Broadband Hamnet

Wireless intranet for emergency communications

N2JAC Emcomm East 2013

Broadband Hamnet

- Repurposed home wifi routers
- Amateur 2.4GHz band overlaps lower half of wifi band
- Modified wifi routers form a mesh network
- Various applications can run over the mesh net
- Formerly hsmm-mesh

Antenna mounted node

- Node mounted at antenna. Power over ethernet

Linksys WRT54G

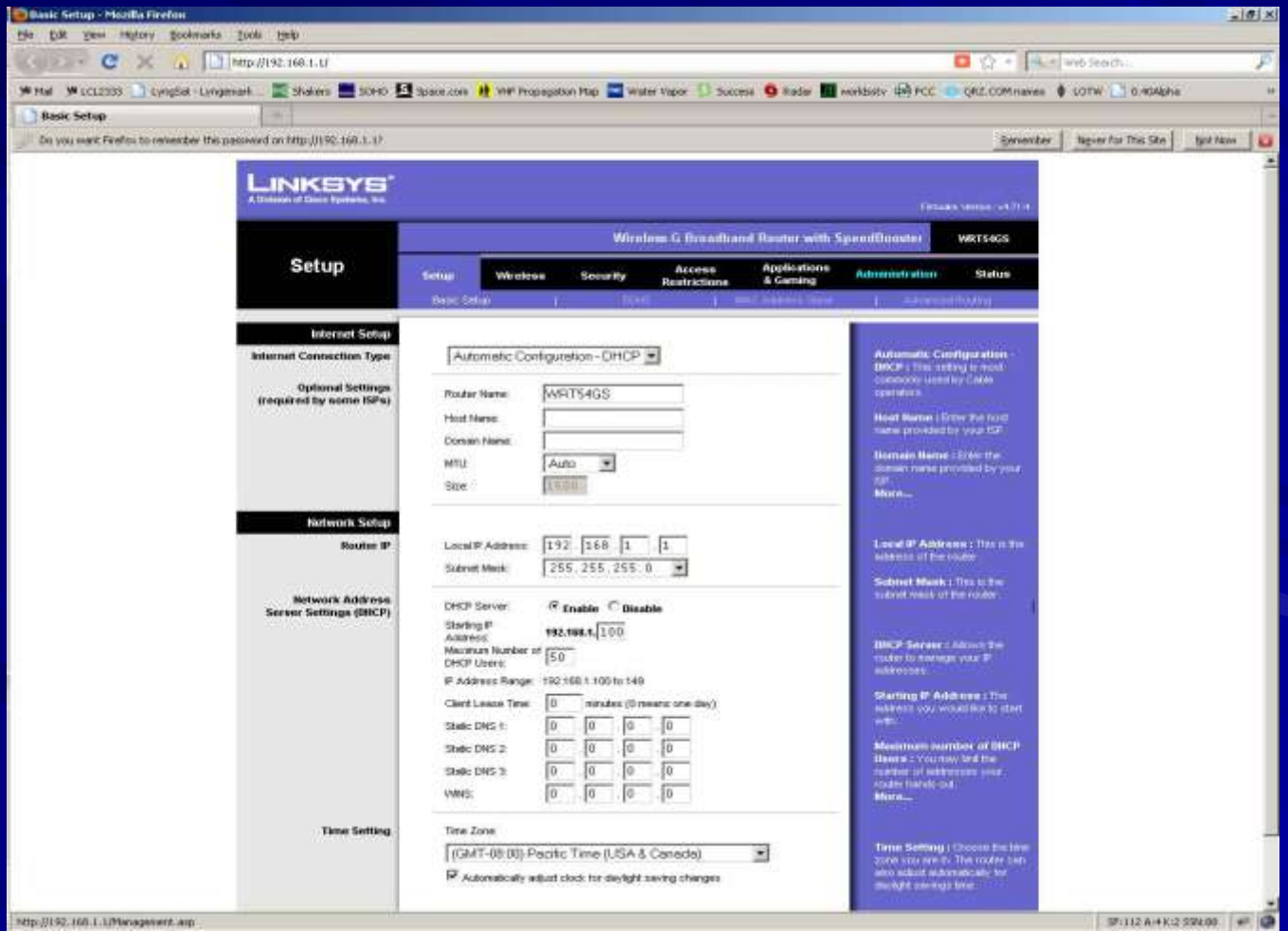
- many consumer routers are actually small linux computers with radios and ethernet
- Older version 1-4 of WRT54G
- $20 on ebay, craigslist, garage sales
- Easily modified to BBHN
- Based on openWRT and OLSR open source protocols
- A few other makes and models

WRT54G

- Turn your wifi router into a broadband hamnet mesh node

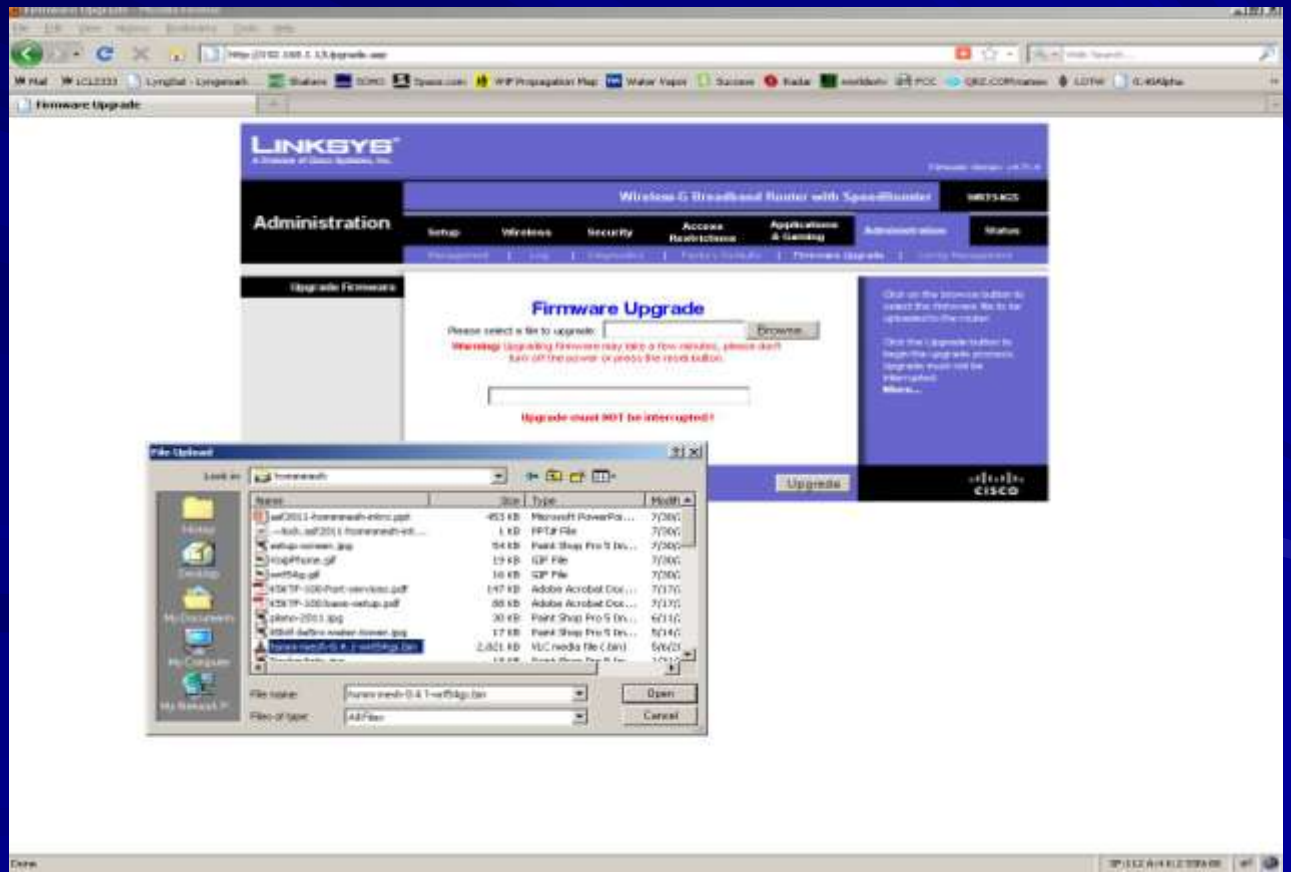
Building your node

- Go to your router's admin page



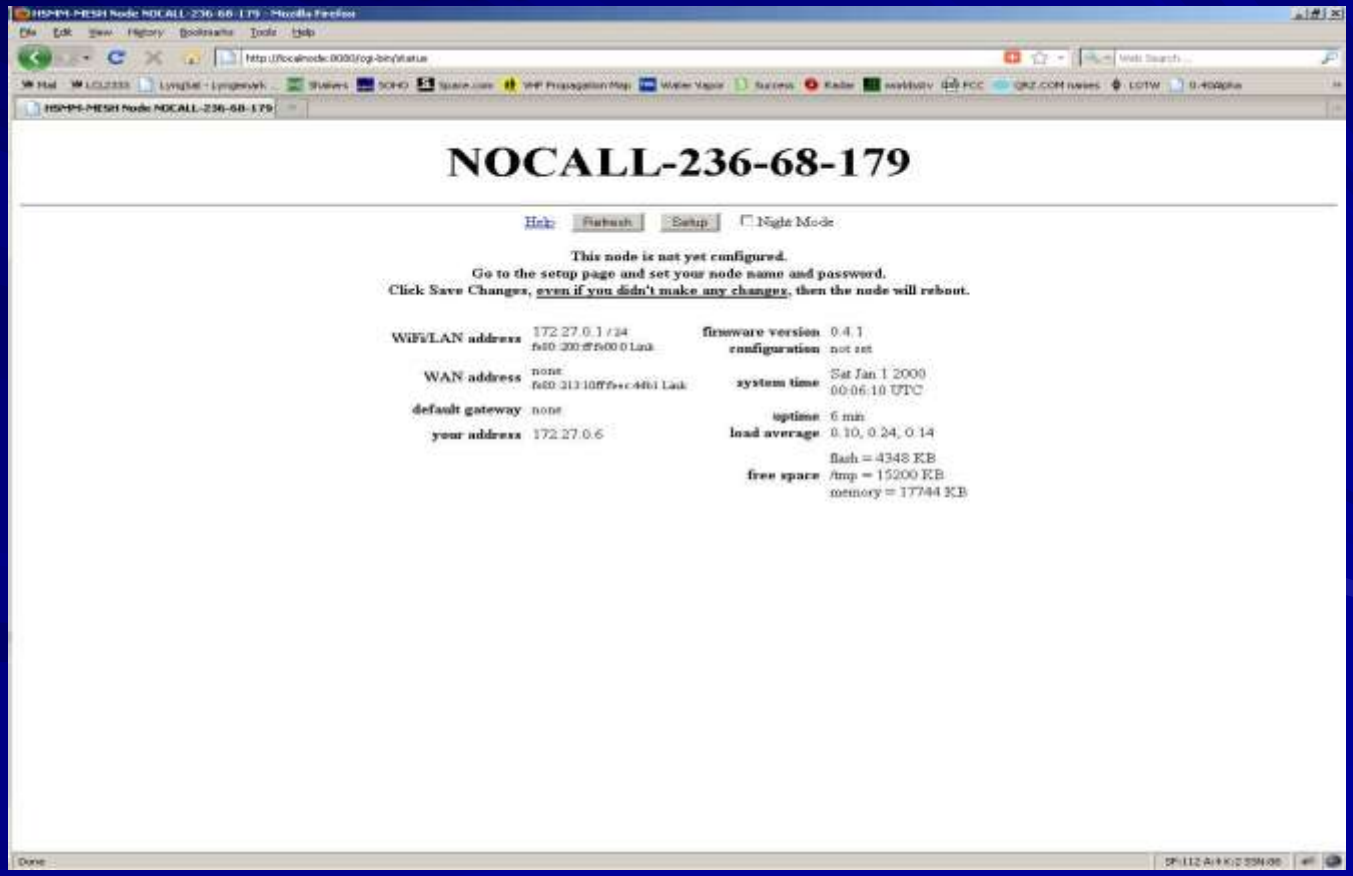
Load firmware

- Go to firmware upgrade page, load file downloaded from hsmm-mesh.org



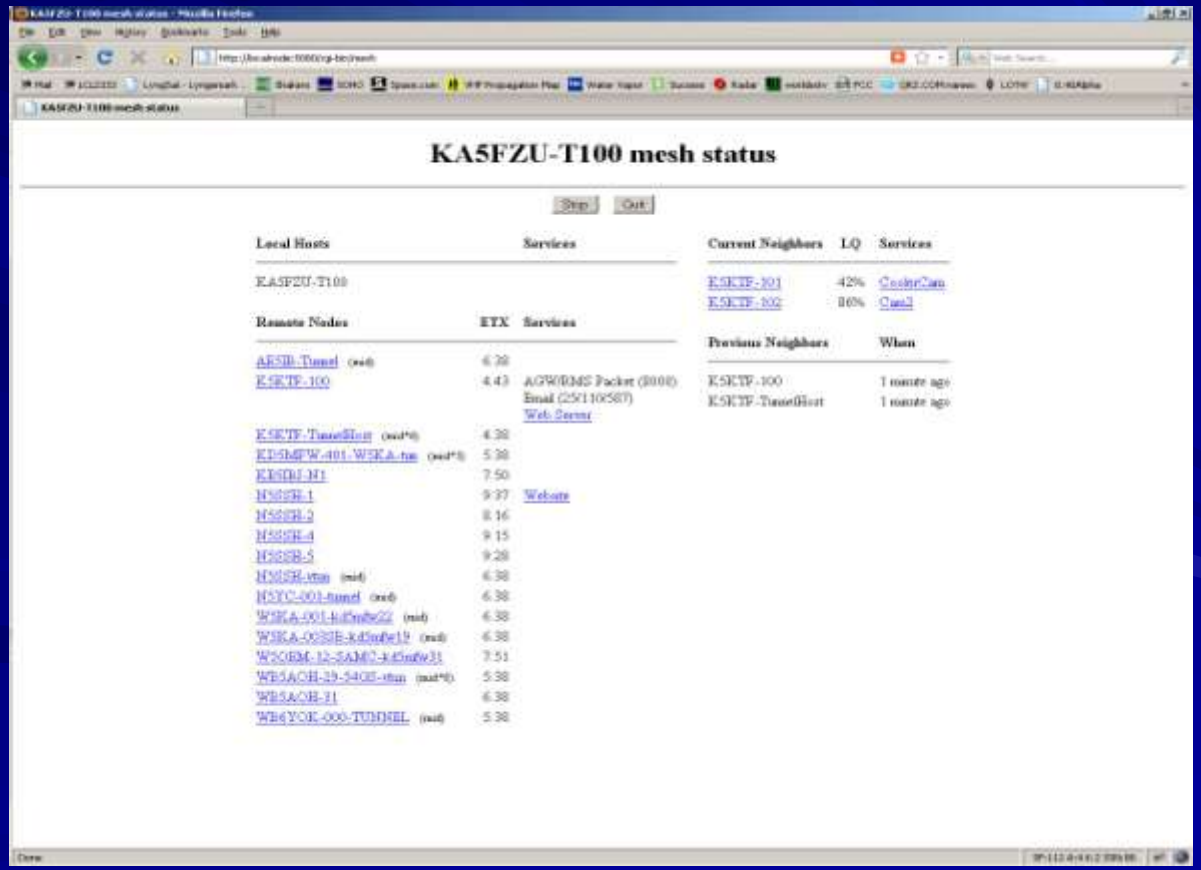
Reboot/renew

- Firmware will load. Reboot. Renew IP. Open localnode:8080



done

- Enter call and password. Node will reboot and you're done



2.4GHz band

- Lower half of wifi band overlaps with amateur 13cm band
- Hams can run high power and gain antennas as primary users
- Routers can be modified to go below the wifi band for quieter spectrum
- Range can be several miles line-of- sight with stock power and antennas

Portable node

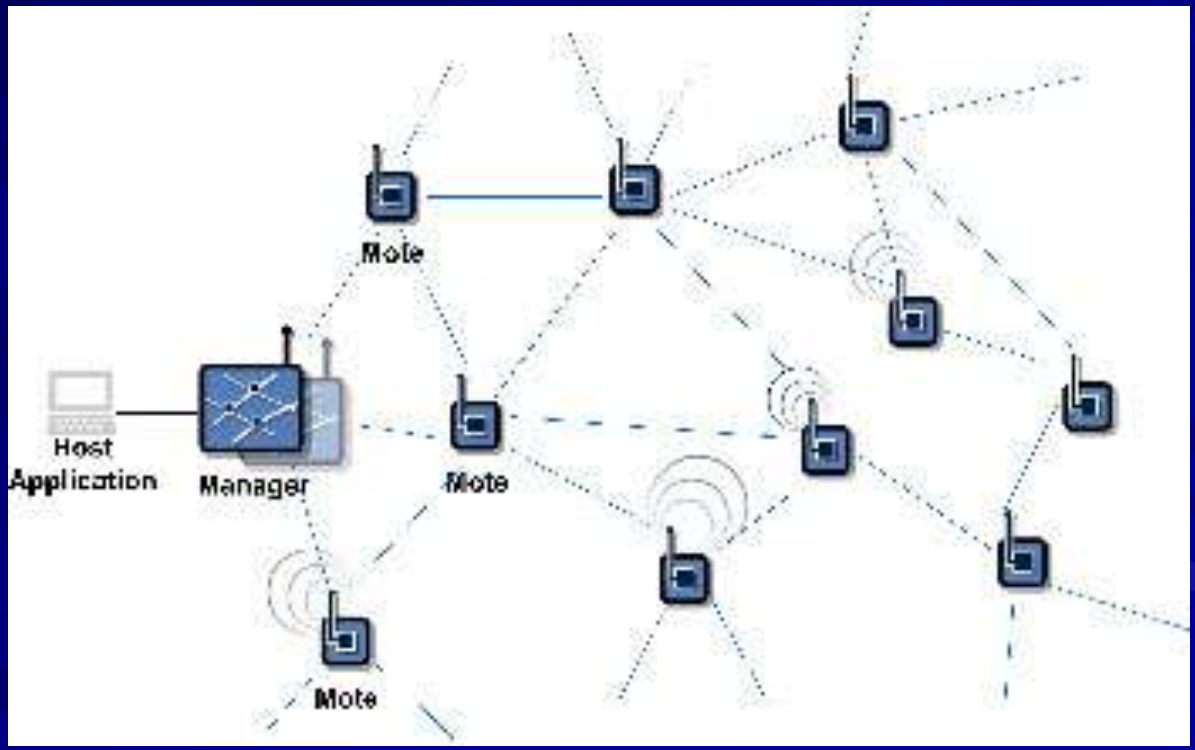
- Runs all day on 12A gel cell

Mesh network

- Nodes automatically connect to each other
- Form multiple paths across network
- More nodes increase reliability, fault tolerance and range of mesh
- No longer accessible by wifi directly, radios only connect to the mesh
- Can be connected to other nets, wifi, Internet

Mesh

- Mesh network



Applications

- Anything that you can run over a network
- Video, audio, text chat, VOIP
- Webcams
- Web pages, share files, print
- Remote console
- WebEOC
- Remote radio control, HRD, etc.
- Apps can run directly on a node

Sample scenario

- APRS is running in the ARES trailer
- Command post is across the parking lot or down the road. Is too noisy/crowded/RF inaccessible
- Broadband hamnet deployed between the two sites
- Command post can now see the APRS screens
- No internet required

Q&A

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