WiFi Networks Research Testbed for Commodity routers

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Wait what?

wibed

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Then you need:

What is WiBed?

WiBed is:

- A mesh testbed software platform
- An actual mesh testbed
- Based on commodity IEEE802.11 routers
- A Good option for wireless networking experiments

What is WiBed?

but WiBed is also:

- An effort started by "hackers" in the WBM
- Complement Community-Lab testbed (Low Cost, Low layer Experiments)
- Fast-installed self-organized mesh network

Architecture Overview

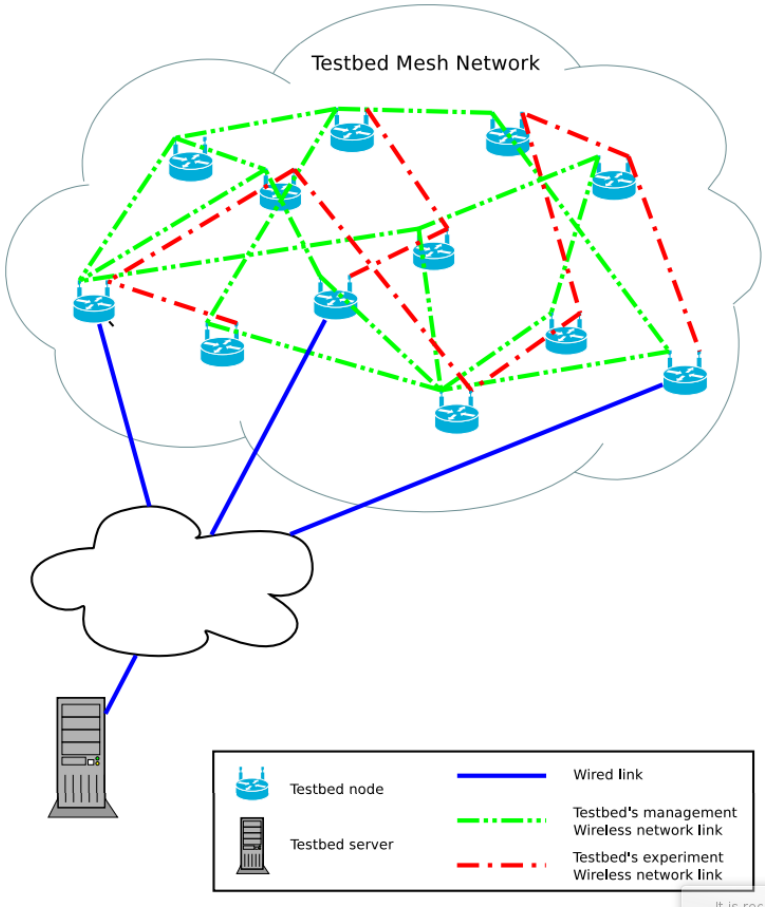

Figure: WiBed Architecture

Design Overview

- Nodes behave like FSM
- Communication with server through mgmt network
- Every N seconds nodes pull state info from server
- Node access only through server (ideally)

Implementation

- *Firmware*: `OpenWrt`
- *Our system*: `wibed-packages` (`UCI` configs, `Lua` scripts)
- *Management Network*: `batman-adv`

Key Idea: OverlayFS

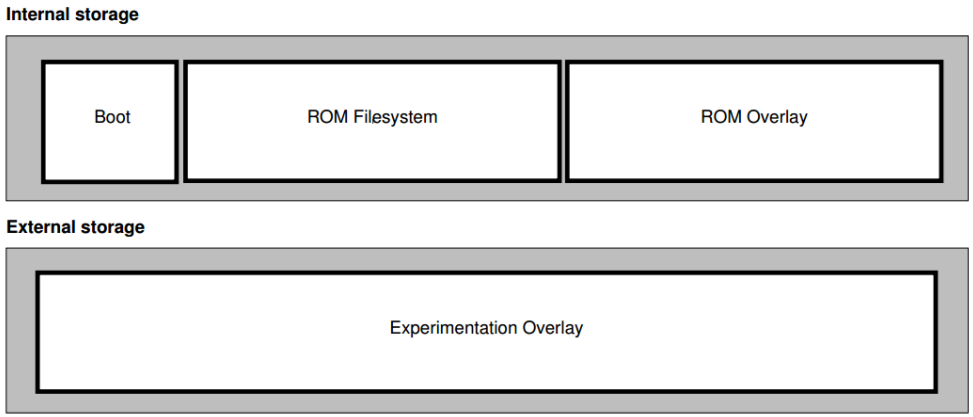

Figure: WiBed Node Filesystem

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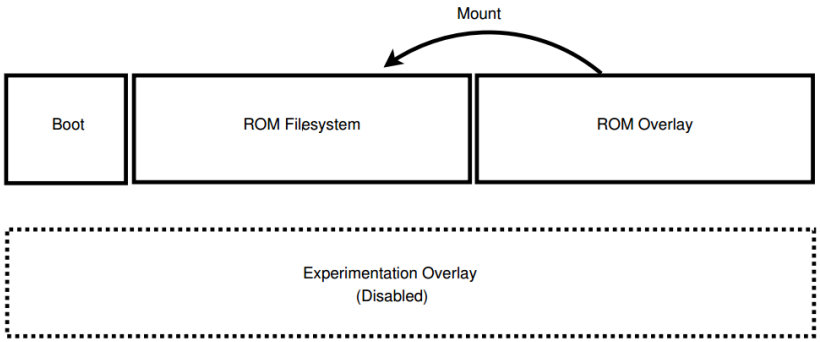


Figure: Node in IDLE state

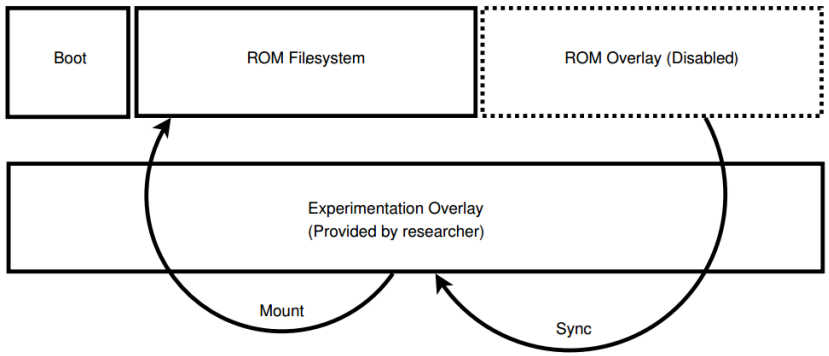


Figure: Node performing experiment

Implementation

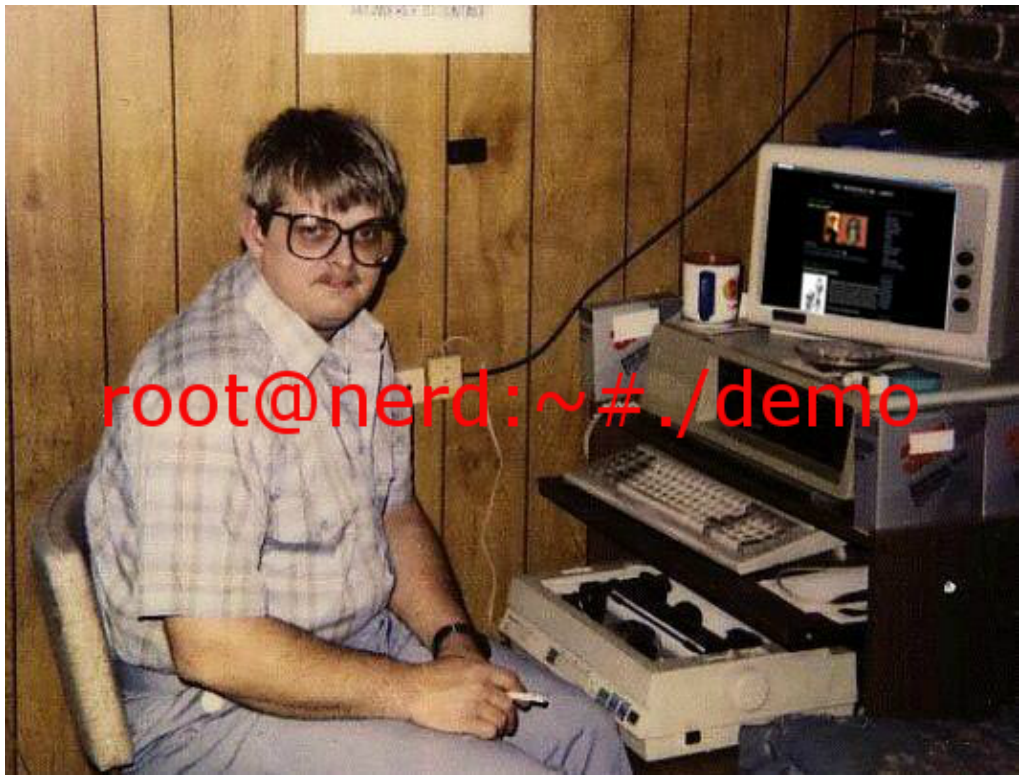
- *Server*: `Tornado Web Server`
- *Our system*: `Flask app` + `SQLite`

Wibed Server

Thus there is:

- A REST API for interaction with nodes
- A web interface for interaction with users

Got you!



More info

- Wiki
- Paper
- Us

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