SEC556

IoT Penetration Testing

JUNE 2026 UPDATE: MODERN IOT PENETRATION TESTING FOR CONNECTED SYSTEMS

The latest SEC556 update expands SANS Institute's hands-on IoT penetration testing course with modern firmware analysis workflows, AI-assisted testing techniques, expanded wireless exploitation labs, and updated offensive methodologies for today's connected ecosystems.

Students now use artificial intelligence workflows to accelerate firmware analysis, RF signal investigation, threat modeling, and filesystem analysis while gaining deeper experience attacking IoT devices across hardware, firmware, wireless, network, and application layers.

The refreshed course also introduces modernized tooling, expanded SDR and replay attack workflows, updated firmware analysis pipelines, and improved support for Apple Silicon and ARM64 environments.

New Content

- AI-assisted threat modeling and packet analysis, firmware and filesystem analysis
- Expanded SDR and replay attack workflows
- Azure Firmware Analysis integration
- Updated IoTA testing methodology
- Expanded RF signal identification techniques
- Offensive API testing for IoT devices

Updated Features

- Apple Silicon and ARM64 VM support
- Updated Raspberry Pi lab environment
- Modernized firmware extraction workflows
- Expanded wireless tooling for BLE, Zigbee, LoRA, and SDR
- ChatGPT access integrated into labs
- Updated hardware analysis workflows
- Improved offensive IoT assessment methodology

Lab Refresh

- AI-assisted IoT threat modeling labs, and packet capture analysis
- Modernized firmware carving exercises
- Updated Binwalk v3 workflows
- Expanded wireless replay attack labs
- RF signal analysis with AI-assisted identification
- Enhanced filesystem extraction and analysis labs

"The skills you will build in this class will be valuable for today's IoT technology and serve as a foundation for tomorrow's advancements, regardless of your vertical, application, or data. We are happy to share that we've included AI-based analysis objectives in many of our labs to further enhance your ability to use these force multipliers, should you see fit. We are hopeful they will accelerate your work as much as it has ours!"

— Larry Pesce and James Leyte-Vidal | SEC556 Authors

For more information: sans.org/SEC556

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