Intel's Embedded Portfolio Goes Quad-core

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As Intel reaches the 30-year anniversary of its embedded business, it brings quad-core chips into the mix and offers a new telecom server.

Intel is preparing to add a pair of quad-core Xeon processors to its embedded lineup.

At the Embedded Systems Conference in San Jose, Calif., on April 3, Intel plans to announce that it will start selling quad-core processors to OEMs and other developers of embedded products, such as POS (point-of-sale) machines, communications equipment, medical imaging and other products.

Intel will start offering embedded versions of its Xeon E5335 and E5345 immediately, said Doug Davis, vice president and general manager of Intel's Embedded and Communications Group.

At the conference, Intel executives also plan to announce that the company will offer its own telecom server, the NSC2U. This high-availability system has a pair of embedded Xeon 5300 series processors and is geared toward technologies such as IMS (IP Multimedia Subsystem), IPTV and video-on-demand.

Finally, Intel executives will also discuss a new microarchitecture for its embedded processors that the Santa Clara, Calif., company is calling SOC (System on a Chip). The new architecture, Davis said, will combine IA (Intel Architecture) x86 processor cores on the same piece of silicon as the I/O and memory control hub.

This new type of architecture will start to address the needs of embedded system builders who are working with smaller form factors and are looking for a chip with greater performance that uses less power. For example, embedded processors developed with this type of technology will have thermal envelopes of between 15 and 75 watts, according to Intel.

"What you get is a higher-performance system on a chip with a small footprint and low power that is all based on Intel Architecture," Davis said.

Davis added that new products based on Intel's SOC architecture are in the later stages of development but are not ready for distribution to system developers.

Dean McCarron, an analyst at Mercury Research, said Intel has used virtually the same strategy to sell embedded processors to systems developers during the last 30 years. Intel will either sell an older generation of processors to the embedded market or it will find a "hook" in its current generation of processors that it can use to sell additional processors, he said.

McCarron said Intel's announcement on March 28 that it will develop desktop and server processors using a new architecture called Nehalem fits in with its plans to develop embedded processors that use its new SOC architecture.

"What is big about Nehalem is that it integrating a number of the key components of the chip set, such as the memory controller and the graphics," McCarron said. "It's reducing the number of parts and it reducing power consumption. The embedded focus is the same. It's about minimizing power."

While at the show, Davis and other Intel executives plan on discussing the 30th anniversary of Intel's embedded division, which will include a look back at the technology the company has developed in those three decades.

Even before the company started developing and manufacturing processors for the PCs, Davis said Intel has been selling embedded chips to various systems designers. The future of the field, he said, remains strong.

"We continue to see the market growing at a pretty healthy clip," Davis said. "We're seeing growth and we're seeing the utilization of more and more performance in application. We're also seeing a greater reliance in connectivity within these applications and a blurring of the line between what is embedded and what is enterprise."

To mark the occasion, Intel executives will show off a specially designed motorcycle from Orange County Choppers, a company that has been featured on the TLC show "American Chopper." The motorcycle will use embedded products from Black Diamond Advanced Technology.

One of the innovations on the motorcycle is an onboard computer that uses an embedded Core Duo processor to operate the kickstand, rear view cameras, tachometer and speedometer.

While Intel does have 30 years of experience behind its embedded program, other companies, notably its main processor rival, Advanced Micro Devices, have also begun to expand their embedded processor lineups.

In the last few months, AMD has added several of its Opteron and Athlon processors to its overall embedded lineup and is now offering a new chip set that uses ATI graphics technology.

Intel first started producing dual-core Xeon processors for its embedded division in 2006. On April 3, the company will add the Xeon E5335 quad-core processor, which runs at 2.0GHz, and the E5345, which runs at 2.33GHz. Each processor offers 8MB of Level 2 cache and a 1333MHz front side bus. Each processor also offers an 80-watt thermal envelope.

The two processors each cost $690 per 1,000 units shipped. As the company has with other processors in the embedded portfolio, Intel will offer at least a five-year longevity guarantee, which will give customers processor and pricing stability.

"Five years is the minimum commitment we make to customers," Davis said. "We'll keep - embedded processors - running as long as it's economically feasible."

The NSC2U telecom server, a 2U (3.5-inch) rack-mount server, will be available in July. A basic, non-integrated system will cost $1,850, according to Intel.