

IoT (Internet of Things) Wireless & Cloud Computing Emerging Technologies Report

BLE Scanner :-

Scanner :-

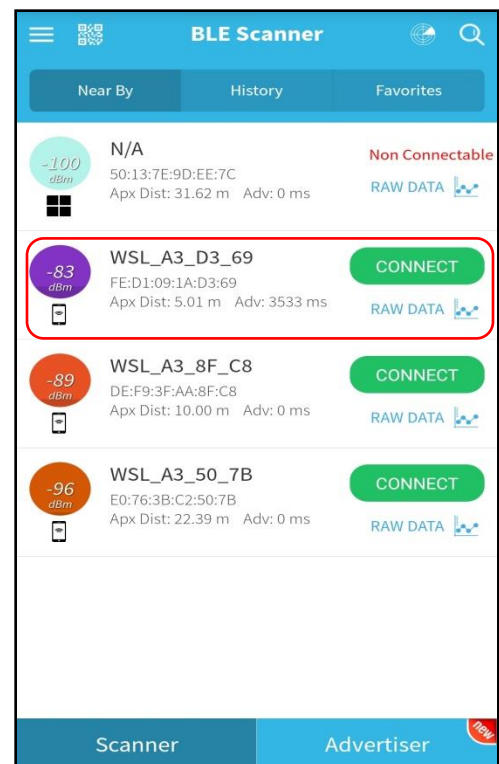
Device WSL_A3_D3_69 is the closest among all as it has the highest RSSI value (-83).

Device Name : WSL_A3_D3_69

MAC Address : FE:D1:09:1A:D3:69

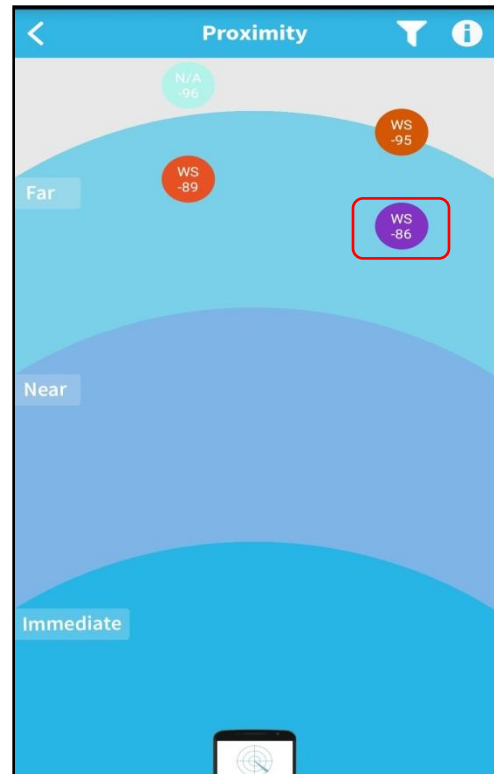
RSSI : -83

Raw Data :



Proximity :-

There are no “Immediate” or “Near” BLE devices available. All the BLE devices are at “Far” distance and beyond from the mobile device with the closest one being the one described above and now its RSSI is changed to -86.



Bluetooth 4.0 Scanner :-

Classic Scan :-

Both the devices with Bluetooth version more and less than 4.0 are listed here. For example, the details of one of the devices are as follows :-

Vendor : Intel Corporate

Desc : DELL

Type : Classic

Power (RSSI) : -51

The screenshot shows the BlueScan app interface with a list of Bluetooth devices. The device with Vendor: Intel Corporate and Desc: DELL is highlighted with a red box.

Time	Type	Power	Vendor	Desc
8:14 PM	LE	-93	Vendor not found	WSL_A3_B9_A7
8:14 PM	Classic	-84	Vendor not found	WSL_A3_8F_C8
8:14 PM	LE	-85	Vendor not found	WSL_A3_D3_69
8:14 PM	Classic	-51	Intel Corporate	DELL

Low Energy Scan :-

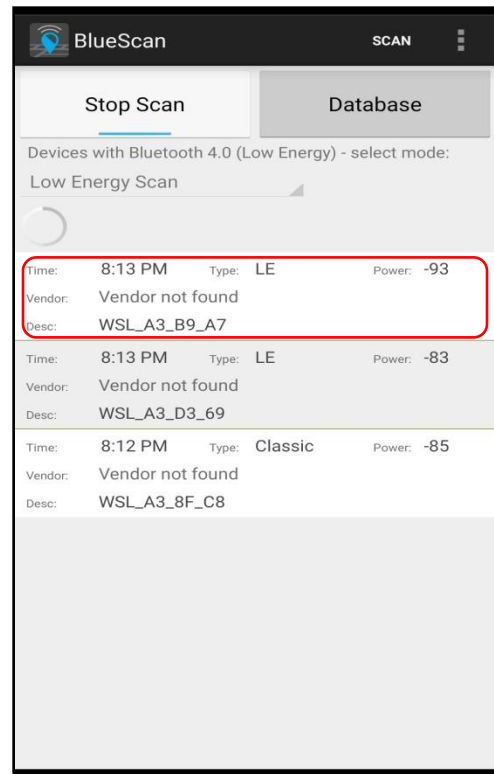
Devices with Bluetooth version 4.0 and above are listed here. For example, the details of one of the devices are as follows :-

Vendor : Not Found

Desc : WSL_A3_B9_A7

Type : LE

Power (RSSI) : -83



Network Analyzer :-

Wi-Fi Information :-

Following are the details of Wi-Fi network to which the mobile device is connected :-

SSID : ION-CoLive2.4GHz

Channel : 1

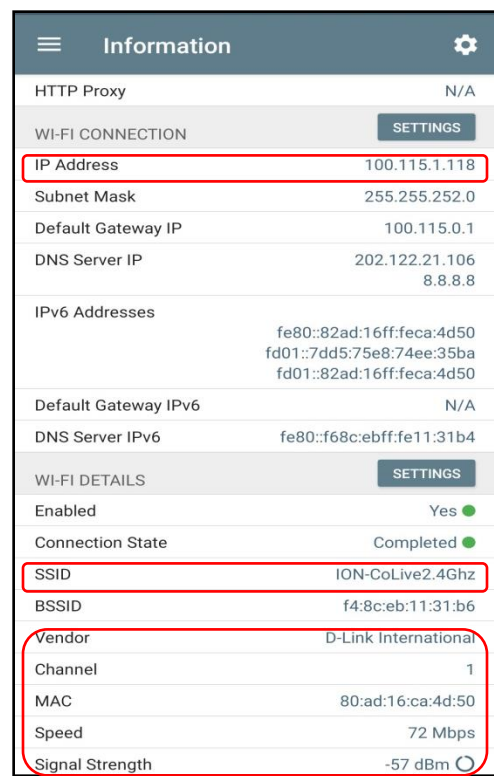
IP Address : 100.115.1.118

Speed : 72 Mbps

Signal Strength : -57 dBm

MAC Address of AP : 80:ad:16:ca:4d:50

Vendor : D-Link International



LAN Scan :-

Devices with following properties were captured in the LAN Scan :-

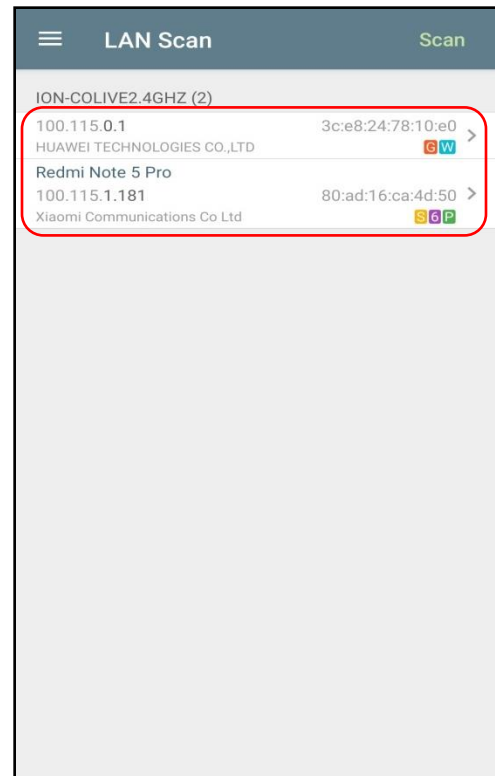
G : Gateway

W : Web Interface Available

S : Scanning Device

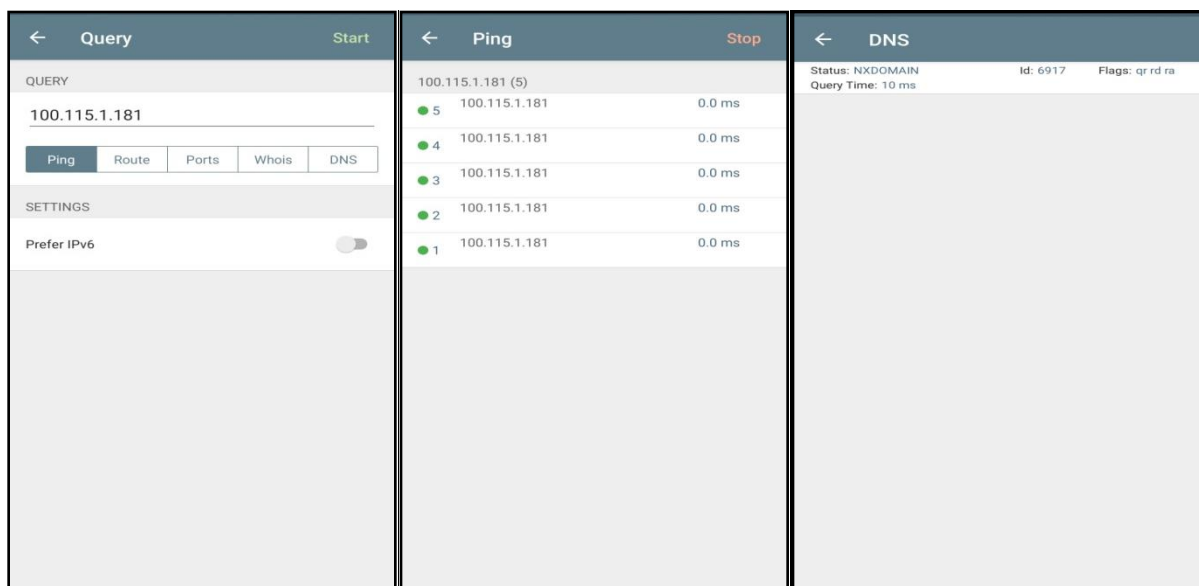
6 : IPv6 Address Exists

P : Pingable



Query :-

Following queries were performed on the Redmi Note 5 Pro device :-



Wi-Fi Signal :-

3 Wi-Fi AP operating on 2.4 GHz band were detected. The details of one of the devices are as follows :-

RSSI : -61 dBm

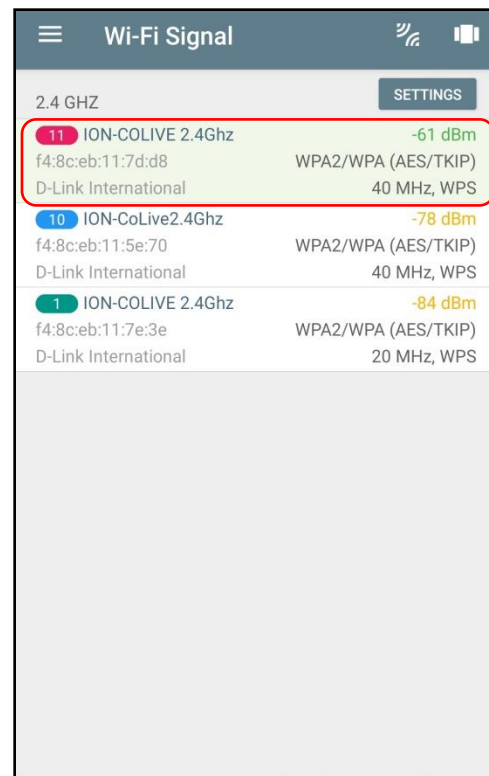
SSID : ION-COLIVE 2.4GHz

MAC Address of AP : f4:8c:eb:11:7d:d8

Bandwidth : 40 MHz

PHY Channel : 11th Channel

Encryption Scheme : WPA2/WPA (AES/TKIP)



2 Wi-Fi AP operating on 5 GHz band were detected. The details of one of the devices are as follows :-

RSSI : -37 dBm

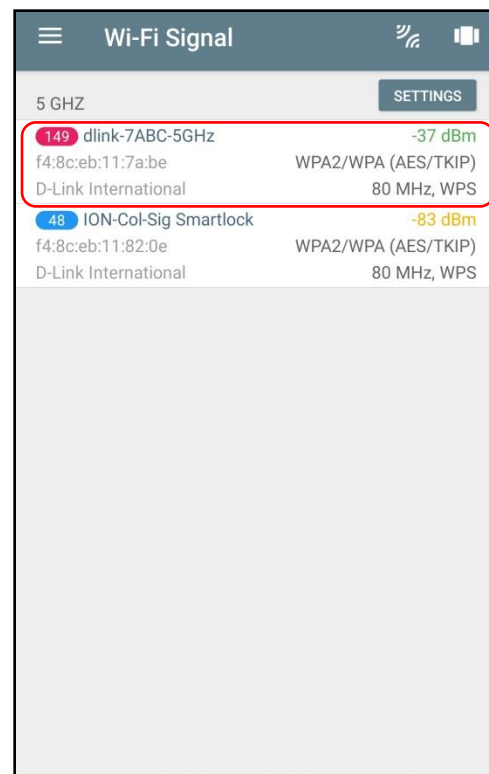
SSID : dlink-7ABC-5GHz

MAC Address of AP : f4:8c:eb:11:7a:be

Bandwidth : 80 MHz

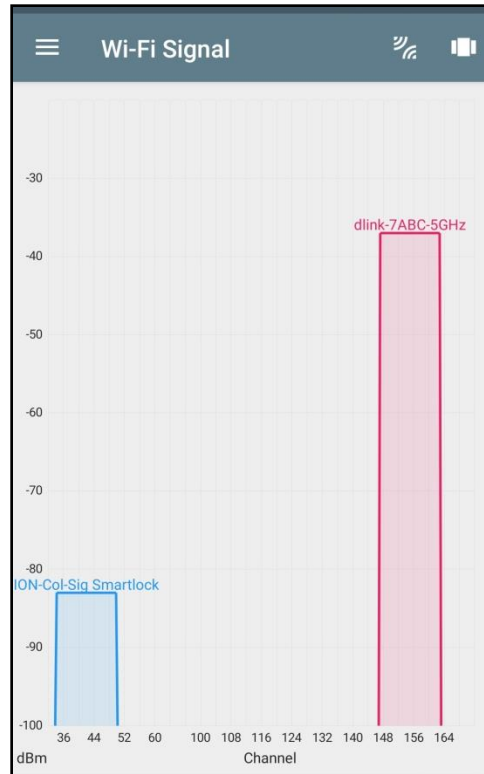
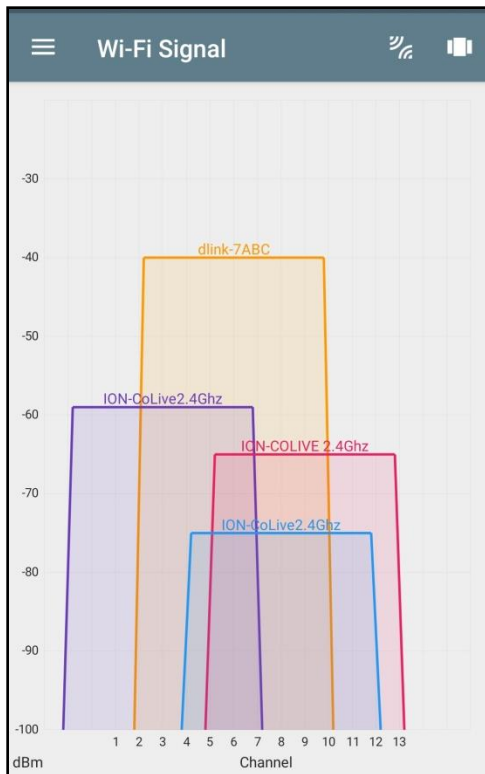
PHY Channel : 149th Channel

Encryption Scheme : WPA2/WPA (AES/TKIP)



Channel Graph :-

Following Channel Graphs were observed for both 2.4 and 5 GHz ISM bands. Even though the channels overlap, still we can see a clear distinction between them.









AWS EC2 :-

AWS Services :-

Explored some of the major AWS services such as :-

- Creating an instance using EC2 (Elastic Compute Cloud)
- Creating buckets and storing files using S3 (Simple Storage Service)
- Adding budget alarm using Billing interface

The screenshot displays the AWS services page. At the top, there's a search bar with the placeholder text "Find a service by name or feature (for example, EC2, S3 or VM, storage)." Below the search bar, a section titled "Recently visited services" shows a grid of service tiles: S3, EC2, Billing, Support, and Cost Explorer. The EC2 tile is highlighted with a red border. Below this is a link for "All services". The lower section, titled "Build a solution", includes the text "Get started with simple wizards and automated workflows." and a grid of six guided workflows, each with an icon, a title, the services used, and an estimated time.

Build a solution		
Get started with simple wizards and automated workflows.		
 Launch a virtual machine With EC2 or Lightsail ~1-2 minutes	 Build a web app With Elastic Beanstalk ~6 minutes	 Host a static website With S3, CloudFront, Route 53 ~5 minutes
 Connect an IoT device With AWS IoT ~5 minutes	 Start a development project With CodeStar ~5 minutes	 Register a domain With Route 53 ~3 minutes

AWS EC2 Instance :-

The AMI that I chose had the following properties :-

Operating System : Linux

Instance Type : t2.micro

RAM : 1 GB

Internal HDD : 8GB

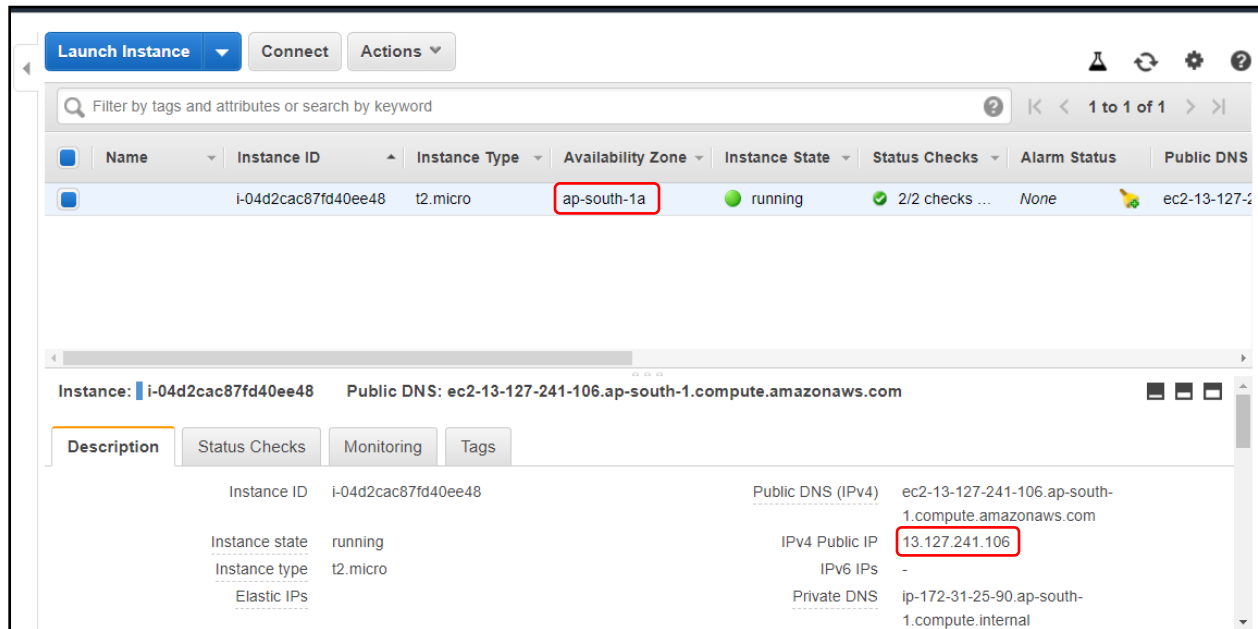
Processor : Intel 2.5 GHz

Security Group : HTTP, HTTPS and SSH (to access the Instance)

The screenshot shows the AWS Management Console interface for creating an EC2 instance. The top navigation bar includes 'Services', 'Resource Groups', and a user profile 'Gaurav Warlyani' from 'Mumbai'. The main breadcrumb trail shows the steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, and 7. Review. The current step is 'Step 1: Choose an Amazon Machine Image (AMI)'. Below the title, a description states: 'An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.' On the left, a 'Quick Start' sidebar lists 'My AMIs', 'AWS Marketplace', and 'Community AMIs', with a 'Free tier only' filter. The main content area displays a list of AMIs. The first AMI, 'Amazon Linux AMI 2017.03.1 (HVM), SSD Volume Type - ami-d7abd1b8', is highlighted with a red dashed box. It includes a description: 'The Amazon Linux AMI is an EBS-backed, AWS-supported image. The default image includes AWS command line tools, Python, Ruby, Perl, and Java. The repositories include Docker, PHP, MySQL, PostgreSQL, and other packages.' and specifies 'Root device type: ebs' and 'Virtualization type: hvm'. Other visible AMIs include 'SUSE Linux Enterprise Server 12 SP2 (HVM), SSD Volume Type' and 'Red Hat Enterprise Linux 7.4 (HVM), SSD Volume Type'. Each AMI entry has a 'Select' button. The bottom of the console features a footer with 'Feedback', 'English', copyright information '© 2008 - 2017, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved.', and links to 'Privacy Policy' and 'Terms of Use'.

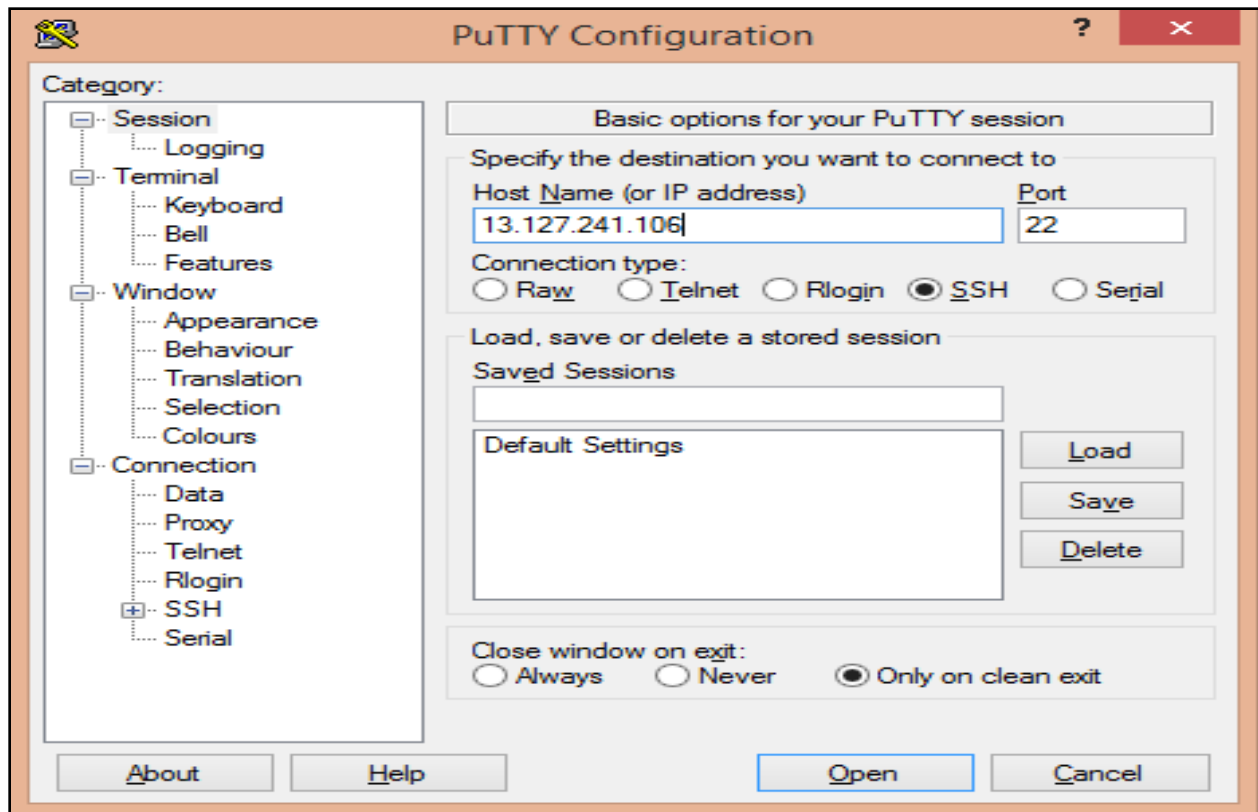
Launching the EC2 Instance :-

The instance was launched in the availability zone ap-south-1a (Asia Pacific) with IPv4 Public IP as : 13.127.241.106



Accessing the EC2 Instance :-

PPK file was generated via PuttyGen using the Public Key provided with AWS EC2 instance. Then, using Putty I was able to access my instance using the Public IP address and Port 22 (SSH).



```
[root@ip-172-31-25-90 ec2-user]# python BlockIP.py
[+] attempting to load demodata.pcap
[+] found valid header
[+] loaded 141 packets
[+] finished loading savefile.
little-endian capture file version 2.4
microsecond time resolution
snapshot length: 65535
linklayer type: LINKTYPE_ETHERNET
number of packets: 141

sudo -u root iptables -A INPUT -s 16.34.181.45 -j DROP
sudo -u root iptables -A INPUT -s 6.17.211.172 -j DROP
sudo -u root iptables -A INPUT -s 4.125.19.17 -j DROP
sudo -u root iptables -A INPUT -s 72.16.11.12 -j DROP
sudo -u root iptables -A INPUT -s 72.16.11.1 -j DROP
[root@ip-172-31-25-90 ec2-user]# iptables -L
Chain INPUT (policy ACCEPT)
target     prot opt source                                   destination
DROP       all  --  16.34.181.45                             anywhere
DROP       all  --  6.17.211.172                             anywhere
DROP       all  --  4.125.19.17                              anywhere
DROP       all  --  h12.11.16.72.static.ip.windstream.net    anywhere
DROP       all  --  h1.11.16.72.static.ip.windstream.net     anywhere

Chain FORWARD (policy ACCEPT)
target     prot opt source                                   destination

Chain OUTPUT (policy ACCEPT)
target     prot opt source                                   destination
```