

Low-Cost, Low-Power Microcontroller Runs Linux Desktop Environment



US embedded hardware OEM KwikByte demonstrated a complete Debian/GNOME desktop environment running on a simple microcontroller-based system. The purpose of the effort is to study critical factors effecting performance in thin-client environments in an attempt to implement low-cost, very low-power devices in demanding applications.

(Tempe, AZ) March 05, 2007 – US embedded hardware OEM KwikByte demonstrated a complete Debian/GNOME desktop environment and applications running on a simple microcontroller-based system. If successful, the project could replace simple desktop computers with much smaller systems in the \$100 price range.

The system used for the work, KwikByte's BAT6, is based on the AT91SAM9261 microcontroller which is intended for use in wireless handheld applications – considerably less demanding than typical desktop applications. The controller's on-chip peripherals simplified the system design by reducing the number of external components. The lower component count combined with the low power consumption of the controller itself results in a minimal system power budget. This enables the entire system to be powered by Power over Ethernet (PoE) methods, also known as IEEE 802.3af.

The system was shown running the FVWM-Crystal desktop demonstrating translucent terminal windows, typical applications like web browser and word processor, and streaming audio player.

Even though light-weight environments are better suited for this level of processing power, a full desktop can be run with software optimization or "tuning". The project will continue with additional optimization work to reach consumer accessibility.

The system is currently aimed at developers. The compiler and debugger run natively on the box, eliminating the complexity of cross-compiler development on a dissimilar host machine.



System Details

- AT91SAM9261, ARM926EJ-S 200MHz
- 128 MB SDRAM
- Compact flash interface
- 2 x PS/2 connectors
- 2 x USB 2.0 host ports
- 10/100 Ethernet
- Audio (mic in, line out, headphone out)
- Power over Ethernet (internal module optional)
- VGA connector

Availability

The BAT6 is offered to developers at an initial price of \$189.99 with volume pricing of \$120.

About KwikByte

KwikByte designs and manufactures embedded hardware systems. Founded in 2003, KwikByte is located in Tempe, AZ.

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