

# The Year 2000 Problem

***By Jaime E. Dunton***

---

## **In This Article:**

Introduction

What is the Year 2000 Problem?

Systems That Could be Affected

Small Business Problems

The International Perspective

What Should I Do to Prepare?

---

## **Introduction**

Since the early 1990's, the world has been inundated with news of the Year 2000 Problem. Most governments and companies have rushed to spend hundreds of thousands of dollars, if not more, on corrections and preparations for January 1, 2000. The "crisis" has even given birth to a new field of consulting, Y2K consulting. Some see Y2K as nothing more than a minor annoyance. Others tout it as the beginning of the end of the world. Here's why you should be concerned.

## **What is the Year 2000 Problem?**

The source of the Y2K problem lies in something as simple as a date. In the early days of software and this sort of technology, memory was very expensive. Software engineers and developers discovered that they could save valuable space, and therefore money, by using only the last two digits of a year for the date. Though they knew the then still far away year 2000 would pose a problem, they never thought their software would still be in use by then. Also contributing to the problem are leap year calculations, and dates that have been set for special meanings.

The two-digit date could cause the biggest problems at the turn of the century. When the clocks turn over to 12:00 midnight on January 1, 2000, many computers may

read this date only as January 1, 00, which they are programmed to read as the year 1900. This error could result in miscalculations, malfunctions or network shutdowns.

Another problem is that the year 2000 happens to be a special case leap year. Under normal circumstances, a leap year is a year that is divisible by four, but not if it's divisible by 100. But, if it is divisible by 400, it *is* a leap year. The year 2000 may not be recognized as a leap year by uncorrected computer systems, and could lead to all dates after February 28, 2000 to be off by one day.

Originally, there was thought to be another problem, known as the "nines" problem. In the continued search for more efficient code, programmers sometimes used special dates for special functionality. The most common of these dates is 9/9/99. This date was often used as a default, or to signify something special, such as "save this data item forever" or "sort this data item to the top of the report". However, the date 9/9/99 can never actually appear within a computer, if the date is formatted correctly. Because a computer treats a date as two digits for day and month, September 9<sup>th</sup> would actually be displayed as 09/09/99.

### **Systems That Could be Affected**

The Year 2000 problem exists on mainframe, mini, Unix, and PC environments, mainframe being worse of all. Businesses and individuals owning hardware purchased before mid-1997 could especially be affected, but those owning newer hardware should still be in touch with the manufacturers. Apple reports that Macintosh users should have no problems, because their computers are already set to use the four-digit date. Primarily, it is a software problem. All software should be checked, including that which is used on Apple computers, to see if it is Y2K compliant. Accounting software, spreadsheet programs, and databases, which rely heavily upon calculations, could be most affected by the date problem.

More widespread problems lie within larger computer systems. A failure of the phone and/or electrical systems could effect anything from ATMs and banks, to elevators, to gas stations, to the prescription drug industry. The electrical power industry says they are now Y2K compliant, and there should be no major power outages. Local outages, however, are still a possibility, and the length of them would depend on how quick the response is. Additionally, at least eighty percent of telephone network systems are currently Y2K compliant. The only main concern, for both the energy and the telecommunications industries, are that smaller rural electrical and telephone companies will not be ready.

The U.S. government has spent billions of dollars on correcting the Y2K problem since as early as 1989, and should be nearly 100 percent Y2K compliant by the end of the year. There are worries, though, that smaller state and local governments will not be as ready, and that systems such as those that handle benefit payments, and even 911 and emergency services, could not function properly. The federal government contends that its systems will be prepared, and payments such as unemployment insurance, government civilian and military pensions, Supplemental Security Income, veteran's benefits and Social Security will be delivered as scheduled. The postal service is also prepared for the turn of the century.

Because of items such as long-term loans and other trade securities agreements that have caused the banking industry to confront the Y2K problem much earlier than most, there should be no problems with the banking industry itself. Possible problems that are pending are those caused by phone or power outages. Also, too many people withdrawing large amounts of money in preparation for the "crisis" could cause market problems.

The airline industry may be among the least prepared for the Y2K problem. As many as one-third of airports may not be compliant. Although the airplanes themselves are deemed safe, problems at airports could lead to delays and cancellations all over the country. Businesses and individuals should pay heed when scheduling trips around the New Year.

Another possible problem area is the health care industry. As many as two-thirds of the nation's health care facilities may not be prepared for the Y2K bug. This could lead to doctors temporarily losing access to medical records or even the failure of dialysis and heart monitoring equipment. The nation's largest industry seems to be the least prepared.

### **Small Business Problems**

The Year 2000 issue has the tendency to be viewed as one affecting mostly "big business", with smaller businesses not having as many problems. This is not true, yet a very low percentage of small businesses are preparing for the problem. If computer systems and software are not scrutinized for compliance, it could lead to the business screeching to a halt. Inventory systems may fail to place orders to replenish supplies, mortgages may be over-billed, transactions may be timed wrong, customer credit card transactions may not go through, and numerous other problems could occur.

Even a business not using computers can be affected. If the business relies on outside services for functions such as payroll, employee benefit programs, tax reporting systems, suppliers, or other things, then they could experience the Y2K bug.

### **The International Perspective**

The Y2K bug is not strictly a U.S. problem, it is worldwide. According to CNN.com, Canada is currently 85 percent Y2K compliant. The government has been checking its systems, businesses are checking their owns, and an awareness campaign has been in place for several years. Airports have also been cross-border checking with airports in the United States.

The same has been happening with Mexico. The Mexican government and all financial institutions must meet strict requirements. At 67 percent compliant, Mexico is ahead of other Latin American countries. Venezuela, for example, is only 50 percent compliant, and there is worry that export distribution will be disrupted.

Real problems could arise in China, where half of surveyed enterprises don't even know how to detect the problem. Assistance is being offered in the crucial finance, aviation, telecom and transportation industries, but few others are being addressed.

Similar problems may occur in India, where the government realized too late the implications of the problem. They have assured the world that their missile supply is "Y2K-proof", and that the Delhi and Mumbai air traffic systems will be ready as well.

Saudi Arabia is also behind western nations in preparation. International clients, especially those dealing in oil, are concerned about interruptions in distribution.

Russia is in serious need of assistance in battling the Year 2000 problem. The nation is only roughly 30 percent compliant, and the presence of nuclear weapons and plants poses a possible danger. NATO has said that it will inspect all nuclear weapon systems, but lack of accurate data could lead to problems within the plants.

Public awareness of the Y2K bug is high in the United Kingdom. On top of debugging their own systems, they have taken the initiative to alert their European neighbors of the gravity of the problem, and are currently 85 percent compliant.

Surprisingly enough, serious problems could also arise in France. The government, possibly distracted by the recent euro conversion, has done little coordination of efforts. Businesses are being relied upon to take care of their own Y2K problems. Additionally, France is more reliant on nuclear energy than any other nation, and provides electricity to many of its neighbors. Problems within nuclear power stations' internal computer systems, as well as problems with the general French electricity grid, could lead to a general electrical failure across several countries. Though it does not necessarily mean risk of a nuclear accident, the plants may be required to function or shut down under unusual conditions, which raises many safety concerns. Currently, between 45 and 80 percent of systems could experience malfunctions, and the French nuclear safety authority has said that power stations would be switched off if security was thought to be threatened.

## **What Should I Do to Prepare?**

With all the hype around the Year 2000 problem, many are treating it like a life-style threatening crisis -- buy all the food and gas you can, buy a generator, take all of your money out of the bank and hide in your basement for a week. Though the true scope of what will happen will not be known until the ball drops in Times Square, such drastic preparations are really unnecessary. But there are a few things that you can do, in addition to preparing your personal computer.

Some basic disaster supplies should be stocked, as well as water, in the event that stores are unable to supply basic necessities due to power failures. Any needed medications should also be purchased. Alternative cooking devices and supplies to keep warm should be on hand, and your car should be at least half full of gas.

Though there is no need to withdraw all of your savings from the bank, you should have a small amount of emergency cash on hand. There is a possibility of ATM failure only due to power failure, and transactions involving credit cards and the like may also have difficulty being processed. To avoid financial disaster, only withdraw money from your bank in small amounts. Also, you should retain proof of any payments made for mortgages, car loans or other debts, as well as copies of your insurance policies and payments.

As January 1, 2000 looms ever closer, the Year 2000 problem seems less of a catastrophe and more of a nuisance. Every day, more and more businesses are working to prepare for the computer glitch. Unfortunately, there is no way to tell exactly what will happen when the clock strikes midnight. Power systems may or may not fail, worldwide economic systems may or may not crash, airplanes may or may not get off the ground, but the *world* will go on.