Build Your Own NAS

MORE FOR THE COMPUTER LITERATE THAN THE FAINTHEARTED, MALCOLM STEWARD
DELVES DEEP INTO THE MURKY WORLD OF NETWORK ATTACHED STORAGE (NAS) DRIVES

When I first became interested in networked audio, I quickly realised that storing my music on NAS (Network Attached Storage) drives was the only choice for me. I needed flexible storage that would happily connect to and work with all manner of servers and renderers by way of *Cat6* Ethernet, regardless of who made the devices. Thankfully, computer networking is based on true and genuine standards, such as TCP/IP (Transport Control Protocol/Internet Protocol).

TCP/IP has been around for decades. It's not proprietary, and not open to change at anybody's whim. Every manufacturer subscribes to it. In theory, then, every NAS should communicate with every media player. If any does not, it is nearly always the fault of software that sits on top of that layer: for example, a UPnP (Universal Plug and Play) server that isn't truly Universal or a DLNA (Digital Living Network Alliance) server that does not conform to the published standards. This has happened to me but only rarely.

The Shopping List

There was then, as there is now, a host of NAS drives available from a multitude of suppliers, but I decided that rather than buy a Netgear, *Qnap*, *D-link* or whatever was the then current 'flavour of the month', I would do as I have always done with my computers and build one from scratch. If that sounds a terrifying prospect, believe me, it is not. It is as easy as assembling the simplest piece of flat-pack furniture that you can imagine. It often delivers the most convenient, cost-effective and easy to organise 'solution', too.

All you need in the way of tools is a pair of pliers and a couple of cross-head screwdrivers. And an anti-static strap is always recommended to prevent you from frying components with static discharges. I have never used one, though: I always sit next to a radiator and touch that occasionally to earth myself. I am thankfully not the sort of person, nor do I live in an environment, that is plagued by static.

Building the unit is simple, and only a handful of components need bolting together. Fundamentally, attach the motherboard – and the other components – to the case and then plug everything into the relevant sockets on the motherboard: power supply, fans, disk drives and so on. Everything will be described in detail in the user guides supplied with the case, motherboard and components. Manufacturer web sites are excellent sources of further and specific information.

All the components may be sourced from www. scan.co.uk except the memory, which comes from www.crucial.com/uk. All the prices were correct in mid-October 2011.

I would argue that the £300 or so bill for materials is very reasonable for a hand-built 1Terabyte NAS. Putting it all together should take less than 30 minutes. Even so, you might like to spend a few extra moments with some cable ties to tidy up and dress the wiring a little. There's a lot of cable floating round inside that tiny case.

Software Considerations

Once the hardware is assembled, an operating system will be needed to enable it to function: *Windows 7* is my preferred choice because it is widespread, familiar, inexpensive and simple to install. You might ask, why not use *Linux*, which is free? The answer is

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TABLE 1

Here is a sample list of the components you will need to build a serviceable NAS:

Part	Example	Price
Case	Silverstone SG06S mini-ITX	£81.32
Power supply (300W)	Included in the above	
Case fan (120mm)	Included in the above	
Motherboard & CPU	Asus E35M1-M with AMD Dual-Core Processor E-350	£90.42
Memory	2 x 4GB DDR3-10600	£39.59
Hard disk 0 (optional)*	160GB Western Digital WD1600AVVS	£31.78
Hard disk 1	1TB Western Digital WD10EVDS	£46.68
Optical drive	Pioneer DVR-TD10RS	£19.69
Mini SATA power & data cable	AKASA AK-CB050-40 for above	£3.59
Fan splitter cable **	Sharkoon 3-pin Y-Cable	£1.18

* Only required if you want to dedicate the 1TB disk solely to data
** Order more if you need to power additional fans