Information Appliances Inching Along

Despite Lack of Dramatic Shifts, Major Changes Are Under Way

It has been about two years since the buzz began about information appliances and the post-PC era. In some ways, little progress has been made: PCs remain, overwhelmingly, the tool of choice for information access and processing. But the pace of introductions is accelerating, and I still believe that, in the long run, appliances will be very important.

The name "post-PC era" has a nice punch, but it clearly is an overstatement. PCs aren't going away, at least not within any meaningful planning horizon. But they are being joined by increasingly diverse devices; a more accurate name is the "post-PC-centric era." In many cases, information appliances will be used along with PCs, but they still represent a threat to PC growth. Information appliances will often reside on networks along with PCs, providing functions that would have been performed by another PC were it not for the existence of such appliances.

Surprisingly, Intel has itself launched print server, email server, and file server appliances. These products are designed to make PC networks easier to configure and more effective; they are, in a sense, just tools to promote the proliferation of PCs. Since they are built using PC hardware components, they still use Intel's core products. But they are appliances; it is notable that Intel's specifications for them don't even mention what processor is inside.

Such products nevertheless represent a potential threat to Intel, however, because they do not need to be built with PC hardware. Cobalt Networks *(www.cobaltnet.com)*, for example, makes Web server appliances that use MIPS processors. These Web servers, which start at under $1,000, run the Linux OS and Apache Web server. What makes them appliances is that the OS and server interfaces are never exposed to the user: Cobalt provides an entirely Web-based configuration interface. The servers have no keyboards or displays. A user simply connects the server to a network, uses a browser to access the configuration screens, and, after filling in a few forms, has an operating server.

WebTV, now owned by Microsoft, is one of the prototypical information appliances. This device has been only modestly successful so far, but it is still early in its life cycle. Ultimately, its capability may be built into most TVs.

I expect the functions of WebTV to be more successful in a different form factor: the wireless Web tablet. Several companies—including Microsoft and Intel—are developing such products, and they will begin reaching consumers this fall. One example is the startup Qubit *(www.qubit.net)*. The company estimates the manufacturing cost to be about $550 and expects retail prices to be $750 to $1,000.

Many people will buy such products for much lower prices, however, by accepting service contracts along with them. In the past few months, several ISPs have begun offering $400 rebates on system purchases, as long as the user signs up for a three-year service contract. This is the same business model that led to the runaway success of cellular phones; most cell-phone purchasers buy phones for less than their manufacturing cost. Qubit expects its tablet to sell for less than $400 when sold with a service contract.

Next-generation game consoles, such as Sony's PlayStation 2000 and Nintendo's Dolphin, will cross the line from simple game machines to entertainment computers. These systems could make a Trojan horse attack on the PC, entering homes by the tens of millions as game machines and then taking on additional functions, such as Web browsing and email. They could also become the heart of a low-end digital photography system; the entire digital photography solution must be appliance-like for mass success.

AOL's announcement that it will introduce a set-top box for PC-less AOL access is another important event. This product presumably will appeal mostly to those consumers who don't have, or want, a PC.

The majority of homes, and virtually all businesses, will continue to have at least one PC for the foreseeable future. But the number of additional PCs they add will be reduced by the emergence of information appliances. When I add a server to my house, it will be an appliance, not a PC. Instead of adding a second PC so we can browse the Web in the living room, I'll use a wireless Web tablet. And we're more likely to play games and DVD movies on a set-top console than on a PC.

A platform as successful as the PC won't be overtaken quickly; transitions will take many years. Consider that even with a growth rate of 100% per year, a product starting off at 100,000 units per year would take 10 years to reach the 100-million-unit level that PCs passed through last year. Thus, even a very successful product may take a decade to reach PC volumes.

It has been said that people tend to overestimate the nature of change in the near term and underestimate its impact in the long term. The shift away from a PC-centric world is likely to be a shining example of this phenomenon. ◇