



Newest ARM Development Targeted for the Enterprise Data Center

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Applied Micro Circuits Corporation in Sunnyvale and the UK's Codethink recently [announced](#) a joint effort to accelerate and foster the adoption of an ARMv8-A architecture that is directly targeted at traditional enterprise workloads and the mainframe application base run there.

In this collaboration, [AMC](#) will be supplying its X-Gene chip, a fully integrated ARM 64-bit Server on a Chip that offers a highly integrated mixed signal I/O capability of 40 gigabits per second for Ethernet, Gen 3 SATA, Gen 3 PCIe, USB3 and workload accelerators, as well as a high-performance on-chip fabric supporting eight superscalar cores at up to 2.4 Ghz and an enterprise-class memory subsystem. For its part, [Codethink](#) will contribute a complete big-endian Linux stack with support for multiple languages and runtime environments including C, C++, Fortran, Java and Python. The stack is designed to support a variety of traditional enterprise applications, with full capability for handling big-endian memory access without the need for specialized compilers, offering a wider range of new vendor sourcing options for the class of enterprise workloads traditionally supplied by IBM.

By expressly offering a full software stack for the big endian scheme, this new collaboration is the first clear and targeted attempt to move the ARM architecture into the larger data center sector. Currently, big endian (BE) codes are the sine qua non of large mainframe environments, mainly those that rely on the IBM Power architecture. In contrast, most x86 application codes - the largest and most general class of software - are little endian (LE). Although big and little endian modes represent two arbitrary methods for storing addresses in memory - BE stores the most significant bits first while LE does the opposite - this distinction becomes critical as most applications cannot simply be re-compiled if they are being ported from one endian to the other.

The timing of this announcement could not come at a better time for the ARM community seeking to build its presence in the large data center space that supports applications including HPC in the cloud and high performance data analytics. Since selling off its x86 server business to Lenovo last year, IBM has ramped up its effort to grow its POWER processor beyond its current market space, highlighted by the recent announcement that its forthcoming POWER8 chip would support LE Linux applications written for the x86 architecture applications—a direct challenge at Intel's main business. However as IBM moves to capture share in the x86 sector with an LE-based POWER8, the firm could lose focus on providing support to its BE products, opening the door for new processor and system suppliers that can provide alternatives to POWER-based systems with ARM options and the BE scheme.

The future success of the AMC/Codethink collaboration – and indeed, any others from the ARM community that may follow – will depend heavily on the ability of chips designers to match the computational capability of the POWER chip with the low empower requirements data centers increasingly demand, matched with an effective software stack that provides easy applications porting from the POWER architecture to the ARM alternative.

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