Kairangi
<p>Use complex techniques to develop a network.</p> <p>The student has:</p> <ul style="list-style-type: none"> explained networking concepts <p>For example (partial evidence): <i>Setting up a static IP address “My IP address was 192.168.1.215. When assigning an IP address, you only want to change the last number. I’m going to change my address to 192.168.1.191. I’ll use a number between 100 and 200. I set the netmask and broadcast to the values from “ifconfig eth0” so that the interface is configured correctly for my home network.”</i> <i>“I configured the Raspberry Pi into broadcast (multicast) mode. IP Multicast is a technique for one-to-many communication over an IP infrastructure in a network.</i></p> <pre>wlan0 Link encap:Ethernet HWaddr inet6 addr: fe80::9380:71d4:4917:9b65/64 Scope:Link UP BROADCAST MULTICAST MTU:1800 Metric:1 RX packets:7 errors:0 dropped:7 overruns:0 frame:0 TX packets:0 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000 RX bytes:971 (971.0 B) TX bytes:0 (0.0 B) wlan1 Link encap:Ethernet HWaddr UP BROADCAST MULTICAST MTU:1800 Metric:1 RX packets:0 errors:0 dropped:0 overruns:0 frame:0 TX packets:0 errors:0 dropped:0 overruns:0 carrier:0</pre>	<p>Use complex techniques to develop an informed network.</p> <p>The student has:</p> <ul style="list-style-type: none"> explained the OSI model and the impact of layers in the design of the network <p>For example (partial evidence): <i>“I put together a presentation to my class which my teacher recorded. In it I talked about the different stages of my project and where they aligned with the OSI model. One point I made was about the Datalink Layer which ensures that messages are delivered to the networked devices and translates messages from the Network layer into bits for the Physical layer to transmit. I showed that when I configured the File server how it receives requests for files.”</i></p> <ul style="list-style-type: none"> evaluated and applied information gained from testing, diagnostic and troubleshooting procedures to inform development and improve the quality of the network <p>For example (partial evidence): <i>The student has shown evidence of ongoing testing and troubleshooting, as they progress. They are able to use this understanding to solve problems with the network.</i></p>	<p>Use complex techniques to develop a refined network.</p> <p>The student has:</p> <ul style="list-style-type: none"> independently and accurately used tools, procedures, protocols and techniques when installing and configuring hardware and software to ensure the network meets end user requirements <p>For example (partial evidence): <i>Teacher notes on student observation: I confirm I saw the student configuring the microcomputer to act as a file server, but that the file server is headless, e.g. it does not have a screen or keyboard, so the student connected the microcomputer to the router via a wired LAN cable. To make this work, the student needed to change the settings of the WiFi router (a D-Link DSL-2750U wireless router). The student correctly identified that the router assumed that the cable connection is an internet connection and tried to use this as the internet gateway leading to a loss of internet connectivity. To prevent this from happening, the student decided to disable the Configure the second IP Address and Subnet Mask for LAN under Setup Local Network Router Settings.</i> <i>The router also by default set up two separate isolated local networks: one wireless network</i></p>

"The snip above shows where I ran an `$ifconfig` to query the network to confirm I had multicast running. I set it to multicast as we will have lots of video on the our home file server. Simultaneous delivery of high-quality video to each of a large number of delivery platforms will exhaust the capability of even a high bandwidth network with a powerful video clip server (which I don't have!). This poses a major scalability issue for sustained high bandwidth. This is why I decided to go with multicast networking."

- used appropriate tools, procedures, protocols and techniques when installing and configuring hardware, software and peripherals

For example (partial evidence):

"I had to set up the Raspberry Pi properly. I configured the Boot the Raspberry Pi 3 and configured SSH, SPI, I2C, and SAMBA. I provided a series of pictures showing this occurring. E.g. On raspberry pi I installed install samba with-

`sudo apt-get install samba samba-common-bin`

--shown as a snippet-

```
pi@raspberrypi:~/Share $ sudo apt-get install samba samba-common-bin
Reading package lists... Done
Building dependency tree
Reading state information... Done
samba-common-bin is already the newest version (2:4.5.12+dfsg-2+deb9u1).
Suggested packages:
  bind9 bind9utils ctdb ldb-tools ntp | chrony smbldap-tools winbind ufw
The following NEW packages will be installed:
  samba
0 upgraded, 1 newly installed, 0 to remove and 28 not upgraded.
Need to get 0 B/870 kB of archives.
After this operation, 11.0 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Selecting previously unselected package samba.
(Reading database ... 35392 files and directories currently installed.)
Preparing to unpack .../samba 2%3a4.5.12+dfsg-2+deb9u1_armhf.deb ...
Unpacking samba (2:4.5.12+dfsg-2+deb9u1) ...
```

- undertaken a range of appropriate testing, diagnostic and troubleshooting procedures to identify and resolve setup and configuration errors

"I typed my Pi's IP address into the "search program and files box" from the Windows command prompt (i.e. `\\192.168.1.191\public`), and typed in my username and password.

The folder `RASPBERRYPI\public` now appears in the Win 10 Network folder, but when I double-click the folder the following error message appears:

`\\RASPBERRYPI\public is not accessible. You might not have permission to use this network resource. Contact the administrator of this server to find out if you have access permissions.`

The user name could not be found."

"I looked up some information, and I think I didn't set the permissions / owner on the drives when I mounted them. I reset them as it appears that on the Pi my USB drive has been mounted twice in `/media`."

- explained the purpose, function and behaviour of the parts and components (hardware and software) used

For example (partial evidence):

"I have made a table of the components I used and tried to briefly explain about each one and why I think it was fit for purpose."

The explanations the student provides are not copy pasted, they are clearly understood by the student.

The examples above are indicative samples only

and one wired network. The student correctly determined that it was wise to uncheck Enable MultiAP Isolation (under Setup | Wireless Basic) to prevent this and force the router to put wireless clients and wired clients on the same local network.

- justified the selection of parts and components (hardware and software)

For example (partial evidence):

"I used a Raspberry Pi with Raspberrian for this task. I think the Raspberry Pi was appropriate because it is small and compact, it supports Linux, which makes software licensing more accessible. The SD cards make it easy to change functionality and test and trial without reinstalling ... There are disadvantages like the non-compatibility with Windows and ... however for this task it is suitable."

"I chose SAMBA for a lot of reasons like access control permission (security). These are important for a file server for distributing content. E.g. A user can access a file through samba only if the user satisfies both the samba permissions and the file system permissions. The samba permissions are set up with read access for guests (anonymous login) but write access only to set up accounts. The samba share is accessible only from the local network, so even these anonymous guests would have to have logged in to the WiFi router."

The examples above are indicative samples only

For example (partial evidence):

"When I downloaded, built, and installed SAMBA as my file server software, it would not run as expected. The RPi is not showing up anywhere within the "Network" area of my Windows machines. I couldn't access the share by IP, either. I got this message "The mapped network drive could not be created because the following error has occurred: The account is not authorised for log in from this station." So, I uncommented the security attribute and swapped the value of the encrypt passwords from no to yes - this is a requirement if you wish to access your Samba share from a Windows machine."

- investigated the parts and components (hardware and software) to be used

For example (partial evidence):

"I did a lot of research and decided to use SAMBA as Samba is a popular freeware program that allows end users to access and use files, printers, and other commonly shared resources on an intranet. Samba is often referred to as a network file system and can be installed on a variety of operating system platforms, including: Linux, most common UNIX platforms, OpenVMS, and OS/2 and Pi. I then looked at..."

"I decided to use a Raspberry Pi because there were a lot of tutorials online and forums I could refer to when setting the system up."

- addressed relevant implications

For example (partial evidence):

The student looked at the implications and identified functionality and end user requirements. They explained these and then explained how they addressed them.

"I decided on SAMBA because Samba has provided secure, stable and fast file and print services for all clients

using the SMB/CIFS protocol, such as all versions of DOS and Windows, OS/2, Linux and many others."

"My selection of the Raspberry Pi was made due to its compatibility with the Linux OS, which is open source, and that it is discreet, cheap, configurable, and noiseless and power efficient. These were important because..."

The examples above are indicative samples only

Final grades will be decided using professional judgement based on a holistic examination of the evidence provided against the criteria in the achievement standard