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Marketplace Update

Power Architecture Platform

The intersection of technology and brand evolution

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Power Architecture Platform – The intersection of technology and brand evolution

By Charles King, Pund-IT, Inc.

Vendors do not consider the re-branding of an existing product to be an inconsequential event. Replacing a known quantity with an unknown engenders risks including customer confusion or alienation, but sometimes there is no other alternative. In many cases, re-branding indicates significant changes in a product or its creator. Others follow fundamental shifts in the attitudes or behavior of core customers. But some efforts reflect a desire to ensure that a brand accurately reflects a product's true nature, thus clarifying its evolving position in the market and among customers.

The new Power Architecture initiative qualifies as just such an effort, and a particularly wise one given ongoing developments in the diverse commercial IT and embedded markets. As an industry moves ever closer toward commoditization, how solutions are perceived tends to become increasingly narrow and rigid. That may not be a serious issue for some vendors, but what about those who are actively developing increasingly innovative solutions that require highly flexible and scalable architectures?

Power Architecture technology fits this mold. In a microprocessor industry dominated by vendors focused on monolithic architectures aimed at singular applications or markets, Power Architecture technology offers developers and customers a broader and more holistic approach to solving numerous processing challenges. Power Architecture technology solutions scale, quite literally, from near-invisible embedded applications all the way to the highest reaches of cutting-edge supercomputing.

Who's got the Power? (Almost Everyone)

The Power Architecture technology may not qualify as the be all/end all of the IT industry, but it is energizing a host of existing markets, emerging opportunities, and areas of influence. For example:

- **Embedded Systems –** Companies including Freescale Semiconductor are leveraging Power Architecture technology to create singular embedded solutions for a variety of markets and sectors such as automotive telematics and safety systems, infotainment, networking, and wireless. For Power.org members including Freescale, AMCC, and PA Semi, Power Architecture technology provides a competitive edge for a wide range of embedded solutions.
- **Automotive –** Automotive solutions are part of the embedded market, but also incorporate unique characteristics and capabilities. For example, 8-bit and 16-bit microcontrollers support numerous simple automotive functions. However, engine and transmission management require memory, software, and algorithms for processing data from dozens of sensors. Freescale's Power Architecture-based microcontrollers have the processing capability, on-chip memory, analog capabilities, timing systems, and other features required to handle complex control and diagnostic systems. About half of all 2006 car models have a Power-based Freescale microcontroller under the hood, and the top five automakers all use Freescale solutions. We expect these numbers to increase substantially as braking, suspension, and safety systems become increasingly sophisticated.
- **Game Consoles –** In a few short years, Power Architecture technology has become the de facto standard platform for computer gaming consoles including Microsoft's Xbox 360,

Nintendo's upcoming Wii, and Sony's next-generation Playstation3 (PS3). The highly innovative gaming industry has profited from one Power play after another.

- **Cell BE –** While most people recognize the Power-based Cell Broadband Engine (BE) co-developed by IBM, Sony, and Toshiba as the brains behind Sony's PS3, Cell's DNA reaches markets far beyond consumer entertainment. Mercury Computing is utilizing Cell for applications in the medical imaging, industrial inspection, aerospace and defense, seismic processing, and telecommunications industries. IBM and others aim to tap Cell's capabilities for a range of enterprise IT applications.
- **Servers –** Speaking of servers, Power Architecture technology originally emerged as the basis of IBM's notable RS/6000 server family. Today Power innovation continues to drive numerous IBM enterprise computing solutions including System i, System p, OpenPower, and the JS20 and JS21 BladeCenter offerings.
- **Blue Gene –** Along with being at the heart of commercial IBM systems, Power Architecture technology provides the brains behind the company's world-beating Blue Gene supercomputing solutions and Deep Computing initiative. Blue Gene installations rank first and second in the current Top500.org supercomputing list (and occupy 9 of the top 20 positions). At 280.6 TFlop/s, the BlueGene/L System installed at DOE's Lawrence Livermore National Laboratory is the only supercomputer ever to exceed 100 TFlop/s in performance.
- **Power.org –** Power Architecture technology is also the only microprocessor architecture managed and maintained by an Open Hardware community, Power.org. Established in December 2004 by IBM and fourteen other global community members including Chartered, Cadence, and Sony, Power.org has more than tripled in size since then. In February 2006, Freescale Semiconductor joined Power.org as a Founder member—a key addition to the community's embedded ecosystem. The recent addition of EVE, Oki Data, CodeSourcery, CSIP, and SJTU to the Power.org community reflects the growing influence and worldwide impact of the Power Architecture.

Mission Accomplished?

Given these points, what are we to make of the new Power Architecture initiative?

1. Power has always been a single architecture, but it has pursued two parallel evolutionary instruction set architecture (ISA) tracks; one utilized by IBM for its homegrown enterprise server solutions and the PowerPC ISA managed initially by IBM and Motorola for desktop systems, then by IBM and Freescale for embedded solutions. The Power Architecture Advisory Council's (PAAC's) new Power ISA version merges server and embedded capabilities (including variable length encoding, virtualization, and AltiVec technology) into a single, integrated offering. This should help simplify the lives of ISVs and system developers, and ease the way for the creation of entirely new Power Architecture-based solutions.
2. Linux has long been an element of IBM's Power-based systems, but Power.org's new collaboratively developed PAPR specification aims to join Power Architecture technology and Linux in a host of new applications and industries. This is an ambitious and wise notion. Linux remains the fastest growing operating system in the enterprise server space, demonstrating continuing torrid growth even when the market itself has cooled. But Linux is also becoming a critical differentiator in numerous other sectors, particularly the embedded systems space. The new PAPR specification demonstrates both the forward thinking of Power.org and the tangible benefits that result for members of the community.
3. Branding efforts around the technology have largely been the responsibility of numerous companies who developed commercial offerings based on Power Architecture technology. Not anymore. Some might consider the unified Power brand and logo mere window dressing. We believe it has deeper resonance; formalizing the responsibility of Power.org

community members in communicating the Power Architecture's unique qualities and capabilities, and symbolizing the goals stake holders hope to achieve by leveraging Power Architecture technology across a host of existing and emerging products.

Ultimately, the Power Architecture technology represents far more than an ISA. Power also energizes an expanding ecosystem and developer community embodied in Power.org that enables faster, easier application development. Power Architecture technology cannot fill every IT need, but it supports end solutions ranging from automotive braking systems to networking systems to the world's fastest supercomputers, providing developers and end-users a degree of flexibility unlike any other embedded or computing platform. The new Power Architecture technology brand identity melds more than 15 years of architectural evolution and market-altering solutions with the forward-thinking collaboration embodied by Power.org. That the success of one of the world's most innovative microprocessor platforms rests in the hands of one of the IT industry's most unique global communities seems entirely appropriate.

About Pund-IT, Inc.

Insightful industry analysis and balanced guidance have never been more important for IT vendors and their partners and customers. Pund-IT's emphasis is on understanding product and technology evolution and interpreting the effects these changes will have on business customers and the greater IT marketplace. This report is the result of sponsored research developed by Pund-IT, Inc., which believes its findings are objective and represent the best analysis available at the time of publication.