NEWSLETTER

Wi-Fi Authentication Course

By **Keith Parsons, CWNE #3** · 2025-05-14 · originally on LinkedIn

Student Kit - Gear

Ferney Munoz and I have developed a new course for teaching the various versions of Wi-Fi Authentication. From Open, through various forms of PSK, to 802.1X and finally to Passpoint and OpenRoaming.

In order to have a baseline of gear all the students can use, we started with a 'Network in a Box' idea from John Deegan and Jim Palmer's work at the Deep Dive of the same name from #WLPC 2024... but wanted the students not to 'build their own' - but instead to have the gear all ready to go so we can get directly into the lab exercises.

After nearly a year of various versions - getting closer and closer to what we wanted the student experience to be. We are now using 20 sets of these Network in a Box kits. We had to learn a lot of lessons along the way... but finally these are about where we finally want them to be.

The first unique feature is the 'Lab Internet' device, which brings in Internet access via either Ethernet, or as a 2.4GHz or 5GHz Wi-Fi client, or via 4G/LTE/5G Modem. Thus the rest of the entire network can maintain dedicated internal IP addressing schemes that won't need to change no matter what the Internet backhaul that is being used.

There is also USB-A and USB-C power to give client devices local charging capability. The WLAN Pi device has external USB-A Ports so adding Wi-Fi 6E or Wi-Fi 7 NICs or Spectrum Analyzers to the system with ease.

All of the wiring is behind the lexan sheets... including an external RJ-45 that provided PoE++ to power and test even Enterprise-Grade Access Points. Additionally there are 802.3af PoE ports available as well. This unit requires only a single AC power cord connection to power the entire rack of gear.

Behind the top Lexan sheet, there are the power bricks, but also a WLAN Pi that offers all WLAN Pi OS features, as well as a RADIUS server.

Available Labs

With this kit, we can offer any lab exercise from any of the CWNP courses, CWNA, CWSP, CWDP, etc. - as well as the ability to do hands-on labs with all the various forms of WI-Fi authentication covered in this course.

You can also do any of the WLAN Pi labs from their #WLPC Deep Dive course, as well as any local Linux labs from various Linux courses.

In this Wi-Fi Authentication course, we start with getting to know the lab gear, how to connect and test the various ports, VLANs, and built-in SSID. Additionally we have the students work through how to reset the network in a box back to 'factory' conditions - and to test all the internal connections are working properly.

For each of the lab exercises, we have the students use the internal lab gear to do packet captures they can take home that are personalized to their own gear... so they'll have their own packet captures of each authentication method to review and study. They will customize their copy of Wireshark with the WLAN Pros Master profile to help in the following exercises.

- Open Authentication
- PSK
- Dynamic PSK
- 802.1X
- Troubleshooting 802.1X
- 802.1X with RADIUS Attributes
- Passpoint - SIM Authentication
- Passpoint - OpenRoaming Authentication
- Capturing and understanding ANPQ

This week's course is being taught to members of the Utah Education Network, but it will also be offered at future #WLPC events as a 3-day bootcamp.

By Keith Parsons, CWNE #3, Wireless LAN Professionals. Free to read and share. Facts