



High Definition images from ten80

# French Apples

**Ten 80<sup>1</sup>** is a French production company with a UK team. When looking to post produce in HD Dave Brewis of ten80 based their system around an Apple core

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Dave Brewis TEN80

**B**eing an Englishman based in Paris has its joys and frustrations but, say what you will of the French, they love all things ‘audiovisual’ and they’re very keen on revolutions.

The HD revolution is alive and well here, and when it comes to producing in HD, my Ten80 partner Phil Millard and I are as keen as Mustard (either sort if you’re wondering).

Late last year, when adding HD editing facilities to our Paris based studio, I gave great consideration to where I spent the money. I knew in theory it was possible to build a low cost solution around FCP HD, so I bit the bullet and did it. This is how we got on.

We built our system around a G5 Dual 2.5 GHz Mac with 1.5 GB SDRAM.

At the time we were running OSX10.3 and FCP HD. We’re now running Tiger (OSX Version 10.4.1) and purchased Final Cut Studio on release, comprising Final Cut Pro 5, and ‘HD’ versions of DVD Studio Pro 4, Soundtrack Pro and Motion.

In terms of card, we plumped for Blackmagic’s Decklink HD Pro, as it appeared to be a solid piece of kit. It supports full 10-bit SDI uncompressed video capture and playback, and came with FCP drivers and useful software utilities.

To save money I considered using our 23 inch Apple HD Display for external monitoring. SDI-DVI converters make this possible and provide one-to-one pixel resolution. Having seen it in action however, I decided instead to use a SD monitor, and to rent a calibrated HD broadcast monitor at the latter stages of each edit, for truer colour correction etc.

## Big Fast Storage

I looked long and hard at everything on the market in terms of off-the-shelf storage but, on consulting my friend and colleague Stephen Porthouse over a bottle of grape juice one evening, we decided to build our own.

We figured this solution would take the form of a disk array of sorts, most likely a number of striped disks (RAID 0 – all disks working concurrently to share load as data is divided between them). This

type of array offers the greatest potential for speed and capacity, although offers no redundancy if one of the drives fails.

With 4:2:2 1080i/60 10-bit requiring 148.3 MB/sec and uncompressed 4:4:4 1080p needing 222.4MB/sec (both plus 20 percent overhead), we were hoping our array would achieve in the region of 300MB/sec read and write speeds. We set the budget in the region of £2,000 for drives, cabling, enclosure and controller card.

The emerging use of the SATA hard disk as a viable basis of high capacity video storage led us to research this against the more established SCSI solutions.

A 300GB 7200rpm SATA (150MB/sec) drive could be purchased for approximately £100, and despite a theoretically slower interface, the cost and capacity of SATA would allow us to use more drives, resulting in a larger array.

Once we’d made the decision to go down the SATA route it was then a question of deciding on the individual components...

**SATA Controller Card** – At this time the Sonnet Tempo-X SATA 4x4 card appeared on the market and seemed by all accounts to be a reliable bit of kit particularly as its drivers were native with OS X. As its name suggests the Tempo-X also supports PCI-X slots (these run at a maximum of 133Mhz as opposed to 33Mhz with standard PCI) and has four external connectors and four internal connectors.

**Hard Disks** – After much deliberation we opted for 9 x 300GB Seagate Barracuda 7200.8 drives (eight drives in the array plus one spare).

**Enclosure** – We required an enclosure with enough bays, power, and cooling for our 8-drive array. Enterprise grade enclosures with redundant PSUs and hot-swappable bays are quite freely available, but we felt this was overkill. Our options seemed to be either importing an enclosure from the US or modifying a SCSI HD tower, neither ideal. During a visit to a computer fair in London however, we stumbled upon a bare enclosure with enough bays, power, and cooling in a form factor not dissimilar to a G5.

With all the necessary parts acquired the actual build was relatively straightforward. Steve did it and

I watched. Easy.

Each drive was mounted in the enclosure, and both a power cable and a SATA cable connected to each.

We then installed the Tempo-X card into the Mac. To achieve maximum throughput this card needs to be in the 4th PCI slot. As the card has 4 internal connections, we had to remove a spare PCI blanking plate and pass four cables into the Mac through this hole. Sonnet now offer the Tempo-X eSATA 8 card, which has eight external connectors which is a better solution if doing this again now.

Not without some trepidation we powered up the array for the first time and then, after a 30 second wait, the Mac itself. On opening Disk Utility we found all drives were present and correct. We then formatted the drives into a striped array, before launching the Blackmagic Disc Speed Test utility. Read and write speeds of 450 and 460MB/sec respectively were reported, which was far more than we had hoped for. The formatted capacity of the array was 2.2TB.

## “Go and shoot some test footage”

Chances are if you give a monkey an HDCAM and throw him out on to the streets of Paris, he’s still going to return with forty minutes of banana-dropping images.

Paris is to HD what a misty Scottish loch is to film.. or what a Macdonald’s interior is to a DV corporate training video.. completely ideal.

Haussman, the 19th century city planner who created the Paris we know today, must have known his hard work would one day be seen through the HD lens... he created wide tree-lined boulevards to let in the sun, and ordered buildings of intricate detail, before littering the place with golden statues.

Once Haussman had finished decorating the entire city, the parfumeurs and patissiers decorated the entire ground floor.

And then the Japanese tourists arrived, to decorate themselves, and in turn transformed the streets into one giant catwalk.

The point is that today, wherever you look, Paris is awash with detail. And detail is undeniably HD’s forté.

We weren’t therefore short of something to shoot when Phil invited me to carry his heavy German tripod around our neighbourhood.

We took a HDW-900 and Phil set it to capture 1080, interlaced at 25fps (or 50 fields per second), and we worked through the day and into the night.

Back in the studio the next day, we connected the HDW-900 with a single HD-SDI cable to the input on the DeckLink

HD Pro. I set the A/V Settings in FCP accordingly, selecting ‘Blackmagic HDTV 1080i50 – 10-bit’ as the capture setting, and then opened the log and capture window.

I initially captured a few seconds at a time until I was confident the array was going to hold up. Suffice to say, it did, with no problems. I captured 30 minutes of HD in one go to see if the array would handle it, and again, no problems.

Satisfied I’d captured successfully, I began to play with the material. I thought scrubbing through the rushes may pose a problem, as doing so relies on read times as opposed to write times, but again, no problem.

Once the technophilia of having accomplished our task subsided, we were left gazing at the images we’d captured.

Paris looks awesome in HD.

## Six months later.

Six months and several HD projects later, the array and the components are holding up fine. As the array is formatted RAID 0, I’ve added four LaCie 500GB firewire drives to allow me to back it up. If one of the array’s drives were to go down, then I’d connect the spare, re-format the array, and copy backed-up data over from the external Firewire drives.

In conclusion then, we at Ten80 figure you don’t have to invest a fortune to kit yourself out for HD Post Production. And that in turn has got to be good for Producers, who, with the option of down conversion at their disposal, now have every reason to work in HD. Vive la revolution!

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<sup>1</sup>[www.ten80.fr](http://www.ten80.fr)