

2009 Power Architecture® Advancement in Technology and Market Share

Thanks to the fast pace of technological innovations there has been an explosion of voice and video applications that allow consumers to stream content not only to their PCs, but also to smart phones, Mobile Internet Devices and gaming consoles.

In support of these applications is multimedia content that has invoked new technologies by which to store content at a personal, business, enterprise, community and governmental level.

The increase in traffic from the latest voice and video applications requires higher bandwidth and higher performance and to this end, multicore SOC architectures are being leveraged to meet the next generation requirements for high performance systems. Optimizing software for multicore devices also means that established software development best practices and tools must be updated.

Another significant technology innovation is virtualization, which presents opportunities to reduce hardware costs and power consumption while enabling new platform-level capabilities.

To overcome the challenges created by new technologies and market trends, a strong and open technology ecosystem is a must. Here is where Power Architecture® technology shines.

At the core of the Power Architecture ecosystem is Power Instruction Set Architecture (ISA), managed as a stable and durable foundation for software compatibility and customer investment protection. As a testament to Power Architecture's time tested flexibility and customization that preserves the binary compatibility of software, Power ISA is the only architecture in the market that has proven implementations from the smallest devices to the largest supercomputers while covering a diverse set of markets including consumer electronics, industrial control, telecommunications and networking, high performance computing, IT and commercial systems, aerospace and defense, high end printers and imaging solutions.

Power.org and its members further advanced Power Architecture technology, completing a number of vital initiatives including Power ISA standards, hypervisor, virtualization and energy management, enabling the highest performing processors and cores for the server and embedded space. Additionally, Power Architecture licensing, SoC, multicore platforms, full system virtualized development, software operating systems, debugging, verification, IP tools, and applications continued to steer substantial advances in home networking, consumer gaming, wireless LTE systems, enterprise switching, routing and storage, printers, and high performance computing.

- Power.org issued a major release of ISA 2.06 that provides key capabilities including virtualization for the embedded space and server market.
- Applied Micro announced its collaboration with TSMC to bring Power Architecture microprocessors to TSMC technology platforms. Such joint efforts aim to produce the world's highest performance Power Architecture processor manufactured in low-cost bulk CMOS technology. Earlier, Applied Micro licensed its high performance SNOW 3G security engine in support of its customers implementing 3GPP LTE (Long Term Evolution) base stations.
- Denali Software announced PureSpec™ verification IP support for IBM's PowerPC processor local bus (PLB)-6, enabling verification of compliance with the latest PLB specification and validation of interoperability between the processor cores and integrated bus controllers.
- EVE the leader in hardware/software co-verification has launched ZeBu-Server, a scalable emulation system capable of handling up to one-billion application specific integrated circuit (ASIC) gates. In addition, the register transfer level (RTL) Market Trends 2009 Report from Gary Smith EDA stated that EVE leads the design team acceleration and emulation market.

- Freescale made a series of announcements related to its solutions based on Power Architecture technology. To help developers shorten development cycles and boost application performance for multicore designs, the company introduced production-ready VortiQa software. The software has been specifically optimized to unleash the industry-leading performance of its Power Architecture based QorIQ and PowerQUICC processors. Additionally, Freescale announced its sampling of the eight-core QorIQ P4080 processor and P4080 design wins spanning the globe across multiple markets. The company also introduced the quad-core QorIQ P4040 for low-power networking applications, the QorIQ P1022 dual-core processor with advanced power management capabilities to support energy-efficient designs for embedded applications, the QorIQ P1012/P1021 products that incorporate QUICC® Engine multiprotocol technology, and the porting of Android on Power Architecture solutions.
- GDA Technologies, Inc. joined the Power.org community, strengthening the Power Architecture roadmap and enabling Power Architecture solutions in growth market areas. GDA announced adding IBM's PowerPC 440T90 to its existing 405S and 460S products using TSMC 90nm process technology optimized for performance, low power dissipation and optimized die size. The Power PC offerings are complemented by a suite of peripheral IPs for easy SOC integration along with our software application IPs for the emerging LTE markets.
- IBM announced its Power 7 server and PowerPC 476 FP core. The news about both the Power7 and PPC476FP demonstrated superior performance with greater energy efficiency than any product offering in the market today, extending the scalability of IBM's Power Architecture solutions in both the server market and embedded applications and providing a growth platform for emerging applications.
- The Department of Energy's National Nuclear Security Administration (NNSA) ordered a supercomputer using Power Architecture technology from IBM that will be able to deliver 20 Petaflops performance by 2012.
- IBM reached a significant milestone as the microprocessor supplier for Nintendo Co., Ltd., by completing the shipment of 50 million processors for the Wii™ game system, which has tremendous worldwide sales momentum. The chip is based on IBM's Power Architecture solutions and features IBM's silicon-on-insulator (SOI) technology.
- LSI Corporation have collaborated with IBM on the design of the PowerPC 476FP embedded processor. LSI designed a configurable level 2 (L2) memory cache for the PowerPC, which helps the PPC476 achieve its leading performance. There are three configurations of L2 (256K, 512K and 1M) to allow customer optimization in a given application.
- Virage Logic Corporation was named an IBM PowerPC Design Center, granting it the rights to license and distribute IBM's PowerPC processor cores and peripheral cores when combined with Virage Logic's broad portfolio of semiconductor IP. The agreement expands IBM's distribution channel and offers customers the convenience of working with a single source to gain access to both the PowerPC technology and Virage Logic's extensive offering of silicon proven semiconductor IP including embedded SRAMS, embedded NVMs, embedded test and repair, logic libraries, memory development software, and interface IP solutions.
- Virtutech defined full systems virtualized development and Simics 4.2 and was selected by NASA Orion to provide a virtual platform. Simics creates a virtual environment in which products can be efficiently Defined, Developed, and Deployed and provides extensive library support for Power Architecture including devices from Applied Micro, IBM, and Freescale's QorIQ™ family.
- XGI Technology is readying a highly capable 2D graphics controller and high definition video decoder called Volari™ G6 which supports H.264 and MPEG-1/2.

Capitalizing on market leadership positions in a number of key markets, Power.org member companies established a strong silicon roadmap, backed by major R&D investments, to address the next generation requirements of high performance systems and applications. On October, President Obama recognized IBM and its Blue Gene family of supercomputers with the National Medal of Technology and Innovation, the country's most prestigious award given to leading innovators for technological achievement underscoring Power Architecture technology's influence on the development of and leadership in high performance computing.