About us

SPARK Microsystems offers a unique & innovative short range wireless transceiver technology that achieves **40 times better energy efficiency** than BLE and 600 times better than ZigBee.

Our technology **enables battery-less operation** of wireless devices such as tags or sensors when paired with energy harvesting technologies.

Specifications

- Ultra-low power consumption
  - ‣ < 1 nJ/bit energy efficiency (<1 mW@1 Mbps)
  - ‣ 1.8 to 3.6 V supply, 700 nA sync sleep current
- Scalable data rate up to 10 Mbps
- Ultra-short latency below 50 µs
- 3-6 GHz configurable ultra-wideband spectrum
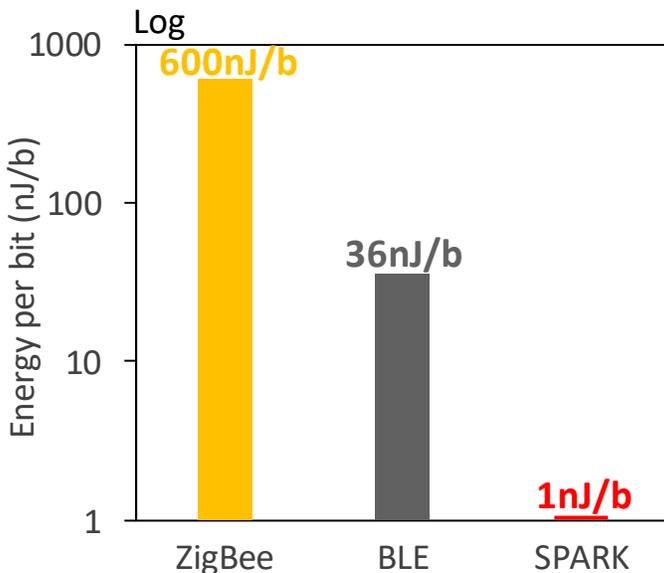 - ‣ 11 dBm TX power, 50 meters range

The Problem

The battery life of wireless devices is insufficient for many home security applications, leading to limited connectivity, bulky batteries or difficult maintenance. In addition, high latency can compound communication issues when used in a mesh network.

The biggest issue with home security is that many devices require a power source due to the power drain of the wireless technology or if they do use batteries they are required to be changed or recharged often due to the wireless power drain.

Standard wireless solutions consume so much power that the battery life of devices is limited, yielding operating expenses or costly installations to get power to the desired location of the endpoint device.
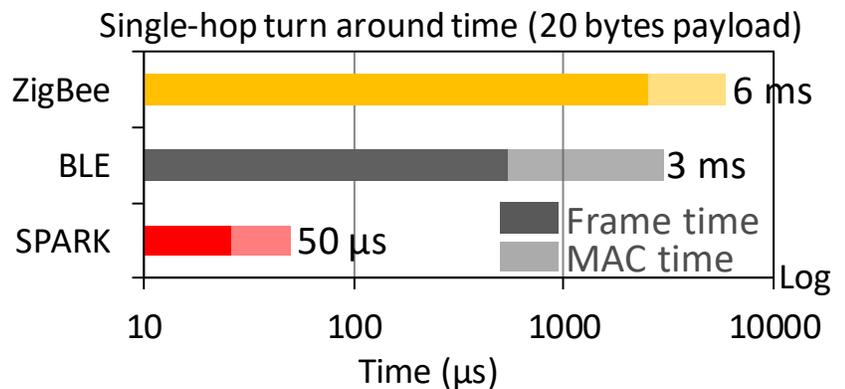
The Solution

The new SR1000 family of devices from SPARK Microsystems can communicate with such low energy that it can be powered by a low cost solar cell or other energy harvesting devices and use a capacitive cell for energy storage. This eliminates wires and batteries, and vastly simplifies the installation process and maintenance of the wireless endpoint devices.
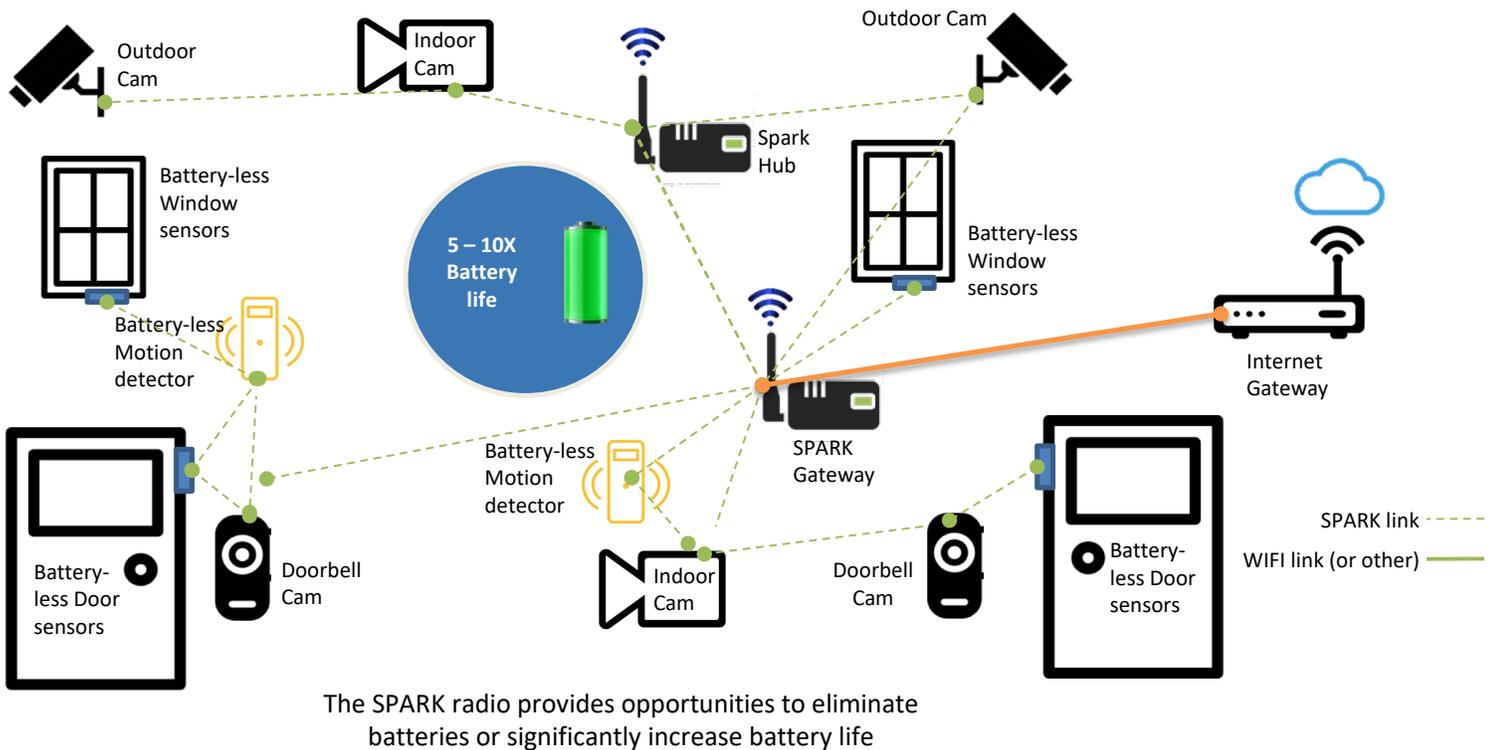
If a battery is required, the SPARK radio can significantly increase battery life by 5-10x.

The adjustable data rate of up to 10 Mbps allows much more flexibility to transmit HD audio, video, or low data rates.

Since the latency is orders of magnitude shorter, there is no penalty for transmitting data through several SPARK radios within the home with 50 meters reach between transceivers. A gateway device can bridge the SPARK network to the internet via WIFI or any other networking technology.

Energy Efficiency

Latency

Single-hop turn around time (20 bytes payload)

The SPARK radio provides opportunities to eliminate batteries or significantly increase battery life

Flexibility

- The SPARK radio can support device-to-device, star, and mesh network configurations.
- These features allow for increased connectivity and reliability, as well as better coverage of large homes.
- The SPARK gateway can then send the aggregate data to the internet gateway using any standard such as WIFI (best for high data rates used by audio/video).
- The SPARK radio can multiplex several of users/devices in the same space.

Ranging

- In addition to communication, the SPARK technology lends itself to both coarse and highly accurate location ranging based on time-of-flight: a two-way ranging system will be integrated with the SPARK radio to estimate of the distance between two devices with an accuracy of up to ±5 cm. Using three fixed SPARK radio chips, the exact 3D location of another moving/fixed SPARK radio chip can be determined.

Target Markets

- Internet-of-Things
- Battery-less systems
- Medical and healthcare
- Health and fitness

- Industrial and automation, M2M
- Structural health monitoring
- Smartphones and tablets
- Smart agriculture

- Smart homes / buildings / cities
- Streaming data /audio / video
- Wireless peripherals
- Wearables