PI Hole Ad-Blocker

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Raspberry Pi

Raspberry pi is a technology innovation comprising small single-board computers ideal for diverse applications and projects. The credit-card-sized computer was initially unveiled by the pioneering entity in this domain – the Raspberry Pi Foundation in 2012 – with little size enabling its effortless connection to screens or televisions alongside keyboards via micro-USB cables. Internet connectivity occurs through either Ethernet or WiFi modes depending on users' preference.

The collection includes several models where - we opted for pi3 model in our study-based project – each comes with distinctive features tailored for easy usage while remaining affordable without sacrificing quality or speed performance across distinct functions ranging from running an array of operating systems like Raspberry Pi OS to Ubuntu plus Windows 10 IoT among other brands; users have found immense use cases deploying this platform within various applications such as convenience-oriented home automation modules or complex robotics solutions bolstered by seamless integration possibilities with other smart devices available today.

PI Hole Ad Blocker

If you're tired of being bombarded with advertisements while browsing the web or using your devices at home consider implementing a Pi hole into your system setup. This innovative network based ad blocker operates by acting as a DNS sinkhole; in simpler terms it blocks ads from appearing across all devices connected to your home network by redirecting requests for ad serving domains elsewhere.

With its strong open source foundation and compatibility with various systems - including the popular Raspberry Pi - Pi hole is a fantastic option for anyone seeking an ad free digital experience. We may develop an economical and effective ad-blocking solution for our home or small business network by using a Raspberry Pi as the base for Pi-hole.

Parts Required

1. Raspberry pi
2. Micro SD card(2gb+)
3. 2.5A Micro USB AC power supply
4. Ethernet Cable

Procedure

Stage 1 - OS Setup

1. First off, we need to change our OS to “Raspbian Buster lite” and install uSD card burner balenaEtcher and plug in the uSD card.
2. Then enable SSH and after that boot up the Raspberry pi.
3. Search for our raspberry pi's IP address so we can access it over SSH.
4. Then we need to assign raspberry pi’s IP address an internal static IP address.
5. To access the Raspberry Pi over SSH we will need to download and connect to it with an SSH client
6. Then we have to login to SSH and update the Raspberry pi

7. After that we can set up the Pi-Hole installer.

Stage 2-Pi Hole Install Setup

1. With RasPi's ,internet, OS we can install Pi-Hole

A. To install Pi-Hole install the command from their website, paste it into the SSH.

B. The installer will gob out the updates when you open the configuration screen.

C. To continue the installation process click continue as by default "wlan0" interface for the Wi-fi is selected . Press Enter to continue.

D. Then on the next Screen select DNS provider. If the requests are not blocked by the Pi-Hole. And then press enter.

E. The next screen allows us to select the block list we would like to use . but we can also select all these from our own wish.

F. On the next page it will ask you which IP protocols we want to block keep it as it is if you don't want to add any other particular ad blocker

G. The next screen will have the list of IP addresses of the Raspberry Pi and the IP of our router just click on continue.

H. on the next page we will be asked about web related things just click on continue.

I. Finally, after all these steps, installation will be completed .This will list all the IP addresses which our ad blocker will block.

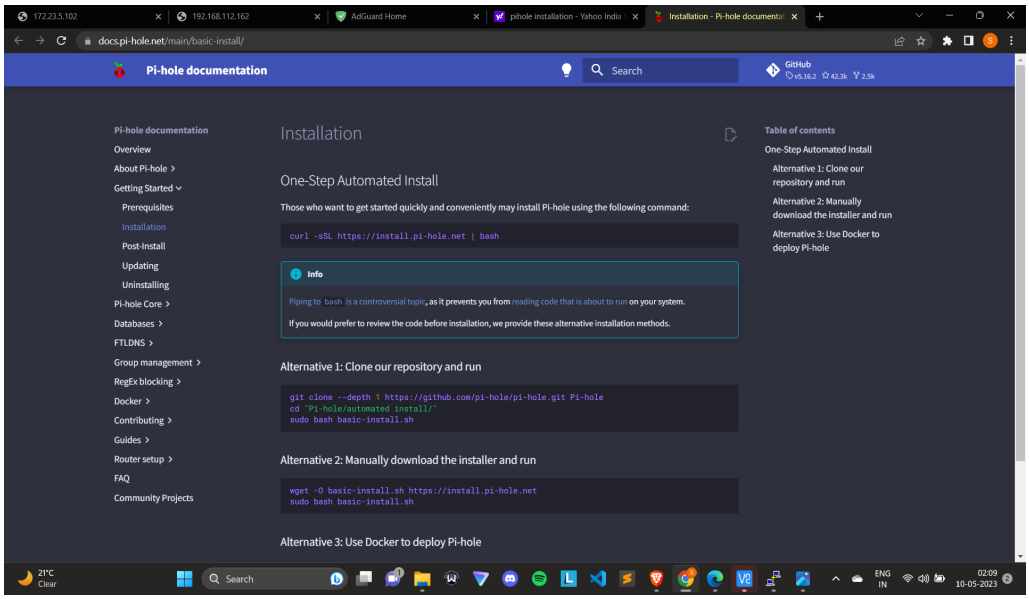
Stage 3 - Setting up and running Pi-Hole on local device/Network

1. To set up a Pi-hole on each individual device, one will have to configure the device's setting and manually add the DNS IP address of the Raspberry Pi. The process varies depending on the OS of the device.

2. To set up Pi-Hole on a router level (which will make it work on all devices connected to the router), one will have to configure the DNS settings of the router's DHCP server. The procedure to do this varies from router to router.

Error We Faced

- These are the steps that we need to follow but in stage 2 the below error was occurring (Failing to fetch some files from the web).
- We tried all the alternatives stated on the site to install it but it showed the same error again and again. This error may be due to connectivity error of the Raspberry Pi.
- After this we tried to install manually by installing in PC first and then transferring the file to a pendrive and then connecting the pendrive to the Raspberry Pi and running the files on it.
- We were successful in downloading and running the Pi-Hole installer but while running the installer, the same error occurred for different multiple files which were also hosted on the web.
- We tried to download them manually too but the number of files kept increasing as there were multiple unsuccessful downloads within each file too. The number of files reached 100+.



We tried all 3 ways given above to install Pi-hole & all showed the same result .

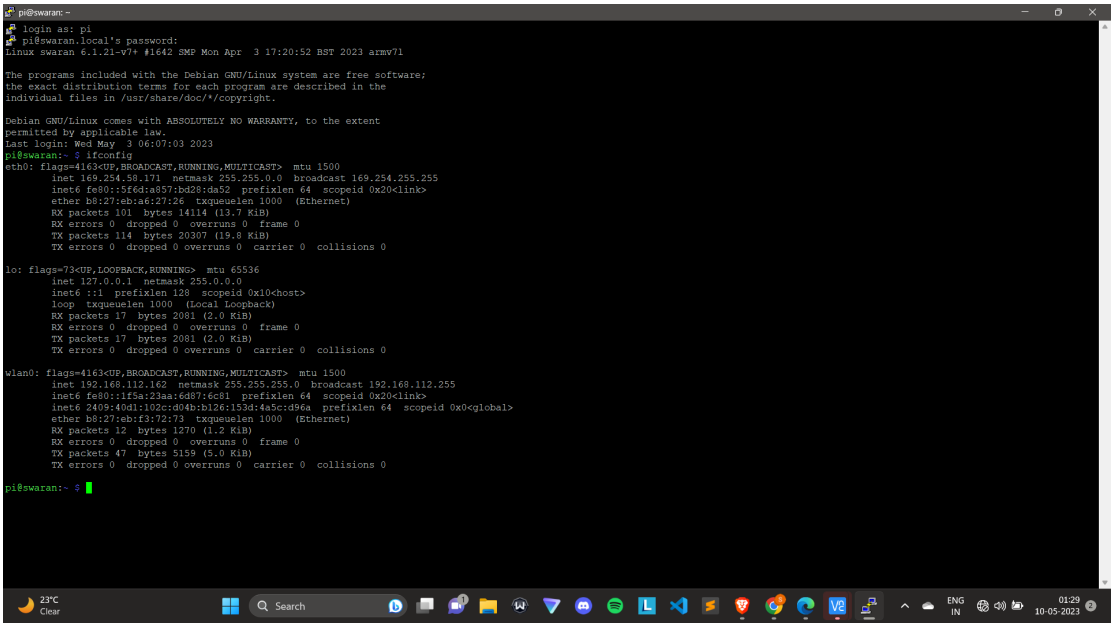
So we searched for alternatives to Pi-Hole and found AdGuard. It works on the same concept as Pi-Hole.

These are the steps that we followed to install AdGuard.

1. Install Raspbian on your Raspberry Pi
2. Open the SSH terminal window on your Raspberry Pi.
3. Updating the Raspberry Pi's software by running the following commands on SSH terminal.

   sudo apt-get update

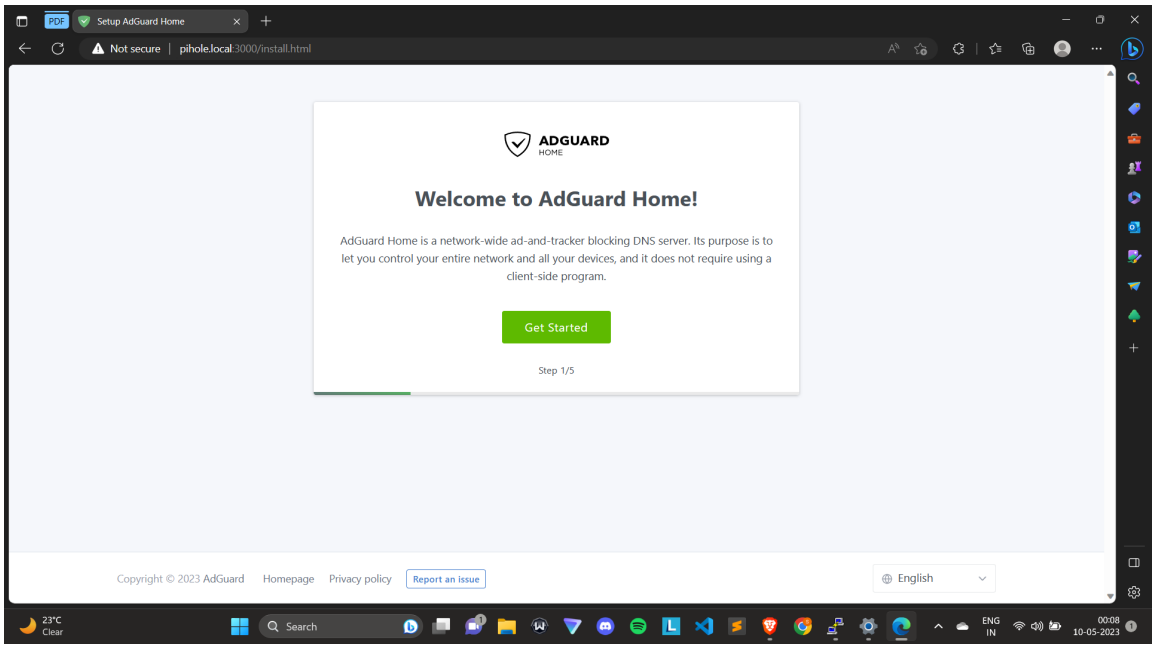
   sudo apt-get upgrade



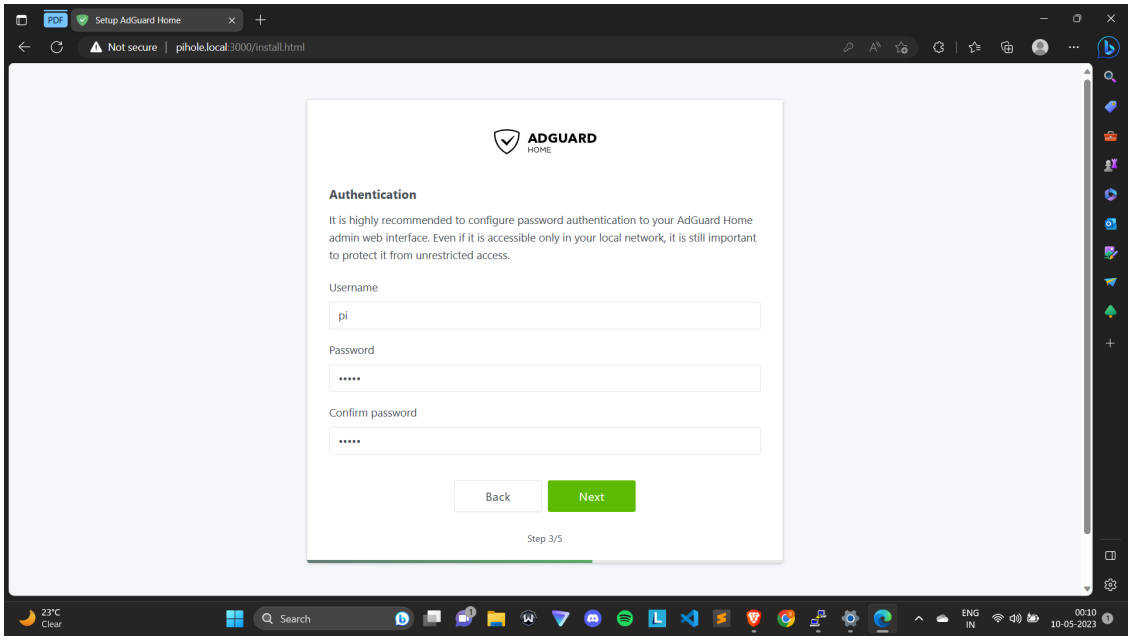
4. Installing Adguard home by following command.

```
pi@swaran: ~/AdGuardHome
pi@swaran:~ $ wget https://static.adguard.com/adguardhome/release/AdGuardHome_linux_arm.tar.gz
--2023-05-10 01:33:04--  https://static.adguard.com/adguardhome/release/AdGuardHome_linux_arm.tar.gz
Resolving static.adguard.com (static.adguard.com)... 2a02:6ea0:d100::14, 2a02:6ea0:d10c::1, 2a02:6ea0:d100::15, ...
Connecting to static.adguard.com (static.adguard.com)|2a02:6ea0:d100::14|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 6530032 (6.2M) [application/gzip]
Saving to: 'AdGuardHome_linux_arm.tar.gz'

AdGuardHome_linux_arm.tar.gz                  100%[=============================================================

2023-05-10 01:33:21 (422 KB/s) - 'AdGuardHome_linux_arm.tar.gz' saved [6530032/6530032]

pi@swaran:~ $ sudo tar xvf AdGuardHome_linux_arm.tar.gz
AdGuardHome/
AdGuardHome/AdGuardHome
AdGuardHome/README.md
AdGuardHome/LICENSE.txt
pi@swaran:~ $ ls
AdGuardHome  AdGuardHome_linux_arm.tar.gz  Bookshelf
pi@swaran:~ $ cd AdGuardHome
pi@swaran:~/AdGuardHome $ ls
AdGuardHome  LICENSE.txt  README.md
pi@swaran:~/AdGuardHome $ sudo ./AdGuardHome -s install
2023/05/10 01:34:50 [info] Service control action: install
2023/05/10 01:34:52 [info] Service has been started
2023/05/10 01:34:52 [info] Almost ready!
AdGuard Home is successfully installed and will automatically start on boot.
There are a few more things that must be configured before you can use it.
Click on the link below and follow the Installation Wizard steps to finish setup.
2023/05/10 01:34:52 [info] AdGuard Home is available on the following addresses:
2023/05/10 01:34:52 [info] Go to http://127.0.0.1:3000
2023/05/10 01:34:52 [info] Go to http://192.168.112.162:3000
2023/05/10 01:34:52 [info] Action install has been done successfully on linux-systemd
pi@swaran:~/AdGuardHome $
```

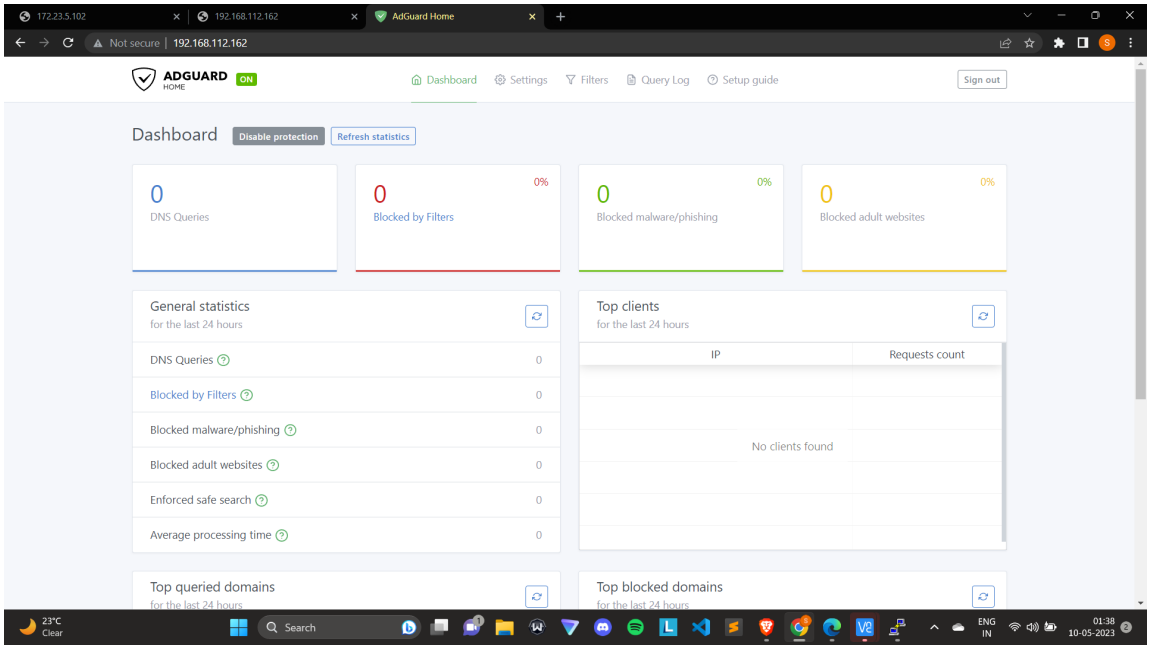
5. Once the installation is complete, you can access AdGuard Home by opening a web browser on your Raspberry Pi and navigating to "http: / /localhost:3000". In our case, "https://pihole.local:3000".



6. In AdGuard Home, you can customize the ad blocking filters and privacy settings to your liking.
7. Once you've configured AdGuard Home to your liking, just finish setting it up and login with your username and password.



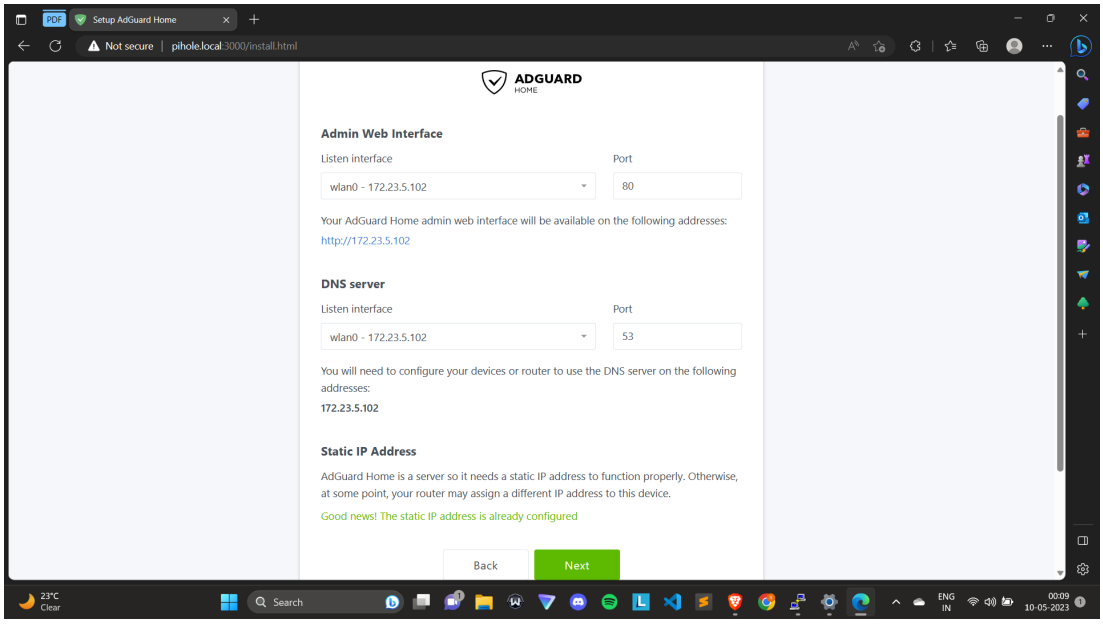
8. After logging in, you would see a dashboard like this with all the data related to the adguard software installed on your raspberry-pi.

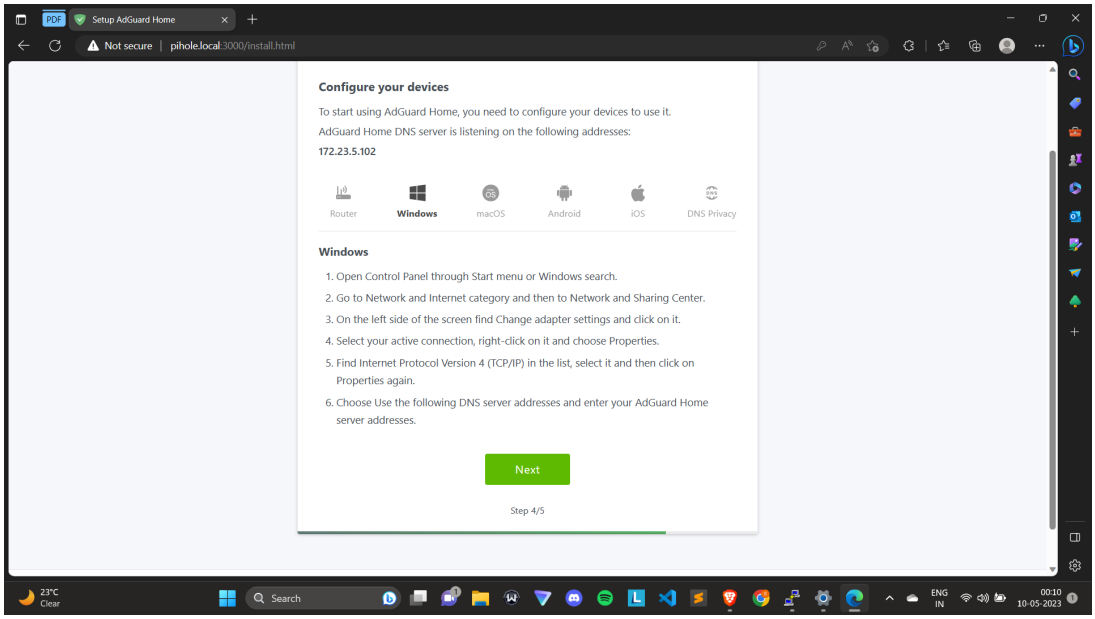


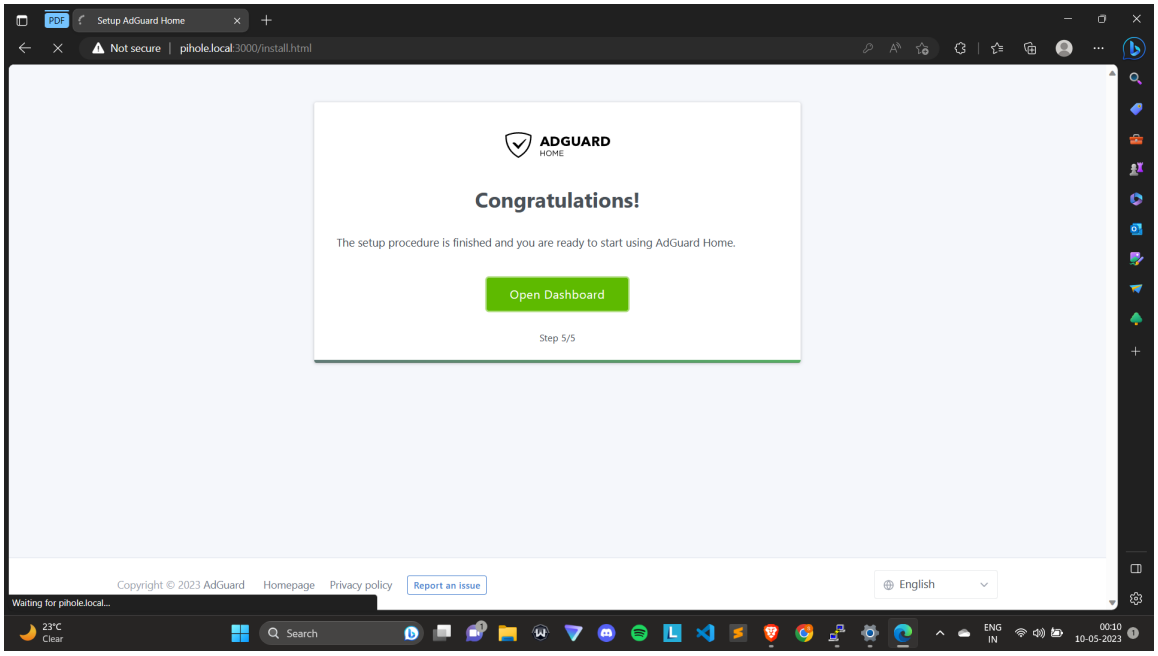
9. Now to start blocking ads, you have to configure the DNS settings of your device and change it to the IP address of your ras-pi. Once you have done this, all the ads on that device would be blocked.

   (PS: As now the internet requests on your device is routing through Raspberry-Pi, your internet speed would decrease)

After installing we will now setup the Adguard as shown below




Setup AdGuard Home
Not secure | pihole.local:3000/install.html
Configure your devices
To start using AdGuard Home, you need to configure your devices to use it.
AdGuard Home DNS server is listening on the following addresses:
172.23.5.102
Router
Windows
macOS
Android
iOS
DNS Privacy
Windows
1. Open Control Panel through Start menu or Windows search.
2. Go to Network and Internet category and then to Network and Sharing Center.
3. On the left side of the screen find Change adapter settings and click on it.
4. Select your active connection, right-click on it and choose Properties.
5. Find Internet Protocol Version 4 (TCP/IP) in the list, select it and then click on Properties again.
6. Choose Use the following DNS server addresses and enter your AdGuard Home server addresses.
Next
Step 4/5
23°C
Clear
Search
ENG
IN
00:10
10-05-2023


Setup AdGuard Home
Not secure | pihole.local:3000/install.html
ADGUARD
HOME
Congratulations!
The setup procedure is finished and you are ready to start using AdGuard Home.
Open Dashboard
Step 5/5
Copyright © 2023 AdGuard
Homepage
Privacy policy
Report an issue
English
Waiting for pihole.local...
23°C
Clear
Search
ENG
IN
00:10
10-05-2023

After successfully installing it we will login to the AdGuard .

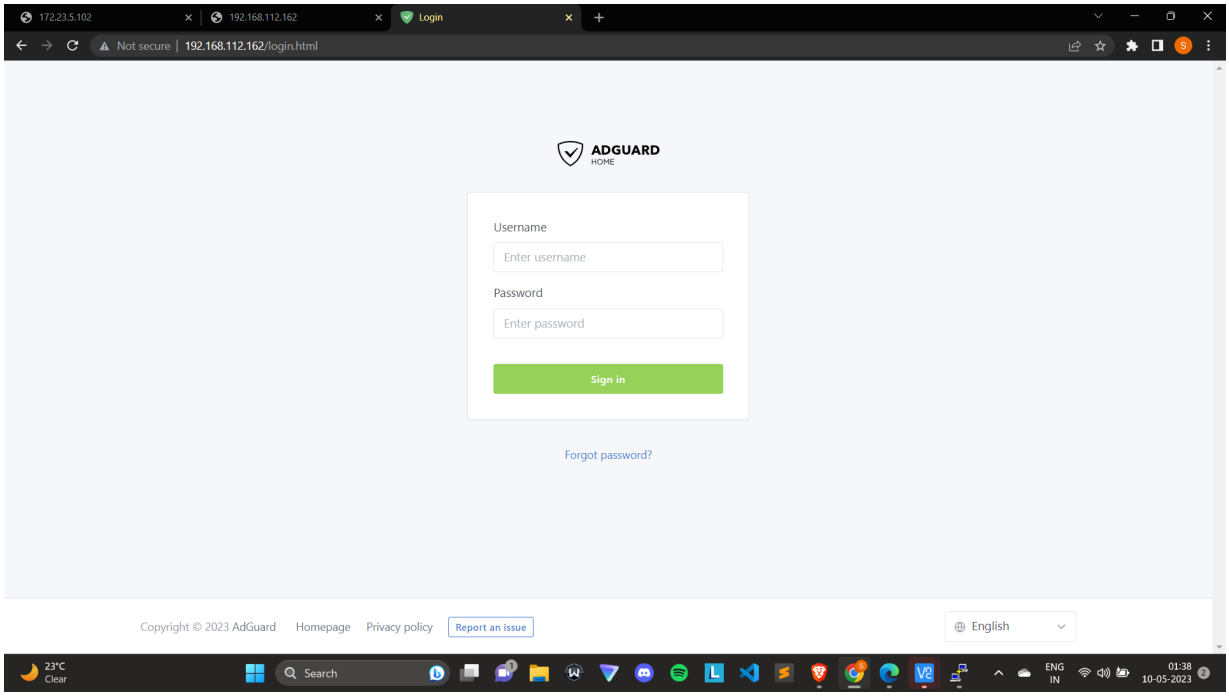
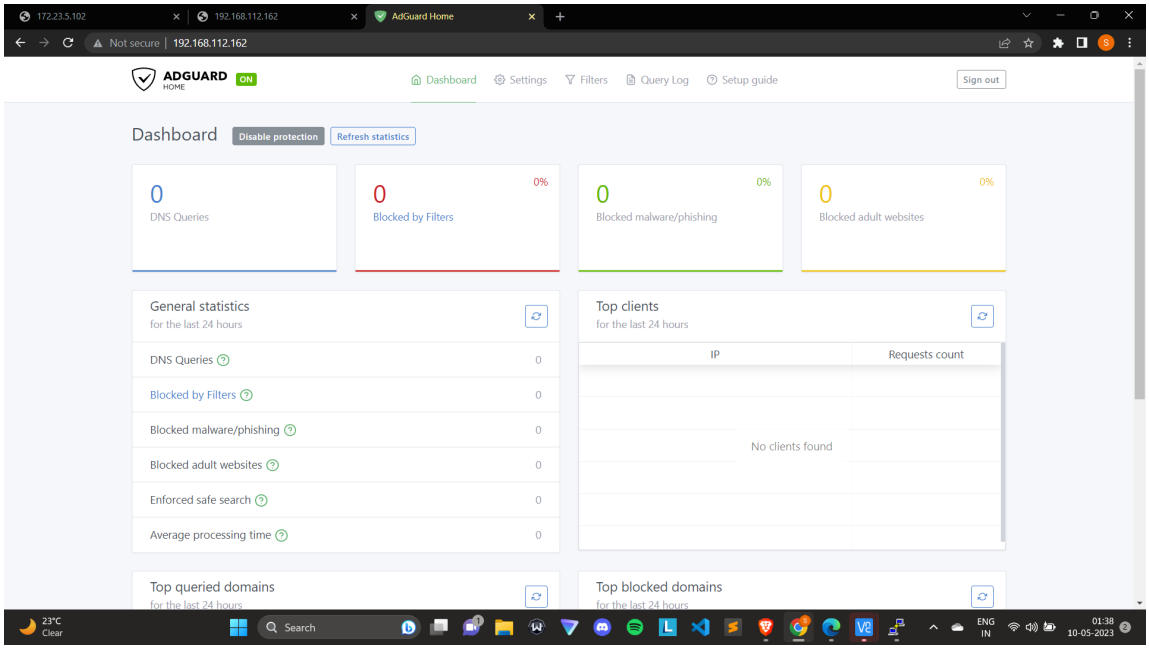


Figure showing the stats of Adguard.



CONCLUSION-

We have successfully implemented the ADD-BLOCKER with the help of Raspberry-pi with the help of AdGuardHome.