

## ARC CORES BUILDS IP LIBRARY

*By Tom R. Halfhill {4/10/00-03}*

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ARC Cores has acquired two companies that for the first time allow it to supply intellectual property in the form of peripheral hardware and software to licensees of its configurable CPU cores. The acquisitions move ARC an important step closer to the business

model of a "one-stop shop" for ASIC developers, although the company stops short of offering comprehensive design services.

The two companies acquired by ARC are VAutomation (Nashua, New Hampshire) and Precise Software Technologies (Ottawa, Canada). ARC (based in the U.K.), VAutomation, and Precise are privately held companies and did not disclose the terms of their deals.

VAutomation sells serial-communication controllers, an 8-bit RISC microcontroller core, and some other intellectual property to system-on-a-chip (SOC) developers. The company's communication controllers support such standards as USB, 10/100Mb Ethernet, IEEE-1394 FireWire, CANbus, and HDLC (high-level data link control). ARC says VAutomation will continue selling its products to customers after VAutomation becomes a wholly owned subsidiary of ARC, whether or not those customers use an ARC CPU core in their designs. The primary goal of the acquisition is to make it easier for ARC's customers to design SOCs without having to shop around for frequently used peripheral logic or to design the logic themselves.

Because ARC's CPU cores are highly configurable (see [MPR 5/31/99-04](#), "ARC Expands DSP Capabilities"), the deal creates some interesting possibilities for SOC developers. ARC will add VAutomation's peripheral library to ARChitect, a form-based design tool that allows developers to configure an ARC core by selecting options from drop-down lists and the like. ARChitect will not only permit


developers to choose the peripheral logic they want, but it will also allow them to configure the logic. For example, a developer could change the size of a FIFO buffer in an Ethernet controller with a simple menu selection.

Verilog- or VHDL-savvy developers could go even further by modifying the source code of the CPU core and the peripherals. A developer could integrate the peripheral's registers or buffers with the CPU's register file, thus eliminating a conventional on-chip bus interface. It would also improve throughput, because register access takes only one cycle.

The finished chip will need some software, which is why ARC also acquired Precise. That company sells a TCP/IP stack (already ported to the ARC architecture), various device drivers, a single- and multiprocessor RTOS, a compiler, a debugger, and other embedded tools and utilities. As with VAutomation, Precise will continue selling its products to non-ARC customers after it becomes a wholly owned subsidiary of ARC.

Together, the acquisitions are an important strategic move for ARC. Until now, ARC was primarily a CPU-core supplier, although it did acquire a tools company last year. (That company, Santa Cruz-based MetaWare, makes a compiler and debugger for the ARC architecture.) By adding some peripheral logic and middleware to its product line, ARC will capture some of the revenue that it currently loses to other suppliers.

At the same time, developers that use ARC's CPU cores will find it easier to design and verify their SOCs, because

some of the peripheral hardware and software they need will be available directly from ARC, already ported and verified to work with the cores. This should strengthen ARC's position against such competitors as ARM and MIPS Technologies, whose embedded-CPU architectures are more widely supported by intellectual-property suppliers. 

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