

IoT Bluetooth & Wi-Fi and EC2 Cloud Projects

Wi-Fi Analysis Project

Wi-Fi Analysis Project

❖ Wi-Fi Network Analyzer

- Provide Wi-Fi connection information
 - IP address of Default gateway, DNS server, device IP (internal and external), Subnet Mask, MAC address
 - Connected AP's SSID, PHY channel used, Signal strength, Link speed, etc.



Network Analyzer

Available at Play Store and App Store

Android: <http://play.google.com/store/apps/details?id=net.techet.netanalyzerlite.an>
iPhone: <https://itunes.apple.com/us/app/network-analyzer-lite/id562315041?mt=8>

Wi-Fi Analysis Project

❖ Wi-Fi Network Analyzer

- Network connection
 - Check network IPs and device's IP

| Information | | Information | |
|----------------------|--------------------------------|----------------------|--------------------------------|
| CONNECTION | | CONNECTION | |
| Default Gateway IP | 192.168.0.1 | Default Gateway IP | 192.168.0.1 |
| DNS Server IP | 165.132.10.21 165.132.10.41 | DNS Server IP | 165.132.10.21 165.132.10.41 |
| External IP | N/A Reload | External IP | Reload |
| Default Gateway IPv6 | N/A | Default Gateway IPv6 | N/A |
| DNS Server IPv6 | N/A | DNS Server IPv6 | N/A |
| External IPv6 | N/A Reload | External IPv6 | N/A Reload |
| HTTP Proxy | N/A | HTTP Proxy | N/A |

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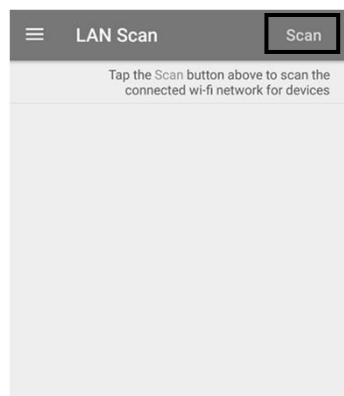
- Wi-Fi information

| Information | | Key | Value | Description |
|---------------------|---------------------------|-----------------|-------------|----------------------|
| Wi-Fi INFORMATION | SETTINGS | SSID | CNL 5GHz | Wi-Fi ID (Name) |
| Enabled | Yes | Channel | 153 | PHY channel using on |
| Data State | Connected | IP Address | 192.168.0.7 | Internal Address |
| Handshake State | Completed | Speed | 150 Mbps | Link datarate |
| SSID | CNL 5GHz | Signal Strength | -59 dBm | RSSI |
| BSSID | 00:08:9f:de:18:e8 | | | |
| Vendor | EFM Networks | | | |
| Channel | 153 | | | |
| IP Address | 192.168.0.7 | | | |
| Subnet Mask | 255.255.255.0 | | | |
| IPv6 Addresses | fe80::f6f5:dbff:fe0d:3f69 | | | |
| MAC | f4:f5:db:0d:3f:69 | | | |
| Speed | 150 Mbps | | | |
| Signal Strength | -59 dBm | | | |
| Received Since Boot | 45.43 MB | | | |
| Sent Since Boot | 5.68 MB | | | |

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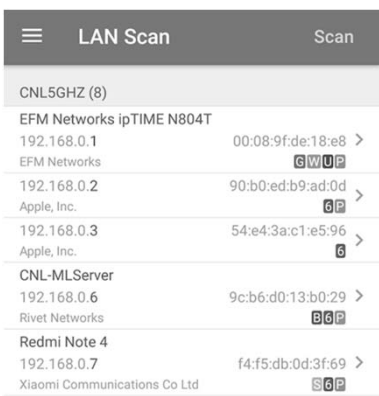
- LAN Scan



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- LAN Scan








- G: Gateway
- W: Web interface available (port 80 or 443 open)
- U: If the device provides UPnP/DLNA services
 - UPnP: Universal Plug-and-Play
 - DLNA: Digital Living Network Alliance
 - Use to share multimedia

Wi-Fi Analysis Project

❖ Wi-Fi Network Analyzer

▪ LAN Scan






| ☰ | LAN Scan | Scan |
|--|-------------------|------|
| CNL5GHZ (8) | | |
| EFM Networks ipTIME N804T | | |
| 192.168.0.1 | 00:08:9f:de:18:e8 | > |
| EFM Networks  | | |
| 192.168.0.2 | 90:b0:ed:b9:ad:0d | > |
| Apple, Inc.  | | |
| 192.168.0.3 | 54:e4:3a:c1:e5:96 | > |
| Apple, Inc.  | | |
| CNL-MLServer | | |
| 192.168.0.6 | 9c:b6:d0:13:b0:29 | > |
| Rivet Networks  | | |
| Redmi Note 4 | | |
| 192.168.0.7 | f4:f5:db:0d:3f:69 | > |
| Xiaomi Communications Co Ltd  | | |

- P: Pingable
 - Device responds to ICMP ping requests
- 6: IPv6 address exists
- B: Device provides Bonjour service
 - Bonjour was developed by Apple
 - Used to find printers and file-sharing servers
- S: Scanning device (your device)

Wi-Fi Analysis Project

❖ Wi-Fi Network Analyzer

▪ Send Ping to the Gateway

| ☰ | LAN Scan | Scan |
|--|-------------------|------|
| CNL5GHZ (8) | | |
| EFM Networks ipTIME N804T | | |
| 192.168.0.1 | 00:08:9f:de:18:e8 | > |
| EFM Networks  | | |
| 192.168.0.2 | 90:b0:ed:b9:ad:0d | > |
| Apple, Inc.  | | |
| 192.168.0.3 | 54:e4:3a:c1:e5:96 | > |
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| Redmi Note 4 | | |
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| Xiaomi Communications Co Ltd  | | |

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Query

Start

QUERY

192.168.0.1

Ping

Route

Ports

Whois

DNS

SETTINGS

Prefer IPv6

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- Send Ping to the Gateway

| | Ping | Stop |
|-----------------|-------------|---------|
| 192.168.0.1 (7) | | |
| ● 7 | 192.168.0.1 | 6.8 ms |
| ● 6 | 192.168.0.1 | 14.3 ms |
| ● 5 | 192.168.0.1 | 10.0 ms |
| ● 4 | 192.168.0.1 | 14.4 ms |
| ● 3 | 192.168.0.1 | 15.7 ms |
| ● 2 | 192.168.0.1 | 2.5 ms |
| ● 1 | 192.168.0.1 | 13.8 ms |

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- Wi-Fi Signal Scan

| Wi-Fi Signal | | |
|-------------------|----------------|----------|
| 5 GHZ | | SETTINGS |
| 153 CNL5GHz | -59 dBm | |
| 00:08:9f:de:18:e8 | WPA2/WPA (AES) | |
| EFM Networks | 40 MHz, WPS | |
| 36 mocolab5Ghz | -66 dBm | |
| 64:e5:99:a3:5e:30 | WEP | |
| EFM Networks | 20 MHz | |
| 100 Yonsei_info | -80 dBm | |
| 00:24:6c:08:e1:f9 | | |
| Aruba Networks | 40 MHz | |
| 100 eduroam | -81 dBm | |
| 00:24:6c:08:e1:fc | WPA2 (AES) | |
| Aruba Networks | 40 MHz | |
| 100 Yonsei_Web | -81 dBm | |
| 00:24:6c:08:e1:fb | | |
| Aruba Networks | 40 MHz | |

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▪ Wi-Fi Signal Scan



1 : Frequency band
(5 GHz/2.4 GHz)
switch by pressing



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▪ Wi-Fi signal scan



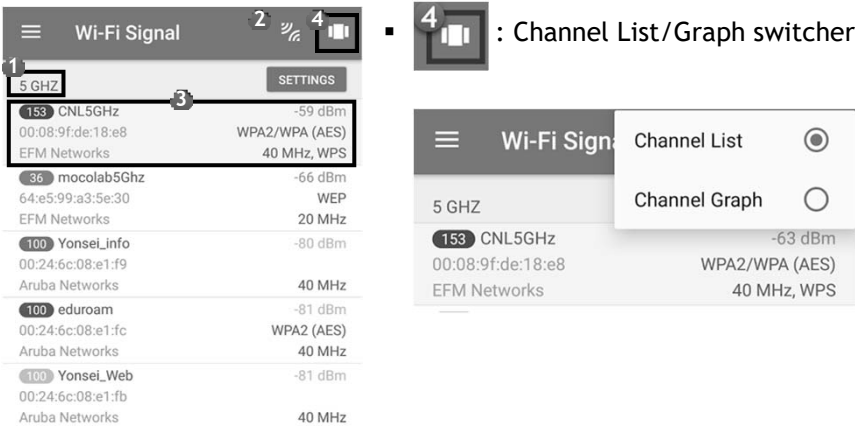
▪ Shows RSSI, SSID, MAC address of AP, Bandwidth and PHY channel used, Encryption scheme, etc.

- RSSI: -59 dBm
- SSID: CNL5GHz
- Encryption: WPA2/WPA (AES)
- Bandwidth: 40 MHz
- PHY Channel:153rd channel

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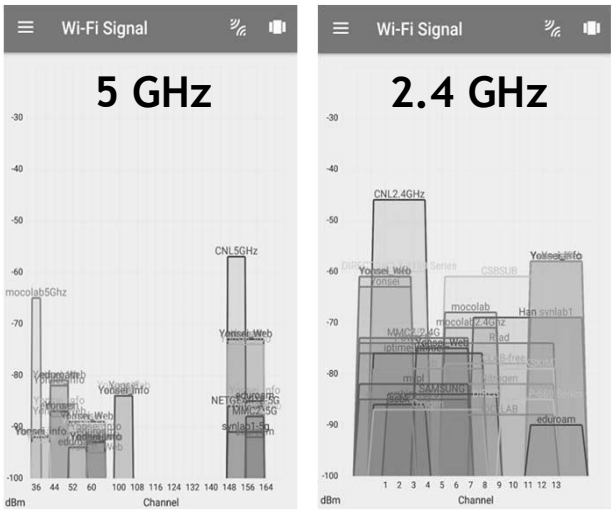
- Wi-Fi signal scan



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- Channel graph



IoT Bluetooth & Wi-Fi and EC2 Cloud Projects References

References

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