Microsoft Windows 2000 Professional Reliability:

A comparative study of the reliability of Windows 2000 Professional
Microsoft Windows 98
And Microsoft Windows NT Workstation 4.0

Disclaimer of Warranties; Limitation of Liability:

ZD LABS HAS MADE REASONABLE EFFORTS TO ENSURE THE ACCURACY AND VALIDITY OF ITS TESTING, HOWEVER, ZD LABS SPECIFICALLY DISCLAIMS ANY WARRANTY, EXPRESSED OR IMPLIED, RELATING TO THE TEST RESULTS AND ANALYSIS, THEIR ACCURACY, COMPLETENESS OR QUALITY, INCLUDING ANY IMPLIED WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE. ALL PERSONS OR ENTITIES RELYING ON THE RESULTS OF ANY TESTING DO SO AT THEIR OWN RISK, AND AGREE THAT ZD LABS, ITS EMPLOYEES AND ITS SUBCONTRACTORS SHALL HAVE NO LIABILITY WHATSOEVER FROM ANY CLAIM OF LOSS OR DAMAGE ON ACCOUNT OF ANY ALLEGED ERROR OR DEFECT IN ANY TESTING PROCEDURE OR RESULT.

IN NO EVENT SHALL ZD LABS BE LIABLE FOR INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH ITS TESTING, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL ZD LABS' LIABILITY, INCLUDING FOR DIRECT DAMAGES, EXCEED THE AMOUNTS PAID IN CONNECTION WITH ZD LABS' TESTING. CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES ARE AS SET FORTH HEREIN.

Origin of report

ZD Labs prepared this report under contract from Microsoft Corporation.

1.0 Executive Summary

Microsoft Corporation commissioned ZD Labs to compare the reliability of Windows 2000 Professional operating system with that of Windows 98 Second Edition (SE) and Windows NT Workstation 4.0 with Service Pack 6a (SP6a). In the absence of a standard desktop reliability benchmark, Microsoft requested that ZD Labs create a custom independent test.

We designed the reliability test to measure the average length of time that an operating system could perform common tasks before needing to be rebooted. We developed a Rational Visual Test script that automated these common tasks: browsing the Web, editing documents, working with spreadsheets, and accessing data in a database. The automated scripts forced the computers under test to do a lot more work than a typical user would. The test script looped continuously, moving from one task to another until it encountered a problem.

We ran the test script on each operating system for thirty consecutive days and measured the total amount of time that our test stressed the system, i.e. the time spent looping the script, and logged the total number of reboots during the thirty-day test period. (This form of measurement takes into account the problem that a computer might have been stuck overnight before it was restarted.) From these two numbers, we calculated the average time each operating system could perform real work before needing to be rebooted (average uptime). To try and make these numbers more understandable, we used the number of eight-hour workdays as the unit of measure.

During the duration of this test, Windows 2000 Professional experienced no errors and never needed to be rebooted. There are a number of reasons why an operating system could need rebooting: the operating system could lock-up or crash, what we refer to in this report as a hard error, or the operating system could become unstable or leak enough resources so that user applications no longer run as they should. We referred to these errors as soft errors. Both Windows NT Workstation 4.0 and Windows 98 SE required reboots. Windows NT Workstation 4.0 experienced only soft errors, while Windows 98 SE experienced a mix of soft errors and hard errors.

The graph below gives a better perspective of Windows 2000 Professional reliability. At the end of thirty calendar days (ninety eight-hour workdays), Windows 2000 had not encountered a single error. We do not know how long Windows 2000 might have run if the test had been continued.
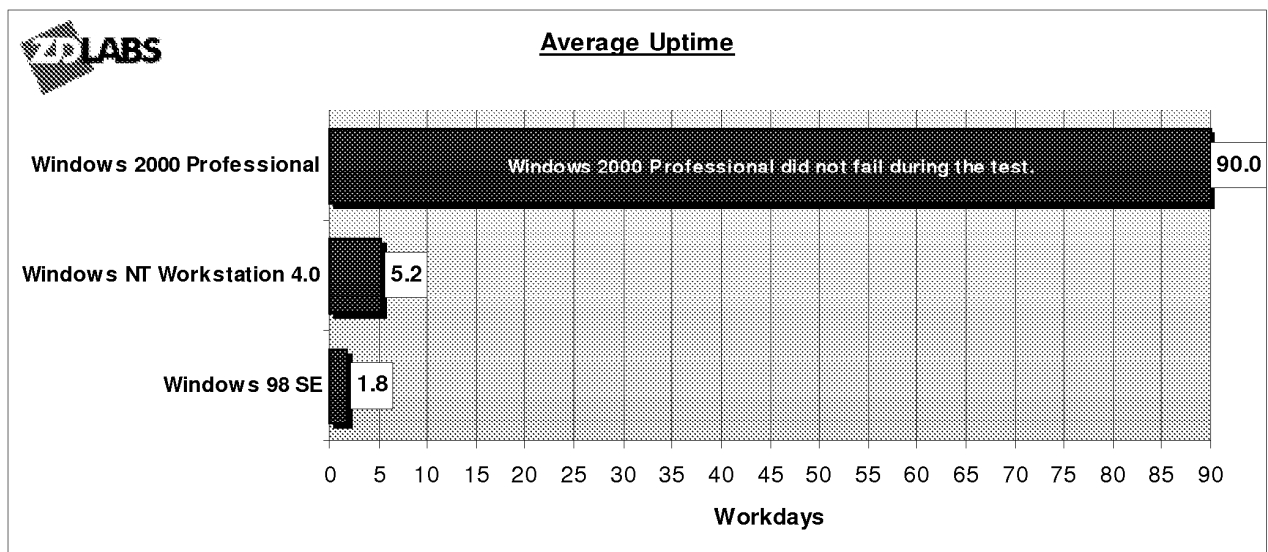

Figure 1: Average uptime in eight-hour workdays.