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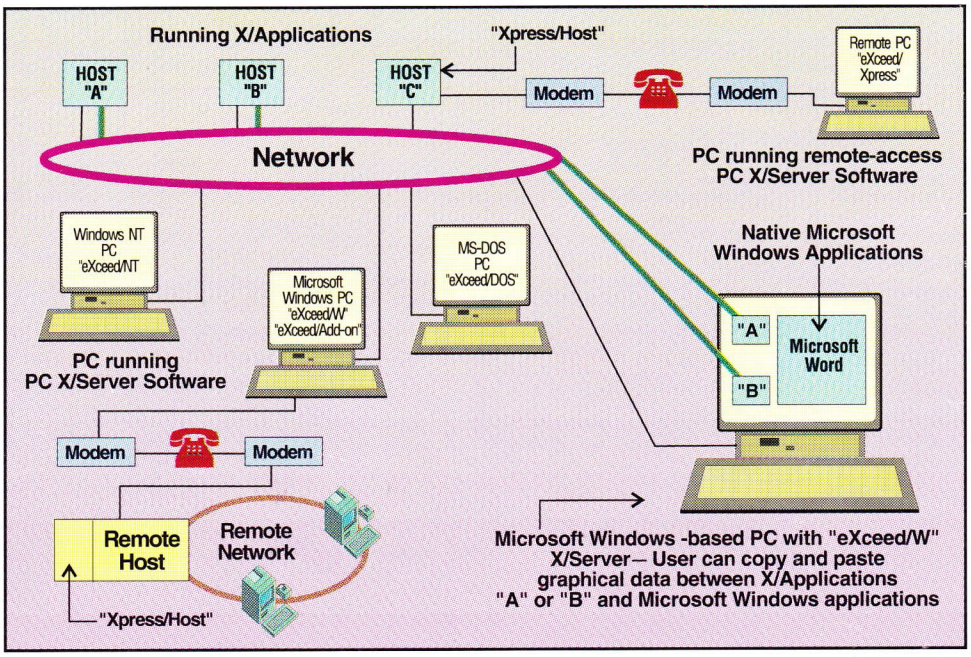
FEATURE

Microsoft Windows and X: partners on the desktop

Lorraine Neal

With today's emphasis on open and distributed computing, the more than 60-million-strong PC users around the world are demanding the ability to tap the enterprise platform. Chances are that platform employs the X/Windows System, a graphics-oriented network windowing protocol that most people associate with Unix. To facilitate the integration of PCs into such networks, the PC X/Server has emerged as the most popular product to do the job.



In this network configuration, the hosts are running X/Applications and the PCs are running PC X/Server software.

There's something enticing about a relatively inexpensive product that gives average PC users access to important graphical resources, while leaving the advantages of personal and group computing intact.

The PC X/Server, a software product that allows networked access to X/Windows System applications from a PC, is fast becoming one of the hottest advents in the Windows world, with market growth topping 200 per cent per year since 1991. PC X/Servers give PC users full access to graphics applications running under Unix or other platforms across the network.

PC X/Servers allow PC users to take their position in the corporate playing field of the '90s. As companies downsize, they must disseminate major applications and databases residing on Unix X/Systems into sales, marketing, administration, R&D and production.

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The graphical interface provided by X ensures an easy transition when diverse systems and applications are brought to the end user. While avoiding the costs and learning curve associated with converting to a Unix operating system, X is now available to mainstream users on their favourite computing platform — PCs running Microsoft Corp.'s Windows.

PC X/Servers for Microsoft Windows platforms accounted for about 70 per cent of all PC X/Server shipments in 1992. Unit shipments of PC X/Servers increased from 58,000 in 1991 to more than 184,000 in 1992, and for the first half of 1993 the total licences shipped reached nearly 120,000, according to The X Business Group, a research and consulting body focused on distributed computing and the X/Windows System.

The X Business Group projects that, for 1993, 94 per cent of PC X/Servers shipped will be for the Microsoft Windows platform alone, and predicts the total number shipped in 1995 will reach about 1.7 million.

Converting a PC to an X/device protects the PC Microsoft Windows investment and provides a corporation with the power

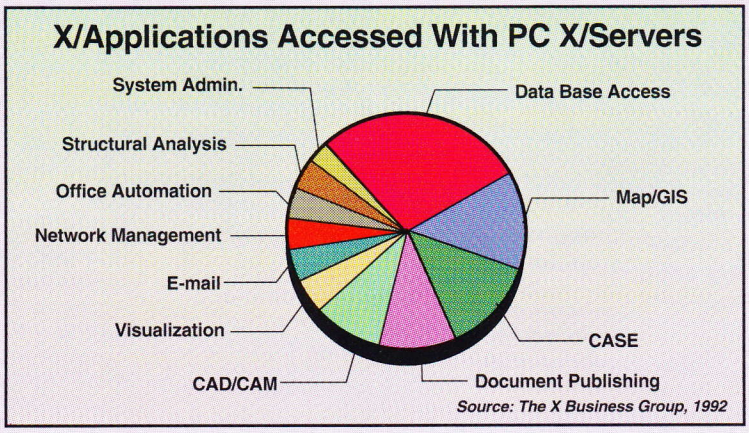
X/Windows functionality more than Unix alone

The X/Windows System is an open standard developed by the Massachusetts Institute of Technology and Stanford University and maintained by the X Consortium, which provides the source code. It is a basic, low-level windowing, network and graphics protocol, unlike Microsoft Windows, which is a complete graphical user environment.

The layered architecture of the X/Windows System means that the windowing protocol is hardware independent. Because it was initially developed for the Unix multitasking operating system, X/Windows is commonly associated with Unix.

In fact, X/Windows applications may run on any computing platform across almost any link. The most common hardware is found in the workstation category from companies such as Sun Microsystems Inc., Hewlett-Packard Co., IBM Corp. and Digital Equipment Corp.

X has two components: the X/Server which controls the keyboard, mouse and monitor, and the X/Clients, which are applications that use the X/Windows protocol. Although the server and client can run on the same piece of hardware (a stand-alone workstation), the beauty of X is that the clients (or applications) displayed by the server can run on several hosts across the network.



X does not come with a preset user interface, as does Microsoft Windows. With X/Windows, the look and feel of your display is governed by the window manager, which runs as a separate application. The user can select a window manager of choice, such as Open Look, Motif, and uwm, which control the behaviour of windows on the server, such as how they are sized and moved.

The Xt toolkit (referred to as Xt intrinsics) provides widgets such as text tables, buttons, menus, scroll bars, and containers.

The X/Windows protocol allows applications to be graphics-based, pixel-map-oriented. It permits multiple applications from multiple network hosts to run and coexist in separate windows on a single video monitor. Since X/Windows permits users to run multiple applications simultaneously using a common windowing interface, the network appears as one complete computer system to the user.

X has gained in popularity because of its ability to allow a variety of computing platforms to be linked together into one seemingly homogenous network.

Today's emphasis on network computing, connectivity, and open systems has X showing up everywhere, as commercial users strive to connect an assortment of machines and operating systems suitable for different tasks: PCs, Unix, VMS, mainframe systems, etc.

and flexibility effected by X. It's this coexistence of otherwise foreign computing environments that's playing seductress to network and MIS managers.

"Our [Microsoft Windows]-based PC X/Server software gives me the option to switch between different tasks, simply and seamlessly," says Karl Klebenow, systems analyst at Stock Equipment Co. in Chagrin Falls, Ohio.

Stock Equipment was looking for a means of electronically viewing and editing Unix-based CAD engineering drawings on the shop floor. PCs running Windows and PC X/Server software not only provided the most user-friendly and economical alternative, it generated a new environment where X/Windows-based engineering applications could live and function right alongside Windows produc-tivity applications.

In fact, the 100 per cent Windows implementation made the con-version process a cinch for Klebenow and his users.

The explosion over the past few years in Microsoft Windows sales (some reports peg it at one million copies shipping each month) tells the obvious story: Microsoft Windows is serving up a platter of features the PC community wants and needs.

By popularizing the concept of GUIs and windowing environments, Windows showed the corporate world that, by presenting users with a similar interface across diverse applications, learning new programs becomes friendly and intuitive.

Building on the momentum created by Microsoft Windows, PC X/Server software takes the concept a step further; the user can run Microsoft Windows applications, DOS applications and X/Unix applications on the same screen, and can copy and paste both text and graphics between them using Windows procedures with which they are already accustomed.

The other way to give users access to X, short of purchasing a workstation, is to install X/Terminals. Apart from the danger of obsolescence (by design, they are single-purpose machines), X/Terminals do not offer the interoperation across environments that PC X/Servers do.

The first X/Servers appeared in 1989 and were designed to be implemented on DOS. Over the past few years, X/Servers for Microsoft Windows have gained in popularity for the following reasons:

1) PC X/Servers for Microsoft Windows platforms are riding on the crest of Microsoft Windows's popularity.
2) Microsoft Windows-based PC X/Servers have demonstrated their superiority as an environment integration tool.
3) Developers of PC X/Servers can easily keep their products up to date because of Microsoft Windows's virtual device drivers.

"One of the most obvious benefits of using Microsoft Windows," claims Mary Powell of the U.S. Geographical Survey, in an article from Information Systems Division's *Developments* newsletter, "is the convenience of running multiple applications from one environment. By combining the capabilities of X/Windows and Microsoft Windows, users can access multiple platforms and systems with the appli-cations available on them while simultaneously running their DOS applications from within [Microsoft Windows]."

> It is becoming more important than ever to give PC users access to X
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PC X/Servers provide the protocol to communicate with X/Clients on the host, I/O functions to handle the screen, keyboard and mouse, plus hundreds of PC-resident X/Fonts. By optimizing the Windows toolkit and virtual device drivers, Windows-based PC X/Servers offer users and application developers significant advantages over their DOS counterparts.

The Windows toolkit allows developers to create a product that has the same look and feel as other applications, without worrying about how the user will interact with the PC X/Server. Plus the X/Server is written for the Windows virtual drivers, making installation simple and eliminating the need for product-specific network and video devices.

As a bonus, full use and control of the Windows's clipboard to cut and paste between applications is provided to the users, who can easily facilitate the movement of information from Unix to X/Windows-based applications to other DOS applications.

"One of the greatest benefits," states Les Farkas, a computer engineer at NASA's Lewis Research Center in Cleveland, Ohio, "is the ability to cut and paste graphics data from X/Windows into [Microsoft Windows], with the graphics then being incorporated into reports."

With an installed base of some 5,000 PCs, the Lewis Research Center needed the ability to access X/Windows System applications from the PC desktop.

Continued Farkas: "Our enter-prise computing environment has a wide variety of X/Windows applications available on centralized systems and distributed hosts [including Digital Equipment Corp. VAXclusters, IBM Corp. and Amdahl Corp. mainframes, plus DEC, Hewlett-Packard Co., Silicon Graphics Inc., Sun Microsystems Inc., IBM and Concurrent work-stations].... The PC X/Server software satisfies a variety of PC-X requirements for both scientific and administrative applications."

Much of the tremendous growth in PC X/Server sales over the past few years is explained by the emerging use of X for non-technical applications. In the past, workstation applications were mostly of a scientific or engineering nature, but in recent years business applications such as Framemaker, Asterix, WordPerfect, and Interleaf, just to name a few, are becom-ing prominent. Popular X/Applications include databases, spreadsheets, CASE, Geographical Information Systems, CAD/CAM, and process control.

It is becoming more important than ever to give PC users access to X. As little as two years ago, the customer support people at Hummingbird Communications Ltd. of Markham, Ont., (which developed and markets the eXceed PC X software family) noted that the majority of callers were Unix knowledge-able. Now, a caller is more likely to have a PC back-ground and not know anything

about Unix, or even X.

This is due in most part to the newer market populated by PC X/Server products — Microsoft Windows PCs. It also signifies that X has left the dungeons of the laboratories and R&D shops and entered the mainstream business environment.

An example of this new generation of X/Windows applications is a state-of-the-art application that automatically scans and reads resumes. In fact, the applica-tion helped Santa Clara, Calif.-based Resumix Inc. become a California success story.

Used by the Clinton administration to help process thousands of candidates' resumes ("reading" one resume in three seconds), the system feeds resumes onto a multi-user Sun workstation and allows a network of PC users access to the documents from the comfort of their familiar Microsoft Windows interface.

Today's PC-X connectivity software offers a wide selection for the Windows palate. It's no longer just a matter of X/Terminal emulation; some PC X/Servers let you choose how you want your X/Server to function, allow you to develop and run X/Clients on your home PC, and permit communications with host computers at excellent performance levels over standard telephone lines.

Over the past few years, most major industry trade publications have evaluated PC X/Servers in their product testing labs. As a reliable, objective source of reference, these reviews can help you select the right product for your environment.

Obviously, the best policy is to test the product within the dynamics of your own personal computing environment. The more important aspects to look for in PC X/Server software are:

1) robust and stable product;
2) 100 per cent Microsoft Windows-based;
3) compatibility with existing computing environment;
4) performance;
5) full support for latest release of X/Windows System (currently X11R5);
6) single and multiple Window modes, local or remote Window Manager capabilities;
7) cut and paste of both text and graphics;
8) font server, scalable fonts, font management database;
9) multiple start-up modes;
10) support for popular TCP/IP transports.

Innovative developments in the PC X/Server market have brought new capabilities to the user community. For example, an X/Development Kit (XDK) is included as part of Hummingbird's eXceed/W.

The XDK is attractive to programmers who can develop and test an X/Client before compiling it on the host, to universities that can teach X/Windows on PCs (rather than on scarce and expensive X/Terminals and workstations), to companies that need to reduce network traffic from developers, and to anyone who wants to develop X clients at home.

Without learning X and without substantial investment, any Microsoft Windows PC user who needs access to X/Windows clients can have it. At the click of the user's mouse, PC X/Servers bring the Unix and X/Applications that businesses depend on to the PC desktop.

Lorraine Neal is marketing and public relations officer at Hummingbird Communications Ltd., headquartered in Markham, Ont., and has contributed application stories and articles to various publications within the computer technology arena in Canada and the United States. Hummingbird Communications is a public company specializing in PC X connectivity software solutions.

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