The New SoftPC

Bob Lawton

NeXT has worked closely with Insignia Solutions to bring a high-quality, high-performance emulation application to NEXTSTEP for Intel Processors.

You may have read about it in the press. . .now check   it out for yourself in NEXTSTEP Release 3.2. By running all your Windows applications inside a NEXTSTEP window, you can have the best of both worlds, in one seamlessly integrated environment!

Overview

In the 1990s, a major shift is occurring as corporations move from mainframes to client/server networks. Factors responsible for this evolution include the economics of low-cost MIPS on workstations and PCs, high-speed networking, the arrival of advanced 32-bit operating systems like NEXTSTEP, and a new generation of client/server applications.

The problem: Incompatibility

Even as the technology evolves, 90 percent of personal productivity applications, including spreadsheets, desktop publishing programs, and word processors, run on DOS or Windows. Abandoning these applications and the PC infrastructure that supports them would be costly and time-consuming.

What's needed is a bridge between the two environments. Such a bridge must allow users on workstations and PCs to access data created on DOS and Windows and to run their legacy applications. Companies depend on the PC infrastructure, with its many applications, vendors, and industry-wide standards. They need to preserve the investment they've made in their DOS and Windows environments.

The solution: Emulation

EmulationÐthe ability to make one computer behave like anotherÐis the bridge. SoftPC from Insignia Solutions provides an emulation bridge by bringing DOS and Windows compatibility to NEXTSTEP. SoftPC provides 100 percent DOS and Windows software compatibility. In effect, SoftPC creates a virtual PC within NEXTSTEP.

In a window or full screen

SoftPC for NEXTSTEP for Intel Processors can run in two modes: Window and full screen.

In window mode, SoftPC runs in a window within the regular NEXTSTEP workspace, so that DOS or Windows applications run side by side with NEXTSTEP applications.

In full screen mode, SoftPC takes over the whole screen, so the computer looks as if it's running DOS or Windows. However, NEXTSTEP applications continue to run in the background, and you can flip back to window mode anytime you want to use a NEXTSTEP application. Full screen mode provides near native performance of DOS and Windows applications.

Cutting and pasting

In window mode you can cut and paste text between NEXTSTEP and Windows applications, just as you do between NEXTSTEP applications. You can even copy graphics from Windows to NEXTSTEP, but not from NEXTSTEP to Windows. (Some display drivers may not support cutting and pasting.)

Note: Full screen mode currently doesn't support cutting and pasting between Windows or DOS and NEXTSTEP applications.

Compatibility with existing applications

SoftPC supports all real and standard mode DOS and Windows DPMI (DOS Protected Mode Interface) compliant applicationsÐmost DOS and Windows applications run in real or standard mode, or are DPMI compliant.

The current version of SoftPC doesn't run Windows in enhanced mode, so applications that require either enhanced mode or complete hardware controlÐfor example, other operating systems like OS/2® and Windows NT™Ðaren't currently supported.

Insignia's extensive testing program ensures compatibility with the latest versions of the most popular DOS and Windows applications.

SoftPC also includes networking support through SoftNode, which supports Novell NetWare® (SPX/IPX) and Novell LAN Workplace® (TCP/IP).

Running applications

You can launch DOS applications directly from the NEXTSTEP workspaceÐSoftPC automatically starts up and runs whatever DOS application you double-click. You can run additional DOS applications at the same time by running additional copies of SoftPC.

To run Microsoft Windows applications, you launch SoftPC from the NEXTSTEP workspace, and then start up Windows in either window mode or full screen modeÐyou can set a default mode in **AUTOEXEC.BAT** . Once Windows is running, you launch Windows applications from the Windows File Manager or Program Manager as usual.

Because SoftPC supports the complete Microsoft Windows 3.1 environment, you can run as many Windows applications as you want within a single SoftPC session.

Performance

SoftPC takes advantage of the native Intel processor to maximize performance. Unlike SoftPC for NeXT computers, the Intel version doesn't emulate a CPU; instead, applications interact directly with the hardware. As a result, many DOS and Windows applications perform as well under NEXTSTEP as they would on a high-end 80386 or low-end i486 computer.

Insignia has worked with NeXT to increase not only raw CPU performance but also graphics performance. For example in window mode, SoftPC uses a NeXT-developed technology to improve the performance of applications. This technology allows SoftPC to access the graphics display frame buffer directly for highest performance.

Even better, in full screen mode SoftPC directly accesses the built-in VGA graphics hardware. This allows applications to run with nearly the same performance as on a regular Windows or DOS system.

Future directions

SoftPC provides the equivalent of a PC/AT running in the NEXTSTEP environment. Insignia and NeXT have optimized SoftPC to provide the best PC emulation possible. Currently, NeXT and Insignia are exploring ways to further accelerate applications running under NEXTSTEP. n

Bob Lawton is Program Manager of NEXTSTEP for Intel Processors. He can be reached by e-mail at **Bob_Lawton@next.com**. *Thanks to Insignia Solutions for providing information for this article. You can contact Insignia at 1-800-848-7677 (outside the U.S., +1-415-694-7600).*

Feature Summary for Insignia's SoftPC Solution

Feature	Support
Real mode	Supported
Protected mode	Supported-DPMI compliant only
Math co-processor	Supported
Expanded memory	0 to 32 MB
Extended memory	1 to 16 MB
DDE and OLE	Supported between Windows applications within a SoftPC Windows session
Floppy disk drives	1.44 MB and 720 KB 3.5" floppies
Hard disk drives	C: and D: via container files, with a single NEXTSTEP file for the entire DOS drive; local DOS partition supported as D drive
FSA drives	E: through Z: host file system access (NEXTSTEP file system)
Video in a window	VGA text mode only; CGA text and CGA graphics supported

Full screen mode	VGA text and VGA graphics supported; Windows supported at VGA resolution; not supported on all systems
Printing	Full support through UNIX lpr; supports PostScript, printers and includes HP, LaserJet, emulation
Parallel ports	LPT1 and LPT2 SoftPC output supported; direct access to parallel ports not yet supported
Serial ports	COM1 and COM2 direct access to serial ports supported
Keyboard	101/102-key AT-style keyboard; US, UK, French, and German keyboards supported
Mouse	Microsoft Bus Mouse compatible; DOS mouse and Windows mouse supported
MS-DOS	Includes Version 5.0
Microsoft Windows	Includes an optimized Insignia version of Windows 3.1, standard mode only; supports Windows in a NEXTSTEP window and full screen mode
Network	Novell NetWare IPX and Novell LAN Workplace DOS TCP/IP
PC CD-ROMs	MSCDEX shipped with SoftPC, supported for data only (audio playback through NEXTSTEP)
NEXTSTEP Display Modes	Supports 2-bit grayscale and 16-bit color
Sound	Limited support
On-line help	Supported