

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

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

Information	Information
CONNECTION	CONNECTION
Default Gateway IP192.168.0.1	Default Gateway IP192.168.0.1
DNS Server IP165.132.10.21165.132.10.41	DNS Server IP165.132.10.21165.132.10.41
External IPN/A Reload	External IPReload
Default Gateway IPv6N/A	Default Gateway IPv6N/A
DNS Server IPv6N/A	DNS Server IPv6N/A
External IPv6N/A Reload	External IPv6N/A Reload
HTTP ProxyN/A	HTTP ProxyN/A

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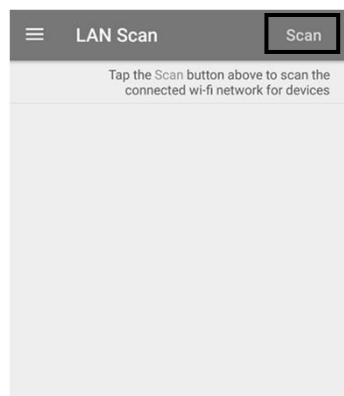
- Wi-Fi information

Information	Key	Value	Description
Wi-Fi INFORMATION	SSID	CNL 5GHz	Wi-Fi ID (Name)
EnabledYes	Channel	153	PHY channel using on
Data StateConnected	IP Address	192.168.0.7	Internal Address
Handshake StateCompleted	Speed	150 Mbps	Link datarate
SSIDCNL 5GHz	Signal Strength	-59 dBm	RSSI
BSSID00:08:9f:de:18:e8			
VendorEFM Networks			
Channel153			
IP Address192.168.0.7			
Subnet Mask255.255.255.0			
IPv6 Addressesfe80::f6f5:dbff:fe0d:3f69			
MACf4:f5:db:0d:3f:69			
Speed150 Mbps			
Signal Strength-59 dBm			
Received Since Boot45.43 MB			
Sent Since Boot5.68 MB			

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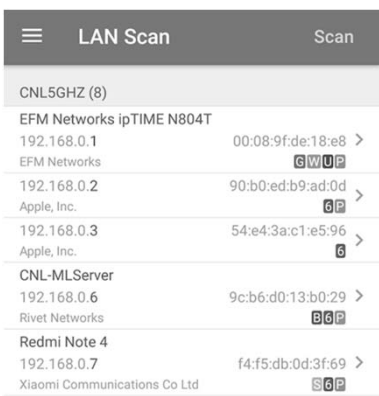
- LAN Scan



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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

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▪ 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)

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❖ 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

>

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

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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	

Wi-Fi Analysis Project

❖ Wi-Fi Network Analyzer


▪ Wi-Fi Signal Scan



The interface shows a list of detected Wi-Fi networks. The first network, 'CNL5GHz', is highlighted. The interface includes a 'SETTINGS' button and a '5 GHZ' indicator.

Channel	SSID	MAC Address	Signal Strength	Encryption	Bandwidth
153	CNL5GHz	00:08:9f:de:18:e8	-59 dBm	WPA2/WPA (AES)	40 MHz, WPS
36	mocolab5Ghz	64:e5:99:a3:5e:30	-66 dBm	WEP	20 MHz
100	Yonsei_info	00:24:6c:08:e1:f9	-80 dBm		40 MHz
100	eduroam	00:24:6c:08:e1:fc	-81 dBm	WPA2 (AES)	40 MHz
100	Yonsei_Web	00:24:6c:08:e1:fb	-81 dBm		40 MHz


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



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▪ Wi-Fi signal scan



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Channel	SSID	MAC Address	Signal Strength	Encryption	Bandwidth
153	CNL5GHz	00:08:9f:de:18:e8	-59 dBm	WPA2/WPA (AES)	40 MHz, WPS
36	mocolab5Ghz	64:e5:99:a3:5e:30	-66 dBm	WEP	20 MHz
100	Yonsei_info	00:24:6c:08:e1:f9	-80 dBm		40 MHz
100	eduroam	00:24:6c:08:e1:fc	-81 dBm	WPA2 (AES)	40 MHz
100	Yonsei_Web	00:24:6c:08:e1:fb	-81 dBm		40 MHz

3 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

IoT Bluetooth & Wi-Fi and EC2 Cloud Projects References

References

- “Network Analyzer,” Jiri Techet, [Online] Available from: <https://play.google.com/store/apps/details?id=net.techet.netanalyzerlite.an> [Accessed Feb. 27, 2018]
- “Network Analyzer Lite,” Techet, [Online] Available from: <https://itunes.apple.com/us/app/network-analyzer-lite/id562315041?mt=8> [Accessed Feb. 27, 2018]
- “BLE Scanner,” Bluepixel Technologies LLP, [Online] Available from: <https://play.google.com/store/apps/details?id=com.macdom.ble.blescanner> [Accessed Feb. 27, 2018]
- “Bluetooth 4.0 Scanner,” John Abraham, [Online] Available from: <https://play.google.com/store/apps/details?id=com.bluemotionlabs.bluescan> [Accessed Feb. 27, 2018]
- “BLE Discovery,” Heap & Stack, [Online] Available from: <https://itunes.apple.com/us/app/ble-discovery/id821826273?mt=8> [Accessed Feb. 27, 2018]
- <https://aws.amazon.com>