The 64-bit ARM Surge

Over the past few weeks, Kevin Krewell and I have attended several events by ARM partners, including AMD, NVIDIA, and Qualcomm. All of these partners are introducing 64-bit ARM-based processors this year. While some of the information is under non-disclosure agreements, I can cover the public announcements. First up is NVIDIA with a custom 64-bit core called Denver that will first be used in the Tegra K1 mobile SoC family. While NVIDIA did not discuss the 64-bit version of the Tegra K1 during the general sessions at GTC, the company has indicated that more information will be coming as the launch approaches later this year, as indicated at CES.

Next up is Qualcomm. With the announcement of the new Snapdragon 808 and 810 mobile SoCs, there are some interesting dynamics to the announcement itself. First, one should take note of the use of the big.LITTLE core configurations being used by more of the ARM ecosystem not only to optimize power and performance at the high-end, but also to offer a range of products by mixing and matching cores. The second key point is what the Snapdragon 810 represents. While it will likely be used in some high-end smartphones, it represents a higher tier of ARM products for a variety of consumer applications. (You can read more about the Qualcomm announcement on the TIRIAS Research website at <http://www.tiriasresearch.com/qualcomm-extends-64-bit-to-the-high-end/>)

Finally, there is the 64-bit Seattle server chip from AMD. AMD has recently announced sampling of the chip and we saw a demo of the Seattle chip and the development platforms, which was impressive. Despite previous reports that were a bit confusing, the Seattle chip is compatible with the SeaMicro Freedom fabric.

In addition, Allwinner, Apple, Applied Micro, Broadcom, MediaTek, and Samsung have all announced new 64-bit ARM devices or development efforts for new chips for introduction in 2014 and 2015. In this wave of 64-bit ARM devices it is becoming clear that:

* There will be a wider range of SoCs available from mid-range handset and embedded applications to high-end server parts, including client PC-like devices in the middle
* ARM partners are leveraging both the use of custom and standard cores to be competitive
* The schedules for the devices are real

The only remaining piece of the puzzle is the availability of 64-bit operating systems to support these new devices, but TIRIAS Research believes that these will be available in the coming months.

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