

Running Asterisk under  
openWRT

[core1.saintjoe.edu/wiki/Astricon](http://core1.saintjoe.edu/wiki/Astricon)

# background

- I run a small WISP in a very rural area
- I am restoring 7 antiquarian houses
  - Some got Internet before electricity
- Jeremy McNamara's email (ca 2004)
- Embedded Asterisk made sense
  - Cheaper and more compact
  - Multiple functionality on the box
  - Integration with teaching mission

# the openWRT project

- Started with the Linksys WRT54G
  - Eureka moment: "This thing runs Linux!"
    - Broadcom reference designs
  - Mike Baker (mbm) was organizer
  - First code released in late 2003
  - " the device is turned into a mini linux PC"
  - Codebase was begun from scratch

# more open WRT

- Two major releases so far
  - Whiterussian
    - Evolved from original "stable" version
    - No longer maintained
  - Kamikaze
    - First release summer 2007
    - More-or-less complete rewrite

# features

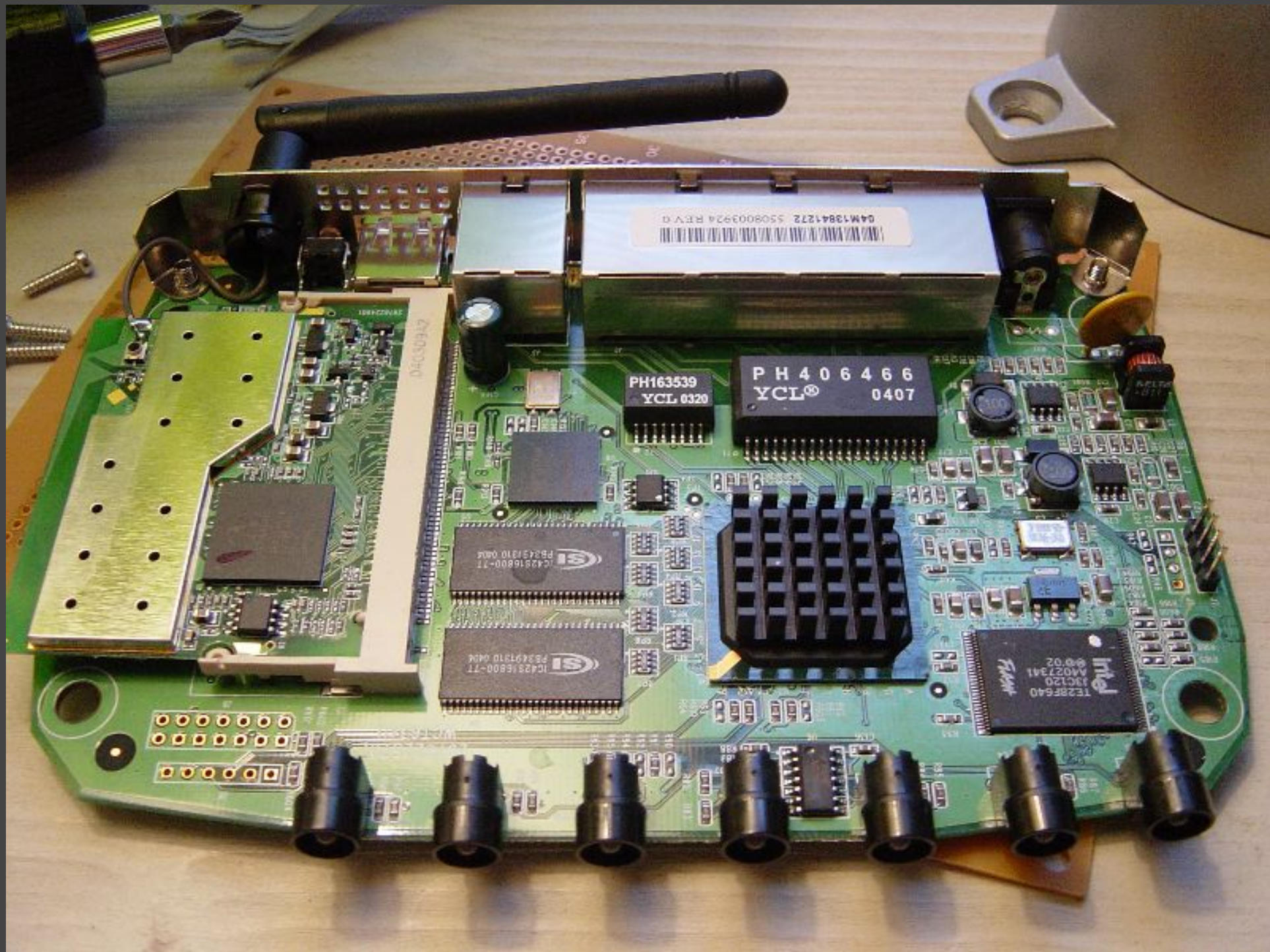
- Runs on an enormous range of hardware
  - It's now native on some products
  - Dozens--may hundreds--of commodity routers
  - Lots of embedded CPUs supported
  - Lots of WLAN cards supported too
- Lots of programmers, lots of activity
- Easy to build
  - IFF you have up-to-date tools
- Support for many applications
  - Big package repository

# building kamikaze

- Cross-compiled
- Configuration similar to Linux kernel
- Builds the build system, then builds the system
  - Components are downloaded on the fly
- Current kernel is 2.6.25.
- Package extensions
  - Uses opkg, an ipkg tool
  - Packages are integral to design
  - Defined by "meta-makefiles"
- Final build result is binfiles and packages

# pick a platform

- List of supported platforms on openWRT site
- Considerations
  - RAM/Flash
  - USB
  - Wireless
  - CPU type, power management, ADSL, etc.
- I use Netgear WGT634U
  - 8M/32M
  - USB 2.0
  - Atheros on mini-PCI



1 800 888 8888 / 1 800 888 8888 / 1 800 888 8888 / 1 800 888 8888  
DAM13841272 5508003924 REV.0

PH163539  
YCL 0320

PH 4 0 6 4 6 6  
YCL® 0407

SI  
IC42816800-7T  
B2451910 0404

SI  
IC42816800-7T  
B2451910 0404

Intel  
TE28F640  
J3C120  
A4027341  
© 02

# usb pitch

- It makes things a lot simpler
- Several models have USB support
  - Especially at >\$40 pricepoints
- Mass storage
  - System libraries
  - Asterisk modules
  - Logs
  - Stores static files, symlinked in
- I use flash, but HD is possible too

# building Asterisk

- I only build trunk, against kamikaze trunk
- Overall process is simple
  - Build and test openWRT first
  - Set up Asterisk package "Makefile"
  - Put necessary Asterisk libs into build
    - e.g. SSL, curses, Postgres, etc.
  - Fetch and build Asterisk
    - I have to do a bit of cheating

# result of build is an .ipk file

- It's a bundle of Asterisk files
- I once called my routers "phonodes"
  - Self-configuring on my network
- Integrated into old house control systems
  - Camera protection
  - Temperature monitor and alarm
- Lots of other stuff possible
  - Bluetooth networking w/Openmoko
  - Home automation
  - Hotspot
  - Home Office
  - Outdoor wireless