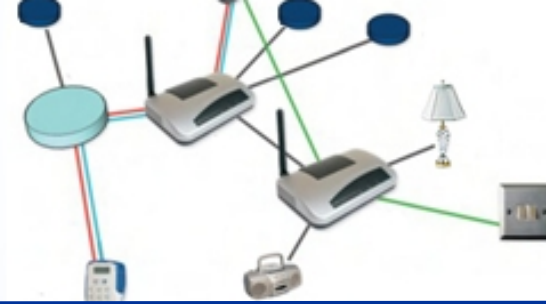


ZigBee Based Wireless Home Automation Solution



Situation

The last few years have witnessed an increasing use of remote control devices in our day to day life. To interact with remotely controlled devices, the devices must be under a single standardized control interface that can interconnect into a network; specifically a Personal Area Network (PAN). ZigBee is one of the most promising PAN protocol; a software layer based on the IEEE 802.15.4 standard.

Aftek has developed a wireless solution based on ZigBee. It is a seamless solution for wire free automation in homes and buildings.

Expected Feature Set

- ◆ Robust, self-healing & self configuring wireless mesh network to provide consistent communication across the home and building
- ◆ Switching home appliances ON and OFF wirelessly
- ◆ Avoids line-of-sight communication which is a drawback of IR remote control
- ◆ Battery powered & energy efficient remote control and pendant with battery life in years
- ◆ LED indication for every operation from remote control and pendant

Solution

Aftek has developed ZigBee based wireless automation and sensor network for homes and buildings. ZigBee wireless network consists of **ZigBee coordinator, router and end devices** like, remote control and pendant. This network has a serial interface with the external world which facilitates the central controlling device to control home appliances.

The remote control and pendant are battery powered devices. These devices provide keypad interface to control appliances from any part of the house.

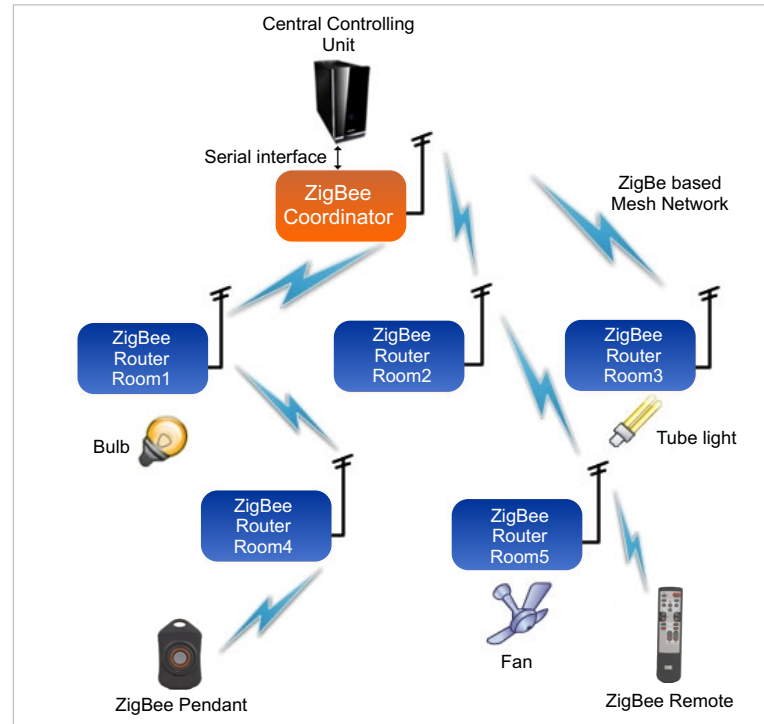
Benefits to the client

- ◆ Easy installation
- ◆ Enhanced life due to the absence of mechanical switches
- ◆ Uses SMPS, increasing safety and life of product
- ◆ Retrofit solution

Aftek's value add

- ◆ Development of ZigBee stack based on IEEE 802.15.4 and ZigBee standard & applications based on ZigBee standard profiles, lighting control and building automation
- ◆ Integration with an external device for appliance control
- ◆ Low power ZigBee hardware platform development
- ◆ Support for ZigBee compliance of network stack

Architectural Overview



1 ZigBee Coordinator

The coordinator forms the network and controls network activities. It adds ZigBee routers and end devices to the network. The coordinator transfers the accepted packets from the network devices to the external intelligent central controlling device via serial port. It is useful in decision making and controlling action. The coordinator transfers control requests from the external devices to the network devices to control appliances.

2 ZigBee Routers

The router routes packets across the network and provides interface to control appliances. The home appliances connect to the ZigBee router and can be controlled by sending requests to router.

3 ZigBee End Devices (Remote control and pendant)

ZigBee end devices, remote control, and pendant are handy devices powered by battery. They operate from any part of the house. The user can control home appliances using the keys of these appliances. These devices also provide a light indication to indicate the status of the action taken.

Technology

- ◆ IEEE 802.15.4 and ZigBee standard
- ◆ PIC micro-controller firmware