LSI LOGIC ADOPTS AMBA

By Tom R. Halfhill {4/10/00-04}

LSI Logic has adopted the Advanced Microcontroller Bus Architecture (AMBA) as the standard interconnect for its CoreWare system-on-a-chip (SOC) design services. The decision throws more weight behind AMBA's bid to become the defacto standard for on-chip buses.

AMBA is already supported by more than 25 semiconductor companies. Another recent convert was Analog Devices, which announced at last year's Microprocessor Forum that its new ADSP-219x core will use AMBA (see *MPR 10/25/99-en*, "ADI Adopts AMBA For New DSPs"). LSI will use AMBA to integrate ARM, MIPS, and ZSP cores with on-chip peripherals in its huge CoreWare library. Standardizing on a single bus specification should simplify SOC development for both LSI and its customers.

Although AMBA was originally a proprietary ARM bus, it has evolved into a license- and royalty-free specification that's compatible with other CPU architectures (see *www.arm.com/Pro+Peripherals/AMBA/*). AMBA 2.0, the current version, defines two on-chip buses: the advanced high-performance bus (AHB) and the advanced peripheral bus (APB). AHB is for high-speed or high-priority components, and APB is for lower-speed or infrequently accessed peripherals. The dual-level bus architecture prevents slower components from impairing the performance of faster components.

AMBA supports multiple bus masters and slaves, single-edged clock timing, multiplexed data, burst transfers, split transactions, and bus widths from 32 to 1,024 bits. It also complies with specifications promoted by the Virtual Socket Interface Alliance (VSIA), an industry-standards body.

Left at the altar by LSI's decision is IBM's CoreConnect, a rival specification that's also architecture neutral and license and royalty free (see *MPR 7/12/99-03*, "PowerPC 405GP Has CoreConnect Bus"). LSI also ruled out other buses that aren't architecture neutral, such as Motorola's IP Interface (see *MPR 12/27/99-en*, "Motorola Releases Specs for On-Chip Bus"), and solutions that require proprietary tools or development fees, such as Sonics's SiliconBackPlane and PalmChip's CoreFrame.

In many ways, CoreConnect was the closest match for AMBA. It has similar technical features and has been embraced by more than 20 companies. But LSI says it rejected CoreConnect for two reasons. First, CoreConnect hasn't been adopted by as many customers and semiconductor vendors as AMBA, so LSI's customers that are already using AMBA would have to port their intellectual property to CoreConnect. Second, CoreConnect is owned by IBM, a rival semiconductor company, so LSI perceives it to be less independent.

CoreConnect also has a shorter track record—although IBM has been using the bus architecture for years, the company didn't begin freely licensing it to others until last year. ◇