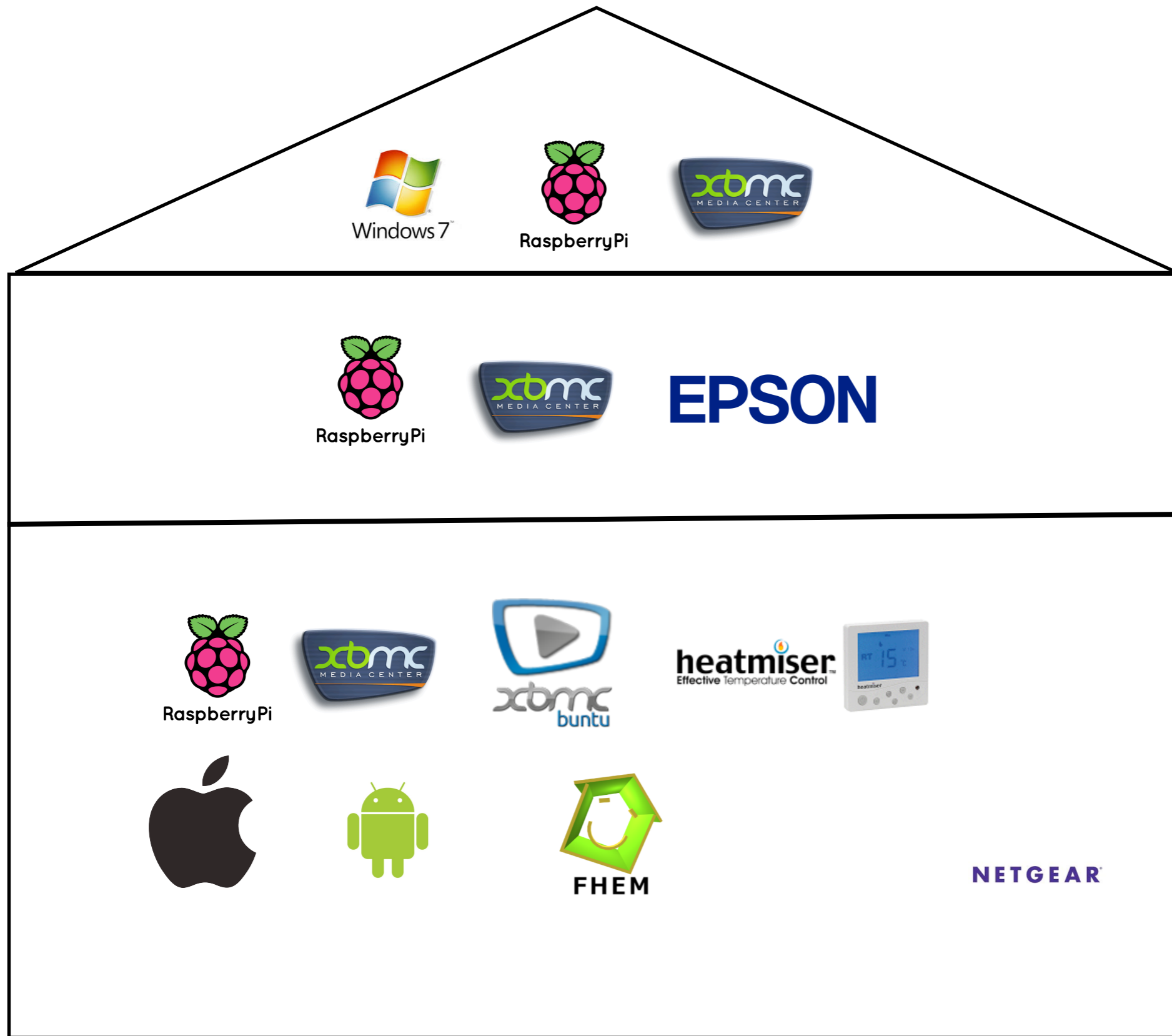# IPv6 at Home

Nathalie Trenaman
SEE3

How it started

- Being an IPv6 trainer since 2009

- Benjamins hobby is domotics

- Time to put our money where our mouth is

  - But how much money?

  - Can we do with v6 what we do with v4?

How it was

Some specs

- UPC 20 Mbit/s*

- Netgear WNR3500U/L wifi AP (standard firmware)*

- Switch Sitecom 8 ports

- 1 vlan to XBMC Media Center with antenna for "klik aan klik uit" RFXtrx433 USB tranceiver

- Media Center ASRock ION 330 running XBMCbuntu

- Netgear ReadyNAS RND4000 4 disks each 1.5T*

- Webcam D-Link*

- Printer Epson Stylus SX515W*

* No IPv6 support

First challenges

- UPC Cable 20 Mbit/s gives only IPv4 over DHCP

  - But we need the speed

- XS4ALL ADSL 8 Mbit/s IPv4/IPv6 dual stack (PPPoA)

  - only 8 Mbit/s because of distance to the DSLAM

- The default XS4ALL Fritz!box 7360 could not Multi-WAN

  - Lots of suggestions from Eric van Uden from AVM!

  - Supposedly works with Freetz (freetz.org) but seemed hassle ;)

..So then what?

The next idea was to use the ASRock ION 330 as a firewall/router with PFSense.

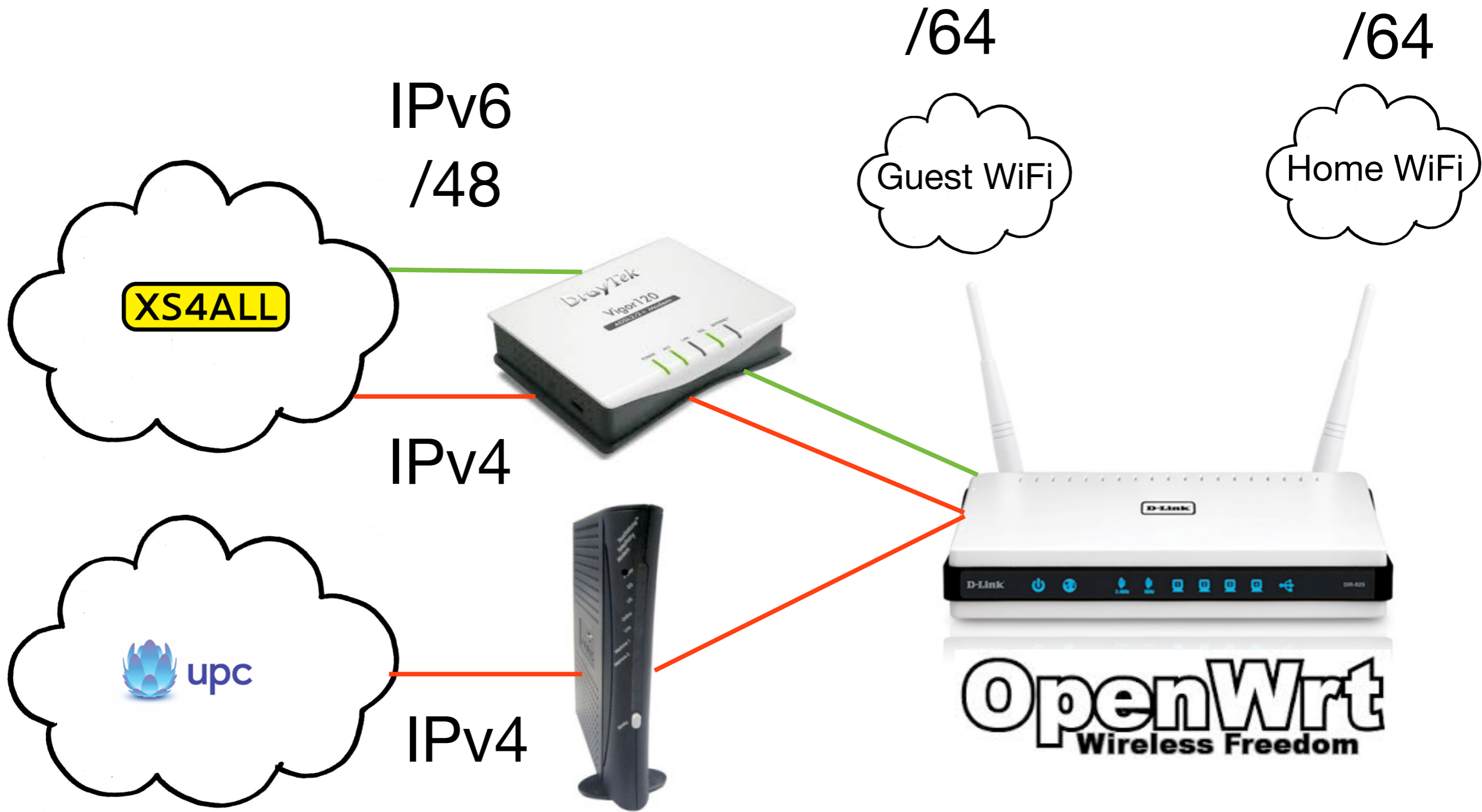IPv6 support on PFSense is still in Beta and when we tried it, it was broken.

We contacted the developer, offered a testbed, but without result.

First challenge solved

- OpenWrt Barrier Breaker on the Netgear WNR3500U

  - Supports Multi-WAN

  - Bridge

  - Firewalls

  - DHCPv6-PD works

  - IPv4 traffic is load balanced

SLAAC vs DHCPv6

- We tried DHCPv6 but found our main devices didn't have (decent) support

  - Mac OSX 10.6.8

  - Android 4.2.2

  - Windows7

- So we sticked to SLAAC (for now)

Easy step: Media

- We have a Raspberry Pi in every room

  - serving as a media center

  - running Raspbmc

- Raspberry Pi and Raspbmc support IPv6

  - Raspbmc was not stable enough

  - Moved to OpenELEC

The NAS

- Netgear ReadyNAS RND4000

  - No IPv6 support ever

  - Time for an upgrade anyway ;)

- Homebuilt PC, ASRock Motherboard

- Ubuntu with ZFS

- Costs: 550 Euro Hardware and 200 Euro disks (4x2T + 128G ssd for OS)

Mission Thermostat

- 2 Years ago, we bought a new thermostat

- Decided to buy Heatmiser PRT-WS WiFi

- 164 Euro

- Nice apps

- But no IPv6?!

- So, we contacted the support desk

  - No IPv6 support on the roadmap

Tado works

- Difficult to find an IPv6 capable thermostat

- German company Tado has one

- Uses Thingsquare Mist (open source software for IoT)

- 99 Euro Per Year (wait….what?)

- Recently they also offered a buying solution

I Spy: the Front Door

- D-Link IP webcam at front door (no IPv6)

  - sends pictures to e-mail

  - if door bel is pressed, a picture is taken and sent to private Twitter account with message: "the doorbel rang"

S█████████████ 🔒   20 Apr
14:34 - Ik hoor de deurbel!
@spacemnky @nathabeer pic.twitter.com/lilUM1XWgi
🔲 View photo

IPv6 at the door

- Logitech USB webcam (cheap, no IP)

- Raspberry Pi

  - running Raspbian

- Twitter and Twitter API don't do IPv6!

- Tweets are still sent over IPv4

- Looking at relay to unlock door over IPv6

  - Possibly with NFC key/ring in stead

Webcam works over IPv6

(We don't have street visibility anymore!)

IPv6 lights!

Our energy supplier offers
IPv6 capable lights

So, we bought them:
2 bulbs and a "gateway" for
129 Euro

Plus an "e-manager" for 2,95
Euro per month!

Light specs

Theory:

Practice: We didn't get it to work over IPv6

(sent an e-mail to GreenWaveReality)

From their website
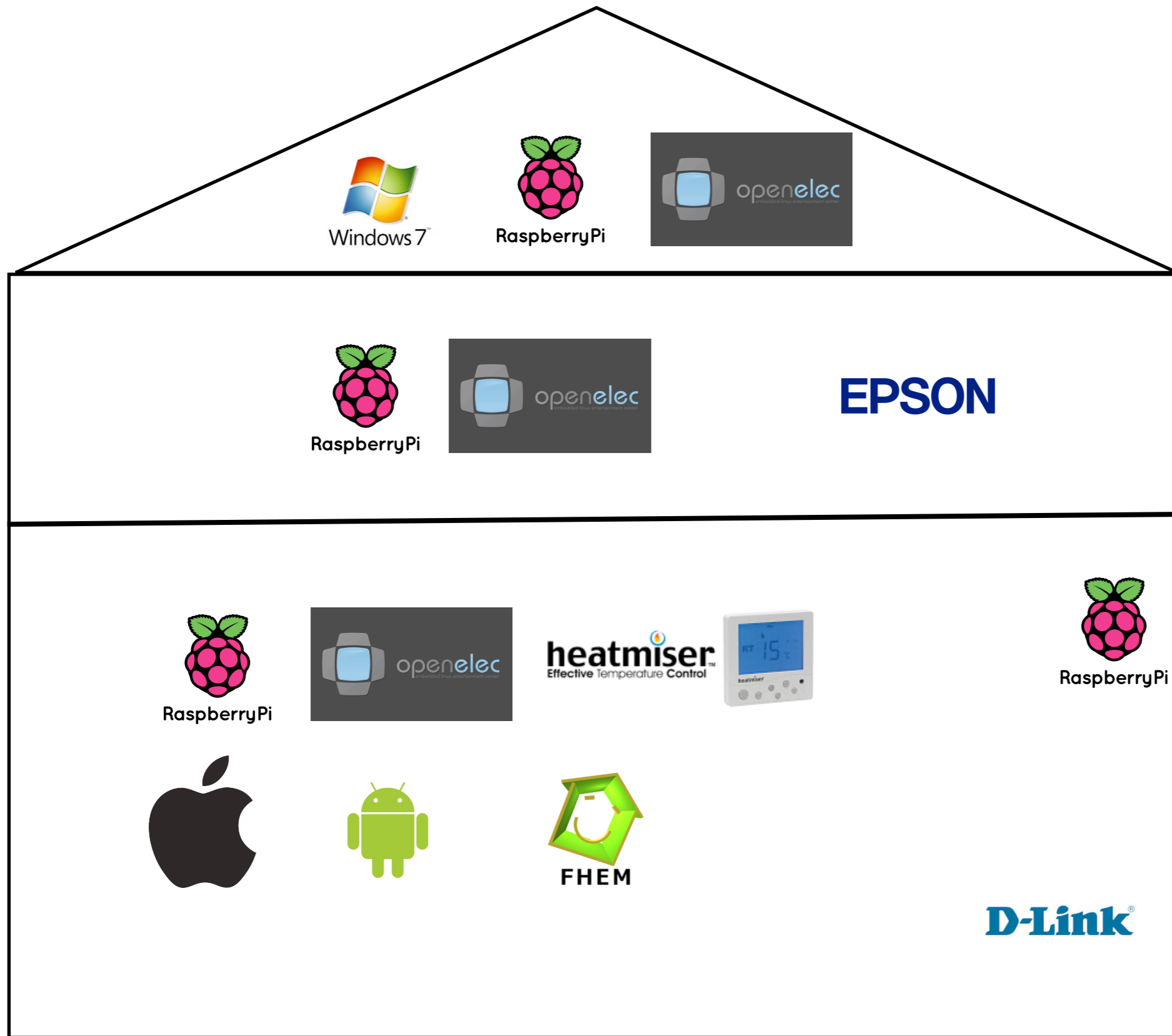
The IPv6-Addressable Light Bulb Goes On Sale

GreenWave Reality and NXP launch 6LowPAN mesh-networked LED bulbs and home energy control platform.

Jeff St. John
October 22, 2012

What can you do with an LED light bulb that has its own internet address? And how much would you pay for it?

Why do these IoT devices only work in the cloud?!

How it is

To do

- Boblight over IPv6

- Buy a new printer, thermostat

- Much more.....

Lessons learned

- IPv6 in your house is not cheap

- There is a lot of manual labour involved

- Thank Goodness for Open Source!

- Vendors of commercial "home" products are not even aware of IPv6

- Not everything with IPv4 can be done with IPv6

Thank you!