IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

UNITED STATES OF AMERICA, Plaintiff, v. MICROSOFT CORPORATION, Defendant.	Civil Action No. 98-1232 (TPJ) **FILED UNDER SEAL** (Seal removed pursuant to court's October 14, 1998 Order
STATE OF NEW YORK ex rel. Attorney General DENNIS C. VACCO, et al., Plaintiffs, v. MICROSOFT CORPORATION, Defendant.	Civil Action No. 98-1233 (TPJ)

DIRECT TESTIMONY OF JOHN SOYRING

I.   BACKGROUND

1.   I joined IBM in 1976 and have, since then, held a variety of positions. I am currently

Director of Network Computing Software Services, which offers professional consulting, design,

application development and product-specific services to large enterprises for the purpose of

developing and deploying mission-critical business applications using IBM's e-business technologies.

2.　　Over the past ten years I have held, among other positions, the position of Director of IBM's Programming Center in Austin, Texas, in charge of the development of IBM's OS/2 family of products as well as IBM Data Base Management Systems, local and wide area communications products and distributed systems management products. I have also been the Director of OEM Sales for PC software products, including OS/2, and I have been in charge of strategic relations for IBM's Personal Software Products Division, which included relationships with independent software vendors for OS/2 and product development.

3.　　I hold a Bachelor's Degree in Electrical Engineering from Michigan Technical University, and I have completed graduate studies at the University of Minnesota and the State University of New York in Electrical Engineering, Computer Science and Business Administration.

II.　　THE IMPORTANCE OF APPLICATIONS

4.　　IBM introduced its personal computer, dubbed the "IBM PC," in 1981, and over time the industry adopted the term PC to refer to IBM and IBM-compatible personal computers that operate on Intel or Intel compatible microprocessors (hereafter referred to as "PCs"). In 1987, IBM introduced its OS/2 operating system for PCs. Since its inception, IBM has enhanced OS/2 with expanded functions and capabilities on an ongoing basis, and it continues to do so today. Between 1987 and today, IBM has invested hundreds of millions of dollars on OS/2 research, development, distribution and marketing.

5.　　Despite this enormous effort, OS/2 has not enjoyed broad commercial success, particularly with regard to consumer or home PC users. According to IDC, in 1996, OS/2 accounted

2

for approximately six percent of the PC operating systems sold worldwide. By contrast, the same report concludes that, in 1996, Microsoft Operating Systems including Windows (Windows 3.1, Windows 95, Windows 98 or Windows NT client operating systems, referred to below collectively as Windows) and Microsoft DOS accounted for approximately ninety-two percent of PC operating systems sold worldwide.

6.   Customers purchase PCs in order to run application programs, which are particular software products that allow users to do the things they want to do such as write letters or handle their personal finances. Many important applications designed to run on Windows have not been made available in versions designed to run on OS/2 or have only been made available with limited function or significantly later than the Windows version of the same application. Examples include popular games, leading desktop publishing applications, and office productivity products. This unavailability of applications has been an important reason for OS/2's relatively limited acceptance. For an application to operate properly on an operating system, it must be designed to work with the main interface (Applications Programming Interface, or "API") between the particular operating system and applications. For example, "Win 32" is the main API for Windows 95, Windows 98 and Windows NT.

7.   Many companies, referred to in the industry as Independent Software Vendors or "ISVs," develop and offer many different types of applications. Because the API is not standardized, but varies significantly from operating system to operating system, usually applications are developed for a particular operating system. ISVs usually develop applications that will run on the most widely used operating system. This gives them the greatest opportunity to make sales, recover their costs and make the most efficient use of their limited development

resources. Once an application has been developed for a particular operating system, significant modifications must usually be made for that application to operate on any other operating system -- and those modifications must then be thoroughly tested. This process is known as "porting," and can be both costly and time consuming. In addition, there are other substantial costs involved in offering a product on another operating system which may be even greater than the porting costs, such as marketing, distribution, sales, support and maintenance. Software companies will decide to incur such costs only if they anticipate enough users of the other operating system, and therefore, enough potential purchasers of their application, to justify this investment. This, in part, explains why there are not more applications for OS/2.

8.   In addition to these costs, certain terms in Microsoft agreements make it more difficult to port applications developed for Windows to OS/2. Specifically, many of the agreements under which Microsoft licenses tools (software products ISVs use to develop applications) to ISVs restrict use of the tools to developing for Windows. Thus, ISVs, who develop applications first for Windows because of its huge install base, may not be able to use the same tools to develop applications for OS/2. In addition, in order to simplify and reduce the time and resources required by an ISV to develop an application for Windows, Microsoft has included with its tools certain software (referred to as "redistributable code") that can be included in ISVs' applications. This code cannot be used in OS/2 applications because of restrictions imposed by Microsoft. This Microsoft redistributable code can be so integrated into an ISV's application that, in order to port the application from Windows to OS/2, the ISV has to recreate much of the application from scratch. This makes it less likely that an ISV could justify the cost of offering the application on OS/2.

9.   These circumstances have resulted in OS/2 being caught in a vicious cycle. First, the limited number and type of OS/2 applications has resulted in a limited demand for OS/2. That, in turn, has meant that relatively few PCs are shipped with OS/2, and that the installed base of PCs with OS/2 is relatively small. This relatively small base of OS/2 installations has further reduced the incentive for application developers to spend the resources necessary to port their existing applications to OS/2 and to then offer and support them on OS/2. At the same time, the restrictions Microsoft has placed in certain of its tools agreements, as I have described above, have helped ensure that porting applications from Windows to OS/2 continues to be a costly and time-consuming task. All this has resulted in fewer and fewer new applications being offered on OS/2. This self-perpetuating cycle has reduced the demand for OS/2.

10.   Microsoft, on the other hand, has benefited from a converse cycle that also tends to be self-perpetuating in the absence of some industry advance that undermines it. The large installed base of Windows has encouraged ISVs to develop a large number of applications for Windows, which has led to increased demand for Windows. This, in turn, has further increased the incentive for ISVs to develop applications for Windows. In fact, users, ISVs, and PC suppliers - recognizing the opportunity offered by Windows' large installed base - know that the most popular applications will be written for Windows. In fact, given the relative size of the Windows installed base, no PC application can achieve wide distribution - that is, be a "best seller" - that is not offered on Windows. Another effect of this cycle is that manufacturers of devices, such as printers and graphics cards, tend to focus their resources on ensuring their products work with Windows (often to the exclusion of other operating systems) because of the demand for Windows and the number of applications available on Windows. By contrast in OS/2's case, we have had to pay

5

manufacturers to ensure their devices work with OS/2. This results in a further ongoing advantage for Windows.

11.   As a result of the applications and device support for Windows, in my view, suppliers of PCs have no commercially viable choice but to license Windows and to offer it on the vast majority of PCs they ship. Not only OS/2, but none of the other operating systems available for desktop or mobile PCs (for example, PC DOS, DR-DOS and Santa Cruz Operation's ("SCO") Unix), are shipped in any appreciable quantity. PC suppliers cannot reasonably base their businesses on these alternatives, due, in large measure, to the lack of applications and device support. In fact, even though IBM popularized the PC and co-developed OS/2, IBM's own PC Company offers Windows with the desktop and mobile PCs it sells, and it has done so since the early 1990's. Today, IBM's PC Company does not ship OS/2 preloaded on the current models of its PCs in the United States. The PC Company has offered Windows despite the fact that, at various times, OS/2 has enjoyed technological advantages over Windows in a number of areas. For instance, OS/2 Warp Version 3 offered 32 bit capability, multi-threading, and symmetrical multiprocessing support prior to the introduction of similar capabilities in Windows.

12.   As I have mentioned, according to IDC, Windows and Microsoft DOS accounted for roughly, ninety-two percent of all PC operating systems sold in 1996. Given Microsoft's application advantage that I described above, I do not expect the installed base or shipment percentages for Windows to decline with the advent of Windows 98.

13.   Today, Microsoft's enormous installed base, along with the wealth of applications and hardware device support for Windows, noted above, makes it difficult for IBM or any other company to successfully offer a new operating system for desktop and mobile PCs. Any company

that attempted to do so would have to invest an enormous amount of money and time on development, marketing, and support. Given the price the company could expect to receive for each license of its operating system, the company would have to "sell" tens of millions of copies of its new product to recoup its cost. The task would be easier if there were some reasonable way to ensure that all the applications now on Windows would run on the new product. Unfortunately, there is not. Microsoft does not provide on a timely basis the information that would be required. The operating system developer would have to find some way to duplicate the function provided by the Windows APIs without being accused of violating Microsoft's license agreements and intellectual property rights. And once again, the restrictions Microsoft often imposes in its tools agreements would come into play. ISVs can not market those applications that include Microsoft redistributable code for use on other operating systems. Based on our experience with supporting some Windows APIs on OS/2, supporting Windows applications on another operating system would be an expensive and time consuming process. As Microsoft ships new releases of Windows, APIs are changed and added. In total, the number and complexity of the Windows APIs has increased significantly over time--there are now several thousand. Not only is it difficult to reliably duplicate the function of each API, another company can not realistically duplicate the function of all of the APIs since Microsoft continues to introduce new APIs. Applications will not work correctly if they use APIs whose functions have not been duplicated. Therefore, there will always be a risk that some application important to a user now--or in the future--will fail. This uncertainty places a heavy drag on any chance for long-term success. Given the expense, time and uncertainty involved, I do not think supporting Windows applications on another operating system for desktop or mobile PCs

offers any reasonable opportunity for a positive financial return, and I would not recommend that

IBM attempt to provide additional support for Windows applications in OS/2.

III.   BROWSERS

14.   From late 1994 to September 1996, IBM offered its own web browser, Web Explorer

for OS/2. IBM offered Web Explorer as an application program a user could install on OS/2. From

the initial shipment of OS/2 Warp 3 in October of 1994, Web Explorer was available for download

at no charge from the Internet to users of Warp. Starting in April 1995, Web Explorer was included

in the OS/2 Bonus Pack, a set of applets (small, limited function applications) shipped on a separate

CD in the box with Warp at no additional charge. Users could install any or all of the applets as they

chose. Users always could choose to install Web Explorer, any other web browser which runs on

OS/2 in lieu of (or in addition to) Web Explorer, or no web browser at all. The alternative chosen

by the user had no significant effect on the function or performance of the underlying OS/2

operating system.

15.   In 1996, IBM began to offer the Netscape "Navigator" browser as an application for

OS/2. IBM chose to offer Navigator on OS/2 rather than offer a browser from Spyglass which

would have also run as an application on OS/2. IBM chose to offer Navigator because it was the

leading brand of browser at the time and because IBM had received specific customer requests for

an OS/2 version of Navigator. Navigator had features not available in Web Explorer, such as frames

support, which allowed a user to view Internet content in a more productive way. Navigator was

offered as an application for OS/2 at no additional charge despite the fact that IBM paid Netscape

for the right to do so. As was the case with Web Explorer, users could choose to install or not to

install Navigator, and to use another browser or no browser at all. The alternative chosen by the user had no significant effect on the function or performance of the underlying OS/2 operating system.

16.   The browsers offered with OS/2 have always been offered as separately installable applications--they have never been integrated into the OS/2 operating system. The Web Explorer browser IBM included in the box with OS/2 in 1995 was on a separate CD, the OS/2 Bonus Pak. In the case of all browsers IBM provided for OS/2, users had the option of installing browsers other than IBM's; installing no browser or of installing any browser available for use with OS/2 in lieu of (or in addition to) Navigator. The alternative chosen by the user had no significant effect on the function or performance of the underlying OS/2 operating system.

17.   Although many customers licensing IBM's OS/2 operating system use browsers in conjunction with the operating system, some customers do not. I am aware of some customers who request that browsers not be installed with their PC systems. In some instances, hardware constraints in terms of disk space or processor size require a customer to prioritize which applications should be used, and a browser is not as important to them as other applications. In other cases, enterprise customers want to control the applications which can be used by employees in the enterprise, and do not want employees to spend time "surfing the Internet." As another example, some enterprises use OS/2 for specific purpose systems for which browsers are not required, such as systems used by baggage handlers or bank tellers.

18.   As I've explained above, IBM's Web Explorer browser for OS/2 has consistently been offered as an application which can be used with OS/2. And, in addition, IBM has made it possible for OS/2 users to select Navigator and run it as an application on OS/2. It is clear from this

history that IBM has not found it necessary technically to integrate the browser with the operating system - the browser works well running on the operating system like any other application.

19.   Just as IBM has treated Web Explorer and Navigator as separate from OS/2, Microsoft itself has at certain times treated Internet Explorer as separate from Windows. In the fall of 1997, Microsoft held a major public relations event to introduce Internet Explorer 4, independent of Microsoft's promotion of Windows. The first shipments of Windows 95 for retail sales did not include Internet Explorer, which was added some time later. Microsoft offers a version of Internet Explorer for use with Apple's operating system.

IV.   CAPABILITIES OF PC SUPPLIERS

20.   PC suppliers generally have sophisticated skills with respect to both hardware and software and are capable of performing complex tasks, including integration of software products for use on their machines. Major PC suppliers have significant software staffs which include skilled programmers. Often these programmers have been trained in software companies. For instance, I am aware of programmers and other technically skilled individuals who worked in the development of OS/2 and who subsequently left IBM to work on software related activities for PC suppliers. PC suppliers employ this highly skilled staff in numerous ways. For instance, PC suppliers create complex programs, known as device drivers, which enable and control the use of other devices with their machines. Device drivers are important because they can provide the machines with better performance and/or increased capability which can provide product differentiation for the specific PC supplier. Another example is the development of software to provide specific function for the system, such as enhanced system management and configuration capabilities, and installation routines. A third example is the providing of support to users. Software suppliers often provide

better pricing to PC suppliers if the PC supplier responds to the support calls from customers and handles the initial analysis of potential problems. This activity can range from simple to very complex and can even involve review and analysis of the source code for the software involved.

21. These examples of software activity commonly executed by PC suppliers require more technical expertise than the process of loading and configuring applications onto the suppliers' machines. PC suppliers, therefore, generally have ample ability to include applications such as a browser with an operating system and load this combined set of products on their machines.

22. In fact, suppliers of PCs generally install and configure operating systems and applications, such as word processors, spreadsheet programs and popular games, on their machines prior to shipping them to their customers. Similarly, they can install browsers on the operating system on machines they ship, so long as they are given appropriate information by the browser supplier and are given any information specific to the particular operating system involved by the browser supplier or the operating system supplier.

V.   SOFTWARE DESIGN / INTEGRATION

23. As a general matter, because of the nature of software and software design, a software developer can choose to combine or separate any two (or more) software products or functions. And if the developer chooses to combine such products or functions, it can be done in ways that make it relatively easy or relatively difficult to separate them. There will always be some arguable advantages and disadvantages to combining any particular software products.

24. More particularly, when a software developer decides to implement a function, because of the nature of software, the function can be done in a number of ways, for example: (1) multiple functions can be combined in a single application that runs on an operating system, (2)

11

functions can be allocated between applications and the operating system, and/or (3) functions can be combined with, that is, "integrated" into, an operating system regardless of whether such combinations create any benefits to customers. This distribution of function between applications and the operating system is influenced by numerous factors, and the same function can be implemented in different ways depending on the developer's technical and marketplace objectives. Also, the developer has numerous options in deciding how tightly to integrate two programs. At one end of the scale, two programs could be tightly integrated - even to the extent that it would be technically difficult, expensive and time-consuming to separate them again. On the other end of the scale, the programs might be packaged together - that is, offered together at one price - but not actually integrated at all.

25. Accordingly, an operating system supplier - for example, IBM with OS/2 or Microsoft with Windows - generally can choose to integrate functions into its operating systems, and this can be done whether that integration achieves any technological efficiencies or confers any benefits on customers. Indeed, integration could be inefficient and disadvantageous to customers. For instance, integration generally increases the size of the operating system, and therefore, the size of the hardware required to run it effectively. In addition, it may slow the use of other applications, and may provide function which certain customers do not want.

26. Because of the inherent flexibility of software and the fact that Microsoft, therefore, has the choice to integrate (or simply package), virtually any software products with its operating systems -- Microsoft can achieve high volume shipments of any particular software function. This ability to integrate or package particular software for accomplishing virtually any function - even a function previously offered by other companies in applications for Windows - enables Microsoft

12

to use the pervasive distribution of Windows to leverage its applications over the products of specific competitors. The demand for products which compete with functions integrated or combined with Windows for no additional charge may be reduced. In this way, Microsoft's actions can make it more difficult for these competitors to be successful with their products.

27. Irrespective of whether Microsoft combines Internet Explorer and Windows in a manner in which they are difficult to subsequently separate, or whether Microsoft simply requires the two to be shipped together, certain significant effects follow. For example, in light of the fact that PC suppliers, as a practical matter, must offer Windows, and Microsoft has chosen to offer Internet Explorer with Windows, virtually all new desktop and mobile PCs come with Internet Explorer. The PC supplier does not choose Internet Explorer; it is simply included. As a result, even if there is customer demand for another browser, the PC supplier has to consider the cost of the second browser. Even if the other browser supplier offers it to the PC supplier for free, the PC supplier will incur substantial additional costs, including additional testing, distribution and support costs.

28. An additional effect of Microsoft's including Internet Explorer with Windows is the advantage it gives Microsoft's implementation of Java technology. Java was developed by Sun Microsystems. The Java technology from Sun is designed to allow Java-compatible application programs to run on a wide variety of different hardware and operating systems. This would provide users with the benefits of increased number of applications and would reduce the cost of ISVs of developing applications for multiple operating systems. This characteristic of Java also has the potential to undermine the Windows application advantage I've described above. Microsoft licensed Java technology from Sun, and has released its own Java implementation. Microsoft tuned its

13

version of Java for Windows, inhibiting the potential for application developers to write applications once and have them run on many different operating systems. The reason this relates to browsers is that Netscape Navigator has been the prime distribution vehicle for Sun's Java technology while Internet Explorer contains the Microsoft version of Java. Wide use of Microsoft's version of Java negates the potential that Java might undermine Windows application advantage.

29.   In the case of IBM, in addition to the decision to provide OS/2 customers with a version of Navigator as I've described, we made a corporate decision in 1997 for IBM units to ship Navigator because it included Java. Even though IBM decided to ship Navigator, the IBM PC Company (the part of IBM which develops, manufactures and sells PCs) also continued to ship Internet Explorer since it came with Windows. IBM chose Navigator. While the PC company might have chosen to ship Internet Explorer at some point, it never had a choice since it is included.

VI.   SCREEN RESTRICTIONS

30.   It is my understanding that Microsoft included provisions in its agreements with PC suppliers for machines shipped since early 1997 which forbid the PC supplier from modifying the procedure by which the operating system is initially loaded (the "start up sequence"), such as by changing any of the screens displayed by Windows during the start up of the machine or placing programs in the Windows startup folder. If so, these restrictions would prevent PC suppliers from customizing the start up of windows on their PCs and from automatically launching customized screens or "shells" to create different user experiences through changes to the user interface. These restrictions would also prevent PC suppliers from rearranging the desktop in ways which remove--or move to different folders--various applications provided by Microsoft with Windows. Finally, these contractual restrictions would prevent PC suppliers from configuring their machines so that a

14

particular application is displayed on a user's computer screen without first displaying the standard Microsoft Windows screen when the machine is turned on.

31.   IBM has not included similar screen restrictions in its OS/2 license agreements. In fact, IBM promotes the fact that its "Workplace Shell" user interface is highly customizable. IBM allows PC suppliers (and end users) to change the OS/2 user experience in a variety of ways, including by adding logos to the initial screens, customizing the user desktop and rearranging, adding or deleting the programs in the initial screens or folders. In fact, a PC supplier could override the entire desktop in favor of a customized desktop or could set an application to start automatically when the machine is turned on. The desktop may also be modified for specific actions, such as changes to what happens when the user clicks on a particular icon. These characteristics of OS/2 allow our customers to select and customize the OS/2 end user experience so that it will be most productive for the particular users. For instance, OS/2 systems for bank tellers or insurance adjusters can be set up to automatically start an application with a custom interface covering the user's daily activities without presenting the general OS/2 Workplace screen. PC suppliers may replace the standard OS/2 background with their own logo or with the logo of a particular customer. Even the image which is displayed during the start up process is customizable. For PC suppliers, this flexibility allows differentiation for particular customer sets and permits the supplier to create a more unique look to the system with individualized logos and shells. I am aware that a number of our customers have in fact made such alterations.

32.   IBM's licensing practices and the technical features of OS/2 have facilitated such changes. In my opinion, if an operating system supplier imposed restrictions such as those described above, the operating system supplier would limit customer choice and innovation by PC suppliers.

15

On the other hand, I do not believe IBM or OS/2 has been negatively affected by our not imposing those restrictions. For instance, I am not aware of any confusion on the part of users of OS/2 as a result of variations in the user experience caused by changes made by PC suppliers, and I have seen no erosion of OS/2's goodwill because of changes such as I have described.

33. Preventing PC suppliers from modifying the start up sequence means the operating system supplier, not the company that sold the user the PC, controls the initial user experience with the computer. Preventing PC suppliers from starting applications during the start up sequence or deleting applications (and the icons associated with them) the operating system supplier provides with the operating system gives the operating system supplier the opportunity to ensure that its applications will be prominently displayed on the desktop of everyone using its operating system, on the first use of the machine.

34. As a result of the restrictions described above, Microsoft could ensure that its applications are always included on the Windows' desktop screen and have favorable treatment in this critical space compared to other applications. Given the almost ubiquitous distribution of Windows, Microsoft's restrictions would ensure the broad distribution--and prominent featuring--of whatever software Microsoft chooses to advantage on virtually every new PC shipped.