INTEL 820E EXPANDS I/O OPTIONS

By Peter N. Glaskowsky {6/5/00-02}

Intel has introduced a new I/O controller hub, the ICH2, as part of an upgraded version of the 820 chip set. The new 820E uses the same memory-controller hub (MCH) and firmware hub found in the original 820 chip set. Intel is developing a new optional SDRAM memory

translator hub (MTH) that corrects the flaws in the original MTH that forced Intel to recall many 820 motherboards last month. Intel expects the new MTH to become available in the third quarter.

The ICH2 features an ATA100 controller designed to support a new generation of faster ATA hard drives due out this summer. Intel's plans show ATA100 is the final generation of the parallel ATA interface before the company begins the switch to Serial ATA (see *MPR 4/3/00-03*, "USB 2.0, Serial ATA Box Out 1394"), but Serial ATA, which is expected to yield about 150MB/s, is not due out until 2002. We expect to see at least one more generation of parallel-ATA chip sets from Acer, SiS, and VIA next year, probably at 133MB/s.

Other ICH2 enhancements include a dual-channel, four-port USB controller. Each controller channel drives two USB ports, doubling aggregate USB speed to 24Mb/s. Also improved is the ICH2's integrated AC97 audio controller. The ICH2 supports up to six channels of AC97 audio that can be used to present 5.1-channel Dolby Digital material, such as that found on DVD movies, or to generate stereo audio with simultaneous soft-modem operation.

Perhaps the most important feature of the ICH2 is an integrated local-area network connect interface (LCI). With the LCI, the 820E matches a key feature of competing chip sets such as SiS's 630 (see *MPR 5/31/99-msb*, "SiS Defends Turf Against Intel's 810"). The Intel version of this feature

supports multiple types of 1Mb/s home networks over phone lines, power lines, and wireless links, plus 10Mb/s and 100Mb/s Ethernet networks. The LCI is also expected to support 10Mb/s home-networking standards currently under development. Each of these options requires a different physical interface to the network, but all work with a single operating-system device driver, the same driver used with Intel's discrete PCI-bus networking chips. To support the 820E's new networking capability, Intel has specified a new riser card derived from the audio/modem riser (AMR) slot specification. The new specification is known as the communications and networking riser (CNR; see *developer. intel.com/technology/cnr* for more information).

The Intel hub architecture, with a 266MB/s hub link between the MCH and ICH, is clearly superior to conventional chip-set designs that put the south bridge and most I/O on the PCI bus. ATA100 alone exceeds the sustained bandwidth typically available on one PCI-bus segment, leaving nothing for add-in cards and south-bridge I/O interfaces. It should be easy for Intel to upgrade its proprietary hub link to higher speeds to provide enough bandwidth for Serial ATA and other future enhancements. Other chip-set vendors, however, will find it much more difficult to speed up their products.

The 820E chip set is available now for $34.50 in quantity. More information is available online at *developer.intel. com/design/chipsets/820E*. ◇