



## **Testing Computer Hardware for Y2K Compliance**

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Computer hardware is one of the areas that businesses, governmental agencies, and individual households should test for Y2K compliance. This fact sheet discusses why computer hardware is vulnerable to Y2K, how to test hardware for Y2K compliance, and strategies for remediating computer hardware that is not Y2K compliant.

### Hardware Problem

The most common hardware-related Y2K problem has to do with older IBM-compatible PCs and their BIOS (Basic Input Output System) chip. Unfortunately, even some newer systems have this problem. The BIOS chip controls the computer's internal Real Time Clock and is responsible for supplying your operating system and other application software with the current date and time.

This document addresses the internal clock (calendar problem) inherent to IBM-compatible computers only. It is not applicable to Macintosh or other Apple computers since Apple computers do not have this particular hardware problem.

Keep in mind that all IBM-compatible PCs using 286, 386, 486 CPUs (Central Processing Unit) and even some Pentium-class processors have the potential to fail to roll over to the year 2000 when they are turned on for the first time in the new century.

In addition, some PC operating systems (Windows 95, Windows 98, and Windows NT) will actually "mask" the year 1900 stored in the internal clock as the year 2000 and will not write the corrected date back to the clock if it is updated from within the operating system. This can cause date-related errors within applications that rely directly on the Real Time Clock and will result in date-related errors within the operating system after the year 2000 has arrived and "masking" has stopped.

## Testing Hardware

Although there are several IBM-compatible PCs on the market today the more common brands are Compaq, Dell, Digital, Gateway 2000, Micron, Toshiba, etc. If your business or household operates an IBM-compatible computer you can conduct the following tests to determine Y2K compliance:

- 1) 2000 Roll Over
- 2) Leap Year

### Testing Roll Over to Year 2000

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Prior to testing your hardware it is best to use an individual write-protected bootable system disk created on a DOS PC. As mentioned earlier, this is because several operating systems will “mask” century roll over which gives a non-compliant PC the false appearance of being compliant.

To test whether or not your computer’s internal is capable of rolling over to the 21st century, you must first turn your computer off. After waiting a few seconds turn your computer on and follow these steps:

1. Go to the DOS prompt (C:\> or C:\Windows>). If you’re using Windows 3.1 or 3.11 double-click the “Main” group in Program Manager and then double-click on the “MS-DOS Prompt” icon. If you are Microsoft Windows 95, Windows 98, or Windows NT, you cannot manually test the Real Time Clock from within the operating system. The PC must be booted from an actual DOS diskette.
2. Type the word “date” on the same line as the C:\> or C:\Windows>. The system will respond with the date and give you an opportunity to change it. On the same line as “Enter new date:” type the date “12-31-1999” and press [enter]. You must enter the year using 4-digits, even if the system displays a 2-digit year.

```
C:\Windows>date
Press [Enter]
Current date is Wed 12-16-98
Enter new date: 12-31-99
Press [Enter]
```

3. Type the word “time” on the same line as the C:\> or C:\Windows>. The system will respond with the time and give you an opportunity to change it. On the same line as “Enter new time:” type the time “23:59:00” and press [Enter].

```
C:\Windows>time
Press [Enter]
Current time is 10:35:42a
Enter new time: 23:59:00
Press [Enter]
```

**4. Type “exit” and press [Enter] to return to Windows. Turn the computer off and wait at least one minute.**

5. Turn the computer back on and return to the DOS prompt. Type “date” at the DOS prompt and press [Enter]. If the date reads 01-01-2000, your PC has passed the test. IF the date reads 01-01-1980, 01-01-1900, or something else, the PC is not compliant and you will have to remediate the problem.
6. After completing test return the system to normal by repeating Steps 2 and 3 using the current date and time. When finished, type “exit” and press {Enter} to return to Windows.

## **Testing Leap Year      FEBRUARY 29, 2000**

Testing your computer for Leap Year is to determine whether or not a computer’s internal clock is capable of recognizing the year 2000 as a leap year. The steps to test for Leap Year is as follows:

1. Go to the DOS prompt.
2. Type the word “time” on the same line as the C:\> or C:\Windows>. The system will respond with the date and give you an opportunity to change it. On the same line as “Enter new date:” type the date “02-28-2000” and press [Enter]. You must enter the year using 4-digits, even if the system displays a 2-digit year.

```
C:\Windows>date  
Press [Enter]  
Current date is Wed 12-16-98  
Enter new date: 02-28-00  
Press [Enter]
```

- 3) Type the word “time” on the same line as the C:\> or C:\Windows>. The system will respond with the time and give you an opportunity to change it. On the same line as “Enter new time:” type the time “23:59:00” and press [Enter].

```
C:\Windows>time  
Press [Enter]  
Current time is 10:35:42a  
Enter new time: 23:59:00  
Press [Enter]
```

4. Type “exit” and press [Enter] to return to Windows. Turn the computer off and wait at least one minute.

- 5) Turn the computer back on and return to the DOS prompt. Type “date” at the DOS prompt and press [Enter]. If the date reads Tue 02-29-2000 or Tue 02-29-00 then your PC has passed the test. If the date reads 02-28-2000, 03-01-2000, or something else, the PC is not compliant and you will have to remediate the problem.
- 6) Return the system to normal by repeating Steps 2 and 3 using the current date and time. When finished, type “exit” and press [Enter] to return to Windows.

After completing each test you will know whether remediation steps will be needed or that your computer hardware is Y2K compliant. If your computer fails either the 2000 Roll Over or Leap Year test your computer is not Y2K compliant. This will now require you to remediate through one of the following approaches:

1. Get software that will either fix the problem or create a work around strategy. Find a good website to locate vendors providing software fixes.
2. Obtain a flash BIOS software update from the vendor that manufactured your system. Start by checking their website to see if they have updates available for download.
3. Replace the actual BIOS chip, the motherboard, or even the entire system.
4. Just leave it. If the computer still works and isn't used for date-sensitive purposes, then maybe it doesn't need to be fixed at all.

Additional Y2K information can be obtained from your local Cooperative Extension Office or by contacting Buddy Borden, Community Development Specialist with Nevada Cooperative Extension (702) 222-3130 or Tim Warden, Research Analyst, Center for Economic Development (775) 784-6994. Other useful websites with Y2K information include:

<http://y2khelp.nist.gov>  
<http://www.sba.gov/y2k>  
<http://www.year2000.com>

Materials and information presented in this document was gathered from the Council of the Great City Schools, Washington, D.C.