Desktop PCs and the Year 2000 Problem
Frequently Asked Questions

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I. Understanding the Year 2000 Problem with Desktop PCs

1. What is the Year 2000 problem?

When your PC keeps track of the year by using only the last two digits of the year, then you have a Year 2000 (Y2K) problem. This is considered not Y2K compliant. This is a problem because when the year becomes 2000, your PC may compute that as 1900 or 1980. So, for example, if your PC is trying to determine how much time has elapsed between January 1, 1998, and January 1, 2000, it sees 2000 as 1900, the result returned would be incorrect.

2. What controls the date and time in my desktop PC?

When your PC is turned off, the Real Time Clock (RTC) keeps track of the current date and time. The RTC clock will only update the last two digits of the year. So when the year becomes 2000, the RTC clock will report the year as 1900, because the first two digits (the century digits) have not been changed. Newer, Y2K compliant RTC will update the century digits correctly.

When the machine is turned on, the BIOS gets the date and time from the RTC. The first time the machine is turned on after January 1, 2000, 12:00 AM, the BIOS will be told by the RTC that the year is 1900. Some BIOS will convert this to 1980. With some PCs, the user can then manually set the year to 2000, and the BIOS will update the century digits in the RTC.

When the OS is loaded, it gets the time and date from the BIOS. An application can request the date and time from the OS, the BIOS, or the RTC. Most applications get the date and time from the OS, some get it from the BIOS, and a few get it from the RTC. An application can be Y2K compliant but report a bad date if it is sent a bad date.

3. How can I do a quick and basic test on my desktop PC?

Check your OS:

1. If you are using DOS or Windows, boot your system to a command prompt. Make sure config.sys or autoexec.bat loads nothing. You may also want to disconnect you

network connection, if any. By not loading anything and disconnecting your network connection you are making sure that when you change the date in the next few steps, applications and processes that rely on the current date are not affected.

2. Once you are at a prompt, set the date to December 31, 1999, by typing “date 12-31-1999 <ENTER>”. Then set the time to 11:59 PM by typing “time 23:59 <ENTER>”.

3. Verify the date and time are set correctly by typing “date <ENTER>” then “time <ENTER>”.

4. Wait more than one minute.

5. Check the date by typing “date <ENTER>”.

6. If the date is January 1, 2000, then your OS does not have a Y2K problem. **This does not mean your PC is free from Y2K problems.**

Check your BIOS:

1. Enter your BIOS setup.

2. Set the date to December 31, 1999.

3. Set the time to 11:59 PM

4. Watch for a minute to see what happens when it reaches midnight.

5. If the date and time correctly change, you have a Y2K compliant BIOS. **This does not mean your PC is free from Y2K problems.**

6. If the date and time do not correctly change, then your BIOS is not Y2K compliant.

Check your RTC:

1. Enter your BIOS setup.

2. Set the date to December 31, 1999.

3. Set the time to 11:59 PM

4. Save and exit BIOS setup.

5. Turn off your machine.

6. Wait more than one minute.

7. Turn your machine on and enter your BIOS setup.

8. If the date and time correctly changed, you have a Y2K compliant RTC. **This does not mean your PC is free from Y2K problems.**

9. If the date and time did not correctly change, then your RTC is not Y2K compliant.

4. What are some more thorough ways to test my desktop PC?

You can download AMI2000's free test utility from American Megatrends, Inc. (AMI) web site, www.ami.com. Also, AMI's hardware diagnostics program, AMIDiag, will test your PC to see if it is Y2K compliant.

5. The date did not correctly change in question number 3 to January 1, 2000. What can I do?

You can install a Y2K BIOS patch card, such as the Year 2000 BIOS Enabler (see section II). When using a patch (or bypass) the date the BIOS receives from the RTC is checked to see if it is correct, then the correct date is send to the application or process requesting the date.

If you are using AMI's AMIBIOS, you can manually set the year to 2000. When you do this the century digits are updated in the RTC. Once the century digits are updated in the RTC, you should have no Y2K related problems with the RTC or BIOS.

6. Will manually setting the year to 2000 work for all BIOS?

No. Award BIOS that was sold from April 26, 1994, to May 31, 1995, assumes that the century digits will always be 19. So even if you set the year to 2000, the next time you boot your machine, the BIOS will set the century digits to 19.

7. Why else would I not be able to set the century digits manually?

Some older RTC does not store the century digits. In this case, the BIOS is responsible for reporting the correct year.

8. Will installing a Y2K BIOS patch card fix the above two problems?

Yes. Since a Y2K BIOS patch card, such as the Year 2000 BIOS Enabler (see question 16), checks the date the BIOS sends, it will make sure the right date is being sent even if the BIOS is sending a wrong year.

9. I have installed a Y2K BIOS patch card. Am I in the clear?

Not necessarily. A few applications get the date and time directly from the RTC, not the BIOS. In this case a patch will not fix your application problem. These types of applications are very rare on desktop PCs.

10. How can I test to see if my RTC has Y2K problems? And if it does, how do I fix it?

Most BIOS manufacturers offer free utilities that will test your BIOS and RTC for Y2K problems. If your RTC passes the test, then you have a Y2K compliant PC. If your RTC is failing the Y2K test and you use applications that require a Y2K compliant RTC, then it must be replaced to ensure no Y2K problems in the future. On most motherboards the RTC is not replaceable, so the motherboard must be replaced. Very few applications interact directly with the RTC, so a failing RTC is usually OK.

11. The date changed correctly in question number 3. Am I in the clear?

Not necessarily. A few applications will use the Real Time Clock (RTC), not the BIOS, to retrieve the date. See question number 7.

12. I have verified that the BIOS and RTC have no Y2K problems. Is this enough to ensure I will have no problems in the year 2000 and after?

No. Problems can also come from the OS, applications, data, and date transfers.

13. How can I check my OS?

If your OS displays the year using four digits, then your OS is OK. To check DOS, type "date <ENTER>" and see if the year is four digits. To check Windows, open a command prompt window, and type "date <ENTER>" and see if the year is four digits. Also, in Windows you should make sure that the long and short date formats use four digits for the year. In some versions of Windows, you do this by editing the sShortDate parameter in the [intl] section of win.ini.

14. How can I check my applications?

It is up to the application vendor to ensure there are noY2K problems. To be absolutely sure you can contact the vendor to see if your application is free from Y2K problems. You may need to upgrade to more recent versions of some applications. Some utilities are available to test your applications and data for Y2K compliance.

15. How can I be sure my data will not have Y2K problems?

Whenever you store date information always use four digits for the year. Older data may need to be updated from two-digit format to four-digit format. Also, whenever date information is transferred between applications, make sure the four-digit year format is maintained.

II. Solutions For BIOS That Is Not Y2K Compliant

16. What is the Year 2000 BIOS Enabler?

AMI2000 Corporation (AMI2000), a sister company of the largest BIOS manufacturer, American Megatrends, Inc. (AMI), has developed the Year 2000 BIOS Enabler that is an ISA board ensuring that system calls to BIOS return the correct year. When the year 00 or 80 would have been returned from a non-Y2K compliant BIOS, the Year 2000 BIOS Enabler returns 2000. In addition, at the turn of the century the Year 2000 BIOS Enabler will rewrite the year in the system's CMOS settings to ensure that all subsequent years are reported correctly.

17. What type of computer is the Year 2000 BIOS Enabler for?

The Year 2000 BIOS Enabler will work on any IBM PC/AT or compatible computer with at least one free ISA slot.

18. What OS does it support?

The Year 2000 BIOS Enabler supports MS-DOS, PC-DOS, Dr. DOS, OS/2, Windows 3.1, Windows 95, Windows 98, and Windows NT 3.0 or greater.

19. Will the Year 2000 BIOS Enabler fix my RTC Y2K problem?

No. The Year 2000 BIOS Enabler works in conjunction with the BIOS. Some embedded and real-time applications get the date and time directly from the RTC. In this case the Year 2000 BIOS Enabler cannot correct the date before it reaches the application. It is very unlikely that your have a RTC-depended application.

20. What other Y2K problems will the Year 2000 BIOS Enabler not fix?

The Year 2000 BIOS Enabler will not fix Y2K problems related to the OS, applications, or data.

21. How do I know the Year 2000 BIOS Enabler is installed correctly?

When your PC is turned on, you will see a message indicating the Year 2000 BIOS Enabler is installed.

22. How do I know the Year 2000 BIOS Enabler is working?

There are numerous free Year 2000 rollover tests available. Once the Year 2000 BIOS Enabler is installed, run one of these tests. The Enabler has been tested using National Software Testing Lab's (NSTL) Ymark2000, Saphena Computing's DOSChk, RighTime's Test 2000, Computer Experts' Millennium Bug Toolkit, McAfee's Nuts & Bolts, and American Megatrends' AMI2000 Tester.

23. When I run a Y2K test, the RTC test fails, but I have the Year 2000 BIOS Enabler installed. Why?

The Year 2000 BIOS Enabler does not fix any Y2K problems with the RTC. If the RTC test was failing before the card was installed, then this test will still fail after the card is installed. Since most OS and applications rely on the BIOS for the date, the Year 2000 BIOS Enabler will probably fix your problem. See question number 16.

Sources and References:

American Megatrends, Inc. (AMI) web site.
Millennium BIOS Board web site.
AMI's Desktop PCs and the Year 2000 Problem white paper.
PC Magazine, October 6, 1998.