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A DNS IN THE AIR

* The views expressed herein are my own, and not those of the Department of Commerce, FCC, White House, Transition Team, Bo the Dog, or any other person or entity, living or dead.

# "Internet 2.0 is Open Spectrum"

-- Tom Evslin 2006

- <u>Four billion</u> mobile phone users

  - Many billion wireless Internet nodes tomorrow

- Wireless must change, the way the Internet changed networking

- …we're about to start.

Lessons Learned

- "It's not big because it's 'the Internet,' it's 'the Internet' because it's big."

  – David Post, *In Search of Jefferson's Moose*

- How did the Internet scale?
  - Many good choices and happy accidents
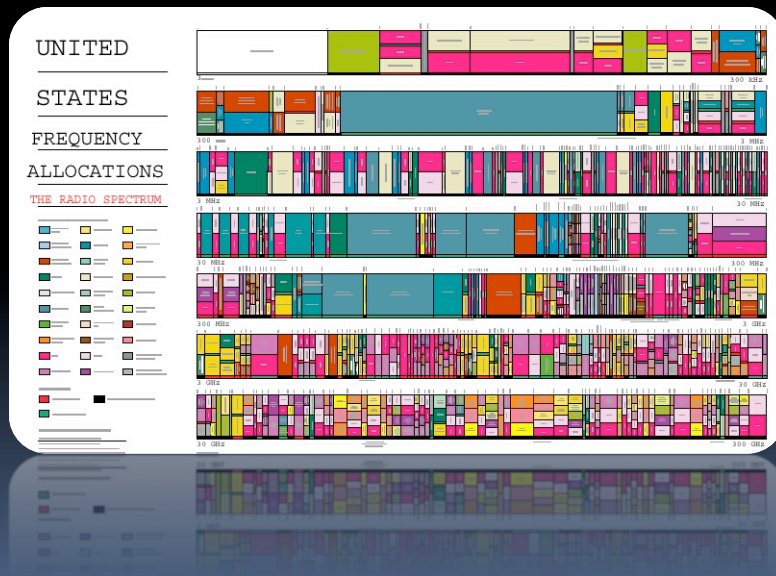 - Distributed addressing
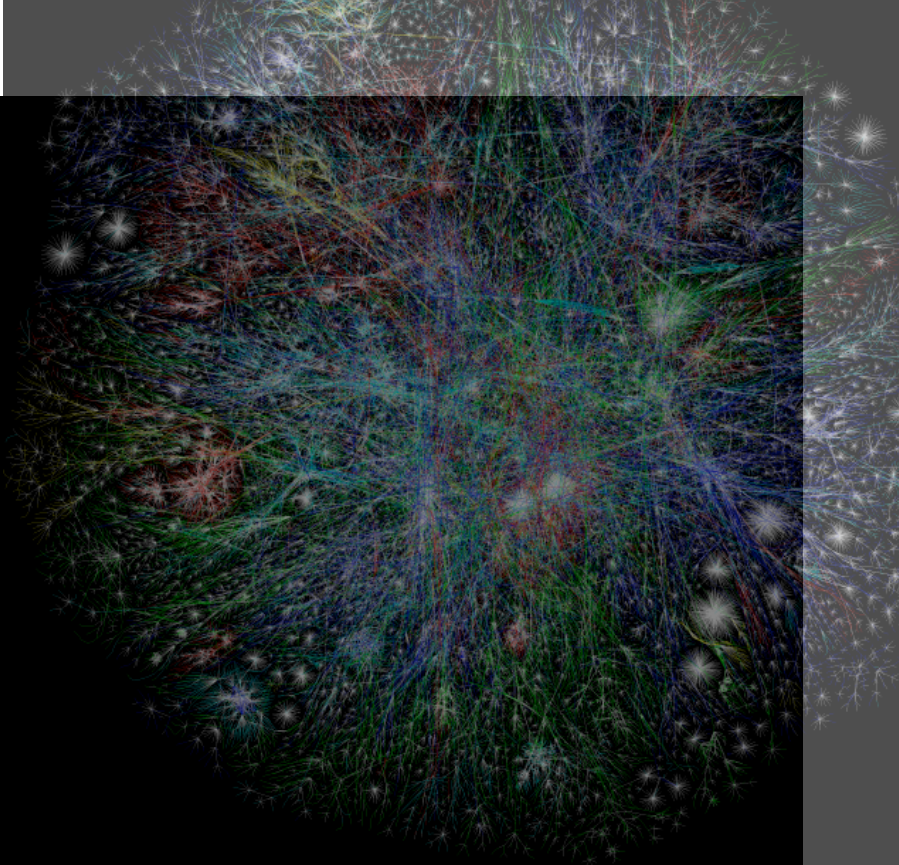
Addressing 101

- Where should this packet go?
  - One network – central allocation
  - Early internetwork – benevolent deity

DOESN'T SCALE!

Wireless 101

- ## Where should this signal go?
  - Command/control allocation

UNITED
STATES
FREQUENCY
ALLOCATIONS
THE RADIO SPECTRUM

DOESN'T SCALE!

95% of prime spectrum bands are <u>idle</u>.

Skyrocketing demand makes the situation unsustainable.

Solution

1. Separate resolution from transmission

2. Embrace distributed redundancy
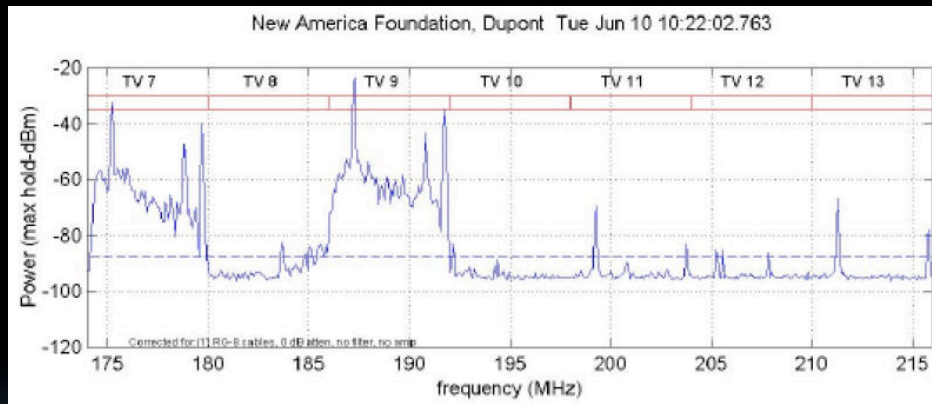
3. Define runtime / policy / governance

SND

Spectrum Networking DB

White Space Devices

- Unlicensed TV Band Devices operate in "white spaces" around TV channels

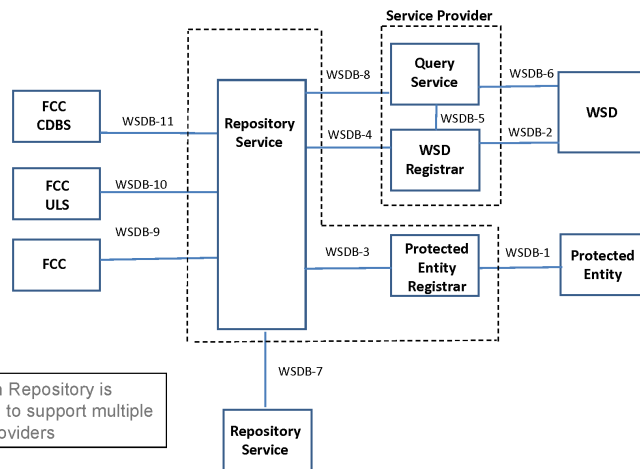New America Foundation, Dupont Tue Jun 10 10:22:02.763

- FCC mandates (11/08) use of geolocation database to protect incumbent users

The White Space Database

- Maps frequencies and locations to users
- Tells devices where they can transit

Figure 1. WSDB Reference Architecture

(Potentially)
unlocks the potential
of the wireless Internet

The Danger

- Bureaucratic, self-aggrandizing, opaque, government-dominated, etc.
- Why? Designed for expediency
  - Vagueness of task = mission creep
  - Jury-rigged corporate/governance structure
  - Money corrupts everything

Recommendations

1. **Separate resolution from transmission**
   - Universal spectrum DB (begins w/inventory)

2. **Embrace distributed redundancy**
   - Multiple service providers, repositories

3. **Define runtime / policy / governance**
   - Adaptive commons + real-time transactions
   - Goal = maximize capacity
   - Substantive and procedural protections

Thanks!

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