Startup Failure Post-Mortems 2015 First Update (8/15/2015)

Calxeda

Title: Low power won't bag ARM the server crown
Title Link: https://www.theregister.com/2014/01/08/calxeda_postmortem/

Product: Calxeda
Product Link: https://www.cbinsights.com/company/calxeda

In [Calxeda's] case, we moved faster than our customers could move. We moved with tech that wasn't really ready for them – ie, with 32-bit when they wanted 64-bit. We moved when the operating-system environment was still being fleshed out – [Ubuntu Linux maker] Canonical is all right, but where is Red Hat? We were too early.

Founded Year

2008

Stage

Dead | Dead

Total Raised

$104.75M

About Calxeda

Calxeda, formerly Smooth-Stone, brings new performance density to the datacenter on an attractive power foot print by leveraging ultra-low power processors as used on mobile phones as a foundation for its technology. Calxeda will make it possible for datacenter managers to increase the density of computer resources while reducing the need for power, space and cooling.

Calxeda Headquarter Location

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Low power WON'T bag ARM the server crown. So here's how to upset Intel

Ex-veep spills beans on where chip upstart Calxeda went wrong Jack Clark in San Francisco Wed 8 Jan 2014 // 10:29 UTC

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EXCLUSIVE In the last days of 2013, Calxeda, the ambitious startup that hoped to design ARM processors for data-center servers, imploded.

Now *El Reg* has sifted its ashes, and pulled out some advice for the silicon upstart's contemporaries.

The demise of Calxeda caused many to ponder the viability of general-purpose ARM-powered computing in the data center, especially given Intel's twin threats of its custom chip business and a newfound dedication to shrinking the power consumption of its Avoton server chips.

Calxeda's plan was to design chip packages that combined its network fabric electronics and other controllers with processor cores licensed from ARM; the resulting blueprints would turned into working silicon by outside fabs, and used in kit from the likes of HP. The startup's low-power ECX-1000 used the quad-core 32-bit Cortex-A9 architecture; the ECX-2000 used the Cortex-A15.

But 64-bit parts, desirable for enterprise-grade workloads, weren't scheduled for release until 2014, a date the company just couldn't reach before the lights were switched off.

Last night, *El Reg* approached Karl Freund, Calxeda's former veep of marketing, and he told us about what other ARM-powered startups can do to avoid Calxeda's fate, and why major adoption of the chips is likely, but not for the power-consumption reasons promulgated by the press.

"In high tech, we are all trained by the years of the dot-com boom to think that being first to market is critical," said Freund, who is now an independent analyst and consultant on ARM servers.

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[Ubuntu Linux maker] Canonical is all right, but where is Red Hat? We were too early."

Calxeda's folly, Freund reckoned, was that it came out early enough to ignite a huge amount of interest from the industry and coverage in the media, but was too early to satisfy key customers with serious spending power.

Though large-scale operators such as Google and Facebook are all interested in ARM-driven servers – a senior Facebook executive joined Calxeda's board in October – they are all going to wait until 64-bit ARMv8 packages are available, Freund reckoned, and will likely want some kind of software ecosystem to be present as well.

Chips stuffed with 64-bit ARM cores are expected to come along in the first months of this year, though Freund believes it will be in 2015 that the industry adopts the architecture in a big way.

In the year between release and adoption, in a sense we'll witness a Mexican standoff: the IT world's superstars won't run production systems on computers until they're demonstrated reliably running critical software. Someone will have to crack and take a shot on the platform before others invest time and money in testing and validate their applications for wide ARMv8 deployment.

"The big guys, they'll all experiment with ARM, many of them will deploy ARM, but not until first-generation 64-bit at best," Freund said.

"These guys have advanced technology strategists so they're always looking at what's next on the horizon. We have had deep, deep discussions with all of them about our technology and about our roadmap. They're all going to wait for 64-bit.

"Red Hat will not have [an ARM] RHEL until 2015 at the earliest. If you're an Amazon you're not going to stand up a big farm of ARM servers if there's nobody running a big load of software on ARM."

The reason ARM will be successful is not performance per watt

ARM-compatible processors tend to end up in handheld devices, and thus aren't as battery hungry as their x86 cousins. In these eco-friendly times, the suggestion you could run an ARM server farm off, say, a solar panel array was enticing for companies with hefty electricity bills.

If power-sipping 64-bit ARMv8 server chips have a chance of serious adoption in the data center come 2015, there's a good chance Intel will at that time be fielding some capable Atom processors with close-to-ARM milliwatt-per-MHz ratings thanks to Chipzilla's advanced manufacturing expertise.

Freund says this is "a very cogent argument," and claimed somewhat heretically that "the reason ARM will be successful is not lower performance per watt."

A minor performance-per-watt advantage (and by 2015 all signs point to it being minor at best) is not great enough to get people to switch architectures, he said.

Instead, the flexibility of the ARM architecture will be vital – specifically, the freedom to license a streamlined ARM core design and bolt on whatever custom hardware is needed to perform or accelerate a particular task. This approach contrasts Intel's beefy but general-purpose packages.

Just as smartphone makers turn to system-on-chips with touchscreen-driving GPUs and wireless networking built alongside battery-friendly processor cores, server manufacturers should be able to pick up parts that strongly glue multiple cores to gigabit ethernet and high-end SATA controllers.

"It's the ability to customize around ARM's intellectual property, which you cannot do with Intel intellectual property," Freund told us. "If you're Google looking at some kind of acceleration, or Sandia Labs looking at very specific algorithms you want to tune for, or you like the [Calxeda] fabric and want disaggregated resource models – that's why you pick ARM."

This lines up with *El Reg's* own analysis in December, and the thoughts of a well-placed source within the semiconductor industry.

Though Intel has an early-stage custom x86 chip business that already works with eBay and Facebook, Freund believes the pace at which a company can either buy and modify ARM chips, or contract to a third party like a Phoenix-rebirthed Calxeda to do so, will beat Intel every time.

"Either customize for a very large account or customize for a very specific workload or market segment," he said. "My advice to other ARM vendors - I wish them all the luck - is you either have to add significant added-value or very, very low costs."

Pay attention, Applied Micro's "X-Gene" team, and AMD's "Seattle" crew, or else you risk a dim reception to your promises of future chippery. ®

Bootnote

Intel experimented with ARM-compatible system-on-chips called the Xscale family between 2002 and 2006, at which point it offloaded the tech to Marvell. Chipzilla pitched the processors at mobile phones, networking kit, disk controllers and similar embedded computing products. Calxeda clearly thought bolting cores onto specialized hardware was the way to go: its co-founder Barry Evans once ran Intel's Xscale businesses.