



Impact Report

Servergy bucks the trend by choosing Power for its new hyper-efficient high-power server

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9 Nov, 2012

The Power Architecture isn't typically regarded as a CPU suitable for energy-efficient servers. But startup Servergy has opted to use a Power-based system on a chip (SoC) as the basis for its new Cleantech Server, in which it combines hyper-efficiency with high performance – two criteria that are typically at opposite ends of the spectrum. Servergy has come up with specially engineered servers using 'brawny' CPUs, but also offering high-density form factors, reduced physical and energy footprints, and high throughput to support enterprise workloads such as Oracle databases. It's taking preorders for 2013.

The 451 Take

Servergy is part of a new movement to redesign blade servers to

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meet new requirements of higher efficiency, density and I/O bandwidth – after all, the first blade servers are coming up to 15 years old now. The startup is applying some of the lessons learned from recent projects to build more efficient, denser servers, but instead of going for the obvious choice of processor cores – the ARM chip – Servergy has opted to work with Freescale Semiconductor on the Power Architecture-based CoreMark SoC, meaning that it will have fewer credibility problems pitching to those customers focused on heavy workloads, such as Oracle. But just as those vendors who have chosen ARM are working closely with Linaro to build the necessary software stack for enterprise server use, so Servergy will have to leverage a combination of Freescale, the Linux Foundation and Power.org - along with partners such as Oracle - to help it fill in the gaps, particularly for virtualization and cloud components. That may be tough, since few others besides IBM are using Power for enterprise servers, although bright spots in the defense and HPC markets should help Servergy gain some early traction and credibility.

Context

Servergy, a Silicon Valley startup founded in 2009, is headquartered in McKinney, Texas. So far its funding has come from private means, and there are only 12 staff members on its core team – although there's a team of more than 80 working on the project at various partner organizations. CEO, chairman and founder Bill Mapp is a veteran of the IBM Global Services Group. Others on the staff include Jack Smith, VP of technology (PMC-Sierra and 10 years at Intel); Vihar Rai, VP of engineering (extensive SoC and ASIC work at PMC-Sierra, Agilent and HP); Wade Cramer, VP of manufacturing operations (28 years at



Texas Instruments and Raytheon); and Lance Smith, COO (18 years at ACS/Xerox, Atos and HDCS) Servergy had been operating in stealth mode until October, when it began the process of a soft launch. As part of those activities, it has joined the Linux Foundation and Power.org, helping to forge some links between those organizations.

The Power architecture was designed jointly by IBM, Apple and the division of Motorola that became Freescale Semiconductor. Power.org, of course, is the consortia formed in 2004 to promote usage of Power. Freescale licenses its implementations to systems vendors, although IBM remains the primary user of Power processors in servers with its System i and System p enterprise servers and Blue Gene supercomputers. (Apple, Bull and Hitachi all used Power processors for servers in the past). However, the market for broader Power systems is still sizable. The most high-profile uses for Power have not been in servers, but in defense and aerospace (such as its use in NASA's Curiosity Rover), and at the other end of the spectrum in gaming systems from Sony, Nintendo and Microsoft. Power.org says that in 2009, Power generated \$4.8bn in revenue spanning consumer, communications, automotive, industrial, medical, military/aerospace, enterprise computing and high-performance computing.

Technology

Servergy isn't giving away too much detail about its Cleantech Server product line, which is being designed and manufactured in the USA. The central SoC has built-in accelerator engines for advanced encryption, pattern matching (to support Big Data

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applications), networking offload, et al., developed around the Power chip. The resulting servers, using half-length, half-depth blades that don't require an expensive backplane, fit in a footprint the size of a legal pad, with four servers fitting into a 1U space. Each server has eight 1.5GHz cores, weighs less than nine pounds, has two 10Gb and two 1Gb Ethernet ports, and consumes 'well under' 130 watts at full load. They can be run on AC or DC power.

The Cleantech CTS-1000 is the basic server, and it's available in duo or 'Quad-Pack' configurations, or as a fully preconfigured and tuned 'Hyper-Rack.' Servergy outsources its manufacturing, but isn't just assembling parts – it's designed the system from the processor level upward. Servergy's figures show the server uses up to 80% less electricity and cooling than comparable standard servers, and takes up to 80% less space and weight; the weight is important as demand for datacenters grows in cities such as New York – where each floor of an old building may contain its own datacenter, and there are weight, space and power restrictions.

Strategy

Target customers are, in particular, the large global datacenters where there is a huge growth in demand, and where power consumption is a major issue. Organizations where the Power architecture is already prevalent, such as healthcare, oil and gas, defense, and academia, are also key targets. Partners include APC and Raritan (highlighting Servergy's interest in energy management and power efficiency), RedHat, SUSE, Canonical (Ubuntu) and Oracle for Linux, and managed hosting firms



Dallas Data Center and ViaWest. Cisco, IBM, Oracle and distributor Avnet have also signed up as partners. Initially selling directly, Servergy is now in the process of teeing up global channel partners.

Moving forward, we would expect Cleantech Servers to evolve toward converged infrastructure systems incorporating storage and networking capabilities, including perhaps an integrated fabric to tie multiple nodes together more closely. It's interesting to note that a number of the company's key technical engineers were previously working on server-oriented SoC technologies at PMC-Sierra and Texas Instruments.

Competition

Servergy sees itself as shaking things up and offering the industry another option besides just Intel and ARM low-power servers. That choice may limit its sales, at least initially, to markets where the Power architecture is still well-known and in widespread use, such as defense. The burning competitive question will focus on IBM – will it turn out to be friend or foe? Additional credibility for the Power architecture in the server world, particularly associated with energy efficiency and high density, would presumably be welcome for IBM, but not if customers opt for lower-cost Servergy systems rather than System p or the new-generation PureSystems, which can incorporate Power as part of a hybrid system. Of course IBM now offers 64-bit Linux as an option on System p as an alternative to AIX Unix. In theory it would be possible to run IBM's AIX on Servergy equipment, should IBM choose to license it. (IBM has already ported DB2 and other software to

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Freescall's Power-based SoCs). It's worth remembering that the last two startups to encroach on IBM's Power portfolio – Transitive and Platform Solutions (not to be confused with IBM's later acquisition of Platform Computing) – were both swallowed up in acquisitions by IBM, the latter after a nasty legal battle. Looking further back in time, Sun Microsystems (now Oracle) was equally hostile to other Sparc server vendors, which it characterized as 'clones,' to the extent that a once-promising systems ecosystem for Sparc was all but wiped out. Servergy argues that by partnering with both IBM and Oracle it can provide complimentary new entry point products. Servergy says it's doing for Power what SeaMicro (now acquired by AMD) has done for the Intel Atom, and is now doing for both ARM and broader x86 chips, and what Calxeda is doing for ARM. But it's emphatically not taking chips out of cell phones and stringing them together to make a server. Instead, it's opting for maturity and performance, redesigning for high efficiency and performance – an enterprise server in a micro server footprint. That means it's as likely to compete against Oracle/Sun and HP Integrity servers as against the emerging ARM and Atom-based extreme low-energy hyper-scale server options from AMD/SeaMicro, Boston Limited, Dell and HP.

SWOT Analysis:

Strengths

The combination of high energy efficiency and density with high-power processor cores gives Servergy a distinctive story in a high-growth market sector.

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Weaknesses

Servergy is a small company with private funding, and systems development is very expensive

Opportunities

Servergy says it's finding a huge pent-up belief in the Power Architecture across multiple market sectors as it hasn't been marketed like intel or ARM has.

Threats

IBM's reaction will be key – if it views Servergy as a significant threat, it will act. Remember what ARM happened to Transitive and Platform Solutions. [Both were bought out by IBM.]

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