

2017 UEN Tech Summit

Wi-Fi Tools

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About Luke - @WiFiLuke

I've been doing Wi-Fi since 802.11b was hot.

\$dayjob is Senior Network Engineer at Xxxxxx Xxxxxx University. (Opinions are my own)

\$hiredgun for conference and event Wi-Fi.



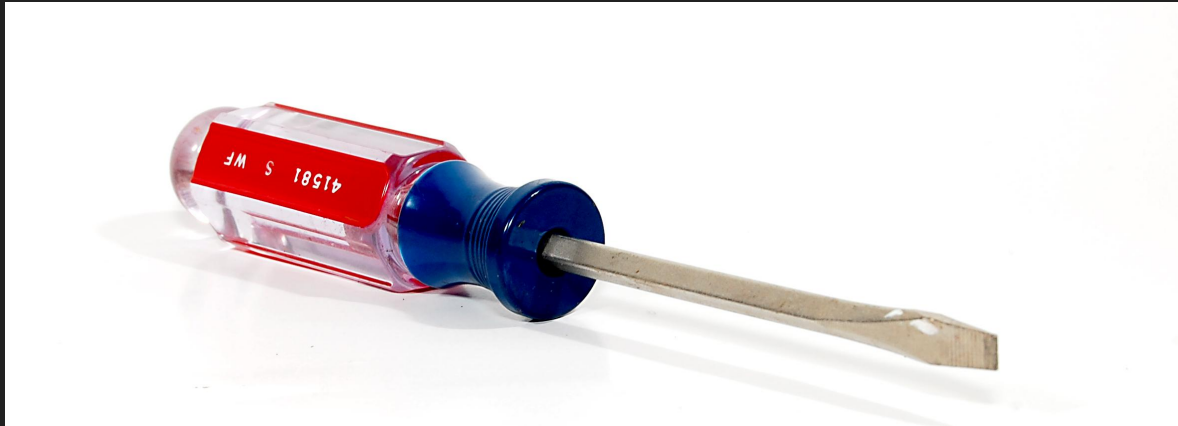
Agenda

Terminology

Rapid Fire Tool Exposition!

Demos of Tools <- you get to vote on what we explore further

Terminology



Terminology

Wireless Access Point (or AP, never WAP)

Site Survey

-Wireless Design

-AP-on-a-Stick

-Validation Survey

Spectrum Analysis

Tools

Tools - Spectrum Analysis

metageek wiSpy 2.4x

2.4GHz only

Use with Chanalyzer & Ekahau Site Survey

<http://www.metageek.com/products/wi-spy/>



metageek wiSpy DBx

2.4GHz or 5GHz

Use with Chanalyzer & Ekahau Site Survey



<http://www.metageek.com/products/wi-spy/>

AirMagnet Spectrum XT



2.4GHz or 5GHz

Bundled with AirMagnet Spectrum software

Works with the other AirMagnet products



<http://enterprise.netscout.com/enterprise-network/wireless-network/airmagnet-spectrum-xt>

HackRF

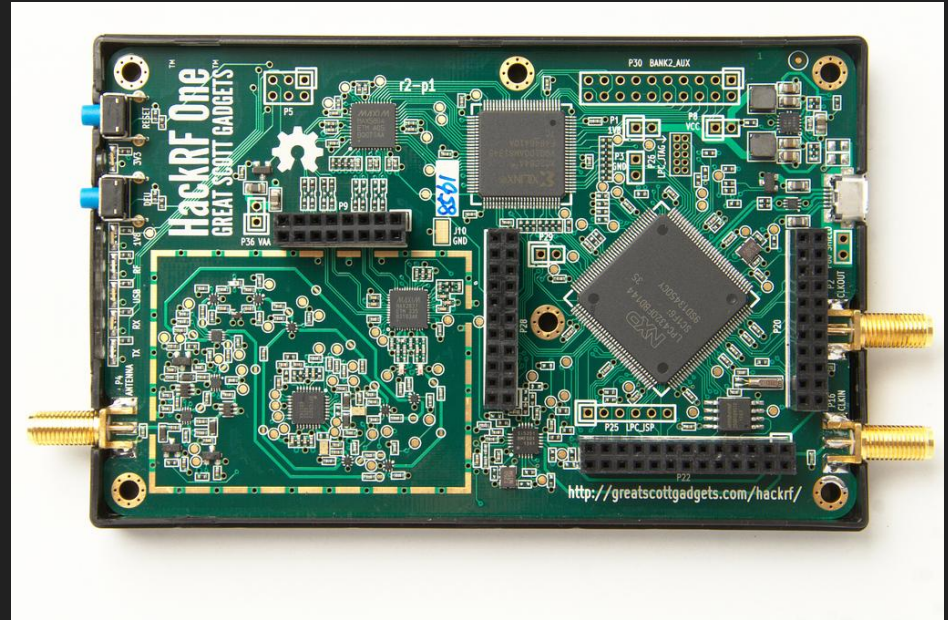
RX/TX Software Defined Radio

Open Source SW & HW

1MHz to 6GHz, ~10MHz bandwidth

New firmware in 2017 that can sweep

Software is VERY tough to work with



https://youtu.be/FrVDL_-HOds?t=17m40s

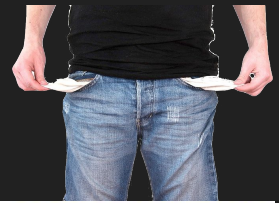
Cisco AP for Spectrum Analysis

2.4GHz or 5GHz

Under \$20 for a used 3502i

Lightweight or Autonomous

Use with Cisco Spectrum Expert
software or metageek Chanalyzer



Cisco Aironet 802.11n Dual Band Access Point AIR-CAP3502I-A-K9 *NO ADAPTER*

\$17.99

Buy It Now

Free shipping



Cisco AIR-CAP3502I-A-K9 Aironet 3502i Wireless Access Point

\$18.99

Trending at \$25.00

Buy It Now

Free shipping



NEW LISTING ~ Cisco Aironet AIR-CAP3502I-A-K9 802.11n Dual Band Wireless Access Point

\$18.99

Buy It Now

Free shipping



Get it on or before Tue, Jun. 20

<https://dot11nate.blogspot.com/2016/02/lab-spectrum-analyzer.html>

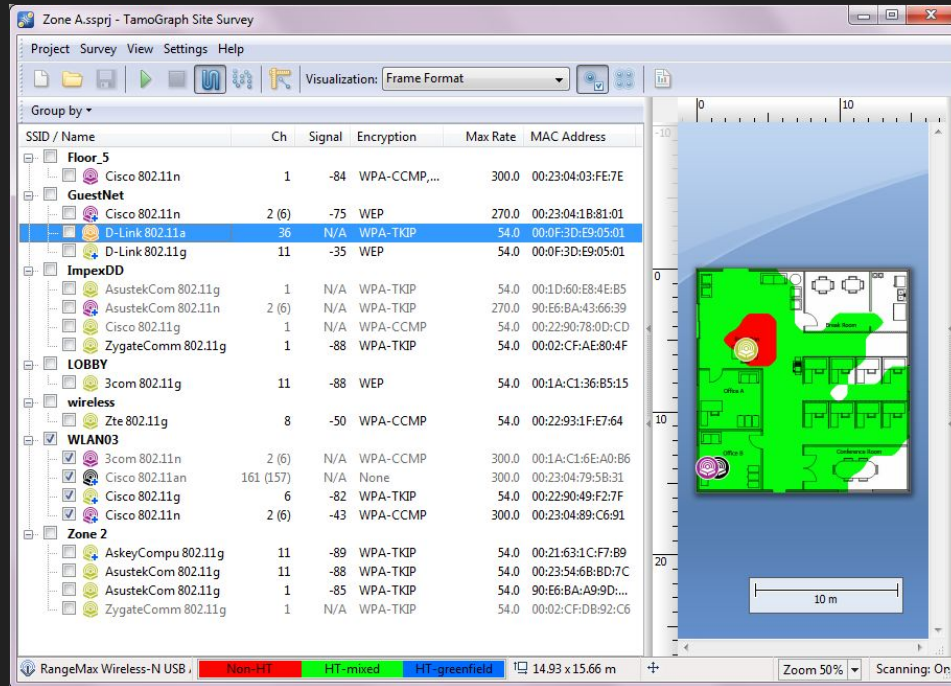
Tools - Survey/Design Software

TamoGraph Site Survey



Competitively priced

Great support for 3rd party adapters



<http://www.tamos.com/products/wifi-site-survey/>

AirMagnet Survey

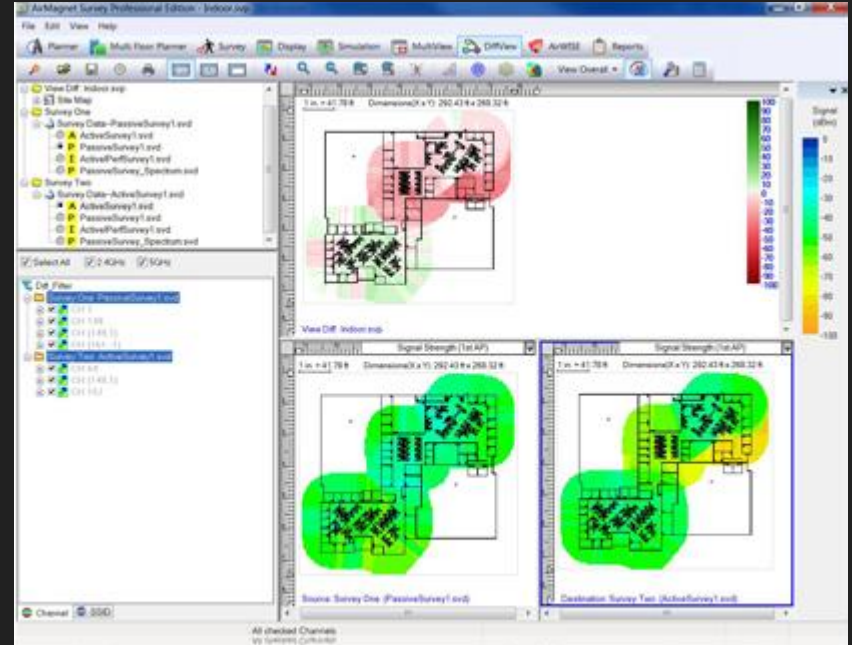


Was the King for a number of years

AirMagnet -> Fluke -> Netscout

Picking back up steam, but still behind

Part of a complete package



<http://enterprise.netscout.com/products/airmagnet-survey>

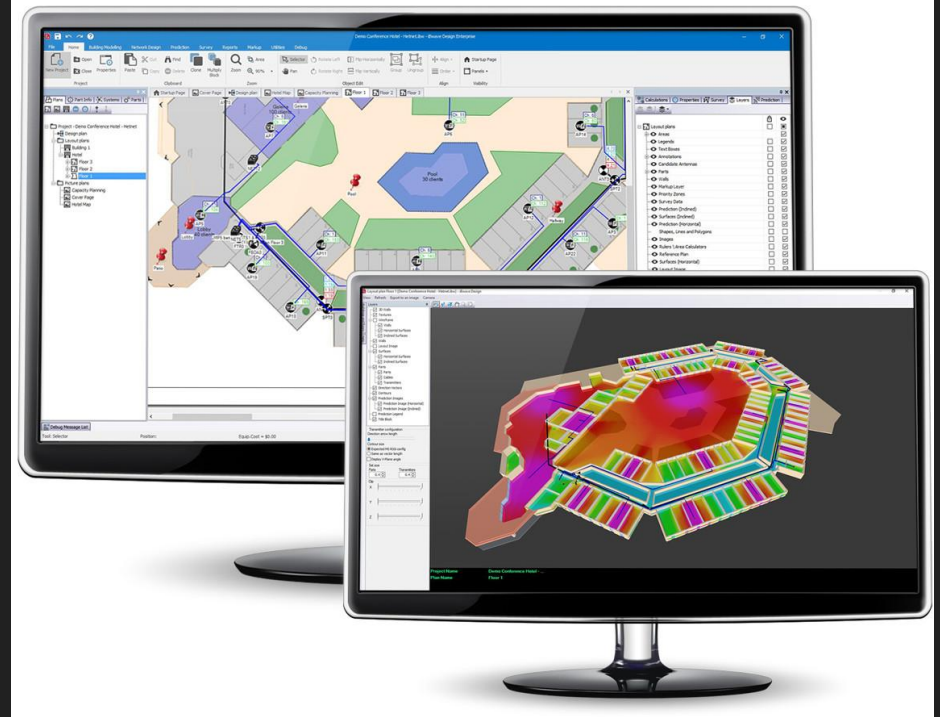
iBWAVE Wi-Fi



Cellular Gold Standard - Now for Wi-Fi

Best 3D modeling

New player in the Wi-Fi field



<http://www.ibwave.com/ibwave-wi-fi-suite>

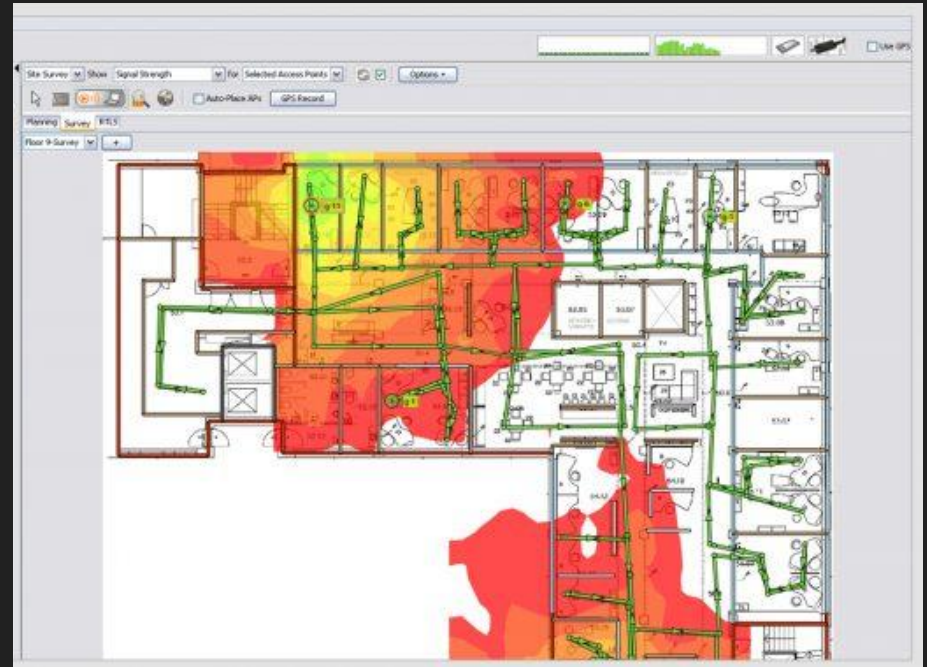
Ekahau Site Survey



Currently the most popular Survey tool

Quickest turnaround on new APs

Windows and Mac OS



<https://www.ekahau.com/>

Tools - Troubleshooting

Netscout AirCheck G2



Best tool for a Wi-Fi Go-Bag

Approachable enough for front line support, but still a great tool for a Wi-Fi Pro

Cloudy bits to aggregate test results across a team

Built in wired tester



<http://enterprise.netscout.com/products/aircheck-g2-wifi-tester>

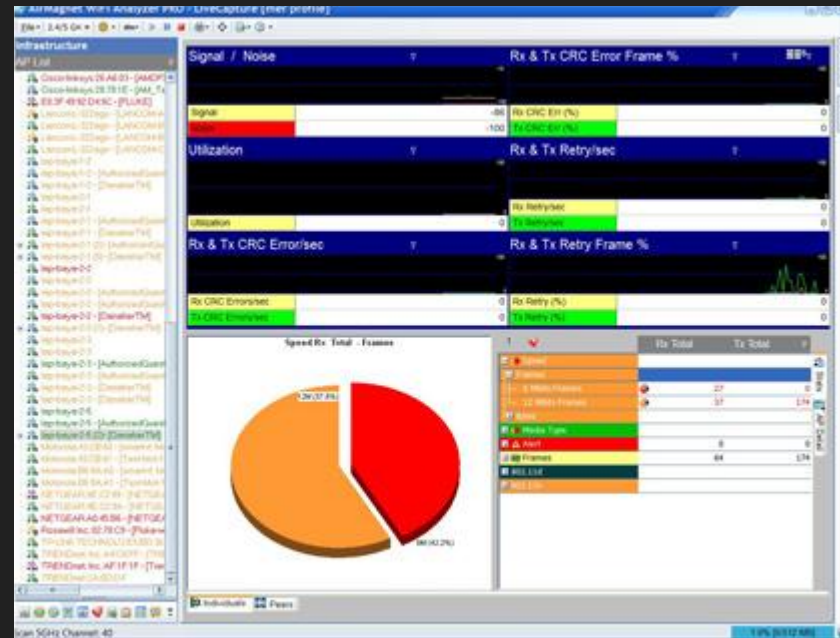
Tools - Troubleshooting Packet Analysis

Netscout AirMagnet WiFi Analyzer Pro



Packet analysis and statistics

Roaming analysis

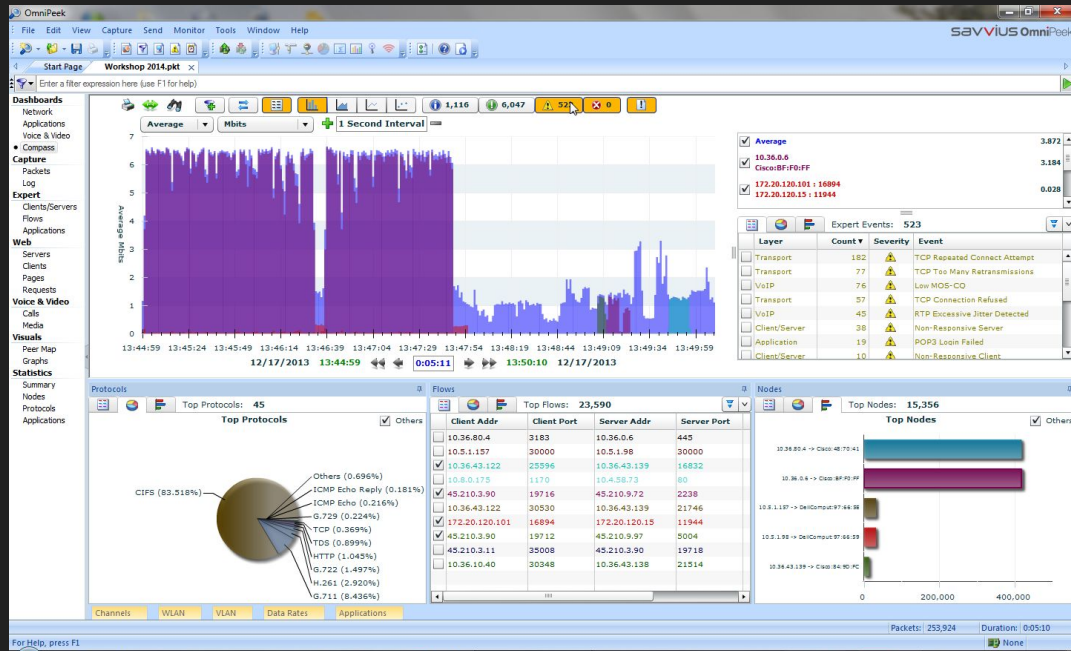


<http://enterprise.netscout.com/enterprise-network/wireless-network/AirMagnet-WiFi-Analyzer>

Savvius Omnipeek

Packet analysis and statistics

Roaming analysis

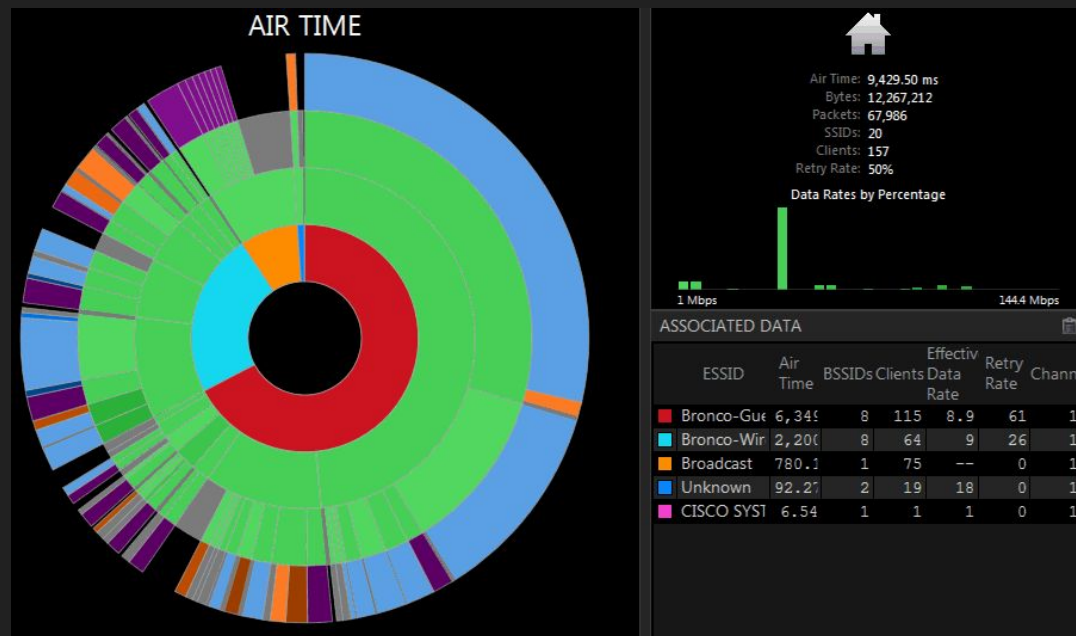


metageek Eye P.A.



Great graphical views

Not as much deep packet love



<https://>

Wireshark



Best capture device: MacBook Pro

Wi-Fi Coloring Rules:

<http://www.revolutionwifi.net/revolutionwifi/2011/04/using-wireshark-coloring-rules-to.html>

<https://www.wireshark.org/>

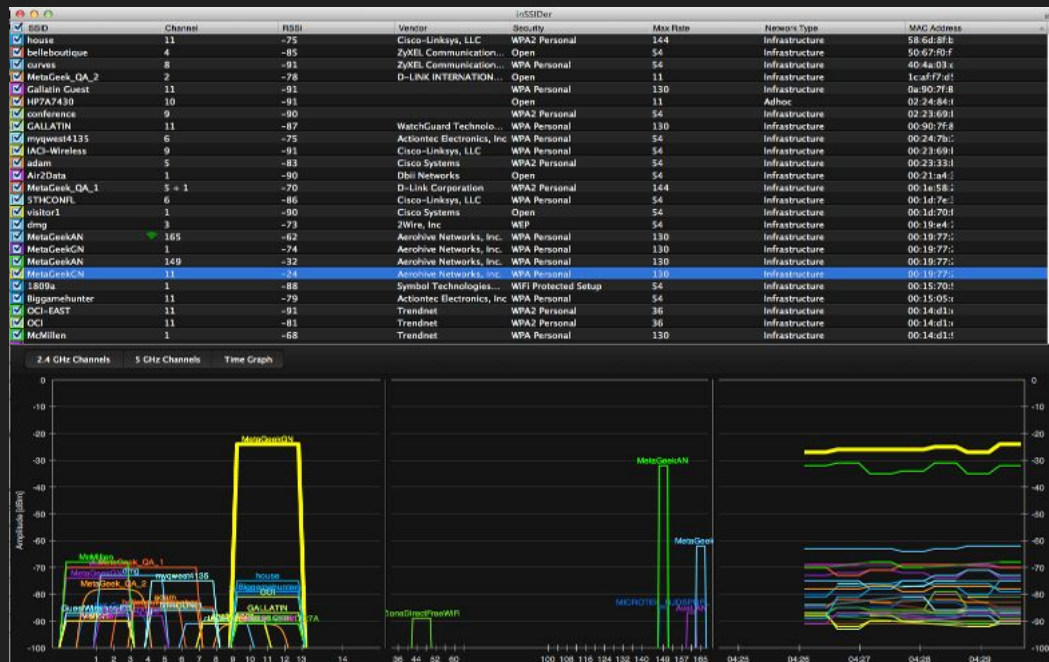
Tools - Miscellaneous

metageek inSSIDer

Scan for networks and APs

Integration with Wi-Spy

Windows & Mac OS



<http://www.metageek.com/products/inssider/>

WiFi Explorer



Scan for networks and APs

Wireshark like drill-down

Mac OS only

WiFi Explorer interface showing a list of detected networks and a detailed view of the selected network (PantAIR-Registration).

Networks List:

Network Name	BSSID	Vendor	Signal	Channel	Width	Band	Mode	Max Rate	Security	Last Seen
PantAIR-Registration	AC:A3:1E:BF...	Aruba Networks Inc.	71%	1	20 MHz	2.4 GHz	b/g/n	144 Mbps		Just now
PantAIR	AC:A3:1E:BF...	Aruba Networks Inc.	95%	1	20 MHz	2.4 GHz	b/g/n	144 Mbps		Just now
PantAIR-Registration	AC:A3:1E:BF...	Aruba Networks Inc.	76%	11	20 MHz	2.4 GHz	b/g/n	144 Mbps		Just now
PantAIR-Guest	AC:A3:1E:BF...	Aruba Networks Inc.	70%	36	80 MHz	5 GHz	ac	867 Mbps	WPA2	Just now
PantAIR-Guest	AC:A3:1E:BF...	Aruba Networks Inc.	79%	6	20 MHz	2.4 GHz	b/g/n	144 Mbps	WPA2	Just now
PantAIR	AC:A3:1E:BF...	Aruba Networks Inc.	100%	40	80 MHz	5 GHz	ac	867 Mbps	WPA2	Just now
PantAIR-Guest	AC:A3:1E:BF...	Aruba Networks Inc.	88%	1	20 MHz	2.4 GHz	b/g/n	144 Mbps	WPA2	Just now
PantAIR-Registration	AC:A3:1E:BF...	Aruba Networks Inc.	70%	36	80 MHz	5 GHz	ac	867 Mbps		Just now
PantAIR-Registration	AC:A3:1E:BF...	Aruba Networks Inc.	67%	149	80 MHz	5 GHz	ac	867 Mbps		Just now
PantAIR	AC:A3:1E:BF...	Aruba Networks Inc.	70%	36	80 MHz	5 GHz	ac	867 Mbps		Just now
PantAIR-Registration	AC:A3:1E:BF...	Aruba Networks Inc.	72%	161	80 MHz	5 GHz	ac	867 Mbps		Just now
PantAIR-Guest	AC:A3:1E:BF...	Aruba Networks Inc.	67%	149	80 MHz	5 GHz	ac	867 Mbps	WPA2	Just now
PantAIR-Guest	AC:A3:1E:BF...	Aruba Networks Inc.	93%	1	20 MHz	2.4 GHz	b/g/n	144 Mbps	WPA2	Just now

Network Details:

Information Element:

- Service Set Identifier: PantAIR
- Supported Rates: 6(B), 9, 12(B), 18, 24(B), 36, 48, 54 Mbps
- DS Parameter Set: Current channel: 48
- Country Information: US (Any Environment)
- Power Constraint: 0 dBm
- TPC Report: Transmit Power: 15 dBm, Link Margin: 0
- HT Capabilities: 20/40 MHz, Short GI for 20 MHz, Short GI for 40 MHz, 2 Spatial Streams
- HT Operation: Primary Channel: 48 (Any Width Supported), Secondary Channel Offset: -1, Greenfield Mode (No Protection)
- Extended Capabilities
- VHT Capabilities: Short GI for 80 MHz, 2 Spatial Streams
- Element ID: 191
- Length: 12 bytes
- VHT Capabilities Info: 0x08159b00
- VHT Supported MCS Set: 0x0000ffa
 - Rx MCS Map:
 - Rx 1 SS: MCS 0-9 (0x0002)
 - Rx 2 SS: MCS 0-9 (0x0002)
 - Rx 3 SS: Not supported (0x0003)
 - Rx 4 SS: Not supported (0x0003)
 - Rx 5 SS: Not supported (0x0003)
 - Rx 6 SS: Not supported (0x0003)
 - Rx 7 SS: Not supported (0x0003)
 - Rx 8 SS: Not supported (0x0003)
 - Rx Highest Long GI Data Rate (Mbps): 0 (0x0000)
 - Tx MCS Map: 0x0000ffa
 - Channel Width: 80 MHz, Channel Center Frequency: 42
 - VHT Operation: Element ID: 190

Networks Found: 51, Displayed: 51 (100%)

Information Elements: 13 (165 bytes)

<https://www.adriangranados.com/apps/wifi-explorer>

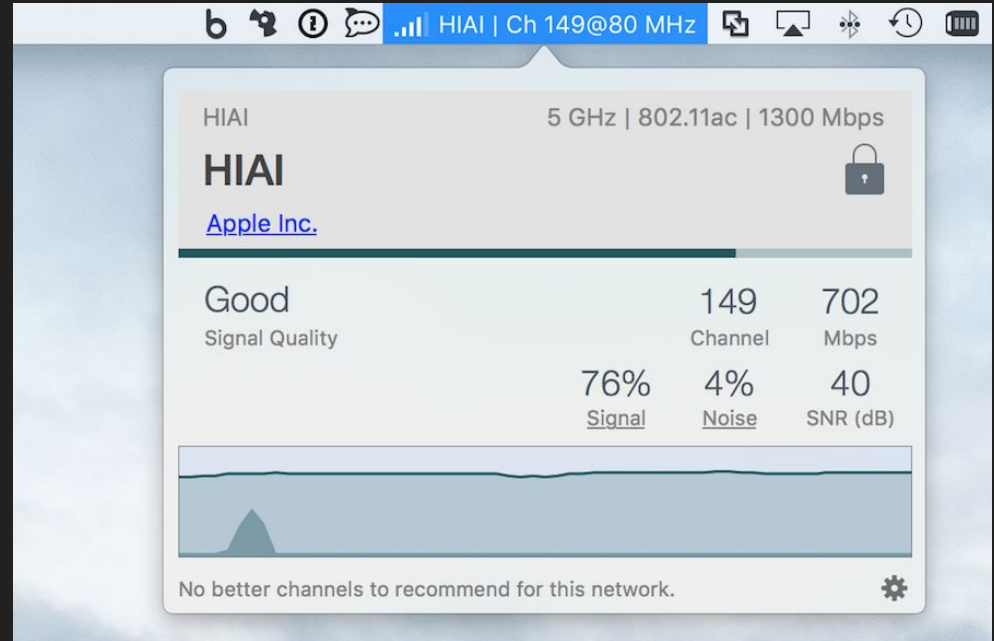
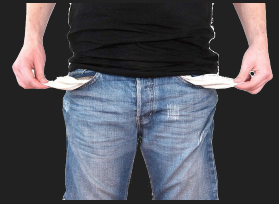
WiFi Signal

Menu Bar status

Notifications on events

Very customizable

Mac OS only



<https://www.adriangranados.com/apps/wifi-signal>

Wifi Analyzer

Scan for networks and APs

Android only

<http://wifianalyzer.mobi>



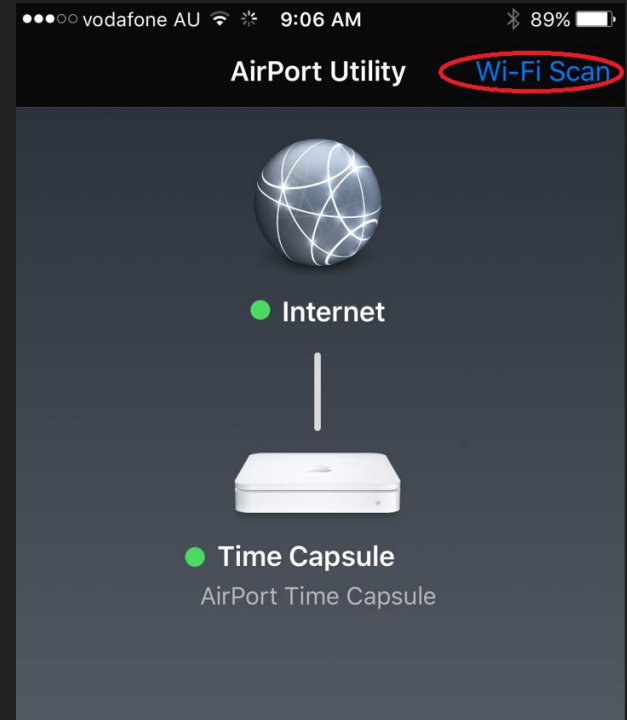
AirPort Utility

Scan for networks and APs

Unlock via Settings -> AirPort Utility -> Wi-Fi Scanner

Easiest way to test with iOS devices

iOS only



<https://itunes.apple.com/us/app/airport-utility/id427276530>

wirelessLAN Professionals Lending Library

<http://www.wlanpros.com/lendinglibrary/>

Check out Wi-Fi tools for your own professional development

Check out tools by covering shipping and writing a blog post

Launching soon



Giveaways

Questions