WLAN PROS TOOLBOX · FREE

See the Air

Everything we work with in Wi-Fi is invisible.
Here are six simulators that make it visible,
and how to use them.



Keith Parsons · CWNE #3

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MULTIPATH

Walk toward a wall and watch the signal cancel

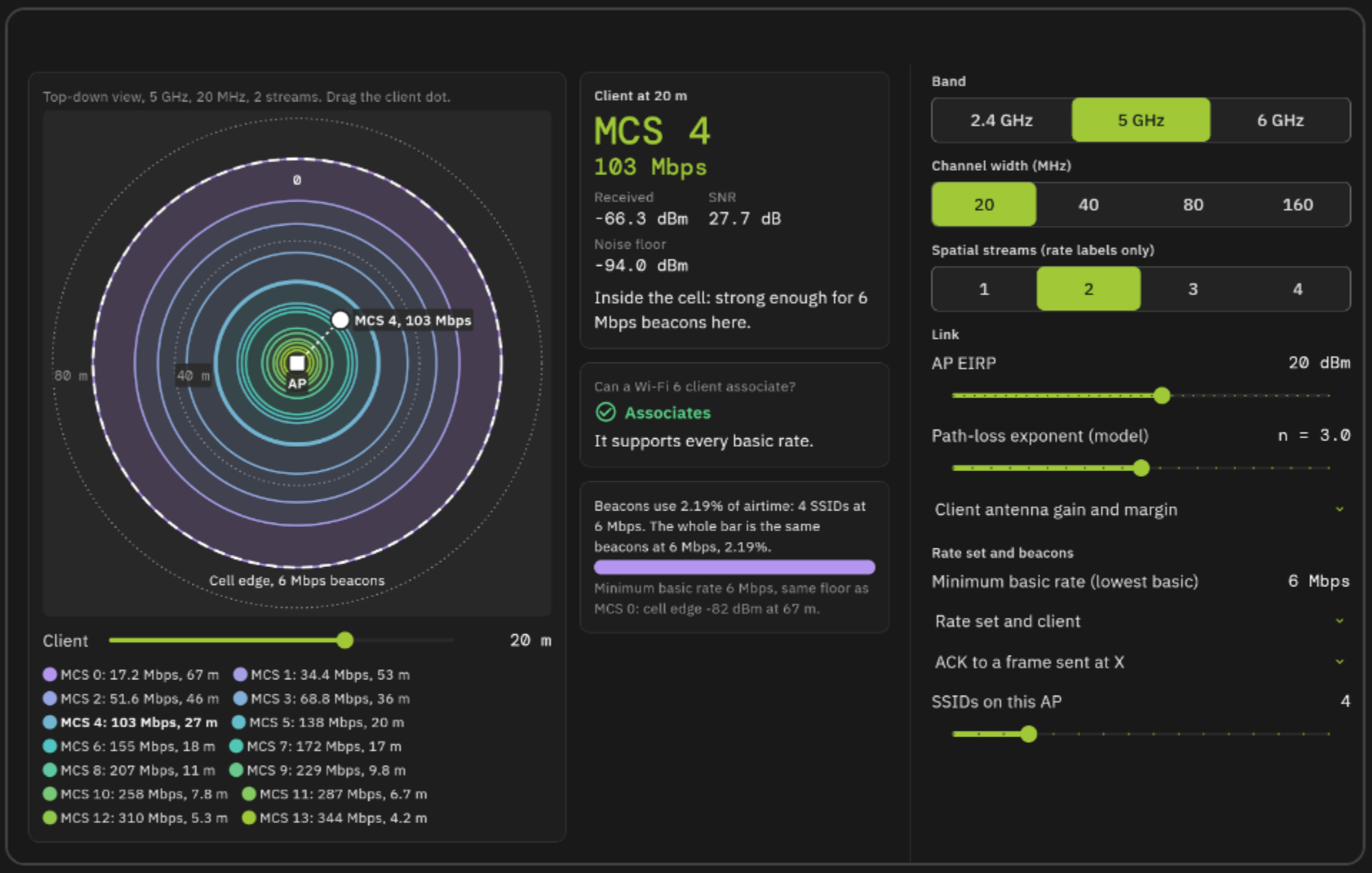


1. The reflected copy adds as an arrow. **In step it helps, out of step it cancels.**
2. In front of a metal wall, nulls repeat every half wavelength: **6.25 cm at 2.4 GHz**

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RATE VS RANGE

Where every MCS ends



1. A ring for every MCS around the AP. **Drag the client and read the rate.**
2. Wider channels shrink every ring. A higher minimum basic rate pulls the beacon edge in.

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AIRTIME FAIRNESS

One slow client drags every fast one down

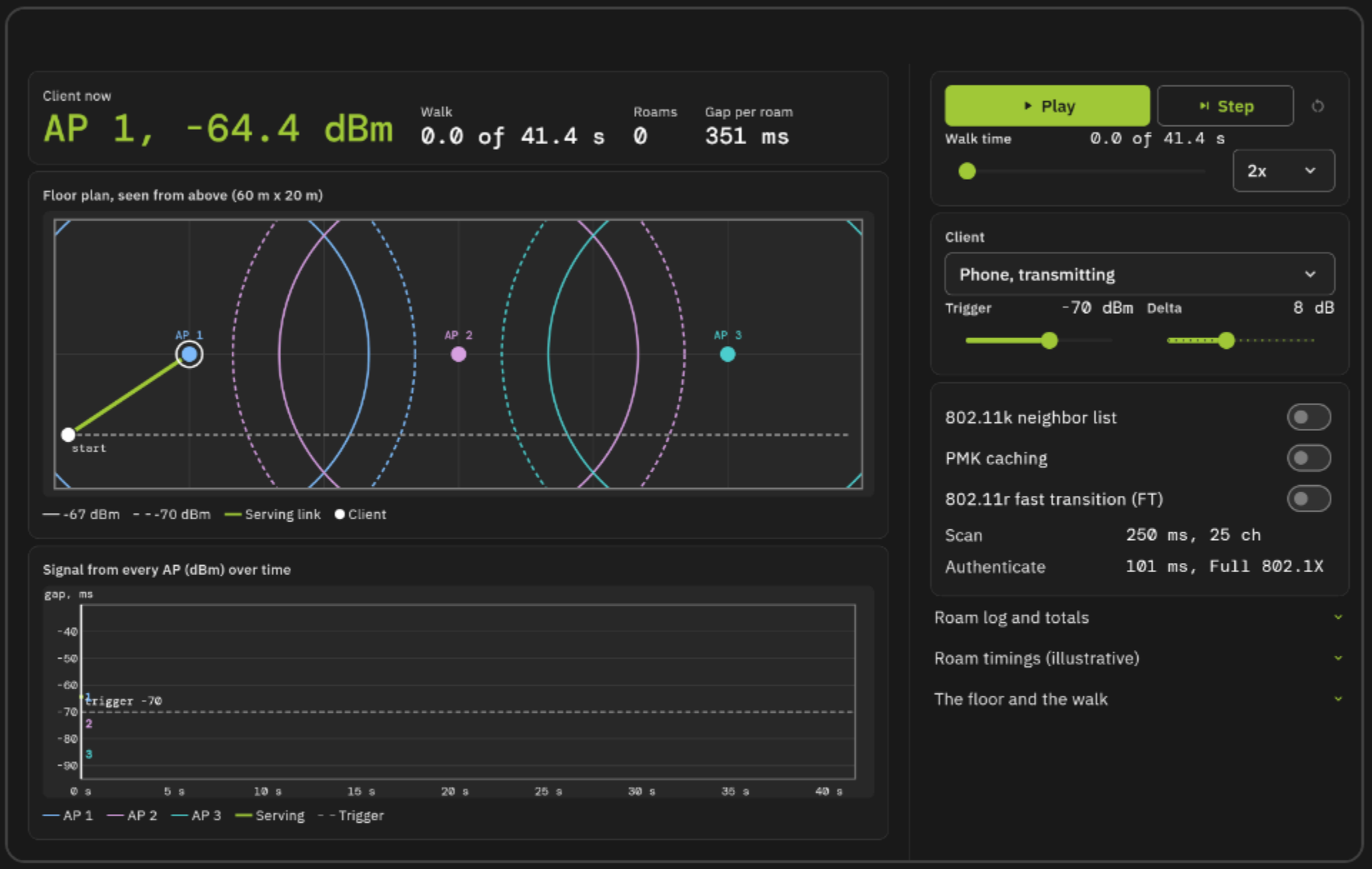


1. One scenario: three clients at 867 Mbps, one at 6. Taking turns by frame, **the slow one holds 53% of the air.**
2. Share the time instead: **278.9 to 443.4 Mbps** total, same channel, same clients.

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ROAMING

Why the phone holds on to the far AP



1. The client decides. **Set its roam trigger and delta** and watch sticky clients and ping-pong.
2. Turn on 802.11k, PMK caching and 802.11r, and see what each one saves.

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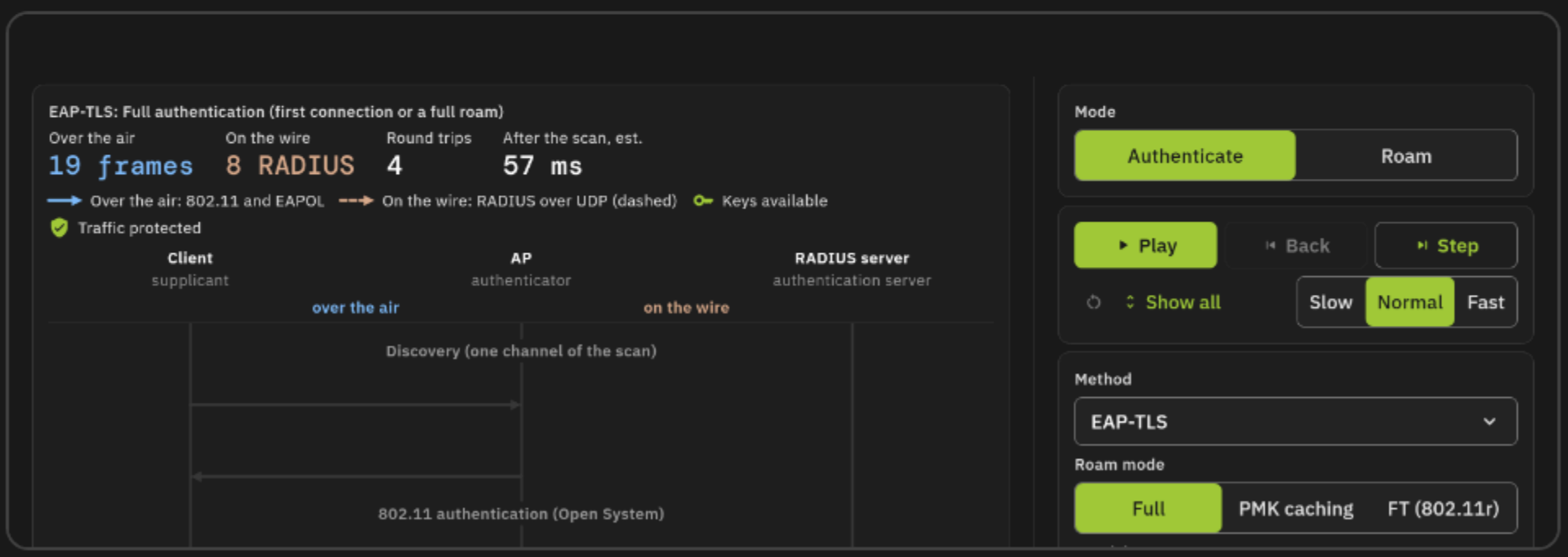
CONNECTING

Every frame of the connection, and where it breaks



Association, Frame by Frame

Scan to DHCP, to scale. "Why won't it associate?" gives the reason.



802.1X and EAP Ladder

"Break it" picks a fault and shows where the exchange stops.

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THE WIRELESS CLASSROOM

91 teaching tools in the Toolbox, all free

30 **Guided Lessons**
Plain language, with pictures

50 **Interactive simulators**
Drag it, change it, break it

11 **Course handouts**
Channel charts, MCS index, checklists

13 RF and Propagation

7 Signals and PHY

13 Airtime and Access

17 Design and Security

Presenter mode for the projector, a Teacher's Guide, and a Field Manual with a "Teaching it" note on 76 tools.

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STUDYING FOR CWNA

Predict first, then move the slider

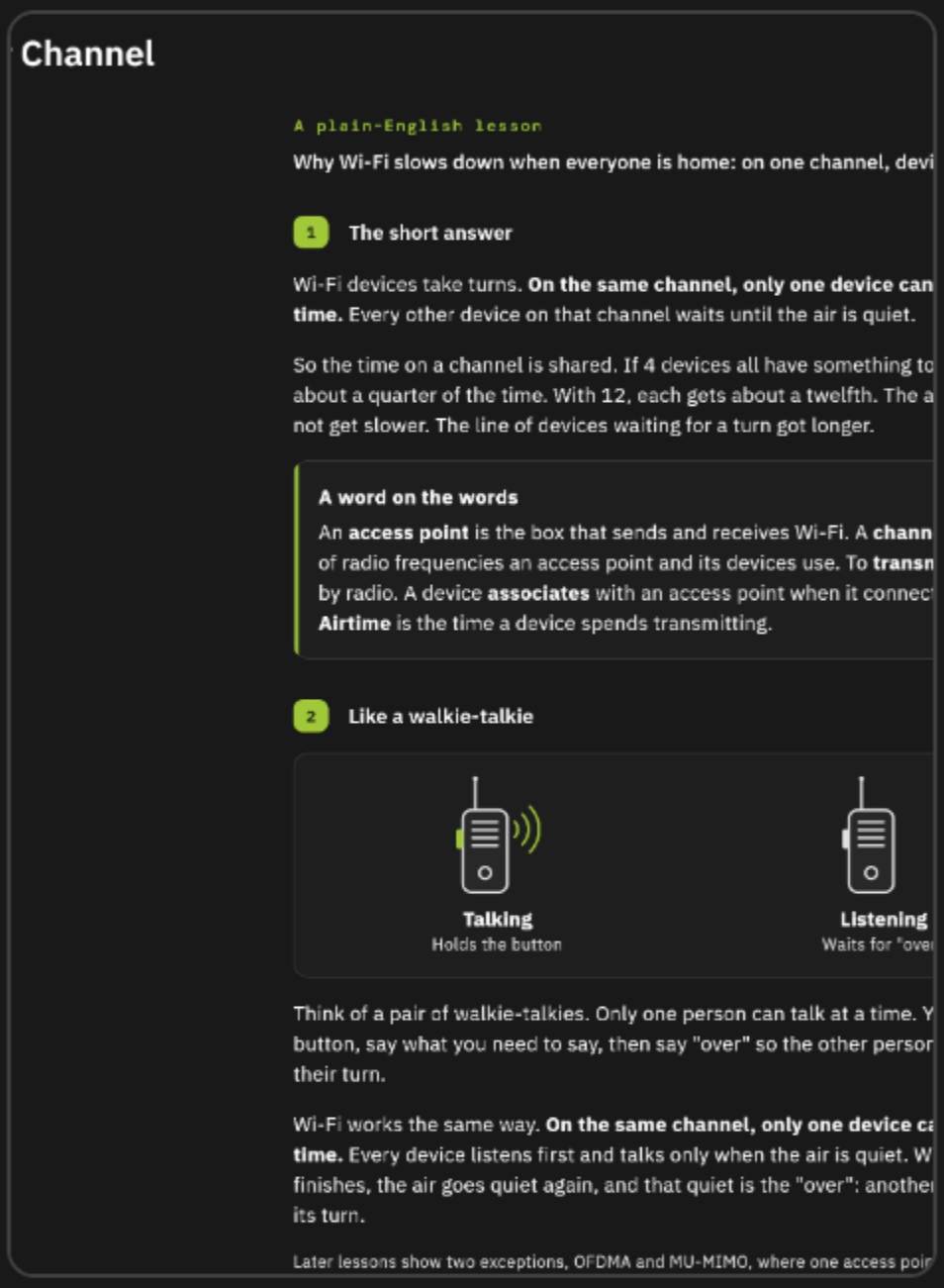


1. **Read the section** in your study guide, the way you do now
2. **Predict out loud:** which way will the number move, and by how much?
3. **Move one control** and check yourself against the screen
4. **Teach it back** to your study group in Presenter mode

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FOR THE PEOPLE WHO ASK YOU

Answers you can send instead of repeating



30 GUIDED LESSONS, INCLUDING

- Find My, Explained
- Captive Portals, Explained
- Is Your Router Too Old?
- Mesh, Extenders and Wired APs
- Wi-Fi Calling, Explained

One Talker per Channel explains why Wi-Fi slows down when everyone is home, with a pair of walkie-talkies. And **Check My Connection** answers "is it the Wi-Fi or the internet?" in one tap.

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