

Of blunderbusses and lifeboats, part one

You only really miss something when it's no longer around, or has just started refusing to play ball... full stop. In part one of this article, **Paul Ellis**, otherwise known as **The Digital Plumber** explains the first steps in IT first aid and considers a 'prevention is better than cure' approach to making sure you come away with the precious contents of your shoot every time

Last time (see the April edition), I asserted that as digital professionals our first priority is to ensure that computer failure doesn't stop us in our tracks. This month I present a selection of blunderbusses and digital lifeboats with which to keep your digital show on the road. *Disclaimer: I work with Apple Macintoshes and know little of Windows PCs. Whereas a good deal of the methodology outlined here applies equally to Windows (and Linux), specific procedures usually refer exclusively to the Macintosh.*

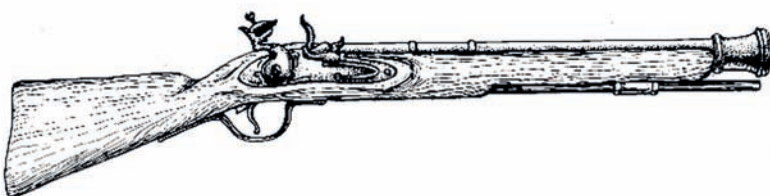
Blunderbusses

It says here, in my dictionary:

blunderbuss ['blʌndəbʌs]
noun historical
a short-barreled large-bored gun with a flared muzzle, used at short range.

- figurative an action or way of doing something regarded as lacking in subtlety and precision: *economists resort too quickly to the blunderbuss of regulation.*

Lacking in subtlety and precision. Sometimes that's just what we want. When dealing with recalcitrant computers there are many occasions on which the best fixer's tool is a blunderbuss rather than a rifle, simply because the blunderbuss' spread of shot is much more likely to hit whatever obscure little fault is causing the apparent problem than an attempt to take careful aim with just one bullet. Here are a few blunderbusses for your collection.



Turn it off, and then on again

Your first action should be to turn off your entire system in this order:

- Laptop computers and attached disks
- Desktop computers and attached disks
- Servers and attached disks
- Printers
- Ethernet switch, if you have one
- Internet router
- DSL or cable modem, if you have one.

Leave everything for half a minute, then turn everything on again in reverse order, waiting at each stage until that device has fully booted up and made its network connection. It's surprising how many obscure faults disappear after a full network reboot is carried out in this way.

Safe boot

Another handy blunderbuss. Shut down your Mac. Start it up again, and at the chime, press and hold down the Shift key, keeping it down until you see the grey Apple and twirly wheel, then release. The Mac will take a while to get going but will eventually display the login screen and the words *Safe Boot* in red. Log in with your username and



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password and let the Mac completely start up. Then restart as normal. Lots of checking and tidying-up takes place during safe boot and many problems get swept away, just like that.

Applejack

Applejack is the best software blunderbuss of all. To use it, restart your Mac in Single User Mode by holding down the Apple and S keys immediately after you hear the start-up chime, keeping them held down until the screen turns grey, and then black. Then release them. The screen will fill with gibberish in white text, which will eventually stop at the line `localhost:/ root#`, at which you type "applejack AUTO restart" (that's lowercase "applejack", a space; then uppercase "AUTO", then another space; then lowercase "restart", but all without the quotes), then press the Return key twice. Applejack will automatically do its stuff, after which your Mac will restart normally.



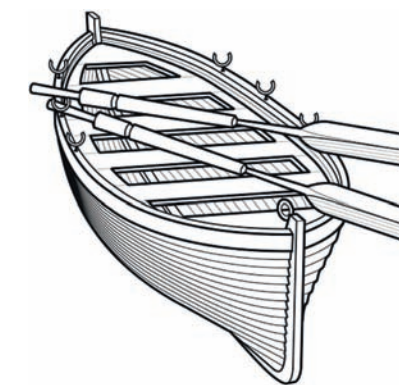
Lifeboats

My dictionary says this about lifeboats:

lifeboat ['lif,bōt]
noun
a specially constructed boat launched from land to rescue people in distress at sea.

- a small boat kept on a ship for use in emergency, typically one of a number on deck or suspended from davits.

In our world, the 'boat launched from land to rescue people in distress at sea' is known as a Digital Plumber. The 'small boat kept on a ship for use in emergency' is a backup, spare, utility tool or other means of keeping going when your main working tool or method quits on you. It's a computer truism that digital data doesn't exist at all unless it exists in at least two places simultaneously. The simple answer is to have at least two of everything, which is all very well if you can afford or even



carry it, but what if you can't? To keep your shoot running I think as a bare minimum you need:

- *An up-to-date clone* of your Mac's internal hard disk on a mobile disk that you can boot from. Make the clone with SuperDuper! or Carbon Copy Cloner. Not all mobile disks can boot a Mac; it depends on the type of FireWire bridge chip installed in the disk enclosure. Mobile disks that I know to be bootable include the LaCie Rugged range with FireWire and the G-Technology G-DRIVE mini ranges. Intel Macs can also boot from USB2 disks. Whichever you choose, try booting from it before relying on it.
- *A second Mac.* Yeah, right. Actually, you can often borrow or scrounge a second Mac quite quickly, which is where your bootable backup comes in. Be warned, however, that to boot both Intel and PowerPC Macintoshes your bootable backup disk must be partitioned in Apple Partition Map format and running OS X 10.5 Leopard. Intel Macs consist of MacBooks, MacBook Pros and Mac Pros. iMacs and Mac minis can be either Intel or PowerPC. All other Macs made this century have PowerPC processors.
- *A FireWire cable.* Better still, three FireWire cables: a 400 to 400, 400 to 800 and 800 to 800. Use the 800 to 800 if you can for double the transfer speed.
- *An Ethernet cable.*
- *The Apple DVDs* that came with your Mac. Use Disk Utility, Toast or similar to make safety copies and have them with you. →

- • *Your DiskWarrior CD*, or a copy of it (see below).
- *Several cheap, lightweight mobile hard disks* to store your shoot data and its backups when on location, and a professional removable-disk system for your studio's picture archive. More on this next time.



important data (ie the day's shoot and email) IMMEDIATELY. Unfortunately, because of limitations in Apple's FireWire and USB busses, external disks can't be so checked. If you want to keep a close watch on these, format them with SoftRAID rather than Disk Utility.

- *SuperDuper!* or *Carbon Copy Cloner*, to keep your bootable backup up-to-date.
- *Chronosync* or similar, to help in backing up your shoot data.
- If you shoot to cards and don't use Photo Mechanic, *ImageIngester* to back up your pictures as you copy them from the card.
- *PhotoRescue* to recover erased, reformatted or corrupted camera data cards.
- Something in which to store your user names, passwords, software serial numbers and helpdesk phone numbers, and your studio's static IP address. I like and use *IPassword*, not least for its excellent browser and iPhone integration, but there are many others.

Lifeboat procedure: the hectoring starts here

- **ALWAYS** have a bootable recent backup or bootable diagnostic and repair disk with you.
- **ALWAYS** have more hard disks available than you think you'll ever possibly need.
- **NEVER** fill up your Mac's boot hard disk to within an inch of its life.
- **NEVER** take the risk of having a tired assistant edit a shoot overnight because you're running out of disk space. If you are running out of disk space, buy more disks. Disks, like camera data cards, are like film. Never run out.
- **NEVER** erase or reformat a camera data card until you've made at least two copies of its contents.



Launch the lifeboat!

Of course you've checked the cabling and that power is turned on, haven't you?

- If your Mac won't start up at all, reset the CUDA, Power Management Unit or System Management Controller. All Macs have different procedures for doing this (links see right).
- If your Mac appears to be running normally but then starts to misbehave, listen to it. Is it, or any disk attached to it, making a repetitive clicking, clonking and/or



whirring sound? That's called the *Click of Death*, and rightly so. TURN IT OFF IMMEDIATELY before the disk thrashes itself to pieces and call the Plumber.

- If it's not, shut it down, disconnect any FireWire and USB devices, then Safe Boot it (see blunderbusses). Check your cabling, and then reconnect the devices. It's surprising how many problems vanish in this way. If the problem persists, disconnect the devices again, restart, and then add them one-by-one. If you can isolate the problem to a specific device, stop using it. If you still have the problem, disconnect everything again and... run Applejack.
- Connect your bootable backup or diagnostic disk, restart and boot from it by pressing and holding down the Alt key at the chime. Wait until your bootable backup volume appears as an icon on the screen, select it and press the right-arrow (PowerPC Macs) or the arrow under your bootable backup icon (Intel Macs) to start up from it.
- Launch DiskWarrior and repair your Mac's internal disk. Restart. If DiskWarrior fails, start up your Mac from the DiskWarrior CD (Insert the CD, restart and hold down the C key at the startup chime) and repair it that way.
- If that doesn't fix it, find the Apple disks that came with your Mac and follow the instructions printed on them to boot into Apple Hardware Test. Run Quick Test to check for hardware problems. If it finds no problems, reset the PRAM and/or Open Firmware (below).
- If Apple Hardware Test finds faulty memory, you're going to have to find out which chip has gone bad, for that is what has happened. Laptops and iMacs only have two chips: remove one and see if the problem goes away. If it does, the chip you have removed is faulty; if not, the one still in the Mac is the culprit. G4s, G5s and Mac Pros are more problematic because they have more memory, which often has to be fitted in pairs in specific locations. Nevertheless the troubleshooting procedure is the same: remove all but the minimum memory, and then replace chips until the problem recurs.
- If your memory and hard disk are OK but your Mac still plays up, try resetting the PRAM, or on a PowerPC Mac, resetting Open Firmware. Instructions follow in Part 2.
- Reset the CUDA, Power Management Unit or System Management Controller. Procedures for this vary by Mac model: see the Resetting Mac Hardware link on the right.
- If your internal disk hardware is faulty, or if DiskWarrior can't repair your disk, if you can, BACK UP YOUR VITAL DATA STRAIGHT AWAY from it to one of your many mobile disks, then continue your shoot, running from the backup. Dismount your internal drive from the desktop if possible to avoid thrashing it. If your Mac locks up, boot another Mac from your backup and continue to run from that. Forget about running any Adobe CS2 or CS3 applications as they



won't run from the backup, thanks to Adobe's software activation scheme.

- If any other part of your Mac's hardware is faulty, boot another Mac from your backup and continue to run from that.

In the next part: the procedures you'll need for doing the above, instructions on partitioning and formatting disks for different uses and guidance on choosing and setting up storage systems. See you then.

The Digital Plumber, a.k.a. Paul Ellis, is an AOP member who spends an increasing amount of his time carrying out Macintosh consultancy and troubleshooting work, mostly for other AOP members and professional photographers. He can be contacted at www.thedigitalplumber.co.uk.

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LINKS

Applejack: <http://tinyurl.com/ylucgw>
 DiskWarrior: <http://tinyurl.com/cb2osh>
 Roxio Toast: <http://www.roxio.com/>
 SuperDuper!: <http://www.shirt-pocket.com/>
 Carbon Copy Cloner: <http://www.bombich.com/>
 Chronosync: <http://tinyurl.com/82bmf>
 Photo Rescue: <http://www.datarescue.com/>
 SMARTReporter: <http://tinyurl.com/5n8ckz>
 SoftRAID: <http://www.softraid.com/>
 Resetting Mac hardware: <http://tinyurl.com/2jpk43>
 Photo Mechanic: <http://www.camerabits.com/>
 Image Ingester: <http://imageingester.com/>
 IPassword: <http://tinyurl.com/447gn2>