Intel Atom Processor
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Introduction

- Intel Atom is Intel's line for ultra-low-voltage processors.
- Atoms are used in netbooks, nettops, embedded applications ranging from health care to advanced robotics, tablets and smart phones.
- Atom processors are based on the Bonnell microarchitecture as opposed to ARM.
ARM Architecture

- ARM instruction set is based on a reduced instruction set computing or (RISC) architecture developed by British company ARM Holdings.
- Fewer transistors than typical CISC x86 processors in most personal computers.
- This reduces costs, heat and power use. These are desirable traits for light, portable, battery-powered devices—including smartphones, laptops, tablet and notepad computers, and other embedded systems.

Bronnell Microarchitecture

- Can execute up to 2 instructions per cycle.
- 16-stage pipeline
- Micro-operations are detailed low-level instructions used in some designs to implement complex machine instructions.
- Only around 4% of instructions produce multiple micro-ops
- The number of instructions that produce more than one micro-op is significantly fewer than previous micro processors.
Bronnell Microarchitecture

- Hyper-Threading is easily implemented in a low power way to service both pipelines efficiently by avoiding the typical single thread needs.
- Can contain both a load and a store with an ALU operation.
- Again used for mobile and embedded devices.

Focus of the Intel Atom

- Powerful yet energy efficient.
- Resulting in lower powered chips.
- Maximum performance at its level.
- A focus in the field of Mobile Internet Devices (MIDs)
- Compete in Mobile Market
Competition

- Intel Atom processors compete with companies like Texas instruments, NVidia, Qualcomm and Samsung etc.
  - NVidia's Tegra 3 series
  - TI's 4 series
  - Qualcomm's next-generation Snapdragon series

- Unlike its counterparts, Intel has adapted the x86 based CPU as suppose to Arm-based CPU's.

Collaborations

- In September of 2011, Intel and Google joined in partnership to provide support with Google’s Android operating system.

- This allowed for Intel to use the Atom processor to grow in the smartphone and tablet market.

  Intel now also powers Samsung’s Galaxy Tablets
Recent News

- February 24th, 2014 Intel launched its latest 64-bit Atom processor (codenamed Merrifield, Z3480) for smartphones and tablets.
- This processor is based on Intel’s 22nm Silvermont microarchitecture and runs at 2.13GHz.
- Intel claims this processor offers improved mobile battery life.
- Intel is moving 64 bit computing from the desktop to the mobile devices. The only company to do so and supporting both Android and Microsoft Windows.

Recent News

- Details of a 64-bit quad core Atom processor for Android mobile devices was also released (codenamed Moorefield).
- A quad-core processor is a chip with four independent units called cores that read and execute CPU instructions.
- Intel is hoping its technology would push more mobile computing into its future.
- Intel also announced multi-year agreements with Lenovo, Asus, and Foxconn to expand the availability of Intel-based mobile devices.
Intel Atoms Future

- Lenovo will introduce new Intel-based mobile devices in 2014, and both companies will dedicate engineering resources to building a “variety of smartphone and tablet form factors spanning value to performance market segments.”

- Asus will bring a full portfolio of Intel-based smartphones and tablets to market this year. In fact, at Mobile World Congress, Asus unveiled the Fonepad 7 LTE (ME3762CL) featuring an Intel Atom processor and Intel LTE connectivity.

- Foxconn will help build affordable Intel-based Android tablets. Intel will provide Atom processors and communications platforms for a range of Foxconn products, beginning with tablets, this year.

Resources

Information

- [http://www.pcmag.com/article2/0,2817,2357349,00.asp](http://www.pcmag.com/article2/0,2817,2357349,00.asp) (7 Facts)
Resources

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