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Micro Channel Manifesto Champions IBM's New Bus Architecture

The bus war between IBM's Micro Channel architecture (MCA) and the Extended Industry Standard Architecture (EISA) rages on. Both camps are battling for the corporate and consumer minds of the post PC AT world. From the Micro Channel camp comes a new salvo, *The Micro Channel Architecture Handbook,* a spirited manifesto and white paper for the MCA way.

Chet Heath, IBM senior engineer and principal designer of the Micro Channel, and Winn L. Rosch, an accomplished PC journalist, do an exemplary job of explaining and selling MCA. *The Micro Channel Architecture Handbook* is the first cross-sectional look at MCA for a wide audience, ranging from the curious PC user to the PS/2 card designer. Heath and Rosch write in a cogent and energetic style; analogies abound, making difficult topics, such as Direct Memory Access (DMA) channels, interrupts, and bus arbitration understandable.

The first six chapters provide an overview of the philosophical, technical, and electrical design innovations of the Micro Channel. The authors then account for the rationale behind IBM's break from the AT bus architecture. Heath and Rosch spell out the electrical restrictions plus the DMA assignment and interrupt-sharing problems of the AT bus.

Heath and Rosch back up their overview of MCA's advantages. They describe how MCA resolves the PC AT bus's data bottleneck problem with the case of slow printing. Examples of bus mastering or using a DMA channel as a printer port show how MCA takes the load off the microprocessor, allowing expansion boards to work independently of the CPU for improved performance.

The authors then proceed to demystify how the MCA expansion bus works. Important topics given in-depth coverage include Programmable Option Select (POS), an automated setup procedure that eliminates jumpers and DIP switches; level-sensitive interrupts, which allow a single interrupt to be shared by multiple expansion devices; and bus arbitration that removes the microprocessor from the expansion bus. The bus then becomes a self-contained system that accommodates and controls the needs of multiple devices. All this occurs without slowing down the CPU.

The book's use of the PC AT bus architecture as a comparison point to extol MCA's benefits are useful, but don't address MCA's true competition, EISA. Heath, a 20-year IBM veteran, obviously has taken his loyalty vows. We can only hope that Rosch will balance the scales by providing a similar treatment of the EISA bus.—*David Angell/ Brent Heslop* ∎