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C4 Trends



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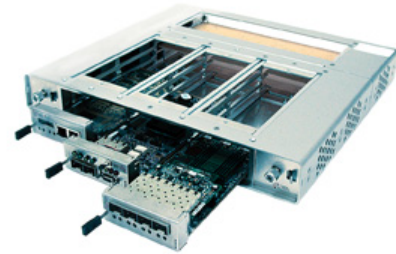
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Coming to a CE Store Near You?

What if your stereo amp, TV tuner, PVR/DVR, DVD and broadband connection could be squeezed into one slim box? We're not talking about rack-mounted products or the pyramid of boxes, wires and power supplies that currently comprise a home entertainment system.

The handwriting is on the wall, and the answer is: standardized CE boards that easily snap into a box with a backplane and are operated through a master control and switch, using a centralized operating system. These modular cards could provide CE, cable, telephony and data networking features-and there would be only one power supply and one universal remote.



Does this sound futuristic? Not really. The groundwork has been laid by the computer industry and more recently by the telecom sector.

Circa 1980, most computers came from IBM (mainframes) or DEC (minicomputers). They used proprietary architectures and enjoyed gross margins on the order of 70 percent. That world ended with the advent of PCs, with Dell working on a gross margin of 18.5 percent. These dramatic changes occurred because critical elements of PC design (power supplies, cards, chassis) were standardized by a standards body called PICMG (PCI Industrial Computer Manufacturers Group-www.picmg.org), backed by the industry. Because of PICMG, you can install one company's PCI cards in another company's chassis, and use a third vendor's power supply.

LEARNING FROM THE PC GENERATION

Having transformed the PC landscape, PICMG has turned its sights on the commercial \$150 billion telecom equipment business that relies heavily on proprietary architectures. We're not just talking about old-line telco switch manufacturers like Lucent selling proprietary equipment-but also the star of the Internet revolution, Cisco. A Cisco router uses proprietary chips, chassis, cards and operating software, and has a 70 percent gross margin making telecom a market ripe for standardization.

These modular cards could provide CE, cable, telephony and data networking features -- and there would be only one power supply and one universal remote.

This is starting to happen. Backed by Ericsson, Motorola, Alcatel, Nortel, Lucent, HP and Sun at the systems level; and Intel and Xilinx in the chip space, PICMG has developed a new telco-grade set of specifications called ATCA (Advanced Telecom Computing Architecture). In ATCA, there is a set of specifications for the chassis, power supply, standard card size, card connectors and operating software.

At this point, every major telecom and IT player is using ATCA for next-generation architectures (with the exception of Cisco). At the systems level, while multiple players are developing products in standard form factors mounted into a standard chassis, companies are differentiating themselves by offering proprietary software and cards, compliant with the standardized PICMG format.

NIMBLE ENOUGH FOR CE?

From a CE standpoint, ATCA is interesting but too industrial strength, because of its size and expensive price tag. But hold on. Computers got smaller and cheaper, and now play a major role in the CE space. Could something similar occur here?

The answer is yes. Eighteen months ago, the leading ATCA backers realized that ATCA's "big iron" approach was too bulky and expensive to be a viable solution for remote applications. So they developed a mini-version of ATCA called MicroTCA that is substantially smaller and cheaper. A typical MicroTCA chassis looks like a DEC minicomputer rather than an IBM 360 mainframe and is several inches high. The standards for MicroTCA are being ratified this spring, and this may be the form factor of choice for cell towers and military applications.



But change doesn't stop there. PICMG also came up with a mini-variant of MicroTCA called PicoTCA (if micro is one-millionth, pico is one-billionth). One example of this smaller PicoTCA chassis was developed by a telecom startup, [CorEdge Networks](#).

While this prototype chassis lacks the cosmetic sleekness of a CE component, it gives a good sense of what can be done. At two-inches high, the size of the chassis is similar to the height of a DVD player, except that it can hold three standardized cards (in ATCA, these are called Advanced Mezzanine Cards, or AMCs). If you want more CE functionality, the system is expandable by stacking more chassis-daisy-chaining three or four. Alternatively, CE vendors might offer different "flavors" of chassis-with six or nine slots, for instance.

The beauty of this approach is that only one power supply is needed, and many of the wires currently used to connect components are eliminated since all the interconnection is done automatically through the common backplane. No more rats' nest! The only external wires would be an AC power cord, a broadband input connection and external connections for speakers and monitors.

If the PicoTCA solution were cost reduced to CE standards, it would work well for a new generation of CE devices:

- Consumers could buy a standardized chassis with a standardized patch-bay for connecting equipment (TV monitors, audio speakers, etc). It could be based on decor

- and look. Imagine a Sony, Panasonic or Apple chassis.
- One could stack additional chassis as needed, even from different brands.
 - The quadruple-play could come in a compact package. What if voice, data, video and wireless became available in one sleek box? Consumers could install multiple cards for different functions. Imagine leading CE companies developing a new generation of products-CD/DVD players; computing; storage; cable TV access/processing; audio processing; LAN connection; and Wi-Fi based on a card form factor. Suppose boards from Cisco/Scientific Atlanta/Linksys, Motorola, NetGear, TiVo, HP, Dell and Intel were offered. Traditional telco companies like Alcatel/Lucent could enter this space, as well.

These cards would work together seamlessly via the backplane and/or via some form of switching card and operating system (o/s) software-accessible by a single universal remote via Bluetooth or infrared. Imagine Microsoft, Apple or a Linux o/s moving into your living room.

While no one is doing this today, there are early indications of movement. Apple's new Mac Mini with its Front Row software is a clear attempt to have the computer and software manage the entire CE suite, although it continues with the one-box/one-power supply paradigm.

With this fresh vision, the blueprint for a new generation of CE products comes into focus. CE companies could start to compete on the basis of chassis, card tasks and faceplate design. Card quality, functionality and product features would heighten the competitive playing field, and the contour and design of monitors and speakers would become even more significant home entertainment system differentiators. Stay tuned! V

By [Susan Schreiner](#)
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