

In the nick of time

THE MILLENNIUM MELTDOWN IS ALMOST UPON US, BUT THERE'S STILL TIME TO PREVENT YOUR SYSTEMS AND DATA GETTING SUCKED INTO OBLIVION. NIALL MAGENNIS AND WILL HEAD THROW YOU A LINE.

IF YOUR APPROACH TO Y2K preparation has a lot in common with an ostrich's reaction to danger, then you'll probably be starting to panic about now, with the shadow of the bug looming large. Still, as they say, better late than never. So what can drinkers at the Y2K last chance saloon do, apart from falling over drunk with worry? We've done a last dash around the year 2000 quick fixes to help you out.

The millennium bug can manifest itself in five different areas, each of which has distinct symptoms and resolutions. The levels are: hardware, BIOS, operating system, application and data.

Hardware

In 1984 IBM introduced the PC AT, which included a hardware real-time clock (RTC). This holds the time and date in the computer when it is switched off. Prior to this the user had to enter the date every time the PC was powered up. The RTC was not designed to store the century and uses a two-digit year counter. Therefore it will return 00 when the system rolls over on 31 December 1999.

BIOS

The BIOS is a piece of code stored in a ROM chip on your motherboard. It holds the basic start-up information for your PC. When you turn on your PC the BIOS fetches the date and time from the

internal real-time clock and passes it on to the OS. The BIOS has an area for storing the current century. It uses two main methods to determine the correct century from the RTC's two-digit year. The first is to recognise the changeover from 99 to 00 and automatically increment its own century value by one. The other method is date windowing – where the system chooses a pivot date and any dates after this are assumed to be 19xx, any dates before this date are 20xx. For instance, if 1980 was chosen as the pivot, then 81 would be 1981 and 79 would be 2079.

Some older BIOSs assume that all dates are in the 20th century and so will only ever return a 19xx date. All is not lost, though, as Windows 98, NT 3.52 with Service Pack 5 and NT4 may correct the problem. The best way to make sure is to contact the manufacturer of your computer, as it should be able to tell you whether you need a BIOS upgrade or patch. If you can't get hold of the manufacturer, you could try searching for the website of the company which made your BIOS and check for any patches. The BIOS manufacturer, version and date is displayed on the screen when you first switch on your PC.

You can, of course, test the BIOS yourself, and in some cases even fix the problem. There are a lot of programs available on the Internet, such as Y2K Test and Fix v1.4, that will test if your BIOS is compliant. These programs will set the date to near midnight on 31 December 1999 and let the date run over. They will also perform a reboot test to check whether the new date is stored after reset and then repeat the process to test that the BIOS can recognise the leap year properly. Your BIOS may work fine, but if it doesn't pass the test then there are two other likely scenarios.

The first is that you'll need to perform a 'work around' yourself. To do this you have to manually reset your system date in DOS. On 1 January 2000, open a DOS window and type 'date', type in the new date as 01-01-2000. Your PC should work fine from then on.

The second possibility is that you will need to upgrade your BIOS. This means it's time to contact your PC or BIOS manufacturer. The software should notify you of which course of action you need to take.

Operating systems

Once you have your BIOS sorted, it's time to move on to the operating system. Those with Macs will be glad to know that all versions of the Mac OS can handle the next 27,000 years correctly. Unix users are safe too, as most Unix variants will handle dates correctly up until 2038 and patches are becoming available to fix problems after this.

Unfortunately, if you're running MS-DOS and your BIOS reports a 00 year field then you're going to have problems. MS-DOS does not recognise any date before 4 January 1980, so if it gets a 00 year field it will default to the 1980 date. But if your BIOS reports the correct date and you are running MS-DOS 4.0 or higher then everything should work fine.

Unfortunately Windows users don't get away so easily, but most of the bugs are pretty easy to fix. There are a number of date-related bugs in Windows 95. For example, the Windows Explorer will only recognise four-digit dates if you change the Regional Settings in the Control Panel from two to four-digit date display. Also if you're still using Windows File Manager, it won't show file dates after 31 December 1999 without a patch. Microsoft has these patches available on its website but some other bugs can only be fixed if you upgrade to Internet Explorer 4.x.

Microsoft says that Windows 98 should work fine, with a couple of slight exceptions. Regional Settings in the Control Panel needs to be set to display four-digit entries for the year. Also, if you use Microsoft Wallet to store credit card details, you need to update it to version 2.1.1383 or later.

Those running NT Workstation 4.0 need to install Service Pack 3 and download a file of other fixes to make the OS fully compliant. If you don't, you'll have problems with the Find Files feature and the User Manager.

Software and data

Applications are the most tricky part of the Y2K-compliance equation. Up to this level, it is fairly easy to diagnose and correct year 2000 problems.

The scope for errors is small, since there are relatively few BIOSs and even fewer OSs, and the fixes can be easily implemented.

Compare that with the number of different computer applications. Even if you remove those that don't use date information, the number is still huge. There is no standard way that applications deal with dates, and so no standard diagnosis or fix can be applied to them.

Many programs, such as databases and spreadsheets, also rely on receiving information from other applications or outside data sources. If any part of this chain is not compliant then it can corrupt the way even Y2K-compliant packages process data.

One problem that affects both applications and data is the issue of date windowing. Just as the BIOS may use windowing to determine the century, so do many applications. However, as the pivot date is arbitrary, so too can be the results. Microsoft's Excel spreadsheet program uses date windowing to handle two-digit years, but different versions of Excel use different pivot dates. So a spreadsheet created on one version may not function correctly on another version.

How to test your PC

The simplest way to test your system is to see if your PC's clock and BIOS continue to work properly when the date changes to 1 January 2000.

- Close all applications
- Set the system's date to 31/12/1999
- Set the system's time to 23:58:00
- Switch the PC off
- Wait for your fake 'midnight' to pass
- Switch the PC back on

➤ Check that the date is now 01/01/2000

If your PC fails the test:

- Set the date to 01/01/2000 using the DOS DATE command or the Date/Time facility in the Control Panel on Windows.
- Switch the PC off, wait a few seconds and then power it back up.
- Check the date. If this is still not being displayed correctly then you need to contact

the PC or BIOS manufacturer.

Check your PC recognises the year 2000 as a leap year:

- Repeat the test above, but this time set the date to 28/02/2000.
- Wait until your 'fake' midnight has passed and turn the PC on again. Has the date changed to 29/02/2000?
- Double check by testing whether the PC changes from 29/02/2000 to 01/03/2000 in the same way.

You really need to check the vendor's website to find out whether the version of the package you are using is compliant. If it's not then you need to upgrade or apply a patch.

You may have data files that use a two-digit year format, if so, you need to test the dates against the limitations of the application being used. For example, in Microsoft Excel 5 you can use two-digit year dates up to 2019, but after that two-digit year dates are handled incorrectly. You can test this by opening a new file and formatting a blank cell as a 'date cell' in long date format (DD/MM/YYYY). If you type 1/1/19 into the cell it will be translated into 1/1/2019, as it should be. However, if you type 1/1/20 into the same cell then the result will be displayed incorrectly as 1/1/1920. If you type the year date using four digits for the year 1/1/2020 then the results will be correct. However this is only valid up to 2078 – after this Excel 5 will report dates incorrectly again even if you're using four-digit year dates.

There are loads of utilities available that claim to test data and applications for compliance, but you can also do your own testing, by rolling the clock forward. Be warned that doing testing this way means that, in many cases, you may have to deal with the problem instantly and turning the clock back again won't necessarily be the answer.

You also need to be careful of any custom macros, such as Word macros, that you use. These may have to be updated to function correctly after the year 2000. Also be careful of shareware products that you regularly use as these may not be fully compliant. You should also back up shareware software before attempting any Y2K roll-over testing, as some of them use date-based registration.

Microsoft has a year 2000 website that lists the compliance details of all its products. It also provides information on how to fix the

company's non-compliant software with patches or upgrades.

Other bug carriers

It's not just your PC and data that need attention, you also need to be aware of the environment in which you use your PC. For example, if you have a Powerkey at home for electricity, then you should make sure that you've carried out any necessary Y2K upgrades. London Electricity, among others, has been upgrading its Powerkey customers to make their meters millennium-compliant. A power failure during a save to your hard drive could cause serious data loss.

Business users should check that alarms and any other systems which use electronic timer mechanisms are compliant, as a failure in one of these systems could have knock-on effects for your computer equipment. Some door access control systems are Y2K bug-prone, and this could exacerbate any problem you have with your PCs as you're not going to be able to gain entry to your offices to be able to rescue your PC from Y2K-induced chaos!

If you get data, such as database records, fed to you by another company's computer system, then you need to check the compliance of that company's systems. In fact you should contact everyone with whom you do business to be sure that there will be no interruption of service.

Also if you exchange information between home and work you need to ensure that both systems are fully Y2K compliant, especially if they are being used for database applications.

As a last resort, if you're unsure whether your systems are compliant and you feel you haven't got enough time to get the problems fixed, you should make sure that you keep paper records of important information. □