Home Automation

What is it and why does one want it?

What is Home Automation?

- Simply, it means control (usually via a computer) of various home functions.

- Systems are made up of controller(s) (devices sending commands) and modules (devices receiving commands and executing them).

- "Smart Home" is now the current term, but implies more 'brains' than a simple control system.

It all began with X-10

History

- Developed in 1975 by Pico Electronics of Glenrothes, Scotland (developed the first single chip calculator)

- Name X-10 came because it was the company's 10th project

- In 1978, sold in Radio Shack and Sears stores

Disadvantages of X-10

- Unreliable – original (most popular) protocol was half-duplex.   Commands can get lost.

- Slow – signaling control took ~3/4 sec to command.

- Problems crossing phases in normal house.

- Security and limitations of addressing (house + unit code).

System

- Controllers / Scene Controllers

- Remotes

- Modules
  - Appliance Modules (On/Off)
  - Dimmers
  - Thermostats
  - Locks
  - Curtain/Drapes
  - Sensors
    - Motion

Current Technologies

- Z-Wave

- ZigBee

- UPB (Universal Powerline Bus) – X-10 compatible

- Insteon

- Various WiFi network based

  - WEMO (Belkin)

  - Nest (Now owned by Google)

  - SmartThings

What I run:

MicasaVerde Vera

- Z-Wave Controller

- Also functions as a scene controller

- Based on a WIFI router device and software based off of OpenWRT

- Relatively adaptable with other devices (non-Z-Wave)

What is a scene controller?

- Scene controller provide the "smarts" to home automation.

- Examples:
  - Simple timing commands (turn off lights at 12am)
  - Set DVD to play, Dim lights for a minute, then turn off lights
  - Open / Close curtains on sunrise/sunset
  - Warning on Cloud based controllers: doesn't work if your internet is down.

Appliance/Dimmer Modules

Hard Wired Switches

Various other devices

Now that I spent more money than I would like to admit, what can I do with this?

Nothing earth-shattering, but does make things a little nicer

- Can remotely control devices via phone/computer/remotes.

- Curtain closes based on sunrise/sunset

- Unlocking door triggers entry light if after sunset

- Turning off light turns off all lights in a room (while I can turn on the lights independently)

Other uses

- Smartphone notification of events

- Configurable entry rules for locks

- Location based events (like NEST)

- Power use monitoring

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