



Standard practice

Upgrading your 56K modem to the **V90 standard**? Roger Gann has some advice.

Some of the pain of being a 56K early adopter (a.k.a. 'mug') was soothed by the knowledge that whichever standard you plumped for, x2 or K56flex, your modem could eventually be upgraded, usually for free, to the eventual ITU standard when the time came. Well, that time has come, so it's time to upgrade. Or is it?

Almost a year down the road from V.90 'determination' and some six months after the official adoption of the standard, many modem makers have yet to release V.90 firmware. 3Com/US Robotics was among the first to offer such upgrades and has released V.90 firmware upgrades for most of its x2 modems. Sadly, it's only true of its US models — UK firmware remains thin on the ground. I'm thinking of renaming my

USR Courier V-everything modem to 'V-almost everything' because, despite the passage of aeons in internet time, the UK V.90 firmware for it is still not forthcoming.

Hayes is another sinner in this regard. Only a handful of its UK modems are currently upgradeable. Diamond Multimedia Modems has a similarly patchy story. The only way to confirm it is to visit the modem maker's web site or the excellent www.56k.com site for the latest news [Figs 1 & 2].

In any event, a V.90 modem requires a V.90-capable ISP at the other end of the line. At the time of writing, no major ISPs are: AOL and CompuServe don't offer it but Cable & Wireless [Fig 3] does, and so too since last December does the Microsoft Network. But this won't be a big problem for many 56K modem owners because their modems ought to be able to hold both the x2 or K56flex code as well as the new V.90 firmware.

The transition to V.90 could be a lengthy business, perhaps a year long, so this dual-mode capability is important. Why? Well, if you have a single-mode modem, it's only got enough flash-ROM capacity for one set of 56K firmware. If you upgrade your modem to V.90 before your ISP

does, you'll probably only be able to connect at 33.6Kbps.

Dual-mode modems won't have this problem. They ship with 2Mb of flash memory (compared with 1Mb in single-mode modems) and can hold both K56flex and V.90 firmware, allowing them to connect to any ISP at 56Kbps speeds. While most x2 modems have room for both sets of code, it seems that only relatively recent K56flex modems have it. Why? Because the extra memory would have added another \$5 to a modem's cost.

At least they're upgradeable. While all x2 modems are software upgradeable thanks to their reliance on DSP technology, some early K56flex modems cannot be upgraded by the end-user so these models will have to be returned to the maker for upgrading.

How do you tell whether or not a modem is V.90 'out of the box'? It's not easy. Many low-end, no-name 56K modems actually ship with K56flex code plus a disk containing the V.90 firmware. These are invariably single-mode devices. Even examining the ATI result codes, it's not always clear when K56flex becomes V.90 — the key version number seems to be 47.22 or better. You can check this by opening the Modems Control Panel applet. Select the Diagnostics tab, then select the COM port. Clicking the More

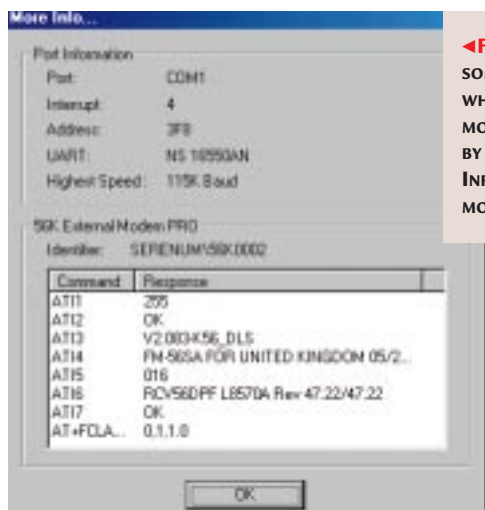


▲ **Fig 1** THIS WEB SITE IS ANOTHER GOOD RESOURCE FOR V.90 UPGRADE NEWS FOR THOSE WITH MODEMS BASED ON THE ROCKWELL CHIPSET

► **Fig 2** THIS IS STILL ONE OF THE BEST WEB SITES FOR INFORMATION ABOUT V.90 UPGRADES AND WHERE TO GET THEM



▲ **Fig 3** CABLE & WIRELESS WAS ONE OF THE FIRST 'NAME' ISPs TO ADOPT THE NEW V.90 STANDARD. COMPU SERVE AND AOL ARE STILL DRAGGING THEIR FEET



◀**FIG 4** THIS (OR SOMETHING SIMILAR) IS WHAT YOU SEE WHEN THE MODEM IS INTERROGATED BY WINDOWS 9x's 'MORE INFO' OPTION IN THE MODEM APPLLET



▶**FIG 5** YOU SHOULD PAY A VISIT TO THE 3COM WEB SITE TO SEE IF V.90 CODE IS NOW AVAILABLE FOR YOUR USR MODEM

Info button will list the firmware version plus a whole load of other geeky data [Fig 4].

Software upgrading is a pretty straightforward task. You go to the modem web site, head for the upgrades page [Fig 5] and look up your modem model <www.3com.com/56k> and <<http://56k.3com.co.uk/pages/info.html>>. This can be a little bewildering, especially if you have a US Robotics modem where you first have to decipher the modem model number — and there are loads of these! However, you can download a firmware upgrade wizard to simplify this.

Anyway, once you know the model number, you download the appropriate file. This usually includes the modem code and a program to upload it to your modem. Typically, the uploader [Fig 6] checks the modem to make sure that the modem and firmware match, then backs up the old code before uploading the new version. You simply unpack the downloaded file into a temporary folder and run the program from there. It will take a few minutes to complete, or longer if the utility prudently saves the modem's existing firmware to a file on disk, in case you ever want to put it back.

That's the theory anyway, but recently some American modem users inadvertently

toasted their Megahertz XJ1560 and CC1560 PC Card modems when they attempted to software-upgrade them. The modems were zapped because the upgrade process was interrupted, either by the notebook entering a power-saving mode or by something as innocent as a screensaver. Installing the new firmware involves zapping the original code to make room for the new. As a result, the interrupted upgrade left users with a 'blank' PC Card modem!

■ Slow drivers

Recently, it's been brought home to me the extent to which new technology is hostage to the arrival of proper drivers,

V.90 REALITY CHECK

My experience, and I guess the experience of many PCW readers, is that 56K is an ideal which in practice is seldom achieved. You're more likely to get between 45 and 50Kbps throughputs. Irritatingly, 56K connect speeds behave like shifting sands. You can connect at 50Kbps, and a minute later the best you can manage is 42Kbps. How come?

What the modem makers never make crystal clear is the fact that the claimed 56Kbps throughputs are merely a theoretical maximum and that the

actual throughput achieved is highly dependent on line quality. For one thing, the analogue local loop, the final wire link between the exchange and the modem, will suffer from noise and interference such as intermodulation distortion and echo which cause distortions in the phase, frequency, and amplitude of the wave. Some of this noise is induced by the phone network's line repeaters and amplifiers, so the noisier the line, the slower the connect speeds you'll achieve. Distance from your telephone exchange is

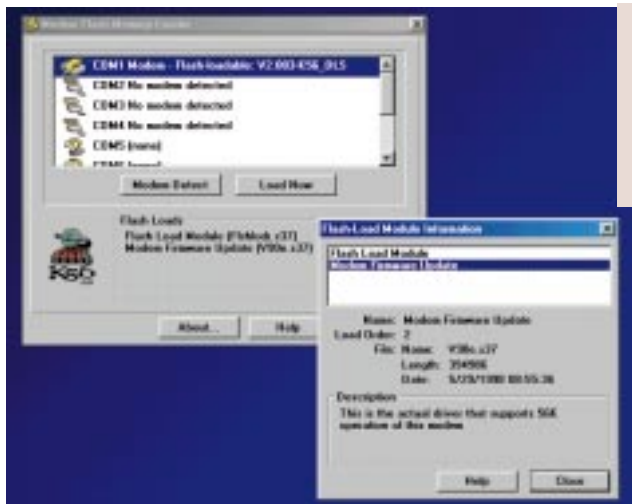
another crucial factor affecting line quality: the further away you are, the weaker the signal.

You should also bear in mind that the connect speed reported by the modem is not particularly meaningful. For example, K56flex modems were notorious for appearing to connect at a 'low' speed and then gradually upping the speed later. Using the ATI6 command on USR x2 modems reveals more instructive connect data.

Another problem is that the connect speed is not fixed and can vary during a

call: the speed reported at the beginning of the call may not be the speed in force at the end of the call.

The entire 56K technology is also predicated on there being just one analogue/digital conversion between the modem and the exchange. If the signal has to pass through a digital switchboard, say if you're in a hotel or an office, you'll get no more than 33.6Kbps. A similar question mark hovers over phone lines provided by cable companies, which may not be analogue all the way to the BT switch.



◀FIG 6
RE-FLASHING YOUR
MODEM'S FIRMWARE
TAKES A FEW
MINUTES USING A
PROGRAM LIKE THIS

Except that, no, the NT 4.0 teletext software is not yet ready. How long has the WinTV been out? Don't tell me. It's too depressing.

At this point, NT 4.0 invites you to reboot to activate the changes. If you think rebooting Windows 98 is slow, wait till you try NT 4.0 Workstation for size — it takes several minutes to come back up, which is an eternity in my book and some way off the 'Instant On' nirvana we've been promised by Microsoft.

To cut a long reboot short, the ATi drivers hadn't 'taken' and I was left with the default VGA drivers. So, I reinstalled the ATi drivers and rebooted. Yes, you guessed it, the VGA drivers were still in place. I went round the block a few more times, but much later I knew it was a pointless exercise. It struck me then,

particularly for NT 4.0. Take DVD-RAM drives. These are cheap pieces of kit which offer 5.2Gb of storage — not bad for removable media. Each 5Gb cartridge costs only £35 (ex VAT) which makes DVD-RAM a great solution for archiving and backing up. Because it is rewritable, it can even be used in lieu of a hard disk. OK, so it won't be as fast, but at these prices who's complaining?

Well, actually, I am, because not only are these drives rarer than hens' teeth, but at present they only come with drivers for Windows 95. If you want Windows 98 and its support for the new UDF disc format you'll have to wait, unless you want to make do with just half the available storage these drives can offer. Drivers for Windows 98 and NT 4.0 will be available 'real soon now'... It's a good job I'm not holding my breath — I would have expired months ago.

■ A tale of two tuner cards

Here's a similar tale. I recently installed a pair of Hauppauge WinTV/PCI TV tuner cards in a pair of Dell Dimension workstations running NT 4.0. These are fine bits of hardware let down by some truly average software. It doesn't instill confidence when the Setup splash screen shows that you're installing Beta 4 of the software. I wouldn't have minded but Beta 4 didn't even work under NT 4.0 and I had to resort to downloading the NT drivers and the tuner application from the Hauppauge web site. My main reason for installing these two cards was not to let some harassed pen-pusher watch Countdown from the comfort of their desk, but to access the Stock Exchange share info on Teletext.

PC99 SPECIFICATION UPDATE

Early samples of motherboards complying with the Microsoft/Intel PC99 specification are surfacing and they make an interesting sight. They are all based on the as yet unreleased Intel Camino chipset.

Board maker FIC previewed its KCI-6111 motherboard at the Comdex show. It has lots of PCI slots — five, in fact, and no ISA slots. It makes up for it, though, with USB, an AMR connector (Audio & Modem Riser Module), IEEE 1394/Firewire, hardware security, 4X AGP,

RAMBUS and 100/133MHz FSB support.

ISA slots are not the only legacy bus to come under the PC99 axe. Only printers are 'allowed' to access COM or LPT ports (so goodbye parallel port devices, thank goodness!). Printer makers are encouraged to use USB or 1394.

The venerable PS/2 mouse and keyboard ports are to go, superseded by USB. Proprietary hardware for games is an absolute no-no. Even IDE is not sacrosanct: under PC99, ATA and ATAPI devices

are to migrate towards 1394. SCSI remains relatively safe.

PC99 defines two types of personal computer, consumer and office. The former will have a minimum of a 300MHz CPU, 32Mb of RAM, OnNow support, two USB ports, 3D graphics and an internal V.90 modem.

The 'recommended' list is somewhat tastier and the following is due to be added: 64Mb, 1394, Device Bay, IrDA infra-red, AGP, TV facilities, PC99 Audio and support for fast comms such as ADSL or cable.

■ Another dimension

Incidentally, while I was doing this I had to reinstall NT 4.0 on another Dell Dimension. These PCs come with the nifty ATi Expert@Work AGP card and, of course, the correct display drivers don't come as standard with NT 4.0. So, it installs the plain VGA drivers and tells you to install the correct drivers when you first reboot. No problem: because I had the correct ATi drivers, I did the 'Have Disk' trick and installed the correct display drivers.

as I watched the NT 4.0 boot screens for the umpteenth time, that I hadn't installed the Service Pack when I completed the install of the main operating system. I had SP4 to hand, so on that went and all was then well in Expert@Work land.

PCW CONTACTS

Roger Gann can be contacted via the PCW editorial office (address, p10) or email hardware@pcw.co.uk