

Overview

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# Energy Profiler Overview

Simplicity Studio® 6 (Studio 6)'s Energy Profiler enables you to visualize the energy consumption of individual devices, multiple devices on one target system, or a network of interacting wireless devices to analyze and improve the power performance of these systems. Real-time information on current consumption is correlated with the program counter providing advanced energy software monitoring capabilities.

Energy saving and efficiency are at the top of developers' priorities for an ever-growing number of embedded systems applications. These constraints can be due to government regulations (for example, metering applications), a requirement to increase battery life, or simply a need to lower the electricity bill. In battery-operated systems, energy efficiency often plays the most important role. In cases where developers are satisfied with their system's battery life, increasing the energy efficiency means they can switch to a smaller and cheaper battery, which will lower the overall cost. There are also situations where the operating life must be extended to the absolute maximum, such as products where the battery cannot be replaced or replacement involves very high costs.

Having a low-power MCU by itself does not mean you will have lower energy consumption. The trick is to optimize your software not just in terms of functionality, but also with respect to energy efficiency. Having full control of the hardware surrounding the MCU and optimizing the overall software and peripheral usage are crucial factors for reducing system energy consumption. Software is not usually seen as an energy drain, yet every clock cycle consumes energy. Minimizing the number of clock cycles becomes a key challenge to reduce overall system consumption.

The Energy Profiler enables you to visualize the energy consumption of individual devices, multiple devices on one target system, or a network of interacting wireless devices to analyze and improve the power performance of these systems. Real-time information on current consumption is correlated with the program counter providing advanced energy software monitoring capabilities. It also provides a basic level of integration with the Network Analyzer network analysis tool.

In these pages the following terms will be used:

- AEM: Advanced Energy Monitor
- ISD: The file extension used with Multi-Node Energy Profiler and Network Analyzer files.
- PTI: Packet Trace Information