WHAT'S NEW IN NOTEBOOKS

MOBILE PC OFFERINGS KEEP EXPANDING: FROM CPUs AND CELLULAR TO GREEN AND SMALL.

As employees work increasingly away from their desks and out of their offices, the demands for mobile computing capability get higher. There is a demand for more power, more flexibility and more runtime. »»»

Leading vendors like HP, Lenovo, Acer, Apple, Panasonic, Samsung, Sony and Toshiba are responding. They are offering notebooks and smaller computing devices that meet these needs — doing more while using fewer resources.

New notebook trends include:

- Intel's next generation of chips for notebooks
- Mobile-oriented features in Windows Vista and XP
- Embedding wide-area broadband capabilities
- "Ultra-light" notebooks, Ultra-Mobile PCs (UMPCs) and other mobile devices
- "Green" notebook-related initiatives by vendors in manufacturing, use and post-use stages.

» MORE PROCESSING POWER

For notebooks, the continued improvement in CPUs — the "brains" of the system — means doing more work faster. It also means using less energy (and not costing more than their predecessors).

Penryn-based processors represent Intel's newest CPU family for notebooks, desktops and servers. In 2008, HP, Lenovo, and Apple, as well as Acer, Panasonic, Sony, Toshiba and other vendors will be offering the first notebooks featuring Penryn-based Core 2 Duo processors.

Intel's Penryn-based processors are unique in several ways, according to Karen Regis, marketing manager in Intel Corporation's Mobile Platforms Group. "Penryn is the industry's first chip made with Intel's 45-nanometer (nm) process technologies."

Penryn processors offer nearly twice the density of Intel's 65nm approach. That means more than 400 million transistors for dual-core processors and more than 800 million for quad-core, providing faster processing and less energy use.

The Penryn-based Core 2 Duo is also the world's first processor to use Intel's new Hafnium-based high-k metal gate silicon technology for its transistors. It allows faster processing than the silicon dioxide used previously. It also adds to energy efficiency.

"For notebook users who 'live' in spreadsheets and usually have five applications open at the same time, more computing power that uses less battery power is always a good thing," states John Jacobs, director of notebook market research at DisplaySearch, a market research and consulting firm.

Other features in Penryn-based chips include Intel HD Boost, which can provide up to 50 percent more speed for high-definition multimedia applications. "Penryn will speed up media applications like manipulating photos, encoding videos and viewing HD DVD and Blu-ray Discs," adds Intel's Regis.

» VISTA VERSUS XP

Although the Microsoft Windows Vista operating system (OS) has been available since January 2007, many enterprises continue to run Windows XP or even older versions of Windows on existing systems.

"Vertical markets, for example insurance and healthcare, where we sell a lot of tablet PCs and pen-enabled form factors, haven't yet made the leap from XP to Vista," comments Paul Moore, senior director of mobile product marketing, Fujitsu Computer Systems. "They're ingrained with the Tablet PC edition of XP."

To let IT buy new notebooks without changing its OS environment, Microsoft has extended the availability of XP Professional in several ways. For specific versions of Windows, Microsoft includes "downgrade rights."

For example, according to Microsoft, "The OEM versions of Windows Vista Business and Windows Vista Ultimate include downgrade rights to Windows XP Professional, Windows XP Professional x64 Edition and Windows XP Tablet PC Edition."

According to Microsoft: "End users who downgrade may reinstall the original software when they are ready to migrate."

"There are many things in Windows Vista that make the computer easier to use and more productive," states Debra Kobs-Fortner, director of software strategy, Lenovo. "However, Lenovo will continue to offer Windows XP as long as Microsoft's policies allow it and the customers request it."

"We see the majority of our notebooks sold with XP Pro," says Jean Zhu, product marketing manager for notebooks at Acer. "And moving forward, we see the demand for XP Pro will last a lot longer than the end-of-June 2008 timeframe that Microsoft has imposed."

But, new features in Vista, combined with Microsoft's announcements that it will phase out XP on new machines, are causing IT to look more closely at the newer OS.

Vista has many mobile-oriented features, including features for tablet PCs and UMPCs, along with user interface, multimedia, security and other features of value to notebook and desktop computer users alike.

"There are hundreds of things in Windows Vista that make the computer easier to use and more productive," comments Howard Locker, director of new technology, Office of the CTO, at Lenovo.

A notebook's processor also impacts operating system choice, says Kyp Walls, director of product management, Panasonic Computer Solutions. "Although XP will be supported on Intel's Penryn-based chips, Vista has some capabilities that will be optimized," he says. "And upcoming versions of Penryn will have some functions, like drivers, that are only supported in Vista.

"The expectation is that most people will start with XP," Walls adds. "They will then switch over when the company is ready to move to Vista."

Vista also offers compelling features for UMPCs, notes Bret Berg, senior product marketing manager, Mobile Computing, Samsung Electronics.

ULTRA-LIGHT NOTEBOOKS

Mobile employees may want the computing and networking capabilities of a standard desktop operating system. Yet, where tasks permit, they would like a unit without the size and weight of a desktop-replacement-class notebook.

"Ultra-light" notebooks — notebooks in the 2- to 4-pound range — are finding growing popularity with travelers. For example, Apple's new MacBook Air weighs only 3 pounds and is only three-quarters of an inch thick, while featuring a 13.3-inch widescreen LCD and full-sized keyboard.

Toshiba's Portege R500 notebook series squeeze a 12.1-inch screen into a 1.72-pound unit. Lenovo's new ThinkPad X300 has a 13.3-inch screen and starts at under 3 pounds.

"The most recent version of Vista has the latest version of Microsoft's Origami touchscreen software," he says. "It has advanced touchscreen capabilities like a better user interface, better handwriting recognition and a better touchscreen for multimedia applications."

» BROADBAND ON BOARD

For wireless broadband access outside the office, one growing solution is broadband cellular from nationwide service providers. "If you can get a data signal on your telephone, you can get data on your device," points out Jeffrey Shomper, senior product manager, Mobile Broadband, AT&T Wireless.

"You get a full signal for live e-mail and web access," Shomper says. "And you don't have to pay another fee at each location or Wi-FI provider. The service plan is good for everywhere the provider has a signal."

The fastest growth in the use of wide-area wireless broadband is by users with "embedded" capability. These are notebooks with wide-area wireless capabilities incorporated into the device, needing only activation of a service agreement.

Several reasons make mobile broadband increasingly attractive, says Shomper. "The decreasing cost of the components makes it more affordable to include in notebooks.

"New chips, like Qualcomm's Gobi, will make it possible for users to select, and change among, the different wireless technologies currently offered by carriers without having to change internal modules or external adapters. And AT&T's HSUPA [High-Speed Uplink Packet Access] technology will offer higher upload speeds."

Notebook and UMPC vendors, including HP, Lenovo, Panasonic and Sony, offer "embedded" wide-area broadband capability.

For devices that don't have embedded wireless, other options are available. These include using a WWAN PCMCIA card, ExpressCard or USB adapter, or buying a cell phone data plan and "tethering" to the notebook by USB or Bluetooth.

From an IT point of view, the embedded approach to wide-area broadband has compelling benefits.

"Embedded is nice because it's far more reliable," says Panasonic's Walls. You can't lose the card or adapter. And it's much less likely to be damaged, because it's built in."

Wide-area broadband options include broadband cellular data service from AT&T, Sprint and Verizon. All three offer monthly service contracts. Verizon also has a day-rate plan and growing deployment of Worldwide Interoperability for Microwave Access (WiMAX)-based services.

» ULTRA-MOBILE PCS

For mobile users who don't need a full-sized screen and don't want a device even as large as ultra-light notebooks, "netbooks" and UMPCs offer an increasingly popular alternative. UMPCs typically weigh between one to three pounds. They have screens anywhere from 5 to 9 or 10 inches and have a smaller keyboard.

UMPCs' smaller size makes them ideal for "secondary PCs" to do e-mail and web access. They are ideal for people who travel frequently but don't want to take their 5-pound notebook with them. For users who don't need as much capability, lower-priced UMPCs offer the convenience of affordability.

"Unlike Personal Digital Assistants (PDAs) or smartphones, these devices have full Windows functionality," points out Leslie Fiering, research vice president, Gartner Inc. "If your company uses enterprise applications like SAP or Oracle, you don't have to rewrite or recompile anything.

"They're excellent for vertical and task-specific applications where the user isn't spending time at the desktop, and doesn't require a full-sized screen," Fiering says. "An example might be a food inspector that needs manuals, checklists and notifications."

"The Fujitsu LifeBook U810 UMPC is doing very well in healthcare and other verticals," reports Fujitsu's Moore.

"We're focused on solving needs in the commercial channel, mostly vertical markets like sales-force automation, healthcare, education, that traditional notebooks and slate tablets, PDAs or other handhelds can't handle today," reports Samsung's Berg.

One way some UMPCs improve reliability and battery life is by using RAM instead of hard drives. This is the same type of memory used in USB flash drives for storage of programs and user data.

"There is tremendous enthusiasm in the market for moving to smaller form factors," comments Gartner's Fiering. "But we have to recognize that different screen sizes represent different limitations on what we can do. These products are used by different people in different ways."

» NOTEBOOKS GO GREEN

Notebook vendors are, like most IT vendors and users, working steadily to improve their "green" levels. This is not just for compliance but also for cost-reduction opportunities.

"We're focused on green products," states Lenovo's Locker. "This includes having a smaller carbon footprint; power management when the notebook is running; and how you recycle it.

"A key thing we're working on is using recycled materials on the new notebooks," says Locker. "The best way to reduce the carbon footprint — energy required for production — is to use as much recycled material as possible.

"We can take old plastic that isn't biodegradable and melt it," Locker adds. "That has one-tenth the carbon footprint, or energy requirement, of making new plastic."

Lenovo's new ThinkPad X300 "is our greenest notebook ever," Locker reports. "It uses 35 percent less power than the ThinkPad X series, because of the technologies and components like a Solid-State Hard Drive (SSHD) instead of a regular disk."

The unit also features a low-voltage processor. And instead of the Cold-Cathode Fluorescent Lamp (CCFL) in the display, it has a Light Emitting Diode (LED), which is mercury and arsenic free.

HP has also been an industry leader in recycling and other green aspects of notebook computing. "We made RoHS [Restriction of Hazardous Substances] compliance a world-wide initiative long ago." says Robert Baker, manager for business notebook product marketing at HP.

"We're about six to 12 months ahead of the mandate," Baker adds. "And we're moving to get the Silver certification with EPEAT, the Electronic Product Environmental Assessment Tool," used to assist in the purchase of green computing systems.

Toshiba requires its laptop and consumer electronics (TVs, DVD players and HD DVD players) component suppliers meet RoHS requirements. And the vendor verifies its suppliers' commitment to meeting those requirements by conducting component sampling inspections during the product design approval process.

In March 2008, Toshiba was recognized by Greenpeace International as one of the greenest technology manufacturers in its quarterly "Guide to Greener Electronics."

Intel has been implementing numerous energy and resource-reducing changes into its products and manufacturing processes as well. For example, the company's new 45nm technology, found in its Penryn-based chips, is 100 percent lead-free. Intel is also planning a halogen-free packaging technology for its 45nm processor and 65nm chipset products in 2008.

On its Toughbooks, Panasonic's Economy Mode (ECO), which doesn't charge the batteries completely, stretches the lifetime of the LiOn rechargeable batteries from the typical 12-to-14 months, to closer to 18-to-22 months, reports Panasonic's Walls.

"You still get very good battery life," he says. "And our customers have fewer batteries to recycle and replace. ◊
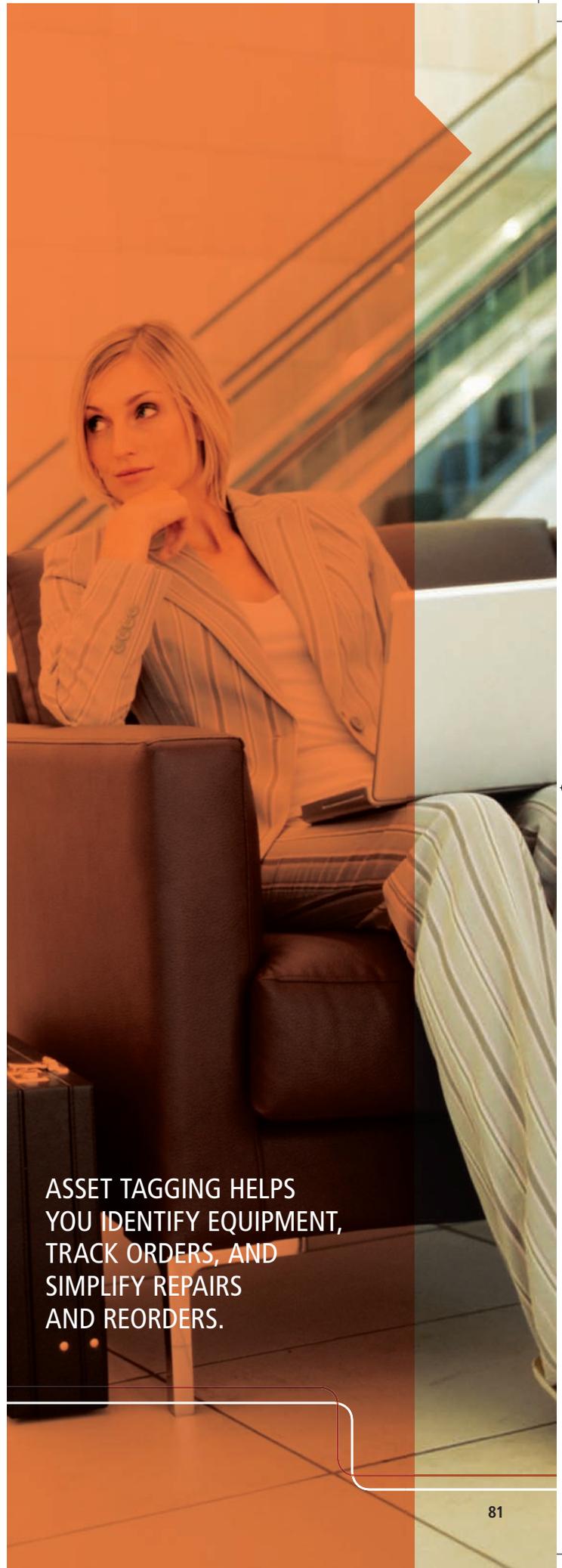
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