GENERAL

aircrack user guide

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Aircrack User Guide: Mastering Wi Fi Security Testing

Aircrack ng is one of the most widely used open source tools for assessing the security of 802.11 wireless networks. Whether you're a penetration tester, a network administrator, or a security enthusiast, understanding how to use Aircrack effectively can help you identify weaknesses before attackers do. This comprehensive user guide walks you through everything you need to know: from installation and packet capture to cracking WEP and WPA/WPA2 keys, plus advanced tactics and legal considerations.

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What Is Aircrack ng?

Aircrack ng is a suite of tools designed for wireless network auditing. It can capture raw 802.11 frames, analyze traffic, and recover encryption keys for WEP, WPA, and WPA2 networks. The project was born in 2008, evolving from earlier tools like Aircrack and Airodump. Today, Aircrack ng runs on Linux, macOS, Windows, and even Android, making it a versatile choice for security professionals.

Why Use Aircrack ng?

Key reasons to adopt Aircrack ng in your security toolkit:

- Open Source & Free – No licensing costs.
- Community Driven – Regular updates and a large user base.
- Cross Platform – Works on multiple operating systems.
- Modular Design – Individual tools can be used independently or combined.
- Comprehensive Feature Set – From packet injection to key cracking.

System Requirements

While Aircrack ng is lightweight, the underlying wireless adapter plays a critical role. For optimal performance:

• Wireless Adapter – Must support monitor mode and packet injection. Popular choices include Alfa AWUS036H, TP Link TL WN722N, and the Atheros AR9271.
• CPU – 2 /GHz or higher for faster cracking, especially for WPA/WPA2.
• RAM – 4 /GB minimum; 8 /GB recommended for large captures.
• Operating System – Linux (Ubuntu, Kali, Debian) is the most common. macOS and Windows are supported but may require additional drivers.

Installing Aircrack ng

Installation steps differ slightly between OSes. Below are concise instructions for the most popular platforms.

Linux (Ubuntu/Debian)

1. Open a terminal.
2. Update package lists:\\n sudo apt update\\n
3. Install Aircrack ng:\\n sudo apt install aircrack-ng\\n
4. Verify installation:\\n aircrack-ng --help\\n

Linux (Kali Linux)

Kali usually comes pre installed with Aircrack ng. If not:

1. Run:\\n sudo apt install aircrack-ng\\n
2. Confirm with:\\n aircrack-ng --version\\n

macOS (Homebrew)

1. Install Homebrew if you don't have it:\\n /bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh)"\\n
2. Install Aircrack ng:\\n brew install aircrack-ng\\n
3. Check installation:\\n aircrack-ng --help\\n

Windows (Cygwin or WSL)

1. Use Windows Subsystem for Linux (WSL) or install Cygwin.
2. Follow the Linux instructions inside the environment.
3. Alternatively, use pre compiled binaries from the Aircrack ng website.

Getting Started

Before diving into packet capture, you need to configure your wireless interface for **monitor mode**. The following steps assume you're using a Linux distribution.

Identify Your Wireless Adapter

iwconfig\\nLook for an interface like *wlan0* or *ath0*.

Enable Monitor Mode

1. Stop the network manager:\\n sudo systemctl stop NetworkManager\\n
2. Set monitor mode:\\n sudo airmon-ng start wlan0\\n

Return to Managed Mode (Optional)

sudo airmon-ng stop mon0\\nRemember to restart NetworkManager if you need a GUI connection later.

Capturing Packets

The core of Aircrack ng's functionality is packet capture. Use **airodump ng** to collect traffic from target networks.

Basic Capture Command

sudo airodump-ng mon0 -w capture_file\\nThis command writes captured packets to *capture_file-01.cap*.

Targeted Capture

To focus on a specific Access Point (AP) and client:

sudo airodump-ng mon0 -c 6 --bssid 00:11:22:33:44:55 -w target_capture --write-interval 2\\n\\n **-c 6** – Channel 6.\\n **--bssid** – Target AP's MAC address.\\n **--write-interval 2** – Flush to disk every 2 seconds.\\n

Capturing a WPA/WPA2 Handshake

1. Put the AP into deauthentication mode to force clients to reconnect:\\n sudo aireplay-ng -0 10 -a 00:11:22:33:44:55 -c FF:FF:FF:FF:FF:FF mon0\\n
2. While clients reconnect, capture the handshake with airodump ng as shown above.
3. Verify handshake presence:\\n aircrack-ng capture_file-01.cap | grep "Handshake"\\n

Analyzing Traffic

After capturing, you need to interpret the data. Aircrack ng provides several tools for analysis.

airodump ng Output

Key columns to watch:

- Channel – Frequency of the AP.
- BSSID – MAC address of the AP.
- ESSID – Network name.
- Signal – Signal strength (dBm).
- Encryption – Type (WEP, WPA, WPA2).
- Clients – Connected devices.

Wireshark Integration

For deeper inspection, export the capture to Wireshark:

sudo airodump-ng -w capture_file -c 6 --write-interval 2 --output-format pcap mon0\\nOpen the resulting *capture_file-01.pcap* in Wireshark to analyze packet flows, authentication exchanges, and more.

Cracking WEP Keys

WEP (Wired Equivalent Privacy) is outdated but still present in many legacy networks. Aircrack ng can recover 40 bit and 104 bit WEP keys with a moderate amount of traffic.

Step 1: Capture Sufficient Packets

Collect at least 500–1,000 packets, preferably with repeated IVs (initialization vectors). Use:

sudo airodump-ng mon0 -w wep_capture\\n\\nStep 2: Run Aircrack ng

aircrack-ng wep_capture-01.cap\\nThe tool will display the key once it's found.

Tips for Faster Cracking

- Use aireplay ng to inject packets and increase IV diversity.
- Target APs on channels with fewer networks to reduce interference.

- Ensure your adapter supports packet injection for higher success rates.

Cracking WPA/WPA2 Keys

WPA/WPA2 employs a four way handshake that must be captured before the key can be derived. Aircrack ng uses dictionary or brute force attacks against the captured handshake.

Step 1: Capture the Handshake

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