QNAP "Quality Network Appliance Provider" home NAS server overview

Linux Supporters Group Adelaide

By Neil, October 2021

QNAP, based in Taiwan, manufacture a range of Linux based Network Attached Storage (NAS) units, which are commonly used for home and small business file storage, through to corporate use for regional branches. The simplest units include provision for a couple of 3.5” HDDs in a RAID array, so you can replace a failing drive without losing your data. File storage can be supplemented by a caching SSD for improved performance. I bought one in January to provide networked storage for my wife’s and my digital records, which we can now access anywhere we have an Internet connection. The QNAP NAS units appear to be fairly well supported for remote Linux, Mac and Windows file storage with the included apps mostly free, but with some requiring a generally modestly priced licence purchase. This support is very much needed, because the units are so popular, they are a specifically targeted by malware, with a recent ransomware attack resulting in firmware and app updates in late April. You can expect regular firmware and app updates and it’s possible to configure automatic firmware updates.

The rest of this document is a brief summary of my experiences to date on the TS-251-D model. It uses an x86-64 processor, which brings with it good compatibility for development, particularly if you are compiling code.

1) The TS-251-D can be ordered with 2 or 4GBytes of laptop RAM. 2GBytes is insufficient if you want to do more than just store perhaps 4TBytes of files. There’s a wide range of apps available, through which you can stream media, set up your personal cloud storage, search through your photo collection for photos of family and friends you’ve taken over the years, do Python development- or even run Ubuntu as a virtual server. I recommend buying just 2GBytes of RAM and then you can add another 2GByte module, or replace the 2GByte module with paired 4 or 8 GByte modules as needed. While the NAS specification states a maximum RAM capacity of 8GBytes, this NAS can support at least 16GBytes of RAM, but the RAM chips on the modules must not be the newer 64GBit variety, as these are not supported by the installed NAS Celeron dual CPU.

2) Choose your accompanying HDDs carefully. They need to be rated for NAS use and some NAS specific hard drives have file access time challenges, due to the disk reading/writing technology used to achieve the high bit areal densities required. HDD noise may also be an issue, depending where you place your NAS (ideally next to your router, or at least via a high capacity cable network connection).

3) The NAS is managed through a powerful and well constructed browser GUI interface, but you can also perform limited management via a terminal menu. The latter allows you to check network settings, system event logs, reset to the factory default (also available via a physical reset button), reboot into rescue and maintenance modes and perform licence and app management (stopping, starting and uninstalling apps), You can also drop out of this menu for a root access terminal session.

3) The Notification Centre can be configured to send emails on hacking attempts. Port scans are constant, but at least you only get a notification after a default of 30 scans, a number you will want to increase. Forced login attempts from bots running scripts come in bursts and I've seen a few instances of several hundred attempts done in a sustained attack after business hours (presumably on the assumption that a business NAS has been found). The easiest way to set up notifications is via a free email account, but allocate one specifically for your NAS. Otherwise when you are under attack, you'll likely exceed the email provider's anticipated personal use threshold and be unable to send email from your account for 24 hours. It's possible to block attacks from a specific IP address, but when I analysed one attack, a range of IP addresses were used, with only some of the IP addresses used for more than one login attempt.

4) As you'd expect with a network attached system, only mature software versions are used. The NAS uses Linux kernel version 4.14 x86-64 and much of the included supported software is Python 2 based, which is no longer supported by the Python Software Foundation. This puts the onus on QNAP to patch any Python 2 security bugs. It also means that it's tricky to install Python 3. More on this in a future update.

5) Among the nearly 60 apps available (I have installed 30) is a very powerful file search utility Qsirch. I would not recommend using this unless you only have a small file collection, (in which case, you are probably unlikely to need a NAS!). My wife and I have an extensive digital photo collection and I found that Qsirch (version 5.03) just keeps grabbing memory, so that after around 10 minutes, the NAS server GUI dies, along with other access apps, though thankfully the firewall stays up. With nearly a million installs, it's disappointing that Qsirch has this serious bug. NOTE: Don't make more than one change to your NAS set-up at at time. I added in extra RAM, then installed the Ubuntu Linux Station and coincidentally that's when the Qsirch problem arose. It took me a while to find out this frustrating problem wasn't a RAM or Unbuntu Linux Station issue.

In summary, a QNAP NAS may seem an expensive investment, but it does provide you with the convenience of not only a commercial quality file server and back-up solution, but also the means of making far better use of your digital files, no matter where you are. Anyone wishing to get into exploring the networking capabilities inherent in Linux will also find a QNAP NAS server worthy of consideration, compared to other, lower cost, but less capable NAS units, which are commonly Android based and less amenable to hobby use. Now if only they came with a free Starlink account!

Neil 03 May 2021
PS A NAS server is not a complete back-up solution. You still need to take and store off site regular back-ups of at least your essential files, but if, like me, you already have a few portable hard drives you'll have the means of achieving this after you set up your NAS.
